

# WALCO



# Play Back NEEDLES

Trade Mark

**QUANTITY DISCOUNTS QUOTED ON REQUEST**

**WALCO "400"  
FLOATING JEWEL SAPPHIRE**



**MODEL WS-400**

RATING: UP TO 10,000 PLAYS  
LIST PRICE \$2.50

**WALCO "400"  
RUBY JEWEL NEEDLE**



**MODEL WR-400**

RATING: UP TO 6,000 PLAYS  
LIST PRICE \$2.00

**WALCO "400"  
PRECIOUS METAL NEEDLE**



**MODEL WA-400**

RATING: UP TO 4,000 PLAYS  
LIST PRICE \$1.50

These three needles are beautifully packaged and are available 12 to a counter-display card or in compact cartons of 12 needles. These needles are also available with microgroove (one mil radius) points for playing 33 $\frac{1}{3}$  RPM LONG PLAYING records.



**WALCO  
DIAMOND NEEDLE  
MODEL WD-90**

The Walco Diamond is the first professional broadcast-type needle to be offered for low cost, mass sale. Once installed in today's pickup, the needle problem is ended.

LIST PRICE \$12.50

**WALCO "Muted Stylus"  
NEEDLES for**



**Muted Stylus  
PICKUP CARTRIDGES**

Mfr'd and Sold by Walco under  
Special Shure License

**PROFESSIONAL DIAMOND  
PLAY BACK STYLUS**

**MODEL WD-95** — For users who prefer a straight shank needle or where a bent needle cannot be used, Walco provides the WD-95 Straight Shank. TIP: South African diamond; SHANK: 17ST duraluminum; POINT RADIUS: .0025"; INCLUDED ANGLE: 45 degrees; OVERALL LENGTH: Straight shank — 1 $\frac{1}{2}$ ".

LIST PRICE \$12.50



**WALCO SAPPHIRE  
"Muted Stylus"  
NEEDLE**



**MODEL WP-30S  
LIST PRICE \$2.50\***

**WALCO PRECIOUS METAL  
"Muted Stylus"  
NEEDLE**



**MODEL WP-30  
LIST PRICE \$1.50\***

**THE ENCORE  
MODEL WA-100**

An exceptionally fine needle priced for volume sales. Precious metal tipped.

LIST PRICE \$1.00



**STRAIGHT SHANK  
SAPPHIRE  
MODEL WN-55**

Especially recommended for low-pressure pickup and professional use. Notched dural shank.

LIST PRICE \$1.00



**BENT SHANK  
SAPPHIRE  
MODEL WN-50**

For use on older type phonos with heavier pickups. Hand polished sapphire with dural shank.

LIST PRICE \$1.00



**GROOVE-MASTER  
MODEL WA-150**

A high fidelity needle tipped with precious metal alloy. Hand polished point with filter type shank.

LIST PRICE \$.50



**COIN MACHINE  
SAPPHIRE  
MODEL WS-900**

For the light weight tone arms in new coin phonographs. Rated at 5,000 record plays.

PRICES ON REQUEST



**COIN MACHINE  
PRECIOUS METAL  
MODEL WA-700**

An all-purpose, long-life coin machine needle of superior quality.

PRICES ON REQUEST

# Brush

## MAGNETIC RECORDING PRODUCTS



### MODEL BK-411 SOUNDMIRROR\*

The BK-411 "SOUNDMIRROR" produces high quality recordings easily and quickly. It offers unequalled advantages for home recording, professional and educational use. The new single control operates REWIND, FAST FORWARD, FAST REVERSE, and RECORD by a simple fingertip movement. Automatic REWIND occurs at the end of the forward movement of each complete reel. Designed with concealed space for microphone storage. Tone, volume and selector dials are also concealed. Selector dial permits easy selection of radio or microphone as source of recording. The solid mahogany cabinet of the "SOUNDMIRROR" is an attractive addition to any home.

The "SOUNDMIRROR" records on tape which can be "erased" and used over and can be "edited" with scissors and cellulose tape.

Dimensions - BK-411 ..... 12 $\frac{1}{8}$  inches x 17 $\frac{1}{2}$  inches x 13 $\frac{3}{4}$  inches.  
Weight 36 lbs.

List Price ..... \$199.50



### PORTABLE MODEL BK-403 SOUNDMIRROR\*

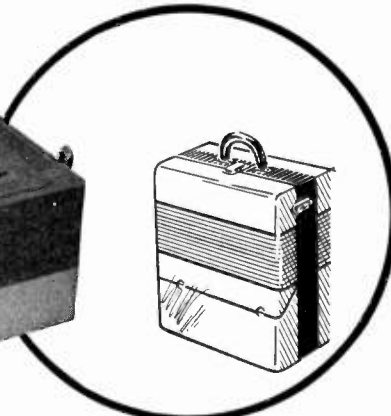
The BK-403 "SOUNDMIRROR" is a portable "Magnetic Ribbon" recorder contained in an attractive black leatherette carrying case. Ideal for use in broadcast companies, school classrooms, industrial conference recording, commercial sound studios.

Ideal for:

- |                   |                          |                       |
|-------------------|--------------------------|-----------------------|
| Remote pickup     | Language studies         | Sermon reference      |
| Delayed broadcast | Class plays              | Labor negotiation     |
| Spot announcement | School musical societies | Important conferences |
| Speech correction | Assembly entertainment   | Vacation reference    |

Dimensions - BK-403 - 25 $\frac{3}{4}$  inches x 10 $\frac{1}{2}$  inches x 14 $\frac{1}{2}$  inches  
Weight 50 lbs.

List Price ..... \$375.00



### MODEL BK-414 PORTABLE SOUNDMIRROR\*

The BK-414 "SOUNDMIRROR" produces high quality recordings easily and quickly. It offers unequalled advantages for home recording, professional, and educational use. The new single control operates REWIND, FAST FORWARD, FAST REVERSE, and RECORD by a simple fingertip movement. Automatic REWIND occurs at the end of the forward movement of each complete reel. The "SOUNDMIRROR" records on tape which can be "erased" and used over and can be "edited" with scissors and cellulose tape.

Dimensions 17 $\frac{3}{4}$  in. x 21 in. x 9 $\frac{3}{4}$  in.  
Weight 37 $\frac{1}{2}$  lbs.

List Price ..... \$229.50

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

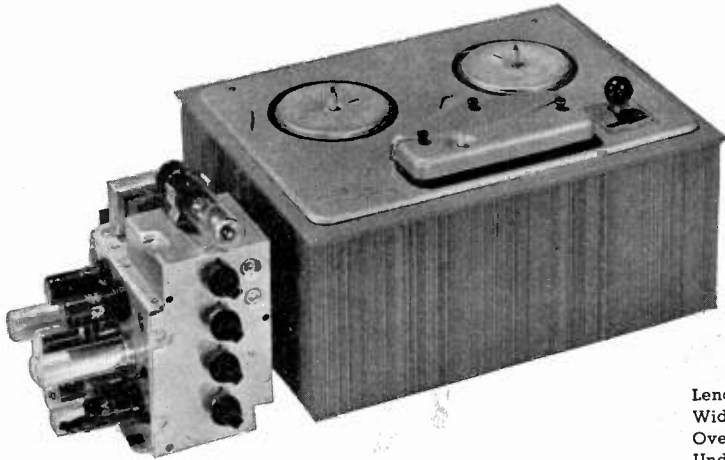
Complete technical data on request  
\*Trade Mark Reg. U. S. Pat. Off.

## THE BRUSH DEVELOPMENT CO.



# Brush

## MAGNETIC RECORDING PRODUCTS



### MODEL BK-415 FOUNDATION UNITS

The Brush Development Company, leader in magnetic recording, announces the availability of magnetic tape foundation units consisting of complete mechanical and electronic assemblies.

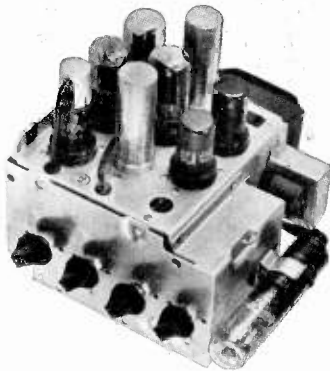
Unique design combines extreme operating simplicity with small size, which facilitates installation in difficult applications.

High quality recording from radio or a microphone is accomplished with minimum effort, using erasable, re-usable magnetic tape, the finest, most practical recording medium known.

List Price . . . . . \$195.00

#### DIMENSIONS BK-415 FOUNDATION UNITS

Length . . . . .	15½ inches
Width . . . . .	11¼ inches
Over Panel . . . . .	13⅞ inches
Under Panel . . . . .	5½ inches
Amplifier . . . . .	8⅞ inches x 9¾ inches x 7¼ inches



#### BK-415S

Complete tape handling mechanism including motor, record-reproduce and erasing heads. Furnished mounted in substantial, compact, attractive wood frame.

List Price . . . . . \$125.00

#### BK-808

Completely wired 7-tube electronic unit, including pre-amplifier, oscillator, monitor circuit, amplifier and recording level indicator. Tubes included.

List Price . . . . . \$70.00



### BRUSH RECORDING TAPE:

#### 1. HIGHEST QUALITY:

- (a) Uniformity
- (b) Excellent Frequency Response
- (c) Strong paper base
- (d) Firm adhesion of coating to paper—no residue on record head
- (e) Complete and easy erasure

2. The ONLY "HIGH LEVEL" Recording Tape on the market: will accommodate recording currents 6 db. higher without distortion.

3. The ONLY Recording Tape wound on highest quality steel reels which fit any popular priced recorder.

Available for any recorder:

#### LIST PRICE

BK-961: About 1,225 ft. wound with coating facing center of reel . . . . . \$3.50  
 BK-961-R: About 1,225 ft. wound with coating facing outside of reel . . . . . \$3.50

#### REELS

BK-921: Empty 7" high-quality steel . . . . . \$1.00

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

Complete technical data on request



## THE BRUSH DEVELOPMENT CO.

# MAGNECORD

FIRST IN THE FIELD OF MAGNETIC RECORDING

## MODEL PT6-A "MAGNECORDING"

- ★ BROADCASTING    ★ BUSINESS    ★ CHURCH  
★ MOTION PICTURES    ★ RECORDING STUDIOS

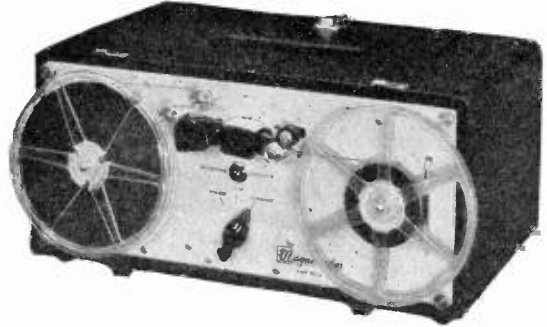
Magnecord gives wide frequency response with low distortion; light weight with dependability; flexible arrangement and use; and economical first cost and operation. Magnecord is the oldest and largest manufacturer of professional magnetic recorders.

### BASIC RECORDING MECHANISM

PT6-A (with case)	\$278.00
PT6-AX (without case)	\$262.00

### SPECIFICATIONS

- Recording Speeds: 15 inches/sec., or 7 1/2 inches/sec. interchangeable. Quick change capstans.
- Rewind Speed: Full 7 1/2-inch reel rewind in approx. 40 seconds.
- Frequency Response: At 15 inches/sec. from below 40 cps to 15 kc ± 2 db. At 7 1/2 inches/sec. 40 cps to beyond 7 kc when used with proper equalizer.
- Motors: Synchronous 117 v. 60-cycle AC motor provides constant speed drive for recording and playback. Shaded pole motor provides high speed rewind.
- Record-Reproduce Head: Magnecord RT-61 plug-in type.
- Erase Head: Magnecord ET-18 plug-in type.
- Flutter: Max. 0.3%.
- Mechanical Drive: Positive idler speed reduction system.



### BASIC RECORDING MECHANISM

PT6-AH (with case)	\$284.00
PT6-AXH (without case)	\$278.00

● Same as above with addition of Hi Forward Cueing Speed.

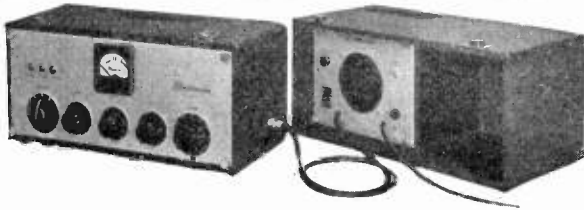
## MULTI-PURPOSE AMPLIFIER PT6-P

Lightweight combination record/playback/remote amplifier used with Magnecord PT6-A to provide high-fidelity recording.

PT6-P	\$462.00
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### SPECIFICATIONS

- Inputs: Three independently mixed low-level microphone channels 30/50 ohms; also, high impedance bridging input.
- Mixer: Individual low impedance controls (2 db per step) on each microphone input. Master gain control (2 db per step).
- Indicator Lights: Colored target lights indicate selector switch position.
- Monitor System: Small built-in loudspeaker with separate power tube and volume control.
- Headphone Jack: Jack for headphone monitoring.
- Volume Level Meter: Std. 3" square V.U. meter, Scale A.
- Tubes: PT6-P: 1-12AX7, 2-12AU7. PT6-PS: 1-6V6, 1-6X4.
- Power Requirements: 117 v, 60-cycle Single Phase AC, 60 watts.
- As remote amplifier, may be operated on battery with minor change.
- Case: 18" L x 8" W x 16 1/2" D. Finish: Black Grain Leatherette.
- Panel: Magnecord grey hammered finish.
- Weight: 31 lbs.



- Outputs: + 6 dbm, 600 ohms balanced. (Recording output is equalized signal developing approx. 1 ma in Magnecord RT-61 recording head used in PT6-A.)
- Frequency Response: ± 2 db from 50 to 15,000 cps at a tape speed of 15 inches/sec., and ± 2 db from 50 to 7,000 cps at 7 1/2 inches/sec. when plug-in recorder equalizer for the specific speed is used. Amplifier alone ± 2 db 50 to 15,000 cps.
- Harmonic Distortion: Total generated in record-playback cycle, including tape and recording head, 2.0%.
- Signal/Noise: Wide band measurement including tape — better than 47 db with total harmonic content less than 2%.
- Switching: Three-position switch selects "Record," "Listen" or "Remote" operation.

## RACK AMPLIFIER PT6-R

Rack mounting recording and reproducing amplifier for use with PT6-A.

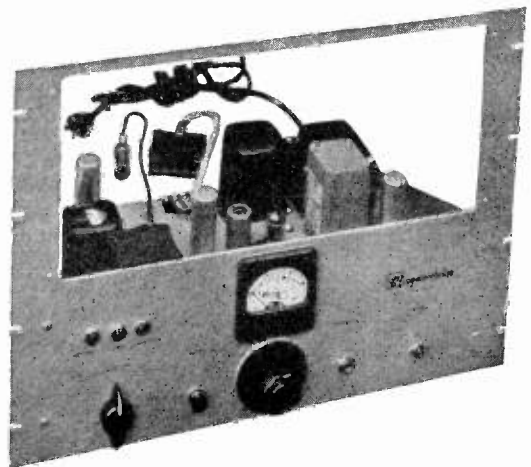
PT6-R	\$383.00
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### SPECIFICATIONS

- Inputs: 600-ohm balanced; high impedance bridging.
- Output: + 6 dbm, 600 ohms balanced. (Recording output is equalized signal developing approx. 1 ma in Magnecord RT-61 recording head used in PT6-A.)
- Gain Control: Single, 2 db per step.
- Frequency Response: ± 2 db from 50 to 15,000 cps at a tape speed of 15 inches/sec., and ± 2 db from 50 to 7,000 cps at 7 1/2 inches/sec. when plug-in recorder equalizer for the specific speed is used. Amplifier alone ± 2 db 50 to 15,000 cps.
- Distortion: Total generated in record-playback cycle, including tape and recording head, 2.0%.
- Switching: Three-position switch selects "Record," "Listen" or "Amplifier."
- Indicator Lights: Colored target lights indicate selector switch position.
- Monitor: Jack on front panel provides for headphone monitoring.
- Volume Level Meter: Standard 3" square V.U. meter, Scale A.
- Tubes: 1-12AX7, 2-12AU7, 1-6X4.
- Power Requirements: 117 v, 60-cycle Single Phase AC, 60 watts.
- Dimensions: Std. 19" relay rack panel 14" H. x 12 1/2" deep. Has cut-out for mounting PT6-A recording mechanism in face of panel.
- Panel: Magnecord grey hammered finish.

## AUXILIARY SPOILING MECHANISM PT6-M

- Increases playing time of PT6-R/PT6-AX combination by factor of 2. \$128.00
- Rack Panel & Throwover Switch (PT6-HT), Throwover Switch, Adapter Plug, and Cables (PT6-T), Portable 12 v. DC Power Supply (PT6-S), and Monitor Head Strip (PT6-Q) also available.

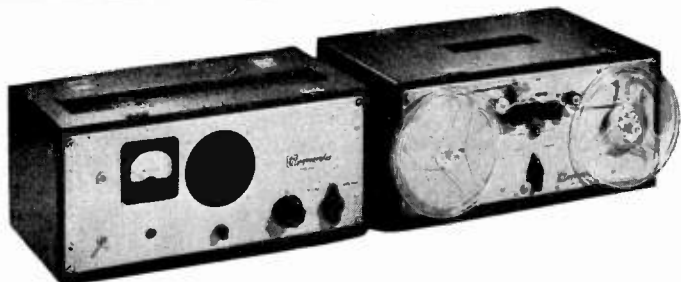


## MAGNECORD ACCESSORIES

Allow convenient assembly of custom installation to meet all recording and playback needs at a reasonable cost.

MAGNECORD, INC.    ★    Chicago, Illinois

# MAGNECORD



## MAGNECORDER PT6-JA\*

FOR ★ BROADCASTERS ★ SCHOOLS  
★ INDUSTRY ★ HOMES

The completely portable Magnecorder PT6-JA produces the same professional results achieved in Magnecord units now efficiently serving the radio broadcasting industry throughout the world.

**\$499.50**

## PROFESSIONAL MAGNETIC TAPE RECORDER

Engineered by the Oldest and Largest Manufacturers of Professional Magnetic Recorders

### SPECIFICATIONS

#### BASIC RECORDER MECHANISM

Produces high-quality recordings of all program material.

- **Recording Speeds:** 15 inches/sec. or  $7\frac{1}{2}$  inches/sec. interchangeable. (No tools required.)
- **Rewind Speed:** Full  $7\frac{1}{2}$ " reel (1,200 ft. of tape) rewound in approx. 40 seconds.
- **Frequency Response:** At 15 inches/sec.: from below 50 cps to 15 kc  $\pm 2$  db, or 50 to 7,500 cps  $\pm 2$  db at  $7\frac{1}{2}$  inches/sec., when the proper equalizer for the specific speed is used in the amplifier.
- **Motors:** Synchronous 117 v, 60-cycle AC drive motor. Shaded pole motor for rewind.
- **Flutter:** Max. 0.3%.
- **Power Requirements:** 117 volts, 60-cycle Single Phase AC, 70 watts.
- **Case:** Dimensions: 18" L x 8" W x  $15\frac{1}{2}$ " D. Finish: Black Grain Leatherette.
- **Panel:** Magnecord grey hammered finish. 7" H x 17" W.
- **Bias Oscillator:** Built in. Uses single 12AU7 tube. 6.3 at .3 amps and 300 v at 40 ma supplied from amplifier.

\* Hi-forward cueing speed available for an additional \$16.00.

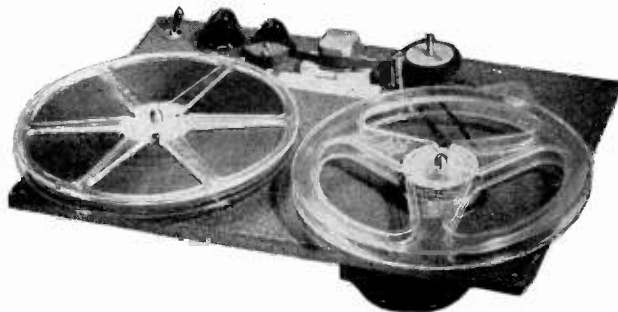
#### RECORD, PLAYBACK & 10-WATT AUDIO AMPLIFIER

Provides exceptionally clean, top-quality audio. Single low impedance microphone input with gain control, high-level terminal for tuner or amplifier input.

- **Inputs:** One low level, low impedance microphone. High level input: 100,000 ohms, unbalanced.
- **Output:** Line output, + 6 dbm at 600 ohms balanced from terminal strip. Power output, 10 watts, at 4 or 16 ohms.
- **Frequency Response:**  $\pm 2$  db from 50 to 15,000 cps at a tape speed of 15 inches/sec., and  $\pm 2$  db from 50 to 7,000 cps at  $7\frac{1}{2}$  inches/sec. when plug-in recording equalizer for the specific speed is used. Amplifier alone  $\pm 2$  db 50 to 15,000 cps.
- **Harmonic Distortion:** Total generated in record/playback cycle (including tape and recording head) 2.0% at normal recording level.
- **Signal/Noise:** Wide band noise including tape, 47 db or better.
- **Switching:** Three-position switch selects "Record," "Listen" or "Amplifier" operation. Inserts proper characteristics for record or playback and removes all equalization for use as a 10-watt audio or P.A. amplifier.
- **Monitor System:** Built-in 5" P.M. loudspeaker with on-off switch.
- **Volume Control Meter:** 3" square standard V.U. meter, Scale A.
- **Dimensions:** 18" L x 8" W x  $12\frac{3}{4}$ " D.
- **Panel:** Magnecord grey hammered finish. 17" W x 7" H.
- **Power Requirements:** 117 volts, 60-cycle Single Phase AC, 60 watts.

## DUOTAPE MAGNETIC TAPE RECORDER PARTS KIT

All engineering completed. Kit makes high-fidelity, bi-filar type magnetic tape recorder for faithful playback of music and voice. Kit includes erase/record/reproduce head, special oscillator coil, drive motor (115 v, 60-cycle), motor switch, capstan flywheel and bearings, pressure roller and arm, tape reel takeup mechanism, motor mounting plate, main support panel, and hardware. Over-all size:  $10\frac{1}{4}$ " x  $14\frac{1}{4}$ ". Sound recorded on one-half of tape width in one direction; on other half in opposite direction. Tape speed:  $7\frac{1}{2}$ " per sec.; low distortion; insignificant wow and flutter. Includes directions for assembly, circuit diagram, parts lists, and hints on building a high-fidelity record-playback amplifier from parts sold by local dealer.



#### Easy to Assemble:

Screwdriver, Pliers, Soldering Iron Only Tools Needed.

DUOTAPE CO.



Chicago 1, Ill.

# RCA TEST AND MEASURING EQUIPMENT

for SERVICE • LABORATORIES • INDUSTRY • SCHOOLS



## TELEVISION CALIBRATOR (WR-39A)

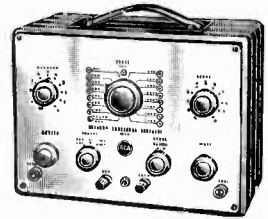
**Variable-Frequency Oscillator:**  
 Frequency Ranges (continuous coverage): 19-110 Mc; 170-240 Mc  
 Output Voltage: Better than 0.28 peak-to-peak volts at any frequency (0.1 RMS volts)  
 Output Impedance.....100 ohms  
 Attenuator Range.....100/1  
 Impedance at "Mod In" Jack.....5000 ohms

**Crystal Oscillators:**  
 Primary Standard Frequency: 2.5 Mc; Accuracy  $\pm 0.01\%$   
 Modulating Standard Frequency: 0.25 Mc; Adjustable for exact zero-beat with 2.5 Mc crystal; Accuracy:  $\pm 0.037\%$   
 (Modulating crystal can be zero-beat against primary crystal)

**Heterodyne Detector Sensitivity:**  
 External Signal Beating Against VFO: 1 millivolt  
 External Signal Beating Against Crystals: 10 millivolts

**Audio Amplifier:** Gain (approx.).....1000 times  
 Output.....0.3 max. watts  
 Loudspeaker.....3-inch cone, alnico magnet type  
 Dimensions.....10" x 13½" x 7½"

The WR-39A is a marker signal generator, a dual crystal standard, and a heterodyne frequency meter with built-in audio amplifier and speaker. The marker VFO operates on fundamentals, and produces strong marker pips on scope traces anywhere within its specified frequency ranges. For regular signal-generator and calibrator applications, the VFO also can be used on second-harmonic frequencies, thus giving continuous coverage from 19 mc to 480 mc. For stagger-tuned alignment work, the VFO can be amplitude-modulated by an audio oscillator. This crystal combination will calibrate any signal source over the range of 250 kc to 480 mc. Unit is complete with signal injection cable. Shipping weight, 15 lbs. Sugg'd User Price: \$250.00



## TV SWEEP GENERATOR (WR-59A)

**IF Center-Frequency Ranges:**  
 Picture Intermediate, first band.....5-15 Mc  
 Picture Intermediate, second band.....20-30 Mc  
 Picture Intermediate, spare.....25-40 Mc (adjust.)  
 FM Intermediate.....10-11.5 Mc  
 Television RF Channels 1-13: 44-50, 54-60, 60-66, 66-72, 76-82, 82-88, 174-180, 180-186, 186-192, 192-198, 198-204, 204-210, 210-216 Mc

**Video Band.....0-10 Mc**  
**Sweep Widths (variable):**  
 Picture Intermediate (first and second bands): 0-10 Mc  
 Picture Intermediate (spare).....0-10 Mc  
 FM Intermediate.....0-1.5 Mc  
 TV Sound Intermediate.....0-2 Mc  
 Television Radio: 0 to at least 6 Mc on channel 1; 0-7.5 Mc on channel 2; 0-8 Mc on channels 3-13  
 Video.....100 kc - 10 Mc  
 Output Voltage, all range: Better than 0.28 peak-to-peak volt

**Output Impedances:**  
 RF Ranges.....150-0-150 ohms, normal load  
 IF & Video Ranges.....100 ohms cable termination

**Attenuator Ranges:**  
 RF Ranges.....20000/1  
 IF & Video Ranges.....4000/1

**Maximum Amplitude Variation While Sweeping:**  
 All ranges,  $\pm 1$  db

**Horizontal Sweep:**  
 Phase Range: 0-160°; Frequency: 60 cps;  
 Amplitude: 5.6 peak-to-peak volts  
 Dimensions.....10" x 13½" x 7½"

WR-59A is a frequency-modulated sweep-alignment generator. It generates signals of fundamental frequency on all ranges, except video, Pix 5-15, and Pix 20-30 which are beat frequency (on these bands, band-pass filters are used) which are preset for speed and accuracy. The ranges include all 13 TV rf channels, picture and sound IF, video, prewar pix IF, the standard FM intermediate, and a spare 25-40 Mc channel. Sweep width is continuously variable, and output level is flat within 1 db in all positions. The output will match balanced or unbalanced lines, and is variable over wide limits by means of an elaborate piston attenuator. The unit develops a sweep frequency signal for a scope, and phasing control is provided. An additional feature is return-trace blanking which produces a zero-reference line on the cathode-ray tube. The unit is complete with rf and if/rf output cables. Shipping weight, 20 lbs. Sugg'd User Price: \$325.00



## MASTER VOLTOHMYST ELECTRONIC METER (WV-95A)

**DC Voltmeter Ranges:** 0 to 5-10-50-100-500-1000 dc volts; Input Resistance: 11 megohms on all ranges  
**AC Voltmeter Ranges:** 0 to 1-5-10-50-100-500-1000 RMS volts; Frequency Response: 30 cps to 20 kc; Input Impedance: 0.5 megohms shunted by 125  $\mu\text{f}$

**DC Ammeter Ranges:** 0-10, 0-100  $\mu\text{a}$ , 0 to 1-10-100 ma, 0-1, 0-10 amps.

**Ohmmeter Ranges:** 0.1 ohm to 1000 megohms in six ranges; Center-Scale Indications: 10, 100, 1000, 10000 ohms; 0.1, 10 megohms

**Capacitance Meter Ranges:** 4 $\mu\text{f}$  to 1000  $\mu\text{f}$  in six ranges; Center-Scale Indications: 100, 1000  $\mu\text{f}$ ; 0.01, 0.1, 1, 10  $\mu\text{f}$

(NOTE: The following data apply to the WV-95A when used with RCA Diode Probe WG-275 which is supplied on separate order.)

**RF Voltmeter Ranges:** 0 to 5-10-50-100 RMS volts from 30 cps to 17.5 Mc; 0 to 5-10-30 RMS volts from 17.5 to 75 Mc; 0-5, 0-10 RMS volts from 75 to 250 Mc  
 Input Impedance: 625000 ohms shunted by 15.6  $\mu\text{f}$  at 1 Mc; 32000 ohms shunted by 14.5  $\mu\text{f}$  at 10 Mc; 100 ohms shunted by 13  $\mu\text{f}$  at 250 Mc

**Meter Indications:** RMS value of sine-wave voltage, 0.354 peak-to-peak value of recurrent complex-wave voltage  
 Dimensions.....10" x 13½" x 7½"

The WV-95A is truly the "master" electronic multimeter. It combines in one case an ac voltmeter, dc voltmeter, ohmmeter, dc microammeter, dc milliammeter, capacitance meter, and a dc ammeter. The instrument is ac line operated. The carefully balanced meter is virtually burn-out proof; it has a full scale accuracy of  $\pm 2\%$ , and it may be zero-centered for discriminator alignment work. The capacitance circuit includes a polarizing voltage for measurement of electrolytic capacitors. The entire electrical system is insulated from the metal case which may be grounded separately. Accessories available on separate order include a 100-Mc crystal probe WG-263, and a 250-Mc peak-to-peak diode probe, WG-275. Unit is complete with three test leads and two test cables with plugs and clips. Shipping weight, 15 lbs. Sugg'd User Price: \$152.50

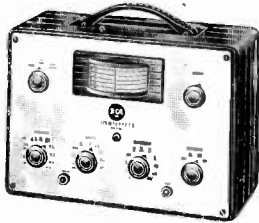




# RCA TEST AND MEASURING EQUIPMENT

for SERVICE • LABORATORIES • INDUSTRY • SCHOOLS

## TEST OSCILLATOR (WR-67A)



The WR-67A combines speed, accuracy, convenience and over-all dependability in signal injection and alignment work. A range switch allows for the quick selection of three fixed frequencies of 1500, 600, and 455 kc . . . or smoothly variable fundamental frequencies from 100 kc to 30 Mc, plus useful harmonics out to 90 Mc. Add to this — a temperature compensated oscillator . . . special signal-injection probe . . . both step and vernier attenuators . . . double shielding . . . six-band drum dial with easy-to-read, four-foot scale spread . . . scale accuracy of  $\pm 2\%$  adjustable modulation level for internal and external modulation . . . power-line filter to minimize rf leakage . . . and 400-cycle signal source — More features than can be found in most signal generators. Shipping weight, 20 lbs. Sugg'd User Price: \$89.50

Frequency Range: Continuous from 100 kc to 31 Mc. Band A: 100-260 kc; Band B: 260-650 kc; Band C: 635-1600 kc; Band D: 1.6-4.7 Mc; Band E: 4.4-12.8 Mc; Band F: 10.5-31 Mc.  
Calibration Accuracy..... $\pm 2\%$

Fixed Frequencies.....455, 600, 1500 kc

Output Voltage: Continuously variable, 5  $\mu$ v to 1 volt RMS

Internal Modulation: 400 cps; adjustable from 0% to 50%

External Modulation: 2 RMS volts req., for 30% mod. to 17000 cps

Audio Output......25 max. RMS volts

RF Output Impedance.....10-1000 ohms  
(Varies with attenuator setting)

Dimensions.....10" x 13 $\frac{1}{2}$ " x 7 $\frac{1}{2}$ "

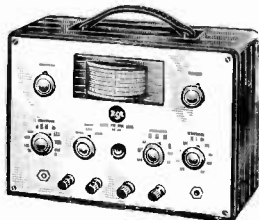
## 3" OSCILLOSCOPE (WO-55A)



The WO-55A oscilloscope is a visual electronic voltmeter. It is equipped with a calibrating facility and a regular multi-meter range switch. Voltages can be read directly on the clip-on graph screen at the same time waveforms are being studied. Push-pull vertical and horizontal amplifiers provide good fidelity and considerably more output than needed for the 3" CR tube. This allows the trace to be greatly expanded for observation of pattern detail. The scope has a retractable light shield and all usual oscilloscope features. It is a quality instrument, rugged, stable, linear, and well-suited for TV-FM alignment and other oscilloscope applications in the laboratory, factory, field installation, and service shop. Shipping weight, 15 lbs. Sugg'd User Price: \$129.50

Deflection:  
Vertical Amplifier: Better than 1.33 peak-to-peak volts/inch 0.46 RMS volt/inch  
Vertical Deflecting Electrodes: Better than 120 peak-to-peak volts/inch 42 RMS volts/inch  
Horizontal Amplifier: Better than 1.5 peak-to-peak volts/inch 0.53 RMS volts/inch  
Horizontal Deflecting Electrodes: Better than 135 peak-to-peak volts/inch 48 RMS volts/inch  
Amplifier Gain (both amplifiers).....90 times  
Input Impedance:  
Vertical Amplifier: 0.5 megohm, shunted by 55  $\mu$  $\mu$ i  
Horizontal Amplifier: 0.5 megohm, shunted by 37  $\mu$  $\mu$ i  
Horizontal Deflecting Electrodes: 5.6 megohms, shunted by 12  $\mu$  $\mu$ i  
Sine-Wave Frequency Response (both amplifiers):  
Flat within  $\pm 10\%$  from 7-40000 cps  
Flat within  $\pm 20\%$  to 70 kc  
Down less than 50% at 200 kc  
Horizontal Sweep Range.....15-50000 cps  
Auxiliary Sine-Wave Sweep Frequency: 60 cps  
Calibrator Voltage.....10 peak-to-peak volts  
Deflecting Capability:  
The beam can be expanded off-screen for observation of pattern detail  
Dimensions.....10" x 13 $\frac{1}{2}$ " x 7"

## AUDIO OSCILLATOR (WA-54A)



The WA-54A Audio Oscillator is a portable, completely self-contained ac operated instrument for generating sinusoidal voltages within the frequency range of 20 to 17,000 cycles per second . . . easily adaptable for measuring the fidelity of radio receivers, frequency response of audio amplifiers, and modulation characteristics of small transmitters, also used for determining frequencies and mechanical speeds. Tapped output transformer makes it possible to match the oscillator output to load impedances most frequently encountered . . . electronic "eye" serves as calibration indicator, output level indicator, and pilot lamp. Frequency settings are read from a large, easy-to-read drum dial. Shipping weight, 19 lbs. Sugg'd User Price: \$152.50

Frequency Range (continuous).....20 cps to 17 kc

Output Impedance:  
High-Level Balanced.....250, 500, 5000 ohms  
High-Level Unbalanced.....62.5, 125, 1250 volts  
Low-Level Unbalanced.....10000 min. ohms

Output Voltage (approx.):  
No Load (high level).....40 RMS volts  
With 5000-Ohm Load.....25 RMS volts  
With 500-Ohm Load.....7.9 RMS volts  
With 250-Ohm Load.....5.5 RMS volts  
No Load (low level).....2.5 RMS volts

Output Variation (loaded).....less than  $\pm 2$  db

Distortion.....less than 5% RMS

Dimensions.....10" x 13 $\frac{1}{2}$ " x 7 $\frac{1}{2}$ "

# RCA TEST AND MEASURING EQUIPMENT

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## AUDIO VOLTMETER (WV-73A)

Voltage (AC).....0.001 to 1000 volts  
 Frequency Range.....20 to 20,000 cycles  
 Input Impedance.....1 megohm and 25  $\mu$ f  
 Power Supply.....105/125 volts; 50/60 cycles  
 Dimensions.....13½" w; 10" h; 7½" deep  
 Weight.....15 lbs.  
 Finish (Case).....Blue-Gray  
 (Panel).....Anodized Aluminum

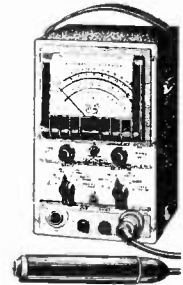
Ideal for measuring voltages in high-impedance circuits. Logarithmic scale and overlapping attenuator assure accuracy even when pointer is at either end of scale. Excellent frequency response. Sugg'd User Price: \$149.50



## ADVANCED VOLTOHMYST (WV-75A)

DC (6 ranges).....0 to 1000 volts  
 AC (6 ranges)  
 Using probe directly.....0 to 100 volts  
 Using probe and multipliers.....0 to 1000 volts  
 Frequency Response:  
 Using probe directly.....30 cycles to 250 Mc  
 Using probe and multipliers.....30 cycles to 15 kc  
 Input Impedance (using probe directly):  
 At 1 Mc.....625 Kilohms; 15.6  $\mu$ f  
 Resistance (6 ranges).....0 ohms to 1000 megohms  
 Power Supply (AC).....105/125 volts, 50/60 cycles  
 Dimensions.....6½" w; 9½" h; 6¼" deep

For High-Frequency, FM, TV, UHF and pulse work. Newly-developed diode probe permits peak-to-peak AC voltage readings to 250 Mc. WV-75A is really 6 instruments: VHF Voltmeter, Audio Voltmeter, AC Voltmeter, DC Voltmeter, Ohmmeter, FM Indicator. Meter is burn-out proof. The WV-75A employs a push-pull DC Vacuum Tube Voltmeter circuit characterized by excellent linearity and stability. Sugg'd User Price: \$125.00.



## ULTRA-SENSITIVE DC MICROAMMETER (WV-84A)

Readings.....0.001  $\mu$ a to 1 ma full scale  
 Six Ranges.....0.01; 0.1; 1.0; 10; 100; 1000  $\mu$ a  
 Voltage Drop at Full Scale (all ranges) 0.5 volts  
 Power Supply (Batteries).....2-1½ volts A (RCA VS106)  
 2-22½ volts B (RCA VS102)  
 Dimensions.....6¼" w; 9½" h; 5¼" deep  
 Weight (including batteries).....9½ lbs.

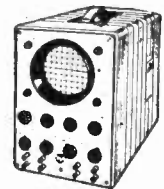
Reads from 0.001 to 1000 microamperes in six separate ranges. Useful for measuring high values of resistance; may be used as high resistance voltmeter. Approaches galvanometer sensitivity. Electronic protected non-burn-out meter. Accuracy, 0.01 range,  $\pm$  5% of full scale reading; other ranges  $\pm$  4%. Ideal for weak-current measurements in phototubes, multiplier phototubes, etc. Sugg'd User Price (less batteries): \$100.00.



## INDUSTRIAL OSCILLOSCOPE (WO-60C)

Deflection Sensitivity:  
 Vertical Amplifier.....0.020 RMS volt/inch  
 Horiz Amplifier.....0.024 RMS volt/inch  
 Input Impedance:  
 Vert or Horiz Amp.....1 meg shunted by 22  $\mu$ f  
 Frequency Response:  
 Sine Wave.....Flat  $\pm$  10%; 5-80,000 cycles  
 Flat  $\pm$  20%; 2-100,000 cycles  
 Square Wave.....No tilt or overshoot 20-5000 c  
 Sawtooth Time Base.....3 to 30,000 cycles/sec  
 Power Supply.....105/125 volts, 50/60 cycles  
 Dimensions.....9½" w; 14" h; 19¼" deep

Portable scope with wide variety of uses. Excellent phase-shift characteristics, 1-f response. Holds high sensitivity even with violent shock. Designed for fast changeover from one type persistence C-R tube to another. Useful range 0.5 to 300,000 cycles. Sugg'd User Price: \$345.00.



## PORTABLE OSCILLOSCOPE (WO-79A)

Frequency Range:  
 Vertical Amplifier.....10 cycles to 5 Mc  
 Horizontal Amplifier.....10 cycles to 500 kc  
 Deflection Sensitivity:  
 Vert. Amplifier.....0.18 RMS volt/in  
 Horizontal Amplifier.....0.46 RMS volt/in  
 Sawtooth Time Base.....20 cycles to 250 kc/sec  
 Triggered Time Base.....Repetition to 50 kc/sec  
 Blanking.....Return trace blanked on triggered definition  
 Power Supply.....105/125 volts, 50/60 cycles  
 Dimensions.....8¼" w; 14¼" h; 16¼" deep

For detailed observation and accurate measurement of voltages produced by TV synch. and deflection circuits, ignition systems, pulse generators, etc. Wide horiz. deflection—up to twice screen diam. Calibrated meter for voltage measurements. Built-in delay line. Triggered sweep. Sugg'd User Price: \$550.00.



## LABORATORY OSCILLOSCOPE (715-B)

Vertical amplifier flat to 11 Mc. Triggered and linear sweep. One microsecond markers. Sugg'd User Price: \$2400. Write for catalog.

## DC OSCILLOSCOPE (WO-27A)

Both vertical and horizontal amplifiers flat from from 0 to 100,000 cycles. 5" C-R tube, quickly interchangeable. Sugg'd User Price: \$1150.

All prices in effect 5/1/49.





# RCA TEST AND MEASURING EQUIPMENT

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The ideal instrument for radio servicing. In one instrument, at one price, you get 6 testing devices: DC Voltmeter; Ohmmeter; AC Voltmeter; A-F Voltmeter; Outputmeter; FM Indicator. New features include diode for AC measurements, linear AC scale for all ranges; RCA Crystal probe WG-263 (available on request). Sugg'd User Price: \$79.50.

Electronic DC Voltmeter Range	0-3; 10; 50; 100; 500; 1000 volts
Input Impedance	10 megohms constant
Electronic Ohmmeter Range	0-1,000; 10,000; 100,000 ohms; 0-1; 10; 1000 megohms
Internal Source	3 volts
Electronic AC Voltmeter Range	0-5; 10; 50; 100; 500; 1000 volts
Power Supply	105/125 volts; 50-60 cycles
Dimensions	6 3/4" w; 9 1/2" h; 6 3/4" deep
Weight	14 lbs.
Finish	Grey wrinkle, brush chrome panel

## VOLTOHMYST (195-A)



Portable electronic voltmeter-ohmmeter and ammeter combination for mobile, industrial or rural use. Works anywhere without AC power source thereby extending famous Volt-Ohmyst features to places remote from power lines. Neon panel lamp lights when battery is used. Unusually long battery life with normal use. Sugg'd User Price: \$59.50 (Less batteries).

DC Ranges	0-3; 10; 30; 100; 300; 1000 v
Input Resistance	11 megohms constant
AC Ranges	0-10; 30; 100; 300; 1000 v
Sensitivity	1000 ohms per volt
Ohmmeter Ranges	0-1000; 10,000; 100,000 ohms; 0-1; 10; 1000 megohms
DC Ammeter Ranges	0-3; 10; 30; 100; 300 milliamp; 0-10 amp
Batteries	Four 1 1/2 v "A"; two 45v "B"
Dimensions	6 1/4" w; 9 1/2" h; 5 1/2" deep
Weight (incl. batteries)	9 lbs.

## BATTERY VOLTOHMYST (WV-65A)



Eliminates shock hazard between ac-dc chassis and ground, speeds detection of receiver faults with high-line tests, and facilitates testing of receivers at the design-center value of 117 volts. A six-position switch and three secondary receptacles afford maximum flexibility and operating convenience. Sugg'd User Price: \$8.95

Primary:	
Line Voltage Range	105-130 volts
Switch Positions	105, 110, 115, 120, 125, 130 volts
Frequency	50-60 cycles
Secondary:	
Output Voltages (approx.)	105-117-130
Power Output at unity power factor (Max.):	
Cont. Oper. (30°C Amb.)	100 watts
Intermit. Oper. (30°C Amb.)	150 watts
Regulation (at 100 volt-amperes)	10%

## ISOTAP ISOLATION TRANSFORMER (WP-24A)



Makes any VoltOhmyst a VHF Voltmeter. Reads flat to 100 Mc. Adapts VoltOhmyst for HF, FM or TV test needs, within sensitivity range of the instrument. Withstands DC loads of 250 volts. Sugg'd User Price: \$8.95.

Input Voltage	22 rms volts (max)
Frequency Range	1000 cycles to 175 Mc
Frequency Response	± 10% from 1 kc to 100 mc
Overall Accuracy	± 7.5% at full scale
Input Capacity	3.5 μf

## CRYSTAL PROBE (WG-263)



The RCA Diode Probe WG-275 is designed to operate in combination with RCA VoltOhmyst Electronic Meters WV-75A or WV-95A; it enables these instruments to read RMS peak-to-peak voltages at frequencies from 30 cycles to 250 Mc. The probe fits coaxial "T" connectors, and permits direct measurement of voltages in coaxial lines.

The full-wave circuit of the WG-275 eliminates errors inherent in half-wave probes for measurements of unsymmetrical waves.

Sugg'd User Price: \$30.00

Frequency Response:	
Direct to Probe	30 cps to 250 Mc
Direct Supplied Leads	30 cps to 30 Mc
Effective Input Resistance and Capacitance	
Direct to Probe:	
At 1 Mc	625000 ohms shunted by 15.6 uuf
At 10 Mc	32000 ohms shunted by 14.5 uuf
At 250 Mc	100 ohms shunted by 13 uuf
Maximum Input Voltages:	
Direct to Probe	
30 cps to 17.5 Mc	100 RMS volts
At 75 Mc	30 RMS volts
At 250 Mc	10 RMS volts
Meter Indication:	
Sine Waveform	RMS volts
Complex Recurrent Waveform	0.354 of peak-to-peak voltage.
(The peak-to-peak voltage of both sine and complex waveforms equals the meter indication times 2.83).	

## DIODE PROBE (WG-275)

# RCA TEST AND MEASURING EQUIPMENT

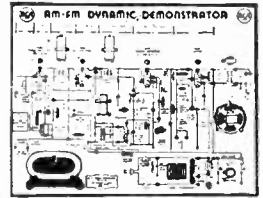
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## AM-FM DYNAMIC DEMONSTRATOR (WE-82A)

Frequency Range.....550 to 1800 kc  
 AM i-f......455 kc  
 FM i-f......10.7 Mc  
 RF (AM) Sensitivity......200 microvolts  
 Power Supply......105/125 volts, 50/60 cycles  
 Discriminator......Foster-Seeley  
 Dimensions......45" w; 33" h; 6" deep  
 Weight......25 lbs.

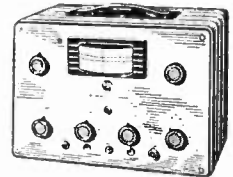
A working schematic diagram of a typical 5-tube superheterodyne radio. Parts are mounted near proper symbols; wired to operate. Pin jacks on 5 color sections make experiments, described in instructions, easy to perform. Has discriminator circuit for FM if demonstration. Sugg'd User Price: \$99.50



## FM SWEEP GENERATOR (WR-53A)

I-F Oscillator:  
 Frequency Range......8.3 to 10.7 Mc  
 Output......1 microvolt to 0.1 volt  
 R-F Oscillator:  
 Frequency Range......85 to 110 Mc  
 Output......5 microvolts to 0.1 volt  
 Power Supply......105/125 volts, 50/60 cycle  
 Finish (Case)......Blue-Gray  
 (Panel)......Anodized Aluminum  
 Dimensions......13½" w; 9¾" h; 7½" deep

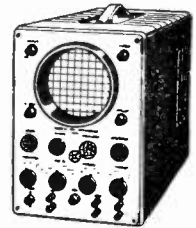
Designed especially for rapid and accurate alignment of FM receivers. Produces an i-f sweep frequency of 0 to 200 kc adjustable band width, which can be centered on any i-f from 8.3 to 10.7 Mc. Also has CW or AM signal in 85 to 110 Mc range for oscillator and mixer alignment. Sugg'd User Price: \$89.50



## OSCILLOSCOPE (WO-58A)

Vertical Amplifier:  
 Deflection—0.18 RMS volt/in  
 Sine-Wave Frequency Response:  
 Flat within ±20% from 5 cycles to 2 Mc  
 Frequency response curve has no positive slope above 1 kc  
 Square-Wave Response:  
 Tilt and overshoot less than 2% from 30 to 50,000 cycles  
 Rise time less than 0.15 μ sec from 10% to 90% of total rise  
 Horizontal Amplifier:  
 Sine-Wave Frequency Response:  
 Flat within ±10% from 6 to 100,000 cycles

5" oscilloscope affording accurate presentation of synchronizing pulses, deflection waveforms, and composite video signals. Peak-to-peak voltages of waveforms can be read during operation. Defective waveforms can be traced step-by-step. The crystal probe can be plugged into the kine-scope socket of the receiver under test to observe video-amplifier response. Sugg'd User Price: \$345.00.



## RIDER CHANALYST (162-C)

R-F, I-F range......100 kc to 1700 kc  
 attenuation......10,000 : 1  
 Osc. channel range......600 kc to 15 Mc  
 attenuation......10 : 1  
 A-F range......0.1 volt to 1000 volts  
 DC range......± 5, 25, 125, 500 volts  
 Wattage indicator......30-250 watts  
 Power supply......105/125 volts, 50/60 cycles  
 Dimensions......16" w; 9" h; 10¾" deep  
 Weight......28 lbs.

Can be used to quickly check presence, absence or character of signal at any point in any AM receiver. Enables serviceman to determine wattage, voltage and signal level thruout the set. All tests can be made simultaneously for monitoring intermittent receivers. Sugg'd User Price: \$162.50.



## REGULATED POWER SUPPLY (WP-23A)

Specifications:  
 Regulated DC Output Voltage..300 max. volts  
 Range (continuously adjustable)......0-300 dc volts  
 Current Capability  
 From 120-300 volts......120 max. ma  
 From 60-120 volts......80 max. ma  
 From 0-60 volts......60 max. ma  
 Ripple Voltage...Less than 8 RMS millivolts  
 Unregulated DC  
 Output Voltage.....Approx. 600 dc volts  
 Current Capability......120 max. ma  
 Ripple Voltage......0.1 RMS volt  
 Auxiliary Unregulated AC  
 Output Voltage......6.3 volts  
 Current Capability......5 amperes  
 Input Power Requirement......105-125 volts, 50/60 cycles, 175 max. watts.  
 Dimensions......Height, 10"; width, 13½"; depth, 7½"

A general purpose d-c power source with excellent voltage regulation output provides an adjustable voltage which remains constant over wide ranges of load impedance and line voltage variations — eliminates the need for constant measurement and readjustment of supply voltages each time a circuit change is made. Primarily intended as an extremely stable "B" supply, the WP-23A is also useful as a low-impedance "C" bias supply. Shipping weight 25 lbs. Sugg'd User Price: \$130.00.





# SYLVANIA ELECTRONIC EQUIPMENT



## TUBE TESTERS

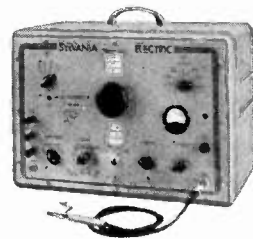


Type 140

Here's the last word in tube testers made for discriminating distributors, radio servicemen and industrial users. This convenient on-the-spot tester can check more than 500 tube types under actual operating conditions. Size:  $5\frac{1}{4}$ " x  $14\frac{3}{16}$ " x 15". Weight: 18 lbs.

Features: Shorts Test at voltage low enough to prevent tube damage, high enough for full brilliancy on indicator. All tube elements tested under dynamic conditions. Fingertip Controls. Tests all styles of receiving tubes. Large  $4\frac{1}{2}$ -inch meter; 8-foot cord. Price: \$59.50.

## FM-AM SIGNAL GENERATOR

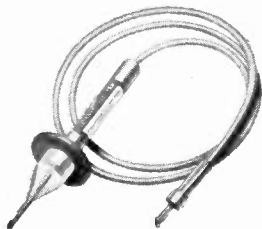


Type 216

Supplies all signals necessary for complete alignment of FM and AM receivers. Frequency range 80 kc to 120 mc. Sweeps of  $\pm 350$  kc,  $\pm 75$  kc, and  $\pm 15$  kc. 1-volt output. Price \$189.50.

## POLYMER DC VOLTAGE MULTIPLIER

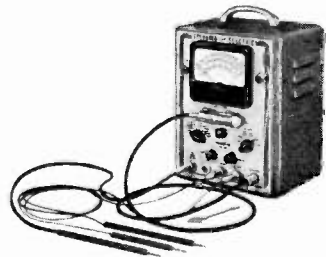
With this new DC Voltage Multiplier, the 1,000 vdc range setting on your Sylvania Polymermeter will read 10,000 vdc full scale! Add this accessory to your Polymermeter and you have a Kilovoltmeter for testing TV circuits. Type 222 (10 KV) for the Polymermeter Types 134 and 134Z. Type 223 (10 KV) for Polymermeter Type 221. Only \$9.95!



Type 224 (30 KV) for Polymermeter Types 134 and 134Z; Type 225 (30 KV) for Polymermeter Type 221. \$12.50.  
Type 226 Conversion Cartridge (for 20,000 Ohm/Voltmeter). \$2.00.

## POLYMER Type 221

The perfect multi-purpose meter for AM-FM-TV servicing. Tests receivers, transmitters, industrial electronic equipment. Highly accurate. New circuit provides superior stability. New rf probe feature provides increased flexibility in use. All essential accessories no extra charge. Price: \$99.50.



## OSCILLOSCOPES (Types 131 and 132)

### OSCILLOSCOPE Type 132

Giant 7" tube and special push-pull amplifiers place this sensational instrument in a class by itself. Check wide response, high input impedances, low amplifier distortions. Priced as low as many smaller oscilloscopes. Has jack for intensity modulation. Widely used by service dealers and industrials for AM-FM-TV testing. Price: \$144.50.



### OSCILLOSCOPE Type 131

Flexible in its many applications, this complete 'scope is priced within reach of every pocketbook. High input impedances, excellent sensitivity and amplifier response. Price: \$69.50.



Wide range — 20-20,000 cycles, flexible, accurate. Negative feedback minimizes output distortion. Ideal for receiver, transmitter, PA servicing. High output permits testing speakers direct. Stabilized R-C circuit. Price: \$129.50.

## MODULATION METER X-7018

Monitors modulation percentage and speech quality. Compact and economical. Helps keep transmission efficient and comply with



FCC overmodulation regulations. Indicates carrier shift. Price: \$29.50.



Type 145  
AUDIO OSCILLATOR

See your Sylvania Distributor or write Sylvania Electric Products Inc., Radio Tube Division, Emporium, Pa.

## TELEVISION STANDARD SIGNAL GENERATOR MODEL 90

This signal generator was designed to meet the most exacting standards required for high definition television use.

### CARRIER FREQUENCY:

**RANGE:** Continuously variable from 20 to 250 megacycles, in eight ranges.  
**ACCURACY:** Crystal frequency standard permits setting to .01%. Dial scale may be set to 0.1%.  
**STABILITY:** Warm-up drift less than .05%.  
**LEAKAGE:** Less than 10 microvolts.

### MODULATION:

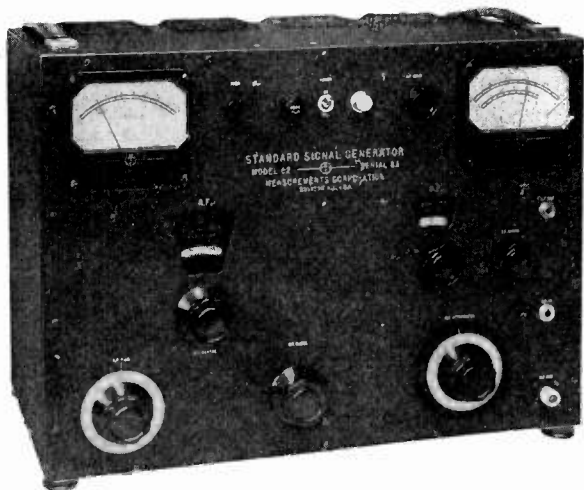
Continuously variable from zero to 100%.  
**ENVELOPE:** Sinusoidal, or composite television. Bandwidth to 3 db is 4 Mc. Rise time from 10% to 90% modulation 0.15 microsecond. Overshoot less than 5%. Slope less than 5% on 60 cycle square wave.  
**INPUT IMPEDANCE:** 75 ohms  $\pm$  10% (RMA Standard)  
**INPUT LEVEL:** 1.5 volts peak to peak minimum level for 100% modulation. Black negative polarity.  
**MODULATION PERCENTAGE:** Zero to 110%; plate modulation.

### OUTPUT:

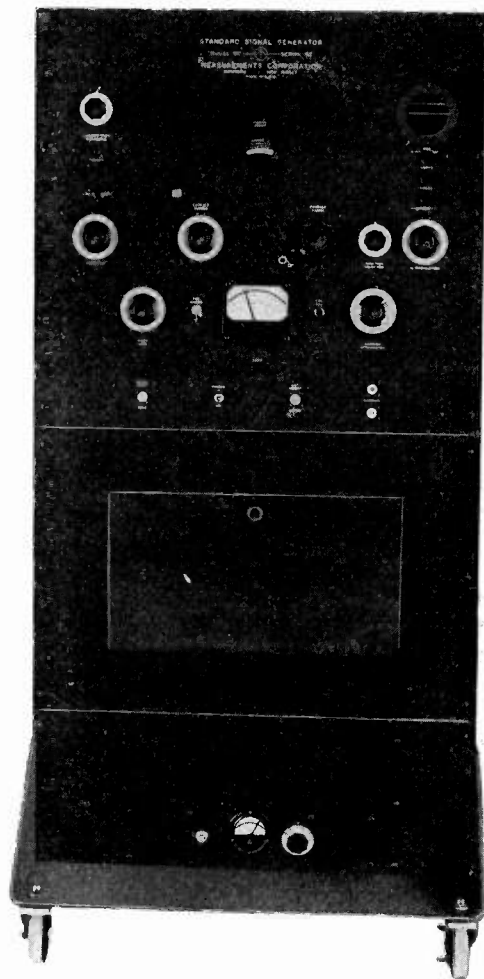
**LEVEL:** Continuously variable from 0.3 microvolt to 0.1 volt balanced to ground (measured at 100% modulation level).  
**IMPEDANCE:** (a) 107 ohms line to line (balanced).  
(b) 53.5 ohms line to ground (unbalanced).  
(c) Suitable pads may be employed to alter these impedances.

### DIMENSIONS:

**OVERALL:** Height—58 $\frac{3}{4}$ " ; Width—28 $\frac{1}{4}$ " ; Depth—25 $\frac{1}{2}$ " .  
**WEIGHT:** Model 90—302 pounds.  
External Voltage Regulator: 92 pounds.  
**POWER SUPPLY:** 117 volts, 60 cycles. 700 watts.



**LEAKAGE AND STRAY FIELD:** Less than 1 microvolt from 80 kilocycles to 50 megacycles.  
**POWER SUPPLY:** 117 volts, 50-60 cycles. 75 watts.  
**DIMENSIONS:** 15" high x 19" wide x 11 $\frac{3}{4}$ " deep overall.  
**WEIGHT:** 50 pounds.



## STANDARD SIGNAL GENERATOR MODEL 82

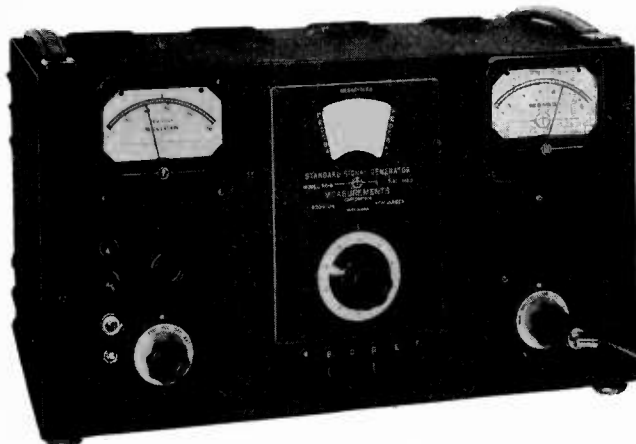
**FREQUENCY RANGE:** 20 cycles to 200 kilocycles in four ranges. 80 kilocycles to 50 megacycles in seven ranges, plus one blank range.

**FREQUENCY CALIBRATION:** Each range is individually calibrated. 20 cycles to 200 kilocycles, accurate to  $\pm$ 5%. 80 kilocycles to 50 megacycles, accurate to  $\pm$ 1%.

**OUTPUT VOLTAGE AND IMPEDANCE:** 0-50 volts across 7500 ohms from 20 cycles to 200 kilocycles. (The output voltage and impedance in this range can be reduced by an external attenuator). 0.1 microvolt to 1 volt across 50 ohms over most of the range from 80 kilocycles to 50 megacycles.

**MODULATION:** Continuously variable 0-50% from 20 cycles to 20 kilocycles from internal variable oscillator.

**HARMONIC OUTPUT:** Less than 1% from 20 cycles to 20 kilocycles; 3% or less from 20 kilocycles to 50 megacycles.



**POWER SUPPLY:** 117 volts, 50-60 cycles. 115 watts.  
**DIMENSIONS:** 11" high x 20" long x 10 1/4" deep, overall.  
**WEIGHT:** Approximately 55 pounds.

### STANDARD SIGNAL GENERATOR MODEL 65-B

**FREQUENCY RANGE:** 75 kilocycles to 30 megacycles in 6 push button ranges.

**FREQUENCY CALIBRATION:** The frequency dial is direct reading and individually hand calibrated for each range. It is accurate to  $\pm 0.5\%$ .

**OUTPUT VOLTAGE:** Continuously variable from 0.1 microvolt to 2.2 volts.

**OUTPUT IMPEDANCE:** 5 ohms to 0.2 volt, rising to 15 ohms at 2.2 volts.

**MODULATION:** Continuously variable from 0 to 100%. Modulation depth is indicated directly by a meter on the panel. Modulation may be obtained either from an internal source of 400 or 1000 cycles or from an external source.

**ENVELOPE DISTORTION:** Less than 4% at 100% modulation at 1 megacycle.

**LEAKAGE:** Less than 0.1 microvolt leakage with attenuator set for 0 output.

### STANDARD SIGNAL GENERATOR MODEL 80

**FREQUENCY RANGE:** 2 to 400 megacycles in 6 bands, individually calibrated direct reading dial.

**FREQUENCY ACCURACY:**  $\pm 0.5\%$ .

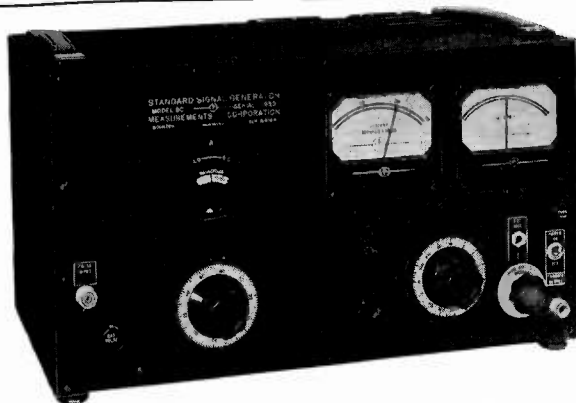
**OUTPUT VOLTAGE:** Continuously variable from 0.1 to 100,000 microvolts.

**OUTPUT IMPEDANCE:** 50 ohms.

**MODULATION:** Amplitude modulation is continuously variable from 0 to 30%. Modulation depth is indicated by a meter on the panel. An internal 400 or 1000 cycle audio oscillator is provided. Modulation may also be applied from an external source. Pulse modulation may be applied to the oscillator from an external source through a special connector.

**LEAKAGE AND STRAY FIELD:** Attenuator leakage less than 0.1 microvolt. Power line leakage less than 0.5 microvolt. Stray fields less than two microvolts.

**POWER SUPPLY:** 117 volts, 50 to 60 cycles. 70 watts.



**DIMENSIONS:** 10 3/4" high x 19" wide x 9 1/2" deep, overall.  
**WEIGHT:** Approximately 45 pounds.

**ACCESSORIES:** (Order with instrument) Recommended — 80-ZH4 Cable; 80-ZH3 Pad. Available — 80-ZH1 Pad; 84-Z2-1 Cable; 84-Z2-2 Cable; 84-Z2-3 Cable; UG-201/U Adapter.

### FM STANDARD SIGNAL GENERATOR MODEL 78-FM

**FREQUENCY RANGE:** 86 to 108 megacycles, individually calibrated dials. Accurate to  $\pm 0.5\%$ .

**OUTPUT VOLTAGE:** 1 to 100,000 microvolts.

**LEAKAGE:** Less than 1 microvolt.

**MODULATION:** Deviation continuously variable from 0 to 300 kc. Indicated on directly calibrated dial. 400 cycle internal audio oscillator. Can be modulated from an external source providing 6 volts across 5000 ohms.

**FIDELITY:** Flat within two db from DC to 15,000 cycles. Distortion is less than 1% at 75 kilocycles deviation. Transient response is excellent.

**POWER SUPPLY:** 117 volts, 50 to 60 cycles. 36 watts.

**DIMENSIONS:** 10" high x 13" wide x 7" deep, overall.

**WEIGHT:** Approximately 20 pounds.



### MODEL M-275 I.F. CONVERTER

**CARRIER FREQUENCIES:** 4.5, 10.7, 21.7 Mc.

**OUTPUT VOLTAGE:** 10 microvolts to 1.0 v. when used with Model 78-FM.

**BAND WIDTHS:** 5% down,  $\pm 250$  Kc. from center frequency.

This instrument is designed to be used with the Model 78-FM Standard Signal Generator to provide output frequencies in the I.F. range.

**AMPLITUDE MODULATION:** Provision for external AM up to approximately 80%, combined with, or exclusive of, FM. There is negligible spurious FM due to AM. The envelope distortion is less than 10% at 80% modulation.

# Laboratory Standards MEASUREMENTS CORPORATION

## STANDARD SIGNAL GENERATOR

### MODEL 84

**FREQUENCY RANGE:** 300 to 1000 megacycles, individually calibrated direct reading dial.

**FREQUENCY ACCURACY:**  $\pm 0.5\%$ .

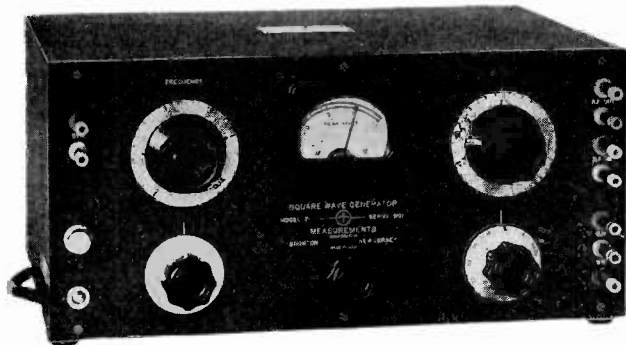
**OUTPUT VOLTAGE:** Continuously variable from 0.1 to 100,000 microvolts.

**OUTPUT IMPEDANCE:** 50 ohms.

**AMPLITUDE MODULATION:** Continuously variable from 0 to 30% indicated directly on panel meter. Internal sine-wave oscillator; choice of 400, 1000, or 2500 cycles is provided. External modulation up to 30 kilocycles may be applied.

**PULSE MODULATION:** Repetition rate continuously variable from 60 to 100,000 cycles. Pulse width continuously variable from 1 to 50 microseconds indicated on directly calibrated dial. Pulse delay (with respect to synchronizing output) continuously variable from 0 to 50 microseconds indicated on directly calibrated dial. May be synchronized with an external sine-wave or pulse source.

**POWER SUPPLY:** 117 volts, 60 cycles, 230 watts (with regulator).  
**DIMENSIONS:** 12" high x 26" wide x 10" deep, overall.  
**WEIGHT:** Approximately 135 pounds, including external line voltage regulator.  
**ACCESSORIES:** Included with each instrument are four connecting cables, external voltage regulator.



## SQUARE WAVE GENERATOR MODEL 71

Recommended for television testing and many different applications in developing AM, FM and TV equipment where square-wave analysis is of great importance.

**FREQUENCY RANGE:** 6 to 100,000 cycles.

**WAVE SHAPE:** Rise time less than 0.2 microseconds with negligible overshoot.

**OUTPUT VOLTAGE:** Step attenuator giving 75, 50, 25, 15, 10, 5 peak volts fixed and 0 to 2.5 volts continuously variable.

**SYNCHRONIZING OUTPUT:** 25 volts peak.

**R. F. MODULATOR:** 5 volts maximum carrier input. Translation gain is approximately unity—Output impedance is 600 ohms.

**POWER SUPPLY:** 117 volts, 50-60 cycles, 100 watts.

**DIMENSIONS:** 7" high x 15" wide x 7 1/2" deep, overall.

**WEIGHT:** Approximately 20 pounds.

## PULSE GENERATOR MODEL 79-B

This instrument is specially adapted for plate pulsing of the Model 80 Standard Signal Generator.

**FREQUENCY RANGE:** 60 to 100,000 cycles.

**PULSE WIDTH:** Continuously variable from 0.5 to 40 microseconds.

**OUTPUT VOLTAGE:** Approximately 150 volts positive with respect to ground.

**"SYNC" OUTPUT:** 75 volts positive with respect to ground. Displaced by 1/2 period from pulse output.

**"SYNC" INPUT:** May be synchronized with as little as 2 volts peak from an external source.

**POWER SUPPLY:** 117 volts, 50-60 cycles, 115 watts.

**DIMENSIONS:** 10" high x 13 3/8" wide x 10 1/2" deep, overall.

**WEIGHT:** Approximately 31 pounds.



MEASUREMENTS CORPORATION BOONTON · NEW JERSEY



# Laboratory Standards MEASUREMENTS CORPORATION

## U.H.F. RADIO NOISE and FIELD STRENGTH METER MODEL 58

This versatile, portable instrument is useful in measuring signal-to-noise ratios, noise levels and for field strength surveys on television and FM transmitters.

**FREQUENCY RANGE:** 15 to 150 megacycles in five bands—dial directly calibrated in megacycles.

**INPUT VOLTAGE RANGE:** 1 to 100,000 microvolts across 72 ohm balanced line. 1 to 100 microvolts on semi-logarithmic output meter, balanced resistance attenuator with ratios of 10, 100 and 1000 ahead of all tubes.

**GAIN STANDARDIZATION:** Internal "shot noise" diode provides calibration standard. Special dial eliminates need for charts.

**CIRCUIT:** Superheterodyne circuit with tuned RF amplifier eliminates image response.

**BAND WIDTH:** 150 kilocycles @ 2X down.



**POWER SUPPLY:** Built-in regulated dual power supply for operation from either 117 volts AC or 6 volts DC. 70 watts (on AC).

**STANDARD EQUIPMENT:** Power cables, 15 foot antenna cable, 9 inch loop antenna, carrying strap, and complete instruction book.

**DIMENSIONS:** 16" wide x 9" high x 11" deep, overall.

**NET WEIGHT:** 35 pounds.

## A VERSATILE "GRID-DIP" METER MEGACYCLE METER — MODEL 59

Widely used by engineers, servicemen and amateurs in television, FM, taxi radio, aircraft radio and other electronic work. An ideal low sensitivity receiver for signal tracing.

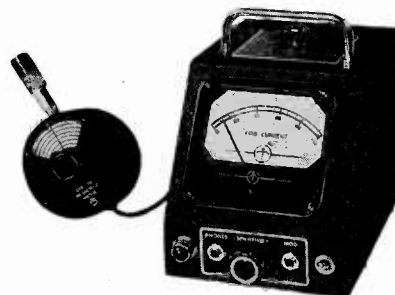
**FREQUENCY:** 2.2 Mc. to 400 Mc.; seven plug-in coils.

Hand calibrated dial, accurate to  $\pm 2\%$ .

**MODULATION:** CW or 120 cycles; or external.

**DIMENSIONS:** Power Unit, 5 $\frac{1}{8}$ " wide; 6 $\frac{1}{8}$ " high; 7 $\frac{1}{2}$ " deep. Oscillator unit, 3 $\frac{3}{4}$ " diameter; 2" deep.

**POWER SUPPLY:** 117 volts, 50-60 cycles; 20 watts.



## VACUUM TUBE VOLTMETER — MODEL 62

A general-purpose zero current voltmeter for the rapid, accurate measurement of AC or DC voltages. No zero adjust necessary when changing ranges.

**RANGE:** Push button selection of 5 ranges—1, 3, 10, 30 and 100 volts full scale AC or DC.

**ACCURACY:**  $\pm 2\%$  of full scale on each range, both DC and sine-wave AC.

**INDICATION:** Linear for DC and calibrated to indicate RMS values of a sine-wave or 71% of the peak value of a complex wave on AC.

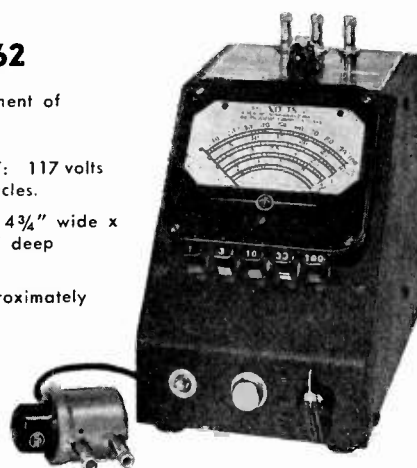
**FREQUENCY ERROR:** Less than 10% from 30 cycles to over 150 megacycles. Resonant frequency of the probe with input terminals shorted is 350 megacycles.

**INPUT IMPEDANCE:** The input capacitance is approximately 7 mmf. The input resistance is a function of frequency.

**POWER SUPPLY:** 117 volts AC, 50 to 60 cycles.

**DIMENSIONS:** 4 $\frac{3}{4}$ " wide x 6" high x 8 $\frac{1}{2}$ " deep overall.

**WEIGHT:** Approximately 8 pounds.



## PEAK VOLTMETER MODEL 67

True peak values of complex wave forms encountered in radio and allied electronic work may be measured accurately with the Model 67. It indicates the true peak-to-peak value of symmetrical and asymmetrical waveforms varying from low frequency

square waves to pulses of less than five microseconds duration.

Full scale values of .03 to 300 volts peak-to-peak or .01 to 100 volts r.m.s. of a sine-wave in five decade ranges are indicated on semi-logarithmic scales.

**MEASUREMENTS CORPORATION BOONTON · NEW JERSEY**

# PRECISION

# TEST EQUIPMENT

STANDARD OF ACCURACY

All prices are subject to change without notice

## Series E-400 Wide Range Sweep Signal Generator Narrow and Wide Band Sweep Direct Reading from 2 to 480 Megacycles



Incorporating selected and true ultra-high frequency components and circuits, Series E-400 has been Application Engineered specifically for modern F.M. and TV. oscillographic alignment methods.

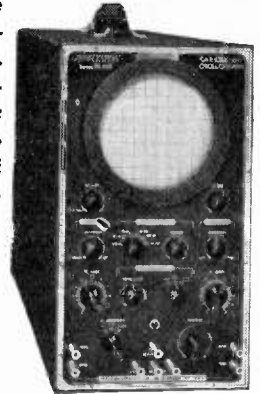
Stressing utmost simplicity of operation, flexibility, stability and accuracy, Series E-400 affords an unparalleled standard of performance and value.

Through careful, intensive development, "Precision" engineers have "designed out" costly, extraneous elements that might lead to undue early obsolescence. As a result, Series E-400 is a *fundamental requirement* for the efficient TV-F.M. Service Laboratory.

### FEATURES

- \* **Direct Frequency Reading** — 2 to 480 MC in 7 bands without skip. Harmonically calibrated from 240 to 480 MC.
- \* **6 Position Rotary Band Switch** covers complete spectrum. Last position provides pure crystal oscillator only. No coil switching. Multiple oscillator B supply switch assures maximum frequency accuracy and stability.
- \* **6 1/2" Etched Aluminum Tuning Dial** — Engine turned finish.
- \* **1500 Point Vernier Scale** permits close calibration and simple resetting of odd frequencies.
- \* **Engraved Transparent Lucite Frequency Indicator** affords readings free from parallax.
- \* **Voltage Regulated Oscillators** free of power supply variations.
- \* **The Basic Circuit and Tube Complement** — Uses 2 separate 6C4 high frequency beat oscillators plus a 6J6 reactance-modulated high frequency oscillator. This positively minimizes generation of unwanted extraneous signals. Also employs a 6J6 mixer-buffer, a 6C4 multiple crystal oscillator and a 6J6 final marker-mixer amplifier. 6X5 full wave rectifier. VR-105 voltage regulator.
- \* **Selected, True High Frequency Circuit Components** render high operating efficiency, stability and accuracy. Uses ceramic and air dielectric trimmer, coupling, by-pass and loading capacitors; rugged ceramic-lucite suspended National SLF tuning condenser; modern miniature HF tubes; mica-filled low-loss sockets; shock mounted reactance modulator; multi-section copper-plate shielding; etc.
- \* **Narrow and Wide Band Sweep** — 0 to 1 MC and 0 to 10 MC continuously adjustable. Permits easy band width setting for both F.M. and TV. requirements.
- \* **Dual Continuous R.F. Attenuators** triple shielded. Smooth, stepless, effective control from extra high output for single stage alignment to minimum levels for multi-stage adjustments.
- \* **Wide Range Phasing Control** for Hor. sweep of oscilloscope.
- \* **Multiple Crystal Marker-Calibrator** built-in. Simultaneously accommodates 4 crystals individually rotary selected. .01% accuracy 10.7 MC and 2 MC crystals furnished as standard equipment. Crystal signal separately attenuated for internal or external use.
- \* **Crystal Calibrated and Control** — Each instrument calibrated against crystal standards. The 2 MC crystal, as furnished, provides for crystal monitoring in addition to use as calibrator for external signal generators.
- \* **Terminated RG/U Coaxial Output Cable** for efficient signal transmission with minimum standing wave effects. LOW-HIGH taps plus open line switch for extra high as well as normal output signal level requirements.
- \* **8 Element Double Section Balanced Line Filter** plus Thorough Multi-Section Copper Plate Shielding of instrument assures minimum leakage and radiation.
- \* **Simultaneous A.M. and F.M.** test facilities for anti-A.M. check of F.M. second detector circuits. A.M. input jacks also permit use as an H.F. A.M. Generator.

## Series ES-500 High Sensitivity, Wide Range, 5" Oscilloscope Vertical Amplifier Range to 7 Megacycle Sensitivity 20 Millivolts per Inch



Series ES-500 affords the ultimate in performance, visibility and operational flexibility at moderate cost. "Precision" engineers have incorporated every necessary basic feature which they have found to be required to meet the needs of the rapidly advancing art of electronics, A.M., F.M., and TV.

The combination of Series ES-500 and Series E-400 Sweep Signal Generator truly represents an *Application Engineered BASIC TELEVISION and F.M. SERVICE LABORATORY.*

### FEATURES

- \* **High Sensitivity, Extended Range, Voltage Regulated, Vertical Amplifier** — 20 MV (.02 V) per inch deflection sensitivity. 10 cycles to 1 MC response. 2 megohms input resistance. Approx. 22 mmfd. input capacity.
- \* **Frequency Compensated Vertical Input Step Attenuator** — X1, X10, X100 plus continuous variable gain control in cathode follower input stage.
- \* **20 Millivolt Vertical Sensitivity** — particularly desirable for diversified TV., F.M. and A.M. circuit analyses, especially when aligning low gain single stages and performing tests involving low output analytical devices.
- \* **Extended Range Horizontal Amplifier** — 500 MV (.5 V) per inch deflection sensitivity adequate for most all "H" drive purposes. 10 cycles to 1 MC response at full gain. 1/2 megohm input resistance. Approx. 20 mmfd. input capacity.
- \* **Linear Multi-Vibrator Sweep Circuit** — 10 cycles to 30 KC plus line or external sweep.
- \* **Amplitude Controlled, 3-Way Synch. Selection** — Internal-External-Line.
- \* **"Z" Axis Modulation** input facility for blanking, timing, etc.
- \* **Sweep Phasing Control** for sinusoidal line sweep usage. Wide angle bridge circuit.
- \* **Direct H and V Plate Connections** and Audio Monitoring phone pin jacks behind rear cover plate. No screws to remove.
- \* **High Intensity CR Patterns** through use of adequate high voltage power supply with 2X2 rectifier.
- \* **The Circuit and Tube Complement** — 6J5 Vertical input cathode follower. 6AK5 first "V" amplifier. 7AD7 second "V" amplifier and CR driver. 7W7 Horizontal amplifier-CR driver. 6SN7 Multi-vibrator internal linear sweep oscillator. 5Y3 low voltage rectifier. 2X2 high potential rectifier. VR-150 vertical amplifier voltage regulator. 5CP1/A CR Tube.
- \* **8 Four-Way Lab. Type Input Terminals** — Take banana plugs, phone tips, bare wire or spade lugs.
- \* **Light Shield and Mask** removable and rotatable.
- \* **Extra Heavy-Duty Construction** and components to assure "Precision" performance.
- \* **Heavy Gauge, Etched-Anodized, No-Glare, Aluminum Panel.**
- \* **Fully Licensed** under patents of W. E. and A. T. & T. Co's.
- \* **Series ES-500 (illustrated)** — In louvred, black ripple, heavy gauge steel case. Size 8 1/4" x 14 1/2" x 18". Complete with light shield, calibrating mask and instruction manual.  
Code: Quick. **NET PRICE \$149.50**
- \* **External Deviation** input facility for sweep frequencies other than internal source.
- \* **Fuse Protected** at panel extractor fuse post.
- \* **Heavy Gauge, Etched-Anodized Aluminum Panel.**
- \* **Fully Licensed** under W. E., A. T. & T. and Remco patents.
- \* **Series E-400 (illustrated)** — In Louvred, portable, copper-plated case. Size 10 1/2" x 12" x 6". Complete with test cables, 2 crystals and elaborate Technical Manual.  
Code: Nancy. **NET PRICE \$124.70**
- \* **E-400-PM** — Consists of E-400 on 12 1/4" x 19" steel panel for standard rack mount. Complete as above.  
Code: Niece. **NET PRICE \$127.55**

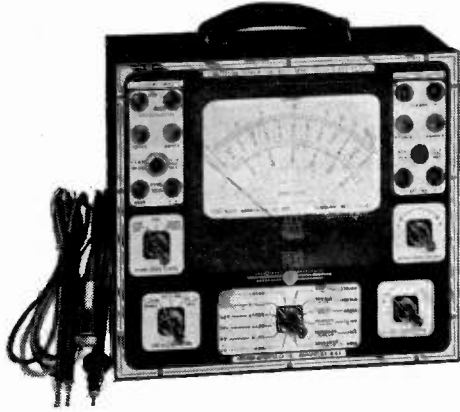
Series TV Super-High Voltage Television Safety Test Probes On Page F-15

# PRECISION

# TEST EQUIPMENT

STANDARD OF ACCURACY

All prices are subject to change without notice



- \* **EV-10-MCP** (illustrated) In black ripple finished, heavy gauge steel case. Size 10 1/2" x 12" x 6". Complete with tubes, battery, and test probes.  
Code: Place. NET PRICE \$89.95
- \* **EV-10-P** In hardwood portable case with tool compartment.  
Code: Phone. NET PRICE \$92.70
- \* **EV-10-PM** Consists of Series EV-10 on steel panel. Size 12 1/4" x 19" for standard rack mount.  
Code: Panel. NET PRICE \$92.70

### \* SERIES RF-10 VACUUM TUBE R.F. PROBE

An accessory item to Series EV-10, the RF-10 Vacuum Tube Probe provides direct means for measurement of super-sonic, R.F. and U.H.F. voltages. Connects directly to Series EV-10 panel. Employs type 9002 tube probe rectifier. All operating voltages are applied through connecting cable. Complete with operating instructions.  
Code: Probe. NET PRICE \$14.40

## Precision Series EV-10 VTVM - Megohmmeter

with 7" Full-View Meter

Plus standard 1000 Ohms per Volt Functions.  
Ranges to 6000 Volts • 2000 Megs. • 12 Amps. • +70 DB.

A WIDE-RANGE ZERO-CENTER ELECTRONIC INSTRUMENT, stressing the utmost in performance, accuracy, and ease of manipulation. Series EV-10 permits rapid check of voltage, current, and resistance conditions encountered in modern A.M., F.M., and TV. Networks, without materially disturbing circuit under analysis.

### IMPORTANT FEATURES

- \* **VOLTAGE REGULATED — BRIDGE TYPE CIRCUIT:** direct reading VTVM, with practical freedom from tube and line voltage variations.
- \* **ZERO-CENTER VTVM —** Indicates both magnitude and polarity with-out reversal of test prods.
- \* **MASTER RANGE SELECTOR.**
- \* **SHIELDED COAXIAL TEST PROBES.**
- \* **DUO-BALANCED ELECTRONIC-BRIDGE OHMMETER —** Provides unusually high accuracy.
- \* **TELEPHONE CABLED,** plastic insulated, hook-up wire.
- \* **7" RECTANGULAR METER** 400 microampere,  $\pm 2\%$ .
- \* **1% wire and metallized resistors.**

### RANGE SPECIFICATIONS

- \* **Eight Zero-Center VTVM Ranges.**  
 $\pm 3, \pm 6, \pm 12, \pm 60, \pm 300, \pm 600, \pm 1200, \pm 6000$  volts D.C.  
Input Resistance—  
Constant 13 1/3 megohms to 600 volts.  
26 2/3 megohms at 1200 volts.  
133 1/3 megohms at 6000 volts.
- \* **Six Circuit Probing, Zero-Center, V.T.V.M. Ranges:**  
 $\pm 3, 6, 12, 60, 300, 600$  volts D.C.
- \* **Six Ohmmeter-Megohmmeter Ranges:** (self-contained).  
0-2000-200,000 ohms.  
0-2-20-200-2000 megohms.
- \* **Eight A.C.-D.C. and Output Voltage Ranges** at 1000 ohms per volt.  
0-3-6-12-60-300-600-1200-6000 v.
- \* **Seven D.C. Current Ranges:**  
0-600 microamperes.  
0-3-12-60-300-1200 MA. 0-12 amps
- \* **Eight DB Ranges:** —26 to +70 DB.
- \* **VTVM Ranges to 60,000 volts,** for Television and similar high voltage, low current applications, are available via use of the Series TV Test Probe described on page F-15.

## Precision Series E-200-C Signal Generator

A Modern Multi-Band Signal Generator for A.M., F.M., and Television Alignment.

Featuring "Servicing by Signal Substitution." The Dynamic Speed Approach to Receiver Alignment and Adjustment Problems.

### SPECIFICATIONS

- \* **FREQUENCY COVERAGE:** 88 KC. to 120 MC. 30 MC. on fundamental. 6 1/2" Dial direct reading in 8 bands to 120 MC. No charts required.
- \* **ACCURACY — CONSTANCY OF CALIBRATION:** 1% accuracy on all bands. Uses "PRECISION" developed "UNIT-OSCILLATOR" construction.
- \* **0-1000 POINT VERNIER SCALE,** direct reading to one part in 1000.
- \* **THE CIRCUIT—**single-ended 6SJ7 in stable E.C.O. circuit—modulated by a 6C5 sine-wave audio oscillator. 5Y3 Full wave rectifier.
- \* **400 CYCLE SINE-WAVE AUDIO OSCILLATOR —** over 50 volts output.
- \* **DUAL R.F. ATTENUATORS —** smooth stepless control of R.F. signal.
- \* **SHIELDING —** Compartment shielding of vital components — Power transformer electrostatically shielded—A.C. line is R.F. filtered.
- \* **SHIELDED COAXIAL OUTPUT CABLE** and (LO-HI) cable connectors.
- \* **FOUR TYPES OF SIGNALS —** "Unmod. R.F.", "400 cycle Mod. R.F.", "EXTERNALLY Mod. R.F.", "400 cycle Audio Output."
- \* **DIRECT READING VARIABLE MODULATION —** 0-100% — triples signal utility as against obsolete fixed modulation of only 30 or 40%.
- \* **DIRECT READING A.V.C. SUBSTITUTION SYSTEM —** Overcomes alignment troubles arising from receiver A.V.C. Supplies ITS OWN A.V.C. VOLTAGE.
- \* **HAND CALIBRATED —** Each instrument is INDIVIDUALLY calibrated.
- \* **FULLY LICENSED** under patents of A. T. & T. and W. E. Co's.
- \* Not only an efficient Signal Generator for purposes of alignment but also SPECIFICALLY DESIGNED for "Servicing by Signal Substitution."
- \* **IDEAL MARKER GENERATOR —** Exceptional stability and high accuracy renders Series E-200-C an excellent variable frequency Marker Generator for use with the Series E-400 or similar high quality Sweep Signal Generator.



\* **Series E-200-C —** (illustrated) In black ripple finished, portable steel case. Size 10 1/2" x 12" x 6". Complete with tubes, output cable and FREE copy of "Servicing by Signal Substitution."  
Code: Trade. NET PRICE \$67.25

\* **E-200-C-PM —** Consists of Series E-200-C on steel panel size 12 1/4" x 19", for standard rack mount.  
Code: Trace. NET PRICE \$69.70



"SERVICING BY SIGNAL SUBSTITUTION" 11th Edition . . . The modern ECONOMICAL solution to your daily service problems . . . Nothing complex to learn, no extraneous equipment to purchase. A systematic method of DYNAMIC SIGNAL ANALYSIS based entirely on fundamentals . . . Fully described in a bound illustrated text "Servicing by Signal Substitution." This highly valuable book is supplied with Series E-200-C at no charge. Additional copies available at your Precision distributor or directly from factory at 40c per copy.

# PRECISION

# TEST EQUIPMENT

STANDARD OF ACCURACY

All prices are subject to change without notice

## Series 10-54 *Electronamic Test Master*

Combination Tube Performance Tester, Battery Tester, and 35 Range, Push-Button Operated, Supersensitive, A.C.-D.C. Set Tester. Ranges to 6000 Volts, 60 Microamps, 12 amps, +70DB, 60 Meg. 20,000 Ohms per Volt D.C.—1000 Ohms per Volt A.C.

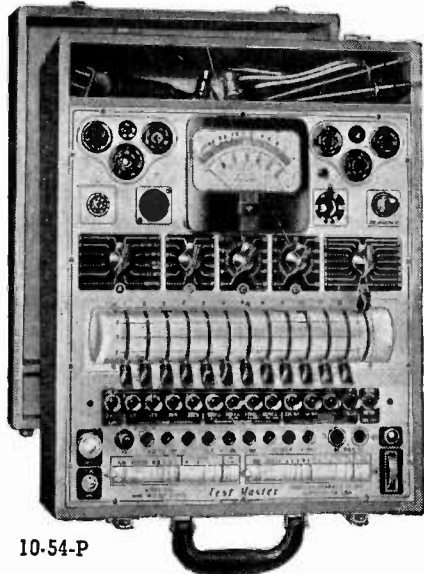
ELECTRONAMIC (Reg. U. S. Patent Office)

**More than just Mutual Conductance:** (Technical details in main catalog)

Series 10-54 affords to the discriminating instrument purchaser, **THE COMPLETE PORTABLE SERVICE LABORATORY**; engineered to meet the expanding needs of modern radio electronics. Provides every necessary facility for high speed, reliable tube and circuit testing associated with Industrial Electronics, Communications, Radio (A.M.-F.M.), Television, Laboratory, etc. . . .

### TUBE AND BATTERY TESTING FEATURES

- \* A TUBE "PERFORMANCE" TESTER: "Precision" ELECTRONAMIC circuit, effectively tests all tubes over a complete "Path of Operation" not just at one arbitrary operating point or for just one inconclusive characteristic.
- \* TESTS ALL MODERN TUBE TYPES: Noval 9 pin, 7 pin Acorn, dual capped H.F. tubes, Single-Ended TV, and F.M. amplifiers, low power transmitting tubes, sub-miniature types, etc. . . . including direct facilities up to twelve element prongs!
- \* ABSOLUTE FREE-POINT LEVER ELEMENT SELECTION: Highest possible, practical order of obsolescence insurance. Locates every tube element regardless of base position.
- \* ABSOLUTE FREE-POINT, INTER-ELEMENT SHORT-CHECK and Visible Filament Continuity System.
- \* DUAL SHORT-CHECK SENSITIVITY: Permits special application tube selection.
- \* INDIVIDUAL TUBE SECTION TESTS of multi-section tubes.
- \* A.M. and F.M. CATHODE RAY TUNING INDICATORS directly tested.
- \* FILAMENT VOLTAGES  $\frac{3}{4}$  to 117 V.
- \* BALLAST UNIT TESTS.
- \* NOISE and CONDENSER TESTS.
- \* MICRO-LINE ADJUSTMENT via continuously variable line voltage control.
- \* PILOT and SIGNAL LIGHT TESTS.
- \* ACCURACY of test circuits closely maintained by use of individual, internal calibrating controls.
- \* ROLLER TUBE CHART: BUILT-IN.
- \* EXTRACTOR FUSE POST.
- \* Test circuits completely transformer-isolated from power line.
- \* TELEPHONE-TYPE, CABLED, plastic-insulated, moisture-resistant wire.
- \* 4 $\frac{1}{2}$ " FULL VISION METER: 50 microampere, 2% accuracy.
- \* TESTS RADIO A, B and C DRY BATTERIES via a "PRECISION" engineered circuit which performance checks each battery under actual load conditions. Battery quality read directly on a 3-color scale.



10-54-P

### CIRCUIT TESTING FEATURES

A complete, wide-range, high speed, push-button operated, super-sensitive test set without any additional panel controls. Self-contained.

- \* Six D.C. Voltage Ranges: 20,000 ohms per volt.
- \* Six A.C. Voltage Ranges: 1000 ohms per volt.
- \* Six Output Ranges at 1000 ohms per volt. 0-6-12-60-300-1200-6000 volts.
- \* Ranges to 60,000 Volts D.C. via use of Series TV Super high voltage test probe. Not included with 10-54. See Page F-15.
- \* Seven D.C. Current Ranges: 0-60-120 microamperes, 0-1-2-12-120-1200 MA. and 0-12 amperes.
- \* Four Self-Contained Resistance Ranges: 0-6000-600,000 ohms; 0-6-60 megohms.
- \* Six Decibel Ranges from -20 to +70 DB.
- \* Automatic Push-Button range selection.
- \* 1% Wirewound and Metallized Resistors.

10-54-P (illustrated above) Hardwood, tapered, portable case, 13 $\frac{3}{4}$ "x17 $\frac{1}{4}$ "x6 $\frac{3}{4}$ ". With ohmmeter batteries and high voltage test leads. Code: Habit.

NET PRICE \$134.40

10-54-C (see 10-12-C illustration and description below) In modern, attractively finished, steel counter cabinet.

Code: Handy, Complete: NET PRICE \$137.70

10-54-PM (see 10-12-PM illustration and description below) In standard Panel Mount, with dust cover.

Code: Harem, Complete: NET PRICE \$137.70

## Series 10-12 *Electronamic Tube Master*

Truly Free-Point Tube and Battery Performance Tester.

ELECTRONAMIC (Reg. U. S. Patent Office)

**More than just Mutual Conductance:** (Technical details in main catalog)

The 10-00 Series of TUBE and TEST MASTERS represent the culmination of many years' development of tube testing equipment to meet the exacting needs of the rapidly advancing field of electronics.

Incorporating the "PRECISION" ELECTRONAMIC Tube Performance Testing Circuit, plus an advanced, "PRECISION" developed, multiple element, master lever selector system, it truly can be said that the MASTER 10-00 Series offers, to the discriminating equipment purchaser, the highest possible practical order of test results and anti-obsolescence insurance.

### TUBE AND BATTERY TESTING FEATURES

The Series 10-12 Electronamic Tube Master incorporates the same time-proven circuit and exacting performance details described for the Series 10-54, above, under the heading: "Tube and Battery Testing Features."

\* 10-12-P (see 10-54-P illustration and description above) In hardwood, tapered, portable case with tool compartment. Code: Facil.

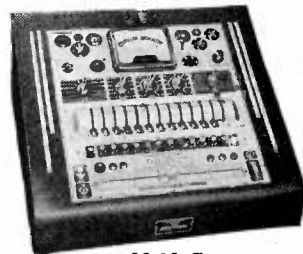
Complete: NET PRICE \$96.10

\* 10-12-C (illustrated at right) In modern, chrome-trimmed, round edged counter cabinet. Fine dull black ripple finish on heavy gauge steel. Size 17"x17 $\frac{7}{8}$ "x7 $\frac{1}{2}$ " sloping to 3" at front. Code: Faith.

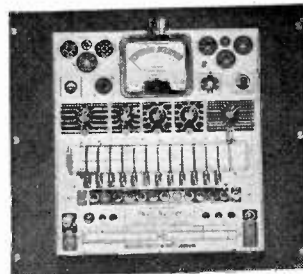
Complete: NET PRICE \$99.40

\* 10-12-PM (illustrated at right) Consists of 10-12 chassis, mounted onto standard size steel panel, 17 $\frac{1}{2}$ "x19" with dust cover. Fine, dull black ripple finish.

Code: Favor. Complete: NET PRICE \$99.40



10-12-C



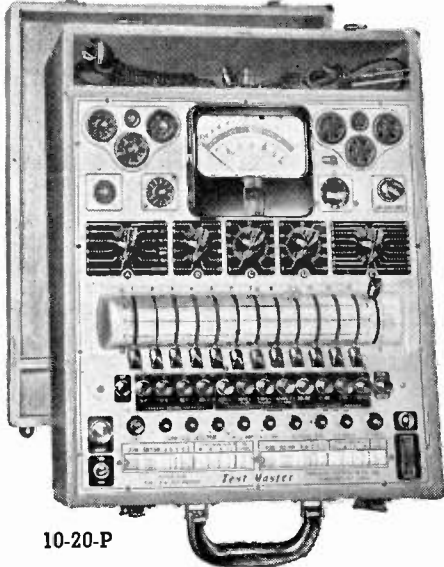
10-12-PM

# PRECISION

# TEST EQUIPMENT

STANDARD OF ACCURACY

All prices are subject to change without notice



10-20-P

- \* **10-20-P** (illustrated above) In hardwood, portable case with tool compartment. Size 13 $\frac{3}{4}$ "x17 $\frac{1}{4}$ "x6 $\frac{3}{4}$ ". Complete with ohmmeter batteries and test leads. Code: Daily. Complete: NET PRICE \$119.80
- \* **10-20-C** (see 10-12-C illustration and description, page F-13) In standard panel mount finished, steel counter cabinet. Code: Dance. Complete: NET PRICE \$123.10
- \* **10-20-PM** (see 10-12-PM illustration and description, page F-13) In standard panel mount with dust cover. Code: Dandy. Complete: NET PRICE \$123.10

## Series 10-20 *Electronamic Test Master*

Combination Master Electronamic Tube Performance Tester, Battery Tester and 34 Range A.C.-D.C. Push-Button Operated Circuit Tester. 1000 Ohms per Volt A.C. and D.C.

ELECTRONAMIC (Reg. U. S. Patent Office)

**More than just Mutual Conductance:** (Technical details in main catalog)

A complete, rugged service laboratory incorporating the time-proven "PRECISION" ELECTRONAMIC Tube Performance Tester, combined with full standard 1000 ohms per volt A.C. and D.C. Multi-Range features: PLUS a complete radio A, B and C Battery Tester.

Ideally suited and particularly engineered for thorough general purpose radio-electronic maintenance, service and installation.

### TUBE AND BATTERY TESTING FEATURES

The Series 10-20 TEST-MASTER provides the identical tube and battery performance testing features as outlined for the Series 10-54 on page 5.

### CIRCUIT TESTING FEATURES

Wide-range, high speed, push-button operated set testing functions provide ranges to: 3000 volts, 600 microamperes, 12 amperes, 10 megohms, +70 DB. ALL SELF-CONTAINED.

- \* SIX A.C.-D.C.-OUTPUT VOLTAGE RANGES at 1000 ohms per volt. 0-6-12-60-300-1200-3000 volts.
- \* SIX D.C. CURRENT RANGES: 0-600 microamperes. 0-6-60-300-1200 MA. and 0-12 amps.
- \* FOUR SELF-CONTAINED RESISTANCE RANGES: 0-1000-100,000 ohms: 0-1-10 megs.
- \* SIX DB RANGES from -20 to +64 DB.
- \* 4 $\frac{1}{8}$ " WIDE VISION METER: 400 microamperes,  $\pm 2\%$ .
- \* 1% WIREWOUND AND METALLIZED RESISTORS.
- \* ONLY 2 TIP JACKS serve all standard ranges.
- \* AUTOMATIC INTERLOCKING PUSH-BUTTON RANGE SELECTION.
- \* ALL CIRCUITS ISOLATED FROM POWER LINE.

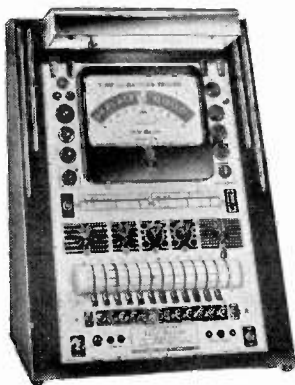
## Series 10-15 *Electronamic Tube Master*

Ultra-Modern, De Luxe Tube and Battery Merchandiser with large 9" meter.

ELECTRONAMIC (Reg. U. S. Patent Office)

### More than just Mutual Conductance:

(Technical details in main catalog)



10-15

- \* **10-15 Tube and Battery Merchandiser.** (Illustrated) Heavy gauge steel cabinet in fine, dull black ripple, with chrome trim and reflector. Size 24" high, 17 $\frac{1}{2}$ " wide, base depth 10" tapering to 4" at top. Code: Gable. Complete: NET PRICE \$132.65
- \* **10-15-PM** (see 10-22-PM illustration at right) On heavy gauge steel panel with dust cover. Panel 22 $\frac{3}{4}$ "x19" for standard rack mount. Fine, dull black ripple finish. Code: Gavot. Complete: NET PRICE \$127.50

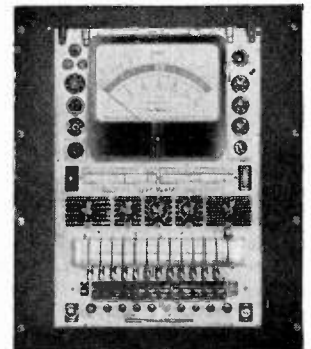
## Series 10-22 *Electronamic Test Master*

De Luxe Tube-Battery Merchandiser and Circuit Tester with large 9" Meter. 1000 ohms per volt A.C. and D.C.

ELECTRONAMIC (Reg. U. S. Patent Office)

### More than just Mutual Conductance:

(Technical details in main catalog)



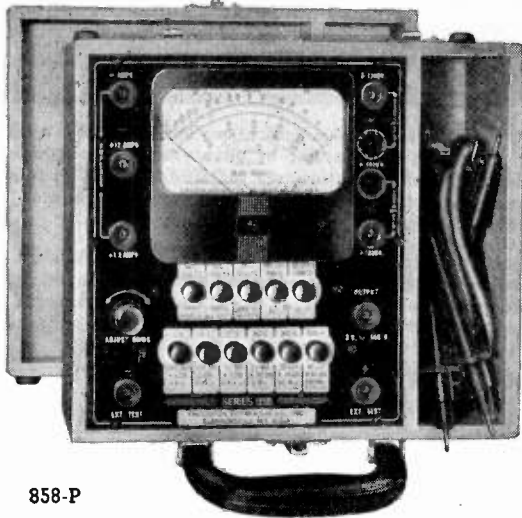
10-22-PM

- \* Incorporates the **Electronamic** tube performance and battery testing circuit, described for Series 10-54 on page F-13.
- \* Designed particularly for equipment-conscious, progressive radio service-sales organizations, and tube-selling sections of department stores.
- \* PROMOTE CUSTOMER CONFIDENCE and tube sales via this impressive "Precision" Tube Merchandiser.
- \* DIRECT READING non-confusing tube performance indications in large, easy reading terms of Replace-Weak-Good.
- \* ILLUMINATED by built-in, large chromium reflector.
- \* The Series 10-22 De Luxe **Electronamic Service Laboratory** is electrically identical to the Series 10-20 above.
- \* Incorporates every sales promotional advantage of the Series 10-15, at left, plus a complete 34 range A.C.-D.C. push-button operated, Multi-Range Test Set.
- \* Tube and Service Facilities are emphasized with this modern, impressive "Precision" engineered instrument.
- \* Ideal for behind-the-counter installation, also ideal for insertion into the center of tube stock-display shelving.
- \* **10-22 Combination Tube and Battery Merchandiser plus A.C.-D.C. Multi-Range Set Tester.** In same cabinet illustrated for the model 10-15 (at left). Complete with test leads and ohmmeter batteries. Code: Gauge. Complete: NET PRICE \$155.15
- \* **10-22-PM** (illustrated) On heavy gauge steel panel with dust cover. Panel 22 $\frac{3}{4}$ "x19" for standard rack mount. Fine, dull black ripple finish. Code: Gamut. Complete: NET PRICE \$150.00



**PRECISION****TEST EQUIPMENT**  
STANDARD OF ACCURACY

All prices are subject to change without notice



858-P

- \* 858-P (illustrated) In hardwood, portable case, with tool compartment. Size 9"x10"x4 1/2". Complete with ohmmeter batteries and high voltage test leads. Code: Judge. NET PRICE \$49.94
- \* 858-L In modern bakelite case (as illustrated for Series 847-L below). Complete with ohmmeter batteries and high voltage test leads. Code: Jetty. NET PRICE \$47.94

**Series 858 High Sensitivity Multi-Master**  
Dual-Range Sensitivity

High Speed, A.C.-D.C. Multi-Range<sup>o</sup> Test Set. 54 Ranges to 6,000 Volts, 60 Microamperes, 12 Amps, 600 Megs. +70DB. 20,000 and 1,000 Ohms per Volt D.C. 1,000 Ohms per Volt A.C.

Series 858 MULTI-MASTER features a "Precision" designed, positive action Push-Button Range and Function selection system, affording the ultimate in operational efficiency.

Designed for reliable measurements in modern T.V., F.M., A.M. and other critical electronic circuits where only minute current drain of the measuring instrument can be tolerated.

The dual-range sensitivity feature provides the equivalent of another instrument at standard 1000 ohms per volt sensitivity, in conformance with many point to point voltage readings listed by receiver service manuals.

When employed in conjunction with the Series TV super-high voltage test probe (described below), direct reading facilities to 60,000 volts are provided.

**SPECIFICATIONS**

- \* EIGHT D.C. VOLTAGE RANGES both 20,000 and 1000 ohms per volt.
- \* EIGHT A.C. and OUTPUT VOLTAGE RANGES at 1000 ohms per volt 0-3-6-12-60-300-600-1200-6000 volts.
- \* EIGHT D.C. CURRENT RANGES: 0-60-120 microamperes. 0-1.2-12-120-600 MA. 0-1.2-12 amps.
- \* SIX RESISTANCE RANGES: self-contained to 60 megohms. 0-6000-60,000-600,000 ohms. 0-6-60-600 megohms.
- \* EIGHT DB RANGES: -26 to +70DB.
- \* Two Pin Jacks for all standard ranges.
- \* 4 3/4" 50 microamp. meter.  $\pm 2\%$ .
- \* 1% Wire and Metallized Resistors.
- \* Safety Jacks for 6000 volt ranges.
- \* HIGHEST GRADE MATERIALS and plastic insulated wiring employed.
- \* ETCHED AND ANODIZED, heavy gauge aluminum panels: resistant to moisture and wear.

**Series TV Super High Voltage SAFETY TEST PROBES\***  
Voltage Ranges to 60,000 Volts D.C.  
With standard V.T.V.M.  
or high sensitivity V-0-M

\*Patent Applied For.

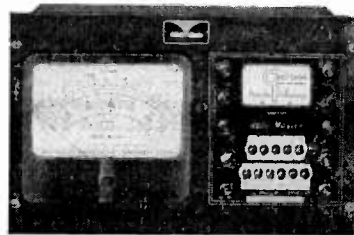
"Precision" engineering solves the high voltage TV. test problem with utmost safety to the operator. Series TV. has been custom designed for YOUR safety FIRST. Cartridge style high voltage tubular multiplier permits use of a single "TV." probe with most popular high sensitivity test sets and V.T.V.M.'s. (See reverse side of "Precision" price sheet for details.)

The brief features below reveal that Series TV. has been specifically engineered as a true High Voltage Testing Device.

- \* Custom Molded Polystyrene Head, heavy duty bakelite handle and barrier, specially machined internal lucite components, all spell out "HIGH VOLTAGE ENGINEERED."
- \* High Dielectric Anti-Leakage Paths and wide, multi-channelled guard-barrier reiterate "HIGH VOLTAGE ENGINEERED."
- \* Internal and External Protective Grounding — Full handle length grounded internal flash-over-shield. External, grounded arc-back barrier. HIGH VOLTAGE ENGINEERED!
- \* Heavy Duty Shielded Connecting Cable for connection to test instrument.
- \* Ceramic, Helical Film-Type, Cartridge Multiplier manufactured specifically for VERY HIGH VOLTAGE APPLICATION. Removed and changed without tools!
- \* Positive Grounds and HV Connections via high compression contact springs.
- \* Series TVP—Test Probe less multiplier cartridge, with instructions. Code: Ebony. NET PRICE \$12.35
- \* Series TV-1 (illustrated) with cartridge for "Precision" Series EV-10 VTVM. Code: Elegy. NET PRICE \$15.45
- \* Series TV-2 with cartridge for "Precision" (or any) 20000 ohms/V. test set with 6000 V. range. Code: Every. NET PRICE \$15.45
- \* TVM — Cartridge Multipliers only for Series TV. See reverse side of "Precision" price sheet.

**Series 866 De Luxe Multi-Master**

Panel-Mounted, A.C.-D.C. Test Set, 9" Meter and Remote-Control Selector Unit. 5000 and 1000 Ohms per Volt D.C. 1000 Ohms per Volt A.C.



A laboratory type, high sensitivity test set indispensable to the well equipped, modern test laboratory and electronics classroom.

The extra-large 9" meter and remote-control selector unit afford unparalleled operational efficiency with maximum physical

meter protection via panel mounting above the work level.

RANGE SPECIFICATIONS OF SERIES 866 are similar to those described for Series 858 above. 5000 and 1000 ohms/V.D.C.

54 ranges to 6000 volts, 300 microamperes, 12 amperes, 200 megohms, +70 DB.

- \* 866 (illustrated) In standard panel mount, size 19"x12 1/4" with dust cover. Complete with high voltage test leads and ohmmeter batteries. Code: Novel. NET PRICE \$71.65

**Series 847 Dual Sensitivity Multi-Master**  
5000 and 1000 Ohms per Volt

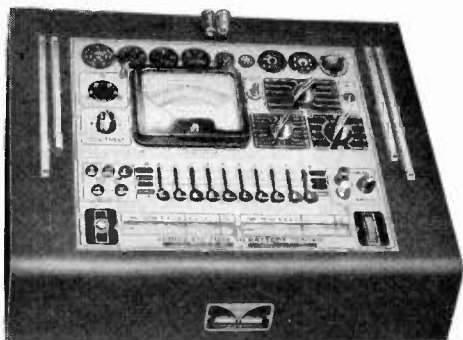
Physically similar to Series 858 at top of page, the Series 847 is a moderate sensitivity, wide range test set specifically prescribed for applications wherever ruggedness is of greater import than extremely high sensitivity. Range specifications are identical to the Series 866 above.

- \* 847-L — Code: Index NET PRICE \$47.65
- \* 847-P — Code: Ivory NET PRICE \$50.90



**PRECISION****TEST EQUIPMENT**  
STANDARD OF ACCURACY

All prices are subject to change without notice



612-C

- \* **612-C** (illustrated) In modern, chrome-trimmed, counter cabinet. Black ripple finish. Size 16" x 13½" x 7", sloping to 3" at front. Code: Bison. Complete: \$71.90
- \* **612-P** In hardwood, portable case (as illustrated for 654, below). Size 12" x 13" x 6". Code: Begin. Complete: \$69.50
- \* **612-MCP** Open style Metal Case Portable. Size 10½" x 12" x 6". Code: Brine. Complete: \$66.65
- \* **612-PM** In standard size panel mount 12¼" x 19" with dust cover. Code: Blaze. Complete: \$69.50

- \* TESTS ALL MODERN TUBE TYPES including 7 pin Acorns, Noval 9 pin, dual capped H.F. tubes, F.M. and TV. amplifiers.
- \* FILAMENT VOLTAGES ¾ to 117 volts.
- \* ABSOLUTE FREE-POINT 10 element lever selection for merit and short tests.
- \* 4½" METER, 2% ACCURACY.
- \* DUAL SHORT-CHECK SENSITIVITY.
- \* INDIVIDUAL TESTS OF MULTI-SECTION TUBES including tuning indicators.
- \* BALLAST UNIT TESTS.
- \* MICRO-LINE ADJUSTMENT.

- \* NOISE and CONDENSER TEST pin jacks.
- \* Pilot Light Test Socket.
- \* DYNAMIC "UNDER-LOAD" TEST for all popular radio A, B, and C dry batteries.
- \* Built-in, brass geared roll chart.
- \* Anodized, deep-etched, heavy gauge aluminum panel, resistant to wear.
- \* Panel-mounted Fuse Extractor Post.
- \* Telephone type cabled, plastic-insulated, moisture resistant hook-up wire.
- \* Each instrument individually calibrated and sealed.

**TUBE AND BATTERY TESTING FEATURES****Series 612 Cathode Conductance Tube Tester**A Modern, Free Point, Lever Operated  
Tube and Battery Tester.

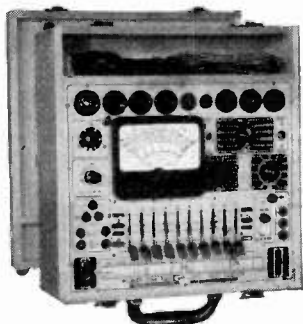
The new "600" Series brings to the field of modern electronic tube checking the **highest practical order of obsolescence insurance with utmost simplicity of operation, AT MODERATE COST.** This has been achieved with full conformity to the well-known "Precision" standards of quality, workmanship, and performance.

The "600" tube testing parameters are based upon the well-established, time-proven emission testing principles as have been recommended by both tube manufacturers and R.M.A. The "600" line affords advanced design features and performance which render it incomparable amongst instruments in its category and price range.

**Series 654****COMBINATION TUBE,  
BATTERY AND SET TESTERS****Series 620**

20,000 OHMS PER VOLT D.C.  
1,000 OHMS/VOLT A.C. • Ranges to 6,000 V.,  
120 Microamperes, 12 Amps., 60 Megs., +70 DB.

1,000 OHMS PER VOLT A.C. AND D.C.  
STANDARD SENSITIVITY • Ranges to 3,000 V.,  
12 Amperes, 10 Megohms, +64 DB.



654-P

- \* SERIES 654 is an economical, compact High Sensitivity Service Laboratory designed to meet the specific needs of modern electronics service and maintenance, A.M., F.M., and TV.

Series 654 incorporates the identical tube and battery testing features of the Series 612 above, PLUS a complete wide range, high sensitivity A.C.-D.C. circuit tester.

- \* SERIES 620 is identical to the Series 654, at left, except for the lower D.C. multi-range meter sensitivity and related range differences as indicated above.

Provides every essential feature for general purpose test and check of modern radio and electronic equipment.

Series 620 is the logical choice as a highly rugged, reliable "Precision" quality instrument at moderate cost.

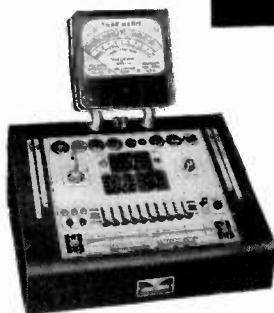
The Series 654 and 620 are available in the same four model types as described for the Series 612 above.

**NET PRICES**

	Code	Net Price		Code	Net Price
* 654-P	Hardy	\$106.40	* 620-P	Local	\$94.10
* 654-MCP	Hurry	103.55	* 620-MCP	Lofty	91.25
* 654-C	House	108.90	* 620-C	Loyal	96.50
* 654-PM	Heart	106.40	* 620-PM	Legal	94.10

**CIRCUIT TESTING FEATURES**

- \* 5 D.C. Voltage Ranges: 20,000 ohms per volt.
- \* 5 A.C. and Output Voltage Ranges: 1000 ohms per volt  
0-12-60-300-1200-6000 volts.  
Ranges to 60,000 Volts D.C. via use of Series TV. Super high voltage test probe. Not included with 654. See page F-15.
- \* 6 D.C. Current Ranges: 0-120 microamperes. 0-1.2-12-120 MA. 0-1.2-12 Amperes.
- \* 3 Wide Resistance Ranges  
0-6000-600,000 ohms. 0-60 Megs.  
Self-contained batteries.
- \* 5 Decibel Ranges from -12 to +70 DB.
- \* Fully Rotary Selective Ranges and Functions.
- \* Only 2 Pin Jacks for all standard ranges.
- \* Recessed 6,000 V. safety pin jacks.
- \* 50 microampere, 45° Wide-Angle meter.
- \* 1% Wirewound and film-type resistors.
- \* All circuits isolated from power line.



614

**Series 614 DE LUXE TUBE AND BATTERY MERCHANDISER**Modern, Counter Type Tube and Battery Tester  
with Large 7" Chrome Trimmed Meter.

The Series 614 is designated for the progressive tube and battery department wherein an exceptionally attractive instrument is desired to step-up tube and battery sales with minimum investment.

The 7" meter provides a full view of test results.

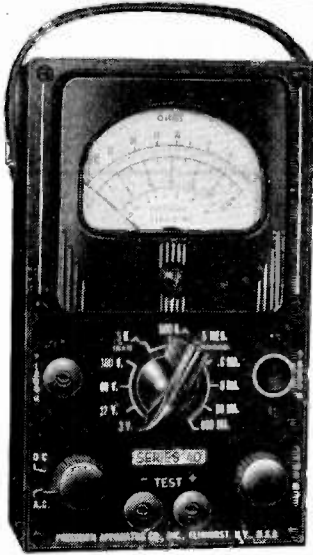
The tube and battery testing circuit of Series 614 is electrically identical to that described for Series 612 at top of page.

- \* 614 Tube and Battery Merchandiser (illustrated) — in modern, chrome-trimmed, fine black ripple finished cabinet. Offset mounted meter. Cabinet size 16" x 13½" x 7", slopes to 3".  
Code: Early. NET PRICE \$89.30

# PRECISION

# TEST EQUIPMENT

STANDARD OF ACCURACY



\* Series 40 (illustrated) In molded bakelite case with plastic handle. 3 3/4" x 6 1/4" x 2 1/2". Complete with ohmmeter batteries and test leads. Code: Visit. NET PRICE \$24.75

## Series 40 Compact Wide-Range Circuit Tester

31 Range A.C.-D.C. Test Set . . . Self-Contained to 6000 Volts, 600MA, +70DB, 5 Megohms with Full Size 3" Rectangular Meter. 1000 Ohms per Volt A.C. and D.C.

In molded bakelite carrying case. Series 40 meets the need for a compact, yet rugged test set to withstand hard usage as is imposed by the service technician, maintenance engineer, production inspector, trouble-shooter, etc.

The Series 40 offers every advanced design feature and full-bodied components as are regularly incorporated in "Precision's" larger multi-range test sets, including: Rotary Range Selection—1% shunts and multipliers—heavy duty insulated pin jacks—Large numeralled, easy reading meter.

**ALL RANGES, including 6000 volts and 5 Megohms, are SELF-CONTAINED NO EXTERNAL BATTERIES OR MULTIPLIERS ARE REQUIRED.**

### RANGE SPECIFICATIONS

- \* 6 A.C.-D.C. AND OUTPUT VOLTAGE RANGES at 1000 ohms per volt. 0-3-12-60-300-1200-6000 volts.
  - \* 4 D.C. CURRENT RANGES: 0-6-6-60-600 MA.
  - \* 3 RESISTANCE RANGES: 0-5000-500,000-5 megohms.
  - \* 6 DECIBEL RANGES -22 to +70 DB.
  - \* FULL SIZE 3" RECTANGULAR METER: 400 microamperes ±2%.
  - \* 1% WIRE & FILM-TYPE RESISTORS.
  - \* ONLY 2 PIN JACKS serve all standard functions.
  - \* Recessed 6000 volt safety jack.
  - \* Anodized, etched aluminum panel: resistant to moisture and wear.
- LC-2 LEATHER INSTRUMENT CASE:** Genuine top-grain heavy cowhide case, custom designed for the Series 40. Richly finished in dark brown. Code: Young. NET PRICE \$4.95

## Series 85 High Sensitivity Test Set

20,000 Ohms per Volt D.C. 1,000 Ohms per Volt A.C.  
34 Self-Contained Ranges to 6000 Volts,  
120 Microamperes, 12 Amperes, -70DB, 60 Megohms.

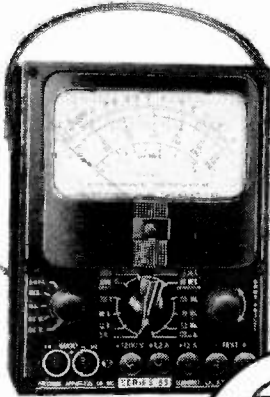
The Series 85 is a bakelite cased, laboratory styled, portable instrument.

Combining high sensitivity with small overall size, Series 85 is "Application Engineered" for production, lab., school and service-maintenance phases of modern electronics: A.M., F.M., and TV.

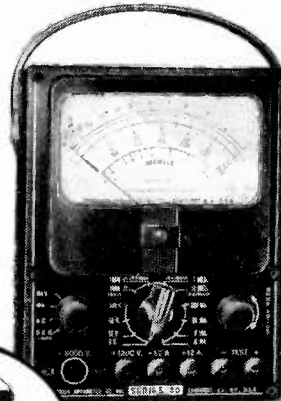
\* When used with the Series TV super-high voltage test probe, D.C. voltage ranges up to 60,000 volts are provided for Television and similar high potential, low current circuits. See page F-15.

### SPECIFICATIONS

- \* 6 D.C. Voltage Ranges: 20,000 ohms per volt.
- \* 6 A.C.-Output Voltage Ranges: 1000 ohms per volt 0-3-12-60-300-1200-6000 volts.
- \* 6 D.C. Current Ranges: 0-120 microamps. 0-1.2-12-120 MA and 0-1.2-12 amps
- \* 4 Resistance Ranges: Self-contained. 0-6000-600,000 ohms; 0-6-60 megs.
- \* 6 Decibel Ranges: -26 to +70DB
- \* 4 5/8" Rectangular Meter. 50 Microampere. 2% accuracy.
- \* 1% Wire & Film-type Resistors.
- \* Rotary Range Selection: All standard functions at 2 pin jacks.
- \* Recessed 6000 volt safety jacks.
- \* Anodized, heavy gauge, etched aluminum panel: resistant to moisture and wear.
- \* Series 85 (illustrated) in molded bakelite carrying case with plastic handle. 5 1/2" x 7 1/8" x 3". Complete with ohmmeter batteries and test leads. Code: Waist. NET PRICE \$38.75



Series 85



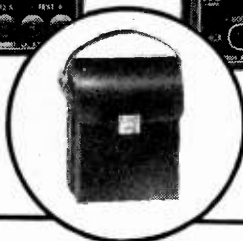
Series 80

The Series 80, laboratory styled, rotary selective, multi-range circuit tester has been designed to meet the same high calibre performance standards as the Series 85 (at left) but is specifically intended for use wherein greater resistance to electrical and physical overload is of more importance than extremely high sensitivity.

"Application Engineered" for general purpose industrial and radio service-maintenance-test requirements.

### SPECIFICATIONS

- \* 6 A.C.-D.C.-Output Voltage Ranges: 1000 ohms per volt. 0-6-12-60-300-1200-6000 volts.
- \* 6 D.C. Current Ranges: 0-6-6-60-300 MA and 0-1.2-12 amps.
- \* 4 Resistance Ranges: Self-Contained. 0-1000-100,000 ohms. 0-1-10 megohms.
- \* 6 Decibel Ranges: from -20 to +70DB.
- \* 4 5/8" Rectangular Meter: 400 microampere, 2% accuracy.
- \* 1% Wirewound and Film-type Resistors.
- \* Recessed 6000 volt safety jack.
- \* Anodized, etched aluminum panel resistant to moisture and wear.
- \* Series 80 (illustrated) In molded bakelite carrying case with plastic handle. 5 1/2" x 7 1/8" x 3". Complete with ohmmeter batteries and test leads. Code: Weave. NET PRICE \$32.70



Series LC-1

### LC-1 LEATHER INSTRUMENT CASE

Custom designed for the Series 80 and 85. Includes a tool and test lead compartment.

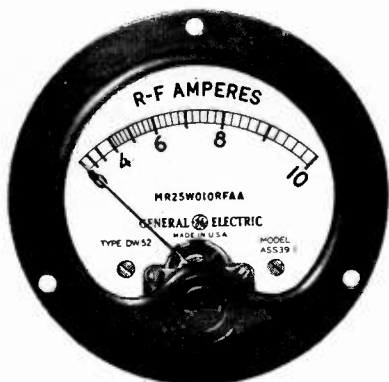
Genuine-top-grain heavy cowhide with water-proof lined suede interior. Adjustable hand or shoulder strap. Positive snap-lock. Richly finished in dark brown. Code: Yearn. NET PRICE \$8.75

All prices are subject to change without notice



# ELECTRIC INDICATING INSTRUMENTS For Panel Mounting

*Internal-pivot Direct-current and Radio-frequency Types*



These small panel instruments are particularly suitable for use in radio and other communications equipment where compactness, especially minimum depth behind the panel, is essential. Thinness is obtained by the use of a unique single-unit, high-torque element of the permanent-magnet, moving-coil type. In this element, the pivots, instead of being secured to the outside of the armature winding, are solidly mounted on the inside of the armature shell.

G-E internal-pivot instruments are available in a variety of standard ratings to measure direct current and voltage (Type DW-51), and radio-frequency current (Type DW-52). They are of the 2½-inch classification. The behind the panel depth is 0.89 inch of the molded Textolite case.

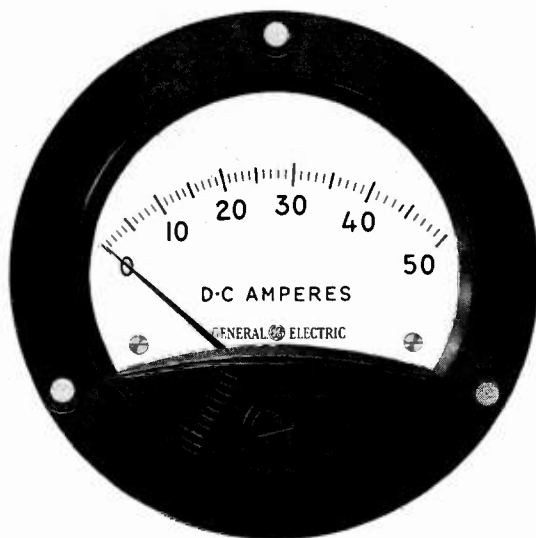
## OTHER TYPES

Many other types of G-E indicating instruments are available for panel mounting. They include 3½ inch a-c, d-c, r-f, and rectifier types in standard round cases as well as in rectangular cases, such as the one shown below. Also 2½-inch alternating-current and rectifier type instruments. Still other types can be supplied to meet unusual requirements.

## LISTINGS

Range	Approx. Resistance in Ohms	Cat. No.	Price*
volts (d-c)	1,000	258X65	\$12.00
	5,000	258X68	12.00
	20,000	258X72	12.00
	50,000	258X74	12.00
	100,000	258X76	12.50
	150,000	258X77	13.00
milliammeters (d-c)	25	258X90	10.50
	7.4	258X93	10.50
	2.16	258X96	10.50
	.50	258X98	10.50
	.252	259X1	10.50
	.100	259X4	10.50
microammeters (d-c)	2,030	259X5	19.00
	693	259X7	18.00
	302	259X9	14.00
	68.5	259X11	12.50
amperes (r-f)	.29	259X13	16.50
	.034	259X16	16.50
	.017	259X19	16.50
milliammeters (r-f)	6.8	259X22	15.50
	4.0	259X25	15.50
	.62	259X28	15.50

\* Manufacturers' suggested retail prices.

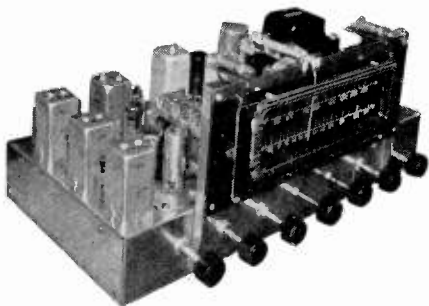


Type D0-71 3½-inch instrument for panel mounting



## BROWNING FM-AM TUNER — MODEL RJ-20

Designed for high-fidelity receiving application in the AM broadcast and FM bands.



### MECHANICAL FEATURES

- Edgelighted slide-rule dial with large tuning ratio.
- Height 7½"; width, 17"; depth, 9"
- Weight: RJ-20, 18½ lbs. shipping 24 lbs.
- Model RJ-22: Rack type with black leatherette panel, 8¾" high, 19" wide and 9¾" deep; shipping 38 lbs.

### ELECTRICAL FEATURES

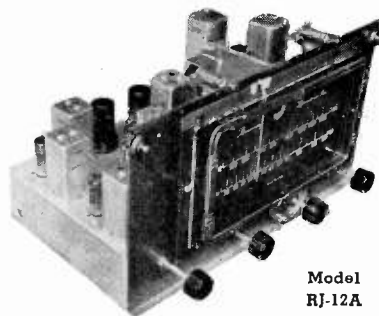
- For FM—88 to 108 MC, and AM—530 to 1650 KC. Armstrong FM circuit.
- 20 db quieting with 6½ microvolts on FM; 5 microvolts sensitivity on AM.
- Separate RF and IF on both bands; no coil switching.
- Variable bandwidth AM IF gives full 9 KC band on broad and 4 KC on narrow position.
- FM audio response flat from 15 to 15,000 cycles ± 3 db.
- 20,000-ohm output impedance; 300 or 72 ohms input for FM provided.
- Tubes: five 6AU6; one 7F8; two 6AL5; one 12AU7; one 6SK7; one 6SA7; one 6SG7; one 6AL7 tuning eye; one 5Y3 rectifier.

## BROWNING FM-AM TUNER — MODEL RJ-12A

Engineered for high-fidelity reception in the FM band. The AM section provides high sensitivity and selectivity as well as quality reception in the broadcast band.

### ELECTRICAL FEATURES

- For the FM band—88 to 108 MC and broadcast band—530 to 1650 KC.
- Less than 10 microvolts needed to produce 20 db noise reduction in the FM band; sensitivity of 5 microvolts in the AM broadcast band.
- Separate RF and IF systems on both bands; no coil switching.
- Drift compensated.
- FM audio response flat from 20 cycles to 15000 cycles within ± 1½ db.
- AM audio response flat from 20 to 6600 cycles ± 3 db; IF's triple tuned.
- Miniature tubes used as FM RF and IF amplifiers assure maximum gain.
- FM uses 2-stage cascade limiting circuit to insure maximum noise rejection.
- High-impedance output for connection any high-quality audio amplifier.
- Phono position on channel selector switch to provide volume control directly on the tuner; phono input connection in back of tuner.
- FM-AM on one antenna with 300 ohms input with twin lead cables.
- Power supply, optional, requires 250 volts d-c at 65 MA and 6.3 volts a-c at 4 amperes.
- Major Armstrong's circuit on FM.
- 6AL7 tuning eye for accurate tuning on both FM and AM.
- Operates on 115 volts, 60 cycles. 80 volt-amperes input when used with Browning model PF-12 power supply.
- Tubes: three 6AU6; one 7F8; one 6SK7; one 6SG7; two 6SJ7; one 6H6; one 6SA7; one 6AL7 tuning eye; one 1N34 crystal detector.



Model RJ-12A

### MECHANICAL FEATURES

- Easily mounted in book-cases, drawers, shelves and cabinets.
- Dial escutcheon supplied with unit. Edge lighted dial—slide rule type.
- Available with black leatherette finished panel for rack mounting (RJ-14).
- Power supply is small separate unit for mounting in confined spaces.
- Dimensions: height 7¾"; width 13½"; depth 9". Power supply: height 6"; width 3½"; depth 8". Rack type tuner; height 8¾"; width 19"; depth 9".

Model	Weight	Shipping Weight
RJ-12A—FM-AM Tuner . . .	12 lbs. . . . .	16 lbs.
RJ-14A—Rack Panel Model . .	24 lbs. . . . .	30 lbs.
PF-12—Power Supply . . . . .	8 lbs. . . . .	9 lbs.

## BROWNING FM TUNER — MODEL RV-10

Designed for high-fidelity reception in the new high-frequency FM band.

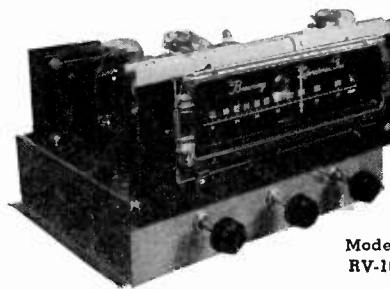
### ELECTRICAL FEATURES

- Receives signals in the FM band extending from 88 to 108 megacycles.
- Less than 10 microvolts needed to produce complete limiting.
- Newly developed miniature tubes used for RF section and IF amplifier.
- Two-stage cascade limiter used to ensure freedom from noise.
- Tuned RF stage used to increase gain and reduce image interference.
- High impedance output to feed any high-fidelity amplifier.
- PHONO-FM switch permits instant transfer of input signals.
- Power supply self contained.
- Employs Armstrong FM circuit.
- Tuning eye indicates correct tuning.
- 115 volt, 60 cycle AC operation. 65 volt-amperes input.

- Tube complement: three Type 6AU6, one 7F8, two 6SJ7, one 6H6.
- Tuning eye indicator (6AL7). Type 5Y3 rectifier tube.

### MECHANICAL FEATURES

- Physically small. Can be easily mounted in cabinets, shelves, bookcases, drawers, and the like.
- Dial escutcheon, knobs, shielded interconnecting wire and connectors supplied with each unit.
- Attractive edgelighted dial calibrated in megacycles and channel numbers.
- Rugged construction, all components of the highest quality.
- Also available with standard rack panel (Designation Model RV-11).
- Dimension: RV-10—Height 6½", Width 11", Depth 8¾". RV-11—Height 8¾", Width 19", Depth 8¾".



Model RV-10

Model	Weight	Shipping Weight
RV-10	10½ lbs.	14 lbs.
RV-11 Rack Panel Mtg.	15 lbs.	21 lbs.



## BROWNING OSCILLOSYNCHROSCOPE — MODEL OL-15B



### MECHANICAL FEATURES

- Steel cabinet finished in black wrinkle with 1/8" aluminum panel.
- Panel finished in black leatherette with all labels engraved directly on panel.
- Copper-plated steel chassis with lacquer finish.
- Controls grouped according to function for convenience of operation.
- Components arranged for electrical efficiency and ease of servicing.
- Dimension: Height 15 3/4", Width 12 3/4", Depth 19 3/4".
- Weight: 95 lbs. Shipping weight: 150 lbs.

A laboratory instrument designed for the observation of wave forms and transient phenomena requiring a variety of time bases, triggers, phasing and delay circuits, and extended range amplifiers. It may be used for work on laboratory applications where extremely short pulses or phenomena of irregular occurrence rate must be studied. It is also designed for television, communication, radar, and facsimile work. The special features are combined with the functions of a standard oscilloscope with greater ease and convenience of operation as a result of improved design.

### ELECTRICAL FEATURES

- Five-inch 5J1 cathode-ray tube with 4000V accelerating potential for improved intensity and definition of images.
- Sawtooth sweep with range of 5 cycles per second to 500 kilocycles per second permitting observation of radio frequency wave forms.
- Single sweep triggered time base for observation of transient phenomena or phenomena of varying repetition rates.
- Internal trigger generator and built-in phasing circuit for use with single sweep time base.
- Extended range amplifiers. The vertical amplifier is flat within 3 db. from 10 cycles per second to 6 megacycles per second. The horizontal amplifier is flat within 1 db. from 5 cycles per second to 1 megacycle per second. Maximum vertical deflection sensitivity is .05 R.M.S. volts per inch.
- The response curve of the vertical amplifier which is linear and without positive slope from 10 cycles to 4 megacycles has transient response such that a 100 kilocycle square wave with rates of rise and fall in the order of 500 volts per microsecond is faithfully reproduced.
- Low-capacitance, high-impedance probe for use with vertical amplifier. Voltage attenuation of probe is 10:1.
- Provisions for direct connection to all deflection plates.
- Internal or external blanking of beam for timing purposes and for elimination of retrace.
- Voltage regulation of all low-level stages for stability of operation under varying line voltage conditions.
- Built-in voltmeter and calibrating circuit for determining deflection sensitivity at any setting of the gain controls.
- Tube complement: three 6C4, one 6AC7, one 6AG5, five 6AG7, two 807, five 6SN7, two 6SJ7, three 6SH7, three 6V6GT, one 884, two 2X2A, one 5R4GY, one 6X5GT, one VR-105.

Net Price \$1275.00 F.O.B. Winchester, Mass.

## BROWNING SWEEP CALIBRATOR — MODEL GL-22

Designed for use with oscilloscopes and synchrosopes as a source of timing markers for the measurement of sweep intervals.

### ELECTRICAL FEATURES

- Provides markers of 0.1, 0.5, 1.0, 10, 100 microseconds either positive or negative with variable amplitude to 50 volts.
- Generates variable width, variable amplitude gate for blanking or timing purposes.
- Contains own trigger generator with positive and negative trigger outputs.
- Markers may be initiated from external trigger or from internal generator. May be synchronized with triggers up to 100 KC. repetition rate.
- Voltage regulator to timing circuits.
- 115 volt, 50 cycle operation. 110 volt-amperes input.
- Tube complement: one Type 6BE6, one 2D21, one 6J6, one 6V6GT, two 6SN7, one 5Y3GT, one VR-105, one 6AL5, one 6AQ5, one 6X5GT.

Net Price \$290.00 F.O.B. Winchester, Mass.



### MECHANICAL FEATURES

- Provided with steel cabinet finished in black wrinkle.
- Panel finished in black leatherette with labels engraved into surface.
- All output connections on front panel.
- Insulated universal binding posts used for output connections.
- Dimensions: Height 7", Width 14", Depth 8".
- Weight: 20 lbs. Shipping weight: 28 lbs.



**BROWNING MODEL TAA-16 AMPLIFIER**

High gain audio amplifier feeding AC voltmeter for measurement of standing wave ratios with slotted lines. Many other similar uses.

**ELECTRICAL FEATURES**

- 500- to 5000-cycle range with **broadband** or **selective** controls on front panel.
- 15-microvolt sensitivity in **broadband** position and 10 microvolts in **selective** position.
- Meter scales 0-10 and standing-wave voltage ratio.
- Panel switch for bolometer voltage application.
- Master gain control switch provides attenuation factors of 1, 10 and 100.
- Power supply electronically regulated for stability.
- 60 volt-amperes input at 115 volts 60 cycles.
- Tubes: three 6SJ7GT; one VR-105; two 6V6GT; one 6H6GT; one 5Y3GT rectifier.

**MECHANICAL FEATURES**

- Rack panel in black wrinkle steel cabinet, 9" x 20" x 12".
- Panel black leatherette finish with engraved characters.
- Input tube shock mounted for low microphonics.
- Weight 30½ lbs. Shipping weight 45 lbs.

**NET PRICE COMPLETE WITH TUBES (FOB Winchester, Mass.) \$390.00**

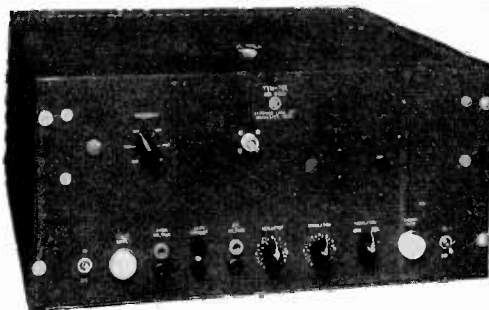
**BROWNING MODEL TVN-7  
POWER SUPPLY AND SQUARE-WAVE MODULATOR**

The basic unit of a signal generator in the super-high-frequency range. Square-wave modulator for low-powered velocity-modulated tubes such as the 417A, 2K28 and 2K25.

**ELECTRICAL FEATURES**

- Range of cathode voltage is 28 to 480 volts, continuously variable. Provision is made for 180 to 300 volt range.
- Range of reflector voltage is 15 to 150 volts controllable from panel.
- Provision is made for grid pulse modulation or reflector pulse modulation. Amplitude of grid pulse is 60 volts while the reflector pulse voltage is 100 volts maximum.
- Square-wave modulation frequency is variable from 600 to 2500 cycles.
- Provisions are made for external modulation.
- 110-115-volts, 60-cycle operation with 170 volt-amperes input.
- Tubes: one type 5Y3; two OD3/VR150; one 6SN7; one 6V6; one 6A3; one 5R4GY; one 6SJ7.

**NET PRICE \$210.00 FOB Winchester, Mass.**



**MECHANICAL FEATURES**

- Designed for rack mounting; cabinet finished at extra cost.
- Black wrinkle, engraved-steel panel.
- 8¾" x 19" x 11"; Weight 33 lbs. Shipping weight 50 lbs.

**BROWNING MODEL P-4-E CATHODE RAY SYNCHROSCOPE**



Designed for viewing recurrent phenomenon where the duration of the phenomenon is short with respect to the intervals of occurrence.

**ELECTRICAL FEATURES**

- Five-inch cathode-ray tube.
- Triggers generated from internal oscillator at repetition rates of 500, 1000, 2000, and 4000 p.p.s. or from external oscillator.
- Sweeps available at approximately ½, 5, 10, and 25 microseconds per inch internally synchronized; can be externally triggered.
- Internal source of calibration voltage of ½ micro-second period for sweeps.

- Return trace blanked out internally.
- Low-gain, broad-band video amplifier preceded by 954 detector.
- Tubes: two 2X2/879; one 5Z3; one 954; one 6AC7; one 6AG7; six 6SN7GT; two 6SL7GT; one 6SK7GT; one 7V7; one 5LP1.

**MECHANICAL FEATURES**

- 8¾" x 14¼" x 20" steel cabinet, black wrinkled.
- Labels engraved in panel surface.
- Ruled screen for cathode-ray tube face.
- Weight: 45 lbs. Shipping weight 55 lbs.

**NET PRICE \$440.00 F.O.B. Winchester, Mass.**

**BROWNING CAPACITANCE RELAY  
MODEL DD-20**

Detects and translates small capacitance changes into action.

**ELECTRICAL FEATURES**

- Operates relay circuit on changes in capacitance of 0.25 mmfd.
- Indicates capacitance changes as small as .005 mmfd.
- Indicates mechanical movements as small as .00001 inches.
- Relay operation provides closed circuit, open circuit, or 115 volts a/c at 10 amperes.
- Electronically regulated power supply for maximum stability.
- Operation frequencies variable from 50 to 150 kilocycles.
- 105-125 volt, 60 cycle operation. 80 volt-amperes input.
- Tubes: three 6V6GT; one 6SA7; three 6SJ7; one 6H6; one 6N7; one VR-90; one 80.

**NET PRICE \$225.00 F.O.B. Winchester, Mass.**



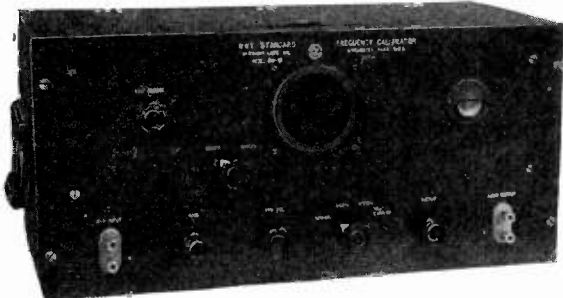
**MECHANICAL FEATURES**

- 8¾" rack panel, mounted in black wrinkle steel cabinet.
- Aluminum panel finished in black leatherette.
- All labels engraved into panel surface.
- Antennae or capacitance leads enter rear of chassis.





**BROWNING WWV STANDARD FREQUENCY CALIBRATOR — MODEL RH-10**



Specifically designed for receiving transmissions from radio station WWV on either 5 or 10 megacycles and employing these as primary frequency standards. Provisions are made so that secondary standards which are in subharmonic relation with WWV transmissions may be accurately compared. Filters are employed so that the 440 or 4000 cycle modulation may also be used as primary standards.

**ELECTRICAL FEATURES**

- Pre-tuned for 5 and 10 megacycles per second reception of radio station WWV. Either frequency may be selected by switch. On special order, pre-tuned frequencies of 2.5 and 5, or 10 and 15 megacycles per second may be substituted.
- Sensitivity better than 1/2 microvolt on any band. Antenna input impedance is high to permit use of single wire antenna. Tuned doublet may be used if desired.
- Selectivity 10 db down at 5. KC off resonance.
- Excellent image rejection minimizes interference. Rejection ratio is more than 50 db.
- Front panel provisions are made for coupling secondary standard or other RF sources and comparing their fundamentals or harmonics with WWV transmission.
- Cathode ray audio indicator permits comparison between RF source and WWV transmission within 1/10 cycle per second using zero beat method.
- A dual filter system allows the selection at will of either the 440 or 4000 cycle modulation of WWV. Either may be employed as a primary frequency standard. Output voltage adjustable from 0 to 5. volts.
- Voltage supplied to stable local oscillator is regulated to reduce to a minimum frequency drift.
- Panel speaker has a separate control which allows the output to be varied at will.
- 100-125 volts AC operation. 85 volt-amperes input.
- Tube complement: one Type 6S17, three 6SK7, one 6SA7, one 6SN7, one 6J5, one 6SQ7, one OD3/VR-150, one 5Y3, one 6U5.

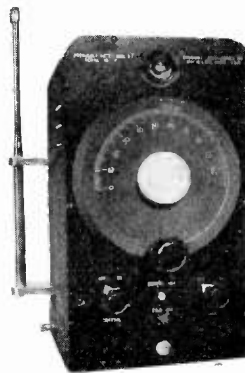
Net Price \$250.00 F.O.B. Winchester, Mass.

**MECHANICAL FEATURES**

- Either rack panel with dust cover or steel cabinet.
- Aluminum panel is finished in black leatherette with engraved labels.
- Large fluted knobs are provided.
- Panel connectors are standard universal binding posts which will also accommodate banana-type plugs.
- Dimensions: Cabinet Mounting—Height 9", Width 19", Depth 11". Rack Mounting—Height 8 3/4", Width 19", Depth 10 1/2".
- Weight: Cabinet Mounting 30 lbs., Shipping Weight 45 lbs. Rack Mounting 25 lbs., Shipping Weight 40 lbs.

**BROWNING FREQUENCY METERS**

Browning frequency meters are precision-built instruments designed to check frequencies in various ranges from 100 kilocycles to 500 megacycles. Custom-built and hand-calibrated, each of the meters listed below is equipped with a 100 KC CRYSTAL USED AS SECONDARY STANDARD WHICH IS EASILY COMPARED WITH WWV RADIATIONS ALLOWING EVERY FREQUENCY METER TO BE CHECKED IN THE FIELD. Some of the outstanding electrical features are:



**MODEL S-4**

**MODEL S-7**

- From 1 to 5 specified frequencies on 1.5-70 mc. range.
- Accuracy ± .0025% of the specified frequency.
- Stable electron-coupled oscillator used in special circuit.
- Visual detection of zero beat with cathode-ray indicator.
- 110-115-volt ac/dc operation with 40 volt-amperes input.
- Telescoping antenna on side of case.
- Tubes: one 6SC7; one 6SA7; one 6J5; one 6SK7; one 6U5; one 25Z6 and one VR90 voltage regulator.

**MODEL S-6**

- Range: 100 kilocycles to 100 megacycles, in 5 bands.
- Accuracy 0.025% of the frequency measured.
- Harmonic amplifiers permit use of harmonics up to 50 mc.
- Visual and audio detection of zero beat.
- 110-115 volt ac/dc operation with 40 volt-amperes input.
- Telescoping antenna on side of case.
- Tubes: one 6SK7; one 6SL7; one 6SF5; one 6U5; one 5Y3GT; one VR90.

**MODEL S-7**

- Calibrated for One or Two frequencies in 72-76 and/or 152-162 mc. bands.
- Accuracy .005% of the specified frequency.
- Deviation chart supplied for instant determination of deviation from assigned frequency.
- Cathode-ray indicator for accurate setting of ECO calibration.
- 105-115-volt ac/dc operation with 40 volt-amperes input.
- Telescoping antennae on side of case.
- Tubes: one 6SL7; one 6SA7; one 6J5; one 6SK7; one 25Z6; one VR-90; and one 6U5 tuning indicator.

**MECHANICAL FEATURES OF ALL MODELS**

- Rugged steel cabinet with 1/8" aluminum panel.
- Machined main dial graduated in 100 divisions over 180 degrees. Vernier allows reading of 1/10 of dial division.
- Panel finished in black leatherette.
- All labels engraved in panel surface.
- Dimensions: 13 1/4" high, 7 7/8" wide, 6 7/8" deep.
- Weight: 15 lbs. Shipping weight 18 1/2 lbs.

**BROWNING FREQUENCY METER — MODEL S-5**

Designed for checking the frequencies of police, fire department, railroad, marine and other special-service transmitters operating between 30 and 500 megacycles.



**ELECTRICAL FEATURES**

- Custom-built and hand-calibrated for one, two, or three frequencies between 30 and 500 megacycles.
- Accuracy: .0025% of the specified frequency.
- Deviation chart supplied for determination of deviation from assigned frequency.
- 100 KC crystal in temperature regulated oven is used as secondary standard with long time frequency stability.
- Temperature compensated electron-coupled oscillator uses precision split-stator variable condenser with no moving contacts.
- Voltage regulated supply for crystal and electron-coupled oscillators.
- 105-115 volt, 60 cycle AC operation. 65 volt-amperes input.
- Telescoping antenna for easy coupling to transmitter.
- Tube complement: one Type 6C4, two 9001, two 6SJ7, three 6J5, one 5Y3GT, one VR-90.

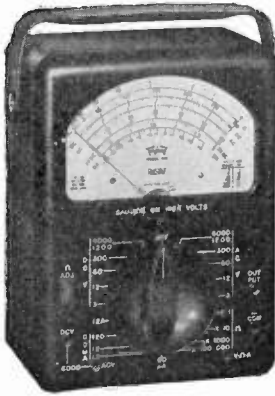
**MECHANICAL FEATURES**

- Rugged steel cabinet and 1/8" steel panel.
- Electron-coupled oscillator built on 3/16" aluminum sub-chassis.
- Worm drive to tuning condenser with dual indicators provides 5000 dial divisions for tuning range.
- Panel finished in black leatherette.
- Labels engraved into panel surface.
- Standard rack panel used. Unit may be incorporated in a rack with other equipment if desired.
- Dimensions: Height 8 3/4", Width 19", Depth 9".
- Weight: 35 lbs. Shipping weight: 50 lbs.

Prices Net (Complete with tubes) F.O.B. Winchester, Mass.  
 1 Band . \$340.00    2 Bands . \$380.00    3 Bands . \$420.00



## MODEL 630 VOLT-OHM-MIL-AMMETER



Model 630

A Beautiful, streamlined Tester that is simple to operate. Only one switch—selects both circuit and range. A really new selector switch, completely enclosed and protected. Eliminates loss between contacts. Retains contact alignment permanently. Molded construction keeps dirt out. Unit construction—resistors, shunts, rectifiers, batteries—all housed in a molded base integral with the switch. All resistors are Precision Film or Wire-wound types—sealed for permanent accuracy, each in separate molded compartment. Large 5½" meter (RED • DOT Lifetime Guaranteed), black and red scale markings. Batteries easily replaced—double-spring tension grip assures permanent contact. Pre-calibrated rectifier. Molded black case, 3¾" × 5½" × 7½", with removable leather strap handle. Black molded panel with white markings.

### RANGES

- D. C. VOLTS: 0-3-12-60-300-1200-6000, at 20,000 Ohms/Volt (For greater accuracy on TV and other High Resistance circuits.)
- A. C. VOLTS: 0-3-12-60-300-1200-6000, at 5,000 Ohms/Volt (For greater accuracy in Audio and other High Impedance A. C. circuits.)
- DECIBELS: -30, +4, +16, +30, +44, +56, +70 (For Direct Reading of Output Levels.)
- D. C. MICROAMPERES: 0-60, at 250 M. V.
- D. C. MILLIAMPERES: 0-1.2-12-120, at 250 M. V.
- D. C. AMPERES: 0-12, at 250 M. V.
- OHMS: 0-1000-10,000 (4.4-44 at center scale.)
- MEGOHMS: 0-1-100 (4400-440,000 center scale.)
- OUTPUT: Condenser in series with A. C. Volt ranges

MODEL 630.....U. S. A. DEALER NET \$37.50

### CARRYING CASE

MODEL 639, black leather, strap handle, snap-over cover.....DEALER NET \$5.75

## MIRROR SCALE VOLT-OHM-MIL-AMMETER

Widest range tester of its type with additional brand new features: Long 5" mirror scale for better reading accuracy; Resistance ranges to 40 Megohm; Low Ohm Range 0-2000 (12 ohms center scale); D. C. Volt ranges with dual sensitivity (10,000/20,000 Ohm/Volt) provide double the number of full scale readings of average testers. A. C. Volt ranges at 10,000 Ohm/Volt permit checking many audio and high impedance A. C. circuits where a vacuum tube voltmeter usually is required. Low voltage ranges permit direct measurement of many bias and output voltages. Special film type resistors provide greater stability on all ranges.

6" RED • DOT Lifetime guaranteed meter. Long mirror scale guarantees greater reading accuracy. Insulated, black molded case with removable strap handle, 2½" × 5½" × 6". Molded black panel with white markings. Leads and instructions furnished.

Weight: Approx. 3 lbs.

### 39 RANGES

- D. C. VOLTS: 0-1.25-5-25-125-500-2500, 20,000 Ohm/Volt
- 0-2.5-10-50-250-1000-5000, 10,000 Ohm/Volt
- A. C. VOLTS: 0-2.5-10-50-250-1000-5000, 10,000 Ohm/Volt
- D. C. MICROAMPS: 0-50, at 250 Millivolts
- D. C. MILLIAMPS: 0-1-10-100-1000, at 250 Millivolts
- D. C. AMPERES: 0-10, at 250 Millivolts
- OHMS: 0-2,000-200,000 (12-1200 center scale)
- MEGOHMS: 0-40 (240,000 ohms center scale)
- DECIBELS: -30, +3, +15, +29, +43, +55, +69. (Reference level "0" DB at 1.73 V. on 500 Ohm line.)
- OUTPUT: Condenser in series with A. C. Volt ranges

Accessories available to special order for extending ranges: External pin jack shunts for A.C.-D.C. Current ranges, resistors for volt ranges, battery and resistors for Ohms ranges. MODEL 625-NA, U. S. A. DEALER NET \$45.00

### CARRYING CASE

Attractive black leather carrying case with strap handle. Leather flap folds over the top and snaps in place. MODEL 629 CASE, U. S. A. DEALER NET \$5.50



Model 625-NA

## POCKET-SIZE VOLT-OHM-MILLIAMMETER



Model 666-HH

A precision-manufactured marvel of compactness that provides a complete miniature laboratory for D. C. and A. C. voltage, Direct Current and Resistance analyses. Its many ranges, attractive appearance and other unique features provide an answer to the Volt-Ohm-Milliammeter requirements of radio service-men and amateurs, industrial engineers, laboratory technicians, etc. Refinements in design feature:

Greater scale readability on the 3" RED • DOT Lifetime guaranteed instrument with black and red scale markings.

Simplified switching provides greater ease in changing ranges.

Lower jack contact resistance and trouble-free plug-in connections by use of banana-type jacks. Banana jacks at top of panel reduce possibility of connecting leads over panel controls or meter scales.

Greater stability on voltage ranges by use of special resistors throughout and on current ranges by use of 250 M. V. instrument.

### RANGES

- D. C. VOLTS: 0-10-50-250-1000-5000, 1000 Ohm/Volt
- A. C. VOLTS: 0-10-50-250-1000-5000, 1000 Ohm/Volt
- D. C. MA: 0-10-100-500, at 250 Millivolts
- OHMS: 0-2000-400,000 (12-2400 center scale)

Attractive new streamlined black molded case, completely insulated, 3¼" × 5½" × 2½". Black molded panel with white markings. Battery self-contained, plug-in type, 1.5 V. Eveready No. 935 or equivalent. 50" test leads with clips and plugs furnished.

Weight: 1½ lbs.

Accessories available to special order for extending ranges: External pin jack shunts for A. C.-D. C. Current ranges, resistors for volt ranges, battery and resistors for Ohms ranges. MODEL 666-HH, U. S. A. DEALER NET \$22.00

### CARRYING CASE

Attractive black leather carrying case with strap handle. Leather flap folds over the top and snaps in place.

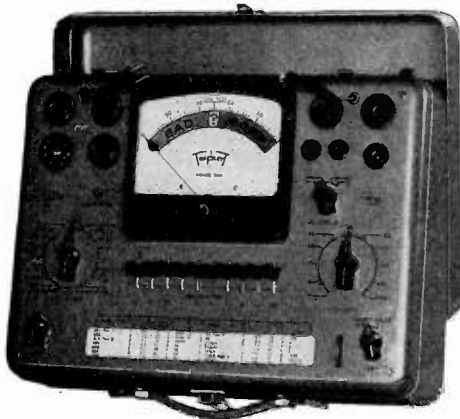
MODEL 669 CASE, U. S. A. DEALER NET \$4.75

ALL PRICES ARE SUBJECT TO CHANGE — ALL MODELS SUBJECT TO REVISION

# Radio



# Testers



Model 3413

### TUBE TESTER

CONCLUSIVE tube tests for value, inter-element shorts and leakage. FULLY-BALANCED, MULTI-PURPOSE CIRCUIT; with accurately calibrated values for all makes of tubes—more than an emission test in the special switching flexibility.

AN APPLIANCE CHECK lead permits "short" and "continuity" test of motors, leads, resistance elements, etc. NEON SHORT TEST shows slightest inter-element short or leakage while cathodes are hot. NEW 3-POSITION LEVER SWITCHES give individual control for each tube element. (See center panel.)

TUBES TESTED—All receiving types, gaseous rectifiers, resistor and ballast tube continuity, and pilot lamps. SOCKETS: 4, 5 and 6 prong; 7 prong large and small with combination for pilot lights and flashlight bulbs; 8 prong octal; 8 prong loctal; 5 prong bantam; 7 prong miniature; 7 prong subminiature; and 9 prong. Only one socket used for each tube base type eliminating possibility of plugging into the wrong socket.

LINE VOLTAGE INDICATOR permits observation and adjustment for line fluctuations. FILAMENT VOLTAGES (Full Range)—0.75 to 110 Volts in 19 steps. 6" meter with RED • DOT Lifetime guarantee, has 3-color GOOD-?-BAD scale. Brightly illuminated SPEED ROLL TUBE CHART located with markings below switches for convenience in testing. New tubes can be calibrated without manufacturers' data.

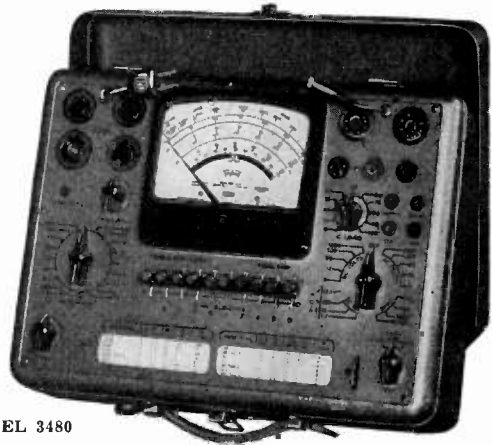
COUNTER-PORTABLE Type Case, metal, 15 1/4" x 11 1/2" x 6 1/2", finished in attractive baked-on "hammered" tan enamel. Panel with brown markings. Power supply—115 Volt, 50-60 cycle A. C.

Weight: 20 lbs.

MODEL 3413 TUBE TESTER.....  
U. S. A. DEALER NET.....\$66.75

Triplet lever switching makes possible an exclusive combination of tube testing advantages including maximum circuit flexibility, simplicity of operation and anti-obsolescence design.

1. Thorough test of all tube elements.
2. Individual control of each tube element.
3. New tube test data can be set up without delay.
4. Lever switching is faster and more accurate.
5. No plugging into wrong socket.
6. Minimum number control settings needed.



MODEL 3480

### COMBINATION TUBE TESTER VOLT-OHM-MIL-AMMETER

VOLT-OHM-MIL-AMMETER RANGES:

- D. C. VOLTS: 0-3-12-60-300-1200, at 10,000 Ohms/Volt
  - A. C. VOLTS: 0-3-12-60-300-1200, at 2000 Ohms/Volt
  - D. C. AMPS: 0-12, at 250 M. V.
  - D. C. MILLIAMPS: 0-1.2-12-120, at 250 M. V.
  - OHMS: 0-1000-10,000 (10-100 at center scale)
  - MEGOHMS: 0-1-50 (10,000-500,000 Ohms at center scale)
- OUTPUT: Output Jacks, condenser in series with A. C. ranges.

TUBE TESTER-VOLT-OHM-MIL-AMMETER—A Combination Tester for conclusive tube testing and complete voltage, current and resistance analyses. Tube Tester has a fully-balanced, multi-purpose test circuit for emission, short and open element tests. See Model 3413 for complete details. GOOD-?-BAD tube testing and Volt-Ohm-Mil-Ammeter ranges are easily readable on the 6" RED • DOT Lifetime Guaranteed meter with multi-color scale. Volt-Ohm-Mil-Amp. markings are black on white except A. C. are red and 0-1000 Ohms are green.

COUNTER-PORTABLE Type Case, metal, has highly attractive two-tone "hammered" baked-on enamel finish, 15 1/4" x 11 1/2" x 6 1/2". Detachable hinged cover, strap handle.

Weight: 25 lbs.

MODEL 3480 COMBINATION TESTER.  
U. S. A. DEALER NET.....\$98.75

### POCKET-SIZE VOLT-OHM-MIL-AMMETER

#### RANGES

- D.C. VOLTS: 0-10-50-250-1000-5000, at 1000 Ohms per volt
- A.C. VOLTS: 0-10-50-250-1000-5000, at 1000 Ohms per volt
- D.C. MA.: 0-10-100, at 250 M.V.
- D.C. AMP.: 0-1, at 250 M.V.
- OHMS: 0-3000-300,000 (20-2000 center scale)
- MEGOHM: 0-3 (20,000 Ohm center scale) (Compensated Ohmmeter circuit.)

A New Pocket-Size Volt-Ohm-Mil-Ammeter with these latest specialized features meet your needs for A.C. and D.C. Voltage, Direct Current and Resistance analyses.

Enclosed selector switch of molded construction keeps dirt out. Retains contact alignment permanently. A Triplet design representing the culmination of a quarter-century of switch making experience. UNIT CONSTRUCTION—All resistors, shunts, rectifier and batteries housed in a molded base integral with the switch. Eliminates chance

for shorts. Direct connections. No Cabling. All precision film or wire-wound resistors are mounted in their own compartment—assures greater accuracy.

3" 0-200 Microammeter, 250 M.V., RED • DOT Lifetime guaranteed against defects in materials or workmanship. Red and black markings on a white background. Easy-to-read scale.

Pre-calibrated rectifier unit and batteries easily replaced. One 1.5 Volt Eveready #935 and two 1.5 Volt Eveready #915, or equivalent, self-contained.

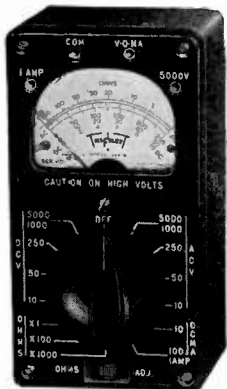
Handy pocket-size, black molded case is completely insulated. Size: 3 1/8" x 5 7/8" x 2 1/8". Leather strap handle. Black molded panel with engraved white markings.

Furnished complete with batteries, 50" test leads and instruction book at an amazingly low price.

Weight: 1 1/2 lbs.  
MODEL 666-R... U.S.A. DEALER... NET \$24.50

#### CARRYING CASE

MODEL 669, black leather, strap handle, snap cover. . . . U.S.A. DEALER NET . . . \$4.75



Model 666-R

# Radio **TRIPOLET** Testers

## SENSITIVE VOLT-OHM-MIL-AMMETER 20,000 OHMS PER VOLT



Model 2405-A

- D. C. VOLTS: 0-10-50-250-500-1000, 20,000 Ohm/Volt
- D. C. AMPS: 0-10, at 250 Millivolt
- D. C. MILLIAMPS: 0-1-10-50-250, at 250 Millivolt
- D. C. MICROAMPS: 0-50, at 250 Millivolt
- A. C. VOLTS: 0-10-50-250-500-1000, 1000 Ohm/Volt
- A. C. AMPS: 0-0.5-1-5-10, at 1 Volt-Amp
- OHM-MEGOHM: 0-4000-40,000 Ohms — 0-4-40 Meg. (Self-contained batteries.)
- OUTPUT: Condenser in series with A. C. Volt ranges
- DECIBELS: -10 to +15, +29, +43, +49, +55. (Reference Level "0" DB at 1.73 V. on 500 Ohm line.)
- CONDENSER TEST: Capacity check of Paper condensers

A perfect combination—ultra sensitive, extra large meter, impressively cased for either shop or portable use. Incorporates the ultimate sensitivity, 20,000 ohms per volt in a conventional meter of extreme accuracy.

6" Meter. RED • DOT Lifetime guarantee. 5 3/4" long scale enables easy reading. Plug-in, pre-calibrated rectifier simplifies replacement. Ruggedly constructed selector switch. "OHMS ADJUST" provides adjustment for all resistance ranges with maximum accuracy. Connections made through low contact resistance banana jacks. "SQUARE LINE" case, 10" x 10" x 5 3/4", tan enamel finish has detachable, hinged cover. Leads and instructions furnished.

Weight: Approx. 11 lbs.  
MODEL 2405-A.....  
U. S. A. DEALER NET.....\$59.75

## HIGH VOLTAGE PROBES

For measuring the high voltage employed in television receivers and in other applications, external probes are available for ranges from 10,000 to 30,000 D. C. Volts for Models 625-NA, 630, 666-HH, 2405-A and 2451. Specify Tester Model when requesting quotations or ordering.

The completely insulated Polystyrene test probe contains the voltage dropping resistors, high stability composition type, protected from moisture with a sealed-in covering of Silicone high voltage insulating compound. An additional safe-guard is the guard-type handle. Each lead consists of a 48-inch high voltage wire with probe at one end and banana plug on the tester end. Probe is 11 3/4" long.

## PORTABLE V-O-MA SHUNTS

Portable, external shunts as high as 120 Amps. are available to extend the current ranges of testers including Models 625-NA, 630, 666-HH, 2405-A and 3480. Shunt must be ordered for the specific tester with which it is to be used because of spacing and millivolt drop. Plug-in type connections are made by plugging shunt into the tester MA terminals. Connections for Portable shunts are made by using 12" leads. Quotations upon request.

### TO EXTEND OHMMETER RANGE MODEL 666-HH

A plug-in ohmmeter multiplier for Model 666-HH. Compact tubular insulator with resistor, battery and plug. Will extend Model 666-HH Ohmmeter range to 4 megohms.  
No. 9467.....DEALER NET \$3.85

## APPLIANCE TESTERS

### VOLTS - AMPS - WATTS

ELECTRICAL CIRCUIT ANALYZER of new advanced design for measuring the power wattage, current consumption, and line voltage of all household appliances and small motors under actual operating conditions. Just the tester for watt, current and volt analyses of electric refrigerators, washers, radios, ironers and other appliances, including ranges operating on 220-Volt single phase three-wire and three phase three-wire systems. Power used by the smallest appliance is readily checked on the extremely low scale

range of 0-20 watts (fused to prevent damage from accidental overload). All switches and leads are ample to carry full load continuously.

### RANGES

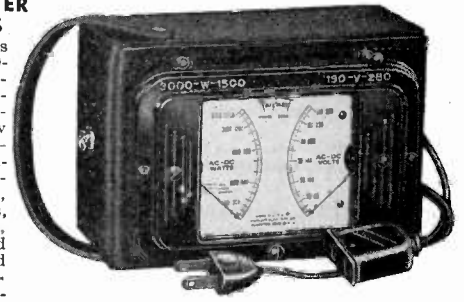
- A. C. WATTS: Single-Phase, 130 V.—0-10-20-250-500-1000-2000
- Single-Phase, 260 V.—0-20-40-500-1000-2000-4000
- Three-Phase, 260 V.—0-80-2000-4000-8000
- A. C. CURRENT: 0-0.13-0.26-3.25-6.5-13-26 Amps
- A. C.-D. C. VOLTS: 0-130-260

Model 666 Meter, Electro-dynamometer type, RED • DOT Lifetime Guarantee, with 5.6" scale. "SQUARE LINE" metal case, 10" x 10" x 5 3/4", finished in tan "hammered" enamel with brown markings on the panel. Hinged, detachable cover has compartment for accessories and leads. One set 5 ft. (Two-Wire) leads with male plug at one end and terminals at other end for connection to tester binding posts; one set 2 1/2 ft. leads with dual socket at one end and terminals at other end for connection to tester binding posts.

Weight: Approx. 11 lbs.  
MODEL 2470.....U. S. A. DEALER NET \$76.75

### DUAL-METER TESTERS

Models 2002 and 2000-A are real helpers for installations and servicing. Show power consumption of industrial equipment, radios, electric ranges, refrigerators, washers and other household appliances under actual running conditions.



Model 2002

on either D. C. or A. C. between 25 and 133 cycles. Checks Watts and Volts simultaneously! Shows if voltage remains within limits under operating loads. Simple operation, clearly marked switches, easy reading long Twin meter scales. Leather carrying case, 6 1/2" x 4 1/2" x 3 1/4", with strap handle, has flap cover to protect meter which is fixed in the case. Space for leads. Leather case eliminates possibility of scratching enamel appliance finishes.

Weight: 2 lbs.

MODEL 2002.....U. S. A. DEALER NET \$35.75  
Ranges: 0-1500-3000 Watts A. C.-D. C. at 10 Amp. normal, 20 Amp. max., 40 Amp. momentary; 0-130-260 A. C.-D. C. Volts.

MODEL 2000-A.....U. S. A. DEALER NET \$34.75  
Ranges: 0-750-1500 Watts A. C.-D. C. at 5 Amp. normal, 10 Amp. max., 20 Amp. momentary; 0-130-260 A. C.-D. C. Volts.

Models 2005-2006 — designed for those preferring Voltmeter-Ammeter method of testing household appliances and industrial applications. Simultaneous line voltage and current drain readings.

MODEL 2005.....U. S. A. DEALER NET \$33.00  
Ranges: 0-10 A. C.-D. C. Amp.; 0-130-260 A. C.-D. C. Volts.

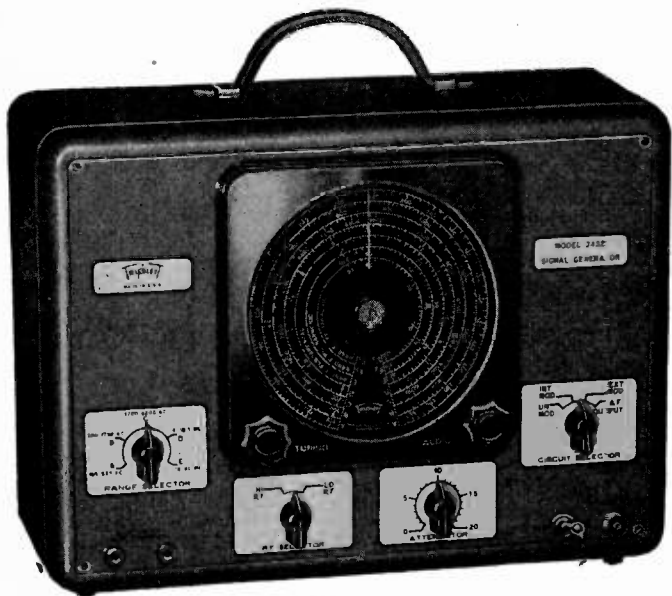
MODEL 2006.....U. S. A. DEALER NET \$33.00  
Ranges: 0-25 A. C.-D. C. Amp.; 0-130-260 A. C.-D. C. Volts.

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# Radio



# Testers



Model 3432

**RANGES**

- |                |                     |
|----------------|---------------------|
| A—165-525 KC   | E—18-40 MC          |
| B—500-1750 KC  | Harmonics to 120 MC |
| C—1700-6200 KC | E2—36-50 MC         |
| D—6-18.5 MC    | E3—54-120 MC        |

## TEST OSCILLATOR

A wide-range oscillator with uniformly illuminated dial. Seven long scales with widely separated divisions easily read, have five fundamental ranges—165 KC to 40 MC, and two harmonic ranges directly calibrated 36 to 120 MC.

Unique new feature is the brightly illuminated dial providing distinct illumination of scale markings without the least possibility of glare. Lighting also provides an "ON-OFF" indicator.

The dial is big (330°) with seven scales quickly readable at a glance. It has 10 to 1 ratio vernier tuning for ease of adjustment.

**RANGE SELECTOR** — 5 position follow-up coil switching with complete shielding.

**R. F. SELECTOR** — Provides High and Low R. F. Output.

**OUTPUT ATTENUATOR** — Provides fine control of R. F. Output to Coaxial output cable connector.

**CIRCUIT SELECTOR** — Provides for internally modulated signal (Variable 0 to 100% at 400 cycles). Variable amplitude of external modulation 40 to 15,000 cycles, unmodulated signal or variable audio 0-10 Volts at 400 cycle.

**DOUBLE SHIELDING**—All R. F. and audio circuits are double shielded with copper plated steel shields.

Metal case, 15½"×11½"×6¼", with tan enamel finish. Has leather strap handle for ease in carrying. Power: 115 volt, 50-60 cycle A. C. (electrostatic shielded transformer).

Weight: 14½ lbs.

MODEL 3432.....U. S. A. DEALER NET \$69.50

## A.M.-F.M. SIGNAL GENERATOR

FM-AM Signal Generator with frequency coverage from 100 KC to 120 MC in 10 bands; plus additional 50 MC from fixed oscillator giving fundamental coverage continuously variable to 170 MC.

**OUTPUT** — 1 volt on low ranges from 100 KC to 20 MC and approximately 250,000 Microvolts on the high ranges.

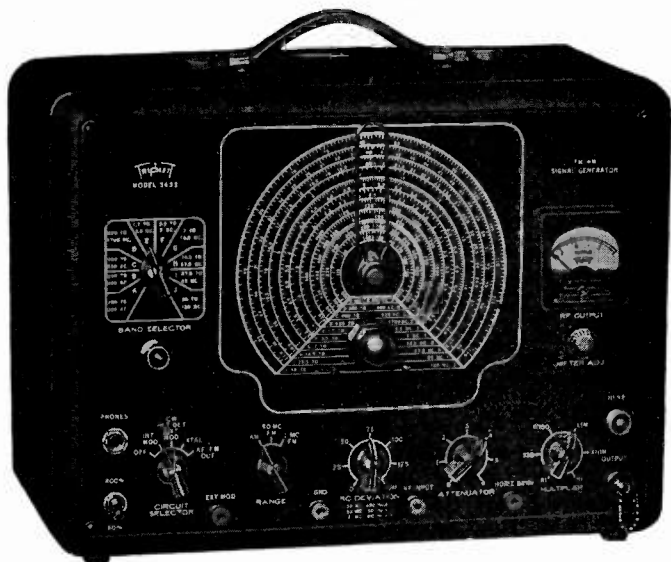
**SWEEP WIDTH VARIABLE IN THREE RANGES**  
60KC (+30 KC)    300KC (+150KC)    600KC (+300KC)

Other outstanding engineering features include: (1)—Deviation control of a fixed frequency reactance modulated oscillator. (2)—Output Meter for measuring relative R. F. output of generator. (3)—Double copper plated steel shielding throughout greatly minimizes R. F. leakage. (4)—Co-axial cable output lead with shielded impedance coupler for direct capacitance or balanced doublet connection. (5)—110 Volt A. C. line filter prevents leakage through power supply. (6)—Ladder attenuator with coarse and fine R. F. output adjustment. (7)—High R. F. Voltage output jack. (8)—High A. F. output available. (9)—Built-in provision for crystal oscillator calibration reference. Crystal not supplied. (10)—Air trimmer capacitor and permeability adjusted oscillator coils. (11)—Voltage regulated power supply for oscillator stability. (12)—Heterodyne Detector for frequency measurement. (13)—External A. M. modulation may be used. (14)—Attractive and easily read dial. (15)—Horizontal synchronized sweep voltage available. (16)—Best available components used throughout.

Metal case, 15½"×11½"×8¼", finished in lustrous black suede enamel with red and white panel markings. Power: 115 Volt, 50-60 cycle A. C. Weight: 25 lbs.

MODEL 3433.....U. S. A. DEALER NET \$173.25

ALL PRICES ARE SUBJECT TO CHANGE — ALL MODELS SUBJECT TO REVISION



Model 3433

**10 VARIABLE FREQUENCY BANDS**

- |               |                |
|---------------|----------------|
| A—100-200 KC  | F—3.5-7 MC     |
| B—200-400 KC  | G—7-14.5 MC    |
| C—400-820 KC  | H—14.5-27.5 MC |
| D—820-1700 KC | I—27.5-55 MC   |
| E—1.7-3.5 MC  | J—55-120 MC    |

(170 MC output available by adding the 50 MC fixed oscillator signal to 120 MC signal.)



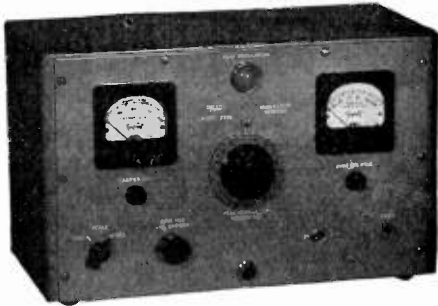
# Radio



# Testers

## RADIO AMATEUR EQUIPMENT

### MODULATION MONITOR



Model 3296

With this new MODULATION MONITOR for radio amateur, police and Marine radiophone use, you've solved the problem of getting maximum efficiency from your transmitter. Four separate circuits for measuring amplitude modulation: (1) Percent Modulation (average). (2) Peak Flash Percent Modulation. (3) Carrier Shift. (4) Audio Output for Headphone. Unique advantages of this new model include the following: Peak Indicator may be preset for any percent of modulation from 20-120, and provides instantaneous flash when predetermined modulation level is reached. Percent modulation meter provides rapid up and slow down swing. Plug into your A. C. line—make simple coupling to the transmitter output and the monitor is ready for operation. R. F. and A. F. stages are isolated and separated by ample shielding. Tuned input circuit is coupled to R. F. source by a vario-coupler. R. F. power requirements are small.

TUNING RANGES: 1550-2950 KC (Police Band) 14,000-14,400 KC  
 3500-4000 KC 28,000-30,000 KC  
 7000-7300 KC Audio Frequency  
 60-10,000 CPS

CASE: Metal, with dark gray "hammered" enamel finish; overall dimensions: 15½"X9"X8". Weight: 20 lbs. Power: 115 Volt, 50-60 cycle A. C.

MODEL 3296.....U. S. A. DEALER NET \$109.75

### VU METER

### DB METER

Volume Unit and Decibel Meters are used to measure sound or noise levels in amplifiers for Public Address, Theatres, Broadcasting Studios, Broadcasting Static Equipment, etc.

VU meters are used for volume level measurements — including broadcast monitoring. Internal impedance 3900 Ohms. Steady state reference 1 Milliwatt. For 600 Ohm line. 0-100% scale also —20 to +3 VU. Specify Type "A" or "B" scale.

MODEL 426 VU.....\$23.10  
 MODEL 426 (Illuminated). 25.10

DB Meter permits the operator to make instant adjustments to prevent sound blasting or distortion. Up 6, down 10 DB. Zero DB at 1.73 volt, 500 ohms, 6 milliwatts. Standard damping furnished unless highly damped is specified.

426 DB (Dealer Net) \$15.20  
 321-T, 327-T " " 13.60

### HIGH RANGE D.C. VOLTMETERS FOR AMATEURS

Designed particularly for radio amateurs. High range 3" D. C. Voltmeters—1000 ohms per volt. Provided with special external metalized multipliers mounted on bakelite strip. Specify this type when ordering, or standard voltmeters will be furnished. Available 3" case, Models 321-T, 327-T:

Range	Price	Range	Price
0-1000.....	\$11.90	0-4000.....	\$11.90
0-2000.....	11.90	0-5000.....	12.80
0-3000.....	11.90		

### FREQUENCY METER

A new band-switching, tuned Absorption type Frequency Meter covering five amateur bands. Incorporates the new germanian crystal and a D. C. Milliammeter indicator for greater sensitivity. Direct calibration on panel—no coils to change; switching permits instantaneous band change. Audio jack is provided for monitoring of phone signals—another new feature. Fully shielded. Calibration is in megacycles in the following bands: 3.5-4 MC; 7-7.3 MC; 14-14.4 MC; 20-21.5 MC; 28-30 MC. Coil is removable and other coils may be substituted for special bands, if desired.

USEFUL FOR CHECKING: (1) Fundamental frequency of oscillating circuits. (2) Presence, order and amplitude of harmonics. (3) For parasitic oscillations. (4) Neutralization of R. F. amplifiers. (5) Standing wave ratio on transmission lines. (6) Presence of undesirable or small quantities of R. F. (7) Monitoring of phone signals.

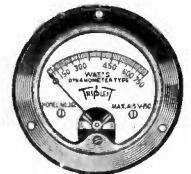
A fully shielded unit of compact pocket size. Overall height, including coil, 7½"; width 2½"; depth 2¼". Attractive gray "hammered" enamel finish with black trim.  
 MODEL 3256.....U. S. A. DEALER NET \$16.25



Model 3256

### WATTMETERS — ELECTRODYNAMOMETER

These instruments can be used on single phase A. C. or D. C. as Wattmeters. On special order they can be made up as voltmeters or ammeters. Instruments are self-contained to 300 Volts—10 Amperes. Over that external connection can be made. For use on frequencies up to 133 cycles per second. Available in three-inch model 361. Case dimensions same as 321-T, except for depth, 2" back of the flange (2½" over studs). Wattmeters can be combined in the Triplet Twin case with a voltmeter or Ammeter. Accuracy within ±2%. Standard ranges as follows:



#### MODEL 361 — SINGLE PHASE

Range Watts	Normal Voltage	Normal Amps.	Sc. Div.	Net Price
0-75	150	1 ½	75	16.00
0-150	150	1	75	16.00
0-300	150	2	60	16.00
0-750	150	5	75	16.00
0-1500	150	10	75	16.00
0-150	300	½	75	17.60
0-300	300	1	60	17.60
0-600	300	2	60	17.60
0-1500	300	5	75	17.60
0-3000	300	10	60	17.60

#### DOUBLE RANGE WATTMETERS (Double Voltage Limits Only)

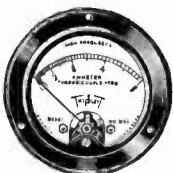
0-75-150	150-300	½	75	21.60
0-150-300	150-300	1	75	21.60
0-300-600	150-300	2	60	21.60
0-750-1500	150-300	5	75	21.60
0-1500-3000	150-300	10	75	23.40

### SENSITIVE RELAYS

Highly sensitive Triplet relays are of the D'Arsonval Moving Coil type, carefully designed to give dependable, satisfactory performance. Since relays cover such a wide field and most of them are made to special order, no standard models are listed. Each application should be accompanied with information specifying maximum and minimum currents and voltages which will pass through relay coil and contact points, etc.

### R.F. AMMETERS

Triplet R. F. Ammeters are the same case size and appearance as corresponding D. C. Models. Internal couples normally furnished at prices shown. If external couples are required, please specify on order, adding \$3.70 net to price of instruments listed below. External couples only (less meter), with 2 ft. leads are \$4.70 net each.



Range	Approx. Res.	Models 241-T, 243-T	Models 242-T, 247-T	Models 341-T, 347-T	Models 342-T, 442, 446	Models 441, 441-A, 447, 541	Model 746
0.5 Amps.....	.93	\$ 6.90	\$ 7.90	\$ 9.50	\$10.30	\$17.30	\$17.30
0-1 Amps.....	.35	\$ 6.90	\$ 7.90	\$ 9.50	\$10.30	\$17.30	\$17.30
0-1.5 Amps.....	.21	\$ 6.90	\$ 7.90	\$ 9.50	\$10.30	\$17.30	\$17.30
0-2.5 Amps.....	.13	\$ 6.90	\$ 7.90	\$ 9.50	\$10.30	\$17.30	\$17.30
0-5 Amps.....	.06	\$ 6.90	\$ 7.90	\$ 9.50	\$10.30	\$17.30	\$17.30
0-10 Amps.....	.03	\$ 6.90	\$ 7.90	\$ 9.50	\$10.30	\$17.30	\$17.30

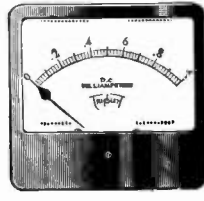
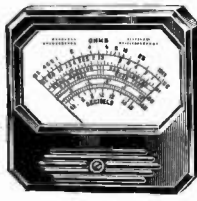
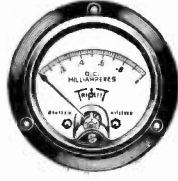
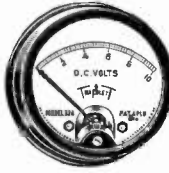
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# Measuring



# Instruments



221-T, 321-T D. C.  
231-S, 331-S A. C.

227-T, 327-T D. C.  
237-T, 337-T A. C.

324, 524 D. C.  
334, 534 A. C.

422, 521 D. C.  
432, 531 A. C.

426 D. C., 436 A. C.

636, 736 A. C.  
626, 726 D. C.

Models		Scale Lengths		Flange	Body Dia.	Body Depth		Material	Case (Mounting)	
D. C.	A. C.	D. C.	A. C.			D. C.	A. C.		Type	Style
221-T	331-S	1.76"	1.58"	2 1/4" Dia.	2 3/8"	1 1/8"	1 1/8"	Molded	Flush	Rim
222-T	332-S	1.76"	1.58"	2 3/8" Dia.	2 3/8"	1 1/8"	1 1/8"	Metal*	Flush	Rim
223-T	333-S	1.76"	1.58"	2 3/8" Dia.	2 3/8"	1 1/8"	1 1/8"	Metal*	Flush	Rear Clamp
227-T	337-S	1.76"	1.58"	2 3/8" Sq.	2 3/8"	1 1/8"	1 1/8"	Molded	Flush	Rear Screws
321-T	331-S	2.49"	2.22"	3 1/2" Dia.	2 3/4"	1 3/8"	1 3/8"	Molded	Flush	Rim
322	332	2.49"	2.22"	3 1/2" Dia.	2 3/4"	1 3/8"	1 3/8"	Metal*	Projection	Rear Studs
324	334	2.49"	2.22"	3 1/2" Dia.	2 3/4"	1 3/8"	1 3/8"	Molded	Flush	Rear Screws
327-T	337-S	2.49"	2.22"	3 1/2" Sq.	2 3/4"	1 3/8"	1 3/8"	Molded	Flush	Rim
421	431	3.11"	2.78"	4 1/4" x 3 1/2"	2 3/4"	1 3/8"	1 3/8"	Molded	Flush	Rim
421-A	431-A	3.11"	2.78"	3 1/2" x 4"	2 3/4"	1 3/8"	1 3/8"	Molded	Flush	Rear Clamp
422	432	3.11"	2.78"	4 3/8" Dia.	3 3/8"	1 3/8"	1 3/8"	Molded	Flush	Rim
426	436	3.11"	2.78"	4 1/4" x 4"	3 3/8"	1 3/8"	1 3/8"	Molded	Flush	Rear Screws
427	437	3.73"	3.4"	4 1/4" x 4 1/2"	3 3/8"	1 3/8"	1 3/8"	Molded	Flush	Rear Screws
521	531	3.11"	2.78"	5 3/4" Dia.	4 3/8"	1 3/8"	1 3/8"	Molded	Flush	Rim
524	534	3.11"	2.78"	4 3/8" Dia.	4 3/8"	1 3/8"	1 3/8"	Molded	Projection	Rear Studs
626	636	5.6"	5.3"	6" x 5 3/8"	3 1/2"	1 3/8"	1 3/8"	Molded	Flush	Rear Screws
726	736	6"	5.75"	7 3/8" x 6 3/8"	3 1/2"	1 3/8"	1 3/8"	Molded	Flush	Rear Screws

\*Molded base.

### D.C. VOLTMETERS — 125 Ohms per Volt

Range	Code	Models 221-T, 222-T, 223-T, 227-T	Models 321-T, 322, 324, 327-T	Models 421, 421-A, 422, 426	Models 427, 521, 524	Model 626	Model 726
0-5	TRCXK	\$ 5.80	\$ 6.80	\$ 8.40	\$ 9.20	\$ 10.30	\$ 16.20
0-10	TRDWD	5.80	6.80	8.40	9.20	10.30	16.20
0-25	TRFUF	5.80	6.80	8.40	9.20	10.30	16.20
0-50	TRGTG	5.80	6.80	8.40	9.20	10.30	16.20
0-100	TRSHH	5.80	6.80	8.40	9.20	10.30	16.20
0-150	TRIRI	5.80	6.80	8.40	9.20	10.30	16.20
0-300	TRLLO	7.60	8.60	10.20	11.00	12.10	18.00

### D.C. VOLTMETERS — 1000 Ohms per Volt

Range	Code	Models 221-T, 222-T, 223-T, 227-T	Models 321-T, 322, 324, 327-T	Models 421, 421-A, 422, 426	Models 427, 521, 524	Model 626	Model 726
0-10	TAIGA	\$ 8.40	\$ 9.40	\$ 11.00	\$ 11.80	\$ 12.90	\$ 18.80
0-150	TAINE	8.70	9.70	11.30	12.10	13.20	19.10
0-300	TRULL	10.80	11.80	13.40	14.20	15.30	21.20
0-500	TURAL	12.20†	13.20†	14.80†	15.60†	16.70†	22.60†
0-1000	TURIN	25.20*	26.20*	27.80*	28.60*	29.70*	35.60*

If sensitivity is not specified on orders for D. C. Voltmeters, 125 Ohms is normally supplied. †Indicates instruments supplied with external wire-wound series resistors at prices shown. \*Supplied with external resistor boxes at prices shown above. ‡All other instruments are self-contained. Double-range panel voltmeters available on special order. Prices on request.

### D.C. MICROAMMETERS

Range	Approx. Resis.	Code	Models 221-T, 222-T, 223-T, 227-T	Models 321-T, 322, 324, 327-T	Models 421, 421-A, 422, 426	Models 427, 521, 524	Model 626	Model 726
0-50	1770	TALBE	\$ 16.99	\$ 17.90	\$ 19.50	\$ 20.30	\$ 21.40	\$ 27.30
0-100	900	TRARA	15.00	16.00	17.60	18.40	19.50	25.40
0-200	360	TARDY	11.80	12.80	14.40	15.20	16.30	22.20
0-500	156	TWIRL	8.10	9.10	10.70	11.50	12.60	18.50

### D.C. MILLIAMMETERS

Range	Approx. Resis.	Code	Models 221-T, 222-T, 223-T, 227-T	Models 321-T, 322, 324, 327-T	Models 421, 421-A, 422, 426	Models 427, 521, 524	Model 626	Model 726
0-1	55	TRAAN	\$ 6.90	\$ 7.90	\$ 9.50	\$ 10.30	\$ 11.40	\$ 17.30
0-15	6.6	TRFFS	5.80	6.80	8.40	9.20	10.30	16.20
0-25	4	TRGGT	5.80	6.80	8.40	9.20	10.30	16.20
0-50	2	TRHHU	5.80	6.80	8.40	9.20	10.30	16.20
0-100	1	TRJJV	5.80	6.80	8.40	9.20	10.30	16.20
0-150	0.6	TRKXK	5.80	6.80	8.40	9.20	10.30	16.20
0-200	0.5	TRLLY	5.80	6.80	8.40	9.20	10.30	16.20
0-250	0.4	TRMMZ	5.80	6.80	8.40	9.20	10.30	16.20
0-300	0.33	TRNNA	5.80	6.80	8.40	9.20	10.30	16.20
0-500	0.2	TRROB	5.80	6.80	8.40	9.20	10.30	16.20

### D.C. AMMETERS

Range	Approx. Resis.	Code	Models 221-T, 222-T, 223-T, 227-T	Models 321-T, 322, 324, 327-T	Models 421, 421-A, 422, 426	Models 427, 521, 524	Model 626	Model 726
0-1	0.05	TALUS	\$ 5.80	\$ 6.80	\$ 8.40	\$ 9.20	\$ 10.30	\$ 16.20
0-10	0.005	TROCK	5.80	6.80	8.40	9.20	10.30	16.20
0-25	0.002	TANGS	5.80	6.80	8.40	9.20	10.30	16.20
0-50	0.0016	TANGO	5.80	6.80	8.40	9.20	10.30	16.20

Self-contained up to and including 50 Amperes. Shunts 75 Amperes (50 M.V.) and higher are switchboard type with 5 ft. leads. Prices on request.

### A.C. VOLTMETERS

Range	Approx. Ohms per Volt	Code	Models 231-S, 232-S, 233-S, 237-S	Models 331-S, 332-S, 334, 337-S	Model 431, 431-A, 432, 436	Models 437, 531, 534	Model 636	Model 736
0-5	4	TERSE	\$ 5.80	\$ 6.80	\$ 8.40	\$ 9.20	\$ 10.30	\$ 16.20
0-10	10	TRUMP	5.80	6.80	8.40	9.20	10.30	16.20
0-150	125	TOYTE	6.90	7.90	9.50	10.30	11.40	17.30
0-300	144	TWEAK	8.50	9.50	11.10	11.90	13.00	18.90

### A.C. AMMETERS

Range	Approx. Resis.	Code	Models 231-S, 232-S, 233-S, 237-S	Models 331-S, 332-S, 334, 337-S	Model 431, 431-A, 432, 436	Models 437, 531, 534	Model 636	Model 736
0-3	0.2	TULIP	\$ 5.80	\$ 6.80	\$ 8.40	\$ 9.20	\$ 10.30	\$ 16.20
0-5	0.1	TEUCH	5.80	6.80	8.40	9.20	10.30	16.20
0-10	0.05	TEHEE	5.80	6.80	8.40	9.20	10.30	16.20
0-25	0.01	TELEO	5.80	6.80	8.40	9.20	10.30	16.20

### A.C. MILLIAMMETERS

Range	Approx. Resis.	Code	Models 231-S, 232-S, 233-S, 237-S	Models 331-S, 332-S, 334, 337-S	Model 431, 431-A, 432, 436	Models 437, 531, 534	Model 636	Model 736
0-10	2670	TEETH	\$ 6.90	\$ 7.90	\$ 9.50	\$ 10.30	\$ 11.40	\$ 17.30
0-15	1150	TOUSY	5.80	6.80	8.40	9.20	10.30	16.20
0-50	82	TEMPT	5.80	6.80	8.40	9.20	10.30	16.20
0-100	21	THARM	5.80	6.80	8.40	9.20	10.30	16.20
0-200	6.7	TRFFT	5.80	6.80	8.40	9.20	10.30	16.20
0-500	0.8	THEOS	5.80	6.80	8.40	9.20	10.30	16.20

ALL PRICES ARE SUBJECT TO CHANGE — ALL MODELS SUBJECT TO REVISION — OTHER RANGES AVAILABLE

# Radio

# TRIPLET

# Testers



Model 3434

### A FEW REASONS YOU'LL WANT MODEL 3434

- ★ Continuously variable sweep width from 100 KC to 12 MC.
- ★ Main frequency dial marked with channels and frequencies.
- ★ Variable Marker provides continuous tuning over all present TV Video and Sound IFs. Mirrored dial.
- ★ Absorption type Marker in addition to pip type.
- ★ Straight-line frequency calibrated dials.

### NEW 5" TV-FM OSCILLOSCOPE TAILORED FOR TELEVISION

#### VERTICAL AMPLIFIER

Frequency Range—Flat within  $\pm 20\%$ .  
 20 Cycles to 1 MC with deflection sensitivity of .1 RMS Volts/Inch  
 20 Cycles to 100 KC with deflection sensitivity of .02 RMS Volts/Inch

#### HORIZONTAL AMPLIFIER

Frequency Range—Flat within  $\pm 20\%$  from 20 Cycles to 250 KC.  
 Deflection sensitivity—.5 RMS Volts/Inch

INPUT IMPEDANCE—Vertical Amplifier—2 Megohms in parallel with 25 MMF.  
 Horizontal Amplifier—2 Megohms in parallel with 25 MMF.

#### MAXIMUM INPUT POTENTIAL

Vertical Amplifier—400 Volts max. DC or Peak.  
 Horizontal Amplifier—400 Volts max. DC or Peak.

LINEAR TIME BASE—10 c.p.s. to 60 KC.

INTENSITY MODULATION—Return trace eliminator.

SYNCHRONIZING SIGNAL—.03 RMS Volt required.

CALIBRATING METER—Calibrated in Peak-to-Peak Volts: 0-3, 0-10.

PHASE HORIZONTAL SWEEP—Phase controlled Sweep voltage of line frequency.

VERTICAL PATTERN—Provides selection of polarity to be observed.

ATTENUATION—Coarse and fine control over Vertical Input. Fine control over Horizontal Input.

SIGNAL TRACING feature provided by Headphone Output. Enables detection of hum modulation, spurious interference, etc.

ESCUTCHEON—Telescoping to provide shaded Cathode Ray Tube. Large 5" Cathode Ray Tube.

SHIELDING—Copper plated steel construction throughout. Cathode Ray tube adequately shielded from stray fields.

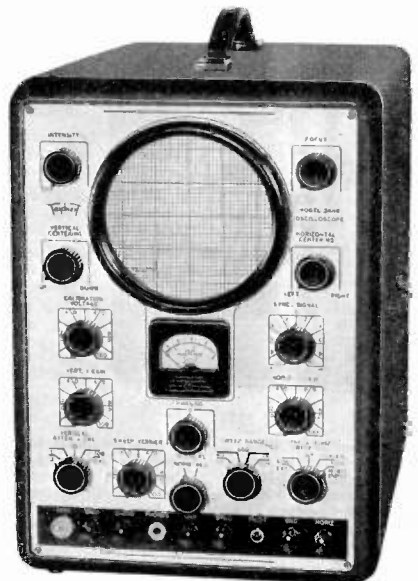
CASE—Metal, with black suede enamel finish,  $15\frac{1}{2}$ " x  $11\frac{1}{2}$ " x 16". Leather handle. Copper plated feet for improved grounding.

PANEL—Black, red and white characters etched on aluminum.

ACCESSORIES—Co-Axial lead for Vertical Input. Rubber covered leads for Sync, Horiz. Input and Ground. Heavy braid grounding strap.

POWER—105-115 Volts, 50-60 Cycles, 80 Watts.

WEIGHT—20 lbs.



Model 3140

#### SPECIALIZED FEATURES:

- ★ Wide Frequency Range: 20 Cycles to 1 MC.
- ★ Provision for changing polarity to vertical input amplifiers—keeps wave form on Cathode Ray tube showing in conventional manner. (Exclusive Trip-lett feature!)
- ★ Calibrated meter for comparison voltage measurements.
- ★ Return trace eliminator.

### A NEW TV-FM SWEEP SIGNAL GENERATOR WITH BUILT-IN MARKERS

#### FREQUENCY COVERAGE

Sweep Center Frequency: Range 1—0-60 MC  
 Range 2—60-120 MC  
 Range 3—120-240 MC

Sweep Width: .1-12 MC  
 (Continuously Variable)

Marker Frequency:  
 19.5-40 MC (Fundamental)  
 39-240 MC (Harmonic)

Crystal Frequency: To 20 MC (Fundamental)  
 Can be used to produce Harmonics to 216 MC. (Crystals not furnished.)

Modulation: 400 Cycles on both Crystal and Marker frequencies.

Audio: 400 Cycles.

Model 3434 provides a complete service laboratory for TV-FM servicing and other electronic requirements. No gaps in frequency. Continuous tuning over all TV-FM bands. Provisions for simultaneous presentation of two Markers. Audio output for quick check on video and sound amplifiers. Ladder type attenuator for coarse and fine output adjustment. Shielded. Copper plated steel construction throughout. Modulation of Markers to facilitate alignment of traps, etc. Line filter. Phase controlled sweep voltage for scope horizontal input. Stability increased by ceramic trimmers, zero temperature coefficient capacitors, silver plated coils, regulated power supply and rugged construction.

Attractive steel case, black enamel suede finish.  $15\frac{1}{2}$ " x  $11\frac{1}{2}$ " x  $8\frac{1}{4}$ ". Copper plated feet for improved grounding. Black, white and red etched markings on aluminum panel.

Accessories—Co-Axial cables for low-loss RF output. Heavy braid strap. Rubber covered leads for audio and sync output and additional ground.

Power: 105-115 Volt, 50-60 Cycle, 55 Watts.  
 Weight: 23 lbs.

MODEL 3434—U.S.A. DEALER NET \$149.50

# Radio



# Testers

## QUALITY-ENGINEERED, LOW COST TV-FM SWEEP SIGNAL GENERATOR

MODEL 3435 answers your needs for a quality engineered TV-FM Sweep Signal Generator at an unusually low price. Designed particularly for the service engineer who has his own provision for an external Marker (any good AM Generator).

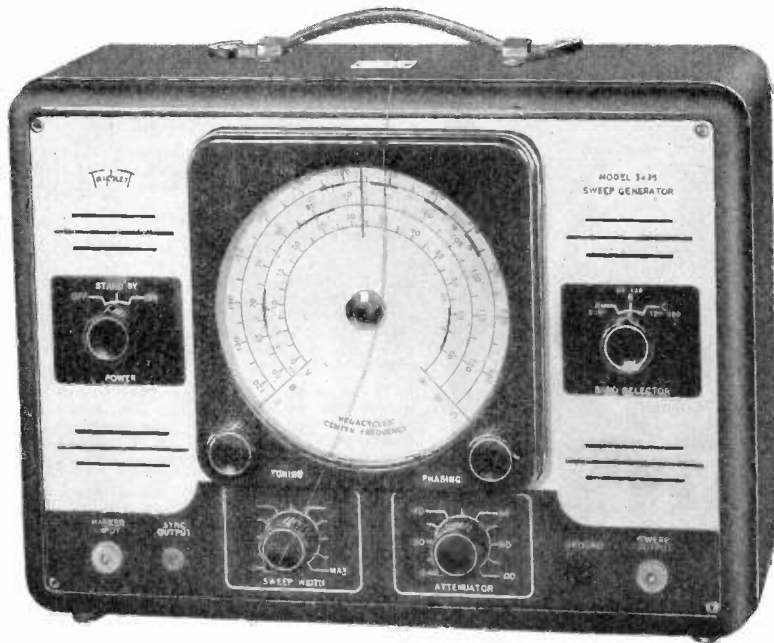
Buying this sensational new Model will enable you to materially reduce your investment in a Sweep Signal Generator, if you have a good AM Signal Generator to use as the Marker. Connection of external Marker is made simply and quickly through a panel connector. If you do want an external Marker see Triplet Models 1235 Variable Marker or 1236 Crystal Marker.

Model 3435 provides continuous range coverage to 240 MC for all TV Carrier and IF frequencies. No gaps in frequency. Continuous tuning is provided over all TV-FM bands. Continuously variable sweep width control. Sweep at any width between .1 to 12 MC. Phase controlled sweep voltage for scope horizontal input. Main frequency dial marked with channels as well as frequencies. Large and easy to read. Standby switch for temporary silencing of Generator during other work on equipment under test. Shielding and wiring designed for good control over output. Copper plated steel construction throughout. Static shielded power transformer. Miniature tubes used for high frequency circuits. Stability increased by use of ceramic trimmers, zero temperature coefficient capacitors, silver plated coils, and rugged construction.

Metal case with black suede enamel finish. 15 1/2" x 11 1/2" x 6 1/4". Leather handle. Copper plated feet for improved grounding when working over metal work bench top. Panel has black, white and red characters etched on aluminum.

Accessories—Co-Axial cables for low-loss RF output. Heavy braid ground strap. Rubber covered leads for Sync output and additional ground.

Power—105-115 Volts. 50-60 Cycles, 25 Watts. Wt.: 15 lbs.  
MODEL 3435—U.S.A. DEALER NET \$99.50



### Model 3435 FREQUENCY COVERAGE

- Sweep Center Frequency:  
 Range 1— 0- 60 MC (Fundamental)  
 Range 2— 60-120 MC "  
 Range 3—120-240 MC (Harmonic)  
 Sweep Width: 0-12 MC (Continuously Variable)

## ABSORPTION TV-IF MARKER



Model 1235

Frequency Coverage:  
10 to 50 MC in two bands.

Triplet first to provide:  
Control over amplitude of Marker dip.

Standby feature. Removed from circuit by merely turning switch.

Other special features:  
May be used with any type Sweep Generator.

Two tuning ranges providing complete coverage of all present TV-IF frequencies and ample provision for the future.

Designed as companion unit for 3435 Sweep Generator.

Although designed as a companion unit for Triplet Model 3435 Sweep Signal Generator, it can be used with any Sweep Generator as an external Marker. There are no complications in use, for connection is made quickly and easily through a panel connector. A standby switch is provided for temporary silencing of Generator during other work on equipment under test. Attenuation—continuously variable from 0 to maximum of Marker dip.

Copper plated steel construction throughout. Large 4" dial has two easy-to-read scales etched on the dial.

Metal case, with black suede enamel finish, 7 7/8" x 6 5/8" x 4 1/2". Metal handle. Copper plated feet for improved grounding when working over metal work bench top. Panel is black and red etched on aluminum.

Accessories—Co-Axial cable for low-loss connection to Sweep Generator. Coaxial cable for connection to test setup.

Power: None required. Weight: 4 lbs.  
MODEL 1235 . . . . . U.S.A. DEALER NET . . . . . \$24.50

## NEW CRYSTAL MARKER

Frequency Coverage:  
 Up through 19 MC on crystal (fundamentals)  
 Up through 216 MC on crystal (harmonics)  
 (Crystals not included.)  
 Model 1236 provides Marker frequencies of crystal controlled accuracy for TV & FM, IF or RF requirements. By purchasing ONLY those crystals needed for a particular TV service area and the most-used IF frequencies, this new unit provides utmost Marker accuracy and offers a speedy selection of the desired crystal-controlled signal.

This Marker saves plenty of time in checking band-pass characteristics of curves—simply throw the switch to the desired crystal—eliminating delays resulting from constant tuning and retuning required in the use of variable markers. Signals for the most accurate and fastest means of aligning local oscillators in TV receivers and many other applications. When using a 1 MC crystal, Model 1236 becomes a standard for checking other signal generators or receivers.

Designed as a companion unit to Triplet 3435, it receives its power by plugging into a panel jack in the Sweep Generator.

Attenuation—Low impedance single control T-pad attenuator, continuously variable. Shielding—Copper plated steel construction throughout. Stability—Increased by use of latest high-frequency techniques.

Metal case, black suede enamel finish, 7 7/8" x 6 5/8" x 4 1/2". Metal handle. Copper plated feet. Black, red and aluminum etched panel.

Accessories—Coaxial cable for low-loss connection to Sweep Generator.

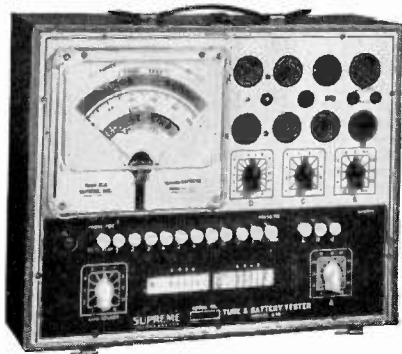
WEIGHT: 3 3/4 lbs.  
MODEL 1236 . . . . . U.S.A. DEALER NET . . . . . \$19.50



Model 1236

# SUPREME INSTRUMENTS

## Newest Engineering Developments



**MODEL 600**  
**TUBE AND SET TESTER**



**MODEL 660**  
**DELUXE 5" OSCILLOSCOPE**  
**FOR**  
**TELEVISION**

Supreme's Time Tested Emission Tube Tester with all Multi-meter functions—Battery Tester (including the 67.5 volt). Truly a portable laboratory.

Sockets for all tubes (including nine-pin) and a spare for the new one yet to be developed. You'll enjoy using this instrument long after others are obsolete and discarded.

**DESCRIPTION—Meter—**7" Clear Plastic—NO GLASS to break. Over 6" of calibrated scale plus mirrored arc for accurate readings. Supreme built rugged meters can "Take It." Flexible—Supreme's patented Filament Return selector switch insures only one socket for each type tube. This one feature guards against obsolescence. Roll Chart—Illuminated—double width—ample room for all tube listings. No binding—plus one year free tube setting service. Multi-meter Ranges—Operate at the touch of a button—No roaming test leads. Case—Metal in beautiful Hammerloid finish with removable cover, new type leather carrying strap.

**SPECIFICATIONS—DC Volts—**7 ranges of 0/5/10/50/250/500/1000/2500 volts. Lowest reading of .1 volt. All ranges 1000 ohms per volt. Push-button selection of ranges. **AC Volts—**6 ranges of 0/10/50/250/500/1000/2500 volts. Rectifier guaranteed as any other part. Double bridge circuit affords maximum of scale linearity and rectifier protection. Circuit temperature compensated to correct rectifier reading over wide range of temperatures. **DC Current—**7 ranges: 0-1000 microamperes 1/5/10/50/250/500/1000 milliamperes and 1/10 amperes. Lowest reading 1 microampere. All shunts wire wound. **Output Volts—**6 ranges of 0/5/10/50/250/500/1000 volts. Ideal for receiver alignment. No external condenser necessary. **Ohmmeter—**5 ranges of 0/200/20,000/200,000 ohms and 2/30 megohms. Center scale of low range 3.5 ohms. Lowest reading 0.1 ohms. Ideal for checking low resistance coils such as voice coils and oscillator coils. **Battery Tests—**Provides proper loads for most commonly used A and B portable batteries. Condition of battery under load is read on English reading scale. 1.5 v—4.5 v—6.0 v—67.5 v—90.0 v—95.0 v. **Power Supply—**100-133 volts—50/60 cycles. Special voltages and frequencies on request. Note: Test Leads furnished with this instrument.

SIZE—11" x 15" x 6 3/4". SHIPPING WEIGHT—20 pounds.

Dealer Net Cash Price..... **\$117.50**

**SPECIFICATIONS FOR MODEL 660 DELUXE 5" OSCILLOSCOPE:**  
**DEFLECTION SENSITIVITY—**Vertical Amplifier—Direct to Vert. Amp. Input..... .1 v RMS. Horizontal Amplifier—Direct to Hor. Amp. Input..... .14 v RMS. **SWEEP OSCILLATOR—**Range of 7 cycles to 100 KC. in six steps. Synchronization: Int. Ext. **TUBE COMPLEMENT—**Cathode Ray Tube..... 5CP1. Rect. tube High Voltage..... 5Z3. Rect. tube Low Voltage..... 5Z3. Vertical Amplifier—1st stage Cathode Follower..... 6J5. 2nd stage Voltage Amplifier..... 6AC7. 3rd stage Power Amplifier..... 2-6AG7. Horizontal Amplifier—1st stage Cathode Follower..... 6J5. 2nd stage Voltage Amplifier..... 6AC7. 3rd stage Power Amplifier..... 2-6AG7. Sweep Generator—Generator tube..... 6SN7. Sweep control tube..... 3/4 6SN7. Z Axis Amplifier—Amplifier Tube..... 3/4 6SN7. Voltage Regulator..... 2-1/25 watt neon. Probe—Cathode Follower Tube..... 6C4. **INPUT IMPEDANCE—**Probe 9 mmf 5 meg. Vert. Amp. direct 5 mmf 5 meg. Hor. Amp. direct 10 mmf 5 meg. Z Axis Amp. direct 10 mmf .5 meg. **PERFORMANCE DATA—**Vertical Amplifier—Sine Wave frequency response: Plus or minus 2 db. 5 cycles to 5 mc. down 6 db. at 7 mc. Gain Control: Independent of frequency within range of the amplifier. Phase shift: Less than 1° at 60 cycles (overall). Square wave response: 30 cycles to 150 kc. Horizontal Amplifier—Sine Wave frequency response: Plus or minus 2 db. 5 cycles to 1.5 mc. down 6 db. at 2 mc. Gain Control: Independent of frequency within range of the amplifier. Phase shift: Less than 1° at 60 cycles (overall). Square wave response: 30 cycles to 50 kc. Z Axis Amplifier—Sine Wave frequency response: Plus or minus 2 db. 100 cycles to 100 kc. down 6 db. at 150 kc. **POWER SUPPLY—**110-125 volts, 50/60 cycles, 250 watts maximum.

SIZE—12" x 16" x 19". SHIPPING WEIGHT—70 pounds.

Dealer Net Cash Price..... **\$276.80**

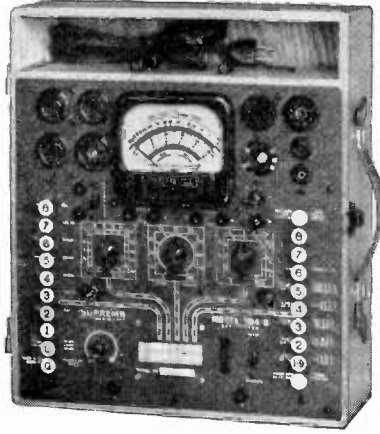
### MODEL 616 TUBE AND BATTERY TESTER

Same as Model 600 Tube and Set Tester described above, less Multi-Meter functions.

Dealer Net Cash Price..... **\$87.45**

### MODEL 504-B COMBINATION TESTER

Contains a Multi-meter, battery tester, condenser tester and proven emission tube tester in one instrument. A unique switching circuit divides these functions with a minimum of complex switches, pin jacks and controls.



**DESCRIPTION—Meter—**Large 4" square face meter, 500-microampere. Speed—Push-button operated. Rugged—Meter of special Alnico design for portable testers. "Can Take It." Flexible—Simple, yet Universal Floating Filaments feature insures against obsolescence. Simplicity—Roll chart carries full data for tube setting. No roaming test leads when using multi-meter—only push a button. Tube Setting Service—Additional tube setting data supplied for one year at no extra charge. Professional Appearance—Sturdy metal case. Panel grey wrinkle, white letters and markings; red highlights. Hardware plated, leather carrying handle. **SPECIFICATIONS—DC Volts—**7 ranges of 0/5/25/100/250/500/1000/2500 volts. Lowest reading of .1 volts. All ranges 1000 ohms per volt. Push-button selection of ranges. **AC Volts—**5 ranges of 0/5/10/50/250/1000 volts. Rectifier guaranteed as any other part. Double bridge circuit affords maximum of scale linearity and rectifier protection. Circuit temperature compensated to correct rectifier reading over wide range of temperatures. **DC Current—**7 ranges of 0-500 microamperes 2.5/10/50/250 milliamperes and 1/10 amperes. Lowest reading 10 microamperes. All shunts wire wound. **Output Volts—**5 ranges of 0/5/10/50/250/1000 volts. Ideal for receiver alignment. No external condenser necessary. **Ohmmeter—**5 ranges of 0/200/20,000/200,000 ohms and 2/30 megohms. Center scale of low range 3.5 ohms. Lowest reading 0.1 ohms. Ideal for checking low resistance coils such as voice coils and oscillator coils. **Condenser Tester—**Covers Electrolytic and Paper or Electrostatic condensers. Provides tests for Electrolytic Capacitors, including high voltage filters and low voltage-high capacity bypass condensers to be checked under their normal working voltages. The following voltages are supplied to be applied across the Electrolytic Condensers: 450/300/250/200/100/50/25 volts. English reading "Good-Bad" scale. **Battery Tests—**Provides proper loads for most commonly used A and B portable batteries. Condition of battery under load is read on English reading scale. **Power Supply—**100-133 volts—50/60 cycles. Special voltages and frequencies on request. Note: Test Leads furnished with this instrument.

SIZE—14 3/8" x 12 3/8" x 4 3/8". SHIPPING WEIGHT—20 pounds.

Dealer Net Cash Price..... **\$102.50**

# SUPREME INSTRUMENTS

## MODEL 666 Combination A.F. & R.F. Oscillator



### SPECIFICATIONS

**Meter**—Large three-inch round meter used to set the desired amount of amplitude modulation. Variable from 0 to 80%. **Simplicity**—All frequencies on the R. F. Oscillator read on two scales. Both A.F. and R.F. push-button operated. **Attenuator**—R.F. Oscillator has ladder type four position resistor push-button attenuator. Also, vernier control from maximum to minimum on either of the four steps of the multiplier. A.F. output is controlled from minimum to maximum with continuously variable control. **Laboratory Appearance**—This fine instrument is housed in beautiful golden tone, lock cornered, natural finish oak case. Black ribbed steel panel with silver and red highlights. **Tube Line Up**—6X5 Rectifier. 6SK7 A.F. Beat Oscillator. 6SK7A.F. Beat Oscillator. 6SK7 R.F. Oscillator. 6C5 A.F. Oscillator Mixer. 6C5 A.F. Amplifier. 6F8 Audio Vacuum Tube voltmeter-frequency modulation control tube. 6F8 R.F. vacuum tube voltmeter-F.M. Oscillator. 6K6 Buffer Mixer.

### DESCRIPTION R.F. OSCILLATOR

**Ranges**—5 band 65/205 KC, 205/650 KC, 650/2050 KC, 2050/6500 KC, 6.5/20.5 MC. Harmonics above 60 MC. **Tuning Mechanism**—Dual ratio from tuning knob to dial. One direct for speed, a second about 5 to 1 for vernier settings. **Accuracy**—Low end of band tuned with iron core inductors. High end of band tuned with air dielectric trimmers providing for greatest accuracy possible with printed scales. **Meter** used to set carrier level at a predetermined value, aligned for an accurate and variable per cent of modulation by the A.F. Oscillator. **Frequency Modulator**—F.M. signal available over range of R.F. Oscillator. Frequency modulated approximately plus or minus 15 KC. Rate of frequency modulation 120 cycles per second. 60 cycle time base provides for automatic positive synchronization.

### A.F. OSCILLATOR

**Range**—15 to 15,000 cycles. **Output Impedances**—Center tap transformer of 50/600/5,000 ohms. High impedance resistor of 50,000 ohms. **Distortion**—Approximately 5%. **Voltage Output**—Open circuit 35 volts. **Frequency Characteristics**—Plus or minus 1 db between 30 and 10,000 cycles. 15 cycles and 15,000 cycles down approximately 2 db. **Attenuator**—Controls voltage output from 0 to maximum. **Power Output**—Approximately 150 milliwatts. **Power Supply**—110-125 volts—50/60 cycles. Special voltages and frequencies on request.

SIZE—15 1/2" x 11 1/2" x 8 3/4". SHIPPING WEIGHT—33 pounds.

Dealer Net Cash Price..... \$141.60



## AUDOLYZER MODEL 688

Used for tracing signals through sets of this range. Also used to check frequency of receiver's oscillator, I.F. or R.F. **Gain Measurements**—By moving Audolyzer probe from stage to stage of a receiver and noting audolyzer's meter voltage reading, stage, tube or transformer gain or loss is determined. **A.V.C. Measurements**—Use proper range of electronic voltmeter and check A.V.C. voltage developed under actual operating conditions. Also use the electronic voltmeter for adjusting A.V.C. circuits. **Distortion Check**—Since the signal is monitored by a speaker, distortion can easily be noted by ear at all times. By checking signal through various stages the improper operating stage of a receiver can easily be located and faulty component found. **Condenser Tester**—Leaky, shorted, or old condensers can be quickly found. **A. F. Input**—Additional leads supplied for monitoring audio circuit at same time regular probe is used for monitoring R.F. circuit. Also used for checking high impedance pickups, microphone, and other audio devices. **A. F. Output**—Output of the audolyzer brought out to the additional probe for use in checking any circuit or part requiring a high audio voltage. **Power Supply**—100-125 volts—50/60 cycles. Special voltages and frequencies upon request. **Note**: Test Leads furnished with this instrument.

SIZE—15 1/2" x 11 1/2" x 8 3/4". SHIPPING WEIGHT—32 pounds.

Dealer Net Cash Price..... \$149.50

## MODEL 661 OSCILLATOR

### DESCRIPTION

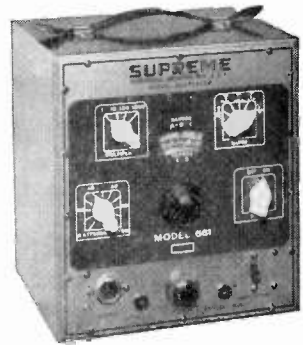
**Simple Operation**—All ranges read on two basic scales, accurately calibrated at both ends. **Dual Tuning Ratio**—One for speed—one for vernier adjustments. **Stability**—Electron coupled circuit, impregnated iron tuned inductors and air dielectric trimmers provide the maximum frequency stability. **Guards** against shift due to line voltage, aging, temperature, and humidity. **Ladder Multiplier**—Four steps from minimum to maximum. Also, continuously variable control. **Double shielding** minimizes leakage. **Shielded line cord**. **Illuminated Hair Line Dial**.

### SPECIFICATIONS

**R. F. Ranges**—65-205 KC; 205-650 KC; 650-2050 KC; 2050-6500 KC; 6.5-20.5 MC, Harmonics to 82 megacycles. **Audio Frequency**—400 cycles—voltage output continuously variable from minimum to maximum. **Internal Modulation**—R. F. Carrier modulated at approximately 50% at 400 cycles. Can be cut off to provide unmodulated signal. **External Modulation**—Jack provided for external audio modulation. **Professional Appearance**—Housed in heavy steel case; Blue Hammerloid finish. Supplied complete with shielded test leads and instructions. **Power Supply**—110-125 volts 50/60 cycles. Special voltage and frequency on request.

SIZE—9 1/2" x 8 1/4" x 7 3/8". SHIPPING WEIGHT—15 pounds.

Dealer Net Cash Price..... \$72.50



## MODEL 655 OSCILLOSCOPE

### DESCRIPTION AND SPECIFICATIONS

**Flexible, Easily Operated**—All controls have been grouped on the front panel. **Switches Arranged for External Synchronization and for External Horizontal Sweep.** **Tube Components**—5Y3G Low Voltage Rectifier. 5Y3G High Voltage Rectifier. 6SJ7 Vertical Amplifier. 6SJ7 Horizontal Amplifier. 885 Saw-tooth Oscillator. 5CP1 Cathode Ray Tube. **Sweep Oscillator** has a frequency range of approximately 20 to 80,000 cycles selected in seven ranges. **Linear control** provided for fine adjustment between ranges. **Synchronization control** provided for positive locking of pattern on screen. **Vertical Amplifier**—Frequency response 20 cycles to approximately 100 kilocycles. Circuit will pass 60 cycle square wave. **Sensitivity** rated at approximately .3 volts RMS per inch deflection. **Horizontal Amplifier**—Frequency response 20 cycles to 75 kilocycles. Will handle 60 cycle square wave deflection. **Sensitivity** rated at approximately .3 volts RMS per inch deflection. **Note**: Test Leads furnished with this instrument.

SIZE—12" x 9 1/2" x 18". SHIPPING WEIGHT—32 pounds.

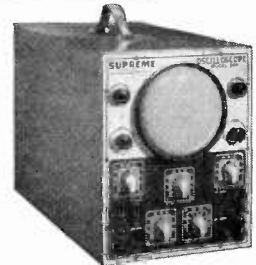
Dealer Net Cash Price..... \$126.50

## SUPREME 3" OSCILLOSCOPE MODEL 650

Essentially the same as Model 655 except that the voltage sensitivity of the amplifiers is approximately .5 volts RMS per inch deflection on the No. 650. In Model 650, a type 3AP1 Cathode Ray tube is used. **Note**: Test Leads furnished with this instrument.

SIZE—13 1/8" x 11 3/8" x 7 1/8". SHIPPING WEIGHT—23 pounds.

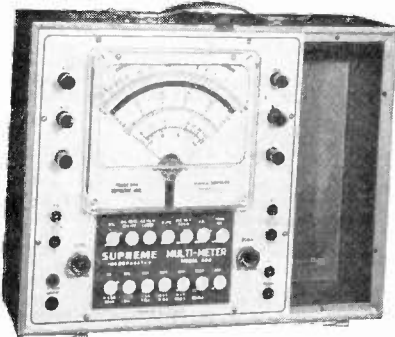
Dealer Net Cash Price..... \$99.95





# SUPREME INSTRUMENTS

## Supreme by Comparison

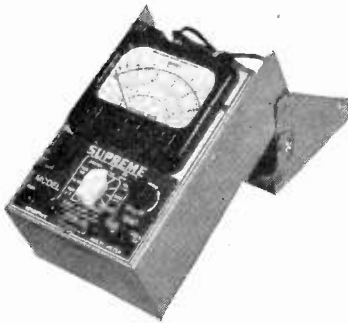


### MODEL 644 DELUXE PORTABLE SET TESTER

**DESCRIPTION AND SPECIFICATIONS:** Meter—50-microampere—Large 7" clear plastic—NO GLASS to break—with mirrored arc. Operation—All ranges (with the exception of the AC and DC, 10 and 50-ampere ranges) are selected by push-button operation. Double Meter Sensitivity—The Model 644 has two direct current sensitivities. 1000 ohms per volt for regular DC measurements and 20,000 ohms per volt for measurements in high resistance circuits. Direct Current Ranges—9 ranges consisting of 0/100 microamperes, 1/5/25/100/500 milliamperes, 1/10/50 amperes. AC Current Ranges—3 ranges of 0/1/10/50 amperes. DC Volt Ranges—Total of 14 ranges, 7 ranges at 1000 ohms per volt, and 7 ranges at 20,000 ohms per volt, 0/5/25/100/250/500/1000/5000 volts. AC Volt Ranges—7 ranges at 1000 ohms per volt, 0/5/25/100/250/500/1000/5000. Output Volt Ranges—7 ranges of 0/5/25/100/250/500/1000/5000. Covers all necessary ranges to provide indications for aligning receivers with Signal Generators. Decibels—5 ranges of -10/+9, 0/+23, 0/+35, 0/+43, 0/+49. Calibrated for 500-ohm line. Resistance Ranges—7 total ranges. Low Ohms—(linear scale) two ranges of 0/5 and 0/5 full scale. A minimum reading of .01 ohms is indicated by one full division on meter scale. High Ohms—(non-linear scale) 0/500, 5000, 500M, 5 megohms, 50 megohms. All ranges are operated with self-contained batteries. Note the extremely wide range of .01 ohms to 50 megohms without additional power supply. Power Supply—Battery operated on all ranges, batteries supplied.

**CARRYING CASE**—sturdy metal carrying case finished in Blue Hammerloid—Panel beautiful satin aluminum and blue with maroon trim.  
**Note:** Test Leads furnished with this instrument.  
**SIZE**—11" x 15" x 6 3/4" **SHIPPING WEIGHT**—15 pounds.  
**Dealer Net Cash Price**

**\$79.95**



### MODEL 640

## MULTI-METERS

### A POPULAR COMPACT POCKET LABORATORY



### MODEL 542

### MODEL 640 MULTI-METER

The New Model 640 is a fitting companion to the extremely popular Model 542 which is so well known to radio servicemen or wherever electronic equipment is used. The Model 640 uses a 50-microampere movement which has a sensitivity of 20,000 ohms per volt. All ohmmeter ranges including the 20 megohm range are operated by batteries furnished with the instrument and contained in its sturdy metal carrying case.

**D-C VOLT RANGES**—(20,000 ohms per volt), 0/5/25/100/500/1000/5000. (First scale division .1 volt). **D-C VOLT RANGES**—(1000 ohms per volt), 0/5/25/100/500/1000/5000. **A-C VOLT RANGES**—(1000 ohms per volt), 0/5/25/100/500/1000/5000. **DECIBEL RANGES**: -10/+9, 0/+23, 0/+35, 0/+49. **D-C CURRENT RANGES**—0/100 microamperes, 0/10/100/500 milliamperes. **RESISTANCE RANGES**—3 ranges, 0/2000/20M/20 megohms. **OUTPUT VOLT RANGES**—6 ranges, 0/5/25/100/500/1000/5000.

**CARRYING CASE**—Sturdy steel case with hinged cover to protect meter. Finished in grey wrinkle.

Size: 5" x 7 1/2" x 3". Shipping Weight: 4 pounds.

Dealer Net Cash Price **\$39.45**

### MODEL 542 POCKET MULTI-METER

A regular little pocket laboratory with a case only 5 7/8" x 3 1/4" x 2 1/4" in size, weighing but 23 ounces—24 ranges—just as accurate and even more convenient than you would expect to find in an instrument twice its price. 4 DC mil ranges (with first scale division 5 microamperes) of 0/0.3/6/30/150; 4 DC volt ranges (with first scale division 0.1 volt) of 0/6/150/300/1500; 4 ohms ranges (with 1 ohm first scale division and 25 ohms center scale) of 0/2,000/20,000/200,000/2 meg; 4 AC volt ranges (with first scale division 0.1 volt) of 0/6/30/150/600; 4 output ranges of 0/6/30/150/600; 4 decibel ranges of -6/+10, +8/+24, +22/+38, +34/+50. The Model 542 is not a toy—it uses a full size 3" square meter with a rugged, accurate 200 microampere movement and a knife edged pointer. This movement has a sensitivity of 5000 ohms per volt. All ohmmeter ranges, including the megohm ranges, are operated by batteries furnished with the instrument and contained within its durable black moulded bakelite case.

Size: 5 7/8" x 3 1/4" x 2 1/4". Shipping Weight: 2 pounds. **\$25.20**  
 Dealer Net Cash Price

In metal case as illustrated, **\$29.20**

### MODEL 632 MULTI-METER

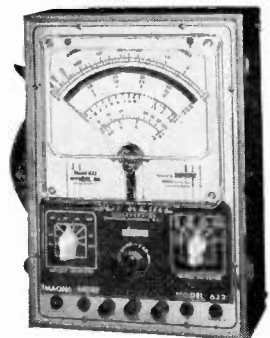
SUPREME Model 632 gives the radio serviceman a large, easily read, seven-inch SUPREME plastic meter together with a total of 38 ranges. It makes an ideal instrument for installing in a work bench or for portable use. It requires no "squinting" to read this meter. **D-C VOLT RANGES**—0/5/25/100/250/500/1000/5000, at 1000 ohms per volt. **A-C VOLT RANGES**—0/5/25/100/250/500/1000/5000, at 1000 ohms per volt.

**OUTPUT VOLT RANGES**—0/5/25/100/250/500/1000/5000, at 1000 ohms per volt. Provides the proper ranges for indications when aligning receivers. **DECIBEL RANGES**: -10/+9, 0/+23, 0/+35, 0/+43, 0/+49. **D-C CURRENT RANGES**—6 ranges provided, 0/5/25/100/250/500/1000 milliamperes. Two ampere ranges of 0/10/25 are provided. **CAPACITANCE RANGES**—For convenience in reading capacitances of electrolytic capacitors and the larger paper capacitors three capacitance ranges of .1/4, 1/40, and 10/400 microfarads are provided. **RESISTANCE RANGES**—A total of 5 ranges, 0/2000/20M/200M, 2 megohms. 20 megohms provide facilities for reading most any resistor found in electronic equipment.

**CARRYING CASE**—Sturdy metal carrying case finished in Blue Hammerloid—Panel beautiful satin aluminum and blue with maroon trim. **NOTE:** Test Leads furnished with this instrument.

Size: 11 3/4" x 8 1/2" x 4 3/4". Shipping Weight: 16 pounds

Dealer Net Cash Price **\$46.50**

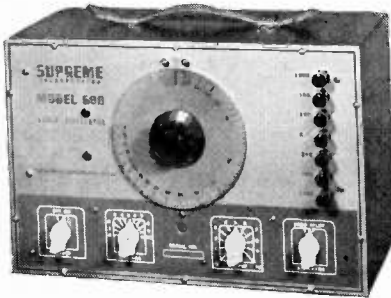




# SUPREME INSTRUMENTS

## Supreme by Comparison

### MODEL 680 AUDIO GENERATOR



The Model 680 continuously variable audio oscillator is SUPREME'S answer to a multitude of requests from the radio servicemen and members of the various sound and acoustical industries for a practical Audio Oscillator. This Beat Frequency Oscillator meets the most exact requirements for the average radio service shop, manufacturers of radios, public address, motion picture sound industry, and other audio apparatus and acoustical material, educational and research laboratories, maintenance and design engineers.

**DESCRIPTION AND SPECIFICATIONS:** **FREQUENCY RANGE**—15 cycles to 15,000 cycles. Dial calibration spread over a 12-inch arc covering 280 degrees. Large 6-inch metal dial with laboratory type tuning knob. **OUTPUT IMPEDANCES**—250/500/5,000 ohms. Each impedance center-tapped for push-pull and other balanced input systems. **ATTENUATOR**—Output continuously variable from minimum to maximum. Linear marks around attenuator for reference settings. **OUTPUT VOLTAGE**—Open circuit approximately 65 RMS volts at 5,000 ohms section. Properly loaded, this section produces 50 volts total or 25 volts either side of center tap. 250-ohm section and 500-ohm section voltages are approximately 9 to 14 respectively. **WAVE FORM**—Sinusoidal type wave form with harmonic distortion at least 30 db below fundamental at 5,000 cycles and at least 25 db below fundamental at 50 cycles. Total distortion approximately 5%. Hum from power supply negligible with output control set at maximum. **FREQUENCY RESPONSE**—Output virtually flat over frequency range. Plus or minus 1 db from 30 cycles to 10,000 cycles. 2 db down at 30 and 15,000 cycles. **SIMPLE OPERATION**—All controls logically arranged for speed and simplicity of operation. Neon lamp for zero adjustment. **STABILITY**—Special shielding and highly impregnated in-lens. **PROFESSIONAL APPEARANCE**—Housed in Hammerloid finish steel case. Leather carrying handle. **POWER SUPPLY**—110-125 volts 50/60 cycles. Special frequencies and voltages upon request. **NOTE:** Test Leads furnished with this instrument. **SIZE**—13 1/4" x 9" x 6 1/8". **SHIPPING WEIGHT**—21 pounds.

**\$82.95**

ductors provided for minimum drift during warm-up period and normal operation. Dealer Net Cash Price

### SUPREME PANEL METERS

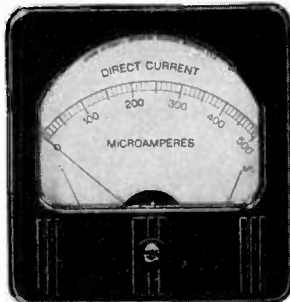
FEATURING A NEW DESIGN FOR GREATER EFFICIENCY!

ALNICO BAR MAGNET AND SOFT SINTERED POLE PIECES

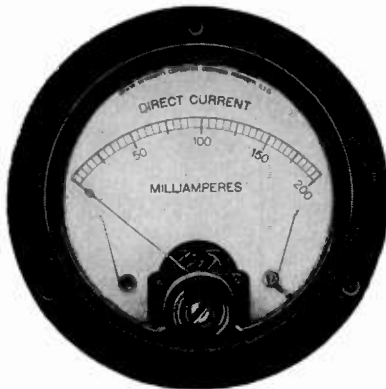
DOUBLE BRIDGE CONSTRUCTION—SIMPLE RUGGED ASSEMBLY



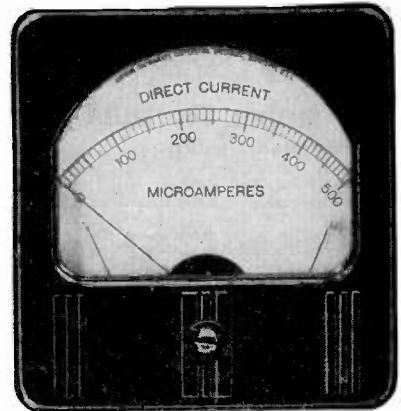
CASE MODEL 2400—2" round



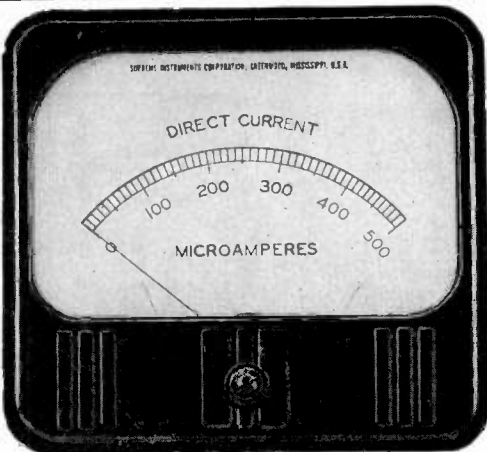
CASE MODEL 2100—2" sq.



CASE MODEL 3400—3" round



CASE MODEL 3100—3" sq.



CASE MODEL 4100—4" sq.

### "HAIRLINE" ACCURACY ASSURED BY:

- (1) Efficient Alnico Bar Magnet.
- (2) Double Bridge Construction.
- (3) Selected Pivots and Jewels.
- (4) Strong, Tough Pointer.
- (5) Simple rugged assembly insures permanent alignment.
- (6) High torque movement reduces friction.

For More Complete Information Write for the Supreme Meter Catalog.

**SUPREME INCORPORATED**  
Greenwood, Mississippi, U. S. A.

# ★ Simpson

INSTRUMENTS THAT STAY ACCURATE

**MODEL 260**      *World's Most Popular*  
**Set Tester**      *High Sensitivity Set Tester*  
                          *For Radio and TELEVISION*

There are more Simpson 260 high sensitivity volt-ohm-milliammeters in use today than all others combined. No other instrument of its kind has approached the world-wide popularity of the Simpson 260. In no other tester of its kind will you find the combination of useful ranges, accuracy, ruggedness, beauty and sensitivity developed to such a high degree of perfection.

Removal of the Model 260 from its heavy, handsome case of molded bakelite, will disclose how it differs from most set testers. You will see a sub-panel with a score of small recesses each holding a separate resistor or other component. You will notice complete absence of cable wiring. All connections are short and direct, thus offering a strength and firmness of assembly and the finest of insulation to reduce chances of shorts. All components are readily accessible. The front panel is a thing of beauty and long life. Pin jacks are recessed so no metal parts are exposed. All figures and symbols are molded into a heavy Bakelite panel and filled with durable white for long wear and legibility.

At 20,000 ohms per volt the 260 is highly dependable, rugged and accurate. Its practically negligible current consumption assures remarkably accurate voltage readings. It provides DC current readings as low as 2 microamperes and up to 10 amperes. Dependable resistance readings can be made up to 20 megohms and as low as 1/5 ohm. With the 260 you can measure automatic frequency control diode balancing circuits, grid currents of oscillator tubes and power tubes, bias of power detectors, automatic volume control diode currents, high-mu triode plate voltage, as well as a wide range of other measurements which cannot be checked with ordinary servicing instruments.



**RANGES**

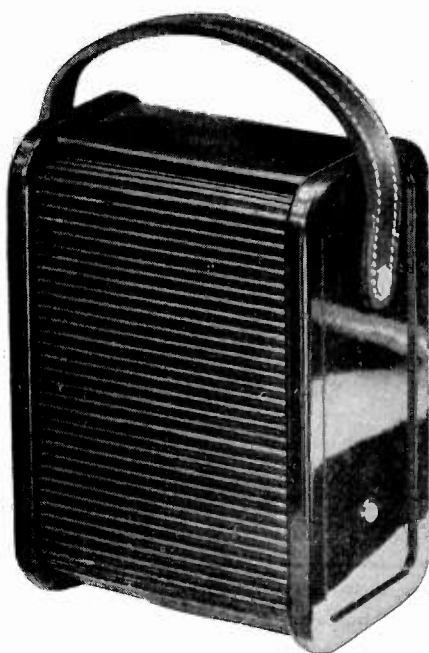
Model 260 Volt-Ohm-Milliammeter  
 20,000 Ohms per Volt DC, 1,000 Ohms per Volt AC  
 Volts, AC and DC: 2.5, 10, 50, 250, 1000, 5000  
 Output: 2.5, 10, 50, 250, 1000 Milliamperes, DC: 10, 100, 500 Microamperes, DC: 100 Amperes, DC: 10  
 Decibels (5 ranges): -12 to +55 DB.  
 Ohms: 0-2000 (12 ohms center), 0-200,000 (1200 ohms center), 0-20 megohms (120,000 ohms center).

**25,000 VOLT DC PROBE FOR TELEVISION TESTING**

Complete, nothing to add, for use with Model 260. Weight: 6 oz. Shipping weight: 8 oz.  
**DEALER'S NET PRICE,**  
 complete with Instructions.....\$12.85

**DEALER'S NET PRICES**

Model 260, complete with test leads and Operator's Manual.....\$38.95  
 (Size: 5 1/4" x 7" x 3 1/8". Weight: 3 1/2 lbs. Shipping Wt.: 5 lbs.)  
 Leather Carrying Case..... 8.00  
 Model 260 in Roll Top Safety Case, complete with test leads and Operator's Manual..... 45.95  
 (Size: 5 3/8" x 9" x 4 3/4". Weight: 6 1/2 lbs. Shipping Wt.: 9 lbs.)  
 Model 260 available in standard all black or two tone tan and brown, at above prices. Specify color desired.

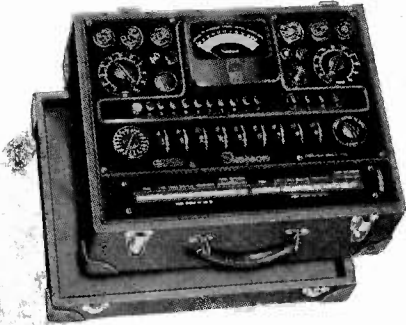


**MODEL 260 SET TESTER IN ROLL TOP SAFETY CASE**

The Model 260, when placed inside our patented housing of heavy molded bakelite and permanently fastened in position, offers the highest degree of efficient, economical instrument protection. Now you can buy the famous 260 complete in this roll top safety carrying case with its built-in lead compartment at less than the price of a 260 and a leather carrying case. A flick of the finger rolls the top up and the instrument is ready to use. A downward flick rolls the top down and your instrument is fully protected.

# Simpson

**I N S T R U M E N T S T H A T S T A Y A C C U R A T E**



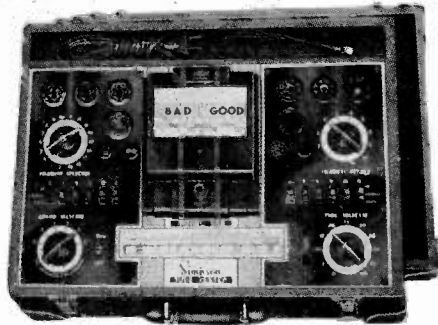
## MODEL 330 Mutual Conductance Tube Tester

*With Simpson Patented "No Backlash" Roll Chart*

The Simpson Model 330 tests tubes in terms of PERCENTAGE of rated DYNAMIC MUTUAL CONDUCTANCE, a direct indication of tube performance with reference to the manufacturer's STANDARD MICRO-MHO rating. The colored zones on the dial coincide with the percentage scale to indicate good, fair, weak or definitely bad tubes. Tubes are tested at audio frequency (2500 cycles) with voltages applied automatically over the entire operating range, reproducing more completely than ever before the actual conditions, under which a tube normally functions. A compact assembly of ten push button switches and nine rotary switches of six positions each provide infinite combinations for tube circuit selection.

When you have finished a tube test, the Simpson one button automatic reset returns all switches to the normal position.

For 105-125 volts, 50-60 cycles.  
Size: 16"x12 1/2"x6 3/4". Weight: 22 lbs.  
Shipping Weight: 27 lbs.  
Roll Chart Portable, DEALER'S NET PRICE, complete with Operator's Manual.....\$145.75  
Roll Chart Counter, DEALER'S NET PRICE, complete with Operator's Manual.....\$149.85  
Portable Model available as per your request in these color combinations: Black panel with black leatherette case. Gray panel with maroon leatherette case. Tan and brown panel with brown leatherette case. Counter model also available in above color combinations, but with natural finish wood case. Color optional at above prices.



## MODEL 555 Tube Tester

Here is a tube tester Simpson engineered to test all tubes for today's radio receivers and any that may be developed within the foreseeable future. It is outstanding in its simplicity of operation and its attractive appearance.

### Check These Many Features

- Basic RMA recommended circuit. Tests any tube regardless of base connections or internal connections of elements.
- Simpson designed 3-position lever operated toggle switches with molded rotor carrying silver plated contacts, self-cleaning through wiping action.
- Sockets for all receiving tubes on the market.
- Provision for future tube developments.
- No adapters or special sockets required.
- Properly fused, provides for line adjustment from 100 to 130 volts; smooth vernier control.
- Beautiful modern panel of shining, silver and black anodized enduring aluminum.
- Large illuminated meter for easy readings.
- Unique jewel-like molded lucite housing encloses Neon bulb indicating shorts and inter-element leakages.
- Line adjustment control below dial opening. Easy to operate.
- Case of sturdy plywood with heavy fabricoid covering, slip hinges.
- Simpson Patented "No Backlash" Roll Chart.

For 100-130 volts, 50-60 cycles.  
Size: 16 3/4"x12 1/2"x6". Weight: 14 lbs.  
Shipping Weight: 19 lbs.  
DEALER'S NET PRICE, complete with Operator's Manual .....\$79.50

## MODEL 335 Plate Conductance Tube Tester

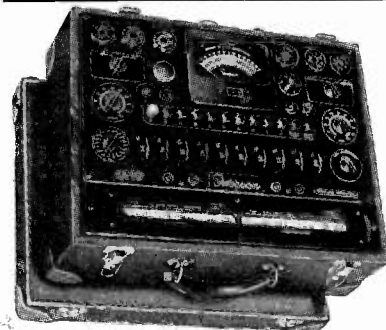
*With Simpson Patented "No Backlash" Roll Chart*

Model 335 tests tubes under conditions simulating actual use in a radio set. The dial indicates percentage of rated plate conductance. With a minimum of settings a reading is quickly obtained which is a percentage of the tube's rated value.

Regardless of tube load, filament voltages are automatically maintained with minimum variation.

Each tube element is individually connected to the proper potential. Reliable short test is provided and Diodes are tested on low voltage. When you have finished a tube test, the Simpson one button automatic reset returns all switches to the normal position.

Tests all receiving tubes, including 9 pin miniatures, and sub-miniatures as used in hearing-aids, etc. Space is provided for new sockets.



For 105-125 volts, 50-60 cycle.  
Size: 16"x12 1/2"x6 3/4". Weight: 17 1/2 lbs.  
Shipping Weight: 27 lbs.  
DEALER'S NET PRICE, complete with Operator's Manual .....\$108.50  
Available as per your request in these color combinations: Black panel with black leatherette case. Gray panel with maroon leatherette case. Tan and brown panel with brown leatherette case. Color optional at above price.

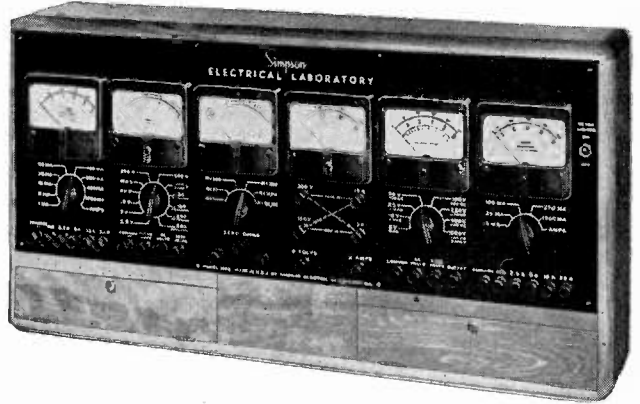
# Simpson

INSTRUMENTS THAT STAY ACCURATE

SIMPSON ELECTRIC CO.

## SIMPSON MODEL 1005 ELECTRICAL LABORATORY

All the functions of over 60 separate instruments combined in one unit. Here is a complete test unit for use by radio, electronic, and electrical technicians in laboratories, shops, and service departments.



The Electrical Laboratory is adaptable for testing all electrical appliances, small motors, circuits, radio sets, etc. All of the instruments are indirectly illuminated, and all lights are controlled by one switch located at the right side of the panel. The panel is of lustrous, long-wearing anodized aluminum. Cabinet is natural finish birch, sturdily constructed. Two compartments for accessories and instructions, with hinged doors, are located at the base of the cabinet. All connections are made to binding posts located on the panel. Test leads and Break-in plug are furnished.

Meter No. 1 (D.C. Milliammeter and Ammeter)	Meter No. 2 (D.C. Microammeter and Voltmeter)	RANGES OF MODEL 1005				Meter No. 5 (A.C. Voltmeter, Output and DB meter)	Meter No. 6 (A.C. Milliammeter and Ammeter)
		Meter No. 3 (Ohmmeter)	Meter No. 4 (Wattmeter)				
0-1 MA. D.C.	0-2.5 Volts D.C.	0-500 Ohms (5 ohms center)	0-300 Watts A.C.	0-5 Volts A.C.	0-5 MA. A.C.		
0-5 MA. D.C.	0-5 Volts D.C.	0-5000 Ohms (50 ohms center)	0-600 Watts A.C.	0-10 Volts A.C.	0-25 MA. A.C.		
0-10 MA. D.C.	0-10 Volts D.C.	0-50,000 Ohms (500 ohms center)	0-1500 Watts A.C.	0-25 Volts A.C.	0-100 MA. A.C.		
0-25 MA. D.C.	0-50 Volts D.C.	0-500,000 Ohms (5,000 ohms center)	0-3000 Watts A.C.	0-50 Volts A.C.	0-250 MA. A.C.		
0-50 MA. D.C.	0-100 Volts D.C.	0-5 Megohms (50,000 ohms center)		0-100 Volts A.C.	0-1000 MA. A.C.		
0-100 MA. D.C.	0-250 Volts D.C.	0-50 Megohms (500,000 ohms center)		0-250 Volts A.C.	0-2.5 Amps A.C.		
0-250 MA. D.C.	0-500 Volts D.C.			0-500 Volts A.C.	0-5 Amps A.C.		
0-500 MA. D.C.	0-1000 Volts D.C.			0-1000 Volts A.C.	0-10 Amps A.C.		
0-1000 MA. D.C.	0-5000 Volts D.C.			0-5000 Volts A.C.	0-25 Amps A.C.		
0-2.5 Amps D.C.	(20,000 ohms per volt)			Rectifier type 1000 ohms per volt			
0-5 Amps D.C.	0-50 Microamps			DB Ranges —10 to +55 output ranges same as volts except 5000 Volt Range			
0-10 Amps D.C.	0-100 Microamps						
0-25 Amps D.C.	0-250 Microamps						
	0-500 Microamps						

Size 33-9/16" x 16-13/16" x 9". Weight: 37 lbs. Shipping Weight: 54 lbs. Dealer's Net Price, complete with Leads and Break-in Plug and Operating Instructions \$218.00

## SIMPSON MODEL 445

Tube and Set Tester with the famous Simpson "No Backlash" Roll Chart

Model 445 combines a 20,000 ohms per volt Set Tester and a Plate Conductance Tube Tester. The tube tester dial indicates percentage of rated plate conductance which can also be considered as a percentage of mutual conductance since, in most cases, the amplification factor remains constant. Tests the new 9-pin miniature tubes and sub-miniature tubes.

The volt-ohm-milliammeter set tester provides the ranges that have made the Simpson Model 260 the most famous set tester in the world.

### HIGH VOLTAGE PROBE FOR TELEVISION SERVICING AVAILABLE

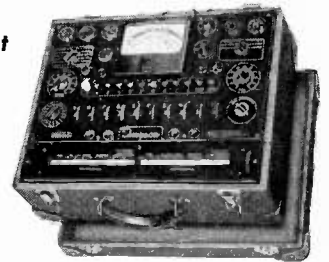
25,000 volts DC — 20,000 ohms per volt.

Weight: 6 oz. Shipping Weight: 8 oz.

DEALER'S NET PRICE, complete with Instructions.....\$12.85

### RANGES

Volts (20,000 ohms per volt D.C., 1000 ohms per volt A.C.): 0-2.5, 10, 50, 250, 1000, 5000.  
Milliamperes (D.C.): 0-10, 100, 500.  
Microamperes (D.C.): 0-100.  
Output (A.C.) volts: 2.5, 10, 50, 250, 1000.  
Ohms: 0-2000 (12 ohms center)  
0-200,000 (1200 ohms center)  
0-20 megohms (120,000 ohms center).



Size: 16"x12 1/2"x6 3/4". Weight: 20 lbs. Shipping Weight: 26 lbs. DEALER'S NET PRICE, complete with Test Leads and Operator's Manual .....\$137.50 Available as per your request in these color combinations: Color optional at above price. Black panel with black leatherette case. Gray panel with maroon leatherette case. Tan and brown panel with brown leatherette case.

## THE SIMPSON PATENTED "NO BACKLASH" ROLL CHART

The exclusive "No-Backlash" feature automatically takes up the slack in the paper chart and, by keeping the chart in constant tension, makes it impossible to turn the selector wheel without moving the chart. This results in precision selection at all times. The "No-Backlash" feature also prevents the paper chart from tearing, insures proper alignment, and presents at all times a neat, flat surface.

The selector wheel gear ratio makes it possible for tube selections to be obtained with a minimum of effort.

The entire Roll Chart mechanism is securely fastened to the instrument panel. Quick access to the roll chart can be obtained by removing four panel screws, so that the addition of tube data or the mounting of a new chart is a matter of a few minutes.

In addition to the neat, flat reading surface made possible by the "No-Backlash" feature, the lucite window was designed so that only two settings appear, which is especially convenient for the settings of multi-purpose tubes.

# ★ Simpson

**SIMPSON ELECTRIC CO.**  
CHICAGO, ILLINOIS

**INSTRUMENTS THAT STAY ACCURATE**

## MODEL 415A WITH BUILT-IN SWEEP CIRCUIT

The AM bands cover the complete frequency range from 75 KC to 130 MC and the FM bands, from 2 MC to 115 MC. A wide sweep of 1 MC is provided, which is more than adequate for FM alignment. A synchronization potential for locking in the scope trace is available. When used with an oscilloscope, the Model 415A is the correct answer to FM servicing.

### Note These Many Features

1. Direct reading dial with continuous coverage from 75 Kilocycles to 130 Megacycles in the following ranges: 75-200; 200-600; 550-1800 Kilocycles and 1.7-4.2; 5-16.51; 16-32; 31-65; 62-130 Megacycles. Fundamental to 65 MC.
2. Practically independent of line voltage fluctuation. Calibration is stable regardless of wide variations in line voltage.
3. RF output is controlled through its entire range, eliminating the necessity of a separate connection for high uncontrolled output as found in other signal generators.
4. Modulation from 0 to 100%, using either the 400 cycle internal sine wave or an external source. A range from 0 to over 9 volts of 400 cycle sine wave is available for external use.
5. Modulation up to 100% from below 60 cycles per second to over 10 Kilocycles per second.
6. Each Signal Generator is individually calibrated against a crystal controlled frequency standard.

**PANEL** — Lustrous black anodized aluminum. Dial is encased in a molded bakelite escutcheon with glass covering for protection against damage and dirt. Functional switches and controls are mounted on engraved molded bakelite panels.

**CASE** — Steel, copper plated for shielding effect and finished in gray durable wrinkled enamel. Leather carrying handle.

**SHIELDING** — In addition to the overall shielding offered by the case and panel, the coils and tuning condenser are individually shielded, and an additional shield is placed over these two assemblies. This series of shields together with other factors reduce leakage to an absolute minimum.

**COILS** — Low loss RF coils are individually calibrated by means of variable inductance and variable minimum capacitance. These



For 105-130 volts, 50-60 cycle.  
Size: 5 $\frac{5}{8}$ "x11 $\frac{3}{8}$ "x15 $\frac{1}{8}$ ". Weight: 18 $\frac{1}{2}$  lbs.  
Shipping Weight: 25 lbs.

DEALER'S NET PRICE, complete with  
Operator's Manual .....\$145.00

adjustments provide the means for greatest possible accuracy in calibration.

**BAND SELECTOR** — The rotating turret coil assembly permits the use of the shortest possible wiring, resulting in minimum circuit capacitance and permits quick selection of any frequency range.

**CONDENSER** — A two section tuning condenser using either one section or the other provides for ideal inductance to capacity ratio on all bands. Smooth vernier tuning permits accurate adjustment of the selected frequency.

## MODEL 340 SIGNAL GENERATOR

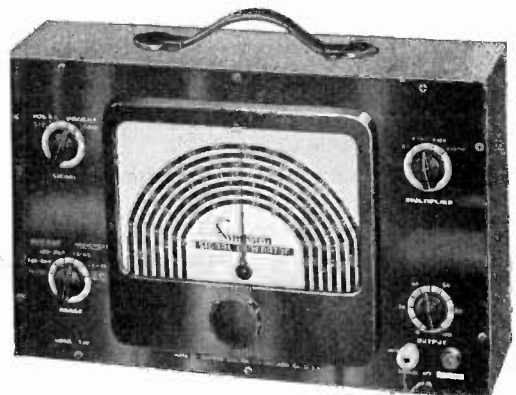
75 Kilocycles to 120 Megacycles—fundamentals to 30 Megacycles. From its lustrous black anodized panel to the big nine-inch dial and knife edge pointer that mean easy readability, the Model 340 is an instrument packed with Simpson engineering refinements for greatest utility and long-lasting accuracy.

An electron coupled circuit, using three tubes—full wave rectifier, modulator, and oscillator — and standard 30% modulation at 400 cycles, assures extreme stability and output uniformity. Close settings are permitted by a smooth vernier control.

RF coils provide range of 75-220; 200-600; 550-1700 KC; and 1.5-4.5, 4.2-14; 9-30; 36-120 megacycles. Fundamentals range to 30 MC, and the dial is direct reading to 120 MC.

Shielding in the Model 340 is complete; coils, attenuator, and signal selector being individually shielded. The oscillator and modulator are sealed in a rigidly welded, entirely closed chassis. In addition, the line cord is shielded, thus reducing leakage to a negligible point.

The signal output is controlled through a step attenuator and non-inductive potentiometer, providing smooth and complete control of the signal output. A special jack is provided in the Model 340 to obtain high output on the 120 MC band.



For 105-130 volts, 50-60 cycles.  
Size: 16"x10"x6". Weight: 15 $\frac{1}{4}$  lbs.  
Shipping Weight: 20 lbs.

DEALER'S NET PRICE, complete with  
Operator's Manual .....\$76.85



# ★ Simpson

SIMPSON ELECTRIC CO.

INSTRUMENTS THAT STAY ACCURATE



## MODEL 266 VACUUM TUBE VOLTMETER

Ideal for TV - AM - FM

Extremely accurate and packed full of important features. This fine Simpson instrument offers a 1 volt range for the full scale deflection necessary in measuring low RF voltages; a zero center switch embracing all DC voltage ranges for discriminator circuit alignment; a special probe with low input capacitance of approximately 4 micro-microfarads for checking RF voltages.

DC volt input resistance ranges from 50 to 200 megohms; AC volt input impedance at 60 cycles is approximately 10 megohms. The primary of the power transformer is well-regulated—holding close control over filament as well as plate voltage, and the DC input circuit is filtered so that the pressure of superimposed alternating currents does not affect DC measurements.

Housed in a sturdy case of attractive hardwood. The shining silver and black anodized aluminum panel includes a convenient well for holding the AC probe. In addition, there is a large, clearly marked 4 1/2" meter for quick, easy readings, and a compartment in the rear of the case for leads.

### 25,000 Volt DC Probe for Television Testing

Complete, nothing to add, for use with Model 266  
Weight: 6 oz. Shipping Weight: 8 oz.

DEALER'S NET PRICE, complete with Instructions.....\$14.85

### RANGES

Volts: (AC and DC) 0-1, 5, 10, 50, 100,  
250, 500, 1000, 5000  
Milliamperes, DC: 0-1, 5, 10, 50, 100,  
250, 500  
Amperes DC: 0-10  
Ohms: 0-1000 (10 ohms center)

0-10,000 (100 ohms center)  
0-100,000 (1000 ohms center)  
0-1 megohm (10,000 ohms center)  
0-10 megohms (100,000 ohms center)  
0-100 megohms (1 megohm center)  
0-1000 megohms (10 megohms center)

For 105-125 volts, 50-60 cycle.  
Size: 8 1/2" x 9 1/2" x 8". Weight: 10 1/4 lbs.  
Shipping Weight: 14 lbs.  
DEALER'S NET PRICE, complete with  
Leads, AC Probe and Operator's Manual .....\$114.00

## MODEL 379 BATTERY TESTER

Designed in accordance with the engineering specifications of leading battery manufacturers, this compact instrument is so ruggedly built that it will stand a lifetime of hard usage. The loading resistors have an accuracy of 1% and properly load all radio and hearing aid A and B batteries.

A single rotary switch selects the voltage of the battery under test and brings into line the correct loading resistor. The full 3" dial has three separate arcs, one for all radio A batteries, one for hearing aid A batteries, and one for all B batteries.

A percentage scale shows the exact condition of the battery in percentage of full voltage. The voltage reading can be quickly obtained by multiplying the percentage reading by the selector-switch voltage setting.

Size: 3"x5 7/8"x2 1/2". Weight 1 1/4 lbs. Shipping Wt. 3 lbs.

DEALER'S NET PRICE, including Test Leads and  
Operator's Manual .....\$21.50  
Leatherette covered Carrying Case, with compartment for leads..... 5.00  
Case colors available as per your request. Now Model 379 can be supplied  
in either black or two tone tan and brown. Color optional at above price.



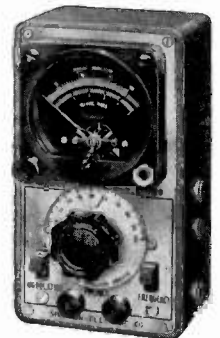
## MODEL 380 WAVEMETER MODULATION INDICATOR

The ideal instrument for the Ham.

1. An accurate band-spread wavemeter, and a sensitive 0-100 microammeter as a resonance indicator.
2. Separate plug-in coils for 10, 20, 40 and 80 meter bands supplied — coils for other bands available at slight extra cost.
3. Additional between-band coverage available at the flip of a switch.
4. Extremely sensitive field strength indicator.
5. Push button switch for dual meter sensitivity.
6. Provision for headphones for use in station monitoring and quality control.
7. A direct-reading Percentage Modulation Indicator with the instrument calibrated at 0-110% Modulation.
8. Designed to function on the 144, 235, and 420 megacycle bands without coils, but with a quarter wave antenna section.
9. Extremely rugged construction.
10. Used as a field strength indicator to determine radiation pattern.

Size: 3"x5 7/8"x2 1/2". Weight: 2 lbs. Shipping Weight: 4 lbs.

DEALER'S NET PRICE, complete with 4 coils, 2 ft. antenna, and Operator's Manual.....\$37.85  
Leatherette covered carrying case, with separate compartments for the instrument and 4 coils..... 8.00





INSTRUMENTS THAT STAY ACCURATE

### MODELS 240 and 230 VOLT-OHM-MILLIAMMETERS

These two "Micro-Tester" portables are famous throughout the world for their ruggedness and built-in accuracy. They exemplify the construction features and utility that distinguish the entire Simpson line shown in this section.

Both are shock-proof and incorporate the celebrated Simpson movement with its FULL BRIDGE-TYPE CONSTRUCTION AND SOFT IRON POLE PIECES. Resistors are in matched pairs to provide the greatest possible accuracy for all ranges.

Model 240 — the "Hammeter" — was designed for the additional voltage and sensitivity demanded in radio testing. With its maximum voltage range of 3000 AC or DC, it was the first self-contained pocket portable instrument built expressly to check high voltage and all the component parts of transmitters and receivers.

Model 230, with a maximum voltage of 1000 volts AC or DC, is ideal for most industrial testing. Its ranges are adequate for most line voltages, for telephone, teletype, and general purpose testing.

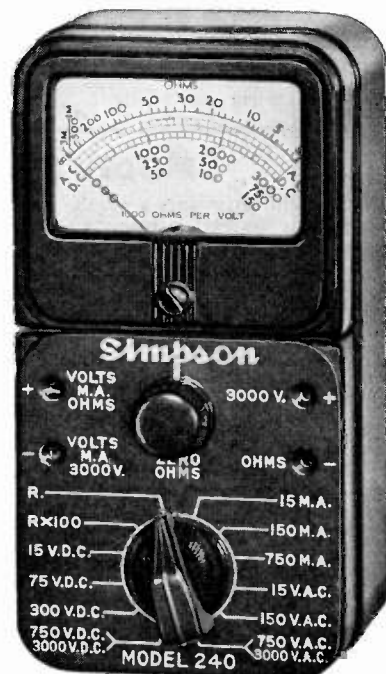
Both models are housed in heavily molded bakelite cases, with all numbers and symbols recessed in the panel and filled with white enamel for greatest legibility and ease of reading. Both have full size 3" meters.

#### MODEL 240 AC and DC VOLT-OHM-MILLIAMMETER RANGES

AC Volts: 0-15, 150, 750, 3000 (1000 ohms per volt)  
 DC Volts: 0-15, 75, 300, 750, 3000 (1000 ohms per volt)  
 DC Milliampers: 0-15, 150, 750  
 Ohms: 0-3000 (center scale 30)  
 0-300,000 (center scale 3000)

Accuracy: DC 3% — AC 5%  
 Size: 3"x5 7/8"x2 1/2". Weight: 1 1/4 lbs. Shipping Weight: 2 1/2 lbs.

DEALER'S NET PRICE, complete with Leads and Printed Instructions.....\$24.60  
 Leatherette Case ..... 5.00  
 Case colors available as per your request. Now Model 240 can be supplied in either black or two tone tan and brown. Color optional at above price.



#### MODEL 230 AC and DC VOLT-OHM-MILLIAMMETER RANGES

AC Volts: 0-10, 250, 1000 (400 ohms per volt)  
 DC Volts: 0-10, 50, 250, 1000 (1000 ohms per volt)  
 DC Milliampers: 0-10, 50, 250  
 Ohms: 0-1000, 0-100,000

Accuracy: DC 3% — AC 5%  
 Size: 3"x5 7/8"x2 1/2". Weight: 1 1/4 lbs.  
 Shipping Weight: 3 lbs.

DEALER'S NET PRICE, complete with Leads and Printed Instructions.....\$23.40  
 Leatherette Case ..... 5.00  
 Case colors available as per your request. Now Model 230 can be supplied in either black or two tone tan and brown. Color optional at above price.





# Simpson

SIMPSON ELECTRIC CO.

INSTRUMENTS THAT STAY ACCURATE

## MODEL 370 AC AMMETER

(With self-contained current transformer)  
(For use on 60 cycles)

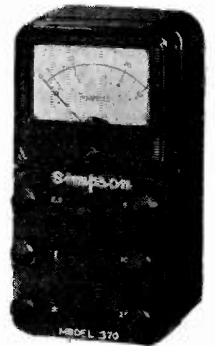
In the Model 370, a current transformer and indicating instrument have been combined in one small case to meet the consistent demand for a small multiple range AC ammeter, at a price that you can afford. Its many uses include the measurement of current drawn by all types of electric appliances and motors, heating elements, lamps, radio sets, etc.

Size: 3"x5 7/8"x2 1/2". Weight 1 1/2 lbs. Shipping Weight: 3 lbs.

DEALER'S NET PRICE ..... \$18.50  
Test Leads with Prods ..... \$1.25 extra  
Test Leads with Alligator Clips and Insulated Sleeves ..... 1.25 extra  
Case colors available as per your request. Now Model 370 can be supplied in either black or two tone tan and brown. Color optional at above price.

### RANGES

0-1, 0-2.5, 0-5, 0-10, 0-25  
Amps.



## MODEL 371 AC VOLTMETER

This instrument is a "must" for the industrial service kit or the lineman. Designed primarily for testing line voltages applied to motors, heating equipment or other industrial installations, the ranges are such that many additional applications will suggest themselves.

Size: 3"x5 7/8"x2 1/2". Weight: 1 1/4 lbs. Shipping Weight: 3 lbs.

DEALER'S NET PRICE ..... \$16.75  
Test Leads with Prods ..... \$1.25 extra  
Test Leads with Alligator Clips and Insulated Sleeves ..... 1.25 extra  
Case colors available as per your request. Now Model 371 can be supplied in either black or two tone tan and brown. Color optional at above price.

### RANGES

0-150, 0-300, 0-600 volts



## MODEL 372 OHMMETER

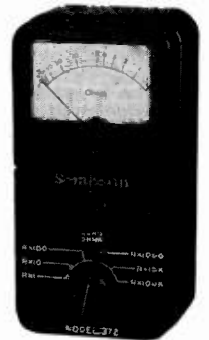
A complete instrument with self-contained batteries. Has a wide range from .2 ohms to 50 megohms. "Ohms" adjuster compensates for variations in battery voltages. Wire wound and matched metallized resistors are used throughout. The basic movement has a sensitivity of 85 microamperes.

Size: 3"x5 7/8"x2 1/2". Weight: 1 1/2 lbs. Shipping Weight: 3 lbs.

DEALER'S NET PRICE, complete with Test Leads ..... \$23.20  
Case colors available as per your request. Now Model 372 can be supplied in either black or two tone tan and brown. Color optional at above price.

### RANGES

0-500 ohms (5 ohms center)  
0-5000 ohms (50 ohms center)  
0-50,000 (500 ohms center)  
0-500,000 (5000 ohms center)  
0-5 Meg. (50,000 ohms center)  
0-50 Meg. (500,000 ohms center)



## MODEL 373 DC MILLIAMMETER

The Model 373 provides for DC current measurements from .02 to 1000 MA. This tester is ideal for radio servicing and experimental work; checking burglar alarm circuits, railroad signal systems, telephone work, etc.

Size: 3"x5 7/8"x2 1/2". Weight 1 1/4 lbs. Shipping Weight: 3 lbs.

DEALER'S NET PRICE ..... \$18.25  
Test Leads with Prods ..... \$1.25 extra  
Test Leads with Alligator Clips and Insulated Sleeves ..... 1.25 extra  
Case colors available as per your request. Now Model 373 can be supplied in either black or two tone tan and brown. Color optional at above price.

### RANGES

0-1, 5, 10, 25, 50, 100, 250,  
0-1000 MA.



# ★ Simpson

**SIMPSON ELECTRIC CO.**

**INSTRUMENTS THAT STAY ACCURATE**

## MODEL 374 DC MICROAMMETER

Incorporates a basic movement of 50 microamperes sensitivity with self-contained shunts for all other ranges. This tester can be used with external resistors or multipliers as a high sensitivity voltmeter at 20,000 ohms per volt. It is of particular value in photoelectric cell and other experimental work. The meter may be shorted out of the circuit by setting the selector knob to "short" position.

Size: 3"x5<sup>7</sup>/<sub>8</sub>"x2<sup>1</sup>/<sub>2</sub>". Weight: 1<sup>1</sup>/<sub>2</sub> lbs. Shipping Weight: 3 lbs.

DEALER'S NET PRICE.....\$20.90  
 Test Leads with Prods.....\$1.25 extra  
 Test Leads with Alligator Clips and Insulated Sleeves.....1.25 extra  
 Case colors available as per your request. Now Model 374 can be supplied in either black or two tone tan and brown. Color optional at above price.

**RANGES**  
 0-50, 100, 250, 500, 1000  
 Microamperes



## MODEL 375 DC AMMETER

(Self-Contained)

A new multi-range instrument which is extremely useful in testing the current in DC circuits. Provides a complete range from a fraction of an ampere to 25 amperes without the necessity of using auxiliary external shunts. Excellent for checking auto radios and experimental work in DC circuits.

Size: 3"x5<sup>7</sup>/<sub>8</sub>"x2<sup>1</sup>/<sub>2</sub>". Weight: 1<sup>1</sup>/<sub>2</sub> lbs. Shipping Weight: 3 lbs.

DEALER'S NET PRICE.....\$18.70  
 Test Leads with Prods.....\$1.25 extra  
 Test Leads with Alligator Clips and Insulated Sleeves.....1.25 extra  
 Case colors available as per your request. Now Model 375 can be supplied in either black or two tone tan and brown. Color optional at above price.

**RANGES**  
 0-1, 2.5, 5, 10, 25  
 Amperes



## MODEL 376 AC VOLTMETER

(Rectifier Type 1000 ohms per volt)

An AC Voltmeter, especially useful in circuits where a limited amount of current is present. Makes an excellent output meter when used with proper condenser. The wide variety of ranges covers both primary and secondary voltage ranges of transformers used in radio sets, toys and appliances.

Size: 3"x5<sup>7</sup>/<sub>8</sub>"x2<sup>1</sup>/<sub>2</sub>". Weight: 1<sup>1</sup>/<sub>4</sub> lbs. Shipping Weight: 3 lbs.

DEALER'S NET PRICE.....\$18.25  
 Test Leads with Prods.....\$1.25 extra  
 Test Leads with Alligator Clips and Insulated Sleeves.....1.25 extra  
 Case colors available as per your request. Now Model 376 can be supplied in either black or two tone tan and brown. Color optional at above price.

**RANGES**  
 0-5, 10, 25, 50, 100, 250,  
 500, 1000 AC volts



## MODEL 377 DC VOLTMETER

(Resistance 1000 ohms per volt)

Measures all dry battery voltage, both A and B, for radio sets, also grid and plate voltage and filament voltage in battery-operated sets. High ranges may be used for checking DC line voltage.

Size: 3"x5<sup>7</sup>/<sub>8</sub>"x2<sup>1</sup>/<sub>2</sub>". Weight: 1<sup>1</sup>/<sub>2</sub> lbs. Shipping Weight: 3 lbs.

DEALER'S NET PRICE.....\$18.25  
 Test Leads with Prods.....\$1.25 extra  
 Test Leads with Alligator Clips and Insulated Sleeves.....1.25 extra  
 Case colors available as per your request. Now Model 377 can be supplied in either black or two tone tan and brown. Color optional at above price.

**RANGES**  
 0-1, 2.5, 5, 10, 25, 50,  
 100, 250, 500, 1000  
 DC Volts



## MODEL 378 AC MILLIAMMETER

(With self-contained current transformer)

Here is the instrument that answers your need for a low cost, handy size milliammeter that combines a current transformer and an indicating instrument in one case. It offers five separate ranges, making it suitable for a wide variety of testing jobs.

Size: 3"x5<sup>7</sup>/<sub>8</sub>"x2<sup>1</sup>/<sub>2</sub>". Weight: 1<sup>1</sup>/<sub>2</sub> lbs. Shipping Weight: 3 lbs.

DEALER'S NET PRICE.....\$20.50  
 Test Leads with Prods.....\$1.25 extra  
 Test Leads with Alligator Clips and Insulated Sleeves.....1.25 extra  
 Case colors available as per your request. Now Model 378 can be supplied in either black or two tone tan and brown. Color optional at above price.

**RANGES**  
 0-5, 25, 100, 250,  
 1000 MA.



# ★ Simpson

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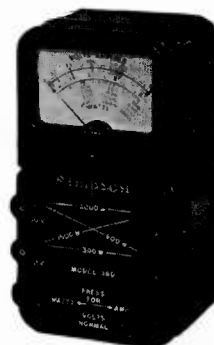
INSTRUMENTS THAT STAY ACCURATE

## SIMPSON MODEL 390 VOLT-AMP-WATTMETER

Ruggedly constructed for full load, continuous operation, the Simpson Model 390 is the first tester of its size ever made to give you volt, ampere and wattage readings in one compact instrument. It embraces two ranges each of voltage and current, providing four wattage ranges which cover practically all types and makes of appliances. The panel has volt-ampere combinations clearly indexed to the proper wattage range on the scale, which makes the instrument easy to use. All readings are shown on one meter. In normal position, the meter indicates volts. Ampere and watt readings are obtained by depressing button on the panel. The widely separated binding posts make it possible for the Model 390 to be used as an individual voltmeter or as an ammeter. The Model 390 has a molded bakelite case with all figures recessed in the panel, which are filled with white enamel for better legibility.

Size: 3"x5<sup>7</sup>/<sub>8</sub>"x2<sup>1</sup>/<sub>2</sub>". Weight: 1<sup>1</sup>/<sub>2</sub> lbs. Shipping Weight: 4 lbs.

DEALER'S NET PRICE, complete with Break-in plug, leads and Operator's Manual.....\$39.50  
 Leatherette Covered Carrying Case, with compartment for Break-in plug and leads..... 5.00  
 Leather case ..... 8.00  
 Case colors available as per your request. Now Model 390 can be supplied in either black or two tone tan and brown. Color optional at above price.



### RANGES

AC Current, 60 cycles  
 Volts: 0-150, 0-300  
 Amperes: 0-3, 0-15  
 Watts: 0-300, 0-600, 0-1500,  
 0-3000

## SIMPSON AC-DC VOLT-WATTMETERS

### MODELS 391 and 392

Designed for simultaneous reading of volts and watts, each of these handy little testers has two separate 3" square meters, one for volts and one for watts. Each has a built-in cord and plug for connection to the line outlet, and a receptacle for connecting the appliance under test. The ranges for each meter are selected by separate toggle switches recessed in the molded bakelite case. The low power consumption combined with the high efficiency of these instruments results in negligible loss and error in reading.

#### Model 391 (3000 watts max.)

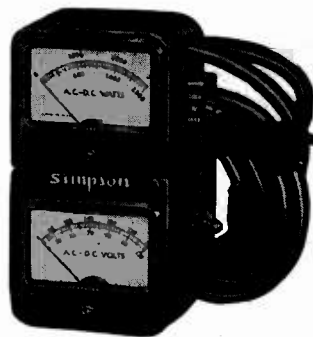
Ranges: AC or DC  
 Volts: 0-130, 0-260  
 Watts: 0-1500, 0-3000  
 Size: 3"x5<sup>7</sup>/<sub>8</sub>"x2<sup>1</sup>/<sub>2</sub>". Weight: 1<sup>1</sup>/<sub>2</sub> lbs.  
 Shipping Weight: 4 lbs.

DEALER'S NET PRICE, with Operating Instructions.....\$30.00  
 Leatherette carrying case..... 5.00  
 Case colors available as per your request. Now Model 391 can be supplied in either black or two tone tan and brown. Color optional at above price.

#### Model 392 (5000 watts max.)

Ranges: AC or DC  
 Volts: 0-130, 0-260  
 Watts: 0-1000, 0-5000  
 Size: 3"x5<sup>7</sup>/<sub>8</sub>"x2<sup>1</sup>/<sub>2</sub>". Weight: 1<sup>1</sup>/<sub>2</sub> lbs.  
 Shipping Weight: 4 lbs.

DEALER'S NET PRICE, with Operating Instructions.....\$35.00  
 Leatherette carrying case..... 5.00  
 Case colors available as per your request. Now Model 392 can be supplied in either black or two tone tan and brown. Color optional at above price.



## MODEL 385 TEMPERATURE INDICATOR

This is the newest addition to the Simpson Appliance Tester line. You will find this a compact instrument which is ideal for measuring temperatures from +70° F to as low as -50° F, where fast accurate temperature readings are important. The scale is designed so that the center portion is expanded, making the most widely used temperatures easy to read. The Model 385 is ideal for use in the refrigeration service field and wherever temperature readings are important, such as deep freeze units, home refrigerators, walk-in coolers and air conditioning units. The temperature readings can be taken at the end of the 15' lead which is supplied with the unit. The lead cord is small in diameter, making it possible to close the door of the equipment, thus obtaining temperature indications under actual conditions.

The probe can also be immersed in liquids where critical temperatures must be maintained.

Range: -50° to +70° F.  
 Battery, self-contained  
 Size: 3"x5<sup>7</sup>/<sub>8</sub>"x2<sup>1</sup>/<sub>2</sub>". Weight: 1<sup>1</sup>/<sub>2</sub> lbs.  
 Shipping Weight: 4 lbs.

DEALER'S NET PRICE, complete with Test Lead and Operating Instructions.....\$30.00  
 Leatherette Carrying Case..... 5.00  
 Case colors available as per your request. Now Model 385 can be supplied in either black or two tone tan and brown. Color optional at above price.



# ★ Simpson

INSTRUMENTS THAT STAY ACCURATE

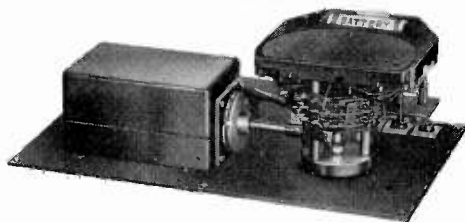
SIMPSON ELECTRIC CO.



## SIMPSON MODEL 221 ROTO RANGER

(High Sensitivity AC-DC  
Volt-Ohm-Milliammeter)

### INSIDE THE ROTO RANGER



Twenty-five separate meters at the turn of a switch. That is what you get in the new Simpson Model 221 Roto Ranger. The necessity of reading numerous scales, so common in ordinary volt-ohm-milliammeters, is forever eliminated when you own a Roto Ranger. The chances for errors in making readings are reduced to a minimum. The Model 221 provides a separate direct reading scale for each range and does it automatically. Calibrations are not cramped. Each scale is full size, the same as it would be for a separate instrument. As the selector switch on the panel is moved to the range desired, an ingenious mechanism rotates the proper range into position behind the meter window.

The Model 221 has a direct current sensitivity of 20,000 ohms per volt and is ideal for research and experimental work where correct readings, quickly obtained, are essential. It is also ideal for critical industrial applications, where reading errors may result in costly material spoilage or serious production errors. In addition the Roto Ranger is the modern and final answer for the radio, radar, television and X-ray technician who must trouble shoot speedily and accurately. It is Simpson patented.

With this super-sensitive instrument you can measure automatic frequency control diode balancing circuits, grid currents of oscillator tubes and power tubes, bias of power detectors, automatic volume control diode currents, rectified radio frequency current, high- $\mu$ -triode plate voltage and a wide range of unusual conditions which cannot be checked by ordinary servicing instruments.

The panel is of brilliantly gleaming black anodized aluminum; ranges and other markings are in the shining silver finish of the natural aluminum base. The case is of sturdy wood construction, leatherette covered, with heavy black bakelite handle, and includes a handy compartment for leads. Slip hinges on the cover permit quick removal.

Your first glance behind the panel of the Roto Ranger will show you an instrument that is radically different. The maze of wires common to most test instruments is gone—replaced by two clean housings. One is a bakelite box containing the drum that holds the range scales and the meter movement; the other the bakelite sub-panel of the meter circuit. Bakelite is used for the drum housing because it provides high insulation qualities for the meter and protection to the fine drum mechanism.

Model 221 has been carefully designed throughout to provide strength and simplicity of assembly, and the consequent accessibility of components. Molded of sturdiest bakelite, it possesses the requisite number of tiny recesses to provide separate pockets for resistors. This separation of resistors means orderly assembly, highest possible accessibility, and added insulation for preventing shorts; all connections are short and direct, eliminating the need for cable wiring. Each battery has a compartment of its own and is easily reached for replacement. These are refinements typical of Simpson manufacture, refinements that have made Simpson instruments finer than any similar instruments on the market.

### RANGES

20,000 ohms per volt DC, 1000 ohms per volt AC  
Volts, AC: 2.5, 10, 50, 250, 1000, 5000  
Volts DC: 2.5, 10, 50, 300, 1000, 5000  
Milliamperes, DC: 10, 100, 500  
Microamperes, DC: 100  
Amperes, DC: 10  
Output: 2.5, 10, 50, 250, 1000  
Ohms: 0-2000 (12 ohms center), 0-200,000 (1200 ohms center),  
0-20 megohms (120,000 ohms center)  
Size: 12 $\frac{3}{4}$ "x10 $\frac{1}{8}$ "x5 $\frac{3}{8}$ ". Weight: 9 lbs. Shipping Weight: 13 lbs.  
Price, complete with test leads and Operator's Manual.....\$69.85

### HIGH VOLTAGE PROBE AVAILABLE FOR TELEVISION SERVICING

30,000 volts DC — 20,000 ohms per volt  
Weight: 6 oz. Shipping Weight: 8 oz.  
DEALER'S NET PRICE, complete with Instructions.....\$12.85

# Simpson

SIMPSON ELECTRIC CO.

INSTRUMENTS THAT STAY ACCURATE

## TWO-INCH ROUND OR RECTANGULAR INSTRUMENTS

### DIRECT CURRENT MILLIAMMETERS

Model 125 (Rd.—Open Face), 126 (Shroud) and 127 (Rectangular)

Range	
0-1	\$6.90
0-5	6.90
0-10	6.90
0-15	6.90
0-25	6.90
0-50	6.90
0-100	6.90
0-150	6.90
0-200	6.90
0-250	6.90
0-300	6.90
0-500	6.90
0-1000	6.90

### ALTERNATING CURRENT

#### AMMETERS

Model 155 (Rd.—Open Face), 156 (Shroud) and 157 (Rectangular)

Range	
0-1	\$6.75
0-3	6.75
0-5	6.75
0-10	6.75

0-50	\$6.90
0-100	6.90
0-150	7.35
0-300	8.55

### ALTERNATING CURRENT VOLTMETERS

Model 155 (Rd.—Open Face), 156 (Shroud) and 157 (Rectangular)

Range	
0-5	\$6.75
0-10	6.75
0-15	6.75
0-25	6.75
0-50	6.75
0-100	6.75
0-150	8.40
0-300	9.60
0-500	12.00

### DIRECT CURRENT VOLTMETERS

Model 125 (Rd.—Open Face), 126 (Shroud) and 127 (Rectangular)

Range	
0-5	\$6.90
0-10	6.90
0-15	6.90
0-25	6.90

(Continued in next column)

## WATTMETERS — Electro-dynamometer Type

RANGES	2 INCH Model 175 (Rd.—Open Face), 176 (Shroud), and 177 (Rectangular)	3 INCH Model 75 (Rd.—Open Face), 76 (Shroud), and 77 (Rectangular)	4 1/2 INCH Model 79 (Rectangular)
0-75 Watts	150 V— .75 A \$16.95	\$18.00	\$23.40
0-150 Watts	150 V— 1.5 A 16.95	18.00	23.40
0-300 Watts	150 V— 3.0 A 16.95	18.00	23.40
0-750 Watts	150 V— 7.5 A 16.95	18.00	23.40
0-600 Watts	300 V— 3.0 A 18.75	19.80	25.20
0-1500 Watts	300 V— 7.5 A 18.75	19.80	25.20
0-3000 Watts	300 V—15.0 A 18.75	19.80	25.20

## RADIO FREQUENCY AMMETERS

(Internal Thermocouple Type)

Model 35—3 inch round case.  
Model 36—3 inch shroud case.  
Model 37—3 inch rectangular case.

Ranges: 0-1, 0-1.5, 0-2, 0-2.5, 0-3, 0-5, 0-10 Amperes—\$9.60  
0-15, 0-20 Amperes—\$12.00.

Model 135—2 inch round case.  
Model 136—2 inch shroud case.  
Model 137—2 inch rectangular case.

Ranges: 0-1, 0-1.5, 0-2, 0-3, 0-5, 0-10 Amperes—\$8.40.

## VU METERS

Two types of scales are available with all VU Meters. Both meet the standards set up by Bell Laboratories. The "A" scale stresses the level in VU and is primarily used in monitoring wire lines. The "B" scale stresses percent use of the transmitter output and is the standard for broadcast service.

## VOLUME LEVEL INDICATORS

(Copper Oxide Rectifier Type)

Model 45—3 inch round open face; Model 46—3 inch round shroud case; Model 47—3 inch rectangular case.

### DB METERS

Calibrated for use on 500 ohm line. Power 6MW.

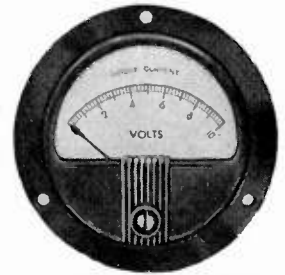
General Purpose	45, 46 or 47 -10 to +6DB Meter—Resistance 2500 ohms.....\$13.20
	45, 46 or 47 -10 to +6DB Meter—Resistance 5000 ohms.....\$16.50
High Speed	45, 46 or 47 -10 to +6DB Meter—Resistance 5000 ohms.....\$24.00
Low Speed	45, 46 or 47 -10 to +6DB Meter—Resistance 5000 ohms.....\$24.00
General Purpose	Model 145—2 inch round case. Model 146—2 inch shroud case. Model 147—2 inch rectangular case.
	145, 146 or 147 -10 to +6DB Meter—Resistance 2500 ohms.....\$11.50
	145, 146 or 147 -10 to +6DB Meter—Resistance 5000 ohms.....\$14.40

Model 45, 46 or 47 (Not Illuminated) "A" Scale or "B" Scale.....	\$21.00
Model 49 (Not Illum'd) "A" Scale or "B" Scale (4 1/2 in. rectangular)....	24.00
Model 49 (Illuminated) "A" Scale or "B" Scale (4 1/2 in. rectangular)....	28.50

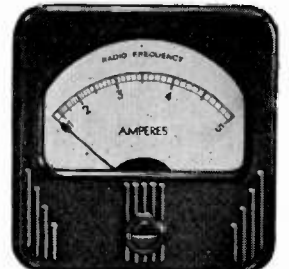
## 4 1/2" RECTANGULAR INSTRUMENTS

MODEL 29 D.C.		MODEL 59 A.C.	
MA		AMPS	
0-1	\$8.85	0-1	\$9.00
0-10	8.85	0-3	9.00
0-50	8.85	0-5	9.00
0-100	8.85	0-10	9.00
0-200	8.85		
0-500	8.85		
VOLTS		VOLTS	
0-10	\$8.85	0-15	\$9.00
		0-150	10.50
		0-300	12.60

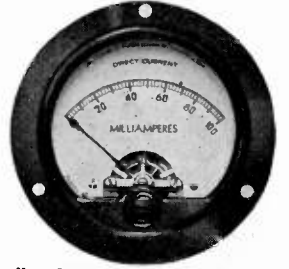
All Prices Dealer's Net



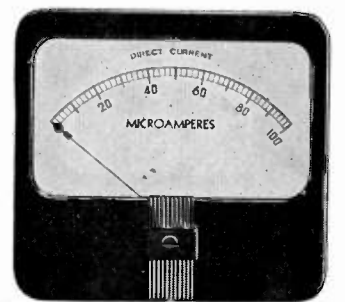
2" ROUND CASE—SHROUD STYLE. Flange diameter, 2 3/4"; depth overall, 2 5/8"; body diameter, 2 1/4"; scale length, 1 7/8". Bakelite case.



2" RECTANGULAR CASE. 2 3/8" square. Mounts in round hole. Body diameter, 2 1/8". Bakelite case.



2" ROUND CASE—OPEN FACE STYLE. Flange diameter, 2 3/4"; depth overall, 2 5/8"; body diameter, 2 1/4"; scale length, 1 7/8". Bakelite case.





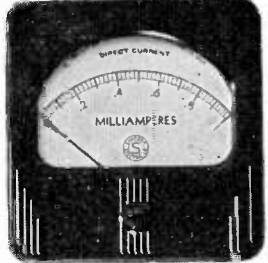
# Simpson

**SIMPSON ELECTRIC CO.**  
CHICAGO, ILLINOIS

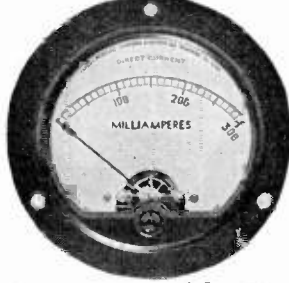
**INSTRUMENTS THAT STAY ACCURATE**



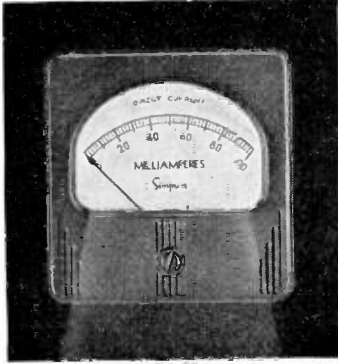
**3" ROUND CASE — SHROUD STYLE.** Flange diameter, 3 1/2"; depth overall, 2 1/4"; body diameter, 2 3/4"; scale length, 2-9/16". Bakelite case.



**3" RECTANGULAR CASE.** Width, 3"; height, 3 1/8". Mounts in round hole. Body diameter, 2 3/4". Bakelite case.



**3" ROUND CASE — OPEN FACE STYLE.** Flange diameter, 3 1/2"; depth overall, 2 1/4"; body diameter, 2 3/4"; scale length, 2-9/16". Bakelite case.



**THREE-INCH ROUND OR RECTANGULAR INSTRUMENTS**

**DIRECT CURRENT VOLTMETERS**

Model 25 (Rd.—Open Face), 26 (Shroud) and 27 (Rectangular)

Range	
0-3	\$7.95
0-5	7.95
0-10	7.95
0-15	7.95
0-25	7.95
0-50	7.95
0-100	7.95
0-150	8.40
0-200	9.00
0-300	9.90

(1000 ohms per volt)

Model 25 (Rd.—Open Face), 26 (Shroud) and 27 (Rectangular)

Range	
0-50	\$9.30
0-100	9.60
0-200	9.90
0-300	10.20
0-500	10.50
0-1000	11.85

**DIRECT CURRENT MILLIAMMETERS**

Model 25 (Rd.—Open Face), 26 (Shroud) and 27 (Rectangular)

Range	
0-1	\$7.95
0-3	7.95
0-5	7.95
0-10	7.95
0-15	7.95
0-25	7.95
0-50	7.95
0-100	7.95
0-150	7.95
0-200	7.95
0-250	7.95
0-300	7.95
0-500	7.95
0-1000	7.95

**DIRECT CURRENT MICROAMMETERS**

Model 25 (Rd.—Open Face), 26 (Shroud) and 27 (Rectangular)

Range	
0-50	\$17.25
0-100	15.00
0-200	12.60
0-500	8.90

**DIRECT CURRENT AMMETERS**

Model 25 (Rd.—Open Face), 26 (Shroud) and 27 (Rectangular)

Range	
0-1	\$7.95
0-3	7.95
0-5	7.95
0-10	7.95
0-25	7.95
0-50	7.95
30-0-30	7.95

**ALTERNATING CURRENT VOLTMETERS**

Model 55 (Rd.—Open Face), 56 (Shroud) and 57 (Rectangular)

Range	
0-3	\$7.35
0-5	7.35
0-10	7.35

*(Continued in next column)*

0-15	\$7.35
0-25	7.35
0-50	7.35
0-100	7.35
0-150	8.85
0-300	10.20
0-500	12.90

**ALTERNATING CURRENT AMMETERS**

Model 55 (Rd.—Open Face), 56 (Shroud) and 57 (Rectangular)

Range	
0-1	\$7.35
0-3	7.35
0-5	7.35
0-10	7.35
0-15	7.35
0-25	7.65
0-50	8.40

**ALTERNATING CURRENT MILLIAMMETERS**

Model 55 (Rd.—Open Face), 56 (Shroud) and 57 (Rectangular)

Range	
0-15	\$7.35
0-25	7.35
0-50	7.35
0-100	7.35
0-250	7.35
0-500	7.35

**HIGH RANGE D.C. PLATE VOLTMETERS**

*(Complete with External Resistor)*

Model 25—3 inch round case. Model 26—3 inch shroud case.  
Model 27—3 inch rectangular case.

Ranges: 0-1500, 0-2000, 0-3000, 0-4000 volts. \$11.85  
Range: 0-5000 12.75

*(Price includes resistor)*

External resistors supplied with high range voltmeters are contained in bakelite cases with binding posts for connections.

**RECTANGULAR LUCITE ILLUMINATED METERS**

3 INCH 3" wide, 3 1/8" high. Mounts in round hole. Body diameter, 2 3/4"		2 INCH 2 3/8" square case. Mounts in round hole. Body diameter, 2-3/16"	
DIRECT CURRENT VOLTMETERS MODEL 27	DIRECT CURRENT MILLIAMMETERS MODEL 27	DIRECT CURRENT VOLTMETERS MODEL 127	DIRECT CURRENT MILLIAMMETERS MODEL 127
0-10	\$9.45	0-1	\$8.40
0-50	9.45	0-10	8.40
0-150	9.90	0-50	8.85
0-300	11.40	0-150	10.05
0-500	12.00		
0-1000	13.35		
0-2000	13.35		
0-3000	13.35		
0-4000	13.35		
0-5000	14.25		
RADIO FREQUENCY AMMETERS MODEL 37	ALTERNATING CURRENT VOLTMETERS MODEL 57	RADIO FREQUENCY AMMETERS MODEL 137	ALTERNATING CURRENT VOLTMETERS MODEL 157
0-1	\$11.10	0-1	\$14.85
0-2	11.10	0-2	14.85
0-3	11.10	0-3	14.85
0-5	11.10	0-5	14.85
			Above prices include external thermocouple*
			0-10 \$8.25
			0-15 8.25
			0-150 9.90
			0-300 11.10

\*Because of the Lucite construction there is no room to place a thermocouple within the 2" meter. Prices therefore include an external thermocouple.  
All Prices Dealer's Net

# ★ Simpson

INSTRUMENTS THAT STAY ACCURATE

## MODEL 480 FM-TV GENESCOPE

The Simpson Model 480 Genescope is the result of many months of painstaking research and it is offered as our interpretation of a modern FM and TV instrument providing all the necessary signal sources for the proper alignment and servicing of FM and TV receivers.

In addition to a signal source, the Genescope includes a high sensitivity oscilloscope of unique advanced design, complete in every detail and equipped with a high frequency crystal probe for signal tracing.

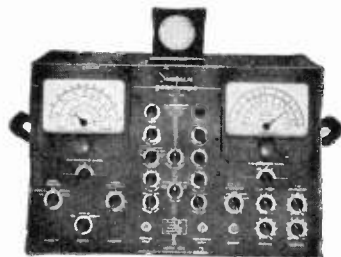
The variable oscillator sections are mounted one on each side of the oscilloscope section and are provided with large precision vernier dials having a 20:1 ratio and 1000 division logging scales. They are easy to read and can be quickly set for to an exact frequency.

Modern FM and TV development and servicing requires the use of test equipment made to exacting standards. With this in mind we offer you the Genescope with the assurance that everything possible has been done to make it the most accurate, flexible and convenient instrument available.

There are many vital component parts in the Genescope, almost all of which have been made to our exacting standards within our own modern plants. Most of these vital components have been developed and designed by us and substantial sums have been spent on modern tooling. The care we have taken to properly design and produce these parts is worthwhile assurance that the Genescope will render many years of uninterrupted service and always produce accurate results.

The center section of the Genescope contains the oscilloscope and all associated controls. The cathode ray tube of the oscilloscope is mounted vertically in the case in order to conserve bench space. The pattern on the tube is brought into view by use of a highly polished adjustable mirror at the top of the cabinet. The mirror may be quickly adjusted for any position of the operator. The tube face is placed well below the top surface of the cabinet in order to shield it from incident light thus producing a clear, sharp image unhampered by narrow angle light shields. The mirror when closed provides adequate protection for the cathode ray tube when not in use.

Direct connection to vertical and horizontal deflection plates and other internal functions are available through removable cover on the front panel.



### RANGES

#### FREQUENCY MODULATED OSCILLATOR

Band A—2-120 megacycles  
 Band B—140-260 megacycles  
 Sweep width variable from zero to 15 megacycles  
 Sweep rate 60 cycles per second  
 Specially designed frequency sweep motor  
 Continuously variable attenuator

#### AMPLITUDE MODULATED OSCILLATOR

Band A—3.2-16 megacycles  
 Band B—15-75 megacycles  
 Band C—75-250 megacycles  
 30% modulation at 400 cycles or unmodulated  
 Continuously variable attenuator  
 Visual method of beat frequency indication  
 Crystal calibrator — 5 megacycles  $\pm .05\%$   
 Audio Oscillator 400 cycles  
 AM and FM oscillator sections provided with large, easy to read dials with 20-1 vernier control and 1000 division logging scale.  
 Output impedance 75 ohms  
 Step attenuator for control of output

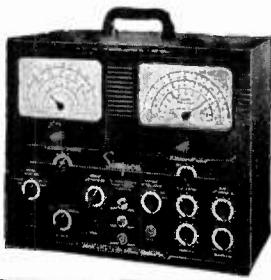
### OSCILLOSCOPE

Vertical and Horizontal amplifiers are balanced DC type.  
 Frequency response essentially flat to 200 KC. Will respond to over 3 megacycles at lower output.  
 Vertical input sensitivity 30 MV per inch peak to peak. Horizontal input sensitivity 50 MV per inch peak to peak. Input resistance .5 meg for low input, 10 meg for high input. 60 cycle sine sweep or linear sweep from 3 cycles to 60 KC.  
 Adjustable synchronization — internal, external or line frequency.  
 Provisions for internal blanking or Z axis modulation.  
 Direct deflection plate sensitivity:  
 Vertical—10 volts per inch peak to peak  
 Horizontal—15 volts per inch peak to peak

Size: 22"x14"x7 $\frac{1}{2}$ ". Weight 39 lbs.  
 Shipping Weight 48 lbs.

DEALER'S NET PRICE complete with Test Leads and Operator's Manual.....\$375.00

## Model 479 TV-FM Signal Generator



A modern instrument for today's TV-FM problems. Exactly the same circuits, ranges and functions as the Model 480, described above, with the exception of the oscilloscope.

Size 17"x14"x7 $\frac{1}{2}$ ". Weight 29 lbs.  
 Shipping Weight 35 lbs.

DEALER'S NET PRICE  
 with Test Leads  
 and Operator's Manual **\$245.00**

# ★ Simpson

INSTRUMENTS THAT STAY ACCURATE

## MODEL 351 TV ANTENNA COMPASS

This valuable instrument is another example of Simpson television pioneering. One man can do a better installation job in less time than it used to take two men.

Model 351 takes the physical form of a ruggedly built pocket-size meter which connects by a simple insulation-piercing alligator clip to the video input of the cathode ray tube in the television receiver.



By an extension cord, it is carried to the antenna site. With a test pattern tuned in on the area's weakest station, the antenna is simply located and rotated for maximum deflection of the TV Antenna Compass. It is as simple as that. Identifies ghosts, too. And much more accurate than trusting to the old fashioned "human eye-and-headphones" method of shouting instructions back and forth from the living room to the roof—which has always resulted in only an approximate best orientation of the antenna. Can also be used to peak the RF mixer and oscillator sections. In that way you actually peak the set right on the station itself.

Size  $4\frac{3}{4}'' \times 4\frac{1}{4}'' \times 1\frac{9}{16}''$ . Weight 1 lb. Shipping Weight 4 lbs.

DEALER'S NET PRICE—Complete with  
Termination Box and Printed Instructions..... **\$16.35**

## MODEL 184 MICRO TUNER

Tuning indicator for use on FM and Television receivers.

Enables operator to tune to the exact mid point of the band for perfect audio reception.

Of particular value to owners of television receivers which are equipped with a fine tuning control.

Supplied with 4 ft. flexible celanese covered lead which includes isolating resistor and special clip for attaching to tube prong.

Easily installed.

An excellent extra profit item for the dealer making television installations. Results in less call-backs.

Size:  $2\frac{1}{4}'' \times 2\frac{1}{2}'' \times 1\frac{3}{4}''$ . Weight 8 ozs. Shipping weight 2 lbs.

DEALER'S NET PRICE with Printed Instructions..... **\$7.50**



## HIGH VOLTAGE TV PROBE

Here are Simpson's three High Voltage Test Probes for Television servicing, each designed for use with the models listed here. They are molded of high temperature polystyrene to provide high dielectric strength and maximum insulation. Their small diameter permits reaching in small spaces and narrow openings.

Size Diameter  $\frac{9}{16}''$ , Length  $11\frac{1}{2}''$ . Weight 6 oz. Shipping Weight 2 lbs.



### DEALER'S NET PRICES

High Voltage Probe for 260 (25000 V) Complete, nothing to add..... **\$12.85**

High Voltage Probe for 221 (30000 V) Complete, nothing to add..... **12.85**

High Voltage Probe for 266 (25000 V) Complete, nothing to add..... **14.85**

**HICKOK**

# TEST EQUIPMENT

## NEW DYNAMIC MUTUAL CONDUCTANCE DISPLAY TUBE MERCHANDISER . . . WITH 9-Inch Illuminated Meter

**Most Outstanding  
and Customer Convincing  
Display Tube Tester  
Ever Designed**

ROLL CHART COVERS MANY HUNDREDS OF TUBE TESTS—INCLUDING NEW NINE PIN TYPES. EMPLOYS THE FAMOUS HICKOK PATENTED DYNAMIC MUTUAL CONDUCTANCE METHOD. LARGE ENGLISH READING DIAL—AND MICROMHO RANGES ARE THERE—WHERE YOU NEED THEM.

Let your customers see for themselves the condition of their tubes. The 533-DM builds customer confidence—helps you sell—makes more profit for you on over-the-counter sales. It is a quality built, accurate testing unit—and looks it. It's a sure-fire sales booster. Panel is modern, legible and lasting, with satin chrome finish.

Easy to read scales have MICROMHO ranges of 0-3,000, 0-6,000, 0-15,000 and English legends reading "Replace," "Doubtful" and "Good."

In selector switches complete flexibility has been provided to take care of all base pin connections; but in routine testing seldom more than one or two manipulations are necessary. It is easy to use.

Roll chart in the panel makes tube data easy to find.

Gas test provision quickly detects gassy tubes (which ruin AVC and IF stages).

Tests diodes separately with low voltage to prevent paralysis of the tube elements.

Tests all present-day tubes including Octal, Loktal, Miniature, Ballast, Magic Eye Tubes, and Nine Pin Tubes.

Will remain up-to-date for years and years. Provision for new tube designs is made.

Pure rectified D.C. current is used to energize plates and grids using two rectifiers.

Has all latest filament voltages. Dial is marked in voltage.

Tested and approved by the leading tube users in the country. Choice of high grade engineers.

Tests grid controlled rectifier tubes.

Size—26 $\frac{3}{4}$ " high, 17" wide, 11" deep.

Shipping Weight—50 lbs.; net, 32 lbs.

Power Supply—100-130 Volts, 50-60 Cycles.

Tube Complement—1 No. 83, 1 No. 5Y3GT.



**Model 533DM  
Net Price \$144.65**

## SPECIAL "D" SERIES DISPLAY EQUIPMENT

**To Sell and Safeguard  
Your Service**

**Start to build your business  
this sure-fire way NOW!**

**Separate Display Cases Available for Any  
of These Hickok Testers You Already Have!**

Most Convenient "Fit All Space" panels that are possible to design.

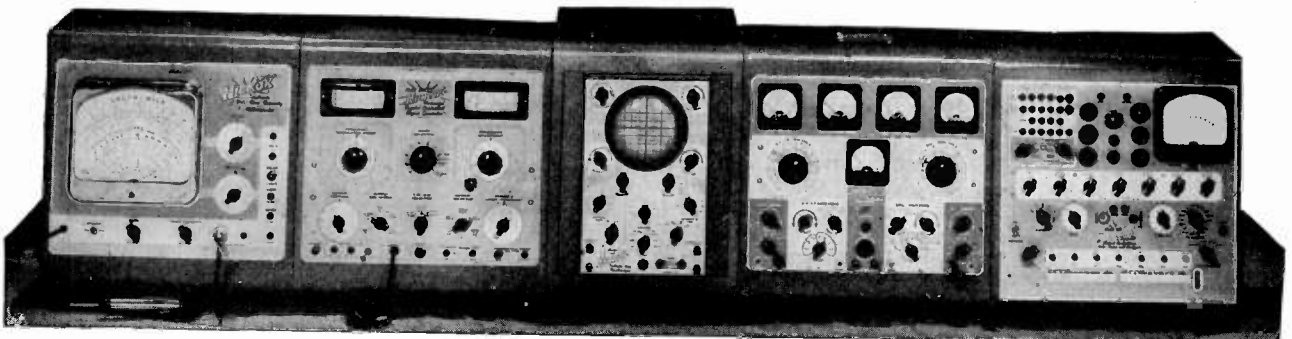
Makes a Most Magnificent, Solid and "Stay Put" Layout.

Can be arranged in Sections or Multiples of Associated Units for Specialized Service. Rearrangement may be made as desired. Show Your Service "Know-How." Put it out where your customers can see it.

"D" SERIES WILL SELL IT—CLINCH IT—SAFEGUARD IT. The following instruments are available in display cases—Models 209A—288X—195B—534B—292X—505A—533—610A.

Size, each case: 18 $\frac{1}{4}$ " high, 17" wide, 11" deep. (Oscilloscope cases: 18 $\frac{1}{2}$ " deep)

Weights: Approximately same as regular models.





**HICKOK**

# TEST EQUIPMENT

## NEW MICROVOLT SIGNAL GENERATOR for AM, FM, TV and Mobile Bands



Model 292-X

**Net Price \$195.00**

**TECHNICAL CHARACTERISTICS** — Fundamental Frequency Coverage: Bands A through G — 125 kc to 110 mc; Band H — 150 to 220 mc. Output Calibrated: 1 to 100,000 microvolts. Output Impedance: X1, X10, and X100 microvolts — 5 ohms; X1K — 30 ohms. X10K — 0 to 100 ohms. Modulation Fixed: 400 cycles. AF Output: 0-2 volts. The Model 292-X is wired for a plug-in type crystal (152-162 mc), with accuracy to .005%. Self-Contained crystal oscillator circuit has crystal jack on front panel permitting crystal outputs at any frequency from 250 kc to 20 mc on fundamentals; and to over 250 mc on harmonics. Type CCO-56 Crystal Oscillator unit available with frequency accuracy to .005% for Mobile Band coverage. Self-Contained Decibel Meter: —10 to  $\pm 38$  DB in 3 ranges. Tube Complement: 1 6SN7, 2 6J6, 1 6SG7, 1 6X5GT. Power Consumption: 35 watts at 115 volts. Meter Model: 50; 105-125 V., 50-70 cycles, A.C. 14" x 10 1/2" x 8"; 29 lbs. Net: 38# Ship. Satin Chrome Panel. Blue lacquered steel case.

**Model 292-X—125 kc to 220 mc on fundamentals.***THE ONLY SIGNAL GENERATOR WITH ALL THESE*

### FEATURES

- Covers all AM, FM, TV and Mobile Frequencies
- Measures Input of Units under test
- Modulated and Unmodulated Output from 1 to 100,000 microvolts
- Cast Aluminum Attenuator for Minimum Signal Leakage
- May be externally modulated from 15 to 10,000 cycles per second
- Decibel Meter for faster servicing
- Self-contained Crystal Oscillator Circuit — Crystals from 250 kc to 20 mc are available
- Over 100 inches of scale
- Most accurate Microvolt Generator available for practical radio servicing

### OPTIONAL

Crystal Oscillator for Accuracy to .005% in 152-162 mc Mobile Range.

This new HICKOK Model 292-X is the only popularly priced Microvolt Generator available that covers both Upper Channel TV and Mobile frequencies — on fundamentals.

## LINEARITY-PATTERN GENERATOR Model 620—Crystal Controlled (L. P.)



Model 620

**Net Price \$144.85**

**TECHNICAL CHARACTERISTICS** — Output Frequencies: 4 channel — 3 through 5 inclusive. However, for servicing, only one channel is necessary. Output Voltage: 50 to 5,000 Microvolts. All modulating frequencies are crystal controlled. Horizontal lines: 8 or 9. Vertical lines: 12. Selection of Horizontal or Vertical lines can be made separately or simultaneously as a Cross-Hatch pattern. Power: 105-125V., 60 cycles AC. Net weight: 11 1/2 lbs. — Ship. weight: 18 lbs. Beautiful blue hammertex steel case with satin chrome panel. Supplied complete with test leads.

**PROVIDES A STABLE VIDEO PATTERN**  
**At Any Time for Alignment**  
**and Trouble Shooting**

**NOW INDEPENDENT OF STATION OPERATION**  
**THE MODEL 620 GIVES YOU THESE OUTSTANDING**

### FEATURES

- Provides Stable Linear TV Pattern at any time
- Checks Relative Receiver Sensitivity
- Detects Hum in Horizontal Deflection Circuits
- Provides Means for Checking and Aligning of:  
Horizontal and Vertical Linearity and Drive Controls  
Horizontal and Vertical Width, Height and Hold Controls  
Horizontal A.F.C. Circuits
- Fast and Easy to use: Merely connect to receiver antenna
- Extremely useful in fringe areas where reception during installation is lacking or questionable

Today's Video serviceman needs an independent and more accurate pattern to rapidly trouble shoot in television servicing. The HICKOK Model 620 Cross-Hatch Generator has a high enough output to obtain a clear picture on the screen of any TV receiver. With a HICKOK 620 you can rapidly service in borderline areas where broadcast reception is unpredictable. You can align more hours per day — for more profit.



**HICKOK**

# TEST EQUIPMENT

## UNIVERSAL CRYSTAL CONTROLLED SIGNAL GENERATOR Models 277, 277X and 288X

The Universal Crystal Controlled Signal Generators, Models 277, 277X and 288X, are specifically designed to meet the many and varied needs of the radio engineer and service man working with frequency and amplitude modulated receivers and with television equipment. The wide range in radio-frequencies and audio-frequencies available, with the many choices of type of modulation, makes these Models most versatile and practical instruments.

All three models are the same except for the following features: 0.01% accurate crystal controlled outputs, both amplitude modulated at 400 cycles and unmodulated, offered in Models 288X and 277X only. Self-contained decibel meter with 42" cable, Model 288X only.

### SPECIAL FEATURES

Complete frequency modulation coverage with three variable bandwidths of sweep: 0-30 kc, 0-150 kc, 0-450 kc. Frequency modulation at two self-contained modulating frequencies: 60 cycles and 400 cycles. Provisions for external amplitude and frequency modulation to 15,000 cycles. Self-contained amplitude modulation at 400 cycles. Continuously variable audio frequency from 0-15,000 cycles. Audio frequency and radio frequency outputs are continuously variable from zero to maximum. 60 cycle synchronized sweep voltage is available for use with an oscillograph.



Model 288-X

**Net Price, \$169.20**

### SPECIFICATIONS

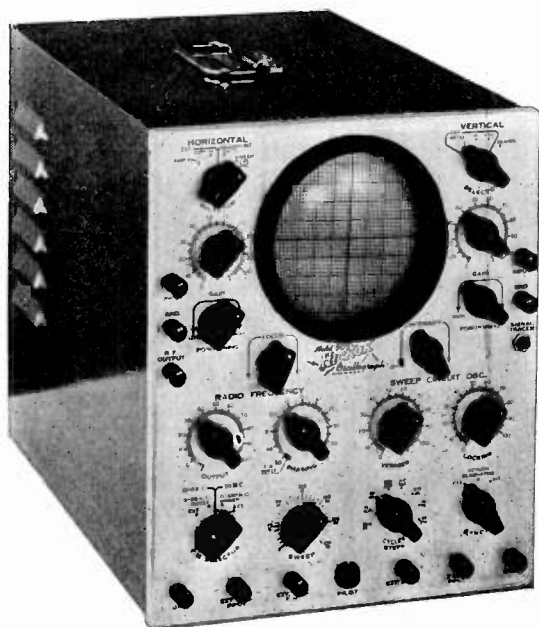
Dimensions—14" x 16½" x 7"  
Net Weight—25 lbs.—Ship. 36 lbs.  
Meter—Model 51X, Model 288X only

Scale—over 100"  
Satin-chrome finish panel  
Blue baked Hammertex finished case.

**POWER SUPPLY:** 105-125 V, 50-70 cycles, A-C. Power Consumption: 20 watts at 115 volts. Amplitude Modulated, Pure R-F Frequency Range: 100 kc-110 mc. Frequency Modulated R-F Frequency Ranges: Narrow Band (0-30 kc Sweep): 100 kc to 110 mc in 7 ranges: Wide Band (0-150-450 kc Sweep) 1 mc to 160 mc in 7 ranges. Modulation: Amplitude Modulation—400 cycles; Frequency Modulation—0-450 kc variable sweep, 50 mc. modulating frequency 60 cycles; 0-150 kc variable sweep, 50 mc, modulating frequency 400 cycles; 0-30 kc variable sweep, 1000 kc, modulating frequency 60 cycles; External Modulation—Amplitude or frequency modulation, variable 0-15,000 cycles. A-F Range: Fixed at 400 cycles, variable from 0-15,000 cycles. Crystal Controlled Output (Models 277X and 288X only)—100 kc, Unmodulated: 100 kc-15 mc, utilizing harmonics; 100 kc, 400 cycle amplitude modulated: 100 kc-15 mc, utilizing harmonics; 1000 kc, Unmodulated: 1000 kc-125 mc, utilizing harmonics; 1000 kc, 400 cycle amplitude modulated: 1000 kc-125 mc, utilizing harmonics. Output: R-F, continuously variable from 0 to maximum (with multipliers X1, X10 and X100); A-F, continuously variable from 0 to maximum, linear control, for both 400 cycle and variable frequency outputs. Synchronized Sweep Voltage: for horizontal deflection of oscillograph (60 cycles.) DB Meter Range (Model 288X only): -10 to +6, +6 to +22, +22 to +38. Tube Complement—1 6C4, 2 6SN7, 1 6SJ7, 1 6X5G.

**HICKOK**

# TEST EQUIPMENT



Model 505-A

**Net Price: \$179.00**

Power Supply: 105-125 V, 50-70 cycles, A-C. Deflection Sensitivity: Vertical—0.03 volts (rms)/inch. Horizontal—0.3 volts (rms)/inch. Horizontal, Direct—45 volts (rms)/inch. Input Impedance: Vertical—1 megohm, 25 mmf. Horizontal, Direct—3 megohm. Tube Complement: 1 5UP-1—cathode ray tube, 1 6SN7—r-f oscillator and mixer, 1 6J5, 1 6AG7—vertical amplifier, 1 6J7—horizontal amplifier, 1 6SQ7—reactance tube, 1 5Y3—high voltage rectifier, 1 5Y3—low voltage rectifier, 1 884—sweep circuit oscillator.

## NEW AM, FM, TV OSCILLOSCOPE Model 505-A

Specifically designed for use with frequency modulated, amplitude modulated and television equipment. Permits a complete visual analysis of the electrical and electronic circuits of the i-f and r-f bands as well as the audio frequency stages. The effectiveness of a tube or circuit as an amplifier, rectifier, or source of special wave shapes may be readily determined.

Interprets modulation, phase relations, voltage amplitudes, distortion, etc. Responds accurately to voltages in wide ranges of both frequencies and amplitudes.

### SPECIAL FEATURES

Wide band, high gain vertical amplifier, 30 cycles to 1 megacycle. Self-contained wide-band frequency modulated oscillator with variable sweep width, 0-450 kc. Self-contained narrow-band frequency modulated oscillator with variable sweep width, 0-30 kc. Signal tracer jack is incorporated so that, when used in conjunction with a speaker or ear phones, the signal may be simultaneously seen and heard. Provisions for modulation by an external audio frequency source to provide the equivalent of a frequency modulated transmitter for receiver checks. Self-contained mixer circuit provided so that when used in conjunction with any good external oscillator, wide band or narrow band frequency modulated outputs may be produced within the frequency limits of the external oscillator. High sensitivity amplifiers. Calibrated screen. Has self-contained frequency modulated oscillator. Can be used with any signal generator for servicing FM or AM sets.

### SPECIFICATIONS

Dimensions—14" x 11½" x 15½"  
Net Weight—32 lbs.—Ship. 42 lbs.  
Cathode Ray Tube—5"  
Satin-chrome finish panel  
Blue baked Hammertex finished case

## NEW 5" HIGH SENSITIVITY AM, FM, TV OSCILLOSCOPE

### Model 195-B

With this oscillograph you can align I. F. transformers, trace trouble, analyze wave shape of signal, determine unknown frequencies, amplify and view very weak signals. Has big 5" screen, extra high gain vertical amplifiers, sinusoidal sweep circuit and phasing control for proper I. F., R. F. and discriminator alignment.

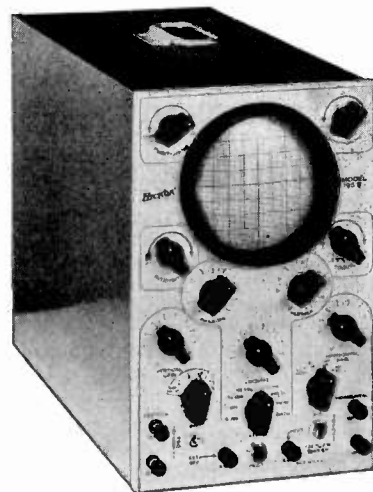
### TECHNICAL CHARACTERISTICS

- Power supply required: 105-125 V, 50-70 cycles A.C.
- Power Consumption: 50 Watts at 115 Volts
- Deflection Sensitivity:
  - Vertical—.03 Volt (rms) per inch
  - Vertical, Direct—15 Volts (rms) per inch
  - Horizontal—.15 Volt (rms) per inch
  - Horizontal, Direct—20 Volts (rms) per inch
- Input Impedance:
  - Vertical—1 meg, 25 mmf
  - Vertical, Direct—2.2 meg
  - Horizontal—4 meg, 35 mmf
  - Horizontal, Direct—2.2 meg
- Frequency Range:
 

Amplifier, Vertical—30 cycles to 1.0 mc

Amplifier, Horizontal—10 cycles to 50 kc
- Tube Complement:
 

Tube	Function
1 6SJ7	Horizontal Amplifier
1 884	Sweep Circuit Oscillator
1 6AC7	Vertical Amplifier
1 6SN7	Vertical Amplifier and Cathode Follower
1 6X5	Low Voltage Rectifier
1 5Y3	High Voltage Rectifier
1 5UP1	Cathode Ray Tube
- Size: 8½" wide x 18½" deep x 13" high  
Net Weight: 27½ lbs.—Ship. 38 lbs.



Model 195-B

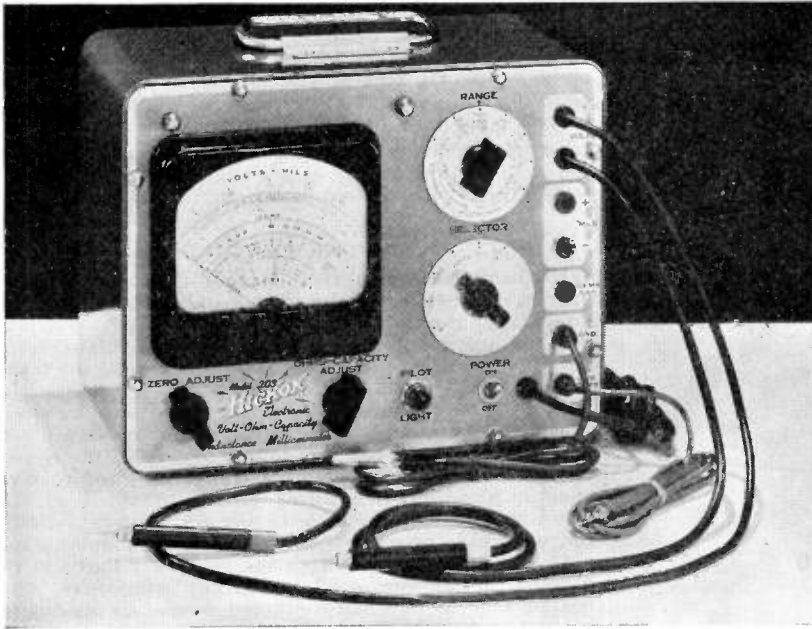
**Net Price: \$156.00**

**HICKOK**

# TEST EQUIPMENT

## ELECTRONIC VOLT-OHM-CAPACITY MILLIAMMETER

### Model 203



Model 203

A universal test instrument for all radio and electronic service work. Accurately and easily measures wide ranges of inductances, capacitances, resistances, currents and voltages, both A.C. and D.C.

**Net Price**  
**\$89.40**

Model PR-203 — Same as above except with probe as shown below on Model 209-A.

**Net Price \$99.60**

High input impedance prevents loading when making voltage tests. Measurement of inductances are possible with the use of a conversion chart supplied in the instruction book. Damage due to overload is

impossible in all except current measurements. Regulated power supply incorporated permits normal operation and accuracy with wide line voltage fluctuation.

#### SPECIFICATIONS

Dimensions—9" x 11½" x 7"  
Net Weight—13 lbs.—Ship. 20 lbs.  
Meter—Model S44A  
Satin-chrome finish panel  
Blue baked Hammertex finished case

POWER SUPPLY: 105-125 V, 50-70 cycles. Ranges: Volts, A-C and D-C 0-3, 12, 30, 120, 300, 1200. Mills (D-C): 0-3, 12, 30, 120, 300, 1200. Cap.: 0-10,000 mmf in 2 ranges, 0-1000 mf in 5 ranges. Ind.: 50 mh-100 henries. Ohms: 0.1 ohm to 10,000 megohms in 7 ranges. Frequency: A-C up to approximately 5 megacycles may be measured. Input Impedance: Volts D-C: 15 megohms. Volt A-C: 12 megohms. Tube Complement: 6X5GT A-C rectifiers, 6SJ7 cathode follower, 6SN7GT vacuum tube voltmeter, OD3/VR150 voltage regulator.

## NEW ELECTRONIC VOLT-OHM-CAPACITY MILLIAMMETER

### LARGE LABORATORY SIZE

### GIANT 9-INCH METER — MODEL 209-A

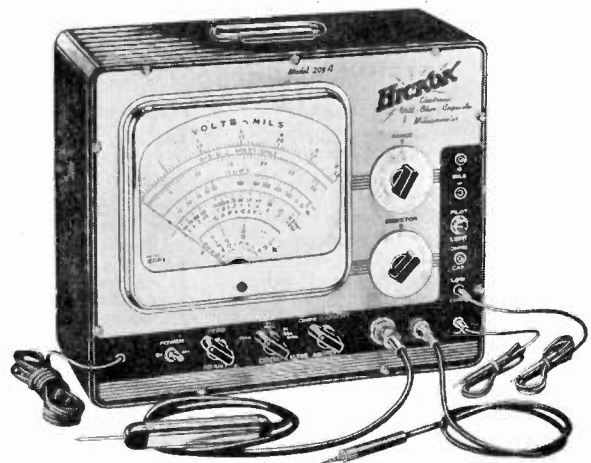
This new giant size instrument matches the size and attractiveness of the Hickok complete line of test equipment. Large 9-inch meter improves ease of operation. Has all the technical characteristics of the Model 203 above, and in addition has a 1200 Volt D.C. scale, and a new Peak-to-Peak Voltmeter to measure peak to peak or RMS values of A.C.

The new Zero-Center scale on D.C. permits much faster alignment than other similar instruments.

#### SPECIFICATIONS

Dimensions—14" x 16½" x 8"  
Meter—Hickok Model S-22  
Weight—18 lbs. Net.—25 lbs. Ship.  
Blue baked Hammertex finish

**Net Price: \$119.40**  
Including probe and all leads.



**HICKOK**

# TEST EQUIPMENT



Model 435-A

**Net Price, \$37.50**

## VOLT OHM MILLIAMMETER

### Model 435-A

The Model 435 is built to the highest Hickok standards of engineering design, workmanship and material. The meters used in these Volt-Ohm-Milliammeters are especially built by Hickok for this service. The movement is large and rugged and the very high torque weight ratio gives lively, instantaneous pointer action. The movement is curve-corrected by an exclusive Hickok process which gives a higher accuracy at all points on the scale.

### SPECIAL FEATURES

20,000 ohms per volt sensitivity on D.C.  
A-c power is not required for operation—especially convenient in many areas. Microampere, milliampere and ampere measurements provide an extremely wide range in current measurements. A.C. voltage output with D.C. components may be measured. Decibel power output measurements from -20 to +29 db may be made. Wide ranges in A.C. and D.C. voltage and resistance values may be measured.

### SPECIFICATIONS

Dimensions—6" x 8¼" x 4"  
Net Weight—3½ lbs.—Ship. 10 lbs.  
Meter—Model S48  
Satin-chrome finished panel  
Blue backed crackle lacquer finished case

Ranges—AC Volts and DC Volts: 0-2.5, 10, 50, 250, 1000, 5000; Ohms 0-10 megohms (4 ranges); Microamperes: 0-50; Milliamperes: 0-2.5, 10, 50, 250, 1000; Amperes: 0-10; Decibels: -20 - +3, -8 - +15, +6 - +29; Output Volts: 0-2.5, 10, 50, 250, 1000, 5000. Sensitivity: A.C. Volts: 5000 ohms/volt; D.C. Volts: 20,000 ohms/volt; Meter: 40 microamperes. Battery Complement: 1 Dry Battery, Radio C, 4.5 volts.

## VOLT-AMPERE WATTMETER

### Model 900-B

Electrical Appliance Tester and Circuit Analyzer.  
True to the Finest Hickok Tradition

**Net Price, \$59.07**

For Measuring Actual Values of Volts, Amperes and Watts.  
Ranges: A.C. Watts: 0-20-100-500-1000-2000. A.C. Amperes: 0-1.3-6-5-13-26. A.C. Volts: 0-130-260. A.C. Milliamperes: 0-260.

Scale is 3¾" long, clear and legible. The Model 900-B Volt-Amp-Wattmeter has been designed for all A.C. appliance-testing, from bell transformers and clocks to electric ranges operating on the 220-volt three-wire Edison system. The extremely low range of 0-20 watts will measure the power consumed by the smallest of appliances and is protected from accidental overload by a fuse. For measuring electric ranges the Number 9A and 9B special leads are available with standard three-wire range connectors. It tests appliances while in actual operation, indicating wattage consumption, amperes, and line voltage.

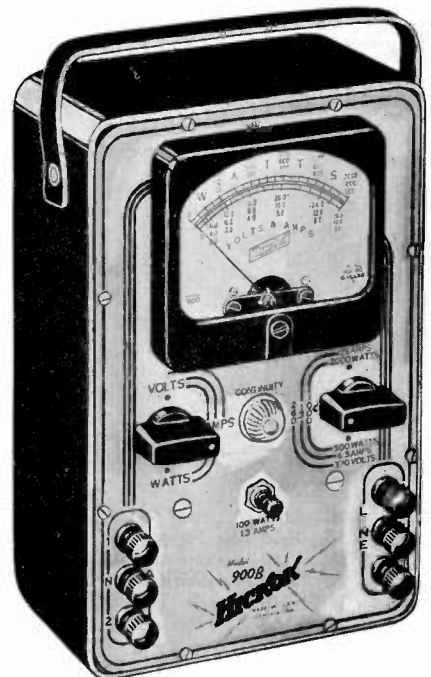
Mounted in a durable welded steel case with strap handle and rubber bumpers. Detachable leads, for small appliances, are furnished. Test leads with prods also included.

Service men will find a wattmeter especially handy for checking all A.C. sets.

Part No. C-105—This external current transformer is designed to give ranges of 5,000 and 10,000 watts and 65 and 130 amperes when used with Model 900-B. Part No. C-105 transformer may be installed in lead compartment of carrying case. When transformer and carrying case are ordered together, transformer will be installed before shipping.

Model 900-B—Size: 9½" high, 6¼" wide, 3" deep.

Shipping Weight: 8½ lbs.—Net 6½ lbs.



Model 900-B

# **FREED** Precision LABORATORY TEST EQUIPMENT



1



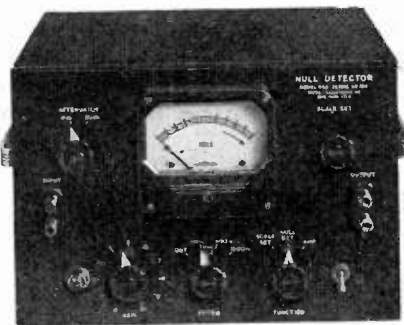
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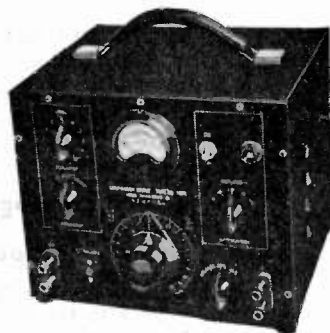
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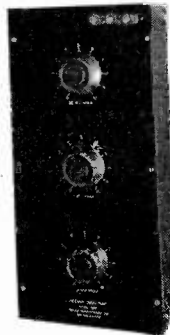
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9



10



11

- 1. Type No. 1030 Low Frequency "Q" Indicator
- 2. Type No. 1110 Incremental Inductance Bridge
- 3. Type No. 1020 Megohmmeter
- 4. Type No. 1060 Vacuum Tube Voltmeter
- 5. Type No. 1140 Null Detector
- 6. Type No. 1010 Comparison and Limit Bridge
- 7. Type No. 1160 Inductor Decade 10x1. Hy 10x.1 Hy 10x.01 Hy
- 8. Type No. 1161 Inductor Decade 10x.1 Hy 10x.01 Hy 10x.001 Hy
- 9. Type No. 1162 Inductor Decade 10x.01 Hy 10x.001 Hy 10x.0001 Hy
- 10. Type No. 1164 Inductor Decade 10x10 Hy 10x1 Hy 10x.1 Hy
- 11. Type No. 1040 Vacuum Tube Voltmeter

**FREED TRANSFORMER CO., Inc.—INSTRUMENTS DIVISION**

# Shurite PANEL METERS



Model 550-AC



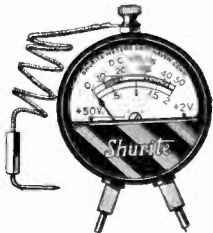
Model 550-DC with Zero Adjuster



Model 650-AC



Model 950-DC(or AC)



Model 450

Shurite panel meters are attractive, rugged, dependable instruments with accuracy well within 5%. All models are metal, telephone-black finish, all require 2 3/32" hole. DC meters are polarized-vane solenoid type, AC meters are double vane repulsion type.

Advantages of this complete line.

All-metal dials, age and moisture resistant, lithographed in black on white for high visibility.

Improved design, with new coil frames and attached insulators for greater rigidity, yet interchangeable in other respects with similar type of instrument formerly available.

Improved appearance, with concealed coils, full view scales, and attractive styling and finish.

Guarantee: All Shurite meters are guaranteed to users against defective workmanship and material, and will be repaired or replaced if sent to the factory postpaid with 25¢ handling charge within one year after date of purchase.

Model 550-DC, flush case, narrow ring, round, has long U-bracket.

Model 550-AC, flush case, narrow ring, round, has ring clamp.

Models 650-DC and 650-AC, flush case, wide round flange, have screw holes for mounting, hardware included.

Models 950-DC and 950-AC, flush case, square flange, have screw holes for mounting, hardware included.

### IMPORTANT—How To Order:

For all standard models, give: (1) Model Number, (2) Range, (3) Stock Number. If Model number and stock number are not stated, Model 550 will be supplied.

### ZERO ADJUSTERS(Z)

Zero Adjusters are available only on Models 550-DC and 650-DC. No zero adjuster on Model 950. When ordering, add Z to stock number. Example: Stock number for Model 550-DC voltmeter, 0-1 volt range—without zero adjuster is 5101. With zero adjuster, it is 5101-Z.

### PANEL CALIBRATION(S)

Meters are calibrated for non-magnetic panels. If for magnetic (steel) panel mounting, specify thickness and overall size of panel, and add-S to stock number when ordering, as 5101-S. If thickness of panel is not specified, meter will be supplied for .040 panel.

(Prices shown are net for individually boxed meters)

## DC AMMETERS

RANGE	MODEL 550*		MODEL 650*		MODEL 950	
	Stock No.	Net Each	Stock No.	Net Each	Stock No.	Net Each
Amps.						
0-1	5201	\$1.30	6201	\$1.40	9201	\$1.45
0-3	5202	1.30	6202	1.40	9202	1.45
0-5	5203	1.30	6203	1.40	9203	1.45
0-8	5204	1.30	6204	1.40	9204	1.45
0-10	5205	1.30	6205	1.40	9205	1.45
0-15	5206	1.30	6206	1.40	9206	1.45
0-25	5207	2.00	6207	2.10	9207	2.15
0-50	5208	2.00	6208	2.10	9208	2.15
1-0-1	5209	1.30	6209	1.40	9209	1.45
3-0-3	5210	1.30	6210	1.40	9210	1.45
5-0-5	5211	1.30	6211	1.40	9211	1.45
6-0-6	5212	1.30	6212	1.40	9212	1.45
10-0-10	5213	1.30	6213	1.40	9213	1.45
20-0-20	5214	1.40	6214	1.50	9214	1.55
30-0-30	5215	1.80	6215	1.90	9215	1.95
0-0-50	5216	2.00	6216	2.10	9216	2.15

\*For zero adjuster, add 30¢ to price and Z to stock number. No zero adjuster on Model 950.

## AC AMMETERS

RANGE	MODEL 550		MODEL 650		MODEL 950	
	Stock No.	Net Each	Stock No.	Net Each	Stock No.	Net Each
Amps.						
0-1	5501	\$2.35	6501	\$2.45	9501	\$2.50
0-3	5502	2.35	6502	2.45	9502	2.50
0-5	5503	2.35	6503	2.45	9503	2.50
0-10	5504	2.35	6504	2.45	9504	2.50
0-30	5505	2.50	6505	2.60	9505	2.65
0-50	5506	3.00	6506	3.10	9506	3.15

## DC MILLIAMMETERS

RANGE	MODEL 550*		MODEL 650*		MODEL 950	
	Stock No.	Net Each	Stock No.	Net Each	Stock No.	Net Each
Ma.						
0-3**	5314	\$2.60	6314	\$2.70	9314	\$2.75
0-3	5301	2.00	6301	2.10	9301	2.15
0-5	5302	1.85	6302	1.95	9302	2.00
0-10	5303	1.75	6303	1.85	9303	1.90
0-15	5304	1.35	6304	1.45	9304	1.50
0-25	5305	1.35	6305	1.40	9305	1.45
0-50	5306	1.30	6306	1.40	9306	1.45
0-100	5307	1.30	6307	1.40	9307	1.45
0-150	5308	1.30	6308	1.40	9308	1.45
0-200	5309	1.30	6309	1.40	9309	1.45
0-300	5310	1.30	6310	1.40	9310	1.45
0-400	5311	1.25	6311	1.35	9311	1.40
0-500	5312	1.25	6312	1.35	9312	1.40

\*\* 500 ohm internal resistance. Sensitive type; moving magnet construction—patent pending. Scale arc 75°

\*For zero adjusters add 30¢ to price and Z to stock number. No zero adjuster on Model 950.

## AC MILLIAMMETERS

RANGE	MODEL 550		MODEL 650		MODEL 950	
	Stock No.	Net Each	Stock No.	Net Each	Stock No.	Net Each
Ma.						
0-10	5607	\$2.65	6607	\$2.75	9607	\$2.80
0-25	5601	2.35	6601	2.45	9601	2.50
0-50	5602	2.35	6602	2.45	9602	2.50
0-100	5603	2.35	6603	2.45	9603	2.50
0-250	5604	2.35	6604	2.45	9604	2.50
0-500	5605	2.35	6605	2.45	9605	2.50

## DC VOLTMETERS

RANGE	MODEL 550*		MODEL 650*		MODEL 950	
	Stock No.	Net Each	Stock No.	Net Each	Stock No.	Net Each
Volts						
0-1	5101	\$1.25	6101	\$1.35	9101	\$1.40
0-3	5102	1.30	6102	1.40	9102	1.45
3-0-3	5103	1.30	6103	1.40	9103	1.45
0-5	5104	1.30	6104	1.40	9104	1.45
0-6	5105	1.30	6105	1.40	9105	1.45
0-8	5106	1.30	6106	1.40	9106	1.45
0-10	5107	1.35	6107	1.45	9107	1.50
0-15	5108	1.40	6108	1.50	9108	1.55
0-20	5121	1.40	6121	1.50	9121	1.55
0-25	5109	1.30	6109	1.40	9109	1.45
0-50	5122	1.35	6122	1.45	9122	1.50
0-25H**	5110	2.40	6110	2.50	9110	2.55
0-50H**	5111	2.80	6111	2.90	9111	2.95
0-75	5112	1.40	6112	1.50	9112	1.55
0-100	5113	1.50	6113	1.60	9113	1.65
0-100H**	5114	3.00	6114	3.10	9114	3.15
0-150	5115	1.70	6115	1.80	9115	1.85
0-150H**	5116	3.00	6116	3.10	9116	3.15
0-300H**	5117	3.25	6117	3.35	9117	3.40
0-500H**	5118	3.75	6118	3.85	9118	3.90
0-750H**	5119	4.50	6119	4.60	9119	4.65
0-8-160	5120	2.25	6120	2.35	9120	2.40

\*For zero adjuster, add 30¢ to price and Z to stock number.

\*\*H denotes high resistance. No zero adjuster on Model 950.

## AC VOLTMETERS

RANGE	MODEL 550		MODEL 650		MODEL 950	
	Stock No.	Net Each	Stock No.	Net Each	Stock No.	Net Each
Volts						
0-4	5401	\$2.35	6401	\$2.45	9401	\$2.50
0-6	5402	2.35	6402	2.45	9402	2.50
0-10	5403	2.35	6403	2.45	9403	2.50
0-15	5404	2.35	6404	2.45	9404	2.50
0-50	5405	3.00	6405	3.10	9405	3.15
0-150	5406	3.10	6406	3.20	9406	3.25
0-300	5407	3.70	6407	3.80	9407	3.85
0-600	5408	4.50	6408	4.60	9408	4.65
0-750	5409	5.10	6409	5.20	9409	5.25

## RESISTANCE METERS

RANGE	MODEL 550		MODEL 650		MODEL 950	
	Stock No.	Net Each	Stock No.	Net Each	Stock No.	Net Each
Ohms. Volts						
10,000 4.5*	6701	\$1.80	6701	\$1.90	9701	\$1.95

\* Requires 3 flashlight cells for resistance readings but does not require resistor for voltage readings.

## FLANGE ADAPTER RING

A sturdy flange ring for use with any Model 550 (round) Shurite meter where a flange mount is preferred. Makes appearance similar to Model 650. Wide flange, 2 1/2" dia. Telephone black finish. Screws, lockwashers and nuts included. Model 5-A, NET.....\$0.18

## POCKET TYPE METERS

A series of Shurite pocket meters using the Model 450 case is in production. Model 450 has nickel plated case, with two or three terminals, depending on ranges. Ranges suitable for pre-war and post-war batteries, portable radio batteries and many other electrical applications, including polarity indication types have been made, although they are not regularly stocked.

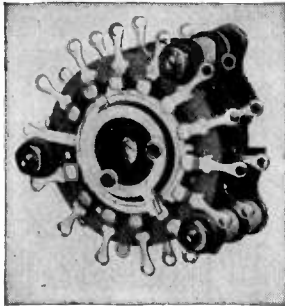
For ordering, use stock number regularly listed, changing the first digit to 4. For example, a 0-3 DC ammeter as illustrated becomes Stock No. 4202 as a pocket meter.

To arrive at price, add \$0.40 to catalog price of Model 550 meters sold at \$1.70 or less; add \$0.30 for meters sold at \$1.75 and above. For details, request Bulletin "Shurite Pocket Types."



## INSTRUMENT AND TESTER SWITCHES (LAMINATED)

Rotary Selector — Single and Multi-Gang — Non-Shorting and Shorting\*



SS-14-2

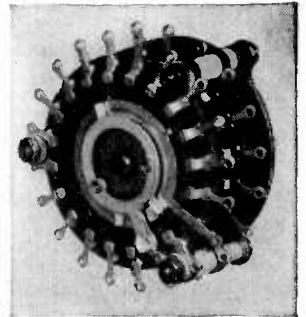
The switch that's IN LAST PLACE on the trouble-shooter's check list . . . AND PROUD OF IT!

J-B-T Instrument Type Rotary Selector Switches were designed and developed to meet the need for trouble-free, dependable performance in hard service. These superior switches are used extensively in high quality test equipment, portable instruments, inspection setups and experimental circuits. Available in two basic types—14 and 20 position—the design gives extra contacts in minimum space. One to six decks.

**FEATURES:**

**Reliability**—Rigid, 3-post deck suspension, instead of the usual 2; all parts heavily coin silver plated to meet 200 hour salt spray test; ball bearing action, beryllium-copper spring, and special design detent wheel assure positive indexing. Laminated plastic decks and rotors selected for maximum mechanical and dielectric strength.

**Exceptional Compactness**—14-position switch takes 13 circuits and "off" in 2" circle; 20-position switch handles 19 circuits and "off" in 2-23/32" circle. Additional decks require only 5/16" spacing per section.



SS-20-2

**Low Contact Loss**—Double-grip collector arms, and large-area contacts, silver to silver, result in an average contact resistance of .007 ohms or less during the useful life of the switch.

**Ample Dielectric**—Normal make-and-break with resistance load, 25 Ma. at 300 volts AC or DC; normal carrying capacity (not

make-and-break), 1 amp.; maximum momentary capacity (not make-and-break), 5 amp.; maximum voltage between contacts and ground, 1000 volts R.M.S.; between decks and ground, 2000 volts R.M.S.

\*Standard items, but not regularly stocked, check with your distributor.

**BASIC 14-POSITION:** Knob supplied only on individually packed units—not on bulk orders unless specified. Collector arm placed directly opposite to flat of shaft, unless otherwise specified. Contact lugs and common lugs positioned as shown, 13 contacts per deck. One to six decks; for each additional deck (or gang) add 5/16" to depth. Continuous rotation type supplied unless otherwise specified. Adjustable Stop supplied when requested. Panel Locator available on special order. Special stabilizing end ring used on switches with three or more decks. Panel locator positioned as shown unless otherwise specified on bulk orders.

**BASIC 20-POSITION:** Knob supplied only on individually packed units—not on bulk orders unless specified. Collector arm placed directly opposite to flat on shaft, unless otherwise specified. Contact lugs and common lug positioned as shown, 19 contacts per deck, continuous rotation types. One to six decks; for each additional deck, add 5/16" to depth. Continuous rotation type supplied unless otherwise specified. Panel locator positioned as shown unless otherwise specified on bulk orders.

**LAMINATED SWITCHES, SS-14 TYPE**

(14 positions: angular indexing 25° 43')

Model	Positions Per Circuit	Circuits Per Deck	Decks or Gangs	Shorting, Non-Shorting	Net Price, Individually
					Boxed, Including Knob
SS-14-1	14	1	1	N-S	\$1.35
SS-14-1A*	5†	2	1	N-S	1.40
SS-14-1S*	14	1	1	S	1.35
SS-14-1CS‡	14	1	1	CS	1.70
SS-14-2	14	1	2	N-S	1.65
SS-14-2A*	5†	2	2	N-S	1.75
SS-14-2S	14	1	2	S	1.65
SS-14-2CS‡	14	1	2	CS	2.30
SS-14-3	14	1	3	N-S	2.05
SS-14-3S*	14	1	3	S	2.05
SS-14-4	14	1	4	N-S	2.65
SS-14-6	14	1	6	N-S	3.85

\*Standard items, but not regularly stocked; check with your distributor.

†Denotes correction in former catalogs; 5 positions include 4 "live" and 1 "off".

‡Complete shorting — all contacts shorted except one in use.

**LAMINATED SWITCHES, SS-20 TYPE**

(20-positions: angular indexing, 18°)

SS-20-1	20	1	1	N-S	\$1.75
SS-20-1A*	5§	2	1	N-S	1.80
SS-20-1S*	20	1	1	S	1.75
SS-20-2	20	1	2	N-S	2.20
SS-20-2S*	20	1	2	S	2.20
SS-20-3	20	1	3	N-S	2.95
SS-20-4	20	1	4	N-S	3.60
SS-20-6	20	1	6	N-S	5.10

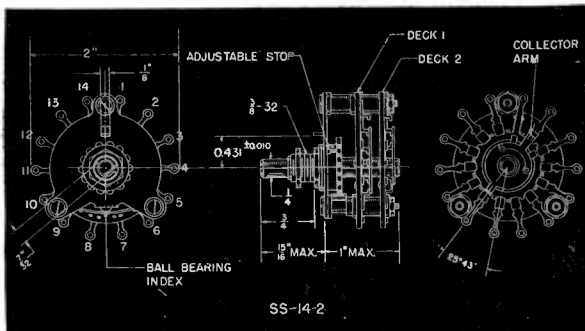
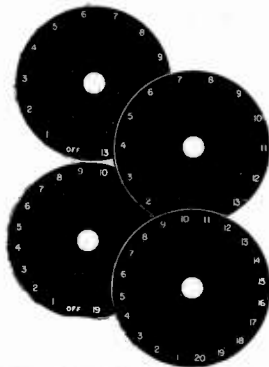
\*Standard items, but not regularly stocked; check with your distributor.

§Denotes correction in former catalogs; 6 positions include 5 "live" and 1 "off".

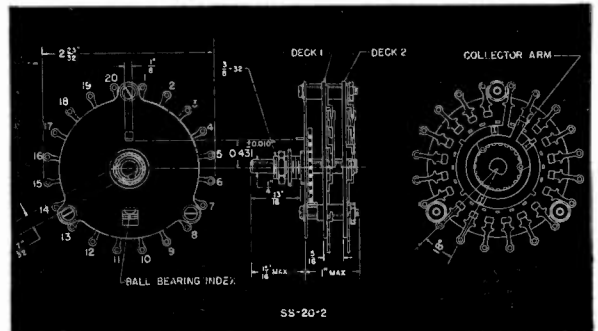
**ETCHED DIAL PLATES**

SS-14 or MS-14 Series  
SS-20 or MS-20 Series

- EP-13  
off thru 13 .....\$0.19
- EP-14  
1 thru 14 .....\$0.19
- EP-19  
off thru 19 .....\$0.19
- EP-20  
1 thru 20 .....\$0.19



SS-14-2

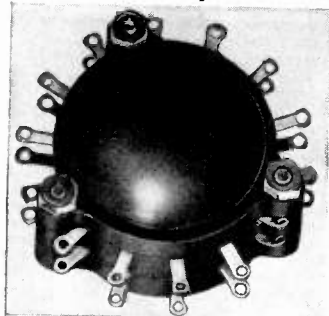


SS-20-2

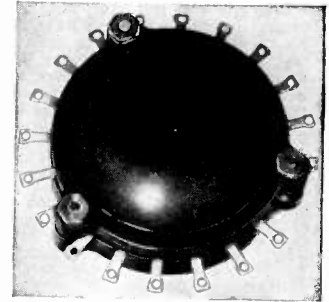
Special stabilizing end ring used in 14-position switches with three or more decks.

## BRAND NEW! MOLDED ROTARY SELECTOR SWITCHES

Fully Enclosed — Single and Multi-Gang — Shorting and Non-Shorting\*



MS-14-2



MS-20-1

- All moving contacts enclosed — eliminates dirt and corrosion.
- Contact lugs permanently integrated into switch assembly.
- Sturdy construction with 3-post deck suspension, double grip collector arms, and rectangular drive shaft through decks for precision indexing.
- Interchangeable, electrically and mechanically, with J-B-T 14- and 20-position laminated switches, widely used by industry and Armed Services.

### FEATURES:

For description of rigid 3-post construction; heavy coin silver plating to meet 200-hour salt-spray test; excep-

tional compactness; .007 ohm average contact resistance; current-carrying capacity and voltage breakdown, see adjoining page on SS-14 and SS-20 laminated switches. Besides fully enclosing all the moving contact parts, the molded switches differ from the laminated construction in the design of the detent mechanism, but both types provide the positive indexing which quickly identifies the superior quality of J-B-T switches.

**BASIC 14-POSITION MOLDED (MS-14):** 13 circuits and "off" per deck in 2" circle for compactness. Molded end cover regularly supplied on MS-14 series. Knob included with individually boxed units — not on bulk orders unless specified. Collector arm placed directly opposite to flat of shaft, so that knob pointer points to live contact. Common or "off" contact lug is bent down for ready identification. Internal construction: double-grip collector arms hold contact lug on upper and lower surfaces; collector ring is self-wiping. One to six decks add  $\frac{1}{16}$ " per deck (or gang) to depth; for special orders beyond six decks indexing mechanisms at top and bottom of switch are recommended, adding 1" extra to overall depth. Continuous rotation type supplied unless adjustable stop (type MAS) is ordered or, on quantity orders, pre-set fixed stops are specified. Panel locator is available on quantity orders when specified; on MS-14-4 and MS-14-6, extra hex nut and longer screw are supplied for inverting supporting screw nearest common, thus converting into panel locator.

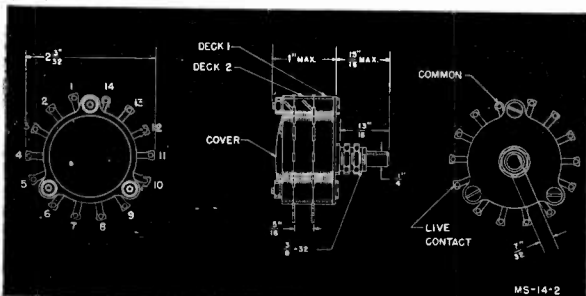
**BASIC 20-POSITION MOLDED (MS-20):** 19 circuits and "off" per deck in 2" circle for compactness. Molded end cover regularly supplied. Knob included with individually boxed units — not on bulk orders unless specified. Collector arm placed directly opposite to flat of shaft, so that knob pointer points to live contact. Common or "off" contact lug is bent down for ready identification. Internal construction: double-grip collector arms and self-wiping collector ring are standard construction. One to six decks; add  $\frac{1}{16}$ " per deck (or gang) to depth. Continuous rotation type supplied; on quantity orders, pre-set fixed stops are available. Panel locator available on quantity orders when specified; on MS-20-4 and MS-20-6, extra hex nut and longer screw are supplied for inverting supporting screw nearest common, thus converting into panel locator.

### MOLDED SWITCHES, MS-14 TYPE

(14 positions; angular indexing 25° 43')  
Continuous rotation, no stops

Model	Positions Per Circuit	Circuits Per Deck	Decks or Gangs	Shorting, Non-Shorting	Net Price, Individually Boxed Including Knob
MS-14-1	14	1	1	N-S	\$1.35
MS-14-1S*	14	1	1	S	1.35
MS-14-2	14	1	2	N-S	1.65
MS-14-2S*	14	1	2	S	1.65
MS-14-3	14	1	3	N-S	2.05
MS-14-4	14	1	4	N-S	2.65
MS-14-6	14	1	6	N-S	3.85

\*Standard items not regularly stocked; check with your distributor.



MS-14-2

### MOLDED SWITCHES, MS-20 TYPE

(20 positions; angular indexing 18°)

Continuous rotation, no stops

Model	Positions Per Circuit	Circuits Per Deck	Decks or Gangs	Shorting, Non-Shorting	Net Price, Individually Boxed Including Knob
MS-20-1	20	1	1	N-S	\$1.75
MS-20-1S*	20	1	1	S	1.75
MS-20-2	20	1	2	N-S	2.20
MS-20-2S*	20	1	2	S	2.20
MS-20-3	20	1	3	N-S	2.95
MS-20-4	20	1	4	N-S	3.60
MS-20-6	20	1	6	N-S	5.10

\*Standard items not regularly stocked; check with your distributor.

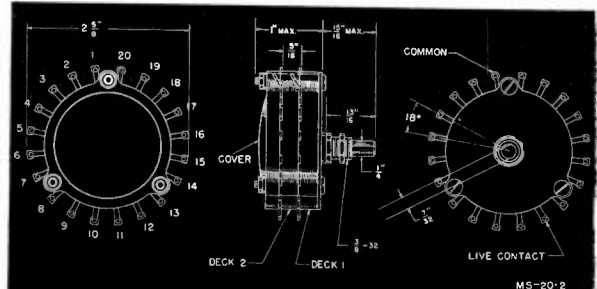
### ADJUSTABLE STOP MOLDED SWITCHES, MAS-14 TYPE

(14 positions; angular indexing 25° 43')

**IMPORTANT:** Enclosed adjustable stop mechanism located on panel side of switch will increase over-all switch length  $\frac{3}{16}$ ".

Model	Positions Per Circuit	Circuits Per Deck	Decks or Gangs	Shorting, Non-Shorting	Net Price, Individually Boxed Including Knob
MAS-14-1	14	1	1	N-S	on application
MAS-14-1S*	14	1	1	S	on application
MAS-14-2	14	1	2	N-S	on application
MAS-14-2S*	14	1	2	S	on application
MAS-14-3	14	1	3	N-S	on application
MAS-14-4	14	1	4	N-S	on application
MAS-14-6	14	1	6	N-S	on application

\*Standard items not regularly stocked; check with your distributor.



MAS-20-2

## APPLIANCE TEMPERATURE TESTERS

**A NEW IDEA IN TESTERS** — The need for scientific but sturdy portable test equipment in the appliance service field is met by this exclusive line. Here the user profits from J-B-T's wide experience in building field test sets for many well-known manufacturers of ranges, irons, refrigerators, deep freeze units, and similar equipment. All J-B-T testers include the principle of remote reading of temperature,—and temperature measures the real usefulness of the appliance.



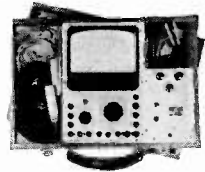
**MODEL 32-JP-4.** Checks oven temperature of gas and electric ranges and other appliances. Ideal for testing and setting thermostats. Has binding posts for quick attachment of thermocouples listed below to check irons, toasters, waffle-bakers, roasters, clothes dryers, etc. Exceptionally fast, continuous response; automatically compensates for ambient temperature. For full details see Bulletin JP-104. Range 0—650° F; black leatherette case 6" x 3 3/8" x 3 3/4". Complete with SA-116 5 1/2' calibrated thermocouple, clip for attaching to grill, and convection shield for steady readings.....\$23.75

**MODEL 32-JP-3.** A very popular oven tester with all the features of Model 32-JP-4 except that no carrying strap is included, and the thermocouple supplied is attached permanently instead of to binding posts. This model is extensively used for service work, sales demonstrations and inspection. Range 0-650° Fahrenheit; 10° divisions readable to 2 1/2'; automatically compensated for ambient temperature. For more details, see Bulletin JP-103. Complete with attached SA-116 5 1/2' calibrated thermocouple, clip and shield.....\$22.75



### ALL-PURPOSE TESTER

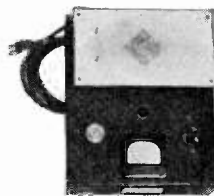
**MODEL 61-JRT.** This 9-in-1 tester is the very latest for accurate temperature adjustment and precise electrical circuit analysis. For ranges, refrigerators and many other appliances. Rapidly reads four cold zones, —100° to +80°F, up to 14' distant; two heat zones, 0—600°F, up to 5 1/2' distant; one voltage range, 0—300 A.C.; and, with transformer, two current ranges, 0—30 and 0—60 amps., A.C. Sturdy, polished walnut case 15 1/2" x 10 3/8" x 4 3/4" with handle and slip hinges. Two-color etched metal panel. Separate switches protect bulb and ammeter circuits. Requires one standard flash-light cell, replaceable in the field. Temperature scale accuracy ±2% of full scale. A.C. readings ±5% (±3% for rectifier). Space for four SA-162 Resistance Bulbs with 14' polyethylene lead, two SA-116 thermocouples with clip and shield, one pair of 4' electrical leads with prods and plugs, 6' jumper leads, and enclosed transformer. Other accessories, listed below, may be added for testing irons, grills, roasters, toasters, etc. As described, except including two SA-162 resistance bulbs, two SA-116 thermocouples, necessary electrical leads, and AS-TR-2 built-in transformer.....\$97.50



For more details, see Bulletin JRT-349.

**MODEL 61-JRT (LESS TRANSFORMER).** Same unit, same scales, except does not read in amperes; AS-TR-2 transformer assembly omitted.....\$85.00

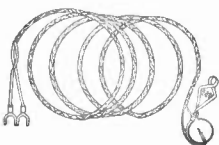
### IRON TESTER



**MODEL 32-JIT.** Self-contained bench type tester; checks all makes of irons; measures thermostat temperatures; and shows open or short circuits. Automatically compensated for room temperature. Also indicates operating temperature of the sole plate (working surface) on non-electric or cordless irons. Black metal case; overall size 10" x 12" x 5 1/2"; scale 0—650° F, 15 amp. fuse, 6' cord, 110-volt, 50-60 cycles.....\$28.75

## ATTACHMENTS AND SPARE PARTS

### THERMOCOUPLES

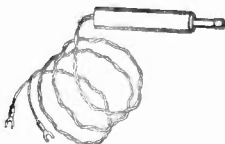


**SA-116 with SHIELD and CLIP.** Flexible No. 22 gauge iron constantan, asbestos insulated, 5 1/2', with attachment clip and convection shield; for use with Models 32-JP-1, 32-JP-2, 32-JP-3 and 32-JP-4 oven testers; also 60-JRT and 61-JRT all-purpose testers. ....\$1.65

**SA-175 (PLAIN TIP).** For roasters, waffle irons, etc., 5 1/2' iron constantan flexible No. 22 gauge, asbestos insulated, with small ball tip; used where clip and shield of SA-116 not suitable; for Models 32-JP-2, 32-JP-4, 60-JRT, and 61-JRT.....\$1.30

**SA-176 (for TOASTERS, etc.)** 5 1/2' iron constantan No. 22 gauge, asbestos insulated, with special disc to collect heat; easily attached to 32-JP-2 and 32-JP-4 oven testers, also 60-JRT and 61-JRT. ....\$2.25

**SA-300 (FOR SURFACE READINGS).** Spring-type iron constantan in Transite tip with handle and 5' No. 22 gauge lead for extremely rapid heat readings; for attachment to 32-JP-3, 32-JP-4, 60-JRT and 61-JRT appliance testers .....\$5.00



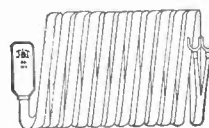
**SA-301 (REPLACEMENT TIP FOR SA-300).** Transite tip and thermal element only .....\$2.50



**IRON TESTER THERMOCOUPLE, MODEL IT-1.** This attachment is identical with the 32-JIT, except there is no meter. It is easily connected to Models 32-JP-2, 32-JP-4, 60-JRT and 61-JRT. Shows open circuits and shorts, checks sole plate temperatures and thermostats on all types of irons. ....\$14.75

**SA-170 (REPLACEMENT THERMOCOUPLE for IRON TESTERS 32-JIT and IT-1).** Thermocouple and lead, including aluminum plate and special tip, quickly installed in the field.....\$1.90

### RESISTANCE BULBS (FOR COLD TESTING)



**SA-142.** For use only with Model 60-JRT; calibration is not interchangeable with SA-162; has no embossed number.....\$5.00

**SA-162.** For use only with Models 50-50 and 61-JRT; identified by embossed part number.....\$5.00

**CL-90 CLAMP.** Metal clamp for holding SA-142 and SA-162 resistance bulbs in contact with surfaces up to 1/4".....\$0.25

### TRANSFORMERS

**AS-TR-2.** Attachment for compartment of 61-JRT all-purpose tester, completely housed, with jumper lead and panel; reads 30 and 60 AC amp. scales on tester.....\$15.00

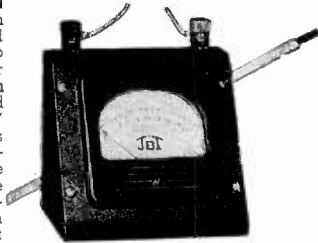
**AS-TR-3.** Attachment for increasing usefulness of 60-JRT all-purpose tester. Includes side rails for attaching inside compartment; fully housed. Reads 30 and 60 AC amp. by dividing volt scale by 10 or 5.....\$16.50

## TEMPERATURE INDICATORS

**WHERE TO USE:** To check heat rise of motors, transformers and coils; for laboratory furnaces, inspection set-ups, for remote indication of infra-red and other oven temperatures; and to maintain controlled industrial processes such as heat treating and annealing. When used with selector switch, permits centralized reading of one to ten thermocouples, as in Diesel exhaust manifold applications.

### MODEL 32-J

**MODEL 32-J PYROMETER IN SN-3 STAND.** Mounted in sloping front black metal stand, 4 1/4" high x 4 3/8" deep x 4 1/8" wide. Compensated for ambient temperature. Medium resistance system, damped for quick reading on 2 3/8" scale, assures ruggedness and pointer stability. To retain the accuracy of the installation: use only the type and resistance of thermocouple and lead which are provided; do not cut extra lead—coil it—change in length changes calibration. A protection tube is not generally required. Many users find it convenient to keep an extra couple and lead on hand.



### MODEL 32-J IN SN-3 STAND

0°—650° F—350° C, includes SA-91 thermocouple, SA-84 lead, and CB-1 connector block..... \$27.50  
 0°—1200° F—650° C, includes SA-87, SA-82, and CB-1..... 27.50  
 0°—2000° F—1100° C, includes SA-87, SA-82, and CB-1..... 27.50

**MODEL 32-J IN SN-5 STAND** (not illustrated). With 3 binding posts to accommodate flexible extra lead and thermocouple for hard-to-reach locations.

0°—650° F with SA-91 thermocouple, SA-84 lead, CB-1 connector block, and SA-86 flexible lead and thermocouple..... \$31.00

## TEMPERATURE

**LEAD WIRES.** To bring the reference junction within the pyrometer, compensating or extension lead wires should always be used. See the instrument dial for (1) the kind of lead and (2) combined resistance of lead and thermocouple. Standard leads include:

**SA-82** 6' compensating lead for chromel-alumel couples; duplex, stranded; asbestos-insulated, cotton-braid impregnated with moisture-proof and flame-proof compound; terminals at instrument end; other end tinned for connector block ..... \$1.40

**SA-83** 26' compensating lead for chromel-alumel as above \$4.40

**SA-84** 6' extension lead for iron-constantan, 1938 calibration; duplex; moisture-proof and flame-proof; prepared as above \$1.40

**SA-85** 26' extension lead for iron-constantan, 1938 calibration; similar to above ..... \$4.40

**SA-86** 7' iron-constantan thermocouple and lead combined; twisted pair No. 20 Ga., asbestos-insulated—for intermittent use on 600° F scales; terminals at instrument end; other end welded; (resistance is not interchangeable with SA-84 nor with SA-85) ..... \$1.70



**THERMOCOUPLES.** For pyrometers and leads above, J-B-T thermocouples are carefully selected, standardized, and tested.

**SA-87** 12" No. 14 Ga. chromel-alumel, 2-hole ceramic beads, fits 5/16" hole; welded tip ..... \$2.80

**SA-88** same except 24" No. 14 Ga. .... \$3.50

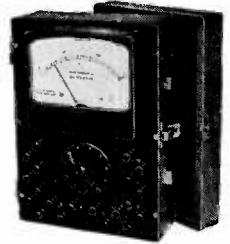
**SA-89** 12" No. 8 Ga. chromel-alumel, 2-hole ceramic beads, fits 7/16" hole; welded tip ..... \$2.80

**SA-90** same except 24" No. 8 Ga. .... \$3.50

**SA-91** 12" No. 14 Ga. iron-constantan, 1938 calibration; 2-hole ceramic beads, fits 5/16" hole; welded tip ..... \$2.35  
**Flexible Thermocouple,** 7' length, see SA-86 lead wire.

### MODEL 60-JPS

**MODEL 60-JPS.** This portable makes it easy to know temperatures at one to ten locations. Excellent for study of heat in various parts of the same equipment, or in a battery of units. Knife-edge pointer, 5.6" scale. Heavy-duty thermocouple switch has average contact resistance of .00075 ohms or less. Automatically compensated for ambient temperature, indoors or outdoors. To retain accuracy of 1% full scale, use leads and thermocouples equal to resistance and e.m.f. vs. temperature characteristics for which instrument is calibrated. Medium resistance system assures portability. Housed in natural-finish wood case 1 3/8" x 8 5/8" x 4 5/8" over rubber feet. A "must" for inspection, maintenance, and engineering.



**60-JPS**—0°—600° F with SA-86, 7' thermocouple and lead for small apertures..... \$92.60

**60-JPS**—0°—1200° F with SA-88, SA-82, and CB-1..... 95.00

**60-JPS**—0°—2000° F with SA-88, SA-82, and CB-1..... 95.00

**60-JP**—For one thermocouple only; furnished with thermocouple and lead same as 60-JPS, but without selector switch.

0°—600° F, with SA-86 ..... \$67.60

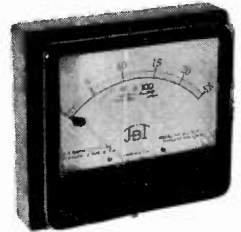
**60-JP**—0°—1200° F, with SA-88, SA-82, and CB-1..... 70.00

**60-JP**—0°—2000° F, with SA-88, SA-82, and CB-1..... 70.00

**Note:** When ordering additional thermocouples, specify couples and leads as above. Centigrade equivalent scales available on order.

### Model 70-J

**MODEL 70-J PYROMETER,** for accurate reading at a distance, has full 6" scale and spade pointer, with accuracy of 1% of total scale deflection. Automatically compensated for ambient temperature. Molded case mounted in metal protecting shell 7 3/8" x 8 1/8" x 1 1/2". Connections through bottom of case for wall or front-of-board mounting. When ordering, specify which standard scale range: 0°—600° F for 1938 std. I-C; 0°—1200° F for C-A; 0°—2000° F for C-A thermocouples.

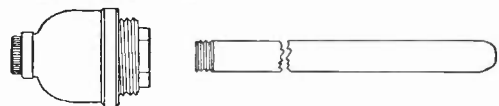
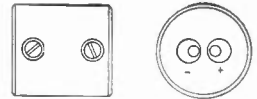


**PRICE,** including 24" thermocouple and 26' lead..... \$60.00  
**Note:** Centigrade equivalent scales available on order.

## ACCESSORIES

### CONNECTOR BLOCK Model CB-1

Lava connector block, withstands high temperatures, accommodates all thermocouples up to No. 6 Ga. Heavy brass connectors keep contact resistance low. Can be used independent of connector head. .... \$1.50



### CONNECTOR HEAD Model CH-6

Connector head encloses connector block and rigidly supports protection tube around thermocouple. Opens for thermocouple inspection without disconnecting circuit. Normally supplied with reducing bushing for 1/2" i.p.s. Composition bushing at top can be removed for permanent 1/2" conduit installation. Including block..... \$2.50

**PROTECTION TUBES** protect and support "base-metal" thermocouples such as above. Used in permanent installations at higher temperatures, or in damaging atmospheres. One end is closed, other end normally threaded for 1/2" i.p.s. Proper quality of tubing is very important.

**No. 1 Wrought Iron**—For temperatures to 1200° F in oil baths, brazing, and general intermittent duty.

**TU-11** No. 1—12 inches \$1.50 **TU-12** No. 1—24 inches \$2.00

**No. 7 Alloy**—27% chromium, iron; seamless drawn tube; for cyanide pots, salt baths with cyanide, open fire with sulphurous content; to 2300° F.

**TU-5** No. 7—12 inches \$6.25 **TU-6** No. 7—24 inches \$9.85

**No. 9 Alloy**—62% nickel, 13% chromium; seamless drawn; for salt baths without cyanide; for gas and oil open fire furnaces and general use, except sulphurous atmospheres; to 2300° F.

**TU-2** No. 9—12 inches \$4.75 **TU-3** No. 9—24 inches \$8.25

**Note:** For temperatures above 2300° F; platinum, platinum-rhodium thermocouples are available.

## VIBRATING REED FREQUENCY METERS (PATENTED)

J-B-T Vibrating Reed Frequency Meters are used extensively in radio, telephone, and television service, on engine generator sets, in laboratories, in many types of electronic equipment, on panel and control boards in central stations and industrial plants—wherever constant or known frequency is important to efficient operation of equipment.

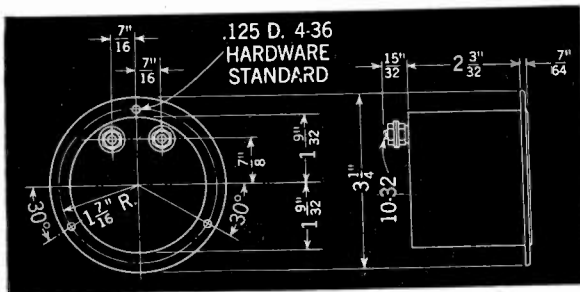
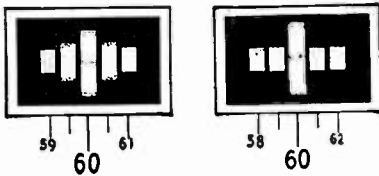
### PRINCIPLE OF OPERATION:

Simple in design, the J-B-T Meter consists of a case, base, dial and central mounting frame, with a series of spring steel reeds screwed to a reed mounting bar, individual driving coil surrounding each bank of reeds, permanent magnet, series resistor and terminal studs.

Each reed is adjusted to respond by resonance to but one frequency. As the alternating current (or interrupted direct current) excites the driving coil, the one reed "in tune" with the frequency in the coils will respond by vibrating rapidly because of permanent magnet polarization and induced magnetism from the coil. The instrument is adapted to specified operating voltage by a series resistor. Frequency of the current is read on the graduated face of the instrument.

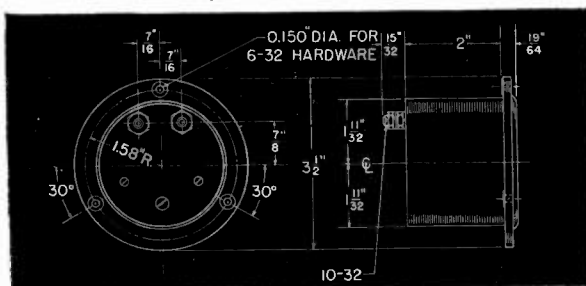
### ADVANTAGES:

Some standard models are available in either half cycle or full cycle steps, as shown below on two meters indicating a frequency of 60 cycles.



Above: Models 30-F, 31-F, 33-F, 34-F; Metal Case

Below: Models 30-FX, 31-FX, 33-FX, and 34-FX; Molded Case Meets Mounting Dimensions of JAN-1-6 and AWS



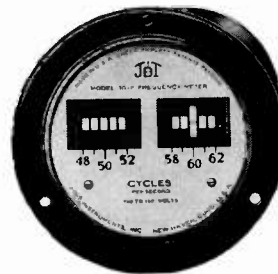
Both response patterns are extremely easy to read. In the half-cycle instrument the response is broad; in the full-cycle instrument the response is sharp.

Guaranteed accuracy of  $\pm 0.3\%$  or better of the frequency being measured, depending on the model. High fatigue safety factor for continuous operation, and outstanding temperature stability. Temperature compensators are not required.

All meters are permanently calibrated at the factory and do not require subsequent adjustment. Accuracy is not affected by wave form or external magnetic fields. Built with no pivoted parts and with lock washers at every critical point, these rugged meters can take rougher treatment than many instruments.

### CAUTION:

If a meter plugged in on a 60 cycle AC power line does not indicate a frequency of exactly 60 cycles, trust the meter! Power supply may momentarily be off-frequency due to changing load conditions beyond the control of Utility. All J-B-T Vibrating Reed Frequency Meters are accurately calibrated at the factory, entirely independent of frequency of power supply.



MODEL 30-F

### MODEL 30-F

**Range:** 48-52 and 58-62 cycles. Double window for ease of reading frequency in either range. Often specified for export. 100-130 volts; 130 ohms per volt; 1 watt power consumption. Accuracy  $\pm 0.3\%$ . Flush panel mounting. For details, Bulletin VF-43.

30-F, 48-52 and 58-62 cy., 3/4" Metal Case ..... \$25.00  
30-FX, 48-52 and 58-62 cy., 3/2" Molded Case, AWS mtg. .... \$25.00

### MODEL 31-F

Used in standby power equipment. Handy for accurately measuring frequency of power source. Five reeds, 58-62 cycles. Other characteristics same as Model 30-F. For details, Bulletin VF-43).

31-F, 58-62 cy., 3/4" Metal Case ..... \$21.50  
31-FX, 58-62 cy., 3/2" Molded Case, AWS mtg. .... \$21.50



MODEL 31-F

### MODEL 34-FX

Used where a broader frequency band is desirable. Nine reeds, 56-64 cycles, or in half-cycle steps (accuracy  $\pm 0.2\%$ ) 58-62 cycles. 100-130 volts; 130 ohms per volt; 1 watt power consumption. Flush panel mounting. For details, Bulletin VF-43.

34-F, 56-64 cy., 3/4" Metal Case ..... \$24.75  
34-FX, 56-64 cy., 3/2" Molded Case ..... \$24.75  
34-F, 58-62 cy., 3/4" Metal Case ..... \$26.25  
34-FX, 58-62 cy., 3/2" Molded Case, AWS mtg. .... \$26.25



MODEL 34-FX

### MODEL 33-F

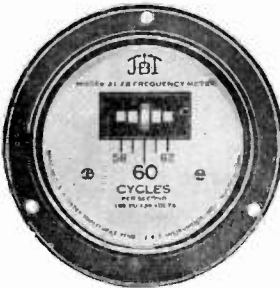
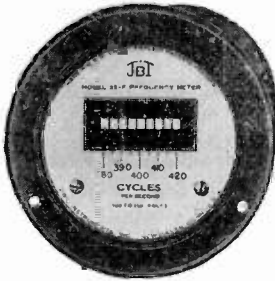
400-cycle. Used for measuring frequency of high-cycle power sources, including new heavy aircraft. Accuracy  $\pm 0.3\%$ . Nine reeds, 380 to 420-cycle range. 100-130 volts; 70 ohms per volt; 1.75 watts power consumption. Flush panel mounting. For details, see Bulletin VF-43-1A.

33-F, 380-420 cy., 3 1/4" Metal Case ..... \$31.00  
 33-FX, 380-420 cy., 3 1/2" Molded Case, AWS mtg. .... \$31.00

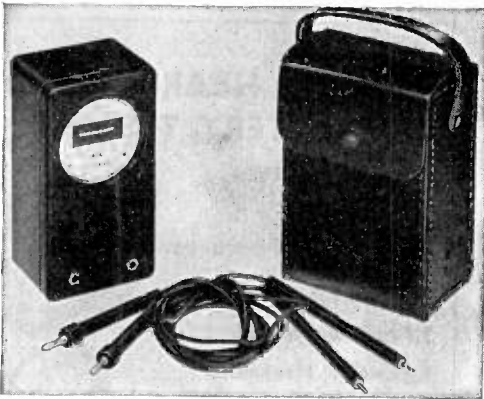
### MODEL 21-FX

Smallest frequency meter manufactured. Meets ASA (AWS) C39.2-1944 in depth of case as well as in mounting dimensions and mounting hardware. Matches other 2 1/2" panel instruments. Weighs only 4 1/2 oz. 100-130 volts; 5 reeds; 58-62 cycles; 190 ohms per volt; 0.6 watt power consumption. Also 116 to 124 cy.; 160 ohms per volt; 0.7 watt power consumption. 390 to 410 cy.; 85 ohms per volt; 1.3 watts power consumption. Flush panel mounting. For details, see Bulletin VF-43-1B.

21-FX, 58-62 cy., 2-11/16" Molded Case ..... \$20.50  
 21-FX, 116-124 cy., 2-11/16" Molded Case, AWS mtg. ... \$23.00  
 21-FX, 390-410 cy., 2-11/16" Molded Case ..... \$25.00



### PORTABLE FREQUENCY TESTERS



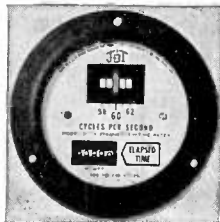
**MODEL 33-FP-9L.** Handy, compact, portable instrument of exceptional accuracy even under poor wave-form conditions, fluctuating voltage or external magnetic disturbances. Meets exacting test requirements of aviation, signal and communication equipment. Housed in sturdy molded case 5 7/8" x 3 1/2" x 2 5/8" with leather carrying case 6 3/8" x 4 1/4" x 2 3/4". 4' leads are supplied complete with sharp 5" insulated test picks and banana plugs. Electrical characteristics identical with 400 cycle 33-F. Model 34-FP-9L electrical characteristics identical with 60-cycle 34-FX.

33-FP-9L, 380-420 cy. (Supersedes Model 33-FP-9) ..... \$43.25  
 34-FP-9L, 56-64 cy. (Supersedes Model 34-FP-9) ..... 37.00

### ELAPSED TIME-FREQUENCY METER

**MODEL 31-FE.** A unique panel instrument which combines the elapsed time meter or running time meter with frequency reeds. It is especially useful on motor generator sets and on electrical equipment where maintenance routine calls for periodic servicing. Reads 9,999.9 hours; 58-62 cycles at 110-130 volts. Self-starting.

31-FE ..... \$30.00



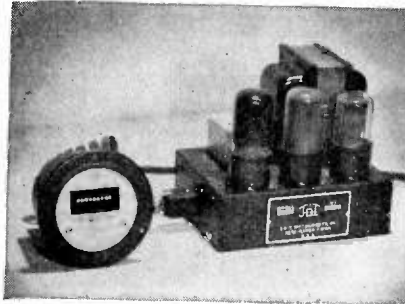
### VACUUM TUBE FREQUENCY METERS

(PATENTS PENDING)

**PRINCIPLES OF OPERATION:** J-B-T Models 33-VTF and 39-VTF Vacuum Tube Frequency Meters provide the maximum degree of accuracy in measuring frequencies located within definite bands. A multi-vibrator circuit in the electronic unit divides the incoming frequency by two, three or higher integers, then measures resultant frequency on a reed instrument.

**WHERE USED:** These models are especially useful for checking audio-oscillators, frequency converters, radar equipment, and for standardizing less accurate frequency measuring units.

**ADVANTAGES:** **Extreme Accuracy:** Within  $\pm 0.25\%$  for any indicated frequency. **Permanent Accuracy:** Calibrated at factory — no subsequent calibration or standardization required. **Temperature Drift Eliminated:** No initial stabilization period required. **Burn-Out Proof:** No protection needed against accidental frequencies above the range being measured. **Few Controls:** No complicated operation. **Stability of Circuit:** Accuracy of reading is independent of line voltage variation. No voltage regulator, external or internal, is required.



Model 33-VTF with cover removed. Vacuum tube unit attaches to rear of panel, meter is flush.

### MODEL 33-VTF, FIELD TYPE

Frequency ranges: 380-420 cycles; 760-840 cycles; 1140-1260 cycles; available singly or in combination. (See Model 33-F for single range 380-420 cycle meters). Voltage range: 100-130 volts. Power to operate the units is obtained from an

inverter or other source of frequency being measured. Power consumption: approximately 20 watts. This model requires no power supply other than the source whose frequency is being checked. Input impedance: approximately 650 ohms. Tubes used: 1-6N7-GT/G multi-vibrator; 1-6V6-GT/G amplifier; 1-6X5-GT/G rectifier. Size 4 5/8" x 5 1/2" x 6"; weight: approximately 6 lb. Black wrinkle finish. Frequency meter is 3 1/2" standard flush panel mounting. Connecting leads included.

### MODEL 33-VTF

Single range 760-840 cy. .... \$110.00  
 Single range 1140-1260 cy. .... 117.50  
 Double range 760-840; 1140-1260 cy. .... 125.00

### MODEL 39-VTF, LABORATORY TYPE

Frequency ranges: Basic range, 380-420 cycles. Multiplier switch permits use in ranges of 2, 3, 4, 6 and 9 times the fundamental range. (400, 800, 1200, 1600, 2400 and 3600 cycle bands). Voltage range: 100-350 volts. Power consumption: Approximately 25 watts at 115 volts. 60 cycles. Input sensitivity: 500,000 ohms. Size: housed in metal cabinet 8" x 10" x 8" with sloping panel.

Model 39-VTF, Series A— \$257.00



Model 39-VTF, Series A, showing portability

### ELAPSED TIME METER

**MODEL 31-EX.** To record operating time of 60 cycles, 115 volts, A.C. electrical and electronic equipment, this instrument registers in 1/10 hour steps to 9,999.9 hours, then automatically re-sets. Molded 3 1/2" case matches "X" frequency meters, fully encloses all parts. Popular for tube-life, maintenance schedules, machine time, etc.

31-EX ..... \$14.50





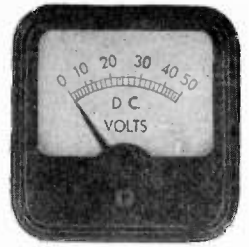


TYPE NF-2C

# EMICO PRECISION INSTRUMENTS

FOR  
PANELS AND TEST SETS

Electro Mechanical Instrument Co.  
813 Chestnut Street, Perkasie, Pa.



TYPE RF-2C

**EMICO panel and test meters are rugged and reliable instruments. Cases are of steel and finished in durable black. DC meters have the new HI-TORQ magnetic movements and are accurate to well within 5%. AC meters are of the moving iron type and are also accurate to within 5%.**

**MOUNTING—All model NF-2C and RF-2C meters will fit into a 2 1/8" diameter hole and are mounted by means of a U. clamp.**

**DESIGN—EMICO meters are designed to give satisfactory service under the most severe conditions. They are styled to add to the prestige and appearance of electrical equipment.**

**CALIBRATION—Since the instruments are calibrated in steel cases, their accuracy is not affected by panels made of magnetic materials of nominal thickness.**

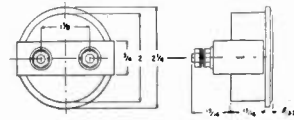
**GUARANTEED—All EMICO instruments are guaranteed against defective material and workmanship for a period of one year after date of purchase, and will be repaired or replaced if sent to the factory postpaid with a 50c handling charge.**

**EMICO instruments are available in quantities to jobbers or manufacturers in the following sizes: NF-2", RF-2", RF-2 1/2", and RF-4 1/2" at 3% accuracy. We invite your inquiries on instruments for special application.**

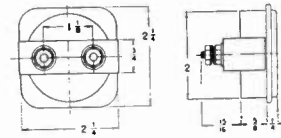
**PRICES—Prices listed are net and include all hardware and individual boxing.**

## DEALERS' PRICE LIST

DC AMMETERS		MODEL NF-2C	MODEL RF-2C	Dealers' Net Price
Range	Catalog Number	Dealers' Net Price	Catalog Number	Dealers' Net Price
0-1	2101	1.30	2201	1.40
0-5	2102	1.30	2202	1.40
0-10	2103	1.30	2203	1.40
0-20	2104	1.30	2204	1.40
0-30	2105	1.30	2205	1.40
1-0-1	2109	1.30	2209	1.40
3-0-3	2110	1.30	2210	1.40
6-0-6	2111	1.30	2211	1.40
10-0-10	2112	1.30	2212	1.40
15-0-15	2113	1.30	2213	1.40
20-0-20	2114	1.30	2214	1.40
30-0-30	2115	1.30	2215	1.40
<b>DC MILLIAMMETERS</b>				
0-3	2121	\$1.90	2221	\$2.00
0-5	2125	1.85	2225	1.95
0-10	2126	1.75	2226	1.85
0-20	2127	1.30	2227	1.40
0-30	2128	1.30	2228	1.40
0-50	2129	1.30	2229	1.40
0-100	2130	1.30	2230	1.40
0-150	2130-A	1.30	2230-A	1.40
0-200	2130-B	1.30	2230-B	1.40
0-300	2131	1.30	2231	1.40
0-500	2132	1.30	2232	1.40
<b>DC VOLTMETERS (LOW RESISTANCE)</b>				
0-1	2134	\$1.30	2234	\$1.40
0-3	2135	1.30	2235	1.40
0-3-0-3	2136	1.30	2236	1.40
0-5	2136-A	1.30	2236-A	1.40
0-8	2136-B	1.30	2236-B	1.40
0-10	2137	1.30	2237	1.40
0-50	2138	1.40	2238	1.50
<b>DC VOLTMETERS (HIGH RESISTANCE)</b>				
(100 ohms/volt except 150 and 300 volt ranges are 200 ohms per volt)				
0-10	2140	\$2.00	2240	\$2.10
0-30	2141	2.25	2241	2.35
0-50	2142	2.60	2242	2.70
0-150	2143	2.70	2243	2.80
0-300	2144	2.70	2244	2.80
<b>AC AMMETERS</b>				
0-1	6101	\$2.25	6201	\$2.35
0-3	6102	2.25	6202	2.35
0-5	6103	2.25	6203	2.35
0-10	6104	2.25	6204	2.35
0-25	6105	2.50	6205	2.60
0-50	6106	2.75	6206	2.85
<b>AC MILLIAMMETERS</b>				
0-25	6125	\$2.25	6225	\$2.35
0-50	6126	2.25	6226	2.35
0-100	6127	2.25	6227	2.35
0-250	6128	2.25	6228	2.35
0-500	6129	2.25	6229	2.35
<b>AC VOLTMETERS</b>				
0-5	6135	\$2.25	6235	\$2.35
0-10	6136	2.25	6236	2.35
0-15	6137	2.25	6237	2.35
0-25	6137-A	2.25	6237-A	2.35
0-50	6138	2.25	6238	2.35
0-150	6139	3.30	6239	3.40
0-300	6140	3.90	6240	3.95



TYPE NF-2C



TYPE RF-2C

## EMICO HEARING AID BATTERY TESTER

MODEL 103A

**Note These Features:**

- Unbreakable Metal Case
- Beautifully Finished Case
- Powerful Mechanism
- Color-Fast Metal Dial
- Easily Read Dial
- Reliably Accurate
- Will Not Drain Batteries



Designed to Test  
All Types of  
2 Volt "A" Batteries  
and 2 1/2, 30 and 45 Volt "B" Batteries

Available also in  
0-9 and 0-90 Volt Range —  
Specify Model 103B

**Write to Factory for Prices**

# DUMONT

## Cathode-Ray TUBES ★ OSCILLOGRAPHS ★ EQUIPMENT



### DU MONT TYPE 164-E 3" CATHODE-RAY OSCILLOGRAPH

★ A compact, portable instrument especially suitable for laboratory, shop, or field work. The 3" cathode-ray tube operates at an accelerating potential of 1,100 volts, thus providing brilliant, well-defined traces. Both amplifiers have uniform frequency response over their operating range: the single-stage vertical

amplifier has a voltage gain of approximately 43; the horizontal amplifier, which serves to amplify either sweep or externally applied signals, has a voltage gain of approximately 55. For added convenience, deflection signals may be applied directly to the cathode-ray tube without removing the cabinet.



### DU MONT TYPE 208-B 5" CATHODE-RAY OSCILLOGRAPH



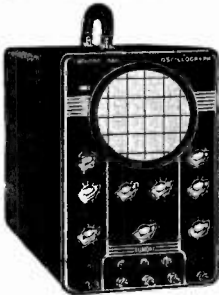
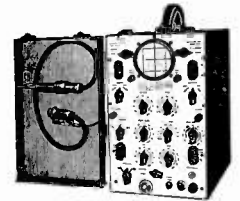
★ A moderately priced 5" instrument embodying many recent improvements that facilitate its application to the great majority of laboratory and production requirements. The Type 208-B is furnished with a 5" intensifier-type, high vacuum tube which operates at an accelerating potential of 1,400 volts, thus insuring trace brilliance. Freedom from

origin distortion, sharp focus at all deflecting frequencies, and a high deflection sensitivity that permits the viewing of moderately low-potential signals without the use of amplifiers, are additional features. The wide-band amplifiers provide symmetric deflection, and are direct-coupled to eliminate "electrical backlash" in the position-control circuits.

### DU MONT TYPE 224-A 3" CATHODE-RAY OSCILLOGRAPH

★ The wide-range response of this instrument provides faithful reproduction of all wave-forms with steep fronts and resultant large-harmonic content, thereby permitting the study of signals such as pulses and square waves involving

frequency components as high as 5 megacycles. Numerous combinations of signal-input connections at the front panel provide added flexibility and convenience of operation. A special feature is the provision for intensity modulation of the grid of the cathode-ray tube. Included is a test probe with cable shielded to eliminate stray pickup for high-frequency work.



### DU MONT TYPE 274-A 5" CATHODE-RAY OSCILLOGRAPH

★ The Du Mont Type 274-A Cathode-ray Oscillograph was developed as an inexpensive, general-purpose instrument for laboratory, radio service, and educational applications. The Type 274-A serves as an excellent null-indicator on inductance-

capacitance bridges, as a means of viewing voltage waveforms, as an output meter, as a means for measuring time and amplitude of pulses, as an indicator in studies of sound, light, electricity, and electronics, and many for other general applications.

### THE DU MONT TYPE 241 — CATHODE RAY OSCILLOGRAPH

The Du Mont Type 241, like the Type 224-A is designed as a high frequency oscillograph. Employing a 5-inch cathode ray tube, the Type 241, however, supplies the operator with greater visibility. The frequency response of the vertical amplifier is uniform within 30% to 2 megacycles, and uniform within 50% to 4 megacycles. This wide frequency response allows faithful reproduction of signals which are rich in harmonic content. The sensi-

tivity of the instrument, using the Y-axis amplifier, is 0.07 rms volts per inch. The beam-modulation circuit of the Type 241 is equipped with a Z-axis amplifier. Timing markers may be impressed on the trace by applying an intensity modulation signal, of either polarity, to this amplifier. A shielded, high-impedance input probe insures efficient coupling of the signal to the Y-axis amplifier of this instrument.



**For Oscillograph Prices and Specifications See Other Side**



# Cathode-Ray TUBES ★ OSCILLOGRAPHS ★ EQUIPMENT



## DU MONT TYPE 185-A ELECTRONIC SWITCH



★ The Du Mont Type 185-A Electronic Switch may be used in conjunction with any oscillograph to observe two related or unrelated signals simultaneously on the screen of the cathode-ray tube. The zero axes of the two signals may be displaced for individual study of either pattern. The two patterns may also be superimposed for comparative studies. A typical application is the use of one channel for the signal to be studied while using the second channel for a timing signal.

### SPECIFICATIONS

Switching rate: 10 to 2000 times/sec.  
 Frequency response: d-c to 5 kc.  
 Voltage gain: 10.  
 Input resistance: 0.1 meg.  
 Output resistance: 50,000 ohms.  
 Maximum input voltage: 150 v.

Maximum signal output: 75 v. peak-to-peak.  
 Dimensions: 11½" h., 7¾" w., 13" d.  
 PRICE: Cat. #1072-A, 115 v, 40-60 cps.....\$105.00  
 PRICE: Cat. #1073-A, 230 v, 40-60 cps.....\$105.00

## DU MONT SCALES AND FILTERS

★ The Type 216 Calibrated Scales provide a convenient means for making relative and quantitative measurements with the cathode-ray oscillograph. They are mounted on the cathode-ray screen by the celluloid clips.

Type No.	Description	Cat. No.	Price
216-A	3" Cal. Scale	1129-A	\$0.85
216-C	5" Cal. Scale	1128-A	1.20
216-D	5" Log. Decrement Scale	1130-A	2.25
216-E	5" Q Scale	1131-A	2.25
216-F	5" Polar Coordinate Scale	1132-A	2.50
216-G	5" Green Filter	1133-A	2.10
216-H	5" Blue Filter	1134-A	2.10
216-J	5" Amber Filter	1135-A	2.10
216-K	Calibrated, polar coordinate, green translucent scale, 0.720° clockwise		6.50
2518	Calibrated acrylic scale, with rectangular mask		5.15
2519	Calibrated acrylic scale with circular mask		8.95
2520	Calibrated acrylic scale with circular mask		4.00

## DU MONT TYPE 264-B VOLTAGE CALIBRATOR



★ The Du Mont Type 264-B Voltage Calibrator is designed to measure the peak-to-peak voltage of any signal viewed on a cathode-ray oscillograph. It may be used with any commercial cathode-ray oscillograph. Its square-wave output is continuously variable from 0 to 100 volts in 4 ranges. By throwing a selector switch, the signal to be measured or any of 4 ranges of calibrating voltage is applied to the input of the oscillograph, eliminating the need to switch leads between signal and calibrating voltage. Amplitude measurements of any part of a complex, composite waveform may be made with the Type 264-B.  
 Range: 0-0.1; 0-1.0; 0-10; 0-100 volts.  
 Accuracy: ± 5% of full scale on each range.  
 Input Impedance: 20 μμ (signal connected through calibrator).  
 Size: 4½" x 8" x 5¾"; wt. 5 lbs.

PRICE: Catalog #1441-A 115 v. 50-60 cps. ....\$39.50  
 Catalog #1442-A 230 v. 50-60 cps. ....\$39.50

## DU MONT CATHODE-RAY TUBES

Type	Cat.	Price	Type	Cat.	Price
3AP1A	2201-A	\$14.85	5CP2A	2232-A	\$40.40
3AP11A	2206-A	16.50	5CP7A	2235-A	42.40
3GP1A	2211-A	22.00	5CP11A	2236-A	37.65
3GP11A	2216-A	23.65	5JP1A	2251-A	67.50
3JP1	2025-A	24.00	5JP2A	2252-A	73.00
3JP2	2026-A	27.50	5JP7A	2255-A	75.00
3JP7	2029-A	28.75	5JP11A	2256-A	70.25
3JP11	2030-A	25.65	5LP1A	2261-A	39.50
5BP1A	2221-A	24.75	5LP2A	2262-A	45.00
5BP11A	2226-A	27.50	5LP7A	2265-A	47.00
5CP1A	2231-A	34.90	5LP11A	2266-A	42.25

## TYPE 2521 MAGNETIC SHIELD

★ The Type 2521 Magnetic Shield is designed for use with the Du Mont Type 5CP1A Cathode Ray Tube. Over-all length, including the tube base clamp is 17¼ inches. Maximum diameter is approx. 5¾ inches.

PRICE: Catalog #1438-A .....\$22.75

## DU MONT OSCILLOGRAPH SPECIFICATIONS

Instrument Type Number	Input Impedance					Frequency Range		Deflection Factor (RMS) V/in.					Linear Time Base	Dimensions in Inches		
	Amplifier		Y-Direct		Probe	Y-Amp	X-Amp	Y-Amp	X-Amp	Y-Dir	X-Dir	Probe		Continuous	H	W
	Y	X	Bal	Unbal												
164-E	1.0 meg.	0.8 meg.				5 cps-100 kc	5 cps-100 kc	0.70	0.55	30	30		15-30,000 cps	11¾	7¾	14
208B	2.0 meg.; 30 uuf	5.0 meg.; 25 uuf				2 cps-100 kc	2 cps-100 kc	0.01	0.5	21	22		2-50,000 cps	15¾	8¾	20¼
224-A	2.0 meg.; 30 uuf	2.0 meg.; 30 uuf	10.0 meg.; 20 uuf	5.0 meg.; 25 uuf	1.0 meg.; 20 uuf	20 cps-2 mc	10 cps-100 kc	0.1	0.7	25	28	0.4	15-30,000 cps	14¾	8¾	15¾
274-A	1 meg.; 40 uuf	1 meg.; 40 uuf	4.7 meg.; 50 uuf			20 cps-100 kc	20 cps-100 kc	0.2	0.25	16	18		8-30 k cps.	14	8¾	19¾
241	2 meg.; 40 uuf	2 meg.; 40 uuf	5 meg.; 20 uuf	5 meg.; 25 uuf	1 meg.; 10 uuf	20 cps-2 mc	50 cps-100 kc	0.07	0.7	22	21	0.7	15-30,000 cps.	17½	10¾	21

## ORDERING DATA FOR DU MONT OSCILLOGRAPHS

Type	Description	Cat.	Price	Type	Description	Cat.	Price
164-E	115 v, 40-60 cps, 3AP1A	1064-A	\$124.50	208-B	230 v, 40-60 cps, 5LP7	1151-A	\$285.00
164-E	230 v, 40-60 cps, 3AP1A	1065-A	124.50	224-A	115 v, 40-60 cps, 3GP1A	1191-A	290.00
164-E	115 v, 40-60 cps, 3AP11A	1066-A	124.50	224-A	115 v, 40-60 cps, 3GP11A	1203-A	290.00
164-E	230 v, 40-60 cps, 3AP11A	1067-A	124.50	241	115 v, 50-60 cps, 5JP1A	1192-A	458.00
208-B	115 v, 40-60 cps, 5LP1A	1146-A	285.00	241	115 v, 50-60 cps, 5JP11-A	1205-A	458.00
208-B	230 v, 40-60 cps, 5LP1A	1147-A	285.00	274-A	115 v, 50-60 cps, 5BP1A	1420-A	124.50
208-B	115 v, 40-60 cps, 5LP11A	1148-A	285.00	274-A	115 v, 50-60 cps, 5BP11A	1422-A	124.50
208-B	230 v, 40-60 cps, 5LP11A	1149-A	285.00	274-A	230 v, 50-60 cps, 5BP1A	1423-A	124.50
208-B	115 v, 40-60 cps, 5LP7	1150-A	285.00	274-A	230 v, 50-60 cps, 5BP11A	1425-A	124.50

THE NAME MARION MEANS  
THE MOST IN METERS



# MARION ELECTRICAL INSTRUMENT COMPANY

Manchester, New Hampshire

EXPORT DIVISION 458 BROADWAY NEW YORK 13, U. S. A. CABLES: MORHANEX

IN CANADA: THE ASTRAL ELECTRIC COMPANY, SCARBORO BLUFFS, ONTARIO

## MARION TRULY HERMETICALLY SEALED 2½" AND 3½" ELECTRICAL INDICATING INSTRUMENTS... 100% GUARANTEED!

### Sealed like a vacuum tube

Marion Glass-To-Metal Truly Hermetically Sealed Electrical Indicating Instruments are guaranteed for six months. You get top performance . . . critical accuracy . . . at a price no higher than that of most competitive unsealed instruments.

Additional economy is offered in Marion's special replacement offer. After the initial six-month guarantee expires, any 2½" and 3½" type, ranging from 200 microamperes upward, will be replaced, regardless of whether the instrument has been overloaded, burned out, or mis-treated . . . provided the seal has not been broken, for a flat fee of \$1.50. Instruments with sensitivity greater than 200 microamperes will be replaced for \$2.50.



### SPECIFICATIONS

Model HM2 — 2½"      Model HM3 — 3½"

- There are no rubber gaskets, and no cement seals.
- Can withstand all extremes of temperature and humidity, required by any service, or test specification, without deterioration to the seals, or harm to the efficiency of the moving system.
- Windows are of double thickness tempered glass processed for solder sealing, and are highly resistant to shock.
- Instruments are completely dehydrated and are filled with dry air at sea level pressure.
- A newly designed crowned crystal permits greater scale length, reduces shadows, and makes for better visibility.
- Magnetic shielding permits interchangeability on any type of panel without affecting calibration; can be supplied silver plated for extra R.F. shielding.
- Silver clad beryllium copper hair springs reduce zero shift at all temperatures.
- Standard Kovar glass bead type terminals with solder lugs.

### MARION "4 FOR 1" FEATURE

Interchangeable Round and Square Colored Flanges . . . one instrument can thus fill four different needs:

1. ROUND



2. ROUND FOR STEEL PANEL



3. RECTANGULAR



4. RECTANGULAR FOR STEEL PANEL



- Instruments manufactured in accordance with AWS Spec. C-39.2 1944 and JAN I-6 plus hermetic sealing.
- They are positively interchangeable—Type HM2 with AWS Types MR24 and 25; Type HM3 with AWS Types MR 34 and 35.

### RANGES DC INSTRUMENTS

DC MICROAMPERES

0-30  
0-50  
0-100  
0-200  
0-500  
0-800

DC MILLIAMPERES

0-1      0-50  
0-1.5      0-100  
0-3      0-200  
0-5      0-250  
0-10      0-500  
0-15      0-800  
0-25

DC MILLIVOLTS

0-15  
0-25  
0-50  
0-100

DC VOLTS

0-1.5      0-25  
0-3      0-50  
0-5      0-150  
0-10      0-250  
0-15      0-500

### AC INSTRUMENTS

0-5 Volts AC  
0-15 Volts AC  
0-50 Volts AC

0-150 Volts AC  
0-250 Volts AC  
0-500 Volts AC

THE NAME MARION MEANS  
THE MOST IN METERS



# MARION ELECTRICAL INSTRUMENT COMPANY

Manchester, New Hampshire

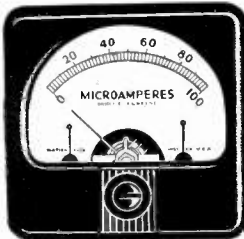
EXPORT DIVISION 450 BROADWAY NEW YORK 13, U. S. A. CABLES MORHANEX

IN CANADA: THE ASTRAL ELECTRIC COMPANY, SCARBORO BLUFFS, ONTARIO



Model 52N

Models 52N and 52S are standard 2 1/2" class instruments, the 52N meeting JAN 1-6 physical dimensions for MR 25 round series and the 52S meeting commercial standards for the 2 1/2" rectangular types. These instruments have gained popularity in portable radio equipment, pocket test equipment and general electrical service where space is at a premium.



Model 52S



Model 53RN



Model 57S

Model 57S is an 8 1/2" x 7" instrument with a large open face and an extra long scale. It is constructed with enlarged pole shoes, and with a higher torque movement than other Marion types in order to give maximum performance in an instrument of its size. This instrument is supplied with a very high damping factor and is not just an overgrown 3" meter. Overall accuracy of 1%, and can be supplied with mirror scales. The 57S finds wide application in large vacuum tube voltmeters, in multimeters, and as an easily read production instrument in many of the measuring and testing operations that are performed in any electrical or electronic manufacturing plant. It is commonly used, too, as a production ohm-meter, limit bridge indicator, and in such varied applications as vibration amplitude measurements and automotive tire balancing.

## MARION ILLUMINATED DIALS . . . EASILY SEEN! QUICKLY READ!

Marion's new design of instrument-dial illumination insures brilliance without glare. The technique employs a transparent lucite cavity and an especially developed alnico magnet with a reflector shaped front face that concentrates the rays on the warp-free, permanent translucent dial.

This dial illumination feature is available on all, except Marion Glass-To-Metal Truly Hermetically Sealed Meters.

## MARION STANDARD INSTRUMENTS

The most important ingredient of Marion design, engineering and construction is simplicity. Our instruments, in special and unusual types as well as conventional models, employ a minimum of parts, each selected for quality and durability. Combined with simplicity of design and engineering, this makes for better performance, under severe conditions, over longer periods of time. Whether your requirements demand custom-built or standard instruments, you can depend upon the functional simplicity of Marion designs to provide the most in service and value.



## MARION MULTI-RANGE METERTESTER

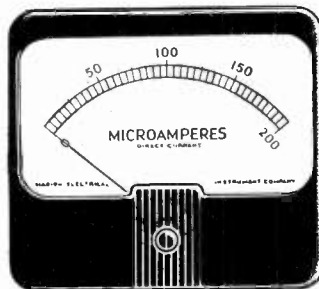
With self-contained power supply and control equipment for operation on 110 volts, AC, 60 cycles . . . for production testing, and calibration of DC instruments. The MARION METERTESTER is designed with many operational features which will definitely improve the production rates of any meter inspection department. Moreover, its accuracy is such that it may be used for checking purposes in any department and all laboratories employing instruments. It may also be used as a precise source of DC current and voltage. Overall accuracy is better than 1/2 of 1%. Basic sensitivity of the Mirror Scale Standard Instrument is 10 milliamperes. The complete unit is housed in a hand-rubbed, solid walnut carrying case.

For use in any department and all laboratories where instruments are employed and their performance must be carefully checked.

With self-contained power supply and control equipment for operation on 110 volts, AC, 60 cycles . . . for production testing and calibration of DC instruments. No additional accessories are required. Merely connect the two clips to the instrument under test, and proceed to analyze its accuracy and general performance.

### INCLUDES . . .

- Regulated Power Supply.
- Stepless Vacuum Tube Voltage Control.
- Large 8 1/2" Mirror Scale Standard Instrument, Hand Calibrated.
- Decade of .1% Accurate Manganin Wire Wound Resistors.



Model 55

Model 55 is a popular test equipment item, having a large case—4 1/2" x 4 1/2"—and long 100° scale. It is well suited for use in vacuum tube voltmeters, bridges and volt-ohm-milliameters. The internal construction is identical with that of the 53RN. Can be supplied with mirror scales for special applications.

### Ranges of MeterTester

0-25 UA	0-800 UA
0-50 UA	0-1 MA
0-100 UA	0-5 MA
0-200 UA	0-10 MA
0-400 UA	0-100 Volts
0-500 UA	



# MARION ELECTRICAL INSTRUMENT COMPANY

Manchester, New Hampshire

EXPORT DIVISION 458 BROADWAY NEW YORK 13, U. S. A. CABLES MORHANEX

IN CANADA: THE ASTRAL ELECTRIC COMPANY, SCARBORO BLUFFS, ONTARIO

THE NAME MARION MEANS  
THE MOST IN METERS

## A SPECIAL SERVICE FOR YOUR INDUSTRIAL CUSTOMERS

Marion has opened a Short Run Shop for the production of "special" instruments to meet your specifications . . . precision-built units that you can buy in sample lots.

You'll appreciate the savings in time, money and materials that this modern, completely equipped Short Run Shop can achieve for you. The high degree of functional simplicity and critical accuracy which Marion "Specials" offer, improve product performance . . . make it unnecessary for users to develop their own makeshift instruments with Special characteristics.

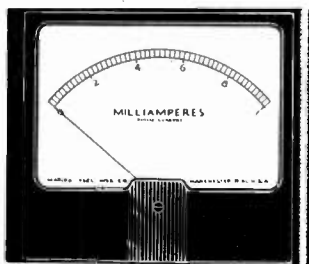
Your Marion specials will give the utmost in satisfaction, service and value . . . the same high standard of performance that has identified the regular line of Marion instruments for years.

Send us your specifications, we will send you a quotation.

### RANGES—For The Twelve Models Illustrated Here

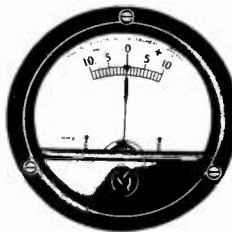
DC MICROAMPERES	DC MILLIAMPERES	DC AMPERES	DC MILLIVOLTS	DC VOLTS	AC VOLTS
0-20	0-1	0-250	0-1	0-15	0-5
0-30	0-1.5	0-250	0-1.5	0-25	0-3
0-50	0-3	0-800	0-3	0-50	0-5
0-100	0-5	0-5	0-100	0-10	0-150
0-200	0-10	0-10	0-15	0-15	0-250
0-500	0-15	0-15	0-25	0-25	0-500
0-800	0-25	0-25	0-50	0-50	
	0-50	Self-		0-150	
	0-100	contained		0-250	
	0-200	Shunts		0-500	

AVAILABLE IN ZERO CENTER AND OTHER RANGES ON SPECIAL ORDER



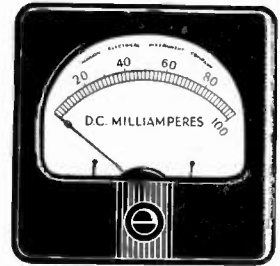
Model 56—6 1/2"

Model 56 is a 6 1/2" x 5 1/2" bakelite cased instrument of entirely new design with heavy cross sections to stand the most rugged use. It fills the need for an instrument between Models 55 and 57S which are 5 and 8 inch meters. It has a 100°, 5/2 inch arc and a large open face readily adaptable to multi arc dials. Supplied with large Alnico II magnets in milliammeter ranges and Alnico V in the more sensitive microammeter ranges. Employs a Marion Bulldozer bracket which assures rugged construction and long, dependable service. Ideal for equipment which needs a large dial easily read from a distance or with plenty of space for a multi-range scale.



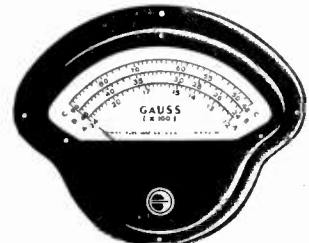
### NULL INDICATORS

Marion Null Indicators are extremely sensitive shaded pole piece D'Arsonval type galvanometers. They are used primarily as bridge and potentiometer balance indicators and in any application where an instrument with very high sensitivity about the zero or balance point is desired. We particularly recommend Types HM2 and HM3 because they are hermetically sealed instruments which completely shield the galvanometers from the effects of moisture and dirt, and external factors. Ideal for use in discriminator alignment of FM receivers and as general laboratory balance indicators.



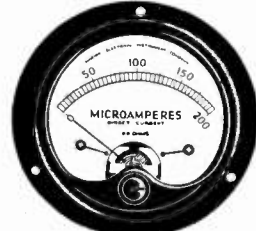
Model 53SN

Models 53RN and 53SN are standard 3 1/2" class instruments, the 53RN meeting JAN 1-6 physical dimensions for MR 35 round series and the 53SN meeting commercial standards for the 3 1/2" rectangular types. Application include radio and electrical test equipment, radio, radar, telegraph and telephone switchboards and general laboratory usage.



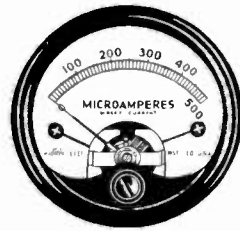
Model MCI—4"

Model MCI features the rugged Alnico construction of the Types 53RN, 54S, 55S, etc., plus the magnetic shielding which a steel case affords. Has a much longer scale than the standard 3 1/2" type. Normal accuracy is 1%, may be ordered to an accuracy of 1/2%, with hand-marked mirror scales. Every type MCI includes a shatterproof glass window. Applications include finer type of test equipment, switchboards and marine use where great precision and extreme ruggedness are required. Available at prices that are unusually economical for an instrument of this quality.



Model 53R

Model 53R features the sintered soft iron pole shoes, heavy Alnico magnet, and excellent overall accuracy. An enlarged face opening permits inclusion of more information on the scale when used for special applications. Applications include radio and electrical test equipment, radio, radar, telegraph and telephone switchboards, and general laboratory assignments.



Model 52RM

Model 52RM is a narrow flange, brass cased instrument. (The brass case offers R. F. shielding for many applications.) It contains the same rugged Alnico movement and the same scale length that are common to the 52S and the 52N.



THE NAME MARION MEANS  
THE MOST IN METERS



# MARION ELECTRICAL INSTRUMENT COMPANY

Manchester, New Hampshire

EXPORT DIVISION 458 BROADWAY NEW YORK 13, U. S. A. CABLES: MORHANEX

IN CANADA: THE ASTRAL ELECTRIC COMPANY, SCARBORO BLUFFS, ONTARIO

**BUILD YOUR OWN TEST**

**EQUIPMENT**

with the  
**MARION  
MULTI-RANGER  
METER**

- **ACCURATE!**
- **DURABLE!**
- **DEPENDABLE!**
- **A GREAT VARIETY OF SIZES!**

When it comes to **TEST EQUIPMENT** build your own with Marion Multi-Ranger Meters. They will solve your problem of finding reasonably priced instruments with the critical accuracy you demand for test equipment or other auxiliary equipment with multiple functions.

These Multi-Ranger Meters permit you to assemble a highly accurate instrument for use as a voltmeter, milliammeter, high and low resistance ohmmeter, AC voltmeter and decibel meter. — Build As Many Ranges As You Desire.

All instruments use Alnico Magnets, have full 100° three-color scales, feature the new, tough Marion "Bulldozer" moving system that insures long life under severe operating conditions plus the highest degree of accuracy.

**MARION RESISTOR KIT  
NEW! LOW-PRICED! VERSATILE!**

Contains: 18 Resistors Ranging from .4 Ohms to 750,000 Ohms. A Schematic Diagram for Constructing Your Own Test Equipment.

It's easy to construct accurate, useful, versatile test equipment with the Marion Resistor Kit, used in conjunction with Marion Multi-Ranger Instruments. List \$12.50

**ASK YOUR DEALER . . . OR WRITE DIRECT**

Export Division  
458 Broadway  
New York 13, U. S. A.  
Cables MORHANEX

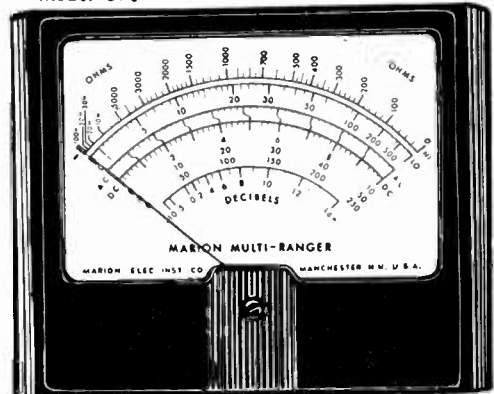
In Canada:  
The Astral Electric Company  
Scarboro Bluffs, Ontario



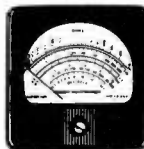
# MARION ELECTRICAL INSTRUMENT COMPANY

Manchester, New Hampshire

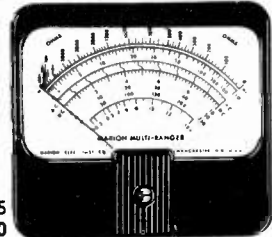
Model 575 List \$20.00



Model 535N  
List \$12.00



Model 55  
List \$15.00



**SCALE RANGES POSSIBLE  
WITH STANDARD RESISTOR KIT**

**VOLTS AC-DC**

0-10 Volts 0-250 Volts  
0-50 Volts 0-1000 Volts

**MILLIAMPERES**

0-1 MA 0-50 MA  
0-10 MA 0-500 MA

**OHMS**

0-500 Ohms 0-1 MEG  
0-100 M 0-10 MEG

**DECIBELS**

-10 — +14 decibels  
+ 4 — +28 decibels  
+18 — +42 decibels  
+30 — +54 decibels

**ALSO AVAILABLE  
WITH VTVM SCALES**

THE NAME "MARION" MEANS THE "MOST" IN METERS

## STERLING PANEL METERS

### AMMETERS, VOLTMETERS, MILLIAMMETERS

FOR USE ON DIRECT AND ALTERNATING CURRENT  
A COMPLETE MODERN LINE

These improved STERLING Panel Meters while retaining the accuracy, beauty and ruggedness which have always characterized STERLING instruments, show a modern trend in the gracefully unique arrangement of the broader and more clearly defined scales. The meters for alternating current and direct current are perfectly matched and therefore suitable for mounting on the same panel. Both the A.C. and D.C. meters are of the permanent magnet, iron vane, solenoid type. This affords positiveness of action and breadth of movement suggestive of those of the D'Arsonval type. The large needle-tipped pointers and wide clearly marked scale divisions of these panel meters make them easily read.

STERLING Panel Meters may be had in any of the types illustrated.

SPECIAL COMBINATION A.C.-D.C. METERS WITH HAIR-SPRING REPULSION TYPE MOVEMENT FITTING SAME CASES, ARE ALSO AVAILABLE.

Standard package, 100 meters, Shipping weight 30 lbs.

ALL STERLING Panel Meters are guaranteed accurate within 5%.

#### Alternating Current Meters

A. C. VOLTMETERS		
Number	Range	List Price
870	0-4 Volts	\$3.00
871	0-6 Volts	3.00
872	0-10 Volts	3.00
873	0-15 Volts	3.00
874	0-150 Volts High Res.	4.75
875	0-300 Volts	5.75
876	0-600 Volts	6.60
877	0-750 Volts	8.50
878	0-10-140 Volts	4.75
879	0-50 Volts	3.60
910	0-30 Volts	3.00
911	0-75 Volts	3.60
912	0-250 Volts	5.25
913	0-500 Volts	6.60

A. C. MILLIAMMETERS		
Number	Range	List Price
880	0-25 Milliampères	\$3.00
881	0-50 Milliampères	3.00
882	0-100 Milliampères	3.00
883	0-250 Milliampères	3.00
884	0-500 Milliampères	3.00
914	0-300 Milliampères	3.00

A. C. AMMETERS		
Number	Range	List Price
886	0-1 Amperes	\$3.00
887	0-3 Amperes	3.00
888	0-5 Amperes	3.00
889	0-10 Amperes	3.00
890	0-20 Amperes	3.30
891	0-50 Amperes	3.60
892	0-30 Amperes	3.30
893	0-60 Amperes	3.75
894	0-75 Amperes	3.75
895	0-100 Amperes	3.75
915	0-2 Amperes	3.00
916	0-7½ Amperes	3.00
917	0-15 Amperes	3.30
918	0-25 Amperes	3.30
919	0-125 Amperes	*

\*Special—Price on Application

RESISTANCE METERS		
Direct Reading		
Number	Range	List Price
901	4.5 Volts, 10,000 Ohms	\$3.00
	3 Flashlight cells required.	
902	2 M. A., 9 Volts, 100,000 Ohms	4.40
	6 Flashlight cells required.	

#### Direct Current Meters

D. C. VOLTMETERS		
Number	Range	List Price
801	0-1 Volts	\$1.65
802	0-3 Volts	1.65
803	3-0-3 Volts	1.65
804	0-5 Volts	1.65
805	0-6 Volts	1.65
806	0-8 Volts	1.65
807	0-10 Volts	1.65
808	0-15 Volts	1.65
809	0-25 Volts	1.65
810	0-25 Volts High Res.	3.00
811	0-50 Volts	1.65
812	0-50 Volts High Res.	3.60
823	0-75 Volts	1.75
813	0-100 Volts	1.85
814	0-100 Volts High Res.	3.60
815	0-150 Volts	2.25
816	0-150 Volts High Res.	3.50
817	0-300 Volts	3.50
818	0-500 Volts	5.00
819	0-750 Volts	6.00
820	0-8-160 Volts	3.00

D. C. MILLIAMMETERS		
Number	Range	List Price
835	0-2 Milliampères	\$4.00
836	0-5 Milliampères	2.50
837	0-10 Milliampères	2.20
838	0-15 Milliampères	1.65
839	0-25 Milliampères	1.65
840	0-50 Milliampères	1.65
841	0-100 Milliampères	1.65
842	0-150 Milliampères	1.65
843	0-200 Milliampères	1.65
844	0-300 Milliampères	1.65
845	0-400 Milliampères	1.65
846	0-20-100 Milliampères	2.50
847	0-15-150 Milliampères	2.50
848	0-500 Milliampères	1.65

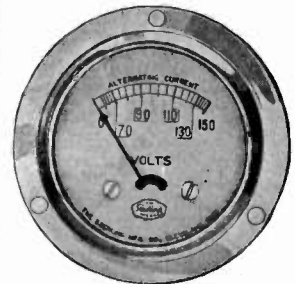
D. C. AMMETERS		
Number	Range	List Price
855	0-1 Amperes	\$1.65
856	0-3 Amperes	1.65
857	0-5 Amperes	1.65
858	0-10 Amperes	1.65
859	1-0-1 Amperes	1.65
860	3-0-3 Amperes	1.65
861	6-0-6 Amperes	1.65
862	10-0-10 Amperes	1.65
863	20-0-20 Amperes	1.65
864	0-15 Amperes	1.75
865	0-30 Amperes	2.20
866	0-50 Amperes	2.75
867	30-0-30 Amperes	2.20
868	0-20 Amperes	1.85
869	0-40 Amperes	2.75



TYPE 80

Flush case, narrow flange, standard finish black enamel. Circular adjustable back clamp for mounting.

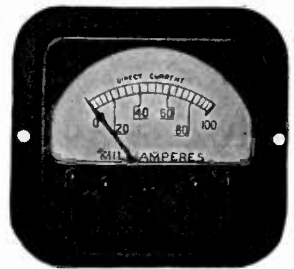
Diameter flange 2 5/8" Diam. case 2". Depth case 3/8". Requires hole 2 3/8" in Diameter Length terminals 1/8"



TYPE 70

Flush case, wide flange, standard finish black enamel. Screw holes in flange for mounting.

Diameter flange 2 5/8" Diam. case 2". Depth case 7/8" Requires hole 2 3/8" in Diameter



TYPE 68

Flush case, square flange, standard finish black enamel. Screw holes in flange for mounting. Width flange 2 5/8". Dia. case 2 3/8". Depth case 3/8".

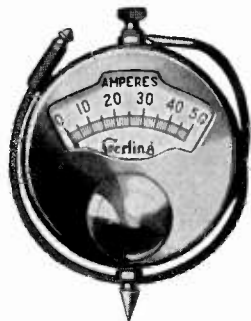
**Type 68 square flange case furnished for any range of meter at an additional list price of 40 cents each.**

# Sterling

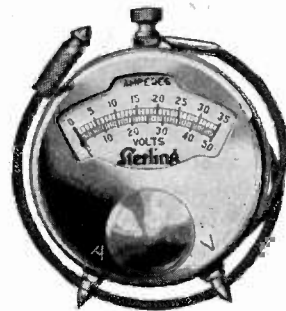
## STERLING POCKET METERS

### STANDARD LINE

**Direct Current Pocket Ammeters,  
Voltmeters and Voltammeters  
for all Purposes**



No. 24A Ammeter



No. 45 Voltmeter

STERLING Pocket Meters are useful in all kinds of battery testing, in railroad signal work, and in telephone and low-voltage electrical work generally. They are polarity indicators.

No. 24 Ammeter, for testing No. 6 dry cells. 0-35 ampere scale, 1 ampere divisions. List Price ..... \$1.85

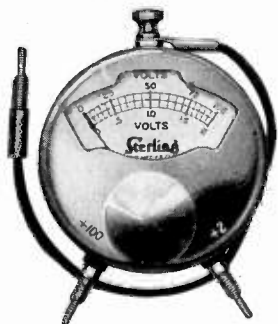
No. 24A Ammeter for testing dry cells including the heavy-duty Ignition type of cell. 0-50 ampere scale, 1 ampere divisions. List Price, \$2.10

- No. 23 Ammeter, for photo-flash dry batteries. 0-20 amp. scale, 1/2 amp. div. List Price, \$2.25
- No. 33 Voltmeter for ordinary single cells and "Flashlight" cells, 0-3 v. scale, 1/10 v. div. List Pr., \$2.10
- No. 34 Voltmeter for "Hot Shot" and Radio batteries. 0-10 volt scale, 1/5 volt div. List Price, \$2.10
- No. 34A Voltmeter for 12 volt batteries. 0-16 volt scale, 1/2 volt divisions. List Price, \$2.30
- No. 34B Voltmeter for ordinary 22½ v. radio "B" batteries. 0-30 v. scale, 1 v. divisions. List Price, \$2.30
- No. 34C Voltmeter for testing ordinary 45 v. radio "B" batteries. 0-50 v. scale, 1 v. div. List Price, \$2.60
- No. 44 Voltammeter for "Hot Shot" and Radio batteries and No. 6 dry cells, 0-35 ampere scale, 1 ampere divisions; 0-10 volt scale, 1/5 volt divisions. List Price, \$2.50
- No. 44A Voltammeter for 12 volt batteries and No. 6 dry cells. 0-35 ampere scale, 1 ampere divisions; 0-16 volt scale, 1/2 volt divisions. List Price, \$2.75
- No. 45 Voltammeter for testing No. 6 dry cells and ordinary 45 volt radio "B" batteries. 0-35 ampere scale, 1 ampere divisions; 0-50 volt scale, 1 volt divisions. List Price, \$3.60
- No. 45A Voltammeter for testing dry cells including the heavy-duty Ignition type and ordinary 45 v. radio "B" batteries. 0-50 amp. scale, 1 amp. div.; 0-50 v. scale, 1 v. div. List Price, \$3.85
- Meters 2¼" in diameter and ⅝" thick. Nickel finish. Standard package, ten instruments, ship. wt. 4 lbs.

### STERLING SPECIAL-PURPOSE POCKET METERS — NEW SERIES

#### Testers for Portable Radio Batteries

The special "A" and "B" dry batteries built for the operation of Portable Radio sets cannot be satisfactorily tested with ordinary battery testers. The new STERLING double voltmeters are designed for testing with correct loads the special "A" and "B" dry batteries used on Portable Radio sets. The new STERLING flexible plugs of these meters fit easily into the small closely spaced socket holes.



No. 38A Voltmeter



No. 31A Hearing Aid Tester

- No. 37A Voltmeter for 45 v. "B" batteries and 1.5 v. "A" batteries. Scale 0-50 v., 1 v. div. Scale 0-2 v., 1/10 v. div. Tests 45 v. "B" and 1½ v. "A" batteries. List Price, \$3.00
- No. 38A Voltmeter for 90 v. "B" batteries and 1.5 v. "A" batteries. Scale 0-100 v., 5 v. div. Scale 0-2 v., 1/10 v. div. Tests 45 v. and 90 v. "B" batteries and 1½ v. "A" batteries. List Price, \$3.25
- No. 39A Voltmeter for 90 v. and 135 v. "B" batteries and 1.5 v. "A" batteries. Scale 0-150 v., 5 v. div. Scale 0-2 v., 1/10 v. div. Tests 90 v. and 135 v. "B" batteries and 1½ v. "A" batteries. List Price, \$3.25
- No. 40A Voltmeter for 90 v. and 135 v. "B" batteries and 4.5 v., 6 v. and 7.5 v. "A" batteries. Scale 0-150 v., 5 v. div. Scale 0-10 v., 1/5 v. div. Tests 90 v. and 135 v. "B" batteries and 4½ v., 6 v. and 7½ v. "A" batteries. List Price, \$3.50
- No. 42A Graphic General Tester. Red and Green color chart for all standard batteries including 45 v. and 90 v. "B" batteries and 1.5 v., 4.5 v., and 7.5 v. "A" batteries. 0-100 v. scale for special sizes of "B" batteries, 5 v. div. Tests all Portable Radio batteries. List Price, \$6.00

#### Testers for Hearing Aid Batteries

- No. 31A Double voltmeter for special 30 or 45 v. "B" batteries and 1½ v. "A" batteries, scale 0-50 v., 1 v. div., scale 0-2 v., 1/10 v. divisions. Carefully engineered to impose the correct loads on the small delicate batteries used to operate vacuum tube hearing aids. Equipped with new STERLING flexible plugs. List Price, \$3.50
- No. 531 Plug-in—Safety type double voltmeter for testing hearing aid batteries. This new tester has the same capacity and scales as the No. 31A. No cord is necessary because the rigid plug-in type terminals are designed to fit hearing aid batteries having accessible keyed sockets. This arrangement makes it impossible to overload the No. 531 instrument or reverse the polarity while it is being used for testing hearing aid batteries. List Price, \$3.50
- No. 32A Double Voltmeter for special 22½ or 30 v. "B" batteries and 1½ v. "A" batteries, scale 0-35 v., 1 v. div., scale 0-2 v. 1/10 v. divisions. Equipped with new STERLING flexible plugs. List Price, \$3.50

Meters 2¼" in diameter and ⅝" thick. Nickel finish. Standard package, ten instruments, ship. wt. 4 lbs.

# WESTON INSTRUMENTS

## MODEL 769 HIGH FREQUENCY ELECTRONIC ANALYZER

A versatile three-in-one instrument built to Weston standards of quality. Provides a conventional Volt-Ohm-Milliammeter, a high impedance Electronic Volt-Ohmmeter, and a stable, probe type Vacuum Tube Voltmeter for use to 300 megacycles. RF and special D-C probe supplied. Complete stability is attained on all ranges from 3 to 1200 Volts and 200 Ohms to 2000 Megohms full scale.

### RANGES

#### VOLT-OHM-MILLIAMMETER

D-C VOLTS (at 10,000 ohms per volt):  
3/12/30/120/300/1200.†

A-C VOLTS (at 1,000 ohms per volt):  
3/12/30/120/300/1200.

DECIBELS: -6 to +62 in six ranges:  
1 milliwatt, 0 level, 600 ohm line.

D-C CURRENT: 300 microamperes  
1/1.2/6/30/120/600 ma.

RESISTANCE: 2,000/20,000/200,000 ohms  
full scale. 20/200/2,000 ohms center  
scale.

ACCURACY: D-C  $\pm 3\%$  A-C  $\pm 5\%$

† For higher ranges  
to 6000 volts d-c  
order Model 766  
Type 4 Televeter  
at \$21.00 net.

#### PROBE TYPE VACUUM TUBE VOLT METER

A-C VOLTS: 3/12/30/120.

DECIBELS: -6 to +42 in four ranges.  
1 milliwatt, 0 level, 600 ohm line.

ACCURACY:  $\pm 5\%$  (direct reading) at 50  
cycles to 150 megacycles.  
 $\pm 12\%$  (direct reading) at 150 to  
300 megacycles.  
 $\pm 8\%$  (with correction curve) at 150  
to 300 megacycles.

#### ELECTRONIC VOLT-OHMMETER

D-C VOLTS:  $\pm 3/12/30/120/300/1200$ .

RESISTANCE: 2,000/20,000/200,000 ohms  
full scale. 2/20/2,000 megohms full  
scale.

20/200/2,000/20,000/200,000 ohms  
center scale, 20 megohms center  
scale.

VOLTMETER RESISTANCE: 15 megohms on  
all ranges.

ACCURACY:  $\pm 4\%$  of full scale on all  
ranges.



MODEL 769

#### RF PROBE

FREQUENCY RANGE: 50 cycles to 300 mega-  
cycles.

INPUT RESISTANCE: 5 megohms.

INPUT CAPACITY: Approximately 5 micro-  
microfarads.

DIMENSIONS: 3 1/2" x 3 1/4".

Size: 10" x 13" x 6 1/8".

App. Wgt. 13 1/2 lbs.

PRICE ..... \$247.50 NET

## MODEL 785 INDUSTRIAL CIRCUIT TESTER

Established in industry as the most complete single  
unit for general maintenance and ultra-sensitive  
test purposes, particularly on electronic equipment.  
Provides 28 ranges for measuring D-C voltage and

current; A-C voltage and current; and resistance.  
Current and voltage ranges can be extended for  
insulation testing. Provisions for instantaneous cur-  
rent and voltage readings.

### RANGES

D-C Volts: (Full scale) 1/10/50/200/500-  
/1000 Volts (20,000 Ohms per volt),  
100 Millivolts direct or with external  
shunt.

Accuracy: 2% to 500 V.; 3% at  
1000 V.

A-C Volts: (Full scale) 5/15/30/150/300-  
/750 Volts (1000 Ohms per volt).

Accuracy: 3%.

D-C Current: (Full scale) 50 Microamps;  
1/10/100 Milliamps; 1/10 Amps.

Accuracy: 2%. Higher ranges with  
100 mv. shunts.

A-C Current: (Full Scale) .5/1/5/10 Amp-  
eres. Accuracy: 3% on 60 cycles.  
Higher ranges with external current  
transformers.

Resistance: (Full scale) 3,000/30,000/-  
300,000 Ohms; 3/30 Megohms.  
(Center scale) 25/250/2,500/25,000/-  
250,000 Ohms.

Sizes: 13" x 12 1/2" x 5 1/2"

Weight (complete) 13 1/2 Lbs.

Model 785 (Oak carrying case) ..\$157.50 Net

Model 785 (Steel case) ..... 127.50 Net



MODEL 785

## MODEL 798 TUBE CHECKER

The Model 798 Tube Checker uses a new method of proportional mutual conductance test-  
ing . . . the differential frequency system which provides readings similar to actual oper-  
ating conditions. This tube checker supplies mutual conductance and "Good-Bad" readings  
on all receiving tube types . . . tests all Voltage Regulator and low power type Thyratron  
tubes . . . has adjustable plate, screen, signal and grid bias voltages. Only six settings re-  
quired for most tubes . . . switching flexibility provides for testing future tubes as they are  
announced.

### SPECIFICATIONS

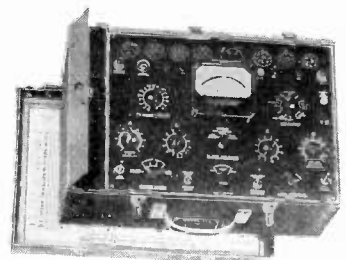
Tube Checker ranges: 3000/6000/12000  
micromhos.

Tube sockets: 4, 5, 6, and 7 prong, octal,  
loctal, miniature, acorn and 9 pin types.  
(Spare miniature socket provided.)

Power Requirements: 105/125 Volts, 50/  
60 Cycles A-C.

Size: 17 3/4" x 11 3/8" x 6 1/8"—Weight: 23  
Lbs.

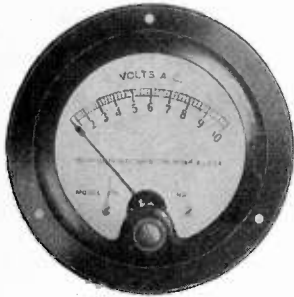
Price ..... \$291.50 NET



MODEL 798

**SUBJECT TO PRICE CHANGE OR WITHDRAWAL WITHOUT NOTICE**

# Weston RADIO INSTRUMENTS



Round Style



Rectangular Style

## PANEL INSTRUMENTS

These panel instruments reflect over half a century of instrument skill, and the Weston tradition of building instruments to the highest standards of dependability and service.

Models 301, 425 and 476 are available in round flush bakelite cases 3 1/2" or 3 3/8", and 3 1/4" metal cases with black finish; also in round surface metal and rectangular flush bakelite cases. Models 301 and 425 supplied in round surface bakelite cases. Models 506, 507, 517 regularly supplied in round flush 2 1/2" bakelite and black finished metal cases; flush narrow flange metal and rectangular flush bakelite cases with a clamp for panel mounting. Model 506 available in surface metal case. All are calibrated normally for use on non-magnetic panels. For magnetic panel use, instruments will be adjusted for steel panel thickness of .09". Order instruments in bakelite cases for use on circuits above 300 volts when it is not possible to connect in grounded side of line. For other instrument prices, write to Weston Electrical Instrument Corporation, Newark 5, New Jersey.

## 3 1/2" PANEL INSTRUMENTS

### MODEL 301—D-C VOLTMETERS

Approximate resistance of Model 301 in ohms per volt—1 to 40 volts, 62; 50 to 150 volts, 200; 200 volts, 250.

Range	Price	Range	Price	Range	Price
3	\$14.25	15	\$14.25	150	\$15.75
5	14.25	30	14.25	200	16.50
8	14.25	50	14.25		
10	14.25	100	15.00		

With Resistance of 1,000 ohms per volt

Range	Price	Range	Price
50	\$15.00	300	\$18.75
100	15.75	500	23.25
200	17.25	1000	30.75*
		3000	56.75*

\* Supplied with external resistor. Scale reading in kilovolts.

### MODEL 301—D-C MILLIAMMETERS \*

Range	Approx. Res. Ohms	Price	Range	Approx. Res. Ohms	Price
1	105	\$14.25	30	1.2	\$14.25
1.5	27	14.25	50	2.0	14.25
2	27	14.25	100	1.0	14.25
5	5.7	14.25	150	0.66	14.25
10	2.0	14.25	300	0.33	14.25
15	2.0	14.25	500	0.2	14.25

\* Milliammeters with ranges above 40 MA. are shunted, and have a drop of approximately 100 MV.

### MODEL 301—D-C AMMETERS \*

Single Ranges: 1/1.5/5/10/15/30/50 at \$14.25

\* Ammeters are supplied in self-contained ranges up to 50 amperes inclusive, and have a drop of 50 MV  $\pm$  5%. Ranges above 50 amperes require external shunts.

### MODEL 301—D-C MICROAMMETERS

Range	Price	Range	Price
50	\$28.25	200	\$18.00
100	27.00	500	18.00

### MODEL 301—RECTIFIER TYPE A-C VOLTMETERS

Range	1000 ohms		2000 ohms	
	per volt	per volt	per volt	per volt
1	.....	\$25.50	50	\$22.50
1.5	.....	25.50	100	23.25
3	\$22.50	25.50	150	24.00
5	22.50	25.50	300	26.25
15	22.50	25.50		.....

### MODEL 301—RECTIFIER TYPE A-C MILLIAMMETERS

Range	Price	Range	Price
0.5	\$25.50	2	\$21.75
1	21.75	5	21.75

### MODEL 301—RECTIFIER TYPE A-C MICROAMMETERS

Range	Price
500	\$25.50

### MODEL 301 VU METER

A or B Scale	Price
	\$40.50

### MODEL 476—A-C AMMETERS

Single Ranges: 1/1.5/2/3/5/10/15/20/30/50 at \$14.25

### MODEL 476 A-C VOLTMETERS

Single Ranges: 1.5/3/5/8/10/15/30/50 at \$14.25

Range	Price	Range	Price
100	\$15.00	250	\$17.25
130	15.75	300	18.00
150	15.75	500	21.00

### MODEL 425—THERMOCOUPLE TYPE AMMETERS

Single Ranges: 1/1.5/2/3/5/10/15/20 at \$21.00

## 2 1/2" PANEL INSTRUMENTS

### MODEL 506—D-C VOLTMETERS

Approximate resistance of Model 506 in ohms per volt: 3 to 150 volts, 125; 200 volts, 200.

Range	Price	Range	Price
3	\$11.25	10	\$11.25
5	11.25	15	11.25
8	11.25	50	11.25

### MODEL 506—D-C AMMETERS

Single Ranges: 1/1.5/5/10/15/30/50 at \$11.25

Ammeters, self-contained up to 50 amps., inclusive—drop 50 MV  $\pm$  5%

### MODEL 506—D-C MILLIAMMETERS

Range	Approx. Resis.	Price	Range	Approx. Resis.	Price
1	105	\$11.25	50	1	\$11.25
1.5	18	11.25	100	.5	11.25
2	18	11.25	150	.33	11.25
5	9.5	11.25	300	.16	11.25
10	3.2	11.25	500	.1	11.25
15	1.5	11.25			

Milliammeters above 40 MA are shunted—drop approximately 50 MV.

### MODEL 507—THERMO AMMETERS

For use on any frequency, including radio frequency. Single Ranges: 1/1.5/2/2.5/5/8/15/20 at \$18.00

### MODEL 517—A-C AMMETERS

Range	Approx. Resis. in ohms	Price	Range	Approx. Resis. in ohms	Price
1	.17	\$13.50	20	.0012	\$13.50
3	.024	13.50	30	.00085	13.50
5	.01	13.50	50	.00072	13.50
10	.0037	13.50			

### MODEL 517—A-C VOLTMETERS

Range	Approx. Ohms per volt	Price	Range	Approx. Ohms per volt	Price
5	10	\$13.50	50	52	\$13.50
10	14	13.50	130	110	15.00
15	14	13.50	150	110	15.00
25	26	13.50	250	167	16.50
			300	167	17.25

**SUBJECT TO PRICE CHANGE OR WITHDRAWAL WITHOUT NOTICE**

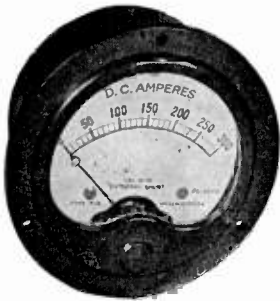
# ROLLER-SMITH INSTRUMENTS



BETHLEHEM, PENNA.

This line of panel instruments is ideally suited to the many varied uses in test units, analyzers, battery testers and chargers, radio tube testers, control panels, communication equipment, general testing panels and hundreds of other uses where **quality, accuracy, stability and economy** are important. Only the most common ranges are listed. Instruments are available in all practical ranges in a wide variety of case styles from 1 1/2" to 7" sizes. Contact the Representatives listed in the Representative Directory or write the factory for complete data.

Prices shown are list prices subject to trade discounts.



ROUND-FLUSH MOUNTING



SQUARE-FLUSH MOUNTING

DC MILLIAMMETERS							
Range	1 1/2"	List	2 1/2"	List	3 1/2"	List	4 1/2"
0-1	152601	\$15.50	251601	\$10.50	351601	\$11.00	452601
0-10	152607	15.50	251607	10.50	351607	11.00	452607
0-100	152614	15.50	251613	10.50	351614	11.00	452614
0-500	152620	15.50	251617	10.50	351620	11.00	452619
DC AMMETERS							
0-1	152501	16.50	251501	11.50	351501	12.00	452501
0-10	152507	16.50	251507	11.50	351507	12.00	452507
0-30	—	—	251510	11.50	351511	12.00	452511
DC MICROAMMETERS							
0-20	—	—	—	—	351640	29.50	452640
0-50	—	—	251641	19.00	351641	19.50	452641
0-100	—	—	251643	18.00	351643	18.50	452643
0-200	—	—	251645	14.50	351645	14.50	452645
0-500	152701	17.50	251647	12.50	351647	13.00	452647
DC VOLTMETERS 1000 ohms per volt							
0-1.5	152802	16.50	251801	12.00	351802	12.50	452802
0-10	152807	16.50	251806	12.00	351807	12.50	452807
0-150	—	—	251813	12.00	351817	13.50	452816
0-250	—	—	—	—	351819	14.50	452818
0-500	—	—	—	—	351821	17.25	452820
"VU" METERS — 20/0/+3 VU A and B scales per JAN — 1 — 6							
Scale A	—	—	—	—	351951	30.00	452951
Scale B	—	—	—	—	351952	30.00	452952
AC VOLTMETERS							
0-1.5	—	—	251201	11.50	351201	12.00	452201
0-10	—	—	251206	11.50	351206	12.00	452206
0-30	—	—	251209	11.50	351210	12.00	452210
0-150	—	—	251213	12.50	351215	13.00	452215
0-300	—	—	—	—	351218	14.00	452218
AC AMMETERS							
0-1	—	—	251001	11.50	351001	12.00	452001
0-3	—	—	251004	11.50	351005	12.00	452005
0-5	—	—	251005	11.50	351006	12.00	452006
0-10	—	—	251007	11.50	351008	12.00	452008
0-30	—	—	251010	11.50	351012	12.00	452012
RF AMMETERS Self Contained							
0-5 MA*	—	—	—	—	351671	50.00	—
0-100 MA*	—	—	—	—	351677	50.00	—
0-800 MA	—	—	251694	16.50	351694	17.00	—
0-1 Amp.	—	—	251695	16.50	351695	17.00	—
0-3 Amp.	—	—	251698	16.50	351698	17.00	—
0-5 Amp.	—	—	251699	16.50	351699	17.00	—
0-10 Amp.	—	—	251701	16.50	351701	17.00	—
0-20 Amp.	—	—	251703	16.50	351703	17.00	—

\* Available in vacuum type couples only.  
3 1/2" available with expanded scale at \$5.00 list extra.  
Center zero ranges available at no extra cost.  
Most types available with internal illumination.

## ROLLER-SMITH, Bethlehem, Penna.

Electrical Indicating Instruments - Aircraft Instruments - Switchgear - Air and Oil Circuit Breakers  
Rotary Switches - Relays - Precision Balances



## "RANGE MASTER" MODEL 10

An 8-in-1 Service Instrument, covers these 25 ranges:

- |  |  |
|--|--|
| 1. CAPACITY — .001-.1/.01-1/1-10 MFD.        | 5. D.C. CURRENT — 0-1/10/100/1000 MA.  |
| 2. A.C. CURRENT — 0-.15/1.5/15 AMPS.         | 6. RESISTANCE — 0-10,000/100,000/1 MEG. OHMS megohm.                             |
| 3. A.C. VOLTAGE — 0-1/10/100/500/1000 VOLTS. | 7. Special high range Ohmmeter to 2 megs. and 20 megs. without external battery. |
| 4. D.C. VOLTAGE — 0-10/100/500/1000 VOLTS.   | 8. Sensitive A.C. Microammeter to 1100 microamps.                                |



Model 10 (Illustrated) .....\$23.50 net  
 Model 10K (Complete KIT and Instructions)..... 17.95 net



## "RANGE MASTER" MODEL 10P

A Portable Model "Range Master" covering the same 25 ranges as the Model 10. Has polished oak case with handy tool compartment.

Model 10P (Illustrated).....\$26.95 net  
 Model 10F (Same as Model 10P but has complete fuse protection on all ranges) 28.15 net

## "MULTI-TESTER" MODEL 30

Covers the following ranges:

- |  |   |
|--|---|
| A.C. VOLTS — 0-12.5/25/125/250/1250 volts. | D.C. CURRENT — 0-1/100 ma.                |
| D.C. VOLTS — 0-5/10/50/100/500/1000 volts. | RESISTANCE — 0-10,000/100,000/1 meg.ohms. |
|  | DECIBELS — From minus 10 to plus 57 Db.   |

Model 30 (Illustrated).....\$15.95 net  
 Model 30P (Portable model. Has polished oak case)..... 19.45 net  
 Model 30K (Complete KIT and Instructions)..... 13.95 net



## SIGNAL GENERATOR MODEL 300

The Signal Generator Model 300 features finger-tip selection of four accurately aligned frequencies. Special crystal position accommodates any standard crystal to adapt the Model 300 to a crystal frequency standard or TELEVISION MARKER OSCILLATOR. Four hundred cycle audio modulation, in or out. Supplies 456 Kc, 465 Kc, 600 Kc, and 1500 Kc, to cover 90% of all receivers manufactured. Works equally well with A.C.-D.C. sets. Complete with tubes and output probe.

Model 300 (Illustrated) .....\$16.95 net

## KILOVOLTER MODEL 4000

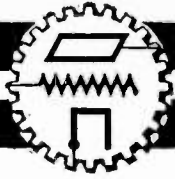
The Kilovoltmeter Model 4000 is designed to measure Television and X-Ray voltages up to 50,000 volts D.C. Sensitivity 50,000 ohms/volt, on 25 KV range. Has a 20 micro-ampere meter with an input impedance of 1250 Megohms. Has adequate safety precautions. RANGES: 0-25/50 KV D.C. Complete with polystyrene probe.

Model 4000 (Illustrated).....\$67.50 net

For further information on Bradshaw Test Equipment, write to Bradshaw Instruments Co.

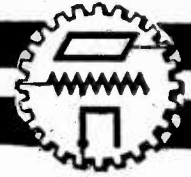


**GUARANTEE:** Every BRADSHAW instrument is FULLY GUARANTEED against defective parts or workmanship for THREE MONTHS after purchase.



# Industrial Instruments

## Electrical Test Equipment



### WHEATSTONE BRIDGE

● A carefully engineered bridge made for all around use in lab., plant, or field. Both models contain own  $4\frac{1}{2}$ -volt battery power supply and galvanometer. Provision for external batteries and galvanometer if desired. Ratio dial settings of .001, .01, .1, 1, 10, 100, and 1000 in both models. Also built-in resistance standards of 1, 10, 100, and 1000-ohm decades. Ratios are guaranteed to .05% tolerance. Resistance dial resistors to .1%. Self-cleaning, four-leaf phosphor bronze wiper switches with detent mechanism mounted below panel. Galvanometer of well-known moving-coil type. Separate binding posts for use of external galvanometer if desired, and for use of bridge as resistance decade. Hardwood case with removable cover.  $9\frac{1}{4}'' \times 7\frac{1}{2}'' \times 6\frac{1}{4}''$  h. Wt.  $9\frac{1}{4}$  lbs. net;  $12\frac{1}{4}$  lbs. shipping.

**MODEL RN-1.** Standard Portable Wheatstone Bridge, complete with batteries..... Net Price \$110.00

**MODEL RN-2.** Standard Portable Wheatstone Bridge with Murray & Varley Loops..... Net Price \$125.00

### MEGOHM METER

● For high-speed testing of condenser leakage resistance, insulation resistance and insulation measurements in production and inspection of components. Terminals for charging capacitors prior to test. Self-contained power source up to 200 volts. Arranged for use of external battery voltage supply up to 1000 volts. Internal checking standard to check and adjust calibration. Broad scale meter. Accuracy within 3% of full scale. Range of 1 megohm to 100,000 megohms on four multiplier ranges of 1, 10, 100, and 1000. Highest range can be extended to 500,000 megohms using external 1000 v. supply. Hardwood case. Sloping bakelite panel designed for production use.  $15'' \times 8'' \times 10''$  h. Wt. 19 lbs. net; 23 lbs. shipping.



**MODEL L-2A.** Megohm Meter with tubes..... Net Price \$145.00

**MODEL L-2AU.** Universal Model for use on 110-220 v. AC power line, available on special order..... Net Price \$160.00



### MEGOHM BRIDGE

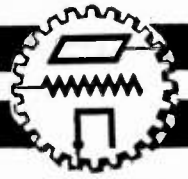
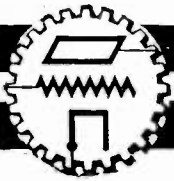
● A fast, accurate instrument for routine inspection work. May be used by laboratory workers, or production workers. Very simple to operate. "Magic Eye" replaces costly and delicate galvanometer. Operates from AC power line. Self-contained DC source. Accuracy within 5% from 1 to 15 on scale; as close as readable on remainder of scale. Hardwood case with slip-hinge removable cover.  $8'' \times 5\frac{3}{4}'' \times 7''$  h. Wt.  $6\frac{1}{4}$  lbs. net;  $8\frac{1}{4}$  lbs. shipping.

**MODEL MB-4.** 100 to 100,000 megohms. 500 v. DC Bridge source, Net Price \$60.00

**MODEL MB-6.** 100,000 ohms to 100 megohms; 10 megohms to 10,000 megohms..... Net Price \$60.00

**MODEL MB-8.** 1 megohm to 1000 megohms; 100 megohms to 100,000 megohms..... Net Price \$75.00

**MODEL MB-11.** 1 megohm to 1000 megohms; 10 megohms to 10,000 megohms; 100 megohms to 100,000 megohms..... Net Price \$120.00



### VOLTAGE BREAKDOWN TESTER

● A simple, positive, safe and quick means of testing voltage breakdown of materials and components. Step-up transformer accurately controlled by Variac. Continuously variable over entire range, 0 to 4,000 v. DC. For safety, load is limited to 5 milliamperes over full range. Also safety switch if unit is removed from case. Operates on AC line. Warning light indicates instrument is operative. Voltage breakdown indicated by red light.

**MODEL P-1.** Voltage Breakdown Tester with tubes. 15" x 8" x 10".  
Wt. 29 lbs. net; 32 lbs. shipping. (Not illustrated) Net Price \$150.00

**MODEL P-2.** Voltage Breakdown Tester with tubes and additional 0 to 3,000 v. AC outlet. 15" x 8" x 10". Wt. 29 lbs. net; 32 lbs. shipping. (Not illustrated) Net Price \$200.00

**MODEL P-3.** Voltage Breakdown Tester with tubes. Upright, crackle enamel finish cabinet of metal. Range 0 to 10,000 v. DC, 0 to 8,000 v. AC. Net Price \$350.00



### RESISTANCE DECADES

● Available in standard models with resistance ranges of .9 to 999,999 ohms total.  $\pm 1\%$  of nominal accuracy. Self-cleaning, four-leaf phosphor bronze wiper switches with detent mechanism mounted below the panel. Hardwood case. Models DR-1 to DR-4, 5 3/4" x 8" x 4" h.; wt. 4 lbs. net; 6 lbs. shipping. Models DR-10 to DR-14, 4 1/8" x 6" x 4" h.; wt. 3 lbs. net; 5 lbs. shipping. Models DR-50 to DR-52, 6 1/8" x 9" x 4 1/4" h.; wt. 5 lbs. net; 7 lbs. shipping.



Model No.	Total Resistance Ohms	Decade Steps	Accuracy	Net Price
DR-1	999,000	9x(1,000 + 10,000 + 100,000)	$\pm 1\%$	\$ 50.00
DR-2	99,900	9x(100 + 1,000 + 10,000)	$\pm 1\%$	50.00
DR-3	9,990	9x(10 + 100 + 1,000)	$\pm 1\%$	45.00
DR-4	999	9x(1 + 10 + 100)	$\pm 1\%$	44.00
DR-10	.9	9x1	$\pm 1\%$	20.00
DR-11	9	9x1	$\pm 1\%$	20.00
DR-12	90	9x10	$\pm 1\%$	20.00
DR-13	900	9x100	$\pm 1\%$	20.00
DR-14	9,000	9x1,000	$\pm 1\%$	22.00
DR-50	9,999.9	9x(.1 + 1 + 10 + 100 + 1,000)	$\pm 1\%$	65.00
DR-51	99,999	9x(1 + 10 + 100 + 1,000 + 10,000)	$\pm 1\%$	70.00
DR-52	999,990	9x(10 + 100 + 1,000 + 10,000 + 100,000)	$\pm 1\%$	100.00

### CAPACITANCE DECADES

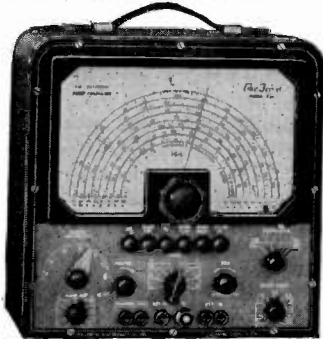
● This instrument is calibrated directly in capacitance so that reading from left to right, the dial settings will give the exact value in microfarads. Progressive adjustment in .01, or .001 mfd. steps depending on model. .001 to 11.1 mfd. can be obtained by group assembly. All units employ paper or mica capacitors of highest quality and stability. Hardwood case with hinged cover and snap lock. DK-3, DK-4 and DK-2A, 7" x 8" x 5 1/2" h.; wt. 8 lbs. net; 12 lbs. shipping. DK-10 and DK-11, 11" x 8 1/4" x 7" h.; wt. 10 lbs. net; 12 lbs. shipping.

Model	Capacitance Mfd. Steps	Accuracy	Dielectric	P.F.	Peak Volts	Net Price
DK-3	11.1 in .01	1%	paper	1%	150 DC	\$ 50.00
DK-4	1.11 in .001	1%	paper	1%	150 DC	\$ 50.00
			mica	.2%	400 DC	
DK-2A	1.11 in .001	1%	mica	.2%	700 DC	125.00
			throughout	.2%	500 AC	
DK-10	.111 in .0001	.5%	mica	1%	60 cycle	100.00
		or 10 mmfd.			700 DC	
DK-11	11.1 in .01	1%	paper	.2%	150 DC	125.00
		.5%	mica	.2%	700 DC	
					500 AC	
					60 cycle	



# FERRET Test Equipment

COASTWISE ELECTRONICS COMPANY, Inc.



## F. M.-TELEVISION SWEEP GENERATOR

### 20 M.C. Sweep Width — FERRET Model 720

Range — 0 to 260 M.C. on Fundamentals — 50 K.C. to 20 M.C. Sweep Width  
 Push-Button Control — All Miniature Tubes — Built-in Marker 19 to 40 M.C.  
 Pimper or Absorption Type

A revolutionary instrument for aligning any FM or Television receiver. Combination of push-buttons permits simultaneous use of crystal oscillator, internal audio oscillator, R.F. generator (modulated or C.W.) marker oscillator or sweep FM Television generator. This combination is not

possible with any other generator today. The unit is entirely independent of markers or external frequency standards since any marker frequency is possible from 19 m.c. to 40 m.c. on variable marker. Moreover, a crystal marker may be used and fully attenuated.

**\$164.95** DEALER PRICE  
 Slightly Higher  
 Eastern States

#### SPECIFICATIONS:

- Range: 0 to 260 m.c. (Fundamentals).
- Power: 110-120 volts, 50-60 cycles.
- Tubes: 6X4, 2-12AT7, 6C4, 3-6J6's.
- R.F.-AM (Mod. or C.W.) Sweep 50 k.c. to 20 m.c.
- Crystal oscillator.
- Dial: 9" Glass covered, calibrated directly on 8 bands.
- Case: Blue-gray Hammertone finished aluminum, with leather handle.
- Size: 10 1/4" high, 10 1/4" wide, 5 1/2" deep. Weight: 14 1/2 lbs. packed.

#### FEATURES:

- Range: 0 to 260 m.c.—all fundamentals.
- Sweep Width: 50 k.c. to 20 m.c.
- Crystal Oscillator.
- Variable Marker Oscillator: 19 to 40 m.c. Accuracy: 1% or better.
- Push-Button Control: Any of 4 oscillators or all 4 simultaneously.
- Crystal standard.
- Large 9" calibrated dial.
- Electronic Sweep.
- 5 to 1 Vernier drive.
- Accuracy: 1/2% on all bands.
- Temperature compensating circuits.
- Fully shielded — Low impedance output.
- Stand-by Switch for continuous operation.
- Provision for external modulation.
- Phasing Control.

## SIGNAL TRACER ELECTRONIC VOLT OHM METER

with SUB-MINIATURE 6K4 DIODE PROBE — Model 730



**\$99.95**  
 DEALER PRICE  
 Slightly Higher  
 Eastern States

Audio & R.F. Measurements to 300 M.C. Proximity Type Fused used in Lightweight Probe. High Gain Signal Tracer — No Hum with 5" Speaker Enclosed. Illuminated 8" Meter — 1 Volt R.F. Scale.

The FERRET Model 730 is the ultimate in a combined Signal Tracer and Vacuum Tube Volt Ohm Meter that incorporates features not found in competitor's lines at any price.

Accurate direct R. F. measurements up to 300 Megacycles for F. M. and television receivers are easily obtained. The same probe is used for the Signal Tracer and operates a hum-free rectifier.

In addition to the advanced type probe, the Model 730 offers improved features that make this combination instrument the most important single unit on the service bench,



Proximity Fuze Type  
 Lightweight Probe.

#### SPECIFICATIONS:

- Power: 110-120 volts, 50-60 cycles.
- Range: AC-DC 0-1, 3, 30, 100, 300, 1000, 3000.
- Ohms: Mid-scale 10 x 1 x 10 x 100 x 1000 x 100,000 x 1 megohm.
- Frequency: Audio to 300 megacycles.
- Tubes: 6X4, 2-12AU7, 6AQ5, 6AQ6, 6AL5, 6K4.
- Input Impedance: DC 10 megohms, AC 10 megohms.
- Probe: 6K4 Diode connected.
- Case: Aluminum, blue-gray Hammertone finish with leather handle.
- Size: 10 1/4" high, 10 1/4" wide, 5 1/2" deep. Weight: 13 1/2 lbs. packed.

#### FEATURES:

- AC-DC volt scale 0-1, 3, 30, 100, 300, 1000 and 3,000.
- Ohm scale 10, 100, 1000, 10,000, 100,000, 1 megohm and 10 megohm center scale.
- High impedance input 10 megohms DC, 10 megohms AC.
- Extremely accurate for all AC measurements to 300 megacycles.
- Four stage amplification for signal tracing. Sufficient gain for tracing signal from antenna without using receiver as amplifier with good tone and with enclosed Speaker.
- All resistors calibrated to ± 1%.
- All miniature tubes.
- 8" illuminated meter with multi-colored, easy to read scale.
- Special 1 volt R. F. scale.

## GERMANIUM CRYSTAL PROBE - Model A-100



**\$7.95** DEALER PRICE

A universal replacement lightweight probe, that will not deteriorate or wear out with normal use. An ideal unit for all types of meters, for the "ham," experimenter or beginner in building and converting various test instruments. No change in electrical characteristics with use. Shield seven inches long, one-half inch diameter.

#### SPECIFICATIONS:

- 1N34 Crystal.
- 1/2" diameter aluminum shield.
- RG/59U Coaxial cables, 36" long.
- Frequency Response: from 20 kilocycles to 110 megacycles.
- Individually boxed in attractive counter display carton with complete instructions and diagrams for its many uses.
- Packed: 6 Boxes to shipping container, weight: 2 1/2 lbs.; 12 Boxes to shipping container, 5 lbs.

# FERRET Test Equipment

COASTWISE ELECTRONICS COMPANY, Inc.



## AUDIO OSCILLATOR — Sine Wave - Square Wave — Model 710



**\$89.95** DEALER PRICE  
Slightly Higher  
Eastern States

An audio oscillator with recently developed features, that is outstanding in its field. Incorporates two units in one: a Sine Wave R.C. type oscillator with low distortion on all bands, and a Square Wave generator with the same frequency range. Provides a laboratory standard for all audio application and frequency response measurements in both designing and practical applications.

### SPECIFICATIONS:

- Power: 110-120 volts, 50-60 cycles.
- Range: 20 to 24,000 cycles. 3 bands.
- Tubes: 6X4, 6AQ5, 6AU6, 12AU7.
- Output: High impedance, 15 volts sine wave or square wave.
- Dial: 3 to 1 Vernier, red and black scale on white background, hairline pointer.
- Panel: 3-color iridescent blue-gray finish.
- Test Leads: Coaxial cable, RG/59U.
- Size: 10 1/4" x 10 1/4" x 5 1/2".
- Weight: 11 lbs. packed.

### FEATURES:

- R. C. type oscillator — does not use beat frequency circuit.
- Range: 20 to 24,000 cycles — 3 bands.
- All new-type miniature tubes.
- Accuracy: within 2% on all bands.
- True sine wave throughout range, with special feedback circuit for each band.
- Sine or square wave obtained by merely rotating panel switch.
- Transformers electrostatically shielded.
- Laboratory precision construction throughout.
- Vernier Drive — 3 to 1 ratio.

## SIGNAL GENERATOR Wide Range FM-AM-Television, Model 701

### All Miniature Tubes



**\$74.95**  
DEALER PRICE  
Slightly Higher  
Eastern States

A crystal-calibrated unit for AM, FM and Television receivers, operating on fundamental frequencies to 110 Megacycles. Output voltage of 1 volt, relatively constant from 170 K.C. to 110 M.C. Universal in scope, it serves the needs of modern radio servicing in both low and high frequency receivers. 9" calibrated dial.

### SPECIFICATIONS:

- Range: 170 k.c. to 220 m.c.
- Power: 110-120 volts, 50-60 cycles.
- Tubes: 6C4, 6AU6, 6X4.
- Dial: Large 9" three-colored scale, glass covered with molded es-cutechon.
- Output: 1. volt R.F. low impedance.  
Coaxial cable, 50 volts Audio high impedance.

### FEATURES:

- Range: 170 k.c. to 220 m.c. — Fundamentals to 110 m.c.
- Completely shielded for minimum radiation.
- Crystal calibrated, low loss, permeability tuned R.F. coils.
- Internal 225-cycle sine wave modulation — 0 to 100%.  
Calibrated directly on dial.
- 20 to 10,000 cycle external modulation for frequency response measurement.
- Turret coil construction with shortest possible leads for minimum leakage and maximum R.F. Stability. Follow-up shorting type switch — no dead spots.
- Electron coupled combination Hartley and Colpitts oscillator for high L.C. ratio, low drift and maximum stability to line voltage fluctuations.
- Low loss, low impedance, coaxial cable output.
- Ladder attenuator.
- Vernier drive: 3 to 1 ratio.
- Accuracy: 1% on all bands.

## DE LUXE TEST SPEAKER and Universal Substitutor — Model 721



**\$29.95**  
DEALER PRICE  
Slightly Higher  
Eastern States

Designed primarily to eliminate necessity of removing set-speaker from midget radios, consoles or auto radios for servicing. Compact, portable, lightweight unit, housing a specially constructed 6" PM speaker with exceptional tone quality and sufficient current rating to test any radio.

### SPECIFICATIONS:

- Field Impedance: 500, 1000, 1500 and 2500 Ohms.
- Current: 175 Milliamperes Maximum.
- Input: Universal. for single ended or tubes in push-pull.
- Speaker: 6" PM. Dustproof, of special construction; low resonant point.
- Size: 10 1/4" high, 10 1/4" wide, 5 1/2" deep.
- Weight: 8 1/2 lbs. packed.

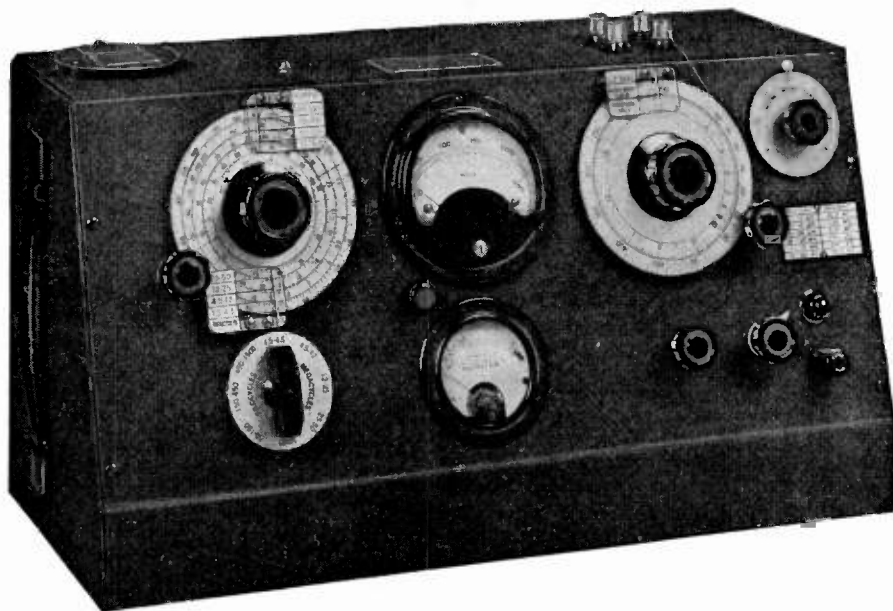
### FEATURES:

- Provides a substitution for choke, electrolytic condensers, coupling, by-pass condensers and a wide range of resistors.
- Speeds servicing — eliminates soldering until all defective parts are located and substituted.
- Voice coil connection permits substitution of any output transformer.
- Rotating input and field switches on front panel permits matching to any single or push-pull output tubes.

PRECISION  
FOR THE RADIO AND



INSTRUMENTS  
ELECTRONIC INDUSTRY



## Q-METER

TYPE 160-A

Radio frequency circuit design often requires the accurate measurement of Q, inductance, and capacitance values. For this application, the 160-A Q-Meter has become the universal choice of radio and electronic engineers throughout the country.

Each component part and assembly used in the manufacture of this instrument is designed with the utmost care and exactness. Circuit tolerances are held to values attainable only in custom built instruments.

The 160-A Q-Meter is designed specifically for the accurate and rapid measurement of Q, inductance, and capacitance. The basic method of measurement consists of measuring the voltage developed across a variable air capacitor connected as an element in a series resonant circuit. Essentially the Q-Meter is comprised of an 8 range RF oscillator, a Q measuring circuit with a main and vernier section tuning condenser, a vacuum tube voltmeter of special design which reads the voltage across the tuning condenser, and a voltage injection circuit which applies an accurately known voltage to the terminals of the series resonant circuit. In operation the Q circuit is resonated by means of the variable Q tuning capacitor and the voltage developed across this capacitor is indicated by means of the vacuum tube voltmeter which is calibrated directly in terms of Q. This method of measuring Q is simple, accurate, and requires only a single operation—resonating the circuit—to measure Q. Variations of this basic method of measurement are employed to determine effective inductance and capacitance as well as the dielectric properties of insulating materials

### SPECIFICATIONS

**Oscillator Frequency Range:** Continuously variable from 50 kc. to 75 mc. in eight self-contained ranges. (In conjunction with an external oscillator the frequency range of the Type 160-A Q-Meter may be extended from 50 kc. to 1 kc. for coil measurements).

**Oscillator Frequency Accuracy:** Generally better than  $\pm 1\%$ , except the 50-75 mc. range which is approximately  $\pm 3\%$ .  
**Range of Q Measurements:** The Q voltmeter is calibrated directly

in Q, 20-250. The "Multiply-Q-By" meter, which measures the oscillator voltage injected in the Q measuring circuit, is calibrated from  $\times 1$  to  $\times 2$  and also at  $\times 2.5$ . The reading of the Q voltmeter scale is multiplied by the setting of the "Multiply-Q-By" meter. Hence, the total range of circuit Q measurements is from 20 to 625. Condensers, dielectrics, etc., which are measured by placing these in parallel with the measuring circuit, may have Q's as high as 5000.

**Accuracy of Q Measurements:** The accuracy of the direct reading measurement of circuit Q (for Q voltmeter readings between  $Q=50$  and  $Q=250$ ) is approximately 5% for all frequencies up to the region of 30 mc. and decreases with increasing frequency. Correction may be made for the error above 30 mc. as it is principally a frequency effect. The accuracy of the measurement of condensers, dielectrics, etc. is generally better than 10% for Q's below 5,000 and up to 30 mc.

**Capacitance Calibration Range:** Main Tuning condenser 30-450 mmf. calibrated in 1 mmf. divisions from 30 to 100 mmf. and in 5 mmf. divisions from 100 to 450 mmf. Vernier condenser, plus 3 mmf., zero, minus 3 mmf., calibrated in 0.1 mmf. divisions.

**Accuracy of Capacitance Calibration:** Main tuning condenser, generally better than 1% or 1 mmf., whichever is the greater. Vernier tuning condenser,  $\pm 0.1$  mmf. The internal inductance of the tuning condenser at the binding posts is approximately .015 microhenry.

**Voltmeter:** The Q voltmeter is also calibrated in volts. A specially calibrated tube, Type BRC 105-A tube, is used. Replacements may be made without recalibration.

**Power Supply:** 105-120 volts, 50-60 cycles. Also 210-240 volts, 50-60 cycles. Power consumption 50 watts.

**Dimensions:** Height 12.5", length 20", depth 8.5".

**Weight:** 25 lbs.

**Price:** \$625.00 F.O.B. Boonton, N. J., U.S.A.

**BOONTON RADIO**

BOONTON - N. J. - U. S. A.

*Corporation*

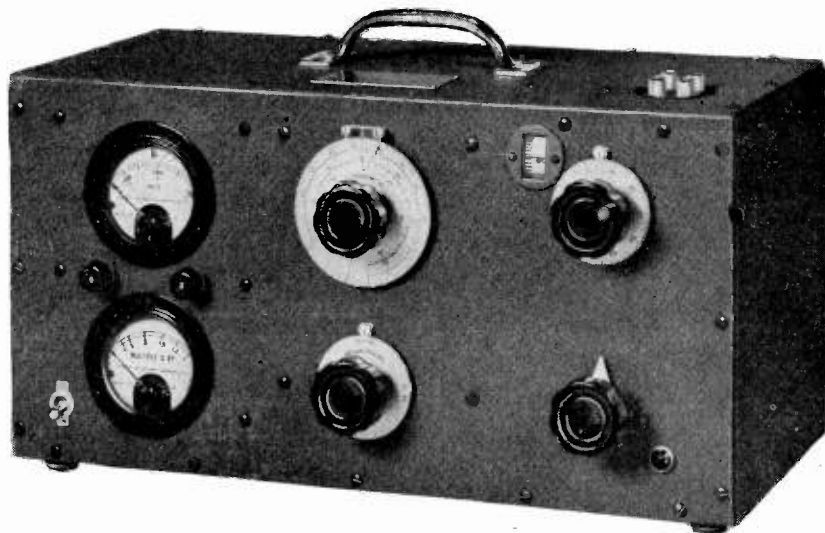




## Q-METER

### TYPE 170-A

The Type 170-A Q-Meter utilizes the same general operating principles and characteristics as the Type 160-A Q-Meter, but incorporates such structural modifications and design refinements as are required for accurate performance at the higher frequencies. This instrument is intended to supplement the low frequency Q-Meter by extending the range of measurement up to 200 mc.



#### SPECIFICATIONS

Oscillator Frequency Range: Continuously variable from 30 mc. to 200 mc. in three ranges—Calibration accuracy  $\pm 1\%$ .

Range of Q Measurements: The Q voltmeter is calibrated directly in circuit Q, from 80 to 300. The "Multiply-Q-by" meter is calibrated from x1 to x4, hence the range of circuit Q measurements is from 80 to 1200.

Accuracy of Q Measurements: The accuracy of the direct reading measurement of circuit Q is  $\pm 10\%$  up to 100 megacycles and decreases with increasing frequency.

Capacitance Calibration of Q Capacitor: Range 11-60 mmfd. calibrated in unit mmfd. divisions. Accuracy: 1% or 0.5 mmfd., whichever is greater. Micrometer dial divided into 100 divisions.

Power Supply: 110-120 volts, 50-60 cycles. Also 220-240 volts, 50-60 cycles. Power consumption 50 watts. Dimensions: 17" x 10½" x 8¾".

Weight: 21 lbs.

Price: \$550.00, F.O.B. Boonton, N. J., U.S.A.

## QX CHECKER TYPE 110-A

The QX-Checker is a production type test instrument specifically designed to compare reactance and relative Q of RF components with approved standards. The two factors, reactance and relative Q, are separately indicated, one on a meter and the other on a condenser dial, so that the deviation of either from established tolerances is immediately shown. Built to laboratory standards, the QX-Checker is a sturdy, fool-proof instrument for use in production work by factory personnel.

#### SPECIFICATIONS

Oscillator Frequency Range: 100 kc. to 25 mc. in 6 ranges using accessory plug-in coils (two coils furnished with each instrument).

Accuracy of Coil Checks: Coils may be checked against a standard to within about 0.2% with inductance values of 10 microhenries to 10 millihenries and Q of 100 or greater.



Capacitance Range: Capacitance values ranging between approximately 2-1000 mmf. may be checked against a standard to an accuracy of a few tenths of one mmf. if the Q of the capacitor is high.

Power Supply: 110-125 volts, 50-60 cycles, also 200-250 volts, 50 cycles.

Dimensions: Width 12¼", Depth 18". Height 8".

Weight: 26 lbs.

Price: \$340.00, F.O.B. Boonton, N. J., U.S.A.

**BOONTON RADIO**

BOONTON · N · J · U · S · A ·

*Corporation*

PRECISION  
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INSTRUMENTS  
ELECTRONIC INDUSTRY

## FM SIGNAL GENERATOR

TYPE 202-B

The type 202-B FM Signal Generator has been developed to meet the needs of engineers engaged in the design of FM and television receivers for operation within the frequency range of from 54 megacycles to 216 megacycles.

This instrument has been proportioned for maximum conservation of laboratory bench space, with frequency dial, modulation and output meters positioned at eyelevel for maximum readability. The unit is finished in grey wrinkle enamel with engraved panel and is supplied complete with tubes and standard output cable.

### SPECIFICATIONS

**RF Range:** Frequencies from 54 mc. to 216 mc. are covered in two ranges, 54-108 mc. and 108-216 mc.

**Main Frequency Dial:** The two RF ranges are calibrated directly in megacycles to an accuracy of within  $\pm 0.5\%$ . The dial is also divided in 24 equal divisions for use with the vernier frequency dial.

**Vernier Frequency Dial:** The vernier frequency dial is divided in 100 divisions and is geared to the main dial through a gear train having a 24:1 ratio. The approximate frequency change per vernier division is 26 kc. on the low range and 52 kc. on the high range.

**Frequency Modulation (Deviation):** The FM deviation is continuously variable from zero to 240 kc. The modulation meter is calibrated in three FM ranges (1) zero to 24 kc., (2) zero to 80 kc. and (3) zero to 240 kc. deviation.

**Amplitude Modulation:** The modulation meter is calibrated at 30% and 50% amplitude modulation. AM is continuously variable from zero to 50%.

**Modulation Controls:** Separate potentiometers are provided for continuous control of FM and AM levels.

**Modulating Oscillator:** The internal AF oscillator may be switched to provide either frequency or amplitude modulation; it may also be switched off. External binding posts permit the use of an external AF oscillator for either FM or AM. Both internal and external AF oscillators may be used simultaneously, thus providing either FM or AM at two modulation frequencies simultaneously or simultaneous FM and AM. The internal AF oscillator provides eight fixed frequencies which may be selected by a rotary type switch—50, 100, 400 cycles and 1, 5, 7.5, 10 and 15 kilocycles, accurate to within 5%. The output voltage of the internal AF oscillator is available at the external binding posts for synchronizing or other purposes.

**RF Output Voltage:** The RF output voltage is continuously variable over a range from 0.1 microvolt to 0.2 volts at the terminals of the output cable. The impedance at the RF output jack, looking into the instrument, is 53 ohms resistive. The output cable has a 53 ohm resistance termination at the terminal end hence the output impedance of the unit with cable attached is 26.5 ohms.



**Distortion:** FM distortion at 75 kc. deviation is less than 2% when modulated with the internal AF oscillator or an external AF oscillator having 0.5% distortion or less. At 50% amplitude modulation the distortion is about 5% using the internal AF oscillator and decreases as the modulation percentage is reduced. An external AF oscillator may be employed for amplitude modulation if desired.

**Spurious RF Output:** All spurious RF output voltages are at least 30 db. below the desired fundamental. The RF leakage is very low.

**Fidelity Characteristics:** The deviation sensitivity of the FM modulation system as a function of frequency is constant from dc. to over 10 kc. At 15 kc. the deviation as indicated on the modulation meter is 0.5 db. higher than the true value. The amplitude modulation system is also flat to 10 kc., and departs from nominal by 1.0 db. at 15 kilocycles.

**Power Supply:** The power supply is self-contained in the instrument for use on 60 cycles, 110 volts.

**Accessories:** 203-A Frequency Converter (Frequency range 0.4 mc. to 25 mc.).

**Dimensions:** Height: 17"; Width: 13½"; Depth: 11½".

**Weight:** 35 lbs.

**Price:** \$975.00, F.O.B. Boonton, N. J., U.S.A.

**BOONTON RADIO**

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*Corporation*



## UNIVERTER TYPE 203-B

The Type 203-B Univerter, a frequency converter accessory having unity gain, is designed for use with the Type 202-B FM Signal Generator to provide additional frequency coverage of from 0.4 mc. to 25 mc. Since the 202-B FM Signal Generator covers a frequency range from 54 to 216 megacycles, the 203-B Univerter offers a simple means whereby the additional coverage of commonly used intermediate and radio frequencies may be obtained. This instrument also enables the frequency and amplitude modulation features of the 202-B instrument, as well as the attenuator calibration, to be utilized at these lower frequencies without causing any appreciable distortion.

The 203-B Univerter matches the 202-B FM Signal Generator in styling and finish, and is supplied complete with tubes and instruction book.

### SPECIFICATIONS

**RF Range:** The Univerter, in combination with the 202-B FM Signal Generator, covers from 0.4 mc. to 25 mc. (0.1 mc. to 25 mc. with no carrier deviation). The RF voltage at the X1 OUTPUT jack is uniform within  $\pm 1$  db. over the frequency range of the instrument.

**Frequency Increment Dial:** This dial is calibrated in increments of 10 kc. from plus 250 kc. through zero to minus 250 kc.

**RF Output:** The RF output voltage at the X1 panel jack is continuously variable from 0.1 microvolt to 0.1 volt by means of the 202-B Signal Generator attenuator. For 0.2 volt input to the Univerter, the output is approximately 0.18 volt. The impedance at the RF output jack, looking into the instrument is approximately 60 ohms resistive. The RF output voltage at the 2 VOLT MAX. pin jack is uncalibrated but may be controlled from the attenuator of the 202-B FM Signal Generator. At this pin jack the internal impedance is approximately 470 ohms.



**Power Supply:** The 203-B Univerter is designed for use on 50-60 cycles, 115 volts  
**Dimensions:** H: 11 1/2" W: 7 3/8" D: 10 1/2"  
**Weight:** 11 lbs.  
**Price:** \$300.00, F.O.B. Boonton, N. J., U.S.A.

## BEAT FREQUENCY GENERATOR TYPE 140-A

This instrument has found universal acceptance because of its wide frequency coverage from 20 cycles to 5 megacycles. A five step decade attenuator provides a means by which extremely small output voltages can be accurately set and a six position switch enables any one of a variety of output impedances to be quickly selected.

### SPECIFICATIONS

**Frequency Range:** 20 cycles to 5 megacycles in two ranges.

**Low Range:** 20 to 30,000 cycles.

**High Range:** 30 kc. to 5 mc.

**Frequency Calibration:** Accuracy  $\pm 2$  cycles up to 100 cycles,  $\pm 2\%$  above 100 cycles.

**Stability:** About 5 cycles drift below 1000 cycles. On low range, drift becomes negligible percentage with increasing frequency. On high range, drift is 3% or less.

**Adjustment:** High and low ranges have individual zero beat adjustments. Low range may be checked against power line frequency with front panel 1 inch cathode ray tube.

**Output Power and Impedances:** Rated power output: One watt, available over the low frequency range from output impedances of 20, 50, 200, 500, 1000 ohms, and over both high and low frequency ranges from an output impedance of 1000 ohms.



**Distortion:** 5% or less at 1 watt output, 2% or less for 1/2 voltage output.

**Voltmeter Accuracy:**  $\pm 3\%$  of full scale reading.

**Power Supply:** 110-120 volts, 50-60 cycles, also 220-240 volts, 50-60 cycles.

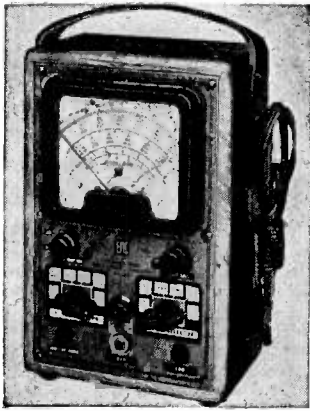
**Power Consumption:** About 120 watts.

**Dimensions:** Width: 21 1/2", Depth: 15", Height: 19 1/2".

**Weight:** 86 lbs.

**Price:** \$1,050.00, F.O.B. Boonton, N. J., U.S.A.

**BOONTON RADIO**  
 BOONTON · N. J. · U. S. A. *Corporation*



# E.M.C.

Gives More Measurement  
Value per Dollar

## THE E. M. C. MODEL 300 VACUUM TUBE VOLT-OHM-CAPACITY METER

The new Model 300 Vacuum Tube Volt-Ohm-Capacity Meter is an unusually stable, extremely compact instrument, with all of the inherent quality of

design and manufacture that is always built into all E.M.C. test instruments.

Its price — amazingly low — was made possible through the development of a new efficient circuit by E.M.C. engineers, which enabled great economies. Its large, accurate meter, mounted on a clearly defined, modern panel, makes operation a pleasure rather than a chore.

Sturdily cased in oak, this instrument will withstand rough usage, and will give complete satisfaction under all conditions. The Model 300 is supplied as an open-face bench model, or as a portable model complete with cover.

### SPECIFICATIONS

Uses 4½" meter.

DC Volts — 6 ranges: 0-3-10-30-100-300-1000 volts.

Input resistance 1 meg per volt on 0-3 and 0-10 ranges, 30 megohms input resistance on 0-30-100-300 and 1000 volts ranges.

1 megohm isolating resistor in probe.

AC Volts — 5 ranges: 0-10-30-100-300-1000 volts.

Approximately 1000 ohms per volt. Full wave tube rectification used.

Resistance — 6 ranges from 2 ohms to 1000 megohms.

Capacity — 4 ranges, from 25 micromicrofarads to 20 microfarads (.000025 mfd to 20 mfd).

Has zero center position available for lining up the discriminator of an FM radio.

Open Face Model, complete with leads, Dealer Price ..... **\$39.50**

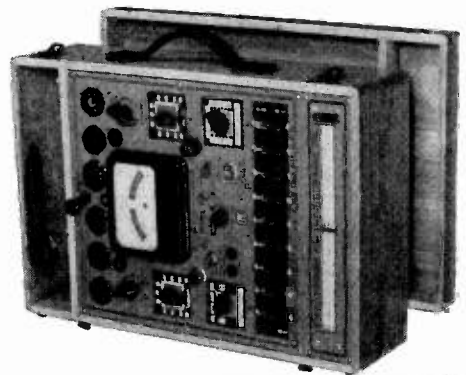
Model 300P, above model, in portable case with cover. Dealer Price ..... **44.50**

Model HFP, High Frequency Probe, for above models ..... **6.50**

## E. M. C. MUTUAL CONDUCTANCE TUBE TESTER — MODEL 200

### Check These Features

- ✓ Checks mutual conductance on a calibrated micromho scale, as well as an a "Reject-Good" scale.
- ✓ Checks 5 element tubes as pentodes.
- ✓ Checks tubes for gas content.
- ✓ Sufficient plate current to check both emission and mutual conductance.
- ✓ Detects both shorted and open elements.
- ✓ Complete switching flexibility allows all present and future tubes to be tested regardless of location of elements on tube base.
- ✓ Tests tubes for radio frequency and other noise.
- ✓ Tests all tubes from .75 volts to 117 filament volts.
- ✓ Tests all loctal, octal, and miniature tubes.
- ✓ Tests cold cathode, magic-eye, voltage regulator tubes, ballast resistors.
- ✓ Instrument is fused, and fuse is easily replaceable from front of panel.
- ✓ Individual sockets for each tube base type eliminates possible errors.
- ✓ Checks individual sections of multi-purpose tubes.
- ✓ Attractive four-color panel with plenty of eye-appeal. Hard wrinkle finish for durability.



### E.M.C. Series 200 Mutual Conductance TUBE TESTERS

	Net Prices
Model 200 BC . . . 4½" meter in sloping counter case .....	\$58.50
Model 200 BP . . . 4½" meter in hand-rubbed carrying case .....	62.50
Model R200 BC . . . Same as Model 200 BC plus built-in Roll Chart .....	64.50
Model R200 BP . . . Same as Model 200 BP plus built-in Roll Chart .....	68.50
Roll Chart unit in individual case .....	6.00
(For 220 v. operation add \$5.00 to above prices)	

**ELECTRONIC**  **MEASUREMENTS**  
CORPORATION

# E. M. C. Announces A Complete Line Of VOLOMETERS\*

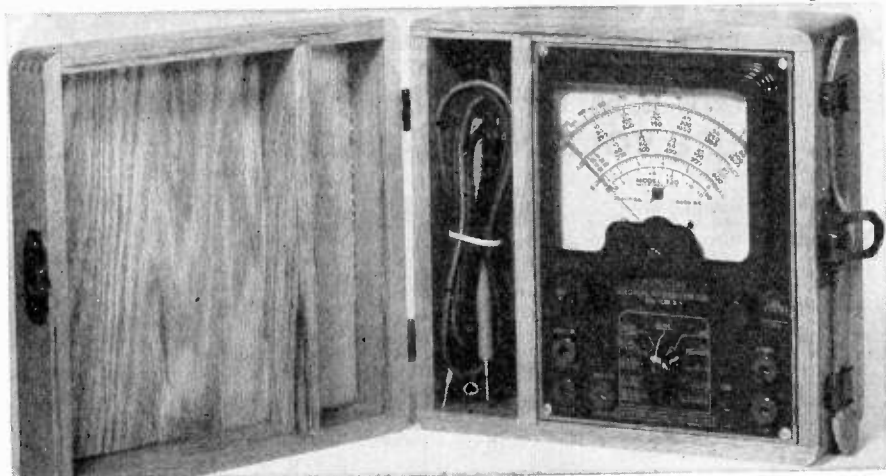
\*Reg. trade mark for volt-ohm-milliammeter

## MODEL 120

20,000 ohms per volt

Model 120 is the ONLY 20,000 ohms per volt instrument that gives you:

1. WIDEST resistance range (.2 ohm to 300 megs.)
2. HIGHEST AC voltage sensitivity (10,000 ohms per volt)
3. LOWEST PRICE — \$29.95, open face model; \$34.95 for Model 120-P (portable)



### Other Features Include:

1. AC voltage frequency range 30 cycles to 1 megacycle.
2. Rectifier and battery replaceable without soldering iron.
3. No external source of power needed for AC voltage measurements.
4. Special precision voltage multipliers accurate to 1%.

### Specifications:

- DC volts at 20,000 ohms per volt: 0-3v, 0-15v, 0-60v, 0-300v, 0-1500v, 0-6000v.
- AC volts at 10,000 ohms per volt: 0-6v, 0-30v, 0-120v, 0-6000v, 0-3000v, 0-6000v.
- DC current: 0-60 microamps, 0-6ma, 0-60ma, 0-600ma, 0-6 amps.
- Resistance: 0-3000, 0-300,000, 0-3 megs, 0-300 megs.
- Decibels: -4 to +11, +10 to +25, +22 to +37, +36 to +51, +50 to +65, +62 to +77.

## MODEL 105

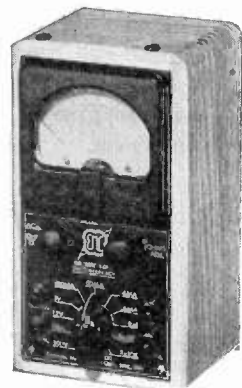
5000 ohms per volt

The Model 105 will accurately measure AC voltages from 25 cycles to 100 KC with no temperature errors, and without the necessity of plugging into any external source of power. For this reason it is invaluable for Audio or I.F. In addition, the Model 105 can be used to measure resistances from 1/2 ohm to 30 megohms.

### SPECIFICATIONS:

- 6 DC voltage ranges (approx. 5000 ohms per volt) 0 to 3-15-60-300-1500-6000 volts.
- 6 AC voltage ranges (approx. 2500 ohms per volt) 0 to 6-30-120-600-3000-6000 volts.
- 4 DC current ranges, 0 to .6-6-60-600 milliamperes.
- 3 resistance ranges, 0 to 3000-300,000 ohms; 0 to 30 megohms.
- 6 DB ranges, -10 to +77.

Open face model, Size: 6 3/8" x 3 1/2" x 3". ..... Price **\$22.95**  
 Portable Model. Complete with set of test leads. Size: 6 3/8" x 4 1/2" x 4 1/4". ..... Price **\$26.95**



MODEL 105

## MODELS 101A & 101B

1000 ohms per volt

Here is an unusually attractive, EXCEPTIONALLY LOW-PRICED volt-ohm-milliammeter. It is a rugged, flexible instrument, combining features which are not available in competitive models selling for more than double this price.

You will be convinced when you read the "Specifications" and "Special Features" that MODEL 101 VOLOMETER is just the instrument to have around the shop or lab whenever the type of measurement does not justify the use of expensive, complicated, highly sensitive equipment.

The fact that resistances between 1/20 OHM and 20 MEGS and AC voltages between 25 CYCLES and 1 MEGACYCLE in frequency can be measured with this unit, makes it a handy and very valuable instrument. In short, when it comes to value and versatility, MODEL 101 really sets the pace.

### SPECIFICATIONS

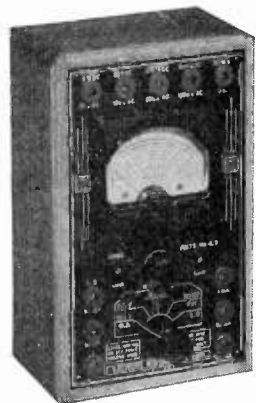
- 5 DC VOLTAGE RANGES (approx. 1000 ohms per v.): 0 to 6-60-300-600-3000 volts.
- 4 AC VOLTAGE RANGES: 0 to 12-120-600-1200 volts.
- 3 DC CURRENT RANGES: 0 to 6-60-600 milliamperes.
- 4 RESISTANCE RANGES: 0 to 200-2000-200,000 20 megohms.



MODEL 101B

Open face as shown.

Price ..... **\$20.95**  
 Size: 5 3/8" x 8 5/8" x 2 3/4".  
 In portable case.  
 Price ..... **\$24.95**  
 Size: 7 1/8" x 8 5/8" x 3 3/4"  
 Complete with test leads.



MODEL 101A

Open face as shown.

Price ..... **\$17.50**  
 Size: 4 1/2" x 7 1/2" x 3 1/4"  
 In portable case.  
 Price ..... **\$21.50**  
 Size: 6 1/4" x 7 1/2" x 3 1/4"  
 Complete with test leads.

# RADIO CITY PRODUCTS CO., Inc.

NEW YORK 1, N. Y.

## TEST EQUIPMENT

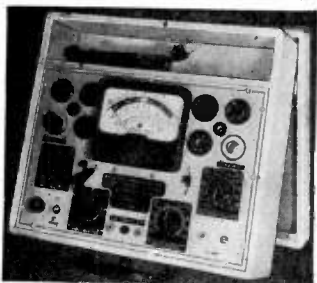


### COMBINATION TUBE TESTER

#### SET TESTER and CONDENSER TESTER MODEL 802NA

— EASY OPERATION — UP TO DATE —

— Only 5 switches for operating both Tube and Set Tester —



Tube Tester has speedy leakage-short tests between all elements. Separate noise test for tubes that otherwise test "good". Large scale  $4\frac{1}{2}$ " meter protected against burn out by special meter fuse for both multitester and tube tester. Complete unit also protected by separate fuse. Tests new and old types of tubes as well as ballast tubes. New gold plated copper oxide rectifier used for A.C. voltage measurements. Multipliers are matched for 1% tolerance.

#### RANGES

DC Voltmeter: 0-10-50-500-1000 at 1000 Ohms per Volt.  
AC Voltmeter: 0-10-50-500-1000.  
DC Milliammeter: 0-1-10-100-1000.  
DC Ammeter: 0-10 Amperes.  
Ohmmeter: 0-500-5000-1 Meg.-10 Meg. Low center scale.  
DB Meter: —8 to +55 decibels in four ranges.  
Four range output meter: Same as AC volts.

Model 802NA—supplied in handsome hardwood case, with special compartment for small tools, test leads (included), etc. Size:  $12\frac{3}{8}$ " x 12" x  $5\frac{1}{4}$ ". Weight: 11½ lbs. Complete with self-contained batteries, ready to operate.

Dealer Net Price ..... **\$59.50**

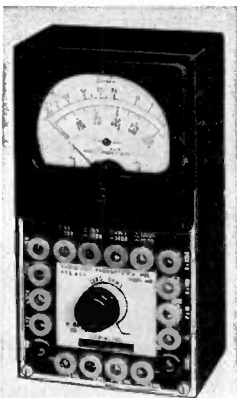
Servishop Model 8073—Combines Model 802NA with Model 730 signal generator fitted into the same case making a complete service shop containing TUBE TESTER — MULTITESTER — CONDENSER TESTER — A.M. SIGNAL GENERATOR — F.M. SIGNAL GENERATOR — AUDIO OSCILLATOR.

The A.M.—RF, as well as the F.M. signal generator are accurately set for the four needed calibration frequencies—two I.F. and two ends of the band. The audio oscillator has a 400 cycle output.

Model 8073—Housed in same overall case as Model 802NA, complete with all tubes, output leads, operating instructions etc.—ready to operate.

Dealer Net Price ..... **\$84.95**

### POCKET MULTITESTER MODEL 449A



Versatile multi-tester remarkably accurate. It's tops for general circuit testing and for speed in trouble-shooting. Uses a 3" square meter at 5,000 ohms per volt with a basic movement of 200 microamperes. Batteries are mounted in special spring clips readily accessible for replacement—no wires to solder. Combines 6 instruments in one small unit.

#### RANGES

DC Volts: 0-5-50-250-1000 Volts.  
AC Volts: 0-5-50-250-1000 Volts.  
DC MA: 5-10-100-1000 MA.  
Ohms: 0-2000-20,000-0-2-2. Meg-ohms.  
Decibels: —6 to +52 DB in four ranges.  
Output Meter: 0-5-50-250-1000.

Model 449A—Pocket Multitester supplied in black metal case complete with self-contained batteries. Ready to operate. Size  $5\frac{7}{8}$ " x  $3\frac{1}{8}$ " x  $2\frac{1}{8}$ ". Weight 1¼ lbs.

Dealer Net Price ..... **\$24.50**

Model 449AP—Same as 449A but supplied in portable oak case with leads.

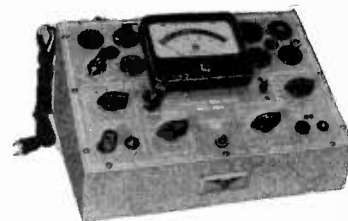
Dealer Net Price ..... **\$28.50**

### DYNOPTIMUM TUBE TESTER

#### MODELS 322A AND 322AP

— Simple operation —  
— only 4 switches used —

R. C. P. again demonstrates leadership in the design of this Tube Tester. Special noise test for tubes that otherwise test "good," gives a speedy leakage short test between all elements, tests new and old types of tubes, individual sections of multi-purpose tubes, and has provisions to check all miniature and sub-miniature tubes.



Model 322P

Complete instrument is protected against burn-out by line fuse immediately replaceable at front of panel.

This Model Features simplicity, speed of operation and compactness, in addition to its economical price.

Counter Model 322A (steel case—sloping panel). Size  $5\frac{1}{4}$ " x  $12\frac{3}{8}$ " x 8". Weight  $8\frac{1}{4}$  lbs.

Dealer Net Price ..... **\$37.95**

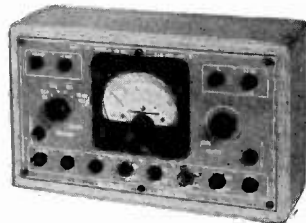
Portable Model 322AP. Size  $4\frac{7}{8}$ " x  $12\frac{1}{8}$ " x  $11\frac{3}{8}$ ". Weight 14¼ lbs.

Dealer Net Price ..... **\$41.95**

### AC-DC MULTITESTER MODELS 447A AND 447AP

The exceptional value in the 447A Model is made possible by the tremendous quantities produced. The resulting very low price is responsible for its great popularity. These units are in a class with other makes of testers that sell for considerably more.

A 3" square D'Arsonval meter is used, having an accuracy of 2%. Ring type shunt circuits are employed. Accuracy of AC voltage measurements are kept to closer tolerance by use of a new gold plated copper oxide rectifier with excellent current density characteristics.



Model 447A

#### RANGES

DC Voltmeter: 0-5-50-250-500-2500 Volts at 1000 Ohm per Volt.  
AC Voltmeter: 0-10-100-500-1000 Volts.  
Output Voltmeter: 0-10-100-500-1000 Volts.  
DC Milliammeter: 0-1-10-100-1000 MA.  
DC Ammeter: 0-1-10 Amperes.  
Ohmmeter: 0-10,000 Ohms—1 Megohm—10 Megohms Ext.  
Decibel Meter: —8 to +55 decibels.

Model 447A—Open face instruments supplied in hardwood case. Size 5" x  $8\frac{1}{2}$ " x 3". Weight 21 oz. Complete with batteries, ready to operate.

Dealer Net Price ..... **\$17.95**

Model 447AP—Portable type supplied in hardwood case with carrying handle, cover and test leads. Size  $6\frac{1}{2}$ " x  $8\frac{1}{2}$ " x  $4\frac{1}{2}$ ". Weight 24 oz. Complete with batteries, ready to operate.

Dealer Net Price ..... **\$21.95**



# RADIO CITY PRODUCTS CO., Inc.

NEW YORK 1, N. Y.

## TEST EQUIPMENT

### POCKET SIGNAL GENERATORS

MODEL AM-710 — MODEL FM-720A



For "On The Job" service work both of these popular generators are a "must," and is an answer to the needs of thousands of servicemen, experimenters, and is ideal for production testing.

Model AM-710 generator provides broadcast band alignment by fixed frequencies of 550 Kc and 1500 Kc. Intermediate frequency alignment is provided for by fixed frequencies

of 456 Kc and 465 Kc. Trimmers are provided for the purpose of recalibrating. Safe AC or DC operation. Isolation of case and chassis prevents any chance of shock, short circuit or burn-out.

Complete with tubes. Shielded output, cable and plug ready to operate. Housed in attractively designed case. Size 3" x 6" x 2 3/4".

Weight 2 lbs.

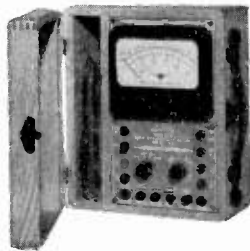
Dealer Net Price.....**\$17.95**

Model FM-720A generator is a companion unit and is actually FREQUENCY modulated sufficient for radio detectors and covers the entire FM band. All needed frequencies for FM servicing are instantly available at accurate calibration. Switch provides fixed frequencies of 9.1 megacycles and 10.7 megacycles for IF and 88 and 108 megacycles for the low and high ends of the band. Continuously variable attenuation is provided to prevent overloading.

Complete with tubes, shielded output, cable line cord and plug ready to operate. Housed in attractively designed metal case. Size 3" x 6" x 2 3/4". Weight 2 lbs.

Dealer Net Price.....**\$19.95**

### 450 SERIES HI-MEGOHM MULTITESTERS



Accurate HIGH MEGOHM RANGE requires NO batteries and NO tubes. Rectangular 4 1/2" meters provide excellent readability and are accurate within 2%.

Output ranges correspond to the AC voltage ranges. Hi-megohm ranges permit readings 50 megohm on type A and 1000 meg. on type C.

All bench type or open face models have dimensions 8 7/8" x 5 1/2" x 3 3/4". Weight 3 lbs. All portable models are designated by letter "P" and are furnished in attractive natural finish oak cases with leads. Case has hinged cover with latch and leather handle. Dimensions, 8 7/8" x 7 1/2" x 4 3/4". Weight 4 1/2 lbs.

**MODEL 450A — 1000 Ohms per volt meter sensitivity**

Ohmmeter: 0-5000-500,000 Ohms, 0-50 Meg.  
DC Volts: 0-5-50-125-500-2500.  
AC Volts: 0-10-100-250-1000.  
DC Milliamps: 0-0.5-10-100-1000.  
Decibels: —9 to +55 DB.

Dealer Net Price.....**\$20.95**

Model 450AP Dealer Net Price.....**\$24.95**

**MODEL 450B — 5,000 Ohms per volt meter sensitivity**

AC and DC Volts: Ranges same as for 450A and 450C.  
Ohmmeter: 0-5000-500,000 Ohms, 0-100 Megohms.  
DC Milliamps: 0-0.5-10-100-1000.  
Decibels: —9 to +55 DB.

Dealer Net Price.....**\$28.50**

Model 450BP Dealer Net Price.....**\$24.50**

**MODEL 450C — 20,000 Ohms per volt meter sensitivity**

Ohmmeter: 0-5000 Ohms 0-5-1000 Meg.  
DC Volts: 0-5-50-125-500-2500.  
AC Volts: 0-10-100-250-1000.  
DC Milliamps: 0-0.1-10-100-1000.  
Decibels: —9 to +55 DB.

Dealer Net Price.....**\$28.50**

Model 450CP Dealer Net Price.....**\$32.50**

Here are fine instruments that provide immediate measurements of high resistance values without the use of expensive bridges.

### SIGNAL GENERATOR MODEL 705A

BOTH 30% AND 80% MODULATION

R. C. P. Model 705A Test Oscillator brings you a feature ordinarily found only in high-priced instruments—high and low percent modulation. Low harmonic output on low frequency bands. High percentage harmonics on high frequency band only. IDEAL FOR ALIGNMENT OF FM RECEIVER IF'S BY THE ZERO DISCRIMINATOR CURRENT METHOD.

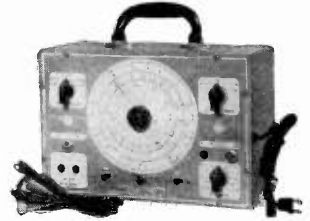
Dial calibration provides fundamental frequencies from 100 Kc to 25 Mc. Band "F" has been included to provide calibrated output using third harmonic of Band "E" to give direct frequency readings from 25 to 75 Mc. Band "F" harmonic output is sufficient for alignment of all present day FM receivers. Calibration is accurate within 2% per band for broadcast bands and within 3% for high frequency and FM bands. Ideal for direct-reading calibration of receivers.

Automatic shorting of coils not in use. Individual shielding of RF circuits, coil assembly and attenuator. Overall steel case, chassis and panel. Fused line supply.

Planetary drive condenser, double-ended indicator—Output can be modulated or unmodulated. Sinusoidal modulation frequency of 400 cycles also available for external application. Five step-ladder attenuator with vernier.

Model 705A—Complete, ready to operate. Size 8" x 11 3/4" x 5". Weight 11 lbs.

Dealer Net Price.....**\$49.50**



### DYNATRACER MODEL 777

A new signal tracer that establishes a new high in performance records — covers all AM - FM - TELEVISION receivers

Astonishing new design at economical cost that gives high amplification available only in the expensive tuned channel types. Operation is more simple.

**TESTS MICROPHONES AND PHONOGRAPH PICKUPS directly through terminals provided**

Negligible outside pickup of noise or hum. Extremely high sensitivity enables this instrument to pick up broadcast signals when connected to a short lead.

Checks noise pickup at antenna—checks operation of AVC-AFC-link and filter circuits. Detailed instructions give full information for checking all types of receivers and their components.

With this revolutionary signal tracer really hear the signal and any variation directly from antenna through each stage of r.f.-i.f.-a.f. step by step without operating any switch or changing to different channels in the instrument. You get readings or signal strength and directly measure gain per stage. Gain measurements made by accurate meter not possible with magic eye indicators.

Negligible Disturbance to circuit under test as input capacity is only 3 mfdms.

Attenuation of 10,000 to 1 by a ladder type of step attenuator with vernier control.

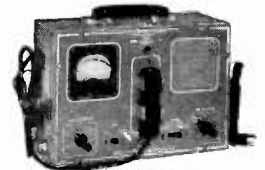
Sensitivity extremely high—10,000 microvolts full scale.

Traveling Detector—Convenient, insulated probe housing detector and amplifier at end of 50" lead.

Frequency coverage up through 150 megacycles.

Model 777—Beautiful hammertone grey finish — 4" Alnico V speaker, sensitivity control, microphone-phonograph input jack — traveling detector probe, sensitive milliammeter with associated switching control — ladder type step attenuator, vernier control — automatic control switch for speaker or meter or both or standby. Includes 6AT6, 7A7, 7B5, and 6X5 tubes. Complete, ready to operate, 105-135 volts. Weight 9 1/2" lbs. Size 6 3/4" x 8 1/2" x 11".

Dealer Net Price.....**\$41.50**

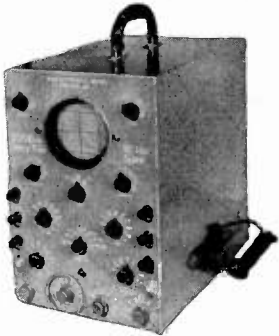


# RADIO CITY PRODUCTS CO., Inc.

NEW YORK 1, N. Y.

## TEST EQUIPMENT

### TEEVEE 90 OSCILLOSCOPE THE LATEST IN TELEVISION TESTING



Combines the two essential instruments needed in television testing: ALIGNMENT - SERVICE

- COMPLETE OSCILLOSCOPE (Can be used as such by itself)
- COMPLETE SWEEP GENERATOR

(Can be used independently)

Oscilloscope has its own variable linear sweep circuit from 10 to 45,000 CPS and has a sensitivity of 285 millivolts RMS per inch vertical and 320 millivolts RMS per inch for horizontal deflection. Input resistance is one megohm shunted by 20 mmfd. Sine wave response uniform from 5 cycles to 200 K.C. within  $\pm 2$ db.

Sinusoidal sweep with phasing control of 150 degree range is provided for use in conjunction with the internal RF sweep generator when testing band pass characteristics.

Absolute locking of pattern is obtained with linear time base control (left to right) from 10 cycles to 45,000 cycles in six ranges with vernier control. Synchronization provision for either internal positive or line frequency or external.

External jack provided for trace blanking. Requires 1/2 volt of negative pulse to blank a normal intensity level trace.

Independent sweep generator has a center frequency range of 1.5 to 45 megacycles giving a choice of any IF frequency desired. The band width can be varied continuously from 0.5 KC to 7 MC.

Attenuation of RF is continuously variable from 0 to 500 millivolts and the output is applied through low loss coaxial cable.

Traveling detector probe is included for observing signal at any point of the R.F. circuit under test.

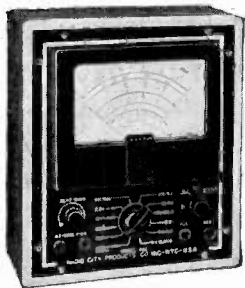
Supplied complete with tubes, probe, coaxial output cable and operating instructions ready to operate.

For operation on 105-130 volts 50-60 cycles—power consumption 40 watts. Weight 25 lbs. Size 14 x 18 x 12 1/2 inches. Finished in attractive hammertone grey.

Here are two instruments combined at actually the price of only one. Light enough and compact enough to easily take right out on the job with you—almost impossible with 2 separate units.

**TUBE COMPLEMENT—1-3BP1, 2-7G7, 2-6X5, 1-884, 1-6SA7GT/G, 1-7A4—Supplied complete with tubes, probe, coaxial output cable and operating instructions ready to operate** ..... **\$127.50**

### MULTITESTER MODEL 462



#### GIANT SIZE METER

20,000 Ohms per Volt D.C.  
5,000 Ohms per Volt A.C.  
NO FREQUENCY ERRORS

Unusual because of the many desirable features that are combined in one instrument. The size of the meter, 6 1/2", provides a very long scale with excellent legibility so important for bench work.

Uses germanium crystal rectifier which has no frequency error for output measurements or even high radio frequencies. Uses individual unit cells for ohmmeter. Easy and economical to purchase and replace—snap into terminal clamps—no soldering.

#### RANGES

- D.C. Voltmeter 0/2.5/10/50/250/. 1000/5000 volts.
- A.C. Voltmeter 0/2.5/10/50/250/. 1000/5000 volts.
- D.C. Milliammeter 0/10/100/500 milliamperes.
- D.C. Microammeter 0/100 micro-

- amperes. Ohmmeter 0/200/200,000 0/20 megohms.
- Decibel Meter—10 to/55 db.
- Meter of 50 microampere sensitivity permits current readings of less than 1 microampere.
- Shunts and multipliers are calibrated to 1% accuracy.

Model 462 Multitester is a beautiful large instrument with 6 1/2" meter, bakelite panel and oak case. Size 4 1/4" x 8 1/2" x 10 1/8". Weight 5 lbs.

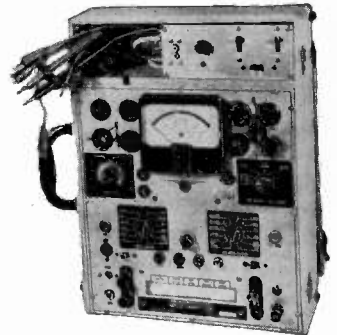
Dealer Net Price ..... **\$41.50**

Model 462P comes in a portable hinged cover oak carrying case having a tool compartment and includes deluxe pencil prod test leads. Size 5 1/4" x 8 1/2" x 11 3/4". Weight 6 lbs.

Dealer Net Price ..... **\$45.95**

### SERVICESHOP MODEL 8573 EQUIVALENT TO A COMPLETE SERVICE SHOP

- Tube Tester
- Battery Tester
- Condenser Tester
- AM Signal Generator
- FM Signal Generator
- Audio Oscillator
- Complete Multitester



Never before in history has there been available an up-to-date tube tester providing for testing acorn tubes, miniature tubes—noval base tubes and sub-miniature tubes with the famous

Rollindex Roll Chart—combined with a battery tester and a complete multitester measuring AC and DC volts—DC milliamperes and amperes—ohms and megohms, decibels and output volts and also having a condenser tester, an AM signal generator, an FM signal generator and an audio oscillator.

The amazing fine performance of this equipment is the result of the latest engineering design and improvement in the 805B combination tube and set tester combined with the all purpose Model 730 signal generator.

850 tube listings on roll chart. Jack provided for headphone test for noisy tubes that do not otherwise read "bad."

Latest type germanium crystal rectifier assures AC measurements free from temperature and frequency errors common to other rectifiers. Readable scale divisions on the ohmmeter start at 0.05 ohm to 25 megohms.

Battery Tester—All standard range batteries tested under rated loads

DC Volts	AC Volts	DC Milliamps	DC Amps	Ohms	Meg.	Decibels	Output Voltmeter
0	0	0	0	0	0	-8 to +15	0
2.5	10	.5	10	250	2.5	6 to 29	10
10	50	2.5		2500	25	20 to 43	50
50	250	10		25000		32 to 55	250
250	1000	50				46 to 69	1000
1000	5000	250					5000
5000		1000					

Model 8573—Complete with tubes, batteries and test leads, output leads, etc.—housed in beautiful natural finish oak case—hammertone grey panel. Weight 18 lbs.

Overall size 16 1/2 x 12 3/4 x 5 1/4 inches. An outstanding value of all times at ..... **\$99.95**

Model 805B—Same unit as above less the all purpose Model 730 Signal Generator—Complete ..... **\$77.50**

### ROLINDEX



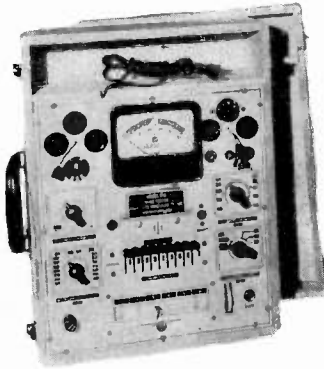
Model 105 Roll chart unit to be used in conjunction with Tube Tester Models 322, 322P, 322A, 322AP, 802N and 802NA. The unit is in a grey hammer-tone finish metal case with plastic window, designed to fit the test lead compartment.

Model 105—Dealer Net Price.... **\$7.50**

# RADIO CITY PRODUCTS CO., Inc.

NEW YORK 1, N. Y.

## TEST EQUIPMENT



### "Free-Point Return" Obsolescence Proof

#### TUBE TESTER MODEL 316

How many tube testers has obsolescence junked in your radio service career? If outmoded instruments deplete your income, you need this practically obsolescence-proof, free-point return tube tester. It enables you to test any tube type available today, or any that may be devised in the future. A noise jack permits easy detection of faulty microphonics in acorn, miniature, and standard tubes. A "must" dollar spent has to produce maximum value and test efficiency.

For the service shop where every instrument produces maximum value and test efficiency.

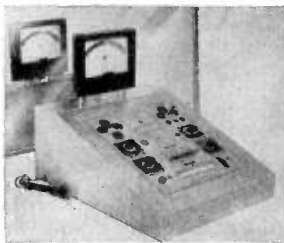
#### CHECK THESE FEATURES

- The free-point-return tester enables all measurements to be made with set in operation.
- The special circuit design allows testing of any tube type regardless of its filament voltage or base wiring.
- Unusual flexibility is attained by using lever-type switching for individual control of each tube element.
- A complete rollehart lists all current tube types in large, legible type.
- Tube tester has 4 1/2" rectangular meter with easy-to-read "Poor-Good" scale.
- Operates on 100-130 volt, 50/60 cycle AC power supply.
- In beautiful portable case of natural oak, with carrying handle and self-latching, removable cover.
- Size: 16 1/2" H. x 12 3/4" W. x 5 1/4" D. Weight: 13 lbs.

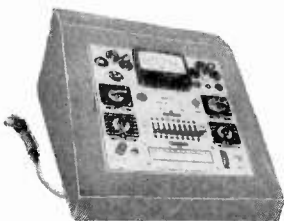
Model 316—Dealer Net Price..... **\$53.50**

#### MODEL 316DL

Similar to Model 316M with exception of meter. Meter is 7 1/2" double meter, giving the identical reading so that both the man in front of the counter as well as the person in back of the counter clearly read the condition of the tube. Size: 16" x 20" x 16". Weight: 21 lbs.



Model 316DL—Dealer Net Price..... **\$82.50**



#### MODEL 316M

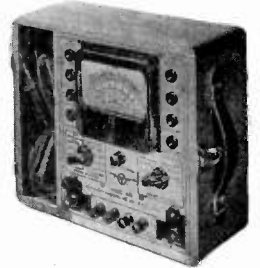
Tube merchandiser complete in handsomely finished all-steel case with 4 1/2" meter, complete, ready to operate. Size: 16" x 20" x 8 1/4". Weight: 19 lbs.

Model 316M—Dealer Net Price..... **\$69.95**

### ULTRA-SENSITIVE MULTITESTER MODEL 488-A

#### Check these features:

- The AC Ammeter is of the current transformer type with a voltage drop of only 0.4 volts at full scale 12-ampere range. Ideally suited for appliance and small motor tests.
- A sensitivity of 20,000 ohms per volt on DC and 1000 ohms per volt on AC measurements. Ideal for television receiver service.
- 6,000-volt AC and DC ranges can be used with safety. 15,000-volt test leads are supplied.
- The center of the low ohm scale reads 37 ohms, permitting extremely accurate readings.
- A wide-scale 4 1/2" meter with movement of 50 microamperes is accurate to 2% of full scale.
- All multipliers and shunts are matched and accurate to 1%.
- Sensitive readings are obtainable as low as 1 microampere, 0.25 ohm and .1 volt.
- Batteries are readily accessible.
- The unit has an overall accuracy of 3% on DC and 5% on AC voltages and currents.



#### RANGES

DC Voltmeter: 0-3-12-60-300-600-1,200-6,000 Volts.  
 AC Voltmeter: 0-3-12-60-300-600-1,200-6,000 Volts.  
 DC Milliammeter: 0-3-20-120-600 Milliampers.  
 DC Microammeter: 0-60-300 Microampers.  
 DC Ammeter: 0-12 Amperes.  
 AC Ammeter: 0-3-6-12 Amperes.  
 Ohmmeter: 0-3,000-300,000 -30,000,000 Oms.  
 Output Voltmeter: 0-3-12-60-300-600-1,200-6,000 Volts.

Model 488A—In golden oak carrying case, compartment, self-latching and detachable cover. Supplied with self-contained battery and test leads. Size: 11 1/2" H. x 9 3/4" W. x 6 1/4" D. Weight: 10 lbs.

Dealer Net Price..... **\$59.50**

### MODERNIZATION UNITS FOR TUBE TESTERS



For the many new tubes that have appeared on the market since 1946, practically every tube tester in use, as well as every new tube tester shipped from the factories up to April, 1947, is now obsolete to some degree.

Models 120 and 125 Modernization Units have a flexible cable with a plug that is simply inserted into the local socket of the old tube tester. There are spare blank sockets and spaces for additional sockets should new types of tube bases appear in the future. Tube Testing charts and data are supplied.

New miniature and subminiature sockets are provided. These units fit snugly into the compartments of the case proper or in the cover of portable types, such as Models 322P, 802N, 802NS. Use the chart below for specifying the correct model.

Modernization Kit No. 129 is supplied in kit form with prewired sub-panel that is mounted in place of one of the regular sockets. Instructions are given for changes in wiring and other connections to be made by the purchaser.

Modernization Kit No. 123 is similar to kit No. 129.

For Testers	308	310-312		800-801	803-804	
Model.....	309	313	314	315	801A-802	802N 801A 805
Order Unit.....	120-308	120-312*	129*	123*	120-800	125 120-803* 128*
Net Price	\$10.95	\$10.95	\$4.95	\$4.95	\$10.95	\$9.95 \$10.95 \$10.95

Hammertone gray panel — steel case. Size: 8" x 8" x 2 3/4". Weight: 1 1/2 lbs.

\*Supplementary tube test data is supplied in sheet form.

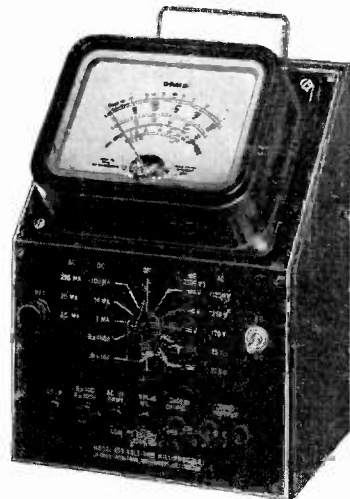
# Chicago INSTRUMENTS

**DEPENDABLE — ACCURATE  
RADIO, ELECTRICAL AND  
INDUSTRIAL TEST EQUIPMENT**

## PORTABLE BENCH-TYPE VOLT-OHM-MILLIAMMETER

**Multiplex Model 458. Volt-Ohm-Milliammeter. 1000 Ohms per volt. Net \$21.00**  
 Volts DC: 0-5/10/50/100/500/2000  
 Volts AC: 0-12.5/25/125/250/1250  
 Milliampers DC: 0-1/10/100/  
 Milliampers AC: 0-2.5/25/250  
 Ohms Full Scale: 1000/200,000/2,000,000  
 Ohms Center Scale: 50/2250/22,500  
 Output: —5 to + 55 Decibels  
 Size: 10 $\frac{1}{8}$ " x 6 $\frac{3}{4}$ " x 5 $\frac{1}{2}$ "

**Multiplex Model 458A. Volt-Ohm-Mils-Ammeter. Net \$26.00**  
 Similar to Model 458, but designed for wider coverage  
 Volts AC-DC: 0-2.5/10/50/250/1000/5000  
 Milliampers AC-DC: 0-1/10/100  
 Amperes AC: 0-0.5/1/5/10  
 Amperes DC: 0-1/10  
 Ohms ranges same as Model 458.



MODEL 458

## PORTAPLEX PORTABLE INSTRUMENTS

**Model 431A AC-DC Volt-Ohm-Mils-Ammeter. Net \$16.60**  
 Volts AC-DC: 0-15/30/150/300/1500/3000  
 (1000 Ohms per volt)  
 Milliampers DC: 0-1.5/150  
 Amperes DC: 0-7.5  
 Ohms Full Scale: 0-10,000/100,000/1 meg.  
 Ohms Center Scale: 60/600/6000  
 Size: 6 $\frac{1}{8}$ " x 3 $\frac{1}{4}$ " x 2 $\frac{3}{4}$ "

**Model 421D AC-DC Volt-Ohm-Milliammeter. Net \$20.00**  
 Volts AC-DC: 0-4/10/40/100/400/1000  
 (5000 Ohms per volt)  
 Milliampers DC: 0-4/40/100/400  
 Ohms Full Scale: 0-10,000/100,000/1 meg.  
 Ohms Center Scale: 60/600/6000  
 Size: 6 $\frac{1}{8}$ " x 3 $\frac{1}{4}$ " x 3 $\frac{1}{4}$ "

**Model 433 Super High Sensitivity Volt-Ohmmeter. 20,000 Ohms per volt. Net \$20.00**  
 Volts DC: 0-3/30/300/600  
 Ohms Full Scale: 5000/50,000/500,000/5,000,000  
 Ohms Center Scale: 70/700/7000/70,000  
 Size: 5 $\frac{7}{16}$ " x 3 $\frac{9}{16}$ " x 3"

## FEATHERWEIGHT MINIATURE MODELS

(All models 3 15/16" x 2 7/8" x 2")

**Model 450 Volt-Ohm-Milliammeter. 1000 Ohms per volt. Net \$10.00**  
 Volts DC: 0-5/10/50/500/1000  
 Milliampers: 0-1  
 Ohms Full Scale: 5000/50,000/500,000  
 Ohms Center Scale: 30/300/3000

**Model 451A AC-DC Volt-Ohmmeter with Output Ranges. Net \$14.00**  
 Volts DC: 0-10/50/100/500/1000 (1000 Ohms per volt)  
 Volts AC and Output: 0-10/50/100/500/1000  
 Ohms Full Scale: 500,000  
 Ohms Center Scale: 7200

**Model 451B Same as Model 451A but with 2500 Ohms per volt. Net \$15.00**

**Model 452 High Sensitivity Volt-Ohmmeter. 10,000 Ohms per volt. Net \$14.00**  
 Volts DC: 0-10/50/100/500/1000  
 Ohms Full Scale: 2000/20,000/200,000/2,000,000  
 Ohms Center Scale: 30/300/3000/30,000

**Model 453 Volt-Ohm-Milliammeter. Net \$12.50**  
 Volts DC: 0-15/30/150/300/1500  
 Volts AC and Output: 0-15/30/150/300/1500  
 Milliampers DC: 0-150  
 Ohms Full Scale: 5000/50,000/500,000



MODEL 451A

## SIMPLEX VOLT-OHM-MILLIAMMETERS

**Model 371 Volt-Ohm-Milliammeter. Iron Vane Type. Net \$5.25**  
 Volts DC: 0-3/15/30/300  
 Milliampers: 0-25  
 Ohms Full Scale: 10,000  
 Size: 1 $\frac{7}{8}$ " x 2 $\frac{3}{4}$ " x 3 $\frac{7}{8}$ "

**Model 312 AC-DC Volt-Ohm-Milliammeter. Repulsion Type Movement. Net \$6.75**  
 Volts AC and DC: 0-25/50/125/250  
 Milliampers AC and DC: 0-50  
 Ohms Full Scale: 100,000  
 Ohms Center Scale: 2400  
 MFD: .05 to 15.  
 Size: 1 $\frac{7}{8}$ " x 2 $\frac{3}{4}$ " x 3 $\frac{7}{8}$ "

## POLARIZED TEST LEADS FOR ALL CHICAGO INSTRUMENTS

No. 1048 Low Resistance Test Leads, 48" Long. Tenite insulated prods. Net \$0.66

## DRY BATTERY TESTER

**Model 471 Dry Battery Tester. Net \$16.00**  
 Tests 1 $\frac{1}{2}$  volt — 10 volt and 10 volt — 150 volt batteries under specified load. Easy reading. 5 $\frac{1}{2}$ " rectangular meter makes battery sales easy.



BATTERY TESTER  
MODEL 471

**CHICAGO INDUSTRIAL INSTRUMENT CO.**

# The "STAR" Line of QUALITY TEST EQUIPMENT

## A Precision TUBE CHECKER at Minimum Cost



MODEL TE-1

Separate switching is provided for each pin of each socket so that any of the heater voltages or the plate voltage can be applied. With this versatile arrangement all standard receiving tubes can be checked no matter what the internal connections.

**\$29<sup>95</sup>**

### FEATURES

- Tests all receiving type tubes including the new series of seven and nine pin tubes now being released for FM and Television.
- Individual pin switching provides the maximum of flexibility in testing.
- 3" square wide vision meter.
- Tests individually all sections of multi-section tubes.
- Features a check for line voltage variations.
- Tests for shorts between all tube elements.
- Compact size — 9" x 7" x 3 1/2".
- Weight — six pounds.
- For use on 50 to 60 cycle, 115 V., AC lines.
- All instruments shipped complete with up to date tube charts.

## STAR TESTER MODEL M-11

The Model M-11 has been designed as a basic all around multi-tester for use by the radio serviceman and allied industries. All essential ranges are covered very adequately with excellent overlapping.

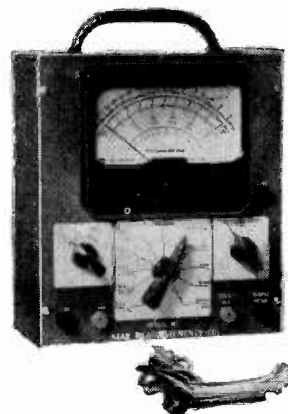
**\$22<sup>95</sup>**

### FEATURES

- A large, wide vision, 4 1/2", 400-microampere meter for ease of reading on all ranges.
- 27 separate ranges for measurement.
- 1,000 ohm per volt sensitivity AC and DC.
- Precision resistors throughout.
- Light weight — 4 pounds.
- Compact size — 9" x 7" x 3 1/2".
- All instruments shipped complete with batteries, test leads and instructions for use.

### DESIGN DATA

- 5 AC Voltage Ranges:  
0 to 10/50/250/500/1000 Volts.
- 5 DC Voltage Ranges:  
0 to 10/50/250/500/1000 Volts.
- 5 Output Meter Ranges:  
0 to 10/50/250/500/1000 Volts.
- 4 DC Current Ranges:  
0 to 1/10/100/1000 Ma.
- 3 Resistance Ranges:  
0 to 5,000/500,000 Ohms.  
0 to 5 Megohms.
- 5 Decibel Ranges:  
Overall Range from -10 to +54 Db.



## 10,000-VOLT STAR TESTER MODEL M-204

The Model M-204 is the high sensitivity, high voltage companion to the M-11. This unit has been engineered to give the maximum possible flexibility in the testing of all AM, FM and Television circuits.

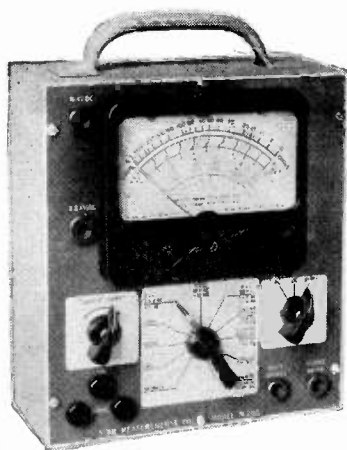
**\$32<sup>95</sup>**

### FEATURES

- A large, wide vision, 4 1/2", 50-microampere meter for ease of reading on all ranges.
- 31 separate ranges for measurement.
- 5 resistance ranges with continuous coverage from zero to 50 megohms. Midscale on first range is 50 ohms.
- 20,000 ohms per volt sensitivity DC.
- 1,000 ohms per volt sensitivity AC.
- 10,000 volts maximum DC.
- 2,500 volts maximum AC.
- Precision resistors throughout.
- All instruments shipped complete with batteries and instructions for use. Test Leads are not included.

### DESIGN DATA

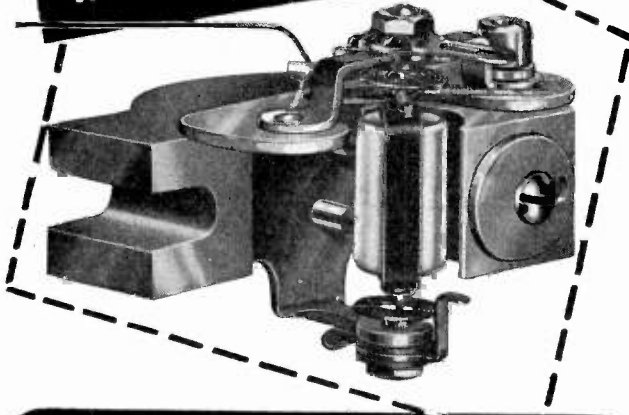
- 6 AC Voltage Ranges:  
0 to 2.5/10/50/200/1000/2500 Volts.
- 6 DC Voltage Ranges:  
0 to 2.5/10/50/250/1000/10000 Volts.
- 5 Output Meter Ranges:  
0 to 2.5/10/50/200/1000 Volts.
- 4 DC Current Ranges:  
0 to 50 Microamperes.  
0 to 1/50/1000 Ma.
- 5 Resistance Ranges:  
Continuous Overlapping from 0 to 50 Megohms.  
Rx1, Rx10, Rx100, Rx1000, Rx10000.
- 5 Decibel Ranges:  
Overall Range from -10 to +54 Db.
- Test Leads:  
TL-10 1,000 Volt.....\$0.65 per pair, net  
TL-100 10,000 Volt.....\$2.95 per pair, net



MODEL M-204

STAR MEASUREMENTS CO. • NEW YORK 56, N. Y.

# PRECISION MOVEMENTS



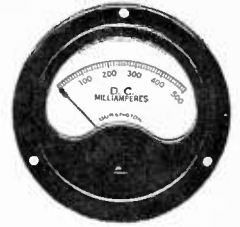
# Burlington PANEL INSTRUMENTS

AC and DC types are accurate to within 2% of full scale value at any point on the scale.

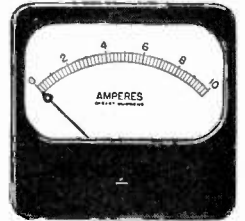
DC instruments combine extremely light weight moving elements and powerful alnico magnets to produce a torque to weight ratio which reduces frictional error to a minimum. This high torque to weight ratio permits use of pivots with ample pivot bearing surface to overcome effects of rough handling, shock, and vibration.

AC instruments are accurate over entire range of commercial power frequencies (25 to 125 cycles). These instruments are of repulsion vane type using carefully aged and impregnated field coils and multipliers which are wound with conductors of ample size so that temperature rise of the windings may be maintained at a minimum, even though instrument is subjected to continuous use in the circuit.

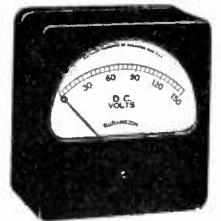
MODELS  
Direct Current  
421, 431, 441  
Alternating Current  
422, 432, 442



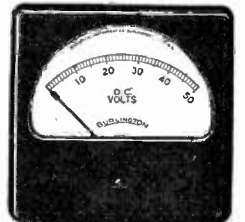
MODELS  
Direct Current  
731, 741  
Alternating Current  
732, 742



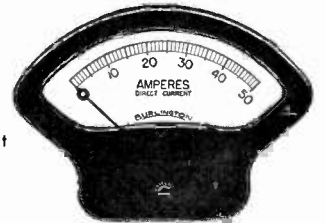
MODELS  
Direct Current  
141  
Alternating Current  
142



MODELS  
Direct Current  
521, 531  
Alternating Current  
522, 532



MODELS  
Direct Current  
841  
Alternating Current  
842



## CASE DIMENSIONS

Model No.		Body	Flange	Body Depth	Stud Length		Case
DC	AC				DC	AC	
141	142		4" x 4 1/4"	2"	3/4"	1"	Rectangular, front-of-board, Bakelite
421	422	2.156" Diam.	2.690" Diam.	1.4062"	5/8"	25/32"	Round, flush, Bakelite
431	432	2.796" Diam.	3 1/2" Diam.	1 1/2"	3/4"	3/4"	Round, flush, Bakelite
441	442	3.5625" Diam.	4 3/8" Diam.	1.4531"	3/4"	3/4"	Round, flush, Bakelite
521	522	2.156" Diam.	2 3/8" x 2 3/8"	1 3/8"	5/8"	25/32"	Square, flush, Bakelite
531	532	2.796" Diam.	3" x 3"	1 1/2"	3/4"	3/4"	Square, flush, Bakelite
731	732	2 1/4" Diam.	3 1/16" x 3 5/16"	1.0156"	3/4"	5/8"	Rectangular, semi-flush, Bakelite
741	742	2 3/4" Diam.	4" x 4 1/4"	1"	3/4"	3/4"	Rectangular, semi-flush, Bakelite
841	842	2 3/4" Diam.		1.2187"	3/4"	3/4"	Fan-shaped, semi-flush, Bakelite

See following page for prices and specifications.



# Burlington

# PANEL INSTRUMENTS

## D. C. MILLIAMMETERS

Range	Scale Div.	Approx. Res.	MODELS				
			421 521	431 531	731	441 841	141 741
0-1	50	47 ohms	\$6.60	\$7.05	\$7.20	\$7.80	\$7.95
0-5	50	10 ohms	5.70	6.45	6.60	7.20	7.65
0-10	50	5 ohms	5.70	6.45	6.60	7.20	7.65
0-15	30	9.34 ohms	5.70	6.45	6.60	7.20	7.65
0-25	50	5.6 ohms	5.70	6.45	6.60	7.20	7.65
0-50	50	2.8 ohms	5.70	6.45	6.60	7.20	7.65
0-100	50	1.4 ohms	5.70	6.45	6.60	7.20	7.65
0-150	30	.94 ohms	5.70	6.45	6.60	7.20	7.65
0-200	40	.7 ohms	5.70	6.45	6.60	7.20	7.65
0-250	50	.56 ohms	5.70	6.45	6.60	7.20	7.65
0-300	30	.466 ohms	5.70	6.45	6.60	7.20	7.65
0-500	50	.28 ohms	5.70	6.45	6.60	7.20	7.65
0-750	75	.186 ohms	5.70	6.45	6.60	7.20	7.65
0-1000	50	.140 ohms	5.70	6.45	6.60	7.20	7.65

## D. C. AMMETERS

Range	Scale Div.	Terminal Voltage Drop	MODELS				
			421 521	431 531	731	441 841	141 741
0-1	50	50MV	\$5.85	\$6.60	\$6.75	\$7.35	\$7.80
0-3	30	50MV	5.85	6.60	6.75	7.35	7.80
0-5	50	50MV	5.85	6.60	6.75	7.35	7.80
0-10	50	50MV	5.85	6.60	6.75	7.35	7.80
0-15	30	50MV	5.85	6.60	6.75	7.35	7.80
0-25	50	50MV	5.85	6.60	6.75	7.35	7.80
0-30	30	50MV	5.85	6.60	6.75	7.35	7.80
0-50	50	50MV	5.85	6.60	6.75	7.35	7.80
0-60	30	50MV	5.85	6.60	6.75	7.35	7.80
0-75	75	50MV	5.85	6.60	6.75	7.35	7.80
*0-100	50	50MV	5.85	6.60	6.75	7.35	7.80
*0-150	30	50MV	5.85	6.60	6.75	7.35	7.80
*0-200	40	50MV	5.85	6.60	6.75	7.35	7.80
*0-300	30	50MV	5.85	6.60	6.75	7.35	7.80
*0-400	40	50MV	5.85	6.60	6.75	7.35	7.80
*0-500	50	50MV	5.85	6.60	6.75	7.35	7.80
*0-600	30	50MV	5.85	6.60	6.75	7.35	7.80
*0-1000	50	50MV	5.85	6.60	6.75	7.35	7.80

\* Ranges above 60 amperes are supplied as 50MV movements to be used with external 50MV shunts.

## D. C. MICROAMMETERS

Range	Scale Div.	Approx. Res.	MODELS				
			421 521	431 531	731	441 841	141 741
0-50	50	1150 ohms	\$14.55	\$15.00	\$15.15	\$15.45	\$15.90
0-100	50	1150 ohms	12.00	12.45	12.60	12.90	13.35
0-200	40	330 ohms	9.75	10.20	10.35	10.65	11.10
0-500	50	225 ohms	7.95	8.85	9.00	9.75	10.65

## D. C. VOLTMETERS—200 Ohms Per Volt

Range	Scale Div.	MODELS				
		421 521	431 531	731	441 841	141 741
0-3	30	\$5.85	\$6.60	\$6.75	\$7.35	\$7.80
0-5	50	5.85	6.60	6.75	7.35	7.80
0-10	50	5.85	6.60	6.75	7.35	7.80
0-15	30	5.85	6.60	6.75	7.35	7.80
0-25	50	5.85	6.60	6.75	7.35	7.80
0-50	50	5.85	6.60	6.75	7.35	7.80
0-100	50	5.85	6.60	6.75	7.35	7.80
0-150	30	7.35	7.80	7.95	8.25	8.55
0-300	30	.....	8.55	.....	9.00	9.30

## D. C. VOLTMETERS—1000 Ohms Per Volt

Range	Scale Div.	MODELS				
		421 521	431 531	731	441 841	141 741
0-50	50	\$7.95	\$ 8.25	\$ 8.40	\$ 8.55	\$ 8.85
0-100	50	8.25	8.55	8.70	8.85	9.15
0-150	30	8.55	8.85	9.00	9.15	9.45
0-300	30	8.85	9.15	9.30	9.45	9.75
0-500	50	9.75	10.35	10.50	10.95	11.55
0-1000	50	.....	14.10	.....	14.70	15.30

Voltmeter ranges above those shown can be supplied as either 200 or 1000 ohm per volt instruments for use with external resistors. Prices on application.

## A. C. MILLIAMMETERS

Range	Scale Div.	Approx. Res.	MODELS				
			422 522	432 532	732	442 842	142 742
0-10	50	2020 ohms	\$5.70	\$6.30	\$6.45	\$7.20	\$7.50
0-15	30	1120 ohms	5.70	6.30	6.45	7.20	7.50
0-25	50	370 ohms	5.70	6.30	6.45	7.20	7.50
0-50	50	83 ohms	5.70	6.30	6.45	7.20	7.50
0-100	50	20 ohms	5.70	6.30	6.45	7.20	7.50
0-250	50	4 ohms	5.70	6.30	6.45	7.20	7.50
0-500	50	.8 ohms	5.70	6.30	6.45	7.20	7.50

## A. C. AMMETERS

Range	Scale Div.	Approx. Res.	MODELS				
			422 522	432 532	732	442 842	142 742
0-1.5	30	.072 ohms	\$5.70	\$6.30	\$6.45	\$7.20	\$7.50
0-5	50	.0108 ohms	5.70	6.30	6.45	7.20	7.50
0-10	50	.0038 ohms	5.70	6.30	6.45	7.20	7.50
0-15	30	.0018 ohms	5.70	6.30	6.45	7.20	7.50
0-25	50	.0008 ohms	5.70	6.30	6.45	7.20	7.50
0-30	30	.00079 ohms	5.70	6.30	6.45	7.20	7.50
0-50	50	.00048 ohms	5.70	6.30	6.45	7.20	7.50
*0-75	75	.00035 ohms	5.70	7.95	6.45	9.30	9.60
**0-100	50	.....	5.70	6.30	6.45	7.20	7.50
**0-150	30	.....	5.70	6.30	6.45	7.20	7.50
**0-200	40	.....	5.70	6.30	6.45	7.20	7.50
**0-250	50	.....	5.70	6.30	6.45	7.20	7.50
**0-300	30	.....	5.70	6.30	6.45	7.20	7.50
**0-400	40	.....	5.70	6.30	6.45	7.20	7.50

\* Models 422, 522, 732 ranges above 50 AMPS are supplied as 5 AMP movements for use with current transformers.

\*\* Models 432, 532, 442, 842, 142, 742 ranges above 75 AMPS are supplied as 5 AMP movements for use with current transformers

## A. C. VOLTMETERS

Range	Scale Div.	Ohms per Volt	MODELS				
			422 522	432 532	732	442 842	142 742
0-1.5	30	3.3	\$6.30	\$6.75	\$6.90	\$7.20	\$7.65
0-3	30	10	6.30	6.75	6.90	7.20	7.65
0-5	50	10	6.30	6.75	6.90	7.20	7.65
0-10	50	13	6.30	6.75	6.90	7.20	7.65
0-15	30	13	6.30	6.75	6.90	7.20	7.65
0-25	50	26	6.30	6.75	6.90	7.20	7.65
0-50	50	50	6.30	6.75	6.90	7.20	7.65
0-100	50	110	6.30	6.75	6.90	7.20	7.65
0-150	30	110	7.35	7.80	7.95	8.10	8.40
0-300	30	165	7.95	8.55	8.70	8.70	9.00
0-500	50	165	.....	8.85	.....	10.20	10.50
0-600	30	165	.....	9.15	.....	10.50	10.80

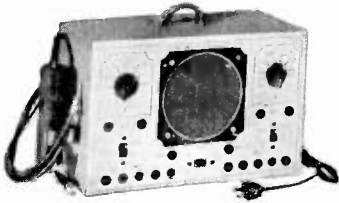
Ranges above 300 VOLTS in Models 422, 522, 732, and above 500 VOLTS in Models 432, 532, 442, 842, 142, 742 require external resistors or potential transformers. Prices on application.

# BURLINGTON INSTRUMENT COMPANY

# TEST CRAFT INSTRUMENT CO.

106 FIFTH AVENUE • NEW YORK 11, N. Y.

## The New Model TC-75 Universal COMBINATION TEST SPEAKER AND SIGNAL TRACER



- plus an experimental one-stage audio amplifier
- plus universal output transformer

### A Combination Test Speaker & Signal Tracer

- plus signal substitution
- plus resistor tester
- plus condenser tester
- plus resistor substitutor
- plus condenser substitutor
- plus output indicator
- plus substitute 100 V. DC power supply
- plus field substitutor
- plus voice coil substitutor
- plus signal tracer

### A MUST FOR EVERY RADIO SERVICEMAN AND ENGINEER

**Specifications:** RESISTOR CONDENSER TESTER: 110-Volt DC power source for basic indication of either shorts or opens in both resistors and condensers. Leakage indication for condensers only. ● CAPACITY SUBSTITUTION: 7 capacity values available, .001, .01, .05, .10, .25 at 600 volts and 30 mfd. and 50 mfd. at 150 volts. Provides substitution of by-pass coupling and electrolytic condensers. ● RESISTOR SUBSTITUTION: 10 resistance values available, 400, 50K, 100K, 500K, 2 meg. and 5 meg. at 1/2-watt and 500, 1K, 1.5K and 2.5K at 15 watts. Provides substitution of grid bias and other types of resistors. ● OUTPUT INDICATOR: Neon type output indicator for receiver alignment. ● UNIVERSAL AND SUBSTITUTION SPEAKER: Field: —500, 1K, 1.5K and 2.5K ohms at 175 ma. Speaker: Permanent magnet type. Voice coil: 2.8 ohms. Input: single or push-pull. Output: Specially designed universal output type transformer. ● AUXILIARY DC POWER SUPPLY: An auxiliary 100 DC volt power source, one half on 117 L7, available for experimental and substitution purpose. ● AUXILIARY AUDIO AMPLIFIER: An auxiliary one stage of audio amplification, one half on 117 L7, available for experimental and substitution purpose. ● SIGNAL TRACER: Provides a signal tracer of the probe type, using a 1N34 crystal diode detector, the output of which is coupled into a one-stage audio amplifier.

This unit comes housed in a rugged battleship-gray, crackle-finished steel cabinet, complete with full operating instructions, ready to work on 110-125 Volts, AC 50-60 cycles. Size: 7" x 11" x 5".

Dealer's Net Price **\$29.50**

## The New Model TC-10 AC-DC QUALITY MULTITESTER



### A New Pocket-Size Volt-Ohm-Milli- ammeter

with features never before available in an instrument of this size and price. Quality engineered both electrically and mechanically, this instrument will satisfy the exacting requirements of the electronics engineer, laboratory worker or service man.

#### FEATURES:

- Compact, small in size: 6" x 3 1/4" x 2"
  - Handsome, telephone black panel
  - Uses D'Arsonval type of meter, 2% accuracy
  - All markings easily read and will not wear out with use
  - Housed in black metal case
- Specifications:** 5 AC VOLTAGE RANGES: 0-5/15/150/1500/3000 Volts. ● 5 DC VOLTAGE RANGES: 0-5/15/150/1500/3000 Volts. ● 3 DC CURRENT RANGES: 0-0.5/5 Ma. 0-1.5 Amps. ● 2 RESISTANCE RANGES: 0-100 Ohms, 0-100 K.

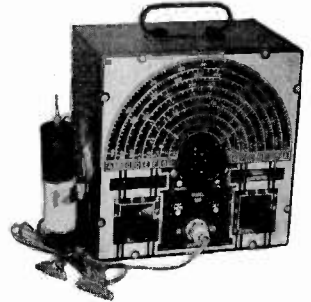
Complete, with self-contained batteries and all instructions.

Dealer's Net Price **\$12.85**

## The Model 999 — A Combination SIGNAL GENERATOR AND SIGNAL TRACER

### The Ultimate in Signal Tracing Procedure is Achieved by the Model 999

Enables you to use either the broadcast signal itself or the signal injected by the Signal Generator. This is especially useful when servicing "dead" or "intermittent" receivers. You will find the Model 999 is the greatest time-saver ever provided for, by combining a full range Signal Generator and Signal Tracer into one unit. The set up time for interconnecting, etc., is entirely eliminated.



### SIGNAL GENERATOR Specifications:

- Frequency Range: 150 Kilocycles to 50 Megacycles.
- The R.F. Signal Frequency is kept completely constant at all output levels. This is accomplished by use of a special grid-loaded circuit which provides a constant load on the oscillatory circuit. A grounded plate oscillator is used for additional frequency stability.
- Modulation is accomplished by Grid-blocking action which has proven to be equally effective for alignment of amplitude and frequency modulation as well as for television receivers.
- Positive action attenuator provides effective output control at all times.

- R.F. is obtainable separately or modulated by the Audio Frequency.
- **SIGNAL TRACER Specifications:**
- Uses the new Sylvania 1N34 Germanium Crystal Diode which, combined with a resistance-capacity network, provides a frequency range of 300 cycles at 50 Megacycles.
- Simple to Operate—Clips directly on to receiver chassis, no tuning controls.

- Provision is made for insertion of phones of any impedance, a standard Volt-Ohm-Milliammeter or Oscilloscope.
- The Model 999 comes complete with all test leads **\$28.85** and operating instructions.

## The New Model TC-50 TUBE AND SET TESTER

### A Complete Laboratory, All-Purpose Test-Instrument

This versatile tester will accurately test all up-to-date tubes.

#### TUBE TESTER

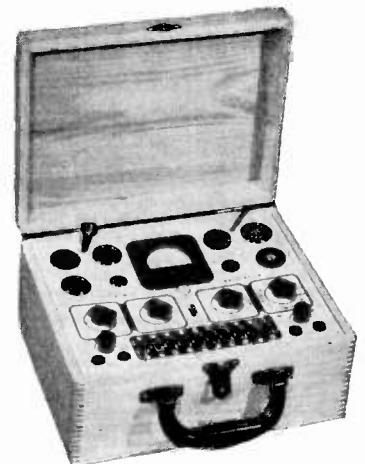
#### Specifications:

- Tests all up-to-date tubes including 4, 5, 6, 7, 7L, octals, loctals, television, magic eye, thyrtors, single-ended, floating filament, mercury vapor, new miniatures, etc.
- Tests pilot lights, all voltages.
- Tests by the popular emission method read directly on the scale of meter.
- Tests leakage and short tests of any element against all elements in all tubes.
- Tests both plates in rectifiers.
- Tests both diodes in multipurpose tubes.
- Tests individual sections such as diodes, triodes, pentodes, etc., in multipurpose tubes.
- Individual pin switch selection.
- Special compensation type of line voltage adjuster.
- Tests provided for approximately 600 tubes.

#### MULTIMETER

#### Specifications:

- DC VOLTAGE RANGES: 0-10/100/1000/5000 Volts. ● AC VOLTAGE RANGES: 0-10/100/1000/5000 Volts. ● DC CURRENT RANGES: 0-10/100/1 Amp. ● LOW RESISTANCE RANGE: 0-10,000 Ohms. ● MEDIUM RESISTANCE RANGE: 0-100,000 Ohms. ● HIGH RESISTANCE RANGE: 0-1 Megohm. ● OUTPUT VOLTS: 0-10/100/1000/5000 Volts. ● DECIBELS: 8 to +55 D.B. based on zero D.B., equals .006 Watts into a 500-Ohm line.



The New Model TC-50 combines seven instruments, DC V., AC V., DC M.A., Ohms, Output Meter, Decibel Meter and Tube Tester. Full scale accuracy to 2%. English Reading GOOD and BAD scale for testing tubes Obsolescence reduced to absolute minimum. Simple and quick reading charts for tube testing. Multi-meter section affords most popular everyday measurements. Operates on 90-120 Volts, 60 cycles AC. Housed in a sturdy beautiful portable, hand-rubbed cabinet. Complete, with test leads, tube charts and all detailed, operating instructions. 8" x 10 1/2" x 5". **\$39.50**

Dealer's Net Price



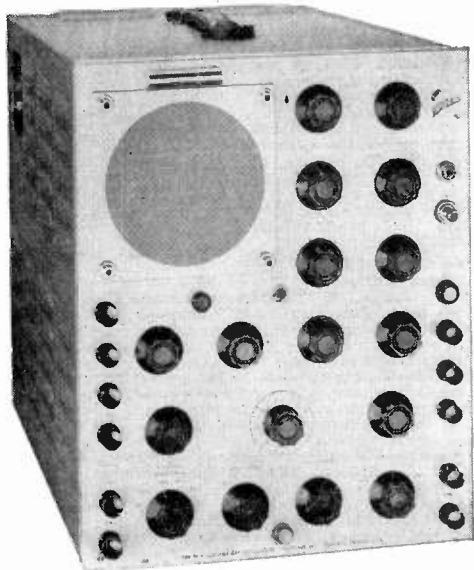
# TEKTRONIX, INC.

CATHODE-RAY OSCILLOSCOPES & VIDEO TEST EQUIPMENT

712 SOUTH EAST HAWTHORNE BOULEVARD  
TELEPHONE: EAST 6197

PORTLAND 14, OREGON  
CABLES: TEKTRONIX

**NEED WIDE BAND  
AND FAST SWEEPS?**



TEKTRONIX TYPE 511-AD OSCILLOSCOPE  
\$845 f.o.b. Portland

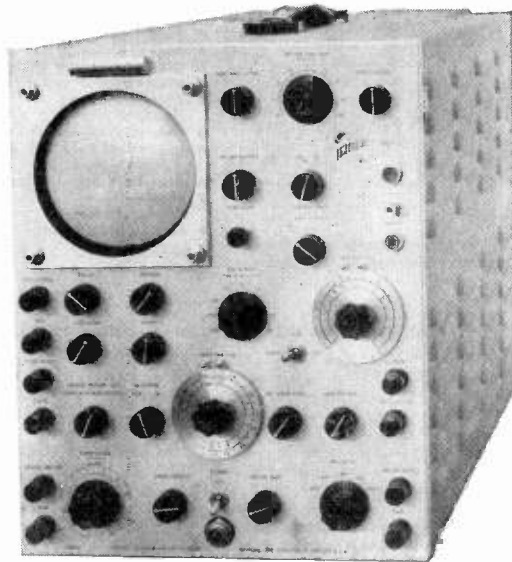
VIDEO — 5 CPS — 10 MC.  
SWEEPS — .01 SECONDS TO .1 MICROSEC./CM.

The Type 511-AD, with its 10 mc. amplifier, 0.25 microsecond video delay line and sweeps as fast as .1 microsec./cm. is excellent for the observation of pulses and high speed transient phenomena. Sweeps as slow as .01 sec./cm. enable the 511-AD to perform superlatively as a conventional oscilloscope. The identical instrument without the video delay line is known as the Type 511-A, price \$795.00 f.o.b. Portland, Oregon.

The Types 511-A and 511-AD have broadened and further secured the position of leadership that was established by their predecessor, the Tektronix Type 511. Eminently satisfied users include leading universities, industrial organizations and independent research groups as well as the armed services and other governmental agencies.

- Direct reading sweep dials.
- Single, triggered or recurrent sweeps.
- Accurate calibration, both time and amplitude.
- All DC voltages electronically regulated.
- Sweep expansion of 5 times for any 20% of normal sweep.
- Individually adjusted for optimum transient response.

**NEED DC COUPLED AMPLIFIERS  
AND SLOW SWEEPS?**



TEKTRONIX TYPE 512 OSCILLOSCOPE  
\$950 f.o.b. Portland

VIDEO — DC — 2 MC.  
SWEEPS — .3 SECONDS TO 3 MICROSEC./CM.

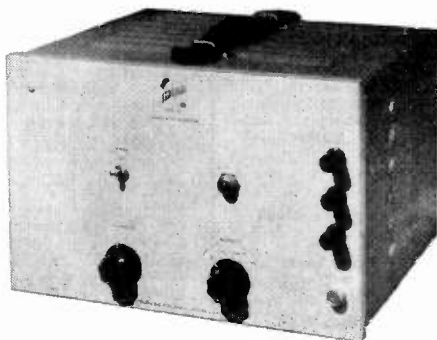
The Type 512 with a sensitivity of 5 mv./cm. DC and sweeps as slow as .3 sec./cm. solves many problems confronting workers in the fields where comparatively slow phenomena must be observed. Vertical amplifier bandwidth of 2 mc. and sweeps as fast as 3 microsec./cm. make it an excellent general purpose oscilloscope as well. The continuously variable sensitivity range of 10,000 to 1; the differential (push-pull) input circuit with high rejection of unwanted signal components; the revolutionary carrier type blanking circuit as well as many other exclusive features have resulted in an immediate acceptance of the Type 512 by prominent research personnel throughout the country.

### BOTH INSTRUMENTS FEATURE:

- RC probes for high impedance, low capacity input.
- Excellent image contrast in high ambient light.
- Design and fabrication integrity of highest degree.
- Choice of 5CP1A, 5CP7A or 5CP11A CRT, no added expense.
- Electrically welded all aluminum construction.
- Low weight (53 pounds — self-contained).

The Type 104 is a low cost generator of precision square waves in the frequency ranges most commonly used for general purpose wide band oscilloscope and amplifier testing. The instrument is supplied with four fixed frequencies; two in the range of 25 cycles to 10 kc., and two in the range of 25 kc. to 1 mc. By proper choice of the four available frequencies, the Type 104, when used in conjunction with a suitable wide band oscilloscope such as the Tektronix Type 511-A, Type 511-AD or Type 512, makes possible convenient adjustment of video amplifiers and observation of their transient response.

The Type 104 is normally supplied with the following frequencies: 50 cycles, 1 kc., 100 kc. and 1 mc. The 50 cycle square wave provides a quick test for the low frequency characteristics of amplifiers. The 1 kc.



TYPE 104 SQUARE WAVE GENERATOR  
PRICE: \$195.00 f.o.b. Portland, Ore.

square wave is a convenient signal for quickly and accurately adjusting capacity compensated attenuators. The 100 kc. and 1 mc. square waves permit convenient adjustment of video amplifiers.

### FEATURES :

- RISE TIME: Less than .015 microsec., high frequencies. Less than 2 microsec., low frequencies.
- IMPEDANCE: 0 to 93 ohms HF., 0 to 20,000 ohms, LF, depending on attenuator settings.
- AMPLITUDE: 0 to 5 volts, HF., 0 to 50 volts LF, both continuously variable.
- DIMENSIONS: 9" high; 13 1/2" wide; 10 1/2" deep.
- WEIGHT: 18 pounds, self-contained.

# SUPERIOR TEST EQUIPMENT

## The New Model TV-10 TUBE TESTER



**SPECIFICATIONS:** ★ Tests all tubes including 4, 5, 6, 7, Octal, Lock-in, Peanut, Bantam, Hearing-aid, Thyatron, Miniatures, Sub-Miniatures, Novals, etc. Will also test Pilot Lights. ★ Tests by the well-established emission method for tube quality, directly read on the scale of the meter. ★ Tests for "shorts" and "leakages" up to 5 Megohms. ★ Uses the new self-cleaning Lever Action Switches for individual element testing. Because all elements are numbered according to pin-number in the RMA base numbering system, the user can instantly identify which element is under test. Tubes having tapped filaments and tubes with filaments terminating in more than one pin are truly tested with the Model TV-10 as any of the pins may be placed in the neutral position when necessary. ★ The Model TV-10 does not use any combination type socket. Instead individual sockets are used for each type of tube. Thus it is impossible to damage a tube by inserting it in the wrong socket. ★ Free-moving built-in roll chart provides complete data for all tubes. ★ Newly designed Line Voltage Control compensates for variation of any line voltage between 105 Volts and 130 Volts.

The Model TV-10 operates on 105-130 Volts, 60 Cycles A.C. Comes housed in a beautiful hand-rubbed oak cabinet complete with portable cover. Size: 6" x 11½" x 12". Shipping Weight: 14 lbs. **\$39<sup>50</sup>** NET

The New Model TV-20

## A COMBINATION 20,000 OHMS PER VOLT MULTI-METER and TELEVISION KILOVOLT METER

The Model TV-20 was designed to provide all the multi-meter measurement requirements of A.M., F.M., and Television. Unlike other recent models, which are actually standard V.O.M.'s converted to test the new Television Voltages, the Model TV-20 is a completely new unit. It provides the sensitivity, ranges and accessories which are needed to service F.M. and Television in addition to A.M. Radio.



### SPECIFICATIONS

- 9 D.C. VOLTAGE RANGES: (At 20,000 ohms per Volt) — 0-2.5/-10/50/100/250/500/1,000/5,000/50,000 Volts.
- 8 A.C. VOLTAGE RANGES: (At 1,000 ohms per Volt) — 0-2.5/10/-50/100/250/500/1,000/5,000 Volts.
- 5 D.C. CURRENT RANGES: 0-50 Microamperes; 0-5/50/500 Milliampere; 0-5 Amperes.
- 4 RESISTANCE RANGES: 0-2,000/20,000 ohms; 0-2/20 Meg.
- 7 D.B. RANGES: (All D.B. ranges based on Odb = 1 Mv. into a 600-ohm line)
 

— 4 to + 10 db	+ 36 to + 50 db
+ 8 to + 22 db	+ 42 to + 56 db
+ 22 to + 36 db	+ 48 to + 62 db
+ 28 to + 42 db	
- 7 OUTPUT VOLTAGE RANGES: 0 to 2.5/10/50/100/250/500/1,000 Volts.

**ADDED FEATURE:** The Model TV-20 includes an Ultra High Frequency Voltmeter Probe. When plugged into the Model TV-20, the V. H. Probe converts the unit into a Negative Peak-Reading H. F. Voltmeter which will measure gain and loss in all circuits including F.M. and T.V.

The Model TV-20 operates on self-contained batteries. Comes housed in beautiful hand-rubbed oak cabinet complete with portable cover, Built-in High Voltage Probe, H. F. Probe, Test Leads and all operating instructions. Size: 4½" x 10¼" x 11½". Shipping Weight: 10 lbs. **\$39<sup>95</sup>** NET

## The New Model TV-30 TELEVISION SIGNAL GENERATOR

Enables Alignment of Television I. F. and Front Ends Without the Use of an Oscilloscope!

**FEATURES:** ★ Built-in modulator may be used to modulate the R.F. Frequency also to localize the cause of trouble in the audio circuits of T.V. Receivers. ★ Double shielding of oscillatory circuit assures stability and reduces radiation to absolute minimum. ★ Provision made for external modulation by A.F. or R.F. source to provide frequency modulation. ★ All I.F. frequencies and 2 to 13 channel frequencies are calibrated direct in Megacycles on the Vernier dial. Markers for the Video and Audio carriers within their respective channels are also calibrated on the dial. ★ Linear calibrations throughout are achieved by the use of a Straight Line Frequency Variable Condenser together with a permeability trimmed coil. ★ Stability assured by cathode follower buffer tube and double shielding of component parts.

**SPECIFICATIONS:** FREQUENCY RANGE: 4 Bands—No switching. 18-32 Mc.; 35-65 Mc.; 54-98 Mc.; 150-250 Mc. AUDIO MODULATING FREQUENCY: 400 cycles (Sine Wave). ATTENUATOR: 4-position, ladder type with constant impedance control for fine adjustment. TUBES USED: 6C4 as Cathode follower and modulated buffer; 6C4 as R.F. Oscillator; 6SN7 as Audio Oscillator and power rectifier.

Model TV-30 comes complete with shielded co-axial lead and all operating instructions. Measures 6" x 7" x 9". Shipping Weight: 10 lbs. **\$29<sup>95</sup>** NET



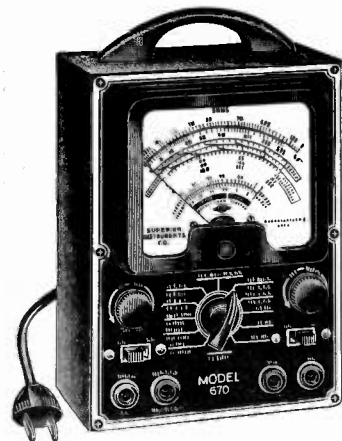
Manufactured by  
**SUPERIOR INSTRUMENTS CO.**

# SUPERIOR TEST EQUIPMENT

## The New Model 670 SUPER METER

A Combination  
VOLT-OHM-MILLIAMMETER  
plus  
CAPACITY REACTANCE,  
INDUCTANCE and  
DECIBEL MEASUREMENTS

D.C. VOLTS: 0 to 7.5/15/  
75/150/750/1,500/7,500. A.-  
C. VOLTS: 0 to 15/30/150/  
300/1,500/3,000 Volts. OUTPUT  
VOLTS: 0 to 15/30/  
150/300/1,500/3,000. D.C.  
CURRENT: 0 to 1.5/15/50  
Ma.; 0 to 1.5 Amps. RESISTANCE:  
0 to 500/100,000  
ohms, 0 to 10 Megohms. CAPACITY: .001 to  
.2 Mfd., .1 to 4 Mfd.  
(Quality test for electro-  
lytics). REACTANCE: 700 to 27,000 Ohms; 13,000  
Ohms to 3 Megohms.



INDUCTANCE: 1.75 to 70 Henries; 35 to 8,000 Henries.  
DECIBELS: - 10 to + 18, + 10 to + 38, + 30 to + 58.

The Model 670 comes housed in rugged,  
crackle-finished steel cabinet complete with  
test leads and operating instructions. Size:  
5 1/2" x 7 1/2" x 3".

**\$28<sup>40</sup>**  
NET

## The New Model 770 — An Accurate Pocket-Size VOLT-OHM MILLIAMMETER

SENSITIVITY: 1000 OHMS PER VOLT

**FEATURES:** ★ Compact — measures 3 1/8" x 5 7/8" x 2 1/4". ★ Uses latest design 2% accurate 1 Mil. D'Arsonval type meter. ★ Same zero adjustment holds for both resistance ranges. It is not necessary to re-adjust when switching from one resistance range to another. This is an important time-saving feature never before included in a V.O.M. in this price range. ★ Housed in round-cornered, molded case. ★ Beautiful black etched panel. ★ Depressed letters filled with permanent white, insuring long-life even with constant use.



**SPECIFICATIONS:** 6 A.C. VOLTAGE RANGES: 0-15/30/150/300/1,500/  
3,000 Volts. 6 D.C. VOLTAGE RANGES: 0-7 1/2/15/75/150/750/1,500 Volts.  
4 D.C. CURRENT RANGES: 0-1 1/2/15/150 Ma.; 0-1 1/2 Amps. 2 RESISTANCE  
RANGES: 0-500 Ohms; 0-1 Megohm.  
The Model 770 comes complete with self-contained  
batteries, test leads and all operating  
instructions.

**\$13<sup>90</sup>**  
NET

## The New Model 777

### TUBE and SET TESTER

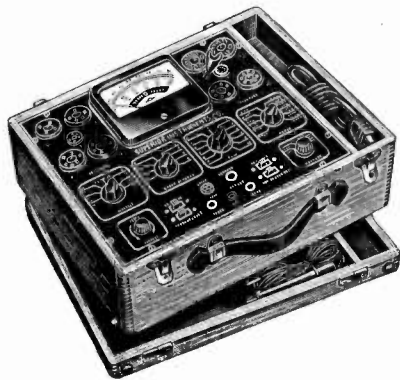
20,000 Ohms per Volt!!

#### Tube Tester Specifications:

★ Tests all tubes including 4, 5, 6, 7, 7L, Octals, Loctals, Television, Magic Eye, Thyratrons, Single Ended, Floating Filament, Mercury Vapor Rectifiers, New Miniatures, etc. Also Pilot Lights. ★ Tests by the well-established emission method for tube quality, directly read on the scale of the meter. ★ Tests leakages and shorts of any one element against all elements in all tubes. ★ Tests both plates in rectifiers. ★ Tests individual sections such as diodes, triodes, pentodes, etc., in multi-purpose tubes. ★ New type line voltage adjuster.

#### V.O.M. Specifications:

D.C. VOLTS: (at 20,000 Ohms per Volt), 0 to 7.5/15/75/150/750/1,500 Volts. A.C. VOLTS: (at 10,000 Ohms per Volt), 0 to 15/30/150/300/1,500/3,000 Volts. D.C. CURRENT: 0 to 1.5/15/150 Ma.; 0 to 1.5 Amps. RESISTANCE: 0 to 5,000/50,000/500,000 Ohms; 0 to 50 Megohms. DECIBELS: (Based on zero decibels equals .006 Watts into a 500-Ohm line) — 10 to + 18 db., + 10 to + 38 db., + 30 to + 58 db.



Model 777 operates on 90-120 Volts, 60 cycles A.C. Housed in beautiful hand-rubbed cabinet. Complete with test leads and detailed operating instructions. Size: 13" x 12 1/2" x 6".

**\$59<sup>95</sup>**  
NET

## FOR FM-AM-TELEVISION BUILD YOUR OWN SIGNAL TRACER and SAVE!!

Increasing production of F.M. and Television Receivers means MORE COMPLEX Receivers. Now more than ever this time-saving method of quickly and easily LOCALIZING the exact cause of trouble becomes the "must" method. Since 1939 when we first introduced our CHANNEL ANALYZER we have worked continuously developing and improving the "short-cut" method of Receiver servicing.

### The Only Signal Tracer in the Low Price Range Including BOTH METER and SPEAKER!!

**FEATURES:** ★ Comparative intensity of the signal is read directly on the meter — quality of the signal is heard in the speaker. ★ Simple to operate — only one connecting cable — no tuning controls. ★ Highly sensitive—uses an improved vacuum-tube voltmeter circuit. ★ Tube and resistor capacity network are built into the detector probe. ★ Built-in high gain amplifier —Alnico V speaker. ★ Completely portable — weighs 8 lbs. — measures 5 1/2" x 6 1/2" x 9".



We can supply the Model CA-12 completely wired, ready to operate: **\$29.95**

Model CA-12 kit includes ALL PARTS assembled and ready for wiring, circuit diagram and detailed operating data for the completed instrument

**\$21<sup>95</sup>**  
NET



Manufactured by

**SUPERIOR INSTRUMENTS CO.**



# TEST EQUIPMENT

*"Build 'em in one evening — they last a lifetime!"*

Now every radio serviceman, every radio amateur, can have precision test equipment at low cost. The famous EICO line of precision instruments long popular in the medium price field is now available IN KIT FORM at the sensationally low prices that save you almost half.

Anyone, professional and beginner alike, can assemble these high precision Vacuum Tube Voltmeters, Oscilloscopes, etc., so necessary for modern radio and television servicing. The simple, foolproof, step-by-step, schematic and pictorial diagrams accompanying each kit make assembly fast, easy and instructive.

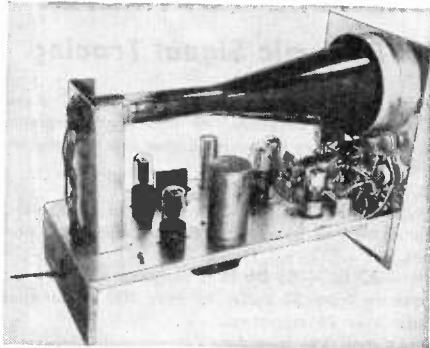


**EASY-TO-FOLLOW  
SCHEMATIC &  
PICTORIAL DIAGRAMS**

included with each kit. It's easy to assemble these precision instruments in one evening!

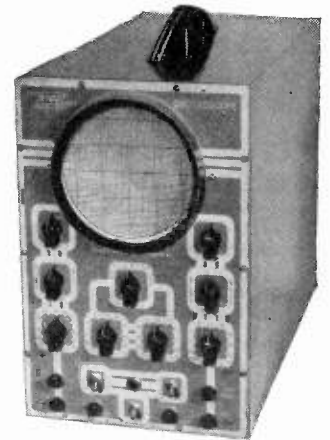
## MODEL 400K — 5" OSCILLOSCOPE

MODEL 400K — An indispensable aid for AM, FM, and Television. Horizontal sweep circuit 15 to 30,000 cycles. All controls on front panel. Linear sweep with 884 gas triode. Graph screen for measuring peak to peak voltages. Frequency response of horizontal and vertical amplifiers from 50 cycles to 50 KC. Input impedance 1 megohm and 50 mmfd. Etched panel for long life. Tube complement: 2-6SJ7, 2-5Y3, 1-884, 1-5BP1. Provision for external synchronization, test voltage and intensity modulation. Deflection sensitivity .65 volts per inch full gain. Kit contains all components, detailed instructions and pictorial diagrams. Nothing Else To Buy! Size: 8½" w. x 13" h. x 17" d. Shipping weight: 29 lbs.



Complete Kit  
F.O.B. Brooklyn.....

**\$39.95**



**FACTORY WIRED AND TESTED**

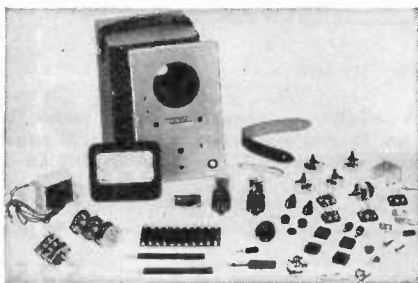
MODEL 400 — Fully wired, laboratory-quality 5" oscilloscope of the most advanced design and construction. Ready to use. Recommended for laboratories, service, production, education, etc. Excellent value! F.O.B. Brooklyn.....

**\$69.95**

## EICO MODEL 221K VACUUM TUBE VOLTMETER

*THE MOST USEFUL TOOL ON YOUR RADIO BENCH!*

DC and AC ranges 0-5, 10, 100, 500, and 1000 volts. Ohmmeter ranges from .02 ohms to 1,000 megohms in steps of Rx1, Rx10, Rx1,000, Rx10,000 and Rx1 megohm. Db scale from -20 to +55 Db in 5 ranges. DC input resistance is 25 megohms. AC input impedance is over 1½ megohms. Diode AC rectifier for greater accuracy and wide frequency range to 30 KC. Large, rugged, 4½" meter with all AC and DC readings on one simple scale. All multiplier resistors matched to 1% accuracy. Complete with 6H6, 6X5, 6SN7 tubes and test prods. All numbers etched into panel; can never rub off. Heavy gauge steel cabinet. Size: 9½" x 6" x 5". Shipping weight: 10 lbs.



Complete Kit  
Nothing Else To Buy!.....

**\$23.95**



**ASSEMBLED VTVM**

MODEL 221 VTVM — Includes all the advantages of above. Completely assembled, hand calibrated and tested, and ready to use at the low price of .....

**\$49.95**

*All prices higher on West Coast*

**ELECTRONIC INSTRUMENT COMPANY, INC. • BROOKLYN 12, N. Y.**





# TEST EQUIPMENT

*"Build 'em in one evening — they last a lifetime!"*

## MODEL 511K VOLT - OHM - MILLIAMETER



A MUST FOR EVERY SERVICEMAN!

MODEL 511K — The small, handy, all around meter that every repairman uses a thousand times a day. Large 3" meter, beautiful etched panel. Simple to assemble. A PERFECT KIT FOR BEGINNERS! Ranges: DC, 0/5/50/250/500/2500 volts. AC, 0/10/100/500/1000 volts. Output, 0/10/100/500/1000 volts. DC MA., 0/1/10. DC Amps., 0/1/10. Ohmmeter, 0/500/100,000 ohms/0/1 meg. Db meter —8 to +55 Db.

Complete

KIT

F.O.B.

Brooklyn.....

**\$14.95**

ASSEMBLED — READY TO USE

MODEL 511 — Completely wired, tested and assembled at the factory. Rugged, built for heavy duty. F.O.B. Brooklyn.....

**\$17.95**



## EICO Model 113A MULTI- ANALYST

**Sensational  
Price  
Reduction!  
Formerly \$89.50**

MODEL 113A—A versatile instrument of a thousand uses. Combines the two most used instruments in the radio workshop, the vacuum tube voltmeter and an audible signal tracer. Self-contained isolation transformer.

The Audible signal tracer is ultra sensitive, contains a high gain 3-tube amplifier with exceptionally broad AM and FM frequency response and minimum circuit loading. Permits service engineer to trace signals in RF, IF, FM, Television and Audio circuits without making frequency adjustments, unsoldering wires on taking out tubes. The VTVM section has the same specifications as the Model 221 VTVM. A terrific buy at the new low price of \$69.95.

Tube complement: 1-6SJ7, 1-6V6, 1-6AT6, 1-6X5, 1-6H6 and 1-6SN7. Size: 8½" x 11" x 7".

FACTORY BUILT, READY TO USE

Shipping weight: 20 lbs.

**\$69.95**

All prices higher on West Coast



## MODEL 210 VACUUM TUBE VOLTMETER

**For Visual Dynamic Signal Tracing**

A laboratory quality vacuum tube voltmeter. Huge 8½" meter knife edge pointer and 2% accuracy. RF with high frequency tube rectification, flat frequency response to over 200 megacycles. Voltage measurements to 5,000 volts DC.

DC, 0-5, 10, 100, 500, 1000 and 5,000 volts.

AC, R.F. (Diode type probe) 0-5, 10, 100, 500 and 1,000 volts.

Ohmmeter measures from .2 ohms to 1,000 megohms in 6 convenient ranges.

Db readings from —20 to +55 Db in 5 ranges.

AC and R.F. frequency from 50 cycles to over 200 megacycles.

DC input resistance over 25 megohms.

AC input impedance over 1½ megohms.

All multiplier resistors are 1% precision (matched).

Tube complement: 6 x 5, 1 - 6SN7, 1 - 6A L5.

Etched panel for long life.

Size: 15" w. x 10" h. x 7" d.

Shipping weight:

20 lbs.

F.O.B. Brooklyn.....

**\$69.50**

FACTORY BUILT, READY TO USE

## EICO MODEL P-75K H.F. PROBE



MODELS P-75K & P-76K — Germanium crystal probe for visual R.F. signal tracing, and measurements to over 200 megacycles. Can be used with Model 221 or 113A (P-75K), Oscilloscope (P-76K).

KIT

Only.....

**\$3.75**

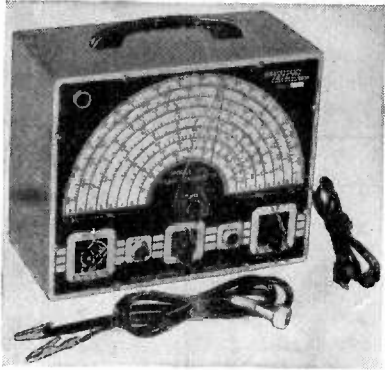
Same, assembled at factory.....

**\$7.50**

**ELECTRONIC INSTRUMENT COMPANY, INC. • BROOKLYN 12, N. Y.**

# EICO TEST EQUIPMENT & KITS

"Build 'em in one evening — they last a lifetime!"



## MODEL 320-K — SIGNAL GENERATOR KIT

An excellent instrument for service, lab, and school use. Can be used for FM-AM alignment and to provide TV marker frequencies. Highly Stable Hartley oscillator has range of 150 kc to 102 mc with fundamentals to 34 mc. Colpitts audio oscillator supplies pure 400 cycle sine wave voltage for modulation. Audio oscillator voltage can be used for testing distortion in audio equipment, bridge measurements, etc. Complete RF section featuring turnet-type coil assembly and ceramic insulated variable Condensers, can be aligned by use of any standard broadcast receiver. Size: 10" x 8" x 4 3/4". Handsome etched panel with easy-to-read calibrations. Easily assembled and aligned. Complete with tubes .....

**\$19.95**

FACTORY WIRED AND ALIGNED  
Model 320. Ready to use.....

**\$29.95**

## MODEL 145-K MULTI-SIGNAL TRACER KIT

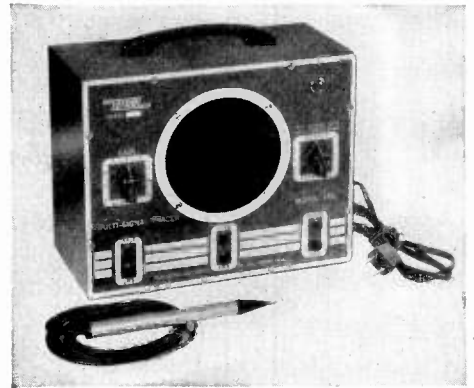
Versatile, high gain—high frequency instrument. Self-contained test speaker permits tracing of RF, IF, FM, audio, and video circuits. Has provision for visual tracing with VTVM, enabling actual stage-by-stage gain comparison. May also be used as a small public address or intercom system. Response is well over 200 mc. 3 color hammertone panel. 110-125 V. AC. Size 10" x 8" x 4 3/4". Comes complete with tubes and diode probe in kit form.

COMPLETE KIT .....

**\$18.95**

Model 145. Ready to operate.....

**\$28.95**



## SENSATIONAL! . . . NEW! . . . EICO MODEL 360-K TV-FM SWEEP SIGNAL GENERATOR KIT

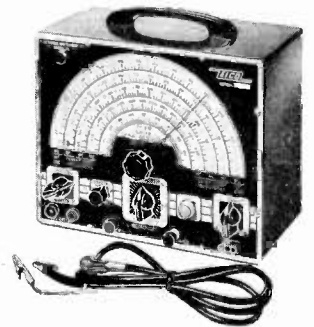
ALL THESE LABORATORY-QUALITY FEATURES: • Crystal marker oscillator with variable amplitude. • Covers all TV and FM alignment frequencies between 500 kc and 228 mc. • Sweep width variable from 0-30 mc. with mechanical inductive sweep. • Extremely wide sweepwidth allows gain comparison of adjacent RF TV channels. • Provides for injection of external signal generator marker. • Phasing control included. • Vernier driven, calibrated tuning dial for master oscillator. • Large, easy-to-read dial is directly calibrated in frequencies. All center frequencies of TV channels clearly marked on panel. • Extremely stable oscillator gives clear, steady pattern. • Can be used with EICO Model 400-K or any other standard oscilloscope. • All components furnished, including handsome, lifelong 3-color etched panel, and durable steel cabinet. Comes complete with all tubes (including new, high-frequency miniature types): 6X5GT, 12AU7, two 6C4's. Crystal not included. Size: 10" x 8" x 6 3/4".

COMPLETE KIT .....

**\$29.95**

Model 360. Ready to use Sweep Signal Generator.....

**\$39.95**



## MODEL HVP-1 — HIGH VOLTAGE PROBE

At remarkable low cost, here is a probe for every use involving high voltages. Not a kit, but a complete, top-quality High Voltage Test Probe. Measures up to 10,000 or 30,000 Volts making it useful even for projection television. Special Helical-Wound Ceramic HV Multiplier Resistor, which is removable, makes it adaptable to most VTVM's and all 20,000 ohms per volt meters with 1000 or 5000 volt scales. Lucite head has high dielectric and low leakage path. Handle is made of multi-layer, plywood bakelite for greater insulation and high safety factor. Large flashguards for additional safety. Specify your instrument to your jobber.



Complete with resistor, **\$6.95**  
ready to use .....

All prices higher on West Coast

**ELECTRONIC INSTRUMENT COMPANY, INC.**

**BROOKLYN 12, N. Y.**

*Thank You!*

When writing for additional  
information or when ordering  
from sources of supply listed  
in this book, please mention

*RADIO'S MASTER*

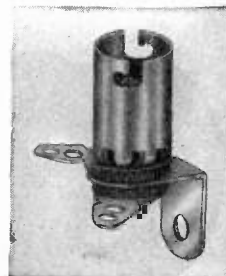
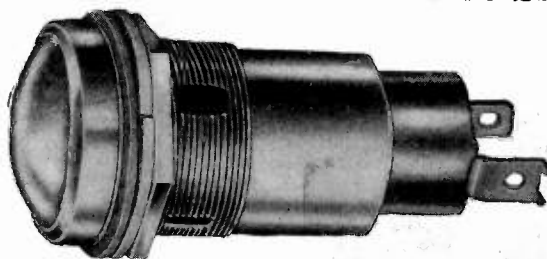
# The DIAL LIGHT COMPANY of AMERICA

Foremost Manufacturer of Pilot Lights



**Makes everything**

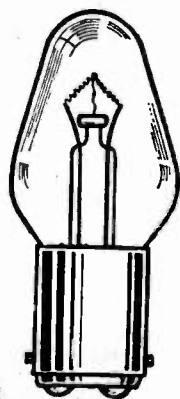
**FROM A SMALL SOCKET**



**TO A LARGE ASSEMBLY**

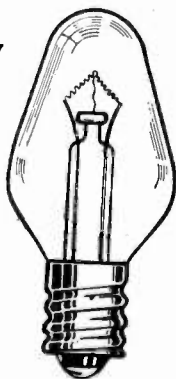
**For all of these lamps**

## INCANDESCENTS

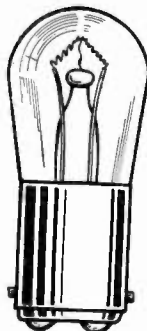


C-7

Double contact bayonet



Candelabra Screw



S-6



G-6

Double contact bayonet

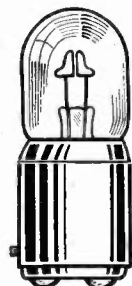
## NEON GLOW

110 and 220 volts

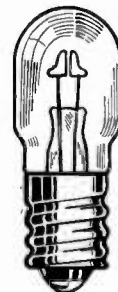
For NE-51 there are patented assemblies with built-in resistors.



NE-51

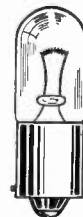
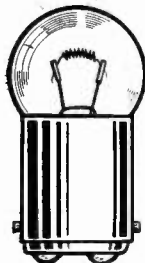


NE-48



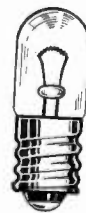
NE-45

## MINIATURE for low voltages



T-3 1/4

Bayonet (miniature)



Screw

# The DIAL LIGHT COMPANY of AMERICA

Foremost Manufacturer of Pilot Lights

NEW YORK 3, N. Y.

# The DIAL LIGHT COMPANY of AMERICA

Foremost Manufacturer of Pilot Lights

NEW YORK 3, N. Y.

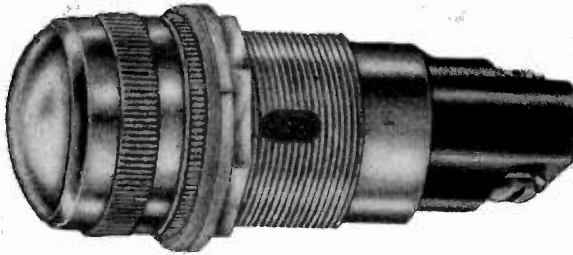
TYPICAL



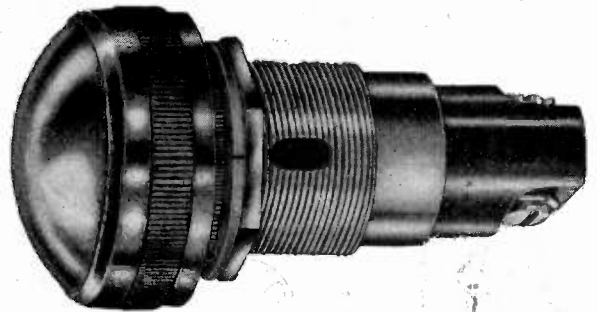
ASSEMBLIES

SIX LENS TYPES

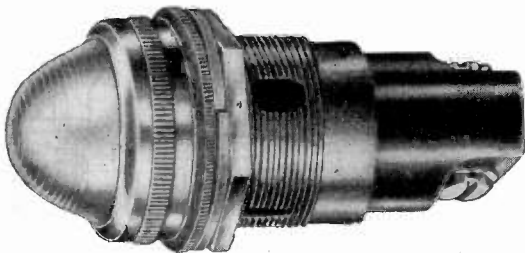
*Assemblies  
such as these  
mount in a  
1" clearance hole.*



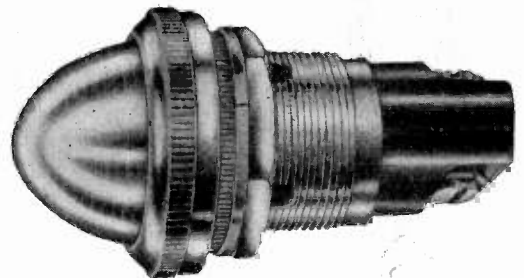
**FIG. 1  
CONVEX LENS  
GLASS**



**FIG. 2  
LARGE CONVEX LENS  
GLASS**



**FIG. 3  
TORPEDO LENS  
GLASS**



**FIG. 4  
LARGE TORPEDO LENS  
GLASS**

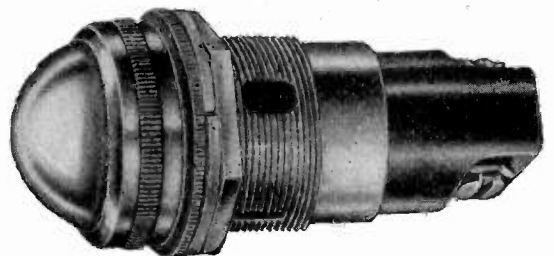


**FIG. 5  
FACETED LENS  
GLASS**

*These illustrations  
show the options  
in lens types.*

*All illustrations  
approximately  
actual size.*

*See following pages  
for catalog numbers  
of assemblies  
for all types  
of lamps.*



**FIG. 6  
DOME LENS  
PLASTIC**



All of these assemblies are listed by Underwriters' Laboratories, Inc.

Foremost Manufacturer  
of Pilot Lights



**CAPS**

**SCREW, BAYONET  
or FRICTION**

The typical assemblies shown, mount  
in a 1" clearance hole.

The first three are complete with the  
three types of caps, all with faceted  
glass lenses.

**TERMINALS**

**BINDING SCREWS  
or  
SOLDERING LUGS**

Two choices are illustrated for  
lamps with candelabra screw base  
and three choices for lamps with  
double contact bayonet bases.

See the following pages for cata-  
logue numbers of assemblies for all  
types of lamps.

All illustrations are approximately  
actual size.

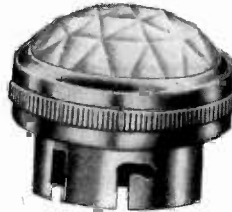


All of these assemblies  
are listed by Under-  
writers' Laboratories,  
Inc.

**FOR SCREW BASE LAMPS**



**SCREW  
FIG. 7**



**BAYONET  
FIG. 8**



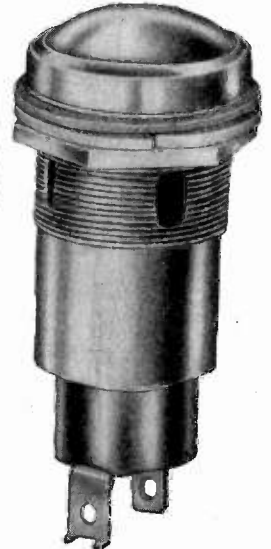
**FRICTION  
FIG. 9**



**BINDING SCREWS**



**FIG. 10  
FIG. 11  
BINDING SCREWS (Two types)**



**SOLDERING LUGS**

**FIG. 12  
SOLDERING LUGS**

**FOR BAYONET BASE LAMPS**



**The DIAL LIGHT COMPANY of AMERICA**

Foremost Manufacturer of Pilot Lights  
NEW YORK 3, N. Y.



# The DIAL LIGHT COMPANY of AMERICA

Foremost Manufacturer of Pilot Lights

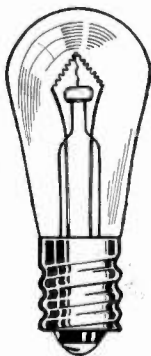
NEW YORK 3, N. Y.

## CATALOG NUMBERS FOR ENCLOSED ASSEMBLIES

Mount in one inch clearance hole  
**UNDERWRITERS' LISTED**

### For S-6 Lamp with Candelabra Screw Base

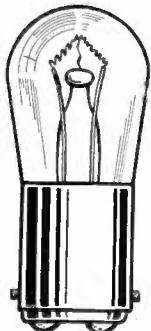
S-6  
CANDELABRA SCREW



- 51901-111 Screw cap, Convex lens, frosted back (Fig. 1) Screw terminals (Fig. 8)
- 61901-111 Screw cap, Large convex lens, frosted back (Fig. 2) Screw terminals (Fig. 8)
- 51901-431 Screw cap, Faceted lens (Fig. 5) Screw terminals (Fig. 8)
- 19901-531 Screw cap, Large torpedo lens (Fig. 4) Screw terminals (Fig. 8)
- 51101-111 Screw cap, Convex lens, frosted back (Fig. 1) Soldering lugs (Fig. 9)
- 41901-111 Bayonet cap (Fig. 8) Convex lens (Fig. 1) Screw terminals (Fig. 8)
- 31901-111 Friction cap (Fig. 9) Convex lens (Fig. 1) Screw terminals (Fig. 8)
- 47901 Light Shield cap (Fig. 13) Binding Screw terminals (Fig. 8)
- 71101-111 Mechanical dimmer (Fig. 14) Soldering terminals (Fig. 9)
- 78101-111 Polaroid dimmer (Fig. 14) Soldering terminals (Fig. 9)

### For S-6 Lamp with Double Contact Bayonet Base

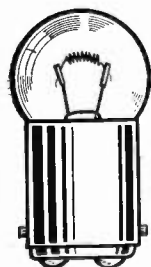
S-6  
DOUBLE CONTACT  
BAYONET



- 513202-111 Screw cap, Convex lens, frosted back (Fig. 1) Screw terminals (Fig. 10)
- 613202-111 Screw cap, Large convex lens, frosted back (Fig. 2) Screw terminals (Fig. 10)
- 513202-111 Screw cap, Faceted lens (Fig. 5) Screw terminals (Fig. 10)
- 803202-531 Screw cap, Torpedo lens (Fig. 3) Screw terminals (Fig. 10)
- 413202-111 Bayonet cap (Fig. 8) Convex lens, frosted back (Fig. 1) Screw terminals (Fig. 10)
- 313202-111 Friction cap (Fig. 9) Convex lens, frosted back (Fig. 1) Screw terminals (Fig. 10)

### For G-6 Lamp with Double Contact Bayonet Base

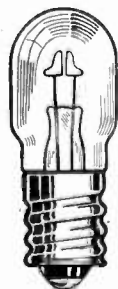
G-6  
DOUBLE CONTACT  
BAYONET



- 51704-111 Screw cap, Convex lens, frosted back (Fig. 1) Screw terminals (Fig. 11)
- 51704-431 Screw cap, Faceted lens (Fig. 5) Screw terminals (Fig. 11)
- 80704-531 Screw cap, Torpedo lens (Fig. 3) Screw terminals (Fig. 11)
- 80704-841 Screw cap, Dome plastic lens, matted back (Fig. 6) Screw terminals (Fig. 11)
- 51204-111 Screw cap, Convex lens, frosted back (Fig. 1) Soldering terminals (Fig. 12)
- 41204-111 Bayonet cap (Fig. 8) Convex lens (Fig. 1) Soldering terminals (Fig. 12)
- 31204-111 Friction cap (Fig. 9) Convex lens (Fig. 1) Soldering terminals (Fig. 12)

### For NE-45 Neon Glow Lamp, Candelabra Screw Base

NE-45  
NEON



- 51914-131 Screw cap, Convex lens (Fig. 1) Binding screw terminals (Fig. 8)
- 80914-841 Screw cap, Dome lens (Fig. 6) Binding screw terminals (Fig. 8)
- 41914-131 Bayonet cap (Fig. 8) Convex lens (Fig. 1) Binding screw terminals (Fig. 8)
- 31914-131 Friction cap (Fig. 9) Convex lens (Fig. 1) Binding screw terminals (Fig. 8)
- 51114-131 Screw cap, Convex lens (Fig. 1) Soldering terminals (Fig. 9)
- 80114-531 Screw cap, Torpedo lens (Fig. 3) Soldering terminals (Fig. 9)

**COLOR**—The final figure 1 in the above number indicates RED LENS COLOR. If other color is desired, change final figure to one from table below.

Green-2, Amber-3, Blue-4, White-5, Yellow-6, Clear-7

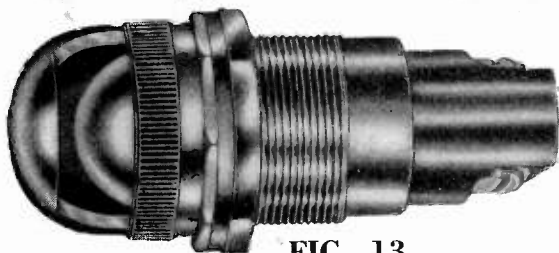


FIG. 13

Assembly with Light Shield for S-6 Lamp  
See Listing above

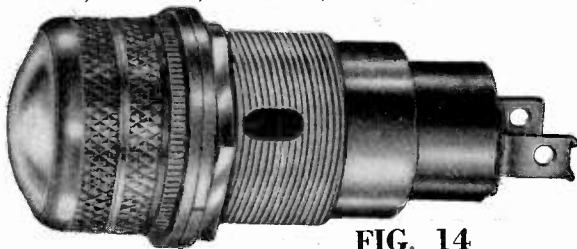


FIG. 14

Cap with Dimmer-Mechanical or Polaroid  
for S-6 or G-6 Lamps • See Listing above

# The DIAL LIGHT COMPANY of AMERICA

Foremost Manufacturer of Pilot Lights

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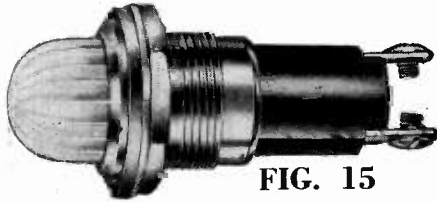


FIG. 15



FIG. 16

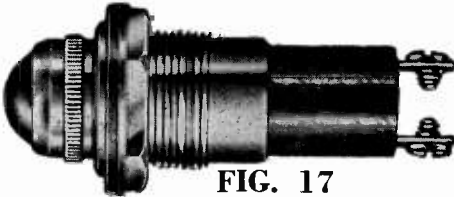


FIG. 17

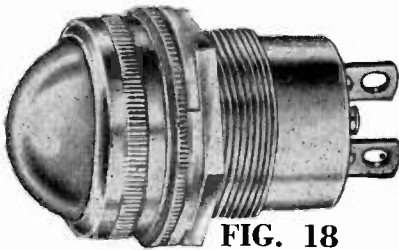


FIG. 18

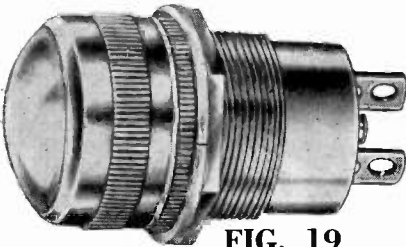


FIG. 19

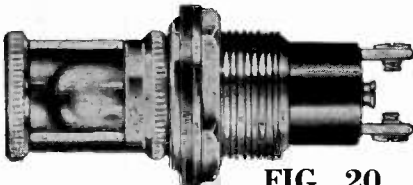


FIG. 20



FIG. 21 (Dimmer)

## ENCLOSED ASSEMBLIES FOR T-3<sup>1</sup>/<sub>4</sub> MINIATURE LAMPS AND NE-51 NEON GLOW LAMP

Smaller assemblies as illustrated in Figs. 15, 16, 17, 20 and 21 mount in 11/16" clearance hole. Figs. 18 and 19 require 1" clearance hole.

### CATALOGUE NUMBERS

#### FOR T-3<sup>1</sup>/<sub>4</sub> Miniature Bayonet Base

##### Low voltage incandescent lamps

- 521310-991 Multivue cap, Screw terminals (Fig. 15)
- 52410-991 Multivue cap, Soldering terminals
- 91410-931 Long clear cap, Soldering terminals (Fig. 16)
- 811310-111 Screw-in cap, Convex lens, Screw terminals (Fig. 17)
- 80410-831 Screw cap, Dome plastic lens, Soldering terminals (Fig. 18)
- 801310-831 Screw cap, Dome plastic lens, Screw terminals
- 51410-111 Screw cap, Convex lens, Soldering terminals (Fig. 19)
- 511310-111 Screw cap, Convex lens, Screw terminals
- 21410 Light shield cap Screw terminals (Fig. 20)
- 93410-111 Polaroid dimmer cap, Convex lens, Soldering terminals (Fig. 21)

**COLOR**—The final figure 1 in the listed numbers indicates RED LENS COLOR. If other color is desired, change final figure to one from table below:

Green-2, Amber-3, Blue-4, White-5, Yellow-6, Clear-7

#### FOR NE-51 Neon Glow Lamp

**NOTE:** The assemblies listed below for the NE-51 Neon Glow Lamp contain built in resistors, a patented DIALCO feature. For choice of resistor value to suit conditions, specify circuit voltage and service, continuous or intermittent.

- 521308-991 Multivue cap, Screw terminals (Fig. 15)
- 52408-991 Multivue cap, Soldering terminals
- 91408-931 Long clear cap, Soldering terminals (Fig. 16)
- 811308-111 Screw-in cap, Convex lens, Screw terminals (Fig. 17)
- 80408-831 Screw cap, Dome plastic lens, Soldering terminals (Fig. 18)
- 801308-831 Screw cap, Dome plastic lens, Screw terminals
- 51408-111 Screw cap, Convex lens, Soldering terminals (Fig. 19)
- 511308-111 Screw cap, Convex lens, Screw terminals

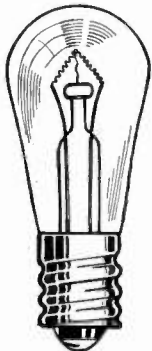


All of these assemblies are listed by Underwriters' Laboratories, Inc.

# The DIAL LIGHT COMPANY of AMERICA

Foremost Manufacturer of Pilot Lights  
NEW YORK 3, N. Y.

## OPEN PILOT LIGHT ASSEMBLIES For Candelabra Screw Base Lamps



S-6

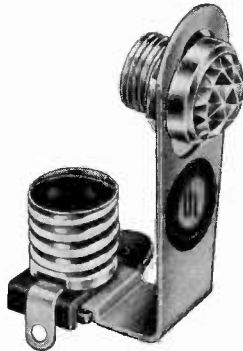


FIG. 22

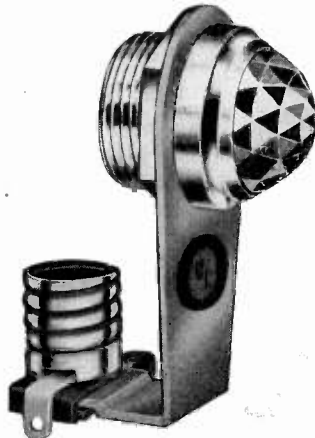


FIG. 23

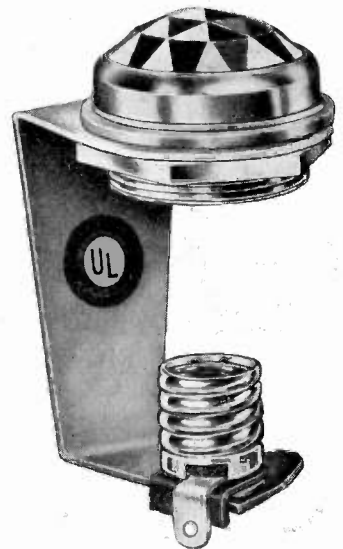


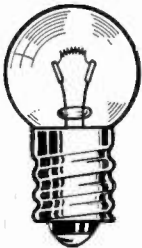
FIG. 24



For S-6 Incandescent Lamps, candelabra screw base

- No. 10-18-14-431 Faceted  $\frac{1}{2}$ " Lens (for  $\frac{7}{16}$ " mounting hole) (Fig. 22)
- No. 25-18-15-431 Faceted  $\frac{5}{8}$ " Lens (for  $\frac{13}{16}$ " mounting hole) (Fig. 23)
- No. 31-18-16-431 Faceted 1" Lens (for 1" mounting hole) (Fig. 24)

All of the above assemblies are listed by Underwriters' Laboratories, Inc.



G-6

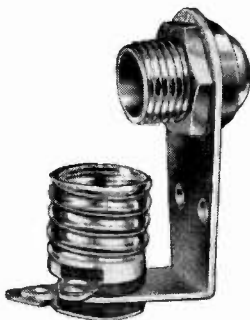
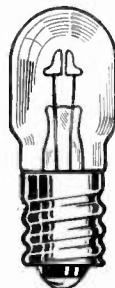


FIG. 25



NE-45

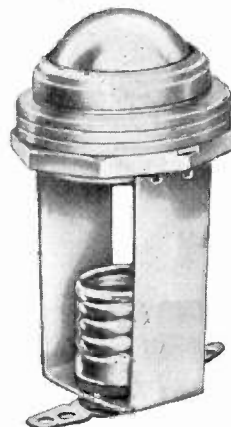


FIG. 26

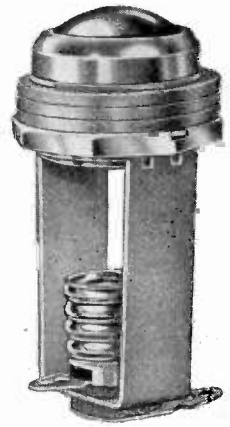


FIG. 27

Octagon lock nut and bracket on these two units welded into one-piece construction.

For G-6 Low voltage lamps,  
candelabra screw base

- No. 610-121 Convex  $\frac{1}{2}$ " lens  
(for  $\frac{7}{16}$  mounting hole)

**COLOR**—The final figure 1 in the listed numbers indicates RED LENS COLOR. If other color is desired, change final figure to one from table below:  
Green-2, Amber-3, Blue-4, White-5, Yellow-6, Clear-7

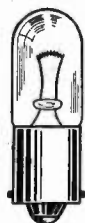
For NE-45 Neon Glow Lamps,  
candelabra screw base

- No. 67BN-831 Dome Plastic Lens ( $\frac{3}{4}$ " diam.)
  - No. 66N-131 Convex Glass Lens ( $\frac{3}{4}$ " diam.)
- (Both mount in  $\frac{13}{16}$ " hole. Cap removable)

# The DIAL LIGHT COMPANY of AMERICA

Foremost Manufacturer of Pilot Lights  
NEW YORK 3, N. Y.

## OPEN PILOT LIGHT ASSEMBLIES For T-3 $\frac{1}{4}$ Low voltage Incandescent Lamps



T-3 $\frac{1}{4}$

Miniature Bayonet Base

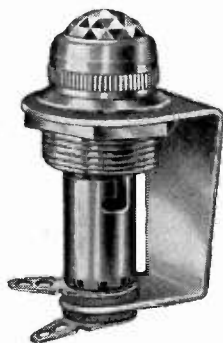
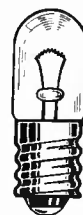


FIG. 29



T-3 $\frac{1}{4}$

Miniature Screw Base

Typical assembly for bayonet base lamp.  
Available also for screw type, see listing below.

### Assemblies for T-3 $\frac{1}{4}$ miniature bayonet base lamps

No. 810B-431	Faceted	$\frac{1}{2}$ " lens.	For $\frac{1}{16}$ " mounting hole.	Fig. 29
No. 755-621	Convex	$\frac{1}{32}$ " lens.	For $\frac{9}{32}$ " mounting hole.	Fig. 30
No. 710-121	Convex	$\frac{1}{2}$ " lens.	For $\frac{7}{16}$ " mounting hole.	Fig. 31
No. 857B-431	Faceted	$\frac{1}{2}$ " lens.	For $\frac{1}{16}$ " mounting hole.	Fig. 32
No. 67B-111	Convex	$\frac{3}{4}$ " lens.	For $\frac{13}{16}$ " mounting hole.	Fig. 33

### Assemblies for T-3 $\frac{1}{4}$ miniature screw base lamps

No. 810M-431	Faceted	$\frac{1}{2}$ " lens.	For $\frac{1}{16}$ " mounting hole.	Similar to Fig. 29
No. 555-621	Convex	$\frac{1}{32}$ " lens.	For $\frac{9}{32}$ " mounting hole.	Similar to Fig. 30
No. 510-121	Convex	$\frac{1}{2}$ " lens.	For $\frac{7}{16}$ " mounting hole.	Similar to Fig. 31
No. 855-431	Faceted	$\frac{1}{2}$ " lens.	For $\frac{1}{16}$ " mounting hole.	Similar to Fig. 32
No. 66M-111	Convex	$\frac{3}{4}$ " lens.	For $\frac{13}{16}$ " mounting hole.	Similar to Fig. 33

**COLOR**—The final figure 1 in the listed numbers indicates RED LENS COLOR. If other color is desired, change final figure to one from table below:

Green-2, Amber-3, Blue-4, White-5, Yellow-6, Clear-7

Octagon lock nut and bracket on these two units welded into one-piece construction.

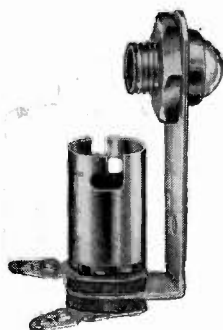


FIG. 30

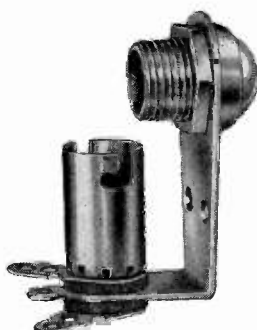


FIG. 31



FIG. 32



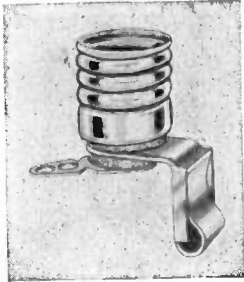
FIG. 33

# The DIAL LIGHT COMPANY of AMERICA

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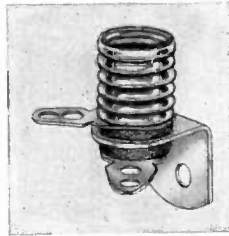
## LAMP SOCKETS

Four series with choice of mounting bracket  
(Add suffix number for bracket desired)



No. 604

**600 SERIES**  
Candelabra screw



No. 508

**500 SERIES**  
Miniature screw

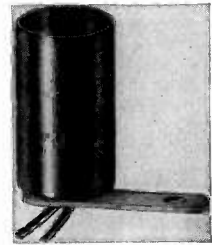


No. 706

**700 SERIES**  
Miniature bayonet

### Socket suffix

No.	Bracket Description
-01.....	Plain clip, upturned
-02.....	Plain clip, downturned
-03.....	Clip with ears, upturned
-04.....	Clip with ears, downturned
-05.....	Right angle, upturned, slotted. Slot..... $\frac{7}{8}$ " x $\frac{3}{16}$ "
-06.....	Right angle, downturned, slotted. Slot..... $\frac{7}{8}$ " x $\frac{3}{16}$ "
-07.....	Plain socket, no bracket
-08.....	Right angle, downturned, short. Hole Size..... $\frac{5}{32}$ "
-09.....	Right angle, upturned, short. Hole Size..... $\frac{5}{32}$ "
-11.....	Square U-shaped. Hole Size..... $\frac{5}{32}$ "
-12.....	Horizontal (no bend), short. Hole Size..... $\frac{5}{32}$ "
-13.....	Horizontal (no bend), slotted. Slot..... $\frac{7}{8}$ " x $\frac{3}{16}$ "
-19.....	Right angle, upturned, long. Hole Size..... $\frac{9}{64}$ "
-20.....	Right angle, downturned, long. Hole Size..... $\frac{9}{64}$ "



No. 312

**300 SERIES**  
Miniature bayonet  
Bakelite insulated-wire leads

## Heavy Bakelite Sockets

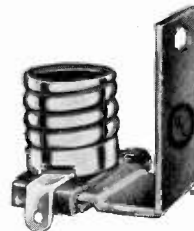
### NAVY SPECIFICATIONS



Miniature bayonet—No. 9S4931  
(illustrated)  
Double Contact bayonet 9S4634  
Candelabra screw 9S5038  
Candelabra screw 9S2036  
(side spring lock)

## Candelabra Screw Sockets

Underwriters' Listed  
Rated 75W. 125V.

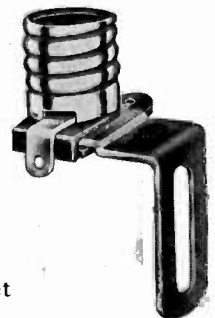


No. 18-73 Upturned bracket  
(illustrated)

No. 18-74 Downturned bracket

No. 18-75 Horizontal bracket

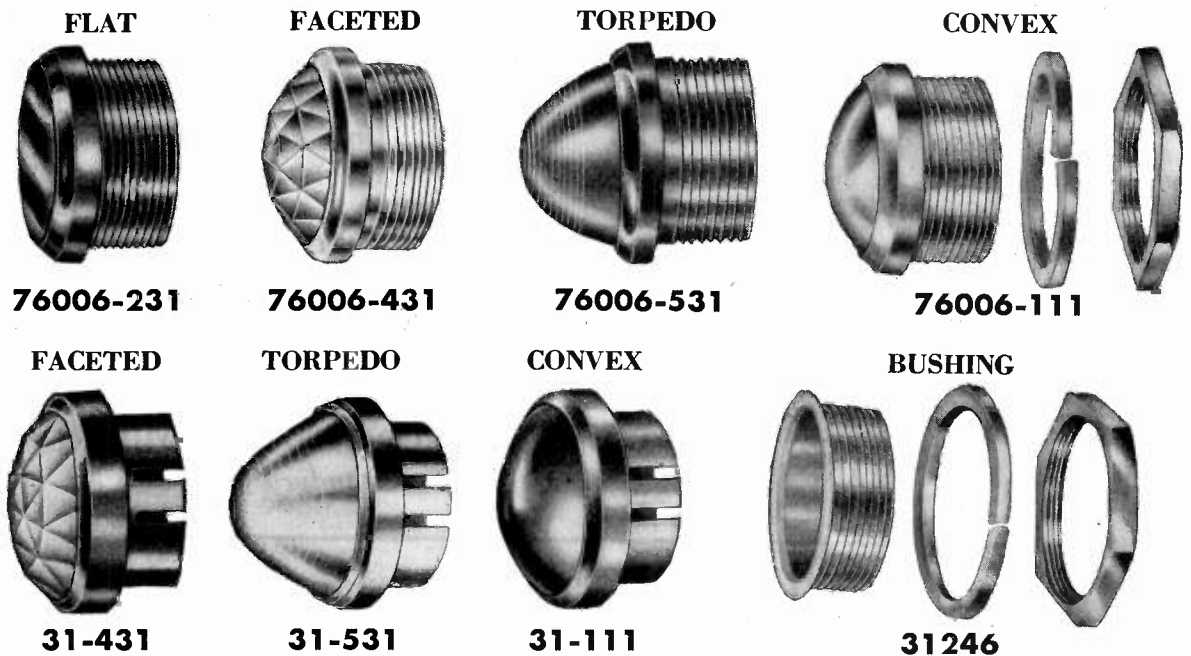
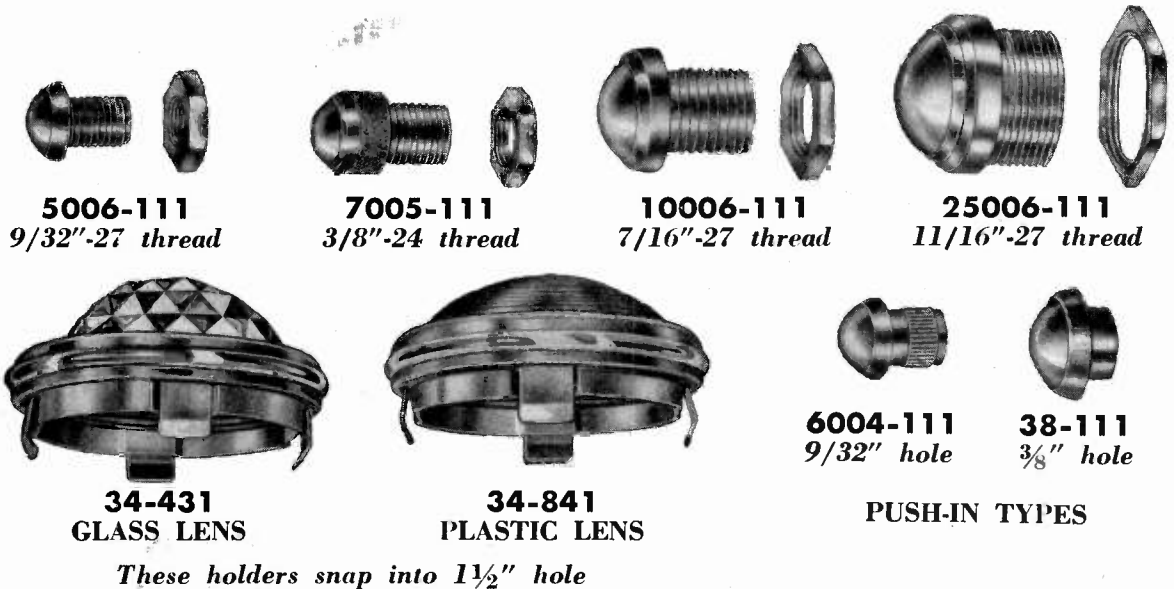
No. 18-76 Downturned and slotted bracket  
(illustrated)



# The DIAL LIGHT COMPANY of AMERICA

Foremost Manufacturer of Pilot Lights  
NEW YORK 3, N. Y.

## Lens Holders with Lenses for Panel Mounting Screw Types Are Complete With Nut for Shank



The above two groups mount in 1" clearance hole. The upper series lock to the panel and are tamper proof. The lower series permit lamp replacement from the front of the panel.

**LENS COLOR**—The final figure 1 in the listed numbers indicates RED LENS COLOR. If other color is desired, change final figure to one from table below:

Green-2, Amber-3, Blue-4, White-5, Yellow-6, Clear-7



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# The DIAL LIGHT COMPANY of AMERICA

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## CONNECTORS FOR STANDARD SINGLE CONDUCTOR SHIELDED CABLE—FOR MICROPHONES, SPEAKERS, PICK-UPS, JACKS



No. 100 CABLE CONNECTOR (*Female*)



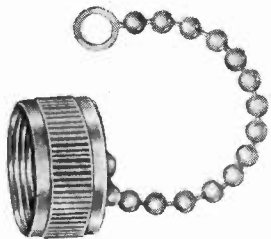
No. 51 CIRCUIT GROUNDING  
MALE CHASSIS CONNECTOR



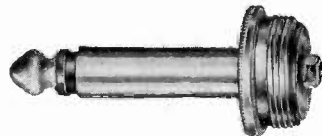
No. 101 CABLE CONNECTOR (*Male*)



No. 50 CHASSIS CONNECTOR  
No. 50P Similar but drive fit  
*into hole in chassis.*



No. 103 CAP AND CHAIN



No. 102 PLUG WITH MALE THREAD  
*Fits standard jacks*

---

## LAMP INSTALLER



*For most lamps — L-73 (illustrated) For T4½ lamps — L-45*

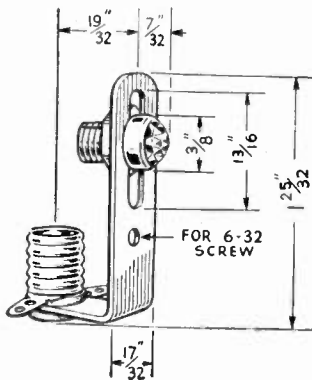


# Dial and Jewel PILOT LIGHT ASSEMBLIES

## JEWEL LIGHT ASSEMBLIES

11/32" Jewel... Vertical Mounting

### No. 5 TYPE



The No. 5 type is unique in its field because it can be adapted to the focal lengths of any miniature screw or bayonet lamp. The opening in the shank of this jewel is so small, it is necessary to have the filament of the lamp directly behind the jewel. The slotted jewel mounting on the No. 5 makes this feature possible. This is an inexpensive unit, and it presents a neat appearance on small instrument panels.

#### STANDARD TYPES

Type Number	Style Socket
5	Miniature Screw
5B	Miniature Bayonet

#### SPECIFICATIONS

- MOUNTING:** Mounts in 9/32" diameter hole on panels up to 1/4" thick.
- RATING:** Tested on 110 volts. Can be supplied to withstand 1000 volts AC for a period of one minute.
- LAMPS:** Designed to house any filament type miniature screw or miniature bayonet lamp.
- COLORS:** Amber, blue, colorless, green, ruby, white or yellow.
- FINISHES OF GLASS:** Standard unit is equipped with faceted glass. Smooth glass may be obtained upon request.
- PLATING:** Panel hardware is bright nickel, other parts cadmium.
- SPECIAL PLATING:** Panel hardware can be supplied with staturary bronze or chrome plating for small extra charge.
- PACKING:** Packed in bulk unassembled.

#### PARTS

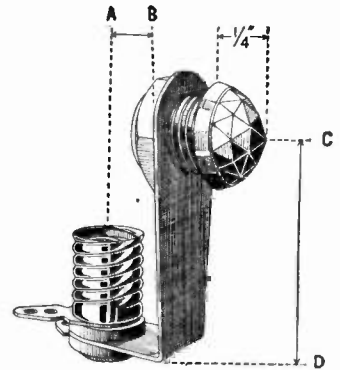
Part No.	Description
14	Jewel Assembly with Nut
15	Nut
123H	Socket Assembly for No. 5
223H	Socket Assembly for No. 5B

1/2" Jewel... Vertical Mounting

### No. 10 TYPE

NOTE:

Dimension A to B is from center of socket to outside of bracket. C to D from center of jewel to bottom of bracket. The No. 10B and 10H have brackets with oblong hole permitting adjustment to obtain best position for lamp filament back of jewel.



#### STANDARD TYPES

Type Number	Style Socket	A to B	C to D
10	Min. Screw	1/2"	1 1/4"
10B	Min. Bayonet	3/4" }	Adj. from 1 1/8" to 1 3/8"
10H	SC Cand. Bay.	3/4" }	
10G	Min. Bayonet	1/2"	1 1/4"

#### SPECIFICATIONS

- LAMPS REQUIRED:** For No. 10 and 10B, miniature screw or bayonet base of any voltage (tubular preferred). For No. 10G, miniature bayonet, type G3 1/2 bulb. For No. 10H any SC candelabra bayonet base lamp may be used. Mounts in 7/16" hole on panels up to 1/4" thick. • **JEWEL:** Diamond cut (faceted); Amber, Blue, Crystal, Green, Ruby, White (Milk White), and Yellow. • **SPECIAL FINISHES:** Chrome, Black Nickel, Statuary Bronze. • **PACKED** in bulk with jewels and nuts in bags. • **SPECIAL JEWELS:** SP—Smooth, plain; SFA—Smooth, frosted all over; SFB—Smooth, frosted on back.

#### PARTS

Part No.	Description
115	Socket Assembly for No. 10
215BC	Socket Assembly for No. 10B
215	Socket Assembly for No. 10G
615BC	Socket Assembly for No. 10H
16	Jewel and Nut
17	Nut



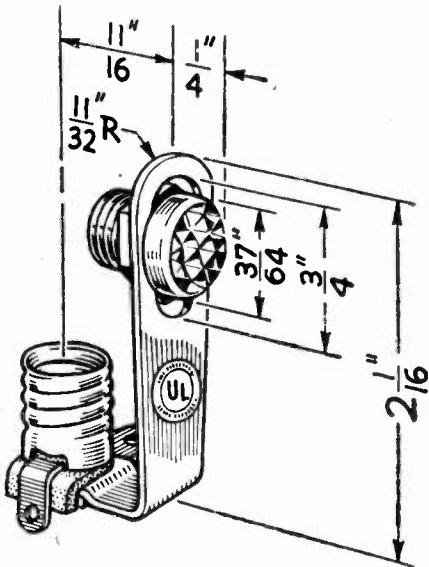
# Dial and Jewel PILOT LIGHT ASSEMBLIES

## JEWEL LIGHT ASSEMBLIES

1/2" Jewel ... Vertical Mounting

### No. 10C TYPE

UNDERWRITERS' APPROVED



The No. 10C is an inexpensive candelabra screw base jewel light assembly that is Underwriters' Approved for 75 watt-125 volt service. It is particularly suited to applications where there is a minimum of depth behind the panel, and lamp replacement from the front of the panel is not necessary. The mounting bracket has a slotted hole to facilitate adjustment for placing the lamp filament directly behind the jewel giving maximum illumination of the jewel.

### SPECIFICATIONS

**MOUNTING:** Mounts in 7/16" hole on panels up to 1/4" thick. For panels between 1/4" and 3/8" specify No. 16L jewel.  
**RATING:** 75 watts, 125 volts.  
**LAMPS:** Will house any candelabra screw base lamp.  
**COLORS:** Amber, blue, colorless, green, ruby, white and yellow.

FINISHES OF GLASS	SYMBOL
Faceted (Diamond Cut)	Standard Finish
Smooth Plain (Smooth face no frosting)	SP
Smooth, Frosted All Over	SFA
Smooth, Frosted on Back Only	SFB

**PLATING:** Jewel assembly is burnished nickel. All other parts are cadmium. Statuary bronze, chrome, and black nickel plating can be applied to jewels for a small extra charge.  
**PACKED:** Packed in bulk unassembled.

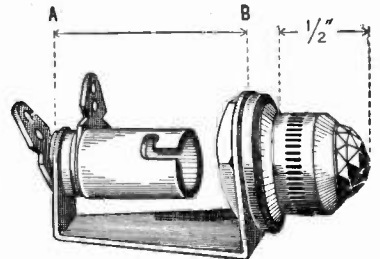
### PARTS

Part No.	Description
16	Jewel Assembly and Nut
17	Nut
415BC	Socket Assembly

1/2" Jewel ... Horizontal Mounting

### No. 20 TYPE

The original Drake Horizontal Mounting Lamp Assembly, and still a fast seller. When ordering, please be sure to select the correct part number for the thickness of panel on which to be installed; otherwise lamp may not extend far enough forward for easy removal, or if too far, prevent bezel screwing all the way on collar.



PATENT NO. 2220515  
Net Wt. 0.036 lb.

### STANDARD TYPES

Type Number	Style Socket	Length A to B	Panel Thickness
20	Min. Bayonet	1-13/32"	0" to 7/64"
30	Min. Bayonet	1-7/32"	1/4"
40	Min. Bayonet	1-11/32"	1/8 to 15/64"
20S	Min. Screw	1-1/16"	0" to 15/64"
30S	Min. Screw	15/16"	1/4"

**NOTE:** Dimension A to B is overall length of socket assembly with lamp installed. Can be furnished with same plastic caps as No. 51 and 51N. Specify by using Nos. 31C or 31SC.

### SPECIFICATIONS

**LAMPS REQUIRED:** Miniature T3/4 tubular, G3 1/2 globular or other lamps of same over-all length. Lamp removable from front of panel. • Mounts in 11/16" hole. • **JEWEL:** Diamond cut (faceted); Amber, Blue, Crystal, Green, Ruby, White (Milk White) and Yellow. • **SPECIAL FINISHES:** Chrome, Black Nickel, Statuary Bronze. • **PACKED** in bulk with jewel, collar and nuts in bag. • **SPECIAL JEWELS:** SP—Smooth, plain; SFA—Smooth, frosted all over; SFB—Smooth, frosted back.

### PARTS

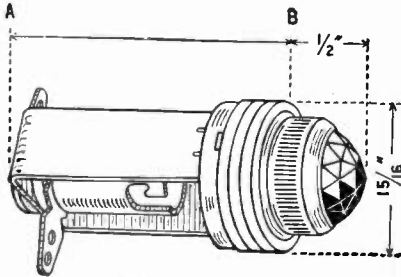
Part No.	Description
220A	Socket Assembly for No. 20
221F	Socket Assembly for No. 30
221V	Socket Assembly for No. 40
122V	Socket Assembly for No. 20-S
122G	Socket Assembly for No. 30-S
25	Jewel
27	Nut
28	Collar for 0"-1/4" panels, 3/8" long
30	Collar for 3/8" panel, 1/2" long



# Dial and Jewel PILOT LIGHT ASSEMBLIES

## JEWEL LIGHT ASSEMBLIES

1/2" Jewel... Horizontal Mounting  
**No. 50 TYPE**



Net Wt. 0.056 lb.  
PATENT NO. 2220516

This patented Drake Assembly is ideal for various applications. Specially designed for use on more than one thickness of panel. Supplied with two fibre washers which compensate for panel thicknesses. It is of sturdy construction, easy to mount, and requires little space.

### STANDARD TYPES

Type Number	Style Socket	Length A to B	Panel Thickness
50	Min. Bayonet	1-9/16"	0" to 1/4"
50.5	Min. Bayonet	1 1/2"	17/64" to 3/8"
50S	Min. Screw	1 1/8"	0" to 1/4"
50.5S	Min. Screw	1 1/8" to 1 1/4"	17/64" to 3/8"

NOTE: Dimension A to B is overall length from front of panel with lamp installed.

No spacing washers are furnished with part No. 50.5S.

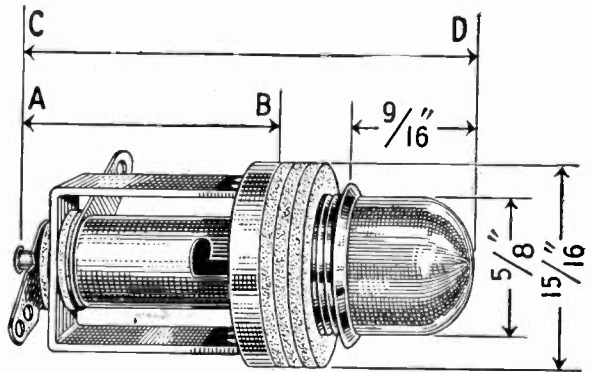
### SPECIFICATIONS

LAMPS REQUIRED: Miniature T3 1/4 tubular, G3 1/2 globular or other lamps of same over-all length. • Lamp removable from front of panel. • Mounts in 11/16" hole. • JEWEL: (Diamond cut faceted); Amber, Blue, Crystal, Green, Ruby, White, (Milk White) and Yellow. • SPECIAL FINISHES: Chrome, Black Nickel, Statuary Bronze. • PACKED in individual boxes for jobbing trade; in bulk and fully assembled for manufacturing trade. • SPECIAL JEWELS: SP—Smooth, plain; SFA—Smooth, frosted all over; SFB—Smooth, frosted on back.

### PARTS

Part No.	Description
25	Jewel
28	Collar 3/8" long for No. 50 & 50S
30	Collar 1/2" long for No. 50.5 & 50.5S
50A	Round Nut
50B	Fibre Washer, 11/16" I.D. x 15/16" O.D. x 1/16" thick
225A	Min. Bay. Socket Assembly for No. 50
225C	Min. Bay. Socket Assembly for No. 50.5
125B	Min. Screw Socket Assembly for Nos. 50S & 50.5S

Plastic Dome... Horizontal Mounting  
Lamp Replaceable from Front of Panel  
**No. 51 TYPE**



NET WEIGHT 0.045 lbs.

PATENT NO. 2220516

The No. 51 is a patented Drake assembly featuring a plastic dome indicator which fosters wide angle observation. The whole dome is illuminated, therefore it can be easily seen from the side. It is a good eye-catcher because of its brilliant glow, and for this reason, it makes a wonderful warning light. The unit is supplied with three 1/16" thick fibre spacing washers, so that when the unit is mounted on a thick panel, these washers can be removed making the lamps as accessible for replacement as when mounted on a thin panel.

Part No.	Length			Style Socket	Number of Spacing Washers Required			
	A to B	C to D	D		Panel thickness	Washers	Washers	Washers
51	1 1/8"	1 1/8"	1 1/8"	Min.	3/8"	1/8"	1/8"	1/4"
				Bay.	3	2	1	0
51.5	1"	1 1/8"	1 1/8"	Min.	1/4"	1/8"	3/8"	
				Bay.	2	1	0	
51S	7/8"	1 1/8"	1 1/8"	Min.	3/8"	1/8"	1/8"	1/4"
				Screw	2	1	0	0

Length A to B is overall length of socket assembly with lamp installed.

### SPECIFICATIONS

MOUNTING: Mounts in 11/16" diameter hole. RATING: Tested on 110 volts. Can be supplied to withstand 1,000 volts AC for a period of one minute. LAMPS: Designed to house the miniature bayonet or miniature screw base T3 1/4 lamp. Will also house G3 1/2 bulb, but lamp is not quite as accessible for replacement. COLORS: Amber, colorless, green and red. PLATING: Regularly supplied with nickel plated panel hardware, all other parts cadmium plated. SPECIAL PLATING: Panel hardware can be supplied with chromium, statuary bronze, or black nickel plating. Extra charge for these finishes. PACKING: The units are packed in bulk and fully assembled.

### PARTS

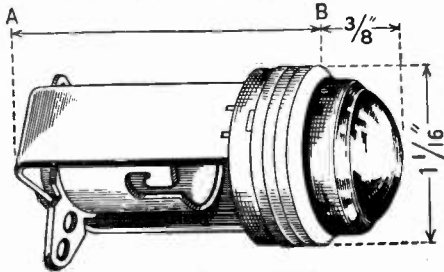
Part No.	Description
25P	Plastic Dome
28	Collar 3/8" long for 51 and 51S
30	Collar 1/2" long for 51.5
50A	Round Nut
50B	Fibre Spacing Washer
125B	Socket Assembly for 51S
225C	Socket Assembly for 51
225B	Socket Assembly for 51.5



# Dial and Jewel PILOT LIGHT ASSEMBLIES

## MECHANICALLY SECURE TERMINALS USED ON 110 VOLT CANDELABRA ASSEMBLIES

### 3/4" Jewel... Horizontal Mounting **No. 60 TYPE**



PATENT NO. 2220516  
Net Wt. 0.068 lb.

This patented item is similar to the No. 50, but has a 3/4" jewel in a polished chrome "slip-fit" bezel. Supplied with three fibre washers which compensate for panel thickness. Its sturdy construction, ease of mounting, and small size make it an ideal assembly.

Part Number	Style Socket	Length A to B
60	Min. Bayonet	1- 9/16"
60N	Cand. Screw for NE45 lamp	1-13/16"
60S	Min. Screw	1- 5/16"
60T	Cand. Screw for 115v, 6W, T4 1/2 lamp	2"

NOTE: Dimension A to B is overall length from front of panel with lamp installed.

### SPECIFICATIONS

**MOUNTING:** Mounts in 13/16" diameter hole on panels 0" to 1/4" thick. For panels 17/64" to 3/8" thick use parts 60.75, 60.75N, 60.75S, or 60.75T.

**RATING:** Miniature bayonet and screw types are tested on 110 volts. Candelabra screw types will withstand a voltage breakdown of 1,000 volts.

**COLORED DISCS:** The No. 60 types are regularly supplied with colorless, smooth glass frosted on back behind which is placed a colored disc. The advantage of this method is that the glass appears white until the lamp is lighted.

**COLORS:** Amber, blue, colorless, green, red, white, or yellow.

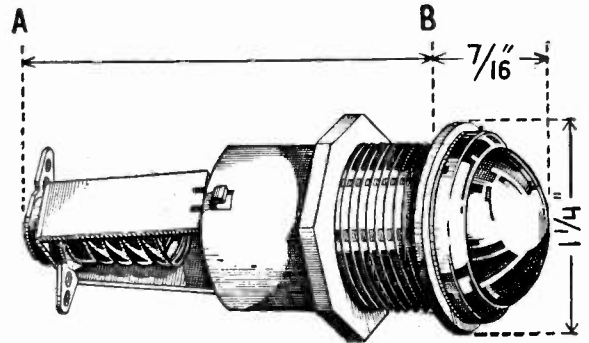
OTHER FINISHES OF GLASS	SYMBOL
Faceted (Diamond Cut)	FAC
Smooth Plain (Smooth face and no frosting)	SP
Smooth, frosted on back (Smooth face frosted on back only)	SFB

Colored glass is furnished when any of the above types are specified. We recommend smooth plain glass for use with neon glow lamps.

### PARTS

Part Number	Description
60A	Jewel
60B	Collar 25/32" long for Nos. 60.75, N, S, and T
60C	Collar 13/32" long for Nos. 60, N, S, and T
60D	Round Nut
60E	Color Disc
60G	Retaining Ring for Color Disc
60I	Fibre Washers, 13/16" I.D. x 1 1/8" O.D. x 1/16" thick
128V	Min. Screw Socket Assembly for Nos. 60S & 60.75S
228U	Min. Bay. Socket Assembly for No. 60
228V	Min. Bay. Socket Assembly for No. 60.75
428U	Cand. Screw Socket Assembly for No. 60.75N
428W	Cand. Screw Socket Assembly for Nos. 60N and 60.75T
437P	Cand. Screw Socket Assembly for No. 60T

### 1" Jewel... Horizontal Mounting **No. 75 TYPE**



Net Wt. 0.107 lb.

PATENT NO. 2192345

The patented No. 75 type has a "slip-fit" bezel. It is exceedingly neat in appearance. Very substantial and easy to install. All parts are burnished cadmium plated except the bezel which has a highly polished chrome finish.

Type Number	Style Socket	Length A to B
75	Candelabra	2 1/8"
175	Min. Screw	1 3/4"
275	Min. Bayonet	1 1/8"
375	S.C. Cand. Bayonet	2-1/32"

NOTE: Dimension A to B is over-all length. Overall diameter of mounting nut 1 3/8".

### SPECIFICATIONS

**MOUNTING:** Mounts in 1" diameter hole on panels up to 1/2" thick.

**RATING:** Nos. 175 and 275 are tested on 110 volts.

Nos. 75 and 375 will withstand a voltage breakdown of 1,000 volts.

**LAMPS:** The No. 75 is designed to house Mazda 115 volt 6 watt, S6 or C7 candelabra screw base lamps. Will house any other candelabra screw base lamp up to 1 1/8" long and 7/8" diameter.

The Nos. 175 and 275 are designed to house any miniature lamp up to 1-3/16" long and 7/8" diameter.

The No. 375 is designed to house any single contact candelabra bayonet base lamp up to 1 1/2" long and 7/8" diameter.

**COLORS:** Amber, Blue, Colorless, Green, Red, White, or Yellow.

**COLORED DISCS:** The No. 75 types are regularly supplied with colorless, smooth glass frosted on back behind which is placed a colored disc. The advantage of this method is that the glass appears white until the lamp is lighted.

OTHER FINISHES OF GLASS	SYMBOL
Faceted (Diamond Cut)	FAC
Smooth Plain (Smooth face and no frosting)	SP
Smooth, frosted on back (Smooth face frosted on back only)	SFB

Colored glass is furnished when any of the above types are specified. We recommend smooth plain glass for use with neon glow lamps.

### PARTS

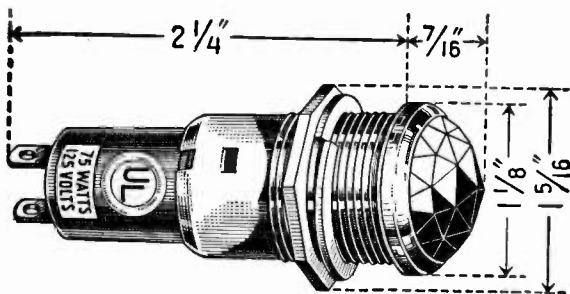
Part Number	Description
419V	Socket Assembly for No. 75
224H	Socket Assembly for No. 275
124I	Socket Assembly for No. 175
624J	Socket Assembly for No. 375
75A	Jewel
75B	Tube
75C	Nut
75E	Color Disc
75F	Retaining ring for Color Disc
75G	Fibre washer—1/4" O.D.
75L	Lock washer
75N	Spring clip to lock socket in place



# Dial and Jewel PILOT LIGHT ASSEMBLIES

## 1" JEWEL LIGHT ASSEMBLIES LAMPS REPLACEABLE FROM FRONT OF PANEL

### No. 75AP TYPE UNDERWRITERS' APPROVED



Net Weight 0.110 lbs.

The No. 75AP is a heavy duty candelabra screw base assembly designed to be used on rugged equipment. The panel hardware (jewel holder) is attractively finished with a highly polished chrome plate. All other parts are cadmium plated. The No. 75AP is Underwriters' approved for 125 volt, 75 watt service. The socket assembly and mounting tube are one piece and so constructed that they need never be replaced. Electrical connections are made to solder terminals. No danger of vibration loosening the connections as with screw terminals.

### SPECIFICATIONS

**MOUNTING:** Mounts in 1" diameter holes on panels up to 1/2" thick.

**RATING:** 125 volts, 75 watts. Can be operated on 220 volt circuits if connected in series with a 2000 ohm, 10 watt wire wound resistor. In this case a 115 volt, 6 watt lamp must be used.

**LAMPS:** Designed to house the Mazda 115 volt, 6 watt, S6, candelabra screw base lamp.

Will house any other candelabra screw base lamp which has an overall length of less than 1 7/8" and a diameter of less than 7/8".

**NOTE:** Will not house a C7 bulb.

**COLORS:** Amber, blue, colorless, green, ruby, white or yellow.

FINISHES OF GLASS	SYMBOL
Faceted (Diamond Cut)	FAC
Smooth Plain (Smooth face and no frosting)	SP
Smooth, frosted on back (Smooth face frosted on back only)	SFB

For Mazda lamps we recommend faceted or smooth glass frosted on back. For neon glow lamps, we recommend smooth plain glass.

**NOTE:** If no other finish is specified, faceted glass will be furnished.

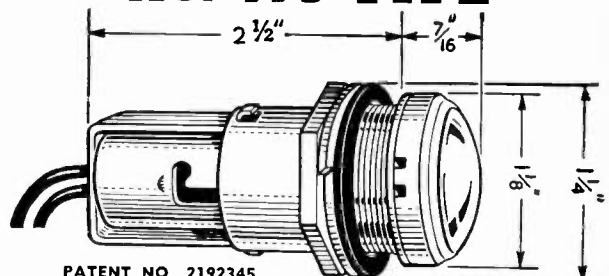
**PACKING:** The units are packed in individual boxes for the jobbing trade; in bulk, and fully assembled for the manufacturing trade.

### PARTS

Part No.	Description
475M	Socket Assembly
75A	Jewel & Jewel Holder
75C	Nut
75L	Lock Washer

### Double Contact Candelabra Bayonet UNDERWRITERS' APPROVED

### No. 975 TYPE



PATENT NO. 2192345

The No. 975 is a heavy duty double contact, candelabra, bayonet base assembly designed to be used in rugged equipment. The panel hardware (jewel holder) is attractively finished with a highly polished chrome plate. All other parts are cadmium plated. The No. 975 is Underwriters' approved for 125 volt, 75 watt service. The mounting tube and socket are detachable; therefore the wire leads of the socket assembly can be connected to the terminal block before the socket assembly is clipped into the mounting tube which is already installed in the panel. This feature facilitates quicker assembly of panels. The built in lead wires can be attached directly to screw or solder terminal blocks; thereby eliminating two soldering operations. Units are carried in stock with both 10 inch and 20 inch leads. On orders of 500 or more units the wires can be cut to your specifications. See wire table.

Part Numbers	Length of Leads
975-10	10 inches
975-20	20 inches

### SPECIFICATIONS

**MOUNTING:** Mounts in 1" diameter holes on panels up to 1/2" thick.

**RATING:** 125 volts, 75 watts.

**LAMPS:** Designed to house the double contact, candelabra, bayonet base, C7, S6 or T6 1/2, 110 volt lamp. Will house any other D C, candelabra based lamp which is no larger than 7/8" in diameter and no longer than 2 1/8". Lamps can be purchased from Drake Manufacturing Co.

**LEADS:** No. 18 gauge (16 strands No. 30) with 1/32" of black Synthinal plastic insulation.

**COLORS:** Amber, blue, colorless, green, red, white or yellow.

**COLOR DISCS:** The No. 975 is regularly supplied with colorless, smooth glass frosted on back behind which is placed a colored disc. The advantage of this method is that the glass appears white until the lamp is lighted.

OTHER FINISHES OF GLASS	SYMBOL
Faceted (Diamond Cut)	FAC
Smooth Plain (Smooth face and no frosting)	SP
Smooth, frosted on back (Smooth face frosted on back only)	SFB

Colored glass is furnished when any of the above types is specified. We recommend smooth plain glass for use with neon glow lamps.

**PACKING:** Packed in bulk fully assembled.

### PARTS

Part Numbers	Description
75A	Jewel
75B	Tube
75C	Nut
75E	Color Disc
75F	Retaining ring for Color Disc
75G	Fiber washer 1/16" thick
75L	Lock Washer
950E-10	Socket Assembly for No. 975-10
950E-20	Socket Assembly for No. 975-20





# Dial and Jewel PILOT LIGHT ASSEMBLIES

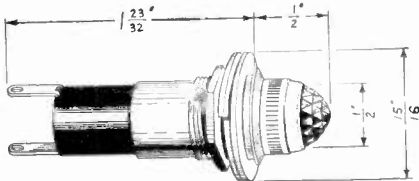
TOTALLY ENCLOSED, MINIATURE BAYONET

## PILOT LIGHT ASSEMBLIES

BUILT-IN RESISTORS FOR NEON GLOW-LAMPS OPTIONAL

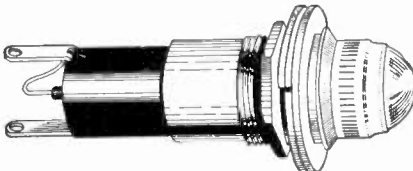
These totally enclosed pilot lights meet Underwriters' Specifications. They are very rugged and particularly adapted to use in equipment subjected to extreme vibration and atmospheric conditions. The 100N and 101N assemblies are designed specifically for use with the NE51 neon glow lamp. With proper current limiting resistors (built into the socket of either the 100N or 101N), the neon glow lamps can be operated on any voltage over 65 volts AC and 90 volts DC. You merely specify the operation voltage and we furnish the correct unit. Stock units have 100,000 ohm resistors for 115 volt operation. The primary advantages of the glow lamp are its long life (3000 hrs.), resistance to vibration (unaffected), low initial cost, low operating cost (1/25 watt), and small size.

### WITH 1/2" JEWEL No. 100



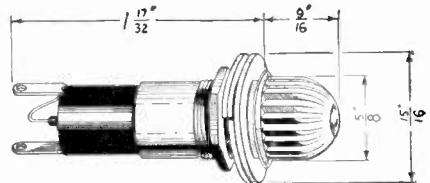
PATENT NO. 2220515

### No. 100N



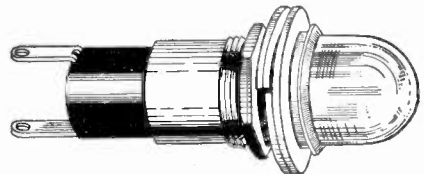
HAS BUILT-IN RESISTOR FOR NEON LAMP

### WITH PLASTIC DOME No. 101N



WITH BUILT-IN RESISTOR FOR NEON LAMP

### No. 101



PATENT NO. 2220515

The jewel or bull's-eye indicators are recommended for use with incandescent lamps of over one watt; in temperature ambients of over 200° F; or, in the case of neon, where a concentration of light is required directly in front of the observer.

### SPECIFICATIONS

**MOUNTING:** Mounts in 11/16" dia. hole on panels up to 3/8" thick.

**RATING:** Breakdown voltage 2000 volts AC.

**LAMPS:** No. 100 is designed to house any miniature bayonet, T3/4 lamp.

**COLORS:** Amber, Blue, Colorless, Green, Ruby, White, and Yellow.

**NOTE:** Blue, Green, and White not recommended for use with neon lamp.

FINISHES OF GLASS	SYMBOL
Faceted (Diamond Cut)	FAC Standard Finish on No. 100
Smooth Plain (Smooth face, no frosting)	SP Standard Finish on No. 100N
Smooth, Frosted All Over	SFA
Smooth, Frosted on Back Only	SFB

**NOTE:** SFA and SFB finishes not recommended for neon lamps.

**PLATING:** Regularly supplied with burnished nickel plated panel hardware.

**SPECIAL PLATING:** Extra charge for chromium, statuary bronze, etc.

**PACKING:** To jobbers: individually packed in boxes, 25 boxes to a unit package. To manufacturers: packed in bulk, fully assembled. Net wt. 0.057 lbs.

### PARTS

Part No.	Description
25	Jewel
27	Nut
36L	Lock Washer
50B	Fibre Washer
2100A	Socket Assembly for No. 100
2100AN	Socket Assembly for No. 100N

The transparent plastic cap is fluted on the inside to multiply the images of the glowing electrodes of the neon lamp. It actually has three times the visibility of the ordinary plain cap. Because of the small amount of illumination emitted by the neon lamp, it is advisable to use the dome with 180° visibility to utilize the greatest amount of available light.

Unless otherwise specified, No. 101 (designed for incandescent lamps) is equipped with a transparent cap that affords a beautiful even glow over the whole area of the dome.

### SPECIFICATIONS

**MOUNTING:** Mounts in 11/16" dia. hole on panels up to 3/8" thick.

**RATING:** Breakdown voltage 2000 volts AC.

**LAMPS:** No. 101 is designed to house No. 47 incandescent lamp or any other miniature bayonet T3/4 lamp of less than 1 watt power consumption.

**TRANSPARENT COLORS:** Amber, Colorless, Red, and Milky White.

**NOTE:** Since the neon glow does not effectively penetrate the transparent Green and Blue caps, they are not carried in stock.

**TRANSLUCENT COLORS:** Blue, Green, Red, Milky White, and Yellow.

**PLATING:** Regularly supplied with burnished nickel plated panel hardware.

**SPECIAL PLATING:** Extra charge for chromium, statuary bronze, etc.

**PACKING:** To jobbers: individually packed in boxes, 25 boxes to a unit package. To manufacturers: packed in bulk, fully assembled. Net wt. 0.047 lbs.

### PARTS

Part No.	Description
25P	Plastic Cap
27	Nut
36L	Lock Washer
50B	Fibre Washer
2101A	Socket Assembly for No. 101
2101AN	Socket Assembly for No. 101N



# Dial and Jewel PILOT LIGHT ASSEMBLIES

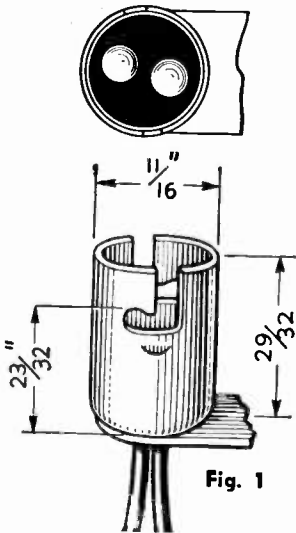
## DOUBLE CONTACT CANDELABRA BAYONET

Underwriters' Approved for General Purpose

### No. A900 SERIES

UL File No. E17786

### MOUNTING BRACKETS FOR 900, A900, 1000 SERIES ASSEMBLIES



This socket assembly is a 110 volt unit designed specifically for use in Underwriters' approved equipment. It has built in lead wires and is sturdily constructed befitting 110 volt application. In spite of its ruggedness it requires less space with lamp installed than does the candelabra screw type. In addition the bayonet type lamps will not loosen from vibration.

This socket can be supplied mounted to any one of the brackets shown on this page and the next. If they do not meet your requirements, we have the facilities to build them to your specifications.

The A900 type assembly is equipped with No. 18 (16 strands No. 30) tinned copper wire insulated with 1/32" of plastic insulation. See wire table. Units can be wired in series.

The Underwriter's Laboratories have approved the use of this socket with No. 22 gauge wire leads for application in radio only. With the lighter gauge wire the assembly is designated as the No. 900 Series. It can be wired in series or parallel. See wire table.

NOTE: On orders for less than 500 assemblies, no choice of leads is given. Assemblies will be supplied with 10" of black wire stripped 1/2".

LAMPS: 110 volt, 10 watt can be purchased from Drake Manufacturing Co.

### FORMULATION OF PART NUMBERS

The part number is composed of three parts, the series number, the bracket number, and the bracket position. The series number is expressed in hundreds plus the letter prefix if there is one. For example: The part number of an A900 Series Socket (fig. 1) with a No. 50H bracket (fig. 4) in the "A" position (fig. 2) would be No. A950H-A. Similarly a unit with No. 22 wire (900 series) and a No. 50J bracket (fig. 5) in the "C" position (fig. 3) would be 950J-C. Part numbers of sockets without brackets are designated as 917, A917, and 1017 respectively.

NOTE: Please do not fail to specify length of lead wire and stripping when ordering more than 500 units.

#### "A" BRACKET POSITION

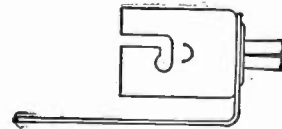


Fig. 2

#### "C" BRACKET POSITION

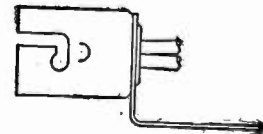


Fig. 3

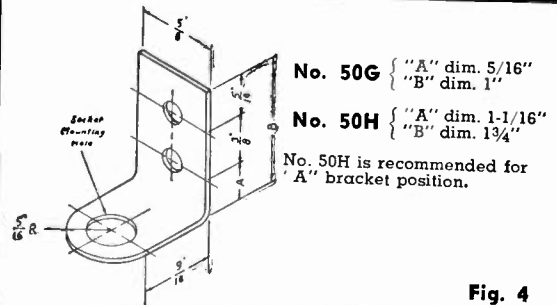


Fig. 4

#### No. 50J

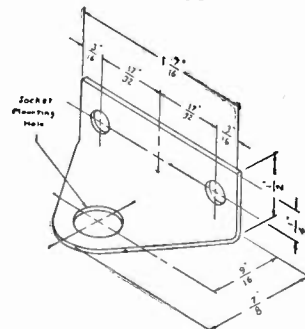


Fig. 5

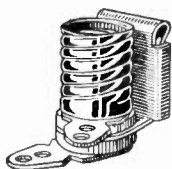


# *Dial and Jewel* **PILOT LIGHT ASSEMBLIES**

## **SOCKET ASSEMBLIES**

• FOR ALL STANDARD OR SPECIAL NEEDS

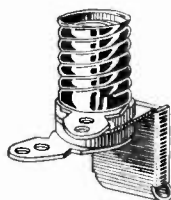
### **Clip Bracket Types With FLANGE Brackets**



103 AE



103 AH

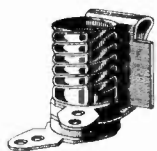


103 CE



103 CH

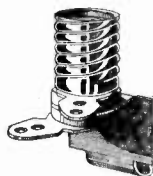
### **Clip Bracket Types With FLAT Brackets**



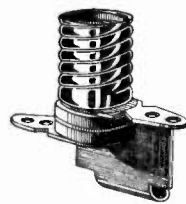
104 AE



104 AH

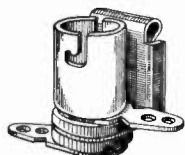


104 CE

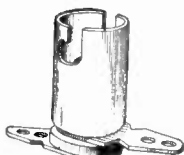


104 CH

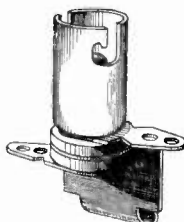
### **Bayonet Type Socket Assemblies**



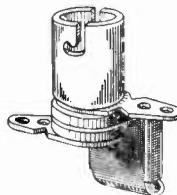
203 AH



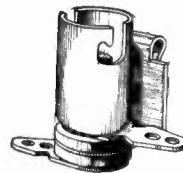
217 H



204 CH



203 CH

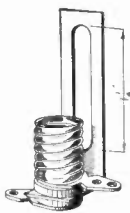


204 AH

### **Miscellaneous Types . . . Special Sizes**



117 H



108 AH



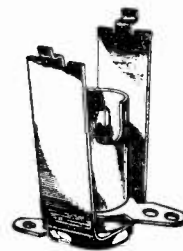
108 CH



109 CH



109 AH



219

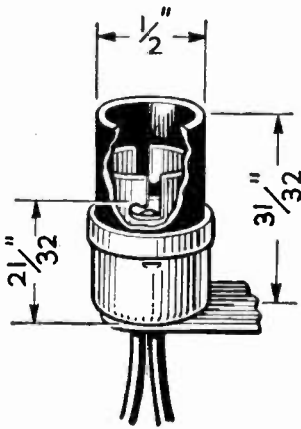


# Dial and Jewel PILOT LIGHT ASSEMBLIES

## MINIATURE BAYONET LIGHT SOCKET ASSEMBLIES

### No. 500 SERIES

For Underwriters' Approved AC-DC  
Radio Receivers



In this socket assembly the bayonet shell is protected from outside contact by a sturdy fishpaper insulating shield. The lead wires are an integral part of the unit and both are secured within the socket so that they will withstand a tension over 25 pounds.

Rounded edges on the opening at the base prevent cut and frayed lead wire insulation.

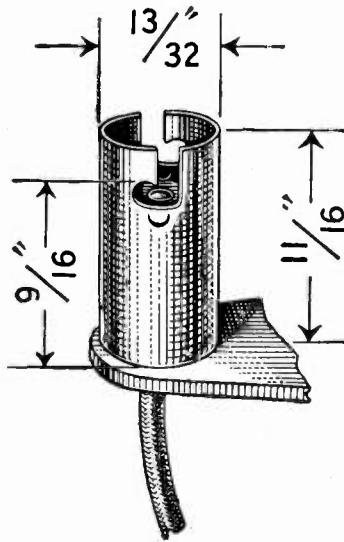
The assembly will withstand a minimum breakdown voltage of 1000 volts between contacts and to ground.

All parts are fitted so that there can be no rotation of one part with respect to another. This means that there is absolute rigidity from the mounting bracket to the bayonet shell which supports the lamp. The center contact cannot protrude from the socket when the lamp is removed.

The standard assembly is equipped with No. 22 gauge wire, however No. 20 wire can be used.

### No. 700 SERIES

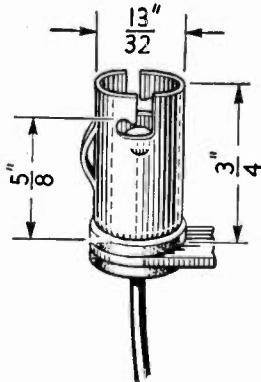
For Underwriters' Approved AC  
Radio Receivers



In this socket assembly the bayonet shell is electrically connected to the mounting bracket. It is secured in such a way that it cannot rotate. The lead wire is an integral part of the unit and is secured tightly enough to withstand a tension of over 25 pounds. The center contact cannot protrude when the lamp is removed.

The assembly will withstand a minimum breakdown voltage of 1,000 volts between the center contact and ground.

The assembly is customarily built with No. 22 gauge wire; however any other gauge up to and including No. 16 wire can be used.



### No. 800 Series

In this socket assembly the bayonet shell is insulated from the bracket. The shell is bridged to provide a good solder connection for one lead wire. The center lead wire is built-in, and the center contact cannot protrude when the lamp is removed. Upon request the assembly can be furnished with two lead wires or no lead wires.

### COMMENTS ON ALL ASSEMBLIES ILLUSTRATED HERE

The 500 and 700 types can be wired in series or parallel, but the 800 type can only be wired in series. See wire table for various lengths, color and insulation of lead wires.

NOTE: On orders for less than 500 assemblies, no choice of leads is given. All assemblies will be supplied with 10" of No. 22 plastic insulated wire stripped 1/2" long.

The assemblies can be attached to any of the mounting brackets shown in the listing of dial light assemblies. We also have approximately 900 other mounting brackets that are not listed. If you will submit your lighting problem to us, we are certain that we can offer you a satisfactory solution.

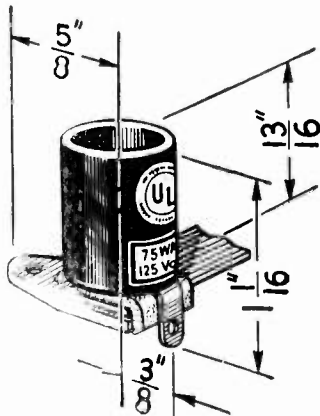


# Dial and Jewel PILOT LIGHT ASSEMBLIES

## SOCKET ASSEMBLIES AND JEWELS

### No. 300 SERIES

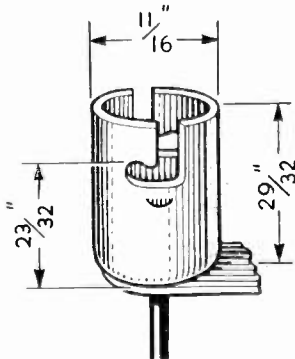
Candelabra Screw Base  
Underwriters' Approved for General Use



The No. 300 socket assembly is a candelabra screw socket, Underwriters' approved for 75 watt, 125 volt service. It can be attached to any of the brackets shown in the listing of dial light assemblies. We also have approximately 900 other mounting brackets that are not listed. If you will submit your lighting problem to us, we are certain that we can offer you a satisfactory solution.

### No. 1000 Series

Single Contact Candelabra Bayonet  
Automotive Type



This unit is an inexpensive assembly suitably adapted for use in 6 to 115 volt circuits. It has a built in center lead wire and the socket and bracket form the ground connection. The unit is sturdily constructed and designed so that the center contact cannot protrude when the lamp is removed.

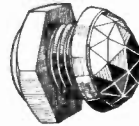
This socket can be supplied mounted to any one of the brackets illustrated with the 900 and A900 socket assemblies. If they do not meet your requirements, we have the facilities to build them to your specifications.

The standard Number 1000 type Assembly is equipped with 10 inches of No. 18 (16 strands No. 30) tinned copper wire insulated with 1/32" of plastic insulation. See wire table. Assemblies can be wired in parallel.

On orders of more than 500 units No. 22 to No. 16 gauge wire is available.

NOTE: Can be sold knocked down into extruded shell, spring, and pigtail with center contact and washer attached.

### 1/2" Jewels



THREADED TYPE



SLOTTED TYPE

### THREAD TYPE WITH NUTS

16CSP	Shank 3/8" long, 1 1/8" O.D.
16 1/2CSP	Shank 1/2" long, 1 1/8" O.D.

### SLOTTED TYPES

22CSP	Shank 1/8" long, 3/8" O.D.
23CSP	Shank 1 1/8" long, 3/8" O.D.
31CSP	Shank .085" long, 3/8" O.D.

JEWELS: Diamond cut (faceted), Amber, Blue, Crystal, Green, Ruby, White (Milk White) and Yellow.

SPECIAL JEWELS: SP—Smooth, plain; SFA—Smooth, frosted all over; SFB—Smooth, frosted back

SPECIAL FINISHES: Chrome, Black Nickel, Statuary Bronze.

### 11/32" Jewels . . . Slotted Types Only

JEWELS: Diamond cut (faceted), Amber, Crystal, Green, Ruby, White (Milk White). Also supplied with smooth plain glass (specify "SP") at same price.



FINISHES: Regular finish Statuary Bronze. Also supplied in nickel finish if so ordered, at same price.

21CSP, slotted type, Shank 1/8" long, 3/8" O.D.
24CSP, slotted type, Shank 1/4" long, 3/8" O.D.

### 1" Threaded Jewel Assembly

#### No. 75A3

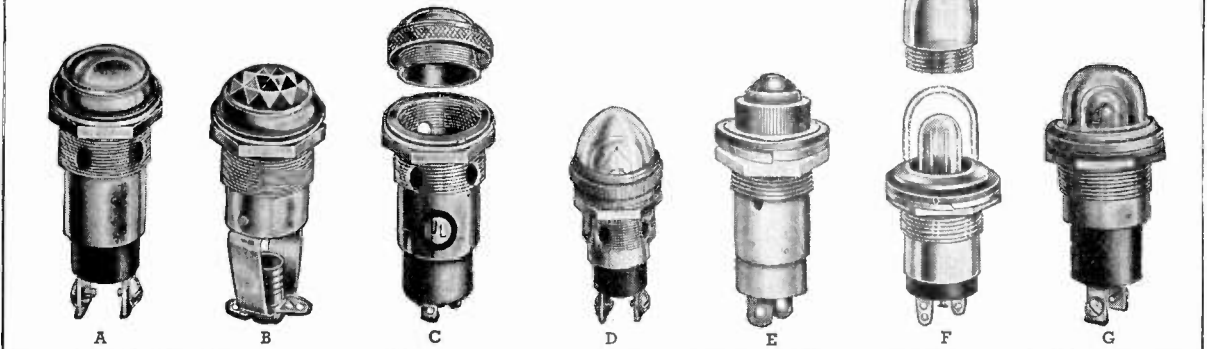


Mounts in 1" diameter hole on panels up to 1/4" thick by removing washers. The assembly is supplied complete with fibre washer, lock washer, and hex nut. The unit is water tight when mounted to the panel with a rubber gasket.



# E. F. JOHNSON Company WASECA, MINNESOTA

## LIGHT ASSEMBLIES



JOHNSON Indicator Light Assemblies are outstanding examples of sound engineering design, excellent material and careful workmanship. Their use is your assurance of complete satisfaction.

The listings on these two pages include only those standard units in greatest demand but many other types are readily available. Special assemblies can be furnished in production quantities.

Cat. No.	List Price	Illus.	Mounting Hole Size	Length Behind Panel <sup>7</sup>	Bulb Shape	Lamp Base	Jewels			Terminals		Insulation	Underwriter Approved	Color
							Type	Size	Holder	No.	Type			
147-800	\$1.05	B	1"	2 3/8"	G3 1/2, T3 1/4	Min. Screw	Faceted	1"	Friction	2	Solder	Fiber		
147-801	1.05	B	1"	2 3/8"	G3 1/2, T3 1/4	Min. Screw	Smooth	1"	Friction	2	Solder	Fiber		
147-802	1.10	B	1"	2 3/8"	S6	Cand. Screw	Faceted	1"	Friction	2	Solder	Fiber		
147-803	1.10	B	1"	2 3/8"	S6	Cand. Screw	Smooth	1"	Friction	2	Solder	Fiber		
147-804	1.10	B	1"	2 3/8"	G3 1/2, T3 1/4	Min. Bay.	Faceted	1"	Friction	2	Solder	Fiber		
147-805	1.10	B	1"	2 3/8"	G3 1/2, T3 1/4	Min. Bay.	Smooth	1"	Friction	2	Solder	Fiber		
147-1000	1.40	A	1"	2 1/8"	S6	Cand. Screw	Faceted	1"	Friction	2	Solder	Porcelain	Yes	
147-1001	1.40	A	1"	2 1/8"	S6	Cand. Screw	Smooth	1"	Friction	2	Solder	Porcelain	Yes	
147-1002	1.50	A	1"	2 1/8"	S6	Cand. Screw	Colored Disc <sup>6</sup>	1"	Friction	2	Solder	Porcelain	Yes	
147-1003	1.40	A	1"	2 1/8"	T4 1/2, NE45	Cand. Screw	Faceted	1"	Friction	2	Solder	Porcelain	Yes	
147-1004	1.40	A	1"	2 1/8"	T4 1/2, NE45	Cand. Screw	Smooth	1"	Friction	2	Solder	Porcelain	Yes	
147-1005	1.50	A	1"	2 1/8"	T4 1/2, NE45	Cand. Screw	Colored Disc <sup>6</sup>	1"	Friction	2	Solder	Porcelain	Yes	
147-1032	1.65	A	1"	2 3/4"	S6	Cand. Screw	Faceted	1"	Friction	2	Screw	Phenolic	Yes	
147-1033	1.65	A	1"	2 3/4"	S6	Cand. Screw	Smooth	1"	Friction	2	Screw	Phenolic	Yes	
147-1034	1.75	A	1"	2 3/4"	S6	Cand. Screw	Colored Disc <sup>6</sup>	1"	Friction	2	Screw	Phenolic	Yes	
147-1035	1.65	A	1"	2 1/8"	T4 1/2, NE45	Cand. Screw	Faceted	1"	Friction	2	Screw	Phenolic	Yes	
147-1036	1.65	A	1"	2 1/8"	T4 1/2, NE45	Cand. Screw	Smooth	1"	Friction	2	Screw	Phenolic	Yes	
147-1037	1.75	A	1"	2 1/8"	T4 1/2, NE45	Cand. Screw	Colored Disc <sup>6</sup>	1"	Friction	2	Screw	Phenolic	Yes	
147-1050	1.75	A	1"	2 1/2"	G6	S. C. Cand. Bay.	Faceted	1"	Friction	1	Screw	H. Rubber		
147-1081	1.75	A	1"	2 1/2"	G6	S. C. Cand. Bay.	Smooth	1"	Friction	1	Screw	H. Rubber		
147-1082	1.85	A	1"	2 1/2"	G6	S. C. Cand. Bay.	Colored Disc <sup>6</sup>	1"	Friction	1	Screw	H. Rubber		
147-1083	1.75	A	1"	2 1/2"	G6	D. C. Cand. Bay.	Faceted	1"	Friction	2	Screw	H. Rubber	Yes	
147-1084	1.75	A	1"	2 1/2"	G6	D. C. Cand. Bay.	Smooth	1"	Friction	2	Screw	H. Rubber	Yes	
147-1085	1.85	A	1"	2 1/2"	G6	D. C. Cand. Bay.	Colored Disc <sup>6</sup>	1"	Friction	2	Screw	H. Rubber	Yes	
147-1086	1.75	A	1"	2 5/8"	G6, NE48	D. C. Cand. Bay. <sup>1</sup>	Faceted	1"	Friction	2	Screw	H. Rubber	Yes	
147-1087	1.75	A	1"	2 5/8"	G6, NE48	D. C. Cand. Bay. <sup>1</sup>	Smooth	1"	Friction	2	Screw	H. Rubber	Yes	
147-1088	1.85	A	1"	2 5/8"	G6, NE48	D. C. Cand. Bay. <sup>1</sup>	Colored Disc <sup>6</sup>	1"	Friction	2	Screw	H. Rubber	Yes	
147-1076	2.00	A	1"	2 5/8"	G6, NE48	D. C. Cand. Bay. <sup>2</sup>	Faceted	1"	Friction	2	Screw	H. Rubber	Yes	
147-1077	2.00	A	1"	2 5/8"	G6, NE48	D. C. Cand. Bay. <sup>2</sup>	Smooth	1"	Friction	2	Screw	H. Rubber	Yes	
147-1078	2.10	A	1"	2 5/8"	G6, NE48	D. C. Cand. Bay. <sup>2</sup>	Colored Disc <sup>6</sup>	1"	Friction	2	Screw	H. Rubber	Yes	
147-1110	1.15	E	1 1/8"	1 5/8"	T3 1/4	Min. Bay.	Faceted	3/8"	Threaded	2	Solder	Phenolic		
147-1111	1.15	E	1 1/8"	1 5/8"	T3 1/4	Min. Bay.	Smooth	3/8"	Threaded	2	Solder	Phenolic		
147-1112	1.15	E	1 1/8"	1 5/8"	G3 1/2	Min. Bay.	Faceted	1 1/2"	Threaded	2	Solder	Phenolic		
147-1113	1.15	E	1 1/8"	1 5/8"	G3 1/2	Min. Bay.	Smooth	1 1/2"	Threaded	2	Solder	Phenolic		
147-1142	1.10	F	1 1/8"	1 5/8"	T3 1/4	Min. Bay.	Lucite	5/8"	Threaded	2	Solder	Phenolic	Yes	
147-1143	1.25	F	1 1/8"	1 5/8"	T3 1/4, NES1	Min. Bay. <sup>3</sup>	Lucite	5/8"	Threaded	2	Solder	Phenolic	Yes	
147-1144	1.25	F	1 1/8"	1 5/8"	T3 1/4, NES1	Min. Bay. <sup>4</sup>	Lucite	5/8"	Threaded	2	Solder	Phenolic	Yes	
147-1200	1.65	C	1"	2 3/8"	S6	Cand. Screw	Faceted	1"	Threaded	2	Solder	Porcelain	Yes	
147-1201	1.65	C	1"	2 3/8"	S6	Cand. Screw	Smooth	1"	Threaded	2	Solder	Porcelain	Yes	
147-1202	1.75	C	1"	2 3/8"	S6	Cand. Screw	Colored Disc <sup>6</sup>	1"	Threaded	2	Solder	Porcelain	Yes	
147-1209	1.90	C	1"	2 3/8"	S6	Cand. Screw	Faceted	1"	Threaded	2	Screw	Phenolic	Yes	
147-1210	1.90	C	1"	2 3/8"	S6	Cand. Screw	Smooth	1"	Threaded	2	Screw	Phenolic	Yes	
147-1211	2.00	C	1"	2 3/8"	S6	Cand. Screw	Colored Disc <sup>6</sup>	1"	Threaded	2	Screw	Phenolic	Yes	
147-1212	1.90	C	1"	2 1/8"	T4 1/2, NE45	Cand. Screw	Faceted	1"	Threaded	2	Screw	Phenolic	Yes	
147-1213	1.90	C	1"	2 1/8"	T4 1/2, NE45	Cand. Screw	Smooth	1"	Threaded	2	Screw	Phenolic	Yes	
147-1214	2.00	C	1"	2 1/8"	T4 1/2, NE45	Cand. Screw	Colored Disc <sup>6</sup>	1"	Threaded	2	Screw	Phenolic	Yes	
147-1217	1.90	G	1"	1 1/2"	T4 1/2, NE45	Cand. Screw	Lucite	1"	Threaded	2	Screw	Phenolic	Yes	
147-1218	1.60	G	1"	1 1/2"	T3 1/4, NES1	Min. Bay. <sup>5</sup>	Lucite	1"	Threaded	2	Solder	Phenolic	Yes	
147-1219	2.10	G	1"	2 1/8"	T4 1/2 G6, NE48	D. C. Cand. Bay. <sup>1</sup>	Lucite	1"	Threaded	2	Screw	H. Rubber	Yes	
147-1220	2.25	G	1"	2 1/8"	T4 1/2 G6, NE48	D. C. Cand. Bay. <sup>2</sup>	Lucite	1"	Threaded	2	Screw	H. Rubber	Yes	
147-1600	2.00	D	1"	2 1/8"	S6	Cand. Screw	Glass	1 1/8"	Threaded	2	Screw	Phenolic	Yes	
147-1604	2.00	D	1"	1 3/8"	G6	S. C. Cand. Bay.	Glass	1 1/8"	Threaded	1	Screw	H. Rubber		
147-1605	2.00	D	1"	1 3/8"	G6	D. C. Cand. Bay.	Glass	1 1/8"	Threaded	2	Screw	H. Rubber	Yes	

SPECIFY COLOR: RED, GREEN, AMBER, BLUE, OPAL, CLEAR. FOR NEON DO NOT USE BLUE, GREEN, OPAL

(1) Requires 30,000 ohm external resistor with NE48.  
 (2) Has built in 30,000 ohm resistor for NE48.  
 (3) Has built in 200,000 ohm resistor for NE51.  
 (4) Has built in 100,000 ohm resistor for NE51, brighter glow but decreased life.  
 (5) Requires 200,000 ohm external resistor for NE51.  
 (6) See "Colored Disc" explanation at right.  
 (7) Max. length from front of panel.

\* **COLORED DISCS**—Where this designation (\*) appears, a colored plastic disc is placed behind a clear sandblasted (frosted) smooth jewel, to conceal color until lighted. Also prevents external light from giving appearance of bulb being lighted.

In addition, lettering, numerals, or insignia may be printed on a plastic disc back of the jewel, and arranged to be visible either continuously or only after lamp is lighted.

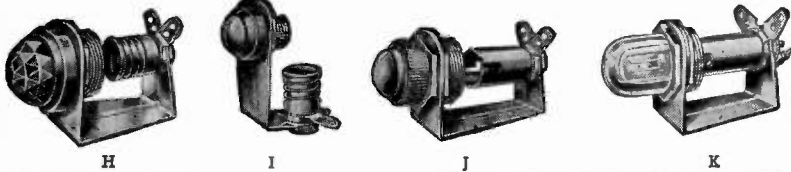




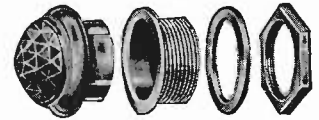
# E. F. JOHNSON Company

WASECA, MINNESOTA

## BRACKET TYPE PILOT LIGHTS AND JEWEL ASSEMBLIES



### JEWEL ASSEMBLIES



Colors, all types: Red, Green, Amber, Blue, Opal, Clear.

One-inch jewel, polished chrome bezel, with mounting sleeve to fit 1-inch hole, fiber washer and nut.

Cat. No.	List Price
147-110—Faceted Jewel	\$.70
147-111—Smooth Jewel	.70
147-112—Colored Disc*	.80

5/8-inch jewel in polished chrome holder, fits 1/2-inch mounting hole.

147-210—Faceted Jewel	\$.40
147-211—Smooth Jewel	.40

1/2-inch jewel, nickel-plated holder and nut, fits 5/8-inch mounting hole.

147-310—Faceted Jewel	\$.25
147-311—Smooth Jewel	.25

3/8-inch jewel, nickel-plated holder and nut, fits 3/8-inch mounting hole.

147-510—Faceted Jewel	\$.20
147-511—Smooth Jewel	.20

1/2-inch jewel, nickel-plated, threaded holder and mounting sleeve to fit 1/2-inch hole.

147-410—Faceted Jewel	\$.40
147-411—Smooth Jewel	.40

### SPECIAL TYPES

JOHNSON manufactures a complete line of bracket-type pilot lights and jewel assemblies. Illustrated are only a few of the more popular types. JOHNSON can readily fill your requirements for any type, regardless of specifications.

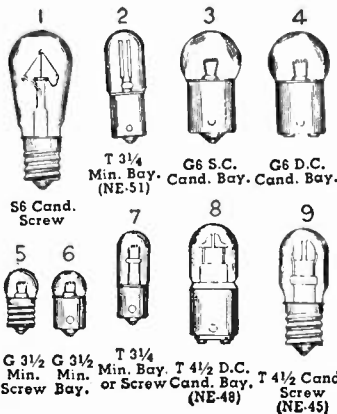
Cat. No.	List Price	Mounting Illustration	Hole Size	Lgh. Behind Panel	Bulb (1)		Jewel		
					Shape	Base	Type	Size	Color
147-100	\$0.80	H	1"	1 1/2"	G3 1/2, T3 1/4	Min. Scr.	Faceted (4)	1"	S
147-101	.80	H	1"	1 1/2"	G3 1/2, T3 1/4	Min. Scr.	Smooth (4)	1"	P
147-103	.85	H	1"	2 1/8"	S6	Cand. Scr.	Faceted (4)	1"	E
147-104	.85	H	1"	2 1/8"	S6	Cand. Scr.	Smooth (4)	1"	C
147-106	.85	H	1"	1 1/2"	G3 1/2, T3 1/4	Min. Bay.	Faceted (4)	1"	I
147-107	.85	H	1"	1 1/2"	G3 1/2, T3 1/4	Min. Bay.	Smooth (4)	1"	F
147-200	.60	I	1 1/8"	1 1/4"	G3 1/2	Min. Scr.	Faceted	5/8"	Y
147-201	.60	I	1 1/8"	1 1/4"	G3 1/2	Min. Scr.	Smooth	5/8"	
147-203	.65	I	1 1/8"	1 1/4"	S6	Cand. Scr.	Faceted	5/8"	C
147-204	.65	I	1 1/8"	1 1/4"	S6	Cand. Scr.	Smooth	5/8"	O
147-206	.65	I	1 1/8"	1"	G3 1/2	Min. Bay.	Faceted	5/8"	L
147-207	.65	I	1 1/8"	1"	G3 1/2	Min. Bay.	Smooth	5/8"	O
147-300	.40	I	7/8"	1 1/4"	G3 1/2	Min. Scr.	Faceted	1/2"	R
147-301	.40	I	7/8"	1 1/4"	G3 1/2	Min. Scr.	Smooth	1/2"	
147-303	.45	I	7/8"	1 1/4"	S6	Cand. Scr.	Faceted	1/2"	Clear
147-304	.45	I	7/8"	1 1/4"	S6	Cand. Scr.	Smooth	1/2"	Red
147-306	.45	I	7/8"	1"	G3 1/2	Min. Bay.	Faceted	1/2"	Green
147-307	.45	I	7/8"	1"	G3 1/2	Min. Bay.	Smooth	1/2"	Amber
147-400	.55	J	1 1/8"	1 1/4"	G3 1/2, T3 1/4	Min. Scr.	Faceted (4)	1/2"	Blue
147-401	.55	J	1 1/8"	1 1/4"	G3 1/2, T3 1/4	Min. Scr.	Smooth (4)	1/2"	Opal
147-403	.60	J	1 1/8"	1 1/2"	G3 1/2, T3 1/4	Min. Bay.	Faceted (4)	1/2"	
147-404	.60	J	1 1/8"	1 1/2"	G3 1/2, T3 1/4	Min. Bay.	Smooth (4)	1/2"	
147-406	.55	K	1 1/8"	1 1/4"	T3 1/4	Min. Bay.	Lucite (4)	5/8"	For
147-407	.70	K	1 1/8"	1 1/4"	T3 1/4, NE51	Min. Bay. (2)	Lucite (4)	5/8"	Neon
147-408	.70	K	1 1/8"	1 1/4"	T3 1/4, NE51	Min. Bay. (3)	Lucite (4)	5/8"	DO NOT
147-700	.60	H	1 1/8"	1 1/4"	G-3 1/2	Min. Scr.	Faceted	5/8"	Use:
147-701	.60	H	1 1/8"	1 1/4"	G-3 1/2	Min. Scr.	Smooth	5/8"	Blue
147-703	.65	H	1 1/8"	1 1/2"	G-3 1/2	Min. Bay.	Faceted	5/8"	Green
147-704	.65	H	1 1/8"	1 1/2"	G-3 1/2	Min. Bay.	Smooth	5/8"	Opal

- (1) See bulb and base illustrations below.
- (2) With 200,000-ohm built-in resistor for NE51.
- (3) With 100,000-ohm resistor. Brighter glow reduced lamp life.
- (4) Bulb removable from front of panel.

\* See page G-21 for explanation.

### BULB SPECIFICATIONS

Bulbs used on all pilot lights may be identified from these illustrations, but are not included in prices.



S6 Cand. Screw

T 3/4 Min. Bay. (NE-51)

G6 S.C. Cand. Bay.

G6 D.C. Cand. Bay.

G 3 1/2 Min. Screw

G 3 1/2 Min. Bay. or Screw

T 3/4 Min. Bay. (NE-48)

T 4 1/2 D.C. Cand. Bay. (NE-45)

### PANEL LIGHT

For front panel illumination. Has polished nickel hood, easily removable for lamp replacement; can be rotated to any position. Fits 1/2" mounting hole. Made for miniature bayonet or screw base, T 3/4 or G 3 1/2, bulbs.



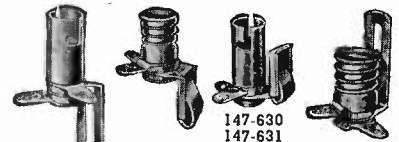
Cat. No.	List Price
147-330—Miniature Screw Base	\$.80
147-329—Miniature Bayonet Base	.90

### VARIABLE LIGHT INTENSITY

Pilot lights similar to 147-400, -800, -1110, -1200 can be furnished with either polarized or shutter type variable light intensity jewel holders. Information on request.

### DIAL LIGHT BRACKETS

Brackets insulated on all types. Many other styles and combinations can be furnished from available tools, also with wire leads.



147-610	147-640	147-600
147-611	147-641	147-620
		147-601
		147-621

Cat. No.	Socket	List Price
147-600	Min. Screw (Bracket Down)	\$.13
147-601	Min. Screw (Bracket Up)	.13
147-610	Min. Bay. (Bracket Down)	.16
147-611	Min. Bay. (Bracket Up)	.16
147-620	Cand. Screw (Bracket Down)	.16
147-621	Cand. Screw (Bracket Up)	.16
147-630	Min. Bay. (Bracket Down)	.17
147-631	Min. Bay. (Bracket Up)	.17
147-640	Min. Screw (Bracket Down)	.14
147-641	Min. Screw (Bracket Up)	.14

DO NOT FAIL TO SPECIFY COLOR OF JEWELS. PRICES DO NOT INCLUDE BULBS.

# GENERAL ELECTRIC

## RADIO DIAL LAMPS

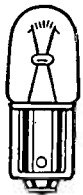
Designed and engineered for the job

**B**ECAUSE of the vibration conditions under which G-E radio dial lights must operate, General Electric devotes special care to their design and manufacture. Filaments are designed to vibrate without damage and are secured by a shake-proof joint.

General Electric research is constantly at work to assure the quality and serviceability of G-E radio dial lamps. Shock tests, vibration tests and base torsion tests are used in the laboratory to make certain your customers will get good service from the G-E bulbs you install.

Features like these make it worthwhile for you to sell and install G-E miniature lamps:

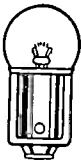
1. Dependable, trouble-free performance.
2. High level of maintained light output.
3. Low current consumption.
4. Long life.
5. Profitable to handle.
6. Preferred by both dealers and customers.



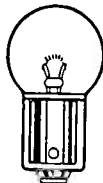
T-3/4  
Miniature  
Bayonet



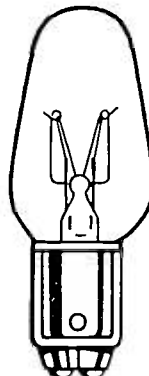
T-3/4  
Miniature  
Screw



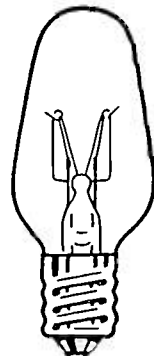
G-3 1/2  
Miniature  
Bayonet



G-4 1/2  
Miniature  
Bayonet



C-7  
Double-Contact  
Bayonet



C-7  
Candelabra  
Screw

### SPECIFICATIONS AND PRICES

Lamp Number	40	41	42	43	*44	45	*46	*47	48	49	51	55	*1490	10C7	10C7DC
Volts	6-8	2.5	3.2	2.5	6-8	3.2	6-8	6-8	2	2	7.5	7.0	3.2	115-25	115-25
Amps	0.15	0.50	0.35	0.50	0.25	0.35	0.25	0.15	0.06	0.06	Max.0.25	Max.0.45	0.16	10 watts	10 watts
#Bulb	T-3/4	T-3/4	T-3/4	T-3/4	T-3/4	T-3/4	T-3/4	T-3/4	T-3/4	T-3/4	G-3 1/2	G-4 1/2	T-3/4	C-7	C-7
Base	Min. Screw	Min. Screw	Min. Screw	Min. Bay.	Min. Bay.	Min. Bay.	Min. Screw	Min. Bay.	Min. Screw	Min. Bay.	Min. Bay.	Min. Bay.	Min. Bay.	Cand. Screw	D.C. Bay.
Bead Color	Brown	White		White	Blue		Blue	Brown	Pink						
Price	\$0.10T	\$0.10T	\$0.12T	\$0.10T	\$0.10T	\$0.12T	\$0.10T	\$0.10T	\$0.15T	\$0.15T	\$0.09V	\$0.09V	\$0.11T	\$0.15T	\$0.22T

# Bulbs are designated by a letter to indicate shape and a figure to indicate the approximate diameter in eighths of an inch.

\* Most popular types.

T After price indicates Federal Excise Tax will be billed as a separate item at 6.3% of list price.

V After price indicates Federal Excise Tax will be billed as a separate item at 1.6% of list price.

## GENERAL ELECTRIC

### LAMP DEPARTMENT DISTRICT OFFICES

Atlanta 3, Ga.	187 Spring St., N. W.	WAlnut 9767	N. Kansas City 16, Mo.	200-210 E. 16th Ave.	NOrcley 3568
Boston 10, Mass.	50 High St.	HANcock 1680	Los Angeles 13, Cal.	601 W. Fifth St.	Mlchigan 8851
Buffalo 2, N. Y.	1 West Genesee St.	Cleveland 3400	Minneapolis 13, Minn.	500 Stinson Blvd.	GRanville 7286
Charlotte 2, N. C.	516 Johnston Bldg.	4-8614	New York 22, N. Y.	570 Lexington Ave.	Wlckersham 2-6300
Chicago 4, Illinois	230 So. Clark St.	DEArborn 2-4712	Oakland 7, Cal.	1614 Campbell St.	Hlghgate 7340
Cincinnati 2, Ohio	738-9 Union Trust Bldg.	DUNbar 2460	Philadelphia 2, Pa.	1405 Locust Street	Klngsley 5-3336
Cleveland 14, Ohio	1320 Williamson Bldg.	CHerry 1010	Pittsburgh 22, Pa.	535 Smithfield St.	GRant 3272
Dallas 2, Texas	1801 N. Lamar St.	CEntral 7711	Portland 9, Oregon	1238 N.W. Gilsan St.	BEacon 2101
Denver 2, Colorado	1863 Wazee St.	MAIn 6141	St. Louis 1, Mo.	710 N. Twelfth Blvd.	CHestnut 8920
Detroit 26, Michigan	1400 Book Tower	WOodward 3-6910			

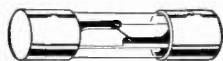
General Office: Nela Park, Cleveland 12, Ohio. GLenville 6600

# BUSS Fuses

## FUSETRON DUAL-ELEMENT Fuses and Fuse Holders

*for Protection of Radios, Instruments and Electronic Equipment*

### FAST ACTING FUSES for PROTECTION OF INSTRUMENTS, Etc.



Formerly called 8AG.  
Dimension  $\frac{1}{4}$  x 1 inch, Glass tube.

Provide high speed action necessary to protect sensitive instruments.

Test specification—carry 100%, open at 200% in 5 seconds.

Listed as approved by Underwriters' Laboratories.

Voltage	Symbol	Amperes	List Price
250 or less	MJB	$\frac{1}{5}00$	\$0.70
"	MJB	$\frac{1}{2}00$	.30
"	MJB	$\frac{1}{1}00$ or $\frac{1}{3}2$	.20
"	MJB	$\frac{1}{1}6$	.15



Formerly called 8AG  
Dimension  $\frac{1}{4}$  x 1 inch, Glass tube.

Provide high speed action necessary to protect instruments.

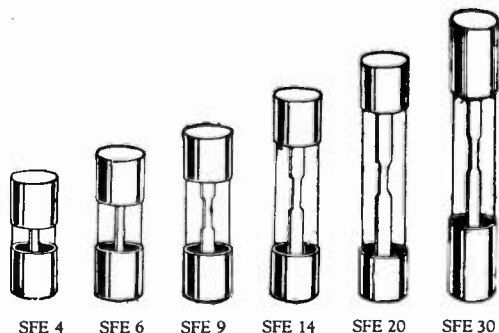
Test specification—carry 100%, open at 200% in 5 seconds.

Listed as approved by Underwriters' Laboratories.

Voltage	Symbol	Amperes	List Price
250 or less	AGX	$\frac{1}{8}$	\$0.15
"	AGX	$\frac{1}{4}$ , $\frac{3}{8}$ or $\frac{1}{2}$	.12
125 or less	AGX	$\frac{3}{4}$	.12
"	AGX	1, $1\frac{1}{2}$ or 2	.10

### BUSS FUSES — SFE STANDARD

All cuts actual size. Fuses of different amperages are of different lengths — to make it impossible to insert too large a size — thereby preventing over-fuseing.



Glass tube — diameter  $\frac{1}{4}$  inch. Length as per table below.

Test specification—carry 100%, open at 125% in  $\frac{1}{2}$  hour.

Listed as approved by Underwriters' Laboratories.

Made according to specifications of Society of Automotive Engineers.

Voltage	Symbol & Amperes	Length Inches	Pounds per 100	List Price
32 or less	SFE 4	$\frac{5}{8}$	.70	\$0.05
"	SFE 6	$\frac{3}{4}$	.71	.05
"	SFE 9	$\frac{7}{8}$	.72	.04
"	SFE 14	$1\frac{1}{16}$	.77	.04
"	SFE 20	$1\frac{1}{4}$	.83	.035
"	SFE 30	$1\frac{1}{8}$	1.05	.06

### BUSS GLASS TUBE FUSES, $\frac{1}{4}$ x $1\frac{1}{4}$ inch



AGC and MTH 4, 5 and 6



MTH 8

Formerly called 3AG

Test specification—carry 110%, open at 135% in 1 hour.

Listed as approved by Underwriters' Laboratories.

Shipping weight 0.8 lbs. per 100.

Voltage	Symbol	Amperes	List Price
250 or less	AGC	$\frac{1}{8}$ , $\frac{1}{4}$ , $\frac{3}{8}$ , $\frac{1}{2}$ or $\frac{3}{4}$	\$0.15
"	AGC	1, $1\frac{1}{2}$ , 2 or 3	.07
"	MTH	4, 5 or 6	.10
"	MTH	8	.15



Formerly called 3AG

Test specification—carry 110%, open at 135% in 1 hour.

Shipping weight 0.8 lbs. per 100.

Voltage	Symbol	Amperes	List Price
32 or less	AGC	5, 6 or $7\frac{1}{2}$	\$0.05
"	AGC	10 or 15,	.04
"	AGC	25 or 30,	.05

20 ampere size is an SFE 20 fuse. Sizes larger than 30 ampere are not recommended as clips or fuse holders would not permit fuse to carry such high currents. If surges or starting currents make heavier fuse necessary, use MDL Fuse-tron dual-element fuses.

### BUSS BAKELITE TUBE FUSES, $\frac{1}{4}$ x $1\frac{1}{4}$ inch



Formerly called 3AB

Test specification—carry 110%, open at 135% in 1 hour.

Shipping weight 1 lb. per 100.

Voltage	Symbol	Amperes	List Price
250 or less	ABC	10, 12 or 15	\$0.15

### FUSETRON FUSES, $\frac{1}{4}$ x $1\frac{1}{4}$ inch

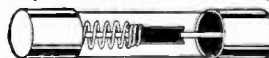
Glass tube — Dual-Element type



$\frac{1}{100}$  and  $\frac{1}{32}$  amp.



$\frac{1}{16}$  to 2 amp.



$2\frac{1}{2}$  to 30 amp.

#### A FUSE WITH A LONG TIME-LAG

These fuses avoid needless blows from starting currents or surges. They have a fuse link which operates only on very high overloads or short-circuits — they have a thermal cutout which functions on low overloads — the thermal cutout cannot operate quickly at any load, hence long time-lag is obtained. Yet protection is afforded against short-circuits or continued overloads.

Test specification—carry 110%, open at 135% in 1 hour.

Approximate blowing time: at 200% load 25 seconds  
at 300% " 8 "  
at 500% " 3 "

125 and 250 volt sizes listed as approved by Underwriters' Laboratories.

Shipping weight 0.9 lbs. per 100.

Voltage	Symbol	Amperes	List Price
250 or less	MDL	$\frac{1}{100}$ , $\frac{1}{32}$ , $\frac{1}{16}$ , $\frac{1}{10}$ , $1\frac{1}{100}$ , $\frac{2}{10}$ , $\frac{3}{10}$ , $\frac{4}{10}$ , $\frac{1}{2}$ , $\frac{3}{10}$ , $\frac{4}{10}$ or 1	\$0.25
125 or less	MDL	$1\frac{1}{4}$ , $1\frac{1}{10}$ , 2, $2\frac{1}{2}$	.20
32 or less	MDL	$3\frac{1}{10}$ , 4, 5, $6\frac{1}{4}$ , 8, 10, 15, 20, 25 or 30	.20

# BUSS Fuses

## FUSETRON DUAL-ELEMENT Fuses and Fuse Holders

for Protection of Radios, Instruments and Electronic Equipment

### BUSS FUSE CLIPS for 1/4 inch Fuses

(SFE4, 6, 9, 14, 20, AGX, AGC, ABC, MDL, MJB, MTH fuses)



Spring bronze clips are made of Herculoy — a bronze of distinctly superior quality for spring clips. This metal gives clips great gripping strength and ability to retain spring under adverse conditions.

Beryllium copper clips combine low electrical resistance with great gripping strength. This means maximum electrical conductivity and results in cooler operation of clips and fuse.

Size of mounting hole; .130 to .135 inch.  
Center of hole to back-stop; .125 to .135 inch.  
Min. length of contact surface; 5/32 inch  
Maximum height; 1 1/32 inch  
Maximum width; 1 1/32 inch  
Shipping weight; 3 lbs. per 100

4548 Spring bronze clip, Nickel plated. List Price \$0.02  
4592 Beryllium copper clip, Silver plated. .05

### BUSS CLIP ASSEMBLIES for 1/4 inch Fuses

(SFE4, 6, 9, 14, 20, AGX, AGC, ABC, MDL, MJB, MTH fuses)

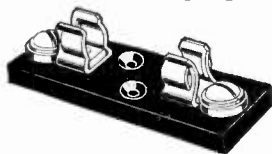


Clips as described above. Brass terminal. 3/16 inch 6-32 washer head terminal screw. 1/4 inch 4-40 flat head iron mounting screw. Shipping weight; 1 lb. per 100

4431 includes No. 4548 spring bronze clip, terminal screw, terminal and mounting screw. List Price \$0.40  
4432 includes No. 4592 beryllium copper clip, terminal screw, terminal and mounting screw. List Price \$0.40

### BUSS FUSE BLOCKS

Bakelite base blocks 3/16 inch thick. Countersunk mounting holes for No. 6 flat head screws. Brass No. 6 terminal screws. No. 4548 spring bronze clips.



Full base, Screw terminal Blocks

For Fuses	One Pole	List Price	Two Pole	List Price	Three Pole	List Price
SFE4	4511	\$0.35	4521	\$0.70	4531	\$1.00
SFE6	4516	.35	4526	.70	4536	1.00
SFE9	4517	.35	4527	.70	4537	1.00
SFE14, AGX, MJB	4514	.35	4524	.70	4534	1.00
SFE20, ABC, AGC, MDL, MTH	4512	.35	4522	.70	4532	1.00



Small base, Solder Terminal Blocks

For Fuses	One Pole	List Price	Two Pole	List Price	Three Pole	List Price
SFE14, AGX, MJB	4520	\$0.15	4485	\$0.30	4403	\$0.45
SFE20, ABC, AGC, MDL, MTH	4405	.15	4408	.30	4411	.45

### Other standard fuse blocks and special fuse blocks

If blocks shown do not fit your requirements ask for information on other standard types and sizes.

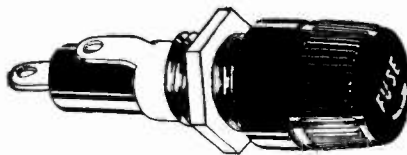
If special fuse block is required, send description or sketch, showing type of fuse to be used, number of circuits, type of terminals, etc. We welcome such inquiries.

### BUSS FUSE HOLDERS

Make it convenient to mount fuse on any equipment. Changing or inspection of fuse is easy and quick. Holder has removable knob. Fuse projects beyond body of holder and is not held tight on other end when knob is removed.

Fuse and contacts are protected from dirt and fumes. Good contact on fuse is made certain by strong coil spring pressure. Poor contact heating that often causes fuse to burn needlessly is eliminated.

Holder bodies are made of black bakelite. All current carrying parts are of brass or copper. Terminals and all contact parts are bright alloy plated.



### Panel Mounted Holders for 1/4 inch Fuses

Holders are inserted through hole in panel and are locked in place by nut on holder. They can be used on panels up to 5/16 inch thick.

Bayonet type knob requires only quarter turn to remove fuse. No screw driver is needed.

Side terminal is held mechanically as well as by solder. Heat of soldering wire to it will not cause it to loosen or come off.

Vibration will not cause failure of terminals as they are designed to stand severe service.

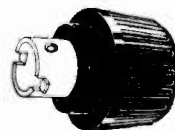
Neoprene washer and steel locking nut (zinc plated, chromate dipped) furnished with each holder.

Wire hole in terminals; .115 inch.

Normal current carrying capacity; 15 amperes.

Listed as Approved by Underwriters' Laboratories.

Shipping weight; 4 lbs. per 100 List Price  
HJM for 1/4 x 1 inch fuses (AGX, MJB, SFE 14) \$0.40  
HKP for 1/4 x 1 1/4 inch fuses (ABC, AGC, SFE20, MDL, MTH) .40



### IN-THE-LINE HOLDERS for 1/4 inch fuses

These holders are for mounting fuse in wire. Holders consist of body and bayonet type knob — two terminal contacts ready to be crimped on ends of wire — a pressure spring that is used under contact in base of holder.

Holders can also be mounted in panel up to 5/16 inch thick by means of a No. C-1437-018-27 Tinnerman nut (Nut not furnished). Flat spot on holder permits it to be locked against rotation.

Normal current carrying capacity; 15 amperes.

Shipping weight, holders: 4 lbs. per 100.

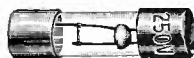
Type	List Price
HDI for 1/4 x 1 inch fuses (AGX, MJB, SFE 14) Takes No. 18 or smaller wires.	\$0.20
HDI-A for 1/4 x 1 1/4 inch fuses (ABC, AGC, MDL, MTH, SFE 20) Takes No. 18 or smaller wires.	.20
HDI-B for 1/4 x 1 1/4 inch fuses (as above) Takes No. 14 or 16 wires.	.20

# LITTELFUSE

"Quicker than a Short Circuit"

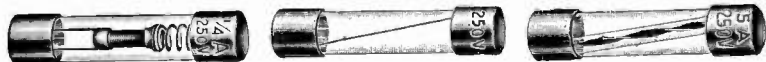
## 3AG INSTRUMENT high speed LITTELFUSES

Locked Cap Assembly and other exclusive Littelfuse features for protection of delicate test equipment, galvanometers, microammeters, milliammeters, voltmeters, etc. Glass-enclosed: 1 x 1/4" dia., accurately rated, high speed action, short time lag. Voltage ratings up to 250 V., AC or DC. For higher voltages use fuses in series.



Catalog No.	Former No.	Amp. Rating	Max. Volt.	Ohms Res. @ 5 m.a.	APPLICATIONS			List Price Ea.
					Volt-meters Ohms P.V.	All Magnetic Movement Milliammeters	Thermo-couples	
361.005	1000	1/200	250	480.	Over 1000	Galvanometers	Up to 0-5	\$0.30
361.010	1001	1/100	250	160.0	1000	Up to 0-1	0-5 to 0-10	.20
361.031	1002	1/50	250	40.0	500-100	0-1 to 0-10	0-10 to 0-25	.20
361.062	1003	1/25	250	5.0	100-500	0-10 to 0-25	0-25 to 0-60	.15
361.125	1004	1/10	250	2.0	20-100	0-25 to 0-75	0-75 to 0-150	.15
361.250	1005	1/5	250	3.5	10 20	0-75 to 0-150	0-115 to 0-200	.15
361.375	1006	3/8	250	3.0	5-10	0-150 to 0-250	0-200 to 0-300	.15
361.500	1007	1/2	250	2.0	3-5	0-250 to 0-350	0-300 to 0-400	.15
361.750	1007-A	3/4	250	2.0		0-350 to 0-500	0-400 to 0-600	.15
361001.	1008	1	250	.24		0-500 to 0-750	0-600 to 0-1000	.10
36101.5	1008-A	1 1/2	250	.13		0-750 to 0-1000	0-1000 to 0-1500	.10
361002.	1009	2	250	.10		0-1000 to 0-1500	0-1500 to 0-2000	.10
361003.		3	32	.043		0-1500 to 0-2000	0-2000 to 0-3000	.10
361005.		5	32	.030		0-2000 to 0-4000	0-3000 to 0-6000	.10

## UNDERWRITERS' APPROVED 3 AG "LITTELFUSES"—250 Volts



"SLO-BLO"—thru 1/4 Amp. STANDARD—1/2 to 3 Amp. SLEEVE TYPE—4 to 8 Amp.

Littelfuse is the first manufacturer to receive Underwriters' approval of 3 AG fuses (1/4" x 1/4" dia.) in current ratings over 3 amps. at 250 volts. Following list gives standard approved ratings carried in stock. However, the Underwriters' approval to Littelfuse is a blanket approval from 1/4 to 6 amps. Intermediate ratings can be furnished without separate approval, at a small extra charge. Littelfuse name, the amperage and

voltage rating must appear on the fuse caps of approved-fuses. Many new fields are opened up by the extension of approval from 3 to 6 amps., where formerly bulky cartridges or plug fuses and their mountings were used. This applies specially to electrical appliances, heavy duty power supplies, amplifiers, radios, communication equipment, electronic devices, motors, etc.

Cat. No.	Former No.	Amp. Rating	Ohms Res.	List Price, Each
313.010*	1259	1/100	33.50	\$0.25
313.032*	1261	1/50	3.90	.25
313.062	1262	1/25	90	.25
313.125	1263	1/10	29	.25
313.187	1263-A	1/5	20	.25
313.250	1264	3/4	9.6	.25

### Ratings thru 1/4 Ampere—250 Volts

"Slo-Blo" fuses with high time lag—for circuits with equipment having high inductive or capacitive surges, heavy starting currents and intermittent-duty circuits. Anti-fatigue construction—compound element with spring and resistor.

Cat. No.	Former No.	Amp. Rating	Ohms Res.	List Price, Each
312.500	1046	1/2	3.1	\$0.15
312.750	1047	3/4	1.9	.15
312001.	1040	1	.24	.07
31201.5	1041	1 1/2	.15	.07
312002.	1042	2	.10	.07
312003.	1043	3	.06	.07

### Ratings 1/2 thru 3 Amp.—250 Volts

Quick-acting Standard Littelfuses with low time lag. Protective-coated elements prevent oxidation, promote clean fusion break. Diagonal element for accurate alignment, calibration.

Cat. No.	Former No.	Amp. Rating	Ohms Res.	List Price, Each
312004.	1357	4	.046	\$0.10
312005.	1358	5	.034	.10
312006.	1359	6	.030	.10

Std. Pkg. 100, wt., 1 1/2 lbs.

### 3 AB "LITTELFUSES"—250 Volts



Smallest, highest rated Underwriters' Laboratory approved fuses made. Bakelite-enclosed, arc-quenching, powder-filled fuses. Medium time lag.

### Ratings 4 thru 6 Amp.—250 Volts

Standard, quick-acting Littelfuses with diagonal elements. Low time lag—quick-acting.

Std. Pkg. 100—wt., 1 1/2 lbs.

\*Not Und. Approved.

Catalog No.	Former No.	Amp. Rating	List Price, Each
314008		8	\$0.15
314010	32155	10	.15
314012	32156	12	.15
314015	32159	15	.15
314020	32160	20	.15

## METER BACK MOUNTING



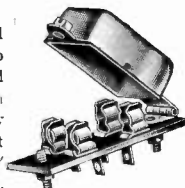
Cat. No. 383002 (1059)—Mounts directly on meter binding post. Will not touch other posts on smallest standard meter. Linen bakelite base, 1" x 1 1/8". Length over screw terminal, 1 1/4". Std. Pkg. 20. Wgt. 1/2 lb. List Price Each.....\$0.20

## FUSE MOUNTINGS (3AG)

### Hinged Cover Type

(Meets Underwriters' Requirements)

Cover fibre-lined. Metal shielded cover hinged to bakelite base. Terminal mounting extends through insulated base. Nut lightly staked to cover to prevent loss. Requires 1 5/8" x 1 1/8" knockout hole in panel.



Two 0-32" x 3/16" mounting studs at 2 1/8" centers. Base 2 1/2" x 1 1/4". 3/4" high above panel. Std. Pkg. 20.

Cat. No. List Price Each  
351009 (1237A)—Double Pole .....\$0.75  
351005 (1379)—Single Pole ..... .50

## NEON TESTERS

Low Voltage tester (illustrated) for 5 to 50 V AC or DC. For automotive, heating and vent., telephone, aircraft, battery service, radio service (low volt. filament circuits, "A" batteries), for testing polarity. Ten-inch leads with alligator clips. Full directions.



No. 202002 Low Volt. Tattelite tester (5420).

List Price, Each \$1.50

High Voltage "Tattelite" tester (not shown) 60-500V AC, 90-500V DC. Molded casings, insulated test prods—unusually sensitive. For testing live lines, polarity, for detecting blown fuses, open circuits, grounded wires, approximate voltage (110, 220, 440, etc.). Detailed instructions.



No. 201002 High Volt. Tattelite tester (5076)

List Price, Each \$1.00

## "POST-LITE"

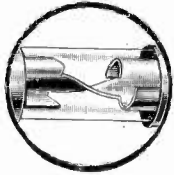


Neon indicating light for radio, television, radar control panels and other electrical equipment. For 65-130V AC, 90-130V DC. For 230V, 100,000 Ohm resistor may be added. Molded, clear plastic—head, 5/8" square, overall length 2 1/4". Under panel length 1 1/2" — 1/2" clearance hole. Wt. 11 gms. Std. pkg.—100.

No. 201005 Post-Lite—

List Price, Each \$0.80

# LITTELFUSE "Quicker than a Short Circuit"



4 AG Aircraft Fuse showing reinforced twisted element



Bakelite-enclosed 4 AB Fuse

## AIRCRAFT LITTELFUSES—ANTI-VIBRATION TYPE

Especially designed for Aircraft Service. Characteristics: High Mechanical Strength—Resistance to Fatigue—Long Vibration Life

**CONSTRUCTION:** Glass-enclosed. Littelfuse Locked Cap Assembly (no cements) prevents loosening of caps. High visibility transparent label for amperage. Elements mechanically depolarized by twisting at 90° (see illustrations) are braced against extreme vibration. "Gooseneck" non-crystallizing fuse element takes up expansion and contraction. Ratings 5 amps. or less use Spring and Link. Service life six times simple wire. The 4 AG and 5 AG sizes are supplied for Aircraft Services for their strength and greater carrying capacity than 3 AG fuses.

**BAKELITE-ENCLOSED:** 4 AB and 5 AB fuses recommended where severe overloads might shatter glass.

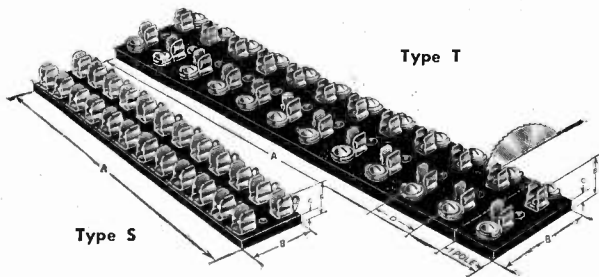
**CURRENT RATING:** Rated to NEC specifications to carry 10% overload indefinitely, to blow on 35% overload within 1 hr., and 100% overload within 2 min.

**VOLTAGE RATING:** Voltage at which fuses will break without arcing over, or bursting under short circuit conditions.

**VIBRATION FACTOR:** Minimum hours these fuses endure our Magnetic Vibrator operating 120 cycles a second, while carrying the rated current. Acceleration is 10 times the worst field conditions.

Vibration Factor	4AG "LITTELFUSES" 1 1/4" x 3/8" Dia. Unit Wt.—3.5 Gms.						4AB "LITTELFUSES" 1 1/4" x 3/8" Dia. Unit Wt.—3.75 Gms.						5AG "LITTELFUSES" 1 3/2" x 1 1/2" Dia. Unit Wt.—8.5 Gms.						
	Cat. No.	Former No.	Amp. Rating	Max. Volt.	Ohms Res.	Price, Each	Cat. No.	Former No.	Amp. Rating	Max. Volt.	Ohms Res.	Price, Each	Cat. No.	Former No.	Amp. Rating	Max. Volt.	Ohms Res.	Price, Each	
100+	"Slo-Blo"												"Slo-Blo"						
100+	413001.	1091C	1	250	.71	\$0.25	414001.	1091B	1	250	.39	\$0.25	513001.	1160C	1	250	.88	\$0.25	
100+	413002.	1092C	2	250	.094	.25	414002.	1092B	2	250	.16	.25	513002.	1161C	2	250	.24	.25	
500+	413003.	1093C	3	250	.059	.25	414003.	1093B	3	250	.055	.25	513003.	1162C	3	250	.18	.25	
500+	413005.	1094C	5	32	.023	.25	414005.	1094B	5	115*	.041	.25	513005.	1163C	5	32	.05	.25	
500+	Aircraft						414010.	1095B	10	115*	.016	.25	Aircraft						
500+	411010.	1095	10	32	.016	.13	414015.	1096B	15	115*	.012	.25	511010.	1164	10	32	.039	.15	
500+	411015.	1096	15	32	.010	.13	414020.	1097B	20	32	.008	.25	511015.	1165	15	32	.013	.15	
500+	411020.	1097	20	32	.008	.13	414025.	1098B	25	32	.007	.25	511020.	1166	20	32	.013	.15	
500+	411025.	1098	25	32	.007	.13	414030.	1099B	30	32	.007	.25	511025.	1142	25	32	.030	.15	
500+	411030.	1099	30	32	.007	.13	414035.	1100B	35	32	.006	.25	511030.	1167	30	32	.013	.15	
500+	411035.	—	35	32	.006	.18	414040.	—	40	32	.003	.25	511035.	1472	35	32	.008	.15	
500+	411040.	1100	40	32	.004	.20						511040.	1168	40	32	.010	.15		
												511050.	1169	50	32	.009	.18		
												511060.	1222	60	32	.010	.18		

\* Good for power supplies up to 25 KVA at 115V—400 cycles.



## NEW FUSE MOUNTING PANELS

Open type fuse panels, stocked in 12-pole units as shown—we cut them to 1, 2, 3, 4 or more poles as ordered, or you may cut them in your plant (1/8" allowance for saw cut).

Fuse Type	Mtg. Type	Dim. "B"	Dim. "C"	Dim. "D"	Dim. "E"
8AG	S	1 3/8"	3/4"	5/8"	2 1/2"
3AG	S	1 1/8"	3/4"	5/8"	2 1/2"
3AG	T	2 3/8"	7/8"	2 3/8"	1 1/2"
4AG	T	2 3/8"	7/8"	2 3/8"	1 1/2"
5AG	T	2 3/4"	7/8"	2 3/8"	3 1/2"

**Mountings with Solder Terminals—Type "S".** Phosphor-bronze, bright-dipped finish "Lug-Clips" are firmly anchored to black Bakelite base—have non-turning anchors. For 8AG and 3AG size fuses.

**Mountings with Screw Terminals—Type "T".** Spaced to U/L requirements for equipment circuit protection. Nickel plated brass screw terminals, nickel plated fuse clips. Type 356 (3AG) and type 556 (5AG or Midget) have cupped wire-retaining washers under terminal screws as required by U/L. Type 456 (4AG) has lock washers or terminals.

### FOR 4AG FUSES—TYPE "T"

Catalog No.	No. Poles	Dim. "A"	List Price, Each
456001	1	2 5/8"	\$1.40
456002	2	1 1/2"	.75
456003	3	2 1/2"	1.10
456004	4	3 1/2"	1.45
456005	5	4 1/2"	1.80
456006	6	5 1/2"	2.15
456007	7	6 1/2"	2.50
456008	8	7 1/2"	2.85
456009	9	8 1/2"	3.20
456010	10	9 1/2"	3.55
456011	11	10 1/2"	3.90
456012	12	11 1/2"	4.25

### FOR 3AG FUSES—TYPE "S"

Catalog No.	No. Poles	Dim. "A"	List Price, Each
357001	1	1 1/2"	\$0.15
357002	2	1 1/8"	.30
357003	3	1 3/4"	.45
357004	4	2 3/8"	.60
357005	5	3	.75
357006	6	3 5/8"	.90
357007	7	4 1/4"	1.05
357008	8	4 3/8"	1.20
357009	9	5 1/2"	1.35
357010	10	6 1/8"	1.50
357011	11	6 3/4"	1.65
357012	12	7 3/8"	1.80

### FOR 3AG FUSES—TYPE "T"

Catalog No.	No. Poles	Dim. "A"	List Price, Each
356001	1	2 5/8"	\$0.35
356002	2	1 1/2"	0.70
356003	3	2 1/2"	1.05
356004	4	3 1/2"	1.40
356005	5	4 1/2"	1.75
356006	6	5 1/2"	2.10
356007	7	6 1/2"	2.45
356008	8	7 1/2"	2.80
356009	9	8 1/2"	3.15
356010	10	9 1/2"	3.50
356011	11	10 1/2"	3.85
356012	12	11 1/2"	4.20

### FOR 5AG FUSES—TYPE "T"

Catalog No.	No. Poles	Dim. "A"	List Price, Each
556001	1	2 7/8"	\$0.50
556002	2	1 1/2"	.95
556003	3	2 1/2"	1.40
556004	4	3 3/4"	1.85
556005	5	4 1/2"	2.30
556006	6	5 1/2"	2.75
556007	7	6 1/2"	3.20
556008	8	7 1/2"	3.65
556009	9	8 1/2"	4.10
556010	10	9 1/2"	4.55
556011	11	10 1/2"	5.00
556012	12	11 1/2"	5.45

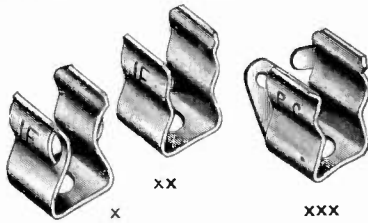
### FOR 8AG FUSES—TYPE "S"

Catalog No.	No. Poles	Dim. "A"	List Price, Each
387001	1	1 1/2"	\$0.15
387002	2	1 1/8"	.30
387003	3	1 3/4"	.45
387004	4	2 3/8"	.60
387005	5	3	.75
387006	6	3 5/8"	.90
387007	7	4 1/4"	1.05
387008	8	4 3/8"	1.20
387009	9	5 1/2"	1.35
387010	10	6 1/8"	1.50
387011	11	6 3/4"	1.65
387012	12	7 3/8"	1.80

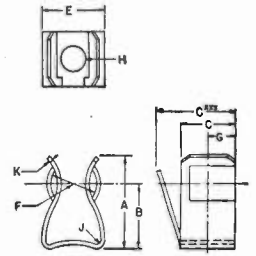


# LITTELFUSE "Quicker than a Short Circuit"

## LITTELFUSE BERYLLIUM COPPER AND PHOSPHOR BRONZE FUSE CLIPS



Littelfuse fuse clips are available in three standard styles: "X," with "ears" or fuse stops; "XX," earless; and "XXX," "Lug-Clips," a new Littelfuse clip having a lug or solder terminal made as an integral part of the clip. All styles are furnished in either Phosphor-Bronze or Beryllium Copper.



Catalog Number	Former Number	Fuse Adaptation	Type	DIMENSIONS								Unit Wt. grams	Std. Pkg. 100 Wt.—lbs.	List Price Each
				A	B	C	E	F	G	H				

### BERYLLIUM COPPER CLIPS SILVER PLATED—WITH FUSE STOP "EARS"

121001	1216B	SFE, 3AG & 8AG Fuses	X	$\frac{29}{64}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{11}{32}$	$\frac{1}{4}$	$\frac{5}{32}$	.131	1	1	\$0.05
123001	1217B	4AG & 4AB Fuses	X	$\frac{9}{16}$	$\frac{3}{8}$	$\frac{15}{32}$	.385	$\frac{1}{2}$	$\frac{3}{16}$	.171	1.6	1	.08
125001	1218B	5AG, Hi-Voltage-Midget	X	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{15}{32}$	$\frac{15}{32}$	$\frac{7}{32}$	$\frac{1}{2}$	.196	3	2	.15
127001	1219	N.E.C.-30 Fuses	X	$\frac{13}{16}$	$\frac{9}{16}$	$\frac{15}{32}$	$\frac{5}{8}$	$\frac{9}{16}$	$\frac{1}{4}$	.203	5.5	2	.18
129001	1221	Standard Hi-Voltage	X	$\frac{17}{32}$	$\frac{13}{16}$	.750	$\frac{7}{8}$	$\frac{15}{16}$	$\frac{5}{16}$	.265	14.5	4	.40

### SILVER PLATED—EARLESS TYPE

121002	1417	SFE, 3AG & AB, & 8AG	XX	$\frac{29}{64}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{11}{32}$	$\frac{1}{4}$	$\frac{5}{32}$	.131	1	1	.05
123002	1437	4AG & 4AB	XX	$\frac{9}{16}$	$\frac{3}{8}$	$\frac{15}{32}$	.385	$\frac{1}{2}$	$\frac{3}{16}$	.171	1.6	1	.08
125002		5AG, Hi-Voltage-Midget	XX	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{15}{32}$	$\frac{15}{32}$	$\frac{7}{32}$	$\frac{1}{2}$	.196	3	2	.15
127002	1475	N.E.C.-30 Fuses	XX	$\frac{13}{16}$	$\frac{9}{16}$	$\frac{15}{32}$	$\frac{5}{8}$	$\frac{9}{16}$	$\frac{1}{4}$	.203	5.5	2	.18
129002	1476	Standard Hi-Voltage	XX	$\frac{17}{32}$	$\frac{13}{16}$	.750	$\frac{7}{8}$	$\frac{15}{16}$	$\frac{5}{16}$	.265	14.5	4	.40

### SILVER PLATED—"LUG-CLIP"—SOLDER TERMINAL ATTACHED

121004	New	SFE, 3AG, AB, & 8AG	XXX	$\frac{29}{64}$	$\frac{1}{4}$	$\frac{37}{64}$	$\frac{11}{32}$	$\frac{1}{4}$	$\frac{5}{32}$	.131	1.2	1	.08
123004	New	4AG Fuses	XXX	$\frac{9}{16}$	$\frac{3}{8}$	$\frac{19}{32}$	.385	$\frac{1}{2}$	$\frac{3}{16}$	.171	1.7	1	.12
125004	New	5AG & Midget Fuse	XXX	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{15}{32}$	$\frac{15}{32}$	$\frac{7}{32}$	$\frac{1}{2}$	.196	3.5	2	.20

### PHOSPHOR BRONZE CLIPS

#### BURNISHED NICKEL PLATE—WITH FUSE STOP "EARS"

101001	1011B	SFE, 3AG & AB, & 8AG	X	$\frac{29}{64}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{11}{32}$	$\frac{1}{4}$	$\frac{5}{32}$	.131	1	1	.02
103001	1319	4AG & 4AB	X	$\frac{9}{16}$	$\frac{3}{8}$	$\frac{15}{32}$	.385	$\frac{1}{2}$	$\frac{3}{16}$	.173	1.7	1	.04
105001	2048	5AG, Hi-Voltage-Midget	X	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{15}{32}$	$\frac{15}{32}$	$\frac{7}{32}$	$\frac{1}{2}$	.196	3.2	2	.05
107001	5048	N.E.C.-30 Fuses	X	$\frac{13}{16}$	$\frac{9}{16}$	$\frac{15}{32}$	$\frac{5}{8}$	$\frac{9}{16}$	$\frac{1}{4}$	.203	5.8	2	.06
109001	1463	Standard Hi-Voltage	X	$\frac{17}{32}$	$\frac{13}{16}$	.750	$\frac{7}{8}$	$\frac{15}{16}$	$\frac{5}{16}$	.265	15.6	4	.16

#### BURNISHED NICKEL PLATE—EARLESS TYPE

101002	125-2	1AG, 3AG & AB, 7AG & 8 AG	XX	$\frac{29}{64}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{11}{32}$	$\frac{1}{4}$	$\frac{5}{32}$	.131	1	1	.02
104002		4AG & 4AB	XX	$\frac{9}{16}$	$\frac{3}{8}$	$\frac{15}{32}$	.385	$\frac{1}{2}$	$\frac{3}{16}$	.173	1.7	1	.04
105002	2049B	5AG, Hi-Voltage-Midget	XX	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{15}{32}$	$\frac{15}{32}$	$\frac{7}{32}$	$\frac{1}{2}$	.196	3.2	2	.05
107002	SP-178	N.E.C. Bantam Fuses	XX	$\frac{13}{16}$	$\frac{9}{16}$	$\frac{15}{32}$	$\frac{5}{8}$	$\frac{9}{16}$	$\frac{1}{4}$	.203	5.8	2	.06

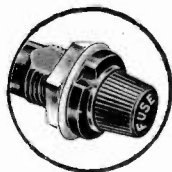
#### BRIGHT-DIP PHOSPHOR BRONZE—"LUG CLIP" SOLDER TERMINAL ATTACHED

101003		1AG, 3AG & AB, 7AG & 8AG	XXX	$\frac{29}{64}$	$\frac{1}{4}$	$\frac{37}{64}$	$\frac{11}{32}$	$\frac{1}{4}$	$\frac{5}{32}$	.131	1.2	1	.03
103003		4AG & 4AB	XXX	$\frac{9}{16}$	$\frac{3}{8}$	$\frac{19}{32}$	.385	$\frac{1}{2}$	$\frac{3}{16}$	.171	1.7	1	.05
105003		5AG, Hi-Voltage-Midget	XXX	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{15}{32}$	$\frac{15}{32}$	$\frac{7}{32}$	$\frac{1}{2}$	.196	3.5	2	.08

## "LITTELFUSE"

### FUSE EXTRACTOR POSTS

Quicker, safer method for mounting and changing fuses. Held in end of removable knob, fuse is easily replaced by unscrewing knob. Available with finger-operated knob, screw driver slot knob, and finger operated with keep chain.



Finger Operated Knob



341001

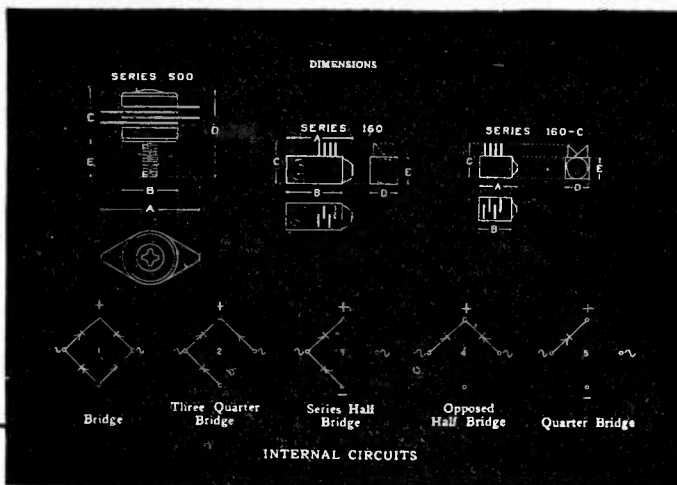
Catalog No.	Former No.	Descr.—Knob, How Operated	Mtg. Hole	Length Under Panel	Wt. Grams	List Price Each
341001	1075S	3AG—Screw Driver	.495" dia.*	$2\frac{3}{32}$	15.0	\$0.45
342001	1075F	3AG—Finger	.495" dia.*	$2\frac{1}{16}$	14.3	.45
371001	1087S	8AG—Screw Driver	.495" dia.*	$2\frac{3}{32}$	15.3	.45
372001	1087F	8AG—Finger	.495" dia.*	$2\frac{1}{16}$	14.3	.45
442002	1212D	4AG—Finger, Pressurized	$\frac{5}{8}$ " dia.—Rd.	$2\frac{1}{8}$	45.3	3.00
442001	1212B	4AG—Finger	.623 dia.†	$2\frac{13}{16}$	24	.70

\*With flat .224" from C.L.

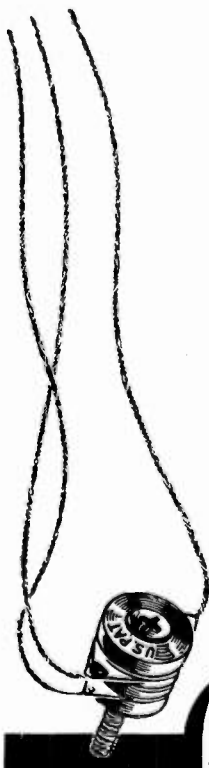
†With flat .250" from C.L.

# Conant Instrument Rectifiers

"STANDARD SINCE 1933"



Series	Type	Body Color	Internal Circuit	Mounting	Number of Terminals	Weight (Grams)	Dimensions (Inches)					Net Price
							A	B	C	D	E	
SERIES 500	M	YELLOW	1	6-32 STUD	4	12.718	.890	.500	.485	.800	.315	\$2.10
	TH	BROWN	2	6-32 STUD	4	11.833	.890	.500	.470	.800	.321	1.86
	HS	BLACK	3	6-32 STUD	3	10.631	.890	.500	.445	.800	.355	1.53
	T	RED	4	6-32 STUD	3	10.631	.890	.500	.445	.800	.355	1.53
	H	GREEN	5	6-32 STUD	2	9.072	.890	.500	.400	.675	.275	1.20
SERIES 160	B	YELLOW	1	#2 SCREW	4	2.531	.690	.590	.375	.250	.250	2.10
	BTH	BROWN	2	#2 SCREW	4	2.183	.690	.590	.375	.250	.250	1.86
	BHS	BLACK	3	#2 SCREW	3	1.824	.690	.590	.375	.250	.250	1.53
	BT	RED	4	#2 SCREW	3	1.824	.690	.590	.375	.250	.250	1.53
	BH	GREEN	5	#2 SCREW	2	1.477	.690	.590	.375	.250	.250	1.20
SERIES 160-C	B-C	YELLOW	1	FUSE CLIP	4	1.743	.345	.297	.310	.220	.200	2.10
	BTH-C	BROWN	2	FUSE CLIP	4	1.650	.345	.297	.310	.220	.200	1.86
	BHS-C	BLACK	3	FUSE CLIP	3	1.385	.345	.297	.310	.220	.200	1.53
	BT-C	RED	4	FUSE CLIP	3	1.385	.345	.297	.310	.220	.200	1.53
	BH-C	GREEN	5	FUSE CLIP	2	1.293	.315	.297	.310	.220	.200	1.20



- ★ Highest rectification efficiency for greatest instrument sensitivity.
- ★ Exceptional stability insures permanent instrument calibration.
- ★ Exclusive Conant Complete Color Code simplifies identification of type and terminal polarity.
- ★ Lead wires WELDED to terminals.
- ★ Sealed against moisture to insure permanent characteristics.
- ★ The only rectifiers with a NO-TIME LIMIT guarantee.
- ★ Manufactured by the exclusive Conant process from domestically produced materials only.
- ★ Life tests in continuous operation since June 1, 1934 prove Conant rectifiers do not deteriorate with age or continued normal service.
- ★ Sold by leading radio jobbers everywhere. Consult your local jobber, or your nearest Conant Representative.

**SERIES 500 UNITS** are for general applications requiring greater output current for meters, relays or other apparatus requiring more than 1 milliamper. Recommended for all such applications at commercial and the lower audio frequencies. Will also operate up to 1,000,000 c.p.s. in special applications wherein accuracy of readings is not essential.

**SERIES 160 and 160-C** are for applications requiring good frequency response over the entire commercial and audio range and especially when the meter, relay or other apparatus requires less than 1 milliamper for operation. In some special applications these units may be operated at frequencies up to 75,000,000 c.p.s. with special circuit treatment.

**SPECIAL TYPES** are available in both series 500 and 160-C. When requesting a quotation on a special type include a sketch of the rectifier required or a circuit dia-

gram showing source and frequency of the input voltage, resistance and kind of load, required load current and the ambient temperatures.

**SERIES 500** Disc diameter .500 inch. Area each disc .15 square inch. Furnished with 3" braided, tinned copper leads. Finished in synthetic lacquer-enamel.

**SERIES 160** Disc diameter .160 inch. Area each disc .02 square inch. Furnished with 3" stranded, tinned thermoplastic covered copper leads. Molded phenolic case. Assembly sealed with specially developed moisture-proof compound.

**SERIES 160-C** Disc diameter .160 inch. Disc area, lead wire and length and moisture-proof seal are identical with Series 160. Dimensions of the case have been reduced to the most compact size. These units may be mounted in a standard midjet fuse clip.



*Instrument Rectifiers*

**LABORATORIES**

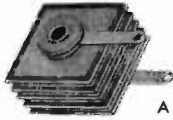
20 Vesey St., New York 7, New York  
 1836 Euclid Ave., Cleveland 15, Ohio  
 600 S. Michigan Ave., Chicago 5, Ill.  
 518 City Bk. Bldg., Kansas City 8, Mo.  
 P. O. Box 201, Crosstwn. Sta., Memphis 4, Tenn.  
 1212 Camp St., Dallas 2, Texas  
 4018 Greer Ave., St. Louis 7, Mo.  
 711 Colorado Bldg., Denver 7, Colo.  
 Bendix Bldg., 1206 Maple Ave.,  
 Los Angeles 15, Calif.  
 Export Div., 75 West St., New York 6, N. Y.  
 Canadian: 50 Yarmouth Rd., Toronto, Ont.

THE

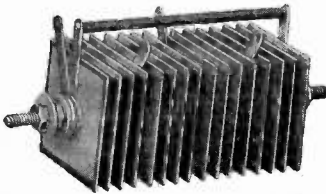
BRADLEY

LINE

## SELENIUM RECTIFIERS



A



B

Above (A) Model RS-100. Designed for radio and low power applications. Rated at 115 volts A.C., 100 milliamperes D.C., but also made for higher voltages and current.

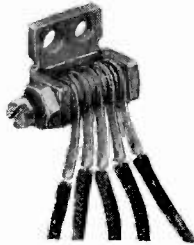
Above (B) SE-11 Series. Power rectifier stacks rated from 0.100 amperes up. Plate size from 1" x 1" up to 5" x 6".

Bradley selenium rectifiers for medium voltage applications are processed to allow good efficiency and stability at D. C. rating up to 24 volts per plate. For power applications, square plates allow a maximum of rating to space factor.

For high voltage applications, Bradley selenium rectifiers are rated up to 70 volts peak inverse per plate.

Bradley manufactures selenium rectifiers for operation from a few microamperes to many thousands of amperes and from fractions of a volt to thousands of volts. On any rectification problem, consult Bradley. With their long application experience, Bradley engineers can quickly specify the right rectifier for your requirements.

## COPPER OXIDE RECTIFIERS



In above Universal Instrument Rectifier, you have a single answer to a wide range of measurement rectifier requirements — one rectifier for all circuits with A.C. voltages and D.C. currents within the unit's rating. Rated up to 12 volts A.C., 5 ma. D.C.

BRADLEY "COPROX" INSTRUMENT RECTIFIERS have vacuum processed pellets with gold contacts.

Exhaustive laboratory and field tests have proved our process produces rectifiers with maximum efficiency and minimum temperature errors. Even under severe conditions of use, aging is practically eliminated.

Electrical instruments with better accuracy are being built with "Coprox" rectifiers.

BRADLEY "COPROX" POWER RECTIFIERS, designed for low voltage applications, are rugged, compact and conservatively rated. Long service life is combined with low operating cost.

Bradley manufactures copper oxide rectifiers for operation from a few microamperes up to one ampere, and from microvolts up to hundreds of volts. All "Coprox" rectifiers are matched and balanced over a wide temperature range.

## PHOTO ELECTRIC CELLS



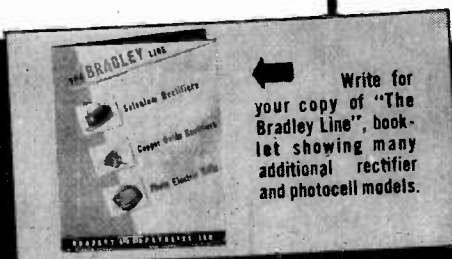
The pigtail contact model 3-1A shown above is only one of a series of standard mountings. Others include housed models with plug-in contacts, for tube socket and nut-and-bolt types. Shapes of Bradley Luxtron® photocells vary from circles to squares, with every in-between shape desired. In size they range from the diminutive to the largest sizes required. Dimensions of the standard model illustrated are 2-3/16" x 2-5/16" x 27/64".

LUXTRON PHOTOCELLS EFFICIENTLY CONVERT LIGHT INTO ELECTRIC ENERGY WITHOUT ANY EXTERNAL POWER SOURCE. The energy developed is sufficient to operate meters and sensitive relays.

Light-weight, rugged and true to rating, these photocells give long life under the most strenuous operating conditions. As far as we have been able to determine, they are the finest on the market, although among the lowest in price.

For precision control of light with electric energy, specify Luxtron photocells. Write Bradley for samples and engineering assistance on any photocell problem you have in mind.

\*T.M. Reg. U. S. Pat. Off.



Write for your copy of "The Bradley Line", booklet showing many additional rectifier and photocell models.

# BRADLEY LABORATORIES, INC.

82 MEADOW STREET, NEW HAVEN 10, CONN.

# ELECTROX<sup>®</sup>

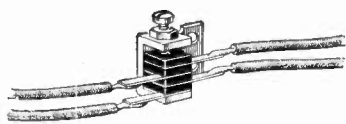
## Low-Capacity

# RECTIFIER UNITS

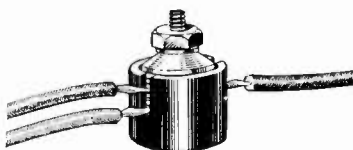
Used by most leading test set manufacturers as original components in their equipment.

\*Trade Mark Reg. U. S. Pat. Off.

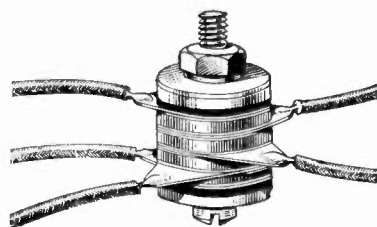
Full and half wave, low-capacity copper oxide rectifiers for instruments, test sets and similar applications. ElectroX Rectifiers are made by a pioneer manufacturer of high-quality, dry disc rectifiers. Each type is specially adapted to meet the individual requirements of the user; each unit is individually inspected, tested, and guaranteed right. For dependability, get genuine ElectroX Rectifiers!



TYPE A-4  
CAT. NO. 5020



TYPE B-2  
CAT. NO. 5047  
CAT. NO. 5049

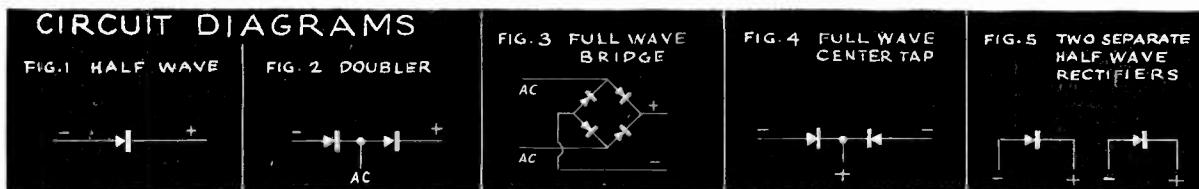


TYPE C-4  
CAT. NO. 5017

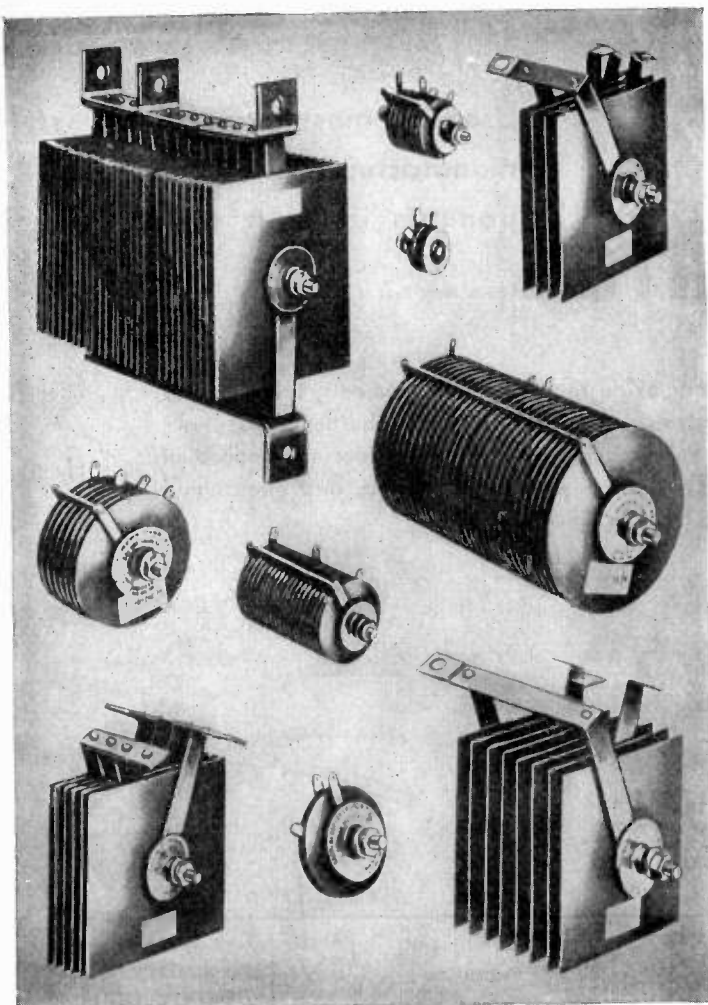
Max. Continuous Rating			Circuit Diagram Fig.	Element Diam. Inches	No. of Elements	Connections	Lead Length Inches	Type	Cat. No.
D.C. M.A.	D.C. Volts	A.C. Rms. Volts							
1	1	1.5	3	1/8	4	4 leads	4	AA-4	5064
5	3	4	3	3/16†	4	4 leads	3	A-4	5020
13		3	1	1/8	1	2 leads	3	B-1	5018
13		4	4	1/16	2	3 leads	3	B-2	5047
13		3*	2	1/16	2	3 leads	3	B-2	5049
20	3	4	3	1/8	4	5 leads	3	B-4	5016
32		3	1	3/8	1	2 lugs		C-1	5011
32		3*	2	3/8	2	3 leads		C-2	5057
32		3*	5	3/8	2	4 lugs		C-2	5010
64	3	4.1	3	3/8	4	5 lugs		C-4	5014
64	3	4.1	3	3/8	4	5 leads	3	C-4	5017

\*3 volts A.C. per element.

†3/16" square.



RECTIFIER DIVISION  
**THE SCHAUER MACHINE CO.** • Cincinnati, Ohio  
*Makers, since 1930, of high-quality, dry disc rectifiers.*



# Seletron

## SELENIUM RECTIFIERS

**Built on Aluminum**

THE high standards of performance established by Seletron Selenium Rectifiers have won for them nationwide acceptance by electrical manufacturers, purchasing agents and electrical engineers in the power and radio fields.

In every type of AC to DC conversion, from the large power stacks to the small units applicable to the radio and television fields, Seletron Rectifiers assure dependable, trouble-free service and long life under severest operating conditions.

These precision-built rectifiers are engineered for compactness and maximum heat dissipation. Although light in weight they are strongly constructed.

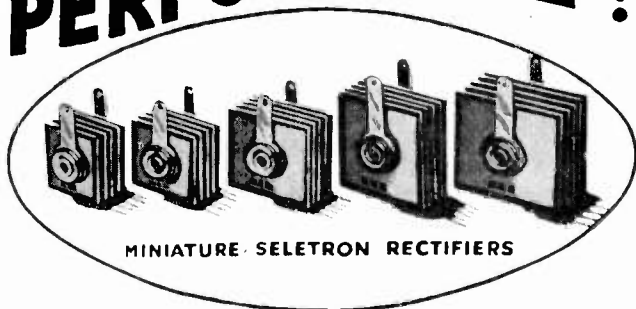
Furnished in eight standard plate sizes in assemblies that provide outputs ranging from a few milliamperes to thousands of amperes. Stacks to meet specific voltage and current requirements are available in an infinite number of combinations.

# \* UNBEATABLE PERFORMANCE !

### STOCK JOBBER SIZES

D.C. Output Max. Amps.	at 35° C. Approx. Volts	Max. Input R.M.S. Volts	Seletron Code Number
0.9	17	24	Q1B1S1B
1.6	18	24	D1B1S1B
3.1	17	24	E1B1S1B
5.2	17	24	F1B1S1B
10.0	17	24	H1B1S1B
16.0	18	24	H1B2S1B
24.0	18	24	H1B3S1B
1.2	36	48	D2B1S1B
3.1	35	48	WE2B1S1B
5.2	34	48	WF2B1S1B
10.0	34	48	WH2B1S1B
16.0	35	48	H2B2S1B
24.0	35	48	H2B3S1B
0.9	105	144	WQ6B1S1B
1.2	108	144	D6B1S1B
2.4	106	144	E6B1S1B
5.2	103	144	WF6B1S1B
0.9	122	168	WQ7B1S1B
1.2	126	168	D7B1S1B
2.4	123	168	E7B1S1B
5.2	120	168	WF7B1S1B

\* According to our Audit Department, replacement under warranty is only 0.2%.



### SPECIFY SELETRON MINIATURE SELENIUM RECTIFIERS FOR RADIO AND TELEVISION APPLICATIONS

Code Number	5M4	5M1	5P1	5R1	5Q1	5S1	1M1
Current Rating	75 ma.	100 ma.	150 ma.	200 ma.	250 ma.	500 ma.	100 ma.
Plate Length	1"	1"	1-3/16"	1-1/2"	1-1/2"	2"	1"
Plate Width	1"	1"	1-3/16"	1-1/4"	1-1/2"	2"	1"
Stack Thickness	11/16"	7/8"	7/8"	7/8"	1-1/8"	1-1/8"	3/8"
A.C. Volts	130 V	130 V	130 V	130 V	130 V	130 V	25 V

Our Engineering Department will be glad to aid you in the solution of your RECTIFIER problems, without obligation. Write for booklet on SELETRON RECTIFIERS. Address Department: US2.

SELETRON DIVISION



**RADIO RECEPTOR COMPANY, INC.**



Since 1922 in Radio and Electronics

# Selenium Rectifiers by Federal



THE REVOLUTIONARY RECTIFIER WITH UNLIMITED USES IN RADIO AND ELECTRONICS



402D3150A



403D2625A



404D2795A



438D3428A



403D3240A

FTR Number	Output MA-DC	Input (RMS)		Inverse Volts	Peak MA	Application	Sugg'd Retail Price, Each	FTR Number	Output MA-DC	Input (RMS)		Inverse Volts	Peak MA	Application	Sugg'd Retail Price, Each
		Volts	MA							Volts	MA				
402D3452A	65	130	160	380	750	B+ AC-DC (5 tube)	\$ .85	403D2889A	100	160	325	440	1200	Vibrator	\$2.25
402D3150A	75	130	220	380	900	B+ 3-way Radios	1.04	402D3239A*	75	160	220	440	900	Vibrator Doubler	2.55
403D2625A	100	130	325	380	1200	B+ Radios, Television	1.30	403D3240A*	100	160	325	440	1200	Vibrator Doubler	3.45
403D2787A	150	130	425	380	1200	B+ Radio-Television	1.50	404D3241A*	200	160	550	440	2000	Vibrator Doubler	5.10
404D2795A	200	130	550	380	2000	B+ Television	1.80	4D2814AS†	1000	8				Battery Charger	.70
404D3450A	250	130	625	380	2000	B+ Television	2.00	104D2943S‡	2000	15				Battery Charger	2.55
438D3427A	400	130	1000	380	3500	B+ Television	3.50	402D3550	150	25	270	35	1800	Bridge Rectifier	1.40
438D3428A	500	130	1250	380	3500	B+ Television	3.65	403D3551	300	25	540	35	2400	Bridge Rectifier	1.70
								404D3552	600	25	1080	35	4000	Bridge Rectifier	2.10
								402D3151	75	20	220	55	900	Bias Rectifier	.50

\* These rectifiers have two sections—characteristics given apply to one section only; if both sections are used half-wave, voltage input is 320 volts.  
 † The characteristics given for this rectifier are based on its use in a half-wave rectifier circuit with a 3 cell battery load.  
 ‡ The characteristics given for this rectifier are based on its use in a full-wave rectifier circuit with a 3 cell battery load.



# HF Cables by Federal



QUALITY CABLES AND TRANSMISSION LINES BY AMERICA'S  
 LARGEST MANUFACTURER OF SOLID DIELECTRIC COAXIAL CABLES



K-111



TV-59



K-109



TV-300

FTR Type Number	Nominal Impedance	Nominal MMF/Ft	Attenuation DB/100 ft	Nominal Jacket OD in inches	APPLICATION	Sugg'd Retail Price, Per Foot
K-111	300		2.4 at 50 Mc 3.4 at 100 Mc 4.6 at 200 Mc	0.480 x 0.290	Television lead-in where 300 ohm shielded cable is advantageous.	\$ .125
TV-59	72	22.04 at 1 kc	2.6 at 50 Mc 3.9 at 100 Mc 5.8 at 200 Mc	0.230	FM and Television where 72 ohm lead-in is required.	.05
K-109	160	8.3 at 1 kc	2.6 at 3.85 Mc 3.7 at 11.8 Mc 4.6 at 19.5 Mc	0.275	Automobile antenna lead-in.	.073
TV-300	300		1.15 at 50 Mc 2.00 at 100 Mc 3.01 at 200 Mc	0.360 x 0.070 no jacket	FM and Television antenna lead-in.	.0295

\* Trade Mark.

### Federal Rectifier Equipment

Federal Selenium Rectifiers Provide Dependable and Economical DC Power

FTR Type	OUTPUT (DC)		INPUT	Application	Sugg'd Retail Price, Each
	Volts	Amps			
FTR 3246-BS	6	10	115 volts, 60 cycle, single phase	"A" Eliminator Battery Charge	\$74.50
FTR 1342-AS	6	6 to 3	115 volts, 60 cycle, single phase		16.65

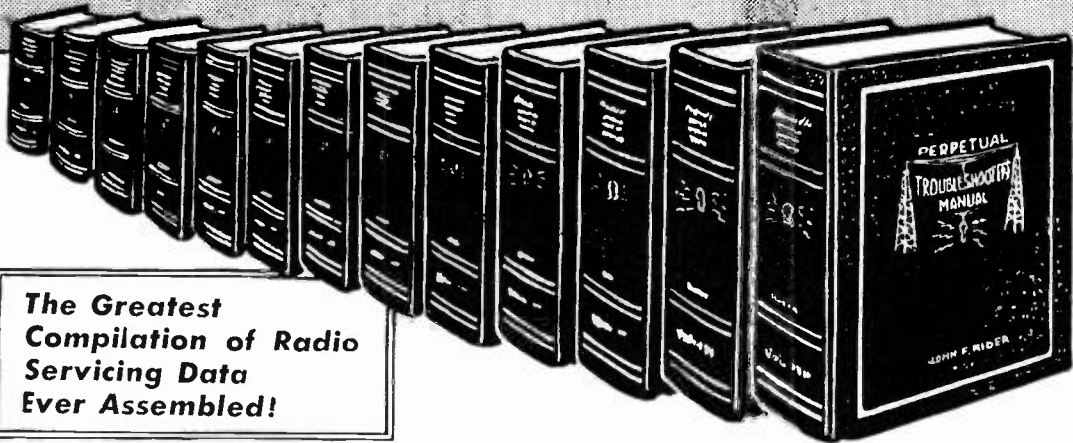


*Thank You!*

When writing for additional  
information or when ordering  
from sources of supply listed  
in this book, please mention

*RADIO'S MASTER*

# RIDER MANUALS



**The Greatest  
Compilation of Radio  
Servicing Data  
Ever Assembled!**

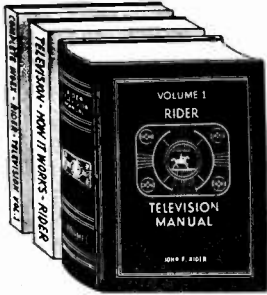
## *A Sign of Successful Servicing*

It is more than coincidence that practically every successful servicing shop has a complete set of Rider Manuals. It is the direct result of their profit-making value. Here you will find data on alignment, I-F peaks, operating voltages, parts lists and parts values, voltage ratings of condensers, wattage ratings of resistors, coil resistance data, gain data, and all other necessary information.

- Vol. XIX. (Available May, 1949). Up-to-the-minute coverage on AM, FM, auto and communications receivers. The productions of over 100 manufacturers. Special Record Changer section. "How it Works" book and cumulative index Volumes XVI through XIX.  
Over 2,100 pages, Net Price \$19.80
- Vol. XVIII. Covers AM, FM receivers, auto radio, and record players manufactured between November, 1947, and November, 1948. 115 manufacturers. Combined "How it Works" book and cumulative index Volumes XVI, XVII, and XVIII.  
2,036 pages, Net Price \$19.80
- Vol. XVII. More than 100 manufacturers of radio receivers and allied products. FM and AM receivers produced during 1947, as well as record changers and wire recorders are covered. Separate "How it Works" book and cumulative index Volumes XVI and XVII.  
1,648 pages, Net Price \$16.50
- Vol. XVI. Diagrams of receivers of 94 manufacturers. Rider-exclusive "clarified schematics," breakdowns of multi-band receivers. Covers sets manufactured in late 1946 and early 1947. Separate "How it Works" book and index.  
768 pages, Net Price \$8.40
- Vol. XV. More than 1200 models and 700 chassis of 121 manufacturers of receivers built during 1946, and earlier. In addition, Rider "clarified schematics" of multi-band receivers. A 181-page "How it Works" book and index.  
2,000 pages, Net Price \$19.80
- Vol. XIV. More than 1300 models and 750 chassis manufactured during the latter part of 1942 when war halted production.  
1,376 pages, Net Price \$16.50
- Vol. XIII. In addition to covering the radio receivers manufactured during the latter part of 1941 and the early part of 1942, a separate cumulative index for Volumes XI, XII, and XIII is included. More than 1500 models and 950 chassis.  
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- Vol. XII. Time-saving "clarified schematic" breakdowns of more than 200 complicated models feature another "big" Rider Manual. Coverage up to April 1941. 1800 models and more than 1000 chassis.  
1,648 pages, Net Price \$16.50
- Vol. XI. In addition to servicing data on 2,416 models and 1130 chassis manufactured in the period from August 1939 to June 1940; a vest-pocket manual on push-button data is included. Double-spread pages are provided for complicated diagrams. Index and "How it Works" book, including television, facsimile, and FM (developments up to that time).  
1,652 pages, Net Price \$16.50
- Vol. X. Covering 2416 models and 1140 chassis, it takes in receivers built from October 1938 to August 1939. A "How it Works" section is featured, as well as 188-page index for Volumes I through X.  
1,664 pages, Net Price \$16.50
- Vol. IX. The produce of radio set manufacturers during the year October 1937 to October 1938. More than 1880 models and 1000 chassis. Special "How it Works" section.  
1,672 pages, Net Price \$16.50
- Vol. VIII. In addition to diagrammatic presentations of 1800 models, and more than 1000 chassis of sets manufactured from October 1936 to October 1937, featured are data on installation and servicing instructions of many types of intercommunication systems. A "How it Works" book is included.  
1,650 pages, Net Price \$16.50
- Vol. VII. More than 1700 models and 1000 chassis of the manufacturing period from November 1935 to October 1936.  
1,600 pages, Net Price \$16.50
- Vol. VI. Encompassing the period of manufacture from late 1934 to November 1935, this volume features more than 1700 models, and 800 chassis.  
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204 pages, Net Price \$1.50

# RIDER TV MANUALS

## RIDER'S TV MANUAL VOLUME 1



Complete factory authorized coverage up to early 1948

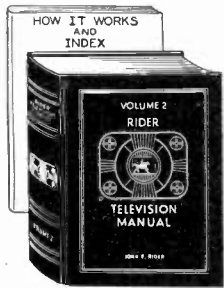
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Equivalent of 2,000 pages

### 34 Manufacturers in Rider's TV Manual Volume 1

Admiral	Philco
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Belmont	Remington
Certified	Republic
Cleervue	Scott
Crosley	Sightmaster
DuMont	Stromberg-Carlson
Electro-Tech	Tele-King
Emerson	Television Assembly
Farnsworth	TV Develop. Labs.
Garod	Tradio
GE	Transvision
Gilfillan	U. S. Television
Hallcrafters	Viewtone
Industrial Television	Westinghouse
Motorola	

Circuit descriptions—Giant and Double Spread Pages—adjustment of trimmers, traps, transformers, etc.—voltages and resistance readings—complete alignment instructions—schematics, chassis views, patterns, waveforms—Separate 203-page "How it Works" book.

## RIDER'S TV MANUAL VOLUME 2



Coverage up to  
January 1949

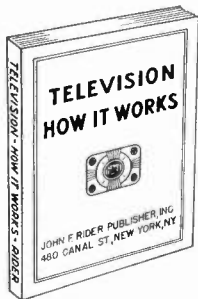
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Ansley	Industrial Television	Sightmaster
Automatic	Jerrold	Mark Simpson
Bace	Magnavox	Sonora
Bagdad	Mars	Standard Coil
Belmont	Meissner	Stewart Warner
Bendix	Merrick	Techmaster
Bud Radio	Motorola	Tele-Craft
Certified	Multiple	Tele-King
Crosley	National	Television Assembly
De Wald	New England	TeleVista
DuMont	Nielsen	Templetone
Dynamic	Olympic	Transvision
Electro-Tech	Philco	United Motors
Emerson	Philharmonic	Vidcraft
Fada	Philmore	Video Corp. of Amer.
Farnsworth	Pilot	Videodyne
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GE	Radio & Television	Zenith
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	Remington	

Service Data on Complete Receivers and Kits and Boosters—Double, Triple Spreads and Giant Pages that Unfold to 440 Square Inches—Test Patterns—Waveforms—Schematics—Voltages—Adjustments of traps, complete alignment tables—Parts lists—"Changes" section for up-to-date revisions on previously published receivers—Accumulative index covering TV Volumes 1 and 2.



### TELEVISION "HOW IT WORKS" (Supplement to TV Manual Vol. 1)

#### A GOLD MINE OF PRACTICAL FACTS

Here is practical theory. The first chapter deals with the transmission and reception of television signals in general, giving you a clear over-all picture. The second chapter deals with frequency standards, the next with antennas. Television "How It Works," then goes into descriptions of the various portions of a television receiver: the r-f, oscillator, converter circuits in the front end; the sound channel; the video amplifier and d-c

restorer, the sync and sweep circuits, picture tubes, power supplies. The conclusion covers alignment and servicing problems. The entire book carries the practical right along with the theoretical, ending up with the when and why of certain operations in television receiver maintenance.

203 Pages . . . Illustrated . . . 8 1/2" x 11" . . . \$2.70

### TV PICTURE PROJECTION AND ENLARGEMENT

by Allan Lytel

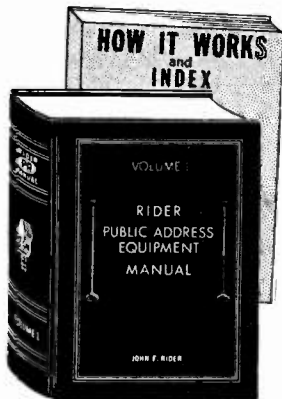
The story behind TV picture enlargement by viewing lenses and by projection systems is important to every serviceman. Read this text, which explains "how" and "why," and you will find adjustments of these receivers can be simple and rapid. It is a combination of theory and practice. Dollar-making—time-saving practice!

Chapters include: Properties of Light . . . Refraction and Lenses . . . The TV Picture . . . Modifications of Schmidt Projection System . . . Refractive Projection . . . TV vs. motion pictures . . . Appendix.

Approx. 250 pages . . . Illustrated . . . \$3.30

# RIDER PA MANUAL

## RIDER'S PUBLIC ADDRESS EQUIPMENT MANUAL VOLUME 1



Coverage from 1938 to 1948

Public Address Systems — Outdoor Announcing — Musical Instruments and Phonographs — Theater, Church Hearing Aids — Electronic Megaphones — Intercommunication Systems — Theater and Home Motion Pictures — School, Hotel, Hospital Sound Systems — Mobile and Portable Sound Systems

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**2024 Pages Plus a "HOW IT WORKS" and INDEX . . . . Net Price . . . . \$18.00**

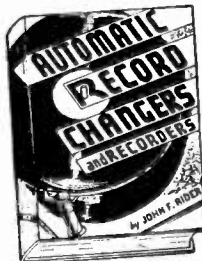
Complete list of 147 manufacturers represented:

Admiral	Espey	Pickering
Air King	Fada	Pilgrim
Alamo	Federal Mfg. & Electronics	PortoMatic
Allied	Federated Purchaser	Precision
Altec Lansing	Gamble Skogmo	Presto
American Comm.	Garod	RCA
American Sound	General Electric	Radio Craftsmen
Amplifier Corp.	General Television	Radio Parts
Ansley	General Transformer	Radio Wire
Apex	Gentleman Products	Radolek
Assoc. Electric	Gibbs	Rauland
Atomite	Goodrich	Regel
Audar	Grant	Remier
Audio Comm.	Greene	Rock-Ola
Audio Development	Hamilton Electronics	Scott
Automatic Musical	Hammond	Sears Roebuck
Automatic Projection	Inter-Communication	Seeburg
Aviola	Jackson	Setchell-Carlson
Beam Radionics	Jefferson	Sheridan
Bell	Jewel	Mark Simpson
Belmont	Langevin	Sonora
Bogen	Laurehk	Sonotone
Brook	Lewyt	Sound, Inc.
Brown Ebinger	Lyman	Speak-A-Phone
Caltron	Lyon & Healy	Spiegel
Cavalcade	Magna	Steelman
Challenger	Meck	Story & Clark
Clark	Mectron	Stromberg Carlson
Collins	Mellaphone	Sundt Engineering
Continental	Meissner	Symphonic
Commun-A-Phone	Mercury	Talk-A-Phone
Concord	Mills	Tele-Tone
Crosley	Minnesota	Telequip
Dalmo Victor	Montgomery Ward	Teletran
Decca	Morlen	Templetone
DeVry	Motograph	Thordarson
Dual Engineering	Motorola	Trav-Ler
Dynavox	Movie Mite	United Scientific
Eastern Amplifier	Musitron	Valco
Eckstein	National Dobro	Walker Jimieson
Electric Acoustic	National Filben	Walsh Engineering
Electronic	Neill	Watterson
Electronic Design	Neige	Webster Chicago
Electronic Devices	Newark Electric	Webster Electric
Electronic Labs.	Operadio	Western Auto
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## AUTOMATIC RECORD CHANGERS AND RECORDERS

Gears, levers, cams—the mechanics needed to service any automatic record changer quickly and profitably are covered in over 60 pages of text. Service problems of specific makes are treated in 654 pages of manufacturers' service data. The small electric motor is covered at length; also records and phonographs.

**Stroboscope Disc for  
Checking Turntable Speed**



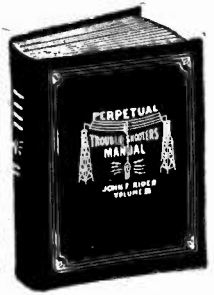
Coverage up to 1942

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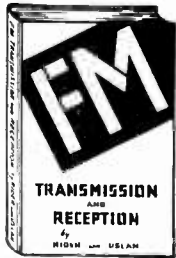
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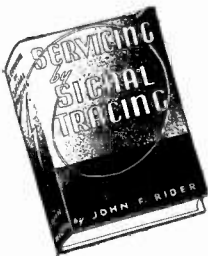
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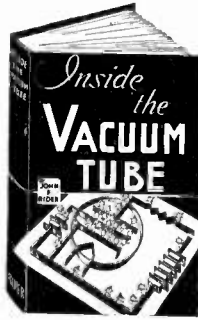
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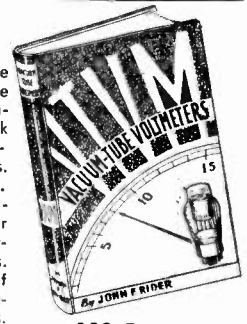
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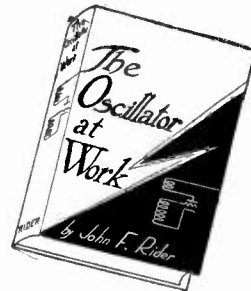
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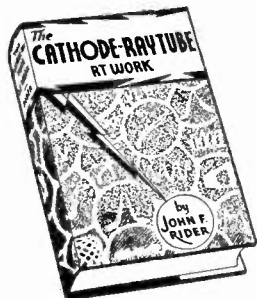
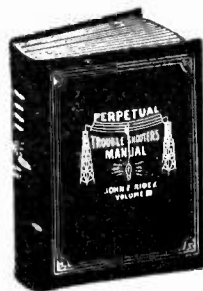
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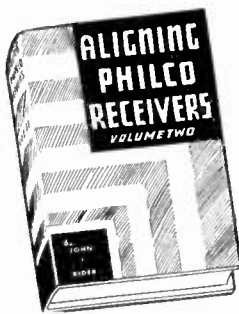
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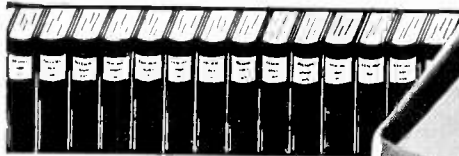


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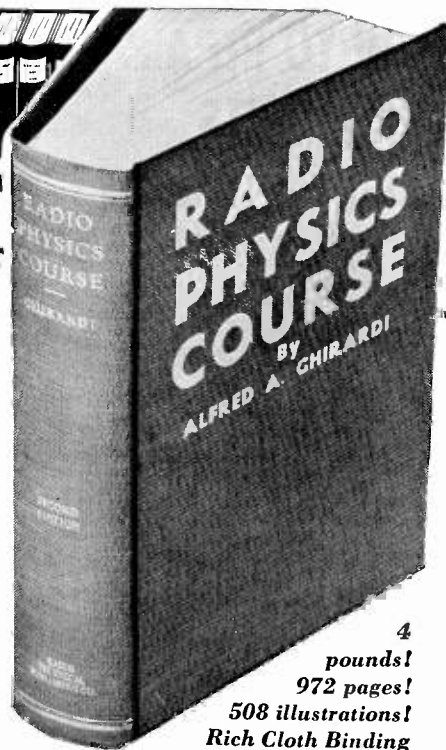
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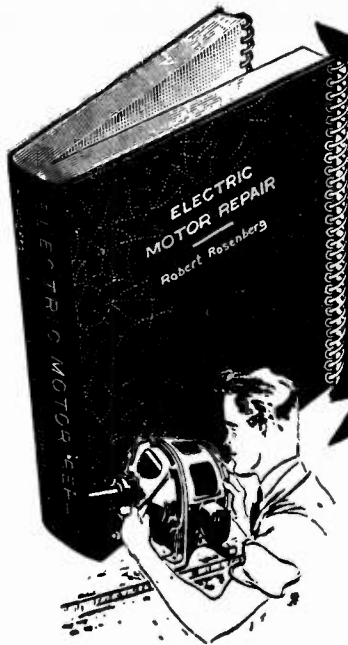
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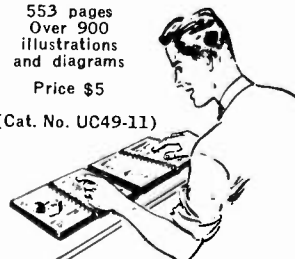
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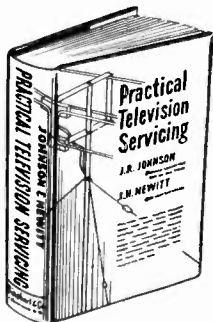


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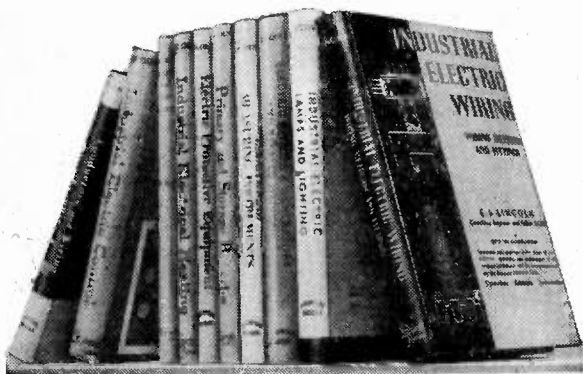
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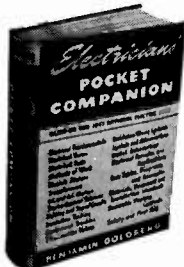
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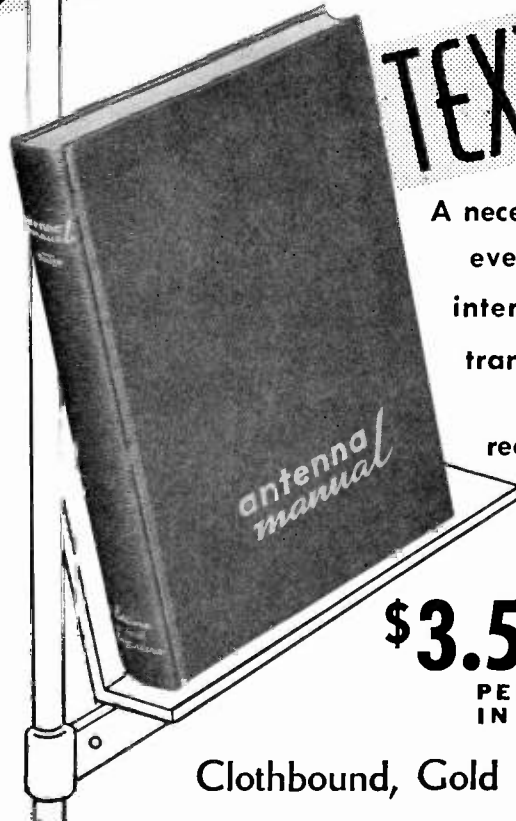
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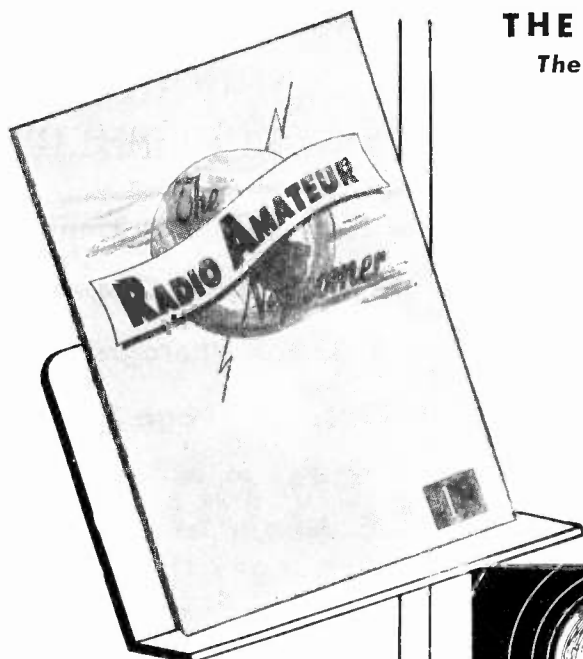
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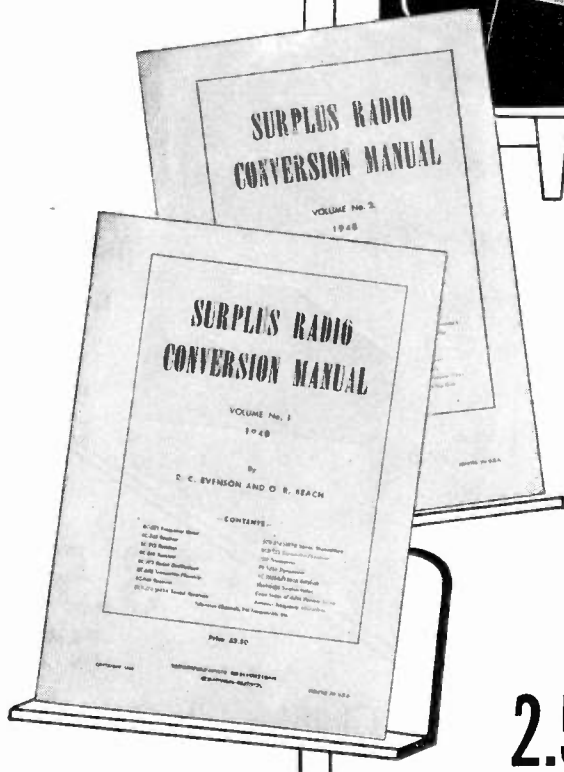
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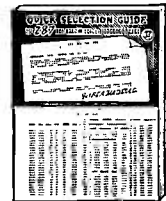


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Gives characteristics and socket connection diagrams for all RCA receiving tubes—Rectifiers, Detectors, Oscillators, Converters, Mixers, Voltage and Power Amplifiers, and Kinescopes. Also includes identification of miniature and metal types; discontinued types are keyed for the benefit of radio servicemen. 24 pages. Price: 10 cents each.



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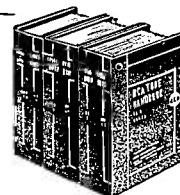
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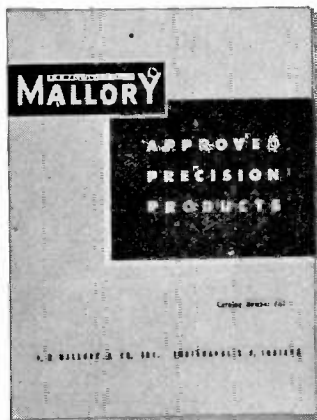
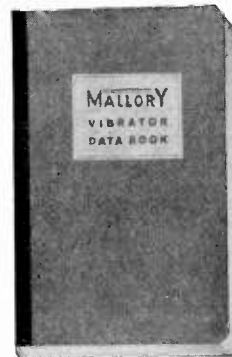
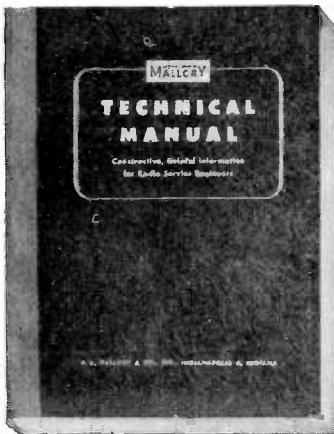
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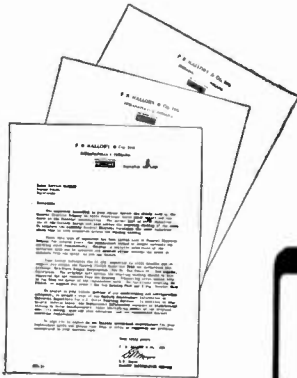


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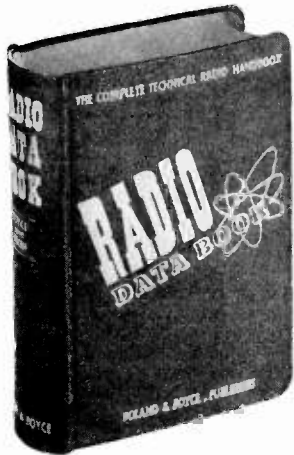


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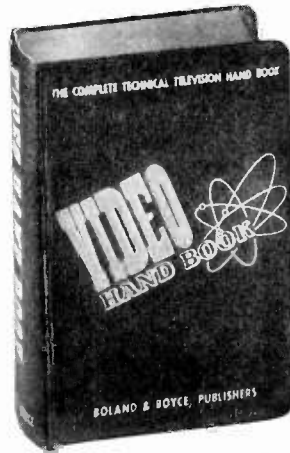
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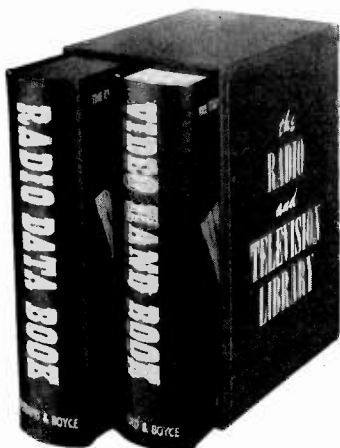
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# hallicrafters RADIO

## SX-42 Communications Receiver

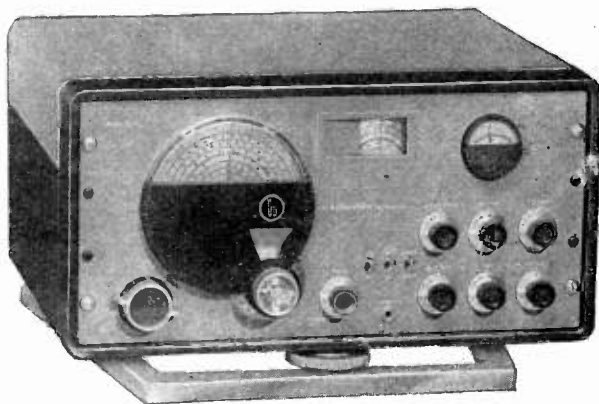
CONTINUOUS COVERAGE FROM 540 KC TO 110 MC  
IN 6 BANDS . . . FM RECEPTION ABOVE 27 MC.

Tops in performance and versatility . . . preferred by Amateurs, SWL's, and discriminating AM/FM broadcast listeners everywhere. AM reception 540 KC - 110 MC; FM 27-110 MC. Temperature-compensated oscillator with voltage regulator. Two RF and three IF stages; dual IF channels (455 KC and 10.7 MC). Audio flat 50-15,000 cycles; 8-watt output.

**CONTROLS:** Band Switch — #1 540-1620 KC, #2 1620-5000 KC, #3 5.0-15.0 MC, #4 15.0-30.0 MC, #5 27.0-55.0 MC, #6 55.0-110 MC. Main tuning dial with logging scale on knob. Band spread dial calibrated for 3.5, 7, 14, and 28 MC bands plus logging scale. Two-position dial lock secures either main or band-spread knobs. AF Volume Control with power switch, AVC, Noise Limiter and Receive/Standby switches. Crystal Phasing, AM/FM/CW/Phono, CW Pitch, six-position Selectivity, four-position Tone, and RF Gain Controls. "S" meter adjustment on rear. Control settings for Broadcast and FM Bands marked in color for simplified use by others in family.

**PHYSICAL DATA:** Gray steel cabinet with satin chrome trim. Top opens on piano hinge. Size 20 in wide by 10½ in. high by 16 in. deep.

**EXTERNAL CONNECTIONS:** Doublet or single wire antenna. 500 and 5000-ohm outputs. Phone jack. Phonograph input jack. Socket for external power. Remote control connections. Power cord for 105-125 volt 50-60 cycle AC line.



13 TUBES PLUS VOLTAGE REG. AND RECT. Two 6AG5's RF Amps., 7F8 Conv., 6SK7 IF Amp., 6SG7 2nd IF Amp., 6H6 2nd Det. and ANL, two 7H7's FM Amps., 6H6 Discriminator, 6SL7 Inverter, two 6V6's Push-pull Output, 7A4 BFO and FM Amp., VR-150 Reg., 5U4G Rectifier.

SX-42. Ship. wt. 71 lbs. . . . . Amateur Net **\$275.00**

R-42 Speaker (not shown). Base reflex, 8 in. PM in metal cabinet. Two-position tone switch. 500-ohm input. Size 17 in. wide by 11¾ in. high by 12½ in. deep. Ship. wt. 30 lbs. . . . . Net **\$34.50**

## SX-43 Communications Receiver

WIDEST COVERAGE IN ITS PRICE CLASS . . . 540 KC TO 55 MC PLUS FM 88 TO 108 MC.

A medium priced set with features not ordinarily found in communications receivers — extended coverage to include two extra bands plus FM reception. AM reception 540 KC - 55 MC; FM 44-55 and 88-108 MC. Temperature-compensated oscillator. One RF and two IF stages (3rd IF stage above 44 MC). Dual IF channels (455 KC and 10.7 MC). Audio response to 10,000 cycles; 3-watt output.

**CONTROLS:** Band Switch — #1 540-1700 KC, #2 1.7-5 MC, #3 5-16 MC, #3A 14-14.4 MC, #4 15.5-44 MC, #5 44-55 MC, #6 86-109 MC. Main tuning in MC. Band Spread Dial calibrated for 3.5, 7, 14 and 28 MC bands. Two-position tone, Receive/Standby and Noise Limiter switches. Crystal Phasing, RF Gain, Phono/FM/AM-AVC/AM-MVC/CW Four-Position Selectivity, AF Gain, CW Pitch. "S" meter adjustment on rear.

**PHYSICAL DATA:** Gray steel, satin chrome trim. Piano-hinge top. 18½ by 8½ by 12 in.

**EXTERNAL CONNECTIONS:** Doublet or single wire antenna. 500 and 5000-ohm outputs. Phone jack. Phonograph input jack. Socket for external power supply. Remote standby connections. 105-125 volt 50-60 cycle AC.



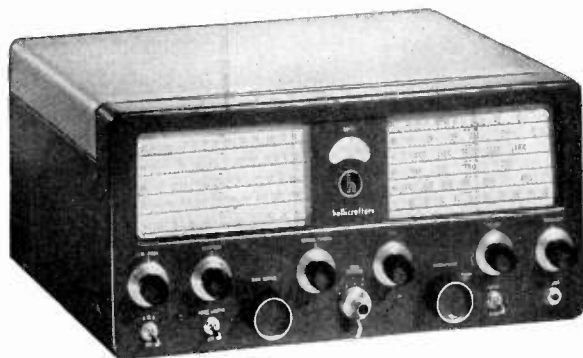
10 TUBES PLUS RECTIFIER. 6BA6 RF Amp., 7F8 Conv., 6SG7 IF Amp., 6SH7 2nd IF Amp., 6SH7 3rd IF Amp. (10.7 MC), 6H6 AM Det. and ANL, 6AL5 FM Det., 6SQ7 Audio, 6J5 BFO, 6V6 Output, 5Y3 Rectifier.

SX-43. Ship. wt. 45 lbs. . . . . Amateur Net **\$159.50**

R-44 Speaker (not shown). 6 by 9 in. oval PM type in metal cabinet matching SX-43. Two-position Tone switch. 500-ohm input. Size 18½ by 8½ by 9½ in. deep. Ship. wt. 19 lbs. . . . . Net **\$24.50**

# hallicrafters RADIO

## New SX-71 Communications Receiver



From the Hams at Hallicrafters to Hams everywhere comes this top-performing receiver in the medium price class. A new type of receiver—the first of its kind on the market—value-packed with features specifically asked for by the Hams. Extra sensitivity, selectivity, and stability, definitely superior image rejection with double superheterodyne circuit, plus built-in Narrow Band FM reception. Extra wide dials for main and bandsread tuning. Surpasses in Ham performance many receivers priced much higher.

**PERFORMANCE:** Continuous AM reception from 538 kc to 35 Mc, and 46 to 56 Mc. Built-in limiter and balanced detector stages for hiss-free NBFM reception. Double conversion (2075 and 455 kc i-f channels) gives image rejection of better than 300 to 1 at

28 Mc. One r-f, two conversion, and 3 i-f stages yield high gain for sensitivity in the order of 1 microvolt. Sharp selectivity as indicated by the 14 kc band width (1000 times down from resonance) even before cutting the crystal filter into the circuit. Audio peaked for communications frequencies, with 3 watt output.

**CONTROLS:** Band Selector 538-1650 kc, 1600-4800 kc, 4.6-13.5 Mc, 12.5-35 Mc, 46-56 Mc. Separate Main and Bandsread tuning controls; bandsread dial calibrated for 80, 40, 20, 10, and 6 Meter Bands. BFO Pitch, 3-position Selectivity, Crystal Phasing, Tone, AF Gain, and RF Gain controls. ANL, BFO, and Receive/Send switches. "S" meter adjustment on rear.

**PHYSICAL DATA:** Gray steel cabinet with satin chrome trim. Piano hinge top. Size 18½ in. wide by 8¾ in. high by 12 in. deep.

**EXTERNAL CONNECTIONS:** Use doublet or single wire antenna. 300 ohm output for separate speaker. Phone jack. Socket for external power supply. Connections for remote control. Power cord. For 105-125 volts 50/60 cycle AC.

**11 TUBES PLUS VOLTAGE REGULATOR AND RECTIFIER:** 6BA6 r-f Amp., 6C4 Osc., 6AU6 Mixer, 6BE6 2nd Conv., three 6SK7 i-f Amps., 6H6 ANL, and delayed AVC, 6SC7 BFO and a-f Amp., 6AL5 Det., 6K6GT Output, VR-150 Reg., and 5Y3GT Rect.

SX-71. Ship wt. approx. 33 lbs. Net **\$179.50**

R-44B Speaker. Matches SX-71. Tone switch. 500-ohm input Heavy Duty PM type, 6 x 9 in. oval. 18½ in. wide, 8¾ in. high, by 9¾ in. deep.

Ship. wt. 19 lbs. Net **\$24.50**

## New S-72 Portable Communications Receiver



You'll always be in touch with the outside world wherever you go with this Hallicrafters extra-sensitive all-wave portable receiver. Super-powered for superb performance with latest circuits and devices for maximum efficiency on AC, DC or battery operation. Designed both for the person who wants better than average reception even in weak signal areas and for the Radio Amateur.

**PERFORMANCE:** Covers standard broadcast band and three short-wave bands—540 kc to 30.5 Mc. One stage of tuned r-f amplification. Operates from built-in antennas—loop for broadcast and 27 in. whip for short-wave. Automatic Noise limiter. Image ratio 140 to 1 at 11 Mc, 18 to 1 at 30 Mc. Overall sensitivity

1.8 microvolts at 30 Mc, ranging to 6 microvolts at 1.7 Mc. Broadcast Band sensitivity with loop antenna 16 microvolts per meter.

**CONTROLS:** Band selector switch gives four tuning ranges: 540-1600 kc, 1500-4400 kc, 4.3-13 Mc, and 12-31 Mc. Sensitivity control. Turns on AVC when advanced to full "On" position, at the same time turning off BFO. Volume control combined with main OM/Off switch. Main tuning knob; separate bandsread control. Tone control combined with fine tuning control.

**PHYSICAL DATA:** Sturdy plywood cabinet, finished in handsome brown leatherette. Space for headphones. Size 14 in. wide, 12¼ in. high, by 7¼ in. deep. Carrying weight approx. 15 lbs., incl. batteries.

**EXTERNAL CONNECTIONS:** Phone jack on panel. Provision for attaching supplementary antenna if desired. Power cord for 105-125 volts DC or 60 cycle AC fits inside set when not in use. Automatic change-over from battery to electric power protects batteries. Power consumption on battery operation 100 ma. at 7.5 V. and 30 ma. at 90 V. Average battery pack lasts 50 to 100 hours depending upon length of continued use. Takes RCA VS018, Burgess G6M60, General 60B6F65 and similar battery packs.

**8 TUBES PLUS RECTIFIER:** 1T4 r-f Amp., 1R5 Osc., 1U4 Mixer, two 1U4 i-f Amps., 1U5 Det. and a-f Amp., 1U5 BFO and Automatic Noise Limiter, 3V4 Output, plus long-life Selenium Rectifier.

S-72. Less Battery. Ship. wt. 16 lbs. Net **\$79.95**

**LONG-WAVE MODEL — S-72L.** Covers airways radio ranges, airport control towers, and marine beacons. Same as S-72 only range 175-400 kc and 535-12,300 kc. Net **\$89.95**

# hallicrafters RADIO

## S-40A Communications Receiver

540 KC to 43 MC . . . TEMPERATURE COMPENSATED OSCILLATOR. ONE RF AND TWO IF STAGES. An outstanding value offering excellent performance in the lower medium price range. Built-in PM Speaker.

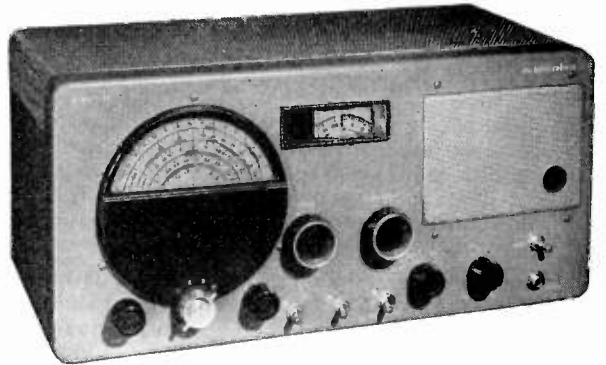
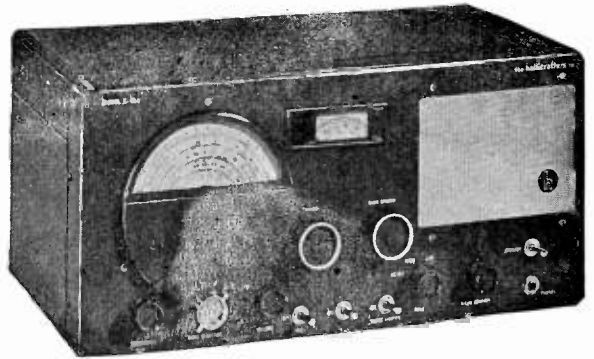
**CONTROLS:** Band Switch — #1 1540-1700 KC, #2 1.7-5.35 MC, #3 5.35-15.7 MC, #4 15.7-43.0 MC. Main tuning in MC; Bandsread has arbitrary scale. AF Gain, RF Gain; AVC, BFO and Noise Limiter switches; three-position Tone, BFO Pitch, Receive/Standby. Settings for Broadcast marked in color.

**PHYSICAL DATA:** Satin Black steel cabinet with brushed chrome trim. Top opens on piano hinge. Size 18½ in. wide by 9 in. high by 11 in. deep.

**EXTERNAL CONNECTIONS:** Doublet or single wire antenna. Phone jack. Socket for external power supply. Remote standby connections. 105-125 v. 50-60 cycle AC.

**8 TUBES PLUS RECTIFIER:** 6SG7 RF Amp., 6SA7 Conv., two 6SK7's IF Amps., 6H6 ANL and AVC, 6J5GT BFO, 6SQ7 2nd Det. and AF Amp., 6F6G Output, 80 Rectifier.

S-40A. Ship. wt. 33 lbs. . . . . Amateur Net **\$79.95**



## S-52 Communications Receiver

Exactly like the S-40A except designed for AC or DC operation. 7 Tubes plus rectifier and ballast tube: RF and IF tubes like S-40A; then 6H6 Det., 6SC7 and AF Amp., 25L6 Output, 25Z6GT Rect., and Ballast.

S-52. Ship. wt. 30 lbs. . . . . Amateur Net **\$79.95**



## S-53 Communications Receiver

540 KC - 31 MC PLUS 48-54.5 MC . . . 2 IF STAGES. Offers maximum performance in small size. 2 MC IF improves image ratio. Built-in speaker.

**CONTROLS:** Main tuning in MC; separate Band Spread; Receive/Standby; Band switch — #1 540-1630 KC, #2 2.5-6.3 MC, #3 6.3-16 MC, #4 14-31 MC, #5 48-54.5 MC; AM/CW; RF Gain; Noise Limiter; AF Gain; 2-position Tone, Speaker/Phones on rear.

**PHYSICAL DATA:** Steel cabinet, brushed chrome trim. Piano hinge top. Size 12¾ by 7 by 7¾ in.

**CONNECTIONS:** Doublet or single wire antenna. Phone tip jacks. Phono jack. 105-125 v. 50-60 cycle AC.

**TUBES PLUS RECTIFIER:** 6C4 Osc., 6BA6 Mixer, two 6A6's IF Amps., 6H6 Det., AVC, and ANL, 6SC7 BFO and AF Amp., 6K6GT Output, 5Y3 Rectifier.

S153. Ship. wt. 23 lbs. . . . . Amateur Net **\$69.95**



## S-38A Communications Receiver

540 KC - 32 MC in 4 BANDS . . . THE LOWEST PRICED COMMUNICATIONS RECEIVER ON THE MARKET . . . with many features of much higher priced receivers.

**CONTROLS:** Main tuning in MC; separate Band Spread, Speaker/Phones, AM/CW; Band Switch — # 1 540-1650 KC, # 2 1.65-5.0 MC, # 3 5.0-14.5 MC, # 4 13.5-32 MC, AF Gain; Receive/Standby.

**PHYSICAL DATA:** Satin black steel cabinet, brushed chrome trim. Size 12¾ by 7 by 7¾ in. deep.

**CONNECTIONS:** Doublet or single wire antenna. Phone tip jack. Cord for 105-125 v. AC or DC.

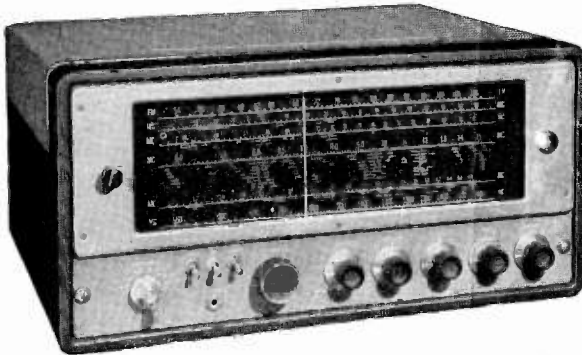
**4 TUBES PLUS RECTIFIER:** 12SA7 Conv., 12SK7 IF Amp. and BFO, 12SQ7 Det. & AVC, 50L6GT Output, 35Z5GT Rectifier.

S-38A. Ship. wt. 14 lbs. . . . . Amateur Net **\$39.95**



# hallicrafters RADIO

## SX-62 FM/AM All-Wave Radio



SWL VERSION OF FAMOUS SX-42 . . . COVERAGE 540 KC — 109 MC INCLUDING FM . . . BUILT-IN CRYSTAL CALIBRATOR.

Having basically the same chassis as Hallicrafters best communications receiver, the SX-62 provides communications-receiver performance in simplified form. A single tuning control covers the wide-visibility dial. Only one band lights up at a time — you always know just where you are tuning.

In addition a crystal calibration oscillator is built in. A flip of the switch at any time will put test signals at 500 KC intervals across the dial. You just tune in

the nearest one of these signals and then use the calibration-reset control to adjust the dial pointer to the exact frequency.

Continuous AM reception from 540 KC to 109 MC; FM reception 27-109 MC. Temperature-compensated oscillator with voltage regulator. Two RF and three IF stages; dual IF channels (455 KC and 10.7 MC). Audio flat 60-15,000 cycles; 8-watt push-pull output. CONTROLS: Band Selector — #1 540-1620 KC, #2 1.62-4.9 MC, #3 4.9-15 MC; #4 15-32 MC, #5 27-56 MC, #6 54-109 MC; Receive/Standby, Crystal calibration On/Off, Noise Limiter, Tuning, AF Gain, Phono/FM/AM/CW, six-position Selectivity, four-position Tone, RF Gain, and Calibration Reset.

PHYSICAL DATA: Gray steel cabinet with satin chrome trim. Top opens on piano hinge. Size 20 in. wide by 10¼ in. high by 16 in. deep.

EXTERNAL CONNECTIONS: Doublet or single wire antenna. 500 and 5000 ohm outputs. Phone jacks. Phonograph jack. Socket for external power. Remote standby connections. 105-125 volt 50-60 cycle AC line. 14 TUBES PLUS VOLTAGE REGULATOR AND RECTIFIER: two 6AG5's RF amps., 7F8 Conv., 6SK7 IF Amp., 6SG7 IF Amp., 7H7 IF Amp., 7H7 Limiter and AM Det., 6H6 Discriminator, 7A4 BFO, 6H6 ANL, 6SL7 AF Amp., two 6V6's Push-pull Output, 6CA Calibration Osc., VR-150 Regulator, 5U4G Rectifier.

SX-62. Ship. wt. 65 lbs. . . . . Amateur Net **\$269.50**



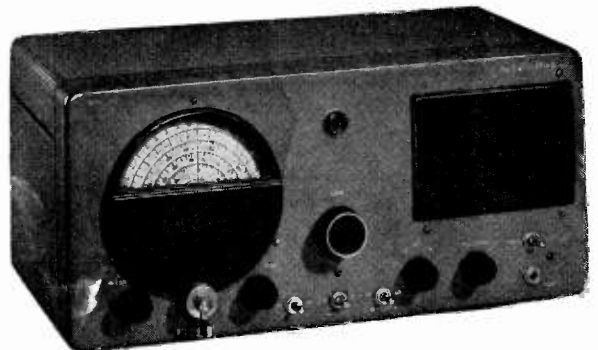
## S-51 Marine Receiver

Rugged and specially constructed for dependable sea or air use. Range 132 KC to 13 MC covers all important channels. Fixed frequency operation possible on three pre-tuned channels; facilitates switching frequency and/or standing guard. Built-in PM speaker. CONTROLS: Band Selector — 132-405 KC, 485-1530 KC, 1450-4550 KC, 4.2-13.0 MC, plus 3 fixed freq. positions in 200-300 KC and 2-3 MC range; RF gain, Volume, CW/AM, Range Filter, ANL, Tuning, 3 position Tone, CW Pitch, Rec./Standby. Gray steel cabinet: 18½ by 9 by 9½ in. deep; piano hinge top. Doublet or single wire antenna. Phone jack. Socket for 6, 12, or 32 v. vibrapack, 105-125 v. 50-60 cycle AC or DC. 9 TUBES PLUS RECTIFIER: 6SS7 RF Amp., 7A8 Conv., two 6SS7's IF Amps., 7C6 Det., 35L6 or 6V6 Output, 7A6 Noise Limiter, 6SS7 BFO, 35Z5 Rectifier. S-51. Ship. wt. 31 lbs. . . . . Amateur Net **\$149.50**  
Vibrapack for 6, 12, or 32 v. operation . . . . . **\$22.50**

## HT-18 Variable Freq. Oscillator

Complete exciter with calibrated band-switching and built-in power supply. Xtal or VFO, NBFM or CW on 5 Bands. Output 2.5-4.5 watts. Temperature compensated, voltage regulated. Built-in speech amp.

Variable frequency oscillator (used as ECO or Pierce xtal), frequency modulator with speech amplifier, plus 6L6 output. Operation switch, Band Selector (80, 40, 20, 10, 6 meters). Check, Plate, Power, and Deviation switches. Single tuning control. Mike, keying, remote control connections. 72-ohm output. 3 6BA6, 6L6, VR-150, VR-105, 5Y3GT. Size 12¼ x 7 x 7¼ in. deep. HT-18. Ship. wt. 25 lbs. . . . . Amateur Net **\$110.00**



SINCE  
1933

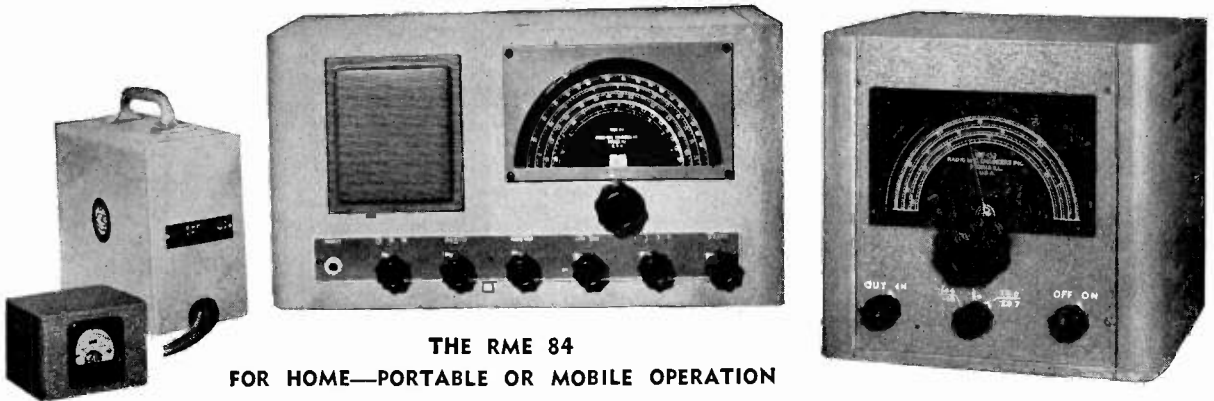


**RME**

FINE COMMUNICATIONS EQUIPMENT

**RADIO MFG. ENGINEERS, INC.**

Peoria 6, Illinois U. S. A.



**THE RME 84**  
**FOR HOME—PORTABLE OR MOBILE OPERATION**

RME 84 at right, VP-2—6 volt power pack with cable attached, optional for RME 84 in center, CM-1—Carrier Level "S" Meter with cord and plug, optional for RME 84 at left.

**The Coverage Is Complete .540 to 44 Megacycles**

An important feature is the continuous coverage ranging from 540 kc to 44 megacycles. This coverage, in addition to providing for the regular broadcast band, takes in the 80, 40, 20, 15 and 10 meter amateur bands. The calibration is made on a 7 inch diameter scale. In addition, a smooth-running vernier dial gives band spread on any setting of the main scale. The vernier scale makes five complete revolutions for the 180 degree rotation of the tuning condenser.

**Seven Tubes Have Been Chosen For The RME 84**

1. A 7B7 loctal radio frequency amplifier is ahead of the first detector.
2. A 7S7 loctal is used as a first detector and radio frequency oscillator.
3. A 7B7 serves as the first IF operating at 455 kc.
4. A 7B7, second IF further amplifies the signal.
5. A 7K7 loctal acts as second detector and first audio amplifier.
6. Another 7K7 provides the beat frequency and acts as noise limiter.
7. The 6G6G provides the final audio frequency output.
8. A 5Y3GT is the power rectifier tube.

**Portability Built Into The RME 84**

Conscious of the fact that many thousands of amateurs want a receiver for portable operation, the new RME 84 is equipped with a special socket connection making possible connections to either a B battery and an A battery supply or a similar source of power such as an external vibropack. 135 volts of B and 6 volts of A battery will operate the RME 84 at full power. The drain on the B battery is only 32 milliamperes at 135 volts and the 6 volt A battery provides 1.5 amps, including the two dial lights.

The new noise limiter, of the series type, performs exceptionally well. Also made available for future use with the RME 84 is a signal strength meter to be connected through the special socket located on the rear of the chassis apron.

**SENSITIVITY:** The average sensitivity of the RME 84 is of the order of 2 microvolts over the entire range of the instrument.

RME 84, CODE HANDY, complete for 115 volt, 60 cycle operation and for use with external battery supply. May also be had for 230 volt, 25 cycle operation at additional cost. f.o.b. Peoria, Illinois, Net Selling Price \$98.70

VP-2, CODE HOMER, A 6 volt power pack with cable attached, optional equipment for RME 84. f.o.b. Peoria, Illinois, Net Selling Price \$28.20

CM-1, CODE HURST, Carrier Level "S" Meter with cord and plug, optional equipment for RME 84. f.o.b. Peoria, Illinois, Net Selling Price \$14.00

**VHF-152A**  
**3 BAND**  
**CONVERTER**

Reception on the new high frequencies, 50 to 54 mc. and 144 to 148 mc. bands, and better reception on the 27 to 29.7 mc. band, using the double detection system, image free, at a cost which any amateur can afford—that is what the new VHF-152 is designed to give. . . . Every owner of a communications receiver can, with the acquisition of this new converter, do a much better job of working high frequency signals than is possible with most any higher priced, specially designed receiver.

This converter provides an order of stability at 50 mc. much higher than most communications receivers have when operating at 5 mc. New engineering design and construction make this possible.

Miniature tubes are used, a 6AK5 rf amplifier and a 6J6 detector and a 6J6 oscillator complete the converter proper. The built-in power supply uses a 5Y3GT rectifier tube and a VR150 voltage regulator. The three bands are calibrated to cover the full sweep of a seven-inch diameter scale, indirectly illuminated. . . . The tuning mechanism is of the same sturdy, positive construction characteristic of all RME units. Smooth, velvety operation of the large knob makes operation a pleasure.

The sensitivity of the VHF-152 is of the order of 2 microvolts. Its output frequency is 7000 kc.

Separate connections are provided for the 10, 6 and 2 meter antennas and for the antenna used with the receiver. Each band has its own especially designed antenna input circuit of approximately 300 ohms impedance. The input of the receiver is changed from the VHF-152 output to the receiver antenna by a front panel switch. Another front panel switch selects the 10, 6 or 2 meter band for VHF-152 operation.

Interconnecting plug and cord are also furnished, which permanently connect the VHF-152 direct to the input terminals of the receiver.

The cabinet is designed to match the RME-45 communications receiver, both in streamlined appearance and in two tone gray and black crinkle finish.

Dimensions are as follows: 11" high, 12" wide, 11" deep, with hinged lid. Standard operation is for 115 volt, 50-60 cycle power source.

Complete with tubes, interconnecting plug and cord. CODE: HAMPY, f.o.b. Peoria, Illinois, Net Selling Price \$86.60.

SINCE  
1933

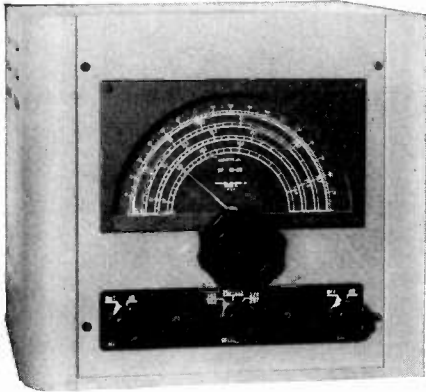


RME

FINE COMMUNICATIONS EQUIPMENT

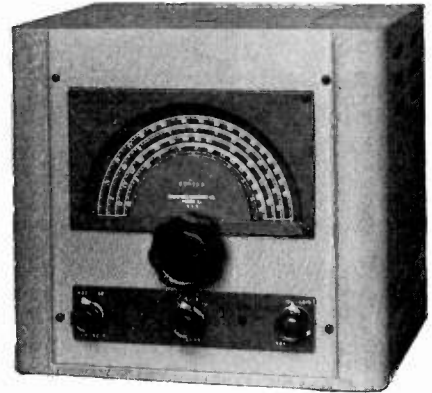
RADIO MFG. ENGINEERS, INC.

Peoria 6, Illinois U. S. A.



**THE HF 10-20 CONVERTER**  
For 10-11-15 and 20 Meters

Because of the double conversion system, the HF 10-20 provides outstanding and imageless reception on 10-11-15 and 20 meters. And it's an especially vital adjunct to those receivers that tune only up to 18 mc. or possess inadequate bandspread. The HF 10-20 provides an average of 7.8 linear inches of calibrated bandspread on each of the three bands. Images are non-existent. The output (I. F. frequency) of the HF 10-20 is 7 mc. It can be used with any all-wave or amateur receiver. Features include provision for separate antennae, self-contained power supply, antenna selector switch, band selector and high gain. The increase in gain, depending on the receiver and receiving conditions, is approximately 30 DB over the entire range of frequencies covered. Tubes used are a 6BA6 RF amplifier and a 6J6 twin triode mixer. Built-in power supply uses a 5Y3GT rectifier and a VR150 voltage regulator. Model HF 10-20 Converter, Standard Model, CODE HORN, in cabinet to match RME 45 Receiver in appearance. Dimensions: 11" high, 12" wide, 11" deep. Amateur Net Price.....\$77.00 Model HF 10-20 Type "S" Converter, CODE HILL, in cabinet to match RME 84 in appearance. Dimensions: 9 1/8" high, 10 1/4" wide, 10 1/4" deep. Amateur Net Price.....\$77.00

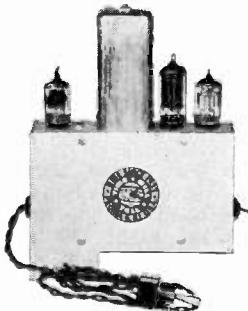


**THE DB22A PRESELECTOR**  
Coverage .54 to 44 Mc. — Average Gain 30 DB

Here's the new DB22A completely redesigned for greater efficiency and higher signal to noise ratio. It uses new 6BA6 miniatures. Image ratio is better than 50 DB with a communications receiver having a single stage of RF. It's calibrated, has smooth planetary tuning, self contained power supply, antenna by-pass switch, gain control and many other features. Model DB22A Preselector, Standard Model, CODE BONET, in cabinet to match RME 45 Receiver in appearance. Dimensions: 11" high, 12" wide, 11" deep. Amateur Net Price.....\$71.00 Model DB22A—Type "S" Preselector, CODE CLEAR, in cabinet to match RME 84 Receiver in appearance. Dimensions: 9 1/8" high, 10 1/4" wide, 10 1/4" deep. Amateur Net Price.....\$71.00

**THE NEW RATIO DETECTOR (NBF4)**  
For Optimum Narrow Band FM Performance

With this plug-in unit and an RME 45 receiver, the noise reducing advantages of NFM are fully realized. NFM Signals that can't be heard with good AM communications receivers come in loud and clear against a noiseless background.



Equal sensitivity can be enjoyed on AM or NFM. It employs a highly efficient ratio-type detector and a limiter for noiseless reception of NFM signals. Only RME 45 receivers can employ the unit.

Amateur Net Price.....\$19.50

**THE BOOMERANG (MB-3)**  
A Break-In & Monitoring Device for CW & Fone

The "Boomerang" is the solution to rapid and efficient break-in, and the avoidance of needless QRM. Dots and dashes are heard in the headphones or the speaker while sending—a great help in perfecting the fist and avoiding errors.

When the key is down, any signal normally going through the receiver is automatically suppressed. Raise the key and instantaneously the receiver functions.

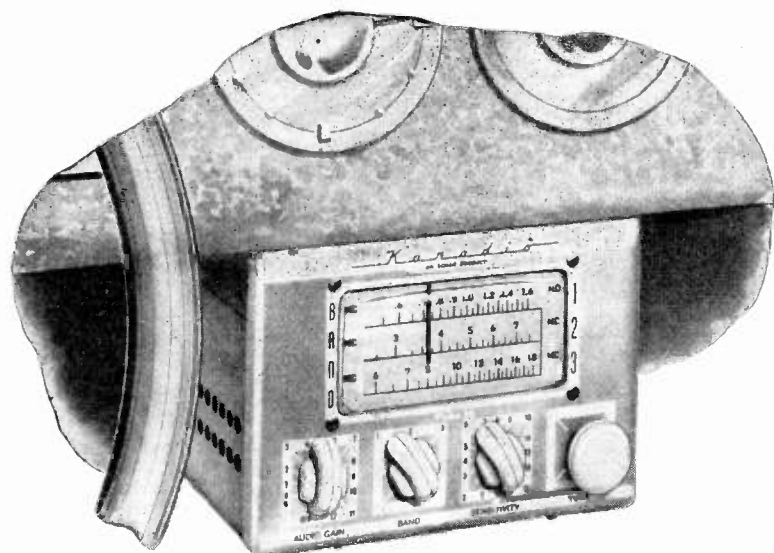
The "Boomerang" can be used as a handy monitor for phone operation, as a code practice oscillator and a tone modulator. Tubes include a 7K7, a 6SL7 and a 6x4 rectifier. Cabinet is two-tone grey finish.



Amateur Net Price.....\$29.50

# Karadio

TRULY FINE MOBILE RECEIVERS SINCE 1927



presents the new  
**MODEL 80-C-3**  
**BAND RECEIVER**

**BROADCAST BAND**  
- - - **PLUS** - - -

**Amateur**  
**75 - 40 - 20 METER BANDS**

Band 1—Broadcast ..... 535-1700 KC  
Band 2—Short Wave ..... 2.7-7.3 MC  
Band 3—Short Wave ..... 5.4-18 MC

## MODEL 80B for the PILOT

Band 1—Range ..... 190-450 KC  
Band 2—Broadcast ..... 535-1700 KC  
Band 3—Aviation ..... 2.4-6.8 MC

**KNOW THE WEATHER BEFORE YOU FLY!**

**SMALL-NEAT**  
**CONVENIENT**

*for your car*

## Specifications

**Controls:** On/off and audio gain, Band selector, Sensitivity, Band Tuning.

**6 Tubes:** RF Amplifier ..... 6BA6  
Power Amplifier ..... 6AQ5  
IF Amplifier ..... 6BA6  
Converter & Oscillator ..... 6BE6  
2nd Detector, 1st Audio and AVC ..... 6AT6  
Rectifier ..... 6X5GT

**Power:** Operates off 6 Volt car battery. No special power units required.

**Dimensions:** Receiver—6¾" wide, 4¾" high, 6¼" deep.  
Speaker and power supply unit—8" by 8" by 4¼".

**Shipping Weight:** 18 lbs.

**Accessories:** Diode current jack and phone jack on special order.

## Check These Features!

- **High Sensitivity** . . . Three gang tuning capacitor. Tuned RF stage on all bands. Sensitivity runs below 5 microvolts for .5 watt output.
- **Positive Action Tuning** . . . controls mounted directly to radio chassis . . . no backlash from flexible shafts or gear assemblies.
- **Easy to install** . . . in car or truck . . . easy to remove. Accessibility of all parts simplifies repairs or replacements.
- **High Quality 6"** permanent magnet speaker combined with power supply unit. Developed specially for communications use in car or truck.
- **Sturdy Construction.** Housing of sheet steel, hammered metal finish. Steel chassis with heavy plating of cadmium.
- **Special Design** coils for optimum selectivity and sensitivity.
- **Accurately Calibrated,** large, easy-to-read slide rule dial.

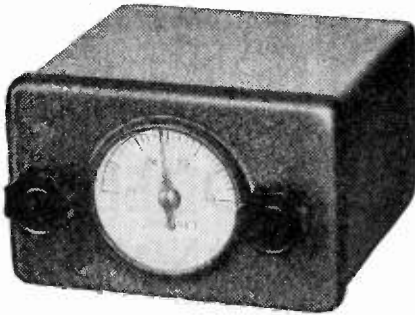
Other Karadios available in single band or fixed frequency receivers. For further information see your jobber or write direct.

**ECKSTEIN RADIO AND TELEVISION CO.**  
**LEROY, MINNESOTA**

Export Sales Division: SCHEEL INTERNATIONAL, INC., 4237 N. Lincoln Ave., Chicago 18, Illinois, Cable Address: Harscheel, Chicago



**GONSET CO.**  
**BURBANK, CALIF.**



### STANDARD MOBILE CONVERTER

The GON-SET 10-11 Meter Converter, complete with built-in pre-selection, is designed for use with either broadcast, auto, or communications receivers. Attaching the Converter to your present radio provides unexcelled mobile or fixed reception. GON-SET converters have been manufactured since 1938 and are used world-wide. Long experience, together with precision design and construction assures a superior product. Ideal for surplus receivers.

#### SPECIFICATIONS

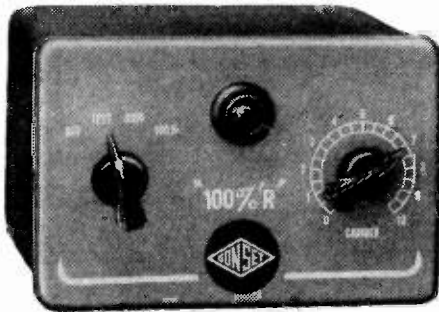
- Tubes: 6AK5 - R.F. 6AK5 - Mixer. 6C4 - OSC. 0B2 Voltage Regulator.
- Output: 1500-2000 KC.
- 8-1 Vernier.
- Illuminated Dial.
- Connecting Cables included.
- Weight: 2 lbs.
- Single Dial Control.

#### MODELS AVAILABLE

6 (50-54 M.C.)    10-11 (27-30 M.C.)    15 (21-22 M.C.)    20 (14-14.5 M.C.)    75 (3-4 M.C.)

- Other Frequencies on Special Order •

Price Complete **\$39.95\***



### "100% 'r'"

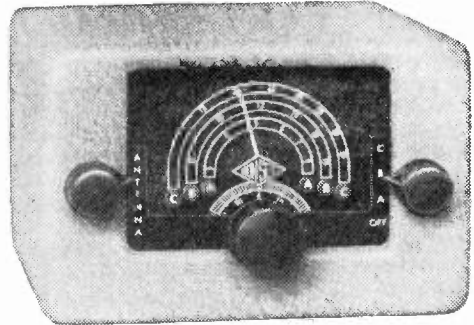
- ACCURATE
- INDEPENDENT OF WAVE FORM
- WORKS ON ANY AM RIG
- NO METER OR SCOPE TO WATCH

The GONSET "100% 'r'" is a modulation indicator of the "peak flash" type which flashes a warning light whenever the peak modulation percentage exceeds a predetermined value.

A selector switch giving the option of 85 % or 100% permits you not only to tell when overmodulation occurs, but also tells if the average speech level is up high enough.

The GONSET "100% 'r'" is a must for adjusting a rig using a low level speech clipper. With it you can set the clipper threshold accurately in a matter of seconds.

Price Complete **\$19.95\***



### "3-30" MOBILE CONVERTER

- Continuous coverage, 3 to 30 Mc.
- Bandsread dial with plenty of bandsread on amateur bands.
- High sensitivity on a short whip.
- High stability. No "warm up" drift.
- Four working (r.f.) tubes give lots of reserve gain.
- Extremely compact. Same size as famous GONSET "10-11" mobile converter, only 5 1/4" by 3 1/2" by 5 1/4" deep.
- Low plate current drain (approximately 10 ma.).

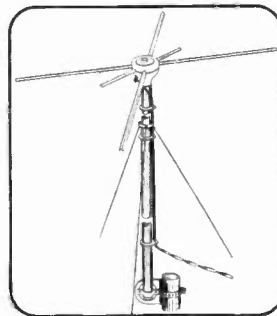
Price Complete **\$39.95\***



### CLIPPER

A simple, inexpensive noise silencer designed specifically to aid in reduction of such interference as ignition noise, power leaks, electric razors, etc. The unit is small in size, 2" x 4" x 1 1/2", and weighs less than one pound. This silencer makes an ideal attachment for communication and mobile receivers. Complete with installation instructions and connecting cables.

Price Complete **\$8.25\***



MODEL "W-W"

### ALL CHANNEL TELEVISION BEAM ANTENNA

- Operates on new principle.
- Rapid assembly. No screws or nuts to install.
- Highly efficient on all channels, 2 through 13.
- 9-foot aluminum mast.
- Weatherproof twin lead connections.
- Designed by antenna engineers.

The GONSET "Double-W" all-channel television beam antenna provides results heretofore obtainable only in the highest priced antennas and in addition offers several new features.

The gain of the "Double-W" increases with frequency, a desirable characteristic when it is considered that receiver sensitivity decreases and line losses increase as the frequency is raised.

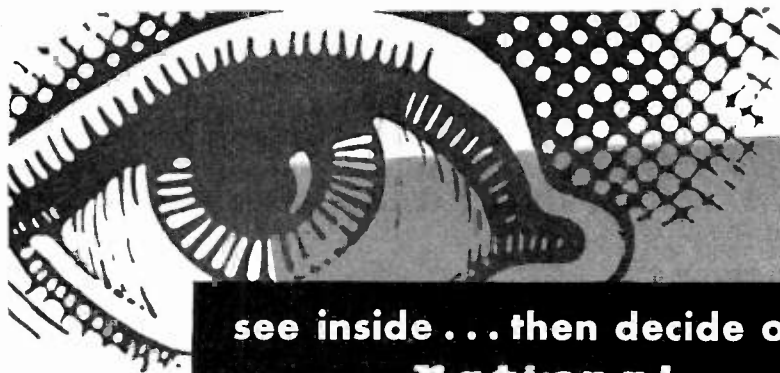
The directivity of the "Double-W" also increases with frequency, a valuable feature when it is considered that "ghost" problems increase with frequency.

Due to new electrical operating principles no "holes" in reception will be found in any of the channels.

Throughout the high band the directivity pattern is sharper than that of a dipole and reflector combination, or a dipole, director and reflector combination. This provides better discrimination against spurious reflections from buildings and other tall objects slightly to one side of the main signal path. Such reflections often produce a particularly tough "ghost" problem on the high band which cannot be resolved satisfactorily with a dipole-and-reflector combination.

"DOUBLE W" complete with 9-foot mast..... **\$14.95 List**  
 "DOUBLE W" complete with 5-foot mast..... **13.25 List**  
 STACKING KIT (2 "Double-W" required in addition)..... **3.25 Net**  
 REFLECTOR KIT..... **4.95 Net**

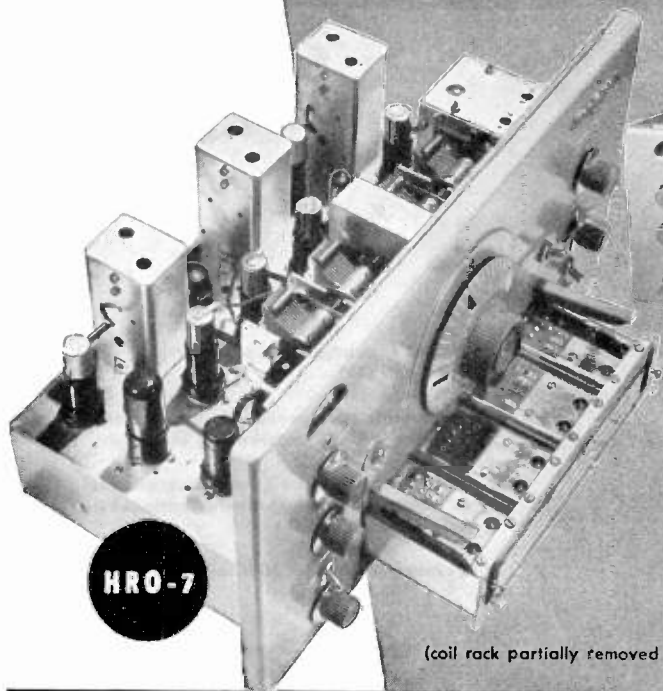




see inside . . . then decide on world-famous



RECEIVERS



HRO-7

(coil rack partially removed)



## the finest amateur receiver National has ever made!

Subjected to the severest tests of government, commercial and amateur use for 14 years, the basic HRO design has set a new high in receiver performance. Now, here it is in its newest, finest form. As always, the major components are National designed and made.

**RANGE:** 1.7 to 30 mcs (Additional coils available for 50 to 430 kcs. 480 to 2050 kcs, 30 to 35 mcs.)

**SENSITIVITY:** 1 microvolt or better.

**IMAGE REJECTION:** Better than 30 db at 30 mcs.

**SIGNAL-TO-NOISE RATIO:** Exceeds 16 db with 5 microvolts input.

**AVC CHARACTERISTIC:** to  $\pm 10$  db between 1.0 and 100,000 microvolts input.

**\$312.86\***

(Complete with coils and power supply, less speaker)

1. Automatic adjustable-threshold noise limiter.
2. Lever handles for coil set changing.
3. Slide rule calibration on all coil sets.
4. 500-degree micrometer dial (effective scale length 12 feet). 400 degrees of bandspread on 80, 40, 20, 11-10 meters!
5. Accessory socket and switch for NFM adaptor or phonograph.
6. Two tuned RF stages.
7. Two IF stages.
8. Precision gear drive eliminates backlash.
9. Voltage-regulated high frequency oscillator for exceptional stability.



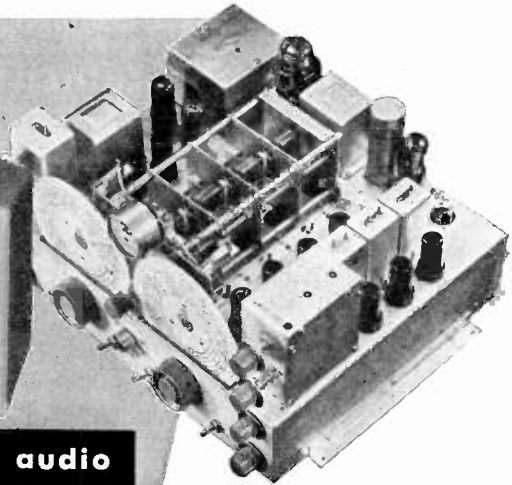
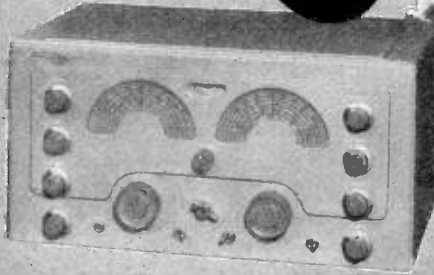
### Deluxe HRO-7C

The incomparable HRO-7 power supply 10" speaker, coils and coil compartment all in one convenient table unit.

**\$358.50\***



**NC-183**

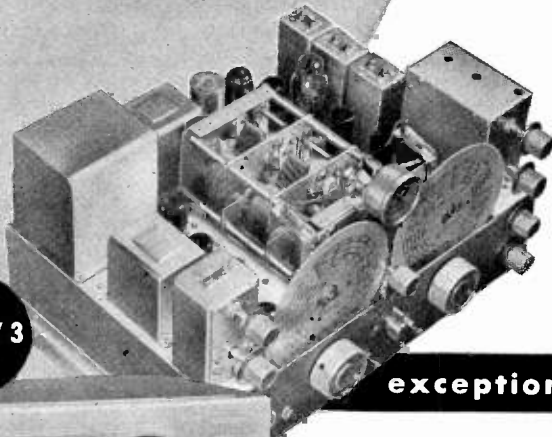
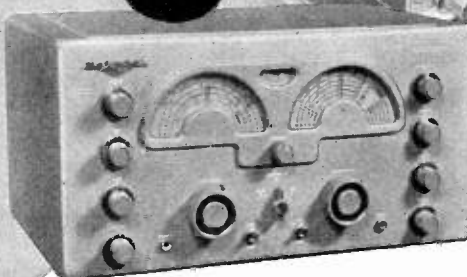


**2 RF stages plus high-fidelity audio**

- Covers 540 kcs to 31 mcs plus 48-56 mcs. Calibrated amateur bandsread for 6, 10-11, 20, 40 and 80 meter bands. Gear drive tuning dials.
- Two RF stages on all bands! Image rejection 40 db at 28 mc!
- New automatic "double-diode" noise limiter, effective on both phone and CW!
- New Crystal filter provides 6 steps of selectivity!
- 5-meter with adjustable sensitivity for both phone and CW!
- Temperature compensation and voltage regulator provide outstanding stability!
- High-fidelity push-pull audio output! Ideal for phonograph attachment. Continuously variable tone control.
- Accessory socket for NFM adaptor!

**\$268\***  
 (less speaker)

**NC-173**



**exceptional sensitivity, stability**

- Covers 540 kcs to 31 mcs plus 48-56 mcs. Calibrated electrical bandsread for 6, 10-11, 20, 40 and 80 meter amateur bands!
- Automatic noise limiter effective on both phone and CW, with adjustable threshold!
- Highly flexible crystal filter provides 6 steps of selectivity!
- 5-meter for both phone and CW!
- New temperature compensation and voltage regulation assure exceptional stability!
- Accessory socket for NFM-73 adaptor!
- Trimmer control permits panel adjustment of RF stage!
- Tone control. Phono input jack also provided.

**\$189.50\***  
 (less speaker)

\*Prices slightly higher west of the Rockies.



# components

NATIONAL CO. MALDEN, MASS.

see inside ... then decide on world-famous  
**National RECEIVERS**



HFS

### EXPLORE VHF

Check MUF! Be ready for those DX contacts whether it's on 1, 2, 6 or 10 meters! Here is the latest in VHF design — compact, dependable, modestly-priced — ideal for both your car and your shack.

(less power supply) **\$142.00\***

### COMPLETE COVERAGE 27 MCS — 250 MCS!

... in 6 bands, including 1 1/4, 2, 6, 10 and 11 meter amateur bands.

### AM — FM — CW!

Operation assures optimum signal-to-noise ratio.

### MOBILE, PORTABLE OR FIXED!

Operates from standard National 5886 power supply, National 686S vibrator power supply or "A" and "B" batteries! Built-in speaker. Light.

### RECEIVER OR CONVERTER!

Makes any receiver capable of tuning to 10.6 mcs a top VHF receiver. All features of connected receiver are usable on VHF.



NC - 57

### GREATEST RANGE IN ITS CLASS!

Complete coverage 540 kc to 55 mc. Separate 6SG7 tuned RF amplifier. Bandspread tuning over entire range. Separate RF gain control for adjusting sensitivity. Pitch control to adjust beat note on CW. Voltage regulated oscillator circuit. Automatic threshold noise limiter to minimize ignition noise, static, etc. Simple 5-position switch for band switching. RF trimmer control to match various types of antenna for maximum efficiency. Provision for battery operation. Accessory socket for SM-57 signal strength meter.

**\$89.50\***



NC - 33

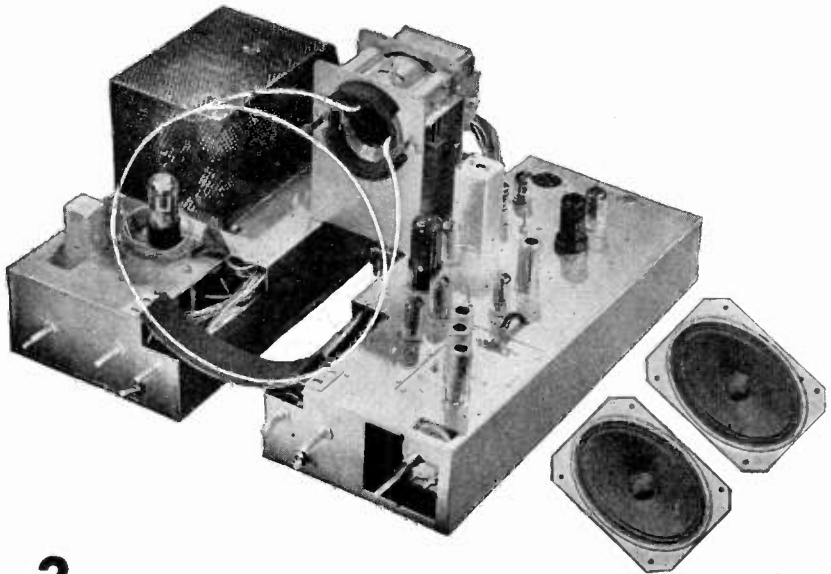
Operates from 110-120 volts AC or DC. Ideal for shipboard and other uses where DC only is available. Covers from 500 kc distress frequency to 35 mcs. Electrical bandspread on all bands! Broadcast, amateur, police and foreign bands plainly marked. Automatic noise limiter assures optimum reception under all operating conditions. CW oscillator with pitch control provides superb CW reception.

**\$57.50\***

\* Prices slightly higher west of the Rockies. (with built-in speaker)

1  
2  
3

**NATIONAL TELEVISION** chassis



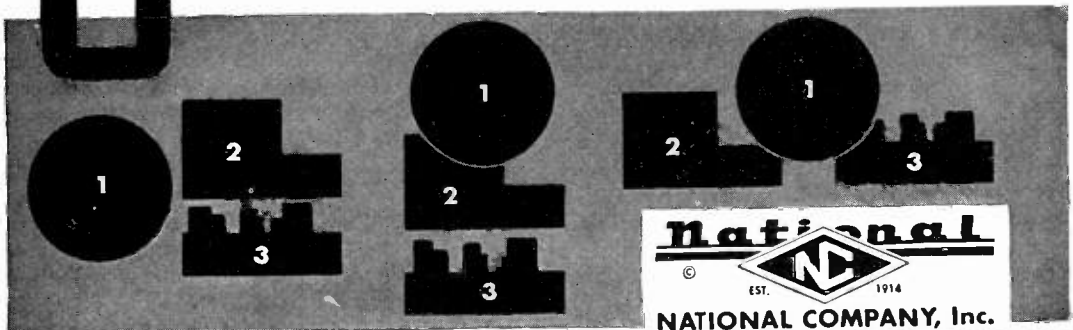
**3-UNIT DESIGN FITS ANY CABINET . . .**

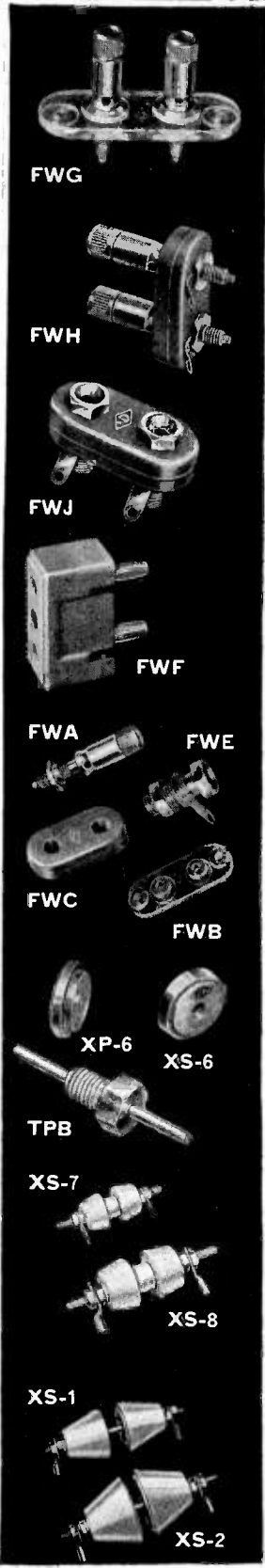
The most versatile television chassis yet designed! Three basic units — power supply chassis, RF chassis and deflection yoke assembly — may be placed side by side, one above the other, etc., to conform to any cabinet. Simply plug in the cable connectors. Each unit is soundly engineered and built to famous National standards of performance.

1. Operates 10" or 12" picture tube.
2. Tunes all 12 channels.
3. Wired, pre-tuned and tested — not a kit.
4. RF stage employs tuned grid and plate for maximum gain and optimum band width.
5. Unique 36 mc IF minimizes interference.
6. Fine tuning control covers range of 2-3 mc. for maximum tuning accuracy.
7. Improved intercarrier sound.
8. Magnetic deflection and "flyback" high voltage supply.
9. 72-ohm unbalanced and 300-ohm balanced inputs.
10. Supplied with two six-inch PM speakers.

**\$149<sup>50</sup>** (less picture tube)

Supplied with mounting bracket for 10" or 12" picture tube





**FWG** Net \$ .60  
A Victron terminal strip for high frequency use. The binding posts take banana plugs at the top, and grip wires through hole at the bottom, simultaneously, if desired.

**FWH** Net \$ .66  
The insulators of this terminal assembly are molded R-39 and have serrated bosses that allow the thinnest panel to be gripped firmly, and yet have ample shoulders. Binding posts same as FWG above.

**FWJ** Net \$ .54  
This assembly uses the same insulators as the FWH above, but has jacks. When used with the FWF plug (below), there is no exposed metal when the plug is in place.

**FWF** Net \$ .70  
This molded R-39 plug has two banana plugs on 3/4" centers and fits FWG, FWH or FWJ above. Leads may be brought out through the top or side.

**FWA**, Post Net, each \$ .20  
Brass Nickel plated

**FWE**, Jack Net, each \$ .15  
Brass Nickel Plated

**BWA** (not illustrated) Net \$ .10

Standard banana plug, silver plated to reduce contact resistance in r.f. circuits.

**BWE** (not illustrated) Net \$ .15

Matching jack for BWA, silver plated.

**FWC**, Insulator Net, per pair \$ .24

R-39 Insulation.

**FWB**, Insulator Net, each \$ .15

Polystyrene insulation.

**XS-6** Net, each \$ .12

A low-loss steatite bushing for 1/2" holes. Passes 6-32 screw.

**XP-6** Net, box of ten \$ .51

Same as above but polystyrene.

**TPB** Net, per dozen \$ .75

A threaded polystyrene bushing with removable .093 conductor moulded in, 1/4" diam., 32 thread.

**XS-7**, (3/8" Hole) Net \$ .36

**XS-8**, (1/2" Hole) Net \$ .48

Steatite bushings. Prices include male and female bushings with metal fittings.

**XS-1**, (1" Hole) Net \$ .72

**XS-2**, (1 1/2" Hole) Net \$ .81

**AA-3** Net \$ .36  
A low-loss steatite spreader for 6 inch line spacing. (600 ohms impedance with No. 12 wire.)

**AA-5** Net \$ .30  
A low-loss steatite aircraft-type strain insulator.

**AA-6** Net \$ .54  
A general purpose strain insulator of low-loss steatite.

**GS-1**, 1/2" x 1 3/8" Net \$ .24

**GS-2**, 1/2" x 2 7/8" Net \$ .30

**GS-3**, 3/4" x 2 7/8" Net \$ .60

**GS-4**, 3/4" x 4 7/8" Net \$ .75

**GS-4A**, 3/4" x 6 7/8" Net \$ 1.05

Cylindrical low-loss steatite standoff insulators with nickel plated caps and bases.

**GSJ**, (not illustrated) Net \$ .10

A special nickel plated jack top threaded to fit the 3/4" diameter insulators GS-3, GS-4 & GS-4A.

**GS-10**, 3/4" high Net, box of ten \$ .90

**GS-10S** (not illustrated) but same as GS-10 except includes threaded stud in top end. Net, box of ten \$ 1.00

**GS-5**, 1 1/4" high Net \$ .30

**GS-6**, 2" high Net \$ .42

**GS-7**, 3" high Net \$ .75

These cone type standoff insulators are of low loss steatite. They are molded with a tapped hole in each end for mounting as follows:

**GS-5**, 8-32 tap 7/16" deep; **GS-6 & GS-7**, 10-24 tap 11/16" deep; **GS-10**, 6-32 tap 1/4" deep and **GS-10S** as noted above.

**GS-8**, with terminal Net \$ .54

**GS-9**, with jack Net \$ .75

These low-loss steatite stand-off Insulators are also useful as lead-through bushings.

**XS-3**, (2 3/4" hole) Net \$ 3.60

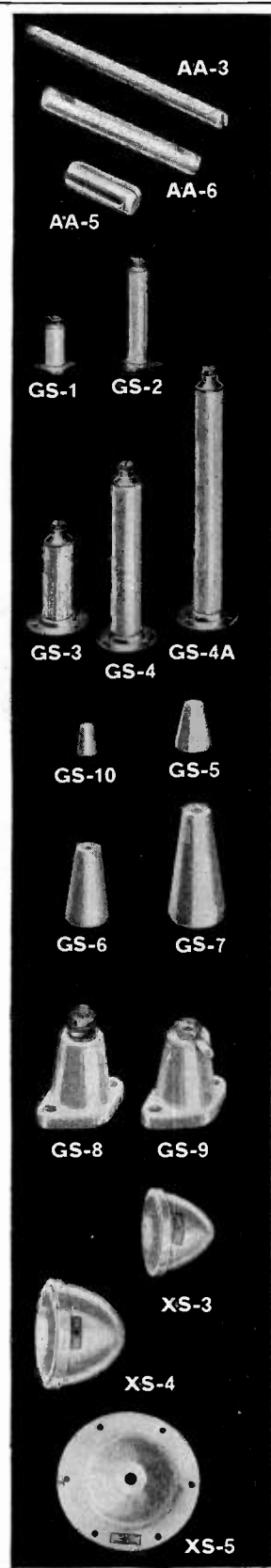
**XS-4**, (3 3/4" hole) Net \$ 4.35

Prices are per pair and include nickel plated spindles, lugs and hardware. These low-loss steatite bowls are ideal for lead-in purposes at high voltages.

**XS-5**, Without Fittings Net, each \$ 4.95

**XS-5F**, With Fittings Net, per pair \$ 10.20

These big low-loss bowls have an extremely long leakage path and a 5/4" flange for bolting in place. Insulation steatite. Fittings include nickel plated brass spindles, lugs, nuts and washers.





**HRT**



**HRS-1**



**HRS-2**



**HRS-3**



**HR**



**HRB**



**SB**



**ODD**



**R**



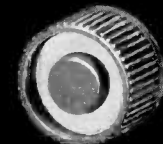
**HRP-P**



**HRP**



**HRK**



**HRT-M**



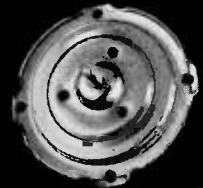
**ODL**



**RSL**



**AN**



**AVD**

**HRT (gray or black) Net \$ .75**

The HRT knob is 2 1/8" in dia. and fits 1/4" shafts. This knob has a chrome appearance circle and combined with the HRS series shown below gives the new look to panel layouts.

**HRS (gray or black) Net \$ .50**

The HRS series knobs are a popular easy to grip knob. They are molded of high quality plastic and have 1 3/8" dia. chrome plated bevel skirts fit 1/4" shafts available in the following scales:

<b>HRS-1</b>	ON-OFF	through 30°
<b>HRS-2</b>	5-0-5	through 180°
<b>HRS-3</b>	0-10	through 300°
<b>HRS-4</b>	Single etched line	

**HR (gray or black) Net \$ .30**

An HRS type knob without the chrome plated skirt but with a white dot for spotting relative control settings.

**HRB Net \$ .45**

Ideal for bandswitching or other applications where a switch is turned to several index positions, the new HRB lever knob has just the right feel — a bright zinc alloy die casting.

**SB Net \$ .18**

A nickel plated brass bushing 1/2" dia. (Fits 1/4" shaft).

**ODL Net \$ .33**

A locking device which clamps the rim of O, K, L and M Dials. Brass, nickel plated.

**ODD Net \$ .42**

Vernier pinch drive for O, L, or other plain dials.

**AN Vernier Mechanism Net \$ 1.80**

A vernier mechanism ratio 5-1 has an insulated output shaft coupling for 1/4" shafts. Drive Shaft fits 3/16" knob.

**AVD Vernier Mechanism Net \$ 1.65**

Similar to AN-Output shaft coupling is non insulated.

For commercial uses many variations available. Write for further particulars.

**R Net \$ .60**

This small dial has a 1 5/8" dia. scale calibrated 0-10 in 180° for increased reading with clockwise rotation. Black bakelite knob. Fits 1/4" shaft.

**HRP-P Net \$ .24**

Black bakelite knob 1 1/4" long and 1/2" wide. Equipped with pointer. Especially suitable for use on wafer and other rotary switches on laboratory equipment and the like. (Fits 1/4" shaft).

**HRP Net \$ .18**

The type HRP knob has no pointer but is otherwise the same as the knob above. Recommended for uncalibrated or hard-tuning controls. (Fits 1/4" shaft).

**HRK Net \$ .57**

Black bakelite knob 2 3/8" dial — extremely rugged. This is the knob used on National type O and type L dials.

**HRT-M Net \$ .50**

This is a smaller version of the HRT and was designed originally for use on the NC-57 Receiver — now available in choice of gray or black — is 1-7/16" in diameter.



# components

NATIONAL CO. MALDEN, MASS.

**N Dial** Net \$4.50  
**AD Dial** Net \$3.00

The four-inch N and AD Dials have engine divided and die stamped scales respectively. The N Dial has a decimal vernier; the AD Dial employs a pointer. The planetary drive has a ratio of 5 to 1, and is contained within the body of the dial. 2, 3, 4 or 5 scale. Fits 1/4" shaft. Specify scale.

**B Dial** Net \$2.70

"Velvet Vernier" Dial, Type B, has a compact variable ratio 6 to 1 min., 20 to 1 max. drive that is smooth and trouble free. The case is black bakelite. 1 or 5 scale. 4" dia. Fits 1/4" shaft. Specify scale.

**BM Dial** Net \$2.10

The BM Dial is a smaller version of the B for use where space is limited. The drive ratio is fixed. Although small in size, the BM Dial has the same smooth action as the larger units. 1 or 5 scale. 3" dia. Fits 1/4" shaft. Specify scale.

**AM Dial** Net \$2.25

The original "Velvet Vernier" mechanism in a metal skirted dial 3" in dia. ratio 5 to 1. It is available with 2, 3, 4, 5 or 6 scale and fits 1/4" shaft.

**P Dial** Net \$1.00

The new P dial is the same as the AM except direct drive.

**Type O**, 3 1/2" dia., scale 2, with HRK knob, fits 1/4" shafts. Net \$1.00

**Type L**, same as O except 5" dia., scale 2 only. Net \$1.95

**Type K**, same as O except less knob, complete with CDD vernier drive, scale 2 only. Net \$1.50

**Type M**, same as K except 5" dia., scale 2 only. Net \$2.25

The dials at the right are for individual calibration; all four employ the noted 5:1 drive ratio Velvet Vernier mechanism and are of excellent quality.

**MCN Dial** Net \$2.70

The MCN dial has been scaled down to lend itself ideally to mobile installations and small converters and tuners. It may also be mounted on the standard 3 1/2" rack panel where such mounting may be desirable. The dial provides three calibrating scales and a 0-100 logging scale. On the rear side of the dial, the mechanism extends 1/4" below the dial frame. 2 3/4" H. x 3 7/8" W.

**SCN Dial** Net \$3.00

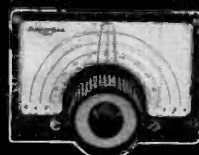
The SCN dial provides the same dial scales as the ACN dial but in a reduced size. It is used where economy of panel-mounting space is desirable and where a smaller dial would be out of proportion with the size of the panel. 4-7/16" H. x 6 1/4" W.

**ICN Dial** Net \$6.00

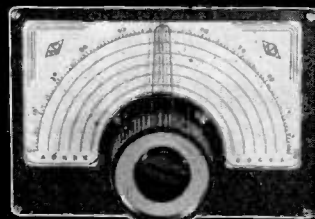
The ICN dial meets those hundreds of requests from amateurs the world over for an illuminated ACN dial. Two dial lights mounted on the top corners of the dial provide efficient and even illumination on all bands. The dial window has been blanked out in semi-circular shape to prevent shadow casting. Dial scales are the same as those used on the ACN dial. 5 1/8" H. x 7 1/4" W.

**ACN Dial** Net \$3.30

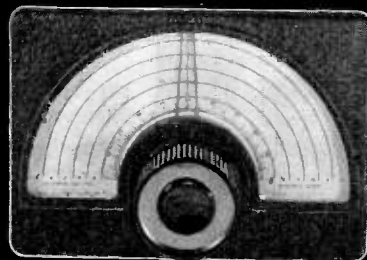
The ACN is the original of this type dial, a National design for the benefit of experimenters who "build their own" and desire direct calibration 5" H. x 7 1/4" W.



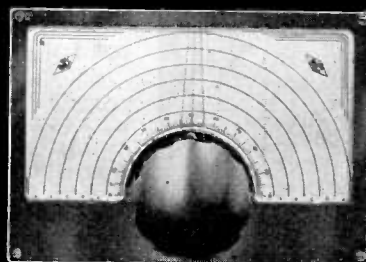
MCN



SCN



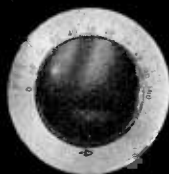
ICN



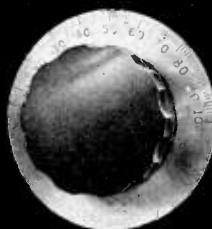
ACN

## DIAL SCALES

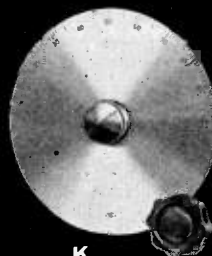
Scale	Divisions	Rotation	Direction of Condenser Rotation for increase of dial reading
1	0-100-0	180°	Either
2	0-100	180°	Counter Clockwise
3	100-0	180°	Clockwise
4	150-0	270°	Clockwise
5	200-0	360°	Clockwise
6	0-150	270°	Counter Clockwise



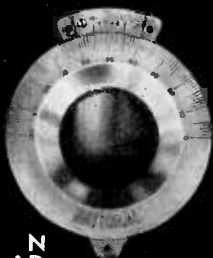
AM



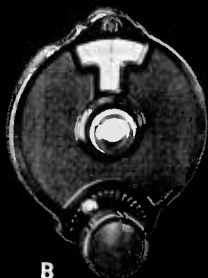
O  
L



K  
M



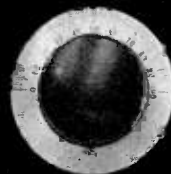
N  
AD



B



BM



P





**XLA**

**XLA** Net \$ .99  
 A low-loss socket for the 6F4 and 950 series acorn tubes for frequencies as high as 600 Mc. Conventional by-pass condensers may be compactly mounted between the contact terminals and the chassis. Low contact resistance, short and direct leads and low and constant inductance are features.



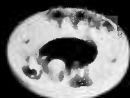
**XLA-S**

**XLA-S** Net \$ .36  
 An internal shield fitting the XLA socket and suitable for tubes such as the 956.



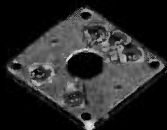
**XLA-C**

**XLA-C** Net \$ .36  
 This miniature by-pass condenser may be mounted inside the socket, directly below the contact. Capacities of 50 or 100 mmf. available.



**XCA**

**XCA** Net \$ .99  
 A low-loss steatite socket for acorn triodes. Pin grips are designed to accept tube prongs with minimum strain but exert maximum pressure when seated.



**XMA**

**XMA** Net \$ 1.32  
 For pentode acorn tubes, this socket has built-in by-pass condensers. The base is a copper plate.

**XOA-7** (mica-filled bakelite) Net \$ .50

**XOA-C-7** (ceramic) Net \$ .50

**XOR-7** (mica-filled bakelite) Net \$ .50

**XOR-C-7** (ceramic) Net \$ .50  
 These high quality sockets for the 7 pin miniature tubes have silver plated beryllium copper contacts that correctly grip the tube pins close to the base of the tube to provide the short leads and low inductance so necessary in ultra-high frequency design.

A novel feature of these new sockets is the interchangeability of the contacts, which are easily removed for replacement. This permits the use of a mixture of axial (XOA) and radial (XOR) type contacts in the same socket to obtain the shortest possible leads, or minimum size in tight places. The above sockets all mount with two 4-40 screws on .875" centers. Chassis cutout should be 3/4" dia. Shields for use with these sockets are on page 21.

**XOA-C-9** (ceramic) Net \$ .57

**XOR-C-9** (ceramic) Net \$ .57  
 These sockets are for the new 9-pin miniature tubes. The XOR-C-9 (not illustrated) has radial contacts. Both have all of the features described above for the 7-pin types



**XOA-7 (Axial)**

**XOA-C-7**



**XOR-7 (Radial)**

**XOR-C-7**



**XOA-C-9**

and they also mount with 4-40 screws. Mounting center dimension is 1 1/8", the chassis cutout should be 13/16" dia.

## CIR SERIES SOCKETS

**Any Type** Net \$ .30  
 Always a popular National component, type CIR Sockets feature low-loss steatite insulation, a contact that grips the tube prong for its entire length, and a metal ring for six position mounting.

XC-4, 5, 6, 7S, 7L and CIR-4, 5, 6, 7S and 7L all have 1-27/32" mounting centers. CIR-8E has slotted holes in plate but will mount on 1-27/32" center. CIR-8 and XC-8 have 1 1/2" mounting centers.

## XC SERIES SOCKETS

**XC-4** ..... Net \$ .36  
**XC-5** ..... Net \$ .39  
**XC-6** ..... Net \$ .42  
**XC-7S** ..... Net \$ .45  
**XC-7L** ..... Net \$ .45  
**XC-8** ..... Net \$ .39

National wafer sockets have exceptionally good contacts with high current capacity together with low loss steatite insulation. All types have a locating groove to make tube insertion easy. The XC-6 is ideal for use with AR-17 coils shown on page 24.

**HX-29** Net \$ .81

A low-loss wafer socket with steatite insulation for the popular 829 and 832 tubes.

**JX-51** Net \$ .81

A low loss steatite wafer socket for the 813 and other tubes having the Giant 7-pin base. (not illustrated)

**XM-10** Net \$ .90

A heavy duty metal shell socket for tubes having the XU 4-pin base.

**XM-50** Net \$ 1.20  
 (see XM-10 for style)

A heavy duty metal shell socket for tubes having the Jumbo 4-pin base ("fifty watters").

**HX-100S** Net \$ 1.65  
 With Standoff Insulators

A low loss wafer socket suitable for the type 4-125-A, 4-250-A and other tubes using the Giant 5-pin base. Shield grounding clips are supplied which mount on the chassis with the socket mounting screws to ground the tube shield at three points. Air holes are provided in the socket to permit forced air cooling.

**HX-100** Net \$ .99  
 Same as above less standoff insulators.



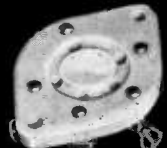
**CIR-5**



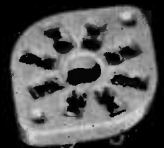
**CIR-8**



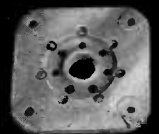
**CIR-8E**



**XC-5**



**XC-8**



**HX-29**



**XM-10**



**HX-100S**

**SHAFT COUPLINGS**

**TX-19** Net \$1.25

A steatite insulated flexible coupling for 1/4" shafts. Conservatively rated at 5000 volts peak. Diameter 1 3/8", length 1". Length and flashover voltage can be increased by turning collars outboard.

**TX-11** Net \$.42

The flexible shaft of this coupling connects shafts at angles up to 90 degrees, and eliminates misalignment problems. Fits 1/4" shafts. Length 4 1/4".

**TX-12**, Length 4 5/8" Net \$.90

**TX-13**, Length 7 1/8" Net \$1.05

These couplings use flexible shafting like the TX-11 above, but are also provided with steatite insulators at each end.

**TX-1**, Leakage path 1" Net \$.65

**TX-2**, Leakage path 2 1/2" Net \$.75

Flexible couplings with glazed steatite insulation which fit 1/4" shafts.

**TX-20** Net \$1.25

A small bakelite insulated flexible coupling of the "Hooke's joint" type. Accommodates up to five degrees angular misalignment as well as 1/64" offset of centers. For 1/4" shafts.

**TX-8** Net \$.60

A non-flexible rigid coupling with steatite insulation. 1" diam. Fits 1/4" shaft.

**TX-10** Net \$.40

A very compact insulated coupling free from backlash. Insulation is canvas bakelite. 1-1/16" diam. Fits 1/4" shaft.

**TX-10F** (Not illustrated) Net \$.45

A new version of the TX-10 which employs thin canvas bakelite strips for flexibility.

**TX-22** (not illustrated) Net \$.40

A non-insulated coupling identical to TX-10 except of all metal construction. Makes good electrical connection between coupled shafts.

**TX-9** Net \$.75

This small insulated flexible coupling provides high electrical efficiency when used to isolate circuits. Insulation is steatite. 1 5/8" diam. Fits 1/4" shaft.

**TX-21** (not illustrated) Net \$.40

Similar to TX-10 except 13/16" long and couples 1/4" shaft to 5/32" shaft.

**SAFETY GRID AND PLATE CAPS**

**SPP-9** Net \$.21

Ceramic insulation. Fits 9/16" diameter.

**SPP-3** Net \$.21

Ceramic insulation. Fits 3/8" diameter.

National Safety Grid and Plate Caps have a ceramic body which offers protection against accidental contact with high voltage caps on tubes.

**GRID AND PLATE GRIPS**

Type 12, for 9/16" Caps Net \$.06

Type 24, for 3/8" Caps Net \$.03

Type 8, for 1/4" Caps Net \$.03

National Grid and Plate Grips provide a secure and positive contact with the tube cap and yet are released easily by a slight pressure on the ear.

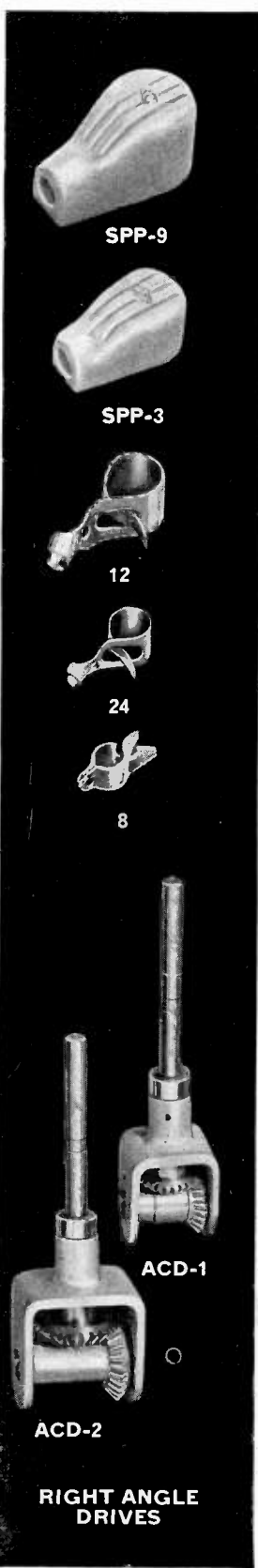
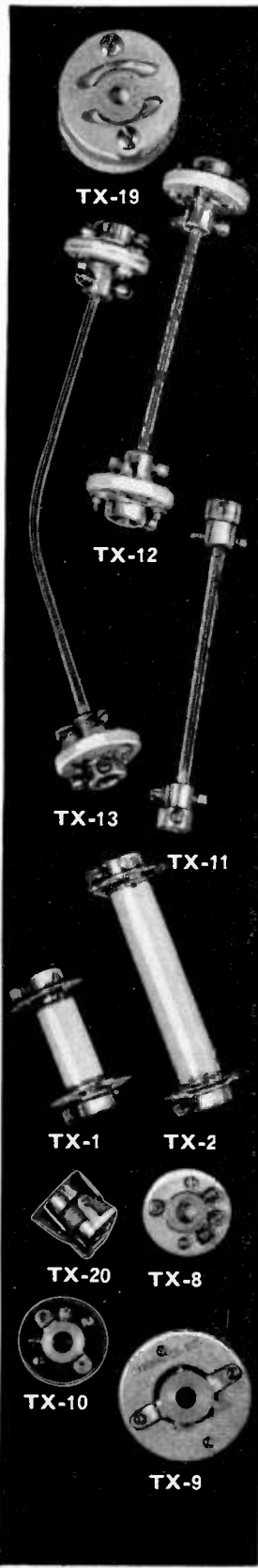
**RIGHT ANGLE DRIVES**

**ACD-1** .....Net \$3.75

**ACD-2** .....Net \$3.90

**ACD-3** .....Net \$3.90

These sturdy drives were developed for use with the new National AMT condensers (see page 26). They are as compact as the torque requirements will allow and have nickel plated cast frames and bronze gears which operate smoothly without chatter or binding. The ACD-1 has 32 pitch gears and a 1/4" dia. dial shaft and drives 1/4" shafts. ACD-2 has 24 pitch gears (for heavier service) and 1/4" dia. shaft driving 1/4" shafts. ACD-3 is the same as ACD-2 except that it drives 3/8" diameter shafts.



R-100	Net \$ .35
R-100U	Net \$ .42
R-100S	Net \$ .42
R-100ST	Net \$ .40

These RF chokes are identical electrically, but differ in mounting provisions. The R-100 employs pigtail leads; the R-100U has pigtail leads and a removable stand-off insulator; the R-100S has cotter-pin lug terminals and a non-removable stand-off insulator; the R-100ST has a 6-32 threaded stud at each end. These chokes are available in 2.5, 5 and 10 millihenry sizes and are rated at 125 milliamperes.

R-33	Net \$ .35
------	------------

The R-33 series chokes are 2-section RF chokes available in 10, 50, 100 and 750 microhenry sizes. Also available in this series is a single layer solenoid choke of 1 microhenry inductance. All are rated at 33 milliamperes. The chokes are wound on a 5/8" long form and range in diameter up to 5/16" maximum.

R-50	Net \$ .35
R-50-I	Net \$ .53

The R-50 series chokes are 3 and 4-section RF chokes and available in 0.5, 1, 2.5, and 10 millihenry sizes. They are rated at 50 milliamperes. The chokes are wound on a 1" long form and have a maximum diameter of 15/32". The 10 millihenry R-50-I choke is wound on an iron core.

R-33G	Net \$3.66
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The R-33G choke is a 2-section 750 microhenry RF choke hermetically sealed in glass with a current rating of 33 milliamperes. The choke body is 1" long by 5/8" diameter.

R-60	Net \$ .35
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The R-60 choke is a high current RF choke (500 milliamperes) available in 2 and 4 microhenry sizes. The choke is 1 1/8" long by 5/16" diameter.

R-300	Net \$ .38
R-300U	Net \$ .42
R-300S	Net \$ .42
R-300ST	Net \$ .40

These RF chokes are similar in size to R-100 series but have higher current capacity. The R-300U is provided with a removable stand-off insulator at one end. The R-300S has a non-removable stand-off insulator and cotter-pin lug terminals. The R-300ST has a 6-32 threaded stud at each end. Inductance values of 0.5, 1.0, 2.5 and 5.0 millihenries are available with a current rating of 300 milliamperes. R-300, R-300U, R-300S and R-300ST are identical electrically.

R-152	Net \$1.75
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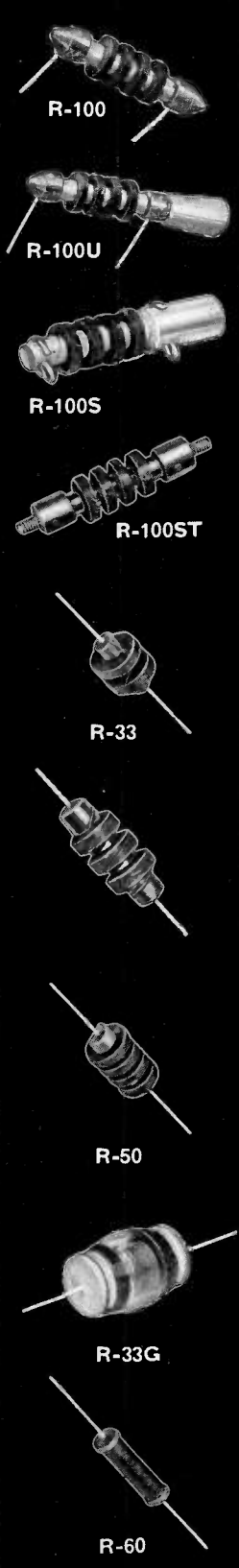
For use in the range between 2 and 4 Mc. Ideal for high power transmitter stages operated in the 80 meter amateur band. Inductance 4 m.h., DC resistance 10 ohms, DC current 600 ma. Coils honeycomb wound on steatite core.

R-154	Net \$1.75
R-154U	Net \$1.40

For the 20, 40 and 80 meter bands, Inductance 1 m.h., DC resistance 6 ohms, DC current 600 ma. Coils honeycomb wound on steatite core. The R-154U does not have the third mounting foot and the small insulator, but is otherwise the same as R-154. See illustration.

R-175	Net \$2.25
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The R-175 Choke is suitable for parallel-feed as well as series-feed in transmitters with plate supply up to 3000 volts modulated or 4000 volts unmodulated. Unlike conventional chokes, the reactance of the R-175 is high throughout the 10 and 20 meter bands as well as the 40 and 80 meter bands. Inductance 225 μh, distributed capacity 0.6 mmf., DC resistance 6 ohms, DC current 800 ma., voltage breakdown to base 12,500 volts.



Manufacturers: We have facilities for quantity production of RF chokes of practically any type. Send us your specifications,

## I. F. TRANSFORMERS

IFC, Transformer, Net \$4.25  
 IFCO, Oscillator, Net \$4.25  
 Litz coils wound on a polystyrene form and ceramic insulated air-dielectric trimming condensers make these transformers inherently stable and exceptionally retentive of tuning. The 4 1/2" x 2 3/8" x 2" shield can has two 6-32 spade bolts for mounting. Available for either 175 KC or 450-550 KC. Specify frequency.  
 IFL FM Discriminator

Net \$6.90

IFM IF Transformer Net \$6.45

IFN IF Transformer Net \$6.45

IFO FM Ratio Discriminator

Net \$6.98

IFL, IFM, IFN and IFO transformers operate at 10.7 Mc. and are designed for use in FM Superheterodyne receivers. Coils are precision wound on grooved polystyrene forms and tuning is accomplished by movable iron cores. Bandwidth is not affected by tuning slug position. The transformer cans are 1 3/8" square and stand 3 1/8" above the chassis. Two 6-32 spade bolts are provided for mounting.

The IFL transformer is a 10.7 Mc. FM discriminator transformer suitable for use in conventional FM receiver discriminator circuit and is linear over a band of ±100 Kc.

The IFM transformer is a 10.7 Mc. IF transformer with a 150 Kc. bandwidth at 1.5 db attenuation. Approximate stage gain of 30 is obtained with IFM Transformer and 6SG7 tube.

The IFN transformer is a 10.7 Mc. IF transformer with a 100 Kc. pass band at 1.5 db attenuation. Approximate stage gain of 30 is obtained with IFN Transformer and 6SG7 tube.

The IFO transformer is a 10.7 Mc. FM discriminator transformer of the ratio type and is linear over a band of ±100 Kc.

IFJ, with variable coupling  
 Net \$8.25

IFK, with fixed coupling  
 Net \$7.25

15 Mc. IF transformers suitable for ultra high frequency superheterodynes. They are made in two models with and without variable coupling. Approximate stage gain of 10 is obtained with IFJ or IFK Transformer and 6AB7 tube.

SA:4842 Net \$4.50

A 456 kc. discriminator transformer for narrow band frequency modulation. This unit is the nucleus of the NFM adapter described by Harrington and Bartell in November 1947 QST. Two slug-tuned secondaries are employed and discrimination is accomplished by resonating one at approximately 10 kc. above, the other at approximately 10 kc. below the center frequency of the i.f. channel.

CD-1, 1/4 pint can Net \$ .95  
 Liquid Polystyrene Cement — is ideal for windings as it will not spoil the properties of the best coil form.

## COILS AND COIL FORMS

AR-2 High Frequency Coil  
 Net \$1.13

AR-5 High Frequency Coil  
 Net \$.97

The AR-2 and AR-5 coils are high Q permeability tuned RF coils on low loss mica-filled bakelite forms. The AR-2 coil tunes from 75 Mc. to 220 Mc. with capacities from 100 to 10 mmfd. The AR-5 coil tunes from 37 Mc. to 110 Mc. with capacities from 100 to 10 mmfd. The inductive windings supplied may be replaced by other windings as desired to modify the tuning range.

XR-50 Net \$ .60

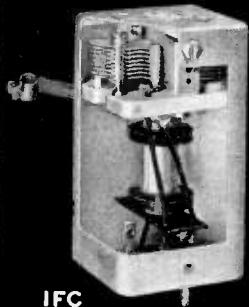
These mica-filled bakelite coil forms may be wound as desired to provide a permeability tuned coil. The form winding length is 1 1/16" and the form winding diameter is 1/2 inch. The iron slug is 3/8" dia. by 1/2" long.

OSR Net \$1.80

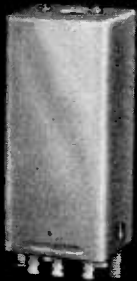
A shielded oscillator coil which tunes to 100 kc. with .00041 mfd. Two separate inductances, closely coupled. Excellent for interruption-frequency oscillator in super-regenerative receivers.

Symbol	Outside Diameter	Length	Net
PRC-1	3/8"	3/8"	.15
PRC-2	3/8"	1/2"	.15
PRC-3	3/8"	3/4"	.15
PRD-1	1/2"	1/2"	.15
PRD-2	1/2"	1"	.15
PRE-1	9/16"	3/4"	.18
PRE-2	9/16"	1"	.18
PRE-3	9/16"	2"	.24
PRF-1	3/4"	3/4"	.24
PRF-2	3/4"	1 1/4"	.30

These small coil forms are of molded polystyrene, open at one end and closed at the other except for a hole which permits mounting by a single 6-32 screw. A size for every application.



IFC  
IFCO



IFL  
IFM  
IFN  
IFO



OSR



XR-50



AR-5



AR-2



IFJ  
IFK



SA-4842



CD-1



PRC

PRD

PRE

PRF

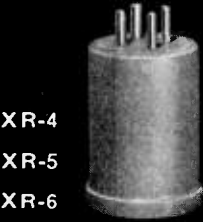




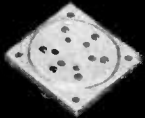
XR-1  
XR-2



XR-3



XR-4  
XR-5  
XR-6



XC-6C



SC-1



CFA



PH-1



PLUG-IN BASE  
AND SHIELD

Coil Forms molded of R-39 mica-filled bakelite permitting them to be grooved and drilled. Coil Form diameter 1", length 1 1/2".

XR-1 Four Prong, Net \$35  
XR-2, without Prongs Net \$25

XR-3, molded of R-39 Diameter 9/16", length 3/4" without prongs. Net \$20

XR-4, Four Prong, Net \$51  
XR-5, Five Prong, Net \$51  
XR-6, Six Prong, Net \$60  
Molded of R-39 permitting them to be grooved and drilled. Coil Form Diameter 1 1/2", length 2 1/4". A special socket is required for the XR-6.  
National type XC-6C Net \$51

SC, Crystal Sockets Net \$32

The SC-1, SC-2, and SC-3 are crystal mounting sockets for crystal holders with mounting pins spaced 0.5000", 0.486", and .750" respectively and pin diameters of 1/8" and 3/32" and 1/8" respectively, steatite insulation. Single 4-36 or 4-40 screw mounting for SC-1 and SC-2; single 6-32 screw mounting for SC-3.

CFA Net \$35  
The National chart frame is supplied with a celluloid sheet to cover the chart size 2 1/4" x 3/4" with sides 1/4" wide. Durable finish.

PH-1 An attractive and rugged pull handle of cast zinc alloy chrome plated, with 10-32 Tapped Holes on 3 3/4" mounting centers. Net \$45

PH-2 same as PH-1 but with black or gray finish. Net \$25

The plug in base and shield includes the low loss R-39 base which is ideal for mounting condensers and coils when it is desirable to have them shielded and easily removable. Shield is 2" x 2 3/8" x 4 1/2".

5 Prong base and shield Net \$75  
6 Prong base and shield Net \$75  
5 Prong base only Net \$51  
6 Prong base only Net \$51  
PB-10-A-6 Net \$51

RZ Coil Shield Net \$35  
1 3/8" square x 4" high.

RS Coil Shield Net \$35  
1-7/16" x 1 7/8" x 3 1/2" high.

RO Coil Shield Net \$35  
2" x 2 3/8" x 4 1/8" high. National Coil Shields are formed from a single piece of pure aluminum. They are mechanically strong and have ample thickness to mount small parts on the walls, and include spade belts, for chassis mounting.

T-78 Tube Shield Net \$27  
National Tube Shield type T-78 is a three-piece pure aluminum shield suitable for shielding glass tubes with ST-12 bulb, such as the 6C6 and 6D6 tubes.

JS-1 Jack Shield Net \$30  
For shielding small standard jacks mounted behind a panel, or on the ends of extension coils. Indispensable for reducing hum pickup.

XOS Tube Shields Net \$48  
The XOS tube shield is a two-piece shield for the miniature Button 7 pin base tubes. The shield is available in three sizes corresponding to the tube body heights XOS-1 for 1-5/16", XOS-2 for 1 1/2", XOS-3 for 2".

The shield contains a spring which centers tube in shield and holds tube and shield firmly in place. The two 4-40 spade bolts serve to mount the XOA or XOR Socket and the XOS Tube Shield.

FXT Fixed tuned exciter tank similar in general construction to National I.F. transformers, this unit has two 25 mmf., 2000 volt air condensers and an unwound XR-2 Coil Form.

FXT, (without plug-in base) Net \$34.5

FXTB-5 (with 5 prong base) Net \$39.0

FXTB-6 (with 6 prong base) Net \$39.0

Paint (not illustrated)

CP-1, dark gray Net \$40  
CP-2, black Net \$40

A high quality air-drying paint that may be applied with a brush.

CP-3, light gray, matches newest National receivers— for spraying and baking. Net \$50



RZ



RS



RO



T-78



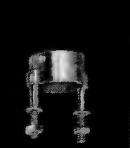
JS-1



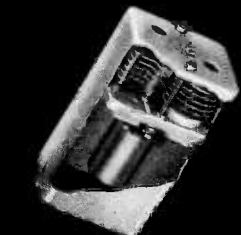
XOS-1



XOS-2



XOS-3

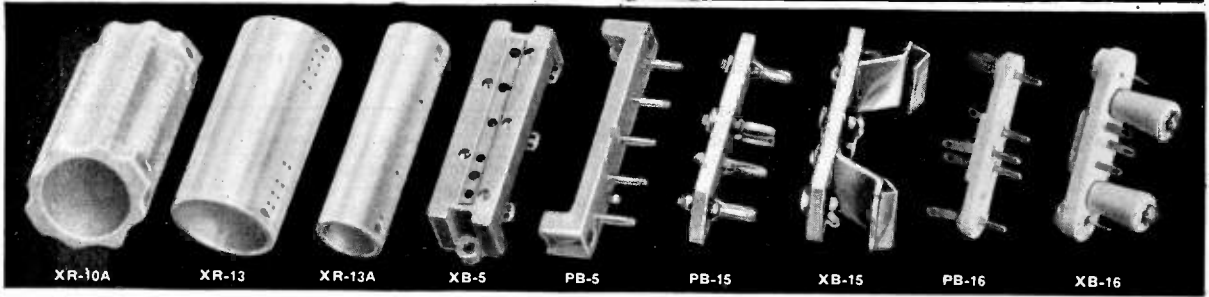


FIXED-TUNED  
EXCITER TANK



# components

NATIONAL CO. MALDEN, MASS.



## TRANSMITTER COIL FORMS

The Transmitter Coil Forms and Mounting are designed as a group, and mount conveniently on the bars of a TMA condenser. The larger coil form, Type XR-14A, (not illustrated) has a winding diameter of 5", a winding length of 3 3/4" (30 turns total) and is intended for the 80 meter band. The smaller form, Type XR-10A, has a winding length of 3 3/4" and a winding diameter of 2 1/2" (26 turns total). It is intended for the 20 and 40 meter bands.

Either coil form fits the PB-15 plug. For higher frequencies, the plug may be used with a self-supporting coil of copper tubing. The XB-15 Socket may be mounted on breadboards or chassis, as well as on the TMA Condenser.

### SINGLE UNITS

XR-10A, Coil Form only	Net \$ .99
XR-14A, Coil Form only	Net \$2.40
PB-15, Plug only	Net \$1.05
XB-15, Socket only	Net \$1.20

### ASSEMBLIES

UR-10A, Assembly (including small Coil Form, Plug and Socket)	Net \$3.24
UR-14A, Assembly (including large Coil Form, Plug and Socket)	Net \$3.60

## BUFFER COIL FORMS

National Buffer Coil Forms are designed to mount directly on the tie bars of a TMC condenser using the PB-5 Plug and XB-5 Socket. Plug and Socket are of molded R-39.

The two coil forms are of steatite, left unglazed to provide a tooth for coil dope. The larger form, Type XR-13, is 1 3/4" in diameter and has a winding length of 2 3/4". The smaller form, Type XR-13A, is 1" in diameter and provides a winding length of 2 3/4". Both forms have holes for mounting and for leads.

### SINGLE UNITS

XR-13, Coil Form only	Net \$ .75
XR-13A, Coil Form only	Net \$ .60
PB-5, Plug only	Net \$ .51
XB-5, Socket only	Net \$ .51

### ASSEMBLIES

UR-13A, Assembly (including small Coil Form, Plug and Socket)	Net \$1.65
UR-13, Assembly (including large Coil Form, Plug and Socket)	Net \$1.65

## EXCITER COILS

There is a National exciter coil for every application. AR-15 coils are mounted on 5 pin bases which fit any standard 5 contact tube socket. AR-16 coils are mounted on the well known National PB-16 plug which fits the National XB-16 socket. The AR-17 coils have 6 pin bases which fit standard 6 contact tube sockets and the link windings of this series have center taps which may be grounded for harmonic reduction. All center link models are center tapped for use in balanced circuits. Insulation polystyrene and steatite. For use where plate power input does not exceed 50 watts. Available with fixed or swinging end or center links for all amateur bands, 6 through 80 meters.

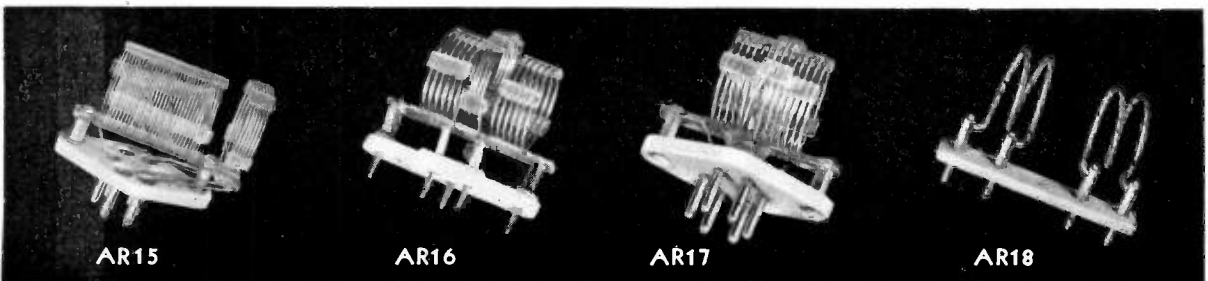
The XR-16 Coil Form (not illustrated) fits the PB-16 Plug-in Base; it has a winding length of 1 3/4", diameter 1 1/4".

AR-15, AR-16, AR-17 Coil, any type	Net \$1.25
XR-16 Coil Form	Net \$ .42
PB-16 Plug-in Base	Net \$ .45
XB-16 Socket for PB-16	Net \$ .45

## 500 WATT COILS

Air-wound coils designed to mount on the split stator models of National AMT condensers. The AR18-C coils have fixed center links and require the XB18-C socket. The AR18-S coils are designed to accommodate the swinging link furnished with the XB18-S socket. Link winding of the XB18-S has a center tap which may be grounded for harmonic reduction. Plugs and jacks are silver plated to insure low contact resistance. Insulation, steatite. The sockets (not illustrated) are 7 1/4" in length. AR-18 coils are available for all amateur bands, 6 through 80 meters.

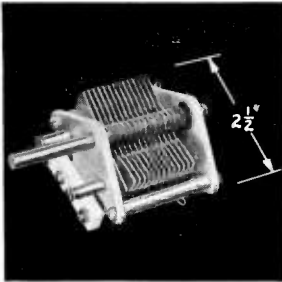
(See your National distributor for prices)





**TYPE TMS TRANSMITTING CONDENSERS**

This is a condenser designed for transmitter use in low power stages. It is compact, rigid, and dependable. Provision has been made for mounting either on the panel, on the chassis, or on two stand-off insulators. Insulation is steatite. Voltage ratings listed are conservative.

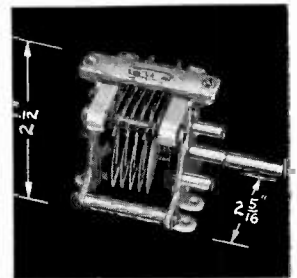


Capacity	Minimum Capacity	Length	Air Gap	Peak Voltage	No. of Plates	Catalog Symbol	Net
<b>SINGLE STATOR MODELS</b>							
100 Mmf.	9.5	3"	.026"	1000v.	9	TMS-100	\$2.60
150	11	3"	.026"	1000v.	14	TMS-150	2.80
250	13.5	3"	.026"	1000v.	22	TMS-250	3.30
300	15	3"	.026"	1000v.	27	TMS-300	3.80
35	8	3"	.065"	2000v.	7	TMSA-35	3.90
50	11	3"	.065"	2000v.	11	TMSA-50	4.40
<b>DOUBLE STATOR MODELS</b>							
50-50 Mmf.	6-6	3"	.026"	1000v.	5-5	TMS-50D	\$3.00
100-100	7-7	3"	.026"	1000v.	9-9	TMS-100D	3.20
50-50	10.5-10.5	3"	.065"	2000v.	11-11	TMSA-50D	4.40

**TYPE TMK TRANSMITTING CONDENSERS**

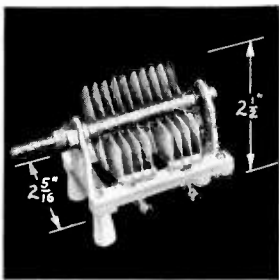
This is a new condenser for exciters and low power transmitters. Special provision has been made for mounting AR-16 coils in a swivel plug-in mount on either the top or rear of the condenser. For stand-off or panel mounting-steatite insulation.

Capacity	Minimum Capacity	Length	Air Gap	Peak Voltage	No. of Plates	Catalog Symbol	Net
<b>SINGLE STATOR MODELS</b>							
35 Mmf.	7.5	2 7/8"	.047"	1500v.	7	TMK-35	\$3.45
50	8	2 8/8"	.047"	1500v.	9	TMK-50	3.55
75	9	2 11/16"	.047"	1500v.	13	TMK-75	3.80
100	10	3"	.047"	1500v.	17	TMK-100	3.95
150	10.5	3 5/8"	.047"	1500v.	25	TMK-150	4.65
200	11	4 1/8"	.047"	1500v.	33	TMK-200	5.25
250	11.5	4 7/8"	.047"	1500v.	41	TMK-250	5.75
<b>DOUBLE STATOR MODELS</b>							
35-35 Mmf.	7.5-7.5	3"	.047"	1500v.	7-7	TMK-35D	\$3.80
50-50	8-8	3 5/8"	.047"	1500v.	9-9	TMK-50D	3.95
100-100	10-10	4 3/8"	.047"	1500v.	17-17	TMK-100D	5.25
Swivel Mounting Hardware for AR 16 Coils						SMH	\$ 1.10



**TYPE TMH TRANSMITTING CONDENSERS**

A condenser that features very compact construction. Excellent power factor, and aluminum plates .0400" thick with polished edges. It mounts on the panel or on removable stand-off insulators. Steatite insulators have long leakage path. Stand-offs included in listed price.

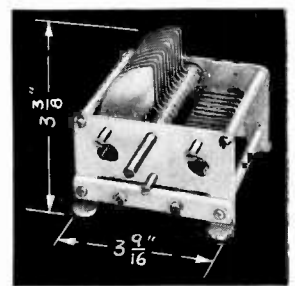


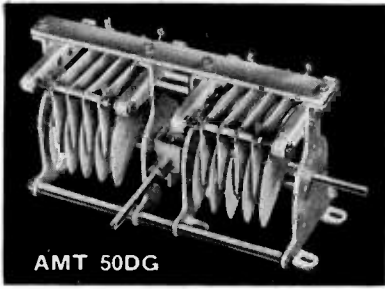
Capacity	Minimum Capacity	Length	Air Gap	Peak Voltage	No. of Plates	Catalog Symbol	Net
<b>SINGLE STATOR MODELS</b>							
50 Mmf.	9	3 3/8"	.085"	3500v.	15	TMH-50	\$3.95
75	11	3 5/8"	.085"	3500v.	19	TMH-75	4.15
100	12.5	5 1/8"	.085"	3500v.	25	TMH-100	4.35
150	18	6 3/8"	.085"	3500v.	37	TMH-150	4.95
35	11	5 3/8"	.180"	6500v.	17	TMH-35A	4.25
<b>DOUBLE STATOR MODELS</b>							
35-35 Mmf.	6-6	3 3/4"	.085"	3500v.	9-9	TMH-35D	\$4.15
50-50	8-8	5 1/8"	.085"	3500v.	13-13	TMH-50D	4.35
75-75	11-11	6 3/8"	.085"	3500v.	19-19	TMH-75D	4.95

**TYPE TMC TRANSMITTING CONDENSERS**

A condenser designed for use in the power stages of transmitters where peak voltages do not exceed 3000 volts. The frame is extremely rigid and arranged for mounting on panel, chassis or stand-off insulators. The plates are aluminum with buffed edges. Insulation is steatite. The stator in the split stator models is supported at both ends.

Capacity	Minimum Capacity	Length	Air Gap	Peak Voltage	No. of Plates	Catalog Symbol	Net
<b>SINGLE STATOR MODELS</b>							
50 Mmf.	10	3"	.077"	3000v.	7	TMC-50	\$3.60
100	13	3 1/2"	.077"	3000v.	13	TMC-100	4.25
150	17	4 3/8"	.077"	3000v.	21	TMC-150	5.25
250	23	6"	.077"	3000v.	32	TMC-250	5.70
300	25	6 3/4"	.077"	3000v.	39	TMC-300	6.10
<b>DOUBLE STATOR MODELS</b>							
50-50 Mmf.	9-9	4 5/8"	.077"	3000v.	7-7	TMC-50D	\$4.35
100-100	11-11	6 3/4"	.077"	3000v.	13-13	TMC-100D	5.95
200-200	18.5-18.5	9 3/4"	.077"	3000v.	25-25	TMC-200D	7.25





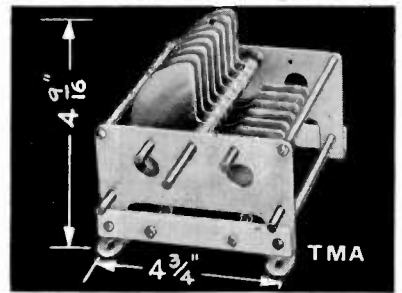
AMT 50DG

**TYPE AMT**

A larger and sturdier model of the TMK condenser. The frame is extremely rigid, with mounting feet a part of the end plates. Heavy steatite insulation.

The solid aluminum tie bar across the top of the condenser acts as a mounting for AR-18 series coils in the double stator models.

The double stator models are available in either standard end drive (D series) or center-drive (DG series) with 1/4" dia. shaft extension.



TMA

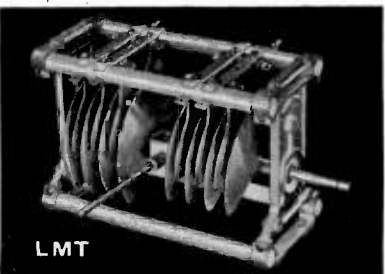
**TYPE TMA**

This is a larger model of the popular TMC. The frame is extremely rigid and arranged for mounting on panel, chassis or stand-off insulators. The plates are of heavy aluminum with rounded and buffed edges. Insulation is steatite located outside of the concentrated field.

Maximum Capacity	Minimum Capacity	Length	Air Gap	Peak Voltage	No. of Plates	Catalog Symbol	Net
<b>SINGLE STATOR MODELS</b>							
50 Mmf. 100	13 20	4 3/8" 6 3/8"	.177" .177"	6000 v. 6000 v.	9 17	AMT-50 AMT-100	\$ 5.20 6.10
300 50 100 150 230 100 150 50 100	19.5 15 19.5 22.5 33 30 40.5 21 37.5	4 3/8" 4 3/8" 6 3/8" 6 3/8" 9 1/4" 9 1/4" 12 1/2" 7 1/2" 12 1/2"	.077" .171" .171" .171" .171" .265" .265" .359" .359"	3000 v. 6000 v. 6000 v. 6000 v. 6000 v. 9000 v. 9000 v. 12,000 v. 12,000 v.	23 7 15 21 33 23 33 13 25	TMA-300 TMA-50A TMA-100A TMA-150A TMA-230A TMA-100B TMA-150B TMA-50C TMA-100C	7.60 4.95 5.85 6.45 7.95 8.50 9.95 5.55 8.95
75 150 100 50 245 150 100 75 500 350 250	25 60 45 22 54 45 32 23.5 55 45 35	18 1/4" 18 1/4" 13 3/8" 8 3/4" 18 1/4" 13 3/8" 10 15/16" 8 3/4" 18 1/4" 13 3/8" 10 15/16"	.719" .469" .469" .469" .344" .344" .344" .344" .219" .219" .219"	20,000 v. 15,000 v. 15,000 v. 15,000 v. 10,000 v. 10,000 v. 10,000 v. 10,000 v. 7,500 v. 7,500 v. 7,500 v.	17 27 19 9 35 21 15 11 49 33 25	TML-75E TML-150D TML-100D TML-50D TML-245B TML-150B TML-100B TML-75B TML-500A TML-350A TML-250A	18.35 18.50 16.60 11.50 20.15 18.35 17.55 12.80 24.60 19.65 18.35
<b>DOUBLE STATOR MODELS</b> D—End drive    DG—Center drive							
50-50 100-100 50-50 100-100	13-13 20-20 13-13 20-20	9 3/8" 13 3/8" 9 3/8" 13 3/8"	.177" .177" .177" .177"	6000 v. 6000 v. 6000 v. 6000 v.	18 34 18 34	AMT-50D AMT-100D AMT-50DG AMT-100DG	7.00 9.00 10.75 12.75
200-200 180-180 50-50 100-100 60-60 40-40	15-15 10-10 12.5-12.5 17-17 19.5-19.5 18-18	6 1/4" 12 3/8" 6 1/4" 9 3/8" 12 1/2" 12 1/2"	.077" .140" .155" .155" .249" .343"	3000 v. 4000 v. 6000 v. 6000 v. 9000 v. 12,000 v.	16-16 24-24 8-8 14-14 15-15 11-11	TMA-200D TMA-180D TMA-50DA TMA-100DA TMA-60DB TMA-40DC	9.40 12.90 6.75 8.75 8.95 8.50
30-30 60-60 100-100 60-60 200-200 100-100	12-12 26-26 27-27 20-20 30-30 17-17	18 1/4" 18 1/4" 18 1/4" 13 3/8" 18 1/4" 10 15/16"	.719" .469" .344" .344" .219" .219"	20,000 v. 15,000 v. 10,000 v. 10,000 v. 7,500 v. 7,500 v.	7-7 11-11 15-15 9-9 21-21 11-11	TML-30DE TML-60DD TML-100DB TML-60DB TML-200DA TML-100DA	18.55 20.15 12.35 19.15 24.60 20.15

**TYPE LMT**

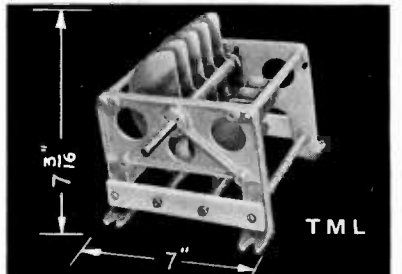
A heavy duty transmitting condenser that completely eliminates troublesome closed loops, vastly simplifying the problem of unwanted harmonics. The rotor shaft is completely insulated from the end plates. Long leakage path (higher safety factor). Plates and parts are extra heavy with highly polished rounded edges to prevent flash-over. Adjustable stator plate mounting and end bearings. Available in single-stator, double-stator, or double-stator right angle center drive models. Same capacities and prices as National TML Condenser. Condensers with right angle drive add \$3.90 to price shown.



LMT

**TYPE TML**

is a heavy duty job throughout. The frame structure (rugged aluminum castings with dural tie bars) and precision bearings assure permanent rotor alignment. All plates are extra thick with rounded and polished edges. This, plus specially treated steatite insulators and a husky self-cleaning rotor contact, provides high flashover, current and voltage ratings.



TML



PSR



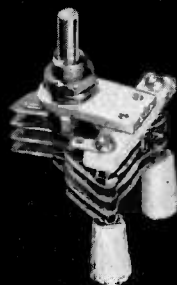
M30



W100



NC-600U



STN

**MINIATURE CONDENSERS:**

Type PS variable condensers are compact silver plated units of soldered construction for use as semi-fixed bandsets or padders. Base is steatite — bearing is "snug" but smooth. PSR models are screwdriver adjust type; PSE have 1/4" diameter shafts both ends; PSL are similar to PSR but include rotor shaft lock.

Type M-30 Net \$2.22  
 The M-30 is a tiny (13/16" x 9/16" x 1/2") mica trimmer — 30 mmf. max. — steatite base.

Type W-75, 75 mmf. Net \$1.60

Type W-100, 100 mmf. Net \$1.76

Small air-dielectric padding condensers having a very low temperature coefficient. They are mounted in 1/4" diameter aluminum shields and have 1/4" hex heads for socket-wrench adjustment.

Capacity	Catalog Symbol			Net
25 mmf.	PSR-25	PSE-25	PSL-25	\$1.70
50	PSR-50	PSE-50	PSL-50	1.85
75	PSR-75	PSE-75	PSL-75	2.00
100	PSR-100	PSE-100	PSL-100	2.15

Capacity	Minimum Capacity	No. of Plates	Air Gap	Catalog Symbol	Net
15 mmf.	1.5	6	.017"	UM-15	\$1.02
35	2.5	12	.017"	UM-35	1.15
50	3	16	.017"	UM-50	1.25
75	3.5	22	.017"	UM-75	1.45
100	4.5	28	.017"	UM-100	1.60
10	1	8	.042"	UM-10D	1.40
25	3.4	14	.042"	UMA-25	1.75

**BALANCED STATOR MODEL**

25	2	4-4-4	.017"	UMB-25	\$2.40
50	5	8-8-8	.017"	UMB-50	2.70

**NEUTRALIZING CONDENSERS:**

NC-600U Net \$3.38  
 With standoff insulator

NC-600 Net \$3.32  
 Without insulator

For neutralizing low power beam tubes requiring from .5 to 4 mmf., and 1500 max. total volts such as the 6L6. The NC-600U is supplied with a GS-10 standoff insulator screwed on one end, which may be removed for pigtail mounting.

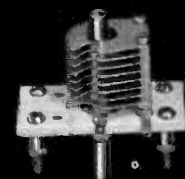
STN Net \$2.07  
 The Type STN has a maximum capacity of 18 mmf. (3000 V), making it suitable for such tubes as the 809. It is supplied with two standoff insulators.

The UM condensers are low-loss, aluminum plate staked construction miniature variables designed for UHF converters, VFOs and the like — minimum capacity is exceptionally low. The UMs can be mounted in PB-10 or RO shield cans and have 1/4" dia. shafts front and rear for ganging (see pages 21, 23 and 24 for shield cans and couplings). Plates: straight-line-cap., 180° rotation. Dimensions: Base 1" x 2 1/4", mtg. holes on 5/8" x 1-23/32" centers, 2-5/16" max. length.

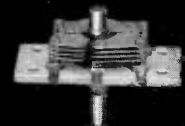
The UMB-25 and UMB-50 are differential (balanced stator) models. UM-10D and UMA-25 are double-spaced and the latter is bolted construction for experimental capacity reduction. Hardware for panel or chassis mounting is supplied with all UM condensers.



UM



UMA-25



UMB-25



NC-800A



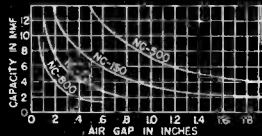
NC-75  
 NC-150  
 NC-500

NC-800A Net \$3.00  
 The NC-800A disk-type neutralizing condenser is suitable for the T40, 35TG, 808 and similar tubes. It is equipped with a clamp for locking. The chart below gives capacity and air gap for different settings.

NC-75 Net \$3.60  
 For 812, 75TH and similar tubes.

NC-150 Net \$5.25  
 For RK36, 100TH, HK354, 250TH, etc.

NC-500 Net \$8.75  
 For WE-251, 304TH, 833A and the like. These large disk-type neutralizing condensers are for the higher powered tubes. Disks are aluminum, insulation steatite.



**PRECISION CONDENSERS**

Originally developed for the famous HRO and NC-100 receivers, National PW and NPW condensers and drive units are well known to professional and amateur radio men throughout the world. Sturdily constructed of the finest materials and carefully adjusted by skilled hands, they have become "standard specifications" for applications requiring smooth, precise control and high re-set accuracy.

The Micrometer Dial reads direct to one part in 500. Division lines are approximately 1/4" apart. The drive, at the mid-point of the rotor, is through an enclosed preloaded worm gear with 20 to 1 ratio. Each rotor is individually insulated from the frame, and each has its own individual rotor contact. Stator insulation is steatite. Plate shape is straight-line frequency when the frequency range is 2:1.

PW Condensers are available in 1, 2, 3 or 4 sections, in either 160 or 225 mmf per section. Larger capacities cannot be supplied.

- PW-1R Single section right Net \$13.50
- PW-1L Single section left Net \$13.50
- PW-2R Double section right Net \$18.00
- PW-2L Double section left Net \$18.00
- PW-2S Single section each side Net \$18.00
- PW-3R Double section right; single left Net \$24.00
- PW-3L Double section left; single right Net \$24.00
- PW-4 Double section each side Net \$27.00
- NPW-3 Three sections, each 225 mmf. Net \$24.00

Similar to PW models, except that rotor shaft is perpendicular to panel.

**NPW-O** Net \$9.00  
 Uses parts similar to the NPW condenser. Drive shaft perpendicular to panel. One TX-9 coupling supplied.

**PW-O** Net \$9.90  
 Uses parts similar to the PW condenser. Drive shaft parallel to panel. Two TX-9 couplings supplied.

**PW-D** Net \$5.25  
 The Micrometer Dial used on the condensers and drives above is available

separately. It revolves ten times in covering the complete range and as there is no gear reduction unit furnished, the driven shaft will revolve ten times, also. The PW-D dial fits a shaft 5/16" in diameter.

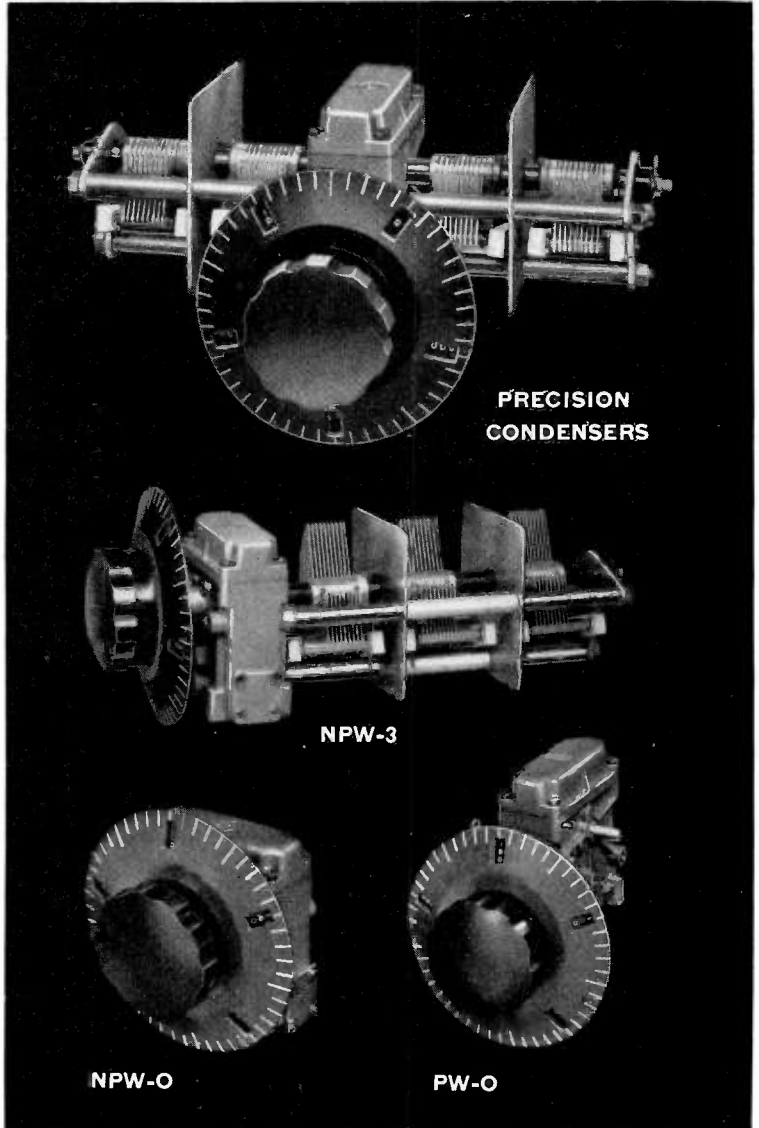
**MULTI-BAND TANK ASSEMBLY**

The unique MB-150 Multi-Band Tank tunes all amateur bands from 80 through 10 meters with 180° rotation of the shaft; the coils are never changed. The unit is built around a circuit which tunes to two harmonically unrelated frequencies at the same time. Thus, it becomes possible to cover a wide frequency range and yet maintain a reasonably constant L/C ratio. 3" wide x 8 1/4" high (including the GS-10 standoffs) x 9" long overall including the 1/4" dia. shaft and output terminals.

Features of the MB-150:

- (1) For use as the all-band plate tank in push-pull or single-ended stages running up to 150-watts input (1500 volts peak). It is ideal for a pair of 807s or 809s or a single 829B.
  - (2) Separate link coupling coil has special clips which adjust to match impedances up to 600 ohms directly. Output couples into a higher powered amplifier, an antenna or an antenna tuning network.
  - (3) Fast band changing is accomplished without handling coils, thus removing one of the danger points in the amateur station.
- MB-150 Multi-Band Tank Assembly

Net \$18.75

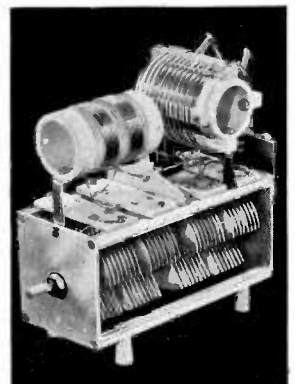


**PRECISION CONDENSERS**

**NPW-3**

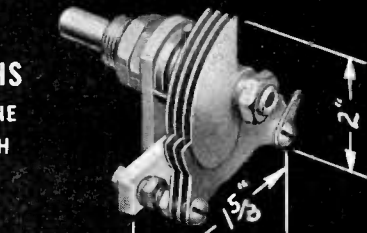
**NPW-O**

**PW-O**



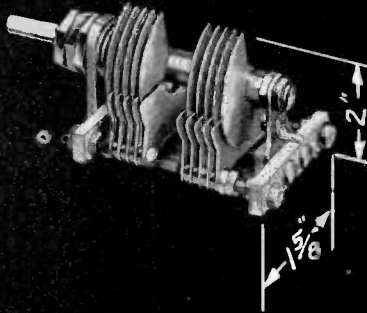
**TYPE STHS**  
STRAIGHT-LINE  
WAVELENGTH

180° Rotation



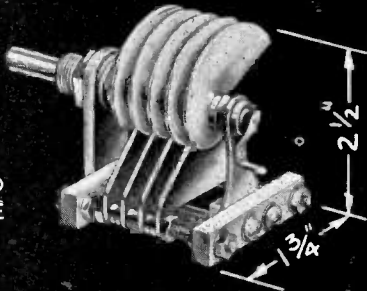
**TYPE ST**  
(Type STD Illustrated)  
STRAIGHT-LINE  
WAVELENGTH

180° Rotation



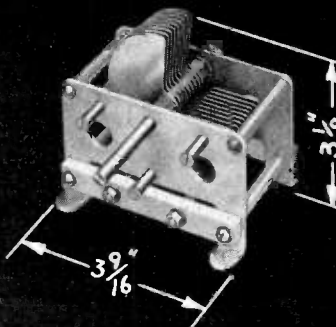
**TYPE SE**  
(Type SEU Illustrated)  
STRAIGHT-LINE  
FREQUENCY

270° Rotation



**TYPE EMC**  
STRAIGHT-LINE  
WAVELENGTH

180° Rotation



The **ST Type** condenser has Straight-Line Wavelength plates. All double-bearing models have the front bearing insulated to prevent noise. On special order a shaft extension at each end is available, for ganging. On double-bearing single shaft models, the rotor contact is through a constant impedance pigtail. Steatite insulation.

Capacity	Minimum Capacity	No. of Plates	Air Gap	Length	Catalog Symbol	Net
<b>SINGLE BEARING MODELS</b>						
15 Mmf.	3 Mmf.	3	.018"	1 3/8"	STHS-15	\$ .65
25	3.25	4	.018"	1 3/8"	STHS-25	.90
50	3.5	7	.018"	1 3/8"	STHS-50	2.10

**NOTE** → Type SS Condensers, having straight-line capacity plates but otherwise similar to the Type ST, are available. Capacities and Prices same as Type ST.

**SPLIT STATOR DOUBLE BEARING MODELS**

50-50	5-5	11-11	.026"	2 3/4"	STD-50	\$3.60
100-100	5.5-5.5	14-14	.018"	2 3/4"	STHD-100	3.90

**DOUBLE BEARING MODELS**

35 Mmf.	6 Mmf.	8	.026"	2 1/4"	ST-35	\$1.85
50	7	11	.026"	2 1/4"	ST-50	1.90
75	8	15	.026"	2 1/4"	ST-75	2.00
100	9	20	.026"	2 1/4"	ST-100	2.10
140	10	27	.026"	2 1/4"	ST-140	2.30
150	10.5	29	.026"	2 1/4"	ST-150	2.30
200	12.0	27	.018"	2 1/4"	STH-200	2.50
250	13.5	32	.018"	2 1/4"	STH-250	2.70
300	15.0	39	.018"	2 1/4"	STH-300	2.90
335	17.0	43	.018"	2 1/4"	STH-335	3.10

**TYPE SE** — All models have two rotor bearings, the front bearing being insulated to prevent noise. A shaft extension at each end, for ganging, is available on special order. On models with single shaft extension, the rotor contact is through a constant impedance pigtail. The SEU models (illustrated) are suitable for high voltages as their plates are thick polished aluminum with rounded edges. Other SE condensers do not have polished edges on the plates. Steatite insulation.

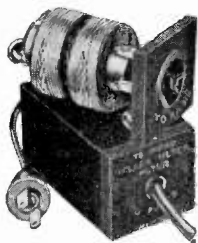
15 Mmf.	7 Mmf.	6	.055"	2 1/4"	SEU-15	\$2.80
20	7.5	7	.055"	2 1/4"	SEU-20	2.95
25	8	9	.055"	2 1/4"	SEU-25	3.10
50	9	11	.026"	2 1/4"	SE-50	2.30
75	10	15	.026"	2 1/4"	SE-75	2.40
100	11.5	20	.026"	2 1/4"	SE-100	2.60
150	13	29	.026"	2 1/4"	SE-150	2.75
200	12	27	.018"	2 1/4"	SEH-200	2.80
250	14	32	.018"	2 1/4"	SEH-250	3.00
300	16	39	.018"	2 1/4"	SEH-300	3.25
335	17	43	.018"	2 1/4"	SEH-335	3.50

**TYPE EMC** — A general purpose condenser available in large sizes and having Straight-Line wavelength plates. They are similar in construction to the TMC Transmitting condenser, and have high efficiency and rugged frames. Insulation is Steatite, and Peak Voltage Rating is 1000 volts. Same sizes available with straight line capacity plates, type DXC condenser.

Capacity	Minimum Capacity	No. of Plates	Length	Catalog Symbol	Net
150 Mmf.	9 Mmf.	9	2 15/16"	EMC-150	\$4.10
250	11	15	2 15/16"	EMC-250	4.75
350	12	20	2 15/16"	EMC-350	6.00
500	16	29	4 3/8"	EMC-500	6.75
1000	22	56	6 3/4"	EMC-1000	10.25

# Miller

## ALL WAVE INTERFERENCE FILTER

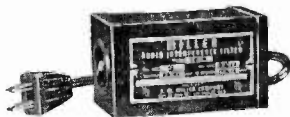


These filters are designed to eliminate radio interference caused by small household appliances such as sewing machines, vacuum cleaners, food mixers and other similar devices requiring less than 150 watts. Inductive-capacitive circuit assures maximum attenuation of interference.

Dimensions: 2 1/2" square x 4" long.

Cat. No.	Volts	Watts	List Price
7818	115	150	\$7.00

## APPLIANCE FILTER



Similar to the Cat. No. 7818, except wound with larger wire to be used with all types of plug-in devices with power requirements up to 550 watts.

Dimensions: 2 1/4" square x 4" long.

Cat. No.	Volts	Watts	List Price
7815	115	550	\$7.00

## GENERAL PURPOSE FILTER

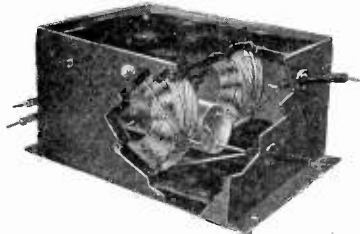


This filter is recommended for use with marine and D.C. appliances and radios. It is also for use with extremely noisy A.C. appliances. A good, permanent connection to ground should be used with this filter.

Dimensions: 2 1/2" square x 5" long.

Cat. No.	Volts	Watts	List Price
7813	115	200	\$7.50

## INDUSTRIAL FILTERS



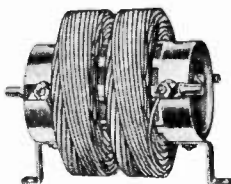
Miller industrial filters are designed for use with all types of radio interference producing devices. Duo-lateral wound chokes and non-inductive condensers result in a high degree of noise attenuation. Completely sealed in metal cases having provision for standard junction boxes at each end of the case.

Dimensions: 9-3/42" x 6-1/2" x 5" high.

Weight: 16 lbs. Approx.

Cat. No.	Volts	Amps.	List Price
7841	220	5	\$30.00
7842	220	10	32.50
7843	220	20	35.00
7844	220	30	37.50
7845	220	40	40.00

## LINE FILTER CHOKES



All Miller line filter chokes are duo-lateral wound on ceramic forms (except #7825 & D-7825 are on bakelite). They are for installation in noise producing equipment such as

flasher signs, farm lighting plants, motor generators, etc. Also used with radio transmitters to prevent r.f. energy feed-back into the power circuits. Typical circuit diagrams are supplied with each choke. Always select chokes having a current rating at least as high as the maximum current load of the circuit to be filtered.

## SINGLE LINE FILTER CHOKES

For use in filtering individual and branch circuits.

Dimensions: #7825 1-7/8" x 1-3/4"

Others: 2-1/2" x 4"

Cat. No.	Amps.	Ohms.	MH	List Price
7825	2	.75	.60	\$1.50
7826	5	.28	.57	4.00
7827	10	.15	.37	4.50
7828	20	.08	.20	5.00
7829	30	.05	.13	5.50

## DUAL LINE FILTER CHOKES

For use in filtering both sides of single phase circuits.

Dimensions: #D-7825 3-1/4" x 2-1/8"

Others: 4-1/2" x 4"

Cat. No.	Amps.	Ohms.	MH	List Price
D-7825	2	.75	.60	\$3.00
D-7826	5	.28	.57	6.00
D-7827	10	.15	.37	7.00
D-7828	20	.08	.20	8.00
D-7829	30	.05	.13	9.00

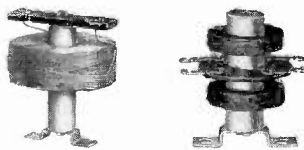
Specifications are for each winding.

## TOWER LIGHTING CHOKES

Similar in construction and size to the D-7826, except of 2-pi construction and recommended for use in the circuits of obstruction and warning lights of antenna towers.

Cat. No.	Amps.	Ohms.	MH	List Price
7870	5	.56	1.20	\$6.00
7871	10	.30	.75	7.00
7872	20	.17	.45	8.00

## RECTIFIER HASH FILTER CHOKES



Duo-lateral wound chokes for use in series with the plate leads of mercury vapor rectifiers to prevent r.f. hash feed-back. The single chokes are insulated for use up to 10,000 volts to ground. The dual choke is insulated for 2500 volts plate to plate. Wound on Alsimag forms with two hole mounting brackets.

Dimensions: 2" dia. by 2-3/8" high.

Cat. No.	MH	Ohms	MA	List Price
7867	4.50	4.5	500	\$2.00
7868	2.75	2.3	1000	2.50

Dual Choke Dimensions: 1-1/4" Dia. x 1-3/4" high

7865	3.25 (per Coil)	15	250	1.50
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## HIGH TENSION FILTER CHOKES



These chokes are used to prevent radio interference caused by high tension (secondary) circuit neon sign animators and lead radiation of border tubing. The chokes are sectional wound and enclosed in weatherproof bakelite cases. They are insulated for 15,000 volts and continuous current operation up to 100 milliamperes. Designed for ease of installation and trouble-free service. Circuit diagram supplied with each choke.

Dimensions: 1-3/8" dia. x 3-1/4" high.

Cat. No.	Volts	Amps.	List Price
7875	15,000	.1	\$2.50

## ELECTRIC SHAVER FILTER



Carefully designed and constructed, this filter is the inductive-capacitive type and requires no ground connection.

Shock-proof moulded rubber construction. For use with all electric shavers. Fully guaranteed.

Dimensions: 1-1/8" dia. x 3" long.

Cat. No.	Volts	Watts	Finish	List Price
7817	115	50	Black	\$2.50
7817-1	115	50	Ivory	2.50

## RADIO INTERFERENCE FILTER CONDENSERS



Highest quality non-inductive wound paper dielectric condensers manufactured for use with Miller Filters and Filter chokes. These condensers are rated at 220 volts AC or DC and are designed to withstand surges up to 1000 volts. Uncased type for installation within the equipment. Wax impregnated and sealed.

Maximum operating voltage—220 AC.

Cat. No.	Capacity	Dimensions	List Price
7803	2 x 2. Mfd.	1-7/8" x 1-1/4" x 4-1/2"	\$4.50
7804	2. mfd.	1-7/8" x 3/4" x 3-1/2"	2.50

## FLUORESCENT LIGHT FILTER CHOKES



Radio interference generated by fluorescent lights and tubing may be prevented from getting into the supply line by the use of these filter chokes. Chokes are installed as close to the ballast as practical. Complete instructions are supplied with each choke.

Dimensions: 1-1/4" dia. x 1-1/2" long.

Cat. No.	Volts	Watts	List Price
7876	220	20	\$1.50
7877	220	40	1.50
7878	220	80	1.50
7879	220	160	1.50

## FILAMENT CHOKES



Enclosed solenoid wound chokes for use in the filament and vibrator circuits of battery operated receivers, transmitters, etc.

Dimensions: 3/4" Dia. x 1-7/8" long, plus 3" leads.

Cat. No.	uH	Ohms	Amps.	List Price
5221	10	.02	8	\$ .60

For a Complete Listing of MILLER PRODUCTS ask for a copy of our Latest General Catalog.

[A]



# Miller

## UNSHIELDED CHOKES



These single section R.F. Chokes are ideally suited for general purpose applications in receiver and filter circuit. Solder lug terminals and single hole mounting.

### AIR CORE TYPE

Dimensions: 1-1/8" dia. x 3/8" high.

Cat. No.	MH	Ohms	MA	List Price
610	.25	8	125	\$.40
620	.75	17	125	.40
630	1.50	21	125	.40
640	2.50	28	125	.50
650	5.0	41	125	.50
660	7.5	53	125	.50
670	10.0	64	125	.60
680	12.5	74	125	.60
690	15.0	83	125	.60
691	20.0	97	125	.75
692	30.0	120	100	.75
693	60.0	175	100	1.00
694	80.0	230	100	1.25

### Center Tapped Chokes

Cat. No.	MH	Ohms	MA	List Price
670-T	10.0	64	125	.70
691-T	20.0	97	100	.85
693-T	60.0	175	100	1.10

### IRON CORE TYPE

These chokes are similar in construction to the No. 600 series except that they are wound on powdered iron cores.

Cat. No.	MH	Ohms	MA	List Price
951	.5	6.8	125	\$.90
952	1.0	10.9	125	1.00
953	2.5	19.5	125	1.05
954	5.0	23.0	125	1.20
955	7.5	37.0	125	1.25
956	10.0	45.0	125	1.30
957	25.0	78.0	100	1.60
958	50.0	130.0	100	1.75
959	75.0	172.0	100	2.00
960	100.0	210.0	100	2.25
961	150.0	268.0	100	2.50



## SHIELDED CHOKES

Single section wound R.F. R.F. Chokes assembled in round aluminum shield with two spade bolts for mounting. Solder lug terminals.

Dimensions: 1-1/4" dia. x 1" high (No. 758 is 1-5/8" dia.)

Cat. No.	MH	Ohms	MA	List Price
751	.5	10	125	\$.75
752	1.0	17	125	.75
753	2.5	30	125	.85
754	5.0	49	125	.85
755	7.5	61	125	.85
756	10.0	75	125	.95
757	25.0	125	125	1.10
758	50.0	186	100	1.35

### IRON CORE TYPE

Similar to the No. 700 series except wound on powdered iron cores for lower circuit loss.

Dimensions: 1-1/4" dia. x 1" high.

Cat. No.	MH	Ohms	MA	List Price
851	.5	8.6	125	\$1.25
852	1.0	11.5	125	1.35
853	2.5	22.0	125	1.40
854	5.0	31.0	125	1.55
855	7.5	42.0	125	1.60
856	10.0	47.0	125	1.65
857	25.0	100.0	125	1.95

Dimensions: 1-5/8" dia. x 1" high.

858	50.0	160.0	100	2.10
859	75.0	222.0	100	2.35
860	100.0	348.0	100	2.60
861	150.0	520.0	100	2.85

## LOW POWER AND RECEIVER CHOKES



These chokes are wound on 1/4" dia. forms and feature the exclusive Miller 'Sta-on' terminal clips. Low distributed capacity and accurate inductance values.

Dimensions: (form) 1/4" dia. x 1-1/2" long.

Cat. No.	MH	Ohms	MA	List Price
4531	.5	11	200	\$.75
4532	1.5	21	200	.75
4537	2.5	26	200	.75
4538	5.0	40	125	1.00
4539	7.5	79	125	1.25
4540	10.0	95	125	1.50
4541	25.0	160	125	1.75

### UHF CHOKES

Dimensions: 1/4" Dia. x 1-1/2" long.

Cat. No.	uH	Ohms	MA	List Price
4528	2.5	.07	200	\$.60
4529	4.0	.25	200	.60

### SINGLE STUD MOUNTING CHOKE

Dimensions: 5/8" O.D. x 1-1/4" high (plus #6-32 stud)

Cat. No.	MH	Ohms	MA	List Price
4530	2.5	23	200	\$.85

## PHONO SCRATCH FILTER



The Miller Phono Scratch Filter is designed to reduce needle and surface noise and may be used with any type of high impedance phonograph pick-up. The resonant frequency of the parallel tuned circuit is adjustable between 2000 and 3000 cycles. The attenuation is approximately 22 db. Assembled in an aluminum shield with two mounting brackets.

Dimensions: 1-3/8" x 1-7/8" x 3" high.

Cat. No.	Item	List Price
EL-59	Scratch Filter	\$7.50

## TV POWER TRANSFORMER (R.F.)



These R.F. power supply transformers for use with television receivers and cathode ray oscilloscope make it possible to construct an inexpensive source of high voltage D.C. Two types are available, the #4525 for voltages to 4000 DC and the #4526 for voltages to 10,000 DC (or 30,000 DC in a voltage rectifier tripler circuit). Type 1B3-GT tubes are used as rectifiers and the R.F. oscillator circuit uses one or more type 6V6 or 6Y6 tubes connected in parallel. The high frequency AC source permits use of simple and inexpensive resistive capacitive filters with low ripple content in the output. Typical circuit diagrams are supplied with each coil.

Cat. No.	Item	List Price
4525	H.V. R.F. Trans. (to 4 KV)	\$7.50
Dimensions—1 1/4" Dia. x 3 3/4" high		(Illustrated)
4526	H.V. R.F. Trans. (to 30 KV)	\$12.50
Dimensions—2 1/4" Dia. x 6" high		(not illustrated)

## HEAVY DUTY TRANSMITTER CHOKES

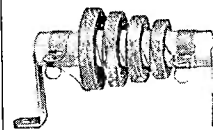


These heavy duty Navy Type R.F. chokes are sectional wound on Alsimag forms and are provided with removable mounting brackets. Ends of form are tapped for #6-32 machine screw. For general use in amateur and commercial transmitters.

Dimensions: (form) 1/2" dia. x 3-1/2" long.

Cat. No.	MH	Ohms	MA	Meters	List Pr.
4534	1.0	2.5	1000	20	\$2.00
4535	1.5	3.6	1000	40	2.25
4533	2.5	4.5	750	80	2.50
4536	4.0	5.5	750	160	2.75

## MEDIUM DUTY TRANSMITTER CHOKES



For use in medium power transmitters, these chokes are similar in construction to our Heavy Duty types.

Low distributed capacity and accurate inductance values are features.

Dimensions: (form) 1/2" dia. x 2-1/2" long.

Cat. No.	MH	Ohms	MA	List Price
4550	2.0	6.5	400	\$1.50
4551	4.0	10.0	400	1.75

## 10 K. C. FILTERS



This filter is used to eliminate the 10 KC heterodyne 'whistle' present in high fidelity broadcast receivers. It is used in the detector load circuit of a diode or infinite impedance detector. The 10,000 cycle attenuation is approximately 30 db. The filter consists of a parallel resonant circuit with an iron

core coil and a variable condenser providing a tuning range from 7500 to 12,000 cycles.

Dimensions: 1-3/8" sq. x 2-1/4" high.

Cat. No. Use List Price

EL-58	10 KC Filter	\$6.00
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This band elimination circuit 10,000 cycle filter has sharper cut-off characteristics than our type EL-58. It should be connected in the plate circuit of a triode audio stage. The cut-off frequencies are 9000 and 11,000 cycles. The load resistance R is 10,000 ohms. The attenuation is approximately 30 db. Recommended for general use with any high fidelity broadcast band receiver.

Dimensions: 1-3/8" x 1-7/8" x 2-7/8" high.

Cat. No.	Use	List Price
EL-60	10 KC Filter	\$12.50

## PHONO-OSCILLATOR COIL



The Miller Phono-Oscillator coils are permeability tuned and are assembled in an aluminum shield, together with the grid coupling condenser and resistor. The tuning range of the coil is from 540 to 700 KC, by core adjustment. A typical circuit diagram is supplied with each coil.

Dimensions: 1-7/16" square x 2-1/2" high.

Cat. No. Use Freq. Range List Price

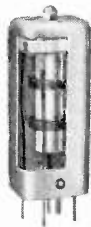
522	Phono-Oscillator	540-700 KC	\$3.00
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[B1] For a Complete Listing of MILLER PRODUCTS ask for a copy of our Latest General Catalog.

# Miller

## REPLACEMENT I. F. TRANSFORMERS

(Double Tuned)



These transformers are an essential part of the stock of every serviceman and dealer. In many cases they will give better performance than the original transformer. All have been pretuned and should require only slight adjustment after installation. Leads are color coded, and the transformers are assembled in aluminum shields. These transformers may be used as replacements in most makes of

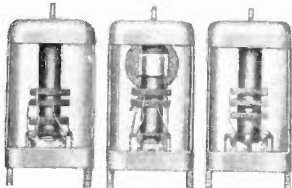
receivers using transformers of the same physical size. Be sure to order a transformer of the correct frequency.

Dimensions: 1-3/8" square x 2-5/8" high.

Cat. No.	Freq.	KC Range	Use	List Price
512-K1	175	160-190	Input	\$2.25
512-K2	175	160-190	Interstage	2.25
512-K3	175	160-190	Full-Wave	2.25
512-K4	175	160-190	Half-Wave	2.25
512-H1	262	240-280	Input	2.00
512-H2	262	240-280	Interstage	2.00
512-H3	262	240-280	Full Wave	2.00
512-H4	262	240-280	Half Wave	2.00
512-C1	455	425-500	Input	2.00
512-C2	455	425-500	Interstage	2.00
512-C3	455	425-500	Full Wave	2.00
512-C4	455	425-500	Half Wave	2.00

## UNIVERSAL REPLACEMENT COILS

(Permeability Tuned)



This series of variable inductance iron core coils are well suited for general replacement use and new designs. The inductance may be adjusted to cover the standard broadcast band with tuning condensers having a maximum capacity of between 250 and 450 mmfd. The oscillator coils may be used with any I.F. amplifier operating in the 100 to 550 KC range. Complete instructions are supplied.

### UNSHIELDED

Dimensions: 7/8" dia. x 2" high. "L" mtg. Bracket.

Cat. No.	Use	Freq. Range	List Price
72-A	Antenna Stage	500-1800 KC	\$2.00
72-RF	R.F. Stage	500-1800 KC	2.00
72-Osc.	Oscillator Coil	100-550-KC I.F.	2.00

### SHIELDED

Dimensions: 1-3/8" square x 2-1/2" high

Cat. No.	Use	Freq. Range	List Price
73-A	Antenna Stage	500-1800	\$2.50
73-RF	R.F. Stage	500-1800	2.50
73-Osc.	Oscillator Coil	100-550 KC I. F.	2.50

## ANTENNA COIL PRIMARIES



High impedance duo-lateral wound replacement primary windings. Dimensions given are for outside diameter of coil secondary.

Cat. No.	Diameter	List Price
352	1/2"	\$.35
353	3/4"	.35
354	3/8"	.35
355	7/8"	.35
356	1"	.35
357	1-1/4"	.35

## DE-LUXE BROADCAST COILS



These coils are used in the finest quality receivers for lasting performance and stability. All coils are wound on XXX grade bakelite tubing and the secondaries are Litz wire wound (except oscillator coils) for maximum "Q". The antenna and R.F. coils are inductive-capacitive coupled for uniform gain. For use with standard 365 mmfd. tuning condensers.

### SHIELDED COILS

Dimensions: 1-7/8" dia. x 3" high.

Cat. No.	Use	Freq. Range	List Pr.
242-A	Antenna	540-1750	\$1.50
242-RF	Interstage	540-1750	1.50
242-BP	Band-pass	540-1750	1.25
277-C	2-coil Oscillator	540-1750*	1.25
279-C	Tapped Oscillator	540-1750*	1.10

NOTE: \*Oscillator coils are for use with 455KC intermediate frequency and require a 400 mmfd. series pad condenser.

### UNSHIELDED COILS

Dimensions: 7/8" dia. (form) x 2-3/4" high.

Cat. No.	Use	Freq. Range	List Pr.
241-A	Antenna	540-1750	\$1.00
241-RF	Interstage	540-1750	1.00
241-BP	Band-pass	540-1750	.85
276-C	2-coil Oscillator	540-1750*	1.00
278-C	Tapped Oscillator	540-1750*	.85

NOTE: \*Oscillator coils are for use with 455 KC intermediate frequency and require a 400 mmfd. series pad condenser.

## HIGH GAIN T.R.F. COILS

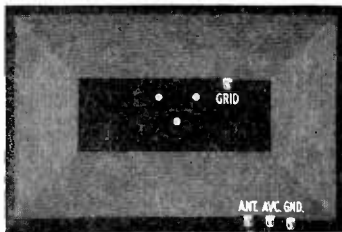


These coils are excellent for use in 2-tuned circuit TRF receivers and beginners circuits. They feature high impedance primaries and Litz wire wound secondaries wound on XXX grade bakelite tubing. Single "L" mounting brackets. For use with standard 365 mmfd. tuning condensers.

Dimensions: 1" dia. (form) x 2" high.

Cat. No.	Use	Freq. Range	List Pr.
42-A	Antenna	540-1600 KC	\$.90
42-RF	Interstage	540-1600 KC	.90

## LOOP ANTENNA



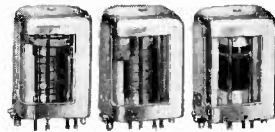
Using the patented "Air Loop" construction, the No. 703-A Loop Antenna provides high "Q" and mechanical rigidity. The loop as supplied has a secondary inductance of 253 microhenries, which may be reduced as needed. Instructions are supplied. May be used in older sets to replace the antenna coil for local reception without an antenna.

Dimensions: 8-1/8" 5-3/8" x 1/8" thick.

\*Mfg. under Franklin Airloop Co. Pat. #2,401,472

Cat. No.	Use	Frequency	List Price
703-A	Loop Antenna	540-1700 KC	\$1.75

## STANDARD BROADCAST COILS



High gain general purpose coils featuring high impedance coupled antenna and R.F. units with progressive wound Litz wire secondaries (except oscillator coils). For use with standard 365 mmfd. tuning condenser. All windings are thoroughly impregnated with tropicalized R.F. lacquer.

### SHIELDED COILS

Dimensions: 1-3/8" square x 2-1/2" high.

Cat. No.	Use	Freq. Range	List Pr.
44-A	Antenna	540-1700	\$1.15
44-RF	Interstage	540-1700	1.15
44-BP	Band-Pass	540-1700	1.15
44-C	2-coil Oscillator	540-1700*	1.15
41-C	Tapped Oscillator	540-1700*	1.15

NOTE: \*Oscillator coils are for use with 455 KC intermediate frequency amplifier and a 400 mmfd. series pad condenser.

### UNSHIELDED COILS

Dimensions: 5/8" dia. (form) x 2-1/2" high.

Cat. No.	Use	Freq. Range	List Pr.
43-A	Antenna	540-1700	\$.85
43-RF	Interstage	540-1700	.85
43-BP	Band-Pass	540-1700	.85
43-C	2-coil Oscillator	540-1700*	.85
45-C	Tapped Oscillator	540-1700*	.85

NOTE: \*Oscillator coils are for use with 455 KC intermediate frequency amplifier and a 400 mmfd. series pad condenser.

## REPLACEMENT OSCILLATOR COILS



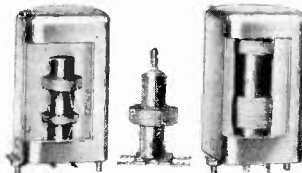
These solenoid wound general purpose coils may be used as general replacements in many makes of standard broadcast band receivers. For use with 365 mmfd. variable condensers to cover the band from 540 to 1700 KC. Wound on XXX grade bakelite tubing with enamelled copper wire.

### UNSHIELDED

Dimensions: 3/4" dia. x 1-3/4" long. "Z" mtg. Bracket.

Cat. No.	I.F. Freq.	Series Pad	List Price
480-K	175	.001 mfd.	\$.70
480-H	262	.0006 mfd.	.70
480-C	455	.0004 mfd.	.70

## ALL WAVE TEST OSCILLATOR COILS



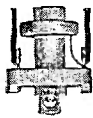
A set of high quality coils for use in building an electron coupled test oscillator. A 2-gang 365 mmfd. condenser with sections connected in parallel is required. The fundamental frequency range, in five bands, is from 50 KC to 20 MC. The low frequency coil is unshielded, the other coils are in two shields measuring 1-3/4 square x 3" high.

Cat. No.	Use	Frequency	List Price
T-550	Test Oscillator	50-20,000 KC	\$7.50

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# Miller

## LOOP ANTENNA WAVE TRAPS

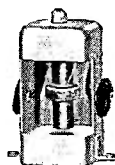


These traps are designed especially for use with receivers having built-in loop antenna. Similar in construction to our Series #811, except with a separate low inductance winding which is to be connected in series with the loop antenna of the receiver. Slight readjustment of the loop tuning circuit after the trap has been installed is desirable. Trap circuit is parallel connected.

Dimensions: 1-3/8" square x 1-3/4" high.

Cat. No.	Band	KC Range	List Pr.
815-X1	I.F. & Commercial	250-500	\$1.50
815-X2	I.F. & Commercial	125-250	1.50
815-BC1	Broadcast	900-1800	1.50
815-BC2	Broadcast	500-900	1.50
815-A	Amateur	160 Meters	1.50
815-B	Amateur	80 Meters	1.50

## SHIELDED WAVE TRAPS

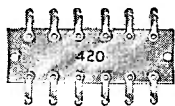


Parallel resonant wave traps assembled in aluminum shields are well suited for use in older types of radio receivers and in locations where the signal strength of the interfering station is high in relation to the signal to be received. Screw-driver frequency adjustment from top of shield. Two mounting brackets are attached to the shield.

Dimensions: 1-3/8" square x 2-1/2" high.

Cat. No.	Band	KC Range	List Pr.
812-X1	I.F. & Commercial	425-525	\$1.75
812-X2	I.F. & Commercial	225-325	1.75
812-X3	I.F. & Commercial	150-225	1.75
812-BC1	Broadcast	1200-1600	1.75
812-BC2	Broadcast	800-1200	1.75
812-BC3	Broadcast	500-800	1.75
812-A	Amateur	160 Meters	1.75
812-B	Amateur	80 Meters	1.75
812-C	Amateur	40 Meters	1.75
812-D	Amateur	20 Meters	1.75
812-E	Amateur	10 Meters	1.75

## BAKELITE TERMINAL PLATES



These terminal plates, provided with securely riveted solder type terminal lugs, are particularly adaptable to the assembly of groups of resistors and by-pass condensers. Lugs are on 1/16" thick bakelite sheet stock and the terminal spacing is 7/16".

Cat. No.	Dimensions	Lugs per Side	List Pr.
420	1" x 3"	6	\$ .30
430	1-3/4" x 2-1/2"	5	.35
440	1" x 5-3/4"	14	.50
450	1-3/4" x 3-3/4"	8	.50
460	1-3/4" x 5-1/4"	11	.70
470	1-3/4" x 8-3/8"	19	1.00

## BAND SELECTOR SWITCHES



Miller band switches will make positive noise-free contact through an indefinite period of operation. These switches are positive self-cleaning type with silver plated contacts. Switches have an adjustable stop to be set for your requirements. Single hole mounting through a 3/8" diameter hole. Supplied with nut and lockwasher. Switches are 1-7/8" diameter.

Cat. No.	Circuits	Positions	Length	List Price
205	2	5	3/4"	\$2.50
402	4	2	3/4"	2.50
405	4	2 to 5	2-1/4"	3.25
605	6	2 to 5	4-1/2"	4.25

## DUAL WAVE TRAPS



Finest quality iron core dual wave traps having both a series and a parallel tuned circuit. Each circuit is tuned by a knob accessible at the top of the shields. Circuits may be tuned to the same frequency for maximum attenuation, or may be tuned to different stations within the range of the trap.

Dimensions: 1-3/8" x 2-3/4" x 2-1/4" high.

Cat. No.	Band	KC Range	List Pr.
813-X1	I.F. & Commercial	250-500	\$3.75
813-X2	I.F. & Commercial	125-250	3.75
813-BC1	Broadcast	900-1600	3.75
813-BC2	Broadcast	500-900	3.75
813-A	Amateur	1500-3000	3.75

## UNSHIELDED WAVE TRAPS

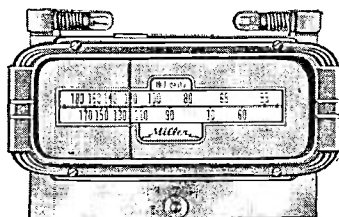


These unshielded wave traps may be installed within the cabinet or on the chassis. They are parallel resonant and provided with screw driver adjustment. Several traps may be connected in series with the antenna to provide simultaneous rejections of more than one interfering station.

Dimensions: 1-3/8" square x 1-3/4" high.

Cat. No.	Band	KC Range	List Pr.
811-X1	I.F. & Commercial	250-500	\$1.25
811-X2	I.F. & Commercial	125-250	1.25
811-BC1	Broadcast	900-1800	1.25
811-BC2	Broadcast	500-1000	1.25
811-A	Amateur	160 Meters	1.25
811-B	Amateur	80 Meters	1.25
811-C	Amateur	40 Meters	1.25
811-D	Amateur	20 Meters	1.25
811-E	Amateur	10 Meters	1.25

## SLIDE RULE DIALS



Miller Series No. 152 Slide Rule dials are designed for top-of-chassis mounting. The dimension from top of chassis to center of dial shaft bushing is 1-13/16". Dials are supplied with hubs for 3/8" diameter shafts. Two screw type dial light sockets are packed with each dial. The attractive escutcheon plate is finished in antique bronze with a protective lacquer coating. The dial scales are calibrated for use with condensers having counter-clockwise rotation. The escutcheon requires a panel cut-out measuring 1-7/8" high by 5-1/4" wide.

Dimensions:  
6-5/8" wide by 4-1/2" high (plus 1/2" for dial lights), 1/4" diameter shaft extends 1-1/4" beyond front of dial. The dial tuning ratio is approximately 5-1/2 to 1 and the effective scale length is 4-3/8".

Cat. No.	Calibration	List Price
152	.540-1800 KC	\$6.00
152-A	.54-1.7 MC/0-100	6.00
152-B	.54-1.7/1.7-5.5 MC	6.00
152-C	.54-1.7/5.5-18. MC	6.00
152-D	.54-1.7/1.7-5.5/5.5-18 MC	6.00
152-E	.14-.42/.54-1.7/2.5-7 MC	6.00
152-F	.14-.42/2.5-7. MC	6.00

## MIDGET I.F. TRANSFORMERS



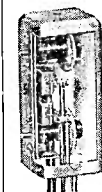
These mica compression tune intermediate frequency transformers are well suited for use in small receivers of all types. They measure only 1-1/8" square and 2" high. In spite of their small size, only the highest quality of parts and workmanship has been used in the construction of the Miller Midget transformers.

Dimensions: 1-1/8" square x 2" high.

Cat. No.	Use	Freq.	KC Range	List Price
<b>AIR CORE TYPES</b>				
112-K1	Input	175	165-185	\$2.00
112-K2	Interstage	175	165-185	2.00
112-K3	Full Wave	175	165-185	2.00
112-K4	Half Wave	175	165-185	2.00
112-C1		455	450-475	1.75
112-C2		455	450-475	1.75
112-C3		455	450-475	1.75
112-C4		455	450-475	1.75
112-W1		1500	1400-1600	1.75
112-W2		1500	1400-1600	1.75
112-W3		1500	1400-1600	1.75
112-W4		1500	1400-1600	1.75

Cat. No.	Use	Freq.	KC Range	List Price
<b>IRON CORE TYPES</b>				
012-K1		175	165-185	2.25
012-K2		175	165-185	2.25
012-K3		175	165-185	2.25
012-K4		175	165-185	2.25
012-H1		262	250-275	2.00
012-H2		262	250-275	2.00
012-H3		262	250-275	2.00
012-H4		262	250-275	2.00
012-C1		455	450-475	2.00
012-C2		455	450-475	2.00
012-C3		455	450-475	2.00
012-C4		455	450-475	2.00
012-W1		1500	1400-1600	2.00
012-W2		1500	1400-1600	2.00
012-W3		1500	1400-1600	2.00
012-W4		1500	1400-1600	2.00

## PERMEABILITY TUNED TRANSFORMERS



Miller permeability tuned intermediate frequency transformers are recommended for all applications where a high degree of frequency stability and operation under humid conditions are used. The two iron core adjusting screws are accessible from the side of the aluminum shield. These transformers have excellent gain and selectivity characteristics. An internal spring clip prevents vibration from affecting the adjustment.

Dimensions: 1-3/8" square x 3-1/4" high.

Cat. No.	Use	Freq.	KC Range	List Price
912-M1	Input	132	127-137	\$4.00
912-M2	Interstage	132	127-137	4.00
912-M3	Full Wave	132	127-137	4.00
912-M4	Half Wave	132	127-137	4.00
612-K1		175	165-185	4.00
612-K2		175	165-185	4.00
612-K3		175	165-185	4.00
612-K4		175	165-185	4.00
612-H1		262	250-275	3.50
612-H2		262	250-275	3.50
612-H3		262	250-275	3.50
612-H4		262	250-275	3.50
612-C1		455	450-475	3.50
612-C2		455	450-475	3.50
612-C3		455	450-475	3.50
612-C4		455	450-475	3.50
912-W1		1500	1400-1600	3.50
912-W2		1500	1400-1600	3.50
912-W3		1500	1400-1600	3.50
912-W4		1500	1400-1600	3.50
912-X1		3000	2900-3100	3.50
912-X2		3000	2900-3100	3.50
912-X3		3000	2900-3100	3.50
912-X4		3000	2900-3100	3.50

[D1] For a Complete Listing of MILLER PRODUCTS ask for a copy of our Latest General Catalog.

# Miller

## MINIATURE I.F. TRANSFORMERS\*



Designed for experimental and custom receivers as well as replacements for 'personal' radios, these transformers are permeability tuned and comparable in performance to standard size components. Expressly designed for use with the new miniature tubes. Plastic insulation throughout. Screw driver adjustment of primary and secondary from top and bottom of shield. Supplied with spring clip for mounting to the chassis.

Dimensions:  $\frac{3}{8}$ " square x 2" high.  
\*Mfg. under K-Trans. Pats. and Pats. Pend.

Cat. No.	Use	Freq.	KC Range	List Price
12-H1	Input	262	250-275 KC	\$2.25
12-H2	Output	262	250-275 KC	2.25
12-C1		455	440-480 KC	2.00
12-C2		455	440-480 KC	2.00

## UNIVERSAL I.F. TRANSFORMERS

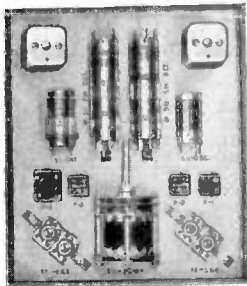


This new series of Miller transformers is used for general replacement purposes and in new designs. High gain and excellent stability are combined in a small transformer designed for use in both home and auto radio receivers. The ceramic mica compression trimmers have been heat cycled for temperature stability. All transformers are assembled in aluminum shields with screw-driver adjustment accessible at the top of the shield.

Dimensions:  $1\frac{1}{4}$ " square x  $2\frac{1}{2}$ " high.

Cat. No.	Use	Freq.	KC Range	List Price
<b>AIR CORE TYPES</b>				
312-H2	Input	262	250-275	\$1.50
312-H4	Output	262	250-275	1.50
312-C2		455	440-475	1.50
312-C4		455	440-475	1.50
<b>IRON CORE TYPES</b>				
412-H2	Input	262	250-275	\$2.00
412-H4	Output	262	250-275	2.00
412-C2		455	440-470	2.00
412-C4		455	440-470	2.00

## ALL WAVE COIL KIT

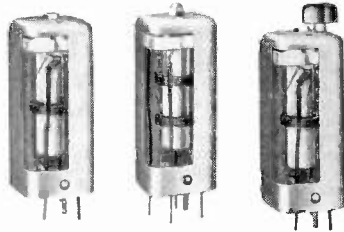


A simple, inexpensive coil kit for the construction of an all-wave receiver capable of out-performing many commercial sets costing much more than the Miller #511. Easy to construct by following the instructions supplied with each kit. 5 Tubes, including rectifier and 2 dual purpose tubes are used.

Frequency Range: 540-25,000 KC (in four bands)

Cat. No.	Quantity	Item	List Price
241-A	1	B. C. Ant. Coil	\$1.00
276-C	1	B. C. Osc. Coil	1.00
511-SWA	1	Short Wave Ant. Coil	2.25
511-SWC	1	Short Wave Osc. Coil	2.25
512-C2	1	455 KC Input I.F.	2.00
512-C4	1	455 KC Output I.F.	2.00
MA-2	2	H. F. Trimmers (dual)	1.00
405	4	Osc. Series Pad Cond.	4.85
405	1	Bond Selector Switch	3.25
511-CD	1	Circuit Diagram & Data	.50
MILLER #511		Coil Kit	List Price \$20.00

## SPECIAL I.F. TRANSFORMERS



For communications receivers, converters and special applications, we maintain a stock of special purpose transformers. The following types are typical of the varieties available.

### BEAT FREQUENCY OSCILLATORS

Cathode tapped transformers with adjustment knob at top of aluminum shield.

Dimensions:  $1\frac{3}{8}$ " square x  $3\frac{1}{4}$ " high.

Cat. No.	Frequency	KC Range	List Price
512-C5	455	450-475 KC	\$2.25
512-W5	1500	1400-1600 KC	2.25
512-X5	3000	2900-3100 KC	2.25
512-Y5	5000	4900-5100 KC	2.25

### REGENERATIVE I.F. TRANSFORMERS

Double tuned transformers with a tapped secondary for cathode regenerative feedback.

Dimensions:  $1\frac{3}{8}$ " square x  $3\frac{1}{4}$ " high.

Cat. No.	Frequency	KC Range	List Price
<b>AIR CORE TYPES</b>			
512-RC	455	450-475 KC	\$2.00
512-RW	1500	1400-1600 KC	2.00
512-RX	3000	2900-3100 KC	2.00
<b>IRON CORE TYPES</b>			
612-RC	455	450-475	\$2.50
612-RW	1500	1400-1600	2.50

### CONVERTER OUTPUT TRANSFORMERS

Used to couple high frequency converters to existing radio receivers and using the receiver as an intermediate frequency amplifier.

Dimensions:  $1\frac{3}{8}$ " square x  $3\frac{1}{4}$ " high.

Cat. No.	Frequency	KC Range	List Price
512-QT	525	500-550 KC	\$2.00
512-WT	1500	1400-1600 KC	2.00
512-XT	3000	2900-3100 KC	2.00
512-YT	5000	4500-5500 KC	2.00

### IRON CORE TRANSFORMERS

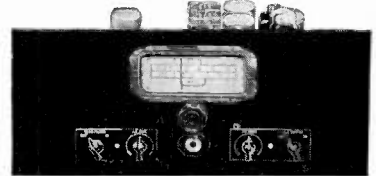


These iron core transformers provide higher gain and selectivity than the conventional air core transformers of similar size. The mica compression trimmers, adjustable from the top of the shield, have been heat cycled for capacity stability. Gain and selectivity of a single stage using iron core transformers is often equal to two stages of air core transformers.

Dimensions:  $1\frac{3}{8}$ " square x  $3\frac{1}{4}$ " high.

Cat. No.	Use	Freq.	KC Range	List Price
612-H1	Input	262	250-275	\$2.50
612-H2	Interstage	262	250-275	2.50
612-H3	Full Wave	262	250-275	2.50
612-H4	Half Wave	262	250-275	2.50
612-C1		455	450-475	2.50
612-C2		455	450-475	2.50
612-C3		455	450-475	2.50
612-C4		455	450-475	2.50
612-W1		1500	1400-1600	2.50
612-W2		1500	1400-1600	2.50
612-W3		1500	1400-1600	2.50
612-W4		1500	1400-1600	2.50

## HIGH FIDELITY TUNER KIT



Essential parts for the construction of a band-pass T.R.F. broadcast receiver which, with a good amplifier and speaker system will enable you to really appreciate some of the fine high fidelity programs being broadcast by the better stations. Band width is 20 KC and a 10KC adjacent channel filter is included with the kit. Form #11941 gives complete details, it's yours for the asking.

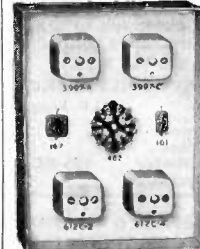
The Coil Kit consists of the following:

Cat. No.	Quantity	Item	List Price
472-UA	1	Untuned Ant. Coil	\$1.75
242-RF	2	Interstage Coils	3.00
242-BP	2	Band-Pass Coils	2.50
472-UT	1	Untuned Def. Coil	2.25
EL-56	2	Coupling Coils	2.00
EL-58	1	10 KC Filter	6.00
2104	1	4-Gang Condenser	15.00
570-CD		Circuit Diagram & Data	.25
MILLER #EL-575		Coil Kits	List Pr. \$32.75

## The foundation Kit consists of:

Cat. No.	Quantity	Item	List Price
EL-570	1	Coil Kit	\$32.75
570-T	1	Tuner Chassis	12.00
570-TB	1	Chassis Bottom	3.00
152	1	Slide Rule Dial	6.00
570-P2	1	Relay Rack Panel	6.00
440	1	Terminal Plate	.50
3093	1	Dial Knob	.75
570-EP	1 Pr.	Engraved Plates	4.00
MILLER #EL-575		Foundation Kit	List Price \$65.00

## SKIP BAND COIL KIT

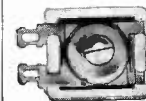


This new 2-Band coil kit covers the standard Broadcast band and the popular international short wave band. Shielded coils are used throughout. High frequency trimmers are incorporated in the coils. Requires a 2-gang 365 mmfd. tuning condenser.

Frequency range: 540-1500/5500-18,000 KC  
The kit contains the following:

Cat. No.	Quantity	Item	List Price
3997-A	1	Antenna Coil	\$3.50
3999-C	1	Oscillator Coil	3.50
612-C2	1	455 KC Input I.F.	2.75
612-C4	1	455 KC Output I.F.	2.75
402	1	Band Selector Switch	2.50
161	1	400 mmfd. Osc. Pod	.60
167	1	.01 mfd. Osc. Pod	2.25
3997-CD	1	Circuit Diagram	.50
MILLER #3997		Coil Kit	List Price \$18.35

## ADJUSTABLE PADDER CONDENSERS



These adjustable oscillator padder condensers are of the finest quality mica-compression type with ceramic body. Capacity adjustable from both top and bottom of condenser.

Dimensions:  $\frac{7}{8}$ " x  $1\frac{1}{4}$ " x  $\frac{3}{8}$ " thick.

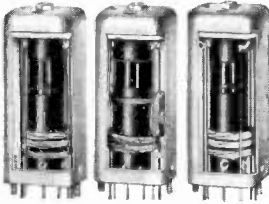
Cat. No.	Capacity Range	List Price
160-A	360-1000 mmfd.	\$.75
160-B	50- 400 mmfd.	.75

For a Complete Listing of MILLER PRODUCTS ask for a copy of our Latest General Catalog.

[E1]

# Miller

## TWO BAND COILS



High quality 2-band shielded coils provided with built-in high frequency trimmers, accessible from the top of the shield. Solenoid and universal windings on XXX grade bakelite tubing, thoroughly impregnated against moisture, make these coils suitable for marine and tropical use as well as for general home receiver use. For use with standard 365 mmfd. tuning condenser.

Dimensions: 1-3/8" square x 3" high.

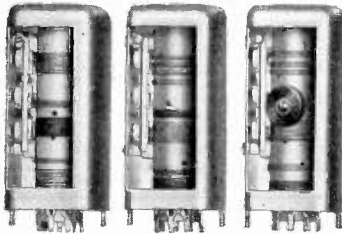
### BROADCAST & MARINE 540-1600/1600-4500 KC

Cat. No.	Use	I.F. Freq.	Osc. Pad	List Price
3996-A	Antenna			\$3.50
3996-RF	Interstage			3.50
3996-C	2-coil Oscillator	455 KC	{ 400 mmfd. }	3.50
3998-C	Tapped Oscillator		{ 1000 mmfd. }	

### BROADCAST & SHORT WAVE 540-1600/5500-18,000 KC

Cat. No.	Use	I.F. Freq.	Osc. Pad	List Price
3997-A	Antenna			\$3.50
3997-RF	Interstage			3.50
3997-C	2-coil Oscillator	455 KC	{ 400 mmfd. }	3.50
3999-C	Tapped Oscillator		{ 5000 mmfd. }	

## THREE BAND COILS



Communications receiver type coils especially designed for fine quality custom built entertainment receivers and commercial marine and aircraft use. These coils are all wound on XXX grade bakelite tubing and thoroughly impregnated against moisture. Individual high frequency trimmers for

each band are adjustable from the side of the aluminum shield. All coil terminals are connected to solder lugs at the bottom of the coil form for under chassis wiring.

Dimensions: 2" square x 4-1/4" high.

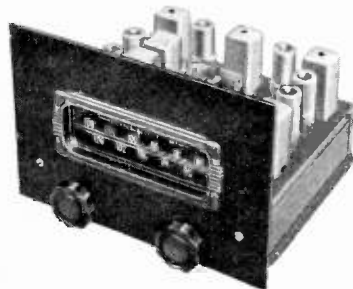
### ALL WAVE COILS 540 KC to 18. MC

Cat. No.	Use	I.F. Freq.	Osc. Pad	List Price
626-A	Antenna			\$5.50
626-RF	Interstage			5.50
626-C	2-coil Oscillator	455 KC	{ 400, 1600 }	5.50
625-C	Tapped Oscillator		{ 5000 mmfd. }	

### AIRCRAFT & MARINE COILS 140-425/540-1600/2500-7000 KC

Cat. No.	Use	I.F. Freq.	Osc. Pad	List Price
628-A	Antenna			\$5.50
628-RF	Interstage			5.50
628-C	2-coil Oscillator	455 KC	{ 120, 400 }	5.50
629-C	Tapped Oscillator		{ 1600 mmfd. }	

## F. M. TUNER KIT



This Kit contains the R.F. components to construct the finest FM tuner for home and professional use. Uses 8 miniature tubes in a circuit using cascade limiters ahead of the discriminator. Requires separate power supply and audio amplifier. The copper plated chassis measures only 7-1/2" deep x 8" wide x 2" high. All Miller Parts in the Kit may be purchased separately, if desired.

Frequency Range: 88-108 MC. The Kit contains the following:

## DOWELL TYPE COILS



Single section Litz wound secondary coils wound on 1/2" Dia. lo-loss ceramic dowels, these coils are provided with solder lugs on a bakelite terminal plate and with a #6-32 threaded stud for single hole chassis mounting. For use with standard 365 mmfd. tuning condenser.

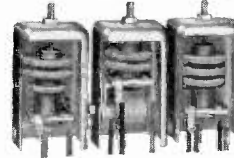
Dimensions: 3/4" square base x 1" high.  
(ABP & RF types 2-1/8" high)

Cat. No.	Use	Freq. Range	List Price
5480-A	Antenna	540-1600	\$1.00
5480-RF	Interstage	540-1600	1.25
5480-BP	Band-Pass	540-1600	1.50
5480-K	2-coil Oscillator	540-1600**	1.00
5480-H	2-coil Oscillator	540-1600**	1.00
5480-C	2-coil Oscillator	540-1600***	1.00
5481-K	Tapped Oscillator	540-1600**	1.00
5481-H	Tapped Oscillator	540-1600**	1.00
5481-C	Tapped Oscillator	540-1600***	1.00

NOTE: \* For 175 KC I.F. with 1000 mmfd. series pad  
\*\* Far 262 KC I.F. with 600 mmfd. series pad  
\*\*\* For 455 KC I.F. with 400 mmfd. series pad

## MIDGET R.F. COILS

(Adjustable Inductance)



This series of compact shielded coils is provided with an adjustable powdered iron core permitting approximately plus or minus 30% secondary inductance deviation from nominal values. Particularly recommended for aircraft, marine and mobile equipment and general custom receiver construction. Core is adjustable from top of aluminum shield. Coils are designed for use with standard 365 mmfd. tuning condenser.

Dimensions: 1-1/8" square x 2" high. (All Types)

### LONG WAVE BAND 140-425 KC

Cat. No.	Use	I.F. Freq.	Osc. Pad	List Price
X-320-A	Antenna			\$2.50
X-320-RF	Interstage			2.50
X-320-M	2-coil Oscillator	132 KC	400 mmfd.	2.00
X-320-C	2-coil Oscillator	455 KC	120 mmfd.	2.00
X-321-M	Tapped Oscillator	132 KC	400 mmfd.	2.00
X-321-C	Tapped Oscillator	455 KC	120 mmfd.	2.00

### BROADCAST BAND 540-1700 KC

Cat. No.	Use	I.F. Freq.	Osc. Pad	List Price
A-320-A	Antenna			\$1.75
A-320-RF	Interstage			1.75
A-320-M	2-coil Oscillator	132 KC	1600 mmfd.	1.75
A-320-C	2-coil Oscillator	455 KC	400 mmfd.	1.75
A-321-M	Tapped Oscillator	132 KC	1600 mmfd.	1.75
A-321-C	Tapped Oscillator	455 KC	400 mmfd.	1.75

### MARINE & AIRCRAFT BAND 2100-6300 KC

Cat. No.	Use	I.F. Freq.	Osc. Pad	List Price
B-320-A	Antenna			\$1.75
B-320-RF	Interstage			1.75
B-320-M	2-coil Oscillator	132 KC	6000 mmfd.	1.75
B-320-C	2-coil Oscillator	455 KC	1600 mmfd.	1.75
B-321-M	Tapped Oscillator	132 KC	6000 mmfd.	1.75
B-321-C	Tapped Oscillator	455 KC	1600 mmfd.	1.75

### SHORT WAVE BAND 6.0-18. MC

Cat. No.	Use	I.F. Freq.	Osc. Pad	List Price
C-320-A	Antenna			\$1.75
C-320-RF	Interstage			1.75
C-320-C	2-coil Oscillator	455 KC	5000 mmfd.	1.75
C-321-C	Tapped Oscillator	455 KC	5000 mmfd.	1.75

Cat. No.	Quantity	Item	List Price
1451	3	10.7 MC I.F.	\$6.00
1452	1	10.7 MC Disc.	3.00
1454	1	Antenna Coil	2.00
1455	1	Interstage Coil	2.00
1456	1	Oscillator Coil	2.00
1457	1	Filament Choke	.70
1458	1	Chassis & connectors	8.00
1459	1	Slide Rule Dial	7.00
1460	3	3 x 500 mmfd. cond.	4.50
1461	1	FM Tuning Condenser	5.50
420	1	Terminal Plate	.30
440	1	Terminal Plate	.50
3093	2	Tuning Knobs	1.50
Circuit Diagram Instructions & Hardware			1.00
MILLER #1450 FM. Tuner Kit			List Price \$44.00

(F) For a Complete Listing of MILLER PRODUCTS ask for a copy of our Latest General Catalog.

A New Tool for Research—

# DECIMETER

## Progressive Products



### The DM-430 Diverse Adaptor

The DM-430 brings the known benefits of diversity reception to the ham rig AT **LOW COST.** The Diverse Adaptor is connected to two antennas of different characteristics, and automatically

and instantly selects the best antenna for best reception. The DM-430 minimizes the deep fading which often occurs in HF communications by using two antennas spaced a wavelength or more apart, or of different directional properties or polarization. The DM-430 is ideal for any communications receiver, and is used without tuning.

Range of 3 to 30 Megacycles

Neon bulb indication of antenna being used  
For AM and FM phone signals and frequency-shift keying

For either or both balanced or unbalanced antennas

**Net price assembled \$29.50**  
**Kit 14.95**

For further information write for Bulletin RM-12

### The DM-103W "Slipstick" Wavemeter



The Slipstick gives quick, accurate frequency readings on oscillators, receivers, or transmitters in the UHF field. It is a sturdy, every-day tool for the engineer and experimenter. Use of the 103W is easy—the Slipstick is coupled to the oscillator, receiver or transmitter by inserting its tip into the rf field, or the antenna circuit.

Enormous range—

90 to 3000 MC

Rapid, direct-reading scale

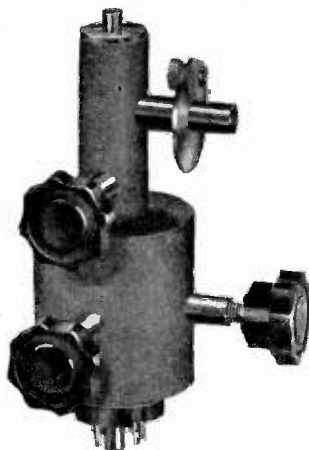
2% accuracy or better; sturdy construction

Polystyrene insulation for permanence and low loss

**Net price \$16.50**

For further information write for Bulletin RM-13

### A New Band for Amateurs



The DM-240A Oscillator leads the way to practical receivers and transmitters on 13 CM. It is made to feed RG-8/U cable directly and uses a 2C40 tube. Precise adjustments control tuning, feedback, and output coupling. Supplied complete with all hardware, instructions, and suggested circuits.

Brass construction with heavy silver plating to assure low rf losses

High precision manufacture for concentric contacts

Tuning range of 2000 to 2500 MC

One watt output

**Net price \$19.50**  
(less tube)

For further information write for Bulletin RM-15

### Decals for Electronics . . . the modern way of labeling equipment

The world's largest assortment of Decals for Electronics contains over 200 different title plates, dial plates, alphabets and numerals, high-voltage signs in red, call letters in black and gold, and television terms. The Decals are printed in neat, opaque letters on a clear, tough backing. Top surface has a tough protective coating which provides high resistance to wear. Superior adhesive qualities of Decimeter Decals, and the toughness of the backing material, bonds the Decal in place so tightly that danger of peeling or chipping is eliminated.



Water-type "slip-off" decals

Adhere to any clean surface

Very economical to use

Improves appearance and safety of equipment

Self-service display assortment for jobbers

For further information write for Bulletin RM-14

# DECIMETER

INC.

1430 MARKET ST. DENVER 2, COLO



# STANWYCK COILS

Mfrd. by STANWYCK WINDING CO.

TELEVISION - I.F. - ANT. - R.F. - F.M. - OSCILLATOR COILS

## TELEVISION COILS

These components when used in a properly designed circuit can provide a gain of approximately 10,000 × in the picture I.F. amplifier with overall response as illustrated. The sound I.F. system can supply a gain of approximately 7,000 × from the converter grid to the grid of the last I.F. tube and a discriminator slope sensitivity of approximately 0.08 volts/kc. with 1.0 volt signal level at the last I.F. amplifier tube grid. The overall sound I.F. and discriminator response is linear over 150 mc.

### TELEVISION REPLACEMENT COMPONENTS

#### R.C.A. REPLACEMENTS

R.C.A. PART No.	STANWYCK PART No.	DESCRIPTION	LIST PRICE
211-T1	S-948	9 K.V. Horizontal H.V. Output (Flyback)	\$9.00
203-L1	S-943	Video Peaking Coil	.55
203-L2	S-944	Video Peaking Coil	.55
203-L3	S-945	Video Peaking Coil	.55
203-L4	S-946	Video Peaking Coil	.55
202-K2	S-949	1st Pix I.F.	2.70
202-K3	S-950	2nd Pix I.F.	1.90
202-L1	S-951	3rd and 4th Pix I.F.	.70
202-K4	S-952	Cathode Trap	2.30
201-K1	S-953	Sound I.F.	1.90
203-K1	S-954	Sound Disc.	2.30
202-K1	S-955	Converter Transformer	2.40
204-L1	S-956	Filament Choke	.20
201-R1	S-957	Horizontal Width Control	.75
201-R3	S-958	Linearity Control	.80
208-T8	S-959	Syncrolop	2.50
203-R1	S-966	Syncoguide	2.00

#### DuMONT REPLACEMENT

Stanwyck No. S-934 — DuMont High Voltage Pulse Oscillator Transformer \$9.50

#### REPLACEMENTS FOR MOTOROLA - TELETONE - HALLICRAFTERS AND OTHER TRANSFORMLESS TELEVISION RECEIVERS

Stanwyck No. S-928 — 4.5 K.V. (4500-Volt) R.F. Power Supply Transformer \$ 7.50  
 Stanwyck No. S-930 — 10 K.V. (10,000-Volt) R.F. Power Supply Transformer 10.50

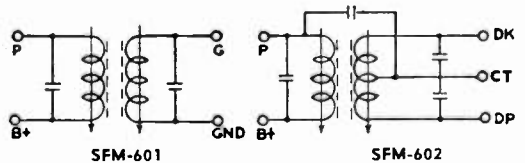
#### TRANSVISION REPLACEMENTS

TRANSVISION PART No.	STANWYCK PART No.	DESCRIPTION	LIST PRICE
308	S-948	9 K.V. Horizontal H.V. Output (Flyback)	\$9.00
16	S-903	250 μh Video Peaking Coils	.65
17	S-901	73 μh Video Peaking Coils	.65
174	S-931	1st Pix I.F.	2.25
174	S-932	3rd Pix I.F.	2.25
175	S-913	2nd Pix I.F.	2.70
176	S-933	4th Pix I.F.	2.25
177 & 318	S-916	Sound I.F.	2.50
317	S-917	Sound Disc.	2.75
319	S-900	500 μh Video Peaking Coils	.65
365	S-961	Slug Coil	.75

#### SOUND TRAP

Recommended for use in any make Television Receiver to remove sound interference in the picture channel. Stanwyck No. S-919 \$0.75

**S-958 LINEARITY CONTROL** — Directly interchangeable with R.C.A. No. 201-R3, this linearity control has extremely wide inductance variation and can be set to provide a linear operating condition in the horizontal deflection circuit.  
 List Price, \$0.80



## HIGH VOLTAGE COILS

**S-928 4.5 Kv. POWER TRANSFORMER**—A 4.5 Kv. R.F. power transformer of high efficiency for use in electrostatic deflection circuits employing a 7" tube.  
 List Price, \$7.50

**S-930 10 Kv. R.F. POWER TRANSFORMER**—A 10 Kv. R.F. power transformer thoroughly vacuum impregnated for efficient operation. Mechanically designed for "corona-less" performance at full rated output.  
 List Price, \$10.50

**S-948 HIGH VOLTAGE FLYBACK**—This horizontal output transformer is similar to the R.C.A. No. 211-T1. Used in electromagnetic deflection circuit, it provides approximately 9 Kv. for excellent picture brilliancy in a 10" or 12" tube.  
 List Price, \$9.00

**S-968 HORIZONTAL OUTPUT TRANSFORMER** similar to R.C.A. No. 211-T3 (Wired same as S-948).  
 List Price, \$9.00

## F.M. COILS

**S-605 RATIO DETECTOR 10.7 mc.**—To meet the critical demands for a sensitive and unusually stable F.M. detector, the S-605 was developed. Embodying every characteristic of a high quality product, this detector will outperform similar products. A peak to peak band width of 350 kc. with linearity exceeding plus or minus 125 kc. results in unusual quality of audio reproduction. High "Q" iron cores, stable ceramic capacitors plus ceramic construction throughout result in the ultimate for fine F.M. reproduction.  
 List Price, \$3.85

**S-613 MIDGET F.M. RATIO DETECTOR**—A 10.7 megacycle midget ratio detector for miniature F.M. set design. Although small in size, its performance is comparable to the larger type. Permeability tuned from top and bottom.  
 List Price, \$2.55

**S-601 F.M. DISCRIMINATOR**—Identical to I.F. electrically and mechanically. The electrically centered secondary results in perfect symmetry between positive and negative peaks. High output and excellent discrimination are obtained. A high quality transformer for production or replacement.  
 List Price, \$3.65

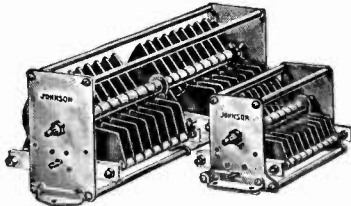
**S-609 F.M. CHOKE**—An excellent parasitic in the oscillator plate circuit.  
 List Price, \$0.40

**S-614 MIDGET F.M. I.F.**—High performance in gain and band width is obtained with this high quality F.M. miniature I.F. Symmetrical wave shape is a result of correct L/C Ratio. High "Q" threaded iron cores and high "Q" silver mica capacitors make this a much desired I.F. for modern F.M. set design.  
 List Price, \$2.10

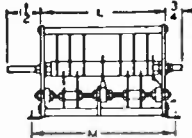
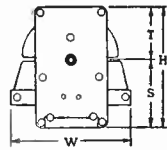


## VARIABLE CONDENSERS

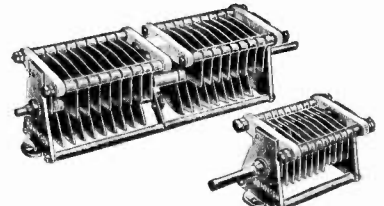
TYPES C AND D



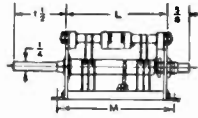
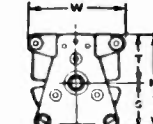
Type C Dual		Type D Single	
Type	T	S	W
C	2 1/8"	3 3/8"	5 1/2"
D	1 3/8"	2 3/8"	4 1/4"



TYPES E AND F



Type E Dual		Type F Single	
Type	T	S	W
E	1 1/8"	1 3/8"	2 5/8"
F	1 3/8"	3 3/8"	2 1/8"



JOHNSON C and D condensers are sturdily constructed to give trouble-free operation under the most severe service. Only the finest materials are employed yet these units are lower in price than any other quality condensers.

All dual models have center rotor connections, to insure balanced operation at ultra-high frequencies. Heavy laminated phosphor bronze contact springs insure low resistance circuits.

Important features include: Heaviest aluminum plates of any similar condenser, .051" thick—Stearite insulation—Large laminated rotor brushes—Center rotor contacts on all dual condensers—Heavy 5/16" diameter aluminum tie rods for frame strength and rigidity—1/4" cadmium-plated steel shafts.

Supplied with single hole mounting brackets which fit either top or bottom of end plate so that stators may be mounted to top or bottom as preferred.

Panel space, Type C, 5 1/2" wide x 5 3/8" high panel space, Type D, 4 1/4" wide x 4" high.

Mounting (M) dimension, on both C and D Types, 7/8" more than L dimension.

Designed as rugged, compact units for medium and low power transmitters, type E and F condensers are in a class by themselves. They have more capacity per cubic inch and occupy less panel space for their rating than any other condenser on the market. Their rapid adoption by manufacturers of high grade equipment and discriminating amateurs is ample proof of their excellence.

Points of superiority: Heavy aluminum plates, .032" thick, with rounded edges for maximum voltage rating—Heavy aluminum tie rods 1/4" diameter for frame strength and rigidity—Stearite insulation—Stator mounted above to reduce capacity to ground—heavy phosphor bronze contact springs, cadmium plated—Center contact on dual models—Chassis or panel mounting—Stainless steel shafts.

In addition to mounting foot shown, removable single hole brackets are furnished so that condenser may be inverted from position shown, or other components mounted above.

Panel space, Type E, 2 5/8" wide x 2 1/8" high panel space, Type F, 2 1/8" wide x 2" high. Mounting (M) dimension, on both E and F Types, 7/8" more than L dimension.

### TYPE C SINGLE SECTION

Cat. No.	List Price	Cap. per Sect.			Number Plates	L
		Max.	Min.	Spacing		
250C70	\$16.50	252	34	.175"	24	6 1/8"
500C70	23.50	496	56	.175"	47	12 3/8"
250C90	19.50	245	45	.250"	31	12 3/8"
350C90	23.00	337	63	.250"	43	14 1/8"
50C110	11.75	51	19	.350"	8	4 1/8"
100C110	15.00	103	30	.350"	17	8 1/8"
250C110	23.25	251	66	.350"	41	18 1/8"
50C130	13.00	51	24	.500"	10	7 1/8"
100C130	17.00	102	42	.500"	21	13 1/8"

### TYPE C DUAL SECTION

Cat. No.	List Price	Cap. per Sect.			Number Plates	L
		Max.	Min.	Spacing		
200CD45	20.50	204	21	.125"	15	8 1/8"
300CD45	24.00	290	26	.125"	21	10 1/8"
200CD70	23.50	198	27	.175"	19	12 1/8"
300CD70	31.00	305	37	.175"	29	16 1/8"
150CD90	25.00	147	30	.250"	19	14 1/8"
200CD90	29.00	196	38	.250"	25	18 1/8"
50CD110	17.50	50	18	.350"	8	10 1/8"
65CD110	19.25	66	21	.350"	11	12 1/8"
100CD110	24.50	103	32	.350"	17	16 1/8"
50CD130	20.00	51	24	.500"	10	14 1/8"

### TYPE D SINGLE SECTION

Cat. No.	List Price	Cap. per Sect.			Number Plates	L
		Max.	Min.	Spacing		
50D35	8.00	49	12	.080"	5	2 1/8"
100D35	8.75	99	14	.080"	8	2 1/8"
150D35	9.75	151	18	.080"	12	2 1/8"
250D35	11.25	252	24	.080"	20	4 1/8"
350D35	12.50	343	27	.080"	27	5 1/8"
500D35	14.75	496	36	.080"	39	6 1/8"
100D45	9.50	104	19	.125"	12	4 1/8"
150D45	11.00	146	23	.125"	17	4 1/8"
50D70	8.75	51	17	.175"	7	2 1/8"
70D70	9.75	72	18	.175"	11	4 1/8"
100D70	10.75	98	23	.175"	15	4 1/8"
150D70	12.50	151	31	.175"	23	6 1/8"
250D70	15.50	244	45	.175"	37	10 1/8"
350D70	19.00	351	62	.175"	53	13 1/8"
50D90	10.00	53	20	.250"	10	4 1/8"
70D90	11.00	73	25	.250"	14	5 1/8"
100D90	12.00	99	30	.250"	19	7 1/8"
150D90	14.25	149	43	.250"	29	10 1/8"
250D90	18.75	249	68	.250"	49	15 1/8"

### TYPE D DUAL SECTION

Cat. No.	List Price	Cap. per Sect.			Number Plates	L
		Max.	Min.	Spacing		
100DD35	11.75	95	13	.080"	8	4 1/8"
150DD35	13.25	147	15	.080"	12	5 1/8"
200DD35	15.75	202	19	.080"	16	7 1/8"
300DD35	18.75	291	24	.080"	23	9 1/8"
500DD35	25.50	496	38	.080"	39	13 1/8"
150DD45	16.25	155	24	.125"	18	9 1/8"
200DD45	18.50	198	27	.125"	23	12 1/8"
50DD70	12.50	52	15	.175"	8	5 1/8"
70DD70	14.25	72	17	.175"	11	7 1/8"
100DD70	16.00	97	22	.175"	15	9 1/8"
150DD70	20.75	151	31	.175"	23	13 1/8"
200DD70	23.75	199	39	.175"	30	16 1/8"
50DD90	14.50	52	19	.250"	10	9 1/8"
100DD90	19.50	97	30	.250"	19	14 1/8"

### TYPE E SINGLE SECTION

Cat. No.	List Price	Cap. per Sect.			Number Plates	L
		Max.	Min.	Spacing		
250E20	\$ 6.20	244	12	.045"	23	2 1/8"
350E20	7.00	353	15	.045"	33	3 1/8"
500E20	8.10	488	19	.045"	45	4 1/8"
35E30	4.75	39	8	.075"	6	1 1/8"
50E30	4.95	52	9	.075"	8	1 1/8"
70E30	5.25	73	9	.075"	11	2 1/8"
100E30	5.60	100	11	.075"	15	2 1/8"
150E30	6.30	154	14	.075"	23	3 1/8"
250E30	7.50	251	20	.075"	37	4 1/8"
350E30	8.90	347	25	.075"	51	6 1/8"
35E45	5.15	38	9	.125"	9	2 1/8"
50E45	5.50	53	11	.125"	12	2 1/8"
70E45	5.85	74	13	.125"	17	3 1/8"
100E45	6.35	101	16	.125"	23	4 1/8"
150E45	7.35	145	20	.125"	33	6 1/8"
250E45	9.35	241	32	.125"	55	9 1/8"

### TYPE E DUAL SECTION

Cat. No.	List Price	Cap. per Sect.			Number Plates	L
		Max.	Min.	Spacing		
200ED20	9.60	200	10	.045"	19	5 1/8"
300ED20	11.20	312	13	.045"	29	6 1/8"
50ED30	7.85	52	8	.075"	8	4 1/8"
70ED30	8.35	72	8	.075"	11	4 1/8"
100ED30	9.15	99	10	.075"	15	5 1/8"
150ED30	10.50	153	13	.075"	23	7 1/8"
200ED30	11.75	196	15	.075"	29	8 1/8"
50ED45	8.35	52	10	.125"	12	6 1/8"
70ED45	9.40	74	12	.125"	17	7 1/8"
100ED45	10.85	100	15	.125"	23	9 1/8"

### TYPE F SINGLE SECTION

Cat. No.	List Price	Cap. per Sect.			Number Plates	L
		Max.	Min.	Spacing		
35F20	4.50	35	7	.045"	6	1 1/8"
50F20	4.70	54	8	.045"	9	1 1/8"
70F20	4.90	66	8	.045"	11	1 1/8"
100F20	5.35	106	10	.045"	17	2 1/8"
150F20	6.05	154	12	.045"	25	2 1/8"
250F20	7.25	252	17	.045"	41	4 1/8"
35F30	4.80	36	8	.075"	9	1 1/8"
50F30	5.10	52	9	.075"	13	2 1/8"
70F30	5.45	67	11	.075"	17	2 1/8"
100F30	6.10	99	14	.075"	25	3 1/8"
150F30	7.15	148	18	.075"	37	4 1/8"

### TYPE F DUAL SECTION

Cat. No.	List Price	Cap. per Sect.			Number Plates	L
		Max.	Min.	Spacing		
50FD20	7.65	53	7	.045"	9	3 1/8"
70FD20	8.15	66	7	.045"	11	3 1/8"
100FD20	8.95	104	9	.045"	17	4 1/8"
150FD20	10.30	153	11	.045"	25	6 1/8"
200FD20	11.55	202	14	.045"	33	7 1/8"
50FD30	8.30	51	8	.075"	13	4 1/8"
70FD30	9.30	66	10	.075"	17	5 1/8"
100FD30	10.75	99	13	.075"	25	7 1/8"

### DEPARTURES FROM STANDARD

Special plate spacings, capacities, shaft extensions, insulation, mounting brackets, terminals, etc., can be furnished to specifications for commercial applications.

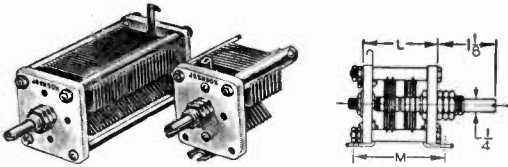
### CONDENSERS FOR HIGHER VOLTAGES

The JOHNSON line includes heavy duty pressurized or air dielectric fixed and variable condensers for high voltage commercial applications. Data sheets furnished on request.



# E. F. JOHNSON Company WASECA, MINNESOTA

## TYPE H CONDENSER



Two End Plates Single End Plate

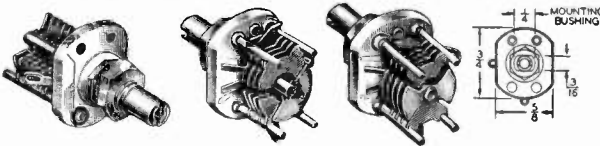
The Type H condenser was designed for aircraft transmitters and combines a minimum of weight and size with simple but rugged construction. Capacities and spacings are provided for low and medium power stages. Use of steatite for end plates avoids any possibility of "short circuit loops" and permits panel mounting with both rotor and stator insulated from ground. Has aluminum plates .020" thick. End plate 1 1/2" square. Capacity measurements are taken with condenser in position shown above.

Mounting (M) dimension is 1/4" more than the L dimension.

### TYPE H SINGLE SECTION

Cat. No.	List Price	Cap. per Sect.		Number Plates	L
		Max.	Min.		
<b>Single End Plate</b>					
25H15	\$2.70	25	4	.030"	6
35H15	2.80	35	4	.030"	8
50H15	2.95	49	4	.030"	11
70H15	3.20	69	6	.030"	15
100H15	3.50	97	7	.030"	21
<b>Double End Plate</b>					
150H15	5.00	146	9	.030"	31
250H15	6.60	242	13	.030"	51
25H30	4.10	28	7	.080"	13
35H30	4.50	37	8	.080"	17
50H30	5.05	54	11	.080"	25
70H30	5.75	74	13	.080"	35
<b>DUAL SECTION</b>					
35HD15	4.70	31	6	.030"	7
50HD15	5.05	51	7	.030"	11
70HD15	5.55	71	8	.030"	15
100HD15	6.25	99	10	.030"	21
35HD30	6.05	38	12	.080"	17
50HD30	7.15	55	15	.080"	25

### MINIATURE AIR VARIABLE CONDENSERS



The smallest air variables ever built. A necessity in all types of high frequency equipment. Available in single, differential and butterfly types. Single hole mounting flats on mounting bushing to prevent turning. Split sleeve rotor bearings — no shaft wobble. Steatite end frames.

Cat. No.	List Price	Capacity		Number Plates	L
		Max.	Min.		
<b>Single</b>					
5M11	\$1.45	5.1	1.5	5	3/8"
9M11	1.55	8.7	1.7	9	3/8"
15M11	1.75	14.6	2.1	15	3/8"
20M11	2.00	19.7	2.6	21	1/2"
<b>Differential</b>					
6MA11	\$2.10	5.6	1.8	7	3/8"
9MA11	2.30	9.3	2.0	13	3/8"
15MA11	2.60	14.8	2.3	22	3/8"
19MA11	3.00	19.3	2.7	31	1/2"
<b>Butterfly</b>					
3MB11	\$2.10	3.3	1.7	7	3/8"
5MB11	2.30	5.3	2.1	13	3/8"
9MB11	2.60	8.5	2.7	22	3/8"
11MB11	2.90	11.0	3.2	31	1/2"

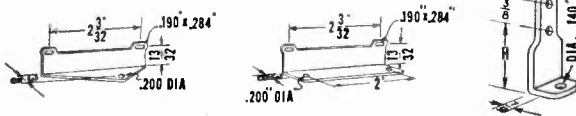
L: Length Behind Panel

Voltage breakdown is 1250 V. peak. Nickel-plated finish.

Panel mounting space is 3/4" by 5/8". Mounting hole 1/4". Slotted for screw driver adjustment or takes a 3/16" knob. Improved terminal provides dual low inductance path to both stator supports, eliminates possibility of loosening plates when soldering, avoids binding stresses on stator supports caused by wiring.

See Page J-35 for knob for these condensers.

### MOUNTING BRACKETS FOR C, D, E AND F CONDENSERS

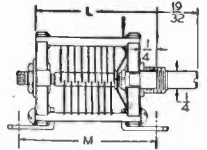


Cat. No.	List Price
115-100—Single Hole Bracket for C or D condenser.....	\$0.15
115-101—Two Hole Bracket for C or D condenser.....	.15
115-102—Single Hole Bracket for E condenser.....	.10
115-103—Single Hole Bracket for F condenser.....	.10

## NEW JOHNSON TYPE L VARIABLES (167 Series)

Ceramic Soldered for Stability, Strength

With the introduction of this new line of air variables, JOHNSON brings many important design advantages never before available.



Outstanding of these is the use of perfected ceramic soldering which assures absolute — and permanent — rigidity and strength, absolute — and permanent — maintenance of capacities!

There are no eyelets, nuts or screws to work loose, causing stator wobble and fluctuations in capacity. JOHNSON ceramic soldering leaves a bond which is stronger than the rugged steatite end plates themselves. There's nothing to come loose, because the stator terminals, mounting posts and rotor bearings are ceramic soldered!

Silent operation on the highest frequencies is assured with a split sleeve tension bearing that also prevents fluctuations in capacity.

### Differential Butterfly

These new variables are ideal for peak efficiency even under the severest conditions, such as portable — mobile operation.

Two sets of stator contacts are provided for connecting components to either side of condenser without appreciably increasing inductance of the circuit. New bright alloy plating is used. It has high corrosion resistance and possesses lower electrical resistance than other common platings.

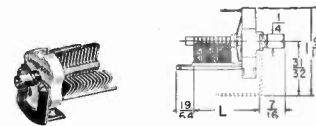
Mounting (M) dimension is 1/4" more than the L dimension.

• Other capacities and spacings available on special order •

### TYPE L SINGLE SECTION

Cat. No.	List Price	Cap. per Sect.		Number Plates	L
		Max.	Min.		
<b>Single End Plate</b>					
10L15	\$2.40	11	2.8	.030"	3
25L15	2.55	27	3.5	.030"	7
50L15	2.80	51	4.6	.030"	13
75L15	3.00	75	5.7	.030"	19
<b>Double End Plate (Also Available in .080" Spacing)</b>					
100L15	4.85	99	6.8	.030"	25
200L15	6.10	202	11.6	.030"	51
<b>Dual Section (Also Available in .080" Spacing)</b>					
25LD15	4.70	27	3.5	.030"	14
50LD15	5.45	51	4.6	.030"	26
100LD15	6.55	99	6.8	.030"	50
<b>Differential (Also Available in .080" Spacing)</b>					
10LA15	2.90	11	2.8	.030"	4
25LA15	3.10	27	3.5	.030"	10
50LA15	3.50	51	4.6	.030"	19
<b>Butterfly</b>					
10LB15	3.35	10.5	2.8	.030"	7
25LB15	3.80	26	4.3	.030"	18
50LB15	4.40	51	6.5	.030"	34

### TYPE J CONDENSER



The Type J condenser is a midget with big condenser characteristics. It has wider spacing than most small types, yet occupies little more space and is ideal for oscillator and low power stages. The spacing is .025" and universal type mounting brackets make possible a variety of mountings including chassis, panel, or inside tube socket type inductors. Steatite end plate is 1 1/2" wide.

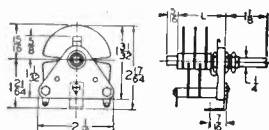
Cat. No.	List Price	Cap. per Sect.		Spacing	Number Plates	L
		Max.	Min.			
7J12	\$1.95	8	2.6	.025"	3	3/8"
15J12	2.10	17	3.3	.025"	6	3/8"
25J12	2.30	29	3.6	.025"	10	3/8"
50J12	2.70	52	4.9	.025"	19	1/2"
75J12	3.15	73	6	.025"	26	1/2"
100J12	3.75	102	7	.025"	36	1/2"

### EXPLANATION OF TYPE NUMBERS

The first part of the type number indicates the capacity per section in mmfd. The following letter indicates the frame size or type. A second letter D indicates a two section type. The final number multiplied by 100 is the approximate peak breakdown voltage. Capacity measurements of the E and F types are made with the condensers in the position shown in the above illustration. The C and D types are measured in inverted position.



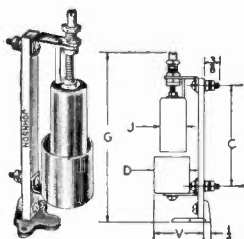
## TYPE G CONDENSER



The Type G condenser is extremely popular as a neutralizing condenser for medium and low power stages. It is also widely used for grid and plate tuning at high and ultra-high frequencies. A wide range of capacities and spacing make it adaptable to many applications. It has a single end plate of steatite and low minimum capacity. .032" rounded aluminum plates, universal mounting bracket locking nut, and front and rear shaft extension are among outstanding features.

Cat. No.	List Price		Cap. per Sect.		Spacing	Number Plates	L
	Max.	Min.	Max.	Min.			
25G20	\$3.40		27	4	.045"	5	1 3/8"
50G20	3.75		52	5	.045"	9	1 7/8"
8G45	3.25		7.7	3.6	.125"	3	1 1/8"
13G45	3.45		13	4.7	.125"	5	1 1/8"
23G45	3.75		23	6.4	.125"	9	1 1/8"
6G70	3.75		5.7	3.5	.225"	3	1 1/8"
12G70	4.25		12	6	.225"	7	2 3/8"

## TYPE N CONDENSER



Small mounting space requirements, extremely high voltage rating in proportion to size, fine adjustment with uniform voltage breakdown rating throughout the full capacity range, and low cost, make these neutralizing condensers ideal for the modern transmitter. "Plates" are aluminum cups supported on a steatite frame with cast aluminum mounting bracket. Because of the design these condensers will withstand much higher voltage than conventional flat plate condensers of the same

spacing. The N375 has been improved and now features a bushing for the guide shaft for greater stability and a beaded lower cup for high voltage rating. Peak R.F. Breakdown Ratings at 2 Mc.; N125 8,500, N250 11,500, N375 14,500.

Cat. No.	List Price	Capacity		D	C	G	V	Spacing
		Max.	Min.					
N125	\$6.50	11.0	1.1	1 3/8"	3 1/8"	6 1/8"	1 1/2"	.125"
N250	7.50	10.6	1.4	1 1/2"	3 3/4"	7 1/2"	2 3/8"	.250"
N375	9.50	10.7	1.7	2 3/8"	5 1/2"	8 3/4"	2 1/2"	.375"

## TINNED COPPER SOLDERING TERMINALS



Terminals Illustrated in the Order Listed

Available in eleven sizes, JOHNSON soldering terminals meet the requirements of most applications. Composed of copper for low resistance, they are tinned to permit easy soldering.

Cat. No.	List Price Per C	Size Hole	Length
110-881	.75	1/4"	1 1/2"
110-882	1.50	3/8"	1 1/2"
110-883	2.75	10-32	1 1/2"
110-884	2.75	10-32	1 1/2"
110-885	4.00	1/4"	1 1/2"
110-886	1.90	.180"	1 1/2"
110-887	2.75		1 1/2"
110-888	2.75		1 1/2"
110-889	4.25		1 1/2"
110-890	4.25		1 1/2"

## INDUCTOR CLIPS



235-804

Clip No. 235-804 is plated phosphor bronze and is designed for making connections to the JOHNSON edgewise wound or similar inductors. No. 235-860 will take wire from No. 20 to No. 10 without danger of tilting and shorting adjacent turns.



235-860

Cat. No.	List Price	Type
235-804	\$0.30	LC4
235-860	.15	860

## FUSE CLIP



115-840

This cadmium plated phosphor bronze clip provides sure grip for 3/8" diameter fuse or resistor. Mounts with No. 8 screw.

Cat. No.	List Price
115-840	\$0.03
110-112	.07

## SCREW TERMINAL

A convenient and substantial clip for use as antenna and ground connections and power terminals. Furnished complete with 2 screws.



110-112

## COUPLINGS



104-251



104-250



104-262



104-252



104-258



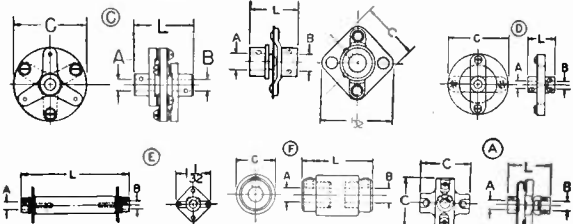
104-264



104-259



104-261



All JOHNSON insulated shaft couplings are characterized by best steatite insulation properly proportioned for electrical and mechanical strength, by accurate metal parts heavily plated, by advanced design, and by skillful manufacture.

The phosphor bronze springs of the -250 and -251 series couplings provide flexibility without backlash and adjust to minor shaft misalignments. Rigid types -252, -262 and -261 meet the requirements of accurate shaft alignment and high torque.

The -259 and -2593 are bar type couplings recommended for high voltages or very high frequencies.

The -264 is a small bakelite insulated flexible coupling for DC or low voltage RF applications.

Cat. No.	List Price	Modulated Dim. Peak Volt. Dwg.	C	Dimension		
				L	A	B
104-250	\$1.00	4000 A	1 3/8"	1 1/8"	1/4"	1/4"
104-2503	1.10	4000 A	1 1/8"	1 1/8"	1/4"	3/8"
104-251	1.40	5000 A	2 1/8"	1 1/8"	3/8"	3/8"
104-251A	1.40	5000 A	2 1/8"	1 1/8"	1/4"	1/4"
104-251B	1.40	5000 A	2 1/8"	1 1/8"	3/8"	3/8"
104-252	.90	1000 F	1 1/4"	1 1/4"	1/4"	1/4"
104-258	.35		3/4"	3/4"	1/4"	1/4"
104-259	1.50	8000 E	1/2"	3 3/8"	1/4"	1/4"
104-2593	1.45	5000 E		2 3/8"	1/4"	1/4"
104-261	4.25	7500 C	2 1/2"	1 1/8"	3/8"	3/8"
104-262	.85	5000 D	2"	1 1/8"	1/4"	1/4"
104-264	.60	400 B	1 1/4"		1/4"	1/4"

## PANEL BEARINGS

Nickel plated brass for 1/4" shaft and up to 3/8" panels. Also with 3" and 6" nickel-plated brass shafts.



115-255, 256, 2562

Cat. No. 115-255	Panel bearing only	List Price	\$0.20
Cat. No. 115-256	Bearing and 3" shaft	List Price	.40
Cat. No. 115-2562	Bearing and 6" shaft	List Price	.60

## FLEXIBLE SHAFTS

Phosphor bronze, non-rusting with 1/4" hubs.

Permit out of line or up to 90 degree angular control.



115-253, 254

Cat. No. 115-253	3" flexible shaft	List Price	\$0.50
Cat. No. 115-254	6" flexible shaft	List Price	.70

## BAKELITE KNOB



A new and extremely versatile knob for screwdriver or hand operation. Has set-screw for attachment. 1 1/8" long, skirt 3/4" diameter.

Cat. No. 116-214-1	for 1/4" shaft	List Price	\$0.50
Cat. No. 116-214-2	for 3/8" shaft	List Price	.50

## RADIO FREQUENCY CHOKES



762



750



760

Uniformly flat in response, JOHNSON R.F. chokes are equally effective over the entire range for which they are designed. Coils are of enamelled silk-covered wire impregnated with high grade R.F. lacquer, and are wound on steatite cores. Current ratings are of continuous service and may be increased for intermittent use.

Cat. No.	List Price	Frequency	Current Rating	Lgh.
102-750	\$1.75	1.7 to 30 mc	150 ma	1 1/2"
102-752	2.50	1.7 to 30 mc	500 ma	2 7/8"
102-754	3.00	1.7 to 30 mc	750 ma	4 1/8"
101-760	.60	Ultra-high	250 ma	1 1/2"
754	1.15	Ultra-high	1500 ma	2 7/8"



# E. F. JOHNSON Company WASECA, MINNESOTA

## NEW JOHNSON AIR-WOUND HAM INDUCTORS

A Coil to Match Your Tube —  
A Link to Match Your Line

There are two models for most bands for use with either high voltage low current, or low voltage high current tubes.

With these new JOHNSON Ham Inductors and "plug-in" Swinging Link Assemblies the amateur can instantly match coil to tube — link to line. These outstanding inductors are also available in semi-fixed models.

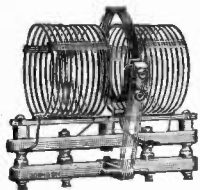
### Heavier Windings on All Models

Efficiency is further increased because coil windings are a wire-size larger than on most available in-

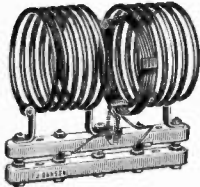
ductors — resulting in less heating, lower loss and consequently higher efficiency.

The new JOHNSON Inductors and "plug-in" Link Assemblies fit all conventional inductor assemblies.

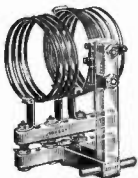
**HCS**—Inductors match high voltage, low current tubes — swinging link type.  
**LCS**—Inductors match low voltage, high current tubes — swinging link type.  
**HCF**—Inductors match high voltage, low current tubes — semi-fixed link.  
**LCF**—Inductors match low voltage, high current tubes — semi-fixed link.



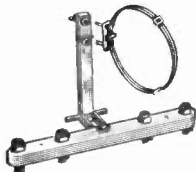
Inductor 1000HCS40  
Link 1000SL5



Inductor 500HCF20  
Link 150/500FL5



Inductor 150H/LCS14  
Link 150/500SL5



Jack Bar 1000JBS with  
1000SLA Arm Assembly  
and 1000SL5 Link



Jack Bars  
1000JBS, 500JBS, 150JBS

### SWINGING LINK INDUCTORS

Catalog Number	List Price
1000HCS160	\$11.50
1000LCS160	11.50
1000HCS80	10.25
1000LCS80	10.25
1000HCS40	9.25
1000LCS40	9.25
1000HCS20	8.50
1000LCS20	8.50
1000H/LCS14	8.00
1000H/LCS10	7.50
500HCS160	6.25
500LCS160	6.25
500HCS80	5.75
500LCS80	5.75
500HCS40	5.25
500LCS40	5.25
500HCS20	4.50
500LCS20	4.50
500H/LCS14	3.50
500H/LCS10	3.25
500H/LCS6	3.25
150HCS160	5.50
150LCS160	5.50
150HCS80	5.00
150LCS80	5.00
150HCS40	4.50
150LCS40	4.50
150HCS20	4.00
150LCS20	4.00
150H/LCS14	3.25
150H/LCS10	3.00
150H/LCS6	3.00

### SEMI-FIXED LINK INDUCTORS

Catalog Number	List Price	Wire Size	Cap.* mmids.
1000HCF80	\$9.90	10	99
1000LCF80	9.90	10	140
1000HCF40	8.90	10	46
1000LCF40	8.90	10	73
1000HCF20	8.50	8	24
1000LCF20	8.50	8	55
1000H/LCF14	8.15	.250**	19
1000H/LCF10	7.65	.250**	26
1000H/LCF6	7.15	.250**	19
			18
		14	100
		14	148
500HCF80	5.60	14	45
500LCF80	5.60	12	76
500HCF40	5.10	12	27
500LCF40	5.10	10	50
500HCF20	4.35	6	25
500LCF20	4.35	6	37
500H/LCF14	3.35	6	19
500H/LCF10	3.10	6	19
500H/LCF6	3.10	6	18
		18	102
		16	151
150HCF80	4.85	16	51
150LCF80	4.85	16	68
150HCF40	4.35	14	28
150LCF40	4.35	12	57
150HCF20	3.85	12	21
150LCF20	3.85	12	32
150H/LCF14	3.10	8	19
150H/LCF10	2.85	8	19
150H/LCF6	2.85	8	16

\*Total circuit capacity required to effect resonance at low frequency end of band. Actual condenser capacity will be smaller by the sum of the tube output and wiring capacities, generally between 5 and 20 mmfd.  
\*\* .250 diameter copper tubing.

### JACK BAR ASSEMBLIES

Cat. No. 150JBS 150 Watt Jack Bar	List Price \$1.45
Cat. No. 500JBS 500 Watt Jack Bar	List Price 2.00
Cat. No. 1000JBS 1000 Watt Jack Bar	List Price 3.00

### SWINGING LINK ARM ASSEMBLIES

Cat. No.	List Price
150/500SLA—Arm Assembly for 150/500 Watt Inductors.....	\$1.70
1000SLA—Arm Assembly for 1000 Watt Inductors.....	2.10

### BRACKETS

Cat. No.	List Price
150/500FLB—150/500 Watt Bracket for Semi-Fixed Link Inductor.....	\$0.45
1000FLB—1000 Watt Bracket for Semi-Fixed Link Inductor.....	.80

### "PLUG-IN" LINKS

Cat. No.	No. Turns	List Price
150/500SL12.....	12.....	\$3.00
150/500SL5.....	5.....	1.90
150/500SL2.....	2.....	1.60
1000SL10.....	10.....	3.10
1000SL5.....	5.....	2.40
1000SL2.....	2.....	1.80

### SEMI-FIXED LINKS

Cat. No.	No. Turns	List Price
150/500FL12.....	12.....	\$2.20
150/500FL5.....	5.....	1.40
150/500FL2.....	2.....	1.20
1000FL10.....	10.....	2.10
1000FL5.....	5.....	1.60
1000FL2.....	2.....	1.30

### TUBE CAP CONNECTORS

Collet types, numbers 119-838 through 119-841 are recommended for heavy current industrial uses. The outside diameter is 7/8" and connector may be tightened with spanner wrench listed below. The 119-843 is a part of the 124-212 socket for 833A tubes and is recommended for other tubes having .567" diameter caps and requiring radiator type connectors for high R.F. currents. The flexible strap is 5 1/8" long and 5/8" wide.



119-838  
119-839  
119-840  
119-841



119-843



119-852  
119-854



119-850  
119-851

Cat. No.	List Price	Tube Cap Dia.
119-838	\$1.35	.375
119-839	1.40	.437
119-840	1.50	.567
119-841	1.75	.676
119-843	1.50	.567
119-846	.35	.125

Cat. No.	List Price	Tube Cap Dia.
119-848	\$0.16	.070
119-849	.12	.048
119-850	1.80 C	.250
119-851	1.80 C	.360
119-852	.06	.360
119-854	.12	.566
119-838 Spanner wrench for use with Nos. 119-838 through -841.....	List Price \$1.25	

### EDGEWISE WOUND "HI-Q" INDUCTORS

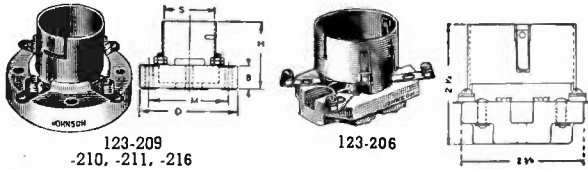


Design improvements and mycalex insulation are new features in this inductor of plated edge-wound copper strip. They are widely used in commercial equipment, and will safely handle more than 1000 watts in continuous service. Other sizes and types of inductors are manufactured for commercial broadcast and industrial electronic applications. More information available on request.

Cat. No.	List Price	Inductance μh	Winding L x ID
232-610	\$8.50	31	7 1/8" x 2 1/2"
232-611	6.50	13	4 1/8" x 2 1/2"
232-619	6.00	19	3 1/8" x 4"
232-620	9.50	84	8 3/8" x 4"
232-622	7.50	41	6 7/8" x 3 1/4"
232-623	5.50	8	6 7/8" x 3 1/4"
232-624	7.00	20	4 3/8" x 3 1/4"
232-626	6.60	10	4 3/8" x 2 1/2"
232-627	5.20	2.8	1 7/8" x 2 1/2"
232-628	6.30	4.4	4 9/8" x 2 1/2"



## TUBE SOCKETS



No. 123-206 industrial bayonet socket with rugged metal shell for extremely high voltage applications. Will accommodate 8008, 5C22, FG104, GL146 and other tubes with similar bases. Has steatite insulation, silver plated beryllium copper contacts, screw terminals and three heavy springs in shell insure tube being held securely in place.

Nos. -209, -210, -211 and -216 all have heavy phosphor bronze, side wiping type contacts, metal shells and white, glazed porcelain bases.

No. -209 is similar to No. -210, but provides greater spacing between contacts and shell, for higher voltages, No. -211, the standard "50 watt" socket has double filament contacts for carrying heavy currents.

No. -216 is for tubes having a GIANT 5 pin bayonet base such as the 803, RK28, etc.

Suffix letters "SB" identify sockets with beryllium copper contacts and steatite bases.

Cat. No.	List Price	D	H	M	B	Base
123-206	\$3.00	2 5/8 x 3 7/8	2 1/2	2 3/4	7/8	Four-Pin Super Jumbo
123-209	1.50	2 1/2	1 3/4	2 5/8	7/8	Medium Four-Pin Bayonet
123-209SB	2.50	2 1/2	1 3/4	2 5/8	7/8	
123-210	1.50	2 1/2	1 7/8	2 5/8	7/8	Standard Jumbo Four-Pin
123-211	1.85	3 3/8	2 3/8	2 1/2	7/8	
123-211SB	3.50	3 3/8	2 3/8	2 1/2	7/8	Giant Five-Pin Bayonet
123-216	3.00	3 3/4	2 7/8	3 1/8	3/4	
123-216SB	5.15	3 3/4	2 7/8	3 1/8	3/4	

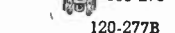


No. -213 takes Eimac 152TL and 304TL. Contacts arranged for either series or parallel filaments.

No. -214 takes Eimac 1500TH and similar tubes. Has air jet tube for cooling filament tube seals.

No. -215 is for "250 watt" tubes such as 204A, 849, etc. The plate terminal has a "safety cup" which prevents accidental dislodgement of the tube.

Cat. No.	List Price	Base
124-213	\$2.00	"Eimac"
124-214	2.75	"Eimac"
124-215	4.25	"250 Watt"



Cat. No.	Description	List Price
120-267	Miniature socket, all ceramic	\$0.50
120-277B	Miniature socket with shield base	.75
133-277S	Miniature socket, shield base only	.15
133-278A	1 3/8" shield for 277 B or S	.20
133-278B	1 3/4" shield for 277 B or S	.20



### ACORN SOCKETS

The -265 was designed for "acorn" tubes. Contacts silver-plated beryllium copper, base grade L-4 Steatite

Cat. No.	List Price	Mfg. Cen.
121-265	\$1.10	1 1/2

### SPECIAL SOCKETS



The No. -212 socket for RCA833 or 833A. Base of steatite. Filament clamps incorporate "springs" which minimize strains on the glass tube seals and prevent breakage. Plate leads include laminated phosphor bronze strips for flexibility. Regularly supplied with 5/16" plate leads. Other lengths available on special order.

Cat. No. 124-212	List Price \$10.00
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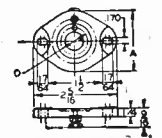
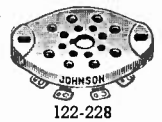
No. -234 for Western Electric 5D21, 705A, 715A, 715B includes heavy steatite base and special locking device for retaining tube in socket.

Cat. No. 122-234	List Price \$3.00
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### WAFFER SOCKETS

JOHNSON wafer sockets are insulated with grade L 4 steatite or better, top and sides glazed, underside impregnated in conformance with latest Army Navy specifications. Contacts are brass with steel spring, cadmium plated and are mounted against phenolic washers in molded recesses to prevent movement. Rivets are countersunk and mounting holes bossed to permit sub-panel mounting. Locating grooves facilitate tube insertion.

Cat. No.	List Price	Dimension
122-217	\$0.75	7-pin small
122-224	.60	4-pin
122-225	.65	5-pin
122-226	.70	6-pin
122-227	.75	7-pin med.
122-228	.80	Octal

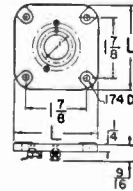
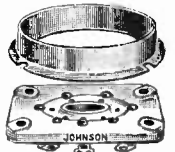


No. -237 is a 7-pin large steatite wafer socket for transmitting tubes having a GIANT 7-pin base such as the HK257, and RCA 813.



No. -247 is a 7-pin steatite wafer socket for transmitting tubes such as the 826. It is furnished with etched aluminum base shield

122-217, -224, -225, -226, -227



The 122-244 is a 4-pin wafer socket of steatite insulation, for transmitting tubes having a Super Jumbo base such as the 8008. Brass clip contacts and reinforcing steel springs are cadmium-plated and are designed for high currents. Four mounting holes spaced 1 7/8" between centers.

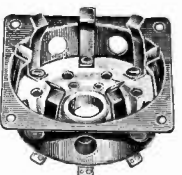
122-247

Cat. No.	List Price	Dimension L
122-237	\$1.10	2 5/8
122-244	2.00	2 5/8
122-247	1.25	2 5/8



The 122-101 is a 7 pin steatite wafer socket of special design incorporating a base shield, retainer springs and provision for mounting button mica capacitors directly to the socket. Socket is specially designed for UHF use with tubes such as the 826, 829 and 832. Contacts and spring are silver plated and recessed to prevent movement. Grid terminals are designed so connecting wires may be isolated from other circuits and permit small grid coils to be mounted on the terminal ends. Four mounting holes are equally spaced 2.312 inches between centers.

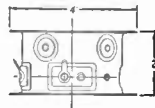
Cat. No. 122-101	List Price \$3.00
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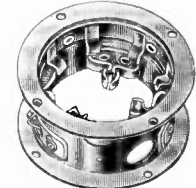
122-101

The 122-102 is designed for high frequencies. Accommodates Eimac 4X-500A tube. Mounting holes in both top and bottom rims. Widely used for coaxial circuits, with coaxial line mounted directly on the tube socket. Terminals so arranged to provide by-pass capacity to ground through the insulation. Mounting holes are provided for adding by-pass condensers for additional capacity. Socket is 2 1/8" high and 4" in diameter.

Cat. No.	List Price
122-102	\$18.00

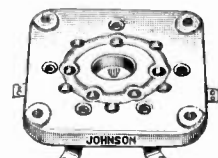


122-102



The 122-275 is a 5 pin steatite wafer socket for transmitting tubes having a GIANT 5 pin base such as the 4-125A and RK48. Contacts are of a superior construction, brass clip and steel spring, both cadmium plated, and are designed for high currents. Adequate ventilation for tubes is provided by five 1/4" holes spaced between contacts. Four mounting holes are equally spaced 2 1/4" between centers.

Cat. No. 122-275	List Price \$1.75
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122-275

THE JOHNSON TUBE SOCKET GUIDE IS AVAILABLE UPON REQUEST.





# E. F. JOHNSON Company

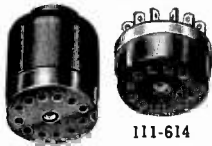
WASECA, MINNESOTA

## MULTIPLE WIRE CONNECTORS

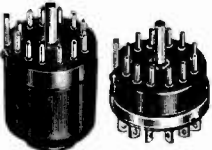
JOHNSON cable connectors provide a most efficient means of quickly connecting or disconnecting multiple electrical circuits in low-voltage control, audio and instrument service. Contacts accommodate No. 16 stranded wire, or No. 14 solid. Minimum surface creepage path for 12 contact types  $\frac{1}{8}$ " for 7 contact types  $\frac{3}{8}$ ". Body material of molded black bakelite, back shells are brass dull black finished, shell liners are fibre. Plug and receptacle polarized for quick accurate insertion. The cadmium plated steel mounting yokes fit standard switch boxes and cover plates and are supplied with necessary hardware.

The multiple Wire connectors, tip plugs and jacks appearing on this page are former Mallory-Yaxley products.

### RECEPTACLES



111-615 Chassis Type Cord Type



PLUGS 111-625 111-617

Catalog Number	List Price	No. of Contacts	Connector Type
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RECEPTACLES			
111-614	\$2.00	12	Chassis Cord
111-615	2.30	12	Chassis Cord
111-644	1.00	7	Chassis Cord
111-645	1.25	7	Cord

PLUGS			
111-617	2.10	12	Chassis Cord
111-625	2.40	12	Cord
111-631	1.45	7	Chassis Cord
111-635	1.70	7	Cord

### PIN PLATE BRACKET MOUNTED

111-682	1.60	12
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### MOUNTING YOKE

111-6002	.25	for 7 wire connectors
111-6003	.25	for 12 wire connectors

### PIN PLATE Bracket Mounted



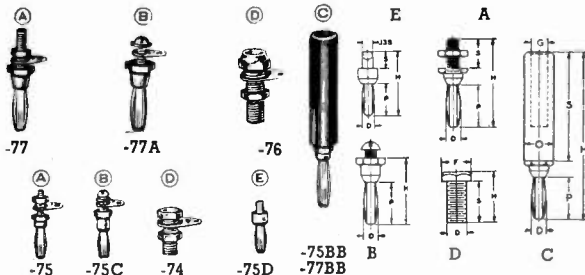
111-682

### MOUNTING YOKES



111-6002, -6003

## PLUGS AND JACKS



### "BANANA SPRING" TYPE

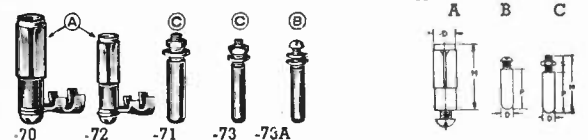
Nickel-silver springs and high grade nickel plated brass screw machine parts with accurate threads and milled nuts. Studs extend full length of springs for added support.

75D is designed for riveting. Spring is beryllium copper. 75BB has  $\frac{1}{8}$ " black plastic handle; 75BR same but red. 77BB has  $\frac{1}{4}$ " black plastic handle; 77BR same but red. 75 or 75A can be furnished with beryllium copper spring on special order, and all plugs can be furnished with nickel, cadmium or silver plating if required.

108-7451 is a red plastic insulated jack similar to the 108-74 and furnished with fibre washers. 108-7452 same but black.

If washers used for insulated mounting fits  $\frac{1}{8}$ " holes,  $\frac{3}{32}$ " maximum panel thickness.

Cat. No.	List Price	Illus. Dwg.	S	D	H	G	O	Thread
108-75	\$0.12	A	$\frac{3}{8}$	.53	.170	1.115		6-32
108-75A	.13	A	$\frac{3}{4}$	.53	.170	1.490		6-32
108-75BB	.40	C	$\frac{1}{8}$	.53	.170	2.115	.215	$\frac{1}{8}$
108-75BR	.40	C	$\frac{1}{8}$	.53	.170	2.115	.215	$\frac{1}{8}$
108-75C	.13	B		.53	.170	.94		6-32
108-75D	.10	E	$\frac{7}{8}$	.40	155	.81		
108-77	.30	A	$\frac{5}{8}$	.74	300	1.77		$\frac{1}{4}$ -28
108-77A	.35	B	$\frac{5}{8}$	.74	300	1.15		10-32
108-77BB	.50	C	$\frac{1}{4}$	.74	300	2.90		$\frac{5}{8}$
108-77BR	.50	C	$\frac{1}{4}$	.74	300	2.90		$\frac{5}{8}$



### "SPRING SLEEVE" TYPE

These jacks have maximum current carrying capacity, minimum resistance, great mechanical strength, and snug fit. Wiping action of spring on insertion insures good electrical contact. Tension is maintained by phosphor bronze "spring sleeves," two sizes available. Furnished regularly nickel plated, but cadmium or silver can be supplied on special order.

Cat. No.	List Price	D	S	P	H	Thread
106-71	\$0.25	.375	$\frac{1}{2}$	$\frac{11}{8}$	$\frac{15}{8}$	$\frac{1}{4}$ -28 screw
106-73	.15	.250	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{11}{8}$	10-32 screw
106-73A	.15	.250		$\frac{1}{2}$	$\frac{11}{8}$	10-32 tapped

Jacks	List Price	D	S	H	Thread
106-70	.50	$\frac{1}{2}$	$\frac{3}{8}$	$\frac{11}{8}$	$\frac{1}{4}$ -20 screw
106-72	.35	$\frac{3}{8}$		$\frac{11}{8}$	10-32 screw

## PLASTIC HEAD TIP JACKS

### REMOVABLE ROUND HEAD TIP JACK



105-520

Removable plastic heads in choice of colors listed. Supplied with fibre shoulder bushing and nickel plated hex nut. Standard finish is nickel plate on body. Mounts in  $\frac{3}{8}$ " hole. Maximum panel thickness  $\frac{3}{8}$ " where insulating washers are used,  $\frac{1}{4}$ " where omitted.  $\frac{1}{4}$ "-32 thread.

### MOLDED ROUND HEAD TIP JACK

Description: similar to removable head type except that brass body is molded integral with head, and additional phenolic washer is furnished.  $\frac{3}{8}$ "-40 thread.

105-418 Red	List Price \$3.30	105-419 Black	List Price \$3.30	105-418
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### INSULATED COMBINATION JACK



105-420

Supplied with shoulder bushing, phenolic washer and one piece contact and nut. Maximum chassis thickness  $\frac{1}{8}$ ". Mounts in  $\frac{3}{8}$ " diameter hole. Provides insulated jack for phonetip plugs and No. 75 series "Banana Spring" plugs.

No. 105-420 Red	List Price \$0.30	No. 105-421 Black	List Price \$0.30
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### METAL HEAD TIP JACKS

#### Large Round Head



105-16

Supplied with fibre shoulder bushing, phenolic washer and hex nut. Mounts in  $\frac{1}{2}$ " hole if shoulder bushing is used. Maximum panel thickness. Contact is phosphor bronze cadmium plated.

105-16 List Price \$0.50

#### Headless Tip Jack



105-1

Metal parts brass. Body nickel plated.  $\frac{1}{4}$ "-32" thread.

105-1 List Price \$0.10

#### Long Solderless Tip Plug



105-15

For use with tip jacks Nos. 105-16, and 105-420.

No. 105-15.....List Price \$0.20

No. 105-14—Solderless Tip Plug

Long Sharpened Point

List Price \$0.22

### TWIN TIP JACKS



105-401

Mounting holes  $\frac{7}{8}$ " centers. Molded black phenolic.

105-401 SHORTING TYPE TWIN TIP JACKS

Circuit closes automatically when tips are removed.

No. 105-432—Black

List Price \$0.60

#### Small Round Head

$\frac{5}{16}$ "-40" thread. Supplied with fiber bushing to fit  $\frac{3}{8}$ " panel hole. Maximum panel thickness.

No. 105-416

List Price \$0.20

105-416

#### Small Hex Head

Similar to 105-416 except has hex head and  $\frac{1}{4}$ "-32" thread. Supplied with fiber bushing to fit  $\frac{3}{8}$ " panel hole.

No. 105-417

List Price \$0.15

105-417

#### Short Solderless Tip Plug



105-415

For use with tip jacks Nos. 105-416, 105-417, 105-418, and 105-529.

No. 105-415.....List Price \$0.18

### TWIN TIP JACKS

Cat. No.	List Price	Marking
105-401	\$0.60	Blank
105-402	.60	Speaker
105-4015	.60	Phono

105-4015

105-4015

105-4015

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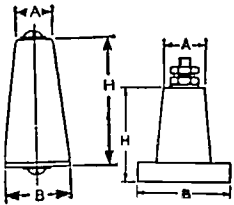
# E. F. JOHNSON Company WASECA, MINNESOTA

## INSULATORS AND BUSHINGS

JOHNSON insulators were introduced in the early twenties, and soon established the sort of dominance that occurs occasionally when one line offers more in choice of style and size; in advanced but practical design; and in mass production economy than others. This position has been maintained through the years by careful attention to the product, the line, and the needs of the user.

JOHNSON insulators are specifically designed for high frequencies. Insulating materials were selected after exhaustive laboratory tests. Superior grade, low absorption, well glazed electrical porcelain, and Grade L 4 or better steatite are used.

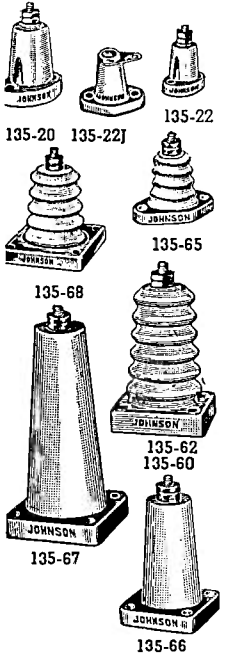
### STAND-OFF AND CONE INSULATORS



The stand-off insulators feature heavy, breakage-resistant bases and adequate "glaze grooves" around mounting screw holes. Numbers 135-65, 135-66, 135-67 and 135-68 have unbreakable, drawn and etched aluminum bases.

The No. 500 cone insulator series are steatite for better high frequency insulation. Threads are tapped directly into the ceramic. Furnished complete with machine screws, brass and cushion washers.

### STAND-OFF INSULATORS



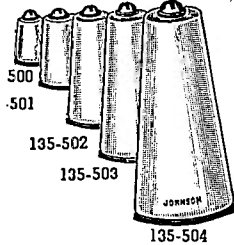
Cat. No.	List Price	Dimensions				Hard-ware
		A	B	M*	H	
Steatite						
135-20	\$0.22	3/4	1 3/4	1 1/8	1 1/8	10-32
135-20J	.27	3/4	1 3/4	1 1/8	1 1/8	74 Jack
135-22	.18	1 1/8	1 3/8	1 1/8	1	8-32
135-22J	.23	1 1/8	1 3/8	1 1/8	1	74 Jack
135-24	.14	3/8	1	1 1/8	5/8	6-32

Porcelain						
Cat. No.	List Price	A	B	M*	H	Hard-ware
135-60	.90	1 1/8	2 1/2	1 7/8	4 1/2	1/4-20
135-62	.50	7/8	1 7/8	1 3/8	2 3/4	1/4-20

Metal Base Types						
Cat. No.	List Price	A	B	M*	H	Hard-ware
135-65	.30	5/8	1 7/8	1 1/2	1 3/8	10-32
135-65J	.35	5/8	1 7/8	1 1/2	1 3/8	74 Jack
135-66	.70	1 1/8	1 3/4	1 3/8	2 3/4	1/4-20
135-66J	.90	1 1/8	1 3/4	1 3/8	2 3/4	76 Jack
135-67	.85	1 1/8	2 1/4	1 3/4	4 1/2	1/4-20
135-67J	1.10	1 1/8	2 1/4	1 3/4	4 1/2	76 Jack
135-68	.40	3/8	1 3/4	1 3/8	2	10-32
135-68J	.50	3/8	1 3/4	1 3/8	2	74 Jack

\* Mounting centers.

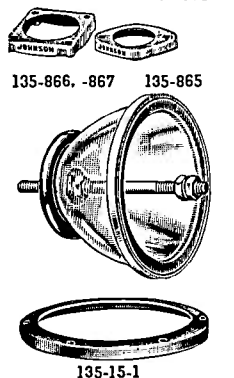
### STEATITE CONE INSULATORS



135-500	.30	1 1/8	3/8	5/8	6-32
135-501	.35	1/2	3/4	1	8-32
135-502	.65	1/2	1	1 1/2	8-32
135-503	.75	5/8	1 1/8	2	10-32
135-504	1.45	3/4	1 1/2	3	10-32

### METAL BASES

Aluminum bases for replacement on 135-65, -66, -67 and -68 insulators.



Cat. No.	List Price	For Use With
135-865	\$0.12	135-65
135-866	.15	135-66, 135-68
135-867	.20	135-67

### FEED-THRU BOWL

Glass bowl 7" diam. by 4 3/8" deep. Flange 7 3/4" O.D.

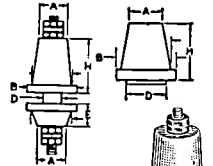
Furnished with cork gaskets. 135-15-1 is single with 10 1/4" stud. 135-15-3 is double with 16" stud. 135-15-7 is double with 24" stud.

Cat. No.	List Price	
135-15-1	\$17.00	Single bowl
135-15-3	30.00	Double bowl
135-15-7	31.00	Double bowl

Of the insulators appearing under the headings "Steatite" all but the 500 series and the 135-55 are offered in this finer material for the first time. Their dielectric losses are but a fraction of those for the same parts in porcelain, and they are particularly recommended for high frequency work.

In addition to fine quality insulating materials the JOHNSON line distinguishes itself with perfection of ceramic design logical proportions; clean-cut, accurate molding; and high grade nickel-plated brass hardware, with milled (not stamped) nuts.

### THRU-PANEL INSULATORS AND BUSHINGS

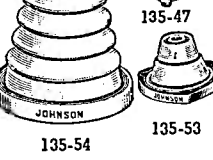
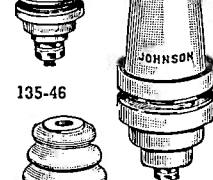
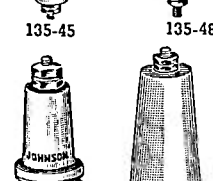
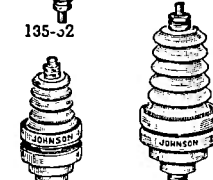
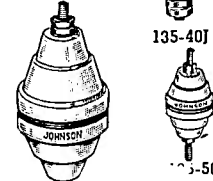
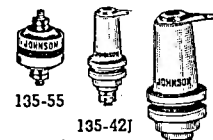
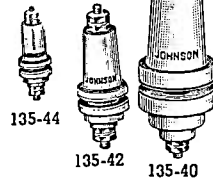


In the thru-panel and bushing series special attention has been given to obtaining high mechanical strength through heavier construction and at the same time increasing the breakdown voltage. Flat mounting surfaces with cushion washers eliminate breakage. Bottom pieces have long internal and external portions for higher breakdown voltage rating, and grooved surfaces to increase leakage path. Jack types have terminals permitting connection above as well as below the panel.

JOHNSON lead-in bushings are designed to have even greater mechanical strength and long leakage path in proportion to size. Numbers 135-53 and 135-54 are supplied as single porcelain parts including cushion washers.

Nos. 135-50 and 135-55 are steatite and have a special interlocking feature which permits mounting on thin panels without extra spacing washers.

Nos. 20, 20J, 22, 22J and 24 are now also steatite with heavily plated brass hardware.



### THRU-PANEL INSULATORS

Cat. No.	List Price	Dimensions					Hard-ware
		A	B	D	E	H	
Steatite							
135-40	\$0.35	1 1/8	1 1/8	1 1/8	1/2	1 1/4	10-32
135-40J	.45	1 1/8	1 1/8	1 1/8	1/2	1 1/4	74 Jack
135-42	.30	1 1/2	3/4	.400	3/8	7/8	10-32
135-42J	.40	1 1/2	3/4	.400	3/8	7/8	74 Jack
135-44	.25	3/8	1	.305	5/8	5/8	6-32

Porcelain							
Cat. No.	List Price	A	B	D	E	H	Hard-ware
135-45	.45	5/8	1 1/4	1/2	1 1/8	1 3/8	10-32
135-45J	.60	5/8	1 1/4	1/2	1 1/8	1 3/8	74 Jack
135-46	1.00	1 1/8	1 5/8	1	1	2 3/4	1/4-20
135-46J	1.25	1 1/8	1 5/8	1	1	2 3/4	76 Jack
135-47	1.40	1 1/8	2 1/8	1 1/2	1 1/2	4 1/2	1/4-20
135-47J	1.65	1 1/8	2 1/8	1 1/2	1 1/2	4 1/2	76 Jack
135-48	.65	1 1/8	1 5/8	1	1 1/2	2	10-32
135-48J	.80	1 1/8	1 5/8	1	1 1/2	2	74 Jack

### LEAD-IN BUSHINGS

Steatite					
Cat. No.	List Price	A	B	H	Hard-ware
135-50	.35	3/4	1 1/8	1 1/2	6-32
135-51	.50	5/8	1 1/4	1 3/8	10-32
135-52	.80	7/8	1 3/4	1 3/8	1 1/8 1/4-20
135-55	.30	1/2	3/4	1 1/2	6-32

Porcelain					
Cat. No.	List Price	A	B	H	Hard-ware
135-53	.30	1 1/8	2 1/2	1 3/4	13/4
135-54	.75	1	3 1/2	2 1/8	4

### MOUNTING FLANGES

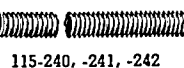
Stamped aluminum Mounting Flanges for Lead-in Bushings 135-53 and 135-54.

Cat. No.	For Bushing No.	List Price
135-90	135-53	\$0.35
135-91	135-54	.70

### THREADED BRASS ROD

Intended primarily for use with lead-in bushings 135-53 and 135-54. Accurately cut threads, heavy nickel plating, complete with 4 washers and 4 nuts, 1/4" diameter, 1/4-20 thread. It has many other uses in radio construction.

Cat. No.	List Price	Length
115-240	\$0.50	8"
115-241	.60	10"
115-242	.70	15"





## RADIO CABINETS

### A Host of Features Aluminum for Lightness Steel for Strength

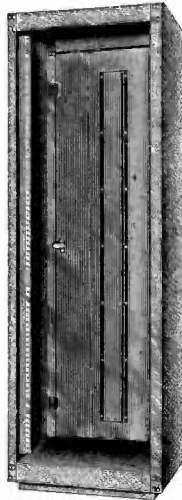
These new JOHNSON cabinets represent the first real advance in cabinet design since the introduction of the first Amateur relay panel cabinet years ago. JOHNSON'S extensive "know-how" and production facilities developed during more than ten years of experience building commercial cabinets for Broadcast Phasing Equipment and Transmitters, is now being applied to the design and manufacture of these superb Amateur cabinets.

### FLOOR MODELS — REAR DOOR ONLY

They feature unique adjustable rails for standard relay panels. These rails may be moved forward or backward to suit the user making vertical chassis construction practical by allowing additional room at the front for mounting some components so they project forward. Later a DeLuxé door will be available to allow full use of this feature. Present cabinets are arranged so that the door may be added at any time. Both vertical panel construction and front doors are widely used commercially, and now for the first time these features are offered to the Amateur at Amateur prices.

Other exclusive features include recessed toe spaces at front and sides; inside ventilation with inlets in the bottom of the cabinet and outlets in the top, allowing cabinets to be placed directly against other objects without restricting the air circulation; and reversible rear door (may be installed to hinge either way) with positive handle lock.

Side panels and rear doors are constructed of heavy (.051") aluminum for lightness, and sturdy steel frames, tops and bottoms for strength. Rails for panels tapped for 10-32 screws and will accommodate either Amateur or Western Electric notching. Shipped knocked-down for your convenience and to save you freight charges; easily assembled in a few minutes with screws and nuts, no self-tapping screws. Available in either fine black wrinkle outside and flat satin black inside or a beautiful silver gray (no purple) outside with a matching flat gray inside.



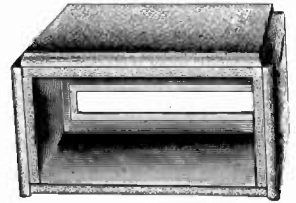
197-103-3

Cat. No.	List Price	Color	Overall Height	Panel Space	Net Weight	Ship. Weight
197-103-3	\$80.00	Gray	68"	61 1/4"	65 lbs.	77 lbs.
197-103-4	80.00	Black	68"	61 1/4"	65 lbs.	77 lbs.
197-102-3	57.50	Gray	48 3/4"	42"	56 lbs.	67 lbs.
197-102-4	57.50	Black	48 3/4"	42"	56 lbs.	67 lbs.

Size: 22" wide by 17 1/2" deep.  
Panel Width: 19"

### TABLE MODELS — TOP DOOR ONLY

More than mere cabinets, these JOHNSON units are superbly engineered as fine pieces of equipment. Built for a life-time of hard usage and handsomely styled to be in keeping with the most expensive apparatus. All aluminum construction for lightness, heavy .064" metal for strength. Rails for attaching panel are double thickness, tapped for 10-32 screws and on universal centers for either Amateur or Western Electric notched panels. Gracefully rounded top and front corners add to appearance and rugged mechanical strength. Opening at the bottom rear for attachment of plugs and cables to the chassis, also provides ventilation which is completed through inside baffles in the sides near the top.



197-111-3

Shipped knocked-down for your convenience and to save you freight charges, easily assembled in a few minutes with screws and nuts, not self-tapping screws. Available in either fine black wrinkle outside and flat satin black inside or a beautiful silver gray (not purple) outside with a matching flat gray inside.

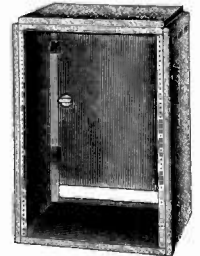
Cat. No.	List Price	Color	Overall Height	Panel Space	Net Weight	Ship. Weight
197-111-3	\$17.50	Gray	11 1/4"	8 3/4"	10 lbs.	13 lbs.
197-111-4	17.50	Black	11 1/4"	8 3/4"	10 lbs.	13 lbs.
197-110-3	19.00	Gray	13"	10 1/2"	10 3/4 lbs.	14 lbs.
197-110-4	19.00	Black	13"	10 1/2"	10 3/4 lbs.	14 lbs.
197-112-3	21.00	Gray	14 3/4"	12 1/4"	11 1/2 lbs.	14 lbs.
197-112-4	21.00	Black	14 3/4"	12 1/4"	11 1/2 lbs.	14 lbs.

Size: 21" wide by 15" deep.

Panel Width: 19"

### TABLE MODELS — BOTH TOP AND REAR DOOR

Same, identical description as the three smaller sizes except for the addition of the rear door. This door is equipped with a positive flush snap-catch and may be installed to hinge from either side. Cabinet is much more rugged than ordinary types with rear doors. Includes top door also.



197-115-3

Cat. No.	List Price	Color	Overall Height	Panel Space	Net Weight	Ship. Weight
197-115-3	\$32.50	Gray	28 3/4"	26 1/4"	18 1/2 lbs.	23 lbs.
197-115-4	32.50	Black	28 3/4"	26 1/4"	18 1/2 lbs.	23 lbs.

Size: 21" wide by 15" deep.

Panel Width: 19"

### RELAY RACK PANELS

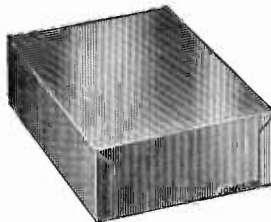
1/8" thick aluminum for lightness and easy working, W. E. notching. 19" long to fit standard relay racks or cabinets. Strength adequate for heaviest equipment. Beautiful, fine black or silver gray wrinkle finish.



Same colors can be furnished in 1/8" thick steel on special orders. Write for prices and delivery.

Black Cat. No.	Gray Cat. No.	List Price	Height
196-161-4	196-161-3	\$0.90	1 3/4"
196-162-4	196-162-3	1.55	3 1/2"
196-163-4	196-163-3	2.20	5 1/4"
196-164-4	196-164-3	2.85	7"
196-165-4	196-165-3	3.55	8 3/4"
196-166-4	196-166-3	4.25	10 1/2"
196-167-4	196-167-3	4.95	12 1/4"
196-168-4	196-168-3	5.65	14"
196-169-4	196-169-3	6.35	15 3/4"
196-170-4	196-170-3	7.05	17 1/2"
196-171-4	196-171-3	7.75	19 1/4"
196-172-4	196-172-3	8.45	21"

### NEW DIE-CUT CHASSIS AND BOTTOM PLATES



Cat. No.	List Price	Size	Gauge
195-150	\$1.35	7 x 5 x 2	20
195-151	1.45	7 x 7 x 2	20
195-152	1.50	9 x 7 x 2	20
195-153	1.45	9 1/2 x 5 1/2 x 2	20
195-154	1.65	10 x 5 x 3	20
195-155	1.85	10 x 8 x 2 1/2	20
195-156	1.75	11 x 7 x 2	20
195-157	1.90	12 x 7 x 3	20
195-158	2.15	12 x 10 x 3	20
195-159	1.75	13 x 7 x 2	20
195-160	1.75	13 x 7 x 3	20
195-161	1.65	13 x 7 x 3	20
195-163	2.50	14 x 10 x 3	18
195-164	2.25	15 x 7 x 3	18
195-166	2.10	17 x 4 x 3	18

### STEEL CHASSIS (Continued)

Cat. No.	List Price	Size	Gauge
195-167	\$2.40	17 x 7 x 3	18
195-168	2.20	17 x 8 x 2	18
195-169	2.55	17 x 8 x 3	18
195-170	2.40	17 x 10 x 2	18
195-171	2.75	17 x 10 x 3	18
195-172	3.15	17 x 10 x 4	18
195-173	3.55	17 x 10 x 5	18
195-174	2.70	17 x 11 x 2	18
195-175	2.95	17 x 11 x 3	18
195-176	3.00	17 x 12 x 2	16
195-177	3.40	17 x 12 x 3	16
195-178	3.85	17 x 12 x 4	16
195-179	3.25	17 x 13 x 2	16
195-180	3.75	17 x 13 x 3	16
195-181	4.25	17 x 13 x 4	16
195-182	4.60	17 x 13 x 5	16

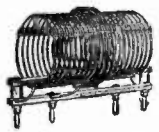
### STEEL BOTTOM PLATES

Cat. No.	List Price	Size	Gauge
195-250	\$0.70	5 x 7	20
195-251	.75	7 x 7	20
195-252	.80	9 x 7	20
195-257	.85	12 x 7	20
195-258	1.00	12 x 8	20
195-259	1.05	12 x 10	20
195-260	.90	13 x 7	20
195-267	1.00	17 x 7	20
195-268	1.05	17 x 8	20
195-270	1.25	17 x 10	20
195-274	1.30	17 x 11	20
195-276	1.35	17 x 12	20
195-279	1.60	17 x 13	20



# AIR INDUCTORS

BARKER & WILLIAMSON • UPPER DARBY, PA.



## ANTENNA INDUCTORS TYPES TA AND HDA

Wound with tinned copper wire for ease in tapping feeders to coils. Equipped with fixed center links for coupling to either fixed or variable linked final tank circuits through a low impedance line. Two tinned clips come with each coil. TYPE TA COILS for power input up to 500 watts. TYPE HDA COILS for power inputs of one kilowatt.

### SPECIFICATIONS

Band	Stock No.	Type	Capacity to Res. L.F. End of Band mmfd.	Net Price
<b>TA TYPES</b>				
10	3601	10TA	20	\$2.89
15	3602	15TA	23	2.96
20	3603	20TA	23	2.96
40	3604	40TA	34	3.30
80	3605	80TA	50	3.65

Stock No. 3321 Jack Bar Assembly for TA Inductors.

Band	Stock No.	Type	Capacity to Res. L.F. End of Band mmfd.	Net Price
<b>HDA TYPES</b>				
10	3607	10HDA	20	5.85
15	3608	15HDA	20	6.54
20	3609	20HDA	20	6.54
40	3610	40HDA	20	6.88
80	3611	80HDA	34	7.56

Stock No. 3721 Jack Bar Assembly for HDA Inductors.

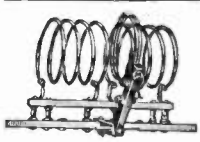


## B & W MINIINDUCTORS

For use in limited space—can be cut to size. Amazingly high Q characteristic. Useful for tank circuit coils, R-F chokes, high-frequency I-F transformers, loading coils, etc.

### SPECIFICATIONS

Catalog No.	Diameter	Turns per Inch	Length	Net Price
3001	1/2"	4	2"	\$0.31
3002	3/8"	8	2"	.31
3003	1/2"	16	2"	.31
3004	1/2"	32	2"	.31
3005	5/8"	4	2"	.37
3006	5/8"	8	2"	.37
3007	5/8"	16	2"	.37
3008	5/8"	32	2"	.37
3009	3/4"	4	3"	.44
3010	3/4"	8	3"	.44
3011	3/4"	16	3"	.44
3012	3/4"	32	3"	.44
3013	1"	4	3"	.50
3014	1"	8	3"	.50
3015	1"	16	3"	.50
3016	1"	32	3"	.50



## TYPE TVH INDUCTORS

For Powers up to 500 Watts Input

A special group of units with eight contact plug bars which gives greater flexibility than otherwise possible.

### SPECIFICATIONS

Band	Stock No.	Type	*Capacity to Res. L.F. End of Band mmfd.	Net Price
10	3501	10TVH	11	\$3.93
15	3502	15TVH	23	3.93
20	3503	20TVH	23	3.93
40	3504	40TVH	28	3.93
80	3505	80TVH	49	3.93

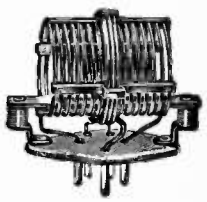
Stock No. 3507—Jack Bar Assembly for Type TVH Inductor 5.16

\*Actual condenser capacity will be smaller by the sum of the tube output and wiring capacities, generally between 5 and 20 mmfd.

## JUNIOR INDUCTORS

For Powers Up to 75 Watts Input

Fitted with standard five-prong steatite base. Small size for compact construction. May be used in the oscillator, buffer or final amplifier stage with input powers up to 75 watts and plate voltages up to 850. Three different assemblies provided, any of which may be used in capacity-coupled circuits by omitting connection to the links.



AMATEUR NET ..... \$1.38 ea.

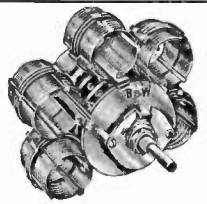
### SPECIFICATIONS

Band	Stock No.	Type	*Capacity to Res. L.F. End of Band mmfd.
<b>End Linked Models</b>			
5	3100	5JEL	15
10	3101	10JEL	22
15	3102	15JEL	22
20	3103	20JEL	34
40	3104	40JEL	47
80	3105	80JEL	60
<b>Center Linked Models</b>			
5	3107	5JCL	15
10	3108	10JCL	16
15	3109	15JCL	16
20	3110	20JCL	16
40	3111	40JCL	33
80	3112	80JCL	63
<b>Variable Link Models</b>			
5	3114	5JVL	15
10	3115	10JVL	22
15	3116	15JVL	27
20	3117	20JVL	21
40	3118	40JVL	31
80	3119	80JVL	46

\*Actual condenser capacity will be smaller by the sum of the tube output and wiring capacities, generally between 5 and 20 mmfd.

## B & W TURRET ASSEMBLIES

Makes possible fast, positive band switching. Unique switching assembly allows unused coils to be shorted, thus eliminating absorption effects. All units cover 80, 40, 20, 15 and 10 meter bands.



B & W 75 WATT 2A "BAND HOPPERS"

Uses same coil design as B & W Juniors. Unusually compact panel controlled unit. It may be used for interstage coupling between two beam power tubes or between beam power tubes and triodes.

Stock No. 3121 ..... Amateur Net \$4.81

B & W 75-WATT TURRETS—provide a means for link coupling single ended or push-pull low power stages. Complete assembly is mounted on a positive action switch arranged for panel mounting through a single 3/8" hole. Turrets may be used with tubes operating at voltages up to 850.

Stock No. 3810—Type JTCL—Center linked, center tapped coils. Amateur Net \$9.38

Stock No. 3811—Type JTCL—End linked, untapped coils. Amateur Net \$9.38

B & W 150-WATT TURRETS—Supplied in both center and end link models for both single- and double-ended circuits. Operation is by a positive action switch arranged for panel mounting through a single 3/8" hole. Turrets may be used with tubes operating at voltages up to 1000 volts.

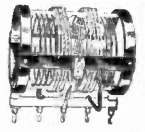
Stock No. 3812—Type BCL—Center linked, center tapped coils. Amateur Net \$11.69

Stock No. 3813—Type BEL—End linked, untapped coils. Amateur Net \$11.69

## 3400 SERIES INDUCTORS

FOR POWERS UP TO 500 WATTS

Give the utmost in sturdy construction and electrical flexibility. Same as those supplied by B & W to the armed forces during the war. Each coil has an individual internal center coupler, adjustable over 360°—permitting precise impedance matching up to 600 ohms, thus providing flexibility far in excess of any installation requirements.



Amateur Net \$7.50 each

### SPECIFICATIONS

Band	Stock No.	*Capacity to Res. L.F. End of Band mmfd.
10	3401	24
15	3402	25
20	3403	30
40	3404	30
80	3405	60

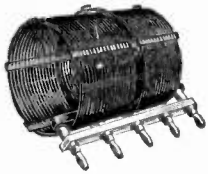
Stock No. 3321—Steatite Jack Bar Assembly.  
\*Actual condenser capacity will be smaller by the sum of the tube output and wiring capacities, generally between 5 and 20 mmfd.

# B&W

# AIR INDUCTORS

BARKER & WILLIAMSON • UPPER DARBY, PA.

- MINIMUM DIELECTRIC IN THE FIELD OF THE COIL
- EXTREMELY LOW LOSSES
- RUGGED CONSTRUCTION
- EXCELLENT APPEARANCE
- LOW COST



TYPE HD1  
(Fixed Link)

Each AIR INDUCTOR is a completely finished unit. All coils are equipped with banana type plugs . . . Type "B" is for use in oscillator and buffer—doubler stages developing up to 100 Watts power. Type "T" is especially suited for high powered neutralized buffer and final tank stages where powers of 500 Watts are developed. Type "HD" is for maximum power — handles a Kilowatt with ease.

## SPECIFICATIONS

Band	Stock No.	Type	Net Price
<b>TYPE B</b>			
MODELS WITHOUT LINK—CENTER TAPPED			
5	3207	5B	\$1.38
10	3201	10B	1.38
15	3202	15B	1.45
20	3203	20B	1.45
40	3204	40B	1.79
80	3205	80B	2.14

Band	Stock No.	Type	Net Price
<b>END LINK MODELS—WITHOUT TAP</b>			
5	3207	5REL	2.41
10	3208	10BEL	2.41
15	3209	15BEL	2.48
20	3210	20BEL	2.48
40	3211	40BEL	2.83
80	3212	80BEL	3.16

Band	Stock No.	Type	Net Price
<b>CENTER LINK MODELS—CENTER TAPPED</b>			
5	3214	5BCL	2.41
10	3215	10RCL	2.41
15	3216	15RCL	2.48
20	3217	20BCL	2.48
40	3218	40RCL	2.83
80	3219	80BCL	3.16

Band	Stock No.	Type	Net Price
<b>VARIABLE LINK MODELS—CENTER TAPPED</b>			
5	3221	5BVL	1.93
10	3222	10BVL	1.93
15	3223	15BVL	2.00
20	3224	20BVL	2.00
40	3225	40BVL	2.28
80	3226	80BVL	2.61

Stock No. 3228—Steatite Jack Bar Assembly for end or center link type B Inductors, old Type A56.  
Stock No. 3229—Jack Bar and Swinging Link for BVL Inductors.

Band	Stock No.	Type	Net Price
<b>TYPE T</b>			
10	3301	10T	1.51
15	3302	15T	1.59
20	3303	20T	1.59
40	3304	40T	1.93
80	3305	80T	2.28

Band	Stock No.	Type	Net Price
<b>CENTER LINKED MODELS—CENTER TAPPED</b>			
10	3308	10TCL	\$2.89
15	3309	15TCL	2.96
20	3310	20TCL	2.96
40	3311	40TCL	3.30
80	3312	80TCL	3.65

Band	Stock No.	Type	Net Price
<b>VARIABLE LINKED—CENTER TAPPED</b>			
10	3315	10TVL	2.20
15	3316	15TVL	2.28
20	3317	20TVL	2.28
40	3318	40TVL	2.61
80	3319	80TVL	2.96

Stock No. 3321—Steatite Jack Bar Assembly for end or center link Type T Inductors, old Type A54.  
Stock No. 3322—Base Assy. and Swinging Link for BVL Inductors.

Band	Stock No.	Type	Net Price
<b>TYPE HD</b>			
MODELS WITHOUT LINK—CENTER TAPPED			
10	3701	10HD	3.10
15	3702	15HD	3.79
20	3703	20HD	3.79
40	3704	40HD	4.13
80	3705	80HD	4.81

Band	Stock No.	Type	Net Price
<b>CENTER LINKED MODELS—CENTER TAPPED</b>			
10	3708	10HDCL	5.85
15	3709	15HDCL	6.54
20	3710	20HDCL	6.54
40	3711	40HDCL	6.88
80	3712	80HDCL	7.56

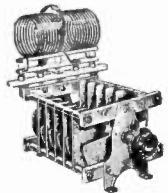
Band	Stock No.	Type	Net Price
<b>VARIABLE LINKED MODELS—CENTER TAPPED</b>			
10	3715	10HDVCL	4.48
15	3716	15HDVCL	5.16
20	3717	20HDVCL	5.16
40	3718	40HDVCL	5.50
80	3719	80HDVCL	6.19

Stock No. 3721—Jack Bar Assembly for HD and HDCL Inductors.  
Stock No. 3722—Base Assembly and SL for HDVL Inductors.

## TYPE CX CONDENSER

Superior design! Only half the length of conventional units. Perfect electrical and mechanical symmetry. Designed for built-in neutralization. Integral mounting of B & W coils reduces lead lengths and resulting lead inductance to an absolute minimum.

Stock No. 3722-1—Type HD Jack Bar and SL assembly mounted on any type of condenser.  
Stock No. 3721-1—Type HD or HDL Jack Bar mounted on condenser.  
Stock No. 3507-1—Type TVII Jack Bar and SL mounted on condenser.  
Stock No. 3930-1—Single Vacuum Condenser mount.  
Stock No. 3930-2—Twin Vacuum Condenser mount.



## NEUTRALIZING PLATES AVAILABLE IN FOUR TYPES, DESIGNATED N1, N2, N3, and N4.

- N1—will neutralize the HY114, HK24, RK31, HK51, TW75, and similar tubes.  
N2—will neutralize the 75T, 35T, 808, RK35, 852, and similar tubes.  
N3—will neutralize the 801, T-TZ20, T-TZ40, RK18, HK154, 811, 812, T95, 100TH, .0TH, 806, 810, and similar tubes.  
N4—will neutralize the 833, T200, 805, GL152, 838, 203A, RK52, and similar tubes.

## "A" TYPE—500" AIRGAP

Type	Capacity Per Section		Capacity Sections In Series		Net Price
	Max.	Min.	Max.	Min.	
CX11A	11	8	8	6	\$12.52
CX20A	20	11	13	8	15.32
CX30A	30	14	18	10	17.59
CX40A	40	18	23	12	19.81
CX49A	49	21	28	14	22.08
CX59A	59	24	33	16	24.29
CX68A	68	27	38	18	26.50
CX77A	77	30	43	20	28.78
CX87A	87	34	48	22	30.99
CX96A	96	37	53	24	33.20
CX105A	105	40	58	26	35.47
CX115A	115	43	62	29	37.69
CX124A	124	46	68	30	39.90

## "B" TYPE—375" AIRGAP

Type	Capacity Per Section		Capacity Sections In Series		Net Price
	Max.	Min.	Max.	Min.	
CX11B	11	8	9	6	12.17
CX22B	22	11	15	8	14.91
CX34B	34	14	21	10	17.18
CX45B	45	17	28	12	19.34
CX58B	58	20	33	13	21.49
CX70B	70	23	38	15	23.71
CX82B	82	26	45	17	25.80
CX94B	94	29	50	19	28.08
CX106B	106	32	56	20	30.17
CX118B	118	36	62	22	32.33
CX130B	130	39	68	24	34.60
CX141B	141	42	74	26	36.76
CX153B	153	45	80	27	38.91

## "C" TYPE—250" AIRGAP

Type	Capacity Per Section		Capacity Sections In Series		Net Price
	Max.	Min.	Max.	Min.	
CX13C	13	8	10	6	11.88
CX30C	30	11	18	8	14.56
CX45C	46	13	26	9	16.72
CX62C	62	16	34	11	18.81
CX78C	78	19	42	12	20.97
CX95C	95	22	50	14	23.13
CX111C	111	25	59	15	25.16
CX127C	127	28	67	17	27.32
CX143C	143	31	75	18	29.42
CX159C	159	33	83	20	31.46
CX175C	175	36	91	21	33.73
CX192C	192	39	100	23	35.82
CX208C	208	42	110	24	37.86

Standard plate thickness in all models, 1/16". • Available on special order, 3/32" plates at 10% additional. • Special features. • Explanation: The type of each condenser designates its capacity and plate spacing as follows: CX100 indicates 100 mfd. per section. • Letters A, B, C, or D denotes plate spacing: A—500", B—375", C—250", D—187". Following N# denotes Neutralizing plates.

## "BABY" AIR INDUCTORS

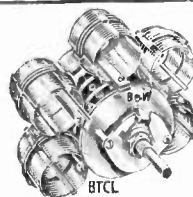
(25 WATT RATING)

Just the thing for crowded layouts, portables, field transmitters! The smallest, most efficient, most practical 25-Watt coils ever available to amateurs. "BABIES" measure only 1 1/2" x 1 1/4", are made by a special B&W process which insures

perfect air-spacing, maximum strength, fine appearance and ultra-high efficiency with an absolute minimum of insulating material. Available in five types, from 10 to 160 mhos. Conservatively rated. Universal 5-prong Alismag 196 bases. . . . . Net Any Type \$1.04

Straight Coil	Center Tapped	End Linked	Center Linked	Inductance	*Capacity
80M	MC	MEL	MCL	40	50
40M	MC	MEL	MCL	14	35
20M	MC	MEL	MCL	3.5	35
15M	MC	MEL	MCL	2.7	35
10M	MC	MEL	MCL	1.1	30

\*Total effective capacity required to effect resonance on low frequency end of specified band.



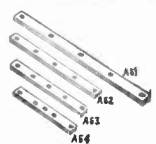
## "BABY" TURRETS

35-WATT RATING

These compact 5-band switching units cover amateur bands from 10 to 80 meters. They may be tuned in all types of service with any of the 50 mfd. midjet condensers. Their sturdy construction and unique design assure permanent coil alignment and maximum efficiency with a minimum number of tubes. Four types—BTM, straight untapped BTCT, center tapped; BTCL, end linked and BTCL, center linked—provide vastly improved band-switching efficiency in low-power transmitters and exciter stages. Net, Any Type . . . . . \$8.44

## B & W PLUG AND JACK BARS

Made of high quality steatite. Ample size to insure excellent strength. They provide experimentation with the same units that are used in B & W inductors. Can also be used as spreaders for feeders and other parts of the antenna system.



## SPECIFICATIONS

Stock No.	Type	Length	Width	Thick. ness	Mounting Used		Net Price
					Dimension Series	Series	
3914	Plug	3 1/2"	3/4"	3/8"	B	B	\$0.20
3915	Jack	4 1/2"	3/4"	3/8"	4 1/2"	B	.60
3916	Plug	5 1/2"	3/4"	3/8"	T	T	.30
3917	Jack	7"	3/4"	3/8"	6 1/2"	T	1.00
3918	Plug	6 1/2"	3/4"	3/8"	TVII	TVII	.60
3919	Jack	8 1/4"	3/4"	3/8"	7 1/2"	TVII	1.10
3920	Plug	8 1/4"	3/4"	3/8"	HD	HD	1.10
3921	Jack	10 3/4"	1"	3/8"	9 1/2"	HD	1.25



# TEST EQUIPMENT

BARKER & WILLIAMSON • UPPER DARBY, PA.

## B & W NEW PLUG-IN LINKS

FOR IMPEDANCE MATCHING  
Adaptable to all B & W Swinging Link assemblies, these B & W plug-in links solve the quick change problem. Just pull out one coil and plug in another with the required number of turns. Old link arm easily replaced with new plug-in type.

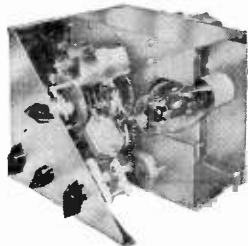


ORDERING NUMBERS FOR B & W PLUG-IN LINKS			ORDERING NUMBERS FOR B & W PLUG-IN LINKS		
For Types TVH, TVL, BVL Swinging Link Assemblies			For Type HDV Swinging Link Assemblies		
Ordering	No.	Price	Ordering	No.	Price
Arm Only	3550	\$ .70	Arm Only	3750	\$1.40
Arm and Hinge	3565	1.00	Arm and Hinge	3765	1.80

PLUG-IN LINK COILS					
Ordering			Ordering		
No.	Price		No.	Price	
1 turn	3551	\$ .60	1 turn	3751	\$1.25
3 turns	3553	.60	3 turns	3753	1.25
6 turns	3556	.60	6 turns	3756	1.25
10 turns	3560	.95	10 turns	3760	1.75

Above are standard. Other turns available on request.

## B & W FREQUENCY MULTIPLIER



Price: \$85.00 Amateur Net. Complete with tubes. Dimensions: 6 1/2" x 7" x 9 3/4".

This B & W all-band frequency multiplier solves the difficult problem of developing frequency step-up stages. Packaged unit covers 80-40-20-15-11 and 10 meter bands. Just flip a switch on the attractive reverse etched aluminum panel plate, to get the required band. Operates on either YFO or Crystal input and not less than 25 watt output.

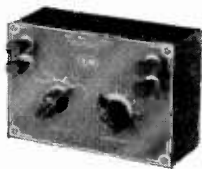
## B & W SINE WAVE CLIPPER Model 250

Equipped with a pair of input terminals, a pair of output terminals, an output volume control and a selector switch.

Net Price: \$10.00.

Dimensions: 2" x 4" x 5 1/2".

SPEEDS ACCURATE ANALYSIS OF AUDIO CIRCUITS. SIMPLIFIES SELECTIONS OF COMPONENTS. SAVES VALUABLE TIME. Here's an instrument that will do most of the jobs usually assigned to a square wave generator costing about 10 times as much! The B & W Sine Wave Clipper provides a test signal particularly useful in examining the transient and frequency response of audio circuits. Designed to be driven by an audio oscillator, the clipper provides a clipped sine wave — hence the name "Sine Wave Clipper." Used in engineering work, repairs, or with equipment under development, it will quickly pay for itself many times over.

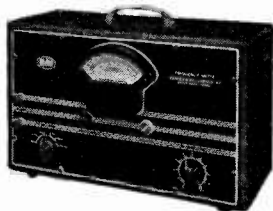


## B & W FREQUENCY METER Model 300

Net Price: \$105.00.

Dimensions: 13 3/4" x 7 1/4" x 9 1/2".

An accurate and convenient means of making direct measurements of unknown audio frequencies up to 30,000 cycles. Integral power supply. Extremely useful for routine checking of audio oscillators or tone generators. Housed in an attractive black crackle finished steel cabinet with carrying handle and rubber feet.

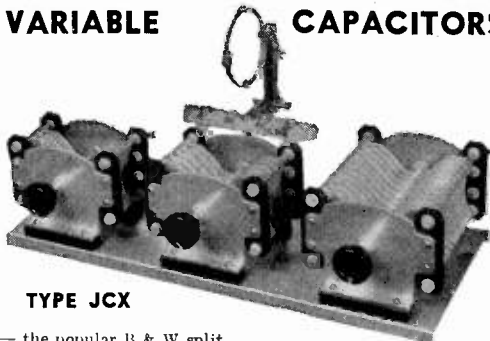


### FEATURES

Frequency Range: 20 to 30,000 cycles in 6 ranges.  
Sensitivity: minimum .5 volts input.  
Wave Form: will operate on any wave form with peak ratios of less than 8 to 1.

Calibration: when referenced against 60 cycle line frequency, all other frequencies will fall within 2%.

## B & W NEW, SMALL BUTTERFLY VARIABLE CAPACITORS



TYPE JXC

Now — the popular B & W split stator, butterfly type of variable condenser construction has been adapted to small, compact units for general ham and other uses! Having just 25% of the frontal area of CX types, these new B & W JXC Variable Capacitors are ideal for medium powered triode or tetrode stage plate circuit applications.

Featuring stainless steel shafts, heavy rounded aluminum plates and high quality insulating materials, the B & W Midget Butterfly will be a welcome addition for the amateur who is looking for peak efficiency in low and medium power transmitter stages.

### "E" TYPE .125" AIRGAP

Type	Catalog Stock No.	Capacity Section in Series		Capacity Per Section		Mounting Length	Net Price
		Max.	Min.	Max.	Min.		
JCX100E	100	50	15	99	23	5 1/2"	\$9.00
JCX50E	101	25	10	42	13	3 3/8"	6.75
JCX25E	102	16	8	25	10	2 3/4"	5.50

## B & W AUDIO OSCILLATOR

### Model 200

Net Price: \$115.00.  
Dimensions: 13 3/4" x 7 1/4" x 9 1/2".

Ideal for use in distortion measurements, frequency measurements or in any application where a stable, accurately calibrated source of frequencies between 30 and 30,000 cycles is required. No zero reset or line calibration is required. Self-contained power supply. Housed in an attractive black crackle finished steel cabinet with carrying handle and rubber feet. Panel is of 1/8" reverse etched aluminum.



### FEATURES

**Voltage Output:**  
12.5 volts open circuit.  
11 volts output on 500 ohm load.  
**Wave Form:** RMS harmonics at 5 volts output on 500 ohm load, less than 1%. On open circuit (10,000 ohms up) approximately .5% on all frequencies between 50 and 15,000 cycles.  
**Frequency Response:** better than ±1 D.B. from 30 to 30,000 cycles.  
**Stability:** better than 1%.  
**Calibration:** ±2.5%.

## B & W DISTORTION METER

### Model 400

Net Price: \$140.00.  
Dimensions: 13 3/4" x 7 1/4" x 9 1/2".

A sensitive instrument having a wide range of applications in the audio frequency measurements field. Ideal for measuring low level audio voltage and determining noise and harmonic content of same. Variable frequency selective filter provides a single frequency suppression circuit for the frequency range of 50 to 15,000 cycles. Small size, light weight and outstanding performance make this instrument an ideal unit for either laboratory or field work.



### FEATURES

- Frequency Range:**
  - Distortion meter. For fundamentals from 50 to 15,000 cycles, measuring harmonics up to 45,000 cycles.
  - As voltmeter and D.V. meter from 30 to 30,000 cycles.
- Sensitivity:**
  - Noise and distortion measurements, minimum input .3 volts.
  - Voltmeter, full scale readings of .3, .1, .03, .01, .003 volts.
- Calibration:**
  - For distortion measurements: ±10%.
  - For noise measurements: ±1 D.B.
  - For voltage measurements: ±5%.



# JAMES MILLEN

MALDEN · MASSACHUSETTS

## SECONDARY FREQUENCY STANDARD

A precision frequency standard for both laboratory and production uses, adjustable output, provided at intervals of 10, 25, 100 and 1000 kc, with magnitude useful to 50 mc. Harmonic amplifier with tuned plate circuit and panel range switch. 800 cycle modulator with panel control switch. In addition to oscillators, multivibrators, modulators and amplifiers, a built-in detector with phone jack and gain control is incorporated. Self-contained power supply.

Model 90505, with tubes . . . . . \$155.00

## ABSORPTION WAVEMETERS

The 9060C series of absorption wavemeters are available in several styles and many different ranges. Most popular is kit of four units, covering range of 3.0 to 140 mc.

Model 90600 . . . . . \$18.00

## FREQUENCY CALIBRATORS

The cavity type frequency calibrator covers a range of 200 to 700 mc., with a maximum error of not over 0.25%. This range is covered by two plug-in cavity type tuning units, which may be easily interchanged. The calibrator consists of an accurately calibrated cavity-type tuning unit, a crystal detector, a two-stage video amplifier and a peak reading VT voltmeter.

Model 90630, with tubes . . . . . \$375.00

## LABORATORY SYNCHROSCOPES

The 5" laboratory synchroscopes are available with and without detector-video strips.

Model P-4-2, with tubes . . . . . \$350.00

Model P-4E-2, with tubes . . . . . 445.00

## MINIATURE SYNCHROSCOPE

The compact design of the No. 90952, measuring only 7½" x 5½" x 13", and weighing only 17 lbs., makes available for the first time a truly DESIGNED FOR APPLICATION "field service" Synchroscope.

No. 90952, with tubes . . . . . \$375.00

## CATHODE RAY OSCILLOSCOPES

The No. 90902, No. 90903 and No. 90905 Rack Panel Oscilloscopes, for two, three and five inch tubes, respectively, are inexpensive basic units comprising power supply, brilliancy and centering controls, safety features, magnetic shielding, switches, etc. As a transmitter monitor, no additional equipment or accessories are required. The well-known trapezoidal monitoring patterns are secured by feeding modulated carrier voltage from a pickup loop directly to vertical plates of the cathode ray tube and audio modulating voltage to horizontal plates. By the addition of such units as sweeps, pulse generators, amplifiers, servo sweeps, etc., all of which can be conveniently and neatly constructed on companion rack panels, the original basic 'scope unit may be expanded to serve any conceivable industrial or laboratory application.

No. 90902, less tubes . . . . . \$ 42.50

No. 90903, less tubes . . . . . 49.50

No. 90905, less tubes . . . . . 100.00

## 'SCOPE AMPLIFIER—SWEEP UNIT

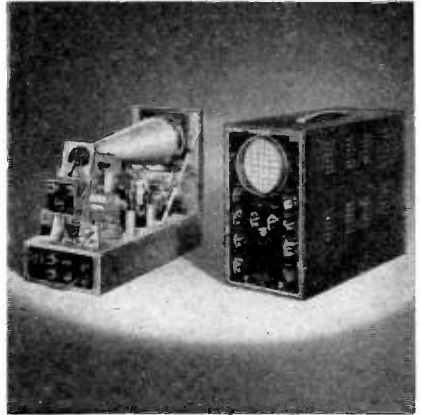
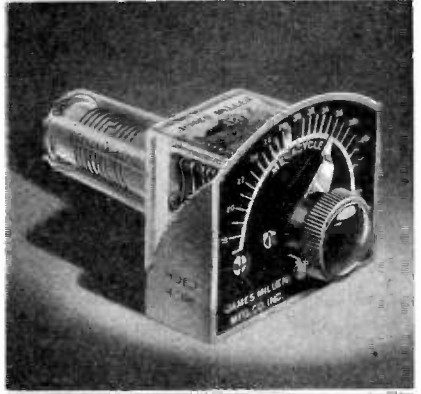
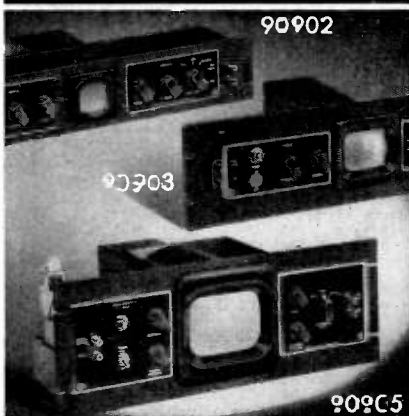
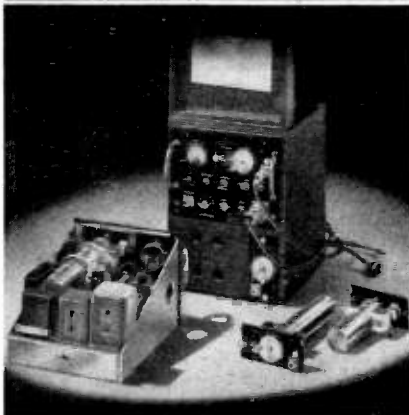
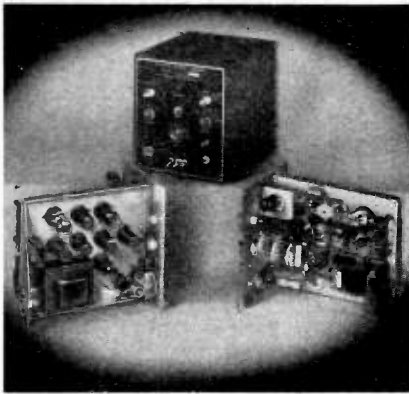
Vertical and horizontal amplifiers along with hard-tube, saw tooth sweep generator. Complete with power supply mounted on a standard 5¼" rack panel.

No. 90921, with tubes . . . . . \$75.00

## REGULATED POWER SUPPLIES

A compact, uncased, regulated power supply, either for table use in the laboratory or for incorporation as an integral part of larger equipments. 50 watts, with regulated voltage from 0 to 200 volts.

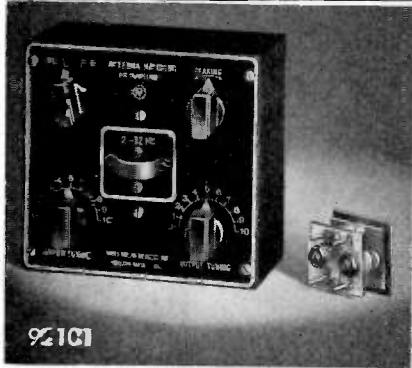
Model 90201, less tubes . . . . . \$100.00



9C921

# JAMES MILLEN

MALDEN MASSACHUSETTS



92101

### R9'er MATCHING PREAMPLIFIER

The Millen 92101 is an electronic impedance matching device and a broad-band preamplifier combined into a single unit, designed primarily for operation on 6 and 10 meters. Coils for 20 meter band also available.

No. 92101, less tubes . . . . . \$24.75

### SINGLE SIDEBAND SELECTOR

The No. 92105 is designed to permit Single Sideband Selection with existing receivers. Full technical details in April 1948 QST. Produced in co-operation and under exclusive U. S. patent license (2,364,863 and others) with the J. L. A. McLaughlin Research Laboratories.

No. 92105, with tubes and crystals . . . . \$75.00

### FREQUENCY SHIFTER

A favorite frequency shifter, plugs in, in place of crystal, for instant finger-tip control of carrier frequency. Low drift, chirpless keying, vibration immune, big band spread, accurate calibration.

Model 90700, with tubes . . . . . \$42.50

### VARIABLE FREQUENCY OSCILLATOR

The No. 90711 is a complete transmitter control unit with 6SK7 temperature-compensated, electron coupled oscillator of exceptional stability and low drift, a 6SK7 broad-band buffer or frequency doubler, a 6A67 tuned amplifier which tracks with the oscillator tuning, and a regulated power supply. Output sufficient to drive an 807 is available on 160, 80 and 40 meters and reduced output is available on 20 meters. Close frequency setting is obtained by means of the vernier control arm at the right of the dial. Since the output is isolated from the oscillator by two stages, zero frequency shift occurs when the output load is varied from open circuit to short circuit. The entire unit is unusually solidly built so that no frequency shift occurs due to vibration. The keying is clean and free from all annoying chirp, quick drift, jump, and similar difficulties often encountered in keying variable frequency oscillators.

No. 90711, with tubes . . . . . \$89.75

### 50 WATT TRANSMITTER

Based on an original Handbook design, this flexible unit is ideal for either low power amateur band transmitter use or as an exciter for high power PA stages.

Model 90800, less tubes . . . . . \$42.50

### OCTAL BASE AND SHIELD

Low loss phenolic base with octal socket plug and aluminum shield can  $1\frac{1}{8} \times 1\frac{1}{8} \times 3\frac{1}{8}$ .

No. 74400 . . . . . \$7.75

### TRANSMISSION LINE PLUG

An inexpensive, compact, and efficient polyethylene unit for use with the 300 ohm ribbon type polyethylene transmission lines. Fits into standard Millen No. 33102 (crystal) socket. Pin spacing  $\frac{1}{2}$ " diameter .095".

No. 37412 . . . . . \$2.10

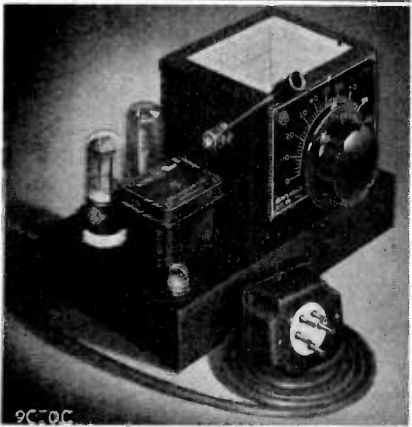
### PERMEABILITY TUNED CERAMIC FORMS

In addition to the popular shielded plug-in permeability tuned forms, 74000 series, the 69040 series of ceramic permeability tuned unshielded forms are available as standard stock items. Winding diameters and lengths of winding space are  $1\frac{3}{32} \times \frac{7}{32}$  for 69041-2;  $\frac{1}{4} \times \frac{3}{8}$  for 69043-7-8;  $\frac{1}{2} \times 1\frac{1}{16}$  for 69045-6;  $\frac{3}{16} \times \frac{3}{16}$  for 69044.

No. 69041—(Copper Slug) . . . . .	\$7.75
No. 69042—(Iron Core) . . . . .	.75
No. 69043—(Iron Core) . . . . .	.75
No. 69044—(Copper Slug) . . . . .	.75
No. 69045—(Copper Slug) . . . . .	.90
No. 69046—(Iron Core) . . . . .	.90
No. 69047—(Copper Slug) . . . . .	.90
No. 69048—(Iron Core) . . . . .	.90



92105



90700



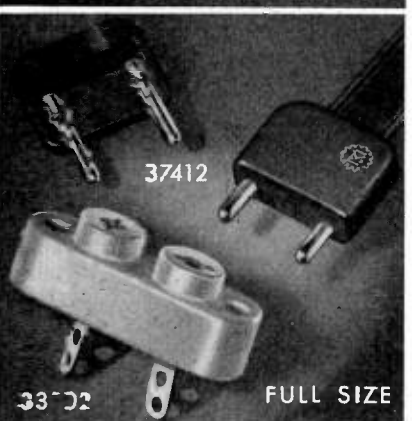
90711



90800



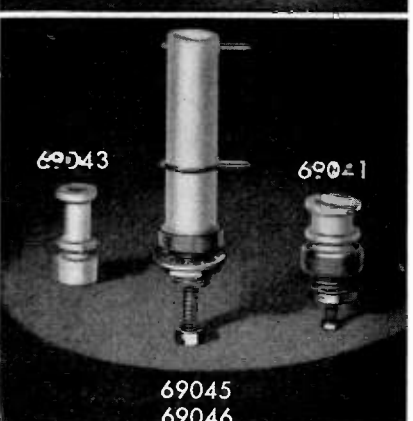
74400



37412

33102

FULL SIZE



69043

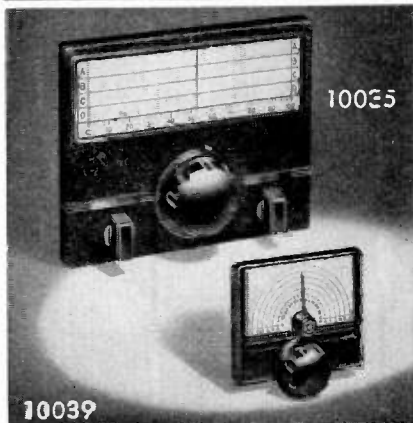
69041

69045

69046

# JAMES MILLEN

MALDEN · MASSACHUSETTS



10035

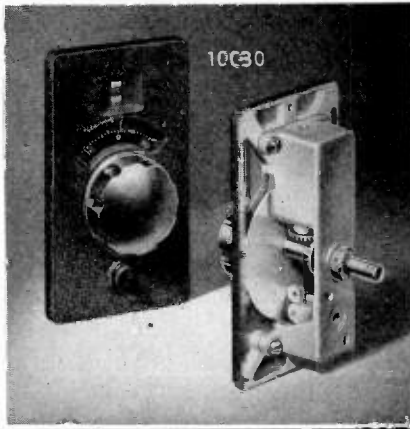
10039

### INSTRUMENT DIALS

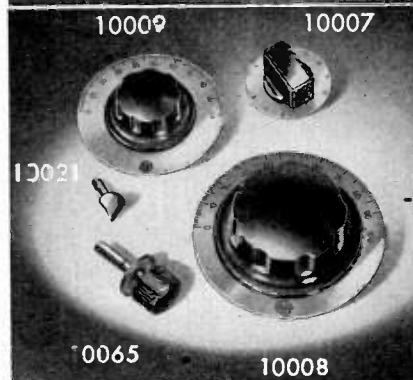
The No. 10030 is an extremely sturdy instrument type indicator. Control shaft has 1 to 1 ratio. Veeder type counter is direct reading in 99 revolutions and vernier scale permits readings to 1 part in 100 of a single revolution. Has built-in dtol lock and 1/4" drive shaft coupling. May be used with multi-revolution transmitter controls, etc., or through gear reduction mechanism for control of fractional revolution capacitors, etc., in receivers or laboratory instruments.

The No. 10035 illuminated panel dial has 12 to 1 ratio; size, 8 1/2" x 6 1/2". Small No. 10039 has 8 to 1 ratio; size, 4" x 3 1/4". Both are of compact mechanical design, easy to mount and have totally self-contained mechanism, thus eliminating back of panel interference. Provision for mounting and marking auxiliary controls, such as switches, potentiometers, etc., provided on the No. 10035. Standard finish, either size, flat black art metal.

No. 10039..... \$ 2.70  
 No. 10035..... 6.00  
 No. 10030..... 25.00



10030



10009

10007

10021

10065

10008

### DIALS AND KNOBS

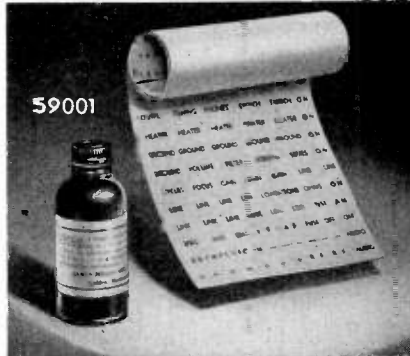
Just a few of the many stock types of small dials and knobs are illustrated herewith. 10007 is 1 1/4" diameter, 10009 is 2 1/2" and 10008 is 3 1/2".

No. 10007..... \$ .60  
 No. 10008..... 1.00  
 No. 10009..... .85  
 No. 10021..... .15  
 No. 10065..... .45

### PANEL MARKING TRANSFERS

The panel marking transfers have 1/4" black letters. Special solution furnished. Must not be used with water. Equally satisfactory on smooth or wrinkle finished panels or chassis. Ample supply of every popular word or marking required for amateur or commercial equipment.

No. 59001, white letters..... \$1.25  
 No. 59002, black letters..... 1.25



59001



90310

### HIGH FREQUENCY TRANSMITTER

The No. 90810 crystal control transmitter provides 75 watt output (higher output may be obtained by the use of forced cooling) on the 20, 10-11, 6 and 2 meter amateur bands. Provisions are made for quick band shift by means of the new 48000 series high frequency plug-in coils.

No. 90810, less tubes and crystals..... \$69.75

### HIGH FREQUENCY RF AMPLIFIER

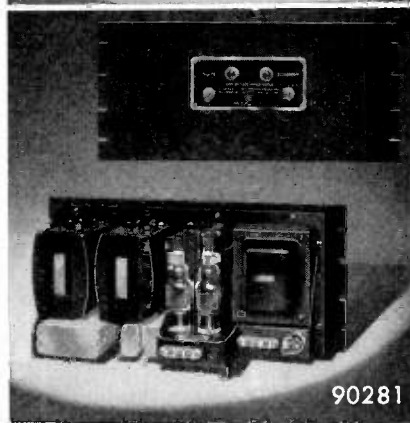
A physically small unit capable of a power output of 70 to 85 watts on 'phone or 87 to 110 watts on C-W on 20, 15, 11, 10, 6 or 2 meter amateur bands. Provision is made for quick band shift by means of the new No. 48000 series VHF plug-in coils. The No. 90811 unit uses either on 829-B or 3E29.

No. 90811 with 10 meter band coils, less tube..... \$33.00

### HIGH VOLTAGE POWER SUPPLY

The No. 90281 high voltage power supply has a d.c. output of 700 volts, with maximum current of 250 ma. In addition, a.c. filament power of 6.3 volts at 4 amperes is also available so that this power supply is an ideal unit for use with transmitters, such as the Millen No. 90800, as well as general laboratory purposes. The power supply uses two No. 816 rectifiers and has a two section pi filter with 10 henry General Electric chokes and a 2-2-10 mfd. bank of 1000 volt General Electric Pyranol capacitors. The panel is standard 8 3/4" x 19" rack mounting.

No. 90281, less tubes..... \$84.50



90281



90881

### RF POWER AMPLIFIER

This 500 watt amplifier may be used as the basis of a high power amateur transmitter or as a means for increasing the power output of an existing transmitter. As shipped from the factory, the No. 90881 RF power amplifier is wired for use with the popular RCA or G.E. "812" type tubes, but adequate instructions are furnished for readjusting for operation with such other popular amateur style transmitting tubes as Taylor TZ40, Eimac 35T, etc. The amplifier is of unusually sturdy mechanical construction, on a 10 1/2" relay rack panel. Plug-in inductors are furnished for operation on 10, 20, 40 or 80 meter amateur bands. The standard Millen No. 90800 exciter unit is an ideal driver for the new No. 90881 RF power amplifier.

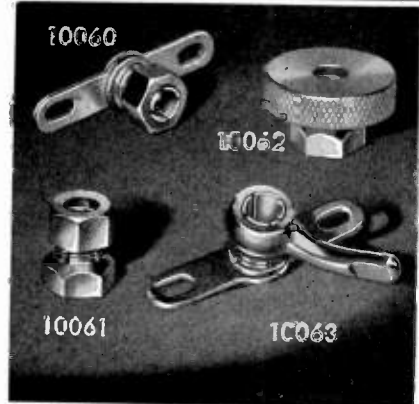
No. 90881, with one set of coils, but less tubes..... \$89.50



90881

# JAMES MILLEN

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## SHAFT LOCKS

In addition to the original No. 10060 and No. 10061 "DESIGNED FOR APPLICATION" shaft locks, we can also furnish such variations as the No. 10062 and No. 10063 for easy thumb operation as illustrated above. The No. 10061 instantly converts any plain "1/4 shaft" volume control, condenser, etc. from "plain" to "shaft locked" type. Each to mount in place of regular mounting nut.

No. 10060 .....	\$36
No. 10061 .....	.36
No. 10062 .....	.45
No. 10063 .....	.45

## TRANSMITTING TANK COILS

A full line—all popular wattages for all bands. Send for special catalog.

## DIAL LOCK

Compact, easy to mount, positive in action, does not alter dial setting in operation! Rotation of knob "A" depresses finger "B" and "C" without imparting any rotary motion to Dial. Single hole mounted.

No. 10050 .....	\$45
-----------------	------

## RIGHT ANGLE DRIVE

Extremely compact, with provisions for many methods of mounting. Ideal for operating potentiometers, switches, etc., that must be located, for short leads, in remote parts of chassis.

No. 10012 .....	\$375
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## THRU-BUSHING

Efficient, compact, easy to use and neat appearing. Fits 1/4" hole in chassis. Held in place with a drop of solder or a "nick" from a crimping tool.

No. 32150 .....	\$05
-----------------	------

## FLEXIBLE COUPLINGS

The No. 39000 series of Millen "Designed for Application" flexible coupling units include, in addition to improved versions of the conventional types, also such exclusive original designs as the No. 39001 insulated universal joint and the No. 39006 "slide-action" coupling (in both steatite and bakelite insulation).

The No. 39006 "slide-action" coupling permits longitudinal shaft motion, eccentric shaft motion and out-of-line operation, as well as angular drive without backlash.

The No. 39005 is similar to the No. 39001, but is not insulated and is designed for applications where relatively high torque is required. The steatite insulated No. 39001 has a special anti-backlash pivot and socket grip feature. All of the above illustrated units are for 1/4" shaft and are standard production type units.

No. 39001 .....	\$42
No. 39002 .....	.42
No. 39003 .....	.21
No. 39005 .....	.42
No. 39006 .....	.42

## CATHODE RAY TUBE SHIELDS

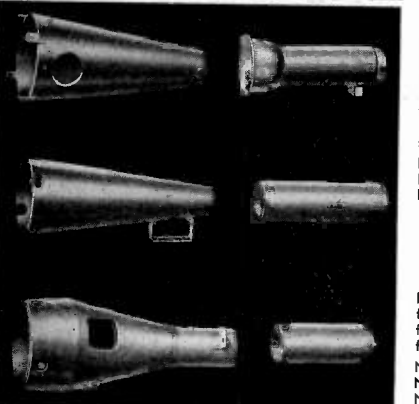
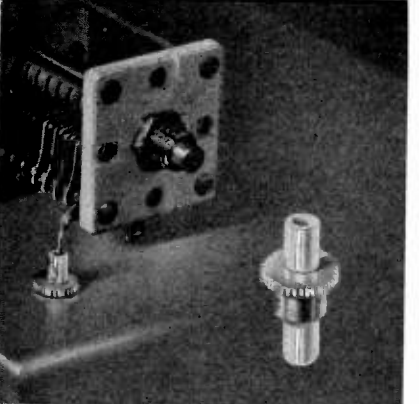
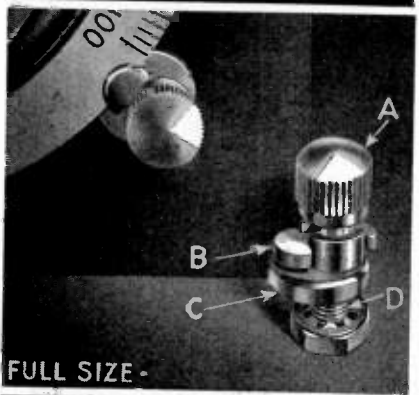
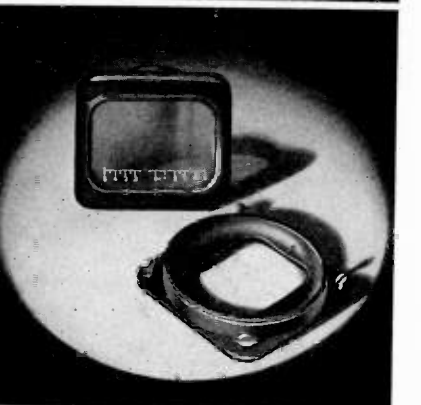
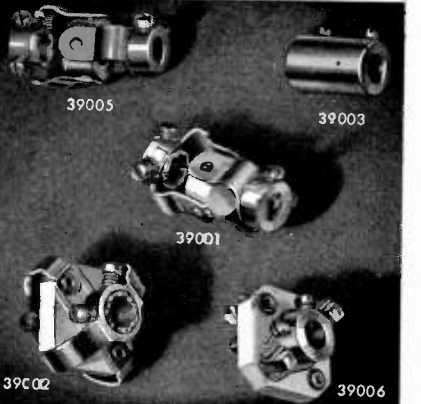
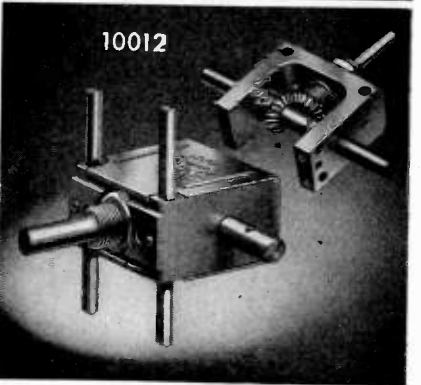
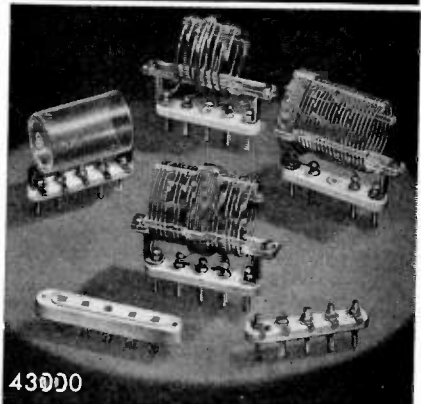
For many years we have specialized in the design and manufacture of magnetic metal shields of nicoloi and mumetal for cathode ray tubes in our own complete equipment, as well as for applications of all other principal complete equipment manufacturers. Stock types as well as special designs to customers' specifications promptly available.

No. 80045—Nicoloi for 5" tube .....	\$10.50
No. 80043—Nicoloi for 3" tube .....	6.00
No. 80042—Nicoloi for 2" tube .....	5.25

## BEZELS FOR CATHODE RAY TUBES

Five inch bezel is of cast aluminum with black wrinkle finish. Complete with neoprene cushion, green lucite filter scale and four screws for quick detachment from panel when inserting tube.

No. 80075—5" .....	\$7.50
No. 80073—3" .....	3.90
No. 80072—2" .....	1.25





# JAMES MILLEN

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## TUBE SOCKETS DESIGNED FOR APPLICATION

**MODERN SOCKETS for MODERN TUBES!** Long Flashover path to chassis permits use with transmitting tubes, 866 rectifiers, etc. Long leakage path between contacts. Contacts are type proven by hundreds of millions already in government, commercial and broadcast service, to be extremely dependable. Sockets may be mounted either with or without metal flange. Mounts in standard size chassis hole. All types have barrier between contacts and chassis. All but octal and crystal sockets also have barriers between individual contacts in addition.

The No. 33888 shield is for use with the 33008 octal socket. By its use, the electrostatic isolation of the grid and plate circuits of single-ended metal tubes can be increased to secure greater stability and gain.

The 33087 tube clamp is easy to use, easy to install, effective in function. Available in special sizes for all types of tubes. Single hole mounting. Spring steel, cadmium plated.

Cavity Socket Contact Discs, 33446 are for use with the "Lighthouse" ultra high frequency tube. This set consists of three different size unhardened beryllium copper multi-finger contact discs. Heat treating instructions forwarded with each kit for hardening after spinning or forming to frequency requirements.

Voltage regulator dual contact bayonet socket, 33991 black Bakelite insulation and 33992 with low loss high leakage mica filled Bakelite insulation.

No. 33004.....	\$ .30
No. 33005.....	.30
No. 33006.....	.30
No. 33007.....	.34
No. 33008.....	.30
No. 33888.....	.18
No. 33087.....	.30
No. 33002.....	.30
No. 33102.....	.30
No. 33202.....	.30
No. 33302.....	.21
No. 33446*.....	5.00
No. 33991.....	.45
No. 33992.....	.55

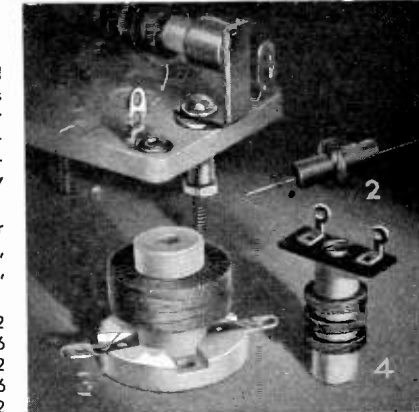
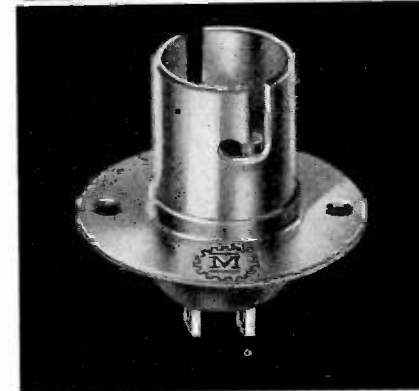
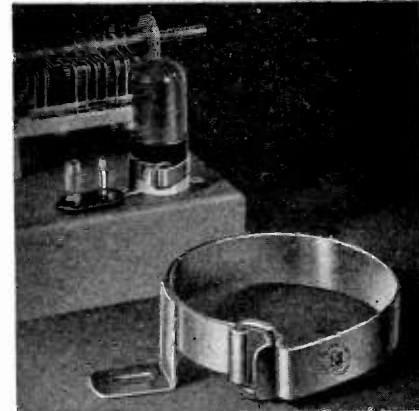
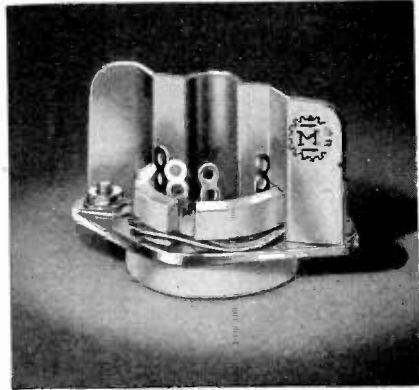
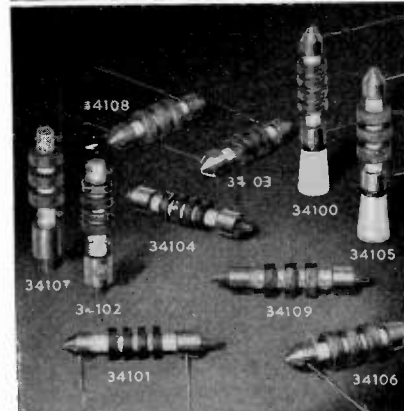
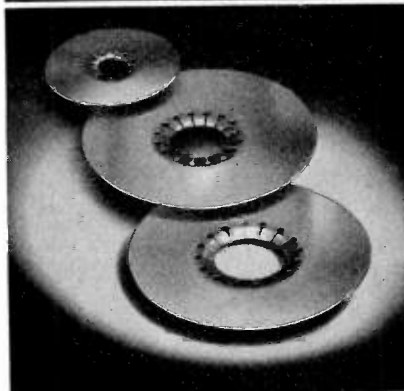
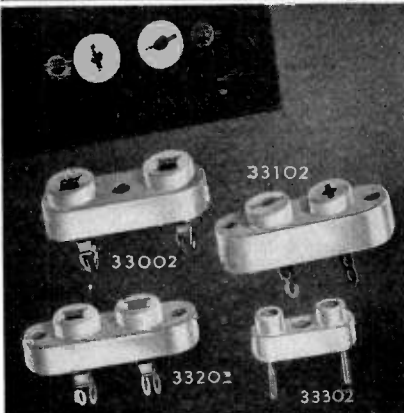
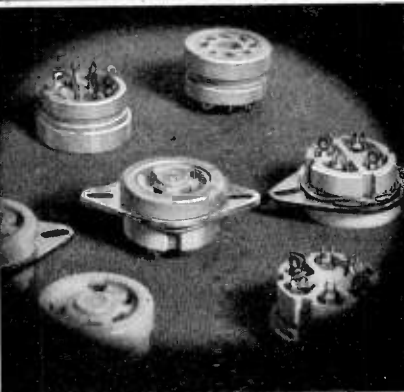
\* For set of 3. Single discs \$2.00 each.

## RF CHOKES

Many have copied, few have equalled, and none have surpassed the genuine original design Millen Designed for Application series of midget RF Chokes. The more popular styles now in constant production are illustrated herewith. Special styles and variations to meet unusual requirements quickly furnished.

General Specifications: 2.5 mH, 250 mA for types 34100, 34101, 34102, 34103, 34104, and 1 mH, 300 mA for types 34105, 34106, 34107, 34108, 34109.

No. 34100.....	\$ .42
No. 34101.....	.36
No. 34102.....	.42
No. 34103.....	.36
No. 34104.....	.42



# JAMES MILLEN

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## CERAMIC PLATE OR GRID CAPS

Soldering lug and contact one-piece. Lug ears annealed and solder dipped to facilitate easy combination "mechanical plus soldered" connection of cable.

No. 36001—9/16"	\$.21
No. 36002—3/8"	.21
No. 36004—1/4"	.21

## SNAP LOCK PLATE CAP

For Mobile, Industrial and other applications where tighter than normal grip with multiple finger 360° low resistance contact is required. Contact self-locking when cap is pressed into position. Insulated snap button at top releases contact grip for easy removal without damage to tube.

No. 36011—9/16"	\$.60
No. 36012—3/8"	.60

## SAFETY TERMINAL

Combination high voltage terminal and thru-bushing. Tapered contact pin fits firmly into conical socket providing large area, low resistance connection. Pin is swivel mounted in cap to prevent twisting of lead wire.

No. 37001, Black or Red	\$.40
No. 37501, Low loss	.55

## TERMINAL STRIP

A sturdy four-terminal strip of molded black Textolite. Barriers between contacts. "Non turning" studs, threaded 8/32 each end.

No. 37104	\$.60
-----------	-------

## POSTS, PLATES and PLUGS

Designed for Application! Compact, easy to use. Made in black and red regular bakelite as well as low loss brown mica filled bakelite or steatite for R.F. uses. Posts have captive head.

No. 37202 Plates (pr.)	\$.30
No. 37212 Plugs	.70
No. 37222 Posts (pr.)	.40

## STEATITE TERMINAL STRIPS

Terminal and lug are one piece. Lugs are Navy turret type and are free floating so as not to strain steatite during wide temperature variations. Easy to mount with series of round holes for integral chassis bushings.

No. 37302	\$.60
No. 37303	.70
No. 37304	.80
No. 37305	.90
No. 37306	1.00

## MIDGET COIL FORMS

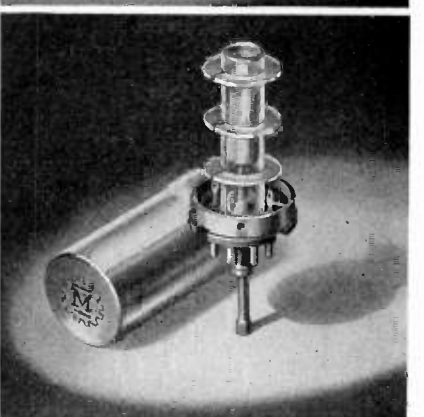
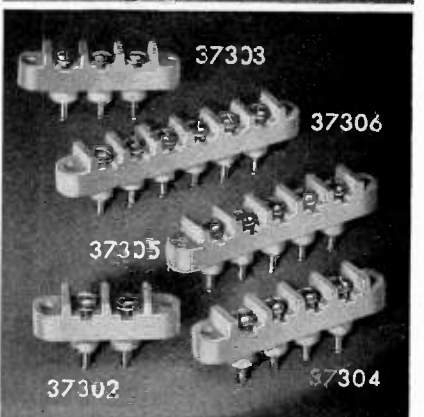
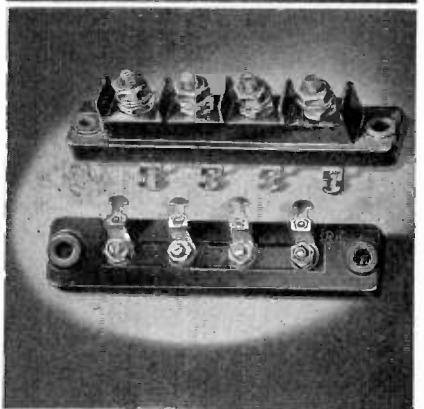
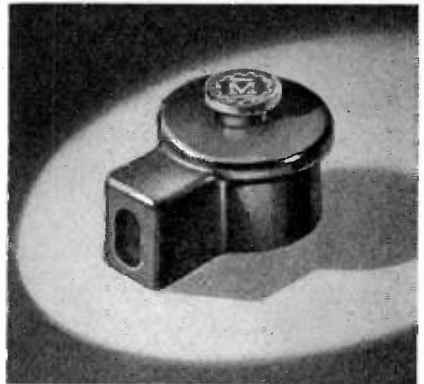
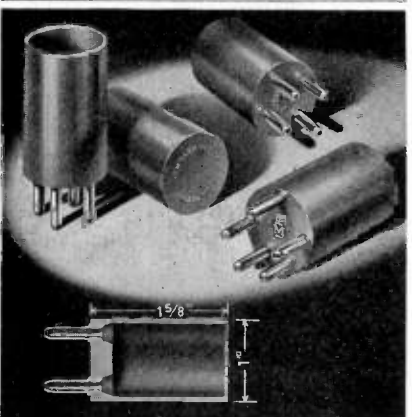
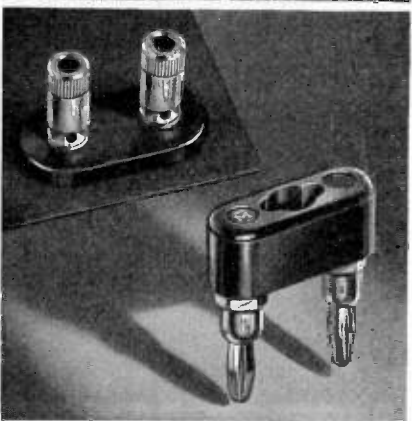
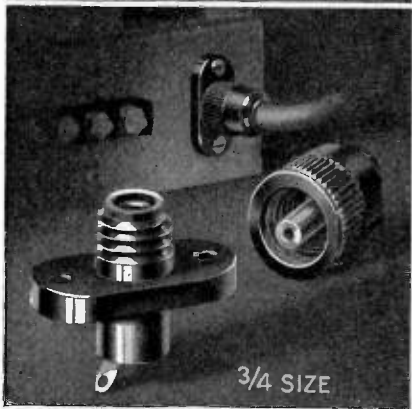
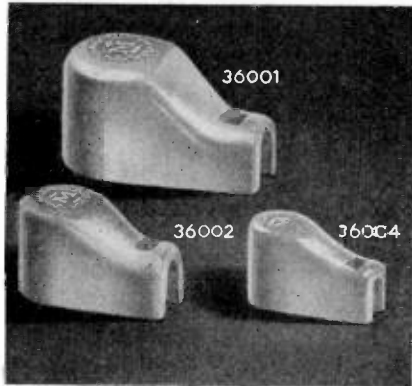
Made of low loss mica filled brown bakelite. Guide funnel makes for easy threading of leads through pins.

No. 45000	\$.35
No. 45004	.45
No. 45005	.45

## TUNABLE COIL FORM

Standard octal base of low loss mica-filled bakelite, polystyrene 1/2" diameter coil form, heavy aluminum shield, iron tuning slug of high frequency type, suitable for use up to 35 mc. Adjusting screw protrudes through center hole of standard octal socket.

No. 74001, with iron core	\$.185
No. 74002, less iron core	1.50





# JAMES MILLLEN

MALDEN · MASSACHUSETTS

## 04000 and 11000 SERIES TRANSMITTING CONDENSERS

A new member of the "Designed for Application" series of transmitting variable air capacitors is the 04000 series with peak voltage ratings of 3000, 6000, and 9000 volts. Right angle drive, 1-1 ratio. Adjustable drive shaft angle for either vertical or sloping panels. Sturdy construction, thick, rounded-edged, polished aluminum plates with  $1\frac{3}{4}$ " radius. Constant impedance, heavy current, multiple finger rotor contactor of new design. Available in all normal capacities.

The 11000 series has 16/1 ratio center drive and fixed angle drive shaft.

Code	Volts	Capacity	Price
11035	3000	35	\$ 6.90
11050	3000	50	7.14
11070	3000	70	7.80
04050	6000	50	16.00
04060	9000	60	18.00
04100	6000	90	18.00
04200	3000	205	20.00

## 12000 and 16000 SERIES TRANSMITTING CONDENSERS

Rigid heavy channeled aluminum end plates. Isolantite insulation, polished or plain edges. One piece rotor contact spring and connection lug. Compact, easy to mount with connector lugs in convenient locations. Same plate sizes as 11000 series above.

The 16000 series has same plate sizes as 04000 series. Also has constant impedance, heavy current, multiple finger rotor contactor of new design. Both 12000 and 16000 series available in single and double sections and many capacities and plate spacing.

## THE 28000-29000 SERIES VARIABLE AIR CAPACITORS

"Designed for Application," double bearings, steatite end plates, cadmium or silver plated brass plates. Single or double section .022" or .066" air gap. End plate size:  $1\frac{9}{16}$ " x  $1\frac{11}{16}$ ". Rotor plate radius:  $\frac{3}{4}$ ". Shaft lock, rear shaft extension, special mounting brackets, etc., to meet your requirements. The 28000 series has semi-circular rotor plate shape. The 29000 series has approximately straight frequency line rotor plate shape. Prices quoted on request. Many stock sizes.

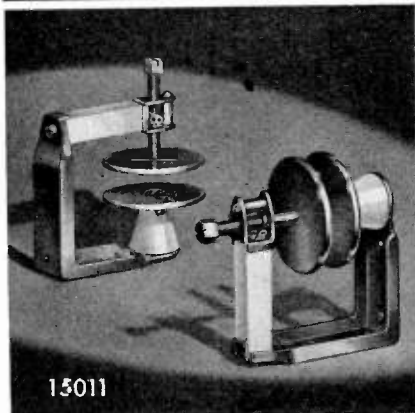
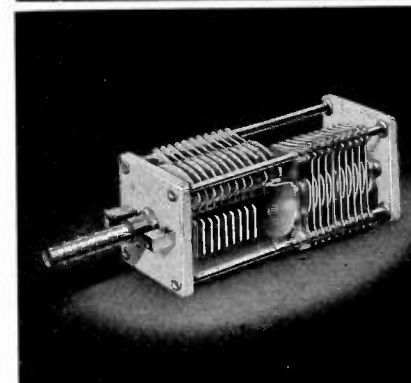
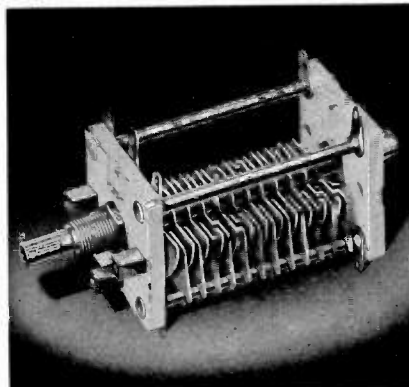
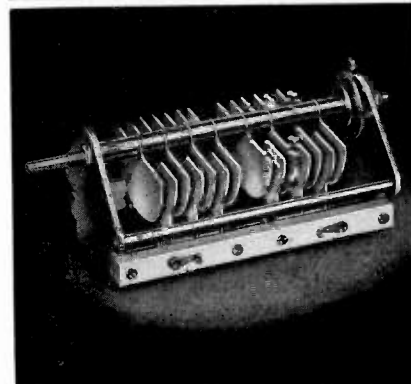
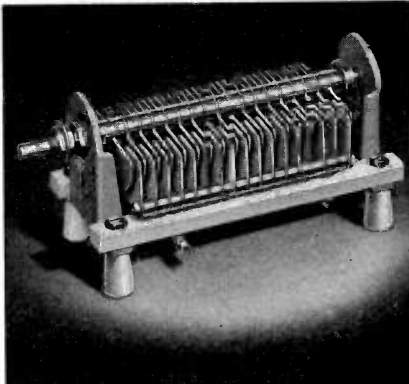
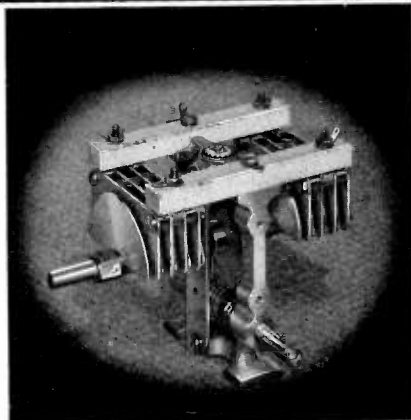
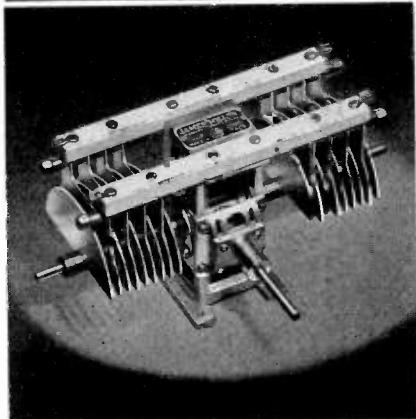
## NEUTRALIZING CAPACITOR

Designed originally for use in our own No. 90881 Power Amplifier, the No. 15011 disc neutralizing capacitor has such unique features as rigid channel frame, horizontal or vertical mounting, fine thread over-size lead screw with stop to prevent shorting and rotor lock. Heavy rounded-edged polished aluminum plates are 2" diameter. Glazed Steatite insulation.

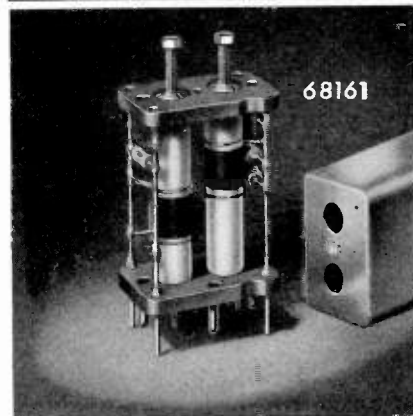
No. 15011..... \$3.15

## I.F. TRANSFORMERS

The Millen "Designed for Application" line of I.F. transformers includes air condenser tuned, and permeability tuned types for all applications. Standard stock units are for 456, 16C0 and 5000 kc.B.F.O. also available.



15011



68161

# STANDARDS OF COMPARISON

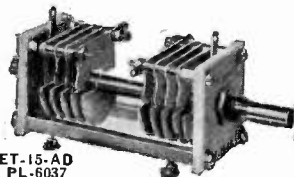
## TRIM-AIR MIDGET CAPACITORS

Combine essential sturdiness with the flexibility obtained only in a spacer-built rotor and stator type of assembly.

ZR-35-AS  
PL-6003



ET-15-AD  
PL-6037



### GENERAL SPECIFICATIONS:

#### CAPACITY CHARACTERISTIC: S.L.C.

**FRAME:** End Plates of 5/32" thick Isalantite.

**SHAFT:** 1/4" diameter, nickel plated brass.

**PLATES:** .020" thick aluminum, specially treated to remove burrs.

**FINISH:** Spacers, bushing nuts and screws nickel plated brass.

**MOUNTING:** Singles require one 3/8" hole in panel; Duals provided with four No. 4-36 screws in square brass tie rods. Trim-Air mounting posts or brackets fit both single and dual types. Singles are fitted with tapered nuts acting on a split bushing for locking rotor shaft for fixed tune. Duals have rear shaft extension for coupling to other units and have a removable intersection shield, on airgaps of .020 and .030.

**Note:** Single section Trim-Airs normally stocked with full length shaft for knob or dial. Stub shaft equivalents, with slot for screw driver adjustment only, available to order. "ZS" type singles have .040" thick plates with rounded buffed edges.

#### SINGLE TRIM-AIR CONDENSERS (Long Shaft Construction)

Parts List No.	Type	Max. Cap.	Min. Cap.	No. Plates	Air Gap	Length	List Price
PL 6016	ZU-75-AS	75	2.7	15	.020	1 3/8	\$2.50
PL 6017	ZU-100-AS	100	3	19	.020	1 1/2	2.55
PL 6018	ZU-140-AS	140	5	27	.020	1 23/32	4.60
PL 6000	ZR-10-AS	10	1.2	3	.030	7/8	1.85
PL 6001	ZR-15-AS	15	1.5	5	.030	31/32	1.90
PL 6002	ZR-25-AS	25	2	7	.030	1 1/16	2.10
PL 6003	ZR-35-AS	35	2.5	11	.030	1 1/32	2.20
PL-6004	ZR-50-AS	50	2.8	13	.030	1 1/8	2.30
PL 6055	ZR-100-AS	108	6.6	29	.030	2 3/4	3.30
PL 6024	ZV-5-TS*	5	1.5	3	.060	7/8	1.85
PL 6044	ZT-5-AS	5	2	3	.070	31/32	2.10
PL 6010	ZT-10-AS	11	3.6	6	.070	1 1/16	2.15
PL 6011	ZT-15-AS	15	3	9	.070	1 1/2	2.25
PL 6012	ZT-30-AS	30	4	17	.070	2 1/16	2.75
PL 6022	ZS-4-SS	4	1.5	5	.140	1 1/2	2.75
PL 6023	ZS-7-SS	7	4	7	.140	1 23/32	3.05

\* Supplied with 2 segment stator for UHF circuits. Extra plate also supplied, making 3 plates as listed.

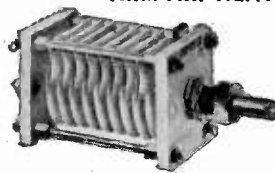
#### DUAL TRIM-AIR CONDENSERS

Per Section

Parts List No.	Type	Max. Cap.	Min. Cap.	No. Plates	Air Gap	Length	List Price
6041	EU-75-AD	75	2.7	15	.020	3 1/32	\$4.80
6042	EU-100-AD	100	3	19	.020	3 1/32	5.00
6043	EU-140-AD	140	5	27	.020	3 11/16	8.85
6028	ER-10-AD	10	1.2	3	.030	2 3/16	3.85
6029	ER-15-AD	15	1.5	5	.030	2 3/16	3.85
6030	ER-25-AD	25	2	7	.030	2 3/16	3.95
6031	ER-35-AD	35	2.5	11	.030	3 1/32	4.30
6032	ER-50-AD	50	2.8	13	.030	3 1/32	4.55
6065	ER-100-AD	100	6.9	25	.030	3 11/16	8.15
6037	ET-15-AD	15	3	9	.070	3 1/32	4.40
6039	ET-30-AD	30	4	17	.070	4 13/32	5.30
6033	ES-4-SD	4	1.5	5	.140	3 1/32	5.30
6035	ES-7-SD	7	4	7	.140	3 11/16	5.90
6293	ER-25-ADI*	25	2	7	.030	2 3/16	5.80

\* Insulated coupling between rotor sections.

## TRIM-AIR HEAVY DUTY SPECIALS



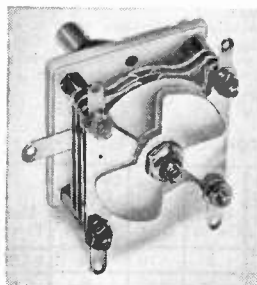
ET-30-ASP  
PL-6058

Four-tie-rod frame, ball and strap rear bearing construction, augmenting the simplified Trim-Air construction, to give even greater strength and rigidity. General characteristics otherwise same as standard Trim-Airs.

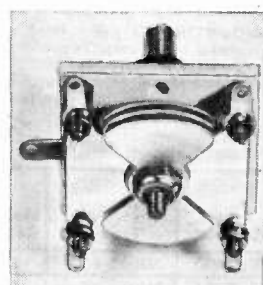
Dual section units have balanced rotor and stator sections and both single and dual section types may be single hole mounted or used with standard Trim-Air mounting accessories. Standard Trim-Air shaft locking nut may be used for fixed tune. PL-6069 and PL-6068 are duals with rear shaft extended; all others have ball and strap type rear bearing.

SINGLES	LIST	DUALS	LIST		
PL 6056	ER-50-ASP	\$4.35	PL 6057	ER-50-ADP	\$4.80
PL 6059	EU-75-ASP	3.95	PL 6069	ER-50-ADP (rear sh. ext.)	8.70
PL 6058	ET-30-ASP	4.05	PL 6068	EU-140-ADP (rear sh. ext.)	11.60

## A NEW LINE OF CARDWELL MIDGET CONDENSERS FOR V.H.F.



PL-6113



PL-6076

Cardwell offers a new line of 90 degree condensers with butterfly rotor plates, fulfilling a demand created by engineers and amateurs since the publication of an article "Stabilizing The 144 Megacycle Transmitter" in April, 1946 "QST." Also see pages 351 to 353 inclusive in the 1946 ARRL Radio Amateurs Handbook. PL-6113 and PL-6076 are specified in these articles. Features of these 90 degree midget condensers are as follows:

- Electrical Symmetry
- Low Distributed Inductance.
- No Moving Contacts.
- Plates easily removable to change capacity range.
- Isalantite Insulation.
- Single Hole Mounting.

Small Size; 1 7/16" x 1 13/32" per general outline dimensions for differential "Trim-Airs" as shown on Page 6 of Catalog No. 46. These condensers are made to fit all standard Cardwell "Trim-Air" hardware.

Note maximum and minimum capacity values shown are measured from stator-to-stator and are effective values as used when a coil is connected stator-to-stator, with rotor floating.

#### CARDWELL V.H.F. 90 DEGREE TRIM-AIR MIDGETS

Part List No.	Type	Max. Cap.	Min. Cap.	No. Plates Rotor	No. Plates Stator	Air Gap	Length Overall	List Price
6075	ER-3-BF/S	3	1.5	2	1	.030"	1 1/4"	\$2.60
6076	ER-6-BF/S	5	1.5	3	2	.030"	1 1/4"	2.70
6077	ER-8-BF/3	7	2.0	4	3	.030"	1 1/4"	2.80
6078	ER-15-BF/S	13	3.0	7	6	.030"	2 3/8"	3.40
6079	EU-25-BF/S	20.4	3.4	8	7	.020"	2 3/8"	3.65
6080	EU-35-BF/S	27	4.0	10	9	.020"	2 3/8"	3.80
**6081	EU-50-BF-S	38	6.0	14	13	.020"	2 3/4"	7.65
*6113	ER-14-BF/SL	13	10.4	(3) Disc (2) 90°	(2) 180° (2) 90°	.030"	2 1/4"	4.00

\* Minimum capacity loaded by circular rotor plates.

\*\* Isd. rear end plate—ball and strap rear bearing.

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

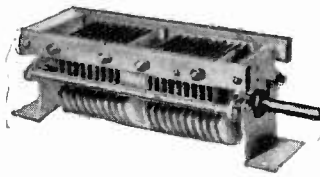
# CARDWELL CONDENSERS

THE ALLEN D. CARDWELL MANUFACTURING CORPORATION

# STANDARDS OF COMPARISON

## MIDWAY TRANSMITTING CAPACITORS

The Midway is ideal for low and medium power transmitters for portable Mobile and aircraft equipment, due to its light weight, compact size and extremely sturdy construction. Incorporates original patented features of the larger "X" type standard transmitting condenser.



MT-100-GD PL-7030  
with PL-5051 Mtg. Brackets

### GENERAL SPECIFICATIONS:

**CAPACITY CHARACTERISTIC:** S.L.C.

**FRAME:** All aluminum end plates and tie rods.

**SHAFT:** 1/4" C.R. steel, cadmium plated.

**PLATES:** .025" aluminum. On sizes having airgap of .070" or over, plates have rounded edges, buffed to minimize corona loss.

**BEARINGS:** Brass, nickel plated shoulder type front bearing with ball thrust rear bearing.

**INSULATION:** Mycalex.

**MOUNTING:** 3 point front panel mounting by means of 3 screws and hex. posts. Two aluminum mounting feet with screws, Cardwell Part List No. 5052 for regular chassis mounting, provided instead, if so ordered. Type "M" special brackets (Part List No. 5051) permit inverted mounting.

### MIDWAY SINGLE CONDENSERS

Parts List No.	Type	Max. Cap.	Min. Cap.	No. Plates	Air Gap	Length Over End Plates	List Price
PL7000	MR-25-BS	25	6	3	.030	1 3/4	\$3.95
PL7001	MR-50-BS	50	6	5	.030	1 3/4	5.00
PL7002	MR-70-BS	70	7	7	.030	1 3/4	5.15
PL7003	MR-105-BS	112	9	11	.030	1 3/4	5.35
PL7004	MR-150-BS	150	10	15	.030	1 3/4	5.80
PL7005	MR-260-BS	260	13	25	.030	2 3/4	6.40
PL7006	MR-365-BS	365	16	35	.030	2 3/4	7.00
PL7015	MT-20-GS	25	8	5	.070	1 3/4	4.80
PL7016	MT-35-GS	35	6	7	.070	1 3/4	5.15
PL7017	MT-50-GS	50	10	11	.070	1 3/4	5.75
PL7018	MT-70-GS	70	10	15	.070	2 3/4	6.55
PL7019	MT-100-GS	100	14	21	.070	2 3/4	7.20
PL7020	MT-150-GS	150	18	31	.070	3 1/4	8.85
PL7021	MG-35-NS	35	14	15	.171	3 1/4	8.85
PL7024	MO-165-BS	165	15	25	.050	2 3/4	4.90

### MIDWAY DUAL CONDENSERS

Parts List No.	Type	Per Section			Air Gap	Length Over End Plates	List Price
		Max. Cap.	Min. Cap.	No. Plates			
PL7007	MR-25-BD	25	5	3	.030	1 3/4	\$6.40
PL7008	MR-50-BD	47	7	5	.030	2 3/4	6.85
PL7009	MR-70-BD	70	8	7	.030	2 3/4	7.20
PL7010	MR-100-BD	112	9	11	.030	2 3/4	7.50
PL7011	MR-150-BD	150	10	15	.030	2 3/4	7.75
PL7013	MR-260-BD	260	13	25	.030	3 1/4	8.75
PL7026	MT-20-GD	20	6	5	.070	2 3/4	8.15
PL7027	MT-35-GD	35	8	7	.070	2 3/4	8.85
PL7028	MT-50-GD	50	9	11	.070	2 1/4	9.35
PL7029	MT-70-GD	70	11	15	.070	3 1/4	10.30
PL7030	MT-100-GD	100	13	21	.070	5 1/4	11.75
PL7031	MO-180-BD	190	15	29	.050	5 1/4	11.75

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

## "N" TYPE TRANSMITTING CAPACITORS

Designed for medium power high frequency transmitters and short wave therapy apparatus, the Cardwell "N" series maintains the customary high standard of Cardwell construction, yet eliminates closed circuit loops completely.



NP-35-DD  
PL-7107

### GENERAL SPECIFICATIONS:

**CAPACITY CHARACTERISTIC:** S.L.C.

**FRAME:** Improved aluminum end plates support heavy lateral ceramic insulating bars which carry the stators.

**SHAFT:** 1/4" diameter cadmium plated steel.

**PLATES:** Aluminum, .040" thick, with rounded edges. PL-7106 and 7116 have buffed and polished edges. PL-7105 has .025" thick plates, buffed and polished edges.

**BEARINGS:** Cardwell shoulder type front bearing, with ball thrust rear bearing.

**MOUNTING:** Can be single hole mounted, or by three mounting posts and screws, to front panel. Chassis mounting on feet which form part of end plates, or use Cardwell "M" brackets, Cardwell part No. 301, for inverted mounting, for lowest stator-to-ground capacity.

### ULTRA-HIGH FREQUENCY SINGLE CONDENSERS

Parts List No.	Type	Max. Cap.	Min. Cap.	No. Plates	Air Gap	Length Back of Panel	List Price
PL7100	NP-50-DS	50	9	13	.084	3 3/8	\$5.15
PL7101	NP-75-DS	75	11	19	.084	4 3/8	6.05
PL7102	NP-100-DS	100	13	25	.084	5 3/8	6.85
PL7103	NP-150-DS	150	19	39	.084	6 1/4	8.95
PL7104	NG-35-DS	35	11	15	.171	5 3/8	6.75

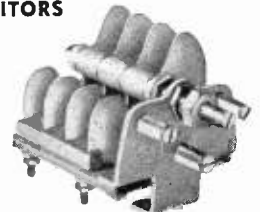
### ULTRA-HIGH FREQUENCY DUAL CONDENSERS

Parts List No.	Type	Per Section			Air Gap	Length Back of Panel	List Price
		Max. Cap.	Min. Cap.	No. Plates			
PL7105	NT-50-GD	50	7	11	.070	4 3/8	\$8.85
PL7116	NP-15-ND	17	4	5	.084	4 3/8	8.40
PL7106	NI-35-ND	35	5	9	.084	4 3/8	8.85
PL7110	NP-15-DD	17	4	5	.084	4 3/8	7.50
PL7107	NP-35-DD	35	5	9	.084	4 3/8	7.90
PL7108	NP-50-DD	50	9	13	.084	5 3/8	8.85
PL7109	NP-75-DD	75	11	19	.084	6 1/4	10.60
PL7115	NA-12-NDI	13	6	7	.218	5 1/4	22.10

Note: NA-12-NDI is dual neutralizer, rotor sections insulated from each other. Capacity and nr. plates shown, is PER SECTION.

## "NA" NEUTRALIZING CAPACITORS

The "NA" group offers 180° neutralizing capacitors of restricted range, for dial or screw driver adjustment. Shaft lock for permanent setting. Adjustable airgap on NA-4-NS only by adjusting threaded bushing in aluminum end plate. Single rotor bearing with beryllium tension washer and special bushing for rigidity. Plates are .040" thick aluminum, rounded and buffed edges. Three point panel mounting or foot mounting.



NA-16-NS  
PL-7114

Parts List No.	Type	Max. Cap.	Min. Cap.	No. Plates	Air Gap	Length Back of Panel	List Price
PL7111	NA-4-NS	4	3.25	2	.218	1 1/4	\$5.30
PL7112	NA-6-NS	6	4	3	.218	1 1/4	5.30
PL7113	NA-10-NS	12	6	6	.218	2 1/4	6.65
PL7114	NA-16-NS	16	7	8	.218	3 3/8	7.40

# CARDWELL CONDENSERS

THE ALLEN D. CARDWELL MANUFACTURING CORPORATION

# STANDARDS OF COMPARISON

## "X" TYPE STANDARD TRANSMITTING CAPACITOR

The original grounded rotor, metal frame variable air capacitor.

Rounded edges, polished aluminum plates, .040" thick on all but "XT" and "XR" types.

Frames, tie rods, bearing bushings, spacers and stator blocks, nicked brass. Cadmium plated 1/4" steel shaft supports securely locked rotor assembly. Mycalex insulation. Panel spaces 4/8" x 3/8". Panel mounting. N.P. brass mounting feet provided on special order, for chassis mounting. See Accessories.



XC-100-XS  
PL-8023

## "T" TYPE HEAVY DUTY TRANSMITTING CAPACITORS

6/4" wide, 5 3/4" high, plates unmeshed. Corona shields on stators for wider airgap types. End plates 1/8" thick, heavy nickel plated. Massive bearings, 3/8" stainless steel shafts; heavy, two finger phosphor bronze rotor contactor bears on sturdy contact ring built to carry very heavy current without power loss. Rotor plates 4/2" diameter, .050" thick aluminum. Heavy mounting feet formed as part of end plates. Ball thrust rear bearing. Mycalex insulation.



TK-300-US  
PL-9110

## "X" TYPE STANDARD SINGLES

Parts List No.	Type	Max. Cap.	Min. Cap.	No. Plates	Air Gap	Length Over End Plates	List Price
PL8000	XR-50-PS	50	11	3	.030	1 1/2	\$5.05
PL8001	XR-100-PS	100	12	5	.030	1 1/2	5.15
PL8002	XR-150-PS	150	12.5	7	.030	1 1/2	5.30
PL8003	XR-250-PS	250	13	11	.030	1 1/2	5.40
PL8004	XR-375-PS	375	16	17	.030	2 1/8	6.15
PL8005	XR-500-PS	475	18	21	.030	2 1/8	7.55
PL8007	XR-1000-PS	950	30	41	.030	3 3/8	14.50
PL8013	XR-1500-PS	1500	50	65	.030	5	16.00
PL8048	XT-220-PS	220	20	21	.070	3 3/8	7.35
PL8050	XT-440-PS	440	40	43	.070	5	11.30
PL8040	XP-90-KS	90	16	11	.084	2 1/8	6.65
PL8041	XP-165-KS	165	22	19	.084	3 3/8	9.55
PL8043	XP-290-KS	290	35	33	.084	5	14.00
PL8044	XP-330-KS	330	37	37	.084	5 5/8	16.00
PL8029	XE-120-XS	120	19	17	.100	3 3/8	8.85
PL8031	XE-240-XS	240	30	33	.100	5 5/8	16.00
PL8025	XD-160-XS	160	28	27	.125	5 5/8	13.30
PL8032	XG-25-XS	25	8	5	.171	2 1/8	5.15
PL8033	XG-50-XS	50	15	11	.171	3 3/8	9.55
PL8034	XG-110-XS	110	26	23	.171	5 5/8	14.25
PL8020	XC-18-XS	19	8	5	.200	2 1/8	6.65
PL8021	XC-40-XS	40	15	11	.200	3 3/8	9.55
PL8022	XC-65-XS	65	20	17	.200	5	12.50
PL8023	XC-100-XS	100	28	25	.200	6 5/8	15.50
PL8037	XR-55-XS	55	20	15	.230	6	14.75

## "X" TYPE STANDARD DOUBLES

Parts List No.	Type	Per Section			Air Gap	Length Over End Plates	List Price
		Max. Cap.	Min. Cap.	No. Plates			
PL8018	XR-500-PD	500	18	21		3 3/8	\$14.00
PL8068	XT-80-PD	80	11	9	.070	3 3/8	9.30
PL8070	XT-210-PD	210	22	21	.070	5	12.80
PL8065	XP-90-KD	95	15	11	.084	3 3/8	11.05
PL8066	XP-165-KD	165	23	19	.084	5 5/8	16.20
PL8067	XP-325-KD	325	38	37	.084	10 3/8	32.45
PL8061	XE-120-XD	120	19	17	.100	5 5/8	14.75
PL8062	XE-240-XD	240	32	33	.100	10 3/8	30.85
PL8060	XD-160-XD	160	28	27	.125	10 3/8	28.05
PL8063	XG-50-XD	50	14	11	.171	5 5/8	15.75
PL8064	XG-110-XD	110	27	21	.171	10 3/8	26.50
PL8056	XC-40-XD	40	14	11	.200	6 5/8	16.95
PL8057	XC-75-XD	75	21	19	.200	10 3/8	22.10
PL8081	XE-160-70-XQ	Multi-Band			.100	10 3/8	40.60

## SINGLE HEAVY DUTY TRANSMITTING CONDENSERS

Parts List No.	Type	Max. Cap.	Min. Cap.	No. Plates	Air Gap	Length Inside End Plates	List Price
PL9009	TJ-315-US	315	36	31	.168	8 3/4	\$40.50
PL9001	TC-200-US	200	35	23	.200	7	35.40
PL9002	TC-300-US	300	42	35	.200	10	40.50
PL9036	TK-300-US	312	53	39	.230	12 1/4	47.00
PL9011	TL-50-US	45	15	7	.294	3 3/8	20.90
PL9013	TL-80-US	85	24	13	.294	5 5/8	26.55
PL9014	TL-100-US	98	26	15	.294	6 3/8	27.85
PL9016	TL-160-US	160	40	25	.294	9 3/4	37.95
PL9019	TZ-40-RS	43	18	11	.500	7	30.35
PL9020	TZ-80-RS	83	32	21	.500	12 1/2	40.50

## DOUBLE HEAVY DUTY TRANSMITTING CONDENSERS

Parts List No.	Type	Per Section Max. Cap.	Per Section Min. Cap.	Per Section No. Plates	Air Gap	Length Inside End Plates	List Price
PL9026	TJ-150-UD	150	21	15	.168	8 3/4	\$40.50
PL9027	TJ-200-UD	211	30	21	.168	10 3/4	45.55
PL9021	TC-100-UD	112	20	13	.200	8 3/4	39.20
PL9022	TC-160-UD	160	30	19	.200	11	43.00
PL9023	TC-200-UD	200	35	23	.200	13	48.05
PL9024	TC-250-UD	255	40	29	.200	16	53.15
PL9030	TL-50-UD	45	15	7	.294	6 3/8	31.65
PL9031	TL-70-UD	70	19	11	.294	9	36.70
PL9033	TL-100-UD	98	26	15	.294	11 3/8	43.65
PL9034	TL-160-UD	160	40	25	.294	18 3/4	55.65
PL9029	TKD-100-UD	110	30	21	.350	18 3/4	55.65
PL9035	TZ-40-RD	43	18	11	.500	13 3/8	48.55

## TYPE "J" PLUG-IN FIXED AIR CONDENSERS

For fixed capacity loading.

Plates easily removed. All "J" types have 2 1/2" square x 1/4" Alsmag No. 196 ceramic end plates. Supplied with banana plugs to fit "JB" Jack Base. On special order provided with hexagonal brass mounting pillars and mounting screws for permanent installation.



JCO-50-OS  
PL-9705



"JB" Jack Base  
PL-5102

## TYPE "J" PLUG-IN FIXED AIR CONDENSERS

Parts List No.	Type	Capacity	No. Plates	Air Gap	Length Overall	List Price
PL9705	JCO-50-OS	50 mmf.	13	.250	5 5/8	\$8.10
PL9704	JCO-25-OS	25 mmf.	7	.250	3 3/4	5.85
PL9703	JD-100-OS	100 mmf.	17	.125	4 3/8	9.55
PL9702	JD-80-OS	80 mmf.	13	.125	4	8.10
PL9701	JD-50-OS	50 mmf.	8	.125	3 3/8	5.85
PL9700	JD-25-OS	25 mmf.	4	.125	2 1/2	4.10
PL9706	JR-750-OS	750 mmf.	33	.030	4 5/8	13.00
PL9707	JKD-50-OS	50 mmf.	18	.350	8 3/8	9.70

## JACK BASE FOR "J" FIXED AIR CONDENSERS

Size: 2 1/2" x 3 1/2" x 1/4".

Material: Alsmag No. 196.

Complete with mounting posts, screws and nuts.

Type "JB" (PL-5102) ..... List Price \$1.25

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

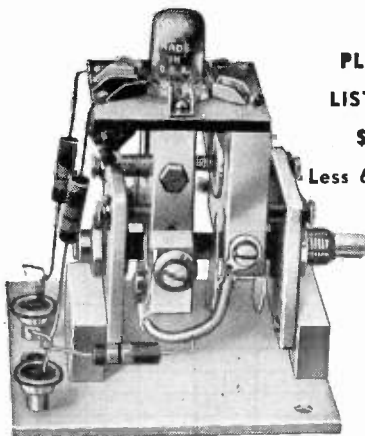
# CARDWELL CONDENSERS



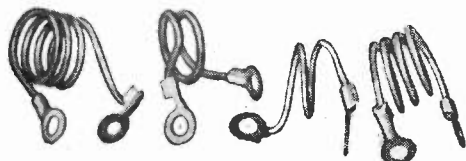
## THE ALLEN D. CARDWELL MANUFACTURING CORPORATION

# STANDARDS OF COMPARISON

## V.H.F. OSCILLATOR KIT



**PL-20,024**  
**LIST PRICE**  
**\$18.00**  
 Less 6-F-4 Tube

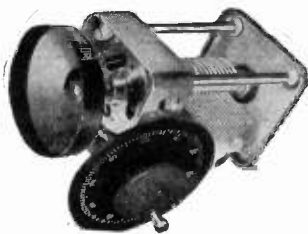


This kit includes 3 sets of coils covering 144-148 mc, 220-225 mc, 420-450 mc bands. (The 6F4 tube is not included.) Ideally suited for local oscillator, for super-heterodyne receiver,

as plate modulated oscillator for low power transmitter or transceiver, driver unit for amplifier tube in higher powered transmitter, V.H.F. signal generator, etc., etc.

## CARDWELL PRECISION CAPACITOR Type PL-24,050

Designed for frequency meters requiring maximum mechanical and electrical precision. Type No. 4.080 gear and worm driven capacitor incorporates special design features representing years of research and usage of this component in special measurement equipment which has successfully withstood most rigorous usage our armed forces could give it.

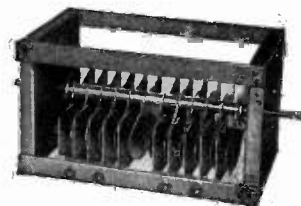


Frequency Meter Capacitor  
 PL-24,050

**CAP. RANGE:** Max. Cap. 220 mmfd., Min. Cap. 21 mmfd.  
**PLATE SHAPE:** S.L.F.  
**DI-ELECTRIC SUPPORTS:** Steatite.  
**BACKLASH:** Negligible.  
**RESETTABILITY:** To 10 parts in one million.  
**GEAR DRIVE:** Precision split worm gear, equipped with precision ball bearings. Ratio—100 : 1 over 360 degrees.  
**DIALS:** 3" DRUM: 50 divisions over 180° condenser rotation. 3" FAST RUNNING DIAL: Graduated 100 divisions, makes 1 revolution for each drum division. VERNIER RING: Divides each division on fast running dial into 10 parts.  
**DIMENSIONS:** 5 5/8" lg. (over drum dial) x 3 1/8" deep x 3 1/8" high.  
**WEIGHT:** 1 1/4 lbs. (with cast aluminum frame).  
**ROTOR CONTACT:** Silver plated phosphor bronze spring, with 2 silver contacts bearing on silver plated disc.  
**MOUNTING:** 3 point, to bottom of main casting.  
**PRICE:** Capacitor, PL-24,050, Type 4.080, only.....List \$95.00  
 Drum Dial .....List \$ 5.95  
 Fast Running Dial .....List \$12.75  
 Vernier Ring .....List \$ 2.50

## TYPE "P" LIGHT HEAVY TRANSMITTING CAPACITORS

Designed to accommodate capacitance values up to 150 mmfd. per section in a dual section type having an airgap of .500", the "P" type construction permits higher capacity for a given airgap, and therefore a shorter frame than the "T" type construction. Typical Cardwell sturdiness is built-in, and the "P" type is probably the lightest transmitting condenser built for its size, yet completely satisfactory for heavyweight use. No single section types are catalogued; parallel or series connect for double or half single section capacity listed in table.



PK-125-QD  
 Special

### GENERAL SPECIFICATIONS:

**FRAME:** End plates are 1/8" thick formed aluminum, satin finish.  
**SHAFT:** 3/8" diameter, non-magnetic stainless steel, extended both front and rear end.  
**PLATES:** .064" thick, rounded and buffed edges. Rotor plates are 6 3/4" in diameter.  
**BEARINGS:** Heavy nickel plated brass front and rear shoulder bearings.  
**ROTOR CONNECTION:** Heavy, two finger N.P. phosphor bronze wiper bears on 1/8" thick N.P. brass contact ring, at each end.  
**STATOR CONSTRUCTION:** Plates permanently staked into slotted, rounded edge aluminum stator blocks.  
**INSULATION:** Mycalex (glass bonded mica).  
**MOUNTING:** 3 clearance holes for No. 10 screws in each side of each end plate permitting mounting on any side, as well as provision for mounting associated components such as inductance coil mountings, etc.

### TYPE "P" LIGHT HEAVYWEIGHT DUAL CONDENSERS

Parts List No.	Type	Per Section			Air Gap	Length Over End Plates	List Price
		Max. Cap.	Min. Cap.	No. Plates			
PL9208	PJ-750-QD	750	50	35	.168	20 1/2	Special
PL9210	PK-200-QD	210	30	13	.230	11 3/4	Special
PL9203	PKD-70-QD	70*	15*	7	.350	9 3/4	\$75.00
PL9204	PKD-100-QD	115	22	9	.350	11 3/4	\$83.50
PL9205	PZ-50-QD	50*	15*	7	.500	11 3/8	\$82.25
PL9206	PZ-70-QD	70*	20*	9	.500	14 1/4	\$87.90
PL9207	PZ-100-QD	91	23	11	.500	16 1/2	100.00
PL9209	PZ-150-QD	150	40	19	.500	24 1/2	125.00

\* Estimated value.

Tolerance for maximum and minimum capacity values: ±10%.

## DISC TYPE NEUTRALIZER

For neutralizing low capacity transmitting triodes. Glazed steatite insulation. Polished aluminum discs. Fine screw thread adjustment in long nickel silver bearing—no wobble. Knurled thumb nut for easy locking. Heavy satin finish aluminum support and base plate.



ADN, Neut. Conds.  
 PL-7118

### DISC TYPE NEUTRALIZING CONDENSERS

Item No.	Parts List No.	Type	Max. Cap.	Air Gap	Min. Cap.	Air Gap	List Price
1	PL7118	ADN	7 mmf.	.100"	1 mmf.	.700"	\$4.40
2	PL7119	BDN	15 mmf.	.200"	3 mmf.	1.000"	7.40

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

# CARDWELL CONDENSERS



THE ALLEN D. CARDWELL MANUFACTURING CORPORATION



# STANDARDS OF COMPARISON

## INSULATED COUPLINGS

For isolating R.F. controls. Ceramic insulation (Alsimag No. 196). All flexible types have N.P. phosphor bronze springs, and heavy N.P. brass hubs, permanently swaged or spin riveted into the springs. Two fillister head, cup point, case hardened steel set screws in each hub insure positive lock to shaft.

All rigid types have improved three-point-spider construction, carefully machined solid brass castings, and are absolutely rigid.

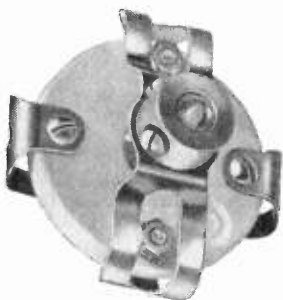
Flexible types C, D, E and F fit both 1/4" diameter shaft or a 3/8" shaft by removing bushing supplied.



"ENF" Rigid Coupling  
PL-5201



"FNF"  
PL-5013



"C"  
PL-5004



"A"  
PL-5000

### INSULATED COUPLINGS—Flexible

Parts List No.	Type	DIMENSIONS		Peak Flashover	To Fit Shaft Diameter	List Price
		"A" (Width)	"B" (Length)			
5000	A	1 3/8"	3/4"	3,700 V.	1/4"	\$0.75
5002	B	1 3/8"	1 1/2"	7,000 V.	1/4"	.75
5202	AB	1 3/8"	3 1/2"	5,000 V.	1/4"	1.00
5004	C	2 5/8"	2 3/8"	13,500 V.	1/4 & 3/8"	3.55
5006	D	2 5/8"	1 3/8"	9,000 V.	1/4 & 3/8"	3.55
5008	E	2 1/8"	1 3/4"	10,000 V.	1/4 & 3/8"	1.90
5010	F	2 1/8"	1 1/8"	5,000 V.	1/4 & 3/8"	1.90

### INSULATED COUPLINGS—Rigid

5014	CNF	2 1/4"	2 1/8"	12,000 V.	3/8"	4.45
5201	ENF	1 3/8"	1 1/8"	10,000 V.	1/4"	1.50
5013	FNF	1 3/8"	1 1/8"	7,500 V.	1/4"	1.25

## ACCESSORIES

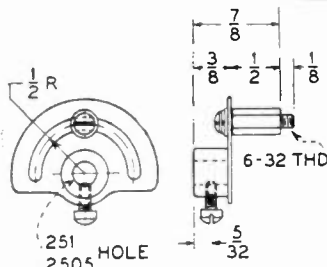
### "MIDWAY" MOUNTING FEET

Heavy aluminum, with 2 screws; for Midway condensers. Parts List No. 5052.....List (Pair) \$0.25

### INDUCTANCE CLIPS

For tapping air-wound inductors. Cadmium plated phosphor bronze spring clips for No. 12 or 14 wire. Thin blades prevent shorting turns. Type 804-A. Parts List No. 5104.....List Price \$0.20

### ROTOR LOCK



For locking "X" standard or "M" Midway rotor shafts in position for fixed tune. Can be set behind panel or attached to any 1/4" shaft, mounted directly on front of panel. Nickel plated brass; diameter 1/2".

Parts List No. 5100 (Type ARL).....List Price \$0.75

### SHAFT LOCK PANEL BUSHING

Long panel bushing for 1/4" shafts, has tapered nut for locking shaft in position. Fits 3/8" hole in panel. Complete with panel nuts. Nickered brass. Parts List No. 5055 (Type ALB).....List Price \$0.40

### TYPE "M" BRACKET

Use with type "N" U.H.F. duals or "M" Midway condensers. Turns condenser upside down for shortest plate leads in balanced R.F. amplifier. Regular mounting feet can be used to support a tank coil or jack base. Made of strong, satin finished, 1/16" aluminum, and supplied with proper screws and lock washers.

Parts List No. 5051.....List Price, each \$0.25

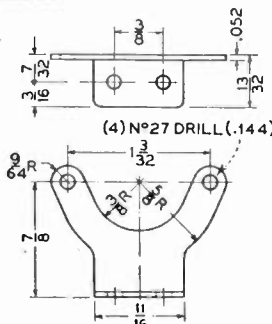
### "STANDARD" TYPE "X" MOUNTING FEET

Heavy nickel plated brass; for "X" transmitting types, with four screws. Parts List No. 5053.....List Price, pair \$0.25

### TRIM-AIR ACCESSORIES

As catalogued, Trim-Air singles are equipped for single hole mounting. Additional mounting accessories listed below are sold separately.

MOUNTING POSTS—(1/4" hex. x 3/4" long, tapped 6-32 N.P. brass). Pair, with screws and lockwashers. Parts List No. 5054.....List Price \$0.25



### "TRIM-AIR" MOUNTING BRACKET

For dual and single Trim-air condensers. Insulated from rotor and stator; N.P. brass, with two screws and nuts.

Parts List No. 5050.....List Price, each \$0.20

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

# CARDWELL CONDENSERS



THE ALLEN D. CARDWELL MANUFACTURING CORPORATION





# HAMMARLUND

SINCE 1910



## "HQ-129-X" AMATEUR RECEIVER



The Hammarlund "HQ-129-X" amateur communications receiver is designed to meet the demands of the most critical amateurs. Its design includes every feature essential to finest performance.

The "HQ-129-X" has a continuous range from .54 to 31 megacycles in six separately calibrated bands with continuous bandspread throughout the entire range. In addition, the bandspread dial is calibrated for each of the four most important amateur bands—3.5 - 4 mc, 7 - 7.3 mc, 14 - 14.4 mc and 28 - 30 mc.

The "HQ-129-X" has the Hammarlund patented variable wide-band crystal filter which works exceptionally well on phone or short wave broadcast signals.

There are many other features: Variable antenna compensator, beat oscillator, voltage regulator, series noise limiter, send-receive switch, automatic volume control, calibrated "S" meter, audio gain control, sensitivity control—plus all that goes into a receiver built by engineers who have spent a lifetime designing commercial communication equipment.

The "HQ-129-X" is available complete in a two-tone gray finish including tubes and a 10 inch P. M. dynamic speaker.

"HQ-129-X" Less Speaker Amateur Net Price \$177.30

SC-10—Speaker in cabinet finished to match Amateur Net Price \$ 11.85

*Send for twenty-page technical booklet*

## SERIES 600 "SUPER-PRO"

### DESCRIPTION

Cheers from the experts — The new Series 600 SUPER-PRO is the finest communications receiver that money can buy. No "warmed over" model, the Series 600 is entirely new in electrical concept and mechanical design—truly "years ahead" of present day receivers. When you check this entirely new SUPER-PRO for such things as image rejection, stability, calibration accuracy, etc. . . . you will find performance that you would not have thought possible. You'll find that "years ahead" in design mean "years ahead" in performance.

Band changing in the new SUPER-PRO is accomplished by means of an ingeniously designed rotary turret which places the coil assemblies of the two R.R., Mixer and Oscillator stages directly adjacent to their respective sections of the four gang tuning condenser where they are electrically most efficient.

By means of the mechanical system used in the SUPER-PRO 600-X both the main and band spread dials are tuned simultaneously with one control and the need for first setting the main dial is eliminated. The dial drive mechanism is entirely gear coupled to the main tuning condenser, producing the kind of calibration accuracy usually associated only with costly laboratory standards.



**Technical Information will be  
Available Late Fall of 1949**

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PRICES SLIGHTLY HIGHER ON WEST COAST

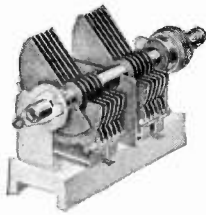


# HAMMARLUND

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**MC  
Midget**



**MCD  
Split-Stator**

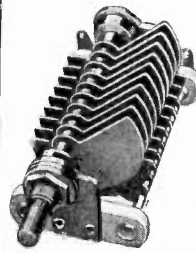
Code	Capacity	Net
MC-20-S	20 mmf.	\$1.80
MC-35-S	35 mmf.	1.86
MC-50-S	50 mmf.	1.92
MC-50-M	50 mmf.	1.92
MC-75-S	80 mmf.	2.04
MC-75-M	80 mmf.	2.04
MC-100-S	100 mmf.	2.16
MC-100-M	100 mmf.	2.16
MC-140-S	140 mmf.	2.34
MC-140-M	140 mmf.	2.34
MC-200-M	200 mmf.	2.58
MC-250-M	260 mmf.	2.70
MC-325-M	320 mmf.	2.94

"M"—Midline Plates.

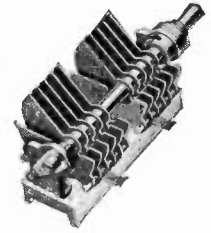
"S"—Straight Line Cap. Plates.

Code	Capacity per sect.	Net
MCD-50-M	50 mmf.	\$3.60
MCD-100-S	100 mmf.	3.90
MCD-100-M	100 mmf.	3.90
MCD-140-M	140 mmf.	4.20

Ideal variables for high frequency tuning Isolantite Insulation. Vibration proof. New type split rear bearing with noiseless wiping contact. Soldered brass plates, nickel plated. Dual types have shield between sections and are mounted on strong Isolantite base. Single hole panel mounting.



**MCX  
Double-Spaced**



**MCDX  
Dual Section  
Double-Spaced**

Code	Capacity	Net
MC-20-SX	20 mmf.	\$2.04
MC-20-MX	20 mmf.	2.04
MC-35-SX	32 mmf.	2.22
MC-35-MX	32 mmf.	2.22
MC-50-SX	50 mmf.	2.52
MC-50-MX	50 mmf.	2.52
MC-100-SX	100 mmf.	2.94

"MX"—Midline Plates.

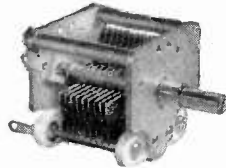
Same construction as MC and MCD Types but with widely spaced plates (.072") for transmitters and neutralizers.

"SX"—Straight Line Cap. Plates.

## "RMC" CAPACITOR

The new "RMC", Rugged Midget Capacitor, is particularly designed for use in applications where strength and solid construction is as important as sound electrical design.

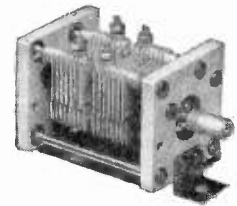
Two low loss silicone treated ceramic insulated bars are used to support the stator. Bearings are hand-fitted sleeve in the front and single ball thrust in the rear—torque is smooth and uniform. Contact to the rotor is made through a silver-plated beryllium forked spring bearing on a wide disk on the rotor shaft.



Code	Capacity	Net
RMC-50-S	50. mmf.	\$2.22
RMC-100-S	105. mmf.	2.55
RMC-140-S	143.5 mmf.	2.70
RMC-325-S	327. mmf.	3.39

## "VU" UHF CAPACITOR

The capacitors listed below are available for use by manufacturers, engineers and amateurs for all types of communications equipment having tuned circuits operating as high as 500 mc. The many advantages of these new capacitors are of course due to the silent electrical operation made possible through the use of pyrex glass ball bearings. Elimination of the rotor contact further precludes the possibility of noise. Two sets of contacts are provided, so that the vacuum tube can be mounted on one side and the inductor on the other side of the capacitor. Voltage rating—700 V.



Code	Capacity	Net
VU-20	22.5 mmf.	\$6.45
VU-30	31.5 mmf.	6.90
VU-45	45.0 mmf.	7.62

## "HF" MICRO CAPACITORS

For tuning or trimming on high and very high frequencies. Cadmium plated soldered brass plates. Isolantite. Base mounting, single hole panel mount, or panel mounting with bushings. 140 mmf. size 1 1/2" high x 1 1/2" behind panel.



Code	Capacity	Net
HF-15	17.5 mmf.	\$1.02
HF-35	35 mmf.	1.17
HF-50	50 mmf.	1.23
HF-100	100 mmf.	1.53
HF-140	140 mmf.	1.74
*HF-15-X	15 mmf.	1.23
*HF-30-X	30 mmf.	1.38

\*Double spaced.

## "HFD" MICRO DUAL CAPACITORS

A compact dual—ideal as a high frequency tuning capacitor, for tuning and neutralizing low-powered short wave and for very high frequency transmitters, etc. Heavy Isolantite base. Equipped with new outstanding Hammarlund split rear bearing and individual noiseless wiping contact for each section.



Code	Capacity	Net
HFD-50	50 mmf. per sect.	\$2.82
HFD-100	100 mmf. per sect.	3.18
HFD-140	140 mmf. per sect.	3.60
*HFD-15-X	15 mmf. per sect.	2.76
*HFD-30-X	28.5 mmf. per sect.	3.00

\*Double-spaced.

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

Net



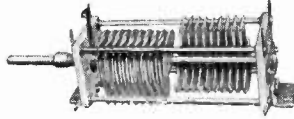
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SINCE 1910



## "HFBD" TRANSMITTING CAPACITORS

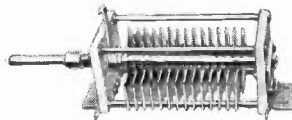
High efficiency, high frequency dual capacitors with isolated rotor. Both mounting brackets and control shafts are insulated. DC can be applied to rotor as well as stator. Isolantite end plates, soldered brass construction, cadmium plated. End plate size 1 1/8". Type "E" has rounded edge plates.



Code	Capacity	Length	Air Gap	Net
HFBD-50-C	50 mmf.	2 7/8"	.050"	\$5.40
HFBD-100-C	100 mmf.	4 5/8"	.050"	6.36
HFBD-35-E	35 mmf.	3 1/4"	.070"	4.77
HFBD-65-E	65 mmf.	4 1/8"	.070"	5.46

## "HFB" CAPACITORS

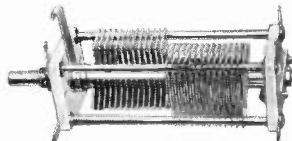
Same as above but single stator types. Stator is mounted at top to reduce capacity to chassis. The "HFB" has insulated mounting brackets and control shaft.



Code	Capacity	Length	Air Gap	Net
HFB-50-C	50 mmf.	1 7/8"	.050"	\$4.20

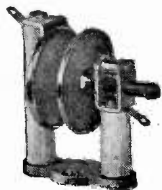
## "HFA" AND "HFAD" CAPACITORS

"HFAD" has the same general construction as "HFBD" except that it is smaller in size and does not have the insulated control shaft. Ideal for high frequency operation. End panels 1 3/8" square. "HFA" same construction, except end panel 1 1/8" x 1 1/8". Both can be single hole panel mounted or can be mounted to the panel with stand-off bushings. Plain edge plates.



Code	Capacity	Type	Length	Air Gap	Net
HFAD-25-B	25 mmf.	Dual	1 3/8"	.030"	\$3.60
HFA-100-A	100 mmf.	Single	1 1/8"	.020"	1.98
HFA-140-A	140 mmf.	Single	1 3/4"	.020"	2.31
HFA-10-B	10 mmf.	Single	3/8"	.030"	1.53
HFA-15-B	15 mmf.	Single	7/8"	.030"	1.62
HFA-25-B	25 mmf.	Single	3/4"	.030"	1.68
HFA-50-B	50 mmf.	Single	1 1/8"	.030"	1.86
HFA-100-B	100 mmf.	Single	2 1/8"	.030"	2.46
HFA-15-E	15 mmf.	Single	1 3/8"	.070"	1.68

## "NZ-10" NEUTRALIZING CAPACITOR



Rounded edges, Isolantite. Fine adjusting screw. Positive lock. Horizontal adjustment. Dimensions: 2 1/8" high x 1 1/8" deep.

Code	Net
NZ-10—(2.3—10 mmf.)	\$3.15

## MIDGET "APC" CAPACITORS

This new midget variety of the well known APC condenser is designed for use where space is limited. Size of 100 mmf., 1 1/8" x 3/8" x 1 1/8". Mounting holes 1/8" apart. Ideal for I.F. circuits. Isolantite insulation. Nickel plated soldered brass plates.



Code	Capacity	Net
MAPC-15	15 mmf.	\$0.99
MAPC-25	25 mmf.	1.02
MAPC-35	36 mmf.	1.08
MAPC-50	49 mmf.	1.14
MAPC-75	75 mmf.	1.26
MAPC-100	99 mmf.	1.38

## "APC" MICRO CAPACITORS

For H.F. and very H.F. For I.F. tuning, trimming R.F. Coils or gang capacitors, general padding, etc. Constant capacity under any condition of temperature or vibration. Size 100 mmf. 1 1/8" x 1/8" x 1 1/8". Isolantite base. Cadmium plated soldered brass plates.



Code	Capacity	Net
APC-25	25 mmf.	\$1.02
APC-50	50 mmf.	1.14
APC-75	75 mmf.	1.26
APC-100	100 mmf.	1.38
APC-140	140 mmf.	1.62

## FLEXIBLE COUPLINGS

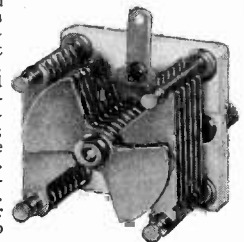
These flexible couplings are designed for both insulated and non-insulated applications. The FC-46-S is insulated for 6000 volts with silicone treated ceramic, will compensate for considerable shaft misalignment, but will not give spring action. Overall depth 1 1/8", diameter 1 1/4". The FNC-46-S is a non-insulated coupling for use where insulation is unnecessary. The general design is the same as the FC-46-S but has a heavy metal body instead of ceramic. Overall depth 3/8", diameter 1 1/4".



Code	Net
FC-46-S—Insulated	\$0.66
FNC-46-S—Non-insulated	.66

## BUTTERFLY CAPACITOR

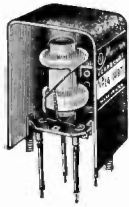
The new butterfly capacitor is designed for use in VHF and UHF applications where the butterfly design is indispensable. Can be used as a single series unit or as a split stator with grounded rotor. This new butterfly capacitor is ideal for use in transmitters as well as receivers. Has soldered rotor and stator assembly; is plated to resist corrosion; silver plated rotor contact; sleeve type bearing, low-loss ceramic end panel. Approximately 1 3/8" square. Depth behind panel depends on number of plates. Insulated mounting studs prevent rotor from being grounded when mounted to metal.



Code	MMF. Cap. per Sec.		Series Cap.		Net
	Max.	Min.	Max.	Min.	
BFC-12	14.5	3.5	7.9	2.2	\$1.50
BFC-25	27.5	5.0	14.5	3.0	1.68
BFC-38	40.5	6.3	21.0	3.7	1.98

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

**UNIVERSAL ADJUSTABLE COILS**



These Adjustable - Inductance Ferrocart (iron-core) coils will replace the Broadcast band coils in practically any receiver. It is no longer necessary to order hard-to-get "exact duplicates" when an Antenna, R.F. or Oscillator coil requires replacement.

Continuously variable in inductance over a wide range, these coils will accurately "track" with the other coils in the receiver when properly adjusted. The exact inductance of the old coil is easily matched by a simple screwdriver adjustment, regardless of the value of the tuning condenser.

High "Q" iron cores used in these coils add gain and selectivity to the receiver. The oscillator coil provides complete adjustment for intermediate frequencies between 175 and 520 kc. May be used in either "out-plate" tuning condenser or padded circuits. Available shielded or unshielded, furnished with complete instructions, 1 3/4" square by 3 1/2" high.

**UNSHIELDED**

No.	Description	List
14-1026	Universal Ant. Coil	\$1.75
14-1027	Universal R.F. Coil	1.75
14-1028	Universal Osc. Coil	1.75

**SHIELDED**

No.	Description	List
14-7413	Universal Ant. Coil	\$2.80
14-7558	Universal R.F. Coil	2.80
14-7560	Universal Osc. Coil	2.80

**SLIP-OVER PRIMARIES**



Designed to provide economical replacement of burned out primaries on all types of Antenna and R.F. coils. All windings are high-impedance type for improved performance. Sizes given below are outside diameter of coil over which the replacement winding will fit. Complete instructions for repair and replacement given.

No.	Size	List
14-6850	For 1 1/4" O.D. Coil	\$0.40
14-6852	For 1" O.D. Coil	.35
14-6854	For 7/8" O.D. Coil	.35
14-6856	For 3/4" O.D. Coil	.35
14-8418	For 1/2" O.D. Coil	.30

**STANDARD ANTENNA R. F. COILS**

Standard type air-core coils of superior construction, designed to cover the Broadcast band from 545 to 1620 kc with a 365-mmfd. tuning condenser. These coils make excellent replacement units and are used as original parts by discriminating set-builders and experimenters in the design and construction of Broadcast receivers.



All coils have high-impedance primaries. Secondaries are wound with Litz wire. Fully protected against humidity. Shielded coils are in non-magnetic cans, 1 1/2" diameter by 2 1/2" high.

**UNSHIELDED**

No.	Type	List
14-1010	Standard Antenna Coil	\$0.95
14-1011	Standard R.F. Coil	.95

**SHIELDED**

No.	Type	List
14-1004	Standard Antenna Coil	\$1.25
14-1005	Standard R.F. Coil	1.25

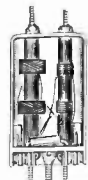
**DOWEL TYPE PRIMARY**

Popular replacement for burned out primaries in high impedance antenna coils. Universal wound on 1/4" dia. by 1/2" long dowels moisture protected. Inductance 1700 uh.



No. 14-6865 List Price..... 42

**FM-AM "COMPOSITE" I.F. TRANSFORMER**



Contains a 455 kc. AM and a 10.7 mc. FM I.F. transformer. Can size: 1 3/8" square x 2 1/2" long. Saddle bolt mounting.

16-6675 10.7 mc.-455 kc. I.F. Trans., List \$4.00

**STANDARD OSCILLATOR COILS**

High-quality Broadcast band oscillator coils designed for use with any of the Antenna and R. F. coils listed above, using a 365-mmfd. tuning condenser. Frequency coverage is 545 to 1580 kc; units are provided for all popular intermediate frequencies.



Coils are mounted on bakelite base with tinned soldering lugs for connections. Unshielded coils have single-hole stud mounting. All coils are thoroughly impregnated to resist severe climatic conditions. Shielded coils are in cans, 1 1/2" diameter by 1 1/4" high, black crackle finish.

**UNSHIELDED**

No.	I.F. Freq.	Padder Required	List
14-3732	175 kc	900 mmf	\$1.05
14-6590	262 kc	700 mmf	1.05
14-6592	370 kc	350 mmf	1.05
14-4034	456 kc	350 mmf	1.05

**SHIELDED**

No.	I.F. Freq.	Padder Required	List
14-4242	175 kc	900 mmf	\$1.35
14-4243	456 kc	350 mmf	1.35

14-1033 Special Unshielded Osc. for 6SA7; 456 kc 350 mmf \$0.85

**REPLACEMENT I. F. WINDINGS**

Coils are wound on wood dowels, 3/8" diameter and 1 1/2" long; coupling is adjustable by sliding primary coil. Complete instructions furnished with each coil.



No.	Freq.	Type	List
16-6600	175	Standard	\$0.85
16-6601	455	Standard	.85
16-6602	175	Center-tap	1.10
16-6603	455	Center-tap	1.10

**"PLASTIC" I. F. TRANSFORMERS**



Particularly suitable for use in small receivers, where space is at a premium and yet superior performance is required, these remarkable transformers are only 1 1/4" square and 2 1/2" high! Made in a complete series of frequency ranges and positions, they will provide results second to none in any type of receiver.

The one-piece molded plastic coil-form and trimmer-base eliminates many separate parts that were required with other types of construction. The assembly is, therefore, simpler and more rigid. The iron core series are highly recommended for use in compact receivers and auto sets where only one I-F stage is permitted. It is not recommended that they be used in a two-stage system because of their high-gain which would cause instability and oscillation.

**Selectivity Band Width**

No.	Freq. Range	Peak Factory Setting	2x	10x	Use
16-6649	140-200	175	6.0	17.5	Input
16-6650	140-200	175	5.7	15.0	Interstage
16-6651	140-200	175	11.2	29.5	Output
16-6652	200-310	262	9.5	24.7	Input
16-6653	200-310	262	10.4	27.6	Interstage
16-6654	200-310	262	20.5	52.1	Output
16-6655	305-480	370	8.4	24.4	Input
16-6656	305-480	370	11.3	30.0	Interstage
16-6657	305-480	370	18.8	47.7	Output
16-6658	400-550	455	18.8	46.6	Input
16-6659	400-550	455	12.5	33.0	Interstage
16-6660	400-550	455	17.5	50.5	Output

Air-Core "PLASTIC" I-F Transformers, List Price Each ..... \$1.40  
IRON-CORE "PLASTIC" I-F's

16-6662	380-600	455	80	11.2	30.0	Input
16-6663	380-600	455	85	15.0	41.0	Output

Iron-Core "PLASTIC" I-F Transformers, List Price Each ..... \$2.10

**CARTWHEEL I. F. TRANSFORMER**

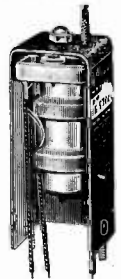


A brand new, ultra-compact, unshielded I-F Transformer, complete with dual trimmers; finds useful application in many types of compact AC-DC or Midget type receivers. Only 1 1/2" by 1 1/2" by 1 1/4" high; one-piece molded plastic trimmer base; for 456-kc only.

No. 16-6661 List Price ..... \$1.40

**STANDARD I. F. TRANSFORMERS**

The Meissner series of Air-Core I. F. Transformers has been accepted as "standard" for general replacement purposes. Gain characteristics have been designed to correspond closely with average values found in the majority of commercial receivers. All transformers are double-tuned with ceramic-base, mica-dielectric trimmers. Windings are fully impregnated. Well-insulated RMA color-coded lead wires. Bright aluminum finish shield is 1 3/8" square by 3" high.



No.	Freq. Range	Peak Factory Setting	Use
16-5700	121-235	175	Input
16-5702	121-235	175	Output
16-3731	121-235	175	Output C. T.
16-5704	220-360	262	Input
16-5706	190-325	262	Output
16-5712	425-650	455	Input
16-6133	435-1000	455	Interstage
16-5714	425-650	455	Output
16-3736	255-550	455	Output C. T.

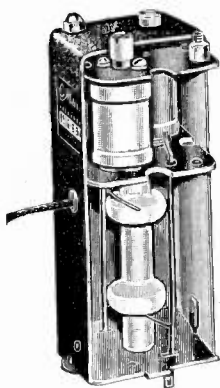
List Price Each ..... \$2.10

**FERROCART I. F. TRANSFORMERS**

Designed primarily as original parts in high-gain receivers of superior quality, these transformers find consistent application in stepping up the performance of old receivers. The special powdered-iron core used in the coils permits higher "Q" with resultant increase in selectivity and gain. All units are double-tuned with ceramic-base, mica-dielectric trimmers. Windings are of high-grade Litz wire, thoroughly impregnated. Shield is bright aluminum finish, 1 3/8" square by 3" high.

No.	Freq. Range	Peak Factory Setting	Use
16-5728	127-206	175	Input
16-5730	127-206	175	Output
16-5740	360-600	455	Input
16-5742	360-600	455	Output
16-8091	1050-2000	1500	Input-Interstage
16-8099	1050-2000	1500	Output

List Price Each ..... \$2.80



## "ALIGN-AIRE" I-F TRANSFORMERS

The result of years of engineering experience in designing high grade transformers for the finest commercial receivers! The exacting requirements of modern high-fidelity and communications type receivers demand units that can be depended upon under any and all conditions. They must be absolutely stable under temperature and humidity variation and unaffected by vibration. These requirements are all met by

the "Align-Aire" I-F Transformer. Provides 3600 degrees of micro-meter smooth trimmer adjustment instead of the usual 180 degree rotation! Accurate trimming can thus be readily accomplished. Available with special "Iron-core" design for maximum gain and selectivity. Double-tuned and offered in a complete range of frequencies for any application. Shield cans are black crackle finish, 2"x2"x4 3/4".

No.	Frequency Range (kc)	Peak Factory Setting	Gain Factory Setting	Selectivity Band Width			Use
				2X	10X	20X	
16-6643	415-540	456	77	7.0	16.0	22.0	Input
16-6123	415-540	456	29	7.0	18.0	21.1	Interstage
16-6645	415-540	456	105	9.0	25.6	36.2	Output
16-6139	415-540	456	100	9.5	23.2	33.5	Output C.T.

LIST PRICE, EACH ..... \$6.95

## AIR-CORE R-F CHOKES

Accurately wound and individually tested; coils wound on specially treated forms, mounted on bakelite terminal base and thoroughly moisture proofed. Available in shields or without; both single-hole mounting. Shielded chokes have terminals thru top of can so unit may be mounted on inside wall of chassis. Shields are bright aluminum finish, 1 3/4" square.



MH Induct.	Shielded		Unshielded	
	No.	List	No.	List
2.5	19-5582	\$0.90	19-1994	\$0.65
5.5	19-5584	.90	19-4551	.65
8.0	19-5588	.95	19-2078	.70
16.0	19-1900	1.05	19-8770	.75
16.0	19-5590	1.10	19-1995	.85
30.0	19-5592	1.20	19-2330	.90
60.0	19-5594	1.35	19-3247	1.05
80.0	19-5596	1.40	19-2709	1.10

## TRANSMITTER CHOKES

Highly efficient for Amateur and Commercial use; six lateral wound sections provide effective action over wide frequency range. Windings on ceramic form with tapped ends; mounting brackets included.



Cat. No.	Induct.	Current	Ohms	Net
19-3019	2.8 MH	1000 MA	5.0	\$1.68
19-3022	5.5 MH	500 MA	12.5	1.47
19-3025	5.9 MH	200 MA	34.9	1.47

## IRON-CORE R-F CHOKES

Universal-wound on special powdered iron cores, these chokes provide maximum efficiency—lower DC resistance per MH. Coils are wax-impregnated; laminated bakelite terminal base; single-hole mounting; without shielding.



No.	MH	List	No.	MH	List
19-6834	2.5	\$0.95	19-6844	60.0	\$1.60
19-6840	10.0	1.20	19-6846	80.0	1.80
19-6842	30.0	1.40	19-6848	125.0	2.30

## PHONO-OSCILLATOR COIL

For use in building either wireless or direct-connected phonograph-oscillator units for record reproduction through the radio receiver. Knob adjustment permits selection of clear frequency in the broadcast band. Coil is in bright aluminum shield, 1 3/4" square by 3 3/4" high.



No. 17-9373 List ..... \$2.80

## B. F. O. COIL

For use with standard I. F.'s in super-het receivers. They supply the "beat" note necessary to reception of C. W.;

materially aid in tuning and locating weak stations. Mica trimmed. Freq. Range 290-650 KC. Peaked at 456 KC. In 1 1/2" sq. x 3 3/4" h. can with knob for pitch control. No. 17-6753 Net Price ..... \$2.45

## F. M. COILS—I. F. TRANSFORMER

Permeability tuned; designed for use on newly assigned F. M. Frequencies. Mounted in 1-7/16" x 7/8" x 1-29/32" can. Tuned to 10.7 mc.

No. 16-6665 List Price ..... \$2.95

## DISCRIMINATOR TRANSFORMER

Mounted in same size can as I.F. Transformer listed above. Permeability tuned to 10.7 mc.

No. 17-3484 List Price ..... \$3.90



## "6SA7" OSCILLATOR COIL



Tapped type coil for currently popular 6SA7 tube. For use with 420 uufd. condenser and padler

14-1033 List ..... \$0.85

For use with 162 uufd. "cut" section condenser

14-1053 List ..... \$0.85

## "UNIVERSAL" ADJ. IND. OSCILLATOR COIL

A truly universal oscillator coil for 455 kc. I.F. Primary is tapped for use with any of 25 different type oscillator tubes. Instructions included.

14-1040 List ..... \$2.00

## MIDGET SHIELDED ANT. AND R.F. COILS

A compact, super quality shielded antenna and R.F. coil. Provides full coverage of the broadcast band with a 365 tuning condenser. Special wound litz wire secondaries. High impedance primaries. Capacity coupling used to level gain over frequency range. Coil forms are bakelite 3/8" diameter; winding protected by wax impregnation. Shields are 1 3/4" square x 2" high.



14-2436 Shielded Ant. Coil, List ..... \$1.25

14-2437 Shielded R.F. Coil, List ..... \$1.25

## MIDGET UNSHIELDED B.C. ANT.—R.F. COILS

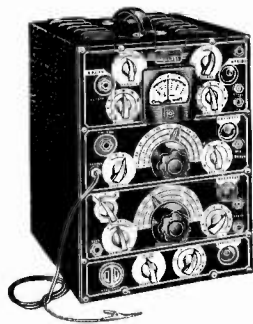
Highly efficient antenna and R.F. coils, especially designed for use where space is at a premium. Cover the regular broadcast band with a 365 uufd. tuning condenser. Coils have high impedance primaries and litz wire secondaries. Windings are impregnated for moisture protection and wound on 3/8" diameter x 1 3/4" long forms.

14-1022 Unshielded Ant. Coil, List ..... \$0.85

14-1023 Unshielded R.F. Coil, List ..... \$0.85

## MEISSNER "ANALYST"

**THE MODERN SERVICE INSTRUMENT**—Undoubtedly the most modern complete servicing instrument on the present day market. Handles the receivers of yesterday, today and tomorrow — with equal efficiency and facility! Entirely fundamental in its testing procedure. Will never become obsolete. **SAVES TIME — SAVES MONEY**—The use of the new Meissner ANALYST will not only permit you to make more money by handling a greater number of service jobs in a given time but it will give you additional assurance that these jobs will "stay sold." **SERVICES BY "SIGNAL TRACING"**—The Meissner ANALYST tests receivers and locates faults by the "Signal tracing" method — proven to be the fastest and most reliable method known at the present time. It is NOT, however, just another signal tracer! It is completely equipped with all devices that might be needed to make simultaneous checks on various parts of the receiver circuit.



Five separate and distinct "channels" provide as many different functions; all controls are accurately calibrated with functions clearly indicated.

### Complete—Ready to Go to Work

The Meissner ANALYST is completely wired, aligned and laboratory tested. Furnished complete with a full set of 12 tubes, it is all ready to be put into service the minute it is unpacked and connected to the 110-volt line! No alignment or adjustments are necessary—just read the instructions, hook it up and go to work! Complete Book of Instructions, supplied with the new Meissner ANALYST, gives detailed directions for use of this instrument in locating all kinds of radio troubles.

No. 9-1046—New Meissner ANALYST, complete with tubes, prods, and Instruction Book; ready to operate. Net Price.....\$113.85\*

## NEW MEISSNER WAVE-TRAPPERS



AVAILABLE IN 5 MODELS  
6 to 13 mc, 13 to 27 mc, 27 to 54 mc, 54 to 108 mc, 108 to 216 mc  
You can now attenuate interfering signals on fundamental or harmonic frequencies with these new, highly efficient tunable wave traps. Several may be connected in series if interference exists on more than one frequency. Efficient with any balanced or unbalanced line from 50 to 400 ohms impedance.  
List Price ..... \$5.00

## NEW MEISSNER LINE FILTERS



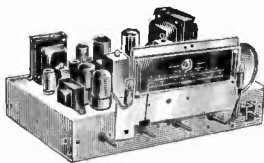
(Grounded & Shielded)

Reject interference from electric shavers, electric fans, food mixers, vacuum cleaners, etc. 300-watt rating.

List Price.....\$6.50



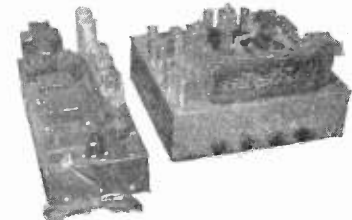
### Meissner AM-FM TUNER MODEL 9-1091-C



High fidelity reception! Covers AM Broadcast Band from 527 to 1620, FM Band from 88 to 108 MC (channels 200 to 300). Frequency response is flat with plus or minus 2 db from 30 to 15,000 cycles! Input jack provided for crystal or high level magnetic type phonograph pickup. Extreme sensitivity and selectivity.

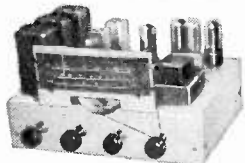
List Price ..... \$245.00

### MODEL 9-1093 AM-FM TUNER AND AMPLIFIER



A high-quality AM-FM tuner and amplifier that is hard to beat. Power output, 18 watts at less than 2% harmonic distortion. Audio fidelity flat within plus or minus 2 db from 50 to 15,000 CPS. Hum level 65 db below full output. Slide rule dial is calibrated in kilocycles (535 to 1620 KC) on the AM band and in megacycles (88 to 108 MC) on the FM band. Sensitivity less than 20 microvolts. A phonograph input jack controlled by a front switch is mounted in rear. The circuit is com-

### MODEL 68K 3-BAND AC KIT



Frequency Range: 535 KC to 18 MC in 3 overlapping bands.  
Sensitivity: 15 microvolts on all bands.  
Audio Output: 3 watts maximum, 2 watts at 5% distortion.  
Intermediate Frequency: 455 KC.  
Tube Complement: 2-6SK7, 1-6SA7, 1-6SQ7, 1-6V6GT and 1-5Y3GT.  
Size: Chassis size — 12" x 10" x 3". Mounting space required — 12 1/2" w. x 7 1/2" h. x 1 1/2" d.  
Power Supply: 105 to 125 and 210 to 250 volts, 50 to 60 cycles. Power consumption, 55 watts.  
Controls: Band switch, combination volume-line switch, continuous tone control and tuning control.  
Dial: Slide rule, 5 1/2" x 1 3/4", calibrated in megacycles on all three bands. Dial edge lighted.  
Speaker: Speaker not supplied with kit. Any good-quality PM type of speaker may be used which has an impedance of 3.2 ohms and the ability to handle the power of this set.  
Assembly: Easily assembled from detailed pictorial diagram and simplified schematic. Wire, hardware and solder included.  
Weight: 8 1/2 lb. actual.  
List Price ..... \$67.25

### Meissner MODEL BC FM RECEPTOR



Adds superb frequency modulation to any regular AM set. Precision built for simple connection to your present AM radio. Audio fidelity: Flat within plus or minus 2 db from 50 to 15,000 CPS. Frequency range 88 to 108 MC. Power supply 115 volts AC.  
List Price ..... \$57.50

### MODEL 9-1093 AM-FM TUNER AND AMPLIFIER

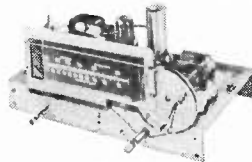
designed for either magnetic or crystal pickup. The Tuner can also be used with the new GE Reluctance Pick-up because of a new phonograph preamplifier that has been incorporated in the circuit. Simply plug a 6SCT in the socket provided. The 6SCT is not supplied. A combination tone control provides bass boost up to 11 db at 40 CPS and treble attenuation up to 13 db at 10,000 CPS. Amplifier is designed for an 8 to 16-ohm speaker. Power supply: 105-125 volts, 50-60 cycles; consumption, 190 watts.  
Tube Complement: 3-6SK7, 1-6SA7, 1-6H6, 5-6AG5, 1-6C4, 2-9001, 1-6AL5, 2-6J5, 1-6SN7GT, 2-6L6 Power Amplifiers, 1-5Y3G Rectifier, 1-5V4G Rectifier and 1-6U5/6G5 Tuning Eye.  
Chassis Mounting Space: Tuner — 11 1/2" w. x 12 1/2" d. x 8 3/8" h. Amplifier — 7 1/2" w. x 16 1/2" d. x 7" h. (Allow clearance above amplifier for ventilation). Tuner weight is 18 lbs.; amplifier, 27 lbs.  
Supplied complete with tubes, two antennas and all hardware required to mount chassis units in cabinet. Antennas consist of a low impedance, 12" x 16", noise reducing loop for AM broadcast and an indoor type folded dipole, 300-ohm, for FM broadcast. Cabinet and speaker not included.  
List Price ..... \$310.00

### New Meissner SIGNAL SHIFTER KIT



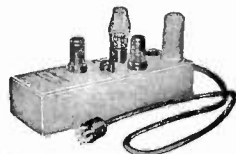
For the amateur with limited budget, the new MEISSNER Signal Shifter Kit is ideal, making it possible for him to save 50% by building it himself.  
Everything is provided including tubes — even wire and solder. All coil strips are furnished, plus a blank for an additional band.  
Directions for assembly are comprehensive and clear, supplemented with schematic diagram, a host of photos and pictographs, all large size and easy to read. Directions are so simple to follow that even the beginning ham will have no trouble. The only two difficult jobs are already completed. The complicated shielded turret assembly and the band spread gear mechanism come already built up — ready to install!  
Only equipment needed is a pair of pliers, a screwdriver and a soldering iron.  
No difficulty at all will be encountered to exactly duplicate the peak performance of the factory-built model.  
Complete Meissner Signal Shifter Kit, Part No. 10-1207, Amateur Net. .... \$64.75

### MODEL 8CK RECEPTOR KIT



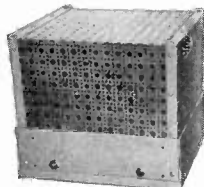
Frequency Range: New FM band, 88 to 108 MC. Audio Fidelity: Flat within plus or minus 2 db from 50 to 15,000 CPS.  
Sensitivity: 40 microvolts.  
Audio Output: 3 volts R.M.S. at minimum usable signal input, 30% modulation. For greater signal inputs, output voltages as high as 15 volts R.M.S. may be obtained without distortion.  
Amplifier Requirements: Any high-quality audio power amplifier may be used which has high impedance input (100,000 ohms or greater) and which will produce full output with 3 volts R.M.S. audio input. The MEISSNER Model 4A and 4AK amplifiers are suitable for use with this Model 8CK FM Receptor.  
Antenna Input Impedance: Standard 300-ohm balanced line.  
Controls: Tuning control and combination volume control-line switch.  
Tube Complement: 2 type 6AW6, 2 type 6H6, 2 type 6C4, 1 type 6AL5 and 1 type 6X3GT/G.  
Power Supply: 105 to 125 volts, 50 or 60 cycle AC. Consumption, 35 watts.  
Dial: Slide rule, 5 1/2" x 1 3/4", calibrated in megacycles and in channel numbers. Edge lighted.  
Assembly: Easily assembled from detailed pictorial diagram and simplified schematic. Front end factory assembled and aligned. Wire, hardware and solder included. IF Coils pre-aligned.  
Weight: 4 1/2 lb. actual.  
List Price ..... \$44.95

### THE NEW FMX PHASE MODULATOR



The new MEISSNER FMX Phase Modulator is designed exclusively for use with the Model EX Signal Shifter. Combination of the two — the FMX Modulator and EX Signal Shifter — gives the radio amateur a complete low power phone and cw transmitter at a very low price. Higher power, up to one KW, can be obtained with a power amplifier driven by the Signal Shifter.  
The deviation control of the FMX Phase Modulator allows a swing of 5 to 10 KC on all amateur frequencies including the 80-meter band. Input for high impedance crystal or dynamic mike is provided. Any class C amplifier that the Signal Shifter is capable of driving becomes a phase modulated amplifier.  
The FMX Modulator is installed in the position normally occupied by the power supply, the latter being a remotely located unit. Input for plate and filament voltages for the FMX are secured from the Signal Shifter power supply.  
Tubes required are 6SL7, 6SG7, and VR-150. The FMX Phase Modulator is another precision-built product, designed by MEISSNER for the discriminating amateur who wants only the best.  
Model FMX Phase Modulator, complete, less tubes, Amateur Net. .... \$15.00

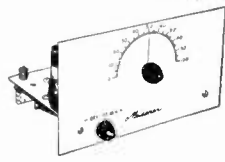
### MODEL 4AJ POWER AMPLIFIER



Fidelity: Flat within 2 db from 45 to 20,000 CPS. Power Output: 20 watts with 1.5% harmonic distortion.  
Power Input: 105-125 volts, 50-60 cycles only.  
Power Consumption: 87 watts.  
Hum and Noise: 150 db below full output.  
Output Impedance: 4, 8, 15, 250 and 500 ohms. Unbalanced.  
Controls: On-off power switch and pilot lamp on front skirt. All other connections made at rear. Volume control on rear skirt with screwdriver slot adjustment.  
Input: High impedance (500,000 ohms) through standard RMA phone jack.  
Input Requirements: 3 volts RMS for full output.  
Tube Complement: 1-6SN7GT, 2-6L6G, 1-5Y3GT.  
Size: 10" x 8 3/8" x 10" deep.  
Weight: 17 lb. actual.  
Cover: Well ventilated protective cover.  
Finish: Etched aluminum.  
List Price ..... \$91.25

### MODEL 4AK POWER AMPLIFIER KIT

Easily assembled from detailed pictorial diagram and simplified schematic. Wire, hardware and solder included.  
List Price ..... \$78.50



Assembly: The kit is easily assembled from detailed pictorial diagram and simplified schematic. Wire, hardware and solder included. • Size: 7 3/4" x 4 1/4" tall x 4 1/2" deep. • Weight: 1 1/2 lb. actual.  
List Price ..... \$15.50  
Extra Coils: 170 to 540 KC and 540 to 1500 KC ..... List Price 2.10  
1.4 to 4.50 MC, 3.2 to 8.2 MC, 8 to 18 MC and 15 to 34 MC. Weight each 1 oz. .... List Price .85

### MODEL 3BK AC-DC TRAINER KIT

Circuit: Regenerative grid leak detector with resistance coupled pentode audio stage and AC-DC type power supply. • Tube Complement: 1-6BJ6 and 2-50B5. • Tuning Range: Shipped with coil to cover the broadcast range of 520 to 1530 KC. Other coils available to cover the following ranges: 175 to 540 KC, 1350 KC to 5.4 MC, 3.5 to 8 MC, 7.9 to 18.5 MC and 15 to 34 MC. • Controls: Combination regenerative control battery switch and vernier tuning control. • Dial: 1 1/2" pointer swings through 180 degrees are over scale graduated 0 to 100. • Batteries Required: Shipped less batteries. Requires 4 1/2-volt "A" battery and 90-volt "B" battery. Battery drain: "A" — 50 mA, "B" — 5 mA. • Headphones: Shipped less phones. Uses any good-quality magnetic type phones having an impedance of 2,000 ohms or more. • Assembly: Easily assembled from detailed pictorial diagram and simplified schematic. Wire, hardware and solder included. • Size: 7 3/4" x 4 1/4" tall x 4 1/2" deep. • Weight: 1 1/2 lb. actual.  
List Price ..... \$18.50  
Extra Coils: 170 to 540 KC and 540 to 1500 KC ..... List Price 2.10  
1.4 to 4.50 MC, 3.2 to 8.2 MC, 8 to 18 MC and 15 to 34 MC. Weight each 1 oz. .... List Price .85



*Thank You!*

When writing for additional  
information or when ordering  
from sources of supply listed  
in this book, please mention

*RADIO'S MASTER*

## BUD DE LUXE RELAY RACKS

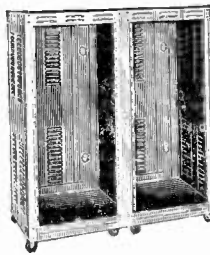


These relay racks are made of 16 gauge steel with 1/8" panel supports. The panel mounting supports are recessed so that no edges of the panel will be exposed.

The front and back of the top, the two sides and the door are well louvered to provide adequate ventilation. Snap catches are positioned on the door. A stream-lined appearance is achieved by the use of rounded corners and red-lined chrome trim. The relay rack is shipped knocked-down and complete with all necessary hardware for assembly. All standard 19" panels will fit these racks.

A SPECIAL FEATURE IS THE USE OF FOUR STURDY SUPPORTS ON THE BOTTOM SO THAT CASTERS CAN BE FASTENED DIRECTLY TO THE BASE, THEREBY ACHIEVING READY MOBILITY. Bud RC-7756 casters will fit this unit. Casters are not included in price of cabinet. These relay racks are supplied in either black or grey wrinkle finish. The overall width is 22" and the depth is 17 1/4" on all sizes listed.

Catalog No.	Overall Height	Panel Space	Shipping Wt.	Dealer Cost
CR-1774	42 1/2"	36 1/4"	90 lbs.	\$28.50
CR-1771	47 1/2"	42"	100 lbs.	35.45
CR-1772	66 1/2"	61 1/4"	135 lbs.	42.30
CR-1773	82 1/2"	77"	155 lbs.	50.40



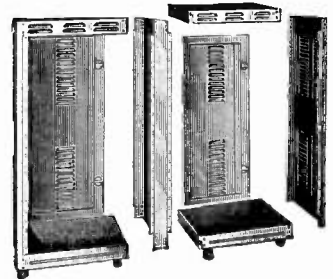
## NEW BUD ADD-a-RACK SERIES

It has always been necessary to buy special racks without louvers on one side to obtain a maximum of panel space with a minimum of floor space. Now, you no longer need to buy a whole new cabinet when you want additional panel space. Through our new and exclusive Add-a-Rack series, BUD not only offers additional racks at a lower cost, but provides you with a sturdier, better looking assembly.

The illustration at top shows two Add-a-Rack cabinets assembled together. The illustration below shows the unique and ingenious method of adding a unit to your present equip-

ment. Instead of buying an entire new outfit, you purchase only four parts: (1) a door (2) a top (3) a bottom and (4) an Add-a-Rack coupling-unit. The right (or left) hand side of your present relay rack is removed and replaced by the Add-a-Rack coupling-unit; next, a top and bottom is fastened into place, and the side taken from the first rack is fastened onto the second rack which has been added. Place the additional door into position and you have two racks properly and efficiently coupled together. In the same simple way, more racks can be added at any time and every one will be in a CONTINUOUS ONE-PIECE assembly.

This series is available in two ways. (1) a double unit consisting of two racks and the Add-a-Rack coupling unit, (2) Add-a-Rack unit, consisting of a door, a top, a bottom and an Add-a-Rack coupling-unit. These units are furnished with all necessary assembling and panel mounting hardware.



Add-a-Rack Unit	Used to Add-a-Rack to	Dealer Cost
AR-1778	CR-1774	\$26.25
AR-1775	CR-1771	32.50
AR-1776	CR-1772	40.75
AR-1777	CR-1773	48.00

Complete unit consisting of the knocked-down parts necessary for two relay racks coupled together.

CR-1779	two coupled relay racks same size as CR-1774	\$54.75
CR-1780	two coupled relay racks same size as CR-1771	67.95
CR-1786	two coupled relay racks same size as CR-1772	83.05
CR-1799	two coupled relay racks same size as CR-1799	98.40

Bud RC-7756 Casters will fit this unit. Casters are not included in price of cabinet.

## BUD DE LUXE CABINET RACKS



These cabinet racks have rounded corners and attractive red-lined chrome trim. There is a recessed, hinged door on the top with a snap catch. These cabinet racks are made of heavy gauge steel and are of sturdy construction. The three large sizes have a hinged rear door, while the small sizes have a welded panel in the rear.

Adequate ventilation is assured by means of louvered sides and a two inch opening in the bottom of the back extends the entire width.

"NO-SCRATCH" EXTENDED METAL FEET ARE EMBOSSED ON THE BOTTOM TO MINIMIZE MARRING OF A TABLE TOP. These relay racks are furnished in either black or grey wrinkle finish. Depth 14 1/4", width 22". Will fit standard 19" panels.

Catalog No.	Overall Height	Panel Space	Shipping Wt.	Dealer Cost
CR-1741	10 1/2"	8 3/4"	29 lbs.	\$10.05
CR-1740	12 1/2"	10 1/2"	31 lbs.	11.30
CR-1742	14 1/2"	12 1/4"	32 lbs.	12.25
CR-1739	15 1/2"	14"	36 lbs.	13.85
CR-1743	19 1/2"	17 1/2"	40 lbs.	16.77
CR-1727	22 1/2"	21"	45 lbs.	18.00
CR-1744	28 1/2"	26 1/4"	50 lbs.	19.20
CR-1728	37 1/2"	31 1/2"	55 lbs.	21.20
CR-1745	36 1/2"	35"	60 lbs.	21.57

## BUD JUNIOR CABINET RACKS



This cabinet rack is a multi-purpose unit that is inexpensive. The cabinet is constructed to accommodate two panels, one is 10 1/2" by 18 1/2", the other 8 3/4" by 18 1/2", these panels are supplied with the cabinet. The BUD Junior Cabinet Rack is spacious enough to accommodate a chassis up to 10" by 17".

The rear of the cabinet is covered by a hinged door with a locking device. The cabinet is furnished in black wrinkle finish only.

Catalog No.	Overall Height	Depth	Width	Shipping Wt.	Dealer Cost
RC-1749A	21 1/4"	10 1/2"	19 1/2"	25 lbs.	\$14.50

## BUD DESK TYPE RELAY RACKS



Perfect for table mounting of low and medium power transmitters, public address systems, and other electronic instruments. Rack has strong chassis for mounting heavy component. Shipped knocked-down, with necessary hardware, easy to assemble. Standard notched 19" wide panels can be used, panels set in recess so that no edges are exposed. Furnished in black wrinkle finish only. Depth 12".

Catalog No.	Height	Panel Space	Shipping Wt.	Dealer Cost
RR-1248	24"	21"	15 lbs.	\$5.55
RR-1249	31"	28"	17 lbs.	6.93

## BUD CHASSIS MOUNTING BRACKETS



Mounting brackets are essential to insure proper support of the chassis. Formed of heavy gauge steel, cut away at the bottom to provide chassis clearance so that chassis can be mounted flush against panel. Finished in Black. Numbers MB-450 and MB-451 designed for chassis height of 4". Sold in pairs only.

Catalog No.	Height	Depth	Dealer Cost Per Pair
MB-458	6 1/2"	8"	\$0.69
MB-448	6 1/2"	10"	.93
MB-459	6 1/2"	11"	1.02
MB-449	6 1/2"	12"	1.20
MB-460	6 1/2"	13"	1.23
MB-450	8 1/2"	10"	1.45
MB-451	8 1/2"	13"	1.55

Where materials are specified Black Wrinkle Finish only, and Grey is desired, a charge of 15% additional will be made.

Prices slightly higher west of the Mississippi River



### BUD STANDARD RELAY RACK PANELS

STEEL				MASONITE				ALUMINUM			
Catalog No.	Height	Dealer Cost		Catalog No.	Height	Dealer Cost		Catalog No.	Height	Dealer Cost	
PS-1250	1 3/4"	\$ .60		PM-1588	1 3/4"	\$ .48		PA-1101	1 3/4"	\$ .66	
PS-1251	3 3/4"	.69		PM-1589	3 3/4"	.60		PA-1102	3 3/4"	.87	
PS-1252	5 3/4"	.84		PM-1590	5 3/4"	.75		PA-1103	5 3/4"	1.04	
PS-1253	7"	.93		PM-1591	7"	.87		PA-1104	7"	1.37	
PS-1254	8 3/4"	1.08		PM-1592	8 3/4"	1.05		PA-1105	8 3/4"	1.56	
PS-1255	10 3/4"	1.32		PM-1593	10 3/4"	1.20		PA-1106	10 3/4"	1.85	
PS-1256	12 3/4"	1.59		PM-1594	12 3/4"	1.35		PA-1107	12 3/4"	2.12	
PS-1257	14"	1.80		PM-1595	14"	1.50		PA-1108	14"	2.40	
PS-1258	15 3/4"	2.10		PM-1596	15 3/4"	1.65		PA-1109	15 3/4"	2.70	
PS-1259	17 3/4"	2.28		PM-1597	17 3/4"	1.92		PA-1110	17 3/4"	3.00	
PS-1260	19 3/4"	2.46		PM-1598	19 3/4"	2.07		PA-1111	19 3/4"	3.30	
PS-1261	21"	2.76		PM-1599	21"	2.31		PA-1112	21"	3.60	

Made of Steel, Masonite or Aluminum. Steel Panels are made of high grade steel 1/8" thick. Masonite Panels are made of 3/16" Tempered Masonite. Aluminum Panels are made of 1/8" thick Aluminum. All Panels are 19" wide. Furnished in either Black or Grey Wrinkle. Aluminum panels 3/16" thick may be had if desired at 60% increase in cost over 1/8".

### BUD ENCLOSED METER PANEL

PS-439 Meter Panel is designed to give maximum protection to meters. The steel panel has a large cut-out, behind which is mounted a blank Masonite sub-panel. This sub-panel has a meter mounting area of 4 1/2" x 15 1/2" — sufficient space to mount four 3" meters. The meters are protected by a glass insert that mounts in slides. Due to danger from breakage during shipment, this glass is not supplied with the panel. The glass insert should be cut 16" long x 4 3/4" wide. Finished in either Black or Grey Wrinkle.

Cat. No.	Length	Width	Dealer Cost
PS-439	19"	5 1/4"	\$4.68

### BUD METER PANELS STEEL AND MASONITE

All meter panels are 5 1/4" high, 19" wide, available in either black or grey wrinkle finish. Small holes fit either 2" square or round meters, large holes fit either 3" square or round meters.

Catalog No.	Number of Holes	Diameter	Type Material	Dealer Cost
PM-509	3	2 3/16"	Masonite	\$1.20
PM-510	4	2 3/16"	Masonite	1.32
PM-511	3	2 13/16"	Masonite	1.20
PM-512	4	2 13/16"	Masonite	1.32
PS-440	3	2 3/16"	Steel	1.14
PS-441	5	2 3/16"	Steel	1.65
PS-442	3	2 13/16"	Steel	1.14
PS-443	5	2 13/16"	Steel	1.65

### BUD METAL DOOR RACK PANELS

If it is desirable to have accessibility to component parts on the chassis, this panel is very useful. Door opening on No. 615—15 3/8" x 6"; door opening on No. 616—15 3/8" x 7 1/2". These panels are available in either Grey or Black Wrinkle finish. Panels are made of 1/8" high grade sheet steel.

Catalog No.	Length	Width	Dealer Cost
PS-615	19"	10 1/2"	\$3.45
PS-616	19"	12 1/4"	3.90

### BUD MASONITE PANELS

This line is intended for all uses requiring an insulated panel that is easily worked. Made from 3/16" thick Tempered Masonite and finished in Black Wrinkle only.

Cat. No.	Width	Length	Dealer Cost	Cat. No.	Width	Length	Dealer Cost
PM-607	7"	10"	\$0.60	PM-610	8"	12"	\$0.78
PM-608	7"	12"	.66	PM-611	8"	14"	.87
PM-609	7"	14"	.75	PM-612	8"	16"	.99
PM-606	8"	10"	.66	PM-613	9"	15"	1.05

### BUD METAL PANELS

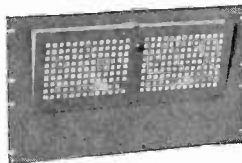
For general experimental and construction applications, this line of steel panels fills all usual requirements. Finished on both sides in fine durable Black Wrinkle Enamel only.

Cat. No.	Width	Length	Dealer Cost	Cat. No.	Width	Length	Dealer Cost
PS-1200	7"	8"	\$0.52	PS-240	8"	12"	\$0.72
PS-1201	7"	10"	.54	PS-1204	8"	14"	.80
PS-1202	7"	12"	.60	PS-1205	8"	16"	.88
PS-1203	7"	14"	.70	PS-1187	8"	18"	.92
PS-238	7 3/8"	15"	.82	PS-1188	8"	19"	1.18
PS-239	8"	10"	.66	PS-700	9"	15"	1.00

Where materials are specified Black Wrinkle Finish, and Grey is desired, a charge of 15% additional will be made.

Prices slightly higher west of the Mississippi River

### BUD VENTILATED DOOR RACK PANEL



These panels have a generous perforated area in the door, providing adequate ventilation for adjacent units. The panels are 19" long and available in either Black or Grey Wrinkle finish. Door opening on P. S. 814 15 3/8" x 6". Opening on P. S. 815 15 3/8" x 7 1/2".

Cat. No.	Height	Door Height	Dealer Cost
PS-814	10 1/2"	6"	\$4.65
PS-815	12 1/4"	7 1/2"	5.25

### BUD RACK SHELVES



Heavy power supplies, modulator units, etc., can be mounted on these rack shelves which are supported in the cabinet by the chassis-supporting angles listed on this page. They are designed to slide in from the rear of the cabinet. Made of heavy gauge steel, finished in Black Wrinkle Enamel only.

Catalog No.	Width	Height	Depth	Dealer Cost
CB-1976	19"	1"	15"	\$2.85
CB-1977	19"	1"	12"	2.25

### BUD HEAVY DUTY CHASSIS

(Furnished with Bottom Plates)



These chassis, made of heavy gauge steel, are intended for applications requiring unusual sturdiness and where large weights are involved. Available in either Black Wrinkle finish or Electro-Zinc Plate.

Black Wrinkle	Zinc Plated	Cat. No.	Depth	Width	Height	Dealer Cost
CB-1757	CB-1764		8"	17"	2"	\$2.16
CB-1758	CB-1765		8"	17"	3"	2.40
CB-1759	CB-1766		11"	17"	2"	2.43
CB-1760	CB-1767		11"	17"	3"	2.64
CB-1761	CB-1768		13"	17"	2"	2.85
CB-1762	CB-1769		13"	17"	3"	3.12
CB-1763	CB-1770		13"	17"	4"	3.45

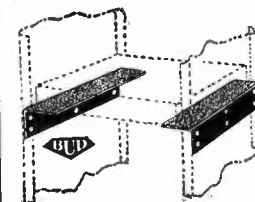
### BUD TRIANGULAR MOUNTING BRACKETS



For panel and chassis assemblies where large weights are involved, these Triangular Mounting Brackets make convenient supports. Constructed of heavy steel. Black finish. Sold in pairs only.

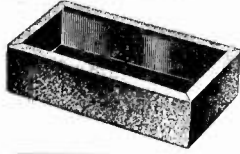
Cat. No.	Height	Depth	Dealer Cost Per Pair
MB-1266	5"	5"	\$0.73
MB-1267	7"	7"	.85
MB-1268	9"	9"	1.00

### BUD CHASSIS SUPPORTING ANGLES



When heavy weights are encountered in chassis construction, Bud Chassis Supporting Angles will distribute the weight on the sides of the rack and relieve the panel. Made in two sizes from Black Painted Steel, 1/8" thick. Sold in pairs only.

Cat. No.	Length	Width	Dealer Cost Per Pair
SA-1349	14 1/2"	3"	\$1.50
SA-1350	12"	3"	1.50



### BUD STEEL CHASIS BASES

These chassis are made from one piece of steel, all corners are reinforced and spot welded. The four sides are folded on bottom for additional strength. This also permits a bottom plate to be attached if desired. These Chassis Bases are furnished in either Black Wrinkle or Electro-Zinc plated.

Black Wrinkle Cat. No.	Zinc Plated Cat. No.	Depth	Width	Height	Gauge	Dealer Cost
CB-628	CB-629	5"	7"	2 1/2"	22	\$0.72
CB-644	CB-645	5"	9 1/2"	2 1/2"	22	.60
CB-788	CB-776	5"	9 1/2"	1 1/2"	22	.60
CB-604	CB-605	5"	10"	3"	22	.90
CB-789	CB-1191	7"	7"	2"	22	.60
CB-790	CB-1192	7"	9"	2"	22	.90
CB-791	CB-1193	7"	11"	2"	20	1.05
CB-792	CB-793	7"	12"	3"	20	1.96
CB-646	CB-1194	5"	13"	2 1/2"	20	1.08
CB-647	CB-1198	7"	13 1/2"	2 1/2"	20	1.23
CB-649	CB-1189	7"	15"	3"	20	1.41
CB-365	CB-666	4 1/2"	15"	3"	20	1.02
CB-1068	CB-1066	7"	17"	2 1/2"	20	1.29
CB-648	CB-1199	7"	17"	2 1/2"	20	1.17
CB-701	CB-702	8"	10"	2 1/2"	20	1.25
CB-703	CB-704	8"	12"	2 1/2"	20	1.32
CB-650	CB-774	8"	17"	3"	20	1.38
CB-651	CB-775	8"	17"	3"	20	1.32
CB-652	CB-1195	10"	12"	3"	20	1.38
CB-653	CB-779	10"	14"	3"	20	1.38
CB-654	CB-769	10"	17"	3"	20	1.32
CB-636	CB-637	10"	17"	3"	20	1.32
CB-655	CB-1196	10"	17"	3"	18	1.74
CB-656	CB-1197	10"	23"	3"	18	1.65
CB-657	CB-770	11"	17"	2"	18	1.85
CB-658	CB-771	11"	17"	2"	18	1.50
CB-663	CB-661	12"	17"	3"	18	1.62
CB-664	CB-662	12"	17"	3"	18	2.05
CB-659	CB-772	13"	17"	3"	18	2.20
CB-660	CB-773	13"	17"	3"	18	1.74
CB-640	CB-641	10"	17"	4"	18	2.65
CB-642	CB-643	13"	17"	5"	18	3.15
CB-623	CB-624	10"	17"	5"	18	3.50
CB-625	CB-626	13"	17"	5"	18	3.50



### BUD OPEN-END CHASSIS

Primarily intended to be used with the various sizes and styles of Bud metal cabinets, these chassis are ideal for any type of small built-up unit such as a record amplifier, code oscillator, etc. U-shaped construction is used with ends folded over 3/8" for additional strength. Finish is Electro-Zinc Plating.

Cat. No.	Depth	Width	Height	Fits Cab. No.	Dealer Cost
CB-38	7"	6"	2"	C-1584	\$0.60
CB-30	5"	7"	1 1/2"		.54
CB-41	7"	7"	1 1/2"	C-973	.62
CB-39	7"	8"	2"	C-1585	.76
CB-996	5 1/2"	9"	1 1/2"	C-993	.60
CB-976	7 1/2"	9"	1 1/2"	C-999, C-1746	.82
CB-40	7"	10"	2"	C-1586	.82
CB-997	7"	11"	1 1/2"	C-994, C-1747	.86
CB-998	7"	13"	1 1/2"	C-995, C-1748	1.00
CB-34	10 3/4"	14"	2"	C-975A	1.38
CB-35	7 3/4"	15"	2"	C-1190A	1.26



### BUD CHASSIS DECKS

These chassis are suitable for use in carrying cases and utility cabinets. Each unit is folded over 1 1/2" on the front, 1/2" on the side and made from Zinc Plated steel. These decks are also useful for interstage shielding and supports in regular panel-end chassis layouts.

Cat. No.	Width	Depth	Fits Cab. No.	Dealer Cost
CB-522	4 1/2"	5 1/2"	CU-1098	\$0.46
CB-523	4 1/2"	4 1/2"	CU-1099	.43
CB-524	6 1/2"	6 1/2"	CU-879	.56
CB-525	5 1/2"	5 1/2"	CU-1124, CC-1096	.50
CB-526	8 1/2"	7 1/2"	CU-880	.79
CB-527	9 1/2"	7 1/2"	CU-881	.82
CB-528	7 1/2"	6 1/2"	CU-882	.66
CB-36	6 1/2"	6 1/2"	CC-1097	.60
CB-37	8 1/2"	6 1/2"	CC-1100	.76



### BUD INTERSTAGE SHIELDS

These shields are useful on receiver and transmitter chassis for eliminating interstage coupling and isolating individual circuits. Formed angles on front and bottom facilitate mounting on either chassis or panel. Both angles punched with two mounting holes.

Cat. No.	Height	Depth	Dealer Cost
IS-1246	5 1/4"	7"	\$0.45
IS-1247	5 1/4"	10"	.47
IS-1245	6 1/4"	10"	.50



### BUD ALUMINUM CHASSIS

The construction and design of these chassis is exactly the same as our steel chassis. The aluminum chassis are welded on government approved spot welders that are the same as used in the welding of aluminum airplane parts. The gauges in table below are aluminum gauges. As a result, you can depend on BUD Aluminum Chassis to do a perfect job.

Catalog Number	Depth	Width	Height	Gauge	Dealer Cost
AC-402	5"	7"	2"	18	\$0.69
AC-403	5"	9 1/2"	2"	18	.81
AC-421	5"	9 1/2"	3"	18	.89
AC-404	5"	10"	3"	18	.99
AC-422	5"	13"	3"	18	.98
AC-405	7"	7"	2"	18	.81
AC-406	7"	9"	2"	18	.90
AC-407	7"	11"	2"	18	.96
AC-408	7"	12"	2"	18	1.14
AC-409	7"	13"	2"	18	1.02
AC-411	7"	15"	3"	16	1.68
AC-423	7"	17"	3"	16	1.43
AC-424	8"	17"	3"	16	1.38
AC-425	8"	17"	2"	16	1.52
AC-412	8"	17"	3"	16	1.77
AC-413	10"	12"	3"	16	1.44
AC-414	10"	14"	3"	16	1.92
AC-415	10"	17"	2"	16	1.80
AC-416	10"	17"	3"	16	2.04
AC-426	11"	17"	2"	14	1.89
AC-417	11"	17"	3"	14	2.40
AC-418	12"	17"	3"	14	2.52
AC-419	13"	17"	2"	14	2.25
AC-420	13"	17"	3"	14	2.67
AC-427	10"	17"	4"	14	2.36
AC-428	13"	17"	4"	14	3.05



### BUD REMOVABLE TOP CHASSIS

Amateurs and experimenters who make periodic changes can do so with a minimum of waste by just discarding the top that has been drilled and replacing it with a new top. Supplied in Black Wrinkle finish or Electro-Zinc Plated.

Black Wrinkle Cat. No.	Zinc Plated Cat. No.	Depth	Width	Height	Dealer Cost
RT-196	CB-193	10"	17"	3"	\$2.75
CB-197	CB-194	10"	17"	4"	3.00
CB-251	CB-210	13"	17"	3"	3.15
CB-252	CB-211	13"	17"	4"	3.90

### REPLACEMENT CHASSIS TOPS

RT-198	RT-195	10"	17"	1/16"	\$1.00
RT-253	RT-212	13"	17"	1/16"	1.32



### BUD CHASSIS BOTTOM PLATES

These bottom plates make excellent dust covers and protect all wiring and component parts under the chassis. Each plate has four formed bosses that prevent sharp edges from scratching the table top. Supplied in Black Wrinkle finish or Electro-Zinc Plated finish.

Black Wrinkle Cat. No.	Zinc Plated Cat. No.	Width	Length	Dealer Cost
BP-705	BP-706	5"	7"	\$0.36
BP-680	BP-667	5"	9 1/2"	.33
BP-536	BP-538	5"	10"	.39
BP-681	BP-668	7"	7"	.45
BP-682	BP-669	7"	9"	.48
BP-683	BP-670	7"	11"	.54
BP-537	BP-539	7"	12"	.57
BP-684	BP-671	7"	13"	.57
BP-685	BP-672	5"	13 1/2"	.45
BP-516	BP-513	7"	15"	.63
BP-541	BP-540	8 1/2"	15"	.65
BP-1069	BP-1067	4"	17"	.48
BP-686	BP-673	7"	17"	.66
BP-707	BP-708	8"	10"	.57
BP-709	BP-710	8"	12"	.66
BP-687	BP-674	8"	17"	.69
BP-688	BP-675	10"	12"	.69
BP-517	BP-514	10"	14"	.75
BP-689	BP-676	10"	17"	.84
BP-690	BP-677	11"	17"	.84
BP-691	BP-678	12"	17"	.90
BP-692	BP-679	13"	17"	1.08
BP-518	BP-515	10"	23"	1.15

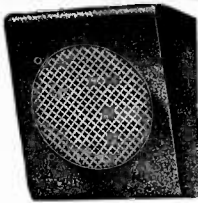


### BUD INTERLOCK SWITCH-BRACKET

The Interlock Switch-Bracket is offered as a means for mounting an essential safety switch used in interlock circuit in rack cabinet. All voltage will automatically be off when the cabinet is opened.

Cat. No.	Height	Width	Depth	Dealer Cost
SB-1348	3 1/4"	1 1/2"	2"	\$0.39

Where materials are specified Black Wrinkle Finish, and Grey is desired, a charge of 15% additional will be made. Prices slightly higher west of the Mississippi River

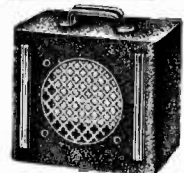


### BUD WALL OR TABLE TYPE SPEAKER CASE

A distinctive line of new metal speaker cabinets with reproduction capabilities equal to wood cabinets. All troubles with wood warping and splitting are eliminated.

Keyway holes are provided for wall mounting and four embossed feet on the bottom are provided to prevent damaging table surfaces. Finished in Brown Wrinkle only.

Cat. No.	Hole Size	Speaker Size	Height	Width	Depth	Dealer Cost
CS-1948	3 1/2"	4"	7 1/2"	6 1/2"	4 1/2"	\$2.85
CS-1939	4"	5"	7 1/2"	6 1/2"	4 1/2"	3.00
CS-1940	4 3/4"	6"	9 1/2"	8"	5 5/8"	3.40
CS-1941	6 1/2"	8"	11 1/2"	9 1/2"	7"	3.90
CS-1942	8 1/2"	10"	13 1/2"	11 1/2"	8 1/4"	4.50
CS-1943	10 1/2"	12"	15 1/2"	13 1/2"	9 3/4"	5.00



### BUD STREAMLINED SPEAKER CASES

For an attractive Speaker Housing that is portable, choose these Speaker Cases. No baffle required with these Speaker Cases. Quality of reproduction is equal to that of a good wood speaker housing. Each case has the front vertical corners rounded and the speaker opening is covered with an artistic metal grille. Two strips of chrome trim are mounted on the front. All Speaker Cases are drilled to take the size of speaker that is intended for the case. These cases are available in either Black or Grey Wrinkle finish.

Cat. No.	Hole Size	Speaker Size	Height	Width	Depth	Dealer Cost
CS-1935	4 3/4"	6"	8"	9"	6"	\$3.35
CS-1936	6 1/2"	8"	9 3/4"	11"	7"	4.20
CS-1937	8 1/4"	10"	11 1/2"	13"	8"	5.70
CS-1938	11"	12"	13 1/2"	15"	8"	7.00



### BUD GENERAL SPEAKER CABINETS

In making permanent or portable public address installations, this line of speaker cabinets will be found very useful. No baffle required with these speaker housings. Quality of reproduction is equal to that of fine wood speaker cases. Construction is of heavy, cold-rolled steel. A carrying handle is attached to each cabinet for portable purposes. Finished in Black Wrinkle Enamel only.

Cat. No.	Hole Size	Speaker Size	Height	Width	Depth	Dealer Cost
CS-471	4 3/4"	6"	9"	9"	6"	\$2.88
CS-472	6 1/2"	8"	11"	11"	7"	3.60
CS-473	8 1/4"	10"	13"	13"	8"	4.65
CS-474	11"	12"	15"	15"	8"	6.15



### TRUCK CASTERS

No. RC-7756—Heavy Duty type casters, for weights of 400 lbs. or less. No. RC-7757 Casters are Light Duty for lighter weights. Wheels, hard rubber composition and ball bearing.

Catalog No.	Height	Type	Dealer Cost
RC-7756	2 3/4"	Heavy Duty	\$ .90
RC-7757	2"	Light Duty	.40

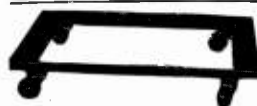
### RELAY RACK SCREWS AND WASHERS



No. RS-7140 Machine Screws, 1/2" long, threaded 10-32, Oval Head, finished in Nickel Plate.

No. RW-7161 Cup Washers, to fit 10-32 Screws. Nickel plated, finish. These are available in packages of 100, 250, 500 and 1000.

Catalog No.	Description	Dealer Cost
RS-7140	Screw	\$ .90 per 100
RW-7161	Washer	1.00 per 100



### BUD CABINET RACK DOLLIES

These dollies have been introduced to overcome the difficulty of moving heavy relay racks when repairs are necessary. They will fit cabinets having bases measuring from 14" x 18" to 17" x 21" and are especially suited for our Standard Relay Racks.

No. RD-505 Dolly is furnished with light duty casters. No. RD-506 is furnished with heavy duty casters. Finished in Black Wrinkle only. Bud De Luxe Relay Racks require four RC-7756 casters only.

Cat. No.	Length Outside	Length Inside	Width Outside	Width Inside	Dealer Cost
RD-505	21 1/2"	17 3/4"	17 1/2"	13 1/2"	\$6.00
RD-506	21 1/2"	17 3/4"	17 1/2"	13 1/2"	7.75

Where materials are specified Black Wrinkle Finish, and Grey is desired, a charge of 15% additional will be made.

Prices slightly higher west of the Mississippi River

### BUD STREAMLINED AMPLIFIER FOUNDATIONS



Use this unit to obtain beauty in an amplifier and similar apparatus. Each foundation consists of a standard chassis on which is mounted a removable top cover. Chromium trim is used to add additional attractiveness to the equipment. All chassis are 3" high and complete units are 9" high. Sturdy Easy Grip handles are attached to chassis, excepting No. 1750 where handle is attached to top. Finished in either Black or Grey Wrinkle.

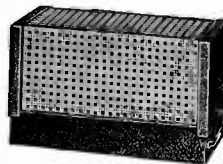
Cat. No.	Width	Depth	Dealer Cost
CA-1750	10 1/16"	5"	\$3.48
CA-1751	12 1/16"	7"	3.21
CA-1752	17 1/16"	7"	4.29
CA-1753	17 1/16"	10"	5.10

### BUD SLOPING PANEL AMPLIFIER FOUNDATIONS



Each foundation consists of a 4" sloping front chassis on which is mounted a removable top cover. The top cover contains gridded cutouts and louvers for adequate ventilation. The CA-1980 has a handle mounted on top of cover. All others have handles mounted on chassis. All chassis are 3 1/2" high and all units are 9 1/2" overall height. Cover is finished in Grey Wrinkle with chrome trim and the chassis is finished in Black Wrinkle.

Cat. No.	Top Depth	Chassis Length	Chassis Depth	Dealer Cost
CA-1980	5"	10"	8"	\$4.65
CA-1981	7"	12"	10"	5.40
CA-1982	7"	17"	10"	6.24
CA-1983	10"	17"	13"	6.90



### BUD AMPLIFIER FOUNDATIONS

Each unit consists of a regular chassis on which is attached a perforated metal cover which provides a lot of ventilation. Chassis have easy grip handles attached to same. Finished in Black Wrinkle only

Cat. No.	Height	Width	Depth	Chassis Height	Dealer Cost
CA-699	8 3/16"	9 3/8"	5 1/8"	2 1/2"	\$3.30
CA-1125	8 3/16"	13 3/8"	5 1/8"	2 1/2"	3.52
CA-1126	8 3/16"	17 3/8"	7 1/8"	2 1/2"	4.24
CA-1127	8 3/16"	17 3/8"	10 1/8"	3"	5.22
CA-1128	8 3/16"	12 3/8"	10 1/8"	3"	4.60

### BUD IMPROVED UTILITY HANDLES



These handles are designed to provide sufficient strength and comfortable hand-grip. They are made from aluminum tubing and are given an etched aluminum finish. Made in two sizes and furnished complete with screws, washers and nuts.

Catalog Number	Overall Length	Overall Width	Mtg. Hole Center	Dealer Cost
UH-70A	5 3/4"	3/4"	4 5/8"	\$0.22
UH-71A	3 3/4"	3/4"	3 3/4"	.18

### BUD MOUNTING BRACKETS



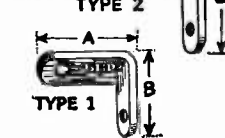
These Brackets are designed to permit the mounting of Midget Condensers, volume controls, etc., at any desired position under or on top of a chassis, at the proper distance from the chassis. Bracket is made of steel, cadmium-plated. AB-550 same as AB-549 except that slot does not have 1/2" hole in center.

Cat. No.	Height	Width	Slot	Dealer Cost
AB-549	2"	3/4"	3/8" & 1/2"	\$0.06
AB-550	2"	3/4"	3/8"	\$0.06

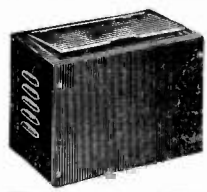
### BUD ANGLES AND BRACKETS

A wide selection in sizes of these angles provides for numerous uses as brackets in all types of radio transmitter and receiver construction, and other electronic equipment. Made of Brass, Nickel Plated.

	A	B	Type 2	Dealer Cost
AB-633	2"	3/8"	3/8"	\$4.20
AB-634	3"	3/4"	3/8"	5.00
AB-635	4"	3/4"	3/8"	6.00



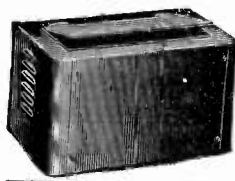
	A	B	Type 1	Dealer Cost
AB-444	1 1/2"	1 1/2"	3/8"	\$2.10
AB-445	3/4"	3/4"	3/8"	2.85
AB-446	1"	1"	3/8"	3.15
AB-447	1 1/2"	1 1/2"	3/8"	4.05
AB-631	1"	1 1/2"	3/8"	2.65
AB-632	1 1/2"	3/8"	3/8"	3.50



**BUD INSTRUMENT & RECEIVER CABINETS**

Each cabinet has an evenly recessed hinged cover with convenient finger lift. The panel on front of cabinet is readily attached with self-tapping screws. Louvers provide ample ventilation. These Cabinets are finished in Black Wrinkle only. For chassis to fit these cabinets see Open End Chassis listed on other page.

Cat. No.	Height	Width	Depth	Dealer Cost
C-973	7"	8"	8"	\$2.52
C-993	7"	10"	8"	2.18
C-994	7"	12"	8"	2.18
C-995	7"	14"	8"	3.24
C-1190	8"	16"	8"	5.10
C-975	9"	15"	11"	6.15



**BUD STREAMLINED CABINETS**

Distinctive features of these cabinets are the rounded front corners and recessed hinged top. All parts built into this cabinet are easily accessible. Overall height, 8". Depth, 8 1/4". Finished in Black Wrinkle only. Suitable chassis may be found under listing of Open End Chassis on other page.

Catalog Number	Panel Size	Cabinet Width	Cabinet Height	Dealer Cost
C-1783	8" x 8"	10 1/2"	8"	\$3.00
C-1745	8" x 10"	12 1/2"	8"	3.30
C-1747	8" x 12"	14 1/2"	8"	3.70
C-1748	8" x 14"	16 1/2"	8"	4.50
C-1790	8" x 16"	18 1/2"	8"	4.26

**BUD DELUXE STREAMLINED CABINETS**

These cabinets are identical with those listed above, except that they have a 1/2" vertical chrome strip at each side of the panel, and are supplied in Gray Wrinkle Enamel only.

Catalog Number	Panel Size	Cabinet Width	Cabinet Height	Dealer Cost
C-1791	8" x 8"	10 1/2"	8"	\$3.75
C-1781	8" x 10"	12 1/2"	8"	4.20
C-1782	8" x 12"	14 1/2"	8"	4.50
C-1783	8" x 14"	16 1/2"	8"	5.10
C-1792	8" x 16"	18 1/2"	8"	6.50

**BUD METAL CARRYING CASES**

These carrying cases have many uses. An easy grip handle is fastened to the top. Front and back panels are removable. Steel welded construction assures maximum strength with minimum weight, an important requirement for portable work. Finish is Black Wrinkle only. For chassis to fit these cabinets see Chassis Decks on other page.



Cat. No.	Depth	Width	Height	Dealer Cost
CC-1095	5"	9"	9"	\$2.15
CC-1091	5"	9"	6"	2.15
CC-1096	6"	7"	6"	2.50
CC-1092	6"	12"	7"	2.95
CC-1097	7"	7 1/4"	15"	3.00
CC-1100	8"	10"	10"	2.95
CC-1093	7"	15"	9"	4.30

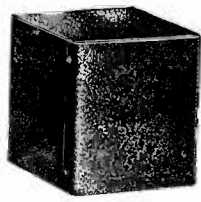
**BUD CODE PRACTICE OSCILLATOR AND MONITOR**



The BUD CODEMASTER is a real money-saver. No longer do you have to consider your code practice oscillator useless after you have learned the code. A flip of the switch and you have a good CW monitor. This is a really versatile instrument. It has a 4" built-in permanent magnetic dynamic speaker and will operate up to twenty ear-phones. A volume control and pitch control permit adjustments to suit individual requirements. Any number of keys can be connected in parallel to the oscillator for group practice. This unit will operate on 110 volts A.C. or D.C. An external speaker may be plugged in without the use of an output transformer. All controls are placed on the front of the unit and all jacks are in the rear. The unit is 6 1/2" high, 5 1/2" wide and 3 1/2" deep. It is finished in black enamel with white lettering.

Catalog Number CPO-128	Dealer Cost \$12.50
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**BUD STREAMLINED SCOPE AND UTILITY CABINETS**

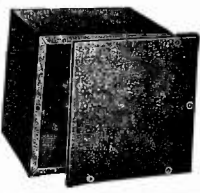


These are attractive cabinets that are adaptable to a variety of uses. All cabinets are supplied with chassis. Prices shown below include chassis. The chassis height on all except CU-1991 and CU-1992 is 1 1/2". CU-1991 is designed for 3" cathode ray tube and has a hinged cover to provide easy access to tube or other components. Chassis height is 2". CU-1992 is designed for a 5" cathode ray tube and also has a hinged cover. Chassis height, 3".

Catalog Number	Width	Depth	Height	Dealer Cost
CU-1990	5 1/2"	8 1/2"	8"	\$2.75
CU-1984	7 1/2"	8 1/2"	8"	3.20
CU-1985	9 1/2"	8 1/2"	8"	3.57
CU-1986	11 1/2"	8 1/2"	8"	3.91
CU-1987	13 1/2"	8 1/2"	8"	4.56
CU-1988	15 1/2"	8 1/2"	8"	5.06
CU-1989	17 1/2"	8 1/2"	8"	5.72
CU-1991	7 1/2"	13"	8"	5.40
CU-1992	9 1/2"	19"	12"	7.65

**BUD METAL UTILITY CABINETS**

The large number of sizes available makes this line useful for all sorts of electronic equipment, monitors, frequency meters, etc. These cabinets have two removable sides for easy accessibility and are finished in Black Wrinkle.



Cat. No.	Depth	Width	Height	Dealer Cost
CU-883	2"	4"	4"	\$0.66
CU-728	3"	5"	4"	.75
CU-729	4"	5"	6"	.95
CU-1098	6"	6"	6"	1.00
CU-1099	5"	6"	9"	1.44
CU-879	7"	6"	9"	1.30
CU-1124	6"	7"	10"	1.90
CU-880	8"	10"	10"	2.40
CU-881	8"	11"	12"	3.00
CU-882	7"	9"	15"	3.35

**BUD SLOPING PANEL CABINETS**



The entire front panel is removable if desired. This cabinet is also provided with a hinged top for easy accessibility to tubes or other parts that are mounted on chassis. All cabinets are finished in Black Wrinkle only.

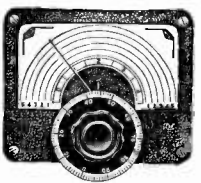
Catalog Number	Height	Width	Depth	Fits Chassis	Dealer Cost
C-1584	6 1/2"	7 1/8"	7 1/2"	7" x 6" x 2"	\$2.88
C-1585	6 1/2"	9 1/8"	7 1/2"	7" x 8" x 2"	3.25
C-1586	6 1/2"	11 1/8"	7 1/2"	7" x 10" x 2"	3.60
C-1892	8"	13 1/8"	8 1/2"	8" x 12" x 2 1/2"	4.32
C-1893	10"	18 1/8"	10 1/2"	10" x 17" x 3"	5.85

**BUD BOX SHIELDS**



This shield has many uses: Shielding power transformers and chokes, and for covering and protecting various other components in power supplies, transmitters, receivers and other electronic units. Top and sides are one-piece steel. No. BS-1244 has perforated steel ends for ventilation. BS-1891 has solid ends. Flanges at bottom provide for mounting. Finished in Black Wrinkle Enamel only.

Cat. No.	Ends	Length	Depth	Height	Dealer Cost
BS-1244	Ventilated	7 1/2"	4 1/2"	5"	\$1.45
BS-1891	Solid	7 1/2"	4 1/2"	5"	1.35



**BUD VERNIER DIAL—GEARED TYPE**  
Freedom of back-lash is obtained by the use of spring-loaded laminated steel gears with a ratio of ten to one. Dial furnished with three paper dial scales on which calibration marks can be printed. Dial scales are printed with five calibration arcs for wave-band identification and each arc is divided into five equal sections over 180 degrees, which makes each section the equivalent of one rotation of the circular dial, or 100 dial divisions. Automatic clutch and stop prevents pointer from being turned off scale and eliminates possibility of damage to the gears. The dial is furnished mounted, complete with all hardware. An escutcheon outlines the dial scale, which is further protected by a "Plastacel" window. Dial scale assembly mounts independent of the gear unit, and may be removed when desired without disturbing the dial drive. Mounting area of the dial 5 1/4" x 5 3/4". Depth behind panel 1 1/2".

D-1729	Dealer Cost \$3.00
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Where materials are specified Black Wrinkle Finish, and Grey is desired, a charge of 15% additional will be made.

Prices slightly higher west of the Mississippi River





**BUD MINIATURE UTILITY CABINETS with attached Chassis**



Filling a long wanted need for a small cabinet with a chassis attached to the front panel, these cabinets are indispensable when building electronic devices using miniature tubes. Front and rear panels are removable and fastened with self-tapping screws, permitting easy accessibility. Especially useful for HF converters, television amplifiers and power supplies. Finished in black wrinkle.

Cat. No.	Height	Width	Depth	CHASSIS SIZE	Dealer Cost
C-1793	4"	2"	1"	3 1/8" 1 7/8"	\$ .95
C-1794	5"	3"	1"	4 1/8" 2 7/8"	1.05
C-1795	5"	4"	3"	1 1/4" 3 3/8" 2 7/8"	1.05
P-1796	5"	4"	4"	1 3/4" 4 1/8" 3 7/8"	1.15
C-1797	5"	4"	4"	1 1/4" 5 1/8" 3 7/8"	1.15
C-1798	6"	6"	6"	1 3/4" 4 7/8" 5 7/8"	1.20

**BUD SLOPING PANEL UTILITY BOX**



A compact, sloping panel cabinet, providing a streamlined appearance and enough space to house conveniently a 2 or 3 miniature tube amplifier or gadget. A 3/8" flange around the rear opening of the cabinet provides a convenient back cover mounting. Designed to accommodate a Bud miniature chassis. Finished in black wrinkle.

Cat. No.	Height	Width	Depth	Use Chassis No.	Dealer Cost
C-1602	4"	4"	4 1/4"	CB-1617	\$1.10
C-1603	4"	5"	4 1/4"	CB-1618	1.20
C-1604	4"	6"	4 1/4"	CB-1619	1.30
C-1605	4"	7"	4 1/4"	CB-1620	1.50

**BUD HANDY BOXES**



Something new in box design permits a large number of small components to be easily wired or serviced. The cover is held by 4 self-tapping screws. Black wrinkle finish.

Cat. No.	Height	Width	Depth	Dealer Cost
HB-1621	2 1/4"	4 1/4"	1 1/2"	\$ .90
HB-1622	2"	4"	2 3/4"	1.00

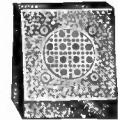
**BUD SLOPING PANEL UTILITY CABINET**

A metal box that can be used for numerous purposes. Finished in Black Wrinkle Enamel only.



Cat. No.	Height	Width	Depth	Dealer Cost
C-1578	4 1/4"	4"	4"	\$ .90
C-1579	4 1/4"	5"	4"	1.05
C-1580	4 1/4"	6"	4"	1.20
C-1581	4 1/4"	7"	4"	1.45

**BUD MIDGET SPEAKER CASES**



A safe, convenient housing for midget 2" and 3" speakers. Size 4" wide, 4" deep, 4 1/4" high. Finished in Black Wrinkle Finish only.

Catalog Number	Hole Diameter	Speaker Size	Dealer Cost
CS-1685	2 3/8"	2"	\$1.25
CS-1686	2 1/8"	3"	1.25

Prices slightly higher west of the Mississippi River.

**BUD MINIATURE AMPLIFIER FOUNDATION**



With the increased use of miniature tubes, smaller cabinets can be used when designing a compact amplifier. This amplifier foundation was designed expressly for this purpose. The chassis is a 5" x 7" x 2". The cover is made of perforated metal. A streamlined handle makes this cabinet portable. Finished in black wrinkle.

Cat. No.	Height	Width	Depth	Chassis Height	Dealer Cost
CA-1754	6"	7"	3"	2"	\$3.00

**BUD ALUMINUM MINIATURE CHASSIS**



These small, open end aluminum chassis are just the thing for miniature tube applications or sub-assemblies. Made of hard aluminum with 1/4" flange on bottom, allowing the chassis to be fastened down or a bottom plate to be attached. Extremely useful for small receivers, outboard uses, such as narrow band FM adapters or any use where space is limited. Finish is etched aluminum.

Cat. No.	Depth	Width	Height	Fits Cabinet No.	Dealer Cost
CB-1623	2 5/8"	2 3/4"	1 1/4"	C-1784	\$ .30
CB-1624	1 3/4"	3 1/8"	1 1/4"	CU-883	.33
CB-1625	3 1/4"	4 1/2"	2"	C-1788	.36
CB-1626	2 3/4"	4 1/8"	1"	CU-728	.36
CB-1627	3 3/4"	4 1/8"	1 1/2"	CU-729	.36
CB-1628	3 3/4"	6 1/8"	1 1/2"	C-1785	.42
CB-1629	5 3/4"	4 7/8"	1 1/2"	CU-1098	.45
CB-1617	4 1/4"	3 1/8"	1"	C-1602	.36
CB-1618	4"	4 1/8"	1"	C-1603	.39
CB-1619	4"	5 1/8"	1"	C-1604	.42
CB-1620	4"	6 1/8"	1"	C-1605	.45

**BUD STREAMLINED MULTI-PURPOSE CABINETS**



Handsome streamlined metal cabinet, finished in grey wrinkle. Back of Cabinet open for ventilation.

Cat. No.	Height	Width	Depth	Use Chassis No.	Dealer Cost
C-1784	4 1/2"	3 5/8"	3 1/8"	CB-1623	\$1.35
C-1785	4 1/2"	7 1/8"	3 1/8"	CB-1628	1.75
C-1787	6 1/2"	5 1/2"	3 1/2"	CB-1625	1.70
C-1788	4 1/2"	5 1/2"	3 1/2"	CB-1625	1.75

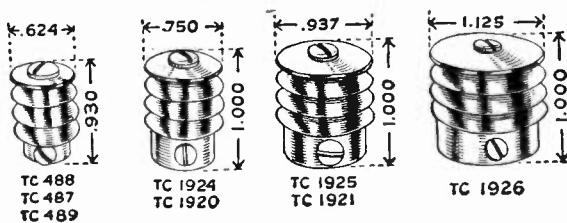
**BUD STREAMLINED METER CASES**

Designed for all applications requiring a modern meter case. All cases have a sloping front with top corner rounded. Meter cases CM-1241 and CM-1242 have insulators on top for leads to meter. CM-1965 and CM-1966 are furnished without indicators. Finished in Black Wrinkle.



Catalog Number	Hole Diameter	Fits Meter Size	Dealer Cost
CM-1241	2 3/8"	2"	\$1.12
CM-1242	2 1/8"	3"	1.12
CM-1965	2 1/8"	2"	.95
ZB-1966	2 1/8"	3"	.95

**HEAT RADIATING PLATE AND GRID TUBE CONNECTORS**



Bud heat radiating connectors fit all sizes of industrial and transmitting vacuum tubes. These connectors serve a dual purpose, not only are they useful to make connections to plate or grid terminals, but they provide a large heat radiating surface that will dissipate heat from the glass seal and tube element.

Eight sizes fit all grid and plate leads and also provide sufficient heat radiation for any tube operating in the range of 50 to 2000 watts. All radiators are machined from special aluminum rod. Edges are rounded to minimize corona loss.

Table below lists Connectors to fit various Tubes

Cat. No.	Hole Size for Lead	Heat Radiating Connectors to Fit the Following Tubes	Dealer Cost
TC-488	.052	3C24, 24, 24G, 25T, 27	\$ .36
TC-487	.062	UH50, HK24, 304B, 829B, 832A, 834	.36
TC-489	.072	35T, 35TG, 75TH, HK254, HK257B, 484, 8001	.36
TC-1924	.125	HK57, 152TH	.50
TC-1920	.375	4-125A, 150TH, 2-150D, 250R, 250TH, 250TL, 420A, 802, 803, 804, 807, 808 Grid, 814, 815, 828	.50
TC-1925	.125	304TH, 304TL	.60
TC-1921	.570	ZB60, HF60, HF100, 111H, 211H, 203H, HF175, HF300 Grid, 100R, HK357C, 450TH, 454, 750TH, 805, 806, 808, 809, 810, 811, 812, 813, 828, 833, 866, 854, 1500T, 2000T, 1054, 5331, 5332, 8000, 8003, 8005	.60
TC-1926	.810	WL468, WL463, WL460, HF200, HF201, HF300	.90

NOTE: TC-1923 Heat Radiating Connector with hole size of .110", is still in our line and can be furnished. Dealer Cost \$ .50

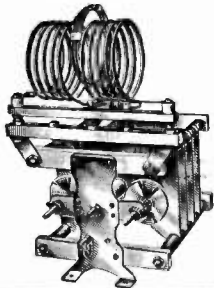


### BUD BUTTERFLY TRANSMITTER CONDENSERS

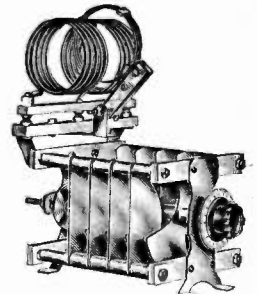
These Butterfly condensers are unequalled for mechanical and electrical balance in push-pull amplifier circuits. Where space behind the panel will not permit the use of our Giant or Master condensers, these dual condensers are ideal.

Rotor and Stator plates are made from .062" thick, highly polished aluminum with all edges rounded and surfaces highly polished to minimize corona loss and danger of peak voltage flash-over. Steatite bars are used as insulators.

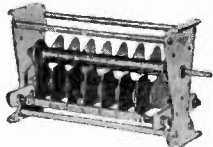
These condensers are so designed that a pair of single plate neutralizing condensers can be fastened to the end plate. Brackets for mounting coil jack bars are furnished with the condensers. All condensers that have an air gap of .5" are furnished with brackets for kilowatt coils and the condensers that have .3" air gap are furnished with brackets for the mounting of 500 watt coils. The height of the condensers is 6 1/4" and the width is 7".



Catalog Number	Overall Length	Mounting Hole Dim.	Air Gap	Capacity MMFD Per Section		Capacity MMFD Sections in Series		Dealer Cost
				Max. — Min.	Max. — Min.	Max. — Min.	Max. — Min.	
GC-1825	8 1/2"	6 1/4"	.500	25 — 13	13 — 7			\$15.00
GC-1826	10 1/2"	9 1/4"	.500	38 — 17	18 — 8			18.00
GC-1827	12 1/2"	11 1/4"	.500	54 — 25	28 — 13			22.50
GC-1828	15"	13 1/4"	.500	70 — 32	38 — 17			26.00
GC-1829	17 1/2"	15 1/4"	.500	86 — 38	43 — 19			29.50
GC-1830	6 1/4"	5 1/4"	.300	31 — 10	12 — 3			14.50
GC-1831	8 1/2"	7 1/4"	.300	51 — 15	21 — 4			17.50
GC-1832	10"	8 1/2"	.300	71 — 19	31 — 6			21.80
GC-1833	11 1/2"	10"	.300	92 — 24	43 — 9			25.00
GC-1834	12 1/2"	11 1/4"	.300	114 — 29	51 — 11			29.00
GC-1835	A pair of Neut. Cond. for above condensers . . . . . per pair							3.75



### BUD GIANT TRANSMITTER CONDENSERS—SINGLE SECTION



Modern design, plus precision production methods, makes BUD GIANT TRANSMITTER CONDENSERS the first choice of critical engineers for use in such applications as broadcast transmitters, high-power trans-oceanic communications equipment, and many other types of highly specialized electronic devices.

BUD GIANT TRANSMITTER CONDENSERS are built with a sturdy frame consisting of 3/16" thick aluminum end plates, connected by 5/8" diameter duraluminum rods. Formed brackets at top and bottom of end plates provide for mounting these units, and permit placing of associated inductances directly on the condenser.

Rotor and stator plates are accurately stamped from 0.064" thick highly polished aluminum with all edges rounded to minimize corona loss and danger of peak-voltage flash-over. The plates are separated by accurately machined duraluminum spacers that insure a constant air-gap throughout the entire length of the condenser.

The large two-finger rotor-contact spring, made from plated spring brass, assures positive contact with noise-free operation. Steatite bars insulate the stator, and are placed well outside the electrostatic field to keep dielectric losses at a minimum.

Catalog Number	Max. Cap. MMFD.	Min. Cap. MMFD.	No. of Plates	Air Gap	Mtg. Hole Spcg.	Over-all Length	Dealer Cost
GC-1800	195	24	15	.250"	8 1/2"	12 3/8"	\$21.60
GC-1801	345	32	27	.250"	12 1/2"	16 3/8"	30.25
GC-1802	530	48	41	.250"	16 3/8"	20 3/8"	41.00
GC-1803	55	19	7	.500"	7 1/2"	11 3/8"	17.25
GC-1804	95	25	15	.500"	12"	15 3/8"	25.35
GC-1805	150	33	21	.500"	15 3/8"	19 3/8"	29.00
GC-1806	255	52	35	.500"	23 1/2"	27 3/8"	40.50
GC-1807	50	22	9	.750"	10 5/8"	14 1/2"	20.00
GC-1808	75	27	13	.750"	13 3/8"	17 3/8"	24.25
GC-1809	110	40	19	.750"	18 3/8"	22 3/8"	27.00
GC-1810	160	50	29	.750"	26 3/8"	30 3/8"	38.75
GC-1811	55	30	11	1.000"	14 3/8"	18 3/8"	23.25
GC-1812	85	40	17	1.000"	21 1/8"	25"	29.80
GC-1813	105	45	23	1.000"	27 1/8"	31 3/8"	36.70

### BUD GIANT TRANSMITTER CONDENSERS—DUAL SECTION



These GIANT DUAL-SECTION TRANSMITTER CONDENSERS compare in quality with the GIANT SINGLE-SECTION TUNING CONDENSERS described above, and have the same general constructional features. Insulated tie-rods in these split-stator units eliminate closed loops in the frame.

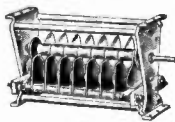
The rotor-contact consists of four fingers made from heavy-plated spring brass, placed in the center of the rotor assembly under heavy spring tension. This construction reduces series resistance and improves the efficiency of the unit at the higher frequencies.

When these dual condensers are used in split-stator circuits, the capacity is reduced to one-half the listed value and the voltage ratings are doubled.

Catalog Number	Cap. Per Sec. Max. Min.	No. Plates Per Sec.	Air Gap	Mtg. Hole Spcg.	Overall Length	Dealer Cost
GC-1815	110 15	9	.250"	11 1/4"	15"	\$29.00
GC-1816	215 23	17	.250"	16 1/4"	20"	39.00
GC-1817	320 30	25	.250"	21 1/4"	25"	50.00
GC-1818	55 18	7	.500"	13 1/4"	17 1/4"	28.00
GC-1819	80 22	11	.500"	18 1/4"	22 3/4"	34.50
GC-1820	110 25	15	.500"	22 3/4"	26 1/4"	41.50
GC-1821	30 15	5	.750"	13 1/2"	17 1/4"	25.92
GC-1822	52 20	9	.750"	20"	23 1/4"	34.00
GC-1823	70 25	13	.750"	26 1/4"	30 1/4"	38.80
GC-1824	35 18	7	1.000"	19 3/4"	23 1/4"	32.40

Panel space for mounting Giant Condenser 6 3/4" wide by 8 1/4" high.

### BUD MASTER TRANSMITTING CONDENSERS—SINGLE SECTION



Each condenser is built in a rigid and sturdy frame consisting of two highly polished 1/8" thick aluminum end plates connected by four 5/16" diameter tie-rods. The end-plates have formed angles on top and bottom to facilitate mounting and to enable the associated inductance to be attached directly to the condenser itself.

The rotors and stators are assembled with plates made from 0.051" thick aluminum on which the edges have been rounded and highly polished. These plates are separated by accurately machined spacers. Large surface cone bearings assure proper alignment and smooth running of rotor with correct tension. Laminated, phosphor bronze wiper springs are placed at each end of the condenser bracket to assure positive rotor contact and noise-free operation. The stator assembly is insulated from the unit by large Steatite bars which are placed outside the electrostatic field. Rotor shaft is 1/4" diameter.

Catalog Number	Cap. in MMFD. Max. Min.	No. of Plates	Air Gap	Mtg. Hole Spcg.	Over-all Length	Dealer Cost
BC-1607	25 10	5	.200"	3 5/8"	4 1/8"	\$5.40
BC-1609	50 13	11	.200"	4 1/8"	6 1/8"	6.00
BC-1610	75 16	15	.200"	5 1/8"	7 1/8"	6.60
BC-1611	100 20	21	.200"	7 5/8"	8 1/8"	7.50
BC-1612	145 35	29	.200"	9 5/8"	10 1/8"	8.40
BC-1613	35 14	9	.300"	5 1/8"	6 3/8"	6.15
BC-1614	55 18	15	.300"	7 1/8"	8 3/8"	7.20
BC-1615	75 21	21	.300"	9 5/8"	10 1/8"	8.40
BC-1616	100 28	28	.300"	12 1/8"	13 3/8"	9.00

### BUD MASTER TRANSMITTING CONDENSERS—DUAL SECTION



While the general style and construction is identical with the single Master units, all tie-rods in this series are insulated by glazed Steatite pillars, thus completely eliminating all closed metallic loops in the condenser frame. A special outstanding feature, developed by BUD engineers, is that of placing the positive double wiping rotor contact between the two sections at the center of the rotor. These features contribute to perfect circuit balance and eliminate the majority of difficulties encountered in ultra-high frequency equipment due to parasitics, circulating currents and poor neutralization. Use BUD condensers throughout and be trouble free.

Catalog Number	Cap. Per Sec. Max. Min.	No. Plates Per Sec.	Air Gap	Mtg. Hole Spcg.	Over-all Length	Dealer Cost
BC-1635A	25 9	5	.200"	6 1/4"	8 1/2"	\$11.10
BC-1636A	35 12	7	.200"	7 1/4"	9 1/2"	12.15
BC-1637A	50 13	11	.200"	9 1/4"	11 1/2"	13.20
BC-1638A	75 16	15	.200"	11 1/4"	13 1/2"	14.30
BC-1639A	100 20	21	.300"	14 1/4"	16 1/2"	16.00
BC-1634A	50 15	13	.300"	12 1/4"	14 1/8"	14.00

Panel space for mounting Master Condensers 3 3/4" wide by 4 1/8" high.

#### OHM'S LAW

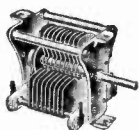
$$E = IR \quad R = \frac{E}{I} \quad I = \frac{E}{R} \quad P = I^2R$$

where:  
 R = resistance in Ohms  
 I = current in Amperes  
 E = electro-motive force in Volts

#### POWER

$$P = EI \quad P = \frac{E^2}{R} \quad P = I^2R$$

where:  
 P = power in Watts  
 I = current in Amperes  
 R = resistance in Ohms  
 E = electro-motive force in Volts



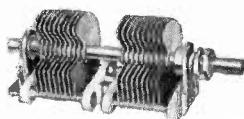
**BUD JUNIOR SINGLE SECTION CONDENSERS**

Construction of these condensers features BUD electro-soldered plate assemblies, assuring correct plate spacing, overall rigidity, and light weight. Losses are reduced to a minimum by this method of assembly. End-plates are rigidly constructed. Frame has formed angles on top and bottom for mounting the condenser in any position, allowing associated tuning inductance to be mounted on the condenser frame. The edges of the brass rotor and stator plates are rounded and the assemblies are finished in cadmium plating. Steatite insulation is used throughout. Large surface front sleeve bearing, and ball and cup rear bearings, provide consistently smooth operation. A two-finger spring brass pressure contact wiper assures noise-free and positive rotor contact at all times.

The low minimum capacities of these units make them especially suitable for multi-band applications where a high maximum-to-minimum capacity is desirable.

Catalog Number	Cap. in MMFD.		No. of Plates	Air Gap	Length Overall	Dealer Cost
	Max.	Min.				
JC-1525	50	4	7	.051"	3 <sup>11</sup> / <sub>16</sub> "	\$2.00
JC-1526	100	7	13	.051"	3 <sup>11</sup> / <sub>16</sub> "	2.25
JC-1527	145	9	19	.051"	4 <sup>1</sup> / <sub>16</sub> "	2.50
JC-1528	250	12	33	.051"	5 <sup>3</sup> / <sub>16</sub> "	3.10
JC-1529	340	15	43	.051"	5 <sup>3</sup> / <sub>16</sub> "	3.90
JC-1530	25	4	5	.078"	3 <sup>3</sup> / <sub>16</sub> "	1.95
JC-1532	55	8	11	.078"	3 <sup>3</sup> / <sub>16</sub> "	2.25
JC-1534	110	10	21	.078"	4 <sup>1</sup> / <sub>16</sub> "	2.76
JC-1535	150	11	29	.078"	5 <sup>1</sup> / <sub>16</sub> "	3.22
JC-1536	190	15	37	.078"	6 <sup>1</sup> / <sub>16</sub> "	4.00
JC-1537	245	17	47	.078"	7 <sup>1</sup> / <sub>16</sub> "	4.25
JC-1538	20	5	7	.144"	3 <sup>3</sup> / <sub>16</sub> "	2.25
JC-1540	55	10	17	.144"	3 <sup>3</sup> / <sub>16</sub> "	2.76
JC-1541	80	12	25	.144"	6 <sup>3</sup> / <sub>16</sub> "	3.15
JC-1542	105	15	33	.144"	8 <sup>1</sup> / <sub>16</sub> "	3.66
JC-1543	18	6	7	.175"	3 <sup>1</sup> / <sub>16</sub> "	2.50
JC-1544	40	11	15	.175"	5 <sup>1</sup> / <sub>16</sub> "	3.15
JC-1545	55	13	19	.175"	6 <sup>1</sup> / <sub>16</sub> "	3.54
JC-1547	100	18	37	.175"	9 <sup>3</sup> / <sub>16</sub> "	4.70

**BUD DOUBLE GANG MIDGET CONDENSERS**



Where space is at a premium and split-stator capacitors are specified, BUD Double Gang Midgets are desirable.

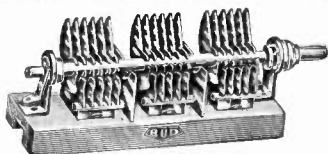
Plate construction and finish, workmanship and materials, are identical with other Midget Condensers. These condensers are designed for chassis and panel mounting.

**MID-LINE PLATE TYPE (STRAIGHT LINE WAVE LENGTH)**

Catalog Number	Cap. Per Section		Air Gap	No. Plates Per Section	Overall Length	Dealer Cost
	Max.	Min.				
MC-929A	50	5	.024"	7	3 <sup>1</sup> / <sub>16</sub> "	\$2.70
MC-911A	100	6	.024"	14	4"	3.05
MC-912A	140	7	.024"	19	4 <sup>3</sup> / <sub>16</sub> "	3.30
MC-942A	20	4	.060"	6	3 <sup>3</sup> / <sub>16</sub> "	2.85
MC-913A	35	5	.060"	11	4 <sup>1</sup> / <sub>16</sub> "	3.10
MC-330A	50	7	.060"	15	5 <sup>1</sup> / <sub>16</sub> "	3.40
MC-331A	75	8	.060"	23	6 <sup>1</sup> / <sub>16</sub> "	3.55
MC-329A	35	9	.095"	15	6 <sup>1</sup> / <sub>16</sub> "	3.55

**SEMI-CIRCULAR PLATE TYPE (STRAIGHT LINE CAPACITY)**

Catalog Number	Cap. Per Section		Air Gap	No. Plates Per Section	Overall Length	Dealer Cost
	Max.	Min.				
MC-1883A	50	5	.024"	7	3 <sup>1</sup> / <sub>16</sub> "	\$2.60
MC-1882A	100	7	.024"	14	4"	2.90
MC-1884A	20	4	.060"	6	3 <sup>3</sup> / <sub>16</sub> "	2.75
MC-1885A	35	5	.060"	11	4 <sup>1</sup> / <sub>16</sub> "	2.95
MC-1887A	50	7	.060"	15	5 <sup>1</sup> / <sub>16</sub> "	3.30
MC-1888A	75	8	.060"	23	6 <sup>1</sup> / <sub>16</sub> "	3.45

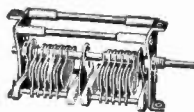


**BUD MIDGET CONDENSERS TRIPLE SECTION**

These mid-line plate type, three-gang condensers fill the need for a tuning unit suitable for short wave super-heterodyne receivers having an R.F. stage for

gang-tuned exciters, and numerous other applications. These condensers are mounted on a glazed ceramic base, assuring perfect rigidity. General construction is the same as other types of midget condensers. A shield plate is provided between each stator section. Base or panel mounting may be used.

Catalog Number	Cap. Per Section		Air Gap	No. Plates Per Section	Length Behind Panel	Dealer Cost
	Max.	Min.				
MC-886	20	4	.060"	6	5 <sup>1</sup> / <sub>16</sub> "	\$4.20
MC-887	35	6	.060"	11	5 <sup>1</sup> / <sub>16</sub> "	4.50
MC-888	100	6	.024"	14	5 <sup>1</sup> / <sub>16</sub> "	4.80
MC-889	140	7	.024"	19	5 <sup>1</sup> / <sub>16</sub> "	5.15



**BUD JUNIOR DUAL SECTION CONDENSERS**

Rotor contact is made by a four-finger, plated pressure spring placed at the center of the rotor shaft between the two sections, thereby providing perfect balance and improving the high frequency characteristics.

The tie-rods are insulated at both ends with Steatite insulators to prevent inductive loops in condenser frame. All other constructional features and materials are the same as used on Junior single section condenser.

Catalog Number	Capacity Per Section		No. Plates Per Section	Air Gap	Length Overall	Dealer Cost
	Max. MMFD.	Min. MMFD.				
JC-1550A	20	3	3	.051"	4 <sup>3</sup> / <sub>16</sub> "	\$3.35
JC-1551A	50	5	7	.051"	4 <sup>3</sup> / <sub>16</sub> "	3.65
JC-1552A	70	6	9	.051"	5 <sup>1</sup> / <sub>16</sub> "	3.85
JC-1553A	100	7	13	.051"	5 <sup>7</sup> / <sub>16</sub> "	4.15
JC-1554A	145	9	19	.051"	6 <sup>3</sup> / <sub>16</sub> "	4.75
JC-1569A	200	10	25	.051"	7 <sup>1</sup> / <sub>16</sub> "	5.10
JC-1556A	250	12	33	.051"	8 <sup>1</sup> / <sub>16</sub> "	6.00
JC-1570A	25	4	5	.078"	4 <sup>1</sup> / <sub>16</sub> "	3.80
JC-1572A	55	8	11	.078"	5 <sup>3</sup> / <sub>16</sub> "	4.45
JC-1573A	80	9	15	.078"	6 <sup>3</sup> / <sub>16</sub> "	4.70
JC-1561A	110	10	21	.078"	7 <sup>1</sup> / <sub>16</sub> "	5.10
JC-1562A	150	11	29	.078"	9 <sup>3</sup> / <sub>16</sub> "	5.80
JC-1574A	20	5	7	.144"	5 <sup>7</sup> / <sub>16</sub> "	4.40
JC-1575A	40	8	13	.144"	7 <sup>7</sup> / <sub>16</sub> "	4.90
JC-1576A	55	10	17	.144"	9 <sup>1</sup> / <sub>16</sub> "	5.10
JC-1566A	18	6	7	.175"	6 <sup>1</sup> / <sub>16</sub> "	4.75
JC-1567A	40	11	15	.175"	9 <sup>1</sup> / <sub>16</sub> "	5.25

Panel Space for mounting Junior Condensers, 2<sup>3</sup>/<sub>4</sub>" wide by 2<sup>7</sup>/<sub>8</sub>" high.

**BUD MIDGET CONDENSERS**



Small size, sturdy construction and high mechanical and electrical efficiency are the outstanding features. Insulation used is Steatite. Rotor and Stator plates are brass and are electro-soldered to their respective rods. All metal parts are cadmium plated.

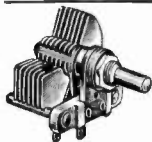
These condensers have both front and rear bearings and are furnished in either mid-line type plates (straight line wave length), or semi-circular plates (straight line capacity).

**SEMI-CIRCULAR TYPE--DOUBLE BEARING**

Catalog Number	Cap. in MMFD.		Air Gap	Number Plates	Dealer Cost
	Max.	Min.			
MC-1850	15	3	.024"	3	\$1.25
MC-1852	33	4	.024"	5	1.35
MC-1853	50	5	.024"	7	1.60
MC-1855	100	7	.024"	14	1.75
MC-1856	140	7	.024"	19	2.00
MC-1858	190	9	.024"	27	2.15
MC-1859	235	10	.024"	33	2.40
MC-1860	300	12	.024"	43	2.64
MC-1861	15	4	.060"	5	1.34
MC-1862	35	5	.060"	11	1.74
MC-1863	50	7	.060"	15	1.93
MC-1864	75	9	.060"	23	2.25
MC-1865	100	12	.060"	31	2.45
MC-1866	35	8	.095"	15	2.00
MC-1867	50	10	.095"	23	2.25
MC-1868	75	13	.095"	33	2.65

**MID-LINE TYPE--DOUBLE BEARING**

Catalog Number	Cap. in MMFD.		Air Gap	Number Plates	Dealer Cost
	Max.	Min.			
MC-900	25	4	.024"	4	\$1.40
MC-902	35	5	.024"	6	1.48
MC-903	50	6	.024"	8	1.67
MC-904	75	7	.024"	11	1.75
MC-905	100	7	.024"	15	1.88
MC-906	140	7	.024"	20	2.15
MC-908	190	9	.024"	27	2.25
MC-909	250	11	.024"	36	2.45
MC-910	300	13	.024"	43	2.75
MC-565	15	4	.060"	5	1.15
MC-897	35	6	.060"	11	1.75
MC-898	50	7	.060"	16	1.98
MC-899	75	8	.060"	23	2.30
MC-941	100	11	.060"	31	2.55
MC-965	35	8	.095"	15	2.15
MC-966	50	12	.095"	23	2.35
MC-967	75	14	.095"	33	2.75



### BUD SINGLE BEARING MIDGET CONDENSERS

Construction of these condensers is identical to Midget Condensers described, with the exception that these condensers have a front bearing only.

#### SEMI-CIRCULAR TYPE — SINGLE BEARING

Catalog Number	Cap. in MMFD.		Air Gap	Number Plates	Dealer Cost
	Max.	Min.			
MC-1870	15	3	.024"	3	\$ .90
MC-1872	33	4	.024"	5	1.00
MC-1873	50	5	.024"	7	1.10
MC-1875	100	7	.024"	14	1.25
MC-1876	140	8	.024"	19	1.40
MC-1877	5	2	.060"	2	1.10
MC-1879	15	4	.060"	5	1.10
MC-1880	35	5	.060"	11	1.25
MC-1881	50	7	.060"	15	1.40

#### MID-LINE TYPE — SINGLE BEARING

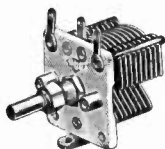
Catalog Number	Cap. in MMFD.		Air Gap	Number Plates	Dealer Cost
	Max.	Min.			
MC-324	10	2	.024"	2	\$ .95
MC-323	25	4	.024"	4	1.05
MC-148	50	5	.024"	8	1.15
MC-901	75	6	.024"	11	1.30
MC-321	100	6	.024"	15	1.40
MC-396	140	7	.024"	20	1.50
MC-327	5	2	.060"	2	1.00
MC-311	15	4	.060"	5	1.15
MC-319	35	6	.060"	11	1.35
MC-312	50	7	.060"	16	1.55

### BUD "CE" MIDGET CONDENSERS SINGLE SECTION DOUBLE BEARING

These Midget Condensers were designed to meet the rigid requirements in design of efficient ultra-high frequency electronic devices and precision laboratory equipment. Brass rotor and stator plate stacks are assembled into permanent units by means of electro-soldering, which assures long life and accurate plate spacing. End-plates of Steatite insulate the mounting bushings and angles from the rotor and stator assemblies. A large front sleeve bearing and rear ball thrust bearing provide for smooth rotation. Special wiper contact provides noise-free tuning. All metal parts are cadmium plated.

Rotor plates are semi-circular shaped. Provision for either panel or base mounting.

Catalog Number	Max. Cap. MMFD.		Air Gap	No. of Plates	Over-all Length	Dealer Cost
	Cap.	MMFD.				
CE-2000	15	4	.030"	3	2 1/2"	\$1.40
CE-2001	35	6	.030"	7	2 23/32"	1.55
CE-2002	50	7	.030"	9	2 27/32"	1.90
CE-2003	75	8	.030"	14	3 5/16"	2.80
CE-2004	100	9	.030"	18	3 11/16"	2.30
CE-2005	150	10	.030"	27	3 19/16"	2.50
CE-2006	200	11	.030"	35	4 1/8"	2.85
CE-2007	250	12	.030"	44	4 8/16"	3.20
CE-2008	300	15	.030"	52	5 5/16"	3.40
CE-2011	15	5	.060"	5	2 3/8"	1.60
CE-2012	35	7	.060"	11	3 1/4"	1.85
CE-2013	50	8	.060"	15	3 9/16"	2.25
CE-2014	75	10	.060"	23	3 3/4"	2.70
CE-2015	100	13	.060"	31	4 5/16"	2.95
CE-2016	35	9	.095"	15	4 1/16"	2.15
CE-2017	50	10	.095"	23	5 1/32"	2.45
CE-2018	75	14	.095"	33	6 7/32"	2.90

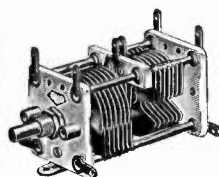


### BUD "CE" MIDGET CONDENSERS SINGLE BEARING

Locking nuts on the rotors of these single-bearing condensers assure trouble-free, portable and mobile operation. A screw-driver slot in rotor provides means of adjustment. Either insulated panel mounting or bracket mounting can be used. General construction is same as "CE" double-bearing condensers.

Catalog Number	Max. Cap. MMFD.		Air Gap	No. of Plates	Over-all Length	Dealer Cost
	Cap.	MMFD.				
CE-2020	15	4	.030"	3	1 11/16"	\$1.15
CE-2021	35	6	.030"	7	1 29/32"	1.30
CE-2022	50	7	.030"	9	2 1/8"	1.40
CE-2023	75	8	.030"	14	2 3/4"	1.60
CE-2024	100	9	.030"	18	3 1/8"	1.80
CE-2025	150	10	.030"	27	3 11/16"	2.00
CE-2028	15	5	.060"	5	1 11/16"	1.35
CE-2029	35	7	.060"	11	2 1/16"	1.60
CE-2030	50	8	.060"	15	2 23/32"	1.75

### BUD "CE" TYPE DUAL MIDGET CONDENSERS



These well constructed dual condensers are similar in design to the double-bearing "CE" types. They feature a rotor wiping contact placed at center of the rotor assembly to assure maximum efficiency at ultra-high frequency. Opposed rotor construction assures perfect counterbalance and provides even torque at any position of rotation. Steatite insulation eliminates closed induction loop in frame.

Catalog Number	Max. Cap. MMFD.		Air Gap	No. of Plates	Distance Behind Panel	Dealer Cost
	Cap.	MMFD.				
CE-2032	35	6	.030"	7	3 1/2"	\$2.30
CE-2033	50	7	.030"	9	3 1/2"	2.45
CE-2034	75	8	.030"	14	3 1/2"	2.95
CE-2035	100	9	.030"	18	4 3/8"	3.15
CE-2036	150	10	.030"	27	4 1/2"	3.75
CE-2039	15	5	.060"	5	3 1/8"	2.70
CE-2040	35	7	.060"	11	4 1/8"	3.15
CE-2041	50	8	.060"	15	4 3/8"	3.40



### BUD TINY MITE PADDERS

For applications requiring a constant padder capacity under all temperature and humidity conditions, these units are ideal. They lend themselves readily to I. F. transformer applications, fixed tuned circuits for exciters, ganged condenser air trimmers, and plug-in-coil padding as they fit inside of standard 1 1/2" diameter coil forms.

Bud Numbers CF-125, CF-126 and CF-310. Rotor and stator assemblies are made up of brass plates (0.015" thick) and rods electrically soldered into a solid unit and then are bright cadmium plated. Insulation is Steatite. Each unit may be adjusted in capacity by either a screw-driver or a 1/4" hex. wrench.

Catalog Number	Max. Cap. MMFD.		Air Gap	No. of Plates	Dealer Cost
	Cap.	MMFD.			
LC-2076	15	2	.017"	5	\$1.00
LC-2077	25	2.5	.017"	7	1.15
LC-2078	35	3	.017"	10	1.20
LC-2079	50	3.9	.017"	14	1.25
LC-2080	75	4.5	.017"	20	1.40
LC-2081	100	5.5	.017"	27	1.55
LC-2082	140	6.5	.017"	37	1.90



### BUD TINY MITE TUNING CONDENSER SINGLE SECTION

This series of condensers has been designed for applications where space or weight are limiting factors and for tuning of ultra-high frequency circuits. Rigid construction, close fitting bearing, positive rotor contact and Steatite insulation are the outstanding features. Cadmium plated, soldered, brass plates and rods insure high frequency efficiency.

Catalog Number	Max. Cap. MMFD.		Air Gap	No. of Plates	Dealer Cost
	Cap.	MMFD.			
LC-1640	8	2.5	.017"	3	\$1.10
LC-1641	15	3	.017"	5	1.15
LC-1642	25	4	.017"	9	1.20
LC-1643	35	5	.017"	13	1.35
LC-1644	50	6	.017"	19	1.45
LC-1645	75	7	.017"	29	1.60
LC-1646	100	9	.017"	37	1.72
LC-1648	10	4	.037"	7	1.18
LC-1649	15	5	.037"	11	1.28
LC-1650	25	5.5	.037"	17	1.50
LC-1651	35	6	.037"	21	1.65
LC-1652*	50	8	.037"	35	2.10
LC-1653	6	3.5	.073"	5	1.25
LC-1654	15	5.5	.073"	15	1.52
LC-1655*	25	9	.073"	27	2.05

\* Denotes double bearing.

### BUD TINY MITE DUAL CONDENSERS

The construction of these units is similar to the regular Tiny Mite Tuning Condensers. The two end pieces are held together firmly with two tie-rods.

A separate round plate is soldered on rotor rod to shield the two stator sections. Large surface front-sleeve bearing, and ball and cup rear bearing, provide smooth rotation.

Catalog Number	CAP. PER SECTION		Air Gap	No. Plates	Over-all Length	Dealer Cost
	Max. MMFD.	Min. MMFD.				
LC-1659	8	2.5	.017"	3	1 15/16"	\$2.15
LC-1660	15	3	.017"	5	2 1/16"	2.35
LC-1661	25	4	.017"	9	2 11/16"	2.60
LC-1662	50	6	.017"	19	3 1/2"	2.72
LC-1663	100	9	.017"	37	4 1/2"	2.95
LC-1664	10	4	.037"	7	2 15/16"	2.25
LC-1665	15	5.5	.037"	11	2 11/16"	2.50
LC-1666	25	5.5	.037"	17	3 1/8"	2.65
LC-1667	35	6	.037"	21	4"	2.90



### NEW BUD THREE-GANG TINY MITE CONDENSERS



Hams, Radio Constructors and Experimenters can find many uses for these compact, three-gang condensers. Designed particularly for high frequency use, they are adaptable for use in converters, preselectors and receivers covering the Amateur, Television and F.M. bands. Well constructed with soldered brass plates and ceramic brackets. Rotor shaft extended 1/4" at rear. Height 1 1/8". Width 1 1/8". Length behind panel 3 3/8". Mounting holes 2 3/8" apart.

Catalog Number	Cap. Per Section Max.	Per Section Min.	No. of Plates Per Section	Dealer Cost
LC-1845	11	5	3	\$3.00
LC-1846	17	5	4	3.20
LC-1847	25	6	5	3.45

### MIDGET TRIMMER CONDENSERS



Primarily intended for antenna coupling, interstage coupling, tracking applications. Base made of ceramic.

Catalog Number	Capacity MMFD. Max.	Min.	Dealer Cost
MT-833	3	36	\$ .15
MT-828	94	420	.30

### BUD NEUTRALIZING AND HIGH FREQUENCY TUNING CONDENSERS



This line of condensers will fill every neutralizing and high frequency tuning requirement that modern circuits pose. The two-pyler construction makes this unit unusually sturdy and eliminates any possibility of capacity variation due to vibration. The movable plate is adjusted by means of the threaded shaft to which it is attached, and it is permanently locked in any position by the lock-nut provided. Any loose thread is taken up by a special nut and locked to give smooth operation. All metal parts are of aluminum. Plates have rounded edges. Steatite insulation is used.

No. 890 and No. 852 are ideal neutralizers for popular low power beam tubes. No. 890 condenser is base mounted only.

Catalog Number	Plate Diameter	MMFD. Capacity Max.	Min.	Dealer Cost
NC-1000	1 7/8"	11	1	\$2.25
NC-1001	2 1/8"	24	2	3.24
NC-1002	4 3/4"	27	6	4.55

### BUD FEED-THROUGH AND BASE MOUNTED NEUTRALIZING CONDENSERS

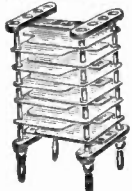


In circuits utilizing tubes with the grid lead terminated in the base, feed-through type of neutralizing condenser is particularly suited. One hole is required for mounting of feed-through condensers. Neutralizing condenser illustrated is feed-through type. Plates are made of aluminum, rounded at edges to cut down losses. After proper tuning is attained, movable plate can be locked with the knurled nut.

No. 890 and No. 852 are ideal neutralizers for popular low power beam tubes. No. 890 condenser is base mounted only.

Catalog Number	Plate Diameter	Size Hole for Mtg.	MMFD. Capacity Max.	Min.	Dealer Cost
NC-852	1"	5/16"	11	.5	\$1.00
NC-853	1 7/8"	13/32"	6	1	2.25
NC-890	1"	.....	6	.5	1.00

### BUD STAT-AIR CONDENSERS



It is difficult to design a radio-frequency amplifier to cover any large frequency range and maintain a proper L/C ratio due to variable condenser limitations. By paralleling the proper Stat-Air condenser in this series with the tuning condenser, this difficulty is easily overcome.

The finish of these electro-soldered brass plate assemblies is cadmium plating, and Steatite insulation is used. They are furnished in either Junior or Senior types.

#### JUNIOR TYPE—MOUNTING DIMENSIONS—1 1/4" x 1 1/2"

Catalog Number	Cap. MMFD.	Air Gap	No. of Plates	Dealer Cost
FA-777	25	.144"	8	\$2.35
FA-780	50	.144"	17	2.30
FA-544	75	.144"	23	3.20
FA-781	100	.144"	29	3.45
FA-782	100	.078"	19	3.00
FA-783	150	.078"	27	3.35

#### SENIOR TYPE—MOUNTING DIMENSIONS—2" x 2 1/4"

Catalog Number	Cap. MMFD.	Air Gap	No. of Plates	Dealer Cost
FA-778	25	.238"	5	\$2.75
FA-784	50	.238"	11	3.20
FA-545	75	.238"	15	3.50
FA-786	100	.238"	19	3.90
FA-785	100	.100"	11	2.68
FA-787	150	.100"	15	3.30

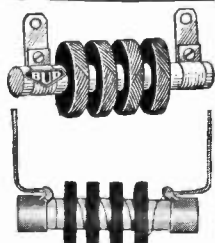
### COMPACT NEUTRALIZING CONDENSERS



In applications where space is the prime factor, these units are ideal for neutralizing and high frequency tuning. Low loss Steatite is used for dielectric. These condensers feature either one hole mounting or fastening to solder lugs provided. All brass parts are nickel plated. A knurled lock-nut permits locking of movable plate.

Catalog Number	Cap. Range in MMFD.	Overall Length	Max. Diam.	Dealer Cost
NC-1928	.75 to 4	2 1/8"	5/8"	\$ .55
NC-1929	1 to 6	2 1/8"	3/4"	1.20
NC-1930	2 to 12	3 7/16"	7/8"	1.55

### PIE WOUND R. F. CHOKES



Each choke has a continuous winding of silk covered enameled copper wire and the pies constituting this winding are wound on a 1/4" diameter ceramic core. Chokes are made with both strap and wire leads. The CH-876 is a heavy duty choke intended for circuits, such as transmitter plate circuits, where high currents are present. All chokes in this series have an overall length of 1 1/2".

#### WITH STRAP LEADS

Catalog Number	Inductance mh.	D. C. Resistance	Current Rating	Dealer Cost
CH-920S	2.5	45 ohms	125 ma	\$ .42
CH-922S	5.5	60 ohms	125 ma	.50
CH-923S	8.0	72 ohms	100 ma	.60
CH-924S	10.0	78 ohms	100 ma	.68
CH-876S	2.5	16 ohms	250 ma	.65

#### WITH WIRE LEADS

Catalog Number	Inductance mh.	D. C. Resistance	Current Rating	Dealer Cost
CH-920W	2.5	45 ohms	125 ma	\$ .42
CH-922W	5.5	60 ohms	125 ma	.50
CH-923W	8.0	72 ohms	100 ma	.60
CH-924W	10.0	78 ohms	100 ma	.68
CH-876W	2.5	16 ohms	250 ma	.65

### LATTICE WOUND R. F. CHOKES



For all general purpose applications requiring a high quality choke at a reasonable price, this line finds wide acceptance. Each choke is wound from silk-covered enameled copper wire on a white ceramic bobbin. Leads are terminated with two convenient soldering lugs. Chokes can be mounted with a 6-32 screw through the center of the form, and each winding is thoroughly impregnated against moisture. The wide range of sizes fills practically every choke requirement in standard radio circuits. Choke base diameter 1 1/8", distance between ends of leads 1 3/8".

Catalog Number	Inductance mh.	D. C. Res. Ohms	Current M. A.	Height	Dealer Cost
CH-1212	2.5	28	125	11/16"	\$ .40
CH-1213	3.4	36	125	11/16"	.50
CH-1214	5.5	46	125	11/16"	.50
CH-1215	8.	60	125	11/16"	.60
CH-1216	10.	65	125	11/16"	.65
CH-1217	16.	84	125	11/16"	.68
CH-1218	30.	190	100	15/16"	.70
CH-1219	60.	279	90	15/16"	.80
CH-1220	80.	332	80	15/16"	.90

### TRANSMITTING CHOKES



Here are two heavy duty R. F. Chokes that can really take it in high powered transmitter plate circuits. Each choke is wound on 9/16" dia. Steatite rod, has connection lugs and a mounting foot.

All chokes have a heavy ceramic coating which prevents moisture absorption and enables them to withstand momentary overloads without collapsing the individual pies.

Consists of five graduated pies wound in continuous winding. Care has been taken to prevent any of the pies from being resonant on an amateur band and to keep the distributed capacity at a minimum. Overall height 3 1/4".

Catalog Number	Inductance	Current Capacity	D. C. Resistance	Dealer Cost
CH-568	2.2 mh.	1 amp.	5 ohms	\$1.65
CH-569	4.3 mh.	.6 amp.	12 ohms	1.50

### ULTRA HIGH FREQUENCY R. F. CHOKES



These chokes were designed to meet the requirements of builders of ultra-high frequency receivers and transmitters. Consists of ceramic rod with a single layer winding terminated with strap leads at each end. Particularly suitable for use on 2 or 6 meters. CH-570 is supplied with a mounting foot and is sometimes used as a filament choke in certain types of high frequency oscillator and amplifier circuits.

Catalog Number	Inductance mh.	Max. Current	D. C. Resistance	Lengths	Dealer Cost
CH-925	5.7 uh.	750 ma	1.4 ohms	1 1/2"	\$ .28
CH-570	1.5 uh.	1.7 a	0.2 ohms	2 3/4"	.95



**IRON CORE R. F. CHOKES**



The efficiency of any circuit requiring an R. F. choke will be definitely improved by utilizing one of these chokes with a finely divided molded metallic core. The improved "Q" possible with this construction results from the D. C. resistance of these chokes being from 40 to 50% less for a given inductance than for regular air-core types. Thus, the D. C. voltage drop through the choke is considerably less, yet the choking action is equally as good. Windings are made with silk-covered enameled wire terminated on convenient soldering lugs, and the chokes are mounted in small square shield cans measuring 1 1/8" x 1 1/8" x 1 1/8".

Catalog Number	Inductance mh.	D. C. Resistance Ohms	Current ma.	Dealer Cost
CH-1277	1.5	11.5	125	\$ .72
CH-1278	2.5	16.	125	.75
CH-1279	3.4	19.5	125	.81
CH-1280	5.5	27.5	125	.81
CH-1281	8.	36.	125	.87
CH-1282	10.	42.5	125	.87
CH-1283	16.	53.	125	.96
CH-1284	30.	82.	100	1.00
CH-1285	60.	131.	100	1.15
CH-1286	80.	163.	90	1.26
CH-1287	125.	221.	90	1.56
CH-294	Shield Can Only		....	.21

**SINGLE CONTACT CABLE CONNECTORS**



Positive unbreakable contacts for single-conductor microphone cable are provided by these shielded connectors. Body is made of brass, bright nickel-plated. Accidental disconnections are rendered impossible by coupling ring which, when tightened, insures perfect contact between soldered connections. Cord protectors of steel spring wire will take cables up to 1/4" diameter.

Catalog Number	Description	Length	Bushing Diameter	Dealer Cost
CN-244	Single Contact, Female	2"	23/32"	\$ .33
CN-245	Single Contact, Male	1 3/4"	5/8"	.27

**CHASSIS UNIT CONNECTOR**



Male connector CN-246 is designed for chassis mounting in connection with CB-244. Where ground to chassis desired, mount in 3/8" hole; to insulate from chassis, mount in 15/32" hole; insulating washers are furnished.

Catalog Number	Description	Dealer Cost
CN-246	Chassis Connector Unit	\$ .20

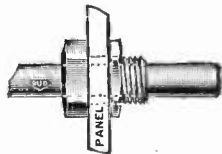
**PHONO PLUG AND JACK**



This is a pin plug and jack combination that will fit into a multitude of applications: Receivers, auto radio, recording and reproducing equipment, experimental units, etc.

Catalog Number	Description	Dealer Cost
PL-247	Plug	\$ .06
JP-248	Jack	.09

**PANEL BEARING ASSEMBLIES**



Nos. PB-530 and PB-531 consist of a regular 1/4" shaft bearing with 6" and 3" length of 1/4" brass rod inserted and held in place by washers to prevent shaft from shifting. These two assemblies will facilitate the panel control of condensers, potentiometers, etc., which must be mounted a distance from the panel. Bearing fits in 13/32" hole and panel. Bearing fits in bearing only without shaft.

Catalog Number	Overall Length	Distance in front of panels	Dealer Cost
PB-530	6"	4 3/8"	\$ .33
PB-531	3"	1 3/4"	.28
PB-532	Bearing Only	....	.12

**SOLDERING IRON TIPS**



This tip is made of a special copper base rod. It is 3/8" diameter x 4" long and is made particularly as a replacement for American Beauty Irons. However, it will fit many other types of irons that are designed to accommodate 3/8" diameter tips.

Catalog Number	Fits American Beauty No.	Dealer Cost
IT-372	3138	\$ .42

**BUD PHONE PLUGS**



All metal parts on these excellent phone plugs are machined from brass, and are nickel plated. Unshielded plugs have handles of black bakelite; shielded types have attractive brass knurled handles, bright nickel plated.

No. FP-1946 is supplied *Without a Handle*, and is used as an adapter between a female microphone cable connector and a regular plug jack.

Catalog Number	Contacts	Handle	Overall Length	Bushing Diam.	Dealer Cost
FP-230	2	Bakelite	2 3/8"	3/4"	\$ .30
FP-282	2	Shielded	2 3/8"	3/4"	.54
FP-1057	3	Bakelite	2 3/8"	3/4"	.66
FP-284	3	Shielded	2 3/8"	3/4"	.85
FP-1946	2	None	1 1/8"	1 1/16"	.24

**BUD MIDGET JACK**



The construction of this jack allows its use in applications having limited space behind the panel. The spring brass contact assures a good connection. These jacks come with insulating washers and accommodate standard phone plugs.

Catalog No.	Type	Distance Behind Panel	Dealer Cost
J-232 A	Open Circuit	13/16"	\$ .27
J-233 A	Closed Circuit	13/16"	.33

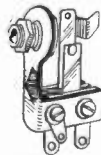
**BUD SMALL JACKS**



These panel mounting jacks are desirable for control panels and similar applications where space is at a premium. Parts are accurately machined, with nickel plated finish and contacts are formed from spring brass. Each jack comes complete with insulated washers and will accommodate standard plugs. Overall length 1 3/8".

Catalog No.	Contacts	Distance Behind Panel	Dealer Cost
J-1038	2	15/16"	\$ .30
J-1058	3	15/16"	.46

**BUD ALL PURPOSE JACKS**



Although small in size, this is one of the finest lines of jacks available. The careful design and high quality materials used in these components assure long, dependable service. Circuit opening contacts are made of pure silver and the laminated bakelite insulation prevents breakdown between springs at all ordinary voltages. Supplied with panel insulating washers. Height 1 1/8", distance behind panel 7/8".

Catalog Number	Circuit Design	Contact Arrangement	Dealer Cost
J-1324		Open Circuit	\$ .30
J-1325		Closed circuit	.36
J-1326		3-Contact open circuit	.39
J-1327		Break contact on tip and ring spring	.42
J-1328		Separate make-contact springs	.42
J-1329		Break contact on tip spring — separate make-contact spring	.48
J-1330		Break-make contact on tip spring	.45

**BAKELITE OUTLET BOX AND COVER**



This bakelite outlet box is an ideal unit for housing numerous radio and electrical specialties in compact form. The box is 2 1/2" wide x 4 3/8" long x 1 1/2" high. A solid bakelite cover is available for this item.

Catalog No.	Item	Dealer Cost
RO-400	Box	\$ .54
RO-401	Cover	.15

**ALLIGATOR CLIPS**



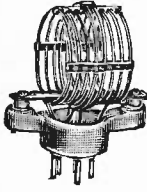
Accurately made; supplied with or without insulated ends. No. CL-485 Clip only. No. CL-486-R Alligator Clip with Red insulated end. No. CL-486-B Alligator Clip with Black insulated end.

Catalog No.	Type	Dealer Cost
CL-485	Regular	\$ .06
CL-486	Insulated	.12





**BUD 75-WATT TRANSMITTER COILS**

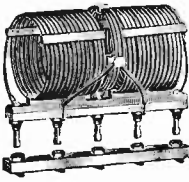


These coils are distinguished by their rigid construction, attractive appearance and conservative power rating. The ceramic mounting base keeps the coil a safe distance from the chassis—it also permits easy coil removal without disturbing the winding. All coils are air-wound and mount in 5 prong tube sockets.

OEP and OCP Coils are designed for use in circuits using Pentode tubes with high output capacity such as 6L6, 807, etc.

OEL coils have fixed link and are not tapped.  
 OCL have fixed center link with main winding center tapped.  
 OLS have adjustable center link, main winding center tapped.  
 OES have adjustable end link and are not tapped.  
 OEP have adjustable end link and are not tapped.  
 OCP have adjustable center link main winding center tapped.

Catalog No.	Catalog No.	Cat. No.	Cat. No.	Band	Capacity*	Dealer Cost
Fixed End Link	Fixed Center Link	Adjustable Center Link	Adjustable End Link			
.....	.....	OLS-160	.....	160 Meter	100 MMFD	\$1.65
.....	.....	.....	OES-160	160 Meter	86 MMFD	1.65
OEL-80	OCL-80	OLS-80	OES-80	80 Meter	75 MMFD	1.38
OEL-40	OCL-40	OLS-40	OES-40	40 Meter	52 MMFD	1.38
OEL-20	OCL-20	OLS-20	OES-20	20 Meter	40 MMFD	1.38
OEL-15	OCL-15	OLS-15	OES-15	15 Meter	30 MMFD	1.35
OEL-10	OCL-10	OLS-10	OES-10	10 Meter	25 MMFD	1.32
OEL-6	OCL-6	.....	.....	6 Meter	17 MMFD	1.08
.....	.....	OCP-10	OEP-10	10 Meter	45 MMFD	1.30
.....	.....	OCP-20	OEP-20	20 Meter	50 MMFD	1.38
AM-1299 Coil Base only.....						54



**BUD ADJUSTABLE LINK TRANSMITTER COILS**

Listed are two types of Coils. CL type of coil has an adjustable CENTER link. ES type of coil has an adjustable END link. The CL and ES can be used where fixed links are specified. No additional cost is involved and more efficient coupling is assured because of this special adjustable link, an exclusive BUD feature.

**150 WATT RATING**

Catalog No. Center Link Adjustable	Catalog No. End Link Adjustable	Band	Capacity*	Dealer Cost
RCL-160	RES-160	160 Meters	110 MMFD	\$4.15
RCL-80	RES-80	80 Meters	68 MMFD	3.45
RCL-40	RES-40	40 Meters	36 MMFD	3.09
RCL-20	RES-20	20 Meters	27 MMFD	2.76
RCL-15	RES-15	15 Meters	27 MMFD	2.76
RCL-10	RES-10	10 Meters	25 MMFD	2.64
AM-1932 — Mounting Base for RCL and RES Coils .... .85				

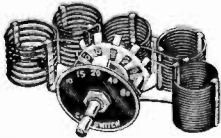
**500 WATT RATING**

VCL-160	VES-160	160 Meter	95 MMFD	\$4.35
VCL-80	VES-80	80 Meter	71 MMFD	3.96
VCL-40	VES-40	40 Meter	26 MMFD	3.63
VCL-20	VES-20	20 Meter	21 MMFD	3.30
VCL-15	VES-15	15 Meter	23 MMFD	3.27
VCL-10	VES-10	10 Meter	26 MMFD	3.17
VCL-6	VES-6	6 Meter	13 MMFD	2.31
AM-1356 — Mounting Base for VCL and VES Coils ..... 1.05				

**ONE KILOWATT RATING**

MCL-80	MES-80	80 Meter	67 MMFD	\$7.56
MCL-40 <td>MES-40</td> <td>40 Meter</td> <td>38 MMFD</td> <td>6.87</td>	MES-40	40 Meter	38 MMFD	6.87
MCL-20 <td>MES-20</td> <td>20 Meter</td> <td>23 MMFD</td> <td>6.54</td>	MES-20	20 Meter	23 MMFD	6.54
MCL-15 <td>MES-15</td> <td>15 Meter</td> <td>30 MMFD</td> <td>6.54</td>	MES-15	15 Meter	30 MMFD	6.54
MCL-10 <td>MES-10</td> <td>10 Meter</td> <td>25 MMFD</td> <td>5.85</td>	MES-10	10 Meter	25 MMFD	5.85
MCL-6 <td>MES-6</td> <td>6 Meter</td> <td>18 MMFD</td> <td>5.07</td>	MES-6	6 Meter	18 MMFD	5.07
AM-1354 — Mounting Base for MCL and MES Coils..... 1.40				

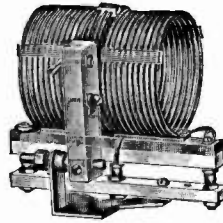
**BUD 50 WATT BAND SWITCH ASSEMBLY**



ONS-1 — 50 watt, 10-15-20-40-80 meter band switch assembly, ideal for all low-power oscillators, buffer or amplifier stages where the input power does not exceed 50 watts and where capacity coupling is used. A 5-position dial plate with suitable marking is furnished.

Catalog Number	Width	Height	Depth	Dealer Cost
ONS-1	5 1/2"	2 1/2"	3"	\$5.40

**BUD VARIABLE LINK TRANSMITTER COILS**



The most effective method of varying the loading of an R. F. Stage is by the use of a variable link to the plate tank, a feature incorporated in all Bud Variable Link Coils. The link winding is connected to the jack bar into which the coils are plugged, and this link may be used with any of the coils regardless of the band being worked. The link winding is so arranged that it may be readily controlled from the panel by means of an extension shaft if required.

**150 WATT RATING**

Catalog Number	Band	Capacity*	Length Mounting Strip Dim.	Mounting Hole Dim.	Dealer Cost
RLS-160	160 M	95 MMFD	3 1/2"	3 1/2"	\$3.15
RLS-80	80 M	78 MMFD	3 1/2"	3 1/2"	2.85
RLS-40	40 M	38 MMFD	3 1/2"	3 1/2"	2.46
RLS-20	20 M	30 MMFD	3 1/2"	3 1/2"	2.19
RLS-15	15 M	30 MMFD	3 1/2"	3 1/2"	2.19
RLS-10	10 M	28 MMFD	3 1/2"	3 1/2"	2.07
AM-1339 — Base and Link Assembly for 150 Watt Coils ... 3.00					

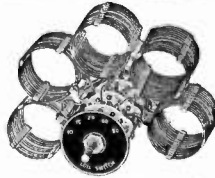
**500 WATT COILS**

VLS-160	160 M	85 MMFD	5 1/2"	5"	\$3.60
VLS-80	80 M	70 MMFD	5 1/2" <td>5" <td>3.21</td> </td>	5" <td>3.21</td>	3.21
VLS-40	40 M	36 MMFD	5 1/2" <td>5" <td>2.85</td> </td>	5" <td>2.85</td>	2.85
VLS-20	20 M	28 MMFD	5 1/2" <td>5" <td>2.49</td> </td>	5" <td>2.49</td>	2.49
VLS-15	15 M	25 MMFD	5 1/2" <td>5" <td>2.46</td> </td>	5" <td>2.46</td>	2.46
VLS-10	10 M	25 MMFD	5 1/2" <td>5" <td>2.40</td> </td>	5" <td>2.40</td>	2.40
AM-1352 — Base and Link Assembly for 500 Watt Coils ... 4.98					

**ONE KILOWATT RATING**

MLS-80	80 M	65 MMFD	8 1/2"	5 3/8"	\$6.15
MLS-40	40 M	37 MMFD	8 1/2" <td>5 3/8" <td>5.49</td> </td>	5 3/8" <td>5.49</td>	5.49
MLS-20	20 M	33 MMFD	8 1/2" <td>5 3/8" <td>5.16</td> </td>	5 3/8" <td>5.16</td>	5.16
MLS-15	15 M	30 MMFD	8 1/2" <td>5 3/8" <td>5.16</td> </td>	5 3/8" <td>5.16</td>	5.16
MLS-10	10 M	25 MMFD	8 1/2" <td>5 3/8" <td>4.44</td> </td>	5 3/8" <td>4.44</td>	4.44
AM-1340 — Base and Link Assembly for Kilowatt Coils ... 6.00					

**BUD 100 WATT BAND SWITCH ASSEMBLY**



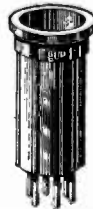
Made in two types, XCS-1 and XES-2. Each unit covers the 10-15-20-40 and 80 meter bands. XCS-1 is designed for use in push-pull plate or grid circuits or where plate neutralization is used. The coils in this assembly are center-tapped and center-linked. A dual section 200 mmfd. condenser is required to tune all bands. The JC-1569 condenser is especially recommended for circuit applications in order to obtain the highest possible efficiency on the high frequency bands.

XES-2 is designed for use in single-ended plate or grid circuits. The coils in this assembly are end-linked. A 100 mmfd. condenser such as Bud JC-1534 is required to tune all bands.

Catalog Number	Width	Height	Depth	Ship. Weight	Dealer Cost
XCS-1	8"	4 1/4"	5"	3 lbs.	\$10.00
XES-2	8"	4 1/4"	5"	3 lbs.	9.00

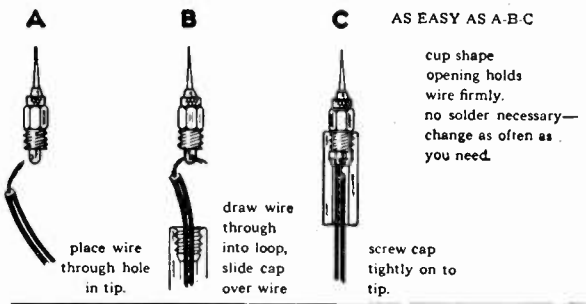
\* Denotes tube plus circuit plus tank plus output coupling capacity required to resonate coil at low frequency end of band.

**PLUG-IN COIL FORMS**



Three sizes are available in these Plug-in Coil Forms to suit all requirements. The material used is a special bakelite having a very low loss factor. Eight ribs are molded on the walls of each form to hold the winding away from the form itself and give the coil higher efficiency. Each form has a molded flange at the top to aid in removing the coil from its socket, and the pins fit standard tube sockets.

Catalog Number	Prong	Diameter	Winding Space	Height	Dealer Cost
CF-734	4	2 1/2"	3 1/2"	3 1/2"	\$.60
CF-735	5	2 1/2"	3 1/2"	3 1/2"	.63
CF-736	6	2 1/2"	3 1/2"	3 1/2"	.66
CF-125	4	1 1/2"	2 1/2"	2 1/2"	.36
CF-126	5	1 1/2"	2 1/2"	2 1/2"	.36
CF-310	6	1 1/2"	2 1/2"	2 1/2"	.39
CF-594	4	1 1/2"	2 1/2"	2 1/2"	.30
CF-595	5	1 1/2"	2 1/2"	2 1/2"	.33
CF-596	6	1 1/2"	2 1/2"	2 1/2"	.33




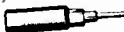
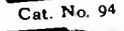


AS EASY AS A-B-C

cup shape opening holds wire firmly. no solder necessary—change as often as you need.

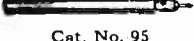

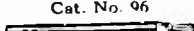
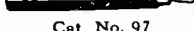

**NEW SENSATIONAL!**  
**BUD "VISE-GRIP" TEST PRODS**  
(Pat. applied for)

No longer is it necessary to use a soldering iron or screw-driver to replace a broken or worn lead on a test prod or plug. To install a wire in this unique, patented prod, merely insert end of wire in hole, screw down handle to finger tightness and a positive contact is assured. By far the fastest, most efficient way of doing this job.

**BUD VISE-GRIP TEST PRODS WITH 1" PLASTIC HANDLE**

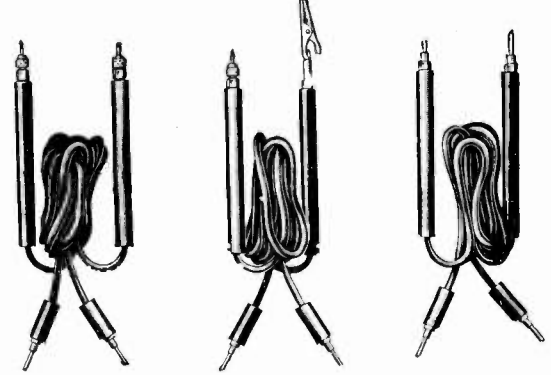
-  Prod is made of brass rod, and is nickel plated. 1" plastic handle is threaded at one end and prod screws into same. Dealer Cost \$ .15
-  Needle Chuck — Black or Red. Dealer Cost \$ .15
-  Phone Tip — Black or Red. Dealer Cost \$ .15
-  Banana Plug — Black or Red. Dealer Cost \$ .15
-  Cat. No. TP-477A..... Dealer Cost \$ .15

**BUD VISE-GRIP TEST PRODS WITH 4" PLASTIC HANDLE**

-  Prods are identical to those described on the left. Plastic handle is 4" long and made of the best material obtainable. Dealer Cost \$ .27
-  Needle Chuck — Black or Red. Dealer Cost \$ .27
-  Phone Tip — Black or Red. Dealer Cost \$ .25
-  Banana Plug — Black or Red. Dealer Cost \$ .25
-  Cat. No. TP-97..... Dealer Cost \$ .25

**BUD SUPER TEST LEADS**

All BUD Super Test Leads use BUD "Vise-Grip" Prods that screw into the highly polished 4" or 1" plastic handles on each end of the leads. The finest, flexible, kinkless, rubber covered wire obtainable is used on all BUD Test Leads.



- No. TL-178 is supplied with 4" handles at one end of the wires with removable needle points and on other end 1" handle with phone tips. Dealer Cost \$1.10
- No. TL-179—4" handles, one with removable needle point and the other with phone tip and removable alligator clip. 1" handles with phone tips. Dealer Cost \$1.25
- No. TL-180 have 4" plastic handles with phone tips on one end. Other end, 1" handles with phone tips as illustrated above. Dealer Cost \$1.00

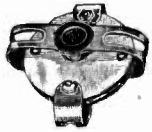
**BUD INSULATED FLEXIBLE COUPLINGS**



Tandem operation of two or more units is readily accomplished through the use of these couplers. Direct shaft alignment is not essential, and all couplers are made to fit 1/4" shafts.

Catalog No.	Diameter	Height	Insulation	Dealer Cost
FC-795	1 1/8"	1 1/8"	Ceramic	\$ .39
FC-845	1 1/8"	5/8"	Bakelite	.30
FC-855	1 1/2"	1 1/8"	Bakelite	.35





**BUD HIGH VOLTAGE FLEXIBLE COUPLINGS**







A new type spring construction in these couplings permits a wide gap between shaft connections, freedom from back-lash, and unusual flexibility. The springs are attached to glazed Steatite discs 1 1/2" in diameter and 3/16" thick, and the overall diameter of the finished coupling is 1 1/4". Coupling accommodates standard 1/4" shaft. Springs are also attached to Bakelite discs 1 1/2" in diameter.

Catalog No.	Insulation	Dealer Cost
FC-614	Steatite	\$ .54
FC-619	Bakelite	.39

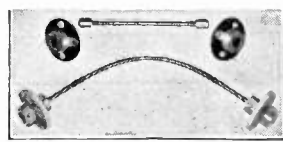
**BANANA PLUGS AND JACKS**  
(Brass Nickel Plated)

- Banana plug jack, threaded 1/4 - 28, supplied with nut and solder lug. Dealer Cost \$ .09
- Banana plug Overall Length 1 1/4" Shank threaded 6-32, supplied with 6-32 nut. Dealer Cost \$ .12
-  PJ-949  PL-470
-  PJ-478  PL-469
- Insulated banana plug jack, complete with insulated washers, solder lug and nut. Dealer Cost \$ .12
- Banana plug. Shank tapped for 6-32 screws. Nickel plated. Dealer Cost \$ .09

**GIANT BANANA PLUGS AND JACKS FOR HEAVY DUTY APPLICATIONS**

- Giant banana jack, complete with nut and solder lug. For mounting, drill 3/8" hole. Dealer Cost \$ .15
- Giant plug, spring 10-32. Positive spring action assures firm contact. Dealer Cost \$ .18
-  PJ-963  PL-962
-  PJ-476A  PL-475A
- Giant insulated banana plug jack, complete with insulated washers, solder lug and nut. To mount, drill 1/2" hole. Dealer Cost \$ .24
- High voltage insulated banana plug. Over all length 2 1/2". Excellent for heavy duty applications. Dealer Cost \$ .30

**BUD FLEXIBLE SHAFTS AND COUPLERS**



When construction necessitates the mounting of condensers or potentiometers away from the panel and at unusual angles, these Flexible Shafts simplify panel control problems. Both lengths are remarkably free from back-lash and will turn at any angle up to 90°.

Nos. FS-859 and FS-860 have 1/4" bushings sweated to each end to fit either plain or insulated couplings. Nos. FS-862 and FS-863 have Steatite insulated couplings attached to each end to fit 1/4" shafts.

Catalog Number	Overall Length	Dealer Cost
FS-859	3 1/2"	\$ .33
FS-860	6 1/2"	.42
FS-862	4 1/2"	1.00
FS-863	7 1/2"	1.15

*Thank You!*

When writing for additional  
information or when ordering  
from sources of supply listed  
in this book, please mention

*RADIO'S MASTER*

# PAR-METAL RACKS · CHASSIS · CABINETS for ELECTRONIC APPARATUS

## TYPE "C" CABINET RACKS—for 19" Rack Panels

These are professional type racks that have been used on many commercial installations, and make a DeLuxe job of any amateur or broadcast transmitter. The racks are of all-steel construction, welded into an integral unit, to give a lifetime of service.

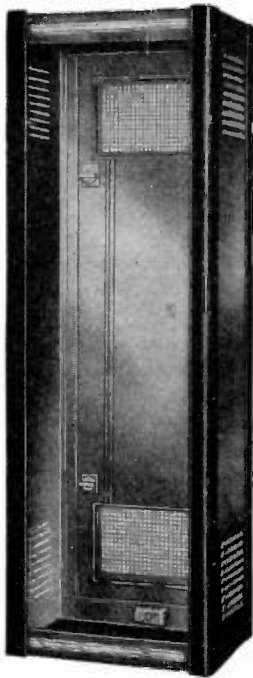
All panel mounting screws are concealed by means of a full length corner trim on each side at the front. In keeping with modern design, this front trim is rounded on the vertical corners. The rear corners are finished with regular angle trim. The front of the rack is trimmed with chrome moulding top and bottom. The door has a grille at top and bottom, and is hung on sturdy loose-joint hinges; it is held closed by two flush snap-action catches. Additional ventilation is provided

by louvres at the sides. The panel mounting angle irons are  $\frac{3}{16}$ " thick, with mounting holes accurately drilled and tapped 12/24 thread on multiple  $1\frac{1}{4}$ "— $\frac{1}{2}$ " spacings. The rack is made from  $\frac{1}{16}$ " thick cold rolled steel, rigidly braced and reinforced throughout; the bottom is  $\frac{7}{8}$ " thick steel. A rectangular opening is provided in the bottom for conduits, leads, etc. A duplex receptacle and outlet box are provided in the back under the door.

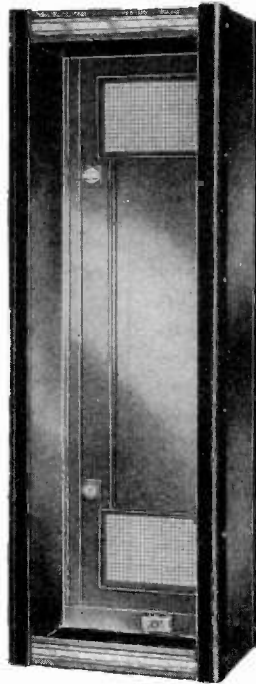
**FINISHES:** Either black ripple or slate grey ripple enamel. Corner trims are supplied in dull black, slate grey smooth enamel, or aluminum grey lacquer at extra cost.

**RACKS WITHOUT LOUVRES:** To permit racks to be set up in gangs or rows of two or more, the louvres at sides are omitted. Racks may be joined by a flat trim fastened to front of adjacent racks, overlapping both racks. Shipped with corner trim as illustrated; where specified, front joining trim will be substituted in place of corner trim at same price. Front joining Trims cannot be used on racks with front doors.

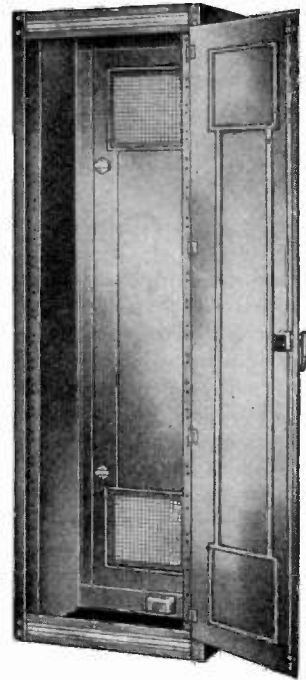
### WITH LOUVRES



### WITHOUT LOUVRES



### WITH FRONT DOORS



#### \*BLACK RIPPLE ENAMEL

##### 15 $\frac{1}{4}$ " Deep Racks

Cat. No.	Overall Size	Panel Space	Wt. lbs.	Net Price
R-3675	42 $\frac{7}{8}$ "x22"x15 $\frac{1}{4}$ "	36 $\frac{3}{4}$ "	150	\$49.50
R-6625	67 $\frac{3}{8}$ "x22"x15 $\frac{1}{4}$ "	61 $\frac{1}{4}$ "	210	66.00
R-8325	83 $\frac{1}{8}$ "x22"x15 $\frac{1}{4}$ "	77"	240	87.00

##### 18" Deep Racks

R-3618	42 $\frac{7}{8}$ "x22"x18"	36 $\frac{3}{4}$ "	160	54.00
R-6618	67 $\frac{3}{8}$ "x22"x18"	61 $\frac{1}{4}$ "	230	72.00
R-8318	83 $\frac{1}{8}$ "x22"x18"	77"	280	93.00

\*If slate grey ripple enamel is required substitute letters "RG" instead of "R" when ordering.

#### \*BLACK RIPPLE ENAMEL

##### 15 $\frac{1}{4}$ " Deep Racks

Cat. No.	Overall Size	Panel Space	Wt. lbs.	Net Price
P-3675	42 $\frac{7}{8}$ "x22"x15 $\frac{1}{4}$ "	36 $\frac{3}{4}$ "	150	\$49.50
P-6625	67 $\frac{3}{8}$ "x22"x15 $\frac{1}{4}$ "	61 $\frac{1}{4}$ "	210	66.00
P-8325	83 $\frac{1}{8}$ "x22"x15 $\frac{1}{4}$ "	77"	240	87.00

##### 18" Deep Racks

P-3618	42 $\frac{7}{8}$ "x22"x18"	36 $\frac{3}{4}$ "	160	\$54.00
P-6618	67 $\frac{3}{8}$ "x22"x18"	61 $\frac{1}{4}$ "	230	72.00
P-8318	83 $\frac{1}{8}$ "x22"x18"	77"	270	93.00

\*If slate grey ripple enamel is required, substitute letters "PG" instead of "P" when ordering.

#### \*BLACK RIPPLE ENAMEL

Racks are 22" wide, 18" deep. Panels mount 2" from front allowing 14" clear inside depth behind panels to rear door.

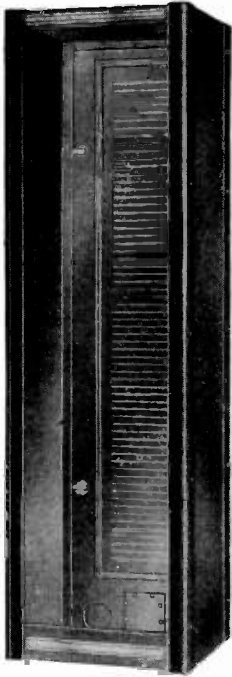
	Catalog F-6618	Number F-8318
Overall Height	67 $\frac{3}{8}$ "	83 $\frac{1}{8}$ "
Available panel space	61 $\frac{1}{4}$ "	77"
Clear inside width (front)	19 $\frac{3}{8}$ "	19 $\frac{3}{8}$ "
Clear inside width (rear)	17 $\frac{3}{4}$ "	17 $\frac{3}{4}$ "
Net Price	\$96.00	\$120.00

\*If slate grey ripple enamel is required, substitute letters "FG" instead of "F" when ordering.

# PAR-METAL RACKS · CHASSIS · CABINETS for ELECTRONIC APPARATUS

## TYPE "C" TRANSMITTER RACKS

**STANDARD TYPE**—for 19" & 30" Rack Panels



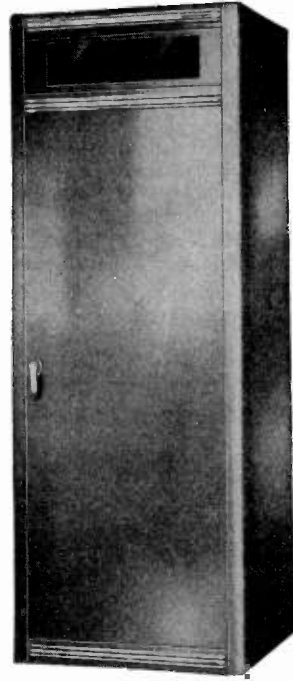
Similar to standard type "C" racks listed on page J-85 except that they have been reinforced at rear corners for use with heavier apparatus. At the rear, knockouts are provided for conduit and 4" square duct, as well as a double convenience outlet with receptacle. Knockouts are also supplied at sides for conduit, suitable for entry of cables when units are ganged. The rear door, which is removable, has ample louvres for ventilation, and is covered on the inside with mesh screening. Front trim rounded on vertical corners. Racks are regularly supplied with corner trim for use as a single unit, but will be furnished with suitable front connecting strips for ganging in rows of two or more without additional charge.

**FINISH:** Black ripple enamel with dull black corner trim is standard. Slate grey ripple enamel furnished without additional charge, if so specified. For aluminum grey lacquer finish, add 10% to prices.

**PANELS:** Type "C" panels to fit the G-2218 and G-2219 racks are listed on page J-89. For cost of 30" blank panels to fit the G-3024 rack, add 100% to prices of 19" panels on page J-89.

Catalog No.	Overall Size	Panel Space	Clear Depth	Ship. Wt. Lbs.	Net Price
G-2218	76½ x 22 x 18"	70 x 19"	16¾"	270	\$96.00
G-2219	83½ x 22 x 18"	77 x 19"	16¾"	290	106.50
G-3024	76½ x 33 x 24"	70 x 30"	22¾"	450	159.00

**DELUXE TYPE**—for 24" Rack Panels



This rack is undoubtedly the finest standard transmitter rack which we have ever made. It is constructed of 1/16" sheet steel, with a base of 1/8" steel, and is reinforced for use with heavy duty apparatus. The meter panel at the top is 7" high, has a glass front, and is provided with a blank bakelite sub-panel. The inner sides of the rack are reinforced with 1/8" steel channels, to which may be attached angle brackets to support the chassis. These channels may also be used as wiring ducts.

The rack will accommodate panels 24" wide; the front panel mounting angles are recessed to allow 2" clearance behind the front door for dials, knobs, etc. The front door is mounted on concealed hinges; the rear door has loose-joint hinges so that it may be removed. Both doors are equipped with handles, and the front door also has a lock. Blank panels 24" wide can be supplied at prices listed on page J-89 plus 50%.

**No. G-8024**

Overall dimensions: 83½" x 30½" x 27".

Available panel space: 70" x 24".

Clear inside width at front: 24"

Clear inside width at rear: 26½".

Clear inside depth behind front panels: 23".

Shipping weight: 540 lbs.

Net Price: \$225.00.

Black ripple enamel finish is optional.

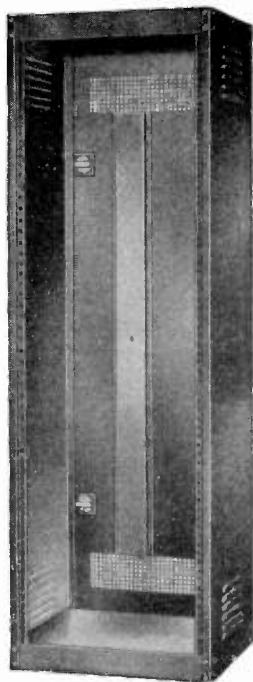
# PAR-METAL RACKS · CHASSIS · CABINETS for ELECTRONIC APPARATUS

## TYPE "A" ENCLOSED RELAY RACKS FOR 19" RACK PANELS

All of the racks on this page are shipped "knocked-down" for easy assembly with all necessary bolts supplied. Made for standard 19" wide panels, they are substantially constructed from 1/16" cold rolled steel; panel mounting angles are of  $\frac{7}{64}$ " steel, accurately drilled on universal centers for either "Amateur" or type "C" panels, tapped for 10/32

machine screws. Panels fit into a recess, so that edges are not exposed. Louvres in sides and screen sections in rear door provide ample ventilation. Rear door is hung on sturdy loose-joint hinges, and closed by a flush snap catch. Ample panel mounting screws and washers supplied with each rack.

### STANDARD TYPE



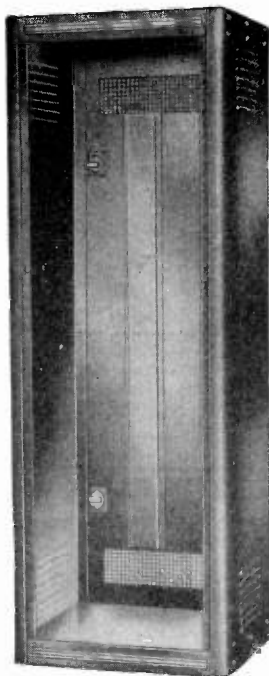
This completely enclosed rack will give your job the "professional appearance" so desirable on transmitters, test equipment, public address systems, etc. It is made in three heights in accordance with specifications below:

#### \*BLACK RIPPLE ENAMEL

Cat. No.	Overall Size	Panel Space	Shpg.	
			Wt. lbs.	Net Price
ER203	42 x 21 x 16 1/2"	36 3/4"	85	\$24.00
ER205	66 1/2 x 21 x 16 1/2"	61 3/4"	120	36.00
ER207	82 1/4 x 21 x 16 1/2"	77"	145	44.10

\*Slate grey ripple is optional

### ROUNDED CORNER TYPE



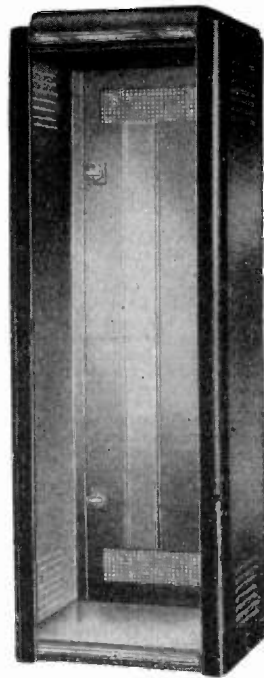
The ideal streamlined rack for your next transmitter or P.A. system. The vertical corners at the front of the rack are rounded, and the top and bottom are nicely trimmed with red striped chrome finished mouldings. The uniform slate grey ripple finish gives the assembly a superb exterior appearance. Combines modern styling and an attractive price.

#### \*SLATE GREY RIPPLE ENAMEL

Cat. No.	Overall Size	Panel Space	Shpg.	
			Wt. lbs.	Net Price
ER213	42 x 22 x 16 1/2"	36 3/4"	85	\$28.50
ER215	66 1/2 x 22 x 16 1/2"	61 3/4"	125	42.30
ER217	82 1/4 x 22 x 16 1/2"	77"	150	50.40

\*Black ripple is optional.

### DELUXE TYPE



Produced in the new "streamlined" style, this rack is fully in keeping with modern design. The removable vertical corner mouldings are rounded and cover the panel mounting screws, the same as is used on our Type "C" commercial racks. The top, which has also been "streamlined," is perforated at the back to provide additional ventilation. The top and bottom are trimmed with red striped chrome finished mouldings.

#### \*SLATE GREY RIPPLE ENAMEL

Cat. No.	Overall Size	Panel Space	Shpg.	
			Wt. lbs.	Net Price
ER223	43 3/4 x 22 x 18"	36 3/4"	90	\$39.30
ER225	67 3/4 x 22 x 18"	61 3/4"	135	50.10
ER227	83 1/2 x 22 x 18"	77"	165	59.70

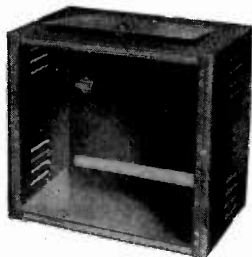
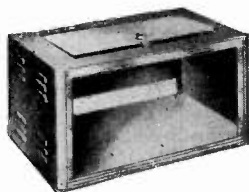
\*Black ripple is optional.



# PAR-METAL RACKS · CHASSIS · CABINETS for ELECTRONIC APPARATUS

## DELUXE TYPE "A" DESK PANEL CABINET RACKS

For Standard 19" Rack Panels  
Black Ripple Finish



Streamlined styling. In keeping with our other Deluxe racks, the vertical front corners are rounded and the top and bottom are trimmed with chrome finished mouldings. Panels fit into a recess, so that the edges are not exposed. Panel mounting holes accurately drilled on universal centers, for either "Amateur" or type "C" panels; holes are tapped for 10/32 machine screws. May be used with any chassis up to 13" x 17" in size. All cabinets constructed of  $\frac{1}{8}$ " thick sheet steel. Louvres provide ample ventilation through sides and back. Piano type hinges are used on the top doors, which are provided with snap catches. Panel mounting screws and washers are furnished. Black ripple enamel is standard. Slate grey is optional at same price.

Cat. No.	Overall Size	Panel Space	Net Price
	With door in top only		
DL128	10 $\frac{1}{2}$ x 21 $\frac{1}{2}$ x 15" deep	8 $\frac{3}{4}$ "	\$10.08
DL1225	14 x 21 $\frac{1}{2}$ x 15" deep	12 $\frac{3}{4}$ "	12.30
DL1413	15 $\frac{1}{2}$ x 21 $\frac{1}{2}$ x 15" deep	14"	13.86
	With door in top and door on rear panel		
DL1713	19 $\frac{1}{2}$ x 21 $\frac{1}{2}$ x 15" deep	17 $\frac{1}{2}$ "	16.95
DL2613	28 x 21 $\frac{1}{2}$ x 15" deep	26 $\frac{1}{2}$ "	19.20
DL3513	36 $\frac{1}{2}$ x 21 $\frac{1}{2}$ x 15" deep	35"	21.60

## TYPE "A" CHANNEL RELAY RACKS

For Standard 19" Rack Panels

Black Ripple Finish

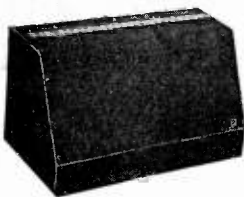


Ideal for use on all types of transmitters and public address systems. Substantially constructed of  $\frac{3}{16}$ " pressed steel. Vertical members and top cross-brace securely welded together. Base is 22" deep and extends both front and rear on the RR-195 rack; it is 19" deep on the RR-193 rack. Panel mounting holes accurately drilled on universal centers for either "Amateur" or type "C" panels, tapped for 10/32 machine screws. Ample supply of panel mounting screws and finishing washers supplied.

Cat. No.	Overall Size	Panel Space	Shpg. Wt.	Net Price
RR-195	73 $\frac{1}{4}$ x 20 x 20 $\frac{3}{8}$ "	71 $\frac{3}{4}$ "	85	\$17.40
RR-193	38 $\frac{1}{4}$ x 20 x 18 $\frac{3}{8}$ "	36 $\frac{3}{4}$ "	57	14.55

## SLOPING FRONT CABINETS

Adaptable as instrument cases for studios, laboratories, etc. Top corner rounded and trimmed with chromemoulding. Slate grey ripple finish. A chassis may be mounted to front panel and removed as a unit. Rear of case ventilated, with opening for connections. Prices do not include chassis.



Cat. No.	H. W. D.	Size of Chassis	Net Price
SF-500	8 x 8 x 8"	7 x 7 x 2"	\$3.30
SF-501	8 x 10 x 8"	7 x 9 x 2"	3.54
SF-502	8 x 14 x 8"	7 x 13 x 2"	3.93
SF-503	9 x 18 x 8"	7 x 17 x 3"	5.70
SF-504	12 x 18 x 12"	10 x 17 x 3"	7.20

## ROLLER TRUCKS FOR RACKS

Designed for use on our racks. Overall size 3" wider than racks for better distribution of weight.



Has rubber composition wheels. Finished in slate grey ripple, with chrome trim.

Will Fit Rack No. Price

RT-401	ER-203, ER-205, ER-207	\$7.50
RT-410	DL-2613, DL-3513	9.25
RT-411	ER-213, ER-215, ER-217	9.30
RT-412	All 18" deep racks	10.50
RT-415	All 15 $\frac{1}{4}$ " deep racks	10.65

## TABLE TYPE RELAY RACKS

Useful where a regular floor type heavy duty rack is not required. Mounting holes accurately drilled on universal centers. Tapped for 10/32 screws. Finished in black ripple enamel and shipped "knocked-down" with all necessary screws. Shipping weight of rack is 20 pounds.



Cat. No.	Overall Size	Panel Space	Net Price
TR-2520	25 x 21 x 12"	21 x 19"	\$5.55
TR-3220	32 x 21 x 12"	28 x 19"	6.93

## STEEL UTILITY CASES

These cases have flat tops and bottoms, which are removable. Made from 20 gauge sheet steel, with flanged edges and spot-welded corners. Finished in black ripple enamel.



Cat. No.	Overall Size	Ship Wt. Lbs.	Net Price
MC-442	4 x 4 x 2"	2	\$0.66
MC-453	4 x 5 x 3"	3	.75
MC-596	5 x 9 x 6"	5	1.44
MC-666	6 x 6 x 6"	3	.99
MC-8101	8 x 10 x 10"	7	2.34
MC-1128	11 x 12 x 8"	9	2.55
MC-1576	15 x 7 $\frac{1}{4}$ x 6 $\frac{1}{2}$ "	11	2.22
MC-1597	15 x 9 x 7"	9	2.61
MC-8107	8 x 10 x 7"	6	1.92

## HINGED STEEL CABINETS DE LUXE TYPE

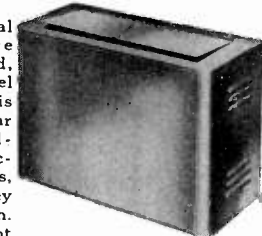
Has double roll on front vertical corners, and chrome finished mouldings. Ventilating louvres are stamped in each end, and a full width opening is provided at the rear for leads, etc. Finish is slate grey ripple enamel. Prices do not include chassis.



Cat. No.	H. L. D.	Panel Size	For Chassis	Net Price
CA-300	8 $\frac{1}{2}$ x 12 $\frac{1}{4}$ x 8"	8 $\frac{1}{2}$ x 10"	7 x 9 x 2"	\$4.80
CA-301	8 $\frac{1}{2}$ x 16 $\frac{1}{4}$ x 8"	8 $\frac{1}{2}$ x 14"	7 x 13 x 2"	5.55
CA-302	9 $\frac{1}{2}$ x 17 $\frac{1}{4}$ x 11"	9 $\frac{1}{2}$ x 15"	10 x 14 x 3"	7.95
CA-303	9 $\frac{1}{2}$ x 20 $\frac{3}{4}$ x 9"	9 $\frac{1}{2}$ x 18"	8 x 17 x 3"	7.95
CA-304	12 $\frac{1}{2}$ x 20 $\frac{3}{4}$ x 12"	12 $\frac{1}{2}$ x 18"	10 x 17 x 3"	8.70

## ROUNDED CORNER TYPE

Front vertical corners are streamlined, and a panel type door is provided. Rear opening allows for necessary leads, etc. Slate grey ripple finish. Prices do not include chassis.



Cat. No.	H. L. D.	Panel Size	For Chassis	Net Price
CA-200	8 x 10 x 8"	8 x 8"	7 x 7 x 2"	\$3.15
CA-201	8 x 12 x 8"	8 x 10"	7 x 9 x 2"	3.30
CA-202	8 x 16 x 8"	8 x 14"	7 x 13 x 2"	4.26
CA-203	9 x 17 x 11"	9 x 15"	10 x 14 x 3"	6.60
CA-204	12 x 20 x 12"	12 x 18"	10 x 17 x 3"	7.89

## STANDARD TYPE

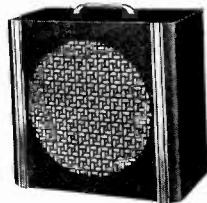
Full piano hinged doors, front panels removable. Top corner at front is rounded. Finished in black ripple. Prices do not include chassis bases.



Cat. No.	H. L. D.	For Chassis	Net Price
CA-100	7 $\frac{1}{4}$ x 10 $\frac{1}{2}$ x 6"	5 $\frac{1}{2}$ x 9 $\frac{1}{2}$ x 1 $\frac{1}{2}$ "	\$2.52
CA-101	7 $\frac{1}{4}$ x 8 x 8"	7 x 7 x 2"	2.52
CA-102	7 $\frac{1}{4}$ x 10 x 8"	7 x 9 x 2"	2.88
CA-103	7 $\frac{1}{4}$ x 14 x 8"	7 x 13 x 2"	3.24
CA-104	9 x 15 x 10 $\frac{3}{4}$ "	10 x 14 x 3"	5.19
CA-105	12 x 18 x 12 $\frac{1}{2}$ "	10 x 17 x 3"	6.00

## De Luxe Speaker Cabinets

To match streamlined metal equipment. Rounded corners with chrome mouldings and handles. New modern grille. Finished in slate grey ripple enamel. Removable back cover.



Cat. No.	Hole Size	Spkr. Size	Cabinet Size	Shpg. Wt.	Net Price
SC1060	4 $\frac{3}{8}$ "	6"	10 x 10 x 6"	8 lbs.	\$3.75
SC1270	6 $\frac{1}{2}$ "	8"	12 x 12 x 7"	9 lbs.	4.50
SC1480	9"	10"	14 x 14 x 8"	15 lbs.	5.85
SC1680	11"	12"	16 x 16 x 8"	20 lbs.	7.50

# PAR-METAL RACKS · CHASSIS · CABINETS for ELECTRONIC APPARATUS

## TYPE "C" RACK PANELS—19" WIDE

Unless otherwise indicated, these panels are made from  $\frac{1}{8}$ " thick steel and are uniformly slotted to fit type "C" cabinet racks and all type "A" racks. They will also fit any other rack equipment having multiple

$1\frac{1}{4}$ " -  $\frac{1}{2}$ " spacings or what is commonly termed as "W.E. spacing." They may be obtained in either black ripple enamel or slate grey ripple enamel. Panels can be furnished in aluminum grey lacquer at extra charge.

### BLANK PANELS $\frac{1}{8}$ " STEEL



These panels are made from  $\frac{1}{8}$ " thick steel and are uniformly slotted to fit type "C" cabinet racks made for 19" panels, and all type "A" racks. They will also fit any other rack equipment having multiple  $1\frac{1}{4}$ " x  $\frac{1}{2}$ " spacings or what is commonly termed as "W.E. spacing." They may be obtained in either black ripple enamel or slate grey ripple enamel.

Cat. No. Black	Cat. No. Grey	Height	Net Price
6600	G-6600	1 $\frac{3}{4}$ "	\$0.60
6601	G-6601	3 $\frac{1}{2}$ "	.69
6602	G-6602	5 $\frac{1}{4}$ "	.84
6603	G-6603	7"	.93
6604	G-6604	8 $\frac{3}{4}$ "	1.08
6605	G-6605	10 $\frac{1}{2}$ "	1.32
6606	G-6606	12 $\frac{1}{4}$ "	1.59
6607	G-6607	14"	1.80
6608	G-6608	15 $\frac{3}{4}$ "	2.10
6609	G-6609	17 $\frac{1}{2}$ "	2.28
6610	G-6610	19 $\frac{1}{4}$ "	2.46
6611	G-6611	21"	2.76

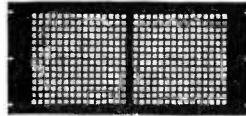
### BLANK PANELS $\frac{1}{8}$ " ALUMINUM



These panels are similar to those listed above, except that they are made from  $\frac{1}{8}$ " aluminum. They can also be supplied from  $\frac{3}{16}$ " stock, at an additional cost of 60%.

Cat. No. Black	Cat. No. Grey	Height	Net Price
6675	G-6675	1 $\frac{3}{4}$ "	\$0.96
6676	G-6676	3 $\frac{1}{2}$ "	1.38
6677	G-6677	5 $\frac{1}{4}$ "	1.74
6678	G-6678	7"	2.04
6679	G-6679	8 $\frac{3}{4}$ "	2.49
6680	G-6680	10 $\frac{1}{2}$ "	3.18
6681	G-6681	12 $\frac{1}{4}$ "	3.75
6682	G-6682	14"	4.26
6683	G-6683	15 $\frac{3}{4}$ "	4.74
6684	G-6684	17 $\frac{1}{2}$ "	5.07
6685	G-6685	19 $\frac{1}{4}$ "	5.73
6686	G-6686	21"	6.72

### GRILLE PANELS $\frac{1}{8}$ " STEEL

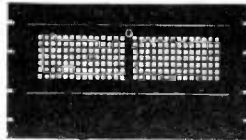


This modern type ventilating grille is stamped into the panel itself; it is not a pieced assembly.

Cat. No. Black	Cat. No. Grey	Panel Size	Grille Size	Net Price
P-661	G-661	5 $\frac{1}{4}$ "	3 $\frac{3}{8}$ x 14 $\frac{3}{8}$ "	\$2.31
P-662	G-662	7"	4 $\frac{1}{2}$ x 14 $\frac{3}{8}$ "	2.46
P-663	G-663	8 $\frac{3}{4}$ "	6 $\frac{1}{2}$ x 14 $\frac{3}{8}$ "	3.00
P-664	G-664	8 $\frac{3}{4}$ "	*3 $\frac{1}{2}$ x 14 $\frac{3}{8}$ "	2.70
P-665	G-665	10 $\frac{1}{2}$ "	8 $\frac{3}{8}$ x 14 $\frac{3}{8}$ "	3.30
P-666	G-666	10 $\frac{1}{2}$ "	*5 $\frac{1}{2}$ x 14 $\frac{3}{8}$ "	3.00
P-667	G-667	12 $\frac{1}{4}$ "	*7 $\frac{3}{8}$ x 14 $\frac{3}{8}$ "	3.45

\*Allows  $3\frac{1}{2}$ " space at bottom for chassis mounting.

### GRILLE DOOR PANELS $\frac{1}{8}$ " STEEL



These panels have flush hinged doors with modern type ventilating grille. Doors are equipped with piano hinges, knob and concealed catch. All doors start 1" from top to allow space for chassis at bottom. Regular chassis brackets may be used.

Cat. No. Black	Cat. No. Grey	Panel Size	Door Size	Net Price
P-680	G-680	8 $\frac{1}{4}$ "	4 $\frac{1}{2}$ x 15 $\frac{3}{8}$ "	\$4.35
P-681	G-681	10 $\frac{1}{2}$ "	6 x 15 $\frac{3}{8}$ "	4.65
P-682	G-682	12 $\frac{1}{4}$ "	7 $\frac{1}{2}$ x 15 $\frac{3}{8}$ "	5.25

### SOLID DOOR PANELS $\frac{1}{8}$ " STEEL



These panels have flush hinged doors with full length piano hinges; they are equipped with a knob and concealed catch. All doors are located 1" from top to allow space for chassis at bottom. Regular chassis brackets may be used.

Cat. No. Black	Cat. No. Grey	Panel Size	Door Size	Net Price
P-670	G-670	8 $\frac{3}{4}$ "	4 $\frac{1}{2}$ x 15 $\frac{3}{8}$ "	\$3.15
P-671	G-671	10 $\frac{1}{2}$ "	6 x 15 $\frac{3}{8}$ "	3.45
P-672	G-672	12 $\frac{1}{4}$ "	7 $\frac{1}{2}$ x 15 $\frac{3}{8}$ "	3.90

### RECESSED METER PANELS $\frac{1}{8}$ " STEEL



These panels are made so that the meters may be recessed from the front of the panel. Meters are protected by a plate glass insert, allowing  $\frac{3}{4}$ " clearance in back of panel. A blank bakelite sub-panel is provided. The clear sub-panel space is 4 $\frac{1}{4}$ " x 15" on the 19" wide panel which is sufficient for 4-3" meters. On the 24" and 30" wide panel the clear sub-panel space is 5 $\frac{3}{4}$ " x 20" and 5 $\frac{3}{4}$ " x 26" respectively.

Cat. No. Black	Cat. No. Grey	Size	Net Price
P-690	G-690	5 $\frac{1}{4}$ " x 19"	\$4.80
P-691	G-691	7" x 24"	8.40
P-692	G-692	7" x 30"	11.40

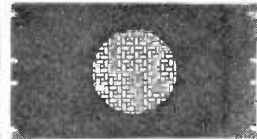
### METER PANELS $\frac{1}{8}$ " STEEL



All meter panels are 5 $\frac{1}{4}$ " x 19".

Cat. No. Black	Cat. No. Grey	No. of Holes	Meter Size	Net Price
MP-632	MG-632	3	2"	\$1.14
MP-652	MG-652	5	2"	1.65
MP-633	MG-633	3	3"	1.14
MP-653	MG-653	5	3"	1.65

### SPEAKER PANELS $\frac{1}{8}$ " STEEL



To fit either 6", 8", 10", or 12" speakers. The opening is covered with a steel grille.

Cat. No. Black	Cat. No. Grey	Panel Size	Speaker Size	Net Price
SP-875	SG-875	8 $\frac{3}{4}$ x 19"	6"	\$1.95
SP-1050	SG-1050	10 $\frac{1}{2}$ x 19"	8"	2.40
SP-1225	SG-1225	12 $\frac{1}{4}$ x 19"	10"	3.00
SP-1400	SG-1400	14 x 19"	12"	3.30

### STANDARD DESK PANELS



Tables are rigidly made of  $\frac{1}{16}$ " thick steel. Securely mounted to regular  $\frac{1}{4}$ " steel panels, size 10 $\frac{1}{2}$ " x 19". Tables 22" wide give full working space across front of racks when mounted in place.

Cat. No.	Width	Depth	Finish	Net Price
BT-2220	22"	20"	Black enamel	\$12.30
BT-2216	22"	16"	Black enamel	11.70
AT-2220	22"	20"	Aluminum grey	13.80
AT-2216	22"	16"	Aluminum grey	12.90

# PAR-METAL RACKS · CHASSIS · CABINETS for ELECTRONIC APPARATUS

## BLANK STEEL CHASSIS BASES

### STANDARD TYPE

Construction is the same as our heavy-duty chassis. Stamped from one piece of cold rolled steel, and have four solid sides with welded corners. Bottom edges are flanged in on four sides to provide additional reinforcement, and they are drilled for bottom plates. The chassis are made from #20 gauge steel, except those marked (\*) which are stamped from  $\frac{1}{16}$ " steel exactly like our heavy-duty type.

Black Ripple	Net Price	Size	Zinc Plated	Net Price
Cat.No.			Cat. No.	
B-4500	\$0.60	5½x9½x1½"	C-4500	\$0.66
B-4508	.84	5x10x3"	C-4508	.96
B-4509	.99	6x14x3"	C-4509	1.11
B-4510	.69	7x7x2"	C-4510	.72
B-4511	.81	7x9x2"	C-4511	.87
B-4512	.90	7x11x2"	C-4512	.93
B-4513	.96	7x13x2"	C-4513	1.02
B-4514	1.23	7x15x3"	C-4514	1.32
B-4518	1.02	4x17x3"	C-4518	1.14
B-4515	1.20	7x17x3"	C-4515	1.26
B-4531	1.32	8x17x2"	C-4531	1.38
B-4532	1.38	8x17x3"	C-4532	1.44
B-4525	1.32	10x12x3"	C-4525	1.38
B-4524	1.38	10x14x3"	C-4524	1.44
B-4528	1.38	10x17x2"	C-4528	1.44
B-4529	1.74	10x17x4"	C-4529	1.89
B-4526	1.32	10x17x3"	C-4526	1.44
B-4527	1.74	10x23x3"	C-4527	1.89
B-4533*	1.74	11x17x2"	C-4533*	1.95
B-4534*	1.92	11x17x3"	C-4534*	2.28
B-4516	1.50	12x17x2"	C-4516	1.62
B-4517	1.62	12x17x3"	C-4517	1.74
B-4530	1.86	12x17x4"	C-4530	2.04
B-4535*	2.10	13x17x2"	C-4535*	2.22
B-4536*	2.22	13x17x3"	C-4536*	2.49
B-4537*	2.64	13x17x4"	C-4537*	3.03

\* Made from  $\frac{1}{16}$ " thick steel.

### BOTTOM PLATES

Bottom plates have holes to match the chassis, and have pressed "bumpers" at the corners.

Black Ripple	Zinc Plated	Size	Net Price
Cat.No.	Cat.No.		
BP-4500	CP-4500	5½x9½x½"	\$0.33
BP-4508	CP-4508	5x10"	.36
BP-4509	CP-4509	6x14"	.48
BP-4510	CP-4510	7x7"	.36
BP-4511	CP-4511	7x9"	.39
BP-4512	CP-4512	7x11"	.45
BP-4513	CP-4513	7x13"	.51
BP-4514	CP-4514	7x15"	.57
BP-4518	CP-4518	4x17"	.45
BP-4515	CP-4515	7x17"	.60
BP-4531	CP-4531	8x17"	.60
BP-4525	CP-4525	10x12"	.60
BP-4524	CP-4524	10x14"	.63
BP-4528	CP-4528	10x17"	.78
BP-4527	CP-4527	10x23"	1.05
BP-4533	CP-4533	11x17"	.81
BP-4516	CP-4516	12x17"	.87
BP-4535	CP-4535	13x17"	.93

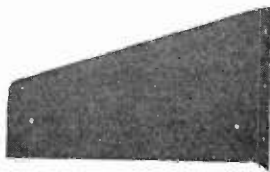
### HEAVY DUTY TYPE



All of the chassis listed on this page may be used with the various Par-Metal racks and cabinets. Substantially constructed for "heavy duty" uses, being formed from one piece of  $\frac{1}{8}$ " sheet steel, with all corners and bottoms reinforced. Bottom covers and mounting screws supplied. Ends drilled to fit standard brackets listed below. Finished in either uniform black ripple enamel or zinc plated.

Black Ripple	Net Price	Dimensions W.L.D.	Zinc Plated	Net Price
Cat.No.			Cat. No.	
15280	\$2.16	8x17x2"	15208	\$2.34
15281	2.40	8x17x3"	15209	2.64
15282	2.43	11x17x2"	15218	2.76
15210	2.64	11x17x3"	15219	3.06
15212	2.85	13x17x2"	15214	3.15
15213	3.12	13x17x3"	15215	3.39
15216	3.45	13x17x4"	15217	3.93
15283	4.65	17x17x4"	15284	5.25

### CHASSIS MOUNTING BRACKETS



These brackets will fit any of the chassis listed above, as the mounting holes are drilled to match. Panels must be at least 7" high. Finished in black enamel.

Cat.No.	Dimensions	Shpg. Wt.	Net Price
SB-78	For 8" Base	2 lbs.	\$0.69
SB-710	For 10" Base	2 lbs.	.93
SB-711	For 11" Base	3 lbs.	1.02
SB-713	For 13" Base	3 lbs.	1.23
SB-717	For 17" Base & larger	5 lbs.	1.86

### STANDARD TYPE Amplifier Foundation Chassis



Rounded corners effectively streamline the covers on these units. Grille type ventilation gives them a modern appearance. Chassis

stamped from one piece of cold rolled steel, with corners securely spot welded. Covers finished in slate grey, chassis in black ripple enamel. Chassis are drilled for bottom plates.

Cat.No.	Size	Depth of Cover	Shpg. Wt.	Net Price
F-510	5x10x3"	6"	9 lbs.	\$2.25
F-615	6x14x3"	6"	10 lbs.	2.55
F-717	7x17x3"	6"	11 lbs.	3.15
F-1012	10x12x3"	6"	11 lbs.	3.15
F-1017	10x17x3"	6"	11 lbs.	3.81
F-1317	13x17x3"	6"	15 lbs.	4.50

### DELUXE TYPE

#### Amplifier Foundation Chassis



For those who prefer a deluxe unit with recessed panel.

Panel slopes slightly and attaches to chassis with screws. Screen cover may be raised without disturbing the panel. Cover finished in slate grey ripple. Chassis finished in black ripple and is drilled for bottom plates.

Cat. No.	Chassis Size	Depth of Cover	Panel Size	Net Price
FC-510	5 x 10 x 3"	6"	4 x 7"	\$4.50
FC-615	6 x 14 x 3"	6"	4 x 10"	5.10
FC-717	7 x 17 x 3"	6"	4 x 13"	5.70
FC-1012	10 x 12 x 3"	6"	4 x 9"	5.55
FC-1017	10 x 17 x 3"	6"	4 x 13"	6.60
FC-1317	13 x 17 x 3"	6"	4 x 13"	7.35

### SLOPING FRONT TYPE Amplifier Foundation Chassis



Latest trend in amplifier design. Combination of sloping front panel and streamlined cover enables you to build up a job similar to that used on commercial deluxe type amplifiers. All parts finished in slate grey ripple enamel trimmed with chrome moulding and handles. Front panel removable and protrudes 3" from face of screen cover. Chassis supplied complete WITH bottom plates.

Cat. No.	Chassis Size	Screen Cover	Net Price
F10120	10x12x3"	6½" high	\$5.70
F10170	10x17x3"	6½" high	6.60
F13170	13x17x3"	6½" high	7.35

### ROUNDED CORNER TYPE Amplifier Foundation Chassis

Modern professional type. Rounded corners on screen cover. Chrome mouldings & handles. Cover finished in slate gray, with black ripple chassis.



Cat.No.	Chassis Size	Depth of Cover	Shpg. Wt.	Net Price
DF510	5x10x3"	6"	9 lbs.	\$3.21
DF615	6x14x3"	6"	10 lbs.	3.75
DF717	7x17x3"	6"	11 lbs.	4.29
DF1012	10x12x3"	6"	11 lbs.	4.29
DF1017	10x17x3"	6"	13 lbs.	5.10
DF1317	13x17x3"	6"	15 lbs.	5.85

# MIDDLETOWN MANUFACTURING CO.

## METAL PRODUCTS — ELECTRONIC DIVISION

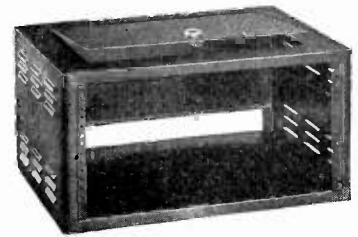
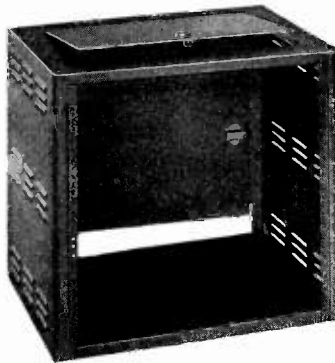
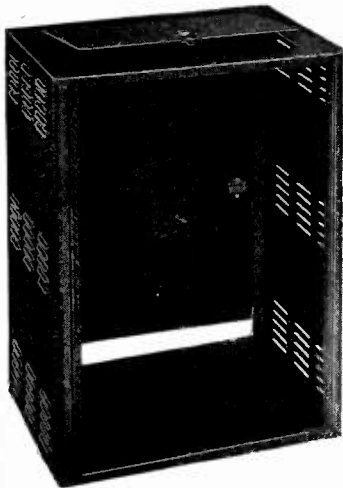
### CABINETS • CHASSIS • CASES • PANELS

#### D.C. DELUXE CABINET RACKS—USE 19" RACK PANELS

Middletown D. C. Cabinets conform to the conventional design of streamlined cabinets used by builders of amateur and commercial equipment.

#### FEATURES

- ★ Constructed of heavy gauge 1/16" steel, electrically welded.
- ★ Adequate ventilation is provided by sufficient louvers in sides, and ventilation in back.
- ★ Front Vertical posts rounded.
- ★ Flush panel mounting (recessed).
- ★ Drilled and tapped for 10/32" screws on universal centers.
- ★ Flush door in top fitted with flush snap-lock and piano hinges.
- ★ Black Wrinkle finish. \*Grey Wrinkle if desired.\*



Cat. No.	Panel Size	Size of Cabinet	Single Unit	Net Price	Cat. No.	Panel Size	Size of Cabinet	Single Unit	Net Price
D.C. 108	8 3/4" x 19"	10 1/2" x 21 1/2" x 15"			D.C. 1917	17 1/2" x 19"	19 1/4" x 21 1/2" x 15"		
D.C. 1412	12 1/4" x 19"	14" x 21 1/2" x 15"		\$11.10	D.C. 2826	26 1/4" x 19"	28" x 21 1/2" x 15"		\$18.49
D.C. 1514	14" x 19"	15 3/4" x 21 1/2" x 15"		13.50	D.C. 3635	35" x 19"	36 3/4" x 21 1/2" x 15"		20.88
			Single Unit	15.21				Double Unit—Door Top and Back	23.94
								Triple Unit—Door Top and Back	
								Quad. Unit—Door Top and Back	

#### BLANK STEEL CHASSIS Heavy Duty

Middletown heavy duty Chassis are made from one piece of 1/16" sheet steel—Spot Welded at all four corners. Bottom edges are folded over on all four sides for additional rigidity and drilled to match bottom plates. Ends are drilled to fit standard Middletown brackets. Bottom plates are supplied with these Chassis.

#### Stock Sizes

Cat. No.	Size	Net Price	
		Black	Cadmium
H.D. 8172	8 x 17 x 2"	\$2.28	\$2.46
H.D. 8173	8 x 17 x 3"	2.52	2.76
H.D. 11172	11 x 17 x 2"	2.70	2.97
H.D. 11173	11 x 17 x 3"	2.79	3.21
H.D. 13172	13 x 17 x 2"	3.12	3.33
H.D. 13173	13 x 17 x 3"	3.30	3.60
H.D. 13174	13 x 17 x 4"	3.66	4.08

#### CHASSIS BRACKETS Mounting

These brackets are for chassis listed above. Front end of the bracket is seven inches high. Finished in black wrinkle.



Cat. No.	Size	Shipping Weight	Net Price
C.B. 8	For 8" Base	2 lbs.	\$ .75
C.B. 11	For 11" Base	3 lbs.	1.08
C.B. 13	For 13" Base	3 lbs.	1.32

#### BLANK STEEL CHASSIS Standard Type

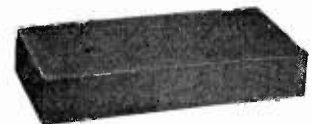
Middletown Chassis are made from one piece of No. 20 gauge steel spot-welded at all 4 corners—bottom edges are folded over on four sides for additional rigidity and drilled to match bottom plates.

Bottom plates are drilled to match holes on flange of chassis and have pressed bumpers at corners. Material No. 20 gauge steel.

#### Standard Stock Sizes

Cat. No.	Size	Net Price	
		Black	Cadmium
B.S. 442	4 x 4 x 2"	\$ .60	—
B.S. 591	5 1/2 x 9 1/2 x 1 1/2"	.72	.78
B.S. 5103	5 x 10 x 3"	.99	1.02
B.S. 4173	4 x 17 x 3"	1.08	1.20
B.S. 6143	6 x 14 x 3"	1.08	1.20
B.S. 772	7 x 7 x 2"	.78	.87
B.S. 792	7 x 9 x 2"	.96	1.05
B.S. 7112	7 x 11 x 2"	1.02	1.14
B.S. 7132	7 x 13 x 2"	1.08	1.17
B.S. 7153	7 x 15 x 3"	1.29	1.41
B.S. 7173	7 x 17 x 3"	1.35	1.47
B.S. 8172	8 x 17 x 2"	1.38	1.50
B.S. 8173	8 x 17 x 3"	1.44	1.56
B.S. 10123	10 x 12 x 3"	1.41	1.56
B.S. 10143	10 x 14 x 3"	1.47	1.62
B.S. 10172	10 x 17 x 2"	1.47	1.62
B.S. 10173	10 x 17 x 3"	1.47	1.62
B.S. 11172*	11 x 17 x 2"	1.89	2.10
B.S. 11173*	11 x 17 x 3"	1.98	2.22
B.S. 12172	12 x 17 x 2"	1.59	1.74
B.S. 12173	12 x 17 x 3"	1.71	1.86
B.S. 12174	12 x 17 x 4"	1.95	2.19
B.S. 13172*	13 x 17 x 2"	2.22	2.37
B.S. 13173*	13 x 17 x 3"	2.40	2.64
B.S. 13174*	13 x 17 x 4"	2.76	3.12

\*Made from 1/16" Stock.



#### Bottom Plates

Cat. No.	Size	Net Price	
		Black	Cadmium
B.P. 59	5 1/2 x 9 1/2"	\$ .33	.36
B.P. 510	5 x 10"	.36	.39
B.P. 417	4 x 17"	.48	.54
B.P. 614	6 x 14"	.51	.57
B.P. 77	7 x 7"	.36	.39
B.P. 79	7 x 9"	.39	.42
B.P. 711	7 x 11"	.45	.51
B.P. 713	7 x 13"	.51	.57
B.P. 715	7 x 15"	.57	.63
B.P. 717	7 x 17"	.60	.66
B.P. 817	8 x 17"	.60	.66
B.P. 1012	10 x 12"	.60	.66
B.P. 1014	10 x 14"	.66	.72
B.P. 1017	10 x 17"	.81	.87
B.P. 1117	11 x 17"	.84	.90
B.P. 1217	12 x 17"	.87	.93
B.P. 1317	13 x 17"	.93	.99

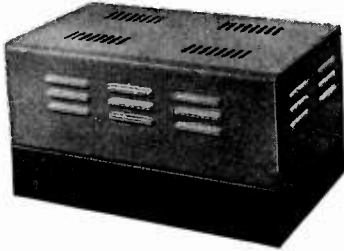
# MIDDLETOWN MANUFACTURING CO.

## METAL PRODUCTS — ELECTRONIC DIVISION

### CABINETS • CHASSIS • CASES • PANELS

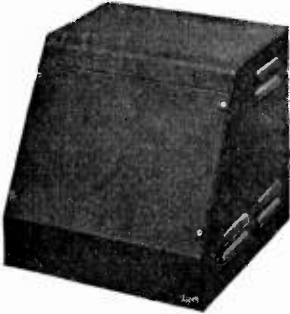
#### AMPLIFIER FOUNDATIONS—DeLuxe Models

This unit is designed to meet the most critical requirements. It has rounded corners, special Middletown designed louvres on all 4 sides and elongated holes on top to give maximum ventilation. Chassis are finished in Black wrinkle. Covers are finished in Grey wrinkle. Chassis are drilled for bottom plates which are listed separately. Covers all have a depth of 6".



Cat. No.	Size	Net Price
A.F.-5103	5 x 10 x 3"	\$2.31
A.F.-6143	6 x 14 x 3"	2.64
A.F.-7173	7 x 17 x 3"	3.24
A.F.-10123	10 x 12 x 3"	3.36
A.F.-10173	10 x 17 x 3"	3.90
A.F.-13173	13 x 17 x 3"	4.65

#### SLOPING FRONT PANEL CABINETS

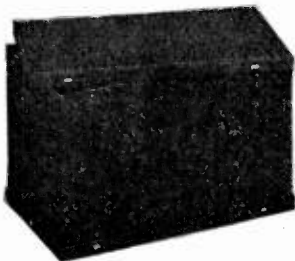


Sloping front panel cabinets have a wide application in the electronic field since they are adaptable for various uses. They are constructed of heavy gauge steel electrically spot-welded. Top corner is rounded, front panel is removable, and louvres on sides provide ventilation.

Back panel is ventilated on top and an opening is provided on the bottom so that connections can be made directly to the rear of the chassis. Finished in Grey wrinkle.

Cat.No.	H.W.D.	Chassis Size	Net Price
S.F.-888	8 x 8 x 8"	7 x 7 x 2"	\$3.36
S.F.-8108	8 x 10 x 8"	7 x 9 x 2"	3.60
S.F.-8148	8 x 14 x 8"	7 x 13 x 2"	4.02
S.F.121812	12 x 18 x 12"	10 x 17 x 3"	7.35

#### STEEL UTILITY CANS



These Utility Cans are substantially made from sheet steel with spot welded reinforced corners. Tops and bottoms are removable and are flanged on all four sides. Held in place with self-tapping screws.

Cat. No.	Size	Weight	Net Price
U.C. 565	5 1/2 x 6 x 5 1/2"	3 lbs.	\$ .99
U.C. 596	5 x 9 x 6"	5 lbs.	1.47
U.C. 8107	8 x 10 x 7"	6 lbs.	1.98
U.C. 81010	8 x 10 x 10"	7 lbs.	2.40
U.C. 11128	11 x 12 x 8"	9 lbs.	2.61

#### STEEL RACK PANELS — 19" LONG

These panels are made from 1/8" steel and are slotted for standard amateur mounting. Twelve standard sizes. Furnished in black or grey wrinkle finish. These panels are also supplied with commercial (W.E.) slotting. When ordering commercial type indicate by adding W to our catalogue number below.



Cat. No.	Width	Weight	Net Price
R.P. 1	1 3/4"	2 lbs.	\$ .60
R.P. 3	3 1/2"	5 lbs.	.75
R.P. 5	5 1/4"	7 lbs.	1.11
R.P. 7	7"	8 lbs.	1.41
R.P. 8	8 3/4"	9 lbs.	1.59
R.P. 10	10 1/2"	10 lbs.	1.92
R.P. 12	12 1/4"	12 lbs.	2.28
R.P. 14	14"	13 lbs.	2.67
R.P. 15	15 3/4"	14 lbs.	3.09
R.P. 17	17 1/2"	15 lbs.	3.54
R.P. 19	19 1/4"	16 lbs.	4.02
R.P. 21	21"	17 lbs.	4.44

When Ordering Specify Black or Grey.

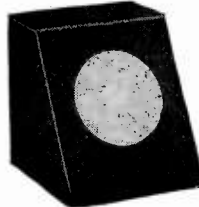
#### METER PANELS



Middletown Meter Panels are made 5 1/4" high and are made to the same specifications as our Rack Panels—are available to fit 3" meters

Cat. No.	Holes	Hole Size	Net Price
R.P.M. 33	3	2 3/8"	\$1.41
R.P.M. 35	5	2 1/4"	1.92

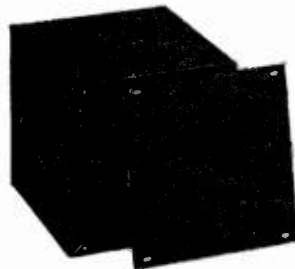
#### METER CASES



These cases have sloping front panel with rounded top corner which blends with streamline equipment. They are sturdily constructed from sheet steel with welded joints.

Cat. No.	Meter	Hole Size	H.W.D.	Net Price
M.C. 13	Single 3"	2 1/8"	4 1/2 x 4 x 4	\$1.02
M.C. 33	3-3" Meters	2 1/8"	4 1/2 x 11 1/4 x 4	2.40

#### STEEL CASES — STANDARD

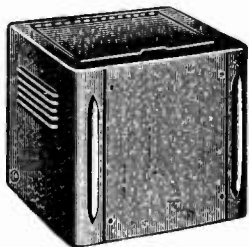


These cases are similar to our standard steel utility cans except they have flat tops and bottoms which are held in place with self tapping screws and are removable. These cases are of sturdy construction and have spot welded corners. Case has flanges on all edges. Furnished in black wrinkle.

Cat. No.	Size	Weight	Net Price
S.C. 442	4 x 4 x 2"	2 lbs.	\$ .69
S.C. 453	4 x 5 x 3"	3 lbs.	.81
S.C. 666	6 x 6 x 6"	3 lbs.	1.05
S.C. 1276	12 x 7 x 6"	5 lbs.	1.95
S.C. 1597	15 x 9 x 7"	9 lbs.	2.70
S.C. 1287	12 x 7 3/4 x 6 1/4"	9 lbs.	1.98
S.C. 1576	15 x 7 3/4 x 6 1/2"	11 lbs.	2.31

# ICA INSULINE RADIO PRODUCTS ICA

## ICA DE LUXE HINGED STEEL CABINETS



The cabinets have rounded corners with specially designed Chrome plated "Air-Gate" ventilators on sides; and vertical Chrome Plated Trim moulding on front. Modern grille type ventilators are provided on the back panels which also have an opening on the bottom to allow for leads, cable connections, etc.

Bottoms have 4 embossed feet.

Finished in a beautiful Marine Gray Ripple Enamel.

No.	H.	W.	D.	Panel Size	List
3860	8" x 10" x 8"	8" x 8"			\$7.25
3861	8" x 12" x 8"	8" x 10"			7.50
3862	8" x 14" x 8"	8" x 12"			9.00
3863	12" x 20" x 12"	12" x 18"			14.00

## ICA STANDARD HINGED STEEL CABINETS

Designed in the same style and appearance as the De Luxe cabinets shown above except that the Chrome trim is eliminated. Sides and backs have ventilating louvres. Backs have opening for cable connections, etc. Top panel hangs on full sized piano type hinge. Bottoms have 4 embossed feet. Finished in Marine Gray Ripple Enamel.

No.	H.	W.	D.	Panel Size	List
3925	8" x 10" x 8"	8" x 8"			\$5.00
3926	8" x 12" x 8"	8" x 10"			5.50
3927	8" x 14" x 8"	8" x 12"			7.00
3928	12" x 20" x 12"	12" x 18"			13.00

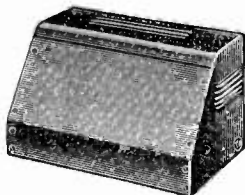
## CHASSIS FOR ICA CABINETS

No.	Size	For Cabinet Numbers	List
4024	7" x 7" x 2"	3860 and 3925	\$1.40
4004	7" x 9" x 2"	3861 and 3926	1.50
4005	7" x 11" x 2"	3862 and 3927	1.65
4033	10" x 17" x 3"	3863 and 3928	2.20

## ICA DE LUXE SLOPING PANEL CABINETS

The top corners are rounded and trimmed with an attractive striped chrome trim. The sides of the cabinets have the beautiful "Air-Gate" Chrome ventilators.

The front panel is removable so that the chassis can be attached to it and used as one unit. Beautifully finished in Marine Gray Ripple Enamel.



No.	H.	W.	D.	List
3990	8" x 8" x 8"			\$6.60
3991	8" x 10" x 8"			7.25
3992	8" x 14" x 8"			9.50
3993	12" x 18" x 12"			12.75

## CHASSIS FOR ICA CABINETS

No.	Size	For Cabinet Number	List
4024	7" x 7" x 2"	3990	\$1.40
4004	7" x 9" x 2"	3991	1.50
4007	7" x 13" x 2"	3992	1.80
4033	10" x 17" x 3"	3993	2.20

## ICA DE LUXE SLOPING CHASSIS AMPLIFIER UNITS



Chassis are sloped and are equipped with beautiful chrome trimmed handles. Slope provides ample space for mounting instruments.

The top covers have beautiful Chrome Plated "Air-Gate" Ventilators with striped chrome trim. Supplied with ventilating louvres on sides and back. Have raised rectangular screen opening on the tops, embellished with chrome moulding. Marine Gray Ripple finish.

No.	Overall Size	Chassis Bottom	Chassis Slope Height	Chassis Slope Size	List
3962	7" x 17" x 9 1/2"	10" x 17"	3 1/2"	4"	\$10.25
3963	10" x 14" x 9 1/2"	13" x 14"	3 1/2"	4"	11.00
3964	10" x 17" x 9 1/2"	13" x 17"	3 1/2"	4"	11.50

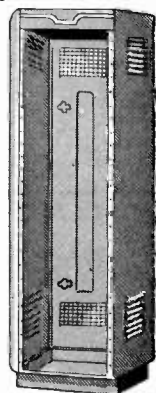
## ENCLOSED RELAY RACKS

A beautifully streamlined designed rack for transmitters and public address systems. Front vertical; corners rounded. Rack is fabricated of 1/16" cold rolled steel; panel mounting angles of 1/8" steel. Universally drilled for either Amateur or Western Electric type panels. Panels fit into recess so edges are not exposed. Screen ventilators on rear door and louvres on sides afford proper ventilation. Rear door hung on sturdy hinges and equipped with two flush snap catches. Shipped "KNOCKED DOWN" with all necessary hardware. Finished in Marine gray ripple finish. Black Ripple furnished only if specified.

No. 3870	Overall Size	Panel Space	Interior Width	Interior Depth	Shipping Weight
List \$43.50	42" x 22" x 16 1/2"	36 3/4" x 19"	17 5/8"	15 1/4"	97 Lbs.

No. 3871	Overall Size	Panel Space	Interior Width	Interior Depth	Shipping Weight
List \$63.50	66 1/2" x 22" x 16 1/2"	61 1/4" x 19"	17 5/8"	15 1/4"	145 Lbs.

No. 3872	Overall Size	Panel Space	Interior Width	Interior Depth	Shipping Weight
List \$74.50	82 1/4" x 22" x 16 1/2"	77" x 19"	17 5/8"	15 1/4"	172 Lbs.



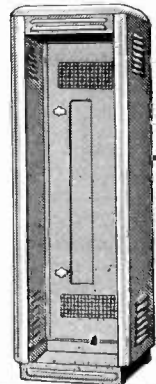
## ICA DE LUXE TRANSMITTER RACKS

New modern design, streamlined transmitter and public address racks. Removable vertical corner mouldings are rounded and completely cover panel edges and mounting screws. Chrome trim. Rack is made of 1/16" cold rolled steel. Panel mounting angles drilled for either Amateur or Western Electric type panels. Screen ventilators on rear door and louvres afford ample ventilation. Easily assembled. Supplied in Marine gray ripple finish. Black ripple finish furnished only on specification.

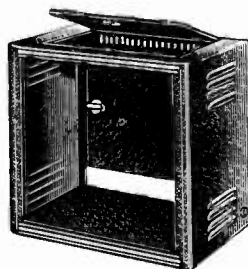
No. 3865	Overall Size	Panel Space	Interior Width	Interior Depth	Shipping Weight
List \$61.75	43 1/4" x 22" x 18"	36 3/4" x 19"	17 5/8"	16 3/4"	110 Lbs.

No. 3866	Overall Size	Panel Space	Interior Width	Interior Depth	Shipping Weight
List \$78.90	67 3/4" x 22" x 18"	61 1/4" x 19"	17 5/8"	16 3/4"	162 Lbs.

No. 3867	Overall Size	Panel Space	Interior Width	Interior Depth	Shipping Weight
List \$94.50	83 1/2" x 22" x 18"	77" x 19"	17 5/8"	16 3/4"	190 Lbs.



## ICA MULTI-USE METAL CABINETS



An ideal unit for public address systems, transmitters, receivers, test equipment, etc. Has rounded corners on front of Cabinet. Trimmed with handsome chrome trim moulding. Equipped with hinge doors, and nickel brass snap locks. Completely assembled, ready for use. Finished in Black or Marine Gray Ripple Enamel. Black will be supplied unless Gray is specified.

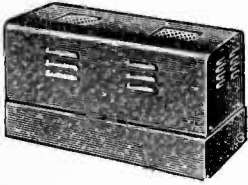
No.	Size	Depth	Door on top only. Panel space	Shipping Weight
No. 3880	10 1/2" x 21" x 15" Deep.	8 3/4" x 19"	\$16.50	
No. 3881	14" x 21" x 15" Deep.	Panel space 12 1/4" x 19".	20.00	
No. 3882	19 1/4" x 21" x 15" Deep.	Panel space 17 1/2" x 19".	27.75	
No. 3883	28" x 21" x 15" Deep.	Panel space 26 1/4" x 19".	32.00	
No. 3884	36 3/4" x 21" x 15" Deep.	Panel space 35" x 19".	35.50	



# ICA INSULINE ICA

## RADIO PRODUCTS

### ICA STANDARD AMPLIFIER FOUNDATION UNITS



Top covers have rounded corners. The front, sides and back are equipped with louvre ventilators. The tops have raised screen openings for additional ventilation.

Finished in beautiful Marine Gray Ripple Enamel.

No.	Size	Height of Chassis	List
3980	5 1/2" x 10" x 9"	3"	\$3.75
3981	8" x 12" x 9"	3"	5.50
3982	7" x 17" x 9"	3"	5.75
3983	10" x 14" x 9"	3"	6.25
3984	10" x 17" x 9"	3"	6.50

### ICA DE LUXE AMPLIFIER FOUNDATION CHASSIS

Top covers have rounded corners and fronts are embellished with the newly created Chrome plated "Air-Gate" Ventilators. Additional ventilation is obtained through the raised screen openings on the top as well as louvres on both sides and back.

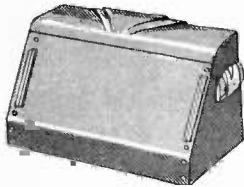
Have beautiful Chrome mouldings and Chrome handles. Finished in Marine Gray Ripple Enamel.



No.	Size	Height of Chassis	List
3971	5 1/2" x 10" x 9"	3"	\$6.15
3972	8" x 12" x 9"	3"	8.00
3973	7" x 17" x 9"	3"	8.25
3974	10" x 14" x 9"	3"	9.00
3975	10" x 17" x 9"	3"	9.50

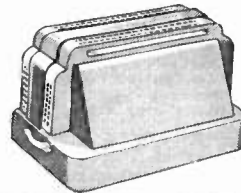
### FUTURA STREAMLINED SLOPING PANEL CABINETS

Can be used as instrument cases in studios, laboratories, etc. Raised "Futura" design — streamlined corners. Ventilator openings for cable connectors. Removable front panel. Finished in Marine Gray Ripple enamel with chrome moulding.



No.	H.	W.	D.	List
3840	8"	8"	8"	\$8.00
3841	8"	10"	8"	9.00
3842	8"	14"	8"	11.00
3843	8"	18"	8"	13.50
3844	12"	18"	12"	15.00

### "SUPER" STREAMLINED SLOPING-FRONT AMPLIFIER CHASSIS



New, modern design amplifier chassis. Front panel sloped with streamlined top cover. Removable front panel Marine Gray Ripple finish with Chrome trim. Bottom plates supplied. Top cover 6 1/2" high.

No.	Chassis Size	List
3930	10" x 12" x 3"	\$10.00
3931	10" x 17" x 3"	11.50
3932	13" x 17" x 3"	13.00

### ICA HINGED COVER CABINETS



Supplied in knocked-down form for easy handling. Easily assembled. Finished in Black Ripple Enamel.

No.	W.	D.	H.	List
3825	9"	5"	6"	\$4.00
3826	10"	8"	7"	5.00
3828	12"	8"	7"	5.75
3829	12"	11"	8"	6.85
3830	14"	8"	7"	6.85
3831	18"	12"	9"	8.60

### CHASSIS FOR ICA CABINETS

For Cabinet

No.	W.	D.	H.	Number	List
4000	8 1/2"	4 3/4"	1 1/2"	3825	\$1.05
4004	9"	7"	2"	3826	1.50
4005	11"	7"	2"	3828	1.65
4007	13"	7"	2"	3830	1.80
4023	17"	11"	3"	3831	3.30

### ICA METAL CABINETS

Black Ripple Finish

Have various uses such as input stages, mixers, transceivers, amplifiers, monitors, etc. Front and back covers are removable and can be fastened to cabinet with self tapping machine screws. Finished in Black Ripple Enamel.



No.	W.	D.	H.	List
3810	4"	2"	4"	\$1.35
3811	4"	3"	5"	1.45
3800	6"	6"	6"	1.65
3801	9"	5"	6"	2.55
3802	10"	8"	7"	3.25
3803	11"	8"	10"	4.00
3804	12"	11"	8"	4.30

### ICA SLOPING PANEL CABINETS

Small—Compact



3905

New streamlined cabinets, rugged, small and compact, have various uses such as speaker cabinets, oscillator cases, input stages, small receivers, teletalk systems, monitors, etc.



3906

Beautifully designed, with rounded corners and finished in marine gray ripple.

No.	W.	H.	D.	List
3905	4 1/2"	4 1/2"	4 1/2"	\$2.15
3906	7 1/2"	4 1/2"	4 1/4"	3.85

### ICA PORTABLE STEEL CABINETS



Ideal for housing oscillators, transceivers, test equipment, etc. Both front and back panels are removable and are held with self-tapping screws which are supplied. Equipped with leather handle. Finished in black ripple.

No. 3850	Size 12" x 7 3/4" x 7"	List \$4.25
No. 3851	Size 15" x 7 3/4" x 7"	List 4.95

### ICA DE LUXE METER CASES

Finished in Marine Gray Ripple Enamel with rounded tops and trimmed with beautiful Chrome band. Available for 2" or 3" meters.



Meter

No.	D.	W.	H.	Hole	List
3995	4 1/4"	4 3/8"	4 1/2"	2 3/8"	\$2.25
3996	4 1/4"	4 1/8"	4 1/2"	2 1/8"	2.25

### STREAMLINED METER CASES



Modern streamlined cases, with raised "futura" design on top of cabinet. Finished in Marine Gray Ripple Enamel and trimmed with chrome band.

Meter

No.	D.	W.	H.	Hole	List
3997	4 1/4"	4 3/8"	4 1/2"	2 3/8"	\$3.00
3998	4 1/4"	4 1/8"	4 1/2"	2 1/8"	3.00

### ICA CHROME TRIM MOULDING

Beautiful chrome trim mouldings to dress up any cabinet, chassis, receiver, speaker cabinet, transmitter, etc. Finished with mounting tracks or clips.



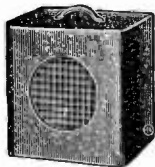
No.	List
3510—Chrome Moulding with single Stripe—size 1/8" w. by 4" l.	\$ .80
3513—Chrome Moulding with double Stripe—size 3/4" w. by 8" l.	1.30
3514—Chrome Moulding with double Stripe—size 3/4" w. by 12" l.	1.50
3515—Chrome Moulding with double Stripe—size 3/4" w. by 18 7/8" l.	1.85
3505—Bullet Shape All Chrome Moulding—size 1/8" w. by 6" l.	.80

### ICA CHROME HANDLES

No. 3500	—Length 4"; width 1 1/8"	List \$ .75
No. 3501	—Length 6 1/4"; width 1/2"	List .75

### ICA STANDARD SPEAKER CABINETS

Finished in Black Ripple Enamel with plain black steel handles to match.



No.	Size	Hole Size	Speaker Size	List
3942	10" x 10" x 6"	4 3/4"	6"	\$7.00
3943	12" x 12" x 7"	6 1/2"	8"	8.80
3944	14" x 14" x 8"	9"	10"	11.00
3945	16" x 16" x 8"	11"	12"	14.50

# ICA INSULINE ICA

## RADIO PRODUCTS



**STEEL OR ALUMINUM CHASSIS BASES**  
 For receivers, transmitters, etc. Bases are folded over on bottom for additional strength and drilled to permit attaching of bottom plates. Solidly constructed. **STEEL BASES**—one piece; heavy duty; zinc plated or black ripple finish. **ALUMINUM BASES**—First grade aluminum, electronically welded. Thickness: .055— $\frac{1}{4}$  Hard.

### ICA CHASSIS BOTTOM PLATES



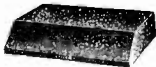
Designed to fit all ICA Chassis Bases and amplifier units listed to the left. Four raised bosses prevent marring or scratching. Supplied in steel or aluminum.

Steel—Zinc Plated Finish		Steel—Black Ripple Finish		Aluminum			
No.	List	No.	List	Gauge	Size	No.	List
1560	\$1.05	4000	\$1.05	20	4 1/2 x 8 x 1 1/2	29000	\$1.10
1530	1.10	4001	1.15	20	5 x 9 1/2 x 1 1/2	29001	1.30
1565	1.45	4002	1.40	20	5 x 9 1/2 x 3	29002	1.65
1582	1.55	4032	1.55	20	5 1/2 x 10 x 3	29004	1.95
1566	1.75	4003	1.75	20	5 x 13 x 3	29003	1.80
1526	1.40	4024	1.40	20	7 x 7 x 2	29005	1.60
1569	1.50	4004	1.50	20	7 x 9 x 2	29006	1.80
1570	1.65	4005	1.65	20	7 x 11 x 2	29007	1.95
1527	1.95	4006	1.90	20	7 x 12 x 3	29008	2.20
1571	1.80	4007	1.80	20	7 x 13 x 2	29009	2.10
1572	2.15	4008	2.15	20	7 x 15 x 3	29010	2.50
1528	2.15	4009	2.15	20	7 x 17 x 3	29011	2.65
1567	2.15	4013	2.15	20	8 x 12 x 3	29012	2.55
1573	2.30	4014	2.30	20	8 x 17 x 2	29013	2.80
1575	2.45	4035	2.45	20	8 x 17 x 3	29014	2.95
1520	2.35	4016	2.35	20	10 x 12 x 3	29015	2.85
1568	2.45	4017	2.45	20	10 x 14 x 3	29016	2.95
1583	2.20	4033	2.20	20	10 x 17 x 3	29017	3.20
1521	2.65	4018	2.65	18	10 x 17 x 3		
1522	3.30	4019	3.30	18	10 x 23 x 3	29018	3.95
1577	3.00	4027	3.00	18	11 x 17 x 2	29019	3.50
1519	3.30	4023	3.30	18	11 x 17 x 3	29020	3.85
1574	3.00	4020	3.00	18	12 x 17 x 2	29021	3.60
1578	3.30	4028	3.30	18	12 x 17 x 3	29022	3.95
1579	3.60	4029	3.60	18	13 x 17 x 2	29023	4.35
1524	4.15	4021	4.15	18	13 x 17 x 3	29024	4.85
1580	3.50	4030	3.50	18	10 x 17 x 4	29025	4.35
1581	4.70	4031	4.70	18	13 x 17 x 4	29026	5.65
					4 x 17 x 3	29027	2.40

Steel Zinc Plated	Black Ripple	List Price	Size	Aluminum No.	List Price
1601	4051	\$ .65	5 x 9 1/2	8725	\$ .90
1625	4075	.70	5 1/2 x 10	8702	.95
1602	4052	.75	5 x 13	8723	.90
1623	4073	.75	7 x 7	8703	.95
1603	4053	.75	7 x 9	8704	1.05
1604	4054	.90	7 x 11	8705	1.10
1605	4055	.95	7 x 12	8706	1.20
1606	4056	.95	7 x 13	8707	1.25
1607	4057	1.05	7 x 15	8708	1.35
1608	4058	1.10	7 x 17	8712	1.30
1612	4062	1.10	8 x 12	8713	1.50
1613	4063	1.15	8 x 17	8715	1.45
1615	4065	1.15	10 x 12	8716	1.55
1616	4066	1.20	10 x 14	8717	1.75
1617	4067	1.40	10 x 17	8718	2.10
1618	4068	1.80	10 x 23	8727	2.00
1622	4072	1.40	11 x 17	8719	2.25
1619	4069	1.50	12 x 17	8720	2.35
1620	4070	1.80	13 x 17		
1624	4074	1.50	13 x 14		

### ICA SLOPING FRONT CHASSIS

Has a sloping front for mounting instruments. Has the effect of a beautiful open cabinet receiver, or amplifier unit, when used without top covers. Heavy Duty Steel, finished in Black Ripple Enamel.



No.	Top of Bottom of Base	Base	Hgt.	Slope	List
3320	7x17"	10x17"	3 1/2"	4"	\$3.30
3321	10x14"	13x14"	3 1/2"	4"	3.65
3322	10x17"	13x17"	3 1/2"	4"	4.15

### ICA CHASSIS MOUNTING BRACKETS

Made to fit on 17" relay rack chassis. Panels must be at least 7" high. Black ripple finish.



No.	For	List
3955	For 8" base.....	Per Pair \$1.25
3958	For 10" base.....	Per Pair 1.70
3956	For 11" base.....	Per Pair 1.90
3957	For 13" base.....	Per Pair 2.20

### ICA MASONITE RELAY RACK PANELS

Made of Tempered Masonite—a non-magnetic material, sturdy and tough yet easily drilled and worked with ordinary wood-working tools and punches. Finished in Black or Gray. Supplied in Black Ripple finish unless Gray is specified.

No.	Size	List
3662	1 3/4" x 19"	\$ .85
3663	3 1/2" x 19"	1.10
3664	5 1/2" x 19"	1.45
3665	7" x 19"	1.60
3666	8 3/4" x 19"	2.00
3667	10 1/2" x 19"	2.25
3668	12 1/4" x 19"	2.50
3669	14" x 19"	2.80
3670	15 3/4" x 19"	3.10
3671	17 1/2" x 19"	3.60
3672	19 1/4" x 19"	4.00
3673	21" x 19"	4.35

**SPECIAL SIZES RACK PANELS TO ORDER**  
 We can supply Rack Panels in any thickness from 1/8" to 3/4" in Steel, Aluminum or Masonite; in any finish to specifications.

### STANDARD RELAY RACK PANELS

Supplied in Amateur Rack notching, first notch 7/8" from edge of panel and 1 1/4" between centers. 19" long. Completely slotted, 1/8" thick. Made of steel (in black ripple or gray finish) or aluminum.



Steel		Aluminum	
No.	List	No.	List
3600	3612 \$1.10	8600	\$1.22
3601	3613 1.25	8601	1.61
3602	3614 1.45	8602	1.92
3603	3615 1.55	8603	2.58
3604	3616 1.95	8604	2.99
3605	3617 2.20	8605	3.41
3606	3618 2.70	8606	3.92
3607	3619 3.10	8607	4.46
3608	3620 3.60	8608	5.00
3609	3621 3.85	8609	5.58
3610	3622 4.15	8610	6.11
3611	3623 4.70	8611	6.68

### ICA RELAY RACK BRACKETS



Black Ripple Finish. Used to reinforce racks and for mounting of panels, shelves, chassis, etc.

No.	List
3950—5" Base Brackets.....	Per Pair \$1.05
3951—8" Base Brackets.....	Per Pair 1.50
3952—11" Base Brackets.....	Per Pair 2.00

### TABLE MOUNT RELAY RACKS



Sturdily constructed heavy duty table rack with one piece base. Accurately drilled mounting holes. Finished in black ripple. Supplied "KNOCKED DOWN" with all necessary hardware.

No.	W.	H.	D.	Panel Space	List
3910	21"	x 25"	x 12"	21" x 19"	\$9.00
3911	21"	x 32"	x 12"	28" x 19"	10.50

### ICA METER PANELS

Slotted to fit all standard racks. Finished in Baked Black or Gray Ripple. Size 5 1/2" x 19". Black will be shipped unless Gray is specified.



STEEL PANELS		MASONITE PANELS	
No.	List	No.	List
3651	3.60	3641	\$2.25
3652	2.50	3642	2.50
3653	3.60	3643	2.25
3654	2.50	3644	2.50

### ICA STEEL PANELS

Thickness of Panels 1/8" Black Ripple Finish



No.	Size	List
3175	7" x 10"	\$ .80
3176	7" x 12"	.90
3177	7" x 14"	1.20
3178	7" x 18"	1.50
3183	8" x 12"	1.15
3184	8" x 14"	1.30
3186	8" x 18"	1.50
3191	10" x 14"	2.00
3192	10" x 18"	2.35
3194	10" x 24"	2.75

### ICA MASONITE PANELS

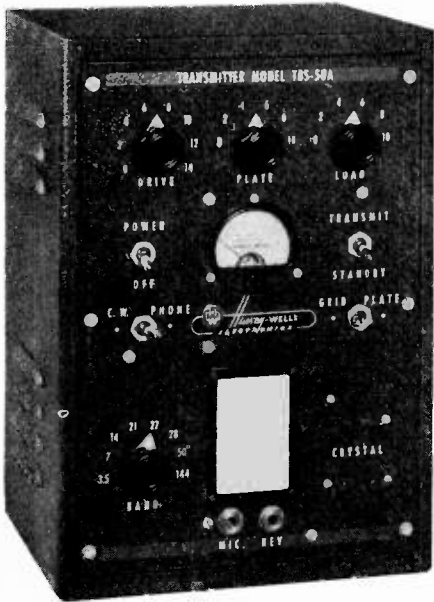
Black Ripple Finish Thickness of panel 3/16"



No.	Size	List
810	7" x 10"	\$1.00
811	7" x 12"	1.10
812	7" x 14"	1.25
813	7" x 18"	1.50
814	7" x 21"	1.65
815	8" x 12"	1.35
816	8" x 14"	1.45
817	8" x 16"	1.65
818	8" x 18"	1.80

# Harvey-WELLS ELECTRONICS, INC.

SOUTHBRIDGE, MASS.



## TBS-50 TRANSMITTER

America's Most Versatile Small Transmitter

**50 WATTS — 8 BANDS — PHONE OR CW**  
**NO PLUG-IN COILS**  
**80, 40, 20, 15, 11, 10, 6 and 2 METERS**  
 (Completely wired and tested—not a kit)

Everything about the TBS-50 was designed to please any operator of this 50 Watt. Crystal controlled on all bands, yet requires no oscillator or multiplier tuning. Eight bands from 80 to 2 meters with band switch and no plug-in coils. Compact, the TBS-50 serves equally well for fixed station or mobile operation. Will operate from AC power packs up to 450 volts at 275. ma. or dynamotor supply for portable mobile operation. As an exciter unit, R.F. output is capable of driving 1000 watt Class C amplifier. Separate winding on modulation transformer permits audio system to be used to drive 500 watt modulator. Employs Pi antenna matching network. Separate coaxial output terminal for 144-148 Mc. antenna. Power input to final is 50 watts with 450 volt power supply on Bands 1 through 7, 30 watts on Band 8. All circuits are sufficiently broad to tune completely over any band with adequate excitation for any frequency on the first six bands. Retuning may be necessary to cover the entire 6 and 2 meter bands. No tuning adjustments are necessary except those necessary to resonate the final output to the antenna. TBS-50 may be mounted on rack panel with power supply.

**CONTROLS:** Band Switch, Excitation Control, Antenna Loading, Amplifier Tuning, Power On Switch, Carrier On Switch, Meter Switch, CW-Phone Switch. Antenna network will match non-reactive feeder of approximately 50-500 ohms. Microphone input designed to use inexpensive single button carbon type microphone. Frequency calibration chart on front panel as well as 0-10 ma. DC milliammeter.

**TUBES:** 6AQ5 Crystal Oscillator, 6AQ5 Buffer-Multiplier, 807 Final Amplifier, 2-6L6 Class B Modulators. In sturdy steel cabinet, 8" wide by 12" high by 8" deep.

TBS-50 Complete with Tubes.....

**\$99.50**

### TBS-50A WITH CRYSTAL-MICROPHONE AMPLIFIER

The TBS-50 amateur transmitter was originally designed to use a simple, inexpensive button carbon microphone. ... There have been so many requests, however, for a crystal microphone model that we have developed a small three-tube pre-amplifier which is incorporated in the TBS-50A at time of manufacture. This pre-amplifier has sufficient gain so that any high impedance microphone having an output level of approximately -50 db can be used.

The first speech amplifier tube (6AU6) is pentode connected and feeds the second speech amplifier (6AU6) triode connected. This in turn drives a twin triode (12AU7) as phase inverter which drives the grids of the regular 6L6 modulators.

TBS-50A Complete with Tubes.....

**\$121.25**



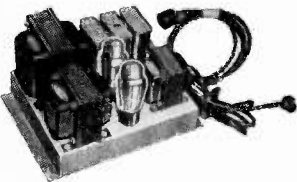
Left side view showing 807 final amplifier, band switch assembly and final tank coils.



Right side view showing 6AQ5 oscillator and multiplier tubes and 6L6G modulators.

## POWER SUPPLIES

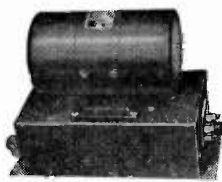
Developed specially for use with the TBS-50 and TBS-50A



APS-50

Delivers 425 volts at 275. ma. and 6.3 volts at 4 amps. With Hi-Lo switch. May be mounted on Rack Panel as shown at right.

APS-50—for 110 volt AC input.....\$39.50



DPS-50

For portable operation. Delivers same voltages and current as APS-50.

DPS-50—for 6 volt operation 300 volts 275 ma.....\$87.50

DPS-50—for 12 volt operation, same as APS-50.....\$54.30

## RACK PANEL



TBS-1A

Size 12 1/2" by 19" — Specially drilled for mounting TBS-50 or TBS-50A and Power Supply APS-50. In new black crackle finish.

**\$5.75**

TELEVISION  
KITS, CABINETS



INSTRUMENTS  
COMPONENTS

**Eliminate the Variables  
in  
Television Installation  
with the TRANSVISION  
FIELD STRENGTH  
METER**

Do not depend on pictures—  
Use absolute measurements—  
Direct Meter Readings!



Improves Installations!!

Saves 1/2 the Work!!

Has numerous features and advantages, including — (1) Measures actual picture signal strength . . . (2) Permits actual picture signal measurements without the use of a complete television set . . . (3) Antenna orientation can be done exactly . . . (4) Measures losses or gain of various antenna and lead-in combinations . . . (5) Useful for checking receiver re-radiation (local oscillator) . . . (6) 12 CHANNEL SELECTOR . . . (7) Amplitudes of interfering signals can be checked . . . (8) Weights only 5 lbs. . . (9) Individually calibrated . . . (10) Housed in attractive metal carrying case . . . (11) Initial cost of this unit is covered after only 3 or 4 installations . . . (12) Operates on 110V, 60 Cycles, AC.

Model FSM-1, complete with tubes . . . Net



**TRANSVISION  
"SERVICE  
NOTES"**

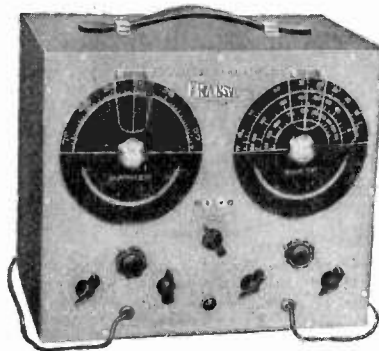
The Key to  
Successful Tele-  
vision Servicing

Transvision's "Service Notes" is a compilation of confidential Television Notes and Information, the product of experience with over 20,000 television receivers, now made available to the public.

"Service Notes" is complete with photographs and diagrams. The information is worth a small fortune. The cost is low.

Net

**TRANSVISION  
TELEVISION and FM  
SWEEP SIGNAL  
GENERATOR**



Complete frequency coverage from 0-227 MC with no band switching. . . Sweep width from 0-12 MC completely variable. . . Accurately calibrated built-in marker generator.

**ADDITIONAL FEATURES:** (1) Dial calibrated in frequency. . . (2) Self-contained markers readable directly on the dial to .5% or better. (No external generator required to provide the marker signals.) . . . (3) Crystal controlled output makes possible any crystal controlled frequency from 5-230 MC. . . (4) Plenty of voltage output—permits stage-by-stage alignment. . . (5) Output impedance 5-125 ohms. . . (6) Directly calibrated markers 20-30 MC for trap, sound and video IF alignment. . . (7) RF for alignment of traps for IF channels when a DC volt meter is used as the indicating medium. . . (8) Unmodulated RF signals to provide marker pips simultaneously with the main variable oscillator. . . (9) Markers can be controlled as to output strength in the pip oscillator. . . (10) Power supply completely shielded and filtered to prevent leakage. . . (11) All active tubes are the new modern miniature type. . . (12) Phasing control incorporated in the generator.

**TRANSVISION  
ALL-CHANNEL  
TELEVISION  
BOOSTER**

CONTINUOUS TUNING



To assure television reception in weak signal areas, or areas which are out of range of certain broadcasting stations, Transvision engineers have designed this new booster. It increases signal strength on all television channels. Tunes all television channels continuously. Can be used with any type of television receiver. Unusually high gain in upper television channels.

Model B-1 . . . List

**TRANSVISION Complete Line of  
TELEVISION COMPONENTS**

Essential units for building a quality television set . . . Transvision makes available a complete line of high quality parts competitively priced. Included in this line are Filter Chokes, all types of Transformers, Focus Coils, Deflection Yokes, Coils—and of course major units such as Picture Tubes, Antennas, Lenses, etc., etc.

WRITE FOR COMPONENTS FOLDER P-1

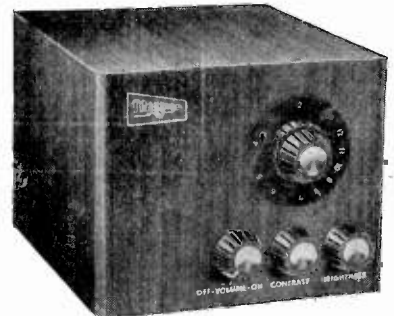
**TRANSVISION'S NEW  
REMOTE CONTROL  
UNIT — for use with  
ANY TELEVISION SET**

**OPERATES ANY TELEVISION SET  
from a DISTANCE up to 50 feet.**

Now you can sit back in your easy chair, a comfortable distance away, and operate your TV set. This new Transvision REMOTE CONTROL UNIT turns ANY SET on, tunes in stations, controls contrast and brightness, turns set off. Especially ideal for commercial installations where the TV set is inaccessible.

TUNER UNIT is a high gain, all-channel, CONTINUOUS TUNING UNIT (about 50 microvolt sensitivity).

Model TRCU Remote Control Unit with 25-ft. cable . . . Net  
Also available without cabinet . . . Net

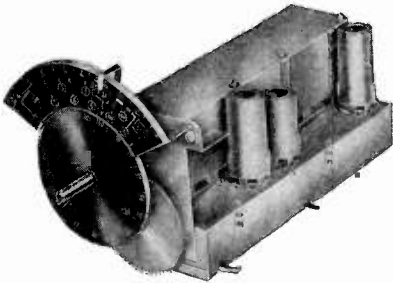


# TV-FM TUNERS ANTENNAS

# TRANSVISION

# LENSES CR TUBES

## DE LUXE TV/FM INPUTUNER MODEL IT-1



Distributed nationally,  
exclusively by Transvision

### The finest TV/FM Tuner on the market today!

Continuous Tuning on All Channels

- Covers all 12 channels, entire FM range.
- Continuously tunes from 44 to 216 mc without a break. Requires no band switching for tuning from channel to channel.
- Complete with tubes and escutcheon.  
Accessory kit available.

## 12-CHANNEL TV TUNERS CONTINUOUS TUNING

Model CT-1 (part #653), for TV channels 2 to 13, is notable for its high gain, sensitivity, excellent image rejection ratio, and CONTINUOUS TUNING feature. May be used with any 7", 10", 12", or 15" kit.

Model CT-1 TV Tuner.....Net

Model TT-2 (part #301-1 or #301-2) covers all TV channels, also FM band (88-108 mc.). Available for 7", 10", 12" or 15" kits. Specify tube size.

Model TT-2 TV/FM Tuner.....Net

## TRANSVISION 12 - Channel TV/FM TUNER, Model TF-13

Complete 12 channel TV/FM tuner. Covers all television stations and complete FM radio range from 88-108 MC. Has 1 stage of RF, three tubes (6BH6, 6AG5, 9002).

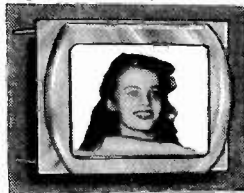
## TRANSVISION TELEVISION PICTURE TUBES



10BP4 Magnetic Deflection 10" picture tube.  
12JP4 Magnetic Deflection 12" picture tube.  
15AP4 Magnetic Deflection 15" picture tube.

## TRANSVISION PICTURE ENLARGING LENSES

Enlarge and Clarify the Pictures



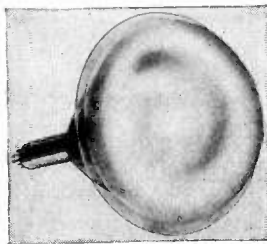
15" Picture Enlarging Lens



10" Lens (52 sq. in. picture)  
12" Lens (75 sq. in. picture)  
15" Lens (125 sq. in. picture)

All lenses are provided with mounting brackets.

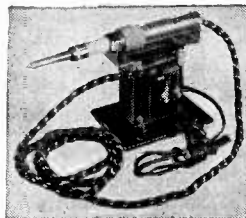
## TRANSVISION All-Angle LENSES for ALL TV SETS



Give picture sizes up to 150 sq. in. Exclusive patented feature makes image visible from wide angle. Lenses come with adapter for installation on ANY 7" or 10" picture tube, and with color kits. All Angle Lens for 7" tubes (gives 75 sq. in. picture).....Net

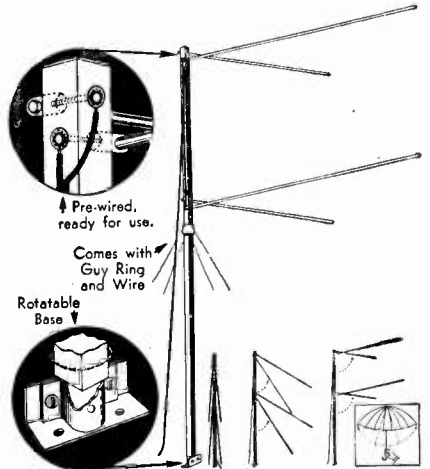
All-Angle Lens for 10" tubes (gives 150 sq. in. picture).....Net

## TRANSVISION "SOLDETRON"



FEATHERWEIGHT SOLDERING IRON  
3 Ounces—Does Job of 200 Watt Iron—  
Interchangeable Tips; No Cleaning or  
Filing; Easy to Use for Every Type of  
Soldering.

## "Flip-Up" TV ANTENNA



Pre-wired,  
ready for use.

Comes with  
Guy Ring  
and Wire

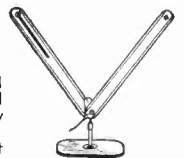
Rotatable  
Base

- PRE-ASSEMBLED, ready for use. Just "flip-up" (like an umbrella) and install.
- PRE-WIRED—just connect your lead-in to the two terminals.
- RECEIVES ALL CHANNELS.
- ALL-DIRECTIONAL; can be oriented for the weakest station in an area with assurance that all other channels will be brought in equally well.
- EXTREMELY SENSITIVE. Unusual high gain on upper channels. Ideal for fringe areas.

Completely assembled with rotatable base, 7-ft. mast, guy ring and guy wire.

Additional 7-ft. masts, to build antenna up to 19 ft., at small extra cost.

## INDOOR TV ANTENNA



"TELEBIRD"

For Ideal Reception on All Channels - All-directional Transvision's sensational new "Telebird" is the ideal indoor antenna. Excellent reception on all channels. Eliminates "ghosts". Install it in a jiffy; place it on window sill or anywhere in the room. Will out-perform many outdoor antennas. When not in use, just fold it up and put it away.

## VISION FILTER

For 7", 10" or 12" sets. For 10BL or 15" sets.

## MAGIC EYE KIT

Magic eye kit—for 12/15" deluxe kits only. Includes eye, assembly, escutcheon, instructions.

All Prices on Application

# Philmore

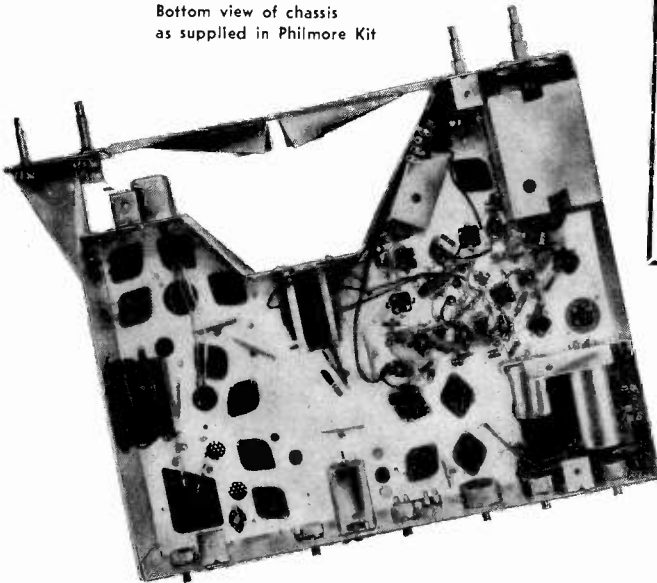
## Pre-Aligned TELEVISION KIT

**TUNER, VIDEO and  
SOUND CHANNELS**  
are completely wired  
and **PRE-ALIGNED** by  
**Philmore**

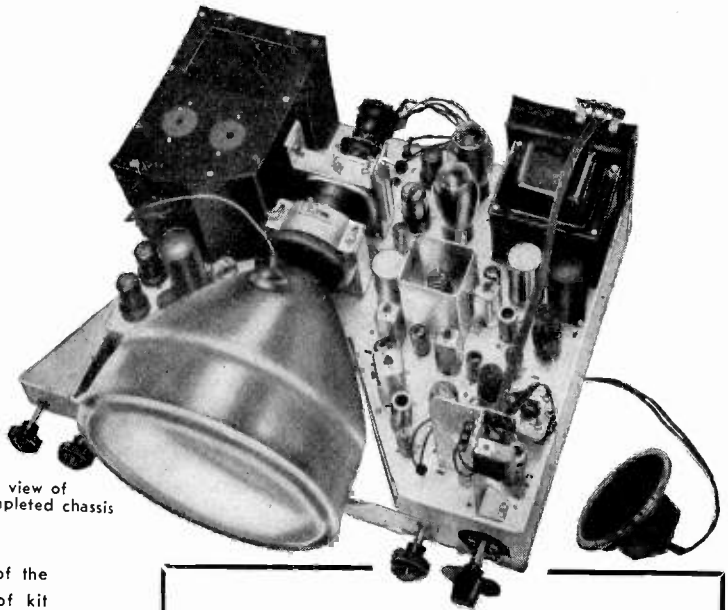
All components are mounted  
by Philmore

Experience has convinced us that pre-alignment of the vital channels is the only satisfactory method of kit assembly. That is why the Tuner, Video and Sound channels are completely wired and fully aligned in our laboratory. We also assemble to the chassis transformers, electrolytic condensers, tubes, high voltage shields, voltage divider shield, chokes. Sockets and other parts are riveted to the chassis which insures good contacts and eliminates any possibility of loose connections.

Bottom view of chassis  
as supplied in Philmore Kit



Top view of  
completed chassis



**Similar to famous RCA 630TS  
and 830TS Circuits**

**Designed for 10" 12" 15" 16"  
PICTURE TUBES**

**SIMPLIFIED STEP-BY-STEP INSTRUCTIONS**  
36 page manual of instructions on assembly and operation generously illustrated. Six full scale lithographed schematic and pictorial diagrams. All small parts packaged in individual envelopes, clearly numbered and identified on blueprints.

When balance of simple wiring is completed, no further alignments are necessary.

**Features:**

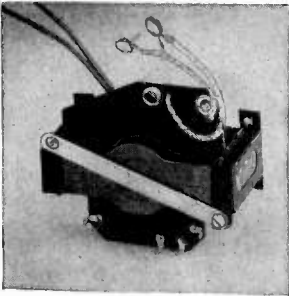
- New, WIDER-SCREEN television for BIGGER pictures on all size tubes.
  - 30 RCA tubes (inc. rect. and video).
  - New, improved daylight viewing.
  - Increased voltage power pack.
  - Long range reception.
  - Complete ALL-channel tuning.
  - PM Speaker with choke (better tone and volume—no hum).
  - Special mounting bracket for 16" tube available.
  - Ideal for custom-built installations.
- (Philmore TV receivers also available completely wired and assembled.)

MFD. BY PHILMORE MANUFACTURING COMPANY, INC.

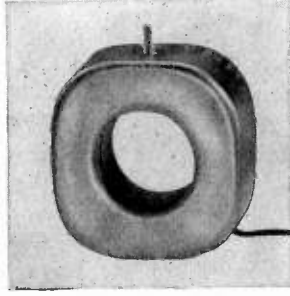
**When ALIGNMENT is BUILT-IN trouble is built out**



# Philmore TV Replacement Parts



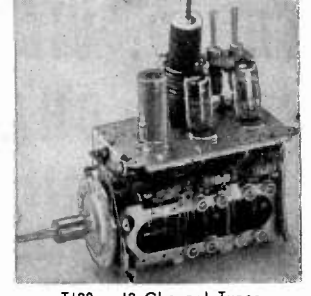
TI18—Horizontal Deflection Output Transformer



TI22—Focus Coil



TI21—Deflection Yoke



TI20—12 Channel Tuner

## COILS AND TRANSFORMERS

Part No.	Description	List Price
TI00	1st and 2nd Sound I.F. Transformers. Interchangeable with RCA type 201K1.	2.00 ea.
TI01	1st Pix I.F. Transformer. Interchangeable with RCA type 202K2.	2.20 ea.
TI02	2nd Pix I.F. Transformer. Interchangeable with RCA type 202K3.	1.70 ea.
TI03	Sound Discriminator Transformer. Interchangeable with RCA type 203K1.	2.60 ea.
TI04	Horizontal (Synch.) Discriminator Transformer. Interchangeable with RCA type 208T8.	2.60 ea.
TI05	3rd and 4th Pix Coils. Interchangeable with RCA type 202L1.	.50 ea.
TI06	Cathode Trap Coil. Interchangeable with RCA type 202K4.	2.00 ea.
TI07	Video Peaking Coil, 180 MH. Shunt Resistance 39,000 Ohms. Interchangeable with RCA type 203L1.	.35 ea.
TI08	Video Peaking Coil, 250 MH. Shunt Resistance 10 Megohms. Interchangeable with RCA type 203L2.	.30 ea.
TI09	Video Peaking Coil, 120 MH. Shunt Resistance 22,000 Ohms. Interchangeable with RCA type 203L3.	.30 ea.
TI10	Video Peaking Coil, 93 MH. Shunt Resistance 10 Megohms. Interchangeable with RCA type 203L4.	.30 ea.
TI11	Filament Chokes, .8 MH. Interchangeable with RCA type 204L1.	.15 ea.
TI12	Width Control Coil. Interchangeable with RCA type 201R1.	.70 ea.
TI13	Horizontal Linearity Control Coil. Interchangeable with RCA type 201R3.	.75 ea.
TI14	Audio Single Output Transformer (speaker) for 6K6 Tubes.	1.35 ea.
TI15	Power Transformer, 295 MA. Fully Shielded. Interchangeable with RCA type 201T6.	26.50 ea.
TI16	Vertical Deflection Output Transformer. Interchangeable with RCA type 204T2.	4.75 ea.
TI17	Vertical Oscillator Transformer (Blocking). Interchangeable with RCA type 208T2.	2.25 ea.
TI18	Horizontal Deflection Output Transformer. Interchangeable with RCA type 211T1 or 211T3.	9.00 ea.
TI21	Deflection Yoke, 8.3 MH. Vertical 50 MH. Interchangeable with RCA type 201D1.	7.50 ea.
TI22	Focus Coil, 247 Ohms D.C. Resistance. Interchangeable with RCA type 202D1.	6.00 ea.
TI23	Ion Trap Beam Bender P.M. (Double Magnet). Interchangeable with RCA types 203D1 or 203D3.	1.90 ea.

## CERAMIC TUBULAR CONDENSERS TYPE GP

Part No.	Description	List Price
C137	10 Mmfd. 10% Tolerance.	.20 ea.
C197	51 Mmfd. 10% Tolerance.	.20 ea.
C181	56 Mmfd. 10% Tolerance.	.20 ea.
C166	82 Mmfd. 10% Tolerance.	.20 ea.
C164	1200 Mmfd. Tolerance Not Less Than Rated Capacity.	.20 ea.
C112	1500 Mmfd. Tolerance Not Less Than Rated Capacity.	.20 ea.
C200	6800 Mmfd. Tolerance Not Less Than Rated Capacity.	.20 ea.

## MICA CONDENSERS

Part No.	Description	List Price
C116	270 Mmfd. 500 W.V.—1000 D.C. Volts Test	.20 ea.
C176	390 Mmfd. 500 W.V.—1000 D.C. Volts Test	.20 ea.
C161	470 Mmfd. 500 W.V.—1000 D.C. Volts Test	.20 ea.
C179	680 Mmfd. 500 W.V.—1000 D.C. Volts Test	.25 ea.
C154	4700 Mmfd. 500 W.V.—1000 D.C. Volts Test	.55 ea.
C187	500 Mmfd. 10,000 W.V.—High Voltage Filter Condenser	1.10 ea.

NOTE: All Condensers are rated for 85°C Operation.

## ELECTROLYTIC CONDENSERS

Part No.	Description	List Price
(in Round Aluminum Cans)		
C220	40+10+80 Mfd. — 450—450—150 Volts — With Cardboard Insulated Tube	2.75 ea.
C221	40+40+10 Mfd. — 450—450—450—Volts	3.00 ea.
C222	80+50 Mfd. — 450—50 Volts — With Cardboard Insulated Tube	3.00 ea.
C223	40+10+10 Mfd. — 450—450—350 Volts	2.75 ea.
C224	20+80 Mfd. — 450—350 Volts	3.00 ea.
C-225	250+1000 Mfd. — 10—6 Volts	2.25 ea.
H125	Bakelite Insulating Plates for above condensers (set of 4)	.15 Set

NOTE: All Condensers are rated for 85°C Operation.

## VOLUME CONTROLS

Part No.	Description	List Price
R131	Picture and Sound—10,000 Ohms and 1 Megohm Dual Control with Power Switch	2.00 ea.
R152	Brightness Control—50,000 Ohms	.70 ea.
R168	Vertical and Horizontal Hold—1 Megohm and 50,000 Ohms Dual Control.	1.75 ea.
R169	Height Control—2.5 Megohm	.65 ea.
R178	Vertical Linearity Control—5,000 Ohms	.65 ea.
R181	Vertical Centering Control—20 Ohms, Tapped Center, Wirewound.	1.25 ea.
R184	Focus Control—1500 Ohms, Wirewound	1.80 ea.
R187	Horizontal Drive Control—20,000 Ohms	.65 ea.
R211	Horizontal Centering Control—20 Ohms, Wirewound	1.30 ea.

## WIREWOUND RESISTORS AND VOLTAGE DIVIDERS

Part No.	Description	List Price
R200	5,000 Ohms, 5 Watt	.50 ea.
R185	1360 Ohms—17 Watt and 250 Ohms—10 Watt	1.25 ea.
R209	5300 Ohms—20 Watt, 500 Ohms—2 Watt and 500 Ohms—2 Watt	1.50 ea.
R186	6750 Ohms 3.2 Watt, 12 Ohms—1/2 Watt and 93 Ohms—4 Watt	1.25 ea.

## TUNER UNITS, KNOBS AND ESCUTCHEONS

Part No.	Description	List Price
TI20	13 Channel Tuner, complete with 3—6J6 Tubes. Pre-Aligned	60.00 ea.
KN101-R	Tuner Knob with Springs (set of two knobs)	.70 Set
KN102-R	Picture and Sound Knobs with Springs (set of two knobs)	.40 Set
KN103-R	Vertical Hold and Horizontal Hold Knobs with Springs (set of two knobs)	.40 Set
KN104-R	Brightness Knobs with Springs (set of two knobs)	.40 Set
KN105-R	13 Channel Escutcheon Plate and Spring	1.10 ea.

NOTE: Above knobs are to be used with the RCA 13 Channel Tuner.  
KN106—Set of Decals for either the 12 Channel or 13 Channel Tuner. .20 Set

## ADDITIONAL TELEVISION ITEMS

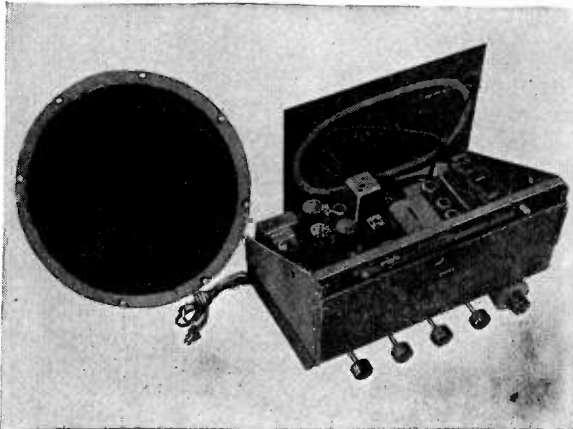
Part No.	Description	List Price
S105	High Voltage Rectifier Socket Assembly	1.25 ea.
S106	Duo-Decal Kinescope Sockets with 5-19" Leads	.90 ea.
301	300 Ohm Twin Connecting Transmission Line, 1000 ft. Spools.	40.00 M ft.
302	High Voltage Lead 23" Long with Clip for Connecting to Kinescope Tube.	.75 ea.

## BRACKETS AND HARDWARE ITEMS

Part No.	Description	List Price
H101	Bracket for Hold Control	.90 ea.
H102	Bracket for Tuner Shaft Bearing and Bake-H103 life Bearing for Tuner Shaft	.50 Set
H104	Brackets for Mounting Chassis to Cabinet (set of 4 brackets)	.75 Set
H105	Bracket for Mounting Deflection Yoke	.80 ea.
H106A	Bracket for Mounting Focus Coil (upper)	.35 ea.
H106B	Bracket for Mounting Focus Coil (lower)	.60 ea.
H106D	Studs Threaded for Focus Coil Bracket (set of 2)	.25 Set
H107	Bracket for Mounting Speaker	.90 ea.
H109-A-B-C-D	High Voltage Shield Assembly consisting of Transformer Mounting Base, Side Cover, Top Cover and Back Cover	8.00 Set
H109E	6 foot Power Supply Cord with Safety Break Female Connector	.90 ea.
H111A	Shield for Voltage Divider	1.50 ea.
H111B	Cover for Voltage Divider Shield	1.00 ea.
H112	Sub-Chassis Plate for Mounting Electrolytic Condensers	1.25 ea.
H114	Shield for Cathode Trap Coil	1.25 ea.
H115	Safety Break Male Connector for AC Input Supply	.30 ea.
H116	Tuner Shield	.75 ea.
H117	Shield for Discriminating Sound Transformer	.35 ea.
H132	Threaded Round Head Screws 4 1/2" long (set of 2)	.30 Set
H135	Ring Corona Wire	.25 ea.
H136	Brackets for Mounting S105 H.V. Socket Assembly (set of 4 brackets)	.25 Set
H137	Bracket for Width Control	.50 ea.
H142	Bracket for Kinescope Tube	1.50 ea.
TI25	T.V. Chassis, formed and punched. Cadmium plated for Philmore Television Sets and Kits or any RCA 630 Type Set.	10.00 ea.

Additional items not listed are available. Please write for prices.

PHILMORE MANUFACTURING COMPANY, INC.

**ESPEY**MANUFACTURING CO. INC.  
NEW YORK 21, NEW YORK  
ESTABLISHED 1928**Model 511 — AM-FM RADIO CHASSIS***A Low-Priced Replacement Chassis.  
Fits All Types of Console Cabinets.***DEALER - SERVICEMAN.....Net \$98.00**

**I. Model 511** is a Superheterodyne AM-FM Radio Receiver chassis designed to operate on: 105/125 volts AC; 50/60 cycles. Power consumption: 85 watts.

**II. FEATURES:** 1. AC Superheterodyne AM-FM receiver. — 2. Improved Frequency Modulation Circuit, Drift Compensated. — 3. 12 Tubes plus Rectifier and Tuning Indicator. — 4. 3 Dual Purpose Tubes give added performance. — 5. Treble Tone Control. — 6. 6-Gang Tuning Condenser. — 7. Full-range Bass Tone Control. — 8. High-Fidelity AM-FM Reception. — 9. Automatic Volume Control. — 10. 13-watt (maximum) Push-Pull Audio Output. — 11. 12-inch PM Speaker with Alnico V Magnet, 25 watts. 12. — Indirectly Illuminated "Slide-Rule" Dial. — 13. Antenna for AM and Folded Dipole Antenna for FM reception. — 14. Provisions for external antennas. — 15. Wired for Phonograph Operations. — 16. Licensed under RCA patents. — 17. RMA listed. — 18. Multi-tap Output Transformer, 3.2, 8 and 500 ohms.

**III. DESCRIPTION:** Model 511 receiver features the latest in postwar engineering design. The FM circuit includes a tuned RF Amplifier stage, 2 stages of high gain Intermediate Frequency Amplification and an advanced design Ratio Detector circuit which provides low noise level between stations, freedom from AM interference, ease of tuning and ample gain for satisfactory operation with an indoor antenna in most urban locations. The AM circuit includes a Tuned RF Amplifier for improved selectivity and freedom from spurious responses. High Fidelity reproduction on FM and AM is insured through well-engineered circuits and the use of high quality parts. The tuning ranges are: Standard Broadcast — 535 to 1720 Kc. FM Band — 88 to 108 Mc.

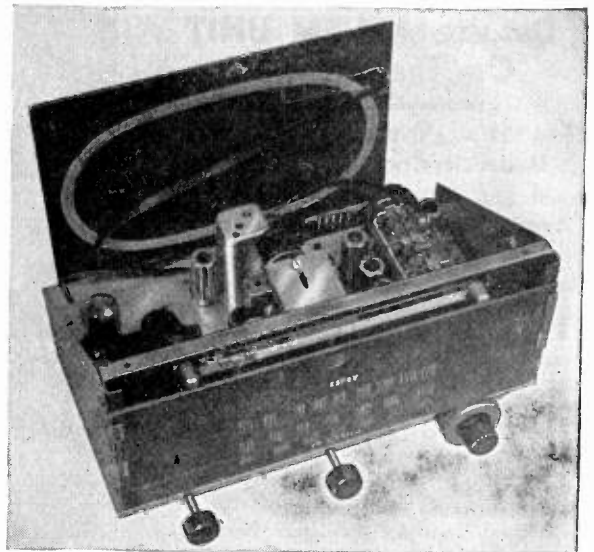
The large easy-to-read "slide-rule" type dial is illuminated by two pilot lights which also provide illumination for the red plastic dial pointer. A high ratio flywheel drive on the tuning condenser provides smooth tuning throughout the range of the receiver.

The receiver has two antennas; a Loop antenna for Standard Broadcast and a Folded Dipole antenna for the FM band. Provision is made for connecting an external Phonograph Pickup to the high-fidelity audio amplifier system of the receiver. The Multi-tap output transformer will permit the use of Most Popular Type Hi-Fidelity Speakers and dividing networks, or to match a standard 500-ohm line for Remote installations.

**IV. TUBE COMPLEMENT:** 1 AM-RF Amplifier tube. — 1 FM-RF Amplifier tube. — 1 AM Oscillator, Mixer tube. — 1 IF Amplifier tube. — 1 FM Detector Driver tube. — 1 FM Detector tube. — 1 FM Oscillator tube. — 1 FM Mixer tube. — 1 AM Detector, Audio Amplifier tube. — 1 Audio Amplifier-Inverter tube. — 2 Push-Pull Power Amplifier tubes. — 1 Rectifier tube. — 1 Electron Ray Tuning Indicator tube.

**V. ACCESSORIES:** The Model 511 chassis is supplied ready to operate, complete with tubes, antennas, speaker and all necessary hardware for mounting in a table cabinet or console, including escutcheon.

**VI. CHASSIS DIMENSIONS AND WEIGHT:** Chassis Dimensions: 13½" wide x 8½" high x 10" deep. Carton Dimensions: (2 units) 20" x 14¼" x 10¾". Net Weight: 16½ lbs. each.

**Model 512 — AM-FM TUNER***Outstanding AM-FM TUNER, self-powered  
for use with all types of Audio Amplifiers.***DEALER - SERVICEMAN.....Net \$82.15**

**I. Model 512** Superheterodyne AM-FM Radio Tuner chassis is designed to operate on: 105/125 volts AC; 50/60 cycles. Power Consumption: 66 watts.

**II. FEATURES:** 1. AC Superheterodyne AM-FM tuning circuit. — 2. Improved Frequency Modulation Circuit, drift compensated. — 3. 9 Tubes plus Rectifier and Tuning Indicator. — 4. 3 Dual Purpose Tubes give added performance. — 5. Automatic Volume Control. — 6. 6-Gang Tuning Condenser. — 7. High-Fidelity AM-FM Reception. — 8. Indirectly Illuminated "Slide-Rule" Dial. — 9. Antenna for AM and Folded Dipole Antenna for FM Reception. — 10. Provisions for external antennas. — 11. Wired for Phonograph Operations. — 12. Licensed under RCA patents. — 13. RMA listed. — 14. High and Low Level Audio Output. — 15. Utility Socket provides power for magnetic reluctance pickup pre-amplifier.

**III. DESCRIPTION:** Model 512 Tuner features the latest in postwar engineering design. The FM circuit includes the tuned RF Amplifier stage, 2 stages of high-gain Intermediate Frequency Amplification, and an advanced design Ratio Detector circuit which provides low noise level between stations, freedom from AM interference, ease of tuning and ample gain for satisfactory operation with an indoor antenna. The AM circuit includes a Tuned RF Amplifier for improved selectivity and freedom from spurious responses. High-Fidelity reproduction on FM and AM is insured through well-engineered circuits and high-quality parts.

Line Voltage is made available at two outlets at the rear of the tuner; these are actuated by the tuner on-off switch. To facilitate custom installations, B+ and Heater Voltages are made available at a utility socket mounted in the tuner. This is suitable for powering auxiliary pre-amplifiers as used with variable reluctance type pickups. Holes for 2 additional controls are available for the convenience of the user. The tuning ranges are: Standard Broadcast — 535 to 1720 Kc. FM Band — 88 to 108 Mc. The receiver has two antennas; a Loop antenna for Standard Broadcast and a Folded Dipole antenna for the FM Band. Provision is made for connecting an external phonograph pick-up to the tuner audio system, for use with all types of amplifier installations. Two audio output channels are provided, one at high level, the other at low level; both are controlled by the tuner volume control.

**IV. TUBE COMPLEMENT:** 1 AM-RF Amplifier tube. — 1 FM-RF Amplifier tube. — 1 AM Oscillator, Mixer tube. — 1 FM Detector Driver tube. — 1 IF Amplifier tube. — 1 FM Detector tube. — 1 FM Oscillator tube. — 1 FM Mixer tube. — 1 AM Detector, Audio Amplifier tube. — 1 Electron Ray Tuning Indicator tube. — 1 Rectifier tube.

**V. ACCESSORIES:** Model 512 chassis is supplied ready to operate, complete with tubes, antennas, and all necessary hardware for mounting in a table cabinet or console, including escutcheon.

**VI. CHASSIS DIMENSIONS AND WEIGHT:** Chassis Dimensions: 13½" wide x 8½" high x 9" deep. Carton Dimensions: (2 units) 20" x 14¼" x 10¾". Net Weight: 14 lbs.

**ESPEY**MANUFACTURING CO. INC.  
NEW YORK 21, NEW YORK

ESTABLISHED 1928

## Lowest Priced DeLuxe AM-FM UNIT On the Market!

Model 513 — AM-FM DeLuxe TUNER  
Dealer-Serviceman . . . . Net \$ 78.60

Model 514 — DeLuxe Audio  
Amplifier, 25 Watts  
Dealer-Serviceman . . . . Net \$ 38.60

Alnico V PM Speaker, 12",  
25 Watts  
Dealer-Serviceman . . . . Net \$ 10.35

**TOTAL—Dealer-Serviceman Net \$127.55**

### Model 513

#### I. FEATURES:

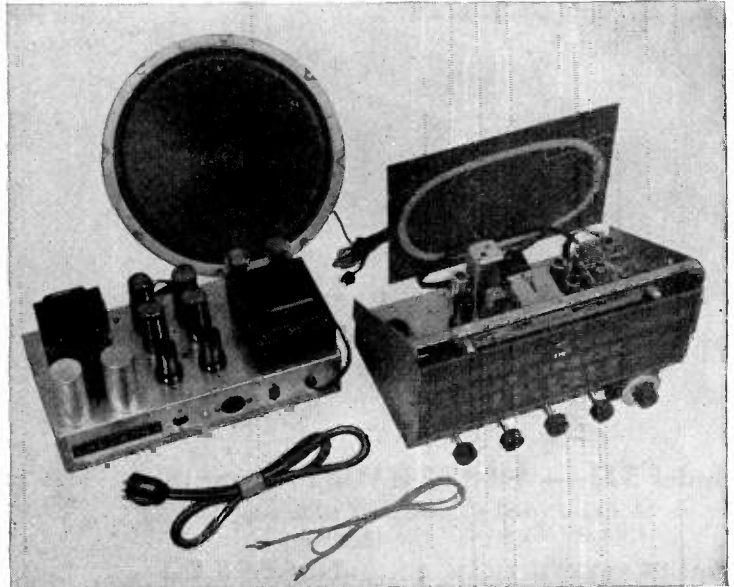
1. Superheterodyne AM-FM circuit.
2. Improved Frequency Modulation Circuit, stabilized against drift.
3. 10 Tubes plus Tuning Indicator.
4. Tuned RF Circuits on AM and FM.
5. 6-Gang Variable Tuning Condenser.
6. Automatic Volume Control.
7. Full Range Bass Boost Control.
8. Full Range Treble Control.
9. Indirectly Illuminated "Slide-Rule" Dial.
10. Fly Wheel Tuning Drive.
11. Antenna for AM and Folded Dipole Antenna for FM.
12. Provision for external antennas.
13. Wired for Phonograph Operation.
14. Utility Socket provides power for magnetic reluctance pickup pre-amplifier.
15. Licensed under RCA.
16. RMA listed.

II. **Model 513 AM-FM Tuner** employs 10 tubes plus a tuning indicator tube in a superheterodyne circuit. It is designed to operate from an external power supply and feed into an external audio amplifier. (Model 514 DeLuxe Power Supply-Audio Amplifier is specifically designed to work in conjunction with the Model 513 Tuner.) The power requirements for the tuner are 6.3 volts AC or DC at 3.5 amperes, and 200 volts DC at 60 milliamperes.

III. **DESCRIPTION:** The Model 513 Tuner incorporates the latest developments in engineering design. It is intended for the discriminating listener. Separate, Tuned RF stages are employed on both the AM and FM bands to provide extreme sensitivity and minimize spurious responses. The FM circuit also includes two stages of high-gain intermediate frequency amplification to drive a ratio detector circuit of advanced design. AM: 535 Kc. to 1720 Kc. — FM: 88 Mc. to 108 Mc.

IV. **TUBE COMPLEMENT:** 1 6BA6 AM-RF Amplifier tube. — 1 6BA6 FM-RF Amplifier tube. — 1 6BE6 AM Converter tube. — 1 6BE6 FM Mixer tube. — 1 6C4 Oscillator tube. — 1 6SG7 AM-FM IF Amplifier tube. — 1 6SH7 FM-Ratio Detector Driver tube. — 1 6J5 AM-Detector AVC tube. — 1 6SQ7 AM-FM 1st Audio tube. — 1 6AL5 FM Ratio Detector tube. — 1 6U5 Tuning Detector tube.

V. **CHASSIS DIMENSIONS:** 13½" wide x 8½" high x 9" deep. Weight: 9½ lbs.



Model 514 Amplifier & Power Supply.

Model 513 AM-FM Tuner.

### Model 514

I. **Model 514 DeLuxe Power Supply and Audio Amplifier** contains 6 tubes, plus 2 rectifiers in a high gain push-pull amplifier circuit. It is designed specifically for use in conjunction with the Model 513 Tuner, but may be used wherever a high quality audio amplifier may be required. Power requirements are: 105/125 volts AC; 50/60 cycles; power consumption: approximately 1.50 watts.

#### II. FEATURES:

1. Parallel Push-Pull Output Circuit.
2. Self-Balanced Phase Inverter System.
3. Extended Range High-Fidelity Response.
4. Inverse Feedback Circuit.
5. 6 Tubes plus 2 Rectifiers.
6. Output Impedance selective for any speaker requirement (4 to 500 ohms).
7. License under RCA.
8. RMA listed.

III. **DESCRIPTION:** The Model 514 Power Supply-Audio Amplifier employs the best in proven engineering design. Six tubes are incorporated in a balanced phase inverter parallel push-pull amplifier. By the use of an inverse feedback circuit, high-fidelity performance is obtained.

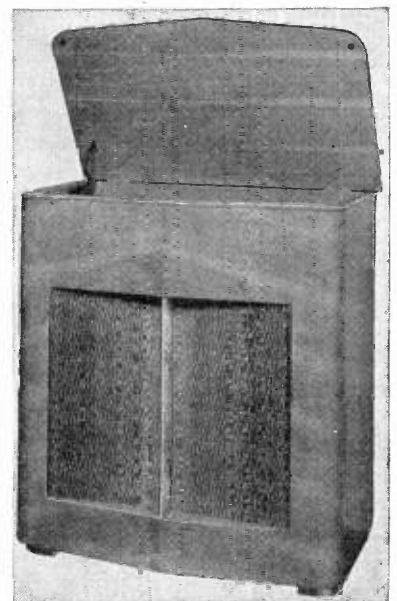
IV. **TUBE COMPLEMENT:**  
2 6J5 Audio Driver tubes. —  
4 6V6 Audio Output tubes.  
— 2 5Y3 Rectifier tubes.

V. 13½" wide x 7½" high x 7" deep. Weight 18 lbs.

### Model 243 Console Cabinet

Dealer-Serviceman . . . Net **\$53.50**

Modernistic, exquisitely finished limed walnut Console Cabinet. Furnished with panels to house ESPEY chassis and standard record changers.

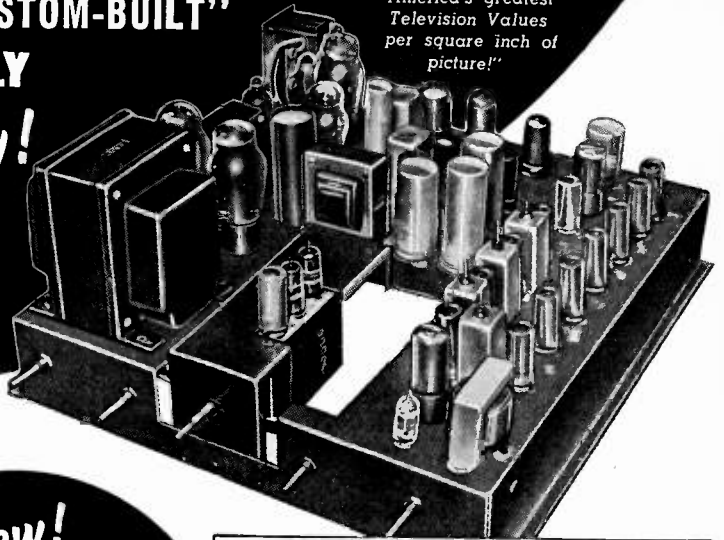


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TELEVISION ASSEMBLY

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More Economically!**  
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Television Values  
per square inch of  
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TELEVISION  
ASSEMBLY CO.

**New!**  
**Super-Simplified**  
wiring and assembly  
**INSTRUCTIONS!**

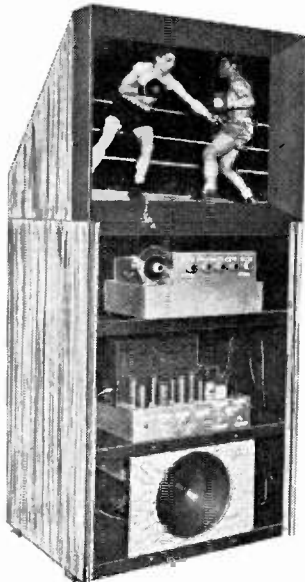
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Prewired, pretuned  
and tubed I.F. sound  
and video strip (pat-  
ents pending). An  
exclusive T. A. C. fea-  
ture developed by  
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**MODEL P-520 . . . 520 SQ. IN. PICTURE  
PROJECTION TELEVISION ASSEMBLY**



• Bausch & Lomb F. 1.9 Lens • Eastman  
Kodak Screen • DuMont Inputuner •  
37 R.C.A. Tubes • Pre-Wired & Pre-  
Tuned Picture I.F. & Sound I.F. • Pre-  
Wired 30 K.V. Tripler Fly Back Power  
Supply • Automatic Gain Control •  
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Picture Frame Supplied • STP4 Pro-  
jection Tube • 12" R.C.A. High Fidelity  
Speaker • Two Low Voltage Power  
Supplies.

**MODEL P-520** \$76950\*  
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**MODEL P-520W** \$89500\*  
Dealer's net

The above unit completely wired and  
ready to install.

Front and rear panels optional  
at additional cost.

TELEVISION  
ASSEMBLY CO.

540 BUSHWICK AVE., BROOKLYN 6, N. Y.

**Champion Models**  
**20" DIRECT-VIEW MODEL**  
with DuMont Inputuner and 20" DuMont Tube

213 SQUARE INCH PICTURE! Prewired Voltage  
Doubler 14KV power supply, Pre-wired "VIVIDeo"  
I.F. picture and sound strip (Pat. Pending). ALL  
channels TV plus ALL FM radio. Continuous  
tuning. DuMont Inputuner is Prewired. Delivered  
complete with all components and 30 RCA tubes  
plus 20-inch DuMont C.R. tube.

**MODEL F-201C** Dealer's net **\$56675\***

**"M" SERIES STANDARD and CHAMPION**  
**Direct-View Models**  
**for 10" CR TUBES**

**STANDARD MODEL**

29 tubes, including 13-tube "VIVIDeo" I.F. picture  
and sound strip (Pat. Pending). This portion com-  
pletely wired, tested and aligned. Prewired,  
standard tuner ready to use. Handles ALL  
channels.

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Same as above except that DuMont Inputuner re-  
places Standard Tuner. Gets ALL channels TV  
—PLUS all channels of FM radio.

**MODEL M-101C** Less C.R. Tube **\$20950\***  
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12"-15" standard and champion assemblies.

**T. A. C. GUARANTEE**

All components are of the finest  
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## SPECIALISTS IN TELEVISION



### TELEVISION ANTENNA AMPLIFIER Model TVA

For improved television reception in fringe areas and indoor antenna installations. Model TVA contains two type 6AK5 special high

frequency tubes in a unique dual amplifier circuit. Antenna connects through automatically when booster is turned off thus providing normal reception. Supplied complete with tubes in attractive walnut or mahogany cabinet ..... \$28.50 List\*



### TELEVISION ANTENNA AMPLIFIER Model TVX

Similar to Model TVA except for extra stage of amplification on the high frequency channels. Model TVX is popular for installations

that require unusual gain in the high frequency TV channels (7-13). Complete with instructions.

\$37.50 List\*



### DE LUXE TELEVISION PREAMPLIFIER Model TVZ

A three stage gang tuned booster for special installations. Especially useful in extreme fringe areas where quiet noise conditions prevail.

Model TVZ contains 3 type 6AK5 tubes in a special patent applied for inductance-capacity tuning system. Housed in walnut or mahogany cabinet with illuminated dial ..... \$54.50 List\*

### SWEEP GENERATOR TSW-50



One of the first popularly priced broad band sweep generators on the market. The TSW-50 employs an electro mechanical type of sweep circuit providing for excellent linearity and wide sweep width. Frequency range from 4 to 220 mc. sweep width range 500 kc to 12 mc. Supplied complete with tubes and cables, housed in an attractive grey crackle cabinet with etched aluminum front plate ..... \$68.50 Net



### TELEMARKER Model TM-100

An absorption type marker unit for use in conjunction with the TSW-50 or similar sweep signal generators, as a frequency marker on the visual alignment trace.

Model TM-100 is connected externally to the sweep generator output lead, covers a frequency range of from 9.5 to 28 mc. Each telemarker is individually calibrated, housed in an attractive grey crackle cabinet with etched aluminum dial and furnished complete with connecting cables ..... \$12.50 Net

### FM TELETUNER

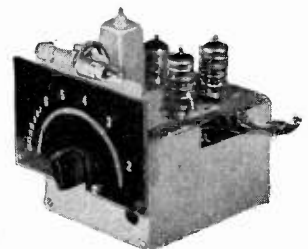
A novel converter unit that adds FM reception to your TV receiver. The FM Teletuner connects in series with the TV antenna providing FM reception when receiver is tuned to an unused TV channel (2 or 3). Antenna connects through when tuner is off so as not to effect normal TV reception. Will work on any TV set that does NOT use an intercarrier circuit



\$29.95 List\*

### FRONT END TUNER Model TF 701

A unique and compact continuous type television front end tuner featuring a revolutionary method of inductance-capacity variation. Model TF-701 may be used whenever application requires a continuous type tuning system. Contains 6AK5 RF amplifier, 6AK5 mixer, 6C4 oscillator. Each unit supplied completely aligned with calibrated, illuminated dial, complete with technical data but less 6AG5 and 6AK5.





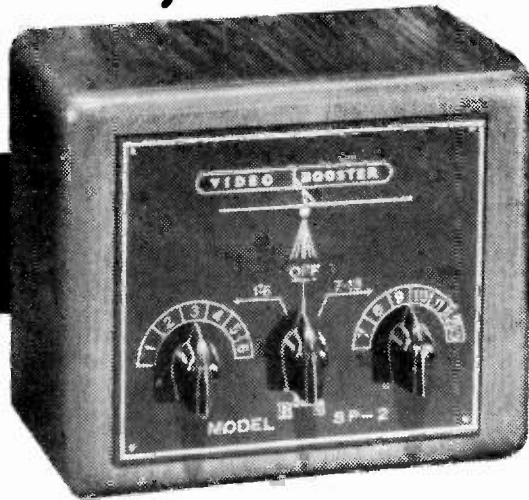
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all agree: **RMS VIDEO ANTENNA BOOSTER**

gives

**OUTSTANDING PERFORMANCE!**

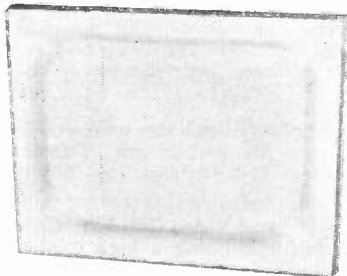
**MODEL SP-2 \$37.50 LIST**  
for ALL CHANNELS



- ★ Boosts weak station to give you clear, easy to look at pictures.
- ★ Pulls in distant stations with a gain of SIX to TEN TIMES in signal strength!
- ★ Cuts down off-channel interference.

- ★ Just plug in to work, it has a self contained power supply.
- ★ For most local installations any simple indoor aerial in conjunction with RMS VIDEO ANTENNA BOOSTER will give you Television Picture reception as clear as that obtainable with an outdoor antenna!

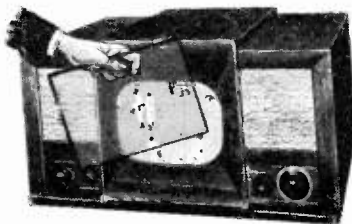
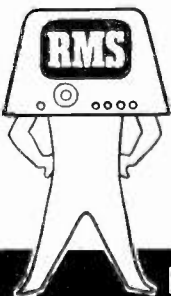
**RMS TELEVISION ACCESSORIES**



**TRANSPARENT UNBREAKABLE PLASTIC MASKS**  
for Television Tubes

No.	For Picture Tubes	List Price Each
210	10"	\$ 9.00
212	12"	9.85
213	12 1/2"	9.85
215	15"	16.00
216 (for new 16" metal picture tube)		26.85
220	20"	35.60

Unbreakable plastic, one piece construction. Crystal clear for perfect vision, contour-designed to fit all types of television picture tubes.

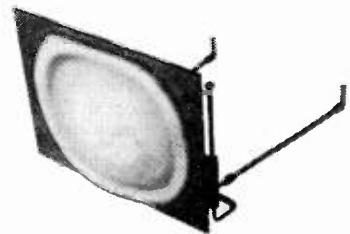


**GLAREPROOF TRANSPARENT FILTERS**  
for Television Sets  
no glare - no headache  
no eyestrain

Can be mounted in any television cabinet, in front of the picture tube. It positively reduces glare and gives image much sharper, clearer definition.

Available in Blue or smoke transparency. Specify when ordering.

No.	For Picture Tubes	List Price Each
307	7"	\$1.13
310	10"	1.38
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315	15"	3.14



**TELEVISION IMAGE ENLARGER LENS**

Universal Enlarger for 7" and 10" picture tubes. Can be mounted on table and console models.

- **Shallow Concave Surface**—for minimum image distortion
- **Extremely High Magnification** of any television picture

Sturdily mounted on adjustable brass tubing. Can be moved back and forth, up or down with greatest ease. Does not have to be attached to television receiver. No tools required to set up.

Model ML-710 Clear \$24.25 list  
Model ML-710B Blue Plastic 24.85 list

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# RCA ELECTRONIC COMPONENTS

## TELEVISION PARTS

### CONTROLS

- #201R1 Width Control. Screwdriver-adjusted variable reactor. Powdered iron core. For use with RCA 211T1 where kinescope anode potential not over 9 KV.....\$0.70
- #201R2 Projection Width Control. Features same as 201R1. For use with RCA 211T2 in circuits with kinescope anode potentials up to 27 KV design center .....\$2.20
- #201R3 Horizontal Linearity Control. Features spring clip mounting. For deflection circuits using RCA 211T1 and 201D1.....\$0.80
- #203R1 Horizontal Oscillator and Synchronizing Control-Coil. A permeability tuned center-tapped oscillator coil for use in Television receivers employing a 6SN7-GT as a combination horizontal blocking oscillator and synchronizing control tube.....\$1.80

### TRANSFORMERS

- #201T6 Power Transformer. For use in 30-tube TV receivers requiring rectified current of 295 ma. at voltage of approx. 385 volts....\$26.00
- #201T7 For 24-Tube Receivers.....\$21.00
- #201T8 For 21-Tube Receivers.....\$19.00
- #201T9 For 27-Tube Receivers.....\$21.00
- #201T10 For 27-Tube Receivers.....\$21.00
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- #204T9 Vertical Output Transformer. Quiet operation. For use with RCA 201D1 or 201D2 where kinescopes require 50° magnetic deflection .....\$4.50
- #204T3 Horizontal Output Transformer. Powdered iron core. For use where electro-magnetic deflection kinescopes with RCA 201D1 yokes are employed .....\$12.00
- #208T1 Horizontal Blocking-Oscillator Transformer. Powdered iron core. For use where electro-magnetic deflection kinescopes with RCA 201D1 yokes are employed.....\$3.90
- #208T9 Vertical Blocking-Oscillator Transformer. Generates 60 cps pulses required to drive the grids of horizontal discharge tubes....\$2.50
- #208T3 Horizontal Blocking-Oscillator Transformer. Similar to 208T1 except that bracket mounting is used in place of potted can construction .....\$2.75

- #208T8 Horizontal Sync-Discriminator Transformer. Provides automatic horiz sweep freq control. Couples horiz-sweep oscillator to horiz-sync discriminator .....\$2.30
- #211T1 Horizontal Output Transformer. For use with RCA 201D1 and directly-viewed kinescopes requiring 50° magnetic deflection using typical circuits.....\$9.50
- #211T2 Horizontal Output Transformer. Designed for use in recommended circuits employing projection kinescope RCA 5TP4. Powdered iron core.....\$19.00

### YOKES

- #201D3 Deflection Yoke. For use with directly-viewed kinescope requiring 50° magnetic deflection such as RCA 7DP4 and 10BP4 \$14.90
- #201D2 Deflection Yoke. For use with projection kinescopes requiring 50° magnetic deflection such as RCA 5TP4.....\$13.00

### COILS

- #202D1 Focus Coils. For magnetically focused kinescopes with deflection angles up to 50°, such as 10BP4. Utilizes large conductor size for long life.....\$7.50
- #204L1 Filament Choke. Eliminates undesirable RF currents from filament circuit. Consists of self-supported 16-turn coil on ¼" inside diameter .....\$0.20
- #204X1 Television I-F and Video Coil Kit. Contains all the coils for building a high quality receiver. 15 individual items.....\$19.50

### MISCELLANEOUS

- #201E1 Television Tuner incorporating RF amplifier, converter and heterodyne oscillator, with 13-channel station selector and fine tuning control. Includes 3 RCA 6J6 tubes.....\$64.00
- #201X1 Yoke Mounting Hood. Holds deflection yoke RCA 201D1 on kinescopes such as RCA 7DP4, 10BP4 .....\$1.30
- #203D1 Iron-Trap Magnet. (Coil Type). Required for RCA 7BP4 and 10BP4. Eliminates ion spot on kinescope screen.....\$6.50

All prices in effect 5/15/49.

FOR COMPLETE INFORMATION ON  
RCA TELEVISION PARTS, ASK YOUR  
RCA DISTRIBUTOR FOR FORM 3F602.

All prices shown are  
suggested list prices.

*Thank You!*

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from sources of supply listed  
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*RADIO'S MASTER*

# ICA INSULINE ICA

## RADIO PRODUCTS

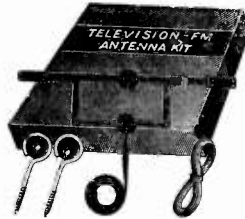
### TELEVISION-FM ANTENNAS — ACCESSORIES



#### ALL-CHANNEL ANTENNA KIT

Designed for INDOOR use. Combination of low band and high band antennas of the flexible dipole type. Includes bakelite double pole double throw knife switch. Each antenna may be separately oriented for the maximum reception of either high or low band. Knife switch permits quick changing from antenna to antenna without disconnecting.

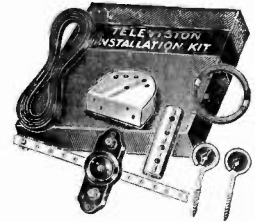
No. 6095..... List \$6.95



#### ALL-CHANNEL ANTENNA KIT

An outdoor television antenna kit of the flexible dipole type, featuring simplicity of installation. May be placed on roof or other convenient location. Yields effective reception of all television channels. Complete with generous 60 ft. 300 ohm twin lead; special weather-resistant nylon supporting strings; insulated screw eyes.

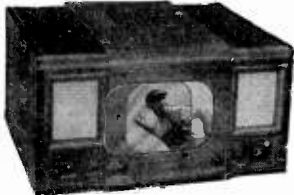
No. 6096..... List \$5.95



#### ANTENNA INSTALLATION KIT

A handy compact assortment of components to facilitate the installation of any type of outdoor antenna. Especially suitable for television antenna installations. Includes: 60 ft. 300 ohm twin lead—3 Universal Screw Eyes—for either twin lead or coaxial cable—Heavy gauge steel Antenna Base Mount—heavy gauge steel extension mast Coupler—100 ft. sturdy Guy Wire—Lightning Arrester with ground strap.

No. 6159..... List \$6.95

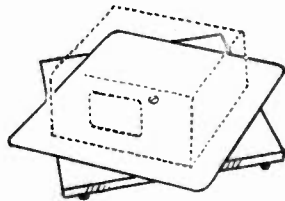


#### The New ICA TELEVISION FILTER

A sensational improvement that adds to the enjoyment of television reception. A scientifically compounded Filter . . . easy to install . . . suitable for every type of receiver.

The ICA Filter offers these outstanding television viewing features: Dissolves fuzzy grays . . . snaps up blacks . . . sharpens detail . . . restful tinting cuts down eyestrain . . . eliminates glare and room-light interference . . . reduces flickering and picture grain . . . unbreakable. Excellent for daylight reception.

No. 6176—7" tube size..... List \$1.45  
 No. 6177—10" tube size..... List 1.95  
 No. 6178—12" tube size..... List 2.95  
 No. 6179—15" tube size..... List 3.95  
 No. 6180—20" tube size..... List 5.95



#### TELEVISION RECEIVER TURNTABLE

Designed for table model receivers. Permits multi-angle television viewing without lifting or disconnecting set. Eliminates furniture moving, re-connecting of set, etc.

Set is merely placed on turn-table—ready for operation. Finger-tip pressure. Makes complete circle for all-angle viewing. Heavy gauge steel in beautiful "hammered-tone" finish. Finely engineered swivel base unit.

No. 6184..... List \$16.50



#### ICA TURNBUCKLES

Sturdy, steel turnbuckles that afford balanced tension of supporting wires. Especially suitable for antenna guy wires. Assure slack-free, rigid support.

No. 6150—3" (closed)..... List \$ .25  
 No. 6151—5" (closed)..... List \$ .35



#### ICA U-BOLTS

Offer a firm and rigid clamping action for affixing antenna or supporting masts to metal or wooden surfaces. Nuts and washers included. Overall measurements: width 1"; length 2 1/2".

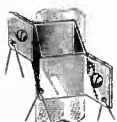
No. 6153..... List \$3.30



#### PIPE STRAPS

A useful accessory for supporting antenna masts, etc., against Chimneys, gables, walls or other flat surfaces. Suitable for all masts up to 1" in diameter.

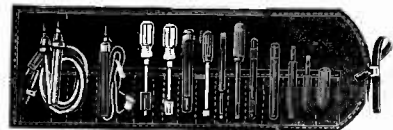
No. 6152..... List \$10.00 C



#### GUY WIRE CLAMP

Ideal for set-ups requiring guy-wire support. May be located at any position on antenna mast for maximum rigidity. This rugged adjustable steel clamp is suitable for masts ranging from 3/8" to 1 1/4" diameters. Includes nuts and lock-washers.

No. 6144..... List \$5.50



#### ICA TELEVISION SERVICING KIT

A compact handy kit containing 13 of the newest servicing tools especially engineered for general television installation and servicing. Neatly packed in leatherette case. Includes high voltage test prods, dual-bladed trans-aligning tool; coil and trimmer aligner—slim diam. TV "Channel Tuner"; spring-controlled Safe-T-Tester; 4 in 1 Aligning tool; narrow shaft trimmer aligning tool; flexible screw driver and socket wrench; thin-bladed neut. tool for "Admiral," etc., TV sets; slim flexible tuning wand for Zenith, etc., TV sets; tuning wrench for Zenith, etc., TV sets; slim, dual-bladed aligner for "Admiral," etc., TV sets.

No. 6160..... List \$16.95

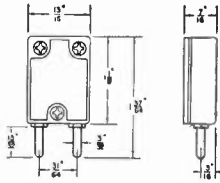
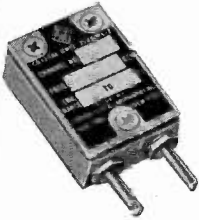
# PREMIER CRYSTALS

*for*

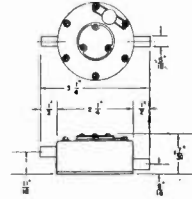
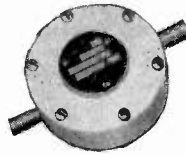
Communications  
Laboratories  
Broadcast Stations

Diathermy  
Service Men  
Equipment Manufacturers

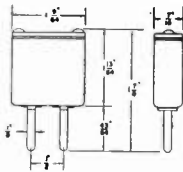
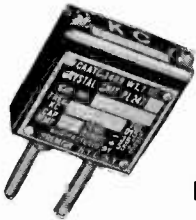
Aircraft  
Amateurs  
Equipment Manufacturers



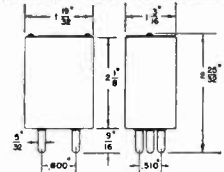
**PL-7** 3,000 to 11,000 kc.  
Pressure-mounted crystal.



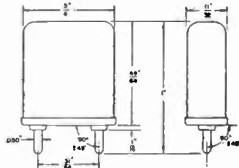
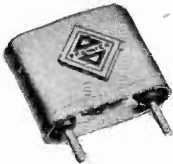
**157** 85 to 10,000 kc.  
Variable air gap.



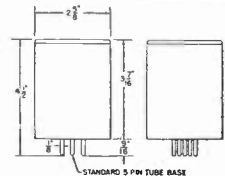
**PL-247** 700 to 11,000 kc.  
Also with .093" pins to  
fit actual socket.



**PL-258** 80 to 10,000 kc.  
Available as either  
single unit or dual unit.



**PL-261** 1,000 to 20,000 kc.  
Also available in holder  
9/16" high.

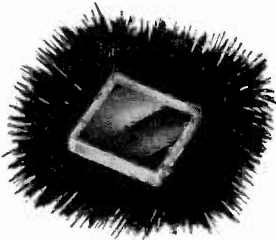


**501** 90 to 10,000 kc.  
Temperature controlled crystal oven,  
with or without thermometer.

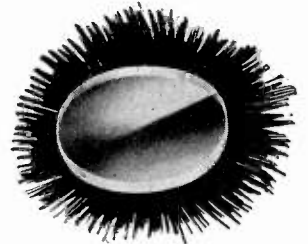
The above units are typical of the wide range of standard and special Premier crystals available for every frequency need. Your inquiry is invited.

## ULTRASONIC CRYSTAL UNITS

Crystals . . . Blanks . . . Mounts . . . Transducers



Premier ultrasonic crystal blanks, flat or curved, round or square, can be manufactured to your specifications. Consult us on your crystal problems in connection with experimental work in ultrasonics. No obligation; strictest confidence observed.



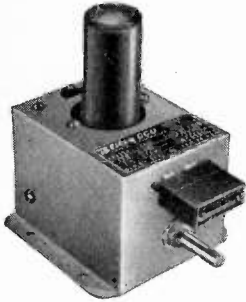
## PREMIER CRYSTAL LABORATORIES, INC.

MANUFACTURERS OF RADIO AND ELECTRICAL APPARATUS  
OPTICAL AND PIEZO CRYSTALS—PRECISION CRYSTAL HOLDERS  
89 SEVENTH AVENUE NEW YORK 11, N. Y.



# Bliley

## CRYSTALS AND CRYSTAL CONTROLLED OSCILLATORS



### CCO — CRYSTAL CONTROLLED OSCILLATOR — MODEL 2A

For 2-6-10-11 Meters

With this basic oscillator, employing a 6AG7 tube, the advantages of VHF crystal control are easily achieved. Has direct output on 6-10-11 meters and ample output to drive tripler stage on 2 meters. Single tuning control, bandswitch and crystal socket are mounted on outside of painted metal subchassis with power and output

terminals at back. Uses Bliley AX2 20-meter crystals for output on 10 and 11 meters, new Bliley AX3 crystals for 6 and 2 meter operation. Ideal as nucleus for new construction or conversion of existing equipment.

Supplied less tube and crystal . . . . \$9.95

### AMATEUR FREQUENCY CRYSTALS

#### TYPE AX2

These high stability advanced design crystals are plated to insure long term precision and reliability. Calibrated to  $\pm .002\%$  with drift less than  $.0002\%$  per degree Centigrade. Holder pins spaced on .486" centers.



Supplied	Range	Price
$\pm 2$ Kc	3500—4000 Kc	\$2.80
$\pm 2$ Kc	7000—7425 Kc	2.80
$\pm 30$ Kc	12500—13500 Kc	3.95
$\pm 30$ Kc	13580—13714 Kc	3.95
$\pm 30$ Kc	14000—14850 Kc	3.95

#### TYPE AX3

A new third overtone crystal unit produced for use in the Bliley CCO-2A. Has exceptionally high activity at operating frequency. Calibration accurate to  $\pm .003\%$  in CCO-2A with drift less than  $.0002\%$  per degree Centigrade. Plated crystal is mounted in gasket sealed holder with pins spaced .486" centers.



Supplied	Range	Price
$\pm 5$ Kc	24000—24333 Kc	\$3.95
$\pm 5$ Kc	25000—25500 Kc	3.95

#### TYPE CF6 455 Kc

Single signal filter crystal unit. Exceptionally low holder capacity permits sharp signal discrimination in filter network of general communications receivers. Frequency 455 Kc free from spurious responses within  $\pm 7$  Kc.



Price \$4.50

#### TYPE CF3 455 Kc

Single signal filter crystal unit. Frequency 455 Kc,  $\pm 5$  Kc—free from spurious responses within  $\pm 7$  Kc of fundamental. Designed for intermediate frequency filter in general communications receivers.



Price \$5.00

#### TYPE MC9 3105 Kc

This unit is suggested for use in private aircraft transmitters operating at 3105 Kc. The crystal is guaranteed to be within  $\pm .02\%$  of 3105 Kc at any temperature between  $0^{\circ}$  C and  $50^{\circ}$  C and is factory tested for performance over this temperature range. Plug-in type holder is gasket sealed against moisture and humidity.



Price \$5.50

#### TYPE VX2 3105 Kc

Designed for applications where space is at a premium, this unit is recommended for private aircraft communication at 3105 Kc. Guaranteed to maintain frequency within  $\pm .02\%$  at any temperature between  $0^{\circ}$  C and  $50^{\circ}$  C. Solder lug connections permit mounting under chassis and assembly is gasket sealed against moisture and humidity.



Price \$5.00

#### TYPE KV3 100 Kc

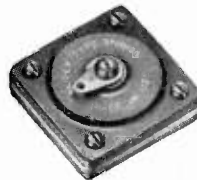
A precision crystal designed for use in secondary standards. Crystal is silver plated and mounted between wire supports which are soldered to the plated surfaces. Exceptionally low drift crystal is adjustable to exactly 100 Kc at  $25^{\circ}$  C when used in recommended oscillator circuit.



Price \$6.95

#### TYPE SMC100 100-1000 Kc

Dual frequency crystal provides either 100 Kc or 1000 Kc frequency source. When used in recommended oscillator circuit 1000 Kc frequency is within  $\pm .05\%$  at  $25^{\circ}$  C and 100 Kc frequency can be adjusted to zero beat at  $25^{\circ}$  C. Suggested for signal generators used in alignment of radio receivers.



Price \$8.75

For complete dimensional information consult Bulletin 35 available at any Bliley distributor.

# Bliley CCO

CRYSTAL  
CONTROLLED OSCILLATOR

MODEL 1C

For instant channel selection and frequency accuracy, radio service technicians use this Bliley test instrument.

It provides direct crystal control for i-f alignment. Write for descriptive Bulletin 32.

Complete with 7 Bliley crystals, tubes and concentric output cable. . . . \$69.50

**BILEY ELECTRIC COMPANY**

# PR Precision CRYSTALS



## COMMERCIAL TYPES—SPECIFICATIONS

Type	Frequency Range	Pin Spacing	Pin Diameter	Height Above Pins	Width	Depth	
Z-1 Fundamental	900 Kc. to 12000 Kc.	.486"	.093"	1-3/16"	13/16"	7/16"	
Z-1 Harmonic	12000 Kc. to 30000 Kc.	.486"	.093"	1-3/16"	13/16"	7/16"	
*Z-1A Fundamental	425 Kc. to 12000 Kc.	3/4"	.125"	1 3/8"	1 3/8"	1/2"	
*Z-1A Harmonic	12000 Kc. to 30000 Kc.	3/4"	.125"	1 3/8"	1 3/8"	1/2"	
Z-1B Fundamental	1000 Kc. to 12000 Kc.	3/4"	.125"	1 3/8"	1-3/16"	1/2"	
Z-1B Harmonic	12000 Kc. to 30000 Kc.	3/4"	.125"	1 3/8"	1-3/16"	1/2"	
Z-1D Same as Z-1	Same as Z-1	1/2"	.125"	1-3/16"	13/16"	7/16"	
Z-1E Same as Z-1	Same as Z-1	1/2"	.125"	1 1/4"	1 1/8"	7/16"	
Z-1H Single or dual unit Fundamental	100 Kc. to 5000 Kc.	3-Pin W.E.	.157"	2-1/16"	1-19/32"	1-3/16"	
Z-1K Same as Z-1A except has .157" dia. pins	Same as Z-1A						
Z-1M Fundamental	1000 Kc. to 5000 Kc.	7/8"	Std. Banana	2-3/32"	1-19/32"	3/4"	
†Z-1R Fundamental	175 Kc. to 475 Kc.	1/2"	.093"	1 1/4"	1-3/32"	7/16"	
Z-4 Fundamental	1500 Kc. to 12000 Kc.	3/4"	.125"	.650"	Diameter	.995"	
Z-4 Harmonic	12000 Kc. to 30000 Kc.	3/4"	.125"	.650"	Diameter	.995"	
Z-7 Fundamental	1000 Kc. to 12000 Kc.	3/4"	Std. Banana	1.660"	1.192"	.518"	
Z-8 Fundamental	400 Kc. to 5000 Kc.	3/4"	1/8"	1 3/4"	1-9/16"	1-11/16"	
Z-6 Fundamental	100 Kc. to 325 Kc.	3/4"	1/8"	1 1/2"	Diameter	1-25/32"	
E-1 Fundamental	100 Kc. to 7000 Kc.	Interchangeable with FT-164 and AC-95					
FT-171-B Fundamental	1000 Kc. to 8000 Kc.	3/4"	Std. Banana	2 1/4"	1 1/2"	13/16"	

\* Can be Supplied with Standard Banana Pins.

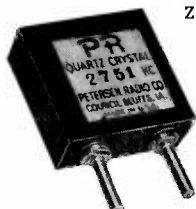
† For Signal Generator Use. Not recommended for Transmitter Freq. Control.



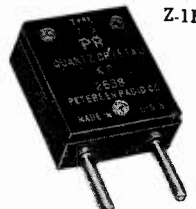
Z-6



Z-1



Z-1A



Z-1B

**PETERSEN RADIO Company, Inc., 2800 W. Broadway, Council Bluffs, Iowa**

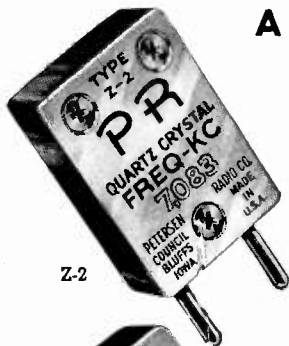


# PR Precision CRYSTALS



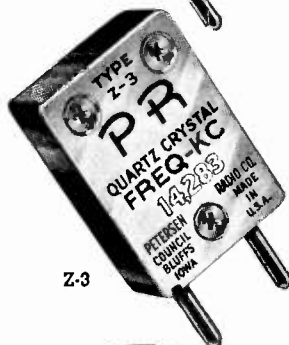
## AMATEUR — Specifications and Frequencies

### TYPE Z-2



Z-2

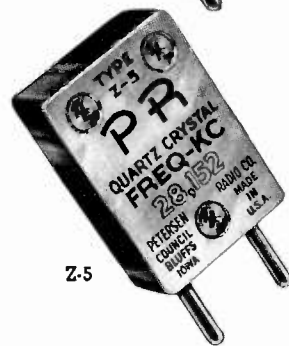
- 160 meter band for VFX-680 Narrow Band FM in Sonar Exciter.
- 1699.2 to 1710 Kc. for 11 meter band.
- 1750 to 1812 Kc. for 10 meter band.
- 1828 and 1844 Kc. These 2 frequencies cover entire 10 meter FM band in Sonar VFX-680.
- 1562.5 to 1687.5 Kc. for 6 meter band.
- 1778 to 1827 Kc. for 2 meter band.
- 3395 to 3428.5 Kc. for 11 meters.
- 3500 to 4000 Kc. for 80, 40, 20 and 10 meters.
- 6250 to 6750 Kc. for 2 meters.
- 6790 to 6857 Kc. for 11 meters.
- 7000 to 7425 Kc. for 40, 20 and 10 meters.
- 8000 to 8222 Kc. for 2 meters.
- 8334 to 9000 Kc. for 6 meters.
- 9000 to 9250 Kc. for 2 meters.



Z-3

### TYPE Z-3

- 12000 to 12333 Kc. for 2 meters.
- 12500 to 13500 Kc. for 6 meters.
- 13580 to 13715 Kc. for 11 meters.
- 14000 to 14850 Kc. for 20 and 10 meters.



Z-5

### TYPE Z-5

- 25000 to 27000 Kc. for 6 meters.
- 27160 to 27430 Kc. for 11 meters.
- 28000 to 29700 Kc. for 10 meters.

## CHECK SUPERIORITY OF PR Crystals

### Stability . . .

Drift characteristics of PR Crystals limited to less than 2 cycles per MC per degree. You get low drift, combined with high output, dependable frequency control. X-Ray orientation guarantees uniform cut for maximum low-drift performance.

### Accuracy . . .

Guaranteed accurate within .01 per cent of specified frequency or better. When doubling and quadrupling accuracy is absolutely essential. You KNOW where you are with PRs.

### Power Output . . .

PRs are designed to give maximum power output from the exciter stage when operating at the highest permissible voltages. PR Crystals can "take it."

### Activity . . .

PRs give you high activity. They "come in" instantly on phone . . . key without chirps, even at high bug speeds, without excessive "backing off."

### Unconditional Guarantee . . .

Every PR Precision CRYSTAL is guaranteed unconditionally, by the makers of fine crystals since 1934.

**PETERSEN RADIO Company, Inc., 2800 W. Broadway, Council Bluffs, Iowa**

# PR Precision CRYSTALS



## PRICE LIST SUBJECT TO CHANGE WITHOUT NOTICE

### COMMERCIAL

Type	Frequency Range	Tolerance			Schedule	
		.005%	.01%	.02%		
Z-1	Fundamental	900 to 12000 Kc.	\$12.50	\$11.00	\$10.00	A
Z-1	Harmonic	12000 to 20000 Kc.	15.00	12.50	11.00	A
Z-1	Harmonic	20000 to 30000 Kc.	18.00	15.00	13.00	A
Z-1A	Fundamental	425 to 900 Kc.	15.00	12.50	11.00	A
Z-1A	Fundamental	900 to 12000 Kc.	12.50	11.00	10.00	A
Z-1A	Harmonic	12000 to 20000 Kc.	15.00	12.50	11.00	A
Z-1A	Harmonic	20000 to 30000 Kc.	18.00	15.00	13.00	A
Z-1B	Fundamental	1000 to 12000 Kc.	12.50	11.00	10.00	A
Z-1B	Harmonic	12000 to 20000 Kc.	15.00	12.50	11.00	A
Z-1B	Harmonic	20000 to 30000 Kc.	18.00	15.00	13.00	A
Z-1D	Same as Z-1	Same as Z-1				A
Z-1E	Same as Z-1	Same as Z-1				A
Z-1H	Fundamental	100 Kc. Standard		(Exact Frequency)	12.00	B
Z-1H	Fundamental	101 to 900 Kc.	18.00	15.00	13.00	A
Z-1H	Fundamental	901 to 5000 Kc.	15.00	12.50	11.00	A
Z-1H	Dual Unit	901 to 5000 Kc.	30.00	27.50	25.00	A
Z-1K	Same as Z-1A	Same as Z-1A				A
Z-1M	Fundamental	1000 to 5000 Kc.	15.00	12.50	11.00	A
Z-1R	Fundamental	175 to 475 Kc.	18.00	15.00	13.00	A
Z-1R	Fundamental for Signal Generators	{ 175, 200, 262, 370, 455, 456, 465 Kc. }		6.00		B
Z-1R	Fundamental	475 to 1000 Kc.	15.00	12.50	11.00	A
Z-4	Fundamental	Same as Z-1				A
Z-4	Harmonic	Same as Z-1				A
Z-7	Fundamental	Same as Z-1				A
Z-8	Fundamental	400 to 900 Kc.	18.00	15.00	13.00	A
Z-6	Fundamental	100 Kc. Standard		(Exact Frequency)	9.00	B
Z-6	Fundamental	101 to 175 Kc.	18.00	15.00	13.00	A
E-1	Fundamental	100 to 900 Kc.	20.00	19.00	18.00	B
E-1	Fundamental	900 to 7000 Kc.	19.00	18.00	17.00	B
FT-171-B	Fundamental	1000 to 8000 Kc.	12.50	11.00	10.00	A

### AIRCRAFT

Type	Frequency	Price	Schedule
Z-1, Z-1A, Z-1B	3105 and 6210 Kc.	\$5.00	C

### MARINE

Type	Transmitter	Receiver	Schedule
Z-1	\$10.00	\$10.00	A
Z-1A	10.00	10.00	A
Z-1B	10.00	10.00	A
Z-1D	10.00	10.00	A
Z-1H	12.50	12.50	A
Z-1H Dual	25.00	25.00	A
Z-1K	12.50	12.50	A
Z-1M	12.50	12.50	A

### AMATEUR

Note: Crystals Within Amateur Bands Supplied INTEGRAL KILOCYCLES Only.

Type	Tolerance	Price	Schedule
Z-2	.01%	\$2.75	B
Z-3	.01%	3.75	B
Z-5	.01%	5.00	B

Crystals for amateur service other than frequencies listed on Catalog Sheet can be supplied as follows:

Type	Range	Tolerances			
		Plus or Minus 5 Kc.		Plus or Minus .02%	
		Price	Sched.	Price	Sched.
Z-2, Fundamental	1500 to 10000 Kc.	\$2.75	B	\$11.00	A
Z-3, 3rd Harmonic	10000 to 20000 Kc.	3.75	B	11.00	A
Z-5, 3rd Harmonic	20000 to 30000 Kc.	7.50	B	13.00	A

#### NOTICE

Prices on Commercial Crystals are based on quantities of 1 to 10 of the same frequency. For larger quantities write for prices.

Price on crystals below 100 Kc. furnished on request. Tolerance can be guaranteed only when oscillator or circuit diagram is furnished.

To facilitate the handling of your order, please order by type number and indicate permissible tolerance.

**PETERSEN RADIO Company, Inc., 2800 W. Broadway, Council Bluffs, Iowa**



**SPECIALISTS IN  
SPECIAL CRYSTALS**

# Crystals

for

Commercial ~ Aircraft ~ Marine  
Amateur ~ Police ~ Mobile  
Ultrasonic ~ Filter ~ Blanks

Precision Engineered ~ Complete Testing Facilities

GET OUR QUOTATION FOR QUALITY CRYSTALS

**COMPLETE COVERAGE**

... **WHATEVER YOUR PROBLEM**

**SPACE, TOLERANCE, HOLDER TYPE, FREQUENCY,**

**CALL IN CRYSTALAB FOR THE ANSWERS**

WRITE TO  
DEPT.

Crystal Research Laboratories, Inc. has complete facilities for research and development of Crystal applications for Communication and Frequency Controls . . . Filters . . . Supersonic Delay Lines . . . Ultrasonic . . . as well as for Scientific Instrumentation.

**THE ULTRA-SONORATOR** — Models SL520 and LB501 500-Watt Ultrasonic Generators with Associated Network . . . Write for Catalog.



**CRYSTAL RESEARCH  
LABORATORIES, INC.**

29 ALLYN ST., HARTFORD, 3, CONN., PHONE 7-3215

# TECH-MASTER PRODUCTS COMPANY

## AMERICA'S FINEST TELEVISION KITS

The Only TV Kits with "Circuit-Aligned" Components

- ★ 3 TIMES PICTURE AREA OF 10-INCH TUBE
- ★ 31 Tubes — Voltage Doubler
- ★ Ultra-Simplified Wiring Instructions
- ★ Easily Wired Over a Week-End
- ★ Tech-Master Integrity  
(Only Perfection Is Acceptable)

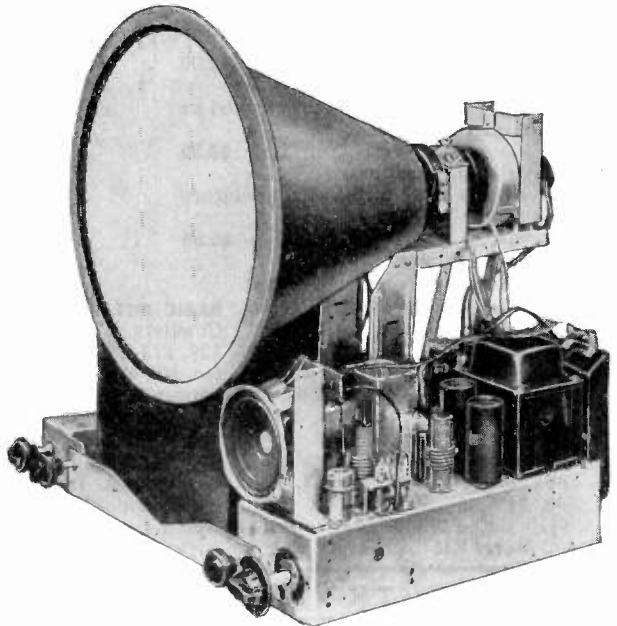
# "Super 16"

Tech-Master, pioneer in the TV kit field, scoops the industry again with this "Super-16" TV kit that produces big, BIG pictures of superlative quality. Our engineers utilized our famous 630-TK De Luxe kit as a basis. An 11T5 flyback transformer, a 2D2 focus coil, a 1R4 width control and other fine components PLUS our new Universal Brackets to accommodate kinescopes up to 16 inches have been added.

A clever, and thoroughly sound, voltage double circuit using two 1B3's has been designed by our engineers to provide full voltage and current to drive up to 20-in kinescopes with excellent brilliance, definition and sweep. Ultra-simplified instructions make it possible for practically anyone to wire this kit over a week-end. The famous "Circuit-Aligned" components supplied with our kits keep final adjustments down to a negligible minimum, and these can be performed without additional equipment.

"SUPER-16" 630-TK De Luxe TV Kit, complete with all tubes, parts and instructions.

Less Kinescope . . . . . Net **\$177.50**

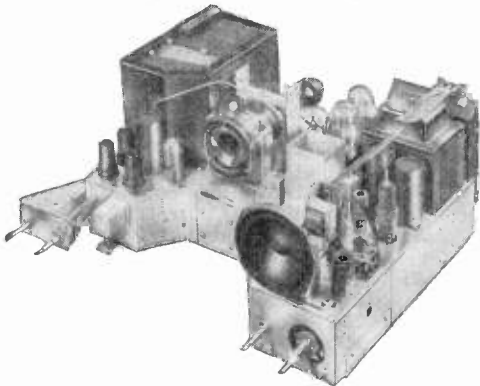


### 630-TK DE LUXE TV KIT

Build your own duplicate of the famous RCA 630-TS with this superfine, 1949 model Tech-Master 630-TK television kit. You will enjoy television at its finest — and save plenty. The Tech-Master kit is complete in all details — major components, all controls, all sockets and terminal strips are mounted in place. Only the interesting and instructive wiring remains to be done from the ultra-simplified wiring diagrams — easily accomplished over a week-end. Furnished with RCA 13-channel front end tuner completely wired, aligned and tested. "Circuit-Aligned" components mean all final adjustments can be made without additional equipment.

630-TK De Luxe TV Kit, all components mounted, complete with all tubes, parts, instructions, less kinescope.

Net **\$163.50**



### 630-TK STANDARD TV KIT

The 630-TK Standard 10" TV kit is identical with the De Luxe, described above, except that it is offered at a low, economy price because no components are mounted. In every other respect it is the same as the De Luxe model, same quality front end and components, complete instructions.

630-TK Standard TV Kit, complete with all tubes, parts, instructions; less kinescope . . . . . Net **\$144.50**

### TECH-MASTER TELEVISION CABINETS

10" Table Model Cabinet (illustrated at right), for either 630-TK TV kit. Handsome, sturdy, mahogany finish. With safety glass and Kinescope mounting slides. Completely drilled, ready for installation. 24 3/4" x 20" x 14" high. . . . . Net **\$42.50**

12 1/2" Table Model Cabinet . . . . . Net **\$47.50**

15" or 16" Table Model Cabinet . . . . . Net **\$54.50**

15" or 16" Mahogany Console Cabinet . . . . . Net **\$98.50**

15" or 16" Formica Console Cabinet in Blonde, Mahogany, Walnut or Ebony Finish . . . . . Net **\$98.50**



# TECH-MASTER PRODUCTS COMPANY

## 630-TK TELEVISION COMPONENTS KITS

### ELECTROLYTIC CONDENSER KIT

Consists of our part numbers 338, 367, 368, 369, 370, 371 listed below.

EK Kit . . . . . \$7.98

### BLEEDER RESISTOR KIT

Consists of our part numbers 439, 458, 459, 876 listed below.

BK Kit . . . . . \$4.25

### IF & VIDEO COIL KIT

Consists of 2 1K1s, 2K2, 2K3, 2K4, 3K1, 2 2L1s, 3L1, 3L2, 2 3L3s, 2 3L4s, 5 4L1s listed below.

4X2 IF & Video Coil Kit . . . . . \$12.00

### MICA CAPACITOR KIT

Consists of the 14 mica capacitors used in the 630-TS circuit.

MK Kit . . . . . \$3.95

### CERAMICON CAPACITOR KIT

Consists of the 25 ceramicon capacitors used in the 630-TS circuit.

CK Kit . . . . . \$5.89

### TUBULAR BY-PASS KIT

Consists of the 38 by-pass moulded capacitors used in the 630-TS circuit.

TK Kit . . . . . \$8.85

### RESISTOR KIT

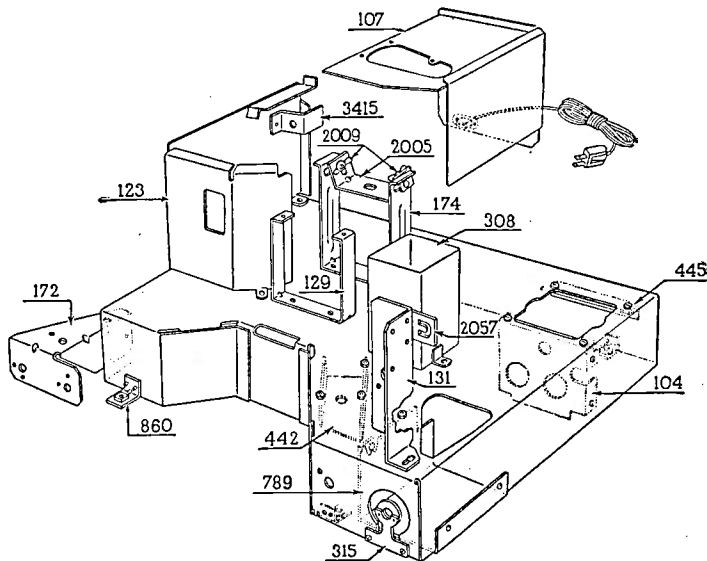
Consists of the 107 1/2, 1 and 2-watt resistors used in the 630-TS circuit.

RK Kit . . . . . \$8.48

### COMPLETE METAL CHASSIS KIT

Consists of our part numbers 1SC, 104, 107, 115, 116, 123, 129, 131, 172, 174, 308, 442, 445, 789, 4 860s, 2004, 2009, 3415, listed below. (Less cord.)

No. 1950 Metal Kit . . . . . \$29.50



630-TK Chassis Assembly (No. 1950 Metal Kit)

### BASIC METAL CHASSIS KIT

Consists of our part numbers 1SC, 129, 172, 174, 308, listed below.

No. 500 Metal Kit . . . . . \$7.70

### "SUPER-16" CONVERSION KIT

Consists of all components and instructions for converting 630 type TV receivers for use with 15" or 16" kinescopes. Includes 11T5 flyback transformer, 2D2 focus coil, 1R4 width control, DS2 voltage doubler socket, UB universal mounting

brackets, 1B3 rectifier, all necessary resistors, condensers, etc., and instructions.

16CK Conversion Kit . . . \$33.30  
Conversion Instructions, separately, 25c

### UB ADJUSTABLE MOUNTING BRACKETS

Kinescope mounting brackets for tubes from 12 1/2" to 16". Mounts on 630 chassis so that face of all tubes up to 16" is in line with front controls.

UB Brackets . . . . . \$4.65

## 630-TK TELEVISION REPLACEMENT PARTS

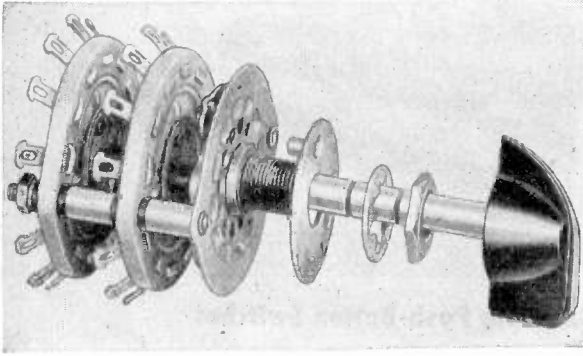
Part No.	Description	Net	Part No.	Description	Net	Part No.	Description	Net
1SC	Stamped Chassis	\$5.50	457	Line Cord and Plug	.96	11.8	Vert. & Horiz. Hold	
104	Electrolytics Bracket	1.50	525	Kinescope Socket with leads	1.32		50K/1 Meg. (72758)	\$2.50
107	H.V. Shield Cover	3.75	532	H.V. Anode Cap and Lead	.66	11.15T	Horiz. Drive .25 Meg	.44
123	H.V. Compartmt. Shield	3.75	533	Knob, Fine Tuning	.24	1D1	Deflection Yoke	4.50
115	Bleeder Case Cover	1.90	534	Knob, Station Selector	.33	1D3	Deflection Yoke	8.94
116	Bleeder Case	2.20	535	Knob, Pic, Brightness		1R1	Width Control	.42
129	Yoke Mtg. Bracket	.99		Vert. Hold	.21	1R3	Hor. Linearity Control	.48
131	Speaker Bracket	1.95	536	Knob, Hor. Hold, Vol. Control	.18	1R4	Width Control	.60
157	Power Transformer	15.60	537	Knob, Dummy Brightness	.18	1R5	Hor. Linearity Control	.72
172	Bracket for Controls	1.65	598	Escutcheon Plate & Spring	1.10	2D1	Focus Coil	4.50
174	Focus Coil "U" Bracket	1.65	789	R.F. Unit Shield	1.50	2D2	Focus Coil	6.60
308	Cathode Trap Shield	1.65	853	Corona Ring	.21	3D3	Ion Trap Magnet (PM type)	1.26
315	R.F. Unit Shaft Support	.65	860	Mounting Foot (4 req.)	ea. .33	4T2	Vert. Defctn. Xfmr	3.00
338	250/10V, 1000/6V Cond. (71436)	1.25	2005	Focus Coil Support	.65	8T2	Vert. Block Osc. Xfmr	1.65
367	40-10/450V, 80/150V, Cond. (71431)	1.53	2009	8/32 Stud Assembly & Wing Nuts	.18	8T8	Synchrolock Trnsfmr.	1.38
368	40-40-10/450V Cond. (71432)	1.72	3415	Width Control Bracket	.33	11T1	Horiz. Deflection Output & H.V. Transformer	5.70
369	80/450V, 50/50V Cond. (71433)	1.61	11.5	Height Control 2.5 Meg. (71440)	.44	11T3	" " " " " "	5.70
370	40-10/450V, 10/350V Cond. (71434)	1.39	11.4	Vert. Lin. Control 5K (71441)	.73	11T5	" " " " " "	7.50
371	20/450V, 80/350V Cond. (71435)	1.48	11.11	Focus Control 1500 (71442)	.97	DS2	Voltage Doubler Socket	2.65
439	6300 ohm WW 50 watt Bleeder	1.47	11.16	Vert. & Horiz. Centering Control 20 WW (Two) (71443)	.97	KRK2	RCA Front End Tuner	38.40
458	1590 " " "	1.18	11.9	Brightness 50K (71444)	.44	1K1	Sound IF Transformer	1.32
459	6855 " " "	1.06	11.7	Volume—On/Off 10K/1 Meg (71446)	2.50	2K2	1st PIX IF	1.41
876	5000 ohm WW 10 watt Bleeder	.36	11.15	Hor. Dri. 20K (71447)	.44	2K3	2nd PIX IF	1.08
442	Detector Shield	.65				2K4	Cathode Trap	1.32
445	Transformer Bracket	.65				3K1	Discriminator Trnsfmr.	1.65
450	500 mmf. H.V. Cond.	1.03				2L1	3rd and 4th PIX IF	.39
						3L1	Peaking Coil	.27
						3L2	Peaking Coil	.27
						3L3	Peaking Coil	.27
						3L4	Peaking Coil	.27
						4L1	Filament Choke	.12







# MALLORY SELECTOR, TAP AND LEVER ACTION SWITCHES



## Ceramic Section Selector Switches

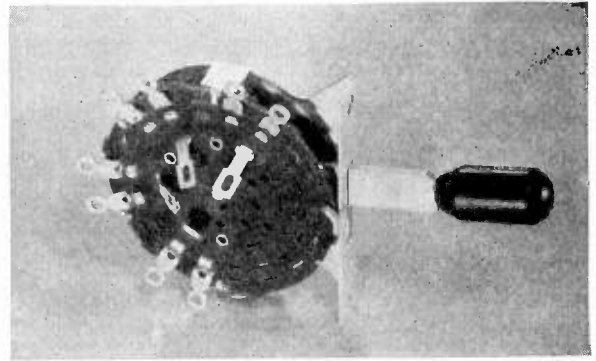
**APPLICATION**—These switches are ideal for highly efficient critical radio frequency circuit applications. Suitable for radio receivers and low-power transmitter circuits. They find widespread use in laboratories, by manufacturers of transmitters, receivers, test equipment and other electronic apparatus, and by experimenters and amateurs.

**DESCRIPTION**—Ceramic insulation minimizes RF losses and retards moisture absorption. Indexing mechanism is the "hill-and-valley" type providing a definite "snap" indexing action. An adjustable stop feature is designed into the index assembly to permit a choice of 2 to 11 positions. All current-carrying parts are heavily silver-plated. The contacts are of the double-wiping, self-cleaning type, which insures low contact resistance over an extended temperature range. All switches supplied with  $\frac{3}{8}$ " diameter,  $\frac{3}{8}$ " long brass bushing and 2" long shaft grooved for easy cutting at popular lengths. All types non-shorting.

The two-section switch has  $\frac{1}{2}$ " spacing between sections. The three-section switch has 1" spacing.

**ACCESSORIES**—One Mallory No. 366 knob, one No. 232 nut, and one No. 227 lock washer furnished with each switch.

**PACKAGING**—One switch and accessories per display carton.



## Lever Action Switches

**APPLICATION**—These switches are particularly adapted to centralized radio, sound distribution, public address equipment, and intercommunication equipment for school installations of loud-speaker systems and office communication systems.

**DESCRIPTION**—The housing and mounting bracket of these switches are one integral part, which assures rigidity, and the design lends itself to the support of the section, thus preventing warping of the section or distortion in alignment of contacts. A smooth contact surface is guaranteed by the use of the exclusive Mallory "wrap-around" method of securing the terminal through the holes in the phenolic resin section. The phenolic resin is high grade for maximum insulation. The 5000 series have elongated mounting holes in the bracket, spaced from  $2\frac{5}{16}$ " to  $2\frac{3}{8}$ " apart. The 6000 and 7000 series have mounting brackets with round holes spaced  $1\frac{1}{8}$ " apart. Switches may be mounted singly or grouped in multiple mounting with  $\frac{3}{8}$ " between lever arm centers to facilitate conventional rack and panel installations.

**ACCESSORIES**—One knob, two 6-32 bolts and nuts are furnished with each switch.

**PACKAGING**—One switch and accessories per display carton.

### Positive Indexing

Cat. No. Shorting Type	Cat. No. Non-shorting Type	Number of Poles or Circuits	Number of Positions or Contacts
5124	5224	2	4
6142	6242	4	2
6143	6243	4	3

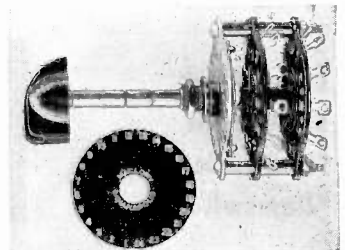
### Spring Return

7122-L	7222-L	2	2
7123-C	7223-C	2	3
7142-L	7242-L	4	2
7143-C	7243-C	4	3
7162-L	7262-L	6	2

**DON'T MISS THE  
MALLORY CONTROL  
DEALS**

**Turn to Page 3,  
Mallory Controls,  
for  
Full Information**

## 24-Point Non-Shorting Tap Switch



**APPLICATION**—This switch is particularly useful in test equipment applications where more than the conventional 12-point switch is required.

**DESCRIPTION**—The single circuit 24-point is accomplished through the use of two sections similar in design to the 1300L series switch.

The indexing mechanism has no stops and is capable of continuous rotation with a 15° indexing action between positions. Furnished with  $\frac{3}{8}$ " diameter,  $\frac{3}{8}$ " long brass bushing and 2" long notched shaft.

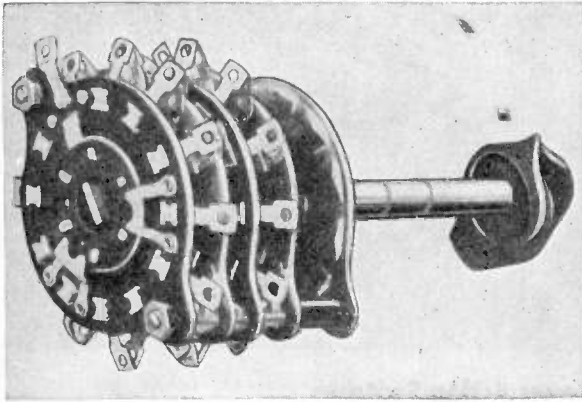
**ACCESSORIES**—One Mallory No. 366 knob, one No. 232 nut, one No. 227 lock washer, and one No. 394 Mallory Dial Plate furnished with each switch.

**PACKAGING**—One switch and accessories per display carton.

**Catalog No. 13124L**

Mallory Page 3 (See Mallory Page 1 for List Prices)

# MALLORY CIRCUIT-OPENING, "HAM", AND PUSHBUTTON SWITCHES



## Circuit-Opening Switch

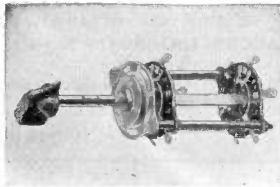
**APPLICATION**—This switch has found wide application in the construction of test sets, tube checkers, analyzers, and other apparatus where it is desirable to use only one meter.

**DESCRIPTION**—This is a special design of the series 1200L switch to provide for wiring of multiplying resistors to the switch, so that the switch not only opens the line but also automatically cuts in the proper multiplying resistor. The switch employs the standard 30° index, and is supplied with 3/8" diameter, 3/8" long brass bushing and a 2" long shaft grooved for easy cutting to proper lengths.

**ACCESSORIES**—One Mallory No. 366 knob, one No. 232 nut, one No. 227 lock washer, and one No. 382 Mallory etched Dial Plate.

**PACKAGING**—One switch and accessories per display carton.

Catalog No. 1400L



## Two-Section Five-Position "Hamswitch"\*

**APPLICATION**—This switch provides a method of using a single meter to measure current or voltages up to and including 5 circuits of an amateur transmitter.

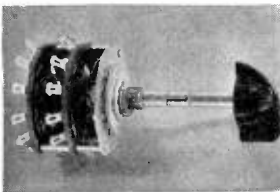
**DESCRIPTION**—This switch has the basic design of the 1200L series switch. It is of two-section construction with 2 1/4" spacing between sections to permit multiplying resistors to be soldered directly to the switch terminals. High insulating qualities and low loss construction permit a conservative rating of 1000 volts RMS AC or 1500 volts DC. 60° indexing between positions and provided with the adjustable stop feature, giving a maximum of 5 positions. Supplied with 3/8" diameter, 3/8" long brass bushing and 2" long shaft grooved for easy cutting at popular lengths.

**ACCESSORIES**—One Mallory No. 366 knob, one No. 237 nut and one No. 227 lock washer, furnished with each switch.

Refer to Misc. Items Section for special dial plate No. 487.

**PACKAGING**—One switch and accessories per display carton.

Catalog No. 151L



## Two-Section Two-Circuit Six-Position "Hamswitch"

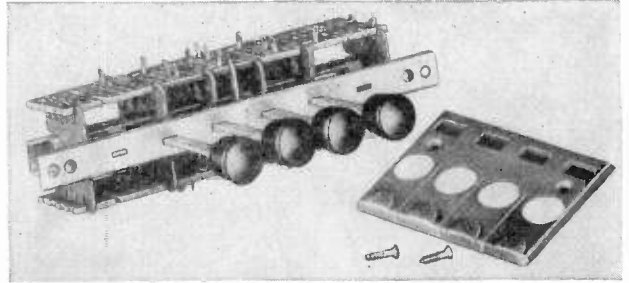
**APPLICATION**—Where all unused terminals are to be connected together and automatically shorted out.

**DESCRIPTION**—This switch is of the basic design of series 170C, excepting a phenolic resin insulation is used in the two-section assembly. Through the use of the 330° shorting shoes, all unused terminals are automatically connected. The spacing between sections is 1/2". Switch is supplied with adjustable stop feature for 2 to 6 positions. Supplied with 3/8" diameter, 3/8" long brass bushing and 2" long shaft grooved for easy cutting at popular lengths.

**ACCESSORIES**—One Mallory No. 366 knob, one No. 232 nut, and one No. 227 lock washer furnished with each switch.

**PACKAGING**—One switch and accessories per display carton.

Catalog No. 152L



## Multiple Push-Button Switches

**APPLICATION**—This switch is ideal for applications requiring a device for making, breaking, or transferring multiple circuits in automatic station selector tuning, inter-office communication systems, telephone and annunciator systems, set analyzers, tube checkers, and multimeters.

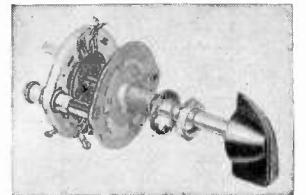
**DESCRIPTION**—Available from four to eight buttons with 5/8" spacing between center lines of plungers. Each plunger actuates a phenolic resin slider supporting the various combinations of shoes which engage the stationary contacts. Arrangement of the plunger and latch bar mechanism provides an inter-locking action whereby one or more plungers may be pressed simultaneously, and will remain latched until released by depressing another plunger. Available in both shorting and non-shorting types, and with contact arrangement for both circuit closing and circuit transfer.

**ACCESSORIES**—Each switch furnished with brown phenolic resin knobs, one attractive statuary bronze escutcheon plate with blank designation inserts, and transparent strip for windows.

**PACKAGING**—One switch and accessories per display carton.

Catalog Number	Number of Buttons	Type
2164	4	Circuit Closing
2166	6	Circuit Closing
2168	8	Circuit Closing
2184	4	Circuit Transfer
2186	6	Circuit Transfer
2188	8	Circuit Transfer
2194	4	†Circuit Transfer
2196	6	†Circuit Transfer
2198	8	†Circuit Transfer

†Non-shorting.



## Ceramic Section "Hamband" Switches

**APPLICATION**—For transmitter band switching of low power transmitter circuits.

**DESCRIPTION**—A special ceramic switch designed for transmitter plate circuits using up to 1000 volts DC with power up to 100 watts inclusive. Ceramic insulation is employed in both the section and spacers between sections to obtain highest insulation qualities, and to provide low losses at high frequencies. Available in one to five sections, with each section having one circuit. 90° indexing between positions, and capable of continuous rotation. Supplied with 3/8" diameter, 3/8" long brass bushing and 2" long shaft grooved for easy cutting at popular lengths. All types non-shorting.

**ACCESSORIES**—One Mallory No. 366 knob, one No. 232 nut, and one No. 227 lock washer furnished with each switch.

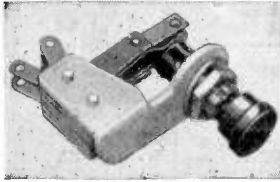
Refer to Misc. Items Section for special dial plate No. 488.

**PACKAGING**—One switch and accessories per display carton.

Catalog Number	No. of Sections or Gangs	Circuits per Switch	Spacing between Sections	Points or Contacts per Circuit
161C	1	1		4
162C	2	2	2"	4
163C	3	3	1"	4
164C	4	4	1"	4
165C	5	5	1"	4

\*Reg. U.S.Pat. Off.

# MALLORY PUSH-BUTTON AND JACK SWITCHES



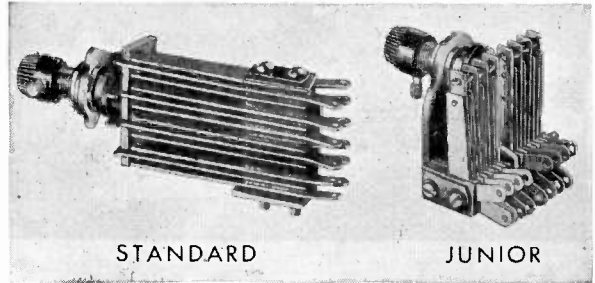
**Single  
Push-Button Switches**

**APPLICATION**—These switches are ideal for a wide variety of applications requiring momentary or permanent contact. Especially adapted for use in laboratories, on test panels, in meter circuits, etc.

**DESCRIPTION**—Eight different circuit combinations available in either the locking or non-locking types. The locking types keep the circuit closed until the button is pulled out. The non-locking types maintain contact only while the button is held in the depressed position. Excellent electrical characteristics are achieved through the use of the phosphor bronze contact springs and the low resistance silver-plated contacts. The switch frame is steel cadmium plated, and the mounting bushing is nickel plated brass. Will mount in single hole  $\frac{7}{16}$ " diameter on panels up to  $\frac{1}{4}$ " thick.

**ACCESSORIES**—One polished phenolic resin knob, one Mallory 232 nut and one No. 225 washer furnished with each switch.

**PACKAGING**—One switch and accessories per display carton.



STANDARD

JUNIOR

## Jack Switches

**APPLICATION**—Ideally suited for use in laboratories, test panels, meter circuits, and other equipment where variable circuit combinations are accomplished through the leaf spring type assembly.

**DESCRIPTION**—The Standard Jack (or long frame type) may be used where space is no factor, as the frame extends straight back from panel mounting. The spring stack is assembled on a horizontal line with the frame. Constructed with knob and shaft that rotates through the bushing, operating a cam to actuate the spring which accomplishes the circuit switching.

The Junior Jack (or short frame type) is made with the frame supporting the spring stack at right angles. Because of the short springs used, it requires a minimum of space for mounting. The actuation of the springs is the same as for the Standard Switch. Frames on both Standard and Junior types are cadmium plated. Brass bushings and phosphor bronze springs are nickel plated. The fine silver contacts insure good electrical and low resistance contact. Both switch types are suitable for mounting in a single hole  $\frac{7}{16}$ " diameter on panels up to  $\frac{1}{4}$ " thick.

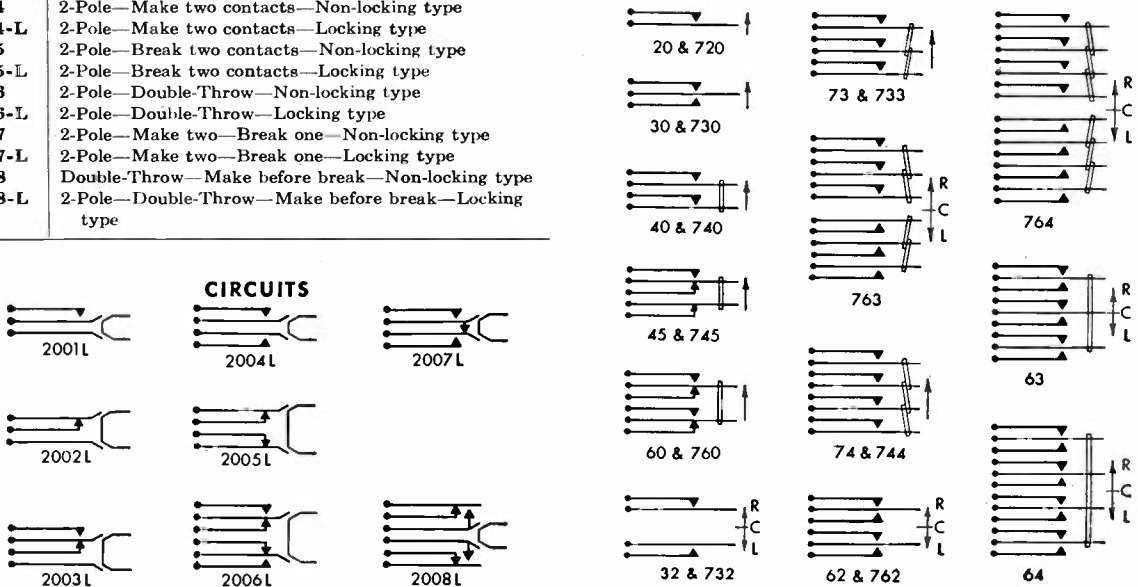
**ACCESSORIES**—One Mallory black phenolic resin knob, one No. 232 nut, and one No. 225 washer furnished with each switch.

**PACKAGING**—One switch and accessories per display carton.

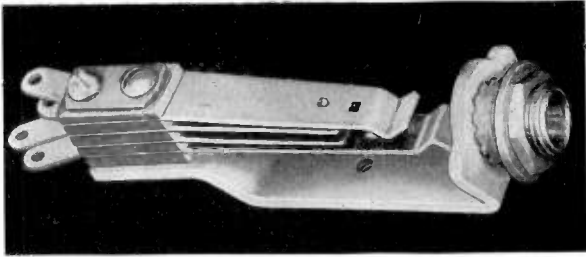
Two Position		Circuit Arrangement
Standard	Junior	
No.	No.	
20	720	Single-Pole, Single-Throw Single-Pole, Double-Throw Double-Pole, Single-Throw Five Springs, two break and one make Double-Pole, Double-Throw Three-Pole, Single-Throw Four-Pole, Single-Throw
30	730	
40	740	
45	745	
60	760	
73	733	
74	744	
Three Position		
32	732	Double-Pole, Single-Throw Center off Position Double-Pole, Double-Throw Center off Position Three-Pole, Double-Throw Center off Position Four-Pole, Double-Throw Center off Position
62	762	
63	763	
64	764	

Cat. No.	Circuit Arrangement
2001	S. P. Make contact—Non-locking type
2001-L	S. P. Make contact—Locking type
2002	S. P. Break contact—Non-locking type
2002-L	S. P. Break contact—Locking type
2003	S. P. Double-Throw—Non-locking type
2003-L	S. P. Double-Throw—Locking type
2004	2-Pole—Make two contacts—Non-locking type
2004-L	2-Pole—Make two contacts—Locking type
2005	2-Pole—Break two contacts—Non-locking type
2005-L	2-Pole—Break two contacts—Locking type
2006	2-Pole—Double-Throw—Non-locking type
2006-L	2-Pole—Double-Throw—Locking type
2007	2-Pole—Make two—Break one—Non-locking type
2007-L	2-Pole—Make two—Break one—Locking type
2008	Double-Throw—Make before break—Non-locking type
2008-L	2-Pole—Double-Throw—Make before break—Locking type

## CIRCUITS



# MALLORY JACKS



## Jacks

**APPLICATION**—These jacks provide a conventional receptacle where it is desirable to open or close auxiliary circuits by use of a combination of spring assemblies actuated by insertion of connection plugs. Excellent for head sets, hand sets, or microphone cord and plug connections, for meter testing cord and plug connections, or as a receptacle for any device where desirable to connect or disconnect by cord and plug. Fit all Mallory #75 and 76 plugs.

**DESCRIPTION**—The long frame jacks are provided with a variety of spring combinations. The spring stackups are mounted horizontally to the frame. The jack is designed to mount in a single  $\frac{7}{16}$ " hole in panels up to  $\frac{5}{16}$ " thick. Fits all standard Mallory plugs of two and three conductor types.

The Junior Jack (sometimes called "short frame" jack) is made with the frame supporting the spring stack at a right angle with the short springs requiring only  $1\frac{5}{16}$ " space back of panel for mounting. Bushings are made to mount in single  $\frac{7}{16}$ " diameter holes in panels up to  $\frac{5}{16}$ " thick. Fits all standard Mallory plugs.

The Midget Jack is very compact (with shorter frame and springs than the Junior types), being extremely useful where bare minimums of space exist. Will mount in a single  $\frac{3}{8}$ " diameter hole in panels up to  $\frac{1}{4}$ " thick.

The Infant Jack (sometimes referred to as a "pup" jack) is the smallest single circuit jack manufactured to accommodate the conventional 2-way phone plug tip and sleeve connection.

All jacks are made with cadmium-plated frames. Brass bushings and phosphor bronze springs are nickel plated. Fine silver contacts provide a jack with excellent electrical contact and low-contact resistance.

**ACCESSORIES**—One Mallory No. 232 nut and one No. 225 washer furnished with each long frame Junior and A-1 (Infant) Jack. Two nuts and one washer furnished with all Midget Jacks.

**PACKAGING**—One switch and accessories per display carton.

## MALLORY VIBRATOR DATA BOOK

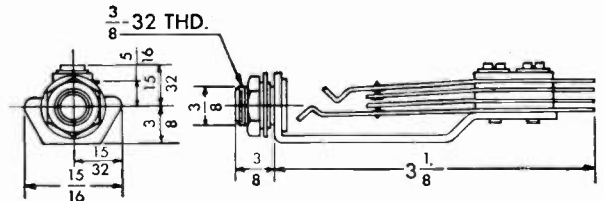
Complete . . . original . . . easy to read. Answers all your questions about vibrator power supplies. It's packed with information that cannot be duplicated anywhere else; information gained by Mallory in sixteen years of specialized power supply experience. The demand for this book is large—so order your copy now through your Mallory Distributor.

	Long Frame Cat. No.	Junior Jacks Cat. No.	Infant and Midget Cat. No.
	1	701	*A-1
	2	702	A-2
	2A	702A	A-2A
	2B	702B	
	3	703	
	3A	703A	A-3A
	3B	703B	
	3C	703C	
	4	704	
	4A	704A	
	4B	704B	
	5	705	
	6	706	

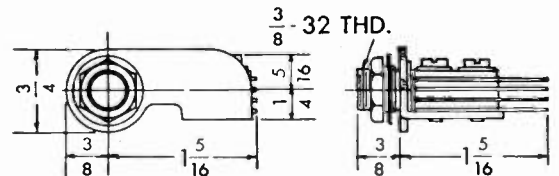
\*Commonly referred to as "Infant" Jack.

**"GROUNDING" JACK**—(Type GJ-1), for "grounding" airplanes while refueling. Similar in construction to A1 Jack except for insulation.

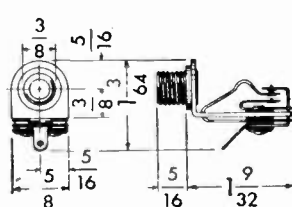
## JACK DIMENSIONS



LONG FRAME

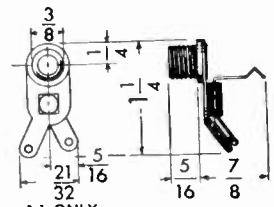


JUNIOR



A2, A2a & A3a ONLY

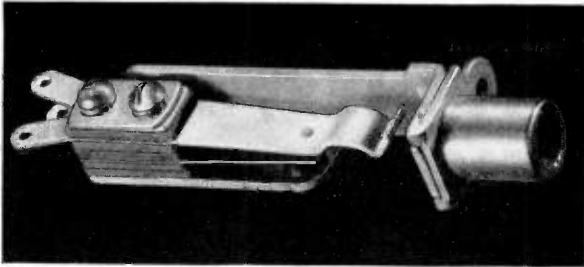
MIDGET JACK



A1 ONLY

INFANT JACK

# MALLORY JACKS AND PLUGS



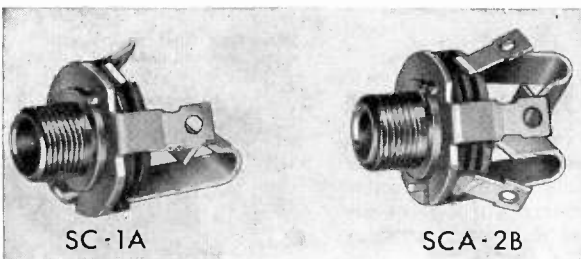
## Jacks

**APPLICATION**—Ideal for telephone switchboard types of applications, as well as industrial applications where a more compact jack is required for close strip panel mounting.

**DESCRIPTION**—Although limited to three circuit combinations, these jacks serve the same purpose as the Mallory Standard Long Frame Jacks, but employ a special frame angle to provide greater support. The bushing is plain, unthreaded, and the jack is mounted by means of a screw through the panel mounting plate at the base of the bushing. Bushing fits all standard Mallory plugs of two and three conductor types. The springs are assembled horizontally to the frame. The frames are steel cadmium plated. Brass bushings and phosphor bronze springs are nickel plated. The fine silver contacts provide an excellent electrical contact and low contact resistance.

**ACCESSORIES**—None furnished.

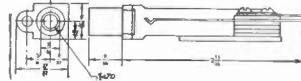
**PACKAGING**—One jack per display carton.



## SC Jacks

**No. SC-1A Phone Jack**—Equivalent of Signal Corps Jack No. JK-34A. Same spring arrangement as No. 1 Long Frame Jack. Designed to receive following plugs: Mallory No. 75, Western Electric Nos. 47A and 47B; Signal Corps Nos. PL-47, PL-48, PL-55, PL-148, PL-155.

**No. SCA-2B Microphone Jack**—Equivalent of Signal Corps Jack No. JK-33A. Same spring arrangement as No. 2B Long Frame Jack. Designed to receive following plugs: Western Electric No. 109 and Signal Corps Nos. PL-46, PL-68 and PL-168.



Cat. No.	Type
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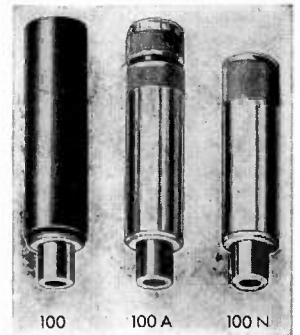
XP1—(Open Circuit)

XP2B—(Three-Circuit Microphone)



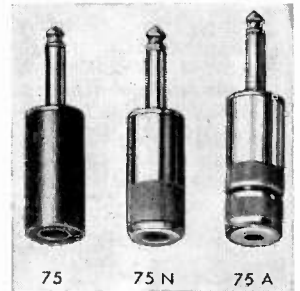
XP3B—(Single Circuit, Make before Break)

## Extension Jacks



Cat. No.	Description
100	Two-Way Extension Jack (Fiber Shell) for No. 75 Phone Plug
100N	Two-Way Extension Jack (Shielded One-Piece Nickel Shell) for No. 75N Phone Plug
100A	Two-Way Extension Jack (Shielded Two-Piece Nickel Shell) for No. 75A Phone Plug (with Built-in Cable Clamp)

## Plugs



Cat. No.	Description
75	Two-Way Phone Plug with Tie-Cord Anchor (Phenolic Resin Shell)
75N	Two-Way Phone Plug with Tie-Cord Anchor (Shielded One-Piece Nickel Shell)
75A	Two-Way Phone Plug with Tie-Cord Anchor (Shielded Two-Piece Nickel Shell) (with Built-in Cable Clamp)
76	Three-Way Microphone Plug (Phenolic Resin Shell)
76A	Three-Way Microphone Plug (Shielded Two-Piece Nickel Shell) (with Built-in Cable Clamp)

**MALLORY**

**RADIO SERVICE ENCYCLOPEDIA**

Page after page of replacement information  
for all pre-war and post-war receivers.





# SMALL SWITCHES, LIMIT SWITCHES, AND MAGNETIC RELAYS

## SMALL SNAP-ACTION SWITCH, G-E SWITCHETTE CR1070-C103

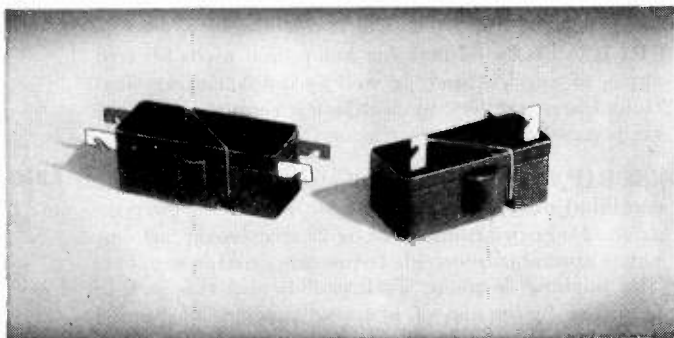
This new, lightweight switch mechanism lends itself especially to applications where space is limited and long life is required.

The Switchette is operated by movement of the spring-return button located in the housing. This button can be actuated by a lever, bellows, or other means. Snap-action, double-break-contact construction gives the G-E Switchette a high current rating and makes it suitable for applications where the vibration is severe.

### FEATURES AND ADVANTAGES

1. Small (approximately 1¼ in. by ½ in. by ½ in.) and weighs only 9 grams (0.02 lb).
2. Resists vibration and corrosion.
3. Phenolic-resin operating button provides safety from live parts during operation.
4. Contact tips are 99.95 per cent pure silver.
5. Particularly suited to electronic applications because of negligible amount of contact bounce.
6. Five terminal arrangements are available, including the two shown above.
7. Wide variety of forms available, for example, three basic contact arrangements: single-circuit, normally open; single-circuit, normally closed; and two-circuit, normally open and normally closed. Also many special forms.

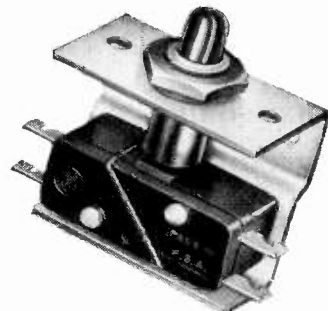
Switchettes are available in ratings up to 10 amperes at 115 or 230 volts a-c. Write for Bulletin GEA-3818.



Switchettes showing two terminal arrangements

## LIMIT SWITCH, CR1070-D101

This sturdy, open-type limit switch is operated by a plunger which provides ¾-inch overtravel. The contact mechanism of this device is the G-E Switchette, which can be wired to control one normally open circuit and one normally closed circuit. Rated 10 amperes at 230 volts a-c. Write for Bulletin GEA—3821.



Open-type limit switch with push-rod operation

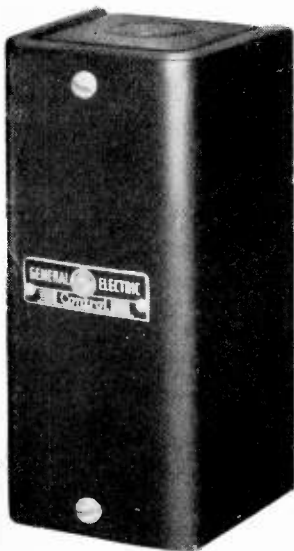
## GENERAL PURPOSE RELAY, CR2790-E

The CR2790 relay is a compact, attractively finished device for use either as a motor starter or a relaying unit. Available in either an open form or enclosed in a general-purpose or explosion-proof housing. Three contact arrangements available: single-pole, single-throw; double-pole, single-throw; and double-pole, double-throw. In the open form, all three contact arrangements use the same base, which facilitates mounting. In the enclosed form, the U-shaped cover makes wiring and servicing convenient. Rated 10 amp. continuous, 110/120 volts a-c.

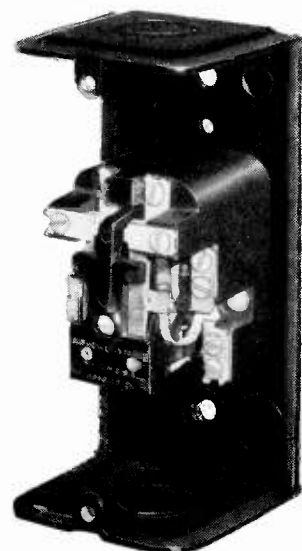
### Applications

Control of pilot circuits in response to remote control switch or thermostat, or for direct control of small motors.

As a fractional-horsepower motor starter, or in conjunction with a magnetic switch controlling larger motors, heating or lighting circuits, and signal systems. Bulletin GEC—257.



Enclosed magnetic relay



Enclosed relay with cover removed

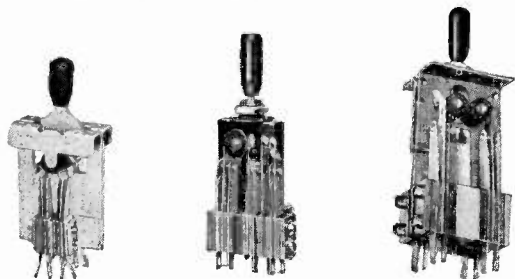
# SWITCHES

LEVER • FOOT  
and  
PUSH-BUTTON

TOUCH  
•  
TIMING

# CONTROLS

## CAM-LEVER SWITCHES



**Model MCT    Model MCM    Model MCL**

Compact lightweight switches designed for long life and trouble-free service under heavy-duty requirements. Added features include shielding between contact sections, mounting provisions for single hole and standard mounting centers plus availability of all popular as well as special build-up variations.

Quotations will be given promptly on your switch problems. Common types are in stock for immediate shipment.

Type	Amps.*	High	Wide	Long†
MCT	1	1½"	¾"	2¾"
MCM	5	1¼"	1¼"	2¾"
MCL	10	1¾"	1¾"	3½"

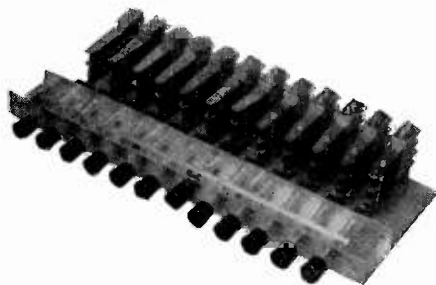
\*At 125 volts, 60 cycles, non-inductive load.

†Distance from back panel to end of terminals.

COMPLETE SWITCH WITH FOUR SPDT SECTIONS:

Type	Net Price, 1-9
<b>MCM</b>	<b>\$5.08</b>
<b>MCL</b>	<b>7.03</b>

## MASTER PUSH-BUTTON SWITCH Model MPB



A single unit type push-button switch with high power handling ability to give direct push-button control. Furnished in from two to a maximum of twelve positions. Standard frames are: (1) locking, (2) non-locking, (3) release-lock, and (4) accumulative locking with single-button release. Pure silver contacts, phosphor bronze springs. Rating: 5 amps., 125 volts a-c (non-ind.).

## HEAVY DUTY ELECTRONIC TIMERS

Convenient and compact units for either full or semi-automatic control of industrial processes. Two or more timers control a number of individually timed operations in a predetermined sequence with either self-recycling or manual recycling. Handle 10 amps. at 125 volts, 60 cycles, on DPDT power control contacts. Five ranges: 0.06-1.2, 1/2-8, 3/4-15, 1.5-30, and 3-60 seconds. Plug-in capacitors give ready selection of timing range. Adaptable to use as photo-electric or sensitive relay in non-timing use. \$32.00 List



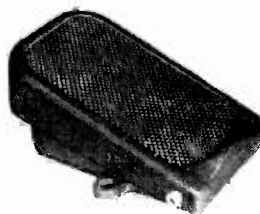
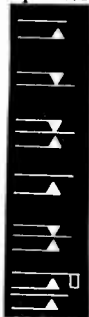
## FOOTSWITCHES

Models to meet every need. Type MI has large, inclined foot treadle; type MC operates by pressure of finger, elbow,

knee, or foot anywhere on its top plate. Each switch will handle 10 amperes at 125 volts a-c.

Type	Type	Action
Price	Price	
MC-11	MI-21	Normally open, spring return.
\$5.50	\$8.80	
MC-12	MI-22	Normally closed, spring return.
\$5.50	\$8.80	
MC-13	MI-23	Double throw, spring return.
\$6.00	\$9.35	
MC-14	MI-24	First press closes switch contacts; second press opens switch contacts.
\$8.25	\$11.35	
MC-15	MI-25	First press transfers switch contacts; second press restores switch contacts.
\$8.75	\$11.85	
	MI-26	First half-throw closes 1st switch; second half-throw closes 2nd switch; spring return.
	\$13.00	

Contact  
Operation



**Model MI**  
Cast Iron Case  
4" w. x 6¾" l. x 3" h.



**Model MC**  
Cast Iron Case  
4" diam. x 2½" high



**GENERAL CONTROL COMPANY**  
1203 SOLDIERS FIELD ROAD BOSTON 34, MASSACHUSETTS



# SWITCHCRAFT INC.

CHICAGO 22, ILLINOIS

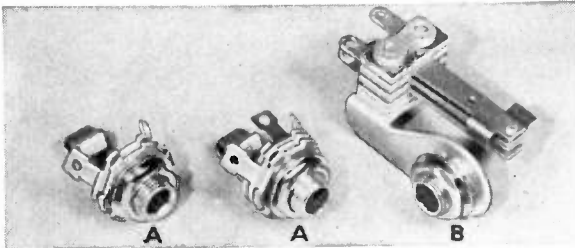
## PHONE JACKS • PHONE PLUGS

SWITCHES: Push-Button . . .

Rotary and Lever Action . . .

"SWITCHCRAFT" produces many custom made products for the industry. Inquiries invited.

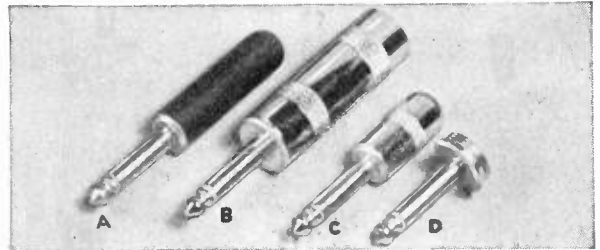
### SWITCHCRAFT PHONE JACKS



The "Littel-Jax" (A), features notched insulating washers mechanically interlocking springs and lugs; "V-bend" in tip spring firmly "holds" mating Plug; minimum space requirements, economical. Mounts in single  $\frac{3}{8}$ " dia. hole, panels up to  $\frac{3}{8}$ " thick. The short frame type Jack known as "SF-JAX" (B), requires minimum panel depth, mounts in single  $\frac{3}{8}$ " dia. hole, panels up to  $\frac{3}{8}$ " thick.

"LITTEL-JAX"		"SF-JAX"		Description	Schematic.
Part No.	U.S.A. List Price	Part No.	U.S.A. List Price		
11	\$0.35	21	\$0.50	Open Ckt. 2-cond.	
		22	\$0.65	Closed Ckt. 2-cond.	
12A	\$0.40	22A	\$0.65	Closed Ckt. 2-cond.	
12B	\$0.50	22B	\$0.65	Open Ckt. 3-cond.	
		23	\$0.75	Separate "make" ckt.	
		23A	\$0.75	"Break-make" ckt.	
13B	\$0.70	23B	\$0.75	"Break" ckt. 3-cond.	
		23C	\$0.75	"Break" ckt. 3-cond.	
		23E	\$0.75	Separate "Break" ckt.	
		24	\$0.85	Two "Break" ckts.	
		24A	\$0.85	Two-conductor — spl. ckt.	
		24B	\$0.85	Two "Break" ckts.	
		25	\$1.05	Special Circuit — 2-cond.	
		26	\$1.15	Special Circuit — 3-cond.	

### SWITCHCRAFT PHONE PLUGS



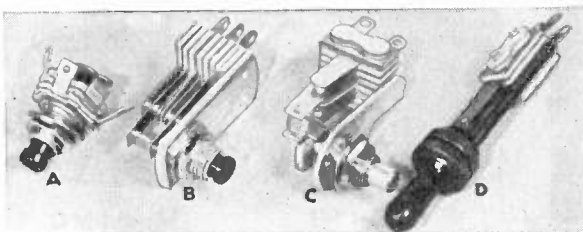
The "Littel-Plug" (A), radically new, fitting standard Jacks; solder lug type features clamp terminal serving as a cable clamp and terminal—perfect for metal braid cable. Screw type terminals—no clamp. Tenite or Metal handles are  $1\frac{1}{8}$ " L.,  $\frac{1}{2}$ " dia. Exterior metal parts bright nickel Pl.

The Standard Plugs (B), conventional design, available both black Bakelite or metal handles  $2\frac{1}{4}$ " L.,  $\frac{1}{4}$ " O.D., except No. 90 and No. 160 have metal handles 1" long. Exterior metal parts bright Nickel Pl.

The "Lug-Plug" (C), low-cost two conductor, solder lug term. Exterior metal parts bright Nickel Pl. Red or Black Tenite Handles are  $1\frac{1}{8}$ " L.,  $\frac{1}{2}$ " O.D. No. 330 has metal handle 1" L., bright Nickel Pl. Plug Adapter (D) used with MC1F or MC1FA Connectors for use with standard Phone Jacks.

Part No.	U.S.A. List Price	Plug Type	Color or Type of Handle	Description
240	\$0.70	"Littel-Plug"	Black	2-conductor. Screw Term.
245	\$0.70	" "	Red	" " " " " "
270	\$0.95	" "	Metal	" " " " " "
250	\$0.65	"Littel-Plug"	Black	2-conduct. Clamp-lug Term.
255	\$0.65	" "	Red	" " " " " "
280	\$0.90	" "	Metal	" " " " " "
260	\$1.10	"Littel-Plug"	Black	3-conductor. Screw Term.
290	\$1.30	" "	Metal	" " " " " "
267	\$0.95	"Littel-Plug"	Black	3-conduct. Clamp-lug Term.
269	\$0.95	" "	Red	" " " " " "
297	\$1.20	" "	Metal	" " " " " "
40	\$0.65	Standard	Black	2-conductor. Screw Term.
70	\$1.10	" "	Metal	" " " " " "
160	\$0.85	" "	Metal	" " " " " "
44	\$0.45	Adapter	—	" " " " " "
60	\$0.95	Standard	Black	3-conductor. Lug Terminals
90	\$1.20	" "	Metal	" " " " " "
350	\$0.50	"Lug-Plug"	Black	2-conductor. Lug Terminals
355	\$0.50	" "	Red	" " " " " "
380	\$0.60	" "	Metal	" " " " " "

## SWITCHCRAFT SWITCHES



The "Littel-Switch" (A), available 3 circuits, either red or black one-piece Plastic Push-Buttons, non-locking only. Mounts in single  $\frac{3}{8}$ " dia. hole, panels up to  $\frac{1}{4}$ " thick.  
 The "FF-Switch" (B), all common circuits, one-piece black Plastic Push-Button, non-locking only. Mounts in single  $\frac{3}{8}$ " dia. hole, panels up to  $\frac{1}{4}$ " thick.  
 The "RS-Switch" (C), non-locking, two-position rotary, all common circuits. Mounts in single  $\frac{3}{8}$ " dia. hole, panels up to  $\frac{1}{4}$ " thick. Ideal for "Talk-Listen" switches in Inter-Comm. Systems.  
 The "LS-Switch" (D), unusually small Lever Action Switch, made to special order only, two or three positions, non or locking. Mounts in single  $\frac{1}{2}$ " dia. hole, panels up to  $\frac{3}{8}$ " thick.

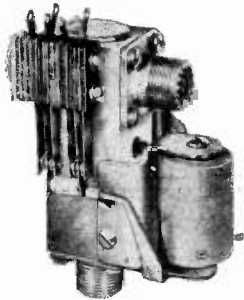
AVAILABLE AT ALL LEADING RADIO JOBBERS.

"LITTEL-SWITCH"			"FF-SWITCH"		"RS-SWITCH"		Schematic Circuit
Part No. Red. Push-button	Part No. Black Push-button	U.S.A. List Price	Part No.	U.S.A. List Price	Part No.	U.S.A. List Price	
101	201	\$0.80	1001	\$0.90	2001	\$0.90	
102	202	\$0.80	1002	\$0.90	2002	\$0.90	
103	203	\$0.85	1003	\$1.00	2003	\$1.00	
			1004	\$1.10	2004	\$1.15	
			1005	\$1.10	2005	\$1.15	
			1006	\$1.35	2006	\$1.50	

PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

# Advance RELAYS

## COAXIAL RELAY



Type 7204

This relay, for use with 52 ohm RG coaxial cable, has SPDT internal contacts, rated at 880 watts maximum. If desired, DPDT auxiliary contacts (as illustrated) may be had. Tests on a 52 ohm line show VSWR of 1.02:1.0 at 100 meg.

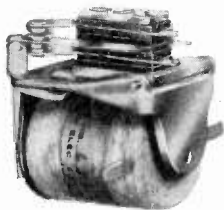
\*List Prices: (Up to 115 V A.C. or 40 V D.C.)

A.C.	D.C.		
7200	8200		\$13.75
7204	8204	With auxiliary contacts.....	17.05

\*For higher voltages up to 440 V A.C. or 240 V D.C., or for other Advance Coaxial Relays, see your nearest jobber.

Size (without auxiliary contacts): 1 $\frac{3}{8}$ " x 2 $\frac{7}{8}$ " x 3 $\frac{1}{2}$ "

## MIDGET TELEPHONE RELAY



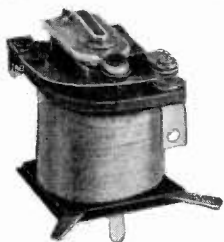
Type 5203A  
"A" denotes  
5-amp. contacts

This small, yet sturdy relay is offered in any contact combination from SPST to 4PDT; with  $\frac{1}{8}$ ", 1.5 amp. contacts, or with  $\frac{1}{16}$ ", 5 amp. contacts. Coils draw from .1 to 2 watts D.C. or 1 to 1 $\frac{1}{2}$  watts A.C. List prices below are for coils up to 115 V A.C. or 1000 ohms D.C.

A.C.	D.C.				
5201	6201	SPST	N. O.	\$3.85	For higher voltage coils, up to 220 V A.C. or 16,000 ohms D.C., see your nearest jobber. He can also show you other Advance Telephone Relays.
5201A	6201A	SPST	N. O.	4.07	
5203	6203	SPDT		4.12	
5203A	6203A	SPDT		4.56	
5204	6204	DPDT		4.95	
5204A	6204A	DPDT		5.83	

## TINY MITE RELAYS

(FOR D.C. ONLY)



Type 003

In these tiny relays, which require less than  $\frac{1}{2}$  cubic inch mounting space, all switching is above ground. Contacts are rated at .35 amperes at 115 V A.C. (non-inductive). Power required is .2 to .5 watt. Coils are available for any D.C. voltage 1 to 80; resistances up to 5000 ohms. Weight: 10 grams. (45 relays per lb.). List prices below are for any coil up to 800 ohms (24 V D.C.). For higher resistances see your nearest jobber.

Type		List	Size: $\frac{1}{8}$ " x $\frac{1}{8}$ " x $\frac{9}{16}$ "
003	SPST	N. O. .... \$2.91	(Overall dimensions with lugs as illustrated).
005	DPST	N. O. .... 3.19	If desired, can be supplied with leads.

## ULTRA-SENSITIVE D.C. RELAYS



Type 1200

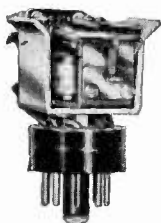
This relay combines many superior features — transparent plastic cover-molded Bakelite base — counter-balanced armature — high overall sensitivity . . . 5 milliwatts for positive operation — 2 $\frac{1}{2}$  milliwatts with careful adjustment, and light contact load . . . Three adjustments with vernier screws: spring, and each contact. Contacts are SPDT, pure silver rated at 1.5 amperes at 115 V A.C. (non-inductive).

Supplied in coil resistances up to 40,000 ohms. Be sure to specify resistance desired! List Prices:

Up to 2200 ohms.....	\$9.07	8700 ohms.....	\$ 9.90	30000 ohms.....	\$12.65
3500 ohms.....	9.35	14000 ohms.....	10.45	40000 ohms.....	15.40
5500 ohms.....	9.62	20000 ohms.....	11.00		

Base Dimensions: 2" x 2 $\frac{9}{16}$ ". Height: 1 $\frac{1}{2}$ ". Weight: 6 $\frac{1}{4}$  ounces.

## PLUG-IN RELAYS



Type K1604P

Any Advance Relay can be Supplied with Standard Speaker Plugs!

To designate that plug-in is desired, add the letter "P" to the type number when ordering. For example type K1604 (illustrated) becomes type K1604P.

To compute list prices, add to the prices shown elsewhere as follows:

4-5-6-7-8 prong.....	\$2.20	11 prong.....	\$3.63
9 prong.....	2.80	12 prong.....	4.07
10 prong.....	3.19		

• Ask your jobber about Advance Hermetically Sealed or Dustite Relays! •

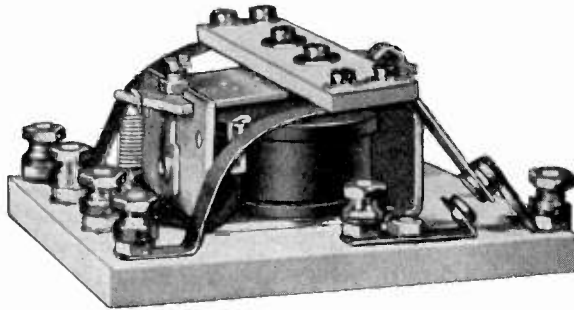
# Advance RELAYS

Isolantite model Antenna Change-Over. Designed for use in Amateur Transmitters.

The contact system is Double Pole-Double Throw, using  $\frac{1}{4}$ " Pure Silver contacts, with exceptional wiping action. Three and four pole arrangements are available on special order.

For high radio frequency control. Entirely hum-

## TRANSMITTER RELAYS



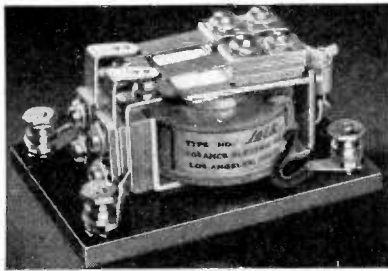
Type 400

free where intended for A.C. operation, and highly efficient on D.C. supplies. All metallic parts are cadmium and chromium plated.

Standard coils are for 110V A.C. and may also be used for 24V D.C. However, they will also be supplied for lower A.C. or D.C. voltages at no increase in price.

List Price .....\$10.89

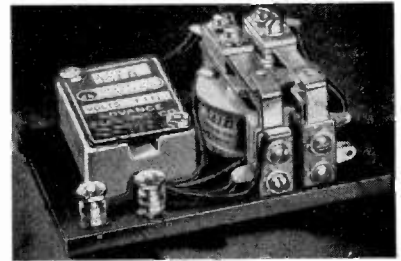
## KEYING RELAYS



Type 300—N.O.  
Type 350—N.C.

Type 101K—A.C.  
Type 201K—D.C.

## TIME DELAY RELAYS



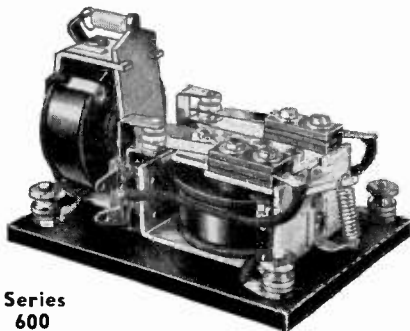
Designed expressly for use in Keying Circuits where it is desired to use low voltage across the key to control high voltage transmission through the Relay contacts. The heavy duty coil and strong return spring makes possible an exceptional keying speed. Two sets of  $\frac{1}{4}$ " Pure Silver contacts in series allow a carrying capacity of 2500 volts. The complete unit, mounted on a  $\frac{3}{16}$ " Bakelite base with binding posts for coil connections, has over-all dimensions of 3" x 2" x  $1\frac{3}{8}$ " and is obtainable for A.C. operation to 115 volts or D.C. operation to 60 volts.

List Price .....\$6.05

Particularly suited for use where short time delays (10 sec. to 1 min.) are required, these Relays are available with both normally open and normally closed thermostats. Types 300 and 350 respectively, the former being widely used for pre-heating tube filaments, etc. The contact combination on both models is Double Pole Single Throw with  $\frac{1}{4}$ " Pure Silver contacts. Mounted on  $\frac{3}{16}$ " Bakelite bases measuring  $3\frac{3}{4}$ " x  $2\frac{3}{8}$ " x  $1\frac{1}{2}$ " with binding posts for coil connections. Standard operating voltage is 110 A.C. List Price \$9.07

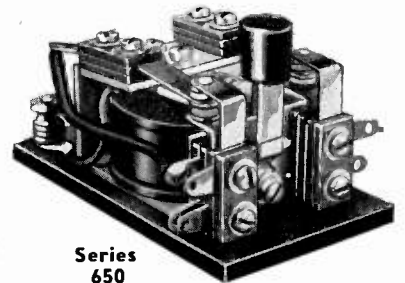
Low voltage units are available on special order.

## LATCHING RELAYS



Series 600

These Relays are highly desirable for applications where it is impractical to have the holding coil in constant service. When the coil actuating the contact arrangement is momentarily energized, the armature is locked in the closed position, and may be released electrically (Type 600) or manually (Type 650).

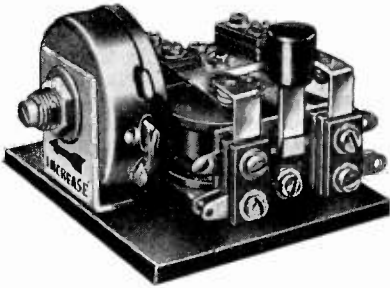


Series 650

	List		List
Type 604B	\$10.56	Double Pole-Double Throw	Type 654B \$7.86
Type 605B	10.28	Double Pole-Single Throw (N. O.)	Type 655B 7.53
Type 606B	10.28	Double Pole-Single Throw (N. C.)	Type 656B 7.53

The above list prices are for  $\frac{1}{4}$ " contacts. For  $\frac{3}{16}$ " points deduct 25c—for  $\frac{1}{8}$ " points deduct 50c. When ordering these types SPECIFY THE VOLTAGE.

# Advance RELAYS

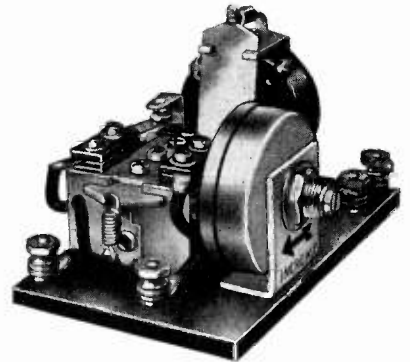


Type 700

## OVERLOAD RELAYS

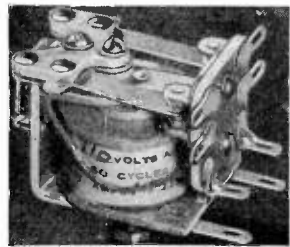
These Relays are designed to provide accurate and positive protection against current surges and continuous overloads, and both the Manual Reset (Type 700) and Electrical Reset (Type 750) are divided into two classifications: Type "A" allows the Relay to attract on any current value between 250 and 500 mills, and Type "B" for any setting between 500 mills and 1 ampere.

When the current flow passes the safety setting, the Double Pole-Single Throw  $\frac{1}{4}$ " Pure Silver contacts are opened, breaking the power supply circuit until reset.



Type 750

Type 700—Base dimensions 3" x 2 $\frac{1}{2}$ "	List Price	\$11.16
Type 750—Base dimensions 4" x 2 $\frac{1}{2}$ "		14.52



Series K1500 and K1600

## MIDGET RELAY

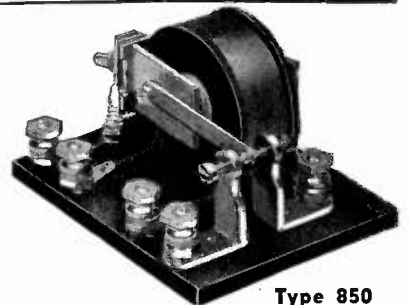
Of particular interest where size and cost are factors, this new series of Midget Relays, of improved design, incorporates all of the fine construction features typical of the ADVANCE line. This unit measures only  $1\frac{1}{2}$ " x  $\frac{3}{4}$ " x  $1\frac{1}{8}$ " high. Pure Silver contacts are used,  $\frac{1}{8}$ " in diameter. Standard coils are obtainable from 2 to 32 V D.C. and 1 to 115 V A.C. The following switch combinations can be supplied:

TYPE		CONTACT COMBINATION	LIST PRICES
A.C.	D.C.		
K1505	K1605	DP-ST NOR. OPEN	\$3.57
K1506	K1606	DP-ST NOR. CLOSED	3.57
K1504	K1604	DP-1T	3.85

## ELECTRONIC RELAY

An ultra-sensitive unit for use in electronic tube circuits, providing positive, dependable control on as little as 12 milliwatts. Adjustment screws to change the air-gap between the armature and the pole face, allow operation on a voltage differential of 30%, a condition ideal for electronic applications. The contact combination is Single Pole-Double Throw, employing  $\frac{1}{8}$ " Pure Silver points to safely handle 100 watt non-inductive loads. Obtainable in resistances of 2500, 3000, 5000 and 10,000 ohms at no increase in price.

List Price \$7.86



Type 850

## GENERAL PURPOSE RELAYS

Types 951B — 952B — 953B

These Relays afford maximum power and efficiency at very low cost.  $\frac{1}{4}$ " Pure Silver contacts are standard on the Single Pole-Single Throw (N. O.) Type 951B—Single Pole-Single Throw (N. C.)—952B—and Single Pole-Double Throw—953B—switch combinations. Adequately insulated and entirely above "ground," these Relays may be mounted on any type of panel, quickly and easily, by means of the metal mounting bracket. Coils are obtainable to 115V A. C. or 60V D. C.

List Price \$4.23



## GEN-E-MOTOR STARTING RELAY

Type 951C

An exceptionally sturdy power transfer Relay, easily capable of handling the heavy current surge encountered on "cold" starts in motor-generator systems. The contacts are  $\frac{3}{8}$ " Pure Silver and have ample carrying capacity for the usual 200-500V converters. Heavy-duty in every phase of construction, this unit is not to be compared with the common five and ten ampere circuit controls. Base dimensions are 3" x 2" and each unit is complete with a braided generator-cable pig-tail and binding posts for all connections. Coils for 5 $\frac{1}{2}$  to 32V D. C. or 1 to 115 A.C.

List Price \$7.26

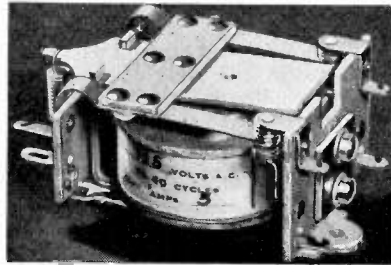




# Advance RELAYS

## MIDGET TYPE CIRCUIT CONTROLS

These Relays are designed for general circuit control applications where the space for mounting is limited, and measure only 2½" in length, 1½" in width, and 1¼" in height. A.C. operated Relays in this series require but 4 watts on 50/60 cycle current, and the D. C. models from 1.5 to 2 watts, affording maximum effi-



ciency without sacrifice of power and dependability. Metal brackets (not shown in the illustration) are supplied with all Relays of this type, and except on special order, these models are limited to the following contact arrangements and the usual standard operating voltages:

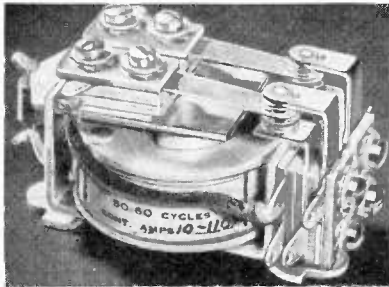
Type Numbers		Contact Sizes and List Prices	
3/16"	List	1/4"	List
104AM	\$6.05	104BM	\$6.65
105AM	5.72	105BM	6.32
106AM	5.72	106BM	6.32

### Contact Combinations

Double Pole-Double Throw	3/16"
Double Pole-Single Throw (N. O.)	104AM
Double Pole-Single Throw (N. C.)	105AM
	106AM

The above chart lists type numbers for A.C. operated Relays. D. C. coils may be obtained by changing the series number from 100 to 200. Prices apply to both.

## INDUSTRIAL CONTROL RELAYS



Series 960

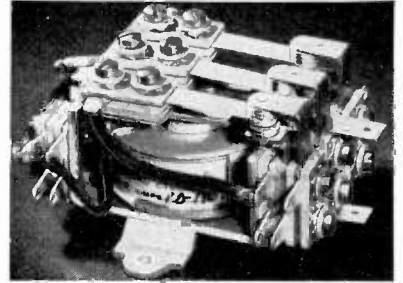
Designed mainly for industrial applications — air conditioning, lighting, and power transfer systems, the Series 960 Relays embody all of the rugged construction features demanded in units of this

type without sacrificing the desirable qualities of the midget style. Available in the following contact combinations, and to operate on standard A. C. and D. C. voltages.

	List
Type 964B—Double Pole-Double Throw	\$6.05
Type 965B—Double Pole-Single Throw (N. O.)	5.72
Type 966B—Double Pole-Single Throw (N. C.)	5.72

For smaller contacts, deduct 25c for 3/16" or 50c for 1/8" points, from the above list prices.

Having the same characteristics as the Series 960 Relays, these Three Pole units, Series 970, may be used for fractional h/p 3-phase motor controls, etc. The area required for mounting 2½" x 1½" for Type



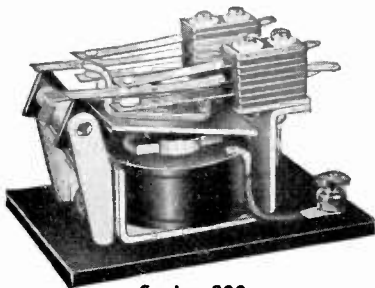
Series 970

970 Relays, as against 2½" x 1¼" for the Type 960's, is due to the slightly larger frame. The metal brackets are the same in both instances—2-5/16" long, and 2" between centers of the 6/32 mounting holes. Available in the voltages indicated in the preceding series, and in the following contact combinations:

	List
Type 977B—Three Pole-Single Throw (N. O.)	\$6.32
Type 978B—Three Pole-Single Throw (N. C.)	6.32
Type 979B—Three Pole-Double Throw	7.26

For smaller contacts, deduct 50c for 3/16" or 75c for 1/8" points from the above list prices.

## IMPULSE RELAYS



Series 900

This is another type of Relay for use where it is not feasible to have the holding coil in constant service, but differs from the latching types in that it may be controlled with a single push-button. Coils to operate this type of unit are

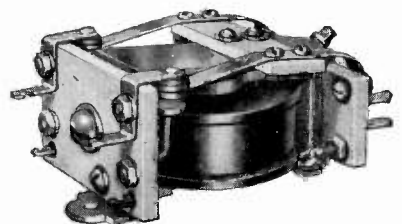
extremely heavy-duty, and are for intermittent (impulse) use only. Available for standard A. C. and D. C. voltages in the following combinations:

	D.P.S.T. List	D.P.D.T. List
With 1/8" Pure Silver contacts	\$10.28	\$10.89
With 3/16" Pure Silver contacts	10.89	11.49
With 1/4" Pure Silver contacts	11.49	12.70

When ordering these type, be sure to specify the input voltage, contact combination, and size of points.

## MIDGET TYPE R.F. RELAYS

These models are sturdy, compact Double Pole - Double Throw Transmitter Relays, designed expressly for use in all types of mobile-portable communications equipment where space is



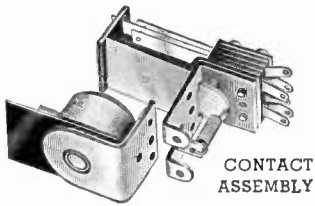
Series 1000—A.C. Series 2000—D.C.

at a premium. The insulation on this, as on the Type 400's, is Isolantite for both the cross-arm and end pieces, with all holes adequately well spaced to prevent structural weakness and possible "creepage." Coils are obtainable for all A. C. and D. C. voltages, and will operate in any position, the former consuming approximately four watts—the latter, two watts of power. Dimensions are 2¾" x 1½" x 1¼".

List Price.....\$9.07

# RELAYS BY GUARDIAN

A COMPLETE LINE OF AMATEUR AND INDUSTRIAL RELAYS



CONTACT ASSEMBLY

COIL ASSEMBLY

**CONTACT SWITCH ASSEMBLIES**

	List Price ea.
Type 200-1—Standard, with SPDT Contact Assembly.....	\$1.83
Type 200-2—Standard, with DPDT Contact Assembly.....	2.50
Type 200-4—Standard, DPDT, 12.5 Amps.....	2.90
Type 200-M1—Midget, with SPDT Contact Assembly.....	1.70
Type 200-M2—Midget, with DPDT Contact Assembly.....	2.25

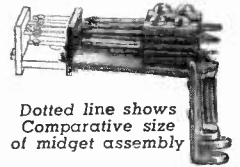
**AC COILS\***

	List Price ea.
6 Volt.....	\$2.25
12 Volt.....	2.25
24 Volt.....	2.25
115 Volt.....	2.80

\*All AC coils available in 25 and 60 cycles.

## SERIES 200—INTERCHANGEABLE

Two basic parts—a coil assembly and a contact assembly—comprise this simple, yet versatile, relay. Coil assembly consists of coil and field piece. Contact assembly consists of switch blades, armature, return spring and mounting bracket. The new midget contact assembly, which is interchangeable with the standard assembly, is also available in either single pole double throw, or double pole, double throw. The standard contact assembly is 2 7/8" long, 1 3/4" high, 1" wide. The midget assembly is 1 5/8" long, 1 1/2" high, 1" wide. The four contact assemblies can be used with any one of 13 coils to make a required relay. Contact points are rated at 8 amps., 115 volts, 60 cycles AC, non-inductive load.



Dotted line shows Comparative size of midget assembly

MIDGET CONTACT ASSEMBLY

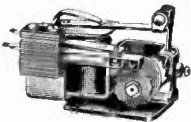
**DC COILS**

	List Price ea.
6 Volt.....	\$2.25
12 Volt.....	2.25
24 Volt.....	2.25
32 Volt.....	2.25
110 Volt.....	2.80
5000-D—For Current Type Operation.....	2.90

**CONTACT PARTS KIT 200-3.** Assortment of contact parts to make other switch combinations. May be used with SPDT or DPDT contact assemblies to make 3PST, 4PST, 4PDT combinations, etc. Either contact assembly takes any combination up to four pole double throw. Includes complete assembly and wiring information for all possible combinations. Complete with all necessary hardware. Shipping weight 4 oz.

List Price .....\$1.85 ea.

## RC-100 REMOTE LOCKING CONTROL RELAY



A Guardian development of the momentary impulse locking control relay. The circuit to the coil needs to be energized only long enough to close armature; contacts lock automatically. Each impulse reverses position of contacts. Standard coils operate on 115 volts, 50-60 cycles AC. Coils

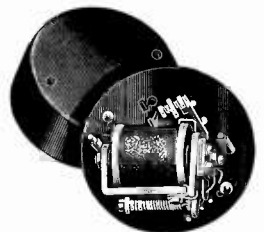
for other voltage and currents on specification. Contacts, 1/4" fine silver metal rated at 1500 watts at 115 volts, 60 cycle, non-inductive. Can also be used in AC primary circuits of any power supply delivering up to 1 KW. 3" long, 2 1/2" wide, 1 1/2" high.

**Applications**—break-in control and phone to CW switching. Any circuit control where locking circuits are used.

	Shp. Wt.	List Price
RC-100-AR—(4PST).....	8 oz.	\$7.15 ea.
RC-100-BR—(3PDT) (SPDT) (DPST).....	8 oz.	7.85 ea.

## U-100 AND U-200 ADJUSTABLE UNDERLOAD RELAYS

Sensitive, precise, designed and constructed for long, trouble-free service. Relays are encased in attractive black finished metal containers, protecting them from dirt, dust and maladjustment. Normal current through the coil on the U-100 is 300 milliamperes with an adjustable range of 100 to 200 milliamperes DC. Normal current through the coil on the U-200 is 600 milliamperes with an adjustable range of 200 to 400 milliamperes. Oversize contacts of fine silver, rated for the AC primary of any power supply delivering up to 500 watts.

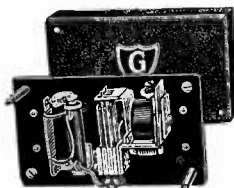


**Radio Application**—protection of class "B" audio equipment in case of class "C" load failure, also class "C" amplifier in case of excitation failure.  
**Industrial Application**—Any DC circuit where it is desirable to maintain currents above a set value. U-100 and U-200 are 3 1/8" in diameter, 2 1/4" high. Shipping weight 14 oz. List Price \$10.75 ea.

## T-100 AND T-110 TIME DELAY RELAYS

Standard coils operate on 115 volts, 50-60 cycles non-inductive AC. Coils available on other voltages on specification. Oversize contacts rated at 1500 watts on 115 volts, 50-60 cycles non-inductive. Can also be used in the AC primary of any power supply delivering up to 1 KW. Adjustable time delay for any period between 10 and 60 seconds.

**Applications**—Radio. In transmitter circuits to prevent damage of rectifiers and tube filaments by application of plate current before filaments are sufficiently heated. **Industrial.** Any control problem requiring the changing of circuits after a predetermined interval.



GUARDIAN SERIES T-110 TIME DELAY RELAY

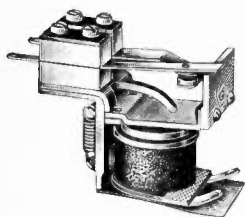
T-100—5 1/4" long, 3" wide, 2 1/4" high. Shipping weight 1 1/4 lbs. Laminated construction. List Price.....\$17.15 ea.

The T-110 is a compact, sturdy, economical time delay relay for use in applications not requiring the capacities of the T-100. Contact capacity — 1250 watts on 115 volt, 60 cycle non-inductive AC. Can also be used in the AC primary circuit of any power supply delivering up to, and including, 1 KW. Adjustable time delay between 10 and 60 seconds.

T-110—5 3/8" long, 3 1/8" wide, 2 7/16" high. Shipping Weight 8 oz. List Price.....\$10.75 ea.

# RELAYS BY GUARDIAN

A COMPLETE LINE OF AMATEUR AND INDUSTRIAL RELAYS



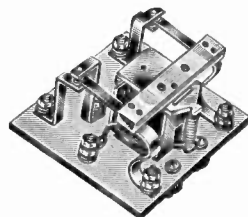
SERIES R-100  
H.F. RELAY

## HIGH FREQUENCY RELAYS

The Series R-100, R-100B, and A-300 Guardian Relays are primarily designed for high frequency applications. They are low-loss insulated, compact, economical and sturdily constructed. The R-100 and R-100B are AISiMag insulated, while the A-300 is mounted on a mycalex base with polystyrene contact mounting bar.

**Radio Applications** — Antenna changeover, break-in, high voltage keying, grid controlled rectifier keying, remote control of receiver and transmitter, and other high frequency applications.

**Industrial Applications** — Oven control, remote motor control, short wave therapy and diathermy, heating equipment.



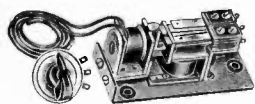
SERIES A-300  
H.F. RELAY

	Length	Width	Height	Shpg. Wght. (oz.)	List Price ea.
R-100 — SPST (normally open).....	2¾"	1"	2"	6	\$3.95
R-100-B — SPST (normally closed).....	2¾"	1"	2¾"	6	3.95
R-100-C — SPDT .....	2¾"	1½"	2¾"	6	4.75
R-100-G — DPDT .....	2¾"	1¾"	2¾"	6	8.55
A-300 — DPDT .....	3"	3"	2-1/16"	7	9.10

## X-300-ER

### ADJUSTABLE OVERLOAD RELAY

with Electrical Reset



This relay offers positive, precise protection against current surges and continuous overloads — remote panel installation of the control potentiometer simplifying adjustment of relay to operate on

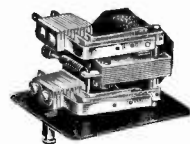
any current value from 250 to 750 milliamperes — auxiliary contacts for pilot light indication of "overload" or "clear" position — reset relay can be operated from any convenient point. Voltage drop across overload coil is less than 10 volts at any current value. Insulation between coil and ground rated at 3000 volts.

**X-300-ER**—4¾" long, 1-15/16" wide, 2" high. Shipping weight 12 oz.

List Price.....\$9.25 ea.

## B-100 BREAK-IN RELAY

Specially designed for break-in operation on amateur transmitters. Low current drain and compact construction, plus the use of a laminated field piece and armature insuring efficient operation, make the B-100 an ideal relay for this application. Standard coil operates on 115 V., 50-60 cycle AC. Silver contacts rated at 1500 watts, 60 cycles AC non-inductive, and in AC primary circuits of any power supply delivering up to 1 KW.

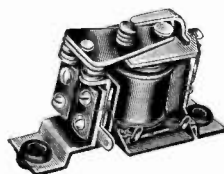


**B-100**—2¾" long, 2½" high, 2¼" wide. Shipping weight 11 oz.

List Price.....\$10.75 ea.

## K-320 KEYING RELAY

A standard coil operates on 6 volts AC. Coils for other voltages on specification at 10% additional to list price. Contacts — special over-size silver. Can handle 5,000 watts on 60 cycle non-inductive 115 volts AC and in AC primary circuit of any power supply delivering up to and including 1 KW. Control capacity — up to 2,000 volts with clean make and break.



**Applications**—Control of filament center tap keying of any stage having up to 2,000 volts on plate; primary keying or control of power supplies up to and including 1,000 watts; and grid-controlled rectifier keying of 3,000 volt power supplies.

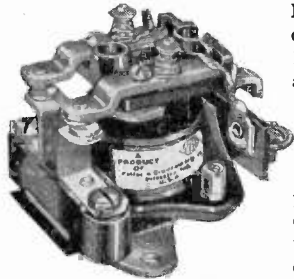
**K-320**—3" long, 1½" wide, 1-15/16" high. Shipping weight 4 oz.

List Price.....\$4.50 ea.



# Potter & Brumfield

## PR Series HEAVY DUTY POWER RELAYS

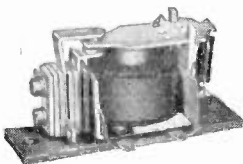


Designed for such power circuits as motor starting up to 1 HP., heater loads up to 20 amperes, remote break-in control of transmitters, electro plating devices, elevator controls, or any control circuit requiring fast positive switching. AC types operate on approximately 10 volt amperes. DC types require approximately 2 watts.

Relay contacts on PR3A, PR3D, PR4A and PR4D rated at 20 A, non-inductive load 115V AC or 1 HP, AC. All other relay contacts rated at 15 A, non-inductive at 115V AC. Size approximately 2 5/8" x 2 9/16" x 2 1/4" high. Specify coil voltage and frequency.

Description	A.C. RELAYS 6-12-24-115-230 Volts				D.C. RELAYS 6-12-24-115 Volts			
	Normally Open	Net	Normally Closed	Net	Normally Open	Net	Normally Closed	Net
SPST	PR1A	\$2.85	PR2A	\$2.85	PR1D	\$2.85	PR2D	\$2.85
Heavy Duty SPST	PR3A	3.10	PR4A	3.15	PR3D	3.10	PR4D	3.15
DPST	PR7A	3.65	PR8A	3.85	PR7D	3.65	PR8D	3.85
SPDT	PR5A		3.20		PR5D		3.20	
DPDT	PR11A		4.90		PR11D		4.90	
	Add 60c to prices above for coils over 150 volts.				Add 60c to prices above for coils over 50 volts.			

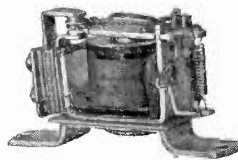
## LS Series PLATE CIRCUIT RELAYS



Designed for application where size and cost are important. Often used in photo-electric circuits, temperature control circuits and electronic timing devices. Similar to the LM Series but less sensitive. Available in all resistances up to and including 10000 ohms. Requires .09 watt minimum actuating power.

Single pole double throw, 2500 ohm coil, net \$1.90.  
Single pole double throw, 5000 ohm coil, net \$2.20.  
Single pole double throw, 10000 ohm coil, net \$2.45.  
Size 2 5/8" x 1 3/8" x 1 3/8" high.  
When ordering, specify coil voltage or resistance.

## FR Series PHOTO FLASH RELAYS

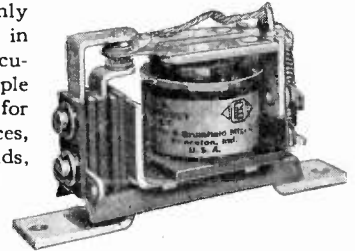


FR1A } \$3.00	FR5A } \$3.25
FR1D }	FR5D }
FR2A } 2.95	FR7A } 3.95
FR2D }	FR7D }
FR3A } 3.65	FR8A } 3.85
FR3D }	FR8D }
FR11A } \$4.25	
FR11D }	

The newly developed electronic photo flash units using a high voltage discharge through a xenon gas filled bulb require a relay of extraordinary characteristics. When the bulb is flashed the contacts must carry an extremely high surge of current without sticking, burning or pitting. The repetitive accuracy must be as uniform as a precision built shutter on a fine camera. Unfailing positive contact is vital to synchronization of the shutter with the 2500 volt capacitor discharge.

The Potter and Brumfield FR relay has been tried and proven under the most severe conditions of temperature, humidity and shock. Special contact material and the finest quality of baked varnish impregnation of coil and other insulating parts combine to give a reliable relay at economy prices. The FR is available in all the contact combinations listed under the MR Series shown on this page up to and including Double Pole Double Throw. Coils are available in all AC voltages up to 230 volts and DC voltages up to 115. Power requirements for coil operation is 1.5 to 2 watts DC and 3 to 4 volt amperes AC. Overall dimensions for single pole types are 2 15/16" x 1 1/2" x 1 5/8" high. Double pole types 2 3/4" x 2 1/8" x 1 7/8" high.

## MR Series MEDIUM DUTY POWER RELAYS



Sturdy, compact, highly efficient, for mounting in confined spaces. Particularly adapted to multiple panel mounting. Ideal for safety and signal devices, call systems, heater loads, radio protective circuits, transmitter keying circuits, burglar alarms, photographic

applications, electric sign controls, etc. Available in all contact arrangements up to and including double pole double throw. AC types operate on approximately 4 volt amperes and DC types operate on approximately 2 watts. Contacts rated at 8 A, 115V, 60 cycles non-inductive load. Approximate size single pole units 2 15/16" x 1 1/2" x 1 5/8" high. Double pole units 2 3/4" x 2 1/8" x 1 7/8" high.

Description	A.C. RELAYS 6-12-24-115-230 Volts				D.C. RELAYS 6-12-24-115 Volts			
	Normally Open	Net	Normally Closed	Net	Normally Open	Net	Normally Closed	Net
SPST	MR1A	\$2.00	MR2A	\$1.95	MR1D	\$2.00	MR2D	\$1.95
DPST	MR7A	2.60	MR8A	2.50	MR7D	2.60	MR8D	2.50
SPDT	MR5A		2.15		MR5D		2.15	
DPDT	MR11A		2.80		MR11D		2.80	
	Add 40c to prices above for coils over 150 volts.				Add 40c to prices above for coils over 55 volts.			

## POTTER & BRUMFIELD

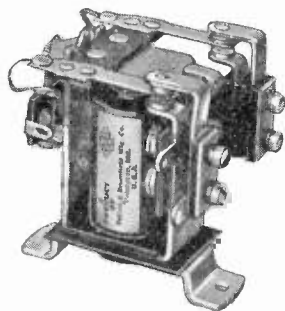
Department 250

549 WEST WASHINGTON BOULEVARD • CHICAGO 6, ILLINOIS

EXPORT SALES AT 2020 ENGINEERING BLDG., CHICAGO 6, U.S.A. • FACTORY AT PRINCETON, INDIANA

# POTTER & BRUMFIELD

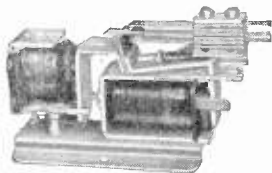
## LM Series PLATE CIRCUIT RELAYS



Designed to meet demand for high grade medium cost plate circuit relays in both single and double pole contact arrangements. Large coils are particularly sensitive. The single pole LM operates on as low as .015 watts, the double pole types on .070 watts. Applicable to smoke control, packaging, counting and other electronic control circuits. Contacts supplied are 3/16" fine silver. Approximate size of single pole units 2 1/4" x 1 3/8" x 2 3/8" high. Double pole units 2 1/4" x 2 3/8" x 2 3/8" high. When ordering, specify coil resistance.

DESCRIPTION	Coil Resistance Ohms	SINGLE THROW			
		Normally Open	Net	Normally Closed	Net
SPST	2500	LM-1	\$2.10	LM-2	\$2.15
	5000		2.40		2.45
	10000		2.75		2.85
DPST	2500	LM-7	3.00	LM-8	3.05
	5000		3.25		3.30
	10000		3.65		3.70
DESCRIPTION	Coil Resistance Ohms	DOUBLE THROW			
		Normally Open		Normally Closed	
SPDT	2500	LM-5			2.30
	5000				2.55
	10000				2.95
DPDT	2500	LM-11			3.40
	5000				3.65
	10000				4.05

## EL Series MULTIPLE CONTACT LATCHING RELAYS



Available in all contact combinations up to and including four pole double throw as shown under SU series. Actuating and latching coils are available for DC voltages up to 115 or AC voltages up to 230. Actuating coils require 1.5 to 2.5 watts.

EL1A	NET	EL7A	NET	EL12A	NET	EL15A	NET
EL1D	\$3.60	EL7D	\$3.95	EL12D	\$4.40	EL15D	\$4.75
EL2A		EL8A		EL13A		EL16A	
EL2D		EL8D		EL13D		EL16D	
EL5A	\$3.75	EL11A	\$4.30	EL14A	\$4.95	EL17A	\$5.40
EL5D		EL11D		EL14D		EL17D	

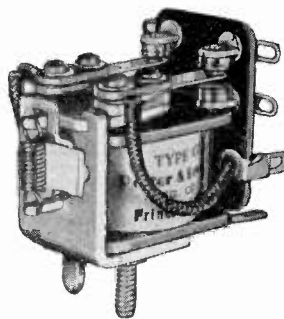
## SM Series Super Midget



This miniature relay weighs less than 1/2 oz. and is less than 1/4 cubic inch in volume. Contacts are SPDT pure coined silver rated at .25 amp. 115 V 60 cy. load. The "D" or voltage operating types can be wound for any specified DC voltage up to 115 and draw approximately .5 watt. The "L" or current operating types can be wound to maximum of 8000 ohms which gives minimum pull-in of 3 ma at 75 milliwatts. "G" version hermetically sealed in miniature tube glass envelope with standard 7 pin base.

List Price	Nominal Coil		List Price	List Price	Coil Resistance Ohms	List Price
SM5D	Voltage	Amps	SM5DG	SM5L		SM5LG
\$1.25	0.3 - 34	2.1 - .016	\$2.15	\$1.50	0.155 to 1800	\$2.40
1.35	35 - 48	.017 - .0116	2.25	1.60	1801 to 3400	2.50
1.65	49 - 60	.0117 - .0093	2.55	1.90	3401 to 5200	2.80
1.90	61 - 75	.0092 - .0075	2.80	2.15	5201 to 8000	3.05

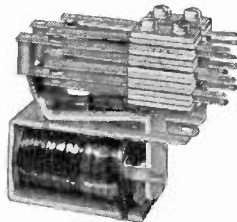
## KR Series Small Light Duty



A relay designed for application where size and weight are important. Sturdy and efficient. In applications where operating current is not too limited, the DC types can be adjusted to withstand the vibration encountered in most aircraft applications. Ideal for sub-chassis mounting and switching of RF or AF circuits. Contacts are rated at 3 amperes 110 volts, 60 cycle non-inductive. Approximate size of KR11D 1 3/16" x 1 11/16" x 1 1/4" high. When ordering, specify coil voltage and frequency.

Description	A.C. RELAYS 6-12-24-115 Volts				D.C. RELAYS 6-12-24-60 Volts			
	Normally Open	Net	Normally Closed	Net	Normally Open	Net	Normally Closed	Net
SPST	KR1A	\$2.00	KR2A	\$1.95	KR1D	\$1.90	KR2D	\$1.85
Heavy Duty SPST	KR3A	2.40	KR4A	2.35	KR3D	2.30	KR4D	2.25
	KR7A	2.40	KR8A	2.35	KR7D	2.30	KR8D	2.25
SPDT	KR5A		2.00	KR5D		1.90		
DPDT	KR11A		2.50	KR11D		2.40		
A.C. coils up to 117 volts at above prices.					Add 25c to above prices for coils of 3500 to 5000 ohms. From 5001 to 6000 ohms add 35c.			

## SU Series MULTIPLE LEAF RELAYS



Unique construction provides many valuable features at low cost. Larger coil space permits most efficient winding for higher voltages and lower consumption. May be mounted either vertically or horizontally, terminals easily accessible in either mounting. Suitable for applications such as signal or alarm controls, remote indicators, temperature controls, overload or underload protective devices, etc. Contacts rated at 4 amperes 115 volts AC non-inductive load. Contact combinations up to and including 4-pole double throw. DC types require 1.5 watts actuating power. Dimensions of SU17A (illustrated) are 2 1/2" x 1 7/16" x 2 1/2" high. When ordering, specify coil voltage and frequency.

Description	A.C. RELAYS 6-12-24-115-230 Volts				D.C. RELAYS 6-12-24-115 Volts			
	Normally Open	Net	Normally Closed	Net	Normally Open	Net	Normally Closed	Net
SPST	SU1A	\$1.95	SU2A	\$1.95	SU1D	\$1.95	SU2D	\$1.95
DPST	SU7A	2.45	SU8A	2.45	SU7D	2.35	SU8D	2.35
3PST	SU12A	2.90	SU13A	2.90	SU12D	2.80	SU13D	2.80
4PST	SU15A	3.30	SU16A	3.30	SU15D	3.20	SU16D	3.20
SPDT	SU5A		2.15		SU5D		2.15	
DPDT	SU11A		2.70		SU11D		2.70	
3PDT	SU14A		3.15		SU14D		3.15	
4PDT	SU17A		3.65		SU17D		3.65	
Add 63c to above prices for coils above 117 volts.					Add 63c to above prices for coils over 60 volts.			

# POTTER & BRUMFIELD

PRINCETON, INDIANA

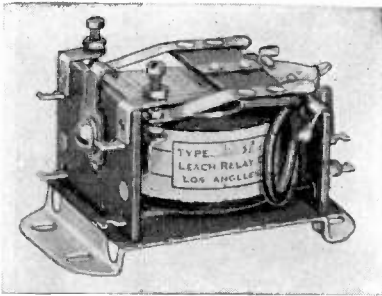
EXPORT SALES AT 2020 ENGINEERING BLDG., CHICAGO 6, U. S. A.

# LEACH RELAY CO.



These Leach Relays are considered standard items within the trade. These relays are maintained in shelf-stock supply in order to expedite shipment to jobbers throughout the United States.

For more than thirty years Leach has manufactured quality relays. This vast experience in engineering design and manufacturing ability is incorporated in these standard relay designs.



**BASE DIMENSIONS:** 1½" x 2-9/16", overall height 1-11/32"

**WEIGHT:** 4½ ounces.

**RESISTANCES:** 5,000 Ohms or 10,000 Ohms.  
Type  
No.

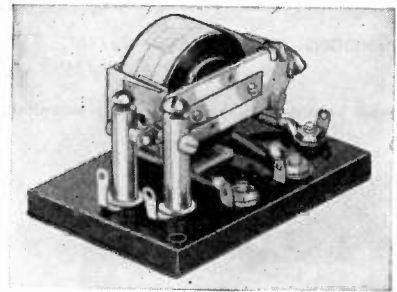
1037 Double Pole, Double Throw, 5,000 Ohms.  
1037 Double Pole, Double Throw, 10,000 Ohms.

Be sure to specify coil resistance when ordering.

## SENSITIVE DIRECT CURRENT RELAYS

### TYPE 1032 SERIES

This Relay is used extensively in closed circuit burglar alarm systems, in the plate circuit of electron tubes, as secondary Relays for micro-ampere Relays, etc. It is a very fine all-around low current, high resistance Relay, capable of withstanding considerable vibration without affecting its operation. It is equipped with an adjustable spring and adjustable stationary contacts, fitted with set screws. All contacts are pure silver and capable of carrying 1 Ampere, 115 Volts, AC, Non-inductive. This Relay is pigtailed to prevent current passing through the hinge part. The contact system is SPDT, and minimum practical coil wattage is .015 watts.



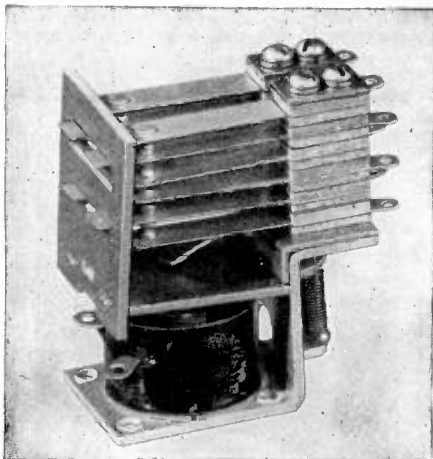
**BASE DIMENSIONS:** 2" x 2¾", overall height, 1-11/16"

**WEIGHT:** 6 ounces.

**RESISTANCES:** 5,000 Ohms or 10,000 Ohms.  
Type  
No.

1032 Single Pole, Double Throw, 5,000 Ohms.  
1032 Single Pole, Double Throw, 10,000 Ohms.

Be sure to specify coil resistance when ordering.



### Type Number

6-C 7-C Single Pole, Double Throw.  
6-2C 7-2C Double Pole, Double Throw.  
6-4C 7-4C 4-Pole Double Throw.

## MULTIPOLE RELAYS

### TYPE 6 & 7 SERIES

This Relay is the most versatile Relay for its size in the Leach line, and is ideal for industrial and radio applications where currents to be handled by the contact systems do not exceed 8 Amperes at 115 VAC, Non-inductive. By using the desired stationary contacts, many combinations are available. For example, on the 7-4C Relay one could have various combinations of double-pole, single-pole open, single-pole closed, etc., as required. All contacts are pure silver and are mounted on heavy-plated phosphor-bronze pole pieces, which are designed to give a wiping action and positive contact, pressure. Relay provides solder lugs for connecting coil and contact systems.

**COILS:** 6 Volt Direct Current Coils consume approximately 3 watts, 6 or 115 VAC Alternating Current Coils consume 6V/A approximately.

**CONTACTS:** Heavy fine silver contacts ⅛" diameter. Will carry loads up to 8 Amperes at 115 VAC, Non-inductive.



# LEACH RELAY CO.



## MIDGET RELAYS

### TYPE 223-227 & 323-327 SERIES

ENGINEERED in miniature to weigh less than 2 ounces and measures from one to 1 3/4 inches in length, Leach Midget Relays dependably handle contact loads of up to 2 Amperes at 115 Volts AC, Non-inductive. Because of their space and weight saving factors, Midgets expand the range of control by Relays in many products where previous methods are considered unprofitable.

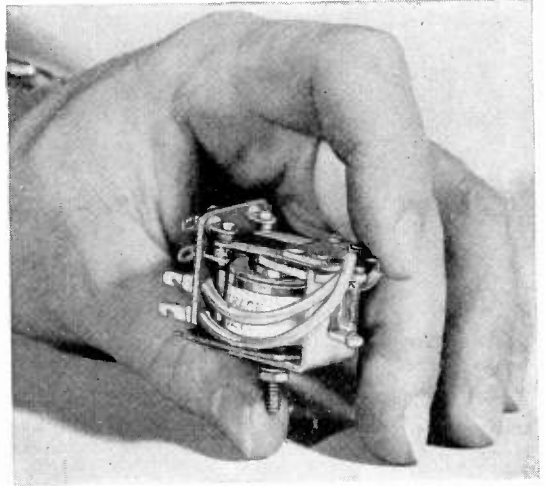
Supplied in a variety of contact arrangements, with moving contact poles insulated from the armature and frame, and with coils for operation on either AC or DC. The high quality, well-known in our standard and larger size Relays, is used throughout.

**STANDARD COILS:** 6 Volt Direct Current Coils consume approximately .750 watts of Alternating Current 6 or 115 Volts, approximately 4 V/A.

**CONTACTS:** 1/8" diameter Fine Silver, rated 2 Amperes at 115 VAC, Non-inductive.

**DIMENSIONS:** SP — 15/16" x 1-13/16".  
DP — 1-3/16" x 1-13/16"

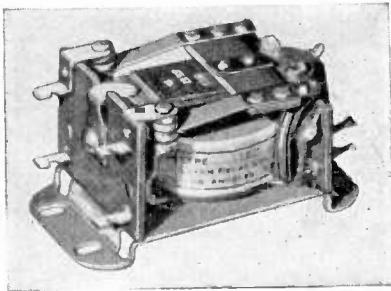
Overall height—1 1/4" not including mounting stud.



**MOUNTING:** Single No. 6-32 stud, 7/16" long.

**WEIGHT:** 1.5 ounces approximately.

Type Number		
DC	AC	
223	323	SPDT
227	327	DPDT



## METAL BASE STYLE

### TYPE 1057 & 1157 SERIES

THESE RELAYS are ruggedly built for industrial uses and are fitted with 1/4" fine silver contacts for handling heavier currents. Phosphor-bronze, nickel-plated, is used for the pole pieces. Nothing is grounded to the frame. All parts and pieces are so constructed that nothing can twist or turn out of alignment.

**DIRECT CURRENT:** Coil consumption 1.5 watts, 6 Volts.

**ALTERNATING CURRENT:** Coil consumption 50-60 cycles, 6 or 115 Volts, approximately 4 V/A.

**CONTACTS:** 1/4" diameter Pure Silver. 12.5 Amperes at 115 Volts AC, Non-inductive.

**BASE DIMENSIONS:** 1 5/8" x 2 3/4"; overall height 1 3/8".

**WEIGHT:** 5 ounces.

Type Number		
DC	AC	
1057	1157	DPDT

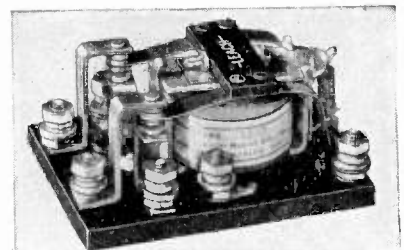
## STANDARD SIZE CIRCUIT CONTROL RELAYS

### TYPE 1257 & 1357 SERIES

This excellent Relay has many applications where it is not desirable to use solder terminal connections. They are highly insulated and made of the best materials obtainable. The magnetic circuit is exceptionally high grade of magnetic iron, heavily cadmium-plated. The contacts are 1/4-inch pure silver, slightly crowned, and are rated at 12.5 Amperes, 115 Volts AC, Non-Inductive.

AC coils consume 6 V/A, 6 or 115 Volts AC.

DC coils consume 1.5 watts, 6 Volts DC.



**BASE DIMENSIONS:** 1/4" black Bakelite, 2-3/16" x 3"; overall height, 1-7/16"

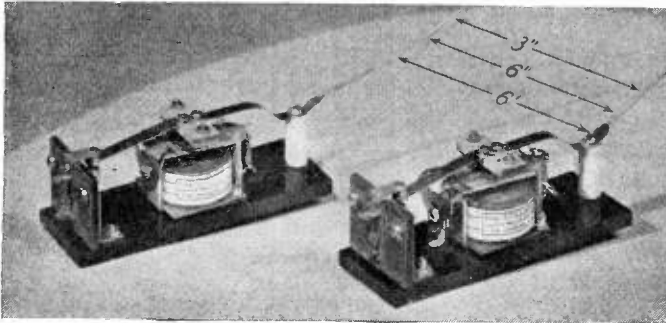
**WEIGHT:** 7 ounces.

Type Number		
DC	AC	
1257	1357	DPDT

# LEACH RELAY CO.



## RADIO AND HIGH FREQUENCY RELAYS—ANTENNA TRANSFER



### TYPE 1623-S9 & 1723-S9

These Relays are exactly the same as above, except that a  $\frac{1}{8}$ -inch fine silver SPST Normally Open auxiliary contact has been added. Usually one these relays is paired with one of the above types\*, in order to provide the auxiliary contact for the power supply. This may also be used to close a power Relay, for grounding, or for controlling light power circuits.

AC coils consume approximately 6 V/A, 6 or 115 Volts, 50-60 cycles.

DC coils consume approximately 3.5 watts, 6 Volts DC.

**DIMENSIONS:**  $1\frac{1}{2}$ " x  $4\frac{5}{8}$ "; overall height,  $1\frac{3}{4}$ ".

**WEIGHT:**  $6\frac{1}{4}$  ounces, approximately (each relay).

Type Number		
DC	AC	SPDT
1623	1723	SPDT
1623-S9	1723-S9	SPDT, with $\frac{1}{8}$ " Aux. Cont.

\*Usually one No. 1723 and one No. 1723-S9 are paired for AC use or one No. 1623 and one No. 1623-S9 are paired for DC use.

## MYCALEX AND ISOLANTITE

### TYPE 1623 & 1723

This new idea for antenna change-over eliminates the major drawback of most Relays now used for this purpose. The spacing between leads, heretofore has been limited to the spacing between the Relay contact strips. A pair of the above matched Relays permits any desired spacing between antenna lead-out wires whether 6 inches, or 6 feet.

Maximum high frequency insulation is provided through the use of heavy Mycalex panels, and Isolantite insulators. The Relays are designed with a wide air gap,  $\frac{1}{4}$  inch pure silver contacts with a SPST arrangement.

They will withstand over 4000 volts RMS, 60-cycle hi-spot test between contacts and between contacts and frame on ground.

## RADIO AND HIGH VOLTAGE RELAYS

### CERAMICS

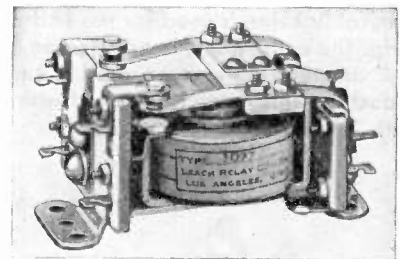
#### TYPE 1077 & 1177 SERIES

This is an ALSiMag insulated RF Relay designed for more or less universal service, such as police mobile radio, aircraft and amateur installations. Nothing has been left undone to make this Relay the best of its kind. The pole pieces are nickel-plated, phosphor-bronze. The main contacts are  $\frac{1}{4}$ " pure silver. All iron parts cadmium plated. The tension spring is stainless steel.

No. 1077C and 1177C have Auxiliary  $\frac{1}{8}$ " contacts which provide a third center pole on Relay. They are grounded to the frame, but not to the base of the Relay.

**WEIGHT:** 5 to  $5\frac{1}{2}$  ounces.

Type Number		
DC	AC	SPDT
1077	1177	DPDT
1077-C	1177-C	DPDT, with Aux. SPDT.



**CONTACTS:**  $\frac{1}{4}$ " Pure Silver—Double Pole, Double Throw.

**COIL DATA:** 6 Volts DC,  $2\frac{1}{2}$  watts, 6 or 115 Volts AC, 50-60 cycles, 6 V/A.

**DIMENSIONS:**  $1\frac{1}{2}$ " wide by  $2\frac{3}{4}$ " long by  $1\frac{1}{2}$ " high.

Mounting hole centers,  $2\frac{3}{8}$ ".

Center holes tapped 6-32.

Outer holes clear 6-32.

# LEACH RELAY CO.



## RADIO AND HIGH VOLTAGE RELAYS

### MYCALEX

#### TYPE 1601-MX & 1701-MX

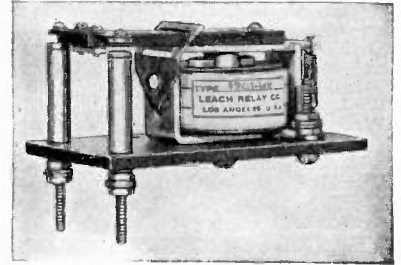
This Relay was designed to control a high voltage radio frequency circuit. Contacts are  $\frac{1}{4}$ " pure silver, SPST normally open, double break. Metal spacers are supplied for mounting.

AC coils consume 6 V/A, or 115 Volts, 50-60 cycles AC.

DC coils consume approximately 3.5 watts, 6 Volts DC.

**DIMENSIONS:**  $1\frac{3}{4}$ " x 3" overall height, not including studs or mounting spacers,  $1\frac{1}{2}$ ".

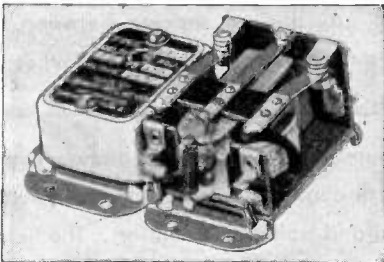
**WEIGHT:** 8 ounces.



Type Number

DC AC

1601-MX 1701-MX SPST-DB Normally open.



**BASE DIMENSIONS:**  $3\frac{1}{4}$ " x  $2\frac{3}{4}$ ", overall height, 1-7/16".

Type Number

DC AC

1057-T 1157-T DPDT.

## TIME DELAY RELAY

### TYPE 1057 & 1157 T SERIES

This Thermo Element Time Delay Relay is primarily for use on vacuum tube transmitters, but may also be used for a wide variety of other applications. They are all made DP, which may be used as normally open, normally closed or DT. The contacts are  $\frac{1}{4}$ " pure silver, rated  $12\frac{1}{2}$  Amperes, 115 Volts AC, non-inductive. The center pole, as shown, always is used for controlling the thermo element, which provides a variable delay of from 20 seconds to 1 minute. After the coil is energized, the Thermo element drops out of the circuit, cooling for the next cycle.

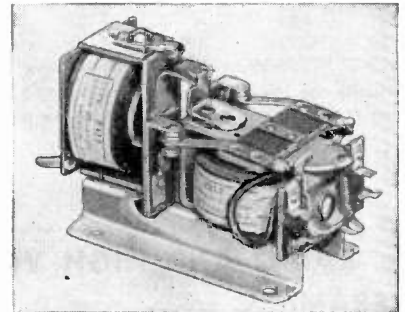
**STANDARD COILS:** AC—6 and 115 Volts (6 V/A)

DC—6 Volts—(1.5 Watts)

## LATCH TYPE ELECTRICALLY RESET

### TYPE 2417

This type Relay fits many applications where it is not desirable to have current continuously on the coil. The mechanical arrangement is such that after the pull-in coil is energized the armature closes and locks, closed by a mechanical latch on the armature of the Relay coil. The pole pieces are phosphor-bronze, and canvas-base natural Bakelite is used for the end panels and the pole mounting strip. The entire Relay is mounted on a metal base. The contacts are  $\frac{3}{16}$ " diameter pure silver rated 8 Amperes at 115 Volts AC. Non-inductive. This Relay is supplied with 2—6 or 115 Volt AC coils or with 2—6 Volt DC coils.

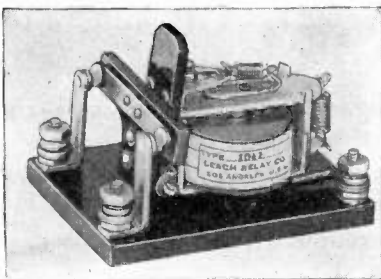


**DIMENSIONS:**  $1\frac{5}{8}$ " x  $3\frac{3}{8}$ "; height 2-1/16".  
**WEIGHT:** 8 ounces.

Type Number

2417 DPDT.

Specify voltage and whether for AC or DC.



Type  
Number

1042 SPST Normally closed—double break.  
Contact rating 10 Amp., 115 Volts AC.

## LIGHT DUTY OVERLOAD TRIP RELAYS

### TYPE 1042 SERIES

The Relays shown are used as safety devices on electronic apparatus for the protection of the equipment against excessive currents. When current reaches a predetermined value the Relay is pulled in allowing the contacts to snap open and at the same time locking the armature closed. To reset the contacts, the coil circuit must be opened before pressing the Bakelite first finger. These Relays are supplied with the coil circuit highly insulated from the contacts; however, to use them as circuit breakers the coils and contacts may be connected in series.

Commonly used for the protection of power tubes. In this service the coil is put in series with the negative side of the plate supply and the contacts are in series with the transformer primary or the coil of the power contactor.

These Relays are all adjustable for the trip-out setting to approximately 20% plus or minus of their designated rating. In ordering it is necessary that you specify the approximate current on which they are to operate. Supplied in 2 standard coils: 250 MA or 500 MA.



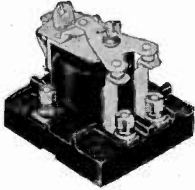
# WARD LEONARD • RADIO AMATEUR and INDUSTRIAL RELAYS

## RELAYS FOR AUTOMATIC CONTROL

Representative samples of the comprehensive line of relays made by Ward Leonard. The ones illustrated are those particularly adaptable to electronic and the more common industrial applications.

### MIDGET MAGNETIC RELAY — TYPE No. 106. —

For remote control of A.C. or D.C. circuits. Has wide application for use on power circuits or electronic circuits in which the currents to be controlled do not exceed the ratings of the contacts. May be energized from main line or from an independent circuit. Built on a molded Bakelite base. Front or back connected terminals.



#### Coil Voltages —

D.C. — 6, 8, 12, 24, 32, 115 volts.  
A.C. (60 cycles) — 6, 8, 12, 24, 32, 115 volts.  
115 volts.

#### Contact Arrangement —

Single Pole, Double Break, Normally Open, Normally Closed and Double Throw.  
Double Pole, Single Break, Normally Open, Normally Closed and Double Throw.  
Double Pole (Common Feed), Single Break, Normally Open, Normally Closed and Double Throw.

#### Contact Ratings, in Amperes —

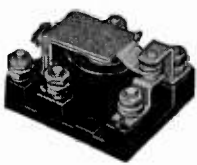
Volts	D. C.		60-Cycle A.C.	
	Single Break	Double Break	Single Break	Double Break
0-24	4	6	4	6
25-115	1*	2	4	6

\*0.7 Amperes if Double Throw.

Dimensions — 2" wide; 2¼" high; 2½" deep.

Type No. 106 Relays for 3-wire control are also available. Details will be furnished on request.

### HEAVY DUTY MIDGET RELAY — TYPE No. 105. —



A general purpose relay designed for remote control of the ordinary type of electrical appliances, such as electric heaters, electric signals, electric lights, electrically operated pumps, and most types of electronic equipments. The Heavy Duty Midget Relay is sturdily built on a molded Bakelite base. Heavy, front connected terminals are provided. The Heavy Duty Midget Relay, as a standard unit, is of the open type, but it can be furnished with a steel knock-out box enclosure.

#### Coil Voltages —

D.C. — 6, 10, 12, 24, 32, 115 volts.  
A.C. (60 cycles) — 6, 10, 12, 24, 32, 115, 230 volts.

#### Contact Arrangement —

Single Pole, Single Break, Normally Open, Normally Closed and Double Throw.  
Double Pole, Single Break, Normally Open, Normally Closed and Double Throw.

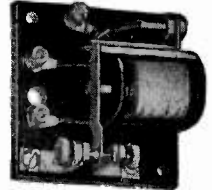
#### Contact Ratings, in Amperes —

Volts	D. C.		60-Cycle A.C.	
	Normally Open	Normally Closed	Normally Open	Normally Closed
0-24	20	15	20	15
25-115	1	1	20	15
230	0.5	0.5	15	10

Dimensions — Single Pole: 1⅞" wide; 2⅝" high; 1½" deep. Double Pole: 2½" wide; 2¾" high; 1¾" deep.

### SENSITIVE RELAY — TYPE No. 250. —

For use in applications where a high degree of sensitivity is required such as in electronic circuits. Built on a Bakelite base with large knurled heads and nuts to facilitate adjustment of the contacts and the spring tension on the armature. The use of nickel alloy in the magnetic circuits insures good contact torque at pull-up and crisp drop-out.



#### Contact Arrangement —

Single Pole, Double Throw.

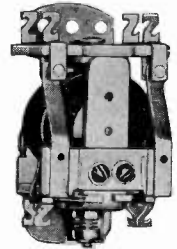
#### Contact Rating, in Amperes —

Volts	D.C.	60-Cycle A.C.
115	0.75	2.0
230	0.5	1.5

Dimensions — 2⅝" wide; 2⅝" high; 1⅝" deep.

### MIDGET METAL BASE RELAY — TYPE No. 104. —

For use in small radio transmitters, sound equipment, aircraft control circuits, and other similar applications. Available with Bakelite insulation or ceramic insulation. Small size permits installation in limited spaces. Built on a metal base. Vibration resistant up to 10 times gravity when energized. Front connected, solder type terminals.



#### Coil Voltages —

D.C. — 6, 10, 12, 24, 32, 115 volts.  
A.C. (60 cycles) — 6, 10, 12, 24, 32, 115 volts.

#### Contact Arrangement —

Single Pole and Double Pole. Various combinations with or without auxiliary contacts.

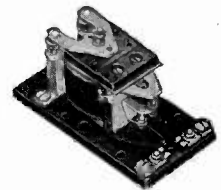
#### Contact Ratings, in Amperes —

Volts	D.C.	60-Cycle A.C.
0-24	4	4
25-115	0.5	4

Dimensions — 1⅞" wide; 2½" high. 1⅞" deep.

### HEAVY DUTY RELAY — TYPE No. 130. —

A relay that has heavy current carrying and rupturing capacities for use in A.C. or D.C. circuits. Contact fingers are heavy stiff metal blades with large stainless steel springs for pressure. Large gap contacts with adequate surfaces. As high as four separate circuits may be opened simultaneously with the closing of up to four other circuits.



#### Coil Voltages —

D.C. — 24, 32, 115, 230 volts.  
A.C. (60 cycles) — 24, 32, 115, 230, 440 volts.

Other voltages and frequencies available on special order.

#### Contact Arrangement —

Various combinations of contacts from one to four poles.

#### Contact Ratings, in Amperes —

Volts	Direct Current	D.C. with Blowout	A.C. 25 Cycles	A.C. 60 Cycles
0-24	25	25	25	25
25-125	3	20	25	25
125-250	1	10	25	25
251-440	.....	.....	10	15

Note: Blowouts required for relays that control Direct Current circuits in excess of 23 volts or a current of 1 ampere.

Dimensions — Base dimensions vary according to size of relay. Maximum depth, 3⅞".



# WARD LEONARD • RADIO AMATEUR and INDUSTRIAL RELAYS

## RELAYS FOR THE RADIO AMATEUR

A few examples of Ward Leonard's popular line of relays for use in radio circuits are illustrated here. Information on specifications and prices are detailed in Catalog D-11 which will be furnished on request made to Ward Leonard directly or through one of its agents or distributors.

### R. F. BREAK-IN RELAYS. —

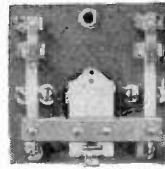
Otherwise known as "Push-to-Talk" Relay for phone transmitters. Pushing button in control circuit connects proper transmitter circuits and disconnects proper receiving circuits to transmit. Releasing button switches all circuits back to normal position for receiving. Furnished in two sizes, Midget Type for light duty and the Heavy Duty Type.



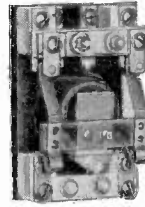
Midget Type



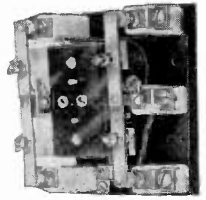
Heavy Duty Type



Midget Type



Intermediate Type

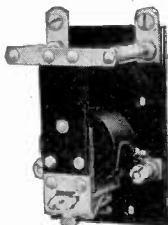


Heavy Duty Type

**ANTENNA CHANGE-OVER RELAYS.** — Switches antenna to transmit or receive. May also be used to switch transmitter or receiver to either of two antennas. Available in three sizes — Midget Type, Intermediate Type, and Heavy Duty Type. Midget Type built on Mycalex base. Contacts and terminals on Intermediate and Heavy Duty Types (except coil terminals) supported by ceramic blocks. Lucite crossarm used on all types.

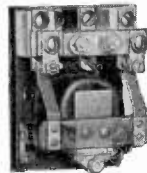


Low Voltage Type



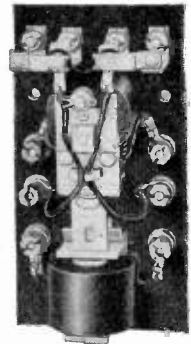
High Voltage Type

**KEYING RELAYS.**—Low voltage type for center-tap or grid-bias keying. High voltage type for use with grid controlled high voltage rectifier tubes. Use of Keying Relays reduces length of circuit wiring and permits control of keying with key located in convenient position for operating. Capable of keying up to 40 words per minute.



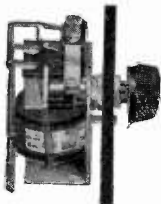
### ANTENNA GROUNDING RELAY. —

For grounding transmitting or receiving antenna when not in use. Contact arms supported on Lucite crossarm. Circuit contacts and terminals supported on ceramic insulation block. Coil terminals and grounding terminals mounted on Bakelite base. Double pole, double throw contacts, with fixed or adjustable normally closed contacts.

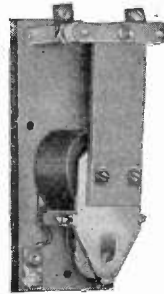


**MIDGET LATCH-IN RELAY.**—A multi-purpose relay especially useful in circuits where interference might be caused if relay coils were continually energized. Momentary energizing coil "pulls in" armature which is locked in position by mechanical latch. Momentary energizing reset coil releases latch allowing armature to drop to normal position.

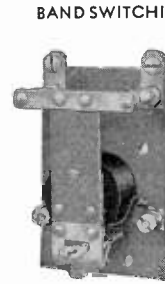
**UNDERLOAD RELAY.** — Protects against damage to tubes and other components of amplifiers when load failures occur, due, for example, to inability of one or more vacuum tubes to hold the load because of loss of excitation. De-energizing of relay coil when load drops opens contacts and prevents damage to transformers or tubes. Available from stock with coil adjusted to pick up at 100 m.a. to 200 m.a. DC or with coil adjusted to pick up at 200 m.a. to 400 m.a. DC.



**ROTARY RESET OVERLOAD RELAY.** — For protection against overloading vacuum tubes of power amplifiers or transmitters. Current surge causes armature to be pulled in, breaking the rectifier primary circuit. A mechanical latch holds the contacts open until the operator closes them by turning the reset knob. Designed for panel mounting. Available from stock with 250 m.a. DC coil and 500 m.a. DC coil.

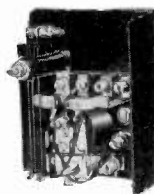


Heavy Duty Type



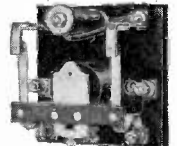
Midget Type

**BAND SWITCHING RELAYS.**—Automatically changes frequency bands through two-wire control circuit. Installation on the relay in the set near the coils eliminates the need for long R. F. leads, such as are required when a panel-mounted switch is used. Mycalex insulation used for base and contact arms. Contacts and terminals spaced to insure against leakage or creepage of high frequency and high voltage in the circuit.



**THERMAL TIME DELAY RELAY.** — Delays the application of voltage to the plates of vacuum tubes until the filaments have heated. The relay illustrated is adjustable over a range of from 15 seconds to 45 seconds. Other time delay relays — thermal type and motor driven type — are also available. Furnished with 110 volt, 60-cycle AC coil.

**SAFETY RELAY.** — A relay that should be installed in every amateur rig. It gives automatic protection against the hazards of high voltages in filter condensers when power supply unit is turned off. Furnished with resistor through which condensers are discharged. Furnished with normally closed contacts which open when transformer primary circuit is closed, energizing relay coil.



The use of Ward Leonard Relays in an Amateur Rig not only modernizes it, but also improves its efficiency and stability. Short r.f. leads prevent stray currents. Convenient control is provided.



**EXCLUSIVE  
FEATURES  
of  
AMPERITE  
THERMOSTATIC  
DELAY  
RELAYS**

- Actuated by a heater.
- Operates on A.C., D.C., or Pulsating Current.
- Hermetically sealed, Amperite Relays are not affected by altitude, moisture or other atmospheric conditions.
- Compact, lightweight and inexpensive.

**TECHNICAL CHARACTERISTICS**

**CIRCUITS:** SPST only — Normally open or normally closed.

**HEATER WATTAGE:** 2 W prox. — Heaters can be operated continuously.

**CONTACT RATING:** 115 V - 3A A.C. (or 440 V - 1.5A A.C.); maximum voltage across contacts — 1000 V. Maximum voltage between contacts and heater — 1500 V.

**AMBIENT TEMPERATURES:** Relays are compensated for temperatures of  $-55^{\circ}$  to  $+70^{\circ}$  C.

**LIFE:** With 115 V - 3A A.C., non-inductive, at least 25,000 operations.

**BASE WIRING:** Heater — Prongs 2-3; Contacts — 5-7.

**LIST PRICE:** Standard types of relays — \$4.00 each.

**DELIVERY:** The types shown in bold type are most popular, and usually available from stock. Other types delivered in approximately 3 weeks.

Delay-Seconds	Tolerance-Seconds	NORMALLY OPEN CONTACTS						NORMALLY CLOSED CONTACTS					
		HEATER VOLTAGES						HEATER VOLTAGES					
		2.5 V.	5.0 V.	6.3 V.	12 V.	26 V. (22-30)	115 V.	2.5 V.	5.0 V.	6.3 V.	12 V.	26 V. (22-30)	115 V.
2	± 1	2N02	5N02	<b>6N02</b>	12N02	26N02	115N02	2C2	5C2	<b>6C2</b>	12C2	26C2	115C2
5	± 2	2N05	5N05	<b>6N05</b>	12N05	<b>26N05</b>	<b>115N05</b>	2C5	5C5	<b>6C5</b>	12C5	<b>26C5</b>	<b>115C5</b>
10	± 3	<b>2N010</b>	5N010	<b>6N010</b>	12N010	<b>26N010</b>	<b>115N010</b>	2C10	5C10	<b>6C10</b>	12C10	<b>26C10</b>	<b>115C10</b>
15	± 3	2N015	5N015	<b>6N015</b>	12N015	<b>26N015</b>	<b>115N015</b>	2C15	5C15	<b>6C15</b>	12C15	<b>26C15</b>	<b>115C15</b>
20	± 4	2N020	5N020	<b>6N020</b>	12N020	<b>26N020</b>	<b>115N020</b>	2C20	5C20	<b>6C20</b>	12C20	<b>26C20</b>	<b>115C20</b>
30	± 7	<b>2N030</b>	<b>5N030</b>	<b>6N030</b>	<b>12N030</b>	<b>26N030</b>	<b>115N030</b>	<b>2C30</b>	<b>5C30</b>	<b>6C30</b>	<b>12C30</b>	<b>26C30</b>	<b>115C30</b>
45	± 9	2N045	5N045	<b>6N045</b>	12N045	<b>26N045</b>	<b>115N045</b>	2C45	5C45	<b>6C45</b>	12C45	<b>26C45</b>	<b>115C45</b>
60	± 10	<b>2N060</b>	<b>5N060</b>	<b>6N060</b>	12N060	<b>26N060</b>	<b>115N060</b>	<b>2C60</b>	5C60	<b>6C60</b>	12C60	<b>26C60</b>	<b>115C60</b>
75	± 12	2N075	5N075	<b>6N075</b>	12N075	<b>26N075</b>	<b>115N075</b>	2C75	5C75	<b>6C75</b>	12C75	<b>26C75</b>	<b>115C75</b>
90	± 12	<b>2N090</b>	5N090	<b>6N090</b>	12N090	<b>26N090</b>	<b>115N090</b>	2C90	5C90	<b>6C90</b>	12C90	<b>26C90</b>	<b>115C90</b>
120	± 20	2N0120	5N0120	<b>6N0120</b>	12N0120	<b>26N0120</b>	<b>115N0120</b>	2C120	5C120	<b>6C120</b>	12C120	<b>26C120</b>	<b>115C120</b>

Flashers available only in low voltage heaters . . . . . 2.5, 5.0, 6.3 — 26 V.

Flash Rate available — pre-set at factory — 15 to 100 fpm. . . . . List — \$4.00 each





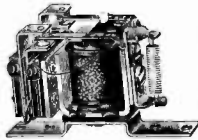
# RELAYS

## FOR AMATEUR AND INDUSTRIAL USES



### MINIATURE RELAYS

These units are very compact and are especially designed for plate circuit and general purpose control application. Overall dimensions: MR 1 7/8" x 1 1/4" x 7/8"—MRD 1 7/8" x 1 3/8" x 1 1/4". Contacts are fine silver rated 5 amps at 115 V. All AC relays are free from hum and AC chatter. The MR-2 and MRD-2 have 2500 ohm coil, will pick up at 6 ma. and 12 ma. respectively. The MR-5 and MRD-5 have 5000 ohm coils, will pick up at 3 ma. and 7.5 ma. respectively. The drop out value of these relays is approximately 50% of the pick up value.

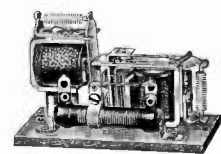


MRD

Type	A.C.	D.C.	Contacts	Net Prices
MR-2		Plate Circuit	SPDT	\$1.50
MR-5		Plate Circuit	SPDT	2.10
MR-6		6 V.	SPDT	1.50
MR-7			SPDT	1.59
MR-11	6 V.		SPDT	1.59
MRD-2	110 V.	Plate Circuit	DPDT	2.70
MRD-5		Plate Circuit	DPDT	3.60
MRD-6		6 V.	DPDT	2.70
MRD-7	6 V.		DPDT	3.00
MRD-11	110 V.		DPDT	3.00

### OVERLOAD RELAYS

Adjustable overload relays provide accurate and positive protection against current surges and continuous overloads. Contact arrangements SPDT using 3/16" fine silver contacts. This allows the use of either audible or visual signal to advise of overload. All models are of the electrical reset type which allows remote control resetting of the relay. Size—3 3/4" x 2" x 1 1/2".



Type	Current Range	Reset Coil	Net Prices
OA-2	250-500 ma.	110 V. A.C.	\$4.50
OA-5	500-1000 ma.	110 V. A.C.	4.50
OC-2	250-500 ma.	6 V. A.C.	4.50
OC-5	500-1000 ma.	6 V. A.C.	4.50
OD-2	250-500 ma.	6 V. D.C.	4.50
OD-5	500-1000 ma.	6 V. D.C.	4.50

### LATCHING RELAYS

These relays are employed where it is not desirable to have current continuously on the coil. The latching arrangement is such that when the relay coil is energized the armature closes and locks in a closed position by mechanical latching. An electrical impulse on the reset coil releases the armature from the latch and allows the relay to assume its initial position. 3/16" fine silver contacts. Bakelite Base. Size—3 3/4" x 2" x 3/4".



Type	Reset Coil	Pull-in Coil	Net Prices
LEA	110 Volts A.C.	110 Volts A.C.	\$3.75
LEA-6	6 Volts A.C.	6 Volts A.C.	3.75
LED	6 Volts D.C.	6 Volts D.C.	3.75

### COMMUNICATION RELAYS

Ideally suited for use in telephone, remote control, signaling, communications circuits etc. High speed operation plus high sensitivity with high contact pressure. Contacts will handle 4 amps at 115 V. non-inductive load. Each relay has one make and one break contact sets. Size—3 3/4" x 1 3/16" x 1 1/8".

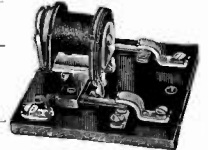


Type	Res. of Coil Ohms	Volts Pick-up	M.A. Pick-up	Net Prices
T10G	10,000	31	3.2	\$3.30
T63F	6,300	24	4.0	3.30
T40F	4,000	19	5.0	3.15
T10F	1,000	10	10.0	2.85
T25E	250	5	20.0	2.55

### ANTENNA CHANGE-OVER

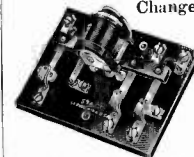
Mycalex Insulation is satisfactory for operation up to 60 MC. Triple-X insulation for operation up to 15 MC. All models use 3/16" fine silver wiping action contacts rated at 4 amps. These relays are designed with ball-bearing armature pivot and have large contact spacing to assure minimum capacity between contact arms. The armature is designed so as to eliminate AC chatter. Size—3 3/8" x 3 3/8" x 2 3/16".

Type	Insulation	Coil Voltage	Net Prices
ABA	TRIPLE-X	110 V. A.C.	\$3.00
ABD	TRIPLE-X	6 V. D.C.	3.00
AMA	MYCALEX	110 V. A.C.	4.00
AMD	MYCALEX	6 V. D.C.	4.00



### BREAK-IN RELAYS

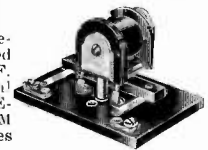
Same type of relay as above only two additional poles are added, one normally open, one normally closed. This arrangement is perfect for PUSH-TO-TALK relays. Contacts etc. identical with Antenna Change-Over Relay. Size—4 1/2" x 3 3/8" x 2 3/16".



Type	Insulation	Coil Voltage	Net Prices
BBA	TRIPLE-X	110 V. A.C.	\$4.20
BRD	TRIPLE-X	6 V. D.C.	4.20
BMA	MYCALEX	110 V. A.C.	6.00
BMD	MYCALEX	6 V. D.C.	6.00

### R.F. AND GENERAL PURPOSE RELAY

An excellent relay for R.F. or high voltage remote control. Contacts are 3/16" fine silver rated 4 amps. Designed with extremely short R.F. path, Ball-bearing armature pivot. All metal parts cadmium plated. RB Series are TRIPLE-X insulated for frequencies up to 15 MC. RM series are MYCALEX insulated for frequencies up to 60 MC. Size—2 1/4" x 3 3/8" x 2 3/16".



Type	Insulation	Contact Combination	Coil Voltage	Net Prices
RBA-1	TRIPLE-X	SPST (double-break)	110 V. A.C.	\$2.10
RBD-1	TRIPLE-X	SPST (double-break)	6 V. D.C.	2.10
RMA-1	MYCALEX	SPST (double-break)	110 V. A.C.	2.55
RMD-1	MYCALEX	SPST (double-break)	6 V. D.C.	2.55
RBA-2	TRIPLE-X	DPST (single-break)	110 V. A.C.	2.25
RBD-2	TRIPLE-X	DPST (single-break)	6 V. D.C.	2.25
RMA-2	MYCALEX	DPST (single-break)	110 V. A.C.	3.00
RMD-2	MYCALEX	DPST (single-break)	6 V. D.C.	3.00

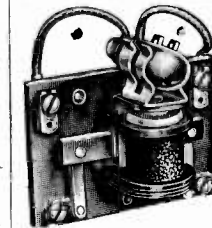
### KEYING RELAY

Same specifications as RB Series except that the coil and return spring are faster acting. Follows a "Bug" with ease.

Type	Coil Voltage	Contacts	Net Prices
KBA	110 V. A.C.	SPST (double-break)	\$2.10
KBD	6 V. D.C.	SPST (double-break)	2.10
KBA-6	6 V. A.C.	SPST (double-break)	2.10

### MERCURY-SWITCH RELAY

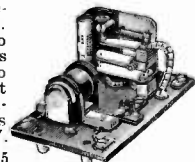
This type relay is used for controlling inductive loads and may be safely used in the presence of explosive dust, gas and vapor. This unit will safely handle a 1/4 H.P. motor or its equivalent. This single pole single throw mercury relay can easily be changed from normally open to normally closed by reversing the mercury tube in the clip. In addition this relay is equipped with SPST double break 3/16" fine silver contact sets which can be used to electrically lock this relay, or other applications. Mounts vertically with adjusting screws. Size—3 3/8" x 2 7/8" x 3 1/2".



Type	Coil Voltage	Net Prices
MSA	110 V. A.C.	\$3.75
MSA-6	6 V. A.C.	3.75
MSD-6	6 V. D.C.	3.75

### TIME-DELAY RELAY

Low cost Thermostatic Time delay relays designed for transmitting and industrial use. Prevents damage to tube filaments due to application of plate current before filaments are thoroughly heated. TD-11 is equipped so that it automatically compensates for ambient temperature changes. Time delay can be adjusted by means of screwdriver. Stock models are 110 V. A.C. Size—3 3/8" x 3 3/8" x 2 3/16". TD-11 (10-60 Sec.)—With compensator ..... Net \$4.75





## SPEED-X

SPEED-X keys, formerly made by Les Logan Co. of San Francisco, Calif., have attained a pre-eminent position as the leading complete line. Now manufactured by JOHNSON, their reputation will be maintained, and improved wherever possible.

### HIGH SPEED SEMI-AUTOMATIC KEYS

SPEED-X Semi-Automatic Keys are designed and constructed to rigid specifications and are approved by the experienced professional and amateur C. W. operators. They are fully adjustable from lowest to highest speeds. Manufactured in four distinctive and attractive models. Fully guaranteed against any defect in material or workmanship. Bases of all models drilled for stationary mounting.

**STANDARD MODEL 114-500.** New-Improved Standard Model Semi-Automatic Key mounted on extra heavy steel base  $3\frac{1}{2}$ " x  $6\frac{1}{4}$ " x  $\frac{1}{2}$ " finished in attractive wrinkle baked enamel. Mounted on four rubber feet to insure stationary position at all times. The finish will not scratch or chip and will last indefinitely. The frame is finished same as base and has five adjustments with lock nuts, assuring dependable operations at all speeds. Vibrator arm, posts, switch and all machine parts heavily plated in beautiful satin chromium. Complete with adjustable weight,  $\frac{1}{8}$ " pure silver contacts, circuit-closing switch and two paddles adjustable to any desired height. Net weight  $4\frac{1}{2}$  lbs.

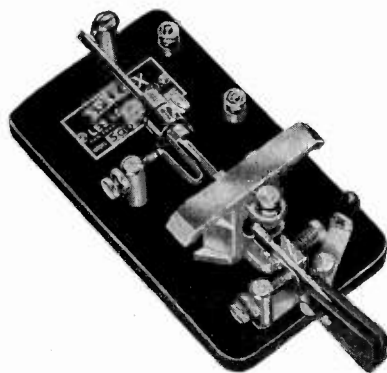
114-500..... List Price \$17.50

114-500-L (Left-handed model)..... List Price 19.50

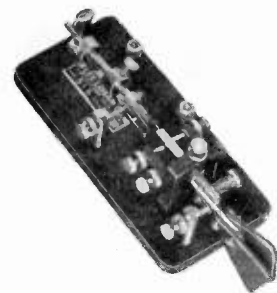
**MODEL 114-501.** Beautiful Chrome finish. Heavy steel base  $6\frac{1}{4}$ " x  $3\frac{1}{2}$ " x  $\frac{1}{2}$ " with four non-slip rubber feet. Heavy brass connector strips mounted under base. Heavy die cast frame with same finish as base and with five screws for sensitive adjustments. Vibrator is designed to obtain slowest and fastest speeds required by high speed operators. Pure silver  $\frac{1}{4}$ " contacts. Pigtail connections to vibrating arm. Perfectly aligned free acting vibrator bearings. Lock nuts on all adjustments. Paddles adjustable to any required height. All machine parts heavily chrome plated, which makes this the most outstanding semi-automatic key on the market. Furnished with circuit closing switch. Net weight  $4\frac{1}{2}$  lbs.

114-501..... List Price \$25.00

114-501-L (Left-handed model)..... List Price 27.50



Nos. 500, 501



114-515

**AMATEUR MODEL 114-515.** Baked Black Wrinkle Enamel Finished Steel Base  $6\frac{1}{4}$ " x  $3$ " x  $\frac{3}{8}$ " with four rubber feet to prevent slipping or tilting. Heavy Brass connector strips. Die Cast Frame finished same as base with adjustable trunion screws. Chromium brass Vibrator has main spring and U-spring made of clock spring for smooth snappy action. Adjustable weight. Two adjustable black fibre paddles. Two sets  $\frac{1}{8}$ " pure silver contacts. Lock nuts for every adjustment. Damping wheel, post screws, springs and terminals chrome plated. Packed in attractive carton. Net weight  $3\frac{1}{4}$  lbs.

114-515..... List Price \$12.50

114-515-L (Left-handed model)..... List Price 15.00

**JUNIOR MODEL 115-510.** Die Cast Base  $2\frac{3}{4}$ " x  $6$ " x  $\frac{3}{4}$ " finished in black wrinkle baked enamel concealing heavy brass connector strips. Frame is same finish as base and all other parts are chromium plated. Vibrator Arm same as Standard model with lots of pep. Adjustable from eight words per minute to as high a rate as desired. Pure silver  $\frac{1}{8}$ " contacts, adjustable weight and two adjustable paddles. Circuit closing switch mounted on base. Being small, compact and streamlined, this semi-automatic key is an outstanding value. A light-weight but sturdily built machine for clean-cut sending. Net weight  $2\frac{1}{2}$  lbs.

114-510..... List Price \$13.50

### REPLACEMENT PARTS

Cat. No.	Description	List Price	Cat. No.	Description	List Price
114-330	Adjustable Weight.....	\$0.25	114-352	Switch Knob.....	\$0.15
114-333	Self-locking Adj. Weight.....	.50	114-360	Black Navy Knob.....	.30
114-335	Key Spring.....	.10	114-361	$\frac{1}{2}$ " Chrome Screw.....	.10
114-336	Dash Spring.....	.10	114-362	$\frac{3}{4}$ " Chrome Screw.....	.13
114-337	Dot Spring.....	.10	114-363	1" Chrome Screw.....	.15
114-340	Set $\frac{1}{8}$ " Mounted Contacts.....	1.00	114-364	$\frac{1}{2}$ " Chrome Knurled Nut.....	.10
114-341	Set $\frac{1}{4}$ " Mounted Contacts.....	2.00	114-365	Chrome Terminal Nuts.....	.10
114-342	Key Mounds— $\frac{1}{8}$ " Contact.....	.40	114-370	Fibre Paddle.....	.25
114-345	(2) $\frac{1}{8}$ " Contacts.....	.20	114-375	Vibrator Arm Complete.....	3.00
114-346	(2) $\frac{1}{4}$ " Contacts.....	.50	114-376	Vibrator Arm Only.....	1.75
114-347	(4) .080 Contacts.....	.20	114-380	Plug for Hi-Speed Key.....	1.50
114-350	Black Key Knob.....	.20	114-390	$\frac{1}{8}$ " U Spring Contact.....	.60
114-351	Brown Key Knob.....	.20	114-391	$\frac{1}{4}$ " U Spring Contact.....	.75

#### 114-444 KIT

An assortment of the best selling parts for all makes of keys, selected from the above list, and packed in a beautiful display box..... List Price \$20.00



114-370



114-330



114-333



114-360



114-350



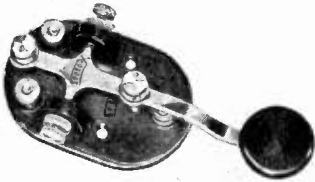
114-390



## SPEED-X

### MOULDED BAKELITE KEYS, BUZZERS, PRACTICE SETS

SPEED-X Moulded Bakelite and Metal Hand Keys, Practice Sets and Buzzers are used throughout the world as standard equipment in amateur and commercial work. Each unit is built according to rigid specifications and is fully guaranteed. All models have holes for stationary mounting. Code card supplied with each individually packed unit.



114-301

**AMATEUR KEY 114-301**—A general purpose key with moulded black bakelite base. Perfect insulation—adjustable smooth acting bearings—improved spring—nickel key arm—pigtail connections—no current on bearings— $\frac{1}{8}$ " pure silver contacts. Net Wt. 6 oz.

- 114-301 ..... List Price \$3.00
- 114-301-S—Same as Model 301 with circuit closing switch mounted on base..... List Price 3.50
- 114-301-SL with  $\frac{1}{4}$ " Contacts..... List Price 3.75

**PRACTICE KEY 114-300**—A well-built and inexpensive practice key for the beginner. Moulded Brown Bakelite base and knob. Spring bearings, perfect action, simple adjustments,  $\frac{1}{8}$ " pure silver contacts. All machine parts nickel plated. Standard Code card furnished. Net Wt. 5 oz.

- 114-300..... List Price \$1.75
- 114-300-L with  $\frac{1}{4}$ " Contacts..... List Price 2.00

**PRACTICE KEY 114-312**—Heavy die cast base finished in Gray Wrinkled Enamel. Smooth adjustable contacts.  $\frac{1}{8}$ " pure silver contacts. Has provision for plugging in our semi-automatic keys when desired. Net Wt. 9 oz.

- 114-312..... List Price \$3.25
- 114-312-S—Same as Model 114-312 with circuit closing switch mounted on base..... List Price 3.75
- 114-312-SL with  $\frac{1}{4}$ " Contacts..... List Price 4.00

**PRACTICE SET 114-450**—Consists of one constant frequency adjustable buzzer and a standard hand key with  $\frac{1}{8}$ " pure silver contacts mounted on a moulded brown bakelite light-weight base 6" x 4". Adjusting screws, key arm and all machine parts nickel plated. Light Spring for perfect keying. A complete sending and receiving set. Three hook-up diagrams on carton show how this Practice Set may be used singly for code practice and in pairs for point to point communications. Standard Code Card included. Net Wt. 12 oz.

- 114-450..... List Price \$4.50

**CONSTANT FREQUENCY BUZZER 114-400**—Moulded Black Bakelite Base and Cap eliminates insulation problems. Large pure silver contacts—precision parts hold adjustments. Additional adjustment on vibrator. Resistance 2 ohms. Operates on two dry cells or one "C" battery. A high quality buzzer for all purposes. Net Wt. 3 oz.

- 114-400..... List Price \$2.00

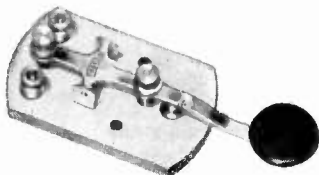


114-450



114-400

### HEAVY DUTY METAL HAND KEYS



114-300, 114-305, 114-306

**METAL HAND KEY 114-305**—An inexpensive metal base key with black wrinkled enamel finish. Smooth acting spring bearings and adjustable key arm spring. Key arm and all machine parts bright nickel finish.  $\frac{1}{8}$ " pure silver contacts. Net Wt. 10 oz.

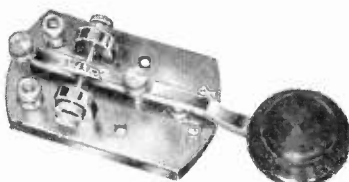
- 114-305 ..... List Price \$1.90
- 114-306—Same as Model 114-305 with Baked Wrinkle Brass finished base..... List Price 1.90



114-310, 114-311, 114-316

**STANDARD KEY 114-310**—Heavy die cast base finished in black wrinkled enamel. Smooth adjustable bearings.  $\frac{1}{8}$ " pure silver contacts. Has provisions for plugging in our semi-automatic keys when desired. Net Wt. 9 oz.

- 114-310 ..... List Price \$3.25
- 114-311—Same as 114-310 with Chromium finish base and parts..... List Price 4.00
- 114-316—Same as 114-310 with Baked Wrinkle Enamel Brass finish base..... List Price 3.25
- 114-316-L with  $\frac{1}{4}$ " Contacts..... List Price 3.50



114-320, 114-321, 114-326

**STANDARD KEY 114-310-S**—Same specifications as Standard model key 114-310 with circuit closing switch mounted on base.  $\frac{1}{8}$ " pure silver contacts. An attractive high-quality key. Net Wt. 10 oz.

- 114-310-S ..... List Price \$3.75
- 114-311-S—Same as 114-311 with circuit closing switch mounted on base..... List Price 4.50
- 114-316-S—Same as 114-316 with circuit closing switch mounted on base..... List Price 3.75

**HEAVY DUTY KEY 114-320**—Black wrinkle enameled extra heavy Die Cast Base. Large sturdy chromium plated key arm with adjustable steel bearings. Heavy brass connector strip concealed under base. Well insulated for heavy duty work. Improved Navy Type Knob and  $\frac{1}{4}$ " pure silver contacts. Net Weight 12 oz.

- 114-320..... List Price \$4.25
- 114-321—Chromium Base..... List Price 5.00

**HEAVY DUTY KEY 114-326**—Same specifications as Heavy Duty Model 114-320 but base finished in a beautiful Lacquered BRASS finish. Arm and machine parts chromium plated. Well designed spring gives this model a light keying touch. Navy Type Knob and  $\frac{1}{4}$ " pure silver contacts. Net Wt. 12 oz.

- 114-326..... List Price \$4.25

# The Vibroplex

**A SEMI-AUTOMATIC TELEGRAPH AND WIRELESS TRANSMITTING MACHINE**

**Embodying the latest exclusive features**



Prominent features which have been contributed to the success of the Vibroplex are:

- Simplicity • Durability
- Perfect control • Easy adjustment
- Strong carrier • Ease of manipulation
- Adaptability to changing wire conditions
- Ability to transmit perfect Morse and Continental signals at high speed

These features, which are found only in the genuine Vibroplex models illustrated on these pages, make for clear, rapid, easy transmission; relieve the arm of strain caused by sending on the ordinary key; rest

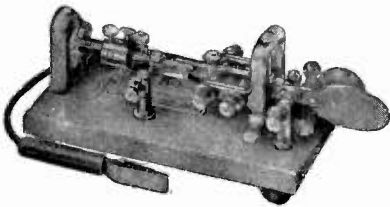
and strengthen the overworked muscles, and prevent telegrapher's paralysis.

### CLEAR, RAPID SENDING MADE EASY

The Vibroplex transmits the same grade of Morse and Continental code as the strongest clearest hand sender, faster than is possible on the ordinary key, and with less than half the labor.

There is no tensing of the muscles, no nerve strain, no pounding on the key in order to make clear, rapid signals. You simply press the lever—the machine does the rest.

## New SUPER DE LUXE "PRESENTATION" VIBROPLEX



Your name engraved on base, \$1.50  
Additional engraving, 15c per letter

The Finest Bug Ever Built! 24K Gold-Plated Base Top, Patented Jewel Movement and Super-Speed Control! New patented adjustable main spring affords wider range of speed than ever obtained before in semi-automatic transmitting key. Beautifully-designed with polished chromium machine parts mounted on a 24K gold-plated base top, colorful red switch knob, finger and thumb piece and precision-machined. This new Super-DeLuxe "Presentation" Vibroplex key at \$27.50 affords a life-time of sending enjoyment. Harder than metal, the jewels in this key reduce friction, maintain smoother, easier operation and prolong life.

Amateur Net Price ..... **\$27.50**

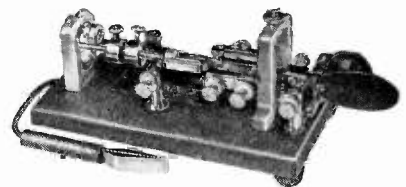
## THE Improved "ORIGINAL" VIBROPLEX

Suitable for All Classes of Transmitting work Where Speed and Perfect Morse Are Prime Essentials

This great new Vibroplex is a smooth and easy working BUG. It has won fame on land and sea for its clarity, precision and ease of manipulation. Can be slowed down to 10 words per minute or less or geared to as high rate of speed as desired. Maintains the same high quality signal at whatever speed, insuring easy reception under all conditions.

### SPECIFICATIONS

The improved model, single lever. Two pairs of contact points: one for dots, the other for dashes. Weight, 3 lbs. 8 oz. A handsome and efficient transmitting machine, with unlimited sending possibilities. Complete with cord and wedge.



Standard—Polished Chromium top parts, black base. Amateur Net Price..... **\$15.95**

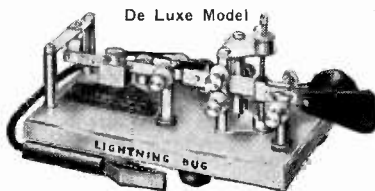
DeLuxe—Polished Chromium base and top parts, with jeweled movement. Amateur Net Price ..... **19.50**

## THE "LIGHTNING BUG" VIBROPLEX

**High Quality Signals at All Speeds**

### SPECIFICATIONS

Single lever, with improved flat pendulum, instantly adjustable dot contact spring, circuit breaker parallel with pendulum. Two pairs of contact points, one for dots, the other for dashes. Complete with cord and wedge. Weight 3 lbs. 8 oz.



Standard—Polished Chromium top parts, black base. Amateur Net Price ..... **\$13.95**

DeLuxe—Polished Chromium base and top parts, with jeweled movement. Amateur Net Price ..... **17.50**

The

# Vibroplex



Telegraph & Wireless  
Transmitting Machines

## THE "ZEPHYR" VIBROPLEX

A Genuine Vibroplex. Slightly Lighter in Weight.  
Having Plenty of "Pep" and "Power"

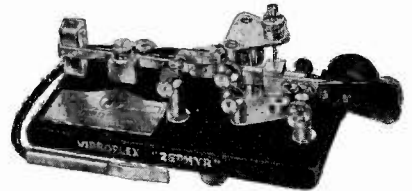
Smaller and more compact but designed in most details the same as the "Lightning Bug" model. Planned to meet the demand for a low priced, efficient and high speed transmitter for telegraph use.

### SPECIFICATIONS

Single lever with standard size contact points. Mounted on slightly smaller base. Weight 3 lbs. 2 oz. Equipped with circuit closer, cord and wedge. Standard finish only. Chromium finished top parts, with black crystal base.

Amateur Net Price .....

**\$12.50**



## THE "CHAMPION" VIBROPLEX

*For Radio Use Only*

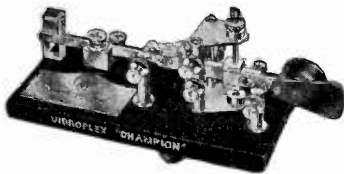
The new "Champion" is an inexpensive transmitter having exceptional sending qualities . . . clarity . . . speed . . . sending ease, which will appeal alike to amateur and professional radio operators. Designed to meet the demand for a low priced Vibroplex in the radio field.

### SPECIFICATIONS

Single lever with two pairs of contact points. Mounted on large standard size base. Weight 3 lbs. 8 oz. Without circuit closer, cord and wedge. Standard finish only. Chromium finished top parts, with black crystal base.

Amateur Net Price .....

**\$9.95**



Designed to Fulfill the Demand for  
a Low Priced Radio Transmitter

## THE "BLUE RACER" VIBROPLEX

Small and compact, the "Blue Racer" Vibroplex can be carried around and never be in the way. Embodies the same sending possibilities, the same carrying qualities, the same strength and durability as the larger models. Built especially to meet the demand of telegraphers requiring a small, lightweight and efficient sending machine.

### SPECIFICATIONS

Single Lever. Two pairs of contact points—one for dots, the other for dashes. Weight, 2 lbs. 8 ozs. Complete with cord and wedge.

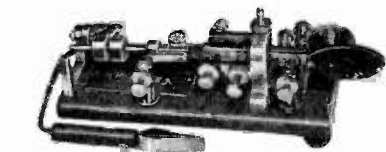
Standard—Polished Chromium top parts, black base . . .

Amateur Net Price .....

**\$15.95**

DeLuxe—Polished Chromium base and top parts, with jeweled movement. Amateur Net Price .....

**19.50**



Very similar to the Original Vibroplex except that it is only half the size. Suitable for all classes of telegraph work and in high favor with wireless men.

## VIBROPLEX CARRYING CASE

Keeps the Machine Free from Dust, Dirt and Moisture  
Insures Safe-keeping When Not in Use



A cloth-lined case, finished in handsome simulated black morocco. Corners are reinforced, adding to its durability and attractiveness. A flexible leather handle makes it more convenient to carry. Has lock and key.

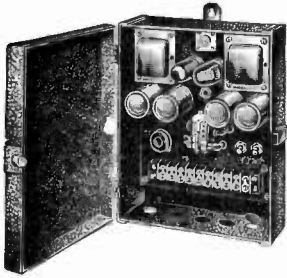
PRICE .....

**\$5.50**

The JEWELS used in the DeLuxe Model Vibroplexes are the same as placed in the world's finest precision made watches and instruments.

A JEWEL bearing main lever insures a "LIFETIME" of service and an ease of operation that can only be referred to as "FEATHER-TOUCH" sending.

**MODEL 63 MASTER AMPLIFIER**



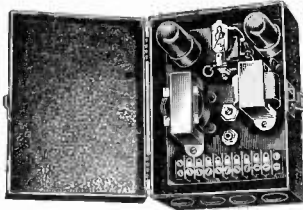
Model 63 Amplifier is especially designed for use with a correct combination of standardized Worner Photo-Cell and Light Source units. However, this Amplifier will operate also from Light Source units, such as daylight, artificial lights, radiant energy from metallic processing, etc.

Model 63 Amplifier is a specially engineered, highest quality unit. It enjoys wide preference as it efficiently meets 95 per cent of industrial requirements and replaces the need of costly individually engineered equipment. Technical details on request.

Model 63 Master Amplifier.....each \$85.00

**MODEL 64 ECONOMY AMPLIFIER**

This Amplifier is an economical unit for practically any industrial application where economy is a factor or requires a light beam distance of not more than 50 feet or where the Relay is not required to operate in excess of 250 times a minute. Can be furnished for greater distances or speed, technical details furnished on request.



Model 64 Economy Amplifier.....each \$56.00

**MODEL 62 R & L  
AMPLIFIER AND LIGHT SOURCE SET**



Model 62-R Amplifier



Model 62-L Light Source

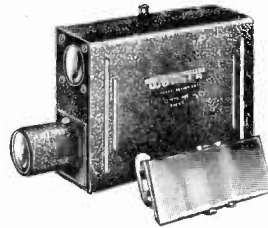
This "two-unit" set has specially designed Light Source unit and an Amplifier unit that includes the Photo-Cell Receiver, Relay and other electrical controls. This combination has proved efficient for countless simple applications for distances from a few inches to 75 feet or where Relay is not required to operate in excess of 300 times a minute.

The "two-unit" set will supervise efficiently on a simple application, such as: Counting or sorting large objects; limit switches; start and stop operations; light density; fire protection; flame control; opening doors, etc.

Model 62 R & L "Two-Unit Set".....per set \$70.00  
Model 62-R Amplifier only.....each 58.00  
Model 62-L Light Source only.....each 18.00

**FOTOLECTRIC ANNOUNCER**

Automatically Announces the Entrance or Passing of Any Object



Model 61-A

The Fotoelectric Announcer unit is designed to project a "beam of light" across any entrance to any room, building or premises. The breaking of this light beam by any person entering will activate a chime or other sound to automatically announce the entrant.

Can serve countless purposes and solve most entrance problems efficiently.

Model 61 Fotoelectric Announcer includes Light Source and sensitive Photo-Cell units in one compact metal case, finished in black crackle lacquer. Size, 10 3/4 x 7 1/2 x 2 3/4 inches.

Model 61 Announcer with Chime.....each \$31.25

Model 61-A Fotoelectric Announcer, the same unit as described above except that it is equipped with an optical system to arrest unwanted light.

Model 61-A Announcer with Chime.....each \$34.25

**LIGHT SOURCE UNITS AND  
PHOTO-CELL RECEIVER UNITS**



Model 33



Model 23



Model 31



Model 21

The Light Source unit is designed to project the light beam and the Photo-Cell Receiver is designed to pick up the beam and convert its light into electrical energy through the Amplifier unit.

Model 33 Light Source is "standard" for general applications and is most generally recommended. Its light beam covers a distance from a few inches to 50 feet from Light Source to Receiver. Heavy duty, cast iron unit with 1/2-inch conduit fittings. Gray finish.

Model 23 Photo-Cell Receiver is engineered for use with Model 33 Light Source and has the same case specifications.

For use in damp surroundings, Models 33 and 23 can be made water-proof at slight additional cost.

Model 31 Light Source is "standard" where a lighter weight case is practical. Its light beam covers a distance from a few inches to 25 feet from Light Source to Photo-Cell Receiver. Case is 18 gauge steel, gray crackle finish. Has 1/2-inch knockout.

Model 21 Photo-Cell Receiver is engineered for use with Model 31 Light Source and has the same case specifications.

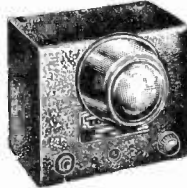
Model No.	Description	Size, Inches	Price, Each
33	Light Source Housing	4 1/4 x 2 3/4 x 2 3/4	\$11.00
23	Photo-Cell Receiver	4 1/4 x 2 3/4 x 2 3/4	16.00
31	Light Source Housing	6 5/8 x 2 x 1 1/4	9.00
21	Photo-Cell Receiver	6 5/8 x 2 x 1 1/4	14.00



**MODEL 9000 SERIES**  
**FOTOLECTRIC BURGLAR ALARM SYSTEM**



Amplifier Model 9100-R



Amplifier Model 9150-R

This series consists of One Master Control Panel operating with one or more (up to 4) Fotoelectric Light Source and Amplifier sets. The combination may be used with traps, foil systems and other equipment as used by professional burglar alarm companies, to operate audible or visible alarms.

Any interruption of the light beam operates whatever alarms the user wishes to install. The complete alarm circuit is supervised by the Master Control Panel which is remotely located for operator's convenience.

All Model 9000 series Amplifiers contain the following: Heavy duty transformers 110-120-volt, 50 to 60 cycle, A.C. with dual secondary. Potentiometer type sensitivity control. Meter Jack to determine correct cut-off and plate current in Relay circuit. Electrolytic condensers. Double pole, double throw 5-amp. relay.

Constructed of 18-gauge steel, welded, gray wrinkle finish. Size: 7 x 6 1/4 x 4 1/4 inches. (Not weatherproof.)

Model No.	Description	Range per Set	Price, Each
9100	Master Trespass Trap.....	100 ft.	\$70.00
9150	Master Trespass Trap.....	150 ft.	90.00
9250	Master Trespass Trap.....	250 ft.	130.00
9500	Master Trespass Trap.....	500 ft.	225.00



Model 9000 Control Panel, \$45.00 list, supplied with plate relays equal to the 9000 series Amplifiers ordered. If 9000 series Amplifiers are ordered without Control Panel, plate relay is supplied with Amplifiers to be mounted in Control Panel.

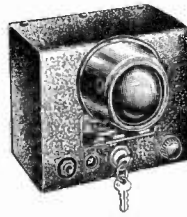
**MODEL 7000 SERIES**  
**FOTOLECTRIC BURGLAR ALARM SYSTEM**

The Model 7000 series operates in conjunction with professional independent burglar alarm company's central office or local equipment.

The 7000 series Amplifiers are complete with the following scientifically engineered equipment: Tubes. Lenses. Heavy duty shielded Amplifier transformer 110-120 volt, 50-60 cycle, A.C. with dual secondary. Potentiometer sensitivity control. Meter Jack to determine correct cut-off and plate current in relay circuit. Electrolytic condensers. Single-pole, double-throw relay, self-wiping contacts rated at 5 amp. non-inductive at 110-120 volts, 50 to 60 cycle.

Model No.	Description	Range per Set	Price, Each
7100	Remote Cont. Trespass Trap	100 ft.	\$70.00
7150	Remote Cont. Trespass Trap	150 ft.	90.00
7250	Remote Cont. Trespass Trap	250 ft.	130.00
7500	Remote Cont. Trespass Trap	500 ft.	225.00

**MODEL 5000 SERIES**  
**FOTOLECTRIC BURGLAR ALARM SYSTEM**



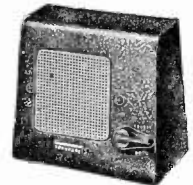
Model 5000 series consists of a Light Source unit and an Amplifier unit. This combination is designed for interior use where a single beam is considered ample protection; it is not intended for use with protective devices such as foil systems, etc. Furnished for 110 volts. Amplifier Model 5150-R (illustrated) is equipped with a scientifically engineered "unwanted light rejector," which materially increases the day-light range of the unit and makes it equal to the night-time range, if equipment is installed so that 90 per cent of the light reaching the Photo-Cell is that guaranteed by the Light Source.

Model No.	Description	Range	Price, Each
5100	Single Beam Trespass Trap	100 ft.	\$75.00
5150	Single Beam Trespass Trap	150 ft.	95.00

**WORNER**  
**COMMUNICATING SYSTEMS**



Models P-359, P-353



Model P-360

All WORNER units operate efficiently as far as 2000 feet unit. Persons at or near Sub-stations when called may answer without leaving their work, from as far away as 25 feet. "Silent feature" shuts out noise in vicinity at Station. 110 volt to 120 volt, A.C. or D.C. Units are shipped complete with wiring diagrams and instructions for easy installation.

Model P-359 Selective Master Station. Handles 1 to 5 Sub-stations. Has 3-tube amplifier. 1 watt output. Contains 5-inch speaker for maximum input without talking directly into unit. In substantial all-metal cabinet; size: 9 x 6 1/4 x 6 inches. Finished in hammered walnut lacquer finish. Complete with tubes and instructions..... each \$34.75

Model P-353 Combination Master Station. 2 to 5 units may be used, in any combination of Masters to Masters, or Masters to Sub-stations. Contains 3-tube amplifier. Complete with tubes and instructions..... each \$47.50

Model P-360 Sub-station. Has 5-inch speaker. Talk-listen switch used by Sub to originate call; not used after Master answers. In substantial all-metal cabinet as illustrated; size: 7 1/4 x 4 x 6 inches; finished in attractive hammered walnut lacquer finish.  
each \$11.50

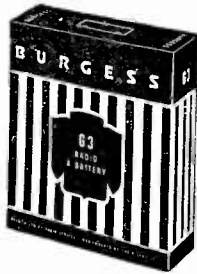
# BURGESS BATTERIES



4F



2R



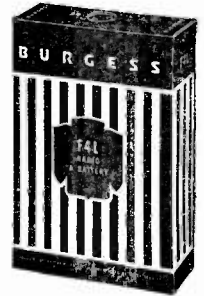
G3



F4PI



T5



F4L

## BURGESS PORTABLE "A" BATTERIES

No. 2F.	1½ volts.	Size, 2½" x 1⅞" x 4⅞".	Standard package 6.....	List price, \$ .56
No. 2F4.	6 volts.	Size, 3½" x 2¼" x 5⅞".	Standard package 6.....	List price, 1.75
No. 2F4L.	6 volts.	Size, 3½" x 1⅞" x 10½".	Standard package 6.....	List price, 1.85
No. 2R.	1½ volts.	Size, 2⅞" x 1⅞" diameter.	Standard package 12.....	List price, .10
No. 4F.	1½ volts.	Size, 2⅞" x 2⅞" x 4½".	Standard package 12.....	List price, .95
No. 4FL.	1½ volts.	Size, 3½" x 1⅞" x 5½".	Standard package 10.....	List price, .90
No. 6F.	1½ volts.	Size, 4½" x 2½" x 4".	Standard package 6.....	List price, 1.30
No. 8F.	1½ volts.	Size, 3½" x 2½" x 5⅞".	Standard package 6.....	List price, 1.65
No. 8FL.	1½ volts.	Size, 3½" x 1½" x 10½".	Standard package 6.....	List price, 1.75
No. F4L.	6 volts.	Size, 3⅞" x 1⅞" x 5⅞".	Standard package 6.....	List price, .90
No. F4PI.	6 volts.	Size, 2½" x 2½" x 4⅞".	Standard package 12.....	List price, .94
No. F4PIX.	6 volts.	Size, 2½" x 2½" x 4⅞".	Standard package 6.....	List price, 1.87
No. FX.	1½ volts.	Size, 1⅞" diameter x 3½".	Standard package 6.....	List price, .46
No. G3.	4½ volts.	Size, 4" x 1⅞" x 4⅞".	Standard package 12.....	List price, .75
No. G5.	7½ volts.	Size, 3⅞" x 2¼" x 4⅞".	Standard package 10.....	List price, 1.10
No. T5.	7½ volts.	Size, 2½" x 2⅞" x 3⅞".	Standard package 6.....	List price, 1.25
No. C5.	7½ volts.	Size, 2⅞" x 1½" x 3".	Standard package 6.....	List price, .95
No. B5.	7½ volts.	Size, 3⅞" x 3⅞" x 2½".	Standard package 10.....	List price, .95
No. F3.	4½ volts.	Size, 3½" x 1⅞" x 4½".	Standard package 6.....	List price, .75
No. Z4.	6 volts.	Size, 1½" x 1½" x 2⅞".	Standard package 24.....	List price, .50



A30



B30



M30



XX45



XX30

## BURGESS PORTABLE "B" BATTERIES

No. A30.	45 volts.	Size, 3½" x 2⅞" x 4⅞".	Standard package 6.....	List price, \$2.15
No. A30M.	45 volts.	Size, 4½" x 3½" x 2½".	Standard package 6.....	List price, 3.50
No. A60.	90 volts.	Size, 4⅞" x 3⅞" x 4⅞".	Standard package 6.....	List price, 4.35
No. B30.	45 volts.	Size, 4⅞" x 2½" x 5⅞".	Standard package 12.....	List price, 2.35
No. M30.	45 volts.	Size, 3½" x 1½" x 5⅞".	Standard package 12.....	List price, 2.00
No. W20PI.	30 volts.	Size, 1½" x 1½" x 3⅞".	Standard package 6.....	List price, 2.00
No. W30PI.	45 volts.	Size, 2½" x 1⅞" x 3⅞".	Standard package 6.....	List price, 2.05
No. XX30.	45 volts.	Size, 2½" x 1½" x 3½".	Standard package 12.....	List price, 1.65
No. XX45.	67½ volts.	Size, 2½" x 1⅞" x 3¼".	Standard package 12.....	List price, 2.25
No. Z30.	45 volts.	Size, 2½" x 2¼" x 4½".	Standard package 6.....	List price, 2.50
No. Z59.	88½ volts.	Size, 3⅞" x 2¼" x 5⅞".	Standard package 6.....	List price, 3.70
No. N60.	90 volts.	Size, 3½" x 1¼" x 3½".	Standard package 6.....	List price, 2.95
No. K45.	67½ volts.	Size, 2½" x 1½" x 2½".	Standard package 12.....	List price, 2.25

A QUALITY DRY BATTERY FOR EVERY PURPOSE

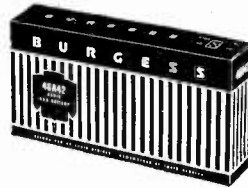
SUBJECT TO TRADE DISCOUNT

M.

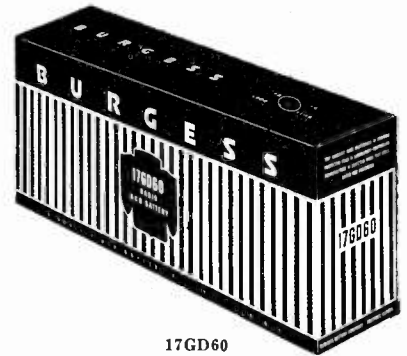
# BURGESS BATTERIES



G6B60



4GA42



17GD60



6TA60



5DA60



F6A60



F4B60

## BURGESS FARM "A & B" BATTERIES

No. 17GD60. 1½ volt "A", 90 volt "B". Size, 15<sup>5</sup>/<sub>8</sub>" x 4<sup>7</sup>/<sub>8</sub>" x 7". Standard package 1.

List price, \$5.95

No. 18GD60. 1½ volt "A", 90 volt "B". Size, 5<sup>5</sup>/<sub>8</sub>" x 6<sup>3</sup>/<sub>4</sub>" x 12<sup>7</sup>/<sub>8</sub>". Standard package 1.

List price, \$7.95

No. 398. 6 volt "A", 90 volt "B". Size, 8<sup>1</sup>/<sub>2</sub>" x 4<sup>5</sup>/<sub>8</sub>" x 14". Standard package 1.

List price, \$12.35

No. 3G6D60. 9 volt "A", 90 volt "B". Size, 8<sup>1</sup>/<sub>2</sub>" x 4<sup>5</sup>/<sub>8</sub>" x 14". Standard package 1.

List price, \$7.95

No. 739. 7½ volt "A", 90 volt "B". Size, 8<sup>1</sup>/<sub>2</sub>" x 4<sup>5</sup>/<sub>8</sub>" x 14". Standard package 1.

List price, \$13.60

## BURGESS PORTABLE "A" & "B" BATTERIES

No.	Voltage	Size	List Price
2F4A60.	6A, 90B	12" x 2 <sup>3</sup> / <sub>4</sub> " x 4 <sup>3</sup> / <sub>8</sub> "	\$5.95
2F4B60.	6A, 90B	10 <sup>5</sup> / <sub>8</sub> " x 3 <sup>3</sup> / <sub>8</sub> " x 4 <sup>3</sup> / <sub>8</sub> "	6.55
2TXX40.	1½A, 60B	2 <sup>3</sup> / <sub>8</sub> " x 1 <sup>1</sup> / <sub>8</sub> " x 7 <sup>1</sup> / <sub>8</sub> "	3.00
3FA60.	1½A, 90B	4 <sup>3</sup> / <sub>2</sub> " x 2 <sup>1</sup> / <sub>2</sub> " x 10 <sup>3</sup> / <sub>4</sub> "	7.05
4FA60.	1½A, 90B	7" x 3 <sup>1</sup> / <sub>2</sub> " x 4 <sup>1</sup> / <sub>4</sub> "	5.95
4GA41.	1½A, 61½B	9 <sup>1</sup> / <sub>8</sub> " x 2 <sup>1</sup> / <sub>8</sub> " x 3 <sup>1</sup> / <sub>8</sub> "	4.15
4GA42.	1½A, 63B	9" x 2 <sup>7</sup> / <sub>8</sub> " x 4 <sup>1</sup> / <sub>8</sub> "	4.15
4TA60.	1½A, 90B	8 <sup>1</sup> / <sub>8</sub> " x 2 <sup>1</sup> / <sub>2</sub> " x 4 <sup>3</sup> / <sub>2</sub> "	5.25
5DA60.	1½A, 90B	5 <sup>1</sup> / <sub>8</sub> " x 2 <sup>7</sup> / <sub>8</sub> " x 6 <sup>1</sup> / <sub>8</sub> "	4.95
6FA60.	1½A, 90B	11 <sup>1</sup> / <sub>8</sub> " x 1 <sup>5</sup> / <sub>8</sub> " x 6 <sup>3</sup> / <sub>2</sub> "	4.95
6TA60.	1½A, 90B	9 <sup>1</sup> / <sub>8</sub> " x 2 <sup>3</sup> / <sub>2</sub> " x 4 <sup>3</sup> / <sub>2</sub> "	5.50
D4A60.	6A, 90B	5 <sup>1</sup> / <sub>2</sub> " x 2 <sup>3</sup> / <sub>4</sub> " x 6 <sup>1</sup> / <sub>8</sub> "	6.35
D5A60.	7½A, 90B	9 <sup>1</sup> / <sub>8</sub> " x 2 <sup>3</sup> / <sub>2</sub> " x 4 <sup>3</sup> / <sub>2</sub> "	6.35
F4A41.	6A, 61½B	9 <sup>7</sup> / <sub>8</sub> " x 2 <sup>1</sup> / <sub>4</sub> " x 4 <sup>3</sup> / <sub>2</sub> "	4.75
F4A50.	6A, 75B	9 <sup>1</sup> / <sub>8</sub> " x 2 <sup>1</sup> / <sub>8</sub> " x 3 <sup>5</sup> / <sub>8</sub> "	4.50
F4B60.	6A, 90B	10 <sup>3</sup> / <sub>4</sub> " x 2 <sup>1</sup> / <sub>8</sub> " x 4 <sup>3</sup> / <sub>2</sub> "	4.95
F5M45.	7½A, 67½B	9 <sup>3</sup> / <sub>2</sub> " x 2 <sup>5</sup> / <sub>8</sub> " x 4 <sup>1</sup> / <sub>8</sub> "	4.50
F6A60.	9A, 90B	9 <sup>1</sup> / <sub>4</sub> " x 2 <sup>3</sup> / <sub>4</sub> " x 4 <sup>7</sup> / <sub>8</sub> "	4.95
G4B50.	6A, 75B	12 <sup>3</sup> / <sub>8</sub> " x 2 <sup>1</sup> / <sub>8</sub> " x 4 <sup>1</sup> / <sub>8</sub> "	4.95
G4B60.	6A, 90B	10 <sup>3</sup> / <sub>4</sub> " x 2 <sup>3</sup> / <sub>2</sub> " x 5"	5.50
G5A42.	7½A, 63B	9 <sup>1</sup> / <sub>8</sub> " x 2 <sup>3</sup> / <sub>4</sub> " x 4 <sup>3</sup> / <sub>2</sub> "	4.20
T5Z60.	7½A, 90B	9 <sup>1</sup> / <sub>2</sub> " x 2 <sup>1</sup> / <sub>8</sub> " x 3 <sup>3</sup> / <sub>4</sub> "	5.50
G6B60.	9A, 90B	13 <sup>7</sup> / <sub>8</sub> " x 2 <sup>3</sup> / <sub>2</sub> " x 4 <sup>5</sup> / <sub>8</sub> "	5.50
G6M60.	9A, 90B	10 <sup>3</sup> / <sub>8</sub> " x 3 <sup>1</sup> / <sub>8</sub> " x 4 <sup>3</sup> / <sub>2</sub> "	5.50
T5Z50.	7½A, 75B	8 <sup>7</sup> / <sub>8</sub> " x 3 <sup>1</sup> / <sub>2</sub> " x 2 <sup>1</sup> / <sub>2</sub> "	4.50
F6A60P.	9A, 90B	9 <sup>3</sup> / <sub>8</sub> " x 2 <sup>3</sup> / <sub>2</sub> " x 4 <sup>7</sup> / <sub>8</sub> "	5.25

A QUALITY DRY BATTERY FOR EVERY PURPOSE

# BURGESS BATTERIES



5308



5540



2370



10308



2308

## BURGESS RADIO "B" BATTERIES

- No. 10308. 45 volts. Size, 8 $\frac{3}{8}$ " x 4 $\frac{3}{8}$ " x 7 $\frac{1}{8}$ ". Standard package 6..... List price, \$3.96
- No. 21308. 45 volts. Size, 8 $\frac{3}{8}$ " x 4 $\frac{3}{8}$ " x 7 $\frac{1}{8}$ ". Standard package 6..... List price, 4.15
- No. 2308. 45 volts. Size, 8 $\frac{3}{8}$ " x 2 $\frac{3}{8}$ " x 7 $\frac{1}{8}$ ". Standard package 6..... List price, 2.88
- No. 5156. 22 $\frac{1}{2}$  volts. Size, 4 $\frac{3}{8}$ " x 2 $\frac{7}{8}$ " x 2 $\frac{3}{8}$ " x 3 $\frac{1}{4}$ ". Standard package 10..... List price, 1.80
- No. 5308. 45 volts. Size, 4" x 2 $\frac{3}{8}$ " x 5 $\frac{1}{8}$ " x 5 $\frac{1}{8}$ ". Standard package 10..... List price, 2.15

## BURGESS RADIO "B" & "C" BATTERIES

- No. 2156. 22 $\frac{1}{2}$  volts. Size, 6 $\frac{3}{8}$ " x 4 $\frac{1}{8}$ " x 2 $\frac{3}{8}$ " x 3 $\frac{1}{8}$ ". Standard package 6..... List price, 1.63
- No. 2370. 4 $\frac{1}{2}$  volts. Size, 4 $\frac{3}{8}$ " x 1 $\frac{1}{8}$ " x 2 $\frac{1}{8}$ " x 3 $\frac{1}{8}$ ". Standard package 10. List price, .81
- No. 4156. 22 $\frac{1}{2}$  volts. Size, 3 $\frac{1}{8}$ " x 2 $\frac{1}{8}$ " x 2 $\frac{3}{8}$ " x 2 $\frac{7}{8}$ ". Standard package 10. List price, 1.80
- No. 5360. 4 $\frac{1}{2}$  volts. Size, 2 $\frac{3}{8}$ " x  $\frac{3}{8}$ " x 2 $\frac{3}{8}$ " x 2 $\frac{1}{8}$ ". Standard package 10..... List price, .50
- No. 5540. 7 $\frac{1}{2}$  volts. Size, 3 $\frac{3}{8}$ " x  $\frac{3}{8}$ " x 2 $\frac{1}{8}$ " x 3 $\frac{1}{8}$ ". Standard package 10..... List price, .95

## BURGESS FARM RADIO "A" BATTERIES

- No. 12F3. 4 $\frac{1}{2}$  volts. Size, 10 $\frac{3}{8}$ " x 3 $\frac{3}{8}$ " x 6 $\frac{1}{8}$ ". Standard package 1..... List price, 5.04
- No. 20F. 1 $\frac{1}{2}$  volts. Size, 7 $\frac{5}{8}$ " x 2 $\frac{3}{8}$ " x 6 $\frac{1}{8}$ ". Standard package 6..... List price, 3.95
- No. 29F2. 3 volts. Size, 11 $\frac{3}{8}$ " x 3 $\frac{1}{8}$ " x 6 $\frac{1}{8}$ ". Standard package 1..... List price, 5.52

## BURGESS HEARING AID BATTERIES

### "A" BATTERIES FOR VACUUM TUBE HEARING AIDS

- No. 1ES. 1 $\frac{1}{2}$  volts. Size, 1" x 1 $\frac{1}{8}$ ". Standard package 10..... List price, \$ .10
- No. 2ES. 1 $\frac{1}{2}$  volts. Size, 1 $\frac{1}{8}$ " x 2 $\frac{1}{8}$ ". Standard package 12..... List price, .10
- No. 2ZE. 1 $\frac{1}{2}$  volts. Size, 1 $\frac{1}{8}$ " x  $\frac{1}{8}$ " x 1 $\frac{7}{8}$ " x 1 $\frac{1}{8}$ ". Standard package 10..... List price, .25
- No. 5ES. 1 $\frac{1}{2}$  volts. Size,  $\frac{3}{16}$ " x 2 $\frac{1}{2}$ ". Standard package 10..... List price, .10
- No. CL. 1 $\frac{1}{2}$  volts. Size, 1" diameter x 2 $\frac{3}{8}$ ". Standard package 10..... List price, .20
- No. TE. 1 $\frac{1}{2}$  volts. Size, 1 $\frac{1}{8}$ " x 3 $\frac{7}{8}$ ". Standard package 4..... List price, .27
- No. 9ES. 1 $\frac{1}{2}$  volts. Size, 1 $\frac{7}{8}$ " x  $\frac{1}{16}$ ". Standard package 12..... List price, 1.25

### "B" BATTERIES FOR VACUUM TUBE HEARING AIDS

- No. K10E. 15 volts. Size, 1 $\frac{7}{8}$ " x  $\frac{37}{32}$ " x 1 $\frac{1}{2}$ ". Standard package 20..... List price, .90
- No. K15E. 22 $\frac{1}{2}$  volts. Size, 1 $\frac{7}{8}$ " x  $\frac{37}{32}$ " x 2 $\frac{1}{8}$ ". Standard package 20..... List price, 1.40
- No. K20E. 30 volts. Size, 1 $\frac{7}{8}$ " x  $\frac{37}{32}$ " x 2 $\frac{3}{8}$ ". Standard package 20..... List price, 1.65
- No. U10E. 15 volts. Size, 1 $\frac{1}{8}$ " x  $\frac{1}{8}$ " x  $\frac{1}{2}$ ". Standard package 20..... List price, .85
- No. U15E. 22 $\frac{1}{2}$  volts. Size, 1 $\frac{1}{8}$ " x  $\frac{1}{8}$ " x  $\frac{3}{4}$ ". Standard package 20..... List price, 1.05
- No. U20E. 30 volts. Size, 2 $\frac{1}{8}$ " x  $\frac{1}{8}$ " x  $\frac{3}{4}$ ". Standard package 20..... List price, 1.25
- No. XX15E. 22 $\frac{1}{2}$  volts. Size, 1 $\frac{1}{8}$ " x  $\frac{1}{8}$ " x 3 $\frac{7}{8}$ ". Standard package 10..... List price, 1.45
- No. XX22E. 33 volts. Size, 2 $\frac{1}{8}$ " x  $\frac{37}{32}$ " x 3 $\frac{1}{4}$ ". Standard package 10..... List price, 1.65
- No. XX30E. 45 volts. Size, 2 $\frac{1}{2}$ " x  $\frac{1}{8}$ " x 3 $\frac{7}{8}$ ". Standard package 20..... List price, 1.90

### "A" AND "B" ASSORTMENTS

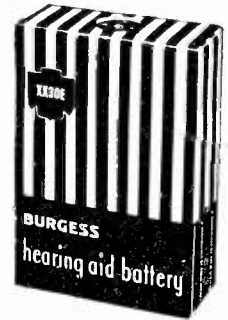
- HA73. Consists of 30 No. 1ES, 24 No. 2ES, 12 No. TE, 6 No. XX30E, and 1 No. XX22E. Standard package 1..... List price, \$21.69
- HA21. Consists of 2 No. XX30E, 1 No. XX22E, 8 No. TE, 6 No. 1ES, 4 No. 2ES. Standard package 1..... List price, 8.61

## For Carbon Hearing Aids—Universal Batteries

- No. T2R. 3 volts. Size, 2 $\frac{1}{8}$ " x 1 $\frac{1}{8}$ " x 4 $\frac{1}{8}$ " x 4 $\frac{1}{8}$ ". Standard package 12. List price, \$1.05
- No. T3R. 4 $\frac{1}{2}$  volts. Size, 3 $\frac{1}{8}$ " x 1 $\frac{3}{8}$ " x 3 $\frac{1}{8}$ " x 4 $\frac{3}{8}$ ". Standard package 12..... List price, 1.00

## For Western Electric Ortho-Technic Models

- No. C3WE. 4 $\frac{1}{2}$  volts. Size, 3 $\frac{1}{8}$ " x 1 $\frac{3}{8}$ " x 2 $\frac{5}{8}$ ". Standard package 12..... List price, .85
- No. T2WE. 3 volts. Size, 2 $\frac{1}{8}$ " x 1 $\frac{1}{8}$ " x 4". Standard package 12..... List price, 1.05
- No. T3WE. 4 $\frac{1}{2}$  volts. Size, 3 $\frac{1}{8}$ " x 1 $\frac{3}{8}$ " x 3 $\frac{1}{8}$ ". Standard package 12..... List price, 1.00



XX30E



K15E



TE



U20E



Z2E



T3WE



T3R

**A QUALITY DRY BATTERY FOR EVERY PURPOSE**

SUBJECT TO TRADE DISCOUNT

# BURGESS BATTERIES



4FH



4F2H



No. 2



No. 1



Z



4F4H



2F2H



F2BP



F4BP



Z30BP

## BURGESS FLASHLIGHT BATTERIES

- |        |   |                    |
|--------|---|--------------------|
| No. 1. | 1½ volts. Size, 1" x 1½". Standard package 12.....  | List price, \$ .10 |
| No. 2. | 1½ volts. Size, 1½" x 2½". Standard package 48..... | List price, .10    |
| No. Z. | 1½ volts. Size, ½" x 1½". Standard package 12.....  | List price, .075   |

## BURGESS IGNITION BATTERIES

- |       |   |
|-------|---|
| 4FH.  | 1½ volts. Size, 2½" x 2½" x 3½" x 4¼". Standard package 20...List price, \$ .70 |
| 4F2H. | 3 volts. Size, 3½" x 2½" x 5½". Standard package 8.....List price, 1.35         |
| 4F4H. | 6 volts. Size, 8¼" x 2¾" x 5½" x 6¾". Standard package 6...List price, 3.20     |
| 4F5H. | 7½ volts. Size, 7½" x 3½" x 5½" x 6¾". Standard package 4.....List price, 3.98  |
| 4F6H. | 9 volts. Size, 8½" x 3½" x 5½" x 6¾". Standard package 4.....List price, 4.55   |

## FOR INDUSTRIAL APPLICATIONS

### BURGESS "A" BATTERIES

- |           |   |
|-----------|---|
| No. 2F2H. | 3 volts. Size, 2½" x 2½" x 4" x 4¼". Standard package 10...List price, \$ .90 |
| No. 2FBP. | 1½ volts. Size, 2½" x 1½" x 3½" x 4½". Standard package 10...List price, .71  |
| No. 4FH.  | 1½ volts. Size, 2½" x 2½" x 3½" x 4¼". Standard package 20. List price, .70   |
| No. F2BP. | 3 volts. Size, 2½" x 1½" x 4" x 4¼". Standard package 10...List price, .71    |
| No. F4BP. | 6 volts. Size, 2½" x 2½" x 3½" x 4¼". Standard package 10. List price, .73    |

### BURGESS "B" BATTERIES

- |             |   |
|-------------|---|
| No. A75BP.  | 112½ volts. Size, 10½" x 3½" x 2½". Standard package 1.....List price, \$6.18 |
| No. W30.    | 45 volts. Size, 2½" x 1½" x 3¼" x 4¼". Standard package 6...List price, 3.00  |
| No. W30BPX. | 45 volts. Size, 2½" x 1½" x 3½" x 4¼". Standard package 6...List price, 2.73  |
| No. Z30NX.  | 45 volts. Size, 2½" x 1½" x 4½" x 5". Standard package 10...List price, 2.58  |
| No. Z30PX.  | 45 volts. Size, 2½" x 1¼" x 4¾" x 4½". Standard package 6...List price, 6.33  |

### BURGESS "C" BATTERIES

- |           |  |
|-----------|--|
| No. A8BP. | 12 volts. Size, 2¾" x 1½" x 2½" x 2¾". Standard package 6. List price, 2.25  |
| No. B2BP. | 3 volts. Size, 1½" x 1½" x 2½" x 2½". Standard package 6...List price, .65   |
| No. W5BP. | 7½ volts. Size, 3½" x 2½" x 1¾" x 1½". Standard package 6...List price, 1.37 |

**A QUALITY DRY BATTERY FOR EVERY PURPOSE**

# THE BATTERIES FOR THE RADIO TRADE— RCA BATTERIES



RADIO-ENGINEERED FOR EXTRA LISTENING HOURS

RCA Type	Voltage	Max. Dimensions, Inches			Interchangeable with	Sugg'd List Price
		Lgth.	Width or Diam.	Body Height		
<b>→ → PORTABLE "A" BATTERIES</b>						
VS002	4½	4	1¾	4¼	746	G3 \$ .80
VS003	7½	3¾	2¾	4¼	687	G5 1.10
VS004	1½	2¾	2¾	4¼	742	4F .95
VS005	1½	3¼	1¾	5¾	—	4FL .90
VS007	1½	3¼	2¾	4¼	743	6F 1.30
VS008	1½	3¾	1¾	10¾	745	8FL 1.75
VS009	6	2¾	2¾	4¾	744	F4PI .95
VS010	6	3¾	2¾	5½	718	2F4 1.75
VS011	6	3¾	1¾	10¾	747	2F4L 1.85
VS036	1½	—	1¾	2¾	"Sealed-in-Steel" .125	
VS065	7½	2¾	2	3¼	Ensign A47	C5 1.00
VS067	4½	4	1¾	4¾	736	F3 .75
VS129	7½	4¼	1¾	3	—	B5 .95
<b>→ → PORTABLE "B" BATTERIES</b>						
VS012	45	4¼	2¾	5¼	762	B30 2.35
VS013	45	3¼	1¾	5¼	482	M30 2.35
VS014	45	3¼	2¼	4¾	—	A30 2.15
VS015	45	3	2¼	4	738	Z30 2.60
VS016	67½	2¾	1¾	3¾	467	XX45 2.45
VS055	45	2¼	3¼	3¼	455	XX30 1.75
VS090	90	3¼	1¾	3¾	490	N60 3.25
<b>→ → PORTABLE "AB" BATTERY PACKS</b>						
VS018	7½-9-90	10¾	3¼	4¾	754	G6M60 5.95
VS019	7½-9-90	9¼	2¾	4¾	753	F6A60 5.95
VS020	6-7½-67½	9¼	2¾	4¾	—	F5M45 4.50
VS037	1½-90	11¾	1½	6¾	—	6FA60 4.95
VS038	7½-63	8¾	2¾	4¼	—	G5A42 4.20
VS041	1½-7½-67½	4¾	3¾	6¾	—	— 5.35
VS043	1½-90	5½	2¼	7¼	—	5DA60 4.95
VS044	6-90	12¾	2¾	4¾	—	2F4A60 5.95
VS046	6-75	12¾	2¾	4¾	Zenith Z675	G4B50 4.95
VS047	9-90	13¾	2¾	4¾	Zenith Z985	G6B60 5.95
VS048	6-90	10¾	2¾	5	Zenith Z659	F4B60 4.95
VS050	6-7½-75	8¾	2¾	3¼	—	T5Z50 4.95
VS052	1½-61½	9¾	2¼	3¾	Philco 41A4G	4GA41 3.95
VS053	1½-63	9¾	2	4¾	Philco 41A4FL	4GA42 3.95
VS054	1½-90	10	2¾	4¾	—	6TA60 5.50
VS057	7½-9-90	9¾	2¾	3¾	Philco P361	T5Z60 5.50
VS058	9-90	9¾	2¾	4¾	Zenith Z909	F6A60P 5.95
Kit #1	Includes 6-VS036, 1-VS016			—	—	— 3.19
<b>→ → FARM "AB" BATTERY PACKS</b>						
VS021	1½-90	10¼	2¾	6¾	758	— 5.95*
VS022	1½-90	15¾	4¼	6¼	759	17GD60 7.95*
VS045	1½-90	12¾	5¾	6¼	Zenith Z28	18GD60 7.95*
VS049	6-75	14¾	4¾	6¼	Zenith Z682	3G4D50 7.50*
VS099	1½-90	15¾	4¼	6¼	Deluxe "Sealed in Steel" 8.95*	

**SERVICING 99% OF PORTABLE & FARM HOME RADIO REQUIREMENTS**



VS036



VS013



VS019

**RCA's selective distribution primarily to the RADIO TRADE steers customers back to you!**



VS022

**The RCA Trademark and attractive package guarantee immediate customer acceptance!**



VS001



VS033



VS034



VS006S

\* Prices slightly higher on Pacific Coast  
All prices in effect 3/28/49.

Turn page for additional types →





# RCA BATTERIES — THE BATTERIES FOR THE RADIO TRADE

RADIO-ENGINEERED FOR EXTRA LISTENING HOURS

**SERVICING 99% OF  
PORTABLE & FARM HOME  
RADIO REQUIREMENTS**



VS002



VS016



VS 053

**RCA's selective distribution  
primarily to the RADIO TRADE  
steers customers back to you!**

**The RCA Trademark and attrac-  
tive package guarantee im-  
mediate customer acceptance!**



VS 006C



VS127W

RCA Type	Voltage	Max. Dimensions,		Inches Body Height	Interchangeable with		Sugg'd List Price
		Lgth.	Width or Diam.		Eveready	Burgess	
<b>→ → FARM "A" BATTERIES</b>							
VS024	1½	7¼ <sub>16</sub>	2¼ <sub>16</sub>	7	740	20F	\$3.30
VS025	3	11¼ <sub>16</sub>	4	6	X125	20F2	5.50*
<b>→ → FARM "B" BATTERIES</b>							
VS026	22½-45	8¼ <sub>16</sub>	3¾ <sub>16</sub>	7¾ <sub>16</sub>	485	2308PI	2.95
VS027	22½-45	8¼ <sub>16</sub>	4¾ <sub>16</sub>	7¾ <sub>16</sub>	386	10308P1	3.95*
<b>→ → RADIO HEARING AID "A" BATTERIES</b>							
VS070	1½	—	1½ <sub>16</sub>	4¼ <sub>16</sub>	Zenith Z1-S	TE	.30
<b>→ → FLASHLIGHT BATTERIES</b>							
VS001	1½	—	1¼ <sub>32</sub>	2¼ <sub>32</sub>	950	2	.10
VS033	1½	—	1¾ <sub>32</sub>	1½ <sub>16</sub>	935	1	.10
VS034	1½ (Baby) 1½ (Penlite)	—	¾ <sub>64</sub>	2	915	Z	.075
<b>→ → INDUSTRIAL &amp; SPECIAL BATTERIES</b>							
VS006C	1½	—	2¾	6¾	6 IGN	—	.70*
VS0065	1½ (Ign.)	—	2¾	6¾ <sub>16</sub>	6	—	.70*
VS028	4½	2¾	1¾ <sub>16</sub>	2¾	781	5360	.50
VS029	1½-3-4½	3¼ <sub>16</sub>	¾	3¼	773	5540	.95
VS030	6-7½	—	—	—	—	—	—
VS031	3-4½	4¼ <sub>16</sub>	17 <sub>16</sub>	3¼ <sub>16</sub>	X771	2370PI	.85
VS031	3-4½	4	2½	3	768	5156PI	1.95
VS039	16½-22½	10¾	2¾	7¾	1461-2	4F4H	3.35*
VS040	6 (Hotshot)	—	—	—	—	—	—
VS040	6 (Spring)	2¼ <sub>16</sub>	2¼ <sub>16</sub>	4¾ <sub>16</sub>	409	F4H	.80
VS040	6 (Screw)	2¼ <sub>16</sub>	2¼ <sub>16</sub>	4¾ <sub>16</sub>	—	F4BP	.80
VS042C	1½	—	2¾	6¾	TEL	—	.65*
VS0425	1½	—	2¾	6¾ <sub>16</sub>	TEL	—	.65*
VS100	3	2¾	1¾	4¾ <sub>16</sub>	—	F2BP	.71
VS101	1½	2¾	1¾	4¾ <sub>16</sub>	—	2FBP	.71
VS102	22½	3¾	2¾	2¾	763	4156	1.95
VS106	1½	2¼ <sub>16</sub>	2¼ <sub>16</sub>	4¾ <sub>16</sub>	—	4FH	.70*
VS112	22½-45	4¾	2¾	5¾ <sub>16</sub>	762S	5308	2.50
VS114	22½-45	2¼ <sub>32</sub>	127 <sub>32</sub>	4¼ <sub>16</sub>	—	Z30NX	2.58
VS126	22½-45	8¼	3¼	7¾ <sub>16</sub>	—	2308SC	2.95
VS127W	22½-45	8	4	7¾	—	10308SC	3.95*
VS130	1½-3-4½	4	17 <sub>16</sub>	3¾ <sub>16</sub>	761T	2370BP	.85
VS131	3-4½-6-9-10½-16½-22½	4¾	2½	3¾ <sub>16</sub>	778	5156SC	2.00
VS132	9	4¼ <sub>16</sub>	2¼ <sub>16</sub>	2¾	—	D6BP	1.90
VS133	4½	2¾	1¾ <sub>16</sub>	3¼ <sub>16</sub>	703	532	.45
VS136	3	2¼ <sub>16</sub>	2¼ <sub>16</sub>	4¾ <sub>16</sub>	—	2F2H	.90
VS137	18-22½	6½	4	3¾	766T	2156	1.63
VS138	3	3¾	2¼ <sub>16</sub>	5¾	—	4F2H	1.35
VS139	6	7¾ <sub>16</sub>	3¼ <sub>32</sub>	6¾ <sub>16</sub>	—	4F5H	3.98*
VS140	9	8¼ <sub>16</sub>	3¼ <sub>16</sub>	6	1662	4F6H	4.55*
VS157	22½-45	8¼	4¾	7¼ <sub>16</sub>	794	21308SC	4.15*
VS214	45	3¾ <sub>16</sub>	2¼	4¾ <sub>16</sub>	Spec. Positioned Socket	—	2.30

All prices in effect 3/28/49.

\*Prices slightly higher on Pacific Coast.

# THE COMPLETE LINE OF **EVEREADY** FLASHLIGHTS



No. 2231 TWO-CELL "EVEREADY" AUTOMATIC SPOTLIGHT—Seamless brass tube. Chromium finish with rolled-on black decoration. Uses 2 "Eveready" No. 936 batteries and "Eveready" Lamp No. PR6. Unit package quantity 1. List Price Each (Complete With Batteries) \$1.65



No. 2351 THREE-CELL "EVEREADY" AUTOMATIC SPOTLIGHT—Seamless brass tube. Chromium finish with rolled-on black decoration. Uses 3 "Eveready" No. 950 batteries and "Eveready" Lamp No. PR3. Unit package quantity 1. List Price Each (Complete With Batteries) \$1.95



No. 2645 FIVE-CELL "EVEREADY" FOCUSING SEARCHLIGHT—Chromium fittings, seamless brass tube with durable black, baked on finish equipped with ring hanger. Uses 5 "Eveready" No. 950 batteries and "Eveready" Lamp No. 605. Unit package quantity 1. List Price Each (Complete With Batteries) \$4.50



No. 915  
1 1/2 volts.  
Length  
1 3/8"  
Diameter  
3 5/16"  
Weight  
1/2 oz.



No. 935  
1 1/2 volts.  
Length 2"  
Diameter  
1 1/2"  
Weight  
1 1/8 oz.



No. 950  
1 1/2 volts.  
Length  
2 7/16"  
Diameter  
1 1/4"  
Weight  
3 1/2 oz.



No. 509  
Lantern  
Battery.  
6 volts.  
2 5/8" x 2 5/8" x  
3 27/32"  
Weight  
1 lb., 7 oz.



DISPLAY PACKAGE  
No. 25

Contains 6 No. 2251 two-cell "Eveready" Automatic Spotlights, displays 6. Seamless brass tube, chromium finish with rolled-on black decoration. Uses 2 "Eveready" No. 950 batteries and "Eveready" Lamp No. PR2.

List Price Each (Complete With Batteries) \$1.65



DISPLAY PACKAGE  
No. 71

Contains 12 No. 2671 two-cell "Eveready" Focusing Spotlights, displays 6. Chromium fittings, seamless brass tube with durable black baked on finish. Equipped with ring hanger. Uses 2 "Eveready" No. 950 batteries and "Eveready" Lamp No. 14.

List Price Each (Complete With Batteries) \$1.65



DISPLAY PACKAGE  
No. 22

Contains 12 No. 220 Penlights, all chromium finish on seamless brass. Uses 2 "Eveready" No. 915 batteries and "Eveready" Lamp No. 222.

List Price Each (Complete With Batteries) \$1.00



No. 1351

Three-Cell Pre-focused Industrial Flashlight—General purpose type. Uses 3 "Eveready" No. 950 batteries and "Eveready" Lamp No. PR7. Unit package quantity 1. List Price Each (Complete With Batteries)

\$3.15



No. 1251

Two-Cell Pre-focused Industrial Flashlight—General purpose type. Uses 2 "Eveready" No. 950 batteries and "Eveready" Lamp No. PR6. Unit package quantity 1. List Price Each (Complete With Batteries)

\$2.95



No. 1259

Two-Cell Pre-focused Permissible Safety Flashlight—Uses 2 "Eveready" No. 950 batteries and "Eveready" Lamp No. PR6. Extra lamp in bottom cap included. Unit package quantity 1. List Price Each (Complete With Batteries)

\$5.20



No. 1359

Three-Cell Pre-focused Permissible Safety Flashlight—Uses 3 "Eveready" No. 950 batteries and "Eveready" Lamp No. PR7. Extra lamp in bottom cap included. Unit package quantity 1. List Price Each (Complete With Batteries)

\$5.50

## SCHEDULE OF PRICES

Cat. No.	No. of Cells	Cell Size	List Price Each	Unit Pkg. Qty.	Weight of Unit Packages	
					Lbs.	Ozs.
915	1	AA	\$.075	12	—	7 1/2
935	1	C	.10	12	1	4
950	1	D	.10	48	9	4

### Lantern Battery

509	4	F	.70	12	16	8
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### "Eveready" Miniature Lamps for Radio Panel Service

"Eveready" No.	Bulb	Volts	Amp.	List Price
40	T-3 1/4	6-8	0.15	\$.10
41	T-3 1/4	2.5	0.50	.10
44	T-3 1/4	6-8	0.25	.10
46	T-3 1/4	6-8	0.25	.10
47	T-3 1/4	6-8	0.15	.10
48	T-3 1/4	2	0.06	.15
49	T-3 1/4	2	0.06	.15
50	G-3 1/2	6-8	C.P. 1	.10
1490	T-3 1/4	3.2	0.16	.11

## FLASHLIGHT LENS ASSORTMENT

Cat. No.	Type	Unit Package Quantity
102	40 No. 53419 Spotlight Lenses and 2 No. 53123 Baby Spotlight Lenses 2 No. 53390 Searchlight Lenses	1 Assortment

## "EVEREADY" LAMPS

### TWO CELL

"Eveready" No.	Bead Color	Bulb	Vol'ts	Amp.	List Price	Use with Following "Eveready" Batteries
14	Blue	G-3 1/2	2.5	0.30	\$.10	2 Nos. 935 or 950
PR-2	Blue	B-3 1/2	2.4	0.50	.14	2 No. 950
PR-4	Lt. Gr.	B-3 1/2	2.3	0.27	.11	2 No. 935
PR-6	Brown	B-3 1/2	2.5	0.30	.14	2 Nos. 935 or 950
222	White	TL-3	2.2	0.25	.10	2 No. 915

### THREE CELL

No.	Bead Color	Bulb	Vol'ts	Amp.	List Price	Use with Following "Eveready" Batteries
13	Green	G-3 1/2	3.8	0.30	\$.10	3 No. 950
PR-3	Green	B-3 1/2	3.6	0.50	.14	3 No. 950
PR-7	Pink	B-3 1/2	3.8	0.30	.14	3 No. 950

### FIVE CELL

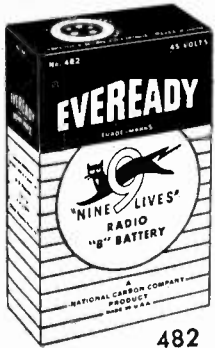
No.	Bead Color	Bulb	Vol'ts	Amp.	List Price	Use with Following "Eveready" Batteries
605	Brown	G-4 1/2	6.0	0.50	\$.11	5 No. 950
PR-12	—	B-3 1/2	6.0	0.50	.15	5 No. 950

# EVEREADY

TRADE-MARK

## Radio Batteries

Sell the one brand your customers will always buy—"Eveready" Radio Batteries—for fast turnover, repeat sales! Famous for fine craftsmanship and quick profits, "Eveready" Radio Batteries—portable and farm packs—equip virtually every battery-type radio in use today! Complete data describing these best-selling batteries are given on page M-9.



482



467



455



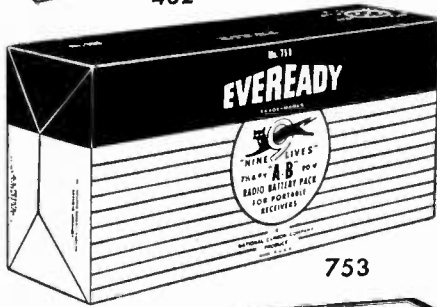
746



950



718



753



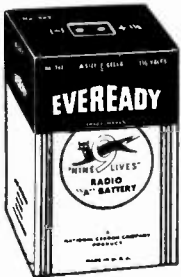
752



754



741



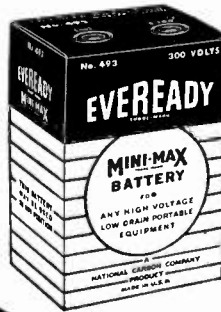
742



743



744



493



487



759



A-1300



490



736



740



A-2600



755



756



724



457

# "EVEREADY" BATTERY SPECIFICATIONS

Catalog Number	VOLTAGE	Overall Dimensions			List Price Each	Unit Package Quantity	Weight of Unit Package in Pounds	Battery Weight	Terminals
		Length	Width	Height					
<b>"B" BATTERIES FOR PORTABLE RECEIVERS</b>									
455	45 Volt...	2 <sup>21</sup> / <sub>32</sub> "	1"	3 <sup>11</sup> / <sub>16</sub> "	\$1.65	6	3 <sup>1</sup> / <sub>4</sub>	8 oz.	Snap Type —, +45
457	67 <sup>1</sup> / <sub>2</sub> Volt...	2 <sup>13</sup> / <sub>16</sub> "	1 <sup>3</sup> / <sub>8</sub> "	2 <sup>1</sup> / <sub>2</sub> "	2.25	6	2 <sup>1</sup> / <sub>2</sub>	7 <sup>3</sup> / <sub>8</sub> oz.	Snap Type —, +67 <sup>1</sup> / <sub>2</sub>
467	67 <sup>1</sup> / <sub>2</sub> Volt...	2 <sup>13</sup> / <sub>16</sub> "	1 <sup>3</sup> / <sub>8</sub> "	3 <sup>45</sup> / <sub>64</sub> "	2.25	6	4 <sup>1</sup> / <sub>2</sub>	12 oz.	Snap Type —, +67 <sup>1</sup> / <sub>2</sub>
482	45 Volt...	3 <sup>19</sup> / <sub>32</sub> "	1 <sup>27</sup> / <sub>32</sub> "	5 <sup>1</sup> / <sub>2</sub> "	2.00	6	11 <sup>1</sup> / <sub>2</sub>	1 lb. 14 oz.	Socket —, +45
490	90 Volt...	3 <sup>23</sup> / <sub>32</sub> "	1 <sup>3</sup> / <sub>8</sub> "	3 <sup>45</sup> / <sub>64</sub> "	2.95	6	6 <sup>1</sup> / <sub>2</sub>	1 lb. <sup>1</sup> / <sub>2</sub> oz.	Snap Type —, +90
493	300 Volt...	2 <sup>1</sup> / <sub>16</sub> "	2 <sup>7</sup> / <sub>32</sub> "	3 <sup>29</sup> / <sub>32</sub> "	10.00	1	1 <sup>1</sup> / <sub>4</sub>	1 lb. 1 oz.	Pin Jacks —, +300
738	45 Volt...	3"	2 <sup>5</sup> / <sub>16</sub> "	4 <sup>1</sup> / <sub>8</sub> "	2.50	2	2 <sup>3</sup> / <sub>4</sub>	1 lb. 4 oz.	Socket —, +22 <sup>1</sup> / <sub>2</sub> , +45
<b>"A" BATTERIES FOR PORTABLE RECEIVERS</b>									
717	7 <sup>1</sup> / <sub>2</sub> Volt...	2 <sup>7</sup> / <sub>32</sub> "	1 <sup>15</sup> / <sub>16</sub> "	3 <sup>1</sup> / <sub>32</sub> "	\$0.95	6	3	8 <sup>3</sup> / <sub>4</sub> oz.	Socket —, +7 <sup>1</sup> / <sub>2</sub>
718	6 Volt...	3 <sup>9</sup> / <sub>16</sub> "	2 <sup>3</sup> / <sub>4</sub> "	5 <sup>1</sup> / <sub>2</sub> "	1.75	1	2 <sup>3</sup> / <sub>4</sub>	2 lb. 13 oz.	Socket —, +6
724	6 Volt...	1 <sup>3</sup> / <sub>32</sub> "	1 <sup>7</sup> / <sub>32</sub> "	2 <sup>11</sup> / <sub>32</sub> "	0.50	12	2 <sup>1</sup> / <sub>4</sub>	2 <sup>3</sup> / <sub>8</sub> oz.	Flashlight
736	4 <sup>1</sup> / <sub>2</sub> Volt...	3 <sup>15</sup> / <sub>16</sub> "	1 <sup>5</sup> / <sub>16</sub> "	4 <sup>3</sup> / <sub>32</sub> "	0.75	6	6 <sup>3</sup> / <sub>4</sub>	1 lb. 1 oz.	Socket —, +4 <sup>1</sup> / <sub>2</sub>
741	1 <sup>1</sup> / <sub>2</sub> Volt...	3 <sup>7</sup> / <sub>8</sub> "	2 <sup>11</sup> / <sub>16</sub> "	5 <sup>3</sup> / <sub>8</sub> "	1.65	1	2 <sup>3</sup> / <sub>4</sub>	2 lb. 13 oz.	Socket —, +1.5
742	1 <sup>1</sup> / <sub>2</sub> Volt...	2 <sup>19</sup> / <sub>32</sub> "	2 <sup>19</sup> / <sub>32</sub> "	4"	0.95	6	8 <sup>1</sup> / <sub>4</sub>	1 lb. 6 oz.	Socket —, +1.5
743	1 <sup>1</sup> / <sub>2</sub> Volt...	3 <sup>13</sup> / <sub>16</sub> "	2 <sup>21</sup> / <sub>32</sub> "	4 <sup>1</sup> / <sub>32</sub> "	1.25	3	6 <sup>1</sup> / <sub>2</sub>	2 lb. 1 oz.	Socket —, +1.5
744	6 Volt...	2 <sup>21</sup> / <sub>32</sub> "	2 <sup>21</sup> / <sub>32</sub> "	3 <sup>31</sup> / <sub>32</sub> "	0.95	6	8 <sup>3</sup> / <sub>8</sub>	1 lb. 6 oz.	Socket —, +6
745	1 <sup>1</sup> / <sub>2</sub> Volt...	3 <sup>7</sup> / <sub>8</sub> "	1 <sup>7</sup> / <sub>16</sub> "	10 <sup>25</sup> / <sub>32</sub> "	1.75	2	5 <sup>3</sup> / <sub>4</sub>	2 lb. 13 oz.	Socket —, +1.5
746	4 <sup>1</sup> / <sub>2</sub> Volt...	3 <sup>15</sup> / <sub>16</sub> "	1 <sup>5</sup> / <sub>16</sub> "	4 <sup>21</sup> / <sub>32</sub> "	.75	6	7 <sup>1</sup> / <sub>2</sub>	1 lb. 4 oz.	Socket —, +4.5
747	6 Volt...	3 <sup>7</sup> / <sub>8</sub> "	1 <sup>7</sup> / <sub>16</sub> "	10 <sup>29</sup> / <sub>32</sub> "	1.75	2	5 <sup>3</sup> / <sub>4</sub>	2 lb. 13 oz.	Socket —, +6
950	1 <sup>1</sup> / <sub>2</sub> Volt...	1 <sup>21</sup> / <sub>64</sub> "	Diam.	2 <sup>27</sup> / <sub>64</sub> "	0.10	48	9 <sup>1</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>3</sub> oz.	Flashlight
<b>"A-B" PACK FOR 1.4 VOLT PORTABLE RECEIVERS</b>									
752	9 "A" 90 "B"	14 <sup>1</sup> / <sub>16</sub> "	2 <sup>11</sup> / <sub>16</sub> "	4 <sup>1</sup> / <sub>16</sub> "	\$5.50	1	6 <sup>3</sup> / <sub>4</sub>	6 lb. 5 oz.	Recessed Plug — "A", +9 "A", — "B", +90 "B"
753	7 <sup>1</sup> / <sub>2</sub> & 9 "A" 90 "B"	9 <sup>7</sup> / <sub>32</sub> "	2 <sup>23</sup> / <sub>32</sub> "	4 <sup>5</sup> / <sub>16</sub> "	5.50	1	5 <sup>1</sup> / <sub>4</sub>	4 lb. 15 oz.	Socket — "A" +7 <sup>1</sup> / <sub>2</sub> "A", +9 "A" — "B", +90 "B"
754	7 <sup>1</sup> / <sub>2</sub> & 9 "A" 90 "B"	10 <sup>15</sup> / <sub>32</sub> "	3 <sup>1</sup> / <sub>4</sub> "	4"	5.50	1	6 <sup>1</sup> / <sub>2</sub>	6 lb. 8 oz.	Socket — "A", +7 <sup>1</sup> / <sub>2</sub> "A", +9 "A", — "B", +90 "B"
755	6 & 7 <sup>1</sup> / <sub>2</sub> "A" 75 "B"	8 <sup>9</sup> / <sub>16</sub> "	2 <sup>7</sup> / <sub>16</sub> "	3 <sup>3</sup> / <sub>4</sub> "	4.50	1	3 <sup>7</sup> / <sub>8</sub>	3 lb. 8 oz.	Socket — "A", +6 "A", +7 <sup>1</sup> / <sub>2</sub> "A" — "B", +75 "B"
756	7 <sup>1</sup> / <sub>2</sub> "A" 90 "B"	9 <sup>17</sup> / <sub>32</sub> "	2 <sup>1</sup> / <sub>8</sub> "	3 <sup>27</sup> / <sub>32</sub> "	5.50	1	4 <sup>1</sup> / <sub>8</sub>	3 lb. 14 oz.	Socket — "A", +7 <sup>1</sup> / <sub>2</sub> "A", — "B", +90 "B"
<b>"B" BATTERY FOR FARM TYPE RECEIVERS</b>									
487	45 Volt...	5 <sup>1</sup> / <sub>8</sub> "	2 <sup>1</sup> / <sub>16</sub> "	7 <sup>1</sup> / <sub>4</sub> "	\$2.75	10	14	4 lb. 4 oz.	Socket —, +22 <sup>1</sup> / <sub>2</sub> , +45
<b>"A-B" PACK FOR 1.4 VOLT FARM TYPE RECEIVERS</b>									
758	1 <sup>1</sup> / <sub>2</sub> "A" 90 "B"	10 <sup>11</sup> / <sub>16</sub> "	4 <sup>1</sup> / <sub>8</sub> "	6 <sup>13</sup> / <sub>16</sub> "	\$5.95	1	14 <sup>3</sup> / <sub>4</sub>	14 lbs. 8 oz.	Socket —, +1.5 Socket —, +90
759	1 <sup>1</sup> / <sub>2</sub> "A" 90 "B"	15 <sup>11</sup> / <sub>16</sub> "	4 <sup>5</sup> / <sub>32</sub> "	6 <sup>15</sup> / <sub>16</sub> "	\$5.95	1	18 <sup>1</sup> / <sub>4</sub>	17 lb. 6 oz.	Socket —, +1.5 Socket —, +90
<b>"AIR CELL" "A" BATTERIES FOR 2 VOLT RECEIVERS</b>									
A-2600	2 <sup>1</sup> / <sub>2</sub> Volt...	9 <sup>29</sup> / <sub>32</sub> "	6 <sup>19</sup> / <sub>32</sub> "	11 <sup>3</sup> / <sub>16</sub> "	\$10.95	1	24	21 lb. 5 oz.	Screw —, +2.5
SA-2600	2 <sup>1</sup> / <sub>2</sub> Volt...	9 <sup>29</sup> / <sub>32</sub> "	6 <sup>19</sup> / <sub>32</sub> "	11 <sup>3</sup> / <sub>16</sub> "	12.10	1	24	21 lb. 5 oz.	Screw —, +2.5
A-2300	2 <sup>1</sup> / <sub>2</sub> Volt...	8 <sup>1</sup> / <sub>4</sub> "	5 <sup>5</sup> / <sub>16</sub> "	8 <sup>5</sup> / <sub>8</sub> "	8.50	1	12 <sup>1</sup> / <sub>2</sub>	11 lb.	Screw —, +2.5
<b>"A" BATTERIES FOR 1.4 VOLT RECEIVERS</b>									
*A-1300	1 <sup>1</sup> / <sub>4</sub> Volt...	5 <sup>5</sup> / <sub>16</sub> "	4 <sup>11</sup> / <sub>32</sub> "	8 <sup>5</sup> / <sub>8</sub> "	\$4.85	1	7	5 lb. 13 <sup>1</sup> / <sub>2</sub> oz.	Socket —, +1.25
740	1 <sup>1</sup> / <sub>2</sub> Volt...	4 <sup>19</sup> / <sub>32</sub> "	3 <sup>7</sup> / <sub>8</sub> "	7 <sup>3</sup> / <sub>4</sub> "	3.95	1	6 <sup>1</sup> / <sub>4</sub>	6 lb. 4 oz.	Socket —, +1.5

# EVEREADY

TRADE-MARK

## Dry Batteries

Illustrated below are "Eveready" Dry Batteries, known for dependable and long service. Information describing famous "Eveready" Dry Batteries is given with each illustration.



### "EVEREADY" "IGNITOR" DRY CELL NO. 6 —

For extra long life and heavy service in all Dry Cell applications. Its exceptionally high quality and recuperative powers have made the "Eveready" "Ignitor" dry cell famous for ignition, radio, bells, buzzers, electric games, toys, lanterns and other battery operated devices.

### "EVEREADY" R.R. AND INDUSTRIAL NO. 6 —

Especially designed for Railroad and Industrial use where a wide range of service conditions, from extremely heavy to extremely light are encountered.

"EVEREADY" "COLUMBIA" "GRAY LABEL" TELEPHONE CELL NO. 6 — Especially designed for telephone service. Noted for its long life on light drain service.

Brand and Type	Jacket	Voltage	Overall Dimensions In Inches		Quantity in Standard Package	Approx. Wt. of Std. Pkg. in Pounds	List Price Each	†P. C. List Price Each
			Diameter	Height				
**Eveready** "Ignitor" No. 6	Round	1½	2⅝	6⅝	12	27	\$0.70	\$0.75
**Eveready** R.R. and Industrial No. 6	Round	1½	2⅝	6⅝	12	28	0.75	0.80
**Eveready** "Columbia" "Gray Label" Telephone Cell No. 6	Round	1½	2⅝	6⅝	12	26	0.65	0.70

\*Equipped with screw terminals unless Fahnestock spring terminals are specified.

\*\*Equipped with Fahnestock spring terminals unless screw terminals are specified.

### "EVEREADY" "HOT SHOT" BATTERIES —

For all purposes requiring four or more dry cells in series. Particularly adapted for electric fences, gas engines (tractors, motor boats, etc.), blasting, fire and burglar alarms, gongs, bells, annunciators, signals, lights for closets, out-houses, camps,

boats, searchlights, etc.

"Eveready" "Hot Shot" Batteries are composed of specially selected cells. Internal connections are securely soldered and the cells are completely insulated against accidental short circuits. Terminals are insulated.

Brand and Type	Voltage	Overall Dimensions In Inches			Quantity in Standard Package	Approx. Wt. of Std. Pkg. in Pounds	List Price Each	†P. C. List Price Each
		Length	Width	Height				
"Eveready" No. 1461	6	10⅝	2¾	7¼	6	59	\$3.35	\$3.65
"Eveready" No. 1462	6	5⅝	5⅝	7¼	4	41	3.35	3.65
"Eveready" No. 1562	7½	7⅝	5	7¼	4	52	4.35	4.75
"Eveready" No. 1662	9	7⅝	5¼	7¼	4	62	4.95	5.40

Standard Packages Contain One Type of 6-Inch Dry Cell or "Hot Shot" Battery Only.

be sure with



# GENERAL

## DRY BATTERIES

GENERAL dry batteries contain many outstanding advancements such as extra heavy seamless extruded zinc cups, the famous paper thin separator permitting more mix and more active zinc area by utilization of the cell bottom, the curled rim lock seal which seals each cell individually. These features, found only in Generals, assure long shelf life as well as the maximum in dry battery performance.

### GENERAL A & B RADIO FARM PACKS

General A-B packs are made with L size cells in the A section. These cells are 40% longer than the largest conventional 1 1/4" diameter cell. This construction assures the perfect balance between these "A" and "B" sections for current drains established by the Radio Industry.



Type	Voltage	Standard Package	Pkg. Lbs. Weight	Interchangeable With			Price	
				Eveready	Burgess	Ray-O-Vac	East	Pacific Coast
60DL11L	1 1/2-90	1	24.5	759	17GD60	AB82	\$ 7.95	\$ 8.25
Z60D12L	1 1/2-90	1	24	—	18GD60	—	7.95	8.25
60D12L6	9-90	1	24	—	3G6D60	AB982	8.25	8.55
60B6L	1 1/2-90	4	39	758	—	AB85	5.95	5.95
90FL6D	135-9C	1	45	—	F90-D6	P8960	10.50	11.11

### GENERAL ABC HOME RADIO BATTERIES

All cells used in General batteries are filled with active mix by loading equipment developed by General which automatically puts the right amount of mix into each cell and packs it uniformly. General home radio batteries are accepted for their uniformity, dependability and long service.



Type	Voltage	Standard Package	Pkg. Lbs. Weight	Interchangeable With			Price	
				Eveready	Burgess	Ray-O-Vac	East	Pacific Coast
I2L11L	1 1/2	4	34	740	20F	P9203	\$3.30	\$3.30
I2L15	1 1/2	4	34	A1300	19G	P168A	3.30	3.30
P24L2	3	1	17	X125	20F2	P9403	4.73	5.15
5H5	7 1/2	4	8.6	687	G5	P85A	1.25	1.25
V30D	45	6	45	—	2308	P5233	2.45	2.45
V30DL	45	6	51	487	—	—	2.55	2.55
V30F	45	6	68	—	10308	P5933	2.95	3.13
V30FL	45	3	39	—	21308	P9303	3.40	3.60
H3D	4 1/2	10	7.5	X771	2370PI	P231W	.85	.85
H3BS	4 1/2	10	3	781	5360	531R	.50	.50
V5B	7 1/2	10	6.3	773	5540	551	.95	.95
H15B5	22 1/2	10	15.4	768	5156PI	P5151	1.95	1.95
H15B	22 1/2	10	15.4	778	5156SC	—	2.00	2.00
H15A	22 1/2	10	10	763	4156	4151	1.95	1.95

### GENERAL PORTABLE A & B PACKS

The small size cells used in portable batteries greatly reflect the benefits derived from General's patented construction. General Batteries deliver more service hours per dollar, therefore you will find them used as original equipment in more battery radios than any other brand.



Type	Voltage	Standard Package	Pkg. Lbs. Weight	Interchangeable With			Price
				Eveready	Burgess	Ray-O-Vac	
40CW2CF	1 1/2-60	6	8.7	—	—	—	\$3.00
41A4FL	1 1/2-61 1/2	6	25.5	—	—	—	4.25
60A2L	1 1/2-90	1	5	—	4GMA41	AB419	5.95
60A4L	1 1/2-90	6	38.5	—	5DMA60	—	5.95
42A5G5	7 1/2-63	6	30	—	6FMA60	AB84	4.70
291	7 1/2-9-90	1	6.5	754	5GMA42	AB794	5.95
60A4F4	6-90	6	33.5	—	G6M60	AB878	5.95
60A6F6-5	7 1/2-9-90	1	6	753	2F4A60	AB694	5.95
362	7 1/2-9-90	6	24	756	F6A60	AB994	5.95
Z50B4H4	6-75	1	7	—	TSZ60	—	5.95
Z60B6H6	9-90	1	89	752	G4850	AB670	5.00
					G6B60	AB677	5.95



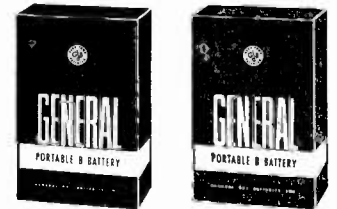
## GENERAL PORTABLE A BATTERIES

Type	Voltage	Pkg. Weight		Interchangeable With			Price
		Std. Pkg.	Lbs. Weight	Eveready	Burgess	Ray-O-Vac	
D	1 1/2 Radio A	50	12	—	—	—	\$0.125
4F1	1 1/2	6	9	742	4F	P94A	.95
6F1	1 1/2	6	13	743	6F	P96A	1.30
8F1	1 1/2	6	17.4	741	8F	P98A	1.65
3L1	1 1/2	6	11.4	745	4FL	P94L	.80
3H3	4 1/2	6	8	746	G3	P83A	.80
4F4	6	6	9	744	F4P1	P694A	.95
8F4	6	6	17.4	718	2F4	P698A	1.75



## GENERAL PORTABLE B BATTERIES

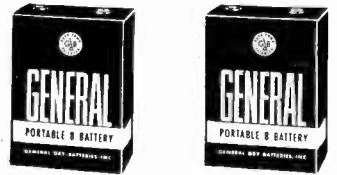
Type	Voltage	Std. Pkg. Lbs.		Interchangeable With			Price
		Pkg.	Weight	Eveready	Burgess	Ray-O-Vac	
V30A	45	6	11.4	—	A30	P430	\$2.35
F30A	45	6	11.4	—	A30X	BB30P	2.35
V30B	45	6	17	—	B30	P5303	2.35
V30AA	45	6	9	738	Z30	P7R30	2.60
V30AA2	45	6	9	—	Z30N	—	2.60
W30B	45	6	12	482	M30	P7830	2.35



## GENERAL "DuroMite" BATTERIES

New General DuroMite batteries are the finest in battery design and assembly. Thin, well-balanced flat cells are stacked like a roll of wafers. Each stack of cells sealed in its own plastic case, keeping the cells fresh until put in use. Maximum service life can be obtained from minimum of space used.

Type	Voltage	Std. Pkg. Lbs.		Interchangeable With			Price
		Pkg.	Weight	Eveready	Burgess	Ray-O-Vac	
W45A	67 1/2	12	10	467	XX45	4367	\$2.45
W30A	45	12	7	455	XX30	P3A30	1.75
W60A	90	12	13.5	490	—	—	3.25



## GENERAL "Leakproof" & LANTERN BATTERIES

The New General "Leakproof" flashlight cell comes to the market to fulfill the demand of practically every user. This demand is for extra long service, years of shelf life and protection against corrosion damage. The Industrial cell is recommended when light is needed frequently and for long periods.

Type	Voltage	Std. Pkg. Lbs.		Interchangeable With			Price
		Pkg.	Weight	Eveready	Burgess	Ray-O-Vac	
C	1 1/2	72	8	935	1	1LP	\$0.10
DLP	1 1/2	240	59	—	—	2LP	.10
D	1 1/2	240	57	950	2	—	.10
D Industrial	1 1/2	250	59.5	1050	# 2 Ind	2111	.10
AA	1 1/2	180	8	915	Z	7-R	.07 1/2
V4F Lantern	6	10	15.8	409	F4H	941	.80
4FB Bicycle	6	10	15.5	—	—	—	1.20



## GENERAL IGNITION & ELECTRIC FENCE BATTERIES

All General batteries are designed to use the most efficient cells available. The 641 is made with 12 L cells and this construction has proven to produce exceptional performance when used on Electric Fence controls and other ignition applications.

Type	Voltage	Std. Pkg. Lbs.		Interchangeable With			Price	
		Pkg.	Weight	Eveready	Burgess	Ray-O-Vac	East	Pacific Ct.
# 6	1 1/2	24	60	# 6 lg	—	# 6 lg	.70	\$0.75
# 6 Tele	1 1/2	24	60	# 6 Co.	—	# 6 Tele	.70	.75
641 Multiple	6	6	54	1461	—	641	3.35	3.75



We manufacture all types of Hearing Aid and Model Airplane batteries. Write for particulars.

# GENERAL DRY BATTERIES, INC.

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# PORTABLE RADIO BATTERIES



2R



P-694A



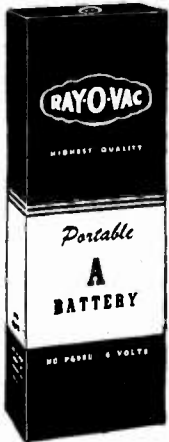
P-698A



P-94A



P-83A



P-698L



P-96A



AB-994



AB-995



AB-878



AB-85



P-7830



P-5303



P-430



4367

Turn page for more RAY-O-VAC Batteries and Specifications →



# FARM RADIO BATTERIES



P-9403



P-9203



AB-82



P-2303



P-9303



P-5151



551



531R



P-231W

## SPECIFICATIONS

PORTABLE "A" BATTERIES							
Catalog No.	Voltage and Type	Dimensions in Inches		Terminals	Standard Pkg. Ouan.	List Price Ea.	
						Wt.	EC PC
P694A	6A	2 <sup>9</sup> / <sub>16</sub>	x 2 <sup>9</sup> / <sub>16</sub>	x 4 <sup>1</sup> / <sub>8</sub>	2 Hole Socket	6	8 <sup>1</sup> / <sub>2</sub> \$0.95
*P698A	6A	3 <sup>7</sup> / <sub>8</sub>	x 2 <sup>13</sup> / <sub>16</sub>	x 5 <sup>1</sup> / <sub>2</sub>	2 Hole Socket	6	16 1.80
P94A	1 <sup>1</sup> / <sub>2</sub> A	2 <sup>5</sup> / <sub>8</sub>	x 2 <sup>5</sup> / <sub>8</sub>	x 4 <sup>1</sup> / <sub>16</sub>	2 Hole Socket	6	8 .90
P83A	4 <sup>1</sup> / <sub>2</sub> A	4	x 1 <sup>3</sup> / <sub>8</sub>	x 4 <sup>11</sup> / <sub>16</sub>	2 Hole Socket	6	6 <sup>3</sup> / <sub>4</sub> .75
P698L	6A	3 <sup>7</sup> / <sub>8</sub>	x 1 <sup>7</sup> / <sub>16</sub>	x 10 <sup>3</sup> / <sub>4</sub>	2 Hole Socket	6	16 1.80
P96A	1 <sup>1</sup> / <sub>2</sub> A	3 <sup>15</sup> / <sub>16</sub>	x 2 <sup>5</sup> / <sub>8</sub>	x 4 <sup>1</sup> / <sub>8</sub>	2 Hole Socket	4	8 1.25
PORTABLE "AB" BATTERIES							
AB994	7 <sup>1</sup> / <sub>2</sub> or 9A-90B	9 <sup>5</sup> / <sub>8</sub>	x 2 <sup>7</sup> / <sub>8</sub>	x 4 <sup>1</sup> / <sub>2</sub>	Standard 8 Hole Socket	6	35 5.25
AB995	9A-90B	13 <sup>5</sup> / <sub>8</sub>	x 2 <sup>7</sup> / <sub>8</sub>	x 4 <sup>5</sup> / <sub>8</sub>	Recessed 4 Pr. Male Plug	6	49 5.35
AB878	7 <sup>1</sup> / <sub>2</sub> or 9A-90B	10 <sup>5</sup> / <sub>8</sub>	x 3 <sup>7</sup> / <sub>16</sub>	x 4 <sup>1</sup> / <sub>8</sub>	Standard 8 Hole Socket	6	44 5.45
PORTABLE "B" BATTERIES							
P7830	45B	3 <sup>9</sup> / <sub>16</sub>	x 1 <sup>13</sup> / <sub>16</sub>	x 5 <sup>1</sup> / <sub>2</sub>	Combination B Socket	6	13 2.15
P5303	45B	4 <sup>1</sup> / <sub>8</sub>	x 2 <sup>5</sup> / <sub>8</sub>	x 5 <sup>5</sup> / <sub>16</sub>	Combination B Socket	6	16 2.15
P430	45B	3 <sup>7</sup> / <sub>16</sub>	x 2 <sup>1</sup> / <sub>4</sub>	x 4 <sup>1</sup> / <sub>2</sub>	Combination B Socket	6	10 <sup>1</sup> / <sub>4</sub> 2.30
4367	67 <sup>1</sup> / <sub>2</sub> B	2 <sup>5</sup> / <sub>8</sub>	x 1 <sup>5</sup> / <sub>16</sub>	x 3 <sup>3</sup> / <sub>8</sub>	2 Snap Fasteners	12	2.45
FARM "A" BATTERIES							
P9403	3A	11 <sup>11</sup> / <sub>16</sub>	x 4	x 5 <sup>15</sup> / <sub>16</sub>	2 Hole Socket	1	14 4.90 \$5.15
P9203	1 <sup>1</sup> / <sub>2</sub> A	7 <sup>11</sup> / <sub>16</sub>	x 2 <sup>13</sup> / <sub>16</sub>	x 7	2 Hole Socket	6	42 <sup>1</sup> / <sub>2</sub> 3.30 3.30
FARM "AB" BATTERIES							
AB85	1 <sup>1</sup> / <sub>2</sub> A-90B	10 <sup>13</sup> / <sub>16</sub>	x 2 <sup>3</sup> / <sub>4</sub>	x 6 <sup>3</sup> / <sub>8</sub>	4 Hole Socket	6	53 <sup>1</sup> / <sub>2</sub> 5.70 6.00
AB82	1 <sup>1</sup> / <sub>2</sub> A-90B	15 <sup>3</sup> / <sub>4</sub>	x 4 <sup>1</sup> / <sub>8</sub>	x 6 <sup>3</sup> / <sub>4</sub>	4 Hole Socket	1	21 7.50 7.80
FARM "B" BATTERIES							
P9303	45B	8 <sup>1</sup> / <sub>16</sub>	x 4 <sup>5</sup> / <sub>16</sub>	x 7 <sup>3</sup> / <sub>16</sub>	3 Hole Socket	4	45 2.93 3.14
P2303	45B	8 <sup>1</sup> / <sub>16</sub>	x 3 <sup>3</sup> / <sub>16</sub>	x 7 <sup>3</sup> / <sub>16</sub>	3 Hole Socket	6	46 2.40 2.40
FARM "C" BATTERIES							
*P231W	4 <sup>1</sup> / <sub>2</sub> C	4 <sup>1</sup> / <sub>16</sub>	x 1 <sup>7</sup> / <sub>16</sub>	x 3 <sup>1</sup> / <sub>16</sub>	3 Hole Socket	10	7 <sup>1</sup> / <sub>4</sub> .75
* 531R	4 <sup>1</sup> / <sub>2</sub> C	2 <sup>3</sup> / <sub>8</sub>	x 1 <sup>3</sup> / <sub>16</sub>	x 2 <sup>9</sup> / <sub>16</sub>	Screw	10	3 .63
* 551	7 <sup>1</sup> / <sub>2</sub> C	3 <sup>15</sup> / <sub>16</sub>	x 7 <sup>3</sup> / <sub>8</sub>	x 2 <sup>13</sup> / <sub>16</sub>	5 Screw 1 Pigtail	10	6 1.10
*P5151	22 <sup>1</sup> / <sub>2</sub> B or C	4	x 2 <sup>1</sup> / <sub>4</sub>	x 3	5 Hole Socket	6	8 1.70

\*Indicates special battery types made on order only and not carried in stock.