

# CHI-RAD

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## Wholesale Radio

Catalog No. 17

1932

Lowest confidential  
wholesale prices for  
high quality merchandise

4413  
3 17  
ESTABLISHED 1921

Phone Harrison 2276-77

Chicago Radio Apparatus  
Company, Inc.

415 So. Dearborn St.  
MAIN FLOOR

CHICAGO, U. S. A.

By Cable — "Chirad-Chicago"

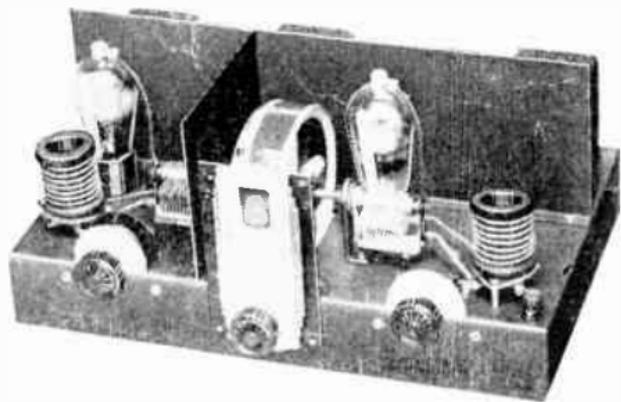
Nov. 1931

New 1931-2

# NATIONAL

Double Screen Grid 5-Tube Thrill Boxes—  
Types SW5 & SW45—AC and DC Models

The NATIONAL 5-tube short-wave tuners or "Thrill Boxes," Types SW5 and SW45, have been designed in response to a continuous demand for sensitive yet easily tuned (single dial control)



short-wave receivers, capable of giving consistent loud-speaker reception from various foreign short-wave broadcasting stations, as well as meeting all of the stringent requirements of both the amateur and commercial operator.

Both Battery and AC power models are available. This eliminates the necessity for both A and B batteries in the majority of installations. For camps, boats, expeditions, etc., where AC power is not available, the battery model has been designed. This model makes use of the non-microphonic battery type tubes designed for this particular type of service. As a result, it is exceedingly economical on both A and B batteries.

Provisions have been made for using the Eveready Air Cell Battery with the Battery model.

The circuit comprises a stage of tuned screen-grid R.F., employing specially designed coupling transformer and a screen-grid detector. The 2-stage audio amplifier uses push-pull in the second or output stage. A jack is provided in the output circuit of the first stage for headphone reception when desired.

The NATIONAL 1931-2 AC model Thrill Boxes are designed for using the UY-235 Variable Mu Screen-Grid tubes in the R.F. and Detector stages.

The NATIONAL 270° patented tuning condensers are employed, permitting greater spread of the stations and, together with the NATIONAL velvet vernier drive, make separate station logging easy and accurate.

The set is thoroughly shielded and furnished in an attractive all metal cabinet. Four pair of R.F. transformers are furnished to cover the range from 15 to 115 meters. Special transformers are available for other ranges and are listed in this catalog.

The Power Packs are separate units, in order to avoid any possible hum resulting from location inside of the tuning cabinet, and are furnished with a handy cable and connector plug to facilitate connection. The power packs use a UX289 rectifier tube and are licensed under RCA patents.

See catalog for proper power supply to order for use with the AC Thrill Boxes.

## Complete Parts

Catalog Symbol	Name of Parts	List Price	Net Price
ACSW5 NATIONAL	complete set of parts for 5-tube AC Short-Wave Thrill Box when using '27 tubes in output stage	\$79.50	\$46.75
ACSW45 NATIONAL	complete set of parts for 5-tube AC Short-Wave Thrill Box when using '45 tubes in output stage	79.50	46.75
DCSW5 NATIONAL	complete set of parts for 5-tube Battery operated Short-Wave Thrill Box	75.00	44.10
We can have any of the above sets of parts wired for you by Jackson Research Laboratories at an additional list price of		10.00	5.87
Special net price for ACSW5 Tuner N. 1888, Pack and Tubes			75.00
Tubes required for AC model: 2—'35, 3—'27, 1—'0 or 2—'35, 1—'27, 2—'45, 1—'80.			
Tubes required for DC model: 1—'30, 2—'31, 2—'32.			
See tube prices.			

## Catalogue No. 17 Shipping Instructions

This is our catalog No. 17 and we put into it the items which will have the greatest appeal and for which there is the most demand. We can also supply any other standard items for which there is only an occasional demand if request be made. If you have special needs let us hear from you and we will advise whether we can supply.

All merchandise which we sell has been carefully selected by us with a view to honest value and high quality. We guarantee it to be as represented and we will make good on this guarantee promptly and cheerfully if found to be other than as stated.

IN ORDERING IF YOU WISH PROMPT SHIPMENT DO NOT SEND PERSONAL CHECKS AS WE WILL HOLD ORDER UNTIL CHECK CLEARS AT BANK ON WHICH IT IS DRAWN. DO NOT REQUEST C.O.D. SHIPMENTS WITHOUT DEPOSIT AS WE POSITIVELY WILL NOT SHIP THAT WAY. ON AMOUNTS UNDER FIVE DOLLARS PLEASE SEND FULL AMOUNT WITH ORDER.

PLEASE USE ENCLOSED ORDER BLANKS AND REQUEST MORE IF YOU WANT THEM. CONFORMANCE WITH THESE REQUESTS WILL SPEED SHIPMENT OF ORDERS.

KINDLY DO NOT ASK US TO OPEN ACCOUNTS ON OUR LEDGER FOR SMALL ORDERS, AS THE MARGIN IN THE PARTS BUSINESS IS NOT ADEQUATE TO COVER.

Chicago Radio Apparatus Company

Wm. Roy Carney, *President*

G. E. Joyce, *Vice-President* ("W9RA")

R. A. Joyce, *Treasurer* (ex. "W9SX-W9CZ")

Wm. S. Joyce, *Secretary*

*We have been in the radio business since 1921 and  
in radio since 1909.*

*Our bank is the Continental-Illinois Bank & Trust Co., Chicago.  
We give you as reference any manufacturer whose parts we sell.  
Dun's or Bradstreet.*

### *Audiola Five Tube T.R.F. Receiver*



18" High by 15" Wide

Model 506 —  
Five tube Pentode Receiver employing both Pentode and Variable-Mu tubes. Equipped with vernier full vision dial and phantom light indicator with spot tuning. Full range tone control and 8 $\frac{1}{2}$ " Jensen dynamic speaker. A beautiful walnut cabinet with very effective grille. Oriental walnut face with attractive panel decorations. A real distance getting set with beautiful deep tone. Uses the following tubes: 2-35; 1-24; 1-47; 1-80. Complete with genuine De Forest or Speed tubes.  
Price..NET \$30.50

## New 1931-2 National 5-Tube Short Wave Converter Range 15 to 185 Meters

This Converter is designed to occupy the same place in the Converter field as the well-known SW5 Thrill Boxes have in the Short-Wave Receiver field. It is also designed to give results regardless of the type of broadcast receiver used. This is accomplished by including enough inherent amplification in the Converter itself so that it will give very satisfactory results even with insensitive receivers.

The circuit comprises a stage of high frequency amplification automatically resonated by means of the new NATIONAL harmonic-tuned input circuit, an exclusive feature of this Converter. Then there is the usual first detector-oscillator combination and finally, the stage of high-gain 1,000 K. C. intermediate frequency amplification to make up for the deficiency in gain obtained when the Converter is used with some types of broadcast receivers.

Of course, there is also the built in power supply using the UX-226 rectifier.

### NO PLUG-IN COILS

A unique feature in the design is the R 39 combination coil mounting and switching panels located at each end of the chassis. These panels also contain the built in "padding" condensers for making the oscillator and first detector circuits track.

The coil forms, likewise, are molded of R 39, the special low-loss material developed for exclusive use in the NATIONAL shortwave products. The coils are so mounted as to prevent any inter-coupling and thus all "dead" spots in the tuning range are conspicuous by their absence.

A very useful feature is the inclusion of an experimental set of coil forms and contacts on the frequency shifting switch, which permits of an experimental frequency range which may be altered at will to cover the reception of any new stations or frequencies outside of the range of the standard Converter that may be erected in the future. Thus, all the flexibility of the plug-in type Converter, without any of its inconveniences, is available in this new instrument.

A novel and attractive feature is the manner of indicating the particular pair of coils in the circuit at any one time. As the wave changing switch is turned to throw the different pairs of coils into the circuit, the color of the illumination of the main dial light also changes and thus serves as an indicator of the frequency range to which the receiver is adjusted.

### INTERLOCKING AND DEAD SPOT ELIMINATION

Due to very thorough shielding, as well as wide separation of the first detector and oscillator circuits, there is no tendency to interlock and thus extremely stable operation is obtained over the wide range of from 15 to 185 meters.

### EASY TO CONNECT AND USE

Simply connect the antenna to the NC-5 and the NC-5 by its lead to the antenna post on your set. The NC-5 has its own built-in power supply. Plug its power cable into the baseboard receptacle alongside the one from your set and it is ready. Turn the switch when you want to receive broadcasts in the usual way. It is unnecessary to disconnect in any way.

The general construction and appearance, as well as the quality of material employed, of the NATIONAL Converter, is the same as the SW5 Thrill Boxes.

The tubes employed are on UY-235, two UY-224, an UY-227 and an UX-226.

The Converter is available for 110 volts, 50-60 cycles; 220 volts, 50-60 cycles, and 110 volts, 25-40 cycles.

### DE LUXE MODEL

In hand-rubbed, mahogany finished case with genuine inlay on front panel. A fitting companion for the most beautiful radio set. Chassis identical with standard model.

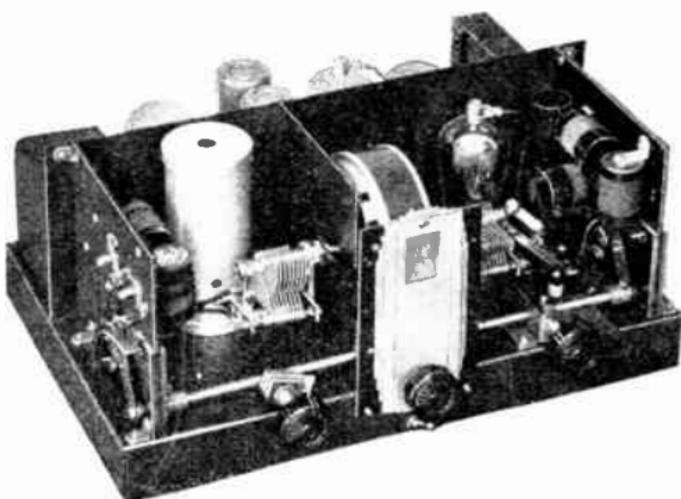
NC5—NATIONAL 5-Tube Shortwave Converter, completely wired and laboratory tested (less tubes) in Metal Cabinet. List \$75.00...NET \$44.10

NC5M—NATIONAL 5-Tube Shortwave Converter, completely wired and laboratory tested (less tubes) in Mahogany Finish Cabinet. List \$85.00 .....NET \$49.98

Above prices are on units for use on 105-120 Volt, 220-230 Volt, 50-60 Cycle, A.C. current. When desired for 110 Volt, 25-40 Cycle, A.C. current add to List price \$5.00 .....NET \$2.94

Tubes (any make) per set .....NET \$4.84

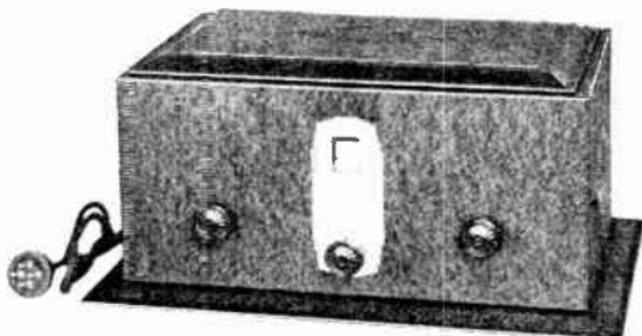
This is the best converter we have tested but it will give most satisfactory results in locations where there are not many local broadcast stations.



*List of Parts for ACSW5 Thrill Box*

1 Foundation Unit

—comprising a metal base completely drilled and equipped with tube and coil sockets, resistor mountings, etc., shield partitions, brackets and loud speaker jacks, binding posts, tube shields, wire wound B potentiometer resistor, and 6 ft. cable with connector plug.



1 Foundation Unit	List \$16.50.....	NET \$ 9.70
2 NATIONAL SE-90 tuning condensers.	List \$7.50.....	NET 4.41
1 NATIONAL Screen-grid Detector Audio Coupler, No. S101.	List \$5.50 .....	NET 3.23
1 NATIONAL Push Pull In on Transformer, No. S-51.	List \$5.50 .....	NET 3.23
1 NATIONAL Push Pull Output Transformer, No. S-11.	List \$5.50 .....	NET 3.23
1 NATIONAL "HS" dial, 150 degree rotation with special insulated bearings.	List \$6.00.....	NET 3.53
1 NATIONAL R.F. Choke, No. 92.	List 70c.....	NET .42
1 NATIONAL Trimmer Condenser with Knob.	List \$2.50..	NET 1.47
1 Set of eight NATIONAL SW5 R.F. Transformers.	List \$20.00 .....	NET 11.76
3 Aerovox .01 P.S. Condenser, No. 1350.	List \$1.95.....	NET 1.15
2 Aerovox .00025 Condenser, No. 1400.	List 60c.....	NET .36
1 Lynch Veritas 2-watt 2000 ohm P.C. Resistor.	List 50c....	NET .30
1 Lynch Veritas 2-watt 1000 ohm P.C. Resistor.	List 50c....	NET .30
1 Lynch Veritas 2-watt 350 ohm P.C. Resistor.	List 50c....	NET .30
1 Lynch Veritas 2-watt 2 meg. P.C. Resistor.	List 50c....	NET .30
1 Frost 50,000 ohm Potentiometer with NATIONAL Knob.	List \$1.75 .....	NET 1.03
1 Closed Circuit Jack with insulating bushings.	List 50c....	NET .30
1 By-pass Condenser double 1/2 mfd. in single can.	List \$1.00.	NET .59
1 Metal Cabinet.	List \$7.50.....	NET 4.41

**MODELS RECOMMENDED FOR DIFFERENT TYPES OF RECEPTION**

**ACSW5** This model uses the heater type tubes throughout and is especially designed for technical and communication work. The tubes employed are two 2Y-235 variable Mu and three 2Y-227s (a pair of the latter in the push-pull or output stage).

**ACSW45**—This model has been designed to use the 245 tubes in the push-pull output stage. This gives fine quality with large volume for those interested in broadcast reception programs only.

After many tests and comparisons we consider the NATIONAL Short Wave Receivers the best on the market today. (Parts may be purchased separately, if desired.)

*National Parts For Auto Radio*

The new NATIONAL Pentode Auto Radio Receiver uses the new type 236 tubes in the R. F. and detector stages and a single Pentode 238 in the output stage. As a result greater sensitivity and volume with less drain on A and B batteries is possible than when using the older type of tubes.

Precision built parts and a rigid mounting arrangement results in the elimination of many squeaks and other disturbing noises and greatly facilitates tuning. A rigidly constructed variable condenser is used so that the set will not be jarred out of trim when traveling over fairly rough roads.

Any good 6 Volt dynamic speaker having an output transformer for a single pentode may be used with this receiver.

**TYPE PARC**—National Pentode Auto Receiver, completely wired with battery box and cable, less tubes and speaker. Price .....

NET \$35.00

*Audiola Receivers*

Model 710—Seven tube Superheterodyne employing both Pentode and Variable-Mu tubes. Equipped with tone control, full vision dial, phantom light indicator and dynamic speaker. An exceptionally attractive Gothic cabinet with figured stump walnut front panel. A real superheterodyne with beautiful tone. Uses the following tubes: 2-35; 2-24; 1-27; 1-47; 1-80. Price complete with genuine Cunningham or Radion tubes.....NET \$38.50

Model No. 110—Table for above. List price .....\$5.00



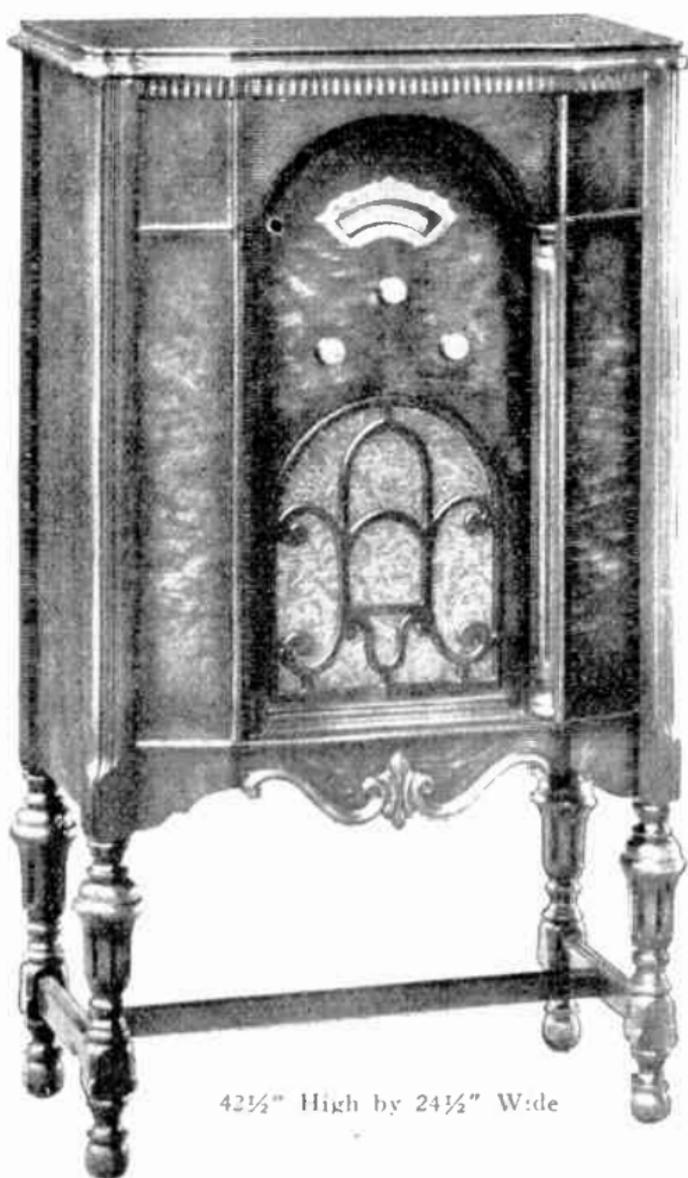
18" High by 15" Wide



Model 712—Seven tube FULL SIZE Superheterodyne employing both Pentode and Variable-Mu tubes. Equipped with tone control, full vision dial, phantom light indicator and dynamic speaker. The above Console is FULL SIZE with beautiful front panel of figured stump walnut and decorative panels of lacewood and burl walnut. Uses the following tubes: 2-35; 2-24; 1-27; 1-47; 1-80. Price complete with genuine Cunningham or Radion tubes....NET \$48.95

39½" High by 23½" Wide

*Audiola—"Known for Its Tone"*



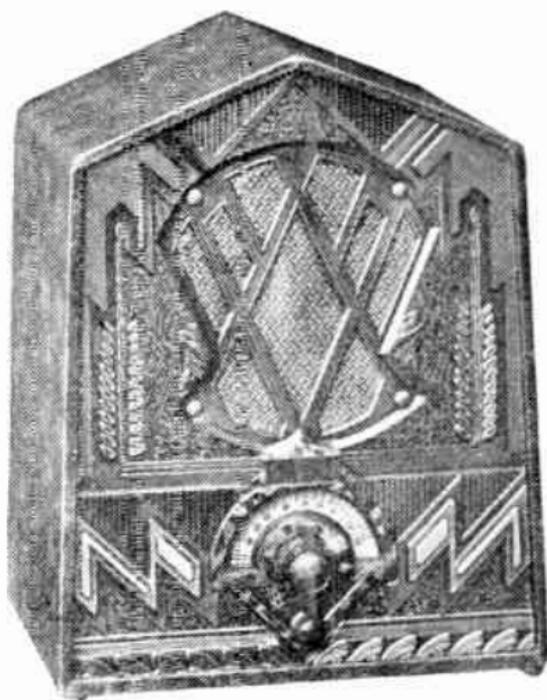
42½" High by 24½" Wide

**Model 914** — Nine tube FULL SIZE sturdily constructed superheterodyne, employing in addition to two Variable-Mu tubes, also two Pentode tubes in push-pull, preceded by a first audio stage. A powerful receiver with tremendous volume output. Tone control, full vision dial, phantom light indicator and large 12" dynamic speaker. Beautiful substantial cabinet. Uses following tubes: 2-35; 1-24; 3-27; 2-47; 1-80. Complete with genuine Speed or DeForest tubes. Price ..... **NET \$62.50**

**Model 714** — Seven tube FULL SIZE Superheterodyne employing both Pentode and Variable-Mu tubes. Equipped with tone control, full vision dial, phantom light indicator and large 12" dynamic speaker. The above cabinet is a striking example of the latest trend in Radio Consoles of exclusive quality and design. Uses the following tubes: 2-35; 1-27; 1-47; 1-80. Complete with De Forest or Speed tubes. Price ..... **NET \$55.95**

2-24; 1-27; 1-47; 1-80. Complete with De Forest or Speed tubes. Price .....

**Model 416** — Four tube Pentode Receiver employing both Pentode and Variable-Mu tubes. Equipped with full vision dial, phantom light indicator and high quality Jensen dynamic speaker. A beautiful embossed leatherette cabinet with colored decorations that will blend with the finest home surroundings. Gorgeous deep rich tone. Uses the following tubes: 1-35; 1-24; 1-47; 1-80. Price complete with genuine Cunningham or Radiotron tubes. .... **NET \$19.95**



13½" High by 10½" Wide

# Wireless Egert Apparatus

## Amateur Band Dynatron Oscillator and Monitor

MODEL NO. 142



supplied. Dimensions 10"x8"x7 1/4". Weight 8 1/2 lbs.  
Without calibration  
With calibration

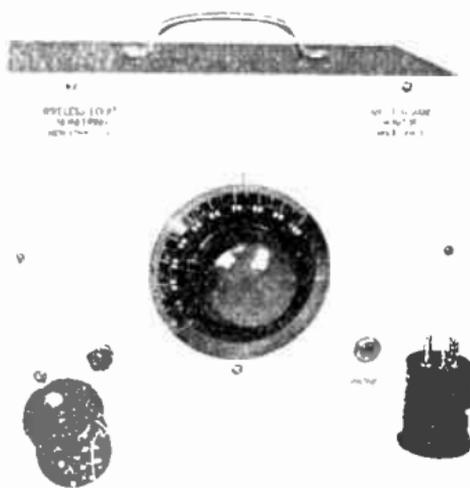
NET \$19.12  
NET \$23.12

The combination Dynatron Oscillator and Monitor Model No. 142 has been designed to accommodate amateur needs. A coil wound to match the condenser capacity for operation on the 160 meter amateur band is supplied. The coil is placed inside the cabinet. A rugged condenser is used to insure against deviations of frequency. A jack is supplied for inserting 'phone tips. A variable resistance and a millimeter are provided to maintain a definite plate current. A vernier dial is supplied for accurate readings. The instrument can be obtained calibrated or not calibrated. A filament lighting transformer is

## Amateur Band Monitor

MODEL NO. 140

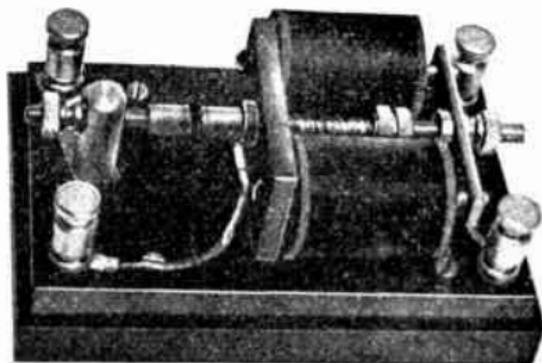
Due to the close frequency limitations on amateur band transmitters, it has been necessary to use a monitor for checking the frequency of the transmitted signal regularly. The No. 140 monitor using a UX 199 has been especially designed for this purpose. An extremely rugged condenser with a variable maximum and minimum capacity is used. The tube socket and coil socket are mounted on a bakelite base which is fastened to the front panel by means of brackets. A Vernier dial is used for the frequency variation. Three coils are provided with the monitor for the 20, 40 and 80 meter bands, respectively. The coils are especially designed to give coverage of the bands over 140 degrees of the dial. The condenser has a straight line frequency characteristic, and the resultant frequency variation varies almost directly with the degrees on the dial. The unit presents a handsome appearance. An aluminum front panel and a black crystallized box is used. Space is provided in the cabinet for two No. 6 Burgess regulation dry cells and one small 22 1/2-volt Burgess battery No. 4156. A jack is provided for plugging in the phones. This jack controls the filament of the tube, as well as a pilot light. Dimensions 10"x8"x7 1/4". Weight 6 1/2 lbs.



NET \$19.12

## Keying Relay

MODEL NO. 200



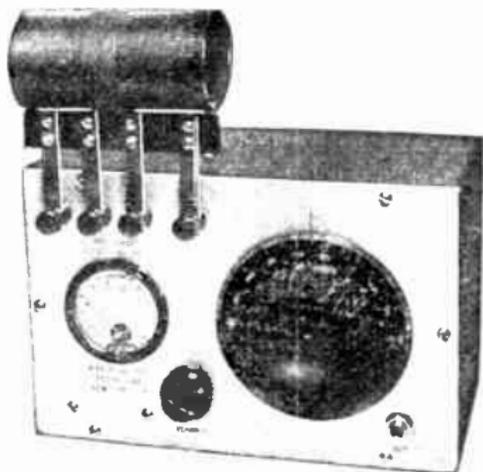
There is also a provision made for varying the gap to 1/4". Hardy metal contacts are used on the gaps. This metal is rapidly replacing platinum and silver as a standard for relay contacts. The relay is insulated for 4,000 volts (peak). Dimensions 4 1/2"x3"x1 7/8". Weight 3/4 lb. NET \$4.60

# WIRELESS EGERT APPARATUS

## Radio Frequency Oscillator

MODEL NO. 301

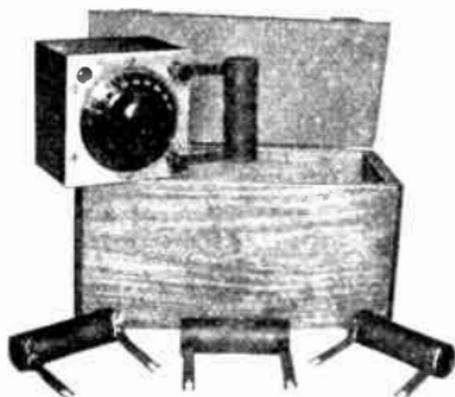
The radio frequency oscillator No. 301 is useful for general laboratory measurement and test work. The instrument employs a plate current meter and is constructed so as to enable one to use any of the standard receiving tubes. A good grade of condenser is employed. As in the indicating wavemeter No. 401, various capacities of condensers are available. Coils are available from frequencies ranging from 10 to 2,000 meters. Coils are mounted on heavy nickle-plated copper strips to allow for quick changes of frequency bands. Please specify upper and lower units of coils when ordering. Clearly defined calibration sheets provided with each coil. Dimensions 8"x6"x6¼". Weight 5 lbs.



With one calibrated coil..... NET \$21.50  
 Each extra coil..... NET \$ 4.90

## Wave Meter

MODEL NO. 400

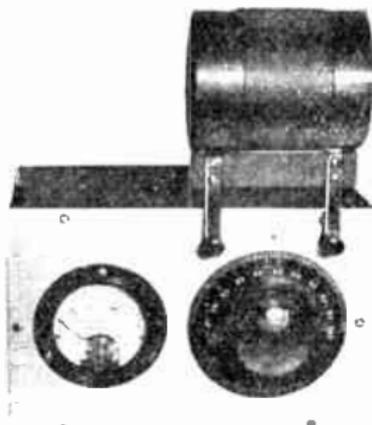


The wavemeter No. 400 has been designed for all wave calibrations covering wave lengths varying from 17 to 550 meters. A calibration curve is supplied with each of the four coils used — accuracy being within 1%. A standard rugged condenser mounted in a handy crystalized cabinet is supplied. The coils are of the removable type for a quick changeover. A standard vernier dial is supplied, thereby allowing for accurate readings. A neon bulb is supplied for obtaining indication. The coils and condenser fit into a small portable carrying case. Dimensions 10¼"x5"x7". Weight, 3½ lbs. NET \$15.42

## Indicating Frequency Meter

MODEL NO. 401

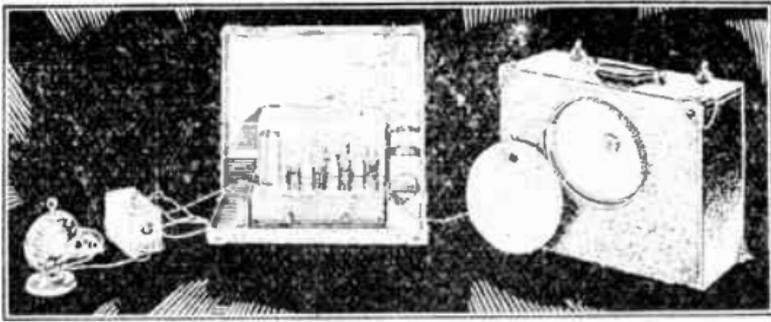
The indicating frequency meter No. 401 has been designed for laboratory uses where a higher accuracy of calibration is desired. A micrometer dial is provided to give a very close reading, measuring up to 1/10 of 1 division, on the dial. A standard condenser of exceptionally rugged construction is used to avoid frequency variations caused by mechanical changes. A full sized thermo-galvanometer with a 0-100 scale is used for peak indications. Condensers of different capacities can be employed to give an exact frequency spread over the whole dial. Coils can be obtained covering any given possible range over wave lengths varying from 10 to 2,000 meters. Specify upper and lower limits of coils when ordering. Clearly defined calibration sheets provided with each coil. Dimensions 8"x6"x6¼". Weight, 5¼ lbs.



With one calibrated coil..... NET \$33.80  
 Each extra coil..... NET \$ 4.90

### Note

The First Item on this page, the Radio Frequency Oscillator is especially useful in connection with short wave receivers. It will enable one to definitely locate a foreign broadcast frequency by simply placing it alongside your receiver and tuning it to the desired frequency.

*Silver-Marshall 686 Portable PA System*

The No. 686 Open Ready for Use.

**PERFORMANCE**

The Silver Marshall 686 is an unbeatable portable power amplifier system and is the lowest priced complete portable on the market having 7 to 8 watts output and a gain of 90db or better. It has a hundred uses; for banquets, political speeches, dances, home movies, stunts and an unlimited number of advertising possibilities. It can be rented to schools, churches, clubs, lodges, hotels and dozens of similar organizations. Four rentals will pay for it, leaving the rest all profit and the complete unit standing you nothing. On selling one, gives you back your original investment and enough profit to buy another.

Due to the use of two 247 pentode power output tubes the high frequency response is exceptional, giving a curve that is flat to within 2db from 40 to 8,500 cycles. The reproduction is remarkably life-like giving crisp speech and all necessary overtones whether used with microphone, record pickup or for sound movies with a PE cell.

The amplifier is entirely free from hum, providing speaker cable is kept well away from any of the input circuit.

The universal application of such a unit makes it most attractive from a sales standpoint and an item that any dealer, radio service man, etc. cannot afford to be without.

**DESCRIPTION**

The Silver Marshall 686 Portable PA System is a complete unit, even to including tubes. All equipment is mounted in one carrying case with a total weight of less than 70 lbs.

Figure 1 shows the case opened, with that section which is used for the speaker baffle removed. There is 25 feet of speaker cable furnished so that this speaker and baffle can be operated at a distance from the amplifier. If desired, satisfactory operation can be had with added cord to allow operation of speaker at a distance of 100 feet or more. The amplifier is fundamentally the same as the S-M684.

Figure 3 shows the schematic of the entire assembly including microphone and control box connections. The control box is equipped with microphone current control and jack for inserting meter to adjust to proper drain. Control box is also equipped with two tip jacks for the connection of phonograph pick-up. Any impedance pick-up may be used.

The two unused binding posts in the center of the amplifier are voltage supply for PE Cell. Instructions are shown in Figure 3 (within the dotted lines) for connecting an external control for proper voltage. The variable resistance is a 100,000 ohm potentiometer, the condenser an 8 m.f.d. electrolytic.

The amplifier develops seven to eight watts out-put and when used with microphone should give a coverage, inside, of over 1,000 people, the coverage outside in the open being dependent upon circumstances.

The microphone is a double button voice reinforcement type of microphone and comes completely mounted in desk stand, as shown in illustration.

The Silver Marshall 686 is completely AC operated even to current for the microphone. The two controls on the amplifier are as follows: The knob to the right, on-off switch; the knob to the left, gain control.

Additional speakers cannot be satisfactorily connected to the 686, due to the fact that the amplifier is designed to hook into a 15 ohm load only, unless three additional 15 ohm voice coil speakers such as the SM852 are used, all four speakers being connected in series parallel. In this case the out-put per speaker would be a little over 1½ watts.

**OPERATION**

The Silver-Marshall 686 is shipped complete with tubes which should be inserted in their respective sockets before amplifier is plugged into AC line.

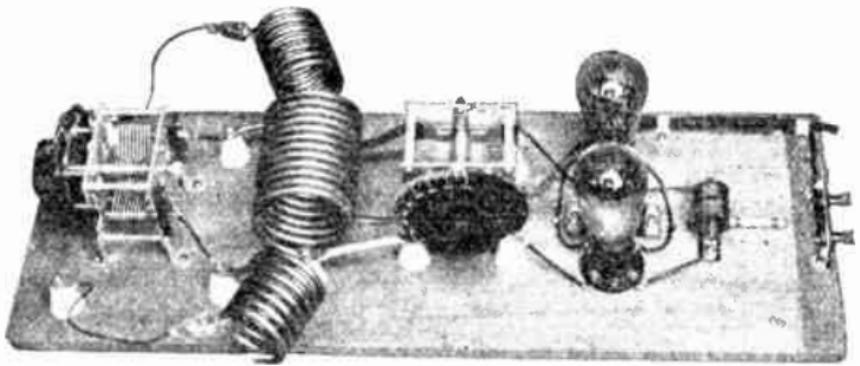
While tubes are heating, microphone should be connected to the control box and adjusted.

One of the microphone cords has a red tracer lead. This should be inserted in the middle (black) of the three microphone tip jacks. The arrow knob on the control box should be turned to the left only far enough to give satisfactory microphone operation. Speaker should be placed in desired position and as far away from microphone as possible to prevent feed-back. If any instability appears a good ground should be connected to the grounded in-put post on the amplifier.

Weight 70 lbs.

Absolutely complete, even to tubes. List \$199.50 ..... **NET \$117.30**

*The National UX245 Push-Pull Transmitter*



**LIST OF PARTS**  
The Push-Pull Oscillator

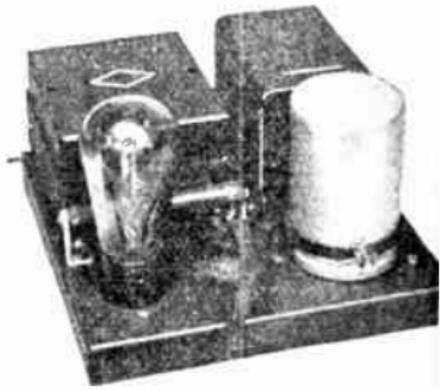
- 1 National Variable Condenser EM .0005 with Velvet Vernier Dial.
- 1 National Variable Condenser EM .0005 with Velvet Vernier Dial.
- 1 Set Inductances Type G, complete with clips, lead, grid coils and sockets.
- 2 Sockets, (Four Prong.)
- 10 Special Mounting Insulators.
- 1 Lynch 50,000 ohm Grid Resistor.
- 1 Center tap resistor (30 ohms).
- 2 Mica by-pass condensers .01 mfd
- 1 Key Terminal Panel.
- 1 Cable and Plug.
- 1 Baseboard 24"x9"x5/8".

Cat. No. GTO Complete Kit, as Above **NET \$17.35**

NATIONAL Power Supply for Push-Pull Transmitter, completely wired and RCA Licensed, Cat. No. GPP **NET \$17.35**

TOTAL Transmitter Kit and Completely wired Power Supply, Cat. No. GPTC **NET \$33.83**

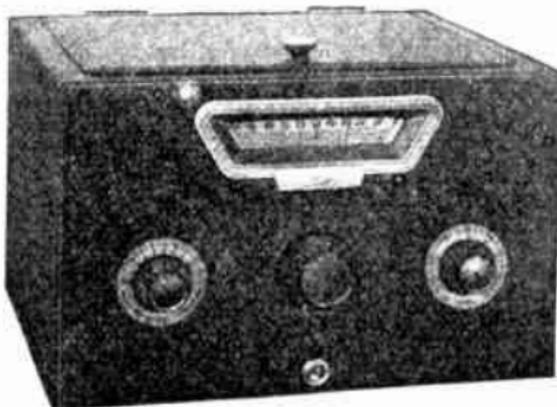
Tubes necessary: 2 '45, 1 '80 (Any make), Total **NET \$1.90**



Booklet "Push-Pull Transmitter for Amateur Use" may be had by mail from us for four cents in stamps. (Describes in detail the above transmitter.)

*R. E. L. Band Spread Receiver (Short Wave)*

Cat. 278—Code "Eirsu"



An efficient Band Spread Receiver specially designed for amateur purposes. Compact, rugged and light in weight; regularly furnished with 20, 40 and 80 meter plug-in coils which are designed to give full dial spread tuning of each of the amateur bands.

Each receiver is individually calibrated so that full spread tuning will be obtained on each band.

When it leaves the factory it is wired for the following tube arrangement:

- 1 Type 36 Screen Grid RF; 1 Type 36 Screen Grid Detector
- 1—Type—38 Pentode Audio.

This arrangement requires 6 volts for the filament and 135 volts "B" supply. The purchaser, by making a slight change to the connection on the Pentode Audio Socket, may thereby employ the A.C. type of tubes which will have the following sequence:

Type 35 in the RF; Type—35 in the Detector; Type—27 in the Audio.

Dimensions of the receiver cabinet are 11" wide x 7" high x 9 1/2" deep. The net weight is 11 1/2 pounds.

Price **NET \$28.50**

25 and 49 meter band coils for this receiver can also be had. See under Inductances.

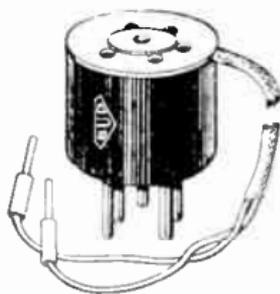
### Bud 45 to Pentode Adapter

Enables the Radio Set owner to modernize his Radio Set. All that is necessary is to remove the 245 or 345 Power Tubes from Radio Set, and insert in their place BUD 45 to PENTODE ADAPTER. Then place Pentode Tube in Adapter. No wiring changes are necessary.



No. 123

No. 123 BUD '45 to PENTODE ADAPTER .....\$0.59



No. 162  
Bud Ear-Phone Adapter  
Price \$0.59

### No. 299

#### BUD Phono or Microphone Adapter

Enables the use of a phonograph Pick up for any receiver not equipped with phone jacks.

Price \$0.59



No. 116

Price for pair.....NET \$0.69

### Bud Output Adapter

Designed so that additional speakers can be connected to any of the newer radio sets that are using push-pull amplification without having to disconnect any of the wiring of radio set or solder any connections. Packed 2 in box.

£

### Bud Output Adapter

BUD OUTPUT ADAPTER designed so that both grid and plate connections can be taken from tube, enabling the connecting of additional speakers, and also the use of a Tone Control or Aud Radio Silencer.

Price for pair...

NET \$0.95



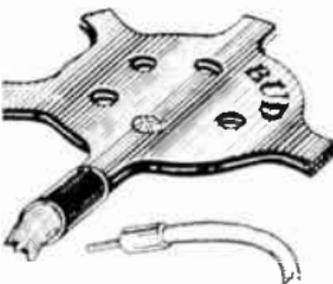
No. 117

### 5 PRONG ADAPTER

We can furnish contacts on any prong desired.

No. 111 Pentode Output Adapter. Price per pair ..... \$0.80

No. 112 Phonograph Adapter. Price each ..... \$0.44



### Special Adapters

Readrite Special Adapters may be had for testing tubes and circuits from UX, UY or UV sockets as required. A few of the more important adapters are listed below.

No. 54—Contains 5 prong Sockets on a 4 prong Plug. Has all connections complete to plug.  
NET \$0.59

No. 45—Contains 4 prong Socket on a 5 prong Plug. Has all connections complete to plug.  
NET \$0.59

No. 20—Adapter for using tubes of 199 type having the UV base and adapting same in the standard UX socket. .... NET \$0.44

No. 19—Adapter has standard UX socket on UV plug for attaching to UV socket. .... NET \$0.59

No. 24—Adapter for testing Kellogg type tubes in Tube Testers. .... NET \$0.59

No. 80—Adapter for testing double plate tubes. UX type for testing both plates. .... NET \$0.88

No. PT—Adapter for testing the new Pentode Output tube in '27 socket of No. 400 tester.

No. 06—Adapter for testing Pentode Output tube in earlier model set testers  
NET \$0.59  
NET \$0.59



No. 45

**Belden Aerial Lead-in Strips**

The conductor is a thin flat strip. The tough Colrubber insulation bends easily under the window and is waterproof. Clips riveted and soldered at both ends.

- No. 8811. 15-in. strip, per strip NET \$0.09
- No. 8890. 12 in. strip, per strip NET .06



**Stiktape Aerial**

IS THE KIND OF AERIAL YOU HAVE BEEN WAITING FOR

The EAR OF THE AIR



ITS **NEW**

AND IT STICKS TO ANYTHING! ANYWHERE

Here at last is the convenient, good looking, dependable aerial for which radio dealers and set owners have been waiting. Your radio set is no better than its aerial, then why be satisfied with poor substitute aerials. STIKTAPE AERIAL is the modern solution to your radio installation problem.

STIKTAPE IS A GENUINE AERIAL AND NOT AN AERIAL SUBSTITUTE

Stiktape is made of a new metallic alloy of great capacity, the back of which is coated with an adhesive rubber that will stick to any surface. It can be easily concealed behind picture moulding, or on baseboard or under rug on floor or behind drapes, etc.

- List \$1.00 ..... NET \$0.59

**Brach Bakelite Storm King Non-Air Gap Lightning Arrester**

The Storm King Lightning Arrester is non-grounding; and is operated on the well-known Non-Air Gap principle of protection. List \$1.00.....NET \$0.59

- Storm Guard Arrester. List \$1.50 ..... NET \$0.88
- Type 210 Vacuum Arrester. List \$1.50 ..... NET \$0.88
- Type 223 Vacuum Arrester. List \$2.50 ..... NET \$1.47

Brach Lightning Arresters are listed by the National Board of Fire Underwriters under the Re-examination Service, and are backed by a \$100 Insurance Guaranty.



**Belden Radio Lightning Arresters**



Thoroughly sturdy, reliable protector designed for installation either inside or out-of-doors. Body of heavy porcelain furnishes weather-proof enclosure for the electrodes. Listed as standard by the National Board of Fire Underwriters.

- No. 8812—Resistor Type. List per arrester \$0.50 NET \$0.30
- No. 8813—Standard Type. List per arrester \$0.25 NET \$0.15

**PLEASE NOTE!**

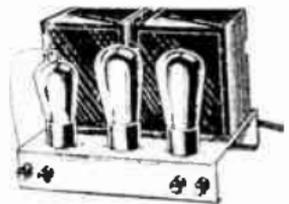
We can furnish almost any type of amplifier for public address work and will be pleased to send descriptive literature upon request.

### Electrad-Loftin-White A-245 Amplifier Kit

The Electrad A-245 Amplifier is Licensed Under Patents of Radio Corporation of America and Associated Companies for radio, amateur, experimental and broadcast reception.

This kit contains complete parts (including drilled metal chassis) for constructing a two-stage power amplifier for 110 volt A-C operation, utilizing the revolutionary Loftin-White Direct-Couple System.

In this system, the plate of one tube is coupled directly to the grid of the next—eliminating condensers and transformers which reduce tube efficiency and limit tone range. Requires fewer parts, hence costs less. Simplifies assembly and service. The Amplifier requires one '24, one '45 and one '80 tube—and provides tremendous amplification with a rich vibrant tone. Can be used with the Electrad A-224 Tuner Kit (below) or tuners having similar characteristics. Ideal for experimental purposes. Unusually easy to assemble and operate.



Complete parts (less tubes), with assembly and operating instructions.  
 List \$35.00  
 Electrad A 250 Amplifier, List \$87.50  
 Electrad C 250 (250 Push Pull)

NET \$20.58  
 NET 51.55  
 NET 79.38

### Burgess Batteries

No. 21308 Burgess Super-B — Extra Heavy Duty—45 Volt—This extra heavy duty Super "B" gives 30 to 50% longer service than other heavy duty batteries. Made of especially constructed larger cells. Size 7 3/8" x 8 1/4" x 4 1/2". List \$3.25 NET \$2.51

Case of 6, Net each \$2.28



No. 22308 Burgess Super-B — Vertical—45 Volt — This new Super "B" gives 35 to 40% greater capacity than the ordinary type such as No. 2308 Burgess. Size 7 1/8" x 7 1/8" x 3 1/4". List \$2.35

Case of 6, Net each \$1.65

NET \$1.82

Stock No.	Unit Pkg. Quantity	Weight Unit Pkg	List Price	Net Price each, Less Unit Pkg.	Net Price each in Unit Pkgs
<b>"B" Batteries</b>					
10308	45 Volts	6	\$2.60	\$2.00	\$1.82
2308	45 Volts	6	1.75	1.35	1.23
2306	45 Volts	5	2.00	1.54	1.40
5308	45 Volts	5	1.87	1.54	1.40
2158	22 1/2 Volts	5	2.47	1.50	1.16
2156	22 1/2 Volts	5	2.57	1.50	1.05
5156	22 1/2 Volts	10	1.75	.97	.88
4156	22 1/2 Volts	10	1.25	.97	.88
<b>"C" Batteries</b>					
5360	4 1/2 Volts	10	\$0.40	\$0.31	\$0.28
2370	4 1/2 Volts	10	.40	.31	.28
5540	7 1/2 Volts	10	.75	.58	.53
5156	22 1/2 Volts	10	1.25	.97	.88
<b>"A" Batteries</b>					
No. 6	1 1/2 Volts	25	62 lbs.	\$0.50	\$0.35 1/2
<b>Special Automobile "B" Battery</b>					
2305	45 Volts	6	58 1/2 lbs.	\$2.25	\$1.74
				\$1.74	\$1.58

### Vesta Radio "A" Batteries

Rubber Case — High Grade Material — Well Known Product.

Amp. Hrs.	Plates per Cell	Wt., Lbs.	List Price	NET PRICE
75	7	44	14.75	\$ 8.67
100	9	53	16.90	10.00

## Eveready "A" Battery for Air Cell Receivers

EVEREADY No. A-600 Air Cell "A" Battery is an air depolarized, constant voltage, non-rechargeable primary battery, especially designed and guaranteed ONLY for use as the "A" battery for Air Cell Receivers. An Air Cell Receiver is a factory-made battery operated receiver specially designed and built around the Eveready Air Cell "A" Battery and the Air Cell (2-volt) tubes and which has been officially approved for Air Cell Battery operation by the Eveready Research Laboratory.

Its high capacity of 600 ampere hours is sufficient to operate an approved Air Cell Receiver for at least 1,000 hours. At an average use of 3 hours daily, it will take a whole year to use up the 1,000 hours battery life. At greater daily periods of operation, the 1,000 hours will be used up proportionally quicker.



The Eveready Air Cell "A" Battery uses a liquid electrolyte, but is shipped dry. In the dry state, it undergoes no depreciation. It can be activated for service at any time after manufacture and still deliver its full quota of ampere hours. It is activated for service by filling with water.

Length, 13½ inches; width, 6¼ inches; height over all, 10 inches, weight, dry, 25 pounds; filled with water, 37 pounds, capacity, 600 ampere hours; maximum load to which battery should be subject, 650 milli amperes.

No. A-600 Air Cell "A" Battery. List \$8.50 ... NET \$5.95

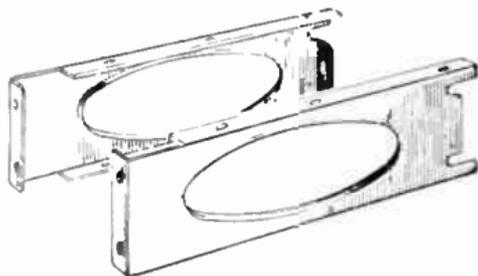
## American Radio Hardware Brackets

These sub-panel brackets are manufactured sturdily of non-magnetic aluminum. Not only can they be used for radio receivers but also for battery eliminators.

No. 7—6¾" x 2".  
Per pair ..... NET \$0.35

No. 8—8½" x 1".  
Per pair ..... NET \$0.35

No. 11—11" x 2".  
Per pair ..... NET \$0.47



## Signal R-60 High Frequency Buzzer

This type buzzer is adjustable. Has standard resistance of 2 ohms. Black crystallized lacquer finish.  
List \$1.25 ..... NET \$0.95

# Books and Manuals

## *The Latest Edition Radio Amateur's Handbook*

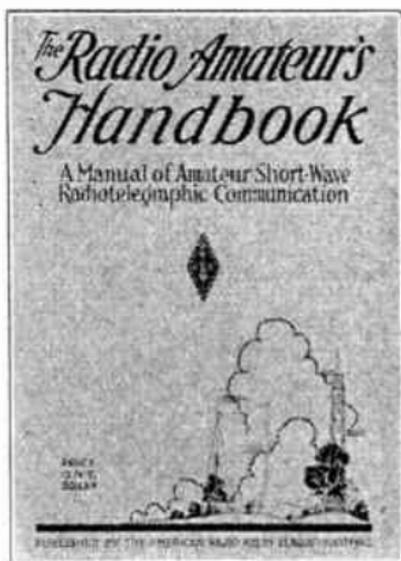
### FOR THOSE WHO DON'T KNOW IT:

The Handbook is a practical manual of amateur radio in all its phases, published by the American Radio Relay League, the amateur's own organization. It starts at the beginning and tells the whole story: What amateur radio is, How to be a radio amateur, How to obtain your licenses, How to build the simple apparatus of a simple station, How to build the best known apparatus for the most modern station, How to operate the station. Enough information to keep you busy and interested for five years.

### FOR THOSE WHO DO KNOW IT:

For years the Handbook has been the practical working guide of successful amateurs the world over. Now it has been completely revised in terms of 1930, by Mr. Handy, the League's Communication Manager, as to all the aspects of operating procedure, and by Mr. Hull, the director of the League's current Technical Development Program, as to all its features of apparatus and technical matters. Everything in it is on a 1930 basis, replacing old methods which used to be good enough but aren't any more.

In Paper Binding.....NET \$1.00



## *Citizens' Radio Amateur Call Book*

### ALWAYS UP-TO-DATE

Issued quarterly, March, June, September and December. Amateur and Commercial Stations from 83 different countries. Single copies.....NET \$1.00



## *The Radio Manual*

### A HANDBOOK FOR STUDENTS, AMATEURS, OPERATORS, AND INSPECTORS

For the first time an entire course of training in one book—the most complete and up-to-date work on radio. Developed simply and clearly from the elementary stage right through all phases of principles, practice, and apparatus so that a beginner with no knowledge of electricity may get all he needs either for amateur operation or to qualify for a government license as operator or inspector.

The author, G. E. Sterling, is Radio Inspector and Examining Officer, Radio Division, U. S. Dept. of Commerce. The book has been edited in detail by Robert S. Kruse, for five years Technical Editor of QST, the Magazine of the Radio Relay League. Many other experts assisted them.

16 Chapters Cover: Elementary Electricity and Magnetism; Motors and Generators; Storage Batteries and Charging Circuits; The Vacuum Tube; Circuits Employed in Vacuum Tube Transmitters; Modulating Systems; Wavemeters; Piezo-Electric Oscillators; Wave Traps; Marine Vacuum Tube Transmitters; Radio Broadcasting Equipment; Arc Transmitters; Spark Transmitters; Commercial Radio Receivers; Radio Beacons and Direction Finders; Radio Laws and Regulations; Handling and Abstracting Traffic.

New Information never before available such as a complete description of the Western Electric 5-Kilowatt Broadcasting Transmitter; description and circuit diagram of Western Electric Superheterodyne Radio Receiving Outfit type 6004-C; Navy Standard 2-Kilowatt Spark Transmitter; etc.; etc.

Every detail up to the minute. List \$6.00.....NET \$5.75

**"How to Become a Radio Amateur"**

"How to Become a Radio Amateur" explains in the simplest possible language what amateur radio is, how to learn the code, how to build a simple transmitter and receiver, and how to operate them. In its 38 pages it contains everything necessary to convert John W. Public into a ham.

Just the thing to give to that friend of yours who wants to get started and doesn't know how. And it will save you lots of time answering his questions.

Per copy ..... NET \$0.15

**The Manual of Short-Wave Radio**

An authoritative 64-page book describing in full the latest and best short-wave receiving circuits, adaptors, meters, etc.....50c



**The NEW 1931  
Trouble Shooter's  
MANUAL**

by  
**John F. Rider**

With the FREE Question and Answer Service  
More than 950 pages! More than 1800 diagrams, illustrations, &c.

This is the most complete book ever offered to the radio service men. Nothing has been left undone to furnish every bit of radio service information which may be of value to the radio service man.

The wiring diagrams are complete with socket layouts, set analyzer, voltage data, electrical constants, color code, chassis layout. . . . Commercial broadcast receivers, short wave receivers and adaptors, kit receivers, nidget receivers, set analyzers, public address systems, power amplifiers, power packs, tube data, a complete Radio Service Course in Trouble Shooting, principles and application of the set analyzer, a separate section devoted to the peculiarities in radio receivers.

**Complete!!! Complete!!! COMPLETE!!!!!!**

Modern up-to-date in every respect. Hot off the press! If you do service work you must have this book. It is sold with a money back guarantee. . . . One successful repair job pays for the cost of the book.

More than 950 pages and more than 1800 diagrams, illustrations, &c.

Price, each ..... NET \$4.45

**RADIO SERVICE SCHEMATICS** of many well known radio receivers. New and enlarged edition published once a year. Price per copy.....\$1.00  
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A. R. R. L. Log Books .....	NET \$0.40
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A. R. R. L. Radiograms (100 sheets to pad) .....	NET .35
Trouble Shooter's Manual by John F. Rider .....	NET 4.45
Practical Testing Systems.....	NET 1.00
Practical Repairing Hints.....	NET 2.00
CRL Service Man's Guide.....	NET .20
Drake Radio Cyclopeda by Manly.....	NET 6.00
Gernsback Official Radio Service Manual .....	NET 5.00
National Short Wave Manuals.....	NET .50
Sterling Radio Manual.....	NET 5.75
Servicing Superheterodynes .....	NET 1.00
Radio Service Schematics.....	NET 1.00

## Yaxley Cable Connector Devices



Nos. 670 and 627

### 4—CONDUCTOR

No. 645-4—Receptacle Plug. List \$0.90.....	NET \$0.54
No. 635-4—Pin Plug. List \$0.90.....	NET \$0.54
No. 680-4—Mounting Plate. List \$0.65.....	NET \$0.39

### 7—CONDUCTOR

No. 660—Cable Connector Plug, complete with 5-foot Cable (see illustration). List \$3.00.....	NET \$1.76
No. 669—Same as No. 660 excepting with extra Tip Jacks in mounting plate. List \$3.25.....	NET \$1.92
No. 670—Binding Post type, complete with cable (see illustration). List \$3.50.....	NET \$2.06
No. 635—Pin Plug. List \$1.00.....	NET \$0.59
No. 645—Receptacle Plug. List \$1.00.....	NET \$0.59
No. 650—Receptacle Plug and 5-foot Cable. List \$2.25.....	NET \$1.32
No. 680—Mounting Plate. List \$0.75.....	NET \$0.44

### 12—CONDUCTOR

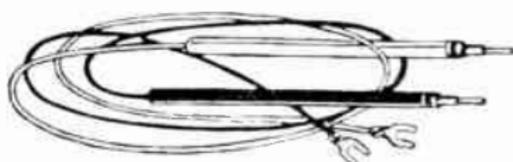
No. 612—Cable Connector Plug with 4-ft Cable. List \$5.00.....	NET \$2.94
No. 627—Binding Post Type (see illustration No. 670). List \$6.00.....	NET \$3.53
No. 615—Receptacle Plug. List \$1.25.....	NET \$0.73
No. 616—Receptacle Plug and 4-foot Cable. List \$4.00.....	NET \$2.35
No. 625—Pin Plug. List \$1.25.....	NET \$0.73
No. 682—Mounting Plate. List \$1.00.....	NET \$0.59

### CABLES

12 Conductor, furnished in 4-foot length only. List \$2.25.....	NET \$1.47
7 Conductor, 5-foot length. List \$1.00.....	NET \$0.66
Extra feet over 5, 7 Conductor, per foot. List \$0.15.....	NET \$0.10

Cable Connector Devices also furnished in 5, 6, 8, 9, 10, and 11 Conductor types. Prices on request.

### Cables



No. 31

No. 222—Cord 30" long with clips for connecting control grid of all screen-grid tubes to the set connection. Supplied with Readrite testers 245-A, 15-A, 14-A, 14-B, 9-A, 216. Type AO. NET \$0.29

No. 31—Two red and black wires test leads 4 ft. long. Fibre covered tips one end. NET \$0.38

A great convenience for testing purposes.....	NET \$0.38
No. 13—Cord 4 ft. long with tips each end, red and black. Supplied with Readrite testers 245-A, 15-A, 700, 600, 9-A. Per pair.....	NET \$0.29
No. 21—Cable 3 ft. long with 3 conductors connected one end to 4 prong plug, other end to marked terminals for filament and plate connections.....	NET \$0.59
No. 22—Cable same as No. 21 but with 4 conductors, including grid terminal.....	NET \$0.73
No. 25—Cable 3 ft. long with 5 conductors connecting one end to 5 prong plug. Marked terminals other end. Used for Short Wave, also as a 5-lead battery cable.....	NET \$0.88
No. 27—Cable same as No. 25 except with pin jack tips. Used with No. 245-A tester.....	NET \$0.88

## Chokes

### Chi-Rad Filter Chokes

Cores of silicon steel.				
No.	Henries	M. A.	D.C. Res. Ohms	NET
600	50	30	1200	\$1.90
630	30	80	400	1.95
650	50	80	400	2.15
700	30	100	200	1.95

Fully guaranteed.

### National Type 80 Filter Chokes

A pair of heavy duty filter chokes, cased in a single container, for use in filter circuits of B-Power Supplies and Power Amplifiers. List \$10.00..... NET \$5.88

**AmerChokes—AmerTran Reactors**

Henries	Amps. D. C.	D. C. Ohms	See Notes	Test Volts	Type No.	List Price	NET
<b>PLATE FILTER AMERCHOKES</b>							
8	0.350	65	.....	2,500	4725	\$18.00	\$10.58
10	0.160	105	.....	2,500	4724	8.00	4.70
13	0.250	130	.....	2,500	557A	18.00	10.58
15	0.120	210	.....	2,500	709	8.00	4.70
40	0.060	625	.....	2,500	854	8.00	4.70
<b>"A" FILTER AMERCHOKE</b>							
0.16	2.5	0.5	.....	2,500	418	8.00	4.70
<b>PARALLEL-FEED AMERCHOKES</b>							
125	0.005	674	2	2,500	103	10.00	5.88
300	0.003	6100	1	2,500	3842	8.00	4.70
650	0.005	674	1 & 2	2,500	988A	20.00	11.76
<b>OUTPUT AMERCHOKES</b>							
40	0.06	674	.....	2,500	101	10.00	5.88
400	0.06	674	3	2,500	641	10.00	5.88
<b>GRID IMPEDANCE AMERCHOKE</b>							
1500	None	6,000	1	2,500	3793	8.00	4.70
<b>DOUBLE "B" AMERCHOKE</b>							
15	0.120	210	.....	2,500	709 854	15.00	8.82
40	0.060	625	.....	.....	.....	.....	.....

If you are interested in any other AMERTRAN PRODUCTS let us hear from you as we can supply anything they make at right prices.

**Silver-Marshall Filter Chokes**

**331 Unichoke (Quake)**—A two-winding high inductance filter choke licensed under the Clough Patent Application. Its filtration when properly used is guaranteed to be superior to that of any other standard filters. Tuned section eliminates 120 cycle ripple. Only 6 Mfd. condenser capacity necessary instead of the usual 12 used by others. Inductance of primary 2 henries; secondary 30 henries at 110 m.a. load. Air gap prevents saturation. Continuous rating of 125 m.a. may be doubled for short periods. D. C. resistance of primary 4.85 ohms; secondary 395 ohms. With electrostatic shield and soldering lugs. Shipping weight, 5 pounds. ....NET \$4.70



**331U Unichoke (Quaker)**—Same as 331, above, except unmounted for manufacturers' use. Shipping weight, 5 pounds. ....NET \$4.12

**10065 Power Choke (Quick)**—A high inductance power choke as used in 692 amplifier mounted with cast end-plates. Inductance 37 henries at 0 mls. D.C. resistance 220 ohms. Shipping weight, 5 pounds. NET \$4.41

**10116 Filter Choke (Quiet)**—A low inductance high current choke as used in 50 watt amplifier. Inductance 2.2 henries at 150 mls. D.C. resistance 45 ohms. ....NET \$5.00

**10119 Filter Choke (Quote)**—A new filter choke with fairly high inductance at heavy draws for use in high voltage power supplies. Inductance 65 henries at 70 mls. D.C. resistance 950 ohms. ....NET \$4.41

**10125 Filter Choke (Quorum)**—An extra heavy current choke with satisfactory inductance for use in high voltage supply for 845 type tubes. Inductance 11 henries at 200 mls. D.C. resistance 90 ohms. ....NET \$5.88

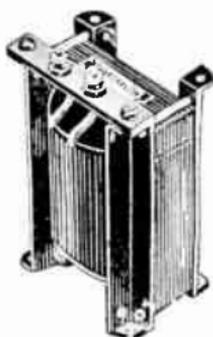
**333 Dual Filter Choke (Uniradio)**—A dual audio choke assembly consisting of two chokes mounted upon one frame and so poled as to give better filtration than is obtainable with two separate chokes. Resistance 400 ohms per coil, inductance 40 henries at 40 milliamperes per coil. Intended for operation with three 2 m.f. condensers (one at input, one at center, and one at output). Open mounted, size 2 7/8" wide, 3 7/8" high and 1 1/2" thick, equipped with separate soldering lugs for each coil. Shipping weight, 2 1/2 pounds. ....NET \$2.65

**338U Filter Choke (Crake)**—A high inductance filter choke for low current filter circuits. D.C. resistance 2400 ohms, inductance 40 henries at 20 milliamperes. Open mounted with soldering lugs and with clamp type mounting feet, size 2 1/2"x2"x2". Shipping weight, 2 pounds. NET \$1.53

**339U Choke (Blake)**—A low inductance filter choke intended as a companion to type 338U above but for use in the first section of filter. D.C. resistance 108 ohms, inductance 4 henries at 50 milliamperes. Similar in appearance, size and weight to the 338U. Shipping weight, 2 pounds. NET \$1.53

### Thordarson Filter and Plate Reactors

- R-196—Code "Polar." 30 Henry, 80 M. A., 1000 V. insulation, shielded. Weight, 2 lbs. List \$4.00...NET \$2.35
- T-2353—Code "Transit." 6 Henry, 150 M. A., 3000 V. insulation, open frame. Weight, 3 lbs. List \$7.50...NET \$4.41
- T-2071—Code "Transition." 30 Henry, 150 M. A., 3000 V. insulation, open frame. 5 lbs. List \$14.00...NET \$8.23
- T-2027—Code "Transitive," 30 Henry, 300 M.A., 3000V., insulation, open frame. 14 lbs. List \$18.00...NET \$10.60
- T-2073—Code "Transitory." 30 Henry, 500 M.A., 3000V. insulation, open frame. 24 lbs. List \$20.00...NET \$11.76



### Thordarson Double Choke Units

- Designed for use in filter circuit of power supply devices using power supply transformers T-2098, T-2900, T-2950, respectively, or other similar transformers. Contains two 30 henry chokes.
- T-2099—Code "Police." 130 M. A. List \$12.00...NET \$7.06
  - T-3099—Code "Poplin." 160 M. A. List \$14.00...NET \$8.23
  - T-3100—Code "Poppet." 200 M. A. List \$16.00...NET \$9.40
  - T-2376—Code "Porgy." 1.5 Henry, 200 Mils., 1600 V. insulation. Filter choke in key circuits. List \$5.00...NET \$2.94
  - T-2458—Code "Polo." Open mounting. Each choke 18 Henry, 250 M. A. D. C. 2000 V. insulation. 108.5 ohms each choke. Shipping weight, 14 lbs. List \$19.50...NET \$11.47

### Thordarson R-105 Replacement Filter Choke

Designed to replace defective filter or speaker coupling chokes where it is not required to carry more than 75 m.a. of current. Mounted same as R-101 transformer. List \$2.00...NET \$1.18



### Filter Reactors

- T-4451 ..... NET \$ 8.82  
Inductance: 25 henries.  
Capacity: 150 M. A.  
Insulation: 3000 Volts.
- T-4456 ..... NET \$11.76  
Inductance: 25 henries.  
Capacity: 250 M. A.  
Insulation: 7000 Volts.
- T-4461 ..... NET \$29.40  
Inductance: 25 henries.  
Capacity: 750 M. A.  
Insulation: 7000 Volts.

### The "Chi Rad" R. F. Choke

The Chi Rad R.F. choke is wound on bakelite tube and will handle 1000 mills on the 20, 40 and 80 meter bands. Size 3 3/4 inches long, 1 inch diameter.

NET \$0.85



### National Radio Frequency Choke

Type 90—An especially compact unit, so built as to fit into any standard grid-leak mounting. It is of the proper value for use in all by-passing work on the screen-grid or plate circuits of screen-grid tubes and between the detector and the first audio tube, in accordance with the best audio-amplifier practice. The multi-section winding makes this choke suitable for short wave as well as broadcast work. List, without mounting, \$1.25...NET \$0.74

No. 250.....NET \$0.95



### Silver-Marshall R. F. Chokes

No. 275 R. F. Choke—May be used in any circuit where any RF choke is specified. Designed to operate on wavelengths up to 600 meters. Inductance  $2\frac{1}{2}$  millihenries. Size  $1 \times 1\frac{1}{2}$  inches. Shipping weight 2 oz. NET \$0.44

No. 276 R. F. Choke—Similar in all respects to No. 275 except that it is designed for long wave use from 600 meters up. Inductance 10 millihenries. Shipping weight 2 oz. NET \$0.44

No. 277 R. F. Choke—A special R. F. choke of very low distributed capacity for short-wave use between 10 and 200 meters. Inductance 3.4 mh. Average distributed capacity, 1 mmfd. Shipping weight 2 oz. NET \$0.73



### Hammarlund RFC-85 R.F. Choke

Genuine helical winding of finest grade enameled wire. Sealed in one-piece cast Bakelite case. Takes minimum space. Inductance 85 millihenries. Capacity 3 mmfd. Resistance 215 ohms. Code

No. RFC-85. Each, List \$2.00.....NET \$1.18  
No. RFC-250. Each, List \$2.25.....NET \$1.32

250 M. H. cap. 2 mmf. D.C. Res. 420 ohms.

### Hammarlund Shielded Polarized R. F. Choke

A radio frequency choke specially developed for modern high-gain shield grid receivers. Shielded in an aluminum shell and polarized. Minimum external field. No undesired coupling to cause circuit instability or feedback. High inductance, low distributed capacity, efficient, compact.

List \$1.50 .....NET \$0.88

### Acme Parvolt By-Pass Condensers

Designed for operation in direct current circuits in which a maximum working voltage of 200 is present, and in alternating currents in which the working voltage does not exceed 100.

Series	Mfd.	Height	Width	Depth	List Price	NET
200	0.1	1 $\frac{1}{8}$ "	1 $\frac{1}{2}$ "	$\frac{5}{8}$ "	\$0.85.....	\$0.50
200	0.25	1 $\frac{1}{8}$ "	1 $\frac{1}{2}$ "	$\frac{5}{8}$ "	.90.....	.53
200	0.5	1 $\frac{1}{8}$ "	1 $\frac{1}{2}$ "	$\frac{5}{8}$ "	.95.....	.57
200	1.0	1 $\frac{1}{8}$ "	1 $\frac{1}{2}$ "	$\frac{1}{2}$ "	1.10.....	.65
200	2.0	1 $\frac{1}{8}$ "	1 $\frac{1}{2}$ "	1 $\frac{1}{4}$ "	1.70.....	1.10
200	4.0	1 $\frac{1}{8}$ "	2 $\frac{1}{8}$ "	2 $\frac{1}{8}$ "	2.80.....	1.65



### For Continuous Operating Voltages up to 250 Volts D. C. (120 rms. A. C.)

Type	Capacity	Size	List	NET
B 10	.10 Mfd.	2x1 $\frac{3}{4}$ x $\frac{1}{8}$	\$0.65	\$0.38
B 25	.25 Mfd.	2x1 $\frac{3}{4}$ x $\frac{1}{8}$	.75	.44
B 50	.50 Mfd.	2x1 $\frac{3}{4}$ x $\frac{1}{8}$	.80	.47
B 100	1 Mfd.	2x1 $\frac{3}{4}$ x $\frac{1}{8}$	.95	.56
B 200	2 Mfd.	2x1 $\frac{3}{4}$ x 1 $\frac{3}{8}$	1.50	.88
B 400	4 Mfd.	2x1 $\frac{3}{4}$ x 1 $\frac{3}{4}$	3.00	1.76

FOR CONTINUOUS OPERATING VOLTAGES UP TO  
450 VOLTS D. C. (220 rms. A. C.)

### Flechtheim

Type	Capacity	Size	List	NET
F 10	.10 Mfd.	2 x 1 $\frac{3}{4}$ x $\frac{1}{8}$	\$0.75	\$0.44
F 25	.25 Mfd.	2 x 1 $\frac{3}{4}$ x $\frac{1}{8}$	.80	.47
F 50	.50 Mfd.	2 x 1 $\frac{3}{4}$ x $\frac{1}{8}$	.85	.50
F 100	1 Mfd.	2 x 1 $\frac{3}{4}$ x 1	1.25	.73
F 200	2 Mfd.	2 x 1 $\frac{3}{4}$ x 1 $\frac{3}{8}$	2.00	1.18
F 400	4 Mfd.	4 $\frac{1}{2}$ x 1 $\frac{3}{4}$ x 1 $\frac{3}{4}$	3.50	2.06
F 401*	4 Mfd.	2 x 1 $\frac{3}{4}$ x 2 $\frac{1}{8}$	3.50	2.06
F 501	0-1-1-1-1-1	2 x 1 $\frac{3}{4}$ x 5	6.00	3.53

\*Type 401 is especially designed as an Output Condenser, and is smaller than Type F 400.

### Non-Inductive Compact Type By-Pass Condensers

TYPE GB, RATED AT 200 V. D.C. (120 rms. A.C.)

Manufacturer's type. Inverted shell construction, small and neat.

Type	Capacity	Size	NET
GB 10	.10 Mfd.	"X1" "X1"	\$0.24
GB 25	.25 Mfd.	"X1 1/2" "X1 1/2"	.26
GB 50	.50 Mfd.	"X1 1/2" "X1 1/2"	.29
GB 100	1 Mfd.	"X2" "X1 1/2"	.41
GB 200	2 Mfd.	"X2" "X1 1/2"	.71
GB 400	4 Mfd.	"X2" "X1 1/2"	1.23



Types GB—GF

### Non-Inductive Service Type By-Pass Condensers

TYPE SB, RATED AT 250 V. D.C. (120 rms. A. C.)

Type SB is similar to type B in all respects with the exception that it is furnished in a plain metal container of simplified design. Packed in bulk, no individual cartons being used.



Types SB—SF

Type	Capacity	Size	NET
SB 10	.10 Mfd.	2"X1 1/2"X1 1/2"	\$0.32
SB 25	.25 Mfd.	2"X1 1/2"X1 1/2"	.35
SB 50	.50 Mfd.	2"X1 1/2"X1 1/2"	.38
SB 100	1 Mfd.	2"X1 1/2"X1 1/2"	.44
SB 200	2 Mfd.	2"X1 1/2"X1 1/2"	.73
SB 400	4 Mfd.	2"X1 1/2"X1 1/2"	1.41

### Sangamo Fixed Condensers

600 VOLT D. C. BREAK DOWN

Sizes and prices are as follows:

CAPACITIES		CAPACITIES		CAPAC.	
mfd.	mmf.	mfd.	mmf.	mfd.	
0.00004	— 40	0.0004	— 400	0.003	} 36c
0.00005	— 50	0.0005	— 500	0.0035	
0.00006	— 60	0.0006	— 600	0.004	} \$0.42
0.00007	— 70	0.0007	— 700	0.005	
0.00008	— 80	0.0008	— 800	0.006	.51
0.0001	— 100	0.001		0.007	.54
0.00012	— 120	0.0012		0.0075	.57
0.00015	— 150	0.0015		0.008	.58
0.000175	— 175	0.00175		0.01	.68
0.0002	— 200	0.002		0.012	.70
0.00025	— 250	0.0025		0.015	.73
0.0003	— 300				
0.00035	— 350				



With Resistor Clips, 10 cents extra

### Sangamo High Voltage Condensers

Class 3—Tested at 5,000 volts DC. Come in capacities from .00004 to .002 mfd. See Sangamo standard mica condensers for capacities between and including these limits. List \$2.00 NET \$1.10

### Illini Type B Condenser



004	1000
005	5000
006	5000
01	10000

Capacity			
Mfd.	Mmfd.	NET	
00005	— 50	NET	\$0.15
0001	— 100	NET	.15
00015	— 150	NET	.15
00025	— 250	NET	.15
0005	— 500	NET	.15
001	— 1000	NET	.18
002	— 2000	NET	.21
003	— 3000	NET	.24
		NET	.30
		NET	.35
		NET	.42
		NET	.48

## Dubilier Laboratory Type Mica Condensers

**FOR USE IN AMATEUR AND LOW POWER TRANSMITTERS**

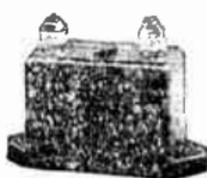
Type 577-577A and Type 6 molded capacitors cover a complete series of designs which have proven very popular with engineers and experimenters during the past twelve years because of their rugged construction, constancy of capacity and all-around superior electrical characteristics — the choice of those who require the best in the condenser art.

The test voltage ratings of these capacitors are based upon ample safety factors; however, the maximum operating voltages should not exceed 75% of the test potentials shown herewith. All condenser casings, as supplied, are marked in terms of operating voltages. The maximum radio frequency current ratings at 100 Kc. are as follows:

- Type 577 and 577A..... 2 Amperes
- Type 580..... 4 Amperes
- Type 668 and 668A..... 5 Amperes
- Type 6..... 5 Amperes

Type 668A capacitors are similar to the 668 design, except that the terminals are brought out in a horizontal instead of a vertical position.

Accuracy 10% plus or minus.



580



577-577A



668-668-A

Capacity	Type 577		Type 577-A		Type 6		Type 668-668A	
	A.C. Test Voltage	NET						
.00005 Mfd.	1,000	\$0.88	2,000	\$1.76	5,000	\$2.94	5,000	\$5.00
.0001 Mfd.	1,000	.88	2,000	1.76	5,000	2.94	5,000	5.00
.0002 Mfd.	1,000	.88	2,000	1.76	5,000	2.94	5,000	5.00
.00025 Mfd.	1,000	.88	2,000	1.76	5,000	2.94	5,000	5.00
.0005 Mfd.	1,000	.88	2,000	1.76	5,000	2.94	5,000	5.00
.001 Mfd.	1,000	.88	2,000	1.91	5,000	2.94	5,000	5.29
.0015 Mfd.	1,000	1.18	2,000	1.91	5,000	2.94	5,000	5.29
.002 Mfd.	1,000	1.18	2,000	1.91	5,000	2.94	5,000	5.29
.0025 Mfd.	1,000	1.18			5,000	2.94	5,000	5.29
.003 Mfd.	1,000	1.18			3,000	2.94	5,000	5.29
.004 Mfd.	1,000	1.18			3,000	2.94	3,000	5.29
.005 Mfd.	1,000	1.18			3,000	2.94	3,000	5.29
.006 Mfd.	1,000	1.18			3,000	2.94	3,000	5.29
.007 Mfd.	1,000	1.18			2,000	2.94	3,000	5.29
.008 Mfd.	1,000	1.18			2,000	2.94	3,000	5.29
.009 Mfd.	1,000	1.18			2,000	2.94	2,500	5.29
.01 Mfd.	1,000	1.18			2,000	2.94	2,500	5.59
.02 Mfd.					2,000	2.94	2,500	5.59
.03 Mfd.					1,000	2.94	1,250	5.59
.04 Mfd.					1,000	2.94	1,250	5.59
.05 Mfd.					1,000	2.94	1,250	5.88
.06 Mfd.					1,000	2.94	1,250	5.88
.07 Mfd.					1,000	2.94	1,250	5.88
.08 Mfd.					1,000	2.94	1,250	5.88
.09 Mfd.					1,000	2.94	1,250	5.88
.10 Mfd.					1,000	2.94	1,250	5.88

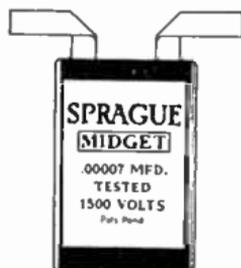
### REPLACEMENT CONDENSERS AND CONDENSER BLOCKS

We can supply upon order condensers for any make of set. Send us your order for any you may need. Include a small deposit and we warrant that our price will be as good as you can get from any supply house anywhere.

### Sprague Midget Condensers

Sprague Midget Condensers are available in sizes from .00007 MFD to .1 MFD for such uses as: By-passing high frequency currents around high impedances, for coupling condensers in resistance and impedance coupled circuits, and for detector grid condensers.

.00007	List	\$0.35	NET	\$0.21
.0001	List	\$0.35	NET	.21
.00025	List	\$0.35	NET	.21
.0005	List	\$0.35	NET	.21
.001	List	\$0.40	NET	.24
.002	List	\$0.40	NET	.24
.0025	List	\$0.40	NET	.24
.003	List	\$0.45	NET	.27
.004	List	\$0.45	NET	.27
.005	List	\$0.45	NET	.27
.006	List	\$0.45	NET	.27
.01	List	\$0.55	NET	.33
.015	List	\$0.65	NET	.39
.02	List	\$0.75	NET	.44
.05	List	\$0.85	NET	.50
.1	List	\$1.00	NET	.59
.25	List	\$1.10	NET	.65



### Flechtheim Transmitting Condensers

FOR CONTINUOUS OPERATING VOLTAGES UP TO 1500 VOLTS D. C. (750 rms. RAC)

Type	Capacity	Size	List	NET
T 100	1 Mfd.	5 1/4 x 4 3/4 x 1	\$4.50	\$2.65
T 200	2 Mfd.	5 1/4 x 4 3/4 x 2	8.50	5.00
T 400	4 Mfd.	5 1/4 x 4 3/4 x 4	14.50	8.53

There is nothing better for the small size, low powered 5, 7 1/2, 10, 25 to 50 watt amateur transmitter, than the use of the well-known type T transmitting condensers rated at 1500 Volts D. C. maximum operating potential. Carefully made and insulated, these condensers can be used successfully with filter circuits from which a pure D. C. note is desired. Designed for use either with a straight operating voltage up to 750 V. A. C. applied to the plate of the rectifier tube, or a full wave 1500 V. A. C. center tapped transformer combination.



Most of the transmitting amateurs who are up-to-date on filter circuits, use shunt resistances across the input and output of the filter circuit, primarily to absorb high potential surges which have a tendency to puncture and break down condensers very conservatively rated. The use of these shunt resistances not only protects valuable condensers, tubes and other apparatus, but also insures a steady D. C. note which can be heard at great "DX" and makes the signals easier to read. We strongly recommend their use.

FOR CONTINUOUS OPERATING VOLTAGES UP TO 2000 VOLTS D. C. (1600 rms. RAC)

Type	Capacity	Size	List	NET
TH 100	1 Mfd.	6x8x2 3/4	\$10.00	\$5.88
TH 200	2 Mfd.	6x8x3 1/2	15.00	8.82
TH 400	4 Mfd.	6x8x6	25.00	14.70

Designed for use in amateur and broadcast transmitters up to 500 watts, these condensers are being used by many of the largest stations in the country, giving excellent service. Built to withstand the heat from the modulator and oscillator tubes, these condensers are best suited for use with motor-generator units delivering up to 2000 V. D. C. Or if a source of rectified A. C. is employed, the rms. transformer rating should be no greater than 1600 V. A. C. Fitted with large porcelain insulators, these condensers are insulated in a way to prevent short-circuit to grounded case.

FOR CONTINUOUS OPERATING VOLTAGES UP TO 3000 VOLTS D. C. (2200 rms. RAC)

Type	Capacity	Size	List	NET
HP 100	1 Mfd.	6x 6 x 3 1/4	\$20.00	\$11.76
HP 200	2 Mfd.	6x 6 x 6	32.50	19.11
HP 400	4 Mfd.	6x12 1/2 x 6	60.00	35.28

These highly perfected condensers are for use in "brute force" filters where the maximum A. C. voltage supply is 2200 Volts, or 3000 V. D. C. from a motor-generator, and will smooth out the last vestige of a ripple.

FOR CONTINUOUS OPERATING VOLTAGES UP TO 5000 VOLTS D. C. (3300 rms. RAC)

Type	Capacity	Size	List	NET
VM 100	1 Mfd.	6x8 3/4 x 3	\$30.00	\$17.64
VM 200	2 Mfd.	6x8 3/4 x 4 1/8	55.00	32.34
VM 400	4 Mfd.	6x8 3/4 x 8 3/4	100.00	58.80

A new type of transmitting condenser, offered by Flechtheim—type VM, rated very conservatively at 5000 V. D. C. or 3300 rms rectified A. C.

**Type ZX: For Continuous Operating Voltages up to 7000 Volts D.C. (5000 rms. RAC)**

Exhaustive tests have proved the excellence of this high voltage type of condenser. The finest and latest improved materials have gone into the construction of these thoroughly reliable units only after the most rigid tests. And it is an acknowledged achievement to be able to produce a paper-dielectric filter condenser to operate safely at 7000 volts D.C. Already a number of stations have installed these condensers as part of their transmitting filter equipment.

Type	Capacity	Size	NET
ZX 100	1 Mfd.	10 1/4" x 5" x 5"	\$ 50.00
ZX 200	2 Mfd.	6 1/4" x 10 1/2" x 10 1/2"	95.00
ZX 400	4 Mfd.	6 1/4" x 21" x 10 1/2"	175.00



Type ZX 100 1 Mfd.  
7000 volts D.C.  
5000 rms. RAC.

The 1 Mfd. unit is cylindrical in construction, whereas the 2 Mfd. and 4 Mfd. units are rectangular. These condensers are equipped with a grounding lug which grounds the metal container, thus avoiding danger of accidental shock.

**Dubilier Capacitors**

**HIGH VOLTAGE FILTER CONDENSER**

PL. No.	Type No.	Capacity (mfd.)	D. C. Working Voltage	NET Price
3771	686A	1	1,000	\$ 2.06
3764	686A	2	1,000	3.53
3814	686A	4	1,000	6.18
3774	688A	1	2,000	4.41
3775	688A	2	2,000	7.64
3795	688A	4	2,000	13.23
3717	689A	1	1,500	2.50
3718	689A	2	1,500	4.70
3719	689A	4	1,500	7.64
3815	690A	1	3,000	11.76
3816	690A	2	3,000	19.10
3817	690A	4	3,000	35.28
3833	691A	1	5,000	17.64
3834	691A	2	5,000	28.52



**Flechtheim Non-Inductive Universal High Voltage Filter Condenser**

THE FINEST, SMALLEST HIGH VOLTAGE FILTER CONDENSERS AT REMARKABLY LOW PRICES!

TYPE HS—RATED AT 1000 V. D.C. (660 RMS. RAC)

Again Flechtheim is far ahead and in the forefront! New methods that have relegated old and antiquated ideas into discard make it possible to offer these time-proved condensers at astoundingly low prices. Exceedingly small in size, of extremely light weight and of remarkable dependability, these condensers are unexcelled in every respect.



TYPE HV—RATED AT 800 V. D.C. (440 RMS. RAC)

Made with a capacity accuracy of 5%, having a uniform resistance of over 1000 megohms per microfarad, employing special process "oil-impregnated" paper-dielectric and outstanding for their general high electrical efficiency these Flechtheim Superior Universal Filter condensers are truly marvelous. It is no wonder that they are so extensively used.

**TYPE HS—FOR TYPE '50 TUBES**

Type	Capacity	Size	No. in Carton	NET
HS 5	.05 mfd.	2" x 1 1/8" x 5/8"	10	\$0.88
HS 10	.10 mfd.	2" x 1 1/8" x 5/8"	10	1.03
HS 25	.25 mfd.	2" x 1 1/8" x 5/8"	10	1.18
HS 50	.50 mfd.	2" x 1 1/8" x 5/8"	10	1.32
HS 100	1 mfd.	2" x 1 1/8" x 1 1/8"	10	1.47
HS 200	2 mfd.	2" x 1 1/8" x 2 1/8"	10	2.65
HS 400	4 mfd.	2" x 2 1/8" x 2 3/8"	6	4.12

**TYPE HV—FOR TYPE '45 TUBES**

Type	Capacity	Size	No. in Carton	NET
HV 100	1 mfd.	2" x 1 1/8" x 5/8"	10	\$1.18
HV 200	2 mfd.	2" x 1 1/8" x 1 1/8"	10	2.06
HV 400	4 mfd.	2" x 1 1/8" x 2 3/8"	6	3.53
HV 244	0.2-4.4	3 1/16" x 4" x 2 3/4"	1	8.82

Type HV 244 is designed for push-pull '45 filters.

## Mershon Electrolytic Condensers

### STUD TYPES

Type	Mershon Cat. No.	No. of Anodes	Total Capacity	Peak Voltage	Dimensions of Container	Each NET
S-4	60002	1	4 Mfd.	430	1 3/8" x 4 1/8"	\$1.12
S-4	60061	1	4 Mfd.	450	1 3/8" x 4 1/8"	1.12
S-4	60044	1	4 Mfd.	475	1 3/8" x 4 1/8"	1.12
S-4	60062	1	4 Mfd.	500	1 3/8" x 4 1/8"	1.12
S-6	60063	1	6 Mfd.	430	1 3/8" x 4 1/8"	1.18
S-6	60064	1	6 Mfd.	450	1 3/8" x 4 1/8"	1.18
S-6	60055	1	6 Mfd.	475	1 3/8" x 4 1/8"	1.23
S-6	60030	1	6 Mfd.	500	1 3/8" x 4 1/8"	1.23
S-8	60056	1	8 Mfd.	430	1 3/8" x 4 1/8"	1.23
S-8	60065	1	8 Mfd.	450	1 3/8" x 4 1/8"	1.23
S-8	60005	1	8 Mfd.	475	1 3/8" x 4 1/8"	1.38
S-8	60067	1	8 Mfd.	500	1 3/8" x 4 1/8"	1.38
S-12	60068	1	12 Mfd.	430	1 3/4" x 4 7/8"	1.47
S-12	60070	1	12 Mfd.	450	1 3/4" x 4 7/8"	1.47

### UPRIGHT TYPES

D-8	67146	2	16 Mfd.	430	2 1/2" x 4 1/8"	2.35
D-20	60081	2	20 Mfd.	430	2 1/2" x 4 1/8"	2.65
(1-5, 1-15)						
D-26	60045	2	26 Mfd.	430	3 " x 4 1/8"	2.65
(1-8, 1-18)						
T-8	60015	3	24 Mfd.	430	3 " x 4 1/8"	3.53
Q-8	60080	4	32 Mfd.	430	3 1/4" x 4 1/8"	4.41
D-18	67098	2	36 Mfd.	430	3 " x 4 1/8"	3.68
T-36	67385	3	36 Mfd.	430	3 " x 4 1/8"	4.41
(1-18, 2-9)						
Q-52	67530	4	52 Mfd.	430	3 1/4" x 4 1/8"	6.62
(2-8, 2-18)						
S-72	60043	1	72 Mfd.	430	3 1/4" x 4 7/8"	5.88



**NOTE**—Stud Mounting Condensers are rated for capacity on the basis of 60 cycle measured capacity (as measured by General Radio Capacity Bridge) making them approximately twenty per cent (20%) higher effective rating than "electro-static" capacity used in rating upright mounting condensers.

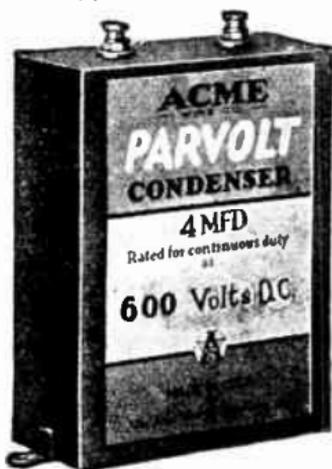
Insulation Washers for 1 3/8 in. size Container .....5c Each  
 Contact Washers for 1 3/8 in. size Container .....5c Each  
 Insulation Washers for 1 3/4 in. size Container .....5c Each  
 Contact Washers for 1 3/4 in. size Container .....5c Each

Washers apply only to stud mounting condensers. Mounting brackets are included with upright type condensers. All condensers are furnished with covers. Lock washers and nuts are included with stud mounting condensers. Studs for 1 3/8 in. diameter containers are 3/4 in. x No. 10 U. S. S. thread and for 1 3/4 in. containers are 7/8 in. x No. 9 U. S. S. thread.

## Acme Parvolt Filter Condensers

Series Number is D. C. Working Voltage  
 Height of Can—5". Width of can—3 3/4".

Series	Mid.	Depth	List Price	NET
200	1	1 1/8"	\$1.65	\$0.97
200	2	1 1/8"	1.90	1.12
200	4	1 1/8"	2.30	1.35
400	1/2	1 1/8"	1.80	1.06
400	1	1 1/8"	1.95	1.15
400	2	1 1/8"	2.45	1.43
400	4	1 1/8"	3.40	2.00
600	1	1 1/8"	2.25	1.32
600	2	1 1/8"	2.90	1.70
600	4	1 1/8"	5.10	3.00
1000	1	1 1/8"	2.90	1.70
1000	2	1 1/8"	4.75	2.79
1000	4	3 1/2"	8.80	5.18
1500	1	1 1/8"	4.00	2.35
1500	2	1 1/8"	7.00	4.12
1500	4	3 1/2"	10.00	5.88



**Non-Inductive Service Type Filter Condensers**

TYPE SF, RATED AT 450 V. D.C. (220 rms. A.C.)

Type SF is made exactly similar to type F, but here too, a plain metal container is employed thereby effecting an adequate saving. It is certainly best to pay a few cents more and get Flechtheim's than to wager the risk of using any of the many types of "dumped" condensers now on the market and with doubtful ratings.

Type	Capacity	Size	NET
SF 10	.10 Mfd.	2" x 1 3/4" x 1 1/8"	\$0.35
SF 25	.25 Mfd.	2" x 1 3/4" x 1 1/8"	.38
SF 50	.50 Mfd.	2" x 1 3/4" x 1 1/8"	.41
SF 100	1 Mfd.	2" x 1 3/4" x 1 1/8"	.59
SF 200	2 Mfd.	2" x 1 3/4" x 1 3/8"	.94
SF 400	4 Mfd.	2" x 1 3/4" x 2 1/8"	1.65

**Non-Inductive Compact Type Filter Condensers**

TYPE GF, RATED AT 400 V. D.C. (220 rms. A.C.)

Manufacturer's type. Solder-lug terminals. Excellently insulated and built to stand up, they are unexcelled for use in circuits demanding full load duty.

Type	Capacity	Size	NET
GF 10	.10 Mfd.	3/4" x 1 3/4" x 1"	\$0.29
GF 25	.25 Mfd.	3/4" x 1 3/4" x 1"	.32
GF 50	.50 Mfd.	3/4" x 1 3/4" x 1"	.38
GF 100	1 Mfd.	3/4" x 2" x 1 7/8"	.59
GF 200	2 Mfd.	1 1/8" x 2" x 1 7/8"	.85
GF 400	4 Mfd.	1 1/8" x 2" x 1 7/8"	1.59

**Non-Inductive Uncased Filter Condenser**

FOR CONTINUOUS OPERATING VOLTAGES UP TO 600 VOLTS D.C. (440 rms. RAC)

NU, a brand new type of uncased condenser that stands up, for all types of repair and construction work in type '45 circuits.

Without doubt the neatest uncased condenser made, type NU is also electrically perfect. The condenser winding is impregnated in a non-hygroscopic compound and the whole is wrapped in a waxed paper wrapper, thus making the condenser absolutely moisture-proof. Equipped with rubber covered wire leads that won't pull out.

Type	Capacity	Size	NET
NU 10	.10 Mfd.	2" x 1 1/8" x 1 1/8"	\$0.29
NU 25	.25 Mfd.	2" x 1 1/4" x 1 1/4"	.32
NU 50	.50 Mfd.	2" x 1 3/8" x 1 1/2"	.38
NU 100	1 Mfd.	2" x 1 3/4" x 1 3/4"	.59
NU 200	2 Mfd.	2" x 1 3/4" x 1 1/2"	.82
NU 400	4 Mfd.	2" x 1 1/8" x 3 1/8"	1.47



Type NU 100

**Buffer Condensers**

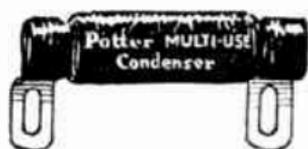
Effective in eliminating line noises and so-called background noises, the buffer condenser, which connects directly across the secondary of the plate supply transformer is widely used. Formerly thought essential for gas-filled rectifiers only, they are admirably suited for use with the mercury vapor rectifier tubes. Capacity .10-.1 mfd.

Type	Size	D.C. Voltage-A.C.	NET
F 16	2" x 1 1/8" x 1 1/8"	1000 D.C., 550 A.C.	\$1.18
F 20	1 1/2" x 4" x 1 1/4"	1500 D.C., 750 A.C.	2.06

**Condenser Blocks**

Compact, dependable and inexpensive, Flechtheim Superior Condenser Blocks are favorites with custom set builders and repair men who know the excellence of Flechtheim products.

Type	Used for	Capacity	Work. Volts	NET
F 14	171	0-2-2-8-1-1	450 D.C.	\$4.41
RM 14	171	0-2-2-8-1-1	650 D.C.	5.29
FA 10	210	0-2-2-2-4-1-1	650 D.C.	6.76
JN 45	245	0-2-2-2-1-1-1-4	800 D.C.	7.06



END LUGS—Mtg. Holes, 17/8"

SIDE LUGS—Mtg. Holes, 13/8"

Test voltage 1500 volts D. C.

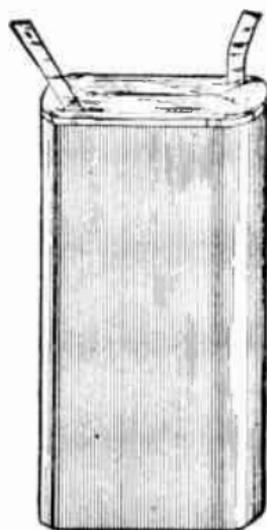
Cap. Mfd.	NET						
.001	\$0.18	.004	\$0.18	.01	\$0.21	.06	\$0.24
.002	.18	.006	.21	.02	.21	.08	.24
.003	.18	.008	.21	.04	.21	.1	.24

### Potter Filter Condensers

Code	Capacity	D. C. Test	Working Voltage D. C.	Size	NET Price
104	1. Mfd.	400V	200	1 1/2" x 5/8" x 3 1/4" Long	0.73
105	2. Mfd.	400V	210	3 1/4" x 2" x 4 3/8" Long	1.03
106	3. Mfd.	400V	200	1 1/2" x 1 1/4" x 3 3/4" Long	1.62
107	4. Mfd.	400V	200	1 1/2" x 2 1/4" x 3 3/4" Long	2.20
108	5. Mfd.	400V	200	1 1/2" x 2 5/8" x 3 3/4" Long	2.65
109	6. Mfd.	400V	200	1 1/2" x 3 1/8" x 3 3/4" Long	3.09
110	7. Mfd.	400V	200	1 1/2" x 3 5/8" x 3 3/4" Long	3.53
111	8. Mfd.	400V	200	1 1/2" x 4 1/8" x 3 3/4" Long	3.97
304	1. Mfd.	750V	400	3 1/4" x 2" x 4 3/8" Long	.88
305	2. Mfd.	750V	400	1" x 2" x 4 3/8" Long	1.76
306	3. Mfd.	750V	400	1 1/2" x 2" x 4 3/8" Long	2.65
307	4. Mfd.	750V	400	1 7/8" x 2" x 4 3/8" Long	3.53
308	5. Mfd.	750V	400	2 3/8" x 2" x 4 3/8" Long	4.12
309	6. Mfd.	750V	400	2 3/4" x 2" x 4 3/8" Long	4.70
310	7. Mfd.	750V	400	3 1/4" x 2" x 4 3/8" Long	5.29
311	8. Mfd.	750V	400	3 5/8" x 2" x 4 3/8" Long	5.88
403	.5 Mfd.	1000V	600	3 1/4" x 2" x 4 3/8" Long	.88
404	1. Mfd.	10 0V	600	1 5/8" x 1 1/8" x 4 3/8" Long	1.18
405	2. Mfd.	1000V	600	1 3/4" x 3 3/8" x 4 3/8" Long	2.06
406	3. Mfd.	1000V	600	2 1/4" x 2 7/8" x 4 3/8" Long	3.23
407	4. Mfd.	10 0V	600	2 3/8" x 3 1/4" x 4 3/8" Long	3.82
503	.5 Mfd.	2000V	1000	1 5/8" x 1 1/8" x 4 3/8" Long	1.03
504	1. Mfd.	2000V	1000	1 5/8" x 1 1/8" x 4 3/8" Long	1.47
505	2. Mfd.	20 0V	1000	1 3/4" x 3 3/8" x 4 3/8" Long	2.94
507	4. Mfd.	2000V	1000	2 1/4" x 4 1/2" x 4 3/8" Long	5.88
603	.5 Mfd.	2500V	1250	1 1/8" x 2 1/8" x 4 3/8" Long	1.62
604	1. Mfd.	2500V	1250	2 3/8" x 2 3/8" x 4 3/8" Long	1.91
605	2. Mfd.	25 0V	1250	2" x 3 3/4" x 4 3/8" Long	3.82
607	4. Mfd.	2500V	1250	4" x 4" x 4 3/8" Long	7.64
703	.5 Mfd.	3000V	1500	2 1/2" x 1 3/8" x 4 3/8" Long	1.76
704	1. Mfd.	3000V	1500	3 1/4" x 1 1/4" x 4 3/8" Long	2.06
705	2. Mfd.	3000V	1500	3 3/4" x 3 1/2" x 4 3/8" Long	4.12
707	4. Mfd.	3000V	1500	3 3/4" x 7" x 4 3/8" Long	7.94

### Potter Replacement Cartridges

Wax-sealed condenser cartridges coated with hard black wax which thoroughly protects from moisture.



Code	D. C. Cap. Mfd.	Working Voltage	Approximate Size	NET Price
11116-102	1/4	200	1 1/4" x 1 1/8" x 1 1/4"	\$0.21
11116-302	3/4	400	3/8" x 1 5/8" x 1 1/4"	.24
11116-103	1/2	200	3/8" x 1 5/8" x 1 1/4"	.24
234-103	1/2	200	5/8" x 1 5/8" x 2 3/4"	.24
234-303	3/2	400	1 1/2" x 1 1/4" x 2 3/4"	.35
234-403	1/2	600	1 3/8" x 1 5/8" x 2 3/4"	.50
234-104	1.	200	1 1/2" x 1 1/4" x 2 3/4"	.35
378-104	1.	200	5/8" x 1 3/4" x 3 7/8"	.35
158-204	1.	300	7/8" x 1 7/8" x 1 5/8"	.44
234-204	1.	300	5/8" x 1 7/8" x 2 3/4"	.44
378-204	1.	300	1 1/8" x 1 3/4" x 3 7/8"	.44
158-304	1.	400	1 1/8" x 1 3/4" x 1 5/8"	.53
234-304	1.	400	3/4" x 2" x 2 3/4"	.53
378-304	1.	400	1 1/2" x 1 7/8" x 3 7/8"	.53
234-404	1.	600	3/4" x 2 5/8" x 2 3/4"	.81
378-404	1.	600	7/8" x 2 1/4" x 3 7/8"	.81
234-504	1.	1000	1 5/8" x 2 5/8" x 2 3/4"	1.00

Code	Cap. Mfd.	D. C. Working Voltage	Approximate Size	NET Price
378-504	1.	1000	1 1/8" x 3 1/8" x 3 7/8"	1.00
378-604	1.	1200	1 1/4" x 3 1/4" x 3 7/8"	1.32
378-105	2.	200	1 1/2" x 2" x 3 7/8"	.65
158-205	2.	300	1 1/8" x 2 1/2" x 1 5/8"	.82
378-205	2.	300	3/4" x 2" x 3 7/8"	.82
234-305	2.	400	7/8" x 2 5/8" x 2 3/4"	1.00
378-305	2.	400	7/8" x 2 1/4" x 3 7/8"	1.00
234-405	2.	600	1 1/2" x 2 5/8" x 2 3/4"	1.59

### Dubilier Dry "A" 2000 Mfd. Condensers



Polarized condensers using a scientifically obtained bone-dry electrochemical dielectric! For unidirectional or direct current up to 15 volts where high capacity is essential: For "A" battery eliminators, for low-voltage rectifier circuits supplying radio or signal systems, or for hum-proof operation of dynamic speakers, etc., this condenser is superior to anything on the market. Its capacity in relation to size is unapproached, and leakage current is less than 1 milli-ampere, against 6 to 10 milli-amperes, or more with other makes.

PL 917 A 2000 mfd. List \$4 50 NET \$2.65

### New Hammarlund Padding Condensers

Imported mica films are used. The phosphor bronze flexible plate is so shaped as to provide a practically straight line capacity increase. Adjusting screws are specially made with machine cut threads and self-aligning conical seat. Solder dipped heat dissipating terminals are employed. Plates are positively anchored to prevent shift and fibre shock pads prevent strains being set up in the base. Contact between plates is secured by soldering instead of depending on pressure only.

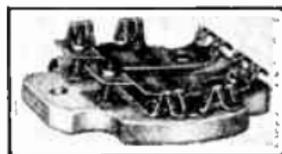
Code MICS- 70 — 10- 70 mfd.	NET \$0.42
Code MICS- 140 — 70- 140 mfd.	NET \$0.48
Code MICS- 220 — 140- 220 mfd.	NET \$0.53
Code MICS-1400 — 700-1000 mfd.	NET \$0.88

Actual minimums are lower, and actual maximums are higher than above rated. All condensers are tested for capacity, power factor, and for breakdown at 450 volts A.C. Size of base is 1"x1 5/8".

### New Hammarlund If Tuning Condensers

Code MICD condenser (illustrated) measures 1 1/2" in diameter. Code ICD is a similar condenser measuring 2 3/8" in diameter. Condensers are individually tested for capacity, power factor and breakdown.

Code MICD- 70 or ICD- 70 — (10-70 mfd.)	NET \$0.59
Code MICD-140 or ICD-140 — (70-140 mfd.)	NET \$0.71
Code MICD-220 or ICD-220 — (140-220 mfd.)	NET \$0.82

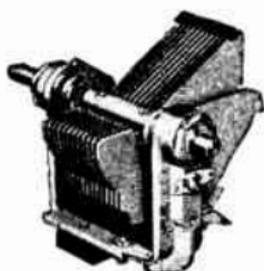


### Hammarlund Condensers

The "Midline" Condenser has specially shaped plates to avoid crowding of stations on either the upper or lower bands and retain normal separation in the middle of the scale.

Removable rotor shaft supports no weight and may be adjusted without cutting to accommodate any type of dial, or entirely removed and a longer shaft inserted for coupling other condensers in tandem.

All condensers are accurately matched in capacity rating and are tested for breakdown on 1000 volts A.C.



ML-23 .0065 mfd.	.....\$5.50	NET \$3.23
ML-17 .0035 mfd.	.....5.25	NET \$3.09
ML-11 .0025 mfd.	.....5.00	NET \$2.94

### Hammarlund Equalizer

A small neutralizing or balancing condenser, having an exceptionally wide capacity range. Very useful as a compensator for equalizing the units of a multiple-tuning condenser. Ruggedly built with bakelite base mount, mica dielectric and a heavy phosphor-bronze spring plate. Very even, gradual capacity changes obtained by movement of the center screw.



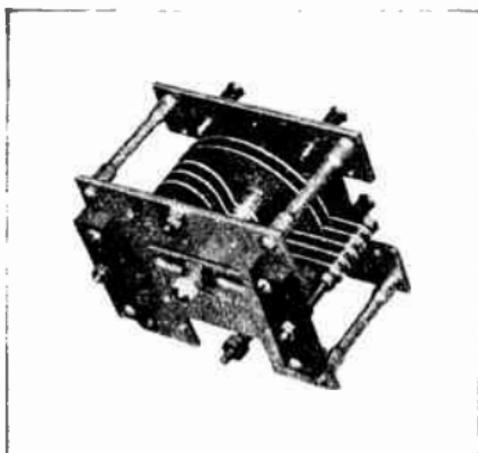
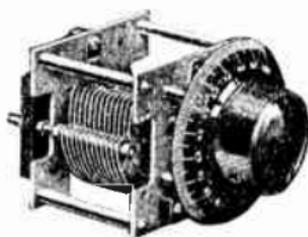
EC-35—2 to 35 mmfd.	List \$0.50	NET \$0.29
EC-80—The proper capacity grid condenser is a highly important factor towards successful short wave reception. Hence this type EC-80 Hammarlund equalizer. Capacity 20 to 100 mmfds.	List \$0.60	NET \$0.35

## National Equimeter Condensers

(STRAIGHT WAVE LINE)

Catalog Symbol	Capacities	List Price	Net Price
EM- 50	50 MMF.....	\$2.50	\$1.47
EM- 100	100 MMF.....	2.50	1.47
EM- 150	150 MMF.....	3.00	1.76
EM- 200	200 MMF.....	3.50	2.06
EM- 250	250 MMF.....	3.50	2.06
EM- 350	350 MMF.....	3.75	2.21
EM- 500	500 MMF.....	4.00	2.35
EM-1000	1000 MMF.....	5.50	3.23

(Above Prices Do Not Include Dial)



## National Band Spread Condenser

Designed to have high minimum capacity for use in frequency meters and amateur band spreading circuits.

Type 35-70

Minimum Capacity 35 mmf.  
Maximum Capacity 70 mmf.  
.....NET \$3.82



## National Equicycle Condenser

(For Short Wave Receivers)

These Short Wave Type EC Condensers are of a straight line frequency type, 270° rotation, built into our Girder frame.

The spacing between plates has been doubled in the smaller sizes and a non-inductive pigtail added to insure positive and silent operation without detuning.

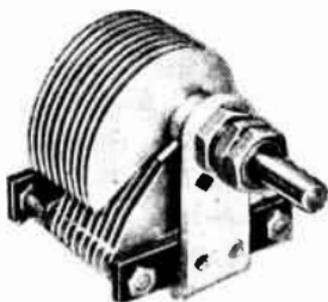
Type	Capacity M.F.	No. Plates	Spacing	List Price	NET
EC 15	.000015	3	.156	\$4.00	\$2.35
EC 50	.00005	9	.156	4.25	2.50
EC 75	.000075	11	.156	4.25	2.50
EC 100	.0001	15	.156	4.50	2.64
EC 125	.000125	19	.156	4.50	2.64
EC 150	.00015	9	.078	4.00	2.35
EC 250	.00025	17	.078	4.50	2.64
EC 350	.00035	23	.078	4.75	2.79
EC 500	.0005	31	.078	5.00	2.94

(Above prices do not include dial)

## Type SE-100 Condensers

The new NATIONAL Type SE-100 Variable Condenser has been designed especially for short-wave work and is not of the "cut down" broadcast variety. Among the outstanding features is the use of the 270° rotation equicycle plates, insulated front bearing, constant impedance pigtail, single hole panel mounting, as well as provision for baseboard mounting, ¼ inch shaft and R-39 low-loss insulation. (Also available with equitune plates, 180° rotation, Type ST-100.)

Size 1½"x1¼"x2". Standard SE-100, capacity 100 mmf., 10 rotor and 10 stator plates. Rotor and stator plates readily removable to alter capacity range to meet special circuit requirements.



Type SE-100—100 mmf. equicycle 270°.	List \$3.75.....	NET \$2.20
Type SE- 50— 50 mmf. equicycle 270°.	List \$3.50.....	NET \$2.06
Type SE- 90— 90 mmf. equicycle 270°.	List \$3.75.....	NET \$2.20
Type ST-100—100 mmf. equitune 180°.	List \$3.75.....	NET \$2.20
Type ST- 50— 50 mmf. equitune 180°.	List \$3.50.....	NET \$2.06
Type SE-150—150 mmf. equicycle 270°.	List \$4.00.....	NET \$2.35

## National Equitone Receiving Condenser

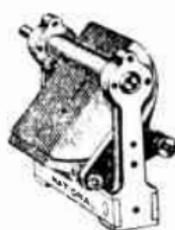
(Modified Straight Frequency Line)

The GIRDER FRAME construction of this Condenser is such as to permit "ganging" when so desired for Single Control Sets. The Frame of the Condenser may also be used to replace brackets for supporting a sub panel.

The lower half of the scale is Straight Frequency Line and the upper half is Straight Wave Length Line, so as to prevent crowding of stations at the lower dial readings.

ET 150	150 mmf.	List Price \$4.25.....	NET \$2.50
ET 250	250 mmf.	List Price \$4.50.....	NET \$2.64
ET 350	350 mmf.	List Price \$4.75.....	NET \$2.80
ET 500	500 mmf.	List Price \$5.00.....	NET \$2.94

(Above prices do not include dial)



## New Hammarlund Jr. Midget Condensers



Code No.	Plates	Min. Cap. (Mmf.)	Max. Cap. (Mmf.)	NET Price
MC-325 M	43	12	320	\$2.06
MC-250 M	34	10	260	1.76
MC-200 M	27	10	200	1.64
MCD-140 M *19		*7	*140	2.82
MC-140 M	19	7	140	1.49
MC-100 M	14	6	100	1.35
MC-100 S	14	6	100	1.35
MC-75 M	11	6	80	1.18
MC-75 S	11	6	80	1.18
MC-50 S	7	5	50	1.06
MC-35 S	5	4	35	.88
MC-20 S	3	3	20	.88

"M"—Midline Plates. "S"—Semi-Circular Plates.

\*Each section of dual condenser.

Plates are .0225" brass, .0245" airgap between plates. Standard condensers include stops—increase capacity by clockwise rotation. Individually tested for breakdown on 500 volts A.C.

## Cardwell Taper Plate Receiving Condensers

This Cardwell Condenser introduced the Ideal Tuning Curve midway between straight wavelength and straight frequency. The weight of the rotor plates is concentrated close to the rotor shaft, where it exerts but a short leverage.

In the type "E" condenser, a rigidity of the plates is obtained which has been heretofore unequalled and calibration of the log of a set using these condensers will remain absolutely the same for all time.



Type No.	Capacity (Rated)	List Price	Net Price
192E	.0005	\$5.00	\$2.94
169E	.00035	4.75	2.79
168E	.00025	4.25	2.50
167E	.00015	4.00	2.35
191E	.000075	4.00	2.35
201E	Various	4.00	2.35

## Cardwell Midway Condensers

RECEIVING

Overall Mounting Space—3x2½ inches. Shaft diameter ¼-inch condenser weight 4 to 7 ounces.

(.031" Airgap)

(Also suitable for low power transmitters using '10-type tube)

Type	Plates	Depth Behind Panel	Max. Cap.	Min. Cap.	Weight (Approx.)	NET Price
401-B	3	2 9/16"	26 mmfds.	7 mmfds.	4 oz.	\$1.24
402-B	5	2 10/16"	50 mmfds.	8 mmfds.	4 oz.	1.30
403-B	7	2 11/16"	70 mmfds.	9 mmfds.	4½ oz.	1.35
404-B	11	2 12/16"	105 mmfds.	10 mmfds.	5 oz.	1.41
405-B	15	2 13/16"	150 mmfds.	11 mmfds.	5½ oz.	1.47
406-B	25	3 1/16"	260 mmfds.	13 mmfds.	6 oz.	1.62
407-B	35	3 2/16"	365 mmfds.	14 mmfds.	7 oz.	1.76

NOTE—Both Receiving and Transmitting Midway Condensers may be had on special order with "C" type shaped plates for semi-SLW tuning. See "Cardwell Receiving Condensers" on page numbered "2" for illustration of "C" type shaped plate. Capacities will be decreased approximately 5% (with "C" type plates) from capacities given in these tables.

GANG CONDENSERS—Dual (straight-in-line) "Midway" condensers may be had on special order but not over 200 mmfd. per section.

### Silver-Marshall Variable Condensers

**317 Midget Condenser (Conmidg)**—A midget condenser with full floating rotor and soldered plate assembly. Capacity, .00014 mfd. Size, 2 3/4" long plus 5/8" shaft, 1 1/2" diameter, 2" deep. Shipping weight, 1 pound. **NET \$1.62**

**318 Two-Gang Midget (Congang)**—A dual midget condenser with full floating rotor and soldered plate assembly. Capacity, each section .00014. Used in 726SW and 739 Units. **NET \$3.53**

**326 Three-Gang Cond. (Midget Type) (Connite)**—A three-unit condenser assembled in rugged frame with individual trimmers, outside rotor plates each section split for alignment purposes. Capacity each section .00040. Used in 726SW and 773. **NET \$5.59**

**340 Midget Condenser (Consort)**—The most universal midget condenser on the market. Capacity, .000003 to .000025 mf. Designed for compensating, balancing, antenna coupling, regeneration control, etc. Has lacquered brass plates mounted on a Bakelite end plate. For either panel or base mounting. Complete with control knob. Size, 1 3/8" x 1 3/8" x 1". Shipping weight, 6 ounces. **NET \$0.88**

**342B Midget Condenser (Container)**—Same construction as the 340 condenser. Capacity, .000004 to .000075 mfd. Suitable for all purposes where a larger condenser than the 340 is needed. For panel or sub-base mounting, complete with control knob. Size, 1 3/8" x 1 3/8" x 1 1/8". Shipping weight, 6 ounces. **NET \$1.03**

**343 Midget Condenser (Conser)**—Three plate condenser similar to 340 but with a capacity of .000002 to .000005 mfd. Size, 1 3/8" x 1 3/8" x 3/4". Shipping weight, 6 ounces. **NET \$0.73**

**345 Midget Condenser (Connote)**—A modified S.L.F.-S.L.W. 5-plate midget condenser. Capacity .000002 to .000025 mfd. Used in 726SW. **NET \$1.47**

### Hammarlund Improved Short-Wave Condensers

NEW AND BETTER IN EVERY FEATURE

#### EXTRA HEAVY WIDE-SPACED PLATES

Double spaced brass plates 3/32" thick, eliminates all chance of plate vibration and the harmful effect of dust accumulation between plates.

#### "PARMICA" INSULATION

"Parmica" Insulation reduces the dielectric losses to less than 10% of that of ordinary short-waving tuning condensers.

#### SMOOTH, EASY TUNING

A constant impedance, double-wiping contact does away with the objectionable inductive reactance of the conventional pigtail. Provides absolutely noiseless adjustment of capacity. "Midline" shaped plates facilitate station separation.

#### MANY EXCLUSIVE FEATURES

Full-floating rotor, mounted in adjustable double-cone bearings. Shaft is removable and may be adjusted for length, or removed entirely for replacement by a longer shaft of metal or Bakelite.

Non-corrosive brass plates with tie-bars. Rib-reinforced aluminum alloy frame. Panel or baseboard mounting. Tested on 1000 volts A.C.

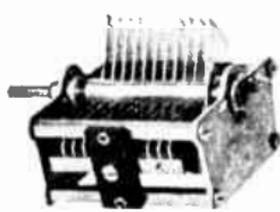
- Code No. MLW-150 Capacity 150 mmfd. **NET \$2.94**
- Code No. MLW-125 Capacity 125 mmfd. **NET \$2.94**
- Code No. MLW-100 Capacity 100 mmfd. **NET \$2.94**

### Hammarlund Transmitting Condensers

The very low losses and high quality of Hammarlund Transmitting Condensers is further improved by the use of "Parmica" the new Hammarlund low-loss insulation. Spacing between plates .083". Breakdown voltage, 3500 Volts at 500 K.C., using 500 cycle alternator.

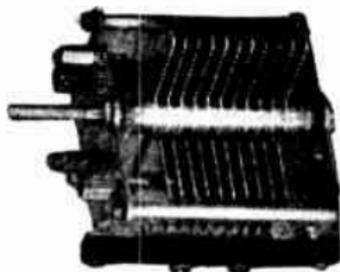
Used in famous flights including those of the "Southern Cross," "Yankee Doodle" and the Byrd Expedition.

- Code No. TC-12—Capacity 105 mmfd. **NET \$3.53**
- Code No. TC-22—Capacity 200 mmfd. **4.12**
- Code No. TC-43—Capacity 390 mmfd. **5.88**



## Cardwell Transmitting Condensers

The "Voltage Breakdown" method of rating transmitting condensers has recently been abandoned by The Allen D. Cardwell Manufacturing Corporation due to the manifold confusion and errors that it has brought forth. Reference to the tables following will indicate the condenser which may be expected to withstand the maximum current anywhere in a transmitter using tubes and voltages shown.



Type	Maximum Capacity	Air Gap	Number of Plates	NET Price
141B	.00025	.030"	11	\$ 2.90
123B	.00048	.030"	21	3.40
156B	.00048	.030"	21*	4.80
137B	.00096	.030"	41	4.12
197B	.00008	.070"	9*	6.86
T183	.00011	.171"	23	6.86
164B	.00022	.070"	21	3.43
157B	.00022	.070"	21*	8.23
T199	.00033	.084"	37	6.86
147B	.00044	.070"	43	6.86
166R	.0003	.219"	23	51.45
511B	.000023	.171"	5	2.74
513B	.000050	.171"	11	4.80
510B	.00011	.171"	23	21.95
512B	.00005	.171"	11	8.23

\*Split Stator Type. Capacity shown is per section.

### MIDWAY TYPE

(Rotor and Stator plates of Transmitting Condensers have edges well rounded and are highly polished overall, thus eliminating corona losses and increasing breakdown voltage.)

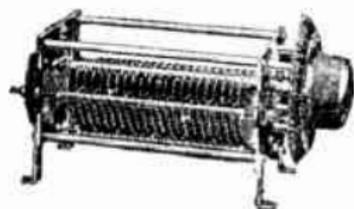
(.070" Airgap)

(Suitable for transmitters using up to 75 watt tube)

Type	Plates	Depth Behind Panel	Max. Cap.	Min. Cap.	Weight (Approx.)	NET Price
408-B	5	2 1/2"	22 mmfds.	6 mmfds.	4 oz.	\$1.80
409-B	7	2 1/2"	35 mmfds.	9 mmfds.	4 1/2 oz.	1.92
410-B	11	2 1/2"	50 mmfds.	11 mmfds.	5 oz.	2.20
411-B	15	3 1/2"	70 mmfds.	13 mmfds.	5 1/2 oz.	2.50
412-B	21	3 1/2"	100 mmfds.	15 mmfds.	6 oz.	2.92
413-B	31	4 1/2"	150 mmfds.	18 mmfds.	7 oz.	3.77

(May be had with split stators on special order)

## National Transmitting Condenser



NATIONAL Transmitting Condensers are widely used by U. S. Government, Broadcasting Stations and amateur transmitters.

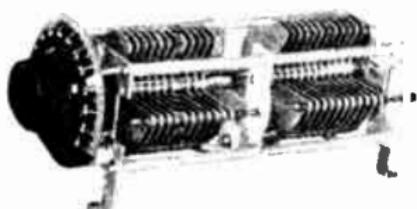
Type	Capacity	Voltage	List	NET
TM 35	.000035	6000v.	\$ 8.00	\$ 4.70
TM 50	.00005	6000v.	10.00	5.88
TM 100	.0001	3000v.	7.00	4.12
TM 100A	.0001	6000v.	12.50	7.35
TM 150	.00015	3000v.	7.50	4.41
TM 150A	.00015	6000v.	18.75	11.03
TM 230	.00023-5	3000v.	11.50	6.76
TM 230A	.00023-5	6000v.	22.50	13.23
TM 350	.00035	3000v.	15.00	8.82
TM 450	.00045	3000v.	16.50	9.70

These prices include NATIONAL Velvet Vernier Dial Type A.

## National Split Stator Transmitting Condensers

SPLIT STATOR TYPE HIGH VOLTAGE CONDENSER, for use in Push-Pull circuits. Constructed in standard TM frame. Plates are of heavy gauge polished aluminum with well rounded edges. Insulation is crocite.

Type	Cap. each section	Rating	NET Price
TMP 230	.00023	3000v.	\$10.30
TMP 100	.0001	3000v.	7.35
TMP 100A	.0001	6000v.	10.88

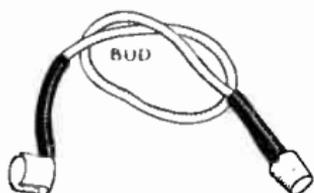


## No. 8864 Belden Bakelite Speaker Connectors

For connecting speaker extension cord to speaker cord. Receives standard pin type speaker tips. An unusual feature is that tips are completely hidden by the bakelite, and no metal is exposed.



List each \$0.35.....NET \$0.21



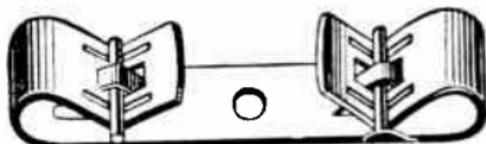
No. 295

### BUD SCREEN GRID EXTENSION

No Test Kit is complete without one.

Price .....\$0.15

## Spring Clip Connectors

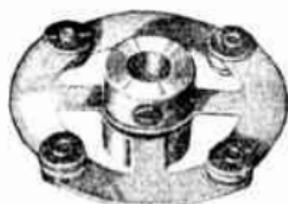


No. 19



No. 28

Each .....NET \$0.02



## Hammarlund Flexible Coupling

The universal flexibility of this coupling permits operation of any number of condensers in tandem, without requiring exact alignment of condenser units. List \$0.60.....NET \$0.35

## National Coupling Unit

This is a small insulated universal joint of the flexible disc type, for use in coupling the shafts of tuning condensers. Simplifies construction of single-control receivers prevents binding of shafts. Made for 1/4" round shafts. List, each \$0.55.....Net \$0.32

## Mueller Battery Clips

No.	Description	Length	Each NET
45	Pee Wee, Steel, cadmium plated.....	1 1/2"	\$0.03 3/4
48-B	Steel, cadmium plated .....	1 3/4"	.03 3/4
27	10 amp. Steel, cadmium plated.....	2 1/4"	.09
24-A	25 amp. Steel, lead-coated .....	2 1/2"	.07
21-A	50 amp. Steel, lead-coated .....	3 3/8"	.14



## Clam Pipe Ground Clamp

For use in grounding a radio set or other apparatus to a water or radiator pipe. Durable and rigid because of the channeled construction. When applied, will not bend or lop over. It can easily be installed on a pipe lying close against a wall or other surface. The point of the large case hardened screw cuts through paint or corrosion into clean fresh metal, insuring a good contact. The small screw with undercut head, acts as a cupped washer to hold the ground wire. Cadmium Plated — 3/8" to 1 1/8" jaw spread.....Net \$0.15



CLAMPIPE  
Net \$0.15

### National Grid-Grip

This remarkable convenient little Grid-Grip is the most simple method we have seen of attaching a wire to the screen-grid terminal of AC or DC screen-grid tubes. Easy to operate, never works loose, makes continuous electrical contact. List \$0.10.....NET \$0.06



### National Type 866 Grid Clip

This type is for the '66 type rectifier tubes. It is larger than the foregoing and affords a firm means of connecting to this type of rectifier tube.

Each ..... NET \$0.12

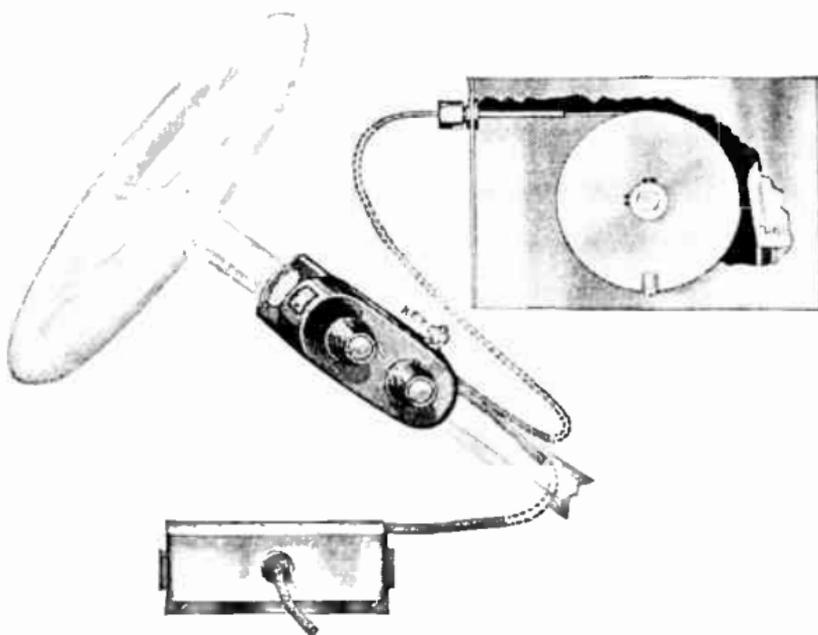
## Mozart Tone Control

Attached to your radio set it enables you to get either brilliant, mellow or deep tones. It will operate on any radio set using either one or two of the following power tubes: 245, 171, or 112. Primarily designed for A.C. sets but will operate on any battery set using one or more power tubes. No special wiring required.

List \$2.85.....NET \$1.67



## Utah Remote Control for Auto Radio



The Utah Motor Car Remote Control

The Utah Remote Control meets all requirements as no other can. A rotating drive shaft is not used and the control has absolutely no backlash or lost motion.

The driving medium does not require straight line installation. A lock switch, junction box, electric cable volume control and dial light are incorporated in the control assembly. Send for detail questionnaire when ordering so we can ship exactly what you need. Easily installed.

Price, each .....NET \$8.82

## Chi-Rad Quartz Crystals

PRICES ARE NET

Frequency in Kc/s	Adjustable to exact F.	Within 50c/s	Within 500c/s	Within 0.1%	Within 0.5% (0.1% cal.)	Precision Holders
25	\$45.00	\$40.00	\$37.00	\$42.00	\$39.00	\$15.00
30	27.00	24.00	21.00	25.00	23.00	10.00
50	18.00	16.00	12.00	16.00	14.00	6.00
100	9.00	8.00	7.00	7.50	7.00	4.00
101-200	12.00	10.00	8.00	9.00	8.00	3.00
201-549	25.00	22.00	20.00	15.00	12.00	4.00
550-1500	90.00a	75.00a	40.00b	15.00	9.00	2.50
1501-1714	.....	.....	40.00b	15.00	9.00	2.50
1715-2000	.....	.....	40.00b	9.00	5.50	2.50
2001-3499	.....	.....	40.00b	15.00	9.00	2.50
3500-4000	.....	.....	40.00b	9.00	5.50	2.50
4001-4665	.....	.....	45.00b	17.00b	12.00	2.50
4666-4800	.....	.....	45.00b	15.00b	7.50	2.50
4801-6999	.....	.....	50.00b	19.00b	15.00	2.50
7000-7300	.....	.....	75.00b	25.00b	10.00	2.50

NET \$2.50

**Notes:**

a. includes variable-type holder. Original, or duplicate oscillator must be furnished by customer.

b. includes regular fixed holder. Customer must furnish data of exact circuit including voltages, tube, etc.

"Within 0.5%": Crystals in this group each calibrated to better than 0.1% and furnished within 0.5% of specified frequency and within band mentioned.

"Adjustable to exact frequency": These crystals are all (but one) furnished unmounted and must be adjusted by the customer to this exact frequency, by varying gap in crystal holder. Instructions furnished.

### Crystal Holder

This Plug-in Dust Proof, Quartz Crystal Holder is ideally suited for the amateur and broadcast transmitters. It has been designed for use with crystals ranging from one fifth to six millimeters in thickness (20-600 meters).

It is made 1 1/2" clear inside to allow for the average crystal of 1" square. Contact to the crystal is made through brass plates ground perfectly flat. The bottom brass plate is nickel-plated on its other side, and the top bakelite cover is 1 5/8" square, held in place by four screws. When placing holder into service, a lug is bent slightly upwards to give spring contact against the top. Standard G. R. tips are used, spaced 3/4" to fit a standard G. R. connector. The overall dimensions are 2 1/4" x 1 5/8" x 1 1/8".



Price each

NET \$2.50

### Precision Velvet-Vernier Dial Type X

The four inch solid German silver NATIONAL Velvet Vernier Dial, Type X, has been developed for use in amateur and other radio equipment requiring the utmost precision of logging. It is equipped with a real Vernier making accurate reading possible to one-tenth of a division. The mechanism is the original and unexcelled NATIONAL Velvet-Vernier design, approved and used by transmitting and receiving amateurs all over the world.

Dial attaches to the face of panel at three points, making accurate mounting exceedingly easy.



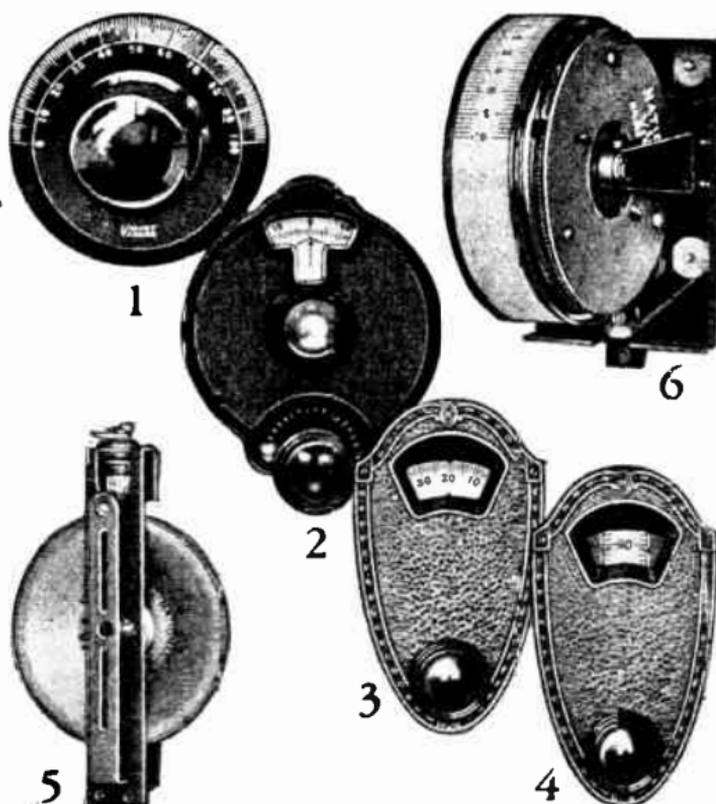
Precision Vernier Dials for Transmitting and Laboratory use are made in both 4 and 6 inch diameters.

Type VNB (0-100) 180°	} Price, each	4-inch diameter	NET \$3.82
Type VND (100-0) 180°			
Type VNE (150-0) 270°			
Type VNC (200-0) 360°			

Also available in a 6" diameter with the same type readings. When ordering this type add the figure 6 to our catalog symbols. NET \$8.82

**National Velvet-Vernier Dials**

TYPE "A"—(Fig. 1)



This is the original NATIONAL VELVET-VERNIER DIAL, with its smooth matchless mechanism, which gives perfect control for highly selective circuits. This development of a new form of Gearless Transmission permits a motion that is even and regular throughout its range. No backlash exists—none can develop.

Symbol	Dia				
VAC C3	3 1/2"	Counter	Clockwise	(0-100) (180°)	NET \$1.47
VAC C4	4"	Counter	Clockwise	(0-100) (180°)	NET \$1.47
VAC 4	4"		Clockwise	(200-0) (360°)	NET \$1.47
VAC E1	4"		Clockwise	(150-0) (270°)	NET \$1.47

## TYPE "B" AND "C"—(Fig. 2)

Easily and quickly attached without special tools, fitted with beautiful permanent Bakelite cover, equipped with variable ratio of 6-1 to 20-1.

Both types are identical except that Type B is without light and Type C includes the illuminator.

Symbol VBC	—	Clockwise	(200-0) (360°)	Type B	NET \$1.47
Symbol VBD	Dual Range	(0-100-0) (180°)	Type B	NET \$1.47	
	Dial Illuminator and bracket, extra			NET \$0.29	

## TYPE BM—3" DIAL

Similar in appearance and design to our Type B except that diameter is 3" and it does not incorporate variable ratio feature. Especially adapted for small receiving and transmitting equipment where space is limited.

Symbol BMD	Dual Range	(0-100-0)	NET \$1.18
Symbol BMC	Clockwise	(200-0)	NET \$1.18

## TYPE "E"—(Figs. 3 and 5)

This dial has a disc type of mechanism similar to our Type B but is designed for those who desire an artistic and distinctive dial to drive the condenser in a plane perpendicular to the front panel.

Symbol VED	—	0-100	NET \$1.62
Symbol VEC	—	200-0	NET \$1.62
	Type 28 Illuminator, extra		NET \$0.29

## TYPE "F"—(Figs. 4 and 6)

This NATIONAL VELVET-VERNIER DRUM DIAL is constructed with a mechanism that has that same velvet smoothness that has featured all of former types. An automatic spring take-up assures a positive drive at all times.

It may be easily attached to the 1/4" shaft of any standard clockwise or counter clockwise condenser.

Symbol VFC	Counter	Clockwise	(0-100) (180°)	NET \$2.35
Symbol VFR	Counter	Clockwise	(0-200) (360°)	NET \$2.35
	Type 28 Illuminator, extra		NET \$0.29	

In the NATIONAL VELVET-VERNIER DIALS, Types G and H, the scale is projected onto a ground-glass screen on the dial opening by a brilliant illuminator, and the dial reads the same from any position. In other words, you do not see the scale itself but you see its image thrown on the screen. By this method, the figures and scale divisions are considerably enlarged in size, making them much easier to read.

## NATIONAL DIALS (Continued)

An added attraction of the Type H Drum Dial is an arrangement by which the color of the figures and scale divisions shifts kaleidoscopically as you turn the tuning knob. The change and play of color adds to the beauty and novelty. If desired, this dial can be furnished without Rainbow Feature at a slight reduction in price.

### TYPE G—DISC PROJECTION DIAL—(Fig. 7)

This dial employs a disc mechanism and is designed for use when the tuning condenser shaft is at right angles to the front panel. This is a monocolor projector dial, standard color is green.

Symbol

VGCC—Counter Clockwise (0-100) (180°).....NET \$2.20  
 VGE —Clockwise (150-0) (270°) .....NET \$2.20

### TYPE H—DRUM PROJECTION DIAL—(Fig. 7)

The Type H Dial employs the proved and popular NATIONAL VELVET-VERNIER drum mechanism with its powerful non-conducting drive and spring take-up. When furnished as a monocolor projector dial, standard color is green.

Symbol

VIIC —Monocolor—Counter Clkws. (0-100) (180°).....NET \$2.94

VHC —Monocolor—Clockwise (100-0) (180°)..... 2.94

VIICR—Rainbow—Counter Clkws. (0-100) (180°) 3.23

VIIC —Rainbow—Clockwise (100-0) (180°)..... 3.23

VIICE —Monocolor—Clockwise (150-0) (270°)..... 2.94

We can also supply Type "IIS" dial as used in National Thrill Box (270°) .....NET \$3.53



Fig. 7

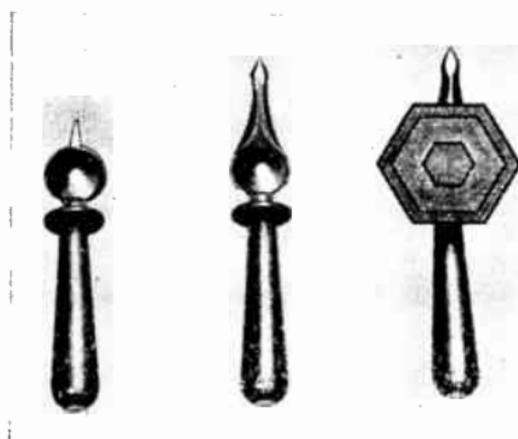
### Dial Lever Indicators

These lever indicators are designed for transmitter control panel use. They have well defined bronze pointers and insulated handles.

NET

Type S .....\$1.62  
 Type M ..... 1.76  
 Type J ..... 2.20

Etched Scales (0-100) furnished on request with J & M indicators.



S

M

J

### The New Signal Model "B" Electric Fruit Juice Extractor

It is equipped with a powerful universal motor, operates on 110 volt, 25 to 60 cycles on either alternating or direct current.

The cup and extractor cone is manufactured of the highest grade porcelain china. The cup is snow white inside with a beautiful shade of green on the outside which matches the Peri green lacquer finish of the steel body and base.

Height 10 in. Diameter 7 in.

Price each ..... NET \$8.35



### Toastwell Toasters

Automatic—keeps toast hot—2 slices at once—Beautiful—economical—durable—guaranteed. Weight, packed, 7 lbs.

Price .....NET \$9.38

## National Power Units for AC Short Wave Reception

One of the essentials for humless AC Short Wave reception is the use of a power unit designed especially for that purpose.

NATIONAL power packs have an exceedingly low inherent hum, employing a double section filter good quality chokes and plenty of condenser capacity. The power transformer has an electro-static shield between the primary and other windings in order to prevent line disturbances from getting into the power unit and into the Thrill Box.

A special R. F. filter, located between the 280 rectifier tube and the hum filter is a feature of all NATIONAL power packs designed for short wave use and is one of several important factors contributing to the complete elimination of so-called "tunable hums," frequently encountered in short wave reception.

5880-AB—Completely wired power supply for use with the ACSW5 Thrill Box using the '27 tubes in the output stage on 105-120 volts, 50-60 cycle current supply. Less tube.....NET \$20.30

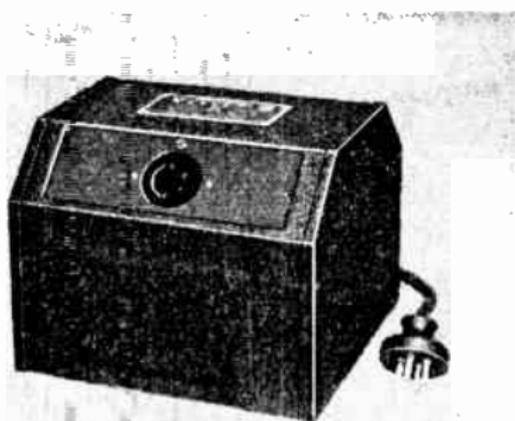
5880-AB-25—Completely wired power supply for use with the ACSW5 Thrill Box using the '27 tubes in the output stage on 105-120 volts, 25-40 cycle current supply. Less tube.....NET \$23.23

5880-AB-220—Completely wired power supply for use with the ACSW5 Thrill Box using the '27 tubes in the output stage on 220-230 volts, 50-60 cycle current supply. Less tube.....NET \$21.76

5880-AB-S—Completely wired power supply for use with the ACSW45 Thrill Box using the '45 tubes in the output stage on 105-120 volts, 50-60 cycle current supply. Less tube.....NET \$23.23

5880-AB-S25—Completely wired power supply for use with the ACSW45 Thrill Box using the '45 tubes in the output stage on 105-120 volts, 25-40 cycle current supply. Less tube.....NET \$25.00

5580-AB-S220—Completely wired power power supply for use with the ACSW45 Thrill Box using the '45 tubes in the output stage on 220-230 volts, 50-60 cycle current supply. Less tube.....NET \$23.23



## 3580 National Velvet-B

A NATIONAL B-Eliminator designed for reliable service. Operates 1 to 6-tube sets, including power tube. This rugged unit has been designed with liberal factors of safety in all component parts. It is the only power-supply, at this price, employing the long lived R.C.A. UX-280 full-wave rectifier tube.

Adjustable Taps give the following voltage: 22-45 V. for detector. 45-90 V. for R.F. 90-135 V. for A.F. Full 180 V. for power tube, non-adjustable.

It is impossible to put harmful or excessive plate voltages on tubes by accident.

List price, less tube \$26.50.....NET \$15.58



## Frost Headsets

For testing radio parts or complete sets—for lining up condensers—for peaking intermediate transformers—the custom set builder will find a good pair of phones indispensable.

No. 174—2,000 Ohm Phones with polished aluminum shells and composition caps. List \$3.00.....NET \$1.76

No. 175—3,000 Ohm Phones with polished aluminum shells and composition caps. List \$3.50.....NET \$2.06

### Trimm Dependable Headsets

The TRIMM DEPENDABLE, the best metal cased headset on the market regardless of price. At a price but little higher than cheap inefficient headset, a real quality instrument. Weight 1½ lbs.

- Code No. 60.....NET \$2.55
- Professional .....NET \$3.30



### Nathaniel Baldwin Type C Headset

Genuine Nathaniel Baldwin Type C headphones famed for their excellence. Possibly the finest headset ever made.

Price per pair.....NET \$4.65

### Hafner Hydrometer

This is a well known and accurate hydrometer. It fills the bill admirably.

List \$1.00 .....NET \$0.59



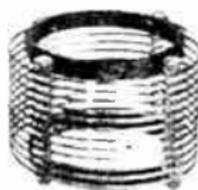
### REL Inductors for Transmission



Type S



Type L



Type LL

Flatwise wound—Low Distributed Capacity. Moulded Glass Separators—Low Losses—95% Air Dielectric — Mechanically Rugged. Unaffected by Climatic Conditions.

For further details, write for Bulletin No. 27.

Type S—3" diameter, 6" long, 11 2/3 turns.

Expressly designed for extreme short wave transmission (20 meters and less; can also be used on 40 meters).

Type L—5" diameter, 6" long, 11 2/3 turns. For 40, 80 and 150 meter wave bands.

Type LL—8" diameter, 6" long, 11 2/3 turns. Specially designed for transmitters operating above 200 meters.

Single units of either type S or L. List \$5.50.....NET \$3.77

Double units of either type S or L. List \$11.00.....NET \$7.55

Single units of type LL. List \$11.00.....NET \$7.55

(Double units comprise one primary unit and one secondary unit with two ½" diameter by 15" long glass coupling rods.)

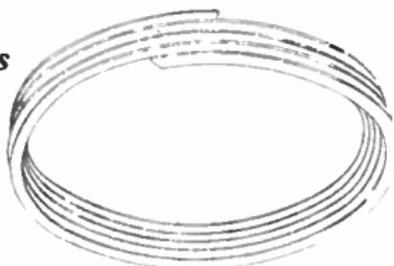
### Edgewise Wound Copper Coils

¼" Copper Strip 5" Diameter.

Per turn .....NET \$0.15

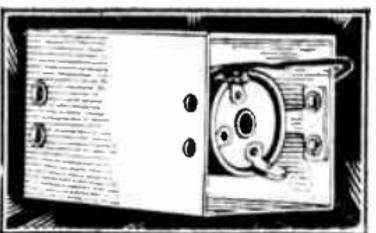
¼" Copper Strip 9½" Diameter.

Per turn .....NET \$0.20



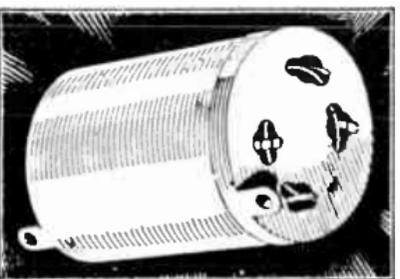
## Silver-Marshall Coils

## Square-Shield Coils



New type square-shield coils were designed for use in modern superheterodynes, such as the Z76SW, 716, etc. Laboratory tests and experiments have proven their efficiency and practicability beyond a shadow of a doubt. Shells are of heavy-gauge, square-drawn aluminum. They are available in the 161 to 169 coils inclusive. Complete with mounting brackets and soldering lugs. Size: 2" x 2" x 3/4" long. Shipping weight, 1 lb.

## Round-Shield Coils



S.M. standard round-shield coils were especially designed for high-gain screen-grid r.f. receivers. These coils have proven their high efficiency and complete shielding in many tests. Shells are of drawn, seamless copper cadmium plated, with drawn caps soldered to shells. They are available in the 121 to 126 coils inclusive. Complete with soldering and mounting lugs. Size: 2 1/4" in diameter by 2 1/2" long. Shipping weight, 1 lb.

World Radio History

S-M Catalog No.	Code Word	WINDING DATA (TURNS)					Range Meters	Secondary Tuning Coil	NET Price
		Secondary	Tickler	Slot Winding	Primary	Inner Primary			
113	Nomadic							\$1.03	
121	Shentor	124-1/6				45	200-550	.00035	
122	Sheten	124-1/6					200-550	.00035	
123	Shendel	124-1/6				83	200-550	.00035	
124	Shenex	120-1/6				13, 22	200-550	.00035	
125	Coilfive	121-1/6				116 1/2	200-550	.00035	
126	Coilsix	118				118	200-550	.00035	
161	Coilone	110				450	200-550	.00040	
162	Coiltwo	110			50		200-550	.00040	
163	Coilthree	87	35		50		200-550	.00040	
167	Coilseven	124				450	200-550	.00040	
168	Coileight	124	1		500		200-550	.00040	
169	Coilnine	100	36	16 (coupling)	50		200-550	.00040	
130P	Peacoil		Plain Coil	Form with Contact Pins				.42	
130T	Teacoil		Threaded Form (98 Threads)	with Contact Pins				.42	
131K	Kacoil	3	43 1/2				15-25	.00014	
131L	Elcoil	6 1/2	9 1/2				16.6-31.0	.00014	
131M	Emcoil	13 1/2	11 1/2				30.0-56.7	.00014	
131N	Encoil	25 1/2		12 1/2			55.0-104	.00014	
131O	Ocoil	44 1/2		15 1/2			103-195	.00014	
131P	Parcoil	82 1/2		22 1/2		50	163-343	.00014	
131Q	Ouacoil	155 1/2		55 1/2		50	273-592	.00014	

### Copper Tubing

1/4" Copper Tubing, 12' to lb. Per lb. .... NET \$0.55



### Type R-39 Inductances

Moulded of "R-39," the new low-loss coil form material developed by Radio Frequency Laboratories for short-wave use. Forms available with UX four-prong, UY five-prong, or special six-prong base, for use in standard sockets.

The coils listed below are designed for use in the new NATIONAL SW5 "Thrill Box."

No.	Color	Range	Net Price Per Pair
No. 10	Brown	9. to 15. meters	\$3.23
No. 11	Black	14.5 to 25. meters	2.94
No. 12	Red	23. to 41. meters	2.94
No. 13	White	40. to 70. meters	2.94
No. 14	Green	65. to 115. meters	2.94
No. 15	Blue	115. to 200. meters	3.23
No. 16	Orange	200. to 360. meters	3.23
No. 17	Yellow	350. to 550. meters	3.23
No. 18	Purple	500. to 850. meters	3.82

Forms only—3-prong UX base	ea.	\$0.59
3-prong UY base	ea.	.59
6-prong Special	ea.	.59
Socket only 6-prong Special with mountings	ea.	.44

### Special Amateur Coils

These coils are designed so as to permit 50 dial division spreading on the amateur 20, 40 and 80 meter bands, using the standard NATIONAL SW Thrill Boxes.

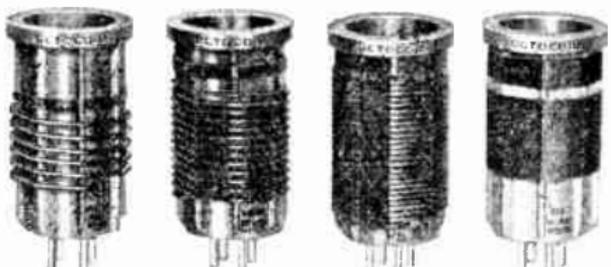
- No. 11A—20 meter band (per set of 2) ..... NET \$3.82
- No. 13A—40 meter band (per set of 2) ..... NET \$3.82
- No. 14A—80 meter band (per set of 2) ..... NET \$3.82



### Octocoils

Octocoils are rugged and efficient shortwave coils. Actual size of these coils is 3 3/8" high and 1 7/8" in diameter.

Moulded in bakelite in colors, green, brown, blue and red, wound with 12, 14, 16 and 25 enamaled wire. Plug into the ordinary tube socket and have a rugged rim to grasp coils so they will not break. Wave length range 16 to 200 meters. Set of Four...NET \$2.94



Broadcast Coil, Range 200-520 meters. Special Experimenter's Price, each ..... NET \$0.73

### R.E.L. Coils for No. 278 Receiver

49 Meter Short Wave Broadcast Coil designed to give full spread tuning of the most popular stations in the 49 meter spectrum.

Cat. No. 278-G Coil..... NET \$1.50

25 Meter Short Wave Broadcast Coil used in conjunction with the standard "278" receiver to cover efficiently and easily all foreign broadcast stations operating within the limits designated.

Cat. No. 278-H Coil..... NET \$1.50



### Pacent Duo-Lateral Coils

The Duo Lateral system of winding is endorsed by leading authorities as most efficient electrically, and it is also mechanically sturdy. Among its advantages are reduced losses, greater selectivity and sharper tuning.

Minimum and Maximum Wave Lengths obtainable with standard makes of condensers, when used with Pacent Duo-Lateral Coils.

Coil Turns	List Prices		350 17 Plate Wave Length in Meters		500 23 Plate Wave Length in Meters	
	UNMTD.	MTD.	Min.	Max.	Min.	Max.
25	\$ .50	\$ 1.40	80	220	100	260
35	.55	1.40	110	300	140	350
50	.60	1.50	160	430	200	510
75	.60	1.50	240	620	290	750
100	.65	1.65	310	830	380	990
150	.75	1.70	480	1360	590	1500
200	.80	1.75	650	1690	780	2000
249	.95	1.80	810	2150	990	2700
300	1.05	1.85	980	2600	1200	3100
400	1.20	1.90	1300	3500	1600	4120
500	1.40	2.20	1700	4400	2000	5300
600	1.55	2.37	2000	5200	2400	6200
750	1.80	2.59	2500	6500	3020	7800
1000	2.20	2.86	3400	8800	4100	11500
1250	2.70	3.30	4400	10400	5300	13500
1500	3.20	3.85	6400	14000	6500	16500

DISCOUNT—25% FROM ABOVE LIST PRICES

### S-M Inductances

**No. 133 Short Wave Coil Assembly (Automatic)**  
—An assembly of 4 oscillator and 4 detector coils with 3 four-contact switches on one control, complete with mounting brackets. Used in 726SW and 739 units. Can be used with 445 i.f. transformers for construction of short-wave super. Cannot be used in one stage r.f.-regenerative detector short-wave circuits. NET \$7.35

**No. 444 Superhet I. F. Transformer (Transif)**  
—A high gain i.f. transformer with both primary and secondary variable tuned for operation with '24 or '51 tubes at 175 kc. Complete with leads, grid lead shielded. NET \$3.53

**No. 445 Superhet I. F. Transformer (Transhet)**  
—A high gain i.f. transformer with variable tuned secondary which can be peaked from approximately 400 to 550 kc. for use in short-wave supers with '24 or '51 tubes. Similar in appearance to 444. NET \$3.53

**No. 446 Superhet Beat Oscillator Transformer (Transosc)**—Similar in appearance and construction to the 445 but designed for constructing beat oscillator for code reception in superhets using 445 i.f. transformer. NET \$3.53



### Vulcan Soldering Irons

"VULCAN" TOOLS are equipped with 6 foot flexible cords and separable plugs. They operate on A.C. or D.C. Wound for standard voltages of 104, 110, 115, 120, 125, 220 and 230 volts. \$1.00 extra for special voltages.



ALWAYS SPECIFY VOLTAGE WHEN ORDERING

Code No.	Watts	Some of the Uses	Heating Head	Extra Tip	Price Comp.
10	44	Radio	\$2.30	\$0.30	\$3.75
30	60	Radio	4.70	.40	6.25
100	70	Switchboards and radio	6.00	.50	8.00
50	120	Telephone work	5.85	.75	7.75
200	150	About the same as No. 500	8.20	.80	10.50
300	250	Medium tinware	9.90	1.25	13.00
400	350	Heavy tinware, sheet steel	11.45	1.70	15.00
800	500	All heavy soldering	15.00	2.65	19.50

Vulcan Discounts to Dealers Only

### Kester Rosin-Core Solder

Acid, paste and compound fluxes spatter, fume or run over surrounding delicate parts, thus causing high leakage and producing resistance comparable to grid leaks! Rosin is the only safe flux for radio use.

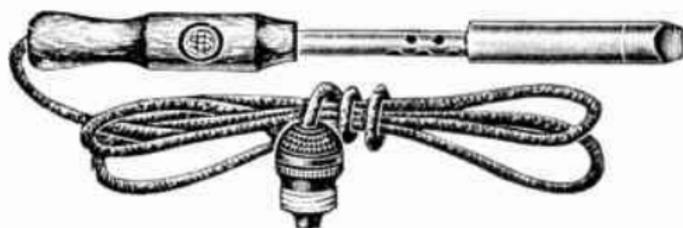


Kester Rosin-Core Radio Solder.  
Per can, as illustrated.  
List \$0.25 .....NET \$0.17  
Per 1 lb. spool.....NET \$0.65

### NOKORODE Soldering Paste

A soldering flux that will not damage the most delicate of work. Per can .....NET \$0.15

### National Specialties Irons



Heating element made from Chromel-A resistance wire on lava core, with Chromel leads extending through core, beyond range of incessant heat, thus preventing corrosion or burning off the leads.

Pure sheet mica and asbestos used in insulation. For 110 volts A.C. or D.C.  
No. 49—55 watts. For radio and household use. List \$1.50.....NET \$1.03  
No. 56—70 watts. List \$3.25.....NET \$2.24  
No. 145—200 watts. List \$6.50.....NET \$4.46

### No. 145 Tips



Extra Tips, each .....NET \$0.59  
Price per set of any four .....NET 2.06  
For Model No. 145 Iron.

### Pyrex Radio Insulators

Tests have shown that the special glass from which these insulators are made, has the lowest power loss of any known material suitable for antenna insulators, with the exception of pure fused quartz.

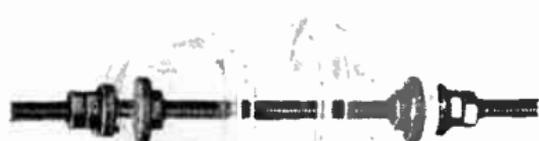
Water, smoke or acid fumes cannot corrode their hard, smooth and impermeable surface. Moisture cannot penetrate it. Dust and soot do not accumulate upon it.

In the United States Navy, Coast Guard, Lighthouses and air mail, by Commander Byrd in his flight over the North Pole, by the largest broadcasting stations in the United States, PYREX Radio Insulators are specified by name.

### Pyrex Strain Insulators

No. 67007—Type, Receiving; Strength, 450 lbs.; Weight, 3 oz.  
List \$0.25 .....NET \$0.19  
No. 67017—Type, Amateur; Strength, 1000 lbs.; Weight, 13 1/2 oz.  
List \$1.00 .....NET \$0.74  
No. 67021—Type, Commercial; Strength, 1000 lbs.; Weight, 1 lb., 14 oz.  
List \$3.00 .....NET \$2.24

### "Chi-Rad"—Pyrex Lead-in Insulators



Consists of two pyrex bowls on a threaded brass rod complete with rubber and brass washers and nuts. An excellent lead-in insulator.

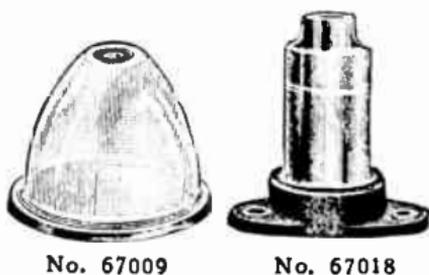
Type A—Pyrex glass bowls 2 1/2" in diameter and 1 3/8" high.  
12" x 1/4" brass rod NET \$2.25  
Type B—Pyrex glass bowls 4 3/8" high and 6" in diameter; 3/8" brass rod .....NET \$4.25

### Pyrex Lead-in and Stand-off Insulators

No. 67009—Small lead-in insulator.  
4 3/8" high, 6" diam., weight 27 1/2 oz.  
Very O.K. on sets up to 2 K.W. power.  
List \$1.00 .....NET \$0.74

No. 67018—Stand-Off. 3" high.  
List \$2.25 .....NET \$1.69

No. 67019—Stand-Off. 7" high.  
List \$2.50 .....NET \$1.88



No. 67009

No. 67018

Special 12" type. Stand-Off. List \$8.00 .....NET \$6.00  
3/8"-16 hole tapped in brass top cap.

### Chi-Rad Porcelain Insulators



Porcelain Stand-off—A new product, the insulation of which is equivalent to other similar types but requiring much less mounting space. 1 1/2" high.

Brown glazed porcelain, No. 20 .....NET \$0.14  
Box of Ten, No. 20 .....NET \$1.20

Culver-Stearns Stand-off—Galvanized rod, porcelain insulator, 7" .....NET \$0.09  
3" .....NET \$0.06

### No. 2 Porcelain Standoff Insulator No. 40

A well glazed insulator. Especially designed for transmitters. 5 1/2" high, 2 1/2" wide. List \$0.60 .....NET \$0.42



No. 1929



### Findlay Stand-off Insulators

No tools to use, no screws to lose.

No. 1929—Small stand-off insulator. Height 3" diameter 1 7/8" .....NET \$0.15

No. 1928—Large stand-off insulator. Height 6" .....NET \$0.25

### No. 8814 Belden Glass Aerial Insulators



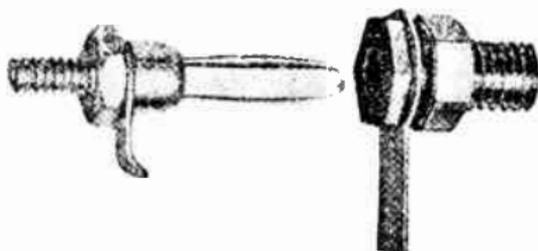
A sturdy 3-inch glass insulator. Packed two in a carton. List, per pair, \$0.20 .....NET \$0.12

### "Chi Rad" Midget Plugs and Jacks

Complete with lugs as illustrated. Heavily nickel-plated. They are the finest obtainable.

Plug and jack, per set  
List \$0.20 .....NET \$0.15

Sold in pairs only.



### BUD TIP JACK

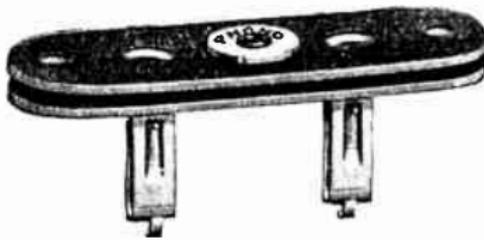
Will fit any phone cord tip.

Price ..... \$0.08



No. 296

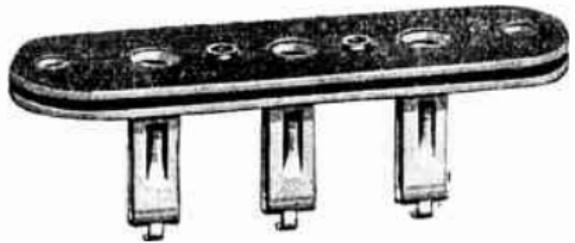
### Eby Twin Jacks



Two eyelets complete the assembly of these two jacks. 2980, Plain; 2100, Phono; 2090, Speaker; 2540, Field.  $1\frac{1}{8}$ " mounting center. Each ..... NET \$0.09

### Eby Triple Jacks

Two eyelets complete the assembly of these three mounting center.



Each ..... NET \$0.09 jacks. Not marked.  $1\frac{1}{8}$ "

2730

### Yaxley Standard Jacks

All bakelite insulation. Mount in single  $\frac{7}{8}$ " panel hole without adjusting collars. Bakelite insulating washers furnished on order for mounting on metal panels. Fit any standard radio plug.

 No. 1 ..... NET \$0.29	 No. 3 ..... NET \$0.42	 No. 4 ..... NET \$0.48
 No. 2 ..... NET \$0.35	 No. 3A ..... NET \$0.42	 No. 4A ..... NET \$0.48
 No. 2A ..... NET \$0.35	 No. 3C ..... NET \$0.42	 No. 5 ..... NET \$0.54
 No. 6 ..... NET \$0.66	 No. 7 ..... NET \$0.65	

### Junior Jacks



For use in the set where space is at a premium. Same characteristics as standard Jack described previously—full weight springs, silver contacts, etc. There is no skimping anywhere in material or workmanship. Takes any standard radio plug. Comes in all spring combinations as follows:

No. 701—List \$0.40 ..... NET \$0.24	No. 704—List \$0.75 ..... NET \$0.44
No. 702—List \$0.55 ..... NET \$0.33	No. 704A—List \$0.75 ..... NET \$0.44
No. 702A—List \$0.55 ..... NET \$0.33	No. 705—List \$0.85 ..... NET \$0.50
No. 703—List \$0.65 ..... NET \$0.39	No. 706—List \$0.95 ..... NET \$0.56
No. 703A—List \$0.65 ..... NET \$0.39	No. 707—List \$1.05 ..... NET \$0.63
No. 703C—List \$0.65 ..... NET \$0.39	

See Standard Jacks above for illustration of spring combinations.

### Yaxley Twin Jacks



Double Hole Mount—Neatness in appearance and ease in use recommend the Twin Jack to the set buyer. Economy in assembly and dependability in service, recommend it to the set builder whether he be the large or small manufacturer. The illustration shows the handsome bakelite cap with the efficient double contact springs. Mounting holes 1-11/16" centers. Available in four markings: "Speaker," "Phono," "Field," "+-."

List \$0.25 ..... NET \$0.17



Single Hole Mount—Exactly the same as the double hole mount Twin Jack. The No. 401 Single Hole Mount Twin Jack saves valuable time in large production. Is interchangeable in mounting with the double hole mount by drilling a center hole in the sub panel. Available in four markings: "Speaker," "Phono," "Field," "+-." List \$0.25..... NET \$0.17

### Yaxley Phone Tip Jacks



Here are the new Phone Tip Jacks with the distinctive colored caps, red for the positive side of the loud speaker, black for the negative. Cap is of bakelite. Take standard Phone Tips. Phone Tips nest all the way in Jack, making excellent spring contact. Lessens danger of shorts. For bakelite or metal panels. Insulated Tip Jacks, Per Pair, List \$0.25 NET \$0.15

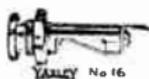
### Yaxley Pup Jacks and Jacks

No. 416—Pup Jack—The ideal Jack for Loud Speaker connections and for use as binding posts. Per Pair. List \$0.25 NET \$0.15



No. 415—Pup Plug—Designed especially for use with the Pup Jack and to serve as a Phone Tip without soldering. Each, List \$0.10 NET \$0.06

### Yaxley Midget Jacks and Jacks



Serve the same purposes as the Pup Jacks and Plugs described above, only larger in size. Mount in 3/8 inch panel hole.

No. 16—Midget Jack. List \$0.30 NET \$0.18  
 No. 15—Midget Plug. List \$0.15 NET \$0.09

### Signal Keys



R-48



R-62

R-48—A very fine light weight key of lacquered brass and nickeled metal construction NET \$1.95

R-62—A heavy lacquered brass key on heavy base. Navy type. It is a beautiful key, 3/8" contacts. List \$3.50 NET \$2.06

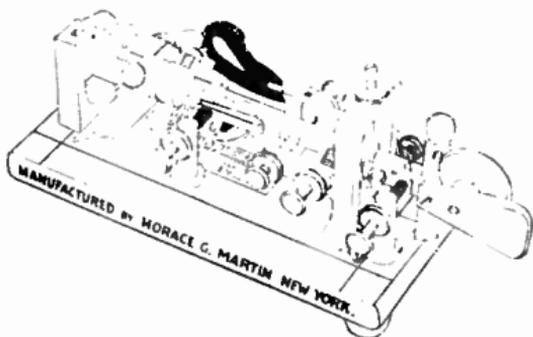
M-100 Legless Key—Lacquered brass base, nickel plated lever, coin silver contacts. List \$2.75 NET \$1.95

M-101 Leg Key—As M-100 but with two threaded legs equipped with wing nuts. List \$2.85 NET \$2.15

112-K Junior Key—Black enamel key base mounted on a mahogany finish base. Nickel plated lever and coin silver contacts. List \$2.00 NET \$1.57

### The Vibroplex Automatic Key

This great New Vibroplex is the smoothest and easiest working BUG ever made. It is a still better BUG than the Improved Single Lever Martin Vibroplex, that has won fame on land and on sea for its clarity, precision and ease of manipulation. Can be slowed down to 10 words per minute or less, or geared to a high rate of speed as desired. Maintains the same high-quality signal at whatever speed, insuring easy reception under all conditions. Can be used in the majority of



DX circuits without relay... NET \$16.65

#### SPECIAL MODEL FOR USE WITHOUT RELAY

In addition to the features listed above, this Special Model is also equipped with Extra Heavy, Specially Constructed Contact Points 3/16 inch in diameter to break high current without use of relay... NET \$24.50

# TRANSMITTING GRID LEAKS

## Ohmite Leaks

Size	Catalogue Number	Resistance Ohms	Maximum Current in Milliampères	Price	NET	
8½" x 1¼"	0801	5,000	200	\$3.50	\$2.06	
	0802	10,000	141	4.00	2.35	
	0803	20,000	100	4.50	2.65	
	0804	30,000	81	5.00	2.94	
	0805	50,000	63	6.50	3.82	
	0806	15,000	tapped at 5,000 and 10,000	115	4.50	2.65
4" x ⅝"	0441	5,000	95	1.75	1.03	
	0442	10,000	67	2.00	1.18	
	0242	200	center tapped unit 2" x ⅝"	300	1.25	.73
	0241	100 ohm, filament center tap resistor, 2x ⅝"	500	1.25	.73	

All Resistors Furnished with Brackets.

## Electrad Wire Wound Grid Leaks



The unique construction of these resistances allows for use of larger diameter wire than is used in other types of enameled wire wound resistors. The contacts between wire and lugs are positive. They are guaranteed not to develop noise or open circuits in use.

Type	Total Resistance Ohms	Resistance of Sections-Ohms	Current in Milliampères	List Price	Net Price
<b>TYPE TG—100 WATT—1¼" x 10"</b>					
TG 50	5000	2500-2500	141	\$3.00	\$1.76
TG 100	10000	5000-5000	100	3.50	2.06
TG 150	15000	5000-5000-5000	82	4.50	2.65
TG 200	20000	10000-10000	71	4.25	2.50
TG 300	30000	15000-15000	58	5.00	2.94
TG 500	50000	25000-25000	45	5.50	3.23
<b>TYPE TL—40 WATT—1" x 6"</b>					
TL 50	5000	2500-2500	90	2.50	1.47
TL 100	10000	5000-5000	63	2.75	1.62
<b>TYPE CF—15 WATT—½" x 4"</b>					
CF .1	10	5-5	12	1.50	.88
CF .2	200	100-100	50	1.50	.88

## Lynch Metallized Resistors (One Watt)



megohms.

A satisfactory resistance unit must have a sufficient current carrying capacity so that it will not break down or change unduly in resistance when in use. It must be non-inductive and non-capacitative. It must be noiseless, compact and durable. Warranted absolutely noiseless, permanently accurate, dependable!

Each Lynch Metallized Resistor is absolutely guaranteed to be accurate within 10%. In production they average within 5%. Metallized Resistances of .25, .3, .5, .75, 1, 1.5, 2, 3, 3.5, 4, 5, 6, 7, 8, 9 and 10

Standard Metallized Resistances of 500, 750, 1,000, 2,000, 3,000, 4,000, 5,000, 6,000, 7,000, 8,000, 9,000, 10,000, 12,000, 15,000, 25,000, 30,000, 40,000, 50,000, 60,000, 75,000, 90,000, 100,000, 125,000, 150,000, and 200,000 ohms  
List \$0.30

NET \$0.18

Also same Resistance Values in 2 watt size. List \$0.40

NET \$0.24

(Note: If pigtails are not wanted they can be cut off.)

### Bud Ever-Ready Test Leads

BUD EVER-READY TEST LEADS are a convenience and a necessity to set owners and Radio Service Men. They are unsurpassed for testing sets and tracing trouble in Radio Sets, where shorts and other defects are encountered.

BUD EVER-READY TEST LEADS are made of the finest quality of Insulated, Flexible Wire with Silk Covering over the Rubber Insulation. Black is used to denote negative (—) and Red is used to denote positive (·) identification.



No. 280

Made of the finest quality of tube tubing obtainable. Wire used is 42" long. Can be supplied with spade terminals or phone tips.

Price per pair \$0.44

Same as No. 280; with spring clips and rubber insulated coverings same as No. 282. Length of wires 42".

Price per pair \$0.65



No. 283



No. 184

Test Leads enable testing of a circuit without having to remove the insulation from the wire. The sharp needle point which is inserted into the chuck enables the service man to penetrate the insulation on wires without injuring the insulation. Supplied with either spade or phone tip terminals. Length

of wires 42".

Price per pair

\$0.88

Supplied with powerful spring clips, which make connections in a jiffy. Rubber insulated coverings over spring clips are used to prevent shorts and shocks. Length of wires 24".

Price per pair \$0.59



No. 282



No. 284

Same as No. 184; with spring clips and rubber insulated covering same as No. 282. Length of wires 42".

Price per pair \$1.03



### Handy Test Leads

Cat. No. 1750—A New Item That Will Sell Big

Service men, trouble shooters and experimenters call for test leads frequently. Consolidated offers these Handy Test Leads in an attractive package. A quality item throughout. Each NET \$0.38

### Shakeproof Washers and Lugs



Washer



Lug

Number	Article	Size Screw	Per 100	Per 1000
1106-6	Washer	.6	\$0.25	\$1.50
1108-8	Washer	.8	.25	1.50
2101-6	Lug	.6	.50	3.85
2101-8	Lug	.8	.50	3.85



No. 8



No. 6

### Kellogg Soldering Lugs

Die stamped from heavy brass and tinned. May be bent in any shape. We know of no finer soldering lugs.  
 Per 100, either size.....NET \$0.34  
 Per 1000, either size.....NET \$1.71

### Cable Markers

Easily read Markers, convenient to attach. Each Marker snugly hugs wire. Packed in boxes, each box containing 18 Markers, as follows: A+, A-, B-, B+DET, B+AMP, B+RF, B+PR, C+, C-, C-4½, C-9, C-PR, A-C+, A+B-, ANT, GRD, FIELD, SPEAKER. List price per set \$0.25.

### Mounting Pillars and Feet

Very handy to have around the Ham station. They are made of nickel-plated brass, ¼" round.

No. 4735—Size 1 1/8" long-tapped 6-32.....NET \$0.07

No. 4548—Size 1 7/8" long tapped 6-32.....NET \$0.07

No. 4741—1/8" diameter, hexagonal—1/2" long. Untapped hole large enough to pass 8-32 screw.

Each.....NET \$0.02

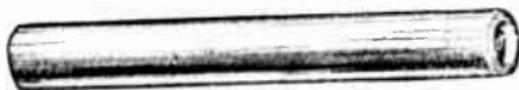
Mounting Feet—Nickel plated brass angle.

Per Pair.....NET \$0.16

No. 4616—3" pillars.....NET \$0.15



No. 4741



Nos. 4735—4548

### Lynch Leakproof Mountings

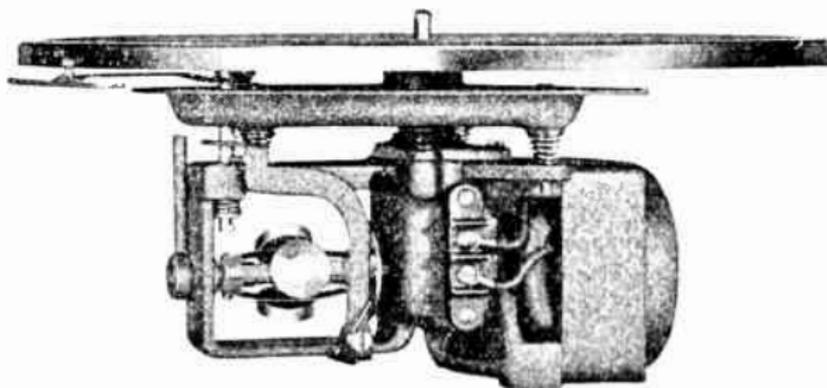
Made of highly polished genuine Bakelite. Springs are made of heavy phosphor bronze, nickel plated. They are held rigidly in grooves by a screw and nut to prevent turning.



Single Mounting. List \$0.35.....NET \$0.21

Double Mounting. List \$0.45.....NET .27

### Flyer, The Right Motor



The Blue Flyer Electric Radio-Phonograph Motor unit

Flyer Electric Radio-Phonograph Motors have been right from the start. Specially designed, balanced in efficiency. The Blue Flyer and the Green Flyer for all A.C. Radio-Phonograph work. Self-starting, amply powerful, furnishing dependably uniform speed. For all voltages and frequencies. Also the Green Flyer for direct current, either 110 or 220 volts.

The Green Flyer soon may be had in any of the following specifications:

1—78 R.P.M. governor control or constant speed.

2—33 1/3 R.P.M. governor control or constant speed.

3—33 1/3 and 78 R.P.M. within the same motor with either governor or constant speed.

No condenser required on constant speed. Prices on request.

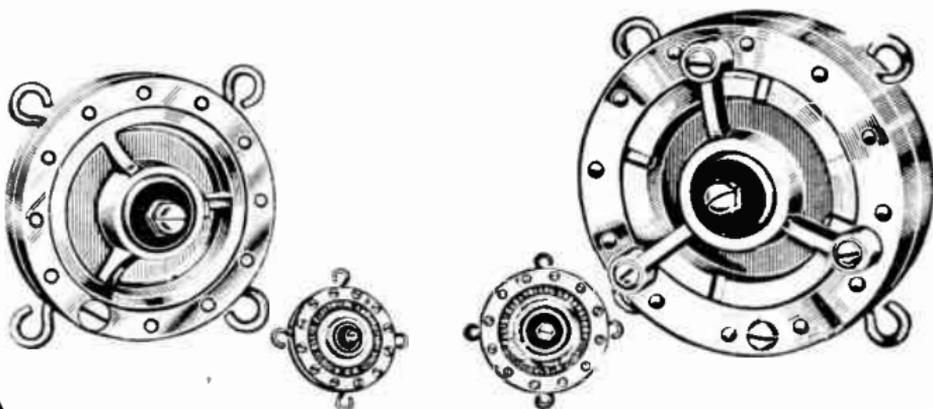
### Audak Musichrome

This compact portable electric turntable weighs less than 14 lbs. Solid walnut or mahogany cabinet. Includes latest model Audak chromatic pickup. High grade split phase induction motor. Wt. 21 lbs.

List price \$58.00.....NET \$33.95

## Ellis Two-button Microphones

Rigid 3-Pillar Construction—Ellis Type Buttons



Model 20

Models 29 and 30

### MODEL 20

Designed to meet requirements for a microphone less sensitive than our larger Models 29 and 30, yet very efficient and low in price.

Specifications: Guaranteed limit, 12 M. A.; finish, nickel or gold; diameter overall, 2 $\frac{3}{8}$  in.; thickness overall, 1 $\frac{5}{8}$  in.; shipping weight, 2 lbs.

No. 20N—Nickel finish. Code, Elcuc. List \$45.00.....NET \$26.46

### MODEL 29

Especially sensitive. Recommended for public address and voice use only.

Specifications: Guaranteed limit, 14 M. A.; finish, nickel or statuary bronze; diameter overall, 4 $\frac{1}{2}$  in.; thickness overall 2 in.; shipping weight, 3 $\frac{1}{4}$  lbs.

No. 29N—Nickel finish. Code, Elegy. List \$75.00.....NET \$44.10

### MODEL 30

For broadcast studio. For both voice and music.

Specifications: Guaranteed limit, 14 M. A.; finish, nickel or statuary bronze; diameter overall, 4 $\frac{1}{2}$  in.; thickness overall, 2 in.; shipping weight, 3 $\frac{1}{4}$  lbs.

No. 30N—Nickel finish. Code, Eltik. List \$75.00.....NET \$44.10

### MODEL 10N

(Not Recommended for Music)

Model 10N is designed to meet the demand for a low priced two-button microphone. This is the most efficient unit made today in its price class. Operates best at 6 to 8 M. A. per button. Limit of guarantee: 12 M. A. per button. Total internal impedance: 400 ohms, or 200 ohms per button. Frequency range: 45 cycles to 4,000 cycles. Diameter overall: 3 $\frac{3}{8}$  inches. Thickness overall: 1 $\frac{1}{4}$  inches. Shipping weight: 1 $\frac{1}{4}$  pounds.

No. 10N—Nickel Finish. Code, Eltel. List Price \$25.00.....NET \$14.70



MODEL 10N

## Ellis Hand Microphone

Model 12N

Ellis Model 12N Hand Microphone is the only unit of its kind made today. It is a real two-button Microphone. The buttons employed are the same patented buttons used in our most expensive models. The diaphragm consists of a special corrugated, gold plated metal.

This unit is especially useful for industrial talking picture machines, home recording, portable public address outfits, etc.

Operates best at 6 to 8 M. A. per button. Limit of guarantee: 12 M. A. per button. Total internal resistance: 400 ohms or 200 ohms per button. Frequency range: 45 to 4,000 cycles. Diameter of unit: 2 $\frac{7}{8}$  in. Diameter of handle: 1 $\frac{1}{8}$  in. Thickness overall: 1 $\frac{1}{2}$  in. Length overall: 6 $\frac{1}{4}$  in. Shipping weight 1 lb.

Model 12N is a real value at the price. Furnished complete including covers and handle, but without cord.

No. 12N—Nickel Finish. Code, Elhan.

Price.....NET \$14.70

No. 94—6-foot 3-conductor cord, with spade terminals.

Code, Elsix. Price.....NET \$0.59



(Patents Allowed)

### Ellis Microphone Accessories

#### SUSPENSION RINGS



Six-inch inside diameter, 7/8-inch wide, 4 microphone suspension hooks inside, open to permit use of rubber bands if desired. Two outside suspension hooks. Eight springs included. Shipping weight, 1 1/2 lbs.

- No. 50N—Nickel finish. Code, Ellen.....NET \$2.65
- No. 50SB—Statuary bronze. Code, Elsie...NET \$2.06

#### Rings with Covers

For use in trucks, etc. Four outside suspension hooks for rigid mounting. Complete with 8 springs and 2 covers.

- No. 57N. Nickel finish. Code, Elfag. List price \$20.50 .....NET \$13.40
- No. 57SB. Statuary bronze. Code, Elbro. List price \$17.40 .....NET 11.37



#### Desk Stands

12 1/2 inches high, with 6-inch diameter ring. Ring 7/8-inch wide. Base 6 inches in diameter, of spun brass, plated. Shipping weight, 4 1/2 lbs. Open suspension hooks. Eight springs included with each stand.

- No. 51N—Nickel finish. Code, Elfin.....NET \$8.82
- No. 51SB Statuary bronze. Code, Eldor..NET \$8.82

#### Stand Complete with Covers

Desk stand 12 1/2 inches high, complete with covers; 8 springs and 12-foot microphone cord. Shipping weight, 5 lbs.

- No. 55N. Nickel finish. Code, Elvox.....NET \$13.52
- No. 55SB. Statuary bronze. Code, Elwiz ....NET 13.52



#### Banquet Stand

##### ADJUSTABLE DESK STAND

Banquet Stand, adjustable from 15 to 22 inches. Base 6 inches in diameter. Thumb screw holds extension at any desired height. Open suspension hooks; 8 springs included. A heavy casting with cord entrance in flat part prevents tipping. Shipping weight, 5 lbs.

- No. 52N. Nickel finish. Code, Elbat .....NET \$11.76
- No. 52SB. Statuary bronze. Code, Eleco.... NET 11.76

#### Floor Stand

##### ADJUSTABLE

Especially designed for rigidity. Base has 3 feet, 14 1/2 inches apart, giving firm support. There is no chance for swaying or vibrating. Extends from 40 inches to 66 inches. Large size set screw securely holds extension in place, preventing any possibility of its dropping and damaging microphone. Open suspension hooks; 8 springs included. Shipping weight, 20 lbs.

- No. 53N. Nickel finish. Code, Elect.....NET \$14.70
- No. 53SB. Statuary bronze. Code, Elgar...NET 14.70



### Covers

#### FOR ELLIS STANDS ONLY

Ellis covers go on easily and do not depend on friction to hold them in the rings. Each cover has a pinhole and slot so that the cover is easily slipped in the ring. Tighten the 2 set screws which are set in the rings and covers are solid. Loosen the screws and covers slip out easily. Diameter, 6 inches.

- No. 56N. Nickel finish. Code, Elkaw, pair..NET \$3.53  
 No. 56SB. Statuary bronze. Code, Elcog, pair..NET 3.53



### Three Conductor Shielded Microphone Cable

The finest microphone cable obtainable. Consists of 3 individual insulated cables. Color coded, black, yellow and red. Each individual cable is rubber insulated and cotton covered. Woven flexible metal shield surrounds cables and is itself cotton covered in dark brown that matches the statuary bronze finish of Ellis Stands. Cables finished with spade tips both ends. A shielding ground lug is provided at one end of cable. Complete as described in lengths given below:



- |         |                 |              |                                   |
|---------|-----------------|--------------|-----------------------------------|
| No. 85. | 12-foot Cable.  | Code, Eloin. | List price \$ 4.00....NET \$ 2.62 |
| No. 86. | 25-foot Cable.  | Code, Elhur. | List price 7.75....NET 5.07       |
| No. 87. | 50-foot Cable.  | Code, Elser. | List price 15.00....NET 9.80      |
| No. 88. | 100-foot Cable. | Code, Elpas. | List price 27.75....NET 18.13     |

### Socket and Plug

#### THREE CONTACT

Permits wiring right up to the place where microphone is to be used so that microphone, stand and cord may be quickly removed to safe keeping when not in use. So designed that plug cannot be improperly inserted into socket.



- No. 73. 3-Contact Plug. Code, Elbun. List price \$0.75.....NET \$0.44  
 No. 74. Porcelain Socket. Code, Elaxe. List price \$1.50.....NET .88

### Springs



Made of finely tempered steel, nickel finished. The end hooks are open, yet they cannot fall off. Unextended size, 1-inch long.

- No. 54. Set of 8 Springs. Code, Elkis. List price, set of 8, \$1.50.  
 NET \$0.88

### Kellogg Hand Microphone

The Kellogg No. 29 microphone is used extensively for studio broadcasting, public address systems, call systems for factories, offices and hotels, amateur short wave transmitting, home recording and commercial recording.

Electrically speaking, the Kellogg hand microphone is super-sensitive, and easily picks up every variation of tone. Its greater sensitivity throughout all tone values is well demonstrated by the flatter response curves, registered in tests.

The Kellogg No. 29 microphone is designed to operate into the usual 200 ohm input circuit. It requires a current of 3 volts and .010 to .015 amperes. The button has a resistance of 200 ohms.

The Kellogg No. 29 microphone is ruggedly constructed throughout. The entire diaphragm assembly and carbon chamber unit are manufactured to micrometer exactness to insure perfect operation under all conditions. The carbon button is thoroughly insulated from the microphone back with moulded Kellite, a phenol resin composition of high insulating qualities. The carbon used is specially processed by Kellogg. The special method of processing the carbon has resulted from Kellogg's third of a century of experience in manufacturing quality telephone transmitters.

The diaphragm is made under very exact engineering specifications from the best phosphor bronze obtainable. The diaphragm is gold plated for perfect contact and permanent efficiency. This sensitive diaphragm is protected from external injury by a strong fine-mesh steel screen.

The handle is made of cast aluminum, assuring lightness and durability as well as properly balancing the entire unit. The microphone case is of drawn brass. The frame and stretching ring are drawn and machined from the finest grade of steel. The entire unit is finished in black nickel.

Each microphone is equipped with a two-conductor 18-strand tinsel cord that measures 6 feet from tip to tip. The two conductors are each covered with a rubberized moisture-proof compound over which is placed a heavy cotton braid and bound together by another heavy dark brown mercerized cotton outer braid which serves as additional protection to the conductors.

- Price, each .....NET \$8.50





**No. 170 Bud Microphone Stand**

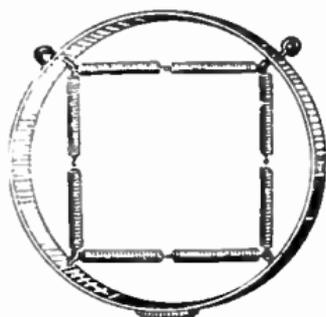
Desk Type supplied with eight (8) springs  
Has switch on stand for turning microphone  
On or Off.

Price .....NET \$3.82

**No. 171 Bud Microphone Ring**

Supplied with eight (8) springs.

Price .....NET \$1.76



**Frost Hand Microphones**

These microphones enjoy an enviable reputation for their excellent performance and appearance.

Their design is based on over thirty-five years experience in the telephone manufacturing field and they are guaranteed to give complete satisfaction when used in proper circuits. They are not designed for commercial broadcasting use, but are intended for amateur and general apparatus work.

These microphones are very sensitive and rugged in construction. Available in three different standard styles complete with cord as follows:

No. 155—Hand Microphone.

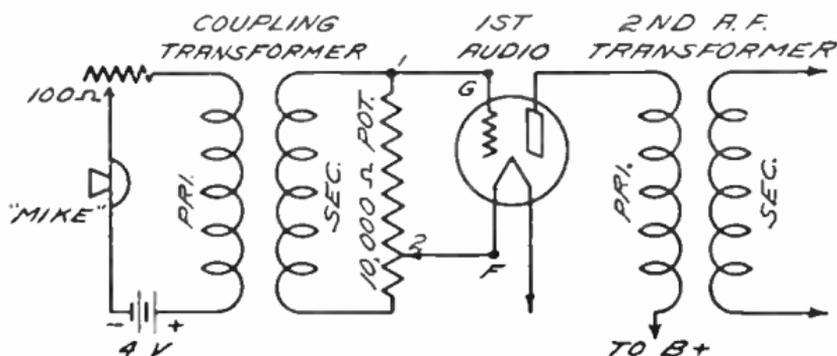
No. 159—Desk Microphone.

No. 157—Pony Arm Microphone for mounting on panel of transmitter or wall.

No. 155—Price .....NET \$3.53

No. 159—Price .....NET 5.15

No. 157—Price .....NET 2.65



"MIKE" CURRENT 100MA OR LESS WITH #165 MIKE AND 300MA OR LESS WITH #155 MIKE.

DISCONNECT SEC LEADS "G" & "F" OF 1ST A.F. TRANSFORMER AND CONNECT TO TERMINALS "1" & "2" OF MICROPHONE VOLUME CONTROL.

### The Jewel 444 Set Analyzer



**MOST COMPLETE RADIO SERVICE INSTRUMENT EVER BUILT FOR TESTING RADIO SETS**

The Pattern 444 Set Analyzer tests every circuit in any receiver regardless of the type of tubes used. Full wave rectifier, variable mu, output-pentode, and pentodes having a direct connected fifth element, may be accurately tested under actual operating conditions.

No. 444—Set Analyzer.....NET \$84.00



No. 213 Demonstration Meter



No. 209 Tube Checker

Jewell Pattern 219 Tube-Seller—Complete with Demonstration Meter and Tube-Checker Panel. For 60-cycle.....NET \$51.38

Jewell Pattern 209 Tube-Checker—Without Demonstration Meter, but with provision for attaching if purchased later. For 60-cycle.....NET \$22.50

Jewell Pattern 213 Demonstration Meter—For owners of Pattern 209 Tube-Checker .....NET \$28.88

### The No. 560 Oscillator

The Jewell Pattern 560 Portable Test Oscillator covers the broadcast band from 550 to 1500 K. C. and intermediate frequency bands of 125 to 185 K. C. and 175 to 450 K. C. This instrument has adequate output frequency ranges for testing every broadcast receiver built today, including all super-heterodyne intermediate amplifiers.

Jewell Pattern 560 Test Oscillator—Complete with tubes, batteries, output meter, and test leads. NET \$76.50

**EASY TO OPERATE**

You do not have to study the instruction book to use the Jewell Test Oscillator. A wiring diagram and calibration chart is carried in the cover, where it can never be mislaid.

Pattern No. 560 Oscillator complete with Tubes and Batteries and Pattern No. 559 Output Meter. List \$97.00.

NET \$72.75

Pattern No. 560 Oscillator complete with Tubes and Batteries but without Output Meter. List \$82.00 .....NET \$61.50

Pattern No. 559 Output Meter. List \$15.00 .....NET \$11.25



### Jewell Pattern 563 Test Oscillator

Output adjustable to any frequency from 550 to 1,500 K. C., and in 125 to 185 K. C. and 175 to 450 K. C.

Completely shielded. Metal carrying case and panel form effective shield. The radio frequency coils are separately shielded from rest of the unit.

Operates from self-contained batteries.

Output continuously variable from maximum to zero. A separate high output is provided for adjustments such as neutralizing.

Single control adjusts output frequency.

Three-position switch allows instant change to any of the three frequency bands.

Calibration curve for each wave band carried in the cover.

Filament rheostat and tapped "A" battery provide proper filament voltage for tube at all times.

Trimmer adjustment permits spotting any much used intermediate frequency.

Metal carrying case at left of control panel for Jewell Pattern 559 Output Meter.

Completely equipped with shielded output lead, calibration curves, instruction chart, '30 type tube, and all necessary batteries.

Jewell Pattern 563 Oscillator, including tube and batteries....NET \$34.92



## The Famous Jewell Trio

The Jewell Trio of Radio Instruments is popular for building up special test panels and service instruments, for use on laboratory apparatus, and in amateur transmitting. Patterns 88, 68, and 78 in flush type bakelite cases are the same instruments as patterns 54, 64, and 74 in metal cases. Patterns 54, 64, and 74 are available in both flush and front of panel mounting types. Shipping weight, 3 lbs.



**Pattern 54 and 88 D. C. Instruments**—Instruments of high ranges are supplied with external resistors, having moulded bakelite heads which are amply large to take care of various capacities. They are not recommended for testing the voltage of B power supply.

### Ranges for both Patterns 54 and 88:

Ranges, 0-8, 10, 15, 30, 50 Volts. List \$7.50.....	NET \$ 5.52
0-150 Volts. List \$ 9.50.....	NET 6.99
0-300 Volts. List 12.00.....	NET 8.82
0-500 Volts. List 15.50.....	NET 11.40
0-750 Volts. List 19.00.....	NET 13.97
0-1000 Volts. List 22.50.....	NET 16.53
0-1500 Volts. List 28.50.....	NET 20.95
0-2000 Volts. List 34.50.....	NET 25.36
0-2500 Volts. List 42.50.....	NET 31.24
0-3000 Volts. List 49.50.....	NET 36.39

Single-scale meters with scale ranges from 0 to any one of the following: 5, 10, 15, 25, 50, 100, 150, 200, 250, 300, 500 milliamperes.

List \$7.50 .....NET \$5.52

Single-scale meters with any one of the following scale ranges: 0-1, 0-1.5, 0-2, 0-3 milliamperes. List \$9.00.....NET \$6.61

Single-scale meters with any one of the following scale ranges: 0-200, 0-300 microamperes. List \$17.00.....NET \$12.49

0-500 microamperes. List \$14.50.....NET 10.66

Single-scale meters with scale ranges from 0 to any one of the following: 1, 1.5, 2, 3, 5, 10, 15 amperes. List \$7.50.....NET \$5.52

50-0-50 galvanometer. List \$9.00.....NET 6.61

**Patterns 64 and 68 Radio Frequency Instruments**—These instruments are thermo-couple type, extremely accurate, and have a guaranteed overload capacity of 50%. Losses are very low, being less than half the minimum required by the Navy.

### Ranges for both Patterns 64 and 68:

Single-scale meters with scale ranges from 0 to any one of the following: .5, 1, 1.5, 2, 2.5, 3, 5, 10, 15, 20 amperes. List \$13.35.....NET \$ 9.81

0-100 galvanometer. List \$15.00 .....NET 11.03

### Pattern 68 (only)—Vacuum Thermo-Couple type.

0-10 Milliamperes (Vacuum Thermo-couple). List \$40.00.....NET \$29.70

0-25 Milliamperes (Vacuum Thermo-couple). List \$37.50 .....NET 27.56

0-50 Milliamperes (Vacuum Thermo-couple). List \$35.00.....NET 25.72

0-100 Milliamperes (Vacuum Thermo-couple). List \$32.50.....NET 23.89

## Jewell 2-Inch Flush Type Instruments for Panel Mounting



No. 135

These instruments are of matched size and appearance. Furnished in 3 styles of mountings: the front of board type with studs projecting through the board, the rim type in which it is necessary to drill a 2-1/16-inch hole, mounting with a cup or clamp, and conventional flush or flange mounting with 3 holes for screws in the flange. They are suited for mounting in the panels of radio receivers or for use in experimental work where the small instrument gives adequate accuracy.

### PATTERN 135 FOR DIRECT CURRENT

Single-scale meters with scale ranges from 0 to any one of the following: 5, 8, 10 volts. List \$7.00.....NET \$4.46

Single-scale meters with scale ranges from 0 to any one of the following: 100 or 150 volts. List \$7.50.....NET 4.78

Single-scale meters with scale ranges from 0 to any one of the following: Double reading 0-8-200 volts. List \$8.50.....NET 5.52

Single-scale meters with scale ranges from 0 to any one of the following: 10, 15, 25, 50, 80, 100, 300 or 500 milliamperes. List \$7.00 .....NET 4.46

Single-scale meters with scale ranges from 0 to any one of the following: 3, 5 amperes. List \$7.00.....NET 4.46

Pattern 135-B. Double scale with push button switch. 0-7.5-300 volts or 0-8-200 volts. List \$9.00 .....NET \$5.73

Shipping weight, 3 lbs.

## *Jewell Semi-Portable Radio Instruments*

Patterns 116, 57, 67, 77 and 98 are instruments of the same general physical appearance, comprising metal cases, mounted on bases of moulded bakelite, with varying numbers of terminals. The simplicity of these instruments and their handy portability make them very popular for radio service work.

**Pattern 116 High Resistance D. C. Voltmeter**—Especially designed for testing B power supply. High internal resistance of 1,000 ohms per volt gives full scale deflection with but one milliamperere, thereby showing the true voltage of B power supply, which cannot be obtained with ordinary voltmeters. Furnished in multiple ranges as follows:

0-50-250 volts. List \$22.50.....	NET	\$16.54
0-100-500 volts. List \$25.00.....	NET	18.37
0-250-500 volts. List \$26.00.....	NET	19.11
0-7.5-300-750 volts. List \$28.00.....	NET	20.58

Shipping weight 3 lbs.

**Pattern 57 D. C. Voltmeter**—For general laboratory work, testing batteries and circuits. Furnished with plain dial having black characters and silver edged background. Complete with test leads.

Either one of the following multiple range meters: 0-7.5-150 or 0-8-200 volts. List \$12.50.....NET \$7.35  
0-50 amperes and 0-50 volts (in one instrument). List \$13.50.....NET 9.93

**Pattern 67 Radio Frequency Galvanometer**—Internal resistance (Radio Frequency) 2.5 ohms. Full scale sensitivity of 115 milliamperes with 0-100 evenly divided scale recommended for radio or audio frequencies. Shipping weight 3 lbs. List \$16.50.....NET \$12.13

**Pattern 77 A. C. Voltmeter**—An effective instrument of moderate price for use in servicing A. C. radio sets and accessories. Furnished in multiple ranges as follows:

Ranges: 0-3-15-150 volts. List \$15.00.....	NET	\$11.03
0-150-300 volts. List \$15.00.....	NET	11.03
0-300-600 volts. List \$18.00.....	NET	13.23
0-15-150 volts. List \$10.50.....	NET	7.72
0-150 volts. List \$10.00.....	NET	7.35

Shipping weight 3 lbs.

**Patterns 74 and 78 A. C. Instruments**—These instruments have rugged movements of the moving iron type. Widely used for filament control in power tubes and for service and laboratory use.

Ranges for both Patterns 74 and 78:

Single-scale meters with scale ranges from 0 to any one of the following:		
3, 5, 10, 15, 20, 30 volts. List \$7.50.....	NET	\$5.52
0-150 volts. List \$9.50.....	NET	6.99
0-300 volts. List \$12.00.....	NET	8.82
0-3-15-150 Triple Range volts. List \$13.50.....	NET	9.93

Single-scale meters with scale ranges from 0 to anyone of the following: 25, 50, 100, 200, 300, 500 milliamperes. List \$7.50.....NET 5.52

Single-scale meters with scale ranges from 0 to anyone of the following: 1, 2, 3, 5, 10, 15 amperes. List \$7.50.....NET 5.52

## *Pattern 88 Rectifier Type A. C. Instrument*

The Pattern 88 consists of a sensitive Jewell D'Arsonval direct current instrument used in conjunction with a self-contained full-wave copper oxide rectifier unit.

Milliamperes—0-1, 0-2, 0-5 ma .....	NET	\$ 9.19
Microammeters—0-500 mma .....	NET	\$10.65

Use only in horizontal or 45° position.

Voltmeters— Voltage	1,000 Ohms per volt NET	2,000 Ohms per volt NET
0-1 .....	\$10.29	\$12.13
0-1.5 .....	10.29	12.13
0-3 .....	10.29	12.13
0-5 .....	10.29	12.13
0-15 .....	10.29	12.13
0-25 .....	11.02	12.87

Instruments with 2,000 ohms per volt resistance should be used only in the horizontal or 45° position.

Extreme accuracy is limited because of errors introduced by the properties of the rectifier. Changes of temperature and frequency also cause errors, so that the rectifier type of instrument cannot be relied upon for greater accuracy than 5% of full scale value

**Jewell Radio Service Instrument Accessories****FOR USE WITH PATTERN 444**

No. 11214—Cable with Plug and Connection.....	NET \$2.94
No. 11213—5 hole, 4 prong Green Ring Adapter.....	NET \$0.64
No. 11237—4½ Volt C Battery.....	NET \$0.57
No. 11243—Test Prods (Pair) 5-inch insulated Prods on one end— Elbow Terminals on other.....	NET \$1.47
No. 11244—Leads (Pair) Small Spade Lugs on one end—Elbow Terminals on other.....	NET \$1.11
No. 10099—Screen Grid Lead.....	NET \$0.64
No. 11212—Cord Assembly with Lamp Socket Plug and Elbow Terminals.....	NET \$0.92
No. 11129—Adapters—For use with Output Meter.....	NET \$0.38

**FOR USE WITH PATTERNS 209-210-214-535-536-538**

No. 10457—Adapter for second Plate of Type 80 Rectifier for Pat- tern 209 Only.....	NET \$0.92
No. 10099—Screen Grid Lead for Pattern 209 Only (Pair).....	NET \$0.73
No. 11385—Adapter for Output Pentodes.....	NET \$0.73
No. 526—Adapter for testing Kellogg or other top heater type tubes.....	NET \$0.19
No. 8813—Screen Grid Lead for patterns 210-214.....	NET \$0.64

**FUSES**

Minimum order accepted for fuses only.....	NET \$0.75
No. 11393—½ amp. for Pattern 209.....	NET \$0.15
No. 11427—1 amp. for Patterns 214, 534, 538.....	NET \$0.10
No. 11613—2 amp. for Patterns 535, 536.....	NET \$0.10

**FOR USE WITH PATTERN 560**

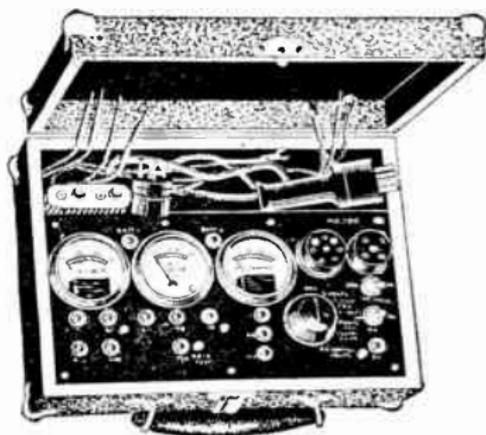
No. 10954—Shielded Cable.....	NET \$1.47
No. 11019—Leads for Output Meter.....	NET \$1.11
No. 11129—Adapter for use with Output Meter.....	NET \$0.38
No. 8176—Cord Assembly—Spade Lugs and Lamp Socket Plug.....	NET \$0.92

**FOR USE WITH PATTERNS 198-199-408-409-578-579-581**

No. 9018—Test Leads—Spade Lugs and 6 inch Cord Tips one red and one black wire.....	NET \$0.92
No. 8170—Adapter—4 holes, 5 prongs—Red Ring.....	NET \$0.64
No. 8173—Adapter—5 holes, 4 prongs—Green Ring with shell and bayonet pin.....	NET \$0.64
No. 8684—Adapter—5 holes, 4 prongs—Green Ring small size for UX-199 Socket.....	NET \$0.64
No. 8813—Short Screen Grid Lead.....	NET \$0.64
No. 8927—Long Screen Grid Lead.....	NET \$0.64
No. 9165—Adapter for checking second plate of 80 Type Rectifier Tubes.....	NET \$0.92
No. 520—Adapter for testing Kellogg or other Top Heater Type Tubes.....	NET \$1.11
No. 11386—Adapter for Output Pentodes.....	NET \$1.47
No. 8410—4½ Volt C Battery.....	\$0.57
No. 9166—Cord and Plug for All Patterns except 444 and 579.....	NET \$1.85
No. 9728—Cord and Plug for Pattern 579.....	NET \$1.85

**READRITE RADIO INSTRUMENTS****Set Testing Reduced To Simplicity With These New  
Readrite Testers**

These meter testers are equipped with a practical selector or switch for checking all parts of the tube circuits by connecting to the set sockets. Selection for testing voltages of plate, grid, cathode and screen-grid is done quickly and accurately. Plate current, filament volts, also line and power supply volts are measured. The grid swing test for tubes is used. Just push one button for screen-grid and another button for other tubes. Makes testing of all type tubes simple and thorough. A 4½ volt grid battery is furnished. The battery is used for the grid test and also continuity testing of transformers, chokes, etc. Capacity and resistance charts are furnished showing use of instruments

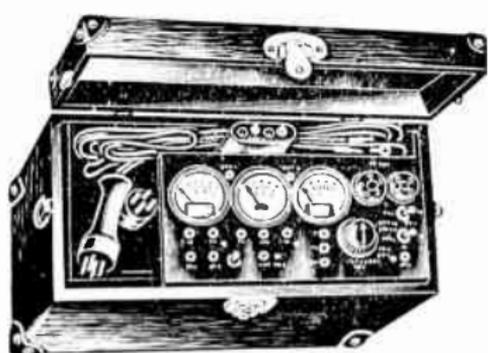


No. 700

for testing condensers, also measuring resistances up to 100,000 ohms. The eight scale readings of the meters may be used separately with the jack terminals provided. The scale readings are 0-20-60-300-600 D.C. volts, 0-10-140-700 A.C. volts and 0-20-100 milliamperes. Both A.C. and D.C. filament voltages are accurately measured on the one meter.

Housed in a strong case with leatherette covering. Attractive. Compact. Complete. Fills every need for the expert serviceman or the beginner for radio set testing. Size 10¼x3½x8". Cover is removable. Case only \$2.94.

No. 700.....	NET \$14.70
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No. 600

The No. 600 contains the same equipment as No. 700. The carrying case is larger with leatherette covering and equipped with lock. Space  $6\frac{1}{4} \times 13\frac{3}{4} \times 4\frac{1}{2}$ " deep for carrying tubes, tools, etc. The test equipment and panel is in a removable tray in the top of the case. The tray equipment may be used separately as a complete test panel for shop purposes. Size  $14\frac{1}{2} \times 7 \times 7\frac{1}{2}$ ". Case only \$6.00.

No. 600 ..... NET \$17.64

### Counter Tube Tester Model 405

For Connecting to A.C. Supply Tests all Tubes in General Use.

Dealers will find the No. 405 tester ideal for checking all new and old tubes. Easy to operate. No adapters required. Connects to A.C. supply line and tests all tubes, including the Pentode and other late types. Meter plugs in tip jacks on panel and can be instantly removed for repairs or connecting elsewhere for convenience of customer. Meter has two scales—0-15-150 milliamperes.

In a strong leatherette covered case with removable cover and rubber feet. Convenient also for portable use.

60 cycle ..... NET \$14.70  
25 cycle ..... NET \$16.17



No. 405

### Output A. C. Voltmeter

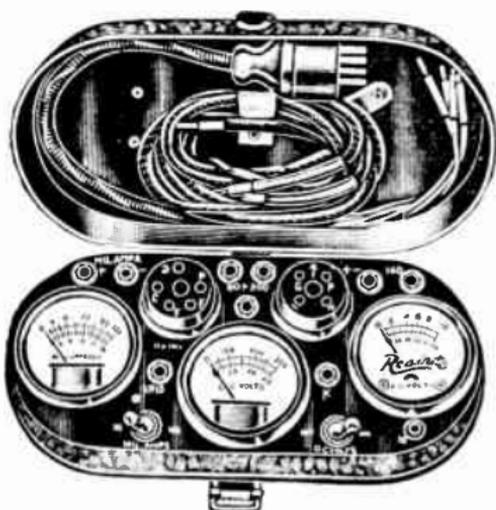
Copper Oxide Rectifier Type



A reliable instrument for indicating output voltage of a radio set. Used for lining up R.F. and I.F. stages by determining maximum gain. Also comparing gain of tubes, R.F. tuner selectivity, hum, and fading. Connect low voltage (0-5) jacks to dynamic speaker voice coil, and high voltage (0-50) jacks to magnetic speaker terminals. Complete with test leads in baked enamel case  $4\frac{1}{2}$ " dia.

No. 575 ..... NET \$3.53

### Readrite Set and Tube Testers



tester every service man should have. Just the thing for field work. Carried in or separate from your regular tool kit. Tests screen grid tubes.

Also charts showing analysis of receiving set circuits, the measurement of resistances up to 100,000 ohms and capacity test.

List \$20.00 ..... NET \$11.76

### Service Test Oscillator No. 550



No. 550

A completely shielded oscillator covering the entire broadcasting band 550 to 1500 k.c. The Intermediate band is also read directly from 120 to 185 k.c. Furnished with 22½ v. and 3 v. batteries and one '30 tube. Self modulated. Extremely compact and accurate. Shielded cable and adapters supplied. Full operating instructions in case cover. In attractive leatherette covered case with removable cover. Weighs but 8 pounds. Size 6x12x5".

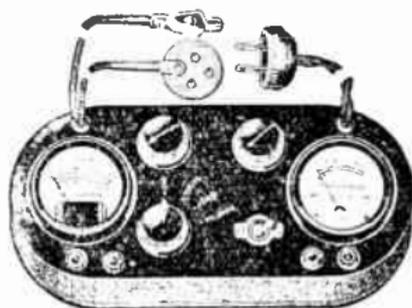
One of the serviceman's most important instruments.

Used to align r.f. gang condensers, locate defective r.f. transformers, adjust i.f. transformers, check oscillator stage, compare gain in tubes and determine sensitivity of a receiver. Furnished with or without output meter built in the panel.

- No. 550 Complete with panel output meter NET \$20.58
- No. 550 Complete less panel output meter NET \$17.64

### Something New for Testing Condensers

Electrolytic—Paper Types



No. 850

No. 850 Capacity Tester contains one d.c. and one a.c. meters. Reads directly the capacity of condensers. The A.C. meter connects to a.c. supply line and adjusts to 100 volts. Tests paper type condensers .008 to 10 mfd. The D.C. voltmeter connects to rectifier tube and adjusts to 300 volts. Selector switch provides for measuring voltage, also forming and testing milliamperage capacity of electrolytic condensers. The maximum reading for a good electrolytic condenser is 2 m.a. per mfd. In a seamless metal case, with or without cover. A very practical and convenient instrument.

- No. 850 NET \$8.82
- No. 850 With cover NET \$10.00

No. 800 same as above for testing paper type condensers only. In a seamless metal case 4½" dia. baked enamel finish.

- No. 800 NET \$4.70



No. 800

### Panel Type



Model 75 Projecting Type

Various ranges are supplied in Ammeters for measuring filament current, Voltmeters to measure "A," "B" and "C" voltages, Milliammeters for measuring plate current of one or more tubes. Panel meters are supplied in narrow rim or in wide flange flush mounting type. These types require 2 5/8" hole. Narrow rim type, Model 55, is held in place by clamp back of panel. Finish is full nickel. Flange type, Model 65, has flange 2 1/8" diameter, with three holes for attaching to panel. Standard finish, this type black flange and nickled bezel. The projecting type, Model 75, is provided with rear terminals, which also serve to attach the meter to the panel. Black finish is standard for model 75. Dials are special white enameled same as other styles. Narrow rim type furnished, unless wide flange type is specified. Standard package, panel and plug-in styles, 75. Weight 25 lbs. per standard package. Panel meters can also be supplied with SWITCH for opening or closing circuits within the meters at small additional cost.

#### D. C. VOLTMETERS

- No. 601—0.1 volts 30 ohms NET \$0.59
- No. 603—0.3 volts 175 ohms NET \$0.59
- No. 326—0.6 volts 550 ohms NET \$0.59
- No. 605—0.5 volts 410 ohms NET \$0.59
- No. 335—0.8 volts 850 ohms NET \$0.59
- No. 310—0.10 volts 1475 ohms NET \$0.59
- No. 316—0.15 volts 2914 ohms NET \$0.59

*Panel Type (Continued)*

No. 333	3-0.3 volts	550 ohms	NET \$0.59
No. 607	0-25 volts	1625 ohms	NET \$0.59
No. 608	0-25 volts	7720 ohms	NET \$1.47
No. 337	0-50 volts	3250 ohms	NET \$0.59
No. 337-H	0-50 volts	15440 ohms	NET \$1.76
No. 339	0-100 volts	6500 ohms	NET \$0.73
No. 339-H	0-100 volts	30888 ohms	NET \$1.76
No. 342	0-150 volts	9750 ohms	NET \$0.88
No. 342-H	0-150 volts	46320 ohms	NET \$1.76
No. 346-P	0-300 volts	92640 ohms	NET \$1.76
No. 347-P	0-500 volts	154400 ohms	NET \$2.36
No. 246-P	0-60-300 volts	92640 ohms	NET \$2.36
No. 609	0-750 volts	231600 ohms	NET \$2.94
No. 341	0-8 160 volts	850 16 220 ohm	NET \$1.18

**D. C. AMMETERS**

No. 380	0-1 amperes	NET \$0.59
No. 381	0-5 amperes	NET \$0.59
No. 336	0-3 amperes	NET \$0.59
No. 338	0-10 amperes	NET \$0.59
No. 101	1-0-1 amperes	NET \$0.59
No. 303	3-0-3 amperes	NET \$0.59
No. 606	-6-0-6 amperes	NET \$0.59
No. 110	10-0-10 amperes	NET \$0.59
No. 220	20-0-20 amperes	NET \$0.59

**D. C. MILLIAMMETERS**

No. 311	0-10 700 ohms	NET \$1.03
No. 315	0-15 295 ohms	NET \$0.59
No. 325	0-25 85 ohms	NET \$0.59
No. 350	0-50 20 ohms	NET \$0.59
No. 390	0-100 5.5 ohms	NET \$0.59
No. 391	0-150 3.3 ohms	NET \$0.59
No. 392	0-200 1.9 ohms	NET \$0.59
No. 399	0-300 .8 ohms	NET \$0.59
No. 394	0-400 .5 ohms	NET \$0.59
No. 395	0-20 -0-100 175/30 ohms	NET \$1.03
No. 402	0-15 -150 305/24 ohms	NET \$1.03

**A. C. VOLTMETERS**

No. 314	0-4 volts	NET \$1.47
No. 353	0-6 volts	NET \$1.47
No. 352	0-10 volts	NET \$1.47
No. 351	0-15 volts	NET \$1.47
No. 348-P	0-150 volts	NET \$2.36
No. 349-P	0-300 volts	NET \$2.94
No. 247-P	0-600 volts	NET \$3.53
No. 249	0-750 volts	NET \$4.12
No. 355-P	0-10-140 volts	NET \$2.36

**A. C. AMMETERS**

No. 360	0-1 amps	NET \$1.47
No. 361	0-3 amps	NET \$1.47
No. 362	0-5 amps	NET \$1.47
No. 363	0-10 amps	NET \$1.47
No. 364	0-50 amps	NET \$1.76

**A. C. MILLIAMMETERS**

No. 370	0-25 Milliamps	NET \$1.47
No. 371	0-50 Milliamps	NET \$1.47
No. 372	0-100 Milliamps	NET \$1.47
No. 373	0-250 Milliamps	NET \$1.47
No. 374	0-500 Milliamps	NET \$1.47

*Portable Type*

Readrite portable meters are offered in various ranges for particular purposes. The A.C. meters are repulsion type and can be used with accuracy for either A.C. or D.C. testing. This type should not be confused with the ordinary vane type instrument with its restricted applications. Readrite A.C. meters are accurately calibrated and have very uniform divisions throughout the scale lengths. The higher reading A.C. Voltmeters contain over 100 ohms per volt resistance. The D.C. Voltmeters are of the polarized vane solenoid type, and contain resistance up to 300 ohms per volt. These meters give excellent performance on pulsating currents. The coils are wound on a Bakelite frame which houses the moving vane construction. This unique arrangement provides perfect alignment for the pivot, which is only  $\frac{1}{8}$ " long, and will remain unchanged through the hardest kind of service.



No. 348  
Model 85

**D. C. VOLTMETERS**

(300 ohms per volt)

No. 346	3" Case 0-300 volts	NET \$2.65
No. 347	3" Case 0-500 volts	NET \$3.23
No. 446	3" Case 0-60-300 volts	NET \$2.65
No. 750	3" Case 0-750 volts	NET \$3.53

**Portable Type—Continued****D. C. MILLIAMMETERS**

No. 225	0-25 m.a. 84 ohms	NET \$1.76
No. 290	0-100 m.a. 5.5 ohms	NET \$1.76
No. 292	0-200 m.a. 1.8 ohms	NET \$1.76
No. 294	0-400 m.a. .5 ohms	NET \$1.76

**D. C. AMMETERS**

No. 280	0-1 amperes	NET \$1.76
No. 281	0-5 amperes	NET \$1.76
No. 238	0-10 amperes	NET \$1.76
No. 201	0-50 amperes	NET \$1.76

**A. C. VOLTMETERS**

(100 ohms per volt)

No. 348	0-150 volts	NET \$2.36
No. 349	0-300 volts	NET \$2.94
No. 247	0-600 volts	NET \$3.53
No. 248	0-150-750 volts	NET \$4.70

**A. C. MILLIAMMETERS**

No. 470	0-25 m.a.	NET \$1.76
No. 471	0-50 m.a.	NET \$1.76
No. 472	0-100 m.a.	NET \$1.76
No. 473	0-250 m.a.	NET \$1.76
No. 474	0-500 m.a.	NET \$1.76

**A. C. AMMETERS**

No. 460	0-1 amperes	NET \$1.76
No. 461	0-3 amperes	NET \$1.76
No. 462	0-5 amperes	NET \$1.76
No. 463	0-10 amperes	NET \$1.76
No. 464	0-50 amperes	NET \$2.06

**Socket Testing Voltmeters**

No. 148

No. 146	Plate Voltmeter 0-300 volts	92,640 ohms	NET \$1.76
No. 150	Grid Voltmeter 0-50 volts	15,440 ohms	NET \$1.76
No. 152	Filament Voltmeter A. C.-D. C.—10 volts, 100 ohms		NET \$1.47

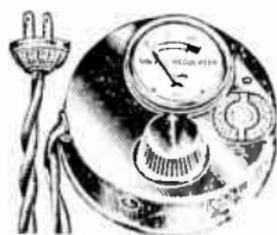
Above for UX or UY socket. Unless otherwise specified UX type will be supplied. Other readings can be furnished.

**Plug-In-Line Voltmeter**

No. 148	0-150 volts A. C.-D. C.	NET \$1.76
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**Plug-In Meters For No. 9-A Test Kit**

Single-Range Meters may be had in Plug-In Tip Jack for No. 9-A Test Kit for 50c List Extra.

**A. C. Line Voltage Regulator**

No. 218

Base is 4 1/2" dia., equipped with A. C. Voltmeter having red margin from 110 to full scale and a black line maximum voltage division marked 115. The power rheostat gives a working range between 130 and 100 volts. Complete with five-foot cord, plug and tap for connecting to receiver. Attractively finished in dull black. May be placed in set, cabinet or outside wherever it is most convenient to use. In many installations this device entirely eliminates the objectionable A. C. hum. 75 watt capacity.

No. 218	NET \$3.82
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**Pin Jack Meter Test Kit No. 9-A**

A unique test kit. Nine meters plug in jacks on bakelite panel. No switches required. Readily adaptable to changes in tubes and radio circuits. Wired for filament, grid and plate circuits. Four meters read simultaneously. Meters furnished, 0-50, 0-500, 0-8 d.c., 0-10, 0-150 a.c. voltmeters; 0-10, 0-100, 0-300 d.c. milliammeters and 0-10,000 ohms resistance meter complete with battery, power rheostat and test leads. A complete test kit in leatherette case with removable cover.



Can also be had in special tool kit combinations, No. 14-B and No. 14-A Deluxe. Description upon request.

No. 9-A	NET \$20.58
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No. 9-A

### No. 500 Ohmmeter

A complete direct reading Ohmmeter. Tests resistances up to 10,000 ohms. Also D. C. Volts up to 4.5 volts. Contains small 3 cell flashlight battery. Adjusts to zero by shorting the two jacks and turning rheostat knob. Supplied with two wire leads for use in continuity and resistance testing. Contains meter No. 501, a high grade instrument. Case finished in beautiful baked enamel. Indispensable for service work.

No. 500. . . . . NET \$3.53



### No. 501 Resistance Meter

A direct reading Ohmmeter. Tests resistances up to 10,000 ohms. Also D. C. volts 0 to 4.5. Requires only 3 small flashlight cells to operate. Current drain is negligible. Contains a high grade movement made with precision accuracy. A thoroughly reliable instrument at a popular price. Built to withstand hard servicing work. Used for testing resistances in radio receiving sets and circuits generally. Also used for continuity testing. Battery and resistance to be measured are connected in series with meter.

List \$2.50 . . . . . NET \$1.47



### Multipliers and Resistors

Resistors of the enameled porcelain tube type are furnished with tip jack or soldering terminals. Add 50c to list price for jack terminals. The flat type multipliers have flexible wire terminals only. Used for multiplying voltage readings and many radio applications.

#### MULTIPLIERS FOR D. C. VOLTMETERS (300 ohms per volt)

No. 100-A—0-50 voltmeter increase reading to 200 volts.....	NET \$0.59
No. 102-A—0-50 voltmeter increase reading to 300 volts.....	NET \$0.59
No. 103-A—0-50 voltmeter increase reading to 600 volts.....	NET \$0.88
No. 104-A—0-50 voltmeters increase reading to 300 and 600 volts.....	NET \$1.18
No. 105-A—0-150 voltmeter increase reading to 300 and 600 volts.....	NET \$1.18
No. 106-A—0-300 voltmeter increase reading to 600 volts.....	NET \$0.88
No. 107-A—0-500 voltmeter increase reading to 1000 volts.....	NET \$0.88

#### MULTIPLIERS FOR A. C. VOLTMETERS

No. 560—0-140 Voltmeter increase reading to 560 v.....	NET \$1.18
No. 570—0-140 Voltmeter increase reading to 700 v. (flat type only).....	NET \$1.47

### Audak Phonograph Pick-ups

The ultimate in home pick-up reproduction . . . Tone control that IS tone control! With control of every phase of the music and the voices you are listening to!

**No Robbing Peter to Pay Paul—**  
When we say tone control, we mean the control of the amount of natural bass and treble without sacrifice of either—by actually controlling the frequency range downward or upward . . . as you please.

In the new POLYPHASE there are, in effect, several minute electrical generators, independent of each other, and each capable of generating a different musical range. . . . It is these minute dynamos that make it possible to re-create again and again the new electrical recordings . . . with you in absolute control of the amount and quality of the bass and brilliancy . . . to suit your moods.

**Remote Control—**The new POLYPHASE pick-ups are also available with remote control.

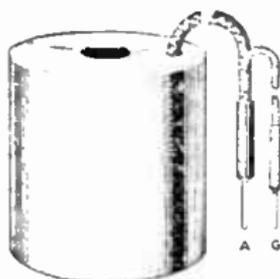
Every electric pick-up made by the Audak Company may be used for the double purpose of recording as well as reproduction.

No. 30—Singlephase. List \$21.00.....	NET \$12.57
No. 30—Polyphase. List \$26.50.....	NET \$15.58
No. 20—Untuned Pick-up, Singlephase. List \$17.50.....	NET \$10.29
No. 21—Polyphase. Tuned pick-up. List \$24.50.....	NET \$14.41
No. 31—Tuned Pick-up. List \$24.50.....	NET \$14.41



### Exploring Coil No. 525

Designed for the serviceman to use in localizing r.f. trouble. The preferred use is in conjunction with a signal supplied by an oscillator, which is induced into the grid of the tube when the exploring coil is placed around the tube. A big time saver. Trouble is traced by eliminating parts of the circuit where it is found that the induced signal from the exploring coil is satisfactory. In the super heterodyne circuit the No. 525 coil is used for peaking the intermediates. When used along with an output meter the amount of gain may be determined by bringing to resonance the parts of a r.f. circuit. Both coil and wire lead are shielded. Full instructions for using are furnished. A device no serviceman can afford to be without.



No. 525

NET \$2.06

### The New Acrocycle Oscillator EVERY RADIO SERVICE MAN NEEDS

A dependable miniature broadcast station easily adjusted to produce a signal of any desired frequency and power, in either broadcast or super-heterodyne intermediate ranges. For use in testing, comparing and adjusting all kinds of radio receivers, either in whole or by stage.

Direct true reading scale.

NO CALIBRATION CURVE TO BOTHER WITH.

Calibrated to read correctly at all points of the scale with an allowable error of less than 1/2 of one per cent.

ABUNDANCE OF POWER with EXTRA STRONG SIGNALS for neutralizing.

FULL VISION DIAL. Extremely sharp tuning. NO BODY CAPACITY. 68 to 1 vernier, makes possible hair line accuracy in setting.

PRODUCES FUNDAMENTAL FREQUENCIES from 115 to 280 KC for Super-heterodynes and all broadcast frequencies in HARMONICS from 230 to 1680 (sixth harmonic of 280) KC and higher.

Large knob for QUICK SHIFTS FROM one part of the scale to another.

#### PRICES

Oscillator with Leads, List. \$30.00

Dealers net .. 17.15

Carrying Case for Oscillator

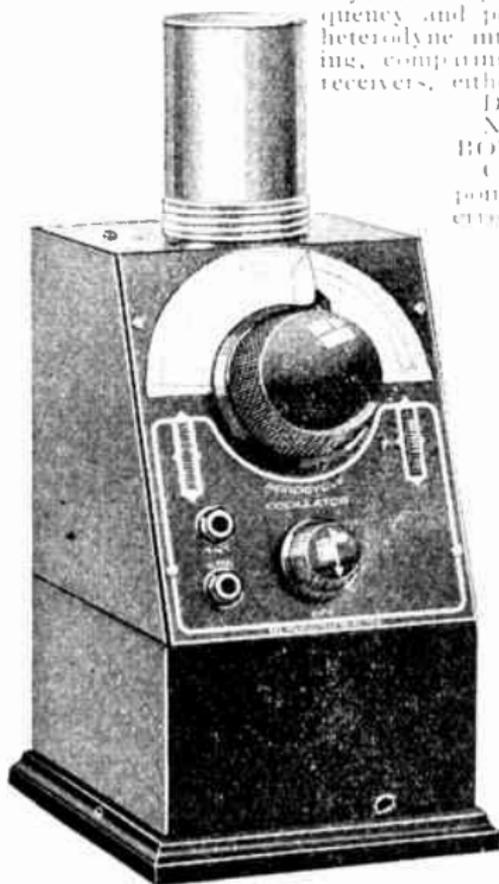
and Output Meter, List 3.00

Dealers net .. 2.00

Shipping weight with case 6 lbs. 12 oz. Without case 3 lbs. 10 oz.

Requires 4 No. 2 Flashlight dry cells.

1 22 1/2 volt battery with screw terminals size 3 3/8 x 2 3/8 x 2 1/2" high.



### Radio Outlet for Aerial and Ground Connections

This is the new Yaxley Radio Outlet with bakelite receptacles for aerial and ground connections. A very handsome and serviceable outlet.

No. 156—Brass; or No. 156-B, Bakelite .. NET \$0.75

### RADIO OUTLET FOR AERIAL AND GROUND AND DUPLEX ELECTRICAL CONNECTIONS

Using the same bakelite receptacles as in the No. 156, to match the electrical receptacles. This serviceable plate provides for aerial and ground and electrical connections for the receiving set as well as an extra electrical outlet.

No. 256 Brass, List \$1.50 .. NET \$0.88

No. 256-B Bakelite, List \$1.50 .. NET \$0.88

### SINGLE GANG RADIO OUTLET FOR AERIAL AND GROUND AND ELECTRICAL CONNECTION

A very neat and practical single gang outlet for aerial and ground and electrical connections. Furnished complete with aerial and ground plugs.

No. 133—Brass, List \$1.35 .. NET \$0.81

No. 133-B Bakelite, List \$1.35 .. NET \$0.81

Same as above, excepting complete with box and listed as standard by Underwriters' Laboratories.

A-133 Brass Plate with box, List \$1.70 .. NET \$1.00

A-133-B Bakelite Plate with box, List \$1.70 .. NET \$1.00

## YAXLEY Convenience Outlets



135



136



137



138



241



242



238



239

No. 135—For Loud Speaker or Head Phone Connections. This is the Radio Convenience Outlet when one or more loud speakers or head sets are to be used. In Brushed Brass. List \$1.00 NET \$0.59

No. 135B—With a rich Bakelite Plate. List \$1.10 NET \$0.65

No. 136—For Aerial and Ground Connections. In Brushed Brass. List \$1.00 NET \$0.59

No. 136B—With a rich Bakelite Plate. List \$1.10 NET \$0.65

No. 137—For Battery Connections. Place the batteries in an out of the way place. Also for power packs and wherever a seven conductor outlet is desirable. Complete with plug as illustrated. In Brushed Brass. List \$2.50 NET \$1.47

No. 137B—With a rich Bakelite Plate. List \$2.60 NET \$1.53

No. 138—For Electrical Connections. The electrical outlet with duplex receptacles, matches in finish and appearance Yaxley Radio Convenience Outlets. In Brushed Brass. List \$1.00 NET \$0.59

No. 138B—With a rich Bakelite Plate. List \$1.10 NET \$0.65

No. 241—Combination for Aerial and Ground and Electrical Connections. One of the most practical and convenient of Radio Convenience Outlets. Jacks that take the aerial and ground wires from the set, and duplex electrical receptacle—one receptacle for the set, the other for the power speaker or other use. In Brushed Brass. List \$2.00 NET \$1.18

No. 241B—With a rich Bakelite Plate. List \$2.20 NET \$1.30

No. 242—Combination for Loud Speaker and Electrical Connections. Provides the aerial and ground connections as well as a speaker connection. Especially recommended when power speakers are used at points distant from the set. In Brushed Brass. List \$2.00 NET \$1.18

No. 242B—With a rich Bakelite Plate. List \$2.20 NET \$1.30



353

No. 353—Combination for Loud Speaker, Aerial and Ground and Electrical Connections. For the completely wired home or apartment, when speakers are to be used in various rooms, the No. 353 Radio Convenience Outlet should find a place near the set. As the name implies, it furnishes a convenient connection for aerial and ground wires, electrical outlet, and also speaker connection. In Brushed Brass only

List \$3.00 NET \$1.76

## Eby Binding Posts



Standard



Buddy

Eby Standard Binding Posts—Moulded of bakelite, and are completely insulated. The head is non-removable. Will take a phone tip, spade terminal, and straight or looped wire. Extra wide contact surfaces. Each post equipped with soldering lug and nut and available either plain or engraved in 40 different markings. List \$0.15 NET \$0.09

Eby Commander Binding Post—Slightly larger than the Standard and furnished with plain top only. List \$0.25 NET \$0.15

Eby Buddy Binding Posts—A popular size metal post with non-removable head.

List \$0.14 NET \$0.09

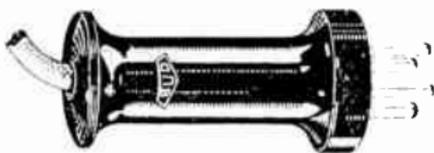
### Bakelite Panels and Tubing

- 3/16" thick, any size, per square inch.....NET \$0.02
- 1/4" thick, any size, per square inch.....NET \$0.02 1/2
- Tubing, 1", 2", 3" in diameter, per running each.....NET \$0.10

#### CABLE PLUG

Made of Brown Bakelite. Quickly detachable.

- No. 288- 4-Prong ..... \$0.21
- No. 289 5-Prong ..... .24



Moulded Bakelite Speaker and Handy Test Plug. Quickly detachable.

- No. 290 4-Prong ..... \$0.15
- No. 291 5-Prong ..... .18

### No. 75 Yaxley Duplex Phone Plug



Extremely high quality. Fit any standard Jack. Perfect contact and bakelite insulation prevent leakage. Shorting impossible. List \$0.50.....NET \$0.33

### Ward Test Prods



WARD TEST PRODS have been designed to enable the service man to efficiently perform his work.

A small chuck is at the end of each pencil grip handle for inserting the needle points, 25 of which are furnished with each set.

One prod is carried out in red and the other in black, to indicate polarity.

The point is convenient for piercing the insulation of wires, thus eliminating scraping the insulation to make contact.

WARD TEST PRODS are a real need for all radio continuity and open tests, also for every electrical service.

Price each ..... NET \$0.88

## PRACTICE SETS



Signal R-68—Wireless practice sets. Just the instrument for those who want to learn the code. The code is printed on a little brass plate fastened to base.

Equipped with Type R-60 High Frequency Buzzer. List \$3.40.....NET \$2.75

Signal Sr. Learner Set—Golden finish brass bar frame sounding plate and key base. Aluminum sounding bar, nickel plated key lever, rubber covered coils and mahogany finish base.

- M-108—4 ohm. List \$6.25.....NET \$4.90
- M-110—4 ohm. List \$5.00.....NET 3.92
- M-109—20 ohm. List \$6.50.....NET 5.10
- M-111—20 ohm. List \$5.25.....NET 4.12

M-110 and M-111 same as M-108 and M-109 except sounder plate is steel and key base is black enamel.

Signal Jr. Learner Set—Black enamel key base and bar frame. Brass bridge and aluminum sounding bar. Nickel plated bridge lever and mahogany finish base.

- M-112— 4 ohm. List \$4.00.....NET \$3.12
- M-113—20 ohm. List \$4.25.....NET 3.33

## The Omnigraph

There is no better way to learn the code than by means of the old reliable Omnigraph. It produces perfect and easily readable code—five to one hundred words per minute.

No. 2 with Fifteen Dials.....NET \$35.00

The Omnigraph must be used with a buzzer of some kind and for this purpose we recommend Signal or Manhattan. We can supply extra dials. Prices on request. Mention style of your omnigraph.

## Leach Relays

**Model 18**—This Leach Break-in Relay may be operated from a small Morse Key, Speedplex No. 2, or any similar transmitting device. It is very fast and will not lag nor drag. It is designed for tube or spark transmitters up to and including 2 K. W.

**Type S-1** complete, operates on 6 volts D. C. ....NET \$22.54

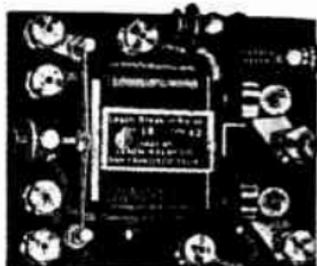
**Type S-3** complete, operates on 120 volts D. C. ....NET \$24.50

(Wiring diagram furnished with each relay)

**PR-5 Relay**—6 volt D. C. Coil resistance 4 ohms. Recommended for circuits up to 250 watts.....NET \$ 8.82

**PR-9**, as PR-5 but for circuits up to 1 K.W.....NET \$11.76

**PR-12 Relay**, as PR-9 but for operation on 120 volts D.C. Coil resistance 160 ohms .....NET \$17.64



## Signal Relays

**Commercial Standard Relay**—Used extensively with W. U. and Postal lines. Heel iron and armature of Norway iron, coils rubber covered and adjustable. Mahogany base, mounted on black enamel sub base.

**916**—150 ohm .....NET \$7.45

**917**—250 ohm .....NET \$7.84

**Signal Pony Relay**—Metal parts are gold lacquered brass, mounted on mahogany and black enamel base.

**M-104**—4 ohm. List \$4.25.....NET \$3.33

**M-105**—20 ohm. List \$4.50.....NET \$3.53

**M-106**—50 ohm. List \$4.75.....NET \$3.72

**M-107**—75 ohm. List \$5.00.....NET \$3.92

## Lynch Filament Equalizers

Used in the filament circuits to keep the filaments at their best operating point. Consists of a special alloy encased in a glass cartridge having metal end-pieces. The cartridge can be inserted or removed from its mounting so that the proper resistance may be employed for different tubes or combinations up to six "A" type tubes.



All sizes, complete with mounting. List \$1.00.....NET \$0.59

Without mount. List \$0.75.....NET .44

Note—Specify tubes, combinations in which they will operate, and describe source and voltage of filament supply.

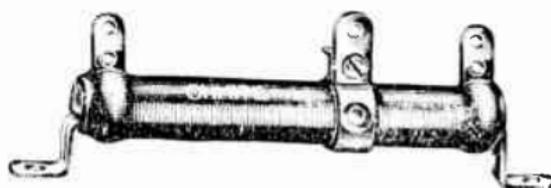
## Ohmite Vitreous Enamelled Semi-Variable Resistors

Vitreous enamel covers most of the unit, and the wire is protected against mechanical injury and will not shift under heat. The wired portion of the wire is backed up by the porcelain core underneath which forms a solid surface against which the contact button on the adjustable clip may press.

High voltages may be applied across the units of high resistance (as indicated in the tables) without danger of shorting.

Two types of adjustable lugs are available. One (Stock No. 0358) is tightened by means of a screwdriver—the other is arranged with a bakelite knob so that it may be tightened with the fingers (Stock No. 0359).

In ordering these adjustable lugs use these stock numbers and state the quantity desired.



### EXTRA CLIP

Stock Number 0358—List price, \$0.10.....NET \$0.07

### EXTRA CLIP WITH KNOB

Stock Number 0359—List price, \$0.20.....NET \$0.14

**Ohmite V. E. Semi-Variable Resistors**

Size—2"x $\frac{1}{8}$ "  
 Rating 30 Watts in Open Air  
 Furnished with Brackets  
 Mounting Centers 3"  
 Maximum  
 Current in

Stock No.	Resistance Ohms	Milli-amperes	NET
0360	1	5450	\$0.65
0361	3	3160	.65
0362	5	2440	.65
0363	10	1730	.65
0364	15	1410	.65
0365	25	1090	.65
0366	50	770	.65
0367	75	630	.65
0368	100	545	.65
0369	150	445	.65
0370	200	385	.65
0371	250	345	.65
0372	500	245	.65
0373	750	200	.65
0374	800	193	.65
0375	1,000	173	.68
0376	1,500	141	.68
0377	2,000	122	.73
0378	2,500	109	.73
0379	3,000	100	.73
0380	3,500	92	.73
0381	4,000	86	.73
0382	5,000	77	.80
0383	6,000	70	.83
0384	7,500	63	.83
0385	10,000	54	.88

Size—4"x $\frac{1}{8}$ "  
 Rating—55 Watts in open air for  
 resistance values up to 16,000 ohms.  
 Furnished with Brackets  
 Mounting Centers 5"  
 Maximum  
 Current in

Stock No.	Resistance Ohms	Milli-amperes	NET
0560	5	3300	\$0.73
0561	10	2340	.73
0562	25	1480	.73
0563	50	1048	.73
0564	75	850	.73
0565	100	740	.73
0566	150	600	.73
0567	200	520	.73
0568	250	465	.73
0569	500	330	.73
0570	750	270	.73
0571	800	260	.73
0572	1,000	234	.80
0573	1,500	190	.80
0574	2,000	165	.80
0575	2,500	148	.83
0576	3,000	135	.83
0577	4,000	117	.83
0578	5,000	104	.83
0579	7,500	85	.88
0580	8,000	82	.88
0581	10,000	74	.94
0582	12,000	67	1.03
0583	15,000	60	1.09
0584	20,000	50	1.12
0585	25,000	45	1.18

Size 6"x $\frac{1}{8}$ ". Rating—75 Watts in open air for resistance values up to 25,000 ohms. Furnished with Brackets. Mounting Centers 7".

Stock No.	Resistance Ohms	Maximum Current in Milli-amperes	NET
0770	10	2730	\$1.03
0771	15	2230	1.03
0772	25	1730	1.03
0773	50	1220	1.03
0774	100	865	1.03
0775	250	545	1.03
0776	500	387	1.03
0777	750	316	1.03
0778	1,000	274	1.03
0779	1,500	223	1.09
0780	2,000	193	1.09
0781	2,500	173	1.18
0782	3,500	146	1.24

Stock No.	Resistance Ohms	Maximum Current in Milli-amperes	NET
0783	5,000	122	1.33
0784	7,500	100	1.38
0785	10,000	86	1.38
0786	15,000	70	1.47
0787	20,000	61	1.47
0788	25,000	50	1.53
0789	30,000	45	1.53
0790	35,000	40	1.62
0791	40,000	36	1.68
0792	45,000	33	1.76
0793	50,000	30	1.91
0358	Adjustable lug		.07
0359	Adjustable lug		.14

**Ohmite Meter-Multiplier Units-Vitreous Enameled High Wattage Resistors With 1% Accuracy**

RATING—5 WATTS  
 Maxi- Maximum  
 Resist- Current in Across  
 ance Milli- Resistor

Stock No.	Resistance Ohms	Current in Milli-amperes	Potential Volts	NET
0250	100	220	22	\$1.03
0251	150	182	27	1.03
0252	200	158	32	1.03
0253	250	141	35	1.03
0254	500	100	50	1.03
0255	750	81	60	1.03
0256	800	79	63	1.03
0257	1,000	70	70	1.03
0258	1,500	57	85	1.03
0259	2,000	50	100	1.03
0260	2,500	44	110	1.03
0261	3,000	40	120	1.03
0262	3,500	37	130	1.03
0263	4,000	35	140	1.03
0264	5,000	31	155	1.03
0265	6,000	28	168	1.18
0266	7,500	25	187	1.18
0267	10,000	22	220	1.18
0268	12,000	20	240	1.33
0269	15,000	18	270	1.33
0270	20,000	15	300	1.47
0271	25,000	14	350	1.47
0272	30,000	13	390	1.62
0273	35,000	12	420	1.62

RATING—5 WATTS—Cont.  
 Maxi- Maximum  
 Resist- Current in Across  
 ance Milli- Resistor

Stock No.	Resistance Ohms	Current in Milli-amperes	Potential Volts	NET
0274	40,000	11	440	1.76
0275	45,000	10	450	1.76
0276	50,000	10	500	1.91
0277	60,000	9	540	2.06
0278	70,000	8	560	2.20
0279	80,000	8	640	2.20
0280	90,000	7	650	2.35
0281	100,000	7	700	2.35
RATING—10 WATTS				
0466	10,000	31	310	\$1.47
0467	12,000	28	336	1.62
0468	15,000	25	375	1.76
0469	20,000	22	440	1.91
0470	25,000	20	500	2.06
0471	35,000	17	595	2.20
0472	50,000	14	700	2.35
0473	75,000	11	825	2.50
0474	100,000	10	1000	2.50
0475	125,000	9	1120	2.65
0476	150,000	8	1200	2.65
0477	175,000	7	1200	2.80
0478	200,000	7	1300	2.80
0479	225,000	6	1350	2.94
0480	250,000	6	1500	2.94

## Ohmite Vitreous Enameled Fixed Resistors

### STANDARD LUG TYPE



#### STANDARD LUG TYPE

4"x $\frac{1}{4}$ "—Code Word, Abzug  
 Rating—55 watts in open air  
 for resistance values up to 16,000  
 ohms. Furnished with brackets as  
 illustrated. Mounting centers, 5".  
 Maximum

Stock Number	Resistance Ohms	Current in Milli-amperes	NET
0400A	5	3300	\$0.59
0400B	10	2340	.59
0400C	25	1480	.59
0400D	50	1048	.59
0400E	75	850	.59
0400F	100	740	.59
0400G	150	600	.59
0400H	200	520	.59
0401	250	465	.59
0402	500	330	.59
0403	750	270	.59
0404	800	260	.59
0405	1,000	234	.65
0406	1,500	190	.65
0407	2,000	165	.65
0408	2,500	148	.65
0409	3,000	135	.73
0410	4,000	117	.73
0411	5,000	104	.88
0412	7,500	85	.88
0413	8,000	82	.88
0414	10,000	74	.88
0415	12,000	67	1.03
0416	15,000	60	1.03
0417	20,000	50	1.18
0418	25,000	45	1.33
0419	35,000	35	1.47
0420	50,000	27	1.47
0421	75,000	20	1.62
0422	100,000	15	1.76
0423	125,000	12	1.91
0424	150,000	9	2.06
0425	175,000	7	2.20
0426	200,000	7	2.20
0427	225,000	6	2.35
0428	250,000	6	2.35

#### STANDARD LUG TYPE

2"x $\frac{1}{4}$ "—Code Word, Acker  
 Rating—30 watts in open air  
 for resistance values up to 10,000  
 ohms. Furnished with brackets as  
 illustrated. Mounting centers, 3".  
 Maximum

Stock Number	Resistance Ohms	Current in Milli-amperes	NET
0200A	5	2450	\$0.53
0200B	10	1730	.53
0200C	25	1090	.53
0200D	50	775	.53
0200E	75	630	.53
0200F	100	545	.53
0200G	150	440	.53
0200H	200	380	.53
0201	250	345	.53
0202	500	240	.53
0203	750	200	.53
0204	800	193	.53
0205	1,000	173	.59
0206	1,500	141	.59
0207	2,000	122	.59
0208	2,500	109	.59
0209	3,000	100	.59
0210	3,500	92	.59
0211	4,000	86	.59
0212	5,000	77	.65
0213	6,000	70	.65
0214	7,500	63	.65
0215	10,000	54	.73
0216	12,000	45	.73
0217	15,000	36	.88
0218	20,000	28	.88
0219	25,000	25	1.03
0220	30,000	22	1.03
0221	35,000	17	1.18
0222	40,000	15	1.18
0223	45,000	14	1.33
0224	50,000	13	1.33
0225	60,000	9	1.47
0226	70,000	8	1.47
0227	80,000	8	1.62
0228	90,000	7	1.62
0229	100,000	7	1.76

### Cartridge Type

1-13/ in. x 1/2 in.—10 Watt



Will fit standard Grid Leak Clips, or Bus Wire may be soldered directly into holes in the copper caps.

Maximum Current in

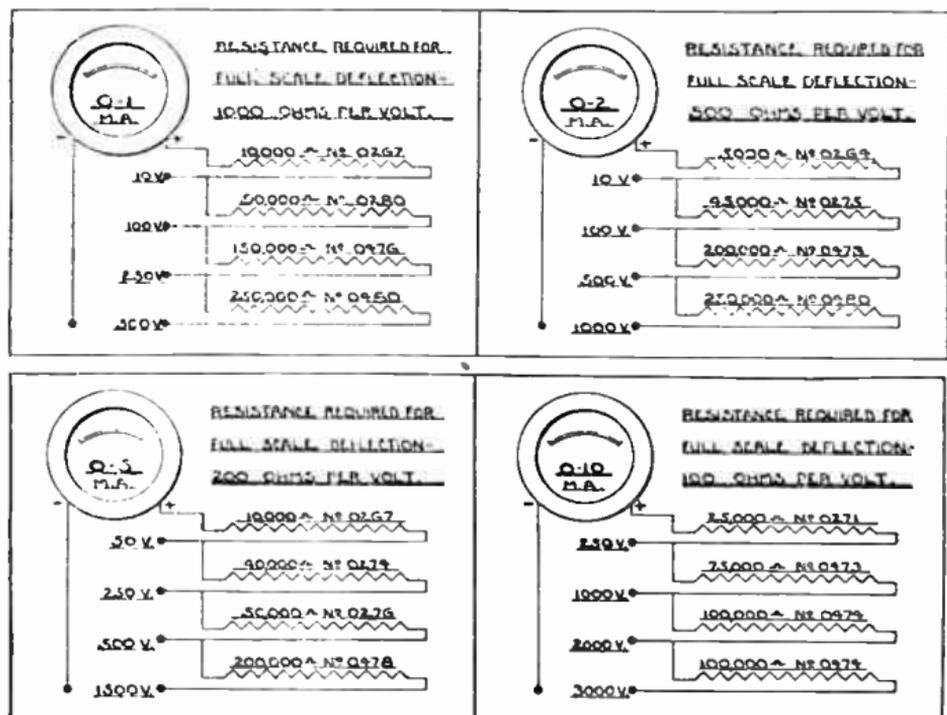
Stock Number	Resistance Ohms	Milli-amperes	List	NET
0101	250	200	\$0.90	\$0.53
0102	400	155	.90	.53
0103	500	140	.90	.53
0104	600	125	.90	.53
0105	750	115	.90	.53
0106	1,000	100	1.00	.59
0107	1,200	91	1.00	.59
0108	1,500	81	1.00	.59
0109	2,000	70	1.00	.59
0110	2,500	63	1.00	.59
0111	3,000	57	1.10	.65
0112	3,500	53	1.10	.65
0113	4,000	50	1.10	.65
0114	5,000	42	1.25	.73
0115	6,000	38	1.25	.73

Maximum Current in

Stock Number	Resistance Ohms	Milli-amperes	List	NET
0116	7,500	35	\$1.25	\$0.73
0117	8,000	30	1.25	.73
0118	10,000	26	1.25	.73
0119	12,000	24	1.50	.88
0120	15,000	18	1.50	.88
0121	20,000	16	1.50	.88
0122	25,000	11	1.50	.88
0123	30,000	10	1.50	.88
0124	35,000	9	1.75	1.03
0125	40,000	7	1.75	1.03
0126	45,000	7	2.00	1.18
0127	50,000	6	2.00	1.18
0128	55,000	5	2.25	1.33
0129	60,000	5	2.25	1.33



### Diagrams Illustrating Suggested Combinations of Resistors Connected in Series to Give Four Full Scale Voltages with One Meter



(See Page 66)

The odd values of resistance indicated in the table below for which no stock numbers are given, may be made up of two or more resistors or can be furnished special to order.

**Total Ohms Required and Stock Numbers of Resistors to Be Used to Obtain Desired Full Scale Voltage as Indicated in Left Hand Column**

Desired FULL SCALE Voltage	O-1 Milliammeter		O-1½ Milliammeter		O-2 Milliammeter	
	Total Ohms	Stock No.	Total Ohms	Stock No.	Total Ohms	Stock No.
1	1,000	0257	637	....	475	....
1.5	1,500	0258	1,000	0257	725	....
2	2,000	0259	1,333	....	1,000	0257
3	3,000	0261	2,000	0259	1,500	0258
5	5,000	0264	3,333	....	2,500	0260
7.5	7,500	0266	5,000	0264	3,750	....
10	10,000	0267	6,666	....	5,000	0264
15	15,000	0269	10,000	0267	7,500	0266
30	30,000	0272	20,000	0270	15,000	0269
50	50,000	0276	33,333	....	25,000	0271
100	100,000	0281	66,666	....	50,000	0276
150	150,000	0476	100,000	0281	75,000	0473
300	300,000	2-0476	200,000	0478	150,000	0476
500	500,000	2-0480	333,333	....	250,000	0480
1000	1,000,000	4-0480	666,667	....	500,000	2-0480
2000	2,000,000	8-0480	1,333,333	....	1,000,000	4-0480
3000	3,000,000	12-0480	2,000,000	8-0480	1,500,000	6-0480

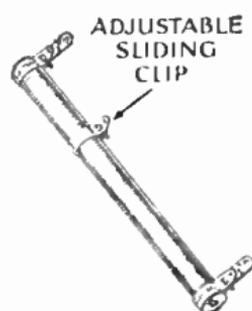
  

Desired FULL SCALE Voltage	O-3 Milliammeter		O-5 Milliammeter		O-10 Milliammeter	
	Total Ohms	Stock No.	Total Ohms	Stock No.	Total Ohms	Stock No.
1	313	....	188	....	92	....
1.5	480	....	288	....	142	....
2	667	....	388	....	192	....
3	1,000	0257	588	....	292	....
5	1,666	....	1,000	0257	500	0254
7.5	2,500	0260	1,500	0258	750	0255
10	3,333	....	2,000	0259	1,000	0257
15	5,000	0264	3,000	0261	1,500	0258
30	10,000	0267	6,000	0265	3,000	0261
50	16,667	....	10,000	0267	5,000	0264
100	33,333	....	20,000	0270	10,000	0267
150	50,000	0276	30,000	0272	15,000	0269
300	100,000	0281	60,000	0277	30,000	0272
500	166,667	....	100,000	0281	50,000	0276
1000	333,333	....	200,000	0478	100,000	0474
2000	666,667	....	400,000	2-0478	200,000	2-0474
3000	1,000,000	4-0480	600,000	3-0478	300,000	3-0474

**Electrad Truvolt All-Wire Resistances****Type B—25 Watts—  
2 inches long**

Type	Resist- ance in Ohms	Current in Milli- amperes	Net Price
B-.01	1	5000	\$0.50
B-.02	2	3500	.50
B-.025	2.5	3150	.50
B-.03	3	2800	.50
B-.05	5	2225	.50
B-.075	7.5	1800	.50
B-.1	10	1500	.50
B-.15	15	1250	.50
B-.2	20	1100	.50
B-.25	25	1000	.50
B-.5	50	700	.50
B-.75	75	575	.50
B-1	100	500	.50
B-2	200	353	.50
B-3	300	289	.50
B-4	400	250	.50
B-5	500	224	.50
B-7.5	750	182	.50
B-8	800	177	.50
B-8.5	850	165	.50
B-10	1000	158	.50
B-12.5	1250	141	.50
B-15	1500	129	.50
B-20	2000	112	.50
B-22.5	2250	105	.50
B-25	2500	100	.50
B-30	3000	91	.50
B-35	3500	84	.50
B-40	4000	79	.50
B-45	4500	75	.50
B-50	5000	71	.50
B-60	6000	64	.50
B-70	7000	60	.50
B-72	7200	59	.50
B-75	7500	58	.50
B-80	8000	56	.53
B-90	9000	53	.56
B-100	10000	50	.59
B-120	12000	45	.59
B-150	15000	41	.59
B-200	20000	35	.68
B-250	25000	32	.68
B-300	30000	29	.73
B-400	40000	25	.76
B-500	50000	22.5	.82

Weight 1 unit in carton.....1 oz.

**Type C—50 Watts—  
4 inches long**

Type	Resist- ance in Ohms	Current in Milli- amperes	Net Price
C-1	100	700	\$0.79
C-2	200	500	.79
C-3	300	406	.79
C-4	400	353	.79
C-5	500	316	.79
C-7.5	750	259	.79
C-8	800	252	.79
C-10	1000	224	.79
C-12.5	1250	200	.79
C-15	1500	182	.79
C-20	2000	158	.79
C-22.5	2250	149	.79
C-25	2500	141	.79
C-30	3000	129	.79
C-35	3500	119	.79
C-40	4000	112	.79
C-45	4500	105	.79
C-50	5000	100	.79
C-60	6000	91	.88
C-70	7000	84	.88
C-72	7200	83	.88
C-75	7500	82	.88
C-80	8000	79	.88
C-90	9000	74	.88
C-100	10000	71	.97
C-120	12000	65	.97
C-150	15000	58	.97
C-200	20000	50	1.06
C-250	25000	45	1.09
C-300	30000	41	1.12
C-400	40000	35	1.15
C-500	50000	32	1.18
C-600	60000	29	1.23
C-800	80000	25	1.32
C-1000	100000	22.5	1.62

Weight, 1 unit in carton, 1 3/4 oz.

**Type D—75 Watts—  
6 inches long**

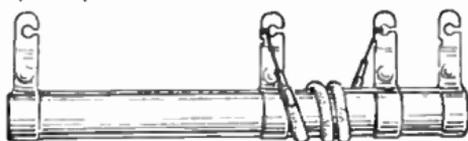
D-1	100	865	\$1.09	D-60	6000	112	1.12
D-2	200	610	1.09	D-70	7000	103	1.15
D-3	300	500	1.09	D-72	7200	102	1.15
D-4	400	432	1.09	D-75	7500	100	1.18
D-5	500	387	1.09	D-80	8000	97	1.18
D-7.5	750	316	1.09	D-90	9000	91	1.23
D-8	800	306	1.09	D-100	10000	87	1.32
D-10	1000	274	1.09	D-120	12000	79	1.32
D-12.5	1250	245	1.09	D-150	15000	71	1.47
D-15	1500	224	1.09	D-200	20000	61	1.47
D-20	2000	194	1.09	D-250	25000	55	1.56
D-22.5	2250	182	1.09	D-300	30000	50	1.56
D-25	2500	173	1.09	D-400	40000	43	1.56
D-30	3000	158	1.09	D-500	50000	39	1.62
D-35	3500	146	1.09	D-600	60000	35	1.65
D-40	4000	137	1.09	D-800	80000	31	1.71
D-45	4500	129	1.09	D-1000	100000	27	1.76
D-50	5000	122	1.09				

NOTE—Above wattage and current ratings apply only when units are suspended in free air, otherwise loads exceeding 50 per cent of their ratings should not be applied. Voltages greater than 400 D.C. should not be applied across the terminals of any one resistance unit. For high voltages it is advisable to use two or more units in series. Extra sliders, 10c each.

# TRUVOLT Flexible RESISTORS

U.S. Patent 1,697,406 and Patents Pending

Wire wound on flexible core and covered with impregnated fabric. Pigtail terminals at each end. The values of stock sizes will fill practically all replacements where a resistor of less than twelve thousand ohms may be used. They may be coiled or bent to almost any convenient shape. For repairing an open section in a divider unit the correct value of flexible resistor can be soldered to one tap of the open section. The flexible unit may then be wrapped around core of divider resistor and the other end soldered to other tap of open section (see illustration below).



## 3 WATT RATING—6 in. Long with Pigtails

Type No.	Ohms	Max. Current in Milliamperes	Max. Potential to be used across Resistor in Volts
2G25	25	346	8.5
2G50	50	245	12
2G75	75	200	15
2G100	100	173	17
2G150	150	141	21
2G200	200	122	24.5
2G225	225	115	26
2G250	250	109	27
2G300	300	100	30
2G350	350	92	32
2G375	375	89	33.5
2G400	400	86	34.5
2G450	450	81	36.5
2G500	500	77	38.5
2G550	550	73	40.5
2G600	600	70	42.5
2G650	650	68	44.2
2G700	700	65	45.5
2G750	750	63	47.4
2G800	800	61	49
2G900	900	57	52
2G1000	1000	54	54.7
2G1100	1100	52	57.5

Type No.	Ohms	Max. Current in Milliamperes	Max. Potential to be used across Resistor in Volts
2G1200	1200	50	60
2G1300	1300	48	62.5
2G1400	1400	46	65
2G1500	1500	44	67
2G1600	1600	43	69.4
2G1650	1650	42.5	70.4
2G1700	1700	42	71.4
2G1750	1750	41	72.5
2G1800	1800	40	73.5
2G2000	2000	38	77.5
2G2250	2250	36	82
2G2500	2500	34.5	86.5
2G2600	2600	33.5	88.3
2G2700	2700	33	90
2G2800	2800	32.5	91.8
2G3000	3000	31.5	95
2G3500	3500	29	102
2G4000	4000	27	109
2G4500	4500	25.5	116
2G5000	5000	24.5	122
2G5500	5500	23	128
2G6000	6000	22	134

LIST PRICE, All 3-watt Sizes, \$0.50 ..... NET \$0.29

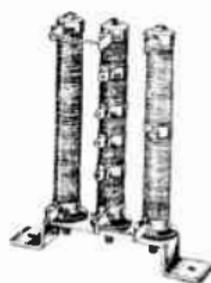
## 6 WATT RATING—12 in. Long with Pigtails

Type No.	Ohms	Max. Current in Milliamperes	Max. Potential to be used across Resistor in Volts
3G500	500	109	54.6
3G1000	1000	72.5	77.5
3G2000	2000	54.5	109
3G3000	3000	44.5	134
3G4000	4000	38.5	156
3G5000	5000	34.6	174
3G6000	6000	31.8	190

Type No.	Ohms	Max. Current in Milliamperes	Max. Potential to be used across Resistor in Volts
3G7000	7000	29.2	205
3G8000	8000	27	220
3G9000	9000	25.5	232
3G10000	10000	24.5	245
3G11000	11000	23	257
3G12000	12000	22	268

LIST PRICE, All 6 watt Sizes, \$1.00 ..... NET \$0.59

## Electrad Truvolt Air-Cooled Resistance Banks



Type 250B3—Three TRUVOLT type C units mounted on an insulated bracket. For use as voltage divider with any 250 or 210 amplifier or plate supply device. Easily adjusted taps provide all voltages required. 8 resistance sections—21000 ohms total resistance.

List \$5.00 ..... NET \$2.94

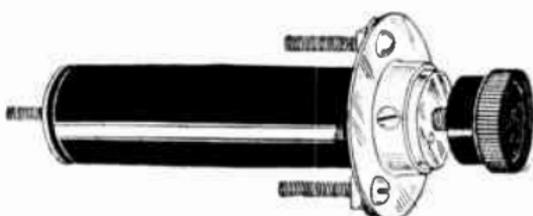
Type C245B2—Two TRUVOLT type C units. For use with any receiver or power amplifier using 245 type tubes. 7 resistance sections—14,700 ohms total resistance.

List \$3.50 ..... NET \$2.06

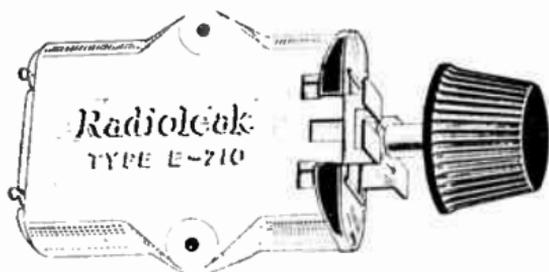
## Allen-Bradley Radiostat

Power rheostat rated 75 watts for continuous operation. Resistance range 4 to 150 ohms.

List \$6.50 ..... NET \$5.40



### Compression Rheostats for Amateur Transmitters



Radioleak — Special grid leak for radio transmitters.  
NET \$4.95

Bradleystat—E210-filament control for ten watt transmitters  
NET \$3.95

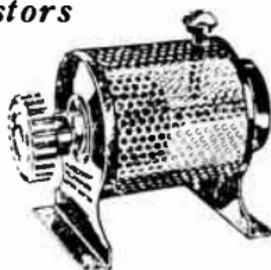
### Clarostat Variable Resistors



Volume Control



Hum-Dinger



Speed Control

Trade Name	Model	Resistance Range	Capacity	NET Price
Standard	Universal	0—5,000,000 rhms	20 watts	\$1.32
Power	Filament Control	1/4—10 ohms	80 watts	2.06
Power	Low Range	25—500 ohms	80 watts	2.06
Power	Universal Range	200—100,000 ohms	80 watts	2.06
Volume Control		0—500,000 ohms	8 watts	.88
Table Type	Table Type	0—500,000 ohms	8 watts	1.47
Grid Leak	Variable Grid Leak	1/10—10 megohms		.88
Duplex	Double	100—5,000,000 ohms	10 watts	1.32
Antenna Plug	Antenna Plug			.88
Speed Control	Laboratory	1/4—10 ohms	80 watts	2.94
Speed Control	Laboratory	25—500 ohms	80 watts	2.94
Speed Control	Laboratory	200—100,000 ohms	80 watts	2.94
Super Power	Filament	1/4—10 ohms	250 watts	3.53
Super Power	Low Range	25—500 ohms	250 watts	3.53
Super Power	Universal	200—100,000 ohms	250 watts	3.53
Hum-Dinger	Hum Suppressor	10 sizes 6 to 400 ohms	2 watts	.44

### Carter "Hi-Ohm" Volume Control

It is the ideal volume and tone control, plate-voltage control, regeneration control or stabilization control. It has many other uses in the receiver or loudspeaker circuits.

A non-inductive, wire protected, high resistance volume control that is unique in principle and original in design. The carbonized resistance element is made of a special resistance material and is graduated so as to produce a curved line effect giving an increase in volume which is uniform in percentage.

The resistance element is then wound with wire and a portion of each turn is removed. The strip is finally treated with a moisture-proof compound for protection, insuring permanency. Mounts in single 3/8 inch hole on 1/8 inch and 3/16 inch panel. Complete with knob. Resistances of 500,000, 300,000, 200,000, 100,000, 50,000, and 10,000 ohms.

List \$2.00 ..... NET \$1.18  
With filament switch. List \$2.50 ..... NET \$1.47

### The Electrad Super-Tonatrol

The Electrad Super-TONATROL is rated at 3 watts. Super-TONATROLS utilize an entirely new principle. A specially developed resistance element is permanently fused at high temperature to the surface of a vitreous enameled metal plate. The vitreous enamel provides high insulation and at the same time aids rapid dissipation of heat. The heavy steel plate also aids heat dissipation and provides rigidity for the unit. A pure silver, low resistance brush contact of new floating design is used, which adapts itself to any possible irregularity of surface, thus insuring smooth, stepless flow of current. The pure silver contact is backed by a silver-plated phosphor bronze spring which is self-aligning and which automatically compensates for production variations. A rigid bakelite disc completely insulates the contact from the shaft and provides complete circuit isolation in multiple or "ganged" units. 5,000, 10,000, 15,000, 25,000, 50,000, 75,000 and 100,000 ohms.

List \$2.40 ..... NET \$1.41

### Electrad Truvolt Wire Grid Resistors



All-wire grid resistance—covered with varnished cambric—can be bent any shape. No mounting necessary. Small—compact—practically non-inductive.

Resistance in Ohms	Capacity in Milli-amperes	Resistance in Ohms	Capacity in Milli-amperes	Resistance in Ohms	Capacity in Milli-amperes
5	386	300	50	1300	24
10	273	400	43	1400	23
15	223	500	38	1500	22
25	173	600	35	1600	21
40	137	700	32	1700	20
50	122	800	30	1800	20
75	100	900	29	1900	19.8
100	86	1000	27	2000	19.3
200	61	1100	26	2500	17.5
		1200	25	3000	16

These Units can also be used for other purposes provided the above working current is not exceeded.

Sizes 5 to 1000 ohms. List \$0.25.....NET \$0.15  
 Sizes 1100 to 3000 ohms. List \$0.40.....NET \$0.24

### Type V Electrad Truvolt Center Tap Resistors



Particularly designed for use across the filaments of A. C. tubes—the center tap providing the electrical center for grid return leads. Made by riveting two matched resistors together—resulting in an unusually accurate center tap. Can be used with any type A. C. tube socket. Total Resistances 10, 20, 30, 40, 50, 80, 100, 150, and 200 ohms. List \$0.50 .....NET \$0.29

### Carter H—Heavy Duty Resistors

Designed for mounting where the height is limited. Will dissipate 2.25 watts. Used to reduce 6 volt current to the voltage requirements for different tube combinations, etc. Due to the fact that this resistor is practically non-inductive and has a negligible distributed capacity it is ideally suited for use as a grid resistor (grid suppressor). Length, center to center, 1 7/16 inches.



Resistances of 100, 200, 300, 400, 500, 750, and 1000 ohms. List \$0.30 .....NET \$0.18  
 Resistances of .25, .4, .435, .5, .57, .67, .8, 1.0, 1.33, 1.5, 2, 3, 4, 5, 6, 8, 10, 12, 15, 18, 20, 25, 30, 36, 40, and 50 ohms. List \$0.25.....NET \$0.15

### FROST Variable High Resistance

Absolutely stable in operation; not affected by humidity or temperature changes. Roller contact produces perfectly smooth, continuously variable adjustment of resistance and eliminates friction and mechanical wear. Units are non-inductive. Polished bakelite case 2 inches by 3/4 inch with bakelite dust cover. Single hole mountings. Bakelite white arrow knob. Units having Frost "D" curve are universal resistances. Can be used as high resistance potentiometers by connecting three terminals or as a straight variable resistance by connecting the center and one outside terminal. Units having the Frost "LD" curve are for volume control in AC sets. They have the new flat tapered curve with only 2 per cent of resistance at half rotation of knob.



Prices, Type LD—2,000, 5,000, 10,000 ohms. List \$2.25.....NET \$1.33  
 Type D—25,000, 50,000, 100,000, 200,000, and 500,000 ohms. List \$2.00 .....NET \$1.18  
 Type D—Variable high resistance with D. C. switch 50,000, 200,000 and 500,000 ohms. List \$2.35 .....NET \$1.38  
 Type D—Variable high resistance with A. C. snap switch, 25,000, 200,000, and 500,000 ohms. List \$2.75.....NET \$1.62  
 Type LD—With A. C. snap switch, 5,000 and 10,000 ohms. List \$3.00 .....NET \$1.76  
 2800 Series—1 1/8" in diameter variable high resistances.  
 Type LD—2000, 5000, and 10000 ohms. List \$2.50.....NET \$1.47  
 Type D—10,000, 25,000, 50,000, 100,000, 200,000, and 500,000 ohms. List \$2.25 .....NET \$1.37

## Electrad Royalty Resistances

### Non-Inductive High Resistances

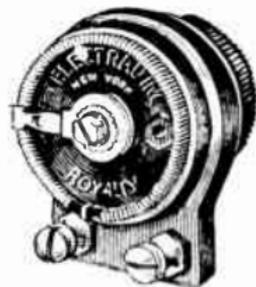
Note These Important Exclusive Features:

1—Resistance element not impaired by any mechanical operation.

2—Electrical contact made positive by metallic arm on wire-wound strip.

3—The same resistance is always obtained at the same point.

4—Entire range of resistance is covered with less than a single turn of the knob.



Type A—Variable Grid Leak 1/10 to 7 megs.

List \$1.50 .....NET \$0.88

Type B—Variable High Resistance, 0 to 100,000 ohms. List \$1.50.....NET \$0.88

Type C—Variable High Resistance, 0 to 50,000 ohms. List \$1.50.....NET \$0.88

Type D—Variable High Resistance, 0 to 700,000 ohms. List \$1.50..NET \$0.88

Type E—Compensator, 500,000 ohms, Potentiometer. List \$2.00...NET \$1.18

Type F—Variable High Resistance, 0 to 2,000 ohms. List \$1.50.....NET \$0.88

Type G—Variable High Resistance, 0 to 10,000 ohms. List \$1.50..NET \$0.88

Type H—Variable High Resistance, 0 to 25,000 ohms. List \$1.50..NET \$0.88

Type J—Variable High Resistance, 0 to 200,000 ohms. List \$1.50..NET \$0.88

Type K—Variable High Resistance, 0 to 5,000 ohms. List \$1.50...NET \$0.88

Type L—Variable High Resistance, 0 to 500,000 ohms. List \$1.50 NET \$0.88

### SPECIAL RANGES TO ORDER

Potentiometer in any of above sizes. List \$2.00..... NET \$1.18

Mounting bracket equipped with rubber feet. List \$0.35.....NET \$0.21



## Lynch Precision Wire Wound Resistor

These precision wire wound units have a small positive change of resistance with load. At the maximum rated load of one watt (1 watt) the change of resistance is approximately 1/4 of one per cent. The maximum change of impedance with frequency up to 50,000 cycles is less than 6%, and the units show no appreciable change in frequencies to 5,000 cycles. The temperature coefficient of resistance is 0.002 per degree C. These resistors have a safe power rating of one watt. Customers will find resistors of this type quite valuable for laboratory purposes.

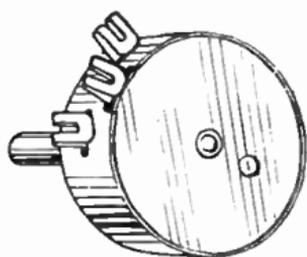
Resistance In Ohms	Rated Current In Milliamperes	List	NET
<b>TYPE LW1</b>			
1 to 9 Ohms		\$2.00	\$1.47
10 Ohms		1.50	1.11
25 Ohms		1.25	.92
50 Ohms		1.25	.92
100 Ohms		1.25	.92
150 Ohms		1.25	.92
200 Ohms		1.25	.92
500 Ohms	44.6	1.25	.92
1,000 Ohms	31.6	1.25	.92
2,500 Ohms		1.25	.92
5,000 Ohms	14.1	1.25	.92
10,000 Ohms	10.0	1.50	1.11
12,500 Ohms	8.7	1.50	1.11
20,000 Ohms	7.05	1.50	1.11
25,000 Ohms	6.32	1.50	1.11
30,000 Ohms	5.75	1.50	1.11
35,000 Ohms	5.35	1.50	1.11
40,000 Ohms	5.00	1.50	1.11
50,000 Ohms	4.47	1.50	1.11
60,000 Ohms	4.08	1.50	1.11
75,000 Ohms	3.64	1.50	1.11
100,000 Ohms	3.16	2.00	1.47
125,000 Ohms	2.82	2.00	1.47
150,000 Ohms	2.58	2.50	1.82
175,000 Ohms	2.46	2.50	1.82
200,000 Ohms	2.23	2.50	1.82
225,000 Ohms	2.11	2.75	2.02
250,000 Ohms	2.00	2.75	2.02
300,000 Ohms	1.83	3.00	2.20
400,000 Ohms	1.58	3.50	2.58
500,000 Ohms	1.41	4.00	2.94



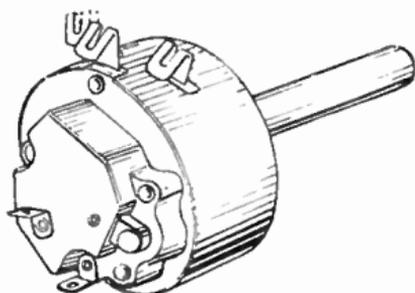
LW-2

Ohms	NET	Ohms	NET
500,000	\$2.35	1,750,000	\$5.30
750,000	2.94	2,000,000	5.88
1,000,000	3.82	2,250,000	7.35
1,250,000	4.41		
1,500,000	4.41	2,500,000	8.82

### Electrad Line of Ri Replacement Controls



Standard Long-Shaft Type. Volume Control. Insulated Shaft.



Standard Long-Shaft Type with 110-volt Built-in Power Switch. Insulated Shaft.

Our Spec. No. Value in Ohms Taper of Control

RI-269	20	Uniform
RI-270	30	Uniform
RI-271	50	Uniform
RI-272	100	Uniform
RI-273	200	Uniform
RI-274	400	Uniform
RI-275	800	Uniform
RI-276	1,000	Uniform
RI-232	2,000	Uniform
RI-233	3,000	Uniform
RI-277	4,000	Uniform
RI-234	5,000	Uniform
RI-278	5,000	Reverse
RI-240	10,000	Reverse
RI-201	15,000	Reverse
RI-279	25,000	Uniform
RI-280	25,000	Reverse
RI-241	30,000	Reverse
RI-205	50,000	Uniform
RI-202	75,000	Regular
RI-242	100,000	Reverse
RI-281	200,000	Uniform
RI-208	250,000	Reverse
RI-203	500,000	Reverse
RI-206	1,000,000	Reverse

**NOTE**

Uniform taper means that resistance variation is proportional to per cent rotation of knob.

Reverse taper means that resistance change per degree of clock-wise rotation increases.

Regular taper means that resistance change per degree of clock-wise rotation decreases.

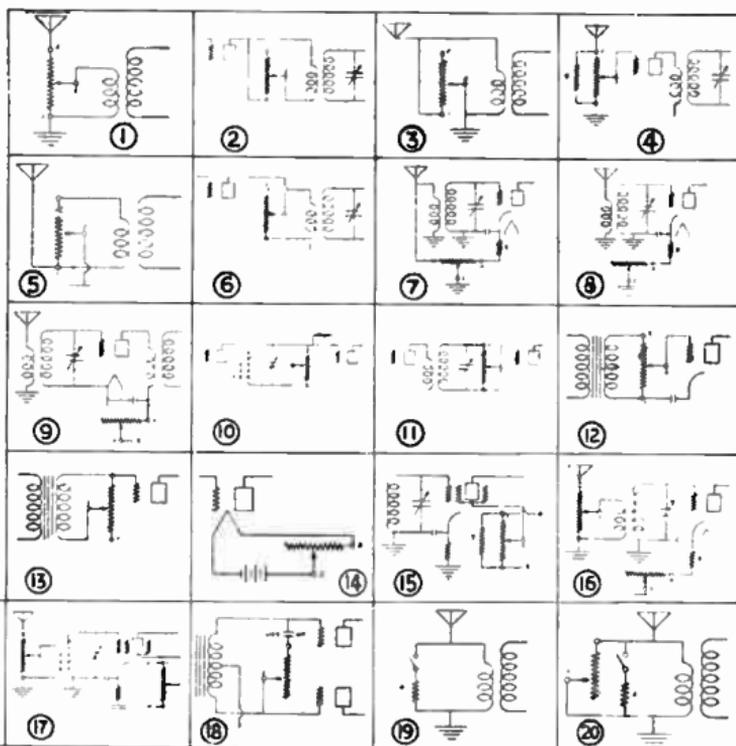
All above controls are potentiometer type for convenience.

Where rheostat is wanted use center and one outside terminal.

Our Spec. No. RI-204 Rheostat; value in ohms, 10; taper of control, uniform.

All RI units standard long shaft insulated. List, \$1.00 **NET \$0.55**

All RI units standard long shaft insulated with 110 volt built-in switch. List, \$1.75 **NET \$1.03**



IMPORTANT NOTE—ALL CONTROLS LISTED MUST  
BE USED IN CIRCUITS INDICATED

Receiver and Model No.	Circuit No.	Volume Control Type No.	Receiver and Model No.	Circuit No.	Volume Control Type No.
Acme Mfg. Co.—AC 7	12	RI-203	Chas. Freshman — N-12		
88	15	*RI-205	N-17	3	RI-201
Aero Coil Co.—Unit 6, Short Wave	14	RI-204	L. I.S., G60S, H, M, K, K60S	12	RI-203
Aero Prod. Co.—Aero 5	9	RI-202	Equaphase	14	RI-204
Aero 4, 6, 7, Short Wave	14	RI-204	Garod—E-A	12	RI-203
All-Amer. Mohawk—96, 90	7	RI-201	Gibfillan—10	7	RI-201
60, 61, 62, 65, 66, 80, 83, 84, 85, 86, 88	10	RI-203	100	6	RI-201
Amrad—70, 7100	1	RI-201	A. H. Grebe—AC-7, 428, AC-6	2	RI-201
81	15	RI-205	SK-4DC	8	RI-202
Apex -36	7	RI-201	Synchophone, M U 1, No. 5	14	RI-204
80	3	RI-201	Halldorson	3	RI-201
Battery Models	9	RI-202	Hammarlund—HiQ-29	5	RI-201
Arborphone—45	2	RI-201	HiQ-30	15	RI-205
Atwater Kent—37, 38	3	RI-201	Kenneth Harkness—AC-7 Control A	12	RI-203
36	2	RI-201	AC-7 Control B	7	RI-201
40, 42, 44, 52	5	RI-201	High Frequency—Master- tone, HFL Super	15	RI-205
33 series filament	12	RI-203	Hollister—AC 8 Control A	15	RI-205
12, 20, 30, 32, 33, 35, 48, 49, 50	14	RI-204	AC 8 Control B	7	RI-201
61, 61C, 66, Battery 222 Tubes	15	RI-205	Holmes Jordan—AC	7	RI-201
Audiola—30B, 7330	15	RI-205	Howard	15	RI-205
Baldwin	7	RI-201	Kellogg—K-24, 25, 27, 28	7	RI-201
Balkite—FC, C	7	RI-201	523, 526 Control A	5	RI-201
Belmont—Belmont	15	RI-205	523, 526 Control B	12	RI-203
Bosch—49	5	RI-201	Colin B. Kennedy—Royal 80	12	RI-203
28, 29	1	RI-201	220	14	RI-204
54 DC	7	RI-201	20	15	RI-205
46, 66, 96, 107, 116, 126, 136, 146, 166	10	RI-203	King Elec. Co.—E-80, 81, FGH	5	RI-201
35 Battery Set	14	RI-204	82	2	RI-201
48	15	*RI-205	J & H	3	RI-201
Bremer-Tully—7-70, 7-71	7	RI-201	9798, Monarch	7	RI-201
4, 6, 8, 8-20A	11	RI-203	10K-1, 25, 71	14	RI-204
14, 21, 31, 81, 82	8	RI-202	Kolster—K-20, 22, 23, 24, 25, 27, 28	1	RI-201
Browning-Drake—34, 36, 38	3	RI-201	8A	14	RI-204
Brunswick—3, KR8, 2, 5, KRO	5	RI-201	Lincoln Elec. — Lincoln 40	8	RI-202
Bush & Lane—12	15	*RI-205	8-80	15	RI-205
Cavac	7	RI-201	Lyric—90	7	RI-201
Clearitone—112	11	RI-203	Magnavox—Magnavox	14	RI-204
Colonial—26, DC31	14	RI-204	Majestic—90, 91, 92, 100B	8	RI-202
Columbia—961, 902, C-11 SG8	1	RI-201	McMillan 900	3	RI-201
Crosley—42AC, 706, 609, 610	1	RI-201	Metro	3	RI-201
804AC, 20, 21, 22, Chum, Buddy	8	RI-202	Montgomery Ward— Screen Grid	7	RI-201
3R3, 90, 401, 601	14	RI-204	Ozarka	15	RI-205
30S, 31S, 33S, 34S	15	RI-205	Peerless Courier—K-70	7	RI-201
Dayan—509-148	3	RI-201	65	8	RI-202
8AC early models	5	RI-201	Peerless	12	RI-203
8AC late models	1	RI-201	Patterson	3	RI-201
OEM54, 74	14	RI-204	Philco—82, 86, 87, 511, 512, 513, 514, 515, 531, 551, 571	5	RI-201
A. C. Dayton—XL61	9	RI-202	Series 5	3	RI-201
AC-63, 65, 66	10	RI-203	296, 296A	12	RI-203
DeForest Crosley—605	11	RI-203	65	15	RI-205
800, 810	12	RI-203	Pilot—Pilot 5	9	RI-202
Diamond Coil—Diamond	8	RI-202	PF-6	15	RI-205
Edison—R-122	6	RI-201	Powrad	15	RI-205
R-1, R-2, C-1, C-2	2	RI-201	RCA—17, 18, 33	4	RI-201
Elect Res. Lab—R-1	1	RI-201	41, 50, 51, 64	5	RI-201
Eveready—31	8	RI-202	16, 20, 25, 28, 30, 32	14	RI-204
Fada—18DC	5	RI-201	44, 46, 47	15	*RI-205
SF 4575 UA or CA, 10, 11, 30, 31, 50, 70, 71, 72	10	RI-203	66 Radiola	8	RI-202
Federal Radio—Type M	10	RI-203	Radio News Elco—Elco	15	RI-205
Type H, Type L	11	RI-203	Remler Mfg. Co.—111	15	RI-205
Freed-Eisemann—NR57, NR70	5	RI-201	Scott Super—Scott Super	14	RI-204
NR80, DC470	3	RI-201	Sears, Roebuck — Screen Grid	7	RI-201
NR95	8	RI-202	Silver-Marshall—Around World 4	8	RI-202
F-10, NR7, 30, 32, 40, 48, 50	14	RI-204	SM 690	12	RI-203

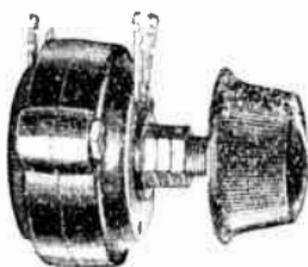
Receiver and Model No.	Circuit No.	Volume Control Type No.	Receiver and Model No.	Circuit No.	Volume Control Type No.
Sonora—A-30, A-32, A-36, A-40, A-44	2	RI-201	Stromberg-Carlson—300, 310, 325	7	RI-201
Sparks-Withington—49B, 39, 931, 301	9	RI-202	363	3	RI-201
390, 110, 109, 39, 89A	8	RI-202	846, 642	5	RI-201
Splitdorf—ES 62	2	RI-201	Automatic Volume Control	12	RI-203
CI	11	RI-203	501, 502	14	RI-204
Steinite—261	2	RI-201	Temple—860, 880, 890	3	RI-201
40, 50, 102	8	RI-202	Tyrman Radio—Tyrman 72-80	8	RI-202
991, 992, 993	9	RI-202	60	14	RI-204
Stewart-Warner—715, 720	3	RI-201	Victor-RCV—K-52	7	RI-201
500, 520, 525, 700, 705, 710, 806	9	RI-202	Victoreen—AC	8	RI-202
811, 900	8	RI-202	Walbert—27	9	RI-202
530, 535	10	RI-203	Ware—T	14	RI-204
300 to 500	14	RI-204	Wells-Gardner 1929-30, 1928	7, 3	RI-201, RI-201
Sterling—A2	7	RI-201	Wurlitzer—1929 Seven Tube	7	RI-201

*Special Replacement Controls Available*

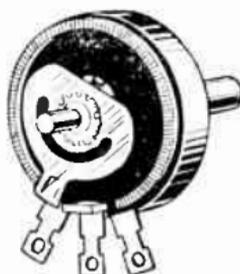
Our Spec. No.	Type Control	Used For	List	NET
FB-478T	Dual Supertonalrol	Eveready	\$4.00	\$2.35
FB-228T	Dual Supertonalrol	Victor	4.00	2.35
R-1434TP	Dual Royalty with Power Switch	Zenith	2.50	1.47
R-205P	Single Royalty with Power Switch	Zenith	1.75	1.03
R-1513PG	Single Royalty with Power Switch	Majestic 20	1.75	1.03
RI-31 } Set	Single Insulated Long-Shaft Type	Strombg 642	1.25	.73
R-1436 }	Single Royalty Type	Stromberg 642	1.00	.59
RI-32 } Set	Single Insulated Long-Shaft Type	Strombg 635	1.25	.73
R-1437 }	Single Royalty Type	Stromberg 635	1.00	.59

SPECIAL VOLTAGE DIVIDERS AVAILABLE FOR POPULAR RECEIVERS. LET US KNOW YOUR REQUIREMENTS

Eveready Victor



Stromberg 642-635



Majestic 20



Zenith



Zenith Tandem



The above represent only a few of the numbers we have available. Simply write us and let us know what you need.

## Ohmite New All-Porcelain Vitreous Enameled Rheostats



A "horse-shoe" shaped core of porcelain is wound with wire, the copper terminals are fitted and connection with the wire made by mechanical means and then by brazing. This wound core is then mounted on a base of porcelain, and the entire unit with the exception of the surface where the wiper arm makes contact is covered with vitreous enamel and fired at a high temperature. The enamel protects the wire and conducts the heat to the surrounding air. The units are fitted with three terminals. The wiper arm is of phosphor bronze securely riveted to the shaft of steel which accurately fits the reamed brass bushing.

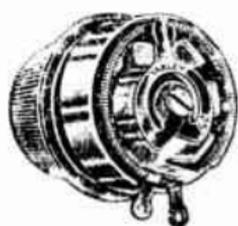
Mounting of the rheostats by means of the center brass bushing ( $\frac{3}{8}$ " diameter), long enough to be used on panels up to  $\frac{3}{4}$ " thick. One hole is required— $\frac{3}{8}$ " in diameter for insulating material, or  $\frac{1}{2}$ " in diameter

in metal panels, insulating washers are furnished.

### RHEOSTATS FURNISHED WITH BAKELITE KNOBS

Stock Number	Total Resistance Ohms	Maximum Current Milliamperes	NET Each
0310	2	5000	\$2.35
0311	4	3500	\$2.35
0312	6	2880	\$2.35
0313	8	2500	\$2.35
0314	12	2040	\$2.35
0315	16	1760	\$2.35
0316	22	1500	\$2.35
0317	35	1190	\$2.35
0318	50	1000	\$2.35
0319	80	790	\$2.35
0320	125	630	\$2.35
0321	150	575	\$2.35
0322	225	470	\$2.35
0323	300	405	\$2.35
0324	500	315	\$2.35
0325	800	250	\$2.50
0326	1,000	220	\$2.50
0327	1,600	176	\$2.50
0328	2,500	140	\$2.50
0329	3,500	119	\$2.65
0330	5,000	100	\$2.65
0331	8,000	79	\$2.65
0332	10,000	70	\$2.65

## Yaxley Junior Rheostats and Potentiometers



Much could be written about the features of the Junior Rheostat. The fact that it is used as standard equipment in so many of the outstanding receivers today is the best recommendation for the all around dependability and desirability of this distinctive product. And the Junior Rheostat has won this remarkable leadership in the face of keen price competition. A little extra metal and a little extra care in manufacture, an extremely fine adjustment, and other features, make this the choice of small Rheostats for lasting satisfaction. Mount in a single 7/16" panel hole.

**Junior Rheostats**—Resistances of 1, 2, 3, 4, 6, 10, 15, 20, 25, 30, 40, 50, 60, 75, and 100 ohms. List \$0.75 ..... NET \$0.44

Junior Rheostat—1000 ohms. List \$1.00 ..... NET \$0.59

**Junior Potentiometers**—Resistance of 6, 10, 15, 20, 25, 30, 40, 50, 60, 75, 100, 200, and 400 ohms. List \$1.00 ..... NET \$0.59

**Junior Potentiometers**—Resistances of 1000, 2000, and 3000 ohms. List \$1.25 ..... NET \$0.73

Junior Potentiometers 5000, 10000 ohms. List \$1.50 ..... NET \$0.88

**NOTE:** Junior Rheostats and Potentiometers are also furnished for sub-panel mounting. The price for the sub-panel mounting type is uniformly 15c less list. .... NET \$0.09

**No. 500 Switch**—Fits any Junior Rheostat. If you now have a Junior Rheostat and want a switching Rheostat, just buy the Switch only. No tools required to attach. Positive in action. List \$0.40 ..... NET \$0.24

Insulating Washers for Metal Panels ..... NET \$0.03

### Carter Tapered Potentiometer

A tapered resistance characteristic is obtained by tapering the strip and increasing spacing between the turns of wire at the narrow end of the strip. Enclosed in a molded bakelite frame. Dissipates 5 watts. 400 and 750 ohms. List \$1.50.....NET \$0.88  
 1000 and 3000 ohms. List \$1.75.....NET \$1.03  
 5000 and 6000 ohms. List \$2.00.....NET \$1.18  
 10,000 ohms. List \$2.50.....NET \$1.47

### Carter "Hi-Watt" Potentiometer

This Potentiometer is of exceptionally heavy construction and was designed to meet the demand for a Potentiometer to carry 20 watts. Makes an ideal adjustment for "B" Eliminators and Power Packs. Also widely used in experimental work for special laboratory set-ups. Resistances of 100, 150, 200, 250, 300, 400, and 500 ohms. List \$1.75.....NET \$1.03  
 800, 1000, and 2000 ohms. List \$2.00.....NET \$1.18  
 3000, 5000, and 7000 ohms. List \$2.25.....NET \$1.32  
 10,000 ohms. List \$2.50.....NET \$1.47  
 20,000 ohms. List \$2.75.....NET \$1.62  
 50,000 ohms. List \$3.25.....NET \$1.91

### Carter Heavy Duty "Midget" Rheostat

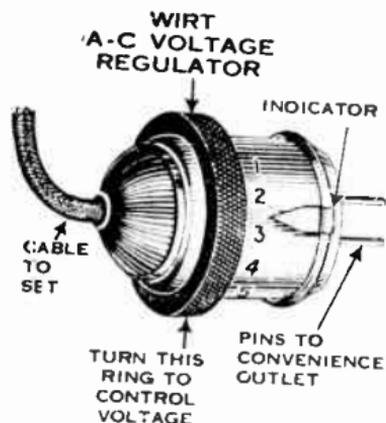
This rheostat is of exceptionally rugged construction and will dissipate 6 watts. It is small, compact and thoroughly reliable in operation. Has the one-piece all-metal frame which forms a substantial, firm anchorage for the resistance strip and the wire. In some resistances the wire is of the flat type, which radiates more heat than ordinary round wire. The contact arm operates with exceptional smoothness and always makes a positive contact. This rheostat has proven unusually efficient and popular for use in the new A-C circuits. Mounts in 3/8 inch single hole on 1/8 inch or 3/16 inch panels. Complete with knob. Resistances of 1/5, 1/4, 1/3, 1/2, 1, 2, 3, 6, 10, 15, 20, 25, 30, 40, and 50 ohms. List 0.75.....NET \$0.44



### Carter "Super Hi-Watt" Rheostat

Ribbon wound on asbestos. Dissipates 50 watts. It makes an ideal control for small motors and for primary rheostats for radio sets and power supply devices. Resistances of 1, 2, 3, 6, 10, 15, 20, 30, 40, 50, 60, 75, 100, 150, 200, 250, 300, 400 and 500 ohms.  
 List \$1.75 .....NET \$1.03

### Wirt Voltage Regulator



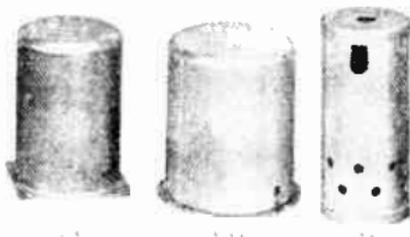
The last step in perfecting the operation and use of modern A. C. radio sets is effective voltage regulation. Electric current is at our command—and progress has brought new, wonderful developments in radio construction. The application of current to a radio set requires one more step, a connecting link—the control of that current to meet the requirements of the set.

No. 211B—To be used with sets consuming in excess of 65 watts and not more than 150 watts, sets using seven or more tubes, and sets that are equipped with dynamic speaker.  
 List \$3.25 .....NET \$1.91

### Tube and Coil Shields

Aluminum shields for experimental and custom set work.

Catalog Symbol	Description	NET Price
TS	Tube Shield with Top Cap and Bottom Mounting Plate	\$0.24
J30	Coil Shield, 2 1/2" dia., 3 1/4" high—square flange at bottom 2 1/4"	.21
B30	Coil Shield, 3" dia., 3 1/4" high	.21
B30	Coil Shield, as above with mounting base	.29



### Silver-Marshall Stage Shield

638—Stage Shield—Overall size, 4½" long, 5½" high, and 2½" wide. Finished in lacquered copper. Sides ribbed to prevent bending. Shipping weight, 10 oz. NET \$0.88

### Silver-Marshall Tube Shield

637—An excellent preventative of capacitive coupling, this tube shield has the perforations so essential to ventilation, especially important for 224 and 227 tubes. NET \$0.24

### New Hammarlund Screen-Grid Tube Shield

The new Hammarlund Screen-Grid Tube Shield is designed with special cutouts for maximum cooling of the tube by up-draft of air and at the same time provides the full extent of shielding required for most efficient operation. Aluminum shell and base with large hole at the top for access to control grid of tube. Designed for use with subpanel sockets.

Mounting screws and control grid connector packed with each shield.

Code TS—List \$0.60 NET \$0.35



9040

### Benjamin Sockets

Benjamin Cle - Ra - Tone sockets are shock-absorbing and non-microphonic. The tube holding element floats independently on springs—these same springs forming the contact between the tube prongs and the binding posts.



9037

- Type 9040—4 prong with base. List \$0.75. NET \$0.44
- Type 9036—5 prong with base. List \$1.00. NET \$0.59
- Type 9044—4 prong without base. For 1/8" mount. List \$0.50. NET \$0.29
- Type 9049—4 prong without base. For 1/8" mount. List \$0.50. NET \$0.29
- Type 9037—5 prong without base. For 1/8" or 1/4" mount. List \$0.75. NET \$0.44

### Eby Sockets



Eby sockets are moulded of genuine Bakelite. A simple twist in the locator groove and the tube is in. Phosphor bronze contact prongs deliver a tight wiping spring contact full length of tube prongs! Can be easily mounted above or below Bakelite, metal, or wood panels. Contact prongs—So designed that spring action cannot be damaged no matter how often the tubes are inserted or withdrawn. High current carrying capacity. Low inter-electrode capacity.

- 4 prong socket. List \$0.40. NET \$0.24
- 5 prong socket. List \$0.50. NET \$0.29



### Eby Wafer Sockets

Four or five prong wafer sockets. 1 1/4" mounting centers. Each NET \$0.09

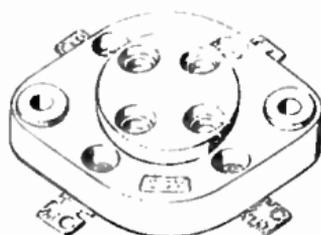
(Specify Markings)

### Low Loss Isolantite Sockets

Designed especially for Television and short wave sets.

- UX—4 Prong. NET \$0.29
- UY—5 Prong. NET \$0.36

1 1/4" mounting centers



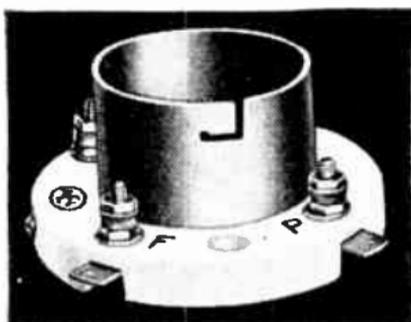
## Transmitter Power Tube Sockets and Antenna Change-Over Switch

50 WATT TUBE SOCKET—Cat. 131A—Code "Efsdi"

The REL Cat. 131-A power tube sockets fit all standard 50 watt base tubes such as Types —03A, —11, —45, —72, etc. Maximum insulation is obtained by the use of heavy glazed Isolantite forms. All metal parts are nickel plated. The one piece contact springs are made of heavy phosphor bronze. These are of unique design affording both bottom and side wipe contact thus being capable of carrying heavy currents as are required when using the large type rectifier tubes. Connections may either be made to the No. 10 terminal screws or else soldered directly on to the extended portion of the contact springs. All connections are plainly marked.

The Cat. No. 131-A sockets have a base diameter of  $3\frac{3}{8}$ " diameter and are designed to be mounted by means of two screws spaced  $2\frac{1}{2}$ " centers.

Net weight  $\frac{1}{2}$  pound each. Packed in individual boxes. List price \$2.75 each ..... NET \$1.97



50 Watt Socket



### This Time It's a GOOD 50-Watt Socket!

An immediate success—see these features:

Excellent porcelain base

Slotted knurled nuts

Slide wiping contacts and soldering lugs in ONE PIECE, cadmium plated.

No. 211—50-watt socket..... NET \$2.50

### Silver-Marshall Sockets

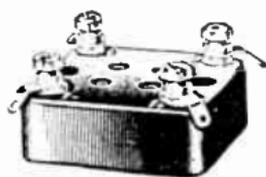
Silver-Marshall Sockets are made of genuine Bakelite. Contact springs are of phosphor-bronze with screw terminals.

No. 511—4 prong. List \$0.50..... NET \$0.29

No. 512—5 prong. List \$0.60..... NET \$0.35



### Frost UX Base Bakelite Sockets



When you put a tube in a Frost Socket you know it makes contact. Base of genuine moulded black bakelite highly polished with plainly marked terminals. Made in two styles; No. 530 with soldering lugs and lock nuts on top; No. 531 with connecting screws projecting through bottom of socket for sub-base wiring.

Either type, List \$0.40..... NET \$0.24

### 250 Watt Tube Mountings

Cat. 128A—Code "Efsel"

The REL Cat. No. 128 A power tube mountings fit all standard double ended tubes such as types —04A, —49, —51, —61, —69, etc. Heavy glazed Isolantite blocks are used for the mounting of the various contacts. This insulating material has been recently approved by the Navy Department as one of the few materials which will provide perfect insulation for high frequency work. All metal parts are nickel plated. The grid contact clip is of one piece construction. The filament clips are of heavy spring bronze designed to carry 20 amperes. Connections are made directly to the No. 10 terminal screws which have correct markings.

The base dimensions of the plate mounting piece are  $3 \times 1\frac{3}{8}$ " base. Dimensions of the grid mounting piece are  $3\frac{1}{2} \times 1\frac{1}{8}$ ". Each piece can be mounted by means of two No. 10 screws.

Net weight 14 oz. per pair. Packed in individual boxes. List \$4.75 per pair ..... NET \$3.56



250 Watt Mountings

### Mar-Co Switches



No.	Description	NET
153	S.P., S.T.	\$0.35
154	S.P., D.T.	.41
155	D.P., S.T.	.53
156	D.P., D.T.	.59
157	3P., S.T.	.74
158	3P., D.T.	.88
159	4P., S.T.	1.03
160	4P., D.T.	1.18
227	5P., S.T.	1.32
228	5P., D.T.	1.47

Radion hard rubber base and handle. Nickel metal parts. Single throw types 1 1/2" long. Double throw 2 1/2" long.

### Yaxley Switches

Have the distinctive one nut mounting in a single panel hole. Fit standard thickness panels. Springs equipped with pure silver, self-cleansing contact points. All bakelite insulation. Insulated from frame. Standard finish nickel. Gold plate, 15 cents NET extra. Standard knob black, Mahogany knob, 3 cents NET extra. Insulating washers for metal panels, 3 cents NET extra.



No. 20—

S.P., S.T.....NET \$0.49



No. 30—

S.P., D.T.....NET \$0.59



No. 40—

D.P., S.T.....NET \$0.66



No. 45—Combining S.P., S.T., & D.P., S.T.....NET \$0.76

No. 60—D.P., D.T.....NET \$0.83

No. 63—3P., D.T.....NET \$1.05



No. 64—4P., D.T.....NET \$1.31



Yaxley No. 10

No. 10—Midget Battery Switch. List \$0.50.....NET \$0.33

No. 11—Aerial Switch—Same as the No. 10, excepting single pole double throw. List \$0.65.....NET \$0.39

The Junior Jack Switches are exactly the same in construction as the Yaxley Junior Jack. For use in sets where space is at a premium.

No. 720 Battery Switch. List \$0.70.....NET \$0.42

No. 730 Two Circuit. List \$0.85.....NET \$0.50

No. 740 Double Circuit. List \$0.95.....NET \$0.56

No. 745 Five Spring. List \$1.10.....NET \$0.65

No. 760 Two Way Two Circuit. List \$1.20.....NET \$0.71



The Standard Jack Switches for spring combinations.

### Push Button Switches

Now, Push Button Switches are available in a wide range of spring combinations. The Push Button Switches are made on the Junior frame illustrated above and are standard Yaxley construction throughout.

No. 2001—Make Contact. List \$1.00.....NET \$0.59

No. 2002—Break Contact. List \$1.00.....NET \$0.59

No. 2003—Single Pole, Double Throw. List \$1.15.....NET \$0.69

No. 2004—Two Make Contacts. List \$1.30.....NET \$0.77

No. 2005—Two Break Contacts. List \$1.30.....NET \$0.77

No. 2006—Double Pole, Double Throw. List \$1.60.....NET \$0.94

### Frost AC Snap Switch

Inspected and approved by the Underwriters Laboratories to carry 3 amperes at 250 volts AC (750 watts). Switch is completely housed in metallic case and is equipped with widely spaced tinned soldering lugs. Single hole mount ing. Easy, positive action.

No. AC 609 Switch. List \$0.75.....NET \$0.45



### Readrite No. 17 Selector Switch

Bi-polar switch as used in set analyzers Nos. 600-700.

No. 17

List \$1.00

NET \$0.59





### Anti-Capacity Switch (Patented)

The original Anti-Capacity Switch has supplanted the old flat-spring type with its high capacity.

All Anti-Capacity Switches are equipped with a highly-polished nickel-plated face plate. Springs are of phosphor bronze, silver-plated for good conductivity. The insulating block in which the springs are mounted is phenol plate—the best insulating material known. The cam arrangement is of the roller type, providing smooth and easy lever action.

No. 1424 —4 P. D. T. 12 Spring .. NET \$2.25  
 No. 1425 —D. P. D. T. 6 Spring .. NET \$1.93

### Carter Jack Switches



No. H-3D5D—Jack Switch is one of the three position horizontal type. Commonly used in radio receivers to switch from "Radio" to "Phonograph." Makes three in left position and makes two in right position. Center position is "Off."  
 List \$1.50 .. NET \$0.88

No. V-33—Jack Switch is one of the three position Vertical type. It mounts close to the panel and requires a comparatively small amount of space. Makes one and breaks one contact in both left and right positions. Center position is "Off."

List \$1.25 .. NET \$0.74



### Yaxley Tap and Selector Switches



TAP SWITCHES—Widely used in power speakers and also for tapping transformers, resistances and the like. Furnished either with a complete break between contact points or without a break as contact arm moves from contact point to contact point, as desired.

SELECTOR SWITCHES—Two Tap Switches as illustrated above are furnished in tandem. Each switch is completely insulated from the other, but they are controlled by a single Knob. In this way, a multi-contact switch that breaks both sides of the line is available. Used for radio wiring in Hotels, Apartments, and the like where a selection of two or more programs is offered. Also used in a variety of ways where both sides of the line are to be broken.

	List	NET
No. 33 —3 Point Tap Switch.....	\$0.65	\$0.43
No. 33B —3 Point Tap Switch with break between contacts ..	.65	.43
No. 33TB —3 Point Selector Switch.....	1.60	1.05
*No. 44 —4 Point Tap Switch.....	.75	.49
*No. 44B —4 Point Tap Switch with break between contacts ..	.75	.49
*No. 44TB —4 Point Selector Switch.....	1.70	1.12
No. 55 —5 Point Tap Switch.....	.65	.43
No. 55B —5 Point Tap Switch with break between contacts ..	.65	.43
No. 55TB —5 Point Selector Switch.....	1.60	1.05
No. 66 —6 Point Tap Switch .....	.65	.43
No. 66B —6 Point Tap Switch with break between contacts ..	.65	.43
No. 70 —7 Point Tap Switch .....	.80	.53
*No. 70B —7 Point Tap Switch with break between contacts ..	.80	.53
No. 88 —8 Point Tap Switch .....	.80	.53
No. 88B —8 Point Tap Switch with break between contacts ..	.80	.53
*No. 90 —9 Point Tap Switch .....	.90	.59
*No. 90B —9 Point Tap Switch with break between contacts ..	.90	.59
No. 90TB—Dual 9 Point with break between contacts ..	2.00	1.39
No. 150 —15 Point Tap Switch—large size.....	1.00	.66

All switches listed above supplied with Knob.

Switches marked \* supplied with etched dial plate numbered to correspond with contacts.

## Antenna Change-Over Switch

Cat. 269—Code "Efsfo"

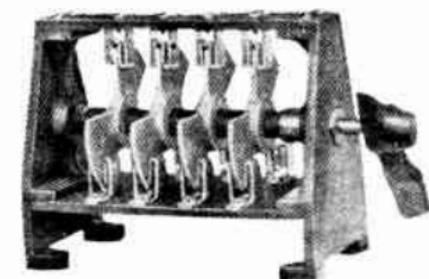
The REL Cat. No. 269, four pole double throw rotary drum type switch is suitable for a variety of purposes in radio and electrical installations.

Its chief radio uses are:

1—As an antenna change-over switch where it is desired to connect and disconnect filament and other auxiliary circuits.

2—As a means of changing from telegraph to telephone in multi-stage type transmitters.

3—As a wavelength or frequency changing switch for shifting from one frequency to another.



Antenna Change-Over Switch

The switch is insulated to withstand voltages up to 3,500 volts. It is ruggedly constructed employing front and rear aluminum castings. The rotor shaft is of heavy Bakelite and carries the four switch blades. The switch may be either panel or base mounted. A metal pointer handle is regularly furnished.

Due to the type of construction employed all flexible contact wires are eliminated thus insuring constant service irrespective of the number of times the switch is employed. Each connection post is of ample size to carry 20 amperes.

Base dimensions  $2\frac{3}{4} \times 5\frac{1}{2}$ ", height  $4\frac{1}{2}$ ".

Net weight  $1\frac{3}{4}$  pounds each. Packed in individual boxes. List price \$12.50 each .....NET \$9.37

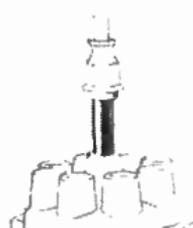
## Bradley Suppressors for Radio-Equipped Cars

The suppression of interference from ignition systems in radio-equipped motor cars is obtained with Bradley Suppressors. Individual resistors for each spark plug and for the common distributor lead minimize disturbing oscillations in ignition circuit.

Type X Plug Unit. List \$0.65.....\$0.39

When used with suitable by-pass condensers in other parts of the ignition circuit, shielded ignition cables are unnecessary. The power of the engine is unaffected by these suppressors which have resistance values of approximately 25,000 ohms each.

Types Y & Z Distributor Units. List \$0.65.....NET \$0.39



## New 1931-32 Magnavox Dynamic Speaker Units

### A.C. MAGNAVOX SPEAKERS

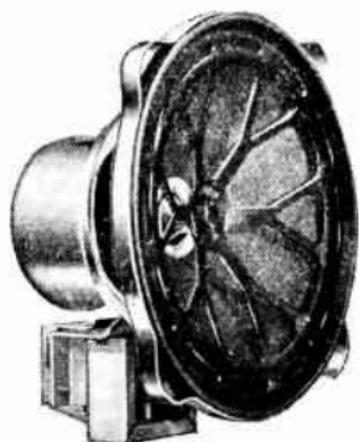
List Price NET

Model No. 442— $8\frac{3}{4}$ " cone.....	\$23.50	\$13.82
Model No. 443— $10\frac{3}{4}$ " cone.....	25.00	14.70
Model No. 444—7" cone.....	22.00	12.94

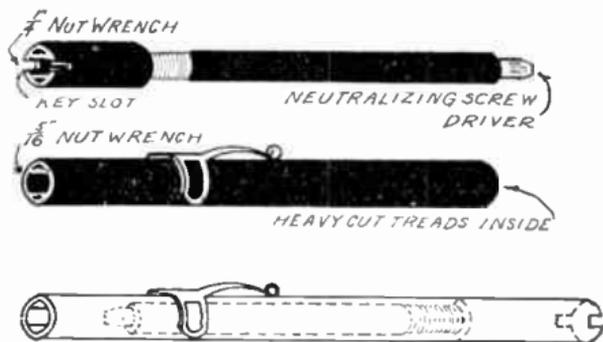
25 or 60 cycle, 110 v. A.C.

### D.C. MAGNAVOX SPEAKERS

Model No. 142— $8\frac{3}{4}$ " cone 2500 ohms.....	\$12.50	\$ 7.35
Model No. 143— $10\frac{3}{4}$ " cone 2500 ohms....	15.00	8.82
Model No. 144—7" cone 2500 ohms....	10.00	5.88



### Ward Neutralizing Tool



Ward Neutralizing Tool is constructed of high grade insulating material. To eliminate body capacity in critical adjustment of radio sets.

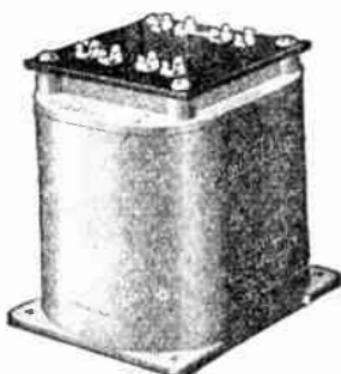
Each available part is utilized, having a socket wrench at each end, which will fit practically every radio set on the market.

A key slot is provided for radio sets with slot effect for neutralizing.

A tempered blued steel blade completely protected by insulating material and which cannot twist or loosen up is provided for precise adjustment of balancers.

**NET \$0.88**

### AmerTran Audio Transformers



	Type No.	List Price	NET
<b>INTERSTAGE AUDIO TRANSFORMERS</b>			
De Luxe for 1st-stage use, ratio 3:1 (Fig. 1).....	1st Stage	\$8.00	\$4.70
De Luxe for 2nd stage use, ratio 4:1 (Fig. 1).....	2nd Stage	8.00	4.70
Between single tubes (1st or 2nd stage), ratio 3.5:1 (Fig. 2).....	AF 8	5.00	2.94
Between output of 1 tube and 2 grids, ratio 2.5:1 (Fig. 1).....	151	12.00	7.06
Between output of 2 tubes and 2 grids, ratio 1.75:1 (Fig. 3).....	710	20.00	11.76
<b>OUTPUT TRANSFORMERS</b>			
Two 210-type tubes to 2,000-4,000-ohm magnetic speaker.....	152	12.00	7.06
Two 210-type tubes to 10-15 ohm dynamic speaker.....	200	12.00	7.06
Two 245- or 171-type tubes to 2,000-4,000-ohm speaker.....	442	12.00	7.06
Two 245- or 171-type tubes to 10-15-ohm dynamic speaker.....	443	12.00	7.06
One 250-, 210-, 245-, or 171-type tube to 10-15-ohm speaker.....	115	15.00	8.82
Two 250- or 245-type tubes to 1-9 dynamic speakers in series parallel or 200-ohm line (Fig. 3).....	678	22.00	12.94
<b>DETECTOR-TO-LINE TRANSFORMERS</b>			
Detector to 500-ohm line—level 10 db.....	994	15.00	8.82
Detector to 200 ohm line—level 10 db.....	805	15.00	8.82
<b>PHONOGRAPH PICK-UP TRANSFORMERS</b>			
5,000-, 6,000-, or 8,000-ohm pick-up to 1st-stage De Luxe.....	389	8.00	4.70
500-, 1,000-, or 2,000-ohm pick up to grid of tube.....	406A	15.00	8.82
500-, 1,000-, or 2,000 ohm pick up to 200- or 500-ohm line.....	806A	18.00	10.58
<b>LINE-TO-GRID TRANSFORMERS</b>			
500-ohm line to grid of tube (150,000 ohms) level 0 db.....	547A	15.00	8.82
200-ohm line to grid of tube (150,000 ohms) level 0 db.....	923A	15.00	8.82
500-ohm line to two 50,000-ohm grids (211- or 845-type tubes)—level 10 db.....	3664	22.00	12.94
<b>TUBE-TO-LINE TRANSFORMERS</b>			
Two 250- or 245-type tubes to 200-ohm line or 1-9 15-ohm dynamic speakers in series parallel.....	678	22.00	12.94
Two 250- or 245-type tubes to 500-ohm line—15-ohm monitor winding.....	3332	22.00	12.94
Two 210- or 112-type tubes to 500-ohm line—15-ohm monitor winding.....	3540	22.00	12.94
20,000 ohms to 500-ohm line, 2 mA. d.c. in pri., low level.....	993	12.00	7.06
Two 211-type tubes to 500-ohm line.....	3810A	68.00	39.98
Two 845-type tubes to 500-ohm line.....	4116A	68.00	39.98

**LINE-TO-SPEAKER AUTO TRANSFORMERS**

500-ohm line to 0.16 to ohms (12 steps)—12 watts	3377	28.00	16.46
500-ohm line to 4.00-333 ohms (12 steps)—12 watts	3432	28.00	16.46
500 or 200-ohm line to 3.75-60 ohms (6 steps)—4.5 watts	3576	20.00	11.76
4,000- or 500-ohm line to 3.75-15 ohms (4 steps)—4.5 watts	4293	25.00	14.70

**MIXER TRANSFORMERS**

200 ohms to 200 ohms—level —20 db.	095	15.00	8.82
200 ohms to 200 ohms—level 0 db.	999	15.00	8.82
200 ohms to 500 ohms—level 0 db.	4338	15.00	8.82
500 ohms to 500 ohms—level 0 db.	4339	15.00	8.82
67 ohms to 200 ohms—level 0 db.	3246	15.00	8.82
100 ohms to 200 ohms—level 0 db.	3259	15.00	8.82

Note: Mounting shown in Fig 1 is also available with terminals taken out at base.

*The New Dubilier Screen-Grid Duratran*

A new development in untuned radio-frequency transformer construction, of particular interest to set-manufacturers.

**FEATURES**

- (1) An untuned interstage radio-frequency transformer for use with screen-grid tubes—Types 222 and 224.
- (2) Relatively high gain per stage.
- (3) Uniform amplification over broadcast waveband.
- (4) Amplification equivalent to that of a tuned radio frequency amplifier system.
- (5) Costly shielding problems practically eliminated.

List \$4.00 ..... NET \$2.35



PL-2000

*Microphone Transformers*

T-2357—Code "Microbe," Thordarson coupling transformer for single button microphones designed for amateur use in telephone transmitters. Primary Impedance: 200 ohms at 500 cycles. Turns ratio: 64 to 1. Impedance 4000 to 1. Weight, 1 lb. List \$4.00.....NET \$2.94

255M—Silver Marshall first stage audio and microphone transformer. Standard 255 transformer (ratio 4.2 to 1) with the addition of a mid-tap microphone winding which may be used with either a single or double button 200 ohm microphone ..... NET \$2.94

**CLOUGH SYSTEM AUDIOS**



223 Hi-Mu Audio Transformer—for use between UX222 first stage, screen grid tube, space charge connection, and any standard power tube. Provides absolutely flat curve from 32 to 5000 cycles with average voltage gain of 42 per stage.....NET \$2.82

225 First Stage Audio Transformer—Provides a flat curve up to 5000 cycles with greater amplification at 32 cycles than at 1000. Unquestionably the finest A.F. transformer ever manufactured.....NET \$2.82

226 Second Stage Audio Transformer—for use with 225, above, between first and second stages. One 225 and one 226 will unconditionally give finer tone quality than any other known audio system used with any standard tubes.....NET \$2.82

251 Output Transformer or Impedance—A combination output unit adjustable to match any standard power tube.....NET \$3.53

255 First Stage Audio Transformer—Superior to any other transformer except S-M 225, Effective ratio 4.2 to 1.....NET \$1.97

256 Second Stage Audio Transformer—Companion to 255 for use in second stage. One 255 and one 256 will give finer reproduction than any other audio system excepting the S-M 225 and 226.....NET \$1.97

257—Push-pull input transformer designed to operate between one standard amplifier tube and two voltage or power amplifier tubes of any standard type. Effective transformation ratio is 1.8 to 1 and its frequency characteristic is flat from 45 to 8,000 cycles.....NET \$2.65

258—Push-pull Output Choke designed to couple two 171A or 245 tubes in push-pull to any standard loud speakers.....NET \$1.32

227—Push-pull interstage transformer designed to couple two standard amplifier tubes to two or more amplifier or power output tubes. Its effective transformation ratio is 1.8 to 1 and its frequency characteristic flat from 20 to 10,000 cycles.....NET \$3.53

247 Filament Transformer—Contains the following windings: one 105-120 volt 50 to 60 cycle primary; one 1½ volt, 5 ampere secondary; one 2½ volt, 3½ ampere secondary, and one 5 volt, 1 ampere secondary. Will operate four or five 226 type tubes, two 227 type tubes and two or three 112 or 171 type tubes. Cord and plug not included, shipping weight, 2 lbs., 8 oz. ....NET \$2.94

**Silver-Marshall Transformers**

**10059 Push-Pull Output Transformer (Transaye)**—A transformer designed to operate out of two tubes in push-pull ('45 or '50 type). Has a center tapped primary and five tapped secondary to work into various loads of from 5 to 125 ohms. Has a flat characteristic to within 2 DB. from 30 to 12,000 cycles. Primary inductance 34 henries. D.C. resistance, total primary 140 ohms, total secondary 6.2 ohms. Transformation ratio (125 ohm tap) .17. Same size and appearance as No. 10075. Shipping weight, 3 pounds.....NET \$5.88

**10075 Push-Pull Input Transformer (Transbee)**—A transformer designed to operate between a '45 type audio tube and two tubes in push-pull either of the '45 or '50 type. Has a characteristic flat to within 2 DB. from 30 to 12,000 cycles. Primary inductance 12 henries with 30 m.a. d.c. in primary. D.C. resistance primary 620 ohms, secondary 3600 ohms each half. Transformation ratio 4 to 1. Case size, base  $2\frac{1}{2}'' \times 2\frac{3}{8}''$  or  $3'' \times 2\frac{3}{8}''$  over mounting feet. Height,  $3\frac{1}{2}''$ . Shipping weight, 4 pounds.....NET \$5.88

**10106 Tube-to-Line Transformer (Transcee)**—A transformer designed to work out of two tubes in push-pull of the '45 or '50 type into either a 500 ohm or 200 ohm line. Has a flat characteristic to within 2 DB. from 30 to 12,000 cycles. Total primary inductance 25 henries. D.C. resistance total primary 145 ohms, total secondary 26.5 ohms. Transformation ratio, primary to secondary .375. Same size and appearance as 10075. Shipping weight, 3 pounds.....NET \$5.88

**10111 Line-to-Tube Transformer (Transdee)**—A transformer designed to couple either a 500 ohm or 200 ohm line to one tube or two tubes in push-pull. Has a flat characteristic to within 2 DB. from 30 to 12,000 cycles. Primary inductance 4.5 henries total. D.C. resistance total primary 5700 ohms, secondary 37 ohms. Transformation ratio, primary to secondary 14.1 to 1. Same size and appearance as 10075. Shipping weight, 4 pounds.....NET \$5.88

**10121 Output Transformer (Transeff)**—A transformer designed to couple one 245 or 250 type tube to 15, 30 or 60 ohm loads by means of a four tapped secondary. Has a flat characteristic to within 2 DB. from 30 to 10,000 cycles. Primary inductance 13.5 henries at 30 m.a.—11.5 henries at 55 m.a. D.C. resistance primary 225 ohms, total secondary 4.0 ohms. Transformation ratio, primary to secondary .117. Case size height  $3\frac{3}{8}''$ , length  $3\frac{3}{8}''$ , breadth  $2\frac{1}{2}''$ , or  $3\frac{1}{2}''$  over mounting feet. Shipping weight, 4 pounds.....NET \$5.88

**10122 Output Transformers (Transgee)**—A transformer designed to couple two 845 type tubes in push-pull to a 500 ohm or 200 ohm line. Has a flat characteristic to within 2 DB. from 30 to 8000 cycles. Primary inductance 120 henries. D.C. resistance primary 425 ohms, total secondary 6.0 ohms. Transformation ratio, primary to secondary .345. Size overall:  $4\frac{3}{8}''$  high,  $3\frac{3}{8}''$  wide, 5" long. Shipping weight,  $7\frac{1}{2}$  pounds.....NET \$8.82

**10131 Push-Pull Input Transformer (Transhh)**—A transformer designed to couple a single '45 type tube to one or two 845 tubes of the 50-watt type in push-pull. Also designed for use with 10145 choke for parallel plate feed circuits. Has a flat characteristic to within 2 DB. from 30 to 8000 cycles. Primary inductance 25.5 henries at 30 m.a. D.C. resistance primary 270 ohms, secondary each half 2000 ohms, secondary is split for series or parallel operation. Transformation ratio 1.5 each side. Same size and general appearance as 10121. Shipping weight, 4 pounds, 6 ounces.....NET \$8.82

**10143 Push-Pull Output Transformer (Transeye)**—A transformer designed to couple two '47 type pentode tubes in push-pull to a 15 ohm speaker voice coil. Not suitable for operation out of single pentode. Presents proper impedance of 15,000 ohms to push-pull pentodes when used with 15 ohm voice coil circuit. Has a flat characteristic to within 2 DB. from 30 to 10,000 cycles. Primary inductance 60 henries. D.C. resistance, total primary 890 ohms, secondary 2 ohms. Transformation ratio, primary to secondary .0316. Same size and appearance as 10075. Shipping weight, 4 pounds.....NET \$5.88

**228**—New Universal output choke designed to couple two standard power output tubes in push-pull (such as 171A, 245 or 250 type) to any normal combination of one to eight or more standard loud speakers. For impedance matching purposes each choke is provided with two end leads, in addition to a center tap, and with two extra pairs of taps to accommodate series or series parallel arrangements of varying numbers of magnetic or dynamic speaker units.....NET \$2.30

**248**—Universal Output Choke electrical characteristics are identically the same as those of the 228 Universal output choke listed above, but it is mounted in an open mounting bracket.....NET \$1.94

**229**—Dynamic Speaker Output Transformer designed to couple one or two standard power tubes singly or in push-pull to the moving or voice coil of any standard dynamic speaker under conditions of maximum undistorted power output. It is equipped with impedance matching taps, allowing it to operate out of one 112, 171, 210, 245 or 250 type tube, or if preferred, out of two of any of the above type tubes in push-pull.....NET \$2.34

**SM-249**—Transformer (Transfull)—The 249 is a companion to the 247 filament transformer, but having two 2.5 volt secondaries only, one of 9 ampere and one of 3 ampere capacity. Shipping weight 3 pounds. List \$5.00.....NET \$2.94

**233U Universal Output Transformer (Transdox)**—With a characteristic curve flat (to within 1.7 D.B.) from 30 to 10,000 cycles, this transformer has the further advantage of extreme flexibility. Three windings, with a total of 12 lugs, enable it to be used to match almost any impedances. As an output transformer it will work out of '71, '45, or '50 tubes singly or in push pull. It will work into 12 different impedances of from 9 to 200 ohms to feed directly into the voice coils of 1, 2, 3, 4 or 8 dynamic speakers. It will also match with 1000, 2000, 4000 or 8000 ohm circuits, and may be used as a line output transformer as well. Open mounted. Size, 3" long, 3 $\frac{3}{4}$ " high, 3 $\frac{3}{8}$ " wide. Shipping weight, 7 pounds. NET \$7.06

**10145 Audio Choke (Transjay)**—An audio choke for use in parallel plate feed circuits, in conjunction with 10131 Input Transformer to couple a low impedance ('45) type or two '45 or '50 tubes in push-pull. (See data sheet 29.) Inductance 18 henries at 30 m.a. or 25.5 henries at 10 m.a. Case size: height 2", base 2 $\frac{1}{2}$ "x2 $\frac{7}{8}$ " or 3"x2 $\frac{7}{8}$ ", including mounting feet. Shipping weight, 2 pounds. NET \$4.12

**10146 Phono. Pickup Trans. (Transkay)**—A transformer designed to couple a low impedance record pickup of 15 ohms to the grid of a tube. Primary inductance .24 henries, D.C. resistance primary 8.3 ohms, secondary 9500 ohms. Transformation ratio 66.4 to 1. Same size and appearance as 10145. Shipping weight, 2 pounds. NET \$4.41

**10147 Microphone Transformer (Transell)**—A high grade transformer with two primaries and secondary for coupling microphone to a 100,000 ohm grid circuit. Primaries may be connected in parallel for operation out of 125 ohm source. Flat to within 2 DB. from 50 to 10,000 cycles. Primary inductance each half 5 henries, in series 20 henries, D.C. resistance each half primary 10 ohms, secondary 5200 ohms. Transformation ratio 14.1 to 1. Same size and appearance as 10075. Shipping weight, 4 pounds. NET \$5.88

**10150 Standard Phono. Pickup Transformer (Transem)**—A transformer designed to couple a standard 3000 ohm to 5000 ohm phonograph pickup to the grid of a tube. Transformation ratio 5 to 1. Same size and appearance as 10145. Shipping weight, 2 pounds. NET \$4.41

**10154 Combination Input Transformer (Transen)**—A transformer with two primaries and secondary designed to couple a 200 ohm phonograph pickup, double or single button microphone to grid of tube. By using a 10158 choke to feed detector plate supply, output of radio tuner or radio set detector can be connected to secondary so that by use of proper switching arrangement, the three different types of input can be fed into one tube circuit. Connect two primaries in parallel for 200 ohms pickup, in series for double button microphone. Inductance primaries 5.5 henries in parallel, 22 henries in series, D.C. resistance each primary 90 ohms, secondary 10,960 ohms. Transformation ratio 10.6 to 1. Same size and appearance as 10145. Shipping weight, 2 pounds, 6 ounces. NET \$5.30

**10156 Line Matching Transformer (Transoo)**—A transformer designed to couple a 200 ohm source such as output of PA-22A to combination of two to six 15 ohm voice coils in parallel and (with switch taps added) allowing removal of several speakers from line and rematching without interrupting transmission. Specially designed to operate without D.C. in primary and to handle up to 50 watts at low frequencies without magnetic distortion. Primary inductance 10.75 henries, D.C. resistance primary 25.7 ohms, secondary 1.05 ohms. Transformation ratio primary to secondary .194. Same size and appearance as 10122. Shipping weight, 7 $\frac{1}{2}$  pounds. NET \$8.82

**10157 Microphone Transformer (Special) (Transpea)**—A transformer for use in mixing and input control panels. Designed with primary same as in 10147 but with a secondary for operation into a 200 ohm load (200 ohm T pads). Transformation ratio primary to secondary .632. Same size and appearance as 10075. Shipping weight, 4 pounds. NET \$5.88

**10158 Audio Choke (Transque)**—A high inductance audio choke for use in parallel plate feed circuits working out of a high impedance type tube (see data sheet 29). Inductance 100 henries at 10 mils d.c. D.C. resistance 2250 ohms. Same size appearance as 10145. Shipping weight, 2 pounds. NET \$4.12

**10159 Push-Pull Input Transformer (Transare)**—A push-pull input transformer designed for use in parallel plate feed circuits using a 10158 choke and to work out of single high impedance tube into '45 or '50 type tubes in push-pull. (See data sheet 29.) Primary inductance 150 henries, D.C. resistance primary 3100 ohms, total secondary 7700 ohms. Transformation ratio 2 to 1. Same size and appearance as 10075. Shipping weight, 4 pounds. NET \$5.88

**10160 Push-Pull Interstage Transformer (Transess)**—An interstage push-pull transformer designed for use in parallel plate feed circuits using a 10163 choke and to work out of low impedance ('45 type) tubes in push-pull into 250 or 845 type tubes in push-pull. (See data sheet 29.) Same size and appearance as 10121. Shipping weight, 4 $\frac{1}{2}$  pounds. NET \$7.35

**10161 Push-Pull Interstage Trans. (Transtea)**—An interstage push-pull transformer designed for use in parallel plate feed circuits using a 10162 choke and to work out of high impedance ('27 type) tubes in push-pull into 245 or 250 type tubes in push-pull. (See data sheet 29.) Same size and appearance as 10121. Shipping weight, 4 $\frac{1}{2}$  pounds. NET \$7.35

**10162 Tapped Audio Choke (Transyon)**—A high inductance audio choke, center tapped, for use in parallel plate feed circuits working out of high impedance ('27) type tubes in push-pull into '45 or '50 type tubes in push-pull. Same size and appearance as 10145. Shipping weight, 2 pounds. NET \$4.41

**10163 Tapped Audio Choke (Transvee)**—A center tapped audio choke for use in parallel plate feed circuits working out of two low impedance (45) type tubes in push-pull into two 250 or 845 tubes in push-pull. Same size and appearance as 10145. Shipping weight, 2 pounds. **NET \$4.41**

**270U Push-Pull Input Transformer (Transode)**—A curve flat to within 3 decibels from 40 to 8,000 cycles is the astonishing achievement of this 1:1 ratio transformer. Ideal for working out of a power detector or first audio stage into power tubes. Open-mounted, similar to 338U. Shipping weight, 1½ pounds. List \$3.25. **NET \$1.92**

**272 Audio Transformer (Transuper)**—A split-choke type used for coupling a 224 detector into two 245 tubes in push-pull. It is divided into two equal halves of approximately 250 henries per half. Designed for ½ to 1½ milliamperes in each half of the winding. Used in 724 A.C. and 724 D.C. superheterodyne receivers. Similar to 338U in size and weight. List \$3.50. **NET \$2.06**

**251 Tone Filter (And Output Transformer) (Transput)**—A combination variable ratio output transformer, choke and condenser tone filter, and tapped impedance. Recommended as a tone filter and is provided with taps exactly matching it to either 112 and 210 or 171, 245 and 250 type power tubes. Boosts low note reproduction. May be used with 210, 245 or 250 type tubes when an external 1 mfd. 600 volt condenser is added. Shipping weight, 1 pound, 8 ounces. **NET \$1.03**

**271A Push-Pull Output Transformer (Transpush)**—Ideal for working out of two power tubes in push-pull directly into a dynamic voice coil. Uniformly flat curve up to 8000 cycles. Similar to 338U in size and weight. **NET \$1.76**

**28U R. R. Choke (Cake)**—An open mounted choke coil having an inductance of 2 millihenries. Used in the 726 and 716 receivers. One hole mounting with two lugs. **NET \$0.39**

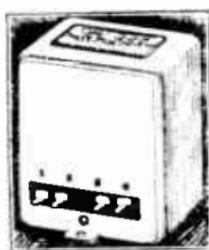
### REPLACEMENT AUDIO TRANSFORMERS

Strictly high-quality audio-frequency transformers, comparing favorably with many of the high priced brands. The characteristics of these transformers are such that they provide practically uniform amplification from 200 to 5000 cycles, with a gradual fall-off below 200 cycles. Ideal for replacement use because of compact, small size.

**260U Transformer**—Equipped with upright type mounting bracket. Size 2½" high, 2" wide, and 1½" thick. Shipping weight 1 pound. **NET \$1.03**

**260S Transformer**—Same as above, but equipped with side mounting bracket. Size 2" high, 2½" wide, and 1½" thick. Shipping weight, 1 pound. **NET \$1.03**

**270U Push-Pull Input**—With its extremely low 1 to 1 ratio, this transformer is ideal for working out of the first audio tube into power tubes. The curve is practically flat from 40 to 8000 cycles—a truly remarkable achievement, permitting astonishing tone fidelity in any amplifier in which it is used. **NET \$1.91**



### S-M Standard Audio Transformers

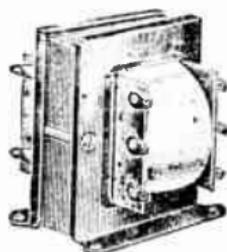
**220 Audio Transformer**—Provides substantially straight line amplification from 30 to 5000 cycles. Ratio 3 to 1. Sharp cut-off above 5000 cycles. Shipping weight 4 lbs., 6 oz. **NET \$2.86**

**221 Output Transformer**—For use in any receiver. Ratio 1 to 1.89. Shipping weight 4 lbs., 4 oz. **NET \$1.85**

### Thordarson Replacement Transformers

#### TYPE T-3381 REPLACEMENT TRANSFORMER

For single 71 tube in output stage. Primary 115 volts 50-60 cycle. Secondaries: 1—5 volts @ ¼ amp. (1-171A); 2—1.5 volts @ 2 amp. (2-226 Audio); 3—5 volts ct. @ 2 amp. (280 fil.); 4—600 volts ct. 60 m.a. (high voltage); 5—1.5 volts @ 3 amp. (3-226 R.F.); 6—2.5 volts @ 2 amp. (227 detector). Overall dimensions 3¾" wide, 4" deep, 4" high. Mounting holes 2⅜" x 3¼". Weight 4¼ pounds. List \$6.00. **NET \$3.53**



**TYPE T-2971-E REPLACEMENT TRANSFORMER**

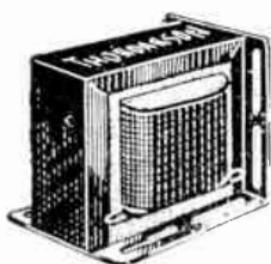
For 171 pushpull tubes in output stage. Primary 115 volts 50-60 cycle. Secondaries: 1—5 volts ct. 1/2 amp. (for 2-171A tubes); 2—2.5 volts @ 2 amp. (227 detector); 3—1.5 volts @ 1 amp. (226 first audio); 4—1.5 volts @ 3 amp. (226 R.F.); 5—5 volts ct. 2 amp. (filament 280); 6—650 volts ct. 70 m.a. (high voltage). Overall dimensions 3 3/4" wide, 4" high. Mounting dimensions 2 3/8" x 3 1/4". Weight 4 1/4 pounds.

List \$6.00 ..... NET \$3.53

**TYPE T-3524-E REPLACEMENT TRANSFORMER**

For pushpull tubes in output stage. Primary 120 volts—50-60 cycle tapped at 110. Secondaries: 1—730 volts ct. 100 m.a. (high voltage); 2—5 volts ct. 2 amp. (280 filament); 3—2.5 volts ct. 3 amp. (2-245 filament); 4—2.5 volts @ 9 amp. 5-227 or 224). Overall dimensions 3 3/8" wide, 4 1/2" deep, 4 3/8" high. Mounting holes 2 3/8" x 2 3/4". Weight 6 1/4 pounds. List \$8.00..... NET \$4.70

**Thordarson Audio Transformers**

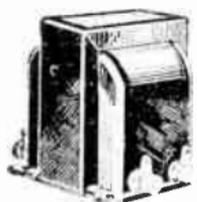


**R-100**—Universal replacement transformer to replace obsolete or burned out transformers. Unique construction enables transformer to be mounted on side or end, and being slotted no new holes have to be drilled for installation. Remarkably faithful over the useful frequency band. List \$2.25..... NET \$1.32

**R-260**—A transformer of remarkably good reproduction. The core is made of a special metal having a permeability 50% greater than the best silicon steel. Thus the transformer can be made small, which in turn decreases the leakage resistance and increases the energy transfer..... NET \$2.35

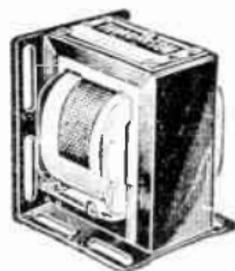
**R-300**—Similar in characteristics to the R-260, except that the amplification extends to lower frequencies. The amplification curve is practically a straight line from 30 to 8000 cycles, with a sharp cut-off above 8000 cycles to eliminate undesirable noises ..... NET \$2.94

**T-2408 Push-Pull Input Transformer**—Primarily intended to couple a stage of straight audio amplification into a stage of power push-pull using any of the existing types of power tubes. Ratio 1 to 1. .... NET \$2.94



R-300-400

**Thordarson R-101 Pushpull Input Replacement Transformer**



A new high quality push pull input transformer for all types of servicing and reconditioning. Has an unusually uniform response over the effective range of audio frequencies. The unit is mounted in the THORDARSON universal bracket making it adaptable to mounting in present panel holes. Equipped with terminal board and convenient soldering lugs. Overall dimensions—1 7/8" x 2" x 2 3/8". Weight—1 1/2 pounds. List \$3.50 ..... NET \$2.06

**Thordarson Speaker Coupling Transformers**

**R-76**—Designed especially for use in coupling the output of a UX 171 power tube into a high impedance speaker ..... NET \$2.35

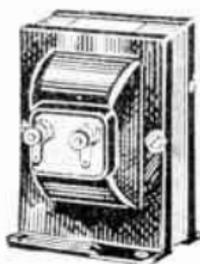
**T-2876**—Designed to couple the output of a UX-210 tube into a high impedance speaker..... NET \$2.35

**T-2901**—Designed to couple the output of a single UX-250 into a high impedance speaker ..... NET \$4.12

**T-2902**—Designed to couple the output of a single UX-250 into a dynamic speaker. Replaces the original speaker coupling transformer mounted in the base of dynamic speaker which is ordinarily designed for UX-210 ..... NET \$4.12

**T-2903**—Designed to couple the output of two UX-250 tubes in push-pull into the coil of a dynamic speaker. Replaces the transformer mounted in the base of the speaker..... NET \$4.12

**T-2880**—Special push-pull output transformer, similar to type T-2903, designed to couple the output of a series of push-pull 250 type power tubes into one or more high impedance speakers..... NET \$4.12

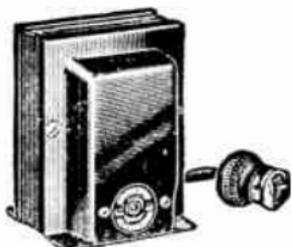


T-2901

## Thordarson T-4015 Voltage Changer

This unit is designed to permit the use of standard receivers or other electrical devices on odd voltages found in some localities. It has a step down ratio of two to one and can be used on any 50-60 cycle line of from 220 to 250 volts, giving a secondary voltage of one-half the line voltage. Mounted in a shielded case with cord and plug on primary for connection to the socket, and a receptacle on secondary for connecting plug of unit. Requires no additional wiring for use. Overall dimensions— $3\frac{3}{8}$ " x  $3\frac{3}{8}$ " x 5" high. Weight 8 pounds.

List \$11.50 ..... NET \$6.76



**T-2604 Transformer**—For changing line voltages of 220 volts to 110 volts. Designed primarily to enable 110 volt A.C. radio receivers and power units to be operated in districts where the line voltage is 220 volts A.C., 50-60 cycles. Primary equipped with cord and plug; secondary terminates in standard plug receptacle. Completely shielded; Capacity: 60 V.A.; Dimensions:  $2\frac{3}{4}$ " x 6" x  $4\frac{3}{8}$ " high. Weight: 5 lbs. Code word, "Poplar." List \$8.50..... NET \$5.00

**329BU Power Transformer**—Has two 220-volt secondaries, one 5-volt, 2 ampere center-tapped winding, one 5-volt,  $\frac{1}{2}$ -ampere winding, one  $2\frac{1}{4}$ -volt,  $3\frac{1}{2}$  ampere, and one  $1\frac{1}{2}$ -volt, 5 ampere winding. Shipping weight, 5 lbs. .... NET \$2.91

**336U Power Transformer**—Similar to 335U, but for use with sets of fewer tubes. Equipped with two 260-volt 65 M.A. secondaries, one 5-volt, 2 ampere center-tapped rectifier filament winding, one 2.25-volt, 3 ampere, one 2.25-volt, 7.5 ampere, and one 1.5-volt, 4 ampere, filament winding. Same size and weight as 329BU. For operation from any 105 to 120 volt 50 to 60 cycle A.C. .... NET \$3.72

## Thordarson Combined Plate—Filament Supplies

**T-2098**—Code "Polemic." Secondary No. 1: 550 V., each side of center tap. 130 M. A. Secondary No. 2: 7.5 V., center-tapped 20 V. A. Secondary No. 3: 7.5 V., center-tapped, 20 V. A. 13 $\frac{1}{4}$  lbs. .... NET \$7.06

**T-2900**—Code "Pompous." Designed to supply A-B-C current to one 250 tube and B to receiver. Used with two 281 rectifiers. Sec. 1: 610 volts each side C. T., 130 M. A. Sec. 2:  $7\frac{1}{2}$  volts, C. T.,  $2\frac{1}{2}$  amps. Sec. 3:  $7\frac{1}{2}$  volts, C. T.,  $2\frac{1}{2}$  amps. 15 $\frac{1}{4}$  lbs. .... NET \$13.06

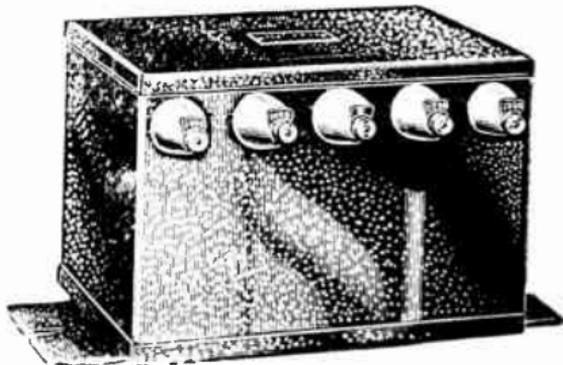
List \$20.00 ..... NET \$13.06

**T-2950**—Code "Poncho." Designed to supply A-B-C current to amplifiers using two 250 tubes in push-pull. Used with two 281 rectifiers. Sec. 1: 675 volts each side, C. T., 200 M. A. Sec. 2:  $7\frac{1}{2}$  volts, C. T.,  $2\frac{1}{2}$  amps. Sec. 3:  $7\frac{1}{2}$  volts, C. T.,  $2\frac{1}{2}$  amps. 18 lbs. List \$22.00..... NET \$12.94



## Plate Supply Transformer T-2389

A new and improved design of the popular THORDARSON plate supply transformer. Has a 115 volt 50-60 cycle primary, secondary 2000 volts each side of center, tapped at 1500 volts, capacity 1000 volt-amperes. This unit is mounted in a crystalline finished, compound filled case rendering it impervious to moisture and climatic conditions. The primary terminates in a porcelain connector block and the secondary screw terminals are brought out through high voltage porcelain bushings, making breakdown impossible, except in case of abuse. Size 7" x  $7\frac{1}{4}$ " x 10". Weight 54 pounds. List \$40.00..... NET \$23.52



Unless otherwise specified, transformers are for 110 volt, 60 cycle AC.

**T-2387-A**—Code "Transfuse." Secondary: 1500-1000-0-1000-1500 volts. Capacity: 300 V. A. Weight, 20 lbs. List \$22.00..... NET \$12.94

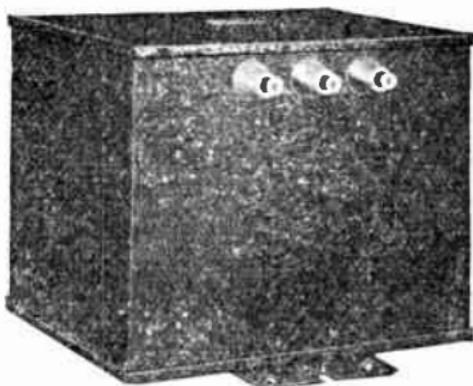
**T-2388-A**—Code "Transgress." Secondary: 2000-1500-0-1500-2000 volts. Capacity: 500 V. A. Weight, 27 lbs. List \$30.00 ..... NET \$17.64

## Thordarson Plate Supply Transformers

T-4450 ..... NET \$14.70  
 Pri. 110-220 Volts—60 cycle. Sec.  
 990 volts center-tapped 125 V. A.

T-4455 ..... NET \$29.40  
 Pri. 110-220 Volts—60 cycle. Sec.  
 3700 volts center-tapped 750 V. A.

T-4460 ..... NET \$58.80  
 Pri. 110-220 Volts—60 cycle. Sec.  
 3700 volts center-tapped 2200 V. A.



T-3773—A Thordarson Plate Supply Transformer for single 210 or pair of 210's—Sec. No. 1 550 volts each side of center tap; Sec. No. 2 7½ v., 2½ amps. Sec. No. 3, same as No. 2. Sec. No. 4, 3 v., 7 amps. In shielded case with leads from bottom. Three primary voltage leads (105, 110, 115 v., 60 cy. a. c.). Weight 9 lbs. .... NET \$3.95

## Pentode Transformers

Specially designed to couple the new power output pentode tube to the voice coil of a dynamic speaker. So built that the reflected load on the pentode is 8000 ohms when connected with a speaker whose voice coil has an impedance of 8.6.

### FOR SINGLE PENTODES

The turn ratio of this transformer is 30 to 1 and the impedance ratio is 932 to 1.

Size, 2½x2½x3 inches high. Weight, 2 pounds.

T-4843 ..... NET \$3.53

### FOR PUSH-PULL PENTODES

This type is built with a turn ratio of 38 to 1 and an impedance ratio of 1444 to 1.

Size, 2½x2½x3 inches high. Weight, 2 pounds.

T-4831 ..... NET \$3.53



## Thordarson Pentran

COMPACT—Weighs only 4 pounds 6 ounces. 3½x4 inches; total depth 3¼ inches; above chassis 2¾ inches.

UNIFORM—Because each transformer is rigidly inspected at every step of manufacture and must pass a final, individual test in which all secondary voltages under load are held within plus or minus 5%.

### Electrical Specifications

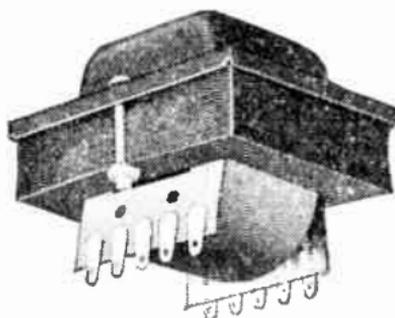
Primary—115 volts, 60 cycles.

Secondary—No. 1 483 volts each side center tapped at 70 m.a.

No. 2—5 volts at 2 amperes.

No. 3—2.5 volts at 8.5 amperes center tapped.

Each ..... NET \$3.53



Model T4900

## "Chi-Rad" Power Transformer

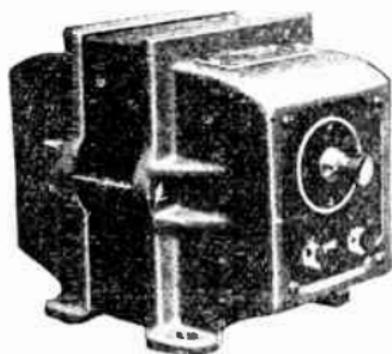


No. 104—110-115 volt primary with four secondaries. No. 1—400-0-400 volts, 100 M.A.; No. 2—2½ volts, 12 amps.; No. 3—2½ volts, 3 amps.; No. 4—5 volts, 2 amps.

POWERFUL, STURDY and of very NEAT and PLEASING appearance, sums up in a few words this new "Chi-Rad" Transformer. The core is stamped from high grade Silicon steel and is of the E type with special jointing which reduces the magnetic leakage to a minimum. The case has been made of a heavy material which practically eliminates coupling. Another important improvement is the method of bringing the leads

from the coil to the terminal strip which is in the bottom of the case. The coil is vertical with one end toward the terminal strip and the leads are brought out so that they go directly to their proper lug without crossing or coming close to one another. .... NET \$3.65

### AmerTran Power Supply Transformers



All transformers have 100-108-115-125 volt, 60-cycle primaries.

Va. Rating	A. C. Plate	Rec. Fil.	Prv. Fil.	R.F. A.F. Fil.	Det. Fil.	Type No.	List Price	NET
100	600-300v	7.5v	7.5v			PF-52A	\$18.00	\$10.58
	0,100a	2.5a	2.5a					
118	600v	7.5v	7.5v	2.5v	2.5v	PF-231A	22.00	12.94
	0,100a	2.5a	2.5a	3,25a	1,75a			
100	730-365v	8v	2.5v	2.5v	2.5v	PF-245A	21.00	12.94
	0,110a	2a	3a	7a	1,75a			
165	1200-600v	7.5v	7.5v			PF-250A	28.00	14.70
	0,160a	2.5a	2.5a					

\*Center-tapped winding.

### Ellis Model 72N Matched Microphone Transformer

Produced in accordance with Ellis standards of high quality, this new Ellis Matched Microphone Transformer assures the maintaining of tone quality in this important part of the circuit. Designed especially for Ellis and other two button microphones. Perfectly balanced primary and secondary circuits. Center tapped at exact electrical center. Frequency response free from resonance peaks. Primary: 200 ohms each side. Turn ratio: 23 to 1. Impedance ratio: 500 to 1. Highly polished and beautifully finished in nickel. Shipping weight, 3 1/2 pounds.



A Microphone Transformer must be used with all 2-button Microphones.

#### MICROPHONE TRANSFORMERS—MODEL 70N

Matches Ellis Microphones to 200 ohm lines for mixing, etc. Turns ratio: 1 to 1.

#### MODEL 71N

Matches Ellis Microphones to 4,000 ohm lines for feeding into the transformer of the usual amplifier. Secondary: 4,000 ohms. 1 to 1.

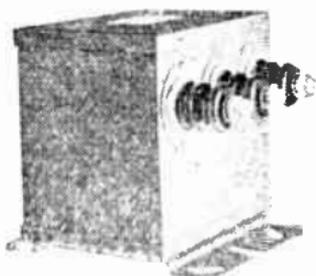
#### MODEL 72N

Matches Ellis Microphones to the grid of the first tube in the amplifier. Turns ratio: 23 to 1. Impedance ratio: 500 to 1.

ANY MODEL

NET \$5.88

### Thordarson Filament Supply Transformers



T-4585 NET \$ 8.82  
Pri. 10-220 Volts—60 cycle. Sec. 2.5 volts @ 10 amp, center tapped.

T-4586 NET \$11.76  
Pri. 10-220 Volts—60 cycle. Sec. 5 volts @ 20 amp, center-tapped.

### AmerTran Filament Transformers

Va. Rating	Line Volts	Sec. Volts	Sec. Amps.	Test Volts	Type No.	List Price	NET
12.5	200-230	2.5-2.25	5	12,000	H-4648	\$14.00	\$ 8.23
25	100-115	2.5-1.25	10	12,000	H-66A	16.00	9.41
37.5	200/230	2.5-1.25	15	12,000	H-4649	19.00	11.17
50	100/115	5-2.5	10	12,000	H-4650	23.00	11.76
50	200/230	5-2.5	10	12,000	H-4651	20.00	11.76
90	100/115	{ 10/5 2.5/1.25 }	{ 6.5 10 }	12,000	H-4201	25.00	14.70
100	100/115	5-2.5	20	12,000	H-4652	24.00	14.11
150	200-230	5-2.5	30	12,000	H-4653	27.00	15.88

## Silver-Marshall Power Transformer Data

Type No.	Code Word	Secondary		Rectifier Tube	Filament Windings						Tubes (or Equivalent) Will Operate	Size, Inches			Shpg. Wt., Lbs.	List	NET
		Total Volts	M.A.		First Am- Volts	Second Am- Volts	Third Am- Volts	High	Wide	Long							
326A	Transone				Special 220 volt line reducing transformer with input and output receptacles and voltage switch.						Any 6 to 10 tube set	4 $\frac{3}{8}$	3 $\frac{1}{8}$	5	7 $\frac{1}{2}$	\$15.00	\$ 8.82
328BU	Transall	1100	150	2-81	7 $\frac{1}{2}$	2.5	2 $\frac{1}{2}$	2	1 $\frac{1}{2}$	2	2-50, 2-26, 1-27	4 $\frac{3}{8}$	5 $\frac{5}{8}$	4 $\frac{1}{2}$	16 $\frac{1}{2}$	25.00	14.70
334	Transflow	300	60	1-80	...	...	...	None	...	...	120-volt speaker field	3 $\frac{1}{2}$	2 $\frac{1}{4}$	3 $\frac{1}{8}$	2	7.00	4.12
#337U	Transvaal	750	110	1-80	2 $\frac{1}{2}$	9	2 $\frac{1}{2}$	3	...	...	2-45, 5-24 or 27	4 $\frac{5}{8}$	5 $\frac{5}{8}$	4	12	15.00	8.82
#33725U	Transmute	750	110	1-80	2 $\frac{1}{2}$	9	2 $\frac{1}{2}$	3	...	...	2-45, 5-24 or 27	4 $\frac{5}{8}$	5 $\frac{5}{8}$	4	13	20.00	11.76
360	Transtwo	766	85	1-80	2 $\frac{1}{2}$	11.75	...	...	...	...	4-24 or 51, 2-27, 2-45 or 47	4	4 $\frac{5}{8}$	3 $\frac{1}{2}$	11	15.00	8.82
36025	Transthree	766	85	1-80	2 $\frac{1}{2}$	11.75	...	...	...	...	4-24 or 51, 2-27, 2-45 or 47	4	4 $\frac{5}{8}$	4 $\frac{1}{4}$	12	20.00	11.76
10081	Transfour	1126	150	2-81	7 $\frac{1}{2}$	1.5	7 $\frac{1}{2}$	1.5	2 $\frac{1}{2}$	3.5	2-50, 1-45, 1-24	4 $\frac{3}{8}$	5 $\frac{5}{8}$	5	16 $\frac{1}{2}$	25.00	14.70
+10120	Transfive	1144	70	2-81	7 $\frac{1}{2}$	1.25	2 $\frac{1}{2}$	1 $\frac{1}{4}$	...	...	1-50, 1-24	5	5 $\frac{3}{4}$	3 $\frac{1}{2}$	15	20.00	11.76
*10123	Transeven	Filament only			10	6.5	...	...	...	...	2-845 filaments	4	4 $\frac{5}{8}$	2 $\frac{3}{4}$	5	7.50	4.41
+10124	Transeight	Filament only			2 $\frac{1}{2}$	10	...	...	...	...	2-866 filaments	4 $\frac{1}{4}$	3 $\frac{3}{8}$	2 $\frac{1}{2}$	5	7.50	4.41
+10132	Transnine	2060	150	2-866	...	...	...	None	...	...	2-845	4 $\frac{3}{4}$	5 $\frac{3}{4}$	4	20	30.00	17.64
+10133	Transten	884	70	1-80	2 $\frac{1}{2}$	3.25	...	...	...	...	1-24, 1-45	4	4 $\frac{1}{4}$	3 $\frac{1}{4}$	7	15.00	8.82

\*Used with Arneco or similar 40 ohm power rheostat in primary.

†Primary wiring tapped.

‡Equipped with 80 volt primary tap for use with automatic voltage regulating device.

*Chirad Replacement Power Transformers*

## No. 101

350-350 Volts at 100 M. A.  
5 Volts at 2 A.  
2½ Volts at 3 A. C. T.  
2½ Volts at 12 A. C. T.  
Price each..... NET \$4.25

## No. 171-A

300-300 Volts at 60 M. A.  
5 Volts at 2 A.  
5 Volts at ½ A. C. T.  
1½ Volts at 9 A.  
2½ Volts at 2 A. C. T.  
Price each..... NET \$3.50

## No. 171

285-285 Volts at 60 M. A.  
5 Volts at 2 A.  
5 Volts at ½ A. C. T.  
2½ Volts at 12 A. C. T.  
Price each..... NET \$3.40

## No. 104

400-400 Volts at 100 M. A.  
5 Volts at 2 A.  
2½ Volts at 3 A. C. T.  
2½ Volts at 12 A. C. T.  
Price each..... NET \$3.65

## No. 250

575-575 Volts at 100 M. A.  
7½ Volts at 3 A. C. T.  
7½ Volts at 3 A.  
2½ Volts at 12 A. C. T.  
Price each..... NET \$4.65

## No. 301

325-325 Volts at 60 M. A.  
5 Volts at 2 A.  
2½ Volts at 2 A.  
2½ Volts at 9 A. C. T.  
Price each..... NET \$2.25

Make	Model	Transformer No.
A. C. Dayton Co.	63	171-A
Acme Electric Co.	7	171-A
Apex	41, 42, 46, 47, 48	101
All-American Mohawk Corp.	96	101
American Bosch Mag. Corp.	48, 58, 60	101
Amrad Corporation	81	101
Atwater Kent	85 and 55 C	101
Atwater Kent	36 to 52	171-A
Balkite Products Co.	F and C	101
Bremer Tully Mfg. Co.	7-70 and 7-71	171-A
Browning Drake Co.	30, 69, 70 and 71	101
Brandies Kolster	930, K 43	101
Brandies Kolster	6 K, 7 A.C., K20, 22, 25, 27, 37 and 42	171-A
Brunswick Radio Corp.	15, 22, 31, 5-14, 821 B, 81-S, 82	101
Brunswick Radio Corp.	R-1, 5Kr, 5KR0, 5KR6, 2 and 3 KR0	171-A
Busn & Lane	10, 12	101
Colonial Radio Corp.	32	101
Columbia	C1, 2, 3, 4, and 930	171-A
Columbia	S. G. 8	101
Crosley Radio Corp.	30, 31, 33, 34, 40, 41, 42, 804	101
Crosley Radio Corp.	608, 704, 706, 610, 609, 21, 41, 42	171-A
Eveready	40, 50	101
F. A. D. Andrea, Inc.	25, 25Z, 35, 40	101
Freed Eiseumann Radio Corp.	90, N R 95	101
Chas. Freshman Co., Inc.	41, 31, 32, 33	101
Chas. Freshman Co., Inc.	G	171-A
General Motors	A	101
General Motors	5077, 5080	171-A
A. H. Grebe & Co.	S K 4	101
A. H. Grebe & Co.	S K 4	101
Howard Radio Co.	S G A	101
Howard Radio Co.	8	171-A
Kellogg Switchboard	523, 526	101
Colin B. Kennedy Co.	20	101
King Mfg. Co.	J, 11	171-A
King Mfg. Co.	King Monarch	101
Montgomery Ward & Co.	2822 to 2957	101
National Carbon Co.	40	101
Pilot	K-113, Twin S. G. S.	101
Pilot	K-108	171-A
R. C. A. Victor Co.	18, 17, 7-26, Radiola 17, 18, 33, 50, 51	171-A
R. C. A. Victor Co.	Radiola 15, 47, 66	101
Silver Marshall	33, 34, 35	101
Sonora	31	101
Splittorf Elec. Mfg. Co.	Abbey 171	171-A
Standard Radio Corp.	29	171-A
Steinite Radio Co.	261-262	171-A
Steinite Radio Co.	50 A, 102 A	101
Stewart Warner Co.	900 and 950	101
Stromberg-Carlson	641, 642	101
Temple Corp.	8-60, 80, 90, 61, 81, 91	101
T. C. A.	51, 53, 55	101
Sentinel	660 and 666 and 444	101
U. S. Radio and Television	80	171-A
U. S. Radio and Television	Apex Models 41, 43, 44, 46, 47	101
U. S. Radio and Television	Apex Models 46 A, 47 A, 48 A, 60	101
Zenith Radio Corp.	11 and 14	171-A
Zenith Radio Corp.	60, 61, 62, 64, 67	101
Zenith Radio Corp.	52, 53, 54, 70	101

### Midget Models

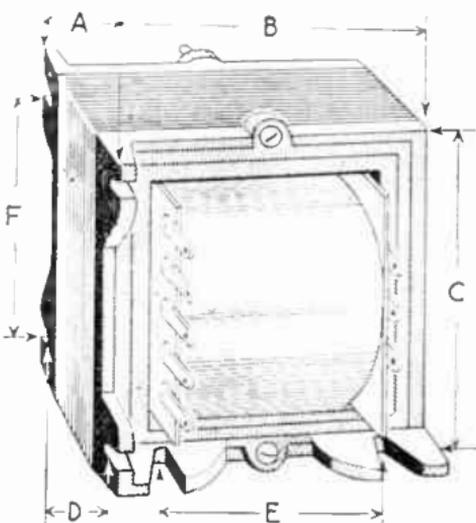
Advance Electric Co.  
 Atchison Radio Co.  
 Automatic Radio Co.  
 Nathaniel Baldwin, Inc.  
 Brown and Manhart  
 Cardinal Radio Co.  
 Carteret Radio Lab.  
 Champion Radio  
 Crosley Radio Co.  
 Echophone Radio Mfg. Co.  
 Elmore Lamping Co.  
 Federated Purchaser  
 Flint Radio Co.  
 Ford Radio Co.  
 J. French & Sons Piano Co.  
 Gilbert, R. W.  
 Gray & Danielson  
 Griffin-Smith Mfg., Ltd.  
 Hyatt Elec. Corp.  
 Jackson Bell Co.  
 Jewell Mfg. Co.  
 Keller-Fuller  
 Kemper Radio Co.

Master Radio Co.  
 McCormick  
 Mission Bell Radio  
 National Transformer Co.  
 Patterson Radio Corp.  
 Pierce Airo, Inc.  
 Plymouth Radio Corp.  
 Powell Mfg.  
 Premier Electric Co.  
 Premier Radio Co.  
 Rensler Division Gray & Danielson  
 Republic Radio Co.  
 Seeley Elec. Co.  
 Simplex Radio Co.  
 Fred Stein  
 Steinte Mfg. Co.  
 Sterling Mfg. Co.  
 Transformer Corp. of Am.  
 Travler Mfg. Co.  
 U. S. Radio & Television  
 Watham Radio Corp.  
 Zaney Gull Corp.

No. 301 Replacement Transformer for all of the above Midget Receivers.

### Output Transformers

No. 702	Push Pull	245 Tubes				
						Net \$0.75
No. 703	Push Pull	Pentode				NET \$0.75 F
No. 704	Single	Pentode				NET \$0.75
No.	A	B	C	D	E	F
101	3	3 1/4	4 1/2	2 1/2	2 3/4	3 1/2
301	1 1/4	4	3 1/4			
171-A	3	3 1/4	4 1/2	2 1/2	2 3/4	3 1/2



### Thordarson Filament Transformers

- T-2180—Code "Filiat." Secondary: 5 volts, center-tapped, 15 V. A. Weight, 3 1/2 lbs. List \$5.00.....NET \$3.26
- T-2230—Code "Filigree." Secondary: 7.5 volts, center-tapped, 35 V. A. Weight, 3 1/2 lbs. List \$7.50. NET \$4.41
- T-2382—Code "Transcend." Secondary: 12 volts, center-tapped, 80 V. A. Weight, 5 lbs. List \$10.00.. NET \$5.88
- T-2383—Code "Transcribe." Secondary: 12 volts, center-tapped, 175 V. A. 12 lbs. List \$15.00..... NET \$8.82
- T-3680—Code "Filing". A filament supply transformer to supply two UX-866 rectifiers. Secondary: 2.5 volts, 10 amps, center-tapped. Insulation: 5000 volts to case. Weight, 3 1/4 lbs. List \$12.00 ..... NET \$7.06
- T-2445—Code "Filar." Secondary No. 1: 1.5 volts, no center tap, 12 V. A. Secondary No. 2: 2.5 volts, center-tapped, 10 V. A. Secondary No. 3: 5 volts, center-tapped, 5 V. A. Weight, 5 1/2 lbs. List \$6.00..... NET \$3.53
- T-3081—Will supply filament for one or two 226 and for one or two 227 tubes. List \$6.00..... NET \$3.53

### National Filament Supply Transformers

Type F-227—Provides two filament windings for 2.5 volts and 1 at 5 volts. Will handle 7 UX-227, 2 UX-245 and 2 UX-171 tubes. List with cord and plug \$10.00 .....NET \$5.88

Type 227-U—A low priced filament transformer having all the characteristics of Type F227 but without casing and 5 volt winding. For set builders, and for special work where a cased transformer is not necessary.

List \$6.50.....NET \$3.82



### Light-O-Stat Units

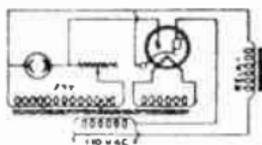
Fitting into a standard four-prong tube socket, these little light cells are sensitive to light changes of several thousands per second. Type "A" having a sensitive area 1/2"x1/2". Your cost .....\$3.00

Type "B," sensitive area 1"x1/2". Your cost .....\$4.50

Diagram shows how they can be used.

A light hitting the top of the highly sensitive surface automatically sets off a relay. In this way, it can be made to perform a great many duties, both practical and amusing. Full information with each cell.

Both types A and B come in the following sizes: 01—less than 25M ohms; 02—25M to 50M; 03—50M to 100M; 04—100M to 250M; 05—250M to 500M and 06—500M ohms. Specify which type you want.



## Speed Tubes

Type	Description	NET		
		List	Less Than Six	NET Six or More
W.D.-11	1.1 V DC General Purpose	\$2.50	\$1.47	\$1.23
W.D.-12	1.1 V DC General Purpose	2.50	1.47	1.23
226	1.5 V AC Amplifier	.80	.47	.40
230	2.0 V Low Wattage General Purpose	1.60	.94	.78
231	2.0 V Low Wattage Output	1.60	.94	.78
232	2.0 V Low Wattage Screen Grid	2.30	1.35	1.13
233	2.0 V Low Wattage Pentode	2.75	1.62	1.35
227	2.5 V AC General Purpose	1.00	.59	.50
224	2.5 V AC Screen Grid	1.60	.94	.78
551	2.5 V AC Vari Mu Screen Grid	1.60	.94	.78
235	2.5 V AC Vari-Mu Screen Grid	1.60	.94	.78
245	2.5 V AC Output	1.10	.65	.54
247	2.5 V AC Pentode	1.55	.91	.75
S-84	3.0 V AC General Purpose	2.50	1.47	1.23
X-199	3.3 V DC General Purpose	2.50	1.47	1.23
V-199	3.3 V DC General Purpose	2.50	1.47	1.23
A-199	3.3 V DC General Purpose	2.50	1.47	1.23
222	3.3 V DC Screen Grid	4.50	2.65	2.20
120	3.3 V DC Output	3.00	1.76	1.47
201-A	5.0 V DC General Purpose	1.75	.44	.37
140	5.0 V DC Hy Mu General Purpose	3.00	1.76	1.47
200-A	5.0 V DC Special Detector	4.00	2.35	1.96
112-A	5.0 V DC General Purpose	1.50	.88	.73
S-82-B*	5.0 V AC Special Output	2.50	1.47	1.23
S-83-B	5.0 V AC Special Output	2.20	1.47	1.23
171-A	5.0 V Output	.90	.53	.45
171-AC	5.0 V AC Output	1.10	.82	.69
236	6.3 V Automobile Screen Grid	2.75	1.62	1.35
237	6.3 V Automobile General Purpose	1.75	1.03	.86
238	6.3 V Automobile Screen Grid	2.75	1.62	1.35
210-A	7.5 V Power Amplifier	7.00	4.12	3.43
250	7.5 V AC Output	6.00	3.53	2.94
280	5.0 V AC Full Wave Rectifier	1.00	.59	.50
281	7.5 V AC Half Wave Rectifier	5.00	2.94	2.45

\*For Sparton Receivers.



## De Forest Audions (Receiving Tubes)

Type	Description	NET		
		List	Less than Six	NET Six or More
401A	Detector Amplifier	\$0.75	\$0.53	\$0.44
410	Power Amplifier	7.00	4.90	4.10
412A	Detector Amplifier	1.50	1.05	.88
420	Dry Cell Power Amplifier	3.00	2.10	1.76
422	D.C. Screen Grid Amplifier	4.00	2.80	2.35
424A	Screen Grid Amplifier (Quick Heater)	1.60	1.12	.94
426	Amplifier (A.C. Filament Type)	.80	.56	.48
427	Detector Amplifier (A.C. Heater Type)	1.00	.69	.59
430	Detector and Amplifier (2 Volt)	1.60	1.12	.94
431	Power Amplifier (2 Volt)	1.60	1.12	.94
432	Screen Grid Amplifier (2 Volt)	2.30	1.61	1.35
435	Variable-Mu Screen Grid	1.60	1.12	.94
440	Special High Mu Amplifier	3.00	2.10	1.76
445	A.C. Power Amplifier	1.10	.77	.65
447	Power Pentode	1.55	1.09	.93
450	Power Amplifier	6.00	4.20	3.53
451	Var. Mu Screen Grid (Quick Heater)	1.60	1.12	.94
471B	Power Amplifier	.90	.63	.53
480	Full-Wave Rectifier (125 Milliamperes)	1.00	.70	.59
481	Half-Wave Rectifier (85 Milliamperes)	5.00	3.50	2.94
499	Dry Cell Detector and Amplifier	2.50	1.75	1.47

# Brach Test-O-Lite

*The Neon Tube Does It*



"Carry a TEST-O-LITE in your pocket always."

The first practical testing light in the history of the electrical industry that covers a wide range of voltages—100-400 volts A. C. or D. C. The TEST-O-LITE is neat and attractively finished in bakelite and can be conveniently carried in the pocket like a fountain pen. Locates burned-out fuses, electric light and motor troubles; troubles in automobile, motor boat and airplane spark plugs; open or short circuits, electric radio sets, household electrical appliances, etc. WILL LAST A LIFETIME.....NET \$1.05

## Mazda Dial Lights

2½ and 6 volt Mazda lamps for dial light. Either voltage.  
 Each ..... NET \$0.15  
 Standard box of 10 each..... NET \$1.20

## General Electric Standard Neon Glow Lamps

110, 115 AND 120 VOLTS

Watts	Bulb	Screw Base	Will Operate on	NET
½	G10	Medium	A. C. only	\$0.55
1	G10	Medium	A. C. or D. C.	.55
2	S14	Medium	A. C. or D. C.	.75

## R81—Rectobulb

HALF Wave Mercury Vapor Rectifier for use in Power amplifiers and in small transmitters (replace 281 tube) Rating.

Filament Volts	7.5
Filament Amps	1.25
Plate Volts	750
Output D. C.	150 Mils
Voltage drop in tube	10

Tube will require choke input to filter to hold down peak current within 600 Mil. peak rating; also it is advisable to check filament voltage carefully and keep at 7.5.

Feeding into a condenser will impose heavy peak current in tube and result in burning off Cathode Coating; this will end useful life of tube.

Tubes with burnt up Cathodes are not subject to replacement.....NET \$3.85



## R3—Rectobulb

Rating—

Filament Volts	10
Filament Amps	1.7
Plate Current	250 Mils
Max. Inverse Peak Volts	7500
Max. Peak Current	1000 Mils

Choke input to filter necessary to hold peak current within rating.

Filament Voltage must be 10 volts, otherwise emission will be low and tube will sputter.

Install fuses furnished with tube and take positive lead from pin marked Cathode.

Should tubes act erratically send to manufacturer at once for replacement. If worn out in Service they will not be subject to replacement.

Our indirect heated Cathode makes the Rectobulb the most rugged of all Mercury Vapor Rectifiers. The Tungsten filament rarely if ever goes out.....NET \$6.85



*De Forest Transmitting Audions*

NET PRICES—Effective September 1, 1931

Code	Tube	Description	NET
FOBAR	510	15 Watt Oscillator. Specially treated plate gives high plate dissipation. No "creeping." High voltage breakdown. Low leakage. Ideal for crystal control oscillators	\$ 5.20
FOBOB	511	50 Watt Oscillator, R. F. Amplifier, Modulator or R. F. Power Amplifier. Indeed a general purpose tube	25.00
FOZON	503-A	50 Watt Oscillator and R. F. Power Amplifier. The standard "50 watter"	25.00
FOTOR	545	50 Watt A. F. Amplifier and Modulator. Not generally suited as an Oscillator or R. F. Amplifier	30.00
FORAN	552	75 Watt Oscillator and R. F. Amplifier. Low internal capacity between elements. Low "frequency shiftings"	23.00
FORIB	504-A	250 Watt Oscillator, Modulator or R. F. Power Amplifier, standard "250 Watter" in general use	97.50
FOFAK	504	250 Watt Oscillator, Modulator or R. F. Power Amplifier, for heavy duty. Has rugged Tungston Filament, rating 11 volts, 14.85 amperes	97.50
FOMEK	549	350 Watt Modulator, R. F. Amplifier or Oscillator. Especially valuable as a Modulator or speech Amplifier. Interchangeable with UV-849	160.00
FOMIG	551	A 1000 Watt general purpose tube for low and intermediate frequency purposes	350.00
FOBEX	520-B	5000 Watt Oscillator-water cooled. An all purpose Modulator, Oscillator or R. F. Amplifier. Without jacket	137.50
FOJAX	520-M	Modulator (See Electrical Characteristic data) Note Audions 520B, 520-M and when using code and water jacket is desired combine Fobex or Fojax with "jacket," thus "Fobex-jacket"	187.50
FOLAR	507	Water jackets for 520-B, 520-M and 521. 10,000 Watt Oscillator or R. F. Amplifier - water cooled - without jacket - interchangeable with UV-207	200.00 12.50
FOJED	548	A 10,000 Watt water cooled Modulator Tube (See Electrical Characteristic data) interchangeable with UV-848 without jacket	350.00
FOGAT	563	A 10,000 Watt water cooled Oscillator and R. F. Amplifier, interchangeable with UV-863--without jacket	350.00
FOCOT	565	Note Audions 507, 548, 563 and when using code and water jacket is desired combine Folar, Fojed or Fogat with "jacket," thus "Folar-jacket"	90.00
FODEN	560	Water jackets for 507, 548 and 563 70 Watt Screen Grid R. F. Amplifier. Useful as "Buffer" Amplifier in telephone transmitters. Extremely low control grid-plate capacity. Requires no neutralizing	15.00
FOKON	561	75 Watt Screen Grid R. F. Amplifier. Extremely low control grid-plate capacity. Requires no neutralizing	35.00
FOPAZ	571	500 Watt Screen Grid R. F. Amplifier. Extremely low control grid-plate capacity. Requires no neutralizing	292.50
FOMOR	566	750 Watt Air cooled high frequency Oscillator and R. F. Amplifier. Extremely valuable at "ultra high" frequencies. A large 552.	200.00
FOLEM	572	A "half wave" hot cathode, mercury vapor rectifier, 2.5 volts, 5 amperes on filament. Maximum peak inverse voltage 7500. Anode peak current 0.6 amperes. Especially valuable for amateur transmitter plate supply	6.35
FOJUK	575	A "half wave" hot cathode, mercury vapor rectifier, 5 volts, 10 amperes on filament, 7500 maximum peak inverse volts, anode peak current, 2.5 amperes. Especially useful for broadcast transmitter	16.50
FOVOX	569	An intermediate size "hot cathode" mercury vapor rectifier. Designed to be used in place of the 572 when higher power is required. Rated 12,500 volts inverse peak and 2.5 amperes peak current. Filament 5 volts, 12.5 amperes	30.00
FOVAD	557	A "half wave" hot cathode, mercury vapor rectifier, 5 volts, 20 amperes on filament. Maximum peak inverse voltage 20,000. Anode peak current 5.0 amperes. Especially valuable for transmitter plate supply and for all general power purposes	168.00
FOROS	601	A "half wave" hot cathode, mercury vapor rectifier, indirect heater type	295.00
FOFJO	603-A	A Neon Lamp for television and kindred uses	6.00
FOUBE	668	A photo electric cell of the caesium type. Interchangeable with W. E. 3A	25.00
		A photo electric cell of the caesium argon type	10.00

### Potter No. 1 Sealing Wax

For use with the replacement cartridges this neat package of wax is put up with instructions covering the handling of new or repair work.

No condenser assembly is complete unless it is well sealed and this can only be done with the correct material.

One Package

NET \$0.15

### Insulating Washers

Every radio man has frequent need for insulating washers at one time or another. We carry a most complete stock of both flat and extruded type washers. The most commonly used sizes are as follows:

Cat. No.	Outside Diameter	Inside Diameter	Thickness	Extension	Price Per 10
202	1"	3/8"	1/16"	1/2"	\$0.25
203	1"	3/8"	1/16"	3/4"	.25
204	1"	3/8"	1/16"	1"	.25
206	1"	3/8"	1/16"	1 1/4"	.25
209	1"	3/8"	1/16"	Flat	.15
212	1"	3/8"	1/16"	Flat	.15
213	1"	3/8"	1/16"	Flat	.15
214	1"	3/8"	1/16"	Flat	.15



### Beldenamel Aerial Wire

- No. 8821—100 ft. 7x22 Beldenamel. Each in carton. List \$1.00 NET \$0.59
- No. 8822—150 ft. 7x22 Beldenamel. Each in carton. List \$1.50 NET \$0.88
- No. 8823—1000 ft. 7x22 Beldenamel. Each on spool. List \$10.00 NET \$5.30
- No. 8828—100 ft. 12 Beldenamel Solid. Each in carton. List \$1.30 NET \$0.76
- No. 8829—100 ft. 14 Beldenamel Solid. Each in carton. List \$0.85 NET \$0.50

### Belden Indoor Aerial Wire

This flexible covered wire is ideal for indoor aeriels and for winding radio loops. The neutral brown color is easily concealed on a picture molding or window frame. Each spool in a carton.

- No. 8840—125-ft. spool 65 strands of fine copper wire with one serve of cotton and a braid of brown rayon. List \$1.75 NET \$1.03
- No. 8842—60-ft. spool special flexible wire with serve of brown cotton. List \$0.70 NET \$0.41
- No. 8843—1000-ft. spool. Same as 8842. List \$9.00 NET \$5.30

### Belden Lead-in and Ground Wire

Has heavy rubber insulation, and the wire is tinned for easy soldering.

- No. 8850 - 50 ft. No. 14 (7x22). List per carton \$0.80 NET \$0.47
- No. 8851 - 250 ft. No. 14 (7x22). List per spool \$4.00 NET \$2.35
- No. 8852 - 50 ft. No. 16 Seven Strand. List per carton \$0.50 NET \$0.29
- No. 8853 - 250 ft. No. 16 Seven Strand. List per spool \$2.50 NET \$1.47

### Belden Shielded Lead-in and Ground Wire



Effective in reducing interference caused by high tension wires, motors, and other sources that radiate disturbing impulses. Consists of a stranded conductor with a heavy easy-strip rubber insulation and an over-all braid of fine tinned copper wire, which serves as a shield. In service the shielding is grounded, and consequently picks up the disturbing impulses and carries them to the ground.

- No. 8856. 50 feet No. 14 Shielded, per carton NET \$1.63
- No. 8854. 250 feet No. 14 Shielded, per spool NET 5.15
- No. 8894. 50 feet No. 16 Shielded, per carton NET .65
- No. 8895. 250 feet No. 16 Shielded, per spool NET 3.23

**Belden Magnet Wire**

Prices per spool:

Size	Half-pound Spools		Quarter-pound Spools	
	Double Cotton White	Double Silk Green	Double Cotton White	Double Silk Green
18	\$0.42	\$0.70	\$0.21	\$0.35
20	.46	.77	.25	.39
22	.49	.84	.28	.46
24	.53	.98	.32	.53
26	.63	1.12	.35	.60
28	.70	1.26	.39	.70
30			.49	

**Belden Radio Battery Cable**

Each cable has two wires of No. 16; the others are No. 20 Stranded Copper, insulated with Colorubber. R. M. A. Standard colors. Cabled together under a brown cotton braid.

No. 8855—5 Conductors. List per foot \$0.08.....	<b>NET \$0.05</b>
No. 8857—7 Conductors. List per foot \$0.10.....	<b>NET \$0.06</b>
No. 8865—54-inch, 5-conductor Cord in carton. List per cord \$0.40.....	<b>NET \$0.24</b>
No. 8867—54-inch, 7-conductor Cord in carton. List per cord \$0.55.....	<b>NET \$0.32</b>

**Belden Flexible Tinned Hookup Wire**

No. 8880—25-ft. No. 18 Stranded Tinned Copper Wire, insulated with 1/64" Colorubber (natural, green, blue, red, brown or yellow). Any color. Any color. List per carton \$0.30.....

No. 8881—1000-ft. Colorubber, same as No. 8880 (natural brown, red). Any color. List per spool \$9.00.....

No. 8885—100-ft. Belden Shielded Colorubber Hookup Wire with shielding of tinned copper braid for use with screen grid tubes. List per carton \$2.00.....

**"Pushbak" Hook-Up Wire**

This is the speediest hook-up wire for the Professional Set Builder—simply push back the insulation! No. 19 solid tinned copper wire covered with cotton wrap and braid, then thoroughly impregnated with wax. Packed 25-ft. coil in individual carton. Six colors: Black, Yellow, Brown, Green, Red, Blue. List Price per 25-ft. carton \$0.30.....

**Belden Speaker Extension Cords**

Conductors are flexible tinned stranded copper served with cotton under Colorubber, one brown the other black, with an outer braid of mercerized cotton. Belden Bakelite Connector completely covers pin tips. The Colorubber Insulation prevents leakage.

No. 8861—10-ft. Cord with connector. List per cord \$0.80	<b>NET \$0.47</b>
No. 8862—20-ft. Cord with connector. List per cord \$1.00.....	<b>NET \$0.59</b>
No. 8863—40-ft. Cord with connector. List per cord \$1.80.....	<b>NET \$1.06</b>
No. 8866—20-ft. 4-Conductor Cord. List per carton \$1.75.....	<b>NET \$1.03</b>

**Belden Radio Replacement Cords**

No. 8870—5-ft. Speaker Cord, conductors flexible tinned stranded copper, pin tips on both ends, in carton. Per cord \$0.35.....

No. 8871—Spade tips on one end; otherwise same as No. 8870. Per cord \$0.35.....

**Miscellaneous Wire**

Tinned Copper Wire in coils:

No. 14 Solid Round, 100 ft., List \$1.00.....	<b>NET \$0.58</b>
No. 12 Solid Round, 100 ft., List \$1.25.....	<b>NET \$0.73</b>
No. 10 Solid Round, 100 ft., List \$1.50.....	<b>NET \$0.88</b>

Copper Braid:

Bare Pigtail, No. 24, per ft.....	<b>NET \$0.006</b>
Bare, 1/4", per ft.....	<b>NET \$0.05</b>
Bare, 1/2", per ft.....	<b>NET \$0.10</b>

Edgewise Wound Ribbon:

9 1/2" Diameter, per turn.....	<b>NET \$0.20</b>
5 1/4" Diameter, per turn.....	<b>NET \$0.15</b>

# Lincoln Electric Clocks

Lincoln Electric clocks are precision made—the best of materials used in their construction, keep accurate split second time and over one million users vouch for their satisfactory service. Each Lincoln Electric Clock carries a written 25 year guarantee.



## *Chippendale Model*

A beautiful Lincoln electric clock priced within the reach of all. Encased in veneered finely finished walnut. Six inch gold dial with embossed arabic numerals and gold bezel makes this model the favorite of all. Size: Height, 12 inches; width, 9 inches. Equipped with a six foot cord ready to operate.

No. 460 List, \$17.50 NET \$9.18

## *Moderne*

This model is well adapted for placement any place in the home. Jet black moulded novalite case with silver finished side pieces. Unusually attractive. Height, 7 1/4 inches; width, 3 1/2 inches. 3 1/2 inch silver dial.

No. 310 List, \$12.00 NET \$6.48



## *Electric Alarm*

Moderne style novalite moulded case of very popular design, walnut finish. Enchased gold dial with sweep second indicator. Alarm truly electric no winding required, 6 1/2 inches height and 4 1/2 inches wide. 3 1/2 inch dial.

No. 451 List, \$7.00 NET \$3.78

### Without Alarm

Same as above but without alarm

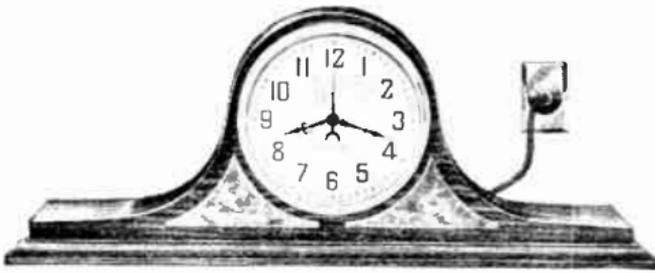
No. 450 List, \$6.00 NET \$3.24



Lincoln Electric Clocks Are Guaranteed

# Lincoln Electric Clocks

*Nationally Advertised*



## *Full Size Tambour*

Case of solid wood with rubbed mahogany finish, decorated with walnut overlays and gold bezel. Buff dial. Length, 18 inches; height, 7½ inches; 5½ inch dial.

No. 61 List, \$9.00

NET \$4.86

## *Small Tambour*

Description Case Wood; Finish—Walnut; Dimensions—Base, 9½ inches; Height, 5½ inches; Dial—Gilt; Indicator—Flasher Type; Lens—Round Crystal. Equipped with 6 foot Cord and Plug. To Operate on 60 Cycle A.C. 80-135 Volt

NET \$1.75

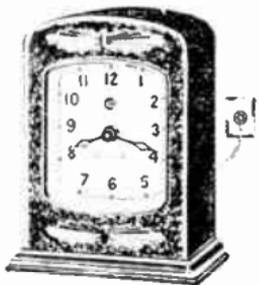
## *Small Size Tambour*

Solid wood case finished in mahogany, very popular radio clock. Length, 14 inches; height, 5½ inches and 3½ inch dial with gilt bezel.

No. 65 List, \$6.00

NET \$3.24

## *Chirad Special*



Truly a wonderful clock popular priced meets all the requirements a fine clock should. Beautiful design. Novalite case. 5¼ high, 4½ inches wide with square dial.

No. 480 List, \$2.50

NET \$1.50

## *Unique*

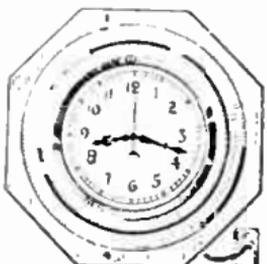
The popular coach clock you have heard so much about. Metal cast and finished in Roman gold. Height, 8 inches; width, 13 inches.

No. 330 List, \$10.00

NET \$5.40



## *Kitchen Clock*



Case of stamped metal 8 inches square with 5 inch dial, finished in both Green and Ivory.

No. 55 List, \$4.50

NET \$2.00

Lincoln Electric Clocks Are Fully Guaranteed

## Regarding Short Waves—A Word of Advice

We feel that we should know something of the short wave field after 22 years of amateur and experimental work besides our commercial contact with our trade.

We consider the short wave field an experimental one and yet the one from which there is to be had the greatest thrill. It is possible to hear foreign stations in this country and people are doing it every day. It is done by careful and intelligent listening. It is necessary to spend a great deal of time in tuning and to make careful record of where stations are found. It is also necessary to tune for the stations when they are likely to be on the air.

It is from this viewpoint that we sell short wave receivers and that is why we will not accept orders on a trial basis. We make no foolish claims and we wish to impress on our customers that you may or may not hear foreign stations with a receiver bought from us. If you wish we will tell you of people who are hearing foreign stations with receivers purchased from us.

We think that a patient fisherman will make a good short wave fan.

## New Ward-Leonard Time Delay Relay Type TDI-A

### GENERAL

The Ward Leonard Type TDI-A Midget Time Delay Relay is well adapted for any use requiring a small inexpensive time delay relay. Many applications such as those particularly concerned with household appliances and amateur radio control require some sort of electrically operated time delay relay. The Type TDI-A Midget construction, because of its small size and neat appearance seems to be the solution for a great number of these problems.

While this relay is small in size, having a base area only  $3\frac{1}{2}'' \times 4''$ , it incorporates quite a number of the standard features used on our larger power type relays.

List \$12.75 ..... NET \$7.50

### STANDARD FEATURES

1. A.C. or D.C. operation.
2. Positive action.
3. Time delay—15 to 60 seconds.
4. Special Bi-Metallic thermostatic control element.
5. Silver to silver contacts—rated at 4 amperes 110 volts A.C. and 1 ampere 110 volts D.C.
6. Bakelite insulating base.
7. All metal parts except silver contacts cadmium plated.
8. Enclosed in black japanned metal cover.
9. Back connected for panel mounting.
10. Small space required  $3\frac{1}{2}'' \times 4'' \times 2\frac{1}{2}''$  deep.

### OTHER CHARACTERISTICS

The Type TDI-A Midget Time Delay Relay is especially well adapted for radio use. It is small, neat in appearance, and is positive in its operation. The amateur who delights in making his own apparatus should find this relay not only in keeping with size and appearance but in price as well.

On special requests this relay can be made to operate on any voltage from 6 to 120 volts both A.C. and D.C. It can also be furnished for time delays anywhere between 1 second and 3 minutes, and on special orders can be front connected.

### DIRECTIONS FOR ORDERING

In placing orders please mention type of coil desired whether A.C. or D.C. and what voltage. Also mention time delay desired.

## The Miller Utility Sunlite

Designed with the famous Udezine feature it at once becomes the most flexible of all sun lamps and provides the best means of affording the essential Vitamin D. Five sunlites in one—and one to suit the needs of every requirement. A floor or table model or wall bracket as you require it—easy to change—no tools or wiring required. With one Sunlite you have all these combinations.

Price each ..... NET \$31.50

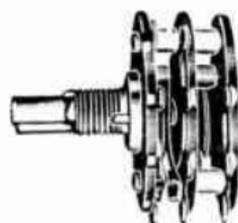
## Taylor Transmitting Tubes

### Fully Guaranteed Against Defects

Type 866 Rectifier Tube—Mercury vapor rectifier. Fil. volts 2.5, Fil. amps. 5 Vol. Peak plate current .6. Max. inverse peak volts 5000 UX standard base. Price each.....NET \$4.41

Type 210 Oscillator Tube—An excellent oscillator for amateur or similar use. Fil. volts 7.5, fil. amps. 1.5, plate volts 600. Plate ma. 35 (max.). Rated at 20 watts. Price each.....NET \$4.12

## Best Multipole Multicontact Switches

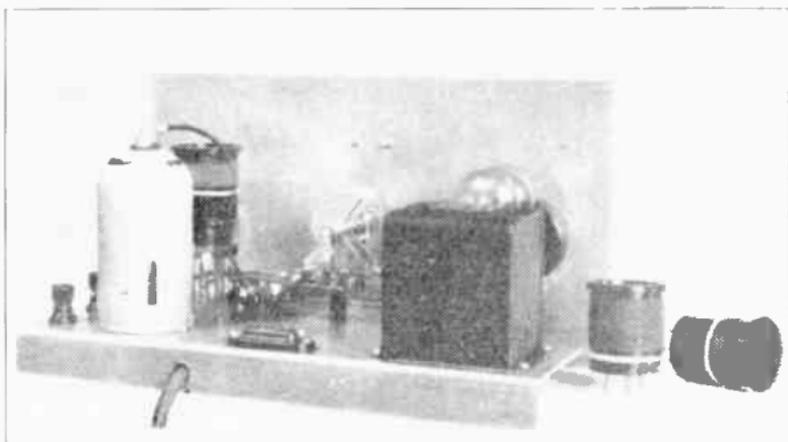


We can supply these excellent switches in any type from single pole two contacts to six pole nine contacts. We can also supply them in shorting and non-shorting types single pole four contacts to six pole nine contacts.

The Net Price on these switches ranges from \$0.44 to \$3.70.

(Special bulletin describing them may be had on request.)

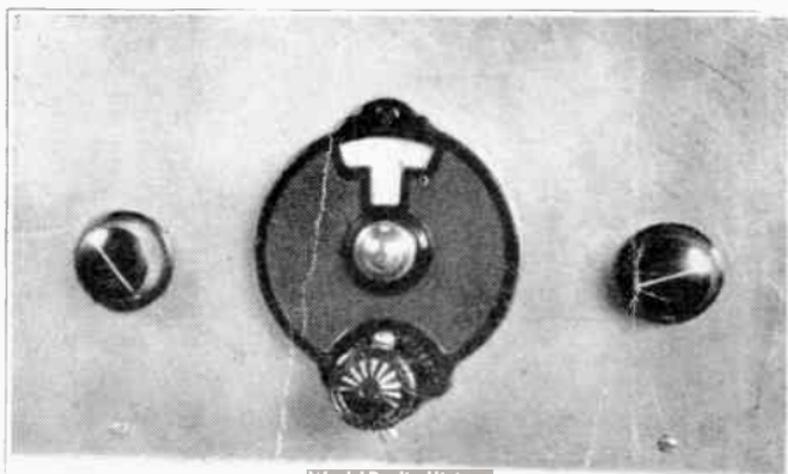
# Parts for QST (December 1930) Two Tube Short Wave "Ham" Receiver (Chi-Rad Type)



This receiver is justly in great favor with amateurs. It spreads the 20, 40 and 80 meter bands over 60 points on the dial. It is simple and therefore very efficient. Volume is just as good as that produced by some very expensive receivers. Ask your "Ham" friends.

## List of Parts Required for QST 2-Tube Short Wave Code Receiver (Chi-Rad Type)

	Net Each
1 CONDENSER—National EC-50 .....	\$ 2.06
1 RESISTOR—Variable Frost 100,000 ohm.....	1.18
1 DIAL—National Type "D" 200-0.....	1.47
1 COUPLER—National Audio S-101.....	3.24
1 SOCKET—Pilot No. 217.....	.20
2 SPACERS—Cardwell Metal 1 5/16 Inch.....	7c ea. .14
1 SWITCH—Pilot No. 44 Fil.....	.50
1 CONDENSER—Hammarlund EC-35.....	.29
1 SHIELD—Tube Hammarlund TS.....	.36
1 JACK—Twin Yaxley "Spenker".....	.17
1 GRIDLEAK—Lynch 10 meg. 1 watt pigtail.....	.29
1 RESISTOR—Lynch 1 watt 2000 ohm pigtail.....	.29
2 SOCKETS—Wafer Type UY EBY.....	15c ea. .30
1 RESISTOR—Pilot Center Tapped 10 ohm.....	.20
1 CHOKE COIL—RF National No. 92.....	.41
1 CONDENSER—By-Pass Flechtheim 250 Volt .5 mf..	.47
1 CONDENSER—By-Pass Flechtheim 250 Volt 1. mf..	.56
1 CONDENSER—By-Pass Sangamo .0001 mf 600 V....	.24
1 CONDENSER—By-Pass Sangamo .0002 mf 600 V....	.24
6 FEET WIRE—Belden, 7 Conductor.....	.36
25 FEET WIRE—Pushbak .....	.18
1 PAIR WASHERS—Insulating Yaxley.....	.03
1 PANEL AND BASEBOARD—Aluminum (Formed and drilled).....	2.50
3 COIL FORMS—SM No. 130-P.....	41c ea. 1.23
1/4 lb. No. 30 DCC MAGNET WIRE.....	.41
1/4 lb. No. 22 DSC MAGNET WIRE.....	.38
2 BINDING POSTS (ANT and GND).....	5c ea. .10
	\$17.80
1 TRANSFORMER FILAMENT—SM-249.....	2.94
	\$20.74

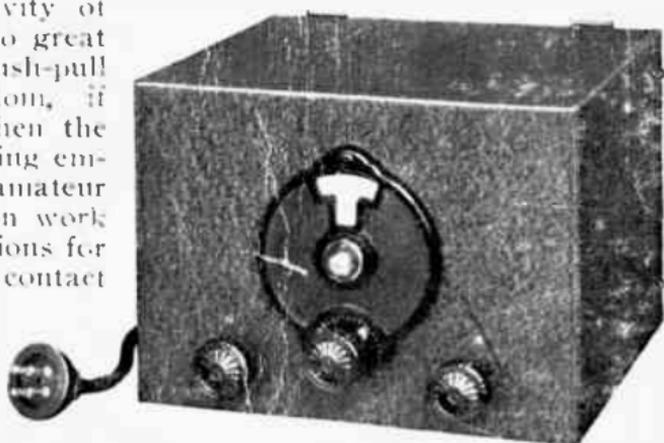


1931-2

# NATIONAL

*Double Screen Grid 3-Tube Thrill Box—  
Type SW3 AC and 6-Volt DC Models*

The sensitivity of the SW5 is so great that the push-pull stage is seldom, if ever, used when the receiver is being employed in amateur communication work or by expeditions for maintaining contact with their base stations. The SW3 Thrill Box employs the same circuit,



and all other essential features, as the famous SW5, except for a more compact layout and the elimination of the last or push-pull stage. It is designed especially for aircraft portable, and amateur communication use.

A highly desirable feature found only in this receiver is the calibrated volume control which thus serves as an audibility meter. As standard equipment, the SW3 amateur receiver is furnished with the three sets of band spread coils for the 20, 40 and 80 meter bands. For reception on other frequencies it is necessary to secure the additional coils listed under the SW5. Coils designed for either the SW3 or SW5 are interchangeable.

The AC model uses the new UY 235 variable MU tube in the RF and detector circuits and the UY 227 in the first audio circuit.

The DC model uses the new UY 236 and UY 237 6 volt low current tubes. This latter model can, therefore, be operated from a filament transformer and B batteries, or a filament transformer and B eliminator if desired, thus making it a universal AC or Battery Model. For strictly AC operation, however, the AC model in conjunction with the 5880 power unit is to be preferred.

## Complete Parts

ACSW3 NATIONAL, complete set of parts for 3-tube Short Wave Thrill Box with band spread coils—less tubes—wired by the Jackson Research Laboratories. List, \$55.00

Our Special Net Price . . . . . \$51.00

Note: The above price is for either AC or DC models.

POWER PACK for AC model. List, \$34.50.

Our Special Net Price, Power Pack and Tubes . . . \$53.00

When DC Battery model is desired, specify Catalog Symbol as DC SW3.

**NOTE:** The circuit employed in the NATIONAL Thrill Boxes, described above will give less background noise and a lower noise level than any other type of shortwave circuit. There is less cracking, less hum, and less interference with reception of broadcasts or signals.

R. F. transformer coil forms are molded of "R-39," the new low-loss material developed by the Radio Frequency Laboratories especially for the NATIONAL COMPANY.