NATIONAL COMPANY, Inc., Malden, Mass.

the finest amateur receiver National has ever built!

THE NEW *DIRECT READING* HRO-50

Now, National presents a great new HRO receiver after more than three years of designing, development and testing. Retaining all the world-famous, performance-proved HRO features, this superb receiver — the finest National has ever made — now incorporates no less than 14 advanced-design innovations. Exhaustive comparative tests indicate the new HRO-50, by far the most modern and versatile in its field, will set an entirely new standard of performance for communication receivers.

14 ALL NEW FEATURES

1. Direct frequency reading linear scale with a single range in view at a time. 2. Provisions for using 100/1000 kcs. crystal calibrator unit, switched from panel. 3. Variable front-of-panel antenna trimmer. 4. Built-in power supply with heat resistant barrier. 5. Front-of-panel oscillator compensation control. 6. B.F.O. switch separated from B.F.O. frequency control. 7. Provision for incorporation of NFM adapter inside receiver, switched from front panel. 8. Dimmer control for dial and meter illumination. 9. Miniature tubes in front end and high frequency oscillator. 10. Speaker matching transformer built into receiver with 8 and 500 -ohm output terminals. 11. High frequency and beat frequency oscillator circuits not disabled when receiver in "send" position. 12. High-fidelity push-pull audio amplifier, 8 watts undistorted output. 13. Tip jack for phono input. 14. Accessory socket for Select-o-Ject (see page 4).

Tube Complement: 1st RF, 6BA6; 2nd RF, 6BA6; Mixer, 6BE6; HF oscillator 6C4; voltage regulator OB2; 1st I.F., 6K7; 2nd I.F., 6K7; Det./ AVC, 6H6; B.F. Oscillator, 6J7; Noise Limiter, 6H6; 1st Audio, 6SJ7; phase inverter/ "S"-meter amp. 6SN7; Push-pull audio, 2-6V6; Rectifier, 5V4G; accessory crystal calibrator, 6AQ5; NFM adapter I.F. amplifier, 6SK7, Ratio detector, 6H6. Freq. range: 50 kc.-420 kc., 480 kc.-35 mc Coils AA, B, C, and D furnished covering standard amateur 160-10 meter bands.

Dimensions: 16½" deep x 19¾" wide x 10⅛" high.

Price: $335.00 (less speaker). 10" spkr. $14.00.

Accessories: 100-1000 kc. calibrator, $19.95; NFM-50 adapter $16.95; SOJ-3, $24.95.

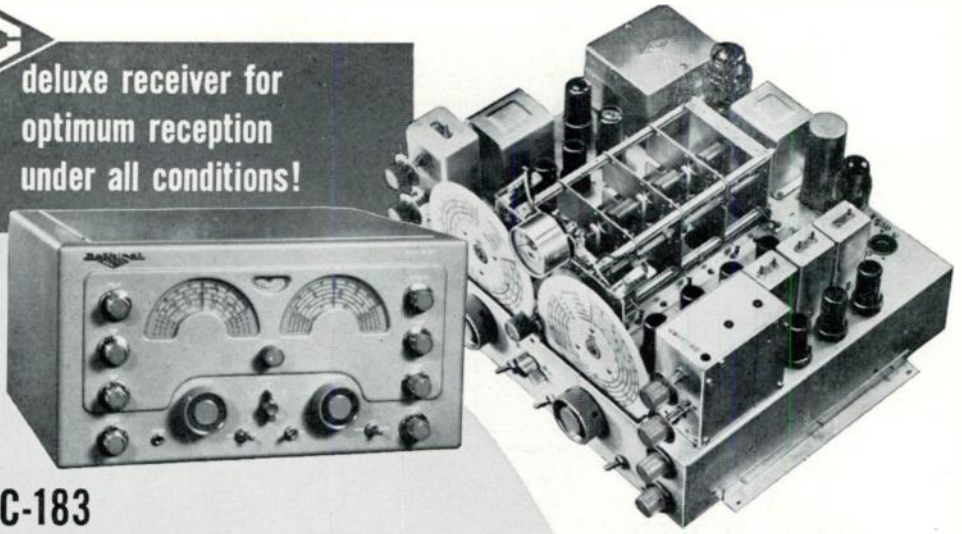
National

© EST 1914

NATIONAL COMPANY, Inc.

MALDEN, MASSACHUSETTS

deluxe receiver for optimum reception under all conditions!



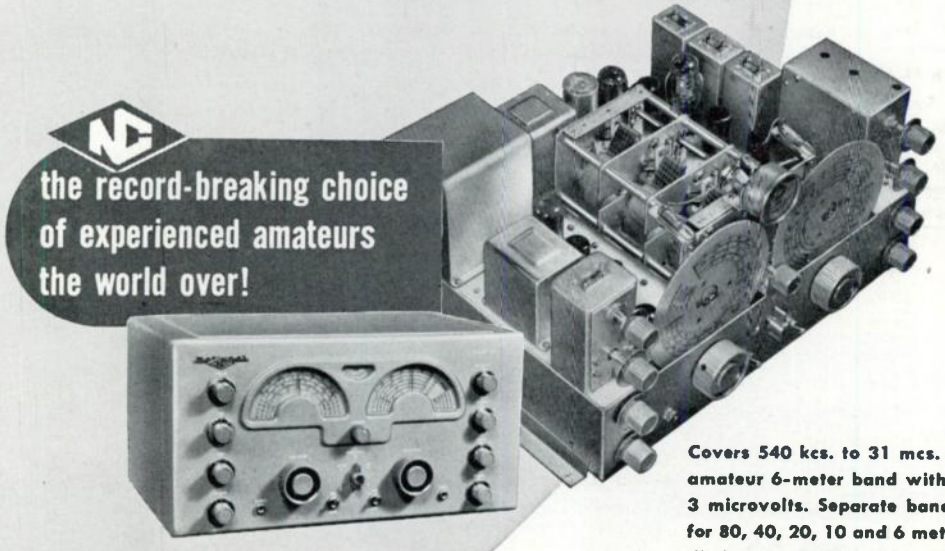
NC-183

The flawless design and superb construction of this professional communication receiver make possible amazing performance even under the worst operating conditions. If it's possible to receive a signal, the NC-183 will bring it in!

Continuous tuning from 540 kcs to 31 mcs plus the 48 to 56 mcs band for 6-meter reception. Two tuned R.F. stages provide extremely high sensitivity and image rejection. Voltage regulated oscillator and BFO assure minimum drift on phone and CW. Separate main tuning and bandspread dials calibrated for tuning ease. Main dial covers range in five bands. Bandspread dial calibrated for amateur 80, 40, 20, 11-10 and 6-meter bands. Bandspread usable over entire range. Six-position crystal filter provides any selectivity required from very broad to extremely sharp for cutting through adjacent channel interference. New-type noise limiter effectively minimizes electrical interference. High fidelity push-pull audio output with phono input and front-of-panel RADIO-PHONO switch. Accessory socket for NFM adaptor or other unit, such as crystal calibrator. Uses 2-6SG7 R.F.; 16SA7 1st det.; 1-6J5 osc.; 2-6SG7 I. F.; 1-6H6 2nd det.; 1-6SJ7 B.F.O.; 1-6AC7 A.V.C.; 1-6H6 noise limiter; 1-6SJ7 A.F.; 1-6J5 phase inv.; 2-6V6GT aud. out.; 1-VR-150 volt. reg.; 1-5V4G rect. Accessory socket for Select-o-Ject (see page 4).

$268 net*
(Less speaker)

the record-breaking choice of experienced amateurs the world over!



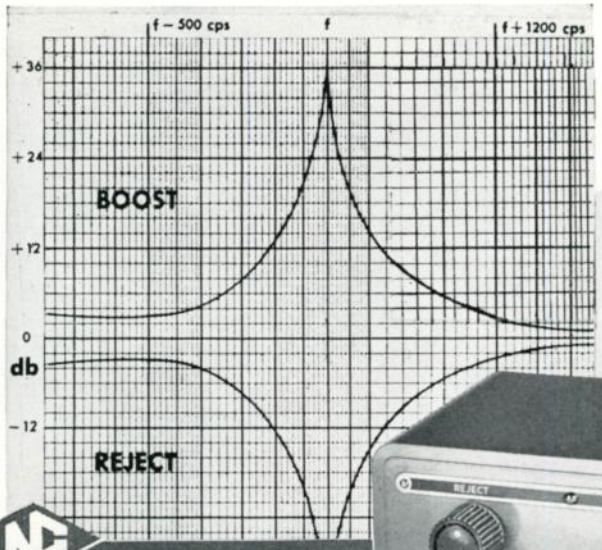
NC-173

The *only* moderate-priced receiver built to National's world-famous standards of sound construction and truly professional performance! Thousands of these sets now in operation attest its popularity and performance.

Covers 540 kcs. to 31 mcs. plus 48 to 56 mcs. for amateur 6-meter band with average sensitivity of 3 microvolts. Separate bandspread dial calibrated for 80, 40, 20, 10 and 6 meter bands. New double-diode noise limiter with variable threshold effective on both phone and CW. Separate AVC usable on phone and CW. New wide-range, 6-position crystal filter, S-meter, antenna trimmer for maximum performance with any antenna, phono input. 1-6SG7 tuned R.F.; 1-6SA7 1st det.; 1-6J5 osc.; 2-6SG7 I.F.; 1-6H6 2nd det. — AVC; 1-6AC7, AVC; 1-6SJ7 BFO; 1-6H6 noise limiter; 1-6SJ7 audio; 1-6v6 output; 1-VR150 volt. reg.; 5Y3GT/G rect.

$199.50 net*
(less speaker)

**Slightly higher west of the Rockies.*



amazingly versatile new audio filter!

SELECT-O-JECT*

BOOSTS 38 db! REJECTS 38 db! ANY SELECTED FREQUENCY!

SOJ-1 for all receivers
SOJ-2 wired for HRO-50, NC183 or NC-173
$24.95 net*

* Patent applied for. Manufactured under exclusive agreement with Dr. O. G. Villard, Jr., Engineering Dept., Stanford University.

Set SELECT-O-JECT for REJECT, tune by ear and — presto! — an annoying heterodyne or other unwanted signal practically disappears without materially affecting the wanted signal! Set SELECT-O-JECT for BOOST, tune — and — presto! — a selected signal rises above background noise and interfering signals! Can also be used as audio oscillator having over 100 to 1 frequency range with a single rotation of the tuning knob! Excellent as a code practice oscillator! Effective on any frequency from 80 c.p.s. to 9,000 c.p.s.! This is the amazing circuit described in the November 1949 issue of QST, page 11. See your National dealer for details.

outperforms receivers costing twice as much!

NC-57

Built with all the engineering know-how and craftsmanship of National's more expensive receivers, the NC-57 combines features never found before at this low price! The set used by a recent winner of a DX contest sponsored by the internationally famous Shortwave Club of London. Both phone and CW reception over entire frequency spectrum from 550 kcs to 55 mcs in 5 bands. Built-in power supply and PM speaker — nothing else to buy. Voltage stabilized oscillator circuit keeps signal steady regardless of line voltage fluctuations. Automatic threshold noise limiter minimizes interference due to ignition noise, static, etc.

Controls include Main Tuning, Bandspread Tuning, Band Switch, RF Gain, RF Trimmer, BFO-MVC-AVC, ANL Switch, AF Gain, BFO Pitch, Tone Control and On-Off Switch.

Superhet uses: 6SG7 RF amp., 6SB7Y conv., 2-6SG7 IF amp., 6H6 Det., AVC, ANL, 6SN7 Audio amp., BFO, 6V6GT Audio amp., 5Y3GT rect., VR-150 voltage rect. Antenna terminals for single, double or co-ax antenna lead-in. Provision made for connecting external "S" meter plus other accessories. 105-120 V, 50-60 cyc. AC. Gray enamel finish. 16½" x 11¼" x 8¼". Wt. 33 lbs.

$89.50 net*

most popular and versatile VHF design in the field!

HFS

Here is the perfect answer to the need for compact, dependable and versatile VHF reception. Can be used as a complete receiver in itself or as a VHF converter with any receiver tuning to 10.7 mcs. As converter, makes features of connected receiver usable on VHF. Covers entire high frequency spectrum from 27 mcs to 250 mcs — receivesA M, FM and CW with amazing selectivity and sensitivity.

Two-gang Main Tuning Capacitor, panel-controlled Antenna Trimmer Capacitor and 6 sets of plug-in coils tune the receiver in six bands. Power furnished by separate unit. Power supply listed below is excellent where 115-230 V, 50-60 cycle AC is available. Also operates with combination of "B," and storage batteries or 6 volt vibrator-type supply. Wt. 25 lbs.

$142.00* net

Power Supply, 15 lbs., $22.43* net

the ideal receiver for shipboard use or shortwave listening!

NC-57M

Combining versatility, dependability, exceptional sensitivity, and extended frequency range, the NC-57M is ideal as a personal receiver aboard ship or in the shortwave listener's home. Offers continuous frequency range from 540 kcs to 35 mcs plus 200 kcs to 400 kcs. Receives voice, music, and CW code. Bandspread action on any desired frequency assures optimum selectivity. Covers U.S. and European broadcast bands plus shortwave. Scales are marked to show location of such features as amateur, police and foreign frequencies. Voltage regulated oscillator assures excellent stability, regardless of line changes. Built-in power supply for operation from 110/120 volts, either AC or DC. 220-volt operation possible by insertion of external ballast resistor in power plug. Tubes include 6SG7 RF, 6SB7-Y conv.; 6SG7 1st IF; 6SG7 2nd IF; 6H6 2nd det., AVC, ANL; 6SL7 GT/G 1st audio, CWO; 25L6GT aud. out.; OA3/VR-75 volt. reg.; 25Z6GT rect.

$89.50* net

feature for feature — biggest receiver dollar value!

NC-33

Now at last you can get a top-notch communication receiver designed and built by the world-famous National Company at a price that compares favorably with the lowest in the market! Packed with features found in no other receiver at the price!

Four tuning bands provide continuous coverage from 500 KC to 35 MC. Main tuning and bandspread capacities connected in parallel on all bands for bandspread operation at any frequency within tuning range. Amateur, police and foreign broadcast bands clearly identified.

Other big set features include: Automatic Noise Limiter, CW oscillator and pitch control for adjustment of beat note, and Send/Receive Switch. Output to 5" speaker or phone jack which cuts out built-in speaker when headphones are in use. Tunes international SOS frequency. Front-panel mounted controls include: Main tuning, band selector switch, beat oscillator pitch control, code-phone switch, noise limiter switch, and audio gain.

New superhet circuit uses latest type high efficiency tubes. 105-125 V, 50-60 cycles AC or DC.

$57.50* net

Slightly higher west of the Rockies.

FOR COMPLETE INFORMATION ON INDIVIDUAL RECEIVERS WRITE

NATIONAL COMPANY INC.

61 SHERMAN ST., MALDEN, MASS.

POPULAR National COMPONENTS

FWG **Net $.60**
A Victron terminal strip for high frequency use. The binding posts take banana plugs at the top, and grip wires through hole at the bottom, simultaneously, if desired.

FWH **Net $.66**
The insulators of this terminal assembly are molded R-39 and have serrated bosses that allow the thinnest panel to be gripped firmly, and yet have ample shoulders. Binding posts same as FWG above.

FWJ **Net $.54**
This assembly uses the same insulators as the FWH above, but has jacks. When used with the FWF plug (below), there is no exposed metal when the plug is in place.

FWF **Net $.70**
This molded R-39 plug has two banana plugs on ¾" centers and fits FWG, FWH or FWJ above. Leads may be brought out through the top or side.

FWA, Post Net, each $.20
Brass Nickel plated

FWE, Jack Net, each $.15
Brass Nickel Plated

BWA (not illustrated)
Net $.10
Standard banana plug, silver plated to reduce contact resistance in r.f. circuits.

BWE (not illustrated)
Net $.15
Matching jack for BWA, silver plated.

FWC, Insulator
Net, per pair $.24
R-39 Insulation.

FWB, Insulator
Net, each $.15
Polystyrene insulation.

XS-6 **Net, each $.12**
A low-loss steatite bushing for ½" holes. Passes 6-32 screw.

XP-6 **Net, box of ten $.51**
Same as above but polystyrene.

TPB **Net, per dozen $.75**
A threaded polystyrene bushing with removable .093 conductor moulded in, ¼" diam., 32 thread.

XS-7, (⅜" Hole) Net $.36
XS-8, (½" Hole) Net $.48
Steatite bushings. Prices include male and female bushings with metal fittings.

XS-1, (1" Hole) Net $.72
XS-2, (1½" Hole) Net $.81
Prices listed are per pair, including metal fittings. Insulation steatite.

AA-3 **Net $.36**
A low-loss steatite spreader for 6 inch line spacing. (600 ohms impedance with No. 12 wire.)

AA-5 **Net $.30**
A low-loss steatite aircraft-type strain insulator.

AA-6 **Net $.54**
A general purpose strain insulator of low-loss steatite.

GS-1, ½" x 1⅜" Net $.24
GS-2, ½" x 2⅞" Net $.30
GS-3, ¾" x 2⅞" Net $.60
GS-4, ¾" x 4⅞" Net $.75

GS-4A, ¾" x 6⅞"
Net $1.05
Cylindrical low-loss steatite standoff insulators with nickel plated caps and bases.

GSJ, (not illustrated)
Net $.10
A special nickel plated jack top threaded to fit the ¾" diameter insulators GS-3, GS-4 & GS-4A.

GS-10, ¾" high
Net, box of ten $.90

GS-10S (not illustrated) but same as GS-10 except includes threaded stud in top end. **Net, box of ten $1.00**

GS-5, 1¼" high Net $.30
GS-6, 2" high Net $.42
GS-7, 3" high Net $.75

These cone type standoff insulators are of low loss steatite. They are molded with a tapped hole in each end for mounting as follows:

GS-5, 8-32 tap 7/16" deep; GS-6 & GS-7, 10-24 tap 11/16" deep; GS-10, 6-32 tap ¼" deep and GS-10S as noted above.

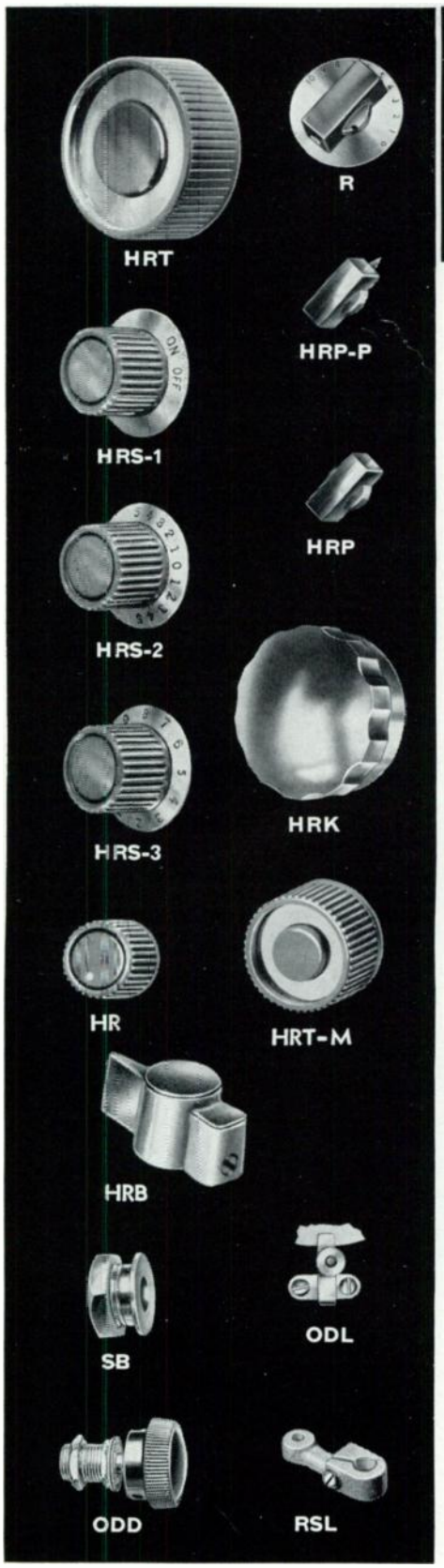
GS-8, with terminal Net $.54
GS-9, with jack Net $.75
These low-loss steatite standoff Insulators are also useful as lead-through bushings.

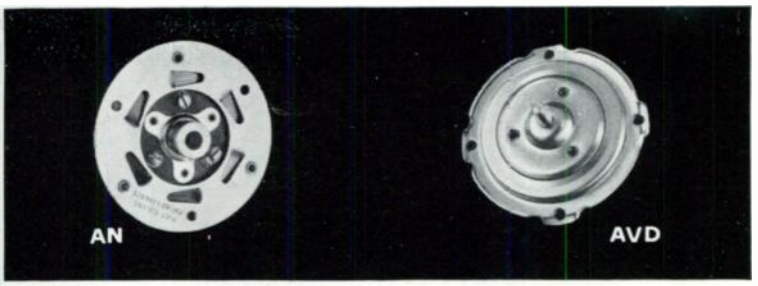
XS-3, (2¾" hole) Net $3.60
XS-4, (3¾" hole) Net $4.35
Prices are per pair and include nickel plated spindles, lugs and hardware. These low-loss steatite bowls are ideal for lead-in purposes at high voltages.

XS-5, Without Fittings
Net, each $ 4.95

XS-5F, With Fittings
Net, per pair $10.20
These big low-loss bowls have an extremely long leakage path and a 5¼" flange for bolting in place. Insulation steatite. Fittings include nickel plated brass spindles, lugs, nuts and washers.

POPULAR National COMPONENTS





HRT (gray or black) **Net $.75**

The HRT knob is 2⅛" in dia. and fits ¼" shafts. This knob has a chrome appearance circle and combined with the HRS series shown below gives the new look to panel layouts.

HRS (gray or black) **Net $.50**

The HRS series knobs are a popular easy to grip knob. They are molded of high quality plastic and have 1⅜" dia. chrome plated bevel skirts fit ¼" shafts available in the following scales:

HRS-1	ON-OFF	through 30°
HRS-2	5-0-5	through 180°
HRS-3	0-10	through 300°
HRS-4		Single etched line

HR (gray or black) **Net $.30**

An HRS type knob without the chrome plated skirt but with a white dot for spotting relative control settings.

HRB **Net $.45**

Ideal for bandswitching or other applications where a switch is turned to several index positions, the new HRB lever knob has just the right feel — a bright zinc alloy die casting.

SB **Net $.18**

A nickel plated brass bushing ½" dia. (Fits ¼" shaft).

ODL **Net $.33**

A locking device which clamps the rim of O, K, L and M Dials. Brass, nickel plated.

ODD **Net $.42**

Vernier pinch drive for O, L, or other plain dials.

AN Vernier Mechanism Net $1.80

A vernier mechanism ratio 5-1 has an insulated output shaft coupling for ¼" shafts. Drive Shaft fits 3/16" knob.

AVD Vernier Mechanism Net $1.65

Similar to AN-Output shaft coupling is non insulated.
For commercial uses many variations available. Write for further particulars.

R **Net $ .60**

This small dial has a 1⅝" dia. scale calibrated 0-10 in 180° for increased reading with clockwise rotation. Black bakelite knob. Fits ¼" shaft.

HRP-P **Net $ .24**

Black bakelite knob 1¼" long and ½" wide. Equipped with pointer. Especially suitable for use on wafer and other rotary switches on laboratory equipment and the like. (Fits ¼" shaft).

HRP **Net $ .18**

The type HRP knob has no pointer but is otherwise the same as the knob above. Recommended for uncalibrated or hard-tuning controls. (Fits ¼" shaft).

HRK **Net $ .57**

Black bakelite knob 2⅜" dial — extremely rugged. This is the knob used on National type O and type L dials.

HRT-M **Net $ .50**

This is a smaller version of the HRT and was designed originally for use on the NC-57 Receiver — now available in choice of gray or black — is 1-7/16" in diameter.

POPULAR National COMPONENTS

N Dial **Net $4.50**

AD Dial **Net $3.00**

The four-inch N and AD Dials have engine divided and die stamped scales respectively. The N Dial has a decimal vernier; the AD Dial employs a pointer. The planetary drive has a ratio of 5 to 1, and is contained within the body of the dial. 2, 3, 4, 5 or blank scale. Fits 1/4" shaft. **Specify scale.**

B Dial **Net $2.70**

"Velvet Vernier" Dial, Type B, has a compact veriable ratio 6 to 1 min., 20 to 1 max. drive that is smooth and trouble free. The case is black bakelite. 1 or 5 scale. 4" dia. Fits 1/4" shaft. **Specify scale.**

BM Dial **Net $2.10**

The BM Dial is a smaller version of the B for use where space is limited. The drive ratio is fixed. Although small in size, the BM Dial has the same smooth action as the larger units. 1 or 5 scale. 3" dia. Fits 1/4" shaft. **Specify scale.**

AM Dial **Net $2.25**

The original "Velvet Vernier" mechanism in a metal skirted dial 3" in dia. ratio 5 to 1. It is available with 2, 3, 4, 5 or 6 scale and fits 1/4" shaft.

P Dial **Net $1.00**

The new P dial is the same as the AM except direct drive.

Type O, 3 1/2" dia., scale 2, with HRK knob, fits 1/4" shafts. **Net $1.00**

Type L, same as O except 5" dia., scale 2 only. **Net $1.95**

Type K, same as O except less knob, complete with ODD vernier drive, scale 2 only. **Net $1.50**

Type M, same as K except 5" dia., scale 2 only. **Net $2.25**

The dials at the right are for individual calibration: all four employ the noted 5:1 drive ratio Velvet Vernier mechanism and are of excellent quality.

MCN Dial **Net $2.70**

The MCN dial has been scaled down to lend itself ideally to mobile installations and small converters and tuners. It may also be mounted on the standard 3 1/2" rack panel where such mounting may be desirable. The dial provides three calibrating scales and a 0-100 logging scale. On the rear side of the dial, the mechanism extends 1/4" below the dial frame. 2 3/4" H. x 3 7/8" W.

SCN Dial **Net $3.00**

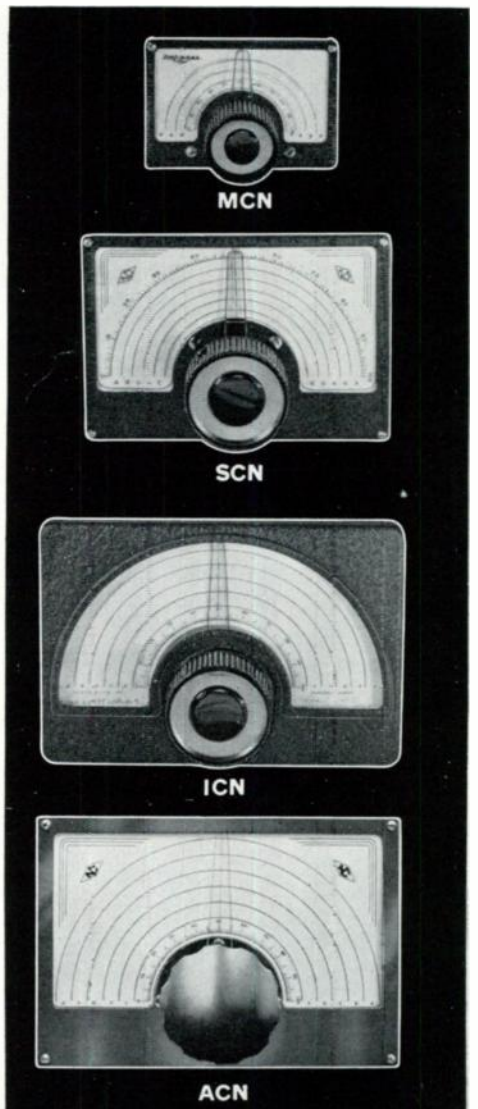
The SCN dial provides the same dial scales as the ACN dial but in a reduced size. It is used where economy of panel-mounting space is desirable and where a smaller dial would be out of proportion with the size of the panel. 4-7/16" H. x 6 1/4" W.

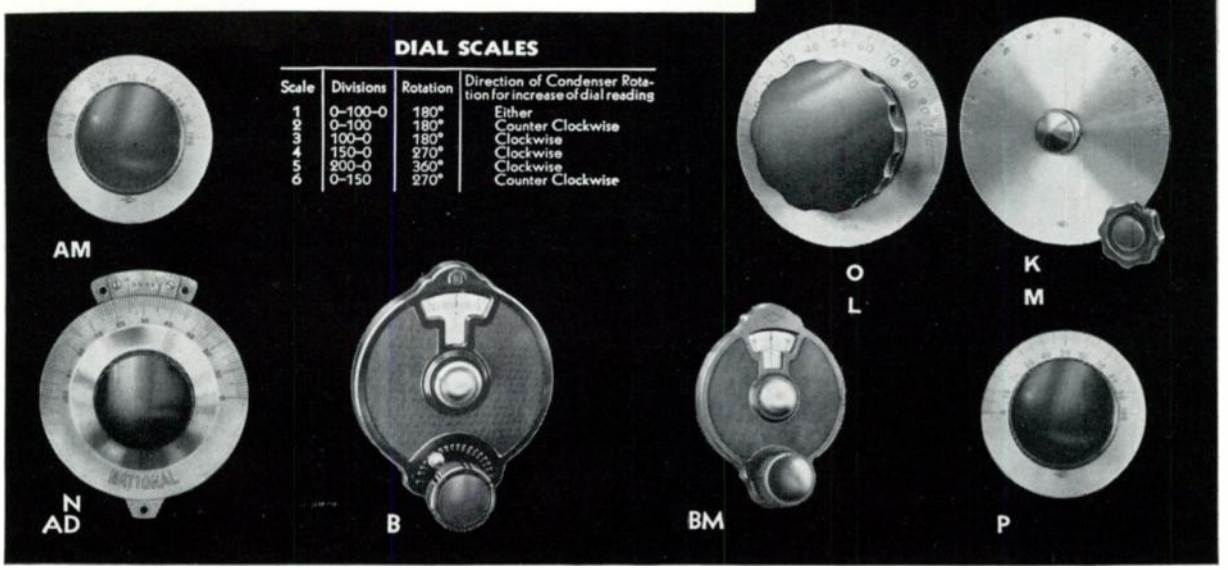
ICN Dial **Net $6.00**

The ICN dial meets those hundreds of requests from amateurs the world over for an illuminated ACN dial. Two dial lights mounted on the top corners of the dial provide efficient and even illumination on all bands. The dial window has been blanked out in semi-circular shape to prevent shadow casting. Dial scales are the same as those used on the ACN dial. 5 1/8" H. x 7 1/4" W.

ACN Dial **Net $3.30**

The ACN is the original of this type dial, a National design for the benefit of experimenters who "build their own" and desire direct calibration 5" H. x 7 1/4" W.





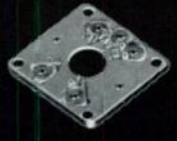
POPULAR National COMPONENTS


XLA


XLA-S


XLA-C


XCA


XMA


XOA-7 (Axial)
XOA-C-7


XOR-7 (Radial)
XOR-C-7


XOA-C-9

XLA **Net $.99**
A low-loss socket for the 6F4 and 950 series acorn tubes for frequencies as high as 600 Mc. Conventional by-pass condensers may be compactly mounted between the contact terminals and the chassis. Low contact resistance, short and direct leads and low and constant inductance are features.

XLA-S **Net $.36**
An internal shield fitting the XLA socket and suitable for tubes such as the 956.

XLA-C **Net $.36**
This miniature by-pass condenser may be mounted inside the socket, directly below the contact. Capacities of 50 or 100 mmf. available.

XCA **Net $.99**
A low-loss steatite socket for acorn triodes. Pin grips are designed to accept tube prongs with minimum strain but exert maximum pressure when seated.

XMA **Net $1.32**
For pentode acorn tubes, this socket has built-in by-pass condensers. The base is a copper plate.

XOA-7 (mica-filled bakelite) **Net $.50**

XOA-C-7 (ceramic) **Net $.50**

XOR-7 (mica-filled bakelite) **Net $.50**

XOR-C-7 (ceramic) **Net $.50**
These high quality sockets for the 7 pin miniature tubes have silver plated beryllium copper contacts that correctly grip the tube pins close to the base of the tube to provide the short leads and low inductance so necessary in ultra-high frequency design.
A novel feature of these new sockets is the interchangeability of the contacts, which are easily removed for replacement. This permits the use of a mixture of axial (XOA) and radial (XOR) type contacts in the same socket to obtain the shortest possible leads, or minimum size in tight places. The above sockets all mount with two 4-40 screws on .875" centers. Chassis cutout should be ¾" dia. Shields for use with these sockets are on page 21.

XOA-C-9 (ceramic) **Net $.57**

XOR-C-9 (ceramic) **Net $.57**
These sockets are for the new 9-pin miniature tubes. The XOR-C-9 (not illustrated) has radial contacts. Both have all of the features described above for the 7-pin types and they also mount with 4-40 screws. Mounting center dimension is 1⅛", the chassis cutout should be 13/16" dia.

CIR SERIES SOCKETS

Any Type **Net $.30**
Always a popular National component, type CIR Sockets feature low-loss steatite insulation, a contact that grips the tube prong for its entire length, and a metal ring for six position mounting.
XC-4, 5, 6, 7S, 7L and CIR-4, 5, 6, 7S and 7L all have 1-27/32" mounting centers. CIR-8E has slotted holes in plate but will mount on 1-27/32" center. CIR-8 and XC-8 have 1½" mounting centers.

XC SERIES SOCKETS

XC-4 ..... **Net $.36**
XC-5 ..... **Net $.39**
XC-6 ..... **Net $.42**
XC-7S ..... **Net $.45**
XC-7L ..... **Net $.45**
XC-8 ..... **Net $.39**
National wafer sockets have exceptionally good contacts with high current capacity together with low loss steatite insulation. All types have a locating groove to make tube insertion easy. The XC-6 is ideal for use with AR-17 coils shown on page 24.

HX-29 **Net $.81**
A low-loss wafer socket with steatite insulation for the popular 829 and 832 tubes.

JX-51 **Net $.81**
A low loss steatite wafer socket for the 813 and other tubes having the Giant 7-pin base. (not illustrated)

XM-10 **Net $.90**
A heavy duty metal shell socket for tubes having the XU 4-pin base.

XM-50 **Net $1.20**
(see XM-10 for style)
A heavy duty metal shell socket for tubes having the Jumbo 4-pin base ("fifty watters").

HX-100 **Net $.99**
A low loss wafer socket suitable for the type 4-125-A, 4-250-A and other tubes using the Giant 5-pin base. Shield grounding clips are supplied which mount on the chassis with the socket mounting screws to ground the tube shield at three points. Air holes are provided in the socket to permit forced air cooling.

HX-100S **Net $1.65**
Same as above with standoff insulators as illustrated.

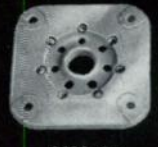

CIR-5


CIR-8


CIR-8E


XC-5

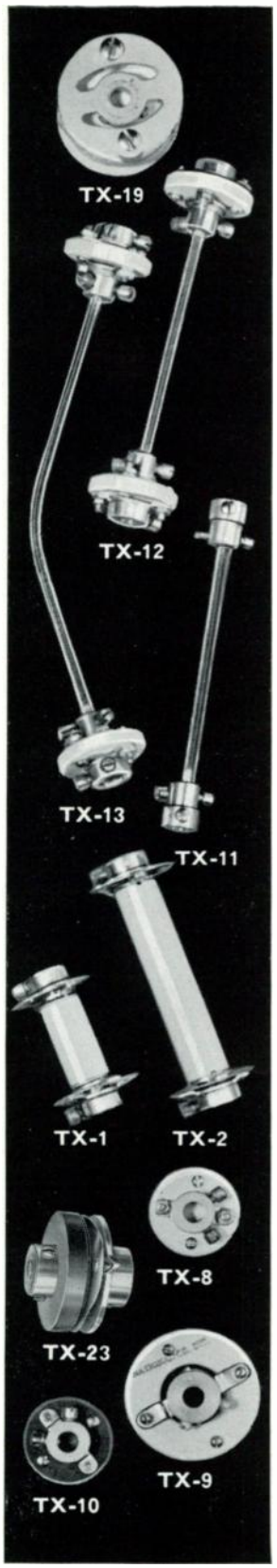

XC-8


HX-29


XM-10


HX-100S

POPULAR National COMPONENTS



SHAFT COUPLINGS

TX-19 **Net $1.25**
A steatite insulated flexible coupling for ¼" shafts. Conservatively rated at 5000 volts peak. Diameter 1⅜", length 1". Length and flashover voltage can be increased by turning collars outboard.

TX-11 **Net $.42**
The flexible shaft of this coupling connects shafts at angles up to 90 degrees, and eliminates misalignment problems. Fits ¼" shafts. Length 4¼".

TX-12, Length 4⅜" **Net $.90**
TX-13, Length 7⅛" **Net $1.05**
These couplings use flexible shafting like the TX-11 above, but are also provided with steatite insulators at each end.

TX-1, Leakage path 1" **Net $.65**
TX-2, Leakage path 2½" **Net $.75**
Flexible couplings with glazed steatite insulation which fit ¼" shafts.

TX-23 **Net $1.35**
A deluxe insulated flexible coupling designed for coupling ¼" shafts. Will handle a maximum radial misalignment of 1/16" also 2 degrees maximum angular misalignment.

TX-24 **Net $1.35**
Same as TX-23, shaft size 5/32".

TX-25 **Net $1.35**
Same as TX-23, non-insulated.

TX-8 **Net $.60**
A non-flexible rigid coupling with steatite insulation. 1" diam. Fits ¼" shaft.

TX-10 **Net $.40**
A very compact insulated coupling free from backlash. Insulation is canvas bakelite. 1-1/16" diam. Fits ¼" shaft.

TX-10F (Not illustrated) **Net $.45**
A new version of the TX-10 which employs thin canvas bakelite strips for flexibility.

TX-22 (Not illustrated) **Net $.40**
A non-insulated coupling identical to TX-10 except of all metal construction. Makes good electrical connection between coupled shafts.

TX-9 **Net $.75**
This small insulated flexible coupling provides high electrical efficiency when used to isolate circuits. Insulation is steatite. 1⅝" diam. Fits ¼" shaft.

TX-21 (Not illustrated) **Net $.40**
Similar to TX-10 except 13/16" long and couples ¼" shaft to 5/32" shaft.

SAFETY GRID AND PLATE CAPS

SPP-9 **Net $.21**
Ceramic insulation. Fits 9/16" diameter.

SPP-3 **Net $.21**
Ceramic insulation. Fits ⅜" diameter. National Safety Grid and Plate Caps have a ceramic body which offers protection against accidental contact with high voltage caps on tubes.

GRID AND PLATE GRIPS

Type 12, for 9/16" Caps	**Net $.06**
Type 24, for ⅜" Caps	**Net $.03**
Type 8, for ¼" Caps	**Net $.03**

National Grid and Plate Grips provide a secure and positive contact with the tube cap and yet are released easily by a slight pressure on the ear.

RIGHT ANGLE DRIVES

ACD-1 ..... **Net $3.75**
ACD-2 ..... **Net $3.90**
ACD-3 ..... **Net $3.90**

These sturdy drives were developed for use with the new National AMT condensers (see page 26). They are as compact as the torque requirements will allow and have nickel plated cast frames and bronze gears which operate smoothly without chatter or binding. The ACD-1 has 32 pitch gears and a ¼" dia. dial shaft and drives ¼" shafts. ACD-2 has 24 pitch gears (for heavier service) and ¼" dia. shaft driving ¼" shafts. ACD-3 is the same as ACD-2 except that it drives ⅜" diameter shafts.

HEAT RADIATING CAPS. Designed to government specifications. Aluminum contact fingers are integral with radiating fins. Tension on fingers maintained by an encircling steel spring. 6/32" tapped center hole for attaching grid ribbon or other lead. Crimped beryllium copper, silver-plated grid ribbon 3¼" long, supplied with each cap. Special lengths can be supplied to manufacturers in quantities.

Type No.	Price	Hole Size For Lead or Cap	Heat Radiating Connectors To Fit the Following Tubes
HC-26	36¢	.052	3C24-24-24G-25T-27
HC-27	36¢	.062	UH50-HK24-304B-892B-832A-834
HC-28	36¢	.072	35T-35TG-75TH-HK254-HK257B-484-8001
HC-29	50¢	.125	HK57-152TH
HC-30	50¢	.375	4-125A-150TH-2-150D-250R-250TH-250TL-420A-802-803-804-807-808 Grid-814-815-828
HC-31	60¢	.125	304TH-304TL
HC-32	60¢	.570	ZB60-HF60-HF100-111H-211H-203H-HF175-HF300 Grid-100R-HK357C-450TH-454-750TH-805-806-808-809-810-811-812-813-828-833-866-854-1500T-2000T-1054-5331-5332-8000-8003-8005
HC-33	80¢	.810	WL468-WL463-WL460-HF200-HF201-HF300

POPULAR National COMPONENTS

R-100 .....**Net $ .35**
R-100U .....**Net $ .42**
R-100S .....**Net $ .42**
R-100ST .....**Net $ .40**

These RF chokes are identical electrically, but differ in mounting provisions. The R-100 employs pigtail leads; the R-100U has pigtail leads and a removable stand-off insulator; the R-100S has cotter-pin lug terminals and a non-removable stand-off insulator; the R-100ST has a 6-32 threaded stud at each end. These chokes are available in 2.5, 5 and 10 millihenry sizes and are rated at 125 milliamperes.

R-33 **Net $ .35**

The R-33 series chokes are 2-section RF chokes available in 10, 50, 100 and 750 microhenry sizes. Also available in this series is a single layer solenoid choke of 1 microhenry inductance. All are rated at 33 milliamperes. The chokes are wound on a 5/8" long form and range in diameter up to 5/16" maximum.

R-50 **Net $ .35**
R-50-1 **Net $ .53**

The R-50 series chokes are 3 and 4-section RF chokes and available in 0.5, 1, 2.5, and 10 millihenry sizes. They are rated at 50 milliamperes The chokes are wound on a 1" long form and have a maximum diameter of 15/32". The 10 millihenry R—50-1 choke is wound on an iron core.

R-33G **Net $3.60**

The R-33G choke is a 2-section 750 microhenry RF choke hermetically sealed in glass with a current rating of 33 milliamperes. The choke body is 1" long by 5/8" diameter.

R-60 **Net $ .35**

The R-60 choke is a high current RF choke (500 milliamperes) available in 2 and 4 microhenry sizes. The choke is 1 1/8" long by 5/16" diameter.

R-300 .....**Net $ .38**
R-300U .....**Net $ .42**
R-300S .....**Net $ .42**
R-300ST .....**Net $ .40**

These RF chokes are similar in size to R-100 series but have higher current capacity. The R-300U is provided with a removable stand-off insulator at one end. The R-300S has a non-removable stand-off insulator and cotter-pin lug terminals. The R-300ST has a 6-32 threaded stud at each end. Inductance values of 0.5, 1.0, 2.5 and 5.0 millihenries are available with a current rating of 300 milliamperes. R-300, R-300U, R-300S and R-300ST are identical electrically.

R-152 **Net $1.75**

For use in the range between 2 and 4 Mc. Ideal for high power transmitter stages operated in the 80 meter amateur band. Inductance 4 m.h., DC resistance 10 ohms, DC current 600 ma. Coils honeycomb wound on steatite core.

R-154 **Net $1.75**
R-154U **Net $1.40**

For the 20, 40 and 80 meter bands, Inductance 1 m.h., DC resistance 6 ohms, DC current 600 ma. Coils honeycomb wound on steatite core. The R-154U does not have the third mounting foot and the small insulator, but is otherwise the same as R-154. See illustration.

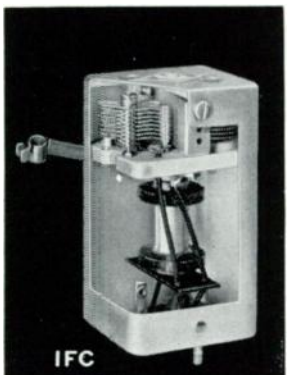
R-175 **Net $2.25**

The R-175 Choke is suitable for parallel-feed as well as series-feed in transmitters with plate supply up to 3000 volts modulated or 4000 volts unmodulated. Unlike conventional chokes, the reactance of the R-175 is high throughout the 10 and 20 meter bands as well as the 40 and 80 meter bands. Inductance 225 μh, distributed capacity 0.6 mmf., DC resistance 6 ohms, DC current 800 ma., voltage breakdown to base 12,500 volts.

Manufacturers: We have facilities for quantity production of RF chokes of practically any type. Send us your specifications.

POPULAR National COMPONENTS

I. F. TRANSFORMERS



IFC, Transformer, Net $4.25
IFCO, Oscillator, Net $4.25
Litz coils wound on a polystyrene form and ceramic insulated air-dielectric trimming condensers make these transformers inherently stable and exceptionally retentive of tuning. The 4½" x 2⅜" x 2" shield can has two 6-32 spade bolts for mounting. Available for either 175 KC or 450-550 KC. Specify frequency.

IFL FM Discriminator Net $6.90
IFM IF Transformer Net $6.45
IFN IF Transformer Net $6.45
IFO FM Ratio Discriminator Net $6.98

IFL, IFM, IFN and IFO transformers operate at 10.7 Mc. and are designed for use in FM Superheterodyne receivers. Coils are precision wound on grooved polystyrene forms and tuning is accomplished by movable iron cores. Bandwidth is not affected by tuning slug position. The transformer cans are 1⅜" square and stand 3⅛" above the chassis. Two 6-32 spade bolts are provided for mounting.

The IFL transformer is a 10.7 Mc. FM discriminator transformer suitable for use in conventional FM receiver discriminator circuit and is linear over a band of ±100 Kc.

The IFM transformer is a 10.7 Mc. IF transformer with a 150 Kc. bandwidth at 1.5 db attenuation. Approximate stage gain of 30 is obtained with IFM Transformer and 6SG7 tube.

The IFN transformer is a 10.7 Mc. IF transformer with a 100 Kc. pass band at 1.5 db attenuation. Approximate stage gain of 30 is obtained with IFN Transformer and 6SG7 tube.

The IFO transformer is a 10.7 Mc. FM discriminator transformer of the ratio type and is linear over a band of ±100 Kc.

IFJ, with variable coupling Net $8.25
IFK, with fixed coupling Net $7.25

15 Mc. IF transformers suitable for ultra high frequency superheterodynes. They are made in two models with and without variable coupling. Approximate stage gain of 10 is obtained with IFJ or IFK Transformer and 6AB7 tube.

SA:4842 Net $4.50

A 456 kc. discriminator transformer for narrow band frequency modulation. This unit is the nucleus of the NFM adapter described by Harrington and Bartell in November 1947 QST. Two slug-tuned secondaries are employed and discrimination is accomplished by resonating one at approximately 10 kc. above, the other at approximately 10 kc. below the center frequency of the i.f. channel.

CD-1, ¼ pint can Net $.95
Liquid Polystyrene Cement — is ideal for windings as it will not spoil the properties of the best coil form.

COILS AND COIL FORMS

AR-2 High Frequency Coil Net $1.70
AR-5 High Frequency Coil Net $1.46

The AR-2 and AR-5 coils are high Q permeability tuned RF coils on low loss mica-filled bakelite forms. The AR-2 coil tunes from 75 Mc. to 220 Mc. with capacities from 100 to 10 mmfd. The AR-5 coil tunes from 37 Mc. to 110 Mc. with capacities from 100 to 10 mmfd. The inductive windings supplied may be replaced by other windings as desired to modify the tuning range.

XR-50 Net $.90

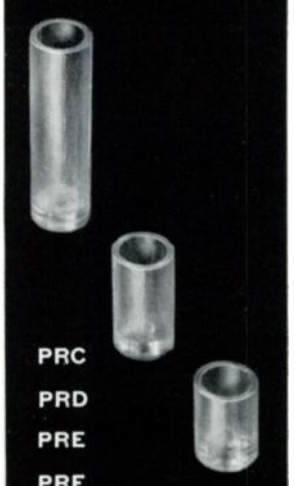
These mica-filled bakelite coil forms may be wound as desired to provide a permeability tuned coil. The form winding length is 11/16" and the form winding diameter is ½ inch. The iron slug is ⅜" dia. by ½" long.

OSR Net $1.80

A shielded oscillator coil which tunes to 100 kc. with .00041 mfd. Two separate inductances, closely coupled. Excellent for interruption-frequency oscillator in superregenerative receivers.

Symbol	Outside Diameter	Length	Net
PRC-1	⅜"	⅜"	.15
PRC-2	⅜"	½"	.15
PRC-3	⅜"	¾"	.15
PRD-1	½"	½"	.15
PRD-2	½"	1"	.15
PRE-1	9/16"	¾"	.18
PRE-2	9/16"	1"	.18
PRE-3	9/16"	2"	.24
PRF-1	¾"	¾"	.24
PRF-2	¾"	1¼"	.30

These small coil forms are of molded polystyrene, open at one end and closed at the other except for a hole which permits mounting by a single 6-32 screw. A size for every application.



POPULAR National COMPONENTS

Coil Forms molded of R-39 mica-filled bakelite permitting them to be grooved and drilled. Coil Form diameter 1", length 1½".

XR-1, Four Prong **Net $.35**

XR-2, Without Prongs **Net .$25**

XR-3, molded of R-39 Diameter 9/16", length ¾" without prongs. **Net $.20**

XR-4, Four Prong **Net $.51**

XR-5, Five Prong **Net $.51**

XR-6, Six Prong **Net $.60**
Molded of R-39 permitting them to be grooved and drilled. Coil Form Diameter 1½", length 2¼". A special socket is required for the XR-6.
National type **XC-6C** **Net $.51**

SC, Crystal Sockets **Net $.32**
The SC-1, SC-2, and SC-3 are crystal mounting sockets for crystal holders with mounting pins spaced 0.5000", 0.486", and .750" respectively and pin diameters of ⅛" and 3/32" and ⅛" respectively, steatite insulation. Single 4-36 or 4-40 screw mounting for SC-1 and SC-2; single 6-32 screw mounting for SC-3.

SC-4 Ceramic crystal socket with clamp. Pin spacing .500". Pin dia. 1/32". **Net $.39**

CFA **Net $.35**
The National chart frame is supplied with a celluloid sheet to cover the chart size 2¼" x 3¼" with sides ¼" wide. Durable finish.

PH-1 An attractive and rugged pull handle of cast zinc alloy chrome plated, with 10-32 Tapped Holes on 3¾" mounting centers. **Net $.45**

PH-2 Same as PH-1 but with black or gray finish. **Net $.25**
The plug in base and shield includes the low loss R-39 base which is ideal for mounting condensers and coils when it is desirable to have them shielded and easily removable. Shield is 2" x 2⅜" x 4½".

PB-10-5 **Net $1.77**
5 Prong base and shield

PB-10-6 **Net $1.77**
6 Prong base and shield

PB-10-A-5 **Net $.99**
5 Prong base only

PB-10-A-6 **Net $.99**
6 Prong base only

RZ Coil Shield **Net $.35**
1⅜" square x 4" high.
RS Coil Shield **Net $.35**
1-7/16" x 1⅜" x 3½" high.

RO Coil Shield **Net $.35**
2" x 2⅜" x 4⅛" high. National Coil Shields are formed from a single piece of pure aluminum. They are mechanically strong and have ample thickness to mount small parts on the walls, and include spade bolts, for chassis mounting.

T-78 Tube Shield **Net $.27**
National Tube Shield type T-78 is a three-piece pure aluminum shield suitable for shielding glass tubes with ST-12 bulb, such as the 6C6 and 6D6 tubes.

JS-1 Jack Shield **Net $.30**
For shielding small standard jacks mounted behind a panel, or on the ends of extension coils. Indispensable for reducing hum pickup.

XOS Tube Shields **Net $.48**
The XOS tube shield is a two-piece shield for the miniature Button 7 and 9 pin base tubes. The shield is available in three sizes corresponding to the tube body heights XOS-1 for 1-5/16", XOS-2 for 1½", XOS-3 for 2"

The shield contains a spring which centers tube in shield and holds tube and shield firmly in place.

SHIELDS 7-pin SOCKETS

XOS-1 fit 1-5/16" tube body	$.48
XOS-2 fit 1½" tube body	.48
XOS-3 fit 2" tube body	.48

SHIELDS 9-pin SOCKETS

XOS-4 fit 1-5/16" body	.51
XOS-5 fit 1½" tube body	.51
XOS-6 fit 2" tube body	.51

FXT Fixed tuned exciter tank similar in general construction to National I.F. transformers, this unit has two 25 mmf., 2000 volt air condensers and an unwound XR-2 Coil form.

FXT (Without plug-in base) **Net $3.45**

FXTB-5 (With 5 prong base) **Net $3.90**

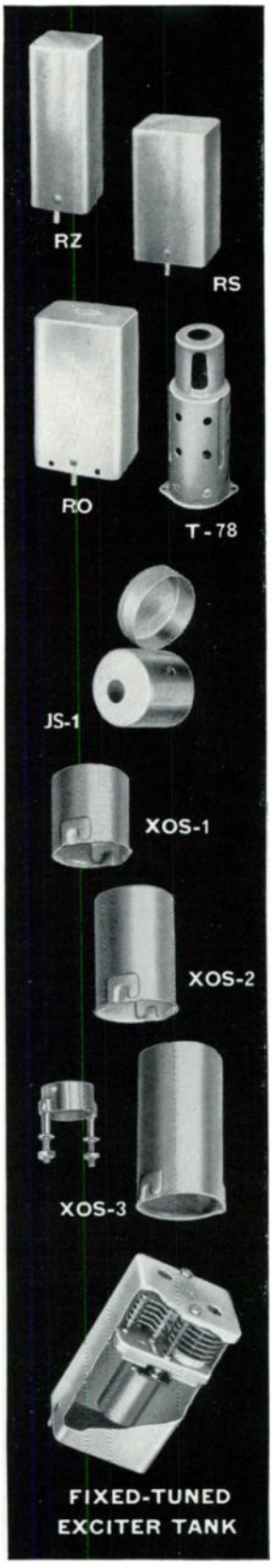
FXTB-6 (With 6 prong base) **Net $3.90**

Paint (not illustrated)

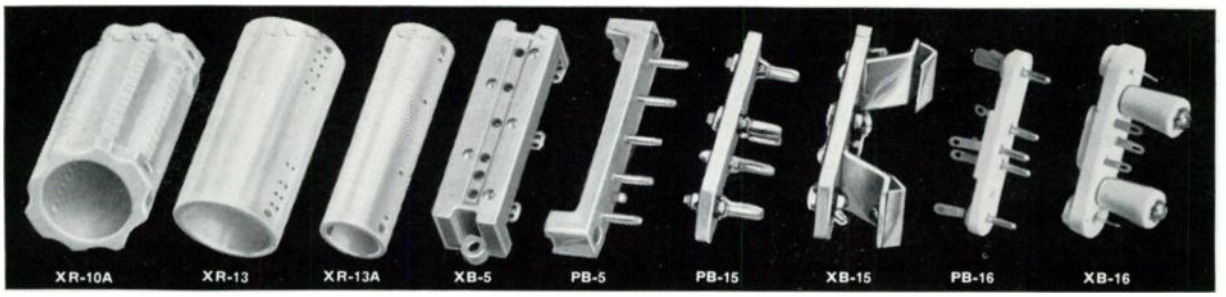
CP-1, dark gray **Net $.40**

CP-2, black **Net $.40**
A high quality air-drying paint that may be applied with a brush.

CP-3, light gray, matches newest National receivers—for spraying and baking. **Net $.50**



POPULAR National COMPONENTS



TRANSMITTER COIL FORMS

The Transmitter Coil Forms and Mounting are designed as a group, and mount conveniently on the bars of a TMA condenser. The larger coil form, Type XR-14A, (not illustrated) has a winding diameter of 5", a winding length of 3¾" (30 turns total) and is intended for the 80 meter band. The smaller form, Type XR-10A, has a winding length of 3¾" and a winding diameter of 2½" (26 turns total). It is intended for the 20 and 40 meter bands.

Either coil form fits the PB-15 plug. For higher frequencies, the plug may be used with a self-supporting coil of copper tubing. The XB-15 Socket may be mounted on breadboards or chassis, as well as on the TMA Condenser.

SINGLE UNITS

XR-10A, Coil Form only	Net $ .99
XR-14A, Coil Form only	Net $2.40
PB-15, Plug only	Net $1.05
XB-15, Socket only	Net $1.20

ASSEMBLIES

UR-10A, Assembly (including small Coil Form, Plug and Socket)	Net $3.24
UR-14A, Assembly (including large Coil Form, Plug and Socket)	Net $3.60

BUFFER COIL FORMS

National Buffer Coil Forms are designed to mount directly on the tie bars of a TMC condenser using the PB-5 Plug and XB-5 Socket. Plug and Socket are of molded R-39.

The two coil forms are of steatite, left unglazed to provide a tooth for coil dope. The larger form, Type XR-13, is 1¾" in diameter and has a winding length of 2¾". The smaller form, Type XR-13A, is 1" in diameter and provides a winding length of 2¾". Both forms have holes for mounting and for leads.

SINGLE UNITS

XR-13, Coil Form only	Net .75
XR-13A, Coil Form only	Net $.60
PB-5, Plug only	Net $.51
XB-5, Socket only	Net $.51

ASSEMBLIES

UR-13A, Assembly (including small Coil Form, Plug and Socket)	Net $1.65
UR-13, Assembly (including large Coil Form, Plug and Socket)	Net $1.65

EXCITER COILS

There is a National exciter coil for every application. AR-15 coils are mounted on 5 pin bases which fit any standard 5 contact tube socket. AR-16 coils are mounted on the well known National PB-16 plug which fits the National XB-16 socket. The AR-17 coils have 6 pin bases which fit standard 6 contact tube sockets and the link windings of this series have center taps which may be grounded for harmonic reduction. All center link models are center tapped for use in balanced circuits. Insulation polystyrene and steatite. For use where plate power input does not exceed 50 watts. Available with fixed or swinging end or center links for all amateur bands, 6 through 80 meters.

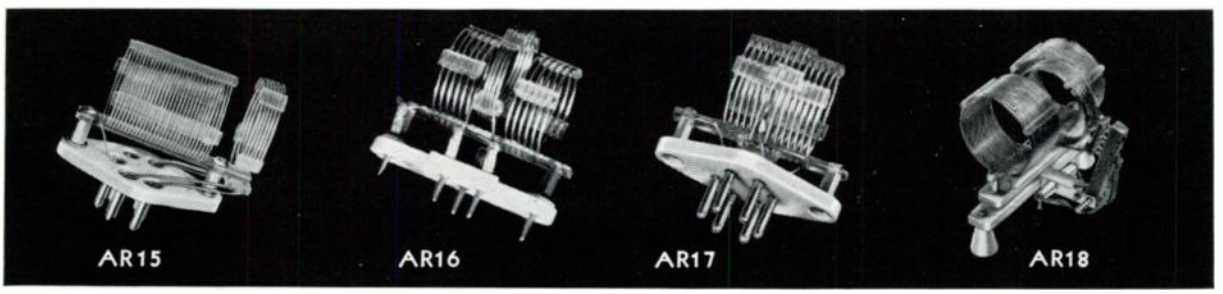
The XR-16 Coil Form (not illustrated) fits the PB-16 Plug-in Base; it has a winding length of 1¾", diameter 1¼"

AR-15, AR-16, AR-17 Coil, any type	Net $1.25	PB-16 Plug-in Base	Net $. 45
XR-16 Coil Form	Net $ .42	XB-16 Socket for PB-16	Net $ .45

500 WATT COILS

Air-wound coils designed to mount on the split stator models of National AMT condensers. The AR18-C coils have fixed center links and require the XB18-C socket. The AR18-S coils are designed to accommodate the swinging link furnished with the XB18-S socket. Link winding of the XB18-S has a center tap which may be grounded for harmonic reduction. Plugs and jacks are silver plated to insure low contact resistance. Insulation, steatite. The sockets (not illustrated) are 7¼" in length.

AR-18— 6C	$3.25	AR-18—80C	4.50	AR-18—40S	3.95
AR-18—10C	3.50	AR-18— 6S	2.96	AR-18—80S	4.20
AR-18—20C	3.75	AR-18—10S	3.20	XB—18S	4.00
AR-18—40C	4.25	AR-18—20S	3.45	XB—18C	1.50



POPULAR National COMPONENTS

TYPE TMS TRANSMITTING CONDENSERS

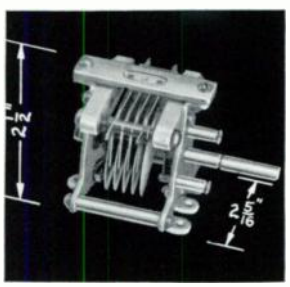
This is a condenser designed for transmitter use in low power stages. It is compact, rigid, and dependable. Provision has been made for mounting either on the panel, on the chassis, or on two stand-off insulators. Insulation is steatite. Voltage ratings listed are conservative.

Capacity	Minimum Capacity	Length	Air Gap	Peak Voltage	No. of Plates	Catalog Symbol	Net
SINGLE STATOR MODELS							
100 Mmf.	9.5	3"	.026"	1000v.	9	TMS-100	$2.60
150	11	3"	.026"	1000v.	14	TMS-150	2.80
250	13.5	3"	.026"	1000v.	22	TMS-250	3.30
300	15	3"	.026"	1000v.	27	TMS-300	3.80
35	8	3"	.065"	2000v.	7	TMSA-35	3.90
50	11	3"	.065"	2000v.	11	TMSA-50	4.40
DOUBLE STATOR MODELS							
50–50 Mmf.	6–6	3"	.026"	1000v.	5–5	TMS-50D	$3.00
100–100	7–7	3"	.026"	1000v.	9–9	TMS-100D	3.20
50–50	10.5–10.5	3"	.065"	2000v.	11–11	TMSA-50D	4.40

TYPE TMK TRANSMITTING CONDENSERS

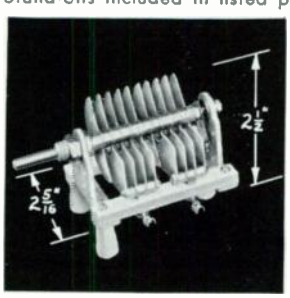
This is a new condenser for exciters and low power transmitters. Special provision has been made for mounting AR-16 coils in a swivel plug-in mount on either the top or rear of the condenser. For stand-off or panel mounting-steatite insulation.

Capacity	Minimum Capacity	Length	Air Gap	Peak Voltage	No. of Plates	Catalog Symbol	Net
SINGLE STATOR MODELS							
35 Mmf.	7.5	2 1/16"	.047"	1500v.	7	TMK-35	$3.45
50	8	2 3/16"	.047"	1500v.	9	TMK-50	3.55
75	9	2 11/16"	.047"	1500v.	13	TMK-75	3.80
100	10	3"	.047"	1500v.	17	TMK-100	3.95
150	10.5	3 5/16"	.047"	1500v.	25	TMK-150	4.65
200	11	4 1/4"	.047"	1500v.	33	TMK-200	5.25
250	11.5	4 7/8"	.047"	1500v.	41	TMK-250	5.75
DOUBLE STATOR MODELS							
35–35 Mmf.	7.5–7.5	3"	.047"	1500v.	7–7	TMK-35D	$3.80
50–50	8–8	3 5/16"	.047"	1500v.	9–9	TMK-50D	3.95
100–100	10–10	4 1/4"	.047"	1500v.	17–17	TMK-100D	5.25
Swivel Mounting Hardware for AR 16 Coils						SMH	$ .10



TYPE TMH TRANSMITTING CONDENSERS

A condenser that features very compact construction. Excellent power factor, and aluminum plates .0400" thick with polished edges. It mounts on the panel or on removable stand-off insulators. Steatite insulators have long leakage path. Stand-offs included in listed price.

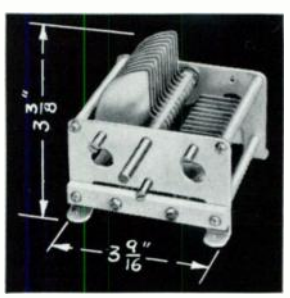


Capacity	Minimum Capacity	Length	Air Gap	Peak Voltage	No. of Plates	Catalog Symbol	Net
SINGLE STATOR MODELS							
50 Mmf.	9	3 3/4"	.085"	3500v.	15	TMH-50	$3.95
75	11	3 3/4"	.085"	3500v.	19	TMH-75	4.15
100	12.5	5 1/8"	.085"	3500v.	25	TMH-100	4.35
150	18	6 1/2"	.085"	3500v.	37	TMH-150	4.95
35	11	5 1/8"	.180"	6500v.	17	TMH-35A	4.25
DOUBLE STATOR MODELS							
35–35 Mmf.	6–6	3 3/4"	.085"	3500v.	9–9	TMH-35D	$4.15
50–50	8–8	5 1/8"	.085"	3500v.	13–13	TMH-50D	4.35
75–75	11–11	6 1/2"	.085"	3500v.	19–19	TMH-75D	4.95

TYPE TMC TRANSMITTING CONDENSERS

A condenser designed for use in the power stages of transmitters where peak voltages do not exceed 3000 volts. The frame is extremely rigid and arranged for mounting on panel, chassis or stand-off insulators. The plates are aluminum with buffed edges. Insulation is steatite. The stator in the split stator models is supported at both ends.

Capacity	Minimum Capacity	Length	Air Gap	Peak Voltage	No. of Plates	Catalog Symbol	Net
SINGLE STATOR MODELS							
50 Mmf.	10	3"	.077"	3000v.	7	TMC-50	$3.60
100	13	3 1/2"	.077"	3000v.	13	TMC-100	4.25
150	17	4 5/8"	.077"	3000v.	21	TMC-150	5.25
250	23	6"	.077"	3000v.	32	TMC-250	5.70
300	25	6 3/4"	.077"	3000v.	39	TMC-300	6.10
DOUBLE STATOR MODELS							
50–50 Mmf.	9–9	4 5/8"	.077"	3000v.	7–7	TMC-50D	$4.35
100–100	11–11	6 3/4"	.077"	3000v.	13–13	TMC-100D	5.95
200–200	18.5–18.5	9 1/4"	.077"	3000v.	25–25	TMC-200D	7.25



POPULAR National COMPONENTS

PRECISION CONDENSERS

Originally developed for the famous HRO and NC-100 receivers, National PW and NPW condensers and drive units are well known to professional and amateur radio men throughout the world. Sturdily constructed of the finest materials and carefully adjusted by skilled hands, they have become "standard specifications" for applications requiring smooth, precise control and high re-set accuracy.

The Micrometer Dial reads direct to one part in 500. Division lines are approximately 1/4" apart. The drive, at the mid-point of the rotor, is through an enclosed preloaded worm gear with 20 to 1 ratio. Each rotor is individually insulated from the frame, and each has its own individual rotor contact. Stator insulation is steatite. Plate shape is straight-line frequency when the frequency range is 2:1.

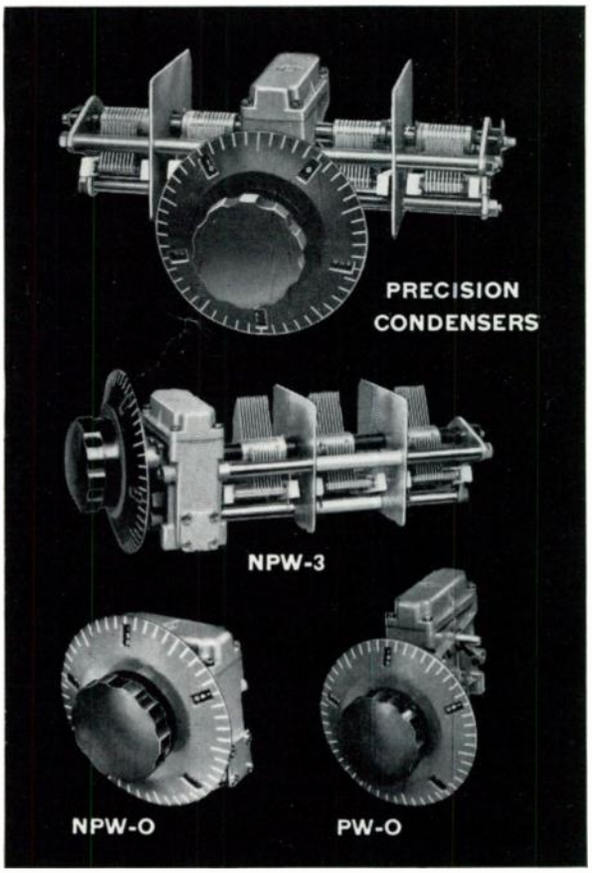
PW Condensers are available in 1, 2, 3 or 4 sections, in either 160 or 225 mmf per section. Larger capacities cannot be supplied.

PW-1R	Single section right	**Net $13.50**
PW-1L	Single section left	**Net $13.50**
PW-2R	Double section right	**Net $18.00**
PW-2L	Double section left	**Net $18.00**
PW-2S	Single section each side	**Net $18.00**
PW-3R	Double section right; single left	**Net $24.00**
PW-3L	Double section left; single right	**Net $24.00**
PW-4	Double section each side	**Net $27.00**

NPW-3 Three sections, each 225 mmf. **Net $24.00**
Similar to PW models, except that rotor shaft is perpendicular to panel.

NPW-O **Net $9.00**
Uses parts similar to the NPW condenser. Drive shaft perpendicular to panel. One TX-9 coupling supplied.

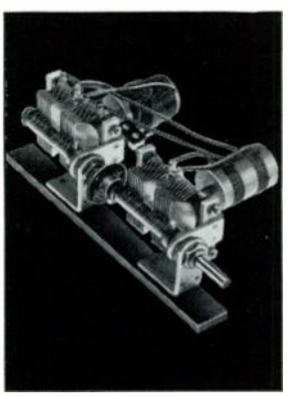
PW-O **Net $9.90**
Uses parts similar to the PW condenser. Drive shaft parallel to panel. Two TX-9 couplings supplied.



PW-D **Net $5.25**
The Micrometer Dial used on the condensers and drives above is available separately. It revolves ten times in covering the complete range and as there is no gear reduction unit furnished, the driven shaft will revolve ten times, also. The PW-D dial fits a shaft 5/16" in diameter.

MULTI-BAND TANK ASSEMBLIES

The unique MB-150 Multi-Band Tank tunes all amateur bands from 80 through 10 meters with 180° rotation of the shaft; the coils are never changed. The unit is built around a circuit which tunes to two harmonically unrelated frequencies at the same time. Thus, it becomes possible to cover a wide frequency range and yet maintain a reasonably constant L/C ratio. 3" wide x 8 1/4" high (including the GS-10 standoffs) x 9" long overall including the 1/4" dia. shaft and output terminals.



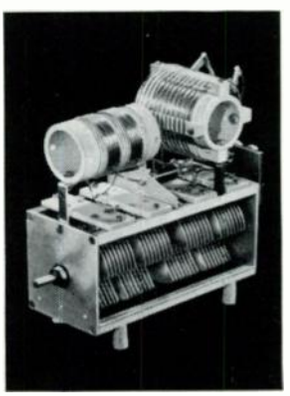
Features of the MB-150:

(1) For use as the all-band plate tank in push-pull or single-ended stages running up to 150-watts input (1500 volts peak). It is ideal for a pair of 807s or 809s or a single 829B.

(2) Separate link coupling coil has special clips which adjust to match impedances up to 600 ohms directly. Output couples into a higher powered amplifier, an antenna or an antenna tuning network.

(3) Fast band changing is accomplished without handling coils, thus removing one of the danger points in the amateur station.

MB-150 Multi-Band Tank Assembly **Net $18.75**



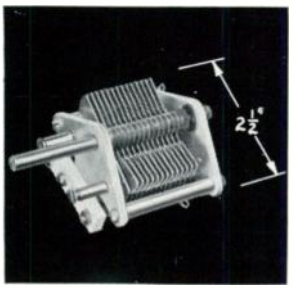
MB 40L LOW-POWER MULTI-BAND TANK

Same principle as the famous MB-150. Logical application as grid circuit for tubes having MB-150 in plate circuit. Will handle 40 watts input if link kept loaded **Net $9.90**

POPULAR National COMPONENTS

TYPE TMS TRANSMITTING CONDENSERS

This is a condenser designed for transmitter use in low power stages. It is compact, rigid, and dependable. Provision has been made for mounting either on the panel, on the chassis, or on two stand-off insulators. Insulation is steatite. Voltage ratings listed are conservative.

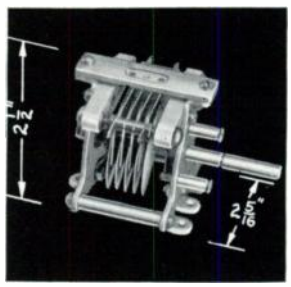


Capacity	Minimum Capacity	Length	Air Gap	Peak Voltage	No. of Plates	Catalog Symbol	Net
SINGLE STATOR MODELS							
100 Mmf.	9.5	3"	.026"	1000v.	9	TMS-100	$2.60
150	11	3"	.026"	1000v.	14	TMS-150	2.80
250	13.5	3"	.026"	1000v.	22	TMS-250	3.30
300	15	3"	.026"	1000v.	27	TMS-300	3.80
35	8	3"	.065"	2000v.	7	TMSA-35	3.90
50	11	3"	.065"	2000v.	11	TMSA-50	4.40
DOUBLE STATOR MODELS							
50–50 Mmf.	6–6	3"	.026"	1000v.	5–5	TMS-50D	$3.00
100–100	7–7	3"	.026"	1000v.	9–9	TMS-100D	3.20
50–50	10.5–10.5	3"	.065"	2000v.	11–11	TMSA-50D	4.40

TYPE TMK TRANSMITTING CONDENSERS

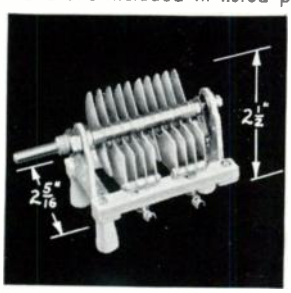
This is a new condenser for exciters and low power transmitters. Special provision has been made for mounting AR-16 coils in a swivel plug-in mount on either the top or rear of the condenser. For stand-off or panel mounting-steatite insulation.

Capacity	Minimum Capacity	Length	Air Gap	Peak Voltage	No. of Plates	Catalog Symbol	Net
SINGLE STATOR MODELS							
35 Mmf.	7.5	2 1/16"	.047"	1500v.	7	TMK-35	$3.45
50	8	2 3/16"	.047"	1500v.	9	TMK-50	3.55
75	9	2 11/16"	.047"	1500v.	13	TMK-75	3.80
100	10	3"	.047"	1500v.	17	TMK-100	3.95
150	10.5	3 3/16"	.047"	1500v.	25	TMK-150	4.65
200	11	4 1/4"	.047"	1500v.	33	TMK-200	5.25
250	11.5	4 7/16"	.047"	1500v.	41	TMK-250	5.75
DOUBLE STATOR MODELS							
35–35 Mmf.	7.5–7.5	3"	.047"	1500v.	7–7	TMK-35D	$3.80
50–50	8–8	3 3/16"	.047"	1500v.	9–9	TMK-50D	3.95
100–100	10–10	4 1/4"	.047"	1500v.	17–17	TMK-100D	5.25
Swivel Mounting Hardware for AR 16 Coils						SMH	$ .10



TYPE TMH TRANSMITTING CONDENSERS

A condenser that features very compact construction. Excellent power factor, and aluminum plates .0400" thick with polished edges. It mounts on the panel or on removable stand-off insulators. Steatite insulators have long leakage path. Stand-offs included in listed price.



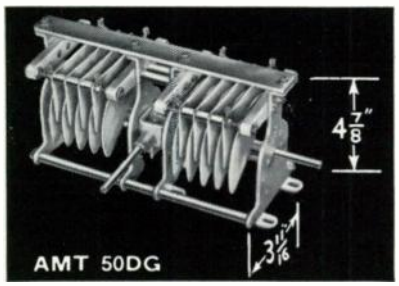
Capacity	Minimum Capacity	Length	Air Gap	Peak Voltage	No. of Plates	Catalog Symbol	Net
SINGLE STATOR MODELS							
50 Mmf.	9	3 3/4"	.085"	3500v.	15	TMH-50	$3.95
75	11	3 3/4"	.085"	3500v.	19	TMH-75	4.15
100	12.5	5 1/8"	.085"	3500v.	25	TMH-100	4.35
150	18	6 1/2"	.085"	3500v.	37	TMH-150	4.95
35	11	5 1/8"	.180"	6500v.	17	TMH-35A	4.25
DOUBLE STATOR MODELS							
35–35 Mmf.	6–6	3 3/4"	.085"	3500v.	9–9	TMH-35D	$4.15
50–50	8–8	5 1/8"	.085"	3500v.	13–13	TMH-50D	4.35
75–75	11–11	6 1/2"	.085"	3500v.	19–19	TMH-75D	4.95

TYPE TMC TRANSMITTING CONDENSERS

A condenser designed for use in the power stages of transmitters where peak voltages do not exceed 3000 volts. The frame is extremely rigid and arranged for mounting on panel, chassis or stand-off insulators. The plates are aluminum with buffed edges. Insulation is steatite. The stator in the split stator models is supported at both ends.

Capacity	Minimum Capacity	Length	Air Gap	Peak Voltage	No. of Plates	Catalog Symbol	Net
SINGLE STATOR MODELS							
50 Mmf.	10	3"	.077"	3000v.	7	TMC-50	$3.60
100	13	3 1/16"	.077"	3000v.	13	TMC-100	4.25
150	17	4 5/8"	.077"	3000v.	21	TMC-150	5.25
250	23	6"	.077"	3000v.	32	TMC-250	5.70
300	25	6 3/8"	.077"	3000v.	39	TMC-300	6.10
DOUBLE STATOR MODELS							
50–50 Mmf.	9–9	4 5/8"	.077"	3000v.	7–7	TMC-50D	$4.35
100–100	11–11	6 3/8"	.077"	3000v.	13–13	TMC-100D	5.95
200–200	18.5–18.5	9 1/4"	.077"	3000v.	25–25	TMC-200D	7.25

POPULAR National COMPONENTS

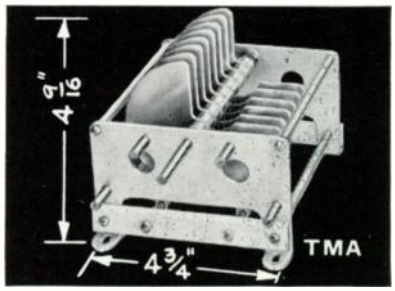


TYPE AMT

A larger and sturdier model of the TMK condenser. The frame is extremely rigid, with mounting feet a part of the end plates. Heavy steatite insulation.

The solid aluminum tie bar across the top of the condenser acts as a mounting for AR-18 series coils in the double stator models.

The double stator models are available in either standard end drive (D series) or center-drive (DG series) with 1/4" dia. shaft extension.



TYPE TMA

This is a larger model of the popular TMC. The frame is extremely rigid and arranged for mounting on panel, chassis or stand-off insulators. The plates are of heavy aluminum with rounded and buffed edges. Insulation is steatite located outside of the concentrated field.

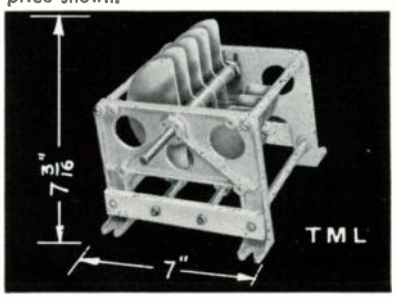
Maximum Capacity	Minimum Capacity	Length	Air Gap	Peak Voltage	No. of Plates	Catalog Symbol	Net
SINGLE STATOR MODELS							
50 Mmf.	13	4 3/4"	.177"	6000 v.	9	AMT-50	$ 5.20
100	20	6 3/4"	.177"	6000 v.	17	AMT-100	6.10
300	19.5	4 9/16"	.077"	3000 v.	23	TMA-300	7.60
50	15	4 9/16"	.171"	6000 v.	7	TMA-50A	4.95
100	19.5	6 7/8"	.171"	6000 v.	15	TMA-100A	5.85
150	22.5	6 7/8"	.171"	6000 v.	21	TMA-150A	6.45
230	33	9 5/16"	.171"	6000 v.	33	TMA-230A	7.95
100	30	9 1/4"	.265"	9000 v.	23	TMA-100B	8.50
150	40.5	12 1/2"	.265"	9000 v.	33	TMA-150B	9.95
50	21	7 1/8"	.359"	12,000 v.	13	TMA-50C	5.55
100	37.5	12 7/8"	.359"	12,000 v.	25	TMA-100C	8.95
75	25	18 1/16"	.719"	20,000 v.	17	TML-75E	18.35
150	60	18 1/16"	.469"	15,000 v.	27	TML-150D	18.50
100	45	13 5/8"	.469"	15,000 v.	19	TML-100D	16.60
50	22	8 3/16"	.469"	15,000 v.	9	TML-50D	11.50
245	54	18 1/16"	.344"	10,000 v.	35	TML-245B	20.15
150	45	13 5/8"	.344"	10,000 v.	21	TML-150B	18.35
100	32	10 15/16"	.344"	10,000 v.	15	TML-100B	17.55
75	23.5	8 3/16"	.344"	10,000 v.	11	TML-75B	12.80
500	55	18 1/16"	.219"	7,500 v.	49	TML-500A	24.60
350	45	13 5/8"	.219"	7,500 v.	33	TML-350A	19.65
250	35	10 11/16"	.219"	7,500 v.	25	TML-250A	18.35
DOUBLE STATOR MODELS D—End drive DG—Center drive							
50–50	13–13	9 3/8"	.177"	6000 v.	18	AMT-50D	7.00
100–100	20–20	13 3/8"	.177"	6000 v.	34	AMT-100D	9.00
50–50	13–13	9 3/8"	.177"	6000 v.	18	AMT-50DG	10.75
100–100	20–20	13 3/8"	.177"	6000 v.	34	AMT-100DG	12.75
200–200	15–15	6 7/8"	.077"	3000 v.	16–16	TMA-200D	9.40
180–180	10–10	12 3/4"	.140"	4000 v.	24–24	TMA-180D	12.90
50–50	12.5–12.5	6 7/8"	.155"	6000 v.	8–8	TMA-50DA	6.75
100–100	17–17	9 5/16"	.155"	6000 v.	14–14	TMA-100DA	8.75
60–60	19.5–19.5	12 1/2"	.249"	9000 v.	15–15	TMA-60DB	8.95
40–40	18–18	12 7/8"	.343"	12,000 v.	11–11	TMA-40DC	8.50
30–30	12–12	18 1/16"	.719"	20,000 v.	7–7	TML-30DE	18.55
60–60	26–26	18 1/16"	.469"	15,000 v.	11–11	TML-60DD	20.15
100–100	27–27	18 1/16"	.344"	10,000 v.	15–15	TML-100DB	22.35
60–60	20–20	13 5/8"	.344"	10,000 v.	9–9	TML-60DB	19.15
200–200	30–30	18 1/16"	.219"	7,500 v.	21–21	TML-200DA	24.60
100–100	17–17	10 15/16"	.219"	7,500 v.	11–11	TML-100DA	20.15

TYPE LMT

A heavy duty transmitting condenser that completely eliminates troublesome closed loops, vastly simplifying the problem of unwanted harmonics. The rotor shaft is completely insulated from the end plates. Long leakage path (higher safety factor). Plates and parts are extra heavy with highly polished rounded edges to prevent flash-over. Adjustable stator plate mounting and end bearings. Available in single-stator, double-stator, or double-stator right angle center drive models. Same capacities and prices as National TML Condenser. Condensers with right angle drive add $3.90 to price shown.

TYPE TML

is a heavy duty job throughout. The frame structure (rugged aluminum castings with dural tie bars) and precision bearings assure permanent rotor alignment. All plates are extra thick with rounded and polished edges. This, plus specially treated steatite insulators and a husky self-cleaning rotor contact, provides high flashover, current and voltage ratings.



POPULAR National COMPONENTS

MINIATURE CONDENSERS:

Type PS variable condensers are compact silver plated units of soldered construction for use as semi-fixed bandsets or padders. Base is steatite — bearing is "snug" but smooth. PSR models are screwdriver adjust type; PSE have ¼" diameter shafts both ends; PSL are similar to PSR but include rotor shaft lock.

Type M-30 **Net $.22**
The M-30 is a tiny (13/16" x 9/16" x ½") mica trimmer — 30 mmf. max. — steatite base.

Type W-75, 75 mmf. **Net $1.60**

Type W-100, 100 mmf. **Net $1.76**
Small air-dielectric padding condensers having a very low temperature coefficient. They are mounted in 1¼" diameter aluminum shields and have ¼" hex heads for socket-wrench adjustment.

The UM condensers are low-loss, aluminum plate staked construction miniature variables designed for UHF converters, VFOs and the like — minimum capacity is exceptionally low. The UMs can be mounted in PB-10 or RO shield cans and have ¼" dia. shafts front and rear for ganging (see pages 21, 23 and 24 for shield cans and couplings). Plates: straight-line-cap., 180° rotation. Dimensions: Base 1" x 2¼", mtg. holes on ⅝" x 1-23/32" centers, 2-5/16" max. length.

The UMB-25 and UMB-50 are differential (balanced stator) models. UM-10D and UMA-25 are double-spaced and the latter is bolted construction for experimental capacity reduction. Hardware for panel or chassis mounting is supplied with all UM condensers.

Capacity	Catalog Symbol			Net
25 mmf.	PSR-25	PSE-25	PSL-25	$1.70
50	PSR-50	PSE-50	PSL-50	1.85
75	PSR-75	PSE-75	PSL-75	2.00
100	PSR-100	PSE-100	PSL-100	2.15

Capacity	Minimum Capacity	No. of Plates	Air Gap	Catalog Symbol	Net
15 mmf.	1.5	6	.017"	UM-15	$1.02
35	2.5	12	.017"	UM-35	1.15
50	3	16	.017"	UM-50	1.25
75	3.5	22	.017"	UM-75	1.45
100	4.5	28	.017"	UM-100	1.60
10	1	8	.042"	UM-10D	1.40
25	3.4	14	.042"	UMA-25	1.75
BALANCED STATOR MODEL					
25	2	4-4-4	.017"	UMB-25	$2.40
50	5	8-8-8	.017"	UMB-50	2.70

NEUTRALIZING CONDENSERS:

NC-600U **Net $.38**
With standoff insulator

NC-600 **Net $.32**
Without insulator

For neutralizing low power beam tubes requiring from .5 to 4 mmf., and 1500 max. total volts such as the 6L6. The NC-600U is supplied with a GS-10 standoff insulator screwed on one end, which may be removed for pigtail mounting.

"TU BY" CONDENSERS

Tubular condensers providing short r.f. path between plate and cathode for tubes having the plate connection at the top. Design reduces harmonics and helps eliminate parasitics. 3,000 volts or 1,500 volts. 15 mmfd. **Net $1.80**

STN **Net $2.07**
The Type STN has a maximum capacity of 18 mmf. (3000 V), making it suitable for such tubes as the 809. It is supplied with two standoff insulators.

NC-800A **Net $3.00**
The NC-800A disk-type neutralizing condenser is suitable for the T40, 35TG, 808 and similar tubes. It is equipped with a clamp for locking. The chart below gives capacity and air gap for different settings.

NC-75 **Net $3.60**
For 812, 75TH and similar tubes.

NC-150 **Net $5.25**
For RK36, 100TH, HK354, 250TH, etc.

NC-500 **Net $8.75**
For WE-251, 304TH, 833A and the like. These large disk-type neutralizing condensers are for the higher powered tubes. Disks are aluminum, insulation steatite.

POPULAR National COMPONENTS

PRECISION CONDENSERS

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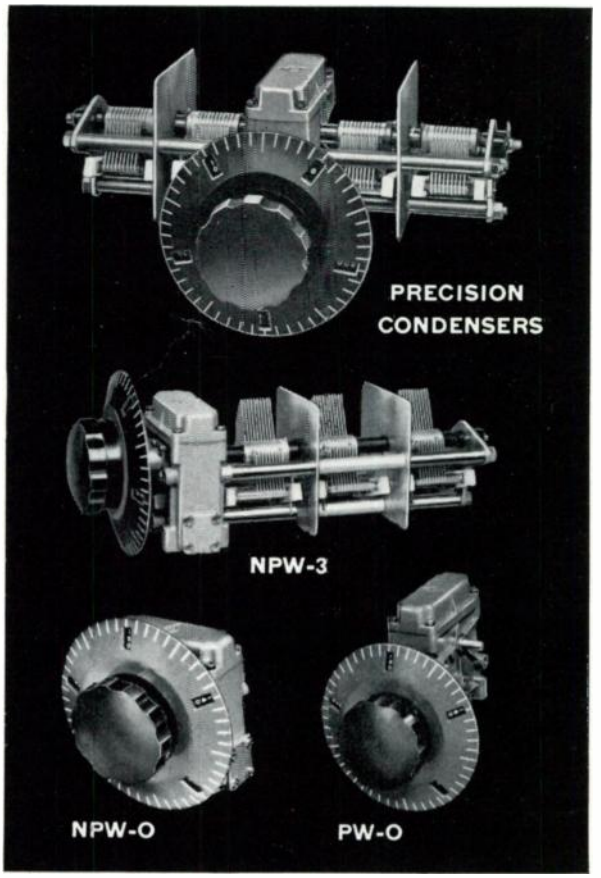
The Micrometer Dial reads direct to one part in 500. Division lines are approximately 1/4" apart. The drive, at the mid-point of the rotor, is through an enclosed preloaded worm gear with 20 to 1 ratio. Each rotor is individually insulated from the frame, and each has its own individual rotor contact. Stator insulation is steatite. Plate shape is straight-line frequency when the frequency range is 2:1.

PW Condensers are available in 1, 2, 3 or 4 sections, in either 160 or 225 mmf per section. Larger capacities cannot be supplied.

PW-1R	Single section right	Net $13.50
PW-1L	Single section left	Net $13.50
PW-2R	Double section right	Net $18.00
PW-2L	Double section left	Net $18.00
PW-2S	Single section each side	Net $18.00
PW-3R	Double section right; single left	Net $24.00
PW-3L	Double section left; single right	Net $24.00
PW-4	Double section each side	Net $27.00
NPW-3	Three sections, each 225 mmf. Similar to PW models, except that rotor shaft is perpendicular to panel.	Net $24.00

NPW-O — Net $9.00
Uses parts similar to the NPW condenser. Drive shaft perpendicular to panel. One TX-9 coupling supplied.

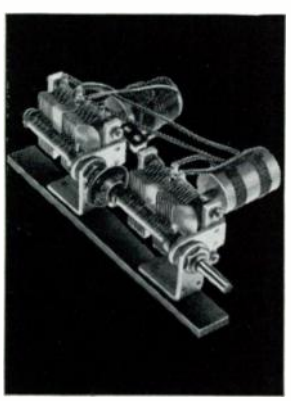
PW-O — Net $9.90
Uses parts similar to the PW condenser. Drive shaft parallel to panel. Two TX-9 couplings supplied.



PW-D — Net $5.25
The Micrometer Dial used on the condensers and drives above is available separately. It revolves ten times in covering the complete range and as there is no gear reduction unit furnished, the driven shaft will revolve ten times, also. The PW-D dial fits a shaft 5/16" in diameter.

MULTI-BAND TANK ASSEMBLIES

The unique MB-150 Multi-Band Tank tunes all amateur bands from 80 through 10 meters with 180° rotation of the shaft; the coils are never changed. The unit is built around a circuit which tunes to two harmonically unrelated frequencies at the same time. Thus, it becomes possible to cover a wide frequency range and yet maintain a reasonably constant L/C ratio. 3" wide x 8 1/4" high (including the GS-10 standoffs) x 9" long overall including the 1/4" dia. shaft and output terminals.



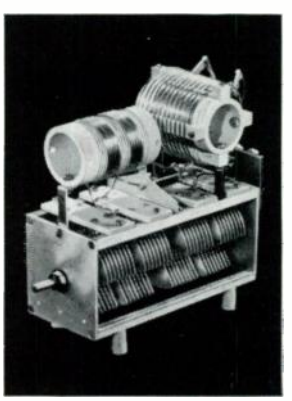
Features of the MB-150:

(1) For use as the all-band plate tank in push-pull or single-ended stages running up to 150-watts input (1500 volts peak). It is ideal for a pair of 807s or 809s or a single 829B.

(2) Separate link coupling coil has special clips which adjust to match impedances up to 600 ohms directly. Output couples into a higher powered amplifier, an antenna or an antenna tuning network.

(3) Fast band changing is accomplished without handling coils, thus removing one of the danger points in the amateur station.

MB-150 Multi-Band Tank Assembly — Net $18.75



MB 40L LOW-POWER MULTI-BAND TANK

Same principle as the famous MB-150. Logical application as grid circuit for tubes having MB-150 in plate circuit. Will handle 40 watts input if link kept loaded — Net $9.90

CHANGE OF PRICES

Effective September 1, 1948 the following prices supercede those shown in the National 1948 Catalog

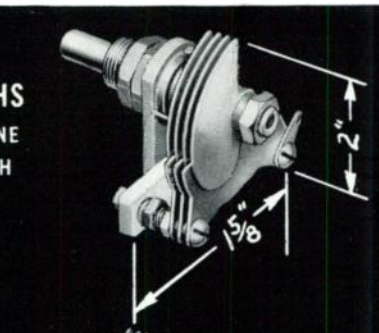
Catalog Page	Receiver	Net Price
3	HRO-7T (with 697 and MCR)	$324.86
3	HRO-7R (with SPU-697 and RFSH-1)	352.15
4	HRO-7R	292.50
4	HRO-7C (complete)	372.45
5	HRO-7R	292.50
7	NC-183T (with speaker)	282.00
7	NC-183R (with speaker)	282.00
9	NC-173T (with speaker)	199.50
9	NC-173R (with speaker)	199.50
11	NC-33	57.50
12	NC-240DT (less speaker)	236.25
12	NC-240DR (less speaker)	236.25
14	HFS (less power supply)	142.00

POPULAR National COMPONENTS

TYPE STHS

STRAIGHT-LINE WAVELENGTH

180° Rotation



The ST Type condenser has Straight-Line Wavelength plates. All double-bearing models have the front bearing insulated to prevent noise. On special order a shaft extension at each end is available, for ganging. On double-bearing single shaft models, the rotor contact is through a constant impedance pigtail. Steatite insulation.

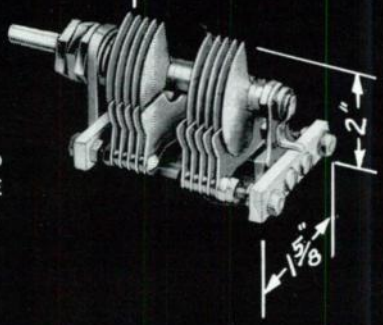
Capacity	Minimum Capacity	No. of Plates	Air Gap	Length	Catalog Symbol	Net
SINGLE BEARING MODELS						
15 Mmf.	3 Mmf.	3	.018"	1 1/16"	STHS- 15	$1.65
25	3.25	4	.018"	1 5/16"	STHS- 25	1.90
50	3.5	7	.018"	1 5/16"	STHS- 50	2.10

TYPE ST

(Type STD Illustrated)

STRAIGHT-LINE WAVELENGTH

180° Rotation



NOTE — Type SS Condensers, having straight-line capacity plates but otherwise similar to the Type ST, are available. Capacities and Prices same as Type ST.

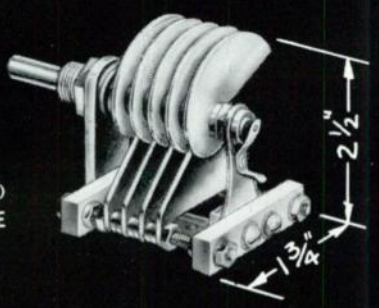
SPLIT STATOR DOUBLE BEARING MODELS						
50–50	5–5	11–11	.026"	2 3/4"	STD- 50	$3.60
100–100	5.5–5.5	14–14	.018"	2 3/4"	STHD-100	3.90
DOUBLE BEARING MODELS						
35 Mmf.	6 Mmf.	8	.026"	2 1/4"	ST- 35	$1.85
50	7	11	.026"	2 1/4"	ST- 50	1.90
75	8	15	.026"	2 1/4"	ST- 75	2.00
100	9	20	.026"	2 1/4"	ST-100	2.10
140	10	27	.026"	2 3/4"	ST-140	2.30
150	10.5	29	.026"	2 3/4"	ST-150	2.30
200	12.0	27	.018"	2 1/4"	STH-200	2.50
250	13.5	32	.018"	2 3/4"	STH-250	2.70
300	15.0	39	.018"	2 3/4"	STH-300	2.90
335	17.0	43	.018"	2 3/4"	STH-335	3.10

TYPE SE

(Type SEU Illustrated)

STRAIGHT-LINE FREQUENCY

270° Rotation



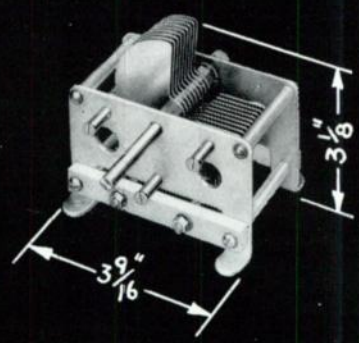
TYPE SE — All models have two rotor bearings, the front bearing being insulated to prevent noise. A shaft extension at each end, for ganging, is available on special order. On models with single shaft extension, the rotor contact is through a constant impedance pigtail. The SEU models (illustrated) are suitable for high voltages as their plates are thick polished aluminum with rounded edges. Other SE condensers do not have polished edges on the plates. Steatite insulation.

15 Mmf.	7 Mmf.	6	.055"	2 1/4"	SEU- 15	$2.80
20	7.5	7	.055"	2 1/4"	SEU- 20	2.95
25	8	9	.055"	2 1/4"	SEU- 25	3.10
50	9	11	.026"	2 1/4"	SE- 50	2.30
75	10	15	.026"	2 1/4"	SE- 75	2.40
100	11.5	20	.026"	2 1/4"	SE-100	2.60
150	13	29	.026"	2 3/4"	SE-150	2.75
200	12	27	.018"	2 1/4"	SEH-200	2.80
250	14	32	.018"	2 3/4"	SEH-250	3.00
300	16	39	.018"	2 3/4"	SEH-300	3.25
335	17	43	.018"	2 3/4"	SEH-335	3.50

TYPE EMC

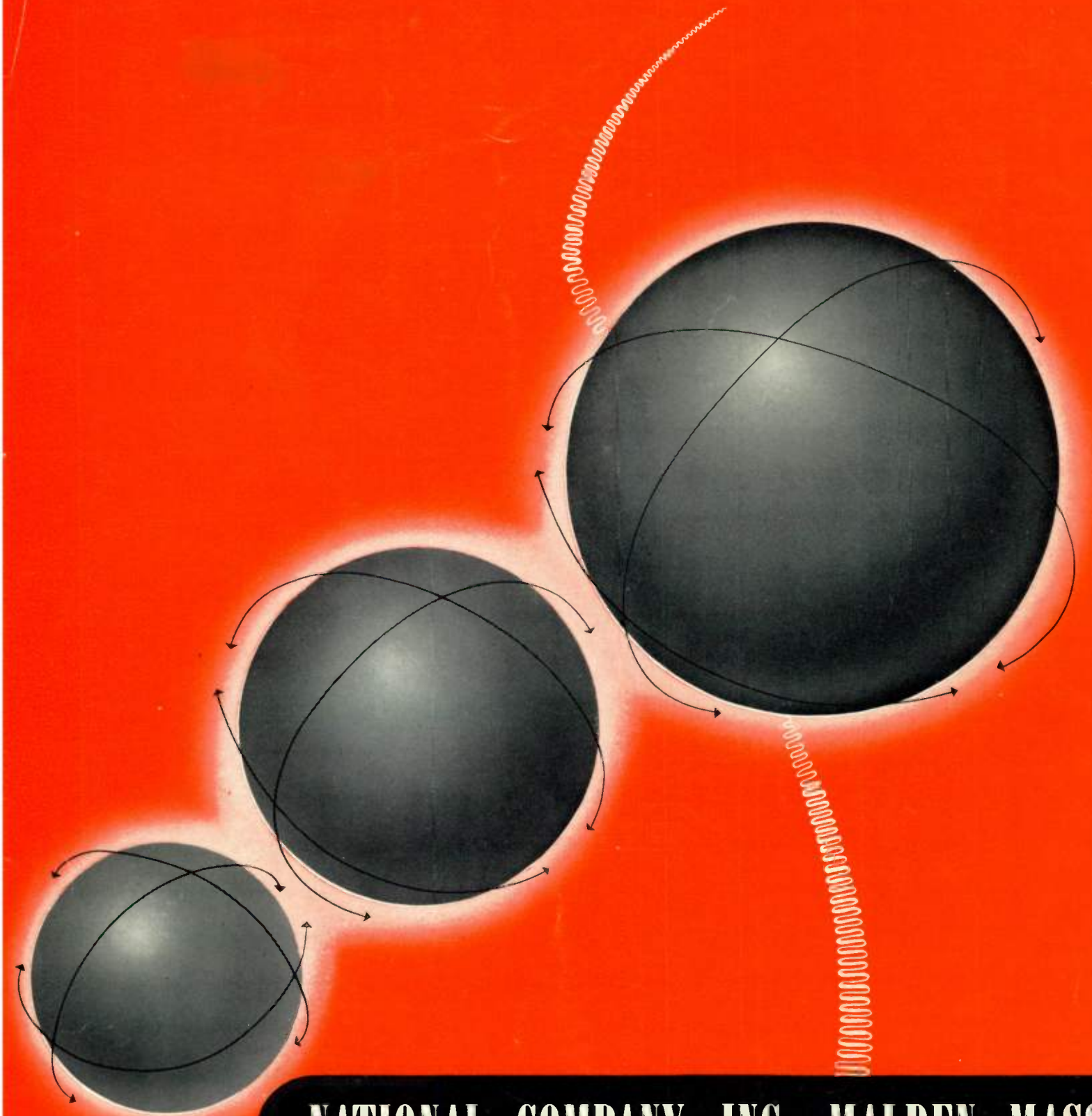
STRAIGHT-LINE WAVELENGTH

180° Rotation



TYPE EMC — A general purpose condenser available in large sizes and having Straight-Line wavelength plates. They are similar in construction to the TMC Transmitting condenser, and have high efficiency and rugged frames. Insulation is Steatite, and Peak Voltage Rating is 1000 volts. Same sizes available with straight line capacity plates, type DXC condenser.

Capacity	Minimum Capacity	No. of Plates	Length	Catalog Symbol	Net
150 Mmf.	9 Mmf.	9	2 15/16"	EMC-150	$4.50
250	11	15	2 15/16"	EMC-250	4.75
350	12	20	2 15/16"	EMC-350	6.00
500	16	29	4 3/8"	EMC-500	6.75
1000	22	56	6 3/4"	EMC-1000	10.35



NATIONAL COMPANY, INC., MALDEN, MASS.

PRINTED IN U.S.A.