

*Catalogue
No. 15 and*

HAM-BOOK

Chicago Radio Apparatus Co.
INC.

415 S. Dearborn Street - - Chicago, Illinois

SM

SM 712 Tuner

A Development from
The Sargent-Rayment Seven

One of the finest receivers ever offered by S-M or any other parts manufacturers, the new 712, developed from the Sargent-Rayment 710 that established so many records last year, presents features never before available. A tuner only—without audio amplification—fully a. c. operated, it employs three of the new 224 a. c. shield-grid tubes in three stages of r. f. amplification, and with band selector tuning a power detector. Any audio amplifier may be used, although it is recommended that the output be fed into the new 677 S-M amplifier. The mechanical assembly is, in the main, similar to the Sargent-Rayment, but the shielding is rendered still more complete by individual shielding of all r. f. coils. This shielding is necessarily more complete because the 712 tests several times as sensitive as the 710.

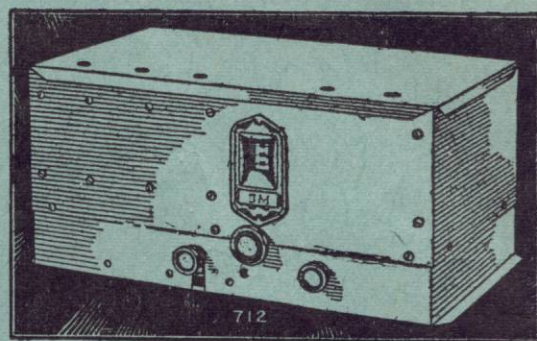
The 712 is assembled upon the chassis of the 713 metal cabinet, in which it is completely enclosed. As a result of the development of extremely accurate coils, and use of a precision single-unit, five-gang condenser assembly, it has been found possible to dispense entirely with the stage verniers of the 710, and yet to show a selectivity far better even than the famous five-vernier set of last season. As the receiver, while entirely suited for installation without additional containing cabinet, will usually be mounted in a console, the symmetrical grouping of tuning, volume, and on-off switch controls is not balanced centrally on the front of the cabinet.

The band-selector circuit is placed between the antenna and the r. f. amplifier, while the three r. f. tubes and detector are coupled by unusually high gain r. f. stages. There are, in the 712, five tuned circuits—the first two working together as a band selector in a tuned antenna circuit—resulting in true super-selectivity with still enough width to the top of the resonance curve to produce unrivalled faithfulness of reproduction. The power and sensitivity are so great that a short indoor antenna is all that is necessary for long-distance reception, yet the complete shielding will cause a dead silence if this short antenna be removed.

The S-M 712 is an RCA licensed, all-electric receiver, using three 224 type tubes and one 227. It requires but two a. c. supply voltages—2½ volts for filament, and 180 volts B supply. The chassis is 16½x9½ inches.

Priced, completely wired.....

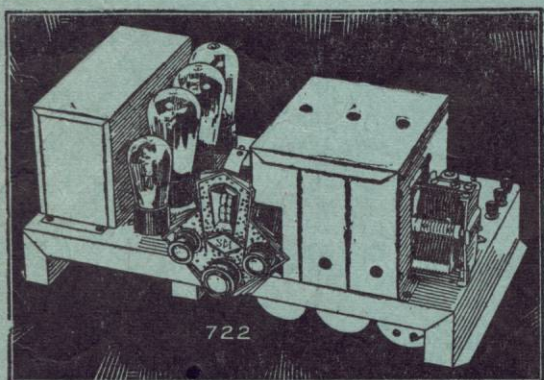
\$6360



PARTS LIST FOR 712 RECEIVER

1—S-M 713 Pierced Metal Chassis	\$6.75
1—S-M 813 Escutcheon .....	.75
1—S-M 313 .00035 Mfd. 5-gang Condenser and Dial.....	9.90
3—S-M 121 Shielded R. F. Coils at \$1.55.....	4.65
1—S-M 122 Shielded R. F. Coil	1.20
1—S-M 124 Shielded R. F. Coil	1.55
7—S-M 275 R. F. Chokes at 54c	3.78
1—S-M 30X Selector Coupler .....	.35
2—Wood Knobs .....	.40
1—Wood Knob .....	.25
4—Potter 30B By-Pass Condenser Blocks.....	4.40
3—C-R 224 Tube Sockets at 30c .....	.90
1—C-R 227 Tube Socket .....	.30
1—Yaxley 10MJP, 10,000-ohm Potentiometer .....	.90
1—Yaxley 840-C Condenser Block .....	.18
1—Durham 10,000-ohm, Two-watt Resistor .....	.51
1—Durham 60,000-ohm, One-watt Resistor .....	.45
2—Polymet .00015 Small Moulded Condensers .....	.50
3—Carter RU-400—400-ohm Resistors.....	.36
1—H & H 1561 On-off Switch .....	.50
8—Moulded Binding Posts at 6c .....	.48
1—Set of Hardware and Hook-up Wire.....	1.84

Total price of parts\$40.90
Complete kit of parts (712 Tuner). Net.....**\$40.08**



The SM 722 Band Selector Seven

Exactly as the S-M 720 Screen-Grid Six provided last year the greatest value the market had known in screen-grid receivers—a strictly single-control, all-electric receiver—now leads the way and goes the 720 one better, for it is much more selective and more sensitive.

It employs two stages of r. f. amplification, a 224 screen-grid detector giving approximately five times the efficiency of the best power detection obtainable from the common 227 type, a 227 resistance-coupled first audio stage, and a pair of 245 push-pull output tubes. The same band selector that gives such excellent results in the 712 receiver is used in the 722 between antenna and r. f. amplifier. This selector, in combination with a new and highly efficient r. f. transformer, coupling the r. f. tubes to each other and to the detector, actually results in appreciably more amplification in the 722 than that ordinarily obtained from three r. f. screen-grid stages.

PARTS LIST FOR 722 RECEIVER

1—S-M 721 Chassis and Power Unit Case.....	\$2.55	1—Yaxley 10-MJP, 10,000-ohm Potentiometer.....	.90
1—S-M 812 Escutcheon .....	.75	2—Yaxley 840C 40-ohm C. T. Resistor .....	.36
1—S-M 810R Drum Dial	2.25	3—Yaxley 422 Tip-jacks .....	.23
1—S-M 336-U Power Transformer.....	6.00	1—Durham 2,000-ohm, One-watt Resistor .....	.45
1—S-M 723 3-Compartment Shield	2.10	2—Durham 10,000-ohm, Two-watt Resistors	1.02
1—S-M 122 Shielded R. F. Coil.....	1.20	1—Durham 25,000-ohm, One-watt Resistor.....	.45
2—S-M 123 Shielded R. F. Coils.....	3.10	1—Durham 60,000-ohm, One-watt Resistor .....	.45
1—S-M 124 Shielded R. F. Coil.....	1.55	1—Durham 300,000-ohm, One-watt Resistor .....	.30
1—S-M 322 .00035 Mfd. 4-Gang Condenser.....	6.00	1—Duram 2-megohm, One-watt Resistor .....	.30
1—S-M 338 Filter Choke	2.10	2—Polymet .00015 Small Moulded Condensers .....	.50
3—S-M 275 R. F. Chokes	1.62	1—Polymet .006 Small Moulded Condenser .....	.70
1—S-M 270-U Push-pull Input Transformer.....	2.90	1—H & H 1561 On-Off Switch.....	.50
1—S-M 30X Selector Coupler .....	.35	1—Carter 2A Closed Circuit Jack.....	.18
1—S-M 818 Hook-up Wire .....	.30	2—Carter RU 400—400-ohm Resistors .....	.24
2—S-M 817 Wood Knobs .....	.40	1—Ohio Carbon 800-ohm, Three-Watt Resistor.....	.45
1—Potter 674-C Condenser Block.....	6.75	1—Cord and Plug .....	.50
2—Potter 30B By-Pass Condenser Blocks.....	2.20	5—Moulded Binding Posts .....	.30
3—C-R 224 Tube Sockets .....	.90	1—Set of Hardware .....	.85
1—C-R 227 Tube Socket .....	.30		
2—C-R 245 Tube Sockets.....	.60		
1—C-R 280 Tube Socket .....	.30		

Total price of parts\$52.90
Complete kit of parts (S-M 722). Net.....**\$51.84**

The built-in ABC power supply is mounted at the left side of the receiver chassis, forming a part of the receiver. A 280 rectifier tube is used.

The 722 receiver is intended to operate with dynamic speaker, and has provision for furnishing all required field power to the speaker, the field of which is used as a choke in the power supply filter circuit. The chassis makes a compact unit 18½x9½ inches.

The 722 receiver is RCA-licensed. Price, complete wired, less tubes **\$7325** and cabinet, net.....

S-M 707 table cabinet. Price, additional, net..... **\$759**

SM

The SM 735 Round the World Six

[An All-Electric Receiver Covering]
Both Short Wave & Broadcast Bands]

The first fully a. c.-operated short-wave receiver offered on the American market, the Model 735 Short-Wave Receiver, will be a revelation to the fans who have used previously available receivers on wave lengths under 200 meters. On broadcast bands the performance will be extremely satisfactory, providing high quality medium-distance and local reception in an extremely flexible and inexpensive receiver. The circuit consists of one stage of untuned screen-grid r. f. amplification followed by a tuned regenerative detector circuit which, by means of six plug-in coils (4 coils covering 17 to 200 meters are furnished with the set. The other two coils are extra), will cover the entire range of 17 to 650 meters. The tuning is controlled by a single vernier illuminated dial, with on-off switch and with the volume smoothly and evenly controlled through a 75-mfd. condenser. Price, fully RCA licensed, factory assembled and tested. **\$63.60**

LIST OF PART (735 A. C.)

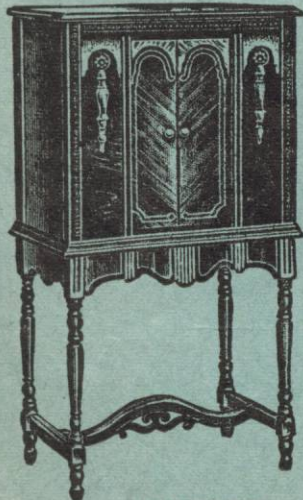
1-S-M 721 Chassis with Power Cover.....	\$2.55	1-S-M 812 Control Escutcheon ..	\$0.75
1-S-M 314 .00015 mfd. Variable Condenser ..	1.80	1-S-M 810R Drum Dial	2.25
1-S-M 342B .000075 mfd. Midget Condenser ..	1.05	2-S-M 275 R. F. Chokes	1.08
4-S-M Coils, 131-L, 131-M, 131-N, 131-O ..	3.00	1-S-M 338 Filter Choke	2.10
3-S-M 277 Short-Wave R. F. Chokes	2.70	2-S-M 636 Tube Shields .....	.60
1-S-M 260U Audio Transformer	1.35	2-Potter 30B Condenser Banks ..	2.20
1-S-M 270U Push-Pull Input Transformer ..	2.90	1-Potter 674C Condenser Bank ..	6.75
1-S-M 336U Power Transformer	6.00	1-C-R 224 Tube Socket .....	.30
1-Polymet .0015 mfd. Moulded Condenser ..	.25	3-C-R 227 Tube Sockets .....	.90
2-Durham 10,000-ohm, Two-watt Resistors ..	1.02	2-C-R 245 Tube Sockets .....	.60
1-Durham 2-megohm, One-watt Resistor .....	.30	1-C-R 280 Tube Socket .....	.30
1-Durham 2,000-ohm, One-watt Resistor .....	.45	3-Yaxley 422 Insulated Tip-jacks ..	.23
2-Yaxley 840C 40-ohm CT Resistors .....	.36	1-Carter 2A Closed Circuit Jack ..	.18
1-H & H 1561 Rotary On-off Switch .....	.50	2-S-M 817 Brown Wood Knobs ..	.40
1-Set of Hardware and Hook-up Wire .....	.72	4-Moulded Binding Posts .....	.24
1-Carter RU-400—400-ohm Resistor .....	.12	1-Cord and Plug .....	.50
1-Ohio Carbon 800-ohm, Three-watt Resistor ..	.45		

Total 735 A. C. Parts \$44.90
Complete kit of parts for 735 A. C. Net..... **\$44.00**

S-M 735DC FOR BATTERY OPERATION

With the same circuit that gives such excellent results in the A. C. 735, but adapted for D. C., the S-M 735DC employs one 222 screen-grid tube and four 112 type, thereby securing power for excellent volume without great current drain. Only the four short-wave coils, covering 17 to 200 meters, come with the 735DC receiver. Price, fully RCA-licensed, factory wired and tested. Net..... **\$44.10**

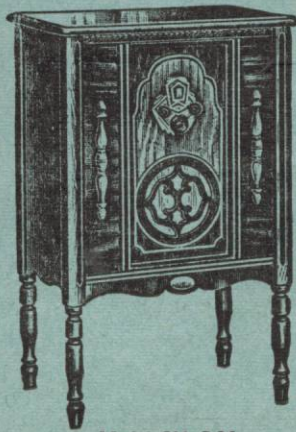
Put your S-M Receivers in these Consoles. Any of these Cabinets will accommodate either the S-M 712, 722, or 735 Receivers



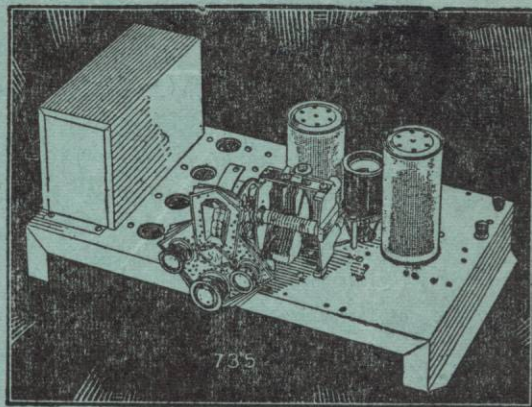
Model 217 S-M



Model 229 S-M



Model 211 S-M



LIST OF PARTS (735 D. C.)

1-S-M 721 Chassis and Power Unit Case.....	\$2.55
1-S-M 812 Escutcheon .....	.75
1-S-M 810R Drum Dial	2.25
1-S-M 314 .00014 Mfd. Variable Condenser ..	1.80
1-S-M 342B .000075 Mfd. Midget Condenser ..	1.05
4-S-M Coils, 131-L, 131-M, 131-N, 131-O ..	3.00
2-S-M 636 Tube Shields .....	.60
1-S-M 260U Audio Transformer	1.35
1-S-M 270U Push-Pull Input Transformer ..	2.90
1-S-M 708 Battery Cable	1.05
1-S-M 709 Five-Prong Cable Plug .....	.15
1-Potter 30-B By-pass Condenser Block	1.10
3-S-M 277 R. F. Chokes	2.70
1-Polymet .00015 Mfd. Moulded Condenser ..	.25
1-C-R 222 Socket .....	.30
4-C-R 112A Sockets	1.20
2-C-R 227-Type Blank Sockets .....	.60
3-Yaxley 422 Tip-jacks .....	.23
1-Yaxley 815-C 15-ohm Resistor .....	.18
1-Yaxley 503 3-ohm Rheostat .....	.45
1-Durham 25,000-ohm, One-watt Resistor .....	.45
1-Durham 2-megohm, One-watt Resistor .....	.30
1-Carter 2A Closed Circuit Jack .....	.18
2-1/4-inch R. R. Brown Wood Knobs .....	.40
4-Moulded Binding Posts .....	.24
1-Set of Hardware .....	.77

Total 735 D. C. Parts \$26.80
Complete kit of parts (735 D. C.) Net..... **\$26.24**

MODEL 217 S-M

With top and sides of lovely genuine walnut plywood, and with that beauty enhanced on the front side panels by Carpathian elm overlays, this cabinet provides a splendid housing for your S-M Receiver. 50½ inches high, 27½ inches wide, and 16½ inches deep—while ample space is provided within for the receiver chassis—23 inches wide, 9 inches high and 13½ inches deep. Net \$29.40

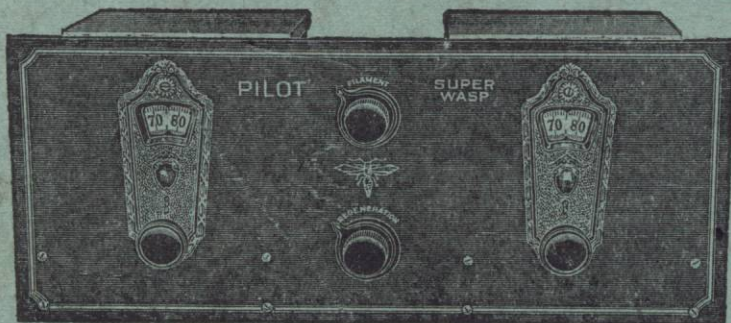
MODEL 229 S-M

Real butt walnut, is in the front of this cabinet, and the symmetry of design increases the pleasure of having such a piece of furniture in one's home. A sliding drawer for phonograph turntable, motor and pickup is in the speaker compartment, which is 28½ inches wide by 12 inches high by 13 inches deep, while the set compartment is 27½ inches wide, 9 inches high, and 12 inches deep. Overall dimensions are 33¼ inches wide, 54¼ inches high, and 18 inches deep. Special provision has been made to take care of a 677 amplifier in the lower drawer of the cabinet. Net.....\$55.27

MODEL 211 S-M

This cabinet has a space for receivers 19½ inches wide, 9 inches high, and 12½ inches deep, with a speaker compartment 21 inches wide, 12 inches high, and 12½ inches deep. Overall dimensions are 38½ inches high, 24½ inches wide, and 15½ inches deep. Net \$17.64

The Pilot Super-Wasp Receiver



14 to 500 Meters

The Finest
of
Amateur Sets

A Splendid
Broadcast Receiver

Modern Features in Super-Wasp

MOST short-wave sets put out in kit form have been highly critical straight regenerative affairs. It was not until the advent of the PILOT Super-Wasp that short-wave receivers graduated from the 1921 stage and grew into modern instruments possessing some of the numerous refinements that have been built into regular broadcast sets. The best and easiest way to get into the short-wave game and to enjoy the unequalled thrills of transoceanic reception is to build a Super-Wasp, because then you are assured of getting results.

Designed by Robert S. Kruse, one of the world's foremost authorities on short waves, the Super-Wasp embodies the most advanced principles of short-wave design, yet is easy to build and costs very little. Thousands of satisfied owners attest to the fact that it is the best short-wave set because of the following points:

Points of Superiority

- 1) Increased sensitivity and selectivity made possible by TUNED screen-grid R. F. stage.
- 2) Universal wavelength range. Tunes from 14 to 500 meters. An excellent broadcast receiver as well as the finest of all short-wave instruments.
- 3) Absolutely no hand capacity effects.
- 4) All-metal chassis—completely shielded.
- 5) Inexpensive.
- 6) Ability to bring in short-wave broadcasting stations better than all previous short-wave sets.

What the Kit Consists of

Electrically, the Super-Wasp consists of one stage of TUNED radio-frequency amplification with a screen-grid tube (it is the only short-wave set so constructed), followed by a regenerative detector and two stages of transformer-coupled audio amplification. The parts of the radio frequency and the detector stages, respectively, are enclosed within individual shield cans, fitted with removable tops for the easy insertion and removal of the plug-in coils.

The battery voltages necessary: 6 volts "A," 9 volts "C," and 135 volts "B."

The front panel and sub-panel are of metal, the former being neatly finished to resemble walnut graining. Along with the shield cans, they are accurately drilled with all the necessary mounting holes, and fit together perfectly. The set can be assembled with a screw driver and a pair of pliers. A thirteen-year-old school boy assembled and wired a whole Super-Wasp in one evening, and brought in PCJ, Holland, the first time he connected the "A" and "B" batteries to it.

The front panel is 18 inches long and 7½ inches high, the whole set being 8 inches deep. It can be fitted in most 7x18 cabinets, although many constructors prefer to leave it the way it stands, as the shield cans protect the most important parts.

Wide Wavelength Range

The PILOT plug-in coils, fitted with colored handles, are used in the Super-Wasp, ten coils altogether being supplied. They are used in pairs (one in the R. F. stage, the other in the detector stage), the wavelength ranges being as follows: red coils, 14 to 27 meters; orange, 26 to 50; yellow, 50 to 100; green, 100 to 200; and blue, 200 to 500. Smooth action vernier dials are fitted to the two tuning condensers to enable the operator to tune in distant stations. Regeneration is controlled by another variable condenser, located between the two tuning condensers. The tuning is quite simple. A filament rheostat is provided on the front panel, so a man not owning a storage battery can run his set on dry cells. The battery posts are so arranged that any combination of audio tubes can be used. The Super-Wasp kit

contains everything necessary for the assembly of the set, including all screws, nuts, washers, special bushings, lugs, wire, etc., and also the ten plug-in coils. **\$28⁷⁵**
Complete kit of parts. List, \$50.00; net.....

Completely assembled and wired ready for use; **\$42⁵⁰**
net

This is what R. S. Kruse says:

"In my opinion no receiver manufactured today is better suited to the amateurs' 1929 need than is the Pilot Super-Wasp."

[The Super-Wasp is a tried and proven set, and not something thrown together without thought or trial. Build one and become a member of the greatest DX family radio has ever known!]

A Word About the 1929-30 Season



HI-RAD is now commencing its eighth season in the radio field. This should be some warranty to prospective customers of fair treatment and prices that are strictly competitive. It should also mean to our old customers (a great many have been with us since the beginning) that we are even better prepared to serve them and more competent to select the best material for their uses. We could tell you again that we did not come into the radio business without previous acquaintance with the subject and that we did not jump from some other totally unrelated line into this highly technical business but we believe that a

perusal of our catalog pages will impress you with this fact. We have tried our best to keep out low quality merchandise and we feel that we have succeeded. It has always been our policy not to attempt to sell to others what we ourselves would not think good enough to use. This policy at times has cost us some money but it has also insured us against loss of confidence on the part of our customers. We have in our files many letters from our customers thanking us for the fair and efficient treatment we have accorded them. We have greatly appreciated your patronage of the past and we solicit its continuation.

CHICAGO RADIO APPARATUS COMPANY

Wm. Roy Carney, Pres.
G. E. Joyce, V.P. "W9RA"

R. A. Joyce, Treas, ex "W9SX"-"W9CZ" (1913)
Wm. S. Joyce, Sec'y.

E1.2429

A Word About Prices

We feel that the prices shown in our catalog are absolutely fair and competitive and we assure our trade that we can sell at as low a price as any jobber of good radio material. WE WILL NOT BE UNDERSOLD. If any job-

ber of similar lines quotes a better price than we do, we will meet that price provided the goods can actually be obtained from the concern so advertising and provided that fact can be proved to our satisfaction.

We Pay Freight on Orders of \$50 or More

Up to \$2.00 per hundred pounds we will pay the freight charges. Send us the freight bill and the number of our order on which the shipment was made and we will allow the charges. In addition we will allow the amount of the freight that would be charged on express or parcel post shipments on orders amounting to \$50 or more. This includes radio sets in cabinets but excludes cabinets, consoles (empty) or radio furniture and A and B batteries.

C. O. D. orders will be accepted from customers already of record on our books but new customers should send a reasonable deposit to

insure prompt shipment. We must request observance of this rule. Money orders will insure quicker shipment than personal checks, unless we have already taken them previously.

YOU CAN SEND US MONEY WITH CONFIDENCE that if the amount is in excess of what you require we will return it to you promptly. We will also advise you promptly in event that any items are out of stock and request your instructions regarding any money sent in. WE ARE VERY PARTICULAR ABOUT THIS POINT AND THIS IS IMPORTANT TO YOU.

Prices in this catalog are strictly net with the exception of our Chi-Rad Radio Receivers. On Chi-Rad Receivers we will allow a very liberal commission to agents who will make an effort to sell them. Prices are also subject to change without notice and according to manufacturers changes.

— ESTABLISHED 1921 —

The CHI-RAD 140 and 110

These Receivers are available in either a Straight A. C. Model (using 227 tubes in the radio frequency) or an A. C. Screen-Grid Model (using 224 tubes in the radio frequency). THE PRICE IS THE SAME for EITHER MODEL.

THE mechanical construction of these Chi-Rad Receivers is unique. The chassis is entirely enclosed in a steel shield, only the smooth working drum dial and the tubes projecting above the assembly. This construction keeps dust and moisture away from the delicate parts, and makes the whole receiver practically foolproof.

Of the three controls on the panel, the center one is the tuning control and rotates the illuminated drum dial. The knob to the left is a modifier and that to the right, the volume control. Provision is made for a phonograph pick-up, there being cord tip jacks in the rear to which the pick-up is connected. The pick-up is automatically connected by turning the tuning control to its zero position, at which point the word "PHONO" appears on the translucent strip on the drum dial.

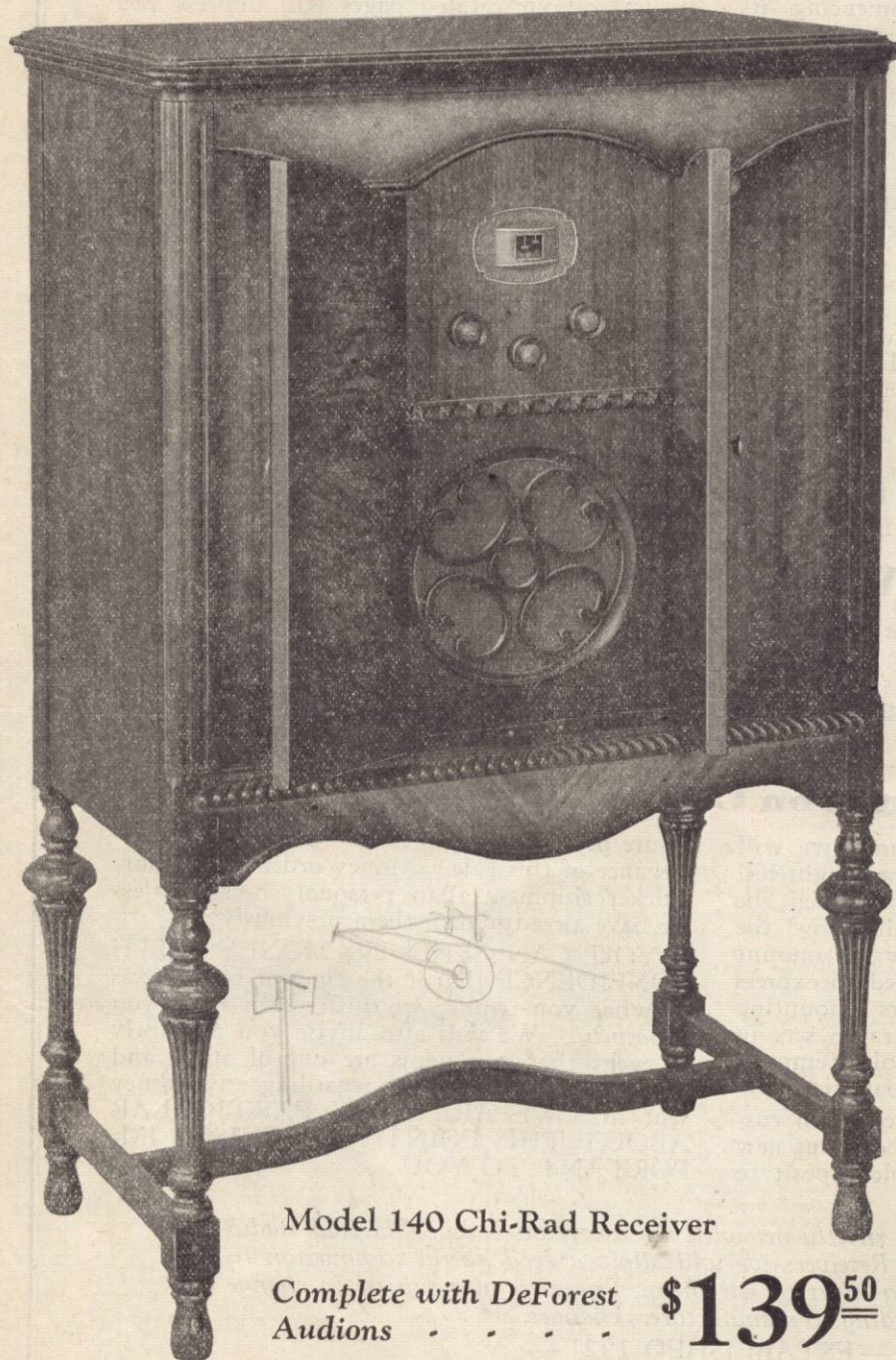
The chassis is available in a straight A. C. model (using 227 tubes in the radio frequency sockets) or in an A. C. Screen-Grid model (using 224 screen-grid tubes in the radio frequency sockets). The price is the same for either model.

We guarantee every Chi-Rad Receiver to be absolutely free from mechanical defects, and we will replace or repair the set if any such defects should develop within one year of the date of purchase. The tubes furnished with the Receiver are genuine DeForest Audions, and we will replace them free of charge if they fail to function perfectly within ninety days of purchase.

This is a broad warranty, and we make it because we know that the Receiver and the tubes WILL STAND UP under continued usage.

Details of the Chi-Rad 140

Cabinet of Walnut veneer front, top, sides. A very beautiful piece of furniture in all respects. French doors of burl walnut, top panel of maple and lower panel of satinwood. Dimensions 46½ inches high, 28½ inches wide, 17 inches deep. Equipped with genuine Magnavox Dynamic speaker. The price is the same for either the Straight A. C. set, or the A. C. Shield-Grid model.



Model 140 Chi-Rad Receiver

Complete with DeForest Audions \$139⁵⁰

We have a special Proposition for Agents on these Receivers.

Time Payments may be

Quality Radio Receivers at a Remarkable Price

LIKE the new Ford, the price of these new Chi-Rad Receivers is remarkably low—and the value extraordinary! One of them truly deserves a place among the fine things in your home.

As musical instruments these Radio Receivers are hard to approach. Such features as *power detection*, *Thordarson Audio Transformers*, *push-pull amplification* using the new 245 power tubes, and the *Magnavox Dynamic Speaker* when fed with an undistorted radio signal (as they are) can not render other than remarkable reproduction. These very features are to be found in sets considerably more expensive, and if you have been reading the advertisements of the leading set manufacturers you will realize the importance that they attach to them.

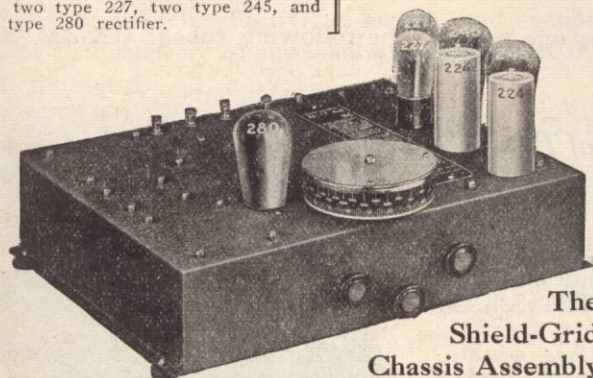
Sensitivity and Selectivity are also excellent. Here in Chicago we have repeatedly listened to stations all over the country while the powerful locals were in full operation; and the performance has been distinctly superior to many of the well-known higher-priced receivers.

With the experience of our eight years in the merchandising of both transmitting and receiving radio equipment, we recommend these Chi-Rad receivers to you!

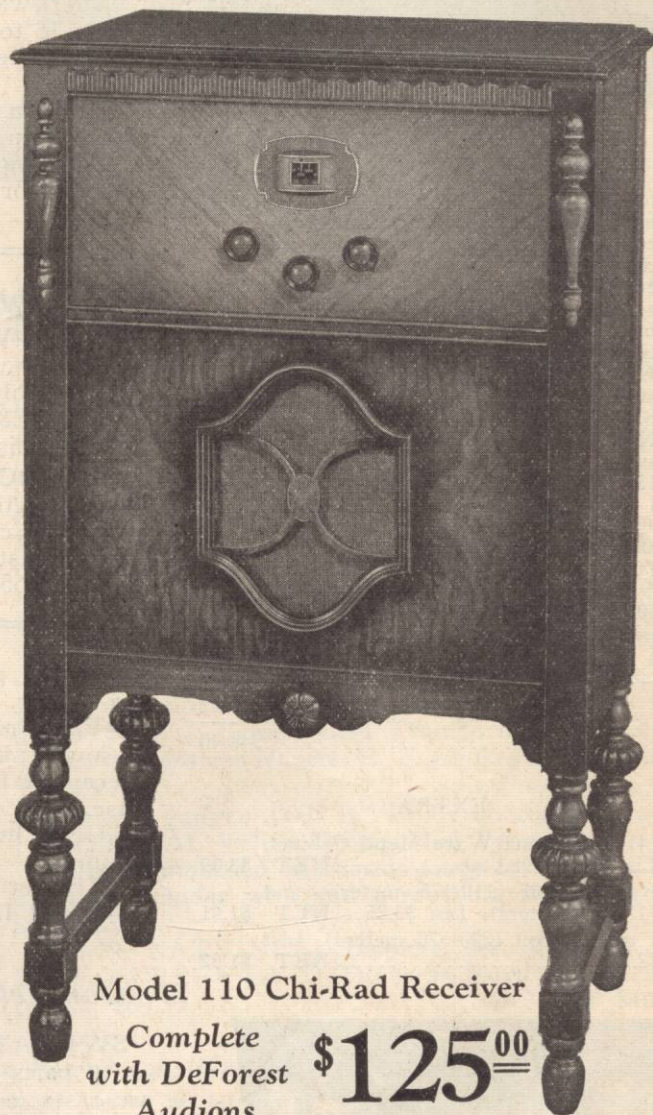
TUBES REQUIRED

Straight A. C. Model—Five type 227, two type 245, and one 280 rectifier.

A. C. Screen-Grid Model—two type 224, two type 227, two type 245, and one type 280 rectifier.



The
Shield-Grid
Chassis Assembly

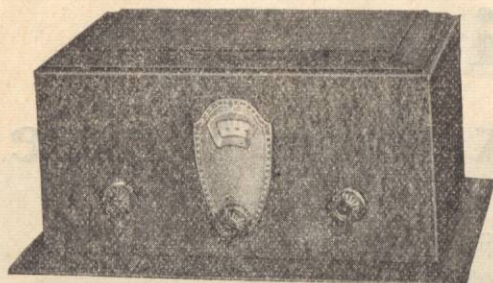


Model 110 Chi-Rad Receiver
Complete
with DeForest
Audions **\$125⁰⁰**

Cabinet of Walnut veneer, front, sides and top. Panel of satin-wood. No doors. 41½ inches high, 22½ inches wide, 15 inches deep. Equipped with genuine Magnavox Dynamic speaker. The price is the same for either the Straight A. C. or the A. C. Shield-Grid model.

had by responsible people.

Write for information if you think you can sell these Sets.

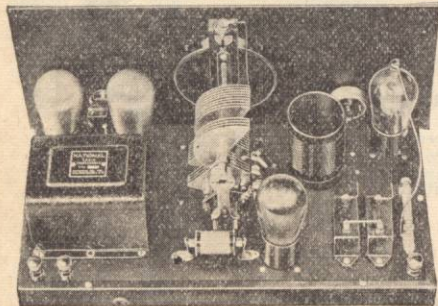


List of Parts

No. of Parts	Name of Parts	List Price
1	foundation Unit—consisting of: a metal front and micarta sub-panel completely drilled and equipped with tube sockets, grid-leak mountings, etc., and metal mounting base.....	\$ 8.00
1	set of (4) transformer coils (15,115 meters)	10.00
1	type E dial, illuminated.....	3.25
1	EC4 Special variable condenser with switch	6.50
1	SW 4 Duo Coupler.....	10.00
1	No. 10 H. F. Impedance.....	1.00
1	switch with National knob.....	.75
1	15 ohm fixed resistor.....	.15
1	1 ohm fixed resistor.....	.15
1	.00025 fixed condenser .....	.35
1	.0001 fixed condenser .....	.35
1	.001 fixed condenser .....	.40
2	.5 fixed condensers	1.80
1	3000 ohm special variable resistor with National knob	1.75
1	6 megohm grid-leak .....	.50
3	binding posts .....	.45
1	6 wire cable	1.00
Total List		\$46.40

EXTRA

1	(4) tube Short Wave Metal Cabinet. List \$5.25	NET \$3.09
1	type E coil (110-175 meters) and (170-300 meters). List \$3.25....	NET \$1.91
1	type F coil (290-570 meters). List \$2.75	NET \$1.62



The NATIONAL Screen-grid 4 tube Thrill Box

Gets Short-Wave and Broadcasts

The NATIONAL 4 Tube Shortwave Tuner or THRILL BOX, Type SW-4, has been designed in response to a continuous demand for a short-wave set capable of receiving the full short-wave range of from 15 to 175 meters, and which at the same time would give good loudspeaker operation on the broadcast band as well—175 to 570 meters.

Previous difficulties in the satisfactory design of a set of this kind have been overcome by the use of an ingeniously designed two-section tuning condenser. At the touch of a little switch, a large capacity section for broadcast waves is thrown in or out.

Completely Wired!

SW4W—NATIONAL completely wired and tested chassis assembly. Does not include type E&F coils or metal cabinet. List \$55.90 .. **NET \$32.87**

SW4CW — NATIONAL completely wired and tested receiver complete with six coils and installed in metal cabinet. List \$65.00

NET \$38.22

The six interchangeable coils are kept in special storage sockets in the handsome metal cabinet, so that they are protected from dust, and are always ready for use.

The Screen Grid Tube in First Stage gives increased sensitivity, eliminates "tuning holes" and prevents radiation.

A special audio system has been designed, embodying new improvements on the former NATIONAL Impedaformers, permitting the use of a high-mu audio tube and giving a very high gain. The two audio

units are placed in one case for compactness and greater simplicity of wiring.

The whole set is extremely easy to assemble, compact, light and has a low drain on batteries. It will be found unusually satisfactory for reception by amateurs and for yachts, airplanes, camp and expedition use.

Gives humless operation on the NATIONAL No. 3580 B-Power Supply.

The set requires one each of the following tubes: UX-222, 200-A, 240, and 171-A.

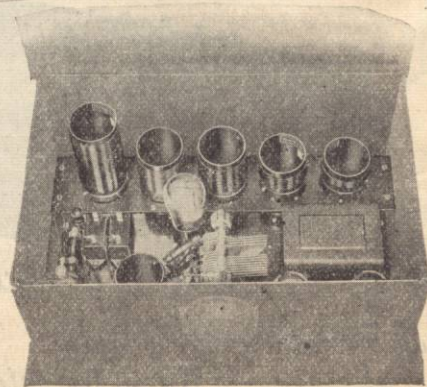
Complete Kit of Parts

SW4 NATIONAL complete set of parts for (4) tube short wave set as listed above less type E&F coils and cabinet, \$45.90.....

NET \$26.99

SW4C NATIONAL complete set of parts for (4) tube short wave set with type E&F coils and cabinet, \$55.00

NET \$32.34



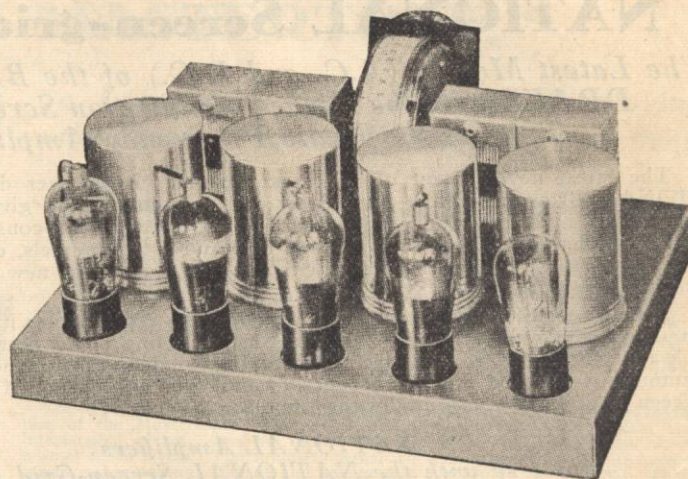
The New NATIONAL Screen-Grid MB-29

*The Latest Development of
Glen H. Browning and James Millen*

The new NATIONAL Screen-Grid MB-29 is the latest and most spectacular radio achievement of Glenn H. Browning and James Millen. NATIONAL Co., Inc., is sole licensee under patents issued and pending covering essential details of this remarkable receiver.

An ultra-sensitive, sharply-selective, distance-getting screen grid tuner, built with a completely shielded and beautifully frosted aluminum chassis and employing 4 screen-grid AC tubes and a 227 detector.

The MB-29 is especially suitable for mounting in a console or with electric phonograph combination.



FOUR SCREEN-GRID STAGES

Covers Enormous Range on Indoor Antenna

Such tremendously high, yet balanced RF amplification is obtained by the NATIONAL MB-29 tuner that 54 stations have been logged in one evening on a six-foot antenna.

Built for AC Operation

The new tuner circuit employs 4 screen-grid AC tubes, which are even better amplifiers than the DC screen-grid tubes, and one 227 detector. The NATIONAL MB-28 will pull in distant stations directly through closely crowded locals.

Completely Wired

The MB-29 NATIONAL Screen-Grid 5-tube tuner completed wired and laboratory tested, \$10.00 list additional.

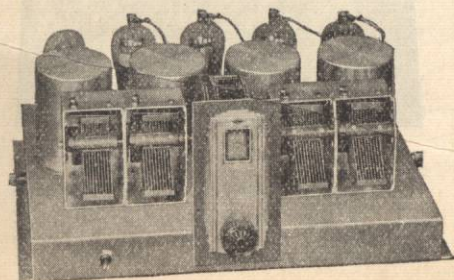
MB-29W, list \$79.50.....NET \$46.75

List of Parts—National MB-29 Five-Tube Tuner

- 1 Aluminum chassis complete, 18x13½
- 2 Binding posts
- 1 5 cord cable (2 of these are Heavy Wire)
- 1 AC switch with NATIONAL knob
- 1 Volume Control with NATIONAL knob
- 1 Center tap resistor
- 1 100 Ohm resistor
- 1 20M Ohm fixed resistor
- 1 1800 Ohm wire wound fixed resistor
- 4 No. 90 choke coils
- 3 1. mfd. by-pass condensers
- 1 .001 mfd. mica molded condenser
- 4 NATIONAL Screen Grid Transformers, complete with by-pass condensers, R. F. Chokes and terminal block
- 2 Sets of 2 ganged .0005 NATIONAL condensers
- 1 NATIONAL Velvet Vernier dial Type H

All parts mounted on chassis ready for wiring. Set of parts includes wire and everything necessary for assembly.

MB-29 NATIONAL complete set of parts for 5-Tube SCREEN-GRID Tuner as listed above (less tubes), \$69.50.....NET \$40.87

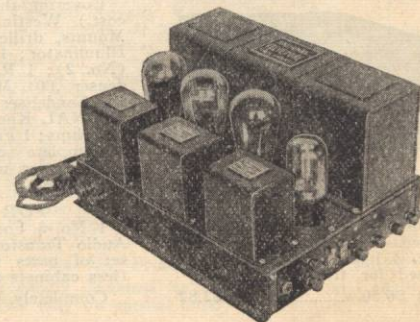


National Velvetone Power Amplifier

This new NATIONAL Power Amplifier has been developed and built to get the very most out of the new MB-29 Screen-Grid 5-tube tuner. It is a combination power supply and audio amplifier, using a 280-tube for a rectifier, one stage of transformer audio with a 227-tube and a stage of push pull amplification with two 245's (the new and remarkable 2.5 volt power tubes).

The new NATIONAL Velvetone Power Amplifier is sold completely wired and assembled and ready for use. It is licensed under RCA patents.

List Price, completely wired and equipped with phonograph jack (less tubes), \$97.50.....NET \$57.33



NATIONAL Screen-grid Four

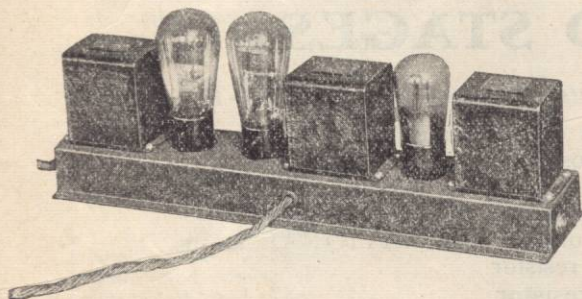
The Latest Models (A.C. and D.C.) of the BROWNING-DRAKE with the High-Amplification Screen-Grid Tube as the Radio Frequency Amplifier

The latest development of the most popular circuit ever designed, the NATIONAL Browning-Drake New Steel chassis construction, gives beautiful clean cut, factory-built appearance with custom-built quality. Unit-construction of Tuner and Amplifiers allows building a range of 4 and 5-tube models, employing straight transformer-push-pull or impedance-coupled-audio, using the new 245 power tube in the last stage.

A new type of Unit-construction makes the 2-tube tuner in one unit and the amplifier in another of exactly the same length, fitting in the rear of it. Redesigned coli and RF Transformer allow use of tuning condensers of same size so that less trimming is required over the broadcast band. The appearance of the NATIONAL Screen Grid Four is essentially the same for AC or DC.

NATIONAL Amplifiers

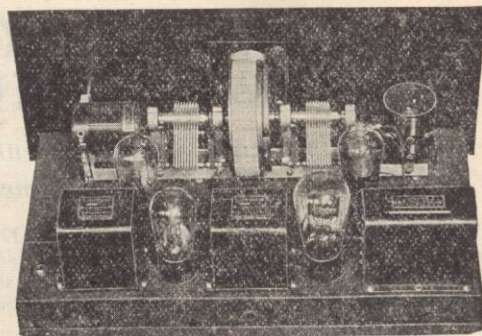
—for Use with the NATIONAL Screen-Grid Four



These amplifiers are sold completely wired and ready for use (less tubes). They are licensed under patents and applications of RCA and Associated Companies. Amplifiers do not include power supply equipment. We recommend for this purpose the NATIONAL Type 7180 AB Supply, which is described elsewhere in this catalog, but the units may be operated on any power supply giving approximately 180-220 volts, 70-100 MA.

The amplifying units are designed for use with the 245 tube in the power stage and are equipped with jacks for phonograph use. They are also available for use with the 171A from the factory.

- Type AAC—Completely wired two-stage Amplifier for A. C. operation, using the new NATIONAL Amplifiers and Tone Filter. List \$32.50.....NET \$19.11
- Type ADC—Same as above but for D. C. operation. List \$32.50.....NET \$19.11
- Type TAC—Completely wired two-stage Amplifier for A. C. operation using the A100 Audio Transformers and Tone Filter. List \$37.50.....NET \$22.05
- Type TDC—Same as above but for D. C. operation. List \$37.50.....NET \$22.05
- Type PAC—Completely wired push pull amplifier, for A. C. operation, using the new NATIONAL Audio and Push Pull Transformers. List \$42.50.....NET \$24.99
- Type PDC—Same as above but for D. C. operation. List \$42.50.....NET \$24.99



- Type 222CA—Complete set of parts for four tube A. C. set with impedance audio, using the new National Impedaformers. The audio unit being completely wired, it is only necessary to assemble and wire the detector and r. f. circuits. List \$80.00.....NET \$47.04
- Type 222DA—Same as 222CA but for D. C. List \$80.00.....NET \$47.04
- Type 222CT—Complete set of parts for four tube A. C. set using a completely wired two stage audio amplifier incorporating the new National nickel-steel alloy transformers. List \$85.00.....NET \$49.98
- Type 222DT—Same as 222CT put for D. C. List \$85.00.....NET \$49.98
- Type 222PA—Complete set of parts for a five tube A. C. set with a completely built two stage push-pull amplifier. List \$90.00.....NET \$52.92
- Type 222PD—Same as 222PA but for D. C. List \$90.00.....NET \$52.92
- Type 222ACK—Complete set of parts for two tube A. C. tuner. List \$47.50.....NET \$27.93
- Type 222DCK—Same as 222ACK but for D. C. List \$47.50.....NET \$27.93

We will furnish any of the above kits laboratory wired and tested for an additional list price of \$10.00.

- Type 222CA—Wired. List \$90.00.....NET \$52.92
- Type 222DA—Wired. List \$90.00.....NET \$52.92
- Type 222CT—Wired. List \$95.00.....NET \$55.86
- Type 222DT—Wired. List \$95.00.....NET \$55.86
- Type 222PA—Wired. List \$100.00.....NET \$58.80
- Type 222PD—Wired. List \$100.00.....NET \$58.80
- Type 222ACK—Wired. List \$57.50.....NET \$33.81
- Type 222DCK—Wired. List \$57.50.....NET \$33.81

NATIONAL 2 & 3 tube Tuners

For Long Distance Short-wave Code and Broadcast Reception

The essential circuit of these screen-grid tuners is the same, the 3-Tube Tuner having added to it a single stage of audio. The Tuner comprises several rather unique features; including single tuning control, and simplified foundation unit design, making necessary only a few connections by the assembler. A SCREEN GRID tube in the first stage materially increases the sensitivity and eliminates the tuning "holes" or "dead spots" so often found in short-wave receivers. Furthermore, the screen grid tube prevents re-radiation. The layout is so arranged as to make shielding unnecessary. By four easily interchangeable transformers, the Tuners will cover the band from 15-115 meters, and an additional transformer covers 110-180 meters. A 270° NATIONAL Short-Wave Equicycle Condenser greatly improves the tuning and spreads the stations out more widely.

LIST OF PARTS—TWO-TUBE TUNER

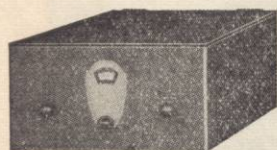
Covering the range of 15 to 115 meters (115 to 180 meters at extra cost.) Westinghouse Micarta panels, sockets, gridleak and R. F. Choke Mounts, drilled ready to assemble. 4 S. W. Coils; 1 Dial, Type E, Illuminator; 1 Condenser, S. W. Type, 125 mmfd.; 1 Foundation Unit (No. 2); 1 R. F. Choke No. 90; 1 H. F. Impedance No. 10; 1 Condenser .001 Mfd.; 1 Condenser .00025 Mfd.; 2 Condensers .5 Mfd.; 1 Condenser 1.0 Mfd.; 1 0-240 Ohm Variable Resistor with NATIONAL Knob; 1 Equalizer No. 2; 1 Equalizer No. 15; 1 Gridleak—6 megohms; 1 Filament Switch with NATIONAL Knob; 8 Binding Posts. Complete set of parts for NATIONAL 2-tube Screen-Grid, Short-wave Tuner, unwired (less cabinets and tubes). List \$34.60.....NET \$19.34

Completely Wired and Tested 2-tube Tuner. List \$44.60.....NET \$26.22

FOR THREE-TUBE SET, ADDITIONAL PARTS

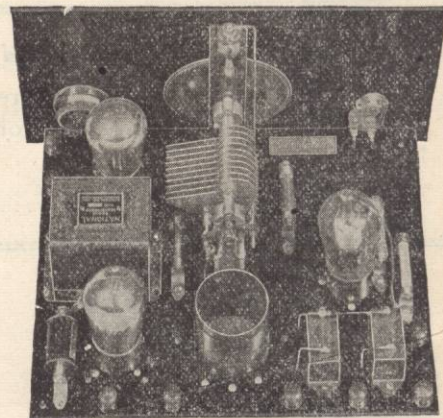
1 No. 3 Foundation Unit in place of No. 2 Foundation Unit, 1 A100 Audio Transformer, 1 No. 4/3 Equalizer in place of No. 2. Complete set of parts for NATIONAL 3-tube Screen-Grid Short-wave Tuner (less cabinets and tubes). List \$44.60.....NET \$26.22

Completely Wired and Tested 3-tube Tuner. List \$54.60.....NET \$32.10



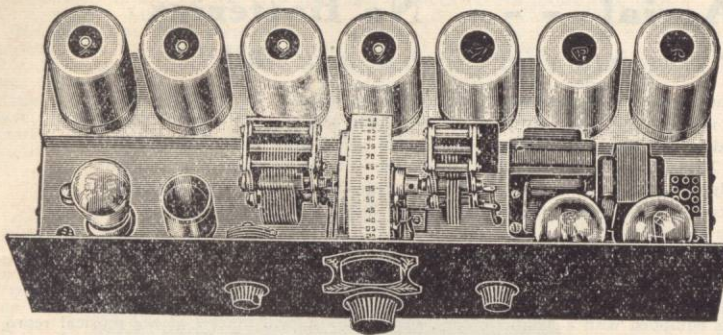
A special metal cabinet is available for housing either model of the NATIONAL Screen-Grid Tuner. The cabinet is light and may be collapsed for transportation.

List \$6.50.....NET \$3.82



These Tuners will bring in short-wave stations all around the world. With them short-wave broadcasts from Australia and Java have been received and clearly heard in Boston, Mass. KDKA, WGY, WABC, WLW and a number of other regular broadcasting stations put on their programs in short waves.

THE NEW H-F-L MASTERTONE



a Laboratory-Made Receiver Employing the Most Advanced Engineering Practices.

The H. F. L. Mastertone is an A. C. Superheterodyne utilizing four 224 A. C. screen grid tubes as R. F. Amplifiers, one 224 screen grid tube as Detector, one each 227, as First Detector, First Audio, and Oscillator. The power output tubes are two 245's in push-pull. The power supply comes as a separate unit and requires one type 280 Rectifier tube. H. F. L. Mastertone Receiver Chassis and Power Supply, completely built and ready to operate (less tubes). List \$180.00; NET..... **\$103.50**

This is the receiver for those who wish to enjoy radio to its fullest. Its range staggers belief! The amplification system is built around the new AC screen grid tubes. This tube is especially adapted to the intermediate frequency stages of the superheterodyne receiver. Since they operate at only one frequency, all tendency toward oscillation is eliminated. In the Mastertone, five 224 screen grid tubes are employed. The fifth one is the detector, upon the plate of which is impressed 175 volts. This new system of power screen grid detection absolutely prevents overloading the detector, even at maximum volume. It is the latest engineering development in radio.

The input circuit is of the conductive tuned type, permitting use of very short antenna. The wire screen backing of the console or a metal plate fastened in top of the cabinet will suffice. Coast to coast reception is possible with such an antenna equipment. For still louder signals or greater distance, either an inside or outside antenna may be used. Surely, smoothly the stations roll in. There is absolute stability at all times. This means perfect enjoyment of every station whose signal reaches your antenna. Engineers will appreciate that the sensitivity is as high as a few tenths of a microvolt with full loud speaker volume.

You are instantly struck with the ease, smoothness and quietness of operation of the Mastertone. There is a complete absence of mechanical and interference noises. Due to its extreme sensitivity, it easily rises above normal noise levels. The minutely equalized gain over the entire frequency range makes tuning efficient and constant at every point on the dial. Then, too, there is absolutely no hum with this receiver.

Unusual Features of Design

Ample provisions for the dissipation of heat have been made. Voltages for dynamic speakers of either the DC or AC variety are provided. Separate terminals for interchanging these speakers are found on the chassis. The power unit and receiver are connected by means of a multiple cable and plugs. A plug-in jack is provided for the instant attachment of an electric phonograph pick-up system. As a whole, the receiver is very compact. Front Panel is 7x21 inches and the chassis is only 7½ inches deep. H. F. L. Mastertone—Completely built chassis (less tubes). List \$110.00. NET..... **\$63.25**

H. F. L. Power Master (less 280 rectifier). List \$70.00. NET..... **40.25**

The New Custom-Built Hammarlund "HiQ-30"

The "HiQ-30" A. C. Phono-Radio Receiver consists of a three stage tuned band filter or pre-selector, followed by a high gain three stage screen grid tuned radio frequency amplifier, a super-sensitive detector, a high quality intermediate audio amplifier, and a balanced push-pull power amplifier. The nine tubes include a voltage regulator, a 280 rectifier, three 224 R. F. amplifiers, a 227 detector, a 227 first audio and two 245 power tubes.

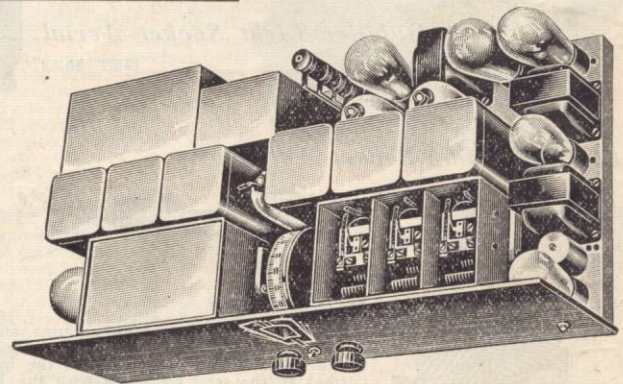
Both the band filter and radio frequency amplifier circuits are tuned by a single illuminated knob control vernier dial with kilocycle graduations. Selectivity is needle-point, yet without any side dial band cutting. The completely shielded screen grid amplifier provides tremendous amplification at all broadcast frequencies, yet without the slightest instability or regenerative distortion. Automatic voltage regulation of the 110 volt, 60 cycle input preserves the tube efficiency and thus aids in maintaining uniform volume level.

The HiQ band filter system pre-selects the desired signal before amplification. It is this new principle which provides "flat-top tuning," greatly increasing the selectivity, without side band cutting, preserving the radio frequency signal characteristics required for perfect tone. Back-ground noises are reduced to a minimum heretofore unknown.

The complete sets is built on a strong metal chassis with no visible wiring. The sub-panel wiring, "unit" construction, and factory assembly, wiring and testing of the filter and amplifier units make the construction a very simple operation requiring only two or three hours of time. The standard size chassis (7"x12¼"x24") allows an unrestricted choice of cabinets. The walnut panel and control knobs with the statuary bronze dial escutcheon and switch make the panel arrangement exceptionally pleasing and compact. The radio phono-switch is mounted on the front panel for convenience of operation.

The "HiQ-30" is unqualifiedly guaranteed for distance, selectivity, volume and tone. It operates on either an inside or outside antenna. A copper screen tacked on to the rear of the cabinet suffices for local reception.

The "HiQ-30 Manual" which lists at 25c (NET \$0.15) contains complete information on both the A. C. Model and Battery Operated Model (Not available up to going to press. Write for information.) of "HiQ-30" Receivers and Tuners. Complete Kit of Parts, Code 30-R-A-C. **\$95.55** List \$162.50. NET.....



PARTS LIST—HAMMARLUND "HiQ-30 AC"

Parts may be ordered separately from following schedule. (Discount is 40%, less 2% for cash or C.O.D.)

1—Hammarlund "HiQ-30" Foundation Unit (QFU-30).....	\$ 8.50	*1—Electrad Grid Resistor, 1500 ohms.....	.40
1—Hammarlund BS-3 Three Stage Band Filter Unit.....	27.00	*3—Electrad Grid Resistors, 400 ohms.....	1.05
1—Hammarlund RF-3 Three Stage Screen-Grid Amplifier Unit.....	35.00	*3—Electrad Filter Resistors, 5000 ohms.....	1.20
1—Hammarlund SD Drum Dial.....	4.00	*1—Electrad Royalty Volume Control Potentiometer, 25,000 ohms.....	2.00
1—Hammarlund SPC R. F. Choke.....	1.50	*1—Eby 6-11 Socket marked "Amperite".....	.25
1—Hammarlund AF-2 First Stage Audio Transformer.....	8.00	*1—Eby 6-11 Socket marked 280.....	.30
1—Hammarlund AF-4 Push Pull Input Transformer.....	8.00	*2—Eby 6-11 Sockets marked 245.....	.60
1—Hammarlund AFM Push Pull Output Transformer.....	8.00	*2—Eby 6-11 Sockets marked 227.....	.70
1—Hammarlund PS-45 Power Supply Unit.....	24.00	*3—Eby 6-11 Sockets marked 224.....	1.05
3—Hammarlund TS Tube Shields.....	1.80	*1—Eby Triple Binding Post Strip.....	.60
*1—Aerovox CHQ-30 Condenser Block.....	16.50	*1—H. & H. 20510 Phono Toggle Switch.....	.60
*3—Aerovox Condensers.....	4.80	*1—H. & H. 20595 Line Toggle Switch.....	.60
1—Yaxley 810-C 10-ohm Resistor.....	.30	1—Sangamo Fixed Condenser, .001 mfd.....	.45
1 pr.—Yaxley 422 Phono Tip Jacks.....	.25	*1—Beaver-Arrow Handle Cap, Cord Connector and Silk Cord.....	1.25
1—Yaxley 401-S Speaker Twin Tip Jack.....	.25	1—Beaver No. L-14 Duplex Receptacle.....	.70
*1—Electrad RHQ-30 Voltage Divider.....	2.50	1—Arrow No. 8339 Midget Receptacle.....	.35
		Total List Price.....	\$162.50

*Specially designed for the "HiQ-30" and available only on special order.

Something New - - - The Peer AC Portable No Aerial - - - No Batteries Just plug into your electric wall outlet.



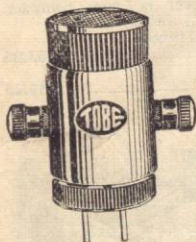
"The Universal Receiver"

Use it in Hotels, Hospitals, Homes, Summer Homes, Camps, Club rooms, Restaurants and Cafes, Stores, Rest rooms, and Offices.

This receiver utilizes six tubes (4 type 227, 1 type 245, and 1 type 280 rectifier) and operates by merely connecting to your electric light socket (110 volt, 60 cycle A. C.). No aerial is necessary, a Dubilier light socket aerial plug being incorporated in the receiver. The set, speaker, and power pack are entirely contained in the carrying case. Only the cable and plug for connecting to the electric wall outlet are external to the carrying case, and there is provision made for these inside the case when moving the set.

Here indeed is a Radio Receiver that is different. It is a Radio Set with the advantages of both a permanently installed receiver and a portable; and it is without their disadvantages. The Peer is wonderfully compact and weighs but twenty-eight pounds. Despite its light weight this Receiver incorporates an efficient power supply and is equipped with a magnetic cone speaker. You will marvel at the musical reproduction and the volume from such a tiny set—and the price is remarkable too. Really we can't find words to convey to you our enthusiasm for this remarkable product. List (less tubes) \$85.00.....NET \$49.98
Complete with DeForest Audions. List \$101.50.....NET \$59.68

Aerials LIGHT SOCKET AERIALS



Tobe Light Socket Aerial

A device which makes an aerial of any wall socket or other outlet.

List \$1.50NET \$0.88



Dubilier Light Socket Aerial

List \$1.50NET \$0.88

Electrad Lamp Socket Antenna

All Bakelite, plugs in on any electric light line. Consumes no current—absolutely safe. Every one tested. Listed by Board of Fire Underwriters.
List \$0.75NET \$0.44



Beldentenna

A 7-ft. combination radio antenna and extension cord. One cord provides a self-contained antenna and also connects the lighting current to the set. Equipped with the Belden Soft Rubber Plug and Bakelite Outlet. Plug, cord, and overall braid are brown. In operation the rubber plug is inserted in a convenience outlet; the plug from the receiver or power unit is inserted in the Beldentenna outlet; and the lead which extends from the Beldentenna outlet is attached to the aerial connection of the set. No other aerial is needed.
List \$1.60.....NET \$0.94



Belden Socket Aerial

A 7-ft. especially designed cord covered with a braid of brown rayon and equipped with the Belden Soft Rubber Plug that provides a self-contained aerial. In operation one end is attached to the aerial connection of the set; the other plugs into a convenience outlet. No other aerial is needed. List \$1.00.....NET \$0.59

AERIAL LEAD-IN STRIP

The conductor is made of flat tinned copper. The tough Colorubber insulation bends easily under the window and is moisture and weather-proof. Fahnestock clips riveted and soldered at both ends.
List \$0.20NET \$0.12

BELDEN AERIAL KITS

SEE PAGES 49 AND 50 FOR AERIAL WIRE, ETC.

The aerial wire in every Belden Aerial Kit is full size 7x22, either Belden-enamel or Bare Copper.

No. 8800—Beldenamtel Aerial Kit. Contents: 100 ft. 7x22 Beldenamtel, 25 ft. Belden Flexible Colorubber Ground Wire, 50 ft. 7x22 R. C. Lead-in Wire, 1 Belden Resistor Type Lightning Arrester No. 8812, 1 1-15-inch Belden Lead-in Strip, 1 Belden Ground Clamp, 2 3-inch Belden Glass Insulators, 3 Nail-on Knobs, 2 Galvanized Screw Eyes, 2 Wood Screws, 6 Two-point Staples, and 1 Instruction Sheet. List \$4.10.....NET \$2.41
No. 8801—Bare Copper Aerial Kit. Same equipment as 8800. List \$3.80.....NET \$2.24

No. 8802—Beldenamtel 75-ft. Aerial Kit. Contents: 75 ft. 7x22 Beldenamtel, 35 ft. R. C. Lead-in and Ground Wire, 1 Belden Standard Type Lightning Arrester No. 8813, 1 15-inch Belden Lead-in Strip, 1 Belden Ground Clamp, 2 3-inch Glass Insulators, 2 Nail-on Knobs, 2 Galvanized Screw Eyes, 2 Wood Screws, and 1 Instruction Sheet. List \$2.30.....NET \$1.35
No. 8803—100-ft. Bare Copper Aerial Kit. Same equipment as No. 8802. List \$2.40.....NET \$1.41

No. 8804—75-ft. Bare Copper Aerial Kit. Same equipment as No. 8802. List \$2.10.....NET \$1.24

No. 8805—75-ft. Bare Copper Aerial Kit with 2 window lead-in strips, otherwise same as No. 8802. List \$2.30.....NET \$1.35

No. 8806—Bare Copper Aerial Kit without arrester, otherwise same as No. 8802. List \$1.90.....NET \$1.12

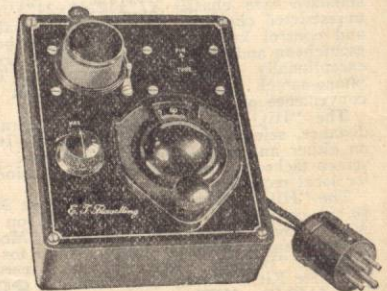
No. 8810—Indoor Aerial Kit. The neutral brown braid of the flexible Belden Indoor Aerial Wire facilitates concealing the wire around a window frame or on the molding. Kit includes: 60 ft. Belden Indoor Aerial Wire, 15 ft. Belden Flexible Colorubber Ground Wire, 1 Belden Ground Clamp, and 1 Instruction Sheet. List \$1.00.....NET \$0.59

Adapters

Flewelling Short Wave Adapter

The Flewelling Short Wave Adapter doubles the value of any broadcast receiver by allowing the reception of another complete broadcast band. The wavelength range of this adaptor is from 17 to 85 meters, thus covering all international broadcasting bands. Instantly attached and one dial tuning makes it very simple to operate. Housed in a bakelite box with verichromed panel. Overall dimensions 7" x 5½" x 3". Shipping weight with three plug in coils, 2½ lbs.

List \$22.50.....NET \$13.23

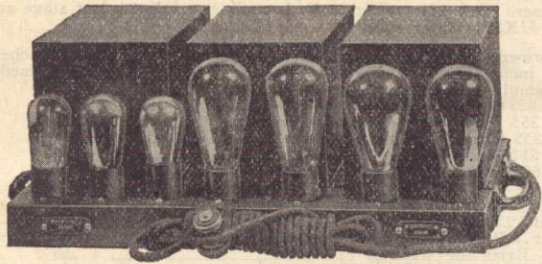


Na-Ald Adapters

No. 945—Test adapter with four holes on top and five prongs below. This adapter is used to test grid and plate voltages in five prong sets with D. C. testers. List \$1.00.....NET \$0.59

No. 954—Just the reverse of 945. Permits 5 prong A. C. tubes to be tested in D. C. testers; equipped with UX or UV sockets. List \$1.00.....NET \$0.59

No. 946—D. C. Pickup Adapter, for connecting Electric Phonographs to Radio Sets. It connects the pickup leads to the plate prong of the detector tube and B45 of the batteries or B eliminator. This avoids putting the pickup signal through the detector tube and insures good quality. List \$1.50.....NET \$0.88

Amplifiers**General Amplifier Company Amplifiers**

Simplicity has been the keynote in the mechanical design of all General Amplifiers. All components are housed in drawn steel cases finished in an attractive black crackle. The sockets which are flush with the base-board present an unusually good contact to the tubes, and have guides for the tube prongs. They are also equipped with colored buttons for easy identification of the tubes. The input and output connections are tip jacks moulded as inserts in a bakelite strip. Handles are also provided for convenience in carrying. In all amplifiers there are no exposed terminals and consequently there can be no danger from shock.

Much thought and care has entered into the electrical design of all General Amplifiers. Since excellent tone quality with great volume is of primary importance, it is imperative that we employ the very best of audio-frequency transformers. However, in building a multi-stage amplifier operated from an alternating current plate supply unit, serious complications are encountered. The use of the common plate supply in combination with any multi-stage amplifier introduces coupling which seriously impairs the frequency characteristic of the device. In order to overcome this defect it is necessary that each individual stage be filtered. When this is done, the signal voltage of each stage is provided with a direct path to the filament of the tube, with the result that the characteristics of the amplifier become that of the transformer employed. In all General Amplifiers each individual stage is filtered in both the plate and grid circuits. In the power supply large size transformers and choke coils are used. The condensers employed are of the self-healing type, which means that no trouble should be experienced from this source. The voltages placed on the plates and filaments of the tubes have been so adjusted that normal line fluctuations will have no effect upon the life or operation of the tubes.

Due to the simplicity of design, the operation of all General Amplifiers is extremely simple. The input of the amplifier should be connected to the terminals marked PHONO. The reproducer of either the dynamic or magnetic type should be connected to the terminals marked SPEAKER. ALL AMPLIFIERS ARE DESIGNED FOR OPERATION FROM THE STANDARD 105 TO 120 VOLT, 50 TO 60 CYCLE ALTERNATING CURRENT.

Model GA-15—A two-stage amplifier employing a UX-227, two UX-245's and one UX-280. Will deliver approximately 4.5 watts of undistorted energy to the speaker. For either magnetic or dynamic reproducers. Requires no output device between itself and the speaker. List price (less tubes), \$85.00.....NET \$49.98

Model GA-20—A three-stage amplifier employing 2 UX-250's, two UX-226's, two UX-281's and one UY-227. Will deliver approximately 14 watts of undistorted energy to the speaker. Requires no output device between itself and the speaker. Due to the use of dual push-pull this amplifier is extremely quiet in operation. List price (less tubes) \$225.00.....NET \$132.30

Model GA-40—A single stage amplifier similar in appearance to Model GA-20 employing four UX-250's and four UX-281's. Will deliver approximately 25 watts of undistorted energy to the speaker. Ideal for large installations where a great amount of power is desired. List price (less tubes) \$225.00.....NET \$132.30

Model GA-50—A two-stage amplifier with a switching arrangement so that it may be used either with a microphone or with the output of a magnetic pickup. Entirely A. C. operated. The output of this amplifier is designed to feed into the amplifiers described herewith. List price (less tubes) \$150.00.....NET \$88.20

National Velvet Power Amplifier

This unit is a combination amplifier and power supply, using a 280 tube as a rectifier, a 227 in the first stage, and two 245's in push-pull in the second stage. It is designed to furnish complete B supply for the 227 detector and as many as four stages of tuned radio frequency using 224 shield-grid tubes. In addition it supplies the A. C. filament current for these tubes. Completely wired and licensed under RCA patents. Equipped with phonograph jack, but without tubes. List \$97.50.....NET \$57.33

SEE PAGE 5 FOR ILLUSTRATION

National Amplifier Units

These units are sold completely wired and ready for use, but do not include power supply apparatus nor tubes. The AC units are designed to use 227 tubes in the first stage and 245's in the power stage. The D. C. units use a 201A or 112A in the first stage and the 245 in the power stage. All units are equipped with phonograph jack; and we can supply them for 171A tubes in the power stage, from the factory.

Type AAC—Completely wired two-stage Amplifier for AC operation, using the new NATIONAL Ampliformers and Tone Filter. List \$32.50.....NET \$19.11

Type ADC—Same as above but for D. C. operation. List \$32.50.....NET \$19.11

Type TAC—Completely wired two-stage Amplifier for A. C. operation, using the A100 Audio Transformers and Tone Filter. List \$37.50.....Net \$22.05

Type TDC—Same as above but for D. C. operation. List \$37.50.....Net \$22.05

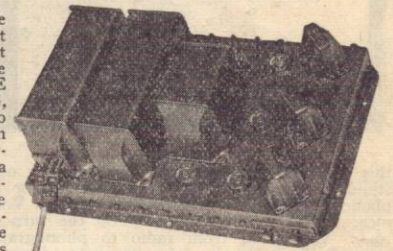
Type PAC—Completely wired push-pull amplifier, for A. C. operation, using the new NATIONAL Audio and Push-Pull Transformers. List \$42.50.....NET \$24.99

Type PDC—Same as above but for D. C. operation. List \$42.50.....NET \$24.99

SEE PAGE 6 FOR ILLUSTRATION

Samson PAM Amplifiers

Samson PAM amplifiers come equipped with fuse, a six foot rubber covered cable, attachment plug, switch, and the exclusive Samson LINE VOLTAGE COMPENSATING PLUG, which permits the amplifier to be operated on line voltages from 100 to 130 volts. Unless otherwise specified the output of a detector tube or a magnetic pickup will be sufficient to operate the amplifiers, and the amplifiers are designed to operate from the regular 100-130 volts 50-60 cycle AC current.



PAM 16-17

PAM 3—A two-stage amplifier using one 227, one 250, and one 281. This amplifier has sufficient output to operate several speakers, and it will operate one speaker with more than enough volume for a small hall or living room. List \$115.00.....NET \$67.62

***PAM 5**—A two-stage amplifier using one 227, two 112As, and one 280. Ideal for use in the average home room. List \$125.00.....NET \$73.50

PAM 9—A two-stage amplifier using one 227, two 250s in push-pull, and two 281s. To be used where high undistorted output is needed. List \$137.50.....NET \$80.85

PAM 16—A two-stage amplifier using one 227, two 210s in push-pull, and one 281. This is the most popular PAM due to its all around adaptability. Amplification the same or slightly less than PAM 9, but not so high an undistorted output. List \$125.00.....NET \$73.50

***PAM 17**—Same as PAM 16 but with provision made for supplying field excitation current for high voltage DC dynamic speakers. List \$125.00.....NET \$73.50

***PAM 19**—Three-stage amplifier using two 227s, two 250s, and two 281s. The extra page is to compensate for a low value of input. List \$175.00.....NET \$102.90

***PAM 25**—One-stage amplifier using two 250s and two 281s, and designed to be operated from the output of a PAM 5 or equivalent. List \$115.00.....NET \$67.62

PAM 45—Two-stage amplifier using one 227, two 245s, and one 281. This amplifier promises to be one of the most popular for home use inasmuch as the power output is practically the same as PAM 3 and there is even less hum noticeable. List \$120.00.....NET \$70.56

***MIK 1**—Designed to supply button current to a double-button carbon microphone and amplify its output sufficiently to supply input voltage to any standard PAM. Uses two 227s in a two-stage amplifier, and one 280. List \$135.00.....NET \$79.38

MIK 1D—Designed to operate from batteries, and uses two 112As in a two-stage amplifier. Current for the two-button microphone must also be furnished from batteries.

PAM 5D—A battery operated amplifier using a 112A in the first stage and two 112As in the second stage. Ideal for home use. List \$50.00.....NET \$29.40

PAM 25D—Two-stage amplifier using two 250s. Designed to operate from the output of a PAM 5 or 5D. List \$35.00.....NET \$20.58

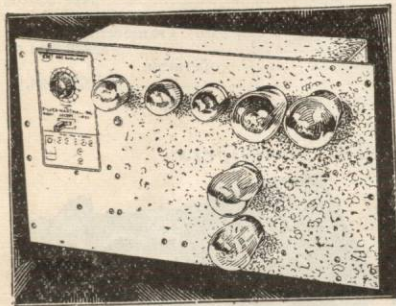
***2-V PAM 19**—Double channel amplifier designed to fill the needs of an installation where a spare amplifier is instantly available in case of difficulty in the one in steady use. This amplifier is mounted vertically and stands 69" high and covers an area 15" by 20". Each of the individual amplifiers on the panel have the same electrical characteristics as PAM 19. The panel is equipped with controls for switching from one amplifier to the other instantly, switching the inputs in parallel, switching the outputs in parallel, turning on or off the field current supply to dynamic speakers, and turning on or off the AC supply. Panel is equipped with indicating colored bulbs-eyes and a monitor volume control. List \$700.00.....NET \$411.60

O 11—An impedance matching transformer for use in multiple head-phone or speaker installations. The secondary of it is such that the impedance into which it is designed to work may be varied from 37.5 to 600 ohms. List \$25.00.....NET \$14.70

TM 1—A transformer designed to step 200-240 volt, 50-60 cycle AC to 100-130 volt current for standard PAM amplifiers. Just plug your PAM into this unit and insert this unit's plug into the power receptacle. List \$25.00.....NET \$14.70

* Will be available for 25-30 cycle AC in the near future.

690-691 Silver-Marshall Auditorium Amplifiers



The 690 super power amplifier fills a long felt want among experimenters in sound amplification because of its ability to cover large groups of people, both indoors and out-doors with unbelievable tone fidelity. This unit is unique among commercially manufactured A. C. amplifiers because of its great low-frequency amplification, coupled with a truly negligible value of A. C. hum. At the same time, all of the high frequencies which are so necessary to perfect speech articulation are preserved.

FOR RADIO PHONOGRAPH OR VOICE

It is only necessary to feed this powerful amplifier with the detector output of any standard radio set, standard magnetic phonograph pickup, or single or double button microphone to secure satisfactory operation. Volume may be controlled from a mere whisper to full intensity by the turn of a knob without affecting the tone. Switching from radio to phonograph, or voice, or vice-versa, requires only a fraction of a second. A three-way selector switch mounted on the control panel, needs only a slight turn to select either of these three classes of entertainment. Where it is necessary to provide continuous record entertainment by the use of two electric phonograph turn-tables, the volume control mounted on the control panel allows and ultra-rapid "fading" of records without undesirable interruption.

Up to 160 standard magnetic speakers may successfully be operated, or if the more powerful dynamic speakers are desired, as many as sixteen or more may be advantageously connected. Three sets of binding posts are provided for matching amplifier and speaker group impedance (the latter varying according to the number of speakers used).

GENERAL DESCRIPTION

This Amplifier is a complete three-stage unit with self-contained power supply. One straight audio stage followed by two separate push-pull stages are responsible for the tremendous power developed. Such features as Clough system amplification, over-size power transformer, variable A. C. hum-adjuster, full-wave rectification with adequate filtering, and high undistorted output of 15 to 16 watts, assures complete and lasting satisfaction to the user. All parts are solidly attached to a heavy aluminum panel, the rear being covered by a metal dust cover. All metal parts are finished in crystalline black, with tube positions and legends plainly engraved on panel. May be mounted in a flat or upright position, or on a rack. Overall size 21 inches long, 14 inches wide, and 8 inches deep.

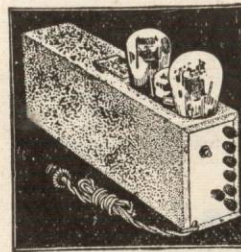
Tubes Required: One 227 first stage, two 226s intermediate stage, two 250s power output stage amplifiers, and two 281 rectifiers.

690 Auditorium Amplifier—Factory wired, and tested. Packed in substantial shipping case (less tubes). Shipping weight 72 pounds. Each.....NET \$145.06

691 Amplifier—Exactly the same as the standard 690 in physical appearance. Intended for pickup input only, and uses a heavy wire-wound potentiometer instead of the 255M transformer. This lowers hum to a really negligible value, and permits the use of a base control. The three position switch gives normal, moderate and slight bass.NET \$144.06

69125 Amplifier—Same as 691 but for 25 cycle operation.....NET \$168.66

678PD Phonograph or Radio Two Stage Amplifier



A two-stage socket-powered audio amplifier using one '26, one '50, and '81 tube, and taking all power from any 105 to 120 volt, 50 to 60 cycle, A. C. lamp socket. It may be used to operate a dynamic loud speaker from a radio detector tube, or from a magnetic phonograph record pickup. (The 678PD is the commercial equivalent of special amplifiers made by S-M for numerous manufacturers of theatrical phonographs for coverage of 1,000 to 2,000 seat theatres.) The 678PD amplifier will supply field current to any dynamic speaker having a 110 volt D. C. field coil; or it will operate two dynamic speakers, the second to have its own source of field excitation. Magnetic loud speakers may be operated by the 678PD upon the addition of an S-M 331 Unichoke filter coil

in place of the 110 volt D. C. dynamic speaker field, and a 227 output transformer. One 281 rectifier tube is used, one UX226 first stage amplifier, and one UX250 power tube.

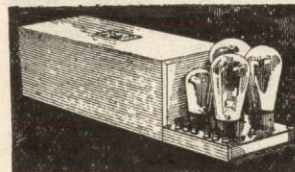
The brown crystalline steel case is 17 inches long, 3 5/16 inches wide, and 5 1/2 inches high (8 1/2 inches high over tubes). Parts contained in the 678PD amplifier are listed below:

1—S-M 327U Power Transformer (mirs. type).....	\$ 9.00
1—S-M 255 First-stage Audio Transformer.....	3.60
1—S-M 255 SPECIAL, Second Stage Audio Transformer.....	5.40
3—S-M 511 Tube Sockets.....	.90
1—S-M 678PD Case, Chassis, and Panel.....	3.60
1—S-M 818 Hook-up Wire (25 ft. to carton).....	.30
1—Yaxley No. 72000, 2000-Ohm Resistor.....	.21
1—Ohmite 1500-Ohm Resistor.....	.75
1—Carter AP15 Midget Potentiometer.....	.45
1—FT64 Balancing Resistor.....	.30
1—S-M 818 Hook-up Wire (25 ft. to carton).....	.30
1—Potter 673 Condenser Bank.....	12.00
7—Moulded Binding Posts (moulded top, screw and nut) @ \$0.06.....	.42
1—Cord and Plug.....	.45
1—6 1/4 x 1/2 x 1/16 inch Drilled Steel Socket Strip.....	.30
1—Set 678PD Hardware.....	1.02

\$39.00 NET \$38.22

678PD Wired Phonograph Amplifier—Factory assembled and wired, packed in substantial carton (less tubes). Shipping weight 23 lbs. Each.....NET \$46.45

S-M 677 Power Amplifier Using 245 Tubes in Push-Pull



S-M677-679

This two-stage light socket amplifier achieves undistorted amplification through Clough system audio amplification, employed with 227 first stage audio amplifier, and through push-pull 245 tubes. As the amplifier is ordinarily expected to be used with any standard type of dynamic speaker of 90 volt (1900 to 2000 ohm) field having a center-tapped primary, no output transformer or choke is included. The power supply is for use with a 280 tube, and will furnish required ABC power to the

amplifier itself and, in addition, heater, and 180 volts B, to the 712 or any equivalent receiver. Power can be drawn from any 105 to 120 volt 60 cycle source.

LIST OF PARTS

1—S-M 677 Case Chassis and Panel.....	\$ 4.00
1—S-M 255R Audio Transformer.....	4.20
1—S-M 257 Push-Pull Input Transformer.....	4.20
1—S-M 337U Power Transformer.....	10.00
1—S-M 338U Filter Choke.....	2.10
1—S-M 339U Filter Choke.....	2.10
1—S-M 4696, 1500 and 800 ohm Resistor.....	.95
1—Potter 673 Condenser Bank.....	12.00
2—C-R Sockets @ \$0.30.....	.60
1—C-R 280 Socket.....	.30
1—C-R 227 Socket.....	.30
1—Carter A. B. 15 Hum Balance.....	.45
1—Durham 2,000-ohm one-watt Resistor (White).....	.45
1—Durham 3,500-ohm two-watt Resistor (Brown).....	.51
12—Moulded Binding Posts @ \$0.06.....	.72
1—Set of Hardware and Hook-up Wire.....	.52

Total cost of parts.....\$43.40 NET \$42.53
Fully-Wired 677 Amplifier.....\$58.50 NET \$57.33

679 Two-Stage Amplifier

A new Auditorium Amplifier ideally suited for use where medium power amplification is desired. Designed to operate direct from the detector output of any standard radio set, magnetic phonograph pick-up, or single or double button microphone.

OPERATES MANY SPEAKERS

Due to the efficient design, the 679 Auditorium Amplifier has an undistorted output of 7 to 8 watts. From four to eight dynamics, or from thirty to sixty magnetic types of speakers may be used with this amplifier. Indoor coverage may be had with this unit of up to 2,000 people, or up to 5,000 outdoors; the exact amount of coverage depending, of course, upon the surrounding conditions.

Housed in a sturdy metal container of dark crackle-brown finish; size 21 inches long, 5 3/4 inches wide, and 5 1/4 inches high. Operates direct from any 105-120 volt 50 to 60 cycle A. C. light socket. Tubes required: One UX226 first stage amplifier, one UX250 second stage amplifier, and two UX281 half-wave rectifiers. Complete as described above, factory assembled, wired and tested (less tubes). Packed in substantial carton. Shipping weight 34 pounds. NET \$61.25

Thordarson Amplifier Kits

R-245—Single stage push-pull amplifier and plate supply using two 245s, and one 280 rectifier tube. The plate supply provides external voltages of 22 1/2, 45, 90, and 135 to a set of average drain. This amplifier is intended to follow the first stage of audio in the radio set.

LIST OF PARTS

1 Thordarson R-245 Compact	.....	\$24.00
1 Thordarson T-2922 Push-Pull Input Transformer	.....	12.00
*1 Thordarson T-2903 Push-Pull Output Transformer (for Dynamic Speakers)	.....	12.00
1 Thordarson T-2903 Push-Pull Output Transformer (for 1 Thordarson R-508-1 Resistance Unit	.....	2.15
1 R-245 Condenser Block (Dubilier PL1429)	.....	14.00
1 Fixed Resistance 850 ohms (Electrad Type B 8.5)	.....	.85
3 UX Sockets (Benjamin 9040)	.....	2.25
9 Eby Marked Binding Posts	.....	1.35

List \$68.60 NET \$43.61

TUBES REQUIRED

2 UX245's @ \$3.50	.....	\$ 7.00
1 UX280	.....	3.00

List \$10.00 NET \$5.88

* If amplifier is for magnetic or other high impedance speaker, transformer T-2880 should be substituted. Price is the same as T-2903.

Heavy Duty 250 Push-Pull Amplifier and B Eliminator—Designed for public address use, speech amplifier use, or as a phonograph or radio set amplifier to operate several speakers and to deliver sufficient output to fill a large auditorium or theater or to be audible over a considerable area out of doors.

It is a complete audio system designed for either photograph, radio, or microphone reproduction and enables the dealer to make sales talks or personal comments between programs. The output is supplied through two UX-250 tubes in push-pull working at full capacity. The parts used in this amplifier are as follows (for Dynamic Speaker):

1 Thordarson T-2950 Power Supply Transformer	.....	\$29.50
1 Thordarson 3100 Double Choke Unit	.....	18.00
1 Thordarson R-300 Audio Transformer	.....	8.00
1 Thordarson 3081 Filament Supply Transformer	.....	6.00
1 Thordarson T-2922 Push-Pull Input Transformer	.....	12.00
1 Thordarson T-2973 Push-Pull Interstage Transformer	.....	12.00
1 Thordarson T-2903 Speaker Coupling Transformer	.....	12.00
1 Thordarson R-2098 Resistor Kit	.....	9.75
1 Tobe 250 Type Condenser Block	.....	26.00
5 Tobe 1 Mfd. By-pass Condensers	.....	6.25
2 Electrad 2,000-ohm Fixed Resistors	.....	1.70
2 Yaxley 25-ohm Center Tapped Resistor	.....	.60
12 Eby Marked Binding Posts	.....	1.80
7 Benjamin No. 9040 Sockets (4-prong)	.....	5.25
1 Benjamin No. 9036 Socket (5-prong)	.....	1.00
1 25,000 Electrad Fixed Resistor with 2 additional Terminals	.....	2.85

Total List \$152.70 NET \$96.79

Note: One Thordarson Microphone Coupling Transformer T-2357 may be substituted for the first R-300 and a single button microphone used. NET \$3.23

TUBES REQUIRED

1 UX227, 2 UX226, 2UX250, 2 UX281, 1 UX874.

Batteries

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 3/4"x8 1/4"x4 1/2". List \$4.25. NET \$3.20

Case of 5, Net each \$2.97

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"x7 1/8"x3 1/4". List \$2.95. NET \$2.22

Case of 6, Net each \$2.06



Stock No.	Unit Pkg. Quantity	Weight Unit Pkg.	List Price	Net Price each, Less Unit Pkg.	Net Price each in Unit Pkg.
"B" Batteries					
10308	45 Volts 6	88 1/4 lbs.	\$3.75	\$2.81	\$2.63
2308	45 Volts 10	" "	2.50	1.88	1.75
2306	45 Volts 10	52 "	2.50	1.88	1.75
5308	45 Volts 10	19 "	2.50	1.88	1.75
2158	22 1/2 Volts 10	30 "	1.75	1.31	1.22
2156	22 1/2 Volts 10	30 "	1.75	1.31	1.22
5156	22 1/2 Volts 10	10 "	1.50	1.13	1.05
4156	22 1/2 Volts 30	6 "	1.25	.94	.87
"C" Batteries					
5360	4 1/2 Volts 10	1 lb.	\$0.40	\$0.30	\$0.28
2370	4 1/2 Volts 10	11 lbs.	.50	.38	.35
5540	7 1/2 Volts 10	3 1/2 "	.75	.56	.52
5156	22 1/2 Volts 10	10 "	1.50	1.13	1.05
"A" Batteries					
No. 6	1 1/2 Volts 25	122 lbs.	\$0.50	\$0.40	\$0.35 1/2

No. 5928—Burgess High Voltage B Batteries—Especially constructed for experiments and transmitting plate supply; 108 volt. List \$8.67. NET \$5.67

Vesta Radio "A" Batteries



Type EAU—Designed and intended exclusively for radio use. The positive plates of the "EAU" are 25 per cent oversize. Negative plates are standard 1/8-inch thickness. Separators are also oversize. These extra heavy plates and separators insure long, dependable and economical life. This battery gives even, steady "A" current which is essential to good reception. This type battery is of the highest quality and workmanship. Built in a substantial rubber case and made in the following sizes:

Rating Amp.	Plates per Hr.	Wt. Type	Shipping Lbs.	List Price	NET PRICE
75	R6-EAU7	7	44	14.75	\$ 8.67
100	R6-EAU9	9	53	16.90	10.00

Hafner Hydrometer

This is a well known and accurate hydrometer. It fills the bill admirably. List \$0.75 NET \$0.44



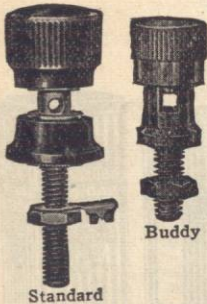
Binding Posts

X-L Push Post



A binding post that is unusually different—push it down—insert wire—release pressure and wire is firmly held. Made in all metal or genuine bakelite insulated types engraved with all standard markings. List \$0.15 NET \$0.09

Eby Binding Posts



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 \$0.20.....NET \$0.12

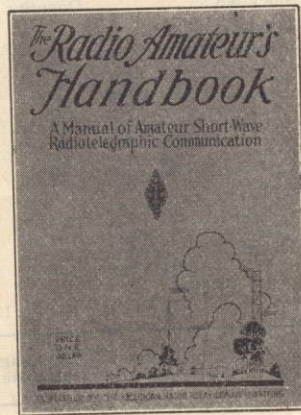
Eby Buddy Binding Posts—A popular size metal post with non-removable head. List \$0.12NET \$0.07

Books and Manuals

The Radio Amateurs 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 1929, 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 1929 basis, replacing the 1928 methods which used to be good enough but aren't any more.

In Paper Binding.....NET \$1.00
Stiff Buckram Binding.....NET \$2.00

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

Citizens' Radio Call Book Magazine

Issued 4 times a year in January, March, September, and November. Single copies.....NET \$0.35



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.

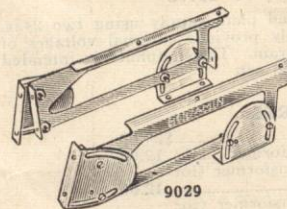
The author, G. E. Sterling, is Radio Inspector and Examining Officer, Radio Division, U. S. Dept. of Commerce. The book has been edited in detail by Robert S. Kruse, for five years Technical Editor of QST, the Magazine of the Radio Relay League. Many other experts assisted them.

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 \$4.95

Brackets (Sub-panel)

Benjamin Sub-Panel Brackets



Enable front panel and sub-panel to be assembled together as a complete, removable unit. Designed to allow room for wiring and mounting small parts below sub-panel. Attractive nickel finish.

The wide sub-panels used on large sets require an auxiliary support at back of panel to prevent sagging when tubes are inserted. For best results use the heel-plates furnished with Benjamin 9029 Adjustable Brackets.

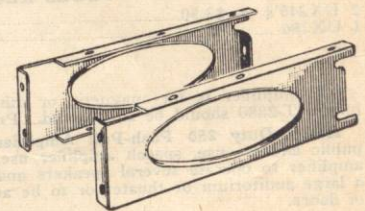
No. 8629—Fixed, per pair. List \$0.70NET \$0.41

No. 9029—Adjustable, per pair. List \$1.25.....NET \$0.73

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". List \$0.40 per pair.....NET \$0.24
No. 8—8½" x 1". List \$0.40 per pair.....NET \$0.24
No. 11—9" x 2". List \$0.60 per pair.....NET \$0.35
No. 11—11" x 2". List \$0.80 per pair.....NET \$0.47



Bushing (extension)

"Chi Rad" Extension Bushing



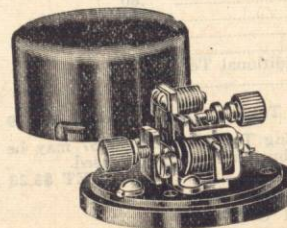
Turned from bakelite rod. Nickel-plated collar and brass set-screw. Very helpful in eliminating hand capacity.

.....NET \$0.50

Buzzers

Manhattan Buzzer

A very high grade double adjustment buzzer. Undoubtedly the finest on the market. Illustration at left.....NET \$2.60



Signal R-60 High Frequency Buzzer

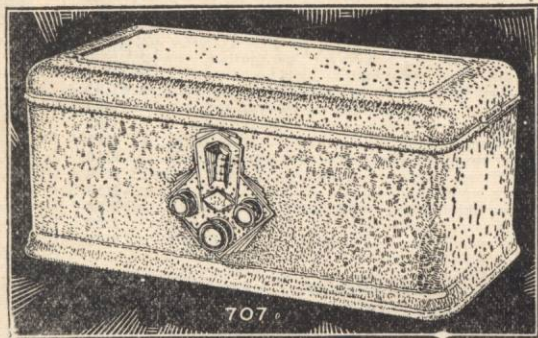
This type buzzer is adjustable. Has standard resistance of 2 ohms. Black crystallized lacquer finish.

List \$1.25NET \$0.95

Cabinets

SEE PAGES 52, 53, AND 54 FOR CONSOLE CABINETS

Silver-Marshall 707 Cabinet



707 Cabinet—A handsome metal shielding cabinet, finished in crystalline brown with rich contrasting gold top panel, an ornament to any home and fully equal in appearance to any table cabinet on the market, this is especially suitable for S-M 722 and S-M 735 receivers. The top is removable and the dimensions are 19½" long, 9" high, and 10½" deep, with rounded corners and superb workmanship. Less knobs and escutcheon...NET \$7.59

Chargers and Replacement Rectifiers

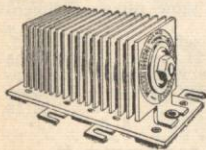
Elkon Tapering Chargers

Trickle Type—Charging rate varies with the condition of the battery—high when the battery is low—low when the battery is high. Guarantee and instructions are printed on the container. Maximum charging rate, 1 ampere. Has the exclusive Elkon Rectifier replacement feature. No moving parts. Absolutely dry. List \$10.00...NET \$5.88
3 amp. type—for radio or auto batteries. List \$13.50...NET \$7.94



Elkon Replacement Rectifiers

Type M-16—3 amp. type. For replacement in A eliminators and chargers. List \$7.00...NET \$4.12
Type V-4—Trickle charger units. For replacement in Elkon trickle type tapering charger and others. List \$4.00 for set of 3 units (3 units are used in a charger)...NET \$2.35



REPLACEMENT UNITS FOR BALKITE CHARGERS

Type BNK—For replacing wet rectifiers in Balkite chargers, types N and K. List \$5.00...NET \$2.94
Type BJ—For replacement in Balkite type J. List \$7.50...NET \$4.41

Chokes

AUDIO FREQUENCY CHOKES

Samson Audio Frequency Choke No. 3

Designed for isolating the different stages of an audio frequency amplifier by insertion in "B" battery leads in conjunction with a by-pass condenser. When so used it conserves "B" batteries, eliminates howling or "motor-boating," and suppresses distortion in audio amplifiers due to "B" eliminators or "B" batteries. Due to its helical winding (giving the exceedingly small self-capacitance of 5 micro-micro-farads), it will also act as a choke to radio frequencies. List \$3.25...NET \$1.91

Sangamo Audio Chokes

Type E—Output choke to match impedance of the various types of power tubes. List \$5.00...NET \$2.94
Type F—Plate impedance for use as a choke to prevent oscillation, and for impedance coupled amplifiers. List \$5.00...NET \$2.94

FILTER CHOKES

Thordarson Filter and Plate Reactors

R-196—Code "Polar." 30 Henry, 80 M. A., 1000 V. insulation, shielded. Weight, 2 lbs. List \$5.00...NET \$3.27
T-2353—Code "Transit." 6 Henry, 150 M. A., 3000 V. insulation, open frame. Weight, 3 lbs. List \$7.50...NET \$4.90
T-2071—Code "Transition." 30 Henry, 150 M. A., 3000 V. insulation, open frame. 5 lbs. List \$16.00...NET \$10.46
T-2027—Code "Transitive." 30 Henry, 300 M. A., 3000V. insulation, open frame. 14 lbs. List \$22.00...NET \$14.38
T-2073—Code "Transitory." 30 Henry, 500 M. A., 3000V. insulation, open frame. 24 lbs. List \$30.00...NET \$19.60



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 \$14.00...NET \$ 9.14
T-3099—Code "Poplin." 160 M. A. List \$16.00...NET \$10.46
T-3100—Code "Poppet." 200 M. A. List \$18.00...NET \$11.76

T-2376—Code "Porgy." 1.5 Henry, 200 Mils., 1600 V. insulation. Filter choke in key circuits. List \$5.00...NET \$3.27

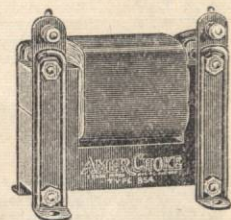
T-2458—Code "Polo." Open mounting. Each choke 18 Henry, 250 M. A. D. C. 2000 V. insulation. 108.5 ohms each choke. Shipping weight, 14 lbs. List \$19.50...NET \$12.74

AmerChoke Choke Coils

AmerChoke Type 418—2 amperes, ¼ Henry, D. C. Resistance, 0.5 ohms. Shipping weight, 5 bs. List Price \$6.00...NET \$3.53

AmerChoke Type 854—60 ma., 50 Henries, D. C. Resistance, 600 ohms. Shipping weight, 5 lbs. List Price \$6.00...NET \$3.53

AmerChoke Type 709—120 ma., 15 to 20 Henries, D. C. Resistance, 210 ohms. Shipping weight, 5½ bs. List Price, \$6.00...NET \$3.53



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

RADIO FREQUENCY CHOKES

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

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 3¼ inches long, 1 inch diameter.

NET \$0.85



Remler R. F. Choke

No. 35 Remler Choke—Of distinct utility in limiting radio frequency current to certain paths and in preventing the generation of high parasitic frequencies. Case of molded bakelite. Size 1" diameter by 1" deep. Inductance 1½ milli-henries. List \$0.90...NET \$0.53





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 2½ millihenries. Size 1x1¼ inches. Shipping weight 2 oz. NET \$0.53

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 \$0.59

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 \$0.88

No. 278 Choke for Needle Scratch Filters—Its inductance of 140 mh., when connected in series with a .0075 mfd. condenser and shunted across any standard magnetic phonograph record pickup, will cut out all frequencies above 4900 cycles, and hence practically all "needle scratch." Shipping weight 3 oz. NET \$0.88

Samson Radio Frequency Chokes

In great demand by musically critical listeners who insist on quality of reproduction, and by high-frequency experimenters who wish to control radio frequencies even down to wavelengths of a few meters.

No. 85 Choke (85 millihenrys). Distributed capacity of but 3 or 4 micro-micro-farads over broadcast band of frequencies, and a resistance of 215 ohms. Current carrying capacity, 60 milliamps. List \$2.00. NET \$1.18

No. 125 Choke (250 millihenrys) has a distributed capacity of but 2 or 3 micro-micro-farads over broadcast band of frequencies, and a resistance of 420 ohms. Current carrying capacity, 60 milliamps. Especially recommended for r.f. choke coupled amplification and use in long-wave receivers. List \$2.25. NET \$1.32

No. 500 Radio Frequency Choke (500 m.h.) is particularly recommended for choking low frequencies and as a coupling unit in long-wave amplifiers. List \$2.75. NET \$1.62

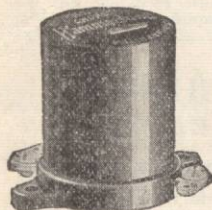
Aero Chokes



1929 Aero Grid Choke No. C-250—A Compact Choke Coil for suppressing high frequency oscillations in transmitting vacuum tubes. List \$1.50. NET \$0.88

Aero Transmitting Choke No. C-248, \$1.50. NET \$0.88

Aero Transmitting Choke No. C-249, C-60, C-65. List, each, \$1.50. NET \$0.88



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

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

Clips (Battery)

Mueller Clips

No.	Description	Length	Each NET
45	Pee Wee, Steel, cadmium plated	1½"	\$0.03½
48-B	Steel, cadmium plated	1¾"	.03½
27	10 amp. Steel, cadmium plated	2¼"	.09
24-A	25 amp. Steel, lead-coated	2½"	.07
21-A	50 amp. Steel, lead-coated	3¾"	.14



**Condensers (Fixed)
BLOCKING CONDENSERS**

Dubilier Type 577 and 577-A

For low power C. W. transmitters. 577 are tested at 1000 volts and 577-A at 2000 volts.

Capacity	TYPE 577 Net Price	TYPE 577-A Net Price
.0001 mfd.	\$1.93	\$2.28
.00025 mfd.	1.93	2.28
.0005 mfd.	1.93	2.28
.001 mfd.	2.10	2.45
.0015 mfd.	2.10	2.45
.002 mfd.	2.10	2.45
.0025 mfd.	2.10	.....
.005 mfd.	2.28	.....
.0075 mfd.	2.28	.....
.01 mfd.	2.45	.....

Dubilier Type 580

Capacity	Test Voltage	List Price	Net Price
* { .0003 mfd. .0004 mfd. .0005 mfd. }	5,000	\$6.00	\$4.20
	5,000	6.00	4.20
	5,000	6.00	4.20
.001 mfd.	5,000	6.00	4.20
.002 mfd.	5,000	6.00	4.20
.005 mfd.	2,500	6.00	4.20
.01 mfd.	2,500	6.00	4.20
.02 mfd.	2,500	6.50	4.55

*These three capacities assembled in one case.

Dubilier Type 668

A highly efficient and permanent capacity mica condenser, designed especially for use in low power vacuum tube transmitters and oscillating circuits. It may be used as a grid or plate blocking condenser, coupling or antenna tuning condenser.



Capacities	Test Voltage	Net Price
.0001, .00025, .0005, .001, or .002 mfd.	5,000	\$6.65
.005 to .02 mfd.	2,500	7.35
.05 mfd.	1,000	7.35
.075 mfd.	1,000	7.70
1 mfd.	1,000	7.70

Sangamo High Voltage Condensers

Small mica condensers capable of withstanding high voltages are required in many radio transmitting sets. This unit has the same physical dimensions as the standard line of mica condensers.

Class 2—Tested at 2,500 volts DC. Come in capacities of .003, .0035, .004, .005, .006, .007, .0075, .008, and 0.1 mfd. List \$1.75. NET \$1.03

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 \$1.18

TRANSMITTING CONDENSERS

Dubilier Transmitting Condensers

Type 686 Dubilier transmitting condensers are supplied for 1000 volts D. C. Through series parallel connections practically any working voltage and capacity can be obtained.

1 Mfd. List \$ 5.00	NET \$2.94
2 Mfd. List \$ 8.00	NET \$4.70
4 Mfd. List \$15.00	NET \$8.82

Tobe Transmitting Condensers



A Tobe guarantee is enclosed with every Transmitting Condenser which reads: This unit is guaranteed for one year if operated at voltage not in excess of that marked on the case.

Capacity	List	Net	List	Net
Mfd.	1000 Volt	1000 Volt	2000 Volt	2000 Volt
1.0	\$ 7.50	\$ 4.41	\$10.00	\$ 5.88
2.0	10.50	6.17	18.00	10.58
5.0	21.50	12.64	32.00	18.94

BY-PASS AND FILTER CONDENSERS

Acme Parvult Buffer Condensers

Series	400	2 condensers, 0.1 mfd., in series in a can, 1 1/8" x 1 1/8" x 1 1/8" ...	List	NET
	1000	1 condenser, 0.1 mfd., in a can, 1 1/8" x 1 1/8" x 1 1/8" ...	1.75	1.03

Two of the latter are necessary connected in series.

Acme Parvult 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 1/8"	1 1/2"	5/8"	\$0.85	\$0.50
200	0.25	1 1/8"	1 1/2"	5/8"	.95	.56
200	0.5	1 1/8"	1 1/2"	5/8"	1.00	.59
200	1.0	1 1/8"	1 1/2"	5/8"	1.25	.74
200	2.0	1 1/8"	1 1/2"	1 3/4"	2.25	1.32
200	4.0	1 1/8"	2 1/8"	2 1/8"	4.00	2.35

Acme Parvult Filter Condensers

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

Series	Mfd.	Depth	List Price	Series	Mfd.	Depth	List Price	NET
200	1	1 1/8"	\$1.25	600	1	1 1/8"	\$3.00	\$1.76
200	2	1 1/8"	2.25	600	2	1 1/8"	5.50	3.23
200	4	1 1/8"	4.00	600	4	1 1/8"	8.00	4.70
400	1/2	1 1/8"	2.00	1000	1	1 1/8"	5.00	2.94
400	1	1 1/8"	2.50	1000	2	1 1/8"	7.00	4.12
400	2	1 1/8"	3.50	1500	1	1 1/8"	6.50	3.82
400	4	1 1/8"	6.00	1500	2	1 1/8"	12.00	7.06
				1500	4	3 1/2"	20.00	11.76

Dubilier 907-908 By-Pass Condensers

These condensers designed to replace the type commonly known as by-pass condensers. They occupy considerably less space than the old type and are neater and more efficient.

Capacities	200 Volt	400 Volt
0.1	\$0.50	\$0.59
0.25	.56	.65
0.5	.59	.73
1.0	.73	1.18
2.0	1.18	---

Type 664—Designed for flat mounting.

Capacities	Working Voltage (D. C.)	List	NET
.5 mfd.	200	1.00	\$0.59
1. mfd.	200	1.25	.74
.5 mfd.	400	1.25	.74

Dubilier Power Block Condensers

Type and List Price	Capacity (Mfds.)	Terminals	Net Price
PL-574 \$16.50	600	1 2 3 4 5 6 7	\$ 9.70
PL-575 \$17.50	1000	1 2 3 4 5 6 7	10.29
PL-664 \$15.00	600	1 2 3 4 5 6 7	8.82
PL-665 \$16.00	600	1 2 3 4 5 6 7	9.41
PL-706 \$8.25	200	1 2 3 4 5 6 7	4.85
PL-707 \$12.50	400	1 2 3 4 5 6 7	7.35
PL-867 \$15.50	600	1 2 3 4 5 6 7	9.11
PL-1120 \$15.50	400	1 2 3 4 5 6 7	9.11
PL-1152 \$17.50	800	1 2 3 4 5 6 7	10.29

PL-1429—For use with Thordarson R-245 Power Compact in the push-pull 245 amplifier. List \$14.00. NET \$8.23
 PL-666—For use with 281, 2 mfd., 1000 volts. List \$6.50. NET \$3.82
 PL-667—For use with 281, 4 mfd., 1000 volts. List \$11.00. NET \$6.47
 PL-668—Two 1 mfd. capacitors of 400 volts for use as a by-pass around the resistor network. List \$3.50. NET \$2.06

Dubilier Buffer Condensers

For all types of 60, 85, 125, and 400 M.A. gas type rectifiers. Note: Due to relatively high surge voltages, adopt condensers of ample voltage rating.
 PL-648—400 volt. List \$2.00. NET \$1.18
 PL-576—600 volt. List \$2.50. NET \$1.47
 PL-649—1000 volt. List \$4.00. NET \$2.35

Elkon Dry Condensers

The Elkon was the first all dry condenser carrying high capacities—must not be confused with the so-called dry condensers which are in reality moist. The Elkon Condensers are baked for 24 hours at a temperature of 200 degrees before sealing in can. In three years no Elkon Condenser has failed. Cans are 2"x2"x6 3/4". Used in many of the leading "A" Eliminators and in filter systems where high capacities are needed.

Capacities: 750 mf., 1250 mf., 1500 mf., 2000 mf.
 List \$4.50 NET \$2.65



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
0.00005	— 50	0.0005	— 500	0.0035
0.00006	— 60	0.0006	— 600	0.004
0.00007	— 70	0.0007	— 700	0.005
0.00008	— 80	0.0008	— 800	0.006
0.0001	— 100	0.001	—	0.007
0.00012	— 120	0.0012	—	0.0075
0.00015	— 150	0.0015	—	0.008
0.000175	— 175	0.00175	—	0.01
0.0002	— 200	0.002	—	0.012
0.00025	— 250	0.0025	—	
0.0003	— 300			
0.00035	— 350			

24c and 30c price markers are shown in the original image.

With Resistor Clips, 10 cents extra



Tobe By-Pass and Filter Condensers



Capacities Mfd.	Net 200 volt	Net 300 volt	Net 400 volt	Net 600 volt	Net 1300 volt
.1	\$0.35	\$0.41	---	---	---
.25	.41	.44	---	---	---
.5	.73	.53	---	---	---
1.	.53	.73	\$1.18	1.47	\$2.06
2.	1.03	1.03	1.62	2.06	3.53
4.	2.06	2.06	2.65	3.43	6.47
2x0.1	---	.88	1.18	---	---

Voltage ratings are for D. C. operation.

Tiny Tobe Condensers

Made for constant operating voltages up to 1000 D. C. They are of extremely small size—a very valuable feature, because of the very small space allowed for by-passing condensers. They require no support other than that of the wiring holding them.

Capacities	Net
.00007, .0001, .00015, .00025, .0003, .0004, .0005, .0007 Mfds.	NET \$0.21
.008, .0015, .001, .0025, .002, .003, .004 Mfds.	NET \$0.24
.0075, .005, .006 Mfds.	NET \$0.26
.01 Mfd.	NET \$0.32
.02, .03, .04, .05 Mfds.	NET \$0.35



Tobe "B" Blocks

Type 250—Designed for use with new transformers being used with 250 tubes. 2, 2, 2, 4, 1, 1, 1 Mfd. List \$26.00. NET \$15.29

Type 280—For Thordarson, etc., 280 full-wave rectifier. 2, 4, 4, 1, 1, 1, 1 Mfd. List \$18.00. NET \$10.58

Type 210—For Thordarson R-210 and other power units. 2, 2, 2, 4, 1, 1 Mfd. List \$18.00. NET \$10.58

Type 171—For Thordarson R-171 and other units. 8, 2, 2, 1, 1 Mfd. List \$15.00. NET \$8.82

Type 660—For S-M Unipac 171; 4, 2, 1, 1, 1 Mfd. List \$12.00. NET \$ 7.06

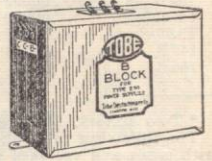
Type 662—For S-M Unipac 210; 1, 2, 4, 1, 1 Mfd. List \$18.00. NET \$10.58

Type 668—For Madison-Moore International One Spot Power unit. 4, 2, 2, 1, 1 Mfd. List \$15.00. NET \$8.82

Model 765—4, 4, 6, 6 Mfd. 400 volt short path condensers. For use with Raytheon BH. List \$14.00. NET \$8.23

Model 760—8, 2, 2, 1, 1 Mfd. For Raytheon 350 m. a. rectifier tube. List \$10.50. NET \$6.17

Model 760-G—6, 2, 2, 1, 1 Mfd. For Raytheon eliminator with new glow tube. List \$10.50. NET \$6.17



Carter Round Type By-Pass Condensers



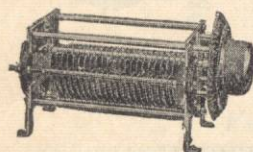
A small compact Condenser providing unusual convenience in mounting. Takes up a minimum of space and having slotted mounting clips, it adapts itself to all limited and odd spaces. Leads may be soldered either to the end caps or placed under the mounting screws. Non-inductive wound. Case is of fibre with metal ends to which the leads are drawn. Widely specified in the leading circuits.

101—.1 Mfd. 90 volts A. C.	List \$0.75	NET \$0.44
102—.25 Mfd. 180 volts D. C.—90 volts A. C.	List \$0.75	NET .44
105—.5 Mfd. 180 volts D. C.—90 volts A. C.	List \$0.90	NET .53
110—1.0 Mfd. 180 volts D. C.—90 volts A. C.	List \$1.25	NET .73

Condensers (Variable)

TRANSMITTING CONDENSERS

National Transmitting Condenser



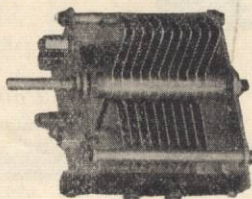
Type	Capacity	Voltage	List	NET
TM 35	.000035	6000v.	\$ 8.00	\$ 4.70
TM 50	.00005	6000v.	15.00	8.82
TM 100A	.0001	3000v.	7.00	4.12
TM 100	.0001	6000v.	12.50	7.35
TM 150	.00015	3000v.	7.50	4.41
TM 150A	.00015	6000v.	18.75	11.03
TM 230	.00023-5	3000v.	11.50	6.76
TM 230A	.00023-5	6000v.	22.50	13.23
TM 350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

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

These prices include NATIONAL Velvet Vernier Dial Type A.

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	
141B	.00025	.030"	11	\$ 3.92
123B	.00048	.030"	21	4.90
156B	.00048	.030"	21*	6.86
137B	.00096	.030"	41	5.88
197B	.00008	.070"	9*	9.80
T183	.00011	.171"	23	9.80
164B	.00022	.070"	21*	5.86
157B	.00022	.070"	21*	11.76
T199	.00033	.084"	37	9.80
147B	.00044	.070"	43	10.00
166B	.0003	.219"	23	73.50

* Two stators. Figures apply to each side.

The following table shows condensers which will stand up in any position with types and voltages shown. For grid or antenna tuning the next smaller air gap will usually suffice.

Hammarlund Transmitting Condensers

Transmission over short wave lengths is recognized as the most efficient medium for long-distance amateur communication. The very low losses and high quality of the Hammarlund Transmitting Condensers are emphasized in this class of work where ordinary condensers are impossible. Tested to withstand very high potentials.

	List	Net
TC-12 .0001 mfd.	\$ 6.00	\$3.53
TC-22 .0002 mfd.	7.00	4.12
TC-43 .0004 mfd.	10.00	5.88

RECEIVING TUNING CONDENSERS

National Equitone 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)

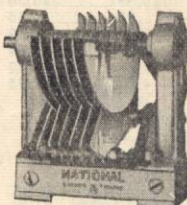


National Equicycle Condenser

(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)

National Equimeter Condensers

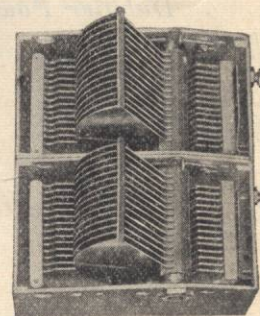
(STRAIGHT WAVE LINE)

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 Weld-Built Condensers

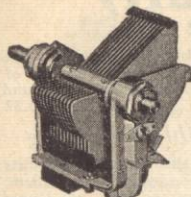
One, two, three and four-gang models. Modern receiver construction requires the greatest care and accuracy in gang condenser construction. The new NATIONAL WELD-BUILT Condenser, Type M, is made with sections factory-matched to an accuracy of 1/2 of one per cent. The solidly welded one-piece frame is copper plated all over after assembly, to secure very low H.F. losses and has the utmost rigidity. The adjustment screw of the shielded minimum capacity adjuster is at ground potential so that adjustments may be made during operation. This is an exclusive feature. Welded tie-bar at tip of rotor plates assures permanent spacing. When desired, end rotor plates are furnished split for ganging adjustments. Provided with removable 1/4" steel shaft.



Type	No. Units	Capacity	List Price	NET Price
1M-25	1	.00025	\$ 4.60	\$2.70
1M-35	1	.00035	4.75	2.79
1M-50	1	.00050	4.95	2.91
2M-25	2	.00025	7.95	4.67
2M-35	2	.00035	8.55	5.03
2M-50	2	.00050	9.00	5.29
3M-25	3	.00025	11.25	6.61
3M-35	3	.00035	11.95	7.03
3M-50	3	.00050	12.60	7.41
4M-25	4	.00025	14.20	8.35
4M-35	4	.00035	15.30	9.00
4M-50	4	.00050	16.20	9.52

(Above prices do not include dial.)

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	.0005	mfd.	.....\$5.50	NET \$3.23
ML-17	.00035	mfd.	.....5.25	NET \$3.09

FOR SHORT-WAVE RECEPTION

ML-11	.00025	mfd.	.....\$5.00	NET \$2.94
ML-7	.00014	mfd.	.....4.75	NET \$2.79
ML-5	.0001	mfd.	.....4.75	NET \$2.79

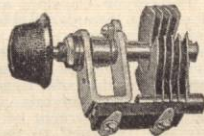
BATTLESHIP TYPE

Two Gang	.....	{ 350 mmfd.	.....\$ 8.70	NET \$5.12
		{ 500 mmfd.	.....9.20	NET \$5.41
Three Gang	.....	{ 350 mmfd.	.....12.20	NET \$7.17
		{ 500 mmfd.	.....12.50	NET \$7.35
Four Gang	.....	{ 350 mmfd.	.....15.60	NET \$9.17
		{ 500 mmfd.	.....16.00	NET \$9.41

Hammarlund Jr. Midget Condensers

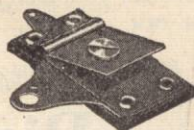
MC-5	16 mmfd.	.....\$1.50	NET \$0.88
MC-9	32 mmfd.	.....1.50	NET \$0.88
MC-11	50 mmfd.	.....1.75	NET \$1.03
MC-15	65 mmfd.	.....2.00	NET \$1.18
MC-23	100 mmfd.	.....2.25	NET \$1.32

Including Bakelite Knob.



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 mmfd.	List \$0.80	.....NET \$0.47

Precise Midget Condensers

The Precise Microdenser is one of the best midget condensers on the market today. It is very well made. Type No. 940:

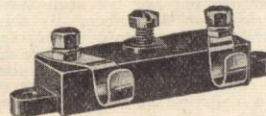
10 m.m.f.	\$1.25	.....NET \$0.74
30 m.m.f.	\$1.50	.....NET \$0.88
55 m.m.f.	\$1.65	.....NET \$0.97
100 m.m.f.	\$1.75	.....NET \$1.03
135 m.m.f.	\$2.00	.....NET \$1.18
For Balancing Gang Condensers Type No. 2040—		
Dual Microdenser	\$1.75	.....NET \$1.03



X-L Vario Denser

The Model G Vario Denser is designed primarily to insure correct and permanent condenser values for any tube or circuit within their range. For positive grid bias, filter and intermediate frequency transformer tuning in super heterodyne antenna tuning, etc. Simple screw adjustment accessible in the most crowded part of the receiver.

List, any type \$1.50.....NET \$0.88



Model G-1	.00002 to .0001 mfd.
Model G-5	.0001 to .0005 mfd.
Model G-10	.0003 to .001 mfd.

Model "N"

For use where absolute balance is required. These units have the most micrometer adjustment obtainable and greatly simplify the neutralization of all receivers. Compensation and adjustment in all popular circuits

packed in each box. List \$1.00.....NET \$0.59



Silver-Marshall Variable Condensers



320R Single Universal Condenser—Full floating rotor, removable shaft, soldered plate assemblies and die-cast end plates, universal mounting for either side, bottom, or either end and as left or right type, on panel or chassis. .000007 to .00035 mfd. capacity. Plates are of modified SLF-SLW shape to provide a substantially straight line tuning curve. Contains a very small amount of insulation, insuring low losses. Used in the new S-M 710, 720, and 740 sets. Size, 2 1/2" wide, 4" long and 4 5/16" high. Shipping weight, 1 lb.NET \$2.35

323 Three-Gang Variable Condenser—A three-unit gang condenser assembled in a rugged die-cast frame. It is used in the new S-M 720 Screen Grid Six and is specified in the 1929 Laboratory Model Receiver. Universal, for mounting on end, either side or bottom. Each section is electrostatically shielded from all others, and equipped with individual compensator. Plates are of modified SLF-SLW shape. Capacity of each section, .000007 to .00035 mfd., the accuracy of which, between all three sections, is guaranteed to be within less than 1% over upper half of scale and to within 1 mmfd. over the lower half. Size, 4 5/16" wide, 8 25/32" long and 3 3/16" high. Shipping weight, 2 lbs. 12 oz.NET \$7.94

314 Single Condenser—A single .00014 mfd. variable condenser, having die-cast end plates, full-floating rotor, removable shaft. This condenser contains a very small amount of insulation and has an extremely high electrical efficiency.NET \$2.20

322 Four-Gang Condenser—A die-cast four-gang .00035 variable condenser, with individual trimmers attached, the 322 is phenomenally accurate, being synchronized or "ganged" within 1 mmfd. at any point on the lower half and within 1% at any point on the upper half.NET \$5.88

313 Five-Gang Condenser—With illuminated dial built into the variable condenser, there are two condenser sections on the right and three on the left of the dial. Ends are die-cast, and not only is there shielding about the condenser body, but there is a complete shield between each condenser section, and each rotor is grounded, thereby avoiding coupling effects and saving space. The condenser is 15 5/32" long, 4 3/4" high, and 4" deep, not including the projecting 1/4" of shaft for the knob. Capacity of each section, .00035 mfd. This is the condenser employed with such remarkable results in the 712 tuner.NET \$9.70

S-M MIDGET CONDENSERS

340—Universal mount .000003 to .000025 mf. midget condenser for balancing, etc., complete with knob. Size 1 1/4" x 1 5/16" x 1"NET \$0.88

342B—Same as No. 340 but capacity .000004 to .000075 mfd. with knob. 1 1/4" x 1 1/4" x 1 1/4". List \$1.75.....NET \$1.32

REL Short Wave Condensers

The Cat. No. 187 combined tank and vernier type condensers will be found useful in many modern high frequency circuits. The large semi-variable capacity is rotated by means of a bakelite disc. This disc may be notched so that the locking device supplied will fit these notches. In this manner it will be easy to always return the large capacity to a setting previously employed. The small vernier single plate condenser is used to obtain full spread tuning of each band.

Cat. No. 187E comprises the Cat. No. 181B condenser combined with a single rotor and single stator vernier control. The tank condenser has a maximum capacity of 115 mmfds.; employs 3/8" spacing between stator plates; break down voltage, 1000 volts.NET \$6.25

Cat. No. 187F comprises the Cat. No. 181C condenser combined with a single rotor and single stator vernier control. The tank has a maximum capacity of 100 mmfds.; employs 1/4" spacing between stator plates; break down voltage, 2000 volts.NET \$6.50

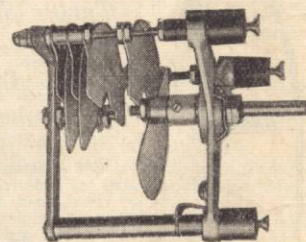
Cat. No. 187G comprises the Cat. No. 181D condenser combined with a single rotor and single stator vernier control. The tank condenser has a maximum capacity of 210 mmfds.; employs 3/8" spacing between stator plates; break down voltage, 1000 volts.NET \$6.50

Cat. No. 181A comprises one stator and one rotor plate; the stator plate is movable so that any maximum capacity may be secured.NET \$4.00

Cat. No. 181B comprises four stator and three rotor plates; spacing between stator plates, 3/8"; maximum capacity 115 mmfds.; break down voltage, 1000 volts.NET \$4.25

Cat. No. 181C comprises seven stator and six rotor plates; spacing between stator plates, 1/4"; maximum capacity 100 mmfds.; break down voltage, 2000 volts.NET \$4.50

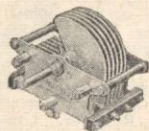
Cat. No. 181D comprises seven stator and six rotor plates; spacing between stator plates, 3/8"; maximum capacity 210 mmfds.; break down voltage, 1000 volts.NET \$4.50



Cardwell Taper Plate 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 or the log of a set using these condensers will remain absolutely the same for all time.

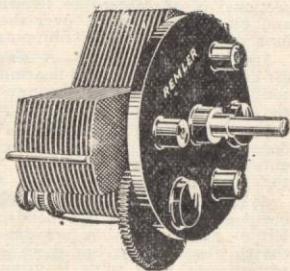


Type No.	Capacity (Rated)	List Price	Net Price
192E	.0005	\$5.00	\$2.94
169E	.00035	4.75	2.79
168E	.00025	4.25	2.50
167E	.00015	4.00	2.35
191E	.000075	4.00	2.35

Remler Twin-Rotor Condenser

In the Remler Twin Rotor Condenser both sets of plates rotate and are insulated from the dial and dial shaft. The dial shaft can be grounded. Body capacity effects are entirely absent and no distinction is necessary as between stator and rotor. The dial rotates through 360 degrees and therefore gives unusually great dial separation of stations at all wavelengths.

The plates are of bright-dipped and lacquered brass and are embossed to prevent warping. They are carefully aligned by hand and are rigidly soldered into position at three points. Flexible braid connections are made to moving parts.



No. 648—	.00035 mfd. max. S.L. Frequency.	List \$5.00	NET \$2.94
No. 649—	.0005 mfd. max. S.L. Frequency.	List \$5.00	NET \$2.94
No. 659—	.0001 mfd. max. S.L. Frequency.	List \$5.00	NET \$2.94
No. 638—	.00035 mfd. max. S.L. Wavelength.	List \$5.00	NET \$2.94
No. 639—	.0005 mfd. max. S.L. Wavelength.	List \$5.00	NET \$2.94
No. 632—	Two-in-Line S.L. Wavelength .00035.	List \$12.00	NET \$7.06
No. 642—	Two-in-Line S.L. Frequency .00035.	List \$12.00	NET \$7.06
No. 633—	Three-in-Line S.L.W. .00035.	List Price \$15.00	NET \$8.82
No. 633-35—	Single Balancing Condenser.	List Price \$1.25	NET \$0.74

Connectors

Carter Shielded Wire Connector

Consists of a shielded flexible wire firmly fitted to a spring brass cap. The cap makes firm contact with the top tube terminal. The wire is designed to have a very low capacity between wire and shield, thereby assuring the best results and maximum amplification.

No. 352—Shielded Wire Connector. List \$0.50. NET \$0.30

No. 342 Carter Connector Cap—Made of spring brass, slotted on side so that it slips onto the top terminal of shielded grid tube. Top is threaded and fitted with short screw, so that the lead wire may be firmly fastened, making a perfect connection. A very efficient little device and indispensable in making the best shielded grid assembly.

List \$0.25.....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



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.

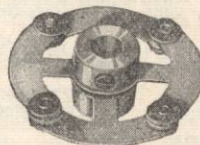
List each \$0.35.....NET \$0.21



Couplings (Shaft)

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



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

Crystals

Powertype Oscillating Quartz Crystals for Amateur Use

Powertype Crystals are made from the very best quartz obtainable. Only perfectly clear stock is selected—no milky or cloudy material is used. Each individual quartz crystal is examined carefully to insure the best cut for maximum output. The preliminary cutting and rough grinding is accomplished by mechanical means which speeds up this stage of the work, thus accounting for the nominal prices. However, the delicate finishing work is done by hand—assuring you as perfect a crystal as human skill can produce. This is evidenced by the fact that the flat surfaces of Powertype Crystals are parallel to within five ten-thousands of an inch.

FREQUENCY PRECISION

Powertype Crystals are tested for output frequency by the use of Precision Piezo Standards which assures you of a higher degree of accuracy than usually encountered in amateur work. We grind these crystals to your approximate frequency, the frequency of each crystal stated accurately to better than one-tenth of one percent. They are tested under actual operating conditions for the ease in which they oscillate.

Powertype Crystals are fully guaranteed to oscillate easily within one-tenth of one percent of the frequency specified. We will promptly replace any one returned to us which does not meet the above requirements.

1715 to 2000 Kilocycle Band.....	NET \$12.50
3500 to 4000 Kilocycle Band.....	NET 17.50
One-inch Oscillating Blanks.....	NET 5.00

Postage Prepaid to You.

Plug-In Mounting

Plug-in dust proof mounting and holder for these crystals, nickel plate finish of sturdy construction—a very high grade job. Each.....NET \$7.50

Dials and Knobs

National Types G and H, The Modern Dials

The NATIONAL VELVET-VERNIER DIALS, Types G and H, employ a beautiful brushed silver finish escutcheon of simple and dignified yet extremely modern design, harmonizing with the most modern cabinet work and furniture, yet free from freakish and radical characteristics.

Up to this year all radio dials were subject to one fault, that they read somewhat differently from different positions because of the distance between the moving scale and the fixed reference line or pointer. In the new NATIONAL VELVET-VERNIER DIALS, Types G and H, the scale is projected on to 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. Extremely easy to mount. Complete directions and template included with each dial.

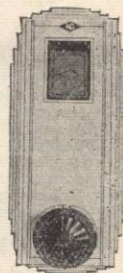
An added feature of these remarkable dials is an arrangement by which the color of the figures and scale divisions changes as you turn the tuning knob of the dial. There are six colors equally divided over the scale—red, green, yellow, purple, orange and blue. You quickly find what stations fall within the different color-bands and so tuning is still more simplified. The change and play of colors on the dial add to its beauty and novelty.

Type G Disc Dials—Designed for use when the tuning condenser shaft is at right angles to the panel. Without rainbow feature.

Type	Scale	Divisions	List	NET
VGCC	Counter Clockwise	(0-100) (180°)	\$3.75	\$2.20
VGC	Clockwise	(100-0) (180°)	3.75	2.20
VGE	Clockwise	(150-0) (270°)	3.75	2.20

Type H Drum Dials—Employs the National Velvet-Vernier drum mechanism with powerful, non-conducting drive and spring take-up.

Type	Scale	Divisions	List	NET
VHCC	Monocolor, counter clockwise	(0-100) (180°)	\$5.00	\$2.94
VHC	Monocolor, clockwise	(100-0) (180°)	5.00	2.94
VHCCR	Rainbow, counter clockwise	(0-100) (180°)	5.50	3.23
VHCR	Rainbow, clockwise	(100-0) (180°)	5.50	3.23



Type F National Velvet Vernier Drum Dial

Constructed with a mechanism that has that same velvet smoothness that has featured all of our former types. Automatic spring takeup assures a positive drive at all times.

Easily attached to the 1/4" shaft of any standard clockwise condenser. A template for drilling the panel is furnished with each dial.

A small concealed 6-volt lamp may be easily attached to light up the dial brilliantly.

List \$4.00NET \$2.35
Type 28 Illuminator, extra. List \$0.50.....NET \$0.29

Type E dial has a disc type of mechanism similar to Type B but designed for those who desire an artistic and distinctive dial to drive the condenser in a plane perpendicular to the front panel. Escutcheon similar to Type F. 0-100-0 or 200-0. List \$2.75.....NET \$1.62

Type 28 illuminator, listed above, may be attached to this dial.

Type B National Velvet Vernier Dials

Easily and quickly attached without special tools, fitted with beautiful permanent Bakelite cover, equipped with variable ratio of 6-1 to 20-1. 360°—200-0, 0-200 or 0-100-0. List \$2.50.....NET \$1.47

Dial illuminator, bulb, and bracket for Type B dial. List Price \$0.50.....NET \$0.29

Type N National Precision Vernier Dial

Embodies our Type A mechanism and has a hand graduated scale on German silver plate. Micrometer Vernier scale readings permit reading accurately to within 1/10 of a division. Especially adapted for short wave receivers, transmitting sets and laboratory apparatus. Readings 100-0, 150-0, 200-0.

List \$6.50NET \$3.82

Less Vernier. List \$4.50.....NET \$2.65

Type A National Velvet Vernier Dials

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.

VAC C3—3 3/8" dia., scale 0-100, 180°. List \$2.50.....NET \$1.47

VAC C4—4" dia., scale 0-100, 180°. List \$2.50.....NET \$1.47

VAC 4—4" dia., scale 200-0, 360°. List \$2.50.....NET \$1.47

VAC E4—4" dia., scale 150-0, 270°. List \$2.50.....NET \$1.47

Kurz-Kasch Knobs



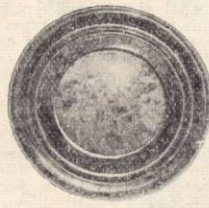
No. 93



No. 92



No. 17-18



No. 97

All Kurz-Kasch knobs are moulded of genuine bakelite and are furnished complete with set screw for 1/4" shafts.

No. 93—1 3/4" Plain stippled knob. List \$0.20.....NET \$0.12

No. 92—1 1/4" Fleur de Lis top knob. List \$0.15.....NET .09

No. 97—1 3/8" Two-tone walnut knob. List \$0.40.....NET .24

No. 17—1 1/8" Arrow knob. For 3/16" or 1/4" shaft. List \$0.15.....NET .09

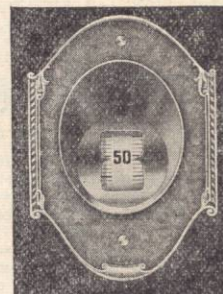
No. 18—1 1/2" Arrow knob. For 3/16" or 1/4" shaft. List \$0.20.....NET .12

Hammarlund Dial

HAMMARLUND now offers a new illuminated drum dial of unusual beauty. It is controlled by a knurled knob, cleverly planned to be placed in any position on the panel. The wave-length scale is of translucent celluloid, illuminated by a small electric light back of it.

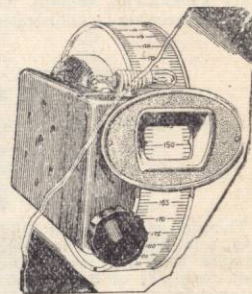
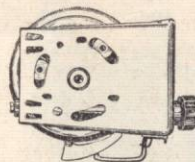
With either black or walnut knob and Mazda bulb, \$4.00NET \$2.35

Knob only \$0.25.....NET \$0.15



Remler Drum Dial

The Remler Dial permits quiet, velvet smooth, vernier control of any type of condenser. It is to be mounted back of the panel so that only an attractive, etched bronze escutcheon plate and the bakelite control knob will be visible. The drum is 15 inches in circumference and is divided into 200 divisions—two for each broadcast channel. There is ample room to write in wave-lengths or frequencies. The calibration strips are of heavy white cardboard printed in black; they are held rigidly in place and yet are readily removable and renewable. 6-Volt lamp and bracket supplied for illumination. List Price \$4.50.....NET \$2.65



The Remler Single Control Equalizer is intended for use in conjunction with the Remler No. 110 Universal Drum Dial. It permits operation through the Universal Drum Dial control knob of two Remler SLW Condensers, one of which is mounted on either side of the drum, and it provides for the separate vernier adjustment of the capacity of one of the condensers over a capacity range represented by twenty divisions on the dial.

The Single Control Equalizer can be used when two Remler SLW single condensers are to be driven from opposite sides of a single No. 110 Universal



Drum Dial. A Remler SLW Two-in-Line or Three-in-Line Condenser controlling several tuned circuits can also be driven from one side of the dial. The vernier adjustment will, in this case, necessarily be applied only to a single condenser mounted on the other side of the dial.

No. 112—Single Control Equalizer. List Price \$5.50.....NET \$3.23

No. 1103—Single Plate. List Price \$1.75.....NET \$1.03

No. 1101—Full Escutcheon Plate \$5.00.....NET \$2.94

No. 1102—Double Plate \$5.00.....NET \$2.94



Silver-Marshall Dials and Escutcheons

810—New illuminated vernier drum dial of striking appearance. Consists of a die-cast metal drum carrying a translucent 100-division scale (divisions are a full 1/16" apart), and a die-cast bracket, which, in turn, carries the drum, the illuminating lamp socket and the drive shaft. The Bracket may be fastened down to a chassis, and when so mounted will be rigid enough to carry a single, double, or triple tuning condenser. Will accommodate practically any standard condenser. Unless desired, the bracket need not be fastened down. Slip-proof drive by special braided linen cord; any looseness which may develop after long use is readily taken up. Vernier reduction is 7:1. The 810 dial is very compact—being 2 inches from front or back to shaft center, and 1 1/16" inches wide over-all, excluding lamp Half circle or 180 degree rotation is arrested at rubber stops. The 807 Window Escutcheon is not included.



bracket and knob, either end by cushion included.

(See Next Page for Prices)

Both 810R and 810L turn in the same direction, and are essentially similar. (Drums, brackets, stops, and lamp mounting are universal, for right or left mounting). Window escutcheon not included with either type. Equipped with walnut control knob, and lamp bracket, but no lamp.

810R—Illuminated drum dial, as described above. Bracket mounted at right of dial. Shipping weight 1½ lbs. NET \$2.20

810L—Same as above, but with bracket mounted at left of dial. Shipping weight 1½ lbs. NET \$2.20

807 Drum Dial Window—A single drum dial window of antique brass (shown above) 810L or 810R dials. It is very attractive and is attached to any panel with two screws and nuts. Size, 2¾" high and 1 7/16" wide. Shipping weight, with screws, 2 oz. NET \$0.29

812 Escutcheon—Used on the 722 receiver, this plate is furnished in antique brass—a beautiful piece of workmanship that will adorn any receiver NET \$0.73

816 Knob—This handsomely finished 1¾" Walnut Wood Knob is the same as that packed at no extra charge with all S-M 810 dials. It may be secured separately NET \$0.25

817 Knob—This Walnut Wood 1¾" Knob is a type used in connection with 722 receiver as illustrated. NET \$0.20

Eliminators

See Pages 10 and 11 for Combined Eliminators and Amplifiers

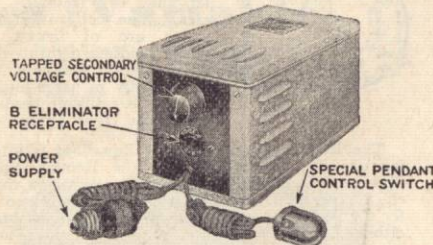
A ELIMINATORS

The Tobe "A" Supply

This unit measures but 10 in. long, 6 in. high and 5 in. wide. Despite this size the component parts are of heavy, solid construction, bolted rigidly onto a chassis and not held in place by the common practice of pouring hot wax over the entire "works" to keep them from moving and to cover poor workmanship. There are two special high inductance chokes and a large oversized transformer, all made of large wire and heavy cores, with a condenser bank of two units measuring 4000 microfarads each. These condensers are dry and actually remain at their rated capacity. In addition there is the metallic rectifying unit placed in a compartment with air vents to control the operating temperature.

A generous 2½ ampere output is given by this unit and the choice of 4 to 6 volts is available by use of a tapped secondary on the transformer, the most expensive but best practice. This A supply is designed for operation at 110-120 volts and 50-60 cycles and will take care of any 8 tube set. This unit is backed by a real guarantee of one year.

Model 27—List \$24.75. NET \$14.55



B ELIMINATORS

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



"AB" 7180 for "AC" Tubes

This NATIONAL power unit incorporates all of the features and advantages of the NATIONAL Super-Velvet-B. Type 7180, and in addition it supplies filament voltages for all of the AC tubes ordinarily used in a radio set. Easily attached to present battery sets either by rewiring the filament circuit or by a set of cable and adapters. List price, with cord and plug (less tube) \$44.50. NET \$26.17

7180 National Super-Velvet-B

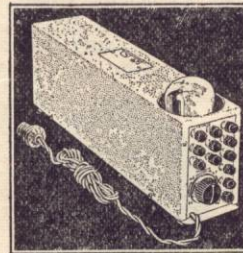
A strictly heavy duty unit with output of 70 MA at 180 volts. Insulated terminals are conveniently located at the top on a sloping panel, giving easiest connections for the cable running to the set. Uses the long lived UX-280 full-wave rectifying tube.

Provided with completely adjustable voltages: 22-45 V. for detector. 45-90 V. for R.F. 90-135 V. for A.F. 180 V. adjustable for power tube.

Only voltages in these ranges are obtainable so that it is impossible to put harmful or excessive plate voltages on the tubes. Will supply voltage for any type of radio receiver requiring not over 180 volts. Cased in beautiful black, moire-finished steel. List price, with cord, switch and plug (less tube) \$39.50. NET \$23.23

Silver-Marshall 675 ABC Power Supply

FOR 210 AND 250 TYPE TUBES



675-669

The 675ABC provides a super-power stage of amplification for any radio receiver without changing set wiring. An adapter (furnished with the wired unit) is merely inserted in the last tube socket and a 210 or 250 type tube plugged into this adapter. Uses one UX281 tube, and furnishes 425, 135, 90, 22, and variable 22-90 B voltages for any receiver. In addition to this, C voltage and a power at 1.5 volts, 4 amperes, 2.25 volts, 4 amperes and 7.5 volts (or 210 or 250 type tube) are furnished for A. C. tube equipped sets. This power supply operates from any 105 to 120 volt, 50 to 60 cycle A. C.

Housed in a crackle finish steel case, 3 5/16" by 5 1/4" by 17", the 675ABC unit will fit in average radio cabinets.

LIST OF PARTS

1—S-M 327U Power Transformer (mfrs. type).....	\$ 9.00
1—S-M 331U (mfrs. type)	4.20
1—S-M 511 Tube Socket .....	.30
1—S-M 675 ABC Case, Chassis and Panel.....	2.40
2—S-M 672 Resistors @ \$1.35.....	2.70
1—FT64 Balancing Resistor .....	.30
1—Potter 673 Condenser Bank	12.00
1—Yaxley 5,000-ohm Potentiometer .....	.90
12—Moulded Binding Posts @ \$0.06.....	.72
1—Cord and Plug .....	.30
1—Set Hardware, hook-up wire, etc.....	.15

\$32.97 NET \$32.31

The 675ABC, factory assembled, with adapter for 250 tube, wired and tested, packed in substantial carton (less tubes). Shipping weight 28 lbs. Each NET \$37.04

Silver-Marshall 669 Power Supply

FOR 224 AND 245 TYPE TUBES

A complete ABC power supply for radio receivers using the new 245 power, and 224 A. C. screen-grid tubes in addition to 227 and 226 tubes. Amply constructed to insure a faithful source of power to sets having up to ten tubes.

Using one 280 tube, the 669 Power Supply furnishes fixed B voltages of about 67, 180, and 300 volts at a maximum current drain of 100 m. a. In addition, C voltages and A power at 1.5 volts, 4 amperes, 2.25 volts, 6 amperes, and 2.25 volts at 9 amperes is furnished for 224, 227 and 245 type tubes. This power supply may also be used to excite the field winding of a 90-120 volt D. C. dynamic speaker.

The 669 is especially recommended for supplying power to the S-M 720AC screen-grid receiver. The special design also permits it to be used with practically all types of tuned radio frequency sets using the new tubes, in which case a slight external change of wiring may be necessary. Housed in an attractive crackle-finish case, size 13" by 3 1/2" by 5 5/16". For operation from any 105-120 volt 50 to 60 cycle A. C.

LIST OF PARTS

1—S-M 336U Power Transformer	\$ 6.00
1—S-M 674C Condenser Block	7.00
1—S-M 333 Dual Filter Choke	3.60
1—S-M 511 Tube Socket .....	.30
1—S-M 669 ABC Case, Chassis and Panel	1.80
2—S-M 672 Resistors @ \$1.35	2.70
1—S-M 818 Coil Hookup Wire (25 ft.).....	.30
13—Insulated Binding Posts @ \$0.06 .....	.78
1—Connecting Cord and Plug .....	.30
1—Set of Hardware .....	.30

Total \$23.08 NET \$22.62

Complete as described above, fully wired and tested. Substantially packed in wooden box (less 1—280 tube). Shipping weight 14 pounds. NET \$27.73

Ground Clamps

No. 8815 Belden Ground Clamp—Sturdy copper with Belden Clip.

List \$0.10NET \$0.06

Ekko Ground Clamp—Attached instantly. Not necessary to file pipe. List \$0.25.....NET \$0.15



Head Sets

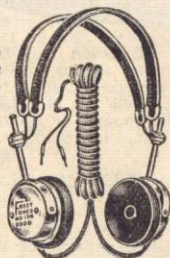
Frost Fones

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

No. 172—3,200 Ohm Phones with genuine moulded bakelite shells and caps. List \$6.00.....NET \$3.53



Trimm Dependable Headsets



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

Code No. 60NET \$1.50

Hum Filters

R-313 Sterling Hum Eliminator

The objectionable hum can be eliminated from 110-Volt A. C. dynamic speaker with the Sterling condenser type Hum Eliminator. The Hum Eliminator is attached across the field coil input and effectively silences the aggravating hum which is always noticeable when A. C. current is rectified. Easily installed with any A. C. dynamic chassis the rectifier of which is rated under 15 volts. Size 5¼"x4¼"x1" thick. Weight 1¼ lbs.

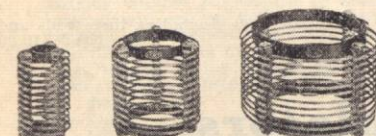
List \$3.50NET \$2.06



Inductances

TRANSMITTING INDUCTANCES

REL Inductors for Transmission



Type S Type L Type LL

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

Catalogue No. 127

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.)

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.

Edgewise Wound Copper Coils

¼" Copper Strip 5" Diameter.
Per turnNET \$0.15

¼" Copper Strip 9½" Diameter.
Per turnNET \$0.20



Aero Interchangeable Inductances

Aero Short Wave Transmitting Coils have given exceptional results. Each kit includes all necessary parts for a tuned plate transmitter, including base with variable antenna coil, plate coil, base for grid coil, grid coil and two choke coils.

The same base may be used for all coils.

Kit 2040-K—16 to 52 meters. List \$12.00.....NET \$7.06

Kit 4080-K—36 to 90 meters. List \$12.00.....NET 7.06

Kit 9018-K—90 to 180 meters. List \$12.00.....NET 7.06

BROKEN KIT PRICES

16.5 to 52 Meter Coil, Code 2040-C. List each \$4.00.....NET \$2.35

36 to 90 Meter Coil, Code 4080-C. List each \$4.00.....NET 2.35

72 to 190 Meter Coil, Code 9018-C. List each \$4.00.....NET 2.35

Grid Mounting Base, Code GRID 100. List each \$1.00.....NET .59

Antenna Mounting Base, Code P. R. I. 300. List each.....NET 1.76

16.5 to 52 Meter Coil, Code TEL-24-C. List each \$5.50.....NET 3.23

36 to 90 Meter Coil, Code TEL-48-C. List each \$5.50.....NET 3.23

72 to 190 Meter Coil, Code TEL-98-C. List each \$5.50.....NET 3.23

Aero 500 Watt Transmitting Coils

In accordance with 1929 practice. First use of plug-in coils for high power up to 75 amperes. Heavy aluminum carries 500 watts safely. New material space bar superior to glass. Many new features. For use with 450 mmfd. condenser.

Kit of 2 coils with plug-in mounts, 9.6 to 27.0 meters.

List \$15.00NET \$8.86

Kit of 2 coils with plug-in mounts 14.2 to 43 meters.

List \$15.00NET \$8.86

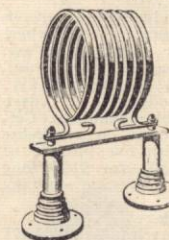
Kit of 2 coils with plug-in mount 31.8 to 90.3 meters.

List \$15.00NET \$8.86

Single coils, without bases. List \$5.50.....NET \$3.24

Pair of plug-in mountings. List \$3.50.....NET \$2.06

Plugs only, with nuts, per pair. List \$2.00.....NET \$1.18



RECEIVING INDUCTANCES

National Browning-Drake Transformers

These small size 2" coils embodying slot wound primary Browning-Drake Transformers have the same electrical efficiency as the larger sizes previously furnished. A special High Impedance Primary Transformer can be supplied for use with the UX-222 Tube. Antenna Coils can be furnished either with or without inductive trimmer.



BD4—National BD Antenna Coil. List \$1.50.....NET \$0.88

BD5—National BD Antenna Coil with Inductive Trimmer. List \$3.00.....NET \$1.76

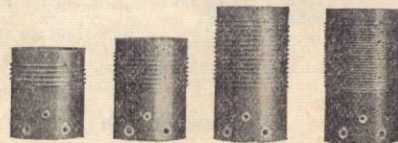
BD6—National BD Transformer. List \$5.50.....NET \$3.23

BD7—National BD Transformer for UX-222 Tubes. List \$5.50.....NET \$3.23

National Short Wave Tuning Transformers

For Short Wave Receivers

These coils are designed especially for use with the UX222 screen grid tube. They may be used very effectively in circuits not employing radio frequency amplification. The set of four (4) coils covers the entire band from 20 to 2.6 megacycles (15 to 115 meters).



Trans. A—Range 15 to 25 meters (20 to 12 megacycles). List \$2.50NET \$1.47

Trans. B—Range 24 to 40 meters (12.5 to 7.5 megacycles). List \$2.50NET \$1.47

Trans. C—Range 37.5 to 65 meters (8 to 4.6 megacycles). List \$3.00NET \$1.77

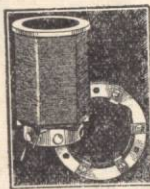
Trans. D—Range 64 to 115 meters (5 to 2.6 megacycles). List \$3.00NET \$1.77

When purchased in sets of four coils (Per Set). List \$10.00.....NET \$5.88

Socket, list \$1.25NET \$0.73

Type 10 National H. F. Impedance

A required part of the NATIONAL 2 and 3-tube Screen-Grid Short-Wave Tuners and a necessary component in a number of other short-wave circuits. List \$1.00NET \$0.59

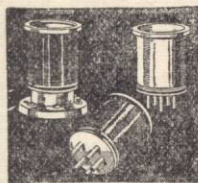


Standard S-M Plug-In Coils

S-M Interchangeable Plug-in Coils are known for their confined magnetic field extreme uniformity, extremely efficient low-loss design and adaptability to all circuits at all wavelengths up to 3,000 meters. Wound on threaded ribbed Bakelite forms with enameled and double silk-covered wire. All are provided with six contacts and plug into the S-M 515 Universal coil socket from 110A to 113A are of this type. Overall size of 2 1/2" diameter by 3" long over finger flange. Average shipping weight 4 oz.

Catalog No.	Code Word	Range Meters	Secondary Tuning Condenser	NET Price
110A	Majestic	190-550	.00035	\$1.47
110B	Gigantic	70-200	.00035	1.47
110C	Titanic	30-75	.00035	1.47
110D	Olympic	500-1500	.00035	2.94
110E	Hectic	1100-3000	.00035	2.94
111A	Oceanic	190-550	.00035	1.47
111B	Atlantic	70-200	.00035	1.47
111C	Pacific	30-75	.00035	1.47
111D	Arctic	500-1500	.00035	2.94
111E	Basic	1100-3000	.00035	2.94
113	Nomadic	Unwound Coil Form with Contacts, Springs and Rotor.		1.03

S-M Midget Plug-In Coils



The new "130 Series" S-M Midget Plug-In Coils are provided to supplement the standard coils where space is at a premium, and for short wave use. They are very compact, economical and highly uniform. Their winding space is 1 1/2" long by 1 1/2" in diameter, with a slot 1/6" wide and 1/8" deep at the bottom for primary or tickler windings. Certain types have inner primaries wound on a bakelite tube. All forms are equipped with five pins to fit any 5-prong tube socket. Overall size 2 1/2" long over finger flange, 1 3/4" diameter. Average shipping weight 2 oz.

Catalog No.	Code Word	Range Meters	Secondary Tuning Condenser	NET Price
130P	Peacock	Plain Coil Form with Contact Pins		.39
130T	Teacoil	Threaded Coil Form (98 threads) with Contact Pins.		.39
131L	Lowcoil	17.4-32.1	.00014	.73
131M	Youcoil	31-58	.00014	.73
131N	Veecoil	57-110	.00014	.73
131O	Highcoil	104-204	.00014	.73
131P	Excoil	190-358	.00014	.73
131Q	Wycoil	344-647	.00014	.88
132A	Leadercoil	190-550	.00035	.73
132B	Labcoil	190-550	.00035	.73
132C	Mixcoil	190-550	.00035	.73

- S-M 515 Universal Coil SocketNET \$0.59
- 121 Shielded R. F. Transformer—A moderate gain r. f. interstage transformer giving voltage amplification of 20 and 40 at 550 and 1500 kc. respectively. Has exceptionally good selectivity factor.NET \$1.52
- 122 Shielded R. F. Coil—A secondary only this was designed to be used in impedance or band selector circuits (Used in S-M 722).NET \$1.18
- 123 Shielded R. F. Coil—A high-gain r. f. interstage transformer giving a voltage amplification of 40 to 65 at 550 and 1500 kc. This is the type used in S-M 722. Shield 2 1/4" diameter and 2 1/2" long.NET \$1.52
- 124 Shielded R. F. Coil—An antenna coupler coil with taps for long and short antenna. Used as first coil and antenna coupler in band-selector circuits of 712 and 722, an indication of the high quality of the coil and the receivers. Shield is 2 1/4" diameter and 2 1/2" long.NET \$1.52
- 30X Selector Coupler—Provides absolutely the proper coupling in a band-selector stage using .00035 condensers.NET \$0.34

Space-Wound Inductance in Bulk



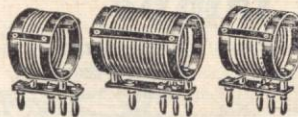
A high grade inductance composed of No. 16 insulated copper wire wound on a low loss base by a patented process.

LWC-3—3" diameter (10 turns per inch). List \$0.40 per inch.NET \$0.24

LWC-2—2" diameter (10 turns per inch). List \$0.40 per inch.NET \$0.24

3" diameter. Broadcast Type (30 turns per inch). Per inch.NET \$0.24

Aero "International" S. W. Receiving Coils



The New International Aero Coils are constructed of heavy wire and the diameter is two inches. This change, over the previous 3 inch coils improved the structure and rigidity of the coil, it constrained the field of the coil materially by increasing the ratio of length to diameter, minimized the pickup from

powerful near-by stations and provides a favorable co-efficient of coupling between the tickler and secondary for operation on the higher frequencies. Base dimensions are the same and coils may be substituted in the LWT-125 Kits. Variable primary is now built in the same low-loss construction as the secondary.

- Coil Kit No. LWT-12—Contains a plug-in mounting base with variable space wound primary and three plug-in coils for use in three circuit receivers. Range 16.5 to 89.5. List \$12.50.NET \$7.35
- Coil Kit No. LWT-11—Contains a plug-in mounting base without primary and three coils for use after a shield grid tube. Range 16.5 to 89.5 meters. List \$11.50.NET \$6.76
- Coil Kit No. LWT-10—For use with Foundation Units containing plug-in mount, or for replacing LWT-125 Coils. Same three coils as in LWT-11 Kit. List \$10.50.NET \$6.17

BROKEN KIT PRICES

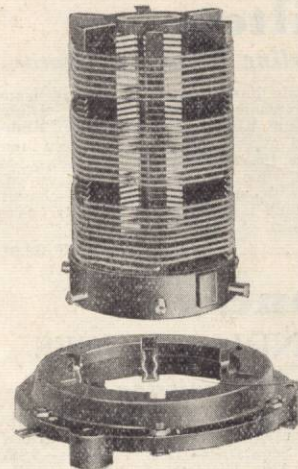
Coil INT-101, 16.5 to 32 Meters.	List \$4.00.	NET \$2.35
Coil INT-102, 26.2 to 48.7 Meters.	List \$4.00.	NET 2.35
Coil INT-103, 46.7 to 89.5 Meters.	List \$4.00.	NET 2.35
Coil INT-104, 87 to 155 Meters.	List \$4.00.	NET 2.35
Base with Space Wound Primary, No. 100-P.	List \$3.00.	NET 1.76
Base, without Primary, No. 100-W.	List \$1.50.	NET .88

Aero 1929 Receiving Coils

Designed for the new amateur 20, 40 and 80 meter bands, for use with .00003 condenser, including plug-in base with new design adjustable space-wound primary.

- Kit L. W. T. 13, 3 coils. List \$12.50.NET \$7.35
- Single Coils 8.2 to 12.6 meters; 19.4 to 21.5 meters; 40.0 to 45.0 meters; 75.0 to 86.0 meters. List each \$4.00.NET \$2.35
- L. W. T. Plug-in base. List \$3.00.NET \$1.76
- .00003 Condenser (This condenser to be shunted with a .00008 fixed condenser.) List \$1.50.NET \$0.88

REL S. W. COILS

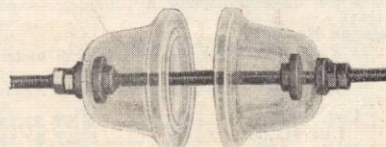


Every amateur receiver must spread each band over the entire tuning condenser scale. Modernize your present set by installing the REL amateur coil and condenser tuning combination. Maximum efficiency can only be obtained by using correct LC ratio. Each coil in the REL Cat. Number 182 coil kit is correctly designed to adapt itself to any type of short wave circuit which requires inductances having one, two or three independent windings. Slotted grooves hold coil to original calibration as each turn is held fast in place. Key slot assures proper plug in as coil will only fit base in correct position. The coil shown is one of a kit covering the 14,000, 7000 and 3500 KC bands. The one piece construction means rigidity, insures permanency unattained with any other type of coil.

Cat. No. 182—Including three coils and baseNET \$10.00

Insulators

"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 5/8" 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 rodNET \$4.25

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.

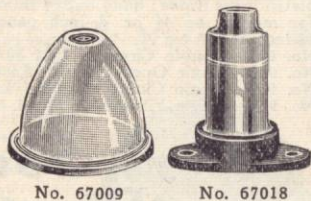
In the United States Navy, Coast Guard, Lighthouses and air mail, by Commander Byrd in his flight over the North Pole, by the largest broadcasting stations in the United States, PYREX Radio Insulators are specified by name.

Pyrex Strain Insulators

- No. 67007—Type, Receiving; Strength, 450 lbs.; Weight, 3 oz.
List \$0.30.....NET \$0.21
- No. 67017—Type, Amateur; Strength, 1000 lbs.; Weight, 13½ oz.
List \$1.50.....NET \$1.15
- No. 67021—Type, Commercial; Strength, 1000 lbs.; Weight, 1 lb., 14 oz.
List \$3.50.....NET \$2.45

Pyrex Lead-in and Stand-off Insulators

- No. 67009—Small lead-in insulator.
4¾" high, 6" diam., weight 27½ oz.
Very O.K. on sets up to 2 K.W. power.
List \$1.50.....NET \$1.05
- No. 67037—Lead-in insulator 4¾"
high, 7" diameter, weight 2 lbs.
List \$1.50.....NET \$1.05
- No. 67018—Stand-Off. 3" high.
List \$2.75.....NET \$1.93
- No. 67019—Stand-Off. 7" high.
List \$3.00.....NET \$2.10



No. 67009

No. 67018

Special 12" type. Stand-Off. List \$8.00.....NET \$5.60
¾"-16 hole tapped in brass top cap.

IF OTHER TYPES ARE DESIRED, WRITE FOR
BOOKLET AND PRICES



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

Porcelain Insulators



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

Brown glazed porcelain.....NET \$0.20
Box of Ten.....NET \$1.40

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

No. 2 Porcelain Standoff Insulator

A well glazed insulator. Especially designed for transmitters. 5½" high, 2½" wide. List \$0.60.....NET \$0.42



Findlay Stand-off Insulators

No tools to use, no screws to lose.

No. 1929—Small stand-off insulator. Height 3" diameter 1⅞"
.....NET \$0.08

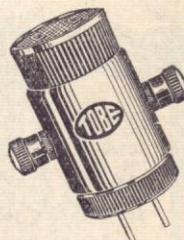
No. 1928—Large stand-off insulator.
Height 6".....NET \$0.15

Interference Filters

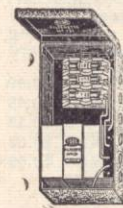
Tobe Filterettes

The enemy of good radio reception is invariably the interference caused by electrical appliances. On the clearest night, on the finest set, spoiling program after program with its ceaseless interference. Did you buy the most up-to-date receiver, sparing no expense, determined to have the best—to put up with this?

"Man-made" static, the cause of all these noises, is easily removed from any set for good, with the application of a Filterette to the offending electrical apparatus—For be it known that these noises are usually nearby and under your control.



Junior



Junior—For small motors, as on: barber clippers, cash registers, hair dryers, electric fans, vacuum cleaners, and similar devices. Maximum operating capacity 110 volts D. C. or A. C. 500 watts. List \$3.50.....NET \$2.06

No. 11—For motors, generators, chargers, transformers, house light plants, etc. Maximum operating capacity 110 volts A. C. or D. C. 1000 watts. List \$10.00.....NET \$5.88

No. 22—For motors, generators, chargers, transformers, house light plants, etc. Maximum operating capacity 220 volts A. C. or D. C. 2000 watts. List \$15.00.....NET \$8.82

No. 23—Same as No. 22, but where three wires are required instead of two. Maximum operating capacity 3 phase 220 volts A. C. Single phase 110-220 volts A. C. 3 wire 110-220 volts D. C. List \$20.00.....NET \$11.76

No. 55—For motors, and any other apparatus operating on 440-550 volts A. C. Maximum potential 440-550 volts A. C. List \$20.00.....NET \$11.76

No. 56—Same as No. 55, but where three wires are required instead of two. 3 phase 440-550 volts A. C. List \$25.00.....NET \$14.70

No. 60—For motors, generators, chargers, transformers, house lighting plants, etc. 600 volts D. C. List \$20.00.....NET \$11.76

No. 110—For refrigerators, oil burners, chargers, dental motors, certain types of violet ray, diathermic machines, electric heating pads, small electric signs or blinkers, and any type of apparatus within maximum potential named. Maximum potential 110 volts A. C. or D. C. 500 watts. Maximum current, 4 amperes. List \$15.00.....NET \$8.82

No. 131—For sign flashers. 110 volts A. C. or D. C. 1000 watts—10 amps. List \$20.00.....NET \$11.76

No. 132—For sign flashers. 110 volts A. C. or D. C. 2000 watts—20 amps. List \$27.50.....NET \$16.17

No. 133—For sign flashers. 110 volts A. C. or D. C. 3000 watts—30 amps. List \$37.50.....NET \$22.05

No. 134—For sign flashers. 110 volts A. C. or D. C. 4000 watts—40 amps. List \$50.00.....NET \$29.40

No. 135—For sign flashers. 110 volts A. C. or D. C. 5000 watts—50 amps. List \$65.00.....NET \$38.22

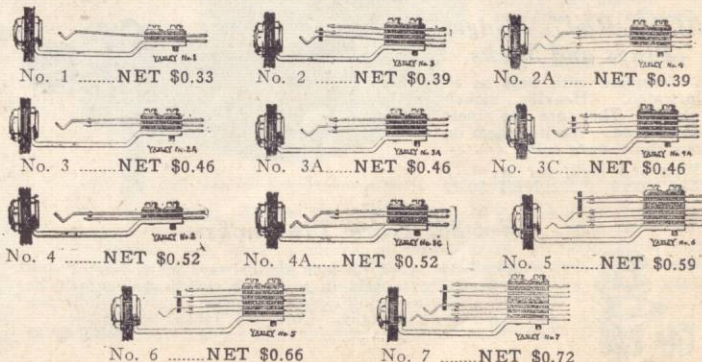
No. 221—Same as No. 110. 220 volts A. C. or D. C. 1000 watts—4 amps. List \$20.00.....NET \$11.76

Models 11, 22, 23, 55, 56, 110, 131, and Filterette Junior, immediate delivery; other models, ten to twenty days delivery on order.

Jacks

Yaxley Standard Jacks

All bakelite insulation. Mount in single ⅞" panel hole without adjusting collars. Bakelite insulating washers furnished on order for mounting on metal panels. Fit any standard radio plug.



No. 1.....NET \$0.33

No. 2.....NET \$0.39

No. 2A.....NET \$0.39

No. 3.....NET \$0.46

No. 3A.....NET \$0.46

No. 3C.....NET \$0.46

No. 4.....NET \$0.52

No. 4A.....NET \$0.52

No. 5.....NET \$0.59

No. 6.....NET \$0.66

No. 7.....NET \$0.72

No. 100 Extension Jack

Quickly connects extension cord or wire so that Loud Speaker or Head Phones may be plugged in at a point distant from receiving set.
List \$0.75NET \$0.49



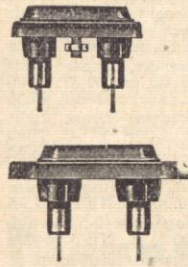
Junior Jacks

For use in the set where space is at a premium. Same characteristics as standard Jack described on page 53—full weight springs, silver contacts, etc. There is no skimming anywhere in material or workmanship. Takes any standard radio plug. Comes in all spring combinations as follows:

- | | |
|-------------------------------------|-------------------------------------|
| No. 701—List \$0.40.....NET \$0.26 | No. 704—List \$0.75.....NET \$0.49 |
| No. 702—List \$0.55.....NET \$0.36 | No. 704A—List \$0.75.....NET \$0.49 |
| No. 702A—List \$0.55.....NET \$0.36 | No. 705—List \$0.85.....NET \$0.56 |
| No. 703—List \$0.65.....NET \$0.42 | No. 706—List \$0.95.....NET \$0.63 |
| No. 703A—List \$0.65.....NET \$0.42 | No. 707—List \$1.05.....NET \$0.69 |
| No. 703C—List \$0.65.....NET \$0.42 | |
- See Standard Jacks above for illustration of spring combinations.

Yaxley Twin Jacks

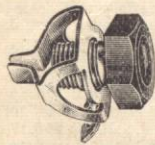
Double Hole Mount—Neatness in appearance and ease in use recommend the Twin Jack to the set buyer. Economy in assembly and dependability in service, recommend it to the set builder whether he be the large or small manufacturer. The illustration shows the handsome bakelite cap with the efficient double contact springs. Mounting holes 1-11/16" centers. Available in four markings: "Speaker," "Phono," "Field," "+—,"
List \$0.25NET \$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

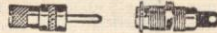
Yaxley Phone Tip Jacks

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 \$0.25NET \$0.17



Yaxley Pup Plugs and Jacks

No. 416—Pup Jack—The ideal Jack for Loud Speaker connections and for use as binding posts. Per Pair. List \$0.25NET \$0.17
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 \$0.07



Yaxley Midget Plugs and Jacks

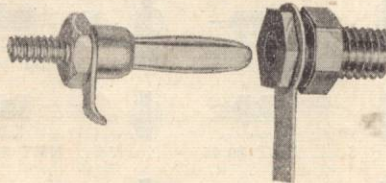
Serve the same purposes as the Pup Jacks and Plugs described above, only larger in size. Mount in 3/8 inch panel hole.
No. 16—Midget Jack. List \$0.30.....NET \$0.20
No. 15—Midget Plug. List \$0.15.....NET .10



"Chi Rad" Midget Plugs and Jacks

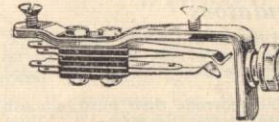
Complete with lugs as illustrated. Heavily nickel-plated. They are the finest obtainable. We use them on our short wave coils.

Plug and jack, per set
List \$0.20NET \$0.12



No. 253 Cord Tip Jacks

A small neat cord tip jack that always gives perfect contact. Cord tip is held in a spring clutch and cannot be released until the spring clutch is pushed down. Cords cannot pull out accidentally. Cord Tip Jacks, per pair.
List \$0.30NET \$0.18



FROST Pan-Tab Jacks

The Pan-Tab is a finer built jack. The springs are heavier, contacts more positive and the points are sterling silver. Each layer of the Celeron insulation is ground to precision thickness which makes possible a close adjustment of the contact springs resulting in perfect spring action. Frame is made of electric brass nickel plated and hand buffed to a high finish. Pan-Tabs can be used for either panel or table mounting. Also as combined Jack and Sub-panel bracket.

- | |
|--|
| No. 226—Pan Tab Jack, 6 Spring. List \$0.90.....NET \$0.53 |
| No. 230—Pan Tab Jack, 4 Spring. List \$0.85.....NET \$0.50 |
| No. 231—Pan Tab Jack, Double Circuit. List \$0.80.....NET \$0.47 |
| No. 233—Pan Tab Jack, Open Circuit. List \$0.65.....NET \$0.38 |
| No. 234—Pan Tab Jack, Closed Circuit. List \$0.75.....NET \$0.45 |
| No. 235—Pan Tab Jack, Filament Control. List \$0.85.....NET \$0.50 |
| No. 236—Pan Tab Jack, Filament Control. List \$0.90.....NET \$0.53 |

FROST Gem-Jacs

A small jack which projects only 1 inch behind the panel. Cannot get out of adjustment, is self-cleaning and it holds the plug in a firm grip. Sterling silver contacts; nickel plated brass frame; hand buffed thimble and washers. Gem-Jac mounts on 1/8 or 3/16-inch panel. Thimble fits 1/16 or 3/16-inch hole.

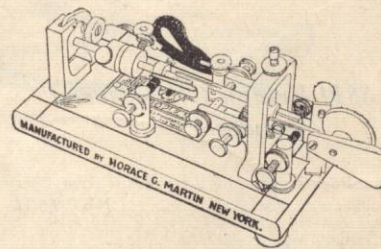
- | |
|---|
| No. 951—Double Circuit. List \$0.50.....NET \$0.30 |
| No. 953—Single Open Circuit. List \$0.40.....NET \$0.24 |
| No. 954—Single Closed Circuit. List \$0.45.....NET \$0.27 |
| No. 955—Single Filament Control. List \$0.50.....NET \$0.30 |



Keys, Sounders, and Practice Sets

KEYS

The Vibroplex



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 relayNET \$17.00

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 \$25.00

Signal Keys

M-200 SEMATIC KEY

Professional key of the latest design with a minimum number of adjustments. It can be used as a double action key or semi-automatic key. Heavy brass cast base with nickel plated brass parts. List \$16.00.....NET \$12.54

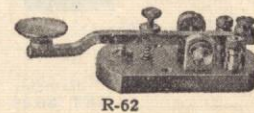
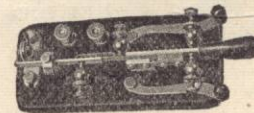
R-48—A very fine light weight key of lacquered brass and nickle metal constructionNET \$2.15

R-62—A heavy lacquered brass key on heavy base. Navy type. It is a beautiful key, 3/16" contacts. List \$3.50.....NET \$2.65

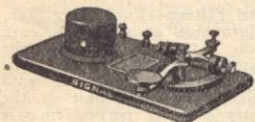
M-100 Legless Key—Lacquered brass base, nickel plated lever, coin silver contacts. List \$2.75NET \$2.16

M-101 Leg Key—As M-100 but with two threaded legs equipped with wing nuts. List \$2.85NET \$2.23

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



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

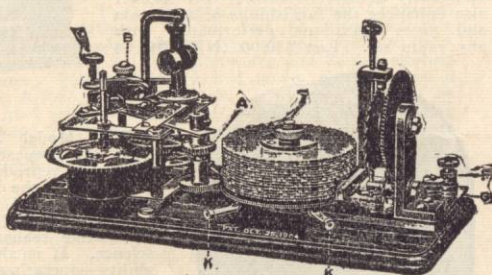
The Omnigraph

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.

We will rent you the No. 2 machine with 15 dials for \$1.50 per week; or a complete outfit in compact carrying case including key, buzzer, batteries, etc., for \$2.00 per week. Deposit of \$32.00 required on first item and \$45.00 on second. Deposit to be refunded less rental. Minimum charge one week.



Telex

Telex is the practical code instructor. Works like a phonograph. Waxed tape records send signals like a real operator. Complete code instructions furnished with every Telex. Sends messages, radiograms, etc.—regular code traffic like an expert operator. Used by all leading schools. Endorsed by U. S. Navy. Speedy, simple, clear. Ideal for advanced students or beginners.

.....NET \$27.50

SIGNAL SOUNDERS

Sounding plate, bar frame and bridge of lacquered brass. Aluminum sounding bar and rubber covered coils. Mounted on mahogany finish base.

- M-102—4 ohm.....NET \$2.55
 - M-103—20 ohm. List \$3.50.....NET 2.74
- Black enamel bar frame. Aluminum sounding bar and brass bridge. Mahogany finish base.
- 112S—4 ohm.....NET \$1.96
 - 113S—20 ohm.....NET 2.16

NO. 758 SIGNAL RESONATOR

Used to confine and increase volume of sound from a sounder. Mahogany finish. List \$5.00.....NET \$3.92

Leaks

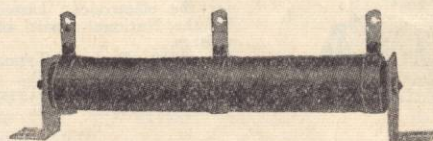
TRANSMITTING GRID LEAKS

Ohmite Leaks

Size	Catalogue Number	Resistance Ohms	Maximum Current in Milliamperes	Price	NET	
8 1/2" x 1 1/4"	8801	5,000	200	\$2.80	\$1.65	
	8802	10,000	141	4.00	2.35	
	8803	20,000	100	4.25	2.50	
	8804	30,000	81	5.50	3.23	
	8805	50,000	63	6.50	3.82	
	8806	15,000	tapped at 5,000 and 10,000	115	6.00	3.53
4" x 5/8"	8441	5,000	95	2.00	1.18	
	8442	10,000	67	2.50	1.47	
	8231	200	center tapped unit 2" x 1 1/8"	300	1.25	.73
	8161	10 ohm,	filament center tap resistor (cartridge type) 550	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 Milliamperes	List Price	Net Price
TYPE TG—100 WATT—1 1/4" x 10"					
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
TYPE TL—40 WATT—1" x 6"					
TL 50	5000	2500-2500	90	2.50	1.47
TL 100	10000	5000-5000	63	2.75	1.62
TYPE CF—15 WATT—1/2" x 4"					
CF .1	10	5-5	12	1.50	.88
CF .2	200	100-100	50	1.50	.88

RECEIVING GRID LEAKS

Lynch Metallized Resistors



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 megohms.

List \$0.50.....NET \$0.29
Standard Metallized Resistances of 500, 750, 1,000, 2,000, 3,000, 4,000, 5000, 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 \$0.75.....NET \$0.44

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 \$0.50.....NET .29



Lightning Arresters

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 \$1.50NET \$0.88
 Type 210 Vacuum Arrester.
 List \$1.50NET \$0.88
 Type 223 Vacuum Arrester.
 List \$2.50NET \$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.

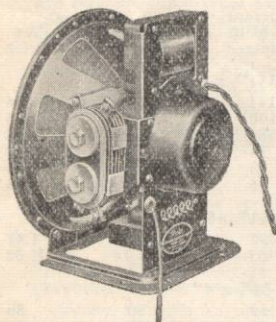
Belden Radio Lightning Arresters



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 \$0.70.....NET \$0.41
 No. 8813—Standard Type.
 List per arrester \$0.30.....NET \$0.18

Loud Speakers

Rola Reproducers



J-110 Unit

Rola loudspeakers have been adopted by leading manufacturers as standard equipment in their radio sets. They are also used in electric phonographs, in talking pictures, in address systems, in schools and auditoriums—wherever the utmost life-like realism is desired in the reproduction of sound. This preference for the Rola loudspeakers is founded not only on brilliant performance, but also on their consistent reliability and freedom from maintenance troubles. There are Rola loudspeakers for every need in radio.

Model J-110—Complete Rola Electro-dynamic Unit. Equipped with Westinghouse Rectox Rectifier for operation directly on 110-volt A. C. light socket.
 List \$40.00NET \$23.52

Model J-90—Complete electro-dynamic unit with 20-1 input transformer, equalizer filter, and tinsel cord, but without transformer rectifier unit—the field coil being wound for excitation from standard power pack.
 List \$25.00NET \$14.70

Model J-110-2—Same as Model J-110, but with special input transformer for push-pull sets and amplifiers. List \$40.00.....NET \$23.52

Model J-180—A complete electro-dynamic unit with 20-1 input transformer, equalizer filter and tinsel cord, but without transformer-rectifier unit—the field coil being wound to 7,000 ohms for excitation by 20 to 30 milliamperes at 150 to 225 volts. List \$28.00.....NET \$16.46

Model J-90-2—Same as Model J-90 but with special input transformer for push-pull sets and amplifiers. List \$25.00.....NET \$14.70

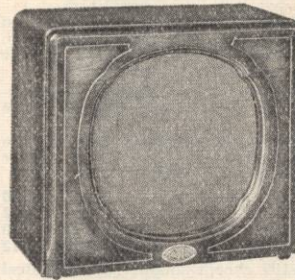
Model 90-AK—A special Rola Dynamic unit for installation with Atwater-Kent Models 43 and 46 radio sets. Speaker-mounting comes equipped with connector cable and plug, enabling ready installation by anyone. List \$21.00.....NET \$12.35



Model M—This is the same complete electro-magnetic-armature unit as that installed in the Rola Models Fifteen and Twenty. It has the Rola full-floating diaphragm, magnetic-armature cone unit with low-pass filter, solid pole pieces, armature and tinsel connecting cord.

List \$15.00NET \$8.82

ROLA CABINET MODELS

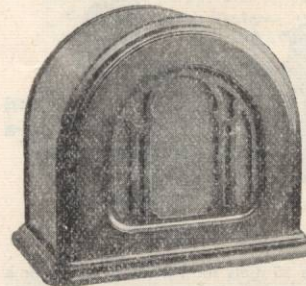


Rola Model Fifteen—Furnishing high-quality performance at moderate cost, this speaker is unquestionably the greatest value offered in radio. The Rola Model Fifteen is equipped with the same electro-magnetic unit as the Model Twenty and its performance is therefore almost identical with the more expensive model. It has ample power capacity to take the full power output of any standard radio set and is exceptionally beautiful in appearance—features never before combined in a speaker at this price.
 List \$22.50NET \$13.23

Rola Model Twenty—Rich, clear, exceptionally faithful in tone, this cabinet model has proven its leadership among magnetic loudspeakers. It is equipped with the Rola Electro-magnetic Unit Model M, and in power capacity, tone range and life-like realism equals the results of the average dynamic reproducer. Extremely artistic in design, this speaker also enhances the furnishings of any room and gives maximum performance with any radio set. List \$30.00.....NET \$17.64



Rola Model Thirty-J—Every note from the deepest bass to the highest treble is reproduced with matchless accuracy by the Model Thirty-J. The performance of this electro-dynamic speaker is today the nearest approach to life-like realism achieved by radio science. It is also of utmost dependability—operating consistently well with any set or amplifier. Equipped for light socket operation.
 List \$60.00NET \$35.28



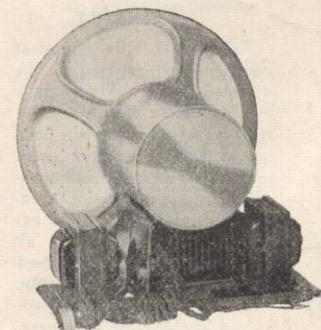
Wright-DeCoster Reproducers

HUMLESS

The flux density of 120,000 magnetic lines to the square inch in the air gap insures extreme sensitivity and no distortion at great power. Dimension of the chassis: 12 inches wide; 9 3/4 inches deep; 12 1/2 inches high; Cone 10 inches in diameter. Requiring 10 3/4 inch Baffle Hole. Weight: Packed one in a box, 52 pounds. On official tests the Wright-DeCoster Reproducers have handled amplifiers having an undistorted output of 45 watts without developing any rattles or showing any signs of breaking down.

No. 107—110 volt, 25-50-60 cycle A. C. with output transformer.
 List \$72.50NET \$42.63

No. 108—Same as No. 107 but without output transformer.
 List \$68.50NET \$40.28



Back View

105—6 volt D. C. unit, with output transformer, requires 1 1/2 amperes to operate the field. List \$58.00.....NET \$34.10

105X—D. C. unit, with output transformer, has a field resistance of 750 ohms, for use on 75 to 130 volts, at a minimum of 90 mils. Especially designed for use as a choke in the filter system of a power pack.
 List \$62.00NET \$36.46

105XX—D. C. unit, with output transformer, has a resistance of 3000 ohms and operates on 150 to 250 volts at a minimum of 50 mils. Usually used in the voltage divided or bleeder system. List \$62.00.....NET \$36.46

106—D. C. unit, without output transformer, requires 1 1/2 amperes to operate the field. List \$55.00.....NET \$32.34

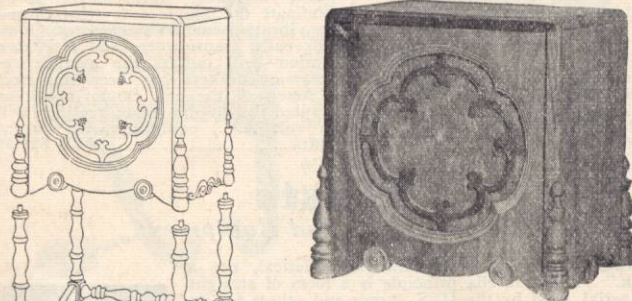
106X—D. C. unit, without output transformer, has a resistance of 750 ohms, for use on 75 to 130 volts, at a minimum of 90 mils. Especially designed for use as a choke in the filter system of a power pack.
 List \$59.00NET \$34.69

106XX—D. C. unit, without output transformer, has a resistance of 3000 ohms and operates on 150 to 250 volts at a minimum of 50 mils. Usually used in the voltage divided or bleeder system. List \$50.00.....NET \$34.69

Realizing the Public's increasing demand for perfect voice reproduction in the talking pictures Wright-DeCoster have developed a special voice cone which accentuates the treble and reduces the bass. When this special voice speaker is used in combination with the standard reproducer there is a heightened brilliance and clearness in the speech, yet nothing is lost in the reproduction of music. It is to be understood that this Voice Speaker should be used only in combination with the Standard Speakers. The correct proportion is usually an equal amount of each.

- 107T—25-50-60 cycle A. C. with output transformer. List \$72.50.....NET \$42.63
- 108T—Same as 107T but without output transformer. List \$68.50.....NET \$40.28

WRIGHT-DE COSTER CABINET MODELS

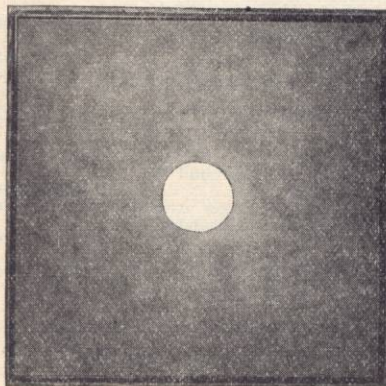


Cabinet "D"

All other things being equal, beauty speaks the last word in the selling of furniture. The scientist and the workman combine to produce the delicate mechanism of a radio set and the marvelously fine adjustments which characterize finer loud speakers, such as Wright-DeCoster products. And then to anyone with a good taste and love of the beautiful, comes the matter of adornment. In the loud speaker cabinets "D" and "E" our designers have achieved something really extraordinary in eye-pleasing lines and decorative craftsmanship. Reminiscent of the days of the spinnet are the table legs of these models, with their Early American, single and twin spools effect. A cabinet proper of exquisite contour, with a delicately carved grill in acorn and oak leaf motif, against a background of figured cloth of silver bearing the same emblematic design. Truly significant, for with this speaker, the fall of a leaf can almost be heard.

- No. 107D—With output transformer. List \$88.00.....NET \$51.74
- No. 108D—Without output transformer. List \$85.00.....NET 49.98
- Table Legs for use with "D" Cabinet—List \$12.00.....NET 7.06
- "D" Cabinet only. List \$20.50.....NET 12.05

Wright-DeCoster Baffles and Horns



No. 4 Baffle

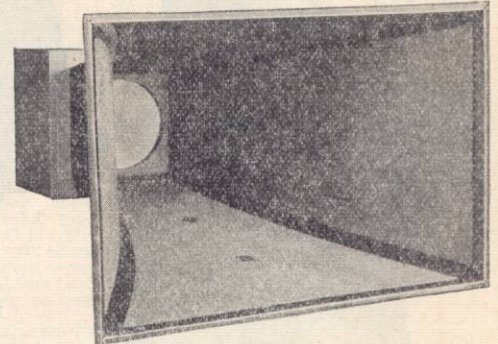
to accommodate two speakers. As the best results are secured when the speakers are placed close together, this baffle is recommended not only when the regular cone and the voice cone is to be used but also for the installation of any two speakers where it is possible to have them placed together. Outside Measurements: height 5 ft. 8 in.; width 4 ft. 2 in. Weight crated, 95 pounds. List \$21.50.....NET \$12.64

Baffle No. 4—Made of one inch non-resonant material mounted in a strong frame. The shelf on the back is substantial enough to carry the speaker chassis when the baffle is tipped at any angle. Four of these baffles put together in a square and placed behind a sound screen gives splendid true reproduction. But they also give very good results when placed at the sides of the screen. The frame is stained a dark walnut and the baffle shaded so it may be made attractive by placing a grill cloth between the speaker ring and the baffle. Outside dimensions: 4 ft. 2 in. by 4 ft. 2 in. Weight crated, 71 pounds. List \$16.50.....NET \$9.70

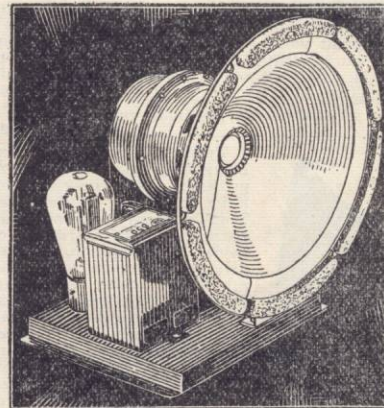
Baffle No. 6 construction is the same as number 4 except that it is one and one-half feet longer and is made

Horn No. 5—Has the bottom flare only. While it is more directional than the No. 9 horn it will cover a very fair space and is really exceptional for distance. Used in theaters at the sides of the solid screens and for outside installations where the voice or music must be heard distinctly for some distance. Outside Measurements: Length over all, 48 in. Bell at opening 23 in. by 22 in. Weight crated, 71 pounds. List \$25.00.....NET \$14.70

Horn No. 9—Has a flare on both sides. It is used extensively in theaters to be placed above or below the solid screens or back of the sound screens. Also for outside installations where a large area is to be covered at not too great a distance. Very substantially manufactured. Outside Measurements: Length over all, 48 in. Bell at opening 30 in. by 21 1/2 in. Weight crated, 71 pounds. List \$25.00.....NET \$14.70



Silver-Marshall Dynamic Speaker Units



Reproduction with rich, vibrant, crystal-clear, tone quality. The snappy crispness of the large military band, the alluring rhythm of the dance orchestra, and the full piercing brilliancy of the violin, are all faithfully reproduced through this revolutionary new S-M Dynamic Speaker.

In eliminating the undesirable light-socket hum, a filtered high voltage, low current (easily filtered) power supply is used, rather than an unfiltered low voltage, high current (difficult to filter) source. The result is that practically no hum will be found in the S-M 850 unit. A 300-volt center-tapped transformer, with a 280-type tube, converts the A.C. to D.C. of the proper voltage, and this is filtered by a condenser and the speaker field winding. The result is a smooth flow of

filtered direct current. This obviates all necessity for a bucking coil as used in some dynamic speakers to eliminate hum—a method prone to eliminate at the same time certain low-frequency notes.

Both the 850 and 851 types are equipped with a universal output transformer which allows them to be fed from push-pull or single audio amplifiers, using 171A, 210, 245 or 250 type power tubes. Taps are provided for this purpose. Because of the fact that this speaker will dissipate two or three watts, it will easily handle the tremendous volumes so necessary in present day practice.

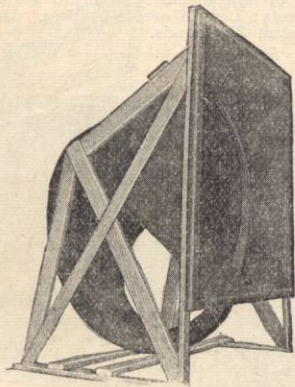
850 (A.C.) Dynamic Unit—Takes power from any 105-120 volt, 50 to 60 cycle A.C. light socket. Equipped with 229 universal output transformer. Requires one UX280 full-wave rectifier tube for its operation. Overall dimensions: 9" high, 6 1/2" deep, 10" wide. Fits 8 1/2" baffle hole. Complete with mounting base; shipping weight 23 pounds.....NET \$34.40

851 (D.C.) Dynamic Speaker Unit—Requires field current from a 90 to 120 volt, D.C. source, such as a B power unit, or through inclusion as a choke in a power supply rectifier circuit (as in S-M 678PD amplifier). Has universal output transformer and mounting brackets; not equipped with base or power supply. Size about 9" high, 10" wide, and 6 1/2" deep. Fits 8 1/2" baffle hole. Shipping weight 19 pounds.....NET \$28.52

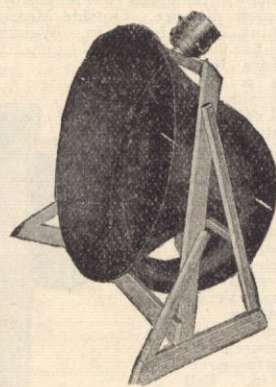
MAKE MONEY SELLING THE CHI-RAD RECEIVER

We have a special proposition for agents to sell the Chi Rad 140 and 110 Receivers. The receivers are low in price and an excellent buy. They sell themselves—and you earn a generous profit. Write today for full details.

Racon Exponential Horns
—For public address and theater use



No. 4320



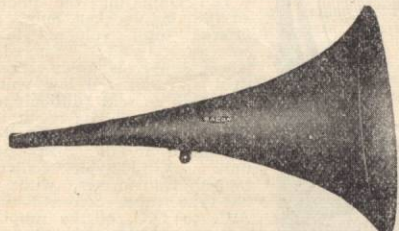
No. 3320

Exponential (Air Column) Horns and Trumpets are made of fabric (fleece) impregnated and hardened. Being a fabric it has no vibration of its own and therefore is a perfect medium for acoustic amplification and pure natural tones. They are uniform and are guaranteed to withstand all climatic temperatures and moistures without effect and will withstand all ordinary abuse without damage. Designed along lines accepted as standard by expert acoustical Engineers.

No. 4320—A very large and powerful Air Column projector mounted on a substantial frame. Designed for use in connection with RACON GIANT DYNAMIC unit, which provides great volume with Theatres, Auditoriums, etc. This projector will deliver pure natural tones thruout the complete musical range. Air Column 10 ft., Bell 40"x40", Depth 34". Weight 45 lbs. Complete with framework. List \$175.00.....NET \$102.90

No. 3320—7½ foot trumpet is illustrated, but without unit. List \$100.00NET \$58.80

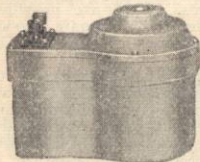
Trumpet Horns—An exceptionally efficient type of projector, especially where large coverage is desirable. Throat design is scientifically correct, particularly for voice reproduction. Also gives pure musical tones over the entire range. For outdoor work, it has no equal and due to its design wind or air pressure has no effect on its efficient operation. When used in connection with H. F. 1, High Powered



Magnetic unit, the combination is unequalled in the science of sound projection, where natural tone qualities are essential. Especially adapted for Theatres, Halls, Churches and all places of public gatherings.

6 ft. trumpet—30" bell. List \$50.00.....NET \$29.40
3½ ft. trumpet—22" bell. List \$20.00.....NET \$11.76

Racon Giant Dynamic Unit—Designed to handle super-power input. Has an input capacity of 30 watts and has an output from 200 to 350 times greater than any other type of unit. The Racon unit carries 30 watts with a frequency cut off of 7500 cycles. An ideal combination when used with Racon Exponential Horns. Adapted for use



H. F. 1 Magnetic with No. 4320 or 3320 and Trumpets energizes its field from a six volt battery using between 1.1 and 1¼ amps or use a six volt exciter. The Magnetic case is a special steel casting to give a maximum magnetic field. List \$120.00.....NET \$70.56

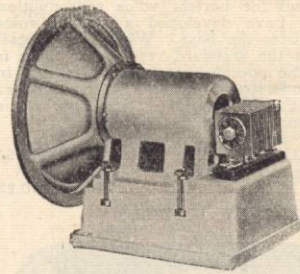


Giant Dynamic

Dynamic Horn Unit—For Radio use only, taking 15 watts input. List \$50.00.....NET \$29.40

Racon H. F. 1—High Powered Magnetic Unit—Designed to handle a power input where super-power is not desirable. Has an input capacity or 3 watts and will handle 2-250 tubes without distortion or rattle. It is an ideal combination when used in connection with Racon trumpets, particularly designed for voice reproduction, but will give maximum efficiency in tone qualities for musical reproduction. List \$35.00.....NET \$20.58

Amervox Super-Dreadnaught Dynamic Reproducer



Built of finest possible materials and parts. Solidly and rigidly built into a die-cast aluminum chassis. Electrical units and transformers are built to handle many times their rated capacity without breaking down. Voice coil held in perfect alignment by the patented "Bullfrog" spring—an exclusive Amervox feature. The rectifier is a guaranteed dry plate Elkon, the best type which can be secured. Mounted at the back of the unit, air-cooled on all sides. Ample capacity for all desired volumes.

The solid aluminum chassis and one piece, seamless, heavy silver cone eliminate the double note often caused by vibration in flimsy speakers. Operated on the proper voltage, the Amervox coils, transformers and resistance elements, will give long, perfect reception—will outlast the average receiver. Most of the trouble with dynamic speakers has been imperfect suspension of the voice coil. In the Amervox the coil cannot move or shift from position. The especially adapted Elkon dry plate rectifier will not hum or "fizz." Chassis for 110 volt A.C., equipped with output transformer and hum filter. List \$35.00.....NET \$20.58

Masts

Premax Masts and Equipment

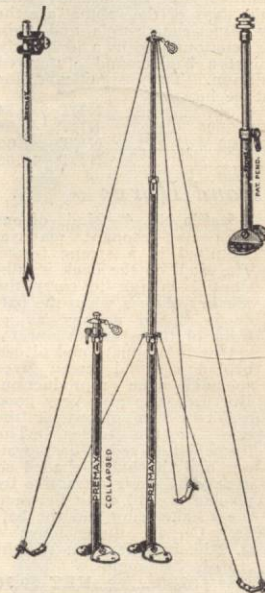
Premax Umbrella Aerial—Simple, practical, not a "freak." The umbrella principle is a form of straight wire aerial, used by the U. S. Army and others for its simplicity and general effectiveness.

The **Premax Umbrella Connector** consists of a white porcelain support to which is attached a solid copper connection disc with brass bolts for holding the aerial wires. This device fits the top of any Premax Mast and insulates the aerial from the mast itself while forming an efficient connection of all wires. No soldering or extra insulators are needed. Used with Premax Insulator Brackets, as illustrated below. List \$0.85.....NET \$0.50



Premax tubular steel masts satisfy every demand for an inexpensive aerial support. They are made to telescope into four-foot lengths and may be clamped at any desired height. The pivoted base may be attached to flat or sloping roofs, or even to sides or ends of buildings. The masts are rust-proof and each one is equipped with three roof anchors, 50 feet galvanized guy wire, and a pulley.

- M-4—3½ feet extended. List \$1.50.....NET \$0.88
- M-7—7 feet extended. List \$2.50.....NET \$1.47
- M-10—10 feet extended. List \$3.50.....NET \$2.06
- M-13—13 feet extended. List \$4.50.....NET \$2.65
- X-1—3 foot sectional extension for use when a height greater than 13 feet is necessary. Several extensions may be used together. List \$1.00.....NET \$0.59
- GR-4—4 foot ground rod. List \$0.50.....NET \$0.29
- GR-6—6 foot ground rod. List \$0.75.....NET \$0.44
- OA-20—Outrigger arm—adjustable 12" to 20". Porcelain insulator on end. List \$0.75.....NET \$0.44
- G-50—Extra guy wire—50 ft. List \$0.25.....NET \$0.15



GA-1—Guy anchor and adjustor as illustrated to the right. List \$0.15.....NET \$0.09



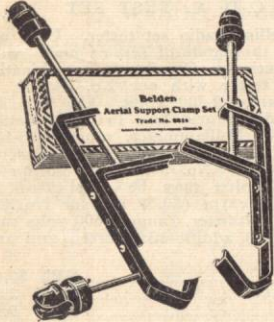
IB-8 Premax Insulator Bracket—A new accessory with many practical uses. The formed steel arm, eight inches long, is Parkerized Rust-proof, finished in olive drab enamel and is made to allow four possible positions for the white porcelain knob insulator. Meets all needs as an Outrigger or Stand-off Insulator.

Used for the outer ends of the several wires in the Umbrella Aerial. It provides secure anchoring and an efficient insulation in one inexpensive unit. List \$0.35.....NET \$0.21



S-3 PREMAX SPECIAL AERIAL MAST

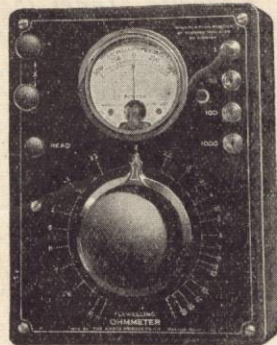
An extremely low priced mast made of strong welded steel tubing, one end of which is flattened and drilled for fastening. The other end is equipped with a porcelain insulator to which the aerial can be attached. Installation is made by fastening the flattened part of the mast to the roof or structure and then bending the mast into an upright position. After this two guy wires and the aerial wire are attached and the installation is complete. The mast stands three feet high (not including the flattened base). Not equipped with guy wire and roof anchors.
List \$0.75.....NET \$0.44

No. 8816 Belden Aerial Support Clamp

Convenient aerial masts of heavy channel iron, black enameled to prevent rust, with insulators attached for roof aerial. Clamps to any part of roof or chimney. No nails or braces. Easily installed or moved. Does not damage roof. The threaded insulator rods are cadmium plated to prevent rust. An extra insulator is provided on one clamp for lead-in. Per set \$4.80.....NET \$2.82

Meters & Test Kits**TEST KITS****Flewelling Direct Reading Ohmmeter**

For quickly determining the correct value of resistances used in radio work, this instrument is unexcelled. The indicating meter is a highly sensitive galvanometer (either Jewell or Weston meter). The dial is easily readable and the value of the resistance under test can be instantly determined. The instrument is assembled on a polished formica panel and installed in a durable bakelite case. Complete instructions are supplied with each ohmmeter. Size overall 7" x 5½" x 3½". Shipping weight, 3 lbs.NET \$34.30

**Flewelling Model B Tube Checkers**

The most modern instrument of its type being equipped to test both the A. C. and D. C. Screen Grid tubes, direct in sockets provided for them, no adapters being necessary for these tests. It is also provided with Tip Jacks and flexible leads for connecting to external heater contacts such as on Kellogg tubes. This instrument plugs into any 110 V. 60 Cycle source, and is supplied complete with extra leads and contacts for special types of tubes. It will accurately test all of the following types: 120, 199, 201A, 112, 171, 226, 280, 281, 250, 210, 240, 245, 222, 224, Kellogg and Cardon tubes. Foolproof to a remarkable degree. No rheostats or other adjustments to regulate. Condition of tube is clearly indicated by referring to table engraved on panel. A thoroughly reliable and accurate instrument at a very moderate price. Equipped with standard milliammeter, genuine D'Arsonval movement (either Jewell or Weston meter). Housed in moulded bakelite box with a neat leather carrying strap. Brackets for mounting on wall or table included. Attractive verichromed panel. Size overall 7" x 5½" x 2¾". Shipping weight, 4 lbs.NET \$22.29



Also available for 110 volt, 25 cycle or 110 volt, 50 cycle current
.....NET \$23.67

Flewelling Model C Counter Checker

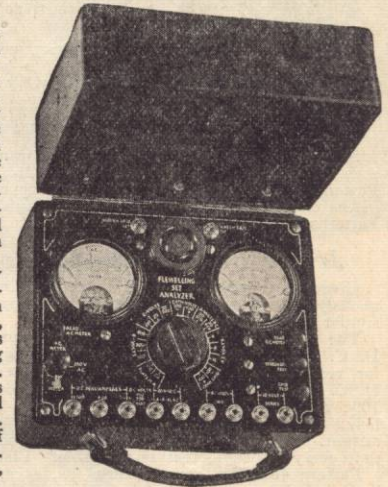
Same as the Model B tube checker but with added features. This remarkable combination instrument makes it easy to test radio equipment at the time of sale, thus avoiding mistakes and customer's complaints. With the Counter Checker such parts may be tested as B and C batteries, B eliminators, audio transformers, audio choke coils, resistors, R. F. coils, R. F. chokes, all receiving tubes including both A. C. and D. C. screen grid types, as well as many other tests.
For 110 volt, 60 cycle A. C.NET \$27.19
For 110 volt, 25 cycle or 110 volt 50 cycle current.....NET 28.57
For 220 volt, 50 cycle current.....NET 28.57

Flewelling Analyzer

This instrument meets the demands of those desiring the best service equipment obtainable. It will enable the operator to analyze the condition of any radio receiver quickly and accurately. It will test each part of either battery operated or all electric receivers including those which use the screen grid tube, type 222 or type 224 (A. C.). The Analyzer will also test "B" eliminators, powers amplifiers, electric phonograph amplifiers and other devices employing vacuum tube circuits.

Meter ranges are connected by the selector switch method. Continuity tests may be made on transformers, chokes, resistors, etc. All test leads and adapters are supplied with the Flewelling Analyzer. Equipped with D. C. Volt Milliammeter with ranges 0-20, 0-100, milliamperes and 0-20, 0-100, 0-200, 0-600 volts. This meter has a resistance of 1000 ohms per volt. The A. C. voltmeter has ranges of 0-4, 0-8, 0-16, 0-160 volts.

The Flewelling Analyzer is the most compact instrument of its type ever offered. It is mounted in genuine bakelite carrying case, measuring only 7" x 5½" x 5¼" over all. The Analyzer is equipped with either Weston or Jewell meters. Instruments and material used are the finest obtainable and the highest standards of workmanship are maintained in the process of manufacture. The Analyzer will operate with a degree of accuracy heretofore obtained only in very high-priced instruments. The circuit is so arranged that danger of damaging the meters is reduced to a minimum. Complete with Full Instructions.....NET \$57.33

**Flewelling Portable Combination**

Consists of the Flewelling Analyzer and Model "B" A. C. Tube Checker combined in a carrying case. The use of this instrument will eliminate errors in testing of tubes "on the job" which frequently occur when the radio set is used as a source of power for tube testing.

Either Jewell or Weston meters are standard equipment. Both the Analyzer and the Model "B" Tube checker are designed to test the new Screen Grid tubes and circuits. Carrying case of sturdy construction and is covered with genuine leather. Complete Test Leads, Adapters and Plugs are supplied. Size overall 14" x 8" x 4". Complete with Full Instructions. Shipping weight, 10 lbs.NET \$83.55

\$1.40 additional for 220 volt or 25 cycles

Jewell Pattern 199 A. C.-D. C. Set Analyzer

SERVICES SCREEN GRID SETS

The Jewell Pattern 199 provides every test required for effective radio servicing. It tests A. C., D. C., and shielded grid tubes, A and B-Eliminators, batteries, circuits, grid, plate and cathode voltages, plate milliamperes, chargers, and line voltage. Ranges of instruments are: 0-4-8-16-160 A. C. volts; 0-7.5-75-300-600 D. C. volts and 0-15-150 milliamperes. All D. C. voltage ranges have a resistance of 1,000 ohms per volt. Furnished with test leads, 4 and 5-prong tube adapters, line voltage leads, pad of analyzer charts and complete instructions. Approximate shipping weight 13 lbs. List \$97.50NET \$71.66



SPECIALS

Extra pads of 50 analysis charts, per pad List \$0.25NET \$0.19
 Pattern No. 520 Adapter Set for testing Kellogg A. C. tubes. List \$1.50NET \$1.10

Shunts for reading heavier currents, ranges of .75, 1.5 3 or 7.5 amperes, each. List \$2.50NET \$1.84

Pattern 198—Same as Pattern 199 except that compartments are provided in the case for tools and replacement tubes. Patterns 198. List \$110.00NET \$80.86

Jewell Pattern 409, 4-Instrument Set Analyzer

Gives plate voltage, plate current filament, and grid voltages simultaneously. In construction, design, and operation the Pattern 409 is quite similar to Jewell Pattern 199.

The 3½ inch face bakelite case instruments supplied are as follows: a D. C. instrument for reading plate voltages, with ranges of 0-120-300-600; for reading plate current, a milliammeter with ranges of 0-12-60-300; a D. C. voltmeter for grid, filament, and cathode voltages, with scales 0-10-100; and an A. C. voltmeter with 0-4-8-16-160-800 volts, the last reading being particularly suitable for checking A. C. high voltage transformer output. Binding posts are provided in connection with all instruments so that every desirable test is available. List \$122.50NET \$90.04

Pattern 408—Same as Pattern 409, except that a case with compartments is provided for carrying tools and extra tubes. List \$137.50NET \$101.06

The Jewell Pattern 210 Tube Tester

Gives direct readings on all tubes from 199 to 250, and also tests both half and full wave rectifier and screen grid tubes. The scale of the D. C. instrument is divided into 100 arbitrary units. Values on all standard tubes in accordance with this arbitrary scale are included in the instructions furnished with the Pattern 210 Tube Checker. The 210 Tube Checker is contained in a genuine Morocco leather covered case. Its rectangular panel carries an A. C. voltmeter, a direct current instrument, and a transformer for supplying filament energy of 1.1, 1.5, 2.5, 3, 5 and 7.5 volts. Both 4 and 5-prong tube sockets are provided. A high resistance rheostat in connection with the A. C. voltmeter compensates for line variations between 100 and 130 volts. This rheostat also disconnects all the apparatus when set at the "off" position. Approximate shipping weight, 13 lbs. List \$65.00NET \$47.77

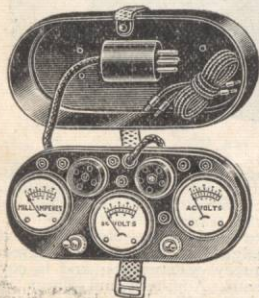
Jewell Pattern 110-A A. C., D. C. Tube Checker
 (FOR BATTERIES ONLY, NOT SUITABLE FOR SCREEN GRID TUBES)

A UX type socket with adapters for five prong A. C. tubes and UV 199 D. C. tubes is provided. Additional C Battery for power tube testing is connected to binding posts. The filament voltmeter has a 0-7.5 volt range. The milliammeter provides a double scale of 0-10 and 0-50 milliamperes. Shipping weight, 11 lbs. List \$45.00NET \$33.08

Readrite Test Kits

No. 245—Complete and extremely compact, and works equally well as a set analyzer or tube tester. It has the equivalent of six meters, although only three meters are supplied, but these are equipped with double scales and switches for using each scale. The following meters are used: 0-10, 0-140 A. C. or D. C. for testing filament and line voltages. D. C. voltmeter 0-60 and 0-300 for testing plate and grid voltages and also B batteries. Milliammeter 0-20 and 0-100.

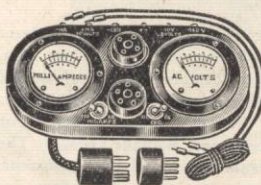
The A. C. voltmeter is of the repulsion type and operates equally well on A. C. or D. C. This meter is of exceptionally high quality and not comparable to vane type A. C. meters. Separate jacks are supplied for using the meters individually with the pair of tipped cords supplied for this purpose. A grid jack makes possible the testing of grid voltages, as well as the grid condition of tubes.



A cable with clips is furnished for making connection to your radio set for testing screen grid tubes. No adapter is necessary for testing either the A. C. or D. C. screen grid tubes. One No. 54 adapter is supplied so that both four and five prong tubes may be tested. Two sockets are furnished on the tester.

The exclusive feature of this tester is the fact that it comes complete with a compact carrying case, and this cover has spring clips inside for holding the five conductor cable plug and adapter and also the prongs of individual tipped cord, and a screen grid cable. This cover slips down snugly over the tester with its hard baked enameled finish, and is fastened with a web strap attached to the cover, holding the tester securely. A strap handle for carrying is also attached. This tester is complete for testing the newest sets using screen grid, No. 26, No. 27, and No. 45 tube. List \$20.00NET \$11.76

READRITE UNIVERSAL A. C.-D. C. TEST SET



Largest selling radio set tester. Used and endorsed by thousands of service men. Simple and practical. Consists of combination of No. 215 tester with our No. 346 D. C. voltmeter, range 0-300 volts. The No. 215 Tester provides a grid bias switch, a double reading D. C. Milliammeter, range 0-20-100, and an A. C.-D. C. repulsion type voltmeter, range 0-10 volts. No. 347 D. C. voltmeter, range 0-500 volts, may be substituted for one dollar list extra (\$0.59 net) or No. 247 A. C.-D. C. voltmeter, range 0-600 volts may be substituted for two dollars list (\$1.18 net) additional. Screen grid and special adapters listed below.

No. 215 Tube Tester. List \$12.00NET \$7.06
 No. 346 Voltmeter—0-300 D. C. List \$4.00NET 2.35
 Universal Test Set Complete. List \$16.00NET 9.41

READRITE NO. 216 A. C.-D. C. TESTER

Same case and meters as No. 215 tester, but provided with extra cords and tip jack connections, permitting the use of each meter individually. Also checks line voltage. A very complete outfit. No. 216 Tester, not including extra voltmeter. List \$13.50NET \$7.94

Readrite Model 15 Set Analyzer and Service Kit



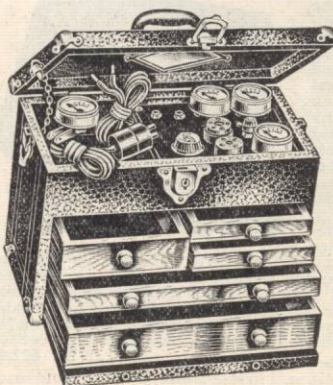
An ideal servicing outfit for either A. C. or D. C. Sets. Embodies new and valuable features. Equipped with regular adapters, and also a new adapter for testing screen tubes and a special switch adapter for full wave rectifying tubes. Adapter for Kellogg tubes may be had for one dollar list extra (\$0.59 net).

Carries a triple reading D. C. voltmeter, a double reading A. C.-D. C. repulsion type voltmeter, and a double reading D. C. milliammeter. Instrument ranges: D. C. volts 0-60, 0-300 and 0-600; A. C. volts 0-10 and 0-140; milliamperes 0-20 and 0-100. Special tip jack connections permit individual use of these meters for a wide variety of testing, including continuity tests of transformers, chokes, condensers, etc.

Compartment for grid leaks, condensers, screws and findings in bottom of case for soldering iron, tools and extra tubes. A single motion opens case ready for use. Everything at your finger tips. Nothing additional to carry. Size closed 7x7¼x14 inches. Metal case finished in dark brown enamel, baked on to insure durability. A wonderfully complete and convenient outfit for the service man. List complete \$33.00NET \$19.40

No. 14-A De Luxe Radio Servicer—Tests circuits, tubes, power units, line voltages and provides large space for tools. A new, unique method of plug-in meters permits a wide variety of use. Equally suitable for A. C. or D. C. sets. Carries special adapters for screen grid and other tubes. The meters provided are 0-10 volts A. C.-D. C., double range milliammeter 0-20-100, 0-500 high resistance B eliminator voltmeter, and No. 148—0-150 A. C.-D. C. Voltmeter. Also has a grid bias switch. Outside dimensions 11 x 7¾ x 14 inches. Leatherette covered. Substantially constructed. Shipping weight 20 lbs. List \$55.00NET \$32.34

No. 14-B Standard Model—Same as above, but with one large compartment in place of the three lower drawers. Shipping weight 20 lbs. List \$45.00NET \$26.46



No. 9 Radio Test Set—Contains 9 meters fitted in tip jacks 0-50, 0-500, 0-8 D. C., 0-15, 0-6, 0-150 A. C. Voltmeters and 0-10, 0-100, 0-300 Milliammeters, in black metal case with leather handle, size 7x10x4" high. Has 4 meter tube tester connected with 5-foot cord, plug and adapters. Also a five-foot polarity cable with tips for special test meter. Power rheostat, grid switch, four and five-prong sockets with interchangeable meters all on marked Bakelite panel. Will make every kind of test of tubes and circuits. Locates faults quickly without switches or other cord connections. A complete and flexible outfit every service man or experimenter will want to own. Full instructions and Tube Chart. Shipping weight 9 lbs..

No. 9—List \$35.00.....NET \$20.58



No. 210 D. C. Tube Tester—Contains 0-6 D. C. Voltmeter—0-10 Milliammeter, grid bias switch, rheostat, socket and binding posts. Connect to Batteries or Eliminators or to set socket with cord and plug No. 21. Tests quickly tubes operating at 5 volts or less. Especially recommended for 199 and 201-A type tubes. For Dealer, Service Man and Set Owner. Instructions for using and chart of tube readings supplies. List \$7.50.....NET \$4.41

No. 212 Counter Tube Checker—For Dealers counter testing. Connected permanently to Eliminators or Batteries. It will test all tubes including power and A. C. types. Supplied with adapter No. 45 and equipped with 5 prong socket. Meters consist of 0-8 D. C. Voltmeter and double reading 0-20 and 0-100 Milliammeter. Has grid switch and power rheostat, and 6 marked binding posts for A-B-C circuits. "B" & "C" Voltmeters can be attached. Also may be used with No. 22 Cord and Plug for connecting to set socket thereby testing the circuits and securing current from the set to test tubes. No. 212 has the same style black finish steel case as No. 210 but is deeper. Full instructions and Tube Test Chart furnished. List \$10.00.....NET \$5.88

Type A Home Tube Testers—Contain Milliammeter. Tests quickly plate current of all tubes. Grid switch connects to positive and negative filament. Difference in readings shows condition of tube on simple reference table on bottom of tester. List \$3.00.....NET \$1.76

Type AB Home Tube Tester—With 0-50 M. A. for A. C. or D. C. tubes. List \$4.00.....NET \$2.35

Readrite Special Cables and Adapters

Readrite Special Adapters may be had for testing any tube in any socket. A few of the more important ones are listed below. Make us your headquarters for special adapters.

No. 54—Contains 5 prong Socket on a 4 prong Plug. Has all connections complete to plug. List \$1.00.....NET \$0.59

No. 45—Contains 4 prong Socket on a 5 prong Plug. Has all connections complete to plug. List \$1.00.....NET \$0.59

No. 20—Adapter for using tubes of 199 type having the UV base and adapting same in the standard UX socket. List \$0.60.....NET \$0.35

No. 19—Adapter has standard UX socket on UV plug for attaching to UV socket. List \$1.00.....NET \$0.59

No. 24—Adapter for testing Kellogg type tubes in Readrite Tube Testers. List \$1.00.....NET \$0.59

No. 145—Adapter for testing double plate tubes. Contains switch for testing both plates. List \$1.50.....NET \$0.88

No. 21—Cable and Plug brings the plate and filament circuits from the set socket to the No. 210 Tube Tester. Can also be used for connecting the respective circuits to any of our meters separately. Combining No. 21 Cord, No. 210 Tube Checker and No. 346 B Voltmeter, makes up a Test Set for Testing A & B volts direct from the set socket, as well as to test tubes. List \$1.00.....NET \$0.59

No. 22—Cable and Plug brings the Plate, Grid and Filament circuits from the set to be connected to either No. 210 or 212 Tube Checkers. B and C Voltmeters may also be attached to the respective posts for making all set tests where D. C. is furnished for the filament circuit. List \$1.50.....NET \$0.88

No. 122—Cord and Plug for testing No. 222 Screen Grid D. C. Tube. List \$2.00.....NET \$1.18

No. 123—Cord and Plug for testing No. 224 Screen Grid A. C. Tube. List \$2.00.....NET \$1.18

No. 25—Special Cable and Plug Adapter for Short Wave. 5 conductor cable with 5 prong plug for A. C. tubes. For short-wave use plug in detector tube socket of receiver. Cable is 34 inches long with marked terminals similar to our No's. 21 and 22 cords. May be used as 5-lead battery cable. Use with No. 54 adapter for four prong tubes. List \$1.75.....NET \$1.03

No. 26—Same as No. 25, except 4 conductor cable with 4 prong plug for D. C. Tubes. Use with No. 45 Adapter for five prong tubes. List \$1.50.....NET \$0.88

METERS

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 milliampere, thereby showing the true voltage of B power supply, which cannot be obtained with ordinary voltmeters.

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.

Ranges: 0-7.5-150 or 0-8-200 volts. List \$10.50.....NET \$7.72
0-50 amperes and 0-50 volts (in one instrument). List \$13.50.....NET 9.93
Shipping weight 3 lbs.

Pattern 67 Radio Frequency Galvanometer—Internal resistance (Radio Frequency 2.5 ohms. Full scale sensitivity calibrated to exactly 100 milliamperes. An additional scale with 100 even divisions is provided for decrement measurements. Not recommended for commercial or audio frequencies. List \$16.50.....NET \$12.13
Shipping weight 3 lbs.

Pattern 77 A. C. Voltmeter—An effective instrument of moderate price for use in servicing A. C. radio sets and accessories.

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.

Jewell 2-Inch Flush Type Instruments for Panel Mounting

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.



No. 135

PATTERN 135 FOR DIRECT CURRENT

0-5, 8, 10 volts. List \$7.00.....NET \$4.46
0-100 or 0-150 volts. List \$7.50.....NET 4.78
Double reading 0-8-200 volts. List \$8.50.....NET 5.52
0-10, 15, 25, 50, 80, 100, 300 or 500 milliamperes. List \$7.00.....NET 4.46
0-3, 0-5 amperes. List \$7.00.....NET 4.46
Double scale with push button switch. Pattern 135-B. 0-7.5 volts or 0-8-200 volts. List \$9.00.....NET \$5.73
With tip jacks, Pattern 135-A. 0-5 volts. List \$7.50.....NET 4.78
Mounted in miniature mantel clock bakelite case, Pattern 135-C. 0-7.5-150 volts. List \$10.00.....NET \$6.37
Shipping weight, 3 lbs.

PATTERN 190 FOR ALTERNATING CURRENT

0-1.5, 0-3, 0-5, 0-8, 0-10, 0-15, 0-20 volts. List \$7.50.....NET \$5.52
0-150 volts. List \$9.50.....NET 6.99
0-1, 0-3, 0-5, 0-10, 0-15 amps. List \$7.50.....NET 5.52
0-20, 0-30, 0-50, 0-100, 0-300, 0-500 milliamperes. List \$7.50.....NET 5.52
Shipping weight, 3 lbs.

JEWELL D. C. VOLTMETERS WITH SELF-CONTAINED SWITCH

Double range voltmeters, designed primarily for use in testing A and B battery voltages. Both instruments are equipped with a switch with a sweeping action across the contacts which are moulded in a bakelite base. The switch has a spring arrangement to throw it off the high range, except when manually held in position, thus preventing accidental draining of the B battery.

Pattern 140 has 2 inch diameter case with a 2 1/2-inch flange. Range 0-7.5-150. List \$9.50.....NET \$6.06

Pattern 55 has 2 1/2 inch diameter case with 3 1/4-inch flange. Range: 0-7.5-150 or 0-8-200 volts. List \$10.00.....NET \$7.35
Triple range 0-8-80-160 volts. List \$12.50.....NET 9.19

The Famous Jewell Trio

The Jewell Trio of Miniature Radio Instruments is popular alike with servicemen for building up special test panels, experimenters for laboratory apparatus, and amateurs for radio broadcasting service. A valuable addition to the Jewell Trio is a new series consisting of the same instruments in flush type bakelite cases.



Pattern 54 and 88 D. C. Instruments—These instruments are supplied as voltmeters in a great variety of ranges. Instruments of high ranges are always 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. Pattern 54 furnished in both flush and front of panel mounting type. Flange diameter 3 3/4 inches. Case diameter 3 inches.

Pattern 88 includes the same movement as 54 in a bakelite case, flush type only. Flange diameter 3 1/2 inches. Case diameter 2 3/4 inches. Approximate shipping weight, 3 lbs.

Ranges for both Patterns 54 and 88:	
Ranges 0-5, 6, 8, 10, 15, 25, 50 Volts. List \$7.50.....	NET \$ 5.52
0-1502 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

3, 5, 10, 15, 25, 50, 100, 150, 200, 250, 300, 500 milliamperes	
List \$7.50.....	NET \$5.52
0-1 milliamperes. List \$9.00.....	NET 6.61
0-1.5 milliamperes. List \$8.50.....	NET 6.25
0-2 milliamperes. List \$8.00.....	NET 5.88
0-200, 300, 500 microamperes. List \$24.00.....	NET 17.64
0-1, 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. Pattern 64 furnished with metal case, either flush type or front of panel mounting. Flange diameter 3 3/4 inches. Case diameter 3 inches. Approximate shipping weight, 3 lbs.

Pattern 68 furnished in bakelite cases, flush type only. Flange diameter 3 1/2 inches. Approximate shipping weight, 3 lbs. List \$13.35.....NET \$9.81

Ranges for both Patterns 64 and 68: 0-.5, 1.5, 2, 2.5, 3, 5, 10, 15 amperes. 0-100 galvanometer. List \$15.00.....NET \$11.03

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. Pattern 74 is furnished in metal cases for both flush and front of panel mounting. Flange diameter 3 3/4 inches. Case diameter 3 inches. Approximate shipping weight, 3 lbs. Pattern 78 is furnished for flush mounting only, in cases of moulded bakelite. Flange diameter 3 1/2 inches. Case diameter 2 3/4 inches. Approximate shipping weight, 3 lbs.

Ranges for both Patterns 74 and 78:	
0-3, 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
0-25, 50, 100, 200, 300, 500 milliamperes. List \$7.50.....	NET 5.52
0-1, 2, 3, 5, 10, 15 amperes. List \$7.50.....	NET 5.52

Jewell Pattern 139 B-Eliminator Tester

A small high resistance type voltmeter, for use of set owners in checking and adjusting voltages of B-Eliminators or other B power supply units. This is a thoroughly high grade instrument and can be relied upon. Shipping weight, 3 lbs.

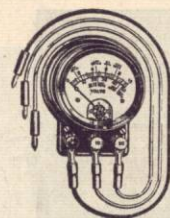
0-300 volts. List \$12.00.....	NET \$ 7.64
0-500 volts. List \$16.50.....	NET \$10.52

Jewell Pattern 53 Flush Type D. C. Instruments

A 2 1/2-inch instrument designed for mounting in the panel of a radio set for checking operating conditions in the radio receiver.

Ranges: 0-5, 8, 10, 15, 50 volts. List \$7.50.....	NET \$5.52
0-100 volts. List \$9.00.....	NET 6.61
0-150 volts. List \$9.50.....	NET 6.99
0-3, 5, 10, 15 amperes. List \$7.50.....	NET 5.52
0-3, 5, 10, 15, 25, 30, 50, 100 milliamperes. List \$7.50.....	NET 5.52
2 milliamperes. List \$8.00.....	NET 5.88
0-1.5 milliamperes. List \$8.50.....	NET 6.25

Shipping weight, 3 lbs.



Pattern No. 98 D. C. Voltmeter for Battery Testing—Colored scales and binding posts with colored leads make it easy to test radio batteries with this instrument. The green lead, post and scale are for readings up to 10 volts and the red for readings up to 50 volts. Green and red markings on the scale indicate proper readings for various batteries.

Complete with leads. List \$13.50.....NET \$9.93
Shipping weight, 3 lbs.

Readrite Meters



Pocket Type Meters. Supplied in full open face as illustrated, or partly open face. The D. C. meters are of the opposed magnet, polarized vane type, and show polarity. Readrite A. C. meters are the repulsion type, and can be used on D. C. with same degree of accuracy. Each instrument is hand calibrated and fully guaranteed.

No. 1 Ammeter—For testing Dry Cells 0-40 scale. List \$0.75.....NET \$0.44

Voltmeters—0-8, 0-10, 0-16, and 0-50 volts. List \$1.00.....	NET \$0.59
0-100 Volts. List \$1.25.....	NET .73
0-150 Volts. List \$1.50.....	NET .88
Double scale 0-8, 0-100 volts. List \$1.50.....	NET 1.03
Double scale 0-8, 0-150 volts. List \$2.00.....	NET 1.18

Voltammeter—0-8 volts—0-40 amps. List \$1.25.....	NET \$0.73
Voltammeter—0-50 volts—0-40 amps. List \$1.50.....	NET .88

No. 23 Charge Tester—For 6 volt "A" battery. Shows condition of battery and when to charge or stop charging. List \$1.00.....NET \$0.59

PORTABLE TYPE VOLTMETERS



No. 346—D. C. only. For testing "B" Eliminators 0-300 volts. 3". List \$4.00.....NET \$2.35

No. 347—D. C. only. For testing "B" Eliminators 0-500 volts. 3". List \$5.00.....NET \$2.94

No. 46—D. C. only. 0-300 volts. 2 1/2". List \$3.00.....NET \$1.76

No. 246—D. C. only. 0-60-300 volts. 2 1/2". List \$4.00.....NET \$2.35

No. 348—For testing A. C. or D. C. Current Supply Line 0-150 volts. List \$4.00.....NET \$2.35

No. 247—0-600 volts. A. C.-D. C. List \$5.00.....NET 2.94

PANEL TYPE METERS

D. C. Ammeters—0-10, 0-3, 1-0-1, 3-0-3, 6-0-6, 10-0-10, and 20-0-20 amperes. List \$1.00.....NET \$0.59

D. C. Milliammeters—0-25, 0-50, 0-100, 0-300, and 0-400 m.a. List \$1.00.....NET \$0.59

D. C. Milliammeters—0-10, and double range 0-20, 0-100. List \$1.75.....NET \$1.03

A. C.-D. C. Voltmeters—0-4, 0-6, 0-10, and 0-15 volts. List \$2.50.....NET \$1.47

A. C.-D. C. High Resistance Voltmeter—0-150 volts. List \$4.00.....NET \$2.35

A. C.-D. C. High Resistance Voltmeter—0-600 volts. List \$5.00.....NET \$2.94

D. C. Voltmeters—0-6, 0-8, 0-10, 0-16, 3-0-3, and 0-50 volts. List \$1.00.....NET \$0.59

D. C. Voltmeter—0-100 volts. List \$1.25.....NET \$0.73

D. C. Voltmeter—0-150 volts. List \$1.50.....NET \$0.88

D. C. Voltmeter—0-50 volts—high resistance. List \$3.00.....NET \$1.76

D. C. Voltmeter—0-100 volts—high resistance. List \$3.50.....NET \$2.06

D. C. Voltmeter—0-150 volts—high resistance. List \$4.00.....NET \$2.35

D. C. Voltmeter—3-0-2.5 volts—Special Cadmium Tester. List \$2.50.....NET \$1.47

D. C. Voltmeter—0-8, 0-100 volts (approx. 40 ohms volt resistance.) List \$1.75.....NET \$1.03

D. C. Voltmeter—0-8, 0-150 volts (approx. 40 ohms volt resistance.) List \$2.00.....NET \$1.18

D. C. Voltmeter—0-300 volts. List \$3.00.....NET \$1.76

D. C. Voltmeter—0-500 volts. List \$4.00.....NET \$2.35

SOCKET TESTING VOLTMETERS

For reading PLATE or FILAMENT voltages by plugging directly into tube socket.

No. 146—Plate Voltmeter—0-300 volts. Resistance 54000 ohms. List \$3.00.....NET \$1.76

No. 150—Grid Voltmeter—0-50 volts. Resistance 8800 ohms. List \$3.00.....NET \$1.76

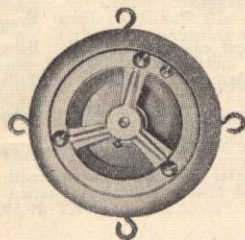
No. 152—Filament Voltmeter—A. C.-D. C 0-10 volts. List \$2.50.....NET \$1.47

PLUG-IN-LINE VOLTMETER

No. 148—0-150 volts A. C.-D. C. List \$3.00.....NET \$1.76

Microphones and Equipment

General Industries Microphone



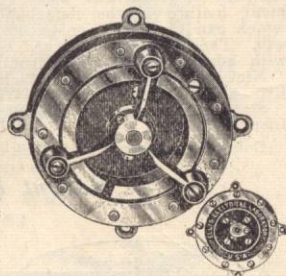
List \$70.00NET \$49.62

The General Industries microphone is of the standard two button, stretched diaphragm, carbon granule type. It has an impedance of about 200 ohms and is designed to work into the standard microphone input transformer. The frequency response curve is uniformly flat from 30 to 7000 cycles per second, thus giving faithful reproduction on all voice and musical frequencies. Due to the careful selection of the carbon grains the level of the "carbon hiss" is low compared to other makes, thus making it especially adaptable to organ reproduction and recording work. This microphone is constructed from cast aluminum parts making lightness in weight an item of interest for portable installations. Four hooks are provided on the side for spring suspension.

Ellis Two-Button Microphone Model No. 29

Two-button stretched diaphragm carbon granule type. A precision instrument and renders true, natural reproduction. The carbon hiss which is characteristic of many microphones is at an exceptionally low level. Its response to all audible frequencies is uniform. Precision laboratory testing is employed. This microphone has no harmonics of its own and will give no distortion. It is of a rigid three pillar construction and will therefore withstand rough handling without losing its fine adjustment.

The Ellis Microphone is covered by a mechanical and electrical guarantee for one full year providing the unit is not mis-handled, and also providing that a millimeter is used in the circuit, care being taken that not more than 10 milliamperes is allowed to pass through each button. The remarkable feature of this microphone is that sufficient sensitivity is obtainable for all practical purposes with a consumption of only 5 milliamperes. A factor of safety is provided in allowing 10 milliamperes to be used on each button without danger of burnout. This great sensitivity is obtained without minimizing the carbon content or creating diaphragm resonance. Sufficient carbon is used to insure durability. Finished in either nickel or statuary bronze. Diameter 3.4", overall thickness 1.5". Can be mounted in any standard stand. Especially recommended for all broadcast station use, public address work, etc.



List \$70.00NET \$49.62

Frost Microphones

All microphones are extremely sensitive and rugged in construction and are equipped with cords. A diagram showing how a microphone is connected is shown in the new 16-page Frost Radio Catalogue—a copy of which will be mailed you upon request.

No. 155—Frost Hand Microphone.
List \$6.00NET \$3.53

No. 159—Frost Desk Microphone.
List \$8.75NET \$5.15

No. 157—Frost Pony Arm Microphone for mounting on transmitter panel or wall.
List \$4.50NET \$2.65

General Industries Microphone Cords

These flexible cords are furnished with spade tips on both ends. The three conductors are color-coded to facilitate the connections at both ends. It is customary to connect the green and red wires to the button terminals and the yellow or plain wire to the case of the microphone.

In the shielded type of cord the common or plain color wire is woven around the other two wires (red and green) in the form of a complete metal sheath, thus eliminating the chance of the microphone leads picking up outside interference. A double braid is woven outside this metal sheath.

728-A—12 ft. in length—unshielded. List \$1.50NET \$1.18

728-B—25 ft. in length—shielded. List \$5.00NET \$3.92

728-C—50 ft. in length—shielded. List \$7.50NET \$5.88

General Industries Microphone Springs

It is absolutely necessary to suspend any carbon granule type of microphone on springs to prevent noisy operation, and a special spring has been designed to facilitate the suspension of these microphones in their stands. These springs are made from nickel-plated tempered steel piano wire. Eight are required for each microphone.

List, per set of eight \$1.75NET \$ 1.40
List price per hundred \$20.00NET 16.00

General Industries Microphone Stands

In these stands the mounting ring is made from steel, cast into a solid throat, making is a very rigid piece of apparatus, which will stand plenty of abuse. Four hooks are provided to attach the eight springs necessary for suspension. Another special feature is the patented adjustment of the height of the stand. There are no thumb screws to lose, nor cams to get out of order. A simple friction arrangement permits the stand to be extended or dropped at will to the desired height. This is guaranteed against wear and allowing the stand to drop. Finished in statuary bronze in the following styles:

810-A—Floor stand adjustable from 48 to 78 inches.
List \$27.50NET \$21.56

810-B—Floor stand with overhang for piano use. Price on request.

810-C—Double floor stand for two microphones. Price on request.

810-D—Banquet table style, adjustable from 20 to 28 in.
List \$20.00NET \$15.68

810-E—Desk stand 14 inches high.
List \$15.00NET \$11.76

810-F—Ring with hook for hanging from ceiling.
List \$7.50NET \$5.88

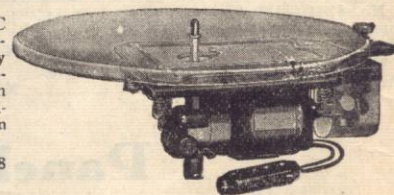


Motors (Phonograph)

Bodine Motor

The BODINE TYPE R-C 10 Electric Turntable is a reliable, noiseless and absolutely non-interfering motor for phonographs and radio-phonograph combinations. Single phase induction motor suspended on springs.

List \$35.00NET \$20.58



The Electric Rotrola



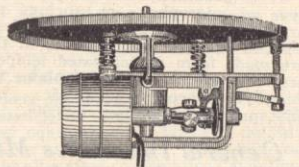
A combination electric phonograph motor and magnetic pick-up in a leather portable case. The motor is the well known Allen-Hough and the pick-up is the Webster. The motor is smooth running, noiseless, and efficient. We don't know a better value for the money.

List \$45.00NET \$26.46

The Electric Rotrola described above and a Chi-Rad Receiver (see pages 2 and 3) make an excellent combination. With such a combination, you have a means of reproduction of phonograph records that is the equal of the new electrical phonographs now on the market—and the price of such a combination is less than the actual cost of a non-radio equipped electric phonograph.

Pacent Induction Motor

The new No. 140 Pacent Induction Phonograph Motor provides an excess reserve power and starting torque beyond ordinary needs. A dynamically balanced rotor eliminates vibration. Phosphor bronze bearings, a micrometer-type speed regulator, a die-cast main frame—absolutely insulated against noise throughout... these are a few of its advantages which, together with its design, construction, and the quality of its materials, make it one of the finest electric phonograph motors which are to be had. Operates on 110 volts—50 or 60 cycles A. C. Complete with 12 inch turntable, mounting screws and springs. List \$25.00.....NET \$14.70



Pacent Electrovox

The Pacent Electrovox is a complete electrically-operated phonograph equipped with a radio-record switch (changing instantly from radio to records without disturbing any electrical connections), the Pacent Super Phonovox, and the new and unusually efficient No. 140 Pacent Induction Motor operates on 110 volts—either 50 or 60 cycles A. C., with automatic stop. Installation requires only plugging one cord into a light socket and the other into the detector tube socket of the radio set. The over-all dimensions of the Electrovox are 17 1/4" x 12 1/2" x 10 3/4" with the top closed. Shipping weight 43 lbs. Net weight 25 1/2 lbs.

No. 300 Electrovox. Complete with handsome walnut cabinet. List \$75.00.....NET \$44.10
 No. 301 Electrovox Chassis. Consists of motor and Pacent Super Phonovox mounted on a 15" x 13" x 7/16" board which includes "radio-record" switch, speed regulator, automatic stop, "on and off" switch, volume control, needle cups, and 12" turntable. List \$60.00.....NET \$35.28

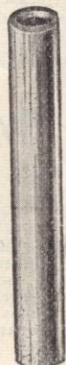
Mounting Pillars and Feet

Very handy to have around the Ham station. They are made of nickel-plated brass, 1/4" round.

No. 4735—Size 1 1/8" long-tapped 6-32.....NET \$0.07
 No. 4548—Size 1 3/8" 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—Nicked brass angle. Per Pair.....NET \$0.16



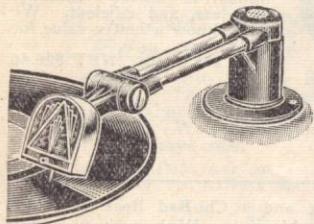
Panel

Westinghouse Micarta

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, any size to 3" in diameter, per running inch.....NET \$0.10

Phonograph Pick-ups

The Audak Electro-Chromatic Pick-up

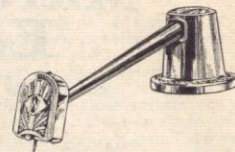


The finest pick-up we have ever known! In operation it accomplishes the seemingly impossible—NATURAL interpretation of voice and music, which requires response to the slightest chromatic shadings and color-tones. It is rubber "damped," making reproduction absolutely clear and devoid of scratch and the customary pick-up noises. Produces enormous volume when coupled with a good amplifier and is ideal for theater and other Public Address work. Beautifully finished in black and gold with the new compensating arm which re-

Model No. 1 relieves pressure from records. Shpg. wt., 5 lbs. Model No. 1 as illustrated. List \$30.00.....NET \$17.64
 Model No. 2—Head only. List \$16.75.....NET \$9.85
 Model 1-16—A special model for use in theater installation to play 16" records. List \$68.30.....NET \$40.16

Webster Electric Pick-up

The famous Webster low-inertia stylus bearing, utilizing an all-metal pivoting action, eliminates necessity for bulky construction. Positively no rubber on bearings. Perfect balance is assured. The Webster Pick-up head is small and compact, perfectly balanced, light in weight. Weight of head on record only 4 1/2 ounces. No counter-balancing or springs necessary. Highest grade Cobalt magnet of greatest possible density is used. Volume control incorporated in base—compact and easiest to install. Base is weighted. Can be screwed to motor board or merely set in place. The construction lends itself easily to use of varied lengths of arm for either standard of talking picture records.



Model 2-A—With adapter. List \$17.50.....NET \$10.29
 Model 2-B—Pick-up head separate volume control, and adapter. List \$13.00.....NET \$7.64
 Special adapter. Designed to connect the Webster Pick-up in series with the grid of 227 detector in sets using grid bias or power detection. Particularly adapted for screen grid sets. List \$1.00.....NET \$0.59

The Toman Pick-up

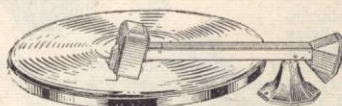
The Toman Super Pick-up with built-in volume control, is designed of standard size for home use, and also furnished in a size to play 16-inch synchronized records for theatrical use. A convenient feature is the detachable head, which can be slipped on or off at your will. The Pick-up is packed complete, with adapters and full instructions.



Nickel Plated Arm and Pick-up List \$17.50.....NET \$10.29
 Statuary Bronze Arm and Pick-up List \$17.50.....NET \$10.29
 Gold Plated Arm and Pick-up List \$20.00.....NET \$11.76

Pacent Electric Pick-up

New improved model. Super-sensitive and gives true reproduction. New balanced tone arm assures perfect contact and eliminates scratching. Higher frequency range—4,000 C. P. S. down to between 40 and 60; mechanical filter. Complete with cords



and adapters. Shpg. wt., 3 lbs.
 Type 106B Super-Phonovox, on balanced tone arm. Bronze finish. List \$15.00.....NET \$8.82
 Type 106A Super-Phonovox, without tone arm. Bronze finish. List \$12.00.....NET \$7.06
 Type 106C Ultra Combination. Heavy gold finish, individually calibrated. Automatic stop in base. List \$25.00.....NET \$14.70

Buckingham Pick-up



Highly regarded. High voltage output, low impedance and uniform response over the entire scale. Permanent magnet of finest cobalt steel. Each armature dynamically balanced. Tested like a fine watch. Ideal for high powered amplifier use. Has 227 detector tube adapter. Shipping weight, 5 pounds. List \$19.00.....NET \$11.17

When you buy phonograph pick-ups from Chi-Rad you buy Quality.

We have tested thoroughly those that we sell, and offer them to you as the best on the market.

The same thing is true of all products we sell. In our purchasing we consider quality above everything else—and you may purchase from us with confidence that your dollar is buying the maximum.

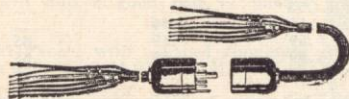
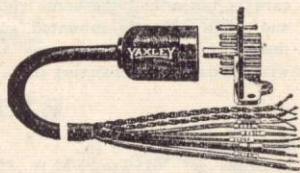
Plugs

POWER PLUGS

Yaxley Cable Connector Devices

Whether you build an AC or DC set, you will get both utility and satisfaction with Cable Connector Devices. The chassis may be connected or disconnected quickly and conveniently from the power pack or batteries.

These features are found in all Yaxley Cable Connector Devices: Positive spring contacts. Bakelite construction. No loosening of the pins or springs in soldering. Easily soldered. You cannot put the Cable Connector Plugs together improperly. All terminals and also cable ends plainly marked.



Nos. 670 and 627

4—CONDUCTOR

No. 645-4—Receptacle Plug. List \$0.90	NET \$0.59
No. 635-4—Pin Plug. List \$0.90	NET \$0.59
No. 680-4—Mounting Plate. List \$0.65	NET \$0.42

7—CONDUCTOR

No. 660—Cable Connector Plug, complete with 5-foot Cable (see illustration). List \$3.00	NET \$1.96
No. 669—Same as No. 660 excepting with extra Tip Jacks in mounting plate. List \$3.25	NET \$2.13
No. 670—Binding Post type, complete with cable (see illustration). List \$3.50	NET \$2.28
No. 635—Pin Plug. List \$1.00	NET \$0.66
No. 645—Receptacle Plug. List \$1.00	NET \$0.66
No. 650—Receptacle Plug and 5-foot Cable. List \$2.25	NET \$1.47
No. 680—Mounting Plate. List \$0.75	NET \$0.49

12—CONDUCTOR

No. 612—Cable Connector plug with 4-ft. Cable. List \$5.00	NET \$3.27
No. 627—Binding Post Type (see illustration No. 670). List \$6.00	NET \$3.92
No. 615—Receptacle Plug. List \$1.25	NET \$0.81
No. 616—Receptacle Plug and 4-foot Cable. List \$4.00	NET \$2.62
No. 625—Pin Plug. List \$1.25	NET \$0.81
No. 682—Mounting Plate. List \$1.00	NET \$0.66

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.	

Hagel Power Plugs and Cables

Set builders will appreciate the many advantages of the new Hagel line.

This new cable plug is moulded of genuine bakelite and the terminals are spun in after the bakelite piece is taken from the mould. These terminals cannot and do not work loose. Heat from the soldering iron does not cause the bakelite to soften and run. The whole assembly can be treated very roughly without any danger of breakage. The cable is of colored rubber covered with cotton braid to conform with the glossy brown finish of the bakelite. The colors of the wires such as red, yellow, black, etc., are moulded into the bakelite of the sockets.

All tension on the cable is relieved by means of a heavy moulded rubber bushing which is held under compression in the rear end of the housing.



SOCKETS

Wall Outlet Socket—Consists of socket attached to standard switch box. Brushed brass plate. 7 Contacts.

List \$1.50	NET \$0.88
10 Contacts. List \$1.75	NET \$1.03
Binding Post Socket—Equipped with 18 in. leads. 7 Contacts.	

List \$1.25	NET \$0.73
10 Contacts. List \$1.50	NET \$0.88

Sub-panel Mounting Socket—May be mounted on metal or composition panels. 7 Contacts.

List \$0.75	NET \$0.44
10 Contacts. List \$1.00	NET \$0.59

Bracket Mounting Socket—For baseboard mounting. 7 Contacts. List \$0.75

List \$0.75	NET \$0.44
10 Contacts. List \$1.25	NET \$0.73



7 Contact Plug—With 5 foot cable (without socket). List \$2.25	NET \$1.32
10 Contact Plug—With cable.	
List \$3.25	NET \$1.91
7 Contact Cable—With Plug each end (4 feet). List \$3.25	NET \$1.91
10 Contact Double Plug Cable—List \$4.75	NET \$2.79
7 Contact 6 Foot Extension Cable—List \$3.50	NET \$2.06
10 Contact Extension Cable—List \$5.00	NET \$2.94
7 Contact Plug—(Plug only). List \$1.00	NET \$0.59
10 Contact Plug—List \$1.25	NET \$0.73

PHONE PLUGS

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



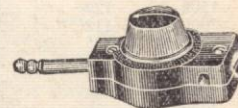
No. 76 Yaxley Phone Plug

Same as the No. 75, excepting equipped with 500,000 ohm resistance so that head sets may be used as a speaker line. Same size as No. 75 phone plug. List \$1.50

Centralab Moduplug

A volume control like a phone plug which can be substituted for the standard type of plug.

No. 1—Standard Modu Plug. List \$2.50	NET \$1.47
No. 2—Cord Type Standard Modu Plug. List \$2.50	NET \$1.47
No. 3—"Easy Chair" Modu Plug. List \$3.00	NET \$1.76

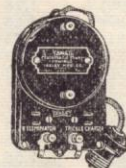


Relays

Yaxley Relays

No. 444 Series Type—Automatic Power Control designed for use in conjunction with a trickle or low rate charger where there is little or no chance of overcharging the A battery. Voltage drop less than two-tenths volts when used with DC sets having a current draw equivalent to six 199 type of tubes up to eleven 201 type of tubes. List \$5.00

No. 445 Multiple Type—Similar in design and function to the Series Type excepting that it is wired to be hooked up in multiple connection to the set and A battery. No voltage drop with the multiple type. Especially recommended for multi-tube sets and also for sets with a very low current draw. Complete instructions for installing packed in each box. May be readily connected by anyone familiar with Radio installation. List \$6.00



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



Resistances (Fixed)

Electrad Truvolt All-Wire Resistances

Resistance	Type B M. A.	NET	Type C		Type D	
1	5000	\$0.50	M. A.	NET	M. A.	NET
2	3500	.50	500	\$0.79	610	\$1.09
2.5	3150	.50	406	.79	500	1.09
3	2800	.50	353	.79	432	1.09
5	2225	.50	316	.79	387	1.09
7.5	1800	.50	259	.79	316	1.09
10	1500	.50	252	.79	306	1.09
15	1250	.50	224	.79	274	1.09
20	1100	.50	200	.79	245	1.09
25	1000	.50	182	.79	224	1.09
50	700	.50	158	.79	194	1.09
75	575	.50	149	.79	182	1.09
100	500	.50	141	.79	173	1.09
200	353	.50	129	.79	158	1.09
300	289	.50	119	.79	146	1.09
400	250	.50	112	.79	137	1.09
500	224	.50	105	.79	129	1.09
750	182	.50	100	.79	122	1.09
800	177	.50	91	.88	112	1.12
850	165	.50	84	.88	103	1.15
1000	158	.50	83	.88	102	1.15
1250	141	.50	82	.88	100	1.18
1500	129	.50	79	.88	97	1.18
2000	112	.50	74	.88	91	1.23
2250	105	.50	71	.97	87	1.32
2500	100	.50	65	.97	79	1.32
3000	91	.50	58	.97	71	1.47
3500	84	.50	50	1.06	61	1.47
4000	79	.50	45	1.09	55	1.56
4500	75	.50	41	1.12	50	1.56
5000	71	.50	35	1.15	43	1.56
6000	64	.50	32	1.18	39	1.62
7000	60	.50	29	1.23	35	1.65
7200	59	.50	25	1.32	31	1.71
7500	58	.50	22	1.62	27	1.76
8000	56	.53				
9000	53	.56				
10000	50	.59				
12000	45	.59				
15000	41	.59				
20000	35	.66				
25000	32	.66				
30000	29	.73				
40000	25	.76				
50000	22.5	.82				
60000	.....	.....		
80000	.....	.....		
100000	.....	.....		



Unusual patented air-cooled construction, insuring longer life and greater accuracy. Sliding clip permits convenient adjustment to desired values. Sliding clips \$0.10 each additional.

Lgth.
Type B—25 Watt 2"
Type C—50 Watt 4"
Type D—75 Watt 6"

Upright bracket for mounting on base board. List \$0.15.....NET \$0.09.

Lynch Veritas Resistors

By making the resistive coating directly on the inside of the glass, the heat generated in the resistor passes directly through the glass to the outside air and is carried away. The metallic resistive coating is fused to the inside of the glass and can run at great heat without change in value. It is not affected by humidity, and is non-absorbent. It is not to be confused with coatings of similar appearance but which are made of colloidal-graphite or similar material. There is no spiral wire path for the current—the VERITAS Resistor is non-conductive. The path is short and direct. There is no measurable capacity to cause feed-back. The cost is no greater than for old-style resistors, though they are many times less efficient. The LYNCH VERITAS Resistor is as nearly pure resistance as can be made. The end caps are not fastened with Woods Metal and can be soldered without damage, or caps falling off. This means permanently perfect connections.

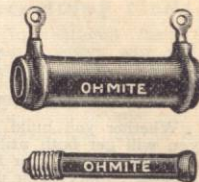
2 WATT LYNCH VERITAS RESISTORS
1,000, 5,000, 10,000, 20,000, 25,000, 50,000 ohms.
List \$0.75.....NET \$0.44
100,000, 250,000, 500,000 ohms—1 to 10 megs., each.
List \$0.50.....NET \$0.29

5 WATT LYNCH VERITAS RESISTORS
500, 1,000, 2,000, 3,000, 5,000, 7,500, 10,000 ohms.
List \$1.10.....NET \$0.65
50,000 ohms. List \$0.90.....NET \$0.53
10,000 ohms, ¼, ½ and 1 meg. (Long Type). List \$0.80.....NET \$0.47

10 WATT LYNCH VERITAS RESISTORS
500, 1,000, 2,500, 3,000, 5,000, 7,500, 10,000 ohms.
List \$1.25.....NET \$0.74
50,000, 100,000 ohms. List \$1.10.....NET \$0.65
250,000, 500,000 ohms and 1 megohm. List \$1.00.....NET \$0.59

Ohmite Radio Resistors

Ohmite Vitreous Enameled Radio Resistors are made with the same care as other resistors which are used in all types of electrical work. The same care is taken and the same rigid tests are made, and when properly mounted and operated within their rated wattage they may be used indefinitely without danger of changing in value or burning out.



—COST EACH NET— RATINGS IN WATTS

Resistance in Ohms	10 155 to 25 M.A.	25 220 to 31 M.A.	45 210 to 35 M.A.	60 160 to 75 M.A.
400	\$0.53	\$0.53	.....	.....
500	.53	.....	.....	.....
600	.53	.....	.....	.....
750	.56	.59	.....	.....
1,000	.59	.59	.65	.....
1,500	.59	.59	.65	.....
2,000	.59	.59	.65	.....
2,250	.....	.....	.....	.....
2,500	.59	.65	.65	1.47
3,000	.65	.65	.73	1.47
3,500	.65	.65	.....	.....
4,000	.65	.65	.73	1.47
5,000	.73	.65	.88	1.47
6,000	.....	.....	.....	.....
7,500	.73	.73	.88	1.47
8,000	.73	.....	.88	1.76
10,000	.73	.73	.88	1.91
12,000	.....	.....	.....	.....
15,000	.88	.88	1.03	.....
20,000	.....	1.04	1.18	.....
25,000	.....	1.18	1.33	.....
35,000	.....	.....	1.62	.....

Catalogue Number	Cartridge 1 1/8" x 1/2"	Tubular 2" x 5/8"	Tubular 4" x 5/8"	Edison Base 5/4" x 3/4"	PRICE NET
8501	Ohmite Resistor Kit, 10 Resistors each 25 Watts			{ 1- 500, 1- 750 1-1,000, 3-1,500 1-3,000, 1-3,500 2-5,000 }	\$ 5.79
8502	Thordarson No. 171 Resistor, 13,000 total, in steps of 2,000				1.27
8503	Thordarson No. 210 Resistor Kit, 4 Resistors, 1-8,000 ohms tapped at 6,800 ohms, 2-10,000 ohms, 1-1,000 ohms.				2.79
8504	Thordarson No. 210 Resistor, 8,000 ohms tapped at 6,800 ohms				.91
8505	Resistor Kit for Thordarson T-2098.....				5.73
8506	Resistor Kit for Thordarson T-2900.....				5.73
8507	Resistor Kit for Thordarson T-2950.....				5.73
8508	Z Coupler Filament Resistor, 25 ohms tapped at 15 ohms.....				.65
8509	Silver-Marshall No. 655 Resistor, 11,350 ohms.....				1.47
8510	Silver-Marshall No. 659 Resistor, 10,300 ohms.....				1.47
8511	Silver-Marshall No. 651 Resistor, Large, 7,200 ohms, tapped at 6,200 ohms.....				2.65
8512	Silver-Marshall No. 651 Resistor, Small, 9,720 ohms.....				1.47
8513	Silver-Marshall No. 672 Resistor, 5,500 ohms.....				1.18
8514	Resistor for Scotts World Record Super 10, (W.R.S. 10) 1"x6"				2.65
8515	Resistor for Scotts Shield Grid 9 (SG9) 1"x7"				3.23
8516	Antenna Static Drain Resistor 1 1/4"x1 1/4", 180,000 ohms.....				17.35

Electrad Enameled Wire Wound High Resistances

Made by winding enameled nichrome wire on a refractory tube and covered with a moisture proof enamel. Those having resistance values above 25,000 ohms are layer wound with generous insulations between each layer of wire. The overall length is 2 inches and maximum outside diameter is 5/8 inches. The lugs are of monel metal for good electrical contact and they are solder dipped for easy soldering. They are particularly suitable for use as plate resistors multipliers for voltmeters and general laboratory work.

Resistance	M. A.	List	NET	Resistance	M. A.	List	NET
10000	22.5	\$1.50	\$0.88	60000	9	2.00	1.18
12500	20	1.50	.88	75000	8	2.50	1.47
15000	18	1.50	.88	80000	8	2.50	1.47
17500	17	1.50	.88	90000	7.5	3.00	1.76
20000	16	1.50	.88	100000	7	3.00	1.76
25000	14	1.50	.88	125000	5.5	3.50	2.06
30000	13	1.75	1.03	150000	5	4.00	2.35
35000	12	1.75	1.03	200000	4.5	4.50	2.65
40000	11	1.75	1.03	250000	4	5.00	2.96
50000	10	2.00	1.18				

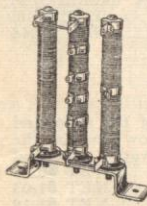
Carter Heavy-Duty Vitreous Enameled Resistors

In Carter Steel Tube Vitreous Enameled Resistors the resistance wire is wound on a steel tube which has been heavily coated with a special enamel. After the wire has been wound on this coated tube the steel terminals are securely fastened over the wire at the ends. Several turns are thus covered with this rugged terminal insuring a permanent unbreakable connection.

The complete resistor is then thoroughly coated with a heavy glass-like enamel. This special enamel, the steel tube, the wire and the steel terminals have practically the same co-efficient of expansion. Consequently the enamel will not crack or peel off. All the units are virtually fused into one, so that under the severest operating conditions, the heat has no damaging effect. Aside from its indestructibility, the steel tube has many other advantages. It operates cooler because the steel tubing dissipates the heat much faster. If mounted vertically so that both ends are exposed, a circulation of air is set up, further lowering the temperature. Heat has long been a troublesome factor in proper operation, especially in the new A-C sets and power supply devices. The Carter Steel Tube Vitreous Enameled Resistors effectively overcome this difficulty. We believe it to be by far the most efficient radio resistor yet produced.

100 Watt—Size 1x4"		
1,000, 2,000, or 3,000 ohms.	List \$2.25	NET \$1.32
5,000 ohms.	List \$2.50	NET \$1.47
10,000 ohms.	List \$2.75	NET \$1.62
25,000 ohms.	List \$3.00	NET \$1.76
50,000 ohms.	List \$4.00	NET \$2.35
75,000 ohms.	List \$5.00	NET \$2.94
150 Watt—Size 1x6"		
1,000, 2,000, or 3,000 ohms.	List \$2.50	NET \$1.47
5,000 ohms.	List \$3.00	NET \$1.76
10,000 ohms.	List \$3.50	NET \$2.06
25,000 ohms.	List \$4.25	NET \$2.50
50,000 ohms.	List \$5.25	NET \$3.09
75,000 ohms.	List \$8.00	NET \$4.70
100,000 ohms.	List \$10.00	NET \$5.88
200 Watt—Size 1 1/4" x 1 1/4"		
180,000 ohms.	List \$29.50	NET \$17.34

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

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

Yaxley Resistance Units

Here are listed the frequently used resistances of the filament and grid type. These units are of the dependable wire wound construction, run true to rating and are provided with convenient screw eye and soldering lug terminals for easy mounting and wiring.



800 Series			700 Series				
Cat. No.	Resist. in Ohms	Cap. in Amps.	NET Price	Cat. No.	Resist. in Ohms	Cap. in Mils	NET Price
801	1	1	\$0.10	Tapped Resistances			
802	2	1	.10	806C	6	.....	\$0.20
803	3	.75	.10	810C	10	.....	.20
804	4	.6	.10	812C	12	.....	.20
805	5	.6	.10	815C	15	.....	.20
806	6	.5	.10	815T5	15	.....	.20
807	7	.4	.10	820C	20	.....	.20
808	8	.4	.10	830C	30	.....	.20
809	9	.4	.10	850C	50	.....	.20
810	10	.4	.10	864C	64	.....	.20
815	15	.35	.10	8100C	100	.....	.26
820	20	.3	.10	8400C	400	.....	.26
825	25	.275	.10	Grid Resistance			
830	30	.275	.10	7100	100	40	.17
840	40	.275	.10	7200	200	40	.17
850	50	.150	.10	7300	300	25	.17
860	60	.150	.10	7400	400	25	.17
8100	100	.125	.17	7500	500	25	.17
8200	200	.080	.17	7600	600	25	.23
8300	300	.075	.17	7700	700	25	.23
8400	400	.075	.17	7800	800	25	.23
Filament Resistances				71000	1000	25	.23
800-1L	4.5	.25	.10	71500	1500	25	.23
800-2L	2	.50	.10	72000	2000	25	.23
800-3L	1.4	.75	.10	73000	3000	25	.23
800-4L	.75	1.	.10				
800-5L	.66	1.25	.10				
800-6L	.5	1.50	.10				

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

Lynch Metallized Resistors

A satisfactory resistance unit must have sufficient current carrying capacity so that 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 megohms. List \$0.50 NET \$0.29

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 \$0.75 NET \$0.44

Lynch Dynohmic Metallized Resistors

Dynohmic Resistors in resistances from 500 to 200,000 ohms as above (Standard metallized resistors) are made with the following ratings.

1/2 watt—pigtail type. List \$0.60 NET \$0.35

1 watt—cartridge or pigtail type. List \$0.75 NET \$0.44

2 watt—cartridge or pigtail type. List \$0.85 NET \$0.50

In addition to the above varieties of Metallized Resistors an entirely new form is now offered in STANDOHM, the "self-supporting" resistor, a general purpose unit comprising all the outstanding features of other Lynch types with the additional advantage of an insulated base designed to permit mounting on metal surfaces.

1 watt Standohm. List \$0.90 NET \$0.53

2 watt Standohm. List \$1.00 NET \$0.59

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 \$0.50.....NET \$0.29



Lynch Grid Suppressors

Special resistance units designed for use in tuned radio frequency circuits to stop oscillation and improve reception without broadening tuning. Suppressors are furnished in resistance values of from 100 to 1,800 ohms varying in even hundred units. All sizes, complete with mounting. List \$1.00.....NET \$0.59
 Without mount. List \$0.75.....NET .44



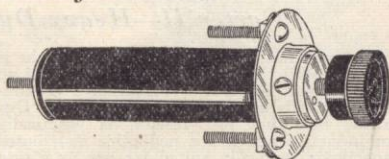
Lynch Filament Equalizers

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.

**Resistances (Variable)
 TRANSMITTING TUBE FILAMENT
 CONTROLS**

Allen-Bradley Radiostat

Power rheostat rated 75 watts for continuous operation. Resistance range 4 to 150 ohms.
 List \$6.50NET \$5.85



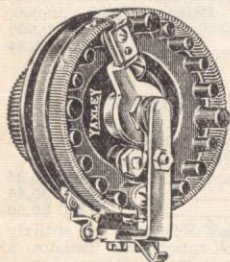
Super-Power Clarostat

A giant variable resistor of 250-watt rating. In 3 resistance ranges—1/4-10 ohms, 25-500 ohms, and 200-100,000 ohms. Dissipates heat rapidly and safely. Mica insulation and asbestos packing, special resistive material, and heavy brass case. Large bakelite knob. Long shaft which may be cut to any length. Special mounting bracket to hold hot casing away from panel.

Ideal as filament and plate control for transmitters; speed control for motors up to 1/4 h.p.; field rheostat for generators; heat control for soldering irons, etc.; and indispensable in laboratory work. List \$6.00.....NET \$3.82

**VARIABLE RESISTANCES FOR
 RECEIVERS AND POWER
 SUPPLIES**

Yaxley Air-Cooled Rheostats and Potentiometers



The Air-Cooled Rheostat is made with the precision of a fine watch. It has a smooth quiet action with an extremely close adjustment. In broadcasting stations where delicate adjustments must be made and in laboratory equipment and laboratories the Air-Cooled Rheostat is a favorite as it has been for several years in receiving equipment of the highest class.

Now, it fits in to fill the exacting requirements of a Volume Control in phonograph pick-ups. In fact, wherever quiet action and critical adjustments are desirable, the Air-Cooled Rheostat is recommended.

Base is of Bakelite. Rheostat mounts in a single 7/16" panel hole. Furnished complete with Bakelite knob. Comes in resistances of 2, 3, 6, 10, 15, 20, 25, 30, 40, 60, and 100 ohms. List \$1.35.....NET \$0.88
 The air-cooled potentiometer has exactly the same mechanical construction as the Yaxley air-cooled rheostats. Complete with Bakelite knob and etched dial plate in resistances of 50, 60, 100, 200, and 400 ohms. List \$1.75.....NET \$1.15

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 \$0.49
Junior Rheostat—1000 ohms. List \$1.00.....NET \$0.66
Junior Potentiometers—Resistance of 6, 10, 15, 20, 25, 30, 40, 50, 60, 75, 100, 200, and 400 ohms. List \$1.00.....NET \$0.66
Junior Potentiometers—Resistances of 1000, 2000, and 3000 ohms. List \$1.25.....NET \$0.81
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 \$0.10 Less
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 \$0.26
Insulating Washers for Metal Panels.....NET \$0.05

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, 2, 3, 6, 10, 15, 20, 25, 30, 40, and 50 ohms. List 0.75.....NET \$0.44

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 "Super Hi-Watt" Rheostat



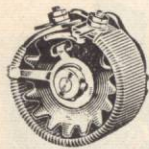
Ribbon wound on asbestos. Dissipates 50 watts. It makes an ideal control for small motors and for primary rheostats for radio sets and power supply devices. Resistances of 1, 2, 3, 6, 10, 15, 20, 30, 40, and 50 ohms. List \$1.75NET \$1.03

Carter "Hi-Watt" Rheostat

Widely used for controls of "A" Eliminators, primary controls of "B" Eliminators, as well as in radio receivers. Will continuously dissipate 20 watts. Resistances of 1/2, 1, 2, 3, 6, 10, 15, 20, 30, 40, 50, 60, 75, 100, 150, 200, 250, 300, 400, and 500 ohms. List \$1.50.....NET \$0.88
 500 ohms. List \$1.50.....NET \$0.88
 800, 1000, and 2000 ohms. List \$1.75.....NET \$1.03
 3000, 5000, and 7500 ohms. List \$2.00.....NET \$1.18
 10,000 ohms. List \$2.25.....NET \$1.32
 20,000 ohms. List \$2.50.....NET \$1.47
 50,000 ohms. List \$3.00.....NET \$1.76

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

FROST Bakelite Rheostats

High resistance wire is wound in die cut threads on flexible bakelite (not fiber) which does not shrink or warp. Genuine molded bakelite frame is designed to give complete circulation of air around resistance windings. German Silver contact arm and spring gives heavy contact pressure but operates with perfect smoothness. Metal parts nickel plated. Single hole mounting. Equipped with black bakelite white arrow knob.

Prices—2, 2½, 3, 4, 6, 10, 15, 20, 25, 30, 50, 75 ohms carrying capacity 2.5 to .06 amps. List \$1.00.....NET \$0.58
Bakelite Rheostats with D.C. Switch same as above. List \$1.35.....NET \$0.80

FROST BAKELITE POTENTIOMETERS

20, 200, 400, 600, 1000 ohms List \$1.25.....NET \$0.74

Gem Rheostats

Rugged in construction and built for continuous long time service. Strong metal frame. Resistance element wound on die cut flexible bakelite. Specially designed German Silver contact arm gives firm contact pressure but operates very smoothly. Occupies minimum space behind the panel. Easy to solder to. Single hole mounting. Bakelite white arrow knob.

Prices: 3, 6, 10, 15, 20, 25, 30 ohm. List \$0.75.....NET \$0.45
Same with D.C. Switch. List \$1.00.....NET \$0.59
Potentiometers: 200, 400 ohms. List \$1.00.....NET \$0.59

**1300 Yaxley Hum Control**

Designed principally for the manufacturing trade.

The contract rides smoothly yet firmly on the resistance. The extra long resistance strip permits an extremely fine adjustment. Once set, the adjustment will not jar loose though the setting may be changed as often as desired. The resistance wire is tautly wound and permanently holds in place as in Yaxley Rheostats.

For one nut Sub-Panel Mounting. Also furnished for use with knobs. ¼" longer shaft at same price (knob not included).

Resistances of 6, 10, 15, 20, 25, 30, 40, 100 and 200 ohms.
List \$0.40.....NET \$0.26

Carter Adjustable Resistors

The Ideal A-C "Hum" Adjuster. Similar in design to rheostats and potentiometers, except with shorter shafts and provided with screw slot for adjustment. To be mounted on sub-panel. They are widely used on the new A-C sets for balancing out the A-C hum.

The "A" (rheostat) type 1½ inches in diameter and extends from panel only ¼ inch. Mounts in single ¾ inch hole on panels ½ inch to 3/16 inch thick. Will dissipate 2½ watts. Resistances of 1, 2, 3, 6, and 10 ohms. List \$0.50.....NET \$0.29

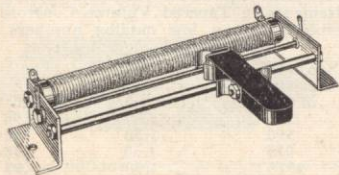
The "A-P" (potentiometer) type. Especially designed for circuits employing the new 326 Type A-C tubes. Will dissipate 2½ watts. Resistances of 6, 10, 15, and 20 ohms. List \$0.75.....NET \$0.44

The "AW" Heavy Duty Pot. Type will dissipate 6 watts. Resistances of 75, 500, and 600 ohms. List \$1.00.....NET \$0.59
1000, 2000, and 3000 ohms. List \$1.25.....NET \$0.74
6000 ohms. List \$1.50.....NET \$0.88

**Gem "Hum Balancer"**

Especially designed to smooth out the A.C. ripple in alternating current receivers. The 6 ohm unit is for use across the filaments of the CX 326 (UX 226) tubes to provide an absolute center point for the grid return of the tubes. The 20 ohm unit provides an exact center point for the grid return of the CX 327 (UX 227) detector tube. Equipped with short slotted shaft for screwdriver operation, and for mounting on the sub-panel.

Price: 6, 20, or 40 ohm. List \$1.00.....NET \$0.59

Electrad Truvolt Sliding Contact Resistance

Patented TRUVOLT air-cooled resistance unit mounted with sliding contact arm. Made particularly for general laboratory use, to control line voltages, speed of small motors, etc. Made on order to any resistance value up to 5,000 ohms maximum. Overall length—7½ inches.

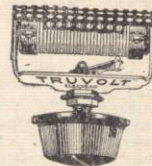
List \$4.75.....NET \$2.79

Electrad Truvolt Divider

Wire-wound resistance bank with fire calibrated knobs for instant adjustment of B and C voltages from any type of eliminator—without calculations. Simple adjustment of knobs from a chart gives voltages desired. Handsome molded Bakelite case. Compact—easily mounted. A great time saver in laboratory work. List \$10.00.....NET \$5.88

Electrad Truvolt Variable Resistances

Same air-cooled construction as fixed TRUVOLTS, plus a convenient knob for fine adjustment, and one-hole mounting. The ideal voltage control for power supply devices, insuring long life and perfect performance.

**ALL TYPES—25 WATT CAPACITY**

Type	Resistance Milli- in ohms	Current in amperes	Type	Resistance Milli- in ohms	Current in amperes
T-.03	3	2800	T-25	2500	100
T-.1	10	1500	T-30	3000	91
T-.15	15	1250	T-20	2000	112
T-.25	25	1000	T-35	3500	84
T-.5	50	700	T-40	4000	79
T-1	100	500	T-50	5000	71
T-2	200	353	T-75	7500	58
T-3	300	289	T-100	10000	50
T-4	400	250	T-150	15000	41
T-5	500	224	T-200	20000	35
T-7.5	750	182	T-250	25000	32
T-10	1000	158	T-300	30000	29
T-12.5	1250	141	T-400	40000	25
T-15	1500	129	T-500	50000	22.5
T-20	2000	112			

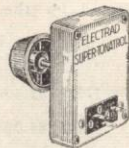
All Sizes. List Price \$2.50 each.....NET \$1.47
Bracket for base board mounting. List \$0.15.....NET \$0.09

Electrad's New Super Tonatrol

An exceptional long-lived volume control that will handle heavy currents and will safely dissipate 5 Watts. New in principle and performance. Special resistance elements fused to the surface of a vitreous enameled steel plate. Metal cover. Moving contact of sterling silver. Remarkably smooth in operation. Practically immune to changes in temperature or humidity.

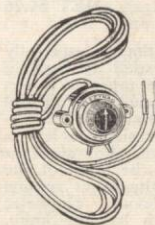
TYPES

- 25,000 ohm potentiometer recommended for antenna volume control.
 - 10,000 ohm potentiometer recommended for screen grid plate voltage volume control.
 - 50,000 ohm rheostat recommended for R.F. grid bias control.
 - 10,000 ohm rheostat recommended for R.F. plate voltage shunt control.
 - 100,000 ohm potentiometer recommended for grid voltage control from secondary of audio transformer.
 - 25,000 ohm potentiometer recommended for volume control of output from one electrical phonograph pickup.
 - 50,000 ohm four terminal potentiometer with 25,000 ohms tapered from each side of center terminal, recommended as fader and volume control with two electrical phonograph pickups.
- All above types have resistance tapers that are particularly adaptable when used in circuits recommended by us.
- Types No. 1 to No. 6. List \$2.40.....NET \$1.41
Type No. 7. List \$3.50.....NET \$2.06

**Electrad Table Tonatrol**

Especially designed volume control for use with phonograph pickups. Provided with tip jacks and phone cord. Can be easily mounted in convenient location on the phonograph turntable panel—or elsewhere if remote control is desired.

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

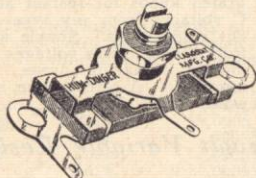


Clarostat Variable Resistors

Electrad Royalty Resistances



Volume Control



Hum-Dinger



Speed Control

Trade Name	Model	Resistance Range	Capacity	Carrying Power	List Price	NET Price
Standard	Universal	0-5,000,000 ohms	20 watts	80 watts	\$2.25	\$1.43
Power	Filament Control	1/4-10 ohms	80 watts	80 watts	3.50	2.24
Power	Low Range	25-500 ohms	80 watts	80 watts	3.50	2.24
Power	Universal Range	200-100,000 ohms	80 watts	80 watts	3.50	2.24
Volume Control		0-500,000 ohms	8 watts	80 watts	1.50	.96
Table Type	Table Type	0-500,000 ohms	8 watts	250 watts	2.50	1.60
Grid Leak	Variable Grid Leak	1/10-10 megohms		250 watts	1.50	.96
Duplex	Double	100-5,000,000 ohms	10 watts	250 watts	2.25	1.43
Antenna Plug	Antenna Plug			250 watts	1.50	.96
Speed Control	Laboratory	1/4-10 ohms	80 watts	250 watts	5.00	3.18
Speed Control	Laboratory	25-500 ohms	80 watts	250 watts	5.00	3.18
Speed Control	Laboratory	200-100,000 ohms	80 watts	250 watts	5.00	3.18
Super Power	Filament	1/4-10 ohms	250 watts	250 watts	6.00	3.82
Super Power	Low Range	25-500 ohms	250 watts	250 watts	6.00	3.82
Super Power	Universal	200-100,000 ohms	250 watts	250 watts	6.00	3.82
Hum-Dinger	Hum Suppressor	10 sizes 6 to 200 ohms	2 watts		.75	.48

Centralab Volume Controls



Centralab Radiohms feature the making of contact by a pressure shoe and tilting disc, assuring long life. Can be varied throughout their entire range from zero to maximum resistance. Give full variation of resistance with a single turn of the knob. Base and knob of Bakelite, single hole mounting.

May be had in 0-2000, 50,000, 100,000, 200,000 and 500,000 ohms. List \$2.00.....NET \$1.18
With Switch. List \$2.30.....NET \$1.35

CENTRALAB MODUPLUG

A volume control like a phone plug which can be substituted for the standard type of plug.
No. 1 Standard Modu Plug. List \$2.50.....NET \$1.47
No. 2 Cord Type Standard Modu Plug. List \$2.50.....NET \$1.47
No. 3 "Easy Chair" Modu Plug. List \$3.00.....NET \$1.76

CONSTANT INPUT RESISTANCE

A special type of resistor for controlling the volume of one speaker without affecting the volume of others connected to the same amplifier. The resistance element is divided into two special tapers, one that will maintain a constant resistance in the line, a resistance equal to the impedance of the speaker used; the other tapered to give a smooth and gradual control of volume. The first resistance is in series with the line and the second shunted across the speaker. Both are regulated by one knob. Turning the knob to reduce volume or short-circuiting the speaker, will add enough of the other resistance to the line to maintain it at a constant impedance, so that when the speaker is completely turned off there is enough resistance in the line to match that of the speaker. This allows signals to be heard at the other speakers in the circuit at the same volume as heard before the speaker was cut-out.

The size is such that it may be assembled in a standard outlet box. Resistances are made up on special order to match impedance of speakers. Give name of speaker or give impedance at 1000 cycles when ordering. With bakelite knob. List \$3.00.....NET \$1.76

PHONOGRAPH PICK-UP "FADER"

A new Variable Resistor with smooth, noiseless action that is especially adapted for volume control of two phonograph pickups such as used in theaters. While there is a continuity of resistance, yet the taper is so arranged that each half will give perfect volume control of each pickup and "fade" from one to the other without any sharp differentiation. The resistance is tapered from the "center tap" with sufficient resistance left in the circuit at this tap to allow the signal to filter through. For constant use, a 50M Centralab Radiohm is oftentimes shunted across the input of the amplifier. This allows the operator to set this control at the exact volume desired and use the "Fader" simply as a "switching" device. Diameter 2 1/4 inches, bakelite case with metal cover, furnished with bakelite knob. List \$3.00.....NET \$1.76

Non-Inductive High Resistances

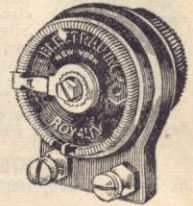
Note These Important Exclusive Features:

- 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



Electrad Tonatrols for Volume Control

FOR OSCILLATING RECEIVERS

- Type R-Radio Frequency Secondary Tonatrol. List \$1.50.....NET \$0.88
Type RS-(with filament switch). List \$2.00.....NET \$1.18
Type RP-(with power switch). List \$2.50.....NET \$1.47
Type R- Radio Frequency Primary Tonatrol. List \$1.50.....NET \$1.47
Type PS-(with filament switch). List \$2.00.....NET \$1.18
Type PP-(with power switch). List \$2.50.....NET \$1.47

FOR NON-OSCILLATING RECEIVERS

- Type S-Audio Frequency Secondary Tonatrol. List \$1.50.....NET \$0.88
Type WS-(with filament switch). List \$2.00.....NET \$1.18
Type SP-(with power switch). List \$2.50.....NET \$1.47
Type A-Antenna potentiometer Tonatrol. List \$2.00.....NET \$1.18
Type AS-(with filament switch). List \$2.50.....NET \$1.47
Type AP-(with power switch). List \$3.00.....NET \$1.76

CONSTANT RESISTANCE VOLUME CONTROL

Type U-List \$2.00.....NET \$1.18

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 1/2 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

Yaxley Volume Controls

The action of the Tapered Volume Controls is very smooth. The wire wound type of construction has the advantage of a long life and unchanging characteristics of the resistance curve. Furthermore, in addition to meeting the resistance curve specifications the resistance curves for the same catalog number run uniform. The taper requirements in Tapered Volume Controls are so diversified that it is only possible to list a few catalog numbers. Complete with knobs.

Catalog No.	Over All Resistance in Ohms	First Turn Resistance in Ohms	Second Turn Resistance in Ohms	List Price	NET
50625	600	25	575	\$1.50	\$0.98
51010	1000	10	990	1.50	.98
51025	1000	25	975	1.50	.98
52025	2000	25	1975	1.50	.98
53025	3000	25	2975	1.50	.98

FROST Variable High Resistance

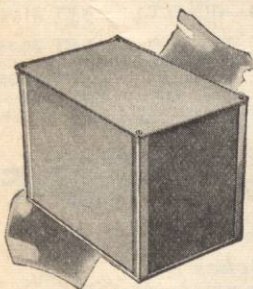
Absolutely stable in operation; not affected by humidity or temperature changes. Roller contact produces perfectly smooth, continuously variable adjustment of resistance and eliminates friction and mechanical wear. Units are non-inductive. Polished bakelite case 2 inches by 3/4 inch with bakelite dust 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 1/2" 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 Phasatrol

Suitable to any radio frequency amplifying circuit—whether tuned or untuned. When correctly installed—one unit to each stage of radio frequency amplification—PHASATROL will completely eliminate all oscillation and R.F. distortion. Recommended as a simple, yet effective means of balancing and controlling radio frequency amplification. Complete instructions for adapting to various circuits in each package. List \$2.00 each.....NET \$1.18

Shields**STAGE SHIELDS****Alcoa Box Shields**

Made of heavy Aluminum sheet—No. 12 B & S gauge—.080" thick so that they can be used for oscillators and transmitters as well as inter-stage shields. Dip finish gives a fine appearance. The design permits altering the size by a few simple operations. The shields are of fine appearance, strong mechanically and require no soldering—only a screw driver for assembling.

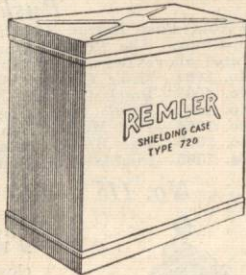
- Box Shield 5" wide x 9" long x 6" high—
 for general application. NET \$2.06
 List \$3.50.....NET \$2.06
 "Junior" Box Shield 4 1/2" wide x 4 1/2" long
 x 5" high—for L. C. 28 and other uses—4 in a
 carton. List \$8.00 for 4.....NET \$4.70

Remler Shields

The Remler Shielding Case is of copper, sufficiently heavy to be rigid, and is readily used wherever complete and effective shielding of individual circuits is required.

The Shielding Case is 3" wide by 5 1/2" deep by 5 3/4" high. The top and bottom of the case are removable so that mounting of the parts and wiring is easily accomplished.

- List \$3.00.....NET \$1.76

**Silver-Marshall Stage Shield**

638—Stage Shield—Overall size, 4 1/2" long, 5 1/2" high, and 2 3/4" wide. Finished in lacquered copper. Sides ribbed to prevent bending. Shipping weight, 10 oz.....NET \$8.88

**TUBE SHIELDS****Remler Tube Case**

No. 55 Remler Tube Case consists of a heavy die cast body into which the bakelite base of the tube fits and a formed copper shell which fits over the tube proper and screws onto the base. It is intended for use with tubes of the 201A type or with the UX222 shield-grid tube. List \$2.00.....NET \$1.18

No. 322 Carter Shielded Grid Tube Shields

A tube shield that actually shields! Not only completely covers the tube down to the sub-panel, but also encloses the top connector. Fits snugly around sockets that have bases extending above sub-panel and readily adaptable to sub-panel style sockets by use of the Carter Adapter Ring listed below. Made in one piece with ornamental cap and finished in a rich dull copper finish. Fits over all 322 type Shielded Grid Tubes. Has outlet hole at top for the shielded wire connector. We believe this to be the most efficient shield of its kind made. List \$1.50.....NET \$0.88

**CARTER ADAPTER RING FOR SUB-PANEL STYLE SOCKETS**

This ring is required to fit Carter Tube Shields into assemblies where Benjamin or sub-panel style sockets are used. It fits around the socket and is fastened securely to sub-panel by screws furnished, as indicated in illustration. The shield fits snugly over it, preventing microphonic noises. Ring is made of black Bakelite. List \$0.35.....NET \$0.21

Silver-Marshall Tube Shield

636—An excellent preventative of capacitative coupling, this tube shield has the perforations so essential to ventilation, especially important for 224 and 227 tubes.....NET \$0.29

Sockets**TRANSMITTING SOCKETS**

"Chi Rad" X-204—This socket consists of two mountings on porcelain stand-off insulators, Bakelite insulation and nickel plated metal parts. Each.....NET \$3.00

Model UR 542—Porcelain base, metal shell socket for use with UX 210, 245, 250, 852, 860, 865, and 866 tubes. On account of its low specific inductive capacity and its high insulating qualities, these Sockets are excellent for Short Wave work and especially adapted to the above tubes. Each.....NET \$0.75

RECEIVING SOCKETS**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.



9040

- 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 1/4" 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 1/16" mount.
 List \$0.75.....NET \$0.44

9037

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.



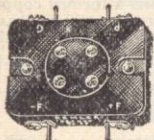
- 4 prong socket. List \$0.40.....NET \$0.24
 5 prong socket. List \$0.50.....NET \$0.29

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

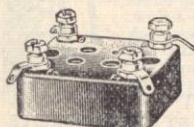


Remler Sockets and Tube Shields



No. 50 Remler Socket is designed for use with the X-type, standard base tubes. Positive contact is insured by brass contact levers extending the full length of the tube base prongs and held under firm pressure by high tension springs. Socket is made of molded bakelite. Soldering lug terminals and screw terminals are provided. List \$0.50.....NET \$0.29

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

Soldering Needs

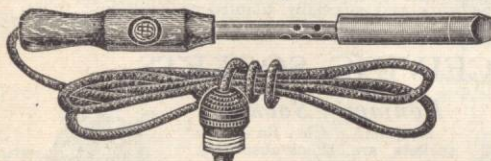
Vulcan Soldering Irons

"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.
600	44	Radio and light soldering.....	\$5.55	\$0.45	\$7.50
700	55	Radio and Home Use.....	5.55	.45	7.50
100	70	Switchboards and radio.....	6.00	.50	8.00
500	120	Light automobile repairs.....	6.75	.75	9.00
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
No. 10 Radio Special Iron.....					NET \$3.75

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

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

Speedway Tape Solder

The perforations in SPEEDWAY TAPE SOLDER are there for the definite purpose of allowing the flux contained in solder to reach the metal before the solder melts. Complete in strip. No acid or other flux needed. A match will do for the heat. Does a perfect job in a few seconds' time. Strips—in pkg.NET \$0.25 \$0.15 pkg.
Spools.....NET \$0.50 \$0.30 ea.



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

Switches

Federal Anti-Capacity Switch

Type 1434-W—A four pole, double throw anti-capacity switch similar to those used in telephone switch boards. The construction is very rugged. NET \$3.20

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	3-P., S.T.	.74
158	3-P., D.T.	.88
159	4-P., S.T.	1.03
160	4-P., D.T.	1.18
227	5-P., S.T.	1.32
228	5-P., D.T.	1.47

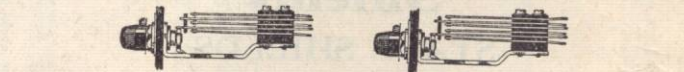
Radion hard rubber base and handle. Nickel metal parts. Single throw types 1½" long. Double throw 2¼" long.

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.



S.P., S.T.....NET \$0.49 S.P., D.T.....NET \$0.59 D.P., ST.....NET \$0.65



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



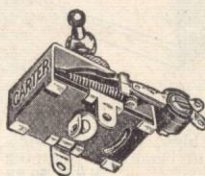
No. 10—Midget Battery Switch. List \$0.50.....NET \$0.33
No. 11—Aerial Switch—Same as the No. 10, excepting single pole double throw. List \$0.65.....NET \$0.33
The Junior Jack Switches are exactly the same in construction, as the Yaxley Junior Jack. For use in sets where space is at a premium.

No. 720—Battery Switch. List \$0.70.....NET \$0.47
No. 730—Two Circuit. List \$0.85.....NET \$0.56
No. 740—Double Circuit. List \$0.95.....NET \$0.63
No. 745—Five Spring. List \$1.10.....NET \$0.74
No. 760—Two Way Two Circuit. List \$1.20.....NET \$0.79
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 \$0.63
No. 2002—Break Contact. List \$1.00.....NET .63
No. 2003—Single Pole, Double Throw. List \$1.15.....NET .76
No. 2004—Two Make Contacts. List \$1.30.....NET .86
No. 2005—Two Break Contacts. List \$1.30.....NET .86
No. 2006—Double Pole, Double Throw. List \$1.60.....NET 1.05

No. 115 "Imp" Power Switch (Automatic)



For switching charger off, "B" supply on, and closing filament circuit. Replaces relays. This Switch will control any type of "A" or "B" supply. 1½x1 inch; projects ½ inch back of panel. Mounts in ¾ inch hole. List \$1.50.....NET \$0.88

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. 33 —3 Point Tap Switch with break between contacts.....	.65	.43
No. 33TB—3 Point Selector Switch.....	1.40	.93
*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.....	1.50	.98
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.....	1.40	.93
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. 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.

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 mounting. Easy, positive action.

No. AC 609 Switch. List \$0.75.....NET \$0.45



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



Transformers

AUDIO TRANSFORMERS

National Audio Units

A100—Audio transformer incorporating the latest advances in audio transformer design. This superior unit employs a special nickel-steel high permeability core and a split secondary winding of new design. The result is a transformer of small size with unusually fine characteristics. Turn ratio is 4:1. List \$9.50.....NET \$5.59

P50 and P10 Push-pull Transformers—Similar in construction to the A100 listed above. The frequency-characteristic curve of these transformers is essentially a straight line from 30 to 500 cycles.

P50—Input transformer. List \$9.50.....NET \$5.59

P10—Output transformer. List \$9.50.....NET \$5.59

Amplifier—An audio unit for impedance coupling, but with certain modifications in design which increases the gain and improve the tone. This new unit replaces the famous National Impedaformer. The case is unusually compact measuring only 2 1/4" x 2 1/4" x 2 3/4". List \$5.00.....NET \$2.94

Tone Filter—A power-tube output-unit to protect the loud speaker and improve the tone. Standard type, with cord. List \$7.00.....NET \$4.12

Tone Filter for 245 or 250 tubes, with cord. List \$8.50.....NET \$5.00

Without cord, deduct 50c list—29c NET.

Scratch-Filter—Greatly reduces the needle scratch heard in the loud speaker when using an electric pick-up. Connection is exceedingly simple, the terminals of the filter being wired across the output of the pick-up. List \$5.00.....NET \$2.94

Sangamo Audio Transformers

Sangamo Audio Transformers are built to precision standards with electrical characteristics that will give unsurpassed reproduction when used in correctly designed circuits. The proof of excellence lies in a flat performance curve. Due to the fact that the impedance of the windings are matched to impedances of tubes and speakers with which the transformers are used, the Sangamo curve is as nearly a straight line as has yet been achieved.

"X" Line Transformers

AX—Standard audio transformer.

List \$6.00.....NET \$3.53

BX—Push-pull input unit. List \$6.50.....NET \$3.82

CX171—Push-pull output unit for 171, 245, or 250 tubes operating into cone speakers. List \$6.50.....NET \$3.82

DX—Same as CX but for 210 and 112 tubes. List \$6.50.....NET \$3.82

HX—Same as CX but to match the impedance of the moving coil of dynamic speakers. List \$6.50.....NET \$3.82

GX—Same as HX, but for 210 and 112 tubes. List \$6.50.....NET \$3.82

E—Output choke to match the impedance of the various types of power tubes. List \$5.00.....NET \$2.94

"A" Line Transformers

The "A" line is similar to the "X" line, but with special core metal to give greater amplification at low frequencies.

A—Standard audio transformer. List \$10.00.....NET \$5.88

B—Push-pull input unit for all tubes. List \$12.00.....NET \$7.06

C171—Push-pull output unit for 171, 245, and 250 tubes operating into a cone speaker. List \$12.00.....NET \$7.06

D210—Same as C171 but for 210 and 112 tubes. List \$12.00.....NET \$7.06

H171—Same as C171 but with impedance to match the moving coil of dynamic speakers. List \$12.00.....NET \$7.06

G210—Same as H171 but for 210 and 112 tubes. List \$12.00.....NET \$7.06

F—Plate impedance for use as a choke to prevent oscillation, and for impedance coupled amplifiers. List \$5.00.....NET \$2.94

AmerTran Audio Transformers

Made in two types, the first stage, turn ratio 3; the second stage, turn ratio 4; completely shielded and sealed in with a weatherproof compound, high permeability alloy used in the cores. Shipping weight, 1 3/4 lbs.

List Each \$10.00.....NET \$5.88

Input Type 151 is an interstage audio transformer similar to the 2nd Stage AmerTran De Luxe except that its secondary has a carefully balanced center tap, and the maximum turn ratio is 5 (full secondary). Ratio of primary to each half of secondary 2 1/2. It can be used preceding any type of power tube. The frequency characteristic is slightly flatter than that of the second stage AmerTran De Luxe when connected for 2 1/2 to 1 turn ratio. Shipping weight, 2 lbs.

List Each \$15.00.....NET \$8.82

Output Type 152 (Impedance Ratio 4:1) is designed to work out of UX-210 tubes, or tubes of similar plate impedance, into a speaker having approximately the impedance of W. E. type 640 AW cone. The primary winding has a carefully balanced center tap. Shipping weight, 2 lbs.

List Each \$15.00.....NET \$8.82

Output Type 271 (Impedance Ratio 2:1) is designed to work out of UX-171, or tubes of similar plate impedance, into a speaker having approximately the impedance of a WE type 640 AW Cone. The primary has a carefully balanced center tap. Shipping weight, 2 lbs. List Each \$15.00.....NET \$8.82

Output Type 200 (Impedance Ratio 2000:1)—The primary of this output transformer is identical with that in type 152, and designed to work out of UX-210 tubes, or tubes of similar impedance. The secondary is designed for connecting directly to the moving coil of dynamic type speakers. Shipping weight, 2 lbs. List Each \$15.00.....NET \$8.82

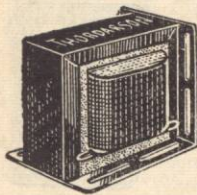
Output Type 362 (Impedance Ratio 1000:1)—Designed to work out of 171 tubes into the moving coil of dynamic type loud speakers. The center tapped primary on this transformer is similar to the primary of type 271. Shipping weight, 2 lbs. List Each \$15.00.....NET \$8.82

Equalizer Type 389 is designed to adjust the impedance of an electric phonograph pickup to the primary impedance of the 1st stage Amer-Tran De Luxe. Three primary taps are provided to compensate for slight variations in the impedance of the best available electrical pickups. Shipping weight, 2 lbs. List Each \$10.00.....NET \$5.88



Inasmuch as we stock practically every item listed in our catalogue, we give **PROMPT SERVICE**. It is our aim to serve our customers just the way we would want to be served were we at their end of the line.

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 \$1.47
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. List \$5.00.....NET \$3.27
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. List \$8.00.....NET \$5.22

R-400—A new transformer designed expressly for use with AC tubes. It differs from the R-300 in that at higher primary current values the inductance characteristic is greatly improved. Ordinary transformers working between the first and second stage of an amplifier using AC tubes in the detector and first stage will suffer in low note efficiency because the AC tubes have a higher plate current. The R-400 corrects this deficiency. List \$9.00.....NET \$5.88
R-2343—Ratio 10 to 1. High distortion transformer. List \$5.00.....NET \$3.27



R-300-400

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. List \$8.00.....NET \$5.22
T-2922 Push-Pull Input Transformer—Serving the same purpose as T-2408 but possessing a higher ratio, 2 to 1. Built for use with the UX-245, the UX-210 or UX-250 type power tubes in the push-pull stage. List \$12.00.....NET \$7.84
T-2973 Push-Pull Interstage Transformer—Designed to couple two stages of push-pull amplification. Ideal for use with the UX-250 type power tubes in the output stage. List \$12.00.....NET \$7.84

List \$5.00.....NET \$3.27

T-2922 Push-Pull Input Transformer—Serving the same purpose as T-2408 but possessing a higher ratio, 2 to 1. Built for use with the UX-245, the UX-210 or UX-250 type power tubes in the push-pull stage. List \$12.00.....NET \$7.84

T-2973 Push-Pull Interstage Transformer—Designed to couple two stages of push-pull amplification. Ideal for use with the UX-250 type power tubes in the output stage. List \$12.00.....NET \$7.84

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. List \$6.00.....NET \$3.92

T-2876—Designed to couple the output of a UX-210 tube into a high impedance speaker. List \$6.00 NET \$3.53

T-2901—Designed to couple the output of a single UX-250 into a high impedance speaker. List \$12.00.....NET \$7.84

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. List \$12.00.....NET \$7.84

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 in the dynamic speaker. List \$12.00.....NET \$7.84

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. List \$12.00.....NET \$7.84

T-2629—Designed to couple two UX-210 tubes into the coil of a dynamic speaker. Replaces the transformer mounted in the base of the speaker. List \$10.00.....NET \$6.53

T-2420 Push-Pull Output Choke—Designed to couple two UX-210 type power amplifying tubes into a high impedance speaker. List \$8.00.....NET \$5.22



T-2901

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 in the dynamic speaker. List \$12.00.....NET \$7.84

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. List \$12.00.....NET \$7.84

T-2629—Designed to couple two UX-210 tubes into the coil of a dynamic speaker. Replaces the transformer mounted in the base of the speaker. List \$10.00.....NET \$6.53

T-2420 Push-Pull Output Choke—Designed to couple two UX-210 type power amplifying tubes into a high impedance speaker. List \$8.00.....NET \$5.22

Silver-Marshall Audio Transformers

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 \$5.29

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 \$5.29

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 \$5.29

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 \$3.53

255M Transformer—Exactly the same as the 255 except for the addition of a mid-tap microphone winding, which may be used with either single or double-button 200-ohm microphone. It may therefore be used with either pickup, radio, or microphone input.....NET \$4.70

255R Transformer—Similar to the S-M 255, S-M 255R has an extra primary tap for use with 2000 ohm phonograph pick-ups.....NET \$4.12

255P Transformer—Same as 255R but for phonograph pick-up use only.....NET \$3.53

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 \$3.53

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 \$4.12

258—Push-pull Output Choke designed to couple two 171A or 245 tubes in push-pull to any standard loud speakers.....NET \$2.94

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 \$4.70

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 \$4.70

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 \$4.12

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 \$4.70

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 \$4.70

220-M Input Transformer—Combination audio and microphone transformer containing two primary and one secondary windings. One primary winding is of high impedance for use with radio or phonograph pick-up. The other is of low impedance, center-tapped for use with a single or double-button microphone or telephone line. Characteristics as an audio transformer same as the S-M 220. Shipping weight 4 lbs., 8 oz.....NET \$8.82

221 Output Transformer—For use in any receiver. Ratio 1 to 1.89. Shipping weight 4 lbs., 4 oz.....NET \$4.41

222 Output Transformer—Same as No. 221 except equipped with four tip jacks and 5 foot cord.....NET \$4.70

230 Push-Pull Input Transformer—For use in push-pull amplifier or as a variable ratio audio transformer, with ratio of 3 to 1 or 6 to 1. Frequency characteristics same as 220. Shipping weight 4 lbs., 6 oz.....NET \$5.88
 171 and 250 tubes. Shipping weight 4 lbs., 6 oz.....NET \$5.88
 and one secondary. Shipping weight 2 lbs., 4 oz.....NET \$4.12

231 Push-Pull Output Transformer—For use with No. 230 in push-pull circuit or as a variable ratio output transformer to match either 112 and 210, or 171 and 250 tubes. Shipping weight 4 lbs., 6 oz.....NET \$5.88

242 Microphone Transformer—For use with either single or double button microphones or as a line input transformer to power amplifiers. Two primaries and one secondary. Shipping weight 2 lbs., 4 oz.....NET \$4.12

REPLACEMENT AUDIO TRANSFORMERS

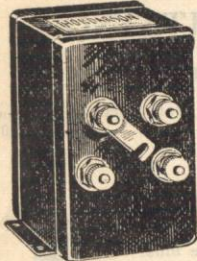
Strictly high-quality audio-frequency transformers, comparing favorably with many of the high priced brands. The characteristics of these transformers are such that they provide practically uniform amplification from 200 to 5000 cycles, with a gradual fall-off below 200 cycles. Ideal for replacement use because of compact, small size.

260U Transformer—Equipped with upright type mounting bracket. Size 2 1/2" high, 2" wide, and 1 1/2" thick. Shipping weight 1 pound.....NET \$1.32

260S Transformer—Same as above, but equipped with side mounting bracket. Size 2" high, 2 1/2" wide, and 1 1/2" thick. Shipping weight, 1 pound.....NET \$1.32

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 \$2.84

LINE AND TUBE, LINE AND LINE COUPLING TRANSFORMERS



T-3474—Code "Mica," Thordarson tube to line transformer—designed to couple output of single 210 or 250, or push-pull 171 or 245 into a line of 600 ohms. List \$25.00.....NET \$17.50

T-3475—Code "Mice," Thordarson line to tube transformer designed to couple the output of a 600 ohm line into any standard amplifying tube. List \$25.00.....NET \$17.50

T-3476—Thordarson line to line or mixing transformer. List \$25.00.....NET \$17.50

MICROPHONE TRANSFORMERS

T3180—Code "Mico," Thordarson microphone transformer for use with double button Western Electric, Kellogg or other similar microphones. Both primary and secondary have center tap at exact electrical centers. Frequency response independent of resonance. Primary Impedance: 200 ohms each side. Turns ratio: 27 to 1. Impedance ratio: 750 to 1. Weight 3 lbs. List \$20.00.....NET \$14.00

T-3020—Code "Microcosm," Thordarson microphone coupling transformer built to meet the need for a less expensive unit than Type T-3180. The windings closely approximate perfect balance. For use with 2 button microphones. Primary Impedance: 200 ohms each side. Turns ratio: 45 to 1. Impedance ratio 2000 to 1. Weight, 2 lbs. List \$10.00.....NET \$7.00

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 \$5.00.....NET \$3.50

POWER TRANSFORMERS

Thordarson Power Transformers

Unless otherwise specified, transformers are for 110 volt, 60 cycle AC.

T-2387—Code "Transfuse." Secondary: 1500-1000-0-1000-1500 volts. Capacity: 300 V. A. Weight, 20 lbs. List \$22.00.....NET \$14.38

T-2388—Code "Transgress." Secondary: 2000-1500-0-1500-2000 volts. Capacity: 500 V. A. Weight, 27 lbs. List \$30.00.....NET \$19.60

T-2389—Code "Transient." Secondary: 2000-1500-0-1500-2000 volts. Capacity: 1000 V. A. Weight, 40 lbs. List \$40.00.....NET \$26.14



Thordarson Filament Transformers

T-2180—Code "Filial." Secondary: 5 volts, center-tapped, 15 V. A. Weight, 3½ lbs. List \$5.00.....NET \$3.26

T-2230—Code "Filigree." Secondary: 7.5 volts, center-tapped, 35 V. A. Weight, 3½ lbs. List \$7.50.....NET \$4.90

T-2382—Code "Transcend." Secondary: 12 volts, center-tapped, 80 V. A. Weight, 5 lbs. List \$10.00.....NET \$6.53

T-2383—Code "Transcribe." Secondary: 12 volts, center-tapped, 175 V. A. 12 lbs. List \$15.00.....NET \$9.80

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, 3½ lbs. List \$12.00.....NET \$7.84

T-2370—Code "File." Secondary: 1.25 volts, no center tap 20 V. A. Weight, 2¼ lbs. List \$5.00.....NET \$3.27

T-2504—Code "Filbert." Secondary: 3 volts, center-tapped, 35 V. A. Weight, 3½ lbs. List \$7.50.....NET \$4.90

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, 5½ lbs. List \$10.00.....NET \$6.53

T-3081—Will supply filament for one or two 226 and for one or two 227 tubes. List \$6.00.....NET \$3.92

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. 13¼ lbs. List \$20.00.....NET \$13.06

R-171—Code "Pocket." Combined plate, filament and choke unit for Raytheon B-H rectifier and 171 amplifier. List \$15.00.....NET \$9.80

R-280—For full wave rectifier. List \$17.00.....NET \$10.00

R-210—Code "Podium." Combined plate, filament and choke unit for UX-216-B or UX281 rectifier and 210 amplifier. List \$20.00.....NET \$13.06



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: 7½ volts, C. T., 2½ amps. Sec. 3: 7½ volts, C. T., 2½ amps. 15¼ lbs. 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: 7½ volts, C. T., 2½ amps. Sec. 3: 7½ volts, C. T., 2½ amps. 18 lbs. List \$29.50.....NET \$19.28

National Plate Supply Transformers

Supply proper voltage from 110-115 volt, 50-60 cycle AC current, for operating standard rectifying tubes. High tension rubber covered leads provide for safety. Equipped with cord and plug.

Type R—Has 300 volt secondary each side of center tap and 5.5 and 7.5 volt secondaries for filament lighting. List \$12.50.....NET \$7.35

Type 210—Has 600 volt secondary tapped at 300 volts and two 7.5 volt secondaries for filament lighting. List \$16.50.....NET \$9.70

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. For set builders, and for special work where a cased transformer is not necessary. List \$5.00.....NET \$2.94



AmerTran Power Transformers

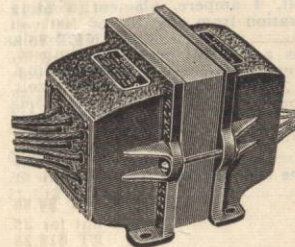
Type PF 52-A—For D. C. output of approximately 450 volts, 100 ma. half wave with UX-281 or 220 volts, 100 ma. full wave, with UX-280. Two center tapped filament winding, 7½ volts each. Weight 10 lbs. List Each \$18.00.....NET \$10.60

Type PF-280—For D. C. output of approximately 220 volts, 120 ma., with UX-280 full wave rectifying tube—Power tube UX-171. Heater windings for A. C. tubes. Weight 25 lbs. List Each \$25.00.....NET \$14.70

Type PF-281—For D. C. output of 425 to 650 volts, 110 ma., with UX-281 half wave rectifying tube—Power tube UX-210. Heater windings for A. C. tubes. Weight 25 lbs. List Each \$25.00.....NET \$14.70

Type PF-250—For D. C. output of 400 to 450 volts, 200 ma., with two UX-281 rectifying tubes, full wave—Power tubes UX-250 single or push pull. Weight 27 lbs. List Each \$30.00.....NET \$17.64

Type H-67 Heater Transformer for A. C. Tubes—Filament supply for UX-226, UX-227, Kellogg A. C. tubes and UX-171. Weight 9 lbs. List Each \$12.00.....NET \$7.06



Silver-Marshall Power Transformers

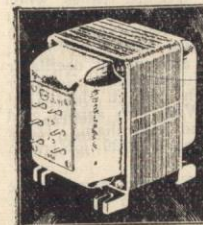
The S-M line of power transformers comprises a transformer for every need. They have long been the standard in popular power supply units, because of the generous design, conservative rating and their low cost.

324 Power Transformer—A large, heavy, full-wave power supply transformer for operation from a 50 to 60 cycle power source of 105 to 120 volts. It is 6½ inches high, 4½ inches wide, and 7 inches long over terminal protection panels (these panels surmount each terminal plate so that it is ordinarily impossible to touch high-voltage soldering conglugs). Conservatively rated at 150 watts for continuous operation. Equipped with two 750-volt, 150-milliamper secondaries, and two separate 7.5 volts, 2.5 ampere filament windings, for operation of 210, 250 and 281 type tubes. It is mounted similarly to S-M 328. Shipping weight, 18 lbs.....NET \$14.70

324BU Power Transformer—Same as 324, but unmounted, with one added 2.25v., 1.75 a.; and one 1.5v., 2 a. secondaries.....NET \$14.70

32425BU Power Transformer—Same as 324BU, but with windings designed especially for 25 cycles.....NET \$18.37

326 Reducing Transformer—An autotransformer, for adapting to operate from 220, 230, 240, or 250-volt, 50 to 60 alternating current, any radio or other electrical device designed to operate on 105 to 120 volt, 50 to 60 cycle alternating current. Its capacity of 150 watts for continuous operation is great enough to adequately handle any popular six, seven, or eight tube AC



receiver, A and B power units, and all standard power amplifiers. May also be used where power line voltage runs about 125 or 130 volts, to reduce voltage to operate 110 volt devices. Fully mounted; size 5" long over mounting lugs, 3 3/8" wide, and 4 3/8" high. Shipping weight, 7 lbs., 8 oz. NET \$8.82

327 Power Transformer—For full 281 half-wave or 280 full-wave rectifiers. Has 2-250 volt; 2-7 1/2 volt, 2 amp.; one 1 1/2 volt, 1 amp.; and 1-2 1/4 volt, 3.5 amp. secondaries. Shipping weight 8 1/2 lbs. NET \$8.82

327U Power Transformer—Same as 327, above, except unmounted for manufacturers' use. Shipping weight, 7 lbs. NET \$8.82

328 Power Transformer—For full wave 281 rectifiers. Has 2-550 volt, 125 M.A.; 2-7 1/2 volt, 2 1/2 amp. secondaries. Ample ABC current for 210 or 250 tubes and receiver. Shipping weight 7 1/2 lbs. List \$20.00. NET \$11.76

328SU Power Transformer—1100 v. 250 m.a. secondary (mid-tapped 550 v. a side), two 7.5 v., 2.5 a. secondaries, and one each 2.25 v. 175 a. and 1.5 v., 2 a. Rating, 150 watts. NET \$14.70

3285BU Power Transformer—Same as 328SU but for 25 cycles. NET \$18.37

329BU Power Transformer—Has two 220-volt secondaries, one 5-volt, 2 ampere center-tapped winding, one 5-volt, 1/2-ampere winding, one 2 1/2-volt, 3 1/2 ampere, and one 1 1/2-volt, 5 ampere winding. Shipping weight, 5 lbs. NET \$5.88

247 Filament Transformer—Contains the following windings: one 105-120 volt 50 to 60 cycle primary; one 1 1/2 volt, 5 ampere secondary; one 2 1/4 volt, 3 1/2 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

334U Power Transformer—Made especially for A.C. operated dynamic speakers. When used with an UX280 tube and a 2 Mfd. condenser, 120 volts of D.C. are available for field current in any standard 90-120 volt D.C. type dynamic speaker. Contains a 5 volt 2 ampere rectifier filament winding, one 300 volt center-tapped high voltage winding, and one primary winding for connecting to any 105-120 volt, 50-60 cycle A.C. Housed in 227 type case. Shipping weight 2 pounds. NET \$4.12

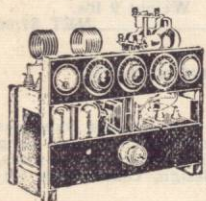
336U Power Transformer—Similar to 335U, but for use with sets of fewer tubes. Equipped with two 260-volt 65 M.A. secondaries, one 5-volt, 2 ampere center-tapped rectifier filament winding, one 2.25-volt, 3 ampere, one 2.25-volt, 7.5 ampere, and one 1.5-volt, 4 ampere, filament winding. Same size and weight as 329BU. For operation from any 105 to 120 volt, 50 to 60 cycle A.C. NET \$5.88

337U Power Transformer—S-M 337U has a 115-volt primary tapped for 75 volts, and a 750 volt, mid-tapped, 100 m.a. secondary, also one 5-volt, 2 ampere; one 2.5-volt, 9 ampere; and one 2.5-volt, 3.5 ampere secondaries. The 75-volt tap permits operation with primary voltage regulator. The transformer will supply 100 m.a. at 400 volts into suitable filter circuit or enough for a receiver and speaker field. Weight, 9 lbs., 4 1/2" long. NET \$9.80

33725U Power Transformer—33725U is the same as S-M 337U but for 25 cycles. NET \$12.25

Transmitters

Aero High-Power Xmitter and 150-Watt Amplifier FOR OPERATION ON 10-20-40-80-100M. BANDS



The first high-power amplifier to use the UX-860 screen grid tubes. 1929 in every detail. 150 watts of pure D. C. signals with a stability which has caused favorable remarks everywhere. Flexibility that fills every ham need.

You can use either two UX-852 tubes when using this new Aero Kit No. 52 as a single unit for a transmitter; or two UX-860 (screen grid) tubes, employed when using with Aero Kit No. 55; or as a 150-watt amplifier in any master oscillator combination. For those desiring a master oscillator system, this unit works with a high degree of efficiency as an amplifier. With two screen grid tubes in this arrangement, it requires no neutralizing. Hook this unit on your present oscillator, converting it into a 1929 job, with ample power for ham use.

UX-860 power tubes in this arrangement, it requires no neutralizing. Hook this unit on your present oscillator, converting it into a 1929 job, with ample power for ham use.

Power supply delivers 2000 volts at 250 M. A. Employs two of the R. C. A.'s newest rectifiers, UX-866. Due to the construction of the UX-866, unusually high voltage may be applied safely to them.

Kit No. 52—Including the power supply (less tubes) NET \$253.82
Kit No. 53—Same as No. 52, but less power supply and tubes NET \$111.72

Aero No. 57 Radiophone Transmitter

The Aero Radiophone and code transmitter No. 57 has an output of 15 to 30 watts. 100% modulation for speech. Employs one 210 type tube oscillator and two 210 type modulators. Two 227 type tubes are used as speech amplifiers. This transmitter is furnished complete with power supply and filter. Weston meters are used throughout. Solid walnut frame, engraved bakelite panels. Uses the reliable tuned plate tuned grid circuit. Operation can be had from 15 to 180 meters, on either code or voice. Supplied in kit form. List price \$215.00. NET \$158.02

Tubes

TUBES FOR TRANSMITTING

6EX Rebuilt 203A's (50 watt)

A fine job, 6EX says you can get more output from them than from an 852 NET \$25.00

Radiotron UX-852

The UX852 has been designed for use in transmitting circuits on 5, 20, and 40 meters. The filament arm of the tube is provided with a standard UX base. The tube must be so mounted that the filament is in a vertical position.

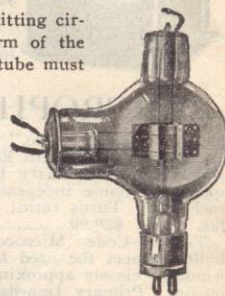
Fil. volts, 10; Plate volts (normal), 2000.

Fil. amps., 3.25; Plate m. a., 75.

Fil. watts, 32.50; Safe power dissipation, 100 watts.

Normal output, 75 watts.

Price NET \$31.85



Radiotron UX-865

A 7.5 watt screen-grid R. F. power amplifier or oscillator in transmitter circuits operating at the higher frequencies. Radiotron UX-865 will prove its effectiveness as a radio frequency power amplifier. Its screen-grid eliminates the necessity for neutralization to prevent feedback and oscillation. Then too, in these days of "staying put" on a definite transmitting frequency, Radiotron UX-865 lends itself admirably for use by the amateur as a crystal-controlled oscillator.

Filament	Volts	7.5	AT	Plate Volts	500
	Amperes	2.0		Grid Volts	0
Max. Plate Volts.		500		Screen Volts	125
Max. Plate Dissipation (watts)		15		Filament Volts-RMS	7.5
Max. Screen Dissipation (watts)		3		Plate Current (ma.)	21
Power Output (watts)		7.5		Plate Resistance (ohms)	200000
Average Characteristic Values				Mutual Conductance (ma.v.)	0.75
				Amplification Factor	150
Each					NET \$22.00

National Type R-3 Rectobulb

A Mercury Vapor Rectifier which will replace the standard rectifier tubes.

The Rectobulb has an overall height of 7 1/4 inches from the bottom of the base to the top of the terminal on Anode. The diameter of the bulb is 3 inches maximum at the center. The base is a regular UX Base and the cap is Bakelite and of regular base dimensions.

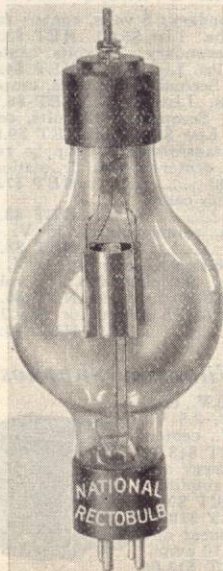
Normal Rating 250 mls
Normal Voltage 3000 volts
Filament volts10
Filament amps.1.7

Oxide coated Cathode of large size furnishes ample emission and long life.

Cy Barker at W9EGU reports "nothing short of marvelous" on Discarding his Mercury Arc and installing Rectobulbs.

EachNET \$10.00
(Parcel Post charges prepaid for cash with order)

We have sold over 500 of these to laboratories, amateurs and manufacturers and their comments have been more than favorable.



RECEIVING AND AMPLIFYING TUBES

Arcturus Tubes

Arcturus Blue Tubes have a most remarkable and exclusive record—a world's record for long life—selected by the Byrd South Pole expedition—in service throughout the world—recommended by critical set manufacturers for best performance in their receivers—and the many features of which these are prominent:

- Reception in 7 seconds.
- Banishes hum—clearer reception.
- Immune to line surge—more volume.
- Uniform efficiency at all times.
- There is an Arcturus A-C tube for every purpose and socket.

STANDARD TYPES

145—2.5 volt Power Amplifier. List \$3.50.....	NET \$2.06
124—2.5 volt A. C. Shield Grid. List \$4.00.....	NET 2.35
127—A. C. Detector and Amplifier. List \$2.50.....	NET 1.47
180—Filament type full wave rectifier. List \$3.00.....	NET 1.76
071—Filament type Power Amplifier. List \$2.25.....	NET 1.32
126—Filament type A. C. Amplifier. List \$1.75.....	NET 1.03

15 VOLT TYPES

26 Detector. List \$4.00	NET \$2.35
48 Amplifier. List \$3.00	NET 1.76
40 Power Amplifier. List \$3.00	NET 1.76
32 High Mu. List \$3.00.....	NET 1.76
22 Shield Grid. List \$7.50	NET 4.41

DeForest Audions

The name DeForest in connection with radio denotes an experience dating back to the earliest days of radio, and we have found that DeForest Audions have merits which are the result of this long experience.

The vacuum to which DeForest Audions are evacuated is several times more rare than competing tubes, and our experience has shown them to be remarkably long lived. The price of the Type 401-A is considerably more than other tubes of the same characteristics, but this tube is basically different. It has an oxide coated filament, the DeForest high vacuum and a remarkably long life.

	List	NET
401-A—Detector and Amplifier.....	\$2.00	\$1.17
410 —Power Amplifier	9.00	5.29
412-A—Detector and Power Amplifier	2.25	1.32
424 —A. C. Shield Grid	4.00	2.35
426 —A. C. Amplifier	1.75	1.03
427 —A. C. Detector and Amplifier	2.50	1.47
445 —A. C. Power Amplifier	3.50	2.05
450 —Power Amplifier	11.00	6.47
471-A—½ amp. Power Amplifier	2.25	1.32
471-B—¼ amp. Power Amplifier	2.25	1.32
480 —Full Wave Rectifier	3.00	1.76
481 —Half Wave Rectifier.....	7.25	4.26

RCA Radiotrons

Type	Purpose	List	NET
WD 11	Detector and Amplifier	\$3.00	\$1.76
WX 12	Detector and Amplifier	3.00	1.76
UX 112A	Detector and Power Amplifier	2.25	1.32
UX 120	Power Amplifier	2.50	1.47
UX 171A	Power Amplifier	2.25	1.32
UV 199	Detector and Amplifier	2.75	1.62
UX 199	Detector and Amplifier	2.50	1.47
UX 200A	Gas-filled Detector	4.00	2.35
UX 201A	Detector and Amplifier	1.25	.73
UX 210	Power Amplifier	9.00	5.29
UX 222	D. C. Screen Grid	4.50	2.65
UY 224	A. C. Screen Grid	4.00	2.35
UX 226	A. C. Amplifier	1.75	1.03
UY 227	A. C. Detector and Amplifier	2.50	1.47
UX 240	Hi Mu Amplifier	3.00	1.76
UX 245	Power Amplifier	3.50	2.06
UX 250	Power Amplifier	11.00	6.47
UX 280	Full Wave Rectifier	3.00	1.76
UX 281	Half Wave Rectifier	7.25	4.26
UX 874	Voltage Regulator	4.75	3.03
UV 876	Ballast Tube	6.50	4.15
UV 877	Protective Tube	1.75	1.03



Raytheon Gaseous Rectifiers

The Raytheon BH Tube (built on the famous Raytheon "Ionized Helium" Principle) which made possible a really efficient "B" Power Eliminator—is still the most rugged and long-lived rectifying tube on the market. And for sustained voltage it has no equal.

Guarantee—Every Raytheon tube has been carefully made of the finest materials thoroughly tested and aged under full rated load at our factory. Raytheon warrants each tube to be free from defects in material and workmanship under normal use and service. Adjustment claim forms must be properly filled out and accompany each tube in order to have claim accepted.

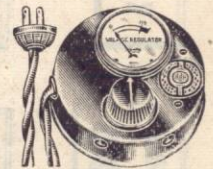
Type BH—Maximum A. C. anode voltage 350 volts. Maximum D. C. current output 125 mils. List \$4.50 NET \$2.65

Type BA—As Type BH, but maximum D. C. current output 350 mils. List \$7.50 NET \$4.41

Voltage Regulators

Readrite Line Voltage Regulator

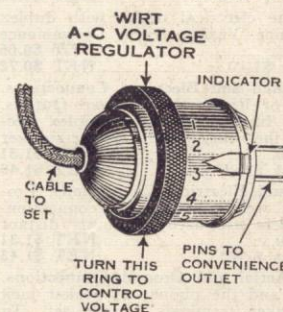
No. 218—Base is 4½" dia. equipped with A. C. Voltmeter having red margin from 110 to full scale and a black line maximum voltage division marked 115. The power rheostat gives a working range between 130 and 100 volts. Complete with five-foot cord, plug and tap for connecting to receiver. Attractively 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. List \$6.50.....NET \$3.82



X-Link

Every dealer interested in the satisfaction of his customer will recommend the X-L Link for the most efficient A. C. set operation. It regulates line voltage—absolute protection against excessive voltage application to tube filaments. Supplies antenna and ground from your shielded light wires—obtained from two terminals on unit. Double socket outlet for set and dynamic speaker or A and B eliminators, if used—complete fusing protects instruments and tubes from burning out and eliminates fire hazard-control switch for sets using power units or 110 volt A. C. dynamic speaker. The X-L Link affords an unusually neat and attractive unit with buffed silver finish and brown bakelite trim, built to the usual high standards of X-L products. List \$7.75 NET \$4.56

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. 211—To be used with sets drawing not more than 65 watts. List \$2.25 NET \$1.32

No. 211B—To be used with sets consuming in excess of 65 watts, sets using seven or more tubes, and sets that are equipped with dynamic speaker. List \$3.25 NET \$1.91

Falck Claroceptor

Blocks Out Lighting Wire Noises from A.C. Radio Sets. A Falck Claroceptor plugged in between the wall socket and radio, blocks out of the set the radio frequency disturbances and electrical interference noises that pour in over the lighting wires. Lowering the noise level permits the signals of distant stations to be heard and tuned in. Tuning is refined and selectivity is improved. List \$7.50 NET \$4.41

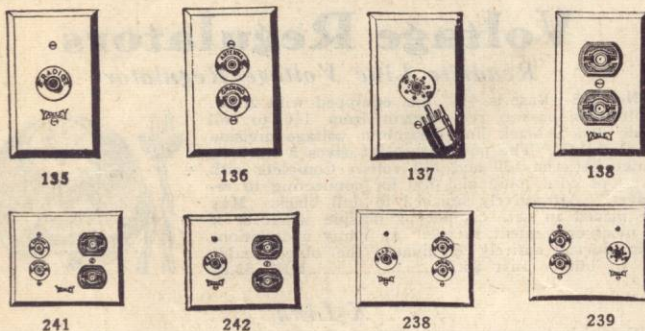


Wall Outlets

YAXLEY Convenience Outlets

Every woman knows the convenience of the handy electrical convenience outlets for plugging in lamps, irons and all manner of electrical appliances. Every man, time and time again, has enjoyed the comfort these outlets bring to him and his home. The Radio Convenience Outlets give you, in their way, as much or more pleasure and satisfaction and actual comfort both in mind and body as the electrical outlets. Enjoy your radio upstairs or down, in the living room, or the porch, anywhere or everywhere in the house, when and as you want it.

The Yaxley line of Radio Convenience Outlets was designed by electrical and radio engineers. First consideration was given to securing proper radio connections and in this respect, Yaxley outlets are unique. The different plates are also distinguished by these most desirable features: Fit any standard switch box. Solder and screw terminals for easy wiring. Socket or Jack mounts on switch box independently of plate which serves as a cover only.



- 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 \$0.66
- No. 135B—With a rich Bakelite Plate. List \$1.10.....NET \$0.72
- No. 136—For Aerial and Ground Connections. In Brushed Brass. List \$1.00.....NET \$0.66
- No. 136B—With a rich Bakelite Plate. List \$1.10.....NET \$0.72
- 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 \$1.64
- No. 137B—With a rich Bakelite Plate. List \$2.60.....NET \$1.70
- 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 \$0.66
- No. 138B—With a rich Bakelite Plate. List \$1.10.....NET \$0.72
- 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 \$1.31
- No. 241B—With a rich Bakelite Plate. List \$2.20.....NET \$1.43
- 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 \$1.31
- No. 242B—With a rich Bakelite Plate. List \$2.20.....NET \$1.43
- No. 238—Combination for Speaker and Aerial and Ground Connections. Provides for aerial and ground connections, and the phone or speaker jack is used to make connections with the speaker terminals on the set. In Brushed Brass. List \$2.00.....NET \$1.31
- No. 238B—With a rich Bakelite Plate. List \$2.20.....NET \$1.43
- No. 239—Combination for Aerial and Ground and Battery Connections. A very handy outlet for the Battery operated set. Provides aerial and ground as well as battery connections. Furnished complete with necessary plugs. In Brushed Brass. List \$2.50.....NET \$1.64
- No. 239B—With a rich Bakelite Plate. List \$2.70.....NET \$1.76
- No. 142—For Loud Speaker Connections. The same as the No. 135 excepting that it has two speaker jacks on a single plate to be used on a two channel system. In Brushed Brass. List \$1.75.....NET \$1.15
- No. 142B—With a rich Bakelite Plate. List \$1.85.....NET \$1.21
- No. 134—For Several Loud Speaker Connections. Equipped with impedance coil wound to 2,200 ohms, which is equivalent to the resistance of the average loud speaker unit or head set. An equal volume is possible when using one or many speakers or head sets in the same circuit at the same time. In Brushed Brass. List \$2.50.....NET \$1.64
- No. 134B—With a rich Bakelite Plate. List \$2.60.....NET \$1.70



No. 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 \$1.96

Frost Wall Outlets



No. 901



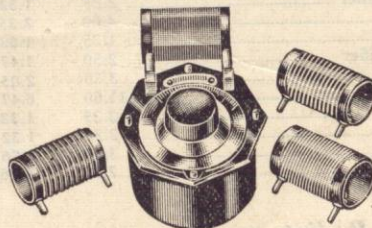
No. 903

- No. 901 & 902—Frost Convenience Outlets are fitted with two Cord Tip Jacks mounted in the flush plate for Antenna-Ground connections or Loud Speaker terminals. The Frost Cord Tip Jacks readily accept all conventional tips and retain them until released. Tips cannot be pulled out; a real convenience feature. Flush plate is furnished in a choice of moulded bakelite or solid brass in rich brushed brass finish and fits all standard outlet boxes.
- No. 901—Brown Bakelite Plate. List \$1.25.....NET \$0.73
- No. 902—Brushed Brass. List \$1.00.....NET \$0.59
- The 903 & 904 Frost Radio Convenience Outlets carry Jack for Loud Speaker plug, and No. 2895, 500,000 Ohm Frost Gem Variable High Resistance unit to control speaker volume. Brass or bakelite flush plate fits all standard wall outlet boxes.
- No. 903—Brown Bakelite Plate. List \$3.25.....NET \$1.91
- No. 904—Brushed Brass. List \$3.00.....NET \$1.76

Wavemeters

Aero Wavemeters

100 Divisions—Readable to 1-10th of a Division



The Aero Wavemeter was designed for the radio amateur and the experimenter. It is of rugged mechanical and good electrical construction and meets the exacting requirements of the properly conducted amateur station.

Using the principle of the "series gap" condensers, and having a definite fixed minimum capacity, the amateur wavelength bands are spread over a great many dial divisions. The velvet vernier dial has 100 divisions, each of

which may be read to one-tenth of a division. The 5-meter band covers 40 dial divisions; the 10-meter, 40 divisions; 20-meter, 17 divisions and the 40-meter band, 25 divisions. For the 80-meter band, two coils are used. One (72 to 82 meters) covers 45 divisions, and the other (80 to 90 meters) covers 65 divisions. Each coil excepting the 5-meter, uses No. 18 enameled wire tightly wound into grooves of the bakelite tubing. The tubing has a 1/4 in. wall and is 2 in. in diameter. The Aero heavy duty plugs and jacks make positive contact. The heavy brass case has a black crackle finish. The 3/16" black bakelite top is hexagonal shape to prevent rolling. Each wavemeter is individually hand calibrated. Standard coils shown are 20, 40 and 80 meters, included in price. 5- and 10-meter coils extra. List \$24.00.....NET \$14.11

HAMS-A Real Wavemeter for You!

The Aero Wavemeter described above is a precision instrument. We have sold quite a number and the comments have been exceedingly favorable. In addition we have used them in connection with our own xmitters and have found them excellent. They are accurate—stay accurate, the contacts are good, and they meet the requirements of the well constructed Ham station.

Wire, Cables and Extension Cords



Belden Aerial Wire

Individual Belden wires stranded together keep the surface of the copper clean, affording minimum resistance to the radio frequency currents which travel on the surface. It also prevents corrosion.

No. 8820—75 ft. 7x22 Beldenamel. Each in carton. List \$1.25†. NET \$0.73
 Each in carton. List \$0.95†. NET \$0.57
 No. 8821—100 ft. 7x22 Beldenamel. Each in carton. List \$1.25†. NET \$0.73
 No. 8822—150 ft. 7x22 Beldenamel. Each in carton. List \$1.85†. NET \$1.08
 No. 8823—1000 ft. 7x22 Beldenamel. Each on spool. List \$12.50†. NET \$7.35

No. 8828—100 ft. 12 Beldenamel Solid. Each in carton. NET \$0.91
 List \$1.55†
 No. 8829—100 ft. 14 Beldenamel Solid. Each in carton. NET \$0.62
 List \$1.05†

Belden Bare and Tinned Copper Aerial Wire

No. 1830—75 ft. coil 7x22 Bare Copper. List per coil \$0.65†. NET \$0.39
 No. 1831—100-ft. coil 7x22 Bare Copper. List per coil \$0.85†. NET \$0.50
 No. 1832—1000-ft. 7x22 Bare Copper. List per spool \$8.50†. NET \$5.00
 No. 1835—100 ft. coil 7x22 Tinned Copper. List per coil \$0.95†. NET \$0.57
 No. 1836—1000-ft. 7x22 Tinned Copper. List per spool \$9.50†. NET \$5.59

†Prices subject to change with copper market.

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. NET \$5.88
 List \$10.00

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 \$1.10. NET \$0.65
 No. 8851—250-ft. No. 14 (7x22). List per spool \$5.50. NET \$3.23
 No. 8852—50-ft. No. 16 Seven Strand. List per carton \$0.70. NET \$0.41
 No. 8853—250-ft. No. 16 Seven Strand. List per spool \$3.40. NET \$2.04

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. NET \$0.05
 No. 8857—7 Conductors. List per foot \$0.10. NET \$0.06
 No. 8859—9 Conductors. List per foot \$0.13. NET \$0.08
 No. 8865—54-inch, 5-conductor Cord in carton. NET \$0.24
 List per cord \$0.40
 No. 8867—54-inch, 7-conductor Cord in carton. NET \$0.32
 List per cord \$0.55
 No. 8869—54-inch, 9-conductor Cord in carton. NET \$0.47
 List per cord \$0.80

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. List per carton \$0.35. NET \$0.21

No. 8881—1000-ft. Colorubber, same as No. 8880 (natural brown, red). Any color. List per spool \$11.40. NET \$6.70

No. 8882—25-ft. No. 20 Solid Tinned Copper Wire with braided Easy-slip-back insulation, furnished in green, blue, red, yellow or black. Any color. List per carton \$0.30. NET \$0.18

No. 8885—100-ft. Belden Shielded Colorubber Hookup Wire with shielding of tinned copper braid for use with screen grid tubes. NET \$1.76
 List per carton \$3.00

Acme Solid Celatsite Hook-Up Wire

"It's Easy to Solder Celatsite."

A superior radio bus-bar made of No. 14 solid tinned copper wire with Celatsite non-inflammable insulation. Ten bright colors. Can be bent and rebent without cracking. Moisture-proof and has a high insulation value. Strips easily for soldering. Unequalled for wiring radio receiving and transmitting sets and battery eliminators.

Specifications and List Prices

Size: No. 14.

Colors: Black, Red, Yellow, Green, Maroon, Brown, Slate, Blue, White, Salmon.

Length: 30" lengths.

List Price \$0.10 per length. NET \$0.06



Acme Flexible Celatsite Hook-Up Wire

"It's Easy to Solder Celatsite, No Rubber to Corrode Wire."

For sub-panel wiring of radio sets where flexibility is desirable we offer Flexible Celatsite, made of fine strands of tinned copper twisted together and covered with non-inflammable Celatsite compound. Will not crack. Will stand high voltage. Ten bright colors. Convenient 25-foot coils in individual correspondingly colored boxes.

Sizes:

No. 18—16/30. List \$0.80 per 25-ft. Coil Box. NET \$0.47

No. 14—41/30. List \$1.00 per 25-ft. Coil Box. NET \$0.59

Colors: Black, Yellow, Red, Green, Brown, Slate, Blue, White, Maroon, Salmon.

Acme Twisted A.C. Celatsite Hook-Up Wire

For A.C. Filament Hook-up. Flexible Celatsite put up in convenient form for this new application. One strand of Red and one strand of Black 16/30 Flexible Celatsite twisted together. The two colors are used so that, if desired, the same sides of all filaments can be maintained at the same relative potential. Packed 25-ft. coil in individual carton.

List Price per 25-ft. carton \$1.75. NET \$1.03

Acme Celatsite Battery and Power-Supply Cables

(5-Foot Lengths)

An attractive and thoroughly insulated cable for connecting A and B current supply to the Receiving Set. No chance for wrong connections and "blown" tubes. Five, six, seven, eight or nine different colored flexible Celatsite wires enclosed in a brown Rayon silk braid. Satisfies the buyer who wants the best. Supplied with or without terminals. Packed one cable

in a box. Cable length—5 feet. List Price

R-55 5 Conductors—List \$0.90. NET \$0.53

R-56 6 Conductors—List \$1.10. NET \$0.65

R-57 7 Conductors—List \$1.25. NET \$0.73

R-58 8 Conductors—List \$1.40. NET \$0.82

R-59 9 Conductors—List \$1.55. NET \$0.91

Extra charge for terminals—two cents per cable.

Acme "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. NET \$0.18

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. NET \$0.47

No. 8862—20-ft. Cord with connector. List per cord \$1.00. NET \$0.59

No. 8863—40-ft. Cord with connector. List per cord \$1.80. NET \$1.06

No. 8866—20-ft. 4-Conductor Cord. List per carton \$1.75. NET \$1.03

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. NET \$0.21

No. 8871—Spade tips on one end; otherwise same as No. 8870. Per cord \$0.35. NET \$0.21

No. 8872—5-ft. Head Set Cord, conductors best copper tinsel pin terminals on both ends, in carton. Per cord \$0.60. NET \$0.35

No. 8873—Has spade terminals on phone end; otherwise same as No. 8872. Per cord \$0.60. NET \$0.35

No. 8860 Belden Speaker Extension Floor Cord

A 12-ft. flat rubber insulated 2-conductor cord with a bakelite connector at one end, and a 5-ft. flexible brown cotton covered cord equipped with pin terminals at the other. Total length 17 feet. The 12-ft. Belden under Rug connector permits the speaker to be used on the opposite side of the room from the receiver. List per cord \$2.75.....NET \$1.62

The Belden Portable Outlet

Has bakelite outlets at each end of the flat under-the-rug connector. A four-foot connecting cord, equipped with the Belden Soft Rubber Plug, is provided at one end for plugging into nearest wall outlet. The under-the-rug connector permits installation of a radio set on the opposite side of the room from outlet. Is easily installed without tools, easily moved, and brings the outlet where it is needed. Furnished one cord in a carton.



- No. 1715—Two outlets with 15'4" Under-Rug Connector. List each \$3.00.....NET \$1.76
- No. 1712—Two outlets with 12'4" Under-Rug connector. List each \$2.75.....NET \$1.62
- No. 1709—Two outlets with 9'4" Under-Rug Connector. List each \$2.50.....NET \$1.47
- No. 1706—Two outlets with 6'4" Under-Rug Connector. List each \$2.25.....NET \$1.32

Miscellaneous Wire

- Tinned Copper Wire in coils:
 - No. 14 Solid Round, 100 ft., List \$1.00.....NET \$0.58
 - No. 12 Solid Round, 100 ft., List \$1.25.....NET \$0.73
 - No. 10 Solid Round, 100 ft., List \$1.50.....NET \$0.88
- Tinned Copper Wire in lengths (2 ft.):
 - No. 14 Solid Round, per length.....NET \$0.01½
 - No. 12 Solid Round, per length.....NET \$0.02
- Copper Braid:
 - Bare Pigtail, No. 24, per ft.....NET \$0.006
 - Bare, ¼", per ft.....NET \$0.05
- Edgewise Wound Ribbon:
 - 9½" Diameter, per turn.....NET \$0.20
 - 5¼" Diameter, per turn.....NET \$0.15

Belden Litz Wire

No. 8887—100-ft. spool of 20x38 Stranded Beldenamel with two servings of green silk. List per spool \$1.00.....NET \$0.59

Belden Magnet Wire

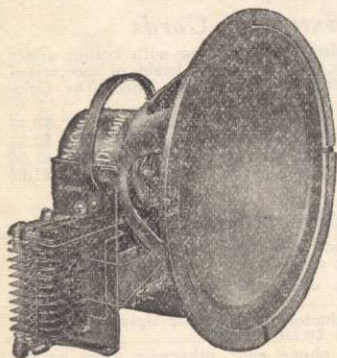
NET PRICES PER SPOOL:

B&B Gauge	Half-pound Spools		Quarter-pound Spools	
	Double Cotton White	Double Silk Green	Double Cotton White	Double-Silk Green
18	\$0.35	\$0.59	\$0.18	\$0.29
20	.38	.65	.21	.32
22	.41	.70	.24	.38
24	.44	.82	.27	.44
26	.53	.94	.29	.50
28	.59	1.06	.32	.59
30	..	..	.41	..

Magnavox X-Core Dynamic Speakers

"X-CORE," The Magnavox trade name means more than a new and exclusive type of construction, for it carries the assurance that the many other Magnavox advantages are present in the speaker you buy. A Magnavox Dynamic Speaker releases all the capabilities of your receiver. You actually "get all the set can give." There is a new dimension to radio reception with Magnavox—Depth of Tone. It is the separation of tones (with their corollary overtones and harmonics) that produces rich, pleasing, soft, voices or music that one exclaims is . . . natural! Separation of instruments in an orchestra is as necessary to good radio reception as light and shadows to a good picture. Magnavox is "stereoscopic" in its delivery of tone value—Magnavox has depth and definition.

The Aristocrat—Graceful buttburl Walnut Cabinet, finished in brushed two-tone effect. 16 inches wide, 36 inches high, 11½ inches deep. Similar to Carillon, but with different grill and legs so that it will stand on floor.



THE CARILLON



THE STRATFORD

The Carillon—A strikingly different Italian finished Walnut Cabinet, richly carved and handsome. 14¾ inches wide, 14½ inches high, 10½ inches deep.



THE CAMPANILE

The Campanile—A handsome, massive, richly carved Italian Cabinet of fine Walnut. Skillful workmanship, masterly designing. A fine, rare bit of furniture for any home. 27¼ inches wide, 32 inches high, 14 inches deep.

The Stratford—A splendid Walnut Console of exquisite detail. Panels are of lacewood. Accommodates any table radio set. 25¾ inches wide, 29¼ inches high, 14⅝ inches deep.

PRICES—Cabinets Only

	List	Net
The Carillon Cabinet.....	\$17.50	\$10.29
The Aristocrat Cabinet.....	20.00	11.76
The Stratford Cabinet.....	30.00	17.64
The Campanile Cabinet.....	40.00	23.52

A.C. Units equipped with Dry Type Rectifier and plug directly into lighting socket.

PRICES—Dynamic Units Only

No.	Cone Dia.	Type	List	Net
106	7¾	110-190 V. D.C.....	\$21.00	\$12.35
107	10½	110-190 V. D.C.....	23.00	13.52
108	7¾	180-300 V. D.C.....	21.00	12.35
109	10½	180-300 V. D.C.....	23.00	13.52
200	7¾	6-12 V. D.C.....	22.00	12.94
201	10½	6-12 V. D.C.....	24.00	14.11
400	7¾	105-120 V. A.C., 60 Cycle....	31.00	18.23
401	10½	105-120 V. A.C., 60 Cycle....	33.00	19.40
402	7¾	105-120 V. A.C., 25 Cycle....	32.00	18.82
403	10½	105-120 V. A.C., 25 Cycle....	34.00	19.99

COMBINE UNIT AND CABINET PRICES FOR COMPLETE SPEAKER

MARVIN MASTER BUILT RADIO TUBES

MARVIN engineers have introduced exceptional testing methods to insure MARVIN customers of uniformly good tubes. These methods start with the usual factory production tests for filament, grid, and plate characteristics, and are followed by the test for residual gas and leakage. After these tests, which are applied to every tube produced, an additional test is applied to every one-hundredth tube manufactured. This test, which is an actual performance test, serves to keep an absolute check on production and makes it possible for each MARVIN tube to go out 100% guaranteed.

MARVIN engineers are making radio tubes that serve better and live longer. The Master-Builder illustrated at the right symbolizes the many famous radio tube engineers who are responsible for MARVIN quality. These scientists have made contribution after contribution to the advancement of the radio art and their latest achievements are the new MARVIN MY-227 and MARVIN MY-224 tubes.



The Master Builder

The MARVIN MY-224, on account of its ingenious construction, will not "short" even if dropped. Outer and inner shield-grids are doubly supported to prevent displacement or breakage and it maintains uniform electrical characteristics. Complete information upon request.

Type	Use	List Price	Net Price
MX112-A	Amplifier and Detector.....	\$ 2.25	\$1.32
MX112	Amplifier and Detector.....	2.50	1.47
MX171-A	Amplifier and Detector.....	2.25	1.32
MX171	Amplifier and Detector.....	2.50	1.47
MX199	Amplifier and Detector.....	2.50	1.47
MV199	Amplifier and Detector.....	2.75	1.62
MS 199	Amplifier and Detector to fit any standard UX or UV socket.....	2.75	1.62
MX200-A	Special Detector	4.00	2.35
MX201-A	Amplifier and Detector.....	1.25	.73
MX210	Power Amplifier	9.00	5.29
MX222	D.C. Shield Grid Amplifier.....	4.50	2.65
MY224	A.C. Shield Grid Amplifier.....	4.00	2.35
MX226	A.C. Amplifier	1.75	1.03
MY227	A.C. Amplifier and Detector.....	2.50	1.47
MX240	HiMu Amplifier	3.00	1.76
MX245	A.C. Power Amplifier.....	3.50	2.06
MX250	Power Amplifier	11.00	6.47
MX280	Full Wave Rectifier.....	3.00	1.76
MX281	Half Wave Rectifier.....	7.25	4.26

Strictly a product of MARVIN'S own laboratories the Master-Built MY-227 tube creates a new world's record for quick starting time by heating up in five seconds flat. This tube is invaluable for demonstration purposes and easier and more profitable to sell. Complete information upon request.

The Latest from Aero Products

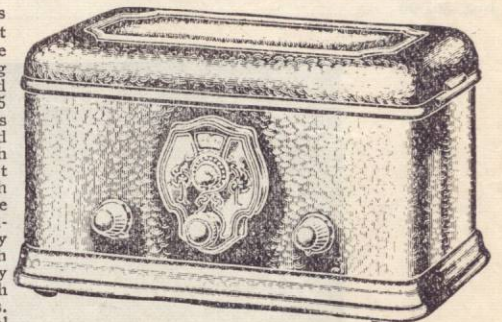
The Aero High Peak (Tuned Audio Choke)

In these days of modern amateur radio and heavy QRM, you need more than amplification alone—you need selectivity more than ever before. The Aero Hi-Peak is a properly designed audio choke, tuned to a frequency which gives greatest signal response with the average head-phones. The Aero Hi-Peak is used as the second audio stage of amplification, connected in the plate lead of the screened-grid type (—22) tube. The first audio stage of amplification may be any good audio transformer, but for a Hi-Peak, a high grade audio transformer is recommended for best results.

Ordinarily, amateur short-wave receivers have been sensitive enough to satisfy the user, but they have been lacking in selectivity—that extreme selectivity so desirable for successful operation. Hundreds and hundreds of amateur radio stations are operating within the very narrow limits of the amateur bands, and there is bound to be some QRM. The Aero Hi-Peak makes it a real pleasure to operate your station without the usual "SORRI OM QRM VY BAD ON UR WV." Mounted in heavy bakelite case, 2½ inches high and 2¾ inches across mounting supports. Shipping weight about one pound. NET \$6.37

The Aero Overseas Four A.C. Short Wave Receiver

The Aero Overseas Four is a factory built short and long wave A.C. Receiver, using the new AC Screened Grid Tube. Range 15 to 550 meters. This receiver was designed for those who wish the best in the short wave receiver, with the added advantage of use on the broadcast band. Extremely easy to operate, with remarkable sensitivity and volume on both short and long waves. Built into a metal cabinet with a golden brown finish. Complete with power pack, but less tubes. NET \$122.50
Special D.C. Model. NET 58.80



Special Webster Pick-up For New Victor Radio R-32

Applied to Victor Radio R-32, these special Webster Pick-up models produce a quality of music that is remarkable for its extreme beauty and clarity. Every special requirement of this new Victor Radio has been completely met by the Webster Engineers. They have incorporated in its construction these distinctive features: The famous Webster low-inertia stylus bearing, with all-metal pivoting action, eliminates bulky construction. . . . Small, perfectly balanced, light-weighted head. No counterbalancing or springs necessary. . . . Highest grade Cobalt magnet of greatest possible density. . . . Shock-absorbing arm-bearing with pivot at base. . . . Unique method of turning head with arm. . . . Weighted base. . . . Cord completely concealed—all bearings free from play and chatter. . . . Built to work into a 200 ohm impedance.

Model 2-A-5. Includes pick-up head, supporting arm and built-in volume control. Attractive light French grey finish. List, \$19.50. NET \$11.46

Model 2-B-7. Includes pick-up head, separate volume control, and necessary adapters. Attractive light French grey finish. List \$15.00. NET \$ 8.82

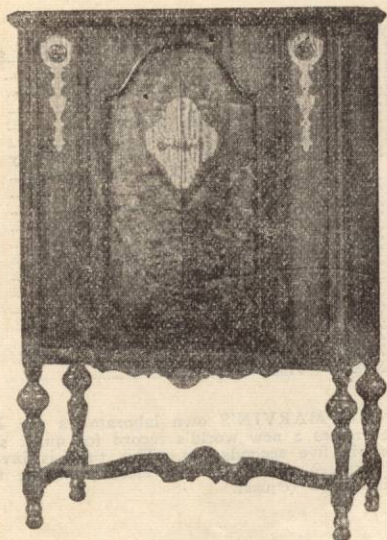
HAMS—The Latest!

3000 Volt Tobe Filter Condensers

Type	Capacity	List Price	NET
3310	1 mfd.	\$15.00	\$ 8.82
3320	2 mfd.	27.00	15.88

These condensers carry the regular Tobe guarantee of one year provided they are not operated at voltages in excess of 3000 volts.

CONSOLE CABINETS OF DISTINCTION



113

Model 113—A popular and convenient type of cabinet for radio, arranged for speaker installation below. Half-doors and front are of carefully selected and matched Walnut and Butt Walnut plywood with overlays of Maple. Set compartment 25" wide, 9" high and 12" deep. Clearance between doors, 16". Speaker compartment, 25" high. Overall height, 45".
List \$65.00NET \$38.22



104

Model 104—A massive period cabinet for those homes where size and style are essential. Doors of choicest Butt Walnut with overlays of Carpathian Elm and Maidou Burl. Mouldings, decorations, and legs are hand carved. Set compartment 32" wide, 8" high, and 12" deep. Clearance between doors when open, 23". Overall height, 49".
List \$500.00NET \$294.00



171

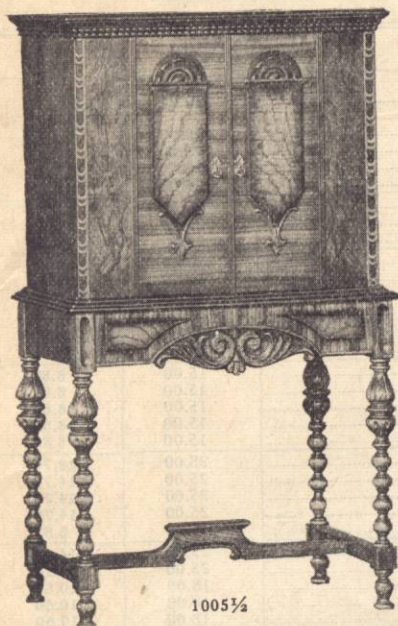
Model 171—A companion piece to Model 170 for those who prefer a low-boy type of cabinet with speaker below. French and Mexican Walnut Burls, Oriental Walnut, Carpathian Elm and Satinwood are again combined to produce and create this most beautiful and distinctive cabinet for radio. Legs and ornaments are all spindle carved. Set compartment 26" wide, 10 1/2" high, 12 1/4" deep. Speaker compartment, 16" high. Overall height, 49". Clearance between doors when open, 13".
List \$160.00NET \$94.08



170

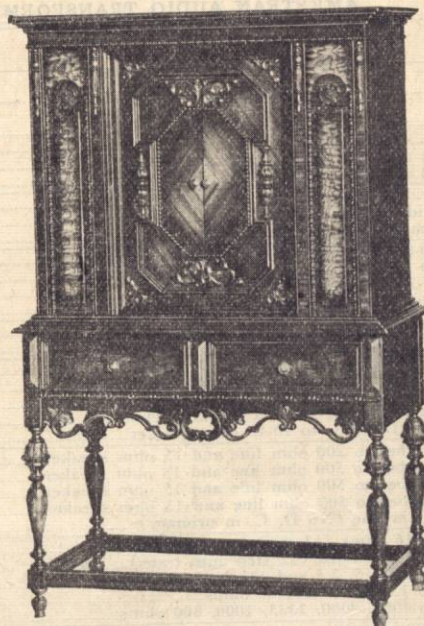
Model 170—DeLuxe highboy. An exquisite cabinet beautifully designed and made of the rarest of imported woods. Burls of French and Mexican Walnut, Satinwood and Australian Walnut—all are combined to make this beautiful piece. All ornaments are spindle carved. Set compartment 26" wide, 11" high, and 12 1/4" deep. Speaker compartment, 13" high. Clearance between doors when open, 12". Overall height, 52".
List \$145.00NET \$85.26

CONSOLE CABINETS OF DISTINCTION



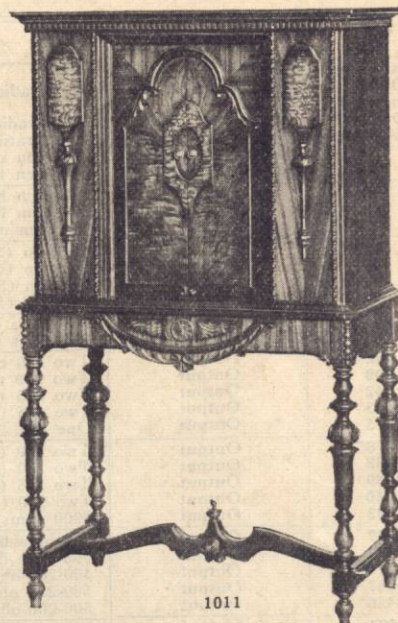
1005 1/2

Model 1005 1/2—Beautiful Tudor Period Cabinet. The finish is Satin Walnut with the natural colors of the different woods brought out. Mouldings are hand cut Russian Briar, carvings are of Walnut and Oak, and Veneers are of Butt Walnut, Japanese Tama, and Oriental Walnut. Speaker compartment specially constructed of five ply 1 1/8" stock. Radio compartment 25 5/8" wide, 13" deep, and 10 1/4" high. Speaker compartment 12 1/2" high. Overall dimensions are 53" high, 17 3/4" deep, and 30" wide...NET \$95.00



1010

Model 1010—A De Luxe Console in every way. Finish is Satin Walnut with natural effects of Butt and Oriental Walnut veneers, and the Japanese Tama wood carvings are solid walnut. Loud speaker compartment specially constructed of five ply 1 1/8" stock. Size of speaker compartment, 13 1/2" wide, 12" deep, and 15" high. Radio compartment 31 1/2" wide, 12" deep, and 10 1/2" high. Cabinet stands 58" high.....NET \$110.00



1011

Model 1011—Renaissance Period Console constructed of walnut and walnut veneer with overlays of Japanese Tama, Oriental Walnut and American Butt Walnut. Carvings are of walnut. Satin walnut finish. Loud speaker compartment built of five ply 1 1/8" stock to eliminate vibration. Radio compartment 26 1/2" wide, 12" deep, and 11" high. Speaker compartment 13" high. Overall dimensions 31" wide, 54" high, and 18 1/2" deep. Maximum opening of sliding doors 12 inchesNET \$67.50



Chelsea

The Chelsea is finished in a beautifully blended lacquer and is a high grade, moderately priced console of excellent construction throughout. The instrument panel, center, is of fine straight grained walnut. The top section of the front panel is also straight grained walnut, with overlays of mahogany in the corners, edged with black. The side pillars are split burl walnut and the center of the bottom panel, mahogany, to match the overlay in the upper corners. The side sections are burl walnut to match the pillars. The top is genuine 5 ply walnut plywood, the rest of the cabinet being gum plywood finished to match. Overall dimensions are: 38 1/2" high, 26" wide and 16 1/2" deep. The receiver compartment is 21 3/4" wide, 9 3/4" high and 12 3/4" deep, while the speaker compartment is 21 1/2" wide, 14 1/4" high and 12 3/4" deep.
List \$32.50NET \$19.11

Alcazar Console

The Alcazar is a combination console especially designed for electric phonograph-radio combinations. This console is made of perfectly matched solid walnut, with a beautiful hand-rubbed dull gloss finish. Equipped with two accurately fitted doors, mounted on steel slides, which slide out of sight behind console front. Doors are made of beautifully quartered burl walnut with a pleasing overlay of satinwood, offering a soft contrast to the two-toned finish of the console. The top is hinged on long piano hinge and is provided with stay to keep cover open. Compartment under top is provided with heavy motor board for mounting motor and phonograph equipment. This heavy board prevents undesirable vibrations which would normally interfere with the proper operation of the installation. Ample space is provided at the left of the phono compartment for two record albums. Immediately below the phonograph section is a heavy shelf for mounting the speaker chassis, and directly below the shelf is the receiver compartment. The interior of the console is mahogany in natural finish, including radio panel. Outside dimensions of console are 48 1/2" high, 27" wide and 17" deep. Receiver compartment is 24" wide, 10" high, 27" wide and 14 3/4" deep. Phonograph equipment is not included with console. List \$75.00.....NET \$44.10

Console complete with phonograph equipment which includes electric phonograph motor, Buckingham pick-up, automatic stop, volume control and switch. Shipping weight, crated, 180 lbs.
List \$143.00NET \$84.08

Chelsea



Alcazar

The Latest Information from Amertran

AMERTRAN AUDIO TRANSFORMERS

Type	Classification	Use	List Price	Net Price
1st stage DeLuxe	Interstage Audio	Turn ratio 3.....	\$10.00	\$ 5.88
2nd stage DeLuxe		Turn ratio 4.....	10.00	5.88
AF8	Interstage Audio	Turn ratio 3½.....	6.00	3.53
151	Interstage Audio	Between one input and two output tubes.....	15.00	8.82
710	Interstage Audio	Between two input and two output tubes.....	20.00	11.76
733	Input	500 ohm line to grid of tube.....	25.00	14.70
870	Input	200 ohm line to grid of tube.....	25.00	14.70
923	Input	200 ohm microphone to grid of tube.....	25.00	14.70
389	Input From	Pick-up (5000-6500-8000 ohms) to 120000 ohms (Pri. DeL).....	10.00	5.88
406	Input From	Pick-up (6000-9000-12000 ohms) to grid of tube.....	15.00	8.82
806	Input From	Pick-up (5000-7000-10000 ohms) to 200 ohm line.....	19.00	11.18
3008	Input From	Pick-up (5000-7000-10000 ohms) to 600 ohm line.....	19.00	11.18
095	Input Mixer	200 ohms to 200 ohms—level dB.—20.....	20.00	11.76
999	Input Mixer	200 ohms to 200 ohms—level dB.0.....	20.00	11.76
152	Output	Two 210 tubes to 2000-4000 ohm speaker (Magnetic).....	15.00	8.82
200	Output	Two 210 tubes to 10-15 ohm speaker (Dynamic).....	15.00	8.82
442	Output	Two 245 (or 171) tubes to 2000-4000 ohm speaker (Mag.).....	15.00	8.82
443	Output	Two 245 (or 171) tubes to 10-15 ohm speaker (Dyn.).....	15.00	8.82
115	Output	One 250, 210, 245 or 171 tube to 10-15 ohm speaker.....	15.00	8.82
678	Output	Two 250 (or 245) tubes to 200 ohm line and 15 ohm speaker.....	25.00	14.70
3332	Output	Two 250 (or 245) tubes to 500 ohm line and 15 ohm speaker.....	25.00	14.70
3489	Output	Two 245 (or 171) tubes to 500 ohm line and 15 ohm speaker.....	25.00	14.70
3540	Output	Two 210 (or 112) tubes to 500 ohm line and 15 ohm speaker.....	25.00	14.70
993	Output	8000 ohms to 500 ohm line (No D. C. in primary).....	15.00	8.82
3377	Output	500 ohm line to .16-16 ohms (12 step auto trans.).....	25.00	14.70
3432	Output	500 ohm line to 4000-333 ohms (12 step auto trans.).....	25.00	14.70
3576	Output	500-200 ohm line to 3.75, 5, 7.5 and 15 ohms.....	18.00	10.60
3487	Output	500-200 ohm line to 15, 30, 45 and 60 ohms.....	18.00	10.60
3456	Output	500-200 ohm line to 4000, 2000, 1333, 1000, 800 ohms.....	18.00	10.60
994	Output	Detector tube to 500 ohm line.....	19.00	11.18
805	Output	Detector tube to 200 ohm line.....	19.00	11.18

AMERTRAN POWER TRANSFORMERS

Type	A. C. Plate Volts	Rect. Fil. Volts	Power Fil. Volts	R. F. Fil.	Det. Fil.	Ampl. Tube	Rect. Tube	List Price	Net Price	
PF52A	600	7.5	7.5	.....	.....	210	281	\$18.00	\$10.60
PF281A	600/300	7.5	7.5	2.5	2.5	210	281	25.00	14.70	
PF245A	730/365	5.0	2.5	2.5	2.5	245	280	22.00	12.94	
PF250A	1200/600	7.5	7.5	.....	.....	250	two 281	30.00	17.64
H45	3-2½ Volt Windings at 3 amp., 3 amp., and 7 amp.....							Price on Application	12.00	7.06
H66	10,000 Volts Insulation—10 ampres at 2.5 volts.....									
1641	A—Eliminator—14, 15, or 16 V. 6 ampers.....									

Power Transformers are for 110 volt 60 cycle A. C.

AMERTRAN IMPEDANCES (Chokes)

Type	Henrys	Amps. D. C.	Resistance D. C. Ohms	Use	List Price	Net Price
418	¼	2.0000	0.5	Filter.....	\$ 6.00	\$ 3.53
709	20	.120	210	Filter or audio.....	6.00	3.53
557	25	.250	110	Filter.....	12.00	7.06
854	50	.060	625	Filter and audio.....	6.00	3.53
101	50	.060	674	Audio output.....	10.00	5.88
256	250	.005	6443	Audio—parallel feed.....	5.00	2.94
641	400	.060	674 total	Push-pull output, split coil, or parallel feed.....	10.00	5.88
103	500	.005	674	Parallel feed.....	10.00	5.88
988	750	.005	674 total	Parallel feed—alloy core, split coil.....	20.00	11.76

AMERTRAN RESISTORS

245	Voltage divider—double tube, vertical, 11425 ohms, 10 steps.....	5.50	3.23
400	Voltage divider—double tube, vertical, 41000 ohms, 7 steps.....	7.50	4.41
500	Voltage divider adjustat—radial switch type, 32000 ohms, 16 steps.....	8.50	5.00

AMERTRAN LINE ADJUSTING TRANSFORMER

976	20.00	200 VA—50/60 cycles, 220/110 step down auto trans.....	11.76
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PILOT A. C. SUPER-WASP

The First A.C. Short Wave Set That Works!

Developed by David Grimes, John Geloso, Robert S. Kruse

The New Pilot Super-Wasp operating from A. C. light socket now brings to everyone the thrills of trans-oceanic short-wave radio reception! New, different programs greet you from Canada, Australia, South America, Europe! Covers all bands from 14 to 500 meters. Utilizes Screen-Grid and specially developed Pilotron 227. Complete Kit. Catalog No. K-115.....

\$34⁵⁰

Power Pack for Pilot A. C. Super-Wasp (less rectifier tube) net, **\$16.50**

The Chi-Rad A. C. Receiver Chassis

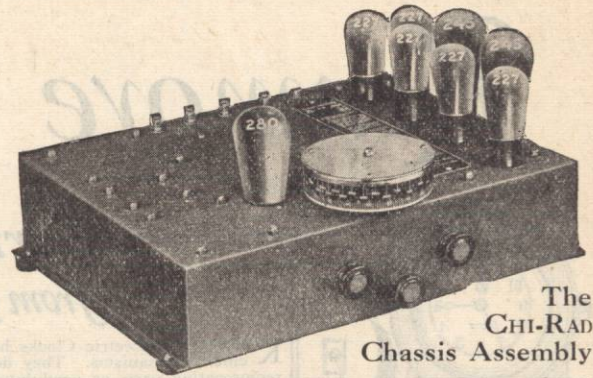
This new Chi-Rad A. C. receiver is noted for its excellent performance and fine tone. By purchasing this chassis, those of you who have fine radio cabinets (the contained receiver being obsolete) may install this chassis and have a thoroughly modern radio receiver. This chassis is available in two models, one using 227 tubes in all but the power sockets, and the other utilizing A. C. screen-grid tubes in the R. F. sockets. The sensitivity and selectivity of this receiver is remarkable, and the fidelity of reproduction is extraordinary.

Two of the new 245 power tubes are used in the last stage of audio, and Thordarson audio and power transformers are used throughout. This receiver is designed for use with a 90-110 volt, 2500 ohm D.C. dynamic speaker without the use of an output transformer.

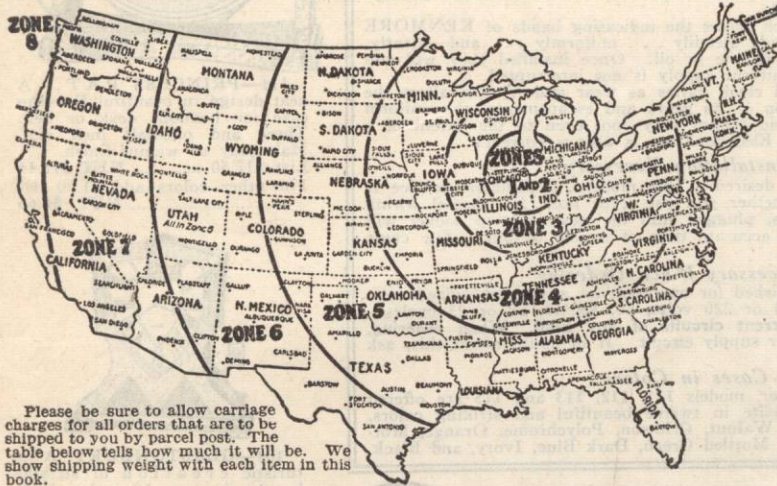
Type SA—Straight A. C. receiver utilizing five 227s, two 245s, and one 280 rectifier tube NET \$52.90

Type SG—A. C. Shield-grid receiver requiring two 224s, two 227s, two 245s, and one 280 rectifier NET \$47.50

Type 106—Magnavox Dynamic Speaker Chassis especially designed for use with these Chi-Rad receivers. List \$21.00 NET \$12.35



The CHI-RAD Chassis Assembly



Please be sure to allow carriage charges for all orders that are to be shipped to you by parcel post. The table below tells how much it will be. We show shipping weight with each item in this book.

Parcel Post Rates

Package weighing from 8 oz. (½ lb.) to 20 lbs.

Weight in Pounds	Zone 1-2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8
	Up to 150 Miles From Chicago	150 to 300 Miles From Chicago	300 to 600 Miles From Chicago	600 to 1000 Miles From Chicago	1000 to 1400 Miles From Chicago	1400 to 1800 Miles From Chicago	Over 1800 Miles From Chicago
1	\$.07	\$.08	\$.08	\$.09	\$.10	\$.12	\$.13
2	\$.08	\$.10	\$.12	\$.15	\$.18	\$.22	\$.25
3	\$.09	\$.12	\$.16	\$.21	\$.26	\$.32	\$.37
4	\$.10	\$.14	\$.20	\$.27	\$.34	\$.42	\$.49
5	\$.11	\$.16	\$.24	\$.33	\$.42	\$.52	\$.61
6	\$.12	\$.18	\$.28	\$.39	\$.50	\$.62	\$.73
7	\$.13	\$.20	\$.32	\$.45	\$.58	\$.72	\$.85
8	\$.14	\$.22	\$.36	\$.51	\$.66	\$.82	\$.97
9	\$.15	\$.24	\$.40	\$.57	\$.74	\$.92	1.09
10	\$.16	\$.26	\$.44	\$.63	\$.82	1.02	1.21
11	\$.17	\$.28	\$.48	\$.69	\$.90	1.12	1.33
12	\$.18	\$.30	\$.52	\$.75	\$.98	1.22	1.45
13	\$.19	\$.32	\$.56	\$.81	1.06	1.32	1.57
14	\$.20	\$.34	\$.60	\$.87	1.14	1.42	1.69
15	\$.21	\$.36	\$.64	\$.93	1.22	1.52	1.81
16	\$.22	\$.38	\$.68	\$.99	1.30	1.62	1.93
17	\$.23	\$.40	\$.72	1.05	1.38	1.72	2.05
18	\$.24	\$.42	\$.76	1.11	1.46	1.82	2.17
19	\$.25	\$.44	\$.80	1.17	1.54	1.92	2.29
20	\$.26	\$.46	\$.84	1.23	1.62	2.02	2.41

If the weight of your package exceeds 20 pounds, add 1c for each additional pound or fraction of a pound if you live in the 1st and 2nd zone, 2c extra if you live in the 3rd zone, 4c extra if you live in the 4th zone, 6c extra if you live in the 5th zone, 8c extra if you live in the 6th zone, 10c extra if you live in the 7th zone, and 12c extra if you live in the 8th zone.

NOTE:—Packages weighing over ½ lb. (8 ozs.) and not more than 1 lb. take 1 lb. rate.

Packages weighing over 1 lb. and less than 2 lbs. take the 2 lb. rate. Always use the next higher pound rate for pounds and fractional pounds.

Approximate Freight and Express Rates Per 100 Lbs.

From Chicago to	Express per 100 Pounds	1st Class Freight per 100 Lbs.	From Chicago to	Express per 100 Pounds	1st Class Freight per 100 Lbs.
Alabama	\$3.75	\$2.40	Nebraska	\$3.90	\$2.25
Arizona	7.30	4.12	Nevada	9.10	4.75
Arkansas	3.59	1.60	N. Hampshire	4.00	1.49
California	10.05	4.75	New Jersey	3.75	1.43
Colorado	6.15	3.65	New Mexico	5.60	3.35
Connecticut	3.85	1.49	New York	3.35	1.18
Delaware	3.70	1.42	No. Carolina	3.75	2.50
Florida	5.05	2.20	No. Dakota	4.50	2.60
Georgia	3.50	2.32	Ohio	2.15	.80
Idaho	7.90	4.50	Oklahoma	3.85	2.14
Illinois	1.85	.75	Oregon	9.75	5.10
Indiana	1.65	.70	Pennsylvania	3.75	1.40
Iowa	2.57	.98	Rhode Island	4.00	1.49
Kansas	3.80	2.04	So. Carolina	4.10	2.29
Kentucky	2.20	.98	South Dakota	4.35	2.65
Louisiana	4.20	2.06	Tennessee	3.30	1.75
Maine	4.50	1.49	Texas	7.15	2.37
Maryland	3.45	1.25	Utah	6.90	4.13
Massachusetts	4.00	1.49	Vermont	3.95	1.60
Michigan	3.95	1.09	Virginia	3.60	1.39
Minnesota	3.60	1.49	Washington	9.45	5.10
Mississippi	3.75	1.80	West Virginia	2.95	1.03
Missouri	2.62	1.35	Wisconsin	2.65	.60
Montana	5.35	3.75	Wyoming	5.50	3.50

Table of Express Charges Based Upon Rate Per 100 Lbs.

If Rate per 100 Lbs. is	\$1.25	\$1.45	\$2.15	\$2.65	\$2.95	\$3.45	\$3.75	\$4.00	\$4.25	\$4.50	\$5.50	\$6.90
Package not over												
1 Pound.	\$.36	\$.36	\$.37	\$.37	\$.38	\$.38	\$.38	\$.39	\$.39	\$.39	\$.40	\$.42
2 Pounds.	.37	.37	.39	.40	.41	.42	.42	.43	.43	.43	.44	.45
3 Pounds.	.38	.38	.40	.42	.43	.43	.45	.46	.47	.47	.50	.55
4 Pounds.	.38	.39	.42	.44	.45	.47	.49	.50	.51	.52	.56	.61
5 Pounds.	.39	.40	.44	.46	.48	.50	.52	.53	.54	.56	.61	.68
10 Pounds.	.44	.46	.53	.58	.61	.66	.69	.71	.74	.76	.86	1.00
15 Pounds.	.48	.51	.62	.69	.74	.81	.86	.90	.93	.97	1.12	1.33
20 Pounds.	.53	.57	.71	.81	.87	.97	1.03	1.08	1.13	1.18	1.38	1.66
25 Pounds.	.57	.62	.80	.92	1.00	1.12	1.20	1.26	1.32	1.39	1.64	1.99
30 Pounds.	.62	.68	.89	1.04	1.13	1.28	1.37	1.44	1.52	1.59	1.89	2.31
35 Pounds.	.66	.73	.98	1.15	1.26	1.43	1.54	1.63	1.71	1.80	2.15	2.64
40 Pounds.	.71	.79	1.07	1.27	1.39	1.59	1.71	1.81	1.91	2.01	2.41	2.97
45 Pounds.	.75	.84	1.16	1.38	1.52	1.74	1.88	1.99	2.10	2.22	2.57	3.30
50 Pounds.	.80	.90	1.25	1.50	1.65	1.90	2.05	2.17	2.30	2.42	2.92	3.62

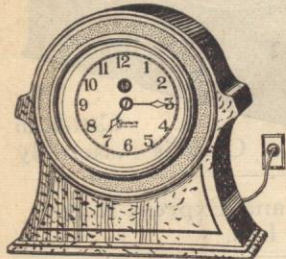
Kodaks — Cameras — Projectors

BELL & HOWELL MOVIE CAMERAS AND PROJECTORS—EASTMAN KODAKS CINÉ KODAKS AND PROJECTORS ROLL AND MOVIE FILM

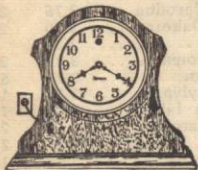
Write for Special Catalogs—A Complete Stock

Kenmore Electric Clocks

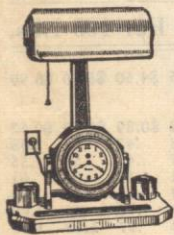
Correct Time from your Light Socket



115—ROSE MARIE "Mistress" choice for boudoir or desk. Small but symmetrically proportioned. ROSE MARIE may be used most fittingly in almost any room. 6 3/4 inches high. 3 1/2-inch dial. Bakelite, Mahogany or Walnut finish. List \$15.00NET \$9.80
For other colors add \$1.00 listNET \$0.66



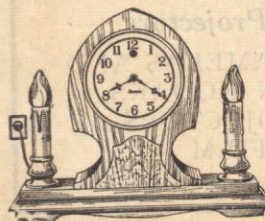
106—PENN. An outstanding, upright model in rich two-tone, high-lighted case 9 1/4 inches high. Five inch dial. Mahogany or walnut finish. List \$27.50NET \$17.96



109—CARLTON. For office or factory use, 15 1/2 in. square. Dial 13 in. diameter. Mahogany, walnut, oak or white enamel finishes optional. \$30.00NET \$19.60

113—FROBISHER. A beautiful desk model with pen tray, inkwells and lamp—just the thing for the executive or secretary. Three and one-half inch dial. Mahogany or walnut finish. List \$45.00NET \$29.40

112—FAVERSHAM. Same as above, excepting light not included. Mahogany or walnut finish. List \$25.00NET \$16.34
For other colors add \$2.50 listNET \$1.63



105—OXFORD. A rich Gothic upright design with electric candlesticks in beautifully finished high-lighted case 11 3/4 inches high. Five inch dial. Mahogany or walnut finish. List \$37.50NET \$24.50

107—BEACONSFIELD. Same as the above, excepting without candlesticks and long base. List \$27.50NET \$17.96

KENMORE Electric Clocks have no springs. They contain none of the ordinary clock mechanisms. They depend upon no delicate jewel bearings, escapements, reciprocating parts or pendulums. They do not produce the monotonous "ticking" so characteristic of the ordinary clock.

The miniature electric motor, which drives the indicating hands of KENMORE Electrics, revolves at a fixed speed, steadily . . . uniformly . . . and silently. There is nothing to wind, adjust, regulate or oil. Once installed they will run indefinitely so long as the electric current supply is not interrupted.

Where the ordinary spring wound clock varies as wear and friction alters the tension of its springs, and the action of its gears and escapements, the uniform accuracy of any KENMORE Electric cannot vary—not even to the extent of a fraction of a second. KENMORE Electric Time is always correct!

No Special Installation Necessary

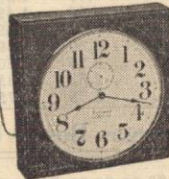
Correct electric time is yours, if desired. This modern, dependable service is in your lighting outlets NOW!—whether you use it or not. No special wiring is necessary. KENMORE Electrics, plugged into the nearest lamp socket will translate these impulses into visible accurate time at a cost of but a few cents monthly for current consumed.

Information Necessary When Ordering

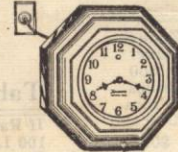
KENMORE Electrics can be furnished for operation on any synchronized commercial lighting circuit, whether 110 or 220 volts, 60, 50, 40, 30 or 25 cycles—They cannot be used on direct current circuits of any kind. When ordering, specify voltage and frequency of your supply circuit. If in doubt about this, ask your Central Station.

Beautiful Cases in Colors

Adapting the modern mode of color, models 111, 112, 113 and 115 are offered in handsome cases of moulded Bakelite in twelve beautiful and striking colors. KENMORE COLORS: Mahogany, Walnut, Crimson, Polychrome, Orange, Mottled Orange, Pea Green, Dark Green, Mottled Green, Dark Blue, Ivory, and Black.



114—LEWISHAM. Designed especially for use in kitchen, hospital, laboratory, etc. Case 9 inches diameter, finished in pure white enamel with blue band. Dial 5 inches in diameter. List \$17.00NET \$11.10



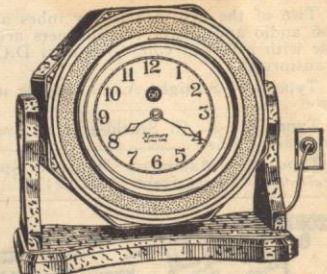
110—BALFOUR. For office or factory use, 15 1/2 in. diameter, with large 13-inch dial. Mahogany, walnut, oak or white enamel finish optional. List \$30.00NET \$19.60



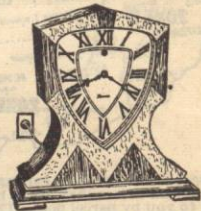
216—WALES. Dignity and aristocratic beauty are combined in this beautiful hall clock model with "hospitality"—a distinctive American trait. The WALES cabinet provides ample storage space for cigars, cigarettes, refreshments, etc., hence its name "Hospitality,"—a feature appreciated by those who entertain regularly. Seventy-two inches high. With hour and half-hour Chime Strike.

List \$197.50NET \$129.04

With Westminster Chimes. List \$250.00NET \$163.34



111—PRINCESS PAT. A neat design in beautiful Bakelite case for boudoir, desk or den. Three and one-half inch dial. Mahogany or walnut finish. List \$17.50NET \$11.44
For other colors add \$1.00 listNET \$0.66

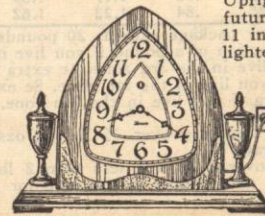


104—GLASTONBURY. A futuristic creation of striking beauty, in case 12 inches high, with Roman numeral dial and attractive hands. Without strike. List \$70.00NET \$45.74
With Chime Strike. List \$85.00NET \$55.54



102—WINDSOR. A conservative Tambour model in attractive two-tone case 8 1/4 inches high, with raised high-lighted panels. Five inch dial. Mahogany or walnut finish. Without strike. List \$35.00NET \$22.86
With Chime Strike. List \$47.50NET \$31.04

101—BUCKINGHAM. Massive dignified Tambour model, suitable for home or club. Case is of solid mahogany, hand rubbed with raised high-lighted panels. 9 1/2 in. high. 5-in. dial. Mahogany or walnut finish. Without strike. List \$65.00NET \$42.46
With Chime Strike. List \$80.00NET \$52.26



103—LEVERHULME. Upright model of semi-futuristic design. Case 11 inches high with high-lighted panel and heart shaped dial. Mahogany or walnut finish. List price without strike \$50.00NET \$32.66
With chime strike. List \$62.50NET \$40.84