

**RADIO EQUIPMENT
FOR AMATEUR STATIONS
SHORT-WAVE EXPERIMENTERS
THEATRES • TELEVISION
PUBLIC ADDRESS SYSTEMS
BROADCAST STATIONS
HOME TALKIES
SERVICEMEN**

1933

radio

CATALOG

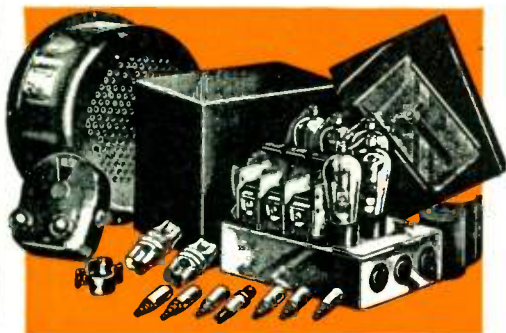
**SUPPLIES FOR
LABORATORIES
PHYSICS DEPARTMENTS
SCHOOLS and COLLEGES
CAMERAS and SUPPLIES**

**M & H
SPORTING GOODS CO.
512 MARKET ST.
PHILADELPHIA**

THREE CHAMPIONS

Quality at NEW Low Prices

PREMIER Auto Radio



Tone Quality . . . Selectivity . . . Distance

Installs Quickly in Any Car—Three (3) shielded connecting cables with plugs for quick connection to all accessories (no slow wiring) are furnished. Complete Accessories Include Universal mounting bracket, illuminated dial lockswitch remote control (attaches to steering column), 30" flexible shaft (other lengths to order), dynamic speaker, five Ken-Rad Tubes, spark suppressors and antenna, —everything—except "B" batteries. Never Before has such a complete and high quality outfit been available.

EASY TO INSTALL

Technical Data—Small and compact, 5" x 7" x 7" uses five new type powerful auto tubes (1—36, 2—38, 2—39). Hookup is tuned radio frequency, developed to its highest efficiency. Covers band from 195 to 550 meters (adjustable to 175 meters, Police calls, if desired). Distance range of 100 to 1000 miles, depending on conditions.

Dial Is Calibrated in Kilocycles

Specify if Auto Radio Is Wanted for 4 or 6 Cylinder Car

List Price, \$34.50

Your Cost

\$18.57

INCLUDING TUBES

3—45-Volt Burgess Batteries and Sturdy Battery Box

Your Cost, \$4.40

Special "B" Eliminator for Above Set Only

An unusually low priced Auto "B" power unit that almost makes the use of "B" batteries impracticable, as it does away with replacement, and costs but little more than a new set of batteries. It is small and compact, being only 3x5½x5½ inches in size, and weighs but 5 lbs. Produces 30 mls. at 130 volts or 25 mls. at 180 volts. A universal mounting bracket permits easy installation.

List Price, \$8.95

Your Cost, \$5.85



PREMIER Midget SET

The new 1933 Premier 4 is a receiver employing two screen grid (224A), rectifier (280) and Pentode power output tube (247).

The receiver chassis is of sturdy construction, employing a shielded ball bearing gang condenser, electrolytic condensers and shielded power and filter units. The receiver is equipped with an 8" dynamic speaker, illuminated dial and refinements to be found only in receivers of the highest quality. The cabinet has a two-toned burl walnut front and finish, modern in design, size 10" x 14" x 7". Super tone quality—an unusual value. For 110 volts, 60 cycles.

Complete with Ken-Rad Tubes

Your Cost

\$11.85

M & H Carries a Complete Stock of Standard Radio Sets

However, due to lack of space we are listing just a few that we feel are outstanding in their price class for appearance and performance. If you are in the market for any type set other than those listed, please get our quotation before you make your purchase.

The Courier



A 5-Tube Set and Clock Combination

The Courier 5 is a receiver employing a highly efficient radio chassis combined with a Hammond first quality electric clock. It has a triple screen grid circuit employing three 224A's, rectifier 280 and 247 power output tube. Incorporates the following features: Sturdy ball bearing condensers, electrolytic condenser, 8" dynamic speaker, tone control, illuminated dial, oversize power transformer, in fact everything you could expect in a receiver costing considerably more. It is selective and supersensitive. Exclusive cabinet design, walnut finish throughout and finished in handsome two-toned blend. Size 16½" x 12" x 7". For 110 volts, 60 cycles.

Exceptional Value

Complete with Ken-Rad Tubes

Your Cost

\$18.95

Imperial 5-Tube Midget

For those who desire a five-tube set but do not require the electric clock, we offer the Imperial. A truly beautiful, square effect walnut cabinet housing a chassis and dynamic speaker with all the features of the above Courier set, such as tone control, illuminated dial, ultra selectivity and sensitivity, etc. Size 10" x 14" x 7".

Complete with Ken-Rad Tubes

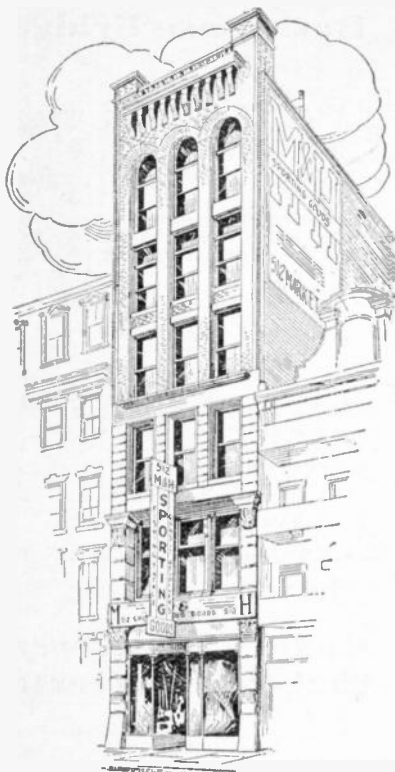
Your Cost, \$14.85

A Real Receiver at a Real Price

M & H . . . Headquarters for Radio Equipment

World Radio History

Scientific RADIO MERCHANDISE



Sold BY A SCIENTIFIC HOUSE
GIVING SCIENTIFIC SERVICE

Our Guarantee

Every order is filled as specified. "The buyer must be pleased" is the M & H slogan. For 35 years M & H has given this additional assurance that everything purchased from us is first-class, dependable merchandise and is sold at the lowest possible fair price. All items listed in this catalog are made by leading manufacturers and are guaranteed by them and by the M & H Sporting Goods Company.

M & H Sporting Goods Co.

IN COMPILING the new M & H 1933 Catalog we have made every effort to incorporate into it items of interest to the Research Engineer, Laboratory Man, Broadcast Engineer, Experimenter, Service Technician and Amateur, and present it to them in a clear and concise manner. This year a special section is devoted to Laboratory apparatus and instruments. This will be of great assistance to the professor in schools and universities, helping him to find materials with which to further advance Radio and its close associate, electricity.

Experienced Engineers

Our laboratory and service engineers are thoroughly experienced and through their associations in the Radio field, are able to give you reliable and authentic information on your Radio problems—remember, if it's a kit or any part of a power pack, we have it.

35 Years of Service

More than thirty-five years of faithful service and fair dealing—You Must Be Satisfied. Read Our Unconditional Guarantee.

No Excise Tax

No excise or Government tax will be added to your order—all prices quoted in the catalog include all taxes.

RUSH SERVICE

We'll give you rush service if you'll carefully note the following:

1. Send all mail orders to our Philadelphia store—512 Market Street.
2. Mention both catalog page and number of part or apparatus you're ordering.
3. All prices are F.O.B. Philadelphia, subject to change due to market fluctuations.
4. Terms: Cash with order or C.O.D. If C.O.D., a sufficient deposit must accompany order to cover shipping charges both ways.
5. Remit by check, Post Office or Express Money Orders. If currency is sent in letter, register letter.
6. Specify whether you wish order sent by Parcel Post or Express. If Parcel Post is specified, be sure to enclose postage with your order or we will be compelled to ship by Express. Any excess postage sent will be immediately returned.

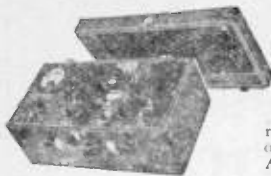
M & H SPORTING GOODS CO.

(RADIO DIVISION)

512 Market Street : Philadelphia, Pa.

"Supreme" Testing Instruments

Model 70 Oscillator



Designed and calibrated for universal application for all intermediate and broadcast frequency requirements. With a guaranteed accuracy of $\frac{1}{2}$ of 1%, and operates from 110-volt A.C. or D.C. line supply or from self-contained batteries contained in the oscillator case.

Completely shielded in the cast-aluminum oscillator case. The Model 70 is 100% modulated.

Supreme Oscillator, Model 70, less tubes and batteries

Your Cost, \$48.75

Tubes and Batteries, Your Cost, \$1.95

Model 20 Output-Ohmmeter

The Output-Ohmmeter is a very ingenious combination of a D'Arsonval movement meter with a full-wave copper-oxide rectifier bridge, and is completely attenuated for output measurements. As an Ohmmeter it is equipped with a zero corrector and has an accurately calibrated range of from 0 ohms to 1 megohm, operating from the oscillator battery supply or equivalent external power.

Supreme, Model 20, Output-Ohmmeter

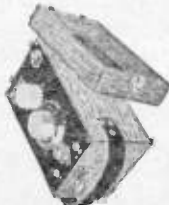
Your Cost, \$29.40

Handsome carrying case of hardwood for combined Oscillator, Output-Ohmmeter and Accessories

Your Cost, \$4.90

Model 60 Oscillator

A new handy Oscillator designed for use with any output meter such as provided in the Model 90 or 56 Analyzer. The Model 60 is a new A.C.-operated Oscillator, individually calibrated for all ranges from 90 to 1,500 kilocycles, and has 100% modulation and complete attenuation without leakage even with the most sensitive receivers.



Your Cost, \$30.00, with tube

Portable Type, Your Cost, \$2.94 extra

Model 75—A.C. D.C. Volt-Ohm-Milliammeter



The new Model 75 is designed to meet the demands of thousands of servicemen—a complete analyzer that will never be obsolete. The Model 75 provides 6 output meter ranges, 6 A.C. voltage ranges, 0, 2.5, 10, 100, 250, 1,000 volts; 6 D.C. voltage ranges, 0, 2.5, 10, 100, 250, 1,000 volts; 5 A.C. milliamperes ranges, 0, 2.5, 10, 100, 250 mAs; 5 D.C. milliamperes ranges, 0, 2.5, 10, 100, 250 mAs; 2 resistance ranges, 0, 5,000, 500,000 ohms.

A.C. and D.C. milliamperes ranges are protected with fuses. Multiplier and Shunt resistors are accurate with $\frac{1}{2}$ of 1% as compared to usual 1% and 2% tolerances.

Your Cost, \$45.58

Carrying case, extra, Your Cost, \$2.00

Supreme by Comparison

Model 44—D.C. Volt-Ohmmeter

The new Model 44 D.C. Volt-Ohmmeter is an unusually compact instrument for voltage measurements, resistance measurements and continuity tests. The Model 44 uses a self-contained flashlight battery for resistance measurements in two ranges, 0/1,000 and 0/100,000 ohms, and is provided with external connections for a 45-volt battery to increase its range to 1,000,000 ohms. Also, 4 D.C. voltage ranges of 0/10, 0/100, 0/250, 0/750 volts are available. The 44 is contained in a handsome, highly finished, hardwood case and is available in shop or portable models.



Your Cost, \$29.70

Carrying case, extra, Your Cost, \$2.21

Model 33 Ohmmeter



The Model 33 Ohmmeter is a completely self-contained instrument for resistance measurements and continuity tests. A large $3\frac{1}{2}$ " bakelite-cased meter is employed, accurately calibrated in resistance ranges of 0/1,000 and 0/100,000 ohms, actuated by self-contained flashlight battery. The Model 33 is provided with external connections for a 45-volt battery to extend its range to 1,000,000 ohms. A set of SUPREME test leads are included in the equipment.

Your Cost, \$26.22

Carrying case, extra, Your Cost, \$2.21

Model 88 Electrolytic Capacitor Tester

The new Model 88 Electrolytic Capacitor Tester is the first commercial tester designed for indicating the capacity and leakage of wet and dry electrolytic filter capacitors under operating conditions. The Model 88 also tests capacity and leakage of paper by-pass capacitors. This new instrument is suitable for insulation leakage tests of cables, etc., and may be used for any high-resistance continuity work up to 3,000,000 ohms, or more, depending on sensitivity of meter used.

The Model 88 may be used with any sensitive D.C. voltmeter for leakage tests, or any A.C. voltmeter for capacity measurements. It may be used with any type '80, '82 or '83 full-wave rectifier tube, and is fully protected against short circuits or grounds. The Model 88 will never be obsolete and is built for lifetime use.



Your Cost, \$20.09

Portable Type, Extra, Your Cost, \$2.94

Model 57 Decade Resistance Bridge

The Model 57 Decade Resistance Bridge has long been needed by all radio-men. In service on all receivers this unit can be connected across an open resistor in the receiver and adjusted for correct potential and current values, when the adjustment of the resistance bridge will indicate the proper resistance value which should be permanently installed in place of the defective resistor.

Resistance values are shown on the panel—covers a range from 10 ohms to 10 megohms by decade steps, and may be set at any value in multiples of 10 ohms. This instrument is twice as accurate as the R.M.A. standard for commercial resistors, and is conservatively rated at 2 watts for any resistance value. It may be used for any resistance measurement by substitution methods. The Model 57 is also very useful for extending the ranges of any standard meter for special voltage or current measurements. It is an instrument that will never be obsolete and has many and varied radio and electrical uses.



Your Cost, \$19.36

Portable Type, extra, Your Cost, \$2.21

Model 77 Universal Analyzer Converter



The Model 77 Universal Analyzer Converter is designed for the thousands of radio men owning obsolete or partially obsolete test equipment. The Model 77 is essentially a complete analyzer without meters, and arranged for external connection to any type analyzer or available meters. It is equipped with a flexible 8-wire analyzing cable with snap-catch plug for the analysis of all circuits and with panel sockets for the accommodation of all 4-prong, 5-prong, 6-prong, and 7-prong tubes.

WITHOUT ADAPTERS. All analytical circuits of 4-prong, 5-prong, 6-prong, and 7-prong tubes.

Your Cost, \$18.13

Portable, extra, Your Cost, \$2.21

Model 62 Tube-Testing Power Unit

The Model 62 Tube-Testing Power Unit is essentially a Model 40 Tube Tester without the meter. May be used with any D.C. voltmeter or any analyzer, old or new. Incorporates a gas test, cathode-heater short test, and tests both plates of full-wave rectifiers. Tests all tubes, 4-prong, 5-prong, 6-prong, 7-prong and other new types WITHOUT ADAPTERS. Every service man should have this new Tube-Testing Power Unit.

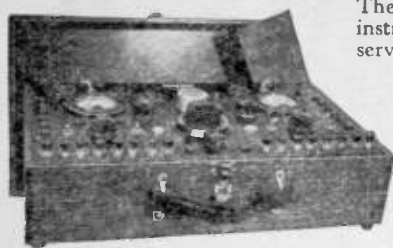


Your Cost, \$16.62

Portable, extra, Your Cost, \$2.94

"Supreme" Testing Instruments

AAA-1 Diagonometer



The AAA-1 Diagonometer is the instrument that remade radio service history. All that was promised for it—and more—has been borne out by the experience and testimony of proud possessors of it. It incorporates in one handy instrument all the essentials of a multiplicity of servicing instruments. When a radio-

man owns an AAA-1 Diagonometer he does not require any other instrument for complete modern shop or home service. It is a combination of five comprehensive service instruments as a single unit, which can be used as a portable radio laboratory, complete shop equipment, or mounted on the wall or back of a test bench as a test panel. The five instruments are: No. 1, Analyzer; No. 2, Tube Checker; No. 3, Oscillator; No. 4, Ohmmeter-Megohmmeter; No. 5, Capacity Checker.

Your Cost, \$144.55

No. 56 Set Analyzer

Featuring the famous Supreme "Multimeter"—all readings on one meter, one scale. Complete resistance analysis made directly on the analyzer panel for point-to-point checking.

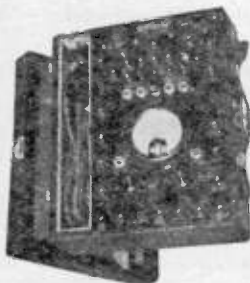
The new Model 56 Analyzer is designed for the accommodation of all 4-prong, 5-prong, 6-prong and 7-prong tubes, without the use of adapters for the analyses of associated radio circuits, and is provided with facilities for accurately and directly indicating resistance values up to 500,000 ohms.

The famous Supreme "Multimeter" is also employed in the new Model 56, so all A.C. and D.C. current and voltage measurements are interpreted on a single scale. This is accomplished by a system of compensation which is an exclusive patented Supreme feature.

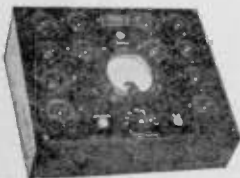
Six alternating and six direct voltage ranges and five alternating and five direct current ranges are provided for all measurements. In addition, three ranges are provided for external D.C. voltage measurements with a sensitivity of 2,750 ohms per volt for use in measuring voltages across high-resistance circuits. All current and voltage ranges are also externally available at insulated pin jacks.

Measures Capacities of Condensers—A Sensational Analyzer at the Price

Your Cost, \$55.13



No. 18 Counter Tube Seller

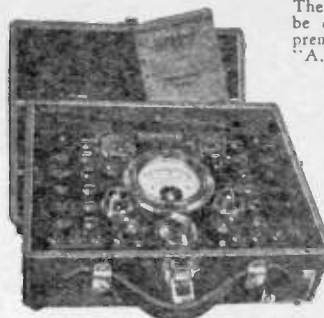


An astonishingly modern and efficient tube-tester for the money. Tests all tubes without adapters, including the 6-prong, 7-prong and other new types. Provides for filament heater potentials of 1.5, 2.0, 2.5, 3.3, 5.0, 6.3 and 7.5 volts to any of the panel sockets. A "grid shift" test is provided with a biasing arrangement, automatically determined by the plate current load of the tube under test. Is sturdily

constructed with a sloping panel for convenient counter visibility, and so compactly designed that it readily slips into small, convenient counter space.

Your Cost, \$24.98

No. 90 Set Analyzer



The original single meter analyzer that can't be copied—featuring the famous patented Supreme "Multimeter"—the only meter that reads "A.C. and D.C." on the same scale—the same calibration. No panel adapters are required for the accommodation of 6-pin, 7-pin tubes or other new types. Six A.C. and six D.C. voltage measuring ranges and five alternating and five direct current measuring ranges. The Model 90

Analyzer meter is provided with an ohmic scale for direct readings of resistance values up to 500,000 ohms in two ranges of 0-5,000 ohms and 0-500,000 ohms, the lowest division of this range being 2½ ohms. The maximum range of the Model 90 is five times the range provided by other analyzers and ohmmeters utilizing the same 4.5-volt battery potential. The analyzer may be used as an output meter with 11 ranges from 13.3 ohms to 1 megohm internal resistance. The voltage ranges are capable of withstanding 3,000% overload. It is the most compact analyzer made for rapid push-button operation, being only 4¼ x 9¼ x 11¼", and weighing less than 6 pounds.

Your Cost, \$77.93

No. 66 Tube-O-Meter

*"The Silent Tube-Salesman"
at a sensible price that
challenges comparison,
at any price!"*

Every tube dealer needs a modern visible tube-testing display.

Here's a "silent tube-salesman."

Built of selected hardwood, admirably finished in the best cabinet manner, and available with or without stand, it makes a handsome fixture that is an asset to any store.

In the Supreme Tube-O-Meter you get a tube-tester that is as modern as the new tubes, including the 6-prong, 7-prong, and all other new types, which it readily tests without adapters. Advanced design, and Supreme long-sighted engineering, assure the minimum obsolescence as still newer tubes are developed.

Two Neon lamps are also outstanding features of the Supreme design. One calibrated Neon tube indicates line voltage variations, and provides accurate adjustment. The other, "shorts". No short sockets are needed. The Neon light simultaneously flashes the warning of short-circuit, while the tube is being tested in its regular socket.

The direct indicating meter is mounted in a ground-glass panel for diffused illumination of advertising when the instrument is put in operation, adding the final touch of distinction and desirability to the Tube-O-Meter.

Your Cost, \$58.56

With Stand, Extra, \$7.35



No. 40 Tube Tester



A tube-tester of improved design equal to instruments selling for double its modest price. Tests all tubes without adapters, including 6-prong, 7-prong and other new types. Provides for filament or heater potentials of 1.5, 2.0, 2.5, 3.3, 5.0, 6.3 and 7.5 volts to any of the five sockets on the panel—a very flexible arrangement. A "grid shift" test of all amplifiers is provided with a biasing arrangement automatically determined by the plate current load of the tube under test, so that the controlling grid biasing potential may be observed on the meter. Incorporates a gas test for amplifiers, a cathode-heater short test for heater types, and tests both plates of full-wave rectifiers. A large 3½" D'Arsonval type meter in a full bakelite case is employed,

using two scales, 80/8/0 milliamperes, both accurately calibrated.

Your Cost, \$29.40

Portable Type (as illustrated), \$2.94 Extra

Weston Radio Instruments

3 1/4" Panel Type D. C., A. C. and Thermocouple

D.C. Filament or Plate Voltmeters—Model 301



Model 301

	List Price	YOUR COST
Voltmeters —1, 1.5, 2, 3, 5, 7, 8, 10, 15, 20, 25, 30 volts (Resistance 62 ohms per volt) ..	\$8.00	\$5.88
50 or 100 volts (Resistance 200 ohms per volt) ..	8.00	5.88
150 volts (Resistance 200 ohms per volt) ..	10.00	7.35
200 volts (Resistance 250 ohms per volt) ..	10.50	7.71
300 volts (Resistance 666 ohms per volt) ..	14.00	10.28
50 volts (Resistance 666 ohms per volt) ..	16.00	11.76
10, 15, 50 or 100 volts (1,000 ohms per volt) ..	12.00	8.82
150 or 200 volts (1,000 ohms per volt) ..	14.50	10.65
300 volts (1,000 ohms per volt) ..	16.00	11.76
500 volts (1,000 ohms per volt) ..	17.50	12.86
750/250/100/50/10/5 volts (1,000 ohms per volt) ..	25.50	17.77



D.C. Filament Ammeters—Model 301

	List Price	YOUR COST
Ammeters —1, 1.5, 2, 3, 5, 8, 10 or 15 amperes ..	\$8.00	\$5.88

D.C. Plate Milliammeters—Model 301

	List Price	YOUR COST
Milliammeters —1, 1.5 or 2 milliamperes ..	\$10.00	\$7.35
5, 10, 15, 20, 25, 30, 50, 100, 150, 200 300, 500 or 800 milliamperes ..	8.00	5.88
2-Scale Type—150/15 or 150/30 ..	13.00	9.56
50-0-50 or 100-0-100 ..	8.00	5.88

Volt-Ohmmeters—Model 301

Volts	Ohm Scale	Battery Voltage	List Price	YOUR COST	Volts	Ohm Scale	Battery Voltage	List Price	YOUR COST
1.5	0-1,000	1.5	\$10.00	\$7.35	4.5	0-100,000	4.5	\$12.00	\$8.82
1.5	1-3,000	1.5	10.00	7.35	15.0	0-500,000	15	12.00	8.82
4.5	0-10,000	4.5	10.00	7.35	90.0	0-2,000,000	90	16.00	11.76
4.5	0-30,000	4.5	11.00	8.09					

A.C. Rectifier Type—Model 301

	List Price	YOUR COST
Voltmeters —3, 5 or 15 volts (1,000 ohms per volt) ..	\$14.00	\$10.28
50, 100 or 150 volts (1,000 ohms per volt) ..	15.00	11.03
1, 1.5, 3, 5 or 15 volts (2,000 ohms per volt) ..	16.50	12.13
50 volts (2,000 ohms per volt) ..	17.50	12.86
100 volts (2,000 ohms per volt) ..	18.50	13.60
2,000 ohms per volt instruments should be used in the horizontal or 45° positions.		

Milliammeters —1, 2 or 5 M.A.	12.50	9.37
State position in which instrument is to be used.		

Microammeters —500 microamperes ..	14.50	10.65
Should be used in horizontal or 45° positions.		

D.C. Microammeters—Model 301

Microammeters —200 microamperes ..	\$13.50	\$9.92
500 microamperes ..	12.00	8.82

Thermo-Ammeters—Model 425

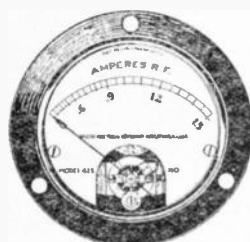
	List Price	YOUR COST
Ammeters —1, 1.15, 2, 2.5, 3, 4, 5, 6, 8, 10, 15 or 20 amperes ..	\$13.50	\$9.92

Thermo-Milliammeters—Model 425

Milliammeters —120, 250 or 500 milliamperes ..	15.00	11.03
Cannot be used on Direct Current.		

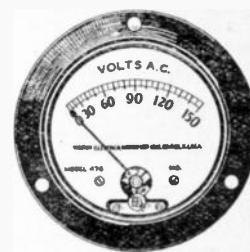
Wavemeter Galvanometer—Model 425

Galvanometers —115 milliamperes (Resistance 5.2 ohms) ..	15.00	11.03
Cannot be used on Direct Current.		



A.C. Instruments—Model 476

	List Price	YOUR COST
Voltmeters —1.5, 2, 3, 5, 10, 15, 25 or 50 volts ..	\$8.00	\$5.88
150 volts ..	10.00	7.35
250 or 300 volts ..	12.00	8.82
750 volts ..	18.00	13.23
1,000 volts ..	24.50	18.02
150/8/4 volts ..	15.00	11.03
750/150/16/8/4 volts ..	20.00	14.70
Ammeters —1, 2, 3, 5, 10 or 20 amperes ..	8.00	5.88
30 or 50 amperes ..	10.00	7.35
Milliammeters —15, 25, 50, 100, 250 or 500 milliamperes ...	8.00	5.88

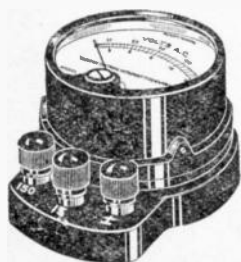


Note: All panel mount instruments are supplied in flush mounting Bakelite case, unless otherwise specified

Portable Type Instruments

A.C. Portable Instruments—Model 528

These instruments represent a distinct achievement in high-grade small A.C. meter design and construction. Model 528 is alike in size and shape to its companion D.C. instrument (Model 489) but is supplied in a mottled red and black Bakelite case to distinguish it from Model 489. Scales are silver gray with black markings. Pair of 30" cables supplied with voltmeters.



Portable Instrument

	List Price	YOUR COST
Voltmeters —Range 150/15 ..	\$13.50	\$9.93
300/150 ..	15.50	11.40
600/150 ..	18.50	13.61
Ammeters —1, 3, 5, 10, 15 or 20 amperes ..	\$13.50	\$9.92
30 or 50 amperes ..	15.50	11.40
Milliammeters —15, 25, 50, 100, 250 or 500 milliamperes ..	13.50	9.92
Supplied with pin-tipped 30" flexible cables for plugging into connection jacks on instrument.		
Leather Case for Model 528 ..	2.25	1.66

D.C. Portable Instruments—Model 489

Portable ammeters and voltmeters which can also be mounted on a panel if desired. Instruments are furnished with black Bakelite cases and have scales of silver gray with black markings. Each voltmeter supplied with a pair of 30" cables.

	List Price	YOUR COST
Voltmeters —150/7.5 or 200/8 volts. (Resistance 125 ohms per volt) ..	\$13.50	\$9.92
200/8 or 250/50 volts. (Resistance 1,000 ohms per volt) ..	22.50	16.54
750/250/10 volts. (Resistance 1,000 ohms per volt) ..	28.00	20.58
Ammeters —1, 10 or 30 amperes ..	13.50	9.92
10/1, 15/3 or 30/3 amperes ..	15.50	11.40
Milliammeters —150/15 or 150/30 milliamperes ..	13.50	9.92
Volt-Milliammeter —200/8 volts—2 milliamperes. (Resistance of voltmeter, 125 ohms per volt) ..	21.00	15.45
Multiplier for increasing range to 500 volts ..	12.50	9.37
Leather Case for Model 489 ..	2.25	1.66



Mounting Base

WESTON MOUNTING BASE

For use with metal case Models 301 and 425 instruments only on circuits of less than 300 volts. Alligator finish. List Price, \$2.75.....YOUR COST, \$1.76

Weston Radio Instruments

A New Weston Tube-Tester



Thousands of servicemen have found that tube buyers respond quickly to the tube testing service made possible by Weston Instruments.

Set owners appreciate this service and buy with confidence from servicemen adequately equipped.

Weston Model 677

The new Weston Model 677 Tube-Tester makes the exclusive features of Weston design available at a cost so low no dealer can afford to be inadequately equipped.

Such proven features as the direct reading, three-color tube performance meter, zero-reset test circuit, line voltage indicator, and compensating control are combined in the Model 677 with compact design and Weston high standards of workmanship.

Performance tests are provided for all current types of tubes. Internal tube shorts of even high resistance are indicated by Neon lamps. Spare sockets are built in the test panel to be used for future tubes that may be developed.

List Price, \$85.00

Your Cost, \$61.50

Model 695 Power Level Meter and Voltmeter



An instrument for servicemen on sound amplification equipment and especially those servicing theatre installations.

This instrument provides five voltage ranges, thus covering filament and line voltage measurements. It also gives direct reading of power level in decibels above or below 6 milliwatts for a 500-ohm load, or a total spread of 40 DB.

As a power level meter, the instrument should be bridged across the load, and is calibrated to read directly the power level in decibels above or below 6 milliwatts for a 500-ohm load. The algebraic sum of the rotating dial position and the scale reading on the instrument will give this power level.

The Model 695 is completely self-contained in a sturdy molded Bakelite case. Dimensions: $5\frac{1}{2} \times 3\frac{3}{8} \times 2\frac{1}{8}$ inches.

List Price, \$50.00

Your Cost, \$36.75

Model 564 Volt-Ohmmeter



A small compact instrument for voltage and resistance measurements and continuity tests.

It has ranges of 600-300-30-3 volts (1,000 ohms per volt) and 10,000-100,000 ohms. A self-contained "C" battery is provided and a pair of 50-inch test leads. Any change in Battery Voltage can be readily compensated for by a very simple adjustment.

All ranges are brought out to pin jacks and two toggle switches are provided, one serving to connect meter in circuit as a voltmeter or ohmmeter, and the other to select the ohmmeter range.

List Price, \$37.50

Your Cost, \$27.57

Weston Model 563 D. C. Circuit Tester

This is a compact, self-contained portable instrument for checking resistance and continuity of circuit during manufacture and for service and installation work on many types of electrical apparatus. Its meter has resistances of 5,000 and 50,000 ohms. It is contained in a Bakelite case and is equipped with a toggle switch for range selection; a self-contained 1.5 volt cell and a pair of 50-inch test leads.

A feature of the instrument is its voltage adjuster used in compensating for changes in potential of the self-contained battery.

It weighs approximately 2 pounds.

List Price, \$21.00

Your Cost, \$15.44

Weston Model 571 Output Meter

Model 571 consists of a five-range copper-oxide rectifier type voltmeter in a Bakelite case. The ranges 150, 60, 15, 6 and 1.5 volts are brought out to pin jacks through a dial switch. A self-contained condenser for blocking any D.C. component is brought out to a separate pin jack for use when desired.

Since the impedance (4000 ohms) is constant for all ranges and the output voltage is measured directly it is easy to compute the power output of the radio set and make adjustments to give highest operating efficiency. Furnished with long test leads with clips for connection to speaker voice coil and an adapter for connections at the tube socket.

List Price, \$30.00

Your Cost, \$22.00

Weston I. F. and R. F. Oscillator

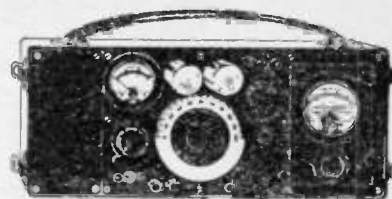
Model 590

A new Weston instrument for aligning of gang condensers, determining sensitivity of receivers, checking R.F. transformers and condensers, making selectivity tests and checking the oscillator stage of radio receivers. It has an intermediate frequency range of approximately 110 to 200 kilocycles and a broadcast range of 550-1500 kilocycles. Frequencies between 200 and 550, and above 1500 kilocycles may be obtained by means of harmonics.

Batteries are self-contained. One 22½-volt "B" and four 1½-volt dry cells are used. The complete instrument is shielded in an aluminum case. An output meter is a necessary accessory for this instrument and a compartment has been provided in the case for the Weston Model 571, which can be purchased with the oscillator. Dimensions: $16\frac{1}{4} \times 7 \times 5\frac{3}{4}$ ". Weight: 15 lbs.

Model 590 Oscillator with Model 571 Output Meter and tubes less batteries. List Price, \$138.00. **Your Cost, \$101.44**

Model 590 Oscillator with tubes but without Output Meter and batteries. List Price, \$108.00. **Your Cost, \$79.38**



Weston Model 607 Photronic Relay

This Photronic Relay has been especially developed for lecture demonstration purposes, for school and college laboratories, for science clubs and for amateur and home experimenters.

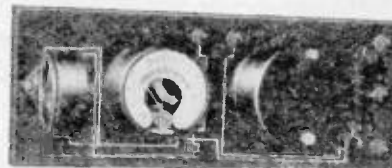
It consists of the Model 601 Photronic Relay, the cell and relays mounted on an attractive block panel and connected as a complete workable unit. To simplify the use of this Photronic Relay, the connections to the cell and relays are traced in colors on the panel showing clearly the circuit conditions and the principle of operation.

List Price, \$37.50

Your Cost, \$27.57

Weston Photronic Cell Only, **Your Cost, \$7.35**

Send for Free Descriptive Booklet



Weston and Jewell Instruments

Universal A.C.—D.C. Meters

Weston Model 301 and Jewell Pattern 88



Designed for the serviceman who desires to build a multi-range instrument to fill his particular testing requirements. These instruments are for use with external shunts and external resistances for measuring D.C. voltages and currents and A.C. voltages.

The instruments are of the permanent magnet moving coil type with a self-contained copper-oxide rectifier for the A.C. measurements. They are self-contained for 5 volts and 1 milliamperes A.C. and 50 millivolts and 1 milliamperes D.C. They have multiple scales for A.C., D.C. and ohms resistance.

USED IN THE SPRAYBERRY TESTER KIT

Weston Model 301, List Price, \$19.00

Your Cost, \$13.97

Jewell Pattern 88, List Price, \$19.00

Your Cost, \$13.97

Model 588 Modulation Meter

For the Continuous Indication of the Percentage Modulation in Radio Frequency

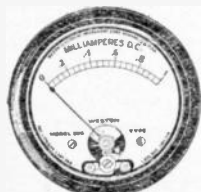
The Model 588 has the same operating characteristics of responsiveness, damping and ballistic properties as the volume level indicators standardized by the Western Electric Co. for indicating speech level input to the amplifier.

Since the instrument actually measures the A.F. envelope of the R.F. carrier wave, the scale in per cent of modulation cannot be more nearly correct than the assumed value of the amplitude of the carrier wave. This value must be supplied by the customer from his knowledge of the operating condition.

In the absence of this knowledge, we must be given the value of the D.C. plate current of the tube being modulated and can assume this is the amplitude of the carrier wave.

List Price, \$50.00

Your Cost, \$37.50



Model 506

D.C. 560 VOLTMETERS

Range	List Price	YOUR COST
0-3 volts	\$7.00	\$4.46
0-5 volts	7.00	4.46
0-7 volts	7.00	4.46
0-8 volts	7.00	4.46
0-10 volts	7.00	4.46
0-15 volts	7.00	4.46
0-50 volts	7.00	4.46
0-100 volts	7.00	4.46
0-150 volts	7.00	4.46
0-200 volts	7.00	4.46
0-50-10 volts	8.25	5.25
0-140-7 volts	8.25	5.25
0-150-7.5 volts	8.25	5.25
0-200-8 volts	8.25	5.25

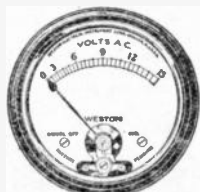
RF MODEL 507 AMMETERS

0 to 1 amp., 0 to 1 1/2, 0 to 2, 0 to 3, 0 to 5, 0 to 10, 0 to 15 and 0 to 20 amperes radio frequency	\$12.50	\$9.19
115MA Galvanometer 0 to 100 divisions	14.00	10.30

A.C. MODEL 517

A.C. VOLTMETER

0-1.5; 0 to 2; 0 to 5; 0 to 10; 0 to 15; 0 to 25; 0 to 50	\$8.00	\$5.88
0 to 130, or 0 to 150 volts	10.00	7.35
0 to 250, or 0 to 300 volts	12.00	8.82



Model 517

A.C. AMMETERS

Range	List Price	YOUR COST
0-1, 2, 3, 5, 10, 20 amps.	\$8.00	\$5.88
0-30 or 50 amps.	10.00	7.35

A.C. MILLIAMPERES

0-15, 25, 50, 100, 250 or 500	8.00	5.88
-------------------------------	------	------

D.C. 506 MILLIAMMETERS

0-1 milliamperes	\$9.90	\$5.74
0-1.5 milliamperes	9.00	5.74
0-2 milliamperes	9.00	5.74
0-3 milliamperes	7.00	4.46
0-5 milliamperes	7.00	4.46
0-10 milliamperes	7.00	4.46
0-15 milliamperes	7.00	4.46
0-25 milliamperes	7.00	4.46
0-50 milliamperes	7.00	4.46
0-100 milliamperes	7.00	4.46
0-150 milliamperes	7.00	4.46
0-200 milliamperes	7.00	4.46
0-300 milliamperes	7.00	4.46
0-500 milliamperes	7.00	4.46

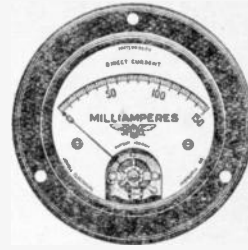
D.C. 506 AMMETERS

0-1 ampere	\$7.00	\$4.46
0-1.5 amperes	7.00	4.46
0-3 amperes	7.00	4.46
0-5 amperes	7.00	4.46
0-10 amperes	7.00	4.46
0-15 amperes	7.00	4.46
0-20 amperes	7.00	4.46
0-30 amperes	7.00	4.46
0-50 amperes	7.00	4.46
Volt-Ohmmeter, 3 v., 10,000 ohms	7.00	4.46

Jewell Precision Instruments

The Jewell Trio comprised of Patterns 68, 78 and 88 is popular for building special test panels and service instruments, for use on experimental laboratory apparatus and in amateur transmitters. These patterns have flush type Bakelite cases with a flange diameter of 3 1/2 inches and a case diameter of 2 3/4 inches. They have a scale length of 2 1/4 inches.

They hold a high position among amateurs and servicemen. They are extremely rugged and accurately calibrated. Each instrument carries a double guarantee by both the manufacturer and M & H. We cannot list all of the Jewell items below, therefore, if you cannot find what you are looking for, write us about it.



Pattern 88 D.C.

Pattern 88

VOLTMETERS

Range	List Price	YOUR COST	Range	List Price	YOUR COST
0-8, 10, 15, 30, 50 volts	\$7.50	\$5.52	0-750 volts	\$19.00	\$13.96
0-150 volts	9.50	6.99	0-1000 volts	22.50	16.54
0-300 volts	12.00	8.82	0-1500 volts	28.50	20.95
0-500 volts	15.50	11.62	0-2000 volts	34.50	25.36

MILLIAMMETERS

0-1, 2, or 3 M.A.	9.00	6.62
0-5, 10, 15, 20, 25, 30, 50, 100, 150, 200, 250, 300, 500, 800 or 1000 M.A.	7.50	5.52
150/15 or 150/30 M.A.	12.50	9.20
50/0/50 or 100/0/100 M.A.	7.50	5.52

MICROAMMETERS

0-300 or 500 microammeter	11.50	8.46
0-200 microammeter	13.00	9.56

AMMETERS

0-1, 1.5, 2, 3, 5, 10, 15, 20, 30 or 50 amperes	7.50	5.52
---	------	------

GALVANOMETER

50-0-50	9.00	6.60
---------	------	------

PATTERN 78 A.C. VOLTMETERS

VOLTMETERS

Range	List Price	YOUR COST
0-3, 5, 10, 15, 20, 30 volts	\$7.50	\$5.52
0-150 volts	9.50	6.99
0-300 volts	12.00	8.82
0-3-15-150 Triple Range volts	13.50	9.93

MILLIAMMETERS

0-15, 25, 50, 100, 250 or 500 M.A.	7.50	5.52
------------------------------------	------	------

AMMETERS

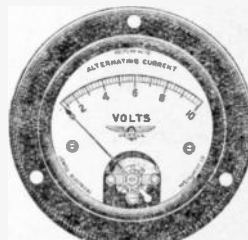
0-1, 2, 3, 5, 15, 20, 30 or 50 amperes	7.50	5.52
--	------	------

CONDENSER METER

Direct reading capacity checker. 2 scales. 15-1.5 microfarads.

List Price, \$22.50

Your Cost, \$16.55

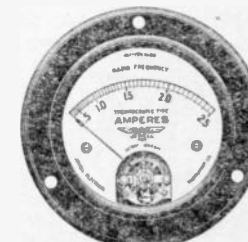


Pattern 78

PATTERN 68 RADIO FREQUENCY INSTRUMENTS

THERMOCOUPLE TYPE

	List Price	YOUR COST
0-.5, 1, 1.5, 2, 2.5, 3, 5, 10, 15 amperes	\$13.35	\$9.81
0-100 galvanometer	15.00	11.02



Pattern 68

PATTERN 88 VOLT-OHMMETER

(Direct-Reading)

Volts	Ohm Scale	Battery Voltage	List Price	YOUR COST	Volts	Ohm Scale	Battery Voltage	List Price	YOUR COST
1.5	0-1,000	1.5	\$10.00	\$7.35	4.5	0-100,000	4.5	\$12.00	\$8.82
1.5	1-3,000	1.5	10.00	7.35	15	0-500,000	15	12.00	8.82
4.5	0-10,000	4.5	10.00	7.35	90	0-2,000,000	90	16.00	11.76
4.5	0-30,000	4.5	11.00	8.09					

Jewell Radio Instruments

Pattern 560 Test Oscillator



Radio frequency circuits can be accurately and quickly adjusted only with a test oscillator of adequate design. The Jewell Pattern 560 Test Oscillator provides the most accurate and conveniently operated instrument available at a price within the range of the service man. Three frequency ranges are provided for complete coverage of the broadcast band and the intermediate bands used in all modern superheterodyne receivers. Operates from self-contained batteries. The adjustment allows any intermediate frequency to be spotted at a convenient scale reading.

Jewell Pattern 560 Test Oscillator, complete with two '30 type tubes, batteries, and shielded output lead. List Price, \$82.00.

Your Cost, \$60.26

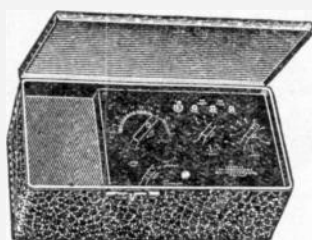
Jewell Pattern 560 Test Oscillator, as listed above, together with Pattern 559 Output Meter.

List Price, \$102.00 **Your Cost, \$74.77**

Pattern 563 Oscillator

A self-modulated oscillator with frequency ranges covering broadcast and intermediate frequencies required in service work from 125 to 1500 K.C.

Features of Pattern 563 Oscillator—Output adjustable to any frequency in the broadcast band in the intermediate bands to cover modern superheterodyne receivers. Completely shielded. Operates from batteries completely shielded within the case. Output continuously variable from maximum to zero. A separate high output provided for neutralizing adjustments. Single control adjusts output frequency. Trimmer adjustment permits spotting any much used intermediate frequency at a convenient point on the dial. Handsomely finished metal carrying case with space at left of control panel for Jewell Pattern 559 Output Meter.



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

List Price.....\$47.50

Your Cost, \$34.92

Pattern 559 Output Meter



Pattern 559 has three ranges, 3, 15 and 60 volts, to adapt it to the output circuit of any radio receiver. It also has a self-contained condenser for blocking any D.C. component. This condenser is brought out to a separate pin jack so that it may be introduced in the circuit only when desired. A 2 3/4-inch D.C. instrument in a full-wave copper-oxide rectifier circuit measures the A.C. component of the current in the receiver output circuit. This instrument is housed in a rugged Bakelite case. All ranges are brought out to individual pin jacks. Furnished with long test leads with clips for connection to speaker voice coil and an adapter for connections at the tube socket.

List Price, \$20.00

Your Cost, \$14.70

New Pattern 444 Radio Set Analyzer



Pattern 444 is a 2-meter analyzer for every type radio receiver and for testing full-wave rectifier, variable-Mu, output Pentode, Pentodes having a direct connected fifth element, and the new six-prong type tubes. A.C. and D.C. circuit tests are controlled by separate rotary selector switches. In addition to set socket tests, twenty-four ranges are available at pin jacks—for external testing. Among these are three output meter ranges and three resistance ranges. The instrument ranges are: A.C. Meter—0-4-8 amperes, 0-20-100 MA. and 0-4-8-160-800 volts; D.C. Meter—0-12-60-120 MA., 0-6-12-30-60-120-300-600 volts; 0-1,000-10,000-100,000 ohms and low-medium-high output ranges. Accessories supplied: Test leads with insulated prods and molded pin-plugs, test leads with clips for speaker voice coil leads and molded pin-plugs, line plug and cord with molded pin-plugs and an adapter for output measurements at tube socket. instruction book. Dimensions: 12 3/4 x 12 x 4 1/2 inches. Approximate weight: 10 pounds.

List Price, \$112.00

Your Cost, \$82.32

Pattern 675 Tube Checker

Tube Checkers of the grid shift type, where the difference of two plate current readings is taken, have been used in large quantities during the last few years. Testers of this type are excellent where a relatively low-priced device is required.

To accommodate the large number of tubes now in use 16 sockets are provided on the Pattern 675 by the use of an ingenious arrangement wherein they occupy a very small space. The use of these 16 sockets provides all of the necessary connections to take care of present types of tubes without the use of adapters.

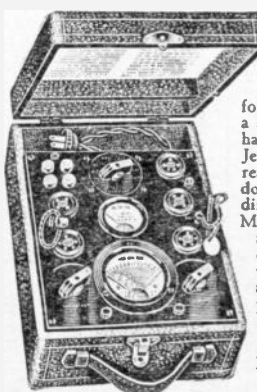
This Tube Checker is enclosed in a durable molded bakelite case. Its dimensions are 5 3/4 x 6 1/2 x 2 1/2 inches and it weighs approximately 4 pounds.

List Price, \$35.00



Your Cost, \$25.73

Pattern 540 Portable Tube-Seller



Dealers who have used this Jewell Portable Tube-Seller in house-to-house canvassing report remarkable increases in tube replacement sales as well as sales of other radio equipment. Pattern 540 is ideal for field service but can also be used to advantage as a store counter unit for testing tubes. This Tube-Seller has a meter with a three-color scale similar to the large Jewell Tube-Seller for store service. Tube condition is read directly on this scale in terms of satisfactory, doubtful and unsatisfactory. This Tube-Seller gives direct reading for all types of tubes, including variable-Mu and standard type screen grid, full-wave rectifier and output Pentode tubes. The Pattern 540 is enclosed in an attractive, durable fabrikoid covered ply wood case. Its dimensions are 5 1/4 x 9 1/4 x 12 inches and it weighs 9 pounds.

List Price (60 cycle), \$75.00

Your Cost, \$55.13

List Price (25 cycle), \$90.00

Your Cost, \$66.15

Mr. Service Man...

Modern equipment is essential to service the new Radio Sets. To get the business it is necessary you have this latest type servicing apparatus. It not only impresses your customers but enables you to do the job efficiently in less time. A satisfied customer means more customers for you. Don't hesitate.

Cash in on this year's Service. Let M & H furnish your needs

Readrite Panel Meters



Choice of wide flange, as illustrated, or narrow rim. Highly attractively finished. Require 2 5/64 in. diam. hole for mounting. (Flange diam., 2 1/4 in.) Accuracy fully guaranteed!

D.C. Voltmeters

	List Price	YOUR COST
No. 601—0-1 volts 30 ohms	\$1.00	\$0.59
No. 603—0-3 volts 175 ohms	1.00	.59
No. 326—0-6 volts 550 ohms	1.00	.59
No. 605—0-5 volts 410 ohms	1.00	.59
No. 335—0-8 volts 850 ohms	1.00	.59
No. 310—0-10 volts 1475 ohms	1.00	.59
No. 316—0-15 volts 2914 ohms	1.00	.59
No. 333—3-0-3 volts 550 ohms	1.00	.59
No. 607—0-25 volts 1625 ohms	1.00	.59
No. 608—0-25 volts 7720 ohms	2.50	1.47
No. 337—0-50 volts 3250 ohms	1.00	.59
No. 337-H—0-50 volts 15440 ohms	3.00	1.77
No. 339—0-100 volts 6500 ohms	1.25	.74
No. 339-H—0-100 volts 30888 ohms	3.00	1.77
No. 342—0-150 volts 9750 ohms	1.50	.89
No. 342-H—0-150 volts 46320 ohms	3.00	1.77
No. 346-P—0-300 volts 92640 ohms	3.00	1.77
No. 347-P—0-500 volts 154400 ohms	4.00	2.36
No. 246-P—0-60-300 volts 92640 ohms	4.00	2.36
No. 609—0-7-50 volts 231600 ohms	5.00	2.94
No. 341—0-8-160 volts 850/16,220 ohms	2.00	1.18

D.C. Ammeters

No. 380—0-1 amperes	\$1.00	\$0.59
No. 381—0-5 amperes	1.00	.59
No. 336—0-3 amperes	1.00	.59
No. 338—0-10 amperes	1.00	.59
No. 101—1-0-1 amperes	1.00	.59
No. 303—3-0-3 amperes	1.00	.59
No. 606—6-0-6 amperes	1.00	.59
No. 110—10-0-10 amperes	1.00	.59
No. 220—20-0-20 amperes	1.00	.59

D.C. Milliammeters

No. 305—0-5 2160 ohms	\$2.00	\$1.18
No. 311—0-10 700 ohms	1.75	1.03
No. 315—0-15 295 ohms	1.00	.59
No. 325—0-25 85 ohms	1.00	.59
No. 350—0-50 20 ohms	1.00	.59
No. 390—0-100 5.5 ohms	1.00	.59
No. 391—0-150 3.3 ohms	1.00	.59
No. 392—0-200 1.9 ohms	1.00	.59
No. 399—0-300 .8 ohms	1.00	.59
No. 394—0-400 .5 ohms	1.00	.59
No. 395—0-20—0-100 175/30 ohms	1.75	1.03
No. 402—0-15—150 305/24 ohms	1.75	1.03

A.C. Voltmeters

No. 314—0-4 volts	\$2.50	\$1.47
No. 353—0-6 volts	2.50	1.47
No. 352—0-10 volts	2.50	1.47
No. 351—0-15 volts	2.50	1.47
No. 348-P—0-150 volts	4.00	2.36
No. 349-P—0-300 volts	5.00	2.94
No. 247-P—0-600 volts	6.00	3.53
No. 249—0-750 volts	7.00	4.12
No. 355-P—0-10-140 volts	4.00	2.36

A.C. Ammeters

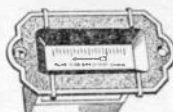
No. 360—0-1 amps.	\$2.50	\$1.47
No. 361—0-3 amps.	2.50	1.47
No. 362—0-5 amps.	2.50	1.47
No. 363—0-10 amps.	2.50	1.47
No. 364—0-50 amps.	3.00	1.77

A.C. Milliammeters

No. 370—0-25 Milliamps	\$2.50	\$1.47
No. 371—0-50 Milliamps	2.50	1.47
No. 372—0-100 Milliamps	2.50	1.47
No. 373—0-250 Milliamps	2.50	1.47
No. 374—0-500 Milliamps	2.50	1.47



Readrite Resonance Visual Tuning Meter



TM 108 and Escutcheon used. The translucent dial is illuminated through the rear window.

Your Cost, 88c

(Escutcheon Plate, 29c additional)

Ohmmeter and D. C. Voltmeter

Tests resistance up to 10,000 ohms, also D.C. volts 0-4.5. Contains small 3-cell flashlight battery; current drain is negligible. Adjusts to zero by shorting the two jacks and turning rheostat knob. Supplied with two wire leads five feet long for use in continuity and resistance testing. 4" dia. Indispensable for service work.



List Price, \$6.00

Your Cost, \$3.53

Resistance Meter

Model 501



No. 501 Resistance Meter as used in above ohmmeter. A thoroughly reliable instrument at a popular price. Requires three small flashlight cells, which with resistance to be measured are connected in series with meter. Used for testing resistances in radio receiving sets, and circuits generally. Fine for continuity tests.

List Price, \$2.50

Your Cost, \$1.47

	List Price	YOUR COST
No. 503—Resistor, 1150 ohms, with jack terminals for use with 22.5-volt battery to increase reading of No. 500 ohmmeter to 60,000 ohms	\$1.50	\$0.88
Same without jack terminals for 501 meter	1.00	.60
No. 504—Resistor, 2300 ohms, center-tapped, for use with 45-v. battery to increase reading of No. 500 and No. 502 ohmmeters to 100,000 ohms, with tip jacks	2.00	1.18

MULTIPLIERS FOR D.C. VOLTMETERS

(300 ohms per volt)

	List Price	YOUR COST
No. 100-A—0-50 voltmeter increase reading to 200 volts	\$1.00	\$0.59
No. 102-A—0-50 voltmeter increase reading to 300 volts	1.00	.59
No. 103-A—0-50 voltmeter increase reading to 600 volts	1.50	.88
No. 104-A—0-50 voltmeter increase reading to 300 and 600 volts	2.00	1.18
No. 105-A—0-150 voltmeter increase reading to 300 and 600 volts	2.00	1.18
No. 106-A—0-300 voltmeter increase reading to 600 volts	1.50	.88
No. 107-A—0-500 voltmeter increase reading to 1000 volts	1.50	.88
No. 108-A—0-20 voltmeter increase reading to 60-300-600 volts (flat type)	2.50	1.47

MULTIPLIERS FOR A.C. VOLTMETERS

No. 560 —0-140 voltmeter increase reading to 560 volts	\$2.00	\$1.18
No. 570 —0-140 voltmeter increase reading to 700 volts (flat type only)	2.50	1.47
85 m. h. choke as used in No. 550 oscillator, each	.50	.30

Output Meter

This two-range output meter has a low range of approximately 5 volts and a high range of 50 volts. In the high range is inserted a condenser to prevent flow of direct current. Connect the low range directly across the terminals of a low impedance dynamic speaker voice coil and the high range is magnetic speaker or from the plate of the output tube to ground. A small adapter is furnished for this connection.

List Price, \$6.00

Your Cost, \$3.53



Capacity Tester

No. 850

A New Instrument (patent pending) for Testing Electrolytic and Paper Type Condensers

This newly devised instrument with two voltmeters provides for testing the capacity of all types of condensers. The A.C. meter dial is calibrated for direct reading in microfarads. The double scale reading is .008 to 10 mfd. for paper type condensers. Tests Electrolytic Condensers. The increased use of the electrolytic condenser in modern receiving sets makes necessary an instrument for properly testing them. The No. 850 instrument combines a unique method for measuring the D.C. voltage applied to test the condenser under load. Also to form the condenser properly and test the capacity by measuring the milliamperes flow. Leaky and faulty electrolytic condensers are easy to detect with the No. 850 tester.

List Price, \$15.00

Your Cost, \$8.82

WITH METAL COVER FOR TOP OF CASE

List Price, \$17.00

Your Cost, \$10.00

Capacity Meter

For testing paper type condensers only. The A.C. meter reads directly in microfarads, .008 to 10. Contains rheostat, switch, test leads and plug for A.C. 60-cycle connection. In a seamless metal case 4 1/2" dia., baked enamel finish. Full instructions and charts are furnished with No. 850 and No. 800 for testing from 10 to 400 henrys. Also measuring resistances 40 to 100,000 ohms.

List Price, \$8.00

Your Cost, \$4.71



A. C. Line Voltage Regulator

Needed by every set using A.C. tubes. Equipped with A.C. voltmeter and giant rheostat. Protect your investment in these high-priced tubes.

List Price, \$6.50

Your Cost, \$3.82



Triple Meter Set Analyzer

No. 710



Capacity and resistance charts are furnished showing use of instruments for testing condensers, also measuring resistances up to 100,000 ohms. The nine scale readings of the meters may be used separately with the jack terminals provided. The scale readings are 0-20-60-300-600 D.C. volts, 0-10-140-700 A.C. volts and 0-20-100 milliamperes. Contains new wiring with added 6-hole socket.

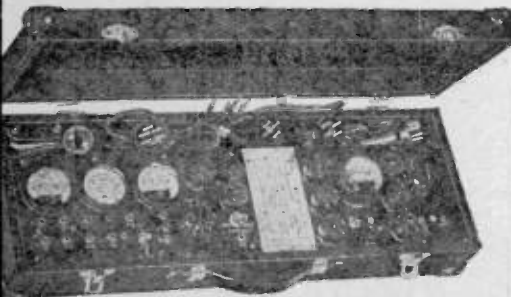
Housed in a strong case with leatherette covering. Attractive. Compact. Complete. Fills every need for the expert serviceman or the beginner for radio set testing. Size $10\frac{1}{4} \times 3\frac{1}{2} \times 8$ ". Cover is removable.

List Price, \$25.00

Your Cost, \$14.70

Combination Test Set

(Tube Tester and Set Tester)

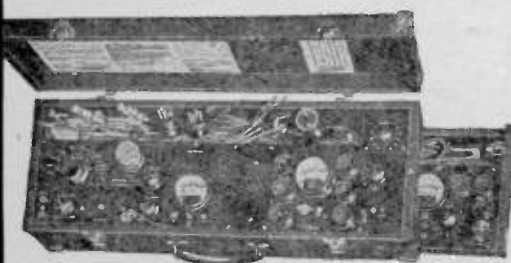


No. 406-710 combines in a single case, $21 \times 14 \times 7\frac{1}{2}$ ", the No. 406 Tube Tester and the No. 710 Set Tester. A handy instrument for analyzing set circuits and accurately testing tubes. Shipping weight 14 lbs.

List Price, \$50.00

Your Cost, \$29.40

Combination Test Set



The No. 577 combines the No. 407 and No. 710 testers with the No. 550 oscillator. Tests tubes, set circuit, aligns tuning condensers and tests for shorts. The oscillator and tube tester are on one panel, with the set tester in a drawer underneath. Closing the case cover automatically locks the drawer in place. Case size $22\frac{3}{4} \times 6\frac{1}{2} \times 8\frac{1}{2}$ " high. Shipping weight is 22 lbs.

List Price, \$90.00

Your Cost, \$52.92

Readrite

Tube Testers

Model 406

Tests all Tubes—Connects to A.C. Supply Line
Illuminated Dial

For checking all new and old tubes used in receiving sets. Test card attached to panel gives simple instructions. Anyone can operate. A push button provides two plate current readings for determining the conductance and worth of a tube. A new and outstanding feature applies the same test to rectifier as all other types of tubes. A separate push button provides for testing both plates of '80 type tubes.

List Price, \$25.00

Your Cost, \$14.70

Special Model

No. 407

Tube and Short Tester Combined

The No. 407 tube tester combines with the No. 406 described above, a complete short test of the tube. All shorts, gas and leakage tests are made with the tube heated under operating conditions. Tube is tested for its worth in the same socket used for short testing. The pilot light for illuminating the dial is also used to indicate the shorts, gas and leakage condition.

List Price, \$30.00

Your Cost, \$17.64

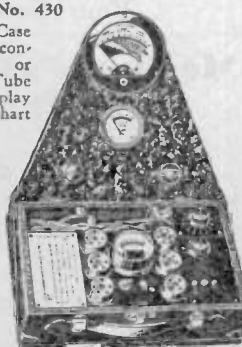
Customer Tube Tester Display Case

No. 430

The No. 430 Display Case is designed for use in connection with No. 406 or No. 407 Counter Tube Testers. The metal Display Case contains a color chart precision meter for direct reading of tubes. Three colors are used: red for poor, yellow for doubtful and blue for good tubes. The scale of this $4\frac{1}{2}$ " meter is long and easy to read. An A.C. Voltmeter with rheostat controls the line voltage. An ON and OFF toggle switch, tip jacks, and outlet receptacle complete the equipment of the No. 430 Display Case.

List Price, \$40.00
(Less No. 407)

Your Cost, \$23.52



Tool Carry Case Model

No. 610

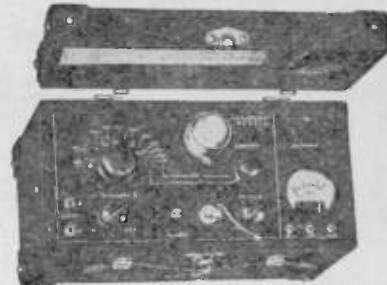
The No. 610 contains the same equipment as No. 710. The carrying case is larger with leatherette covering and equipped with lock. Space $6\frac{1}{4} \times 13\frac{3}{4} \times 4\frac{1}{2}$ " deep for carrying tubes, tools, etc. The test equipment and panel are in a removable tray in the top of the case. The tray equipment may be used separately as a complete test panel for shop purposes. Size $14\frac{1}{2} \times 7 \times 7\frac{1}{2}$ ".

List Price, \$30.00

Your Cost, \$17.64

Service Test Oscillator

No. 550

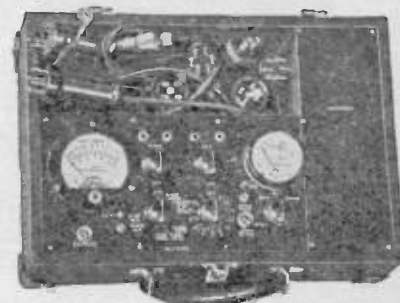


Used to align r.f. gang condensers, locate defective r.f. transformers, adjust i.f. transformer, check oscillator stage and determine sensitivity of a receiver. A modern instrument for all new and old model receiving sets. In leatherette case $6 \times 12 \times 5$ ". Weighs but 8 pounds.

List Price
Price COST

Complete, less output meter.....\$30.00 \$17.64
Complete, with output meter in panel.. 35.00 20.58

Testing Continuity and Capacity of Radio Sets



The Modern Set Analyzer. Contains ohmmeter, 0-6,000,000 ohms, and capacity meter, .008 to 10 mfd., both direct reading. A unique and exclusive circuit is employed, providing a new method of set analysis. No serviceman will fail to recognize its superiority and outstanding advantages. Every serviceman needs this instrument to properly test modern receiving sets.

List Price, \$55.00

Your Cost, \$32.34

Household Utility Tester

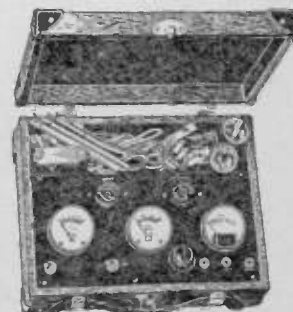
For servicing electrically operated refrigerators, ironing machines, water pumps, oil burners, stokers, ventilating systems, ranges and general household appliances.

Contains input and output outlets for measuring volts and amperes, A.C. Ammeter reading up to 20 a.m.p.s., A.C. Voltmeter reading up to 300 volts, and a complete direct reading Ohmmeter 0-40, 0-10,000 ohms for continuity testing.

In a leatherette case $10\frac{3}{4} \times 8 \times 3\frac{1}{2}$ ". Shipping weight 10 pounds.

No. 900 complete
List Price, \$22.50

Your Cost, \$13.23



TOOLS

Spintite Bench Set



No. T-73
Set of seven popular size hex Spintites in a convenient holder for bench or tool rack. Just the unit for electrical assembly, repair, or testing.

Contents: Nos. 3406, 3408, 3410, 3411, 3412, 3414, 3416.
Stand only
Your Cost, \$0.75

No. T-73, complete with stand, \$2.50

Spintite Socket Set

No. 68



A genuine miniature socket wrench set filling a long-felt want in the repair shop. Double-depth thin-wall sockets and a variety of handles provide combinations for adjusting and assembling small and delicate electrical and mechanical parts. Ideal for the electrician, radio fan, or ignition specialist.

Contents

Hex Sockets $\frac{1}{4}$, $\frac{5}{16}$, $\frac{11}{32}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$. Square Sockets $\frac{1}{4}$, $\frac{5}{16}$. Tee Handle. Offset Handle, two Screw Driver Shanks, Universal Handle with chuck. Extension bar for handle.

No. 68 Set complete in steel box

Your Cost, \$3.00

Vulcan Soldering Irons

The Vulcan Construction includes every feature necessary in a tool for perfect soldering. Speed and ruggedness have been combined with light weight and extremely low cost of operation. The tools are well balanced and fit the hand comfortably. Vulcans give satisfaction.

No. 10—44 Watts
Extra Tip, 30c

Your Cost, \$3.75

No. 30—60 Watts
Extra Tip, 40c

Your Cost, \$6.25

"Kester Solder"

The well-known non-corrosive rosincore radio solder—use it once and you will use it always.

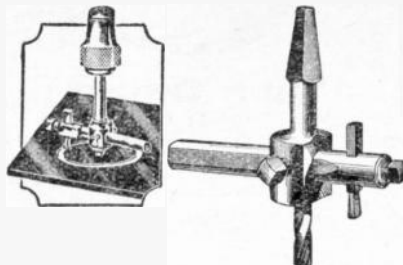


1 LB. SPOOL
YOUR COST
43c



IN CAN
YOUR COST
19c

Stevens Adjustable Panel Cutter



A well-made, substantial tool for cutting holes in panels. Quickly adjusted from $1\frac{1}{2}$ " to 6". Tapered shank fits carpenter's brace or machine. Center drill penetrates panel while cutter is operating. T-564.

Your Cost, \$1.85

Jackson Laboratory Soldering Irons



Light Duty
No. 121

50 Watts, 110 V. nickel-plated tube, black-enameled handle. Lava element, 6 feet heater cord. Removable copper tip. For home use and light radio work.

Your Cost, 69c



No. 141

75 Watt—110 V. Highly polished nickel tube. Removable mahogany handle. Element wound on high grade amber, mica and steel core. 6 feet heater cord. Large removable copper tip. Good for light shop work.

Your Cost, \$1.50

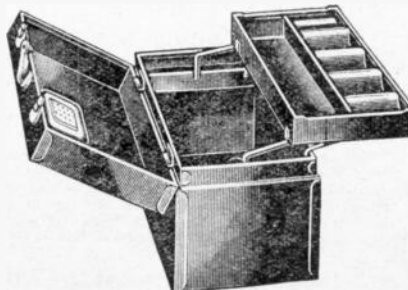
Mechanic's Iron No. 142



110 watts, 110 volts, highly polished nickel tube. Removable mahogany handle. Element wound on high grade amber, mica and steel core. 6 feet heater cord. Large removable copper tip. A good mechanic's tool.

Your Cost, \$2.25

Tool Box



Spintites

The Socket Wrench for Little Nuts—Works Like a Screw Driver

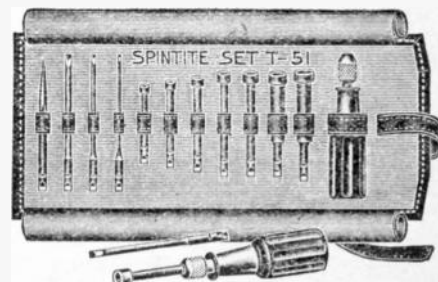
Little nuts! Millions of them to be tightened everywhere. In the home, in the radio shop, the electrical shop, in the industrial plant, on the automobile.



There's a feel to Spintite "nut drivers" no tool user can resist. Built like a screw driver with a thin-walled hexagon socket on the end. Hollow shanks so the socket will reach down over the bolt and grip the nut.

No.	Hex. Size	Overall Length	YOUR COST
3406	$\frac{1}{8}$ "	$\frac{5}{8}$ "	\$0.25
3408	$\frac{1}{4}$ "	$\frac{5}{8}$ "	.25
3410	$\frac{3}{8}$ "	$\frac{5}{8}$ "	.25
3411	$\frac{11}{32}$ "	$\frac{5}{8}$ "	.25
3412	$\frac{1}{2}$ "	$\frac{5}{8}$ "	.25
3414	$\frac{5}{8}$ "	$\frac{5}{8}$ "	.40
3416	$\frac{3}{4}$ "	$\frac{5}{8}$ "	.40
3418	$\frac{7}{8}$ "	$\frac{5}{8}$ "	.75
3420	$\frac{15}{16}$ "	$\frac{5}{8}$ "	.75

Spintite Set No. 51



Many mechanics prefer the compactness and portability of the tool roll. Contains 3 screw driver bits, 1 ream awl, 7 Spintite hex. bits, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{11}{32}$, $\frac{1}{2}$, $\frac{5}{8}$, and $\frac{3}{4}$, with Universal Handle.

No. T-51 Set
complete in roll

Your Cost, \$3.50

"American Beauty" Soldering Irons



No. 3138

The dependable electric iron for the laboratory or service shop. Complete with $\frac{1}{8}$ " tip for standard shop use. $12\frac{1}{4}$ " long. 100 watts. Weight, 2 lbs.

List Price, \$8.00

Your Cost, \$5.50

Extra $\frac{1}{8}$ " Tip: YOUR COST, 40c



No. S76

50-watt lightweight American Beauty with removable tip. A handy tool for the outside service man. Weight, 14 oz.

List Price, \$4.50

Your Cost, \$3.25

Extra Tip: YOUR COST, 25c

Here is a tool box with a swinging tray at a price within the reach of everyone. The tray works smoothly and swings toward the front, making a balanced box that will not tip over when opened. The tray is divided into five small divisions and one long one, and the space in the bottom of the box will accommodate a good assortment of tools.

Equipped with lock, side catches, and countersunk handle. Kennedy-brown baked enamel finish.

Dimensions: Long, wide, high, $14"$ x $6"$ x $6\frac{1}{4}"$.

Net weight, $4\frac{1}{2}$ lbs.

Your Cost, \$1.00

Test Equipment

DayraD Type 880 Set Analyzer

The DayraD Model 880 Set Analyzer uses large 3-inch meters and includes many new features.

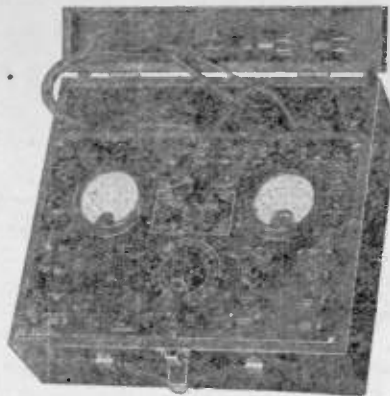
The instrument is equipped with a self-contained direct reading ohmmeter with battery compensating rheostat, ranges 0-10,000 0-100,000 ohms. An excellent direct reading capacity meter is provided with range from 0.1 microfarad and 0-10 microfarads.

An output meter range is provided (copper oxide rectifier type).

The Analyzer is supplied with facilities for the measurement of four, five, six and seven prong circuits.

Size—12½" x 11" x 5"—12 lbs.

Your Cost, \$82.32



Type 330 Test Oscillator



This cut shows the Type 330 Test Oscillator and the Type 50 Output Meter. The Type 50 Output Meter is furnished separately at \$9.80. Provision is made for this meter in the carrying case.

Type 330 Test Oscillator has sufficiently complete facilities for supplying correctly calibrated signals in all intermediate frequency ranges for modern receivers. In addition, the oscillator can be set to deliver five signals in the broadcast band simultaneously, two hundred kilocycles apart.

The various frequency ranges are obtained by means of a four-point selector switch with settings as follows:

1. Intermediate Frequency Range 17-180 KC. Continuously variable. 2. Intermediate Frequency Range 128-132 KC, 256-264 KC. Continuously variable.

3. Intermediate Frequency Range 460-470 KC. Continuously variable. 4. Broadcast Frequencies, 600-800-1000 1200-1400 KC (From Fundamental Frequency of 200 KC).

The carrying case is hand-finished quartered oak; the hardware heavily nicked. Furnished without batteries or tube. Requires 22½ battery, four No. 2 unit cells, and one Type 30 tube.

Your Cost, \$24.50

Hickok StatiKtester

The First All New Set Tester Development in Years

The only service device which measures every unit in a radio receiver.

The only Tester which locates every defective unit when the receiver is entirely inoperative.

WHAT IT MEASURES

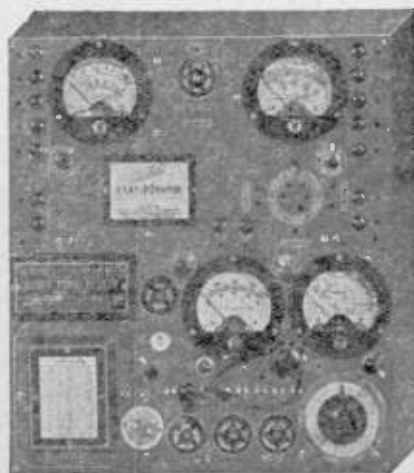
All Values of D. C. Volts.
All Values of A. C. Volts.
All Values of D. C. Milliamperes.
All Values of A. C. Milliamperes.
All Values of Resistance on Triple Range Ohmmeter from ¼ Ohm to 20 Megohms.
All Values of Capacity on Double Range Capacity Meter from .05 to 15 Micro Farads.

Tests Electrolytic Condenser Leakage and Capacity Under Operative Conditions.
Output of Receivers Measured on Milliammeter.

Tests All New Type Tubes and Receivers

List Price, \$250.00

CARRYING CASE



Your Cost, \$147.00

Your Cost, \$8.82

List Price, \$15.00

DayraD Type 890 Set Analyzer

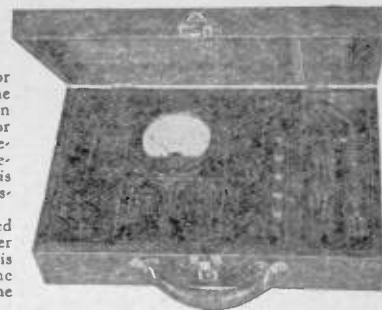
The extreme simplicity and great ease in the test is largely due to the use of the exclusive DayraD "pre-selector" feature. This feature permits direct reading of the measurement selector switch and thereby eliminates the necessity for tedious calculations in order to learn which receiver factor is under measurement. The pre-selector greatly reduces the time required to make a complete analysis and reduces the possibility of mistakes to an absolute minimum.

Type 890 Analyzer is equipped with a large meter (4½ in. over flanges). A long indicating scale is thus secured which permits extreme accuracy and easy legibility of the dial.

Complete provision is made for the analysis of circuits employing four, five, six and seven prong tubes of all types, including Triode, Screen Grid, Output Pentode, Class B Amplifiers, Duplex Diode Triode and others.

Durable hand-finished oak carrying case equipped with leather handle and removable lid. Type 890 Analyzer is supplied with complete instruction book and set of representative charts for ready reference.

Your Cost, \$61.50



DayraD Type 320 Portable Tube Tester

The 320 is a sturdy, portable tube checker in which is incorporated complete provision for standard types of receiving tubes, including the following recently developed types: '46, '47, '55, '56, '57, '58, '82, '85.

Of particular importance is the highly practical socket design which permits instant insertion of the tube to be tested. Each tube socket is an individual receptacle and is equipped with a depressed ring to receive the tube contact pin. The tube may be rotated with the pins in this depression in order that the correct position be immediately located.

The instrument is equipped with an input voltage switch and is installed in a hand-finished oak carrying case with leather handle and removable hinged lid.

Your Cost, \$27.94

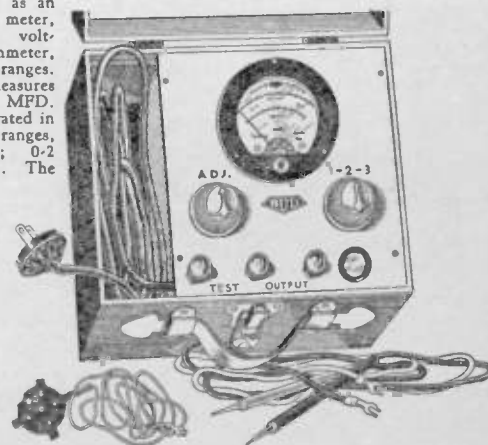


Bud Radiometer

Fulfills the Necessary Requirements of Every Radio Engineer, Service Man, Technician, Retail Store or Service Bench

This instrument serves as an ohm-meter, capacity-meter, output-meter, A. C. volt-meter, A. C. milliammeter, with sixteen useful ranges. The Capacity Meter measures condensers from .0005 MFD. up to 20 MFD. Calibrated in three convenient ranges, namely, 0.2 MFD; 0.2 MFD., and 0.20 MFD. The Ohm-Meter will measure all types of fixed or variable resistors. Also measures the impedance in ohms of output transformers at 60 cycles, in order to determine if the transformer will match the impedance of the plate circuit of the output tubes. Calibrated in three ranges, namely, 0-50,000 ohms; 0-500,000 ohms and 0-5 megohms.

List Price, \$65.00



Your Cost, \$31.85

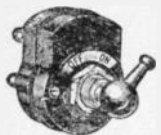


PILOT PARTS

Toggle and Rotary Switches



No. 47



No. 46

Three different types of PILOT switches cover all designs and circuit requirements. Nos. 47 and 47A toggle switches are of the "on-and-off" type, the former bearing a threaded neck to take panels up to 1/4 in. thick, and the latter up to 1/2 in.

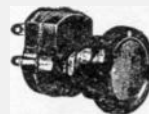
Nos. 48 and 48A toggle switches are two-way switches, closing either one of two circuits, but having no open position. No. 48 is for panels up to 1/4 in., and 48A for panels up to 1/2 in.

Both 44 and 46 are of the plain "on-and-off" type, housed in similar cases of molded bakelite, but with knob and lever control, respectively.

In all these switches the heavy, long-wearing contacts are designed for current up to 3 amperes at 220 volts, with a quick break and positive action. They are suitable for either battery or house-current circuits.



No. 48



No. 44

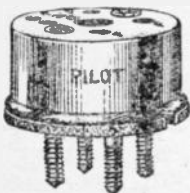
	List Price	YOUR COST
Toggle Switch, on and off. No. 47	\$0.40	\$0.25
Toggle Switch, on and off. No. 47A .....	.40	.25
Toggle Switch, two-way. No. 48 .....	.50	.30
Toggle Switch, two-way. No. 48-A .....	.50	.30
Knob Switch, on and off. No. 44 .....	.60	.35
Lever Switch, on and off. No. 46 .....	.50	.30



Manufacturers'



Set Builders'

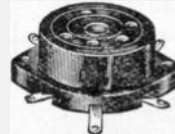


Screw Type

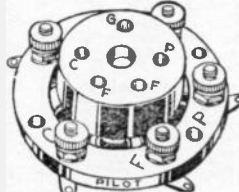
Pilot Tube Sockets

Pilot tube sockets are standard the world over. The types listed below cover all possible requirements for U. S. and European tubes. Smooth action, positive contacts, and perfect insulation are characteristics which recommend PILOT sockets wherever tubes are used.

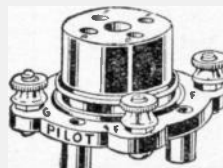
	List Price	YOUR COST
Manufacturers' type, UX-UV tubes, 4 prongs, for metal chassis. No. 218...	\$0.16	\$0.10
Manufacturers' type, UY tubes, 5 prongs, for metal chassis. No. 219...	.16	.10
Manufacturers' type, European tubes, 4 prongs, for metal chassis. No. 220	.16	.10
Manufacturers' type, European tubes, 5 prongs, for metal chassis. No. 221	.16	.10
Set builders' type, 4 prongs. No. 205	.16	.10
Set builders' type, 5 prongs. No. 211	.16	.10
Screw type, 4 prongs. No. 214.....	.25	.15
Screw type, 5 prongs. No. 215.....	.25	.15
Universal type, 4 prongs. No. 216...	.25	.15
Universal type, 5 prongs. No. 217...	.25	.15
Base type, 4 prongs. No. 213.....	.40	.24
Base type, 5 prongs. No. 212.....	.40	.24
Shock-proof type, 4 prongs. No. 206	.40	.24



Universal

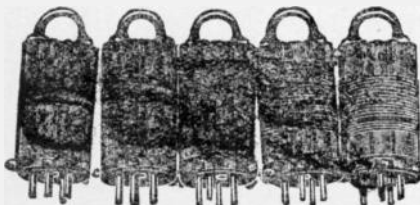


Base Type



Shock-Proof

Short-Wave Coils



The No. 601-A's are the antenna coils, which contain a single winding apiece. The No. 601D's are the detector coils, each of which has a grid and a tickler winding. There are five coils to each set, fitted with handles of different colors. These coils were designed especially for the Super-Wasp, and will work satisfactorily in other receivers only if their circuits and constants match those of the Super-Wasp. These coils also use the No. 185 forms.

Super-Wasp antenna coils. No. 601A
List Price, \$7.10 Your Cost, \$4.25

Super-Wasp detector coils. No. 601D
List Price, \$7.10 Your Cost, \$4.25

Coil Forms

The bakelite forms on which these coils are wound are available for those who prefer to wind their own coils. The five contact pins fit any standard UY socket. Length 2 1/2 inches, diameter 1 1/8 inches.

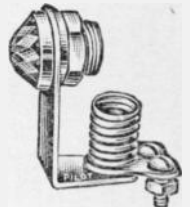
Coil form, with pins and handle. No. 185

List Price, 60c

Your Cost, 35c

Jeweled Light

The No. 40 Pilot light lends an attractive touch to a set not equipped with illuminated dials. The red jewel glows as long as the set is turned on, and acts as a reminder. No bulb is supplied, but any miniature base lamp can be used.



No. 40—Jeweled pilot light

List Price, 40c

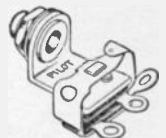
Your Cost, 24c

"Pilot" Midget Jack

Single closed circuit type, practically adaptable for all circuits.

No. 1165

Your Cost, 25c



Bakelite Phone Plug

No. 275

A simple, sturdy plug, to which phone and loudspeaker cord tips can be connected in an instant without tools. Will work in all standard jacks. The insulation between the contacts will withstand 500 volts.



List Price, 40c Your Cost, 25c

I. F. Transformers

For the intermediate frequency amplifier of a super-heterodyne using the No. 24 coils and the No. 3160 condenser, the No. 241 transformers are recommended. They are packed three to a box, and are accurately matched to a frequency of 175 kilocycles. In strong aluminum cans, 2 1/8 in. high and 2 3/4 in. in diameter.



No. 241
Intermediate frequency transformers (kit of three)

List Price, \$6.75

Your Cost, \$3.25

Super-Het Coils

For the man who wants to make his own superheterodyne the No. 242 kit is very handy. This contains one band-pass coil, one oscillator coil, and two special fixed condensers, all packed in one box. Designed for a circuit comprising a band-pass filter coupled to a screen-grid R.F. stage, ahead of the first detector. Should be used with the four-gang No. 3160 variable condenser. Coils 1 3/4 inches diameter by 5/8 inches and 4 inches long.



Superheterodyne coil kit. No. 242

List Price, \$3.75

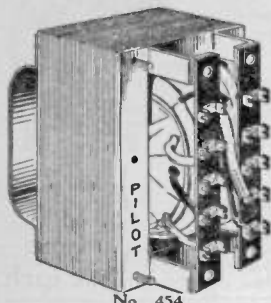
Your Cost, \$2.25

**If It's "PILOT"
We Have It**



PILOT POWER PACKS and POWER UNITS

Replacement Power Transformers and Filter Chokes



No. 434

Pilot transformers and filter chokes, with brackets for universal mounting are suitable for all kinds of replacement use, because their extra iron and copper, providing splendid voltage regulation characteristics, make them adapted to a wide load variation. Further, they are designed to meet extreme temperatures and humidities.

Transformers for 110 to 125 volts have a primary tap to be used on a 125-volt line.

These transformers have excellent voltage regulation characteristics, so that there is no over-load when the minimum number of tubes is used, and the full voltage is delivered to the maximum number of tubes.

Three to four-tube transformers have secondary coils as follows: 200 v. plate supply at 25 m.a. each side of the center tap; 2½ v. filament supply for 3 or 4 tubes; 5 v. for one 280 filament. Laminations ¾ by ¾, by 3 ins. thickness of coil.

Five to six-tube transformers have secondary coils as follows: 340 v. plate supply at 60 m.a. each side of the center tap; 2½ v. filament supply for 4 or 5 tubes; 5 v. for one 280 filament. Laminations ¾ by ¾, by 3½ ins. thickness of coil.

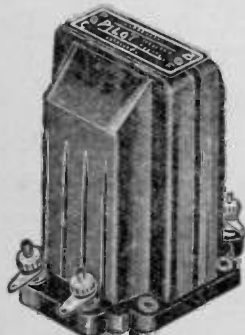
Seven or eight-tube transformers have secondary coils as follows: 320 v. plate supply at 70 m.a. each side of center tap; 2½ v. filament supply for 6 or 7 tubes; 5 v. for one 280 filament. Laminations ¾ by ¾, by 3½ ins. thickness of coil.

Nine to eleven-tube transformers have secondary coils as follows: 340 v. plate supply at 100 m.a. each side of center tap; 2½ v. filament supply for 8 to 10 tubes; 5 v. for one 280 filament. Laminations ¾ by ¾, by 3½ ins. thickness of coil.

	YOUR COST
3 to 4-tube type, 110-125 v., 50-60 cy.	
No. 488—List Price, \$5.25.....	\$3.15
5 to 6-tube type, 110-125 v., 50-60 cy.	
No. 451—List Price, \$6.75.....	4.05
7 to 8-tube type, 110-125 v., 50-60 cy.	
No. 454—List Price, \$8.75.....	5.25
9 to 11-tube type, 110-125 v., 50-60 cy.	
No. 457—List Price, \$9.50.....	5.70

Filter Chokes for B supply replacements are made in three types, all of 30 henries when used at their rated current. The D.C. resistance in ohms is also given. No. 460, Laminations 2½ by 1¾, by 1¾ ins. thickness of coil. No. 465, Laminations 3¼ by 2¼, by 2¼ ins. thickness of coil. No. 461, Laminations 3¼ by 2¼, by 2½ ins. thickness of coil.

	YOUR COST
30 h. at 25 m.a., 100 ohms, No. 460..	\$3.40
30 h. at 70 m.a., 250 ohms, No. 465..	3.50
30 h. at 100 m.a., 250 ohms, No. 461..	3.80



Amplifying Transformers For 71A Tubes

No. 391

The Bakelite cases of these Pilot transformers and chokes are molded in one piece, so that the instruments can be kept immersed in water for a month without affecting the coils.

	YOUR COST
Transformer, 3½-1 ratio, No. 391.....	\$2.25
Push-pull input, No. 399.....	3.00
Push-pull output impedance, No. 401..	3.00

Amplifying and Head-Phone Transformers



No. 413

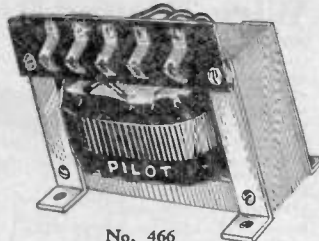
Here is a group of transformers specially designed for short-wave receivers. The adjustable-ratio head-phone transformer is needed on all sets to match the out-put tube with the phones, and to keep the D.C. plate current out of the telephone magnets. Reception is not only improved, but the phones are protected from demagnetization. Connect the primary in place of the head-set and connect the head-

set to the secondary. The two types of amplifying transformers are for high amplification, with excellent reproduction of speech and code signals. All types are similar in appearance, 2⅞ ins. square by 2⅞ ins. high.

	YOUR COST
Head-phone match. transformer, No. 416..	\$2.35
3½:1 amplifying transformer, No. 413..	2.10
5:1 amplifying transformer, No. 413Y..	2.35

Replacement Audio and Push-Pull Transformers

Nos. 462 and 463 are push-pull input replacement transformers, the former to work from a 227 into two 247's and the latter from a 237 into two 238's. No. 464 is a push-pull out-put to work with the No. 463. The No. 466 A.F. transformer can be used for inter-stage coupling between all standard types of tubes. This is an exceptionally fine flat-characteristic design, and is recommended for all high-quality circuits. All four of these units have Laminations ¾ by ¾, by 2½ ins. thickness of coil.



No. 466

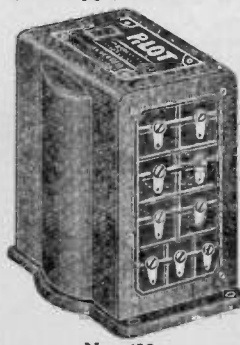
Push-pull input to 247's, 1¼:1, No. 462.. \$4.10
Push-pull input to 238's, 3½:1, No. 463.. 4.20
Push-pull output, for above, into 2-ohm coil, No. 464..... 3.75
A.F. Transformer, flat-characteristic type, No. 466 4.40

	YOUR COST
Push-pull input to 247's, 1¼:1, No. 462..	\$4.10
Push-pull input to 238's, 3½:1, No. 463..	4.20
Push-pull output, for above, into 2-ohm coil, No. 464.....	3.75
A.F. Transformer, flat-characteristic type, No. 466	4.40

Jumbo Power Transformer

For A, B, C Supply

Set builders, experimenters and engineers find the 432 Jumbo power transformer ideal for set construction as well as laboratory circuits. Of the four windings, the first supplies 2½ volts for 3 to 5 tubes; the second, 2½ volts for 1 to 3 tubes; the third, 5 volts for a 280 rectifier; and the fourth, 330 volts plate supply on each side of the center tap, at a current drain of 90 m.a. Thus the 432 can be used in sets of 4 to 9 tubes, using 245 or 247 output tubes singly or in push-pull.

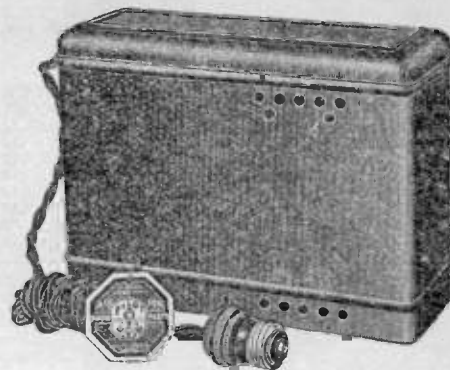


No. 432

List Price, \$8.55

Your Cost, \$5.25

Standard Power Pack for A, B, C Supply



K-111 and K-112

The K-111 and K-112 power packs, which are factory assembled and wired, use the same steel case, 10 inches long, 7 inches high and 3¼ inches wide.

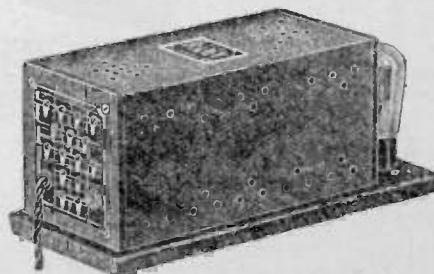
The K-111 has a maximum direct current output of 60 milliamperes at 220 volts, with taps at 180, 135, 90 and 45 volts. There are three low voltage windings for the heating of A.C. tubes; 5 volts at 1 ampere, 2½ volts at 8 amperes, and 1½ volts at 4 amperes, supplying sufficient power for 2-171's, 4-224's or 227's and 4-226's.

The K-112 will deliver 90 milliamperes at 300 volts, 180, 135, 90 and 45. A variable resistance provides control of these latter four values. There are three filament windings; 5 volts at 2 amperes, 2½ volts at 3.6 amperes, supplying sufficient power for 2-245's, 6 or 7-224's or 227's and 1-280.

No. K-111—List Price, \$27.25 Your Cost, \$16.35

No. K-112—List Price, \$31.60 Your Cost, \$18.95

Heavy-Duty Power Pack for A, B, C Supply



K-139

The K-139 is a new heavy-duty power pack that will take care of practically any modern A.C. receiver. It has a formed steel base 14½ inches long, 6½ inches wide, the whole unit standing 6 inches high.

The maximum D.C. output is 125 milliamperes at 300 volts with taps for lower voltages. The filament windings are: 4 volts at 6 amperes; 2½ volts at 12 amperes; 2½ volts at 3.5 amperes; 5 volts at 2 amperes.

The transformer, choke, condensers, and resistors in this power pack are designed to the same specifications as those used in the most expensive PILOT radio receivers.

List Price, \$40.00

Your Cost, \$24.00



PILOT PARTS

Midget Mica Condensers

The Pilot midget mica condensers sealed in molded bakelite. These tiny condensers are formed in a solid block $1\frac{1}{8}$ ins. long, $\frac{3}{4}$ in. wide, by $\frac{1}{4}$ in. thick. The capacities are as follows:

	List Price	YOUR COST
.00002 mfd. No. 83.....	\$0.20	\$0.12
.00004 mfd. No. 84.....	.20	.12
.0001 mfd. No. 85.....	.20	.12
.00025 mfd. No. 88.....	.20	.12
.0005 mfd. No. 89.....	.20	.12
.001 mfd. No. 90.....	.25	.15
.002 mfd. No. 91.....	.30	.20
.006 mfd. No. 95.....	.40	.25

Standard Mica Condensers

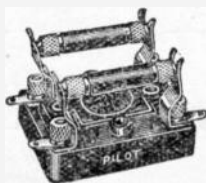


In size they are $1\frac{1}{8}$ ins. long, $1\frac{19}{32}$ ins. wide, and $11/32$ in. thick. No. 51-M is fitted with grid leak slips. The capacities are:

	List Price	YOUR COST
.00002 mfd. No. 50E.....	\$0.40	\$0.24
.00004 mfd. No. 50A.....	.40	.24
.0001 mfd. No. 50B.....	.40	.24
.00025 mfd. No. 51.....	.40	.24
.00025 mfd. No. 51M.....	.50	.30
with grid leak clips		
.0005 mfd. No. 52.....	.40	.24
.001 mfd. No. 53.....	.40	.24
.002 mfd. No. 54.....	.40	.24
.006 mfd. No. 58.....	.50	.30
.01 mfd. No. 59.....	.75	.45

Resistance Coupling Unit

The Pilot Resistoblock is suitable for any circuit employing resistance coupling. The Bakelite base has a depression to fit any fifty series fixed condenser. Any combination of capacity and resistance can be used. Dimensions $2\frac{1}{4}$ ins. long, $1\frac{25}{32}$ ins. wide and $1\frac{1}{8}$ ins. high.



	List Price	YOUR COST
Without leaks or condenser. No. 501..	\$0.45	\$0.25
With .01 mfd. condenser. No. 500.....	1.10	.70

Dricon Electrolytics



The 4 mfd. unit measures $1\frac{1}{8}$ by 1 by $4\frac{1}{4}$ ins. long, and the 8 mfd. unit, $1\frac{1}{8}$ by $1\frac{1}{4}$ by $4\frac{1}{4}$ ins. long. These can be assembled into a very small can to contain the total capacities needed for power supply circuits, and are practically self-healing.

Both sizes are designed for D.C. working voltages up to 450, with peak voltages at 600 volts D.C.

	List Price	YOUR COST
4 mfd. Dricon Condenser. No. 810....	\$1.65	\$1.00
8 mfd. Dricon Condenser. No. 811....	2.50	1.50

Non-Inductive Condensers

These condensers are $1\frac{1}{8}$ ins. long and $1\frac{1}{4}$ ins. high, and $\frac{1}{8}$ ins. thick. They are fitted with wire leads. They are rated at 300 volts working voltage, 1,250 volts flash test.



	List Price	YOUR COST
Three section condenser, .1 mfd. per section. No. 804.....	\$1.60	\$1.00
Single .5 mfd. size. No. 807.....	1.25	.75
Single .1 mfd. size. No. 808.....	.60	.35

Filter Condensers



For all heavy-duty work, these filter condensers are specially recommended. No. 9501 is rated at 500 volts D.C., with a flash test at 2,400 volts. No. 9551 is rated at 650 volts D.C., with a flash test at 3,600 volts. Both units are of 1 mfd. capacity. No. 9302, of 2 mfd., is rated at 300 volts, with a flash test at 1,200 volts.

The condensers are permanently sealed in pressed steel cases 2 ins. by $\frac{7}{8}$ in. by 5 ins. high.

	List Price	YOUR COST
1 mfd., 500 V. No. 9501.....	\$1.65	\$1.00
1 mfd., 500 V. No. 9501.....	1.25	.75
2 mfd., 300 V. No. 9302.....	1.25	.75

Wire-Wound Resistors

All Pilot wire resistors are wound with Nichrome wire on porcelain tubes, and are impregnated with a black elastic coating that protects them against dampness and corrosion. The resistors are equipped with removable feet, and can be mounted either vertically or horizontally.

Resistor, 15 ohms, tapped (for 222 tubes) No. 961

Resistor, 225 ohms No. 967

Resistor, 450 ohms No. 996

Resistor, 900 ohms No. 959

Center-tapped

Resistor, 650 ohms No. 954

Resistor, 750 ohms No. 965

Resistor, 850 ohms No. 955

Resistor, 1,000 ohms No. 962

Resistor, 1,500 ohms No. 963

Resistor, 1,200 ohms No. 956

Resistor, 2,000 ohms No. 958

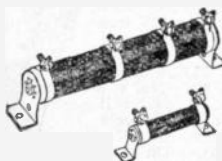
Resistor, 2,250 ohms No. 951

Resistor, 3,000 ohms No. 964

Resistor, 10,000 ohms No. 953

"B" Power pack resistor, 12,700 ohms

No. 960.....\$1.25 \$0.75



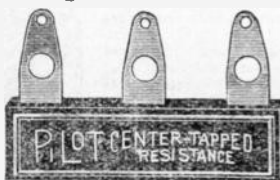
List Price
\$0.40

Your Cost
25c

Center-Tap Resistors

The Pilot center-tapped resistances, being only $1\frac{1}{2}$ inches long, can be connected directly across the filament posts of the tube sockets, and when so installed save considerable wiring.

They obviate the necessity for center taps on the filament windings of the power transformer, and keep the hum in an A.C. receiver at a minimum.

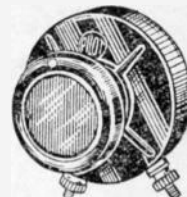


Resistor, 10 ohms. No. 352
Resistor, 20 ohms. No. 354
Resistor, 50 ohms. No. 356
Resistor, 75 ohms. No. 358

List Price, 25c each Your Cost, 15c each

Rheostats and Potentiometers

Pilot rheostats and potentiometers are wire-wound on a non-shrinking strip which withstands a high degree of heat. The Bakelite base is of heavy one-piece construction, 2 ins. in diameter by $\frac{1}{8}$ in. deep over all, behind the panel. Single-hole mounting is provided. The control knob is of two-tone brown Bakelite.



Rheostat, 6 ohms. No. 906
Rheostat, 20 ohms. No. 920
Rheostat, 30 ohms. No. 930
Potentiometer, 200 ohms. No. 200
Potentiometer, 400 ohms. No. 400
Potentiometer, 1,000 ohms. No. 931-P
Potentiometer, 2,000 ohms. No. 932-P
Potentiometer, 3,000 ohms. No. 3,000

List
85c each
Your Cost
50c each

Volumgrads



The Volumgrad is a smooth action variable resistor designed especially for volume and oscillation control purposes. The arm is insulated from the shaft, so the Volumgrad can be mounted directly on a metal panel. The maximum power dissipation is $\frac{1}{2}$ watt. The maximum voltage across the terminals is 140, 280, and 450 for the four types listed below.

0-50,000 ohms. No. 940
0-100,000 ohms. No. 941
0-200,000 ohms. No. 942
0-500,000 ohms. No. 945

List
\$1.25 each
Your Cost, 75c ea.

Resistograd

The Resistograd is a variable resistance having a "jumpless" range from 40 to about 10,000,000 ohms, which is covered by four turns of the knob. Absolutely non-inductive and non-packing. Will handle 20 watts. The case is cast out of solid aluminum, and is ribbed to radiate the heat generated during normal operation. $2\frac{1}{8}$ " long overall and $1\frac{1}{8}$ " in diameter. Mounts in a single hole. Bakelite adjusting knob furnished.

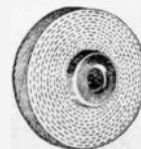


Resistograd. No. 350

List Price, 85c Your Cost, 50c

R. F. Chokes

The No. 132 R.F. choke is a universal wound, 18 millihenry, uncased R.F. choke, designed for use in the plate circuit of the second detector in 175 K.C. superheterodyne circuits, $1\frac{1}{2}$ ins. in diameter, $\frac{1}{4}$ in. deep.



R. F. choke. No. 132

List Price, 50c Your Cost, 30c



The No. 131 is a 30-millihenry radio-frequency choke coil for general use in short-wave and regular broadcast receivers. Its choking effect extends from about 15 meters up to 600, its distributed capacity being very low. Dimensions: $1\frac{1}{2}$ in. high, 1 in. diameter.

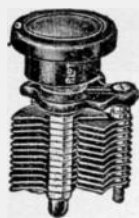
R.F. choke coil. No. 131

List Price, \$1.25 Your Cost, 75c



PILOT PARTS

Midget Condensers (Most Popular Midget Condenser)



This Midget variable condenser, designed for easy mounting, has a Bakelite frame and rigid brass plates. There are types for neutralizing R.F. amplifiers, antenna coupling, tuning verniers, regeneration control, and short-wave tuning circuits. The depth behind the panel ranges from 1 in. to 1 3/4 ins., depending upon the capacity, with a 1/4-in. shaft.

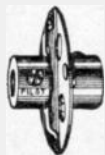
	List Price	YOUR COST
Midget, .000015 mfd. No. J-5 Plate..	\$.85	\$.50
Midget, .000025 mfd. No. J-7 Plate..	.85	.50
Midget, .000050 mfd. No. J-13 Plate..	.90	.55
Midget, .000100 mfd. No. J-23 Plate..	1.00	.60

Flexible Coupling

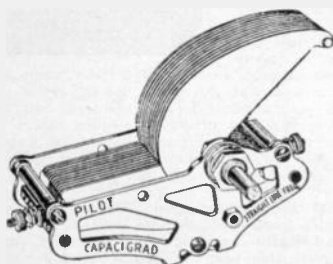
The 12A insulated flexible coupling is made for a 1/4-in. shaft. Three brackets are also supplied for fastening together the 1600 series variable condensers. This coupling is very rugged, and can carry a heavy mechanical load.

List Price, 40c

Your Cost, 24c



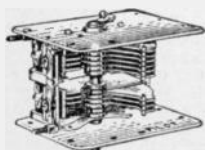
Centraline Condensers



The 1600 Centraline series is for modified straight line frequency. Condensers supplied with mounting feet and removable shafts. Because of their reversible feature, they can be mounted on either clockwise or counter-clockwise dials. They mount in a single hole and can be secured against turning by additional panel screws. Two or more can be ganged together by means of a long 1/4-inch shaft, or by No. 12A couplings. Connection to the rotor plates is made by a brass pigtail which insures noiseless contact. The No. 1611 condenser is recommended for short-wave receivers as it has extra spacing between the plates.

	List Price	YOUR COST
Centraline, .00016 mfd. No. 1611.....	\$1.75	\$1.05
Centraline, .00025 mfd. No. 1613.....	1.75	1.05
Centraline, .00035 mfd. No. 1617.....	1.85	1.10
Centraline, .00050 mfd. No. 1623.....	2.10	1.25

Short-Wave Condenser



Years of experience with short-wave equipment are designed into these condensers, the type used in PILOT'S Converter, similar in design to the precision series. Each section has .00014 mfd. max.

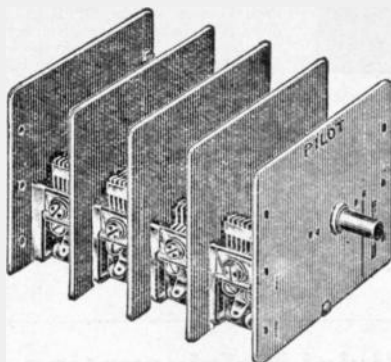
The plates are extra-spaced to assure accuracy of calibration at the low settings. The shields measure 4 1/2 by 3 3/4 ins., and the over-all length is 3 ins.

Short-Wave Condenser. No. 3135

List Price, \$5.00

Your Cost, \$3.00

Precision Type Shielded Condensers



PILOT has developed the Precision Type variable condensers to meet the most exacting requirements of balanced super-heterodyne circuits. Each section has an adjustable compensator to allow for balancing in accordance with the distributed capacities of the circuit to which the sections are connected.

These condensers, of .00032 mfd. max. per section, are made with one, two, three, and four sections. The shields measure 4 1/2 by 3 3/4 ins. The four types are 1 1/2, 3, 4 1/2, and 6 ins., in length, respectively, with a 1/4-in. shaft.

The rugged construction of the Precision Type condensers makes them particularly suited for calibrated circuits, test oscillators, and laboratory set-ups.

	List Price	YOUR COST
Precision type, 1 section. No. 3115...	\$1.75	\$1.05
Precision type, 2 sections. No. 3130...	3.25	2.00
Precision type, 3 sections. No. 3145...	5.00	3.00
Precision type, 4 sections. No. 3160...	6.60	4.00

Perfect Vision Dial

The attractive appearance of the perfect-vision PILOT dial has made it extremely popular among all classes of set builders, to whom the dependable and simple mechanism also has a strong appeal. An easy-action cam device reduces the 180-degree rotation of the condenser to a 90-degree movement of the pointer. A dial light can be mounted behind the dial for illumination, although a socket for this purpose is not provided. The dial can be mounted on the condenser itself. The coupling is for a 1/4-in. condenser shaft.



Perfect-vision dial, No. 1287

List Price, \$2.10

Your Cost, \$1.25

Art Dials



This ornamental vernier dial is made of solid bakelite, and lends an air of distinction to any set. It is available in either black or walnut color. A positive friction drive prevents slipping or backlash, even with heavy triple condensers. Mounts with a single machine screw. The scale is calibrated for both clockwise and counter-clockwise condensers. The dial is 4 inches high and 3 1/2 inches wide.

Black Bakelite. No. 1278

List Price, 85c

Your Cost, 50c

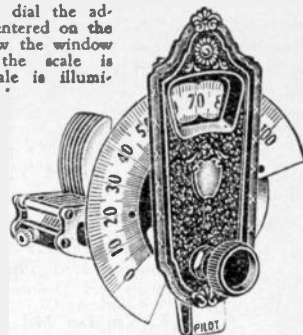
Walnut Bakelite. No. 1279

List Price, 85c

Your Cost, 50c

Precision Type Dial

In the No. 1282 dial the adjusting knob is centered on the bronze plate below the window through which the scale is viewed. The scale is illuminated, and has large figures which are easily read. The vernier action is smooth and accurate, and the framework is strong enough to support large multiple condensers. The scale is parallel to the panel, the condenser or other instrument being mounted at right angles to the latter. This dial is very popular because it is easy to mount, works smoothly, and presents a handsome appearance.

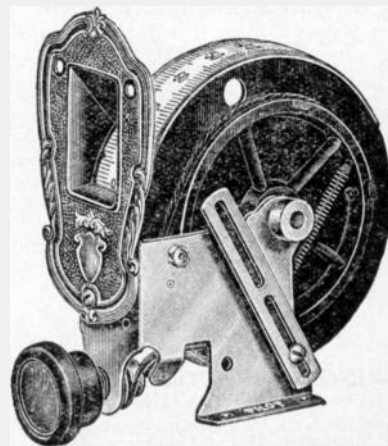


Precision dial, with bulb, No. 1282L

List Price, \$1.85

Your Cost, \$1.10

Standard Drum Dial



The No. 1285 is the finest Pilot single illuminated drum dial. The plate is of bronze, beautifully decorated with scroll work. The control knob is centered below the plate, and does not touch the latter.

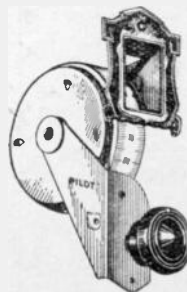
The solid molded bakelite drum carrying the condensers is driven by a specially treated cord which is wound around the drum and connects with a small pulley on the shaft turned by the control knob. The dial turns easily and smoothly yet there is absolutely no backlash, even with the largest and heaviest "Bath-tub" condensers.

Drum dial, with lamp, No. 1285L

List Price, \$2.90

Your Cost, \$1.65

Universal Drum Dial



Extreme simplicity and ruggedness have been combined to produce the No. 1273 drum dial at a very low price, although in operation and appearance it is equal to the most expensive types. The drum is intended to be carried on a 1/4-in. condenser shaft. The mounting bracket goes directly on the rear of the front panel. At the top of the escutcheon there is an opening through which a Pilot light can shine to illuminate the celluloid dial on the drum.

Universal drum dial, No. 1273

List Price, \$2.10

Your Cost, \$1.25

World's Best Books on Radio

"Radio-Craft" 50c Library Series

These books are all newly written, and contain information not only authentic in substance, but up-to-the-minute, as well! All these books contain 64 pages each, measuring 6 x 9 inches, and average between 50 to 120 illustrations in each book. They are bound in stiff board covers!



Book No. 1 RADIO SET ANALYZERS And How to Use Them

With Full Instructions and Descriptions of Set Analyzers, Tube Checkers, Oscillators, etc.
By L. Van Der Mel

Book No. 2 MODERN VACUUM TUBES And How They Work

With Complete Technical Data on All Standard and Many Special Tubes
By Robert Hertzberg

Book No. 3 THE SUPERHETERODYNE BOOK

All About Superheterodynes, How They Work, How to Build and How to Service Them
By Clyde Fitch

Book No. 4 MODERN RADIO HOOK-UPS

The Best Radio Circuits
A Complete Compendium of the Most Important Experimental and Custom-built Receivers
By R. D. Washburne

Book No. 5 HOW TO BECOME A RADIO SERVICE MAN

How to Get Started and How to Make Money in Radio Servicing
By Louis Martin

Book No. 6 BRINGING ELECTRIC SETS UP TO DATE

With Pentodes, Multi-Mus, Dynamic Speakers—Complete Information How to Modernize A.C., D.C. and Battery Operated Receivers
By Clifford E. Denton

Book No. 7 RADIO KINKS AND WRINKLES

For Service Men and Experimenters
A Complete Compendium on the Latest Radio Short-Cuts and Money-Savers
By C. W. Palmer

Book No. 8 RADIO QUESTIONS AND ANSWERS

A Selection of the Most Important of 5,000 Questions Submitted by Radio Men During the Course of One Year
By R. D. Washburne

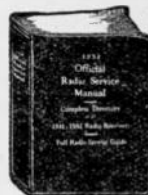
Book No. 9 AUTOMOBILE RADIO AND SERVICING

A Complete Treatise on the Subject Covering All Phases from Installing to Servicing and Maintenance
By Louis Martin

Book No. 10 HOME RECORDING AND ALL ABOUT IT

A Complete Treatise on Instantaneous Recordings, Microphones, Recorders, Amplifiers, Commercial Machines, Servicing, etc.
By George J. Saliba

If you want a complete set of all Radio Diagrams, you must have both volumes in your file



Both volumes of the OFFICIAL RADIO SERVICE MANUAL will give you the most complete set of circuit diagrams ever published for the Radio Industry. Every Radio Service Man and Dealer should have them available for immediate use in his business. Professional set-builders and amateurs will find them instructive and helpful.

Partial Contents—Wiring diagrams of radio sets manufactured since 1927, and many earlier ones of which there is any record elsewhere. 650 pages of helpful radio-servicing material. Complete course of instruction for Radio Service Men, dealers, manufacturers, jobbers, set builders and amateurs. The 1932 Manual contains a Full Radio Service Guide and a Complete Directory of all 1931-1932 Radio Diagrams, also models of older design. Everyone in the Radio business should have a copy. Send for yours today!

650 PAGES

(Complete with Supplements)

Over 1,500 Diagrams, Charts and Illustrations, Flexible, Looseleaf Binder, 9 x 12 inches. Complete with Supplements.

Your Cost, \$3.75

OVER 1,000 PAGES

(Including Supplements)

Over 2,000 Diagrams, Charts and Illustrations, Flexible, Looseleaf Binder, 9 x 12 inches. Complete with Supplements.

Your Cost, \$4.00

Official Refrigeration Service Manual

96 Pages of New Data Have Been Added

To bring this useful service manual right up-to-date, Mr. L. K. Wright, the Editor of the Official Refrigeration Service Manual, has added a wealth of entirely new material on electric refrigerators. This new section, which totals 96 pages, has contained therein dozens of new models of recent manufacture which have been placed on the market during the past few months and, in addition, information regarding improvements on older models. As usual every refrigerator has been accurately described from the viewpoint of servicing—diagrams to illustrate the essential parts, and simplified so that repairs can easily be made.



With the inclusion of more pages, the Official Refrigeration Service Manual will have over 1,200 diagrams and over 450 pages. Its flexible, loose-leaf binder accommodates the extra pages very easily. When the material has been placed in the manual, you will have a complete 1931-1932 Official Refrigeration Service Manual.

Radio Service Men—Turn Idle Hours into Profit by Servicing Electric Refrigerators with the aid of this New and Complete Service Manual

Your Cost, \$4.00

REVISED AND ENLARGED Second Edition

Radio Physics Course

By Alfred A. Ghirardi, B.S., E.E.



Completely revised from cover to cover in accordance with the suggestions offered by hundreds of Radio, Physics and Electrical Instructors who have successfully used the First Edition in their courses!

Descriptions of all new radio developments brought out during the past year have been added in this edition. These include Pentode, Variable Mu, and 2-Volt Tubes and Receivers, Midjet Receivers, Modern Super-Heterodynes, all new Television and Short-Wave Development and Receivers, the Ribbon Microphone and Talkie Improvements.

Over 750 Pages—Over 500 Illustrations

Your Cost, \$3.50

1933 Manual

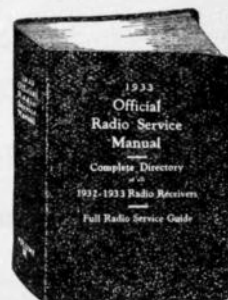
The importance of the last two Official Radio Service Manuals to those engaged in the Radio Industry has been shown by the fact that over 52,000 copies of both editions have been purchased and are in use by manufacturers, jobbers, dealers, service men and experimenters. Incessant demands have encouraged us to publish a new and bigger Service Manual for 1933.

The new manual will not contain so many full-page illustrations as in the past for the reason that not as many new sets are being put out at present, but will have in its contents important information that has not yet appeared in print. This new "dope" is invaluable to radio men. Stress has been emphasized on giving only practical material, not complicated theory. It is bound to save time and money for everyone.

Over 2,000 illustrations; over 700 pages; 9 x 12 inches; flexible, looseleaf leatherette cover.

The Official Radio Service Manual for 1933 comes to you complete this year—no supplements.

Your Cost, \$4.00



Short-Wave Book

Dozens of short-wave sets and converters will be found in this book, which contains hundreds of illustrations; actual photographs of sets built, hook-ups and diagrams galore. 76 pages, 250 illustrations, stiff paper covers.

Your Cost, 50c



Radio Traffic Manual and Operating Regulations

By R. L. Duncan and C. E. Drew
This valuable handbook starts off with the instructions on how to learn the code in considerable detail, with a list of abbreviations. Then comes operating rules and regulations of the Radiomarine Corporation of America with operators' report forms; followed by the rules of the International Radiograph Convention; the United States Radio Act of 1927; the Ship Act of 1912; etc.

Flexible covers, size 9" x 6", 186 pages

Your Cost, \$2.00

World's Best Books on Radio

How To Pass U.S. Government Radio License Examinations



By R. L. Duncan and C. E. Drew
The authors are thoroughly conversant with their subject and all of the most important information, including hook-ups; types of antennae and receivers with wiring diagrams of both small and large receivers and transmitters of commercial type, including ship sets, are given.

Flexible Covers, size 9½" x 7", 170 pages, 92 illustrations, appendix

Your Cost, \$2.00

Radio and Electronic Dictionary

For Every Man Interested in Radio and Modern Uses of the Electronic Tube

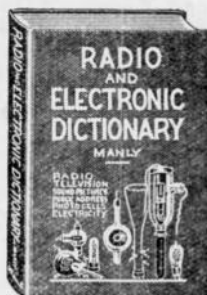
Right up-to-the-minute with definitions of the technical words and terms used in all branches of radio, including aviation, navigation and industrial control — photoelectricity and photo-cell applications — sound pictures — public address systems — television — telephotography — electricity and magnetism. 3800 helpful definitions of all words and terms used in the electronic field.

300 pages printed on fine grade paper.

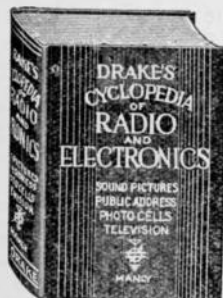
550 illustrations made especially for this book.

Compiled by Harold P. Manly, of the Radiotecnical Laboratory. Recognized authority and writer on electronic subjects, and author of Drake's Radio Cyclopedia.

Your Cost, \$2.19



Drake's Radio Cyclopedia



Answers in plain English every practical question on the servicing, adjustment, repair, remodeling and designing of radio receiving equipment. Each of the five hundred leading articles is complete in itself, and in addition there are hundreds of concise definitions. The entire volume is alphabetically arranged and self-indexed to make every fact instantly accessible.

Your Cost, \$4.80

Theory of Radio Communication

By Lieut. John T. Filgate

Formerly Instructor at U. S. Army Signal School. Published with approval of U. S. War Department, this is first public printing of the officers' radio manual used by the U. S. Army Signal Corps. A splendid technical text-book for advanced radio amateurs. 250 pages, 200 illustrations.

Your Cost, \$2.00

Rider's Perpetual Trouble Shooter's Manual

Volume No. 2

Contains 1,000 Pages—2,000 Diagrams and Layouts
Size 8½ x 11—Weighs 6 lbs.—Loose Leaf Style

It will help you service at a profit. It will save time because you will not be called upon to trace the circuit of a receiver. You will not waste time trying to locate the units shown in the wiring diagram. You will not waste time guessing at the correct operating voltages, at the correct values of resistance and capacity—at all electrical values. Are you interested in having all the service information about commercial radio receivers? Then buy Rider's PERPETUAL TROUBLE SHOOTER'S MANUAL. It was prepared with the co-operation of Radio Receiver Manufacturers. In it you will find every bit of service information you require to work rapidly and accurately without any guesswork.

Point-to-Point Resistance Data—The point-to-point resistance data contained in the manual represents the finest and latest advancement in the art of radio receiver servicing.

Volume No. 2 of the Perpetual Trouble Shooter's Manual picks up where Volume No. 1 left off. Absolutely no duplication of material in the two volumes. Every owner of Volume No. 1 should have Volume No. 2. It is indispensable—guaranteed to be up-to-date and includes receivers announced up to and inclusive of April, 1932.

Volume No. 2, Your Cost, \$5.00

RIDER'S PERPETUAL TROUBLE SHOOTER'S MANUAL

Volume No. 1

Contains All Sets and Diagrams Up to 1931
More than 974 pages. More than 1,800 diagrams. You will need Volume 1 to enable yourself to service the old model sets.

Your Cost, \$4.50

Radio Telegraphy and Telephony

By R. L. Duncan and C. E. Drew

This 950-page book furnishes indeed a most complete treatise on radio facts. The authors treat thoroughly the magnetic circuit; Ohm's Law; Transformers and induction; motor generators and starters; storage batteries; alternating currents; capacity and inductance formulae. Vacuum tubes as detectors and amplifiers; oscillographs; radio compass; wave-length measurements and short-wave receivers.

Cloth covers, size 9½" x 6", 950 pages, 468 illustrations

Your Cost, \$7.50

The Most Complete Selection of Important and Up-to-Date Radio Books for the "Ham," Service Man, Radio Technician, Television Expert, Radio Student and Laboratory



Rider's Popular Dollar Library

"Servicing Super - Heterodynes," 163 pages, 5" x 7".
"Radio Service Questions and Answers," (2 volumes) 160 pages in each volume, 5" or 7". Well illustrated. A storehouse of valuable knowledge.
"Practical Testing Systems"
"Servicing Receivers by Resistance Measurements." Shows how to check a complete receiver without removing the chassis. 160 pages, 5" x 7".
"Useful Radio Tables." No theory—no charts . . . just brimful of valuable tables. 144 pages.

Servicing Auto-Radio Receivers—Do you know how to install the R.C.A. M-30 auto-radio receiver in a Ford, Buick, Cadillac or other car? Have you accurate data about ignition suppression? Are you familiar with Class B amplification as used in auto-radio receivers? These and a large number of other problems related to auto-radio receivers are solved for you in Servicing Auto-Radio Receivers. This field will be tremendously active this summer. Are you prepared? In this volume you will find the circuits of auto-radio receivers with special instructional notes accompanying each receiver. If you expect to do any auto-radio receiver service, you must have this book. It will pay for itself on the first job. 144 pages. Well illustrated. Type set. Cloth bound. Practical, informative, up-to-date, accurate.

Your Cost \$1.00 each

Principles of Radio

By Keith Henney, Associate Editor, Electronics



477 pages. 5½ by 8. Cloth. A book intended primarily for radio students, experimenters, and technicians. Well illustrated with practical problems and examples.

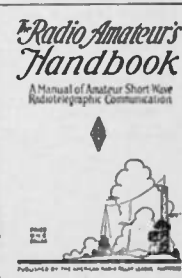
Contents: Fundamentals, Ohm's Law, Production of Currents, Inductance, Capacity, Properties of A-C Circuits, Resonance, Properties of Coils and Condensers, The Vacuum Tube, The Tube as an Amplifier, Audio Amplifiers, Design of A.F. Amplifiers, High-Frequency Amplifiers, Detectors, Receiving Systems, Rectifiers and Power Supply Apparatus, Oscillators, Transmitters, etc. Antennae, Transmission, Index.

Your Cost, \$3.50

Radio Amateur Handbook

A book every amateur should have. This is the ninth and latest edition of a book that has become so popular that it is generally referred to as the amateur's "bible." More than 100,000 copies have been sold to radio fans all over the world, and orders for it continue to arrive in every mail.

Your Cost, \$1.00



Practical Radio Repairing Hints

By J. F. Rider

This book is full of practical radio repairing hints and kinks covering all types of radio receivers and radio parts.

Your Cost, \$2.00

Public Address Equipment

M & H Portable Class "A" and Class "B" Amplifiers

CLASS "B" AMPLIFIER TYPE RD-102A

The M & H Portable Class "B" Amplifier is a five-tube instrument incorporating all of the usual amplifier features, together with the new compensated audio system and Class "B" audio amplifier output. These features, mainly evidenced by the greatly improved tone quality and high output, give this instrument a degree of performance not obtainable with any existing type of amplifier.

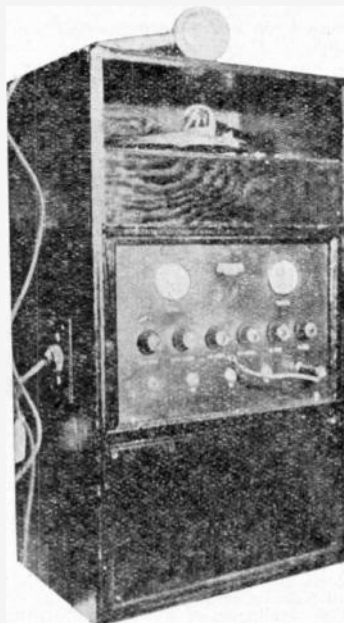
In order to understand the reasons for many of the design features of this amplifier it is necessary to first review some of the requirements of an amplifier. These may be listed in the following order:

FIDELITY

Fidelity is that quality of an amplifier that determines how exact the reproduced sound follows that of a record, radio receiver or microphone, excepting, of course, any distortion that may originate in the record or microphone. Fidelity must cover every quality of an amplifier from input to sound pressure output. Not only must the amplifier be considered but also the loud speaker, the room or hall and input apparatus; all of these parts are important. Fidelity also includes distortion that occurs at reduced volume due to certain characteristics of the human ear. This will be discussed later. In general, fidelity means the overall ability of an amplifier to reproduce exactly the same sounds in their natural qualities.

AUTOMATIC TONE CORRECTION

By the use of a new type of volume control, automatic tone correction is had. The sound-pressure representing the threshold of audibility varies greatly with the frequency and is a great deal higher at low and high frequencies than in the middle register. Therefore, the volume control unit must vary the frequency characteristics of the



M & H Class "B" Type RD102A Amplifier, complete with tubes, dynamotor, "A" battery and microphone—

Your Cost, \$226.24

Complete with tubes, "A" and "B" batteries and microphone—

Your Cost, \$190.16

Complete, less tubes and batteries, but with microphone—

Your Cost, \$170.24

See Racor Speakers for cost on units and horns, or for dynamic speakers see Magnavox No. 143 units.

ELECTRICAL SPECIFICATIONS

Voltage rating...6 or 12-v. storage battery
Power consumption...78 watts approx.
Output impedances...15 and 2,000 ohms
Input impedances...200 and 2,000 ohms
Undistorted output10 watts
Number of audio stages.....3
First audio stage.....one tube
Second stage audio....two in push-pull
Type of converter...Esco (special unit)

Third audio stage...2 tubes in push-pull
Type of tone control
Reactor capacitor and variable resistor for reducing high or low frequency response and eliminating noises and hiss.
Type and number of tubes
Four Cunningham CX112A and One CX301A.

Phonograph motor...6 v., 1/4 amp. D.C.
Electric pickup.....Audak
Volume level indicator.....Weston
Filament voltmeter.....Weston

Height30 inches
Width16 inches
Depth12 inches

MicrophoneAmerican
Transformers.....M & H Special
Gain control.....Special C.R.L.
Adequate insulation.....3,000 volts

PHYSICAL SPECIFICATIONS

WeightApprox. 75 pounds
FinishBlack lacquer, high lustre
Material used in cabinet...5-ply veneer

audio amplifier so that the apparent quality of reproduction remains the same for all volume control settings. This new correction control achieves this result.

SPECIAL MIXING CIRCUIT

One of our special Type 2311 Mixing Transformers provides a convenient method of coupling either microphone or phonograph to the amplifier. One or both may be employed at will.

Why should I use Class "B" amplification? This question has been asked of us hundreds of times, to which we answer: 1. Extremely high efficiency. 2. Low battery-power consumption. 3. Exceptionally great output—10 watts undistorted. 4. Tone fidelity. 5. Flexibility. 6. Use plate power in proportion to the volume. 7. Low cost of tubes. 8. Will handle 10 magnetic units or 6 dynamic speakers or units.

RUGGEDNESS

In Portable Amplifiers, it is of vital importance to have an outfit that will withstand the heavy vibration and shocks commonly given to this type of apparatus.

It is self-evident that, however efficient an amplifier may be in tone, output and appearance, unless it can stand this abuse it is absolutely unsatisfactory.

In constructing the M & H Portable Amplifier these facts were kept in mind and the results obtained from our amplifiers were more than gratifying. While it is economical to use cheaper parts, in the long run it is more costly.

We do not contend to have the cheapest the market offers, but we can say that our amplifiers are of the best obtainable. The quality and performance is primary and the price is secondary but still within reason.

CLASS "A" AMPLIFIER TYPE RD-101

For those who do not require the output of a Class "B" Amplifier we are prepared to supply our Class "A". The quality of this unit, in so far as mechanical and electrical arrangement, compares favorably with our Class "B" unit, however, with an output of approximately four watts. This apparatus is ideal for political meetings, store demonstrations, sound trucks, yachts, etc., or wherever a compact portable amplifier is required. General appearance is the same as the Type RD-102A.

Uses: One 112-A first stage audio.
One 112-A second stage audio.
Two 183 tubes in push-pull.

Has tremendous volume on microphone and pickup and nothing but highest-grade equipment used throughout.

Complete with tubes, dynamotor, storage battery and microphone

Your Cost, \$194.92

Complete with tubes, "A" and "B" batteries and microphone

Your Cost, \$147.92

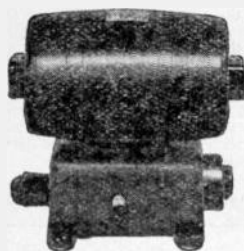
These amplifiers are merely suggested arrangements. Our Engineering Department will be glad to quote on any special arrangement you may desire. High quality at a reasonable price is our motto.

Public Address Accessories

CONVERTERS

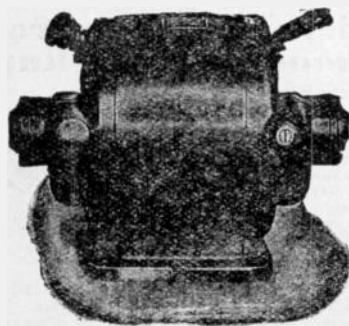
Esco Rotary Converters

Esco Generators are known the world over. They are used by the U. S. Government. Conservatively rated with high efficiency.



Catalog No.	Watts Output	Primary Volts	YOUR COST Filtered	YOUR COST Unfiltered
2-R-61	40 W.	6 V.	\$40.00	\$36.00
4-R-122	150 W.	12 V.	62.50	56.25
2-R-322	150 W.	32 V.	45.10	40.50
2-R-323	200 W.	32 V.	49.95	44.95
2-R-324	300 W.	32 V.	53.75	48.38
2-R-325	400 W.	32 V.	64.75	58.28
2-R-151	90 W.	115 V.	35.50	32.00
2-R-152	120 W.	115 V.	36.25	32.63
2-R-154	200 W.	115 V.	48.25	43.43
2-R-155	300 W.	115 V.	52.25	47.03
2-R-157	500 W.	115 V.	64.75	58.28
4-R-155	1000 W.	115 V.	146.25	131.65
4-R-157	2000 W.	115 V.	190.12	171.12

Esco Dynamotors



Cat. No.	Watts Output	Primary Volts	Secondary Volts	YOUR COST
51	100 W.	32 V.	500 V.	\$52.30
53	200 W.	32 V.	500 V.	59.40
58	175 W.	32 V.	1000 V.	84.60
60	450 W.	32 V.	1000 V.	126.90
64	40 W.	12 V.	350 V.	45.90
70	100 W.	12 V.	500 V.	63.00
90	5 W.	6 or 12 V.	100 V.	20.70
91	15 W.	6 or 12 V.	220 V.	23.40
92	20 W.	12 V.	300 V.	24.30

"Janette" Rotary Converters

For Electric Phonographs, Amplifiers, Etc.
Outstanding in Performance—Never Fail



CA-20-F

Converter with filter is recommended for use with radio sets.

(h) 32 Volts D.C. to 110 Volts, 60 Cycles A.C.				
Type	Output Watts	Input Amps.	YOUR COST	With Filter YOUR COST
CA-20	110	6.5	\$29.16	\$33.96
CA-18	150	8.5	32.59	37.39
C-13	300	15.0	41.16	51.45
CB-11	400	19.0	68.60	82.32
E-8	500	24.0	97.70	110.50

(k) 115 Volts D.C. to 110 Volts, 60 Cycles A.C.				
Type	Output Watts	Input Amps.	YOUR COST	With Filter YOUR COST
CA-20	110	1.9	29.16	33.96
CA-18	150	2.4	32.59	37.39
C-16	180	2.9	34.30	51.45
C-13	300	4.0	41.16	....
CB-12	500	6.4	54.88	65.17
CF-12	600	8.0	109.76	123.48

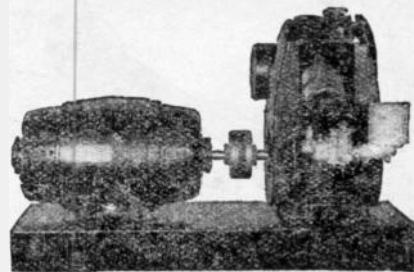
Janette Gasoline Motor Driven Generator Sets

110 Volts, 60 Cycles, Single Phase, A.C.
1-Cylinder Type

Type	Watts Output	YOUR COST Bare M-G Set	YOUR COST Panel	YOUR COST Filter and Shielding of Engine Ignition
C-13	300	\$148.55	\$24.00	\$17.84
CB-12	500	158.88	24.00	17.84

It has been proved time and time again that cheap merchandise is most expensive in the long run and it is especially so with Public Address Equipment. When thousands of people are waiting to listen to a presidential candidate or if the mayor of a town is laying the cornerstone for a new building—and is to make an address it is essential that there be no breakdown. Take no chances—buy the best as recommended on these pages.

Esco Gasoline-Electric Power Plants

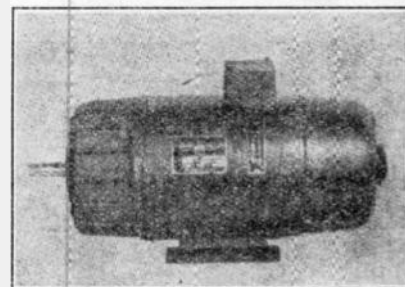


Public address trucks, yachts, etc. Entirely self-contained. Protected against weather and dust.

Cat. No.	Watts Output	YOUR COST Set Only	YOUR COST Filtered	YOUR COST Control Panel
AC-1	250	\$121.50	\$139.75	\$18.25
AC-3	500	157.75	176.00	18.25
AC-4	750	213.25	236.75	18.25
AC-5	1200	261.75	285.25	18.25

Esco Automotive Alternator

A Constant Speed Generator with Speed Regulator Giving a Steady A.C. Voltage and Frequency from an Automotive or Motor Boat Engine



All Parts Non-Corrodible, Rugged, Totally Enclosed, Durable

Delivers 110 Volts, 60 Cycles, Single Phase, Alternating Current

The speed regulator of the Esco design which is built integral with the generator maintains the generator speed, and therefore the output voltage and frequency constant, even though the speed of the engine may vary through wide limits.

The generators are furnished with direct current windings, for field excitation, and if desired may be supplied to deliver direct current for battery charging as well as A.C. The rated output may be divided between A.C. and D.C. as required, and should be definitely specified in the order.

Following are ratings and prices of the generators complete with speed regulators and separate rheostats, but not including pulleys, belts, or mounting brackets.

Size	Total Watts Output	YOUR COST	YOUR COST With Filter
RLS-2	200	\$90.00	\$100.00
RLS-4	350	94.09	104.00
RLS-5	450	108.00	118.00

Public Address Equipment

The New AUDAK Electro-Chromatic Pickups

"The Standard by Which Others Are Judged and Valued"

... to reproduce every shade of musical value—
NEEDLE-BALLAST—The Last Word in Pickup Performance

In the reproduction of electrical recordings, the fine shadings, so essential to real music, are generally lost due to side-sway of the pickup-head itself. That is to say, instead of the needle vibrating, the motion is transmitted to the pickup-head so that the whole structure moves, thus depriving the needle of some of the vibrations. This is now most effectively overcome by our new needle-ballast wings. This needle-ballast is directly at the needle point and is, therefore, not only independent of the arm itself, but is also independent of any tortional twist, or looseness at the joint (which is always present) between the pickup-head and the arm. **POLY-CHRON—No. 33**—For 78 and 33 1/3 records

List Price, \$24.50

Your Cost, \$14.41

The new **MUSIC MASTER** pickup is recommended for those who do not require the finest in performance, but still wish to obtain good quality at a low price.



MUSIC MASTER No. 433
 For 78 and 33 1/3 records
 List Price, \$12.50

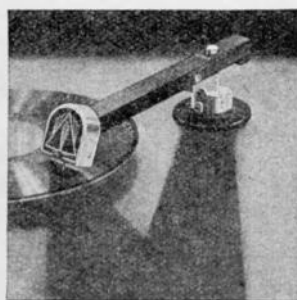
Your Cost, \$7.35

New—No. 20
 Priced at
 \$17.50

Your Cost, \$10.29

No. 20
 Tuned, \$19.50

Your Cost, \$11.47



New—The Professional, the standard pickup for talking movies. Made expressly for talking picture theatres.

Priced at
 \$100.00

Special Theatre Price, \$37.50

Note: Unless otherwise specified, high impedance units are supplied.

The Pacent 108 Oil-Damped Phonovox With Adjustable Tone Arm



The most perfect reproduction of records is now available through the use of the 108 Oil-Damped Phonovox. Designed to meet every requirement of broadcasting stations and talking pictures, Pacent engineers have overcome every obstacle in disc reproduction. Absolutely no rubber is used in dampening the 108 Oil-Damped Phonovox; thus no adjustments are ever necessary.

The absolute elimination of needle jumping is now a reality. The needle pressure may be varied to suit all requirements by turning the thumb screw on the top of the tone arm.

	List Price	YOUR COST
108A—Oil-Damped Phonovox Head Only	\$20.00	\$11.70
(Impedance 2000 Ohms at 1000 Cycles)		
Average Voltage Output—0.2 Volts		
108B—Oil-Damped Head with Adjustable Tone Arm	25.00	14.70
(Includes volume control) (Impedance 2000 Ohms at 1000 Cycles)		
Average Voltage Output—0.2 Volts		
108AL—Same as 108A except low impedance	20.00	11.70
(Impedance 200 Ohms at 400 cycles)		
Average Voltage Output—0.02 Volts		
108BL—Same as 108B except low impedance	25.00	14.70
(Volume control is not included) (Impedance 200 Ohms at 400 Cycles)		
Average Voltage Output—0.02 Volts		

"National" Scratch Filter

The "National" Scratch Filter greatly reduces the needle-scratch when using an electrical phonograph pick-up in connection with a radio set or power amplifier when reproducing phonograph records, electrically.

List Price, \$5.50

Your Cost, \$3.30

New Pacent Phonovox

For 33 1/3 and 78 RPM Records



Never before have you heard such astounding quality and such tremendous volume from an electric phonograph pickup as that provided by the new No. 120 and No. 160 Pacent Phonovoxes. The operation of the Phonovox is very simple. Merely turn on the radio receiver and adjust the volume control on the set to minimum position; start phonograph motor, insert new needle in pickup head and place it on the record in the usual manner. Volume from the No. 120 Phonovox is regulated through the separate volume control and change-over switch.

When it is desired again to use the radio set, simply turn the volume control knob on the combined volume control and selector switch to radio position, and tune in the receiver.

The No. 120 Phonovox, including No. 14 adapter, wafer adapter and combination volume control and radio-record change-over switch.

List Price, \$13.50

Your Cost, \$7.94

No. 160 Phonovox, including the No. 14 adapter, wafer and combination volume control and radio-record change-over switch, same as above except equipped with 16" tone arm.

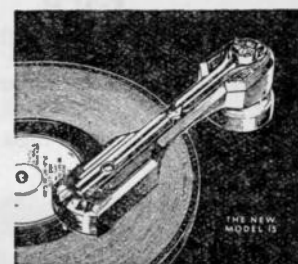
List Price, \$16.00

Your Cost, \$9.42

AN IMPROVED WEBSTER ELECTRIC PICKUP For the New "Long-Playing" Records

Model 15-B

Startling new and modern in appearance, this Webster Electric Pickup embodies the most advanced features of engineering development and design. This instrument is now ready and available to meet the popular demand created by the advent of the new "long-playing" records.



Through the introduction of an ingenious counter-balance, this new Webster Electric Pickup reproduces either the older type records, or the latest recordings with equal tone fidelity.

List Price, \$13.00

Your Cost, \$7.65

Pacent No. 171 Recordovox With Control Box

For Home and Professional Recording

Make your own phonograph records. Permanent recordings of your voice or those of your friends. Records permanently distant, foreign or local radio programs as they are received through your radio.

The Recordovox, furthermore, permits you to talk, announce, or sing through the loud-speaker of your radio set. Simultaneously with the reception of programs. An accomplishment which in itself provides endless possibilities for amusement.

No. 171—Pacent Recordovox with Control Box (including three recording weights and necessary adapters but not including microphone).

List Price, \$27.50

Your Cost, \$16.50

Single-Button Hand Microphone (especially adapted for the No. 171 Recordovox).

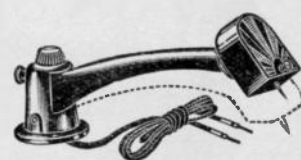
List Price, \$10.00

Your Cost, \$3.95

Winchester "Micrometer-Control" Phonograph Pickup

This phonograph pickup is the only one manufactured which has a micrometer screw adjustment for varying the pressure of the head on the record. The arm is double-jointed and hence, very flexible.

It is cushioned by a spring, the tension of which is controlled by the micrometer screw. These features make the reproduction of recorded music the most natural and clear-cut ever obtained. The case is made of molded bakelite throughout and is surprisingly light. Has a built-in volume control which will effectively control the output from a whisper to a roar. The pickup head works on a swivel, thereby making the insertion of a phonograph needle the easiest thing in the world. Due to the careful balancing of the tone arm on the record "scratch noise" is entirely eliminated. Shipping weight, 2 lbs.



Winchester Micrometer Phonograph Pickup

Your Cost, \$4.95

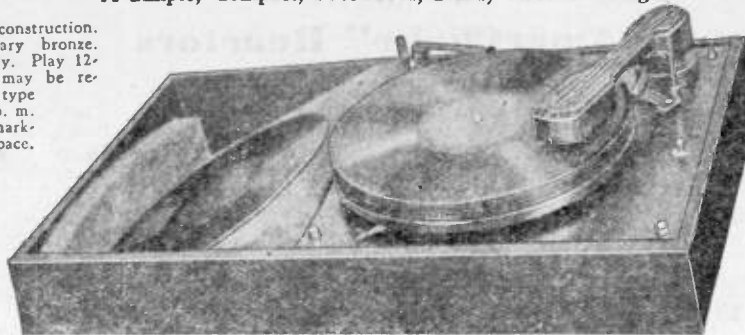
Public Address Equipment

Packard Automatic Record Changer

A Simple, Compact, Fool-Proof, Sturdy Record Changer

SPECIFICATIONS—All steel construction. Heavily copper-plated. Finish, statuary bronze. Plays eight 10-inch records automatically. Play 12-inch records manually. Any record may be repeated. Repeats last record. Improved type two-speed motor. Plays standard 78 r. p. m. or 33 1/3 r. p. m. records. Most remarkable for its simplicity. Requires small space. Flat-type flexible pick-up. Volume control. Master switch. Electrical specifications: 110 volt A.C., 60 cycles (odd cycles, slightly higher). Complete, ready to plug in.

FULL CHASSIS VIEW (showing cabinet type mounting)—Width, 22 1/4 inches; depth, 13 1/2 inches; height above mounting board, 3 1/2 inches;



depth below mounting board, 3 inches. (Note simplicity.)

Has automatic pick-up weight adjusting device. When the motor speed control lever is set in the 33 1/3 position the pick-up weight is set at between 3 and 3 1/2 ounces pressure. When the lever is moved to the 78 r. p. m. position the pick-up weight is automatically increased to between 5 and 5 1/2 ounces pressure.

Your Cost, \$50.00

Less mounting box as pictured, as this merely shows the ease with which the changer may be mounted.

Green Flyer Two-Speed Phonograph Motor



New Green Flyer Two-Speed Governor Controlled Electric Motor—33 1/3 and 78 r. p. m., complete with standard 12" turntable, speed regulator and speed change lever and plate.

Model "D"—for 10" and 12" Records

Your Cost, \$10.90

Model "H"—for 16" Records

Your Cost, \$11.90

New Duo-Disc

33 1/3-78 R. P. M.

In a jiffy—makes an up-to-date two-speed machine out of your radio combination or old style phonograph

Millions have marveled at the new long playing records. These records must be played at the special speed of 33 1/3 r. p. m. and, therefore, cannot be played on your machine, which runs at 78 r. p. m.

Throughout the world, engineers have been trying to develop a device that could be readily attached to your machine, converting it into a dual-speed instrument. However, due to the delicate constant speed required by these records, such attempts have met with failure. BUT, the Audak Company, in keeping with its past pioneering achievements, has succeeded where others failed . . . and our answer to this "impossibility" is . . . DUO-DISC.

Imagine it! By the mere turn of a button—easy as turning on the light, with DUO-DISC you can now have all the joys of the new long-playing discs . . . or, turn back at will to the regular records.

List Price, \$7.50

Your Cost, \$4.40

Audak Musicchrome

Equipped with the Famous "Electro-Chromatic" Pick-up

Weights less than 14 lbs. This marvelous little cabinet holds the secret of finest home and public entertainment through your radio . . . via Records.

The identical outfit used by broadcasting stations, talking picture theatres and exclusive radio shops, for electrically transcribing music. Solid mahogany cabinet, walnut finished. High grade electric motor. Full length, genuine "Electro-Chromatic" Pick-up. Just plug in, use and enjoy it, then tuck it out of the way till you want it again!



List Price, \$58.00
Dual Speed, \$5.60 Extra

Your Cost, \$34.10

Sound Truck Batteries

Type GLWR-4
Capacity, 150 Amps.

This heavy duty oversize radio battery is assembled in a hard rubber container and is especially designed for sound truck and speech amplification work where the load is heavy.

Also particularly recommended for all battery operated radio sets where the load is considerably above the average.

Physical dimensions: 13" long, 7 1/8" wide, 9 3/4" high. Weight, 63 lbs.

Your Cost, \$20.45

In Lots of Six, \$110.40

Willard

STORAGE
BATTERY

Sound Truck Batteries

Type GLW-11-3
Capacity, 125 Amps.

This heavy 11-plate radio battery is assembled in a hard rubber container and is designed for sound truck and speech amplification work where weight and space is limited.

Also ideal for the battery operated radio set.

The extra heavy duty plates in the battery avoid frequent recharging. Special Port Oxford seasoned wood separators used.

Your Cost, \$12.95

In Lots of Six, \$69.90

Standard "A" Battery

Type WT-1-13

Auto Capacity, 80 Amps.
Radio Capacity, 100 Amps.

This battery has 13 plates and is assembled in a hard rubber container suitable for use in most of the four-cylinder and light six-cylinder cars. Ideal for radio use where larger capacities are not required. Uses especially treated separators. Physical dimensions: 9 1/8" long, 7 1/8" wide, 8 1/8" high. Weight, 40 lbs.

Your Cost, \$6.95

In Lots of Six, \$33.35



Heavy Duty "A" Battery

Type WT-2-15

Auto Capacity, 95 Amps.
Radio Capacity, 120 Amps.

This battery has 15 plates and is assembled in a hard rubber container suitable for use in all cars requiring a 15-plate battery.

Ideal for radio use on battery operated sets with a normal "A" battery draw. Uses Port Oxford cedar wood separators which are especially seasoned. Physical dimensions: 10 1/8" long, 7 1/8" wide, 8 1/8" high. Weight, 44 lbs.

Your Cost, \$9.95

In Lots of Six, \$79.95 each

Records for Sound Recording

The records are aluminum discs and will faithfully record the voice of any person, music, or sounds of any type. They can be used to record on both sides, and when played with the proper bamboo needles are practically indestructible.

Size	Playing Time	List Price Each	YOUR COST Per Doz.
6 inches	1 1/4 minutes	\$0.20	\$1.41
7 1/2 inches	2 minutes	.30	2.12
10 inches	3 3/4 minutes	.90	3.53
12 inches	5 minutes	.75	5.30
			YOUR COST
Recording Needles (Pack of 5).....			\$0.15
Reproducing Needles (Pack of 2).....			.15

These Records Are Not Pre-Grooved



AmerTran Products

"The Accepted Standard of Excellence"



"AmerChoke" Reactors

PLATE FILTER "AMERCHOKES"

Henries	Amps. D.C.	D.C. Ohms	See Notes	Test Volts	Illus- tration	Type No.	List Price	YOUR COST
8	0.350	65	....	2,500	Fig. 6	4725	\$18.00	\$10.59
10	0.160	105	....	2,500	Fig. 5	4724	8.00	4.71
13	0.250	130	....	2,500	Fig. 6	557A	18.00	10.59
15	0.120	210	....	2,500	Fig. 5	709	8.00	4.71
40	0.060	625	....	2,500	Fig. 5	854	8.00	4.71



Figure 1

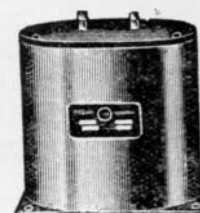


Figure 4

"A" FILTER "AMERCHOKES"

0.16	2.5	0.5	2,500	Fig. 5	418	8.00	4.71
------	-----	-----	------	-------	--------	-----	------	------



Figure 2



Figure 5

PARALLEL-FEED "AMERCHOKES"

125	0.005	674	2	2,500	Fig. 4	103	10.00	5.88
300	0.003	6,000	1 & 4	2,500		3842	8.00	4.71
650	0.005	674	1 & 2	2,500	Fig. 6	988A	20.00	11.76

OUTPUT "AMERCHOKES"

40	0.006	674	....	2,500	Fig. 4	101	10.00	5.88
400	0.006	674	3	2,500	Fig. 4	641	10.00	5.88

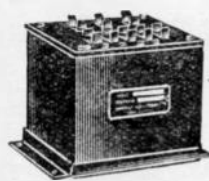


Figure 3

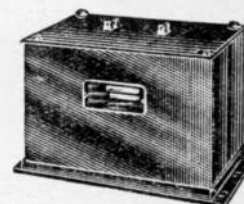


Figure 6

GRID IMPEDANCE "AMERCHOKES"

1500	None	6,000	1 & 4	2,500		3793	8.00	4.71
------	------	-------	-------	-------	--	------	------	------

Notes: 1—Alloy Core. 2—Size wire sufficient to carry 50-mA.
3—Centertapped winding. 4—Aluminum mounting (see First Stage De Luxe transformers).

"AmerTran" Transformers

INTERSTAGE AUDIO TRANSFORMERS

	Type No.	List Price	YOUR COST
AmerTran De Luxe for 1st-stage use, ratio 3:1 (Fig. 1)	1st Stage	\$8.00	\$4.71
AmerTran De Luxe for 2nd-stage use, ratio 4:1 (Fig. 1)	2nd Stage	8.00	4.71
Between output of 1 tube and 2 grids, ratio 2.5:1 (Fig. 1)	151	12.00	7.06
Between output of 2 tubes and 2 grids, ratio 1.75:1 (Fig. 2)	710	20.00	11.76

OUTPUT TRANSFORMERS (Fig. 1)

Two 210-type tubes to 2,000-4,000-ohm magnetic speaker	152	12.00	7.06
Two 210-type tubes to 10-15-ohm dynamic speaker...	200	12.00	7.06
Two 245- or 171-type tubes to 2,000-4,000-ohm speaker	442	12.00	7.06
Two 245- or 171-type tubes to 10-15-ohm dynamic speaker	443	12.00	7.06
One 250-, 210-, 245- or 171-type tube to 10-15-ohm speaker	115	15.00	8.82
Two 250-type tubes to 1-9 dyn. speakers in series parallel	678	22.00	12.94

PENTODE OUTPUT TRANSFORMERS (Fig. 1)

Two type 247 pentode tubes to 500 ohms (center-tapped primary)	6150	15.00	8.82
Two type 247 pentode tubes to 4000 ohms (center-tapped primary)	6152	15.00	8.82
Two type 247 pentode tubes to 15 ohms (centertapped primary)	6200	15.00	8.82

DETECTOR-TO-LINE TRANSFORMERS (Fig. 1)

Detector to 500-ohm line—level 10 db.	994	15.00	8.82
Detector to 200-ohm line—level 10 db.	805	15.00	8.82

LINE-TO-GRID TRANSFORMERS

500-ohm line to grid of tube (150,000 ohms)—level 0 db. (Fig. 1)	547A	15.00	8.82
200-ohm line to grid of tube (150,000 ohms)—level 0 db. (Fig. 1)	923A	15.00	8.82
500-ohm line to two 50,000 ohm grids (211- or 845-type tubes)—level +20 db. (Fig. 2)	3664	22.00	12.94

PHONOGRAPH PICK-UP TRANSFORMERS (Fig. 1)

	Type No.	List Price	YOUR COST
5,000-, 6,000-, or 8,000-ohm pick-up to 1st-stage de Luxe	389	\$8.00	\$4.71
500-, 1,000-, or 2,000-ohm pick-up to grid of tube...	406A	15.00	8.82
500-, 1,000-, or 2,000-ohm pick-up to 200-, or 500-ohm line	806A	18.00	10.59

TUBE-TO-LINE TRANSFORMERS

Two 250- or 245-type tubes to 200-ohm line or 1-9 15-ohm dynamic speakers in series parallel (Fig. 2)	678	22.00	12.94
Two 250- or 245-type tubes to 500-ohm line—15-ohm monitor winding (Fig. 2)	3332	22.00	12.94
Two 210- or 112-type tubes to 500-ohm line—15-ohm monitor winding (Fig. 2)	3332	22.00	12.94
20,000 ohms to 500-ohm line, 2 mA. d.c. in pri., low level (Fig. 1)	993	12.00	7.06
Two 211-type tubes to 500-ohm line (Fig. 3)	3810A	68.00	40.00
Two 845-type tubes to 500-ohm line (Fig. 3)	4116A	68.00	40.00

LINE-TO-SPEAKER AUTO TRANSFORMERS (Fig. 2)

500-ohm line to 0.16-16 ohms (12 steps) 12 watts...	3377	28.00	16.47
500-ohm line to 4,000-333 ohms (12 steps) 12 watts	3432	28.00	16.47
500- or 200-ohm line to 3.75-60 ohms (6 steps)—4.5 watts	3576	20.00	11.76
4,000- or 500-ohm line to 3.75-15 ohms (4 steps)—4.5 watts	4293	25.00	14.70

MIXER TRANSFORMERS (Fig. 1)

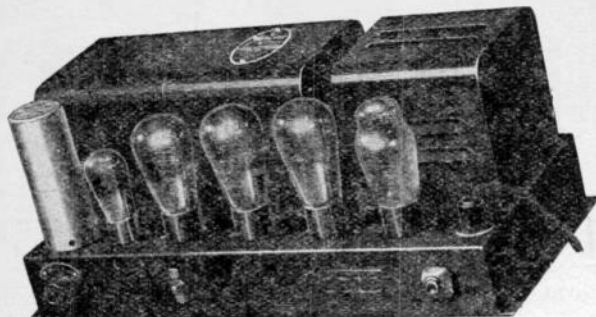
200 ohms to 200 ohms—level —20 db.	095	15.00	8.82
200 ohms to 200 ohms—level 0 db.	999	15.00	8.82
200 ohms to 500 ohms—level 0 db.	4338	15.00	8.82
500 ohms to 500 ohms—level 0 db.	4339	15.00	8.82
67 ohms to 200 ohms—level 0 db.	3246	15.00	8.82
100 ohms to 200 ohms—level 0 db.	3259	15.00	8.82

SPECIAL AUDIO TRANSFORMERS

The American Transformer Company is prepared to manufacture special audio transformers to any desired specifications. Such units are usually identical in appearance and construction to standard transformers and can be supplied promptly at reasonable prices.

Public Address Equipment

Latest Webster Super-Power Amplifier



Wherever sound must fill great spaces you will find the Webster Type 6056-R Class "B" Amplifier will do the job with utmost efficiency and satisfaction at low cost. A few rental jobs will pay the cost of this equipment.

QUALITY PLUS PRECISION

Number of Stages—4 Tubes Used: 1st stage, 1 type 35; 2nd stage, 1 type 56; 3rd stage, 1 type 45; 4th stage, 2 type 46; rectifier, 1 type 83. **Input—**Source impedance, from which amplifier may be operated, anything up to 250,000 ohms. **Input Signal—**To obtain

maximum power output: 0.05 volts R.M.S. Amplifier alone exclusive of external input transformer. **Frequency Characteristic and Gain at 1000 Cycles—**73.4 DB.

Maximum Undistorted Power Output—36.4 D.B. or 26 watts. **Output Impedances—**The amplifier is designed to supply load impedances of 2, 4, 8, 16, 250 and 500 ohms. **Field Current Supply—**The amplifier is designed to supply two D.C. speaker fields of 2500 ohms at 9 watts each. **Power Consumption—**At 115 volts, 50 cycles, with no signal, 91 watts; with full output, 134 watts. **Overall Dimensions—**18½ inches long, 9 inches wide and 7⅞ inches high. Height given is minimum clearance that will permit tube removal.

The 6056-R Model supplies button current for from one to three double button carbon microphones. It is suitable to operate from an electric phonograph, microphone or the detector tube of a radio tuner. Where it is desired to mix these input sources an external control panel will be supplied at an extra cost.

Model 6056-R for 115-Volt, 60-Cycle Operation.
Code: Abolm. List Price, \$125.00 less tubes

Your Cost, \$73.50

Model 6056-RZ for 115-Volt, 25-Cycle Operation.
Code: Abosi. List Price, \$137.50 less tubes

Your Cost, \$80.85

Complete Set of Cunningham Tubes

Your Cost, \$4.95

Net Weight, 31 lbs. Shipping Weight, 50 lbs.

MAHCO Class "B" Amplifier

A Quality Amplifier for the Exacting Sound Equipment Expert

GREAT POWER

Designed for theatres, auditoriums, skating rinks, dancing pavilions, outdoor mass gatherings, film and disc recording.

CIRCUIT CHARACTERISTICS

Three cascade audio stages and a push-push output stage combine to deliver an output of over twenty watts at a distortion level of less than 5%. The first two audio stages are impedance coupled for uniform and high gain energy transfer. The first 46 is transformer coupled in Class A operation to the grids of the 46's in Class B. The amplifier has a level frequency response over the broadcast audio band and it is down 2 DB at 10,000 cycles.

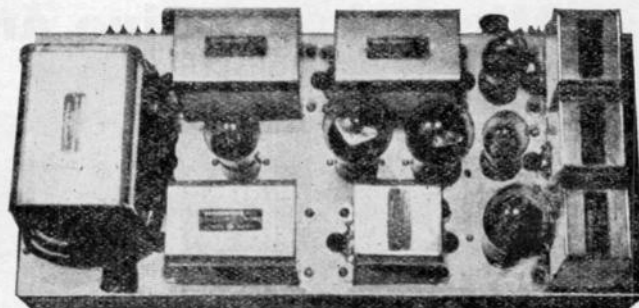
CONSTRUCTION

All audio, filter and power units are individually housed in silver-finished shields. These in turn form a common ground with the silver-finished metal chassis. The finest filter and by-pass condensers and long-lasting accurate resistors complete the rest of the amplifier assembly. The amplifier components are impervious to humidity and temperature changes as all audio and power units are vacuum impregnated and poured with moisture proofing compound. A tapered wire-wound volume control is provided. Input and output impedance matching terminals are also provided.

UNEXCELLED QUALITY

This amplifier has sufficient gain for use with the newer types of dynamic and condenser microphones. The input will also match low level, low impedance oil damped pickups. Using four stages of audio amplification enough power is developed to feed twenty speakers to a gathering of 10,000 people.

Primary of input transformer designed to match a 50-ohm line, a 200-ohm line, a 500-ohm line,—or three 500-ohm lines, three 200-ohm lines, a 500-ohm line and a 200-ohm line used simultaneously. The input transformer will match single and double button microphones as well as low impedance electro-magnetic pick-ups. The output transformer has two windings to match a 500-ohm speaker line or a batch of four, eight and fifteen ohm voice coils.



Tubes used are one triple grid 57, one super triode 56, three 46 double grid and one 82 mercury vapor rectifier.

This amplifier can also be used to modulate a Class C R.F. amplifier. It is only necessary to change the output transformer to match a high impedance modulator load.

For best results this amplifier requires at least four speakers and never less than two as the voice coils may be wrenched out of position due to the tremendous peak loads when a heavy signal is amplified. This amplifier is ideal for broadcast studio monitoring and broadcast speaker distribution lines. The hum level is extremely low and all frequencies are amplified with uniform intensity.

Intermediate voltages of 90, 135 and 250 volts may be made available for photo-electric cell amplifiers.

With all these exclusive design features this amplifier is remarkably low priced. Our price is another example of the unbeatable values obtainable only at M & H.

Complete Kit of Parts (less tubes)

Your Cost, \$41.30

Above Amplifier Wired with RCA Tubes

Your Cost, \$61.50

THORDARSON Transformers

Output Transformers Class "A"



Fig. A

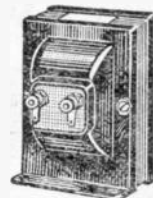


Fig. B

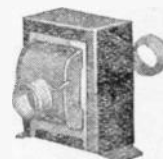


Fig. C

Type	Purpose	Resistance		Primary Inductance*		Impedance Ratio	Figure	List Price	YOUR COST
		Pri.	Sec.	Henries	@ D.C.				
T-2876	210 to 2,000 ohms	864	595	36.	.020	2.9	A	\$3.00	\$1.77
T-2629	210 P.P. to voice coil	1162	0.79	172.	0	1370	B	4.00	2.36
T-2901	250-45-71 to 2,000 ohms	222	275	14.9	.050	1	B	4.00	2.36
T-2902	250-45-71 to voice coil	362	1.1	15.1	.050	250	B	4.00	2.36
T-2903	250-45-71 P.P. to voice coil	435	1.93	121.6	0	482	B	4.00	2.36
T-2880	250-45-71 P.P. to 2,000 ohms	208	308	64.8	0	0.7	B	4.00	2.36
T-4843	247 Pentode to voice coil	469	0.63	24.8	.030	900	A	3.00	1.77
T-4831	247 P.P. to voice coil	554	0.51	138.	0	1440	A	3.50	2.06
R-76	245-171 to 2,000 ohms	289	362	19.8	.020	1	A	3.00	1.77
T-3399	245-171 P.P. to voice coil	591	0.42	47.8	0	1020	C	1.75	1.03
T-4152	250 P.P. or Parallel to 12 to 8,700 ohms	229	...	33.8	0	Variable		12.00	7.06

* Measured at 25 volts, 60 cycles.

Microphone, Line and Audio Transformers

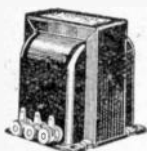


Fig. A



Fig. B



Fig. C



Fig. D

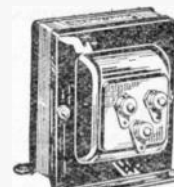


Fig. E

Type No.	Purpose	Turn Ratio	D.C. Resistance		Primary			Sec. Henries	Fig.	List Price	YOUR COST
			Primary	Secondary	Henries	@ D.C.	A.C.				
T-2357	Single Button	1-64	1.9	3230	0.22	.015	3	900	A	\$3.00	\$1.77
T-3020	Mike to Grid	1-22	41.0	6700	1.69	*	3	830	A	5.00	2.94
T-3180	Double Button	1-27	15.4	9710	2.11	*	3	1580	B	8.50	5.00
T-3474	Mike to Grid	3.5-1	538.	19.5	16.0	0	8	1.3	B	9.00	5.30
T-3475	Tube to Line	1-15	24.4	7745	11.0	0	25	2475	B	9.00	5.30
T-3476	Line to Grid	1-1	15.6	18.0	6.3	0	3	6.3	B	9.00	5.30
R-260	Mixer or Mike to Line	1-3.2	1324	5217	37.5	.005	25	398	C	3.00	1.77
R-300	Audio Interstage	1-3	2380	8480	76.0	.005	25	683	A	4.00	2.36
R-190	Audio Interstage	1-1.3	1304	2034	69.0	.005	25	117	A	3.00	1.77
	Autoformer			total				total			
T-3391	Push Pull Input	1-3.3	1290	4900	31.5	.005	25	322	D	2.00	1.18
T-2408	Push Pull Input	1-2	1319	3206	57.5	.006	25	230	A	4.00	2.36
T-4304	Push Pull Input	1-3	2520	8980	80.0	.005	25	720	A	4.50	2.65
T-2973	Push Pull Interstage	1-2	4310	10,030	407.0	*	25	1628	E	7.00	4.12

*D.C. in primary balances out.

Public Address Equipment by Samson



PAM 110

A "Class B" Amplifier by SAMSON

Even greater power per dollar is the accomplishment of this new SAMSON amplifier. It is a high-"gain", high-quality, A.C.-operated unit, employing the latest tubes and utilizing the most recent development—"Class B" amplification—to secure relatively great power output with exceptional economy in both operation and maintenance.

Electrical and Mechanical Specifications—Number of stages, 3; tubes, first stage 1 Type 57, second stage 1 Type 46 Class A, third stage 2 Type 46s Class B, rectifier 1 type 82; source impedances from which amplifier will work, up to 500,000 ohms; maximum source volts required for maximum power output, 0.2, root mean square; load impedance for which amplifier is designed, 4 ohms to 4,000 ohms, accomplished by adjustable switch control; maximum power output, 26 watts; overall dimensions, 16" long x 10 7/8" wide x 7 1/2" high. This height permits tube removal. **Frequency characteristics**—Frequency in cycles per second, followed by gain in decibels—50 cycles, 82.0; 100 cycles, 83.3; 200 cycles, 85.2; 400 cycles, 86.1; 800 cycles, 86.3; 1,600 cycles, 86.1; 3,200 cycles, 85.1; 6,400 cycles, 82.7; 12,800 cycles, 79.6. Hum level, minus 53 decibels from maximum power output; net weight, excluding tubes, 27 lbs.; power consumption at 110 volts 60 cycles with no signal is 43 watts, and with a signal to cause full power output is 93 watts.

List Price PAM-110, \$149.50

Your Cost, less customary discount

Kit of Tubes for same—Your Cost, \$4.46



MIK 110

This unit, which is a companion to PAM-110, is a combined input mixer and input coupling unit. It has three positions: one for microphone, one for phonograph, and one for radio. In conjunction with PAM-110 it will supply filtered current for the operation of a double-button carbon microphone, although either condenser or dynamic type microphones may be used if desired.

The volume control of any position of the MIK-110 can be adjusted independently without appreciable variation of the volume of other positions. This allows the superimposing of voice and music, or vice-versa, or the blending of any combination of the three. In addition, there is a tone control which will help to compensate for acoustic deficiencies in any given location.

List Price MIK-110, \$75.00

Your Cost, less customary discount

General features of PAM-110 and MIK-110—The finish of the two units is the standard SAMSON dull matte black lacquer and brush silver. The nameplates are of a new type, having black letters etched on a brush silver background. PAM-110 delivers 26 watts for \$149.50 list price, whereas in any previous SAMSON amplifier we have given 9.3 watts output for \$97.50. This is due entirely to "Class B" amplification and the very latest tubes. Then there is the adjustable output impedance control for handling loads of 4 ohms to 4,000 ohms requiring no special impedance-adjusting transformer, and with the ability to work into a high impedance magnetic speaker, or into the voice coil of a dynamic speaker, or into a 500-ohm line.

PAM 80

The PAM 80 is a combined voltage and power amplifier with facilities for additional power amplification and the supply of energy for microphone operation. It replaces, at less than half the price, voltage and power amplifiers that were formerly made separately.

PAM 80 has tremendously high amplification (gain). It has about twice the db. gain of any other amplifier of its power and in its price range. High amplification heretofore has been apt to cause instability, but PAM 80 is entirely stable under all normal operating conditions.

PAM 80 is made to operate two accessory amplifiers, PAM 85 power amplifier and MIK 80 microphone unit. By the addition of a proper number of PAM 85s the PAM 80 may have an undistorted audio frequency power output of from 9.3 watts to 100 watts or more without the danger of high-voltage rectifier tubes and without expensive power tubes. Outlets in the form of sockets provide an extremely flexible method of connecting PAM 80 to PAM 85 and MIK 80.



Tubes required—1 UY-224, 1 UX-245, 2 UX-250s, 2 UX-281s. **Number of stages**—Three. **800-cycle gain**—104.9 decibels. **Maximum undistorted power output**—9.3 watts for not more than 5% voltage harmonic. **Maximum input volts for above output**—0.16 r.m.s. **Power consumption**—150 watts at 110 volts, 1.5 amperes, 60 cycles. **Maximum temperature rise above surrounding air**—19° Centigrade. **Rated source impedance**—Up to 500,000 ohms. **N.B.**—Any source of this impedance or less, capable of delivering 0.16 volts, r.m.s., to input, is satisfactory. **Rated load impedance**—4,000 ohms. **Range** 2,000 ohms up.

N.B.—Efficiency decreases below 2,000 ohms and above 4,000 ohms. **Distortion increases below 4,000 ohms.**

Dimensions (including clearances for tubes)—Length, 16 1/4"; width, 9 1/4"; height, 7 1/4". **Net weight (with-out tubes)**—21 lbs. 8 oz.

List Price, \$97.50

Your Cost, less customary discount

Price—Complete Set of Tubes, \$14.70

SENIOR PAM-O-PHONE

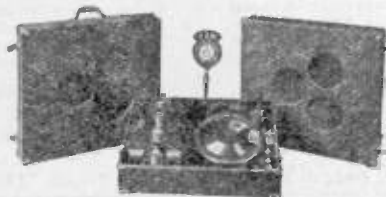
The Senior PAM-O-PHONE is a combination phonograph-microphone-amplifier unit with sufficient power to fill a large auditorium or be heard distinctly at the four corners of an airport. It is compactly installed in two carrying cases, one containing the amplifier and phonograph equipment and the other the loud-speakers, microphone and cables.

The amplifier is a high-"gain", high-quality unit employing the latest tubes and utilizing the most recent development—"Class B" amplification. It has an undistorted power output of 26 watts and is exceptionally economical in both operation and maintenance. A complete set of Cunningham tubes is standard equipment.

The phonograph will play either the standard 78 r.p.m. records or the new 33 1/3 r.p.m. records. Volume is independently adjustable for both phonograph and microphone. In addition, there is a tone modifier, allowing the operator to eliminate as much or as little of the higher frequencies as desired.

The microphone equipment includes a broadcast-type double-button microphone for voice pickup, an extensible microphone desk stand, and a 50-foot shielded microphone cable and plug.

To handle large audiences effectively under varying conditions, the loud-speakers are mounted with baffles in two groups of three in the two halves of the larger carrying case. Each group has a 50-foot Tyrex cable and plug. This gives a working radius of 100 feet for the loud-speakers. Each group of speakers will stand by itself wherever located. Both groups of speakers must be operated simultaneously. All connections are made externally by means of polarized receptacles and plugs at one end of the case.



Features of the Senior Pam-O-Phone—(1) All A.C. operation, 110 volts, 60 cycles, no batteries; (2) "Class B" amplification, high-efficiency, low operating cost; (3) Plays either 78 or 33 1/3 r.p.m. phonograph records; (4) Variable tone modifier for controlling higher frequencies; (5) 26 watts power output; (6) Independently adjustable volume for either phonograph or microphone reproduction; (7) Mixer circuit for superimposing and fading voice and music in either direction.

Senior PAM-O-PHONE complete—List Price, \$449.50

Your Cost, less customary discount

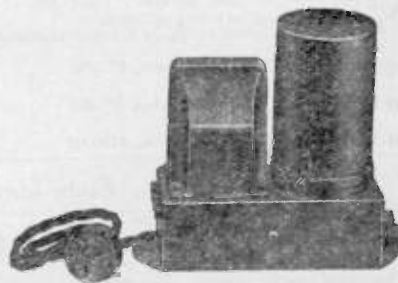
Amplifier case, size 27" x 18" x 9"; weight 95 lbs. Speaker case, size 27" x 25" x 10"; weight, 80 lbs.

Senior PAM-O-PHONE without microphone, microphone stand, and microphone cable—List Price, \$399.50

Your Cost, less customary discount

MIK 80

MICROPHONE COUPLING UNIT



MIK 80 is designed for use solely with PAM 80. Taking advantage of the high amplification of PAM 80, it requires no tubes. It comes equipped with a cord and plug for attachment to PAM 80, through which it gets its power supply. It operates entirely from A.C., including button current supply. A 1,000-ohm variable volume control is provided, but not built into the unit for the sake of portability and convenience. Terminals for the microphone are tip jacks, color coded.

List Price, \$32.50

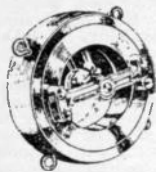
Your Cost, less customary discount

Universal Microphones

A Complete Line ... Enlarged ... Improved

Universal Model "LL"

The Last Word in Broadcast Microphones



Every possible supremacy of design and manufacturing skill has been enlisted to make Model "LL" truly the last word in carbon granule microphones.

An extra rugged heavy type two-button broadcast microphone. The entire assembly is of high carbon steel, ground to within .001 of an inch accuracy. The diaphragm is alloy of exactly the proper hardness and tension to secure the best results. Pure gold contacts are placed on each side. The materials used and the precision of manufacture combine to make this model stand out as the superlative microphone, reproducing a range of from 30 to 7000 cycles.

Model "LL" is 3½ in. in diameter by 1¼ in. thick and is standard 200 ohms per button. Due to the precision of workmanship in this model, a rust-proof process is used to preserve the original steel surface.

List Price, \$75.00

Your Cost, \$44.10

Universal Model "BB"

1933 Value—New Super-Design



The super-microphone in every sense of the word. Model "BB" is nearly twice as heavy as any other microphone in its class. Built to hair-line precision. An idea of the ruggedness can be obtained by the fact that Model "BB" is 3 in. in diameter by 2 in. thick.

It is built especially for voice-pick-up, public address work and for amateur broadcasters, experimenters, halls, ball rooms, speaker wagon, etc. Finished in beautifully finished, highly polished chrome plate.

Model "BB" has extra heavy 20-kt. pure gold spot centers, duralumin diaphragm and has a frequency range of from 70 to well over 4,000 cycles, 200 ohms per button.

List Price, \$25.00

Your Cost, \$14.70

Universal Bullet Type Microphones

Built-in Acoustic Adjustment

Carbon Granule Type with Hiss Eliminating Filter

Note: All Bullet Type Microphones supplied with cable as shown. Shipped without battery.

Especially recommended for use in public address work of all kinds where elegance of appearance, beauty of design, and true reproduction of voice and sound are demanded.

Careful tests have shown that the hiss level of Universal Bullet Type Microphones is far below any background noise encountered in public address or similar work.

Universal Bullet Type Microphones consists of a tube with a center partition, providing space for a standard 1½-volt No. 6 dry cell battery. Microphone head is fixed, assuring vertical position at all times. Adjustment screw, operated through side of tube, permits microphone adjustment for varying acoustic conditions. Flexible wire connections, long enough to permit easy battery replacement. Rubber cushions and spring tension sides make a very rugged assembly that permits a great deal of handling and transportation without affecting performance.

Finished in highly polished aluminum and chrome plate.

Bullet Microphone "BB," List Price, \$50.00

Your Cost, \$29.40

Bullet Microphone "KK," List Price, \$75.00

Your Cost, \$44.10

Bullet Microphone "LL," List Price, \$100.00

Your Cost, \$58.80

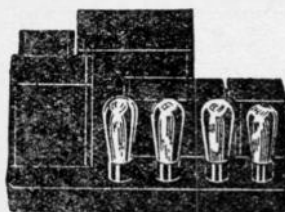
Each Unit Is Carefully Laboratory Tested Before Shipment

Low-Priced Public Address System

We have had many requests from stores, schools, laboratories, theatres, small auditoriums, etc., for a low-priced semi-portable public address system. And in many cases we have supplied the following: which has given wonderful satisfaction.

Victor 2-stage 245 Push-Pull Power Amplifier, Your Cost, \$7.75 (less tubes). Victor D.C. Dynamic Speaker, Your Cost, \$4.75. R.C.A. Single Button Hand Microphone, Your Cost, \$1.75. One 4½-Volt "C" Battery and Switch, Your Cost, 60c. One set of R.C.A. Tubes, Your Cost, \$2.45.

Your Cost, Complete, \$17.25



SPECIFICATIONS OF SPEAKER

Operates from 110 volts D.C.—Voice coil impedance 2500 ohms, D.C. field resistance 2500 ohms. Diameter over all, 9". Diaphragm, 7". Mounted cast-iron frame. Fine tone quality and volume.

SPECIFICATIONS OF AMPLIFIER

Uses one 226, two 245's (push-pull) and 1-280 Push-Pull Output Transformer in amplifier matched from 15-ohm voice coil and 2500-ohm field resistance. Supplies dynamic speaker field of 110 volts D.C. at 50 mls. Undistorted output at 4 watts. Fine for use with phonograph pick-up or radio set. Operates on 110-120 volts, 50-60 cycle A.C. current.

This outfit complete in sturdy carrying case with diagram

Your Cost, \$23.45

Universal Model "KK"

A Top-Notch Double-Button Broadcast Microphone

Only supreme performance and year after year dependability can explain the fact that the improved Model "KK" continues to be the most popular and fastest selling \$50.00 microphone on the market.

A substantial, solid, two-button broadcast microphone, with a very minimum of hiss. Model "KK" is carefully constructed of the finest materials with a 24-kt. pure gold spot center alloy diaphragm which is held under tension. Diaphragm has a thickness of only .002 in.

The frequency range of Model "KK" is all that can be designed in a carbon microphone, namely from 50 to well over 6000 cycles. The buttons are of 200 ohms resistance each. Entire microphone finished in 24-kt. polished gold. It is 2½ in. in diameter and 1¼ in. thick.

List Price, \$50.00

Your Cost, \$29.40



Universal Model "X"

A Sensational Microphone at a Sensational Price

A two-button microphone listing at only \$10.00! Model "X" sets a new high standard for quality at a price that defies competition.

Model "X" confirms the reputation for quality and performance that characterizes all Universal products. Every essential feature necessary to insure superior performance and long, care-free service has been incorporated in the design of this model. Only the non-essential "trimmings" have been eliminated to enable us to offer this remarkable microphone at this popular price.

Faithful, truly natural tone. Pure gold contacts. Duralumin non-breakable diaphragm. 200 ohms per button. Very low hiss level. Scientifically damped. Frequency range from 100 to 4000 cycles. Model "X" is ruggedly built and finished in non-corrosive polished nickel plate. Diameter, 2½ in.; overall thickness, 1 in.

List Price, \$10.00

Your Cost, \$5.88



Universal Torpedo Type Microphones

This new type of Universal Microphone is supplied to meet the steadily growing demand for microphones which in themselves are fully protected, are more compact, and can be quickly demounted. Torpedo Type Microphones of the design illustrated are supreme in this field. They combine in one instrument the recognized outstanding quality of tested Universal microphone performance with the special features demanded.

Connection is made to three spring jacks into which telephone pin terminals are plugged. Not supplied with cord. The polished chrome plated perforated and screened cup housings are of heavy brass and are firmly fastened. Can not be removed accidentally.

Model Torpedo "BB," List Price, \$30.00

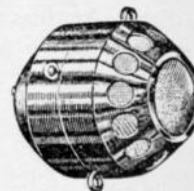
Your Cost, \$17.64

Model Torpedo "KK," List Price, \$55.00

Your Cost, \$32.34

Model Torpedo "LL," List Price, \$80.00

Your Cost, \$47.00



Microphone Stands Conforming to Studio Standards

The complete line has been especially designed for microphone use and is positively not made of fixture parts. Due to this fact the Broadcast and Public Address Operator is thereby assured of securing stands of the highest quality of material and workmanship.

EM-1

An extra heavy floor stand especially designed to handle the average condenser microphone. A three-hole, flat mounting serves to fasten the microphone to stand. A special feature incorporated in the clamping screw allows the stand to be raised to the desired height and clamped with the slightest amount of pressure. The minimum height is 44 inches and the maximum 70 inches. The diameter of the outer brass pipe is 1 1/8 inches. A cast-iron base of 15-in. diameter and a weight of 30 pounds is assurance of rigidity. Finished in statuary bronze. Special mountings to specifications can be supplied at slight extra cost.

List Price, \$40.00

Your Cost, \$23.50

EM-7

An extra good quality desk stand with a 6 3/4 in. ring accommodating all standard microphones. Felt feet prevent marring of furniture. Height 10 in., base diameter 5 3/4 in., net weight 3 1/2 pounds.

Statuary Bronze—List Price, \$9.50

Your Cost, \$5.60

Chromium-plated—List Price, \$10.00

Your Cost, \$5.88



EM-7

EM-2

A lighter type of stand similar to EM-3, except that it has a three-hole flat mounting as in EM-1 to accommodate the dynamic type of microphone, which is much lighter than the condenser type and therefore does not require as heavy a stand. For characteristics see description of EM-3.

Statuary Bronze—List Price, \$18.00 Your Cost, \$10.59



EM-2

EM-5

A desk stand with a 5-in. diameter ring made especially to hold the smaller carbon microphones. A loop is provided for suspension purposes and the base is equipped with felt feet to prevent marring of furniture. Overall height 8 1/4 in. Net weight 1 1/2 pounds.

Statuary Bronze or Chromium
List Price, \$5.00

Your Cost, \$2.94

Dust Covers (extra)—List Price, \$4.00

Your Cost, \$2.36



EM-5

EM-9

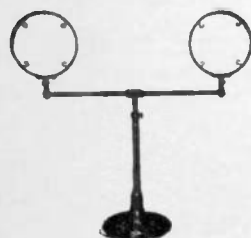
Double banquet stand similar to EM-6, with the exception that cross-bar replaces the single ring. Distance between outer extremities of rings 24 in. Felt feet in base prevent marring of furniture.

Statuary Bronze—List Price, \$23.00

Your Cost, \$11.53

Chromium-plated—List Price, \$25.30

Your Cost, \$14.88



EM-9

EM-4

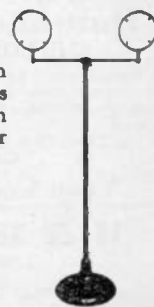
Double floor stand similar to EM-3, with cross-bar replacing the single ring. Rings can be rotated to any desired angle and then locked in position. Distance between outer extremities 24 in. Net weight 22 pounds.

Statuary Bronze—List Price, \$28.00

Your Cost, \$16.47

Chromium-plated—List Price, \$30.80

Your Cost, \$18.12



EM-4

EM-3

A high quality floor stand, ruggedly constructed, presenting a very neat appearance. Minimum height 3 ft. 10 in., maximum 6 ft. 5 in. Tipping is entirely eliminated by use of an extra heavy base with a diameter



EM-3

of 10 in. Net weight of stand 20 pounds.

Statuary Bronze—List Price, \$18.00

Your Cost, \$10.59

Chromium-plated—List Price, \$19.80

Your Cost, \$11.65

Model "BD" Desk Stand



With 5-inch covers, hanger ring and suspension springs. Bright nickel finish.

Your Cost, \$3.95

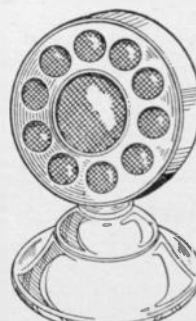
Model "AD" Desk Stand

The desk stand cover is six and one-quarter in. in diameter and will accommodate any standard two-button microphone. Ample space is provided between covers and units to permit moving without damage to unit. The microphone cable passes through the base of the stand. Bright nickel finish.

Stand, equipped with Hanger Ring, Covers and Springs

List Price, \$12.00

Your Cost, \$5.95



EM-8

For ceiling suspension, 6 3/4-in. diameter ring, same as supplied with regular stands.

Statuary Bronze

List Price, \$4.00

Your Cost, \$2.36

Chromium-plated

List Price, \$4.40

Your Cost, \$2.60

EM-85

A 5-in. diameter suspension ring, same as supplied with EM-5 desk stands. Statuary Bronze

List Price, \$2.50

Your Cost, \$1.47

EM-6

EM-6

This banquet stand is in fact a miniature of the floor stand EM-3. Height 20 to 27 in. Felt feet prevent marring of furniture. Base diameter 7 in., net weight 6 1/2 pounds.

Statuary Bronze

List Price, \$14.00

Your Cost, \$8.24

Chromium-plated

List Price, \$15.00

Your Cost, \$8.82

Microphone Accessories

Three-Conductor Cable SHIELDED MICROPHONE



This Three-Conductor Microphone Cable is the finest cable obtainable. Consists of 3 individually insulated cables color coded. Each individual cable has rubber insulating and cotton covering. Woven, flexible tinned copper shield self cotton covered. Cable is finished with spade tips on both ends. A shielded ground lug is provided on one end of cable. Supplied as follows:

	YOUR COST
12 foot	\$0.72
25 foot	1.45
50 foot	2.75
100 foot	5.90

Cut to Any Length

Your Cost, Per Foot, 6c

Two-Conductor Cable SHIELDED MICROPHONE

With the same general characteristics as the 3-wire but with only 2 wires and the metal shield acting as the third or ground connection.

	YOUR COST
12-ft. length	\$0.60
25-ft. length	1.47
50-ft. length	2.94

Cut to Any Length

Your Cost, Per Foot, 5c

HEAVY-DUTY

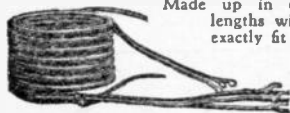
Waterproof and Damage-Proof Cable SHIELDED MICROPHONE

A special 3-wire shielded cable with a very heavy rubber outer covering. Flexible, Sturdy, Waterproof. Ideal for outdoor installations. Supplied in any length desired.

100-ft. Coil, Your Cost, \$6.00
Cut to Any Length

Your Cost, 7 1/2c Per Foot

M & H Mike Cable 3-Wire Unshielded



Made up in 6, 12 and 25 ft. lengths with eye terminals to exactly fit microphone connections on one end and large spade terminals on the other. Three conductor color coded.

	YOUR COST
12-ft. lengths	\$0.50
25-ft. lengths .....	.95
50-ft. lengths	1.95

Condenser Mike Cable Plugs

Yaxley cable plugs and sockets are furnished with seven point contact pins to be used for condenser microphones. Can also be used for carbon microphones, using only three pins. A pilot prevents improper assembly.

	List Price	YOUR COST
Plugs, each	\$1.00	\$0.59
Sockets, each	1.00	.59

Volume Control Potentiometer

For Microphones

The three higher ohm models are used for volume control across the secondary of mike transformers. 25,000 ohm, 250,000 ohm, 500,000 ohm.

List Price, \$2.00

Your Cost, \$1.18

Microphone Tone Control

The tone control is used across the buttons of any microphone to change the tone to fit adverse conditions. Shrill, high pitched voices may be toned down to normal, and low, deep voices may be toned down to more pleasant position in the voice frequencies.

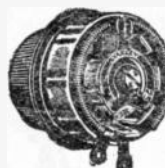


Ideal in buildings having bad acoustics and an excellent accessory to all microphones. Catalog No. 1320
List Price, \$7.50

Your Cost, \$4.41

Yaxley Button Current Control Potentiometer

A potentiometer is used in all microphone circuits with switch combined, which cuts current from and applies current to the microphone buttons at lowest of milliamps, preventing burning of buttons and damage to the microphone, also eliminating noise caused from sudden current surge.



Potentiometer and Switch
List Price, \$1.30

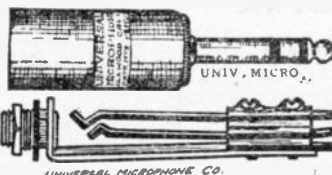
Your Cost, 78c

Microphone and Audio Mixing Transformers

For the first time there is available a complete line of microphone and mixing transformers at popular prices. This entire line is uniform in appearance, completely cased and finished in black or green crinkle. The transformers are impregnated in moisture-proof compound. An ideal four-channel mixing panel may be constructed by connecting in series four of the 50-ohm secondary mixing transformers and running them into the primary of a 200-ohm line to grid transformer. The frequency response is excellent.

	List Price	YOUR COST
Type CM-200. Single Button, 200 Ohms to Grid	\$4.00	\$1.75
Type CM-400. Double Button, 200 Ohms to Grid	5.00	2.25
Type CM-450. Double Button, 200 Ohms to 50 Ohms	5.00	2.45
Type CM-250. Single Button, 200 Ohms to 50 Ohms	5.00	2.45
Type CM-100. 4000 ohm line or pickup to 50-ohm secondary	5.00	2.45
Type CM-500. 500-ohm line or pickup to 50-ohm secondary	5.00	2.45

Telephone Type Plug and Jack



A special design of 3-conductor plug and pack for microphone use. Standard size. High insulation factor. Connection made by solder joint insuring positive connection. Plug size—length overall, 2 3/8 in. diameter, 3/4 in. tip—length, 1 1/8 in. diameter 1/4 in. Jack fits 3/8 in. mounting hole and any panel up to 3/8 in. thick. Overall length, 3 1/2 in.

	List Price	YOUR COST
Jack	\$0.75	\$0.45
Plug	1.50	.90

Microphone and Speaker Outlet



Dark brown bakelite plate size 4 1/4 x 4 1/4 on which is mounted a three-contact microphone receptacle and a radio speaker jack. Mounts flush on the wall.

Catalog No. 1317.
List Price, \$2.75

Your Cost, \$1.62



Microphone Receptacle

This microphone receptacle is mounted on a bakelite single gang plate, size 2 3/4 x 4 3/4 which mounts flush to the wall.

Catalog No. 1318.
List Price, \$2.00

Your Cost, \$1.18

Microphone Plug and Socket



Has 3 contacts and permits wiring right up to the place where microphone is to be used so that microphone, stand and cord can be quickly removed when not in use. Special design assures proper insertion of plug into socket at all times.



	List Price	YOUR COST
No. 1313. 3-Contact Plug	\$0.75	\$0.44
No. 1314. 3-Contact Socket	1.00	.59
No. 1300. Panel Mount Socket	1.50	.89

Mike Springs



Made of finely tempered steel, nickel finished. The end hooks are open, yet they cannot fall off. Unextended size: 1-inch long. Set of 8 springs.

Your Cost, 25c

Carbon Granules

Care must be exercised in handling granules, and careful measurement must be made in refilling old buttons. They must be kept sealed before use and must not be handled by fingers. The very best grade of transmitter carbon granules. Each vial contains sufficient to recarbon one ordinary two-button microphone. No. 100 size.

List, per Vial, \$1.00

Your Cost, 60c



Molded Microphone Adapters



The Microphone Adapter has a split cathode circuit. It is connected to the microphone through a small and unique connector and is supplied with the adapter for UY or UX tubes. This adapter can also be used as a phonograph pick-up. For 5 and 4 prong tubes.

	List Price	YOUR COST
For 5-prong tubes	\$1.00	\$0.59
For 4-prong tubes	1.00	.59

Microphones

American Fayette "A"



An extra large two-button microphone extremely rugged in construction, built especially for all broadcasting purposes. Only the best materials are used. The diaphragm is of aluminum alloy .002 thickness, with pure gold contacts on each surface under the buttons. This model is three and one-half inches in diameter, by one and three-quarter inches thick, the frequency range being from 30 to 8,000 cycles; 100 ohms per button, requiring 6 volts with not over 10 mils per button. Very beautiful in appearance, being nickel-plated finish. This microphone compares with any other microphone on the market in appearance and quality of tone.

List Price, per unit, \$72.00

Your Cost, \$34.50

American Fayette "S"



A rugged two-button microphone, built of only the finest material obtainable, with a very minimum of hiss. This unit uses a duralumin diaphragm .002 thickness, with pure gold contacts below each button, the same diaphragm as you obtain in the large unit. Has a frequency range from 30 to 6,500 cycles, which is greater than that of competitive models, which use entirely gold-plated diaphragms, that cannot give you the frequency response desired. Buttons 100 ohm impedance each. Many of these models are in use in broadcasting stations throughout the country, producing very satisfactory results, with an increasing demand. You may compare this unit with any other \$75.00 unit on the market, many of which will not compare even in construction and material used, and none can compare with the superior quality of tone rendered by the "S" unit.

List Price, \$50.00

Your Cost, \$22.50

Double Button Utility Microphone



Stretched diaphragm gold-plated. Built particularly for use where portability is important, such as for home use, public address systems, music trucks, etc. Very rugged in construction. Impedance 100 ohms per button. Finished in sanded oxidized copper. Complete with 12 feet of silk-covered cable.

List Price, \$23.00

Your Cost, \$10.40

Double Button Model "EL"



A two-button microphone built for use where high standards of tone quality are desired. This unit uses a stretched gold-plated dural diaphragm. It has an excellent frequency response. Impedance 100 ohms per button. Finished in beautiful nickel, highly polished.

List Price, \$15.00

Your Cost, \$5.95

Single Button Utility Microphone



Built for use where a utility microphone of single-button construction is desired. Intended for voice only. It is entirely cast, as are competitive models. Finished in beautiful polished plate. Equipped with an off and on switch, and 12 feet of silk-covered cable.

List Price, \$10.00

Your Cost, \$3.95

American Fayette "C"

A two-button microphone, built only for voice pick-up, faithfully reproducing all the notes and sounds within the audible range of the human voice. It is especially built for Public Address work; Amateur Broadcasters and experimenters. A great many radio broadcasting stations use this model entirely, when announcing record programs. Its frequency range is from 45 to 3,500 cycles, impedance 100 ohms per button and operates on 6 volts, and not over 10 mils per button. This microphone is nickel-plated finish. Same in general appearance as type "S".

List Price, \$23.00

Your Cost, \$11.50

Model "SJ"

A single-button microphone designed to adequately cover the normal voice range, which is well within its 70 to 3,000 cycle limits. Its fabrication represents rugged construction and choice materials. The button has an impedance of the standard 100 ohms. Polished nickel finish.

List Price, \$12.50

Your Cost, \$3.95



Baby Bullet Type Condenser Mike with Two-Stage Amplifier



American condenser heads represent an acme, both in performance and construction, in the art of microphone manufacture. They are constructed of a special alloy brass and milled to .001 of an inch in accuracy. The plug or back plate of each unit is cut and finished so that the transmitter response is practically flat from 50 to 7,500 cycles, above which the output drops about 3 db. and remains steady to 8,500 cycles. All

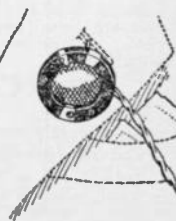
American condensers are immune to damage or characteristic changes due to climatic and altitude pressure changes. A special compensating diaphragm allows these condenser heads to work with equal facility at sea level or in higher altitudes. The amplifier is resistance coupled, using 264-A tubes. The "A" and "B" voltages are 6 and 180, respectively; the full 180 volts is impressed on the head and dropped to the proper values for the plates of the tubes within the amplifier. No external "C" voltage is necessary. The approximate output of the microphone amplifier unit is about minus 10 db., which is available from a line transformer of either 50 or 200 ohms impedance. As is usual, the 200-ohm output will be shipped unless otherwise specified. 500 ohms output impedance will be supplied upon request at slight additional charge.

Complete with Tubes

Your Cost, \$94.50

Buttonhole Microphone

A scientifically designed microphone. Developed especially for the orator. When fastened on the coat lapel it allows perfect freedom to the speaker who may move about and assume a natural poise. This small microphone may also be used where it is desirable to conceal the unit. It is indispensable to drivers of sound trucks, enabling them to make announcements while driving. Surgeons and lecturers of schools have given this model microphone wide acclaim as it leaves them unhampered in working on operations or experiments while addressing classes. The frequency response of the American Buttonhole microphone covers the entire speaking voice with unusual fidelity. Single-button, 100-ohm impedance. May be attached to any standard carbon microphone input transformer. Black metallic finish complete with attaching clip.



List Price, \$25.00

Your Cost, \$9.75

Cord, any length, per foot.....YOUR COST, \$0.05

Public Address Equipment

RCA 106 Speaker

Electro-Dynamic



R.C.A. Electro-Dynamic; reproduces tones over a range of seven octaves; 30" baffle board; uses two Westinghouse rectifiers; walnut finish cabinet; panels of toile embroidered with Velour de Genes. This speaker is very sensitive and can be operated with an output of a single 112A. Has its own input transformer of 2,000 to 4,000 ohms impedance. Sufficiently rugged to stand the output of push-pull 250's. A real buy! Height 33 1/2", width 23 3/4", depth 10 3/4". Operates on 110-volt, 60-cycle A.C. only.

Special at \$13.45

"R.C.A." 106 Chassis Only (less Cabinet)
 Your Cost, \$11.50

Wright-DeCoster Speakers

For Powerful, Truthful Reproduction

Still the outstanding speaker for public address installations, either inside or outdoors, where great output is needed. No hum; powerful; fidelity of tone.

Model 207—115-volt A.C., 25-50-60 cycle with output transformer.

List Price, \$72.50

Model 205—D.C. unit, 6-volt; with output transformer; drain, 1 1/2 amperes; field resistance, 4 ohms; minimum field requirement, 9 watts.

List Price, \$50.00

Your Cost, \$30.00

Wright-DeCoster Jr. Model

In Truth a Junior for It Is a Perfect Miniature of the Large Model 207—Same Tone Quality, Same Truthful Reproduction; Ample Volume for the Home or Small Hall.

The constant demand for a reproducer like our Model 207, yet not being made to handle the tremendous power of our large unit, determined us to bring out the Junior Model.

Your Cost, \$30.00

Transformers for the new Pentode Tubes can be furnished when specified

Model 215X Jr. is for D.C. operation from the field supply which is standard with most A.C. Radio Sets. It can also be operated successfully from the 110-volt D.C. line. The output transformer is the same as that used on the Model 217 Jr.

Dimensions—Cone, 10"; outside cone ring, 12 1/4"; height over all, 12 1/4"; depth, 8 1/4"; size of base, 3 3/8" x 6 3/4".

List Price, \$30.00

Your Cost, \$18.00

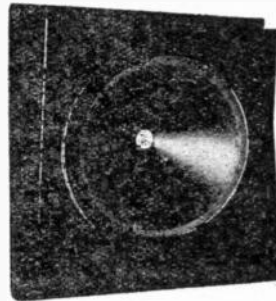
RCA Photophone Speaker

Recommended for airports, boat landings, public gatherings, political campaigns, theatres, schools, bus terminals, railroad waiting rooms, etc.

In conjunction with the M & H Baffle Horn, this combination will give fidelity of tone quality on both voice and music frequencies that will satisfy the most critical of listeners. All perfect in original containers. 12-inch dynamic unit. Specifications—Field supply, 110v. D.C. Current draw, 100 M.A. Field resistance, 1,000 ohms. Voice coil, 8 ohms.

List Price, \$110

Special Price, \$10.95



Field Exciters for Photophones and Speakers

With the arrival of the 83 type mercury vapor tube we are now manufacturing four standard models of field exciters. The transformer is impregnated in moisture-proof compound in steel cases with side flanges for mounting. All units have eight-foot A.C. cords with unbreakable male plugs.

Type	Tube Used	D.C. Volts Delivered	M.A.	YOUR COST
FE-80	80	110	100	\$4.25
FE-D8	(2) 80's	110	200	5.50
FE-82	82	110	125	5.25
FE-83	82 or 83	110	200	4.25

For Photophones and Other Speakers

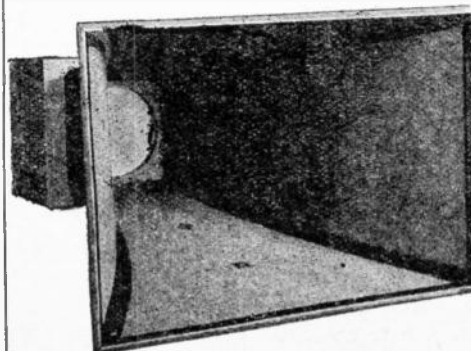
M & H Baffle Horn

For Use with R. C. A. Photophone

This horn was specially designed to be used with the "RCA" Photophone dynamic speaker on installations where great volume, distance and tremendous coverage is desired. It contains a chassis compartment to protect the speaker from the weather. Outside measurements: Length overall, 50". Bell at opening, 32"x23".

List Price, \$36.00

Special, \$17.95



RCA 103 Magnetic Speaker

"Volume Plus"

"RCA" 103 Magnetic Speaker is beautiful in appearance and superb in its ability to reproduce music and speech faithfully. Its frame and pedestal are hand-carved oak, while a beautiful tapestry medallion conceals the mechanism and completes the decorative design of the instrument. Can be satisfactorily used on both electric or battery-operated receivers. Beautiful in design. Efficient in performance.

Your Cost, \$3.43

Bud Wall-Type Magnetic Speaker

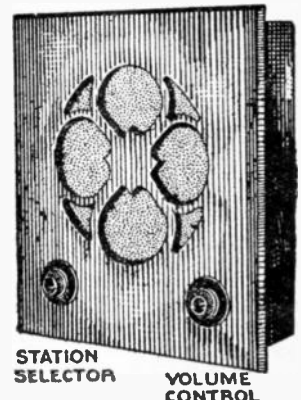
Especially designed for installation in hotels, hospitals, schools and wherever reception is distributed from a centralized amplifier.

Speaker is furnished complete ready for installation in wall.

Bud Speakers are equipped with an efficient Super Magnetic unit which gives true reproduction of sound.

No. 397 Speaker less volume control and selector switch.

List Price, \$12.00

STATION
SELECTORVOLUME
CONTROL

Your Cost, \$7.12

No. 398 Speaker with Volume Control
 List Price, \$13.50

Your Cost, \$7.94

No. 399 Speaker with Volume Control and 5 Channel
 Selector Switch—List Price, \$15.00

Your Cost, \$8.82

Kolster Magnetic Speaker

Model K6

No effort was spared to make this an exceptional speaker, no blasting, no distortion, excellent reproduction of the full musical register. 12 in. high, 12 in. wide, 7 in. deep.

Your Cost, \$3.35

Output Transformers

For Photophone Speaker

We can furnish output transformers from any tube or tubes in push-pull; to match the output circuit to the voice coil of one to seven Photophone speakers.

Racon Horns and Dynamic Units

With the New Super-Type "B" Heads

Super-Giant



Electrodynamic Horn Unit
 6-8 volt field excitation. 1.0 ampere consumption at 6 volts. 15-ohm voice coil impedance. Continuous operating capacity 30 watts. Peak load capacity 60 watts. Particularly adapted for theatre and auditorium use where the finest quality reproduction is required. Weight 20 pounds.

List Price, \$75.00
Your Cost,
\$44.10
 (Less Coupling Transformer)

Giant

Electrodynamic Horn Unit
 6-8 volt field excitation. 1.1 amp. consumption. Approximately. 15-ohm voice coil impedance. Continuous operating capacity, 25-30 watts. Peak load capacity, 60 watts. Weight 20 pounds.

List Price, \$60.00
Your Cost, \$35.28
 (Less Coupling Transformer)



Master

Electrodynamic Horn Unit



6-8 volt field excitation. 1.1 amp. consumption. Approximately. 15-ohm voice coil impedance. Continuous operating capacity, 25 watts. Peak load capacity, 55 watts. Weight 13½ pounds.

List Price, \$50.00
Your Cost, \$29.40
 (Less Coupling Transformer)

Junior

Electrodynamic Horn Unit

6-8 volt field excitation. 1.1 amp. consumption. Approximately. 15-ohm voice coil impedance. Continuous operating capacity, 20 watts. Peak load capacity, 50 watts. Weight 11 pounds.

List Price, \$37.50
Your Cost, \$22.05
 (Less Coupling Transformer)



Baby



Electrodynamic Horn Unit
 6-volt excitation. 1¼ amp. consumption. Approximately. 15-ohm voice coil impedance. Continuous operating capacity, 15 watts. Peak load capacity, 50 watts. Weight 6¼ pounds.

List Price, \$27.50
Your Cost, \$16.27
 (Less Coupling Transformer)

Hi-Powered Magnetic Unit

Continuous operating capacity, 2 watts. Impedance 2,000 ohms. Adaptable for public address use only. Weight 4 pounds.

List Price, \$25.00
Your Cost, \$14.70



Electrodynamic Horn Units supplied with 110 volt D.C. or 220 volt D.C. fields without extra charge
 For 32 volt D.C. field add \$2.50 net

The Perfect Mouthpiece for Your Sound System

3½-FOOT TRUMPET

Bell 22 inches round. Length 3½ feet.

Stormproof. Equipped with metal beaded edge, cast aluminum ferrule and suspension ring. Guaranteed for one year. For outdoor use in all climates and weathers. Weight 9½ pounds.

List Price, \$40.00
Your Cost, \$23.52

De Luxe. Equipped with metal beaded edge, cast aluminum ferrule and suspension ring. For indoor use or temporary outdoor use. Weight 7 pounds.

List Price, \$25.00
Your Cost, \$14.70

Regular. Equipped with metal beaded edge, metal ferrule and suspension ring. Adapted for ⅞—18 inch threaded unit. For indoor use only. Weight 6½ pounds. Extra charge for Giant Unit Adapter.

List Price, \$20.00
Your Cost, \$11.76



6-FOOT TRUMPET

Bell 30 inches round. Length 6 feet.

Stormproof. Equipped with metal beaded edge, cast aluminum throat and 4-inch suspension ring. For outdoor use in all climates and weathers. Single unit horn. Weight 21 pounds.

List Price, \$65.00
Your Cost, \$38.22

Regular. Equipped with metal beaded edge, cast aluminum throat, and 4-inch suspension ring. For indoor use only in all climates. Weight 17 pounds.

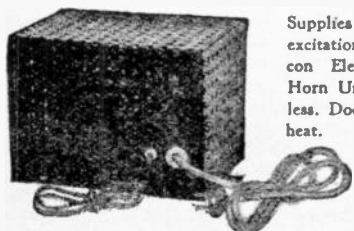
List Price, \$50.00
Your Cost, \$29.40

TRIPLE CONNECTOR

A novel combination for using three horns with one unit. Distributes the output of the unit equally through each, without choking or reducing the efficiency of same. Dispersion angle, 90°. Triple connector only.

List Price, \$20.00
Your Cost, \$11.76

Field Exciter

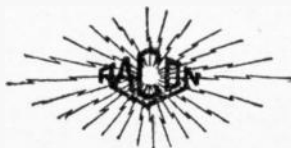


Supplies proper field excitation for Racon Electrodynamic Horn Units. Humless. Does not over-heat.

Single Unit Operation
 List Price, \$20.00
Your Cost, \$11.76
 Two Unit Operation
 List Price, \$35.00
Your Cost, \$20.58
 Four Unit Operation
 List Price, \$60.00
Your Cost, \$35.24

Coupling Transformers

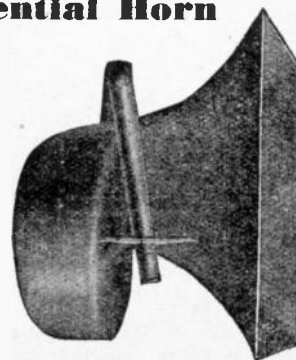
	List Price	YOUR COST
Type 06 Heavy-Duty, 4,000 ohms primary impedance at 1,000 cycles....	\$20.00	\$11.76
Type AM5 Heavy-Duty, 500 or 4,000 ohms primary impedance at 1,000 cycles	20.00	11.76
Type J50 General-Purpose Transformer PP 245 or 4,000 ohms primary impedance	7.50	4.35



Exponential Horn

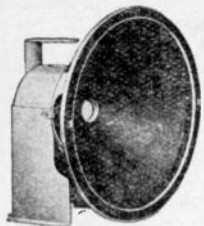
No. 1115
 Bell 14 in. x 17 in. Depth 12 in. Air column 72 in. Equipped with bronze loose coupling. Particularly recommended for all types of monitoring.
 Weight 4 lbs.

List Price, \$12.00
Your Cost, \$7.06



Public Address Equipment

Magnavox Speakers



Model No. 517 — Public Address Speaker — D.C. — with 14" cone diameter. With standard field coil and transformer.

List Price, \$36.00

Your Cost, \$21.17

Model No. 521 — Public Address Speaker — A.C. — with 14" cone diameter. With standard field coil and transformer.

Model 517
14-inch Dynamic Speaker

List Price, \$60.00

Your Cost, \$35.24

Model No. 442 — Magnavox A.C. Speaker — with 10½" cone diameter. With standard field coil and transformer.

List Price, \$23.50

Your Cost, \$13.82

Model No. 443 — Magnavox A.C. Speaker — with 12½" cone diameter. With standard field coil and transformer.

List Price, \$25.00

Your Cost, \$14.70

Model No. 444 — Magnavox A.C. Speaker — with 8" cone diameter. With standard field coil and transformer.

List Price, \$22.00

Your Cost, \$12.94



Model No. 150 — Magnavox Dynamic Speaker — with 6½" cone diameter. With standard field coil and transformer.

List Price, \$8.50

Your Cost, \$5.00

Model No. 154 — Magnavox Dynamic Speaker — with 8" cone diameter. With standard field coil and transformer.

List Price, \$10.00

Your Cost, \$5.88

Model No. 152 — Magnavox Dynamic Speaker — with 10½" cone diameter. With standard field coil and transformer.

List Price, \$12.50

Your Cost, \$7.35

Jensen Concert Dynamic

Reproduces with enormous volume and great tonal beauty. Extremely sensitive. Handles all audible tones with an even degree of brilliance. Equipped with C.T. input transformer and 9½" cone. D9A.C. for 110 v., 60 cycles.

List Price, \$27.50

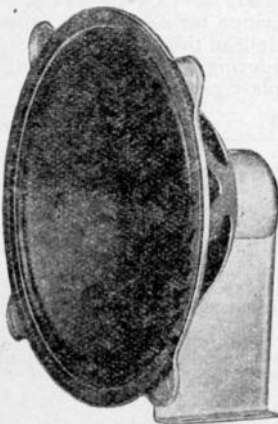
Your Cost, \$16.17

D9D.C. for 110 v. D.C. Has 2,500 ohm field coil.

List Price, \$18.50

Your Cost, \$10.88

Please specify type of input transformer desired when ordering any speaker.



Jensen Radically New Auditorium Dynamic Speakers



In sound output these new Jensen Auditorium Speakers are 400% more efficient than the conventional type of electro-dynamic one speaker. For example, adding one of these speakers to an amplifier is the equivalent of using Type 250 tubes instead of Type 245, or the equivalent of using Type 845 tubes in place of Type 250. The addition of these speakers, therefore, to an amplifier system is an economical means of greatly

increasing the power of the system without adding to the cost of the amplifier itself. Have 12" baffle opening. 110-V.-A.C. Models with Output Transformer

List Price, \$67.50

Your Cost, \$39.70

110-V.-D.C. Models with Output Transformer

List Price, \$45.00

Your Cost, \$26.56

Please specify type of Output Transformer required

Jensen Permanent Magnet Dynamic Speaker



This Speaker, with its electro-dynamic tone quality, is ideal for hotel-room and apartment installations operated from a central tuning and amplifying system and for use in connection with automobile radio receivers. The permanent magnet which supplies the energy in the air-gap is an exclusive development of Jensen engineers. Its strength will not deteriorate even after several years of use. Model PM-1 is compact and

light in weight and input transformers are available which will adapt it for operation from any type of amplifier tube.

List Price, \$15.00

Your Cost, \$8.82

Magnavox Speaker

Model No. 143 — Magnavox Dynamic Speaker — with 12½" cone diameter. With standard field coil and transformer.

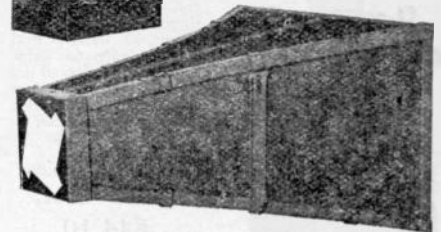
List Price, \$15.00

Your Cost, \$8.82

Standard Equipment

on Magnavox Dynamic Speakers includes any single field coil up to or including 2,500 ohms resistance and any standard transformer for single or push-pull 245 or Pentode tubes. For fields of higher resistance a slight additional charge is made.

Wright-De-Coster P. A. 20



THE PORTABLE HORN WITH A DYNAMIC CONE TYPE UNIT

Easily Portable—Packs in Small Space—Clear and Distinct on Voice—Beautiful on Music—Ample Volume

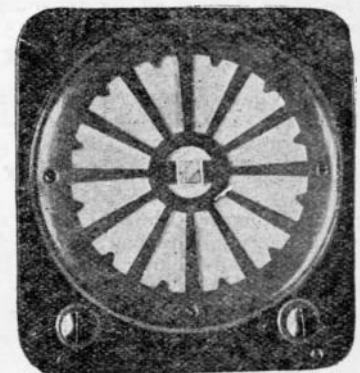
Sensitive enough to operate on one watt. Powerful enough to handle nine watts. The P.A. 20 is capable of delivering an amount of volume that is astonishing. Never has a more flexible, adaptable and money-making combination been offered to the sound engineer. Outside measurement, length over all, 39¼". Bell at opening, 28" x 18½". Size of unit housing, 10¼" x 10¼" x 7¼" deep. Weight crated, 77 pounds.

Price, P.A. 20, Horn and Chassis, \$73.00

No. 20 Field Supply without 280 rectifying tube, \$24.00

LESS CUSTOMARY DISCOUNT

Hyflux Flush Wall Dynamic Speaker

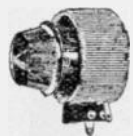


The Egyptian Wheel Design is not only attractive and distinctive, but leaves ample opening for sound. It is made of pressed steel and finished in brown walnut or any color desired for special orders. The Hyflux Flush Wall Mounting is used for installations in new buildings or where it is possible to cut a hole in the wall to accommodate the conduit box without too much difficulty. Packed 2 to a carton, weight 19 lbs., completely mounted and wired to specifications. All leads connected to a terminal strip. Size: Depth over all, 5½ inches; depth into wall, 4 inches; conduit box, 9½ x 11¼ inches; front plate, 12 x 14 inches; price, \$24.00. Constant impedance volume control, \$3.50 extra. Five-channel selector switch, \$2.80 extra.

LESS CUSTOMARY DISCOUNT

Public Address Equipment

"CENTRALAB" Giant Power Potentiometer



The wire-wound resistance is built of materials that insure safe operation at high temperature. The wire is wound on a steel core, 1" wide, which is insulated with asbestos. The diameter is 2", which allows mounting the unit in a comparatively small space. This construction provides a resistance unit that will safely carry any current load at a power dissipation of 50 watts through the entire resistance.

Manufactured with single-hole mounting, and furnished with bakelite knob.

Three Terminals	List Price	YOUR COST
48-025— 25 ohms	\$2.00	\$1.18
48-060— 60 ohms	2.00	1.18
48-151— 150 ohms	2.00	1.18
48-401— 400 ohms	2.00	1.18
48-501— 500 ohms	2.00	1.18
48-811—1,000 ohms	2.50	1.47
48-821—2,000 ohms	2.50	1.47
48-851—5,000 ohms	2.75	1.62
48-881—8,000 ohms	2.75	1.62

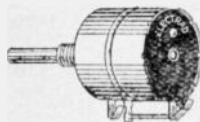
C. R. L. Commercial Type "L" Pad

Employed in output circuits where the amount of power does not exceed 10 watts. Commonly used as a voice coil control of dynamic speakers. The unit provides constant impedance to the line and thus, when used in multiple circuits, does not disturb the adjustment of other sections of the same circuit. The resistance units are wire-wound for maximum power rating and housed in the same molded bakelite case as the "T" Pad. Provides single or three-hole mounting. Diameter of control 3½ inches. Depth of control 2 inches approx.

Cat. No. 93-003—Resistance 100 ohms
94-002—Resistance 50 ohms
94-001—Resistance 15 ohms

List Price, \$7.00 Your Cost, \$4.12

Electrad Royalty "L" Pad Attenuator



Type	Line Impedance in Ohms
Type LR15	15
Type LR200	200
Type LR500	500
Type LR3000	3000
Type LR5000	5000

List Price, all sizes, \$3.00 Your Cost, \$1.77

Note: The panel unit is the series resistor (S) and the rear unit is the shunt resistor.

"L" Pad Super-Tonatrol

Approximately constant impedance can be obtained by using a dual control consisting of a series and a shunt resistor.

Impedance of Line (ohms)	Made in these sizes	Type
200	200	LS-200
500	500	LS-500
3000	3000	LS-3000
5000	5000	LS-5000

List Price, all sizes, \$4.00 Your Cost, \$2.36
Special sizes made to order

C. R. L. Modulators and Potentiometers



Non-inductive resistances, smoothly variable from zero to maximum Radiohms, have two taps, potentiometers and modulators, three. Modulator for use in grid circuit of audio amplifier. Rocking disc makes contact with graphite resistance by means of a pressure shoe. No sliding contacts to wear or become noisy. Entire variation can be made by single turn of the knob.

Potentiometers—Made in total resistance values of 200-400-2,000-10,000-50,000-100,000 and 500,000 ohms.

List Price, \$2.00 Your Cost, \$1.17
Modulators—Made in total resistance values of 250,000 and 500,000 ohms. Special taper.
List Price, \$2.00 Your Cost, \$1.17

Centralab Volume Control Guide

Radio service men and dealers everywhere need it. Illustrates all volume control circuits in common use, lists all makes and models of radio receivers with the volume control circuit used and the proper replacement part.

Price, 25c, Postpaid

C. R. L. Giant Type "L" Pad

The Giant Power "L" Pads consist of two heavy wire-wound sections of large dimensions. These units are recommended for installations in systems where the output exceeds 10 watts.

The units are mounted with no covering to allow free circulation of air about the resistance units and thus permit a free dissipation of heat. These units provide a means of control which maintains a constant impedance upon the line, and may thus be operated in multiple without disturbing the adjustment of other circuits obtaining energy from the same line.

List Price, \$5.00 Your Cost, \$2.94

Cat. No. 47-209—Resistance 50 ohms
47-208—Resistance 15 ohms

The resistance specified is the equivalent line impedance.

Impedance Matching Tonatrol Type "U"

The Electrad type "U" Tonatrol provides a simple, inexpensive and efficient method of controlling the volume of electric phonographs. This type of control reduces distortion and gives better results because of its constant impedance feature. The type "U" Tonatrol is constructed for one-hole panel mounting. However, it can be mounted in a metal mounting bracket, or it can be obtained in a handsome bakelite casing for table mounting. The basic difference between this volume control and the ordinary rheostat and potentiometer types is that varying the volume does not affect the impedance of either the input or output circuits.

Tonatrol Type "U"
List Price, \$2.00 Your Cost, \$1.18

C. R. L. "T" Pad and "T" Type Fader

For Use in Theatres, Broadcast Stations and Other Sound Projection Fields



"T" PAD FADER

The Centralab "T" Pad Fader maintains the same high quality of control as the Centralab "T" Pad. Used where necessary to fade from pickup to pickup, film to film, microphone to microphone, or line to line.

The unit consists of two groups of three resistances. The unit is housed in the same dustproof molded bakelite case as the "T" Pad. All parts are heavy for continuous commercial service. Provides for single or three-hole mounting. Diameter of control 3½ inches. Depth of control 2 inches.

Cat. No. 83-006—Resistance 5,000 ohms
83-001—Resistance 3,000 ohms
83-002—Resistance 1,500 ohms
83-003—Resistance 500 ohms
83-004—Resistance 200 ohms
83-005—Resistance 50 ohms

List Price, \$10.00 each Your Cost, \$5.88 each

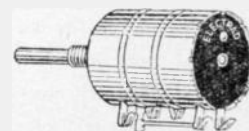
"T" PAD

The Centralab "T" Pad consists of one group of three resistances. Two offer a constant impedance to the input and output circuits, while the third, a tapered graphite section, permits a smooth, even variation of volume level. Housed in a dustproof molded bakelite case, with heavy soldering lug connections. There is a positive stop, and all parts are heavy for continuous commercial service. Provides single or three-hole mounting. Diameter of control 3½ inches. Depth of control 2 inches.

Cat. No. 93-008—Resistance 5,000 ohms
93-001—Resistance 1,500 ohms
93-002—Resistance 500 ohms
93-003—Resistance 200 ohms
93-004—Resistance 100 ohms
93-005—Resistance 50 ohms
93-006—Resistance 15 ohms

List Price, \$7.00 each Your Cost, \$4.12 each

Electrad Royalty "T" Pad Attenuator



Electrad Constant Impedance "T" pad controls are useful for the volume control of microphones, electrical phonographs, talking picture amplifiers and other sound amplifying and distribution systems. Constant impedance is maintained throughout the adjustment of knob.

Type	Line Impedance in Ohms
Type TR15	15
Type TR200	200
Type TR500	500
Type TR3000	3000
Type TR5000	5000

Note: The panel and rear units are series resistors (S. & S.) and the center unit is the shunt resistor (R.).

List Price, all sizes, \$5.00 Your Cost, \$2.94 each

Kenyon Laboratory Standard Audio Components

Transformers Available in Top or Bottom Mounting

Kenyon Laboratory Standard Audio components are an outstanding contribution to the development of flat-line amplifier equipment. A frequency response characteristic of plus or minus 1 DB over the entire audio broadcast spectrum for standard ratio coupling, input, output and line-matching transformers—encasing all audio, power and filter components in high permeability cast-iron shields to prevent the possibility of induced hum or of parasitic oscillations—these are factors which have won over the leading audio research laboratories, broadcast stations, university research bureaus, experimenters, inventors and exacting amplifier engineers to the use of Kenyon audio equipment. Kenyon Laboratory Standard Audio transformers, when used in transmitting or receiving sets designed to amplify the audio spectrum fully and uniformly, are so close an approach to life-like reproduction as to put the burden of further improvement in amplifier reception on the inventive genius of microphone and speaker specialists.



No. 1
Top Mounting



No. 3



No. 4



No. 2



No. 1
Bottom Mounting

INPUT TRANSFORMERS

	List Price	YOUR COST
KLG—Input to grid: Carbon or dynamic microphone, or low impedance pickup to one or two low impedance grids. Primary designed for a 50-ohm, 125-ohm, 200-ohm, or 500-ohm line. Secondary in two sections; impedance 30,000 ohms each side of center. Case 1	\$15.00	\$9.00
KL-2G—Input to grid: Carbon or dynamic microphone, or low impedance pickup to one or two high impedance grids. Primary designed for a 50-ohm, 125-ohm, 200-ohm, or 500-ohm line. Secondary in two sections; impedance 60,000 ohms each side of center. Case 1	15.00	9.00
KL-845-G—Input to grid: Primary designed for a 50-ohm, 125-ohm, 200-ohm or 500-ohm line to work into two 50-watt grids at a plus-20 level	20.00	9.00

COUPLING TRANSFORMERS

KB-210-IN—Two 210 plates to two 50-watt grids for Class B amplification. Case 2	25.00	15.00
K-45-IN—Two 245 plates or two 250 plates to two 50-watt grids in Class A. Case 2	25.00	15.00
KB-46-IN—One 46 plate to two 46 grids in Class B amplification. Case 2	15.00	9.00
KB-27-46-IN—Two 27 plates to two 46 grids in Class B amplification. Case 2	25.00	15.00
KB-56-46-IN—Two 56 plates to two 46 grids in Class B amplification. Case 2	25.00	15.00
KA-31—Cascade, single plate to single grid. Turn ratio 3:1. Limit 5 MR D.C. Case 1	8.00	4.80
KA-12—Input, one plate to two grids. Turn ratio 2½:1 each side of center. Case 1	12.00	7.20
KA-22—Input, two plates to two grids. Turn ratio 1:8-1 each side of center. Primary and secondary each in two sections. Limit unbalanced primary current 4 MA D.C. Case 2	20.00	12.00
KPLG—Single plate and 500-ohm line to one or two grids. Primary in two sections. One section designed for a 27, 37, 55 or 56 plate. Second section designed for a double-button microphone or a low impedance pickup. Secondary in two sections. Case 2	20.00	12.00
KPUG—Input, high or low impedance pickups to single grid. Primary 4,000 ohms tapped at 500, 1,000 and 2,000 ohms. Case 1	15.00	9.00

OUTPUT TRANSFORMERS

KDL—Output: will match the plate of tubes like the 201A, 112A, 230, 231, 226, 227, 237, 256, 55 and 85. Secondary designed for a 500-ohm, 200-ohm, 125-ohm and 50-ohm line. Works at 0 level. Case 1	15.00	9.00
K-2DL—Output: Primary will match push-pull plates of tubes like 201A, 112A, 230, 231, 226, 227, 237, 256, 55 and 85. Secondary designed for a 500-ohm, 200-ohm, 125-ohm or 50-ohm line. Works at 0 level. Case 1	15.00	9.00
KPPMD—Two 250, two 245 or two triple twin plates to a 4,000-ohm line and a 15-ohm line. 4,000-ohm line and 15-ohm line on separate windings	15.00	9.00
KPPD—Two 250, two 245 or two triple twin plates to 1 or more low impedance voice coils. Secondary: 15 ohms, tapped for two, four and eight ohms. Case 2	12.00	7.20
KPP-1047—Two 247, or two 210 plates to 500-ohm or 200-ohm line. Secondary windings also arranged to match from one to six voice coils. Case 2	20.00	12.00
KPP-500—Two 250, two 245 or two triple twin plates to 500-ohm or 200-ohm line. Secondary windings also arranged to match from one to six voice coils. Case 2	20.00	12.00
KPP-845—Two 845 plates to 500-ohm or 200-ohm line. Secondary windings also arranged to match from one to twenty voice coils. Case 4	35.00	21.00
KB-46-0—Two 246 plates in Class B amplification to a 500-ohm or 200-ohm line. Secondary windings also arranged to match from one to ten voice coils. Case 2	22.00	13.20

MIXING TRANSFORMERS

	List Price	YOUR COST
KALL—Input, two-button carbon microphone, or moving coil microphone (500-ohm line, or 200-ohm line or 50-ohm line) to universal line (500-ohm, 200-ohm line or 50-ohm line). Case 1	15.00	9.00
KLM-200—Input, one or more moving coil microphones or low impedance pickups in parallel to a universal line. Primary 30 ohms tapped for 24, 15 or 10 ohms. Secondary designed for a 500-ohm line, a 200-ohm line or a 50-ohm line. Case 1	25.00	15.00

MATCHING TRANSFORMERS

KLS-15—15-watt audio line matching transformer. Input designed for 200-ohm, 500-ohm, 2,000-ohm or 4,000-ohm line. Output tapped for 2, 3½, 5, 7½, 15, 30, 45 or 60-ohm line. Case 3 ..	20.00	12.00
KLS-30—30-watt audio line matching transformer. Input designed for 200-ohm, 500-ohm, 2,000-ohm or 4,000-ohm line. Output tapped for 2, 3½, 5, 7½, 15, 30, 45 or 60-ohm line. Case 3 ..	30.00	18.00
KLS-50—50-watt audio line matching transformer. Input designed for 200-ohm, 500-ohm, 2,000-ohm or 4,000-ohm line. Output tapped for ½, 1, 2, 3½, 5, 7½, 15 or 30 ohms. Case 4	40.00	24.00

REACTORS

KC-15-120—Filter choke. 15 henry, 120 MA. D.C. resistance 210 ohms. Case 2	6.00	3.60
KC-40-60—Filter choke. 40 henry, 60 MA. D.C. resistance 625 ohms. Case 2	6.00	3.60
KC-300-3—Audio filter and parallel feed choke. 300 henrys, 3 MA. D.C. resistance 6,000 ohms. Case 1	8.00	4.80
KC-700-5—Audio filter and parallel feed choke. 700 henrys, 5 MA. D.C. resistance 3,200 ohms. Case 2	20.00	12.00
KC-30-200—Filter choke. 30 henrys, 200 MA. D.C. resistance 120 ohms. Case 4	18.00	10.80
KC-15-200—Saturated filter choke for Class B amplification. 15 henrys, 200 MA. D.C. resistance 110 ohms. Case 3	10.00	6.00

FILAMENT TRANSFORMERS

KFT-66—Filament transformer for 66 mercury vapor rectifier tubes. Primary tapped for 100, 110, 115, 125 volts, 60 cycles A.C. Secondary 2½ volts, 10 amps. 12,000 volts insulation. Case 3 ..	15.00	9.00
KFT-72—Filament transformer for 872 mercury vapor rectifier tubes. Primary tapped for 100, 110, 115, 125 volts, 60 cycles A.C. Secondary 5 volts, 20 amps. 12,000 volts insulation. Case 4	22.00	13.20
KFT-45-03A—Filament transformer for 50-watt tubes. Primary tapped for 100, 110, 115, 125 volts, 60 cycles A.C. Secondary 10 volts, 7 amps. 10,000 volts insulation. Case 4	20.00	12.00
KFT-66-45—Filament transformer for 866 and 50-watt power tubes. Primary tapped for 100, 110, 115, 125 volts, 60 cycles A.C. Secondary 2½ volts, 10 amps. 10 volts, 7 amps. 10,000 volts insulation. Case 4	25.00	15.00

PLATE TRANSFORMERS

KPT-245—Primary tapped for 100, 110, 115, 125 volts, 60 cycles A.C. Secondaries: 375 volts each side of center at 125 MA. 2½ volts C.T. 14 amp. winding for tuner or amplifier. 2½ volts C.T. winding for two 245 tubes. Case 3	20.00	12.00
KPT-46—Plate transformer for Class B operation with 46 tubes. Primary tapped for 100, 110, 115, 125 volts, 60 cycles A.C. Secondaries: 570 volts each side of center at 200 MA. 5 volts C.T. 3 amps. for full-wave 83 rectifier. 2½ volts C.T. for 46 tubes in Class B. 2½ volts C.T. 14 amps for tuner or amplifier. Case 4	22.00	13.20
KPT-250—Primary tapped for 100, 110, 115, 125 volts, 60 cycles A.C. Secondaries: 600 volts each side of center at 175 MA. One 7½ volt C.T. 3 amp. winding for two 281 rectifiers. Two 7½ volt C.T. windings for filaments of each 250. One 2½ volt C.T. winding for tuner	25.00	15.00
KPT-845—Primary tapped for 100, 110, 115, 125 volts, 60 cycles A.C. Secondaries: 1,400 volts tapped for 1,225 each side of center at 175 MA. Shielded and casting construction. Secondary leads terminating in porcelain bushings	40.00	24.00

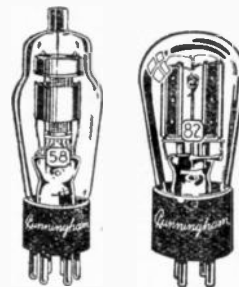


RCA-Radiotron

and

Cunningham

RADIO TUBES



Every Tube Guaranteed

Specify RCA or Cunningham on Your Order. Our Large Stock Assures Immediate shipment

Detectors and Amplifiers

UX-200A or CX-300A
5-Volt D.C. Special Detector
List Price, \$4.00

Your Cost, \$2.36

UX-201A or CX-301A
5-Volt D.C. Detector-Amplifier
List Price, 80c

Your Cost, 45c

WD-11 and WX-12 or C-11 and CX-12
1.1-Volt D.C. Detector-Amplifier
List Price, \$3.00

Your Cost, \$1.77

UX-112A or CX-112A
5-Volt D.C. Detector-Amplifier
List Price, \$1.55

Your Cost, 91c

UX-222 or CX-322
D.C. Screen-Grid
List Price, \$3.15

Your Cost, \$1.85

UY-224A or C-324A
2½-Volt A.C. or D.C. Screen-Grid
Amplifier and Power Detector
List Price, \$1.65

Your Cost, 97c

UX-226 or CX-326
1½-Volt A.C. or D.C. Amplifier
List Price, 85c

Your Cost, 50c

UY-227 or C-327
2½-Volt A.C. or D.C. Detector
List Price, \$1.05

Your Cost, 61c

230 or CX-330
2-Volt D.C. Detector-Amplifier
List Price, \$1.65

Your Cost, 97c

232 or CX-332
2-Volt D.C. R.F. Amp. and Power
Detector
List Price, \$2.35

Your Cost, \$1.38

234 or CX-234
2-Volt D.C. Super-Control R.F.
Amplifier
List Price, \$2.80

Your Cost, \$1.65

235 or C-335
2½-Volt A.C. or D.C. Super-Control
R.F. Amplifier
List Price, \$1.65

Your Cost, 97c

236 or C-336
R.F. Amplifier and Power Detector
List Price, \$2.80

Your Cost, \$1.65

237 or C-337
Amplifier or Power Detector
List Price, \$1.80

Your Cost, \$1.05

239 or C-239
Super-Control R.F. Amplifier
UX-240 or CX-340

Your Cost, \$1.65

UX-240 or CX-340
5-Volt D.C. High Mu Detector
List Price, \$3.00

Your Cost, \$1.77

56 or C-56
Detector-Amplifier or Oscillator
New 5-Prong Type
List Price, \$1.30

Your Cost, 76c

57 or C-57
Triple-Grid Amplifier-Detector
New 6-Prong Type
List Price, \$1.65

Your Cost, 97c

58 or C-58
Triple-Grid Super-Control Amplifier
New 6-Prong Type

Your Cost, 97c

UV-199 or C-299
3.3-Volt D.C. Detector-Amplifier
List Price, \$2.75

Your Cost, \$1.62

UX-199 or CX-299
List Price, \$2.50

Your Cost, \$1.47

Power Amplifiers

210 or CX-310
7½-Volt A.C. or D.C. Power
Amplifier
List Price, \$7.25

Your Cost, \$4.27

UX-112A or CX-112A
5-Volt D.C. Power Amplifier
List Price, \$1.55

Your Cost, 91c

UX-120 or CX-220
3.3-Volt D.D. Power Amplifier
List Price, \$3.00

Your Cost, \$1.77

231 or CX-331
2-Volt D.C. Power Amplifier
List Price, \$1.65

Your Cost, 97c

233 or C-333
2-Volt D.C. Power Amplifier
List Price, \$2.80

Your Cost, \$1.65

238 or C-338
6.3 Volt D.C. Power Amplifier
List Price, \$2.80

Your Cost, \$1.65

UX-245 or CX-345
2½-Volt A.C. or D.C. Power
Amplifier
List Price, \$1.15

Your Cost, 67c

46 or C-46
2½-Volt A.C. or D.C. Class "A"
and "B" Power Amplifier
List Price, \$1.55

Your Cost, 91c

247 or C-347
2½-Volt A.C. Pentode Power
Amplifier
List Price, \$1.60

Your Cost, 94c

UX-250 or CX-350
7½-Volt A.C. or D.C. Power
Amplifier
List Price, \$6.20

Your Cost, \$3.65

UX-171A or CX-371A
5-Volt A.C. or D.C. Amplifier
List Price, 95c

Your Cost, 55c

Rectifiers

UX-280 or CX-380
5-Volt Full-Wave
List Price, \$1.05

Your Cost, 61c

UX-281 or CX-381
7½-Volt Half-Wave
List Price, \$5.20

Your Cost, \$3.06

82 or CX-382
2½-Volt Full-Wave Mercury Vapor
List Price, \$1.30

Your Cost, 76c

UX-866 or CX-366
2.5-Volt Half-Wave Mercury Vapor
List Price, \$7.50

Your Cost, \$5.60

New Type Tubes Just Announced

55 or C-55
Duo-Diode Det., Triode Amp.,
Automatic Volume Control
List Price, \$1.60

Your Cost, 94c

85 or C-85
Similar to 55 but Intended for 6-Volt
Auto Sets

Your Cost, 94c

89 or C-89
Class "A" and "B" Pentode for
Auto

Your Cost, \$1.06

83 or C-83
Full-Wave Mercury Vapor Rectifier

Your Cost, 91c

TUBES **ARCTURUS** TUBES*"The BLUE TUBE with the LIFE-LIKE TONE"***Only Arcturus BLUE Tubes Give You All These Sales Advantages**

Arcturus BLUE Tubes offer you exclusive advantages that have gained a wide consumer acceptance:

QUICK-ACTION—Arcturus pioneered the original quick-acting tube.

IMMUNITY TO OVERLOADS—Arcturus Blue Tubes resist overload as high as 50%.

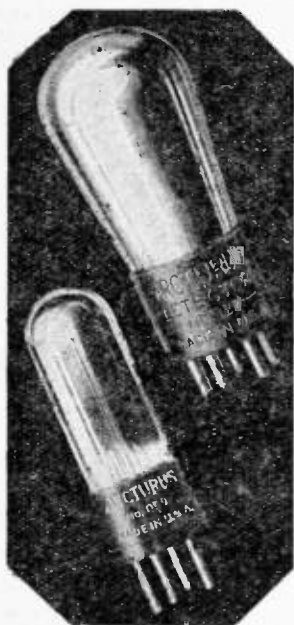
LESS HUM—Comparative tests show that Arcturus Tubes have 52% less hum than other tubes.

LONG LIFE—Arcturus Tubes have established an unchallenged world's record for long life.

LIFE-LIKE TONE—Comparison in any receiver shows the improved tone of Arcturus Blue Tubes.

BLUE TUBES—This distinctive color assures dealers of repeat business on the blue tube.

Only Arcturus Tubes enable you to actually demonstrate all these salient features. Such a convincing demonstration means increased sales and satisfied customers. Sell tubes on facts, not mere claims!



QUICK ACTION
LONG LIFE
LIFE-LIKE TONE
WITHSTANDS CURRENT SURGES

Type	Volts		List Price	YOUR COST
101A	5.0	Detector Amplifier...	\$0.80	\$0.44
110	7.5	Power Amplifier...	7.25	3.92
012A	5.0	Detector Amplifier...	1.55	.83
122	3.3	S.G. Amplifier.....	3.15	1.70
*124	2.5	S.G. Detector Amp..	1.65	.90
126	1.5	Amplifier .....	.85	.46
127	2.5	Detector Amplifier..	1.05	.57
130	2.0	Detector Amplifier..	1.65	.90
131	2.0	Power Amplifier....	1.65	.90
132	2.0	S.G. Detector Amp..	2.35	1.27
133	2.0	Power Pentode.....	2.80	1.51
134	2.0	Var.-Mu R.F. Pent..	2.80	1.51
135 (see 551)				
136A	6.3	S.G. Detector Amp..	2.80	1.51
137A	6.3	Detector Amplifier..	1.80	.98
138A	6.3	Power Pentode.....	2.80	1.51
139A	6.3	Var.-Mu R.F. Pent..	2.80	1.51
41	6.3	Power Pentode.....	2.80	1.51
42	6.3	Power Pentode.....	2.80	1.51
44	6.3	Var.-Mu R.F. Pent..	2.80	1.51
145	2.5	Power Amplifier....	1.15	.63
46	2.5	Class "B" Amplifier.	1.55	.84
147 (see PZ)				

Type	Volts		List Price	YOUR COST
150	7.5	Power Amplifier....	\$6.20	\$3.35
†551	2.5	Var.-Mu R.F. Amp..	1.65	.90
56	2.5	Det., Amp., Oscil...	1.30	.70
57	2.5	S.G. Detector Amp..	1.65	.90
58	2.5	Var.-Mu R.F. Pent..	1.65	.90
071A	5.0	Power Amplifier....	.95	.52
180	5.0	Full-Wave Rectifier..	1.05	.57
181	7.5	Half-Wave Rectifier.	5.20	2.81
82	2.5	F-W Mer. Vapor Rec.	1.30	.70
83	5.0	F-W Mer. Vapor Rec.	1.30	.70
85	6.3	Duplex-Diode Triode	1.60	.87
89	6.3	Gen. Pur. Pow. Amp.	1.80	.98
099UV	3.0	Detector Amplifier..	2.80	1.51
099UX	3.0	Detector Amplifier..	2.55	1.38
GA	5.0	Power Pentode.....	2.75	1.49
*PZ	2.5	Power Pentode.....	1.60	.87
PZH	2.5	Power Pentode.....	2.80	1.51
Wunderlich A	2.5	Detector	3.00	1.62
Wunderlich B	2.5	Detector	3.00	1.62
Automotive A	6.3	Detector	3.00	1.62
Wunderlich B	6.3	Detector	3.00	1.62
Automotive B	6.3	Detector	3.00	1.62

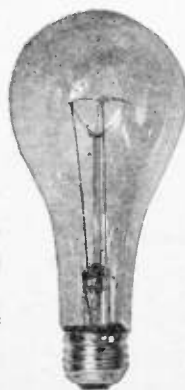
• 124 is interchangeable with '24A.
† 551 Variable-Mu is interchangeable with Type '35.
• PZ Pentode is interchangeable with Type '47.

**SIRIAN
Ultra-Violet Lamp***It's Like the Sun*

Medical science recognizes that the ultra-violet rays radiating from the sun are of great value to the health of mankind.

Sirian Ultra-Violet Illuminating Lamps are proved to radiate the same kind of ultra-violet rays in the health-giving band of the spectrum known as the vital region. Not only do they give these healthful, biological rays but also provide pleasing and restful illumination.

With a Sirian Ultra-Violet Lamp in every socket of your home, you are provided with sunlike healthful illumination without respect to time of day, weather or season of year.

A Little Sun in Each Lamp**By Arcturus**

Sirian Ultra-Violet Lamps herald an advance in healthful lighting. The beneficial rays from this lamp are mild and can be absorbed without danger. The special glass which is used positively prevents all short harmful rays that are apt to burn and prove dangerous unless administered under a physician's supervision. The "vitamin rays" of the Sirian Lamp act as a healthful tonic and build up resistance to disease.

Sirian Ultra-Violet Lamps will replace any incandescent bulb—no additional apparatus or precautions are necessary—no noise or dirt. Merely put a Sirian Lamp into any socket and begin getting the advantages of their health-giving energy—plus soothing illumination. Place Sirian Ultra-Violet Lamps in baby's room, in your favorite reading lamp, in the bathroom so your whole body will benefit—in fact wherever lamps are used.

	60 Watt	100 Watt	150 Watt	300 Watt
List Price	\$0.90	\$1.25	\$2.00	\$3.75
Your Cost	\$0.63	\$0.88	\$1.40	\$2.60

FLECHTHEIM
SUPERIOR CONDENSERSCompact Heavy Duty
Filter Condensers

The Type HSM condensers represent the highest perfection in the art of making comparatively high voltage condensers for heavy duty amplifiers using Type -50, -10, -45, -47 and other similar heavy duty amplifier tubes.

Improved manufacturing methods and processes, together with the use of a special insulating paper have made possible the construction of these compact units having high voltage ratings, yet requiring considerably less space in amplifier assemblies because of their extreme compactness.

Every unit in the series is conservatively rated at 1,000 volts D.C. and 660 volts A.C., R.M.S. They have a high insulation resistance of over 1,000 megohms per microfarad, extremely low power factor, non-inductive windings and are made to a capacity tolerance of 5%. Their flash breakdown rating is 3,000 volts D.C.

Type HSM:—1,000 v. D.C.—660 v. A.C., R.M.S.

Type No.	Cap. Mfd.	Body Dimen. H W D	List Price	YOUR COST
HSM-5	.05	2" 1 1/4" 1 1/8"	\$1.00	\$.57
HSM-10	.1	2" 1 1/4" 1 1/8"	1.00	.60
HSM-25	.25	2" 1 1/4" 1 1/8"	1.20	.65
HSM-50	.5	2" 1 1/4" 1 1/8"	1.30	.70
HSM-100	1.0	2" 1 1/4" 1 1/8"	1.75	.90
HSM-200	2.0	4 1/8" 2 3/8" 1 1/8"	2.75	1.50
HSM-400	4.0	4 1/8" 2 3/8" 1 1/8"	4.50	2.80

Standard By-Pass
and Filter Types

This line of condensers is available in a complete range of capacities required for by-pass and filter use.

The Type SB condensers are rated at 250 volts D.C. working voltage while the Type SF condensers in this series are rated at 450 volts D.C. working voltage.

The inexpensive flat, soldered tinplate case and convenient mounting lugs and terminals used in this type of unit permit them to be offered at the low prices quoted. In electrical characteristics these units are the equal of any other condenser of similar voltage and capacity ratings for by-pass and filter use.

These units are neat in appearance, accurate in construction and dependable in service.

Type SB:—250 v. D.C.—120 v. A.C., R.M.S.

Type No.	Cap. Mfd.	Body Dimen. H W D	List Price	YOUR COST
SB-10	.1	2" 1 1/4" 1 1/8"	\$.50	\$.30
SB-25	.25	2" 1 1/4" 1 1/8"	.55	.32
SB-50	.5	2" 1 1/4" 1 1/8"	.60	.35
SB-100	1.0	2" 1 1/4" 1 1/8"	.70	.40
SB-200	2.0	2" 1 1/4" 1"	1.10	.67
SB-400	4.0	2" 1 1/4" 1 1/4"	2.10	1.30

Type SF:—450 v. D.C.—220 v. A.C., R.M.S.

Type No.	Cap. Mfd.	Body Dimen. H W D	List Price	YOUR COST
SF-10	.1	2" 1 1/4" 1 1/8"	.55	.32
SF-25	.25	2" 1 1/4" 1 1/8"	.60	.35
SF-50	.5	2" 1 1/4" 1 1/8"	.65	.38
SF-100	1.0	2" 1 1/4" 1"	.90	.54
SF-200	2.0	2" 1 1/4" 1 1/8"	1.40	.86
SF-400	4.0	4 1/8" 1 1/4" 1 1/4"	2.50	1.51

Filter Condensers

Non-Inductive



The Type NU condensers are without doubt the neatest, smallest and most efficient uncased condensers made. The winding is non-inductive, is impregnated in a special non-hygroscopic compound and the unit is finally enclosed in a wax-paper wrapper. This construction renders the unit absolutely moisture-proof.

They are equipped with rubber-covered wire leads that won't pull out.

If you are looking for a thoroughly dependable uncased condenser to employ in your repair work, we fully recommend these Type NU units as the finest obtainable. When installed in power supply units in place of defective condensers, they will guard your reputation for efficient servicing.

Type NU:—600 v. D.C.—440 v. A.C., R.M.S.

Type No.	Cap. Mfd.	Body Dimen. H W D	List Price	YOUR COST
NU-10	.1	2" 1 1/4" 1 1/8"	\$.40	\$.21
NU-25	.25	2" 1 1/4" 1 1/8"	.45	.24
NU-50	.5	2" 1 1/4" 1 1/8"	.55	.30
NU-100	1.0	2" 1 1/4" 1 1/8"	.85	.46
NU-200	2.0	2" 1 1/4" 1 1/8"	1.30	.66
NU-400	4.0	2" 1 1/4" 1 1/8"	2.30	1.25

By-Pass and Filter

This series of condensers of the compact, easy mounting type which have proved so popular with radio receiver manufacturers, makes available to radio experimenters and service men a complete line of units for both original and replacement use. These units are encased in inverted drawn metal shells which are provided with integral soldering lugs which project through insulated holes through the sides of the units.

They are especially designed for by-pass and coupling work and provide minimum impedance at radio and audio frequency and high insulation resistance and low leakage to direct current.



Type GB:—200 v. D.C.—120 v. A.C., R.M.S.

Type No.	Cap. Mfd.	Body Dimen. H W D	List Price	YOUR COST
GB-10	.1	3/4" 1 1/4" 1"	\$.35	\$.19
GB-25	.25	3/4" 1 1/4" 1"	.40	.22
GB-50	.5	3/4" 1 1/4" 1"	.45	.26
GB-100	1.0	3/4" 2" 1 1/8"	.60	.33
GB-200	2.0	1 1/4" 2" 1 1/8"	1.00	.63
GB-400	4.0	1 1/4" 2" 1 1/8"	1.80	1.05

Type GF:—400 v. D.C.—220 v. A.C., R.M.S.

Type No.	Cap. Mfd.	Body Dimen. H W D	List Price	YOUR COST
GF-10	.1	3/4" 1 1/4" 1"	\$.45	\$.26
GF-25	.25	3/4" 1 1/4" 1"	.50	.28
GF-50	.5	3/4" 1 1/4" 1"	.60	.35
GF-100	1.0	3/4" 2" 1 1/8"	.80	.49
GF-200	2.0	1 1/4" 2" 1 1/8"	1.20	.78
GF-400	4.0	1 1/4" 2" 1 1/8"	2.40	1.45

M & H
Has Everything for the
Service Man

Carrying a large stock of standard merchandise you can safely place your order with us and be sure that it will be shipped to you promptly. You get what you want. We do not substitute.

Midget Condensers

These new, compact, neatly constructed tubular type midget condensers are available in a complete range of capacities from .00005 to .1 mfd. and are conservatively rated at 1,000 volts D.C. and 660 volts R.M.S., A.C.

They are ideally suited for original and replacement use as plate blocking condensers in low power transmitters; for R.F. by-pass work; for coupling condensers in resistance coupled amplifiers for television work or wherever a high grade compact, low capacity, high voltage and inexpensive condenser is required.

Wire leads are soldered carefully so as to insure against loose connections and pulled-out leads.

The condenser is encased in a "Pertinax" container to prevent any possibility of change in characteristics due to normal moisture and temperature changes.

Type AZ Midget Tubular Condensers
1,000 v. D.C.—660 v. A.C., R.M.S.

Type No.	Cap. Mfd.	List Price	YOUR COST
AZ-1	.00005	\$.40	
AZ-2	.0001	.40	
AZ-3	.0002	.40	
AZ-4	.00025	.40	
AZ-5	.0004	.40	
AZ-6	.0005	.40	
AZ-7	.00075	.40	
AZ-8	.001	.40	
AZ-9	.0015	.60	
AZ-10	.002	.60	
AZ-11	.0025	.60	
AZ-12	.003	.60	
AZ-13	.004	.60	
AZ-14	.005	.60	
AZ-15	.006	.60	
AZ-16	.0075	.60	
AZ-17	.01	.60	
AZ-18	.015	.80	
AZ-19	.02	.80	
AZ-20	.025	.80	
AZ-21	.03	.80	
AZ-22	.04	.80	
AZ-23	.05	.80	
AZ-24	.06	.80	
AZ-25	.07	.80	
AZ-26	.08	.80	
AZ-27	.09	.80	
AZ-28	.1	.80	

Packed 10 to a Carton

Type M Non-Inductive
Midget Condensers

These beautifully made, highly efficient midget condensers are handy to use and are indispensable for "tight" places. They are used by the thousands for grid blocking and plate coupling, grid plate and screen-grid circuit by-pass units, series antenna condensers, resistance and impedance coupling circuits, compensating, neutralizing and many other functions too numerous to mention.

They are rated at 500 volts D.C. working voltage, have very low power factor, low direct current leakage and low radio frequency losses.

Type No.	Cap. Mfd.	Body Dimen. H W D	List Price	YOUR COST
M-A	.0001	1 1/4" 1 1/4" 1 1/8"	\$.35	\$.20
M-B	.0002	1 1/4" 1 1/4" 1 1/8"	.35	.20
M-C	.00025	1 1/4" 1 1/4" 1 1/8"	.35	.20
M-D	.0005	1 1/4" 1 1/4" 1 1/8"	.35	.20
M-E	.001	1 1/4" 1 1/4" 1 1/8"	.40	.22
M-F	.002	1 1/4" 1 1/4" 1 1/8"	.40	.22
M-G	.004	1 1/4" 1 1/4" 1 1/8"	.40	.22
M-H	.005	1 1/4" 1 1/4" 1 1/8"	.45	.25
M-J	.006	1 1/4" 1 1/4" 1 1/8"	.50	.25
M-K	.01	1 1/4" 1 1/4" 1 1/8"	.55	.28
M-L	.02	1 1/4" 1 1/4" 1 1/8"	.60	.30
M-M	.05	1 1/4" 1 1/4" 1 1/8"	.70	.38



AEROVOX

Molded Bakelite Mica Condensers



Type 1450

The mica condensers are molded in bakelite. The capacity of the element is predetermined by a patented process. The bakelite seals and protects the condensers against extreme temperature, moisture or chemical action. The dielectric is of the finest grade India Ruby Mica, the plates are tinfoil, and the condenser element is thoroughly impregnated. The Type 1450 condenser will withstand retest voltages of 1,000 volts, D.C. The Type 1460 condenser will withstand a retest voltage of 900 volts D.C. and Type 1467 will stand retest voltage of 500 volts D.C.



Type 1460



Type 1467

	Type 1450 500v.	Type 1460 450v.	Type 1467 250v.
Cap. Mfd.	YOUR COST	YOUR COST	YOUR COST
.00004	\$0.18	\$0.12	\$0.12
.00005	.18	.12	.12
.00007	.18	.12	.12
.000075	.18	.12	.12
.0001	.18	.12	.12
.00015	.18	.12	.12
.0002	.18	.12	.12
.00025	.18	.12	.12
.00037	.18	.15	.15
.0005	.18	.15	.15
.001	.18	.15	.15
.0015	.21	.21	.21
.002	.21	.21	.21
.0025	.21	.21	.21
.003	.27	.24	
.004	.27		
.005	.27		
.006	.33		
.0075	.39		
.01	.45		
.015	.54		
.02	.63		
.025	.98		
.03	1.18		
.035	1.39		
.04	1.60		

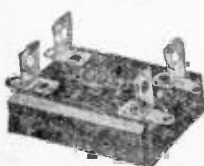
AEROVOX

Grid Leak and Resistor Mountings



No. 1049

Single



No. 1050

Double

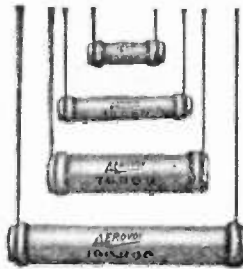
The single mounting and double mountings listed here will take any standard size grid leak or resistor and make good contact. The bases of these mountings are made of molded bakelite and the spring contact clips of phosphor-bronze. The terminal lugs are tinned copper for ease and permanence in soldering connections.

No. 1049
Single mounting
Your Cost, \$0.15

No. 1050
Double mounting
Your Cost, \$0.30

AEROVOX

Wire-Wound Cement Coated Resistors



They are wound on a porcelain tube with a special high-grade resistance wire of low temperature coefficient and provided with pig-tail terminal leads 2 in. long. The entire unit is completely coated with a newly developed refractory compound which resists wear and will not chip or crack. The 5-watt resistors, Type 931, are of the same dimensions as our standard 1-watt carbon resistors, Type 1094.

Type 930, 2 Watts			Type 931, 5 Watts		
Resist. Ohms	List Price	YOUR COST	Resist. Ohms	List Price	YOUR COST
500	\$0.35	\$0.21	1000	\$0.40	\$0.24
1000	.35	.21	5000	.45	.27
5000	.40	.24	10000	.45	.27
10000	.40	.24	20000	.50	.30
			30000	.55	.33
Type 932, 12 Watts			Type 933, 18 Watts		
Resist. Ohms	List Price	YOUR COST	Resist. Ohms	List Price	YOUR COST
5000	\$0.50	\$0.30	10000	\$0.60	\$0.36
10000	.50	.30	20000	.60	.36
20000	.55	.33	30000	.65	.39
30000	.60	.36	40000	.70	.42
40000	.65	.39	50000	.75	.45
50000	.70	.42	75000	.90	.54
70000	.80	.48	100000	1.00	.59

AEROVOX

Carbon Resistors

These Types 1094 and 1095

carbon resistors are non-inductive resistors designed for comparatively heavy service. The resistor element of solid molded carbon composition is non-hygroscopic, therefore being unaffected by humidity changes. Type 1094 resistors are rated at one watt, while Type 1095 resistors are rated at one-half watt.

The end contacts are force-fitted to the resistance element to insure noiseless operation. The Type 1094 is 1 1/4 in. long, and Type 1095 is 1 in. long. All units are accurate and permanent in resistance value.



Resist. Ohms	List Price Type 1094	List Price Type 1095	Meg.	List Price Type 1094	List Price Type 1095
25	\$0.25	\$0.25	.25	\$2.25	\$2.25
50	.25	.25	.5	.25	.25
100	.25	.25	.75	.25	.25
250	.25	.25	1.0	.25	.25
500	.25	.25	1.5	.25	.25
750	.25	.25	2.0	.25	.25
1000	.25	.25	2.5	.25	.25
2500	.25	.25	3.0	.25	.25
5000	.25	.25	4.0	.25	.25
7500	.25	.25	5.0	.25	.25
10000	.25	.25	6.0	.25	.25
25000	.25	.25	7.0	.25	.25
50000	.25	.25	8.0	.25	.25
75000	.25	.25	9.0	.25	.25
100000	.25	.25	10.0	.25	.25
150000	.25	.25	15.0	.25	.25
200000	.25	.25	20.0	.25	.25
240000	.25	.25	25.0	.25	.25

Your Cost, all sizes, 15c each

AEROVOX

Bakelite Case Non-Inductive Condensers

These condensers are mounted in attractive molded bakelite cases and are ideal for radio or audio frequency bypassing, resistance or impedance coupled amplification, or any other purpose where a compact, high insulation resistance, non-inductive condenser is required.



The bakelite case prevents leakage between terminals and eliminates all possibilities of grounding the terminals through the case. Working voltages: Type 250 rated at 200 volts D.C.; Type 350 rated at 300 volts D.C.; Type 450 rated at 400 volts D.C.; Type 650 rated at 600 volts D.C., and Type 1050 rated at 1,000 volts D.C.

Type 250			Type 450		
Cap. Mfd.	List Price	YOUR COST	Cap. Mfd.	List Price	YOUR COST
.05	\$0.55	\$0.33	.05	\$0.65	\$0.39
.1	.55	.33	.1	.65	.39
.25	.60	.36	.25	.75	.45
.5	.70	.42	.5	.95	.57
1.0	.90	.54			
Type 350			Type 650		
Cap. Mfd.	List Price	YOUR COST	Cap. Mfd.	List Price	YOUR COST
.05	.60	.36	.05	.76	.42
.1	.60	.36	.1	.85	.51
.25	.70	.42			
.5	.90	.54			
Type 1051					
Cap. Mfd.	List Price	YOUR COST			
.05	.85	.51			
.1	1.15	.69			

AEROVOX

Stamped Metal Case Condensers

These non-inductive condensers are hermetically sealed in stamped metal containers. Terminals are brought out through insulating strips, centered in large holes in the case to prevent leakage and short-circuits to the can.



Type 260

Cap. Mfd.	Type 260 200 v.	Type 360 300 v.	Type 460 400 v.
	YOUR COST	YOUR COST	YOUR COST
.05	\$0.25	\$0.28	\$0.30
.1	.25	.28	.30
.25	.29	.36	.39
.5	.35		.45
1.1-1	.39	.42	
.25-.25	.48		
1.1-1.1	.54		

AEROVOX

Heat-Resisting Condensers

Here are condensers particularly adapted for automobile radios, ignition systems, interference and spark suppressors on electrical machinery or any other applications where temperatures up to 160 degrees Fahrenheit are encountered. These condensers are impregnated with a high melting point compound and enclosed in leakproof metal cylinders filled with the same high melting point compound. All units are rated at 200 volts D.C.



Type 1120

Cap. Mfd.	List Price	YOUR COST
.5	\$1.10	\$0.65
.75	1.25	.74
1.	1.40	.83

AEROVOX
 BUILT BETTER
 CONDENSERS AND RESISTORS

Hi-Farad Dry Electrolytic Condensers



Type I-8



Type E5-4



Type S5-1



Type E5-8



Type E5-88



Type E5-888



Type P5-8

Aerovox Hi-Farad Dry Electrolytic Condensers are the most advanced type high-capacity filter condensers. The dry characteristic of these units makes it possible to mount them in any position, upright, inverted, horizontal or any other desired angle without any danger of spilling or leakage. Units are made for universal mounting. Type E, screw mounting Types I, G and S; and in cardboard boxes, Type P. All types are standard in size enabling changes to be made in standard radio sets to Hi-Farad condensers. For all practical purposes they can be handled and mounted in the same manner as wax paper condensers.

The high voltage characteristic (500 volts D.C. peak without series connections) permits their practical use in most standard high-voltage power supply units. Hi-Farad condensers are low in initial leakage, stable in operation, unaffected by moisture, operate at low temperatures and high in filtering efficiency. Their self-healing and surge-proof characteristics prevent damage to the condenser from high-voltage surges and increase the life of the condenser indefinitely. They are much more compact and lower in cost than wax paper condensers of equivalent capacity, and their all-around efficiency is in keeping with modern radio design.

Hi-Farad Dry Electrolytic Condensers — 500 Volts Peak

TYPE E-5					
Cap. Mfds.	List Price	YOUR COST	Cap. Mfds.	List Price	YOUR COST
1	\$1.00	\$0.59	6-6-6-6	\$5.50	\$3.24
2	1.20	.71	8	1.70	1.00
2-2	2.40	1.42	8-8	3.25	1.92
2-2-2	3.25	1.92	8-8-8	4.50	2.65
2-2-2-2	4.65	2.75	8-8-8-8	6.00	3.53
4	1.40	.84	2-4-8	4.00	2.36
4-4	2.65	1.56	2-8-8	4.75	2.81
4-4-4	3.75	2.21	2-8-16	5.00	2.94
4-4-4-4	4.75	2.80	8-16	3.80	2.24
5	1.50	.89	8-8-16	6.00	3.53
5-5	2.75	1.62	10	2.10	1.24
5-5-5	3.90	2.30	12	2.25	1.33
5-5-5-5	5.25	3.09	16	2.60	1.53
6	1.60	.85	20	3.50	2.56
6-6	3.00	1.77	30	5.00	2.94
6-6-6	4.15	2.45			

TYPE G-5

Cap. Mfds.	List Price	YOUR COST
1	\$1.00	\$0.59
2	1.20	.71
4	1.40	.83
5	1.50	.89
6	1.60	.95
8	1.70	1.00
10	2.10	1.24
12	2.25	1.33
14	2.40	1.42
16	2.60	1.53

TYPE P-5

Cap. Mfds.	List Price	YOUR COST
1	\$0.08	\$0.48
2	.95	.57
4	1.10	.65
5	1.20	.72
6	1.30	.78
8	1.45	.86

Cap. Mfds.	List Price	YOUR COST
1	\$1.00	\$0.59
2	1.20	.71
4	1.40	.83

Low Voltage Electrolytic Condensers

		Type E-25		Type E-50		Type E-100		Type E-200	
Cap. Mfds.		25 v.		50 v.		100 v.		200 v.	
		List Price	Your Cost	List Price	Your Cost	List Price	Your Cost	List Price	Your Cost
5	\$.95	\$.57	\$1.00	\$.59	\$1.05	\$.62	\$1.35	\$.80	
10	1.00	.59	1.05	.62	1.15	.68	1.55	.93	
15	1.05	.62	1.10	.65	1.20	.71	1.75	1.03	
20	1.05	.62	1.10	.65	1.25	.74	2.00	1.18	
25	1.05	.62	1.15	.68	1.35	.80	2.50	1.47	
50	1.15	.68	1.35	.80	1.85	1.10	3.75	2.21	
75	1.25	.74	1.75	1.02	2.50	1.47	5.25	3.09	
100	1.40	.83	1.85	1.10	2.80	1.65			

		Type S-25		Type S-50		Type S-100		Type S-200	
		List Price	Your Cost	List Price	Your Cost	List Price	Your Cost	List Price	Your Cost
5	\$.95	\$.57	\$1.00	\$.59	\$1.05	\$.63	\$1.35	\$.80	
10	1.00	.59	1.05	.62	1.15	.68			
15	1.05	.62	1.10	.65	1.20	.71			
20	1.05	.62	1.10	.65	1.25	.74			
25	1.05	.62	1.15	.68	1.35	.80			
50	1.15	.68	1.35	.80					
75	1.25	.74							
100	1.40	.83							

Interference Filters



Type IN-25



Type IN-26

Aerovox interference filters are designed to be installed between electrical appliances which cause interference.

For use on 110-volts A.C. or 200-volts D.C.

Type IN-25, List Price, \$2.75 Your Cost, \$1.03

Type IN-26, List Price, \$2.25 Your Cost, \$1.33

Lavite Non-Inductive Resistors

TYPE 1098

Aerovox Lavite resistors are adapted for use where a non-inductive resistor of comparatively high current carrying capacity is required. The maximum rating of these resistors is three watts.

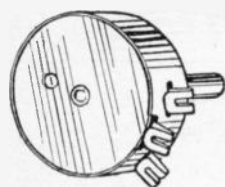
Resist.	Max. Current	Recom. Current	Resist.	Max. Current	Recom. Current
1,000	54.8	38.3	30,000	10.0	7.0
2,000	38.7	27.1	50,000	7.7	5.4
5,000	24.5	17.1	75,000	6.3	4.4
10,000	17.3	12.1	100,000	5.5	3.8
15,000	14.1	9.8	200,000	3.8	2.6
20,000	12.2	8.5	250,000	3.5	2.4
25,000	10.9	7.6	500,000	2.4	1.7

List Price, All Values, \$1.00 Your Cost, 59c

Aerovox Cartridge Condensers

These condensers are especially desirable for use where high-grade units are required at low cost. They are compact, non-inductively wound and sealed in insulating tubes provided with wire lead terminals.

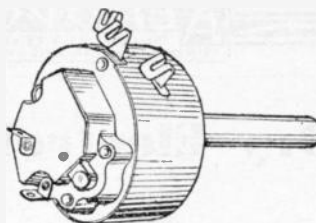
Cap. Mfd.	200 Volts YOUR COST	400 Volts YOUR COST	600 Volts YOUR COST
.006	\$0.12	\$0.15	\$0.16
.001	.12	.15	.16
.015	.12	.15	.16
.02	.12	.15	.16
.03	.12	.15	.16
.05	.15	.15	.18
.1	.16	.17	.24
.25	.21	.30	...
.5	.33	...	...
1-1	.30	.43	...



+



=



Electrad Replacement Volume Controls

All Electrad Standard Replacement
Volume Controls
Your Cost, 60c each

A.C. Switch that can be clamped on back of
all controls

Your Cost, 29c each

VOLUME CONTROL	PLUS	A. C. SWITCH	EQUALS	VOLUME CONTROL WITH SWITCH	Your Cost, 29c each						
Receiver & Model No.	Circuit No.	Volume Control Type No.	Receiver & Model No.	Circuit No.	Volume Control Type No.	Receiver & Model No.	Circuit No.	Volume Control Type No.			
Acme Mfg. Co.—A.C. 7.	12	RI-203	Crosley—42A.C., 706,			High Frequency—Master-			R.C.A.—17, 18, 33	4	RI-201
88	15	*RI-205	609, 610	1	RI-201	tone, HFL Super	15	RI-205	41, 50, 51, 64	5	RI-201
All-Am. Mohawk—96, 90	7	RI-201	804A.C., 20, 21, 22,			Kellogg—K-24, 25, 27, 28	7	RI-201	16, 20, 25, 28, 30, 32	14	RI-204
60, 61, 62, 65, 66, 80			Chum, Buddy	8	RI-202	523, 526 Control A	5	RI-201	44, 46, 47	15	*RI-205
83, 84, 85, 86, 88	10	RI-203	3R3, 90, 401, 601	14	RI-204	523, 526 Control B	12	RI-203	66 Radiola	8	RI-202
Amrad—70, 7100	1	RI-201	30S, 31S, 33S, 34S	15	RI-205	Colin B. Kennedy—Royal			Scott Super—Scott Super.	14	RI-204
81	15	RI-205	Daylan—509-148	3	RI-201	80	12	RI-203	SM 690	12	RI-203
Apex—36	7	RI-201	8A.C. early models	5	RI-201	220	14	RI-204	Sonora—A-30, A-32,		
80	3	RI-201	8A.C. late models	1	RI-201	20	15	RI-205	A-36, A-10, A-44	2	RI-201
Battery Models	9	RI-202	OEM54, 74	14	RI-204	King Elec. Co.—E-80,			Sparks-Withington—		
Atwater Kent—37, 38	3	RI-201	A.C. Dayton—XL61	9	RI-202	81, FGH	5	RI-201	49B, 39, 931, 301	9	RI-202
36	2	RI-201	A.C.—63, 65, 66	10	RI-203	82	2	RI-201	390, 110, 109, 89, 89A	8	RI-202
40, 42, 44, 52	5	RI-201	Elect. Res. Lab.—R-1	1	RI-201	J & H	3	RI-201	Splitdorf—ES 62	2	RI-201
33 series filament	12	RI-203	Eveready—31	8	RI-202	9798 Monarch	7	RI-201	CI	11	RI-203
12, 20, 30, 32, 33, 35			Fada—18D.C.	5	RI-201	10K-1, 25, 71	14	RI-204	Steinitz—261	2	RI-201
48, 40, 50	14	RI-204	SF 4575 UA or CA, 10			Kolster—K-20, 22, 23,			40, 50, 102	8	RI-202
61, 61C, 66, Battery			11, 30, 31, 50, 70,			24, 25, 27, 28	1	RI-201	991, 992, 993	9	RI-202
222 Tubes	15	RI-205	71, 72	10	RI-203	8A	14	RI-204	Stewart-Warner—715, 720	3	RI-201
Audiola—30B, 7330	15	RI-205	Freed-Eisemann—NR57,			Magnavox—Magnavox	14	RI-204	500, 520, 525, 700,		
Baldwin	7	RI-201	NR70	5	RI-201	Majestic—90, 91, 92,			705, 710, 806	9	RI-202
Balkite—FC, C	7	RI-201	NR80, DG470	3	RI-201	100B	8	RI-202	811, 900	8	RI-202
Bosch—40	5	RI-201	NR95	8	RI-202	McMillan—900	3	RI-201	530, 535	10	RI-203
28, 29	1	RI-201	F-10, NR7, 30, 32, 40,			Montgomery Ward—			300 to 500	14	RI-204
54 D.C.	7	RI-201	48, 50	14	RI-204	Screen Grid	7	RI-201	Stromberg-Carlson—300,		
46, 66, 96, 107, 116,			Chas. Freshman—N-12,			Ozarka	15	RI-205	310, 325	7	RI-201
126, 136, 146, 166	10	RI-203	N-17	3	RI-201	Peerless Courier—K-70	7	RI-201	363	3	RI-201
35 Battery Set	14	RI-204	L. LS, G60S, H, M,			65	8	RI-202	846, 642	5	RI-201
48	15	*RI-205	K60S	12	RI-203	Peerless	12	RI-203	Automatic Vol. Control	12	RI-203
Bremner-Tully—7-70, 7-71	7	RI-201	Equaphase	14	RI-204	Patterson	3	RI-201	501, 502	14	RI-204
4, 6, 8, 8-20A	11	RI-203	A. H. Grebe—A.C.-7,			Philco—82, 86, 87, 511,			Temple—860, 880, 890	3	RI-201
14, 21, 31, 81, 82	8	RI-202	428, A.C.-6,			512, 513, 514, 515,			Tyrman Radio—Tyrman		
Browning-Drake—			SK-4D.C.	8	RI-202	531, 551, 571	5	RI-201	72-80	8	RI-202
34, 36, 38	3	RI-201	Synchrophone, MU1,			571	5	RI-201	60	14	RI-204
Brunswick—3, KR8, 2, 5,			No. 5	14	RI-204	Series 5	3	RI-201	Victor-R.C.A.—R-52	7	RI-201
KRO			Hammarlund—HiQ-29	5	RI-201	296, 296A	12	RI-203	Victoreen—A.C.	8	RI-202
Bush & Lane—12	15	*RI-205	HiQ-30	15	RI-205	65	15	RI-205	Wurlitzer—1929 7-Tube	7	RI-201

IMPORTANT NOTICE—All Controls Listed Must Be Used in Circuits Indicated

Note: Electrad Hand Book lists hundreds of receivers, showing volume control needed for replacement.

Complete Line of Electrad Standard RI Replacement Controls

Our Spec. No.	Circuit No.	Value in Ohms	*Taper of Control
RI-269		20	Uniform
RI-270		30	Uniform
RI-271		50	Uniform
RI-272		100	Uniform
RI-273		200	Uniform
RI-274	8	400	Uniform
RI-282		600	Uniform
RI-275	8	800	Uniform
RI-276	8	1,000	Uniform
RI-232	4, 8, 15	2,000	Uniform
RI-233	8, 15	3,000	Uniform
RI-277	8	4,000	Uniform
RI-234	15	5,000	Uniform
RI-278	7	5,000	Reverse
RI-240	7	10,000	Reverse
RI-283		10,000	Uniform
RI-201	1, 2, 3, 4, 5, 6, 7	15,000	Reverse
RI-279	15	25,000	Uniform
RI-280	21	25,000	Reverse
RI-241	21	30,000	Reverse
RI-205	15	70,000	Uniform
RI-202	8, 9	75,000	Regular
RI-242	12, 13, 18	100,000	Reverse
RI-281	18	200,000	Uniform
RI-208	11, 12, 13, 18	250,000	Reverse
RI-203	10, 11, 12, 13	500,000	Reverse
RI-206	18	1,000,000	Reverse
RI-204 Rheostat	10		Uniform

* NOTE

Uniform taper means that resistance variation is proportional to percent rotation of knob.

Reverse taper means that resistance change per degree of clockwise rotation increases.

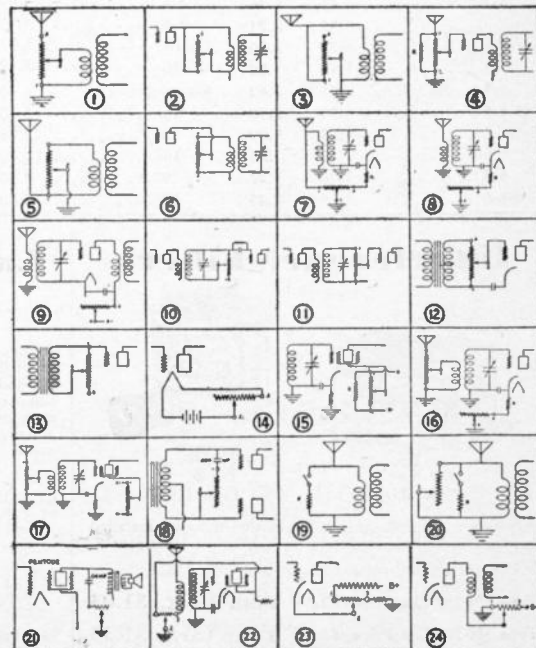
Regular taper means that resistance change per degree of clockwise rotation decreases.

Just five types of Electrad Replacement Volume Controls required in the service kit to service 799 standard receivers.

Think of the convenience and saving in time and money that means. Think of the small stock it is necessary to carry. And think, too, of the uniform quality and satisfaction assured.

Type	No. of Receivers Listed in Hand Book Using This Control
RI-201	314
RI-202	194
RI-203	85
RI-204	155
RI-205	51

Total... 799



ELECTRAD PRODUCTS

TRUVOLT—The Most Adaptable of All Resistors

Truvolt Resistors are unlike any other "fixed" resistors in two important respects. (1) The patented open-air construction insures liberal cooling surfaces, which make for more stable voltages and longer life. (2) The distinctive adjustable clips may be added or removed, or placed at the exact position for the voltages required. They are the

most adaptable of all resistors, hence ideal for replacement purposes. The resistance wire is wound over an asbestos-covered, enameled copper core. This in turn, is wound around a hollow, grooved fire-clay base. The result is a more compact unit, better insulated, better ventilated—hence cooler in operation and having longer life.

Type B—25 Watts—2 Inches Long

Type	Resistance in Ohms	Current in Milliamperes	List Price	YOUR COST
B-.05	5	2225	\$0.85	\$0.49
B-.075	7.5	1800	.85	.49
B-.1	10	1500	.85	.49
B-.15	15	1250	.85	.49
B-.2	20	1100	.85	.49
B-.25	25	1000	.85	.49
B-.5	50	700	.85	.49
B-.75	75	575	.85	.49
B-1	100	500	.85	.49
B-2	200	353	.85	.49
B-3	300	289	.85	.49
B-4	400	250	.85	.49
B-5	500	224	.85	.49
B-7.5	750	182	.85	.49
B-8	800	177	.85	.49
B-8.5	850	165	.85	.49
B-10	1000	158	.85	.49
B-12.5	1250	141	.85	.49
B-15	1500	129	.85	.49
B-20	2000	112	.85	.49
B-22.5	2250	105	.85	.49
B-25	2500	100	.85	.49
B-30	3000	91	.85	.49
B-35	3500	84	.85	.49
B-40	4000	79	.85	.49
B-45	4500	75	.85	.49
B-50	5000	71	.85	.49
B-60	6000	64	.85	.49
B-70	7000	60	.85	.49
B-72	7200	59	.85	.49
B-75	7500	58	.85	.49
B-80	8000	56	.90	.52
B-90	9000	53	.95	.55
B-100	10000	50	1.00	.58
B-120	12000	45	1.00	.58
B-150	15000	41	1.00	.58
B-200	20000	35	1.15	.67
B-250	25000	32	1.15	.67
B-300	30000	29	1.25	.73
B-400	40000	25	1.30	.75
B-500	50000	22.5	1.40	.82

All-Wire Resistances for All Purposes. Unusual Patented Air Cool Construction, Longer Life, Greater Accuracy

Type D—75 Watts—6 Inches Long

Type	Resistance in Ohms	Current in Milliamperes	List Price	YOUR COST
D-2	200	610	\$1.60	\$0.94
D-3	300	500	1.60	.94
D-4	400	432	1.60	.94
D-5	500	387	1.60	.94
D-7.5	750	316	1.60	.94
D-8	800	306	1.60	.94
D-10	1000	274	1.60	.94
D-12.5	1250	245	1.60	.94
D-15	1500	224	1.60	.94
D-20	2000	194	1.60	.94
D-22.5	2250	182	1.60	.94
D-25	2500	173	1.60	.94
D-30	3000	158	1.60	.94
D-35	3500	146	1.60	.94
D-40	4000	137	1.60	.94
D-45	4500	129	1.60	.94
D-50	5000	122	1.60	.94
D-60	6000	112	1.90	.97
D-70	7000	103	1.95	.97
D-72	7200	102	1.95	.97
D-75	7500	100	2.00	.97
D-80	8000	97	2.00	1.00
D-90	9000	91	2.10	1.00
D-100	10000	87	2.25	1.10
D-120	12000	79	2.25	1.10
D-150	15000	71	2.50	1.18
D-200	20000	61	2.50	1.18
D-250	25000	55	2.65	1.29
D-300	30000	50	2.65	1.29
D-400	40000	43	2.65	1.29
D-500	50000	39	2.75	1.47
D-600	60000	35	2.80	1.62
D-800	80000	31	2.90	1.62
D-1000	100000	27	3.00	1.62

Type C—50Watts—4 Inches Long

Type	Resistance in Ohms	Current in Milliamperes	List Price	YOUR COST
C-2	200	500	\$1.35	\$0.79
C-3	300	406	1.35	.79
C-4	400	353	1.35	.79
C-5	500	316	1.35	.79
C-7.5	750	259	1.35	.79
C-8	800	252	1.35	.79
C-10	1000	224	1.35	.79
C-12.5	1250	200	1.35	.79
C-15	1500	182	1.35	.79
C-20	2000	158	1.35	.79
C-22.5	2250	149	1.35	.79
C-25	2500	141	1.35	.79
C-30	3000	129	1.35	.79



Sliding Clip

Note—Above wattage and current ratings apply only when units are suspended in free air, otherwise loads exceeding 50 per cent of their ratings should not be applied. Voltages greater than 400 D.C. should not be applied across the terminals of any one resistance unit. For high voltages it is advisable to use two or more units in series.

Extra sliders, 10c each list

Your Cost, 4c each

Electrad Resistor and Volume Control Handbook

With Four Free Yearly Supplements

Here is a book which is very necessary to the radio service man.

A perpetual loose-leaf guide kept constantly up to date by revised lists sent you four times a year without any additional charge.

It shows at a glance exactly the value of resistors or volume controls required. Contains

resistor circuit diagrams and useful information for over 1,000 receivers. Pocket size, 5" x 8", black fabrikoid, flexible cover with four supplements.

Your Cost, \$1.00

Truvolt Flexible Resistors

Type GB—Using 1/8" Dia. Core

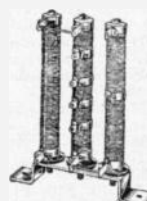
Wound on a larger core and have a rating of 1 watt per inch of fabric length. They are adapted to many uses.

1 Watt Rating—1 in. Long with Pigtails

Ohms	Max. Current in Milliamperes	Max. Potential to be used across Resistor in Volts	Ohms	Max. Current in Milliamperes	Max. Potential to be used across Resistor in Volts
5	445	2.2	800	35	28
10	315	3.1	850	34	29
15	260	3.8	900	33	30
25	200	5	1000	31.5	31.5
40	160	6.3	1100	30	33
50	140	7	1200	29	35
75	115	8.7	1300	28	36
100	100	10	1400	27	37
200	71	14	1500	26	38
300	58	17	1600	25	40
350	53	18	1650	24.5	40
375	52	19	1700	24	41
400	50	20	1750	24	42
500	45	22	1800	23	43
550	42	23	2000	22	45
600	41	24	2250	21	46
700	38	26	2500	20	50
750	37	27			

List Price, All Watt Sizes, 25c 1- Your Cost, 15c each

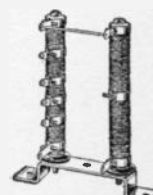
Truvolt Air-Cooled Resistance Banks



Type 250B3

Type 250B3.

Three "Truvolt" type C units mounted on an insulated bracket. For use as voltage divider with any 250 or 210 amplifier



Type C245B2

or plate supply device. Easily adjusted taps provide all voltages required, 8 resistance sections—21,000 ohms total resistance.

List Price, \$5.00

Your Cost, \$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.

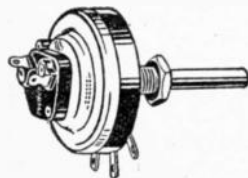
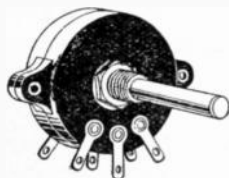
List Price, \$3.50

Your Cost, \$2.06

Service Section

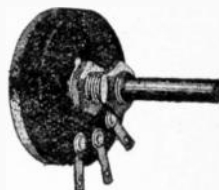
Special Centralab Replacement Controls

These controls exactly duplicate the original in mechanical and resistance specifications, but not necessarily in appearance. Standard replacement controls will not fit the models in this list.



Centralab Part No.	Make and Model No.	List Price	YOUR COST
70-501	All American 70, 73, 75...	\$3.50	\$1.72
74-510	American Bosch 48, 49...	4.00	1.96
72-166	American Bosch 60, 61...	3.00	1.47
74-537	American Bosch 14D.C.	4.00	1.96
70-018	American Bosch 80 Auto...	3.00	1.47
72-167	American Bosch 58...	3.00	1.47
70-017	Andrea, Inc. Fada 30, 30Z, 31, 31Z, 10, 10Z, 11, 11Z, D.E.	3.00	1.47
70-059	Andrea, Inc. Fada 50, 51, 70, 71, 72	3.00	1.47
72-001	Andrea, Inc. Fada 16, 16Z, 17, 32, 32Z, 18D.C.	3.00	1.47
76-007	Andrea, Inc. Fada 35D.C., 40C	4.00	1.96
79-019	Andrea, Inc. Fada 25, 25Z, 15M, 15MZ	3.00	1.47
99-019	Andrea, Inc. Fada 20, 20Z	3.00	1.47
72-168	Andrea, Inc. Fada 35, 35Z, 75, 77	3.00	1.47
74-513	Andrea, Inc. Fada 35B, 35C, 40A.C.	4.00	1.96
47-210	Andrea, Inc. Fada 22 Batt.	3.00	1.47
25-426	Atwater-Kent 61, 61C-H-2 H1 series 72, 66	4.00	1.96
70-502	Atwater-Kent D series	3.50	1.72
74-521	Atwater-Kent F series, L1, L2, P or 75, 0-2 series	4.00	1.96
72-169	Bremer-Tully 7-70, 7-71	3.00	1.47
55-004	Brunswick-Balke 10 Midget	3.00	1.47
25-417	Colonial Radio Corp. SG-32A.C., 33A.C.	4.00	1.96
41-074	Colonial Radio Corp. 40, 43, 44, 47, 47E, 48, 48E, 50	2.00	.98
82-028	Columbia Radio SG 8	3.00	1.47
51-037	Crosley Radio, 41S, 42, 60Z, 608, 609, 610, 704, 704A, 704B, 705, 706, 61	2.00	.98
70-503	Crosley Radio 40A, 41S, 42S, 82S (early models) 71A	3.50	1.72
74-511	Crosley Radio 40S, 41S, 42S, 82S (late models)	4.00	1.96
72-019	Crosley Radio 30S, 31S, 31S, 34S, 28	3.00	1.47
72-053	Crosley Radio 126, 55	3.00	1.47
72-045	Crosley Radio 56, 26	3.00	1.47
72-047	Crosley Radio 75, 76DC, 77	3.00	1.47
51-033	Crosley Radio 120 series	2.00	.98
51-016	Crosley Radio 122 series	2.00	.98
72-030	Crosley Radio 605, 615, 625	3.00	1.47
91-001	DeForest Radio 705	4.00	1.96
41-073	DeForest Radio 705 Tone Control	2.00	.98
82-042	DeForest Radio 707A	3.00	1.47
72-012	DeForest Radio 605	3.00	1.47
55-012	Echophone Radio 40	3.00	1.47
26-021	Edison Radio Mfg. P. AD-No. 41, R12, C1, C2, R1, R2, M5, M6, SRC3, R11	3.00	1.47
76-003	Edison Radio Mfg. R4, R5, C4, early model	4.00	1.96
64-306	Edison Radio Mfg. R6, R7, Phono.	3.50	1.72
74-512	Edison Radio Mfg. R6, R7, later model	4.00	1.96
75-506	Electrical Research, 225, 271, 271A (Earla)	4.50	2.21
24-052	Federal Radio Corp. D-79-070, F10, F11, G	3.00	1.47
44-053	Federal Radio Corp. E-10-68-062	3.50	1.72
74-514	Federal Radio Corp. L	4.00	1.96
74-506	Freed-Eiseman Radio 905GA, NR657, NR879	4.00	1.96
75-507	Jesse French G & Jr.	4.50	2.21
51-103	Freshman Radio Corp. G. H. K. 605M, L, LS, Q15, Q16	2.00	.98
41-200	Freshman Radio Corp. N, series Q-D-16, 3Q15, 3Q16	2.00	.98
25-416	Freshman Radio Corp. (Earl) 21, 22	3.00	1.47
70-036	Galvin Mfg. Co. Motorola	3.00	1.47
26-156	General Motors Radio 5003, 5091, 48, 5004, 5010	3.00	1.47
70-028	General Motors Radio 3002	3.00	1.47
70-019	General Motors Radio Tone Control	3.00	1.47

Centralab Part No.	Make and Model No.	List Price	YOUR COST
25-419	Grigaby-Grunow 180, 181	\$4.00	\$1.96
78-007	Grigaby-Grunow 90, 91, 92, 180, 181, 321	3.00	1.47
74-537	Grigaby-Grunow 30, 31, 131, 132, 283	4.00	1.96
25-421	Grigaby-Grunow 100 series	4.00	1.96
74-518	Grigaby-Grunow 120 series	4.00	1.96
41-060	Grigaby-Grunow 15, 15B, 150	2.00	.98
55-014	Grigaby-Grunow 25	3.00	1.47
41-060	Grigaby-Grunow 15, 15B, 150 Tone Control	2.00	.98
72-088	Grigaby-Grunow 110 Auto Set	3.00	1.47
74-523	Grigaby-Grunow 50 series	4.00	1.96
74-509	Gulbranson Radio C-WG24, CG, C, 9-in-Line (new model)	4.00	1.96
78-005	Gulbranson Radio 9-in-Line (old model)	3.00	1.47
25-423	Gulbranson Radio 8-8 Tube (new)	4.00	1.96
72-092	Gulbranson Radio 40	3.00	1.47
70-053	Gulbranson Radio 40A	3.00	1.47
88-001	Gulbranson Radio 80-8 Tube (new model)	3.00	1.47
74-556	Gulbranson Radio 90 series	4.00	1.96
35-002	Gulbranson Radio 10, 13 series	3.00	1.47
74-620	Howard Radio Co. 135, 395, 445, 495	4.00	1.96
26-057	Howard Radio Co. 8-Green Diamond	3.00	1.47
76-008	Colin B. Kennedy 10, 12SG	4.00	1.96
75-525	Kolster Radio Corp. 930A.C	4.50	2.21
62-025	Kolster Radio Corp. 70, 80, 90	3.00	1.47
72-013	R.C.A. Victor Co. 21, 22	3.00	1.47
41-200	Sonora 2RP, 25, 3R, 4R, 5R, A3D, A31, A32, A36, A46	2.00	.98
51-012	Steinitz Mfg. Co. Superhet	2.00	.98
44-060	Steinitz Mfg. Co. 21-23	3.50	1.72
24-072	Steinitz Mfg. Co. Midget	3.00	1.47
47-124	Steinitz Mfg. Co. X927	3.00	1.47
44-059	Sterling Radio Co. 3A, 4, A2, 60	3.50	1.72
28-031	Stewart Warner Corp. 700, 705, 710, 900 series	2.00	.98
30-010	Stewart Warner Corp. 715, 720, R100B, R100E, R100F, 110 series, 950A.C.	2.00	.98
72-161	72-162—Stromberg-Carlson 63, 636, 638	3.00	1.47
72-159	72-160—Stromberg-Carlson 641, 642, 652, 654	3.00	1.47
55-004	Transformer Corp. 40	3.00	1.47
44-059	United Air Cleaner Portrola 3	3.50	1.72
55-003	United Air Cleaner 108A & B, 109, 110, 111	3.00	1.47
98-002	United Air Cleaner Midget Super, 108	3.00	1.47
62-042	Zenith Radio 50, 70 series	3.00	1.47
75-614	Zenith Radio 50, 60, 70, 71, 72, 73, 77, 712, 722, 732, 772, later types	4.50	2.21



Here is the New Centralab Volume Control Guide

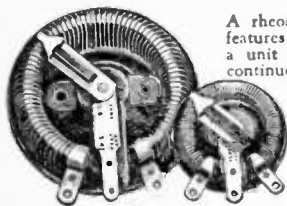
Sixty-four pages of up-to-date material, thirty-two pages devoted to set listings alone.

Your Cost 50c

or it's yours **FREE** with Every
Five Volume Controls ordered

Service Section

Ohmite All-Porcelain Vitreous Enameled Rheostats



A rheostat entirely different—a rheostat designed to incorporate all the advantageous features of vitreous enameled resistance units with the purpose in mind of producing a unit that could be used at a high wattage for its size, and which would give continuous dependable service. No organic material of any kind is used in its construction, and the rheostat will withstand relatively high temperatures safely and continuously. The units are regularly fitted with three terminals so that they may be used as potentiometers.

Used when Rheostats are mounted where there is a possibility of human contact with them.

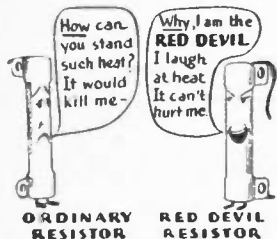
50-watt cage Your Cost, \$1.62

150-watt cage Your Cost, \$2.06

Dimensions: 50-watt rheostat, 2 1/4" dia., 1" depth (below mounting nut)
150-watt rheostat 4" dia., 1 1/4" depth (below mounting nut)

Stock No.	50 WATT			List Price	YOUR COST	Stock No.	150 WATT			List Price	YOUR COST
	Total Resistance Ohms	Max. Current Through ANY PART or all of Winding Milliampers					Total Resistance Ohms	Maximum Current Milliampers			
0309	1	7,000	\$4.00	\$2.36	0525	1	12,500	\$9.00	\$5.30		
0310	2	5,000	4.00	2.36	0526	2	8,650	9.00	5.30		
0311	4	3,500	4.00	2.36	0527	3	7,070	9.00	5.30		
0312	6	2,880	4.00	2.36	0528	5	5,480	9.00	5.30		
0313	8	2,500	4.00	2.36	0529	7.5	4,470	9.00	5.30		
0314	12	2,040	4.00	2.36	0530	10	3,880	9.00	5.30		
0315	16	1,760	4.00	2.36	0531	15	3,163	9.00	5.30		
0316	22	1,500	4.00	2.36	0532	25	2,450	9.00	5.30		
0317	35	1,190	4.00	2.36	0533	35	2,070	9.00	5.30		
0318	50	1,000	4.00	2.36	0534	50	1,735	9.00	5.30		
0319	80	790	4.00	2.36	0535	75	1,415	9.00	5.30		
0320	125	630	4.00	2.36	0536	100	1,225	9.00	5.30		
0321	150	575	4.00	2.36	0537	150	1,000	9.00	5.30		
0322	225	470	4.00	2.36	0538	200	865	9.00	5.30		
0323	300	405	4.00	2.36	0539	250	775	9.00	5.30		
0324	500	315	4.00	2.36	0540	350	655	9.00	5.30		
0325	800	250	4.25	2.50	0541	500	548	9.00	5.30		
0326	1,000	220	4.25	2.50	0542	750	447	9.50	5.60		
0327	1,600	176	4.25	2.50	0543	1,250	346	9.50	5.60		
0328	2,500	140	4.25	2.50	0544	1,800	288	10.00	5.88		
0329	3,500	119	4.50	2.65	0545	2,250	219	10.00	5.88		
0330	5,000	100	4.50	2.65	0546	3,000	224	10.00	5.88		
0331	8,000	79	4.50	2.65	0547	4,500	182	10.70	6.18		
0332	10,000	70	4.50	2.65	0548	7,500	141	11.00	6.47		
0333	15,000	55	5.00	2.94	0549	10,000	122	11.50	6.77		
0334	25,000	45	5.50	3.24	0550	20,000	83	12.00	7.12		
0335	35,000	34	6.00	3.53							

Ohmite "Red Devils" Cut Replacement Costs



ORDINARY RESISTOR

RED DEVIL RESISTOR



STOCK VALUES					
Ohms	Ohms	Ohms	Ohms	Ohms	Ohms
1	20	150	1,200	7,500	45,000
2	25	200	1,500	10,000	50,000
3	30	250	2,000	12,000	55,000
4	35	300	2,500	15,000	60,000
5	40	400	3,000	20,000	65,000
7.5	50	500	3,500	25,000	70,000
10	75	600	4,000	30,000	75,000
12	100	750	5,000	35,000	80,000
15	125	1,000	6,000	40,000	85,000

	List Price	YOUR COST
Units 1 ohm to 25,000 ohms (10 watt rating).....	\$0.35	\$0.21
Units 30,000 to 70,000 ohms (20 watt rating).....	.65	.39
Units 75,000 to 100,000 ohms (20 watt rating).....	.75	.45

Dimensions: 10 watt rating, 1-25,000 ohms, 1 1/4" x 3/8"; 20 watt rating, 30,000-100,000 ohms, 2" x 1/2". All units have 1/2" tinned wire leads.

Carter Super "Hi-Watt" Rheostat

Dissipates 25 Watts



A perfected heavy-duty rheostat of many distinctive features and advantages. Resistance wire is wound on an asbestos covered steel strip. It may be run at high temperatures without danger of destruction and carries safely a load of 25 watts, and is widely used for motor control, radio and experimental work. Mounts in single 1/2" hole on panels up to 1/8" inch.

No.	Resistance Ohms	No.	Resistance Ohms
SW-1	1	SW-60	60
SW-2	2	SW-75	75
SW-3	3	SW-100	100
SW-6	6	SW-150	150
SW-10	10	SW-200	200
SW-15	15	SW-250	250
SW-20	20	SW-300	300
SW-30	30	SW-400	400
SW-40	40	SW-500	500
SW-50	50		

Complete with Black Bakelite Arrow-Pointer Knob
List Price, each, \$1.75 Your Cost, \$1.03
Insulation for Mountings on Metal Panels, 5c extra

Standard Clarostat

General variable resistor for "B" eliminators and receivers. Will handle 20 watts. 0-5,000,000 ohms.

List Price, \$2.25

Your Cost, \$1.35



Volume Control Clarostat



A compact single hold mount, universal control. 0-500,000 ohms, 7 watts.

List Price, \$1.50

Your Cost, 90c

Grid Leak Clarostat

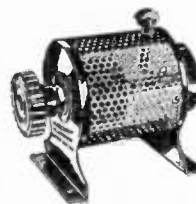
Same in appearance as volume control. Resistance range, 1-10th to 10 megohms.

List Price, \$1.50

Your Cost, 89c



Speed Control Clarostat



Especially adapted to control of variable speed motor in television and other precise work. May also be used as heavy-duty variable resistor for laboratory work. Provided with heavy metal casing, protected screw binding posts, and short-circuiting button. Carrying capacity of 80 watts.

Laboratory—1/4—10 ohms—80 watts.

Laboratory—200 to 100,000 ohms—80 watts.

Speed Control—25 to 500 ohms—80 watts.

List Price, \$5.00

Your Cost, \$2.94

Wire-Wound Clarostat

The new Bakelite Wire-Wound Volume Control Clarostat is a 100% all wire-wound job. Wire itself supplies the resistance. Bakelite shell and metal end plate—entirely sealed in. No dust, dirt or moisture can reach the working parts. One-hole mounting, handy soldering tabs. Neat and compact.



	List Price	YOUR COST
Resistance range of 100, 200, 300, 400, 500, 1,000, 2,000 or 3,000 ohms.....	\$1.25	\$0.73
Resistance range of 5,000, 10,000 or 15,000 ohms.....	1.50	.88
Resistance range of 20,000 or 25,000 ohms.....	1.75	1.03
Resistance range of 40,000 or 50,000 ohms.....	2.00	1.17

Duplex Clarostat



Unique variable resistor, comprising two Clarostats in one. Independent set-screw adjustment for each section. Used in power units. Metal case; nickel plated; two-hole mounting; screw-driver adjustment. Resistance up to 500,000 ohms per unit, carrying capacity 7 watts total.

List Price, \$2.25

Your Cost, \$1.33

Simplify Your Replacement Work



Wire-Wound Resistors may appear alike, but you will find I.R.C. Precision Wire-Wound Resistors different in performance. There are no open contacts—no shorting of turns—better treated wire. Ideal for making capacity bridge meters, ohmmeters, voltmeters and high reading ammeters. New tube requirements and set requirements need up-to-date test equipment. I.R.C. formulas show you how to make your own at a big money saving.



Precision Wire-Wound Resistors

For Conversion of Meters as Voltmeter Multipliers

Made in All Ranges



WW1

Range	List Price	YOUR COST
1 to 9 ohms	\$1.50	\$1.03
10 "	1.25	.85
25 "	1.25	.85
50 "	1.25	.85
100 "	1.25	.85
150 "	1.25	.85
200 "	1.25	.85
500 "	1.25	.85
1,000 "	1.25	.85
2,500 "	1.25	.85
5,000 "	1.25	.85
10,000 "	1.50	1.03
12,500 "	1.50	1.03
20,000 "	1.50	1.03
25,000 "	1.50	1.03
30,000 "	1.50	1.03
35,000 "	1.50	1.03
40,000 "	1.50	1.03
50,000 "	1.50	1.03
60,000 "	1.50	1.03
75,000 "	1.50	1.03
100,000 "	2.00	1.38
125,000 "	2.00	1.38
150,000 "	2.25	1.33
175,000 "	2.25	1.33
200,000 "	2.50	1.71
225,000 "	2.75	1.89
250,000 "	2.75	1.89
300,000 "	3.00	2.06
400,000 "	3.50	2.40
500,000 "	4.00	2.74



WW2

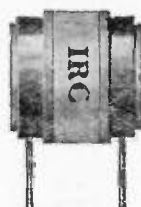
Range	List Price	YOUR COST
500,000 ohms	\$4.00	\$2.75
750,000 "	4.50	3.09
1,000,000 "	5.00	3.43
1,250,000 "	7.50	5.15
1,500,000 "	7.50	5.15
1,750,000 "	9.00	6.18
2,000,000 "	10.00	6.86
2,250,000 "	12.50	8.58
2,500,000 "	12.50	8.58

Normal Tolerance—1%

Can be obtained in Closer Tolerances— $\frac{1}{2}$ or $\frac{1}{4}$ of 1%

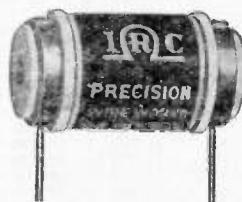
Information FREE!

Complete Instruction Folders on Building Set Analyzers, Ohmmeters, Capacity Bridge Meters, Voltmeters, etc., will be sent you FREE. Write for them.



TYPE WW3

Range	List Price	YOUR COST
200 ohms	\$0.75	\$0.52
1,000 "	.80	.55
2,500 "	.80	.55
5,000 "	1.00	.69
7,500 "	1.00	.69
10,000 "	1.00	.69
15,000 "	1.00	.69
20,000 "	1.15	.79
25,000 "	1.25	.87
35,000 "	1.25	.87
50,000 "	1.50	1.03
100,000 "	2.00	1.37



TYPE WW4

Ranges and List Prices Same as WW1

Normal Tolerance—1%

Can be obtained in Closer Tolerances— $\frac{1}{2}$ or $\frac{1}{4}$ of 1%

I.R.C. Resistors are supplied in any resistance value desired. For List Prices of values not shown, use the List Price of the next lower resistance value.



Ohmmeter Calibration Scale

A wonderful money-saving device. It makes your milliammeter do the work of two meters.

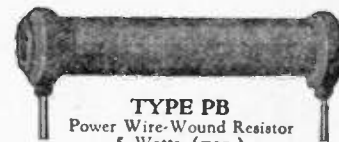
Simply place this scale in your 0 to 1 milliammeter, and it automatically becomes a direct-reading milliammeter or an ohmmeter, through the use of I.R.C. Precision Wire-Wound Resistors. Use a 22,500-ohm resistor with a 22½-volt battery and you can read resistors up to 750,000 ohms. This scale will be sent to you with your order for any 3 I.R.C. Wire-Wound Resistors.



Power Wire-Wound Resistors

The new Power Wire-Wound Resistors, developed by the International Resistance Company, have many points of superiority. They are rugged, permanent, accurate—and possess the exclusive I.R.C. advantage of positive contact. This is due to a ring molded around the ceramic material through which the nichrome wire passes, embedding itself in the metal.

Open contacts, which have so often given trouble with ordinary power wire-wound resistors, are thus eliminated.



TYPE PB

Power Wire-Wound Resistor

5 Watts (max.)

1¼" long by ⅝" diameter

Range—up to 15,000 ohms. Normal Tolerance 5%

List Price, 50c

Your Cost, 30c

TYPE PA

Power Wire-Wound Resistor

3 Watts (max.)

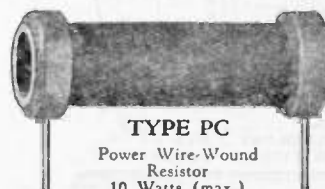
⅞" long by ⅝" diameter

Range—up to 5,000 ohms

Normal Tolerance 5%

List Price (all ranges), 50c

Your Cost, 30c



TYPE PC

Power Wire-Wound Resistor

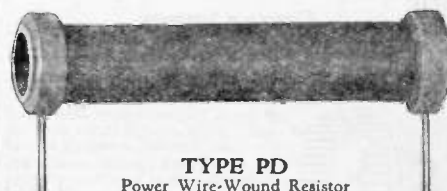
10 Watts (max.)

2" long by ⅝" diameter

Range—up to 30,000 ohms. Normal Tolerance 5%

List Price, 65c

Your Cost, 39c



TYPE PD

Power Wire-Wound Resistor

15 Watts (max.)

3" long by ⅝" diameter

Range up to 50,000 ohms

Normal Tolerance 5%

List Price, 70c

Your Cost, 42c

I.R.C. Resistors in New Handy Kits

With I.R.C. Metallized Resistors, you obtain a guarantee of quality—a guarantee of uniformity possible only from makers of standard merchandise. Tests in the laboratories of leading set manufacturers have confirmed their remarkable accuracy and ruggedness for all radio and vacuum tube uses. Now, in their new Handy Certified Kits, these famous resistors enable you to take care of any resistor problem with more speed and satisfaction than ever before.

1 WATT
RESISTORS
18¢
NET

Handy Certified Kit No. 1



Contains 20 F-1
1-Watt Resistors

This is the original I.R.C. kit that made such a hit with servicemen. Contains 20 1-watt Metallized Units ranging from 500 ohms to 3 megohms. With the help of the formulas enclosed in the kit, you can obtain thousands of resistance values. The Certified Seal insures factory guarantee and factory-tested resistors.

List Price, \$6.00

Your Cost, \$3.50

Handy Certified Kit No. 2



Contains 20 F-2 2-watt Resistors. Made for servicemen requiring resistors of higher wattage. Values range from 500 ohms to 1/2 megohm. Factory sealed, factory tested, and factory guaranteed.

List Price, \$8.00

Your Cost, \$4.65

New Handy Grid Bias Kit

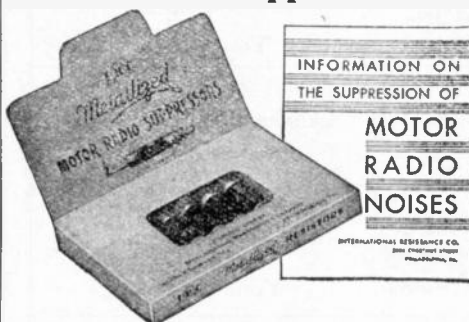


Contains 10 assorted Resistors of F1-F2 and power wire-wound (5-watt) types, required to bias the following type tubes: '24, '26, '27, '71A, '10, '45, '50, '47. The kit also contains resistance values that can be used as grid suppressors. Complete information on the proper biasing of radio tubes, together with wiring diagrams, given with every order.

List Price, \$3.70

Your Cost, \$2.15

Motor Radio Suppressor Kit



Together with its information folder is a most valuable aid to the serviceman installing automobile radio sets.

Suppressor Kits and Prices	YOUR COST
M-14 Kit (four-cylinder cars) contains four spark plug resistors and one distributor type resistor. List Price, \$2.50.....	\$1.47
M-6 Kit (six-cylinder cars) contains six spark plug resistors and one distributor type resistor. List Price, \$3.50.....	2.06
M-8 Kit (eight-cylinder cars) contains eight spark plug resistors and one distributor type resistor. List Price, \$4.50.....	2.65
Individual Motor Radio Suppressors:	
MS—Spark plug type—List Price, 50c.....	.30
MD—Distributor type—List Price, 50c.....	.30
MC—Cable type—List Price, 50c.....	.30



MS—Spark Plug Type



MD—Distributor Type



MC—Cable Type



This remarkable book gives the value and code and position in the circuit of each defective resistor. All popular makes of receivers listed—types and values of resistors shown. Loose-leaf sheets furnished every month to every user of this Guide. Keep it always up to date.

Buy Any 20
I.R.C. Metallized
Resistors
and
**Receive
Free**
The "I.R.C."
Resistor
Replacement
Guide

An absolute necessity in every service kit.

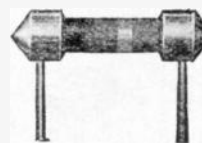
I.R.C. Metallized Resistors



TYPE F1
(1 Watt)

Supplied in all practical ranges from 100 ohms to 10 megohms.

List Price, 30c
YOUR COST, 18c



TYPE F1/2
(1/2 Watt)

Supplied in all ranges from 50 ohms to 5 megohms.

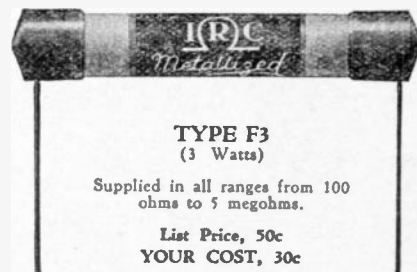
List Price, 30c
YOUR COST, 18c



TYPE F2
(2 Watts)

Supplied in all ranges from 50 ohms to 5 megohms.

List Price, 40c
YOUR COST, 24c



TYPE F3
(3 Watts)

Supplied in all ranges from 100 ohms to 5 megohms.

List Price, 50c
YOUR COST, 30c

I.R.C. Resistor Color Code Chart

Nearly all set manufacturers use the R.M.A. Color Code. This pocket chart tells instantly the value of any particular resistor—and what the color coding signifies.



FREE When Buying Any Five Metallized Resistors

I.R.C. RESISTORS STAND THE GAFF

PAGE 45

Adapters for Every Purpose

'82 Mercury Rectifier Testing Adapter



Toggle switch permits readings of both plates of rectifier tube; 4-hole top, 4-prong bottom. Incorporates proper resistances.

No. 982 Adapter

Your Cost, \$1.76

Color Coded Plug-in Coil Forms

Genuine molded bakelite with phosphor-bronze contact prongs. Overall length $2\frac{1}{4}$ ins. $1\frac{1}{4}$ ins. outside diameter. Top rim colored for identification of different wave-lengths.



No. 1864 Coil Forms

Your Cost, \$0.14 each

G-2 Diode Tube Adapter

For testing Diode tubes in Majestic and Bosch radios. Toggle switch permits readings of both sides of tubes. Made with proper resistances, having sufficient current-carrying capacity.



No. 955G-2 Adapter

Your Cost, \$1.80

General-Purpose Adapters Neutralizing—Oscillation Control—Testing Experimenting

YOUR
COST

944N—UX neutralizing adapter with one filament dead, for balancing oscillating receivers..	\$0.59
955N—UY neutralizing adapter used same as above .....	.59
944GP—UX adapter, makes detector circuit of any UX R.F. stage, breaking grid circuit for grid leak and condenser. Also breaks plate with phone tip terminals for head phones....	.73
955GP—UY adapter, used same as above.....	.73
944GPL—For measuring voltages of both plates of 280 rectifier tube .....	.88
955GS—For testing A.C. screen-grid tubes....	.88
972—For adapting Western Electric type 215A tubes to UX or UV sockets .....	.73
973—For adapting UV or UX tubes to Western Electric type 215A sockets .....	.73
944PTT—UX Universal testing adapter with plate-break. All other connections brought out to phone tip terminals .....	.73
955PTT—UY Universal testing adapter, used same as above .....	.73



"Sure Grip" Plugs

Genuine molded bakelite with phosphor-bronze prongs. Cover threads on base for easy connections.

94—UX Plug
95—UY Plug
96—6-prong Plug

Your Cost, \$0.14

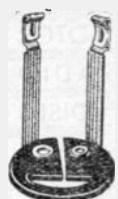
Flat Type Speaker Plugs

Genuine molded bakelite bases with phosphor-bronze prongs. Excellent for dynamic speaker cables. Usually employed with our No. 984F, 985F and 986F Female Connector Plugs.



Less Cord
No. 104—4-Prong Plug
No. 105—5-Prong Plug
No. 106—6-Prong Plug

Your Cost, \$0.08



Universal Purpose Adapter

For 4 and 5-Prong Tubes

For connecting phonograph pickups and microphone to A.C., D.C. and battery sets. Fits either UY or UX tubes. Grid and cathode prongs brought out to tip jacks.

No. 949 Adapter

Your Cost, \$0.35

"Phono"—"Mike" and Tone Control Adapters

Phono-Pickup Five-Prong Adapter
This adapter connects all types of phonograph pickups into the grid and cathode circuit of receivers employing type 227 detector tubes. May also be used for connecting microphones through a microphone transformer. Grid and cathode brought to external pin jacks.

No. 955KT Adapter
Your Cost, \$0.73



Female Connector Plug



Used in conjunction with our Nos. 104, 105 and 106 Flat Type Speaker Plugs to form complete connector units.

Less Cord
No. 984F—4 Prongs
No. 985F—5 Prongs
No. 986F—6 Prongs

Your Cost, \$0.44

Complete Cable Connector Units



Flate fiber plate containing prongs attaches directly to speaker chassis. Female plug attached to speaker cable. Convenient, safe, positive connections.

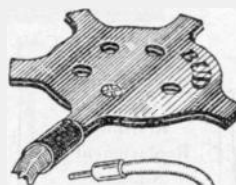
No. 204FP—4 Prongs
No. 205FP—5 Prongs
No. 206FP—6 Prongs

Your Cost, \$0.15

Pentode P.P. Output Adapter

Designed so that additional speakers can be connected to any set that uses two (2) Pentode Output Tubes. Leads are 42" long and have phone tips soldered on ends. Packed 2 in a box.

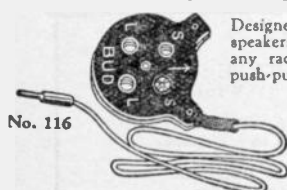
Instructions for connecting printed on box.



No. 111

Your Cost, 80c per pair

Output Adapter



Designed so that additional speakers can be connected to any radio set that is using push-pull amplification without having to disconnect any of the wiring of radio set or solder any connections.

Packed 2 in a box

Your Cost, 59c per pair

Output Adapter

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

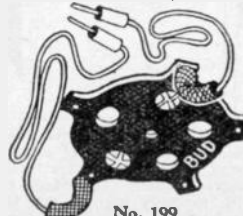


No. 117

Your Cost, 80c per pair

Single Pentode Output Adapter

Pentode Output Adapter designed so that additional speaker can be connected to Radio Set that has only one Pentode Tube. Wire leads 42" long and have phone tips soldered on ends.



No. 199

Your Cost, 45c

The No. 954 F.K.P. Adapter

Enables one to replace a 71 tube with the Pentode or the new 46 tube. Since the Pentode has a power sensitivity many times that of the 71 tube a marked increase in volume is noted when this adapter is used.

Your Cost, 45c



46 Adapter, No. 954 F.S.

This adapter places two $2\frac{1}{2}$ -volt Pentode tubes or the new 46 tubes in series in push-pull 71 stages. Brings out the higher frequencies, making music sound more brilliant. Also increases volume. Caution: Replacing 71A tubes with Pentodes increases the filament current 7-fold. For this reason it is not advisable to use them in battery receivers.

Your Cost, \$1.18



Your Cost, 60c

Ear Phone Adapter

A new Ear Phone Adapter specially designed for use with the electric sets. Also can be used with battery model sets. One can now listen to DX at any time without disturbing the rest of the family. In order to put the Ear Phone Adapter in use, take out the power tube of set, and insert the Ear Phone Adapter.

Your Cost, 89c



Adapters for Every Purpose

Na-ald "Lock Feature" Analyzer Plug



Here is the latest, most ingenious and most practical development in the field of radio plugs and adapters; a development which is the outcome of a crying need of service men and experimenters. A new handle plug with an ingenious locking feature which completely eliminates the old time-consuming process of attaching adapters to handle plugs with screws.

New Analyzer Plug UX Type. List Price, \$3.00.

YOUR COST, \$1.80

No. 905L—New Analyzer Plug UY Type. List Price, \$3.00.

YOUR COST, \$1.80

No. 904LC—New Analyzer Plug UX Type with 5 ft. Cord. List Price, \$5.00.

YOUR COST, \$3.00

No. 905LC—New Analyzer Plug, UY Type with 5-ft. cord.

List Price, \$5.00.....**YOUR COST, \$3.00**

No. 1894—Additional Cable for New Plug. List Price, \$0.30 ft....**YOUR COST, \$0.18**

No. 945DS—UX to UY Adapter for use with UX Type Handle Plug. Cathode Circuit connected to center post. List Price, \$1.25.....**YOUR COST, \$0.75**

No. 945DS—UY to UX Adapters for use with UY Type Handle Plug. List Price, \$1.25.....**YOUR COST, \$0.75**

ADAPTERS FOR NEW PENTODES

The reason adapters or wiring changes are necessary to test Pentode tubes is that the elements of the tube are connected to the base prongs in a way differing from standard practice. Any set analyzer or tube tester, however, may be brought up to date by the use of the adapters presented herewith—which adapters of course automatically make the required circuit changes.

4- to 5-Prong Weston Instruments

Filament and plate connections through. Grid hole connected to Cathode prong. Grid prong has 6-in. lead with screen-grid clip. For use with Weston tube checkers and analyzers.

No. 945GL

Your Cost, \$0.88

5- to 4-Prong Adapter

Grid, plate and heater connections through. Cathode circuit brought out to tube checkers and set analyzers.

No. 954K

Your Cost, \$0.73

For Replacing '45's With Pentodes

4-prong button, 5-hole top. Current for Cathode circuit attained internally from plate prong. Used for replacing type 245 power tubes with 247 Pentodes. Two adapters used for push-pull circuits.



No. 954KPC Adapter

Your Cost, \$0.59

5- to 4-Prong

For use with Weston tube checkers and analyzers. Plate and filament connections through. Cathode hole connected to grid prong. Grid hole has 6-in. lead with fork terminal.

No. 955GL Adapter

Your Cost, \$0.88

Tube Checker Adapter

5-prong bottom, 5-hole top. Cathode prong, dead; hole connects to plate prong for screen-grid current. Used for testing Pentode tubes in older model tube checkers.

No. 975 Adapter

Your Cost, \$0.59

4- to 5-Prong

For use with Supreme analyzers with old-style plug. Grid plate and heater plus connections through. Heater minus prong connected to center stud. Cathode prong has lead for engaging nut terminal of analyzer plug

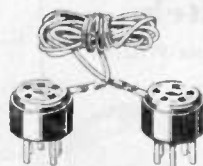


No. 977 Adapter

Your Cost, \$1.03

Twin Adapters for Set Analyzers

With these twin adapters, all styles and models of set analyzers may be made to test any of the Pentode tubes. One adapter is attached to the 5-prong analyzer plug and then inserted into the Pentode tube socket of the receiver while the other is inserted in the 5-tube socket of the analyzer and is then engaged by the Pentode tube. A flexible lead connects the suppressor grid prong of the first adapter to the suppressor grid hole of the second.



No. 974 Twin Adapter

Your Cost, \$1.47

6-PRONG ADAPTERS AND ANALYZER PLUGS

For Modernizing All Types of Tube Checkers and Set Analyzers—The new line of adapters presented herewith was designed to bring up to the minute all old-type tube checkers and set analyzers which cannot at the present time test the latest type '57 and '58 triple-grid 6-prong tubes. Available for use with either the new-style "lock-feature" or old-type analyzer plugs. Service men and experimenters should not delay in modernizing their testing equipment.

"Lock-Feature" 6-Prong Analyzer Plug



For building new analyzers and modernizing old ones to accommodate the latest type '57 and '58 6-prong, triple-grid tubes. Has screen-grid contact on side. May be had either with or without 7-wire cable.

No. 906WL Plug

Your Cost, \$2.06

No. 906WLC Plug with 5-ft. cable

Your Cost, \$3.23

6- to 4-Prong

For use with new 6-prong analyzer plug, 6-hole top with center stud, 4-prong bottom. All connections through. Suppressor grid contact dead. For testing 4-prong tubes in 6-prong analyzer and tube-tester sockets.

No. 946DS Adapter

Your Cost, \$0.73

6- to 5-Prong Hickok Adapter

For use with Hickok and Radio Products instruments. Five-prong bottom, six-hole top. All connections through. Suppressor grid brought out to six-inch lead with phone tip.

No. 965SL Adapter

Your Cost, \$0.73

6- to 5-Prong Tube Checker Adapter

For testing '57 and '58 tubes in old-type tube checkers. Five-prong bottom, six-hole top. Suppressor grid contact in top connected to Cathode prong of UY base.

No. 965KS Adapter

Your Cost, \$0.59

6-Prong Adapter for Supreme Analyzers

For recent models of Supreme analyzers which have extra wire in their cables connected to the center latch of "lock-feature" analyzer plugs. Five-hole top, six-prong bottom; suppressor grid connected to center stud.

No. 956DS

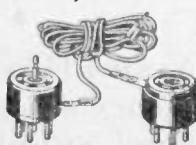
Your Cost, \$0.73

Twin Adapters for Testing 6-Prong Tubes in Tube Checkers and Set Analyzers

With these twin adapters any style or model of tube checker or set analyzer may be made to test the latest type '57 and '58 6-prong tubes. The 6-prong adapter is attached to the 5-prong analyzer plug and then inserted in the 6-hole socket of the set. The other or 5-prong adapter is inserted in the five-hole socket of the analyzer and then engages the 6-prong tube which is to be tested.

No. 965DSW Twin Adapter for "Lock-Feature" Plug

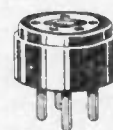
No. 965DW Twin Adapter for Old-Style Analyzer Plug



Your Cost, \$1.47

Your Cost, \$1.47

CHANGE-OVER ADAPTERS

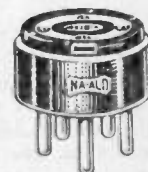


UY TO UX

Fits 5-prong tubes into 4-prong sockets. Cathode hole to heater prong.

No. 954 Adapter

Your Cost, \$0.59



UX TO UY

Fits 4-prong tubes into 5-prong sockets. Cathode prong dead.

No. 945 Adapter

Your Cost, \$0.59

The 965KS takes the new 57 tube in a 24 socket or the 58 tube in a 51 socket. The 58 tube has about 2½ times the MU-factor and over 50% greater transconductance, so is a much better tube than the 51. Moreover the 58 tube uses less than 1/3 the filament power consumed by the 51.

Your Cost, 59c

The 927 adapter will replace the Kellogg overhead heater type tubes with 27 type tubes, in this way making it more convenient and less expensive to renew the tubes as they wear. Heater connectors are provided.

Your Cost, 74c

The 419X enables one to place the UX-199 or the new 2-volt 30 and 31 tubes in sets having old UV type sockets. Fine for making portable receivers from old-style sets.

Your Cost, 21c

The 120 adapter enables the 20 or 31 power tubes to be operated in portable or battery receivers previously using the UV-201A. Leads are provided for connecting in extra "B" and "C" batteries.

The 999 adapter takes the UX tubes in a UV-199 socket. Useful for changing over old sets for portable use by using the 2-volt tubes.

Your Cost, 59c

The 920 adapter changes over sockets using the UV-199 tubes to use a power tube such as the UX-120 or the 2-volt 31 tube.

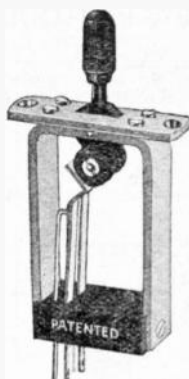
Your Cost, 74c

Switches for All Purposes

Federal Anti-Capacity Switches

The original Anti-Capacity Switch has supplanted the old flat-spring type with its high capacity.

All Anti-Capacity Switches are equipped with a highly polished nickel-plated face plate. Springs are of phosphor-bronze, silver-plated for good conductivity. The insulating block in which the springs are mounted is phenol plate—the best insulating material known. The cam arrangement is of the roller type, providing smooth and easy lever action.



1427



1424



1425

No. 1424—4 P.D.T., 12-spring—List, each, \$2.90
YOUR COST, \$1.70

No. 1425—D.P.D.T., 6-spring—List, each, \$2.45
YOUR COST, \$1.45

No. 1427—D.P.S.T., 4-spring—List, each, \$2.45
YOUR COST, \$1.45

H & H Toggle Switches for Radio and Electrical Use



Particularly adapted for set manufacturers, service men and set builders. Specially constructed joint facilitates easy toggle switch movement. Will not stick. Complete with stamped "ON" and "OFF" plates. Furnished in antique bronze. Approved by Underwriters. Capacity 1 Amp.—250 Volts; 3 Amps.—125 Volts.

Types

Single pole, single throw, with $\frac{3}{8}$ " shank.
Your Cost, 23c each or \$2.40 per doz.

Single pole, single throw, with $\frac{3}{4}$ " shank.
Your Cost, 27c each or \$2.90 per doz.

Single pole, double throw, with $\frac{3}{8}$ " shank.
Your Cost, 28c each or \$2.95 per doz.

Single pole, double throw, with $\frac{3}{4}$ " shank.
Your Cost, 30c each or \$3.25 per doz.

Double pole, single throw, with $\frac{3}{8}$ " shaft.
Your Cost, 40c each or \$4.00 per doz.

Double pole, single throw, with $\frac{3}{4}$ " shaft.
Your Cost, 44c each or \$4.25 per doz.

These switches listed above are not a job lot but are standard stock—Are all perfect and can be supplied at all times.

Double-Pole Double Throw Toggle Switch

This is a Double Pole Throw switch which makes it possible to switch over from phonograph to radio or from radio to phonograph. Has many other uses. Supplied with nickel-plated hardware. Size of shank, $\frac{3}{4}$ inch.



No. 3—List Price, \$1.15
Your Cost, 60c

Cutler-Hammer Toggle Switch

One-Hole Utility Type, Four-Position

Ratings: 6 Amperes, 24 Volts. As this mechanism is of the slow make-and-break construction, it does not carry Underwriters' Laboratories approval and is essentially a low-voltage device. However, it has handled small currents (2 amperes, 125 volts A.C. and $\frac{1}{2}$ ampere, 125 volts D.C.) very satisfactorily and may be used on these voltages for certain applications.

Description—This four-position toggle switch functions as a single pole, triple-throw knife switch. It provides three "ON" positions and one "OFF" position. It is used by the Radio Industry to provide switching mechanism whereby voltages are varied on power packs and for changing aerial capacities, etc.

List Price, \$1.25

Your Cost, 75c

Per Doz., \$8.00

Weston Toggle Switch

Single pole, double throw. Small type for analyzers, etc.

Type ND-19640

Your Cost, 38c

BUY TODAY ...Avoid Delay

A small outlay of money will purchase a good supply of this material.

Miniature Bakelite Knife Switches

Mechanically perfect in every respect, designed and constructed under new and improved principles. Hardware of brass, heavily nickel-plated. Mounted on highly-polished bases of black bakelite.



No.		List Price	YOUR COST
1216	Single Pole, Single Throw.....	\$0.50	\$0.30
1217	Single Pole, Double Throw.....	.60	.36
1218	Double Pole, Single Throw.....	.70	.42
1219	Double Pole, Double Throw.....	.80	.48
1220	Three Pole, Double Throw.....	1.20	.72
1221	Four Pole, Single Throw.....	1.40	.83
1222	Four Pole, Double Throw.....	1.50	.89
1363	Five Pole, Single Throw.....	1.75	1.03
1364	Five Pole, Double Throw.....	2.00	1.18

Porcelain Throw Switches

Insulated handle for use in low-voltage circuits such as radio A, B and C batteries, power equipment, etc.

No.		List Price	YOUR COST
235	Single Pole, Single Throw.....	\$0.25	\$0.15
236	Single Pole, Double Throw.....	.30	.18
237	Double Pole, Single Throw.....	.35	.21
238	Double Pole, Double Throw.....	.50	.30
239	Triple Pole, Double Throw.....	.80	.48

Midget Knife Throw Switches

The Smallest Switch Made

Description—These tiny switches have countless applications in general or experimental radio work. May be used for battery chargers, switching from long to short aerial, etc. Adapted for either base or panel mounting. Black bakelite base. Highly nickeled brass parts with insulated handles.

Single Pole Single Throw
Base $\frac{1}{4}$ " long, $\frac{1}{2}$ " wide.

No. 1900

Your Cost, 15c

Single Pole Double Throw

Base $\frac{1}{4}$ " long, $\frac{1}{2}$ " wide.

No. 1925

Your Cost, 25c

Double Pole Double Throw

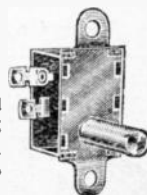
Base $\frac{1}{4}$ " long, 1" wide

No. 1950

Your Cost, 40c

Eby Rotary Snap Switches

Engineers who have seen, handled and tested the new Eby Single and Tandem Rotary Switches proclaim them to be the finest rotary snap switches so far developed.

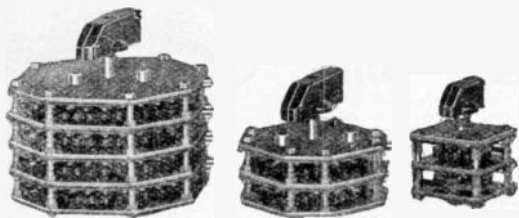


Type	Cat. No.	List Price	YOUR COST
Single Pole, Single Throw...14 SPST *		\$0.25	\$0.15
Single Pole, Double Throw...14 SPDT		.30	.18
Double Pole, Single Throw...14 DPST		.40	.24
Double Pole, Double Throw...14 DPDT		.50	.30

*Standard for power, battery and local distance switch use.

Switches for All Purposes

ROTARY, PUSH BUTTON and TOGGLE SWITCHES

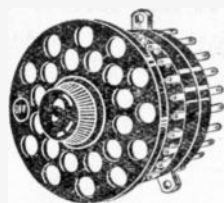


Jewell Rotary Switches

These switches are supplied as 12, 24 or 36 point switches and can be made in any number of decks desired. Each deck constitutes a rotary member and a set of stationary contacts. The prices below include a bar handle.

When ordering it is necessary to specify the thickness of panel on which the switch is to be mounted, otherwise the switch will be supplied for a standard panel thickness of $\frac{1}{8}$ inch.

12 Pt.				24 Pt.				36 Pt.			
No. Decks	List Price	YOUR COST		No. Decks	List Price	YOUR COST		No. Decks	List Price	YOUR COST	
1	\$2.50	\$1.85		5	\$14.50	\$10.77		1	On Application		
2	3.85	2.84		6	17.00	12.50		2	"		
3	5.20	3.83						3	"		
4	6.55	4.83						4	"		
5	7.90	5.82						5	"		
6	9.25	6.82						6	"		
24 Pt.											
1	\$ 4.50	\$ 3.32									
2	7.00	5.15									
3	9.50	7.00									
4	12.00	8.82									



Weston Bi-Polar Switch No. D-66946

Weston Bi-Polar Switches

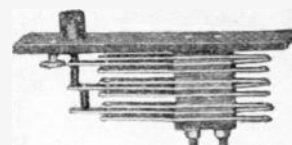
Supplied complete with Bakelite dial having openings for index markings.

	List Price	YOUR COST
24 Positions No. D-66946	\$11.00	\$7.00
10 Positions No. D-58671	4.25	2.71
Bakelite Dial only, with 23 openings for index markings, No. D-64073	.75	.48
Bakelite Dial only, with 9 openings for index markings, No. D-57754	.50	.32

Weston Uni-Polar Switches

12 Positions	\$2.50	\$1.60
--------------	--------	--------

State panel thickness when ordering



Push Button Switch No. D-70240

Locking Push Button Switches

These switches have phosphor-bronze blades with silver contacts and have a small Bakelite mounting panel.

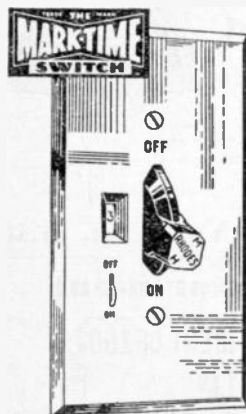
	List Price	YOUR COST
Single-Pole Double-throw, D-70238	\$2.00	\$1.47
Double-Pole Double-throw, D-70239	2.25	1.66
Triple-Pole Double-throw, D-70240	2.50	1.85

Single throw switches are not supplied, however, the corresponding double-throw switches may be used.

You Can't Control an Eclipse but. NOW... You Can Set the Time for Your Electricity to go ON or OFF Automatically with Mark-Time Automatic Switches

Use Mark-Time like any snap switch. Push down and the light comes on to stay. Push up and the light keeps burning a few seconds or minutes according to the model. Rock the handle back and forth—extra time is added and indicated on the

dial. If you want Mark-Time to work like a common switch, it will. Simply push the little side lever and the light snaps instantly on and off. It costs nothing to run is guaranteed unequivocally one year and should last a lifetime.



No. 104

With Bakelite Plate

Minimum time 15 seconds
Maximum time 150 seconds

List Price, \$2.75

Your Cost, \$1.90

No. 114

With Bakelite Plate

Minimum time 3 minutes
Maximum time 30 minutes

List Price, \$2.75

Your Cost, \$1.90



Plug-In Switches

It drops into any standard outlet or can be mounted externally by using a Wire-mold Box No. 5748. The two terminal type listed below brings automatic timing to any appliance or continuous current if preferred. The three terminal type provides timing for a light and continuous current for any appliance; or timing for light and appliances simultaneously.

No.	Min. Time	Max. Time	Terminals	Price	YOUR COST
204	15 sec.	150 sec.	Two	\$3.20	\$2.20
214	3 min.	30 min.	Two	3.20	2.20
208	15 sec.	150 sec.	Three	3.45	2.37
218	3 min.	30 min.	Three	3.45	2.37

Table Switches

POINTER SETTING

No. 1804 Toastermatic is set by turning pointer to proper spot on 3 minute scale. List Price, \$4.95. Your Cost, \$3.40.

No. 1814 Table Switch has scale marked in one minute divisions to $\frac{1}{2}$ hour. List Price, \$4.95. Your Cost, \$3.40.

No. 2801 Table Switch turns ON or OFF any time within 15 hours. List Price, \$5.95. Your Cost, \$4.08.



Mark-Time Modernizes All Radio Sets

Important radio programs are missed through sheer forgetfulness. People fall off to sleep, awake hours later to find the radio operating. Thousands would prefer a cheery radio announcement to an alarm clock. Appreciated services are brought these listeners by MARK-TIME No. 601. Fully enclosed in bakelite it is only $2\frac{1}{8}$ " x $\frac{1}{8}$ " deep excluding knob. It mounts quickly by two screws, furnished. Rubber-covered leads, not shown but furnished, enable quick connection to the cord leading to set. Turns ON or OFF any time from 5 minutes to 15 hours (3-revolutions of knob). No. 601 for A.C. or battery sets.

List Price, \$4.40 Your Cost, \$3.00



Service Section

Extension Cords



These Cords are made of stranded copper wires and insulated with rubber to protect the copper strands from moisture which often causes leakage from one conductor.

Complete with connector.

	List Price	YOUR COST
10-foot Cord, each	\$0.60	\$0.35
20-foot Cord, each	.75	.44
30-foot Cord, each	1.00	.59
40-foot Cord, each	1.25	.74
50-foot Cord, each	1.50	.88
100-foot Cord, each	3.00	1.77

Cord Connector

Made of bakelite. Built to withstand heavy wear and abuse. Neat in appearance. Cord tips can be attached quickly without the use of tools.



List Price, \$0.25

Your Cost, \$0.15

Plain Cord Tips



A nickel-plated tip for replacing old terminals

YOUR COST

No. 416—4 Pin Tips in envelope, per envelope. \$0.05
No. 402—Carton 200 Cord Tips, per 100..... .50

Phone and Speaker Cords

These Cords are used in replacing worn-out cords from head sets or loud speakers. Birnbach Cords are closely woven and are strong and durable.



YOUR COST

5-ft. Speaker Cord, Tips both ends.....	\$0.18
5-ft. Speaker Cord, Pin and Spade Tips.....	.18
5-ft. Speaker Cord with Pin and Eye Tips.....	.18
5-ft. Head Set Cord, Pin Tips on both ends.....	.29
5-ft. Head Set Cord, Pin and Spade Tips.....	.29
5-ft. Head Set Cord with Pin and Eye Tips.....	.29
10-ft. Speaker Cord with Pin and Eye Tips.....	.27
20-ft. Speaker Cord with Pin and Eye Tips.....	.39

A.C. Extension Cord



A handy unit. Rayon Lamp Cord equipped with soft rubber plug and bakelite 3-way outlet.

No. 1823—6-ft. Cord in individual carton.

List Price, 75c

Your Cost, 44c

Ear Cushions



These ear cushions are made of soft rubber and are very ideal for the amateur, wireless operator and individuals who use ear phones.

List Price, \$0.75 per pair

Your Cost, 45c

Neon Glow Lamps

For use on either D.C. or A.C. 110 to 120 volts. Sheds a soft and diffused light which is desirable for boudoirs, halls, etc. Excellent for silent "indicators". Also used widely in amateur transmitters to show oscillation. Costs practically nothing to burn. Standard base.



S4 1/2



G10



S14

S14—2 watt	YOUR COST
G10—1 watt	\$0.65
	.50

Above use standard A.C. socket

S4 1/2—A new type 1/4-watt neon lamp. Does not draw much current. Super-sensitive for pilot lights, annunciators and indicators. Candelabra base.

YOUR COST, ea. 55c

Pilot Dial Lights

For Radio Sets

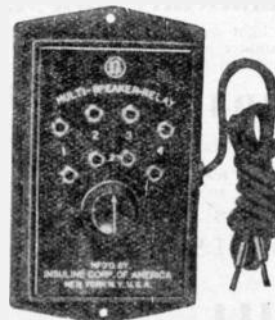
For 2 1/2 volts or for 6 volts
Your Cost, 10c each
or 85c box of 10

Multi-Speaker Relay

The Multi-Speaker Relay is a new compact device with which the set owner, serviceman or radio dealer can easily test, compare and operate a number of loud speakers at one time. A turn of the knob switches from one speaker to the other without loss of a single note or volume, giving instant comparison of tone quality in a positive and practical way. The Multi-Speaker Relay is very efficient for homes, apartment houses, hotels, hospitals, radio dealers, laboratories, etc., where it is desired to compare or operate several speakers in different rooms or locations. Its capacity is four speakers for comparison or to play two speakers at any one time. Sturdily built on bakelite with a brown crystalline finish.

No. 79 List Price, \$2.00

Your Cost, \$1.18



Jacks

SINGLE OPEN CIRCUIT JACKS

These jacks are made very small to fit into the smallest possible space. Bakelite washers are used to prevent leakage. Take standard plug. Individually boxed.

No. 362

List Price, \$0.25

Your Cost, 15c

SINGLE CLOSED CIRCUIT JACK

Similar to the Open Circuit Jack. Individually boxed.

No. 363

List Price, \$0.30

Your Cost, 18c



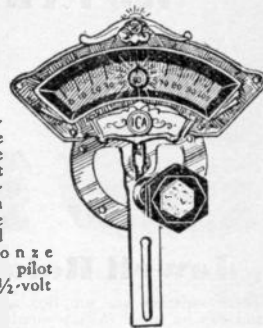
Full Vision Dial

This dial is the aristocrat of the I.C.A. line of radio products. The pyralin scale is set at an angle and is furnished for calibration reading from 0 at the left to 100. Furnished complete with a bronze escutcheon plate, a pilot light bracket and a 2 1/2-volt pilot lamp.

No. 1100

List Price, \$2.00

Your Cost, \$1.18



Drum Dial

This Drum Dial is artistically designed and constructed with fool-proof mechanism. Automatic spring take-up insures positive drive at all times. The drum carrying the condensers is driven by a specially treated cord wound around the drum and connects with a small pulley on the shaft turned by the control knob.

No. 354

List Price, complete, \$2.75

Your Cost,

\$1.62



New Full Vision Dial

With Revolving Spot Light

This dial has a revolving spotlight, so that the calibration on the scale can be seen at a glance even in the dark. Furnished complete with a beautiful bronze escutcheon plate, a pilot light bracket, a dial pilot lamp and a walnut knob.

No. 1099

List Price, \$2.00

Your Cost, \$1.18



Knob Assortment

ASSORTMENT OF 100
KNOBS TO FIT ALL
SETS



This knob assortment is composed of 100 knobs, 12 different types and sizes. They are made of bakelite and also wood composition and each knob has 1/4 inch shaft. Replacement for almost every make set.

No. 1043

List Price, \$17.50

Your Cost, \$8.75

SERVICE SECTION

Exploring Coil



Designed for the serviceman to use in locating R.F. trouble. Can be used in conjunction with a signal supplied by an oscillator which is induced into the grid of the tube when the exploring coil is placed around the tube. A big time-saver. Excellent for superheterodyne circuits for peaking the intermediates. When used in conjunction with an output meter, the amount of gain may be determined by bringing into resonance the parts of R.F. circuits.

List Price, \$3.50

Your Cost, \$2.06

Handy Screw, Nut, Lug, and Washer Kit

Contains a Good Supply of Each
Your Cost, 25c Per Kit

Bull's-Eye Receptacle with Lamp

Your Cost, 69c each



Bull's-Eye Solid Brush Brass Plate

Your Cost, 69c each



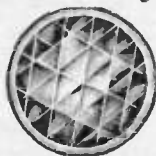
Toggle Bull's-Eye



No. 119

Your Cost
12c each

Round Bull's-Eye



Your Cost
12c each

"Celotex" Dynamic Baffle Board



Will Not Vibrate to
Any Musical
Frequency

"Celotex" baffle boards are $\frac{7}{8}$ " in thickness and are furnished with size hole desired.

YOUR COST

12 x 12	.....	\$0.59
18 x 18	.....	1.10
24 x 24	.....	1.74
36 x 36	.....	2.63
48 x 48	.....	4.40

Odd Sizes on Order

Dynamic Speaker Cable Plugs

Grip-Right Model

This Cable Plug is molded of genuine brown bakelite. It is attractive in appearance and is carefully fabricated to assure the most satisfactory service. The quick detachable handle cap is a time-saver and a convenience to users. Supplied in 4 and 5 prongs.



4 prongs—List Price, 35c

Your Cost, 21c

5 prongs—List Price, 40c

Your Cost, 24c

Molded Speaker Plugs



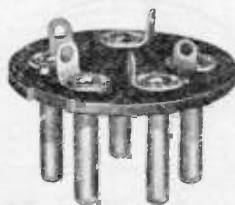
Decorative, clean-cut, serviceable. Furnished as follows:

No. 4410 UX:
Without solder lugs
List Price—25c
Your Cost—15c

No. 4420 UY:
Without solder lugs
List Price—30c
Your Cost—18c

No. 4450 UX:
With solder lugs
List Price—30c
Your Cost—18c

No. 4460 UY:
With solder lugs
List Price—35c
Your Cost—21c



Tinned Soldering Lugs



Spade Terminal

Made of copper tinned for easy soldering. Packed 1,000 to a box. No. 374.

Your Cost, \$3.00 per 1,000

FLAT TYPE



These are flat lugs with two holes tinned for easy soldering. Supplied 1,000 to a box.

Small Size, Your Cost, per thousand..\$1.70

Large size, Your Cost, per thousand.. 1.95

Brass Spring Clips

For general radio or electrical purposes. Packed 1,000 in a box.



Your Cost, \$5.00 per 1,000
or 15c dozen

Balancing Tool

No. 281 Bud Balancing Tool and Attachment enables the serviceman to neutralize or balance any radio without having to remove chassis from cabinet. Overall length of Bud Balancing Tool is $2\frac{1}{2}$ ". This makes possible working in very close quarters.



List Price, \$0.60

Your Cost, 36c

Screen Grid Caps



These Caps are very convenient for soldering and make a sure grip on the Screen Grid tip.

No. 1550

Your Cost, 20c dozen

RED DEVIL

Radio Insulators

Made in brown glazed porcelain. Has perfect insulation. Ideal for inside and outside wiring from aerial to receiver and ground.

Your Cost, 95c dozen

(Large size, $2\frac{1}{4}$ " x $5\frac{1}{2}$ ")

Your Cost, 75c dozen

(Small size, 2" x $2\frac{1}{2}$ ")

It is essential to have a stock of replacement parts on hand at all times. The ability to serve your customers without delay will lead to larger sales and a greater patronage. A small outlay of money will secure quite a stock of this material. *Don't delay! Send in your order today.*

Service Section

5 in 1 Neutralizing and Compensating Tools



This tool is a combination of $\frac{1}{4}$ " nut wrench, a neutralizing screw driver $\frac{1}{4}$ ", and a full sized screw driver. Cleverly

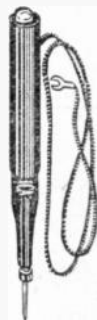
constructed that the parts fit into each other. When completely assembled it is the size of a small fountain pen. A fountain pen clip makes it easy to carry it in the vest pocket. Very useful to the service man for neutralizing and compensating radio receivers, condensers, etc.

No. 1022—List Price, \$1.50 Your Cost, 88c

Short-O-Tester

A Circuit and Continuity Tester

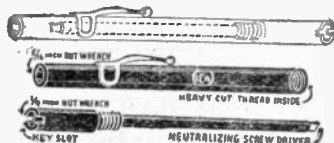
The Short-O-Tester contains a $2\frac{1}{2}$ -volt lamp and a small sized flashlight battery so connected that when the flexible wire lead with its clip is attached to one end of a circuit and contact made through the pin terminal on one end of the tester, to the other end of the circuit, it will indicate whether it is an open or closed circuit. It will test the continuity of practically any circuit used in radio receivers or other associated devices and should prove very handy to the service man. It can also be used as a trouble or flash light by connecting the clip lead to the pin base. Can also be used with a Neon lamp so that circuits having any voltage or frequency may be readily tested for continuity and approximate indication of the relative strength of same and whether it is D.C. or A.C. This device has many uses which should appeal to all those engaged in servicing radio and electrical equipment.



No. 1030. Complete with battery and $2\frac{1}{2}$ -volt bulb.

List Price, \$2.00 Your Cost, \$1.18

Neutralizing Set



No. 1019

Your Cost, 54c

No. 1020. Majestic attachment for No. 1019.

Your Cost, 15c

No. 1021. Crosley attachment for No. 1019.

Your Cost, 15c

Neutralizing Tools with Metal Nibs

No. 996

Your Cost, 88c

Tip Jacks

No. 357



These Tip Jacks are solidly constructed of brass, nickel-plated, and will accommodate any phone cord tip. The heavy contact springs insure positive connection.

Mounts in $\frac{1}{4}$ " hole on panels of thickness up to $\frac{1}{4}$ ".

Your Cost, 6c Each

58c per Doz.

Neutralizing Knob-Type Screw Driver



Your Cost

33c

Fork-Type Neutralizing Wrench and Screw Driver

No. 1024

Your Cost

44c



Insulated Neutralizing and Compensating Screw Driver



No. 1026

Your Cost, 30c

Screw Driver and Wrench

No. 1025

Your Cost, 30c

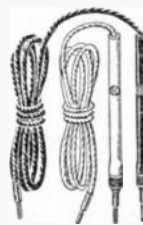


Test Leads

With Solderless Plugs

These Test Leads are convenient for the set owner and a necessity for the radio dealer. Can be quickly attached to any meter for testing batteries or any other radio and electrical apparatus.

Made of sturdy black and red tubing and black and red wire. For positive and negative identification.



No. 355—Spade Type

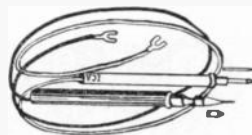
Your Cost, 30c

No. 356—Tip Type

Your Cost, 30c

Needle Point Test Leads

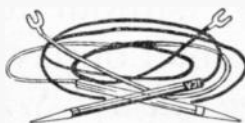
For testing circuits without having to remove the insulation from the wire. The needle points enable the tester to penetrate the insulation of the wire without any injury to the insulation. Supplied with spade or phone tip terminals. Overall length 50 inches.



No. 381

Your Cost, 54c

Long Pointed Prod Test Leads



No. 383
List Price, \$0.65

These Test Leads are identical in construction to No. 355, excepting that they are made of heavy and sturdy Insuline Tubing and have long prods enabling the user to reach into very tight and narrow spots.

Your Cost, 39c

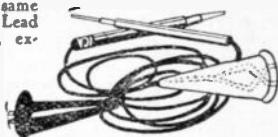
Test Leads with Clips

These clips are the same as No. 355 Test Lead with solderless plug, except that they are supplied with spring clips and rubber-insulated sheath. Overall length 50".

No. 384

List Price, \$1.00 per Set

Your Cost, 59c



Detector-Lite

Tells All at a Glance!

Indispensable to Any Service Man

1. Will test any current from 110 volts to 550 volts and will indicate voltage.
2. Will tell instantly whether A.C. or D.C. current.
3. Will show how many cycles.
4. Will detect the live and ground wires.
5. Will act as pilot on any electrical apparatus.

Your Cost \$1.00



Weston Test Leads

A serviceable pair of 50-inch Test Leads with hardened, polished steel contact points—securely soldered connections.

Strong covering material to withstand wear and abrasion—insulated for high potentials—tested at 5,000 volts.

List Price, \$1.25

Your Cost, 81c



Trouble Finder Adapters

Especially adapted to trouble finding and making all circuit connections where no wires are exposed. May be used for connecting phonograph pickups or meters to radio sets or amplifiers.

Can Be Had in Either 4 or 5 Prong

Your Cost, \$1.05 Each

Special kit consisting of 4 and 5 prong adapters and service leads for plugging into any circuit on tube.

Your Cost, \$2.94



Solderless Plugs

The Solderless Plug can be quickly attached to cord or wire.

without soldering or use of tools. These are especially recommended for use with Tip Jacks No. 357.

Your Cost, 6c Each or

58c per Doz.

Junior Solderless Plug

This is similar to the larger size No. 358 Solderless Plug, only smaller in size.

No. 359
Your Cost, 5c Each or

48c per Doz.



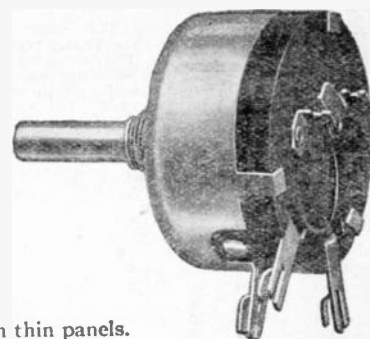
YAXLEY REPLACEMENT CONTROLS

The new Yaxley RP Type replacement controls are now made on the "H" Type base. Every RP Type replacement control contains a Yaxley built-in, A. C. switch. When the switch is not desired, you merely remove a screw which cuts out the A. C. switch. This feature makes Yaxley the most convenient and most flexible unit for service men. There are no extra parts to be assembled by the service man in this self-contained volume control.

The resistance strip, made of specially prepared Bakelite core and wound with selected wire on delicate winding machines, is permanently riveted to the Bakelite base. This results in the double function of holding the strip in shape and affords an added support to the wire. By means of this design, the resistance strip cannot become loose; cannot unduly shrink or expand and remains accurate throughout a normal life of service.

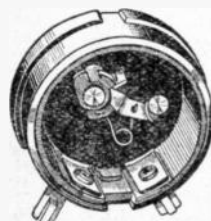
Service men who have installed this new Yaxley control have remarked about its smooth and quiet action. This new product is designed to fit different makes of receiving sets with a minimum amount of work on the part of the service man. Bushing length $\frac{3}{8}$ " from base of control. Shaft length 2" from base of control. If shorter shaft is desired, cut off to proper length.

Each control is supplied with three No. 232 flat, hexagon nuts which may be used as take-up nuts on thin panels. One No. 256 hexagon nut with $\frac{1}{2}$ " shoulder is also supplied so that any Yaxley replacement control may be used on panels up to $\frac{5}{8}$ " in thickness. Yaxley "H" Type Replacement Controls are furnished with insulated contact arms. Shaft is provided with one side flat for mounting the knob securely.



RP-101 to RP-112 inclusive, include Yaxley Built-in AC Switch

Complete Stock On Hand



Showing the dependable built-in switch and resistance securely housed in the Bakelite base, completely enclosed and safe from damage

PRICE LIST

Catalog No.	DESCRIPTION	List Price	YOUR COST	Catalog No.	DESCRIPTION	List Price	YOUR COST
RP-101	10,000 Ohms with 300 Ohm taper...	\$1.00	\$.59	RP-120	Dual Control—Front unit 10,000 Ohms—Rear unit 5,000 Ohms...	\$2.75	\$1.62
RP-102	20,000 Ohms...	1.00	.59	RP-121	Dual Control—Front unit 10,000 Ohms—Rear unit 825 Ohms...	2.75	1.62
RP-103	10,000 Ohms...	1.00	.59	RP-122	Dual Control—Front unit 10,000 Ohms—Rear unit 645 Ohms...	2.75	1.62
RP-104	3,000 Ohms with 25 Ohm taper...	1.00	.59	RP-123	Dual Control—Front unit 5,000 Ohms—Rear unit 10,000 Ohms...	2.75	1.62
RP-105	2,000 Ohms with 25 Ohm taper...	1.00	.59	RP-124	Dual Control—Front unit 20,000 Ohms—Rear unit 800 Ohms...	2.75	1.62
RP-106	6,000 Ohms with 50 Ohm taper...	1.00	.59	RP-128	Dual Control—Front unit 10,000 Ohms—Rear unit 10,000 Ohms...	2.75	1.62
RP-107	5,000 Ohms with 25 Ohm taper...	1.00	.59	RP-133	2,000 Ohms with 30 Ohm Taper—Special Mounting...	1.50	.88
RP-108	800 Ohms with 25 Ohm taper...	1.00	.59	RP-134	Special Style Control—4,500 Ohms with 160 Ohms left in circuit...	1.50	.88
RP-109	600 Ohms...	1.00	.59	RP-135	Special H type Control—4,500 Ohms total resistance, tapered...	1.50	.88
RP-110	400 Ohms...	1.00	.59	RP-136	Special H Control—1,200 Ohms, tapered...	1.50	.88
RP-111	1,500 Ohms...	1.00	.59				
RP-112	1,000 Ohms...	1.00	.59				
RP-114	Dual Control—Front unit 5,000 Ohms—Rear unit 250 Ohms...	2.75	1.62				
RP-115	Dual Control—Front unit 3,830 Ohms—Rear unit 3,830 Ohms...	2.75	1.62				
RP-116	Dual Control—Special...	3.50	2.10				
RP-117	Dual Control—Front unit 500 Ohms—Rear unit 2,500 Ohms...	2.75	1.62				
RP-119	Dual Control—Front unit 10,000 Ohms—Rear unit 3,000 Ohms...	2.75	1.62				

Merchandise with Merit



The contact arm and shoe is of new and improved construction. The pressure is automatically held uniform—the action smooth and silent

Mallory-Elkon Dry Electrolytic Replacement Condensers

Filter Types



Mallory-Elkon Filter Type Condensers are noted for their superiority. In the past electrolytic condensers have had a very high power factor compared with paper condensers. Mallory-Elkon engineers, after years of exhaustive research, now provide the user with a power factor which compares favorably with that of paper condensers.

Type No.	Capacity	List Price	Your Cost	Nominal Dimensions	Box Dimensions
				Thick-ness	Width. Lgth.
12450	2 mfd.	\$.95	\$.57	1 1/2"	1 3/4" x 4 1/2"
14450	4 mfd.	1.10	.65	1 1/2"	1 3/4" x 4 1/2"
16450	6 mfd.	1.30	.76	1 1/2"	1 3/4" x 4 1/2"
18450	8 mfd.	1.45	.87	1 1/2"	1 3/4" x 4 1/2"

D. C. Working Voltage—450 volt
Max. D. C. Peak Voltage—475 volt

By-Pass Types



Many paper condensers of one or two mfd. capacity used in filter circuits and also as audio by-passes are failing in service. These new Mallory By-Pass Condensers will be found both smaller and more satisfactory. They may be inserted easily in blocks as replacement units.

Type No.	Capacity	D. C. Working Voltage	D. C. Peak Voltage	List Price	Your Cost
20450A	1/4 mfd.	450 volt	475 volt	\$.60	\$.36
20450B	1/2 mfd.	450 volt	475 volt	.70	.42
20450C	3/4 mfd.	450 volt	475 volt	.80	.48
21450	1 mfd.	450 volt	475 volt	.90	.54
22450	2 mfd.	450 volt	475 volt	.95	.57
23450	3 mfd.	450 volt	475 volt	1.10	.65
28150	8 mfd.	150 volt	150 volt	1.00	.59
220025	20 mfd.	25 volt	25 volt	1.00	.59

Thickness of all types listed above—1 1/4"
Width, 1 1/4". Length, 2 3/4"

Metal Can Condensers



Mallory-Elkon Metal Can Condensers are available in both upright and inverted types. In both types the can is directly connected to the negative side of the condensers. For installation where the negative of one or more condensers is above ground, the edge or bottom of the can may be easily insulated from chassis ground by means of an easily made insulating washer.

Type No.	Capacity	List Price	Your Cost	Nominal Dimensions	Box Dimensions
				8 upright	8 mfd.
				8 screw	8 mfd.
				16 upright	16 mfd.
				24 upright	24 mfd.

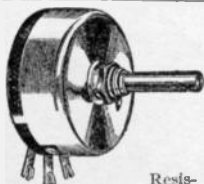
D. C. Working Voltage—430 volt
Max. D. C. Peak Voltage—525 volt

We will be glad to mail a complete catalog on Yaxley Volume Controls and Mallory Condensers with a replacement chart showing the requirements for each set.

YAXLEY

YAXLEY

YAXLEY

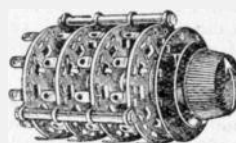


Volume Control Type "S"

This Yaxley control is a companion number for Type "H," the Yaxley replacement control shown elsewhere in this catalog. The only difference is that Type "S," being larger, offers a wider resistance range and greater flexibility in circuit design. Available with or without built-in switch.

"S" Type—Dissipates Six Watts

"S" type List Price	Rheo. Your Cost	Resis- tance in Ohms	Carrying Capac- ity in Am- peres	"S" type Pot. List Price	Your Cost	Resis- tance in Ohms	Carrying Capac- ity in Am- peres	"S" type Pot. with Switch List Price	Your Cost
\$1.00	\$0.59	1/2	3.5	\$1.25	\$0.74	200	.17		
1.00	.59	1	2.5	1.25	.74	400	.12		
1.00	.59	2	1.75	1.25	.74	600	.1		
1.00	.59	3	1.5	1.50	.88	1000	.075	\$1.85	\$1.09
1.00	.59	4	1.25	1.50	.88	2000	.055	1.85	1.09
1.00	.59	6	1	1.50	.88	3000	.045	1.85	1.09
1.00	.59	10	.75	1.50	.88	4000	.038	1.85	1.09
1.00	.59	15	.6	1.50	.88	5000	.035	1.85	1.09
1.00	.59	20	.55	1.75	1.03	10000	.025	2.10	1.24
1.00	.59	25	.5	1.75	1.03	15000	.02	2.10	1.24
1.00	.59	30	.45	1.75	1.03	20000	.017	2.10	1.24
1.00	.59	40	.38	1.75	1.03	30000	.014	2.10	1.24
1.00	.59	50	.35	1.75	1.03	40000	.012	2.10	1.24
1.00	.59	60	.3	2.00	1.18	50000	.011	2.35	1.39
1.00	.59	75	.28						
1.00	.59	100	.25						



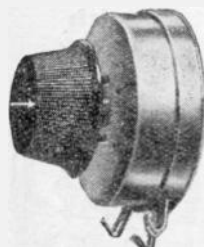
Tap Switches

Yaxley pioneered Tap Switches in the early days of radio and has continuously improved their design along with the advance in radio circuits.

These Tap Switches have been designed to meet the requirements of the most exacting radio and electrical engineers. Careful development gives these parts characteristics which make them outstanding in quality and service.

The bases are made of highest grade Bakelite which has an extremely low moisture content, reducing current leakage between points to a minimum. Selected metals insure smooth action and positive contact.

Catalog No.	Shorting	Non-Shorting	Description	List Price	Shorting	Non-Shorting	Your Cost
1512	1612		Single Gang—Two Points.....	\$0.90			\$0.54
1522	1622		Two Gang—Two Points.....	1.50			.88
1532	1632		Three Gang—Two Points.....	2.10			1.23
1542	1642		Four Gang—Two Points.....	2.70			1.60
1513	1613		Single Gang—Three Points.....	0.90			.54
1523	1623		Two Gang—Three Points.....	1.50			.88
1533	1633		Three Gang—Three Points.....	2.10			1.23
1543	1643		Four Gang—Three Points.....	2.70			1.60
1514	1614		Single Gang—Four Points.....	0.90			.54
1524	1624		Two Gang—Four Points.....	1.50			.88
1534	1634		Three Gang—Four Points.....	2.10			1.23
1544	1644		Four Gang—Four Points.....	2.70			1.60
1515	1615		Single Gang—Five Points.....	0.95			.57
1525	1625		Two Gang—Five Points.....	1.60			.95
1535	1635		Three Gang—Five Points.....	2.20			1.30
1545	1645		Four Gang—Five Points.....	2.80			1.65
1516	1616		Single Gang—Six Points.....	0.95			.57
1526	1626		Two Gang—Six Points.....	1.60			.95
1536	1636		Three Gang—Six Points.....	2.20			1.30
1546	1646		Four Gang—Six Points.....	2.80			1.65
1517	1617		Single Gang—Seven Points.....	0.95			.57
1527	1627		Two Gang—Seven Points.....	1.60			.95
1537	1637		Three Gang—Seven Points.....	2.20			1.30
1547	1647		Four Gang—Seven Points.....	2.80			1.65
1518	1618		Single Gang—Eight Points.....	1.15			.69
1528	1628		Two Gang—Eight Points.....	1.90			1.12
1538	1638		Three Gang—Eight Points.....	2.50			1.47
1548	1648		Four Gang—Eight Points.....	3.10			1.78
1519	1619		Single Gang—Nine Points.....	1.15			.69
1529	1629		Two Gang—Nine Points.....	1.90			1.12
1539	1639		Three Gang—Nine Points.....	2.50			1.47
1549	1649		Four Gang—Nine Points.....	3.10			1.78
1510	1610		Single Gang—Ten Points.....	1.15			.69
1520	1620		Two Gang—Ten Points.....	1.90			1.12
1530	1630		Three Gang—Ten Points.....	2.50			1.47
1540	1640		Four Gang—Ten Points.....	3.10			1.78



Volume Control Type "E"

Designed to meet those conditions where a larger control is desirable. It incorporates time-proven features in a design having higher wattage dissipation. The large number of turns possible in the resistance strip permits a finer adjustment on the "E" type control.

"E" Type—Dissipates Nine Watts

"E" Type List Price	Your Cost	Resis- tance in Ohms	Carrying Capac- ity in Am- peres
E5MP	\$2.50	1.47	5000 .042
E10MP	2.50	1.47	10000 .03
E15MP	2.50	1.47	15000 .025
E20MP	2.50	1.47	20000 .021
E25MP	2.75	1.62	25000 .019
E30MP	2.75	1.62	30000 .017
E40MP	2.75	1.62	40000 .015
E50MP	2.75	1.62	50000 .0135
E60MP	2.75	1.62	60000 .0122
E70MP	2.75	1.62	70000 .0112

Prices include Knobs

Radio Convenience Outlets

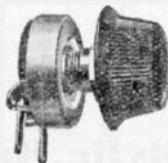


No. 156—Single gang radio outlet for antenna ground and AC and ground connections, a single gang outlet.
No. 156—Brass or Bakelite
List Price \$0.75
Your Cost \$0.45



No. 133—Combining antenna, ground and AC connections in a single gang outlet.
No. 133—Brass or Bakelite
List Price \$1.35
Your Cost \$0.81

Volume Control Type "C"



The "C" Type Control, measuring a scant 1 1/2" in diameter, is the smallest Yaxley control. It incorporates the same high quality materials and construction found in the "E" type control excepting the cover.

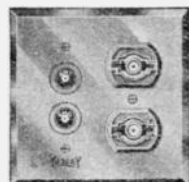
"C" Type—Dissipates Two Watts

Cat. No.	Rheostat List Price	Your Cost	Potentiometer List Price	Your Cost	Resis- tance in Ohms	Carrying Capac- ity in Am- peres
C6R	\$0.75	\$0.45	C6P	\$1.00	\$0.59	6 .58
C10R	.75	.45	C10P	1.00	.59	10 .45
C15R	.75	.45	C15P	1.00	.59	15 .36
C20R	.75	.45	C20P	1.00	.59	20 .3
C30R	.75	.45	C30P	1.00	.59	30 .25
C40R	.75	.45	C40P	1.00	.59	40 .22
C50R	.75	.45	C50P	1.00	.59	50 .2
C100R	.75	.45	C100P	1.00	.59	100 .14
			C200P	1.00	.59	200 .1
			C400P	1.00	.59	400 .07
			C1MP	1.25	.74	1000 .045
			C3MP	1.25	.74	3000 .025
			C5MP	1.50	.88	5000 .02
			C6MP	1.50	.88	6000 .018
			C10MP	1.50	.88	10000 .014
			C15MP	1.50	.88	15000 .011

Prices include Bakelite Knob

Other Yaxley Outlets

No. 134—For loud speaker connections with impedance coil.
No. 134—Brass or Bakelite Your Cost \$2.50
No. 134-B—Bakelite Your Cost \$1.50
No. 142—For loud speaker connections and two-channel system.
No. 142—Brass or Bakelite Your Cost \$1.75
No. 142-B—Bakelite Your Cost \$1.05
No. 136—For aerial and ground connections.
No. 136—Brass or Bakelite Your Cost \$0.90
No. 136-B—Bakelite Your Cost \$0.54
No. 241—Combination for aerial, ground and electrical connections.
No. 241—Brass or Bakelite Your Cost \$2.00
No. 241-B—Bakelite Your Cost \$1.20
No. A-241—Brass or Bakelite Your Cost \$2.50
Equipped with special outlet box.



No. 256—Two gang outlet for antenna and ground and duplex electrical connections.
No. 256—Brass or Bakelite
List Price \$1.50
Your Cost \$0.90

Junior Jack Switches



Desirable for small space mounting. Lies parallel with panel with depth of 1 1/4". Furnished complete with black knob, off-on Name Plate for mounting in single 1/4" panel hole up to 3/4" thick.

Two Position Switches

No.	List Price	Your Cost
No. 720—Single Pole, Single Throw.....	\$0.70	\$0.42
No. 730—Single Pole, Double Throw.....	.85	.51
No. 740—Double Pole, Single Throw.....	.95	.57
No. 745—5 Spring—Two make and one break.....	1.10	.65
No. 760—Double Pole, Double Throw.....	1.25	.74
No. 733—Three Pole, Single Throw.....	1.25	.74
No. 744—Four Pole, Single Throw.....	1.60	.95

Three Position Switches

No.	List Price	Your Cost
No. 732—Single Pole, Double Throw, Center off position.....	\$0.85	\$0.51
No. 762—Double Pole, Double Throw, Center off position.....	1.20	.72
No. 763—Three Pole, Double Throw, Center off position.....	1.55	.92
No. 764—Four Pole, Double Throw, Center off position.....	1.95	1.15



Panel Light

A great convenience for every receiving set. Consists of a handsome reflector and metal socket. Mounts in a single 1/2-inch panel hole. Easily wired.

No.	List Price	Your Cost
No. 330—Panel Light.....	\$0.50	\$0.30
Lamps, extra.....	.20	.12

Extension Jack



No. 100

Quickly connects extension cord or wire so that loud speaker and head phone may be plugged in at any distant point.

No.	List Price	Your Cost
No. 100 Extension Jack.....	\$0.75	\$0.45

Phone Plug



No. 75

Bakelite insulation prevents current leakage. Patented feature insulating tip from sleeve prevents shorting between these parts. Equipped with screw terminals with coin slots. List Your Price Cost
No. 75, as illustrated.....\$0.50 \$0.30
No. TC-75 with tie cord clip......60 .36

YAXLEY

Junior Jacks



Vaxley Junior Jacks are constructed of high quality materials, are small in design and require less mounting space. They mount in $\frac{1}{8}$ " panel hole, extend $1\frac{1}{4}$ " back of panel.

	List Price	Your Cost
No. 701 —Open Circuit.....	\$0.40	\$0.24
No. 702 —Circuit Closing.....	.55	.33
No. 702A —Two Circuit.....	.55	.33
No. 703 —Single Circuit Filament Control.....	.65	.39
No. 703A —Circuit Reversing.....	.65	.39
No. 703C —Double Circuit.....	.65	.39
No. 704 —Interstage.....	.75	.45
No. 704A —Two Circuit Filament Control.....	.75	.45
No. 705 —Two Circuit Filament Lighting.....	.85	.50
No. 706 —Interstage Filament Control.....	.95	.57

Insulated Tip Jacks



Distinctive colored caps, red for positive and black for negative, are but one advantage of the Vaxley Insulated Tip Jack. The Bakelite cap lessens danger of shorting.

	List Price	Your Cost
No. 407 —Pair (Black and Red) in envelope.....	\$0.35	\$0.21
No. 413 —Green.....	.20	.12
No. 418 —Red.....	.20	.12
No. 419 —Black.....	.20	.12

Round Bakelite Head Tip Jack, mounts in $\frac{1}{8}$ " hole in panel up to $\frac{3}{8}$ " thickness. When insulating washers are used, mount in $\frac{3}{8}$ " hole.



	List Price	Your Cost
No. 420 —Red.....	\$0.15	\$0.09
No. 421 —Black.....	.15	.09
No. 422 —Both red and black — in envelope.....	.25	.15
No. 423 —Dark Green.....	.15	.09
No. 424 —Brown.....	.15	.09

Tip Jack



No. 16

Mounts in $\frac{1}{4}$ " hole. When using metal panels, Insulating Washers Nos. 203 and 212 are required. When using insulating washers, mount in $\frac{1}{2}$ " hole.

	List Price	Your Cost
No. 16 Round Head Type.....	\$0.30	\$0.18

Tip Plug

Designed especially for use with Tip Jacks and to serve as a phone tip without soldering. Note the long tip.



No. 15

	List Price	Your Cost
No. 15.....	\$0.15	\$0.09

Tip Plug



No. 415

Designed for use with Tip Jacks and to serve as a phone tip without soldering.

	List Price	Your Cost
No. 415.....	\$0.10	\$0.09

Insulated Tip Jack

Round Head Type Tip Jack mounts in $\frac{1}{8}$ " hole. When mounting on metal panels, Insulating Washers Nos. 204 and 214 are required. When using metal washers, mount in $\frac{3}{8}$ " hole.



No. 416

	List Price	Your Cost
No. 416 Round Head Type.....	\$0.15	\$0.09



No. 401-S

Moulded Twin Tip Jacks

A pair of Tip Jacks moulded in Bakelite providing a completely insulated assembly with embossed designations for single screw mounting. Widely used wherever two Tip Jacks are required. Mounting hole centers $1\frac{1}{4}$ ".

	List Price	Your Cost
No. 401-S —Marked "Speaker".....	\$0.25	\$0.15
No. 401-P —Marked "Phone".....	.25	.15
No. 401-PM —Marked "P + M".....	.25	.15
No. 401-AG —Marked "A G".....	.25	.15

YAXLEY

Dial and Pilot Lights



Vaxley manufactures the largest variety of Dial and Pilot Light Assemblies on the market. Below are listed a few of the most popular type assemblies. We will gladly furnish complete catalog on request.

	List Price	Your Cost
No. 310		
No. 310-R —Pilot Light Bracket, Red Jewel.....	\$0.50	\$0.30
No. 310-G —Pilot Light Bracket, Green Jewel.....	.50	.30
No. 310-A —Pilot Light Bracket, Amber Jewel.....	.50	.30
Lamps extra —2 $\frac{1}{2}$ V and 6 V.....	.20	.10

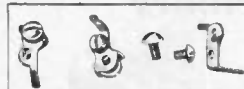
Etched Dial Plates



For mounting under Knob or Tap Switches and Variable Rheostats. These Etched Dial Plates provide a handy means for calibrating an instrument. Diameter $1\frac{1}{2}$ ", furnished in silver and black.

	List Price	Your Cost
For Tap Switches in combination from 1 to 2 and up to 10.....	\$0.15	\$0.09
For Rheostats and Potentiometers —		
No. 369 0 to 100 —Silver and Black.....	.15	.09
No. 369-G —0 to 100 —Gold and Black.....	.15	.09
Diameter $2\frac{1}{4}$ ".		

Terminal Clips



Quality, substantial clips. Hot tin dipped for easy soldering. Often used as Ant. and Gnd. connections for power terminals.

	List Price	Your Cost
Furnished complete with two screws.		
No. 112 —Five to envelope.....	\$0.25	\$0.15

Relays



Vaxley Relays meet the requirements of Signal, Burglar Alarm, Laboratory and Photo Electric service. All contacts made of pure silver and of the self-cleaning type.

	List Price	Your Cost
No. 440		
No. 440 Full Automatic Power Control Switch —for use with A-batteries. Shuts off automatically when battery is fully charged. For use with chargers having 2 to 2 $\frac{1}{2}$ amps. rating.	\$7.50	\$4.41

Cable Connector Devices



The most convenient means of making or separating multiple connections quickly and easily.

Vaxley are pioneers in this field and we will gladly send complete information upon request.

	List Price	Your Cost
No. 612, illustrated, —12 conductor Cable Connector Plug with 4-foot cable receptacle plug and mounting plate.	\$5.00	\$2.94

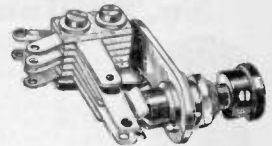
Bias Resistances



Cat. No.	Resistance in Ohms	Carrying Capacity in Amperes	Mounting Centers	List Price	Your Cost
7100	100	.040	1"	\$0.30	\$0.18
7200	200	.040	1"	.30	.18
7300	300	.025	1"	.30	.18
7400	400	.025	1"	.30	.18
7500	500	.025	1"	.30	.18
7600	600	.025	1"	.40	.24
7700	700	.025	1"	.40	.24
7800	800	.025	1"	.40	.24
71000	1000	.025	1"	.40	.24
71500	1500	.025	2"	.40	.24
72000	2000	.025	3"	.40	.24
73000	3000	.025	4"	.40	.24

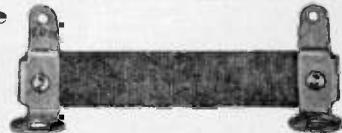
Push Button Switches

Available in both locking and non-locking types. The non-locking switch operates only when the button is pushed in and released on removal of the pressure. The locking type maintains its position when the button is pushed in and is released when button is pulled out. Furnished complete with polished black Bakelite knob. Mounts in single hole $\frac{1}{4}$ " diameter on panels up to $\frac{1}{4}$ " thick.



	List Price	Your Cost
No. 2001 —S. P. Make contact.....	\$0.90	\$0.54
No. 2001L —S. P. Make contact — Locking type.....	.90	.54
No. 2002 —S. P. Break contact.....	.90	.54
No. 2002L —S. P. Break contact — Locking type.....	.90	.54
No. 2003 —S. P. Double Throw.....	1.00	.59
No. 2003L —S. P. Double Throw — Locking type.....	1.00	.59
No. 2004 —2 Pole —Make two contacts.....	1.20	.72
No. 2004L —2 Pole —Make two contacts — Locking type.....	1.20	.72
No. 2005 —2 Pole —Break two contacts.....	1.20	.72
No. 2005L —2 Pole —Break two contacts — Locking type.....	1.20	.72
No. 2006 —2 Pole —Double Throw.....	1.50	.88
No. 2006L —2 Pole —Double Throw — Locking type.....	1.50	.88
No. 2007 —2 Pole —Make two —Break one.....	1.30	.78
No. 2007L —2 Pole —Make two —Break one — Locking type.....	1.30	.78
No. 2008 —2 Pole —Double Throw — Make before break.....	1.65	.98
No. 2008L —2 Pole —Double Throw — Make before break — Locking type.....	1.65	.98

800 Type Wire Wound Resistance Units



Dissipate 2 $\frac{1}{2}$ watts per running inch of active winding space, which is $\frac{1}{2}$ " less than mounting centers.

Cat. No.	Resistance in Ohms	Carrying Capacity in Amperes	Mounting Centers	List Price	Your Cost
8005	0.5	1.50	1"	\$0.25	\$0.15
8006	0.66	1.25	1"	.25	.15
80075	0.75	1	1"	.25	.15
801	1	1	1"	.25	.15
8015	1.5	.75	1"	.25	.15
802	2	1	1"	.25	.15
803	3	.75	1"	.25	.15
804	4	.6	1"	.25	.15
805	5	.6	1"	.25	.15
806	6	.5	1"	.25	.15
807	7	.4	1"	.25	.15
808	8	.4	1"	.25	.15
809	9	.4	1"	.25	.15
810	10	.4	1"	.25	.15
815	15	.35	1"	.25	.15
820	20	.3	1"	.25	.15
825	25	.275	1"	.25	.15
830	30	.275	2"	.25	.15
840	40	.275	2"	.25	.15
850	50	.150	1"	.25	.15
860	60	.150	1"	.25	.15
8100	100	.125	1"	.35	.21
8200	200	.080	1"	.35	.21
8300	300	.075	2"	.35	.21
8400	400	.075	3"	.35	.21
81000	1000	.070	3"	.35	.21

Tapped Resistances

Same construction as the 800 type Resistors. The letter "C" in the catalog number indicates tapped in the center. No. 815T5 is tapped at 5 Ohms.

Cat. No.	Resistance in Ohms	Carrying Capacity in Amperes	Mounting Centers	List Price	Your Cost
806C	6	.5	1"	\$0.35	\$0.21
810C	10	.4	1"	.35	.21
812C	12	.37	1"	.35	.21
815C	15	.35	1"	.35	.21
815T5	15	.35	1"	.35	.21
820C	20	.3	1"	.35	.21
830C	30	.275	2"	.35	.21
850C	50	.15	1"	.35	.21
864C	64	.15	1"	.35	.21
8100C	100	.125	2"	.45	.27
8400C	400	.075	2"	.45	.27

Service Section

No. 29 Handy Tap



Polarized Radio Aerial and Ground Connector

A convenient device for connecting the aerial and ground wires from the set to the aerial and ground lead-in wires. Packed in an individual carton with mounting screw. Separate Polarized Caps available. (Catalog No. 30.) Fits Duo Tap and Handy Tap.

	List Price	YOUR COST
29	Each \$0.50	.30
30 Cap only.....	.20	.12

No. 32 Duo Tap

Surface Type Polarized Radio Aerial and Ground Connector in combination with 110-Volt receptacle



A handy device for extending the 110-v. wires to the radio set and providing a connector for set aerial and ground. Makes a neat workmanlike installation. Complete with special Polarized Cap and mounting screws. Separate Polarized Caps available.

	List Price	YOUR COST
32	Each \$0.75	.45
30 Cap only.....	.20	.12

Flush Handy Tap

Flush Type Polarized Radio Aerial and Ground Connector

For use where concealed aerial and ground connections only are required and power for your radio is furnished from another outlet. Made of Bakelite. The special Polarized Aerial and Ground Cap is included. Approved by Underwriters' Laboratories.

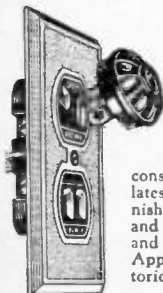
List Price, \$1.10

Your Cost, 65c



Duo Tap

Flush Type Polarized Radio Aerial and Ground Connector in combination with single 110-volt receptacle



Aerial and ground connections and power for your radio set all from a Single Gang Outlet. Made possible because of new construction and separator plate meeting latest Underwriters' requirements. Furnished complete with Polarized Aerial and Ground Cap, which insures correct and positive connections for your radio. Approved by Underwriters' Laboratories.

Furnished in brown bakelite

List Price, \$1.75

Your Cost, \$1.03

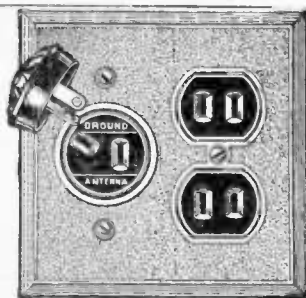
Duplex Duo Tap

Flush Type Polarized Radio Aerial and Ground Connector in combination with Duplex 110-volt receptacle

For use where concealed aerial and ground connections are desired in combination with DUPLEX electric receptacle. This gives an extra outlet for lamps, appliances, etc. Made of Bakelite. The Special Polarized Aerial and Ground Cap is included. Approved by Underwriters' Laboratories.

List Price, \$2.20

Your Cost, \$1.30



Insultenna Aerial Eliminator



A Startling Invention to Replace Outdoor and Indoor Antennas
The Insultenna is remarkably compact, measuring "only 5" x 2 1/2" x 1". May be installed anywhere. It can be conveniently placed in the console or cabinet. It contains a number of feet of a new type filtered aerial wire and condensers which give it the capacity of 75 feet of ordinary antenna.

Many installations and much experimenting prove the Insultenna is superior to any type of indoor aerial and except outdoor aerials of great length, has a capacity beyond that of the ordinary outside aerial. In many sections users of Insultenna report freedom from interference and "man-made" static formerly almost unbearable with the old type aerials.

The Insultenna is not a light socket antenna and has no connection with the electric light current line, hence eliminating any possibility of A.C. hum. There is, of course, no necessity of using a lightning arrester. The Insultenna is the 100% efficient, fool-proof modern aerial substitute.

List Price, \$2.50

Your Cost, \$1.47

Selectuner

Station Selector and Static Reducer Cuts Through Locals for DX Reception

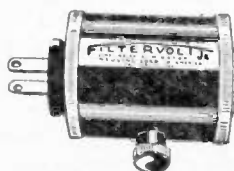
Selectuner separates stations over entire wave band on any type of receiver and cuts through the locals and enhances the quality of reception. Installed without the use of tools and does not require any circuit changes. Made of genuine Bakelite handsomely finished in gold and black. Small and compact. Can be installed in any convenient place.

List Price, \$1.50

Your Cost, 88c



Filtervolt, Jr.



The Filtervolt, Jr., is the now famous Light Duty Noise Eliminator that eliminates noises caused by electric heating pads, switching on and off of lights, electric toasters, vacuum cleaners, small motors of 1/4 horsepower or less, and minor disturbances caused by electric appliances. Filtervolt, Jr., is recommended to be installed at the source of interference. It may also be installed at the radio set. A small compact unit. Housing body made of black enameled metal with brass nickel-plated end rings. Packed in an attractive individual carton with a simple instruction sheet enclosed.

List Price, \$3.00

Your Cost, \$1.75

Resistovolt

The Tube Protector That Is Famous Throughout the World



The new Resistovolt stops tubes from blowing out and prevents them from being strained by excessive house current voltage. Whether A.C. or D.C. no electric or battery eliminator operated set should be without a Resistovolt.

Here are the facts: A New York survey by the "Electric World" shows that nationally sold radio sets are operated on line voltages rated between 100 volts and 127 volts. In addition to this wide fluctuation, local line voltages vary 30% or more. This means that tubes designed for 110 volts have to be operated anywhere from 95 to 135 volts. This voltage fluctuation often occurs not gradually but suddenly, such as when power house dynamos are shifted, thus bringing a tremendous strain on the tubes. The Resistovolt cures all this completely and so levels out the current supply as to give at all times the most efficient operating voltage for which the tubes were designed. The use of a Resistovolt guarantees the set operator against all tube losses, whether from blow-out or strain. In addition to saving tubes, the Resistovolt by controlling the surges of A.C. and D.C. current, clears up reception very noticeably by eliminating the fading so common with electric sets. Resistovolt plugs into house current outlet and set plugs into Resistovolt. Operates on A.C. or D.C. current. Made in two models: Light duty—for sets using up to six tubes; Heavy duty—for sets with over six tubes.

List Price, \$1.75

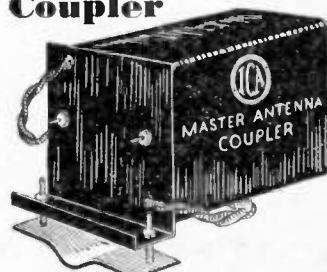
Your Cost, \$1.02

Master Antenna Coupler

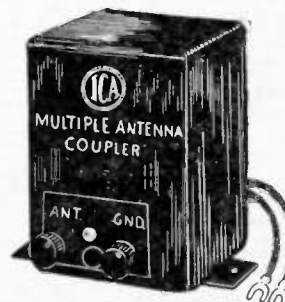
This unit permits the use of many sets from the same aerial. It permits sharp tuning and acts as a band pass filter, filtering out all aerial noises. It increases volume and also acts as a lightning arrester. The Master Antenna couples the antenna to the radio by means of condensers and chokes, tuning the antenna circuit to a frequency above or below the broadcasting range. The Master Antenna Coupler can operate up to twenty sets from one aerial when used in conjunction with a Multiple Antenna Coupler, as described below.

List Price, \$5.00

Your Cost, \$2.94



Multiple Antenna Coupler



The Multiple Antenna Coupler is placed at the radio set while the Master Antenna Coupler is attached to the outside aerial on the roof, thereby coupling the outside antenna to the radio sets in the building.

List Price, \$2.50

Your Cost, \$1.47

Service Section

"Inter-Air" Connectors

Supplied in different colors except where noted: R.B.—denotes red and black only, available in type mentioned. O.D.—denotes outside diameter.

Material will not burn or break and has a high dielectric

No. 2 PLUG



Set-screw to hold wire. Size $1\frac{1}{8} \times \frac{1}{8}$ " O.D.
Your Cost, \$0.07 each, or 80c per doz.

No. 10 PLUG



Spade with set-screw for wire, will fit binding posts. $1\frac{3}{4} \times 11/32$ " R.B.
Your Cost, 11c each, or \$1.15 per doz.

No. 11 PLUG



Same as No. 10, but has a closed terminal.
Your Cost, 11c each, or \$1.15 per doz.

No. 12 PLUG



Same as No. 10, but has straight spade.
Your Cost, 11c each, or \$1.15 per doz.

No. 15 PLUG



Spade hex. shank with chuck to hold wire, which fits an internal collar insuring a perfect hold on wire: $2\frac{1}{8} \times \frac{3}{8}$ " O.D. R.B.
Your Cost, 15c each, or \$1.65 per doz.

No. 16 CONNECTOR



Spade with round shank which pulls up the internal collet chuck and holds any ordinary size of wire used: $1\frac{1}{8} \times \frac{1}{8}$ " O.D.
Your Cost, 11c each, or \$1.15 per doz.

No. 21 PLUG

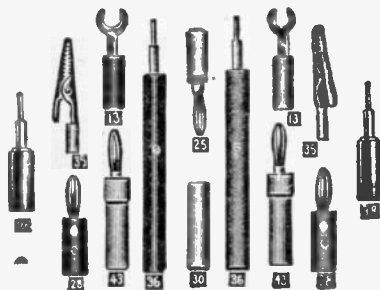


Most popular type of the line. Set-screw holds wire: $1\frac{1}{8} \times 11/32$ " O.D.
Your Cost, 11c each, or \$1.15 per doz.

No. 24 PLUG



Has simple chuck, split tip, low priced, can be used as prod: $2\frac{3}{8} \times \frac{1}{8}$ " R.B.
Your Cost, 11c each, or \$1.15 per doz.



SERVICE MAN'S TEST TERMINAL KIT

A Fitting for Every Conceivable Connection

Universal Test Kit: Contains fourteen pieces. All pieces are supplied in red and black for positive and negative respectively.

Your Cost, \$1.40

No. 25 PLUG



Has internal collet chuck. By inserting a phono needle into it a fine test prod can be made out of it. $1\frac{3}{4} \times \frac{1}{8}$ " R.B.
Your Cost, 11c each, or \$1.15 per doz.

No. 26 PLUG



Same as No. 25, but has a hole on side to tap off another plug.
Your Cost, 11c each, or \$1.15 per doz.

No. 29 PLUG



A divider plug, will divide one jack into four plugs. Has no hole at end for plug or wire: $1\frac{1}{8} \times 11/32$ " R.B.
Your Cost, 15c each, or \$1.65 per doz.

No. 32 COUPLING



Coupling to couple a wire lead to a plug: $1" \times 11/32$ " R.B.
Your Cost, 11c each, or \$1.15 per doz.

No. 35 CLIP



Crocodile clip, will take the plugs. The particular shape will allow it to fit tight places. Highly nicked and polished. Does away with soldering and a screw driver: $1\frac{1}{8} \times \frac{1}{4}$ " R.B.
Your Cost, 7c each, or 80c per doz.

No. 42 PLUG



Has set-screw under an insulated collar, milled end: $2\frac{1}{4} \times \frac{1}{8}$ " R.B.
Your Cost, 15c each, or \$1.65 per doz.

No. 44 PLUG



Has chuck and milled tip: $2\frac{1}{2} \times \frac{1}{8}$ " R.B.
Your Cost, 18c each, or \$2.05 per doz.

No. 45 PLUG



Heavier type, will hold larger wire and carry heavier currents: $2\frac{3}{8} \times \frac{1}{8}$ " R.B.
Your Cost, 21c each, or \$2.50 per doz.

No. 55 BINDING POST



Heavy duty type. Posts, colored, take our plugs, phone tips and wire. Head unremovable. Can't slip on panels: $1\frac{1}{4} \times \frac{1}{2}$ " R.B.
Your Cost, 11c each, or \$1.15 per doz.

No. 60 JACK



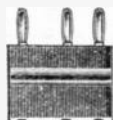
Colored jacks for metal panels, 2 nuts and soldering socket, fits all thicknesses of metal panels used: $1" \times \frac{3}{8}$ ".
Your Cost, 11c each, or \$1.15 per doz.

No. 61 JACK



Same as No. 60, but intended for insulation panels only.
Your Cost, 11c each, or \$1.15 per doz.

No. 79 MULTIPLUG



Has three plugs and is polarized to insure proper connection: $1\frac{1}{8} \times 1\frac{1}{4}$ " x $\frac{1}{2}$ ". Recommended for microphone work. Black.
Your Cost, 42c each

No. 80 MULTIPLUG



Has thumb inset, set-screw each side holds wire, etc.: $1\frac{3}{4} \times 1\frac{1}{8}$ " x $\frac{3}{8}$ ". Black only.
Your Cost, 31c each

COIL PLUG No. 111



Coil plug, hex. shank springs riveted to internal shaft: $1\frac{1}{8}$ ".
Your Cost, 11c each, or \$1.15 per doz.

COIL PLUG No. 112



Banana springs held by hexagon shank. A far superior plug to any now on the market: $1\frac{1}{4}$ ".
Your Cost, 7c each, or 80c per doz.

COIL PLUG No. 113



Milled type without shank, hole in end to solder wire in. Ideal for transmitter use: $1\frac{1}{4}$ ".
Your Cost, 7c each, or 80c per doz.

INSULATED SCREW DRIVER



Has a clip to carry in the pocket (insulated cap protects the pocket and can be used to see if connections are tight). Finger cap at one end, for holding with the index finger and on the other end a special chuck holds the removable bit which is case hardened. The insulated body is ribbed, $4\frac{1}{2}$ " long, supplied in black. All metal parts high nickel-polished except bit, which is blued and case-hardened.
Your Cost, 35c

Universal Battery Clips



	List Price Each	YOUR COST Per 10
No. 27 Copper, $2\frac{1}{4}$ " long.....	\$0.12 1/2	\$0.88
No. 24A Lead-coated, $2\frac{1}{2}$ " long..	.10	.70
No. 48B Lead-coated, $1\frac{3}{4}$ " long, Ten in standard box....	.05	.35
No. 45 Pee Wee, $1\frac{1}{2}$ " long....	.05	.35
No. 21A Lead-coated, $3\frac{3}{8}$ " long, Ten in standard box....	.20	1.40

Fahnestock Clip Connectors

No. 10—SMALL SINGLE-END CONNECTOR



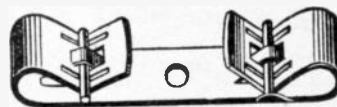
Your Cost, 12c per doz., or 95c per hundred

No. 28—SINGLE-END HEAVY CONNECTOR



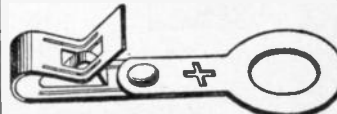
Your Cost, 15c per doz., or \$1.10 per hundred

No. 19—DOUBLE-END CONNECTOR



Your Cost, 30c per doz., or \$1.00 for fifty

No. 6—HEAVY BATTERY ATTACHMENT



Available with positive and negative markings.
Your Cost, 50c package of 25

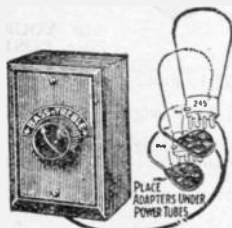
BUY TODAY ... Avoid Delay

A small outlay of money will purchase a good supply of this material.
ORDER NOW!

ACCESSORIES

Tone Controls

Bud Tone Control and Static Minimizer enables you to change the tone of radio stations and programs to suit your tastes and moods, in addition to minimizing static and background noises. A turn of the knob and treble or bass is at your command, also so designed that it can be attached to any radio set. Specify for 4- or 5-prong tubes.



No. 315

TYPE "A" SUPER TONE CONTROL

No. 315

Enclosed in bakelite case—size of control box, 4 1/8" x 2 7/8" x 2 1/2".

List Price, \$3.85

Your Cost,
\$2.10

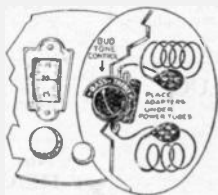
TYPE "B" SUPER TONE CONTROL

No. 316

Space required for mounting, 2"; to mount drill 3/8" hole; 6 1/2" panel up to 1" in thickness.

List Price, \$2.85

Your Cost,
\$1.65



Bud Plug-In Coil Forms



Made of special low-loss bakelite, have standard base to fit either 4- or 5-prong sockets. Winding space on coil form 2 1/2" and has an extended ridge on top so that coil form can be handled without having to take hold of the windings. Outside diameter of Bud Coil Form is 1 1/2" and has 8 ribs on the surface to permit low-loss air core windings. Coil forms can be supplied in the following colors: Brown, black, orange, red or green. Amateurs who prefer to wind their own coils will be pleased with this coil form.

4- or 5-prong coil forms

Brown or black

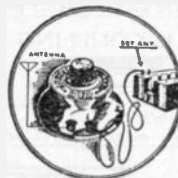
Your Cost, 21c each

Red, green or orange

Your Cost, 24c each

Bud Aerial Filter

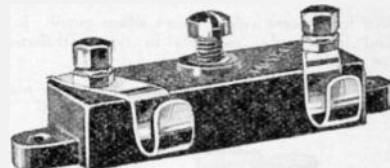
A highly successful aerial device. It absorbs and thus destroys signals of interfering stations, adding real selectivity and better sensitivity to your set. As the illustration shows it "filters" out the disturbing signals picked up by the aerial. Every set owner will want one. Housed in a beautiful brown bakelite case.



No. 217

Your Cost, 88c

"X-L" Variodensers



Model N

Has variable capacity, adjustable from 1.8 to 20 mmf., which is .000018 to .00002 mf.

List Price, \$1.00

Your Cost, 59c

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

List Price, \$1.50

Your Cost, 88c

Radio Frequency Choke Coils

80 M.H. for general use in short-wave and broadcast receivers. Very efficient. Distributed capacity is very low.

No. 270

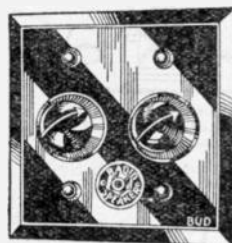
Your Cost, 59c



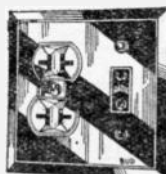
No. 271

30 M.H. for general use in short-wave and broadcast receivers. Its distributed capacity is very low.

Your Cost, 59c



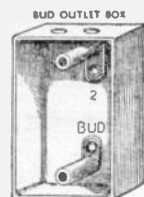
No. 1476-B



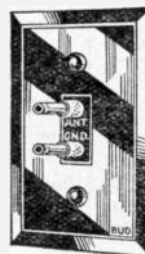
No. 242-B



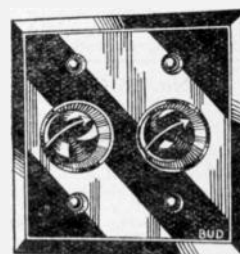
No. 176-B



No. 400



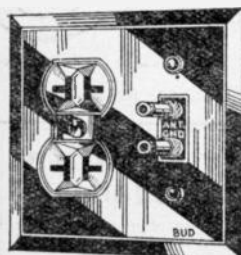
No. 136-B



No. 147-B



No. 176-B



No. 241-B

Complete Line of Radio Convenience Outlets

For Residences, Hospitals, Schools, Hotels, Apartments, Etc.

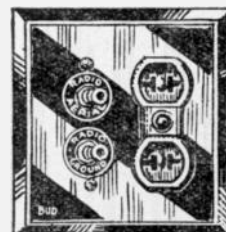
Made of Genuine Bakelite

No.	Connections	List Price	YOUR COST
*136B	Aerial and ground	\$0.85	\$0.50
*143B	Speaker with five-point selector switch	1.85	1.09
147B	Selector and volume control	3.50	2.06
158B	Aerial, ground and electrical connections	1.90	1.12
*163B	Speaker and switch	1.50	.88
*176B	Speaker or head phone connections with volume control ...	2.50	2.06
241B	Aerial, ground and electrical connections	1.90	1.12
242B	Speaker or head phone and electrical	1.90	1.12
400	Bakelite outlet box will fit any one-gang plate .....	.65	.39
1476B	Speaker or head phones, selector switch and volume control..	3.85	2.27

* Convenience outlets will fit No. 400 Bud Outlet Box.



No. 163-B



No. 158-B

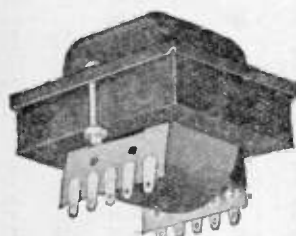
Thordarson

Manufacturers' Types Transformers and Chokes

For years Thordarson has specialized in supplying leading radio receiver manufacturers with their requirements of transformers and chokes. The more popular types are now available to custom set builders and service men. The power transformers are all supplied for "Thru Chassis" mounting and have soldering lug terminals. The audio transformers and chokes are mounted in open type frames with wire leads.

Replacement Transformers and Chokes

Thordarson Replacement Transformers are standards of the industry. Their flexibility of design makes them universally adaptable to the service trade. Thordarson's manufacturing skill and experience insure lasting satisfaction. The design is liberal; workmanship the best; quality the finest. All power transformers are designed to operate on 115 volts, 50-60 cycles.



T-5002 T-4900 T-5003

Power Transformers

Thordarson offers three types of different capacities. The transformers bolt directly to the chassis with the terminal lugs protruding below for convenient assembly. A cup shield covers the top of the transformer. Primary—115 volts, 50-60 cycles.

Type T-5002	Size 3 3/8" x 2 7/8"	Sec. 1—2.5v @ 5 a. C.T. Sec. 2—5v @ 2 a. Sec. 3—670v C.T. @ 40 M.A.	List Price \$3.50 YOUR COST \$2.06
Type T-4900	Size 3 1/4" x 4"	Sec. 1—2.5v @ 8.5 a. C.T. Sec. 2—5v @ 2 a. Sec. 3—675v C.T. @ 70 M.A.	4.00 2.36
Type T-5003	Size 3 1/4" x 4"	Sec. 1—2.5v @ 12 a. C.T. Sec. 2—5v @ 2 a. Sec. 3—760v C.T. @ 80 M.A.	4.50 2.65



T-2999 T-3391 T-3399

Type T-2999 Audio Transformer

This is an audio coupling transformer made specifically for set manufacturers. It has a very good response over the entire audio frequency band. Adaptable to use in any audio device. Turn Ratio 3 to 1. Size—1 7/8" x 2" x 2 1/4" high. Weight—1 1/4 lbs.

List Price, \$1.75

Your Cost, \$1.03

Type T-3391 Input Audio Transformer

This is a push-pull input coupling transformer of excellent audio frequency response. The overall turn ratio is 3 to 1. It can be used in all conventional push-pull circuits. Size—1 7/8" x 2" x 2 1/4" high. Weight 1 1/4 lbs.

List Price, \$2.00

Your Cost, \$1.18

Type T-3399 Output Audio Transformer

This push-pull output transformer is designed to couple a pair of 245 or 171 tubes to the voice coil of a dynamic speaker having an impedance of about 7 ohms. The turn ratio is 33 to 1. Size—1 7/8" x 2" x 2 1/4" high. Weight 1 1/4 lbs.

List Price, \$1.75

Your Cost, \$1.03

T-4707

Type T-4707 Choke Coil

This is an iron core filter choke, designed for use by set manufacturers, that is adaptable to all types of service use. It has an inductance of 19 henries measured at 25 volts A.C. It has a current carrying capacity of 80 m.a. D.C. Size—2 3/8" x 2 1/4" x 2 1/8" high. Weight 2 1/3 lbs.

List Price, \$1.75

Your Cost, \$1.03

T-3381 Power Transformer

A unit designed for circuits using 226 and 171 tubes. It has the following characteristics: Sec. No. 1—5 volts at 1/4 ampere (1-171A tube); Sec. No. 2—1.5 volts at 2 amperes (2-226 tubes); Sec. No. 3—5 volts at 2 amperes with C.T. (280 rectifier fil.); Sec. No. 4—600 volts with C.T. at 60 milliamperes (high voltage); Sec. No. 5—1.5 volts at 3 amperes (3-226 tubes); Sec. No. 6—2.5 volts at 2 amperes (227 detector fil.). The overall dimensions are 3 3/4" x 4" x 4" high. Weight—4 1/4 lbs.

List Price, \$5.00

Your Cost, \$2.94

T-2971 Power Transformer

A unit designed for circuits requiring push-pull 171's and 226 tubes. The secondaries are: No. 1—5 volts at 1/2 ampere with C.T. (2-171A tubes); No. 2—2.5 volts at 2 amperes (227 detector); No. 3—1.5 volts at 1 ampere (226 tubes); No. 4—1.5 volts at 3 amperes (3-226 tubes); No. 5—5 volts at 2 amperes with C.T. (280 fil.); and No. 6—650 volts with C.T. at 70 milliamperes (high voltage). Dimensions—3 3/4" x 4" x 4" high. Weight—4 1/4 lbs.

List Price, \$5.00

Your Cost, \$2.94

T-3624 Power Transformer

A unit for heater type tubes and push-pull 245's. It has secondaries as follows: No. 1—730 volts with C.T. at 100 milliamperes (high voltage); No. 2—5 volts at 2 amperes with C.T. (280 fil.); No. 3—2.5 volts at 3 amperes (2-245's); and No. 4—2.5 volts at 9 amperes (5 heaters). Overall dimensions 3 3/8" x 4 1/2" x 4 1/8". Weight 6 1/4 lbs.

List Price, \$7.00

Your Cost, \$4.12

T-3740 Power Transformer

A sub-panel mounting unit for heater type tubes and 245's in push-pull. It has secondaries as follows: No. 1—2.5 volts at 9 amperes with C.T. (5 heaters); No. 2—2.5 volts at 3 amperes with C.T. (2-245's); No. 3—750 volts with C.T. at 110 milliamperes (high voltage); No. 4—5 volts at 2 amperes (280 fil.). Overall dimensions 3 3/4" x 3 3/8" x 5 7/8" high. Weight 6 1/4 lbs.

List Price, \$6.00

Your Cost, \$3.53

Type R-100 Replacement Audio

A replacement audio transformer of low cost and unflinching service. Very satisfactory response over useful audio frequency range. Equipped with universal mounting bracket. Size—2 1/8" x 1 1/2" x 2". Weight 1 lb.

List Price, \$1.75

Your Cost, \$1.03

Type R-103 Replacement Audio

A replacement audio transformer larger than the R-100 for work requiring the best audio response. Response extends well into the low and high registers without resonance peaks. Universal mounting. Size—2 3/8" x 1 7/8" x 2". Weight 1 1/2 lbs.

List Price, \$2.00

Your Cost, \$1.18

Type R-101 Push-Pull Input

A high-grade push-pull input transformer for service work. Is equipped with universal mounting bracket and convenient soldering lugs for connection. Suitable for use with all standard power tubes. Size—2 3/8" x 1 7/8" x 2". Weight 1 1/2 lbs.

List Price, \$2.25

Your Cost, \$1.33

Type R-102 Push-Pull Output Choke

A unit of the highest quality designed to couple '71 or '45 tubes in push-pull to a high impedance speaker or to the coupling transformer of a dynamic speaker. Size—2 3/8" x 1 7/8" x 2". Weight 1 1/2 lbs.

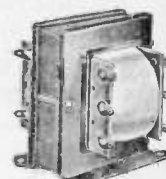
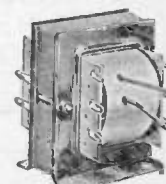
List Price, \$2.00

Your Cost, \$1.18

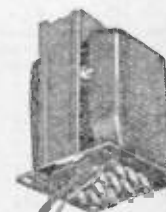
Type R-105 Replacement Choke

Designed to replace defective or inadequate filter or speaker coupling chokes in circuits where it is not required to carry more than 75 milliamperes of current. Furnished with universal mounting and solder lugs. Size—2 3/8" x 1 7/8" x 2". Weight 1 1/2 lbs.

List Price, \$1.75

Your Cost, \$1.03T-3381
T-2971

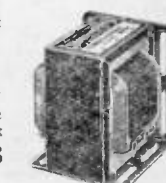
T-3624



T-3740



R-100

R-101
R-102
R-103
R-105

Genuine PHILCO Replacement Parts

The parts listed on this page are Genuine Philco Parts recommended for use in repairing Philco sets and equipment. Each and every part is guaranteed by the Philco factory and the M & H Company. Philco parts are made for Philco sets; use no substitute. It's to your own advantage to replace with an exact interchangeable part at lower prices. The first column is the model of the set—then follow the columns through for parts needed. All Philco merchandise is extremely well made and carries a very liberal and fair guarantee.

Model	Dials	Drive Belts	Electrolytic Condensers	Field Coils	Filter Chokes	Filter Condensers	Friction Drives	Pilot Lamps	Resistors	Speaker Cones	Switches On and Off	Transformers Input	Transformers Output	Transformers Power	Tone Control	Volume Control
3	\$0.21	...	...	\$5.40	...	...	...	\$0.18	...	\$0.45	\$0.75/.60	...	\$1.20	...	...	\$0.75
4	...	...	\$1.05	...	\$0.90	...	...	.12	\$0.30	...	.75	...	...	\$2.10	...	.75
7	...	...	...	5.40	...	...	...	.18	...	.45	.90	...	.75/1.05	...	...	.90
15	.12	\$0.15	.90	...	1.50	...	...	.09	...	.75	\$1.95	.84	...	\$0.27	...	.60
20	.24	...	...	.75	.90	\$2.25	\$0.12	.12	...	.45	.30	1.35	1.20	4.20	...	.75
21	.24	...	1.20	.75	.90	...	.12	.12	.27	.45	.30	1.35	1.20	4.20	...	.75
30	...	...	...	.24	...	...	...	.36	.36	...	.30	...	1.65	1.65	.33	.90
35	...	...	...	...	...	...	...	.36	...	...	.99	...	...	1.35	.99	.90
35B	...	...	...	.39	...	...	...	.36	...	...	.99	...	...	1.35	.24	.90
50	.24	...	1.05	1.05	...	.75	.12	.12	...	.36	.24	...	.75	2.55	...	.75
51	.24	...	1.05	1.05	...	.66	.12	.12	.51	.36	.24	...	.75	2.55	...	.45
52	.24	...	1.05	1.05	...	.66	.12	.12	...	.36	.24	...	.75	2.55	...	.45
65	.09	.15	...	1.95	1.50/1.65	5.55	...	.12	.75	.39	.30	2.10	1.20	6.00	...	.60
70*a	.36	...	1.05	1.35	.90	...	.19	.12	.27	.45	.30	...	1.20	3.90	.24	.90
70*b	.36	...	1.05	1.35	.90	.60	.19	.12	.27	.45	.30	...	1.20	3.90	.18	.45
71	...	.15	.93/1.05	...	...	.40	...	.09	.10	...	.24	...	.75	2.25	.21	.48
76	.09	.15	...	1.95	1.50	3.75	...	.12	.76	.39	.30	1.80	1.20	5.40	...	.39
77	.12	.15	...	1.95	1.50	3.75	...	.12	.60	.39	.30	1.80	1.20	5.40	.33	.75
86	.09	.15	...	1.95	2.25	9.00	...	.18	.96	1.50	.24	1.65	1.20	4.20	...	.84
87	.12	.15	...	1.95	1.50/2.25	7.50	...	.12	.75	.39	.33	1.65	1.20	6.30	...	.84
90*c	.36	...	1.05	1.35	.90	...	.19	.12	.33	.39	.30	1.65	1.20	4.20	.33	.90
90*d	.36	...	1.05	1.35	.90	...	.19	.12	.24	.39	.30	...	1.20	3.25	.27	.45
90*e	.36	...	1.05	1.35	.90	.60	.19	.12	...	.39	.30	1.35	1.20	3.00	.33	.45
91	...	.15	1.05	...	.90	...	...	.09	...	...	.24	1.35	.81	2.85	.30	.48
95	.09	.15	...	1.95	1.50	3.90	...	.12	.60	.39	.30	2.10	1.20	4.95	...	.93
96	.12	.15	...	1.95	1.50	3.90	...	.12	.60	.39	.30	2.10	1.20	4.95	.33	.84
111	.12	.15	...	1.95	1.50	3.90	...	.12	.27	.39	.30	2.10	1.20	4.95	.33	.84
112*f	.12	.15	...	3.00	1.50	3.90	...	.12	.27	.39	.30	2.10	1.20	4.65	.33	.84
112*g	.12	.15	1.05	3.00	.90	1.05	...	.12	...	.39	.30	1.95	1.20	4.20	.30	.84
511	.09	.15	...	...	...	7.20	...	.18	.99	1.15	.45	...	...	4.20	...	.84

*a—Without automatic volume control.

*b—With automatic volume control.

*c—Using 2-45 tubes.

*d—Using 1-47 tubes.

*e—Using 2-47 tubes.

*f—Using 2-45 tubes.

*g—Using 2-47 tubes.

PHILCO By-Pass Condensers

Condenser 3615 .05 Mfd.					Condenser 3793 .015 Mfd.				
Part No.	Cond. Cap. Mfd.	Wire Resis. Ohms	Lugs Used	Dealer Net Price	Part No.	Cond. Cap. Mfd.	Wire Resis. Ohms	Lugs Used	Dealer Net Price
*B	.05	250	1-3-5	\$0.18	B	.015	...	5-7	\$0.10
*C	.05	250	1-5-7	.18	C	.015	...	2-4	.10
*D	.05	...	1-3-5	.11	D	.015	...	2-6	.10
*E	.05	...	2-5	.12	E	Twin .015	...	1-5-7	.12
*F	.05	...	2-3-5	.12	F	.015	...	5-7-8	.12
*G	.05	...	5-8	.10	G	.015	...	2-3-6	.10
*H	.05	...	3-5-8	.12	H	Twin .015	...	1-3-5	.12
*I	.05	...	1-5-7	.11	I	.015	...	2-5-7	.12
*K	.05	250	3-5-8	.18	K	Twin .015	...	1-3-5-8	.12
*L	.05	...	1-5	.10	L	Twin .015	...	5-7-8	.15
*M	.05	...	2-5-7	.11	M	Twin .015	...	5-7-8	.15
*N	.05	...	1-4-7	.12					
*P	.05	250	1-4-7	.18	Condenser 3903 .01 Mfd.				
*R	.05	250	1-5-7	.18	Part No.	Cond. Cap. Mfd.	Wire Resis. Ohms	Lugs Used	Dealer Net Price
*S	.05	...	1-4	.10	F	.01	...	3-5	\$0.09
*T	.05	150	1-5-7	.18	G	.01	...	2-4-7	.10
*U	.05	...	1-5-7	.10	H	.01	...	5-8	.10
*W	.05	...	1-2-5	.10	J	.01	...	2-5-7	.12
*X	.05	150	1-2-5-7	.18	K	.01	...	1-2-4-7	.10
*Y	.05	150	1-2-5-7	.27	L	.01	...	3-5-8	.10
AA	.05	...	1-3-5-8	.20	M	.01	...	4-7-8	.10
AB	.05	...	1-4-7-8	.20	N	.01	...	3-5-8	.10
AC	.05	...	1-5-7-8	.20	P	.01	...	2-5-7	.12
AD	.05	...	3-5-8	.20	R	.01	...	4-7-8	.10
AE	.05	...	1-7-8	.20	S	Twin .01	...	1-5-7	.12
AF	Twin .05	...	4-7-8	.25	T	.01	...	5-7-8	.10
AG	.05	...	1-3-5	.20	U	.01	...	1-2-5-7	.12
AH	.05	...	1-5	.20	W	.01	...	2-4-7	...
AJ	Twin .05	...	1-3-6-8	.25	X	.01	...	3-5-8	.12
AK	.05	...	1-5-7-8	.20					

* Combined with Resistor.

Condenser 4989 .09 Mfd.

Part No.	Cond. Cap. Mfd.	Wire Resis. Ohms	Lugs Used	Dealer Net Price	Part No.	Cond. Cap. Mfd.	Wire Resis. Ohms	Lugs Used	Dealer Net Price
B	Twin .09	...	1-3-5	\$0.13	H	Twin .09	...	1-5	\$0.13
C	Twin .09	...	1-5-7	.15	J	.09	...	3-5	.10
D	.09	...	1-5	.12	K	Twin .09	...	3-5	.15
E	.09	250	1-5-7	.21	L	.09	200	3-4-8	.15
F	.09	...	1-5-7	.11	M	Twin .09	...	4-7-8	...
G	Twin .09	...	1-4-7	.15					

MICA Condensers

Cap. Mfd.	Color Code	Part No.	Net Dealer Price
.000025	Blue and Blue	6897	\$0.11
.000035	Green and Yellow	4990	.11
.00005	White	3774	.15
.00011	Blue and Yellow	4519	.11
.00025	Yellow	3082	.12
.00041	Yellow and Orange	5120	.11
.0005	Green	3910	.12
.0006	Orange and Orange	6898	.11
.0007	White and Yellow	5863	.11
.0008	Green and Orange	6021	.12
.0010	Green and White	5215	.12
.00125	Blue and Orange	6773	.15
.0014	Red and Red	7007	.15
.0015	Red and White	7139	.15
.00165	Green and Blue	5877	.18
.0018	White and White	6022	.15
.002	Blue	6853	.18
.0025	Red	7006	.18
.003	Orange and White	6009	.18
.006	Orange	5981	.24

Condenser Replacement Sections

(Uncased)

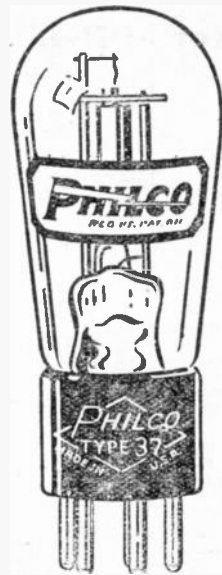
Capacity Mfd.	No. of Papers	Test Voltage	Part No.	Net Dealer Price
.1	3	2000	7068	\$0.08
.25	3	2000	7067	.15
.5	3	2000	7066	.20
1.0	3	2000	7065	.30
2.0	3	2000	7064	.60

PHILCO Resistors with R. M. A. Color Code

Resistance (Ohms)	Power (Watts)	Philco Part No.	Body	R M A COLOR Tip	Dot	Dealer Net Price
1,000	1	4590	Brown	Black	Red	\$0.15 each
2,000	1	4515	Red	Black	Red	.15 each
5,000	1	3526	Green	Black	Red	.15 each
10,000	1	3524	Brown	Black	Orange	.15 each
13,000	1	3766	Brown	Orange	Orange	.15 each
15,000	1	5278	Brown	Green	Orange	.15 each
20,000	1	6649	Red	Black	Orange	.15 each
25,000	1	3656	Red	Green	Orange	.15 each
32,000	1	3525	Orange	Red	Orange	.15 each
51,000	1	4237	Green	Brown	Orange	.15 each
70,000	1	3542	Violet	Black	Orange	.15 each
99,000	1	3767	White	White	Orange	.15 each
190,000	1	5023	Brown	White	Yellow	.15 each
240,000	1	3768	Red	Yellow	Yellow	.15 each
490,000	1	3769	Yellow	White	Yellow	.15 each
1,000,000	1	4414	Brown	Black	Green	.15 each
1,000	2	3655	Brown	Black	Red	.30 each
15,000	2	5718	Brown	Green	Orange	.24 each
20,000	2	5649	Red	Black	Orange	.24 each
51,000	2	5868	Green	Brown	Orange	.21 each
5,000	.33	6096	Green	Black	Red	.12 each
51,000	.33	6098	Green	Brown	Orange	.12 each
99,000	.33	6099	White	White	Orange	.12 each
490,000	.33	6097	Yellow	White	Yellow	.12 each
1,000	.5	5837	Brown	Black	Red	.15 each
2,900	.5	5309	Red	White	Red	.15 each
5,000	.5	5310	Green	Black	Red	.15 each
8,000	.5	5838	Gray	Black	Red	.15 each
10,000	.5	4412	Brown	Black	Orange	.15 each
15,000	.5	6208	Brown	Green	Orange	.15 each
20,000	.5	6650	Red	Black	Orange	.15 each
25,000	.5	4516	Red	Green	Orange	.15 each
32,000	.5	5279	Orange	Red	Orange	.15 each
45,000	.5	5256	Yellow	Green	Orange	.15 each
51,000	.5	4518	Green	Brown	Orange	.15 each
70,000	.5	5385	Violet	Black	Orange	.15 each
99,000	.5	4411	White	White	Orange	.15 each
160,000	.5	5331	Brown	Blue	Yellow	.15 each
240,000	.5	4410	Red	Yellow	Yellow	.15 each
330,000	.5	6046	Orange	Orange	Yellow	.15 each
490,000	.5	4517	Yellow	White	Yellow	.15 each
1,000,000	.5	4409	Brown	Black	Green	.15 each
2,000,000	.5	5872	Red	Black	Green	.15 each
4,000,000	.5	6010	Yellow	Black	Green	.15 each

PHILCO—Balanced Tubes

Philco High-Efficiency Tubes Are Better by Test



EVERY TUBE GUARANTEED

Type	Volts	List Price	YOUR COST
00A	5	Det. \$4.00	\$2.16
01A	5	Det. Amp. .. .80	.44
2	8	Ballast 1.10	.60
3	128	Ballast 1.75	.95
4		Ballast 1.60	.87866

Philco Balanced Tubes Make Any Radio a Better Receiver

Genuine RCA-Victor Replacement Parts

Not Surplus
Salvage Material
Guaranteed
No Substitutes

We can furnish any part for any model Victor or RCA-Victor Radio or Combination Phonograph and Radio. Also parts for amplifiers and speakers.

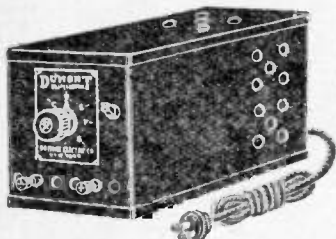
Send us the part number and the model of the set it is used in and we will supply you with same at a discount of 40%.—Play Safe—Buy the Genuine.

Model	Condenser Bank		Power Transformer		Volume Control		Voltage Divider		Speaker Cone with Voice Coil	
Number of Set	Part Number	YOUR COST	Part Number	YOUR COST	Part Number	YOUR COST	Part Number	YOUR COST	Part Number	YOUR COST
18 A.C.	*8333	\$4.44	8335	\$8.74	5901	\$1.17	{ 2242 2243	{ \$0.48 .75		
30 A.-A.C.	{ 5673-12MFD 5674-15MFD 5345-4MFD 5373-20MFD 5380-10MFD	{ 9.00 8.40 7.38 11.40 6.30	8274	10.20	2019	.90	{ 2020 2021	{ 1.14 1.53	8359	\$0.84
32 A.C.			8229	20.49	2019	.90	2023	1.50	9205	3.54
33 A.C.	*8333	4.44	8335	8.74	5901	1.17	{ 2242 2243	{ .48 .75		
41 A.C. Using Model "R" Amplifier	{ 8404	7.20	8405	9.90	5680	.72	2386	1.08	8375	2.70
41 A.C. Using Model "S" Amplifier	{ 8397	10.80	8399	9.90	5680	.72	{ 2381 2382		8375	2.70
44	*8476	11.40	8472	7.80	6005	.88	{ 2543 2544	{ 1.23 1.41		
46	*8476	11.40	8472	7.80	6005	.88	{ 2543 2553	{ 1.23 1.17	8375	2.70
47	*8476	11.40	8472	7.80	6005	.88	{ 2543 2553	{ 1.23 1.17	8375	2.70
50	8289	11.52	8287	7.20	5680	.72	2033	1.62	8359	.84
51	*8333	4.44	8335	8.74	2206	1.08	{ 2242 2243	{ .48 .75	8359	.84
60	*8346	9.90	8344	8.74	5811	1.14	{ 5816 5817 5810	{ .54 .54 .72		
62	8382	9.90	8344	8.74	5811	1.14	{ 5816 5817 5810	{ .54 .54 .72	8375	2.70
64	8368	18.36	8373	14.85	2336	1.05	{ 2342 2343	{ 1.77 1.77	8375	2.70
66	*8487	8.55	8483	8.74	6027	.88	6031	1.77	8375	2.70
67	8504	16.92	8501	16.20	2336	1.05	{ 2596 2597	{ 1.50 1.38	8375	2.70
80-82-86	8553	9.60	8556	7.20	7061	3.60			8558	2.40
R-32, R-52, RE-45 and RE-75	10417	7.20	10415	7.20	10450	1.50	10407	1.50	10792	5.40
R-34, R-35, R-39 and RE-57	10909	9.60	10917	7.20	10826	1.50			8558	2.40
RCA Radiolas 42 and 48	8614	7.20	8609	6.00	7129	1.38	7117	.90	8601	1.80
Victor Models R-14, R-15, RE-17										

Prices quoted represent a discount of 40% from the list price.
*Denotes assembly contains filter condenser and output choke.

Service Section

Dumont "A" Eliminator

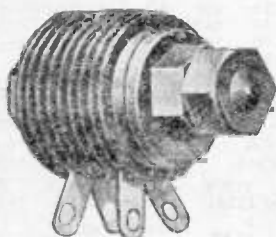


This Eliminator is made of the best parts and material that money can buy; it is very sturdy and well built, has no loose or moving parts and is not filled with wax to conceal poor material and workmanship. It is built like a battleship and is good for years of dependable service. You can be proud to own this apparatus and feel sure it will give you desired service.

Specifications—B-12 Benwood Linze Dry Rectifier; low-resistance high-grade choke coils; high-grade power transformer; 2—2,000 M.Fd. dry, long-life condensers; power rheostat; on-and-off switch.

Your Cost, \$8.95

Type "F" "B-L" Rectifiers

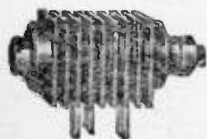


For relays, electromagnetic counters, industrial control devices, time recorders and all other instruments which require relatively small amounts of D.C. power.

TYPE "F" FULL-WAVE RECTIFYING UNITS

D. C. M. V.	Type A. No.	Max. Safe		Overall Dimensions in Inches	List Price	YOUR COST
		Req. A.C. (App.) V.	Open Cir. V.			
4	250 F-8	7.0	8.0	$\frac{7}{8} \times 1\frac{1}{8} \times 1\frac{1}{8}$	\$2.40	\$1.40
5	100	8.0				
6	250 F-16	12.0	15.0	$\frac{7}{8} \times 1\frac{1}{8} \times 2\frac{1}{8}$	3.00	1.77
7	100	13.0				
8	250 F-24	16.5	20.0	$\frac{7}{8} \times 1\frac{1}{8} \times 2\frac{1}{8}$	3.60	2.12
9	100	18.0				

"B-L" Rectifier Unit



For replacement in many types of chargers and A-Powers which have been specially designed for the B-L (Benwood - Linze), unit. Don't discard the complete A-Power when a new unit will make it as good as ever.

Type B-12—Used in Acme, Airline, Arco, Cooper, France, Green Brown Type P, King, Knight, Sterling, Stewart, Transf. Corp., No. 646; Triple A, U. S. L., Valley Type MB, and others.

List Price, \$4.00

Your Cost, \$1.95

Type B-16—Used in Green Brown Type D, Norden Hauck, Tobe Deutschmann, Valley Type DMA, and others.

List Price, \$5.00

Your Cost, \$2.94

"B-L" Trickle Charger Unit

Replacement unit for replacing the wet charger jar. Increases the charging rate of old chargers and eliminates the constant care.

Type A-20 used on Acme, Balkite, France, Gould, Johnson, Silite, Stewart, Unitron, U. S. L., Vesta.

List Price, \$4.00

Your Cost, \$2.36

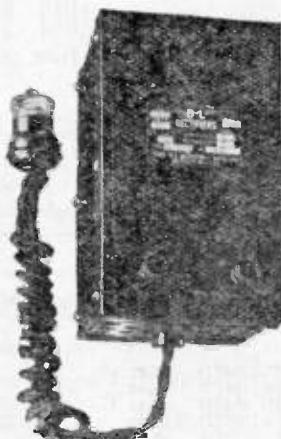
Type A-40-P used on Philco A-Power or Trickle Charger.

List Price, \$4.00

Your Cost, \$2.36



B-L Battery Booster



The B-L Battery Booster is a small, powerful device that takes energy from the light socket and keeps your battery fully charged for snappy starting without cranking... It can also be used as a regular charger... Charges all night at a cost of approximately two cents. There is no danger of overcharging — it "tapers" off automatically when the battery is fully charged, eliminating danger of damage to battery from overcharging.

List Price, \$9.75

Your Cost, \$5.75

Parts Replacement Jars

for Philco "B" Eliminators

"Repleno" Rectifier Cells are guaranteed to give satisfactory service and full charging rates in Power Units properly designed for their use.

Set of Four, List Price, \$4.00

Your Cost, \$2.00

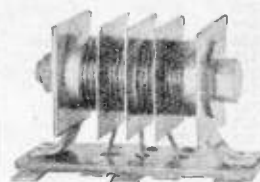


M & H Has Everything for the Service Man

Carrying a large stock of standard merchandise you can safely place your order with us and be sure that it will be shipped to you promptly. You get what you want. We do not substitute.

ELKON REPLACEMENT RECTIFIERS

For "A" Powers and 3 Ampere Chargers



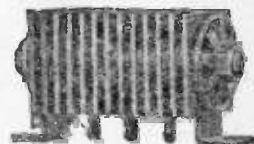
Elkon Dry Rectifiers have been standard equipment on practically all "A" Eliminators. Hundreds of thousands of their units have been sold. This season, practically all of the "A" Eliminators and 3 Ampere Chargers still in use will need new rectifiers. Any one can make the change, nothing complicated.

Type XB-16
(Formerly Type M-16)

List Price, \$7.00

Your Cost, \$4.12

For Trickle and Tapering Chargers



Type X-12
(Formerly Type U-12)

Thousands of trickle and tapering chargers using Elkon Dry Rectifiers have been sold, which will need replacement this year. There is nothing to wear out in any of these chargers but the rectifiers should be replaced every five thousand hours. Be sure to order the proper rectifier for the charger. Type X-12 (U) should be used in the following:
Elkon—Type E Song Bird WLS

Type X-12—
\$4.00 list each

Your Cost, \$2.36

For Dynamic and Other Moving Coil Speakers



Type X-20
(Formerly Type U-20)

The Elkon dry rectifiers have been used as standard equipment on the leading dynamic speakers (A.C. types). Be sure that you order the right rectifier for replacement—look at the name plate for the type number.

Type X-20
Fada
Farrand
Amervox

Type XB-16
Farrand
Stevens
Amervox
Vitalitone

Type X-20, \$7.00 List

Your Cost, \$4.12

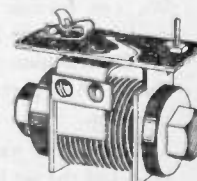
Type XB-16, \$7.00 List

Your Cost, \$4.12

Elkon XP-8

The Replacement Rectifier for
PHILCATRON
"A" and "AA"

Replaces the wet jar rectifiers (designated as the Philcatron A and Philcatron AA) used in Philco Trickle Chargers, Philco "A" Eliminators and Philco A and B combinations.



Type XP-8
Formerly Type UP-8

List Price, \$4.00

Your Cost, \$2.36

KENYON Universal Replacement Transformers

Overall Dimensions	3 3/4 x 4 1/8 x 3 3/8
Mounting Dimensions, Small Side	1 1/8 to 2 1/8 x 1 1/8 to 2 1/8
Mounting Dimensions, Large Side	1 1/8 to 2 1/8 x 1 1/8 to 3 1/8
Primary	115 Volts, 50/60 cycles
High Voltage Secondary	700 Volts C.T., 125 M.A.
Filament Winding 1	5 Volts, 2 Amp.
Filament Winding 2	2.5 Volts C.T., 3 Amp.
Filament Winding 3	2.5 Volts C.T., 10 1/2 Amp.

KR-1 List Price, \$5.25
Your Cost, \$3.09

KR-2 List Price, \$4.00
Your Cost, \$2.36

KR-3 List Price, \$4.00
Your Cost, \$2.36

3 1/8 x 3 3/4 x 2 1/8
1 1/8 to 2 1/8 x 3/4 to 2 1/8
1 1/8 to 2 1/8 x 1 1/8 to 3 1/8
115 Volts, 50/60 Cycles
580 Volts C.T., 85 M.A.
5 Volts, 2 Amp.
1.5 Volts, 4.2 Amp.
2.5 Volts C.T., 1.75 Amp.
5 Volts C.T., 1.5 Amp.

3 1/8 x 3 3/4 x 2 1/8
1 1/8 to 2 1/8 x 3/4 to 2 1/8
1 1/8 to 2 1/8 x 1 1/8 to 3 1/8
115 Volts, 50/60 Cycles
650 Volts C.T., 60 M.A.
5 Volts, 2 Amp.
2.5 Volts C.T., 1.5 Amp.
2.5 Volts C.T., 8.5 Amp.

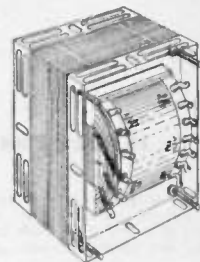


CHART INDICATING REPLACEMENTS FOR STANDARD RADIO SETS

Manufacturers	Model No.	Trans. No.
A. C. Dayton Co.	A. C. 63	KR-2
Acme Electric Co.	A. C. 7	KR-2
All-American Mohawk Corp.	No. 96	KR-1
All-American Mohawk Corp.	D (Lyric)	KR-1
American Bosch Mfg. Corp.	Model 48, 58, 60	KR-1
Apex	41, 42, 46, 47, 48	KR-1
Atwater-Kent	Model 36, 37, 38	KR-2
Atwater-Kent	Model 40, 42, 43, 44, 52	KR-2
Atwater-Kent	Model 55 & 55C	KR-1
Balkite Product Co.	Model C	KR-1
Balkite Product Co.	Model F	KR-1
Brandeis Kolster	930, K43	KR-1
Brandeis Kolster	6K, 7AC, K20, 22, 25, 27, 37, & 42	KR-2
Bremer Tully Mfg. Co.	B. T. 6-40	KR-2
Bremer Tully Mfg. Co.	B. T. 7-70 & 7-71	KR-2
Browning Drake Co.	M. B. 30, 69, 70 & 71	KR-1
Brunswick Radio Corp.	81-22	KR-1
Brunswick Radio Corp.	(Panatrope) S-31	KR-1
Brunswick Radio Corp.	5-14-821-B, T. S., 81-S, 82	KR-1
Brunswick Radio Corp.	5KR, 5KRO, 2KRO, 3KRO, 3KRO	KR-2
Brunswick Radio Corp.	5KR6	KR-2
Brunswick Radio Corp.	15 & 22	KR-1
Bush & Lane Piano Co.	No. 12 S. G.	KR-1
Colonial Radio Corp.	Model 32 A. C.	KR-1
Columbia Phone Co.	C1, C3, C2 & C4, 930	KR-2
Columbia Phone Co.	S. G. 8	KR-1
Crosley Radio Corp.	30S, 31S, 33S, 34S	KR-1
Crosley Radio Corp.	40S, 41S, 42S, 82S	KR-1
Crosley Radio Corp.	60S, 70A, 70AB, 70B	KR-2
Crosley Radio Corp.	610, 609 A. C., 41A & 42 A. C.	KR-2
Eveready	40, 50	KR-1
F. A. D. Andrea, Inc.	25, 25F, 35, 35F, 40, 41, 42, 44, 46, 47	KR-1
Freed Eisemann	90 S. A. C., NR95 A. C.	KR-1

Manufacturers	Model No.	Trans. No.
Chas. Freshman Co., Inc.	41, 31S, 32S, 33S, A. C., 31-32 A. C.	KR-1
Chas. Freshman Co., Inc.	41 A. C.	KR-1
General Motors	5077, 5080	KR-2
A. H. Grebe & Co.	Synchrophase 7 A. C.	KR-2
A. H. Grebe & Co.	Synchrophase SK4	KR-1
Grigsby-Grunow Co.	(60-25V) 100, (60-25V) 90B, (60-25V) 100B	KR-1
Grigsby-Grunow Co.	130A, 230A	KR-1
Howard Radio Co.	S. G. A.	KR-1
Howard Radio Co.	8 Green Diamond	KR-2
Kolster Radio Corp.	Type 930	KR-1
Kolster Radio Corp.	6K A. C., 7 A. C.	KR-2
Kolster Radio Corp.	K43	KR-1
Kolster Radio Corp.	K20, 22, 25, 27 & 37, K42	KR-2
Montgomery Ward & Co.	2822, 2827, 2895, 2897, 2955, 2957	KR-1
Montgomery Ward & Co.	3035, 3037, 3065, 3067	KR-1
National Carbon Co.	Series 40	KR-1
R. C. A. Victor Co.	17, 18, 7-26, Radiola 17, 18, 33	KR-2
R. C. A. Victor Co.	Radiola 50, 51	KR-2
R. C. A. Victor Co.	Radiola 15, 47, 66	KR-1
Splitdorf	Abbey 171	KR-2
Standard Radio Corp.	Model 29	KR-2
Steinitz Radio Co.	261 & 262	KR-2
Stewart Warner Co.	950 A. C., 900	KR-1
Stromberg-Carlson	641 & 642	KR-1
Temple Corp.	8-60, 8-80, 8-90, 8-61, 8-81, 8-91	KR-1
Transformer Corp.	A. C. 51, 53, 55 (25-51), (25-53), (25-55)	KR-1
U. S. Radio & Television	80	KR-2
U. S. Radio & Television	Apex 60CY, 48, 25CY, 48A, 46A, 47A	KR-1
U. S. Radio & Television	Apex 41, 43, 25CY, 42, 44, 25CY, 46, 47	KR-1
Zenith Radio Corp.	11E, 14E	KR-2
Zenith Radio Corp.	52, 53, 54, 60, 61, 62, 64, 67, 70	KR-1
Zenith Radio Corp.	602, 612, 612, 642, 672	KR-1

Replacement Condenser Blocks for Standard Radio Sets

Set	YOUR COST	Set	YOUR COST	Set	YOUR COST	Set	YOUR COST	Set	YOUR COST
A. C. Dayton	\$4.00	Brandes B-10	\$2.65	Farrand B	\$4.00	Kodak A Single	\$1.35	Pierce-Arrow	
5309A	3.50	B-15, 16	1.95	Federal D-E-F-G	2.75	A Double	2.25	226-171	\$4.00
63	3.00	Bremner Tully 6-40	3.95	H	2.50	A Triple	3.50	224-245	3.95
Airline	4.00	8-21A, 8-20A	3.95	K	2.45	Kolster 6H	3.95	Powell-Midget	4.00
All-Amer. Mohawk F	3.75	7-70	3.75	By-Pass	2.30	6J-6R	3.25	Powerizer 210 Pack	4.50
A10	3.75	81-82	3.25	By-Pass	1.95	K20-22-42	2.50	R.C.A. 17	3.50
A8	2.50	Brunswick 14	3.95	D-E-F-G-Buffer	1.50	K21-K23	2.95	18-31-51 w/Choke	3.00
1-AB Elim.	4.00	15-22	3.50	France "A"	2.25	K24	3.25	28	4.00
Lyric 90	3.50	Buckingham	4.25	Freed-Eisemann 16B	3.75	K43	2.50	41	3.50
Lyric D	3.95	Capitol 9-tube	4.50	NR-60	2.95	K44	2.75	46 inc/Choke	3.25
Apex 28	2.50	Clearstone 110	4.60	NR57-457	2.95	K45	4.00	60 inc/Choke	3.25
36-25 CY.	3.75	Colonial 28	3.25	NR-67	3.95	Majestic A	2.45	48	3.25
36-60 Cy.	3.50	47	1.75	NR70-470	3.75	Standard, Master		30A	4.50
37	4.25	32 By-Pass	.75	NR-80 DC	2.95	& Super B	2.50	30A	4.75
41	3.75	32 By-Pass	.65	NR-60 DC	3.00	Special Master B	2.65	104 Speaker	1.75
42, Melrose 245	2.50	Col. Kol. S.G. 8	2.95	NR-80 AC	3.50	70-71-72-80-180	2.85	64	7.95
46	3.00	Day-Fan 5091	3.50	Freed 55-6	2.75	90-91-92 Inc. Chk.	2.85	64-4 Mfd. Repair	
80	3.75	5081	4.75	78	2.75	90B	2.85	Unit	2.95
Arbophone 45	4.00	Dumont A	4.50	41	2.95	50-51-52-53	2.85	80-81	2.95
Argus Elec.		Earl 21-22	2.75	Freshman		130A	3.15	82	4.00
191-210/CK.	4.50	31-32	2.75	Polydyne QD15-		70-71-72-25 Cycle	3.45	66	3.25
Atwater-Kent		41-42	2.95	16-16S	3.00	70-80-90 By-Pass	.75	105 Speaker	6.95
36	4.75	78	2.75	N11-2N12-		130, 131, 132	1.25	30 (3 used)	1.65
37 w/CKS	2.25	21-22 25 Cy.	4.50	Polydyne 250	3.50	By-Pass		30 (2 used)	4.00
40 PR. PK.	9.50	Echophone No. 4	2.00	M-12-M60S-171	3.50	Melrose (see Apex)		20	6.00
43 PR. PK.	9.25	201A Type	2.50	G60S-60CY.	3.50	Mohawk		Sentinel B & C Elim.	3.50
55-55C-60	3.75	Edison R1-R2-C2	4.50	G60S-25CY.	5.00	AC27 to 28, 226		Silver-Marshall	6.25
55F-55FC	3.95	R4-R5-C4	2.95	K-K60S	3.75	type Pack	2.50	ABC 850	5.75
37 Cond. Only	1.25	R4 25 Cy.	3.75	Garod EA	4.00	Montgomery-Ward		Silvertone	4.50
40 Cond. Only	1.25	Elkon A	1.25	EA	3.75	2822	3.00	Sonora DeLuxe 44	5.00
By-Pass	.70	Eveready 50	2.95	6 T.	4.00	Muter B	3.25	226-171	4.50
By-Pass	.65	By-Pass	1.50	General Motors 1001	3.50	Olympic-Mastercraft	4.00	Spartan AC-5	3.50
61 D.C.	3.50	Exide-Willard		Grebe AC6	3.95	Peerless 65	3.00	AC-7, 62, 63	3.50
66	3.25	Elim. 60 Cy.	3.25	Green-Brown "A"	3.00	K72	3.75	89-89A	4.25
Audiola	3.95	Elim. 25 Cy.	3.75	HI-PR "B"	4.00	Philco 20	3.00	110	4.50
Balkit C	3.50	Fada ABC "A"	1.25	"B" Super Power	3.75	76	3.95	930	3.50
Bosch Little 6	4.50	ABC "B"	3.25	Hammerlund HI-Q30	4.25	77	4.50	109	4.50
28 w/Choke	3.65	10-11-16-17-20		Jackson-Bell 62	3.25	87	2.95	301	4.25
29-825 Pk.	3.75	31-32	3.50	Kennedy-Colin		96, 96A, 296,		69-79A	4.65
501-2-3	2.75	42-44-46-41-47	3.50	B 226-171	4.35	296A, 211	3.00	69-79A 25CY	4.95
48	4.75	Fada K-KA	4.00	20-By Pass	2.10	511-12-13-14 etc.	3.00	Splitdorf-Abbey 171	4.25
Ban-Series	1.65	25	3.25	King Model		65	2.95	M-5	3.00
No. 3	1.25	35	3.75	J	4.50	ABC B Cond.	3.00	Standardyne	
No. 3	2.15	E420-50-70-71		Knight 6-tube	3.25			AC29 w/Cks.	4.75
No. 3 Buffer	1.25	75-77-E180	3.95	89 AC 9	4.00				
5	2.45	43-56	3.50						

Service Section

Jefferson Class "B" Amplifier Equipment

No. 465-151—PLATE SUPPLY TRANSFORMER

This transformer is designed primarily for use with the No. 282 mercury type rectifier to supply the required plate voltage for Class "B" amplifiers. It has sufficient voltage when operated with No. 466-190 choke to work the No. 246 push-push amplifier at maximum output, and in addition has capacity to supply high voltage current for the average 10-tube set.



465-151

Dimensions			Weight	List Price	YOUR COST
High	Wide	Deep			
4 1/2"	3 1/4"	3 3/4"	5 1/2 lbs.	\$7.00	\$4.12

No. 464-191—FILAMENT TRANSFORMER

Designed to be used in conjunction with plate supply transformer No. 465-151. Has filament winding for No. 282 Mercury Type Rectifier, one No. 246 driver and two No. 246 push-push amplifiers and also additional winding with sufficient capacity to take care of eight 1 1/4 ampere heater filaments, or fourteen 1-ampere heater filaments.



464-191

Dimensions			Weight	List Price	YOUR COST
High	Wide	Deep			
4 1/2"	3 1/4"	3 3/4"	4 1/4 lbs.	\$5.50	\$3.24

No. 467-281—OUTPUT TRANSFORMER

Designed for use in push-push Class "B" amplifier circuit. Has tapped primary and secondary windings suitable for coupling two No. 246 tubes to various types of speakers or speaker combinations having voice coil resistances of 1, 3, 6 and 10 ohms.



467-281

Dimensions			Weight	List Price	YOUR COST
High	Wide	Deep			
3 1/2"	2 1/2"	2 3/4"	2 1/2 lbs.	\$5.00	\$2.94

No. 467-271—INPUT TRANSFORMER

Designed for use as coupling transformer for Class "B" amplifier. Has tapped primary and secondary windings, making it adaptable for coupling either No. 246 driver to two No. 246 push-push amplifiers or for coupling two No. 227 push-pull tubes to two No. 246 push-push tubes. This transformer has a flat response curve over the entire musical range as well as windings of ample capacity to handle the maximum output of the amplifier.



467-271

Dimensions			Weight	List Price	YOUR COST
High	Wide	Deep			
3 1/2"	2 1/2"	2 3/4"	2 1/2 lbs.	\$5.00	\$2.94

No. 466-190—Input Filter Choke

466-190
466-200

This choke is for use with filament and plate supply transformers Nos. 465-151 and 464-191. It is especially adaptable as choke input for Class "B" amplifier as it aids materially in maintaining the close regulation desirable for this type amplifier. Resistance 190 Ohms; nominal inductance 18 Henries, 50 M.A. Capacity of winding 150 M.A.

No. 466-200—FILTER CHOKE

Recommended for use as general purpose filter choke but is particularly applicable as second section Class "B" amplifier choke. Resistance 190 Ohms; nominal inductance 10 Henries, 150 M.A. Has same general construction as No. 466-190.

Catalog No.	High	Wide	Deep	Weight Lbs.	List Price	YOUR COST
466-190	3 1/8"	2 1/8"	3"	2 1/2	\$2.50	\$1.47
466-200	3 1/8"	2 1/8"	3"	2 1/2	2.50	1.47

M & H Special All-Purpose Filament Transformers

2 1/2-Volt

No. 464-905—Specifications: 115-volt 60-cycle primary; Secondary No. 1—2 1/2 volts, 3 amps., center-tapped; Secondary No. 2—2 1/2 volts, 15 amps., center-tapped. Dimensions: 4" high x 2 1/2" x 3 1/4" wide with 1" core.

Your Cost, \$2.45

No. 464-906—Specifications: 115-volt 60-cycle primary; Secondary No. 1—2 1/2 volts, 3 amps., center-tapped; Secondary No. 2—2 1/2 volts, 3 1/2 amps., center-tapped; Secondary No. 3—2 1/2 volts, 15 amps., center-tapped. Dimensions: 4" x 3 1/4" x 2 1/2" x 2 1/2" with 1 1/8" core.

Your Cost, \$2.70



Jefferson Standard Pull-Push Transformers

No. 103—Push-pull input, lugs on bottom, for use with 171A, 245, 247, 231, 233, 238, 210. \$1.85

No. 120—Push-pull pentode output, for connection direct to voice of dynamic for use with 247, 233, 238. 1.65

No. 121—Push-pull output, lugs on bottom, ratio 35/1, for use with 171A, 245, 250, 231, for connection to 10-ohm voice coil of dynamic... 1.55

No. 122—Push-pull output, lugs on one side and tip jacks on other, ratio 35/1, for connection direct to dynamic voice coil, for use with 171A, 245, 250, 231. \$1.65

No. 104—Push-pull input, lugs on side, for use with 171A, 245, 250, 247, 231, 233, 238, 219, recommended for use where fine tone quality is wanted, due to the flat response curve of this transformer. 1.80

"Super Akra-Ohm" Accurate Resistors

(Wire-Wound)

The "Super-Akra-Ohm" is a very popular resistance unit for many reasons.



Type 6-M

STOCK RESISTANCE VALUES

One Watt—Accuracy 1% Plus or Minus					
Resistance in Ohms	Current in M. A.	Voltage Drop	List Price	YOUR COST	
1	1000	1.00	\$1.50	\$0.96	
10	316	1.00	1.25	.80	
50	141	7.07	1.25	.80	
100	100.0	10.0	1.25	.80	
500	44.7	22.3	1.25	.80	
1,000	31.6	31.6	1.25	.80	
1,500	25.8	38.7	1.25	.80	
2,000	22.4	44.7	1.25	.80	
2,500	20.0	50.0	1.25	.80	
3,000	18.3	54.5	1.25	.80	
4,000	15.8	63.2	1.25	.80	
5,000	14.1	70.7	1.25	.80	
9,000	10.5	94.8	1.50	.96	
10,000	10.0	100	1.50	.96	
15,000	8.17	123	1.50	.96	
20,000	7.07	141	1.50	.96	
25,000	6.32	158	1.50	.96	
30,000	5.78	173	1.50	.96	
40,000	5.00	200	1.50	.96	
50,000	4.47	223	1.50	.96	
60,000	4.08	244	1.50	.96	
75,000	3.65	274	1.50	.96	
90,000	3.33	300	2.00	1.30	
100,000	3.16	316	2.00	1.30	
125,000	2.83	353	2.00	1.30	
150,000	2.58	387	2.25	1.43	
200,000	2.24	447	2.50	1.60	
250,000	2.00	500	2.75	1.75	
300,000	1.83	545	3.00	1.92	
400,000	1.58	632	3.50	2.24	
500,000	1.41	707	4.00	2.55	
600,000	1.29	775	4.25	2.71	
750,000	1.15	862	4.50	2.88	
1,000,000	1.00	1000	5.00	3.19	

TYPE RM

Accurate Heavy Duty 10-Watt Resistors

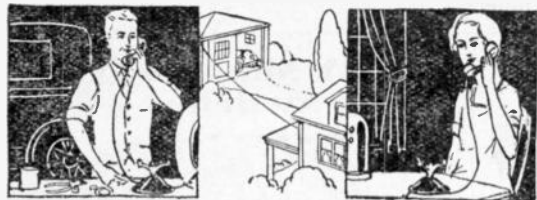


Tolerance 2% single layer wound. Brass caps fit standard 5 amp. fuse clips. Terminal studs cadmium plated permits easy soldering. Resistor length 2 1/4". Studs 1/4", overall 2 3/4".

Resistance	Current in Milliamperes	Maximum Voltage	List Price	YOUR COST
10	1000	10	\$1.00	\$0.64
50	447	22.5	1.00	.64
100	316	31.5	1.00	.64
200	224	44.5	1.00	.64
250	200	50	1.00	.64
300	182	54.5	1.00	.64
500	141.2	70.5	1.00	.64
750	115.5	86.5	1.00	.64
1,000	100	100	1.00	.64
1,500	81.7	123	1.00	.64
2,000	70.7	141	1.00	.64
2,500	63.3	158	1.00	.64
3,000	57.7	176	1.00	.64
4,000	50	200	1.00	.64
5,000	44.7	224	1.00	.64
7,500	36.5	274	1.00	.64
10,000	31.6	316	1.25	.80
12,500	28.3	354	1.25	.80
15,000	25.8	387	1.25	.80
20,000	22.4	447	1.25	.80
25,000	20	500	1.25	.80
30,000	18.3	547	1.25	.80
35,000	16.8	592	1.25	.80
40,000	15.8	632	1.25	.80
45,000	14.9	672	1.25	.80
50,000	14.1	707	1.25	.80
60,000	12.9	775	1.25	.80
75,000	11.5	867	1.25	.80
90,000	10.5	950	1.50	.96
100,000	10	1000	1.50	.96

Service Section

Realphones—Electric Phones—That Talk and Ring for Thousands of Feet



Now you can have your own telephone system with Realphones, the new two-way telephones that operate on standard dry cell batteries. Modern, compact and good-looking French-style phones. Signal buzzers are cleverly concealed in

base. No installation necessary. No complicated mechanism. Furnished in pairs—all ready for use. Only the batteries need to be added. Choice of four colors, Green, Ivory, Chinese Red and Black.

Realphones are especially convenient as room-to-room or house-to-garage telephones. Save time and steps. Equally useful in offices, factories, public garages, restaurants, stores, etc.

Packed in complete sets (except batteries) including 2 Realphones with buzzers, 35 feet of wiring and full instructions.

Your Cost, \$3.33

Batteries Required: 3 Dry Cells, Your Cost, \$1.10

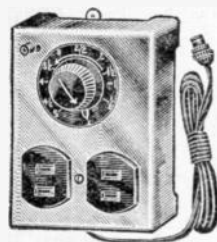


USE REALPHONES—At Home. Upstairs to downstairs. House to garage*. Living room to kitchen. House to nearby house*. Any room to sick room. —At Work. Inner office to outer office. Store to stockroom. Front office to shipping room. Office to warehouse*.

*Realphones are furnished with sufficient wiring for room to room communication. Additional wiring can be added for longer distances—as required. Use weatherproof wire for outdoor installation.

X-L Sentinel

Affords Greater Enjoyment From Your Radio



The X-L Sentinel is a foolproof time switch for shutting off radio receivers, hall lights, small window display lights and signs and many other devices. It requires no winding—is entirely automatic in action, hence nothing can be forgotten.

The X-L Sentinel is carefully designed and constructed of the highest grade material. Finished in beautiful satin silver with brown bakelite trim. It is made to operate on all voltages from 4 to 250, both direct and alternating and regardless of cycle.

It will carry 5 amperes at 110 volts and 3 amperes at 220 volts. It bears the usual X-L guarantee.

List Price, \$6.75

Your Cost, \$3.97

WE CARRY A COMPLETE LINE OF Cables, Cords and Belts for All Standard Receivers

These Dial Cables and Belts are made in accordance with the original manufacturers' specifications and we guarantee them to work properly.

Make of Set	Model	Type	Your Cost	Make of Set	Model	Type	Your Cost
Atwater Kent	30	Belts: Set of 2...	\$0.25	Emerson	All Nos.	Drive Cables	\$0.40
Atwater Kent	55	Belts: Set of 2...	.25	Eveready	All Nos.	Drive Cables ....	.25
Atwater Kent	35, 37	Belts: Set of 2...	.25	First National All Nos.		Drive Cables ....	.40
Atwater Kent	44	Belts: Set of 3...	.45	Freed Eiseman NR60		Belt .....	.30
Atwater Kent	60, 61	Belts: Set of 3...	.45	Freshman	2	Drive Cable ....	.40
Amrad	84	Drive Cable ....	.25	Grebe	SK4	Cord and Springs..	.25
Bosch	48a	Drive Cable ....	.25	Kolster		Cord and Beads ..	.25
Bosch	58a	Drive Cable ....	.25	Kolster	43, 44	Drive Cable ....	.50
Bosch	58, 60	Drive Cable ....	.25	Majestic	70, 71, 72	Drive Cables ....	.25
Bosch	28	Drive Cable ....	.30	Peerless	All Nos.	Drive Cables (2)..	.30
Balkeitt	All Nos.	Cord and Lug ...	.15	Philco	All Nos.	Drive Cables (2)..	.60
Bremer Tully	14-21	Cord and Lug ...	.15	R. C. A.	16, 17, 18	Drive Cable ....	.25
Brunswick	14-21	Belt, Spring, etc.	.35	R. C. A.	46, 64, 67	Drive Cable ....	.30
Colonial	31, 32	Drive Cables (2)..	.50	R. C. A.	16, 17, 18, 33	Linen Cord ....	.15
Colonial	33, 34, 35, 37	2 Drive Cables ..	.50	Sparton	All Nos.	Drive Cables ....	.30
Columbia	All Nos.	Drive Cables ....	.25	Steinitz	All Nos.	Drive Cables ....	.30
Crosley	40s, 60s, 804	Belt, Spring, etc.	.30	Temple	All Nos.	Drive Cables (2)..	.50
Crosley	601, 602, 607						



Makes Your Radio Behave!

AMPERITE
 Self-Adjusting
 LINE VOLTAGE CONTROL

Help Your Customers!

Guard Your Reputation!

Use The Automatic!

More and more service men are equipping their customers' sets with Amperite—the real regulating voltage control. It is the control recommended by all leading set manufacturers such as R.C.A.-Victor, Zenith, Steinite, Bosch, etc.

Keeping the voltage constant will eliminate those crackling noises due to overloaded resistances and condensers. Better and more uniform reception. Prevents power pack burnouts.

New Amperite Chart

The Amperite for any 110-volt A.C. set can be determined approximately from the following chart.

No. of tubes in set	use Amperite
4-5	5-A-5
6-7	7-A-5
8-9-10	9-A-5
11-12	11-A-5

And for sets using '50 type tubes.

7 to 11 tube sets (1-'50)	Amperite 13-A-5
7 to 11 tube sets (2-'50)	Amperite 20-A-5
110-volt DC sets	use Amperite 20-A-5

AMPERITE FOR SPECIAL SETS

Brunswick 14; 21; 31	9-20	Majestic 70; 71; 72	70
Hamm. Roberts Hi Q-30	11-20	Peerless 21; to 25	11-20
Kyletron K-71; K-72	11-20	Star Raider	18-10
Majestic 90; 91; 92	90	Victor R-35; 39	9-V-10

New Amperite Prices

List Price, \$3.00

Your Cost, any type, \$1.25

Socket for inserting Amperite in line. List, 25c. net 15c
 Special price on 3 or more Amperites.

AMPERITE REGULATION FOR AUTOMOBILE SETS

Storage Battery of car varies from 5.5 to 8 volts—31%—depending upon speed of car and resulting generator voltage.

5 and 6 tube sets use Amperite 16-A

7 and 8 tube sets use Amperite 22-A

Easily installed—gives uniform reception.

List Price, \$3.00

Your Cost, \$1.25

Service Section

When you buy Eby Products, you get "Recognized Radio Parts." Eby Products have been "Standard" in the Radio Industry for over 12 years and are used by leading manufacturers of radio and electrical instruments and appliances, service men, experimenters and set builders

Type 12 Sockets



The Type 12 Socket is the Eby "Universal" with the entire shell and base molded in one piece. The arrangement of the contact spring terminals is such that it can be mounted on metal or insulating panels, with terminals projecting above the panel for experimental or above-board wiring, or projecting below the sub-panel for sub-panel wiring. The socket can be mounted on sub-panels with the base above the sub-panel or with simply the top projecting through a large hole in the sub-panel.

Contact designations are molded on the top and bottom of the base, close to the terminals.

Type No.	List Price	YOUR COST
Type 12—1½" Mtg. Cen.		
4-Prong 12A	\$0.35	\$0.16
5-Prong 12B	.35	.16
6-Prong 12C	.40	.16
Type 12—1½" Mtg. Cen.		
7-Prong 12D	.50	.20

Please order by Catalog No.

Type 8 Sockets



The Type 8 Socket is similar to the Type 12 in the construction of the upper part and the contact springs, but the base consists of a separate, laminated bakelite plate instead of being molded as part of the top. This type of socket is designed for sub-panel mounting. A large hole, approximately 1½", to receive the body of the socket, is drilled or punched through the sub-panel.

MOLDED TUBE SOCKETS

No. of Prongs	Cat. No.	List Price	YOUR COST
4	8A	\$0.25	\$0.12
5	8B	.25	.12
6	8C	.30	.12

Wafer Type Sockets



Eby Laminated Sockets represent the last word in the design of units intended to accomplish the fundamental function of a socket, namely to provide a perfect, long-lasting, efficient, low-resistance contact between circuit wiring and tube or plug connector prongs. They are designed to permit mass production at low prices.

4-Prong.....	YOUR COST..	\$0.08
5-Prong.....	YOUR COST..	.08
6-Prong.....	YOUR COST..	.08
7-Prong.....	YOUR COST..	.08

Junior Binding Post

Eby Binding Posts, with non-removable heads which prevent loss of tops or errors due to the shifting of knobs to the wrong terminals, have long been recognized as the standard of comparison in the industry. They are examples of real engineering applied to the solution of the problem of effecting a positive contact between leads and terminals. Furnished with ½" stem. Plain top—bakelite.

Your Cost, 7c Ea. or
75c per Doz.



Commander

A slightly larger post than the Junior type. Completely insulated with a non-removable top. Furnished with plain tops only—not engraved. Stem 8-32 - ¼" long.

List Price, 25 Cents Your Cost, 15c Ea.
Or \$1.60 per Doz.



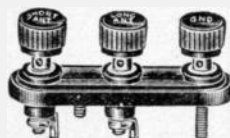
Sergeant "SS"

Slot size ¼" x 5/32". ½" solid stem threaded 8-32. Polished nickel finish.

List Price, 25 Cents
Your Cost, 15c Ea.
Or \$1.75 per Doz.

Molded Triple Post

No. 21T — Marked
L.Ant., S.Ant., Gnd.



Your Cost, 18c

Twin Binding Post



No. 21S—Marked Ant.
and Gnd.

Your Cost,
13c

EBY Tip Jacks

Deliver a tight spring contact the full length of the phone tip. They are countersunk so that the tip can't move. Nickel-plated brass equipped with red and black washers for insulating from metal panels.

List Price, 25 Cents Pair
Your Cost, 15c



Laminated Triple Jack



18T

Your Cost, 9c

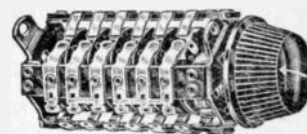
Laminated Double Jack

No. 18

Your Cost, 9c



EBY Short-Wave Switches



EBY Short-Wave Switches were originally designed to meet the critical electrical and mechanical requirements of a multi-polar, multi-position switch for use in the radio frequency circuits of multi-waveband radio receivers. They are, however, well adapted to any switching problem that requires the opening or closing of a number of circuits at once or in sequence.

SHORT-WAVE SWITCHES

No. of Poles	No. of Switch Positions	No. of Circuits Made or Opened In Any Sequence	At Once	Up to	Cat. No.	List Price	YOUR COST
1	2	1 or 2	2	1		\$0.65	\$0.39
2	2, 3, 4 or 5	2 or 4	4	2		1.00	.59
3	"	3 or 6	6	3		1.50	.88
4	"	4 or 8	8	4		2.00	1.18
5	"	5 or 10	10	5		2.50	1.47
6	"	6 or 12	12	6		3.00	1.77
7	"	7 or 14	14	7		3.50	2.06
8	"	8 or 16	16	8		4.00	2.36
9	"	9 or 18	18	9		4.50	2.65
10	"	10 or 20	20	10		5.00	2.94

Any greater number of poles may be furnished if desired.

Female-Molded Socket Cable Connectors

The Eby Molded Female Connector consists of a molded cap and a socket assembly. The two fit together by means of a bayonet arrangement which permits quick and positive assembly and disassembly.

The assembled unit matches the Molded Male Plug Cable Connector and the two provide an ideal method of making quick make-and-break multiple circuit connections between multi-wire cables.

YOUR COST

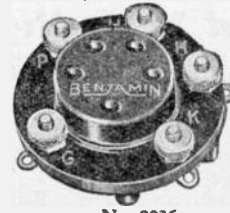
No. 11A	For 4-Prong Plugs.....	\$0.24
No. 11B	For 5-Prong Plugs.....	.27
No. 11C	For 6-Prong Plugs.....	.30

Benjamin Cushion Sockets

No. 9040—Four-prong UX type. The spring suspension feature of these sockets tends to lengthen tube life by absorbing mechanical jars and shocks.

List Price, 75c

Your Cost, 44c

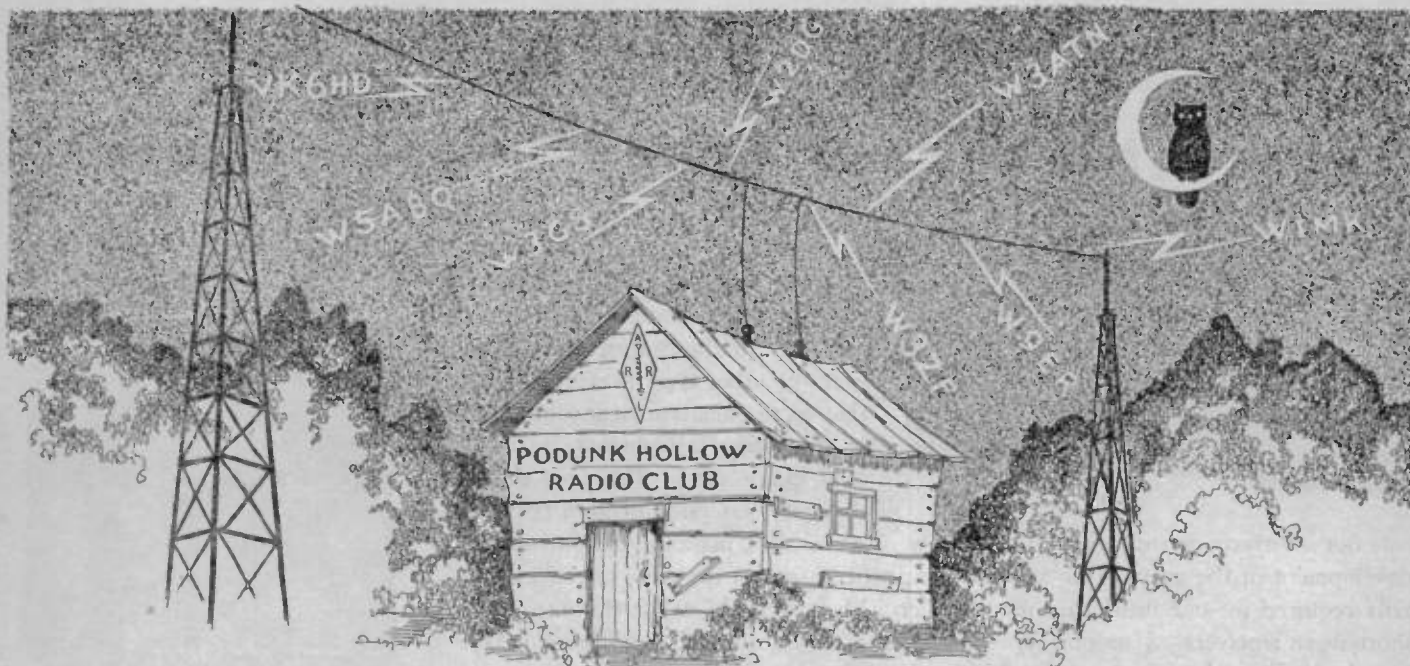


No. 9036

No. 9036—Five-prong "Y" A.C. cushion type is intended for A.C. tubes only; shock absorbing.

List Price, \$1.00

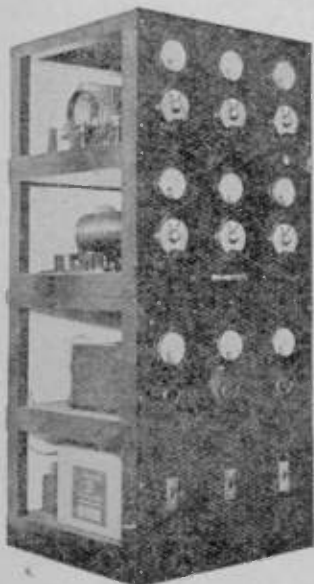
Your Cost, 59c



SHORT WAVE AND AMATEUR SECTION

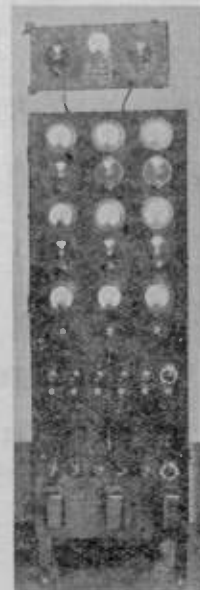
For the Promotion of Interest in Amateur Radio Communication

and for the Advancement of the Art of Radio in General,
**M & H Sporting Goods Company presents this
Short Wave and Amateur Section**



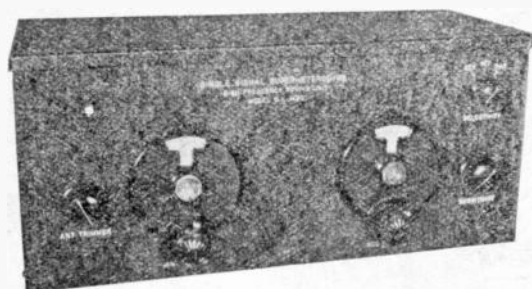
Did you know that the M & H Sporting Goods Company maintains a complete special Apparatus Department for those who wish such parts as: DeLuxe Electron Oscillators and Frequency Meters; Custom-made DeLuxe Short-Wave Single Signal Superheterodynes; Radio Frequency Resonance Indicators; combination Universal A.C.-D.C. Volt Milliammeters with multi-range combinations; Constant-Temperature Ovens for Piezo Electric Oscillators; 100 K.C. Primary Frequency Standards for the precision measurement of all frequencies between 100 and 30,000 K.C.; high-grade Class B Audio Equipment with frequency range of less than 2 D.B. variation between 30 and 7,000 cycles for broadcasting station use; Photronic Relay Apparatus for all uses; Medium and High-Frequency Transmitting Sets for code or radiophone purposes; Volume Level Indicators for all frequencies and for any impedance value; Aircraft Public Address Systems using latest type portable amplifying units; Portable High-Efficiency Direct-Current Amplifiers for mobile installations where size, weight, efficiency and economy are prime factors; Special Transformer Chokes, etc.; Cathode Ray Oscillographs; Distortion Meters and Filters; Wheatstone Bridges and Decade Boxes; Ultra High-Frequency Receiving and Transmitting combinations for either portable or stationary use. (Transmitters illustrated were made by M & H.)

It is quite impossible for us to list all of the special apparatus that we manufacture. Consequently you are invited to communicate your requirements to our Engineering Department for quotations and further information.



Single Signal Superheterodyne

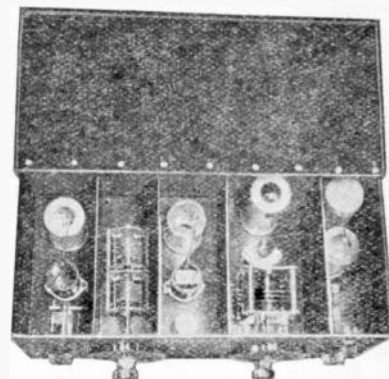
M & H Kit of Parts for the New Single Signal Super



As Described by DON L. LUSK
in QST for November, 1932

Because of the definitely superior performance of the Single Signal Super over any other type of receiver available to the amateur, many hundreds of these fine instruments are being used every day. The fact that it eliminates one side of zero beat and

cuts out interference and provides selectivity of 500 cycles, makes it the outstanding development of the year. Two stations can now transmit in the same channel ordinarily required for one using this new receiver. Many "Hams" call it the ultimate in short wave receivers. Uses one type 58 tube as a pre-selector RF amplifier, one type 58 tube as a first detector, one type 224A tube as an electron coupled high frequency oscillator, one type 58 tube as filter and intermediate frequency amplifier, thereby allowing any good type of broadcast tuner to be used without loss of signal strength. Each stage is completely isolated and by-pass condensers and radio frequency chokes are generously used. National R.F. and detector coils supplied for 20-, 40- and 80-meter amateur bands. Oscillator coil forms are supplied unwound but with wire and data for winding them yourself. "Logged" tuning of the receiver an outstanding feature. Band spread tuning on each of the amateur frequencies (14, 7 and 3.5 MC.). It truly is a revelation. The M & H De Luxe SS Super Kit is supplied completely assembled but not wired. A heavy aluminum cabinet finished in a fine black "crinkled" lacquer is also supplied. It being necessary to have only a pair of pliers and a soldering iron to complete the unit. Instructions and complete data with each kit.



Your Cost, \$90.00

Single Signal IF and Audio Frequency Amplifier Unit

A companion unit for the S. S. High Frequency Tuner. Provides the necessary gain in both IF and Audio-frequency stages to give complete satisfaction to its user. Incorporates low frequency heterodyne oscillator and filter assembly, complete shielding, isolated circuits, adequately insulated. Uses two type 58 tubes as intermediate frequency amplifiers, one type 56 tube as second detector, one type 224A as beat frequency or heterodyne oscillator, one type 47 tube as audio

frequency amplifier and one type 80 tube as a rectifier. Outstanding features: High sensitivity, extreme selectivity, high quality parts, custom made, operates on any IF frequency between 465 and 525 KC. Power supply built in. Heavy aluminum cabinet finished in black "crinkled" lacquer. Supplied assembled but not wired, it being necessary to have only a soldering iron and pliers. Similar in appearance to High-Frequency Unit.

Your Cost, \$57.00

Everything You Need to Make the Famous Lamb Single Signal Superheterodyne

High Frequency Tuner

Complete kit of parts including aluminum cabinet, resistors, condensers, OSC coils (wound), switches, flexible couplings, coil and tube sockets, tube and oscillator shields, IF filter transformer, 525 KC. crystal and air-gap holder, RF chokes, dials, etc.

Your Cost, \$65.00

IF and Audio Frequency Unit

Complete kit of parts, including aluminum base panel, oscillator shield box, beat frequency oscillator coil, IF transformers, tube and coil shields, volume and tone controls, bias and Isolating resistors, padding and by-pass condensers interstage and output audio transformers, switch, jack, etc.

Your Cost, \$47.00

National Precision Receivers

National Double Screen Grid 3-Tube Thrill Box

Type SW3 AC and 6-Volt DC Models

The sensitivity of the SW58 is so great that the push-pull stage is seldom, if ever, used when the receiver is being employed in amateur communication work or by expeditions for maintaining contact with their base stations. The SW3 Thrill Box employs the same circuit, and all other essential features, as the famous SW58, except for a more compact layout and the elimination of the last or push-pull stage. It is designed especially for aircraft, portable, and amateur communication use.

A highly desirable feature found only in this receiver is the calibrated volume control, which thus serves as an audibility meter. As standard equipment, the SW3 amateur receiver is furnished with the three sets of band spread coils for the 20, 40 and 80 meter bands. For reception on other frequencies it is necessary to secure the additional coils listed under the SW58 for AC model and under SW34 for the DC model.

The AC model uses the new type 58 variable MU tubes in the RF and detector circuits and the new 56 in the first audio circuit.

The DC model uses the new UY 236 and UY 237 6-volt low-current tubes. This latter model can, therefore, be operated from a filament transformer and B batteries, or a filament transformer and B eliminator if desired, thus making it a universal AC or Battery Model. For strictly AC operation, however, the AC model in conjunction with the 5880 power unit is to be preferred.

Catalog
Symbol

Complete Parts
Name of Parts

List
Price

YOUR
COST

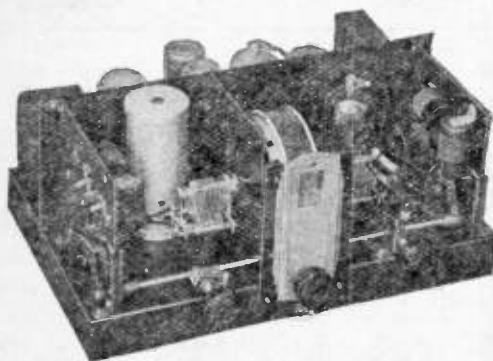
ACS3W—NATIONAL complete set of parts for 3-tube Short Wave Thrill Box—with band spread coils—less tubes—wired by the Jackson Research Laboratories..... \$55.00 **\$32.34**

Note: The above price is for either A.C. or D.C. models.

NOTE: The circuit, employed in the NATIONAL Thrill Boxes will give less background noise and a lower noise level than any other type of short-wave circuit. There is less cracking, less hum, and less interference with reception of broadcasts or signals. R. F. transformer coil forms are molded of "R-39," the new low-loss material developed by the Radio Frequency Laboratories. The SW3 has now been revised to use the new Isolantite tube and coil sockets together with the new isolated rotar-gauged timing condenser.



National 5-Tube Converter



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

Due to very thorough shielding, as well as wide separation of the 1st detector and oscillator circuits, there is no tendency to interlock and thus extremely stable operation is obtained over the wide range of from 15 to 185 meters.

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

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

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

	List Price	YOUR COST
LIST PRICE—NC5W: In metal cabinet, wired	\$75.00	\$44.10
NC5: In metal cabinet, unwired.....	67.50	39.68
NC5-S: In metal de luxe mahogany cabinet, wired	85.00	50.97

National Power Packs

National power packs are particularly well suited for short wave AC operation. They have an exceedingly low inherent hum due to their special filtering and shielding.

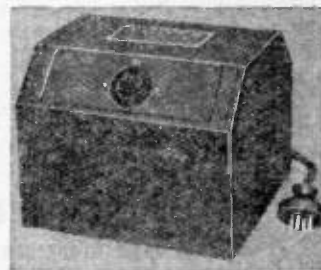
Catalog Symbol 580AB—Completely wired power supply, for use with SW3 AC or wherever a power

supply giving 2½ volts at 10 amps and 180 volts at 125 mills is required.

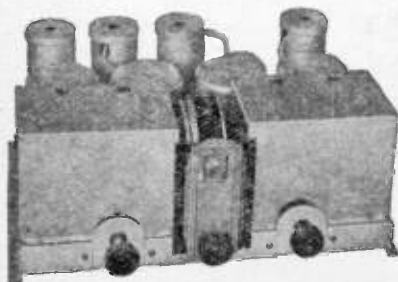
List Price, \$34.50

Your Cost, \$20.29

See inside back cover page for other National power packs.



National MB-29A Tuner



The National MB29A makes an ideal IF amplifier for either the NC5 or HFC converters. It may also be used as an intermediate frequency amplifier for the new Single Signal Super-heterodyne. CW or code reception can be accomplished by using a separate heterodyne oscillator.

Set uses three type 224 tubes as radio frequency amplifiers and one type 256 or 227

tube as a detector. This set is also an ideal broadcast tuner.

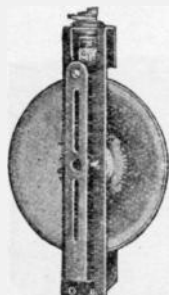
Wired complete less tubes
Your Cost, \$21.95

National 245 amplifier and power supply for above receiver.

Your Cost, \$19.75

National Short-Wave Parts

Type "E" Dial



This dial embodies a Velvet-Vernier disc type of mechanism that assures a good positive drive on condensers mounted perpendicular to the front panel. No gears used in its construction, thereby eliminating all backlash. Ratio—ten to one. Easily attached to panel. Hammered silver or bronze finish escutcheon plate may be had. Dial reading available for all types of condensers. Standard type designed to fit 1/4" condenser shaft—can be supplied at no additional cost to fit 3/8" shaft.

Catalog Symbol VED—0-100-0

List Price, \$2.75

Your Cost, \$1.62

Catalog Symbol VEC—200-0

List Price, \$2.75

Your Cost, \$1.62

Type 28 Illuminator, extra, \$0.30



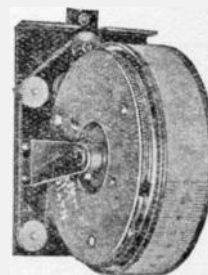
Velvet Vernier Dials

The most artistic dial yet designed. These new "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.

Type G—Disc Dial

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

Catalog Symbol	List Price	YOUR COST
VGCC—Counter Clockwise (0-100) (180°)	\$3.75	\$2.21
VGC—Clockwise (100-0) (180°)	3.75	2.21
VGE—Clockwise (150-0) (270°)	3.75	2.21



Type H—Drum Dial

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

Catalog Symbol	List Price	YOUR COST
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	3.24
VHCR—Rainbow, clockwise (100-0) (180°)	5.50	3.24
HS—270° dial used in SW5 Thrill Box	6.50	3.83



Class "B" Transformers

Type BI Input Transformers for coupling 245's in push-pull to a Class B amplifier employing 2-210 tubes in push-pull. Primary inductance 20 henrys; primary resistance (total) 150 ohms; secondary resistance (total) 200 ohms.



List Price, \$8.50

Your Cost, \$5.00

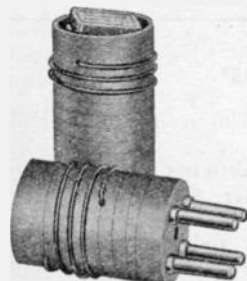


Type BO Output Transformer for coupling a Class B Amplifier employing 2 210's (operating at a plate voltage of 500 V. and a bias of 17 V.) to a loud speaker or Class C RF Amplifier. Six terminals are available for various loads. The secondary is not designed to carry the RF Amplifier plate current. Insulated for 5,000 volts. Tested at 10,000 volts. Primary inductance 20 henrys; primary resistance (total) 115 ohms.

List Price, \$12.50

Your Cost, \$7.35

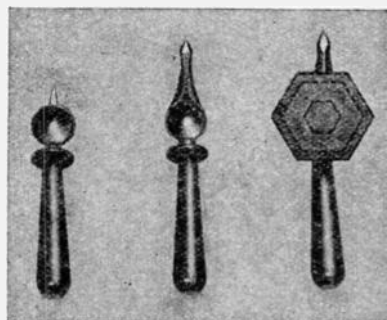
Midget Type R-39 Coil Forms



In order to insure stability, maintain calibration, and give maximum efficiency and flexibility to ultra-high-frequency circuits, a low-loss, rigid coil form is essential. These forms are designed to give best form factor and lowest R.F. resistance. Diameter, 1"; length, 1 1/2"; 1/4" wall. Made in standard 4-prong type only. Unwound and ungrooved.

List Price, \$0.50

Your Cost, \$0.29



Dial Lever Indicators

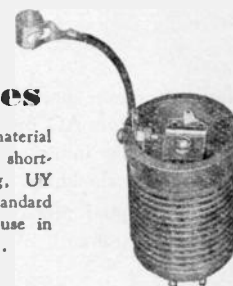
NATIONAL lever indicators are designed for transmitter control panel use. They have well-defined bronze pointers and insulated handles. Available in three types as per attached cut and to fit both 1/4" and 3/8" shafts.

Type	List Price	YOUR COST
S	\$2.75	\$1.62
M	3.00	1.76
J	3.75	2.21

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

Type R-39 Inductances

Moulded of "R-39", the new low-loss coil form material developed by the Radio Frequency Laboratories for short-wave use. Forms available with UX four-prong, UY five-prong, or special six-prong base, for use in standard sockets. The coils listed below are designed for use in the NATIONAL SW34 and SW3 D.C. "Thrill Box".



No.	Color	Range	List Price Per Pair	YOUR COST
No. 10	Brown	9. to 15. meters	\$5.50	\$3.24
No. 11	Black	14.5 to 25. meters	5.00	2.94
No. 12	Red	23. to 41. meters	5.00	2.94
No. 13	White	40. to 70. meters	5.00	2.94
No. 14	Green	65. to 115. meters	5.00	2.94
No. 15	Blue	115. to 200. meters	5.50	3.24
No. 16	Orange	200. to 360. meters	5.50	3.24
No. 17	Yellow	350. to 550. meters	5.50	3.24
No. 18	Purple	500. to 850. meters	6.50	3.83
Forms only—				
4-prong UX base, each			.75	.44
5-prong UY base, each			.75	.44
6-prong Special, each			.75	.44
Socket only—				
6-prong Special with mountings, each			.60	.36

Special Amateur Coils

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

No.	Range	List Price (per set of 2)	YOUR COST (per set of 2)
No. 11A—20-meter band			
(per set of 2) ..		\$6.50	\$3.83
No. 13A—40-meter band			
(per set of 2) ..	6.50		3.83
No. 14A—80-meter band			
(per set of 2) ..	6.50		3.83
No. 15A—160-meter band			
(per set of 2) ..	6.50		3.83

National Short-Wave Parts

Velvet-Vernier Dials

Type "A"

(Fig. 1)

The Type "A" is the original NATIONAL Velvet-Vernier Dial with its smooth, matchless mechanism, which gives perfect control for highly selective circuits. The development of the new form of gearless transmission used in this mechanism permits a motion that is even and regular throughout its range. No backlash exists, none can develop, dials equipped with this mechanism may be used under all operating conditions and assure user of a positive and even drive at all times. Ratio—five to one.

On the Type "A" dial the mechanism is mounted to a bakelite shell and knob with readings as follows:

Catalog Symbol	Dia.			List Price	YOUR COST
VACC3	3 3/8"	Counter Clkws.	(0-100) (180°)	\$2.50	\$1.47
VACC4	4"	Counter Clkws.	(0-100) (180°)	2.50	1.47
VAC 4	4"	Clockwise	(200-0) (360°)	2.50	1.47
VACE4	4"	Clockwise	(150-0) (270°)	2.50	1.47

Types "B" and "C"

(Fig. 2)

This NATIONAL dial embodies a standard Velvet-Vernier mechanism that is smooth, free from backlash, and furnishes a positive drive on condensers where the shaft is at right angles to the panel. Variable ratio of 6 to 1 and 20 to 1. It is equipped with a black bakelite shell and easily attached to front panel. Diameter across front of dial 4".

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

Catalog Symbol				List Price	YOUR COST
VBC	Clockwise	(200-0) (360°)	Type B	\$1.47	
VBD	Dual Range	(0-100-0) (180°)		\$2.50	1.47
Dial Illuminator and Bracket, extra, 50c.					

Type "BM" 3-inch Dial

(Fig. 3)

Similar in appearance to our Type "B" except that diameter is 3". Has the same Vernier mechanism but does not incorporate variable ratio feature. Especially adapted for small receiving and transmitting equipment where space is limited.

Catalog Symbol			List Price	YOUR COST
BMD	Dual Range	(0-100-0)	\$2.00	\$1.18
BMC	Clockwise	(200-0)	2.00	1.18

Precision Velvet-Vernier Dials

Types "N" and "NW"

On instruments and equipment when permanency of calibration depends on the accuracy of the dial the NATIONAL Types "N" and "NW" are especially adapted.



Fig. 1



Fig. 2



Fig. 3

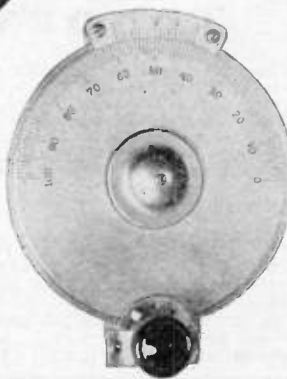


Fig. 5



Fig. 4

Type "N" Dial

(Fig. 4)

The 4" instrument dial is equipped with the original and unexcelled NATIONAL Velvet-Vernier mechanism as used in our Type "A" dial, thereby assuring a smooth, positive and reliable drive while also securing the utmost precision of logging. Reading possible to 1/10 of a dial division. Ratio—5 to 1. Dials attach to panel at three points. Standard size hub 1/4".

Catalog Symbol				List Price, ea.	YOUR COST
Type VNB	(0-100)	180°	4-inch diameter	\$6.50	\$3.82
Type VND	(100-0)	180°			
Type VNE	(150-0)	270°			
Type VNC	(200-0)	360°			

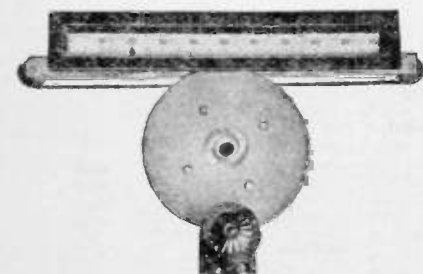
Type "NW"

(Fig. 5)

The 6" instrument dial is equipped with a standard NATIONAL Velvet-Vernier mechanism similar to that used in our Type "B" dial that assures a firm and positive drive. It is capable of extreme precision. Flush Vernier eliminating parallax. Reads to one-tenth division and may be estimated to one-twentieth division. Equipped with a 3-point variable ratio. Dial attaches to face of panel at four points making accurate mounting exceedingly easy. Standard size hub, 3/8".

Catalog Symbol				List Price, each	YOUR COST
Type NWB	(0-100)	180°		\$15.00	\$8.82
Type NWD	(100-0)	180°			
Type NWE	(150-0)	270°			
Type NWC	(200-0)	360°			

NATIONAL FULL VISION DIAL



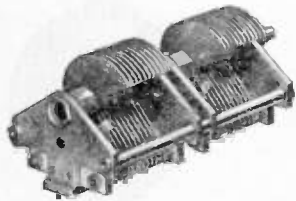
The new NATIONAL Full Vision Dial shown at the right fills a definite need for a dial having none of the failings usually so noticeable in a unit of this type. The scale is fully seven inches in length, insuring accuracy of reading which is quite essential in high-frequency work. The pointer moves evenly across the scale and remains vertical at all positions. The movement bears a strictly linear relationship to the rotation of the control knob.

The mechanism is similar to that of the Type "E", noted for its smooth and positive drive which improves with use.

The escutcheons can be supplied in either silver or antique bronze.

Catalog Symbol	Scale Reading	List Price	YOUR COST	Direction of condenser rotation for capacity increase
VKC	100-0 180°	\$4.00	\$2.35	Clockwise
VKCC	0-100 180°	4.00	2.35	Counter Clockwise
VKE	0-100 270°	4.00	2.35	Counter Clockwise

National Short-Wave Parts



NATIONAL Two-Gang Type SE Variable Receiving CONDENSERS

This two-gang condenser has been constructed particularly for short-wave T. R. F. and super heterodyne receivers, which require a unit of exceptional characteristics in order to obtain best performance. Mechanical rigidity, so necessary for permanence for electrical characteristics and the elimination of lost motion or backlash in tuning, is secured through the use of four heavy partition plates accurately spaced by three heavy tie-bars.

A new type of noiseless, self-cleaning, multi-fingered contact brush makes positive connection to the rotors.

The stator insulation is Isolantite.

Note: We do not recommend that the experimenter attempt to remove plates from this condenser.

	List Price	YOUR COST
Type 2 SE-50—50 mmf. each section.....	\$5.50	\$3.24
Type 2 SE-100—100 mmf. each section.....	6.50	3.82
Type 2SE-140, 140 mmf. dual	7.50	4.41

As it is impossible to list all different sizes we will gladly quote price and delivery on any size or type you may desire.

Overall dimensions, including rotor swing, 2½ x 2½ x 5 inches.

NATIONAL Type SE Variable Receiving CONDENSERS



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

	List Price	YOUR COST
Type SE-50, 50 mmf. equicycle 270°	\$3.50	\$2.06
Type SE-100, 100 mmf. equicycle 270°	3.75	2.21
Type SE-150, 150 mmf. equicycle 270°	4.00	2.36
Type ST-50, 50 mmf. equitune 180°	3.50	2.06
Type ST-100, 100 mmf. equitune 180°	3.75	2.21
Type ST-150, 150 mmf. equitune 180°	4.00	2.36
Type SE-200, 200 mmf. equitune 270°	4.00	2.36
Type SE-20, 20 mmf. equitune 270°	2.50	1.47

National Neutralizing Condenser

Type STN Condenser

A compact, rigid, and efficient condenser particularly suitable for neutralizing 245, 247, 210 and similar tubes in amplifier, buffer or double stages. Very low minimum capacity. Isolantite insulation and polished plates. Maximum capacity 18 mmf. Peak voltage breakdown—3000v.



Your Cost,
\$1.18

Type SEU Condenser

Ultra High-Frequency Variable Condensers



A special 270° condenser of exceptional characteristics that will hold its calibration under any operating conditions. Isolantite insulation, double spaced throughout, heavy rigid plates, insulated front bearing, constant low impedance pigtail, single hole panel or base mounting.

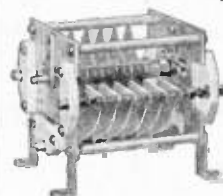
These condensers can be furnished in any capacity up to 25 mmf.

List Price, \$3.50 Your Cost, \$2.06

National Neutralizing Condenser

Type TMN Condenser

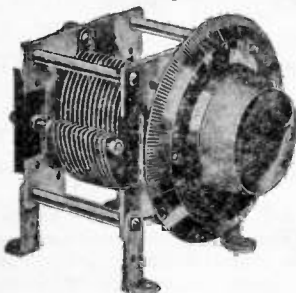
A heavy-duty neutralizing condenser having a peak voltage rating of 6000 volts. Suitable for use with 203A, 852, 204A and similar tubes. Maximum capacity 50 mmf.



List Price, \$6.00

Your
Cost,
\$3.52

National Equimeter Condensers (Straight Wave Line)



These prices do not include NATIONAL Velvet Vernier Type "A" Dials. Condensers with Dials extra.

List
Price,
\$2.50

Your
Cost
\$1.47

Catalog Symbol	Size	List Price	YOUR COST
EM 50	50 MMF	\$2.50	\$1.47
EM 100	100 MMF	2.50	1.47
EM 150	150 MMF	3.00	1.77
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	2.36
EM 1000	1000 MMF	5.50	3.24

National Equicycle Condensers (For Short-Wave Receivers)

These short-wave type EC condensers are of straight line frequency type, 270° rotation, built into the famous girder frame. Spacing between plates doubled in the smaller sizes and a non-inductive pigtail added to insure positive and silent operation without detuning.

Type	Capacity	No. Plates	Spacing	List Price	YOUR COST
EC 15	.000015	3	.156	\$4.00	\$2.36
EC 50	.00005	9	.156	4.25	2.51
EC 75	.000075	11	.156	4.25	2.51
EC 100	.0001	15	.156	4.50	2.65
EC 125	.000125	19	.156	4.50	2.65
EC 150	.00015	9	.078	4.00	2.36
EC 250	.00025	17	.078	4.50	2.65
EC 350	.00035	23	.078	4.75	2.80
EC 500	.0005	31	.078	5.00	2.94

(Above prices do not include dial)

National Screen Grid Coupling Transformer

A transformer especially designed for coupling screen grid or variable "mu" detectors to the audio amplifier grid. Has correct primary impedance and gives a flat line frequency response. Used in SW5 and SW3 thrill boxes.

List Price, \$5.50 Your Cost, \$3.24

National Equitune Condenser

(Modified Straight Frequency Line)

The girder frame construction of this condenser is such as to permit "ganging" when so desired. The lower half of the scale is straight frequency line, so as to prevent crowding of stations at the lower dial readings. Made in the following sizes:

Type	Size	List Price	YOUR COST
ET 150	.00015	\$4.25	\$2.51
ET 250	.00025	4.50	2.65
ET 350	.00035	4.75	2.80
ET 500	.0005	5.00	2.94

(Above prices do not include dial)

National Radio Frequency Choke

Spaced on an Isolantite form. Supplied with stiff leads for mounting. May be mounted in grid leak clips if desired.

Approximate Characteristics
D. C. Resistance, 50 ohms.
Distributed Capacity, 1 mmf.
Inductance, 2½ millihenries.
Will carry 125 milliamps without heating.

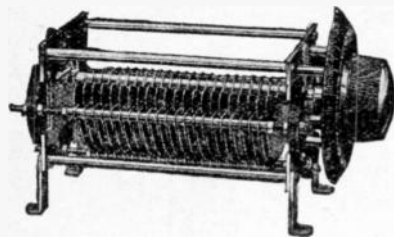
List Price, \$75

Your Cost, \$0.45



National Short-Wave Parts

National Transmuting Condensers



"National" Transmuting Condensers are widely used by U. S. Government Broadcasting Stations and amateur transmitters.

Transmuting condensers of any size and capacity can be supplied for voltages of from 2,000 to 20,000. Prices upon request.

List of Standard Sizes of Stock Condensers for Transmuting Sets

Type	Capacity	Voltage	No. Plates	Spacing	List Price	YOUR COST
TM 35A	.000035	6000v.	7	3/8"	\$4.50	\$2.64
TM 50A	.00005	6000v.	12	3/8"	6.00	3.52
TM 100	.0001	3000v.	11	1/8"	4.50	2.64
TM 100A	.0001	6000v.	23	3/8"	10.00	5.88
TM 150	.00015	3000v.	17	1/8"	5.00	2.94
TM 150A	.00015	6000v.	35	3/8"	14.00	8.31
TM 230	.00023-5	3000v.	23	1/8"	9.00	5.29
TM 230A	.00023-5	6000v.	51	3/8"	17.00	10.00
TM 350	.00035	3000v.	35	1/8"	11.00	6.46
TM 450	.00045	3000v.	43	1/8"	12.00	7.05

Note: Dials for the above condensers can be supplied at an extra charge of \$1.47 net.

New National Split Stator High Voltage Condensers

Similar in Appearance as Other TM Condensers

For use in push-pull circuits. Constructed in standard TM frame. Plates are of heavy aluminum with well-rounded edges.

Type	Capacity Each Section	Rating	List Price	YOUR COST
TMP 230	.00023	3000v.	\$15.00	\$8.82
TMP 100	.0001	3000v.	10.00	5.88
TMP 100A	.0001	6000v.	16.00	9.41

Note: Dials for the above condensers can be supplied at an extra charge of \$1.47 net.

Frequency Meter Condenser

A special purpose condenser designed for use in amateur frequency meters and monitors. The three circular rotor plates make possible the use of a High C circuit which is necessary in order to avoid changes in calibration due to differences in tube characteristics, temperature variation, etc.

When used with a 100 division dial, the spread of the 160 or 80 meter bands is over 80 divisions.

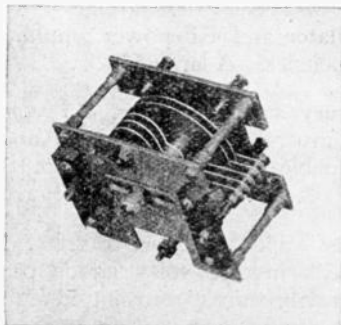
Type 40-75

Min. Capacity 40 mmf.

Max. Capacity 75 mmf.

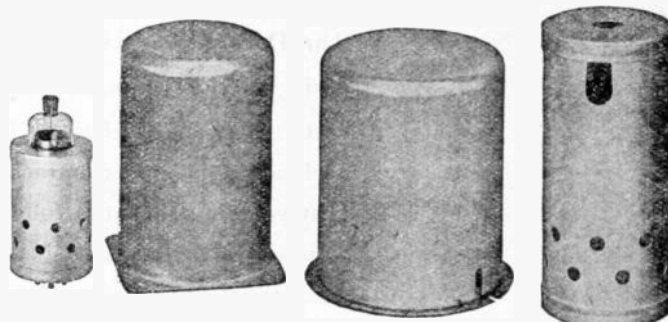
List Price, \$4.50

Your Cost, \$2.64



Aluminum Shields

For Experimental and Custom Set Work



Catalog Symbol	List Price	YOUR COST
TS Tube Shield with Top Cap and Bottom Mounting Plate	\$0.40	\$0.23
J30 Coil Shield, 2 1/2" dia., 3 3/4" high—square flange at bottom 2 3/4"	.35	.21
B30 Coil Shield, 3" dia., 3 3/4" high	.35	.21
B30 Coil Shield, as above with mounting base	.50	.29
T58 Tube Shield with Top Cap and Bottom Mounting Plate	.40	.23

New National Coil and Tube Sockets

A point which is often overlooked in ultra high-frequency receiver and transmitter design is the inefficiency of coil and tube sockets. These new Isolantite sockets will reduce such losses to a minimum. Suitable for either standard sub-panel or base-board mounting. Made in standard 4, 5 and 6-prong styles as well as in special 6-prong for NATIONAL coils.

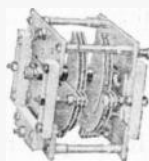
List Price, \$0.60

Your Cost, \$0.36



Type EMP Condensers

A split stator condenser for receivers and low power push-pull transmitters. Special low-loss stator insulators are employed. 1200-volt breakdown. The spacing between adjacent rotor and stator plates is .023. Construction is similar to type TM.



Standard Size EMP 100 mmf. per Section, List Price, \$5.00

Your Cost, \$2.94

Although we list only one size, these condensers are available in capacities up to 350 mmf. per section. Prices quoted upon request.

National Grid-Grips

This remarkably 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.

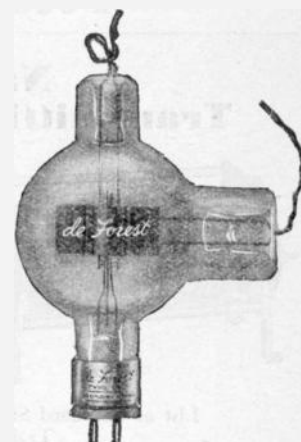
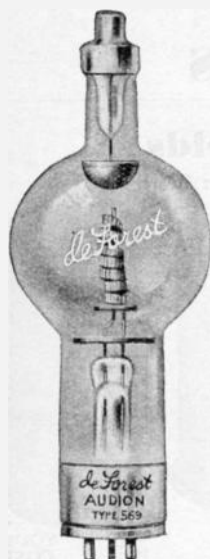


Made in Two Sizes

Type	List Price	YOUR COST
Type 24—To fit broadcast set tubes	\$0.10	\$0.06
Type 12—To fit large type tubes such as 872	.20	.12

de Forest**Transmitting Audions**

The DeForest reputation for engineering skill and painstaking precision has been zealously guarded in the manufacture of the DeForest Transmitting Audions. The DeForest script etched on each transmitting tube is assurance that your investment is fully protected by a guarantee of satisfactory performance. These same tubes are used in commercial and broadcasting stations throughout the world, and are giving 100% satisfaction.



Tubes	Description	Your Cost	Tubes	Description	Your Cost
510	15-Watt oscillator. Specially treated plate gives high plate dissipation. No creeping. High Voltage breakdown. Low leakage. Ideal for crystal control oscillators.....	\$ 4.12	552	75-Watt oscillator and RF power amplifier. Low internal capacity between elements. Low frequency shift	\$ 23.00
511	50-Watt oscillator and RF amplifier, modulator or RF power amplifier, indeed a general purpose tube	14.70	504A	250-Watt oscillator, modulator or RF power amplifier. Standard "250-watter" in general use	97.50
503A	50-Watt oscillator and RF power amplifier. the standard "50-watter." Not generally suited for Modulator purposes.....	14.70	504	250-Watt oscillator, modulator or RF power amplifier, for heavy duty. Has rugged tungsten filament, rating 11 volts 14.85 amperes. A general-purpose tube.....	97.50
545	50-Watt AF amplifier and modulator. Not generally suited as an oscillator or RF power amplifier	14.70	549	350-Watt modulator, RF power amplifier or oscillator. Especially valuable as a modulator or speech amplifier, interchangeable with UV849	160.00

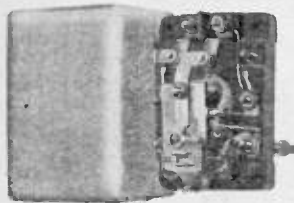


Tubes	Description	Your Cost
565	71½-Watt screen grid RF power amplifier. Useful as buffer amplifier in telephone transmitters. Extremely low control grid-plate capacity and requires no neutralizing	\$ 15.00
560	75-Watt screen grid RF amplifier, extremely low grid-plate capacity, no neutralizing	35.00
561	500-Watt screen grid RF amplifier, interchangeable with UV861.....	292.50
571	750-Watt air-cooled, high-frequency oscillator and RF power amplifier. Extremely valuable at "ultra high" frequencies. A large 552.....	200.00
566	A "Half-Wave", hot hat cathode, mercury vapor rectifier, 2.5 volts, 5 amperes on filament. Maximum peak inverse voltage, 7500. Anode peak current, 0.6 amperes. Especially valuable for amateur transmitter plate supply	3.95
572	A "Half-Wave", hot cathode, mercury vapor rectifier, 5 volts, 10 amperes on filament, 7500 maximum peak inverse volts, anode peak current, 2.5 amperes. Especially useful for broadcast transmitter	16.50



Keying, Time Delay, Remote Control Relays

Time Delay Relay

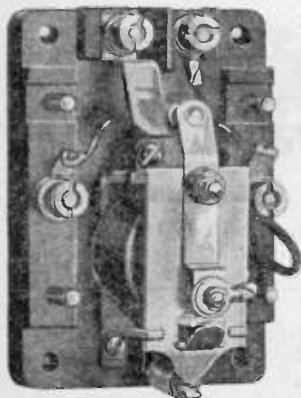


or up to 1000 watts if a choke precedes the first condensers in the filter system.
 2 3/4" long x 1 1/4" wide x 2 1/4" wide.

Dunco Relay, Type CS-1079

Your Cost, \$8.00

Midget Keying Relay



Dunco Relay, Type ASBX1

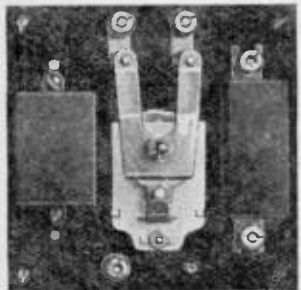
This midget keying relay is suitable for speeds up to 40 words per minute. Contacts are large fine silver buttons assuring long life and may be easily replaced. Coil consumes only 50 milliamperes at 110 volts, 60 cycles, while contacts will interrupt currents of 6 amperes at 110 volts. The unit is designed for mounting on vertical panel, and is recommended for loads up to 660 watts. The contacts close when the coil is energized.

Size 2 3/4" long x 1 7/8" wide x 1 3/4" deep.

Your Cost, \$3.50

Covered, \$1.00 Additional

Constant Temperature Control Relay



Extremely sensitive and a resistor is used to limit the current in the thermoregulator to a safe value of about 12 milliamperes. No battery or other source of power is required as this relay supplies AC at reduced current and voltage to the thermoregulator directly from the power line. Relay is designed for vertical mounting.

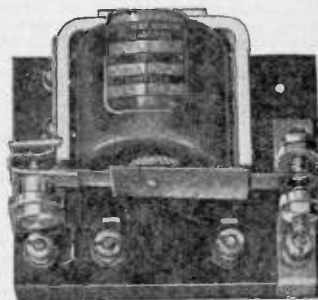
5" long x 5" wide x 3" deep.

Dunco Relay, Type CS-1022

Your Cost, \$10.00

Covered, \$1.00 Additional

Vacuum Tube Relay



Relay type CXB-51 is an ultra-sensitive unit designed for direct current in the coil circuit and either direct or alternating current in the contact circuit. It has single pole double throw contacts, making one circuit when the coil is energized and another circuit when the coil is de-energized. The coil has a resistance of 10,000 ohms, and it will safely carry currents up to 18 milliamperes. Adjustments are provided that will cause the relay to operate on any desired current value down to less than one milliamperer. This unit is particularly adapted to operation in the plate circuit of small vacuum tubes. Contacts are rated at 2 amperes at 110 volts AC.

Size 2 7/8" long x 2 1/4" wide x 2 1/8" long.

Dunco Relay, Type CXB-51

Your Cost, \$5.00

Remote Control Relay



This power type relay handles loads up to 20 amperes at 250 volts or 25 amperes at 125 volts. It is of particular service in remotely controlled transmitters, receivers, motors, or inductive loads of any nature within its rating. Provisions are made so that the mercury contacts will make when the coil is energized and break when the coil is de-energized or vice versa. An outstanding feature is that it is completely silent in operation—no humming or chatter occurs when the coil is energized. Another outstanding feature is that due to mercury-to-mercury contacts there is no sticking or burning of contacts. Sturdy Pyrex enclosed contactors are employed. Standard coils are for operation on 110 volts, 60 cycles, but other coils are available. The unit is designed for vertical panel mounting.

5" long x 4" wide x 3" deep.

Covered, \$1.00 Additional

Dunco Relay, Type CS-1027

Your Cost, \$10.00

Ward-Leonard Keying Relays

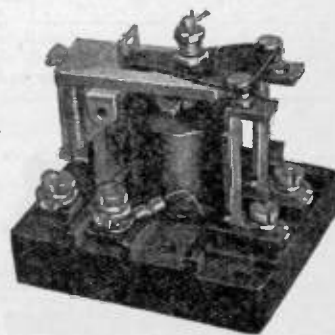
A small compact relay. Simple in construction, dependable in operation, inexpensive in cost. Designed for keying moderately powered transmitters. Hardy metal contacts, good insulation.

Model 507—Single pole, single throw, double break. Operates on 2 1/2 volts D.C.

Your Cost, \$3.00

Model 508—Keying relay same as above excepting coil wound for 6 volts D.C. operation.

Your Cost, \$3.00



Ward-Leonard Time Delay Relay



Model 501 Relay has been designed specifically for the Ham transmitter using mercury vapor rectifier tubes. Delays the application of the plate potential, allowing filaments to reach operating temperature before the load is applied. Supplied for 110 volts, 60 cycles. Complete with dust cover.

Your Cost, \$7.65

Cardwell Transmittin , and Receiving Condensers

CARDWELL MID

TRANSMITTING CONDENSERS

The "Midway" is a small and compact variable air condenser without doubt, should find considerable application for many purposes extremely light weight and reduction of bulk are desirable in receivers mitters and oscillator-amplifier outfits. Condensers of this description have a breakdown rating sufficient for transmitters using up to 75-watt tubes may be had in capacities as high as 150 mmfds. A panel surface of only $2\frac{3}{4}$ " x $2\frac{1}{8}$ " is required and the condensers weigh only 4 to 7 ounces.

A Real Condenser—Not a Midget

Several advantages are apparent—although fully adequate for replacing full size transmitting condensers up to 150 mmfds., the "Midway" condensers are only slightly larger than many so-called "midget" condensers, at the same time having the same well known solid and substantial construction and rotor shaft bearings found in the larger "Cardwell" transmitting and receiving condensers. Because these condensers may be fitted into small spaces, ample room may be allowed between components, and capacity field effects may be reduced without increasing the bulk of the complete instrument to the extent that would be necessary to allow for sufficient separation if the larger condensers were used.

(Suitable for transmitters using up to 75-watt tube)

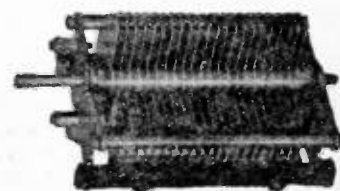
Type	Plates	Depth Behind Panel	Max. Cap.	Min. Cap.	Weight (Approx.)	List Price	YOUR COST
408B	5	$2\frac{3}{8}$ "	22 mmfds.	6 mmfds.	4 oz.	\$2.60	\$1.46
409B	7	$2\frac{3}{8}$ "	35 "	9 "	$4\frac{1}{2}$ oz.	2.80	1.57
410B	11	$2\frac{3}{8}$ "	50 "	11 "	5 oz.	3.20	1.80
411B	15	$3\frac{1}{8}$ "	70 "	13 "	$5\frac{1}{2}$ oz.	3.60	2.02
412B	21	$3\frac{1}{8}$ "	100 "	15 "	6 oz.	4.25	2.39
413B	31	$4\frac{1}{2}$ "	150 "	18 "	7 oz.	5.50	3.08

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

INDIVIDUAL CHARACTERISTICS

TRANSMITTING CONDENSERS

Type	Maximum Capacity	Air Gap Bet. Rotor and Stator Pl.	C. to C. Spacing Between Stator Plates	Plate Thickness	Number of Plates	Depth (back of panel)	List Prices	YOUR COST
141B	.00025	.030"	.110"	.0253"	11	$2\frac{1}{2}$ "	\$ 4.25	\$2.91
123B	.00048	.030"	.110"	.0253"	21	$3\frac{1}{2}$ "	5.00	3.43
137B	.00096	.030"	.110"	.0253"	41	4"	6.00	4.12
T183	.00011	.171"	.422"	.040"	23	$6\frac{1}{2}$ "	10.00	6.86
164B	.00022	.070"	.190"	.0253"	21	4"	5.00	3.43
T199	.00033	.084"	.248"	.040"	37	$6\frac{1}{2}$ "	10.00	6.86
147B	.00044	.070"	.190"	.0253"	43	$5\frac{3}{4}$ "	10.00	6.86
511B	.000023	.171"	.422"	.040"	5	3"	4.00	2.36
513B	.000050	.171"	.422"	.040"	11	4"	7.00	4.80
515B	.000056	.230"	.540"	.040"	15	$5\frac{3}{4}$ "	12.00	8.23



Type T199

CARDWELL "HIGH-POWER" TRANSMITTING CONDENSERS

Construction Design 16-B Type Nos.	Max. Cap.	* Air-Gap	No. of Plates	Depth Behind Panel (Overall)	List Price	YOUR COST
3279	315 mmf.	.168 in.	31	9 9/32"	\$34.00	\$30.60
3280	147 "	.168 "	15	5 13/16"	31.00	28.90
3281	84 "	.168 "	9	4 1/2"	28.00	25.20
3276	160 "	.294 "	25	11"	32.00	28.80
3277	80 "	.294 "	13	6 7/8"	30.00	27.00
3278	47 "	.294 "	7	4 13/16"	28.00	25.20

NOTE:—Static shields are furnished only on condensers having .294" air-gap. *Actual air-gap between adjacent rotor and stator plates. All plates have well rounded edges and are highly polished overall.

May be furnished with Split Stator, if desired

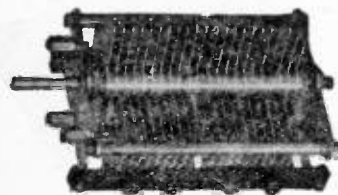
This model is primarily intended to meet requirements where condensers for moderately high voltages are indicated of a size between our Construction Design 166-B and our smaller condenser designs such as T-183, T-199, etc.

The figures given indicate a few possible sizes. The number of plates determining increase or decrease in capacity can be accommodated to suit special requirements, provided that an overall depth behind panel of 11", as indicated for Type No. 3276, is not exceeded.

CARDWELL SPLIT STATOR CONDENSERS

Type 157B

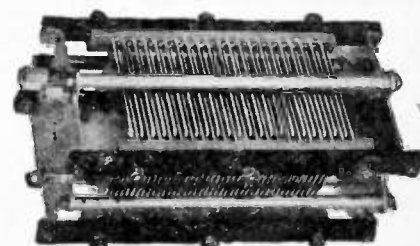
Type	Capacity			Air-Gap Bet. Rotor and Stator Plates	C. to C. Spacing (between Stator Plates)	Plate Thick- ness	Num- ber of Plates (ea. Sec.)	Depth (back of panel)	List Prices	YOUR COST							
	Sections in		Per Section														
	Mult.	Series															
156B	.001	.00025	.0005	.030"	.110"	.0253"	21	4"	\$7.00	\$2.36							
197B	.00016	.00004	.00008	.070"	.190"	.0253"	9	4"	7.00	2.36							
157B	.00042	.00010	.00021	.070"	.190"	.0253"	21	5 3/4"	12.00	8.23							
510B	.00022	.000055	.00011	.171"	.422"	.040"	23	12"	32.00	17.92							
512B	.0001	.000025	.00005	.171"	.422"	.040"	11	6 1/2"	12.00	8.23							



Type 157B

AIR DIELECTRIC FIXED CAPACITORS

Type	Capacity	Air-Gap	No. Plates	Depth (Back of Panel)	List Price	YOUR COST
501	.00025	.070"	12	$2\frac{1}{2}$ "	\$4.50	\$2.52
502	.00042	.070"	20	$3\frac{3}{4}$ "	7.00	4.81
503	.00088	.070"	42	$7\frac{1}{2}$ "	10.00	6.86
504	.00022	.1535"	22	$5\frac{1}{2}$ "	15.00	10.29



Type 503

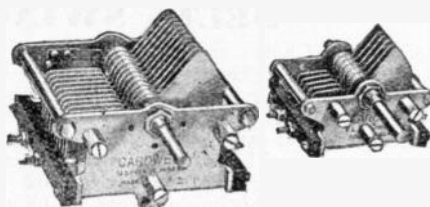
Cardwell Receiving Condensers and Accessories

Cardwell

MIDWAY

FEATHERWEIGHT

Condensers



"Standard" Size
Cardwell
Transmitting
Condenser

Midway
Transmitting
Condenser

Note difference in bulk and panel space required.
Both condensers are shown to same scale.

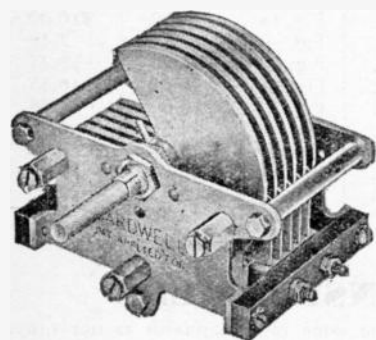
RECEIVING

(.031" Air-Gap)

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

Type	Plates	Depth Behind Panel	Max. Cap.	Min. Cap.	Weight (Approx.)	List Price	YOUR COST
401B	3	2 7/8"	26 mmfds.	7 mmfds.	4 oz.	\$2.10	\$1.18
402B	5	2 7/8"	50 "	8 "	4 1/4 oz.	2.20	1.23
403B	7	2 7/8"	70 "	9 "	4 1/2 oz.	2.30	1.29
404B	11	2 7/8"	105 "	10 "	5 oz.	2.40	1.35
405B	15	2 7/8"	150 "	11 "	5 1/2 oz.	2.50	1.40
406B	25	3 7/8"	260 "	13 "	6 oz.	2.75	1.54
407B	35	3 7/8"	365 "	14 "	7 oz.	3.00	1.78

NOTE—Both Receiving and Transmitting "Midway" Condensers may be had with split stators on special order.

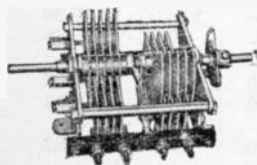


Type 169E

TAPER PLATE TYPE "E"

Type No.	No. Plates	Capacity	List Price	YOUR COST
201E	2	.000050 Adjustable Stator .000010	\$4.00	\$2.36
202E (Split Stator)	10	.000300 (Sections in Multiple) .000075 (Sections in Series) .000150 (Per Section)	4.75	2.80
191E	3	.000075	4.00	2.36
167E	5	.000150	4.00	2.36
168E	7	.000220	4.25	2.50
169E	11	.000350	4.75	2.80
192E	15	.000500	5.00	2.94

New Double-End Cardwells



Type No. 516—A double-end "standard size" condenser. Has 2 separate rotors and stators with positive rotor lock for one section. This type has 90

mmfd. capacity in each section. Designed for either shelf or panel mounting. Can be supplied for other capacities on special order.

List Price, \$7.50

Your Cost, \$4.41

New Cardwell Band Spread Condensers

Type No. 517—Band spread condenser in the famous Midway "Featherweight" model. Has two separate rotors and stators with positive rotor lock on high-capacity section. Designed for either shelf or panel mounting. The model illustrated has 25 mmfd. capacity one section and 50 mmfd. other section.

List Price, \$4.25

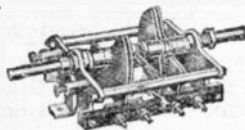
Your Cost, \$2.50

Type No. 518—As above but with 25 mmfd. one section and 100 mmfd. other section.

List Price, \$4.60

Your Cost, \$2.70

Types 517 and 518 can be furnished in other than standard capacities as above on special order.



Handle-Pointers and Scales

For use with our transmitting condensers we are prepared to furnish combination Handle-Pointers and Scales as illustrated. The Handle-Pointer is of cast brass with safety shield and specially treated maple handle. The whole is dull black Duco finish with point picked out in white. The Scales are made of aluminum (1/8" in thickness) reversed metal etch, with white figures and edges and black background. Numerals and divisions from 0 to 180°. Three screw holes are drilled for mounting.



List YOUR Price COST
Handle-Pointer, for 1/4", 3/8"
or 1/2" Shaft \$3.50 \$3.15
Scale (Radius, outside, 3").. 1.25 1.12

Mounting Pillars



Nickel-plated, Brass—1/4" diameter tapped both ends for 6 x 32 screw.
Length
1 1/8" \$0.06
1 7/8"06
3"10



Extension Post

5/8" hexagonal by 1/2" long nickel-plated brass, clearance hole for 6 x 32 machine screw.

Your Cost, \$.021/2 each

MOUNTING BRACKETS

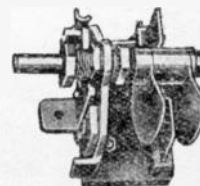
For baseboard and sub-panel mounting.
per pair 15c
(State whether for "Midway" or standard size condensers)

FOR GANG CONTROL

(Not furnished for Balancet condensers)
Extended rotor shaft continuing through rear end and terminating in coupling, 90c extra
(State whether metal or insulated coupling is wanted)

Cardwell Neutralizing Condenser

Type No. 519—Neutralizing condenser for 852 tubes. One plate is easily removable if desired, leaving a 2-plate variable condenser with air-gap adjustable. Mycalex insulation is used.



This condenser is very compact in size, has positive rotor lock and is designed for either shelf or panel mounting.

List Price, \$3.60

Your Cost, \$2.10

DELTA Chokes and Transformers

DELTA SWINGING CHOKES

Delta Swinging Chokes are designed for use as input chokes to filter circuits using mercury vapor rectifier tubes. This type of choke has been developed by careful design and laboratory experiments, and owing to its special characteristics gives marked improvement in voltage regulation, control of peak currents, smoothing of ripple and increased life of rectifier tubes. To determine the size of swing choke: the terminal voltage is divided by the load current, which gives the load resistance. The load resistance is then divided by 500, which gives you the value of choke inductance. We will cheerfully forward you complete diagrams and information, including a special circular, on this line of apparatus upon request.

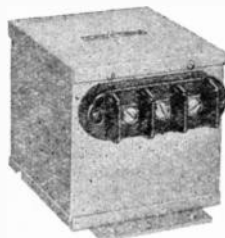


Fig. 9



Fig. 10

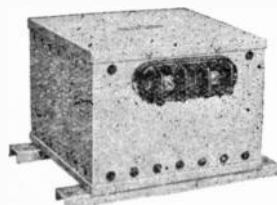


Fig. 11

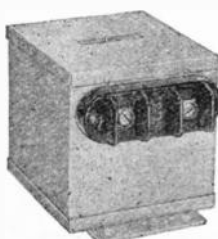


Fig. 12

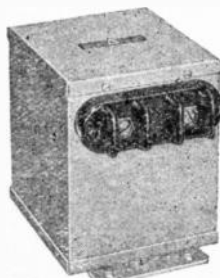


Fig. 14

Cat. No.	Swing	Max. Current	Max. Volts	Ins.	See Figure	List Price	YOUR COST
D 301	6/30 H.	0.175 amp.	500	2500 v.	Fig. 12	\$14.00	\$8.23
D 302	12/60 H.	0.175 amp.	1000	5000 v.	Fig. 12	17.50	10.39
D 303	25/125 H.	0.100 amp.	1000	5000 v.	Fig. 12	16.75	10.03
D 304*	3/15 H.	0.300 amp.	500	2500 v.	Fig. 14	18.25	10.73
D 305	6/30 H.	0.350 amp.	1000	5000 v.	Fig. 11	26.50	15.58
D 306	25/125 H.	0.175 amp.	2000	10000 v.	Fig. 11	28.25	16.61
D 307	12/60 H.	0.350 amp.	2000	10000 v.	Fig. 11	34.50	20.28
D 308	8/40 H.	0.500 amp.	2000	10000 v.	Fig. 11	37.50	22.05
D 309	25/125 H.	0.350 amp.	4000	10000 v.	Fig. 11	44.00	25.87

*Minimum size of 1st Condenser recommended with these chokes is 2 microfarads except D 304 which requires 5 mfd.

DELTA SMOOTHING CHOKES

Delta Smoothing Chokes are designed to obtain maximum inductance under rated loads. Air gaps carefully adjusted by special test bridge. Rugged construction and mounted to reduce hum to a negligible amount.

Type	Henrys	Amps. DC	Energy Storage Watt Seconds	Insul't'n	See Figure	List Price	YOUR COST
D 401	7	.300	.320	5000 v.	Fig. 14	\$17.00	\$10.00
D 402	10	.175	.160	5000 v.	Fig. 9	12.75	7.49
D 403	10	.350	.620	10000 v.	Fig. 11	22.50	13.23
D 404	10	.500	1.250	10000 v.	Fig. 11	29.00	16.85
D 405	15	.110	.091	2500 v.	Fig. 10	10.00	5.88
D 406	20	.100	.100	5000 v.	Fig. 12	11.50	6.76
D 407	20	.175	.310	5000 v.	Fig. 14	15.00	8.82
D 408	20	.350	1.230	10000 v.	Fig. 11	29.00	16.85
D 409	20	.500	2.50	10000 v.	Fig. 11	37.75	22.19
D 410	30	.110	.182	2500 v.	Fig. 12	13.50	7.94

DELTA COUPLING TRANSFORMERS

Delta Coupling Transformers are designed and built to the same high standards as our other products. All transformers are sealed in steel cases having mounting flanges at the bottom. Terminals are mounted at the top for accessibility in rack and sub-panel assembly. Modern practice of sandwiching and sectionalizing windings to reduce leakage reactance and distributed capacity to a minimum is followed throughout the line. Core material is either Allegheny Electric Metal ("A" Metal) or high silicon steel as required for best design.

Catalog No.	LOAD IMPEDANCE		USE	See Figure	List Price	YOUR COST
	Input	Output				
D 701	5000	Grid	Class "B" 2-245 to 2-10	Fig. 10	\$10.00	\$5.88
D 702	5000	Grid	Class "B" 2-50 to 2-10	Fig. 10	10.00	5.88
D 703	2000	5000	Class "B" 2-10 to Class C	Fig. 6	14.50	8.52
D 704	2000	200	Amplf.	Fig. 6	14.50	8.52
D 705	Var'ble	Grid	Class "B" 2-10 to Line	Fig. 10	15.00	8.82
D 706	200	50	Input Trans. Phono. or S.B. Mic. or D.B. Mic. to Grid	Fig. 10	15.00	8.82
D 707	200	Grid	D.B. Mic. to 50 ohm Line (Mixer)	Fig. 10	15.00	8.82
D 708	10000	Grid	200 ohm Line or S.B. Mic. to Grid	Fig. 10	15.00	8.82
D 709	5000	Grid	Amplifier Input or Inter-stage	Fig. 10	15.00	8.82
D 710	15000	200	Push Pull Input	Fig. 10	15.00	8.82
D 711	15000	Grid	'38 Pentode to 200 ohm Line	Fig. 10	15.00	8.82
			'38 Pentode to P.P. Grids.	Fig. 10	15.00	8.82

DELTA Power Transformers

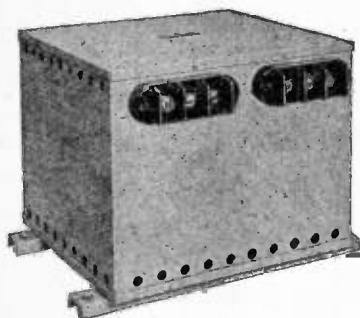


Fig. 1

All Delta transformers are insulated to withstand a peak potential equal to twice their normal operating voltages plus 1000 volts. All transformers are made with material and workmanship of the best quality. All windings in even layers and free from cross-overs. All units are thoroughly dried and impregnated in approved compound before casing. Terminals are suitably insulated and plainly marked. Each transformer will deliver 125% of rated VA output for four consecutive hours without temperature rise exceeding 40°C. No vibration or hum. Excellent regulation. Guaranteed against electrical or mechanical defects for a period of 3 years.

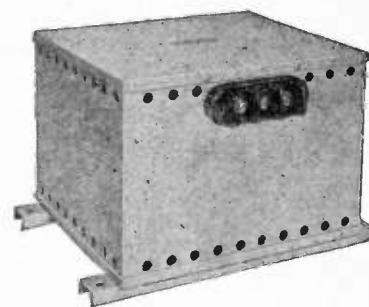


Fig. 8

DELTA FILAMENT TRANSFORMERS

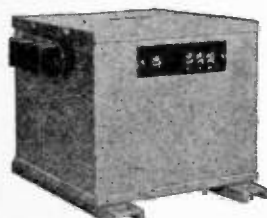


Fig. 2

Type	Use	Volts	Amps	Dimensions Overall	See Fig.	List Price	YOUR COST
D 101	2-866 tubes	2 1/2 CT	10 A	7 "x4 3/8" x4 1/8"	4	\$14.00	\$8.23
D 102*	4-866 tubes	2 1/2 CT	10 A	8 1/2 "x6 "x4 1/8"	3	23.00	13.52
D 103	2-866 low voltage	2 1/2 CT	10 A	3 3/4 "x2 3/4" x3 1/4"	5	11.00	6.46
D 104	1-872 tube	5 v.	10 A	5 1/8 "x4 3/4" x4 1/2"	4	15.00	8.82
D 105	2-872 tubes	5 v.	20 A	7 "x4 3/4" x5 5/8"	4	17.00	10.00
D 106†	2-210 tubes	7 1/2 v.	2 1/2 A	5 1/2 "x4 3/4" x4 1/8"	6	16.50	9.70
D 107*	3-56 tubes	2 1/2 v.	3 A	5 1/2 "x4 3/4" x4 1/8"	6	20.00	11.76
	4-210 tubes	7 1/2 v.	4 A				
D 108	2-203A tubes	10 v.	6 1/2 A	7 "x4 3/4" x4 5/8"	4	15.50	9.11
D 109	2-849 tubes	11 v.	10 A	7 "x4 3/4" x5 1/8"	4	17.25	10.14
D 110†	2-866 tubes	2 1/2 v.	10 A	8 1/8 "x5 "x4 1/8"	4	16.50	9.70
	2-281 tubes	7 1/2 v.	2 1/2 A				
D 111†	2-245 tubes	2 1/2 v.	3.75 A	5 3/8 "x5 "x4 5/8"	6	17.75	10.43
	4-210 tubes	7 1/2 v.	5 A				
D 112*	1-238 tube	6.3 v.	0.3 A				
	2-245 tubes	2.5 v.	3 A	5 3/8 "x5 "x4 5/8"	6	17.50	10.19
	2-210 tubes	7.5 v.	5 A				

*Three windings.
 †Two windings.

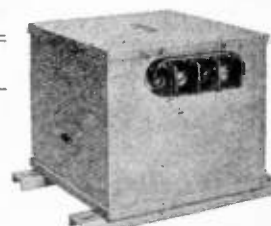


Fig. 7

DELTA PLATE TRANSFORMERS



Fig. 3

Type	Use	OUTPUT		Overall Dimensions	Watts	See Fig.	List Price	YOUR COST
		Volts	Amps					
D 201	Class "B" 210's	500 v.*	.3A	7 "x4 3/4" x7 1/8"	205	4	\$23.00	\$13.52
	4-210 tubes							
D 202	MOPA 203-210 tubes	1000 v.*	.35A	10 "x7 5/8" x7 "	600	3	39.00	23.03
		500 v.*	.15A					
D 203	Universal	1000 v.*	.6A	9 5/8 "x9 3/4" x7 1/8"	820	1	55.00	32.34
	203A-849	2000 v.*	.3A					
D 204	849-861 tubes	2000 v.*	.35	9 5/8 "x9 3/4" x8 1/2"	1350	8	65.00	38.22
		3000 v.*	.35					
D 205	General	1000 v.†	.135	10 "x7 5/8" x6 "	300	2	28.50	16.76
		1500 v.†	.135					
D 206	General	1500 v.†	.176	10 "x7 5/8" x7 "	500	2	36.50	21.46
		2000 v.†	.176					
D 207	General	1500 v.†	.337	9 5/8 "x9 3/4" x8 1/2"	1000	8	48.50	28.52
		2000 v.†	.337					

*DC output of filter.
 †AC voltage each side of center tap.

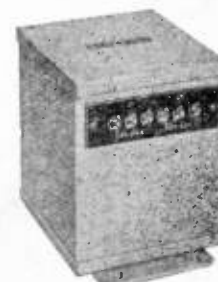


Fig. 6

DELTA MODULATION CHOKES

Made of high permeability steel cores, has high impedance to maintain low frequency response. Sectionalized windings, adequate insulation, full frequency coverage.

Type	Henrys	Max. Amps	Resis.	Insulation	Fig. No.	List Price	YOUR COST
D 450	45	.100	515	10000 v.	4	\$18.00	\$7.64
D 451	45	.175	345	10000 v.	8	31.00	18.22
D 452	45	.350	250	10000 v.	7	48.50	27.54



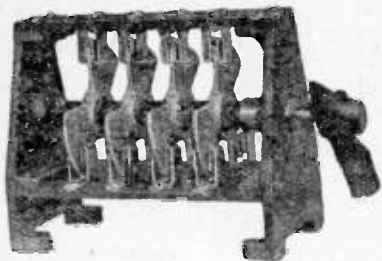
Fig. 4



Fig. 5

M & H for R. E. L. Apparatus

Antenna Change Over Switch



The REL Cat. No. 269 four-pole, double-throw rotary switch is suitable for a variety of purposes in radio and electrical installations. Its chief radio uses are:

1. Antenna change over switch where it is desired to disconnect filament and other auxiliary circuits.
2. Wave-length changing switch.
3. As a means of changing from CW to phone, or vice versa.

Ample insulation, 3500 volts and will carry 20 amps.

List Price, \$12.50

Your Cost, \$9.00

Radio Frequency Choke



REL Cat. No. 132 is adaptable in all short-wave receiver circuits and in low-powered transmitter circuits. This choke may be used to good advantage in grid circuits of high power tubes.

The No. 132 choke is of the "pie wound" type, having 5 small pancake windings. This design reduces the effective field of the choke coil and also the distributed capacity of the windings. Will work efficiently at all wave-lengths between 15 and 90 meters. The coil measures $2\frac{1}{4}$ " x $\frac{1}{8}$ " diameter.

Cat. No. 132 RF Choke Coil,
List Price.....\$1.10

Your Cost, 72c

50-Watt Tube Socket

Cat. 131A

The REL Cat. No. 131-A power tube sockets fit all standard 50-watt base tubes. Maximum insulation is obtained by the use of heavy glazed Isolantite forms. All metal parts are nickel-plated. Connections may either be made

to the No. 10 terminal screws or else soldered directly to the extended portion of the contact springs. All connections are plainly marked.

The Cat. No. 131-A sockets have a base diameter of $3\frac{1}{8}$ " diameter and are designed to be mounted by means of two screws spaced $2\frac{1}{8}$ " between centers.

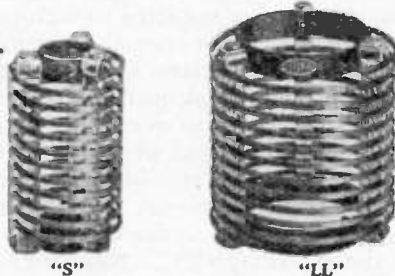
List Price, \$2.75 ea.

Your Cost, \$1.62

Short-Wave Plug-in Coils

Coil forms are of one-piece moulded bakelite construction. Minimum amount of dielectric in coil fields. Suitable for receiver or transmitters up to 30 watts. Six contacts. Dimensions $4\frac{1}{2}$ " long, 2" diameter. **YOUR COST**

Coil Forms Only\$0.84
Base Only84



"S"

Type "S"

Type "S" 3" diameter, 6" long, 11 $\frac{2}{3}$ turns. Expressly designed for extreme high-frequency transmission. 15,000 kilocycles (20 meters) or more; however, it can be used down to 3000 kilocycles (100 meters) in circuits employing large shunt capacity.

Type "L"

Type "L" 5" diameter, 6" long, 11 $\frac{2}{3}$ turns. For transmission in the 1715, 3500 and 7300 kilocycle bands (150, 80 and 40 meter bands) depending on the amount of capacity shunted across the inductor.

Type "LL"

Type "LL" 8" diameter, 6" long, 11 $\frac{2}{3}$ turns. Specially designed for transmitters operating below 1500 kilocycles (above 200 meters). A number of these units may be connected in series.

	List Price	YOUR COST
Type "L" or "S", Single Unit.....	\$5.50	\$3.30
Type "L" or "S", Double Unit.....	11.00	6.60
Type "LL", Single Unit	11.00	6.60

Tube Holder

Type 52

This holder has been designed to be used with this very popular amateur short-wave tube. It is adapted for use with type 52 and type 60 tubes. These are of the 75-watt type either with or without screen grid. When ordering for type 60 tube specify.

Heavy insulated base with engraved terminals. Polished hard rubber pillars for connecting grid and plate leads from tube. The tube is tightly held in position.

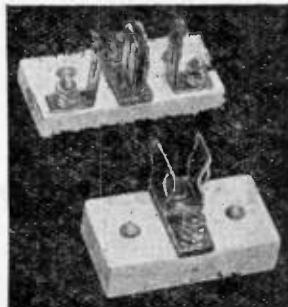
The ideal tube mounting for the ultra short-wave transmitter.

Cat. No. 129, List Price\$2.50

Your Cost, \$1.70

250-Watt Tube Mountings

Cat. 128A—Code "Efsel"



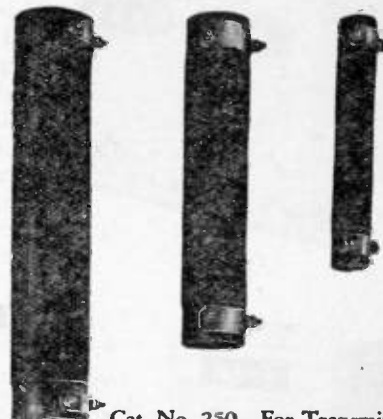
The REL Cat. No. 128A power tube mountings fit all standard double ended tubes such as types — 04A, — 49 — 51, — 61, — 69, etc. Heavy glazed Isolantite blocks are used for the mounting of the various contacts. This insulating material has been recently approved by the Navy Department.

ment as one of the few materials which will provide perfect insulation for high-frequency work. All metal parts are nickel-plated.

Price per pair, \$4.75

Your Cost, \$3.08

Radio Frequency Chokes



Cat. No. 250—For Transmitters

The REL Cat. No. 250 radio frequency choke coils have been designed for use in transmitter circuits of medium power. They can be used with efficiency and safety in all transmitters employing up to 1,000 watts. Although they are primarily intended for plate circuits, they can with equal efficiency be used in grid circuits in Piezo crystal circuits, or in any position where an efficient RF choke coil is required.

The Cat. No. 250 RF chokes are single layer wound on Bakelite tubes. Each choke coil is covered with transparent insulating lacquer, thereby assuring constancy under all climatic conditions. Special care is taken in the method employed for making terminal connections.

The Cat. No. 250 chokes are furnished in three types. Each one is capable of carrying 500 milliamperes. Each one is designed to operate on a particular wave-length. Therefore, when ordering be sure to specify the correct type number for your particular purposes.

The Cat. No. 250-A radio frequency choke coil is designed for transmitter circuits operating on wave-lengths between 15 and 90 meters. Inductance .26 millihenries, DC resistance 5.2 ohms. Size $\frac{3}{4}$ " diameter x $4\frac{1}{2}$ " long.

Cat. No. 250-A Choke **Your Cost, 85c**
Coil, List Price...\$1.30

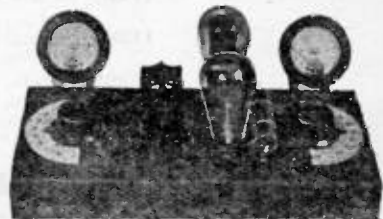
The Cat. No. 250-B radio frequency choke coil is designed for transmitter circuits operating on wave-lengths between 90 and 200 meters. Inductance .73 millihenries, DC resistance 7.1 ohms. Size 6" long x 1" diameter.

Cat. No. 250-B RF Choke **Your Cost, \$1.43**
Coil, List Price...\$2.20

The Cat. No. 250-C radio frequency choke coil is designed for transmitter circuits operating on wave-lengths between 200 and 500 meters. Inductance 2.1 millihenries, DC resistance 22 ohms. Size $7\frac{1}{2}$ " long x $1\frac{1}{2}$ " diameter.

Cat. No. 250-C RF Choke **Your Cost, \$3.00**
Coil, List Price...\$4.50

The New R.E.L. "Globe Girdler"

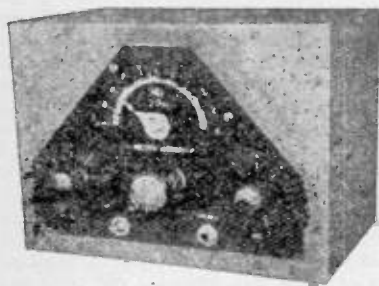


Cat. No. 271 30-watt push-pull telegraph transmitter for use on 10, 20, 40 or 80 meter ham bands. A real TPTG Xmtr and cheaper than you can actually build it yourself. Uses any type tubes from 199 to 510, and gives out real signal like those of commercial stations. Meters shown are not supplied as standard equipment, but we can furnish them at an extra charge.

List Price\$17.50
YOUR COST\$15.45
Additional Coils, per pair 2.35

REL Amateur Supplies

REL No. 296 5-Meter Receiver



The now famous REL No. 296 five-meter receiver is an outstanding development in high-frequency reception. Hundreds of these instruments have been sold and DX records are being made daily. Full band spread over entire five-meter band, extremely sensitive and wonderfully selective. Uses two 6-volt type 337 and one type 338 tubes, requires 6 volts "A" supply and 135 volts of "B".

REL No. 296 Receiver, wired less tubes
Your Cost, \$20.50

REL No. 297 5-Meter Transmitter

A fitting companion to the above receiver is the REL Cat. No. 297 Amateur 5-Meter RADIO TELEPHONE TRANSMITTER, designed and paneled exactly as the above and housed in a metal cabinet 13" x 7" high x 6" deep, designed to use either of two tube combinations, without any changes whatever in the circuit wiring, and by the way, the first combination makes this outfit extremely portable, employing two Type -01A's and two Type -33's. Power required is 6 volts for filament, 135 volts for plate and 13 volts for C. The second tube combination employs two Type -45's and two Type -47's, requiring 2½ volts for filament, 250 volts plate and 16 volts for C. Eight-foot battery cable supplied for connections. Frequency-measuring apparatus is not absolutely necessary, since the No. 297 transmitter is calibrated so that the amateur will be able to place the unit in operation immediately.

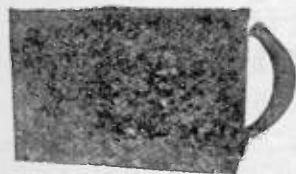


REL No. 297 Transmitter, wired less tubes

Your Cost, \$27.75

REL Portable Short-Wave Receiver

Uses Low Drain Tubes



A really portable short-wave receiver that is exceptionally compact and light enough to be carried around. This little set, which has numerous uses, is rather ingeniously constructed. The three features of lightness, strength and rigidity, which are essential to any "portable" receiver, are obtained by the use of an aluminum case cast in one piece without joints. It measures only 11 ins. long, 7½ ins. high, and 4¼ ins. deep, and contains both "A" and "B" batteries in addition to a two-tube regenerative tuner and amplifier of simple but efficient design. It is the most compact and efficient receiver available. Ideal for amateurs—police departments—ship operators—forest patrols—mining exploits—etc. Can be used for monitoring—interference finding—stand-by receiver—time signals—weather and press. Completely shielded and self-contained in one-piece cast aluminum case with carrying handle. Weight when completely loaded—12 lbs. Complete with 3 plug-in coils covering continuous wave-length range from 20 to 100 meters. Coils for other ranges can be furnished. Employs two UX-230 tubes. Requires two small 22½-volt "B" and one standard 4½-volt "C" battery for "A" supply. Sold complete, ready to operate with coils; no tubes or batteries, however, included. Shipping weight, 14 lbs.

No. 273 REL Portable Short-Wave Receiver
Your Cost, \$27.00

Complete with Burgess Batteries and Cunningham or RCA tubes

Your Cost, \$33.00

New Electron-Coupled Frequency Meter

This new apparatus uses the latest development in frequency-measuring design. Stability and accuracy approach that of a Piezo crystal oscillator. Accuracies to better than .025 can readily be obtained and with reasonable care it will hold this calibration since tube changes and battery voltages have no effect on the frequency. Has high output, rich in strong harmonics, allowing use on all amateur frequencies. Cast-aluminum box beautifully finished in black "leatherette"



lacquer. A 6-inch REL dial with micrometer indicator permits accurate readings to better than one part in 2,000. Requires one type 336 tube, 6 volts "A" and 135 volts "B". Also made to use 224 tube for A.C. operation.

YOUR COST

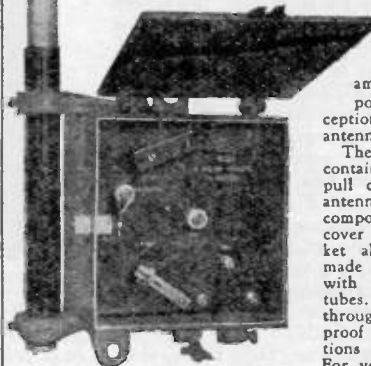
Wired but not calibrated.....\$28.50

Calibrated 1,715 to 2,000 KC, specify tube 36.00

Kit, consisting case, condenser, dial and coil, with instructions how to wire.... 22.50

5-Meter Pole OSC

The new REL "E" 300 ultra high-frequency outdoor CW transmitter unit was made for those who desire the ultimate in attaining DX transmission on 5 meters. Each transmitter is furnished with an 8-foot long, 1 inch diameter, seamless, aluminum pole, which makes an exceptionally efficient half-wave antenna.



The complete oscillator case contains two tubes in a push-pull circuit, tuning condenser, antenna condenser and other component parts. A hinged cover fitted with a rubber gasket allows adjustments to be made readily. Suitable for use with 201A's, 112A's or 245 tubes. Connections are made through a four-wire weather-proof cable. Complete instructions furnished with each unit. For voice transmissions we recommend the type 301 modulator unit to be used with this transmitter.

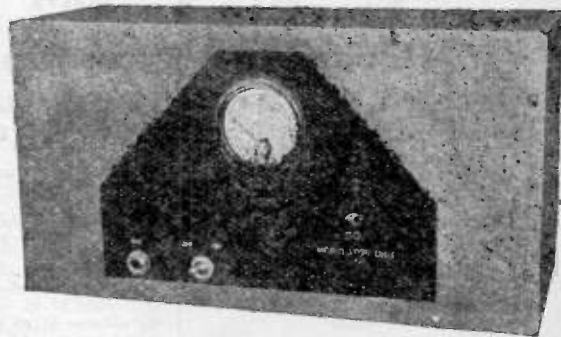
YOUR COST
 Transmitter, complete, less tubes and battery cable\$31.50
 Four-wire weatherproof cable, per foot..... .12

5-Meter Modulator Unit

The REL Cat. No. 301 modulator unit has been specially designed to operate in conjunction with the REL Cat. No. 300 ultra high frequency outdoor CW transmitter unit. It contains the necessary modulator circuit equipment and also the Weston plate milliammeter for indicating total plate current drawn by both oscillator and modulator tubes.

When employed with the lower power combination, that is, two -33 pentodes as modulators and having two -01A tubes as oscillators (oscillator remote control outdoor type, REL Cat. No. 300), the power required is 6 volts filament, 135 volts plate and 13½ volts "C" bias. When used for higher power the tube combination will be two type -47 pentodes as modulators and two type -45 tubes as oscillators, which will require a power of 2½ volts filament, 250 to 300 volts plate and 16 volts "C" bias.

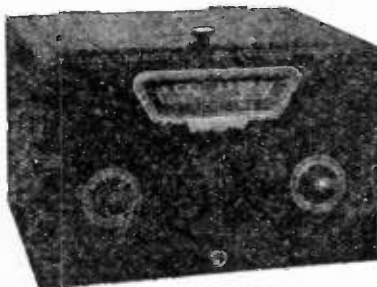
REL No. 301 Modulator Unit
 Wired Less Tubes **Your Cost, \$25.50**



REL Short-Wave Apparatus

New REL Amateur Band Spread Receiver

Employing the rugged automobile tubes, uses one 236 screen grid in RF stage, one 236 screen grid detector, special audio coupling unit for tone and maximum signal gain, the famous REL band spread-condenser with bearings floating in mercury eliminates all possibility of noises on high frequencies due to varying contact resistances. Has a full 100-degree band spread on all amateur frequencies, uses low-loss coil form made of bakelite with less than 10% of the form touching the wire. Forms are slotted to prevent slipping of turns, consequently permitting the accurate logging of stations. Uses 238 Pentode in audio stage, gives a signal volume level that is really astounding!! Can easily be modified for A. C. operation, if desired. Uses plug-in battery cable for convenience or portability. The smoothest regeneration control yet devised. No squealing or "fring howl" due to peak regeneration.



The Original Band Spread Receiver

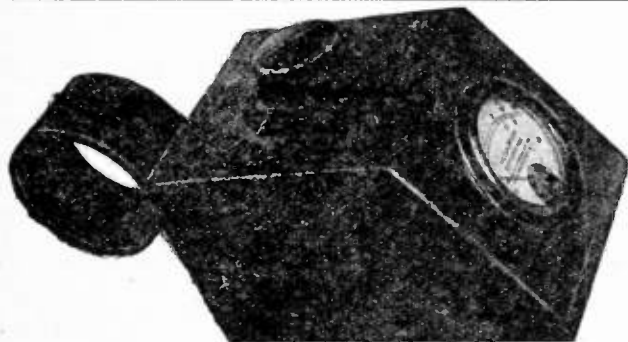
Low noise level from disturbing electrical circuits because of battery operation and complete shielding. Calibrated volume control reading in direct audibilities from R1 to R9. Full vision dial with the entire scale illuminated and hair-line pointer. Small in size and weight and suitable for marine, aeronautical or commercial uses by using the proper coils. Coils can be supplied to cover any special frequency desired. A full one-year guarantee with absolutely free replacement of parts and no charge for service. Neat crackle brown finish cabinet harmonizing with various other equipment. We truly are enthusiastic about this receiver and know that you, too, will become likewise, when you try it.

Wired and ready to use.

List Price, \$45.00

Your Cost, \$28.50

SET OF TUBES CONSISTING OF TWO 236 AND ONE 238 RCA OR CUNNINGHAM, \$4.83



New REL Percentage Modulation Indicator

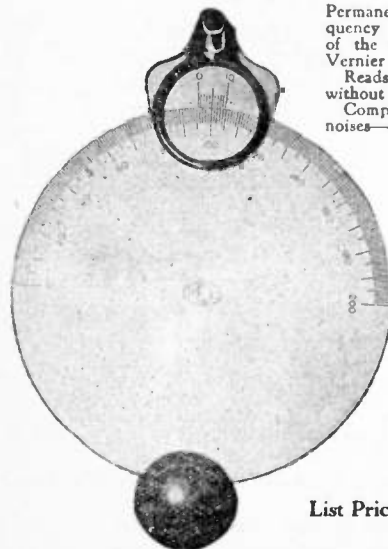
The type No. 286 indicator provides the ultra modern amateur phone operator with a simple, easy means of constantly checking the percentage of modulation. Meter calibrated directly in percentage modulation. No direct connections to transmitter, simply place near lead-in. Mounted in a cast-aluminum case, black crackle finish. Coils for any frequency band, but unless otherwise specified it will be supplied in 3,500 to 4,000 KC phone band only.

Complete, ready to use

Your Cost, \$28.00

New REL No. 292 Micrometer Type Dial

REL Cat. No. 292, 6" diameter Micro Vernier Dial, with magnifying glass attachment. Briefly described as follows:



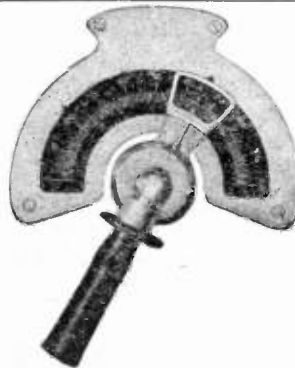
Permanency of calibration in modern frequency meters depends on the accuracy of the dial. REL No. 292 is the Micro Vernier Dial that does the job.

Reads directly to one part in 2,000 without guesswork.

Complete elimination of metallic friction noises—smooth non-backlash vernier control—ratio 12 to 1—6 ins. diameter accurate engine approved scale—scale and indicator on same plane eliminates Parallax. (Parallax is the apparent difference in readings obtained when the dial is viewed from different angles. It is negligible when the indicator and the dial are in the same plane and becomes worse when the two are farther apart.) Errors due to overlapping of indicator and scale. Fitted with magnifying glass allowing dial to be read at distances of two to four feet. Easily attached to any well-designed variable condenser having 1/4" diameter shaft.

List Price, \$12.50

Your Cost, \$8.75



REL No. 276 Lock Dial

A beautiful new silver-finished dial with black background for figures. Dial can be set and locked into position by pressing down on lever. Positions may be easily engraved on upper portion of dial. A real commercial-looking dial, suitable for use wherever a control is required on transmitters. Insulated handle—no danger of shocks, etc.

List Price, \$6.00

Your Cost, \$4.20

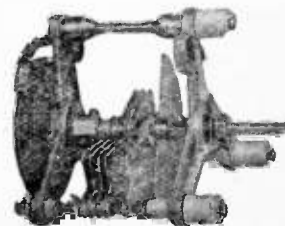
REL Band Spread Condenser

REL No. 187E Band Spread Condenser for use in frequency meters, receivers or transmitters or wherever a rigid heavy-duty condenser is required. Every conceivable modern design feature is incorporated in the mechanical construction of this condenser. Isolantite stand-off bushings are furnished allowing this unit to be directly mounted on metal panels without grounding of either the stator or rotor plates. The bearings are of special conical construction employing a noiseless friction contact highly essential in ultra short-wave work. The panel space required for mounting is 4 1/4" x 4 1/4". The maximum overall depth behind panel is 4 1/4". The shaft will take any standard 1/4" dial. Maximum capacity of the tank condenser 115 mmf. Breakdown voltage 1,000 volts D.C. Net weight 1 1/2 pounds. Packed in individual boxes.

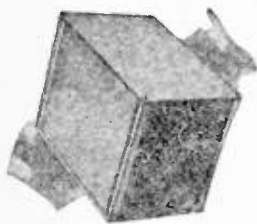
List Price, \$6.25 each

Your Cost, \$4.35

Other Sizes Available



Aluminum, Bakelite and Hard Rubber

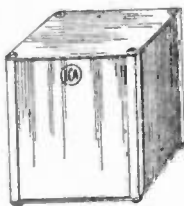


Aluminum shield cans are supplied in knock-down form with drilled and tapped corner posts. Can be put together by anyone in a few minutes with aid of only a screw driver. Material of No. 16 thickness.

No.	Size	List Price	YOUR COST
1203	8x8x6	\$4.00	\$2.36
1204	6x6x6	3.50	2.05
1205	9x5x6	3.00	1.77
1206	5x5x6	2.75	1.63
1207	10x8x6	4.50	2.65
1208	14x7x6	4.75	2.80
1209	12x10x6	5.75	3.38
1210	18x9x6	7.75	4.56
1211	12x6x6	3.50	2.05

Electralloy Cans

Electralloy cans are a non-corrosive, non-magnetic material for radio panels, radio cans and radio shielding purposes. Drills and machines much easier than other metals. Finished in beautiful dull silver. Supplied in No. 16 thickness as follows:



No.	Size	Price	YOUR COST
1184	8x8x6	\$3.00	\$1.77
1185	6x6x6	2.75	1.63
1186	9x5x5	2.50	1.47
1187	5x5x6	2.25	1.33
1188	4x5x6	2.00	1.18
1189	10x8x6	3.50	2.05
1190	14x7x6	3.75	2.25
1191	12x10x6	4.75	2.80
1192	18x9x6	6.25	3.68
1193	12x6x6	2.75	1.63

Electralloy Panels

No. 16 Thickness

No.	Size	List Price	YOUR COST
1175	7x10	\$0.50	\$0.30
1176	7x12	.60	.36
1177	7x14	.70	.42
1178	7x16	.80	.48
1179	7x18	.90	.53
1180	7x21	1.05	.62
1181	7x24	1.20	.71
1182	7x30	1.50	.88
1183	36x36	8.50	5.00

Bakelite Rods (Round)

Min. Length 12"

No.	Diameter	per foot	YOUR COST
175	1/4"	\$0.36	
176	3/8"	.46	
177	1/2"	.70	
178	5/8"	.98	
179	3/4"	1.26	
180	7/8"	1.60	
181	1"	1.94	

Aluminum Panels

Same material as shield cans. No. 16 thickness.

No.	Size	List Price	YOUR COST
1194	7x10	\$0.85	\$0.49
1195	7x12	1.05	.59
1196	7x14	1.25	.69
1197	7x16	1.45	.86
1198	7x18	1.65	.88
1199	7x21	1.90	.99
1200	7x24	2.00	1.18
1201	7x30	2.50	1.47
1202	24x36	9.50	5.69

Special Sizes Cut to Order

	YOUR COST per sq. in.
3/32" thickness	6/10c
1/8" thickness	1c
3/16" thickness	3c
1/4" thickness	4c

Aluminum Corner and Angle Posts



No.	Size	YOUR COST
1212	6" corner posts drilled and tapped	\$0.18
1213	Corner posts not drilled or tapped, per foot	.21
1214	1/2" angle post, 1/8" thick, per foot	.18
1215	3/4" angle post, 1/8" thick, per foot	.21

Bakelite Tubing

(Cut to Order, Wall Thickness 1/8")

Outside diameter	YOUR COST per linear inch
1" or 1 1/4"	\$0.04
1 1/2" or 1 3/4"	.06
2" or 2 1/4"	.07
2 1/2" or 2 3/4"	.08
3" or 3 1/4"	.09
3 1/2" or 3 3/4" or 4"	.10

Hard Rubber Radio Panels

Selected Hard Rubber Panels

No.	Size	Thick	YOUR COST
800	7x10		\$0.49
801	7x12		.60
802	7x14		.70
803	7x18		.90
804	7x21		1.05
805	7x24		1.20
806	7x26		1.35
807	7x28		1.40
808	7x30		1.50

Cast Aluminum Boxes

A one-piece cast aluminum box for frequency meters, etc.

Size	YOUR COST
9x5x6	\$3.00
10x6x6	3.50
12x8x8	6.30

Bakelite Radio Panels

Black—Mahogany—Walnut



Bakelite panels may be had in three finishes—glossy black, beautiful grained mahogany and American Walnut. Each panel is packed in a strong envelope.

No.	Size	Thick	YOUR COST
842	7x10		\$0.90
843	7x12		1.09
844	7x14		1.26
845	7x18		1.62
846	7x21		1.96
847	7x24		2.24
848	7x26		2.34
849	7x28		2.52
850	7x30		2.70
851	7x36		3.24

Special sizes cut to order any finish—black, mahogany or walnut.

	YOUR COST per square inch
1/8"	1c
3/16"	2c
1/4"	2.5c

Cold-Rolled Polished Steel Panels

No. 16 Thickness

Can be used for shielding in amplifiers, receivers, chassis, etc.

Catalog No.	Size	Approximate Weight	YOUR COST
1900	7x10	less than 2 lbs.	\$0.12
1901	7x12	" "	.14
1902	7x14	" "	.16
1903	7x16	" "	.18
1904	7x18	2 1/4 lbs.	.21
1905	7x21	2 1/2 lbs.	.23
1906	7x24	3 lbs.	.27
1907	7x30	3 1/2 lbs.	.33
1908	36x36	22 1/2 lbs.	2.00

Angle Iron

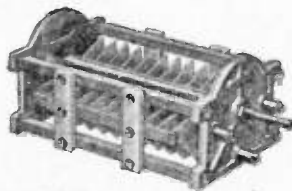
For building transmitting amplifiers or receiver racks, etc.

Catalog No.	Size	Weight per 100 Feet	YOUR COST per foot
2000	1/2" x 1/2" x 1/8"	38 lbs.	4c
2001	3/4" x 3/4" x 1/8"	60 lbs.	4c
2002	1" x 1" x 1/8"	80 lbs.	4 1/2 c

No order for less than ten feet accepted.

For Better Radio**Hammarlund****Precision Products****New Hammarlund Transmitting Condensers**

Incorporating features usually associated only with high-power transmitters, these condensers represent a marked advance in both design and construction for medium and low-power installations. Wider spacing and rounding the edges of plates permit greatly increased voltages. The use of extruded Isolantite for insulation assures highest efficiency.



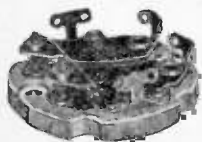
Greater rigidity and freedom from vibration provide for absolute steadiness of signal. These features, combined with very light weight and good appearance, make HAMMARLUND Transmitting Condensers ideally suited to the requirements of the professional, amateur and laboratory.

LIST OF STANDARD SIZES
Other Capacities and Air-gaps to Special Order

Code No.	Capacity mmf.	Number Plates	Plate Thickness	Plate Edges	*Plate Spacing	Voltage Rating	Overall Length	List Price	YOUR COST
TC-30-A	30	7	.040"	Rounded	.192"	6500 V.	3 3/8"	\$5.00	\$2.94
TC-50-A	50	11	.040"	Rounded	.192"	6500 V.	4 1/8"	6.50	3.82
TC-100-A	100	21	.040"	Rounded	.192"	6500 V.	6 1/8"	9.50	5.58
TC-150-A	150	31	.040"	Rounded	.192"	6500 V.	8 1/8"	13.50	7.94
TC-225-A	225	47	.040"	Rounded	.192"	6500 V.	12 21/32"	18.00	10.58
TC-100-B	100	11	.040"	Rounded	.080"	3000 V.	3 3/8"	5.50	3.23
TC-150-B	150	17	.040"	Rounded	.080"	3000 V.	3 3/8"	6.50	3.82
TC-225-B	225	23	.040"	Rounded	.080"	3000 V.	4 1/8"	8.00	4.70
TC-335-BX	335	43	.040"	Rounded	.100"	3500 V.	7 1/2"	12.00	7.05
TC-450-B	450	47	.040"	Rounded	.080"	3000 V.	7 1/2"	12.00	7.05
TC-225-X	225	23	.025"	Plain	.080"	2000 V.	4 9/32"	6.00	3.52
TC-350-C	350	19	.025"	Plain	.038"	1000 V.	3 3/32"	5.00	2.94
TC-500-C	500	27	.025"	Plain	.038"	1000 V.	3 3/8"	5.50	3.23

* Actual Air-gap between adjacent rotor and stator plates

General Specifications:—The following general specifications cover all of the standard condensers listed herewith. Overall width 4 1/8", overall height 3 3/8". overall lengths as per table. Shafts are 1/4" diameter and extend 1 1/8" beyond panel mounting bushings. All metal parts are aluminum except shaft, bearings and contact surfaces. Steel parts are heavily cadmium-plated. Lock washers used under all screws. Extruded Isolantite (B-100 compound) used throughout for insulation. Bearings are accurately fitted and consist of a long split bearing at the front end and a rear ball bearing. Rotor contact is by means of a phosphor-bronze self-cleaning brush. Three panel mounting bushings for No. 8-32 screws are packed with each condenser. End frames are also drilled and tapped for table or shelf mounting. Condensers are fully guaranteed and for protection are packed individually in strong corrugated cartons.

New Hammarlund IF Tuning Condensers

These condensers, except for having two sections, are identically the same as the single described below. Their principal use is for tuning the intermediate frequency transformer stages in superheterodynes. Sensitivity and selectivity depend upon these condensers maintaining constant capacity and constant power

factor under varying conditions of temperature, humidity and vibration encountered in actual service. HAMMARLUND condensers will more than meet these conditions. The MICD condenser shown measures 1 1/8" in diameter. The ICD is a similar condenser measuring 2 3/8" in diameter. Condensers are individually tested for capacity, power factor and breakdown.

	List Price	YOUR COST
Code MICD-70 or ICD-70 (10 to 70 mmf.)	\$0.80	\$0.47
Code MICD-140 or ICD-140 (70 to 140 mmf.)	.90	.53
Code MICD-220 or ICD-220 (140 to 220 mmf.)	1.00	.59

Hammarlund Adjustable Padding Condensers

Hammarlund adjustable condensers, as now improved, are the result of seven years' specialization on condensers of this general type. Quality has been constantly improved through research work carried on for the larger electrical laboratories and radio manufacturers in the development of condensers to resist effects of moisture, temperature and vibration. Bases are Isolantite, conditioned to resist moisture and to maintain constant volume and surface resistance. Only the most expensive imported mica is used. The phosphor-bronze flexible plate is shaped to provide substantially straight-line-capacity increase. Adjusting screws have machine-cut threads and self-aligning conical seats. Solder-dipped, heat-dissipating terminals are employed. Fixed plates are securely anchored. Fibre shock-pads prevent strains being set up in the base. Contact between plates is positive. Other capacities to Special Order.

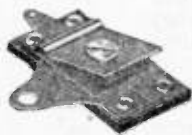
Note: Actual minimums are lower, and actual maximums are higher than above rated. Condensers are tested for capacity, power factor and for breakdown at 450 volts A.C. Size of base is 1" x 1 1/8".

Used for trimming, aligning, compensating and padding purposes, or wherever a high quality, compact, adjustable condenser is required. The higher capacity units are used as superheterodyne oscillator series condensers.

	List Price	YOUR COST
Code MICS-70 (10-70 mmf.)	\$0.50	\$0.29
Code MICS-140 (70-140 mmf.)	.60	.35
Code MICS-220 (140-220 mmf.)	.70	.41
Code MICS-1000 (600-1000 mmf.)	1.00	.59

Hammarlund Equalizers

A very small condenser for neutralizing, balancing and trimming purposes. Useful for balancing multiple-tuned circuits or for equalizing gang condenser units. Adjustment of center screw provides gradual capacity change over a wide range. May be attached directly to binding post of socket or condenser. Mica dielectric, phosphor-bronze flexible plate and bakelite base. Size of base is 1 1/4" x 1 1/8".



	List Price	YOUR COST
Code EC-35 (3-35 mmf.)	\$0.35	\$0.21
Code EC-80 (25-80 mmf.)	.45	.27

Hammarlund Flexible Couplings

This coupling permits tandem operation of any number of independent units without requiring exact shaft alignment. A great convenience and time-saver.

The sides of the condenser are insulated from each other, allowing instruments in gang to be operated as independent electrical units.



Made of Bakelized canvas, with brass bushings and for 1/4" shafts. Four rustproofed and hardened steel set screws provide against shafts slipping. Overall diameter is 1 1/2".

Code FC
List Price, \$0.60
Your Cost, \$0.35

Hammarlund Isolantite Sockets

Low-loss sockets are just as important as low-loss coils or low-loss condensers. In these sockets Hammarlund has combined low cost with low loss, making improved

short-wave reception available to everyone. Constant resistivity and perfect contact eliminate noise.

Made of Isolantite for lowest losses and highest surface resistivity. Glazed top and sides, rustproof side gripping contacts. Sub-panel or base mounting. Four, five and six-prong types. 2 1/4" long by 1 1/8" wide, standard 1 27/32" mounting centers.

Hammarlund Isolantite sockets and coil forms provide a short-wave combination guaranteeing maximum sensitivity and selectivity. Ideal for low-power transmitters.

	List Price	YOUR COST
Code S-4 (four-prong) ...	\$0.60	\$0.35
Code S-5 (five-prong) ...	.60	.35
Code S-6 (six-prong) ...	.60	.35

Hammarlund Precision Products

Hammarlund Comet "Pro" Short-Wave Superheterodyne

The Comet "Pro" is a high-frequency superheterodyne receiver designed to meet the exacting demands of professional operators and advanced amateurs interested in the reception of both code and voice signals in the frequency range from 20,000 KC to 1,500 KC, or 15 to 200 meters. In addition to being an excellent general-purpose receiver it is also ideally suited for experimental and research work involving frequencies in that range where high sensitivity, low noise level, and great selectivity are important.

The present model includes certain improvements made possible through use of the new "50 series" tubes and employment of the recently developed "electron coupled" type of oscillator. These major changes, plus a number of minor refinements, result in improved selectivity, even greater sensitivity and complete stability under all conditions of operation. A heater type Pentode output tube is now used in a special circuit to provide humless reception at either full loud-speaker volume or on headphones. A well-ventilated metal cabinet of attractive and sturdy design is now standard equipment but walnut cabinets will continue to be available as optional equipment at no additional cost. That the "Pro" is a remarkable and unusually efficient receiver is perhaps best attested by the character of its users. To enable you to judge the "Pro" on this basis the following partial list of prominent users is provided: Bell

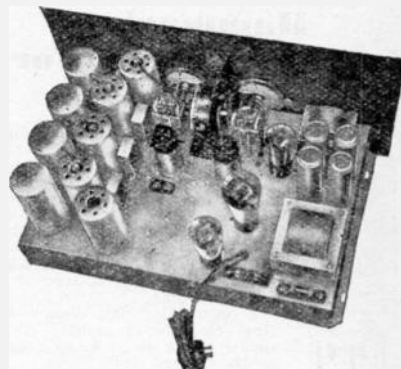
Telephone Laboratories, International Telephone and Telegraph Company, National Broadcasting Company, Columbia Broadcasting System, American Radio News Service, American Airways, Eastern Air Transport Company, Northwest Airways, Transcontinental and Western Air, Inc., Canadian Signal Department, Naval Research Laboratory, Marine Signal Corps, War Department Message Center, Naval Observatory, and others of equal prominence.

Although designed for communications, airport, broadcasting, police, and other equally important services, the "Pro" is so easy to tune that even the veriest novice can readily tune in stations from over the entire world for his entertainment. Operators of amateur stations, especially 'phone stations, praise the receiver highly for its ultra-selectivity, low noise level and its efficient band-spread tuning system.

A sixteen-page booklet, giving complete technical details and performance data, will be supplied on request. No obligation on your part except to write for it.

Code	List Price	YOUR COST
PRO—"Pro" Receiver, less tubes . .	\$150.00	\$88.00
PRT—"Pro" Receiver, with tubes	163.70	97.26
PRC—"Pro" Chassis, less tubes . . .	135.00	79.38

EXCISE TAX PAID



The new "Pro" retains all of the original features that made the receiver so popular, almost overnight. Among these features are the following:

1. Sensitivity of better than $\frac{1}{2}$ microvolt per meter. Selectivity of 1,000 times at 10 KC off resonance. Noise level so low as to be negligible.
2. Intermediate oscillator for C.W. code reception, also valuable as a "station-finder" in searching for weak phone stations.
3. Band-spread tuning at all frequencies within the range of the receiver.
4. Smooth control of sensitivity; tone control for noise suppression; vernier tuning controls.
5. Isolantite coil forms, coil sockets and condenser insulation. Litz-wound intermediates. Complete shielding. Instrument type control panel.

Low-Frequency Filter Assembly

To prevent both low and high radio frequencies from getting into the audio channels it is particularly important that an effective filter system be employed. Comes complete with shields, by-pass condenser, radio frequency chokes, etc.

List Price, Per Pair, \$5.00

Your Cost, \$2.94

New Hammarlund Intermediate Frequency Transformers

Since intermediate amplifiers provide most of a receiver's sensitivity and selectivity, no effort has been spared in the design of these transformers. Three transformers, as used in "Comet" Receivers, provide one microvolt sensitivity and a selectivity of 1,000 times at 10 KC off resonance.

The twin coils are of 10/41 Litz with a power factor of .01 or a "Q" of 100. Coupling is very slightly below optimum. Peaked at 465 KC but may be adjusted to any frequency between 425 KC and 525 KC, depending on



circuit conditions. Designed for use with 258 or 235 type tubes.

Tuned by adjustable condensers with mica dielectric and Isolantite base. Wax impregnation and sturdy construction provide excellent stability. The shield can is $2 \frac{3}{32}$ " diameter by $4 \frac{1}{2}$ " high and is intended for base mounting.

Code TR-465

List Price, \$3.00

Your Cost, \$1.75

Beat-Frequency Oscillator

For use in low-frequency (465 to 525 KC) second detectors. Permits CW reception on super's, etc. Comes complete with shield and tuning capacitors.

List Price, \$2.50

Your Cost, \$1.47

New Hammarlund Triple Grid Tube Shield



The complete isolation afforded by this shield permits full use of the enormous amplification possibilities of the new "50 series" tubes, such as 56's and 57's. A special drawn-in neck completes the shielding between grid and plate and a removable top is used to entirely shield the control grid cap. Body, cap and base are all made of heavy aluminum and designed for maximum cooling. Measures $4 \frac{1}{8}$ " high by $1 \frac{1}{4}$ " diameter.

Code TS-50

List Price, \$0.60

Your Cost, \$0.35

Hammarlund Screen Grid Tube Shield

This shield is for standard size tubes, such as types 224 and 235. Its design provides for maximum shielding effect and for cooling of the tube in operation. Two-piece construction of heavy aluminum. Large hole at top of shell for easy access to control grid of tube. Good-looking and efficient. For use with sub-panel sockets. Mounting screws and control grid connector packed with each shield. Shield measures $4 \frac{1}{8}$ " high by $3 \frac{3}{32}$ " diameter.

Code TS-35

List Price, \$0.50

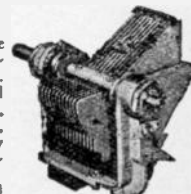
Your Cost, \$0.30



Hammarlund Midline Condensers

Years of leadership attest the remarkable engineering perfection of "Midline" Condensers. Special shaped brass plates, full floating rotor, removable shaft, perfect bearings and contact, rib-reinforced aluminum alloy frame. "Parmica" low loss insulation.

Dual condensers to special order, also condensers with straight-frequency-line plates, condensers of special capacities and condensers with double-spaced or extra heavy plates.



Code No.	Maximum Capacity	List Price	YOUR COST
ML-23	.0005 mfd.	\$4.50	\$2.64
ML-17	.00035 mfd.	4.25	2.50
ML-11	.00025 mfd.	4.00	2.35

Hammarlund Condensers • Pyrex Insulators

Hammarlund Insolantite Coil Forms

For Ultra Short Waves



These coil forms are designed for maximum efficiency at ultra high frequencies, or within the 28 to 56 megacycle band. Being made of Insolantite, and having correct form factor, high-frequency resistance is at a maximum and absolute stability is achieved. The number and location of holes facilitate securing the exact inductance desired and permit of almost any conceivable type of experimental winding.

Form is 1 1/8" in diameter and 2" long, exclusive of prongs. Otherwise similar to the larger forms except that no knob is provided.

Made only in five-prong type to fit standard sockets. For maximum efficiency use Hammarlund Insolantite Sockets.

Code CF-5M
List Price, \$0.75

Your Cost, \$0.45

Hammarlund Short-Wave Coil Forms



The low losses and stability of these forms provide for efficient high-frequency reception under all conditions, being made of extruded Insolantite, a material closely approximating the ideal qualities of fused quartz.

Equipped with convenient black enameled wooden handle. Surface is "non-skid", eliminating troubles encountered in winding on slippery surfaces. The numerous holes provided in the form make drilling unnecessary. Form is 1 1/2" in diameter and 2 1/2" long, exclusive of knob and prongs. Made in four, five and six-prong types to fit standard sockets.

	List Price	YOUR COST
Code CF-4 (four-prong)	\$1.00	\$0.58
Code CF-5 (five-prong)	1.00	.58
Code CF-6 (six-prong)	1.00	.58

Hammarlund Shielded Polarized R.F. Choke



Hammarlund Shielded Polarized Choke Coils have ably proved themselves superior for use in high-gain screen-grid and other types of receivers. The coil unit is thoroughly shielded in an aluminum shell, resulting in minimum external field and permitting close, compact receiver design without any undesired coupling to cause instability or feedback. High impedance to all broadcast frequencies—low distributed capacity. Marked for high and low polarities of windings. Terminals extend from bottom of choke. Shell mounts with a single screw and is 5/8" high and 1 1/8" in diameter.

tend from bottom of choke. Shell mounts with a single screw and is 5/8" high and 1 1/8" in diameter.

Code SPC
List Price, \$1.50

Your Cost, \$0.88

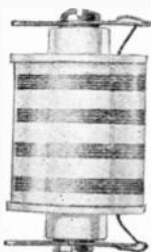
New Hammarlund Insolantite R. F. Choke

This low-loss radio frequency choke is designed particularly for short-wave and ultra short-wave receivers and transmitters, but its efficiency actually extends well above the regular broadcast band. Its compactness permits mounting in isolated positions well removed from stray R.F. fields, which, together with its load characteristics, specially recommends it as a grid choke for multi-stage transmitters.

A sectionalized Insolantite spool carries the four windings which are moisture-proofed and protected by radio frequency lacquer and a covering of cellophane. Both standard leads and terminals are provided to permit the choke being either base-mounted or suspended in the circuit wiring. No metal screw passes through the choke to increase losses and distributed capacity. The choke measures 1 1/8" x 7/8", has an inductance of 8 millihenries, a D.C. resistance of 70 ohms, a distributed capacity of 3 mmf., and a current-carrying capacity of 125 milliamperes.

Code CH-8 List Price, \$1.10

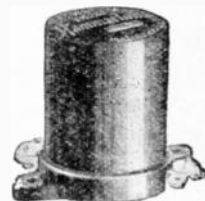
Your Cost, \$0.65



Hammarlund High Impedance R. F. Choke

These chokes have been standard in the industry for years. A special process of helical winding and impregnating enables the forming of a very large inductance with a very low distributed capacity, making them very effective in both broadcast and short-wave receivers.

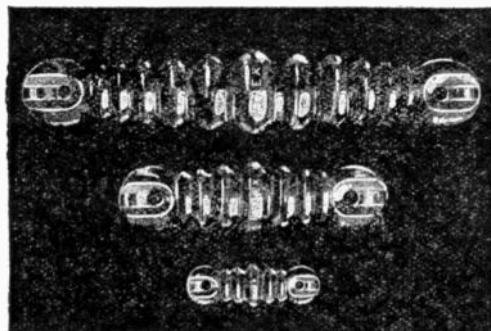
Ideally suited for detector plate circuits, B-plus and grid return leads and for R.F. filtering in general. Current-carrying capacity of both sizes is 60 milliamperes. Bakelite case is 1 1/8" high by 1 1/8" diameter with mounting feet and terminals extending from the base portion. The helical windings used are made under U. S. Pat. dated January 13, 1914.



Code RFC-85—Inductance 85 millihenries, capacity 3 mmf., D.C. resistance 215 ohms.....	List Price, \$2.00
Code RFC-250—Inductance 250 millihenries, capacity 2 mmf., D.C. resistance 420 ohms.....	List Price, \$2.25

YOUR COST
\$1.10
\$1.32

Pyrex Amateur Insulators



Pyrex Amateur Lead-In

Now you can have these better insulating qualities, too. The new Pyrex entering insulator for amateurs is available in two sizes—No. 67104 has a solid brass rod 15" long; No. 67105 has a rod 20" long. The rods are threaded except for 3" in the center. The bowls for both sizes are exactly alike and both are supplied with four brass jam nuts, two brass washers and two rubber gaskets. An ideal lead-in insulator OT.

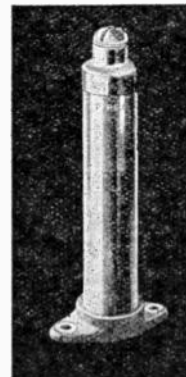
	List Price	YOUR COST
No. 67104—15"	\$2.20	\$1.51
No. 67105—20"	2.30	1.58



Pyrex Stand-Off Insulator

No. 67006 No. 67007
Height overall 3 inches 7 inches
Oval Brass Base, 3 3/8" x 1 5/8".
Tapped Hole in Brass Cap, 3/8", 16 thread.
Diameter Pyrex Part, 1 1/4".

Average Flash over Value (Kv.).	
Wet	7. 32.5
Dry	21.5 56.
List Price	\$2.25 \$2.50
Your Cost	\$1.54 \$1.72



Pyrex Entering Insulators

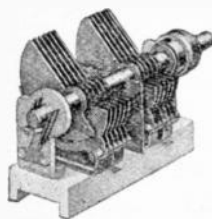
	Broadcast Rec. Insulators	Amateur Transmitting	Strain Insulator
Number	67007	67017	67021
Length (overall)	3 3/8 in.	7 1/4 in.	12 1/4 in.
Developed leakage path	3 3/8 in.	6 in.	11 3/4 in.
Average flashover value (Kv.) ..	Wet 22.5	32	84
Average flashover value (Kv.) ..	Dry 38	75	124
Height	3 oz.	13 1/2 oz.	1 lb., 14 oz.
Strength	450 lb.	1,000 lb.	1,000 lb.
Suitable for powers up to.....		250 watts	1 1/2 kw.
List Price, each	\$0.25	\$1.00	\$3.00
Your Cost	17c	68c	\$2.06

Navy Type

List Price, each \$1.00
Your Cost .. 68c 68c

Hammarlund Precision Products

New Hammarlund Dual Midget Condensers



Like Hammarlund Single Midget Condensers these new duals incorporate in their design every requirement of a high-quality, small-size, two-gang condenser. Their rigidity, low losses and careful construction provide for greatest electrical and mechanical efficiency in all types of short-wave receivers employing two-gang tuning condensers.

The entire condenser is built on a strong Isolantite base, including a shield plate between the stators. Other specifications are the same as for the single midget condensers. Made for single-hole panel mounting. Overall length behind panel is 3/4". Stock sizes are listed below. Condensers of special capacities or construction, including condensers for base mounting, can be supplied to order.

Code		List Price	YOUR COST
MCD-140-M	140 mmf. capacity per section	\$4.80	\$2.82
MCD-100-M	100 mmf. capacity per section	4.40	2.78

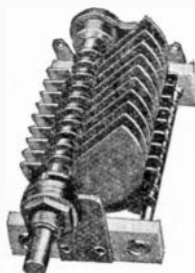
Hammarlund Double-Spaced Single Midget Condensers

For Ultra High-Frequency Work

Wide spacing, special bearings and Isolantite make these condensers particularly suitable for ultra short-wave receivers and transmitters. Air-gap between plates is .0175".

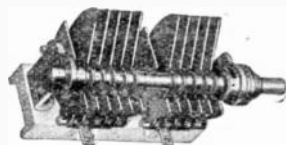
Their small size adapts them to the compact types of transmitters now so much in vogue. For tuning amplifier stages in crystal-controlled transmitters and for neutralizers up to 210's and 50-watters. Also as tuners for 5-meter master oscillator power amplifiers.

Code No.	Maximum	Minimum	List Price	YOUR COST
MC-35-X	35 mmf.	6 mmf.	\$2.50	\$1.47
MC-50-X	50 mmf.	7 mmf.	3.00	1.76



Hammarlund Double-Spaced Dual Midget Condenser

For Ultra High-Frequency Work



This condenser is specially designed for efficiency at ultra high frequencies and may be used for either receiving or transmitting. The wide spacing between plates materially aids frequency stability and the use of Isolantite for insulation assures the low-loss factor so necessary in 5-meter work. It is an ideal condenser for compact 5-meter transmitters using tubes up to 245's or 210's in push-pull. Actual air-gap between adjacent rotor and stator plates is .0715". Midline shaped plates and special bearings provide for easy and accurate tuning. Other specifications are standard except for omission of the shield plate.

Code	List Price, \$4.50	Your Cost, \$2.64
MCD-35-X		
Capacity per section, 33 mmf. max., 6 mmf. min.		

Hammarlund Band-Spread Midget Condensers

These condensers are designed for use as "band-spread" tuning condensers for short-wave receivers and for use in amateur band frequency meters. The "tank" section can be set and locked at any desired capacity, permitting the tuning section to spread narrow frequency ranges over the entire dial, regardless of the range of the band or the coils used.



Code Number	Tank Capacity	Tuning Capacity	List Price	YOUR COST
MC-120-B	100 mmf.	20 mmf.	\$3.00	\$1.76
MC-150-B	100 mmf.	50 mmf.	3.25	1.91
MC-175-B	100 mmf.	75 mmf.	3.50	2.06

Improved Hammarlund Midget Condensers

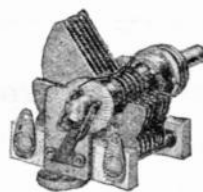
"Midline" and Straight Line Capacity Types

The marked efficiency of Hammarlund Condensers at ultra high frequencies has been attained by extensive research in materials and design, constant experimentation and careful workmanship—plus years of experience. Their superiority is attested by their dominant position in amateur and experimental fields and their use by the more prominent manufacturers of short-wave receivers, television equipment and high-frequency apparatus in general.

Isolantite insulation reduces dielectric losses to a minimum and assures maximum and uniform efficiency under all conditions of temperature and humidity. A brush type four-point wiping contact eliminates objectionable inductive reactance. Accurately fitted bearings at both ends of the condenser provide for long life, quiet operation and stability of calibration. Non-corrosive soldered brass plates eliminate vibration and effect lowest series resistance. Tuning condenser sizes have "Midline" shaped plates for better spread between stations.

Great strength and rigidity are secured through the elimination of all screws and nuts, everything being either soldered or riveted. End plates are of heavy aluminum and provisions are made for both single-hole panel mounting and base mounting.

Special condensers can be supplied to order. These include condensers of special capacities, spacing, rotation and shaft extensions, also locking type condensers for fixed frequency work, split stator balancing condensers, extra compact condensers, etc.



GENERAL SPECIFICATIONS:

Plates are .0225" brass with .0245" air-gap between plates. Standard condensers include stope and are made to increase capacity by clockwise rotation. Individually tested for breakdown on 500 volts A.C. and packed with 1 1/2" bakelite knob. Quality fully guaranteed.

LIST OF STOCK SIZES

Intermediate sizes to special order

Code No.	Plates	Min. Cap. (Mmf.)	Max. Cap. (Mmf.)	List Price	YOUR COST
MC-325 M	43	12	320	\$3.50	\$2.06
MC-250 M	34	10	260	3.00	1.77
MC-200 M	27	10	200	2.80	1.65
MC-140 M	19	7	140	2.50	1.47
MC-100 M	14	6	100	2.30	1.36
MC-100 S	14	6	100	2.30	1.36
MC-75 M	11	6	80	2.00	1.18
MC-75 S	11	6	80	2.00	1.18
MC-50 S	7	5	50	1.80	1.06
MC-35 S	5	4	35	1.50	.88
MC-20 S	3	3	20	1.50	.88

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

Piezo Oven Apparatus

Aluminum Heat-Spreading Layer

Aluminum is necessary in constant temperature ovens so that the heat supplied by the heater pads is distributed evenly. The thicker this layer the more evenly the heat will spread.

	YOUR COST
* $\frac{1}{32}$ " thick per square inch.....	\$.007
* $\frac{1}{16}$ " thick per square inch.....	.02
* $\frac{1}{8}$ " thick per square inch.....	.03
* $\frac{1}{4}$ " thick per square inch.....	.04

*Price quoted subject to current market quotations.

Heat-Attenuating Layers

Balsa wood is an essential requirement in all heat-controlled ovens. Its purpose is to slow up or attenuate the variations in temperature reaching the crystal. Available in several thicknesses.

	YOUR COST
* $\frac{1}{2}$ " thick per board foot.....	\$0.27
* $\frac{3}{4}$ " thick per board foot.....	.30
* $1\frac{1}{8}$ " thick per board foot.....	.43

*Price quoted subject to current market quotations.

Chase Low-Frequency Quartz Bars

For primary and secondary frequency standards. These Piezo electric bars are made of selected Brazilian quartz accurately calibrated and with carefully insulated temperature-controlled ovens you can bring the frequency of this bar to within one or two parts in a million. All crystals are guaranteed for quality and accuracy.

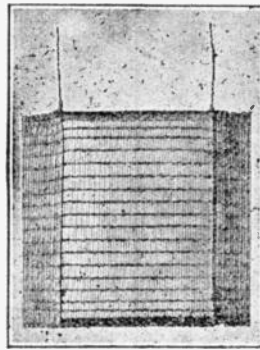
	YOUR COST
100 KC	\$9.00
50 KC	18.00
30 KC	27.00

Special Dustproof Holders for Standard Frequency Bars

	YOUR COST
100 KC Holder.....	\$4.00
50 KC Holder.....	6.00
30 KC Holder.....	15.00

Crystals with frequencies other than those specified can be supplied to order at prices that are reasonable.

Ohm-spun Heater Pads



For Supplying a Constant Heat in Temperature-Controlled Ovens

Woven on asbestos sheets, size 6" x 6". Made for $\frac{1}{4}$ -amp., 115-volt operation. The wire is held in place by long fibre asbestos warp run in pairs, alternately taking a half turn, first to the right and then to the left, so as to hold the wire uniformly spaced. This construction permits a rapid and even distribution of heat, essential in the design of constant temperature ovens. Usually six of these pads are required to an oven. Will last a lifetime and is the only satisfactory method of distributing the heat evenly over the entire surface of the oven.

Your Cost, \$2.00 each

Balsa Wood Boxes

For Constant Temperature Piezo Electric Ovens

All boxes are locked together with a precise tongue and grooved joint and sealed with a special compound to prevent atmospheric pressure changes, important in precision frequency-control work. Lacquered black finish.

Cat. No.	Size	Inside Dimensions	YOUR COST
1400—	12" high, 12" deep, 12" long, $\frac{1}{8}$ " thick....		\$6.50
1401—	10" high, 10" deep, 12" long, $\frac{1}{8}$ " thick....		6.00
1402—	10" high, 10" deep, 18" long, $\frac{1}{8}$ " thick....		8.00
1403—	9" high, 9" deep, 12" long, $\frac{1}{8}$ " thick....		5.50
1404—	$\frac{1}{2}$ " boards, 12" wide, per foot.....		.25
1405—	$\frac{1}{8}$ " boards, 12" wide, per foot.....		.35

Special size boxes made to order

Aluminum Heat-Spreading Layer

Unless the heat applied is evenly distributed over the entire oven, it is difficult to maintain accurate temperature variations. Aluminum accomplishes this only if properly constructed. The boxes we supply are perfectly machined, with milled edges, screwed together with heavy brass screws, accurately cut and fitted.

Cat. No.	Size	Outside Dimensions	YOUR COST
1500—	11 $\frac{1}{2}$ " high, 11 $\frac{1}{2}$ " deep, 11" long, $\frac{1}{4}$ " thick		\$14.00
1501—	9 $\frac{1}{2}$ " high, 9 $\frac{1}{2}$ " deep, 11" long, $\frac{1}{4}$ " thick		14.00
1502—	9 $\frac{1}{2}$ " high, 9 $\frac{1}{2}$ " deep, 17" long, $\frac{1}{4}$ " thick		18.75
1503—	8 $\frac{1}{2}$ " high, 8 $\frac{1}{2}$ " deep, 11" long, $\frac{1}{4}$ " thick		15.50

Red Cedar Heat-Attenuating Boxes

Cedar boxes are to the constant-temperature oven what a radiator is to an automobile. It is very essential in reducing the heat fluctuations reaching the crystal. Made with a locked and sealed joint, machined and sealed to prevent atmospheric changes.

Cat. No.	Size	Outside Dimensions	YOUR COST
1600—	11" high, 11" deep, 10 $\frac{1}{2}$ " long, $\frac{1}{2}$ " thick....		\$3.75
1601—	9" high, 9" deep, 10 $\frac{1}{2}$ " long, $\frac{1}{2}$ " thick....		3.25
1602—	9" high, 9" deep, 16 $\frac{1}{2}$ " long, $\frac{1}{2}$ " thick....		5.00
1603—	8" high, 8" deep, 10 $\frac{1}{2}$ " long, $\frac{1}{2}$ " thick....		3.00

Useful Information Regarding Thermoregulators and Temperature-Controlled Ovens

Although sealed, M & H Regulators are readily adjustable as to the temperature at which they make and break contact. Setting is accomplished as follows:

If the bulb of the regulator is heated the mercury will naturally expand, rising in the capillary. If the heating is continued long enough, the mercury will eventually spill out through the fine tip, falling into the reservoir. For every drop spilled out there is, of course, one drop less in the bulb. A certain temperature is required to expand the mercury to the point of contact. After spilling some mercury into the reservoir, a higher temperature will obviously be required to expand the now smaller amount of mercury to the volume required to make contact. In other words, the less mercury in the bulb, the higher the contact temperature.

Therefore, to raise the contact temperature, sufficient mercury is spilled out and conversely, to lower the contact temperature, sufficient mercury must be drawn back into the bulb. This is done by heating the bulb until the mercury begins to spill out and then suddenly inverting the regulator. If allowed to cool in this inverted position, the desired amount of mercury can be drawn back into the bulb. M & H Metastatic Thermoregulators all have about the same inherent sensitivity. The different shapes and sizes are to meet varying conditions of service. The right-angle Regulators are widely used in the control of Piezo frequency-control oscillators. Type A has an additional ampule blown into the capillary below the contacts to prevent the mercury from getting back

beyond the right-angle bend. All M & H Regulators of this type have an ampule blown into the capillary near the top to prevent loss of setting if the regulator is accidentally overheated.

To those who are planning to work in constant temperature, we offer the following facts, based on the results of our many years of experience in the design, construction and use of baths, ovens, culture rooms, etc. One of the most prolific sources of error is the general custom of using much more heat than is needed, and attempting to compensate for this condition by reducing the time during which the heat is applied. Thus, if 200 watts steady input are required to maintain a given temperature, the same total energy input may be obtained by using 400 watts half the time or 800 watts one-quarter of the time. Any one of these arrangements will maintain approximately constant temperature but the variation of the temperature will be greater in the last case than in the first. A nearer approach to ideal constant temperature control is effected by reducing the heat energy and increasing the length of time during which it is applied. If a condition of absolute equilibrium could be reached, the heat would be supplied at exactly the same rate at which it was being lost. But due to changes in room temperature the heat-loss is variable and due to variations in the line voltage the heat input also varies. If the voltage could be kept constant and the room temperature constant, no thermoregulator would be needed. Inasmuch as this is impossible, the most accurate results are obtained by applying a small amount of heat over long periods—using the best insulation obtainable and a highly sensitive, thoroughly reliable regulator and relay.

Mercury Column Thermostats and Thermoregulators

Metastatic Thermoregulators and Thermometers

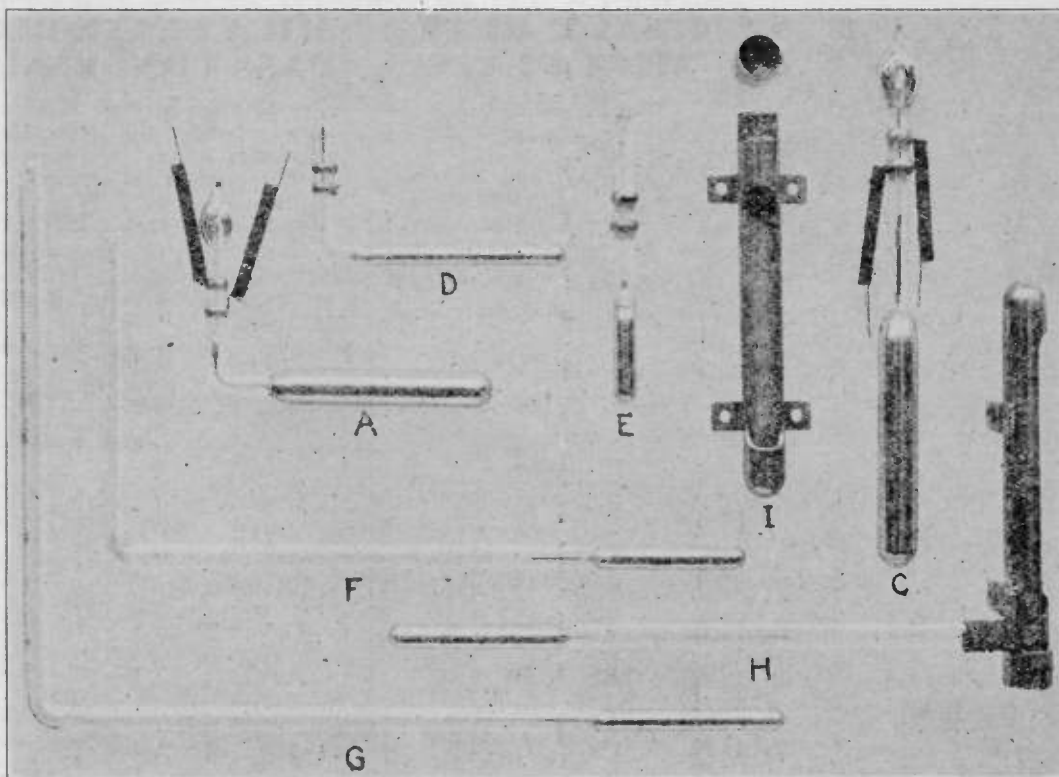
We are offering a complete line of constant-temperature apparatus for the precise control of Piezo Electric Oscillators, constant-temperature baths, ovens and rooms. A recent Federal Radio Commission order to maintain 50-cycle stability in BC transmitters can only be accomplished by the use of constant-temperature ovens and reliable thermoregulators.

Our Metastatic Thermoregulators are made to Navy Specifications and are used by: The Bureau of Standards, United States Navy, United States Army, Coast Guard, Westinghouse, General Electric, RCA-Victor, American T. & T. and others.

Made of heat resistant glass, filled with triple-distilled mercury, with pure dry hydrogen gas above mercury to prevent formation of oxides. Contact with mercury column is made through platinum contacts.

Adjustable over a wide range of temperature. Does not lose its setting if moderately overheated. Inherent sensitivity .02 degree C. Available in either fixed or adjustable temperature. Specify temperature desired when ordering fixed contact regulators.

Thermometers are gas filled to prevent error in readings due to aging, accurate to plus or minus one scale division, can be certified by U. S. Bureau of Standards at 50 cents per degree extra, annealed and filled with triple-distilled mercury, a fine instrument at a reasonable price.



Thermoregulators

Style	Size and Range	YOUR COST
"A"	Right Angle 3 1/2" Long, 2 1/2" High	\$10.00
"B"	Right Angle 4 1/2" Long, 3 1/2" High	10.50
"C"	Straight 6" High	9.00
"C"	Straight 8" High	10.00
"C"	Straight 10" High	12.00
"D"	Right Angle Fixed Contact 2 3/4" Long, 1 1/2" High	6.00
"E"	Straight Fixed Contact 3" Long	4.00

Thermometers

Style	Size and Range	YOUR COST
"F"	49 to 51 Degrees C., Graduated in 1/10 Degree. 6 3/4" Long, 3 1/4" High	\$6.00
"G"	48 to 52 Degrees C., Graduated in 1/20 Degree. 8" Long, 6" High	6.00
"H"	49 to 51 Degrees C., with Case Graduated in 1/10 Degree. 6 3/4" Long, 4" High	7.50
"I"	Case, Only for Thermometers	1.00
"J"	49 to 51 Degrees C., Graduated in 1/20 Degree. 6" Long, 4" High	6.00
"K"	40 to 60 Degrees C., Graduated in 2/10 Degree. 8" Long, 6" High	6.00
"L"	40 to 60 Degrees C., Straight 10" Long, Graduated in 2/10 Degree.	4.50

A New Supersensitive Relay

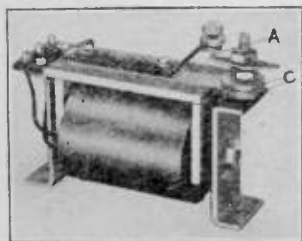


Fig. 1

A new supersensitive relay has just recently made its appearance on the market and those interested in temperature-controlled apparatus such as Piezo electric oscillator constant-temperature ovens and baths will be interested to know some of the features of this new relay. This instrument is made in two styles shown in Figure 1 and Figure 2. Both relays have a normal coil resistance of 1,300 ohms and operate on four milliamperes at six volts. Relays, however, can be supplied in any resistance up to and including 50,000 ohms. The relay in Figure No. 1 is supplied with open platinum-

iridium contacts and will break 50 watts easily. Relay No. 2 shown in Figure 2 is equipped with a Burgess vacuum contact and will continuously break 1,520 watts. This contact is made and broken in a sealed transparent glass tube. The contact is normally closed and is caused to open by a slight pressure on the glass stem. The motion of the stem is a matter of a few thousandths of an inch, and the break is quick and clean, even at high speeds. The contact is positive and is made in a vacuum between flat copper plates of ample cross-section. The glass is sealed into the relatively flexible glass bellows which permits motion of the contacts without breaking the seal. These vacuum contact tubes, although made of glass, are surprisingly sturdy.

There are several unique features of the supersensitive relay, common to each type, that will be of special interest to those whose requirements are most exacting. The relay has no pivots, jewels, or other bearings. The armature is fastened to the frame of the relay by a brass fulcrum plate. This permits the armature to swing in one plane without permitting any motion in either of the other two. Thus, the armature cannot get out of adjustment, and there are no wearing parts. The armature is universally adjustable as to the spring tension which it must overcome when it operates. Thus, if it is installed in a vertical position where its own weight does not affect it, the armature springs may be made weaker to compensate for the weight of the armature pulling against itself.

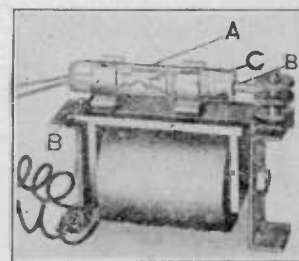


Fig. 2

Figure 1 Relay..... Your Cost, \$11.25
 Figure 2 Relay..... Your Cost, 15.00
 Replacement Burgess Contacts..... Your Cost, 3.75

Amateur Transmitting Condensers



Types 1882 and 1883

HEAVY DUTY MICA PLATE

Blocking and By-Pass Condensers

The types 1882 and 1883 are designed for use in high voltage high power circuits employing tubes such as 852, 204A, 860 and 861 types. Will withstand heavy currents without excessive heating.

Type No.	1882		1883	
D.C. Test Voltage	2500 Volts		5000 Volts	
CAP. MFD.	List Price	YOUR COST	List Price	YOUR COST
.0005	\$7.50	\$4.40	\$8.00	\$4.70
.0001	7.50	4.40	8.00	4.70
.0002	7.50	4.40	8.00	4.70
.00025	7.50	4.40	8.00	4.70
.0005	7.50	4.40	8.00	4.70
.001	7.75	4.55	8.00	4.85
.0015	7.75	4.55	8.00	4.85
.002	7.75	4.55	8.50	4.95
.0025	8.00	4.70	Aerovox condensers are non-leaking and have low radio frequency resistance. Guaranteed to stand up OM.	
.003	8.00	4.70		
.004	8.00	4.70		
.005	8.25	4.85		
.0075	8.25	4.85		
.01	8.25	4.85		
.02	8.50	4.95		

MICA HIGH VOLTAGE CONDENSERS



Aerovox Mica Transmitting Condensers are available in a wide variety of capacities, working voltages and mechanical constructions to suit all the requirements of the average low and high power amateur transmitter.

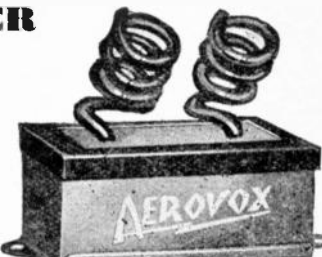
The dielectric used in all Aerovox Mica Condensers is the finest grade India Ruby Mica, the plates are made of special foil and the condenser element is thoroughly impregnated to protect the unit against moisture, and to insure long life.

Capacity	List Price 1456-2500 Volts	YOUR COST 1456-2500 Volts	List Price 1457-5000 Volts	YOUR COST 1457-5000 Volts
.0001	\$1.00	\$0.59	\$1.25	\$0.73
.00015	1.00	.59	1.25	.73
.0002	1.00	.59	1.25	.73
.00025	1.00	.59	1.25	.73
.0005	1.00	.59	1.50	.88
.001	1.00	.59	1.50	.88
.0015	1.00	.59	1.50	.88
.002	1.20	.70	1.85	1.07
.003	1.20	.70	The capacity of the condenser element is predetermined by a patented process. All standard units are made to a tolerance of 10% plus or minus but can be made to closer tolerances on special order at a slight additional cost.	
.004	1.20	.70		
.005	1.40	.82		
	1.40	.82		
.01	1.60	.94		

MICA PLATE BLOCKING and BY-PASS CONDENSER

The difference between Aerovox Mica condensers of the same voltage rating lies in the currents which they will carry without excessive heating.

The types 1772 and 1773 are designed for use in comparatively higher voltage circuits using 50 to 100 watt tubes of the 203A and 852 types.



Types 1772 and 1773

Type No.	1772		1773	
D.C. Test Voltage	2500 Volts		5000 Volts	
CAP. MFD.	List Price	YOUR COST	List Price	YOUR COST
.00005	\$3.50	\$2.05	\$4.00	\$2.35
.0001	3.50	2.05	4.00	2.35
.0002	3.50	2.05	4.00	2.35
.00025	3.50	2.05	4.00	2.35
.0005	3.50	2.05	4.00	2.35
.001	3.75	2.20	4.25	2.50
.0015	3.75	2.20	4.25	2.50
.002	3.75	2.20	4.25	2.50
.0025	4.00	2.35		
.003	4.00	2.35		
.004	4.00	2.35		
.005	4.25	2.50		
.0075	4.25	2.50		
.01	4.25	2.50		
.02	4.25	2.50		

DUO-LATERAL HONEY-COMB COILS

Are noted for their low loss, low capacity, low R.F. resistance and high inductance. Available in a number of sizes. Note coils supplied unmounted, mountings, 65c extra.



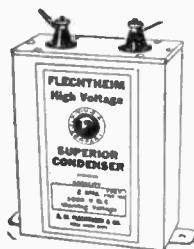
No. Turns	Capacity Range of Condenser in Micro-Micro Farads				YOUR COST
	350 mmf., 17 plate wave-length in meters		500 mmf., 23 plate wave-length in meters		
	Min.	Max.	Min.	Max.	
25	80	220	100	260	\$0.37
35	....	....	....	....	.37
50	160	430	200	510	.37
75	240	620	290	750	.45
100	310	830	380	990	.48
150	480	1360	590	1500	.56
200	650	1690	780	2000	.60
250	....	....	....	....	.71
300	980	2600	1200	3100	.78
350	....	....	....	....	.84
400	1300	3500	1600	4120	.90
500	1700	4400	2000	5300	1.05
600	....	....	....	....	1.16
750	2500	6500	3020	7800	1.35
1000	3400	8800	4100	11500	1.65
1250	4400	10400	5300	13500	2.02
1500	6400	14000	6500	16500	2.40

Note: 50 MMF assumed min. cap. of 17 plate condenser.
75 MMF assumed min. cap. of 23 plate condenser.

FLECHTHEIM

SUPERIOR CONDENSERS

TYPE TC: For Continuous Operating Voltages Up to 1000 Volts D.C. (750 rms. RAC)



Type TC200

Because of their small size and light weight they are excellent for use in portable outfits, aircraft transmitters, etc. Absolutely the best 1000-volt transmitting condenser on the market and very attractively priced. Equipped with neat stand-off insulators, the condenser is enclosed in an all-metal container which protects it against heat or damage. Amateurs who are just beginning with their first transmitter will do well to get these dependable units.

Type	Capacity	Size	List Price	YOUR COST
TC 100	1 Mfd.	4 1/4" x 1 3/4" x 1 3/4"	\$3.75	\$1.85
TC 200	1 Mfd.	4 1/4" x 3 1/4" x 1 3/4"	6.50	3.19
TC 400	4 Mfd.	4 1/4" x 2 3/4" x 3 1/4"	11.00	5.39

Here is a brand new type of condenser for low power transmitters. Type TC is now more compact, better insulated and of improved design.

TYPE T: For Continuous Operating Voltages Up to 1500 Volts D.C. (1000 V. rms. RAC)

Type	Capacity	Size	List Price	YOUR COST
T 100	1 Mfd.	5 1/4" x 4 3/4" x 1"	\$4.50	\$2.20
T 200	2 Mfd.	5 1/4" x 4 3/4" x 2"	8.00	3.92
T 400	4 Mfd.	5 1/4" x 4 3/4" x 4"	14.00	6.86

For the more advanced amateurs, type T, familiar to thousands of them, is still the best bet for use with the 50 watt with 1000 volts of rectified A.C. on the plate. Also improved in its construction, this type condenser is now better than ever.

"Imitation is the sincerest form of flattery." This well-known expression is stated here for reason that many manufacturers have time and again tried to copy our transmitting condensers. However, in the field of transmitting condensers, Flechtheim has been the true pioneer. We have invaluable knowledge which we infuse in the scientific manufacture of our condensers. No one can possibly make a real, dependable condenser better or more cheaply. It is needless to pay more, yet more questionable to pay less. There are cheaper condensers on the market, but you get exactly what you pay for, more probably even less. When you buy a Flechtheim condenser, you can rest assured of honest value.



Type T200

TYPE TH: For Continuous Operating Voltages Up to 2000 Volts D.C. (1600 rms. RAC)



Type TH200

Porcelain insulators do not make the condenser! There are advertised many nondescript brands of condensers "equipped with porcelain insulators." It doesn't pay to buy inferior condensers merely because exaggerated claims are made for them and a dubious replacement policy tops these claims. It is best to get a condenser well known for its dependable construction and reliable manufacture. You can't go wrong in getting Flechtheim's.

Type	Capacity	Size	List Price	YOUR COST
TH 100	1 Mfd.	6" x 3 1/4" x 3 1/4"	\$10.00	\$4.90
TH 200	2 Mfd.	6" x 6" x 3 1/4"	15.00	7.35
TH 400	4 Mfd.	6" x 8" x 6"	25.00	12.25

Type TH is in use by hundreds of broadcasting and amateur stations and is without doubt the best 2000-volt transmitting condenser procurable. Now, in its new form, containing the special cylindrical windings as employed in the higher voltage types of condensers, it is better in every respect. Heavily bushed porcelain insulators provide an ample factor of insulation safety, preventing short-circuit to grounded case.

TYPE HP: For Continuous Operating Voltages Up to 3000 Volts D.C. (2200 rms. RAC)



Type HP200

"With type HP in the circuit, your filter condenser troubles come to an end." That is the essence of the remarks of the chief engineers of dozens of stations who have found the solution by their judicious discretion in choosing these jobs to do the filtering of the plate supply.

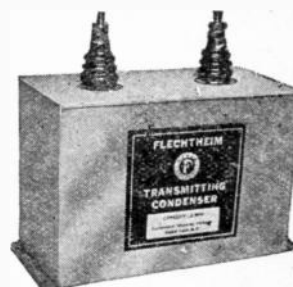
Conclusive tests show that the resistance of these condensers, which approximate 750 megohms per microfarad, remains nearly absolutely constant even after three years of continuous use! The secret lies partly in the special oil-treatment of the paper dielectric.

Type	Capacity	Size	List Price	YOUR COST
HP 100	1 Mfd.	6" x 4 3/4" x 4 3/4"	\$20.00	\$9.90
HP 200	2 Mfd.	6" x 8 3/4" x 4 3/4"	32.50	15.92
HP 400	4 Mfd.	6" x 8 3/4" x 8 3/4"	60.00	29.40

The first successful 3000-volt transmitting condenser at a reasonably low price! Type HP is performing with fullest satisfactory results at scores of stations. With the allowance of increased power, many stations have purchased these units because of their confidence in our conviction that these units represent the ultimate desirable quality and characteristics required of a high voltage filter condenser.

TYPE VM: For Continuous Operating Voltages Up to 5000 Volts D.C. (3300 rms. RAC)

A very popular type with the progressive type of station, type VM is now available in improved construction which slightly increases its physical dimensions and makes its continuous operation at rated voltage a matter of the greatest safety. Scores of stations have found type VM a solution to their filter condenser problems.



Type	Capacity	Size	List Price	YOUR COST
VM 100	1 Mfd.	6" x 5" x 5"	\$30.00	\$14.70
VM 200	2 Mfd.	6" x 14" x 5"	55.00	26.95
VM 400	4 Mfd.	6" x 14" x 14"	100.00	49.00

Dimensions—Give height, width and depth of container—porcelain terminals are 2 1/2" high.

Note: Orders for Transmitting Condensers are shipped immediately upon receipt.

TYPE ZX: For Continuous Operating Voltages Up to 7000 Volts D.C. (5000 rms. RAC)

Type	Capacity	Size	YOUR COST
ZX 100	1 Mfd.	10 3/4" x 5" x 5"	\$44.00
ZX 200	2 Mfd.	6 1/4" x 10 1/2" x 10 1/2"	83.50
ZX 400	4 Mfd.	6 1/4" x 21" x 10 1/2"	154.00

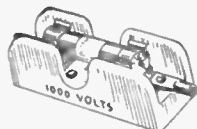
Where a condenser is called upon to perform under conditions of continuous duty, as in the case of many broadcasting stations which are "on the air" for sixteen and eighteen hours every day in the week, you will find Flechtheim Superior Transmitting Condensers standing up, working silently and dependably, playing their role in the high voltage filter circuit. Very conservative ratings characterize the fine condensers, yet aside from this they are scientifically built to stand up under the severe strains imposed upon them by the ever-occurring normal line voltage surges, transient voltages, radio frequency currents and the pulsating D.C. from the rectifier. Used in over 50% of the broadcasting stations throughout the world.



Low and High Voltage Fuses

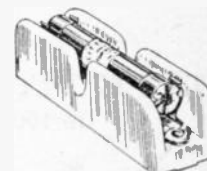
1,000 VOLTS

For voltages up to 1,000. Size 3" x 1/8" diameter. Use for amateur power tubes, rectifiers, and plate circuits of power amplifiers.



No. 2016

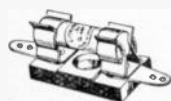
Cat. No.	Rating Amps.	Maximum Load	List Price	YOUR COST
2013	1/8	65 mils	\$0.40	\$0.24
2014	1/8	100 "	.35	.21
2015	1/4	200 "	.35	.21
2016	3/8	300 "	.35	.21
2017	1/2	400 "	.35	.21
2017-A	3/4	600 "	.40	.24
2018	1	1 amp.	.40	.24
2018-A	1 1/2	1 1/2 "	.40	.24
2019	2	2 "	.40	.24



No. 3020

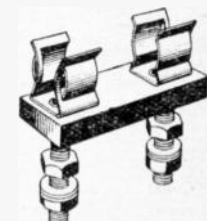
5,000 VOLTS

For voltages between 1,000 and 5,000. Size 5" x 1/8" diameter. Use in plate circuits of the larger air-cooled power tubes, large amplifiers, oscillators, power supply (fuse center tap of output), filter circuits, etc.



No. 1010

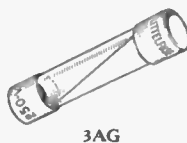
Cat. No.	Rating Amps.	Maximum Load	List Price	YOUR COST
3020	1/8	65 mils	\$0.70	\$0.42
3021	1/8	100 "	.70	.42
3022	1/4	200 "	.65	.39
3023	3/8	300 "	.65	.39
3024	1/2	400 "	.65	.39
3024-A	3/4	600 "	.75	.45
3025	1	1 amp.	.75	.45
3025-A	1 1/2	1 1/2 "	.75	.45
3026	2	2 "	.75	.45



No. 1050

10,000 VOLTS

For voltages between 5,000 and 10,000 volts. Use in plate circuits of large water-cooled power tubes, oscillators, rectifiers, kenatrons, etc. Size 10" x 1/8" diameter. Voltages above 10,000 use two or more in series.



3AG

Cat. No.	Rating Amps.	Maximum Load	List Price	YOUR COST
4027	1/8	65 mils	\$1.00	\$0.60
4028	1/8	100 "	1.00	.60
4029	1/4	200 "	1.00	.60
4030	1/2	300 "	1.00	.60
4031	1/2	400 "	1.00	.60
4031-A	3/4	600 "	1.10	.66
4032	1	1 amp.	1.25	.75
4032-A	1 1/2	1 1/2 "	1.25	.75
4033	2	2 "	1.25	.75



No. 1005

INSTRUMENT LITTELFUSES

Glass enclosed, size 1" x 1/4" diameter. Especially designed for the protection of very delicate equipment, such as galvanometers, milliammeters, tube testers, and set analyzers. Actual blowing point about 20% above max. load. All sizes safe for 250 volts—smaller sizes much higher. Suggested sizes for various ranges of meters are given below:



No. 1037

Cat. No.	Rating Amps.	Max. Load	Use for This Equipment	List Price	YOUR COST
1001	1/100	5	Galvanometers, m.m.a., 0-5 t.h.m.a., 1,000 o.p.v. v.m.	\$0.20	\$0.12
1002	1/32	15	0-1 to 0-5 m.a., 0-5 to 0-15 t.h.m.a., 750-1,000 o.p.v. v.m. ....	.20	.12
1003	1/16	60	0-5 to 0-15 m.a., 0-15 to 0-50 t.h.m.a., 300-750 o.p.v. v.m. ....	.20	.12
1004	1/8	100	0-10 to 0-50 m.a., 0-50 to 0-100 t.h.m.a., 750 to 300 o.p.v. v.m., "B" circuits all auto radios and battery sets.....	.15	.09
1005	1/4	200	0-50 to 0-100 m.a., 0-100 to 0-150 t.h.m.a., 20-75 o.p.v. v.m., "B" circuits auto radios, Readrite Tube Testers, No. 405 & 406..	.15	.09
1006	3/8	300	0-100 to 0-200 m.a., 0-150 to 0-250 t.h.m.a., 10 to 20 o.p.v. v.m. ....	.15	.09
1007	1/2	400	0-200 to 0-300 m.a., 0-250 to 0-350 t.h.m.a., Supreme Analyzer, AAA-1 and No. 90, Jewell No. 209 Tube Tester.....	.15	.09
1007-A	3/4	600	0-300 to 0-500 m.a., 0-350 to 0-600 t.h.m.a. ....	.10	.06
1008	1	1000	0-500 to 0-750 m.a., 0-600 to 0-1,000 t.h.m.a., Analyzers and Tube Testers, Jewell No. 214, 444, 534 & 538, Supreme No. AAA-1, Shallcross Universal Meter .....	.10	.06
1009	2	2000	0-750 to 0-1,500 m.a., 0-1,000 to 0-2,000 t.h.m.a., Jewell No. 535 and 536 Tube Testers, Visameter Tube Tester .....	.10	.06

Abbreviations: M.m.a., microammeter; m.a., milliammeter; t.h.m.a., thermo-milliammeter; v.m., voltmeter; o.p.v., ohms per volt.



No. 1204

TYPE 3AG FUSES

Cat. No.	Max. Load Amps.	Volts	List Price	YOUR COST
1040	1	250	\$0.10	\$0.06
1041	1 1/2	250	.10	.06
1042	2	250	.10	.06
1043	3	250	.10	.06
1044	1/8	500	.15	.09
1045	1/4	500	.15	.09
1046	1/2	500	.15	.09
1047	3/4	500	.15	.09
1000	Any size	250	Box of Five Fuses.....	\$0.25
1001	Any size	500	Box of Five Fuses.....	.40



No. 1011-4036

FUSE BLOCKS AND MOUNTINGS

Cat. No.	Description	List Price	YOUR COST
1010	Molded bakelite, 1 1/4" x 3/4" x 1/8"	\$0.15	\$0.09
1060	Same as 1010 except for 3AG Fuses .....	.20	.12
1011	Phosphor-bronze, takes all 1/4" caps .....	.03	.02
1012	Universal grip connectors .....	.15	.09
1037	Fusible cap (2 fuses)	1.00	.60
1200	Single fuse block .....	.50	.30
1201	Double fuse block .....	.75	.45
1202	Triple fuse block	1.00	.60
1204	Panel mounting clip, 1/4" caps	1.30	.78
2034	1,000-V. single fuse, porcelain mounting	1.20	.72
3035	5,000-V. single fuse, porcelain mounting	1.20	.72
4036	10,000-V. clips only .....	.08	.05



Box of 5

Triple Block
No. 1200-1202

Amateur Station Supplies

Winchester Featherweight Headphones



You would scarcely know you had them on . . . So light and so comfortable that hours of continuous use do not bring the wearer the slightest discomfort. They are efficient, too; their total resistance of 4,000 ohms makes them extremely sensitive to DX and weak signals. Headband is made of flexible steel finished in crackle maroon lacquer.

Your Cost, \$1.45

Brandes Phones



The Ever Popular Brandes — Used and appreciated by the radio public for the past 10 years — known the world over for their sensitivity and quality of manufacture.

Complete with cord — in original carton. **Your Cost, \$1.25**

Nathaniel Baldwin Phones



This is the genuine Nathaniel Baldwin Type C phones, known for their high quality, admitted one of the most favored headsets used by professional operators everywhere. One of the best, if not the best, headsets made.

Your Cost, \$4.45

How to Become An Amateur

A book published by A.R.R.L. Headquarters Staff explaining fully just how to go about becoming an amateur. Clear and not technical. Start right.

Your Cost, 25c

B. M. S. Fixed Crystals



A fine quality fixed crystal of the iron pyrite type. Extremely sensitive and of long life.

Your Cost, 59c

Electrad Enameled High Resistors



Suitable for grid leaks in low-powered transmitters. 2" long, 3/8" diameter, Monel lugs.

YOUR COST
 5,000 ohms \$0.59
 10,000 ohms73
 15,000 ohms73
 25,000 ohms73
 50,000 ohms88

Amateur Call Book



LATEST EDITION
 Contains over 40,000 calls listing all U.S.A. amateurs and foreign amateurs. High-Frequency Commercial Stations, Who's Who on Short Wave, Special Stations and Expeditions, International Call Letters, and New Prefixes.

Published four times a year

Your Cost, \$1.00

A. R. R. L. Log Book

M & H tries hard to supply EVERYTHING you need in the operation of your ham station. The new ham log book by Mr. F. E. Handy, of A.R.R.L., is available. **YOUR COST**

In lots of three at..... \$1.00
 In single copies..... .40

Message Blanks

To members of the A.R.R.L. we can supply you with the standard A.R.R.L. message pads.

YOUR COST
 Lots of 3..... \$1.00
 Single Pads..... .40

MAGNET WIRE

"Cornico" Magnet Wire is made from the best grade copper wire and insulated with the finest materials obtainable. Each spool contains a single length of wire neatly wound and suitably labeled.



B. & S. Gauge	D.C.C. 1/4 lb.	D.C.C. 1/2 lb.	D.S.C. 1/4 lb.	D.S.C. 1/2 lb.	Enamel 1/4 lb.	Enamel 1/2 lb.	Circular Mil. Area	Current Carrying Cap. 1500 C.M.	Resis. per 1000 ft.	Feet per 1/4 lb. D.C.C.
14	\$0.15	\$0.27	\$0.22	\$0.43	\$0.13	\$0.24	4107	2.7A	2.575	14.3
16	.16	.28	.24	.44	.13	.25	2583	1.7A	4.094	24.5
18	.17	.31	.27	.52	.14	.26	1624	1.1A	6.51	47.
20	.18	.34	.31	.61	.15	.26	1022	.68A	10.35	74.5
22	.21	.39	.36	.70	.16	.27	642.4	.43A	16.46	115.5
24	.24	.46	.43	.84	.17	.29	404	.27	26.17	186.5
26	.29	.59	.54	1.04	.19	.35	254.1	.17	41.62	2.77
28	.34	.67	.67	1.30	.21	.37	159.8	.11	66.17	439.7
30	.41	.79	.87	1.70	.22	.42	100.5	.067	105.2	633.5
32	.51	.97	1.11	2.16	.25	.43	63.21	.042	167.3	784.2
34	.73	1.38	1.40	2.66	.28	.52	39.75	.026	266	1542
36	1.00	1.90	1.72	3.28	.33	.60	25.00	.017	423	1969
38	....	....	2.08	3.96	.38	.70	15.72	.01	672.6	2666
40	....	....	....	....	.45	.84	9.88	.006	1069	3555

For those who require less than 1/4 lb. of wire we can supply a special 25c spool as follows:

B. & S. Gauge	No. Feet D.C.C.	YOUR COST	B. & S. Gauge	No. Feet D.C.C.	YOUR COST
14	16	\$0.25	28	118	\$0.25
16	34	.25	30	150	.25
18	55	.25	32	165	.25
20	83	.25	34	198	.25
22	110	.25	36	215	.25
24	140	.25	38	235	.25
26	93	.25	40	265	.25

Ward-Leonard Products

Ward-Leonard Resistors



507-2—Center tapped grid leak for use in circuits up to and including 50 watts. 4" long, 5,000 ohms, 44 watts, 90 M.A.

List Price, \$1.60

Your Cost, 96c

507-8—A resistor that can be used in 50-watt circuits, 10,000 ohms, 65 M.A., 44 watts.

List Price, \$1.60

Your Cost, 96c

507-53—Center tapped resistor for obtaining accurately the electrical center of low voltage filament transformers. 2" long, 200 ohms, 10 watts, 220 M.A.

List Price, \$1.10

Your Cost, 66c

Vitrohm Plaque Resistors

These units are ideal where a non-inductive, non-capacitive resistor is required. Low in price, dissipates a large amount of energy, standard resistance value and may be mounted in banks. Standard resistance, 5,000 ohms, but available in other values on special order.



Your Cost, \$1.50

Ward-Leonard Grid Leaks



507-3—Center-tapped grid leak for use in circuits up to and including 1,000 watts input. 8 1/2" long, 5,000 ohms, 200 watts, 200 M.A.

List Price, \$3.75

Your Cost, \$2.25

507-4—For use in circuits using the DeForest or R.C.A. UX852 tubes, 50,000 ohms, 200 watts, 60 M.A. 8 1/2" long.

List Price, \$8.75

Your Cost, \$5.25

507-5—Heavy-duty resistor, 20,000 ohms, 200 watts, 95 M.A.

List Price, \$4.50

Your Cost, \$2.70

507-66—A heavy-duty resistor, 15,000 ohms, with three taps of 5,000 ohms each. 120 M.A., 200 watts.

List Price, \$4.25

Your Cost, \$2.55

507-51—Center-tapped resistor for use as grid leak in circuits up to 500 watts input. 8 1/2" long, 10,000 ohms, 200 watts, 135 M.A.

List Price, \$3.85

Your Cost, \$2.31

D-500—A center-tapped heavy-duty bleeder resistor for use with power supplies up to 1,000 volts. 200 watts, 50,000 ohms, 60 M.A.

List Price, \$6.00

Your Cost, \$3.45



AMINCO Supersensitive Mercury Relay

Breaks Higher Currents. Operates on Lower Current. Relays 1000 Watts with Ease; 10 Amps. at 110 Volts or 5 Amps. at 220

The Aminco Supersensitive Mercury Relay acts as a trigger to relay a larger amount of current used for operating motors, heaters, solenoid valves, etc.

This relay will also operate in an amplified vacuum tube circuit and therefore may be used in experiments where a photo-electric cell controls a circuit by the varying degrees of light which fall upon it. We will furnish a diagram of this "hook-up" to those interested, upon request.

Uses Either A.C. or D.C.

By the use of suitable Rectifying Transformers or Resistors, which we can furnish, the Aminco Supersensitive Mercury Relay will operate on any standard 110 or 220 Volt A.C. or D.C. light circuit. Thus the necessity of using unreliable batteries is eliminated.

Only 4 Milliampères at 3 Volts Needed to Actuate This Relay

One of the most important features of the Aminco Supersensitive Mercury Relay is that such a small amount of current will operate it dependably. As little as 4 milliampères at 3 volts, passing through a sensitive regulator such as the Aminco Metastatic Thermo-regulator or a vacuum tube circuit controlled by a photoelectric cell, will actuate this Relay. This means that there is practically no wearing or burning of contacts in the thermostat (or regulator). "Sticking" of contacts in the regulator often causes serious delays and costly errors in research work where a constant temperature, vacuum, pressure or degree of humidity must be maintained.

The Aminco Supersensitive Mercury Relay eliminates all possibility of the failure of the regulator by assuring positive action with a minute amount of electrical energy.

Your Cost, \$20.00

AMINCO Rectifying Transformer

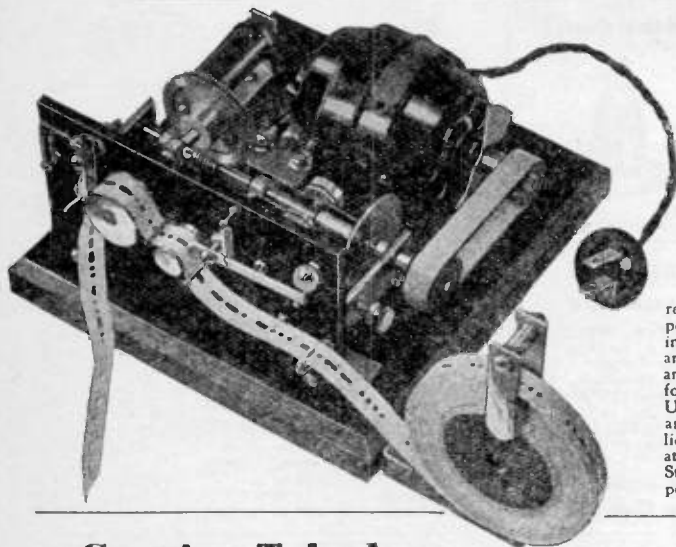
Reduces 110 or 220 Volts A.C. to 3 Volts D.C. for Use with Aminco Supersensitive Mercury Relay



The Rectifying Transformer consists of two elements in a single housing: First, a transformer which takes the line voltage (110 or 220 volts alternating current) on its primary side and reduces it to 3 volts on the secondary side. This 3-volt secondary alternating current passes to the primary side of the rectifier and emerges from the secondary side of the rectifier as a direct current, the voltage of which varies in accordance with the resistance of the load circuit. The current and voltage of this unit are sufficient to operate our Supersensitive Relay without overloading and full-wave rectification is obtained. This device is sold separately to those who wish a never-failing source of low-voltage direct current energy. Complete rectifying transformer, in case—

Your Cost, \$3.75

Automatic Transmitting Machines



The New Automatic Transmitter

The new "HETEROGRAPH" brings to the home and the schools a Master Operator, a tireless, perfect teacher of the Morse and Continental telegraph codes. Automatic Transmitters have, in the past, been operated by old-fashioned, troublesome and slow-working clockwork mechanism. By merely attaching the HETEROGRAPH to the light socket, all of the old troubles, accompanied by the usual disappointment of the purchaser, disappear, and in their place is found contentment and satisfaction in the smooth running, flexible operation of this motor-driven device. With a HETEROGRAPH in the home, a new and interesting field is made available for the enthusiast, "Radio Wireless," as it is now known, is robbed of its mystery, interesting messages may be intercepted, and wonderful distance reception recorded. The HETEROGRAPH does this by making you familiar with the Telegraph Codes in a very short time.

The HETEROGRAPH is a complete unit. There are no accessories to buy other than a telephone receiver. The equipment includes about 75 feet of prepared tape together with a key sheet of the transmitted signals. By attaching the plug to the light socket, and connecting to the binding posts either a Radio Head Phone or a Loud Speaker, it is ready for immediate use. The Telegraph signal is obtained by means of a device incorporated in the machine, making unnecessary the use of Buzzer or Batteries. For code instruction, its unvarying accuracy together with flexibility of speed control between two and fifty words per minute, the "HETEROGRAPH" has completely superseded the older and more tedious method of hand sending. The "HETEROGRAPH" was especially designed for the Department of Commerce, Washington, D. C., to meet all the requirements of the U. S. Radio Inspectors Service. Installations have been made in thirty offices where they are used exclusively in the examination of applicants for commercial and amateur radio licenses. One full tape is included with each machine. Additional tapes may be purchased at the rate of one-half cent a word. Tapes are supplied in three grades, viz.: Beginners' grade, Standard grade and Advanced grade. If carefully handled tapes will last for an indefinite period.

Your Cost, \$24.00

Genuine Teleplex

The Perfect Self-Instructor

Teleplex is the student's perfect aid in developing speed in both sending and receiving. It is equally helpful to the advanced student and the beginner. Many experienced operators are using Teleplex to attain absolute perfection. Dots and dashes are perforated in the lesson tape. A mechanical motor pulls the tape and sounds the dots and dashes for you. The speed may be regulated from 5 to over 80 words per minute. The only other equipment necessary is either a key and buzzer or an Audion Oscillator. The key and buzzer are necessary for the American Morse Code. Either equipment may be used for the Radio Code.

**Your
Cost,
\$26.95**



Heterograph Perforating Machine

The Heterograph Perforator is a machine for making tapes of any composition or spacing either Morse or Continental code; may be prepared four at a time. Comes complete, ready to operate merely by plugging into light socket. It is indispensable to schools and others where a considerable quantity of tapes are required.

The complete HETEROGRAPH system has been installed and proven highly successful at the Department of Commerce, Washington, D. C., at the War Department, Manila, P. I.; Boeing School of Aeronautics, Oakland, Calif.; Y. M. C. A. Schools, Seattle, Washington; Santa Cruz High School, Central Trade School, Oakland, Calif.; Hammond Radio School, and many others.

Your Cost, \$245.00



Original Martin Vibroplex



The new improved model of this famous automatic key. Used and approved by professional and amateur operators alike.

New style single lever type with single weight easily adjustable for various speeds. A handsome and efficient key. Furnished in red, green, blue, or black.

Your Cost, \$16.50

Plush Lined Carrying Case for Vibroplex Key
Your Cost, \$2.94

The Omnigraph

The Omnigraph has been known and used for over 25 years. The world's foremost operators used this ingenious self-instructor in their early days. It works automatically and brings into your home an expert operator, ready at all times to send you messages by the hour, at any speed, in either Morse or Continental (Wireless) Code. The Omnigraph No. 2 is the standard model, comes complete with 15 aluminum dials, which will last forever. Each of these dials is divided into 5 parts, making an equivalent of 75 dials, each with a different message. The Omnigraph is used by the United States Government and in almost every technical and trade college in the country. Speed may be controlled from 5 to 50 words per minute. Advanced student as well as beginner can use the Omnigraph to distinct advantage.

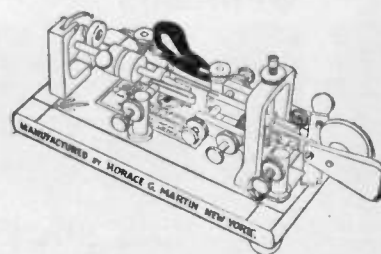
Omnigraph No. 2
List Price, \$35.00

Your Cost, \$31.50

Extra Set of 15 Dials
For No. 2 Omnigraph

Your Cost, \$4.50

No. 4 Blue Racer



Very similar to original Vibroplex except only half the size. Single lever. Two pairs of contacts—one for dots, the other for dashes. Weight 2 lbs. 8 ozs. Japanned black base. We have a limited number of these at an exceptional price.

Your Cost, \$12.00

Transmitting Equipment

Hytron Transmitting Tubes

UX210S—A special heavy-duty 210 tube having over-size plates with grid terminal brought out top of tube to cap like 865-type tubes. Low internal capacity and high output (15 watts). Especially recommended for 5-meter transmitters.

Your Cost, \$4.12

UX210X—Same as above but with plate lead brought out through the top instead of grid lead. Will stand high voltages safely.

Your Cost, \$4.12

UX871—An intermediate mercury vapor rectifier between the 281 and the 866 tubes. 2½-volt filament at 3 amps.; 5000 volts at 300 milliamperes.

Your Cost, \$1.25

UX866—A heavy-duty mercury vapor rectifier rated at 7500 volts at 600 milliamperes. 2½-volt, 5-ampere filament.

Your Cost, \$2.25

No. 82 Midget Stand-off Insulator

Made of heavy brown glazed porcelain with 10/32" nickle-plated screw. 1½" overall height and 1½" wide at bottom. Neat and very handy.

Your Cost, 9c ea.
or \$1.00 per Doz.



No. 83 Porcelain Stand-off Insulator

A heavy-duty, large, porcelain-glazed insulator for high-powered transmitters.

Specifications
Size of screw, ¼", No. 20
Height overall, 5½"
Width at base, 2½" sq.
Screw holes in base for No. 10 wood screw.

List Price, 50c

Your Cost, 29c



Power Clarostats

The Power and Super-Power Clarostats are heavy-duty resistors for radio power units, transmitters, or general electrical applications. The Power Clarostats will handle 80 watts, and the Super-Power Clarostats will carry 250 watts. Both types can be mounted either one-hole or baseboard manner.



Power Clarostats

Model	Resistance Range Ohms	List Price	YOUR COST
Fil. Control	¼ to 10	\$3.50	\$2.05
Low Range	25 to 500	3.50	2.05
Uni. Range	200 to 100,000	3.50	2.05

Super-Power Clarostats

Model	Resistance Range Ohms	List Price	YOUR COST
Fil. Control	¼ to 10	\$6.00	\$3.50
Low Range	25 to 500	6.00	3.50
Uni. Range	200 to 100,000	6.00	3.50

"SANGAMO" MOULDED BAKELITE CONDENSERS

Maintains accuracy. Sealed to exclude moisture and acid fumes.



With Resistor Clips, 10c extra.
Other Sizes Also in Stock

Capacity Mfd.	List Price	YOUR COST
.0001	\$0.40	\$0.23
.00015	.40	.23
.00025	.40	.23
.0005	.40	.23
.001	.50	.29
.002	.50	.29
.0025	.50	.29
.003	.60	.35
.004	.60	.35
.005	.70	.41
.006	.85	.50
.0075	.95	.53
.01	1.15	.67
.012	1.20	.70
.015	1.25	.75

"SANGAMO" HIGH VOLTAGE CONDENSERS

Small mica condensers capable of withstanding high voltages are required in many radio transmitting sets. To supply the need for a unit of this type, Sangamo has developed a special line of high voltage mica condensers that will withstand a breakdown test up to 5000 volts direct current, and at the same time meet the stringent requirements as to capacity that are maintained on the standard line of condensers.

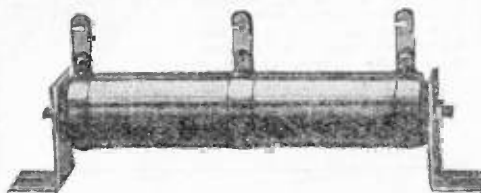
Many years of experimental work were necessary before the Sangamo high voltage condenser was perfected. This unit has the same physical dimensions as the standard line of condensers, and is available in the following classes:

	List Price	YOUR COST
Class 2—Direct current test 2500 volts. Capacities .003 to .01....	\$1.75	\$1.03
Class 3—Direct current test 5000 volts. Capacities .00004 to .002.	2.00	1.17

Wire-Wound Grid Leaks for Transmitters

TYPE TG—190 WATT—1¼" x 10"

Type	Total Resistance Ohms	Resistance of Sections-Ohms	Max. Working Current in Milli-ampere	List Price	YOUR COST
TG 50	5000	2500-2500	195	\$3.00	\$1.77
TG 100	10000	5000-5000	137	3.50	2.08
TG 150	15000	5000-5000-5000	112	4.50	2.67
TG 200	20000	10000-10000	97	4.25	2.52
TG 300	30000	15000-15000	79	5.00	2.82
TG 500	50000	25000-25000	61	5.50	3.23
TG 1000	100000	50000-50000	43	6.00	3.53



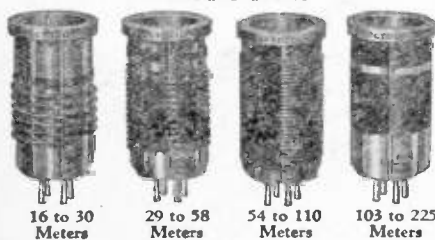
TYPE TL—90 WATT—1" x 6"

Type	Total Resistance Ohms	Resistance of Sections-Ohms	Max. Working Current in Milli-ampere	List Price	YOUR COST
TL 50	5000	2500-2500	134	\$2.50	\$1.47
TL 100	10000	5000-5000	95	2.75	1.62

TYPE CF—40 WATT—½" x 4"

Type	Total Resistance Ohms	Resistance of Sections-Ohms	Max. Working Current in Milli-ampere	List Price	YOUR COST
CF 1	10	5-5	20	\$1.50	\$0.88
CF 2	200	100-100	85	1.50	.88

Octocoils



16 to 30
Meters

29 to 58
Meters

54 to 110
Meters

103 to 225
Meters

Octocoils are unquestionably the finest, most rugged and most efficient short-wave coils ever designed and have been built to a standard of efficiency and appearance seldom if ever attained in commercial production. Actual size of these coils is 3⅞" high and 1⅞" in diameter.

Octocoils are moulded in genuine bakelite in four distinctive colors: green, brown, blue and red, and are wound with Nos. 12, 14, 16 and 25 enameled wire. Will plug into the ordinary tube socket and have a rugged rim so that they may be grasped without breaking. Wave length range 15 to 200 meters.

Set of Four, List Price, \$5.00; YOUR COST \$2.95

Broadcast Coil, Range 200-520 meters, each, List Price, \$1.25

YOUR COST \$0.75

Crystal Holder

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

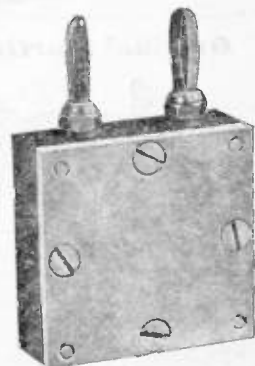
It is made in two sizes. One to accommodate the average one inch square crystal (type A) and the other, crystals up to 1⅞" square (type B). Contact to the crystal is made through brass plates ground perfectly flat. The bottom brass plate is nickel-plated on its outer side, and the top bakelite cover is held in place by four screws. When placing holder into service, a lug is bent slightly upwards to give spring contact against the top. Standard G.R. tips are used spaced ¼" to fit a standard G.R. connector.

Type "A"—Measures 1-1/32" square inside. Overall dimensions 2¼"x1½"x⅞".
Type "B"—Measures 1⅞" square inside. Overall dimensions 2⅞"x1⅞"x⅞".

Both Types, each \$2.50 YOUR COST, \$2.50

General Radio Base Receptacle for Above Holder—

YOUR COST, \$0.50



SAVE—BUY FROM M & H—BE SURE

Amateur Supplies

R-18



1/4 KW Wireless
Key
Coin Silver Contacts

List Price, \$2.80

Your Cost, \$1.58

Signal Heavy Duty Standard Transmitting Keys

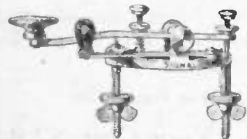
Made very sturdy.
Coin silver contact.
Polished and lacquered
brass parts.



Standard Wireless Key
Brass Base

	List Price	YOUR COST
R-62—1/4" contacts	\$3.50	\$1.98
R-63—1/2" contacts	3.70	2.18
R-64—3/8" contacts	3.90	2.30

Leg Key M-101



Polished and lacquered
brass base, nickel-plated
lever, platinum contacts.

List Price, \$3.10

Your Cost, \$1.82

Legless Key M-100

Polished and lacquered
brass base, nickel-plated
lever, platinum contacts.



List Price, \$3.00

Your Cost, \$1.76

Dual Contact Key

The addition of the back-stop contacts makes this key invaluable for break-in systems where the auxiliary contacts can be used to operate the break-in relay; or the "back-stop" contacts only may be used where it is necessary to open, instead of close, the keying circuit in order to key the transmitter.

R-75 List Price, \$4.00 Your Cost, \$2.36

Sematic Key

Semi-Automatic and Double Action
Type M-200



M-200

List Price, \$18.00

Your Cost, \$10.60

This is a professional key of the latest design with a minimum number of adjustments. It can be used as a double action or semi-automatic key. Heavy black cast base with nickel-plated brass parts.

Wireless Practice Set



R-68 "Signal"
Wireless Practice Set

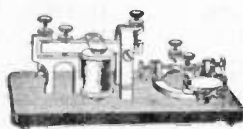
List Price, \$3.40

Your Cost, \$1.98

Just the thing to master the code with. Comes with booklet on how to learn the code and full instructions on how to use instrument. Equipped with high-frequency radio buzzer.

"Signal" Telegraph Practice Set

For those who desire to become a professional telegraph operator with the least amount of effort or for those who desire to touch up on their speed, we can recommend this beautiful golden finish brass frame, sounding plate, and key base, with mahogany finish base, telegraph instrument.



Sr. Telegraph
Practice Set

	List Price	YOUR COST
M108—4 ohms	\$6.75	\$3.97
M109—20 ohms	7.25	4.46
M110—4 ohms	5.50	3.24
M111—20 ohms	5.75	3.39

M110 and M111 same as M108 and M109 except sounder plate is steel and key base is black enamel.

Black enamel key base and bar frame. Brass bridge and aluminum sounding bar. Nickel-plated lever, mahogany finish base.

	List Price	YOUR COST
M-112—4 ohms	\$4.00	\$2.80
M-113—20 ohms	4.25	2.98

Sounders

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



Sounder

	List Price	YOUR COST
M-102—4 ohms	\$3.70	\$2.18
M-103—20 ohms	4.00	2.36

Black enamel bar frame. Aluminum sounding bar and brass bridge. Mahogany finished base.

	List Price	YOUR COST
112S—4 ohms	\$2.75	\$1.63
113S—20 ohms	3.00	1.78

High-Frequency Radio Buzzer



Has a good 1,000 cycle pitch. Can be adjusted and locked in position. May be used wherever a constant source is required. Ideal for inter-communication work and radio practice sets.

List Price, \$1.25

Your Cost, 75c

M & H Telegraph Key

1/8" tungsten contacts will handle 1/4 KW easily. Made of highest quality parts nickled and brush-brass finish.

Your Cost, 95c

Keying Relay

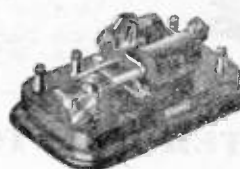
Model No. 200

The No. 200 keying relay has been especially designed for keying operations in powered transmitters operated by amateur, experimental and commercial systems. All the mechanical and electrical necessities are ideally fitted into a small simple compact unit measuring 4 1/2" x 3" x 1 1/4". A three-point suspension is employed. The relay is designed for quick action if a rapid sending rate should be employed. A variable spring tension is provided to allow for the fast keying rate. There is also a provision made for varying the gap up to 1/4". Hardy metal contacts are used on the gaps. This metal is rapidly replacing platinum and silver as a standard for relay contacts. The relay is insulated for 4,000 volts.

Dimensions: 4 1/2" x 3" x 1 1/4". Weight: 3/4 lb.

Your Cost, \$4.25

"Signal" Commercial Relay



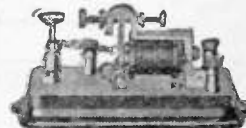
Relay

A sturdily constructed relay requiring very little current for operation. Exceptionally fast and will follow a bug up to 80 words per minute. Cork, rubber-covered, armature adjustable. Suitable as keying relay in medium-powered transmitters.

	List Price	YOUR COST
No. 916—150 ohms	\$10.50	\$6.18
No. 917—250 ohms	11.00	6.47

Pony Relay

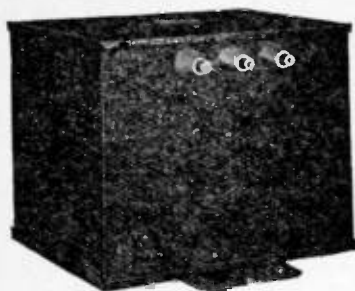
Amateurs are using this type of relay for breaking and keying purposes successfully. Metal parts are mounted on mahogany and black enamel base.



Pony Relay

	List Price	YOUR COST
M-104—4 ohms	\$4.75	\$2.50
M-105—20 ohms	5.00	2.94
M-106—50 ohms	5.25	3.09
M-107—75 ohms	5.75	3.39

Transmitting Power Supply Equipment

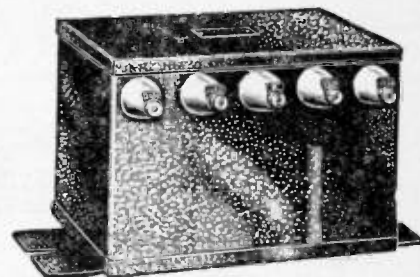


Types 4450, 4455 and 4460

THORDARSON

Plate Supply Transformers

For Many years Thordarson has been the leading transformer for the Ham, and again after many months of painstaking research Thordarson once more offers the Ham a new and complete transmitting power equipment, including plate and filament transformers, chokes and low power reactors.

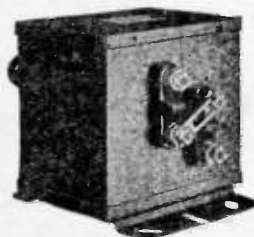


Types 2388A and 2389A

Type	Height	Width	Weight Lbs.	Primary Volts	Primary Fuse 110-V.	Secondary Volts	Secondary Watts	List Price	YOUR COST
4450	6 1/8"	5 1/8"	20	110-220	3 Amp.	500*	100	\$20.00	\$11.76
4455	7 1/8"	9"	47 1/2	110-220	10 Amp.	2000*	500	35.00	20.60
4460	10"	12"	110	110-220	25 Amp.	2000*	1500	85.00	49.95
2387A	7 1/2"	7 1/2"	20	110	10 Amp.	1000-1500	300	19.00	11.15
2388A	10"	7 1/4"	27	110	10 Amp.	1500-2000	500	25.00	14.70
2389A	8 1/2"	6 1/2"	54	110	20 Amp.	1500-2000	1000	30.00	17.60

*Voltage delivered out of filter.

Filament Supply Transformers



The same general construction has been employed in building the filament supply transformers. They are completely encased and sealed. The primary is arranged for 110 and 220 volts operation with the same method for changing as applied to the plate transformers. The secondary is adequately insulated for operation in connection with its associated apparatus even to the extent of using high voltage porcelain insulator at the terminals. No humid salt atmosphere will affect this transformer.

No.	Secondary	Height	Width	Depth	Wt. Lbs.	List Price	YOUR COST
4585	2.5 V. Total. C. Tap. 25 V.A.—10 Amp.	5 1/8"	5 3/4"	4 1/8"	10 1/2	\$12.00	\$7.05
4586	5 Volt Total. C Tap. 100 V.A.—20 Amp.	6 1/8"	5 3/8"	6 1/8"	19 1/2	15.00	8.80

FILTER REACTOR

The construction of the filter chokes is a distinct departure from previous designs. They are completely encased and sealed. They have high grade porcelain insulators for terminals. Much time was spent in our laboratory to determine the best filter circuit characteristics, and this knowledge is reflected in the design of the filter chokes. The inductance is measured under actual operating conditions. It is not estimated or calculated.

No.	Height	Width	Depth	Wt. Lbs.	Inductance	D. C. Milliamperes	List Price	YOUR COST
4451	6 1/2"	4 1/2"	4 1/2"	17	25 Henries	150	\$10.00	\$5.85
4456	8 1/4"	5 3/8"	5 3/8"	26 1/2	25 Henries	250	15.00	8.80
4461	12"	8"	8"	54	25 Henries	750	50.00	29.40

All measurements taken at 70 volts, 60 cycles A. C.



Filament Supply Transformers

All filament transformers have a split secondary with center tap brought out at exact electrical center. Transformer completely shielded with primary for 110 volts, 60 cycles.

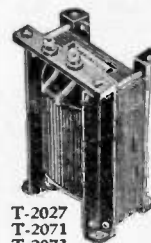
Type	Secondary Rating	List Price	YOUR COST
T-2383	12 V.—175 Watts	\$10.00	\$5.88
T-3680	2 1/2 V.—10 Amps.	7.50	4.41
T-2382	12 V.—80 Watts	6.00	3.50
T-2230	7 1/2 V.—3 Amps.	6.00	3.50



Filter Reactors

1.5 Henry Choke, 200 mils, 1600 V. insulation. Filter choke in key circuits.

T-2376—List Price, \$5.00



Your Cost, \$2.94

T-2027
T-2071
T-2073

T-2353—A single open-frame choke, 6 henry, 150 M.A., D.C. Resistance, 100 ohms. 3000 volt insulation. Dimensions: 3" x 3 1/4" x 3 1/4" high.

List Price, \$7.50

Your Cost, \$4.41

T-2071—A single open-frame choke, 30 henry, 150 M.A., D.C. Resistance, 290 ohms, 3000 volt insulation. Dimensions: 2 3/4" x 3 1/2" x 6" high.

List Price, \$10.00

Your Cost, \$5.88

T-2027—A single open-frame choke, 30 henry, 300 M.A., D.C. Resistance, 160 ohms, 3000 volt insulation. Dimensions: 5" x 3 1/2" x 8" high.

List Price, \$13.50

Your Cost, \$7.94

T-2073—A single open-frame choke, 30 henry, 500 M.A., 3000 volt insulation. Dimensions: 4 1/2" x 5 1/2" x 9 1/2" high.

List Price, \$17.50

Your Cost, \$10.00

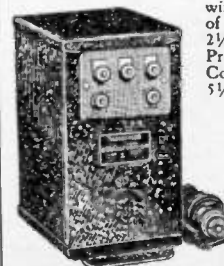
Plate Supply Transformers

T-2098—A conservatively rated transformer with high voltage winding of 550 volts each side of center tap, and two 7 1/2 volts, 2 1/2 amp. filament windings. Primary: 110 volts, 60 cycles. Cool in operation. Size: 4 1/2" x 5 1/4" x 5 3/4". 13 3/4 lbs.

List Price, \$9.00.

Your Cost, \$5.29

T-2387A—Similar to above with following specifications — Primary: 110 volts, 50-50 cycles. Secondary: 1000 and 1500 volts each side of center tap. Capacity: 300 V.A.



Dimensions: 7 1/2" x 5 3/4" x 7 1/2" high. 20 lbs.
List Price, \$19.00

Your Cost, \$11.17

Amateur Supplies

Electralloy Chassis Bases

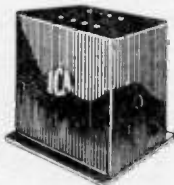
These chassis bases are very handy for mounting all radio instruments and the three sizes will make it possible for anyone to mount up any type of receiver. These are supplied undrilled. The height of each size is 3 in., which is satisfactory for all type receivers or power packs.



No.	List Price	YOUR COST
1515 10" x 12" x 3"	\$2.75	\$1.61
1516 10" x 23" x 3"	4.50	2.74
1517 10" x 17" x 3"	3.75	2.20

A Popular Shield Can

Measures $4\frac{3}{4}$ x $3\frac{3}{8}$ inches. Length $4\frac{1}{4}$ inches. For use in making condenser blocks, or transformers.



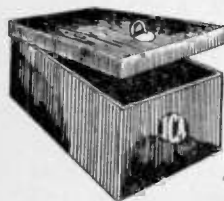
List Price, \$0.90
Your Cost, 53c



Square Coil Shields

I. C. A. Square Coil Shields, size $2\frac{1}{8}$ x $2\frac{1}{8}$ x $3\frac{1}{2}$ inches with mounting lugs. No. 1538

List Price, \$0.30 each
Your Cost, 17c



Utility Can

This can is perfect for building line noise filtering devices. Measures $8\frac{1}{4}$ x $7\frac{1}{4}$ x $3\frac{1}{8}$ inches. Finished in dark green. No. 1531.

List Price, \$1.50
Your Cost, 88c

I. C. A. Tube Shield

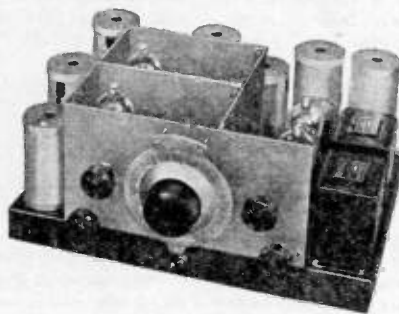
For New '55, '57, '58 Type Tubes These shields have been specifically designed to increase the effective shielding between control grid and plate of the new tubes. In order to take advantage of the increased gain, it is necessary to provide adequate shielding or oscillation will result. Supplied complete with base.

No. 1708

List Price, \$0.25
Your Cost, 14c



New National Superheterodyne

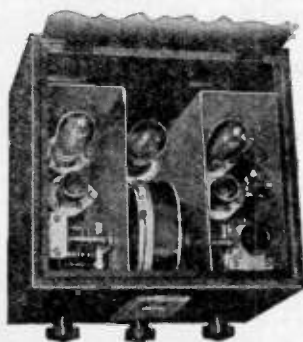


While the type HFR receiver has been especially designed for $3\frac{3}{4}$ to $7\frac{1}{2}$ meter work it will work equally as well on the 10, 20, 40 or 80 meter amateur bands also. Send for special circular on this new receiver.

Type HFR Superhet.

List Price, \$89.50 Your Cost, \$52.62

New National High Frequency Converter



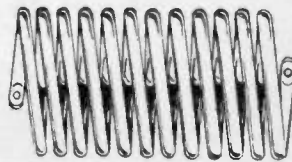
Incorporates all of the features of the above receiver but does not include IF or AF channels. Send for circular on this unit.

List Price, \$39.50 Your Cost, \$23.22

We maintain a completely equipped machine shop to give prompt attention to your special order work on the cutting of panels, etc. Send complete drawings and specifications for quotation on this work.

Copper Tubing

$\frac{1}{4}$ inch heavy, soft-drawn copper tubing for making your own coils or for giving your xmtr. that commercial "touch." Available in bulk or wound coils.

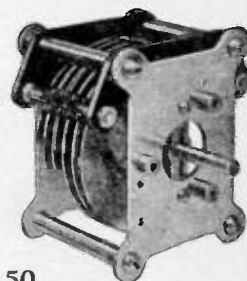


Any number of turns up to 50, 3-inch diameter.

Price per turn..... \$0.08
Your Cost, per linear foot..... .06

General Radio Amateur Band Condenser

Has been designed especially for use in dynatron frequency meters and band spread amateur receivers. The capacitance values are such that when the condenser is used in a dynatron-oscillator circuit it will easily span 3,500 to 4,000 KC. This condenser supercedes the Type 557 Amateur-Band Condenser.



Your Cost, \$3.50

Feeder Spreaders

Constructed of genuine uncolored bakelite with hole slot and setscrew. For use in two-wire feed lines. Available in several sizes.

	List Price	YOUR COST
Feeder Spreaders, 7 in.	\$0.40	\$0.24
Feeder Spreaders, 4 in. ....	.30	.18
Feeder Spreaders, 2 in. ....	.25	.15

Dynamometer A. C. Wattmeter

MODEL 47 HICKOK

Accuracy 1%

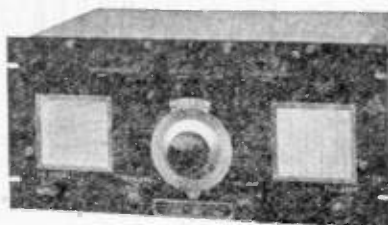


Dimensions—Identical with Model 46. Flange diameter, flush type, $3\frac{1}{4}$ "; mounting hole radius, No. 4 screw, $1\frac{1}{4}$ "; body diameter, flush and surface, $2\frac{3}{4}$ "; depth, $1\frac{1}{4}$ "; weight, 7 oz.; scale length, $2\frac{1}{8}$ ". Bakelite cases.

WATTMETERS						
Model 47—Dynamometer Type						
Cat. No.	Range Watts	Scale Div.	Volt Limit	Amp. Limit	List Price	YOUR COST
4700W	0-75	75	150	.5	\$17.50	\$13.12
4701W	0-150	75	150	1	17.50	13.12
4702W	0-300	60	150	2	17.50	13.12
4705W	0-750	75	150	5	17.50	13.12
4706W	0-1500	75	150	10	19.50	14.62
*4707W	0-1500	75	300	5	20.50	15.37
*4708W	0-3000	60	300	10	22.50	16.87
*4709W	0-4000	40	750	5	26.00	19.50
*4710W	0-7500	75	750	10	28.00	21.00

Frequency Meters . . . Monitors . . . Oscillators

National "AGS" Communication Short Wave Receiver



Developed in conjunction with the Airways Division of the U. S. Department of Commerce to provide the finest possible type of receiving equipment for the stringent requirements of aviation ground station use. Extremely high sensitivity and selectivity, combined with easy operation, rigid construction to maintain frequency calibration and dependability of performance.

While considerably more expensive than other receivers available for this type service, the many outstanding advantages, most of which are not to be found in any other commercially available receiver at this time, makes the National Type AGS unquestionably a most unusual value from the standpoint of performance alone.

Tubes: 4—236's, 4—237's, 1—238.

OUTSTANDING FEATURES

1. Tuned R.F. stage preceding first detector. (Image suppression—improved signal to noise ratio—improved "weak signal" response.)
2. Single dial straight frequency line tuning (270°).
3. Calibration Curves and Station Chart on panel.
4. Coil change from front of panel.
5. Automatic volume control or manual volume control, as desired.
6. Extremely rigid mechanical construction from very heavy aluminum plate.
7. Relay rack mounting (size 8 3/4 x 19").
8. Frequency range 2400 to 15,000 kc. Additional coils to extend the range to 20,000 kc.
9. Heterodyne oscillator for c.w. reception.

ADDITIONAL PLUG-IN COILS

Special inductances available for extending frequency range of either type "AGS" or "58C" receivers, both above and below the range covered with the inductances furnished as standard.

Write for quotations on coils covering specific range desired.

AGS—National Type AGS Short-Wave Receiver completely wired and laboratory tested, with coils to cover frequency range 15,000 to 2400 kc. (less tubes).

Your Cost, \$162.70

M & H De Luxe Monitor



This instrument is built for those desiring a permanent means of monitoring their transmitter carrier. Constructed of the highest quality materials obtainable, housed in a cast aluminum case with beautiful black lacquer finish. Coils for 20, 40 and 80 meter amateur bands. Uses two No. 4 Burgess Dry Cells, and one No. 4156 "B" battery. Available either wired or kit form, complete all batteries, tubes and coils.

Wired, Complete **Your Cost, \$14.00**

Kit Only (assembled but not wired) **Your Cost, \$11.00**

M & H Electron Coupled Frequency Meter



The new M & H Electron Coupled Frequency Meter is an outstanding development of the year. Housed in a one-piece cast aluminum box with heavy aluminum front panel suitably engraved. Finished in a beautiful "crinkle" black lacquer. Uses one type 24 tube, two 45 volts portable type "B" batteries, A.C. operated filaments.

Supplied completely calibrated with all batteries and tube.

Your Cost, \$29.50

National "58C" Communication Type Short Wave Receiver



Because of the definitely superior signal to noise ratio over any other type of receiver commercially available, many hundred National SW-5 and SW-58 Short Wave TRF Receivers have been and still are being used by every one of the principal American continent air lines. While many of these air transport companies use the standard receivers, as described in the general catalog, a number of the SW-5s have, in the past,

been made up for rack panel mounting with front of panel coil changing. The new SW-58 TRF Receiver is now available in this form and may also be obtained, if desired, mounted in a walnut cabinet for table use. (As illustrated.)

The SW-58C has two tuned circuits, uses the new 58 tubes as R.F. and detector, 227 as first audio and a pair of UX-245s as final audio stage. It is also available using 234, 230 and 231 tubes for Ail Cell battery operation or 236 and 237 tubes for 6-volt battery operation.

Circuit details are essentially the same as for the standard SW-58.

A set of four coils covers the frequency range of 2.6 megacycles to 22 megacycles is supplied.

58C—National Type 58C Short Wave Receiver completely wired and laboratory tested with coils to cover frequencies of from 2.6 MC to 22 MC (less tubes).

Your Cost, \$83.30

Chase Quality Quartz Crystals



Chase Piezo Electric Plates are scientifically manufactured from the best grade of Brazilian quartz obtainable and are ground to an uncomparable degree of accuracy by professional engineers. Each crystal is individually calibrated and its frequency is extremely accurate to plus or minus 100 cycles when used under the conditions specified in calibration sheet.

Calibration chart supplied with crystal includes such important characteristics as: Tank current, R.F. grid current, watts output, frequency, temperature, etc.

Each crystal is supplied complete with a new type Chase holder with its frequency and temperature marked on a name plate. Holders may be purchased separately if desired. Good holders are just as important as good crystals and unless the plates of your holder are perfectly flat; frequency "wobulation" and low output power is the result.

Why pay more for an inferior quality crystal or holder when you can get Chase units? Good crystals cannot be made cheaper.

Of course M & H guarantees it.

YOUR COST

1715 to 2000 KC.—Holders Included	\$8.00
35 to 4000 KC.—Holders Included	8.00
7000 to 7300 KC.—Holders Included	12.00
*500 to 600 KC.—Airgap Holder	9.00
Chase Crystal Holders Only	2.50

*Made for Single Signal Superheterodynes.

Low-Priced . . . High Quality Power Transformers

UNCASED FILAMENT TRANSFORMERS

The "OF" type of transformer is intended to supply the demand for an open mounting filament transformer for use in transmitters and power amplifier systems. Primary and secondary connections are brought out to heavy soldering lugs on bakelite terminal boards. All secondary windings are center tapped at the exact electrical center of the windings.

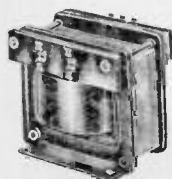


Fig. 1

Type	Pri. Voltage	Sec. Voltage	Sec. Amperes	Insulation	YOUR COST
OF-866	115 V.	2.5 V.	10 A.	10,000 V.	\$2.90
OF-81	115 V.	7.5 V.	5 A.	3,000 V.	3.50
OF-812	*Tapped	7.5 V.-7.5 V.	5 A.-5 A.	3,000 V.	4.50
OF-10	*Tapped	10 V.	7 A.	3,000 V.	4.25
OF-11	*Tapped	11 V.	7 A.	3,000 V.	4.35
OF-14	*Tapped	14 V.	7 A.	3,000 V.	4.35

*Tapped primaries 105-115-125 V.

See Figure No. 1

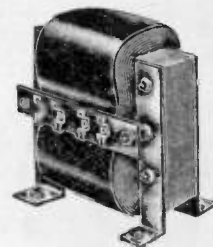


Fig. 5

CASED FILAMENT TRANSFORMERS

Type "CF" has been very popular for power amplifier systems in outdoor work or in transmitter installations in humid sections of this country and in the tropics. It is completely cased and sealed in moisture-proof compound. The electrical characteristics are identical to type "OF."

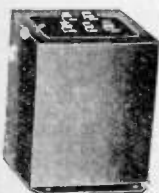


Fig. 2

Type	Pri. Voltage	Sec. Voltage	Sec. Amperes	Insulation	YOUR COST
CF-866	115 V.	2.5 V.	10 A.	10,000 V.	\$3.20
CF-81	115 V.	7.5 V.	5 A.	3,000 V.	3.80
CF-812	*Tapped	7.5 V.-7.5 V.	5 A.-5 A.	3,000 V.	4.80
CF-10	*Tapped	10 V.	7 A.	3,000 V.	4.55
CF-11	*Tapped	11 V.	7 A.	3,000 V.	4.65
CF-14	*Tapped	14 V.	7 A.	3,000 V.	4.65

*Tapped primaries 105-115-125 V.

See Figure No. 2

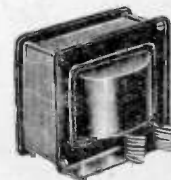


Fig. 6

UNCASED PLATE TRANSFORMERS

Type "OP" is an uncase plate transformer used mostly in small transmitters and public address systems where compactness is desired. Because of its excellent regulation this transformer is ideal for class "B" work with the new mercury vapor rectifier tube or with 81 tube in class "A".

Type	Pri. Voltage	Sec. Voltage	Sec. M. A.	Insulation	Your Cost, \$5.75
OP-600	115 V.	600 CT. 600	200 M. A.	2,000 V.	Your Cost, 6.00
OP-750	115 V.	750 CT. 750	150 M. A.	2,000 V.	

See Figure No. 8

CASED HIGH VOLTAGE PLATE TRANSFORMERS

Type "CP" is a high voltage plate transformer used largely in transmitters and heavy-duty public address work. It is conservatively rated and represents extensive experience in high voltage power transformer design. This type of transformer requires careful workmanship, design and construction in order to obtain the proper regulation necessary in its performance. Leads are brought out to porcelain stand-off insulators. Cases are made from very heavy gauge steel and finished in black crinkle.

Type	Pri. Voltage	Sec. Voltage	Sec. M. A.	Your Cost, \$11.50
CP-1000	115 V.	1500-1000-750 V.	E. S. C. 200 M. A.	Your Cost, 16.50
CP-2000	115 V.	2000-1500-1000 V.	E. S. C. 300 M. A.	

All Have 10,000 V. Insulation.

See Figure No. 4



Fig. 3

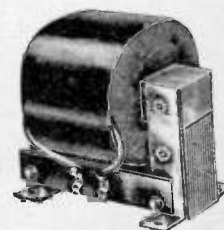


Fig. 7

UNCASED CHOKES

Type	Henries	M.A.	Insulation	YOUR COST
DC-160	15-15	160	5000 V.	\$5.75
DC-220	15-15	220	5000 V.	9.40
DC-320	15-15	320	5000 V.	12.25
DC-500	15-15	500	5000 V.	15.00

See Figure No. 5

Type	Henries	M.A.	Insulation	YOUR COST
OC	15	150	3000 V.	\$2.25

See Figure No. 6

Type	Henries	M.A.	Insulation	YOUR COST
SC-160	30	160	5000 V.	\$5.50
SC-220	30	220	5000 V.	8.10
SC-320	30	320	5000 V.	10.00

See Figure No. 7

These chokes are rugged in construction, low in resistance and have high insulation. You will find them very satisfactory for filter or modulation purposes. Type "DC" chokes are double units.

MICROPHONE TRANSFORMERS

For the first time there are available a complete line of microphone and mixing transformers at popular prices. This entire line is uniform in appearance, completely cased and finished in black or green crinkle. The transformers are impregnated in moisture-proof compound.

Type CM-200—Single Button, 200 Ohms to Grid.	Your Cost, \$1.75
Type CM-400—Double Button, 200 Ohms to Grid.	Your Cost, 2.25

See Figure No. 2

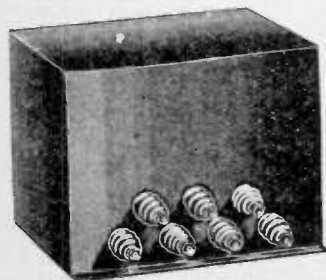


Fig. 4

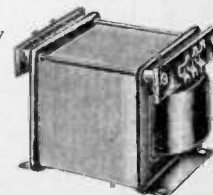
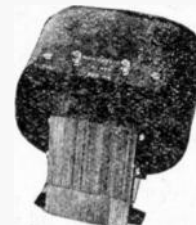
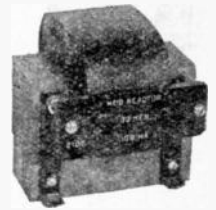


Fig. 8

M & H DeLuxe Powertrans

Type 2150
CasedType 2148
CasedType 2272-A
Cased

We present herewith a complete line of high grade transformers and chokes. The tables are self-explanatory and we need only to say that their regulation is guaranteed to be 5% or better and that each transformer carries a three-year guarantee. We can quote on any special transformers or chokes.

Type 2104
OpenType 2105
Open

Powertran Class "B" Modulation Transformers

Type	Use	Working Out of	Working Into	Sec. D.C. M.A.	Core Mat.*	Insul.	Total Pri. Imp.	Total Sec. Imp.	DIMENSIONS						WEIGHT		LIST PRICE		YOUR COST	
									Open	Cast	L	W	H	L	W	H	Open	Cast	Open	Cast
2142	Input	245PP	210PP		Sil.	3000V.	7,600	7,600	3 1/2	2 1/4	4 1/4	5 1/4	4	3 3/4	2 3/4	7	\$8.00	\$12.00	\$4.71	\$7.05
2143	Input	245PP	210PP		Cns.	3000V.	7,600	7,600	2 1/2	1 1/2	2 1/2	3 1/2	3	3 1/2	1 1/4	3	7.00	10.00	4.11	5.88
2144	Output	210PP	5000†	None	Sil.	3000V.	4,000	5,000	4	4	4	6 3/4	4 3/4	4 3/4	6	11	11.00	16.00	6.47	9.41
2145	Output	210PP	5000†	None	Cns.	3000V.	4,000	5,000	2 1/2	2	2 1/2	3 1/2	3	3 1/2	1 1/4	3	8.00	12.00	4.71	7.05
2146	Output	210PP	5000†	100MA	Sil.	3000V.	4,000	5,000	4	4	4	6 3/4	4 3/4	4 3/4	6 1/2	12	12.00	16.00	7.05	9.41
2147	Output	210PP	5000†	100MA	Cns.	3000V.	4,000	5,000	3 1/2	2 3/4	4 1/4	5 1/4	4	4 1/4	2 1/2	5	18.00	22.00	10.59	11.94
2148	Input	250PP	203APP		Cns.	3000V.	7,600	7,600	2 1/2	2	2 1/2	3 1/2	3	3 1/2	1 1/4	3	10.00	14.00	5.88	8.23
2149	Output	203APP	5000†	None	Sil.	5000V.	1,500	6,000	6	3 1/4	6	7	7	6 1/4	8 1/2	16 1/4	16.00	20.00	9.41	11.76
2150	Output	203APP	5000†	200-400	Sil.	5000V.	1,500	6,000	6	6	6	8	7	6 1/4	18 1/2	27	20.00	24.00	11.76	14.11
2151	Input	250PP	203APP		Sil.	3000V.	7,600	9,000	3 1/2	2 1/4	4 1/4	6	3 3/4	4 1/4	3 1/4	6	10.00	14.00	5.88	8.23
2152	Output	203APP	5000†	200-400	Cns.	5000V.	1,500	6,000	6	3 1/4	6	7	7	6 1/4	8 1/2	16 1/4	40.00	46.00	23.72	27.05
2153	Output	203APP	5000†	None	Cns.	5000V.	1,500	6,000	6	3 1/4	6	7	7	6 1/4	8 1/2	16 1/4	40.00	46.00	23.72	27.05
2154	Input	46	46PP	None	Cns.	1000V.	6,400	6,000	2 1/2	2	2 1/2	3 1/2	3	3 1/2	1 1/4	3	8.00	12.00	4.71	7.05
2155	Input	46	46PP	None	Sil.	1000V.	6,400	6,000	4	4	4	6 3/4	4 3/4	4 3/4	6 1/4	12	12.00	16.00	7.05	9.41
2156	Input	227	46PP	None	Sil.	1000V.	6,400	6,000	4	4	4	6 3/4	4 3/4	4 3/4	6 1/4	12	12.00	16.00	7.05	9.41
2157	Input	227	46PP	None	Cns.	1000V.	6,400	6,000	2 1/2	2	2 1/2	3 1/2	3	3 1/2	1 1/4	3	8.00	12.00	4.71	7.05
2160	Input	227PP	46PP	None	Sil.	1000V.	20,000	6,000	4	4	4	6 3/4	4 3/4	4 3/4	6 1/4	12	12.00	16.00	7.05	9.41
2161	Input	227PP	46PP	None	Cns.	1000V.	20,000	6,000	2 1/2	2	2 1/2	3 1/2	3	3 1/2	1 1/4	3	8.00	12.00	4.71	7.05
2162	Output	46PP	5000†		Cns.	2000V.	4,000	5,000	2 1/2	2	2 1/2	3 1/2	3	3 1/2	1 1/4	3	8.00	12.00	4.71	7.05
2163	Output	46PP	5000†	100	Sil.	2000V.	4,000	5,000	4	4	4	6 3/4	4 3/4	4 3/4	6 1/4	12	12.00	16.00	7.05	9.41
2164	Input	112APP	112APP	None	Sil.	2000V.	20,000	15,000	3 1/2	1 3/4	4 1/4	5 1/4	4	3 3/4	3 1/4	5 1/2	8.00	12.00	4.71	7.05
2169	Output	112APP	SP	None	Sil.	2000V.	2,500	2000-15	3 1/2	1 3/4	4 1/4	5 1/4	4	3 3/4	3 1/4	5 1/2	8.00	12.00	4.71	7.05
2202	Inter.	201A	112APP	SP	Cns.	1000V.	18,000	600,000	2 1/2	2	2 1/2	3 1/2	3	3 1/2	1 1/2	3 1/4	8.90	13.30	5.23	7.86
2203	Input	112APP	112APP	None	Cns.	2000V.	20,000	15,000	2 1/2	2	2 1/2	3 1/2	3	3 1/2	1 1/2	3 1/4	11.00	15.50	6.47	9.14
2204	Output	112APP	SP	None	Cns.	2000V.	2,500	2000-15	2 1/2	2	2 1/2	3 1/2	3	3 1/2	1 1/2	3 1/4	11.00	15.50	6.47	9.14

*—Sil.—Silicon Steel.

Cns.—"A" Metal Alloy.

†—Ohms load.

SP—Speaker.

PP—Push Pull.

*—Sil.—Silicon Steel. Cns.—"A" Metal Alloy. †—Ohms load. SP—Speaker. PP—Push Pull.

Powertran Reactors

Type	Use	Inductance Henries	Current MA.	Insulation	L	DIMENSIONS				W	H	WEIGHT		LIST PRICE		YOUR COST	
						Open	Cast	L	W			Open	Cast	Open	Cast	Open	Cast
2102	Filter	30	150	2,000V.	4	4	4	4	4	4	4 3/4	6 1/4	11 1/4	\$10.00	\$17.00	\$5.88	\$10.00
2103	Filter	30	300	3,000V.	6	6	6	5 1/2	7	7	6 1/4	17 1/2	26	18.00	28.00	10.59	16.47
2104	Filter	30	500	5,000V.	6	6	6	7	7	7	6 1/4	25	34	25.00	35.00	14.70	20.87
2105	Mod.	30	150	2,000V.	4	4	4	4	4	4	4 3/4	6 1/4	11 1/4	11.00	18.00	6.47	10.59
2106	Mod.	30	300	3,000V.	6	6	6	5 1/2	7	7	6 1/4	17 1/2	26	20.00	30.00	11.76	17.64
2107	Mod.	30	500	5,000V.	6	6	6	7	7	7	6 1/4	25	34	28.00	38.00	16.47	22.35

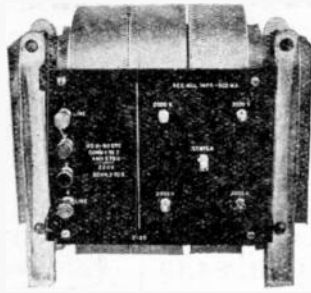
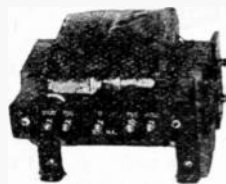
Powertran Mixing and Audio Transformers

Type	Purpose	PRIMARY		SECONDARY		TAPS		Insulation	DIMENSIONS						WEIGHT		LIST PRICE		YOUR COST		
		Impedance Ohms	Limit MA.	Impedance Ohms	Limit MA.	Pri.	Sec.		Open W	H	L	Cast W	H	Open	Cast	Open	Cast	Open	Cast		
2166-S	Mic.	200	50	150,000		CT		1,000V.	3 1/8	1 3/4	4 1/4	5 1/4	4	3 3/4	3 1/4	5 1/2	8.00	12.00	4.71	7.05	
2201-A	Mic.	200	50	150,000		CT		1,000V.	2 1/2	2	2 1/2	3 1/2	3	3 1/2	1 1/4	3	11.00	15.50	6.47	9.14	
2271-A	Mix.	15	10	200	10			1,000V.	2 1/2	3/4	1 3/4	3	3	2 1/4	1 1/2	1 1/4	5.00	7.00	2.94	4.11	
2272-A	PP-Output	7,800	30	8	250	CT		1,000V.	2 1/2	2	2	3 1/2	3	3 1/2	1 1/4	3	7.00	9.00	4.11	5.29	
2273-A	1st Stage	20,000	10	300,000	6			1,000V.	2 1/2	1 1/4	2 1/4	3	3	2 1/4	1 1/2	1 1/4	5.00	7.00	2.94	4.11	
2274-A	2nd Stage	15,000	10	300,000	6			1,000V.	2 1/2	1 1/4	2 1/4	3	3	2 1/4	1 1/2	1 1/4	5.00	7.00	2.94	4.11	
2275-A	Output	10,000	30	4,000	30			1,000V.	2 1/2	1 1/4	2 1/4	3	3	2 1/4	1 1/2	1 1/4	5.00	7.00	2.94	4.11	
2276-A	PP-Output	7,800	30	15	100	CT		1,000V.	2 1/2	2	2 1/4	3 1/2	3	3 1/2	1 1/4	3	7.00	9.00	4.11	5.29	
2277-A	PP-Output	20,000	30	15	100	CT		1,000V.	2 1/2	2	2 1/4	3 1/2	3	3 1/2	1 1/4	3	7.00	9.00	4.11	5.29	
2278-A	Output	10,000	30	15	100			1,000V.	2 1/2	1 1/4	2 1/4	3	3	2 1/4	1 1/2	1 1/4	5.00	7.00	2.94	4.11	
2279-A	Output	10,000	30	8	250			1,000V.	2 1/2	1 1/4	2	3	3	2 1/4	1 1/2	1 1/4	5.00	7.00	2.94	4.11	
2280-A	PP-Output	20,000	30	8	250	CT		1,000V.	2 1/2	1 1/4	2	3	3	2 1/4	1 1/2	1 1/4	5.00	7.00	2.94	4.11	
2281-S	PP-Output	7,800	30	15	100	CT		1,000V.	2 1/2	1 1/4	2	3	3	2 1/4	1 1/2	1 1/4	5.00	7.00	2.94	4.11	
2282-A	Output	3,900	60	200	60			1,000V.	2 1/2	2	2 1/4	3 1/2	3	3 1/2	1 1/4	3	7.00	9.00	4.11	5.29	
2283-A	PP-Output	7,800	30	200	60	CT		1,000V.	2 1/2	2	2 1/4	3 1/2	3	3 1/2	1 1/4	3	7.00	9.00	4.11	5.29	
2285-A	Output	3,900	60	500	50			1,000V.	2 1/2	2	2 1/4	3 1/2	3	3 1/2	1 1/4	3	7.00	9.00	4.11	5.29	
2286-A	PP-Output	7,800	30	500	50	CT		1,000V.	2 1/2	2	2 1/4	3 1/2	3	3 1/2	1 1/4	3	7.00	9.00	4.11	5.29	
2287-A	Mix.	200	50	200	50			2,000V.	2 1/2	1 1/4	2	3	3	2 1/4	1 1/2	1 1/4	5.00	7.00	2.94	4.11	
2288-A	Mix.	200	50	500	50			2,000V.	2 1/2	1 1/4	2	3	3	2 1/4	1 1/2	1 1/4	5.00	7.00	2.94	4.11	
2289-A	Mix.	500	50	500	50			2,000V.	2 1/2	1 1/4	2	3	3	2 1/4	1 1/2	1 1/4	5.00	7.00	2.94	4.11	
2310-A	Mix	200	50	500	50			5,000V.	2 1/2	2	2 1/4	3 1/2	3	3 1/2	1 1/2	3 1/4	12.00	15.00	7.06	8.82	
2311-A	Mix.	200-16,000	50	100,000		CT		2,000V.	2 1/2	2	2 1/4	3 1/2	3	3 1/2	1 1/2	3	12.00	15.00	7.06	8.82	
2867-A	Inter-stage	8,000	50	100,000		CT*	CT*	2,000V.	2 1/2	2	2 1/4	3 1/2	3	3 1/2	1 1/2	3 1/4	12.00	15.00	7.06	8.82	
*—Alloy Core. PP—Push Pull. CT—Center Tap. S—Sil. Core. Mix.—Mixer.																		*—More than 1 winding.		Mic.—Microphone Trans.	

A—Alloy Core. PP—Push Pull. CT—Center Tap. S—Sil. Core. Mix.—Mixer.

*—More than 1 winding. Mic.—Microphone Trans.

M & H DeLuxe Powertrans

Type 2120
CasedType 2120
OpenType 2116
OpenType 2117
CasedType 2212
Open

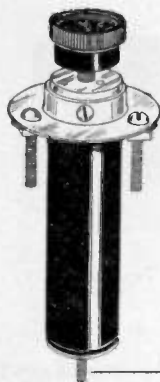
Powertran Plate Supply Transformers

DIMENSIONS															List Price		YOUR COST		
Type	Primary		Secondary		MA	Watts	Insulation Test	Open			Cast			Weight		Open	Cast	Open	Cast
V.	Cy.	Fuse	Volts					L	W	H	L	W	H	Open	Cast					Open	Cast
2115	110	60	3 A.	550-0-550	230	110	2,000V.	3 3/8	2 3/4	5 1/2	6	4 3/4	5 1/2	9 1/4	14	13.00	18.00	7.64	10.58
2115-A	110	25	3 A.	550-0-550	200	110	2,000V.	3 3/8	3 1/2	5 1/2	7	4 3/4	5 3/4	12 1/4	17	16.00	20.00	9.41	11.76
2116	110	60	3 A.	750-550-0-550-750	200	150	3,000V.	3 3/8	3 1/2	5 1/2	7	4 3/4	5 3/4	12 1/4	17	16.00	20.00	9.41	11.76
2116-A	110	25	3 A.	750-550-0-550-750	200	150	3,000V.	6	6	6	8	7	6 1/4	18 1/2	26	20.00	24.00	11.76	14.11
2117	110	60	5 A.	1000-750-0-750-1000	300	300	3,000V.	6	6	6	8	7	6 1/4	18 1/2	26	20.00	24.00	11.76	14.11
2117-A	110	25	5 A.	1000-750-0-750-1000	300	300	3,000V.	8 1/2	4	8	10	8	9	20 1/2	29	24.00	34.00	14.11	20.00
2118	110	60	5 A.	1500-1000-0-1000-1500	300	450	5,000V.	6	6	6	8	7	6 1/4	20 1/2	29	24.00	34.00	14.11	20.00
2118-A	110	25	5 A.	1500-1000-0-1000-1500	300	450	5,000V.	8 1/2	4	8	10	8	9	36	46	38.00	48.00	22.35	28.22
2119	110	60	10 A.	2000-1500-0-1500-2000	300	600	10,000V.	8 1/2	4	8	10	8	9	40	50	38.00	48.00	22.35	28.22
2120	110	60	20 A.	3000-2000-0-2000-3000	500	1500	15,000V.	10 1/2	4 1/2	9	12	10	10	48	60	70.00	80.00	41.16	47.04
2250	110	60	3 A.	1000-500-0-500-1000	200	200	10,000V.	6	6	6	8	7	6 1/4	12	17	18.00	22.00	10.58	12.94
2250-A	110	25	3 A.	1000-500-0-500-1000	200	200	10,000V.	6	6	6	8	7	6 1/4	15	20	22.00	26.00	12.94	15.29
2251	110	60	10 A.	1000-500-0-500-1000	600	600	10,000V.	8 1/2	4	8	10	8	9	20	28	38.00	48.00	22.35	28.22
2251-A	110	25	10 A.	1000-500-0-500-1000	600	600	10,000V.	10 1/2	4 1/2	9	12	10	10	36	46	60.00	70.00	35.28	39.20
2252	110	60	10 A.	{ 500-1000-2000 0 500-1000-2000 }	300	600	10,000V.	8 1/2	4	8	10	8	9	20	28	40.00	48.00	23.52	28.22
2252-A	110	25	10 A.		300	600	10,000V.	10 1/2	4 1/2	9	12	10	10	36	46	64.00	74.00	37.62	43.51
2253	110	60	15 A.		600	1200	10,000V.	10 1/2	4 1/2	9	12	10	10	40	50	68.00	78.00	39.98	45.86
2253-A	110	25	15 A.	{ 500-1000-2000-3000 0 500-1000-2000-3000 }	600	1200	10,000V.	10 1/2	5	10	12	10	10	48	60	74.00	84.00	43.51	49.40
2254	110	60	15 A.		300	900	15,000V.	10 1/2	4	8	12	10	10	36	46	64.00	74.00	37.62	43.51
2254-A	110	25	15 A.		300	900	15,000V.	10 1/2	5 1/2	10	12	10	10	48	60	74.00	84.00	43.51	49.40
2255	110	60	20 A.	{ 500-1000-2000-3000 }	600	1800	15,000V.	10 1/2	6	11	14	11	12	54	70	80.00	90.00	47.04	52.92
2255-A	110	25	20 A.		600	1800	15,000V.	12	7	12	14	11	12	70	85	90.00	100.00	52.92	58.80

Powertran Filament Transformers

	Primary		Secondary			Insulation Test	DIMENSIONS						Weight		List Price		YOUR COST		
Type	V.	Cyc.	Fuse	Volts	Amps.		Watts	L	Open W	H	L	Cast W	H	Open	Cast	Open	Cast	Open	Cast
2108	110	60	1/4 A.	7.5CT	2.5	20	2,000V.	3 3/8	2 3/4	4 1/4	5 1/4	4	3 3/4	3 1/4	5 1/2	8.00	12.00	4.71	7.05
2109	110	60	1/2 A.	7.5CT	2.5	40	2,000V.	3 3/8	2 3/4	4 1/4	5 1/4	4	3 3/4	3 1/2	6	9.00	13.00	5.29	7.37
2109-A	110	25	1/2 A.	7.5CT	2.5	40	2,000V.	3 3/8	2 3/4	5 1/2	6	4 3/4	5 1/2	9	13 1/4	12.00	16.00	7.05	9.42
2310	110	60	1 A.	7.5CT	2.5	60	2,000V.	3 3/8	2 3/4	4 1/4	5 3/4	4	4 1/4	4 3/4	7 1/4	10.00	14.00	5.88	8.24
2310-A	110	25	1 A.	7.5CT	2.5	60	2,000V.	3 3/8	2 3/4	5 1/2	6	4 3/4	5 1/2	9	13 1/4	13.00	17.00	7.37	9.99
2110	110	60	1/2 A.	2.5CT	10	25	10,000V.	3 3/8	2 3/4	4 1/4	5 1/4	4	3 3/4	3 1/2	6	8.00	12.00	4.71	7.05
2111	110	60	1 A.	10CT	7	70	5,000V.	3 3/8	2 3/4	4 1/4	5 3/4	4	4 1/4	4 3/4	7 1/4	10.00	14.00	5.88	8.24
2112	110	60	1 A.	12CT	7	70	5,000V.	3 3/8	2 3/4	4 1/4	6	3 3/4	4 1/4	5 3/4	8	12.00	15.00	6.48	8.82
2113	{ 110 } { 220 }	60	2-1 A.	14CT	12	170	5,000V.	3 3/8	2 3/4	5 1/2	6	4 3/4	5 1/2	9	13 1/4	16.00	20.00	9.42	11.76
2113-A	{ 110 } { 220 }	25	1 A.	14CT	12	170	5,000V.	6	4	5	7	7	6 1/4	9 1/2	17	19.00	23.00	11.17	13.53
2114	{ 110 } { 220 }	60	2-1 A.	5CT	20	100	15,000V.	6	4	5	7	7	6 1/4	9 1/2	17	16.00	20.00	9.42	11.76
2210	110	60	1 A.	2.5 7.5 7.5	10 3 3	70	10,000V.	3 3/8	2 3/4	4 1/4	5 3/4	4	4 1/4	4 3/4	7 1/4	11.00	15.00	6.48	8.82
2210-A	110	25	1 A.	2.5 7.5 7.5	10 3 3	70	10,000V.	3 3/8	2 3/4	5 1/2	6	4 3/4	5 1/2	5 3/4	8	14.00	18.00	8.28	10.54
2211	110	60	1 A.	2.5 7.5 7.5 7.5	10-3 3-3	93	10,000V.	3 3/8	2 3/4	5 1/2	6	4 3/4	5 1/2	5 3/4	8	12.00	16.00	7.05	9.42
2212	110	60	1/2 A.	2.5 7.5 7.5	10 3 3	48	10,000V.	3 3/8	2 3/4	4 1/4	5 3/4	4	4 1/4	4 3/4	7 1/4	10.00	14.00	5.88	8.24
2212-A	110	25	1/2 A.	2.5 7.5 7.5	10 3 3	48	10,000V.	3 3/8	2 3/4	5 1/2	6	7 3/4	5 1/2	5 3/4	8	13.00	17.00	7.37	9.99
2213	110	60	2 A.	2.5 7.5 7.5	10 3 3	118	10,000V.	6	4	5	7	7	6 1/4	9 1/2	17	12.00	16.00	7.05	9.42
2213-A	110	25	2 A.	2.5 7.5 7.5	10 3 3	118	10,000V.	6	5	6	8	7	6 1/4	18	25	20.00	26.00	11.76	15.29
2214	{ 110 } { 220 }	60	2-1 A.	2.5 7.5 7.5 10	10-3 3-7	140	10,000V.	6	5	5	7	7	6 1/4	9 1/2	17	16.00	20.00	9.42	11.76
2214-A	110	25	2 A.	2.5 7.5 7.5 10	10-3 3-7	140	10,000V.	6	4	6	8	7	6 1/4	18	25	20.00	26.00	11.76	15.29
2215	110	60	1 A.	2.5 7.5	10 3	73	10,000V.	3 3/8	2 3/4	4 1/4	5 3/4	4	4 1/4	4 3/4	7 1/4	11.00	15.00	6.48	8.82

Transmitting Equipment



Radiostat

A reliable graphite compression filament control rheostat for supply transformers of 500 watts or less—the ideal transmitter rheostat.

List Price, \$6.50

Your Cost, \$5.42

Lynch Transposition Blocks



kits for 61 1/4 ft. long.

At last a reasonable priced high quality transposition block is available to the amateur for use in antenna feeder line construction. Made of Lynchite and extremely rugged. One kit is sufficient for a lead-in of 11 1/4 ft. long. 2 kits for 23 3/4 ft. long. 3 kits for 36 1/4 ft. long. 4 kits for 48 3/4 ft. long. 5 kits for 61 1/4 ft. long.

Kit of Ten Blocks

Your Cost, \$1.47

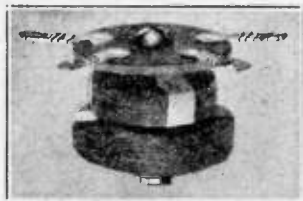
Lynch Cage-Aerial Spreaders



Where the cage of aerial is to be used, to take advantage of its great pick-up qualities and its freedom from directional effect, the new Lynch Cage-Antenna Spreaders are highly desirable. They are also made of Lynchite, to reduce their electrical losses to a minimum. These units are supplied in kit form, and are just as light as they can be made without taking any chances on their breaking while in service.

Your Cost, 15c each

5-Meter Interruption Frequency Oscillator Coil



Wound with the correct number of turns with leads brought out to soldering lugs mounted on bakelite disc. Impregnated against weather conditions.

Catalog Number 1201

Your Cost, 75c

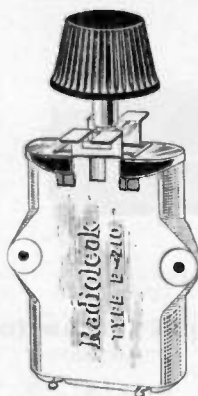
5-Meter R. F. Choke



A spaced wound radio frequency choke made especially for 56 megacycles operation.

Catalog Number 1202

Your Cost, 38c



Radioleak

Compression Rheostats for Amateur Transmitters

Radioleak—Special grid leak for radio transmitters, 5,000 to 30,000 ohms.

List Price, \$5.00

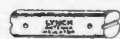
Your Cost, \$4.17

Bradleystat — E210 filament control for ten-watt transmitters, capacity 75 watts, resistance 4 to 150 ohms.

List Price, \$4.00

Your Cost, \$3.34

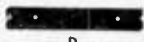
Lynch "U. S. Navy Standard" Antenna Insulators



Insulators of this type are in constant use in the Navy Short Wave Experimental Laboratories, as well as in many of the most important commercial services of the world. Designed with this wonderful background and made of material which time and experience have shown to be best suited to withstand the electrical and mechanical strains placed on both transmitting and receiving systems, these insulators are available in kits.

Your Cost, 12c each

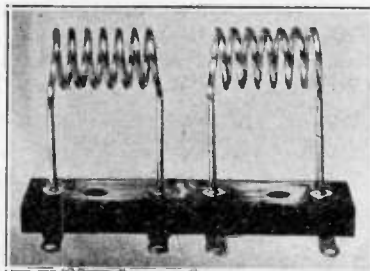
Lynch "Commercial" Antenna Insulators



These insulators have been patterned after the Lynch "U. S. Navy Standard" Antenna Insulators. They are made of a high grade molded and milled vulcanite. These insulators have a highly polished surface, which resists the accumulation and absorption of moisture, they are so designed as to assume a position perpendicular to the earth and high frequency losses are reduced to a marked degree.

Your Cost, 9c each

5-Meter Tuning Coils and Mounting



Made for band spread tuning. Correct number of turns. Catalog Number 1203

Your Cost, 45c

5-meter coil kit consisting of one each of numbers 1201, 1202 and 1203, including blue print. Complete—

Your Cost, \$1.50



Bradleystats

Adjustable Resistors for Every Radio Application

Graphite disc compression rheostats that assure noiseless, stepless control. One hole mounting. With bakelite detachable knob.

BRADLEYSTAT—Perfect filament control. Stepless range 1/2 to 75 ohms.

List Price, \$1.85

Your Cost, \$1.48

BRADLEYLEAK—Perfect grid leak. Adjustable from 1/4 to 15 megohms.

List Price, \$1.85

Your Cost, \$1.48

BRADLEYOHM—Perfect adjustable resistors for voltage control, amplifiers, etc.

BRADLEYOHM A—Capacity, 3 watts. Range 10 to 1. Ohms, Min. 100; Max. 250,000.

List Price, \$2.00

Your Cost, \$1.60

BRADLEYOHM E—Capacity, 4 watts. Range 50 to 1. Ohms, Min. 1; Max. 1,500,000.

List Price, \$2.25

Your Cost, \$1.80

BRADLEYOHM R—Capacity, 5 watts. Range 75 to 1. Ohms, Min. 1; Max. 2,000,000.

List Price, \$2.75

Your Cost, \$2.20

BRADLEYOHM X—Capacity, 6 watts. Range, 100 to 1. Ohms, Min. 1; Max. 2,500,000.

List Price, \$3.25

Your Cost, \$2.60

Lynch "All-Wave" Antenna Coupler



While it is possible to secure much more satisfactory results by the application of the transposed lead-in, alone, over the usual ground and aerial system, the best results are obtained when there is no connection between the receiver itself and the regular ground. The best way to accomplish this result is to have a winding which is connected with the two leads of the transposed lead-in system and placed in inductive relation to the first tuned circuit in the receiver. There are many receivers in which this connection cannot be made without considerable trouble. The two leads of the antenna system, itself, should be balanced. In the Lynch "All-Wave" Antenna Coupler all these functions are brought about automatically. It enables us to secure the best possible results from the various noise-reducing antenna systems, without regard to the wave-length on which we desire to receive.

"All-Wave" Coupler, List Price, \$1.50

Your Cost, 88c

I. F. Transformers and Coils

The I.F. and I.F. filter transformers are wound with Litz wire and tuned by Hammerlund Isolantite insulated trimming condensers to 525 KC. All units are of the diamond weave type having low distributed capacity and high impedance.

Catalog No.	Description	YOUR COST
1501*	I.F. Filter Transformer	\$1.00
1502*	I.F. Transformer for 58 Tubes	1.75
1503*	2nd Detector I.F. Trans. for 56 Tubes	1.75
1504*	Filter for Heterodyne Oscillator	1.50
1505*	Beat Freq. Osc. Coils and Cond.	3.00
1506*	Low Frequency RF Choke	.75
1507*	High Frequency RF Choke	.75

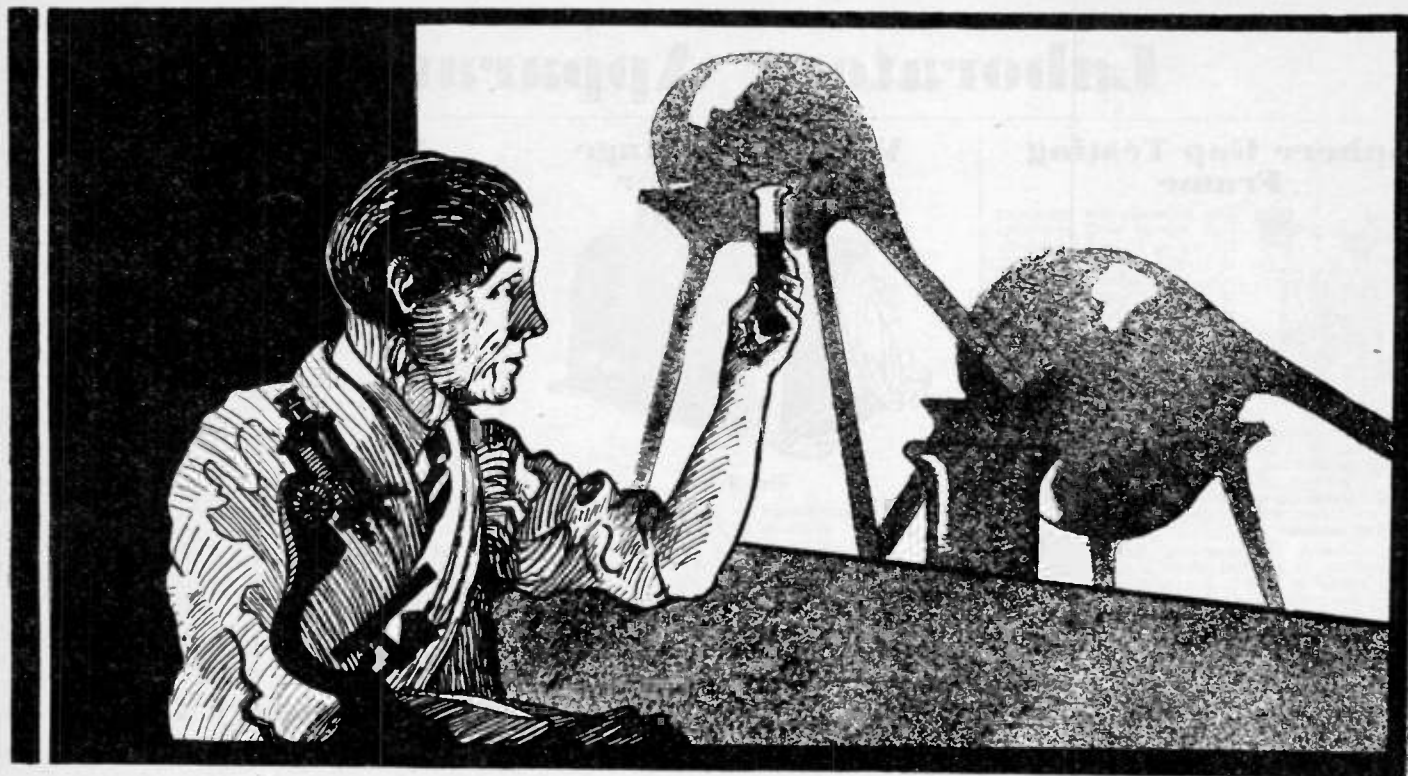
*The parts used in Lamb S.S. Super.

M & H 5-Meter Receiver

As this catalog is just going to press our Engineering Department announces a new 5-meter receiver using only the finest of parts at a very reasonable price.

Set uses two type "37" and one type "38" tubes mounted on an aluminum chassis. Extremely rugged and easily portable. We are unable to show a view of this fine instrument because of lack of time, but we know you'll like it and, of course, M & H guarantees it.

Your Cost, \$12.45 Less Tubes



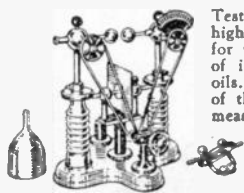
LABORATORY SECTION

M & H dedicates this section of the catalog to those interested in laboratory instruments and apparatus by listing the parts that will be of general interest. Due to the fact that a large amount of this apparatus is designed to conform to special requirements, we are unable to list all of our apparatus. We solicit your inquiries in regard to special laboratory equipment. M & H endeavors to supply only the highest quality material at attractive prices.

Schools, universities and research laboratories will find this section of special value in their physics and electrical experiments by utilizing this ultra-modern equipment. We are intensely interested in making this department a great success. Your criticisms, comments or suggestions will be gratefully received and we would appreciate your reactions to our efforts in creating a special department devoted to your interests.

Laboratory Apparatus

Sphere Gap Testing Frame



Type T5412

Test apparatus for measuring high voltage with provisions for testing for the breakdown of insulation and insulating oils. The sphere gap is one of the most accurate ways of measuring high potentials.

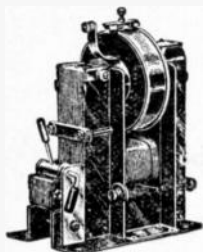
Two heavy porcelain insulators fastened to a heavy cast iron base serve as supports for the two spheres. The spheres are exactly 3 centimeters in diameter. Each sphere is capable of being moved in a horizontal direction by means of belts and an insulated hand wheel. With one sphere locked in position, the other may be moved to a point of breakdown and the voltage measured directly by the pointer on the calibrated scale attached to the right hand terminal.

An attachment for measuring the breakdown of sheet insulation is supplied which is arranged so that the test sample is held in a vertical position to permit the free circulation of ionized air from both sides of the sample. The sample is held in position between the round edge, flat electrodes by means of a slight spring pressure. The stem of the holder fits into a socket fastened to the base frame.

Furnished complete with the attachments described above. Weight—15 pounds. Dimensions—12¼ inches long by 10½ inches wide by 14 inches high.

Your Cost, \$88.20

High Voltage Transformers



Type R and RS

Open type transformers for general laboratory use where high voltages are required.

The type "R" Thordarson transformer is widely known throughout the electrical and radio industry.

The type "RS" design is furnished in three capacities, all for operation on 110 volts 60 cycles.

Type No.	Secondary K.V.A.	Volts	Dimensions	Weight Lbs.	YOUR COST
T-2742	½	10,000	10" x 5" x 11½"	38	\$21.56
T-2480	¾	10,000	10" x 5½" x 12"	40	27.44
T-2479	1	25,000	10¾" x 5" x 14½"	62	39.20

The type "RS" is similar to the type "R" except that it is of the simple core type construction and does not have the double magnetic circuit.

Type No.	Secondary K.V.A.	Volts	Dimensions	Weight Lbs.	YOUR COST
T-2355	¼	8,000	5" x 4¼" x 8"	15	\$9.80
T-2413	½	10,000	7" x 5" x 10"	25	18.80
T-2525	1	15,000	8" x 5½" x 11"	35	28.20

Other high voltage transformers of larger capacity also available.

Direct Current Coils



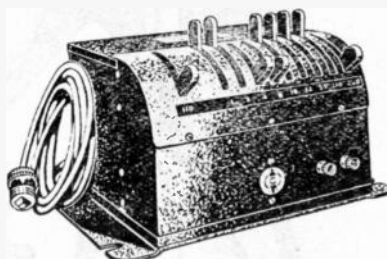
Type T5263

The direct current coils are spool wound coils especially designed for use on a direct current source. With their use a powerful direct current field can be produced.

The heavy terminals are carefully protected against accidental contact by a shield placed over them.

Your Cost \$11.76

Variable Voltage Transformer



Type T2182

A laboratory transformer for giving any output voltage from 1 volt to 440 volts in 1 volt steps.

This transformer is wound for 110 or 220 volts 60 cycles on the primary. A double pole double throw switch makes possible a change to either voltage instantly. If necessary, by using the 220 volt winding, the transformer can be used on 110 volts 25 cycles.

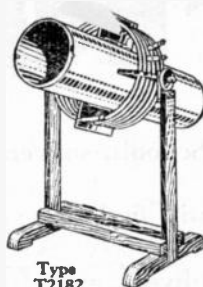
The variation of secondary voltages is accomplished by a series of nine single pole double throw knife switches by which you can selectively add any of the various voltages.

The transformer has an average output capacity of 500 v. a. a.

Dimensions—10" x 13½" x 8¾" high. Weight—47 lbs.

Your Cost, \$58.80

Tesla Coil



Type T2182

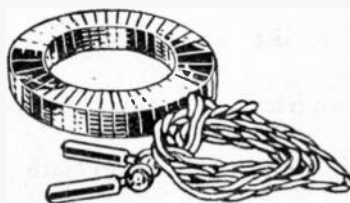
A tesla coil of conventional design for demonstration purposes.

It consists of a secondary winding wound on a tube 9½ inches in diameter and 36 inches long supported and insulated from a primary of 6 turns of heavy copper tubing. The primary is adjustably supported in a well made wooden frame.

Capable of supplying a high frequency spark 36 inches long.

Price on Application

Direct Current Exploring Coil



Type T5409

A round, paper section coil designed with characteristics such that 110 volts direct current may be applied to its terminals. When so energized, it can be used to demonstrate attraction and repulsion. This coil is also very useful in demonstrating lines of force by means of iron filings.

The coil is 6¾ inches in diameter.

Your Cost, \$4.90

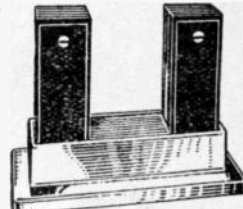
Magnetic Circuit (Double)

The magnetic circuit is the foundation unit around which we have built many flexible parts for laboratory and commercial use.

The double magnetic circuit is of the core type construction with a removable top yoke or armature.

The U shaped stampings are made of high grade silicon transformer steel.

This magnetic circuit has the proportions of a two-kilowatt transformer. The legs measure 2½ inches by 2½ inches in cross section. The total length of the magnetic circuit is 33 inches. The members of the circuit are square for simplicity of calculations. The total weight is 84 pounds. The length is 12¾ inches, the width 6¼ inches and the overall height when assembled 12 inches.



Type T5261



Your Cost, \$33.22

Secondary Coil

Type T5265

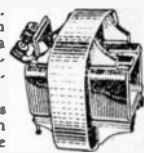


The high voltage coils are designed to slip over the A.C. primary coil to form the secondary of a practical high voltage, step-up transformer.

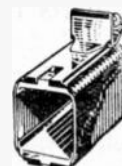
The coil delivers 20,000 volts when assembled with the primary coil energized with 110 volts 60 cycles.

The coil measures 7 inches by 9½ inches in its extreme dimensions.

Your Cost, \$19.60



Primary Coils for Alternating Current



Type T5262

The primary coils are designed for use with any of the magnetic circuits. They can readily be assembled or removed by simply slipping them over the core of the magnetic circuit. The coils can be used either singly or in combinations. Each is carefully constructed to withstand constant use.

The coils are wound with two layers of enameled wire, the greater part of each layer exposed to the air to give the maximum of cooling action. This is accomplished by winding a self-supporting coil around two copper plates which are placed inside the coil but outside of the magnetic circuit proper. These copper plates serve as guides for assembling or withdrawing the coils on the magnetic circuits. The plates also serve as a support for the two heavy terminals. An angle plate fixed to the outside of the coil over the terminals prevents accidental contact with the terminals causing a short circuit.

Each coil has 110 turns. (One turn per volt when used on 110 volts.)

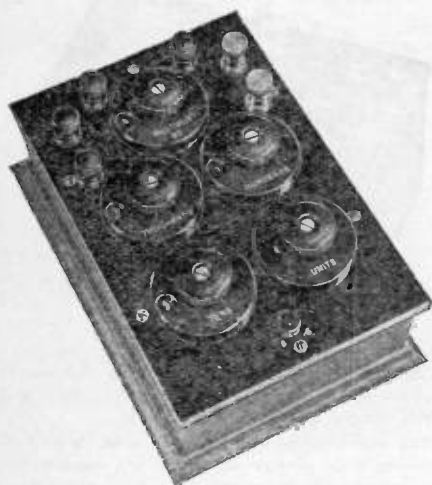
We pride ourselves in our ability to wind these self-supporting coils of heavy wire without subsequent forming or hammering to shape. It is accomplished by the use of special patented winding machinery which guides the wire straight, flat and accurately onto the square form without stretching.

Bakelite only is used on all sheet insulation under mechanical strain.

Each weighs 4½ pounds. **Your Cost, \$8.82**

Laboratory Apparatus

Type B Wheatstone Bridge



These bridges are similar in construction to Rubicon Type B resistance boxes. Bifilar coils wound on Isolantite spools with double silk covered manganin wire are used throughout. The rheostat dials contain nine coils each. The ratio dial affords a selection of seven multiplying factors—.001, .01, .1, 1, 10, 100 and 1000. The rheostat coils are guaranteed accurate to .1%, while the ratio coils have a guaranteed accuracy of .05%. No variable contacts of any kind are present in the ratio arms.

Bridge No. 1040 has, in addition to the ratio dial, four rheostat dials—9 x (1+10+100+1000). Bridge No. 1041 differs from No. 1040 in that its rheostat contains five dials—9 x (1+1+10+100+1000). Either bridge can be used for measuring resistances from a fraction of an ohm to ten megohms.

Binding posts are provided for connecting a battery, a galvanometer and the unknown resistance. The latter binding posts are of large size and are made of brass, nickel plated. The other binding posts are standard bakelite covered. The double contact key is so connected that the battery circuit is closed before the galvanometer circuit.

1040—Wheatstone Bridge, four dial rheostat

Your Cost, \$60.00

1041—Wheatstone Bridge, five dial rheostat

Your Cost, \$75.00

Prices on special arrangements will be supplied upon request.

Student Resistances

These units are intended primarily for use by students in courses on electrical measurements. They are made of silk-covered manganin wire in the bifilar type of winding. Each unit is enclosed in a neatly finished metal box having bakelite top and two substantial binding posts.

1190—Student Resistance, 1 to 999 ohms

Your Cost, \$5.00

1191—Student Resistance, 1000 to 10,000 ohms

Your Cost, \$6.00

Discount for quantity lots

Rubicon Pointer Galvanometers



These are suspended system D'Arsonval type galvanometers affording sensitivities much higher than those obtainable with Pivot and Jewell movements. At the same time these instruments are extremely rugged.

These galvanometers are available in two types, differing only in sensitivity and price.

Cat. No.	Res.	Sensitivity		Period Seconds	External Critical Damp. Res.
		Per MM. Div.			
3001	30	3 microamps	2	35 ohms	
3002	300	1 microamps	2	1,000 ohms	
3003	1100	.5 microamps	2	2,500 ohms	
3011	40	.5 microamps	4	175 ohms	
3012	360	.2 microamps	4	2,000 ohms	
3013	1200	.07 microamps	4	10,000 ohms	

Send for Descriptive Circular

Attenuation Pads For Audio Frequency Use



The rapid development of electro-acoustic devices during the past decade has created a demand for calibrated attenuation networks of all kinds.

The finish is baked crystalline black which is both pleasing in appearance and very durable. The dimensions are 2½" x 1½" x 1½".

Coils are thoroughly aged and accurately adjusted to within 1/10th of 1%.

Catalog No.	Attenuation	Input Impedance	Output Impedance	YOUR COST
1230	20 db	500 ohms	200 ohms	\$10.00
1231	20 db	500 ohms	500 ohms	10.00
1232	10 db	500 ohms	200 ohms	10.00
1233	10 db	500 ohms	500 ohms	10.00
135	Pair of W. E. 11A connecting blocks			.60

The above units are carried in stock. Pads of different attenuation or impedance values can be furnished on short notice. For more complicated network assemblies, correspondence is required.

Spotlight Type Galvanometer



For work requiring high sensitivity with great accuracy we recommend the use of the Rubicon "Spotlight" type galvanometer.

These instruments combine a number of features not ordinarily found in other galvanometers of equal sensitivity. The sensitivity attained has never before been reached in this type of galvanometer. All Rubicon "Spotlight" galvanometers are of the taut suspension type, requiring no leveling, etc.

Cat. No.	Resist.	Sensitivity		Per. Sec.	Critical Damp. Resist.	YOUR COST
		Per MM. Div.				
3401	25	20	Microvolts	2	65	\$40.00
3401H	25	5	Microvolts	2	65	55.00
3402	350	.05	Microamps	2	2000	40.00
3402H	350	.015	Microamps	2	2000	55.00
3402HH	360	.006	Microamps	3	3000	60.00
3403	1100	.025	Microamps	3	5000	40.00
3403H	1100	.007	Microamps	2.5	5000	55.00
3403HH	1100	.004	Microamps	3	10,000	60.00

Above galvanometers including self contained transformer for operation on 110 volt 60 cycles, add \$5.00

Mounted Individual Resistors

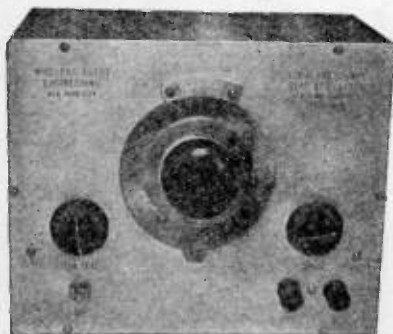
We offer a selection of individual mounted resistance units in both the bifilar type and the Wenner type. These resistors are mounted on substantial bakelite bases and are protected by neatly finished covers. Each unit is provided with two bakelite covered binding posts. These units are guaranteed accurate to .05%.

		YOUR COST
1180—Bifilar,	1 ohm	\$ 6.00
1181—Bifilar,	10 ohms	6.00
1182—Bifilar,	100 ohms	7.00
1183—Bifilar,	1000 ohms	8.00
1184—Bifilar,	10000 ohms	10.00
1186—Wenner,	100 ohms	8.00
1187—Wenner,	1000 ohms	10.00
1198—Wenner,	10000 ohms	15.00

Other values—prices on request

Laboratory Apparatus

Heterodyne Audio Oscillator



Model No. 302

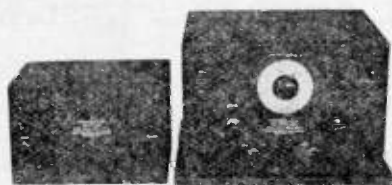
The beat-note or heterodyne oscillator No. 302 generates audio frequencies which are continuously variable from 40 to 15,000 cycles per second. Four tubes are used, two of which are the radio frequency oscillators, while the remaining two are detector and amplifier, respectively. All four tubes are of the two-volt type. The voltage output of the instrument remains practically constant over the entire range. A calibrated curve is provided with the instrument recording audio frequencies against the dial reading. The instrument is ruggedly constructed, employing the best apparatus available. A handle can be placed on the cabinet if a semi-portable unit is required. An aluminum panel and black crystallized cabinet is used.

This instrument is valuable as a source of variable audio frequencies in the testing of loud speakers, amplifiers, microphones, and acoustical apparatus in general.

Dimensions 10" x 8" x 7 3/8" Weight 6 lbs.

Your Cost, \$56.00

Model No. 405 and No. 406 Distortion Meter



No. 406

No. 405

Type No. 405 and No. 406 distortion meter has been designed for the rapid determination of distortion in amplifiers, public address systems, radio frequency broadcast transmitters and radio receivers. Measurements are made at a single frequency (400 cycles) and the combined harmonic content of the wave is read directly from a dial. The dial has two ranges 0 to 3% and 0 to 30%. Harmonic distortions of as low as two hundredths of 1% can be easily and accurately read. This instrument offers practically the simplest, yet most efficient, means for determining audio frequency distortion.

Model 405 Distortion Meter

Your Cost, \$110.00

Model 406 400 Cycle Filter

Your Cost, \$40.00

Model No. 800 Light Relay



The Model No. 800 Light Relay has been designed to meet the need for a rugged, inexpensive light controlled device, for use where the usual heavy duty device would be unnecessarily expensive. It uses a cesium photo-cell, a 112A tube as an amplifier, and operates a built-in relay with contacts that will handle a 100-watt load continuously. It operates directly from a 110V. AC. line. It is designed to either make or break a circuit as desired. It will respond to a light intensity of 1/10 lumen or higher. A sensitivity control provides a means of adjustment for the initial light intensity. This instrument is housed in a cylindrical aluminum case, finished in black crystallized lacquer, and is very rugged.

Complete with tubes

Your Cost \$40.00

Shallcross Hi-Meg Resistors



5 to 5000 Megohms

Industrial applications of electronic or vacuum tubes, photo-electric cells, and associated circuits have taxed the ingenuity of many manufacturers of resistors to produce a stable resistance element of the megohm order, i.e., 5 megohms to 5000 megohms.

The Shallcross Hi-Meg resistors described here were developed for the express purpose of providing a very high resistance (5 megohms to 5000 megohms) having as many as possible of the characteristics of the well known Shallcross wire-wound resistors.

These resistors incorporate all the essential features necessary for commercial and laboratory use.

Free from noise.

No polarization effect.

Resistance element protected against humidity.

Thoroughly aged prior to calibration.

Maximum load 0.1 watt.

Minimum surface leakage under operating conditions.

Positive connections between resistance element and resistor terminals.

May be used for intermittent or continuous use without change of resistance.

Temperature coefficient approximately 0.2 of 1% per °F.

Resistance not affected by voltage within the maximum rating power of 0.1 watt.

Calibrated to an accuracy of 2% at 72°F.

Type No. 206. Resistor dimensions: Length 1 1/2"; Diameter 3/8"; Overall 1 1/8"; Terminal Specs. No. 8 Screw 3/16" long; Maximum Resistance 500 mega.

Your Cost, \$5.00

Type No. 212. Resistor dimensions: Length 1 1/8"; Diameter 3/4"; Overall 2 1/8"; Terminal Specs. No. 8 Screw 3/8" long; Maximum Resistance 5000 mega.

Your Cost, \$10.00

Megohm Decade Boxes



The 900 Series Megohm Decade Resistance boxes described in this bulletin are designed for the specific requirements of the physicist, research engineer, and others engaged in scientific investigation.

The wide range of high resistances available in these resistance boxes now provide comparison standards for high resistance measurements, insulation measurements and other uses in many fields of research and engineering such as: physical, electrical, radio, geo-physical, electronic tube, physical chemistry, X-ray, sound recording and industrial laboratories.

These Megohm Decade boxes are of great value in connection with photo-electric cells and amplifier circuits in radio and television, frequency response correction networks, potential dividers, voltmeter multipliers with milliammeters and microammeters. When used in conjunction with a sensitive galvanometer the proper decade box will provide a voltmeter of 10 megohms per volt.

It will be noted from the circuit on the panel that the decades of resistances are so connected to the binding posts that the box can be used as a potential divider, a feature not available in most boxes.

In order to guarantee a dependable very high resistance box one of the most important requirements, other than high grade resistor units, is the character of insulation. The interior view of the box shows that the switch plates, supporting spacers, shaft couplings and binding post pillars are made of a modern ceramic insulating material (Insulante), which has negligible surface conductivity and exceedingly high electrical resistance. Measurements on assembled boxes show a leakage resistance higher than 1,000,000 megohms.

The box is made of cast aluminum and can be filled with suitable oil to the top of the switches in case loads in excess of one watt per step are to be employed.

Catalog No. 935. Maximum Resistance, 1,100,000 ohms in 10,000 ohm steps. Dials 2.

Your Cost, \$100.00

Catalog No. 945. Maximum Resistance 11,000,000 ohms in 100,000 ohm steps. Dials 2.

Your Cost, \$150.00

Catalog No. 960. Maximum Resistance 60,000,000 ohms in 1,000,000 ohm steps. Dials 2.

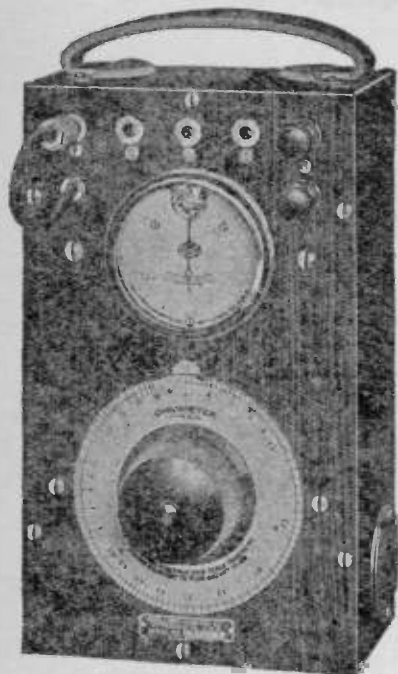
Your Cost, \$350.00

Calibrated to an accuracy of .1%.

Maximum voltage, 5000 volts.

Dimensions, 5 1/2" x 7" x 9".

Laboratory Apparatus



Portable Direct Reading Ohmmeter

This instrument is a form of slide wire ohmmeter designed with particular reference to speed and simplicity in operation and low initial cost. Its design is such as to make it an ideal instrument for the rapid measurement of coils and resistance units. The instrument is entirely self-contained—there are no loose parts that may become lost. Resistances may be read to within an accuracy of approximately 1% of their value from the ".5" mark to and including the "10" mark, at which latter point the operator should shift to the next higher ratio to get best results. Above the "10" mark the corresponding accuracy is 2%.

No. 3007—Range 5-50, 5-500, 5-5,000, 500-50,000 ohms (4 ranges)

List Price, \$70.00

Your Cost, \$52.50

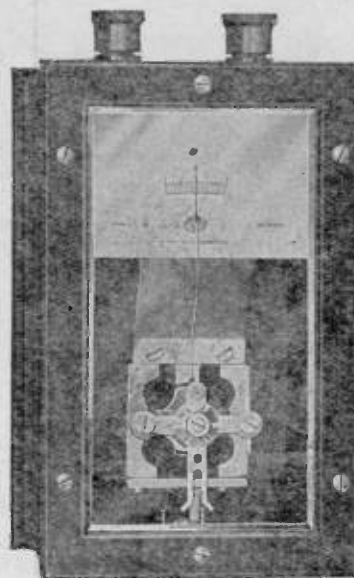
Type LGD Galvanometer

Our Type LGD galvanometer is intended for all applications where an instrument of high sensitivity, great accuracy and extreme ruggedness is wanted. The pointer is of the knife-edge type. The scale divisions are uniform with 10 divisions on both sides of zero. These instruments are exceedingly well damped, which insures quick readings. The current value of the Type LGD galvanometer scale is 2 micro-amperes per millimeter. The resistance is about 275 ohms. The net weight is 4 lbs. Overall dimensions are 7 1/4 inches long by 4 1/4 inches wide by 3 3/4 inches high.

No. 2502—Type LGD Galvanometer

List Price, \$70.00

Your Cost, \$49.00



Student Galvanometer



Our Student's Type KGD galvanometers are offered to meet the demand for reasonably priced instruments and are particularly recommended for use in educational institutions and laboratories where a sensitive but very rugged device is wanted. A knife-edge pointer is provided. The scale divisions are uniform with five divisions on both sides of zero. The instrument is well damped. The current value of the Type KGD galvanometer scale is 16 micro-amperes per millimeter. The resistance is about 75 ohms. The net weight is 1 1/4 lbs. Overall dimensions are approximately 5 1/2 in. long by 3 1/2 in. wide by 3 1/2 in. high.

List Price, \$40.00

Your Cost, \$25.00

Portable Multirange Volt-Ammeter

Here is a portable multirange instrument with a d'Arsonval movement of improved design. Very rugged and extremely accurate. Has a variety of uses in any laboratory. Accuracy is better than 1/2 of 1% of full scale value at any point on the scale. Scales are 5 1/4" long. Entirely self-contained.

No. 1014—Ranges 0-1.5, 15 and 150 volts and 0-.15, 1.5 and 15. amperes.

List Price, \$115.00

Your Cost, \$81.00



Portable Direct Reading Circuit Test Ohmmeter

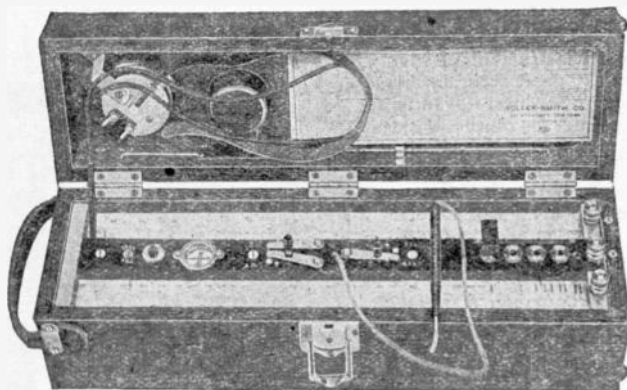


The uses of the HTD Circuit Tester are two-fold. The instrument can be used to ascertain if there is an electrical circuit existing between conductors applied to the terminals of the instrument and, secondly, it enables the user to read the resistance of the circuit under test. This instrument consists of a small high-grade d'Arsonval type D.C. voltmeter connected in series with a small dry cell. The circuit is such that when the two terminals of the instrument are connected the circuit is completed. The instrument pointer will indicate full scale when the terminals are short-circuited. The scale reads directly in ohms, which enables resistance readings of the circuit under test. Range 0 to 10,000 ohms.

Type 3009
List Price, \$17.00

Your Cost, \$12.75

Laboratory Instruments



Portable Direct Reading Slide Wire Ohmmeter

The Type G-OM Ohmmeters are in many respects superior to the Wheatstone bridge. They are extremely easy to operate and give results which are read off directly in ohms without the necessity of any computation whatsoever. The scales are 30 inches long and therefore can be read very closely. Supplied with both galvanometer and head-set for A.C. and D.C. resistance measurements. With this instrument comparisons of inductance, capacity or the measurement of resistances are easily and satisfactorily made. Invaluable to all laboratories. Net weight 11 lbs.; size 17 x 5 x 5 inches. Polished hardwood case.

Cat. No.	Ranges	List Price	YOUR COST
3002	0 to 10, 100, 1,000, 200,000 ohms (4 scales)	\$150.00	\$112.00
3003	0 to 10, 100, 1,000, 2,000,000 ohms (4 scales)	170.44	127.00

New Red Top Thermo-Regulator

For Accurately Controlling Constant Temperature of Ovens, Heating Baths, Refrigerants, Rooms, Incubators, etc.

The development of the RED TOP Terminal Type Thermo-Regulator is the result of a definite demand in the field of accurate temperature control for a device that will control any desired temperature to a variation of 1/10th of one degree, within a range of from 0° to 300° F.

FEATURES—The mercury is purified through a special process. The capillary and reservoir is filled with dry hydrogen to dampen spark at contact point. The electrodes, or contacts, are of a special alloy metal, expressly designed to contact on top of mercury. Terminals for connecting control circuit eliminate danger of breaking of old style, delicate "pigtail" leads to electrodes. Outer glass shell, completely enclosing delicate parts, adds rigidity to the completed instrument.

Your Cost, \$14.00

Burgess Vacuum Contact



The Burgess Vacuum Contact is a new and improved device for use wherever a positive, rapid and durable electrical contact is needed in circuits handling up to 6 amperes continuous load or 8 amperes intermittently, and up to 220 volts. It can be operated by hand, by mechanical means, or again by electromagnetic agency in conjunction with the usual telephone relay. This contact is especially well adapted for use in telegraph and telephone systems, switches and railway signals, fire-alarm systems, burglar-alarm systems, thermostats, traffic signals, controllers, advertising signs, rectifiers, electric ranges and other applications where a considerable wattage must be controlled by a minimum of energy. The Burgess Vacuum Contact is virtually an electrical hair trigger or a contact amplifying device, in that it permits the usual relay, capable of handling only a few watts of energy, to be transformed into a relay switch capable of handling many hundred watts of energy, for practical service.

Your Cost, \$4.00

All Range V. T. Voltmeter

Model No. 403



The need is often felt for a vacuum tube voltmeter with several ranges. In order to meet this demand we have designed a voltmeter, Model No. 403, with ranges of 2, 12, 60 and 120 volts. The instrument is unique in many respects, some of which are distinctly novel. A single 45-volt B battery supplies A, B and C potentials. A two-volt tube, type 230 is employed. Since 50 milliamperes are drawn from this battery while in use, a heavy-duty type should be used.

One setting is all that is necessary to bring the voltmeter to the point at which it was initially calibrated. The setting is extremely simple. A button is pressed and a knob turned until the meter reads one-half scale deflection. The button is then released and the voltmeter is ready for use. The 45-volt battery can be used until it drops to 35 volts at which time it should be replaced by a fresh battery. A Model 440 Weston meter is used as the indicating meter. The frequency characteristic is substantially straight up to 20 K.C. The various ranges are changed by means of a rotary switch. A calibration curve for each voltage range is supplied with the instrument.

The input impedance is 500,000 ohms for any range and at every frequency. This instrument may be used at radio frequencies of 1,500 K.C. with an error of only 5 per cent.

Dimensions 12" x 6" x 9 1/2" — Weight 6 1/2 lbs.

Your Cost, \$169.00

Type "B" Resistance Boxes

These boxes are intended for use with direct current, also with alternating current of commercial and low audio frequencies. The windings are of the non-inductive, bifilar type. All coils above .1 ohm are wire-wound. Units of .1 ohm or less are made up in the form of non-inductive, self-supporting spirals from heavy manganin wire or strip. The guaranteed accuracy is .1% for all units above .1 ohm. Units of .1 ohm or less are guaranteed to 1/4%. The actual laboratory adjustment is better than .05%. The following combinations are regularly carried in stock. Other combinations can be supplied on short notice:



No. 1014

	YOUR COST
1001—1 Dial, 9 x .1 ohm	\$16.00
1002—1 Dial, 9 x 1 ohm	16.00
1003—1 Dial, 9 x 10 ohm	16.00
1004—1 Dial, 9 x 100 ohm	16.00
1005—1 Dial, 9 x 1,000 ohm	18.00
1006—2 Dial, 9 x (.1+1) ohm	27.00
1007—2 Dial, 9 x (1+10) ohm	27.00
1008—2 Dial, 9 x (10+100) ohm	27.00
1009—2 Dial, 9 x (100+1,000) ohm	29.00
1010—3 Dial, 9 x (.1+1+10) ohm	36.00
1011—3 Dial, 9 x (1+10+100) ohm	36.00
1012—3 Dial, 9 x (10+100+1,000) ohm	38.00
1013—4 Dial, 9 x (.1+1+10+100) ohm	45.00
1014—4 Dial, 9 x (1+10+100+1,000) ohm	45.00
1015—5 Dial, 9 x (.1+1+10+100+1,000) ohm	55.00
1016—5 Dial, 9 x (1+10+100+1,000+10,000) ohm	60.00

Outstanding Radio Sets

We present to our patrons a page of real Radio Values, not merchandise that is manufacturers' surplus, and sold at low prices, but sets that incorporate the latest features and design of modern engineering, using the latest type tubes and carrying the manufacturers' and our guarantees to give 100% satisfaction and performance. In purchasing these sets, you do so with the assurance that they were carefully checked by us and we feel that they are of the best the Radio market has to offer in their price class



PILOT DRAGON—All-Wave—Superheterodyne

No one has a set like the Dragon unless he has a Dragon, too, for the design, circuit and performance are entirely new, the result of exclusive Pilot research in combining broadcast and short-wave tuning in one set. The single Dragon dial tunes not only the broadcast band, but three short-wave bands in addition, covering all waves from 18 to 555 meters. Mind you—you pay no more to have the three extra tuning bands, for on broadcast reception, the Dragon with its new acoustic cabinet, gives finer performance than most sets which can receive only broadcast waves.

At no extra expense, you have short waves at your command—police alarms, airplane reports, amateur phones, and foreign stations. If you are in a good receiving area, you may be able to equal the results of skilled operators who hear Europe, Japan, Australia and South America regularly.

Only the Dragon can give you these results, for only the Dragon has Pilot's exclusive 9-coil all-wave superheterodyne circuit. The switch control eliminates plug-in coils.



Pilot Features in the All-Wave Dragon

No Plug-in Coils—One Receiver for short waves and broadcast waves—One Chassis for 18 to 555 meters—One Dial for broadcasting, airplanes, police alarms, amateurs and foreign stations—One Set of Tubes, instead of two, for economy of operation—One Scale to read, instead of four or five confusing calibrations—New Amplifier circuit, giving quality so perfect that no tone control is needed—Acoustic Cabinet, to give full value to the electric amplifier quality of reproduction—Sealed Chassis, with Pilot's 9-coil superheterodyne catcomb.

Your Cost, \$59.50

COMPLETE WITH TUBES

A Triumph of Design and Radio-Acoustical Engineering—



Emerson "RADIO CHEST"

—a beautifully designed piece of furniture in the current vogue. Wrought of selected woods, with hand-carving on top and front, overlaid with four-piece matched walnut veneers. Instrument panel of walnut. Exquisitely trimmed and finished in two-tone walnut.

Hinged top acts as a sounding board, adding to volume and resonance.

EMERSON MODEL L-559 (A.C.) is a 5-Tube T.R.F. Receiver, featuring the new radio frequency Pentode tubes and setting new standards in selectivity and sensitivity. Three tuned stages and Pentode output—Three-gang Condenser—Single Dial Control—Volume Control, finely graduated—Dynamic Speaker—Pilot Light. Tubes used: 2 No. 58, 1 No. 57, 1 No. 347, 1 No. 380.

Retail Price, including tax, \$34.50

Your Cost, \$22.25

COMPLETE WITH CUNNINGHAM TUBES

Emerson Radio

Model L-557 (A.C.)

New 5-Tube T.R.F. Compact Receiver

Here—in this Compact Model that has been designed to make it a "radio of convenience"—is grace of line that adds distinction to its other attractive qualities. In its sturdy construction solid gumwood is used for top, sides and bottom, with five-ply gumwood front—two-tone walnut finish.

EMERSON MODEL L-557 (A.C.) is a 5-Tube T.R.F. Receiver, featuring the new radio frequency Pentode tubes and setting new standards in selectivity and sensitivity. Three tuned stages and Pentode output—Three-gang Condenser—Single Dial Control—Volume Control, finely graduated—Dynamic Speaker—Pilot Light. Tubes used: 2 No. 58, 1 No. 57, 1 No. 347, 1 No. 380. Size: 9½" high, 14½" long, 7¾" deep. Shipping weight (less tubes) 19 pounds.



Retail Price, \$27.50

Your Cost, \$16.17

Complete with Cunningham Tubes, including tax
R.C.A. Licensed

SIMPLEX MIDGET

FAMOUS FOR ITS FINE TONE

New and startling values. Small, compact, portable. Fits snugly into limited quarters. New triple-grid tubes. New circuits. Asks no odds in performance.

Tuned radio frequency. Four tubes. Power consumption 45 watts. An excellent instrument for local reception but not recommended for great distance or extreme selectivity. 8¾" wide, 12" high, 6" deep, weight 11 lbs., packed 14 lbs.



OUTSTANDING FEATURES

Long and short wave, two bands in one—550-4,000 kilocycles (75-550 meters)—simple, efficient short-wave switch—tone control, static suppressor—built-in antenna, phonograph provision—deep, full tone at any volume—rugged ball-bearing condenser—illuminated dial, kilocycle calibration—chassis parts completely rustproofed—self-healing electrolytic condenser—adequately shielded throughout—Vernier tuning, dynamic speaker.

Licensed by RCA and Affiliated Companies

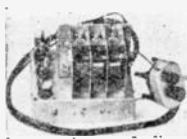
110 or 220 Volt A.C. 1/57 1/58 1/47 1/80 Tubes

Your Cost, \$11.95

Complete with set of R.C.A. tubes

Auto Radio

Mahco Auto Radio (HIGHWAYS ARE HAPPY WAYS)



Radio as you drive!! A touch of the convenient dial on the steering column brings you your choice of anything on the air—the baseball games, election returns, or your favorite chain or local broadcast—just as perfectly as the set in your own home. A sensation of perfection that the automobile public has been waiting for.

Simple—and nothing to get out of order—especially designed for installation and operation in your automobile—an engineering achievement.

Specifications of the new 1932 Mahco Auto Radio
Six-tube, high-grade Superheterodyne.
RCA Licensed.

Automatic Volume Control.

Especially designed for installation and operation in automobiles.

New type full dynamic speaker assures perfect tone quality under all driving conditions.

Chrome plated remote control on steering column.

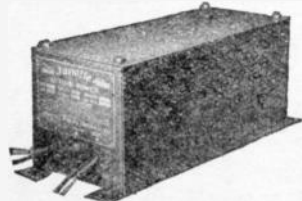
Furnished complete with:

RCA Tubes	Distributor Suppressors
Burgess B Batteries	Generator Condensor
B Battery Box	Antenna
Spark Plug Suppressors	

List Price, \$64.50 Your Cost, \$36.95

Janette "Auto-B-Power" Units

Better Auto-Radio Results Without "B" Batteries



Has a dynamically balanced armature; thus it runs with a minimum of vibration. Virtually inaudible when placed under the hood, floor boards or seats. Requires but little room—measures only 12x6x5½ in. Due to an effective Fil-

ter, radio reception with this "Auto-B-Power" rivals that obtained with dry batteries. A dynamically balanced armature with ball bearings and fully enclosed construction assure quiet operation. The dynamotor, or current-transforming unit, is built with a steel frame and laminated steel pole pieces. Requires practically no attention beyond lubrication once a year. The dynamotor itself is fully enclosed, and the complete unit is enclosed in a splash-proof steel box. Double-wound dynamotor, delivers pure D. C. in a continuous flow, similar to battery current. Equipped with a variable voltage divider and taps. Maintains a constant ratio between the "B" voltage and the tap voltage; thus preventing distorted reception due to unbalanced voltage.

Complete with a Variable Voltage Divider and Extra Taps

Input Voltage	Output Voltage	Battery M.A. at 25	Drain M.A. at 40	Amps. M.A. at 50
6	135	2.3	2.8	3.0
6	180	2.5	3.0	3.5
12	135	1.15	1.4	1.5
12	180	1.25	1.5	1.75

List Price, \$32.00 Your Cost, \$18.82

Flexible Automobile Aerial



54" and 4¼" wide. Can be installed in a jiffy by anyone.

Your Cost, \$1.77

This aerial is heavily insulated and is installed at the bottom of the car between both axles. Supplied with a heavy coil spring at one end of the aerial to take up any slack. Overall dimensions

Auto-Radio Silencer Kits



For 4-6-8
Cylinder Cars

These kits are supplied complete with generator silencer, distributor and spark plug silencers.

No.	List Price	YOUR COST
1240 Radio Silencer Kit for 4 Cyl. Car	\$3.00	\$1.77
1241 Radio Silencer Kit for 6 Cyl. Car	4.00	2.36
1242 Radio Silencer Kit for 8 Cyl. Car	5.00	2.94

Generator Silencer For All Make Cars

Generator Silencer is used for radio equipped automobiles to suppress noises. It can be easily mounted.

No. 1243. List Price, \$1.10 Your Cost, 65c
Spark Plug Type

No. 351. List Price, 50c Your Cost, 30c
Distributor Type

No. 352. List Price, 50c Your Cost, 30c

Belden Shielded Wires

and Shielding for Automobile Radio Installations



Shielded Wires
for Battery Leads and Connecting Wires

12 AIRMAN (65x30 Tinned) No. 12 wire, cambric tape wrapped, braid, shield of tinned copper, for "A" Battery Leads.

List Price, per 100 ft. Spool, \$6.50
Your Cost, \$3.90

18 AIRMAN (16x30 Tinned) No. 18 wire, cambric tape wrapped, braid, shield of tinned copper, for "B" Battery leads, speaker leads and other connecting wires.

List Price, per 100 ft. Spool, \$4.20
Your Cost, \$2.52

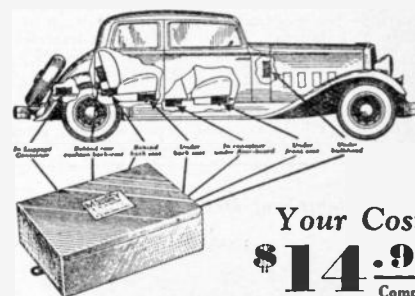


"B" ELIMINATOR

For Automobile Radio

Nearly 50,000 Mallory-Elkon "B" Eliminators are giving satisfactory service on automobile radio sets. This tried and proven unit is a result of two years' research work and development by one of America's greatest electric, radio and automotive engineering organizations. It will provide an unvarying source of power which insures uniform and dependable radio reception.

Slips easily into any of these small spaces



Your Cost
\$14.95
Complete

Including Relay
Nothing else to buy.

The Mallory-Elkon unit is dry. Contains no rotary parts, requires no oiling, nothing to fix and doesn't set up interference. It is easily installed and can be placed in any position. The size is 10" x 7" x 3¼". Guaranteed under R. M. A. standards.

Correct Type Elkonode and Mallory-Elkon "B" Eliminator for Leading Auto Radio Sets

Atwater Kent 81. Type 4	Majestic. Type 6
Auto-Lite 82. Type 5	Milwaukee Police Type 2
Bosch 9:20. Type 5P	Motorola 5-T-71. Type 6
Bosch Police. Type 1	Motorola 6. Type 6
Colonial 53. Type 5	Motorola 7-T-38. Type 6
Colonial 54. Type 4	Motorola 7-T-47. Type 6
*Crosley 90. Type 4	*Philco 3. Type 6
*Crosley 91. Type 3	Philco 7
*Crosley 92. Type 6	Type 5P (180 volts)
Delco 3010. Type 5	Philco 7
Gilfilin. Type 2	Type 3P (135 volts)
Indianapolis Police	Universal 70. Type 6
Type 1	Spartan 40. Type 6

*Requires Mallory "A" Choke, \$3.50 List Price

Your Cost, \$2.06



By merely removing six screws and lifting the top, all parts of the Mallory-Elkon "B" Eliminator are immediately visible.

Hook-Up Wire for Every Purpose

Filament Hook-Up Wire



A special heavy-duty stranded, tinned wire with a $\frac{1}{8}$ " serve of quality rubber insulation. Insulation bared back from wire very readily. For use in wiring radio broadcast and transmitter filament circuits.

	List Price	YOUR COST
25 ft. No. 14 Red.....each	\$0.70	\$0.42
25 ft. No. 14 Black.....each	.70	.42
25 ft. No. 12 Red.....each	.90	.54
25 ft. No. 12 Black.....each	.90	.54

Can be had in 100 ft. lengths or longer.

I. C. A Dial Cable

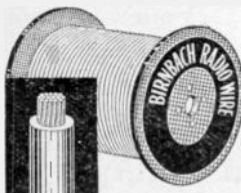
This Dial Cable is made of braided copper wire, particularly made for strength. Thickness of the cable is approximately $\frac{1}{8}$ " and the wire is very flexible. Made particularly strong to last a lifetime. Put up in spools of 100 feet to a spool.



List Price for 100-foot spools, \$3.00

Your Cost, \$1.77

FLEXIBLE TINNED Hook-Up Wire



Made of No. 16 Stranded Tinned Copper Wires, and covered with a Colored Rubber Compound. Used for hook-up and wiring. Easy to solder.

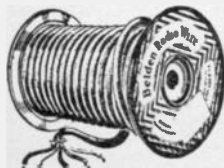
	List Price	YOUR COST
50 ft. ....each	\$0.80	\$0.48
25 ft. ....each	.40	.24
100 ft. ....each	1.60	.95
500 ft. ....each	7.50	4.45

Can be had in red, black, green, white or brown.

BELDEN Indoor Aerial and Litz Wire

This flexible, covered wire (65 strands) is ideal for indoor aerials, for winding radio loops and for winding precision induction coils. The neutral brown color is easily concealed on a picture molding or window frame.

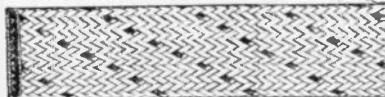
	List Price Per Spool	YOUR COST
No. 8840—125 ft. brown rayon	\$1.75	\$1.03
No. 8842—60 ft. brown cotton .....	.70	.42
No. 8843—1000 ft. brown cotton	9.00	5.30
No. 8887—100 ft. Litz Wire, 20 x 38 stranded Beldenamel with two servings of green silk.....	1.00	.60



Battery Cables

	List Price	YOUR COST
3 Conductor, 100 ft. spool.....	\$6.50	\$3.83
4 Conductor, 100 ft. spool.....	7.50	4.41
5 Conductor, 100 ft. spool.....	8.00	4.71
7 Conductor, 100 ft. spool.....	10.00	5.88
9 Conductor, 100 ft. spool.....	11.00	6.47
10 Conductor, 100 ft. spool.....	12.00	7.18

Tinned Copper Shielding



	On 50 ft. Metal Spools	List Price per 50 ft. Spool	YOUR COST
Inside Diameter			
Round in Inches			
8930	13/64	\$3.00	\$1.80
8931	3/8	4.50	2.70
8932	25/32	6.50	3.90

Armored Wire

Stranded 1/64" rubber-covered, cotton-braided wire, armored with half-round rustless steel similar in appearance to BX cable.

	YOUR COST
No. 290—No. 20 Single	per 100 ft. \$1.10
No. 291—No. 20 Duplex	per 100 ft. 2.00
No. 292—No. 18 Single	per 100 ft. 1.20
No. 293—No. 18 Duplex	per 100 ft. 2.30

KELLOGG

Push Back Wire

Every Dealer and Service Man Needs This Item

A high-grade hook-up wire for general work. The 18-gauge solid wire is tinned, ready for soldering. Covered with paraffined push back insulation, with another cotton serving underneath. Supplied in black, red, green, brown or yellow color. Used for wiring sets and general repair work.

	YOUR COST
100 ft. roll.....	\$0.90
500 ft. roll.....	4.25
1,000 ft. roll.....	8.35

Annunciator or Bell Wire



Annunciator Wire is a double cotton-covered wire (No. 18 B. & S.), the insulation being thoroughly impregnated with paraffine.

No. 102—Box containing one-half pound of No. 18 Annunciator Wire.

Your Cost, 15c
or \$1.50 per Dozen

No. 105—Mill Spools containing about 7 lbs. of No. 18 Annunciator Wire.

Your Cost, \$1.89

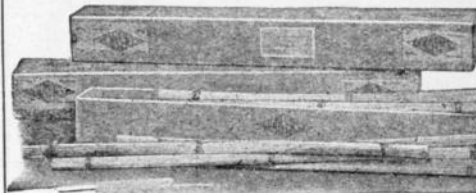
Lamp Cord

This is a parallel fixture lamp cord and is made of stranded rubber-covered copper No. 18 wire with a cotton or silk braiding over the rubber covering. Supplied in white or brown on 1,000 ft. spools.

No.	Color	List Price	YOUR COST
1582	White Cotton	\$12.50	\$7.35
1583	Brown Cotton	12.50	7.35
1584	White Silk	14.00	8.26
1585	Brown Silk	14.00	8.26

Can be purchased in any length from 1 ft. to 1,000 ft.

Bus Bar Wire



Is manufactured in uniformly straight lengths from sharp-cornered square tinned copper wire. This product is also manufactured from round-tinned copper wire. Each 100 lengths are bound together and each 1,000 lengths are shipped in a fibre board container, making a neat package.

No. 534—No. 14 ($\frac{1}{8}$ " Square-Tinned Copper Bus Bar Wire in 2-foot lengths.

Your Cost, \$1.50

Per Hundred Lengths or \$12.00 per Thousand

No. 536—No. 14 Round-Tinned Copper Bus Bar Wire in 2-foot lengths.

Your Cost, \$1.40

Per Hundred Lengths, or \$11.50 per Thousand

No. 537—No. 12 Round-Tinned Copper Bus Bar Wire in 2-foot lengths.

Your Cost, \$1.75

Per Hundred Lengths, or \$14.00 per Thousand

Solid "Flexibus"



Solid Flexibus is insulated similar to the stranded product. The core consists of a solid tinned copper wire. Its uses are the same as the stranded. It is supplied in five colors—red, green, yellow, brown and black.

No. 14, 50 lengths, each 24 inches long in one color (red, green, yellow, brown or black) supplied in an attractive display envelope.

Your Cost, 6c per length
or \$2.45 per Carton of 50

Spaghetti Flexible Varnished Tubing

An insulated covering for bus bar wire as protection against contact with other wires. Impervious to acid, oils and water. Flexible and guaranteed not to crack. Breakdown test is approximately 5,000 volts. Furnished in 30" lengths; red, yellow, brown, green and black, for No. 10 to No. 18 wires. Packed 100 lengths of a color to the package.

List Price, 10c each length

Your Cost, 7c per length
or \$5.88 per Carton of 100 Lengths

Lead-Covered Cables

These cables are used where the speaker is located at a remote distance from the set. The lead sheath acts as a shield. Used extensively in public address installations.

No. 18—Solid, 2 Conductor Par'el, 1/32" R.C. 1/32" Lead

	YOUR COST
No. 300—50 ft. coils	\$1.57
No. 301—500 ft. spools	13.37
No. 18—Solid, Single, 1/32" R.C. 1/32" Lead	
No. 305—50 ft. coils	\$1.06
No. 306—500 ft. spools	9.20

No. 19—Solid, 2 Conduct, Twisted, 1/32" R.C. 1/32" Lead

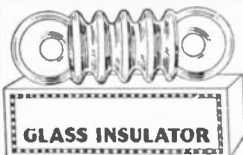
No. 310—50 ft. coils	\$1.83
No. 311—500 ft. spools	15.98

Aerial Equipment

M & H Glass Insulator

Is made of special temperature - resisting glass which is unaffected by heat or cold or an atmospheric condition. Packed in individual cartons. Size 3".

Your Cost, 4c each or
40c per doz.



HIGH QUALITY PORCELAIN Stand-Off Insulator



An item of many uses: Supports Lead-ins; R. F. Leads; Power Supply Leads; Condensers; Choke Coil and Tuning Coil Mountings. Greater strength and finer appearance than other makes because of new type insulation used. Brass fittings. Glazed finish.

Your Cost,
10c each
\$1.00 per doz.

MIDGET

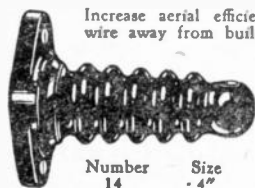
Stand-Off Insulator

Used for same general purposes as our No. 401, but is smaller, slightly shorter and can be used to advantage where space is a factor. Black glazed finish.

Your Cost, 9c each
or \$1.00 per doz.



Stand-Off Insulators

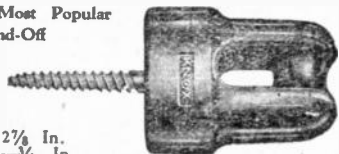


Number	Size	List Price	YOUR COST
14	4"	\$2.25	\$1.15
8	8"	1.00	.59

BROWN

Stand-Off Insulators

America's Most Popular Stand-Off



Height 2 7/8 In.
Hole 1/2 - 3/4 In.
Diameter 1 1/8 In.
Wt. 6 1/2 lbs. per 100
Packed 50 to Nested Carton

List Price, \$12.00 per 100 in pkgs. of 50
Your Cost, 8c each
or \$3.43 for carton of 50

PORCELAIN

Strain Insulator



Your Cost,
6c each

or \$4.80 per carton of 100

Electrostatic Lightning and Static Arrester

The Electrostatic is not to be confused with the ordinary air-gap or other type lightning arrester. It is of the silicate of carbon type (it is passed by the Board of Underwriters and backed by an I. C. A. \$100 Insurance Bond). It is also an effective filter of static noises that come in through the aerial, particularly on the lower wave-lengths. This is accomplished by a choke coil and condenser mounted in the arrester. In addition, there is a shield over the ground terminal to protect the set connection from the usual electrostatic field set up between the aerial and ground connections.

The Electrostatic is of handsome appearance, highly polished surface of black porcelain throughout with nickel-plated hardware.

List Price, \$1.00



Your Cost, 59c

Visible Lightning Arrester

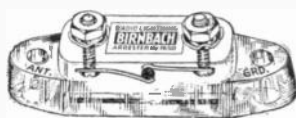
Made of Crystal Clear Glass

A new idea in Lightning Arresters. Made visible so that any "shorts" or defects caused by overloads can be detected. In other words

No More Blind Spots in the Antenna Circuit
It is backed by a \$100 Performance Guarantee.

List Price, 75c

Your Cost, 45c



BELDEN

Approved Arrester



The Belden Air-Gap Arrester is weatherproof and non-grounding and approved by Underwriters' Laboratory. A sturdy arrester at a very low price.

Packed in individual cartons

\$2.00 per doz.

Your Cost, 20c each

Window Lead-In Strip

All insulate, nickel-plated clips, fully waterproof.



45c per doz.

Your Cost, 5c each

Aerial Mast



Large expensive Aerial Masts are no longer necessary. This device meets the requirement in a quick economical way. Aerial Mast screws into convenient location and is supported by three guy wires. Height 30 inches, made of 5-16 Chromium Plated Steel Rod. Furnished with Screw Eyes but no Guy Wire.
List Price, each \$0.75

Your Cost, 45c

AERIAL

Spring Tightener



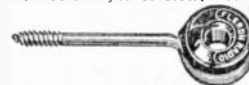
For holding aerial wire tight and straight. Prevents breakage when swaying in wind or if covered with heavy snow and ice or if anchored to trees, etc.

Catalog Number, 188
List Price, each 50c

Your Cost, 30c

Screw-Eye Insulator

Made in four sizes. Porcelain ring made of "Fleron" blue porcelain. Screw-eyes of steel, hot tinned finish.



No.	Size	List Price	YOUR COST
No. 318	Size 3 "	\$0.07	\$0.03
No. 618	Size 6 1/4 "	.10	.06
No. 1218	Size 12 "	.20	.12

Other "Fleron" Products in Stock

PORCELAIN

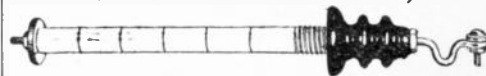
Lead-In Bushing

This device makes a workmanlike finish at a point in aerial installation that has been a source of power loss. Maximum length, 14 inches. Porcelain sections slide off brass rod to any wall thickness up to 9/16". Threaded rod can then be cut at any desired point. Black porcelain. Black glaze. Passed by Underwriters' Laboratories. Each bushing in an attractive carton.

Catalog Number 9

List Price, each \$1.10

Your Cost, 66c



"BULL DOG" Ground Clamp



Easily connected to any pipe. Pointed screw cuts through rust and makes positive contacts. Cadmium plated prevents rusting.

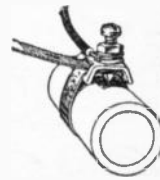
Your Cost, 5c each
50c per doz.

"JIFFY GRIP" Ground Clamp

No. 345

The Jiffy Grip Ground Clamp provides a positive and quick connection as its case-hardened points dig through paint and rust on the surface of the pipe, thus making a positive connection.

Your Cost, 4c each
35c per doz.



Ground Rods

Made in two sizes—4 feet or 6 feet long—of 3/8 inch rod heavily galvanized by the Hot Dip process. Wire is securely held by our special Ground Rod Clamp. We especially recommend the galvanized rod because of its non-corrosive qualities.

Number	Length	List Price	YOUR COST
485	4 ft.	\$1.50	\$1.30
725	6 ft.	.75	.45



AERIAL EQUIPMENT

Enamel-Covered Copper Aerial Wire



(STRANDED) YOUR COST

 100 ft. length, 7 x 22.....35c
 1000 ft. length, 7 x 22.....\$3.25

YOUR COST

No. 1018—A heavy stranded wire consisting of 10 strands of No. 18 copper wire, each wire having 5 coats of enamel.....per 100 feet \$2.94

No. 718—A heavy stranded wire consisting of 7 strands of No. 18 wire, with heavy enamel covering.....per 100 feet 1.25

Aerial wire can be supplied in any lengths up to 1,000 feet

(SOLID) YOUR COST

 100 ft. length, No. 14.....30c
 1000 ft. length, No. 14.....\$2.75
 100 ft. length, No. 12.....45c
 500 ft. length, No. 12.....\$2.10
 100 ft. length, No. 10.....90c
 500 ft. length, No. 10.....\$4.25
 100 ft. length, No. 8.....\$1.25

Aerial Lead-In Connector

Used for connecting lead-in wire to antenna. Produces perfect contact. Made of brass cadmium plated.

No. 225K—List Price, \$1.10 each

Your Cost, \$.06



ROEBLING TUBULAR

Braided Enamel Aerial Wire

Consists of 24 strands of No. 28 copper enameled wire. Guaranteed to improve your reception.

Your Cost per 100 feet, \$1.47

Belden Shielded Wire



Effective in reducing interference caused by high-tension wires, motors, and other sources that radiate disturbing impulses. Consists of a stranded conductor with a heavy easy-strip rubber insulation and an over-all braid of fine tinned copper wire, which serves as a shield. In service the shielding is grounded and consequently picks

up the disturbing impulses and carries them to the ground.

	List Price	YOUR COST
50 feet No. 14 Shielded, per carton..	\$1.75	\$1.03
250 feet No. 14 Shielded, per spool..	8.75	5.05
50 feet No. 16 Shielded, per carton..	1.10	.65
250 feet No. 16 Shielded, per spool..	5.50	3.24
100 feet No. 18 Shielded, per carton..	2.00	1.18

U. S. Navy Silicon-Bronze Aerial Wire

 DEALERS TAKE NOTE:
 Purchased from the Navy Dept. genuine braided silicon-bronze wire. Will not rust or corrode.

 100 ft. Coil.....YOUR COST \$0.25
 Lots of 10 Coils.....YOUR COST 2.00
 Lots of 25 Coils.....YOUR COST 4.50

(Limited Supply)

A REAL M & H VALUE

All-Rubber Lead-In and Ground Wire

This special all-rubber lead-in wire is insulated with special rubber compound which is easily stripped from the wires leaving the conductor clean and ready for quick splicing and easy soldering.

	YOUR COST
No. 8850—50 ft. No. 14 Seven Strand per carton, List Price, 80c	\$0.48
No. 8851—250 ft. No. 14 Seven Strand per spool, List Price, \$3.75	2.21
No. 8852—50 ft. No. 16 Seven Strand per carton, List Price, 50c	.30
No. 8853—250 ft. No. 16 Seven Strand per spool, List Price, \$2.25	1.33
No. 1816—500 ft. No. 16 Seven Strand per spool, List Price, \$3.50	2.06
No. 1818—500 ft. No. 18 Seven Strand per spool, List Price, \$3.00	1.77

Galvanized Steel Cable (Guy Wire)

Galvanized Steel Cable is made of No. 20 annealed galvanized rustproof wire stranded to form cables of suitable size to strengthen the antenna structure. It is recommended for use between the antenna insulators and the antenna structure.

YOUR COST

No. 200—Coils containing 25 feet of 4-strand No. 20 galvanized steel cable. List Price, per doz. coils, \$2.00.....	\$1.20
No. 201—Coils containing 65 feet of 5-strand No. 20 galvanized steel cable. List Price, per doz. coils, \$4.80.....	2.83
No. 202—Coils containing 50 feet of 6-strand No. 20 galvanized steel cable. List Price, per doz. coils, \$4.75.....	2.80

Bare Copper Wire

7 Strands—No. 22

The choicest copper is used for this wire—one of our biggest sellers. Dealers should stock a supply.

	Each
Single Coils.....	25c
Lots of 10 Coils, 24 1/2c	
Lots of 25 Coils, 24c	
Lots of 100 Coils, 23 1/2c	



Insulated Staples

100 to a Box

Your Cost, .20

Aerial Kits

 Put Pep Into Your Set
 With a New Aerial


Kit No. 1

 100 Ft. Coil Silicon-Bronze Aerial Wire
 40 Ft. Rubber-Covered Lead-in Wire
 1 Keystone Lightning Arrester
 2 Glass Insulators
 1 Window Lead-in Strip
 1 Ground Clamp
 3 Porcelain Nail Knobs
 2 Galvanized Screw Eyes
 25 Ft. Hook-up Wire
 10 Insulated Staples
 2 Wood Screws

List Price, \$2.50

Your Cost, \$1.47

Kit No. 2

 100 Ft. Coil Silicon-Bronze Aerial Wire
 40 Ft. Rubber-Covered Lead-in-Wire
 1 Belden Lightning Arrester
 2 Glass Insulators
 1 Window Lead-in Strip
 1 Ground Clamp
 3 Porcelain Nail Knobs
 2 Galvanized Screw Eyes
 15 Ft. No. 18 Flexible Rubber-Covered Hook-up Wire
 2 Wood Screws
 1 Instruction Sheet

List Price, \$2.00

Your Cost, \$1.18

Kit No. 3

 100 Ft. Coil Silicon-Bronze Aerial Wire
 50 Ft. R.C. Lead-in Wire
 1 No. 336 Lightning Arrester
 1 No. 345 Ground Clamp
 1 No. 1510 Lead-in Strips
 2 Porcelain Insulators
 2 Nail Knobs
 6 Staples
 25 Ft. Hook-up Wire

List Price, \$1.50

Your Cost, 88c

Kit No. 4

 100 Ft. Silicon-Bronze Aerial Wire
 35 Ft. R.C. Lead-in Wire
 1 Lightning Arrester
 1 No. 345 Ground Clamp
 1 Lead-in Strip No. 1501
 2 Porcelain Insulators
 6 Staples

List Price, \$1.00

Your Cost, 55c

Nothing but the Finest Copper Wire Supplied. Gauge and Length Guaranteed. Prices Subject to Change.

Burgess Radio Batteries

Meet the Rigid Specifications of:

U. S. ARMY —

U. S. NAVY —

U. S. BUREAU OF STANDARDS

Super "B" Batteries



No. 21308. 45 Volts

Size—Height, 7 $\frac{3}{8}$ " ; Width, 8 $\frac{1}{4}$ " ; Depth, 4 $\frac{1}{2}$ ". 30 individual high test cells. Weight, 15 $\frac{1}{2}$ pounds.

Terminals to give +22 $\frac{1}{2}$ and +45 volts. An oversized "B" battery designed to give maximum electrical capacity for sets of high current drain. The ranking "B" battery on the market. Shelf life well over one year.

List Price, \$3.25 Ea.

Your Cost, \$2.51 Ea.

Quantity 6, \$2.28 Each



No. 22308. 45 Volts

Size—Height, 7 $\frac{3}{8}$ " ; Width, 7 $\frac{1}{8}$ " ; Depth, 3 $\frac{1}{4}$ ". 30 individual high test cells. Weight, 10 pounds.

Terminals at +22 $\frac{1}{2}$ and +45 volts. Especially designed to give 35 to 40 per cent greater capacity than the No. 2308 type of battery. Shelf life well over one year. True to its name—A super "B" battery.

List Price, \$2.35 Each

Your Cost, \$1.82 Ea.

Quantity 6, \$1.65 Each

Metal Shell Uniplex

DRY CELL IGNITION BATTERIES

Armored by a steel jacket. Weather-tight and shock-proof. Burgess Uniplex batteries are made to order.

The Burgess Uniplex method of construction brings to you a dry cell ignition battery that can withstand almost anything in the way of rough handling and adverse weather or climatic conditions. Moreover, each cell is a laboratory product into which years of research have placed the secret of the use of Chrome in dry cell manufacture. Uniplex batteries are made with Chrome. They have more vitality, a greater and more useful life because of it. Uniplex batteries are doubly insulated. They have solid contacts and heavy, tested connections. For S-461.



List Price, \$2.30

Your Cost, \$1.77

Quantity 6, \$1.67

"C" Batteries



No. 5360—4 $\frac{1}{2}$ Volts

Size—Length, 2 $\frac{7}{8}$ " ; Width, $\frac{1}{8}$ " ; Height, 2 $\frac{1}{8}$ ". 3 individually tested cells. Weight, 5 ounces. Shelf life over eight months.

List Price, 40c

Your Cost, 31c Ea.

Quantity 10, 28c Each



No. 5156—22 $\frac{1}{2}$ Volts

Size—Height, 2 $\frac{3}{4}$ " ; Width, 4 $\frac{1}{8}$ " ; Depth, 2 $\frac{1}{8}$ ". 15 individually tested cells. Weight, 1 pound, 13 ounces. Taps to give —3, —4 $\frac{1}{2}$, —16 $\frac{1}{2}$ or —22 $\frac{1}{2}$ volts. Shelf life over eight months.

List Price, \$1.25

Your Cost, 97c Ea.

Quantity 10, 88c Each



No. 2370—4 $\frac{1}{2}$ Volts

Size—Height, 3" ; Width, 4" ; Depth, 1 $\frac{1}{8}$ ". 3 individually tested cells. Weight, 1 pound. Brass posts, contacts and nuts, to give —1 $\frac{1}{2}$, —3 and —4 $\frac{1}{2}$ volts. Shelf life over one year.

List Price, 40c

Your Cost, 31c Ea.

Quantity 10, 28c Each



No. 5540—7 $\frac{1}{2}$ Volts

Size—Height, 2 $\frac{7}{8}$ " ; Width, 4" ; Depth, $\frac{7}{8}$ ". 5 individually tested cells. Weight, 9 ounces. Brass posts, contacts and nuts and one flexible wire terminal to give —1 $\frac{1}{2}$, —3, —4 $\frac{1}{2}$, —6 and —7 $\frac{1}{2}$ volts. Shelf life over eight months.

List Price, 75c

Your Cost, 58c Ea.

Quantity 10, 53c Each



Baby Tubular No. 1
Size 1 $\frac{1}{8}$ "x1" List Price, 10c

Your Cost, 7 $\frac{1}{2}$ c Ea.
Quantity 12, 6 $\frac{1}{2}$ c Each

Standard Tubular No. 2
Size 2 $\frac{3}{8}$ "x1 $\frac{1}{4}$ " List Price, 10c

Your Cost, 7 $\frac{1}{2}$ c Ea.
Quantity 36, 6 $\frac{1}{2}$ c Each

Standard "B" Batteries



No. 2308. 45 Volts

Size—Height, 7" ; Width, 8 $\frac{1}{4}$ " ; Depth, 3 $\frac{1}{8}$ ". 30 individually tested cells. Weight, 9 pounds. Terminals to give +22 $\frac{1}{2}$ and +45 volts. Occupies minimum table space. Recommended for sets drawing 10 milliamperes or more. Shelf life over one year.

List Price, \$1.75 Each

Your Cost, \$1.35 Ea.

Quantity 6, \$1.23 Each



No. 4156. 22 $\frac{1}{2}$ Volts

Size—Height, 2 $\frac{1}{2}$ " ; Width, 3 $\frac{3}{8}$ " ; Depth, 2". 15 individually tested cells. Weight, 1 pound. Shelf life of over six months. Adaptable for aeroplane, portable and small cabinet-sets.

List Price, \$1.25 Each

Your Cost, 97c Ea.

Quantity 10, \$0.88 Each



No. 10308. 45 Volts

Size—Height, 7" ; Width, 8" ; Depth, 4 $\frac{1}{4}$ ". 30 individually tested cells. Weight, 12 pounds, 12 ounces. Terminals to give +22 $\frac{1}{2}$ and +45 volts. Intended for use on sets drawing 20 milliamperes or over. Shelf life over one year.

List Price, \$2.60 Each

Your Cost, \$2.00 Ea.

Quantity 6, \$1.82 Each



No. 5308. 45 Volts

Size—Height, 5 $\frac{7}{8}$ " ; Width, 4 $\frac{1}{4}$ " ; Depth, 2 $\frac{1}{2}$ ". 30 individually tested cells. Weight, 3 $\frac{3}{4}$ pounds. Terminals to give +22 $\frac{1}{2}$ and +45 volts. A smaller 45-volt battery of light weight for portable sets and convenient dimensions to combine with the No. 6 "A" battery. Shelf life over eight months.

List Price, \$2.00 Each

Your Cost, \$1.54 Ea.

Quantity 5, \$1.40 Each

For Portable Sets

Burgess Radio Batteries

for Auto Radio



Burgess Means Quality

Automobile Radio "B" Batteries must be built right! They must withstand constant vibration, extremes in heat and cold and still be capable of many hours of long, dependable, uniform power. Burgess Radio "B" Batteries deliver the maximum service most economically under just such conditions—and that is just why they are being used all over the United States by police departments having radio equipped police cars. Remember, quality purchases are economical purchases. Insist upon Burgess Black and White Striped Radio "B" Batteries.

No. 21305. 45 Volts

Police Car Type

Size:—Height, 7 5/16"; Width, 8 5/32"; Depth, 4 7/16". 30 individual high test cells. Weight, 15 lbs. 4 ounces.

Terminals to give +22½ and +45 volts. A specially designed "B" battery to give maximum electrical capacity for Police Radio Sets.

List Price, \$3.75

Your Cost, \$2.81

Quantity 6, \$2.63 each



No. 2305. 45 Volts

Private Car Type

Size:—Height, 6 15/16"; Width, 8 15/16"; Depth, 3 1/16". 30 individual high tested cells especially well constructed. Weight, 9 lbs.

Terminals to give +22½ and +45 volts. "B" battery designed to give maximum electrical capacity for automobile radio sets. Shelf life over eight months.

List Price, \$2.25

Your Cost, \$1.74

Quantity 6, \$1.58 each

No. 6A Radio "A" Battery



1½ Volts

Size:—Height, 6"; Width, 2½"; Depth, 2½"; Weight, 2 lbs. 5 oz. Brass binding posts and nuts.

The design of this battery makes it ideal for use on the filament circuit of a radio that uses dry cell vacuum tubes. Its construction is such that it will recover to a high voltage after short periods of rest, even after being submitted to a heavy voltage drain.

List Price, 50c

Your Cost, 40c

Quantity 25, 35½c each

No. 44 "A" Battery

Same in appearance as No. 6A but only 4" high and 2" in diameter. Ideal for amateurs and broadcasting stations.

For use in portable receivers, oscillators, monitors, frequency meters, etc. In fact wherever space is a deciding factor.

Your Cost, 39c each

High Potential Batteries

No. 5728. 108 Volts

Size:—Height, 15 1/16"; Width, 3 7/16"; Depth, 2 5/8". 72 individual cells. Weight, 6 lbs. 9 oz. Terminals to give —, +36; +72; +108 volts.

This battery is especially designed for use with sound transmitters, photo-electric cell apparatus, and portable sound equipment, etc. This battery is adaptable where high voltage, small current drain, compact size and light weight are required.

List Price, \$8.75

Your Cost, \$5.67

No. 4968. 144 Volts

Size:—Height, 13½"; Width, 3 1/32"; Depth, 3 1/32". 96 individual cells. Weight, 5 lbs. 6 oz. Terminals to give —, +54; +144 volts.

This battery has the same characteristics and uses as the No. 5728, only it has smaller cells. The added number cells gives it the additional voltage.

List Price, \$9.75

Your Cost, \$6.33

Aircraft Radio Battery

No. 5966. 135 Volts

135-volt "B", 9-volt "C"—96 cells—voltage tape at, —9, 0, +22½, +45, +67½, +135. Size:—Height, 7 5/16"; Width, 2¾"; Length, 9 5/16". Weight, 9 lbs. 3 oz.

Ninety-six cylindrical cells are soldered in series, assembled in insulated tubes, and bound together in "stick" construction. Excellent insulation is obtained by use of these insulated tubes surrounding the cells, paraffined cell separators and a moisture-proof container.

This battery is especially designed for use with Aircraft receivers where ruggedness, light weight and water resistance are required. **Do not recommend it for other uses.**

Binding posts "Y" and "X" are dummy posts to permit all interconnecting "A" and "B" cables to be grouped on top of the battery.

List Price, \$7.25

Your Cost, \$5.10



Major "B" Batteries

Built the Famous Burgess Way

Longer service is assured through the exclusive use of chrome. All cells are aged before assembling to assure definite high quality. All cells are individually tested and selected to assure uniform quality. Waterproof and moistureproof. Rugged honeycomb construction plus rigid bracing makes this battery vibrationproof. It is constructed of cylindrical cells—the same as all Police Radio Batteries. Comparative Tests with other batteries of like size prove this battery decidedly more economical. Burgess patented formulae are used to select and compound the chemicals. Seamless cans of pure zinc are used to assure longer life.

No. F308—45 Volts

Size:—Height, 7"; Width, 8"; Depth, 4¼". 30 individually tested Major-mix cells. Weight, 11 lbs. 15 oz. Terminals to give +22½ and +45 volts. The F308 is an extra heavy duty battery built to give more economical service in radio "B" circuits. It will out-perform any other battery of like size or slightly larger. Shelf life, one year.

List Price, \$2.95

Your Cost, \$2.28

Quantity 6, \$2.07 each

No. D308—45 Volts

Size:—Height, 7"; Width, 8"; Depth, 3¾". 30 individually tested Major-mix cells. Weight, 8 lbs. 9 oz. Terminals to give +22½ and +45 volts. This battery has been built for smaller cabinet spaces into which the F308 will not fit. It offers the same quality performance as the F308 with a slight decrease in service life due to size. Shelf life, one year.

List Price, \$1.95

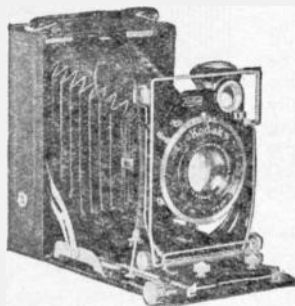
Your Cost, \$1.51

Quantity 6, \$1.37 each



CAMERAS

Continental Kodaks



These Kodaks are admirably suited to the requirements of the picture maker who wants a camera adaptable to film packs, cut film, and plates. Since these types of negative material offer a great variety of color-sensitive and speed emulsions, the Recomars open up an almost unlimited vista of photographic possibilities. And their versatility is backed by unsurpassed precision construction, sturdiness, and fine finish.

Both carry a carefully made f.4.5 anastigmat lens which, in addition to its great speed and general adaptability, is notable for the keenly defined negatives it makes.

The shutter is the famous Compur. It offers a range of speeds from 1 to 1/200 second, besides time and bulb, and also carries a built-in self-timer.

2 1/4" x 3 1/4"

List, \$40.00

9 cm. x 12 cm.

List, \$48.00

Special discounts on application

Lowest Priced Ciné-Kodak Ever Built

The Ciné-Kodak Eight is convenient in shape—so small and light it can be carried in men's coat pockets . . . in women's handbags. Yet you can count on it to perform with the same unflinching precision that made the larger Ciné-Kodak famous the world over. Ciné-Kodak Eight is equipped with a Kodak Anastigmat f.3.5 lens that assures clear, sharp movies throughout the range of diaphragm stops. No focusing is required.

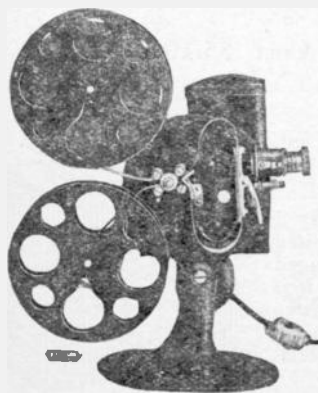
A simplified exposure guide, built in on the front of the camera, makes good pictures easy to get from the start. There's a full-vision, eye-level type finder combined with the carrying handle so that both elements of the finder snap into position in one movement. A self-setting footage indicator enables you to tell at a glance the amount of unexposed film. The camera is handsomely finished in black. It uses the new 8 m.m. film.



List, \$29.50

Special discounts on application

Keystone Projector

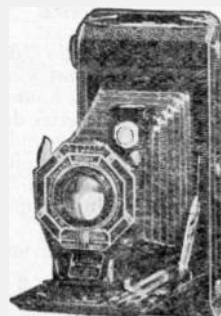


Model A-74 is equipped with a 200-watt special concentrated filament pre-focused projection lamp. A ventilating fan is connected to motor which forces cool air through lamphouse, thereby cooling lamphouse and mechanism. Universal motor drive, 2-inch double achromatic lens, two-claw intermittent movement and perfection oiling system complete this remarkable low-priced projector.

List, \$50.00

Special discounts on application

Kodaks Six-16 and Six-20



Emphatically different in design and operation, Kodaks Six-16 and Six-20 are without doubt the big camera news of the year. Take the first opportunity to drop in to examine them.

In planning these cameras, one of the most important objectives was small size. It was found however, that more compact Kodaks, using the prevailing film spools, could not be built without a loss in efficiency. Therefore Eastman engineers designed an all-metal spool—smaller, yet carrying eight exposures as against the former six. With the new spool as a starting point, two radically new Kodaks were designed, with the picture taker's needs always foremost in the planning.

PICTURE SIZES

Six-20, 2 1/4 x 3 1/4—Six-16, 2 1/2 x 4 1/4

	List	
	Without Case	With Case
Kodak Six-16 with Meniscus Achromatic Lens, Kodak Shutter	\$11.00	\$13.50
With Kodak Anastigmat f.6.3 Lens, Diodak Shutter . .	17.00	19.50
Kodak Six-20 with Meniscus Achromatic Lens, Kodak Shutter	10.00	12.00
With Kodak Anastigmat f.6.3 Lens, Kodon Shutter . .	15.00	17.00

Special discounts on application

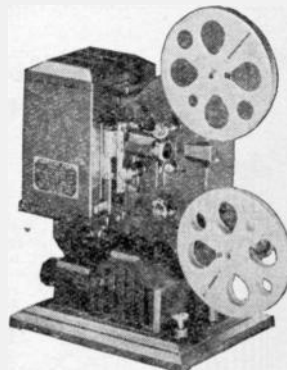
Kodascope Eight Model 60

This model provides added operating conveniences. It is equipped with a 100-watt lamp for maximum screen brilliance. A high-speed automatic rewind eliminates the need for changing belts after projection. There is a combination receptacle and switch for plugging in a room lamp so that the room light goes off when the projector light goes on. By moving a lever, projection may be stopped for showing a "still" picture. Will run 200 feet of 8 mm. film at one threading . . . over sixteen minutes of movies. For 60-cycle alternating current, 105-125 volts.

Model 60 Including Case List, \$75.00

Model 20 Including Case List, \$22.50

Special discounts on application



Keystone Camera

Model A



f.3.5 lens: universal focus with adjustable mechanical iris. The f.1.5 lens is for ultra-rapid speed and is a standard Wallensak Ciné-Velostigmat lens—1" focus. MONOCULAR VIEWFINDER built right into camera. SPRING MOTOR designed to withstand severe use. Winds very easily. CAPACITY 100-foot, or 50-foot. DAYLIGHT LOADING. Automatically indicates the amount of film left after taking each scene. At every two feet of film a sound like a faint bell is heard so that without removing camera from eye you will know the amount of film you are taking for a particular subject. Finger type movement feeds film steadily and with hair-line accuracy.

With f.3.5 Lens List, \$35.00

With f.1.9 Lens List, \$67.50

Special discounts on application

The M & H Camera Department stocks all of the highest grade cameras, including LEICA, ROLLEIFLEX, PILOT, GRAFLEX and many others. Those of our customers who desire the best will find it on our shelves. M & H also maintains a Used Camera Section where there is always a splendid array of attractive values in used cameras that are guaranteed mechanically perfect. THIS SECTION EXCHANGES, BUYS AND SELLS USED CAMERAS.

Photographic Accessories

CHEMICALS


**HAUFF'S
AGFA**
**EASTMAN'S
MALLINCKROAT'S**

M & H carry a full line of chemicals especially prepared and tested for photographic purposes. These standard brands are all packed in their original containers. An order will convince you that our prices are right.

	List
Acid, acetic glacial, per lb.	\$0.34
Pyro, per ounce .....	.24
Alum, potassium, per lb. ....	.16
Elon, per ounce .....	.39
Hydroquinone, per ounce .....	.16
M & H M. O. Developer, 5 tubes.....	.21
Potassium Bromide, per ounce .....	.09
Sodium Carbonate (desic), per lb. ....	.17
Sodium Sulphite (desic), per lb. ....	.19
Hauff's Prepared Developers, per tube.....	.12
Potassium Chrome Alum, per lb. ....	.21
Pictol, per oz. ....	.39
Glycin, Hauff or Agfa, 1 ounce.....	.39
Potassium Meta-bisulphite, 1/4 lb. ....	.18

Prices subject to change without notice

M & H HYPO Pea Crystal

A superior sodium thiosulphate with technically correct photographic qualities, fully tested in our own laboratories.

	List
1-lb. Pkg.	\$0.09
5-lb. Carton .....	.37
50-lb. Sacks	2.75
100-lb. Kegs	5.00

M & H TRAYS

Best grade enameled trays, tested and guaranteed to be photographically perfect, at prices which are the lowest in years.

	List
4 x 6 in.	\$0.35
5 x 7 in. ....	.45
8 x 10 in. ....	.65
11 x 14 in.	1.35

Special discounts on quantity lots

SUNDRIES

**YOUR
COST**

Graduates, tumbler type	
4-oz.	\$0.12
8-oz. ....	.16
16-oz. ....	.24

Thermometers	
Stirring Rod .....	.85
Tray .....	.40

Safelight Outer Globes	
Red .....	.69
Yellow .....	.69
Green	1.15

Wooden Film Clips	
With Hooks, 6 for.....	.19

Photoflash Outfits	
Complete with battery and lamp..	.79
Extra Lamp .....	.19

Photoflood Lamps27
-------------------------------	------------

Balljoint Tripod Heads.....	.85
------------------------------------	------------

Compact Triangle Tripods..	2.15
-----------------------------------	-------------

Ball-head Tripods	3.35
--------------------------------	-------------

Albums	
7x11—Several colors—black leaves	.69
Pack of Art Corners free.	

Books	
"How to Make Good Pictures"...	.50
"Photography of Colored Subjects"	.50
"Elementary Photographic Chemistry" .....	.50
"Fundamentals of Photography"..	1.00

Oil Color Outfits	2.80
--------------------------------	-------------

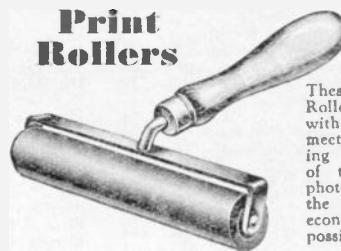
Water Color Outfits.....	.80
---------------------------------	------------

Reel and Humidor Can,	
16 mm. ....	.75

Film Cement38
--------------------------	------------

This is only a partial list of the many hundreds of bargains in the Photo Department. Send in a trial order . . . we guarantee best quality . . . and best prices.

Print Rollers



These De Luxe Rollers are made with a view to meeting the exacting requirements of the amateur photographer and the hobbyist as economically as possible.

	List
4-inch	\$0.38
6-inch .....	.55
8-inch .....	.67

M & H Trimming Boards

"The trimming board with a reputation"

The beds of this especially manufactured line are made of seasoned maple with a hard-rubbed surface. They are equipped with the new safety adjustable spring that causes the handle to remain in any raised position.



	List
8 inches square	\$1.60
10 inches square	2.00
12 inches square	2.40
14 inches square	3.75

ENLARGERS

For enlargement of motion picture film, M & H, Dolly Leica and other miniature camera negatives . . . and generally for negatives up to 1 1/4" x 1 1/2" and smaller portions of larger negatives.

Small negatives produced by miniature cameras and individual film frames require a considerable amount of enlarging. The M & H Enlarger, the most modern instrument of its kind and most unusually priced, has been designed as a special apparatus for this purpose. Compact, convenient and easily manipulated, it is provided with a removable condenser, giving an extremely brilliant and even light. It makes enlargements up to 9 diameters magnification. The highly corrected high speed anastigmat f3.5 lens, with iris diaphragm, is easily focused and capable of producing faultless enlargements. All metal parts nickel-plated steel and fire-proof crystallized black enamel. Supplied with adjustable red filter for placing the paper. Well-ventilated lamp-house. Light exposure control in electric cord. Weight, 4 1/4 lbs.



Your Cost, Special, \$16.50, Without Board
Baseboard, \$1.00 Extra

We unhesitatingly recommend our Photographic Department to our friends as a complete branch ready to serve your every need . . . Those of our customers who desire imported chemicals to work out special formulae will find our supply and service especially helpful and decidedly low in cost. . . It is needless to repeat the policy upon which the reputation of M & H is based relative to the attentiveness of our mail order service.

INDEX

A	Page No.
Adapters	46, 47, 28
Aerial Equipment,	56, 58, 104, 113, 114, 115
Aerovox Products	38, 39, 90
Akro-ohm Resistors	64, 108
Alloy Panels and Shields	83
Aluminum Panels and Shields	83
Amateur Call Book Magazine	93
Amateur Supplies	67 to 111
American Mikes	29
Amertran Products	22
Amperites	65
Amplifiers (Class "B")	23, 25
Amplifiers (public address)	18, 23, 25, 26

A. R. R. L. Log Book and Message	93
Arcturus Tubes	36
Arresters (lightning)	114
Attenuator Pads	107
Audak Pickups	20
Audio Oscillators	108, Back Cover
Auto Radio Apparatus and Sets,	Front Inside Cover, 45, 112
Automatic Transmitting Machines,	95, 97

B	Page No.
Baffle Boards and Horns	30, 51
Bakelite (tubing and panels)	83
Balsa Wood	88
Batteries ("A," "B" and "C"),	21, 116, 117
Battery Cable	55, 113
Binding Posts	66
Books	16, 17, 93
Boxes (aluminum)	83
Bradystats	104
Bridges Wheatstone	107
Broadcast Tuner	69
Bud Radiometer	11
Bugs (transmitting machines)	95, 97
Buss Bar	113
Buzzers (radio)	97

C	Page No.
"C" Batteries	116, 117
Cable Connectors	28, 55
Cable (lead covered)	113
Cables (microphone)	28
Cameras	118, 119
Carbon Resistors (See Resistors)	
Cardwell Condensers	76, 77
Capacity Tester	2, 8
Carter Products	43
Cast Aluminum Boxes	83
Cedar Boxes (constant temp. type)	88
Centralab	33, 42
Chassis Base Panels	99
Chokes (filter and modulator)	78, 79, 98, 101
Chokes (R.F.)	14, 58, 72, 80, 86
Chokes (replacement)	13, 59, 60
Claroats	43, 96
Coil Forms	58, 70, 86
Coil Shields	73, 85, 99
Coils (I.P., honeycomb, etc.),	70, 80, 85, 86, 90, 96, 99
Code Practice Sets	95, 97
Condensers (by-pass)	37, 38
Condensers (by-pass and blocking,	transmitting) 76, 84, 90, 96
Condensers (cartridge type)	37, 38
Condensers (electrolytic)	39, 53
Condensers (filter)	14, 37, 38
Condensers, Filter (transmitting)	91
Condensers (mica)	14, 38, 60, 96
Condensers (midjet fixed)	14, 37
Condensers (padding)	84
Condensers (transmitting variable)	72, 73, 76, 77, 84, 87
Condensers (uncased)	37
Condensers (variable rec.),	15, 72, 76, 77, 85, 87, 99
Convenience Outlets	54, 56, 58
Converters (Esco-Janette)	19
Converters (short wave)	99
Copper Tubing	99
Crystal Holders	96, 100
Crystal Oven Apparatus	88, 89, 94
Crystals (quartz, transmitting)	88, 100
Crystals (receiving)	93
Cunningham Tubes	35

D	Page No.
Dayrad	11
Decade Boxes	108, 110
Decade Resistance Bridge	2, 107, 110
DeForest Tubes (transmitting)	74
Delta Products	78, 79

D	Page No.
Dials	15, 50, 70, 71, 82
Dial Cables	65
Dial Levers and Indicators	70, 77
Dial Lights	12, 50, 54, 55
Dry Cells	89
Dynamic Units and Speakers (See	Speakers)
Dynamometer	99

E	Page No.
Ear Phone Cushions	50
Ear Phones	93
Electrad Products	33, 40, 41, 96
Electric Phonograph Motors	21
Electrolytic Condensers (See Con-	densers)
Eliminators ("A" and "B")	13, 62
Elkon Products	53, 62
Ely Products	66
Esco Converters	19
Extension Cords	50
Extension Posts and Mounting Pil-	lars 77

F	Page No.
Fahnestock Clips	57
Feeder Spreaders	99
Field Exciters	30, 31
Filament Transformers (See Trans-	formers)
Filter Chokes (See Chokes)	
Filter Condensers (transmitting)	(See Condensers)
Filter Condensers (receiving) (See	Condensers)
Filters (laboratory type)	108
Five-Meter Apparatus	81, 99, 104
Flechtheim Condensers	37, 91
Flexible Couplings	15, 84
Frequency Meters	81, 100, Back Cover
Fuses	92

G	Page No.
Galvanometers	4, 107, 109
Gasoline Power Plants	19
Grid Leaks (receiving)	38, 44, 45
Grid Leaks (transmitting)	94, 96
Ground Rods and Clamps	114

H	Page No.
Hammarlund Products	84, 85, 86, 87
Handle Pointers and Scales	70, 77
Health Lamps	36
Heater Pads	88
Heterograph	95
Hickok Instruments	11, 99
Home Recording Pick-ups	20
Honeycomb Coils	90
Hook-up Wire	113
Horns (exponential)	30, 31, 32
Hytron Tubes	96

I	Page No.
Inductances (transmitting)	80
Instruments (laboratory)	105 to 110, Back Cover
Insulators (receiving)	51, 86, 104, 114
Insulators (transmitting)	86, 104
Interference Filters	39, 56
I. R. C. Resistors and Kits	44, 45

J	Page No.
Jack Switches	54
Jacks and Plugs	12, 50, 51, 52, 54, 55, 66
Janette Converters	19, 112
Jefferson Products	64
Jensen Speakers	32
Jewell Radio Instruments	5, 7

K	Page No.
Kenyon Transformer	34
Keys (transmitting)	97
Kit (single signal superhet.)	68
Kits (antenna)	115
Knobs	50

L	Page No.
"L" Pads	33
Lab. Section	105 to 110, Back Cover
Lamp Cord	113
Lamps (sun type)	36
Lightning Arresters	114
Littelfuses	92
Lugs (soldering)	51, 55
Lynch Apparatus	104

M	Page No.
Magnavox Speakers	32
Magnet Wire	93
Magnetic Speakers (See Speakers)	
Mallory Auto "B"	112
Mark Time Switches	65
Meters (indicating)	4, 6, 8, 11
Microammeters	6
Microphone Control and Accessories	28
Microphone Stands	27
Microphones	26, 29
Midget Radio Sets,	Inside Front Cover, 111
Miniature Meters	6, 82
Mixing Transformers (See Trans-	formers)
Modulation Indicators	6, 82
Modulation Meter	6
Modulation Transformers (See	Transformers)
Modulator Chokes	102, 103
Modulator Tubes	74
Modulator Units	81
M & H Amplifiers	18, 23
M & H Monitors	100
M & H Transformers (See Trans-	formers)

N	Page No.
Na-ald Plugs and Adapters	46, 47
National Products	68, 69, 70, 71, 72, 73, 99, 100
Neon Lamps	50
Neutralizing Tools	51, 52

O	Page No.
Octo Coils	96
Ohmite Resistors	43
Ohmmeters	2, 5, 8, 9, 109, 110
Omnigraph	95
Oscillators	2, 5, 7, 9, 11, Back Cover
Output Meters	2, 5, 7, 9

P	Page No.
Panel Cutters	10
Panel Lights	54, 55
Panela (aluminum, bakelite, etc.)	83
Philco Parts	60, 61
Philco Tubes	54
Phone Plugs	12, 54
Phonograph Motors	21
Phonograph Pickups	20
Photronic Cells and Relay	5
Photo-electric Cells	5
Piezo Electric Apparatus	88
Pilot Products	12, 13, 14, 15
Plugs (analyzer)	46, 47
Power Packs	13, 69
Power Transformers (See Trans-	formers)
Potentiometers (See Resistors,	variable)
Practice Sets (telegraph and wireless)	97
Public Address Amplifiers	18, 25, 26
Public Address Horns	30
Pyrex Insulators	86

Q	Page No.
Quartz Bars	88

R	Page No.
Racon Horns and Units	31
R. C. A. Tubes	35
R. C. A.-Victor Parts	61
Radio Sets	Inside Cover, 111
Reactors (filter and modulator) (See	Chokes)
Readrite Analyzers and Products	8, 9
Realtphones	65
Record Changer	21
Records (home recording)	21
Rectifier Units	62
Rectifiers (mercury vapor)	74, 94
Relays (keying and otherwise)	55, 75, 89, 94, 97
Relays (photo-electric)	5
R. E. L. Products	80, 81, 82
Replacement Audio and Power	Transformers (See Transformers)
Replacement Cond. Blocks	60, 61, 63
Replacement Cords and Cables for	Sets 65
Replacement Resistors	60-61
Replacement Volume Controls,	40, 42, 53, 54, 60, 61
Resistor Mountings	38
Resistors (fixed)	14, 38, 39, 41, 43, 44, 45, 55, 93

R	Page No.
Resistors (laboratory type),	107, 108, 110
Resistors (variable)	14, 41, 43, 53, 54
Rotary Converters	19, 112

S	Page No.
Samson Amplifiers	25
Sangamo Condensers	96
Scratch Filters	20
Set Testers and Analyzers	2, 3, 7, 11
Shielded Wire	112, 115
Shielding	112, 113
Short-Wave Coils	17, 70, 80
Short-Wave Converters	69
Short-Wave Sets,	68, 69, 81, 82, 85, 111
Signal Products	97
Single Signal Superheterodynes	68
Sockets	12, 66, 73, 84
Sockets (transmitting)	80
Socket Wrenches	10
Solder	10
Soldering Irons	10
Spaghetti	113
Speaker Cones	60, 61
Speaker Plugs	46, 47, 51
Speaker Relays	50
Speakers (magnetic and dynamic)	30, 32
Standard Freq. Apparatus,	89, 89, Back Cover
Stand-off Insulators	86, 96, 114
Storage Batteries	21
Superheterodyne Coils	12, 85
Supreme Test Instruments	2, 3
Switches (all types),	12, 48, 49, 54, 55, 65, 66, 80

T	Page No.
"T" Pads	33
Teleplex	95
Testing Adapters	46, 47, 52
Test Leads, Prods and Clips	52, 57
Thermometers	89
Thermoregulators	89, 110
Thordarson Products	24, 59, 98
Time Switches	65, 49
Tone Controls	28, 58
Tools	10
Top Switches	54
Transformers (audio)	13, 22, 59, 64
Transformers (Class "B"),	34, 64, 70, 78, 79, 102, 103
Transformers (filament)	64, 79
Transformers (microphone)	22, 24, 34, 101, 102, 103
Transformers (mixing)	22, 24, 34
Transformers (plate supply)	13, 59, 79, 98, 101, 102
Transformers (replacement type)	13, 59, 60, 63
Transformers (transmitting filament)	98, 101, 102, 103
Transmitters	67, 80, 81
Transmitting Equipment	67 to 104
Transmitting Keys	95, 97
Transmitting Tubes	74
Tube Shields	73, 85, 99
Tube Testers	2, 3, 5, 7, 9, 11
Tubes (receiving)	35, 36, 61
Tubes (transmitting)	74, 96
Tubing (bakelite)	83
Tubing (copper)	99
Trumpets	31

U	Page No.
Uncased Condensers (See	Condensers)
Units for Speakers (See Speakers)	
Universal Meter	6
Universal Microphones	26

V	Page No.
Variodensers	58
Vibroplex	95
Volt-ammeters	2, 5, 6, 109
Voltmeters (See Weston and Jewell)	
Volt-ohmmeters	2, 4, 5, 6, 8, 9
Volume Controls (See Service Sec-	tion)

W	Page No.
Ward-Leonard	94
Wattmeters	99
Wavemeters (See Frequency Meters)	
Weston Radio Instruments	4, 5, 6
Wire (for every purpose),	93, 112, 113, 114, 115
Wright-De-Coster Speakers	30, 32

Y	Page No.
Yaxley Products	53, 54, 55

UNEQUALED FLEXIBILITY *and* EASE OF CONTROL

in the

New NATIONAL Short-Wave Receivers



Where utmost sensitivity, with extremely low background noise level, together with unequal flexibility and ease of control is required, these receivers are outstandingly in a class by themselves

NATIONAL SW-58 AND SW-34

The new NATIONAL short-wave tuners or "Thrill Boxes," Types SW-58 and SW-34, while employing the same fundamental circuit as that of the well-known SW-5, show a decided improvement in operating characteristics. The most essential requirement of a short-wave receiver is sensitivity with ease of control, and in designing the Types SW-58 and SW-34 no detail which would help in attaining this end has been overlooked. The circuit, which consists essentially of a tuned R.F. stage, a regenerative detector, and two audio stages, is becoming recognized more and more as being more efficient, as well as combining more desirable characteristics than any other yet developed

The A.C. model, type SW-58, employs two type 58 variable MU Pentodes in R.F. and Detector, one type 56 (or 227) first audio, and two type 245 output tubes. The D.C. model, type SW-34, employs two type 234 variable MU screen grid R.F. and Detector, one type 230 first audio, and two type 231 output tubes. Five sets of coils covering the wave-lengths of from 13.5 to 200 meters are furnished as standard equipment with each receiver. The following coils are designed for use with the A.C. Model SW-58 and A.C. SW-3 receivers

Catalog Symbol	Range	List Price Per Pair	YOUR COST
No. 60	9 to 15 meters	\$5.50	\$3.24
No. 61*	13.5 to 25 meters	\$5.00	2.96
No. 62	23 to 41 meters	\$5.00	2.94
No. 63*	40 to 70 meters	\$5.00	2.94
No. 64*	65 to 115 meters	\$5.00	3.24
No. 65*	115 to 200 meters	\$5.50	3.24
No. 66	200 to 360 meters	\$5.50	3.82
No. 67	350 to 550 meters	\$5.50	
No. 68	500 to 850 meters	6.50	

*For amateur band spread coils, 20-, 40-, 80- or 160-meter coil, add the letter "A". Per set (2 coils), YOUR COST, \$3.82

Note:—The types of coils used in the battery model of the SW-34 receiver are the same as those listed on Page 70 and as used in the SW-3 and 5 Thrill Boxes.

Note:—The National A.C. SW-58 is particularly designed for use with the National 5880-AB-S listed below.



A.C. SW-58 National complete set of parts for 5-tube A.C. 58 Short-Wave Receiver, less tubes. List Price, \$79.50.

YOUR COST

\$46.75
Less Tubes

D.C. SW-34 National complete set of parts for 5-tube D.C. 34 Short-Wave Receiver, less tubes. List Price, \$75.00. YOUR COST, \$44.10.

We can have any of the above sets of parts wired for you by Jackson Research Laboratories at an additional cost of \$5.70.

M & H

Largest

Distributors

in the East

for

National

Products



Wired POWER SUPPLY

One of the essentials for humless A.C. short-wave reception is the use of a power unit designed especially for that purpose. NATIONAL power packs have an exceedingly low inherent hum, employing a double-section filter using good quality chokes and plenty of condenser capacity.

5880-AB-S—Completely wired power supply for use with the A.C. SW-45 Thrill Box using the '45 tubes in the output stage on 105-120 volts, 50-60 cycle current supply. Less tube. List Price, \$39.50. YOUR COST, \$23.23

5880-AB-S25 — Completely wired power supply for use with the A.C. SW-45 Thrill Box using the '45 tubes in the output stage on 105-120 volts, 25-40 cycle current supply. Less tube. List Price, \$42.50. YOUR COST, \$24.99.

World Radio History

De Luxe

Our Engineering Department has just announced the new M & H De Luxe Frequency Meter Type RD-1900, which is truly a revelation. Its accuracy far surpasses any other instrument of similar design. Utilizes one type 224 screen grid tube as an oscillator and another type 224 as a harmonic amplifier, thereby doing away with frequency variations due to external loads, changing of tubes, battery voltages and atmospheric conditions. Provides a strong beat note every 100 kilocycles between 100 and 30,000 KC. (3000 and 10 meters). Uses a one-piece cast aluminum shield box, batteries self-con-

ANNOUNCING THE Frequency

Rec'd NOV 21

Meter



Model RD-1900 De Luxe Frequency Meter

tained. Accuracies to better than .0001 per cent readily obtainable and a constant check can be had from the Bureau of Standards radio station WWV, which transmits every Tuesday. Comes completely wired with tubes and batteries but not calibrated, since you have only to set it to "zero beat" with WWV and it is accurate then on all frequencies within its range.

YOUR COST

\$42.00

MODEL No. 305A

Audio Oscillator

Is a semi-portable laboratory instrument. A filament transformer operates from the 110-volt A.C. line, and the plate voltage is supplied by batteries. The output is approximately two volts across a 2000-ohm load, and



The cabinet has a compartment to hold the batteries, making the instrument completely self-contained. The unit uses three 227 tubes and one 224. The frequency range is from 10 to 10,000 C.P.S., continuously variable.

the harmonic content is less than 4%. A meter on the panel indicates output voltage. The unit is built into a walnut cabinet, with an aluminum panel, finished in black crystallized lacquer. A calibration curve is supplied, and is nearly a straight line for practically the entire frequency range.

YOUR COST

\$170.00

MODEL No. 709

POWER SUPPLY

The Model No. 709 Power Supply to be used in conjunction with the cathode ray oscillograph supplies all voltages necessary for the operation of the cathode ray tube. Included in the unit is an ammeter to insure against excess voltages on the tube, as well as plate and filament control. The unit is entirely self-contained in a shielded cabinet and thereby prevents any electro-magnetic disturbances from the power supply from affecting the electron stream in the cathode ray tube.

YOUR COST

\$85.00

**M & H
for
Radio Supplies**

MODEL No. 309

Triangular-Wave Generator

Is designed for use with cathode ray tubes. Its frequency is variable between 10 cycles per second and well above 4000 cycles per second. Output voltage can be varied between approximately 10 volts and 200 volts. The wave shape is independent of both frequency and output voltage, and consists of a pure straight line triangular wave. The apparatus utilizes a special thyratron which is charged at a constant current by a special tungsten filament current regulator tube. Provision is made for maintaining the oscillator frequency at some sub-multiple of the wave being studied. The apparatus will maintain absolute synchronism with the wave shape under inspection at all times. The device is completely self-contained and includes built-in power supply operated from the 110-volt A.C. mains. The controls are as follows:

A synchronism control, frequency control (both step and continuous), amplitude control and a framing control to bring the image to the center of the cathode ray tube screen.

Your Cost **\$125.00**



MODEL No. 701

CATHODE RAY Oscillograph HOLDER

The Model No. 701 Cathode Oscillograph Mounting is an extremely handy and useful piece of equipment to use in conjunction with the cathode ray oscillograph tube. The holder has been constructed so as to allow for longevity variation. The holder also acts as a shield and avoids any electro-magnetic disturbances from being transmitted to the tube from an outside source.

YOUR COST

\$40.00

**M & H
Always Sell It
for Less**