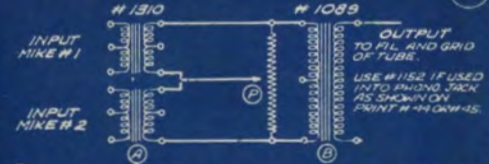


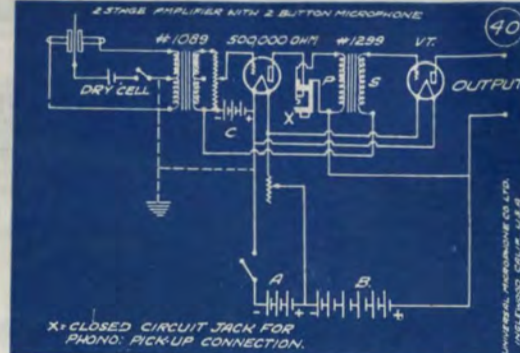
SIMPLE 2 MICROPHONE MIX

32



(A) MIKE TO MIKE TRANSFORMER 1 TO 1-400 OHMS EACH SIDE.
(B) UNIVERSAL #1089
(C) 1000 OHM STAND. POTENTIOMETER
SIMPLE 2 MIKE MIXER USING ONE POTENTIOMETER FOR MIXING OUTPUT OF 2 CONDENSER MICROPHONES, 2 CARBON MICROPHONES, OR 1 CONDENSER AND 1 CARBON.

UNIVERSAL MICROPHONE CO. LTD.
INGLEWOOD, CALIF., U.S.A.

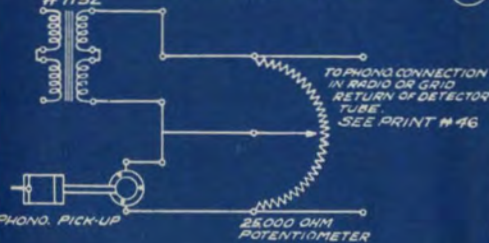


X=CLOSED CIRCUIT JACK FOR PHONO PICKUP CONNECTION.

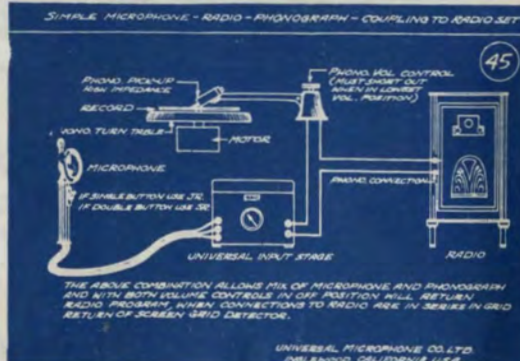
UNIVERSAL MICROPHONE CO. LTD.
INGLEWOOD, CALIF., U.S.A.

MICROPHONE PHONOGRAPH MIX

44



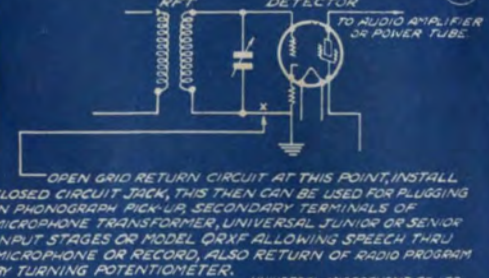
UNIVERSAL MICROPHONE CO. LTD.
INGLEWOOD, CALIF., U.S.A.



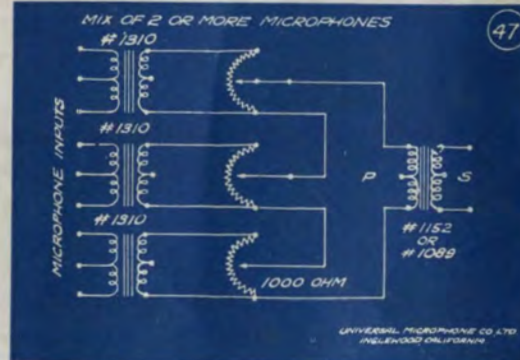
UNIVERSAL MICROPHONE CO. LTD.
INGLEWOOD, CALIF., U.S.A.

RECOMMENDED CIRCUIT FOR CONNECTING MICROPHONES TO RADIO SETS USING SCREEN GRID DETECTORS.

46



UNIVERSAL MICROPHONE CO. LTD.
INGLEWOOD, CALIF., U.S.A.



UNIVERSAL MICROPHONE CO. LTD.
INGLEWOOD, CALIF., U.S.A.

The diagrams shown in this catalog are those most frequently encountered in the hook-up of microphones. To anyone familiar with electrical or radio matters, the connection of a microphone will be very simple if the above diagrams are followed. The services of our engineering department are available to all users of microphones gratis.

Blue prints of any of the circuits illustrated (6 in. x 8 in.) will be mailed on receipt of 10 cents. Please order by number.

Special booklet "Use and Care of Microphones" mailed upon receipt of 10 cents. Also booklet "Simplified Home Recording" mailed upon receipt of 10 cents.

UNIVERSAL MICROPHONE CO., Ltd.

424 Warren Lane, Inglewood, Calif., U. S. A.



Society of Wireless Pioneers - California Historical Radio Society

UNIVERSAL MICROPHONES

1933

UNIVERSAL MICROPHONE COMPANY, LTD.

424 WARREN LANE

INGLEWOOD, CALIF., U.S.A.

CABLE ADDRESS "UMIC"

COPYRIGHT, 1932 BY U. M. Co.

A COMPLETE LINE ... ENLARGED ... IMPROVED

In this, the 1933 catalog, the Universal Microphone Company, Ltd., is offering an enlarged and improved line of microphones and microphone accessories. Adhering to its progressive policy of providing users of Universal products with the very latest improvements in design, finish and quality, this catalog presents a new line of Bullet Type and Torpedo Type microphones, the new Models X, Y and W; and a complete new line of transformers designed to meet every possible transformer need. Descriptions of these new transformers are listed in a special section at the back of this catalog.

Since the publication of the 1932 catalog, Universal Microphone Co., Ltd., has moved into its new, three-story factory building in which every facility for precision in manufacturing has been provided. The enlarged quarters also permitted the installation of completely equipped laboratories for experimentation purposes as well as the installation of a sound-proof room in which microphones are tested out under conditions exactly simulating those under which microphones are used in actual practice.

Universal Microphone Co., Ltd., enters its fifth year of service to the industry better equipped than ever before to meet the exacting demands of the radio world.

Terms

Prices shown are list.

Discounts apply and will be quoted only to established dealers.

Terms are cash on delivery and when not rated a customer is required to forward a deposit with orders.

Microphone Repairs

Repairs on any make or model of microphone is a feature of Universal Service.

Expert mechanics and proper equipment enable us to turn out all repair jobs in 48 hours. Generally repairs leave 24 hours after the jobs are received.

We have completely overhauled thousands of Microphones for some of the largest Broadcast chains and individual



operators in the country. You will be more than satisfied with Universal Repair Service. Carefully and cleanly handled, securely packed, your repaired Microphone will perform like new and look as near new as a thorough cleaning and polishing will

make it. New screws furnished where needed. Return shipment made in 36 hours.

Prices are difficult to quote, but the following standard jobs give an indication of the reasonable charges made for expert repairing.

2-Button stretched diaphragm microphones, of any make, completely overhauled, with pure 24 Kt. gold spot Duralumin diaphragm, highest grade carbon granules, and new buttons. Scientifically tested, \$7.50.

Any 2-Button Non-Stretched diaphragm type microphone repaired, same as above, \$3.00.

Any Single Button Microphone repaired, \$1.50.

Exclusive Features

Particular attention is called to the fact that no UNIVERSAL microphone has electro-plated buttons or electro-plated gold spot diaphragms. Pure 24 Kt. gold metal spots and button facings are used instead of chemical deposits. This method insures absolute absence of corrosion, oxidization and insures maximum sensitivity, long life and low hiss level. Patents pending on this exclusive process.

Guarantee

Microphones or accessories are not shipped on test or approval and are not subject to return for credit. Microphones are guaranteed and will be repaired gratis if found by our inspection to have been defective. Ignorance in the use of, or abuse of a microphone or improper handling will not be considered as a basis of gratis repair. All guarantees are null and void when there is evidence that microphones have been altered or tampered with. This guarantee does not cover breakage or damage to diaphragms.

Net weight 1 lb.
Packed weight 1 1/2 lb.
Code word "DUKE"



Patents Pending

UNIVERSAL MODEL "A"

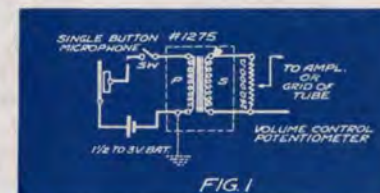
AMERICA'S MOST HIGHLY DEVELOPED SINGLE-BUTTON MICROPHONE

New Heavy Duty Design

The new design of the heavy duty Model "A" microphone incorporates improvements that lift the performance of this most refined single-button microphone above anything previously considered possible. The new type of perforated protective facing more than doubles the effective area of the diaphragm.

Model "A" is constructed with Solid 24-Kt. gold faced button and highest grade carbon granules which reduce hiss to a minimum. Equipped with an extremely thin, light weight diaphragm which is also gold faced. The scientific damping permits Model "A" to handle frequencies from 100 to 3000 cycles. The single button is 200 ohm resistance. Model "A" is 3 in. in diameter by 1 1/4 in. thick. It is beautifully plated in polished chrome and can be mounted in various ways. Model K Desk stand or 5 1/4-inch suspension ring recommended.

Connection for Model "A" or any other single button microphone is shown in Fig. 1 on this page.



Model "A" Response Curve



Patents Pending

UNIVERSAL MODEL "BB"

1933 Value—New Super-Design

The super-microphone in every sense of the word. No other 2-button microphone can give such superlative value for such a low price. 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-pickup, public address work and for amateur broadcasters, experimenters, halls, ball rooms, speaker wagons, etc. Finished in beautifully finished, highly polished chrome plate.

Model "BB" has extra heavy 24-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.

Owing to the large size and weight of Model "BB", it is recommended that Model "L" desk stand be used for mounting instead of Model "K", especially when covers are used.

Made in three degrees of sensitivity: S, very sensitive; M, medium sensitive (Standard); and D, highly damped.

Compare this new Heavy Model "BB", listing at only \$25.00, with any \$45.00 to \$50.00 microphone on the market.

For connecting up Model "BB" see Fig. 4, page 21.



Response Curve—Model "BB"

List Price \$25.00

Net weight 1 lb.
Packed weight 1 ½ lbs.
Code word "BET"



Patents Pending

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 desired 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 2 ½ in. in diameter and 1 ¼ in. thick. Made in three sensitivities: S, very sensitive; M, medium sensitive (Standard) and D, highly damped. Each unit is carefully laboratory tested before shipment.

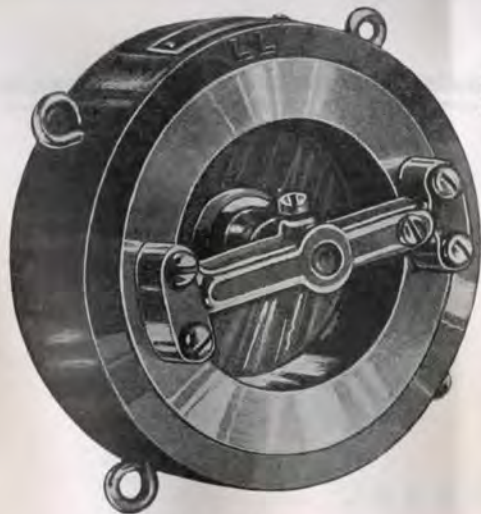
For connecting up Model "KK" see Fig. 4, page 21.



Response Curve—Model "KK"

List Price \$50.00

Net weight 1 ¼ lbs.
Packed weight 2 lbs.
Code word "DUCK"



Patents Pending

UNIVERSAL MODEL "LL"

The Last Word in Broadcast Microphones

No matter what the price, a better microphone than Universal Model "LL" cannot be produced. 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 1¾ in. thick and is standard 200 ohms per button. It is made in three degrees of sensitivity: S, very sensitive; M, medium sensitive (Standard); and D, highly damped. Due to the precision of workmanship in this model, a rust-proof process is used to preserve the original steel surface.

For connecting up Model "LL" see Fig. 4, page 21.

List Price \$75.00

Net weight 2¼ lbs.
Packed weight 3½ lbs.
Code word "LAT"



Net weight 12 oz.
Packed weight 1 lb. 1 oz.
Code word "QRQ"
Patents Pending

UNIVERSAL MODEL "QRQ"

Proved Value--Tested Performance

List Price \$5.00

An exceptionally efficient, small, low cost microphone for amateurs, experimenters and for any installation requiring a simple single-button microphone.

"QRQ" is an exact replica of the Standard Broadcast Model in appearance. It is 3½

in. high and is finished in highly polished nickelplate.

Model "QRQ" is a single-button, 200 ohm carbon microphone with high sensitivity and clear, natural reproduction. The button is solid 24-karat Gold faced, giving it extremely long life. Furnished with 3-ft. phone tip cord.

Though low in price, Model "QRQ" increases in sales every 30 days. It is used on the air by amateurs and heard through small address systems everywhere. Not a toy, but a real microphone although small in size.

Connection for Model "QRQ" to circuit is shown in Fig. 1, page 1.

UNIVERSAL MODEL "QRXF"

QRQ Microphone Mounted Directly on Junior Input Stage

Net wt. 2 lbs. Packed wt. 2½ lbs.
Code word "QRXF"

List Price \$12.00

Model QRXF is an assembly consisting of Model QRQ microphone mounted directly on a Junior Input stage with a 25-ft. cord for connection to the phonograph jack on radio or amplifier. The assembly is simple and is very easy to connect and operate. Requires one flashlight mono-cell for operation.

The transformer improves both volume and quality over any direct application of microphone to the detector tube. The Potentiometer Volume Control also operates the battery switch. When used for home entertainment, the program and speech may be returned and faded in and out by the volume control.

The amplifier box is finished in durable leatherette lacquer, making an attractive unit with the highly polished nickelplate microphone.



Patents Pending



UNIVERSAL BABY MIKE For Home Entertainment

List Price \$7.50

Net weight 1 lb. - Packed wt. 1 1/4 lbs.

Code word "BAM"

Built under Patent No. 1814470.

All others are infringements.

There's a world of fun in this genuine little Baby Mike. You will thrill at the surprises you can give your guests with it. The 25-ft. cord that is standard equipment with the Baby Mike permits you to use it in another room, out of sight of your guests.

Baby Mike is a genuine single-button carbon microphone of 200 ohms resistance. It is mounted in a die-cast mounting 3 1/2 inches high—a replica of the regular Broadcast models. It may be connected to amplifiers or direct to almost any radio set on the market, the manner of connection depending upon the circuit and tubes in the set. A detailed instruction sheet accompanies each Baby Mike, describing its construction and giving several methods of general adaptation.

A feature of Baby Mike is the circuit adjusting screw at the top near the press button which permits the operator to leave the circuit "open" or "closed" when the mike is not being used. An additional feature is the cushioning of the diaphragm to prevent excessive "feed-back" from the speaker. Patents allowed and pending.

Baby Mike is a beautiful miniature microphone, finished in highly polished nickelplate.

It is shipped to you securely packed and completely furnished with prong adapter for connection to tube, pin plugs for connection to jacks or binding posts, 25-ft. cord, detailed instruction sheet—in short, everything needed to hook up ready to enjoy the fun.

Many imitations of Baby Mike have been attempted. We caution purchasers in this field against poor quality of reproduction, lack of return of program, and toy-like assemblies without adequate connecting means, inferior granules, brass surfaces, etc.

PREGROOVED ALUMINUM DISCS For Home Recording

Universal pregrooved, aluminum discs assure a greater volume, brilliancy and durability. Discs are double faced, permitting recording on both sides. Available in four sizes—6 in., 8 in., 10 in. and 12 in. in diameter.

Records may be made with ordinary blunt home-recording needle and played back with wood or fibre needle. To secure best results, a suitable weight, depending upon the power of the turntable, must be applied to the top of the pick-up while recording.

Also furnished ungrooved at the same prices.

Fully protected by patents allowed.



Size	Code word	List Price
6 in.	REM	each \$.30
8 in.	REMET	each .50
10 in.	REMEX	each .75
12 in.	REMEY	each 1.00

UNIVERSAL Single-Button "HANDI-MIKE"

The Accepted Standard Hand Microphone

In spite of attempts by newcomers to usurp Handi-Mike's demonstrated premier position in the hand microphone field, Universal Handi-Mike continues preeminent. It is intended for voice only and in this field it has a maximum volume with clear and clean cut speech reproduction.

The single-button Handi-Mike is built in two Models—"Regular" and "Home Recording." The universally enthusiastic praise this microphone is receiving is establishing it without competition for superior home recording.

Handi-Mike is finished in beautiful polished plate. It is equipped with an "off" and "on" thumb switch, 15-ft. cord, and provided with an eye as shown for hanging while in or out of use. The unit is scientifically constructed with gold faced button and is mounted in sound damping, resilient felt. Handi-Mike is the successful result of exhaustive study and tests to produce the most efficient general utility microphone that could be built. Connection to circuit is shown on Fig. 1, page 1.

Packed in individual boxes. Overall length, 6 inches. Size of head, diameter, 2 1/4 inches. Net weight, 1 lb. Packed weight, 1 1/2 lbs. Copy of booklet, "Use and Care of Microphones," giving instructions and wiring hookup, accompanies each Handi-Mike.

Model No. 200—Regular Model

Model No. 50 for Home Recording

Net weight 1 lb.

Code word "HANDY"

Code word "HANDER"

Packed weight 1 1/2 lbs.

UNIVERSAL Double-Button

"HANDI-MIKE"

An exceptionally clear, highly damped hand microphone, designed particularly for uses where clarity of reproduction plus general adaptability and portability are important requisites—a microphone that is outstanding for its superior reproduction qualities. Especially recommended where microphone must be used in close proximity to loud speakers, such as home talkie installations and music trucks, etc.

The general appearance of the double-button Handi-Mike is similar to the single-button Handi-Mike except, of course, that a three-conductor cord is used and the switch breaks the circuit in the center conductor. Of rugged construction. No delicate parts.

The double-button Handi-Mike is 200 ohms per button. It is finished in beautifully polished chrome plate and comes equipped with a 6-ft. silk braid covered cable. Each unit is securely packed in an individual box.

Connection to circuit is shown on Fig. 4, page 21.

Net weight, 1 lb. Packed weight, 1 1/2 lbs.

List Price \$15.00

Net weight 1 lb.

Code word "HANDEX"

Packed weight 1 1/2 lbs.



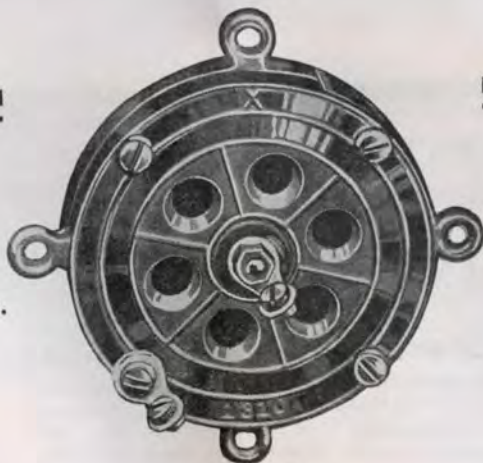
Patents Pending



List Price
\$10.00

Patents Pending

Net weight 1 lb.
Packed wt. 1 1/4 lbs.
Code word "X"



Patents Pending

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.

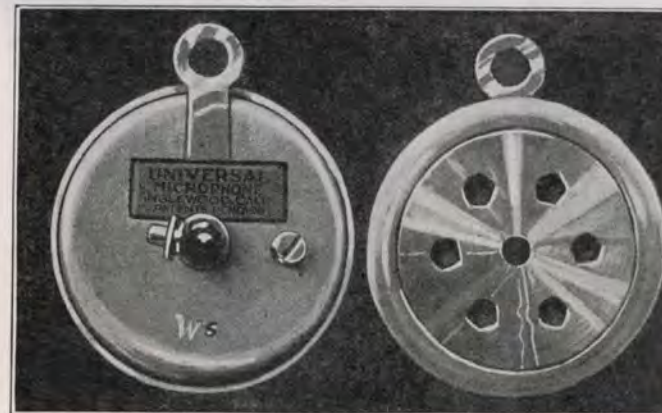
Faithful, truly natural tone. Pure Gold Contacts. Duralumin non-breakable diaphragm. 200 ohms per button. Very low hiss level. Scientifically Damped. Frequency range from 100 to 4000 cycles. Model "X" is ruggedly built and finished in non-corrosive, polished nickel plate. Can be mounted in any Universal mounting. Diameter, 2 1/2 in. Overall thickness, 1 in.

Made in three degrees of sensitivity: S, very sensitive; M, medium sensitive (standard) and D, highly damped.

For connecting up Model "X" see Fig. 4, page 21.

Nowhere can a better microphone be purchased at anywhere near this astonishingly low price.

List
Price
\$10.00



Patents Pending

UNIVERSAL MODEL "W"

The Perfected Watch Model Microphone

Universal Model "W" is the smallest completely protected and workable single-button microphone manufactured. Supplied particularly for the many special uses requiring a small, very sensitive compact microphone that can be depended upon to give full quality performance. A favorite type for use in hidden positions such as a detectophone, or on the coat lapel.

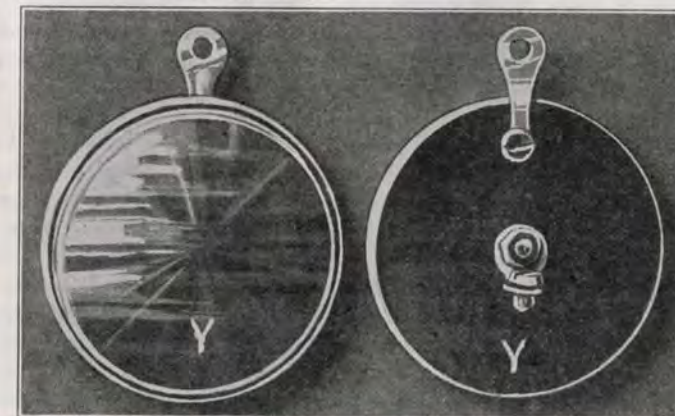
High sensitivity, light weight and compactness are the outstanding features of this model. 200 ohms. Equipped with Pure Gold Spot Center Diaphragm, completely enclosed, protecting it against injury during handling and use. 1 7/8 in. in diameter. 1/4 in. thick.

Connection to circuit is shown on Fig. 1, page 1.

UNIVERSAL MODEL "Y"

List Price
\$2.00

Code word "YAM"
Weight 1 oz.



Patents Pending

The Super-Sensitive Midget Microphone

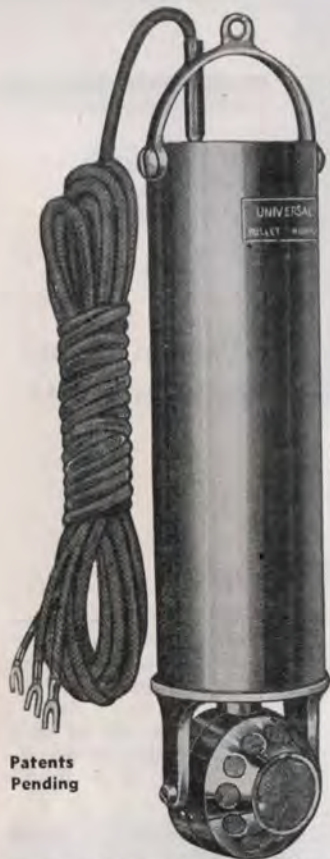
Universal Model "Y" is even lighter, smaller and more sensitive than Model "W", described above. It is of the same general construction as Model "W", except that the front face of the microphone is the diaphragm proper.

Model "Y" is extremely sensitive. When placed in any hidden position, it will pick up sounds and conversations. Recommended for use where high sensitivity and extreme compactness are necessary. Should be placed in protected locations, behind screen or grill work. Suitable for use with some of the less expensive types of ear phones. Because of the exposed diaphragm, great care must be exercised in handling.

Connection to circuit is shown on Fig. 1, page 1.

List
Price
\$3.00

Weight 1 1/2 oz.
Code word "WAT"



Patents Pending

UNIVERSAL BULLET TYPE MICROPHONES

Built-In Acoustic Adjustment

**Carbon Granule Type With
Hiss Eliminating Filter**

Bullet Microphone	Code word	List Price
"BB"	BUBE	\$50.00
"KK"	BUKE	\$75.00
"LL"	BULE	\$100.00

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

Universal Bullet Type Microphones are the last word in appearance and performance for the lowest possible cost. Especially recom-

mended 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, making the proved performance of Universal high grade carbon microphones especially favored for that type of work.

Universal Bullet Type Microphones consist 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.

Made in three degrees of sensitivity: S, very sensitive; M, medium sensitive (Standard); and D, highly damped.

Finished in highly polished aluminum and chrome plate.

Supplied in three models: Bullet Model "BB," Bullet Model "KK" and Bullet Model "LL."

For connection a 3-conductor telephone type plug takes the output through a 24 ft. braid-covered cable to any standard two-button microphone input transformer.



Patents Pending

UNIVERSAL TORPEDO TYPE MICROPHONES

Model	Code word	List Price
Torpedo "BB"	TOB	\$30.00
Torpedo "KK"	TOK	\$55.00
Torpedo "LL"	TOL	\$80.00

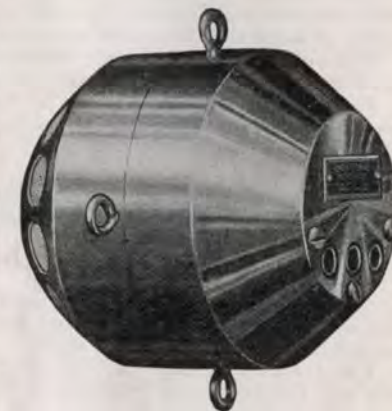
Any of the above will be supplied in any degree of sensitivity required. "M"—Medium Standard will be shipped unless otherwise ordered.

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. Supplied in standard Models "BB," "KK" and "LL."

Made in three degrees of sensitivity: S, very sensitive; M, medium sensitive (Standard); and D, highly damped.

For connecting up Torpedo Type Microphone see Fig. 4, page 21.



Combination Phonograph Pickup and Recording Head



A scientifically designed, sensitive instrument insuring clear, colorful reproduction. Used in combination radio and phonograph broadcasting, public address work, home recording, etc. Has a specially wound low impedance coil, designed

to match the input terminals of all standard microphone transformers. When used as a recording cutting head, it matches all standard line-to-mixer, tube-to-line and line-to-line transformers. Approximate impedance, 400 ohms. Wound with largest wire possible to keep D. C. resistance to absolute minimum for greatest efficiency in recording. Can be used in standard mixing panels without use of matching transformer.

Net weight 1 lb. 11 oz. Packed weight 2 lbs. Code word "PICK."

List Price \$15.00

UNIVERSAL JUNIOR INPUT STAGE

For All Single-Button Microphones

List Price \$8.00

The Junior Radio and Amplifier Input Stage effects a great improvement in the quality of reproduction over any other method of connection, because of the proper matching of the parts. It is used on the same basis as the coupling of elements in your radio set.

The Input Stage provides a built up circuit with transformer, variable volume control and battery receptacle and switch, all contained in a neat box 3 in. by 3 in. by 5 in. in size. Lacquered in durable leatherette finish.

The transformer used is of first class construction throughout and matches the impedance relation between the microphone and the phonograph jack or connections to radio or amplifier. Requires one mono-cell flashlight battery for operation.

The volume control is very valuable, allowing the microphone to be used nearer to the loud speaker and also permitting an adjustment against feed back.

For use with Models "A", Baby Mike, QRO, Handi-Mike or any single-button microphone. Terminals are plainly marked. Complete with 25-ft. cord and copy "Care and Use of Microphones."



Net weight 1 1/2 lbs.

Packed weight 2 1/2 lbs.

Code word "JAMS"

UNIVERSAL SENIOR INPUT STAGE

For All Double-Button Microphones

Senior Radio and Amplifier Input Stage consists of No. 1089 transformer, potentiometer volume control, switch and battery receptacle, all completely assembled in a neat box, 3 in. by 3 in. by 7 in. in size.

For use with Models "X", 2-button "Handi-Mike," "BB", "KK", "LL", or for matching any two-button microphone to filament and grid of tube if connected to amplifier or to phonograph jack if connected to radio set. Requires one standard No. 6 drycell for operation.

The volume control potentiometer is across the secondary of the transformer and incorporates a switch which turns the battery off when not in use.

The box is finished in durable leatherette lacquer. All connections are plainly marked. Each box equipped with a 25 ft., 2-conductor cord and full directions. Battery not supplied.

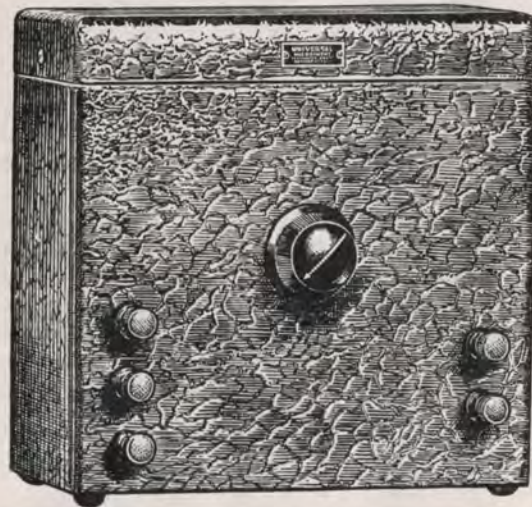
List Price \$15.00

Weight 2 1/4 lbs. Code word "SAMS."

Special Senior Input Stage

List Price \$18.00

Same as above except a No. 1152 Transformer with 10,000 ohm output is used. Secondary made to match phonograph jack connection on radio or amplifier. Code word "SAMSET."



List Price

\$8.00

Code word "TONER"

UNIVERSAL MICROPHONE TONE CONTROL

A new accessory that means much added value to every public address installation. 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 gruff, deep voices may be tuned to more pleasing positions in the voice frequencies.

The tone control permits an adjustment in public address and loud speaker installations that eliminates the "feed back," resonance or ringing echo following the pronunciation of certain words. It provides a flexible, adjustable element against these drawbacks when working in a building having bad acoustics.

Size 2 1/2 in. by 2 1/2 in. by 4 1/2 in. Net weight 1 lb. Packed weight 1 1/2 lbs.

UNIVERSAL SUSPENSION RINGS

Made of solid brass, for suspending microphones from ceilings or beams. For use especially with Models "A", "X", "BB", "KK", "LL" or Torpedo Models, etc. Beautifully finished in highly polished chrome plate.

Size 5 1/4 in. diameter by 1/2 in. wide by 1/8 in. thick—8 suspension springs included. List price, each, \$2.50. Code word "FRIS."

Size 6 1/2 in. diameter by 1/2 in. wide by 1/8 in. thick. A larger ring for larger mikes, especially the extra heavy "BB", "A", "LL" or Torpedo Types—8 suspension springs included. List Price, each, \$4.00. Code word "FRIM."



UNIVERSAL HANDI-MIKE STAND

Designed for Handi-Mike, either one or two-button. Is particularly good for holding the microphone when making home recordings. It also permits Handi-Mike to be used as a desk announcer's microphone. Handi-Mike can be instantly removed from the Handi stand or in another instant snapped into the stand where it is spring pressure held.

Furnished with a rubber covered base and finished in polished chrome plate. Net weight 2 lbs. Packed weight 2 1/2 lbs.

Code word "MAND"

List Price \$3.00

UNIVERSAL DESK TYPE MOUNTINGS

Model "K" Desk Mount Without Covers

Model "K" is 5 inches in diameter and is used for mounting Models "X", "A" or "KK" microphones on 4 points of suspension, using 8 springs—the ideal way to suspend a microphone. It may be used for the new heavy "BB" but is not recommended for this new larger unit.

The base is set in a moulded rubber ring forming a cushion against vibration and preventing damage to polished surfaces.

The entire unit is beautifully finished in highly polished chrome plate. Provided with a blank call letter nameplate as shown. Cable passes through the hollow base.

Net weight 2½ lbs. Packed weight 3½ lbs. Entire assembly 8¾ in. high. Code word "KIND."

List Price \$5.00

8 Suspension Springs Included

Model "L" Desk Mount Without Covers

Model "L" is 6½ in. in diameter and is used for mounting Models "LL", 387 W, or New Type "BB", or other large, heavy types of microphones. An extremely well-built and highly finished mount following the lines of Universal's general designs. Presents a highly professional appearance in polished chrome plate.

Entire assembly 10½ in. high. Net weight 3 lbs. Packed weight 4½ lbs. Code word "POND."

List Price \$10.00

Including 8 Suspension Springs

Model "K" Desk Mount With Covers

Desirable protection from the curious is secured by the beautifully turned and screened covers of the covered Model "K". The covers are sprung into position, eliminating trick mechanisms which are liable to rattle. Makes a substantial and business-like appearance. Polished chrome plate.

Same stand and frame as on Model "K" without covers. Code word "KINDNESS."

List Price \$9.00

8 Suspension Springs Included

Model "L" Desk Mount With Covers

The same type of covers as described for Model "K" are fitted to the 6½ in. diameter of the Model "L" mounting. Extra room is provided inside the ring and screened covers to allow freedom of movement without danger of jar or shorting of wires. Finished in highly polished chrome plate and equipped with blank call letter nameplate. It is most attractive and business-like in appearance.

Net weight 3½ lbs. Packed weight 4½ lbs. Code word "PONDWATER."

List Price \$16.00

Including 8 Suspension Springs



UNIVERSAL BANQUET STAND

A half height stand for use on tables, at banquets, desks, pulpits, etc., also preferred by some for studio announcer's use.

Adjustable from 18 in. to 28 in. high.

Base 7 in. in diameter. Top ring 6½ in. in diameter. Furnished with 4 eyes for suspension of Universal "A", "BB", "KK", "LL" and any other carbon microphone.

Finished in highly polished chrome plate and equipped with blank call letter nameplate as shown.

Packed in individual cartons.

Net weight 11 lbs. Packed weight 15 lbs.

Code word "BANK."

List Price \$15.00

8 Suspension Springs Included

NOTE: All microphone desk stands, floor stands and banquet stands are now equipped with call letter name plate, as shown. Call letters or other wording can be painted in this space. If desired, paper or metal letters may be cemented in the space provided allowing the user to change lettering as desired. We do not furnish plates lettered or letters.

All stands are mechanically perfect. Not made up of lamp fixture or smoking stand parts; are silent in operation when raised or lowered. Present a highly professional studio appearance. Cord can be run down through the tubes and out at the base.

UNIVERSAL FLOOR STAND

A really good floor stand, of the right size in every way. The top ring is 6½ in. in diameter, the base 12 in. in diameter, and complete weight 18 lbs. Total extended height 5½ ft.

This stand is smooth in operation and is not easily tipped. The clamp lock is positive, yet is operated by the slightest pressure.

Hundreds of these stands are in use in all parts of the world, and all users are enthusiastic about them.

Finished in highly polished chrome plate and equipped with blank call letter nameplate as shown.

At the new List Price of \$20.00, this superior Universal floor stand offers the best buy on the market.

Net weight 19¼ lbs.

Packed weight 30 lbs.

Code word "FLAND."

List Price \$20.00

8 Suspension Springs Included



UNIVERSAL MICROPHONE CORDS



Made up Cables with Connectors for
Carbon Microphones

Code word "CAX"	6 ft.	each	\$2.75
Code word "CAT"	12 ft.	each	\$4.50
Code word "CAP"	25 ft.	each	\$7.50
Code word "CAR"	50 ft.	each	\$12.00
Code word "CAL"	100 ft.	each	\$19.00

For outdoor use, over gravel, pavement, platforms, in water, or where crowds are walking, a rubber covered, shielded cable is an absolute necessity. Fitted with genuine G. E. Bakelite connectors as shown on page 18. Supplied in 3-conductor shielded only, the shield being soldered to the center conductor of the plug and socket.

These assemblies made up complete as shown cannot be duplicated anywhere for the price.

Cable from the Reel—Cut to Desired Length Without Terminals

R. For interior use. 3-conductor microphone cable, each conductor rubber covered and color coded. Outside jacket of braided brown rayon silk. Code word "FEX."
List Price per foot 15c

T. For both indoor and outdoor use. Extremely flexible rubber covered and shielded 3-conductor in which the shield can be separately grounded. Code word "KEX."
List Price per foot 25c

V. For permanent installation. 3-conductor lead shielded with paraffined cotton protection. Can be bent without cracking. A very high class lead-covered cable. Code word "LEX."
List Price per foot 12c

X. For condenser microphones. Shielded rubber covered, with rubber between the metal shield and conductors. Cannot puncture. The most trouble free cable on the market. X4 Conductor, Price, per ft., 40c. Code word "DEX." X6 Conductor, Price, per ft., 50c. Code word "HEX."

3-Conductor Silk Covered— NOT SHIELDED—with Terminals

Equipped with small eye terminals at one end and large spade terminals on the other end. Covered with rayon silk braid. Individually braided.

Available in 6, 12 and 25 ft. lengths. 3-conductor color coded. Each cord braided individually with pigtail at each end for anchoring.

Code word "WORTH"	List Price	6 ft.	\$1.50
Code word "WICK"	List Price	12 ft.	2.40
Code word "WOLF"	List Price	25 ft.	5.00

3-Conductor Black Braid Covered— SHIELDED—with Terminals

The following cables offer the advantages of shielding, but are not considered as waterproof cable. They are very widely used because of the extremely low price and the quality.

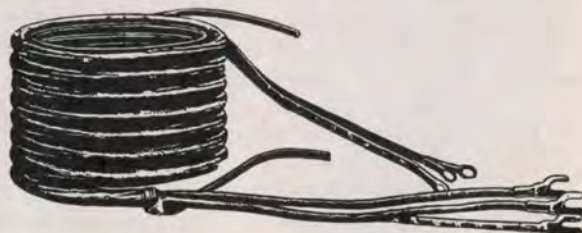
Available in 6, 12, 25, 50 and 100 ft. lengths. 3-conductor color coded. Eye terminals at one end and large spade terminals at other end.

Code word "WORTHX"	List Price	6 ft.	\$1.50
Code word "WICKEX"	List Price	12 ft.	3.00
Code word "WOLFEX"	List Price	25 ft.	6.00
Code word "WORMEX"	List Price	50 ft.	10.00
Code word "WINTEX"	List Price	100 ft.	18.00

3-Conductor Rubber Covered— SHIELDED—with Terminals

Made up rubber covered 3-conductor shielded cable with terminals, for outside public address use. Waterproof and wearproof. Metal braided shield over conductors and an outside jacket of rubber. Gives maximum flexibility. Shield cannot short conductors.

Code word "WORTHED,"	6 ft.	\$2.40
Code word "WICKED,"	12 ft.	3.60
Code word "WOLFED,"	25 ft.	7.00
Code word "WORMED,"	50 ft.	12.00
Code word "WINTED,"	100 ft.	24.00



UNIVERSAL CABLE PLUGS and CONNECTORS

The Universal Cable plugs and connectors shown on this page are the most reliable and ruggedly built connectors on the market. For use with condenser microphones, especially in motion picture and recording work.

The pins each have 8 points of spring contact, and are absolutely positive and noiseless in use. The cable opening is made water and dust tight by means of a rubber gasket. The terminals are all cross drilled for easy soldering. Made in aluminum or bronze for portable or studio use.



No. 50
Code word "CON"
List Price \$8.00



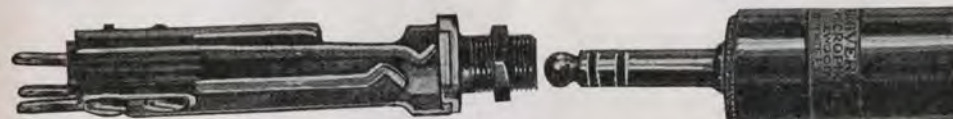
No. 51
Code word "COP"
List Price \$7.00



No. 52
Code word "COB"
List Price \$7.00



No. 53
Code word "COG"
List Price \$7.00

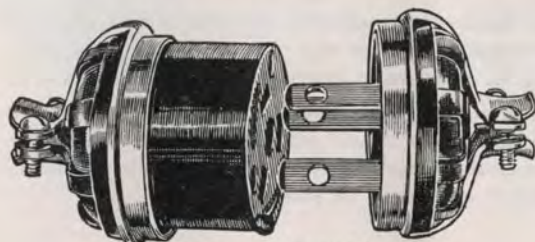


Telephone Type Plug and Jack

A special design of 3-conductor plug and jack for microphone use. Standard size. High insulation factor. Connection made by solder joint insuring positive connection. Plug size—length overall, 2 7/8 in. Diameter, 3/4 in. Tip—length, 1 3/16 in. Diameter 1/4 in. Jack fits 7/16 in. mounting hole and any panel up to 3/8 in. thick. Overall length 3 1/2 in.

	Code Word	List Price
JACK—"JACK"		\$.75
PLUG—"PLUX"		1.50

UNIVERSAL GENUINE BAKELITE CABLE CONNECTORS



Code word "POCK"
Sockets, each \$1.00

Code word "PLUG"
Plugs, each 75c

Three prong cable connectors insuring perfect contacts, and 100 per cent insulation. The steel armor protects the plug and extends over making the cable clamp as shown. No better plug on the market for carbon microphones. The prong arrangement permits assembly in one position only. 1½ in. in diameter.

Universal Potentiometer and Switch



In microphone circuits a potentiometer is generally used. The one here illustrated is a Junior model listing at a very low price and is furnished with knob. The switch cuts current from and applies current to microphone buttons at the lowest possible milliamps. This is a safety feature and prevents burning of buttons and damage to microphone, aside from noise of sudden current surge.

The three higher ohm models are used for volume control across the secondary of transformers.

List Prices, Potentiometer & Switch Combined

Code word "PITCH"	400 ohm.....	\$1.30
Code word "PITCHEL"	1000 ohm.....	1.50
Code word "PITCHER"	25,000 ohm.....	2.00
Code word "PITCHET"	250,000 ohm.....	2.40
Code word "PITCHEX"	500,000 ohm.....	2.40

No. 15 Tube Adapter

A series cathode adapter which, when placed under the detector tube in a radio set, provides an easy and permanent connection for any single-button microphone. It is also used for connecting phonograph pick-up to radio.



Code word "ADAPTEX."

List Price \$1.25

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.

Code word "GRAN."

List, per Vial, \$1.00

Suspension Rings

For suspension of microphones in rings, desk mounts, floor stands, etc. A much needed small part handy to have and sometimes hard to obtain. Special heads with one long loop, beautifully finished of highest grade spring steel allowing maximum flexibility without stretch. Eight are generally used per set.

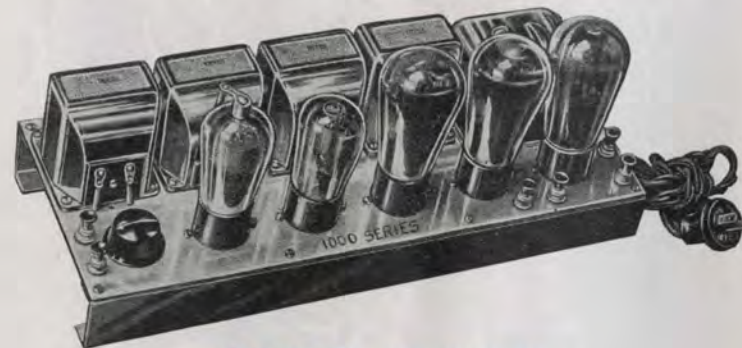
Rust proofed and polished chrome plated.

Code word "SIS."

List Price, each, 10c

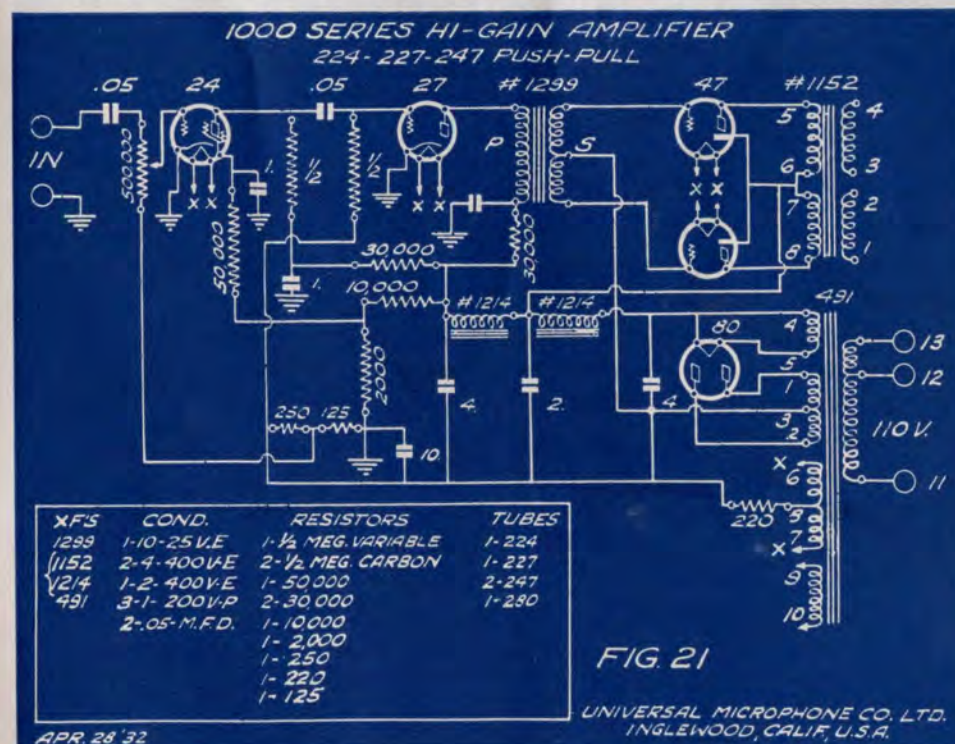
TRANSFORMER DIVISION

UNIVERSAL MICROPHONE CO., LTD.



1000 SERIES

High-Gain Amplifier Constructed Entirely of
Transformers Manufactured by Universal Microphone Co., Ltd.



1000 Series High-Gain Amplifier, 7.5 Watts Output

1000 SERIES HI-GAIN AMPLIFIER 224-227-245-PUSH-PULL

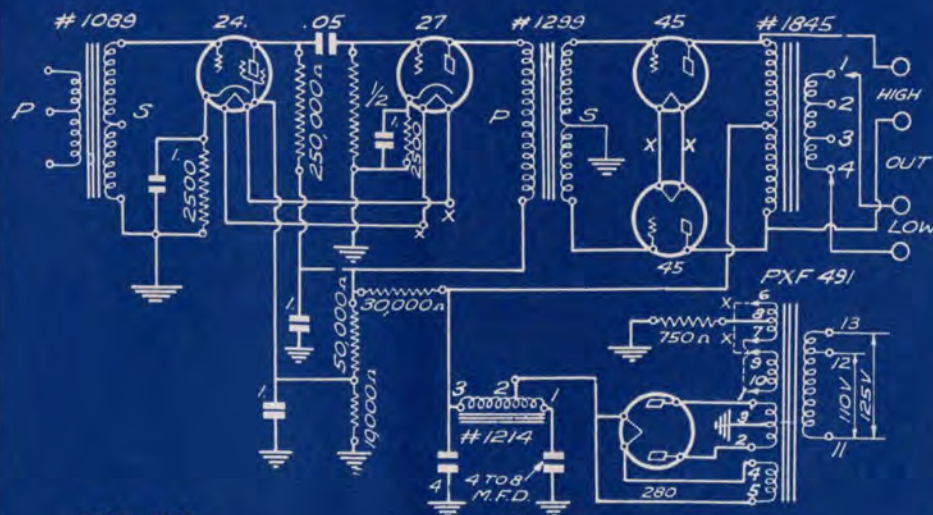


FIG. 22

UNIVERSAL MICROPHONE CO. LTD.
INGLEWOOD, CALIF., U.S.A.

1000 Series High-Gain Amplifier, 4.8 Watts Output

The following is a list of transformer models developed in the laboratories of the Universal Microphone Company. They represent the latest advance in engineering science and skilled workmanship in this particular line.

All types and kinds of transformers are represented, covering the entire field from small, low-priced replacement transformers to the larger, more expensive power transformers used in radio transmitters.

Only the highest grade of core material is used throughout, regardless of size of transformer, and ample copper and insulation has been used to provide a safety factor far above any competitive line.

The more popular types are represented in three sizes: First, the small core size used where minimum space and low price are the greatest factors. Measures 2 in. by 2 3/8 in. and requires a mounting space of 2 3/4 in. by 1 1/2 in. and has an average weight of 1 lb. This type is uncased. Supplied with terminal mounting strip or with pig-tail connections, as desired.

The next size or medium core size is a considerably higher grade transformer throughout and is known as the 1000 series. Its overall height is 3 in. and it requires a mounting space of 2 1/2 in. by 2 5/8 in. The average weight of this model is 2 lbs.



1000 SERIES TRANSFORMERS

In Chrome Plated Case

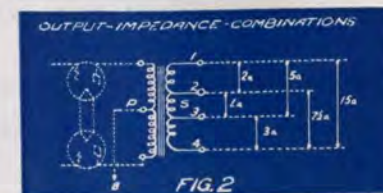
The following group of transformers is designated as the 1000 series and represents an all around higher value than any competitive line. Height 3 in. Requires mounting space 2 1/2 in. by 2 5/8 in. Weight 2 1/4 lbs. All furnished with screw and lug type terminals mounted on bakelite panel.

No. 1299—Push-Pull Input Transformer

Chrome plated case. Ideal for coupling the output of a 227 tube into the grid of amplifying tubes which may be connected either single or push-pull. Primary impedance 8,000 ohms. Secondary impedance 100,000 ohms, center tapped. Mounted in highly polished chrome case, all terminals plainly marked. Used in 1,000 series amplifier, as shown in Fig. 21 and Fig. 22. No. 1299, List Price \$8.00.

No. 1845—Output Transformer

In chrome plated case. Primary for push-pull 245 tubes. Secondary tapped for 1, 2, 3, 5, 7 1/2 and 15 ohms output which will match all present day dynamic speaker voice coils. Impedance combinations same as No. 2785 as shown in Fig. 2. No. 1845, List Price \$8.00.

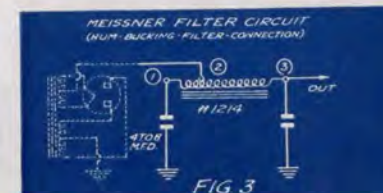


No. 1847—Output Transformer

In chrome plated case. Same as above but the primary wound for push-pull 247 pentode tubes. Impedance combinations, see Fig. 2. No. 1847, List Price \$8.00.

No. 1214—Choke Coil

In chrome plated case. Especially designed choke tapped for the Meissner filter circuit. Conservatively rated at 20 henries, 100 M. A., 350 ohms D. C. resistance. See Fig. 3. Used in the 1,000 series amplifier as shown in Fig. 22. No. 1214, List Price \$4.80.



No. 1243—Choke Coil

In chrome plated case. High impedance choke for impedance coupled units to be used either singly or in push-pull, center tapped, 3,000 henries with up to 3 M. A. in windings. No. 1243, List Price \$8.00.

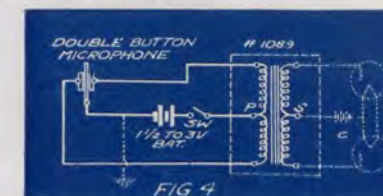
No. 1789—Interstage Push-Pull

In chrome plated case. Especially designed for 227 push-pull to grids of following tubes. Center tapped primary and secondary. Primary 16,000 ohms, secondary 100,000 ohms. No. 1789, List Price \$8.00.

No. 1089—Two-Button Microphone Transformer

In chrome plated case. A two-button microphone input transformer having an exceptionally flat frequency characteristic ranging from well below 40 cycles to over 10,000 cycles. Has center tapped primary, 200 ohms to each side and the secondary impedance is of the order of 100,000 ohms. Secondary matches impedance

(Concluded on next page)



of all standard types of amplifier tubes and is center tapped which allows its use on either straight or push-pull amplifiers. Primary matches all standard types of two-button carbon microphones. Net weight 2¼ lbs. Packed weight 3 lbs. Size 2¾ in. by 3¼ in. by 3½ in. See Fig. 4. No. 1089, List Price \$10.00.

No. 1152—Microphone Coupling or Line Matching Transformer

In chrome plated case. A special matching transformer, having two individual low impedance windings; and two individual high impedance windings, each coil being brought out to separate terminals; allowing its use in various special combinations such as microphone input to standard built-up amplifiers with 2,000 to 20,000 ohms input; as tube-to-line, line-to-amplifier, etc. For use with 200 ohm line or load, the low impedance side is connected in parallel; while for 500 to 600 ohms, coils are used in series. For microphone use, strap is used as center tap or third connection. On the high impedance side coils may be used singly, in series or parallel. Makes an excellent push-pull output transformer for amplifiers feeding a line, or to a 200 to 500 ohm pick-up as used in recording. For impedance combinations, see Fig. 7. Use as an output transformer illustrated in Fig. 21. Size 2¾ in. by 3¼ in. by 3½ in. No. 1152, List Price \$10.00.

No. 1310—Coupling Transformer

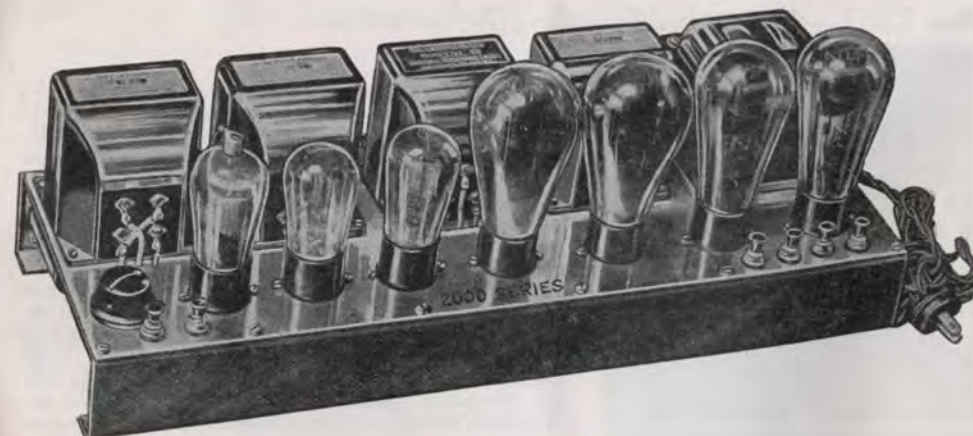
In chrome plated case. A high quality one-to-one matching transformer for microphone-to-mixer, mixer-to-line, line-to-line, etc. Both sides of this transformer are center tapped, 200 ohms on each side, total 400 ohms. Extremely low D. C. resistance on both windings. Height 2⅞ in. and requires a mounting space of 2½ in. by 2⅝ in. Weight 2 lbs. 2 ozs. See diagram No. 47 on back cover. No. 1310, List Price \$10.00.

2000 SERIES TRANSFORMERS



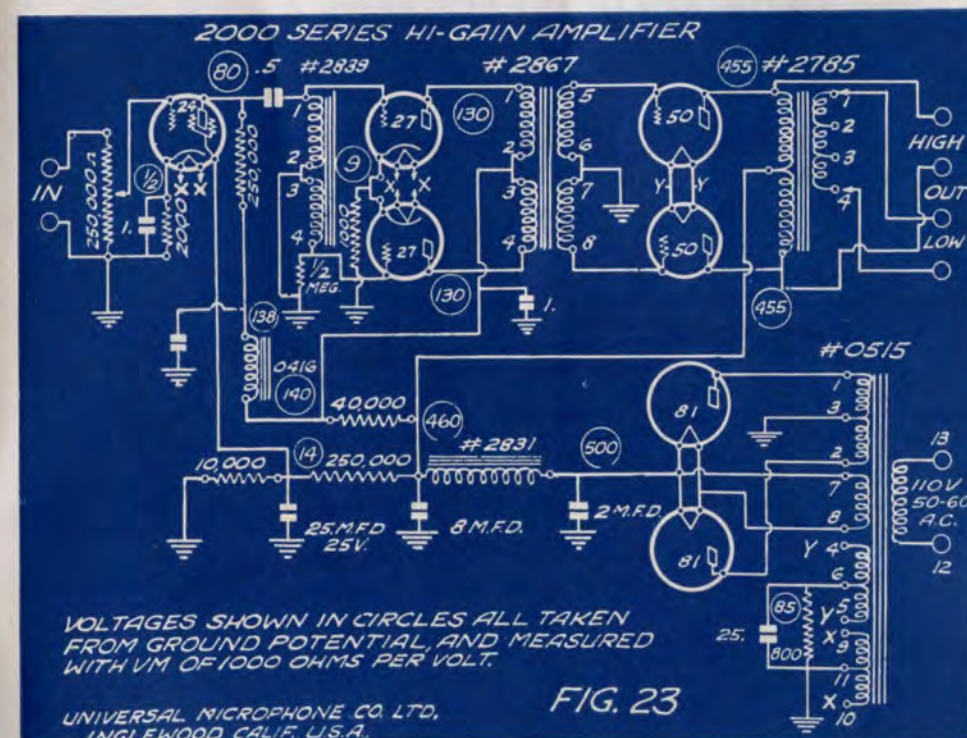
These transformers represent the best that electrical science and engineering skill can produce and insure uniformly flat frequency characteristics throughout the entire audible spectrum.

This is the large or de luxe size, designated as the 2000 series. Is 3⅝ in. high and requires a mounting space of 3⅜ in. by 3¼ in. The average weight is 3 lbs. 10 ozs. All cased types are furnished with combination screw and lug terminals, permitting either wire end or spade to be applied with a screw driver, or soldered directly to lug as desired.



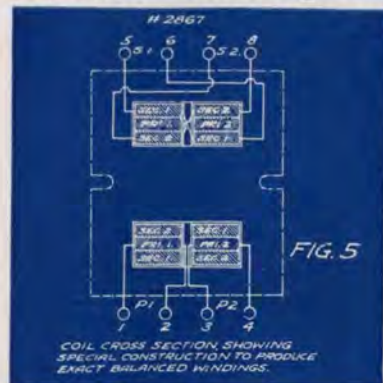
2000 SERIES

High-Gain Amplifier Constructed Entirely of Transformers Manufactured by Universal Microphone Co., Ltd.



2000 Series High-Gain Amplifier, 15 Watts Output

No. 2867—Interstage Coupling Transformer



In chrome plated case. This transformer has two individual primaries and four secondaries. One primary and two secondary coils being wound on individual coils and so connected inside of the case that the exact electrical center and electrostatic balance is maintained throughout any connection, as shown in Fig. 5. Four terminals are brought out on the secondary representing two coils each of 100,000 ohms impedance. Primary, four taps representing two coils of 8,000 ohms impedance can be connected either as a single unit, push-pull input, push-pull inter stage or inter stage coupling transformer. Combination screw and lug type terminals, mounted on bakelite panel. Height 3 3/4 in. Mounting space required 3 1/4 in. by 3 1/2 in. Weight 4 lbs. For terminal combinations see Fig. 6.

No. 2867, List Price \$18.00.

No. 2888—Interstage Coupling Transformer

In chrome plated case. A heavy duty transformer especially designed for coupling two 245 tubes in push-pull to the input of two 250 tubes or 845 or larger tubes, or to four such tubes in push-pull parallel. Primary, center tapped, 4,000 ohms impedance on each side. Secondary 100,000 ohms, center tapped. All terminals plainly marked. Highest insulation throughout insuring maximum safety factor. No. 2888, List Price \$15.00.

No. 2866—Microphone and Phonograph Input Coupling Transformer

In chrome plated case. A specially constructed input transformer for public address and power amplifier work. Has two primaries, one for standard broadcast type microphone and one for high impedance phonograph pick-up. Secondary is center tapped, 100,000 ohms to feed either single or push-pull stage. Primary No. 1 has a total of 400 ohms impedance, 200 ohms each side of center tapped for use with either single or double-button microphones. Primary No. 2, 16,000 ohms impedance to match the average high impedance phonograph pick-up. All terminals plainly marked. Also suitably adapted for use as an inter-stage transformer by using the high impedance pick-up winding as a plate primary of the preceding tube. Insistent demand for a higher grade article than any of those now available has caused us to produce this particular item. For connections, see Fig. 8. No. 2866, List Price \$15.00.

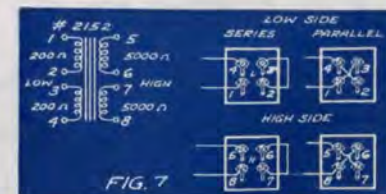


No. 2785—Output Transformer

In chrome plated case. A high capacity output transformer, primary especially designed for two 250 or two 845 tubes in push-pull. Secondary tapped for combinations of 1, 2, 3, 5, 7 1/2 and 15 ohms output. All terminals numbered. Especially designed and suited for coupling high output amplifiers to low impedance speakers or recorder cutting head. Impedance combinations shown in Fig. 2. Used in 2,000 series amplifier as shown in Fig. 23. No. 2785, List Price \$15.00.

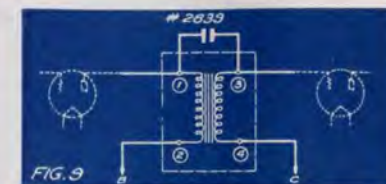
No. 2152—Impedance Matching Transformer

In chrome plated case. A special impedance matching transformer with four windings which may be used in series or parallel. Windings are 5,000 ohms, 5,000 ohms (Terminals 5-6 and 7-8), 200 ohms, 200 ohms (Terminals 1-2 and 3-4). All windings are of sufficient current carrying capacity to stand the full output of all tubes up to and including 250's in push-pull. Mounted in large size case with individual terminals for each coil. Ideal for tube-to-line where it is necessary to handle considerable amounts of power without distortion; or for feeding a 100 to 500 ohm cutting head from a power amplifier in recording work. List Price \$15.00.



No. 2839—Audio Choke Coil

In chrome plated case. A high quality choke coil with a total inductance of 5,000 henries suitable for coupling two 224 tubes to the input of power tubes. May also be used as both plate and grid choke in straight amplification. Windings are in exact inductive and static balance. Four terminals are provided so that coils may be connected individually, in series or in parallel. No. 2839, List Price \$18.00.



No. 2831—Choke Coil

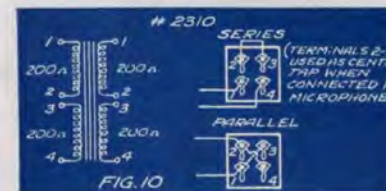
In chrome plated case. Conservatively rated at 30 henries with a current carrying capacity of 150 M. A. Two terminals with D. C. resistance of less than 400 ohms. Extremely high insulation factor. Used in 2,000 series amplifier as shown in Fig. 23. No. 2831, List Price \$8.00.

No. 2889—Tube-to-Line Output Transformer

In chrome plated case. A high-carrying capacity transformer to couple two 250 tubes in push-pull to a 200 or 500 ohm line. Primary exactly center tapped. Four terminals on secondary, representing two complete coils, of 200 ohms impedance each, which may be used singly, in series, or in parallel. See Fig. 7 for low side connections. Especially suitable for recording cutting head. No. 2889, List Price \$15.00.

No. 2310—Mixing Transformer

In chrome plated case. A high quality mixing transformer with a ratio of 1 to 1. To couple a microphone to line; or used as a mixing transformer; line-to-line, etc. Four terminals on each side, each pair representing a coil of 200 ohms impedance with extremely low D. C. resistance; which may be used individually, in parallel or in series. Especially designed for high carrying capacity with flat frequency characteristics. (Fig. 10.) No. 2310, List Price \$15.00.



No. 2089—High-Quality High-Capacity Input Transformer

In chromium plated case. A large size transformer of highest quality. Primary, four terminals, each pair representing a coil of 200 ohms impedance, which may be used individually, in series or in parallel. Secondary, 125,000 ohms, split into two separate windings, this permitting the employment of de-coupling resistors in high quality amplifiers. Especially designed for broadcast type carbon microphones or for coupling output of condenser microphones where quality of transmission is the greatest factor. Also suitable for use in coupling line output to grids of high-capacity amplifiers where considerable amounts of energy are involved. Combination screw and lug type terminals mounted on bakelite panel. Height 3 3/4 in. Mounting space required 3 1/4 in. by 3 1/2 in. Weight 3 1/2 lbs. (Fig. 20.) No. 2089, List Price \$15.



POWER TRANSFORMERS

For Radio and High-Powered Public Address Systems

No. 0779—Heavy-Duty Power Transformer

In chromium plated case. Static shielded. A large size heavy duty unit especially built for sets or amplifier employing 281 rectifiers and two 250 tubes in push-pull as output. Core size 4-5/16 in. by 5-3/16 in. Height 6 in. Mounting space required 4 1/2 in. by 4 1/2 in. Weight 11 lbs. Bakelite panels. All terminals combination screw and solder type and plainly marked.

Primary: 115 volts, 155 watts, 50-60 cycles.

Sec. No. 1: 1300 volts, 150 M. A. (650 volts each side of center tap.)

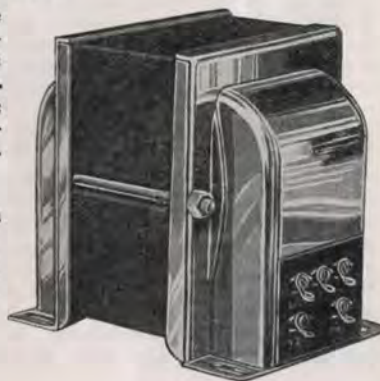
Sec. No. 2: 7 1/2 volts, 2 1/2 amperes, center tapped.

Sec. No. 3: 7 1/2 volts, 2 1/2 amperes, center tapped.

Sec. No. 4: 2 1/2 volts, 10 1/2 amperes.

Sec. No. 5: 1 1/2 volts, 4 1/2 amperes.

No. 0779, List Price \$18.00



No. 0780—Hi-Voltage Power Transformer

In chromium plated case. Static shielded. 3,000 volts, 200 M. A. power transformer. Beautifully encased with screw and lug type terminals on bakelite panels. Height 6 in. Mounting space 4 1/2 in. by 6 in. Weight 18 1/2 lbs. Highest insulation factors throughout. Primary 115 volts, 300 watts, 50-60 cycle. Secondary, 1500-1000-0-1000-1500 volts, 200 M. A. Especially adaptable for radio transmitters or high power amplifier installations. Recommended for all installations where 50 watt tubes are used with No. 866 rectifiers. All terminals plainly marked. No. 0780, List Price \$22.50.

No. 0905—High-Capacity Choke

In chrome plated case. A highly efficient choke for high power transmitting equipment. This unit has a rating of 20 henries at 500 M. A. and is of the leakage gap type, furnished in bracket mounting. Height 6 in. Mounting space required 4 1/2 in. by 6 in. Weight 19 lbs. No. 0905, List Price \$17.50.

Replacement Transformers

No. 0515—Power Transformer—Static Shielded

This transformer is ideally suited for high-gain power amplifiers employing two 250 tubes in push-pull in the last stage. It has four secondaries which provide necessary filament and plate voltage for all tubes. Used as power supply in the 2,000 series amplifier, Fig. 23.

Primary: 115 volts, 50-60 cycles.

Sec. No. 1: 1200 volts, 150 M. A. (600 volts each side of center tap.)

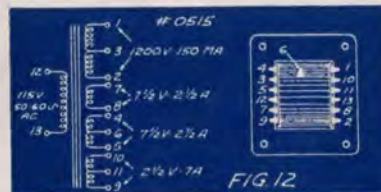
Sec. No. 2: 7 1/2 volts at 2 1/2 amperes, center tapped.

Sec. No. 3: 7 1/2 volts at 2 1/2 amperes.

Sec. No. 4: 2 1/2 volts at 7 amperes for either 224's or 227's.

This transformer is furnished for chassis mounting, lug terminals extending from bottom. Top case highly cadmium plated. A superior job for power amplifiers. Especially recommended for two 281's, two 250's, two 227's, and one or more 224's. Core size 3 1/2 in. by 4 in. Core stack 2 1/2 in. Height mounted 3 3/4 in. Mounting space 4 1/4 in. by 3 3/4 in. When mounted for sub-panel wiring, requires hole 2 1/2 in. by 3 in. through which solder terminals extend for wiring. (Fig. 12.)

No. 0515, List Price \$12.50



No. 0491—Power Transformer

Static shielded. Ideally suited for high-gain power amplifiers where 247 or 245 tubes are used in push-pull. Also especially suitable for 8-tube set replacement. Used in the 1,000 series amplifiers as shown in Fig. 21 and Fig. 22.

Primary: 110-125 volts, 50 to 60 cycles.

Sec. No. 1: 750 volts, 80 M. A. (375 volts each side of center tap.)

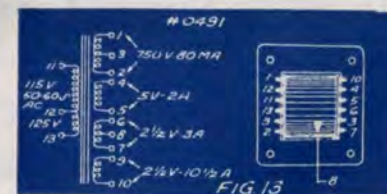
Sec. No. 2: 5 volts, 2 amperes.

Sec. No. 3: 2 1/2 volts, 3 amperes center tapped.

Sec. No. 4: 2 1/2 volts, 10 1/2 amperes.

Furnished with cadmium plated case one side, and lug terminals on other. May also be used for chassis mounting. Core size and mounting space 4 in. by 3 1/2 in. Requires panel hole 2 1/2 in. by 3 in. for extended terminals when using sub-panel wiring. Weight 5 1/2 lbs. (Fig. 13.)

No. 0491, List Price \$6.00



No. 0454—Standard Manufacturer's Replacement Power Transformer

A 12-tube replacement transformer.

Primary: 115 to 125 volts, 50 to 60 cycles.

Sec. No. 1: 750 volts, 100 M. A. (375 each side of center tap.)

Sec. No. 2: 5 volts, 2 amperes.

Sec. No. 3: 2 1/2 volts, 3 amperes center tapped.

Sec. No. 4: 2 1/2 volts, 16 amperes.

Cadmium case one side, terminals on other side. Mounting space, 4 1/8 in. by 3 3/8 in. Height above panel 2 7/8 in. Weight 6 1/2 lbs. (Fig. 14.)

No. 0454, List Price \$7.00



No. 0805—Power Transformer

A 5-tube replacement transformer. Cadmium case one side, terminals on other.

Primary: 115 volts, 50-60 cycles.

Sec. No. 1: 750 volts, 50 M. A. (375 each side of center tap.)

Sec. No. 2: 5 volt, 2 amperes for 280 tube.

Sec. No. 3: 2 1/2 volts at 7 amperes, center tapped, for four heater tubes.

Height mounted 2 1/4 in. Mounting space 3 3/4 in. by 3 1/4 in. When mounted for sub-panel wiring, requires panel hole 2 1/2 in. by 2 5/8 in. through which solder terminals extend for wiring. Weight 3 3/4 lbs. (Fig. 15.)

No. 0805, List Price \$5.00



No. 0972—Power Transformer

A special manufacturer's type replacement transformer for sets of the older type using 171's in push-pull output, such as Kolster, Victor, etc.

Primary: 115 volts, 50-60 cycles.

Sec. No. 1: 500 volts, 60 M. A. (250 volts each side center tap.)

Sec. No. 2: 5 volts, 2 amperes for 280 tube.

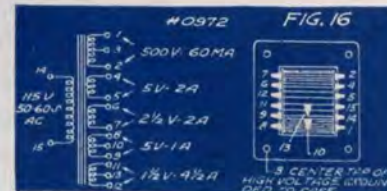
Sec. No. 3: 2 1/2 volts, 2 amperes for 227 tubes.

Sec. No. 4: 5 volts, 1 ampere, center tapped, for 171 tubes.

Sec. No. 5: 1 1/2 volts at 4 1/2 amperes, center tapped, for 226 type tube.

Horizontal mounting with cadmium plated case and terminal lugs so that connections can be made from underneath chassis. (Fig. 16.)

No. 0972, List Price \$5.50



No. 0804—Manufacturer's Power Transformer

Uncased replacement type. Static shielded. Standard manufacturer's type of power transformer for four tube midset set or small amplifier.

Primary: 115 volts, 50-60 cycles.

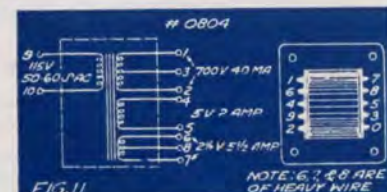
Sec. No. 1: 700 volts, 40 M. A. (350 each side of center tap.)

Sec. No. 2: 5 volts, 2 amperes for 280 tube.

Sec. No. 3: 2 1/2 volts, 5 1/2 amperes, center tapped, for 224 and 227 tubes.

Cadmium plated case on one side. Other side for under chassis lug connections. Core size 3 1/2 in. by 3 3/4 in. by 1 1/16 in. Weight 3 1/4 lbs. Side mounting requires hole same as No. 0805. (Fig. 11.)

No. 0804, List Price \$4.00



No. 0832—Filament Transformer

A filament transformer for three type 227 or other heater type tubes. Much used in amateur short wave work.

Primary: 115 volts, 50-60 cycles.

Secondary: 2.5 volts, 5½ amperes, center tapped.

Height 2¼ in. Requires mounting space 2 in. by 3¾ in. Weight 1½ lbs. (Fig. 18.)

No. 0832, List Price \$3.50



No. 0795—Filament Transformer

A filament transformer for 210-250-281 tubes. Has two filament windings, insulated for 2500 volts.

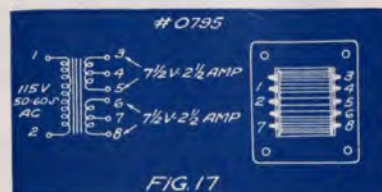
Primary: 115 volts, 50-60 cycles.

Sec. No. 1: 7½ volts at 2½ amperes, center tapped.

Sec. No. 2: 7½ volts at 2½ amperes, center tapped.

Height 3¾ in. Mounting space required 2¾ in. by 3¾ in. Weight 2½ lbs. (Fig. 17.)

No. 0795, List Price \$4.50



No. 0903—Power Filament Transformer

A high quality filament transformer for 204A or similar tubes. Insulated for 5000 volts. Primary, 115 volts, 50-60 cycles. Secondary, 11 volts, 8 amperes center tapped. See Fig. 19 for terminals. Skeleton type mounting. Height 4¾ in. Mounting space required 3¼ in. by 3½ in. Weight 6 lbs.

No. 0903, List Price \$8.00

No. 0796—Filament Transformer

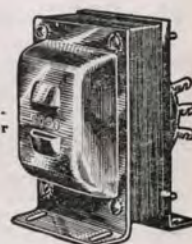
A filament transformer to handle up to eight 2½ volt tubes. This is a universal transformer being insulated to stand 7500 volts so that it may be used as a filament supply for 866 tubes. See Fig. 19 for terminals.

Primary: 115 volts, 50-60 cycles.

Secondary: 2.5 volts, 14 amperes, center tapped.

Height 3¾ in. Mounting space required 2½ in. by 3¾ in. Weight 2½ lbs.

No. 0796, List Price \$4.50



This illustration representative of Models: 0795, 0902, 0903, 0796, 0821.

No. 0821—High-Capacity Choke Coil

A 30 henry, 250 M. A. choke for all medium power amplifiers or transmitters. Skeleton frame mounting. Height 4¾ in. Mounting space required 3 in. by 3½ in. Weight 5½ lbs. Leakage core type.

No. 0821, List Price \$7.50

No. 0902—Filament Transformer

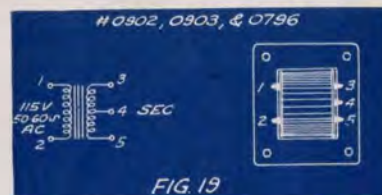
A filament transformer to supply current for standard 50-watt tubes.

Primary: 115 volts, 50-60 cycles.

Secondary: 10 volts, 7 amperes, center tapped.

Skeleton frame with bracket mounting. Height 4½ in. Mounting space 2¾ in. by 3½ in. Weight 4½ lbs. See Fig. 19 for terminals.

No. 0902, List Price \$6.00



No. 0587—Filament Transformer

Uncased. A very compact filament transformer for two standard 2½ volt heater tubes. Strap mounting.

Primary: 115 volts, 50-60 cycles.

Secondary: 2½ volts, 3½ amperes.

Height 1¾ in. Requires mounting space 3 in. by 1½ in. Weight 1 lb.

No. 0587, List Price \$2.50

No. 0075—Single-Button Microphone Transformer

Uncased. A single-button microphone transformer, 200 ohms impedance on the primary side and 100,000 ohms on the secondary. Especially designed where small size and low cost are the main requirements. Designed for use with Universal Baby Mikes, Single-Button Handi-Mikes, "QRQ", Models "A", "W" or "Y", or any single-button microphone. No. 0075 is carefully built of the best materials. 2 in. high. Mounting space required 2 in. by 1¾ in. Weight 1 lb. 2 ozs. (Fig. 1.)

No. 0075, List Price \$3.00

No. 0089—Two-Button Microphone Coupling Transformer

Uncased. A small size light weight coupling transformer for use with Double-Button Microphones. Primary 200 ohms each side of center tap. Secondary 100,000 ohms, center tapped. Strap mounting. Height 2 in. Requires mounting space of 2 in. by 1¾ in. Weight 13 ozs. Especially designed for use where size and weight are the most important factors.

No. 0089, List Price \$4.00

No. 0983—Impedance Matching Transformer

Uncased. A very compact coupling transformer with a 200 ohm winding on one side and a 4500 ohm winding on the other; used for matching a single-button microphone to an amplifier of from 4000 to 5000 ohms input impedance. Height 1¾ in. Requires mounting space 3½ in. by 1½ in. Weight 1 lb.

No. 0983, List Price \$3.00

No. 0115—Audio Transformer

Not cased. A manufacturer's type, single audio, ratio 3-1. Not cased but provided with a strap for mounting. Required mounting space 2¾ in. by 1½ in. Height 2 in. Weight 1 lb.

No. 0115, List Price \$3.10



This illustration representative of Models 0175, 0146, 0587, 0115, 0983, 0089, 0075, 0433, 0422.

No. 0175—Audio Transformer

Not cased. Manufacturer's type input push-pull transformer, 2 to 1 ratio, on each side of center tap; 4 to 1 overall. Same dimensions and weight as No. 0115.

No. 0175, List Price \$3.20

No. 0433—Output Transformer

Not cased. A small skeleton type output transformer to match one 247 type pentode tube to most small dynamic speakers on the market. Primary 7,500 ohms. Secondary 3 ohms. Height 2 in. Mounting space required, 1¾ in. by 3 in. Weight 1 lb.

No. 0433, List Price \$2.50

No. 0422—Output Transformer

Not cased. Same as transformer No. 0433 but for push-pull 247 pentode tube. 15,000 ohms center tapped primary; 3 ohms secondary.

No. 0422, List Price \$2.75

No. 0146—Choke Coil

Not cased. Small manufacturer's skeleton type choke. Conservatively rated at 30 henries, 45 M. A. 700 ohms D. C. resistance. Used in 2000 series amplifier, Fig. 23.

No. 0146, List Price \$2.50

Supplement to Universal Microphone Co's. 1933 Catalogue

SEE PAGE 14



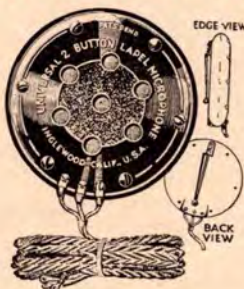
This is the new "L" Desk Mount. Furnished with 2 lengths of tubing, one of which can be used to make up a low mount (shown in background of illustration herewith) and the other a 6 inch piece to make a high mount as shown in foreground.

All parts are Chrome plated and come packed for instant assembly upon receipt.

Here is in reality two stands in one. Choose the length you desire then assemble or change from one to the other as often as you please.

Use same code word. Price is the same as shown in Catalog.

New Universal 2 button High Quality Lapel Mike



Thin, compact, light in weight, with minimum hiss, a laboratory designed, built and tested unit for Broadcast quality of reproduction. Not just a small or thin model, but a full fledged 2 button, natural toned precision instrument. The cord terminals are held securely by screws to metal anchors in the polished Bakelite housing. The cord can be easily and quickly removed or replaced.

List Price \$25.00

Weight 2 oz. Dia. 2 1/4" Thickness 3/8"
Code Word "LAMIK"

HERE IS A BRAND NEW ITEM



A 3 piece telescoping, fully polish nickel plated combination Banquet and floor stand, that can be folded into small space.

Is light in weight and clean and workmanlike in appearance.

Including 8 suspension springs the list price is only \$10.00.

Code Word "MAFAD"

Packed in individual cartons, weight 7 1/2 lbs.

(Not made up of lamp or fixture parts. No iron pipe or cast iron smoking stand parts used).

A NEW PROTECTED DIAPHRAGM TYPE OF BB UNIVERSAL MICROPHONE



One year ago when our new improved BB was placed on the market it was proclaimed the world's greatest microphone value. Today with its detachable front bar the same as used on our model LL, which lists at \$75.00 and our protected diaphragm bar grating front, eliminating damage while in use or from the curious who want to see how much the diaphragm moves and may ruin a microphone in their attempt. Model BB out-distances all competition. Still with these added advantages the same list price is maintained. \$25.00

REFER TO PAGE 8



Herewith is illustrated the very latest X-2 button microphone. An acoustically perfect grating now protects the diaphragm. A front bar securely fastened at each end maintains the center button in perfect alignment at all times. With these improvements plus the added value of more pleasing design and finish by Chrome plating Model X embodies still greater value, but the list price remains the same as heretofore \$10.00.

NEW X—DESK MOUNT



As shown in highly polished nickel plate with ebony rubber base cover and 8 suspension springs. This extremely popular low priced mount is intended especially for mounting of Universal X Unit but may be used with any medium or small diameter microphone.

The lowest priced genuine microphone stand on the market. Not a cast iron pipe fixture assembly with a spray finish such as is often times urged upon you.

List Price \$3.50

Code Word "MOX"

NEW X INPUT STAGE—\$9.00

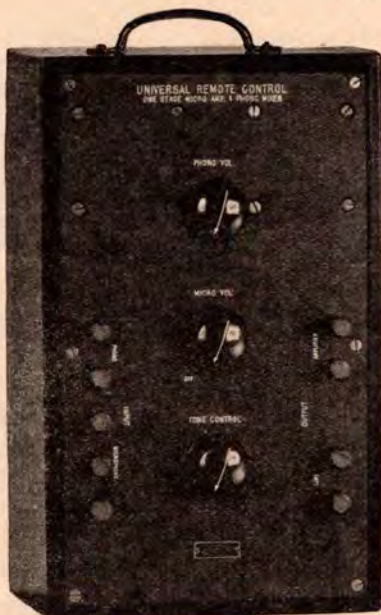


For all 2 button microphones especially for use for voice transmission.

Operates like our regular Senior Input Stage shown on Page 12—except smaller in size and lighter in weight. Specially built transformer and volume control.

Code Word "SAX"

UNIVERSAL REMOTE CONTROL PANEL



One Stage Microphone Amplifier, Phonograph Mixer and Tone Control
Also Used as Line-to-Line Amplifier, Allowing Use of Monitor
Headphones; or as Line-to-Amplifier, with Phonograph Pickup

Consists of a single stage amplifier to bring the output level of a microphone up to approximately that of phonograph pick up. Both A and B batteries are contained in the box.

Allows phonograph volume control, microphone volume control; also contains battery switch and a tone control. It has two output combinations—a low and high impedance; one designed to feed into an amplifier and the other to feed into a line of the order of 400 ohms.

The tone control allows adjustment to a particular room or hall wherein it may be used in connection with loud speakers where possibly the acoustic conditions are not favorable. It permits the use of a speaker system under conditions which without the tone control would be impossible. It also allows the operator to control the tone of output so that when a person having a high pitched voice speaks, the voice may be rounded out, or vice-versa—if the voice is very deep it may be sharpened slightly. The advantage of this tone control will be very evident to anyone who has encountered difficulty in making a public address installation.

The volume controls on the phonograph and the microphone permit a very low musical background when desired and a fading in and out of phonograph and voices while the program is going on.

The tube used is a 230 drawing 60 mils on the filament and two mils on the plate. This makes a self contained battery amplifier of very low current consumption.

The size of the black enameled box is approximately 7x13x7 and the weight is approximately twenty (20) pounds.

List Price, as shown, \$60.00, without Batteries or Tube

Code Word—"REMOTE"

Universal Condenser Microphones

FULL RECORDING HIGH FIDELITY TYPE



The models herewith illustrated are the result of exhaustive experiments to produce a microphone for film and disc recording, in which field 90% of the production of this model is used. Universal Condenser Microphones are in use in nearly all parts of the civilized world in film recording and in broadcast studios. The transmitter head used in both models is turned from solid high grade steel bar, this assuring accuracy and permanency in adjustment. Back plates and damping chambers are ground and polished and provided with proper Venturi passages and Barometric adjustment seals.

Universal Condenser Microphones are made in two models, Model 1440 and 2440 — the first having a single stage of amplification and in the second, a 2 stage amplifier is used. They are otherwise the same in size and appearance. Following are detail descriptions:

MODEL 1440

A single stage microphone using a specially selected 864 tube with an output of approximately minus 55 D. B., with an almost flat response from 32 to 7000 cycles. Amplifier housing of pure aluminum, drawn in one piece without seams or rivets. Amplifier base casting of bronze with transmitter head ring of brass. Neat and business-like in appearance, finished in beautiful statuary bronze plate. Battery required 6V "A" and 180V "B." The output is designed to feed into a 200 or 500 ohm load, or the input terminals of an amplifier, where a carbon microphone has previously been used. The current consumption on the 180 volt tap is only 3 milliamperes with filament current of .25 amp. Size 6 inches by 6 inches by 3 inches. Net weight, 11 lbs. Packed weight, 17 lbs. Code Word, "COY." Complete with 25 feet Rubber Covered Shielded Cable.



List Price \$150.00

MODEL 2440

A two-stage microphone using two special 864 tubes with an output of approximately Minus 35 D. B. This model is the same in every particular as Model No. 1440, except the current consumption on the 180 volt tap is only 4 milliamperes with filament current of .25 amp. Size 6 inches by 6 inches by 3 inches. Net weight, 12 lbs. Packed weight, 18 lbs. Code Word "COZ." Complete with 25 feet Rubber Covered Shielded Cable.

List Price \$175.00

We also produce models in "Bomb Type," an aluminum sphere or globe slightly under 7 inches in diameter, containing either one or two stage amplifiers and fitted with a bale for overhead suspension, especially used for sound film recording.

Single Stage, Code Word "BOMB." List Price \$300.00

Two-Stage, Code Word "BOMBER." List Price \$350.00

MICROPHONE FLOOR STAND EXTRA HEAVY CONDENSER

Built especially for condenser microphones. An idea of its ruggedness can be obtained from the main body tube which is 2 inches in diameter. The entire assembly is statuary bronze plated and presents a fine studio appearance. A flange at top allows for easy mounting. The adjustment lock screw is firm and positive and locks or releases by the slightest thumb pressure.

Net weight 21½ lbs. Packed weight 28 lbs. Code Word "XAND."

List Price \$20.00



Manufactured by

UNIVERSAL MICROPHONE CO., Ltd.

Centinela at Warren Lane
INGLEWOOD, CALIFORNIA - U. S. A.

RADIO OWL SAVES LIGHT BILLS, TUBES, BATTERIES



List Price \$5.00

*The
New*

**RADIO
OWL**

AUTOMATICALLY TURNS OFF YOUR RADIO

Or Any Electric Household Appliance

Simply connect plug into Electric Light Socket. Connect plug from Radio or appliance, push down the owl's head—which automatically switches on the current and sets the desired shut off time from a few minutes up to two hours ahead.

Small, attractive, modern, beautifully finished in bronze with sparkling **red** jeweled eyes. Radio Owl is a handsome ornament for any home, an ideal gift for any occasion. Double Plug Connection and 5 ft. Cord are included with each Owl.

OPERATION AND CONSTRUCTION

When the Owl's body is pushed down the oil is forced past the piston. The spring then exerts an upward force on the body which action is retarded by the slow leakage of oil through the piston valve. All working parts are immersed in oil, eliminating any possibility of wear by friction or rust.

The Owl body and base are made of metal. The oil cylinder, is a highly polished brass tube. The steel shaft is precision ground to insure perfect operation. In the new stuffing box the special oil-proof packing prevents any possibility of leakage. The oil, selected after many months of research, has the proper viscosity to flow through the piston valve at the desired rate. The switch block, of hard rubber, completely insulates the electrodes from the base and precludes any possibility of shorting.

Radio Owl Will Last A Lifetime

Being sturdily constructed of metal, it is practically indestructible. There is nothing to get out of order, no springs to wind or hands to set and no tricky mechanism to break. Guaranteed one year.

Electrical Carrying Capacity 250 watts A. C.

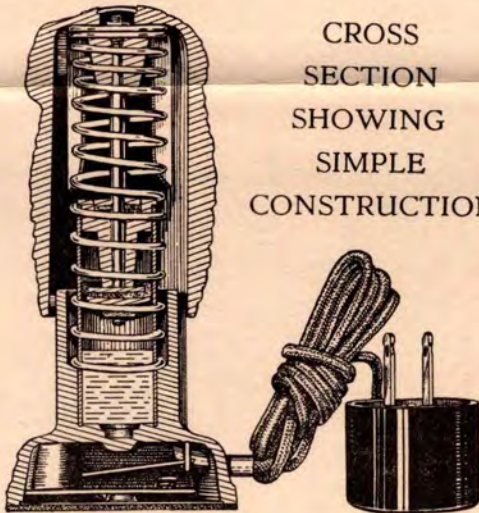
Each Owl is 4½" by 2½" Diameter and weighs 2lbs. packed.

Standard packages contain 12 Radio Owls.

Fully protected by Patent and Patents Pending.

Standard trade discounts.

CROSS
SECTION
SHOWING
SIMPLE
CONSTRUCTION



Attractive window cards in **COLORS** are available in two sizes — 12x16 and 30 x 40 inches. Also electros for catalogues in 1" high and 2" high.

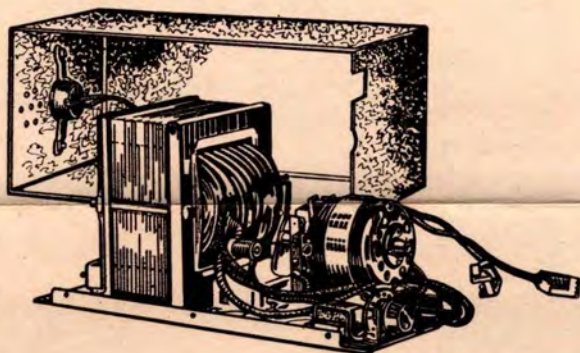
Manufactured exclusively by
UNIVERSAL MICROPHONE CO., LTD.
INGLEWOOD, CALIFORNIA, U. S. A.

Here are two models ---

UNIVERSAL Battery Converters

GIVING 110 volts A.C. output from storage batteries. Recommended for operation of any 110 volt A.C. device, particularly sound amplifiers for trucks, in parks, and for all portable uses where commercial current is not available.

These units have been scientifically engineered and developed and represent the most efficient and economical means of 110 volt A.C. conversion from low voltage D.C. sources. Many uses other than for operation of sound devices will present themselves such as Neon signs, Portable Transmitters, etc., etc., and within their rated capacities Universal Battery-Converters will be found highly efficient in operation, well constructed mechanically and having the minimum of moving parts which might wear or require frequent adjustment. When, by use, there is necessity of replacement of parts these are few in number, low in cost and are easily and quickly installed.



MODEL 60

operates from 6 volt D.C. and has an output of 60 watts. The battery drain is 90 watts (6 volts at 15 amps.) and is recommended for operation of 3 stage push pull power amplifiers using '45 or '46 or '47 tubes, or an amplifier requiring less energy than above plus a phonograph turntable and loud speaker field. Size $4\frac{1}{2} \times 5 \times 10\frac{1}{2}$.

Net weight $12\frac{1}{2}$ lbs. List Price \$28.00.

MODEL 150

operates from 12 volts D.C. source (two 6 volt storage batteries in series) and has an output of 150 watts. The battery drain is 216 watts (12 volts at 18 amps.) and is recommended for operation of three stage sound amplifiers terminating in 2-50 tubes in push pull and in addition will operate an ordinary 20 watt turntable and power speaker field. Size $5\frac{1}{2} \times 6\frac{1}{2} \times 12$.

Net weight 23 lbs. List Price \$60.00

In using Universal Battery-Converters the average A.C. Voltmeter reading should be entirely disregarded, since they are inaccurate on this particular wave form. Voltage determination should be taken from amplifier with D.C. voltmeter after rectification; comparing with amplifier voltage when supplied from house line.

When coupled to load of less than rated capacity, battery drain can be reduced by adjustment to most economical point.

LIBERAL TRADE DISCOUNTS

Manufactured by

UNIVERSAL MICROPHONE CO., Ltd.

Centinela at Warren Lane
INGLEWOOD, CALIFORNIA, U.S.A.

Announcing---

UNIVERSAL'S 3-Channel Mixer

A compact, portable, perfectly engineered mixer to handle three 2-button carbon microphones—Condenser Microphones, low impedance pickups, or standard telephone (remote) lines or any combination of above.

The **fading** or **blending** is accomplished by the use of three mixing transformers (Univ. No. 1310) and three constant impedance T pads.

Single or double button microphones may be used.

In operation the **Universal 3-Channel Mixer** allows the **mixing, fading, and blending** to be done smoothly and silently and the pads are so engineered and installed in the circuit as to **not interfere** with the frequency of the sound passing thru the mixer whether in the lowest or loudest position.

The **quality of reproduction** is not in the slightest degree impaired or altered in passing thru the mixer.

The **adjustment of one Volume Control** does not affect or interfere with the volume or tone quality of other channels.

To furnish current for carbon microphones 3 volts of battery (2 dry cells) should be connected to binding posts shown.

The output is to feed into a 400 - 600 ohm line or regular microphone input transformer as generally installed in amplifiers.

Engraved Bakelite front panel. Steel housing, black crackle finish.

Size 4"x5½"x12" high. Wt. 9 lbs.

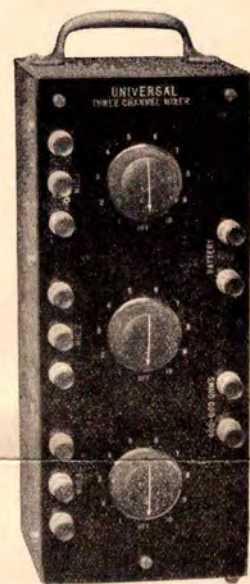
Codeword **Mixer.** List price \$36.00

DEALER'S NET CASH PRICE \$20.17

Manufactured by

UNIVERSAL MICROPHONE Co., LTD.

Inglewood, California, U.S.A.



Universal's Hearing Aid Devices

The following 3 models are the result of many months of experimenting and testing and are offered through the Radio Trade as the logical merchandisers of such products.

In the matter of service to amplifiers, replacing of tubes, renewal of batteries, etc., the Radio Trade has not only the talent and ability to render such service, but carry in their own stock all of the essential units for immediate use.

The models shown and described herewith, will not bring hearing to every deafened person, therefore it is recommended that any person contemplating the purchase of a hearing aid device be invited to visit the dealer's salesroom, remaining there as long as he may want, using one of these models during his visit, but not actually purchasing until he is entirely satisfied. After purchase, the instrument should not be returned for credit or exchange.

Heretofore hearing aid devices have been sold on trial, approval, etc., over long periods of time, creating much expense in handling and overhead which accounts for the excessive cost of hearing aid equipment in the past. The prices listed herein are based on volume production and on elimination of advertising costs plus sales through Radio jobbers, dealers, and service men direct to the user.

While any of the models shown can be carried very easily, they are intended primarily for home and office use. It will be found that they reproduce music with great fidelity and naturalness of tone.

Instruments are furnished with a special lightweight ear piece and head band having a total weight of only two and one-half ounces. Batteries and tubes are not furnished, these being better supplied by the dealer fresh from his shelves.



MODEL HA1

Two stage amplifier using two 230 tubes. It is eleven inches long by five and three-quarters inches wide by seven and three-quarters inches high. Weight without batteries is five and three-quarters pounds, and with batteries installed it weighs sixteen and a half pounds. Two Burgess No. 5308 Batteries and two Burgess No. 6 dry cells are used.

HA1 is designed for utmost in quality and volume. The use of standard large size batteries in this model permits of consistent long time use at the minimum of battery up-keep expense.

Model No. HA1 shipped complete with special Universal HA type microphone and single featherweight earphone with head band, but without tubes and batteries. List price \$48.00

MODEL HA2

Two stage amplifier using two 230 type tubes. It is nine inches long, four and one-half inches wide, and five and one-fourth inches high. Weight without batteries is four and one-half pounds, and with batteries installed it weighs seven pounds. One Burgess No. 2370 "C" battery, and 2 Burgess No. 4156 "C" Batteries, or similar are used.

This model is the best it is possible to produce consistent with small size and weight and at the same time preserve reasonable economy in up-keep. Will stand 15 hours of continuous duty, and approximately 30 hours of intermittent duty, at which time a No. 2370 "C" battery would be replaced, at an approximate cost of 60c.

Model HA2 shipped complete with special Universal HA microphone and single featherweight earphone with head band, but without tubes or batteries. List price \$44.00.

MODEL HA3

One stage amplifier using one 230 type tube. It is seven and one-half inches long, three and one-half inches wide, and four and one-fourth inches high. Weight without batteries is two and one-fourth pounds, and with batteries installed it weighs three and a half pounds. Uses two Burgess No. 2 Uni-Cells and one Burgess No. 4156 "C" battery.

This model being a single stage, is adaptable to those of only partial deafness. Light weight and portability, however, make it especially desirable. Runs 30 hours continuously on one set of "A" batteries, which are then replaced at a cost of 20c.

Model HA3 shipped complete with special Universal HA microphone and single featherweight earphone with head band, but without tube or batteries. List price \$36.00.

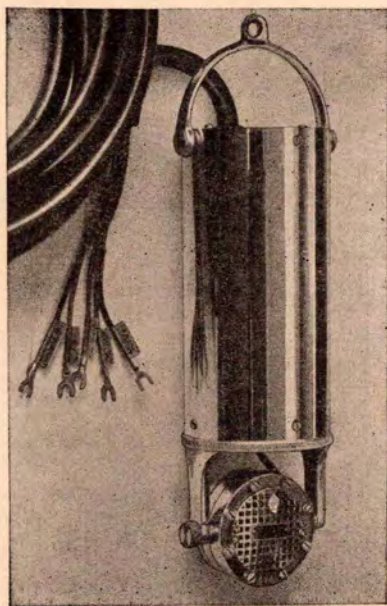
NOTE—The above descriptions cover the only models that we manufacture. We do not make Pocket models, nor do we sell parts separately or send circuit diagrams or make changes of any kind for the very obvious reason that these models and low list prices are based on volume of continuous, uninterrupted production.

Regular Discounts to Jobbers and Dealers



UNIVERSAL MICROPHONE CO., Ltd.
Inglewood, California, U. S. A.

The Microphone Sensation of 1933



UNIVERSAL'S NEW MODEL "E" CONDENSER TYPE MICROPHONE

With 2 stage amplifier. 25 feet rubber covered, shielded cable. Beautifully Polished Aluminum and Chrome plated. An attractive and highly professional appearing unit for Broadcast Studios, Sound Recording, Public Address, Orchestras and all uses where absolute absence of hiss or other background noises is essential.

The output is slightly greater than a standard 2 button microphone and Model "E" can be connected to standard input transformers of 200 ohms or into mixing circuit where carbon microphones have been previously used. The frequency response is from 35 cycles to well over average audibility in the upper frequency range.

DESK STAND FOR ABOVE with cast clamp for tubular section, circular cast base, all chrome plated with molded rubber base cover.

List Price \$10.00



DESK STAND

ADJUSTABLE STUDIO FLOOR STAND for Model "E" chrome plated with positive silent adjustment clamping device. (See 1933 General Catalogue, page 15).

List Price \$20.00

THE TUBES USED IN THE AMPLIFIER ARE NON-MICROPHONIC and the total drain is $\frac{1}{4}$ amp. at 6 volts and 4 mls on the 180 volt battery.

THE HEAD HAS AUTOMATIC BAROMETRIC ADJUSTMENT and the diaphragm is protected from damage by a solid cast bar grating.

90° SWIVEL OF HEAD PERMITS USE DIRECTLY OVERHEAD, the bale as shown in illustration allowing hanging by wire or cord from ceiling.

List Price \$90.00

MODEL "E" CONDENSER HEAD ONLY, with Circuit Blue Print.

List Price \$55.00

Regular Trade Discounts

UNIVERSAL MICROPHONE CO., Ltd.
Inglewood, California, U.S.A

Test Motor Oil Scientifically!

How crank-case oil Looks through the Luboscope--



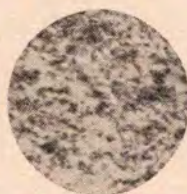
New Clean Oil



Slightly Contaminated



Lubricating Value Poor



Lubricating Value
Extremely Low



Lubricating Value Gone



Dangerous. Drain Oil
Wash Crank-case
Refill.
(Replace Oil Filter ele-
ment if needed.)

THE "LUBOSCOPE" A Business Builder

The LUBOSCOPE

- SELLS**—Crank-case Oil Drains.
- SELLS**—Transmission and Differential Refills.
- SELLS**—Oil Filter Cartridges.
- SELLS**—Crank-case Flushing Jobs.

Points out crank-case dilution.

Shows and proves when motor is full of carbon.

Shows carbon, dirt, steel, etc., in oil, transmission and differential greases.

QUANTITY PRODUCTION enables us to place this beautifully finished scientifically built instrument in your hands at the extremely low price of

\$6.50

(Batteries Not Included)

Postpaid

A price that will enable you to pay for it out of your first two days profit.



Cut Half
Actual Size

RESULTS ARE AMAZING

The **LUBOSCOPE** will increase Lubricating Oil Sales from 15 to 25 per cent.

The **LUBOSCOPE** shows up the small particles of steel not visible to the eye, in differential and transmission greases.

In crankcase oil, carbon, dirt, road dust, gasoline, small parts of bab-bitt, etc., are clearly and brilliantly seen.

Show these conditions to your customers.

Let your trade see for themselves . . .
"Seeing is believing."

Directions for Operation

PULL BAYONET OIL GUAGE FROM CUSTOMER'S CAR. PLACE ONE DROP OF OIL ON SLIDE WHICH YOU HAVE TAKEN FROM LUBOSCOPE. PUSH SLIDE BACK INTO INSTRUMENT. HAND INSTRUMENT TO CUSTOMER, TELLING HIM TO PRESS ELECTRIC SWITCH BUTTON AND EXAMINE SPECIMEN THROUGH HIGH-POWER LENS.

"SEEING IS BELIEVING"

Since the inception of the combustion engine the matter of lubrication has been of first importance, one on which a great deal of energy, effort, and thought has been expended. It is general knowledge that the life of a motor depends on lubrication.

Until the advent of the Luboscope the service station operator had no intelligent way of backing up his sales talk in his efforts to sell lubricating oil. The idea of feeling oil between the fingers, a hit-and-miss proposition at the best, is to be thrown in the discard.

The "Luboscope," a scientific, practical, and economical device for examining crankcase oil for carbon, grit, dirt, road dust and metal particles is the means by which both the service station and garage man can increase their business. Designed for efficiency, ease and economy in handling, Luboscope is receiving the plaudits of the trade everywhere.

To the service station operator the "Luboscope" offers a means of selling more oil more frequently, for one look at old oil will convince any customer when he needs a DRAIN.

For the garage man the "Luboscope" offers the only scientific method of showing to the automobile owner the condition of his motor. If he needs a valve grind, a re-bore, new rings, or just the carbon removed, the "Luboscope" tells the story.

LUBOSCOPE also sells better grades of gasoline. **Crankcase dilution** shows up clearly in the form of a larger stain than the oil body being examined proving that part of gasoline used is not being properly burned. Poor grades of gasoline dilute crankcase oil and the **Luboscope** shows it clearly and definitely.

Sold by Jobbers in all parts of the world
Manufactured exclusively by

UNIVERSAL MICROPHONE CO., Ltd.

Cable Address UMIC

Inglewood, California, U.S.A.



LUBOSCOPE REASONS

ENGINEERS and oil authorities all agree that lubricating oil will serve in a motor as long as there is no foreign matter present. But contamination of any oil, regardless of the quality thereof, by carbon, dust, or metal particles—wearings from the inside of the motor, immediately converts a good lubricating body into a destructive element in the life of the motor.

This also applies to greases in both transmission and rear axle housings. In our experience we have tested a great number of these and without exception, we have found the grease in rear axles and transmissions to contain a hardening scale that is worn or broken away from the gears, and chips of steel, and other destructive ingredients, all of which are very clearly shown by the Luboscope.

Any service station can pay for one of these Luboscopes in 48 hours if properly used in connection with the sale of lubricating oils and grease, and without the necessity of urging upon the customer an oil change—leaving the entire matter to the customer's discretion after seeing the condition of the oil. Also, the Luboscope points out the necessity of a thorough flushing of the crank-case at the time of change of oil. This is a detail in the servicing of automobiles that has been overlooked and has become quite a serious problem with some of the larger oil companies.

In the sale of oil filters the Luboscope shows clearly and convincingly when the customer needs a new cartridge, or on the other hand shows conclusively when a filter is doing its duty. A drop of oil taken before it enters the filter compared with a drop taken after it has passed through the filter will show the efficiency of the filter, either that it is actually cleaning the oil, or that the filter is already clogged and cannot function and a new cartridge should be installed.

How many cars do you know of that have had the rear axle housing and transmission gear case drained, **washed out clean**, and refilled with fresh clean grease? How many do you know of that never have been washed out since they left the factory? True enough small amounts of grease have been added from time to time but the original grease plus all the small particles worn off of new parts, all the scale from hardened parts, are still in the lubricating body and are being fed back through the gears and bearings.

The same situation exists regarding transmissions.

Look at the greases from these two important parts of any car under a Luboscope. If clean and free of small particles O. K. you then **know** the condition. If, however, hardening scale, small steel particles, etc., are seen, you then **know** that a drain, a complete flushing and refill job should be done to prevent excessive and rapid wear.

SELL CRANK CASE FLUSHING JOBS

If crank-cases were of glass and each customer could see clearly the accumulated carbon, dirt, grit, and wearings in the bottom of his crank-case would he ask you to drain out the old oil, leaving the dirt deposit in the crank-case and then pour good fresh clean oil in on top of the dirt?

The Luboscope allows the owner to see the exact condition of his oil, serving the same purpose as if the crank-case were of glass.

The Luboscope serves the same purpose in the oil and grease industry as the pressure gauge does to the tire business or as the voltmeter does in the battery field.

Luboscope sells for \$6.50 list, comes packed in individual cartons with 12 to a carton for dealers and jobbers.

Each Luboscope is fitted with a double magnifying lens of great power showing a flat field and is corrected against color distortion.

Finished in black lacquer with chrome eye piece, slide holder and base, it presents a handsome appearance.

Paper slides are furnished with each Luboscope and by the installation of 2 flash-light monocell dry batteries at a cost of about 5c each, the Luboscope is ready for immediate use.

The Luboscope will render better service to the customer, will sell more oil changes, flushing jobs and transmission and rear axle refills, and will pay for itself in extra material sold in one day.



Manufactured exclusively by

UNIVERSAL MICROPHONE CO., Ltd.

Cable Address UMIC

Inglewood, California, U.S.A.





REMLER CONDENSER MICROPHONE AND ACCESSORIES - PRICE LIST.

List Prices

Floor Type:	Adjustable from 43 to maximum 61 inches, complete with tubes and 20 feet cable.....	\$125.00
Suspension:	With tubes, less cable.....	100.00
Desk Type:	Complete with tubes and 20 feet cable.....	130.00
Hand Type:	With tubes, less cable.....	140.00
Bomb Type:	With tubes, less cable.....	150.00

General Characteristics

Response: Essentially flat from 40 to 10,000 c.p.s. Overall output,—15 d. b. Outputs furnished: 50 and 200 ohms, 200 and 500 ohms. Battery requirements: 180-200 volts B and 6 volts A. Plate draws $1\frac{1}{2}$ milliamperes, filament $\frac{1}{4}$ amperes.

Floor, Suspension and Desk types finished in beautiful statuary bronze; other finishes at slight additional cost.

Transmitter Head:

Gold or chrome finish.....	\$40.00
Head, with Bakelite Head Housing...	48.00

Conversion Unit:

Converter, with 30 foot cable, for use with floor type.....	10.00
Converter unit without cable.....	3.00

Cable:

High grade, rubber armored, 4 conductor and shield, color coded, per foot.....	.25
In single orders of 100 feet or more.....	.20

REMLER COMPANY Ltd.

2101 Bryant Street

San Francisco

AUTOMATIC AMPLIFIED MUSIC CO.

260 GOLDEN GATE AVE.

SAN FRANCISCO
CALIFORNIA

Suped 2909



Head



Hand Type



Bomb Type



Desk Type

FROM COAST TO COAST THE REMLER CONDENSER MICROPHONE!



TED FIO-RITO AND HIS HOTEL ST. FRANCIS ORCHESTRA

REMOTE CONTROL AMPLIFIER AND A. C. MICROPHONE POWER SUPPLY

From Coast to Coast the Remler Condenser Microphone—precision built by "the radio firm as old as radio"—is meeting the exacting requirements of broadcast technicians. Now, at the same low price as formerly, the radically improved 1933 Remler is more than ever the most practical moderately priced professional microphone on the market.

The revolutionary all A. C. operated Remler Remote Control Amplifier and Microphone power supply, the latest product of the Remler laboratories, is in every way a worthy companion piece of equipment. Skillfully designed, efficient, and highly portable, it simplifies installation and permits of highest studio fidelity.



LATEST NEW



Remote Control Amplifier
and Power Supply Unit

ALL A. C. OPERATED REMOTE CONTROL AMPLIFIER AND MICROPHONE POWER SUPPLY

Eliminating all battery requirements, the new Remler consists of a three stage amplifier of improved design, together with an A. C. operated power supply for condenser microphone.

The amplifier brings the microphone output to a maximum of plus 10 decibels input into the telephone line, to operate normally at a plus 2 db. level. Output is flat within plus and minus 1 decibel, over the audio range of 40 to 10,000 cycles.

Equipped with level indicator and attenuator calibrated in decibels, both units are housed in a single attractive duco finished metal cabinet 21" x 9" x 10". The weight is only forty pounds!

Remler Quality and Price

Complete research, engineering and manufacturing facilities insure the quality long associated with the Remler name. Moderate price is made possible by reason of the fact that all fittings, screw machine products, and bakelite molded parts are Remler designed and Remler built.

Remler Remote Control Amplifier and A. C. Condenser Microphone	
Power Supply in metal case, as illustrated, List price.....	\$225.00
Additional Microphone inputs. List price, extra.....	40.00
Remote Control Amplifier Carrying Case, List price.....	17.00

A. C. POWER SUPPLY FOR CONDENSER MICROPHONES

Efficiently compact, the Remler A. C. Power Supply pays for itself by eliminating inconvenience and battery costs. It is neat, attractive, and highly practical for both studio and remote installations. Housed in a duco finished metal case as illustrated. Size: 12" x 8" x 9". Weight 26 pounds. \$65.00

REMLER

1933 BROADCASTING EQUIPMENT

IMPROVED CONDENSER MICROPHONES

Precision Built for all Professional Requirements. Sets New Standard of Attractiveness and Efficiency. Low Prices.

Characterized by radically new improvements which greatly increase efficiency of operation, the new 1933 Remler Condenser Microphone is the most practical microphone on the market. The economy of volume production has enabled Remler engineers to add new and important features without increase in price.

The practicability of the Remler is emphasized by reason of its sturdy construction. It is skillfully designed without moving parts. The result is a trouble-proof microphone built to withstand inadvertent rough handling.

Many New Features

The standard Remler is now equipped with a new hermetically sealed nitrogen gas filled transmitter head, acoustic equalizer and pressure equalized diaphragm. The back plate is suspended in moulded mica, resulting in extremely low static capacity. The small diaphragm cavity reduces resonant peaks. Completely moisture proof. Head housing is copper shielded and mica insulated. Noiseless plug-in contacts.

The amplifier is only two and one-half inches in diameter. Two stages of amplification, using Cunningham 864 tubes. Audio filter on each stage eliminates oscillation, making possible the use of an A. C. "B" supply. Highly permeable transformer core. Condensers sealed in bakelite casings.

Nationwide Acceptance

Although it has been on the market less than six months, more than two hundred Remler microphones are daily meeting the critical requirements of broadcasting stations, recording studios, and sound systems from Coast to Coast. A number of users have re-ordered a fourth and fifth Remler. This spontaneous nationwide acceptance is a tribute to the outstandingly efficient performance of the Remler Condenser Microphone.

