Genuine

AMPHENOL

REG. U. S. PAT. OFF.

PRODUCTS For the RADIO ELECTRICAL and AERONAUTICAL Industries

Official Photographs
U. S. NAVY

CATALOG
No. 65
1942

AMERICAN PHENOLIC CORPORATION

ARTHUR J. SCHMITT, President

PHONE HAYMARKET 3266

AMERICAN PHENOLIC CORPORATION

AMPHENOL
REG. U.S. PAT. OFF.

1250 WEST VAN BUREN STREET
CHICAGO

CABLE ADDRESS
AMPHENOL CHICAGO

Gentlemen:

June 26, 1939.

Here's your copy of the Amphenol Catalog No. 57-J for the 1939-1940 radio season. In it we attempted to give a complete description of the more popular parts which have been accepted by the industry as standard on most quality electronic apparatus.

No special television items are listed because, as yet, there has been no general standardization. However, we can send you blueprints on high voltage rectifier sockets, cathode ray tube sockets, high voltage safety plate caps, etc.

Coil forms for the set manufacturer are not listed, but they can be molded from Amphenol "912" polystyrene-base material to your specifications. Amphenol "912" used for this purpose and as terminal strips, condenser dielectrics, etc. has solved many problems for the engineer who was troubled with drift and losses on the high frequencies.

Amphenol sockets molded from high dielectric black bakelite are gradually replacing the inferior laminated types in all receivers because of the low moisture absorbtion and dependability, because they are trouble-free and easy to handle on the production line without breakage.

No other line of sockets in the world is so complete nor is supplied with so many types of mountings. All the variations of contacts, solder lugs, etc. are not shown in this book, but if you will outline your exact requirements to the Amphenol sales engineer who calls on you, we are positive we can give you everything you have ever wanted in a socket.

The Amphenol line of small connectors for electronic use is most complete and variations from the standards are available for the manufacturer ordering in large quantities.

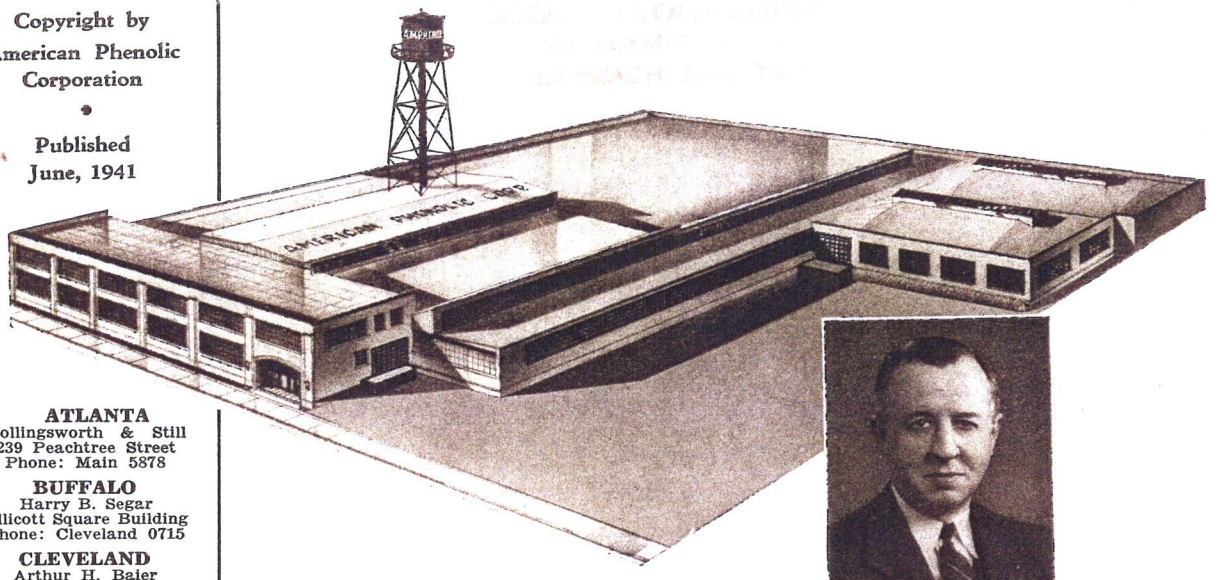
Fill in the enclosed card on any items which you would like to inspect and we will immediately send a sample by return mail or have an Amphenol representative call on you. Prices are quoted on request.

Yours very truly,

LMH:AE

AMERICAN PHENOLIC CORPORATION

Published
June, 1941



ARTHUR J. SCHMITT
President

AMERICAN PHENOLIC CORPORATION

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6432 Cass Avenue
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Foreword

PRODUCTION! This is now the watchword of America. Today production means the preservation of life itself. The effectiveness of our entire National Defense is geared to the ability and resourcefulness of American Industry in meeting the challenge of this emergency.

To do our share in meeting this challenge, and at the same time satisfy the growing civilian demand for Amphenol products, we have acquired a new manufacturing plant. We have further constructed a new building to house our increased facilities for production of synthetic materials and cables. With augmented capacity, we pledge ourselves to continue to build and increase our production without stint to meet the needs of the day.

PRIORITIES—Priorities will become increasingly important during this period of "National Emergency," and we at Amphenol realize the necessity of expediting delivery on Defense orders. However, it is our sincere desire to continue to increase our production to the extent that, with or without the formality of priority ratings, our customers will be served promptly.

•

SUBSTITUTIONS—Substitution of steel for aluminum and similar situations may from time to time occur, and we reserve the right to make such substitutions in conformity to rulings by government order or expediency.
However, as in the past, we shall endeavor to use in our products only the finest of raw materials available.

•

ENGINEERING FACILITIES—Working closely with the various branches of the Government and its contractors, Amphenol engineers are familiar with the multiple problems confronting suppliers of electronic devices under the rapidly changing conditions prevailing today. We ask that you feel free to consult with them on your problems, and assure you such consultation will be held in strict confidence.

•

EXPORT— Always an important part of our business, present world conditions have placed even more emphasis on the export phase of Amphenol activities, and this Department is consequently in position to ship without undue delay. Orders are handled direct from our Chicago factory by experienced personnel, assuring prompt delivery with minimum expense. There is no charge for export packing.

PRICE CONTROL—These are times of rising labor and material cost—a situation usually resulting in proportionate increases in finished products. Despite these conditions, engineering and production efficiency, in combination with greater plant facilities, have enabled us to avoid price increases up to the time this catalog goes to press.
It is hoped that this position can be maintained indefinitely, but inasmuch as the situation as regards costs is unpredictable, we reserve the right to change our prices without further notification, except where definite contracts exist between our customers and ourselves.

•

DISTRIBUTING JOBBERS—Sales franchises are given only to well established responsible distributors who carry complete stocks and are able to render dependable service. With them we co-operate by supplying displays, literature, metal stock cabinets and other merchandising assistance. Most Amphenol products are attractively packaged in a crisp blue and white box—indicative of the quality within.

•

GUARANTEE—The Amphenol trade mark identifies our products and warrants that they are properly engineered and made of the best materials and workmanship. Any article which proves defective as to workmanship or material is subject to prompt replacement. This is the full extent of our responsibility concerning defective material.

More than a half billion Amphenol Products in use today

EXPLANATION OF CATALOG CONTINUITY

This catalog was compiled in three sections to simplify the selection of the correct Amphenol product for a given application. Basically Amphenol products fall into three categories: (1) Cable Connectors, sometimes referred to as Plugs; (2) Sockets and Receptacles; and (3) Ultra-Low-Loss Insulation, including Co-Axial Cable which uses this material as the dielectric. Each section has a foreword page devoted to general information, technical data and some of the variations from standard products which may be specified.

THESE GENERAL INFORMATION PAGES ARE AS FOLLOWS:

← ARMY-NAVY CONNECTORS

Listed on Pages 4, 5 and 9. Designed primarily for the electrical and radio wiring of commercial and military aircraft, and are mandatory in many government specifications. The radio and electrical industries in general found them the answer to a great many of their problems. Because this particular line of connectors is so extensive no attempt is made to list them in this catalog. Manufacturers of radio and electrical products are invited to ask for the special "AN" catalog which will contain a complete listing of these connectors with their fittings for portable cords, flexible and rigid thin wall conduit, and mountings for motors, panels, etc. **On pages 4 and 5** is a general description of the entire line, and **on page 9** are listed a group which were selected as being the most practical for general radio and public address applications.

← 110-250 VOLT POWER CONNECTORS

Listed on Pages 7, 14 and 15. There are two types of connectors for 110-250 volt power current in the Amphenol line. **On page 7** are listed the Heavy Duty Connectors, having four prongs, for connecting two, three and four wire circuits. Unwanted prongs are easily removed or they may be left in place and not wired. These connectors are especially recommended for industrial use where the power must not fail. Also used in mines, oil refineries and other places where explosive gases are present, because the shells are brass and will not spark when dropped upon or dragged across the floor. **On Pages 14 and 15** are listed two and three pole compact connectors. The panel receptacles are mounted in place with the patented Amphenol retainer ring, eliminating the need of screws or rivets and requiring less mounting area than conventional types. The cable units have drawn steel shells which are often used with shielded cable to prevent radiation of spurious currents from the unit under operation.

← CONNECTORS FOR MULTI-WIRE CABLES

Listed on Pages 6 and 13. Since its inception the radio industry has used connectors for cables having many wires. Today all industries have need for such connectors for installing safety devices, photo cell equipment, etc. **On page 6** is listed the Heavy Duty type, having from four to twelve prongs, housed in unbreakable brass shells. **On page 13** are the compact type, having drawn steel shells, with four to twenty prongs. This type uses standard radio tube sockets as the panel or chassis receptacle. Any tube socket may be used for the four to eight prong sizes although the Amphenol molded type is recommended because of its sturdy construction. For the nine to twenty prong sizes the Amphenol sockets must be used for correct contact spacing. This combination of a low priced plug and tube socket receptacle provided an economical means of connecting multi-wire cables to any low power electrical or radio circuit.

← SMALL, COMPACT CONNECTORS

Listed on Pages 8 to 11. Commonly called microphone connectors because they are most commonly used for that purpose, but used in all branches of the radio and electrical industry where a compact, unbreakable and attractive connector is required. Housed in brass shells, chrome plated, having from one to four prongs.

← MINIATURE CONNECTORS

Listed on Page 12. Economical and extremely light weight connectors for radio, small electrical apparatus such as model trains, and small aircraft where weight of accessories must be kept at the very minimum. Have drawn brass cadmium-plated shells and three to six prongs.

Cable Connectors, or plugs as they are known for some applications, are a means of easily coupling and uncoupling two cables or a cable to an apparatus. The Amphenol line of connectors listed on the next twelve pages were designed to fit the requirements of the radio industry through working with designing engineers, production men and others who are interested in the standardization, economy and efficiency of these units. In many phases of the radio business Amphenol engineers actually took the initiative in bringing about standardization for definite requirements. Because of the dependability of all Amphenol products, the connectors listed in this catalog will be found on the finest radio equipment and on electrical units for National Defense.

WIRED ASSEMBLIES

In many cases the manufacturer finds it more economical to purchase Amphenol sockets and plugs completely wired. For instance, most of the magic eyes for radio receivers, and adapters for test instruments, are supplied to the trade as a completely wired unit. Special cables, terminating in Amphenol plugs, are wired and braided for special radio, electrical and aircraft applications. This includes completed co-axial cables.

UNDERWRITERS' SPECIFICATIONS

The Underwriters' Laboratories are the outstanding guardian of American home-life and industry. Theirs is a jealous concern for the safety and well being of our nation. Whenever necessary, Amphenol products are submitted to this laboratory for their approval before the item is merchandised. You are assured, when purchasing Amphenol products with the U.L. seal, of the proper safety features and current carrying capacity.

JAPANNING AND PLATING

The exact finish of standard items is given in the catalog copy. However, this finish can be altered to suit any requirements. Mounting plates, connector shells, etc., can be supplied without delay, finished in polished chrome, nickel, cadmium, etc., or can be coated with baked-on colored enamel as well as black japanned.

CONNECTOR INSULATION

See Page 17 for Electrical Characteristics of Black and Mica Filled Bakelite

The dielectric of all connectors and plugs listed in this catalog is molded black bakelite unless otherwise specified in the description of the item. **Any connector in this catalog can be supplied with the element molded from low-loss mica filled bakelite. When ordering connectors with this insulating material simply add the letter "T" to the part number and 13c to the list price.** Manufacturers ordering in quantities can also be supplied with the element molded from ultra-low-loss polystyrene insulation.

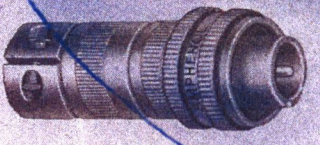
Special Connectors

Manufacturers having special problems are invited to consult with Amphenol engineers freely. Wherever possible a standard Amphenol connector will be altered to suit the requirements, when necessary a new connector will be designed. **Important—When a connector having the correct number of prongs is not available in the style desired, order the unit with the next largest number of prongs. For instance if a three prong connector is desired but four prong is the smallest size listed, the four prong type can be used by leaving one prong unwired or wiring two prongs in parallel.**

Electrical Connectors

AN-3108-42-1S

One of the large right angle connectors having 42 contacts.



AN-3109-8S-1P

One of the smallest single prong connectors fitted with cable clamp for portable cord.

The interchangeability of "AN" bakelite element inserts, shells and fittings makes thousands of combinations possible to fit most applications.

FROM 1 to 48 CONTACTS—Bakelite elements are available with various pin arrangements, both male and female, with contacts for No. 20 to No. 0 wire, handling up to 200 amperes.

4 STYLE SHELLS IN 18 SIZES—The light-weight aluminum shells, having machined threads are supplied in 18 different sizes, in four principle styles. The four styles are as follows:

ANGLE CABLE PLUG—Supplied with either male or female contacts. Can be swung in a 360° arc, permits clearance of surrounding objects and allows straight runs of cable. After correct position is determined connector may be permanently locked in place. Has locking type coupling ring. Fittings are available for connecting conduit, shielded cables or portable cords.

STRAIGHT CABLE PLUG—Available in 18 sizes. Supplied with fittings, with conduit, shielded cables or portable cords. Carries a locking type coupling ring.

SHIELDED RECEPTACLE—Accepts either of the above type plugs. Has a square mounting flange with holes in the four corners for rigid mounting on panels, machinery and chassis. The back of the receptacle is fully shielded so that soldered contacts are encased, eliminating the danger of shocks and of shorts caused by foreign particles.

UNSHIELDED RECEPTACLE — Identical to the shielded receptacle described above, but solder contacts are exposed. For mounting on enclosed panels, motor bases and other mounting surfaces where the rear of the receptacle is enclosed.

DESIGNED FOR MILITARY USE

Adopted by the Radio and Electrical Industries

• *Dependable* • *Minimum Weight* • *Interchangeable*

Because failure of electrical connections in battle planes cannot be tolerated, a select group of Army and Navy engineers collaborated with leading manufacturers to standardize on a line of connectors and fittings for navigation instruments, ignition, radio receivers and transmitters. Used for altimeters, direction finders, bomb racks, automatic firing for aerial machine guns and cannon, and for the many other electrical and radioactive instruments which are a vital part of every commercial and fighting plane.

The Navy's "Mosquito Fleet" of small high-powered speed boats, carrying torpedos and fast firing guns, required connectors for the same purpose as military aircraft, now use the "AN" line because of their ability to withstand high vibrations of speeding boats and the rigors of sea water and weather.

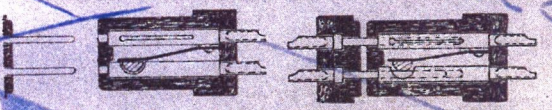
This line of connectors is now mandatory in many government specifications for Defense Materials, including those used by the signal corps where all units must be light in weight, easily portable, and quickly connected and disconnected.

Because of the dependability and versatility of "AN" Connectors they have been adopted by many manufacturers of radio and electrical products, including X-Ray Machines, Radio Equipment of all types, Industrial Controls, Railroad Devices and other electrical and radio products.

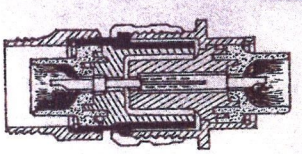
EXPLOSION PROOF CONNECTORS

Any "AN" connector with pin (male) contact can be supplied for explosion proof applications. Such connectors are required for fuel pumps, etc., and for use in atmosphere charged with explosive gases, as in oil refineries, lacquer plants, etc. For explosion proof applications all internal clearances are reduced and rear shank is held to close tolerances to fit mounting hole of apparatus.

AUTOMATIC GROUNDING CONNECTORS



Circuit closes when male connector is extracted from female. Keeps circuit continuous when several units are used in series and must be disconnected one at a time, and for grounding magnetos, generators, etc. when load is disconnected. Used on Bombing Planes to simplify Bomb Release Mechanism, permitting a single circuit which is kept closed as bomb after bomb is dropped.



HIGH TENSION IGNITION TYPE

Connectors for extremely high voltages, as on booster ignition coils where approximately 14,000 volts are present. Leakage is kept at a minimum and breakdown is practically impossible if voltage does not exceed limit of connector. Laboratory tests show that breakdown does not occur even at 60,000 volts, 60 cycle A.C.

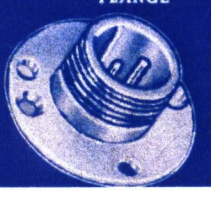
SPECIAL PURPOSE CONNECTORS

Only a few of the many connectors for special applications are outlined above. Manufacturers having other problems should consult Amphenol engineers, and a solution will be worked out with them. Innumerable contact arrangements are possible for use where standard connectors are not available, but in most instances the standard "AN" line can be used without modification.

See Page 9 for Complete "AN" Connector Assemblies

PIONEER EXPLOSION-PROOF DYNAMOTOR

ROUND MOUNTING FLANGE



MOTOR SPACER MOUNTING

Amphenol connectors must be dependable — used by leading aircraft manufacturers, including BEECH BELL BOEING BREWSTER CESSNA CURTISS-WRIGHT DOUGLAS FAIRCHILD GLENN L. MARTIN GRUMMAN LOCKHEED NORTH AMERI-

Army-Navy Specification AN-7534

RADIO APPLICATIONS

"AN" connectors find a multitude of uses in radio. Illustrated is an Air Associates ultra-high frequency receiver with a single prong polystyrene insulated receptacle for antenna lead-in and a multiple receptacle for controls and power. "AN" connectors are used almost exclusively on the several communication receivers and transmitters carried by each large plane, as well as all instruments including Altimeters, Compasses, Radio Beam, Directional Loops, Automatic Pilots, etc.

LOCKING TYPE COUPLING RING

Coupling ring acts on the screw-jack principle. As it is tightened the male prongs are pushed into the female contacts. Unloosening the coupling ring pulls the male prongs out so that the connectors come apart easily, eliminating pulling or jerking. Coupling ring definitely locks connection, eliminating the danger of accidental pull aparts. Locking threads are screw machined and deep cut.

INSULATING MATERIAL

Dielectric ordinarily supplied is high grade black bakelite, having a low loss factor, negligible moisture absorption and high impact strength. Colored bakelite, such as red, green, blue, etc., is available; used for identification purposes. Other dielectrics, such as mica-filled bakelite, brown low-loss bakelite and ultra-low-loss polystyrene are available for high frequency applications. Contact designations are molded on front and back of elements for quick identification.

COMPLETE ASSEMBLIES

Many manufacturers find it more economical to purchase complete assemblies consisting of connectors and conduit cut to specified length with correct ferrules and coupling nuts attached, thereby saving valuable man-hours in plants already crowded beyond capacity. **Amphenol connector assemblies are constructed to meet Army-Navy Standards and will give complete satisfaction under the most severe conditions.**

Illustrated to right is the Ferrule Assembling Machine, which is supplied to manufacturers who prefer to produce their own assemblies. A minimum of experience or effort is required to assemble ferrule to flexible or rigid conduit, and machine is constructed to accommodate conduit sizes from 3/16 to 2½".

SILVER-PLATED CONTACTS

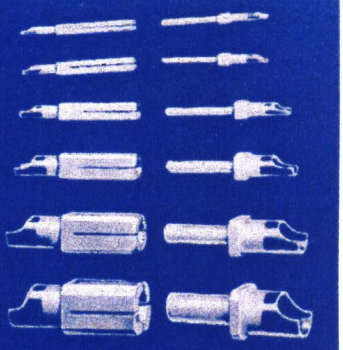
Amphenol "AN" contacts, both male and female, are machined from high conductivity bronze stock, which combines superior electrical conductivity with high tensile strength. Both male and female contacts are removable and replaceable as they fit into square holes in the insulation. These holes have a predetermined tolerance that permits the contact to float sufficiently to eliminate strain and to insure perfect mating to the full length of the contact. All contacts are silver plated, and terminals are lead coated for easy soldering.

RIGID & FLEXIBLE CONDUIT FITTINGS

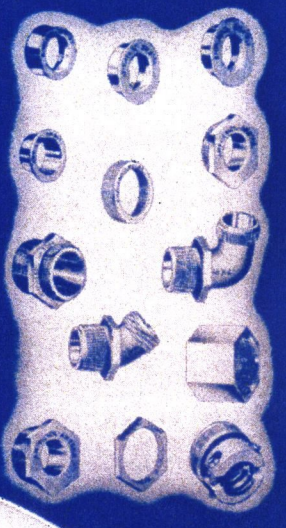
Aluminum alloy fittings are available for assembling "AN" connectors to flexible or rigid thin wall conduit and for terminating runs of conduit at panel or instrument. Some of the Amphenol fittings regularly supplied are illustrated in the border. Machined threads are coated with Permalub to prevent binding between coupled parts. With these fittings it is possible to connect flexible to rigid conduit, feed conduit through bulk heads and panels, connect rigid or flexible conduit to portable cords, etc. Send specification of installation to be made and correct fittings and conduit will be selected by Amphenol Engineers.

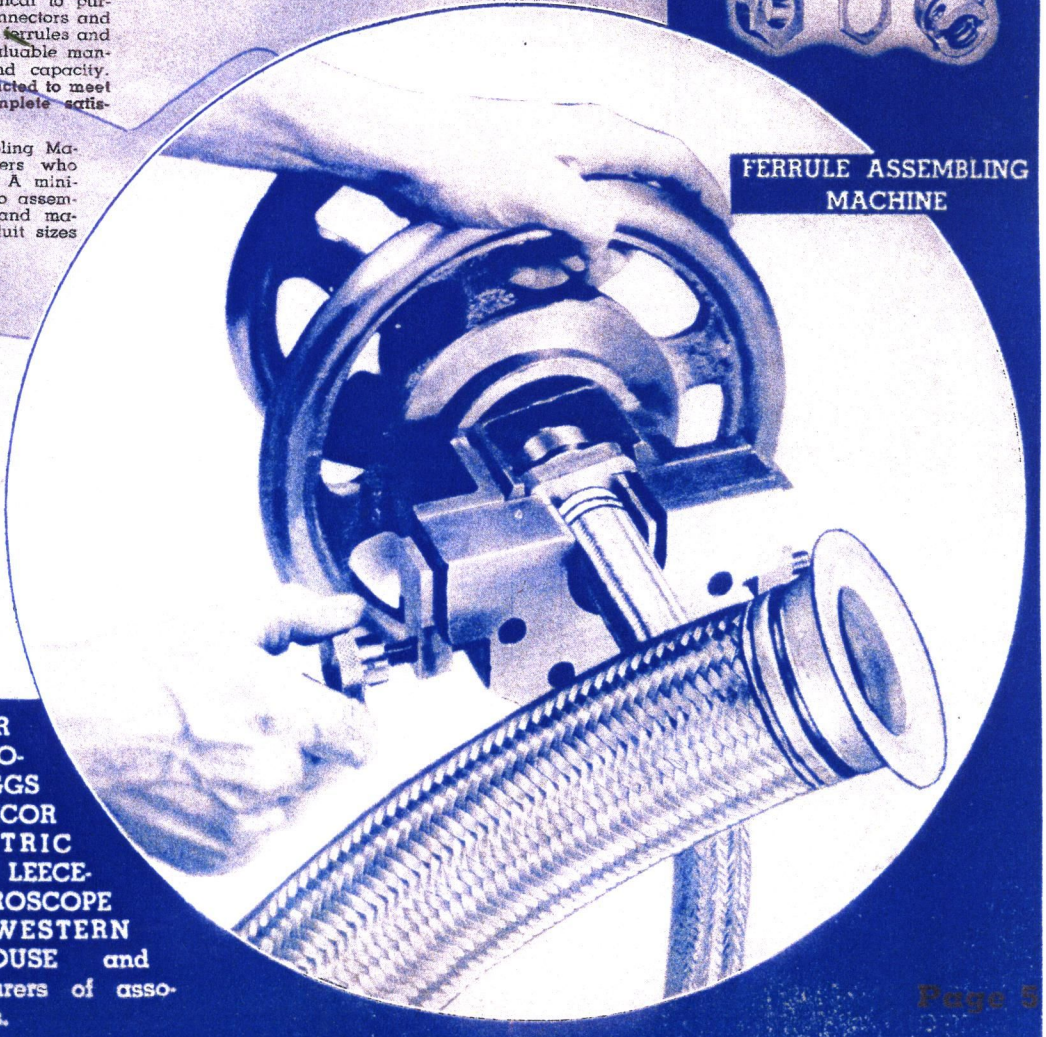
RIGID AND FLEXIBLE CONDUIT

Amphenol rigid and flexible conduit meets the Army-Navy specifications and is supplied in sizes from 3/16" to 2½" sizes. The thin wall, light weight and durability of these conduits makes them acceptable by all industries for shielding radio and electrical wiring.



AN FITTINGS FOR FLEXIBLE AND RIGID CONDUIT





FERRULE ASSEMBLING MACHINE

COMPLETE "AN" CATALOG

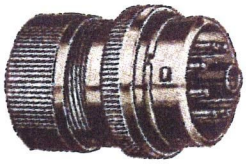
The "AN" line of connectors, fittings and conduits are only briefly described on these pages. Manufacturers and contractors are requested to write for the complete "AN" catalog which contains complete listing, with diagrams for assembling and wiring.

AND on aircraft accessories by AIR ASSOCIATES AIRCRAFT ACCESSORIES AIRTRACK BENDIX BRIGGS RADIO BRISTOL ECLIPSE EICOR GALVIN GENERAL ELECTRIC KOLLSMAN LEAR AVIA LEECE-NEVILLE RCA SPERRY GYROSCOPE STEWART WARNER WESTERN ELECTRIC WESTINGHOUSE and many other manufacturers of associated aircraft products.

Genuine AMPHENOL

CONNECTORS

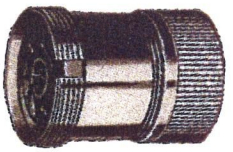
Heavy Duty for Radio Cables



CABLE CONNECTORS
With Coupling Ring

Supplied with either male or female elements. Screw type coupling ring engages threads of Chassis or Cable Connectors described to the right.

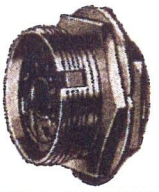
Male	Female		List Price
04M	04F1	4-contact	$1.25
05M	05F1	5-contact	1.25
06M	06F1	6-contact	1.25
08M	08F1	8-contact	1.25
012M	012F1	12-contact	2.00



CABLE CONNECTORS
With Coupling Thread

Supplied with either male or female elements. Polarizing keyway in side of shell engages key in connectors listed to the left, making incorrect insertions impossible.

Female	Male		List Price
04F	04M1	4-contact	$1.25
05F	05M1	5-contact	1.25
06F	06M1	6-contact	1.25
08F	08M1	8-contact	1.25
012F	012M1	12-contact	2.00



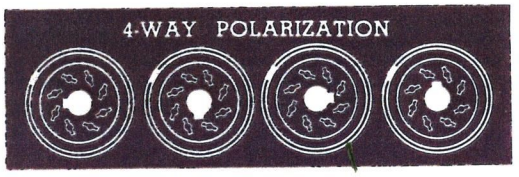
CHASSIS CONNECTORS

Mount in 1¼" hole in any panel up to ½" thick or blank outlet box cover. Ideal for mounting directly on chassis. Supplied with lock washer, flat washer and hex. nut. Coupling threads fit cable connectors having coupling rings.

Female	Male		List Price
P04F	P04M	4-contact	$1.25
P05F	P05M	5-contact	1.25
P06F	P06M	6-contact	1.25
P08F	P08M	8-contact	1.25
P012F	P012M	12-contact	2.00

For a More Positive Contact—Use Amphenol Connectors

Molded bakelite connectors encased in cadmium-plated, drawn brass shells, capable of withstanding the severe abuse of general radio and electronic use, yet compact in size and neat appearing. Used extensively for connecting various units of transmitters and testing apparatus; and as the power connector for mobile transceivers and receivers used in aircraft, police motorcycles, speed boats, automobiles, etc. The standard connectors for intercommunicating systems. Chassis types can be mounted in standard electric outlet boxes, to conceal wires behind walls.



Bakelite element polarized according to R.M.A. standards for tube sockets; 8 and 12 contact follows the octal style, having a bakelite polarizing key. Elements can be assembled to the polarized shell in four positions so that four different connectors may have the same number of contacts, yet each will require its own corresponding plug.

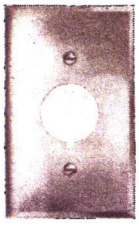
As rugged as the Heavy Duty Power Plugs described on the next page.

YOKE FOR USING CHASSIS TYPE IN OUTLET BOXES
No. 92-12 Yoke Only
List 15c Each

For flush surface work mount chassis type in Yoke. Punched from steel, cadmium-plated to prevent corrosion, this yoke has self centering holes to fit any shallow or deep conduit or BX service, switch or handy box. Standard wall plate mounting holes. Supplied with mounting screws.

CAP & CHAIN
No. CCC8—List 50c

Polished chrome-plated heavy brass cap with nickel silver bead chain. For sealing chassis connectors against dirt and tampering when not in use. End ring on chain fastens under screw in chassis or under screw of wall plate.



POLISHED CHROME WALL PLATE
No. 84-92C—List 75c Each

Polished chrome-plated wall plate for use with chassis connectors when used with above Yoke. .040" brass, beveled edge, standard mounting holes. This wall plate may also be used with No. 92-M2 and 92-F2 listed on next page.

GENERAL SPECIFICATIONS

Insulation is best grade high dielectric molded black bakelite, permitting the connectors to be used on high frequencies and high voltages. Female contacts are made of bronze, cadmium plated, recessed in individually molded pockets, protecting them from physical damage and increasing the surface leakage path from contact to contact and contact to shell. Prongs of male are drawn brass, plated for fast soldering. Shell is heavy drawn brass, cadmium-plated to prevent corrosion.

ELEMENTS INTERCHANGEABLE

Male and female elements are interchangeable so that male prongs can be kept at dead end of circuit.

WEATHERPROOF

Live rubber gasket washer backed by paraffined fibre washer seals cable entrance of connector against dirt and moisture. To make connector humidity-proof pour sealing compound in cable end after connector is wired.

FULLY SHIELDED

Completely encased in a heavy drawn brass cadmium-plated shell, making the connector 100% shock proof and incapable of radiation.

NUMBERED CONTACTS

Contact and prong numbers are molded directly into the bakelite to facilitate easy wiring and tracing of circuits.

CABLE CLAMP

Cable clamp is riveted to brass shell to prevent turning. This clamp is very positive and relieves soldered connections of all pulling and twisting strain. Adjustable to cables up to ½".

FLEXIBLE CONDUIT & BX

See next page for illustration of connector wired with flexible conduit or BX.

For High Frequency Applications

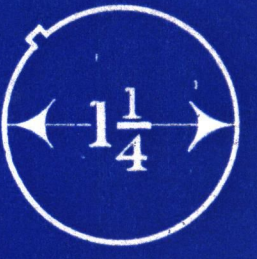
All connectors on this and the next page are available with the element molded from mica-filled bakelite. When ordering simply add the suffix "T" to the part number and 13c to the list price.

Either male or female chassis unit mounted in a standard electrical switch box provides an ideal outlet for connecting multi-wire intercommunication systems. Install the same as an electrical power outlet.

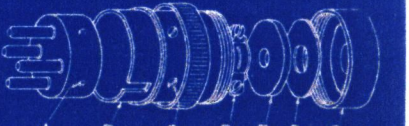
REMOTE CONTROL CONNECTIONS

Provides an outlet having from 4 to 12 contacts. Cable connector can be locked in place with coupling ring, making accidental disconnections impossible.

MOUNTING HOLE DIMENSIONS



ASSEMBLY INSTRUCTIONS

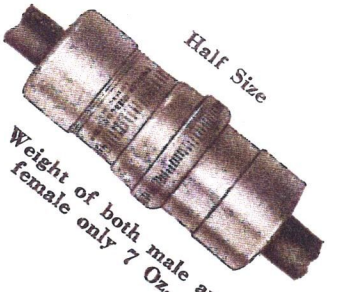


Push bakelite element "A" into keyed shell "B"; (Position polarizing of bakelite element and keying of metal shells so that male and female connectors match); insert screws "C" Tighten cable clamp "D" which relieves strain on connections. Push live rubber gasket washer "E" and fibre washer "F" against shell (sealing connections) and screw on outer cap "G" overall.

ADJUSTABLE CABLE CLAMP

AMPHENOL
REG. U.S. PAT. OFF.

CIRCUIT—BREAKING POWER PLUGS

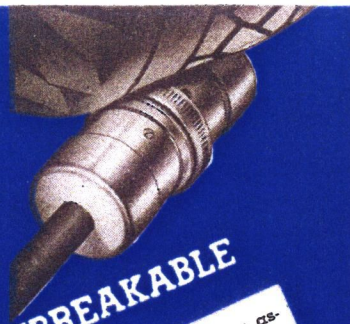


A rugged connector designed for modern high-speed, slap-bang usage. Extremely compact and feather-weight as compared to other heavy duty connectors. Screw type coupling ring absolutely eliminates accidental disconnections, even in overhead work and on trucks and vibrating machinery. *LIFE TIME REPLACEMENT WARRANTY* makes it the most economical connector on the market. Extensively used for: Connecting all types of electrical appliances and machinery——Coupling trucks and trailers—In movies, sound and radio for connecting multi-unit apparatus, indoor or outdoor.

Highly recommended for all ordinary useage where two, three or four power wires are to be connected, carrying 15 amps, at 125 volts or 10 amps. at 250 volts. Where more conductors are involved, for higher current carrying capacity, and for special applications, see the "AN" Connectors on Pages 5 and 6.

LOW IMPEDANCE MICROPHONE CONNECTIONS can be most effectively made with these connectors because of their low capacity and the low resistance of their flat, heavy prongs. Also ideal for connecting outdoor P.A. speakers or microphones.

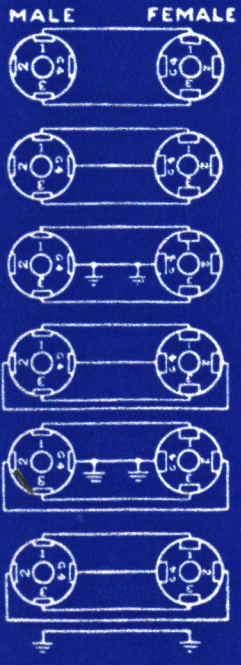
Where the Power must not Fail — Use Amphenol Connectors



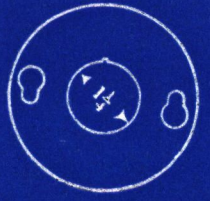
UNBREAKABLE

A five ton truck actually drove across assembled connector. Not only did the electrical circuit remain unbroken, but no damage was done to either the drawn brass shell or the bakelite element. Definite proof the connectors will stand the rough usage of factory and garage service.

WIRING DIAGRAMS



TO MOUNT ON ANY BLANK COVER OR PANEL



WIRED WITH FLEXIBLE CONDUIT

Backs of caps can be easily reamed out to accommodate standard BX or Greenfield connectors. Can also be connected directly to metal conduit. Elements are removable from the front for easy wiring on installations of this type.

ELEMENTS INTERCHANGEABLE

Male and female elements are interchangeable so that male prongs can be kept at dead end of circuit.

WEATHERPROOF

Live rubber gasket washer backed by fibre washer seals connector against dirt and moisture. To make connector humidity-proof pour sealing compound in cable end after connector is wired.

EXTRA HEAVY PRONGS

Flat-blade brass prongs—phosphor bronze contacts, more than heavy enough to carry 15 amps. at 125 volts, 10 amps. at 250 volts. ***Listed By Underwriters' Laboratory***

EASY TO WIRE

Easier to connect than an ordinary light socket.

FULLY SHIELDED

Completely encased in heavy drawn-brass cadmium-plated shell, eliminating radio interference and making the connector 100% shockproof.

RECESSED CONTACTS

Female contacts in individually molded pockets to quench arc.

POLARIZED

Key in metal shell makes it impossible to insert male prongs except in proper contacts.

CABLE CLAMP

Positive gripping cable clamp to relieve strain on connectors. Adjustable to cables up to ½".

NUMBERED CONTACTS

Contact numbers molded into bakelite opposite each binding screw on cable end, and opposite each contact on service end. A great convenience for fast, accurate wiring.

GROUND SCREW

Ground screw in shell for safety circuit wire or for connecting to ground of circuit. Makes possible the use of the shell as a fifth conductor.

Warranty: Life Time Service

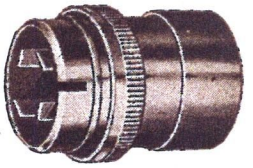
If at any time the prongs or contacts become pitted or oxidized from constant circuit breaking or carrying heavy overloads, return the connector to the AMERICAN PHENOLIC CORPORATION with fifty cents for each connector returned. New prongs or contacts will be inserted and the connector returned prepaid.

List Prices

CABLE CONNECTORS
With Coupling Ring

Supplied with either male or female element. Coupling Ring engages threads of following Connectors and Receptacles, absolutely preventing accidental disconnections.

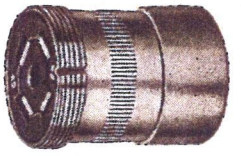
No. 92-M—Male .....$2.50 each
No. 92-F1—Female .. 2.50 each



CABLE CONNECTORS
With Coupling Threads

Supplied with either male or female element. Polarizing key fits keyway slot in above connector, making incorrect insertions impossible.

No. 92-F—Female ....$2.50 each
No. 92-M1—Male ..... 2.50 each



PANEL RECEPTACLES

Supplied with either male or female element. Mounts in 1¼" hole in any panel or blank cover up to ½" in thickness. Ideal for mounting directly on appliances or machinery. Supplied with lock washer, spacer washer and hex nut. Use 92-M or 92-F1 as the cable connector.

No. 92-C—Female ....$2.50 each
No. 92-C1—Male ..... 2.50 each

FLUSH RECEPTACLES

Supplied with either male or female element. Mounted on punched steel yoke as illustrated. Self centering mounting holes to fit standard switch boxes. For use with Wall Plate listed on page 16. Service end protrudes through Wall Plate ⅛" to accommodate coupling ring on cable connector, or Chain & Cap to close outlet when not in use.

No. 92-M2—Male ....$2.60 each
No. 92-F2—Female ... 2.60 each

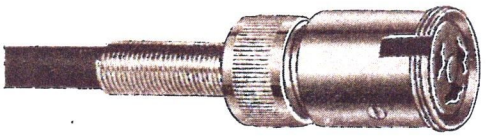
CAP & CHAIN — WALL PLATES

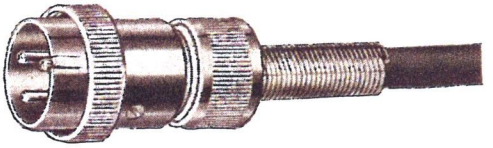
See preceding page for flush mounting wall plates to fit standard outlet boxes, and dust-protector caps for sealing Flush and Panel Receptacles.

Genuine AMPHENOL
REG U.S. PAT. OFF.

CONNECTORS

3 and 4 Contact Microphone Style





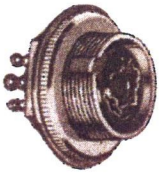
WITH COUPLING THREAD		WITH COUPLING RING	
MC3F	—3-contact female $1.00	MC3M	—3-prong male $1.00
MC4F	—4-contact female 1.10	MC4M	—4 prong male 1.10
MC3M1	—3-prong male 1.00	MC3F1	—3-contact female 1.00
MC4M1	—4-prong male 1.10	MC4F1	—4-contact female 1.10

Above price includes spring cord protector. Cord protectors available in two sizes: .281" I.D. supplied with 3 contact; .385" I.D. with 4 contact.

CHASSIS CONNECTORS

FEMALE

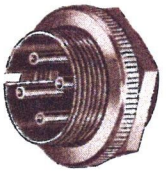
PC3F — 3-contact — 50c List
PC4F — 4-contact — 55c List



Mounts in $\frac{13}{16}$" hole in any panel or chassis up to $\frac{1}{8}$" in thickness. Service end accommodates coupling ring on Cable Connector or Cap and Chain to seal input against tampering and dirt. Supplied with cadmium plated knurled mounting ring, lock washer and hex. locking nut. Bakelite element molded permanently in brass shell. **Use MC3M or MC4M as the cable connector.**

MALE

PC3M — 3-prong — 50c List
PC4M — 4-prong — 55c List

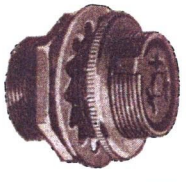


Identical to above but has male element. The brass, nickel-plated prongs are fully protected by the machined brass shell. For use on panels or chassis up to $\frac{1}{8}$" in thickness, where a live line is to be plugged into the receptacle. Supplied with cadmium plated knurled mounting ring, lock washer and hex. locking nut. **Use MC3F1 or MC4F1 as the Cable Connector.**

SPECIAL CHASSIS CONNECTORS

FEMALE

For heavy panels up to ¾" in thickness

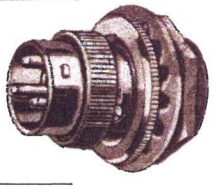


SP-PC3F—3-contact—$1.00 List
SP-PC4F—4-contact— 1.10 List

Housed in 1¼" threaded, cadmium-plated brass shell. Removable bakelite element held in place by side set screw. Contact solder lugs recessed $\frac{5}{8}$", protecting them from physical damage and eliminating danger of shock. **Use MC3M or MC4M as the Cable Connector.**

MALE

SP-PC3M—3-prong—$1.00 List
SP-PC4M—4-prong— 1.10 List



Adjustable to panels or chassis up to $\frac{3}{8}$" in thickness. Extends in front of panel ½". Brass shell is chrome-plated and carries the coupling ring. **Use MC3F or MC4F as the Cable Connector.**

DUST PROOF CAP AND CHAIN

No. CCC-3 — 50c List

For use with the chassis connectors listed above. Seals panel and chassis outlets against dirt and tampering when not in use. The cap is machined from brass, then polished chrome-plated. The nickel-silver bead chain terminates in an eyelet that fastens under screw in chassis or under mounting screw of wall plate.

CONVENIENCE WALL OUTLET

For permanent installation in broadcasting studios, recording studios, and for microphone inputs on the better sound jobs. Also ideal as a speaker or doublet antenna outlet. Used wherever a neat appearing, compact connector is required which cannot accidentally disconnect. Wall plate has struck up bevel edges and is chrome plated. Mounting holes fit directly on standard electric switch boxes. Punched for use with any chassis connector on this page. Supplied with mounting screws.

No. 84-MC3—Wall Plate Only.....75c List

CABLE CONNECTORS

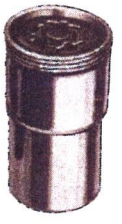
Compact, unbreakable connectors for connecting two, three and four conductor cables, either shielded or unshielded. The elements are molded from high dielectric black bakelite. Shells are machined from solid brass rod, then finished in highly polished chrome.

Amphenol connectors have all these highly desirable features: (1) Screw type coupling ring eliminates accidental disconnections. (2) Polarized so that incorrect insertions are impossible. (3) 1 prong of 3 pole type can be grounded if desired by set screw. (4) Squeeze type ground clamp grips cable securely after assembly, eliminating pulling and twisting strain from soldered contacts.

STANDARD FOR MICROPHONES

Although these connectors are widely used for all types of portable apparatus, they were designed primarily for use with microphones. Since 1934 they have been the standard for the "sound" industry. Almost all amplifiers carry one of the chassis units listed to the left, to which one of these cable units must be connected. By removing the back cap of these cable connectors they can be screwed into microphone housings having $\frac{5}{8}$"-27 threads.

STAND CONNECTORS



SC3F—3-contact Female—$1.00 List
SC4F—4-contact Female— 1.10 List

Screws on top of any microphone stand with standard $\frac{5}{8}$"-27 male threads. Reducers are available from any Radio Parts Jobber permitting use with ½" pipe threads. Use with any microphone having the MC3M or MC4M connectors installed. The microphone can then be plugged into the Stand Connector and locked in place with the coupling ring.

MICROPHONE PROTECTION

Every microphone used in a permanent installation should be connected to the stand with this connector so that the microphone can be easily disconnected when not in use, protecting it from tampering, dust and thieves. This is especially true of auditorium, theatre and church installations.

This connector can be assembled to any pipe or hanger, mounted to the floor, walls or ceiling. If the pipe cannot be threaded $\frac{5}{8}$"-27, suitable reducers are on the market.

SHOCK ABSORBER

MSA-3 — $1.00 List

For use between stand and microphone. A rubber shock absorber encased in metal keeps floor vibrations from microphone. Has standard $\frac{5}{8}$"-27 threads, male at one end, female at the other. Has $\frac{7}{16}$" opening through the center for mike cable. The cushioning element is formed rubber which retains its resiliency indefinitely. The outer metal shell is brass, chrome-plated. Overall length, 1⅞"; diameter ¾".

SIDE CABLE OUTLET

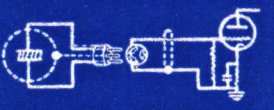
SC03 — 75c List

Designed to be placed between a microphone and stand having $\frac{5}{8}$"-27 threads. Its purpose is to provide an outlet for the microphone cable where it is not desired to run cable through the stand tubing. Efficient cable grip relieves strain. Heavy metal casting, finished in polished chrome. Large oval shaped cable opening with rounded edges prevents cable from twist-when the Side Cable Outlet is screwed into microphone body.

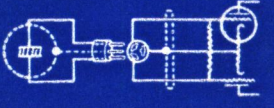
Commonly called Microphone Connectors, but because of their light weight, neat appearance and compactness, they are also used extensively for other purposes. For connecting electrical appliances on aircraft, speaker connectors, doublet antenna lead-ins, etc.

TYPICAL WIRING DIAGRAMS

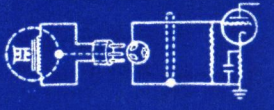
CRYSTAL MICROPHONE
(SINGLE CONDUCTOR SHIELDED CABLE)



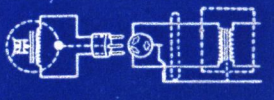
CRYSTAL MICROPHONE
PUSH-PULL COMBINATION
(2 CONDUCTOR SHIELDED CABLE)



DYNAMIC or VELOCITY MICROPHONE
HIGH IMPEDANCE
(SINGLE CONDUCTOR SHIELDED CABLE)

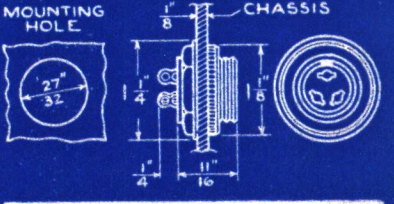


DYNAMIC or VELOCITY MICROPHONE
LOW IMPEDANCE
(2 CONDUCTOR SHIELDED CABLE)



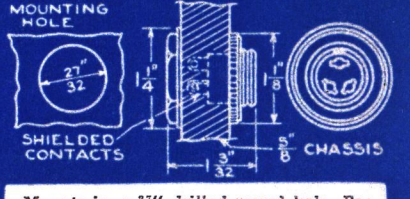
CHASSIS UNITS

TYPE PC DIMENSIONS



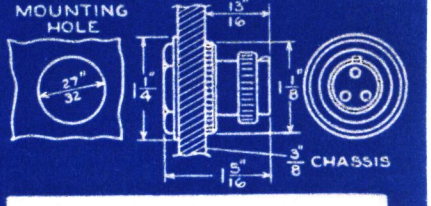
Mounts in a $\frac{27}{32}$" drilled round hole. For regular production use LD-3 Laboratory Die, page 16, which punches a $\frac{13}{16}$" hole.

TYPE SP-PC-F



Mounts in a $\frac{27}{32}$" drilled round hole. For regular production use LD-3 Laboratory Die, page 16, which punches a $\frac{13}{16}$" hole.

TYPE SP-PC-M



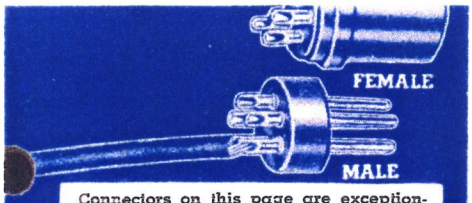
Mounts in a $\frac{27}{32}$" drilled round hole. For regular production use LD-3 Laboratory Die, page 16, which punches a $\frac{13}{16}$" hole.

MC 3M GROUNDED PIN

The MC3M Cable Connector has provisions for grounding the #1 prong to the connector shell when used with two wire shielded microphone cable or Twinax Transmission Cable listed on pages 37 and 38. Cable shield is then

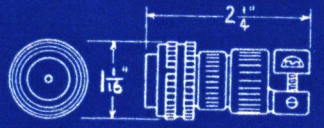
AMPHENOL
REG. U.S. PAT. OFF.

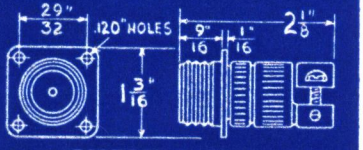
"AN" Connectors for Public Address Work



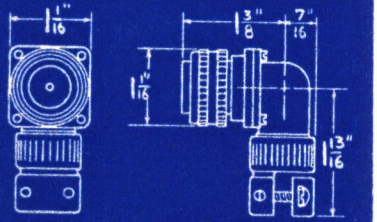
Connectors on this page are exceptionally easy to wire. Both male prongs and female contacts extend beyond bakelite element and are terminated in a soldering lug as illustrated. Simply insert wire into lug and touch with soldering iron. Lugs are solder coated.

FROM 1 TO 5 CONTACTS CABLE UNITS

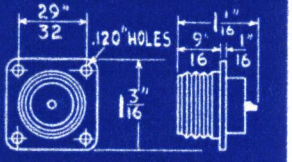




ANGLE CONNECTOR

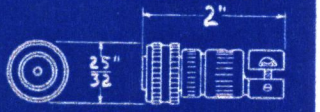


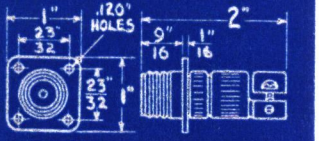
CHASSIS UNIT



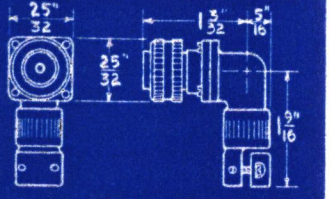
To mount chassis unit drill or punch a 3/4" hole for back of connector and four .120" holes for screws or rivets.

SINGLE CONTACT CABLE UNITS

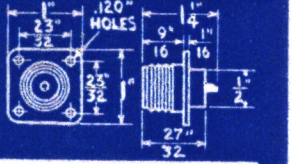




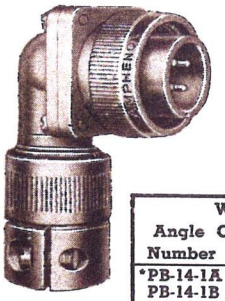
ANGLE CONNECTOR



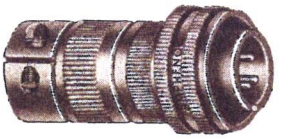
CHASSIS UNIT



To mount chassis unit drill or punch a 1/2" hole for back of connector and four .120" holes for screws or rivets.

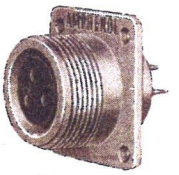


Angle Cable Connector With Ring



With Coupling Ring

With Coupling Thread



Chassis Unit

WITH COUPLING RING				Number of Contacts	For Wire Size	WITH COUPLING THREAD			
Angle Connector		Straight Connector				Straight Connector		Chassis Unit	
Number	List	Number	List			Number	List	Number	List
*PB-14-1A	$8.55	PA-14-1A	$6.05	1	8	RA-14-1A	$5.55	RB-14-1A	$2.55
PB-14-1B	8.35	PA-14-1B	5.85	1	16	RA-14-1B	5.35	RB-14-1B	2.35
PB-14-3	9.05	PA-14-3	6.55	3	20	RA-14-3	6.05	RB-14-3	3.05
PB-14-4	9.40	PA-14-4	6.90	4	20	RA-14-4	6.40	RB-14-4	3.40
PB-14-5	9.75	PA-14-5	7.25	5	20	RA-14-5	6.75	RB-14-5	3.75

* Connector with contact to handle up to #8 wire is widely used for connecting antenna feeders.

ANGLE CABLE CONNECTOR. A right angle connector for connecting a vertical line to a horizontal outlet, as between transmitting units mounted on rack and panel. Rear end of connector unit can be swung through a 360° arc, permitting shortest possible runs of cable and easy clearance of surrounding obstructions. Cable clamp accomodates cables 3/16" to 1/2". Supplied with 1, 3, 4 or 5 prongs. Available with female contacts at slightly higher prices. Use with connectors having coupling threads.

CABLE CONNECTORS with Coupling Ring. Use with the Cable Connector having coupling threads for connecting two cables, or with the Chassis Unit for connecting a cable to panel or chassis. Cable clamp accomodates cables from 3/16" to 1/2" in diameter. Supplied with 1, 3, 4 or 5 prongs. Available with female contacts at slightly higher prices.

CABLE CONNECTOR with Coupling Threads. Identical to Cable Connector described above but has coupling threads. Supplied with 1, 3, 4 or 5 female contacts. Available with male prongs at slightly lower prices.

CHASSIS UNIT. Has a square mounting flange for permanent assembly to chassis or panels with screws or rivets. Supplied with 1, 3, 4 or 5 female contacts. Available with male prongs at slightly lower prices. Use with the Angle Connector or Cable Connector with Coupling Ring.

These connector assemblies were selected from the regular Amphenol "AN" line, designed in accordance with U.S. Army-Navy Procurement Specification AN-S534, as the most suitable for general radio and public address work. See pages 4 and 5 for additional information.

Engineers engaged in the designing and maintenance of transmitters and public addres systems have often requested a series of connectors which would give a life-time of trouble-free service and definitely eliminate noisy connections. Greater contact tension is permissible in the "AN" line because of the screw-jack action exerted by the coupling ring as described in the following paragraph.

Easy to insert or withdraw plugs from the receptacle. Coupling ring acts on the screw-jack principle. As it is tightened, the male prongs are pushed into the female contacts. Unloosening the coupling ring pulls the male prongs out so that the connectors come apart easily, eliminating pulling or jerking.

Contacts are machined from bronze bar-stock, of hardness to insure lasting resiliency. All contacts are heavily silver plated, to insure low resistance. The easily accessible pocket-type soldering lugs, lead coated for rapid soldering, are an integral part of the contact.

Specifications

Aluminum alloy shells have light sand blast finish. Insulation is high dielectric black bakelite. Machined threads with Permalub coating prevent binding. Shells are polarized to prevent incorrect insertions. Male and female elements are interchangeable so that male prongs can be kept at dead end of circuit.

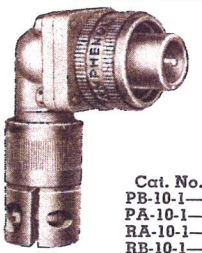
LOW-LOSS CONNECTORS

Any connector on this page can be supplied with the element molded from low-loss Mica-Filled Bakelite. For electrical characteristics see page 17. When ordering, add the letter "T" to the catalog number and 13c to the list price. Recommended for use wherever the connectors are to carry high or ultra-high RF currents as patch cords on transmitters, connecting antenna feeders, etc.

CABLE CLAMP

The cable clamp used on connectors described above and below was especially designed to eliminate all pulling and twisting strain on soldered connections without damaging outer covering of cable. Cable clamp has two inner grooves into which the cable covering is pressed when side machine screws are tightened. Supplied with live rubber gasket backed by a fibre washer to keep dirt and moisture from soldered connections.

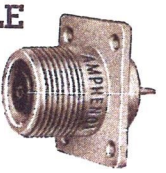
FOR SINGLE CONDUCTOR SHIELDED CABLE



Angle Cable Connector With Ring

With Coupling Ring

With Coupling Thread



Chassis Unit

Cat. No.	List
PB-10-1—Angle Connector—coupling ring	$7.60
PA-10-1—Cable Connector—coupling ring	4.85
RA-10-1—Cable Connector—coupling thread	4.90
RB-10-1—Chassis Unit—coupling threads	2.40

First two units are supplied with male prong; last two have female contact. Elements are interchangeable so that male prong can be kept at dead end of circuit.

Identical to the larger units described at top of page. Supplied with single contact only. Used for connecting small co-axial cable, shielded rubber cable as used for microphones, also used in pairs for connecting open wire antenna feeders. Contacts and prongs are for wire up to #16 stranded. Cable clamp, supplied with rubber gasket and fibre washer, accomodates cables to 1/4" O.D.

SPECIAL FITTINGS AVAILABLE

Where it is desired to make permanent installations and run cables through flexible or thin wall conduit, an entire line of fittings is available for the connectors listed on this page, including right angle and 45° couplings. Terminations are available for assembling conduit to panel or chassis. These fittings will be widely used by amateur and commercial stations for protecting cables running between units on rack and panel and long runs of cable to microphones, monitoring speakers, etc.

CONNECTORS FOR EVERY PURPOSE

The "AN" line of connectors more fully described on pages 4 and 5 include connectors for almost every conceivable application. There are more than 160 bakelite elements, having from 1 to 42 contacts, and 18 different sizes of shells. Primarily designed for use in U. S. Army and Navy Aircraft, where the electrical connection must never fail, they are now widely used in all branches of the electrical and radio field. Manufacturers and contractors—write for special "AN" catalog with complete listings.

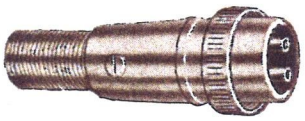
Genuine

AMPHENOL

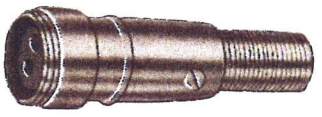
REG. U. S. PAT. OFF.

MICROPHONE

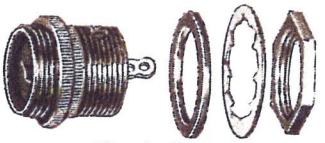
For 2 Conductor Shielded or Unshielded Cable



With Coupling Ring
No. MC2M — Male
No. MC2F1 — Female
List Price .....80c Each



With Coupling Thread
No. MC2F — Female
No. MC2M1 — Male
List Price .....80c Each



Chassis Connector
No. PC2F — Female
No. PC2M — Male
List Price .....45c Each

**Supplied Complete with Coil Spring Cord Protectors* *with Hardware*

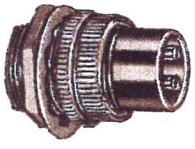
CABLE CONNECTORS

An unbreakable connector for cables having a double shield and single conductor, single shield and two conductors, twisted pairs and concentric lines, photo cell leads, patch cords, etc. Also widely used for connecting small electrical apparatus such as model railroad equipment, pin ball games, etc.

Cord protector accommodates cables up to $\frac{5}{16}$". Shells are machined from solid brass, then heavily plated with polished chrome. Elements are molded from high dielectric black bakelite. Contacts are formed from spring brass, then cadmium plated. Screw type coupling ring engages coupling threads of chassis connector or companion cable connector, preventing accidental disconnections. Elements are polarized.

CHASSIS UNIT WITH COUPLING RING

No. SP-MC2M—2-pole Male — 90c List



Connector for mounting on chassis, panel, or may be screwed into microphone body having standard $\frac{5}{8}$"-27 thread. Has coupling ring for engaging MC2F Cable Connector. Brass shell is chrome plated. Supplied with hex nut, lock washer and flat washer.

CHASSIS CONNECTOR

A rugged connector designed for mounting on panels or chassis of all types of radio and electrical apparatus. Mounts in a $\frac{5}{8}$" round hole.

Can be screwed directly into microphone housing having $\frac{5}{8}$" — 27 threads. When female chassis connector is used for mounting on chassis or in microphone bodies or stands, use No. MC2M as the Cable Connector.

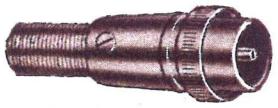
Bakelite element is completely encased in a cadmium-plated brass shell. Price includes hex. nut, lock washer and flat washer.

WITH RIVETING PLATE

PC2-CR—2-Pole Female — 55c List

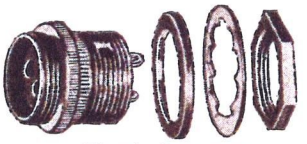
Chassis connector for fast mounting with rivets or for installing on apparatus that has a mounting hole too large for Lock-Nut-Mounting Amphenol Connectors. The $1\frac{1}{16}$" diameter round mounting plate is an integral part of shell, the entire unit being machined from solid brass, then chrome plated. See border for dimensions.

SINGLE POLE SHIELDED CONNECTORS



With Coupling Ring
No. 80M — Male
No. 80F1 — Female
List Price .....65c Each

With Coupling Thread
No. 80F — Female
No. 80M1 — Male
List Price .....65c Each



Chassis Connector
No. 80C — Female
No. 80C1 — Male
List Price 40c.Each

**Supplied Complete with Coil Spring Cord Protectors* *with Hardware*

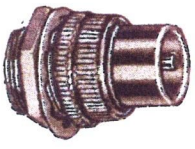
CABLE CONNECTORS

For small co-axial cables, microphone cables, etc. Utilizes a standard sleeve type contact and male prong for a more positive contact. Unbreakable brass shell, finished in polished chrome. Element is Amphenol molded from high dielectric black bakelite.

** Spring cord protector supplied as standard with connectors accepts cables to $\frac{1}{4}$". When ordering connectors for use with Amphenol 76 cable, request No. 7030 spring for $\frac{5}{16}$" cables.*

CHASSIS UNIT WITH COUPLING RING

No. 80-MSP—1-pole Male — 80c List



Connector for mounting on chassis, panel, or may be screwed into microphone body having standard $\frac{5}{8}$"—27 thread. Has coupling ring for engaging 80-F Cable Connector. Brass shell is chrome plated. Supplied with hex nut, lock washer and flat washer.

CHASSIS CONNECTORS

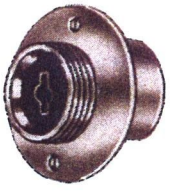
Single pole connector for mounting on amplifiers and other electronic apparatus. May be screwed into microphone body having $\frac{5}{8}$"—27 threads. Highly recommended as the chassis unit for small concentric cables. Mounts in a $\frac{5}{8}$" round hole.

Shell is heavy brass, bright cadmium plated. Element is Amphenol molded from high dielectric black bakelite. Price includes hex. nut, flat washer and lock washer.

WITH RIVETING PLATE

PC2-CR—1-pole Female — 50c List

Chassis connector for fast mounting with rivets or for installing on apparatus that has a mounting hole too large for "Lock-Nut-Mounting" Amphenol Connectors. The $1\frac{1}{16}$" diameter round mounting plate is an integral part of shell, the entire unit being machined from solid brass, then chrome plated. See border for dimensions.



CONVENIENCE OUTLET

Chrome-plated wall plates, punched for any chassis connector listed on this and the preceding page. Provide a neat appearing microphone outlet for broadcasting studios, recording studios, and the better sound installations. Also used as a speaker outlet.

Plate has struckup bevel edge. Mounting holes are spaced $3\frac{5}{16}$" to fit directly on outlet boxes. **Price is for wall plate only.**

No. 84-PC2—For all chassis units on page 25....75c List
No. 84-PC3—For all chassis units on page 26....75c List

CHROME CAP & CHAIN

No. CCC-1....50c List

A heavy brass cap, finished in polished chrome, for sealing the chassis connectors listed on this and the preceding page. Eliminates the gathering of dust in contacts when connectors are not being used, and discourages tampering. Cap is supplied with a nickel-silver chain which terminates in an eyelet for fastening under screw or rivet in chassis or panel. Eyelet also fits under mounting screw of wall plate as illustrated to the left.

Use with PC1M, CL-PC1M, 80C, PC2F and PC2M.

Any Connector on this page available molded from Low-Loss Mica-Filled Bakelite
Add letter "T" to Cat. No. and 13c to List Price.

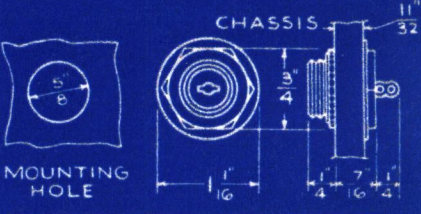
FIT ALMOST EVERY MIKE

Used by the Following Mike Manufacturers:

American Microphone Co.
Amperite Co.
Astatic Microphone Lab.
Bruno Laboratories, Inc.
Brush Development Co.
Electro-Voice
Shure Brothers
Turner Co.
Universal Microphone Co.

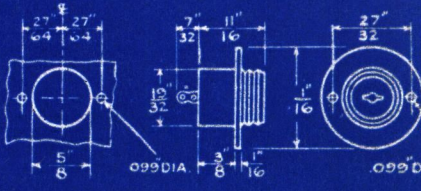
Also used by most manufacturers of public address amplifiers and electr onic apparatus.

LOCK-NUT MOUNTING



All lock nut mounting chassis units on this page mount in plain $\frac{5}{8}$" round hole. Dimensions are for 80-C & PC2F.

RIVETING TYPE



For fast assembly use rivet type. Requires $\frac{5}{8}$" round hole with .099" rivet holes on $\frac{27}{32}$" centers.

ASSEMBLY INSTRUCTIONS

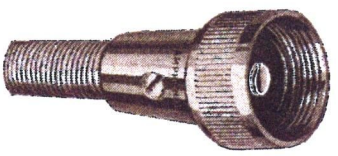
Remove about 1" of outer insulation. Insert in spring cable protector. Fold shield back over spring cable protector and solder. Strip back insulation on center conductor and solder to contact.

All wiring is done out in the open. Upon completion of soldering slide assembled cable and element into shell from the back. Tighten side set screw, mak-

CONNECTORS

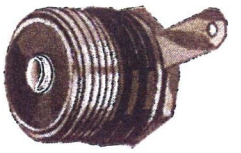
AMPHENOL

For Single Conductor Shielded Cable



No. MC1F—Female
With Coupling Ring
List Price 50c

No. MC1M—Male
With Coupling Threads
List Price 40c



No. PC1M—Chassis
With Coupling Threads
List Price 30c
With Necessary Hardware

Supplied Complete with Coil Spring Cord Protectors

CABLE CONNECTORS

Pressure-type compact connectors for use with single conductor microphone cable. Utilizes the cable shield as the return conductor. Contact is made when center soldered connections are pressed together by tightening the coupling ring, Recognized as standard for all single conductor microphone cable work.

Chrome-plated heavy machined brass shell incapable of becoming damaged regardless of how roughly the connectors are used.

Female cable connector has a positive locking screw-type coupling ring which engages threads of male cable or chassis connectors and phone plug adapter.

Insulation is special tissue-base laminated bakelite having extremely high dielectric properties and practically no moisture absorption.

New ingenuous method of grounding cable shield to the connector shell. Shield is folded back over cord protector and soldered. See instructions in border. Side set screw locks cord protector in place, relieving all strain on center conductor. Cable cannot pull out; ground connection cannot become noisy. End of spring cord protectors are hot tin dipped to permit easy soldering of cable shield. Cord protector cables up to ¼".

CHASSIS CONNECTORS

Widely used on amplifiers. An integral part of microphones using single conductor cable. Threaded shank which can be screwed into microphone housings or stands is ⅜" - 24—standard for single conductor microphones. **Use MC1F or MC1F-A as the cable connector.**

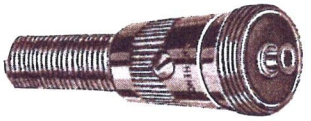
Mount in .375 hole (use Letter drill "W") when it is desired to ground shell directly to chassis or metal panels. Knurled portion of shank wedges into chassis when lock nut is tightened. Mount in ½" hole when two circuits are desired independent of the chassis. Supplied with shoulder and flat fibre washers, flat metal washer and hex. lock nut.

PRESSURE CHASSIS CONNECTOR

No. SP-PC1M — List Price 40c

A new spring action chassis connector. Center insulated contact is floating and forced forward by a tempered heavy coil spring. For all applications where a more positive contact is desired. Mounts in same chassis hole as PC1M described above. Supplied with extruded fibre washer, flat fibre washer, metal washer and hex. nut. **Use MC1F or MC1F-A as the cable connector.**

PRESSURE CABLE CONNECTOR



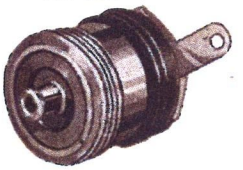
No. SP-MC1M — 50c List

Identical to MC1M described at top of page, but center insulated contact is forced forward by a heavy coil spring for a more positive connection. Can be used for connecting to any unit where MC1M was formerly used. Supplied with coil spring cord protector for cables to ¼".

CLOSED CIRCUIT INPUT

Eliminates Open Circuit Grid Howls

No. CL-PC1M — 40c List



A radically new type of chassis connector for feeding microphones or phono pick-ups into amplifiers or transmitters. Also used for connecting various units in series, such as P.M. Speakers, Headphones, etc.

When cable connector is removed, circuit is automatically closed by center metal contact being pressed forward by tempered heavy coil spring. Center contact shorts to outer shell. **Chassis connector circuit makes before cable circuit breaks.** Open circuit grid howls, always a cause of embarrassment and annoyance in Public Address and Broadcasting, are entirely eliminated. Also widely used for theft-alarms on wall type coin operated devices. Use MC1F or MC1F-A as the cable connector.

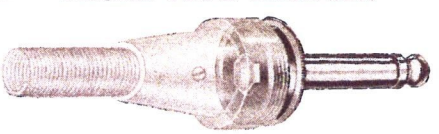
Mount in same hole as No. PC1M described above. Supplied with shoulder fibre washer, flat fibre washer, flat metal washer and hex, lock nut.

ANGLE CONNECTOR

No. MC1F-A — 60c List
With Coupling Ring

A new convenient cable unit for connecting cables at right angles to chassis unit. For use on amplifiers, transmitters and other apparatus which has the PC1M, SP-PC1M or CL-PC1M installed. Eliminates unsightly long bends in cable and greatly reduces the breakage of cable shields and center conductors. Barrel of connector is die cast and finished in polished chrome. Supplied with spring cord protector for cables to ¼". for wiring directions see instructions in border to left.

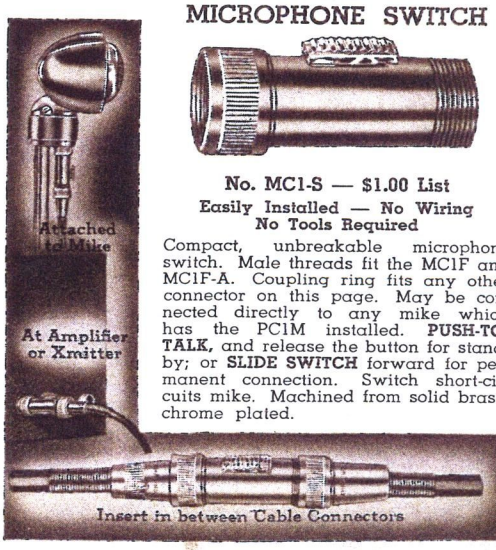
PHONE PLUG ADAPTER



No. MC1P — (Plug Only) — List Price 45c

Screws into coupling ring of MC1F and MC1F-A Connectors, permitting the cable to be plugged into any standard phone jack. There is no soldering or wiring. Since almost every microphone using single conductor shielded cable has the MC1F as the cable terminal, several of these adapters should always be on hand so that mikes can be plugged into amplifiers or recorders which use phone jacks for the input.

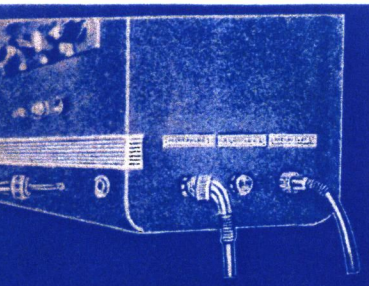
MICROPHONE SWITCH

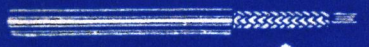


No. MC1-S — $1.00 List
Easily Installed — No Wiring
No Tools Required

Compact, unbreakable microphone switch. Male threads fit the MC1F and MC1F-A. Coupling ring fits any other connector on this page. May be connected directly to any mike which has the PC1M installed. **PUSH-TO-TALK,** and release the button for stand-by; or **SLIDE SWITCH** forward for permanent connection. Switch short-circuits mike. Machined from solid brass, chrome plated.

CABLE TYPE WIRING INSTRUCTIONS



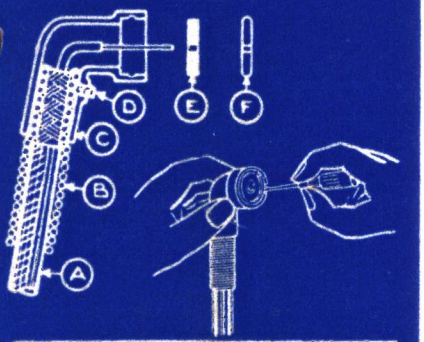


Remove 1" of outer rubber covering. Spread shield and remove ¼" of inner rubber covering.

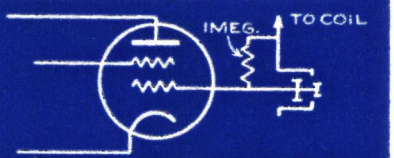
Fan shield and fold back on coil spring protector. Solder, being careful to avoid lumps of solder.

Insert assembled cable and spring cord protector into connector. Fasten side screw. Clip off protruding wiring. Solder.

ANGLE TYPE ASSEMBLY

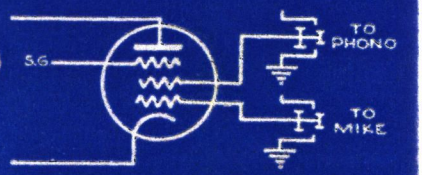


Remove spring (F) with small screw driver, releasing bakelite element (E). Loosen set screw (D) in shell (C) and take out spring cord protector (B). Solder cable shield to spring cord protector as described above. Reassemble. Solder center conductor of cable to contact in (E).



NOTE: 1 meg. resistor across connector for crystal mikes, but not required for other mikes.

Phono & Mike Into Same Tube



High output mike and phono pick-up can be fed into a single dual grid tube. Either may be disconnected while other operates.

Genuine AMPHENOL

MINIATURES

SMALL, LIGHTWEIGHT CONNECTORS

For Aircraft, Hearing Aids, Auto Radios, Speakers, Mikes, Photo Cells, Model Railroad Equipment, Etc.

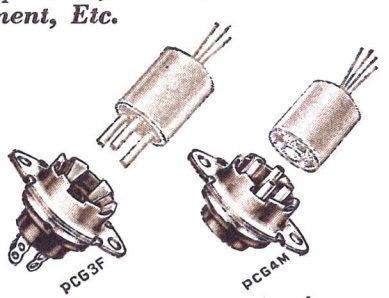
SHIELDED CHASSIS UNITS

Economical chassis receptacles and plugs for connecting shielded or unshielded cables having from two to six conductors. (For two wire cable use three contact unit and leave one contact unwired.) Can be used for connecting low amperage A.C. or D.C. power current for electrical appliances and test panels, battery current to battery and auto radios, and audio and R.F. current for microphones, speakers, antennas and record cutters.

Elements are molded from high dielectric black bakelite and assembled in a drawn steel mounting plate. Six spring contacts at entrance wipe the cable connector shell, assuring a good electrical connection between cable shield, connector shell and mounting surface. Cable connector is held positively in place and cannot accidentally disconnect.

Can be mounted on Surface or Behind Chassis or Panel.

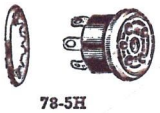
These chassis connectors are ruggedly built and will withstand the abuse of high speed riveting machines on the production line. High quality dielectric and low resistance contacts makes it possible to use them in photo cell circuits, etc., where minute currents are handled. For the cable connector use the Miniature Shielded Plugs (MPM3L and MPF3L type), listed below for a fully shielded connection.



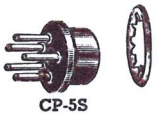
Price is for chassis unit only.

Female	Male	List Price
PCG3F	PCG3M	3-contact .....30c ea.
PCG4F	PCG4M	4-contact .....30c ea.
PCG5F	PCG5M	5-contact .....34c ea.
PCG6F	PCG6M	6-contact .....34c ea.

UNSHIELDED CHASSIS UNITS



78-5H



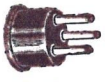
CP-5S

Extremely compact sockets and plugs for mounting on chassis and panels where space is at a premium. For connecting speakers, carbon microphones, doublet antennas, test equipment, etc. Bodies are molded from high dielectric black bakelite. Male plugs have plated brass prongs that are molded directly into the bakelite body. Each prong set in separate pocket so that wire insulation pushing back will not cause shorts. Both sockets and plugs mount in plain round hole 5/8" in diameter. Held firmly in place by the #2-9 tempered steel retainer ring. **With sockets use unshielded plugs listed below or shielded plugs listed to right. With plugs use the female miniature cable connectors (MPF3 Series) listed below to the right.**

Price includes No. 2-9 retainer ring

PLUGS			SOCKETS	
No.	List		No.	List
CP-3S	13c	3-contact	S3S	14c
CP-4S	13c	4-contact	S4S	14c
CP-5S	17c	5-contact	S5S	17c
CP-6S	17c	6-contact	S6S	17c

UNSHIELDED PLUGS



71-3S

Extremely compact plugs, used extensively for speaker connections in compact midgets, and for connecting external units such as microphones and record cutters on home recorders. Use in conjunction with miniature receptacle listed above. Plated brass prongs are deeply recessed in individually molded pockets, preventing shorts due to insulation pulling back.

		List Price
No. 71-3S	3-prong plug	.....13c ea.
No. 71-4S	4-prong plug	.....13c ea.
No. 71-5S	5-prong plug	.....17c ea.
No. 71-6S	6-prong plug	.....17c ea.

Any plug, socket or connector is available with the element molded from mica-filled low-loss bakelite. See electrical specifications on page 17. When ordering add the letter "T" to the part number and 13c to the list price.

HEARING AID SOCKETS & PLUGS

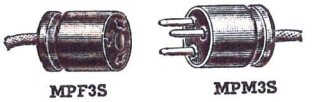
Especially suited for compact apparatus where plugs and sockets must use a minimum of space. Plugs are often used as supports for self sustaining coil forms. Instruction for easy method of cutting chassis holes for sockets is described in border of page.

No. 70-27—2-prong plug ..... 10c List
No. 70-25—3-prong plug ..... 13c List
No. 70-26—4-prong plug ..... 15c List
No. 77-25—3-contact socket ..... 22c List
No. 77-26—4-contact socket ..... 25c List

As above but have contacts adjusted to fit phone tips (.080"). Used to connect two pair of headphones in series or parallel. Also used for connections on test equipment.

No. 77-25S—3-contact headphone socket ..... 22c List
No. 77-26S—4-contact headphone socket ..... 25c List

MINIATURE SHIELDED PLUGS



MPF3S MPM3S

For use where a shielded plug is desired for making connection in compact apparatus. For microphones, speakers and doublet antennas, battery connections, etc. Identical to connectors described below, but male prongs are exposed. Will accommodate cables up to 1/4". Short shell is 13/16" long; long shell 1 5/16". Use long shell type with the shielded chassis connectors listed above; either type with the miniature receptacles and plugs listed at the left.

Short Shell Female	Short Shell Male	Long Shell Female	Long Shell Male	List Price
MPF3S	MPM3S	MPF3L	MPM3L	3-contact 30c ea.
MPF4S	MPM4S	MPF4L	MPM4L	4-contact 33c ea.
MPF5S	MPM5S	MPF5L	MPM5L	5-contact 37c ea.
MPF6S	MPM6S	MPF6L	MPM6L	6-contact 37c ea.

MINIATURE CABLE CONNECTORS

MPF3

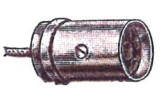
MPM3

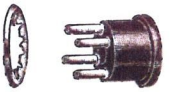
For connecting two shielded or unshielded cables having two to six conductors. Molded bakelite elements are housed in cadmium-plated brass shells, only 1 3/16" long and 11/16" O.D. Bakelite element held in place by side set screw. Staggered contact spacing polarizes elements so that incorrect insertions are impossible.

NOTE: The 3 and 4 contact male and female type have the same contact spacing as Amphenol MC3 and MC4 connector series. Where economy demands, these units can be used to plug cables into microphones and chassis equipped with chassis units listed on page 8.

Female	Male	List Price
MPF3	MPM3	3-contact .....30c ea.
MPF4	MPM4	4-contact .....33c ea.
MPF5	MPM5	5-contact .....37c ea.
MPF6	MPM6	6-contact .....37c ea.

COMPACT SPEAKER CONNECTORS

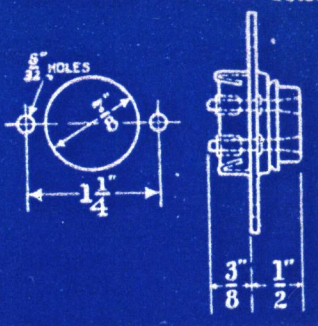




Miniature plug mounts in a 5/8" hole punched in the speaker frame and is held firmly in place by the No. 2-9 retainer ring. Plug requires only 1/16" behind the frame. Male prongs do not engage female contacts of cable connector until metal shell has slipped over bakelite body of plug.

Cable-Unit	List		Chassis Unit	List
91-43	30c	3-contact	71C-3S	13c
91-44	33c	4-contact	71C-4S	13c
91-45	37c	5-contact	71C-5S	17c
91-46	37c	6-contact	71C-6S	17c

SHIELDED CHASSIS UNITS



Above dimensions are for the Male shielded chassis units. Female units are identical in size but the soldering lug protrudes beyond rear of unit. Mount on front or behind the panel.

FOR CONNECTING ALL SMALL CABLES

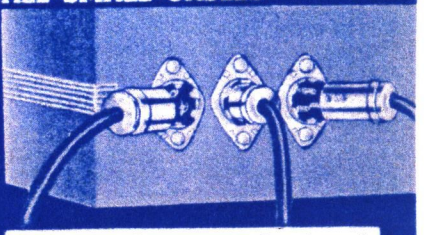
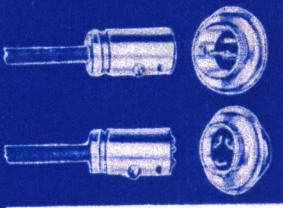


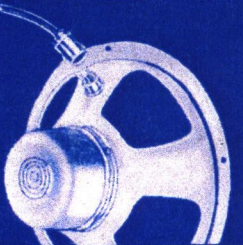
Illustration shows mounted male and female shielded chassis units, with shielded rubber covered cable for plugging in microphone, key and other accessories.

FITS MIKE CONNECTORS



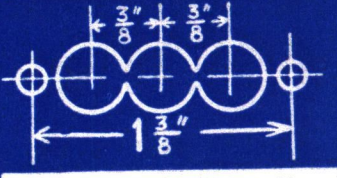
MPF3, MPF4, MPM3 and MPF3 can be used in conjunction with the chassis mounting microphone connectors listed on page 8. Used for testing and other applications.

DISCONNECT CABLE AT SPEAKER



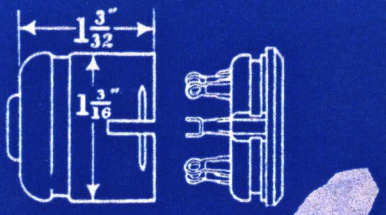
Where it is desirable to wire the speaker cable into the radio chassis, the Compact Speaker Connectors provide an economical and safe method. Chassis unit mounts on speaker.

HEARING AID SOCKET



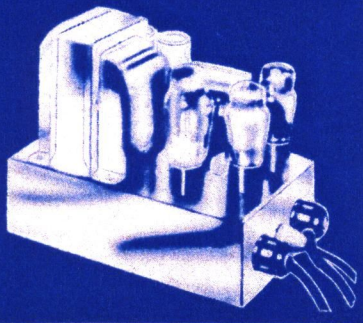
Amateurs — Drill 3 holes with a 3/8" drill. Place drilled chassis or panel in vise and cut away metal between holes with a cold chisel. Trim 4 corners with a file. Insert socket and using mounting

PF & PM PLUG CAP



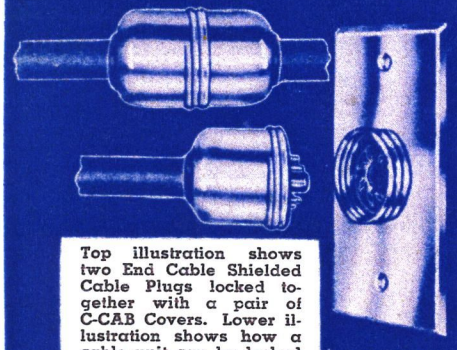
To remove plug cap simply insert screw driver in slot and turn. Cap can be removed without the further use of tools.

SCOTT MASTERPIECE



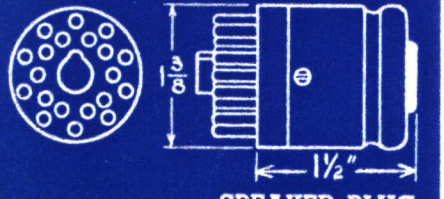
A typical use is illustrated in the above amplifier of the Scott Masterpiece which is connected to the radio proper with Amphenol End Outlet and Side Outlet plugs.

LOCKED CONNECTORS

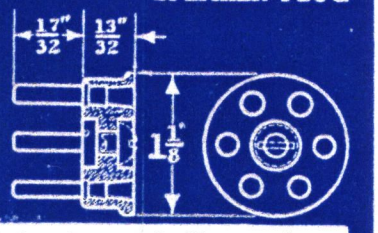


Top illustration shows two End Cable Shielded Cable Plugs locked together with a pair of C-CAB Covers. Lower illustration shows how a cable unit can be locked to a standard "S" socket

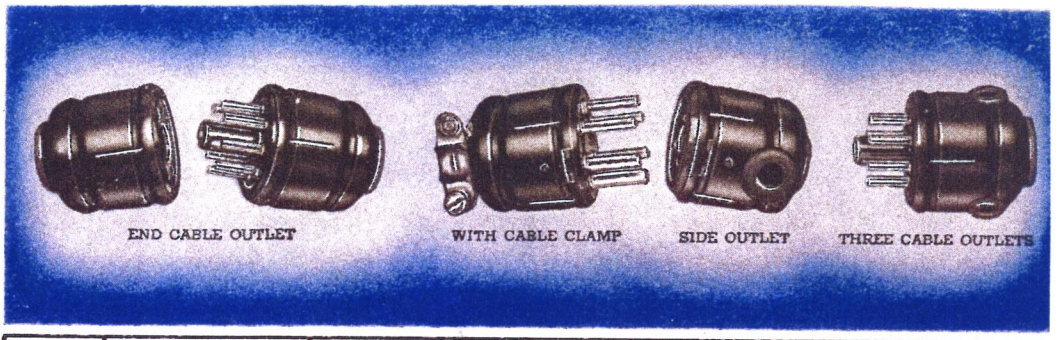
22-CONTACT PLUGS



SPEAKER PLUG



Neat and compact. Diagram shows center countersunk hole, in 4 to 7 prong plugs, to accommodate locking screw. No. 3 prong may also be omitted to accommodate screw, if specified.



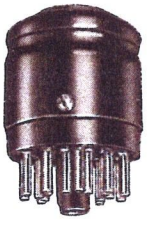
Number of Contacts	END CABLE OUTLET			WITH CABLE CLAMP			WITH SIDE OUTLET			THREE CABLE OUTLETS			Number of Contacts
	Male	Female	List	Male	Female	List	Male	Female	List	Male	Female	List	
4-Prong	PM4	PF4	$0.25	PM4-11	PF4-11	$0.30	PM4-7	PF4-7	$0.25	PM4-15	PF4-15	$0.30	4-Prong
5-Prong	PM5	PF5	.25	PM5-11	PF5-11	.30	PM5-7	PF5-7	.25	PM5-15	PF5-15	.30	5-Prong
6-Prong	PM6	PF6	.25	PM6-11	PF6-11	.30	PM6-7	PF6-7	.25	PM6-15	PF6-15	.30	6-Prong
7-Small	PM7S	PF7S	.25	PM7S-11	PF7S-11	.30	PM7S-7	PF7S-7	.25	PM7S-15	PF7S-15	.30	7-Small
7-Large	PM7L	PF7L	.25	PM7L-11	PF7L-11	.30	PM7L-7	PF7L-7	.25	PM7L-15	PF7L-15	.30	7-Large
8-Prong	PM8	PF8	.25	PM8-11	PF8-11	.30	PM8-7	PF8-7	.25	PM8-15	PF8-15	.30	8-Prong
9-Prong	PM9	PF9	.28	PM9-11	PF9-11	.33	PM9-7	PF9-7	.28	PM9-15	PF9 15	.33	9-Prong
11-prong	PM11	PF11	.35	PM11-11	PF11-11	.40	PM11-7	PF11-7	.35	PM11-15	PF11-15	.40	11-prong

END CABLE OUTLET—Most widely used. Has end cable entrance with rubber grommets which protects cable from abrasion. Accommodates cables up to $\frac{7}{16}$".

WITH CABLE CLAMP—Same as above but has positive gripping cable clamp in place of rubber grommet. Recommended for all applications where undue strain is placed on cable. Clamp accepts cables up to $\frac{7}{16}$" in diameter. Riveted to shell to prevent turning. Grips cable securely, removing all twisting and pulling strain from soldered contacts.

SIDE OUTLET—For plugging a vertical line into a horizontal outlet, or a horizontal line into a vertical outlet. Rubber grommet in side accommodates cables to $\frac{7}{16}$" in diameter.

THREE CABLE OUTLETS—Has one live rubber grommet in end which accommodates cables to $\frac{7}{16}$" and two side cable outlets with rubber grommets that accept cables to $\frac{3}{16}$". For use where high voltage or wires carrying R.F. current should be isolated from regular multi-wire cable.



20 PRONG PLUG

The maximum number of prongs in a limited area. For connecting cables having up to twenty No. 18 conductors. Prongs are molded directly into bakelite body and cannot work loose or get out of alignment. Molded bakelite center stud serves to polarize plug, preventing improper insertions. Cap is drawn steel, finished in black japan. Has rubber grommet protected cable entrance for cables up to $\frac{7}{16}$" in diameter.

See page 19 for 20-contact Mip socket to be used as panel or chassis receptacle.

SHIELDED CABLE PLUGS

Compact and Sturdy — Electrically Safe

Molded black bakelite "S" type sockets and "CP" type plugs, described on page 21, encased in a fibre-lined drawn-steel cap, finished in black japan. Cap snaps onto bakelite unit and fits securely but may easily be removed as illustrated in border. Widely used on all types of radio, public address amplifiers and other electronic devices. Often used with shielded cable to prevent radiation and pick-up, the shield being fed through one prong, and in some instances, soldered to inside of steel cap.

The male plugs, having from four to eight prongs, will plug into any standard R.M.A. tube socket. The 9 and 11 prong sizes should use Amphenol 9 and 11 contact sockets, described on pages 19, 20 and 21, as the chassis or panel unit.

The female plugs will accommodate any standard radio tube and are often used for connecting isolated tubes as on vacuum tube volt meters, cathode ray tubes, etc.

LOW-LOSS MICA-FILLED BAKELITE PLUGS

Any plug on this page is available with the bakelite element molded from low-loss tan color mica-filled bakelite. When ordering add the letter "T" to the part number and 13c to the list price.

RUBBER PLUG HANDLE

No. RPH .....15c List

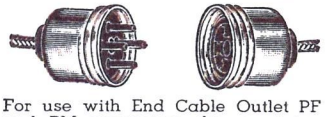
"PF" or "PM" End Cable Outlet Connectors, described at top of page, snap into this rubber-handle and are held securely in place by an inner molded shoulder. For easy removal of connectors plugged into recessed or hard to get at places. Protects cords from breaking at entrance to cap. Molded from black rubber.

Illustration is cut away to show how connector is gripped by plug handle.

CONNECTOR LOCKING COVERS

CABLE TYPE

No. C-CAB — 25c Per Set List



For use with End Cable Outlet PF and PM connectors shown at top of page. Drawn steel caps, cadmium plated. Locks connectors firmly together, preventing accidental pull aparts, and providing a neat appearing connection. Especially suited for public address application.

CHASSIS TYPE

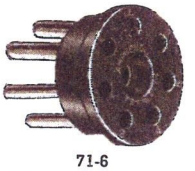
No. C-CHA — 25c Per Set List

Chassis section is a threaded steel flange which is assembled between "S" type sockets or "CP" type Plugs and the mounting surface. Held firmly in place by the #4 retainer ring without the use of screws or rivets. Supplied complete with a C-CAB cable section which slips over the cable connector.

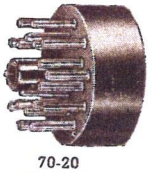
SPEAKER PLUGS

Strong molded bakelite plugs. Designed originally as speaker plugs, but have since found many uses in intercommunication systems, public address, remote controls, test panels, wherever a multi-wire cable must be plugged into a tube-socket receptacle. Prongs are molded into the bakelite so that they cannot work loose or get out of alignment. Each prong is set deeply into an individual molded pocket so that the bakelite walls eliminate the possibility of shorts caused by the cable insulation pulling back. Prongs are drawn-brass, plated to prevent corrosion. All plugs are polarized to assure correct insertion and numbered for easy wiring.

The 4 to 7-prong plugs have molded finger grips. The 8 to 20-prong plugs have straight sides, made necessary by the increased number of prongs. Any prong can be omitted on special order, providing a convenient hole for inserting a No. 8 self-tapping screw through the plug and into the socket receptacle. This simple method complies with Underwriters' Laboratory requirement that speaker plugs must be irremovable without the use of a tool. Plugs having 4 to 7 prongs have center countersunk hole to accommodate locking screw.

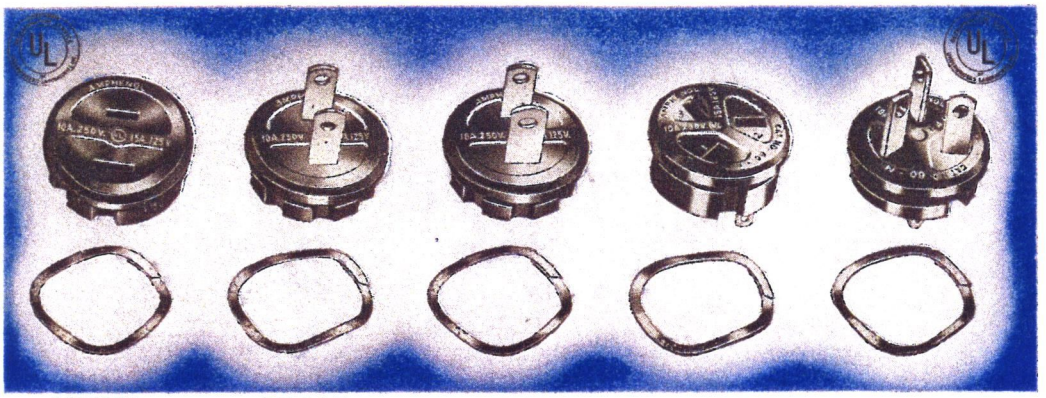


71-6



70-20

No. 71-4	4-prong plugs	11c List
No. 71-5	5-prong plugs	11c List
No. 71-6	6-prong plugs	11c List
No. 71-7	7-prong plugs	11c List
No. 70-8	8-prong plugs	14c List
No. 70-9	9-prong plugs	17c List
No. 70-12	12-contact plugs	25c List
No. 70-20	20-contact plugs	50c List



2-POLE *Universal* RECEPTACLE	2-POLE *Standard* PLUG	2-POLE *Polarized* PLUG	3-POLE *Polarized* RECEPTACLE	3-POLE *Polarized* PLUG
61-F — 25c List	61-M — 25c List	61-MP — 25c List	60-F — 35c List	60-M — 35c List

110-250 VOLT — 15-10 AMPERE RECEPTACLES AND PLUGS

Compact receptacles and plugs for mounting directly on panels, chassis and frames of electrical and radio apparatus. Insulation is the same high dielectric black bakelite as used in molding Amphenol radio tube sockets. Soldering lugs and binding screws on female receptacles makes them highly desirable for high speed production lines. **No screws or rivets are necessary.** Held firmly in place by the Amphenol retainer ring as illustrated in border of page. In addition to use as a positive connection for all types of electrical work, also used for connecting radio speakers, doublet antennas, low impedance microphones, etc., because of the extremely high capacity between contacts. Contacts grip plug blades more securely than conventional types. Plugs go in with a definite "snap", and won't accidentally pull out.

The two pole receptacle will accept all standard 110-volt plugs such as are used on household electrical appliances, or for polarization purposes will admit insertion of the Amphenol 61-MP plug in only one way. Three pole receptacle contacts are staggered so that the Amphenol 60-M plugs can be inserted in only one way.

No. 61-M plug has standard ¼" brass blades spread ½"; No. 61-MP has one ¼" and one $\frac{5}{16}$" blade spaced ½" apart; No. 60-M has three ¼" blades staggered spaced. Plugs have binding screws for connecting cables.

Both plugs and receptacles are clamped firmly to the mounting surface by the patented Amphenol #4 tempered steel retainer ring. ***Important!*** **Manufacturers should specify the exact thickness of panels on which these connectors are to be used.** Plugs can be grooved to fit panels up to ⅛" in thickness; receptacles can be grooved to fit panels up to ¼" in thickness. **Unless otherwise specified both plugs and receptacles will be supplied to fit panels from .040 to .062".** Resiliency of retainer ring takes up variation in metal thickness.

Standard color is black. Supplied to manufacturers in production quantities in other colors such as red, green, blue, etc.

WITH MOUNTING PLATE

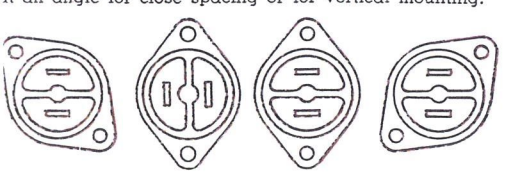
Above receptacles and plugs set in a nickel-plated steel mounting plate with slotted holes to fit any hole spacing from 1½" to 1⅞". Extensively used for mounting on metal walls, chassis, etc.

No. 61-F1 —2-Pole Receptacle .....28c List
No. 61-M1 —2-Pole Standard Plug .....28c List
No. 61-MP1—2-Pole Polarized Plug .....28c List
No. 60-F1 —3-Pole Receptacle .....38c List
No. 60-M1 —3-Pole Polarized Plug .....38c List

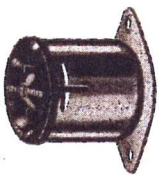
MOLDED-IN-PLATE RECEPTACLES

MIP-61F—2-pole Receptacle .....25c List

Identical to receptacles described above, but the sturdy steel mounting plate is molded directly into the bakelite body. Designed for manufacturers of radio and electrical equipment so that receptacle could be riveted to apparatus on high speed production lines. Riverting plate is punched from steel, nickle-plated. Manufacturers ordering 2-pole style in production quantities may specify any of the four mounting positions shown below. Receptacle molded into plate at an angle for close spacing or for vertical mounting.



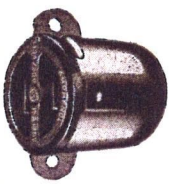
EXTENDED CABINET TYPE



An extended receptacle mounting which can be fastened from the rear of cabinets and thick panels, to bring the receptacle flush to the surface. For wood cabinets and panels, wood mounting screws can be worked from the rear so that they will not mar the surface of the finished product. Standard types are supplied with a cap $1\frac{1}{16}$" long. Other lengths are available to manufacturers ordering in quantities. To install, drill a 1¼" hole and two mounting holes on 1½" centers.

61-F20—2-Pole Receptacle .....$0.45 List
60-F20—3-Pole Receptacle ..... .55 List

HANDY RECEPTACLE



An entirely new design in compact wall outlets. Fastens to the surface of mouldings, panels, cabinets, etc., with two wood screws or machine screws. Ideal for temporary wiring where portable cords may be used, on work benches, connections inside of transmitter racks, on the bulk head of cars for battery chargers, and similar applications. Also used on walls as speaker outlets in public address systems. Other applications will suggest themselves to the radioman and electrician.

Assembly consists of a black-japanned drawn steel cap, sturdy steel mounting plate, and a molded black bakelite receptacle as described on the preceding page. Note: colored bakelite receptacles are available on special order; used for identification purposes when several outlets are used to carry different currents or circuits. Supplied with two or three pole receptacles.

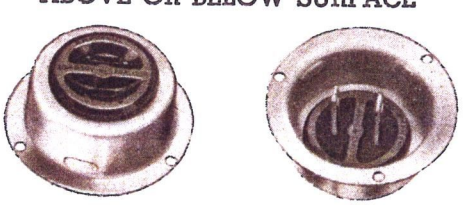
No. 61-F21—With 2 pole receptacle.....45c List
No. 60-F21—With 3 pole receptacle..... .....55c List

FLUSH MOTOR PLUG

Plug or receptacle set in drawn steel, burnished nickel-plated shell. Neat and compact. For below surface mounting on all types of apparatus. Overall diameter of shell only 1-$\frac{3}{8}$". Ample room for the insertion of Amphenol end cable outlet plugs listed on page 15.

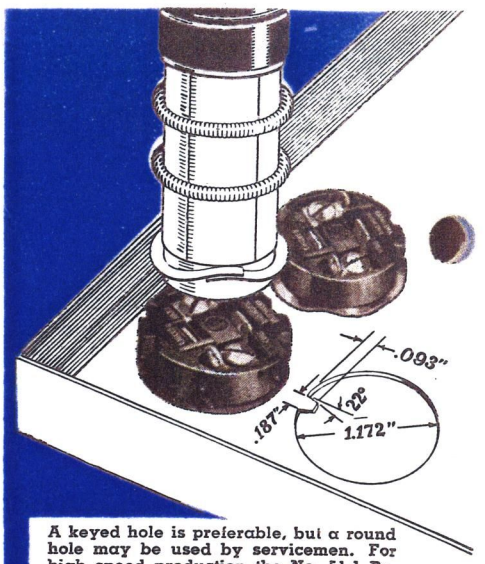
No. 61-F10 —2-Pole Receptacle .....40c List
No. 61-M10 —2-Pole Standard Plug .....40c List
No. 61-MP10—2-Pole Polarized Plug .....40c List
No. 60-F10 —3-Pole Polarized Receptacle .....50c List
No. 60-M10 —3-Pole Polarized Plug .....50c List

ABOVE OR BELOW SURFACE



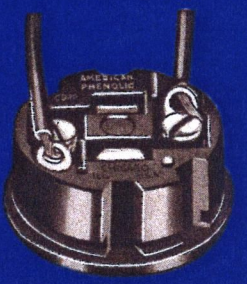
Used also for quick temporary outlet installations. Plug or receptacle can be mounted on work benches, walls, etc., with wood screws and the power fed into any of the four knockouts provided. Ideal for terminating extension cords that must be anchored with machine or wood screws.

No. 61-F18 —2-Pole Receptacle .....35c List
No. 61-M19 —2-Pole Standard Plug .....35c List
No. 61-MP19—2-Pole Polarized Plug .....35c List
No. 60-F18 —3-Pole Receptacle .....45c List
No. 60-M19 —3-Pole Polarized Plug .....45c List



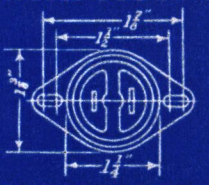
A keyed hole is preferable, but a round hole may be used by servicemen. For high speed production the No. 51-1 Retainer Ring Hand Tool should be used (Listed on page 16). The serviceman and experimenter can easily mount the sockets and plugs with a screw driver.

BOTTOM VIEW

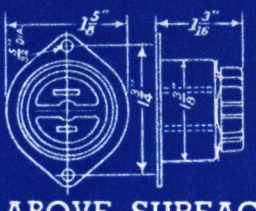


Note the lug extensions on the contacts. Wire is fed through lug before fastening under screw-head to relieve strain on connection. Lugs may be used for soldered connection.

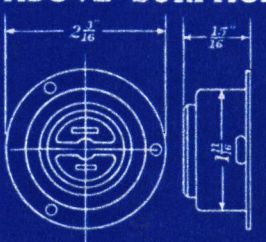
WITH MOUNTING PLATE



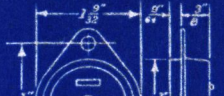
FLUSH MOTOR TYPE



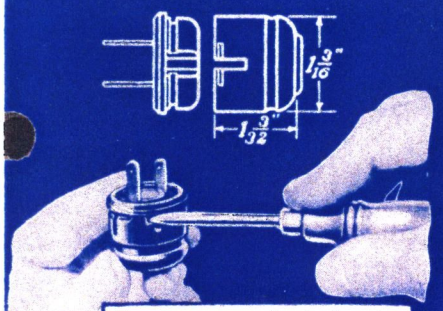
ABOVE SURFACE



MOLDED-IN-PLATE

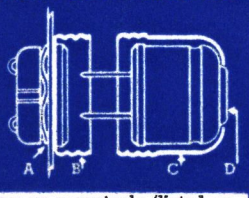


DIMENSIONS



To remove cap simply insert a small screw driver in the notch indicated. Turn screw driver—don't pry—and the cap raises sufficiently to be removed.

LOCKED CONNECTION

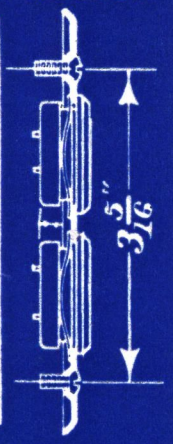


A 60 or 61 plug or receptacle (listed on page 14) held in place with retainer pact receptacles are required. Receptacles extend only 5/16" behind wall plate. Mounting holes of wall plate are spaced 3 5/16" to fit directly on outlet boxes.

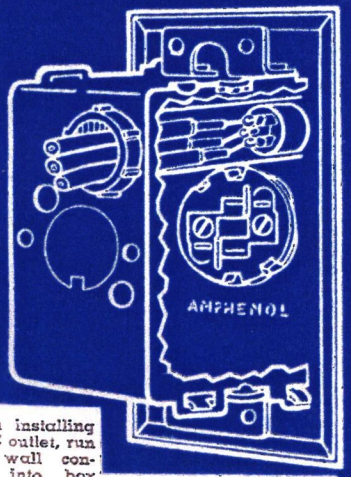
EXTREMELY SHALLOW

Amphenol 60 and 61 receptacles mounted on wall plates are unexcelled for mounting on very shallow boxes or boxes which are crammed hind wall plate less than with wires. Extend be-5/16". Ideal for use wherever compact receptacles are required.

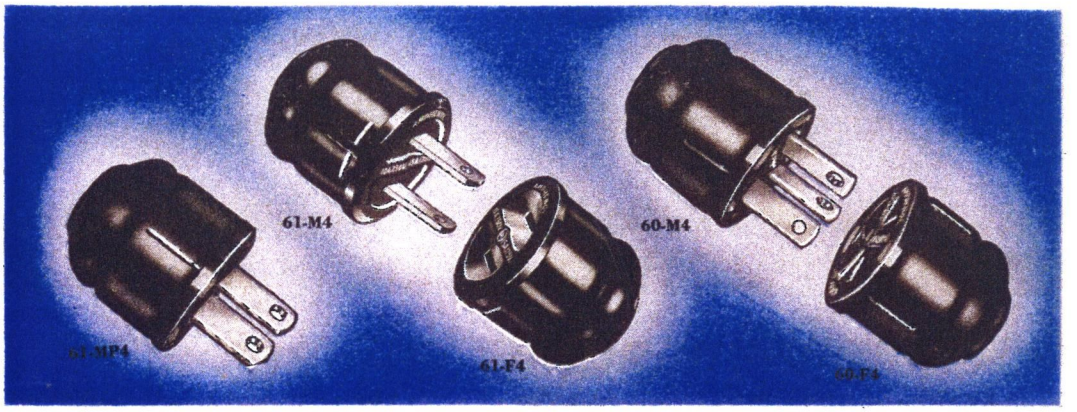
NOTE: Mounting screws spaced 3 5/16" to fit standard outlet box.



DOUBLET ANTENNA AND 110 VOLT OUTLET

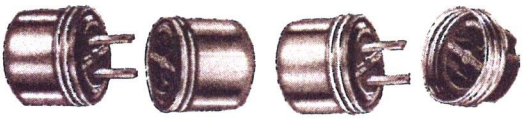


When installing 84-AC outlet, run thin wall conduit into box from rear so that it covers 3-contact socket thereby isolating the antenna and ground leads from the 110-volt current.



2-POLE *Universal* RECEPTACLE	2-POLE *Standard* PLUG	2-POLE *Polarized* PLUG	3-POLE *Polarized* PLUG	3-POLE *Polarized* RECEPTACLE
61-F4 — 35c List	61-M4 — 35c List	61-MP4 — 35c List	60-M4 — 45c List	60-F4 — 45c List

LOCKING COVERS



C-CAB C-CHA

Cadmium-plated drawn steel covers that slip over Amphenol End-Cable Outlet Connectors. Locks plug and receptacle firmly together, preventing pull-aparts.

*Cable type set consist of one each male and female threaded shells for locking two cable connectors.

†Chassis set includes one male section for the cable terminal and a chassis flange which is installed between the mounting surface and an Amphenol 60 or 61 receptacle or plug, listed on the upper part of page 14.

***C-CAB —Cable Locking Covers.....25c per set, List**
†C-CHA—Chassis Locking Covers.....25c per set, List

RUBBER PLUG HANDLE

No. RPH—Plug Handle only...15c List

End-Cable Outlet Receptacles or Plugs (61-F4 type) snap into this rubber handle and are held securely in place by an inner molded shoulder. Molded from black live rubber.

Illustration is cut away to show how connector is gripped by plug handle

GROUNDING ADAPTER

For Coin Operated Machines

No. 44-19W.....$1.25 List

Wired adapter permits grounding of radio chassis and racks, motor frames, pin ball game cabinets, coin operated phonographs and other devices. To install use three wire cable terminating in three pole plugs listed above. Adapter will safely handle up to 1000 watts. An 8" rubber covered wire, terminating in an eyelet. should be connected to an independent ground, usually under mounting screw of the wall plate. Shell of the adapter is described on page 24. Use with 3-pole plug listed above.

110-250 VOLT SHIELDED PLUGS

END CABLE OUTLET

Molded bakelite receptacles and plugs described on preceding page, encased in drawn steel caps, making unbreakable cable terminals that are fully shielded. The cap snaps on and fits securely, but may be removed easily as illustrated in the border of this page. Cable entrance accommodates cables up to 7/16" in diameter. Rubber grommet protects cables against abrasion. Radio and other electronic apparatus have become so important in the home-life and business of America, that everyone designing and using electrical appliances should use shielded power cords, terminated in shielded plugs that can be grounded to the conduit system through the wall plate, eliminating the possibility of radiating interference from such cords.

WITH CABLE CLAMP

Same design as above but equipped with a cable clamp to accommodate cables up to ½" in diameter. Cable clamp grips cable securely, removing all pulling or twisting strain from connections. Cable clamp riveted to cap to prevent turning. Cap is black japanned. For chrome-plated caps add the letters "CH" to the following part numbers and 20c to the list price.

No. 61-F11 —2-pole Receptacle .....40c List
No. 61-M11 —2-pole Standard Plug .....40c List
No. 61-MP11—2-pole Polarized Plug .....40c List
No. 60-F11 —3-pole Receptacle .....50c List
No. 60-M11 —3-pole Polarized Plug .....50c List

SIDE CABLE OUTLET

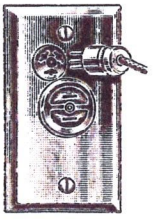
Same design as above, but cable enters from the side. For all types of work where a vertical cable is plugged into a horizontal outlet, or a horizontal cable into a vertical outlet. Accommodates all cables up to 7/16" in diameter. Cap is black japanned. For chrome-plated caps add the letters "CH" to the part number and 20c to the list price.

No. 61-F7 —2-pole Receptacle .....35c List
No. 61-M7 —2-pole Standard Plug .....35c List
No. 61-MP7—2-pole Polarized Plug .....35c List
No. 60-F7 —3-pole Receptacle .....45c List
No. 60-M7 —3-pole Polarized Plug .....45c List

CONVENIENCE OUTLETS FOR ELECTRIC, RADIO and PUBLIC ADDRESS

Practically every new building—residence, hotel, commercial, industrial, hospital—is being wired for radio and/or sound. Among the installations now demanded on both new and old work are multi-speaker systems for hotels and hospitals, inter-call systems for factories, microphone outlets for studios and **television outlets for hotels.** Blank wall plate listed below can be punched for any Amphenol receptacle, plug, or combination, providing up to 40 contacts on a single plate.

ANTENNA and 110 VOLT OUTLETS



No. 84-AC — $1.45 List

Wall plate as described to the right equipped with a 61-F 110 volt receptacle and S3S socket, having 3 contacts for doublet or "L" type antenna. A neat appearing combination which will harmonize with any surroundings.

Supplied complete with a No. MPM3S plug to be used as the antenna connector.

BLANK WALL PLATES

No. 84-2CH — 75c List

Chrome-plated heavy steel plates, 2¾" x4½", with struck-up bevel edge. Connectors, receptacles and sockets mount directly on wall plate. Mounting holes of wall plate are spaced 3 5/16" to fit directly on outlet boxes.

Punched without charge for any Amphenol socket or receptacle.

Genuine AMPHENOL

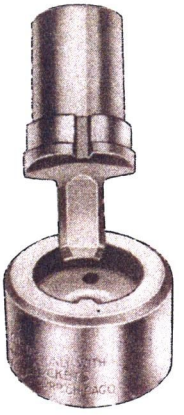
SPECIAL TOOLS

LABORATORY PUNCH & DIES

Dies for punching special holes for Amphenol connectors, plugs and receptacles. Used by laboratory men, amateurs and radio parts jobbers. .. Made of tool steel, properly hardened. Dies are capable of punching from several hundred to a thousand holes, depending upon the care used by the operator. These dies are intended for laboratory work only. For regular production of chassis use the punch press dies listed below.

In the chassis or panel drill the pilot hole required in center location of socket, plug or connector. Place die on smooth hard surface (ordinary work bench). Insert the punch pilot through this drilled hole and align flat side of pilot with flat side of hole in die.

With a fairly heavy hammer deliver one or two light blows which will bring the punch and die together against the chassis ready for the piercing blow. To break through metal **hit the punch squarely on the top.** A glancing side blow may break the punch pilot. To facilitate removal of punched slug, a hole is provided in die alongside of pilot hole on LD-1 and LD-2. Insert a steel rod or nail in this hole and push out slug.



Keep Dies Sharp

Dies or punches with a nicked or dull cutting edge will make a ragged hole and will require considerable more force for punching holes, endangering the life of the die. **Sharpen by holding die or punch square against an emery wheel.**

LD-3, LD-4, LD-5 & LD-6 DIES

For punching holes for Amphenol miniature sockets and microphone connectors. (See border for exact applications.)

*No. LD-3—$\frac{13}{64}$" round hole	$3.00 List
†No. LD-4—$\frac{5}{8}$" round hole	3.00 List
*No. LD-5—$\frac{5}{8}$" "D" hole	5.00 List
*No. LD-6—$\frac{1}{2}$" "D" hole	5.00 List

*Drill $\frac{3}{8}$" pilot hole to accommodate pilot pin of punch.
†Drill $\frac{1}{4}$" pilot hole for pilot pin.

LD-1 & LD-2 DIES

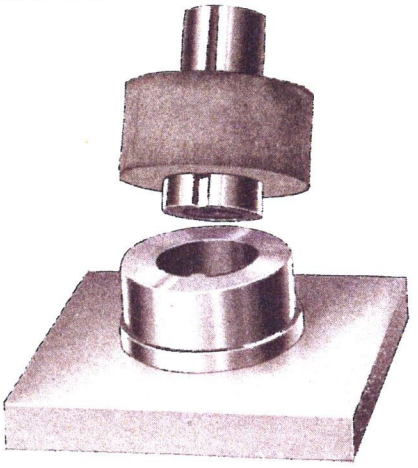
For punching holes for Amphenol Retainer Ring mounting tube sockets, radio plugs, and electrical receptacles and plugs.

*No. LD-1—$1\frac{11}{64}$" keyed hole	$10.00 List
*No. LD-2—$1\frac{21}{64}$" keyed hole	10.00 List

*Drill a $\frac{1}{2}$" pilot hole to accommodate pilot pin of punch.

PUNCH PRESS PRODUCTION DIES

No. PP-1 & PP-2—List Price $33.35 each



These oil hardened tool steel dies will render service indefinitely. As illustrated, this is punch and die in the most simple form. It is possible to fit the round die ring into a large bolster plate on the press and on this plate fasten guides, stops, etc., to locate socket hole punching positions.

Die ring accurate on outside diameter. The dowel holes and threaded screw holes in the bottom make its inclusion into a die block very simple and inexpensive.

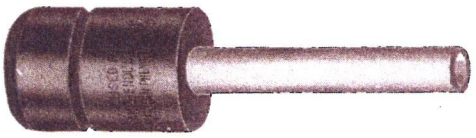
Punch has 1" shank to fit small presses. When necessary to fit into larger presses, a split sleeve should be used.

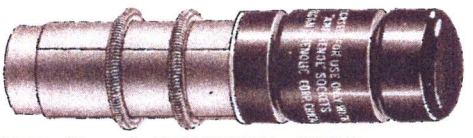
Rubber stripper fitting over punch satisfactorily strips chassis from punch after piercing operation. $\frac{5}{32}$" pilot pin is provided in the punch and its use is optional.

PP-1 punches $1\frac{11}{64}$" keyed hole; PP-2 punches $1\frac{21}{64}$" keyed hole.

Production dies for any punch press can be built in the Amphenol tool room for manufacturers who do not have facilities for producing their own. Punch and dies for any Amphenol product can be built to order. Please furnish all necessary data for our tool makers. Prices will be quoted upon request.

RETAINER RING HAND TOOLS





FOR No. 2-9, 2-10 & 2-11 RINGS

List Price—$1.00 each

Convenient retainer ring hand tools for assembling miniature sockets, plugs and tip jacks to panels or chassis. Consists of a steel tube fitted into a wooden handle which is shaped to fit the palm of the operator's hand. Tool is sufficiently long so that parts and projections surrounding the socket will not cut the operator's hands.

No. 51-5—for No. 2-9 retainer rings as used on sockets which mount in a $\frac{5}{8}$" round or "D" shaped hole.

No. 51-6—for No. 2-11 retainer rings as used on sockets and tip jacks which mount in a $\frac{3}{8}$" hole.

No. 51-7—for No. 2-10 retainer rings as used on sockets which mount in a $\frac{1}{2}$" round or "D" shaped hole.

NOTE: Above type retainer ring hand tools can easily be constructed by manufacturers in their own tool rooms. Simply fasten a length of brass or steel tubing, having the correct I.D., to a wooden handle. Chamfer (bevel) inner wall of tube.

FOR No. 4 RETAINER RING

List Price—$5.55 each

Handy tools for rapidly assembling Amphenol retainer-ring-mounting sockets, plugs and receptacles to chassis and panels. Designed for hand operation but many users fasten to ram or plunger of small kick press, leaving the operator's hands free to place socket and ring in position, and to guide work being assembled. All metal parts of hand tool are cadmium-plated hardened steel. Handle is wood for comfort.

FOR "S" TYPE SOCKETS AND "CP" TYPE PLUGS

No. 51-1—For Small No. 4 Rings—$5.55 List
No. 51-2—For Large No. 4 Rings—$5.55 List

These tools are for use on all Amphenol "S" type tube sockets and "CP" type plugs. Operate on the principal of a spring collet. Place retainer ring over pilot of tool, place on socket and press down. Pushing down on handle of tool causes outer sleeve to pass over pilot, and forces retainer ring into place on the socket. No experience is required to operate. Use No. 51-2 for 7-large and 7-combination sockets; use No. 51-1 for all other "S" sockets and "CP" plugs.

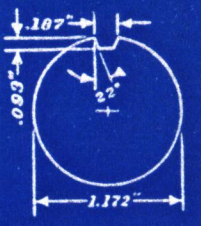
FOR "SS" STEATITE SOCKETS AND "60 & 61" RECEPTACLES

No. 51-3—For Small No. 4 Rings—$5.55 List

For use with all Amphenol retainer-ring-mounting Steatite sockets and plugs, and the "60" and "61" receptacles and plugs listed on page 14. Tool is similar to the one listed above but is constructed in two parts. One part is a cone shaped guide which is placed over socket. Retainer ring is placed on this cone. Upper half of tool is placed over cone and pressed down, forcing retainer ring into place

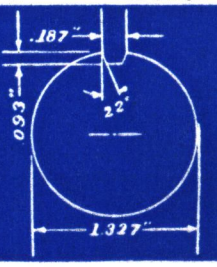
HOLES PUNCHED BY AMPHENOL DIES

LD-1 & PP-1



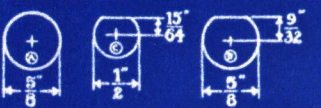
LD-1 and PP-1 dies punch a $1\frac{11}{64}$" keyed hole for 60 and 61 receptacles, and all but 7-large sockets and plugs.

LD-2 & PP-2



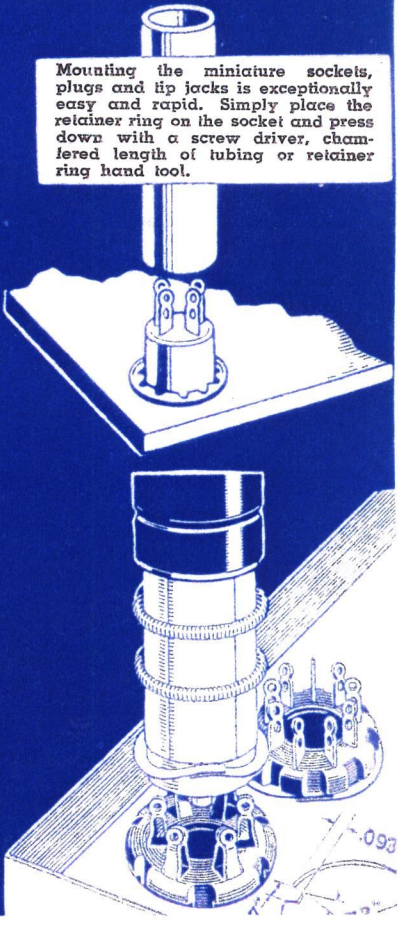
LD-2 and PP-2 dies punch a $1\frac{21}{64}$" hole for large 7-contact sockets which mount with large No. 4 rings.

SMALL DIES

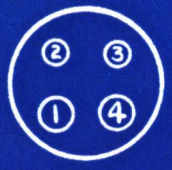


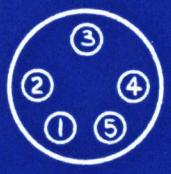
A—$\frac{5}{8}$" round hole punched by LD-4 for large miniature sockets.
B—$\frac{5}{8}$" "D" shaped hole punched by LD-5 for miniature sockets having a flat on shank.
C—$\frac{1}{2}$" "D" shaped hole punched by LD-6 for small miniature sockets.

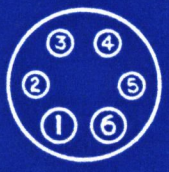
Mounting the miniature sockets, plugs and tip jacks is exceptionally easy and rapid. Simply place the retainer ring on the socket and press down with a screw driver, chamfered length of tubing or retainer ring hand tool.

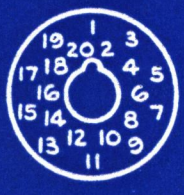


R. M. A. NUMBERING SOCKET BOTTOM





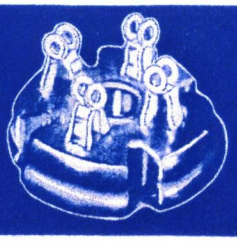


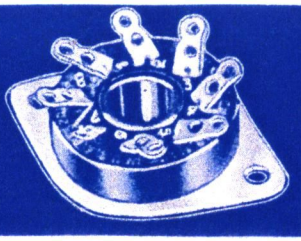


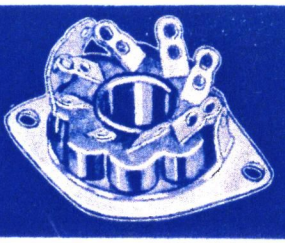
RCA PHOTO CELL

HYTRON

RAYTHEON







The #4 contact is used in all standard size Amphenol tube sockets and plug receptacles having 4, 5, 6 and 7 contacts. For example, RS-4, RS-5, RS-6, RS-7S, RS-7L, RS-7C will have the #4 contact. This contact was especially engineered to firmly grip large prongs. A number of wires can be soldered to one lug as illustrated.

The #9 contact is used on all standard Amphenol tube sockets and plug receptacles having 8, 9, 11 and 12 contacts, with the exception of sockets for loktal tubes. For example RS-8, RS-9 and RS-11 will have #9 contacts. The most widely used method of soldering these sockets on the production line is to preform hooks on ends of wires.

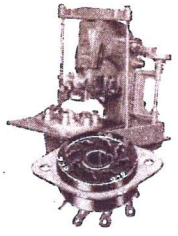
Crimp-on sockets can be supplied with one "T" grounding lug and one straight grounding lug as illustrated, or with two straight lugs. Contacts to be grounded can be easily soldered to grounding lug.

Contacts for miniature tubes are individually engineered to fit the pins of the tube for which they are intended. Maximum contact area is always achieved through clever design to maintain a low resistance path. Contacts are only slightly larger than the tube prongs, leaving maximum insulation at all points, insuring the lowest possible capacity between contacts. Small contacts may be wired on the high production line by preforming small hooks on end of wire, or simply laid in position and soldered.

SOCKETS FOR EVERY PURPOSE

CONTACT NUMBERING

Wherever it is physically possible to do so, Amphenol sockets have the contact numbers molded directly into the bakelite body on socket bottom. This is an invaluable aid to everyone who works on the instrument in which the socket is used—designing engineer, production line and service departments. In the border to the left is the standard R.M.A. numbering system. All standard tube diagrams and all Amphenol plugs are numbered to conform to this system, making it easy to quickly wire the corresponding socket and facilitates tracing circuits.



SOCKET MARKINGS

Sockets are supplied to manufacturers with the tube designation engraved in white. Marking machines, such as the one illustrated, permit this operation to be done most economically. Amphenol tap switch knobs and other parts are also engraved. Hundreds of dies for all common uses are available. Where a special die lettering is required, it can be quickly supplied at a moderate cost. Sockets to be used as panel receptacles can also be engraved "Spk", etc.

Insulating Materials
HIGH DIELECTRIC BLACK BAKELITE

Unless otherwise specified, all Amphenol plugs, sockets and connectors are supplied with the insulating material molded from the best grade high dielectric black bakelite.

MECHANICAL CHARACTERISTICS
Tensile strength, 8300 lbs. per square inch
***Use safely at temperatures to 302° Fahrenheit**
Moisture absorption, less than .2%
*Bakelite sustaining higher temperatures to 500° F. is available for special applications.

ELECTRICAL CHARACTERISTICS
Volume resistivity, 1.7x105 megohms cms.
Dielectric Strength, 400-500 volts per mil. inst. at 50 cycles
Dielectric Constant, 5.09 at 1,000,000 cycles
Power Factor, .035 at 1,000,000 cycles
Loss Factor, (not %), .178 at 1,000,000 cycles

For most ordinary uses in home radios, public address amplifiers and similar electronic devices which are operated at relatively low frequencies, this insulating material is recommended.

Improved
Low-Loss Mica-Filled Bakelite

Every socket, plug and connector listed in this catalog with the insulating material molded from black bakelite can also be supplied with a new and improved mica-filled bakelite. When ordering simply add the letter "T" to the part number and 13c to the list price. For example, the MC3F microphone connector at $1.00 list, becomes MC3F-T at $1.13 list.

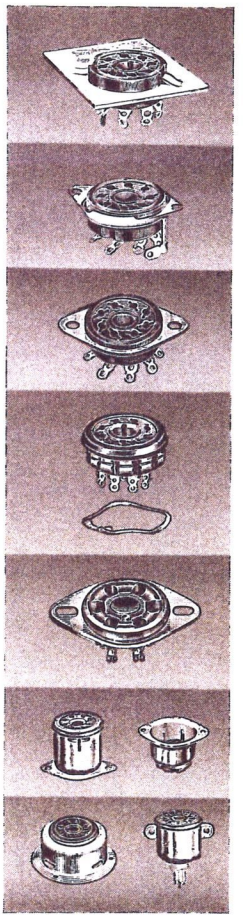
MECHANICAL CHARACTERISTICS
Tensile strength, 6500 lbs. per square inch
Use safely at temperatures to 275° Fahrenheit
Moisture absorption, .07%

ELECTRICAL CHARACTERISTICS
Volume resistivity, 108 megohms cms.
Dielectric strength, 475-600V. per mil. Inst at 60 cycles
Dielectric Constant, 5 at 1,000,000 cycles
Power Factor, .008 to .010 at 1,000,000 cycles
Loss Factor, (not %) .040 to .050 at 1,000,000 cycles

Sockets, plugs and connectors with the insulating material molded from mica-filled bakelite are recommended for all high and ultra-high frequency and high voltage applications where it is impractical to use **Steatite or Polystyrene materials listed on pages 23, 36 and 37.**

In the design of sockets for the radio industry the first consideration of Amphenol engineers is to achieve the most efficient electrical and mechanical characteristics possible. After this is accomplished the user's production problems are considered of primary importance. Amphenol's introduction of its versatile line of mountings for every type socket permits easy and economical assembly of sockets to chassis or panel.

The following short paragraphs on the principle Amphenol mounting methods are intended to assist the designing engineer and production man in selecting the socket which can be assembled and wired at the lowest cost per unit, with greatest safety and efficiency of electrical operation. **Consult Amphenol engineers freely on all socket problems.**



CHASSIS LOCK SOCKETS

Listed on Page 18. Undoubtedly the most economical of all sockets for mass production where a large number of a single unit are to be built. Requires no riveting plate or rivets. Every socket on the chassis can be locked firmly in place by one closing of a punch press.

CRIMP-ON SOCKETS

Listed on Page 19. The most widely used socket on high production lines where smaller quantities of a single unit are manufactured. Has saddle mounting plate described at top of page.

MIP SOCKETS

Listed on Page 19. The world's strongest socket. Mounting plate is molded directly into the bakelite body. Used in aircraft and mobile receivers and transmitters, in public address amplifiers.

"S" TYPE SOCKETS

Listed on Page 21. These sockets are mounted with the Amphenol patented retainer ring, and no screws or rivets are required. Used extensively on test equipment, public address amplifiers and on other apparatus where the sockets are exposed.

REPLACEMENT SOCKETS

Listed on Page 20. Above "S" type sockets, assembled to a steel mounting plate with slotted mounting holes. Used by radio servicemen for replacing inferior water type sockets.

VERSATILE MOUNTINGS

Listed on Page 20. For sockets to be mounted on solid walls, above or below chassis, and for other special applications, Amphenol has developed a complete series of mountings for all types of sockets. In large production quantities manufacturers may specify variations in these mountings to suit their requirements.

COLORED SOCKETS

All sockets listed in this catalog are available to manufacturers in production quantities, molded from any color bakelite such as red, green, blue, brown, etc. Colored sockets are used for decorative purposes where the sockets are exposed, as on tube checkers and public address amplifiers.

Loktal and Miniature Sockets Listed on Page 22

Genuine AMPHENOL

CHASSIS LOCK

SOCKETS FOR HIGH SPEED PRODUCTION

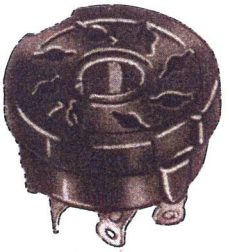
Economy

SOCKETS —
Lower first cost.

LABOR COST —
All sockets assembled to chassis at one time, in one operation.

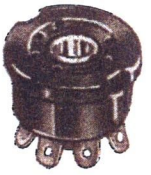
RIVETS —
None required.

TOOLS —
Tooling and tooling maintenance is exceptionally low.

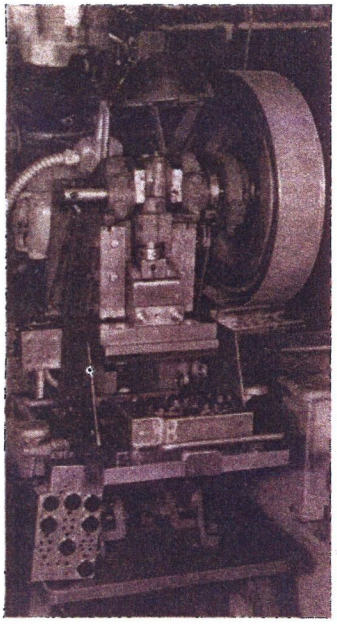


No. 68-8
OCTAL
SOCKETS

No. 68-8L
LOKTAL
SOCKETS



No. 68-7P
R C A
Miniature
SOCKETS



Courtesy Motorola
A large socket assembly press.

← THIS PICTURE TELLS THE STORY

8 Sockets completely assembled to chassis

With One Stroke of the Punch Press

Major economies are being effected by radio manufacturers already using the new PATENTED high-speed Chassis Lock Sockets which require no rivets or eyelets for assembling to chassis. Locked firmly in place by lugs sheared up from chassis itself. Sockets may be assembled one at a time for limited production, using a foot press equipped with No. CLD-1 Locking Tool. For regular production of chassis all sockets are assembled by one stroke of punch press with installed Multiple Locking Tool.

There are no complications in switching from riveting type to Chassis Lock Sockets. There will be no confliction with present wiring layouts, because they take up less chassis room. Amphenol engineers will assist manufacturers in obtaining punched chassis, or will advise their tool maker on how to build correct dies.

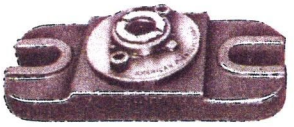
Because of the anticipated demand for these new sockets, large stocks have been built up in Canada and in the United States, and prompt shipment can be obtained from Amphenol and their authorized licensees, producing in conformity with Amphenol specifications.

AMPHENOL QUALITY MAINTAINED

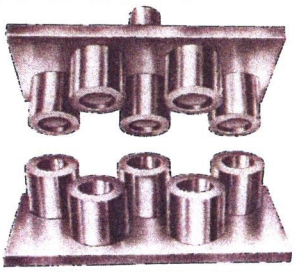
Although Chassis Lock Sockets were designed entirely for the large savings they would effect in production and because the sockets themselves could be supplied at a lower price, Amphenol quality is maintained throughout. Available in high dielectric black bakelite, mica-filled bakelite and polystyrene.

Tooling for Chassis Lock is Economical

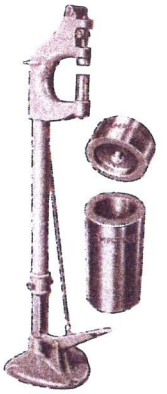
LD-8



PP3 Punch-Press Die



Multiple Locking Die



Foot Press
Locking Tool

No. LD-8 LABORATORY HAND DIE

For punching holes and forming Chassis-Lock lugs in laboratory sample chassis, a laboratory hand die may be used. Punches out the socket hole and at the same time shears and forms the locking ears.

No. PP3—PUNCH-PRESS DIE

Single stroke punch press die, which in one operation punches the hole and forms the lugs ready for assembly of the socket.

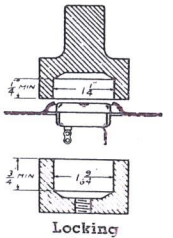
Regular production dies which punch all holes in chassis at one stroke can easily be built in the manufacturers' own tool room.

SOCKET LOCKING TOOLS

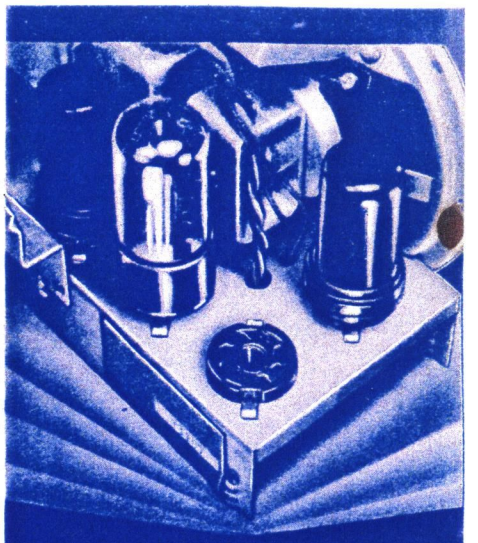
Enlarged view of No. CLD-1 Locking Tool is shown with typical foot press with which it can be used. Although only one socket is mounted at a time, it is done considerably faster than by riveting method.

MULTIPLE LOCKING DIE

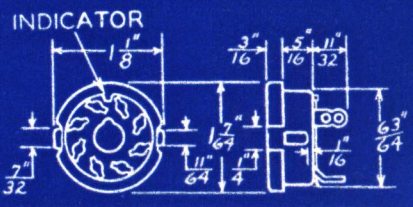
Locks all sockets in chassis at a single stroke. May be used in almost any type of press because no great pressure is required. For such multiple locking dies the tooling is very simple and complete details will be supplied by Amphenol engineers.



Locking
Tool
Details

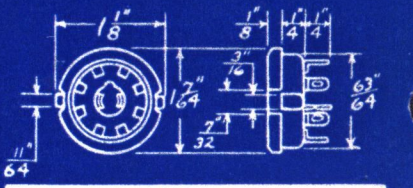


OCTAL SOCKET



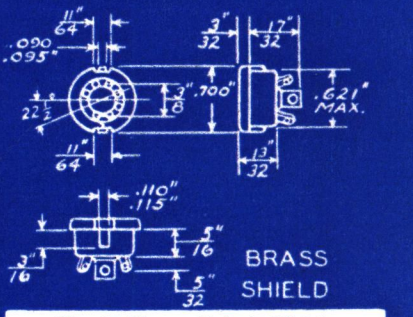
Requires less chassis area. Maximum chassis area required only 1⅛", permitting the design of smaller units.

LOKTAL SOCKET



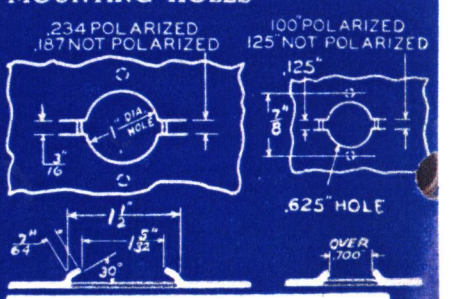
Requires less chassis area. Maximum chassis area required only 1⅛", permitting the design of smaller units.

RCA MINIATURE



Tiny in Size — Light in Weight
In keeping with design of RCA miniature tubes for minimum weight and bulk.

MOUNTING HOLES



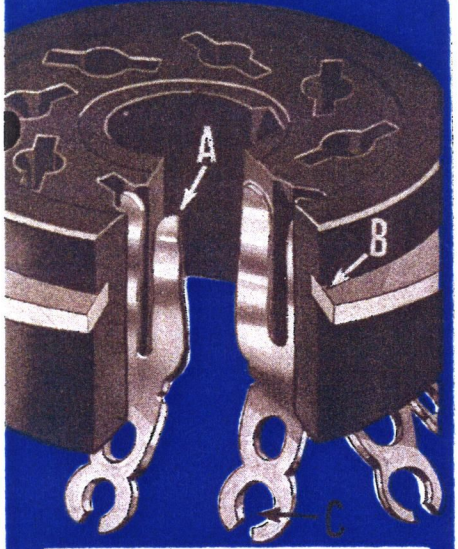
Diagrams are for illustrating type of

MIP (MOLDED-IN-PLATE)

AMPHENOL

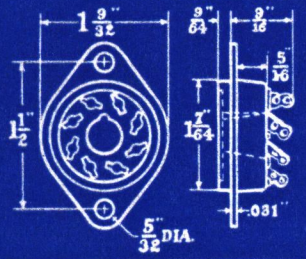
REG. U.S. PAT. OFF.

VIEW OF MIP



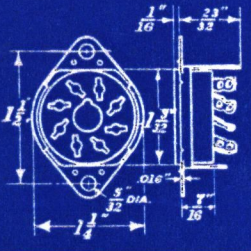
A—Long wiping contacts. Wave in contact puts pressure on tube prong at four different places.
B—Mounting plate is actually molded into solid bakelite.
C—Manufacturers ordering in large quantities may specify that end hole of contact is to be left open.

MIP DIMENSIONS



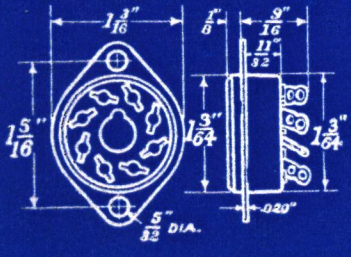
Mounts in a standard 1 5/32" round hole with mounting centers spaced 1½". Mounts from bottom or top.

CRIMP-ON DIMENSIONS



The heart of the circuit. Ample anchoring places for resistors and condensers. Nos. 1 and 5 contacts can be grounded directly to the mounting plate.

MIDGET OCTAL DIMENSIONS



Compact socket. Mounts in 1⅛" round hole with riveting centers spaced 1 5/16". No. 88-8X loktal socket mounts in same size hole.

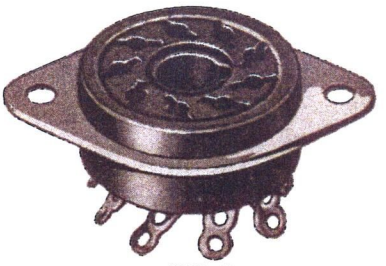
World's Strongest Socket

High Dielectric Black or Low-Loss Mica-Filled Bakelite

Standard 1½" Mounting Centers

Strongest socket in the world, yet compact in size, modern and attractive in appearance. Sturdy steel mounting plate, molded directly into the solid bakelite body, cannot come loose or vibrate, reducing possibility of tube microphonics. Mounting plate punched from steel, plated to prevent corrosion. 1½" riveting centers.

Available molded from black bakelite or low-loss mica-filled bakelite. For electrical characteristics of both materials see page 17.



MIP - 9
Actual Size

Of Importance to Manufacturers

Sturdy steel mounting plate cannot be damaged during riveting process. Breakage encountered when riveting laminated sockets entirely eliminated because of metal to metal riveting surfaces. Contacts spaced for easy wiring. Two holes in contact for wiring and anchoring resistors or condensers.

Contacts grip tube prongs firmly so that tubes will not pop out during shipment. Amphenol contacts retain their resiliency indefinitely.

As new tubes are announced, an Amphenol MIP socket goes into production and is often ready for delivery before the tube is on the market. Your chassis layout remains uniform throughout the years, keeping down tooling cost, permitting your production line to retain its speed because it is working with a socket it knows.

For converting any MIP sockets to a Anti-Microphone Socket, see page 40 for kit of necessary parts.

MICA-FILLED BAKELITE			BLACK BAKELITE	
No.	**List**		**No.**	**List**
MIP4T	23c ea.	4-contact	MIP4	10c ea.
MIP5T	23c ea.	5-contact	MIP5	10c ea.
MIP6T	23c ea.	6-contact	MIP6	10c ea.
MIP7ST	23c ea.	7-small	MIP7S	10c ea.
MIP7LT	25c ea.	7-large	MIP7L	12c ea.
MIP8T	25c ea.	8-contact octal	MIP8	12c ea.
MIP9T	28c ea.	9-contact	MIP9	15c ea.
MIP11T	33c ea.	11-contact	MIP11	20c ea.
MIP12T	38c ea.	12-contact	MIP12	25c ea.

Manufacturer's standard cartons contain 500 of one style socket. Jobber's cartons contain 50 of one style.

(Other colors available in production quantities at slightly higher prices)

ANTI-MICROPHONIC SOCKETS

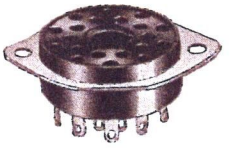
OCTAL STYLE ONLY

No. MIP8-FK — Black Bakelite Socket — 32c List
No. MIP8-FKT — Mica-Filled Bakelite — 45c List

Octal MIP sockets identical to those described above, but has enlarged mounting holes into which live rubber grommets are placed. Two additional grommets are supplied for inserting in chassis mounting holes, fully cushioning the socket from vibrations and eliminating practically all tube microphonics. Mounts in a 1 1/16" round hole with two ¼" screw holes on 1½" centers. Supplied complete with octal socket, four live para rubber grommets, two mounting screws, nuts and washers.

20-CONTACT SOCKET

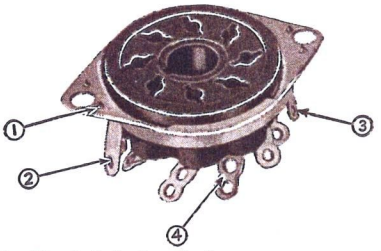
No. MIP20 — Black Bakelite Socket — 50c List
No. MIP20T — Mica-Filled Bakelite — 63c List



A 20-contact MIP socket for use with the 20 prong Speaker Plug or Shielded Cable Plug listed on page 13. Socket has same sturdy molded-in-plate as the MIP sockets described above. This socket with its corresponding plug provides an economical means of connecting multi-wire cables having up to 20 conductors, for intercommunication systems, electric control panels, electric organs and other apparatus having a great many independent circuits. Supplied molded from high dielectric black bakelite for all ordinary applications, and from low-loss mica-filled bakelite for cables carrying R.F. current. **Socket mounts in a 1 3/32" hole, with riveting centers spaced at 1½".**

CRIMP-ON SOCKET

OCTAL STYLE ONLY



No. 74-8—Black Bakelite Socket .....12c List
No. 74-8—Mica-Filled Bakelite .....25c List

Especially designed for high production lines for rapid soldering. Priced so they can be used economically.

1. Sharp nibs on riveting plate score chassis during riveting operation, breaking through any oxidization for a perfect ground. 1½" mounting centers. **2.** Grounding lug, actually part of steel riveting plate, permits grounding No. 1 contact and affords a firm anchorage for grounding small parts such as condensers, resistors, etc. **3.** Short grounding lug provided for grounding No. 5 contact, or for grounding resistors or condensers. **4.** Phosphor bronze contacts, cadmium plated for fast soldering, have two soldering holes.

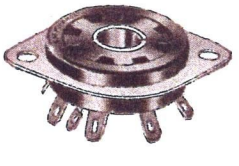
Amphenol Molded from high dielectric black bakelite or low-loss mica-filled bakelite. Riveting plate firmly crimped around edges of bakelite.

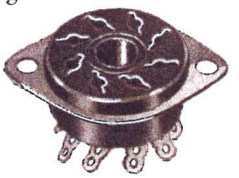
"T" shaped grounding lug at (2) also available to manufacturers in quantity. Permits grounding any combination of No. 1, 2 and 8 contacts. **See page 17.**

Manufacturer's standard cartons contain 500 of one style. Jobber's cartons contain 50 of one style.

COMPACT SOCKETS

1 5/16" Mounting Centers





Loktal
No. 88-8X—17c List

Octal
No. 88-8—12c List

Companion octal and loktal sockets, having all the features of Amphenol MIP socket listed above, but smaller in diameter and with 1 5/16" mounting centers.

Very popular for small midget and auto radios where space is limited. The smaller mounting centers permit use of this socket in corners where the standard socket would not fit. Because of the ingenious contact spacing, the break-down voltage and capacity between contacts and contacts and ground is the same as for the above MIP's.

See page 22 for complete description of loktal types.

Octal types are used extensively for the new single ended octal tubes because of their compact size and low capacity between contacts.

For high frequency applications use midget octals and loktals molded from mica-filled bakelite. Add the letter "T" to the catalog number and 13c to the list price.

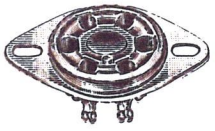
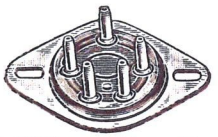
Manufacturer's standard cartons contain 500 of one style. Jobber's cartons contain 50 of one style.

See Page 17 for Electrical Characteristics of Black and Mica-Filled Bakelite

Genuine AMPHENOL
REG. U. S. PAT. OFF.

MOUNTING PLATE SOCKETS & PLUGS

REPLACEMENT SOCKETS AND PLUGS

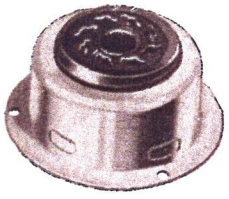
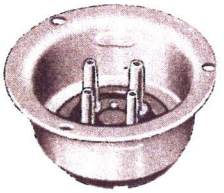



Regular "S" type sockets and "CP" type plugs (described on the next page), but assembled with No. 4 retainer ring in a nickel plated steel mounting plate with slotted holes to fit riveting centers from 1½" to 1⅞".

Extensively used by servicemen to replace wafer or laminated type sockets. A sure cure for noise caused by leakage between contacts or contacts to ground.

Socket No.	Plug No.		List Price
RS-4	RCP-4	4-contact	12c
RS-5	RCP-5	5-contact	12c
RS-6	RCP-6	6-contact	12c
RS-7S	RCP-7S	7-small	12c
RS-7L	RCP-7L	7-large	12c
RS-7C	.....	7-combination	15c
RS-8	RCP-8	8-octal	15c
RS-9	RCP-9	9-octal style	18c
RS-11	RCP-11	11-octal style	25c
RS-8L	.....	LOKTAL	18c

ABOVE OR BELOW SURFACE

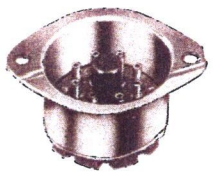
Regular "S" sockets or "CP" plugs set in drawn steel "ACS" shell which extends socket or plug 1⅜" above or below surface. Four knockouts in side of shell provide wire entrances from any angle. Ideal for mounting on blank panels, test benches, bread board bases, etc. Widely used in transmitters for recessing sockets or plugs carrying dangerous voltages. Accommodates metal, "G" type and medium base tubes. Ample room for inserting Amphenol "PM" cable connectors encased in "RPH" rubber plug handle. Unless otherwise specified, sockets will be supplied for above surface mounting; plugs for below surface mounting. To reverse simply remove retainer ring and insert bakelite element from opposite side.

Aluminum "ACS" shells are available for customers having government contracts who can supply a priority certificate.

Sockets	Plugs		List Price
ACS4	ACP4	4-contact	21c
ACS5	ACP5	5-contact	21c
ACS6	ACP6	6-contact	21c
ACS7S	ACP7S	7-small	21c
ACS7L	ACP7L	7-large	21c
ACS7C	.....	7-combination	24c
ACS8	ACP8	8-octal	24c
ACS9	ACP9	9-octal style	27c
ACS11	ACP11	11-octal style	34c
ACS8L	.....	LOKTAL	27c

WITH FLUSH MOTOR SHELL

FOR BELOW SURFACE ONLY

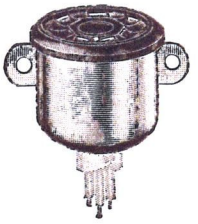


Regular "S" type sockets or "CP" type plugs set in a drawn steel, burnished nickel-plated shell. Used for recessing plugs into which a live line is to be plugged and for recessing sockets carrying dangerous voltages. Impossible for the user to touch the male prongs until they are entirely disengaged from the live contacts. Overall diameter only 1⅜", yet there is ample room to insert "PF" or "PM" connectors, or metal or "G" base tubes.

Sockets	Plugs		List Price
61-S4	61-CP4	4-contact	26c
61-S5	61-CP5	5-contact	26c
61-S6	61-CP6	6-contact	26c
61-S7S	61-CP7S	7-small	26c
61-S8	61-CP8	8-octal	29c
61-S9	61-CP9	9-octal style	32c
61-S11	61-CP11	11-octal style	40c
61-S8L	.....	LOKTAL	32c

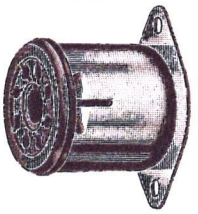
SIDE MOUNTING SOCKETS AND PLUGS

A new style mounting which permits socket or plug to be mounted on the surface of chassis, panels, walls, counters, inside cabinets, etc. Ideal for mounting on moldings, work benches, etc. Cap is drawn steel, cadmium plated; plate is heavy steel with mounting holes on 1½" centers. Has two cable outlets, one in back through mounting plate, the other through plug end.



Rear Outlet			List Price
Plug	Socket		
3-33A-P4	3-33A-S4	4-contact	31c
3-33A-P5	3-33A-S5	5-contact	31c
3-33A-P6	3-33A-S6	6-contact	31c
3-33A-P7S	3-33A-S7S	7-small	31c
3-33A-P8	3-33A-S8	8-octal	34c
3-33A-P9	3-33A-S9	9-contact	37c
3-33A-P11	3-33A-S11	11-contact	44c
.....	3-33A-S8L	LOKTAL	37c

EXTENDED SOCKETS AND PLUGS



"S" type sockets and "CP" type plugs housed in a versatile mounting that has many applications, but is used principally for bringing plugs or receptacles to the surface of a wood cabinet as illustrated in the border of this page. Ideal for connecting remote controls, extra speakers, phono players, etc., without marring the appearance of the unit by protruding plugs or sockets

Also permits mounting a plug or socket on the surface in a minimum area. See page 40 for shorter plug cap.

Socket No.	Plug No.		List Price
3-30A-S4	3-30A-P4	4-contact	31c
3-30A-S5	3-30A-P5	5-contact	31c
3-30A-S6	3-30A-P6	6-contact	31c
3-30A-S7S	3-30A-P7S	7-small	31c
3-30A-S8	3-30A-P8	8-octal	34c
3-30A-S9	3-30A-P9	9-octal style	37c
3-30A-S11	3-30A-P11	11-octal style	44c
3-30A-S8L	.....	LOKTAL	37c

VIBRATOR SOCKETS


Mounting Plate Type Above
Retainer Ring Type to Right

Used by most receiver manufacturers because vibrators require a strong **molded** socket. The ideal replacement socket for servicemen. Also used extensively by builders of vibrator test instruments.

There is an Amphenol socket for almost every vibrator made. **Built on the same principle as "S" sockets,** on next page. Supplied to servicemen and dealers through their jobbers with the replacement type mounting plate as used on replacement type sockets described at top of page .

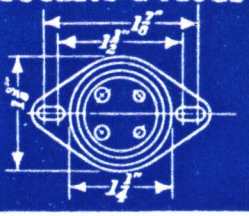
It is impossible to list all type vibrators. Consult the chart in the border of this page for contact spacings.

With retainer ring only	List Price		With mounting plate	List Price
No. 56-4-A	$.19 ea.	4-contact	No. R56-4-A	$.20 ea.
*No. 56-4-B	.11 ea.	4-contact	*No. R56-4-B	.12 ea.
No. 56-5-A	.19 ea.	5-contact	No. R56-5-A	.20 ea.
No. 56-5-B	.19 ea.	5-contact	No. R56-5-B	.20 ea.
No. 56-5-C	.19 ea.	5-contact	No. R56-5-C	.20 ea.
†No. 56-5-D	.11 ea.	5-contact	†No. R56-5-D	.12 ea.
No. 56-6-A	.19 ea.	6-contact	No. R56-6-A	.20 ea.
No. 56-6-B	.19 ea.	6-contact	No. R56-6-B	.20 ea.
‡No. 56-6-C	.11 ea.	6-contact	‡No. R56-6-C	.12 ea.
No. 56-7-A	.19 ea.	7-contact	No. R56-7-A	.20 ea.

** No. 56-4-B is standard "S4"; No. R56-4-B is standard "RS4".*
† No. 56-5-D is standard "S5"; No. R56-5-D is standard "RS5".
‡ No. 56-6-C is standard "S6"; No. R56-6-C is standard "RS6".

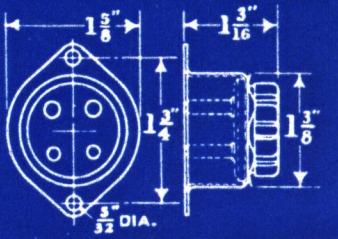
Any Socket or Plug on this Page available molded from Low-Loss Mica-Filled Bakelite
Add letter "T" to Cat. No. and 13c to List Price.

REPLACEMENT SOCKETS & PLUGS



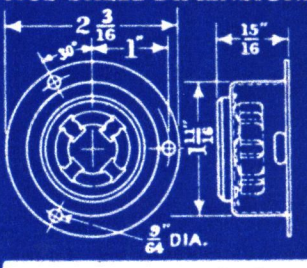
Slotted mounting holes fit any riveting centers from 1½" to 1⅞", making these sockets ideal for replacing wafer types.

61-61 SHELL DIMENSIONS



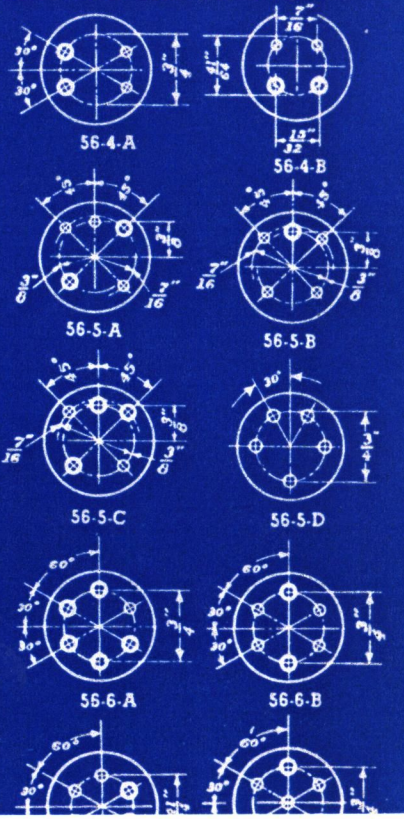
Mounts in a plain round hole 1 1/16" in diameter. 1¾" mounting centers. Extends only 1 1/16" below the surface.

ACS SHELL DIMENSIONS

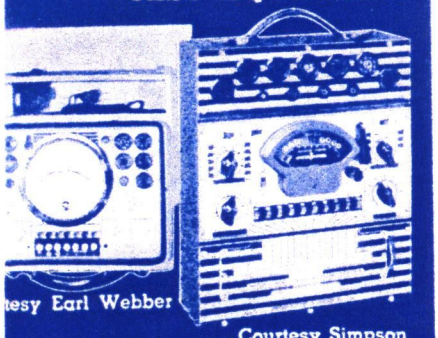


For below chassis applications, mounts in plain round hole, 1 1/16" in diameter. For above or below chassis mounting,

VIBRATOR SOCKET REPLACEMENT CHART



USED ON 90% OF ALL TEST EQUIPMENT



Courtesy Earl Webber

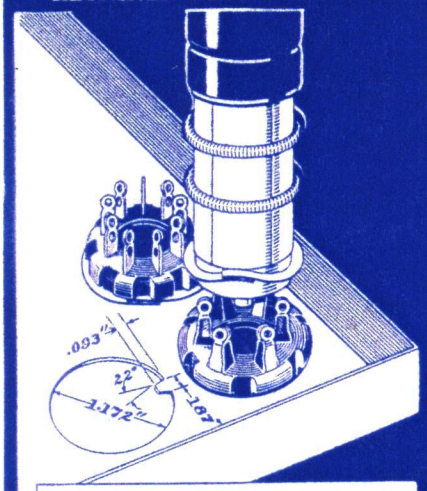
Courtesy Simpson

Amphenol "S" type sockets are used by 90% of all test equipment manufacturers including the following:

Bendix, Boonton, Clough-Brengle, Daco Products, Daco Radio, Ferris, Hickok, Jackson, Leeds & Northrup, John Meck, Million, Monarch, Precision, RCA, Radio City, Readrite, RTL, Simpson, Stark, Supreme, Televiso, Triplett Triumph, Earl Webber

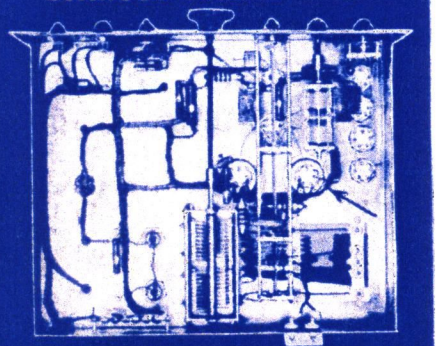
For identification purposes and for beautifying finished products, Amphenol "S" type sockets and "CP" type plugs are supplied to manufacturers in production quantities in any desired color.

RETAINER RING MOUNTING



Servicemen and experimenters can easily assemble "S" type sockets and "CP" type plugs to the chassis with a screw driver. For production use the 51-1 Retainer Ring Hand Tool shown in illustration and listed on page 16. All plugs and all sockets except the 7-large and 7-combination mount in the chassis hole illustrated, a keyed hole 1.172". The 7-large and 7-combination mount in a keyed hole 1.327". For dies see page 16.

STANCOR MOBILE XMITTER



For low-loss Steatite sockets see page 23. Shown in Stancor Xmitter are retainer ring steatite sockets and steatites in ACS shell.

"S" Type SOCKETS
"CP" Type PLUGS

AMPHENOL

No Screws or Rivets Necessary

Extremely compact sockets and plugs, requiring a minimum chassis area. Held firmly in place by the patented Amphenol #4 retainer ring. Can be rotated to line up contacts with wiring for shortest possible leads. Molded keyway in side engages key in chassis hole, preventing socket or plug from turning.

Phosphor bronze contacts, cadmium-plated for easy soldering, recessed in individually molded pockets, protecting them from physical damage. Insulation is best grade high dielectric black bakelite, or low-loss mica-filled bakelite.

Preferred by most experimenters and laboratory men because it is possible to quickly change sockets without damaging the chassis or panel. Also used extensively on instruments, etc., where rivet heads or screws must not mar the appearance of the finished product and for plug-in condensers, relays, etc.

Maximum insulation between contacts and ground enables the sockets to withstand an unusually high breakdown voltage. All D.C. breakdown voltages are in excess of:

	From Contact to Ground	Between Small Contacts	Between Large Contacts
S-4	9500 Volts	8000 Volts	8000 Volts
S-5	9000 Volts	6500 Volts	.....
S-6	9000 Volts	7000 Volts	6500 Volts
S-7S	10000 Volts	6000 Volts	5000 Volts
S-7L	9500 Volts	6000 Volts	5500 Volts
S-8	10000 Volts	8000 Volts	.....
S-9	11000 Volts	7500 Volts	.....
S-11	12000 Volts	7000 Volts	.....

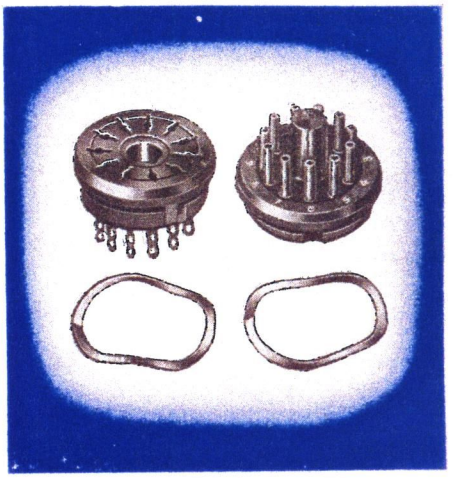
Because of the high breakdown voltage and long leakage path, "S" type sockets are used in many of the finest communication and home radio receivers. Also used in small midgets because there is no riveting plate to extend beyond circumference of socket. Contacts are numbered for quick identification.

Grooved to fit Panels to .093"

Manufacturers should specify exact thickness of panels or chassis in which the socket is used. Can be grooved to fit up to 13 gauge (.093"). When exact thickness of chassis or panel is specified the sockets are grooved to order, insuring a firm mounting and easy assembly.

Unless otherwise specified, sockets supplied grooved to fit from 19 gauge (.044") to 16 gauge (.062") panels or chassis. Resiliency of tempered steel retainer ring takes up variation in metal thickness.

"S" type sockets and "CP" type plugs can be supplied to manufacturers in production quantities in colors such as red, blue, green, yellow, gray, etc.



BLACK BAKELITE SOCKETS

Socket No.	Plug No.		List Price
S-4	CP-4	4-contact	11c
S-5	CP-5	5-contact	11c
S-6	CP-6	6-contact	11c
S-7S	CP-7S	7-small	11c
S-7L	CP-7L	7-large	11c
S-7C		7-combination	14c
S-8	CP-8	8-octal	14c
S-9	CP-9	9-octal style	17c
S-11	CP-11	11-octal style	24c
78-8L		LOKTAL	17c

Price includes retainer ring

LOW-LOSS MICA-FILLED BAKELITE TAN COLOR

Socket No.	Plug No.		List Price
S4T	CP4T	4-contact	24c
S5T	CP5T	5-contact	24c
S6T	CP6T	6-contact	24c
S7ST	CP7S	7-small	24c
S7LT	CP7LT	7-large	24c
S7CT		7-combination	27c
S8T	CP8T	8-octal	27c
S9T	CP9T	9-octal style	30c
S11T	CP11T	11-octal style	37c
S8LT		LOKTAL	30c

Manufacturer's standard carton contains 500 of one style. Jobber's package 50 of one style.

FOR MINIATURE TUBES

Especially molded for installing in tube checkers and analyzers that have blank or spare sockets, but which do not have facilities for testing the new miniature tubes. All types listed below will mount in the standard 1 1/4" "S" type hole which is standard for dummy or spare sockets.

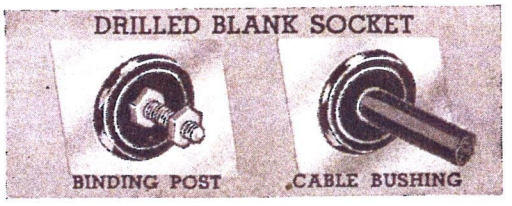
NOTE: For instruments not having a spare socket see Page 22 for tiny miniature sockets.

No. 78A-7P—For RCA Miniature Tubes.....25c List
No. 78A-5P—For Raytheon Miniatures .....25c List
No. 78A-5H—For Hytron Bantam Jrs. .....25c List

BLANK SOCKET

No. 78B — List Price 6c

Identical in size and appearance to above "S" type sockets. Mounts in the standard 1 1/4" "S" type socket hole. Can be used as a bakelite bushing by drilling a hole in the center, but primarily designed as a dummy or spare socket on tube checkers and analyzers so that a new socket of the "S" type can be added easily to the instrument when a new tube base is announced requiring a new socket. Used by most test instrument manufacturers because they appreciate how difficult it is to drill or punch a socket hole in an instrument already assembled.



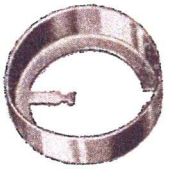
UNDERWRITER'S SHIELD

No. 58-90 — List Price 3½c Each

Mounts between "S" type socket or "CP" type plug and chassis. Held firmly in place by shoulder of socket and cannot come loose or vibrate. Key in hole engages keyway in socket, preventing the shield from turning. May also be assembled to socket below the chassis to protect the wired contacts. Primarily designed for AC/DC receivers, also used for television, transmitter and other tubes carrying dangerous voltage. Punched from steel and finished in black japan. 1 3/8" O.D. x 5/8" high.

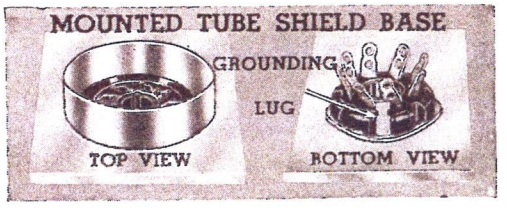
TUBE SHIELD BASE

No. TSB-1 — 3½c List



Mounts between "S" type socket and chassis. Held firmly in place by shoulder of socket and cannot come loose or rattle. Overall diameter 1 13/32", fitting most standard tube shields.

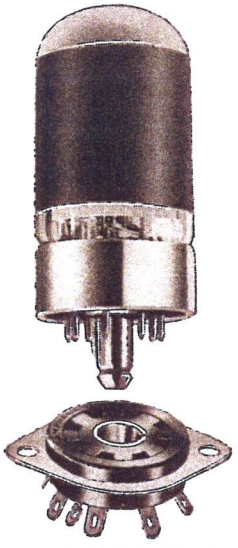
Projecting solder lug bends down through one of the socket grooves, and prevents tube shield base from turning. Lug may be soldered to contact or bent over and soldered directly to chassis. Tube shield bases punched from .016" steel, cadmium-plated to prevent corrosion. Slot in side provides space for bringing up grid lead inside of tube shield.



Genuine AMPHENOL

REG. U. S. PAT. OFF.

LOKTALS



LOKTAL MIP SOCKETS

Floating Contacts Minimize Strain on Tube Prongs

No. 88-8X —Black Bakelite .....17c List
No. 88-8XT—Mica-Filled .....30c List

EXTREMELY COMPACT

Amphenol Loktal sockets are compact, requiring less chassis area than the tubes they serve. Mounting centers $1\frac{5}{16}$".

A newly designed floating contact is self-aligning, eliminating danger of fracturing glass seal at tube prongs.

Bottom of socket has raised bakelite barriers between contacts, increasing the leakage path and preventing soldering flux from flowing from contact to contact.

Fundamentally loktal tubes were designed to cut down losses at the tube base and to shorten the control grid lead. To retain the advantages gained, Amphenol No. 88-8X loktal sockets are molded from the best grade high dielectric black bakelite.

(For low loss applications use No. 88-8XT molded from Mica-Filled Bakelite.)

FOR FAST PRODUCTION

These small sockets have all the features of Amphenol MIP sockets described on page 19.

1. Sturdy construction. One piece molded bakelite body has rigid steel mounting plate molded in bakelite.

2. Center contact is a one piece formed spring lock sleeve punched from spring temper brass, cadmium plated to prevent corrosion. Soldering end of contact relatively stiff, permitting wiring without bending lug.

3. Floating phosphor bronze contacts have proper resiliency to grip tiny loktal tube pins regardless of times they are inserted and extracted.

4. Solder lug has oblong hole; permits easy insertion of wires for soldering.

RETAINER RING MOUNTING

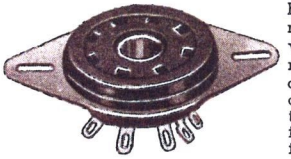
No. 78-8L —Black Bakelite .....17c List
No. 78-8LT—Mica-Filled .....30c List

Similar in construction to the Amphenol "S" type sockets on page 21, but has floating contacts to fit the tiny .050" Loktal tube prongs.

For mounting hole instructions see page 21. Price includes No. 4 retainer ring.

REPLACEMENT LOKTAL SOCKETS

No. RS8-L —Black Bakelite .....18c List
No. RS8-LT—Mica-Filled .....31c List



For all types of replacement and experimental work. Standard No. 78-8L retainer ring type set in a nickel plated steel adapter plate, with slotted mounting holes that fit any riveting center from 1½" to 1⅞".

For Ultra-Low-Loss Socket See Page 31

MINIATURE TUBE SOCKETS

For Hearing Aids, Police Pocket Radios, Remote Controls, Meteorological Instruments, Sensitive Measuring Devices, and other compact electronic apparatus.

FOR HYTRON

No. 78-5H —Black Bakelite .....17c List
No. 78-5HT—Mica-Filled .....30c List

Accommodates 5 prong Hytron Bantam Jr. tubes, such as the HY113, HY115 and HY125. This socket is the recognized standard for all Hearing Aids and other Compact Electronic apparatus that use Bantam Jr. tubes. The socket has long, round contacts, only slightly larger than the tube prongs, leaving maximum insulation at all points, and insuring minimum capacity. **For ultra-low-loss sockets see page 30.** For size and mounting hole see Fig. "C" in border.

FOR RAYTHEON

No. 78-5P —Black Bakelite .....17c List
No. 78-5PT—Mica-Filled .....30c List

The World's Smallest tube socket. Designed to perfectly match the small hearing aid tubes such as the Raytheon CK501, CK502, CK503, CK504. This socket is already widely used in the production of Hearing Aids and other Midget Amplifiers. The five short, stubby prongs of these tubes demanded a floating, low resistance contact. The socket actually weighs only 1/12 ounce. For size and mounting hole see Fig. "B" in border.

FOR RCA

No. 78-7P —Black Bakelite .....17c List
No. 78-7PT—Mica-Filled .....30c List

For RCA Miniature Tubes such as the 1S4, 1S5, 1T4 and 1R5. The seven tiny prongs, set in glass, require a floating low resistance contact, which is provided in these sockets. Socket has metal shield in center for grounding to chassis. **For ultra-low-loss sockets see page 30.** For size and mounting hole see Fig. "A" in border.

FOR PHOTO CELLS

No. S3S —Black Bakelite .....14c List
No. S3S-T—Mica-Filled .....27c List

Designed to fit RCA Pee-Wee and Cetron CE-5BB and CE-20 Photo Cells. For size and mounting hole see Fig. "C" in border. See PCG3F on page 13. Used as photo cell socket. Shell of connector grips side of tube base securely. Ideal for inverted mounting of tube.

GENERAL SPECIFICATIONS

These extremely compact sockets for the new tiny miniature tubes demonstrate the skill of Amphenol engineers. All types actually require less chassis area than the tubes they serve. Contacts are recessed in individually molded pockets in the bakelite socket body. Since the prong diameters of the four types of tubes are different, special contacts were designed for each type to insure a low resistance connection between tube prongs and contacts.

Correct size retainer ring (as illustrated) supplied with all sockets.

RCA MINIATURE SOCKETS WITH RIVETING PLATES

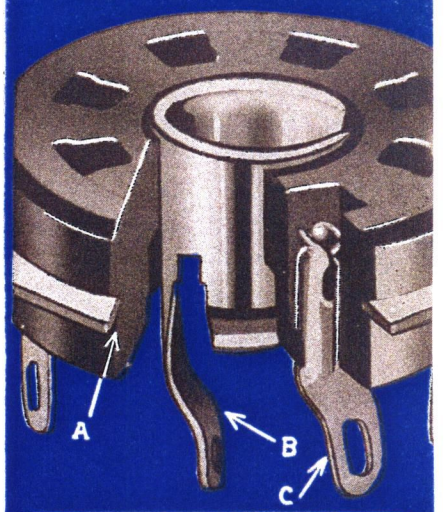
No. 64-7P —Black Bakelite Socket .....20c List
No. 64-7PT—Mica-Filled Bakelite .....33c List

Identical to the retainer ring mounting socket described above, but has steel mounting plate. Requires a ⅛" diameter round mounting hole, with riveting centers on ⅞".

No. 64-7PFK —Black Bakelite Socket .....25c List
No. 64-7PFKT—Mica-Filled Bakelite .....38c List

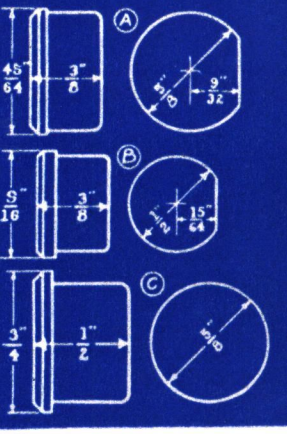
Anti-Microphonic socket for RCA miniature tubes. Has rubber cushions in mounting holes. Practically eliminates microphonics in ultra sensitive instruments. Same mounting holes as socket to left.

CROSS SECTION VIEW OF LOKTAL



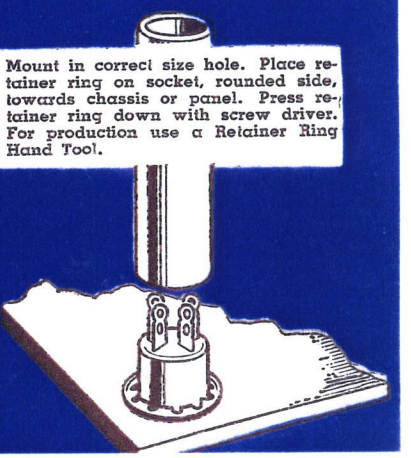
A—The steel mounting plate is molded directly into the bakelite body. Cannot shake loose or rattle.
B—Center locking contact is one piece construction. Grips center stud of loktal tube firmly.
C—Floating contacts are self aligning. Prevent breakage of tube envelope when tube prongs are slightly out of alignment.

MINIATURE SOCKET DIMENSIONS



A—Size and mounting hole for RCA No. 78-7P. Laboratory and servicemen can mount socket in plain round hole.
B—Size and mounting hole for Raytheon No. 78-5P. Laboratory and servicemen can mount socket in plain round hole.
C—Size and mounting hole for Hytron No. 78-5H and Photo Cell No. S3S.

RETAINER RING MOUNTING



Mount in correct size hole. Place retainer ring on socket, rounded side, towards chassis or panel. Press retainer ring down with screw driver. For production use a Retainer Ring Hand Tool.

STEATITE

LOW - LOSS

SOCKETS AND PLUGS

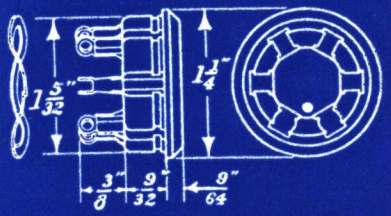
AMPHENOL

REG. U. S. PAT. OFF.

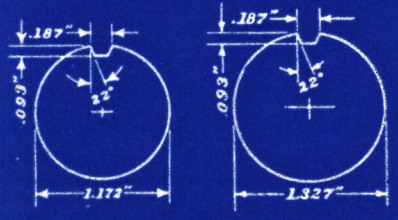
A ↗

Illustration showing bottom view of newly designed Amphenol Steatite socket. Note "A", the barriers between contacts so that dirt or soldering paste cannot form a leakage path.

STEATITE DIMENSIONS

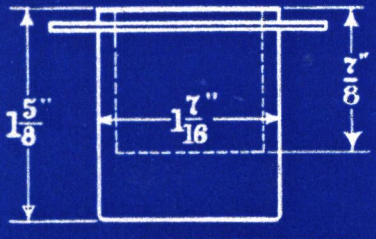


MOUNTING HOLES

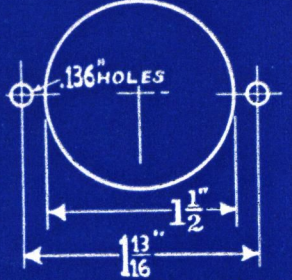


The Steatite plug and all but the large SS-7 mount in the 1.172" hole which is punched with the Amphenol LD-1 Die. The 1.327" hole is for the 7-large and is punched with LD-2 Die. See page 35.

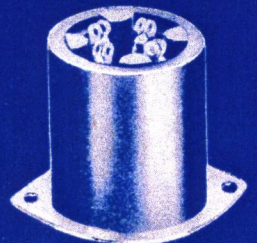
HIGH VOLTAGE SOCKET DIMENSIONS



MOUNTING HOLE



BOTTOM VIEW



Note how the contacts are set up in the bakelite body between molded barriers forming a long leakage path.

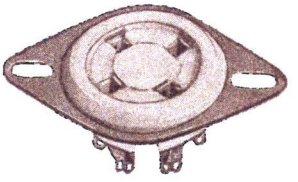
Entirely new dielectric and design. The newly developed Steatite used meets U.S. government specifications. It withstands higher temperatures, is non-hygroscopic and has a lower loss-factor than ordinary Steatite. The new design places a maximum of insulation between contacts, and provides an extremely long leakage path. See bottom view in border of this page illustrating how each contact is placed in its own separate pocket, with raised barriers between contacts, making it impossible for dirt or soldering paste to form a leakage path.

The contacts are formed from phosphor bronze, then silver-plated for low resistance connections with the tube prongs.

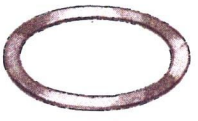
ELECTRICAL AND MECHANICAL CHARACTERISTICS

	1 mc.	10 mc.
Dielectric Constant	6.0	5.8
Power Factor	.0006	.0004
Loss Factor	.0036	.0023

Dielectric Strength, volts per mil. 300-500
Volume Resistivity mc/am (AC 220 V.) at 70% F. ..108
Softening Temperature, 1420° F. **Moisture Absorption,** .1%
Tensile Strength, 8500 lbs. per sq. in.



Steatite sockets and plugs are recommended for high frequency work where high temperatures are encountered — in transmitters and amplifiers where the output is in excess of 20 watts. Also used as receptacles for plug-in coils, crystals, transformers.



"SS" Retainer Ring Mounting

See Page 21

Steatite sockets supplied with patented Amphenol retainer ring. No screws or rivets are required. Sockets are grooved to fit panels and chassis up to .093" in thickness. For thin panels a spacer washer is supplied so that the socket can be assembled firmly to any chassis from 1/32" to 1/16".

See border of page for mounting holes. Prices include spacer washer and #4 retainer ring.

Used throughout the world for all short wave applications, in receivers, transmitters, and other electronic apparatus. Also used in electronic relays and other apparatus which is located in or near high temperature electrical equipment such as ovens, etc.

SS4 —4-contact	**39c List**
SS5 —5-contact	**39c List**
SS6 —6-contact	**39c List**
SS7S —7-small	**39c List**
SS7L —7-large	**49c List**
SS8 —octal	**39c List**
CPC-6—6 PRONG PLUG	**39c List**

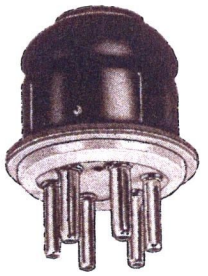
"RSS" Replacement Sockets

See Page 20

Identical to Retainer Ring Mounting Sockets described to the left, but sockets are assembled to a nickel-plated steel mounting plate that permits it to be fastened to the chassis or panel with rivets or screws. Slotted mounting holes fit any riveting centers from 1½" to 1⅞" making these sockets ideal for replacing ordinary steatite or bakelite sockets.

This is the steatite socket preferred by the radio amateur and laboratory experiments because socket is so easily mounted. Also, mounting plate may be removed and an "SS" socket is available for single hole mounting.

RSS4 —4-contact	**40c List**
RSS5 —5-contact	**40c List**
RSS6 —6-contact	**40c List**
RSS7S —7-small	**40c List**
RSS7L —7-large	**50c List**
RSS8 —octal	**40c List**
RCPS6—6 PRONG PLUG	**40c List**



Steatite Cable Plugs

Any "SS" socket or the CPS-6 plug listed above may be inserted in any plug cap listed on page 40, providing a low-loss cable terminal for connecting two cables or cable to instrument. Although only a 6-prong male to 6-contact female is possible, for cables having a lesser number of conductors simply leave unwired the contacts not needed.

When ordering "SS" socket or "CPS" plug for assembling to a plug cap, request that two spacer washers be supplied instead of the standard retainer ring and spacer washer.

Below Chassis Mounting

"SS" Steatite Sockets or "CPS" plug mounted in nickel-plated steel shell. (See Flush Motor Shell on page 20.)

61-SS4 —4-contact	**55c List**
61-SS5 —5-contact	**55c List**
61-SS6 —6-contact	**55c List**
61-SS7S —7-small	**55c List**
61-SS8 —octal	**55c List**
61-CPS6—6-PRONG PLUG	**55c List**

Above or Below Surface

"SS" Steatite Sockets or "CPS" Plug mounted in ACS shell for mounting socket above or below chassis surface. (See "ACS" shell on page 20.)

AC-SS4 —4-contact	**50c List**
AC-SS5 —5-contact	**50c List**
AC-SS6 —6-contact	**50c List**
AC-SS7S —7-small	**50c List**
AC-SS7L —7-large	**60c List**
AC-SS8 —octal	**50c List**
AC-CPS6—6 PRONG PLUG	**50c List**

LOKTAL TUBE SOCKETS

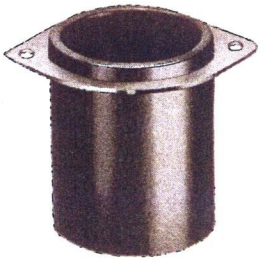
Sockets molded from steatite are not recommended for use with the loktal tubes. The close tolerances required to fit the tiny loktal pins cannot be held. Deviations from the exact pin circle of the loktal tube might fracture the tube envelope when pins are forced out of position.

For low-loss applications, use loktal sockets molded from mica-filled bakelite listed **on page 22;** for ultra-low-loss, use polystyrene socket **on page 31.**

HIGH VOLTAGE SAFETY SOCKET

Newly designed safety socket for high voltage small-base television rectifier tubes. Accommodates all tubes having a base diameter of 1.165" such as 871, 879, etc. Socket is set at the bottom of a deep molded bakelite shell making it impossible for the fingers to touch the tube prongs while they are engaged with socket contacts. Increased distance between contacts and chassis also prevents "flashover".

Heavy nickel-plated steel mounting plate molded into the bakelite body has .136" dia. holes for mounting on 1 13/16" centers. Mounts either from top of chassis or from below in 1 7/16" diameter hole.



Black Bakelite

No.		List
77A-4	**4-contact**	**$1.00**
77A-5	**5-contact**	**1.00**
77A-6	**6-contact**	**1.00**
77A-8	**8-octal**	**1.00**

Mica-Filled Bakelite

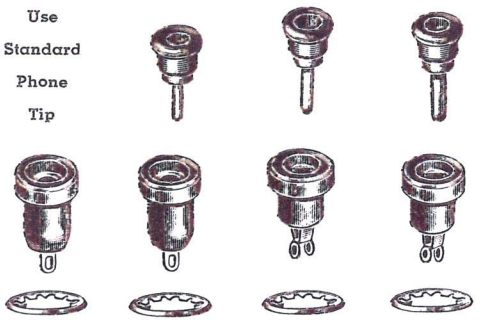
No.		List
77A-4T	**4-contact**	**$1.25**
77A-5T	**5-contact**	**1.25**
77A-6T	**6-contact**	**1.25**
77A-8T	**8-octal**	**1.25**

Genuine AMPHENOL REG. U.S. PAT. OFF.

ACCESSORIES

For Modern Electronic Equipment

SINGLE PRONG JACKS AND TIP JACKS



TIP JACKS mount in plain round holes, 3/8" in diameter, and are held firmly in place by the Amphenol No. 2-11 retainer ring. No screws or rivets are required. See page 40 for mounting instructions. The solid, molded bakelite body provides ample insulation. Breakdown voltage (with plug inserted) is in excess of 10,000 volts D.C. from contact to panel. Contacts are recessed 1/8" below the top of the tip jacks, preventing accidental shorts from the contact to the chassis.

SINGLE PRONG PLUGS. These are the tiniest plugs made, yet will carry more current than conventional cord tips. The brass prong is molded directly into the bakelite finger grip. Prong is set deep into a molded pocket so that wire insulation can be pulled down into the bakelite body. The bakelite shoulder actually enters bakelite body of tip jack, making a sealed connection.

COLORS FOR CODING

All Pin Jacks and Plugs available in Black, Red, Green, Blue, Grey, Yellow, Maroon and Walnut. Color code your panel so that the correct circuit can be quickly identified. When ordering state color desired. If no color is specified, black will be shipped.

SUPPLIED IN FOUR SIZES

By use of various size tip jacks, costly "burn-outs" can be eliminated. Use smallest socket for highest voltage, preventing accidental plug-ins of low voltage meters, etc.

SINGLE PRONG PLUGS

No. 71-1S —Fits 3/32" socket .....5c Each
No. 71-1M—Fits 1/8" socket .....5c Each
No. 71-1L —Fits 5/32" socket .....5c Each

TIP JACKS (SOCKETS)

***No. 78-1P —For standard .080" phone tip....7½c Each**
No. 78-1S —For 3/32" plug .....7½c Each
No. 78-1M—For 1/8" plug .....7½c Each
No. 78-1L —For 5/32" plug .....7½c Each

***The .080" socket accommodates all standard .080" phone tips, test equipment leads, and other .080" plugs.**

Contacts may be removed from above tip jacks and the bakelite body used as bushing for wire leads.

HIGH VOLTAGE TIP JACK

No. 78-1P1 .....10c List

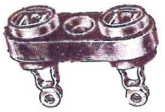
Accommodates all standard .080" phone tips and test instrument plugs. Bakelite body is ½" in diameter. Breakdown voltage (with plug inserted) is in excess of 13,000 volts D.C. from contact to panel. Used for all high voltage requirements such as are met in transmitters and television equipment and test instruments. Mounts in a ½" plain round hole. Held firmly in place by No. 2-10 retainer ring.

See Page 9 for High Frequency Tip Jack

CRYSTAL HOLDER SOCKET

No. 33-2—8c List

Black bakelite socket for standard crystal holders having two prongs on 3/4" centers. Easily mounted and requires minimum area on chassis or panel. Used extensively for crystal phasing in receivers, crystal control of transmitters and test equipment, and may also be used as a dual tip jack on test panels. Accomodates 1/8" male prongs.



See Page 30 for ultra-low-loss polystyrene version of this crystal holder socket and for dimensions and mounting holes.

NEW UNIVERSAL GRID CAP

Fits all Glass and Metal Tubes

An entirely new design in grid caps. Will make a perfect contact to any tube grid stud, from 1/4" to 3/8" in diameter, including standard glass and metal tubes. The spring brass contact is of unique design, spreading to accommodate the stud on which it is placed, yet gripping it securely to form a good electrical and mechanical connection. (See illustration in border.) Supplied either unwired or with a 15" wire lead, No. 20 stranded, rubber covered. Servicemen will want to replace their present troublesome dual grid caps with this new type.

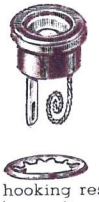
No. 63-1W—With wire lead .....20c List
No. 63-1 —Unwired .....15c List

BULB TESTER & TUBE SOCKET

78-7CD—With Ret'ner Ring 44c List
RS7-CD—With Mount. Plate 45c List

A standard 7-contact combination socket, as used on tube checkers, having an additional large center contact for testing all miniature bulbs, both with bayonet and screw base, such as are used in flashlights, Christmas tree strings, dial lights, etc. Center contact has a pig tail which is soldered to one heater contact, and a soldering lug which is connected to the other heater contact, making it possible to test miniature bulbs of all voltages, from 1.5 volts to the limit of the tube tester filament transformer.
For adapting to existing instruments simply remove the 7-contact combination socket and install the Bulb Tester and Tube Socket in the same hole.

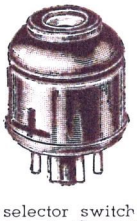
Supplied in two styles: No. 78-7CD, with retainer ring for mounting without screws or rivets in a keyed hole, 1 1/64" in diameter, (Use LD-2 or PP-2 Punch and Die) or with mounting plate having slotted mounting holes to fit riveting centers from 1½" to 1⅞". (Same mounting plate as used on Replacement Sockets, see page 20.)



BULB TESTER SOCKET

No. 78-1DL .....30c List

Molded bakelite socket for testing miniature bulbs such as are in dial lights, Christmas tree strings, flashlights, etc. Mounts in a plain round 5/8" hole. Held firmly in place by the Amphenol No. 2-9 retainer ring.
Every radio, electrical and hardware store should have a minature bulb counter tester. Such a tester can be easily constructed by hooking resistors in series with 110 volt line, or by utilizing a tapped stepdown transformer. Note: Such transformers are carried in stock by all radio jobbers for use in tube checkers.



BULB TESTER ADAPTER

No. 44-20W—Wired .....$1.00 List
No. 44-20 —Unwired .....60c List

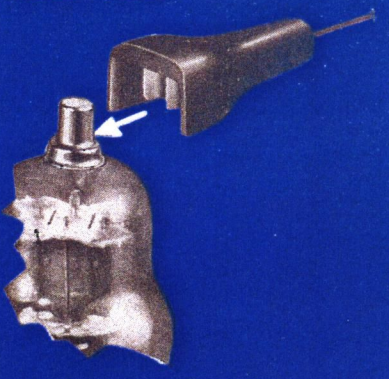
A convenient adapter which permits testing miniature bulbs in any tube checker if it is undesirable to install the above combination socket. Plugs into the octal socket of the tube checker. Circuit selector switch is set as for testing any standard octal base tube such as the 6J7 or 6L6. Filament selector switch is set at proper voltage for bulb to be tested. Contacts of bulb tester socket are connected to prongs No. 2 and No. 7 of the octal base.)

ADAPTER SHELL

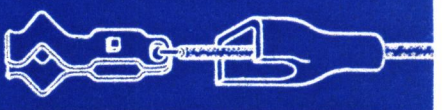
No. 3-14 —Without side hole 15c List
No. 3-14D—With side hole...20c List

Formed black-japanned brass tubing. Amphenol "S" type sockets or "CP" type plugs listed on page 21, snap into either end and are held securely yet may be removed easily. Any combination possible from 4 prong or contact to 11 prong or contact. Also used with 110 volt plugs and receptacles listed on page 14 for inserting small resistors or condensers in the line.
Sufficient room between socket and plug to insert a small resistor or condenser. Ideal for special laboratory work where resistors are to tied between various tube elements or for inserting resistors to cut down voltage when testing tubes.
Supplied in two types. No. 3-14 with blank side or No. 3-14D with rubber grommet in side for brinaing out leads.

NEW UNIVERSAL GRID CAP

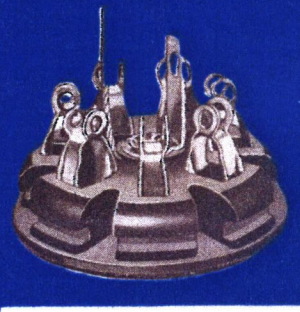


EASY TO SOLDER



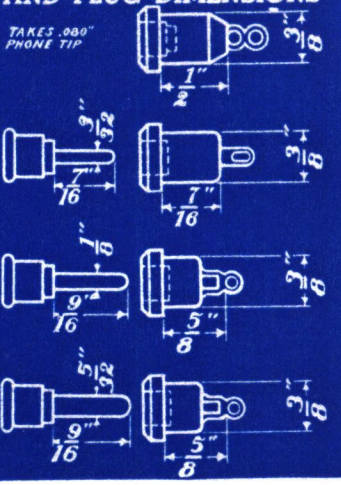
Wiring is exceptionally easy. Contact is removed and soldered in the open. Contact is snapped into body and is held firmly in place.

BULB TESTER SOCKET BOTTOM VIEW



Connect the tube socket as for any other 7-combination socket, then connect the pig tail to contact No. 1 and run a short lead from the center soldering lug to contact No. 2.

SINGLE CONTACT SOCKET AND PLUG DIMENSIONS



Note compact design with maximum bakelite insulation all around contacts. Plugs have bakelite finger grip.

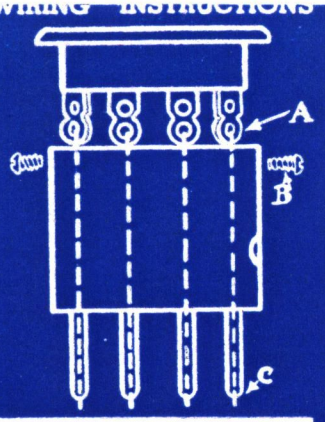
HIGH VOLTAGE TYPE

ADAPTERS

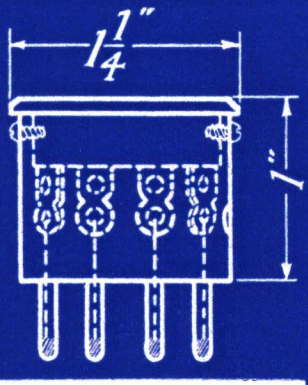
AMPHENOL

For Modernizing Test Equipment

WIRING INSTRUCTIONS

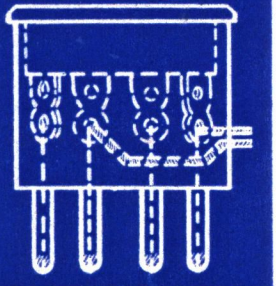


Solder #20 tinned solid wire to socket contacts "A". Run a short piece of spaghetti over each lead. Feed leads through prongs "C". Insert socket top while pulling on wires protruding through prongs "C". When socket is in place insert screws "B".



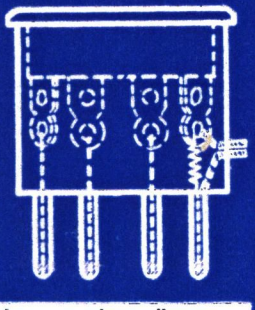
Clip off protruding wires at prongs. Turn adapter upside down and solder. For production dip-solder adapter bases and capillary action will draw solder far up prongs. Manufacturers supplied with complete soldering instructions.

FOR HEADPHONES OR SPEAKER



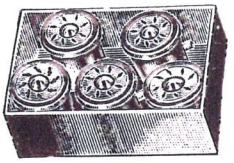
For connecting headphones or an extra speaker to any radio, wire an adapter straight through, 1 to 1, 2 to 2, etc. Connect a #22 D.C.C. wire to the plate and one to the cathode (or any contact which goes to ground). Connect speakers to output tube, headphones to 1st audio.

PHONO PICKUP OR MIKE



For phono pickup or carbon mike, connect an adapter straight through as above, but break the control grid (G-1). Feed a lead out the side from the socket and one from the base. Hook a 1 meg. resistor across these leads. (Carbon mikes require a transformer.)

LOKTAL TO OCTAL KIT



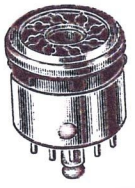
Kit contains five adapters which will test any loktal tube except the 7E7 and 7F7 in any tube checker, whether factory or custom built. Adapters convert loktals to exact counterparts in octal series. Socket tops color coded black, green, gray, blue and yellow so that serviceman can immediately pick correct adapter from his kit. Wired adapters are supplied with complete testing instructions; unwired kits are supplied with wiring and testing instructions

No. 44-11WK—5 wired adapters.....$5.00 List
No. 44-11K —5 unwired adapters.....$2.50 List

SPECIAL LOKTAL ADAPTERS

The 7E7 and 7F7 loktal tubes require special adapters because of their pin arrangement. Adapters are completely wired and are supplied with instructions.

No. 44-11W7—for 7E7 tube .....$1.00 List
No. 44-11W8—for 7F7 tube ..... 1.00 List



LOKTAL ANALYZER PLUG

Completely Wired

Adapter bottom is loktal type plug. Same pin size and pin spacing as loktal tubes. Fits on end of analyzer plugs.

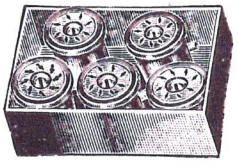
No. 44-13-8—With Octal Top...$1.25 List
No. 44-13-7—7-contact Top .... 1.25 List
No. 44-13-6—6-contact Top .... 1.25 List

WITH CENTER LOCKING STUD

Same as above but 7-contact top has center stud for lock-type analyzer plugs.

No. 44-13-S7—Complete with Stud.....$1.35 List

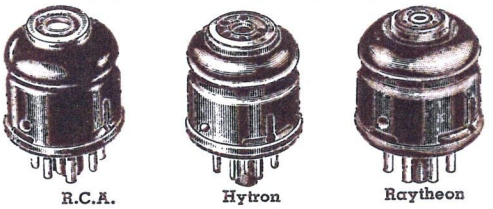
FOR SINGLE ENDED TUBES



Because the pin arrangement of the Single Ended Tubes (without grid stud) differs from the R.M.A. standards set for octal tubes, many checkers will not float the elements to the proper position for testing. This kit contains five adapters with different colored tops which permits testing these tubes in any checker. Wired adapters are supplied with complete testing instructions; unwired adapters are supplied with wiring and testing instructions.

No. 44-14WK—5 wired adapters.....$5.00 List
No. 44-14K—5 unwired adapters.....$2.50 List

FOR MINIATURE TUBES



R.C.A. Hytron Raytheon

Provide an easy method of testing the new tiny tubes in checkers not equipped with miniature sockets. The sudden popularity of pocket radio receivers, hearing aids and other compact electronic apparatus makes it necessary for the laboratory and service shop to have some method of checking the following tubes by RCA, Hytron and Raytheon.

FOR RCA 1S4, 1T4, 1R5, ETC.

The RCA Button-type series of miniature tubes (1S4, 1T4, 1R5 and 1S5) are quite similar in characteristics to some of the conventional battery-operated tubes, even though they are entirely different in physical size, appearance and in basing arrangement. This Amphenol Adapter Kit makes it possible to test these tubes in any tester equipped with an octal socket. Kit of 3 wired adapters includes testing instructions. Unwired kit of 3 adapters includes wiring instructions also.

No. 44-17WK—3 wired adapters.....$3.00 List
No. 44-17K —3 unwired adapters ..... 1.50 List
No. 44-17-8 —Single unwired adapter ..... .50 List

FOR HYTRON HY113, HY115, HY125, ETC.

For testing Hytron Bantam Jr. tubes in the octal socket of any tube checker. **Supplied unwired only.** Consult manufacturer of tube checker for wiring and testing instructions.

No. 44-12-8—Single unwired adapter.....50c List

FOR RAYTHEON CK501, CK502, CK503, CK504, ETC.

For testing the tiny Raytheon tubes in the octal socket of any tube checker. **Supplied unwired only.** Consult manufacturer of tube checker for wiring and testing instructions.

No. 44-26-8—Single unwired adapter .....50c List

Thousands of special adapters are wired by Amphenol annually for instrument manufacturers. Manufacturers are requested to send in their specifications and wiring schemes for quotations.

All adapters are tested on a special instrument designed by Amphenol engineers. It is practically impossible for an adapter with a short circuit or open connection to pass through this test.

STANDARD UNWIRED ADAPTERS

SOCKET TOPS

List Price 20c Each

Socket tops supplied in various colors so that adapters can be identified which are physically the same but wired differently. Available in black, red, green, blue, gray, yellow and brown. Please state color desired. If no color is specified, black will be shipped.

FIT SMALL BASES ONLY

No. 44-4—4-contact	No. 44-7S—small
No. 44-5—5-contact	No. 44-8—8-octal
No. 44-6—6-contact	No. 44-L—Loktal

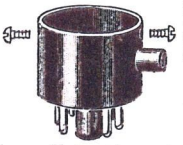
FITS LARGE BASES ONLY

No. 44-7L—7-large No. 44-7C—7 Comb.

WITH CENTER LOCKING STUD

No. 47-7SS — 30c List

7-contact small socket with lock type center stud. Permits the serviceman to make his own adapters to fit the latching type analyzer plug used on some test instruments. Socket fits any small base listed to right. Supplied in red or black. Specify color.



ADAPTER BASES

Bases supplied in 2 styles. With 5/32" side hole for bringing out leads or with a side stud that accommodates a metal tube grip cap. Bases and socket tops drilled for self tapping screws for holding assembly together. Screws supplied with Bases.

Bases are supplied in black only.

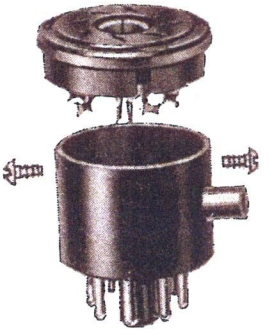
Number of prongs	Side Hole List 20c	Side Stud List 30c
4-prong	50-4D	50-4G
5-prong	50-5D	50-5G
6-prong	50-6D	50-6G
7-small	50-7SD	50-7SG
8-octal	50-8SD	50-8SG
*7-large	50-7LD	50-7LG
*8-octal	50-8LD	50-8LG

**Fits 7-large and 7-comb. sockets only*

SIDE STUD ONLY

No. 44-25 — 10c List

Side stud as used in above adapter bases. Consists of stud to fit metal tube size grid cap, and a threaded hollow sleeve. Can be inserted in adapter bases which have the 5/32" side hole. Used by amateurs and experimenters for making quick connections with grid caps.



ANY SOCKET TO ANY BASE

A universal yet simple way for the serviceman or experimenter to make his own adapters. Finished adapter resembles a factory wired job in all respects. Required for modernizing tube checkers and analyzers; for adapting new tubes to old circuits; for bringing out leads to output meter, phono pick-up, headphones, extra speaker, recorder, etc. Simple wiring instructions are outlined in the border of this page.

Genuine AMPHENOL

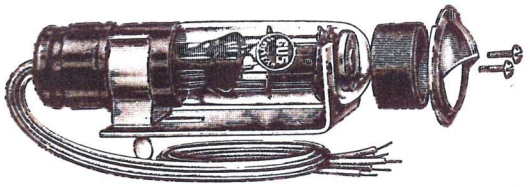
REG. U.S. PAT. OFF.

MAGIC EYE

ASSEMBLIES FOR ELECTRON-RAY TUBES

For Tuning Indicators, Recorders, Test Equipment

FOR 6-PRONG TUBES



No. MEA6 — $1.25 List

Complete assembly for easily adapting or replacing a 6-prong Magic Eye (electron-ray) tube in any apparatus. Includes all necessary parts, with exception of tube. 6-contact socket is completely wired with 22" color coded cable. One megohm target-to-plate resistor is included inside drawn metal socket shield. Slotted mounting bracket permits adjusting tube to come flush with surface of any thickness panel. A fibre light shield slips over front of tube to keep out light from tubes and dial bulbs. Hood type escutcheon is finished in antique bronze to harmonize with modern radio cabinets.

TUNING INDICATOR — Assembly is easliy connected to any superhet receiver having automatic volume control (AVC). Tube visually indicates when receiver is in resonance with the broadcast signal. Eliminates listening to distorted side bands. Permits tuning with volume control turned off to avoid "blasting". Easily understood instructions are given below for connecting.

FREQUENCY MODULATION — Receivers constructed to receive frequency modulated signals definitely require a tuning indicator for bringing the receiver in resonance with the signal or the high fidelity of F.M. is lost. See typical wiring diagram in border.

RECORDER LEVEL INDICATOR — To make good semi-professional and home recordings a visual amplitude indicator is required. Simple but effective circuit is shown in border. By switching grid of Magic Eye, a single tube will serve for both Resonance and Recorder Level Indicator.

TEST EQUIPMENT — Used by laboratories and service shops, in signal tracers, balance indicators in bridge circuits, condenser testers, vacuum tube voltmeters, output indicators and other apparatus.

AMATEUR RADIO — Used to indicate modulation or over modulation. Also an acceptable resonance indicator 6U5, 6E5 and 6N5 types) for communication receivers. Not as accurate as "R", "S" or Carrier Level Meters, but permits finding station carrier, tuning to exact resonance for checking frequencies, etc.

INSTALLING TUNING INDICATOR

Working in front of the radio cabinet drill a 1⅛" hole. Press fibre light shield over front of tube. Insert tube in the 1⅛" hole from the back. If hole is proper size the tube will hold itself in place. Using the escutcheon as a template, drill two ⅛" mounting holes. Through these holes insert the two art-head screws into the tapped assembly holder. Run cable through any convenient hole in the chassis and wire as directed below. Although the spring clip grips the tube firmly, the tube can be rotated until the eye movement is centered in the lower half of the escutcheon.

WIRING INSTRUCTIONS

RED WIRE — Connect to "B" plus, from 200 to 250 volts.

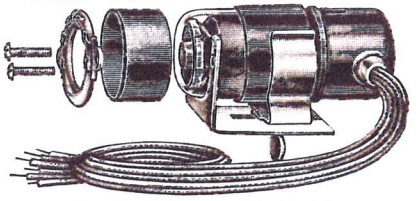
BLACK WIRE — Connect to chassis or to ground.

GREEN AND BLUE WIRES — Connect to the filament terminals of any tube socket except the rectifier.

YELLOW WIRE — In most installations the yellow wire can be connected directly to diode load. If Eye remains closed or shows only slight action, disconnect the yellow wire and connect as instructed in the border.

Packaged Individually in Blue and White Carton.

FOR OCTAL BASE TUBES



No. MEA8 — $1.25 List

Complete assembly for connecting octal base Magic Eye tubes, such as 6AF6G and 6AD6G, to receivers and test equipment. Eyes of this type have two movements which can be controlled separately, but common usage is to connect ray-control elements in parallel and amplify the AVC through a tube of the 6K7 or 6J5 type for strong eye action on weak signals. Not recommended for adapting a tuning indicator to an old receiver. Intended for constructing new apparatus.

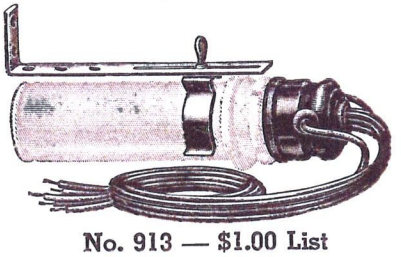
Assembly is similar to MEA6 listed to left but has shorter bracket to accommodate the small octal base tubes. Completely wired with a six wire 22" cable. Supplied with full vision escutcheon finished in antique bronze. For list of parts see top of border.

Color Code of Cable

Black	— No. 2 Contact	**Red**	— No. 5 Contact
Green	— No. 3 Contact	**Black**	— No. 7 Contact
Blue	— No. 4 Contact	**Brown**	— No. 8 Contact

Packaged Individually in Blue and White Carton.

FOR CATHODE RAY TUBES
902 and 913



No. 913 — $1.00 List

For mounting the 913, 902 and similar cathode ray tubes. Adjustable bracket permits mounting the tube in any position at any angle. An ideal foundation for laboratory men, amateurs and servicemen who wish to construct an oscilloscope or modulation checker.

Assembly consists of molded bakelite socket mounted in a protective metal shell, completely wired with a 22" 8-wire color coded cable. "L" bracket permits mounting on front panel or base. Spring clip holds tube firmly in place. Thumb screw fastening of clip gives easy adjustment to position of tube. Spring clip will expand sufficiently to permit insulation of tube with bakelite or fibre.

Color Code of Cable

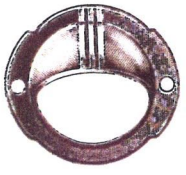
Black	— No. 1 Contact	**Yellow**	— No. 2 Contact
Brown	— No. 3 Contact	**Green**	— No. 4 Contact
Red	— No. 5 Contact	**Blue**	— No. 6 Contact

Blue with Yellow Tracer — No. 7 Contact

Black with White Tracer — No. 8 Contact

Universal bracket permits mounting cathode ray tube in any position and can be affixed to chassis base, front panel, tuning condenser or cabinet.

MAGIC EYE ESCUTCHEONS



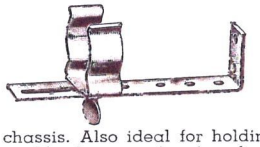
No. 10-1 — 25c List

For magic eyes. Modernistically designed to match the other components of your apparatus. Brass, finished in antique bronze.

No. 10-2 — 30c List

Full vision escutcheon for octal-base Magic Eyes. Also used as escutcheon over drilled hole in panel or cabinet for small cable connectors. Inside diam., 11/16". Brass, finished in antique bronze.

BRACKET AND TUBE CLIP



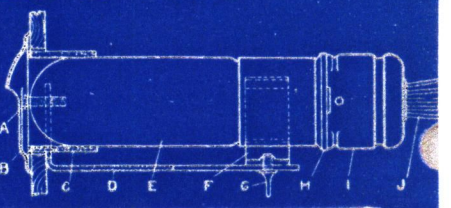
Convenient bracket and tube clip as used on above No. 913 Cathode Ray Assembly. Used extensively for holding Magic Eye and other tubes which must be mounted away from chassis. Also ideal for holding tubes which are mounted upside down as in aircraft or other compact apparatus. Steel clip is formed to grip tube base firmly. Has wing screw for tightening with fingers. Steel bracket is 3⅞" long, has long slotted hole for sliding adjustment of clip, and three $\frac{5}{32}$" holes for mounting or setting clip closer to tube. Base of bracket is 1" long and has two $\frac{5}{32}$" mounting holes. See dimensions in border. Finished in cadmium.

No. CTWS—Clip and wing screw only.....**10c List**

No. CB —"L" Mounting Bracket only.....**8c List**

Several Million Magic Eye Assemblies Wired by Amphenol Yearly

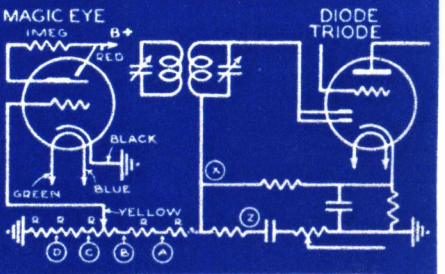
LIST OF PARTS



A—Art Head Screws; B—Escutcheon; C—Fibre Light Shield; D—Mounting Bracket; E—Magic Eye Tube (not included); F—Adjustable Spring Clip; G—Wing Screw; H—Bakelite Socket; I—Black Japanned Metal Socket Cover; J—Color Coded Cable, 22" long.

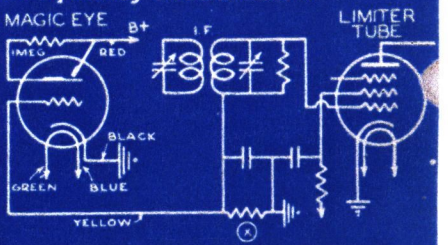
WIRING INSTRUCTIONS

SUPERHETERODYNE



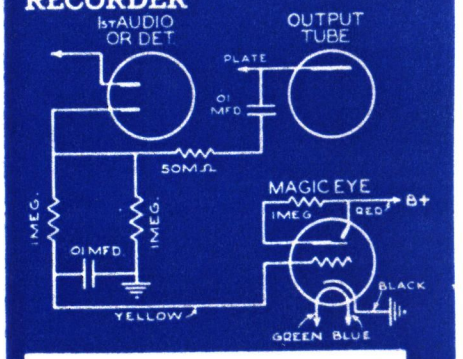
Connect Yellow wire to points "X", or "Z" (any place in the A.V.C. network). If closing sections overlap, connect five ¼ watt, 3-megohm resistors in series from the I.F. coil to ground. (See resistors "R"). Try Yellow wire at points "A", "B", "C" and "D".

Frequency Modulation



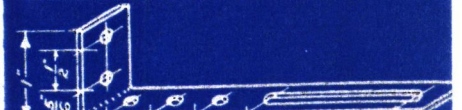
Connect Red, Green, Black and Blue wires as for superhets. Connect Yellow wire to coil side of resistor "X". If Eye action overlaps replace resistor "X" with 10 resistors in series which have a total resistance equal to "X". I.e., if "X" is 10,000 ohms, use ten 1000 ohm resistors. Try at each junction.

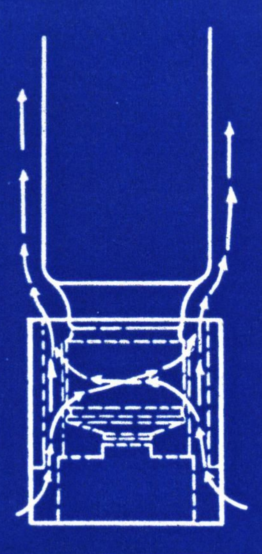
RECORDER



A typical circuit for using a Magic Eye as a visual amplitude indicator for recording. One diode of 1st audio or det. remains connected as in original circuit, the other is used to rectify audio current.

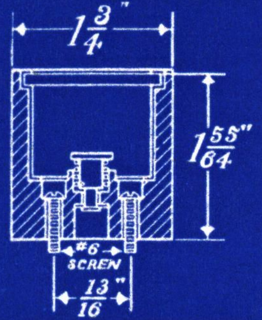
BRACKET DIMENSIONS





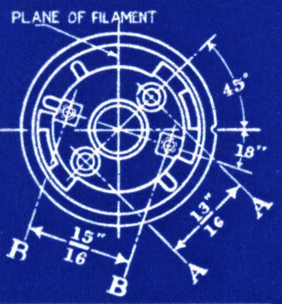
The arrows in the above illustration indicate how the natural flow of air currents cool the socket and lamp. The socket body is channeled on two sides to provide a chimney effect which permits the cool air from the bottom to rise as the upper heated air is dissipated. *This is an exclusive Amphenol feature.*

DIMENSIONS

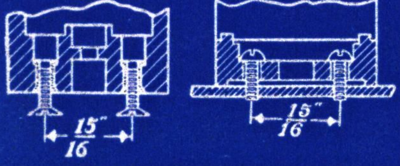


All dimensions are accurately maintained by fixed limit gauges. Illustration shows the socket mounted from above by two No. 6 screws which screw into a tapped hole.

UNIVERSAL MOUNTING



The versatile mounting will fit all apparatus making this socket ideal as a replacement unit. Two sets of mounting holes are provided: "A" "A" on 13/16" centers; and "B" "B" on 15/16" centers.



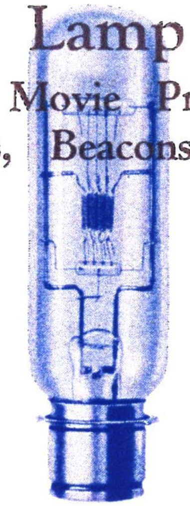
Note socket may be fastened from above or below. Illustration at right shows socket with insulating cap; illustration at left shows socket alone. When cap is used socket may also be mounted with a single stud passed through large center hole in cap.

SOCKETS

AMPHENOL REG. U. S. PAT. OFF.

Prefocused Lamp Receptacle

For Movie Projectors
Floodlights, Beacons, Searchlights



PRECISION BUILT

Solid brass, cadmium-plated center contact, ½" in diameter, is backed by a heavy helical coil spring, formed from non-corrosive alloy steel. A steady pressure of 22 pounds is exerted on the lamp base, insuring low resistance contacts. Lamp is held firmly in place and cannot vibrate out of focus. The bayonet shell is two piece brass construction, annealed and normalized after drawing.

Brass inner shell is drawn from extra heavy material. An ingenious "stop" is formed which makes a positive limit when the lamp is being inserted. The lamp can't possibly over-ride this stop and thereby be out of focus.

The wide experience of Amphenol in designing radio parts which carry minute currents has made its engineers aware of the importance of low resistance contacts. It must be remembered that a drop of only 10 volts results in 31% illumination loss.

ACCURATELY ENGINEERED

These universally adaptable sockets for all medium-base prefocused lamps were designed in collaboration with lamp manufacturers and designing engineers of prefocused lamp equipment. Designed especially for use in movie projectors, both amateur 8 and 16 mm. and commercial 35 mm., where high intensity light must be accurately controlled. Also used for aircraft landing lights, airport beacons, floodlights, outdoor signs and searchlights. Should also be carried in stock by all dealers catering to the home movie fan and commercial operator. Makes an ideal replacement socket because it can be assembled to the standard mounting of all projectors without drilling new holes, making installation simple. Regardless of the weather or the application, these sockets will give unfailing service. Shock or other disturbances cannot jar lamp out of focus.

CERAMIC RECEPTACLE

No. 98—Receptacle Only—$1.75 List

Formed from ceramic insulating material which withstands temperatures to 1200° F. For use in poorly ventilated apparatus. For temperatures of 450° F. or less the Black Bakelite Receptacle to right is recommended. Supplied with heavy fibre cap to cover bottom of socket. Weight only 4 ounces.

No. 98-A—Above receptacle supplied with the Insulating Cap described below...**$2.25 List**

BAKELITE RECEPTACLE

No. 98-8—Receptacle Only—$1.75 List

Molded in Amphenol precision presses from a new high heat black bakelite that operates safely in temperatures to 450°. **Weighs only 3.2 ounces.** Recommended for most uses except where exceptionally high temperatures are encountered. Supplied with heavy fibre cap to cover bottom of socket.

No. 98-8A—Above receptacle supplied with Ceramic Insulating Cap ....**$2.25 List**

INSULATING CAP

Ceramic Cap for insulating wire terminals on above sockets. Used when socket is suspended, to add ½" to height of socket, and to insulate wire terminals from panel.

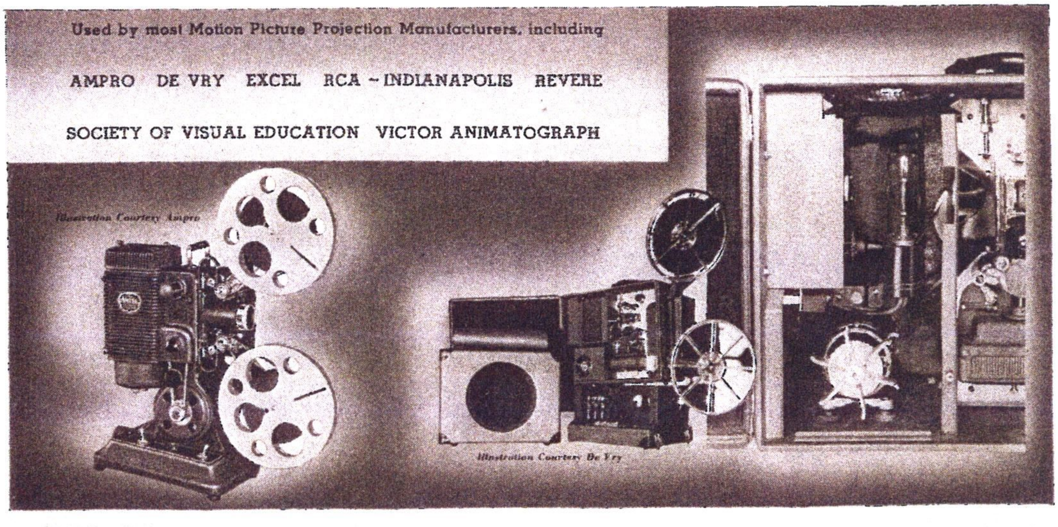
Cap assembles to socket body in either of two ways: (1)—From top of socket with No. 4-36 screws into tapped brass inserts in cap; (2)— From underneath with No. 4-36 screws which pass through holes in cap and screw into brass inserts in socket.

Cap may be fastened to panel either by screws from top or bottom, or by single stud through the large hole in center of cap.

WIRING

Large, deep wire entrance grooves accommodate wire up to No. 10 solid or stranded, including heavy asbestos insulations. Illustration of bottom view shows wiring space, arrangement of terminals, etc. Brass binding screws have large head so heavy screw driver can be employed and a solid connection made. Note wire can be fed into sides or fed straight up from bottom. Heavy vulcanized fibre insulator (1/16" thick) supplied to cover terminals after wiring.

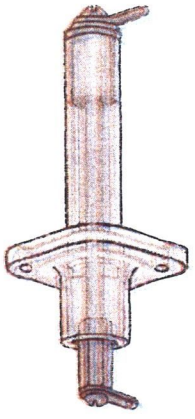
CONSERVATIVELY RATED AT 1000 WATTS, 110 or 250 VOLTS



Genuine AMPHENOL

INSULATORS

Ultra-Low-Loss Polystyrene



The insulators listed on this page are molded or formed from Amphenol "912-A" (pure polystyrene), which is unquestionably the finest insulating material commercially available. For complete electrical and mechanical characteristics see next page.

The Ultra-Low-Loss characteristics of these insulators is of paramount importance because R.F. leakage is reduced to a minimum. But of equal importance is their non-hygroscopic qualities. Moisture absorption under the most adverse climatic conditions is nil for all practical purposes. Their smooth, hard, non-porous surface makes it difficult for dirt or other foreign particles to gather. Constant exposure to the ultra-violet rays of the sun will not discolor them or affect their electrical properties.

They will not break when dropped or subjected to sudden impact as do porcelain, ceramic and glass insulators. **Parts of insulators can be cemented together with Liquid "912" on page 34, making them one solid unit.**

SPECIAL INSULATORS

Insulators listed are those carried regularly in stock for immediate shipment. Many other types, such as feeder spreaders, antenna insulators, coil supports, terminal strips, special coil forms, spacers, etc., can readily be made in your workshop out of the "912-B" sheet stock, strips, rod and tubing shown on pages 32 and 33.

UNIVERSAL INSULATORS

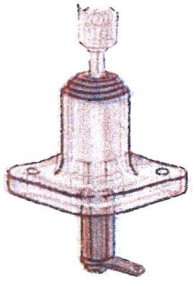
No. 66-60 — Complete Insulator — $1.00 List

STAND-OFF, FEED-THROUGH, LEAD-IN

A universal insulator molded from Amphenol "912-A" (pure polystyrene). Suited for almost every high voltage or high frequency application. The sectional construction makes it possible to assemble the insulator as illustrated for mounting behind the panel or chassis, providing a stand-off on both sides, keeping the wire leads on attached apparatus far from the chassis or panel. It can also be assembled as illustrated in the border of this page so that the entire insulation is above the chassis or panel. The individual parts are listed to the right so that an insulator for every purpose can be assembled. The center conductor is a brass rod, threaded at top and bottom to accommodate the supplied top brass insert and bottom brass hex. nut bushing. Both top and bottom brass inserts will accommodate a banana type plug, and are threaded also for the supplied binding screws and soldering lugs. Overall height of insulator 3⅛". Insulating tube is ½" in diameter. See border of page for mounting holes.

STUB INSULATOR

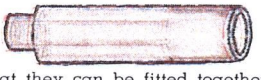
No. 66-61 — Complete Insulator — 80c List



Similar to above insulator but shorter in length. Molded from pure polystyrene Amphenol "912-A" insulation. For mounting coils, condensers and other parts carrying high frequencies or high voltages. Used also on racks and panels to bring external leads into the transmitter or other electronic device. Center conductor is a threaded brass rod which fits the supplied top brass insert and bottom brass hex. nut bushing. Both top and bottom accommodate a banana type plug or the supplied binding screws and soldering lugs. Overall height is 1". See border of page for mounting.

INSULATOR TUBE

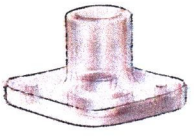
No. 66-60T — As Illustrated — 25c List



Insulating tube only as used on insulators described to right. Molded from pure polystyrene Amphenol "912-A". Tubes are designed so that they can be fitted together, forming a tube as long as is required. Used extensively for feeding high frequency and high voltage lines through walls, etc. Also used in conjunction with the following parts to assemble lead-in and other insulators described in the border of this page. See border for dimensions.

FEED THROUGH BUSHING

No. 66-60B — As Illustrated — 25c List



An exceptionally versatile type of feed-through bushing for bringing high voltages or high frequencies through metal chassis and panels. The center hole will accommodate wires or rods up to 3/16" in diameter. Also used with the above tubing and the following hardware to assemble insulators described in border of page.

INSULATOR HARDWARE

The following hardware is for use with the above base and tube to assemble the insulators described in the border of this page. Other uses will also suggest themselves. These parts are all machined from brass bar stock, nickel plated to prevent corrosion. See border of page for all dimensions. All rods are threaded at both ends to accommodate the Bottom Hex. Nut Bushing and the Top Bushing.

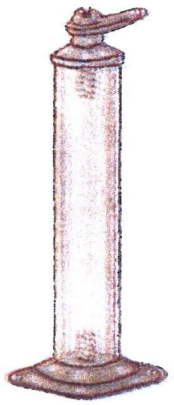
No. 66-167—Brass Rod 5/8" long.....15c List
No. 66-168—Brass Rod 2⅝" long.....18c List
No. 66-169—Brass Rod 4⅝" long.....20c List
No. 66-170—Brass Rod 6⅝" long.....25c List
***No. 66-165—Top Brass Bushing.....20c List**
***No. 66-166—Bottom Brass Hex. Bushing.....15c List**

***Supplied with binding screws and soldering lugs**

STAND-OFF INSULATORS

Will not break when dropped or subjected to sudden impact

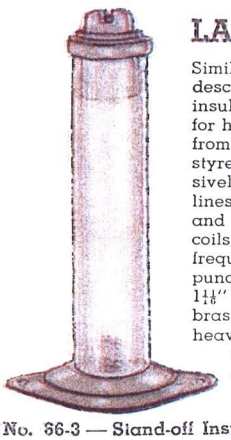
SMALL STAND-OFFS



Formed from Amphenol "912-A" pure polystyrene insulating material. They are exceptionally popular for mounting coils and condensers, for anchoring high voltage or high frequency leads inside transmitters and other electronic apparatus, and for general applications. The neat appearance of the water-clear transparent insulating body and the nickel-plated hardware adds much to the appearance of any apparatus. The base is punched from heavy steel and has 1 5/16" mounting centers. The top has a brass cap, binding screw and soldering lug. All sizes have an insulating body ½" in diameter.

No. 66-1 — Stand-off Insulator 1⅜" long.....50c List
No. 66-2 — Stand-off Insulator 2⅞" long.....50c List

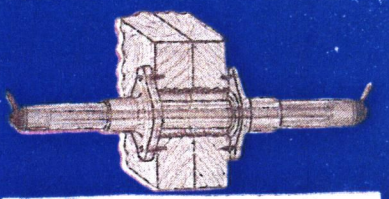
LARGE STAND-OFFS



Similar to the stand-off insulators described to the left, but have insulating bodies ¾" in diameter for heavy duty applications. Formed from Amphenol "912-A" pure polystyrene insulating material. Extensively used for bringing open wire lines down the sides of buildings and across ceilings, for mounting coils and condensers in ultra-high frequency apparatus. The base is punched from heavy steel, having 1 1/16" mounting centers. The top brass insert is supplied with a heavy binding screw so that wires can be wrapped around and anchored securely.

No. 66-3 — Stand-off Insulator 2⅞" long....$1.10 List
No. 66-4 — Stand-off Insulator 4⅞" long.... 1.35 List
No. 66-5 — Stand-off Insulator 6" long.... 1.50 List

UNIVERSAL INSULATOR



Two Universal insulators assembled as a lead-in. Required parts are 3 No. 66-60T tubes, 2 No. 66-60B bases, 1 No. 66-170 brass rod, and 2 No. 66-165 top bushings.

Two or more tubes can be cemented together with Liquid "912". Note how the shoulder of tube fits into the adjoining tube, forming one solid unit.

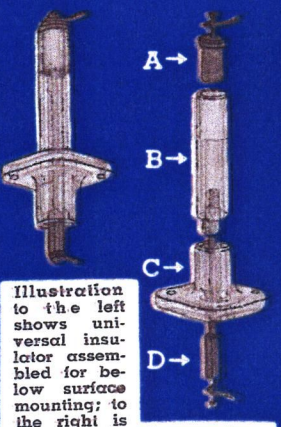
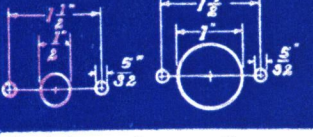
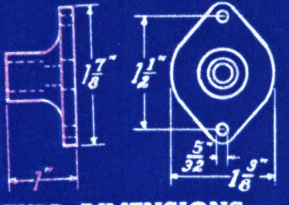


Illustration to the left shows universal insulator assembled for below surface mounting; to the right is assembly for above surface.
A—Top Brass Bushing
B—Insulating Tube
C—Insulating Base
D—Bottom Hex. Bushing

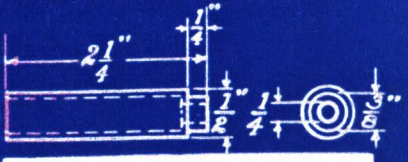


For below surface mounting use mounting holes illustrated at left; for above surface use mounting holes at right.

FEED-THROUGH BASES



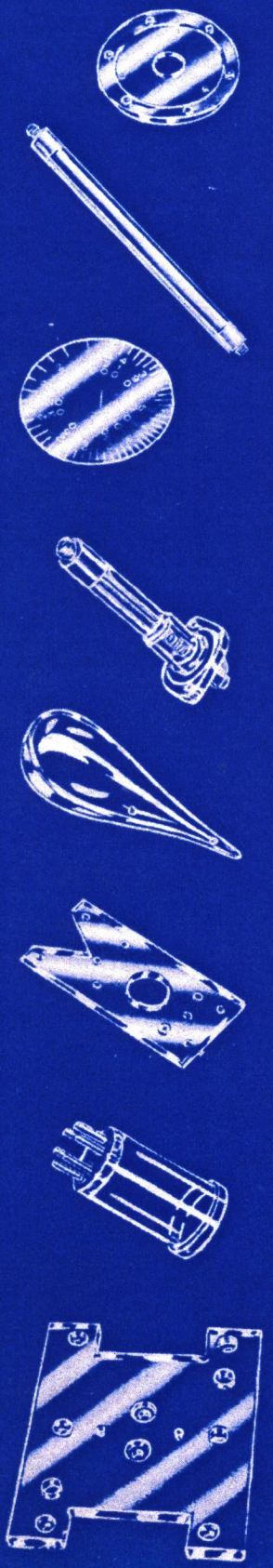
TUBE DIMENSIONS



CEMENT ALL FINISHED INSULATORS WITH LIQUID "912-A" ON PAGE 34.

TOP VIEW OF STAND-OFF BASES

TRANSPARENT INSULATING MATERIAL



PROPERTIES OF AMPHENOL "912-A"
(Pure Polystyrene)

PHYSICAL

Specific gravity	1.05-1.07
Weight—gms. per cu. in.	17.5
Tensile strength—lbs. per sq. in.	5500-7000
Softening point	180-190° F.
Modulus of Elasticity	0.375-0.425x10⁶ lb./sq.in.
Water absorption (318 Hrs. 2½" disc)	0.05%

ELECTRICAL

Dielectric strength at 60 cycles (step by step)—volts per mil	500 to 525
Volume resistivity—megohm cms.	10^{16}
Arc resistance (proposed ASTM method)—sec.	240 to 250

Dielectric Constant, Power Factor, and Loss Factor:

Frequency	Dielectric Constant	Power Factor (Not %)	Loss Factor
60 cy.	2.6	0.0002	0.0005
1 kc.	2.6	0.0002	0.0005
1 mc.	2.6	0.0002	0.0005
10 mc.	2.6	0.0002-0.0004	0.0005-0.0010
50 mc.	2.6	0.0002-0.0004	0.0005-0.0010

CHEMICAL

Resistance to Non-Oxidizing Acids—Excellent
Resistance to Oxidizing Acids—Discolors Slightly
Resistance to Alkalies—Excellent
Resistance to Hydrofluoric Acid—Good

SOLUBILITY

Styrene	Dioxane	Toluene
Benzene	Ethylene Chloride	Carbon Tetrachloride
Ethyl Benzene	Turpentine	Cellosolve Acetate
	Ethyle Acetate	

INSOLUBILITY: Alcohol Cellosolve

PROPERTIES OF AMPHENOL "912-B" SHEET, ROD, TUBE

PHYSICAL

Specific gravity	1.185
Tensile strength—lbs. per sq. in.	8,000-10,000
Softening point—°F.	190-200
Modulus of Elasticity	4-6x10⁵ lb./sq. in.
Water absorption (24 hours)—%	0.3
Specific volume—cubic inches per lb.	22
Compressive yield point	12,000
Compressive strength	18,000
Elongation before break—%	1
Effect of age	None
Effect of light, including ultra violet	None
Color	Water clear

ELECTRICAL

Volume Resistivity, (50% relative humidity and and 25° C.)—megohm cms.	10^{9-10}
Dielectric strength at 60 cycles (instantaneous) volts per mil	550

Dielectric Constant, Power Factor, and Loss Factor:

Frequency	Dielectric Constant	Power Factor (Not %)	Loss Factor
60 cy.	3.2	.015	0.048
1 kc.	3.0	.015	0.045
1 mc.	3.0	.015	0.045

CHEMICAL

Effect of acids (except oxidizing acids)	None
Effect of weak alkalies	Practically Nil
Effect of strong alkalies	Practically Nil

PROPERTIES OF AMPHENOL "912-B" RIBBON

All data on 0.001 in. (0.025 mm.) film at 25° C.

PHYSICAL

Density	1.14
Square inches per pound	24,000
Tensile strength—lbs. per sq. in.	10,000
Refractive index	1.47
Transmission of white light	94%
Ultraviolet absorption, complete below	2,150
Yellowing after 200 hours in Fadeometer	None
Embrittlement after 200 hours in Fadeometer	None
Moisture absorption 70° F. (21° C.) and 90% relative humidity	0.8-1.2%

ELECTRICAL

Resistivity, ohm centimeters	0.3-1.0 x 10^{14}
Dielectric strength — volts per mil	3100-3600

Dielectric Constant, Power Factor, and Loss Factor:

Frequency	Dielectric Constant	Power Factor (Not %)	Loss Factor
60 cy.	3.2	0.0135	0.0432
1 kc.	3.0	0.004	0.012
1 mc.	2.7	0.02	0.054

CHEMICAL: Tasteless, colorless, odorless, non-toxic

SOLUBLE:
Chlorinated Hydrocarbons Keytones Alcohols
Coal Tar Hydrocarbons Esters

INSOLUBLE:
Petroleum Naphthas Asphalt Alkalies
Paraffin O.X Glycerine Glycoes

"912-A" PURE POLYSTYRENE

Polystyrene has become a magic word in radio, an industry accustomed to the unusual. Introduced in its molded form by Amphenol only a few years ago, now demanded by most engineers because of its remarkable ultra-low-loss characteristics.

Today manufacturers of radioactive instruments widely advertise that ultra high frequency circuits are insulated by polystyrene, thereby assuring their prospective customers of maximum stability and efficiency not otherwise obtainable.
Polystyrene is formed by the thermal polymerization* of a liquid, $C_6H_5CH:CH_2$, known as monomeric styrene.

Amphenol parts manufactured from this material are formed by injection molding (or extrusion) and no plasticizers are added. Every part bearing the designation "912-A" is molded from polystyrene without adulteration.

The electrical characteristics, as will be noted in the table to the left, are superior to all materials which can be formed into electrical or radio parts. Dielectric constant is superior to all known materials, with the possible exceptions of some forms of hard rubber, and remains constant even at very high frequencies. Power factor is equal to that of fused quartz and may be regarded as zero for most applications.

Moisture absorption by polystyrene under the most severe conditions, even when immersed in water, may also be regarded as nil. Because of the molecular structure, moisture cannot adhere to its surface, permitting polystyrene to maintain its electrical quality under the worst conditions.

PARTS MOLDED FROM "912-A"

On pages 28, 30 and 31 are listed the products molded from pure polystyrene, which are carried regularly in stock. Other parts, molded for manufacturers to their specifications, are shown in the border of this page. Manufacturers are invited to consult with Amphenol engineers on all their problems in dealing with high frequencies, such as drift, excessive losses, etc. Special parts can be molded from pure polystyrene most economically. Mold charges, on the first order only, are exceptionally low because molds are made in the Amphenol tool room by experienced men.

"912-B" ROD, SHEET and TUBING

Amphenol "912-B" insulating material is similar in appearance to "912-A" described above. Amphenol "912-B" is recommended where "912-A" is not obtainable in the desired form and the quantities to be used do not warrant special mold costs. Easily machined, drawn or shaped as described on page 32 in home workshop, laboratory or machine shop. Used in preference to "912-A" where optical clarity is required, as for dial bezels, clear vision panels, etc.

Amphenol "912-B" is a transparent acrylic type of resin produced by the polymerization* of methyl methacrylate. While its electrical insulating characteristics are not as outstanding as those of Amphenol "912-A" polystyrene, they still are better than those of other thermoplastics. Dimensional stability, low moisture absorption, low-loss electrical characteristics, clarity, rigidity, weather resistance, and light transmission, are properties which make it adaptable for many applications such as high voltage and high frequency insulation, lenses, reflectors, signs, display furniture, dial windows and instrument panels.

The chemical process of changing one compound, by union of two or more molecules of the same kind, into another compound having the same elements in the same proportions, but a higher molecular weight and different physical properties.

"912-B" RIBBON

Amphenol "912-B" Ribbon is a type of synthetic film having a combination of physical, chemical and electrical properties which make it an unusually interesting material for dielectric insulating foils and wrapped insulation applications. Its outstanding characteristics include high flexibility, excellent toughness, low moisture absorption, low loss factor, and high resistivity. Because of these features, it is unexcelled for radio and electronic applications where it is necessary to obtain high insulation qualities in a minimum of space with the least possible amount of moisture absorption. It is widely used therefore, as dielectric in high quality condensers, transformers, and motors and as wrapped insulation for wires, bars and cable terminals.

The dielectric strength of Amphenol "912-B" Ribbon after conditioning for three days at 21° C. and 50 per cent relative humidity tested 3000 to 3600 volts per mil for films 1 to 2 mils in thickness.

Sunlight and ultra violet rays do not discolor or decompose Amphenol "912-B" Ribbon. Transmission of white light is 94 per cent through a film 0.001 in. thick. It does not curl or shrink on exposure to wide variations in temperature or humidity, or upon aging. These features, combined with its exceptional toughness (tensile strength of 0.001 in. film, 10,000 lbs. per sq. in.) and its light weight (its density of 1.14 is the lowest of the commercially available films), makes it one of the most desirable and adaptable materials of this nature for mechanical applications.

ULTRA LOW LOSS INSULATION

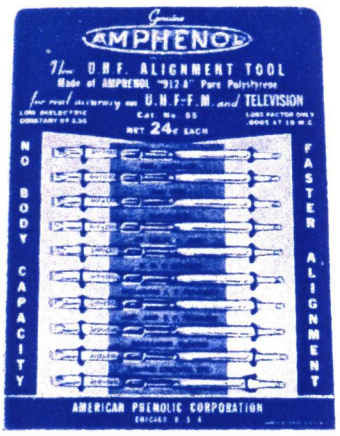
Genuine AMPHENOL
REG U S PAT OFF

POLYSTYRENE

U.H.F. ALIGNMENT TOOL

No. 55 — 40c List, Each

Molded from pure polystyrene Amphenol "912-A". The only alignment tool manufactured which has no capacity effect upon critical circuits. Designed after conferring with engineers and production men whose problem is the alignment of frequency modulation, television and short wave receivers. Supplied with a pencil-type clip so that it is convenient to carry in breast pockets. Has one broad blade for easily accessible screws, and one narrow blade for reaching through holes in coil shields for I.F. trimmers, etc.



ALIGNMENT TOOL SALES CARD

Illustrated to the left is the attractive blue and white sales card on which are mounted ten U.H.F. Alignment Tools. Found on the sales counters of better radio parts jobbers everywhere.

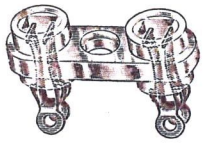
U.H.F. TIP JACK

No. 54-1H — 25c List

Contact accommodates .080" phone tip. Contact may be removed and the transparent Amphenol "912-A" body used as a high frequency thru-panel bushing.

Mounts in a plain round 5/8" hole, and is held in place with the No. 2-9 retainer ring.

CRYSTAL HOLDER SOCKET

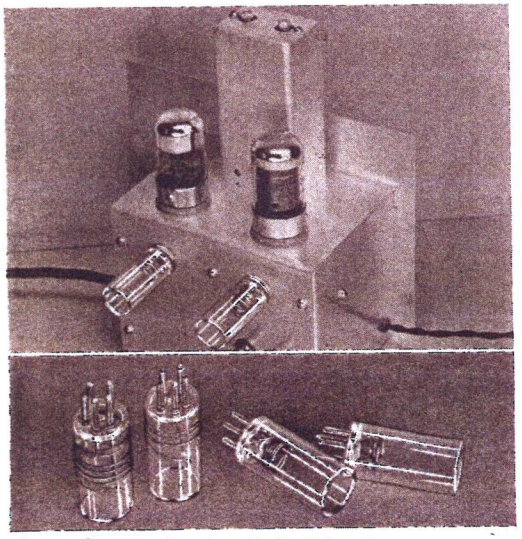


No. 54-2 — 30c List

For plugging in standard quartz-crystal holders. Body molded of Amphenol "912-A" (polystyrene).

Contacts are of special phosphor bronze, silver plated to keep resistance at a minimum.

Contacts may be removed and the polystyrene body used as a two hole feed through bushing.



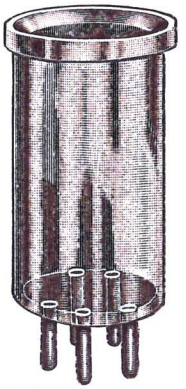
Courtesy American Radio Relay League

Illustration shows U.H.F. converter for 56 and 112 Mc, described on page 365 of the Radio Amateur Handbook. Uses Amphenol No. 24-5H Coils Forms and No. 54-5H Miniature U.H.F. Sockets. Both manufacturers and amateur builders of ultra high frequency apparatus use polystyrene wherever possible to minimize drift and increase efficiency.

Amphenol polystyrene Insulators described on page 28 of this catalog are ideal for ultra high frequency coil forms. Illustrations of the insulators will suggest many uses as forms for antenna, R.F. and I.F. coils.

STANDARD PLUG-IN COIL FORMS

No. 24-4P—4-prong .....50c List
No. 24-5P—5-prong .....55c List
No. 24-6P—6-prong .....60c List



Molded from Amphenol "912-A", the loss characteristics are practically zero. Coils wound on these forms will have the same "Q" as those wound on air, but are superior to air wound coils for this reason: The "Q" of coils which are not sealed in a dielectric gradually drops as dust gathers on surface. Prong spacings of coil form base fit standard tube sockets. Use Amphenol Steatite or Mica-Filled sockets as the receptacle. No holes in side of coil form because it is simple to drill them where wanted. Impregnate wound coils with Liquid "912" (page 34), seal coils between two layers of "912".

PERMANENT MOUNTING FORM

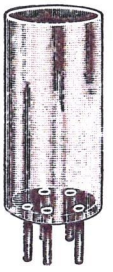
No. 24 — 15c List

Identical to coil forms described below but has a raised hole in center of base to accept a self tapping screw.

For mounting directly on wave band switch, tuning condenser or chassis. No holes for windings because it is simple to drill them exactly where they are needed. Paint finished coil with Liquid "912" listed on page 34.

MINIATURE PLUG-IN FORMS

No. 24-5H—5-Prong Form .....40c List
No. 24-6H—6-Prong Form .....40c List



Small plug-in coil forms, molded from Amphenol "912-A" polystyrene insulation. Only 3/4" in diameter. Especially designed for use in transceivers, low-power transmitters and receivers which work the ultra-high frequencies.

No holes are provided for the ends of the coil windings because it is simple to drill holes exactly where they are wanted.

Use 54-5H and 54-6H Miniature sockets listed below as the coil form receptacles.

U.H.F. MINIATURE SOCKETS

No. 54-5H—5-contact Socket....35c List
No. 54-6H—6-contact Socket....35c List

Molded from Amphenol "912-A" (polystyrene). 5 and 6-contact sockets designed for use with Miniature Coil Forms above, to keep coil and circuit losses in U.H.F. equipment at a minimum. Also fit Hytron Bantam Jr. tubes. See page 22 for dimensions.

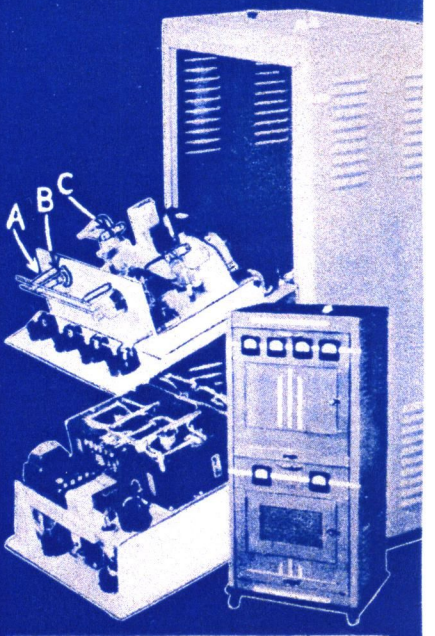
FOR R.C.A. MINIATURE TUBES

No. 54-7P — 35c List

U.H.F. socket for the tiny R.C.A. miniature tubes, such as 1R5, 1S5, 1S4 and 1T4. See page 22 for dimensions.

See Page 29 for Electrical Characteristics of Polystyrene

ULTRA-HIGH FREQUENCY RADIO TRANSMITTER

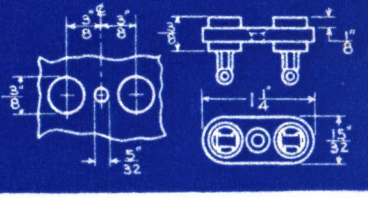


A — Polystyrene stand-off insulators used throughout to anchor R.F. leads.

B — Polystyrene feed-through insulators and bushings through metal panels.

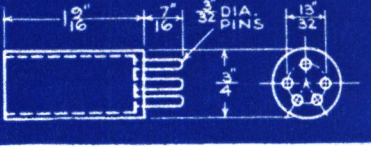
C — Polystyrene coil forms.

CRYSTAL SOCKET DIMENSIONS

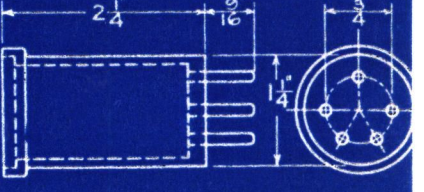


Crystal socket can be mounted from below or above the surface with #6-32 screw and nut. Contacts of socket fit all standard crystal holders.

PLUG-IN COIL FORMS

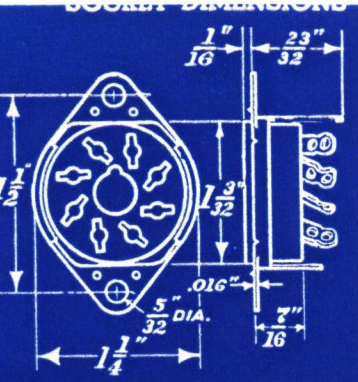


Above diagram shows dimensions of 24-5H and 24-6H coil forms. The No. 24 is same size but has no plug-in prongs.

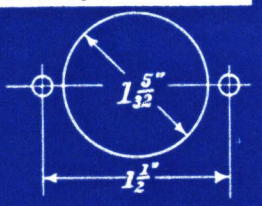


For the socket receptacle of 24-4P, 24-5P and 24-6P use Amphenol sockets. Ask for them molded from mica-filled bake-

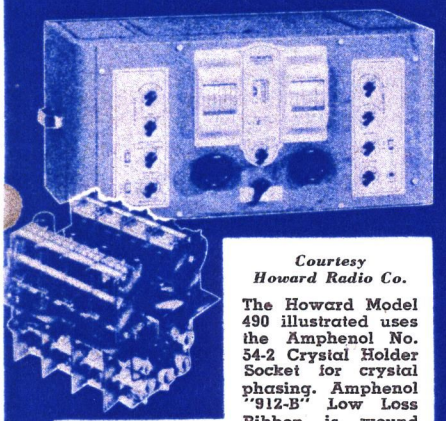
AMPHENOL
REG U S PAT OFF



The mounting holes illustrated below fit both the U.H.F. Octal and Loktal sockets listed to the right.



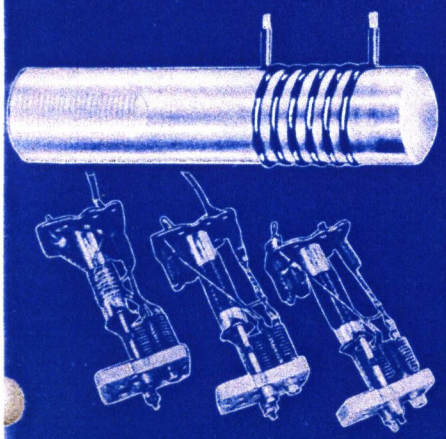
HOWARD PROFESSIONAL RECEIVER



Courtesy Howard Radio Co.

The Howard Model 490 illustrated uses the Amphenol No. 54-2 Crystal Holder Socket for crystal phasing. Amphenol "912-B" Low Loss Ribbon is wound on the iron cores of the I.F. transformers before the coils are wound. This receiver is also completely equipped with Amphenol molded sockets, as are most other precision built radioactive instruments.

SPECIAL COIL FORMS

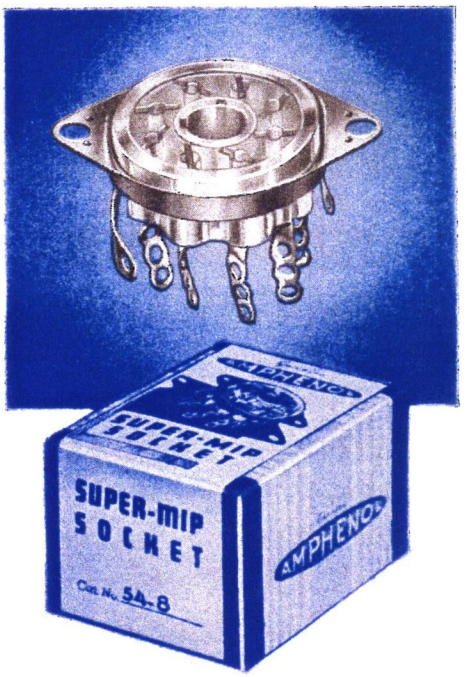


Courtesy Galvin Mfg. Corp.
Machined coil form used in a Motorola police receiver. Lower illustration shows coil assemblies Complete with trimmer condensers. Special coil forms are molded or machined to specifications molded or machined to specifications.

AMPHENOL "912-A"

Ultra-Low-Loss

INSULATING MATERIAL



Parts listed on this and the preceding page are molded from Amphenol "912-A" pure polystyrene. This ultra-low-loss insulation has been astounding engineers with its ability to handle R. F. currents with unbelievable efficiency. See page 29 detailed electrical and mechanical characteristics. The material is non-hygroscopic (moisture absorption is nil), which is very important when used in critical circuits where the effect of moisture could easily unbalance tuned circuits. Electrical properties are equal to those of fused quartz.

Polystyrene is the world's finest insulator for high and ultra high frequency use. It should be employed wherever possible in high frequency circuits, providing temperatures in excess of 190° F. are not encountered.

In addition to the standard items listed on these pages, many special parts are molded to manufacturers' specifications. A few of these special parts are shown on page 29.

U.H.F. LOKTAL SOCKETS

No. 54-8L — 45c List

Identical to the above but has floating contacts to fit the tiny loktal tube prongs. One of the principal features of the loktal type tube is the absence of insulating material at the tube base. Drift and losses at the tube base are entirely eliminated, but this efficiency is lost if an ordinary tube socket is used.

Has one piece center locking contact for holding the loktal tube in place. This large center contact, when grounded to chassis, prevents intercoupling between contacts.

U.H.F. OCTAL SOCKETS

No. 54-8 — 40c List

This is the finest socket in the world for high frequency applications. Transparent body is molded from Amphenol "912-A" the new polystyrene insulating material. Breakdown voltage between contacts 12,000 volts D.C.; between contacts and mounting plate 9500 volts D.C. Non-hygroscopic, making it the perfect socket to use under all adverse climatic conditions.
Extra long contact soldering lugs are provided so that the soldering iron does not come too close to the Amphenol "912-A" body. Should not be subjected to temperatures in excess of 190° Fahrenheit. However, normal temperatures inside the receiver cabinet never rise that high making precautions necessary only at the time of soldering.

POLYSTYRENE ROD AND SHEET STOCK

Amphenol "912-A" pure polystyrene is offered in rod and sheet form for producing small quantities of special parts by machining. Laboratory technicians, radio amateurs and other builders of special high and ultra high frequency apparatus are now using this material to make variable condenser end plates, terminal strips, special stand-off insulators, trimmer bases, etc. Instructions for handling "912-A" material are the same as those given for "912-B" on page 32, except that for cementing "912-A" parts, Liquid "912-A" on page 34 must be used instead of cement.

POLYSTYRENE "912-A" ROD

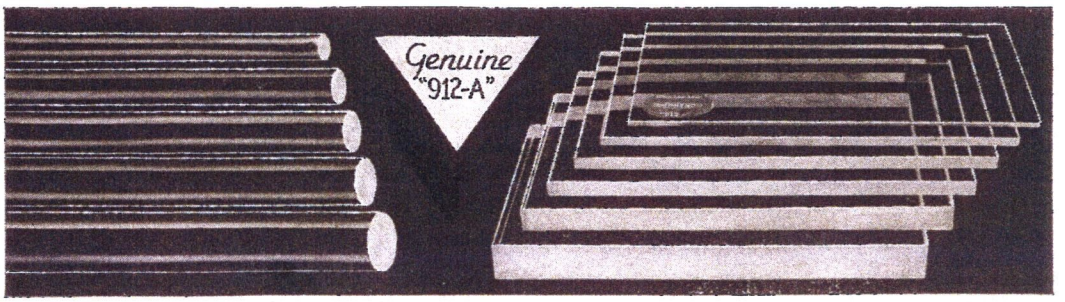
Nine sizes of rod are available in lengths up to 48". If no definite length is specified, 12" lengths will be shipped.

Size	List	Size	List
1/8" diameter	$0.15 per ft.	1/2" diameter	$0.80 per ft.
3/16" diameter	.20 per ft.	5/8" diameter	1.25 per ft.
1/4" diameter	.40 per ft.	3/4" diameter	1.65 per ft.
5/16" diameter	.43 per ft.	1" diameter	3.10 per ft.
3/8" diameter	.45 per ft.		

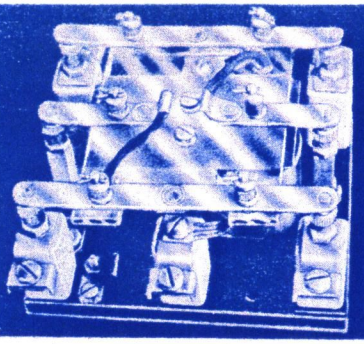
POLYSTYRENE "912-A" SHEETS

Five sizes of sheet stock are available in 4" x 4" squares.

4" x 4" square x 1/16" thick	$0.80
4" x 4" square x 1/8" thick	0.90
4" x 4" square x 3/32" thick	0.90
4" x 4" square x 3/16" thick	1.00
4" x 4" square x 1/4" thick	1.00



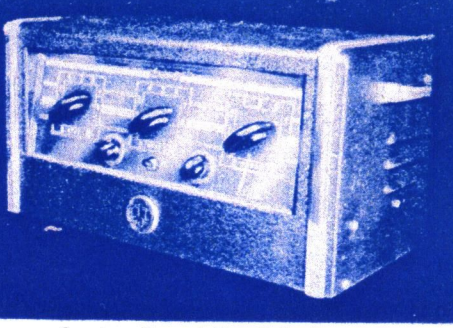
See Page 29 for Electrical Characteristics of Polystyrene



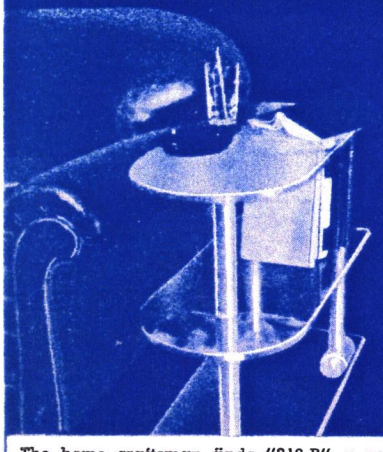
Courtesy Guardian Electric
Where R.F. losses must be kept at a minimum, as in the above sensitive relay, "912-B" is most highly recommended. Chosen because of its ultra-low-loss characteristics.

Genuine AMPHENOL SOCKETS AND CONNECTORS

Unusual lighting effects can be achieved because "912-B" bends light rays. Material may be painted or screened in any color. Lettering can be engraved with an ordinary routing tool.



Courtesy Erwood Sound Equipment
Shatterproof panels for radio receivers and amplifiers add new beauty to modern apparatus. The panel and dial markings can be printed on "912-B" sheet stock. The panel is then edge lit.



The home craftsman finds "912-B" a new and interesting material. Occasional furniture of unusual beauty can be formed from the tools on hand in the home workshop. Unusual effects can be obtained because the material can be bent into shape.

TRANSPARENT "912-B" MATERIAL

SHEETS — RODS — TUBING

See Page 29 for Electrical and Mechanical Specifications

MACHINING

Easy to cut. Can be drilled, sawed or turned in a lathe easier than metal and no special skill is necessary. Of course, perfection of workmanship and equipment always produces a better final product. Circular saws are used for straight cutting and jig or band saws for irregular shapes.

HEAT FORMING

Bent to any desired shape or deep-drawn to cups. Forming jigs cut from hard wood or plaster paris, or metal, are easily made. Before placing in form, the material should be heated to 212° F. for forming and upon cooling may be removed, retaining its shape indefinitely.

CEMENTING

Amphenol "912-B" Rod, Tube and Sheet Stock can be firmly cemented with "901" cement listed on page 34. This cement contains a solvent of "912-B" material which actually welds the two pieces together instead of merely gluing them.

THREADING

Amphenol will thread with ease using standard dies. Caution should be taken to free chips and keep the cutting edge properly lubricated.

PUNCHING

Thin sheeting may be punched with standard punch press dies or rule dies. Stock to 1/32" thick can be punched without pre-heating and still be assured of a smooth edge. From 1/32" thick on up the stock should be slightly preheated in an oven with a hot-plate or with infra-red ray lamps before entering cutting die to prevent chipped edges.

VERSATILE

Illustrations in the border of this page show only a few of the many applications for this easily formed, beautiful transparent material. Amphenol "912-B" was originally produced for the radio and electrical industries because of its remarkable ultra-low-loss characteristics, it has since found its way into many other fields and has become a favorite of the home craftsman.

Manufacturers Note

Production quantities of small parts can be more economically molded to shape in Amphenol precision presses. Send complete details, including quantities desired, and prices will be quoted. For special information consult your Amphenol sales engineer.

Amphenol "912-B" transparent material is a synthetic resin product possessing transparency greater than that of most glass and having good electrical insulation characteristics. Mechanically strong, as shown on page 29, and unaffected by oils and acids.

Being a thermo-plastic it can be heated and formed to shape easily. Readily adaptable to all manners of fabrication in lathes, screw machines, blanking or punching processes. Ordinary woodworking or machine tools may be used.

When heated to 212° F, either by immersion in boiling water or in oven, it becomes as soft and pliable as a piece of uncured rubber. When this is placed between two forms, which can either be wood or plaster paris, or metal, and allowed to cool, the sheet will have assumed that shape and will remain that way indefinitely. The tensile strength of 10,000 lbs. per square inch, coupled with the inherent shock resistant property of the material, makes it indeed very strong, and, it will not shatter upon being broken.

Light transmission is another of the unique properties of this material. Rods, for instance, can be bent and formed to carry light around corners as used by many doctors in diagnostic work. Counter and window signs can be edge lighted, and splendid advertising effects created.

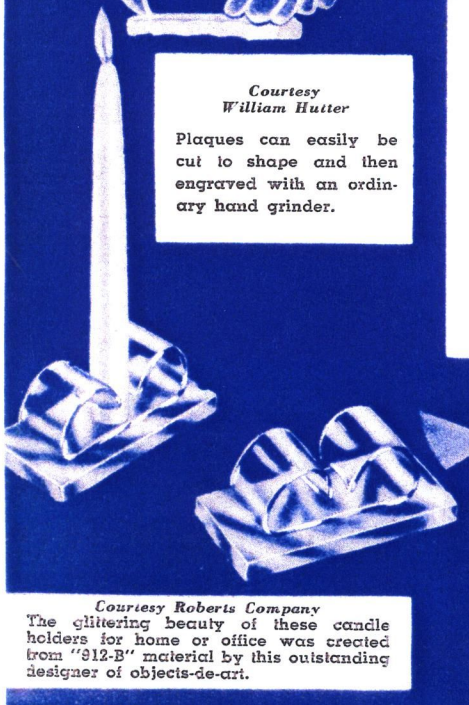
Radio sets with Amphenol panels, edge lighted, show up the dial calibrations and many beautiful color effects are obtainable. The many gauges on the instrument panels of aircraft have a ring of this material around the perimeter which conducts and diffuses the lighting evenly over the gauge surface uniformly and without glare.

In the choice of materials available to industries, every product has some deficiency. Steel is strong but corrosive. Wood is easily worked but inflammable. Cast iron is inexpensive but fragile. Perhaps the most serious of objections raised against Amphenol "912-B" is, that compared to glass, its surface can be more easily scratched, and it cannot be used at temperatures above 190° F.

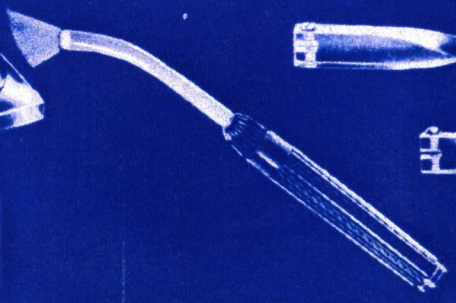
Detailed fabricating instructions furnished on request.

Courtesy William Hutter

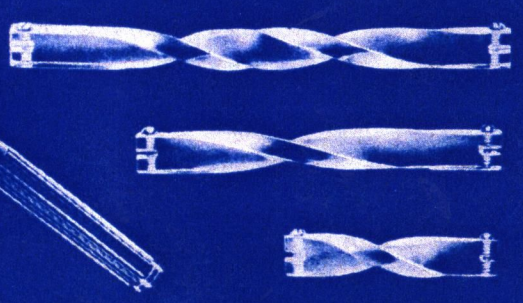
Plaques can easily be cut to shape and then engraved with an ordinary hand grinder.



Courtesy Roberts Company
The glittering beauty of these candle holders for home or office was created from "912-B" material by this outstanding designer of objects-de-art.

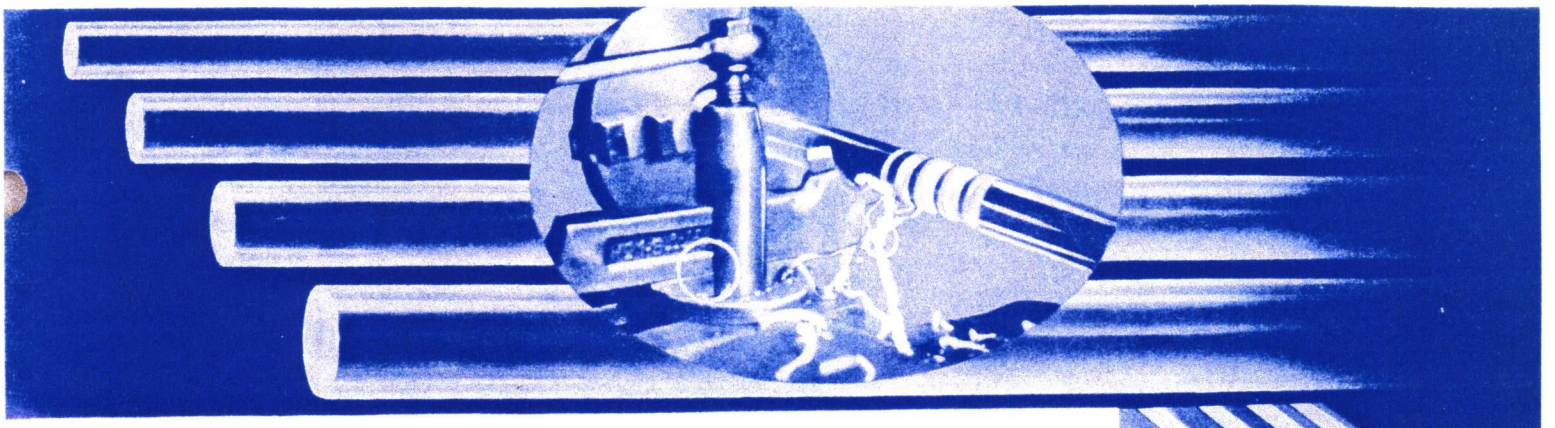


Courtesy F. W. Norton
Illustrated is a Throat Lamp manufac-



Unusually efficient strain and spreader insulators are easily

Courtesy U. S. Gauge Company
Shatterproof bezels and win-



AMPHENOL "912-B" PRICE SCHEDULE

SHEET STOCK

Supplied in standard sheets, 12"x16". No additional charge is made for quarter or half sheets. For quantities of smaller pieces cut to measure, write for quotations. Large quantities of irregular shapes can be punched from sheet stock up to 1/16". Sheets available as large as 20" x 25".

PRICE IS FOR STANDARD SHEET 12"x16"

No.	Thickness	List Price
65-062	1/16"	$ 4.00
65-125	1/8"	8.00
65-187	3/16"	12.00
65-250	1/4"	16.00
65-375	3/8"	24.00
65-500	1/2"	32.00

RODS

Solid rods can be supplied in continuous lengths of 48" average. No cutting charge is made on pieces 12" or over in length. On large quantities of rod from 1/4" to 12" in length, ask for quotations. **Supplied in 12" lengths unless otherwise specified.**

No.	Diameter	List Price Per Foot
65R250	1/4"	$ .40
65R375	3/8"	.45
65R500	1/2"	.80
65R625	5/8"	1.25
65R750	3/4"	1.65
65R812	13/16"	1.95
65R875	7/8"	2.40
65R1000	1"	3.10
65R1125	1 1/8"	3.80
65R1250	1 1/4"	4.80
65R1375	1 3/8"	5.65
65R1500	1 1/2"	7.45
65R1625	1 5/8"	8.40
65R1750	1 3/4"	9.80
65R1875	1 7/8"	11.25
65R2000	2"	12.60

TUBING

Tubing can be supplied in continuous lengths up to 48". No cutting charge is made for pieces 12" or over. For quantities of shorter lengths, write for quotation. Large quantities, up to 2 3/4" long, molded to your your specifications, in any size or shape.

No.	Outside Diameter	Wall Thickness	List Price Per Foot
65T1-125	1 1/2"	1/8"	$2.40
65T1-187	1 1/2"	3/16"	3.55
65T2-125	1 3/4"	1/8"	2.85
65T2-187	1 3/4"	3/16"	4.10
65T2-250	1 3/4"	1/4"	5.20
65T3-125	2"	1/8"	3.20
65T3-187	2"	3/16"	4.75
65T3-250	2"	1/4"	6.30
65T4-125	2 1/4"	1/8"	3.75
65T4-187	2 1/4"	3/16"	5.50
65T4-250	2 1/4"	1/4"	7.20
65T5-125	2 1/2"	1/8"	4.30
65T5-187	2 1/2"	3/16"	6.30
65T5-250	2 1/2"	1/4"	8.50
65T6-125	2 3/4"	1/8"	4.45
65T6-187	2 3/4"	3/16"	7.20
65T6-250	2 3/4"	1/4"	9.40
65T7-125	2 7/8"	1/8"	4.95
65T7-187	2 7/8"	3/16"	7.80
65T7-250	2 7/8"	1/4"	9.40
65T8-125	3"	1/8"	4.95
65T8-187	3"	3/16"	7.80
65T8-250	3"	1/4"	10.45

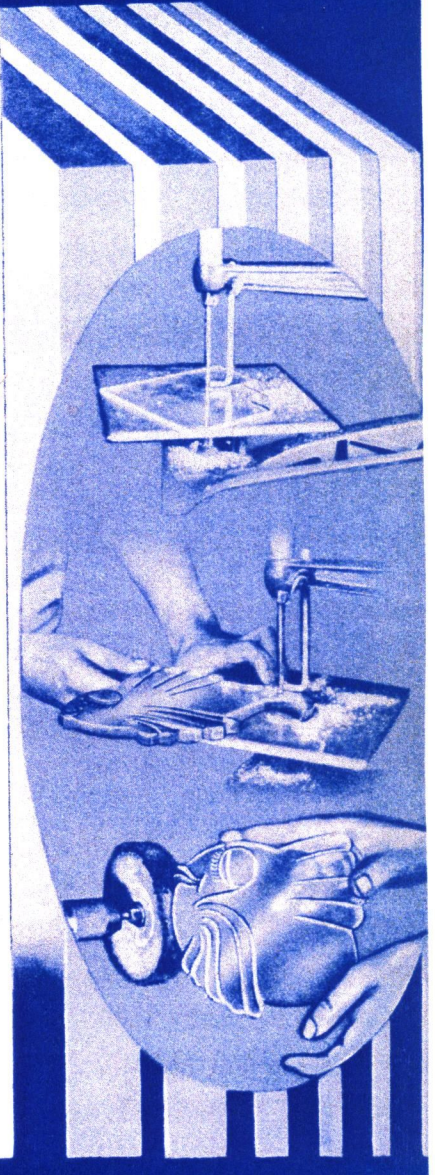
SHEET STOCK CUT IN STRIPS

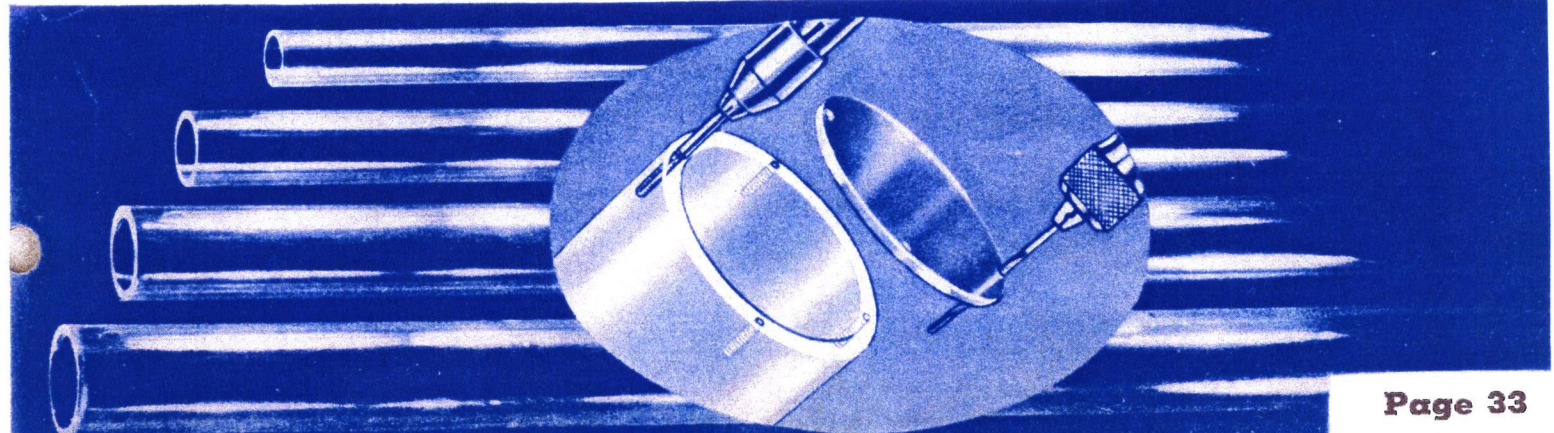
Sheet stock cut into convenient strips for the radio amateur, laboratory technician and home craftsman. Widely used in radio for coil supports, transmission line spreaders, trimmer bases, binding post or tip jack mounting strips.

PRICE IS FOR 12" LENGTHS

No.	Size	List Price
65TS1-250	1/16"x1/4"	$ .26
65TS1-500	1/16"x1/2"	.35
65TS1-750	1/16"x3/4"	.42
65TS1-1000	1/16"x 1"	.52
65TS2-250	1/8"x1/4"	.38
65TS2-500	1/8"x1/2"	.57
65TS2-750	1/8"x3/4"	.71
65TS2-1000	1/8"x 1"	.90
65TS3-250	3/16"x1/4"	.57
65TS3-500	3/16"x1/2"	.84
65TS3-750	3/16"x3/4"	1.05
65TS3-1000	3/16"x 1"	1.34
65TS4-250	1/4"x1/4"	$ .72
65TS4-500	1/4"x1/2"	1.08
65TS4-750	1/4"x3/4"	1.36
65TS4-1000	1/4"x 1"	1.75
65TS6-250	3/8"x1/4"	1.06
65TS6-500	3/8"x1/2"	1.60
65TS6-750	3/8"x3/4"	2.00
65TS6-1000	3/8"x 1"	2.60
65TS8-250	1/2"x1/4"	1.37
65TS8-500	1/2"x1/2"	2.10
65TS8-750	1/2"x3/4"	2.66
65TS8-1000	1/2"x 1"	3.45

Use "901" Cement Listed on Page 34

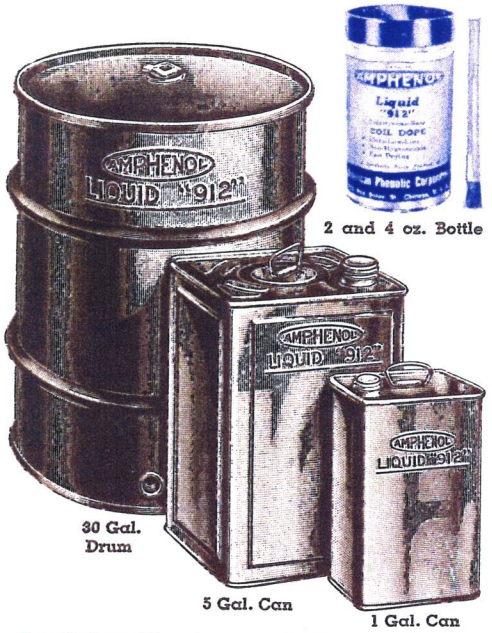




Genuine AMPHENOL
REG U.S. PAT. OFF.

Liquid "912"

Ultra-Low-Loss Polystyrene Coil Dope



2 and 4 oz. Bottle

30 Gal. Drum

5 Gal. Can

1 Gal. Can

- *Non-Hygroscopic*
- *Loss Factor Nil*
- *Rapid Drying*

The liquid form of pure polstyrene. For impregnating and sealing coils, paper tubing, fibre, ceramics, fabrics, and other moisture absorbing materials. Definitely seals all porous and non-porous materials and improves their electrical characteristics. **Will not harm coverings of silk, celanese, enamel or cotton.**

HUMIDITY TESTS

An .015" film of Amphenol "912" will repel an abnormal atmosphere of 90% relative humidity for a continuous period of 14 days.

The material is non-hygroscopic (will not absorb moisture), and has a very low loss factor, making it ideal for high frequency use. It insures greater stability in receivers and other electronic devices, and allows more critical adjustments without the danger of drift due to leakage or moisture absorption.

Used by manufacturers for impregnating R.F. and I.F. coils and chokes, A.F. and power transformers, condensers and resistors used in critical parts of circuits. Amateur communication receivers, television and frequency modulation are but a few of the branches of radio where components must be coated with Liquid "912".

Treating coil forms made from fibre or paper tubing with Liquid "912", allows the use of lower priced materials but still maintains a high degree of efficiency. A dilution of 25% Thinner is suggested for this application.

Dielectric Constant	**2.39**
Power Factor	**.00073**
Loss Factor	**.00174**

ECONOMICAL TO USE

One gallon of Liquid "912" weighs about eight pounds, which most manufacturers dilute with an equal part of thinner, making 16 lbs. of Liquid "912", costing approximately the price of good coil wax. But the big savings is not in the initial cost. To be effective wax requires a very heavy coating while Liquid "912-A" seals permanently with a tissue thin coating, impregnating many more units per pound. **Advertising departments of manufacturers building precision instruments like to use the word Polystyrene. It is a magic word that means increased stability and maximum efficiency.**

BAKING OF PARTS UNNECESSARY

Liquid "912" Polystyrene dries by evaporation of solvent or thinner, leaving behind a coat of pure polystyrene material. It leaves a hard transparent surface coat with a high lustre. DRIES SUFFICIENTLY FOR HANDLING IN 4 to 8 MINUTES, depending upon thickness of the coat.

Lattice, layer and pi-wound coils such as RF Chokes, etc. are often coated during the winding process. Wire is fed through a bath of Liquid "912" Polystyrene and wound while wet. This method individually seals each turn and utilizes the adhesive qualities of Liquid "912" Polystyrene to anchor and maintain coil shapes. For some cases, as for operation under high humidity conditions, finished coil may be given a quick dip into liquid "912" 24 hours after it is wound.

Note: Liquid "912" is not recommended for use where temperatures in excess of 190° are encountered. The basic resin, being a true thermoplastic, will soften at 200° F., although it will immediately re-harden upon cooling without change in the electrical properties. This is no serious drawback, however, as temperatures below this would melt wax impregnated condensers, tar filled transformers, etc., before softening the Amphenol Liquid "912".

Supplied to Manufacturers In Metal Containers

		List Price
No. 53-P	**— Pint Can Liquid "912"**	**$2.25 per pt.**
No. 53-Q	**— Quart Can**	**4.00 per qt.**
No. 53-G	**— Gallon Can**	**13.35 per gal.**
No. 53-5G	**— 5 Gallon Drum**	**12.26 per gal.**
No. 53-30G	**—30 Gallon Drum**	**11.31 per gal.**
No. 53-GT	**—"916" Thinner**	**2.00 per gal.**

Drums and Cans Non-Returnable

Net Weight per gallon 7.85 lbs. Gross Weights—30 gal. drum—265 lbs.; 5 gal. can—41¾ lbs.; 1 gal. can—8¾ lbs.

The 30 gallon drum has provisions at bottom of drum for inserting spigot.

Liquid "912" can be supplied in colors at slightly higher prices, in quantities of 5 gallons or more.

SMALL BOTTLES FOR LAB AND SHOP

No. 53-2	**—2 oz. Bottle Liquid "912"**	**.50c List**
No. 53-4	**—4 oz. Bottle Liquid "912"**	**.65c List**
No. 53-2T	**—2 oz. Bottle "916-8" Thinner**	**.25c List**

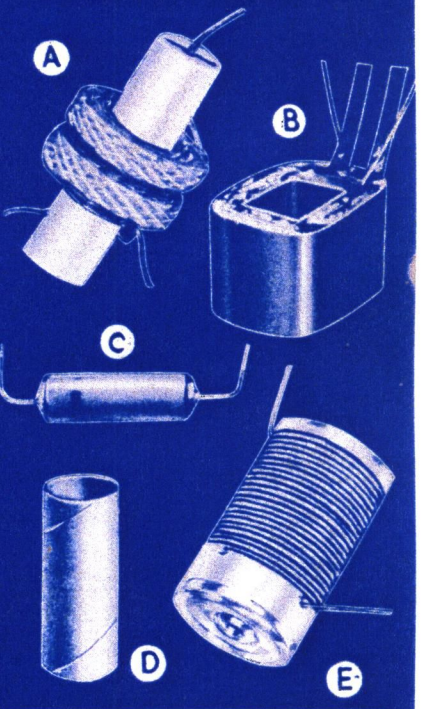
GENERAL DIRECTIONS

Because of the low loss factor of Liquid "912" Polystyrene, heavy layers may be used without affecting the electrical characteristics of the coil. However, for most applications only a thin coating is necessary, making this the most economical of all coil dopes.

Remove all moisture from parts to be impregnated by heating them in an oven at temperatures in excess of 212° F., the boiling point of water. **DON'T SEAL THE MOISTURE IN.** Dipping is recommended because the Liquid "912" Polystyrent penetrates thoroughly. Place or hang parts in reverse position from dipping operation for a uniform coat. When necessary, it can be applied with a brush.

Courtesy Commonwealth Edison Co.
For high production when extra rapid drying is required, ovens are not necessary. Economical infra-red tunnels, as illustrated, produce best result.

IMPREGNATED PARTS



All electrical products are improved with Liquid "912". (A) Lattice wound coil form (B)) Transformer coil (C) Paper Condenser (D) Paper Coil Form (E) Coil on "912-A" form.

AMPHENOL CEMENTS

The following were developed especially for use with Amphenol polystyrene and other Amphenol transparent materials. The cements contain solvents of the material with which they are to be used, so that the joint is actually welded instead of merely glued.

FOR AMPHENOL "912-A"

For cementing materials or parts made from pure polystyrene (Amphenol "912-A") use the Liquid "912" coil dope listed above. Pure polystyrene products are Insulators on page 28, and Coil Forms, Rod Tubing and all other parts on pages 30 and 31.

FOR AMPHENOL "912-B"

For cementing the sheet stock, rods and tubing listed on pages 32 and 33, use the following:

No. 53-901-2	**—2 oz. bottle "901" cement**	**$ 0.50 List**
No. 53-901-4	**—4 oz. bottle "901" cement**	**.65 List**
No. 53-901-G	**—in bulk, price per gal.**	**13.35 List**
No. 53-901-2T	**—2 oz. bottle "901" thinner**	**.25 List**
No. 53-901-GT	**—bulk thinner, price, gal.**	**2.00 List**

FOR AMPHENOL THIN SHEETS

For cementing the thin sheet stock (from .015" to .050") on page 35 use the following:

No. 53-904-2	**—2 oz. bottle "904" cement**	**$ 0.50 List**
No. 53-904-4	**—4 oz. bottle "904" cement**	**.65 List**
No. 53-904-G	**—in bulk, price per gal.**	**13.35 List**
No. 53-904-2T	**—2 oz. bottle "904" thinner**	**.25 List**
No. 53-904-GT	**—bulk thinner, price, gal.**	**2.00 List**

FOR AMPHENOL RIBBON

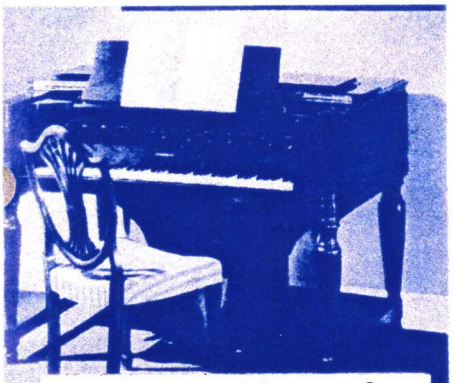
For cementing Amphenol Ribbons (from .001" to .010") listed on page 35 together or to wood, paper, glass, etc., use the following:

No. 53-207-2	**—2 oz. bottle "207" cement**	**$ 0.50 List**
No. 53-207-4	**—4 oz. bottle "207" cement**	**.65 List**
No. 53-207-G	**—in bulk, price per gal.**	**13.35 List**
No. 53-207-2T	**—2 oz. bottle "207" thinner**	**.25 List**
No. 53-207-GT	**—bulk thinner, price, gal.**	**2.00 List**

Courtesy Stewart-Warner
Most manufacturers of radio receivers like the 1942 Stewart-Warner receiver shown use Liquid "912" for increased stability and efficiency.

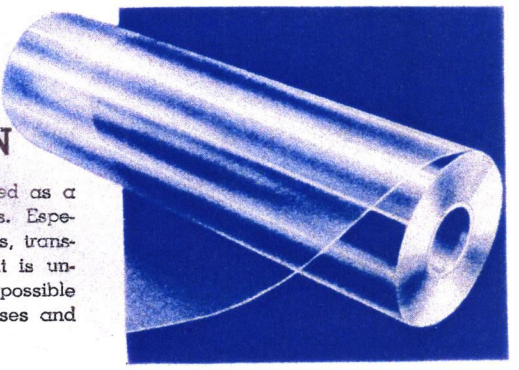
RIBBON

AMPHENOL



Courtesy Hammond Instrument Co. Amphenol "912-B" Ribbon is used in fine Hammond musical instruments such as organs and illustrated Solovox.

Low-Loss AMPHENOL "912-B" THIN-WALL INSULATION



A strong, water-clear, flexible insulating material. Used as a wrapped insulation for wires, bars and cable terminals. Especially developed for use as the dielectric in condensers, transformers, etc. Because of its high dielectric qualities it is unexcelled for radio and electronic applications, making it possible to build smaller parts with closer tolerances, less losses and essentially zero moisture absorption.

Replaces Papers, Treated Fabrics, and Other Thin Sheet Dielectrics

MECHANICAL CHARACTERISTICS

Amphenol "912-B" is strong and highly flexible. It is a tough film, which can be used as a wrapped insulation for wires, coils, or bars. It retains its flexibility on exposure to extreme variations in temperature and humidity. Absorbs very little moisture, even when immersed in water. Even at 90% relative humidity at 70° F. its moisture content is only 0.8%. This low moisture absorption contributes to its insulating properties and good dimensional stability.

Retains its strength and flexibility at elevated temperatures. Thin ribbons can be creased without cracking after three weeks of heating at 248° F. Can be heat softened and even melted without decomposition.

Will not discolor on exposure to ultra violet light. It retains its flexibility as tested by bending the film double or by creasing even after 400 hours exposure in a standard fadeometer.

Does not deteriorate with age. It retains its insulating properties and flexibility on keeping for long periods. Being an organic material, it is not recommended as a substitute for glass for applications subjected to out-door exposure for indefinite periods.

Although Amphenol "912-B" will burn, it presents no greater fire hazard in handling or storage than paper insulation of equal thickness. Amphenol "912-B" has about the same burning rate as cellulose acetate films. It yields no toxic fumes on combustion.

Soluble in alcohols, esters, ketones, coal tar hydrocarbons, and chlorinated hydrocarbons. It is insoluble in petroleum naphthas, paraffin oil, asphalt, glycerine, and glycol. Dissolved by contact with hot melted rosin, coal tar, and stearic acid. It is softened by contact with most melted waxes except paraffin, ceresin, and ozokorite. Is not dissolved by insulating varnishes when their thinners consist of petroleum naphthas. After drying, the varnished Amphenol "912-B" may be baked without effecting the continuity of the Amphenol "912-B" wrapping.

The expansion and contraction of Amphenol "912-B" with wide variations in temperature and humidity are very slight. This means that wrapped insulation will retain its tautness and that laminated insulation will not readily curl or become wrinkled.

ELECTRONIC DATA

Amphenol "912-B" is a new thermoplastic ribbon whose physical, chemical, and dielectric properties combine to make it an unusually interesting material for electrical insulation. Free from pinholes or inclusion of foreign particles. In contrast to insulating papers, Amphenol "912-B" is not an aggregate of individual fibers but a film of an inert organic material.

Its low loss characteristics at high and ultra-high frequencies makes it ideal for all types of electronic apparatus. Its high dielectric strength permits parts manufacturers to design smaller high voltage units. (See page 29 for electrical characteristics.)

Moisture has practically no effect on this remarkable new dielectric, making it ideal for use in tropical climates, and for winding transformers and other parts which are affected by electrolysis which takes place when electrical current flows through a moisture filled body. Produces no corrosive acids on contact with water or under the combined action of electric potentials and moisture.

Amphenol "912-B" can be laminated to cloth, insulating paper, or cellophane by the use of **Amphenol 207-C cement, listed on preceding page.** It forms a continuous covering which provides a barrier to the passage of low voltage currents in motor slot insulation.

PRICE SCHEDULE

Amphenol "912-B" Ribbon is supplied regularly in the thicknesses listed below. It is wound on a 3" I.D. core, and the maximum O.D. (of the wound roll) is 9" Maximum width is 28". Slit to widths as small as ½".

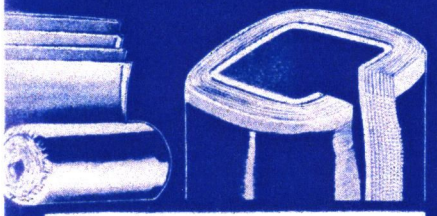
.001"....$5.55 List per lb.	.005"....$7.65 List per lb.
.002".... 6.10 List per lb.	.0075"... 7.65 List per lb.
.003".... 6.70 List per lb.	.010".... 7.65 List per lb.

NOTE: 1000 sq. ins., .001" thick, weighs approx. .056 lbs.

Special Amphenol Films

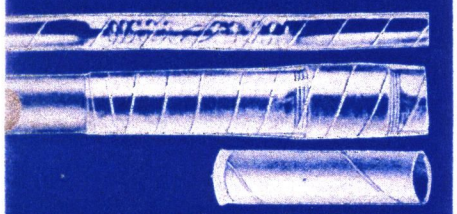
Manufacturers having special problems should consult Amphenol chemists. Available are ribbons for temperatures above 300° F. For heat sealing containers, beading and deep drawing another material is supplied which seals at 225° F.

TRANSFORMER-CONDENSER



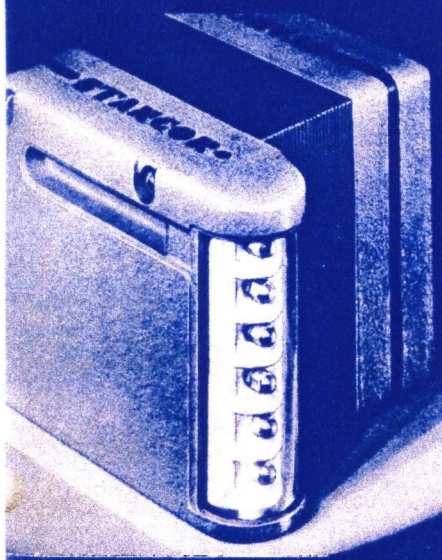
Used as the dielectric in condensers, and in between windings of transformers. Permits building smaller units with higher safety factor.

WRAPPING

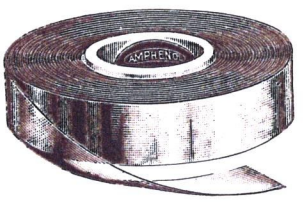


Paper coil forms can be wrapped with "912-B" Ribbon, lowering costs yet maintaining a moisture-proof, low-loss base for the completed coil. Cable splices can be effectively insulated. Pipes and conduits to be buried in the earth should be wrapped with ribbon to eliminate corrosion and to seal couplings.

SAFETY SHIELD



Courtesy Standard Transformer Corp. Transparent Amphenol "912-B" Thin Sheet Stock is used as a safety shield over high voltage terminals.



IN CONVENIENT ROLLS

No. 65-001—.001" in thickness.....$0.50 List
No. 65-005—.005" in thickness..... 2.50 List

Supplied to laboratory men, amateurs and servicemen in convenient rolls, 100 ft. in length and ¾" in width. Used as a wrapped insulation for bars, wires, cable terminals, etc. Also used for winding low capacity condensers used in ultra-high frequency work.

Co-axial cable ends can be effectively sealed with Amphenol "912-B" Ribbon. For cementing ribbon to ribbon, or ribbon to any other material, use Amphenol 207-C cement listed on preceding page.

THIN FLEXIBLE SHEETS

PRICE SCHEDULE

Price is for standard sheet, 20" x 50".

.003" .....$1.20 List	.020".....$ 7.60 List
.005" ..... 2.00 List	.025"..... 12.50 List
.0075"..... 2.90 List	.030"..... 14.75 List
.010" ..... 3.80 List	.040"..... 18.80 List
.0125"..... 5.10 List	.045"..... 21.20 List
.015" ..... 5.65 List	.050"..... 23.00 List
	.060"..... 28.20 List

Quantities of small pieces can be cut to size. Send in the exact dimensions and a price will be quoted promptly. Production quantities of small pieces or irregular shapes can be punched to specifications. There will be a small die charge on the first order only.

A new water-clear transparent insulating material. Used when sufficient rigidity or thickness is not available in Amphenol "912-B" Ribbon, yet flexibility is required. Has essentially the same physical and electrical characteristics as Amphenol "912-B" Sheet Stock listed on pages 32 and 33.

Principle uses for this materials are as follows: Provides substantially more insulation between the two plates of trimmer condensers; can be formed to any shape for protecting self-sustaining coils against dust and moisture.

Non-electrical uses include the terminal strip shield illustrated in the border, and the condenser dust shield. Valuable books may also be covered with this material.

Electrical and Mechanical Characteristics Listed on Page 29

Genuine AMPHENOL

REG. U. S. PAT. OFF.

CO-AXIAL CABLE

CO-AXIAL CABLE DATA

Co-axial cable, often referred to as a concentric transmission line, consists of a small center conductor (copper wire or rod) running through and on the axis of a larger hollow conductor. This outer conductor can be a braided wire shield or metal tube. Between the two conductors there must be some form of insulation. Gases, with all moisture removed, such as air and nitrogen are the finest insulators. Next to these, and almost their equal, is polystyrene (see page 29 for electrical characteristics). Because gas-filled lines are expensive to install and maintain, the Amphenol type of co-axial cable, light in weight, easily installed and requiring no maintenance, is now widely used.

ADVANTAGES OF CO-AXIAL CABLES

Co-axial cables have this outstanding advantage; the electrical field lies entirely between the two conductors, eliminating radiation, which is not only a disturbing factor but a great loss of electrical energy. Surrounding objects, such as large masses of metal have no effect on the co-axial line, nor is there any pick-up of spurious currents such as static and radiations from other electrical circuits. The outside of the co-axial cable can be kept at ground potential, guarding against danger to operator and equipment, and making installation simple because no stand-off insulation is required.

CO-AXIAL CABLE IMPEDANCES

A characteristic of co-axial transmission lines is their low impedance. A line may be designed to have a certain impedance so that it may be directly connected to other circuit elements of that impedance without impedance-matching devices. For example, the impedance at the center of a half-wave antenna is often about 72 ohms. A co-axial cable of that impedance could be connected to it directly at its center and a perfect impedance match would result. Slight mismatches are not important as the efficiency of the Amphenol cable more than compensates for the negligible losses which will result.

USE IN TELEVISION

Amphenol engineers have made a thorough study of the particular problems experienced in the transmission of video signals, and are ready to assist the designing engineers of transmitting and receiving equipment with this problem. Because of the wide frequency band required from audio frequencies of 30 cycles to ultra-high R.F., the low capacitance of Amphenol cables has made them particularly adaptable to this field where minimum attenuation and phase shift are very necessary.

IN FREQUENCY MODULATION

Frequency Modulated transmitters and receivers present much the same problems as television equipment because of the relatively wide band and ultra-high frequencies employed. Amphenol cables are used for piping the high fidelity programs in studios, from studio to transmitter and from transmitter to antenna.

AS A SHIELDED LEAD-IN

Where it is not practical to properly terminate the co-axial line it should be regarded as a shielded cable rather than a co-axial. As a lead-in from the average receiving antenna where the receiver is tuned to various frequencies, making a matching system impossible without costly automatic balancers, the low-loss characteristics of Amphenol cable permits longer runs of cable, thereby allowing the aerial itself to be erected as high as possible and in the position of greatest signal strength. Where there is a "man-made" static level, Amphenol cable permits installing the aerial high on the roof above the noise. These installations are widely used by radio dealers who must demonstrate receivers on both foreign and domestic programs.

LEADS FOR TEST EQUIPMENT

A most important link between the test instrument and the device under test is the connecting cable. In many cases the importance of this link is completely overlooked, even though the high capacity and leakage which are inherent qualities of rubber-insulated cables often effect accuracy and sensitivity to such an extent as to nullify the careful construction of the instrument. The basic electrical requirement for test instrument leads is low capacity, especially where used with vacuum tube voltmeters, signal generators, signal tracers and oscilloscopes.

Construction of Amphenol Co-Axial Cable

In designing Amphenol co-axial cables it was desired to place a minimum of insulating material between the inner conductor and the outer conductor and yet have a cable that would be flexible enough to be used as a portable cord and to bend easily around corners for permanent installations. This was accomplished by the use of interlocking beads strung on the inner conductor to form a "fish spine" which permits the cables to be bent and flexed without exposing the conductor. The beads are so designed as to contain a minimum of material commensurate with mechanical strength. Beads are supplied molded from "912-A" pure polystyrene (see page 29) for ultra-low-loss characteristics, or from mica-filled bakelite (see page 17) for use where higher temperatures are encountered than can be withstood by polystyrene beads.

Cables are available with outer conductors of soft electrical copper tubing for installations where there is a firm anchorage, and with outer conductors of woven wire braid where the cable is not anchored or where very sharp bends must be made.

Inner conductors can be supplied to specifications, including stranded, solid and special wires, up to the maximum size acceptable by the bead used. Where the surge impedance is not important, the smallest possible center conductor should be selected which has sufficient mechanical strength. The smaller the center conductor the lower the cable capacity. Where the cable is to be correctly terminated and used as a matched impedance line, surge impedance for most uses will be found in the regular stock sizes listed on the next three pages.

SPECIAL CABLE ASSEMBLIES

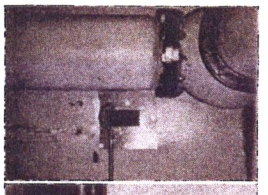
For manufacturers requiring short pieces of cable with a specific means of connection to apparatus, as for police transmitters, air craft and mobile instruments, patch cords, etc., Amphenol can supply these cables completely assembled. Illustrated in the border are a few of the cables now supplied for this type of work.

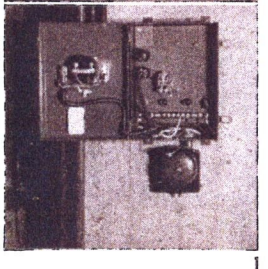
PHOTO CELL INSTALLATIONS

Photo cell apparatus has found many applications in industry and public life, providing safety, efficiency and convenience never before possible. Used as burglar alarms, smoke controls, merchandise inspectors, safety devices on machinery, automatic counting of pieces or packages, and for hundreds of other uses. The biggest problem met in the installation of photo cell equipment is the conservation of the minute electrical current emitted by the cell until it has reached the amplifier.

Attempts to carry the photo cell emission long distance through ordinary cable disclosed that current losses prevent operation of the necessary relays. By using Amphenol co-axial cables it has been found that the photo cell current can be carried long distances and efficiently operate the relays.

Use any Amphenol sockets for photo cells having standard 4 prong base. On page 22 is listed a socket for cells with 3 prong miniature base.





COURTESY WORNER PRODUCTS

Illustrations show co-ax installation of photo cell equipment. Cable runs through electrical conduit from control panel and amplifier to photo cell smoke control on furnace pipe.

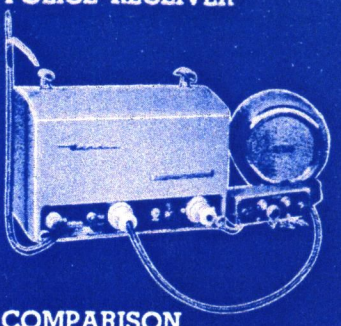
From Worner Products: "Where sufficient space is not available to place the amplifier close to the photo cell, we have found it necessary to use Amphenol co-axial cable to connect two pieces of apparatus. Lengths of cable up to 500 feet are in use, and we have been unable to measure any losses.

Following table gives direct comparisons between AMPHENOL Co-Axial Cable and other transmission lines.
LINE LOSS IN WATTS WHEN 1000 WATTS ARE FED INTO 100 FEET.

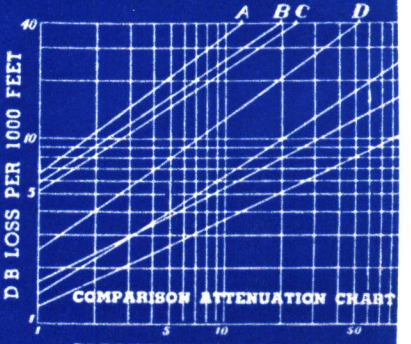
These Figures Represent Actual Watts Loss With 1000 Watts Input.

— Wave Length — Meters	Frequency	Rubber Co-Axial No. 1	Twisted Pair	Heavy Rubber Co-Axial	No. 72-12 AMPHENOL CO-AXIAL CABLE	No. 72-12C AMPHENOL COPPER TUBING CABLE
2½	120 mc.	920	800	700	320	210
5	60 mc.	800	645	563	249	162
10	30 mc.	637	463	411	188	121
20	15 mc.	460	324	308	133	88
40	7½ mc.	324	206	206	110	65
80	3¾ mc.	206	133	135	60	49
160	1⅞ mc.	143	88	92	45	39

MOTOROLA F.M. POLICE RECEIVER



COMPARISON ATTENUATION CHART

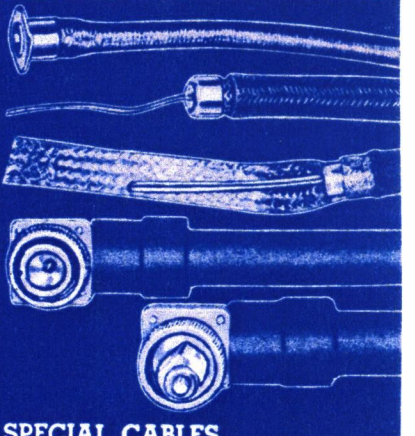


Above chart shows db loss of various types of transmission lines at frequencies to 100 megacycles (3 meters).

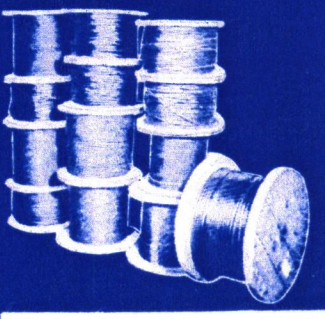
A — Light Rubber Co-Axial
B — Light Twisted Pair
C — Heavy Rubber Co-Axial
D — Heavy Twisted Pair
E — Amphenol 81-18 Twinax
F — Amphenol 72-12
G — Amphenol 72-12C

CABLE ASSEMBLIES

Complete cable assemblies can be supplied to manufacturers. A few of the many end fittings available are shown below. Bottom two illustrations are British waterproof aircraft cables.



SPECIAL CABLES



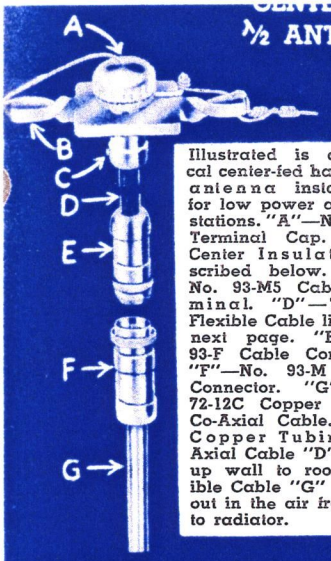
Illustrated are cables up to 1000 feet in length, waiting to be shipped to the radio and aircraft industries. Manu-
facturers having special problems

CO-AXIAL CABLE

AMPHENOL
REG. U.S. PAT. OFF.

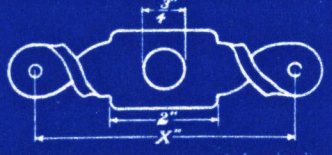
COPPER TUBING TRANSMISSION LINES

CENTER FED ½ ANTENNA



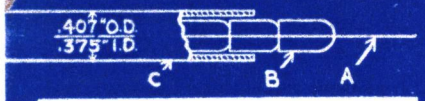
Illustrated is a typical center-fed half-wave antenna installation for low power amateur stations. "A"—No. 90-15 Terminal Cap. "B"—Center Insulator described below. "C"—No. 93-M5 Cable Terminal. "D"—72-12R Flexible Cable listed on next page. "E"—No. 93-F Cable Connector. "F"—No. 93-M Cable Connector. "G"—No. 72-12C Copper Tubing Co-Axial Cable. Copper Tubing Co-Axial Cable "D" is run up wall to roof. Flexible Cable "G" is used out in the air from roof to radiator.

CENTER STRAIN INSULATOR



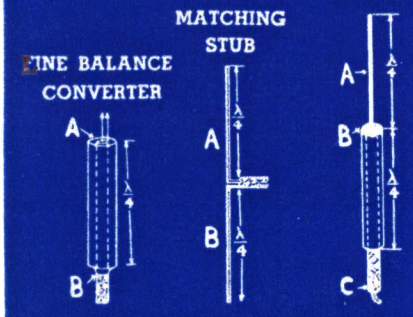
One of the most ingenuous center strain insulators ever devised. Easily formed in the laboratory or home work shop. Cut a piece of Amphenol "912-B" sheet stock (listed on page 7). Use sheet stock ¼" in thickness. Cut to the shape illustrated above. Note "X" dimension can be any required length. Ends can be twisted by heating in water at 200° F.

TYPE 72-12C CABLE



"A"—No. 12 solid tinned copper wire. Other center conductors can be supplied. "B"—Amphenol "912-A" polystyrene insulating beads or mica-filled bakelite beads. "C"—Soft drawn copper tubing.

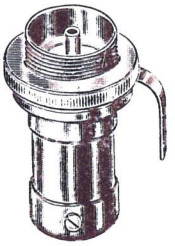
CO-AXIAL ANTENNA



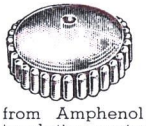
LINE BALANCE CONVERTER—If a co-axial line is being used as a feeder and a balanced circuit is desired, slip a quarter wave shield over end of co-axial cable, solder end of co-axial cable and auxiliary shield at point "B" and ground. Center conductor and cable shield coming out at "A" have balanced high impedance to ground.
MATCHING STUB—For ¼ wave vertical antenna, drop ¼ wave of No. 12 wire, changing to a ½ wave center-fed vertical-antenna.
CO-AXIAL ANTENNA—A quarter wave vertical antenna (A) is mounted on top of any hollow metal flag pole or pipe which is one quarter wave length long. The co-axial cable is fed through this metal pipe and connected at "B".

COPPER TUBING CABLE CONNECTORS

Use cable connectors on next page for connecting two copper tubing co-axial cables, for connecting No. 72-12 flexible cable to copper tubing cable, and for cable connecting to chassis or panel. For installation of an antenna feeder it is recommended that copper tubing cable be run up the wall to roof and firmly anchored; and out in the air, from roof to radiator, use No. 72-12R flexible cable which will sway with the wind without breaking.



CABLE TERMINAL
No. 93-M5 — $1.50 List
For connecting any co-axial cable to antennas, matching stubs, etc. Can be hung in the air or assembled to a bracket or insulator in a 33/32" hole. May be "sweated" on copper tubing cable. Body solder-lug is provided so that it can be used with di-pole and doublet receiving aerials. Center cable conductor goes right through for connection to antenna. Use Terminal Cap for a weather-sealed connection.



TERMINAL CAP
No. 90-15 — 60c List
Screws on to outer end of Cable End Terminal illustrated above. Umbrella-design cap is molded from Amphenol "912" (polystyrene) ultra-low-loss insulating material; 1 7/32" diameter, ½" high. For a positive, weather-proof seal, threads and wire opening should be painted with Liquid "912".

Special Connectors

For permanent installations of mboile and fixed transmitters where special fittings, connectors and end seals can be supplied. Send detailed information for recommendations. Se "AN" connectors described on pages 4 and 5 for suggested methods of terminating and coupling cables.

MATCHES A HALF WAVE ANTENNA

No. 72-12C — Copper Tubing Cable — 50c per ft.

An exceptionally efficient co-axial cable for transmitting radio frequency currents in broadcasting studios, test laboratories, and for amateur and broadcasting stations operating on power to one kilowatt. Recommended for long runs of cable that can be anchored to walls or other supports. **Supplied in continuous lengths to 1000 feet.**

SPECIFICATIONS

Surge Impedance—78 ohms, approximately matching a ½ wave antenna.
Power Handling Capacity—1 kilowatt to 40 mc, 700 watts to 100 mc.
Db Loss—See preceding page.
Weight—2 ounces per foot.
*** Inner Conductor**—No. 12 solid tinned copper wire.
Insulation—Amphenol No. 73 polystyrene beads.
Outer Conductor—Soft drawn copper tubing, .407" x .375". Manufactured for electrical conductivity.
Bends—Bends easily on 4" radius for easy installation.
Operating Temperature—Operates safely to 190° F.
**** On special order smaller center conductors may be specified for higher surge impedance and lower capacity.***

FOR TEMPERATURES TO 285° F.

No. 72-12CT — Copper Tubing Cable — 82c per ft.

Identical to the above cable but has mica-filled bakelite beads instead of polystyrene. (For electrical characteristics of mica-filled bakelite see page 17.) For use where cables must be used in temperatures that exceed those tolerated by polystyrene, as in ships over boilers, for geophysical field work, etc.

ELECTRICAL COPPER TUBING

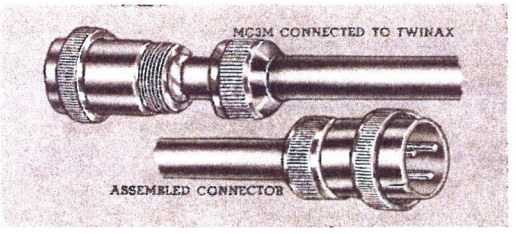
No. 72-54—Tubing Only — 20c per ft.
Supplied in 50 ft. lengths

For the amateur or laboratory man who wishes to construct his own transmission line. For use with the No. 73 or 73-T insulating beads described on next page. All copper tubings are not good electrical conductors. This tubing was especially manufactured for use as a co-axial line, of soft drawn copper, .407" O.D. x .375" I.D. May be used indoors or outdoors. Corrosion can be prevented by painting the finished transmission line with aluminum paint; or the tubing can be left unfinished to form its own protective oxidized coat.
Bends easily around corners.

TWINAX COPPER TUBE CABLE

Balanced 2-Conductor Shielded Line

No. 81-18C — 80c per ft.



SPECIFICATIONS

Cable is constructed with two No. 18 solid tinned copper wires strung with No. 73-2 polystyrene beads described on next page. Has same copper tube outer conductor as used on above 72-12C cable. The ball and socket design permits bending the cable on wide radii without baring the conductors and keeping the wires parallel even around bends. The cable shield is electrical copper tubing. Because the ultra-low-loss polystyrene insulation will soften at temperatures in excess of 190° F., this cable is not recommended for use over boilers of ships and other places where high temperatures are encountered.

No. 81-18 — 80c List per Ft.

Newly developed cable for balanced lines. Preferred by many engineers for ultra-high frequency use. Also used instead of single conductor concentric cable when a balanced line is required above ground. Used in broadcasting studios and laboratories for piping high frequencies from one source to another.

Surge impedance of this cable is 150 ohms. Attenuation is given in the chart in the border of preceding page. Can also be supplied with smaller conductors for higher surge impedance.

CONNECTORS FOR TWINAX CABLE

Use the MC3 series microphone connectors listed on page 8. Permits connecting two copper tubing twinax cables, copper tubing twinax to flexible twinax listed on next page, and connecting twinax to chassis or panel. Solder center conductors of cable to prongs #2 and #3 of MC3M connector, solder tubing to connector shell. Set screw in side of connector shell grounds #1 prong, feeding the cable tubing through to contact #1 on female connector. **When ordering MC3 series microphone connectors for use with Twinax Cable add the letter "T" to the part number and 13c to list price and elements will be supplied molded from low-loss mica-filled bakelite.**

Genuine AMPHENOL

CO-AXIAL CABLE

No. 72 FLEXIBLE CO-AXIAL CABLE

72 OHM TRANSMISSION LINE

No. 72-12—50c per Ft. List

The most widely used of all Amphenol Co-Axial Cables. Surge impedance is 72 ohms, matching a half-wave antenna. It is the preferred cable for connecting the television iconoscope to the video amplifier, for cross connecting high frequencies on broadcast units, etc.

Weight—1 oz. per foot.

Insulation—Amphenol No. 73 polystyrene beads.

Maximum Standard Length—1000 feet.

Outer Conductor—Braided wire shield, 6 strands No. 34 tinned copper wire, 16 picks per inch.

Flexible—Bends on 1" radius.

Operating Temperatures—Operates safely to 190° F.

Outer Covering—Double cotton braid, 1st braid impregnated with waterproofing asphaltum; 2nd braid, eight coats of waterproofing lacquer.

Surge Impedance—72 ohms.

Capacity—20 mmf. per ft.

Power Rating—Handles 1000 watts to 40 Mc.; 700 watts to 100 Mc.

Can be supplied with any size center conductor from No. 12 solid to the smallest steel piano wire. Stock sizes are listed to right. Quotations on special conductors will be given on request.

No. 72-R RUBBER COVERED CABLE

Any No. 72 Cable listed on this page available with an .050" wall of pliable rubber over the two impregnated cotton braids. Maximum length 100 ft. When ordering add the letter "R" to part number and 40c to list price per foot.

No. 72-NR AVIATION CABLE

List Price — $1.40 per foot

Identical to rubber covered cable, but has two braids of non-hygroscopic celanese, one between beads and shield, the other between shield and cotton braids. Add letters "NR" to part number of No. 72 Cable.

No. 72-T FOR TEMPERATURES TO 285° F.

List Price — 82c per Foot

Same as No. 72 Cable listed at top of page but has beads molded from mica-filled bakelite to withstand temperatures to 285° F. When ordering add letter "T" to part number. See page 17 for electrical characteristics of mica-filled bakelite.

LOW CAPACITY No. 72 CABLES

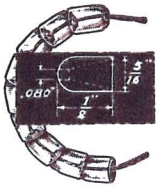
No. 72 Cable is available from stock in the following sizes, for correct impedance matching, or lowest possible capacity consistent with mechanical strength required.

Type 72 Cable No.	Size Conductor	Surge Impedance	Capacity Per Foot	List Price Per Foot
72-14	14	90	16.0 mmf.	$0.50
72-16	16	100	13.7 mmf.	.60
72-18	18	110	11.7 mmf.	.50
72-20	20	122	10.0 mmf.	.50
72-22	22	138	8.8 mmf.	.60
72-24	24	150	7.9 mmf.	.50
72-26	26	165	7.0 mmf.	.60
72-28	28	180	6.4 mmf.	.60
72-30	30	195	5.8 mmf.	.50

** Solid wire center conductors. Stranded center conductors are available on special order.*

5/16" POLYSTYRENE BEADS

No. 73 — Per Box of 250 Beads — $2.50 List



The most widely used of Amphenol insulating beads. Molded from pure, transparent polystyrene. Used for transmission lines and for insulating high voltage leads. See stancor X-mitter in blue border.

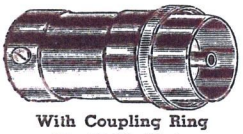
Can be strung on wires up to No. 12 solid or No. 14 stranded. Hole diameter is .080"; length, ½"; overall diameter is 5/16". When stringing cables figure 28 beads to the foot.

5/16" HIGH TEMPERATURE

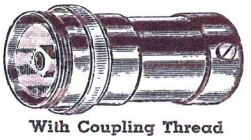
No. 73-T — Per Box of 250 Beads — $5.00 per box List

Identical to beads listed above but molded from Mica-Filled Bakelite. For use where temperatures up to 285° F. are encountered, as for mounting transmission line over boilers on ships, etc. Mica-Filled beads are superior to ceramic and are excelled in electrical characteristics only by Amphenol "912" polystyrene beads.

CONNECTORS FOR No. 72 and 72-C Cables



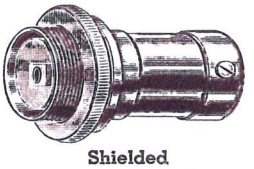
With Coupling Ring
No. 93-M—Male
No. 93-F1—Female



With Coupling Thread
No. 93-F—Female
No. 93-M1—Male

List Price — $1.50 each

Standard
$1.25 List, each
No. 93-C—Female
No. 93-C1—Male



Shielded
$1.50 List, each
No. 93-CL—Female
No. 93-CL1—Male

CABLE TYPE: Insulation is pure polystyrene. Screw type coupling ring prevents accidental disconnections. Indestructible shells machined from solid brass bar stock, and polished chrome plated. Cable clamp assures a positive ground. All elements are interchangeable. Cable opening accepts cables up to 13/32" in dia., may be reamed out to fit cables to 1/16" O.D.

Use cable type with the Coupling Ring as the companion connector for all chassis units.

STANDARD CHASSIS UNIT: For use with cable type listed to the left, where cable is to terminate at a chassis or panel. Mounts in a 13/32" round hole. Supplied with soldering lug, lock washer, and knurled locking nut. Overall length, 57/64". Finished in polished chrome.

SHIELDED CHASSIS UNIT: Identical to above but rear of connector is shielded, maintaining impedance of transmission line.

FLEXIBLE TWINAX CABLE FOR BALANCED LINES

No. 81-18B — TWINAX FLEXIBLE CABLE

List Price — 80c per Foot

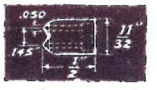
Cable is constructed with two No. 18 solid tinned copper wires strung with No. 73-2 polystyrene beads described to right. The ball and socket design permits bending the cable on wide radii without baring the conductors and keeping the wires parallel even around bends. The cable shield is 6 strands of No. 34 tinned copper wire, 16 picks per inch. Has same impregnated double cotton braid as 72-12 cable described at top of page.

Surge impedance of this cable is 150 ohms. Attenuation is given in the chart in the border of page 36.

TWO WIRE BEADS

Packed 250 to the Box

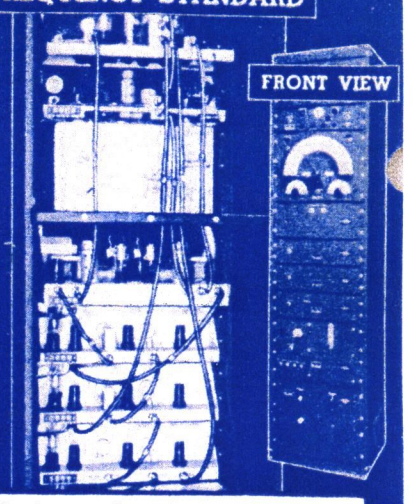
No. 73-2 — $3.25 per box List



A new two hole bead molded from pure polystyrene for making balanced lines, especially for high frequency work.

Can be strung on wires up to No. 18 solid. Hole diameters, .050"; length, ½"; overall diameter is 11/32". When stringing cables figure 27 beads to the foot. Rounded projections at each wire hole prevent the wire from shorting against the cable tubing when cable is bent.

CLOUGH-BRENGLE FREQUENCY STANDARD

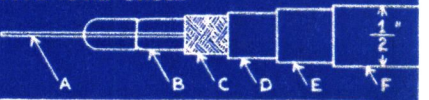


As in no other electrical instrument, stability must be maintained in a frequency standard. Note Amphenol Co-Axial cables cross connecting units.

TYPE 72 CABLE

(A) Center conductor to specs; (B) No. 73 beads; (C) braided shield; (D) cotton braid, asphaltum impregnated; (E) cotton braid, 8 coats lacquer.

TYPE 72-NR CABLE

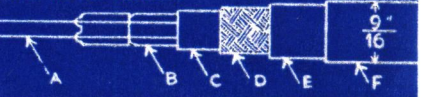


(A and B) same as above; (C) copper shielded and 2 celanese braids, one on each side of shield; (D and E) cotton braids; (F) rubber wall.

TYPE 81-B CABLE

(A) Two No. 18 solid wires; (B) No. 73-2 beads; (C) copper shield; (D and E) impregnated cotton braids, see 72—cable at top.

TYPE 81-NR CABLE



(A and B) same as 81-B; (C) copper shield, 2 celanese braids, one on each side of shield; (D and E) impregnated cotton braids; (F) rubber wall.

STANCOR XMITTER
Insulated High Voltage Leads

(A) Amphenol insulating beads used to

CABLES

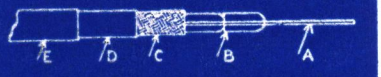
AMPHENOL

SMALL DIAMETER CO-AXIAL CABLES
For Instruments - Photo Cells - Television - F. M.

TEST INSTRUMENT LEADS

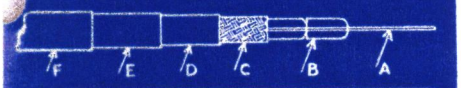
Courtesy Televiso Co.
The VG-6 Vacuum Tube Voltemeter uses Amphenol polystyrene insulated co-axial cable for more accurate readings.

COTTON COVERED DIMENSIONS



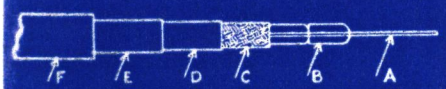
(A)—Center conductor to specs.; (B)—73-1 or 73-1T beads; (C) Copper shield; (D) Cotton Braid, impregnated with waterproofing asphaltum; (E) Cotton Braid, impregnated with 8 coats of waterproofing lacquer.

RUBBER COVERED DIMENSIONS

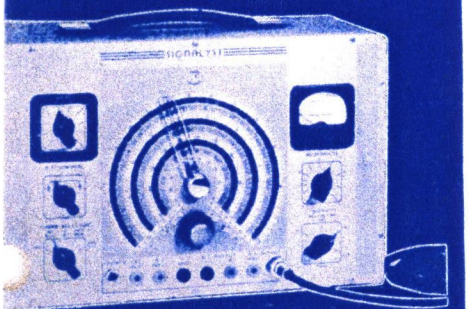


A, B, C, D are identical to materials listed above under Cotton Covered Cable. (E) — A final outer coating of rubber having a 1/16" wall. Cotton Braids, D and E and impregnated as described above, triply sealing cable.

AIRCRAFT ANTENNA CABLE



(A) No. 7/38 stranded phosphor bronze center conductor; (B) — 73 beads; (C) — 2 celanese braids; (D) — Copper Shield; E and F are two cotton braids, impregnated as are E and F under Cotton Covered Cable.



Courtesy R.C.A.
Illustration shows Amphenol Co-Axial Cable connected to the famous R.C.A. Signalyst. Leads must be ultra-low-loss, with very low capacity.

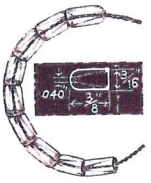
LOW CAPACITY AVIATION CABLE

No. 76-7-38-PBC — $1.25 List per Ft.

Exceptional low capacity for a cable this small in size, having a No. 7/38 stranded phosphor bronze center conductor. Built especially for connecting aircraft directional loops and other high frequency receiving antennas to the receiver. Also recommended for uses where low capacity, small size and light weight requisites, and cable must withstand a great deal of flexing or vibrating.

Constructed on the same principle as the No. 76 cable listed to right, but has a double braid of non-hygroscopic celanese between the insulating beads and braided copper shield. Other specifications identical to No. 76 cable listed to left, including type of outer braid, insulating beads, etc.

3/16" Polystyrene Insulating Beads



Packed 500 to the Box
No. 73-1 — $4.50 per box, List

A transparent small bead molded from pure polystyrene, intended for use in small transmission lines to be used inside of electronic apparatus and as test instrument leads and for stringing on wires carrying high voltages.

Can be strung on wires up to No. 22 stranded or No. 20 solid wires. Hole diameter, .040"; length 3/8"; overall diameter, 3/16". See diagram to left. When stringing cables figure 35 beads to the foot.

For making a copper tubing transmission line with these beads, use copper tubing with an inside diameter of at least 7/32".

Beads are molded from ultra-low-loss polystyrene insulating material. See page 29 for electrical characteristics. May be used safely in temperatures to 190° F.

3/16" MICA-FILLED BAKELITE BEADS

Packed 500 to Box
No. 73-1T — $8.50 per box, List

Identical to beads listed above but molded from Mica-Filled Bakelite. (See page 17 for electrical data.) For use where temperatures up to 285° F. are encountered, as for mounting transmission line over boilers on ships, etc. Mica-Filled beads are superior to ceramic and are excelled in electrical characteristics only by Amphenol "912" polystyrene beads.

A mica-filled bead is recommended for the end of the flexible co-axial cable, listed to right, to facilitate soldering.

No. 76-T CO-AXIAL CABLES
FOR TEMPERATURES TO 285° F.

List Price per Ft. — 82c

Identical in size and construction to No. 76 cables listed at top of page to right, but have insulating beads molded from mica-filled bakelite. For use in temperatures to 285° F. where polystyrene beads cannot be used. (See page 17 for electrical characteristics of mica-filled bakelite.) Available with any center conductor listed in the table to the right under No. 76 Low-Capacity Cable. When ordering simply add the letter "T" to the part number.

FOR TEST INSTRUMENTS AND RECEIVER LEAD-INS

No. **List Price**
76-22S—With No. 22 stranded center conductor—**50c per Ft.**
76-20 —With No. 20 solid center conductor.....**50c per Ft.**

A small co-axial cable especially designed for test equipment leads. Also used for connecting other types of electronic apparatus where the larger diameter of other Amphenol cables is objectionable. Outside diameter of the cable is only 1/4". Ideal for leads inside transmitters and other apparatus.

Cable is constructed of No. 22 stranded or 20 solid tinned copper wire strung with No. 73-1 polystyrene beads described on this page. The beads are then shielded with a woven tinned copper braid. Overall are two separate impregnated cotton braids. Cable bends on a 1" radius.

NOTE: No. 76-22S with No. 22 stranded center conductor is recommended for test instruments and other applications where cable is flexed a great deal. No. 76-20 with No. 20 solid center conductor, because of its lower capacity, is recommended for lead-ins, for television, frequency modulation, and even for straight a.m. receivers where a long lead-in is required.

See Electrical and Mechanical Data Below

No. 76 LOW CAPACITY CABLES

In addition to the above cables carried in stock by the radio parts jobber, No. 76 cable is available with smaller center conductors for lower capacity and higher surge impedance. Following are the electrical and mechanical specifications:

Weight—0.6 oz. per foot.
Insulation—Amphenol No. 73-1 polystyrene beads.
Maximum Standard Length—1000 feet.
Outer Conductor—Braided wire shield, 4 strands No. 34 tinned copper wire, 10 picks per inch.
Flexible—Bends on 1" radius.
Operating Temperatures—Operates safely to 190° F.
Outer Covering—Double cotton braid, 1st braid impregnated with waterproofing asphaltum; 2nd braid, eight coats of waterproofing lacquer.

Type 76 Cable No.	Size Center Conductor	Surge Impedance	Capacity Per Foot	List Price Per Foot
76-20	20	105	14 mmf.	$0.50
76-22S	*22S	107	13.3 mmf.	.50
76-22	22	115	12 mmf.	.60
76-24	24	125	11 mmf.	.60
76-26	26	137	9.8 mmf.	.60
76-28	28	149	8.8 mmf.	.60
76-30	30	160	8.0 mmf.	.60

* ***Center conductor is stranded; all others are solid.***

Other center conductors for special applications, such as fine sizes of phosphor bronze and steel piano wire, can be supplied without delay on special order.

No. 76-R RUBBER COVERED CABLE

Overall Diameter—3/8' — Wt., 0.8 oz. per ft.

Any cable listed above is available with a 1/16" final outer covering of soft rubber. This rubber is applied in addition to the two cotton braids impregnated as described above. For use where absolute imperviousness to moisture is required. **When ordering simply add the letter "R" to the catalog number and 40c per foot to the list price.** Available in lengths to 100 feet.

Outer covering is genuine rubber and not synthetic.

CONNECTORS FOR CABLES LISTED ABOVE

Wiring Instructions

Remove outer cotton braids as indicated in illustration, feed into No. 8030 coil spring of connector. Fan shield of cable back and trim excess strands of shield and solder shield to coil spring. Feed coil spring with cable through the connector barrel. Insert center conductor of cable through prong of connector element, clip off excess center conductor wire and solder to prong of connector. Pull back on cable until connector element is in place and insert connector set screws.

USE 80 SERIES CONNECTORS ON PAGE 10

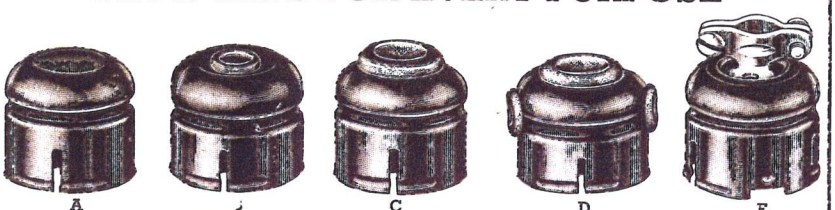
For connecting two No. 76 or 76-T cables together, or connecting these small diameter cables to instruments use the Single Prong 80 Series Connectors of page 10. When ordering be sure to specify low-loss Mica-Filled Bakelite by adding the letter "T" to the part number and 13c to the list price. Connectors in this series are supplied in styles that meet almost every requirement. For special requirements write, giving complete details and "AN" connectors shown on pages 4-5 will be recommended.

Genuine AMPHENOL

HARDWARE

Primarily intended for use with Amphenol sockets and connectors, but extensively used by manufacturers, amateurs and laboratory men for many other purposes. Parts listed on this page are not usually carried in stock by the radio parts jobber, but he can obtain them for servicemen and amateurs.

PLUG CAPS FOR EVERY PURPOSE



A B C D E

This complete versatile line of plug caps makes it possible to use any Amphenol retainer ring mounting socket, plug or receptacle as a cable terminal. All plug caps listed below are designed for all but the large 7 plug and socket. See 3L listing below table for caps for 7-large sockets and plugs.

The standard finish is black japan. For chrome plating add the letters "CH" to the part number and 20c to the list price. For cadmium plating, add the letters "CA" to the part number. Caps can also be supplied to manufacturers finished in colored lacquers where the quantity warrants special handling.

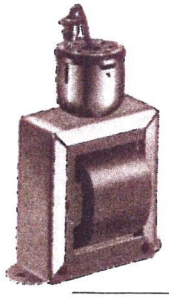
LIST PRICE 15c EACH

Catalog Number	Type	Length	End Hole	Side Holes	Grommet
3-10	A	1"	None	None	None
3-11	A*	¾"	None	None	None
3-12	B	1"	5/16"	None	Metal
3-20	B	1"	7/16"	None	Metal
3-21	D*	1"	None	5/16"†	Metal
3-25	D*	¾"	None	5/16"†	Metal
3-13	C	1"	7/16"	None	Rubber
3-15	D	1"	7/16"	3/16"‡	Rubber
3-16	D	1"	None	5/16"‡	Rubber
3-17	D	1"	None	7/16"†	Rubber
3-18	C	1"	5/16"	None	Rubber
3-27	D*	¾"	None	3/16"	Rubber
3-28	C	1"	3/16"	None	Rubber
3-32	D*	1"	None	7/16"†	Rubber
3-22	C	1"	¼"	None	Fibre
3-23	D*	1"	None	¼"†	Fibre
3-26	C	1"	5/8"	None	Fibre
3-31	D*	1"	None	5/16"†	Fibre

* Has no finger grip. † Has one side hole. ‡ Has two side holes.

No. 3L-12—for large 7 sockets and plugs } See No. 12 and 13 above for description
No. 3L-13—for large 7 sockets and plugs } of holes and dimensions ..... **20c List**

No. 3-24—Type E, Cap with Cable clamp attached. 1 1/16" in length. Clamp accommodates cables to ½". ..... **20c List**

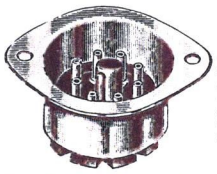


RIVET TYPE PLUG CAP FOR TRANSFORMERS

This cap will accommodate all small "S" type sockets, "CP" plugs, 60 and 61 receptacles, etc. Neck spun over directly on chassis or mounting straps of unshielded transformers. Used extensively for universal transformers as illustrated to the left.

No. 3-19—Cap is ¾" high ..... **15c List**

No. 3-30—Cap is 1" high ..... **15c List**



61-61 SHELL

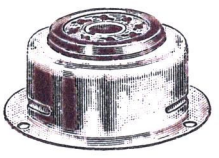
Drawn steel, burnished nickel shell for recessing plugs or sockets below the chassis surface. See page 20 for dimensions.

No. 61-61—Shell only ..... **15c ea.**

MOUNTING-PLATE CAP

Punched from steel, cadmium-plated. Permits mounting sockets or plugs above surface in a limited area. Ideal for bringing plugs or receptacles to surface of wood cabinets and yet keep mounting screws in interior.

No. 3-19A—With Cap ¾" high..... **20c List**
No. 3-30A—With Cap 1" high..... **20c List**



ACS SHELL

A light weight aluminum shell which permits extending sockets or plugs 13/16" above or below surface. Used extensively for mounting on workbenches. Four knockouts in side of shell provide wire entrances. Shell only. See page 20 for dimensions.

No. 23-1S—For small "S" sockets... **10c List**
No. 23-1L—for large "S" sockets... **10c List**

BLANK ACS SHELL

Same as above but top of shell is blank. For mounting small variable resistors, phone jacks, tips jacks, etc. Easy to drill correct size hole. Used in laboratories and by experimenters for "bread-board" hookups, and wherever it is desired to mount small parts above or below the surface.

No. 23-1—Blank ACS shell..... **10c List**

ANTI-MICROPHONIC SOCKET CUSHIONS

No. 11-3K — 20c List

All the parts necessary for converting any Amphenol MIP socket listed on page 19 to a floating socket are contained in an envelope on which are printed complete instructions. Consists of 4 live gum rubber cushions, metal washers, mounting screws and nuts.

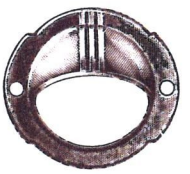
To overcome tube microphonics cushioned sockets are sometimes necessary, especially for photo-cell work, ultra-sensitive circuits and for some battery tubes.

STRAIN RELIEF CLAMP

A positive gripping cable clamp punched from steel and cadmium-plated. Anchors cables to panels or chassis, relieving all strain on solder contacts. Fits into any shape hole from 7/16" to 5/8". Legs of clamp are pierced so that it may be screwed or riveted to chassis.

No. CC-4—Cable Clamp ..... 10c List

ESCUTCHEONS



For magic eyes. Modernistically designed to match the other components of your apparatus. Brass, finished in antique bronze.

No. 10-1—For 6-prong magic eye...25c List

No. 10-2—For octal magic eye...30c List

LIVE RUBBER CUSHIONS

Live rubber cushions for inserting in chassis or panel riveting holes to lessen vibration of an assembled part such as a tube socket.

Molded from pure Para rubber.

No. 22-6 —For 3/8" hole.....$3.00 per C
No. 22-10—For ¼" hole..... 1.50 per C

BLACK RUBBER GROMMETS

For protecting cables from abrasions when passing through a chassis or panel hole.

No. 22-1 For 5/16" hole, 7/16" I.D...$1.25 per C
No. 22-2 For 7/16" hole, 5/16" I.D... 1.05 per C
No. 22-3 For 5/16" hole, 3/16" I.D... .90 per C

FIBRE WASHERS

One flat and one extruded fibre washer. Used to insulate a metal part from chassis or panel. Fits into ½" hole. Insulated hole is .395", 5/8" O.D.

No. 75-20—Flat Washer .....$ .95 per C
No. 75-21—Extruded Washer.... 1.40 per C

Special Hardware, Much of It Not Shown Here,

TAP SWITCH

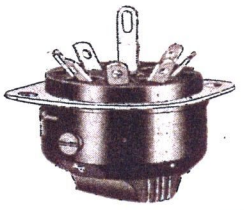
AMPHENOL

8-Position — Single Pole

No. 36-1—With numerals from 1 to 8.....75c
No. 36-2—With impedance markings 75c

Manufacturers may specify other markings.

All electrically connected parts fully shielded. Side set screw locks switch-arm in position, preventing accidental tap changes. Tap designation visible through window in bevel of cap. Extremely compact—mounted height only 7/8", overall diameter 1-15/16".



Convenient cadmium plated brass lugs protrude through switch bottom for fast soldering. As easy to wire and assemble as a tube socket. Black bakelite body is molded directly into punched steel mounting plate. Phosphor bronze switch arm, nickel-plated. Unique design raises switch arm when passing from contact to contact with quick make-and-break action. Arm does not rub across bakelite between contacts to leave a metal deposit which later becomes a current carrying path.

Supplied as an 8-position continuous switch. To make a 7-position stop switch, simply twist one contact at right angles to normal position. Supplied through radio parts jobbers with white numerals, from 1 to 8; or with white impedance designations of 0-2-4-8-16-250-500.

Especially designed for switching voltages or impedances of tapped transformers, but also widely used on all types of radio and electrical apparatus. Its small size and neat appearance makes it adaptable to all low power applications.

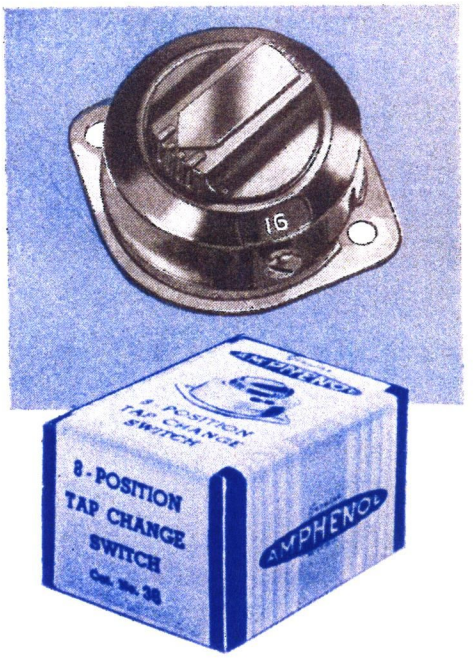
Manufacturers ordering in quantities may specify any markings listed in box below.

TRANSFORMER AND TAP SWITCH MARKINGS

Engraving dies available include the following:

0	2	4	8	16	250	500		
* 0	2	4	8	16	230	250		
‡1	2	3	4	5	6	7	8	
1	2	3	4					
2	4	6	8					
2Ω	4Ω	8Ω	166	250	500 AB			
3	4	6	8	16	125	230	500	
* 50V	65V	80V	95V	115V	130V	145V		
* 85V	100V	115V	130V	145V				
90	100	110	115	120	125	135		
* 90	100	120	200	230	250			
90	110	130	150	230				
90	100	110	120	130				
95	100	105	110	115	120	125	130	
95	110	130	230					
*100V	110V	130V	150V	200V	225V	250V		
110	115	125	200	220	240			
100	105	110	115	120				
*100V	110V	130V	200V	225V	250V			
*105	115	125	135	150	210	230	250	
110	130	150	185	220	260			
110	130	150	220	250				
110	130	230						
110	130	150	230					
110	130	220	250					
110	125	145	200	225	250			
110	125	200	220	250				
110	125	150	220	240				
110	Off	115	Off	120				
115	125	150	220	240				
117	135	220	250					
*160V	180V	200V	220V	240V				
210	220	230	240					
Off	Lo	Med	Hi					

** Vertical reading. ‡ Horizontal or vertical reading.*
All others for horizontal reading only.

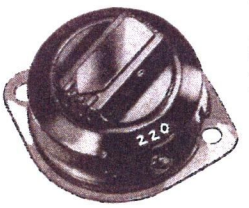


Individually Boxed

TRANSFORMER SWITCH

No. 36.....75c List

Unless otherwise specified supplied with numerals from 1 to 8. Available to manufacturers with any marking as tabulated in box to left.



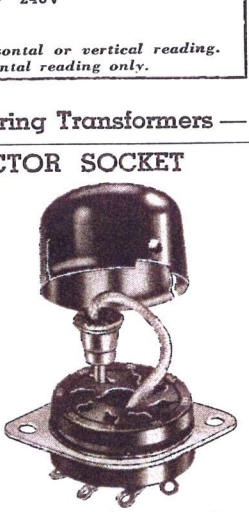
This is the standard tap switch for most export radios having tapped primaries for various line voltages. Also used extensively on special purpose transformers such as impedance matching transformers, set testing, etc. Identical to the above switch, but has internal soldering lugs to conserve space. Transformer leads feed through eight molded holes and are soldered at the top after transformer is assembled. See wiring instructions in border of page.

SNAP-ON STEEL COVER

Black-japanned, drawn steel cover snaps over bakelite base, completely shielding mechanism from dirt—making the switch 100% shock proof. **Complies with Underwriters' specification that taps must be unchangeable without the use of a tool.** Set screw in side of cover, which must be loosened with a screw driver, prevents accidental tap changes. Only designation of contact actually engaged is visible through window in bevel of cover, guarding against incorrect tap settings.

When Ordering Transformers — Specify Amphenol Tap Switches

VOLTAGE SELECTOR SOCKET



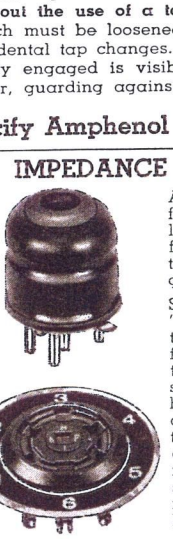
For use in setting the primary voltages on lower priced export sets. Voltage is set by inserting the small single prong plug in the correct socket contact. The steel cover is then snapped on and voltage cannot be changed without removing the cap with a screw driver.

Exact voltage may be engraved on the socket rim. A small partial die charge on the first order only.

Complete assembly consists of an 8-contact socket with molded-in nickel-plated steel mounting plate having 1½" riveting center, a black japanned steel cap, and a compact single prong plug having a 6" flexible lead soldered in place. See diagram in border for illustration of socket assembled to transformer shell.

No. 77-8PF—Complete Assembly. List.....35c

IMPEDANCE MATCHING PLUGS



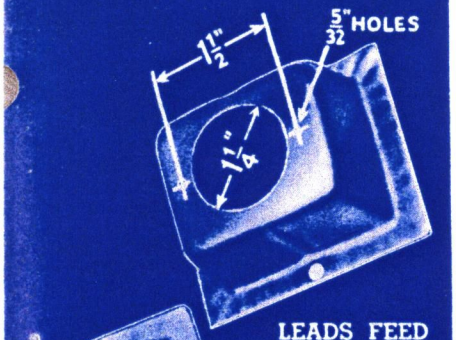
A plug and socket arrangement for quick switching of a common lead to any one of 6 positions; for switching 3 circuits in 2 positions; other combinations will suggest themselves to the user.

Socket is similar to the standard "S" type tube socket. Mounts in the same type hole and is held firmly in place with the #4 retainer ring without the use of screws or rivets. Aluminum dial has numerals from 1 to 6 etched on a black background. Two types of plugs with metal pointers are available: Blank Plug for use as impedance matching switch; or Plug with rubber grommet hole for cable permitting selection of six circuits.

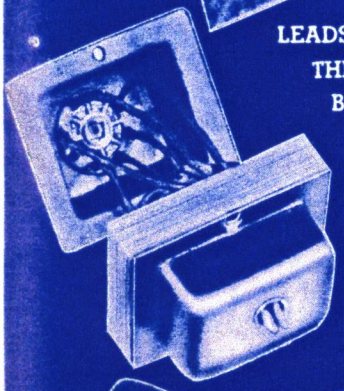
No. IMS6—6-contact Special Socket.....20c List
No. 10-3—Etched Aluminum Dial .....40c List
No. IMP6—6-prong Blank Plug with pointer.....50c List
No. IMP6C—Cable Type Plug with pointer .....50c List

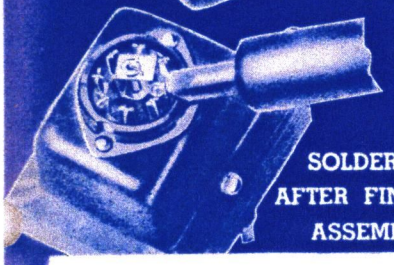
SPEED

MOUNTED & WIRED IN SECONDS



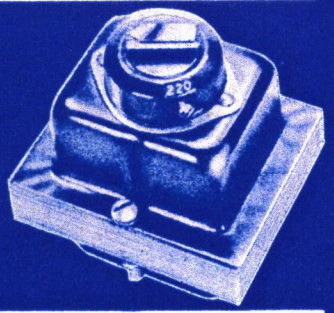
LEADS FEED THROUGH BOTTOM





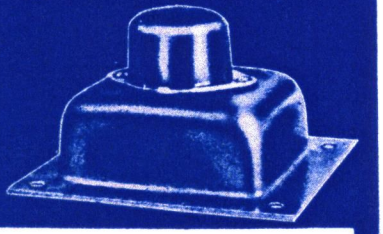
SOLDERED AFTER FINAL ASSEMBLY

Hook wire leads over cadmium-plated lugs and solder from the outside as illustrated. Common return feeds through hollow center stud and is soldered at the top.



Easily and quickly assembled to transformer shells as illustrated above. Rivet in place like a tube socket, feed transformer leads up through the switch holes, solder from the top after final assembly. For all special purpose transformers.

VOLTAGE SELECTOR SOCKET



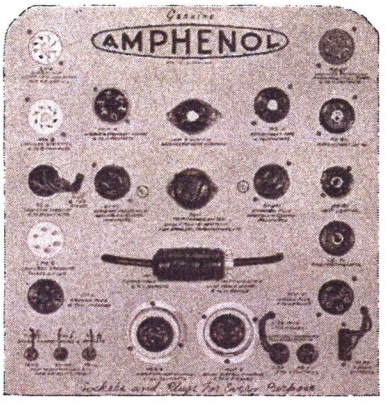
Illustrated is a Voltage Selector Socket mounted on the shell of an universal power transformer. A compact and safe assembly. Before voltage tap can be changed a screw driver must be used to remove cap.

AMPHENOL DISPLAY CABINET

An attractive piece of salesroom furniture, built of 18-gauge steel, with an olive green crackle finish, to harmonize with salesroom. Requires only four and one-half square feet of floor space.
Five drawers each have twenty-five compartments for AMPHENOL parts, and four shelves hold sixty-four standard AMPHENOL packages. The drawers have movable dividers and metal holders over each compartment for stock numbers and prices. A removable top has 15 glass partitioned compartments for display of parts. A complete line of Amphenol products can be stocked, with the exception of larger items such as cable, keeping the merchandise at the point of sale.

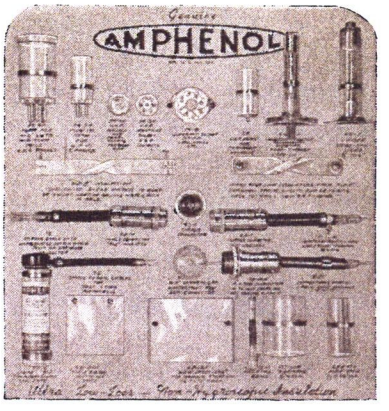
To assist engineers, purchasing agents and authorized distributors, Amphenol has instituted a number of original services which are only partially illustrated and outlined on these pages. Naturally there must be restricted distribution of these displays to guard against promiscuous distribution. Consult your Amphenol salesman to learn how these displays are obtained.

SOCKETS



The display above illustrates one each of the most popular Amphenol sockets for radio tubes and cable plugs. This display not only shows the many features of Amphenol sockets, but also shows the purchaser exactly how they should be mounted. Background is steel, finished in baked-on blue-gray enamel. Size 13x13½". Has easel type bracket.

INSULATION



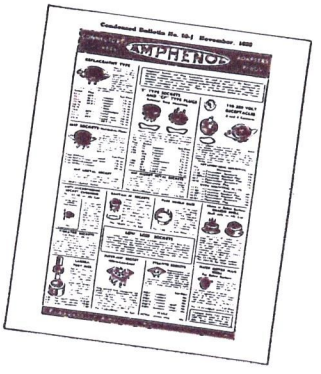
On this display are the products molded from the world's finest insulating material, Amphenol "912-A", pure polystyrene. This ultra-low-loss insulation has found a prominent place in a modern world where high frequencies guide aircraft, cure diseases, and permit many types of visual and oral communications. Sockets, coil forms and co-axial cables are featured.

ENGINEERING DATA AND INSTRUCTIONS

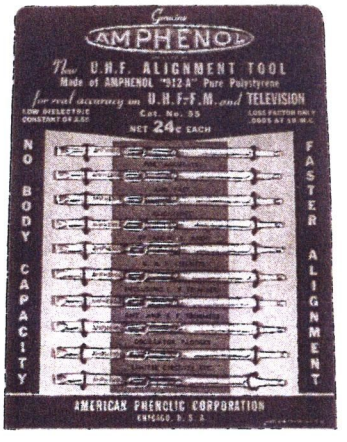
Amphenol has always supplied elaborate and fully illustrated instruction sheets with parts which required special information for use or assembly. The Amphenol News is mailed to all engineers and purchasing agents in the radio and allied industries, describing latest Amphenol developments and suggestions for the advancement of the electronic arts. Anyone who is actively engaged in radio may receive the Amphenol News regularly without charge or obligation.

CATALOG SERVICE FOR JOBBERS

Perhaps no other radio line of parts is so clearly displayed in the radio jobbers' catalogs as the Amphenol line. This is due in part to the catalog service rendered to authorized Amphenol distributors. Not only the jobber is kept in mind, but also the ultimate user, who should be able to find the correct part he requires without trouble. Jobbers who letterpress their catalog should send the Amphenol advertising department a copy of their previous catalog and a rough layout of the space allotted. A finished layout, copy and electros will be returned immediately. United Catalog Publisher pages are always kept up to date. For the jobber who planographs, suitable sheets are available.



ALIGNMENT TOOL SALES CARD



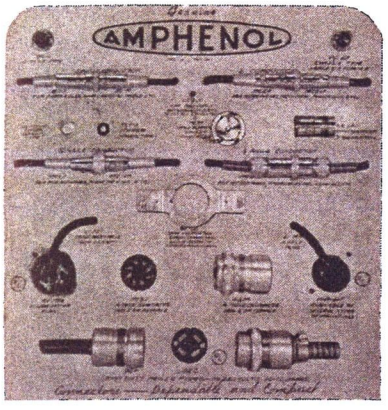
Illustrated is one of the many sales promotional helps that Amphenol offers its distributors. It has been proven that the alignment tools placed upon the sales counter where the customer can see and inspect the tools has increased their sale in every instance more than 300%.

Most Amphenol products have the same sales appeal when they are displayed. Always attractive in appearance and many of them packed in attractive blue and white boxes, indicative of the quality within.

DISPLAYS

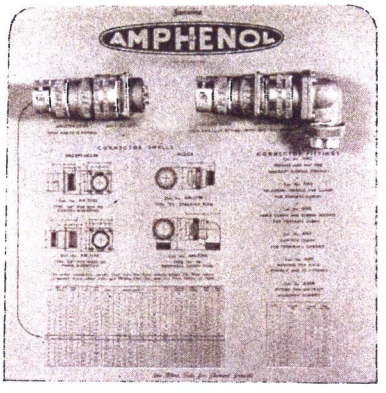
Jobbers and distributors of Amphenol products will not be penalized in these times of heavy business. The cooperation through catalogs, displays, exhibits and advertising assistance will be maintained on an increased basis for this year. The Advertising Department has been expanded to disseminate sales and technical information to a greater extent than previously because ever increasing new personnel of our jobbers and their customers require all the assistance available.

CONNECTORS

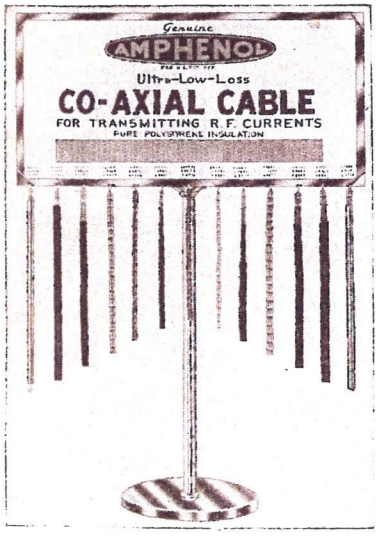


This display shows the most popular of the Amphenol extensive line of cable and cord connectors. Chassis and panel connectors are actually mounted so that the user can visualize them on his own apparatus. Cables are connected properly so that the engineer or serviceman can follow the wiring scheme for the connector selected. See display to left for size and color.

AN CONNECTORS

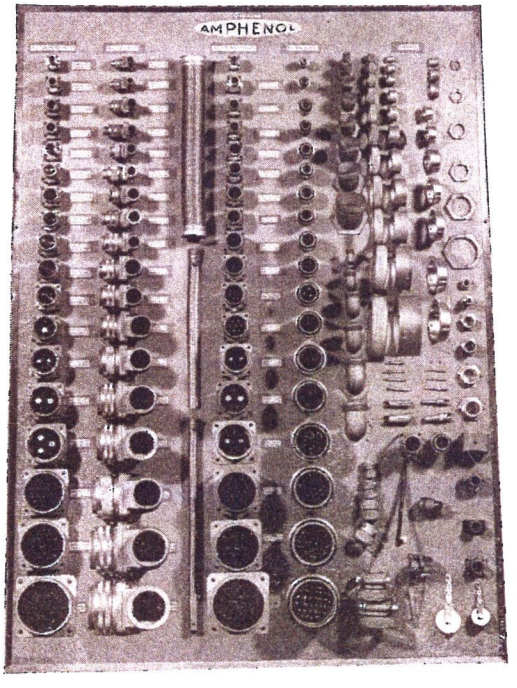


Displays have illustrations and tables which assist both the jobber salesman in selecting the proper "AN" assembly for a given application. All jobbers should have this display upon their counters because of the extensiveness of the "AN" line. The thousands of these connectors already in the field will undoubtedly make them popular among experimenters and amateurs.



CO-AXIAL CABLE

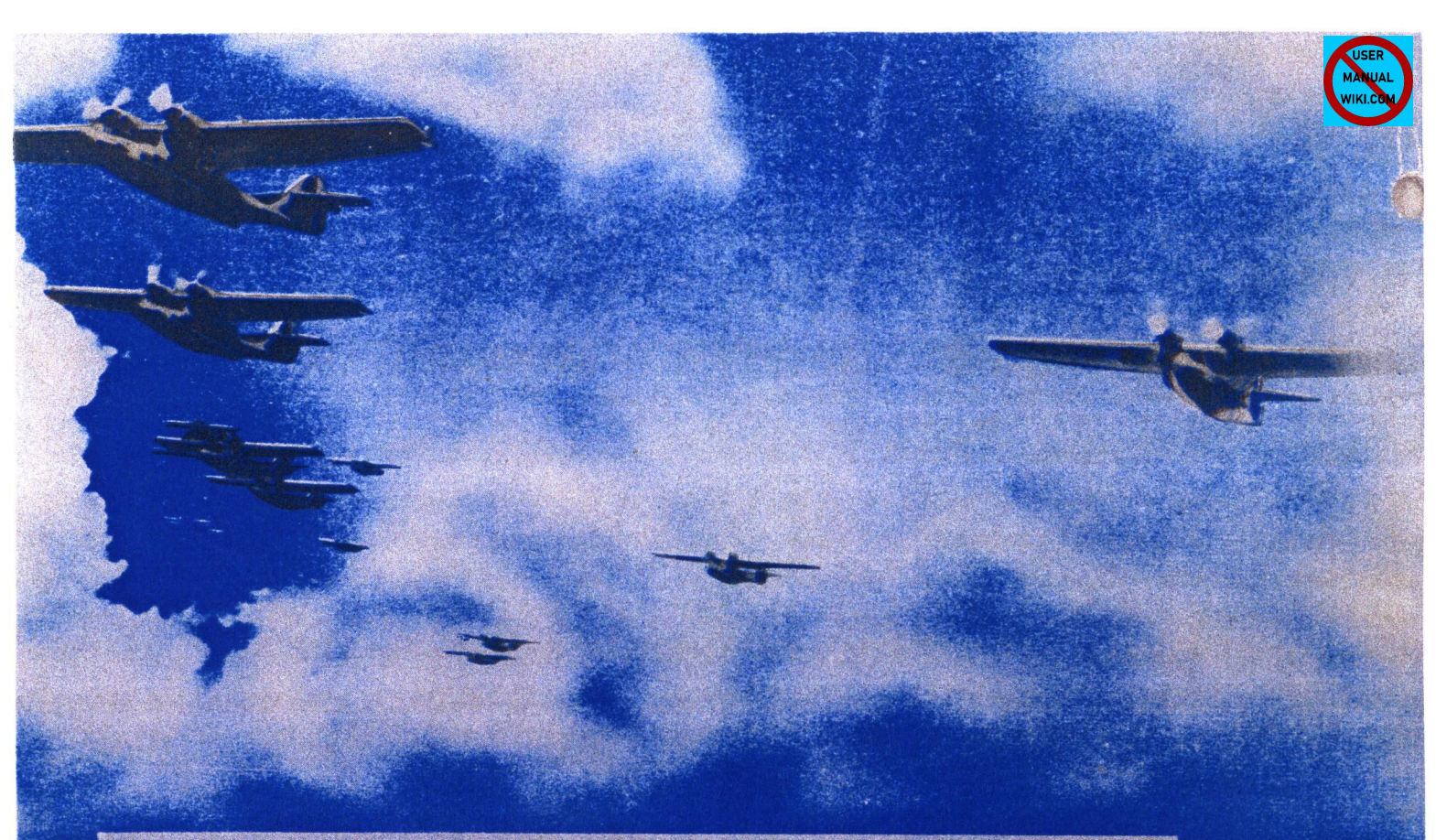
A new unique display which has samples of the most widely used co-axial cables and insulating beads. Placed on the sales counter it will attract attention and prompt questions which will eventually lead to sales. The customer can handle the cables and easily make his selection.



MANUFACTURERS "AN" DISPLAY

A costly display which is recommended only for the engineering departments of very large users of "AN" connectors. Permits the designing engineer to rapidly select the correct combination of parts for his requirements. Allows visualizing the completed assembly to assist in locating it on the instrument under construction.

INDEX BY PRODUCTS



In This Emergency . . .

First — This is a simple dedication of all our resources to the National Defense Program of our country. Realizing the vital necessity of the time element in this great task, we are operating most departments of our plant twenty-four hours a day.

Second — Additional personnel and the building of a large new plant, which has been carefully planned for maximum production efficiency, with greatly increased manufacturing area, enables us not only to carry the heavy load of defense orders, but provides facilities for handling the ever-increasing requirements of our civilian customers as well.

Third — We offer to all manufacturers every assistance within our scope, knowing that in the unity of all her people lies the greatness that is America.

AMERICAN PHENOLIC CORPORATION