



# Radio Installation and Service Manual



PHILADELPHIA STORAGE BATTERY CO.

Ontario and C Streets

PHILADELPHIA, PA., U. S. A.



## Philco Socket Power Information

Philco Socket Powers need no introduction to the dealer. They have established themselves on performance and are recognized as the most successful, dependable and economical means of operating any radio set from the light socket.

### Design

Socket Powers for the season 1926-1927 have not been changed in principle but have been improved in many respects. The current capacity, both A and B, has been increased to take care of the increases in tubes and the growing use of audio power tubes in the new receiving sets. The B voltage available for audio power tubes has been increased while at the same time the transformer voltage has been kept relatively low. This is made possible by the use of low-resistance electrolytic rectifiers (Philcotrons) in place of the ordinary high-resistance tube rectifiers. As a result, the filter condensers are not at any time subjected to excessive voltage strain. The latter has been the cause of many costly breakdowns in certain so-called B eliminators.

There are other important advantages resulting from the use of Philcotron electrolytic rectifiers instead of high-resistance tube rectifiers in a B Socket Power Unit. With a tube rectifier, unless the complications and cost of a special regulating tube are resorted to, it is necessary to design for a very high output voltage at, say, 10 milliamperes, in order to have sufficient voltage for a big set drawing 30 to 40 milliamperes. Yet there are many sets with 4 to 6 tubes which do not draw more than 10 to 15 milliamperes. At such low currents, the B voltage with a tube rectifier outfit is likely to rise so high as to distort the reproduction and paralyze or greatly shorten the life of the tubes in the radio set. With a Philcotron electrolytic rectifier as used in the Philco B Socket Power no costly regulator tube is needed. The output voltage holds up under a heavy current draw and cannot go too high at a light current draw. The radio tubes are never endangered and reproduction of the highest quality is had regardless of the number of tubes or kind of set.

The design, arrangement and wiring of the parts inside the case have been improved and simplified. An improved type of B voltage adjuster, mounted inside the case, permits the adjustment and setting once for all of the intermediate amplifier plate voltage at the best point for each radio set and makes the B Socket Power (like the A) universally applicable to sets of all kinds and sizes.

All terminals are inside the case and all wires enter from the back through suitable insulating bushings, leaving the attractive front of the Socket Power entirely unspoiled by unsightly wires. The terminals are designed to take and hold securely either the standard fork terminal or a bare wire.

All Philco Socket Powers are enclosed in strong metal cases having a handsome brown crystallized finish.

The AB types combine A and B power in one case. The individual A and B types are designed to be used either separately or together. When used together—the B plugged into the A and the A into the house socket—they operate like an AB unit. The switch on the radio set is left turned on at all times and the set as well as the A and B power are controlled entirely by the single master switch on the A or AB Socket Power. The attachment plug must be kept in a live house socket at all times, as house current is used by the B Socket Power while the set is in use and by the A Socket Power to trickle charge the "A" battery while the set is off.

The importance, in a battery that is trickle charged, of thick plates, thick separators, spray-proof construction and a built-in charge indicator cannot be over-emphasized. These features are found only in the type UD-44 and type UD-86 batteries originated by Philco more

than three years ago and used in Philco Socket Powers. Thick plates and separators give long life and freedom from internal short-circuiting. Spray-proof construction is necessary for the protection of adjacent parts of the radio set or Socket Power against corrosion.

Without the charge indicator, the battery may run down without warning, perhaps in the midst of a concert, and then several days or even weeks will be required to bring it up again with a trickle charger. For such emergencies, some manufacturers provide a high or quick charging rate that may be used by throwing a switch. For this high charging rate it is necessary to use a large and inefficient charger which may generate so much heat, even at the low trickle charge rates, that the battery will be overheated and injured or the radio console in which it is installed will be seriously harmed. With such a unit there is also great danger that the user, unintentionally or through lack of understanding, may use the high rate continuously and ruin the battery in a very short time.

The built-in Philco Charge Indicator makes a quick charging rate unnecessary. The highest charge rate provided in Philco A and AB Socket Powers cannot injure the battery or generate harmful heat; yet it will keep up the battery even when used many hours a day by the new and proud owner of a big set. The Charge Indicator gives warning if for any reason the battery is not keeping charged and guards against power failure during a concert or at any time.

#### Working Principle of Socket Power A

Philco Socket Power A is a combination of a highly efficient transformer and rectifier with a battery especially designed for trickle charge use. The arrangement is such that the battery is recharged automatically when the radio set is out of use. Figure 1 shows the hook-up.

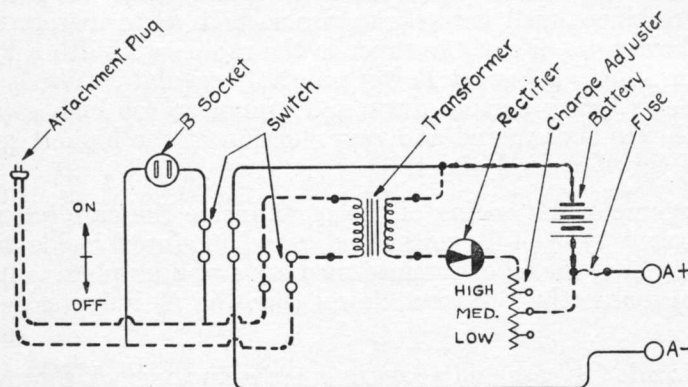


Figure 1

The charging circuit (switch OFF) is shown by dotted lines and the operating circuit (switch ON) by solid lines. When the switch is thrown to ON, the battery is connected to the filament circuit of the set while the house current is disconnected from the Trickle Charger and connected to the socket provided for connection to Socket Power B. When the switch is thrown to OFF, the battery current is switched off the filaments while the house current is disconnected from the B socket and connected to the trickle charger which automatically recharges the battery.

Since the house current is entirely disconnected from the battery and charger during the periods of use of the radio set, all possible complications by which the alternating current in the charger might cause a hum to be heard are avoided. By trickle charging during the relatively long off periods, the size of the charger and the heat generated by it are kept to a minimum. The low charging rates cannot harm the battery even though continued for long periods after the battery is fully charged. In fact, the battery is charged in the best possible manner, without gassing or heating.



**Working Principle of Socket Power B**

Socket Power B consists essentially of a transformer, a full-wave electrolytic rectifier and a smoothing filter, with suitable resistance units for adjusting the output voltage to the needs of the different tubes in the set and terminals for making the connections. Figure 2 shows the hook-up.

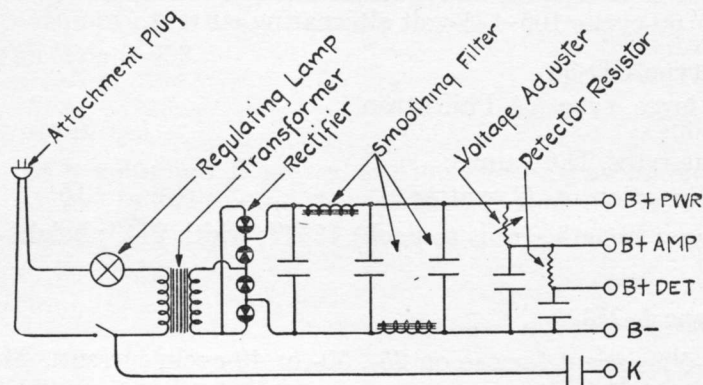


Figure 2

A lamp socket is provided in the transformer circuit to take a standard 115-volt Mazda lamp. The prime function of this lamp is to regulate the current and protect the rectifier cells and transformer against overload in starting up after a period of idleness as well as when the rectifier cells ultimately cease to rectify. An ordinary 50-watt lamp should be used in the socket for the great majority of sets. However, by using a smaller or larger lamp the output voltage of the Socket Power may be decreased or increased to compensate for extreme conditions of line voltage or to meet the requirements of exceptional sets which draw a very high or very low plate current. See the Instructions in this Manual for further information on the regulating lamp.

A general idea of the working principle of Socket Power B may be had from Figure 3. The ordinary current in the house wires is alternating current, that is, current which flows in surges, first in one direction then in the other. Alternating current is usually represented by a wave form such as that shown at the left end of Figure 3. The horizontal line represents zero voltage and the waves above and below this line represent the electric waves or surges back and forth. The transformer steps up the voltage or electric pressure slightly but does not change the character of the current. It is still alternating current when it enters the rectifier. In the full-wave rectifier, however, the waves below the line are turned over so that they fill the gaps between the waves above the line, which changes the character of the current. It is now direct current, that is, current which continues to flow in one direction. It is not usable direct current however, because there is a fluctuation or ripple in it which would cause a bad hum in a radio set. The filter smooths out this ripple, making the current equivalent to battery current for radio use.

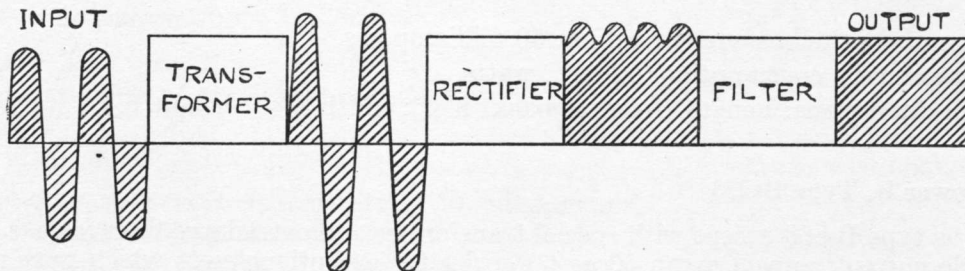


Figure 3



## Philco Socket Power Specifications

### Socket Power A, Type A-603

Supplies A power at 6 volts to light the filaments of one to eight 5-volt storage battery tubes, including a power tube, such as type UX-171 or UX-112.

For use on 50- or 60-cycle, 105-125-volt alternating current.

Battery: Philco type UD-86

Rectifier: Extra large, type AA Philcotron

	LOW	MEDIUM	HIGH
Trickle charge rates, D.C. amps: . . . . .	.2	.4	.8
Current consumption, A. C. watts: . . . . .	15	25	45

Overall dimensions: Length (front to back) 12 $\frac{7}{8}$ " ; width 9 $\frac{3}{8}$ " ; height 7 $\frac{7}{8}$ " .

### Socket Power A, Type A-253

Same as type A-603 except for use on 25-, 30- or 40-cycle current. May be used on 50- or 60-cycle current if desired.

### Socket Power A, Type DA-6

Similar to type A-603 for use on 105-125-volt *direct current*. Polarity indicator shows when plugged into socket the right way. Trickle charge rate is adjusted by means of a 115-volt Mazda lamp.

	LOW	MEDIUM	HIGH
115-volt lamp size, watts: . . . . .	25	40	75
Trickle charge rates, D.C. amps. . . . .	.22	.35	.63
Current consumption, D.C. watts . . . . .	25	40	72

Dimensions same as type A-603.

### Socket Power B, Type B-603

Supplies B power for sets having one to ten tubes—any standard type—including a power tube such as type UX-171, UX-112 or UX-120.

For use on 50- or 60-cycle, 105-125-volt alternating current.

Full-wave Philco electrolytic rectifier.

Average voltage at amplifier terminals:

B+ PWR 135-150 volts, depending on load.

B+ AMP 50-100 volts, adjustable.

Maximum continuous current rating: 50 milliamperes.

Average current consumption: 12 A.C. watts.

Overall dimensions: Length (front to back) 8 $\frac{5}{8}$ " ; width 8 $\frac{1}{8}$ " ; height 7 $\frac{7}{8}$ " .

### Socket Power B, Type B-253

Same as type B-603 except with special transformer and extra large filter for use on 25-, 30- or 40-cycle current as well as on 50 or 60 cycles for exceptional sets which may require the 25-cycle super-filter.



**Socket Power B, Type DB**

Similar to type B-603 for use on 105-125-volt *direct current*.

Supplies B power at detector and two amplifier voltages for sets having one to ten tubes of any standard type.

Maximum continuous current rating: 50 milliamperes.

Average current consumption: 3 D.C. watts.

Dimensions same as type B-603.

**Socket Power AB, Type AB-663**

Supplies A power at 6 volts and B power at detector and two amplifier voltages for receiving sets having from one to eight 5-volt storage battery tubes including a power tube such as type UX-171 or UX-112. For use on 50- or 60-cycle, 105-125-volt alternating current.

A battery: Philco type UD-86

A rectifier: Extra large, type AA Philcotron.

	LOW	MEDIUM	HIGH
A trickle charge rates, D.C. amps. . . . .	.2	.4	.8
A current consumption, A.C. watts. . . . .	15	25	45

B rectifier: Full-wave Philco electrolytic

Average B voltage at amplifier terminals:

B+ PWR 135-150 volts, depending on load.

B+ AMP 50-100 volts, adjustable.

Maximum continuous B current rating: 50 milliamperes.

Average B current consumption: 12 A.C. watts.

Overall dimensions: Length (front to back) 12<sup>3</sup>/<sub>4</sub>" ; width 13<sup>5</sup>/<sub>8</sub>" ; height 8<sup>1</sup>/<sub>2</sub>".

**Socket Power AB, Type AB-623**

Same as type AB-663 except with special transformer and extra large B current filter for use on 25-, 30- or 40-cycle current as well as on 50 or 60 cycles for exceptional sets which may require the 25-cycle super-filter.

**Socket Power AB, Type AB-463**

Supplies A power at 4 volts and B power at detector and two amplifier voltages for sets having from one to ten 3-volt dry cell tubes, including Radiolas. For use on 50- or 60-cycle, 105-125-volt alternating current.

A battery: Philco Type UD-44

A rectifier: Large, type A Philcotron

	LOW	MEDIUM	HIGH
A trickle charge rates, D.C. amps: . . . . .	.075	.15	.30
A current consumption, A.C. watts: . . . . .	9	12	18

B rectifier: Full-wave Philco electrolytic

Average B voltage at amplifier terminals

B+ PWR 135 volts.

B+ AMP 50-90 volts, adjustable.

Maximum continuous B current rating: 50 milliamperes.

Average B current consumption: 10 A.C. watts.

Overall dimensions: Length (front to back) 12<sup>3</sup>/<sub>4</sub>" ; width 13<sup>5</sup>/<sub>8</sub>" ; height 8<sup>1</sup>/<sub>2</sub>".



**Socket Power AB, Type AB-423**

Same as type AB-463 except with special transformer and extra large B current filter for use on 25-, 30- or 40-cycle current as well as on 50 or 60 cycles for exceptional sets which may require the 25-cycle super-filter.

**Socket Power AB, Type DAB-4**

Similar to type AB-463 for use on 105-125-volt *direct current*. Supplies A power at 4 volts and B power at detector and two amplifier voltages for sets having from one to ten 3-volt dry cell tubes, including Radiolas. Polarity indicator shows when plugged into socket the right way. Trickle charge rate is adjusted by means of a 115-volt Mazda lamp.

	LOW	MEDIUM	HIGH
115-volt lamp size, watts: . . . . .	10	15	25
A trickle charge rates, D.C. amps. . . . .	.085	.125	.22
A current consumption, A. C. watts . . . . .	10	15	25

Maximum continuous B current rating: 50 milliamperes  
 Average B current consumption: 10 A.C. watts.  
 Overall dimensions: Length (front to back) 12 $\frac{7}{8}$ " ; width 9 $\frac{3}{8}$ " ; height 7 $\frac{7}{8}$ " .

**Trickle Charger, Type TC-60**

For charging 6-volt and 4-volt batteries efficiently from 50- or 60-cycle, 105-125-volt alternating current. Has a socket for connection to B Socket Power and built-in switch for controlling operation of radio set and A and B power.

Three charging rates for 6-volt batteries and two for 4-volt batteries.

	LOW	MEDIUM	HIGH
6 V. trickle charge rates, D. C. amps. . . . .	.16	.33	.60
4 V. trickle charge rates, D. C. amps. . . . .	.18	.36	—
Current consumption, A. C. Watts. . . . .	12	20	32

Overall dimensions: 9" long, 4 $\frac{3}{4}$ " wide, 8 $\frac{3}{4}$ " high.

**Trickle Charger, Type TC-25**

Same as type TC-60 for use on 25-, 30- and 40-cycle current.  
 May be used on 50 or 60 cycles if desired.

**Special Trickle Charge A Batteries**

Spray-proof construction with unit pressed glass case. Designed for use with Philco or any other trickle charger. Philco visible built-in charge indicator has two balls which drop at 25 per cent discharge and 75 per cent discharge respectively and rise on charge. Large solution space provides operation over long periods without the addition of water. Double thick plates and wide separation ensure longest life.

TYPE	VOLTS	AMP. HRS.	OVERALL DIMENSIONS		
			LENGTH	WIDTH	HEIGHT
UD-44 . . . . .	4	15	7 $\frac{1}{16}$ "	2 $\frac{3}{16}$ "	6 $\frac{3}{4}$ "
UD-86 . . . . .	6	30	10 $\frac{3}{16}$ "	4 $\frac{5}{8}$ "	6 $\frac{7}{8}$ "



## Philco Socket Power Instructions

### Key to Radio Sets and Connection Diagrams

	DIAGRAM NO.		DIAGRAM NO.
A-C Dayton (All Models) . . . . .	1 or 2	Freed-Eisemann (FE 15, FE 18, NR 5, NR 6, NR 12, NR 20) . . . . .	1 or 2
Adler Royal (All Models) . . . . .	1 or 2	Freed-Eisemann (NR 7) . . . . .	5 or 6
Amrad (All Models) . . . . .	1 or 2	Freshman Masterpiece (All Models) . . . . .	1 or 2
Astrola (All Models) . . . . .	1 or 2	Garod (All Models) . . . . .	5 or 6
Atwater Kent (Models 9, 10 and 12) . . . . .	1 or 2	Gilfillan (GN 1, GN 2, GN 4 and GN 5) . . . . .	1 or 2
Atwater Kent (Model 19) . . . . .	1 or 2	Grebe (All Models) . . . . .	1 or 2
Atwater Kent (Model 20) . . . . .	1 or 2	Grimes (Inverse Duplex) . . . . .	1 or 2
Atwater Kent (Model 20—Compact, with 5-volt tubes) . . . . .	3 or 4	Grimes (Baby Grand Duplex, with power tube) . . . . .	5 or 6
Atwater Kent (Model 20—Compact, with 3-volt tubes) . . . . .	1 or 2	Grimes (Baby Grand Duplex, without power tube). Connect both the +90 V and +135 V set terminals to the B+ AMP terminal of Socket Power . . . . .	1 or 2
Atwater Kent (Models 30, 32 and 35 with power tube) . . . . .	5 or 6	Howard (5-tube) . . . . .	1 or 2
Atwater Kent (Models 30, 32 and 35 with- out power tube) . . . . .	3 or 4	Howard (6- and 7-tube). These models do not have a detector terminal. Connect as shown in Diagram 1 or 2 but use only the B- and B+ AMP terminals of Socket Power. These models require the use of a special fixed resistor in the clips provided for the purpose on the set. This fixed resistor is connected across the 1 Mf. condenser in the radio set. See Howard Co.'s instructions. . . . .	1 or 2
Bosch (Amborola) . . . . .	5 or 6	Jones, Jos. (All Models) . . . . .	1 or 2
Brunswick-Radiola (All Models) . . . . .	14	Kennedy (Model 20)—Connect as shown in Diagram 1 or 2 but change the stand- ard detector resistor of Socket Power to a 10,000-ohm Bradleyunit fixed re- sistor. . . . .	1 or 2
Claratone (All Models) . . . . .	1 or 2	Kennedy (All Other Models) . . . . .	1 or 2
Colonial (All Models) . . . . .	1 or 2	King (25) . . . . .	1 or 2
Crosley (All Models) . . . . .	1 or 2	King (30)—This model does not have a detector terminal. Connect as shown in Diagram 1 or 2 but use only the B- and B+ AMP terminals of Socket Power . . . . .	1 or 2
Dayfan (All Models) . . . . .	1 or 2	Kodel (All Models) . . . . .	1 or 2
De Forest (All Models) . . . . .	1 or 2	Kolster (6 A, 6 B, 6 C, 8 B and 8 C) . . . . .	3 or 4
Eagle (Models D, F, H, K) . . . . .	5 or 6	Magnavox (All Models) . . . . .	1 or 2
Eagle (All other Models) . . . . .	1 or 2	Magnet (ZR 50, ZR 60, ZR 66) . . . . .	1 or 2
Erla (Circloid 5)—Connect as shown in Diagram 1 or 2 but change the stand- ard detector resistor of Socket Power to a 10,000-ohm Bradleyunit fixed re- sistor . . . . .	1 or 2	Murad . . . . .	3 or 4
Fada (170-A, 192-A, and 195-A, with power tube) . . . . .	5 or 6	Murdock (A, B, C and D) . . . . .	1 or 2
Fada (170-A, 192-A and 195-A, without power tube) Connect both the +90 V and +135 V set terminals to the B+ AMP terminal of Socket Power. . . . .	1 or 2	Murdock (Model E)—This model does not have a detector terminal. Connect as shown in Diagram 1 or 2, but use only the B- and B+ AMP terminals of Socket Power . . . . .	1 or 2
Fada (All other Models) . . . . .	1 or 2		
Federal (DX 58, 59 and 140) . . . . .	1 or 2		
Federal (B and C) . . . . .	5 or 6		
Ferguson (Eight) Connect a wire across the 45 V+ and - set terminals at the extreme end, next to the antenna ter- minals. Connect Socket Power to the three set terminals next to the C battery terminals as follows: -DET (white) to B-; +DET (green) to B+ DET; +45 (red) to B+ AMP . . . . .	1 or 2		

## Philco Socket Power Instructions

### Key to Radio Sets and Connection Diagrams

(Continued)

	DIAGRAM NO.		DIAGRAM NO.
Music Master—Ware (7-tube)—Connect as shown in Diagram 5 or 6 but change the standard detector resistor of Socket Power to a 10,000-ohm Bradleyunit fixed resistor . . . . .	5 or 6	Stromberg-Carlson (1-A and 1-B) . . . . .	1 or 2
Music Master (All other Models) . . . . .	1 or 2	Stromberg-Carlson (601 and 602) . . . . .	5 or 6
Neutrowound (All Models) . . . . .	3 or 4	Supertone—Connect as shown in Diagram 1 or 2, but change the standard detector resistor of Socket Power to a 10,000-ohm Bradleyunit fixed resistor . . . . .	1 or 2
Operadio (All Models) . . . . .	1 or 2	Thermodyne (TF 5 and TF 6) . . . . .	1 or 2
Pfanstiehl (7, 8, 8 C, 10, 10 C and 10 S) . . . . .	1 or 2	Thompson (All Models) . . . . .	5 or 6
Priess (Straight 8) . . . . .	5 or 6	Tone-A-Dyne (All Models) . . . . .	1 or 2
Radiola 28 . . . . .	7	Victrola-Radiolas—Take Special Philco Units. See Philco Victrola Dealer Manual . . . . .	
Radiola 25 . . . . .	8	Ware . . . . .	3 or 4
Radiola 20 . . . . .	9	Workrite (All Models) . . . . .	1 or 2
Radiola 26 . . . . .	10	Zenith (3 R and 4 R)—Connect as shown in Diagram 1 or 2. Also connect brown lead marked either + 1½ V or + 2 V to A- terminal of Socket Power . . . . .	1 or 2
Radiola Super-Heterodyne (Semi-portable) . . . . .	11	Zenith (Super)—All connections are made in the left hand battery compartment, looking at the set from the front. Connect as shown in Diagram 1 or 2 using the set leads marked B-, B+ 22½ and B+ 90. Tape the end of the B+ 45 lead as it is not used. Tape all connections, and all wires in the right-hand compartment . . . . .	1 or 2
Radiola Super VIII . . . . .	12	Zenith (DeLuxe)—Connect as shown in Diagram 5 or 6, connecting the set lead marked B AMP to the B+ PWR post of the Socket Power. The B+ AMP post of the Socket Power is not used . . . . .	5 or 6
Radiola III-A (Using 1 UX-199 and 3 UX-120 tubes) . . . . .	13		
Radiotone (All Models) . . . . .	1 or 2		
Ramway (All Models) . . . . .	1 or 2		
Silvertone . . . . .	1 or 2		
Sleeper (All Models) . . . . .	1 or 2		
Sonora (C)—Connect B- and B+ AMP leads as shown in Diagram 1 or 2. Connect detector terminal of set to A+ terminal of the A Socket Power or A battery (See Sonora Instructions) . . . . .	1 or 2		
Splitdorf (500) . . . . .	5 or 6		
Stewart-Warner (300, 305, 310, 315, 320 and 325) . . . . .	1 or 2		

### Kit Sets

Many "kit sets" have more than one tube operating at detector voltage. For sets of this kind remove the standard detector resistor from the Socket Power and replace it with a 10,000-ohm Bradleyunit fixed resistor. Some of these sets are listed below:

- Remler-Best Super
- World's Record Super 9
- Victoreen
- Silver Marshall
- Microdyne (Apex)
- Haynes Griffin Super-Het.
- General Radio Super-Het.
- Ultradyn



### Important Note Regarding C Batteries

The Socket Power does not eliminate the C battery. Connect C batteries according to the radio set manufacturer's instructions.

The following table gives suitable C battery voltages for power tubes when using a Socket Power:

SOCKET POWER TYPE	UX-120 CX-220	UX-112 CX-112	UX-171 CX-371
B-603, B-253, AB-663, AB-253 . . . . .	—————	7.5 to 9	25½ to 31½
AB-463, AB-423, AB-4631, AB-4231, B-603, B-253	22½	—————	—————
DB . . . . .	19½ to 21	6 to 7½	19½ to 22½
DAB-4 . . . . .	19½ to 21	—————	—————

Usually sets of five tubes or less will require the higher C voltage, and sets of more than five tubes will require a lower C voltage.

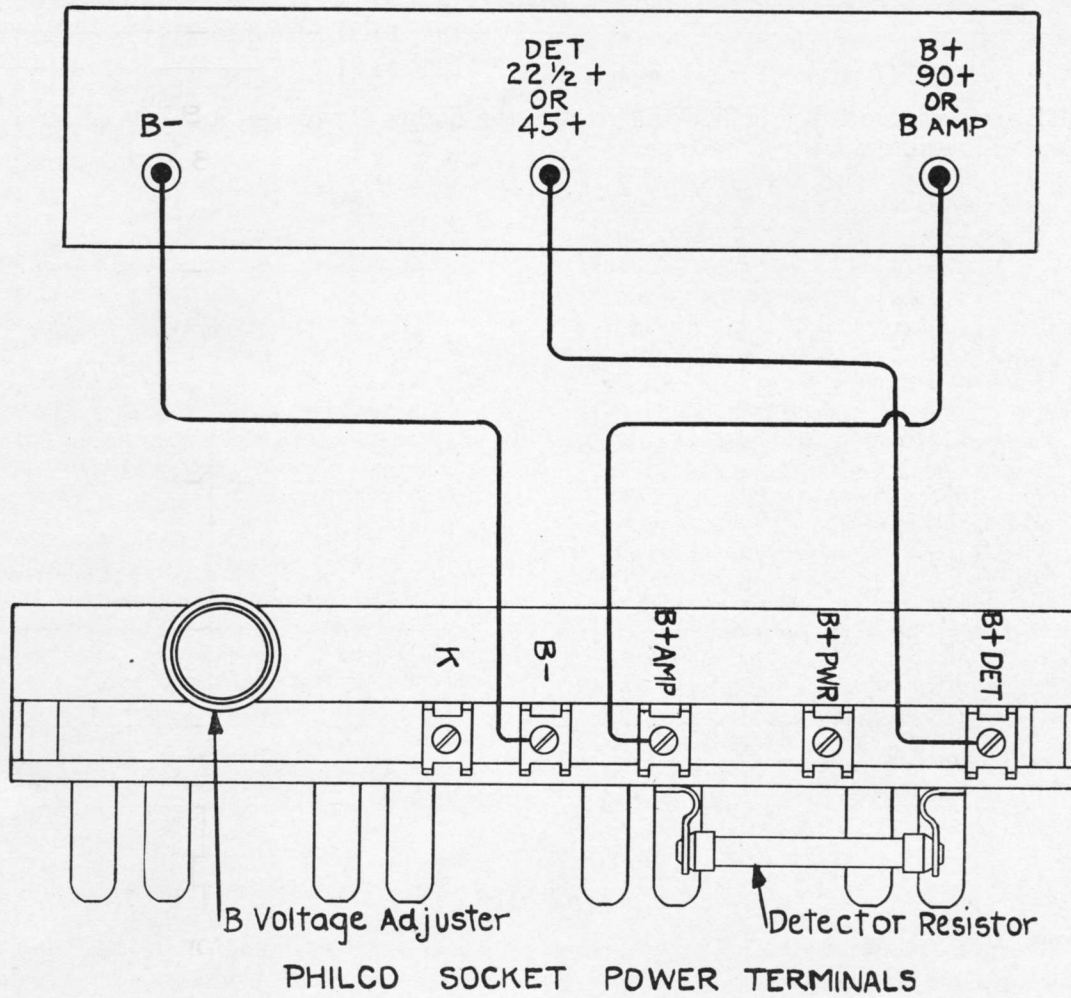
### Philco Socket Power Instructions

CONNECTION DIAGRAM No. 1

For Socket Powers

B-603, B-253, DB

RADIO SET TERMINALS





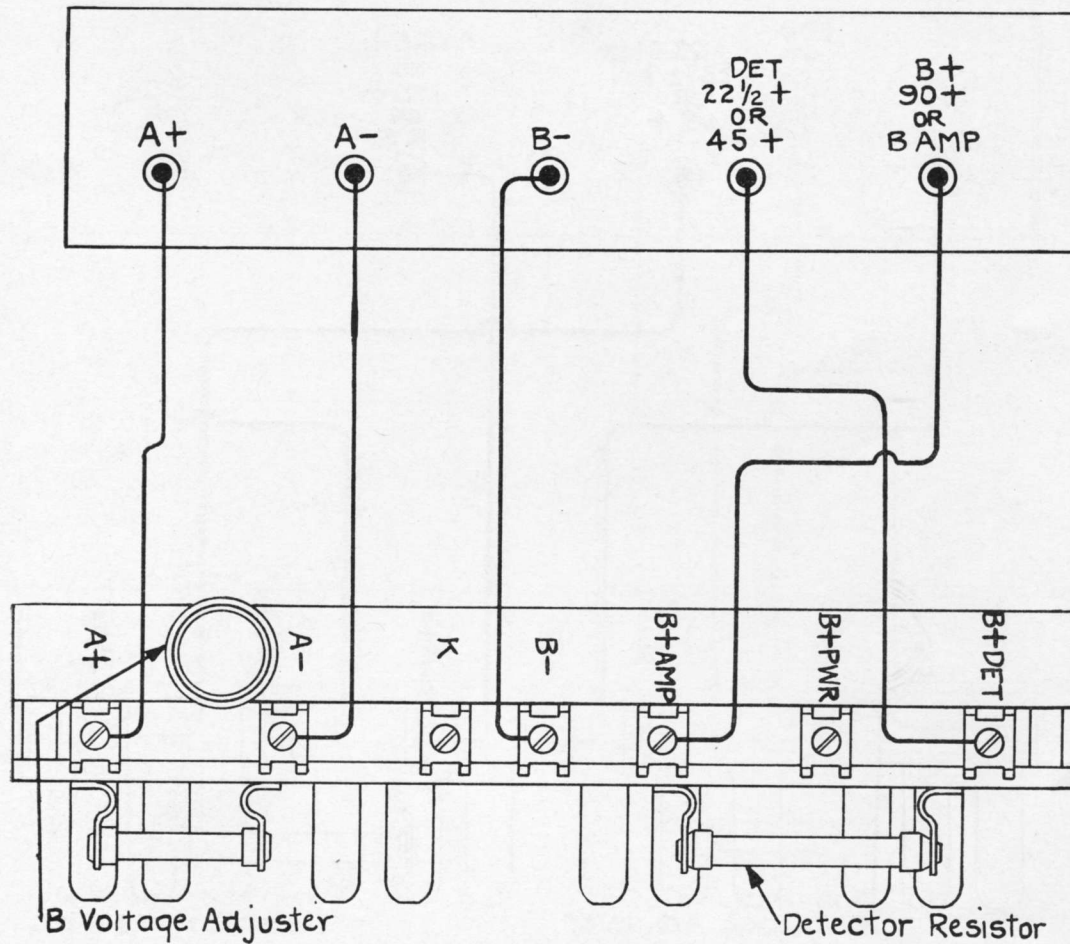
### Philco Socket Power Instructions

CONNECTION DIAGRAM No. 2

For Socket Powers

AB-463, AB-423, AB-663, AB-623, DAB-4

#### RADIO SET TERMINALS



#### PHILCO SOCKET POWER TERMINALS

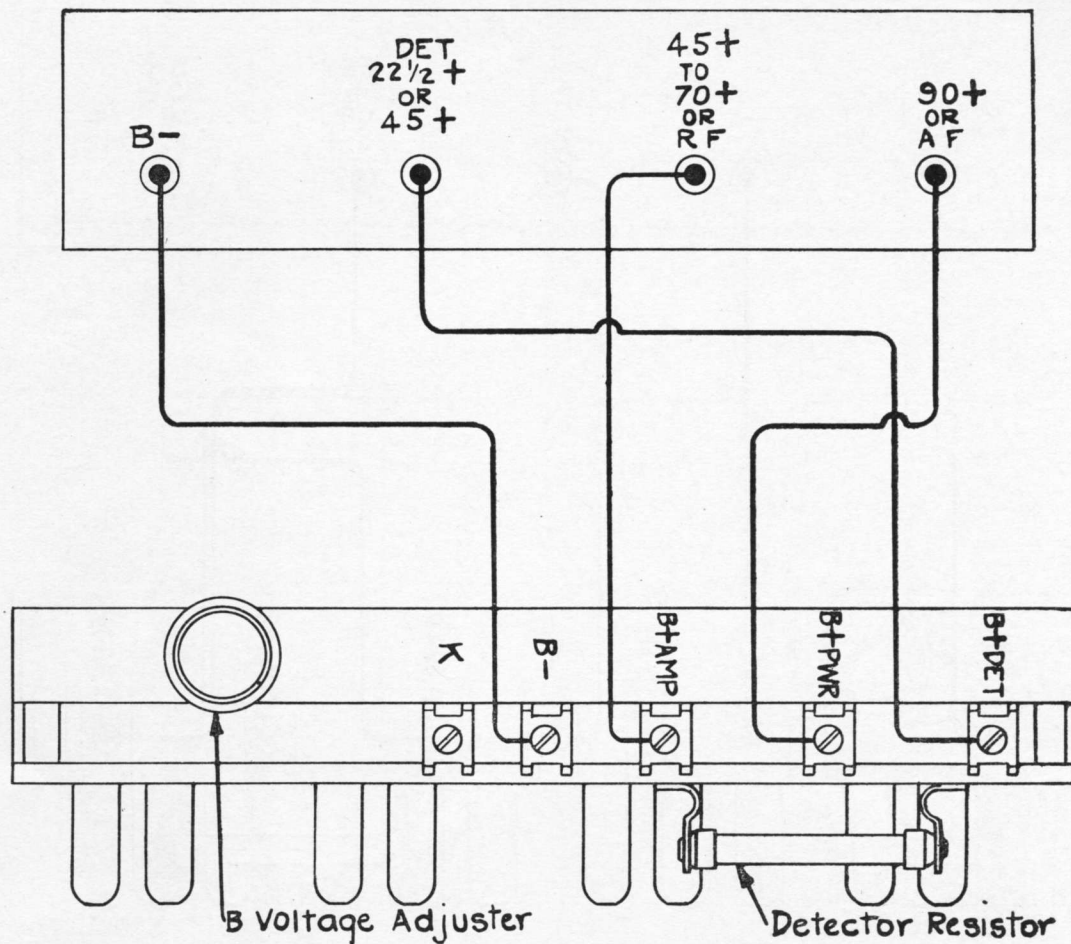
## Philco Socket Power Instructions

CONNECTION DIAGRAM No. 3

For Socket Powers

B-603, B-253, DB

### RADIO SET TERMINALS



### PHILCO SOCKET POWER TERMINALS

Use a 15-watt or 25-watt Mazda lamp in the Socket Power, whichever gives the best results, instead of the standard 50-watt lamp.

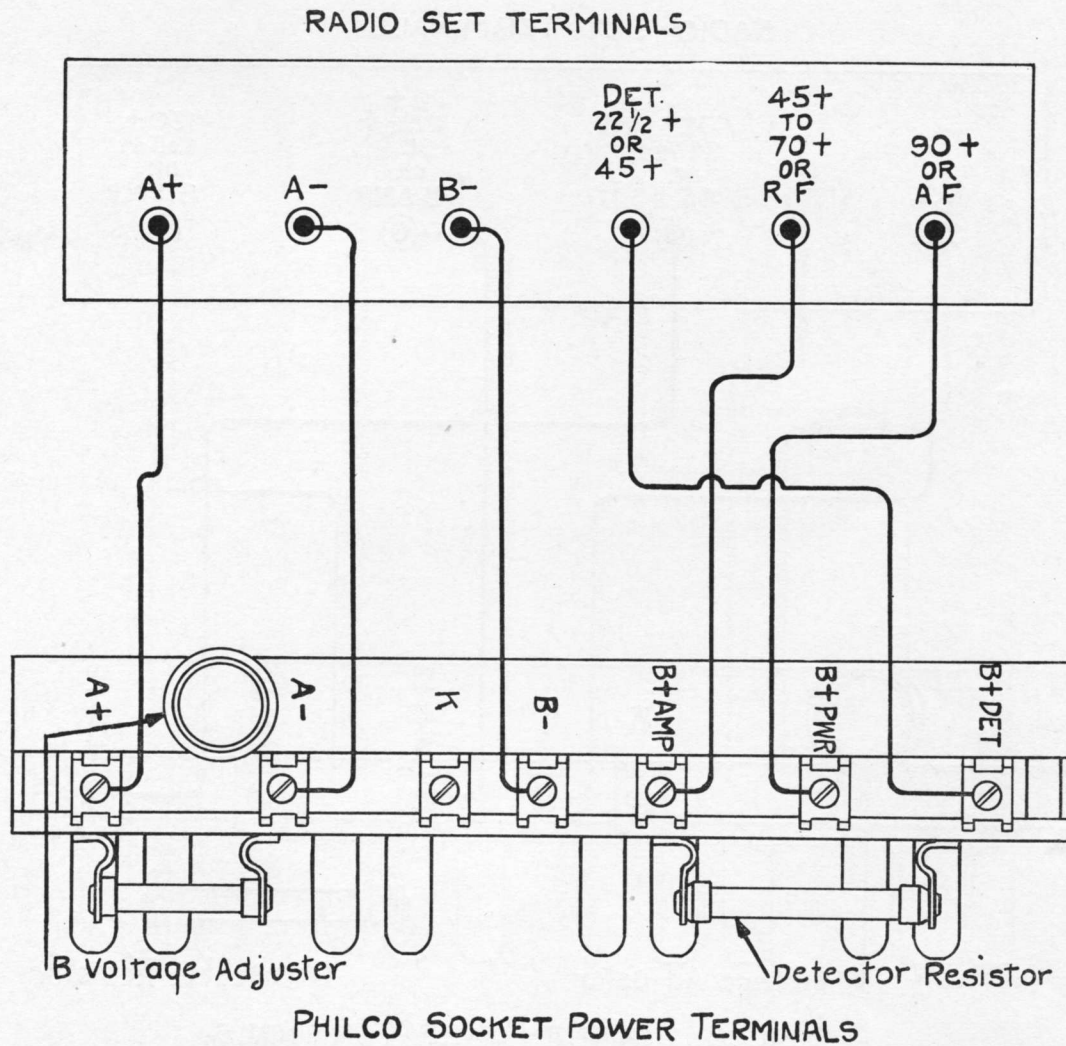


## Philco Socket Power Instructions

CONNECTION DIAGRAM No. 4

For Socket Powers

AB-463, AB-423, AB-663, AB-623, DAB-4



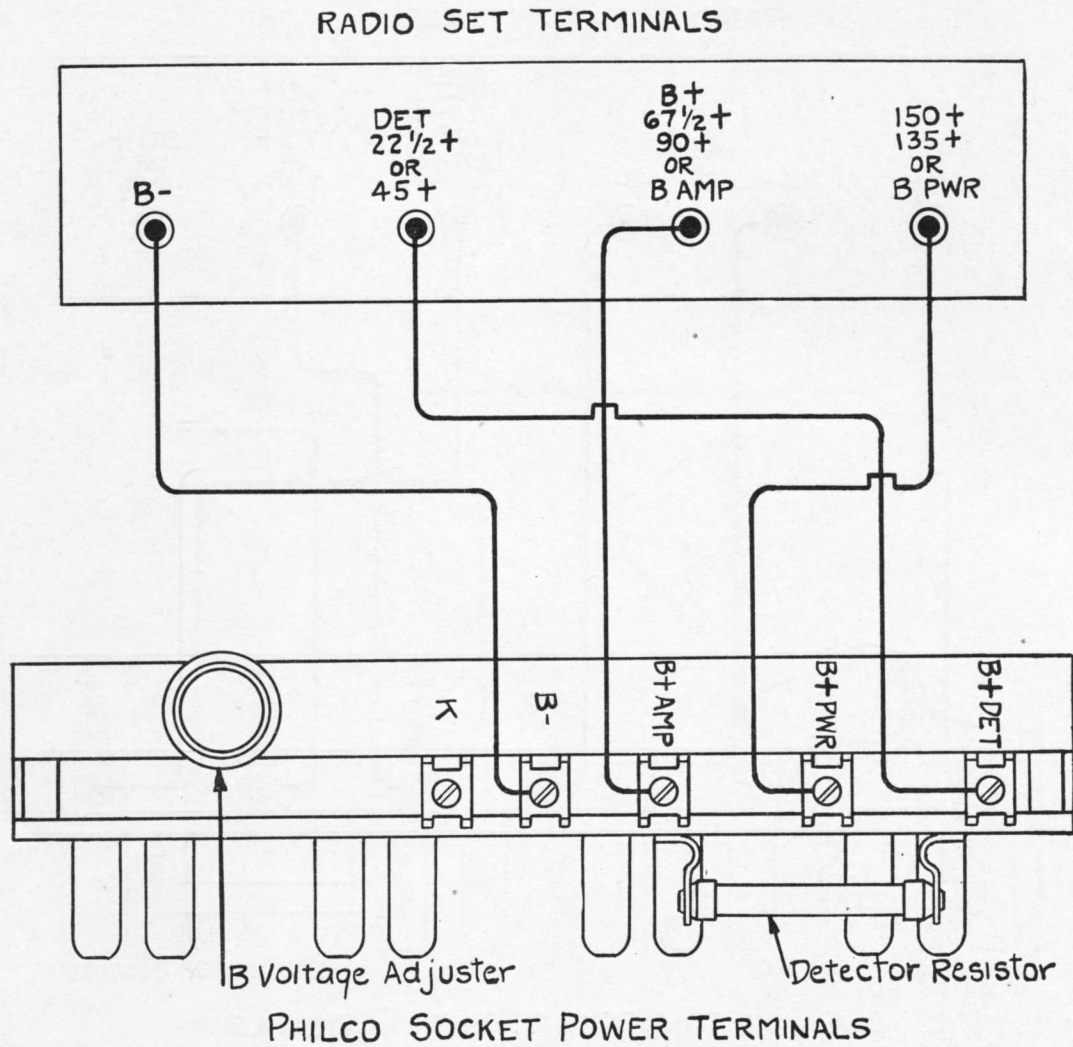
Use a 15-watt or 25-watt Mazda lamp in the Socket Power, whichever gives the best results, instead of the standard 50-watt lamp.

## Philco Socket Power Instructions

CONNECTION DIAGRAM No. 5

For Socket Powers

B-603, B-253, DB



Use a 50-watt Type C gas-filled or new inside frosted Mazda lamp in the Socket Power when operating a radio set of 7 tubes or more, and when operating a set with fewer tubes but including a UX171 or CX371 power tube.

Use a 25-watt Mazda lamp when operating any radio set equipped with 3-volt dry-cell tubes.

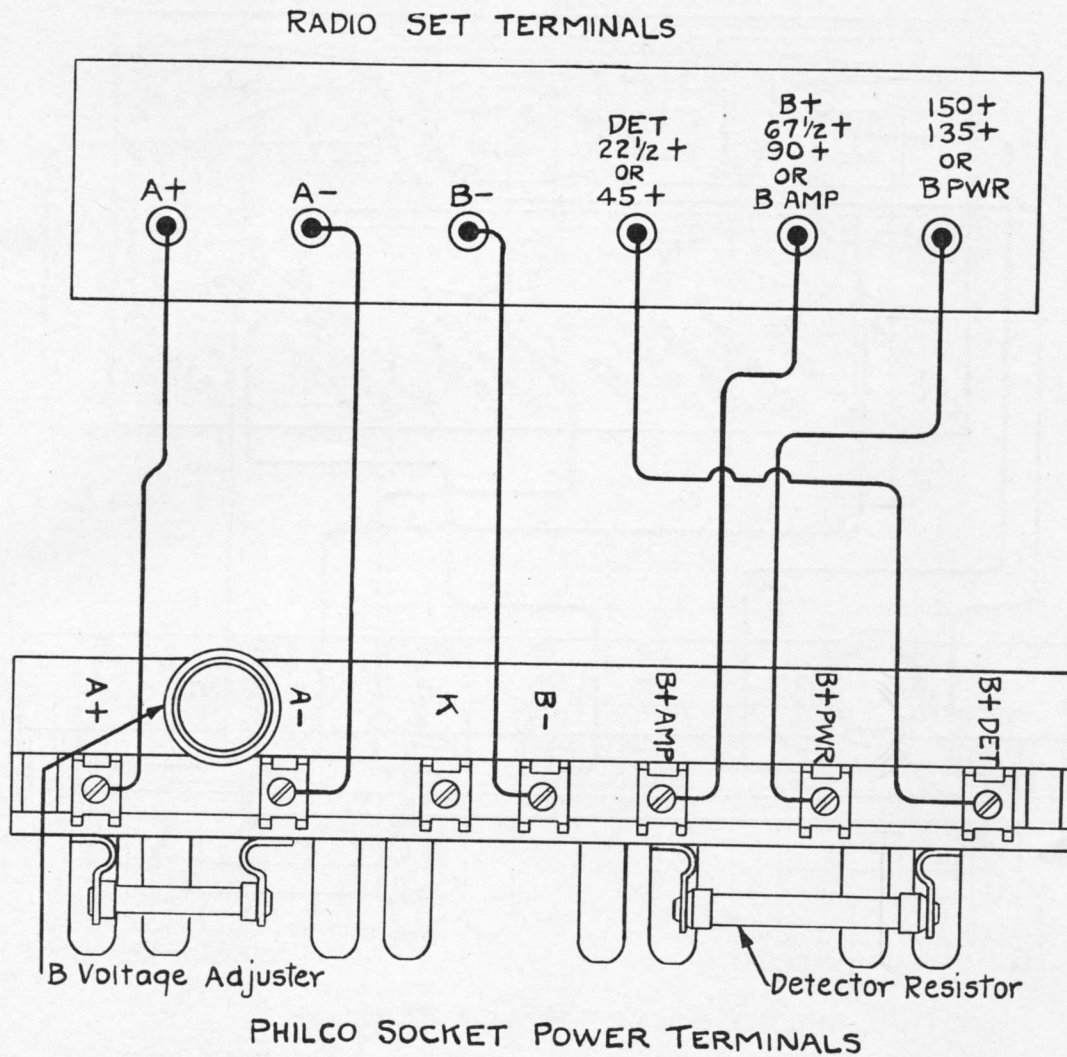


## Philco Socket Power Instructions

CONNECTION DIAGRAM No. 6

For Socket Powers

AB-463, AB-423, AB-663, AB-623, DAB-4



Use a 50-watt Type C gas-filled or new inside frosted Mazda lamp in the Socket Power when operating a radio set of 7 tubes or more, and when operating a set with fewer tubes but including a UX171 or CX371 power tube.

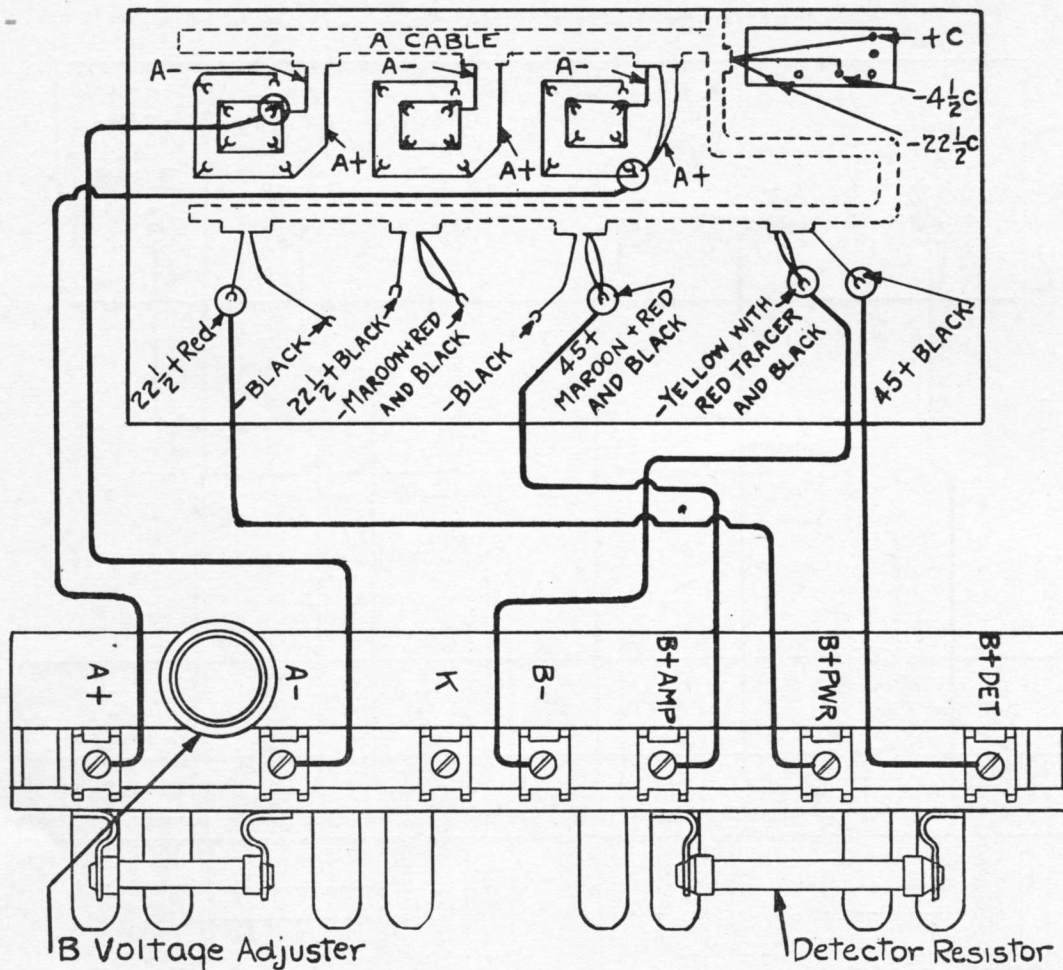
## Philco Socket Power Instructions

CONNECTION DIAGRAM No. 7

For Socket Powers

AB-463, AB-423, DAB-4, AB-4631, AB-4231

PLAN VIEW OF BATTERY SPACE



PHILCO SOCKET POWER TERMINALS

1. Drill  $\frac{1}{2}$ -inch hole through wooden bottom of the battery compartment near the center of the box.

2. Run a cable having six wires (differently colored for identification) through this hole and make soldered or bolted connections to terminals of the set wiring as shown above.

3. Tape all connections and all bare ends of unused wires. The four lugs on each A+ lead can be bunched together and taped at one time. Also the four

lugs on each A- lead can be taped together. Tape all other wires separately.

4. Connect the outer ends of cable wires to binding posts of Socket Power AB in accordance with above diagram.

5. The "C" battery must be connected in the set as shown above.

6. If desired, a five-wire instead of a six-wire cable may be used by leaving off the B- connection called for above and connecting the B- and A+ posts of Socket Power AB with a short wire.

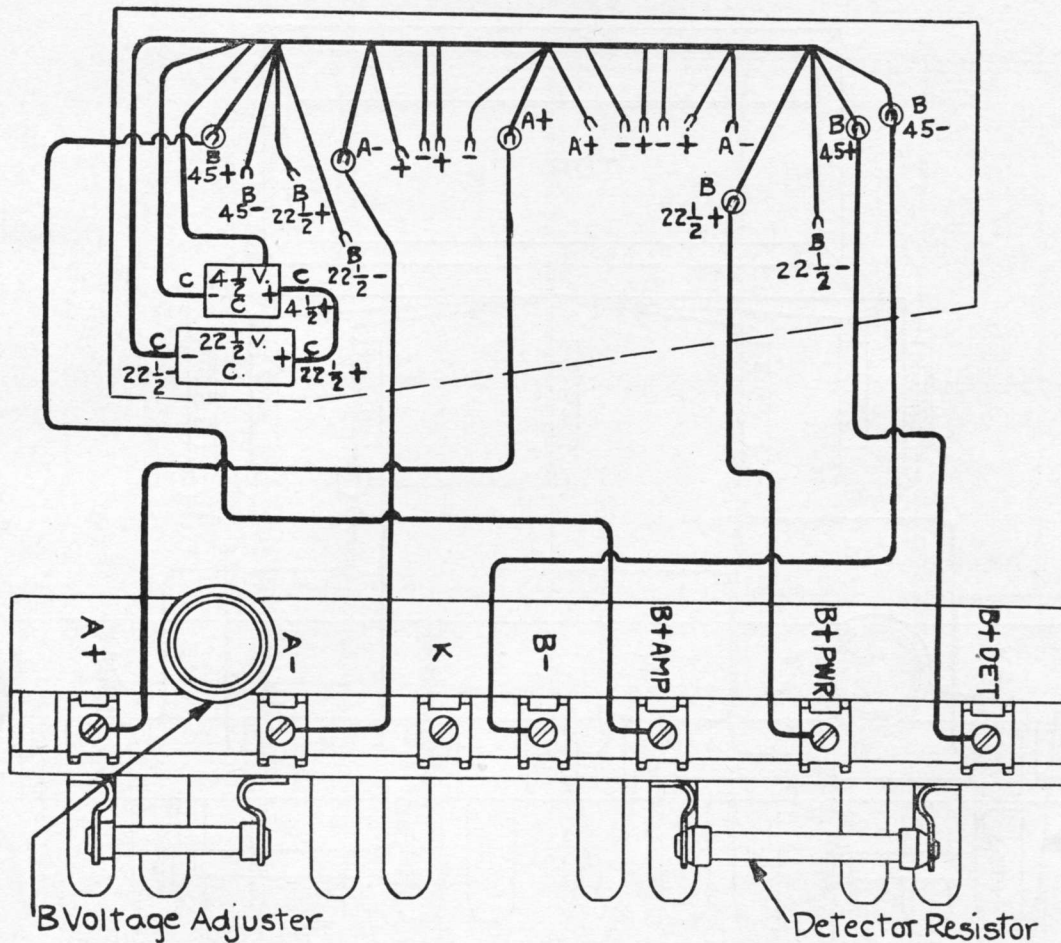


## Philco Socket Power Instructions

CONNECTION DIAGRAM No. 8

For Socket Powers  
AB-463, AB-423, DAB-4

PLAN VIEW OF BATTERY SPACE



PHILCO SOCKET POWER TERMINALS

1. Drill a 1/2-inch hole through bottom of radio set at a convenient point.

2. Run a cable having six wires (differently colored for identification) through this hole, and make soldered or bolted connections to terminals of the set wiring as shown above.

3. Tape up these connections as well as all unused terminals with insulating tape.

4. Connect outer ends of the cable

wires to binding posts of Socket Power AB in accordance with above diagram.

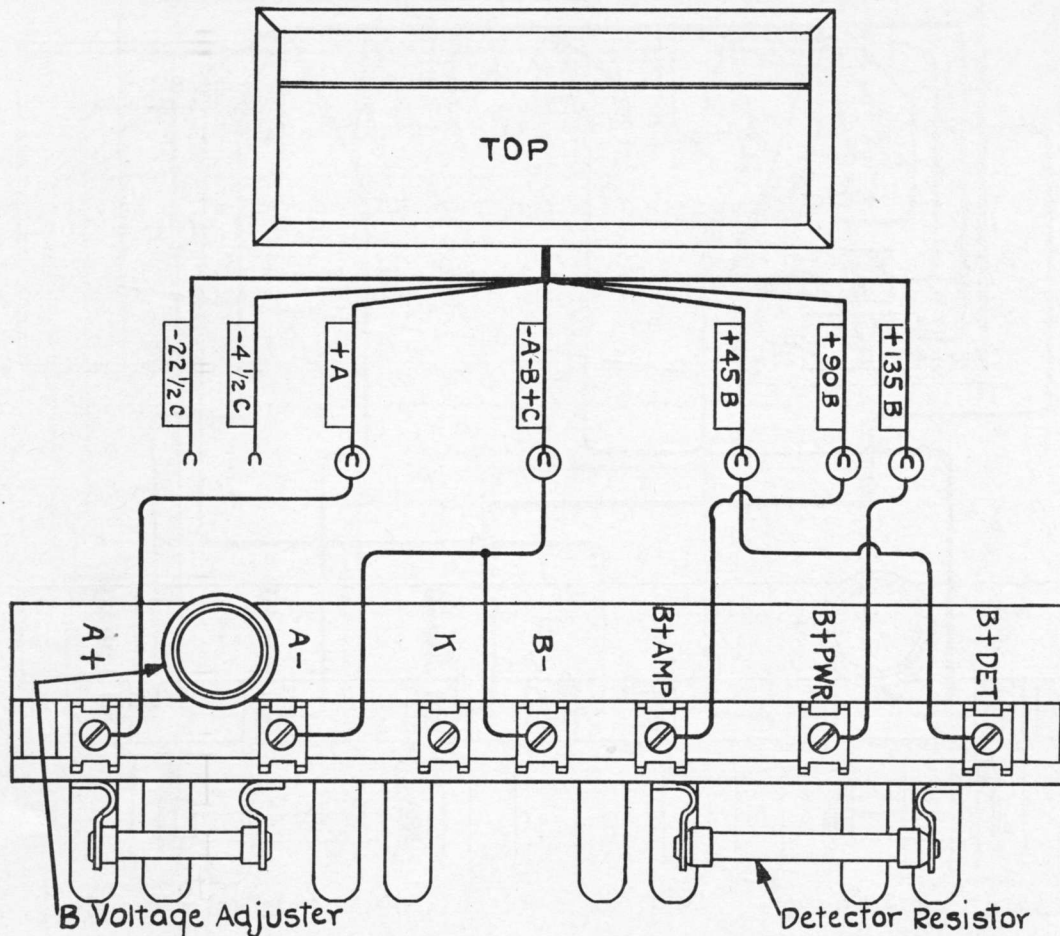
5. Dry "C" batteries must be connected up in set in accordance with R. C. A. instructions.

6. If desired, a five-wire instead of a six-wire cable may be used by leaving off the B- connection called for above and connecting together the B- and A+ posts of Socket Power AB by means of a short wire.

## Philco Socket Power Instructions

CONNECTION DIAGRAM No. 9

For Socket Powers  
AB-463, AB-423, DAB-4



PHILCO SOCKET POWER TERMINALS

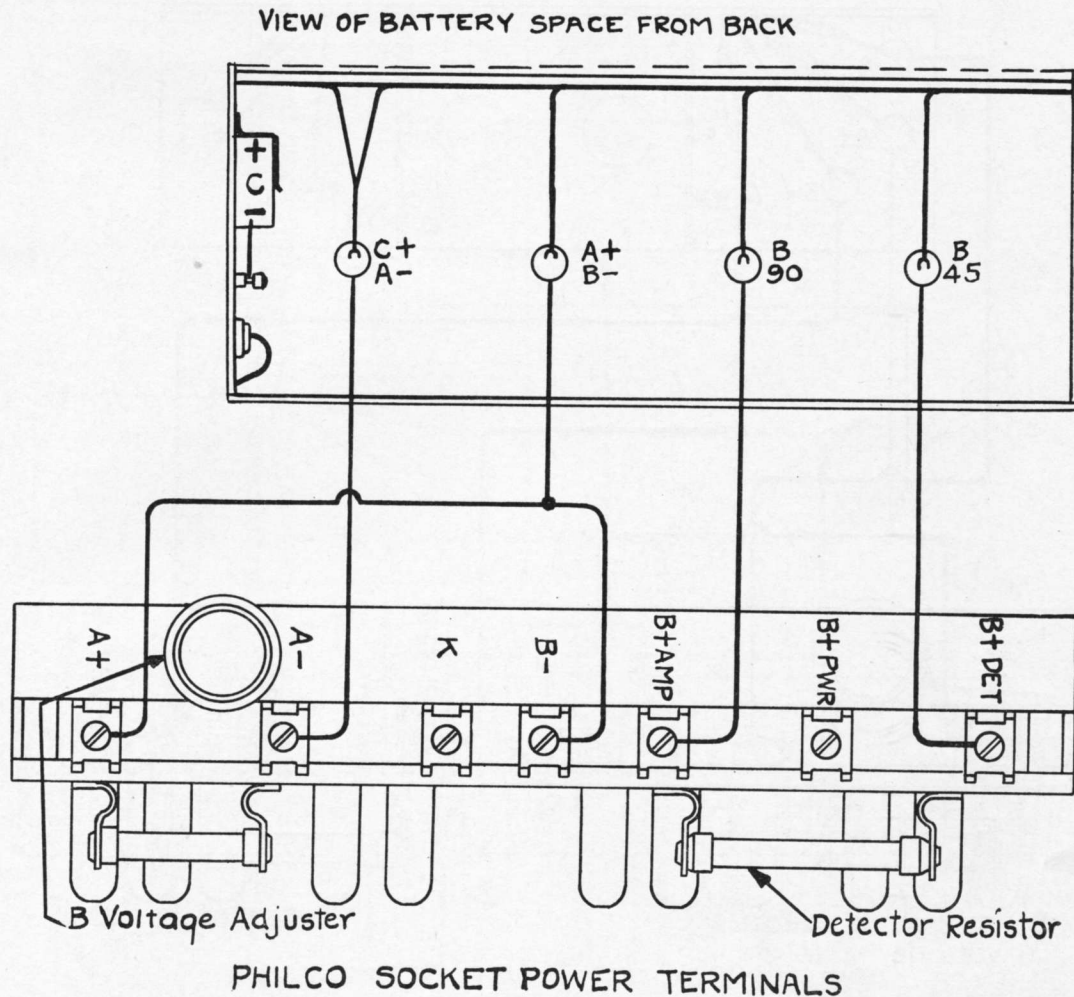
1. This receiver comes equipped with a power cable tagged as shown.
2. Connect as indicated in sketch to Socket Power AB and to the 22½-volt "C" battery specified in R. C. A. instructions.



## Philco Socket Power Instructions

CONNECTION DIAGRAM No. 10

For Socket Powers  
AB-463, AB-243, DAB-4



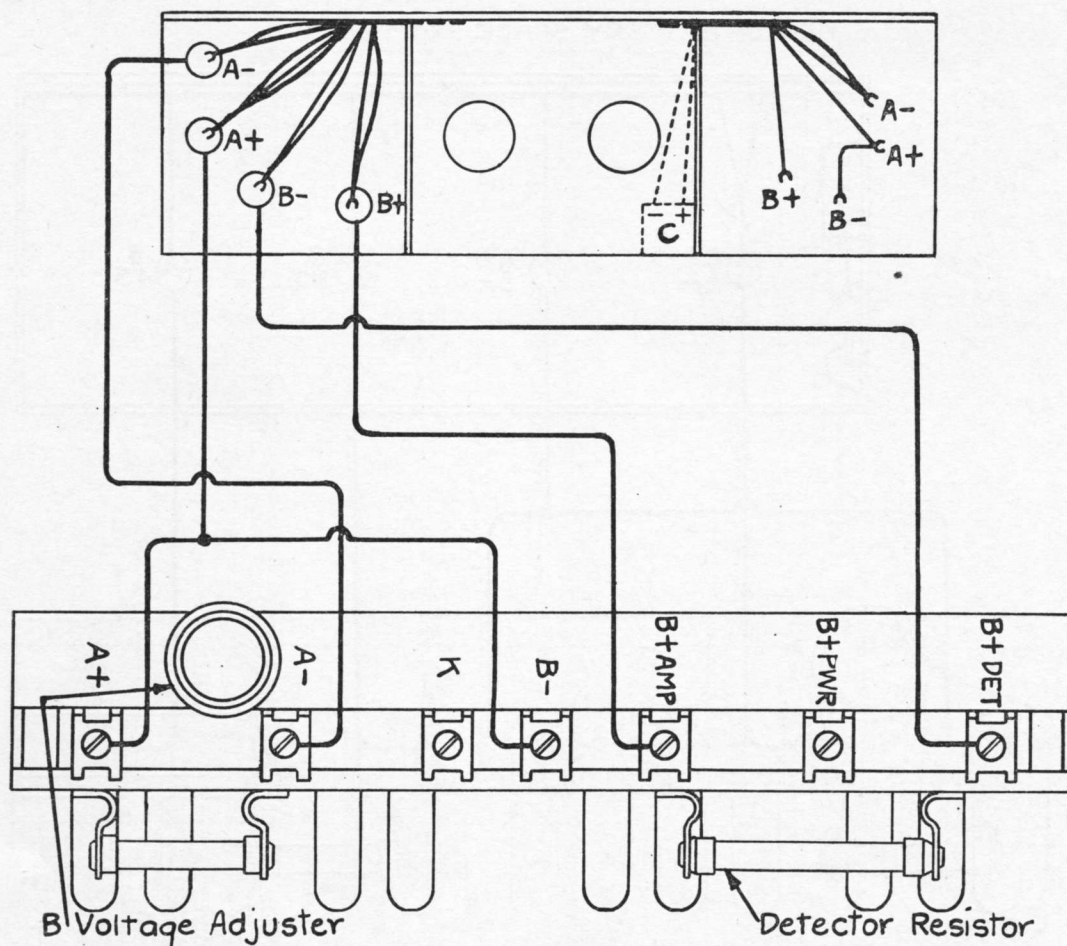
1. Saw a small triangle off of the upper right-hand corner of the battery compartment door of the receiver.
2. Run a five-wire cable through this opening and make soldered or bolted connections to terminals of the set wiring as shown herewith.
3. Tape up these connections with insulating tape.
4. Connect the outer end of the cable wires to binding post of Socket Power AB in accordance with the adjoining diagram.
5. The dry "C" battery must be connected in set in accordance with R. C. A. instructions.

## Philco Socket Power Instructions

CONNECTION DIAGRAM No. 11

For Socket Powers  
AB-463, AB-243, DAB-4

VIEW OF BATTERY SPACE FROM FRONT



### PHILCO SOCKET POWER TERMINALS

1. Run a five-wire cable through the external loop wire hole in the back of the set. Run it through the center compartment and over the top of the partition into the battery compartment in the left end of the set.
2. Make soldered or bolted connections to terminals of the set wiring as shown herewith.

#### Instructions for Connecting Power Tube Adapter

Make the regular Socket Power connections as shown in our wiring diagram for this model receiver. Then make the following additional connections:

1. Remove the control panel of the receiver and lay it face down.
2. Disconnect (either by cutting or by unsoldering) the black wire which is soldered to the bottom of the fifth terminal lug from the left end of the terminal strip at the back of the metal catacomb. The correct terminal lug can be determined by counting from the left end and also it has a red wire connected to the top. Do not disturb this red wire.
3. Connect an insulated extension wire to the wire removed from the lug and run it out

3. Tape up these connections with insulating tape. Tape ends of all unused wires.
4. Connect the outer end of the cable wires to binding posts of Socket Power AB in accordance with the adjoining diagram.
5. The dry "C" battery must be connected in set in accordance with R. C. A. instructions.

of the hole in the back of the radio cabinet. Connect the wire to Socket Power post marked 130 volts +. The extension wire should be soldered to the wire removed from the lug and the joint should be taped.

4. Connect a short wire directly across the adapter from the post marked 45+ to the post marked 45-.
5. Connect a 22½-volt "C" battery to the adapter posts marked 22½+ and 22½- as shown on the adapter instruction sheet.
6. When using Socket Power AB with the adapter, it is best not to use the "amplifier switch" of the Radiola. If the volume is too great it should be reduced by means of the "volume control" and "battery setting" knobs.

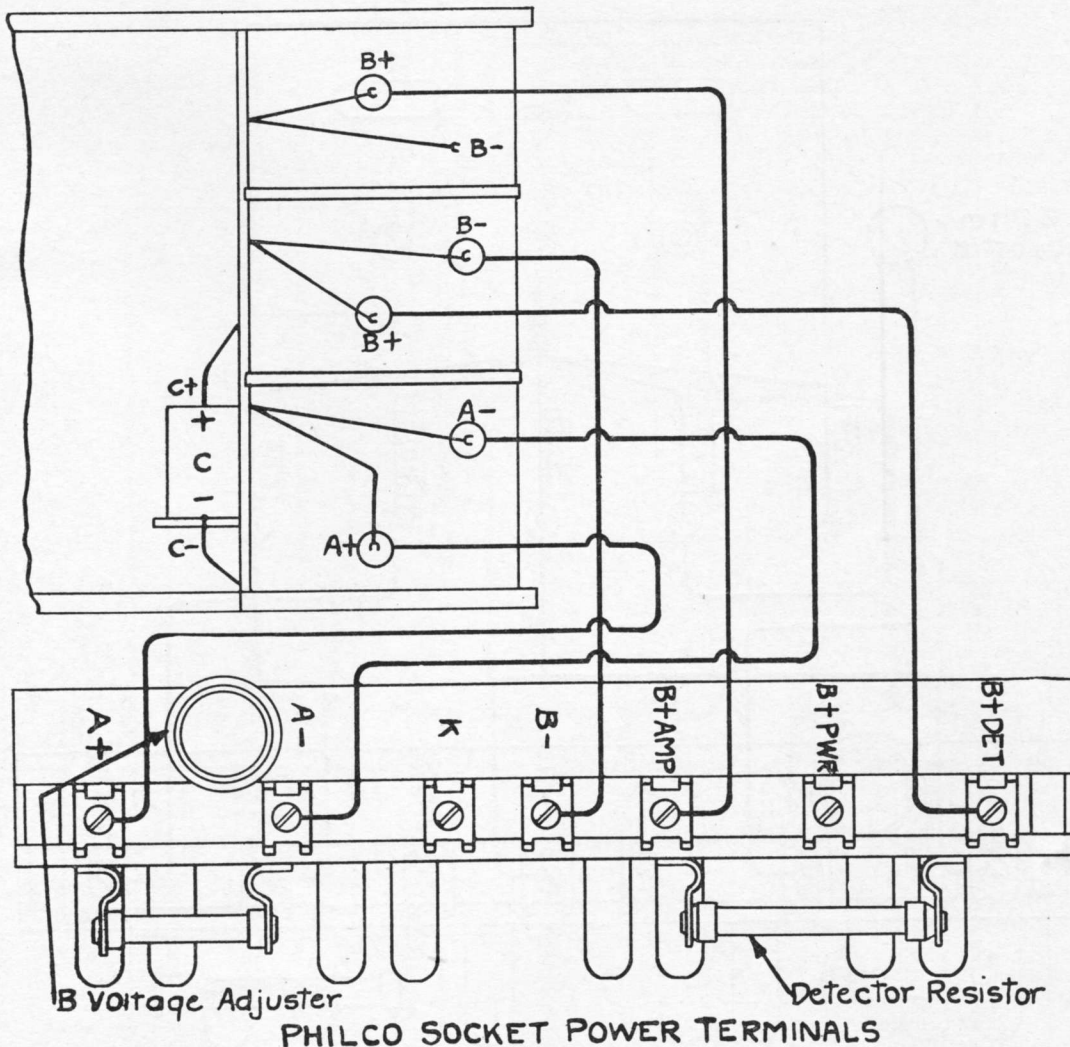


## Philco Socket Power Instructions

CONNECTION DIAGRAM No. 12

For Socket Powers  
AB-463, AB-243, DAB-4

VIEW OF BATTERY SPACE FROM BACK



1. Saw a small triangle off of the lower right-hand corner of the battery compartment door of the receiver.

2. Run a five-wire cable through this opening and make soldered or bolted connections to the terminals of the set wiring as is shown here-with.

3. Tape up these connections with insulating tape. Tape ends of all unused wires.

4. Connect the outer end of the cable wires to binding posts of Socket Power AB in accordance with the adjoining diagram.

5. The dry "C" battery must be connected in set in accordance with R. C. A. instructions.

### Instructions for Connecting Power Tube Adapter

Make the regular Socket Power connections as shown in our wiring diagram for this model receiver. Then make the following additional connections:

1. Disconnect the wire marked + from the binding post on the base of the loud speaker horn. In sets having two horns disconnect this wire from the lower horn. This wire is black with a brown tracer. Tape the end of this wire as it is not used hereafter.

2. Connect Socket Power post marked 130

volts + to the loud speaker post from which the wire described above was removed.

3. Connect a short wire across adapter from post marked 45+ to post marked 45-.

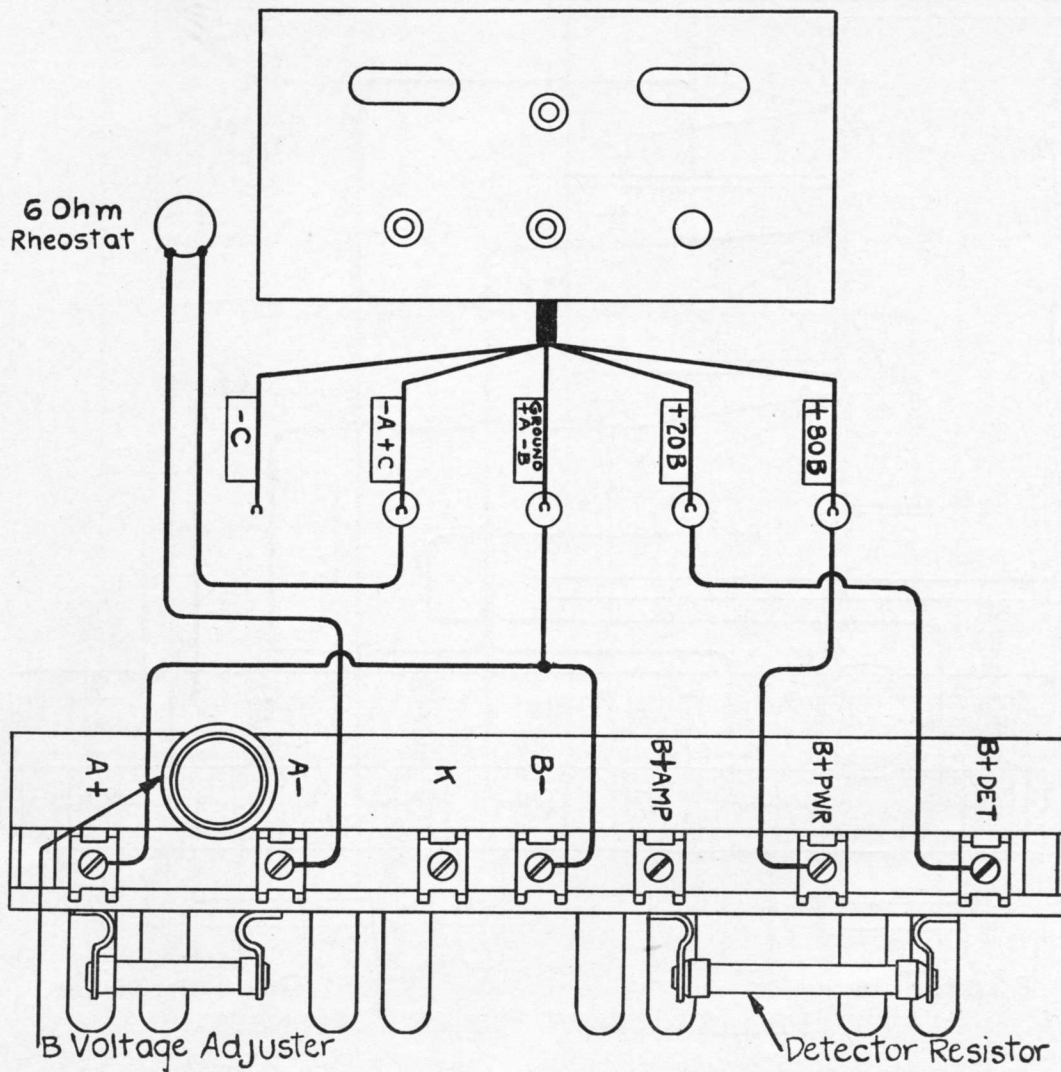
4. Connect a 22½-volt "C" battery to the adapter post marked 22½+ and 22½- as shown on the adapter instruction sheet.

5. When using Socket Power AB with the adapter, it is best not to use the "amplifier switch" of the Radiola. If the volume is too great it should be reduced by means of the "volume control" and "battery setting" knobs.

## Philco Socket Power Instructions

CONNECTION DIAGRAM No. 13

For Socket Powers  
AB-463, AB-243, DAB-4



PHILCO SOCKET POWER TERMINALS

1. When this set is equipped with 3-volt tubes, it is necessary to use a six-ohm rheostat connected in the battery circuit as shown above.

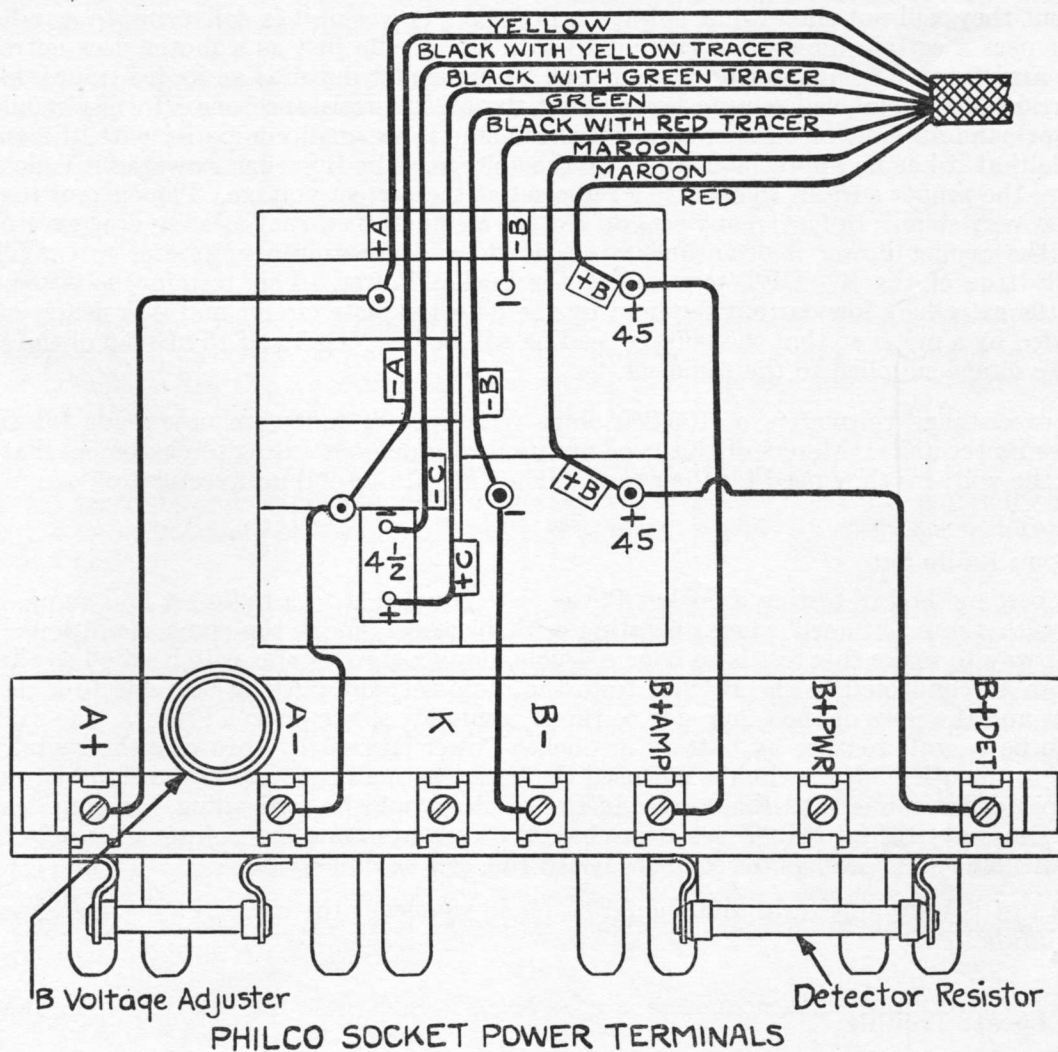
See "Radio Corporation of America Bulletin No. 6."  
(Dated 12-11-25.)



## Philco Socket Power Instructions

CONNECTION DIAGRAM No. 14

For Socket Powers  
AB-463, AB-243, DAB-4



### Instructions for Connecting Power Tube Adapter

Make the regular Socket Power connections as shown in our wiring diagram for this model receiver. Then make the following additional connections:

1. Disconnect the wire marked + from the binding post on the base of the loud speaker horn. Tape the end of this wire as it is not used hereafter.

2. Connect Socket Power post marked 130 volts + to the loud speaker post from which the wire described above was removed.

3. Connect a short wire directly across the adapter from the post marked 45+ to the post marked 45-.

4. Connect a 22½-volt "C" battery to the adapter post marked 22½+ and 22½- as shown on the adapter instruction sheet.

5. When using Socket Power AB with the adapter, it is best not to use the "amplifier switch" of the Radiola. If the volume is too great it should be reduced by means of the "volume control" and "battery setting" knobs.

## Philco Socket Power Testing

### Testing with Meters

Most voltmeters in common use have a relatively low resistance. These meters may be accurate when used for all ordinary work, including the testing of storage or dry cell B batteries, but they will not show what voltage a B Socket Power unit is delivering to a radio set. A meter uses a certain amount of current to turn the needle just as a motor uses current to turn its armature. The amount of current used by the meter depends on its resistance, so that a high-resistance meter will require less current than a low-resistance one. In nearly all electrical work the amount of current used by the meter is so small compared with the current available that it has no appreciable affect on the voltage. The B Socket Power unit is designed to deliver the proper current to operate a radio set at the correct voltage. The current required for this is very small. In fact, many sets do not use as much B current as an average voltmeter, so that the Socket Power is oftentimes overloaded by connecting a voltmeter to it. This is especially true of the B+ DET terminal of the Socket Power. This terminal is designed to supply the extremely low current required by the detector plate circuit and it is nearly always overloaded by a meter so that the voltage reading will be between 5 and 15 instead of the actual working voltage supplied to the radio set.

High-resistance voltmeters of 100,000 ohms resistance or more are now made for testing B Socket Power units. Meters of this type are useful for demonstrating to customers that they can get the voltages they need for their radio. They are also useful in investigating complaints.

### Testing on Radio Set

The best method of testing a Socket Power is to connect it to a radio set and compare the results with those obtained when operating with batteries under the same conditions. The quickest way to make this test is to have a 4-pole, double-throw knife switch wired so that the levers can be connected to the B leads from the radio set; the jaws on one side to a set of B batteries and the jaws of the other side to the B terminals of the Socket Power. The radio set can then be operated either by battery or Socket Power current by throwing the switch from one side to the other. If a switch is not used the broadcasting may vary in the time required to disconnect and reconnect all the wires and the results would be misleading. In some cases it may be necessary to re-tune the set after changing over from one kind of power supply to the other but if the dial readings for each are noted this can be quickly done.

This test is very important and should be made whenever there is any question about the Socket Power.

### How to Locate Trouble

Testing a Socket Power with the right kind of a voltmeter will show if it is delivering the correct voltage.

Comparing the reception with that obtained when operating from batteries will show if the Socket Power is properly connected and adjusted to the set.

These two tests will show whether the trouble is in the radio set or in the Socket Power. The following will help to locate the cause of trouble within the units:

**Poor Volume—No Distance.**—Examine connections to Socket Power, C battery, aerial and ground. If an adapter for a power tube is used make sure that it is connected according to Philco instructions.

Test the tubes in the radio set by replacing them with others known to be good.



If a voltmeter is available, read the filament voltage right at a tube socket. If this is correct the trouble is not in the A supply. If not correct examine the A battery and the wiring in the A circuit.

Make sure that the B voltage adjuster is turned to the best position. See the connection diagrams in this Manual for right size Mazda lamp to use in the Socket Power.

**Noisy.**—If this is an A.C. hum it can usually be removed by using the K terminal connection, or by placing the Socket Power further away from the audio frequency end of the set. Other noises will be heard when operating from either socket power or batteries and are caused by atmospheric disturbances, poor contacts or bad radio tubes.

**Battery Not Charged in Socket Power A.**—Determine if the attachment plug is kept in the house socket at all times. Also make sure that the receptacle into which it is plugged is alive at all times.

If a low-reading ammeter is available, connect it in the battery charging circuit and see if the charge rates are correct. If not, examine the wiring in the charging circuit and examine the A rectifier cell. When the A rectifier cell is operating normally the aluminum electrode will be free of any growth. The solution normally turns brown with use. When the rectifier does finally fail the aluminum electrode will usually show a white growth. If kept in use after this time, the aluminum electrode may dissolve off right up to the hard-rubber sleeve. Impurities in the cell may cause its failure in a different manner. For instance, a trace of sulphuric acid in the solution will cause the aluminum electrode to be eaten through so that it will drop to the bottom of the jar.

In any case, after the rectifier cell has failed it should be replaced with a complete new cell. Never try to replace the electrodes or the solution without changing the complete cell. The life of the two electrodes is balanced so that by the time one has failed the other is also near an end and it is always necessary to renew the solution so the simplest way is to replace the complete rectifier cell. Rectifier cells of each type should be kept in stock for these periodic replacements.

**Low Detector Voltage.**—Almost all cases of complaint on low detector voltage are found to be based on readings taken with low-resistance voltmeters. This is explained under "Testing with Meters." If the Socket Power detector circuit is open so that the meter does not show any reading on the detector terminal, try replacing the standard detector resistor with a new one. See "Key to Radio Sets and Connection Diagrams" for sets requiring a change in the resistance value of the detector resistor.

**Fading.**—This is practically always caused by a poor connection, a bad contact within the Socket Power or a run-down A battery.

**No Signal.**—Check connections to Socket Power, C battery, aerial and ground. Test all radio tubes. If testing with batteries shows the trouble is in the Socket Power try a new standard detector resistor. Test Mazda lamps in another house socket to determine if they are good. See if the house socket used for the Socket Power is alive.

**Distortion**—Look for wrong or loose connections. Test radio tubes. Adjust loud speaker.

**Wiring Diagrams.**—Dealers who want them can obtain wiring diagrams of Philco Socket Powers by writing to Engineering Department, Philadelphia Storage Battery Company, Ontario and C Streets, Philadelphia, Pa., U.S.A.

## List of Equipment Needed for Installation

Following is a list of material needed that either the installation men or the installation supervisor should carry in his car:

### Installation Men

5 10-ft. A.C. Extension Cords	1 1" Bit
5 5-wire Power Cables	1 Bottle of Ammonia
500 ft. No. 18 Rubber-Covered or Celasite Wire	1 Electric Soldering Iron
2 Rolls Tape	6 A Socket Power Fuses Part No. Z-163
1 Gross $\frac{3}{8}$ " No. 8 Bolts (brass)	6 Standard Detector Resistors Part No. Z-129
1 Gross No. 8 Nuts (brass)	12 Instruction Sheets of each type
1 Pr. Pliers	2 15-Watt 110-V. Mazda Lamps
1 Pr. Wire Cutters	2 25-Watt 110-V. Mazda Lamps
1 Screwdriver ( $\frac{1}{8}$ " blade)	2 50-Watt 110-V. "C" Type (gas filled) or new inside-frosted Mazda Lamps
1 Brace	
1 $\frac{3}{8}$ " Bit	

### Supervisor

3 UX-201-A Tubes	1 4-Pole, Double-Throw Switch
3 UX-199 Tubes	1 B Voltage Adjuster Part No. Z-195
3 UX-120 Tubes	3 45-V. Dry Batteries
3 UV-199 Tubes	1 22 $\frac{1}{2}$ -V. Dry Battery
1 UX-112 Tube	2 4 $\frac{1}{2}$ -V. Dry Batteries
3 10,000-ohm Bradleyunit Fixed Resistors	



SUPPLEMENTARY

**PHILCO**

Radio Installation and  
Service Manual



Issued December 15, 1926

by

PHILADELPHIA STORAGE BATTERY CO.

Ontario and C Streets

PHILADELPHIA, PA., U. S. A.

Standard Philco AB Socket Power Types for Different Radio Receivers

RADIO RECEIVER DATA			PHILCO SOCKET POWER DATA			
Make	Model	Tube Voltage	50-60 Cycles		25-40 Cycles	
			Enclosed Model	Open Model	Enclosed Model	Open Model
A-C Dayton	1926-27	5	AB-663	AB-6631	AB-623	AB-6231
A-C Dayton	1925-26	5	AB-663	AB-6631	AB-623	AB-6231
Adler Royal	1925-26	5	AB-663	AB-6631	AB-623	AB-6231
Amrad	1926-27	5	AB-663	AB-6631	AB-623	AB-6231
Amrad	1925-26	5	AB-663	AB-6631	AB-623	AB-6231
Apex	1926-27	5	AB-663	AB-6631	AB-623	AB-6231
Astrola	1926-27	5	AB-663	AB-6631	AB-623	AB-6231
Astrola	1925-26	5	AB-663	AB-6631	AB-623	AB-6231
Atwater Kent	30, 32 and 35	5	AB-663	AB-6631	AB-623	AB-6231
Atwater Kent	20 Compact	5	AB-663	AB-6631	AB-623	AB-6231
Atwater Kent	20 Compact	3	AB-463	AB-4632	AB-423	AB-4232
Atwater Kent	20	5	AB-663	AB-6631	AB-623	AB-6231
Atwater Kent	9, 10, 12 and 19	5	AB-663	AB-6631	AB-623	AB-6231
Bosch	Cruiser 5-tube, Amborola 6-tube and Amborola 7-tube	5	AB-663	AB-6631	AB-623	AB-6231
Bosch	Amborola 1925-26	5	AB-663	AB-6631	AB-623	AB-6231
Bremer Tully	1926-27	5	AB-663	AB-6631	AB-623	AB-6231
Bremer Tully	1925-26	5	AB-663	AB-6631	AB-623	AB-6231
Browning Drake	1926-27	5	AB-663	AB-6631	AB-623	AB-6231
Browning Drake	1926-27	3	AB-463	AB-4632	AB-423	AB-4232
Brunswick-Radiola	1926-27	3	AB-463	AB-4638-B	AB-423	AB-4238-B
Brunswick-Radiola	1925-26	3	AB-463		AB-423	
Canadian Victor	3-tube	3.3	AB-463	AB-4632	AB-423	AB-4232
Canadian Victor	R-30	5	AB-663	AB-6631	AB-623	AB-6231
Canadian Victor	R-50	5	AB-663	AB-6631	AB-623	AB-6231
Claratone	1925-26	5	AB-663	AB-6631	AB-623	AB-6231
Colonial	1925-26	5	AB-663	AB-6631	AB-623	AB-6231
Crosley	1926-27	5	AB-663	AB-6631	AB-623	AB-6231
Crosley	1925-26	5	AB-663	AB-6631	AB-623	AB-6231
Day Fan	1926-27 6 and 7-tube	5	AB-663	AB-6631	AB-623	AB-6231
Day Fan	1925-26	5	AB-663	AB-6631	AB-623	AB-6231
De Forest	1925-26	5	AB-663	AB-6631	AB-623	AB-6231
Eagle	1926-27	5	AB-663	AB-6631	AB-623	AB-6231
Eagle	D, F, H, K	5	AB-663	AB-6631	AB-623	AB-6231
Erla	1926-27 S-50	5	AB-663	AB-6631	AB-623	AB-6231
Erla	1925-26 Circleoid 5	5	AB-663	AB-6631	AB-623	AB-6231
Fada	1926-27 8-tube	5	A-603 B-604			
Fada	1926-27 6-tube	5	AB-663	AB-6631	AB-623	AB-6231
Fada	170 A, 192 A, 195 A	5	AB-663	AB-6631	AB-623	AB-6231
Fada	All Other Models	5	AB-663	AB-6631	AB-623	AB-6231
Federal	1926-27 A-10 and B-30	5	AB-663	AB-6631	AB-623	AB-6231
Federal	1925-26 B and C	5	AB-663	AB-6631	AB-623	AB-6231
Federal	DX-58, 59 and 140	5	AB-663	AB-6631	AB-623	AB-6231
Ferguson	8	5	AB-663	AB-6631	AB-623	AB-6231
Ferguson	12	5	AB-663	AB-6631	AB-623	AB-6231
Freed-Eisemann	30, 40, 48 and 800	5	AB-663	AB-6631	AB-623	AB-6231
Freed-Eisemann	NR 7	5	AB-663	AB-6631	AB-623	AB-6231
Freed-Eisemann	FE 15, FE 18, NR 5, NR 6, NR 12, NR 20	5	AB-663	AB-6631	AB-623	AB-6231



Standard Philco AB Socket Power Types for Different Radio Receivers

RADIO RECEIVER DATA			PHILCO SOCKET POWER DATA			
Make	Model	Tube Voltage	50-60 Cycles		25-40 Cycles	
			Enclosed Model	Open Model	Enclosed Model	Open Model
Freshman Masterpiece	1926-27	5	AB-663	AB-6631	AB-623	AB-6231
Freshman Masterpiece	1925-26	5	AB-663	AB-6631	AB-623	AB-6231
Garod	1925-26	5	AB-663	AB-6631	AB-623	AB-6231
Gilfillan	10	5	AB-663	AB-6631	AB-623	AB-6231
Gilfillan	GN 1, GN 2, GN 4, GN 5	5	AB-663	AB-6631	AB-623	AB-6231
Grebe	1926-27	5	AB-663	AB-6631	AB-623	AB-6231
Grebe	1925-26	5	AB-663	AB-6631	AB-623	AB-6231
Grimes	Viking	5	AB-663	AB-6631	AB-623	AB-6231
Grimes	Baby Grand Duplex	5	AB-663	AB-6631	AB-623	AB-6231
Grimes	Inverse Duplex	5	AB-663	AB-6631	AB-623	AB-6231
Howard	1926-27 8-tube	5	A-603 B-604			
Howard	1926-27 5, 6 and 7-tube	5	AB-663	AB-6631	AB-623	AB-6231
Howard	1925-26 5, 6 and 7-tube	5	AB-663	AB-6631	AB-623	AB-6231
Jones	1925-26	5	AB-663	AB-6631	AB-623	AB-6231
Kellogg	1926-27	5	AB-663	AB-6631	AB-623	AB-6231
Kelso	1926-27	5	AB-663	AB-6631	AB-623	AB-6231
Kennedy	20	5	AB-663	AB-6631	AB-623	AB-6231
Kennedy	All Other Models	5	AB-663	AB-6631	AB-623	AB-6231
Kentucky Cardinal	1926-27	5	AB-663	AB-6631	AB-623	AB-6231
King	61, 52 and 63	5	AB-663	AB-6631	AB-623	AB-6231
King	25 and 30	5	AB-663	AB-6631	AB-623	AB-6231
Kodel	1925-26	5	AB-663	AB-6631	AB-623	AB-6231
Kolster	1926-27 6 D, 6 E, 8 A and 8 B	5	AB-663	AB-6631	AB-623	AB-6231
Kolster	1925-26 6 A, 6 B, 6 C, 8 B and 8 C	5	AB-663	AB-6631	AB-623	AB-6231
Magnavox	1926-27	5	AB-663	AB-6631	AB-623	AB-6231
Magnavox	1925-26	5	AB-663	AB-6631	AB-623	AB-6231
Magnet	1926-27	5	AB-663	AB-6631	AB-623	AB-6231
Magnet	1925-26	5	AB-663	AB-6631	AB-623	AB-6231
Mohawk	One Dial	5	AB-663	AB-6631	AB-623	AB-6231
Murad	1925-26	5	*AB-663	AB-6631	AB-623	AB-6231
Murdock	E	5	AB-663	AB-6631	AB-623	AB-6231
Murdock	A, B, C and D	5	AB-663	AB-6631	AB-623	AB-6231
Music Master	1925-26	5	AB-663	AB-6631	AB-623	AB-6231
Music Master-Ware	7-tube	5	AB-663	AB-6631	AB-623	AB-6231
Neutrowound	1926-27	5	AB-663	AB-6631	AB-623	AB-6231
Neutrowound	1925-26	5	AB-663	AB-6631	AB-623	AB-6231
Operadio	1926-27	5	AB-663	AB-6631	AB-623	AB-6231
Operadio	1925-26	5	AB-663	AB-6631	AB-623	AB-6231
Page	6-tube	5	AB-663	AB-6631	AB-623	AB-6231
Pfanstiehl	1926-27	5	AB-663	AB-6631	AB-623	AB-6231
Pfanstiehl	7, 8, 8 C, 10, 10 C, 10 S	5	AB-663	AB-6631	AB-623	AB-6231
Priess	9	5	AB-663	AB-6631	AB-623	AB-6231
Priess	Straight 8	5	AB-663	AB-6631	AB-623	AB-6231
Radiola	28	3	AB-463	AB-4631	AB-423	AB-4231
Radiola	25	3	AB-463	AB-4632	AB-423	AB-4232
Radiola	20	3	AB-463	AB-4632	AB-423	AB-4232
Radiola	26	3	AB-463	AB-4632	A-B423	AB-4232

Standard Philco AB Socket Power Types for Different Radio Receivers

RADIO RECEIVER DATA			PHILCO SOCKET POWER DATA			
Make	Model	Tube Volt-age	50-60 Cycles		25-40 Cycles	
			Enclosed Model	Open Model	Enclosed Model	Open Model
Radiola . . . . .	Super-Heterodyne, Semi-Portable . . . . .	3	AB-463	AB-4632	AB-423	AB-4232
Radiola . . . . .	Super VIII . . . . .	3	AB-463		AB-423	
Radiola . . . . .	III-A . . . . .	3	AB-463	AB-4632	AB-423	AB-4232
Radiotone . . . . .	1925-26 . . . . .	5	AB-663	AB-6631	AB-623	AB-6231
Ramway . . . . .	1925-26 . . . . .	5	AB-663	AB-6631	AB-623	AB-6231
Shamrock . . . . .	1926-27 . . . . .	5	AB-663	AB-6631	AB-623	AB-6231
Silvertone . . . . .	1925-26 . . . . .	5	AB-663	AB-6631	AB-623	AB-6231
Sleeper . . . . .	1926-27 . . . . .	5	AB-663	AB-6632	AB-623	AB-6231
Sleeper . . . . .	1925-26 . . . . .	5	AB-663	AB-6631	AB-623	AB-6231
Sonora . . . . .	C . . . . .	5	AB-663	AB-6631	AB-623	AB-6231
Splitdorf . . . . .	500 . . . . .	5	AB-663	AB-6631	AB-623	AB-6231
Stewart-Warner . . . . .	1926-27 . . . . .	5	AB-663	AB-6631	AB-623	AB-6231
Stewart-Warner . . . . .	300, 305, 310, 315, 320, 325 . . . . .	5	AB-663	AB-6631	AB-623	AB-6231
Stromberg-Carlson . . . . .	1926-27 602 . . . . .	5	AB-663	AB-6631	AB-623	AB-6231
Stromberg-Carlson . . . . .	1925-26 . . . . .	5	AB-663	AB-6631	AB-623	AB-6231
Stromberg-Carlson . . . . .	Earlier Models . . . . .	5	AB-663	AB-6631	AB-623	AB-6231
Supertone . . . . .	1925-26 . . . . .	5	AB-663	AB-6631	AB-623	AB-6231
Synchronomic . . . . .	1926-27 . . . . .	5	AB-663	AB-6631	AB-623	AB-6231
Thermiodyne . . . . .	1926-27 . . . . .	5	AB-663	AB-6631	AB-623	AB-6231
Thermiodyne . . . . .	1925-26 . . . . .	5	AB-663	AB-6631	AB-623	AB-6231
Thompson . . . . .	1925-26 . . . . .	5	AB-663	AB-6631	AB-623	AB-6231
Tone-A-Dyne . . . . .	1925-26 . . . . .	5	AB-663	AB-6631	AB-623	AB-6231
Trinity . . . . .	6-tube . . . . .	5	AB-663	AB-6631	AB-623	AB-6231
Victrola-Radiola . . . . .	9-15 . . . . .	3		AB-4234 with L-846-A		AB-4234 with L-846-A
Victrola-Radiola . . . . .	7-3 . . . . .	3		AB-4234		AB-4234
Victrola-Radiola . . . . .	Alhambra I . . . . .			AB-4238		AB-4238
Victrola-Radiola . . . . .	Alhambra II . . . . .			AB-4238		AB-4238
Victrola-Radiola . . . . .	Florenza . . . . .	3		AB-4239 with L-846-A		AB-4239 with L-846-A
Victrola-Radiola . . . . .	Borgia I . . . . .	3		AB-4239 with L-852-A		AB-4239 with L-852-A
Ware . . . . .	1925-26 . . . . .	5	AB-663	AB-6631	AB-623	AB-6231
Workrite . . . . .	1926-27 . . . . .	5	AB-663	AB-6631	AB-623	AB-6231
Workrite . . . . .	1925-26 . . . . .	5	AB-663	AB-6631	AB-623	AB-6231
Zenith . . . . .	1926-27 10-tube . . . . .	5	A-603 B-604			
Zenith . . . . .	6-tube . . . . .	5	AB-663	AB-6631	AB-623	AB-6231
Zenith . . . . .	All Older Models . . . . .	5	AB-663	AB-6631	AB-623	AB-6231

The enclosed models of Socket Powers are the ones with a complete housing around them so that they can be placed on the floor or in any position outside of the radio set cabinet. The open models are made up the same as the corresponding type of enclosed model except that there are no sides or lid to the housing and the operating switch is mounted on the end of a cable so that the Socket Power can be put inside of a console table or a radio cabinet with the switch mounted in the cabinet itself, making it possible to snap the Socket Power ON or OFF without opening the doors of the cabinet.



**Philco Socket Power Instructions**  
**Key to Radio Sets and Connection Diagrams**

Diagram Numbers Refer to Diagrams in Philco Radio Installation and Service Manual

RADIO RECEIVER DATA			SPECIAL NOTE
Make	Model	Diagram No.	
A-C Dayton	1926-27	5 or 6	Change fixed resistor in radio set according to manufacturer's instructions. Connect as shown in Diagram 5 or 6, connecting both the RF and AF leads of the set to the B+ PWR terminal of the Socket Power. The B+ AMP terminal of the Socket Power is not used.
A-C Dayton	1925-26	1 or 2	
Adler Royal	1925-26	1 or 2	
Amrad	1926-27	5 or 6	
Amrad	1925-26	1 or 2	
Apex	1926-27	5 or 6	
Astrola	1926-27	5 or 6	
Astrola	1925-26	1 or 2	
Atwater Kent	30, 32 and 35 with power tube	5 or 6	
Atwater Kent	30, 32 and 35 without power tube	3 or 4	
Atwater Kent	20 Compact with 5-volt tubes	3 or 4	Connect as shown in Diagram 5 or 6, connecting the set lead marked 67½ on the B+ AMP terminal of the Socket Power and the set lead marked B+ on the B+ PWR terminal of the Socket Power. The B+ DET terminal of the Socket Power is not used.
Atwater Kent	20 Compact with 3-volt tubes	1 or 2	
Atwater Kent	20	1 or 2	
Atwater Kent	9, 10, 12 and 19	1 or 2	
Bosch	Cruiser 5-tube, Amborola 6-tube and Amborada 7-tube	5 or 6	
Bosch	Amborola 1925-26	5 or 6	
Bremer Tully	1926-27	5 or 6	
Bremer Tully	1925-26	5 or 6	
Browning-Drake	1926-27	5 or 6	
Brunswick-Radiola	1926-27	14	
Brunswick-Radiola	1925-26	14	
Canadian Victor	3-tube	1 or 2	Connect as shown in Diagram 5 or 6, connecting both the 67½-volt and the 90-volt leads of the set to the B+ AMP terminal of the Socket Power. The B+ DET terminal of the Socket Power is not used.
Canadian Victor	R-30	5 or 6	
Canadian Victor	R-50	5 or 6	
Claratone	1925-26	1 or 2	
Colonial	1925-26	1 or 2	
Crosley	1926-27	5 or 6	
Crosley	1925-26	1 or 2	
Day Fan	1926-27 6-tube	5 or 6	
Day Fan	1926-27 7-tube	5 or 6	
Day Fan	1925-26	1 or 2	
De Forest	1925-26	1 or 2	

**Philco Socket Power Instructions**  
**Key to Radio Sets and Connection Diagrams**

Diagram Numbers Refer to Diagrams in Philco Radio Installation and Service Manual

RADIO RECEIVER DATA			SPECIAL NOTE
Make	Model	Diagram No.	
Eagle . . . . .	1926-27 . . . . .	5 or 6	Connect as shown in Diagram 1 or 2, but change the fixed resistor of Socket Power to a 10,000-ohm Bradleyunit fixed resistor.
Eagle . . . . .	D, F, H and K . . . . .	5 or 6	
Erla . . . . .	1926-27 S-50 . . . . .	5 or 6	
Erla . . . . .	1925-26 Circlويد 5 . . . . .	1 or 2	
Fada . . . . .	1926-27 8-tube . . . . .	5 or 6	
Fada . . . . .	1926-27 6-tube . . . . .	5 or 6	
Fada . . . . .	170 A, 192 A and 195 A with power tube . . . . .	5 or 6	
Fada . . . . .	170 A, 192 A and 195 A without power tube . . . . .	1 or 2	
Fada . . . . .	All Other Models . . . . .	1 or 2	
Federal . . . . .	1926-27 A-10 and B-30 . . . . .	5 or 6	
Federal . . . . .	1925-26 B and C . . . . .	5 or 6	
Federal . . . . .	DX-58, 59 and 140 . . . . .	1 or 2	
Ferguson . . . . .	8 . . . . .	1 or 2	
Ferguson . . . . .	12 . . . . .	5 or 6	
Freed-Eisemann . . . . .	30, 40, 48 and 800 . . . . .	5 or 6	
Freed-Eisemann . . . . .	NR 7 . . . . .	5 or 6	
Freed-Eisemann . . . . .	FE 15, FE 18, NR 5, NR 6, NR 12 and NR 20 . . . . .	1 or 2	
Freshman Masterpiece . . . . .	1926-27 . . . . .	5 or 6	
Freshman Masterpiece . . . . .	1925-26 . . . . .	1 or 2	
Garod . . . . .	1925-26 . . . . .	5 or 6	
Gilfillan . . . . .	10 . . . . .	5 or 6	
Gilfillan . . . . .	GN 1, GN 2, GN 4 and GN 5 . . . . .	1 or 2	
Grebe . . . . .	1926-27 . . . . .	5 or 6	
Grebe . . . . .	1925-26 . . . . .	1 or 2	
Grimes . . . . .	Viking . . . . .	5 or 6	
Grimes . . . . .	Baby Grand Duplex with power tube . . . . .	5 or 6	



**Philco Socket Power Instructions**  
**Key to Radio Sets and Connection Diagrams**

Diagram Numbers Refer to Diagrams in Philco Radio Installation and Service Manual

RADIO RECEIVER DATA			SPECIAL NOTE
Make	Model	Diagram No.	
Grimes . . . . .	Baby Grand Duplex without power tube . . . . .	1 or 2	Connect both the +90 V and +135 V set terminals to the B+ AMP terminal of Socket Power.
Grimes . . . . . Howard . . . . .	Inverse Duplex . . . . . 1926-27 6-tube, 7-tube and 8-tube . . . . .	1 or 2 5 or 6	
Howard . . . . .	1926-27 5-tube . . . . .	5 or 6	Use special fixed resistor in radio set according to manufacturer's instructions. (For maximum volume use Socket Power type B-604 with 8-tube set.)
Howard . . . . . Howard . . . . .	1925-26 5-tube . . . . . 1925-26 6-tube and 7-tube . . . . .	1 or 2 1 or 2	
Jones . . . . . Kellogg . . . . . Kelso . . . . . Kennedy . . . . .	1925-26 . . . . . 1926-27 . . . . . 1926-27 . . . . . 20 . . . . .	1 or 2 5 or 6 5 or 6 1 or 2	It is not necessary to use the special fixed resistor supplied with the radio set. (See Howard Instructions.)
Kennedy . . . . . Kentucky Cardinal . . . . . King . . . . . King . . . . .	All Other Models . . . . . 1926-27 . . . . . 61 . . . . . 62 and 63 . . . . .	1 or 2 5 or 6 5 or 6 Special	
King . . . . . King . . . . .	25 . . . . . 30 . . . . .	1 or 2 1 or 2	These models do not have a detector terminal. Connect as shown in Diagram 1 or 2, but use only the B- and B+ AMP terminals of Socket Power. These models require the use of a special fixed resistor in the clips provided for the purpose on the set. This fixed resistor is connected across the 1 mf. condenser in the radio set. (See Howard Co.'s Instructions.)
Kodel . . . . . Kolster . . . . .	1925-26 . . . . . 1926-27 6 D and 6 E . . . . .	1 or 2 5 or 6	
Kolster . . . . .	1926-27 8 A, 8 B and 8 C . . . . .	5 or 6	Connect as shown in Diagram 1 or 2 but change the fixed resistor of Socket Power to a 10,000-ohm Bradleyunit fixed resistor.
King . . . . . King . . . . .	25 . . . . . 30 . . . . .	1 or 2 1 or 2	Connect the set lead marked DET 45-135 to the B+ AMP terminal of the Socket Power and the set lead marked Radio 60-90 to the B+ DET terminal of the Socket Power. Change the fixed resistor of the Socket Power to a 10,000-ohm Bradleyunit fixed resistor.
Kodel . . . . . Kolster . . . . .	1925-26 . . . . . 1926-27 6 D and 6 E . . . . .	1 or 2 5 or 6	
Kolster . . . . .	1926-27 8 A, 8 B and 8 C . . . . .	5 or 6	This model does not have a detector terminal. Connect as shown in Diagram 1 or 2, but use only the B- and B+ AMP terminals of Socket Power.
Kolster . . . . .	1926-27 8 A, 8 B and 8 C . . . . .	5 or 6	Connect as shown in Diagram 5 or 6, connecting both the 67½-volt and 90-volt lead of the set to the B+ AMP terminal of the Socket Power.
Kolster . . . . .	1926-27 8 A, 8 B and 8 C . . . . .	5 or 6	Connect as shown in Diagram 5 or 6, connecting both the R-90 and A-90 set leads to the B+ AMP terminal of the Socket Power.

**Philco Socket Power Instructions**  
**Key to Radio Sets and Connection Diagrams**

Diagram Numbers Refer to Diagrams in Philco Radio Installation and Service Manual

RADIO RECEIVER DATA			SPECIAL NOTE
Make	Model	Diagram No.	
Kolster . . . . .	1925-26 6 A, 6 B, 6 C, 8 B and 8 C . . . . .	3 or 4	
Magnavox . . . . .	1926-27 . . . . .	5 or 6	
Magnavox . . . . .	1925-26 . . . . .	1 or 2	
Magnet . . . . .	1926-27 . . . . .	5 or 6	
Magnet . . . . .	1925-26 ZR 50, ZR 60 and ZR 66 . . . . .	1 or 2	
Mohawk . . . . .	One Dial . . . . .	5 or 6	
Murad . . . . .	1925-26 . . . . .	3 or 4	
Murdock . . . . .	E . . . . .	1 or 2	
Murdock . . . . .	A, B, C and D . . . . .	1 or 2	
Music Master . . . . .	1925-26 . . . . .	1 or 2	
Music Master-Ware . . . . .	7-tube . . . . .	5 or 6	Connect as shown in Diagram 5 or 6, but change the fixed resistor of Socket Power to a 10,000-ohm Bradleyunit fixed resistor.
Neutrowound . . . . .	1926-27 . . . . .	5 or 6	
Neutrowound . . . . .	1925-26 . . . . .	3 or 4	
Newsonic . . . . .	1926-27 . . . . .	1 or 2	
Operadio . . . . .	1926-27 . . . . .	5 or 6	
Operadio . . . . .	1925-26 . . . . .	1 or 2	
Page . . . . .	6-tube . . . . .	5 or 6	
Pfanstiehl . . . . .	1926-27 . . . . .	5 or 6	
Pfanstiehl . . . . .	7, 8, 8 C, 10, 10 C and 10 S 9 . . . . .	1 or 2	
Priess . . . . .	9 . . . . .	5 or 6	
Priess . . . . .	Straight 8 . . . . .	5 or 6	
Radiola . . . . .	28 . . . . .	7	
Radiola . . . . .	25 . . . . .	8	
Radiola . . . . .	20 . . . . .	9	
Radiola . . . . .	26 . . . . .	10	
Radiola . . . . .	Super-Heterodyne, Semi-Portable . . . . .	11	
Radiola . . . . .	Super VIII . . . . .	12	
Radiola . . . . .	III-A (Using 1 UX199 and 3 UX120 tubes) . . . . .	13	
Radiotone . . . . .	1925-26 . . . . .	1 or 2	
Ramway . . . . .	1925-26 . . . . .	1 or 2	
Shamrock . . . . .	1926-27 . . . . .	5 or 6	
Silvertone . . . . .	1925-26 . . . . .	1 or 2	
Sleeper . . . . .	1926-27 . . . . .	5 or 6	
Sleeper . . . . .	1925-26 . . . . .	1 or 2	
Sonora . . . . .	C . . . . .	1 or 2	Connect B- and B+ AMP leads as shown in Diagram 1 or 2. Connect detector terminal of set to A+ terminal of the A Socket Power or A battery. (See Sonora instructions.)
Splitdorf . . . . .	500 . . . . .	5 or 6	
Standardyne . . . . .	1926-27 . . . . .	1 or 2	



**Philco Socket Power Instructions**  
**Key to Radio Sets and Connection Diagrams**

Diagram Numbers Refer to Diagrams in Philco Radio Installation and Service Manual

RADIO RECEIVER DATA			SPECIAL NOTE
Make	Model	Diagram No.	
Stewart-Warner . . . . .	1926-27 . . . . .	5 or 6	<p>Connect as shown in Diagram 1 or 2, but change the fixed resistor of Socket Power to a 10,000-ohm Bradleyunit fixed resistor.</p> <p>See Philco Victor Dealer Manual.</p> <p>See Philco Victor Dealer Manual.</p> <p>See Philco Victor Dealer Manual.</p> <p>See Philco Victor Dealer Manual.</p> <p>See Philco Victor Dealer Manual.</p> <p>See Philco Victor Dealer Manual.</p> <p>Connect as shown in Diagram 5 or 6, connecting the set lead marked B AMP to the B+ PWR terminal of the Socket Power. The B+ AMP terminal of the Socket Power is not used.</p> <p>All connections are made in the left-hand battery compartment, looking at the set from the front. Connect as shown in Diagram 1 or 2, using the set leads marked B-, B+ 22½ and B+ 90. Tape the end of the B+ 45 lead as it is not used. Tape all connections, and all wires in the right-hand compartment.</p> <p>Connect as shown in Diagram 1 or 2. Also connect brown lead marked either +1½ V or +2 V to A- terminal of Socket Power.</p>
Stewart-Warner . . . . .	300, 305, 310, 315, 320 and 325 . . . . .	1 or 2	
Stromberg-Carlson . . . . .	1926-27 602 . . . . .	5 or 6	
Stromberg-Carlson . . . . .	1925-26 601 . . . . .	5 or 6	
Stromberg-Carlson . . . . .	Earlier Models . . . . .	1 or 2	
Sun De Luxe . . . . .	1926-27 . . . . .	1 or 2	
Supertone . . . . .	1925-26 . . . . .	1 or 2	
Synchromonic . . . . .	1926-27 . . . . .	5 or 6	
Thermodyne . . . . .	1926-27 . . . . .	5 or 6	
Thermodyne . . . . .	1925-26 . . . . .	1 or 2	
Thompson . . . . .	1925-26 . . . . .	5 or 6	
Tone-A-Dyne . . . . .	1925-26 . . . . .	1 or 2	
Trinity . . . . .	6-tube . . . . .	1 or 2	
Victrola-Radiola . . . . .	9-15 . . . . .	. . . . .	
Victrola-Radiola . . . . .	7-3 . . . . .	. . . . .	
Victrola-Radiola . . . . .	Alhambra I . . . . .	. . . . .	
Victrola-Radiola . . . . .	Alhambra II . . . . .	. . . . .	
Victrola-Radiola . . . . .	Florenza . . . . .	. . . . .	
Victrola-Radiola . . . . .	Borgia I . . . . .	. . . . .	
Ware . . . . .	1925-26 . . . . .	3 or 4	
Workrite . . . . .	1926-27 . . . . .	5 or 6	
Workrite . . . . .	1925-26 . . . . .	1 or 2	
Zenith . . . . .	1926-27 10-tube . . . . .	5 or 6	
Zenith . . . . .	6-tube . . . . .	1 or 2	
Zenith . . . . .	3 R and 4 R . . . . .	1 or 2	

## Kit Sets

Many "kit sets" have more than one tube operating at detector voltage. For sets of this kind remove the fixed resistor from the Socket Power and replace it with a 10,000-ohm Bradleyunit fixed resistor. Some of these sets are listed below:

Remler-Best Super	Microdyne (Apex)
World's Record Super 9	Haynes Griffin Super-Heterodyne
Victoreen	General Radio Super-Heterodyne
Silver Marshall	Ultradyn

### Important Note Regarding C Batteries

The Socket Power does not eliminate the C battery. Connect C batteries according to the radio set manufacturer's instructions.

The following table gives suitable C battery voltages for power tubes when using a Socket Power:

SOCKET POWER TYPE	UX-120 CX-220	UX-112 CX-112	UX-171 CX-371
B-603, B-253, AB-663, AB-253, AB-6631, AB-6231		7.5 to 9	25½ to 31½
AB-463, AB-423, AB-4631, AB-4231, B-603, B-253	22½		
DB	19½ to 21	6 to 7½	19½ to 22½
DAB-4	19½ to 21		

Usually sets of five tubes or less will require the higher C voltage, and sets of more than five tubes will require a lower C voltage.

## Philco Socket Power Testing

It is possible by a few simple tests without meters to determine whether or not a Philco Socket Power is operating normally.

### For All Alternating Current Types Except B-604 "A" and "A" Part of "AB" Socket Powers

#### Testing the Battery

If the charge indicator balls are up and the radio tubes fail to light, the trouble is with the fuse in the Socket Power, a loose or dirty connection, or the battery has been filled with high gravity acid.

With a short piece of copper wire, short-circuit momentarily each individual cell of the "A" battery. As each cell is shorted a spark should be obtained. If any cell in the battery is dead no spark will be obtained when that cell is shorted.

If a low scale voltmeter is available it can be used here to check the battery voltage. With the radio set turned on, the voltage at the battery terminals should be at least 5.5 for the 3-cell or 6-volt battery and 3.6 for the 2-cell or 4-volt battery.

If the battery voltage is less than this, read the voltage of the individual cells. All of the cells should read about the same—not less than 1.8 volts.

If one cell of the battery is low in voltage, examine the battery for high gravity acid, internal short circuit and loose plates.

To adjust the acid in a battery which has been filled to a higher gravity than called for, unscrew the vent tubes from the tops of the cells and, by using a hydrometer with a small rubber tube on the end, suck out as much of the acid as possible. After doing this bring the solution level up to the high mark by adding pure water. Have the Socket Power on charge while doing this adjusting and allow it to charge for several hours after adding water as described above, to allow the water to mix with the rest of the solution, then read the specific gravity. If it is still too high repeat the operation. In



some cases it may be necessary to repeat this three or four times. **Do not drop any acid on the top of the battery.**

### **Testing the Rectifier Cell**

If both of the charge indicator balls remain down even after the Socket Power switch has been in the "OFF" or charging position for 24 hours, the trouble is probably in the rectifier cell. The best way of checking this is to remove the rectifier cell from the Socket Power and replace it with a new one. Using HIGH tap with the new rectifier cell should bring the charge indicator balls up.

Both the old and the new rectifier cells will gas when the switch is in the "OFF" position, so that it is not possible to tell if they are charging by looking at them.

If there is no gas given off from either of the electrodes in the rectifier cell when the Socket Power switch is "OFF" examine the house socket to see that it is alive and inspect the attachment plug and cord and the wiring of the Socket Power itself for an open circuit.

## **Philco Socket Power Testing**

### **For All Alternating Current Types Except B-604**

### **"B" and "B" Part of "AB" Socket Powers**

### **Testing the Terminal Output**

Disconnect all wires running from the radio set to the Socket Power and snap the switch of the Socket Power to "ON." Allow the protective lamp (Mazda lamp) in the Socket Power to get dim, then replace this protective lamp with a 15-watt or 25-watt Mazda lamp.

Short circuit the "B-" and "B+ PWR" terminals. If a hot spark is produced and the Mazda lamp lights the "B+ PWR" terminal is O.K. If no spark is obtained or if the lamp does not light, follow the tests outlined below under **No Voltage at "B+ PWR" Terminal.**

Short circuit "B-" and "B+ AMP" terminals and with this short on, gradually screw down the variable resistor and the Mazda lamp should gradually get brighter. Unscrewing the variable resistor should make the lamp dimmer.

If the lamp flickers or if it does not get brighter when the variable resistor is screwed down, either the variable resistor is faulty or else there is a loose connection between the "B+ PWR" terminal and the variable resistor, or between the variable resistor and the "B+ AMP" terminal.

If the short circuit from the "B-" terminal to the "B+ AMP" terminal is removed and the Mazda lamp still varies in brightness as the variable resistor is turned, the trouble is due to a faulty condenser.

Short circuiting the "B-" and the "B+ DET" terminals should give a fairly hot spark. If no spark is obtained the trouble is probably in the fixed resistor unit. Replace this resistor with one known to be good.

If no spark is obtained even after changing the fixed resistor, remove the short circuit from "B-" to "B+ DET" and place a short circuit across from "B+ DET" to "B+ AMP" terminal. With this short left on, screw the variable resistor clear down. If the Mazda lamp lights the trouble is in the condenser.

### **Testing the Rest of the Circuit**

If all the above terminals test O.K., check for full voltage by short circuiting Philcotron clips F and H (See Fig. I) which should light the Mazda lamp very bright. If the lamp lights only dim the transformer is faulty, otherwise the Socket Power is delivering full voltage.

Test the Philcotrons by short-circuiting each pair of Philcotron terminal clips. This should light the lamp nearly as bright as when the clips F and H are shorted.

If the Mazda lamp fails to light bright when (See Fig. I) A and B are shorted, there is a loose connection at C or D; C and D are shorted, there is a loose connection at A or B; E and F are shorted, there is a loose connection at G or H; G and H are shorted, there is a loose connection at E or F.

## Philco Socket Power Testing

For All Alternating Current Types Except B-604

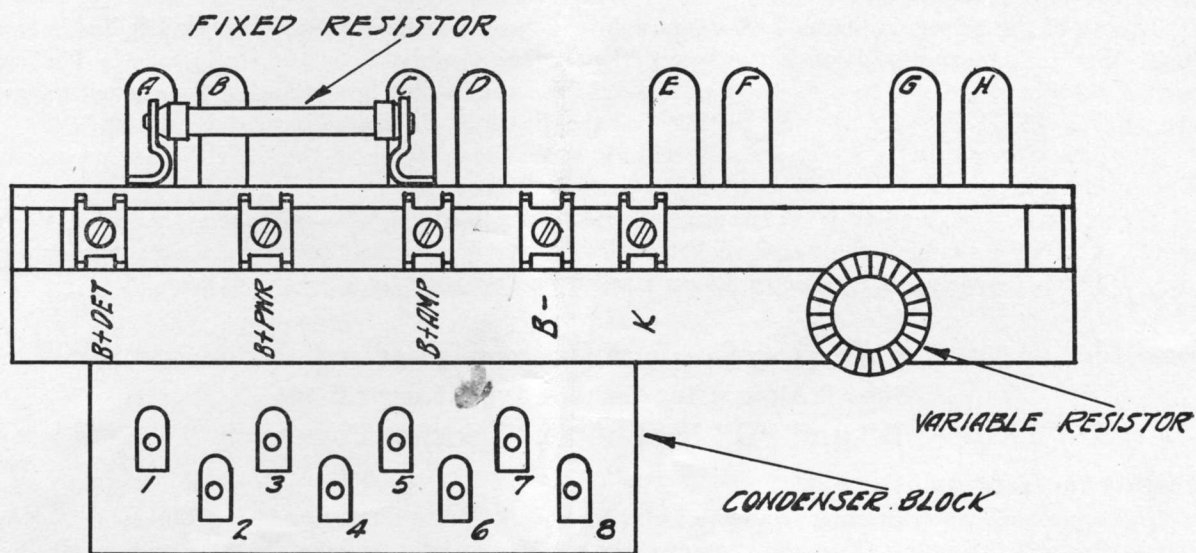


Fig. I

### No Voltage at "B+ PWR" Terminal: Mazda Lamp Not Lit

Short-circuiting terminals—

F and H Should light lamp very bright.

1 and 2 Should give hot spark and light lamp bright.

2 and 3 Should give hot spark and light lamp dim.

3 and 4 Should give hot spark and light lamp very dim.

If no spark is obtained at one of the above terminals but the lamp lights, there is an open condenser lead, an open condenser or a wrong connection on the condenser block. Check connections on condenser block with Fig. II.

If no spark is obtained and the lamp does not light on shorting:

F and H The current is not on or else there is a faulty Mazda lamp, switch, transformer, A. C cord or a loose connection.

1 and 2 Loose connection on Philcotron rack.

2 and 3 Faulty choke coil.

3 and 4 Faulty choke coil.

If a spark is obtained when terminals 3 and 4 are shorted but there is no spark when "B-" and "B+ PWR" terminals are shorted, there is an open circuit either between terminal 3 and the "B+ PWR" terminal or terminal 4 and the "B-" terminal.

### No Voltage at "B+ PWR" Terminal: Mazda Lamp Lit.

Short circuit terminals—

F and H If no change in brilliancy of lamp there is a short in the cable leading to the Philcotron rack, in the Philcotron rack, or the Philcotron cells are worn out.

1 and 2 If no change in brilliancy of lamp, condenser block is faulty.

2 and 3 If no change in brilliancy of lamp, condenser block is faulty.

3 and 4 If no change in brilliancy of lamp, condenser block is faulty.



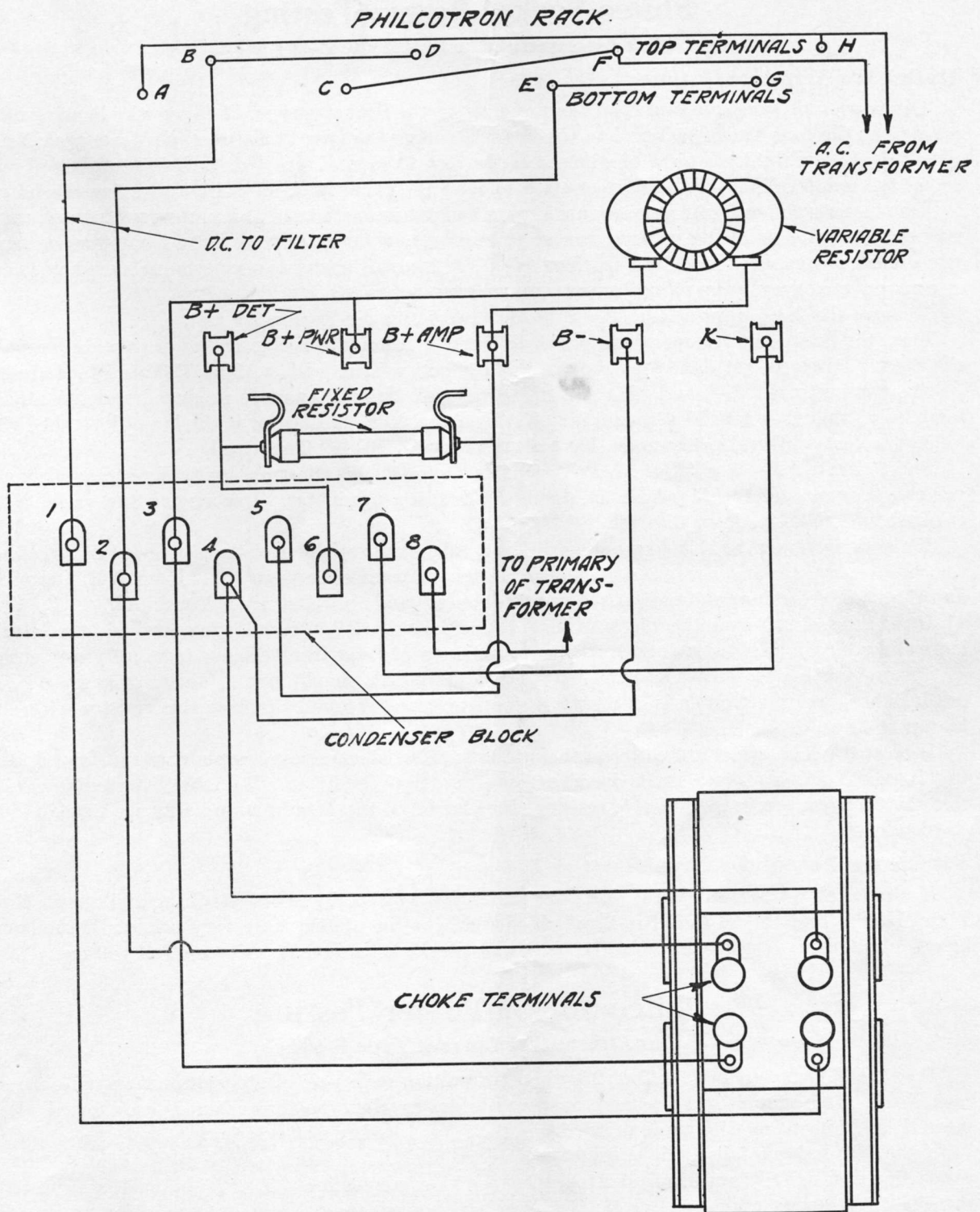


Fig. II

## Philco Socket Power Testing

### For Alternating Current Type B-604

#### Testing the Terminal Output

Disconnect all wires running from the radio set to the Socket Power. Remove the housing after taking out the four screws fastened to the base. Remove the four Philcotron cells from rack No. 1 (See Fig. III) and bridge a piece of wire across the clips D to E of rack No. 1. Bridge a piece of wire across the two terminals of the safety switch to close the primary circuit without having the lid on.

DO NOT ATTEMPT TO JUMP ACROSS THIS SAFETY SWITCH WHILE THERE ARE EIGHT PHILCOTRON CELLS IN THE SOCKET POWER. BY TAKING THE FOUR PHILCOTRON CELLS OUT OF RACK NO. 1 AND TESTING THE SOCKET POWER WITH THE FOUR CELLS OF RACK NO. 2 IN PLACE, THERE IS NO DANGER AS THE VOLTAGE IN THIS CASE IS ONLY HALF OF THE NORMAL OPERATING VOLTAGE.

Remove the fixed resistor from Rack No. 1. Leave this out during the test.

Snap the Socket Power operating switch to "ON." Allow the protective lamp (Mazda lamp) in the Socket Power to get dim, then replace this protective lamp with a 15 or 25-watt Mazda lamp.

Short circuit the "B-" and "B+ PWR" terminals. If a hot spark is produced and the Mazda lamp lights the "B+ PWR" terminal is O.K. If no spark is obtained or if the lamp does not light, follow the tests outlined below under **No Voltage at "B+ PWR" Terminal.**

Short circuit "B-" and "B+ AMP" terminals and with this short on, gradually screw down the variable resistor and the Mazda lamp should gradually get brighter. Unscrewing the variable resistor should make the lamp dimmer.

If the lamp flickers or if it does not get brighter when the variable resistor is screwed down, either the variable resistor is faulty or else there is a loose connection between the "B+ PWR" terminal and the variable resistor or between the variable resistor and the "B+ AMP" terminal.

If the short circuit from the "B-" terminal to the "B+ AMP" terminal is removed and the Mazda lamp still varies in brightness as the variable resistor is turned, the trouble is due to a faulty condenser.

Short-circuiting the "B-" and the "B+ DET" terminals should give a fairly hot spark. If no spark is obtained the trouble is probably in the fixed resistor unit. Replace this resistor with one known to be good.

If no spark is obtained even after changing the fixed resistor, remove the short circuit from "B-" to "B+ DET" and place a short circuit across from "B+ DET" to "B+ AMP" terminal. With this short left on, screw the variable resistor clear down. If the Mazda lamp lights the trouble is in the condenser.

#### Testing the Rest of the Circuit

If all the above terminals test O.K., check for full voltage by short-circuiting Philcotron clips F and H (See Fig. III) of rack No. 2, which should light the Mazda lamp very bright. If the lamp lights only dim the transformer is faulty, otherwise the Socket Power is delivering full voltage.

## Philco Socket Power Testing

### For Alternating Current Type B-604

Test the Philcotrons in rack No. 2 by short-circuiting each pair of Philcotron terminal clips of rack No. 2. This should light the lamp nearly as bright as when the clips F and H are shorted. Replace these Philcotrons with those originally in rack No. 1 and repeat this test.

If the Mazda lamp fails to light bright when (See Fig. III) A and B are shorted, there is a loose connection at C or D; C and D are shorted, there is a loose connection at A or B; E and F are shorted, there is a loose connection at G or H; G and H are shorted, there is a loose connection at E or F.

Loose connections or short circuits in rack No. 1 can be found by visual examination. Check wiring with diagram in Fig. IV.



**No Voltage at "B+ PWR" Terminal: Mazda Lamp Not Lit**

If impossible to get at the condenser lugs Nos. 1 to 4 with the Mazda lamp in the socket, remove the lamp and put it in a socket at the end of a short extension cord. Then plug the extension cord into the Socket in the Socket Power.

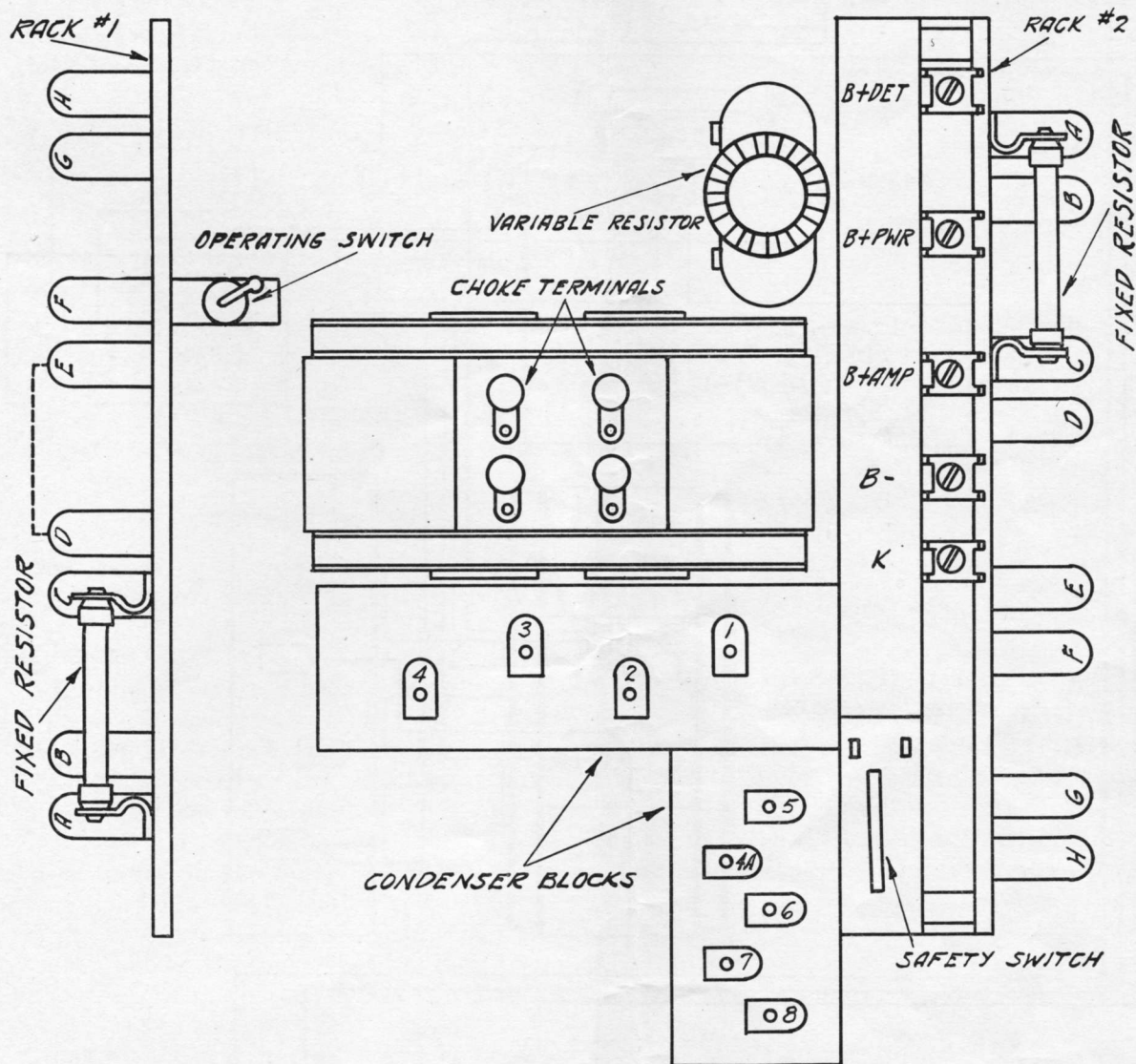


Fig. III

Short-circuiting terminals—

- F and H of rack No. 2 Should light lamp very bright.
- 1 and 2 Should give hot spark and light lamp bright.
- 2 and 3 Should give hot spark and light lamp dim.
- 3 and 4 Should give hot spark and light lamp very dim.

If no spark is obtained at one of the above terminals but the lamp lights, there is an open condenser lead, an open condenser or a wrong connection on the condenser block. Check connections on condenser block with Fig. IV.

SUPPLEMENTARY PHILCO RADIO INSTALLATION AND SERVICE MANUAL

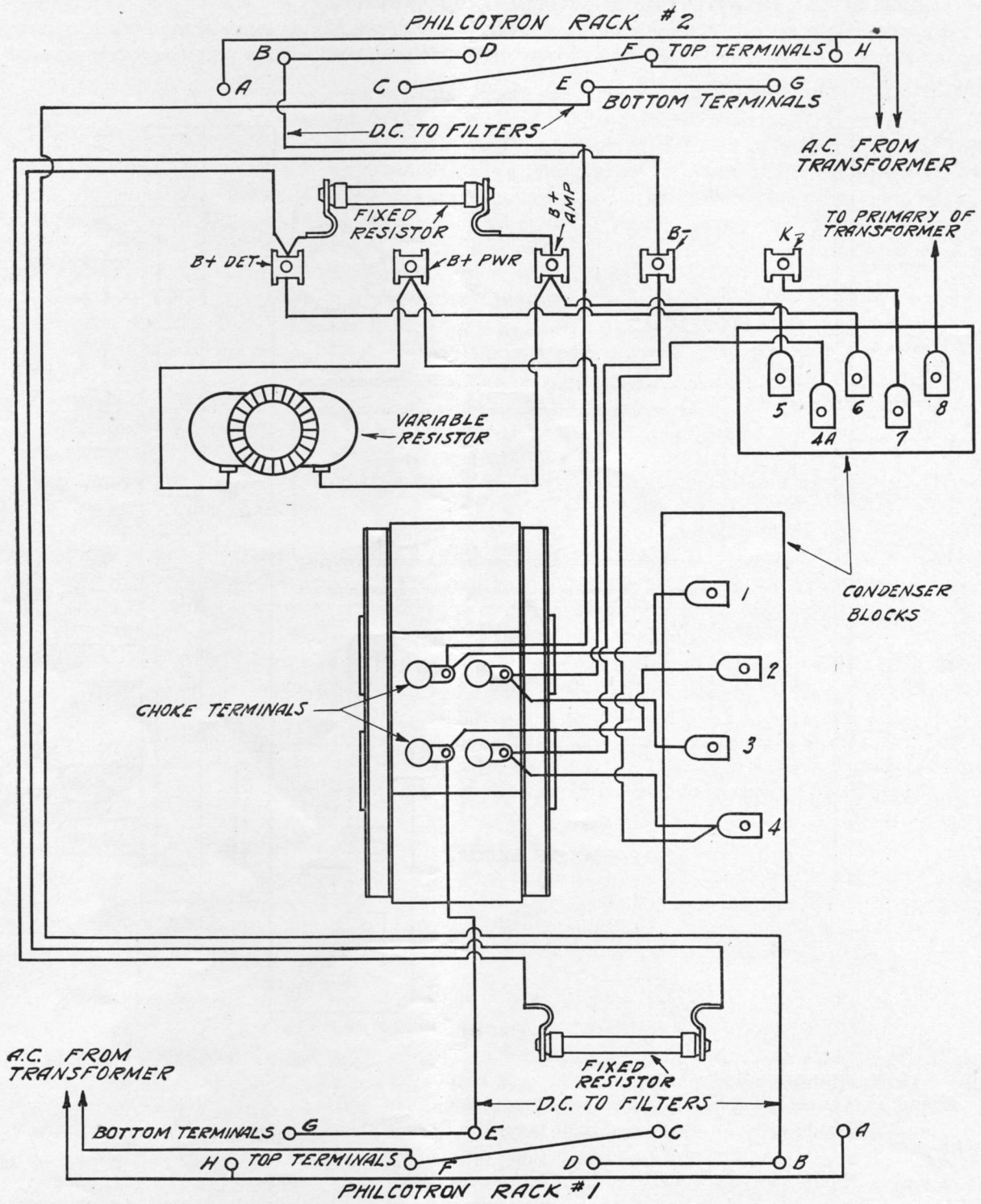


Fig. IV



## Philco Socket Power Testing

### For Alternating Current Type B-604

If no spark is obtained and the lamp does not light on shorting:

F and H of rack No. 2. The current is not on or else there is a faulty Mazda lamp, switch, transformer, A. C. cord or a loose connection.

1 and 2 Loose connection on Philcotron rack No. 2.

2 and 3 Faulty choke coil.

3 and 4 Faulty choke coil.

If a spark is obtained when terminals 3 and 4 are shorted but there is no spark when "B-" and "B+ PWR" terminals are shorted, there is an open circuit either between terminal 3 and the "B+ PWR" terminal or terminal 4 and the "B-" terminal.

### No Voltage at "B+ PWR" Terminal: Mazda Lamp Lit

Short circuit terminals—

F and H of rack No. 2. If no change in brilliancy of lamp there is a short in the cable leading to the Philcotron rack No. 2, in the Philcotron rack No. 2, or the Philcotron cells are worn out.

1 and 2 If no change in brilliancy of lamp, condenser block is faulty.

2 and 3 If no change in brilliancy of lamp, condenser block is faulty.

3 and 4 If no change in brilliancy of lamp, condenser block is faulty.

## Philco Socket Power Testing

### For All Direct Current Types

### "DA" and "A" Part of "DAB" Socket Powers

#### Testing the Battery

If the charge indicator balls are up and the radio tubes fail to light, the trouble is with the fuse in the Socket Power, a loose or dirty connection, or the battery has been filled with high gravity acid.

With a short piece of copper wire, short circuit momentarily each individual cell of the "A" battery. As each cell is shorted a spark should be obtained. If any cell in the battery is dead no spark will be obtained when that cell is shorted.

If a low scale voltmeter is available it can be used here to check the battery voltage. With the radio set turned on, the voltage at the battery terminals should be at least 5.5 for the 3-cell or 6-volt battery and 3.6 for the 2-cell or 4-volt battery.

If the battery voltage is less than this, read the voltage of the individual cells. All of the cells should read about the same—not less than 1.8 volts.

If one cell of the battery is low in voltage, examine the battery for high gravity acid, internal short circuit and loose plates.

To adjust the acid in a battery which has been filled to a higher gravity than called for, unscrew the vent tubes from the tops of the cells and, by using a hydrometer with a small rubber tube on the end, suck out as much of the acid as possible. After doing this bring the solution level up to the high mark by adding pure water. Have the Socket Power on charge while doing this adjusting and allow it to charge for several hours after adding water as described above, to allow the water to mix with the rest of the solution, then read the specific gravity. If it is still too high repeat the operation. In some cases it may be necessary to repeat this three or four times. **Do not drop any acid on the top of the battery.**

If battery fails to keep charged, make sure that house socket is alive and that the charge adjusting lamp is not broken. See table in instruction book for proper size Mazda lamp to use in charge adjusting socket.

## “DB” and “B” Part of “DAB” Socket Powers

### Testing the Terminal Output

Disconnect all wires running from the radio set to the Socket Power and snap the switch of the Socket Power to “ON.” Replace the two 50-watt lamps with two 15-watt or 25-watt Mazda lamps.

Short circuit the “B-” and “B+ PWR” terminals. If a hot spark is produced and the Mazda lamps light, the “B+ PWR” terminal is O.K. If no spark is obtained or if the lamps do not light, follow the tests outlined below under **No Voltage at “B+ PWR” Terminal.**

## Philco Socket Power Testing

### For All Direct Current Types

Short circuit “B-” and “B+ AMP” terminals and with this short on, gradually screw down the variable resistor and the Mazda lamps should gradually get brighter. Unscrewing the variable resistor should make the lamps dimmer.

If the lamps flicker or if they do not get brighter when the variable resistor is screwed down, either the variable resistor is faulty or else there is a loose connection between the “B+ PWR” terminal and the variable resistor or between the variable resistor and the “B+ AMP” terminal.

If the short circuit from the “B-” terminal to the “B+ AMP” terminal is removed and the Mazda lamps still vary in brightness as the variable resistor is turned, the trouble is due to a faulty condenser.

Short-circuiting the “B-” and the “B+ DET” terminals should give a fairly hot spark. If no spark is obtained the trouble is probably in the fixed resistor unit. Replace this resistor with one known to be good.

If no spark is obtained even after changing the fixed resistor, remove the short circuit from “B-” to “B+ DET” and place a short circuit across from “B+ DET” to “B+ AMP” terminal. With this short left on, screw the variable resistor clear down. If the Mazda lamps light the trouble is in the condenser.

### Testing the Rest of the Circuit

If all the above terminals test O.K., check for full voltage by short-circuiting terminals F and H (See Fig. V) which should light the Mazda lamps bright.

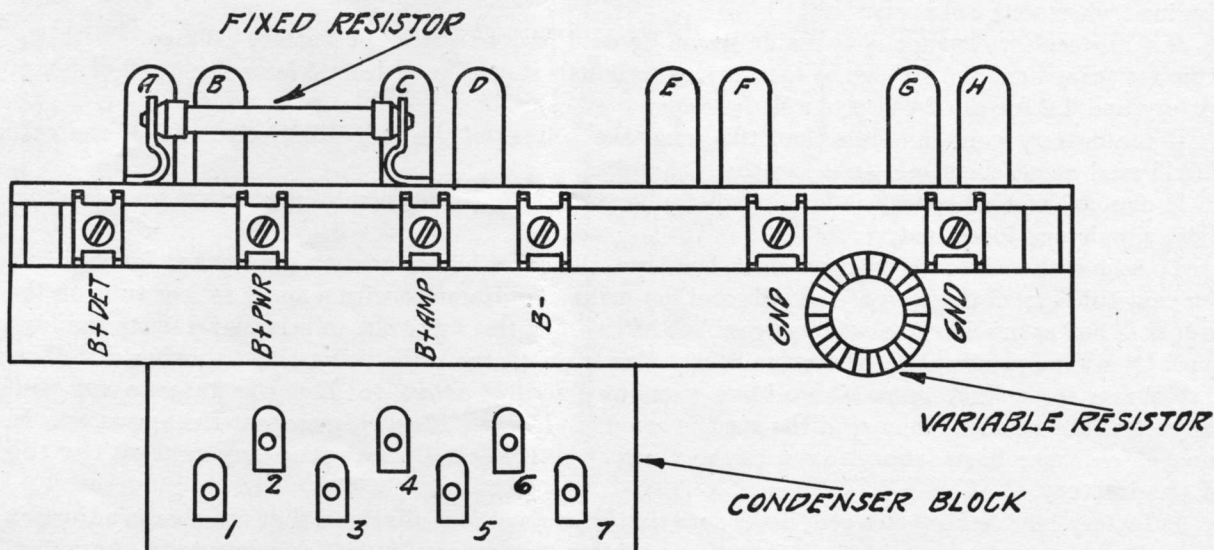


Fig. V



## **Philco Socket Power Testing**

### **For All Direct Current Types**

#### **No Voltage at "B+ PWR" Terminal: Mazda Lamps Not Lit**

Short-circuiting terminals—

F and H Should light lamps bright.

1 and 2 Should give hot spark and light lamps bright.

2 and 3 Should give hot spark and light lamps dim.

3 and 4 Should give hot spark and light lamps very dim.

If no spark is obtained at one of the above terminals but the lamps light, there is an open condenser lead, an open condenser or a wrong connection on the condenser block. Check connections on condenser block with Fig. VI.

If no spark is obtained and the lamps do not light on shorting:

F and H The current is not on or else there is a faulty Mazda lamp, switch, D.C. cord or a loose connection.

1 and 2 Faulty choke coil.

2 and 3 Faulty choke coil.

3 and 4 Faulty choke coil.

If a spark is obtained when terminals 2 and 3 are shorted but there is no spark when "B—" and "B+ PWR" terminals are shorted, there is an open circuit either between terminal 2 and the "B+ PWR" terminal or terminal 3 and the "B—" terminal.

#### **No Voltage at "B+ PWR" Terminal: Mazda Lamps Lit.**

Short circuit terminals—

F and H If no change in brilliancy of lamps, there is a short in the cable leading to the condenser block or to the choke coils.

1 and 2 If no change in brilliancy of lamps, condenser block is faulty.

2 and 3 If no change in brilliancy of lamps, condenser block is faulty.

3 and 4 If no change in brilliancy of lamps, condenser block is faulty.

## **Philco Socket Power Testing**

### **For All Direct Current Types**

#### **Caution**

Be sure that the two GND terminals are used when connecting a direct current Socket Power to a radio set. It is very important that these terminals be used as explained in the Socket Power instruction sheet.

If one of the lamps in the "B" circuit in the Socket Power lights brighter than the other, it is probably due to grounding the radio set direct instead of connecting the ground wire to one of the GND terminals. Even though the set appears to operate normally without using these two terminals, it is best to be on the safe side and always connect the ground wire as explained in the instructions.

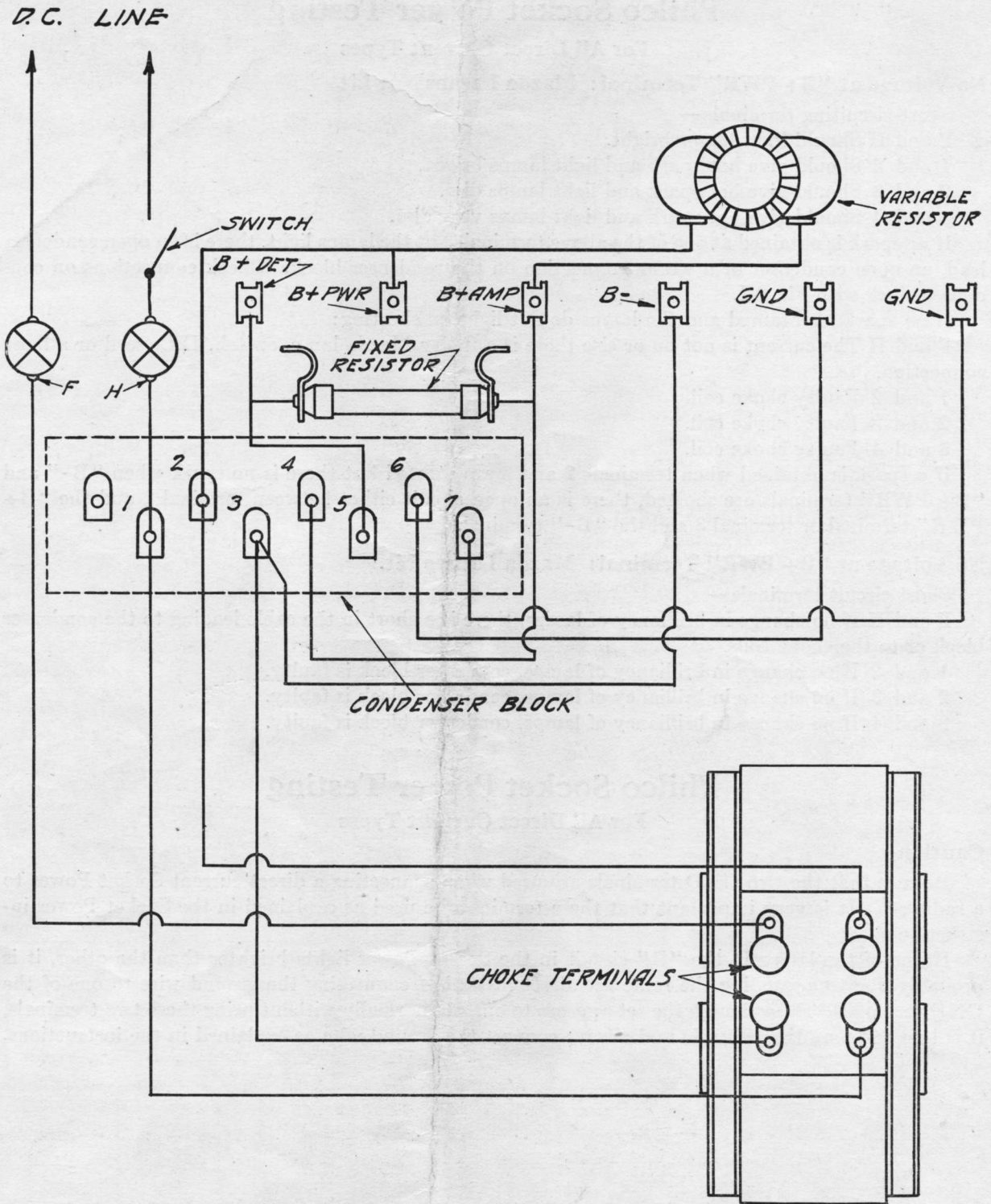


Fig. VI