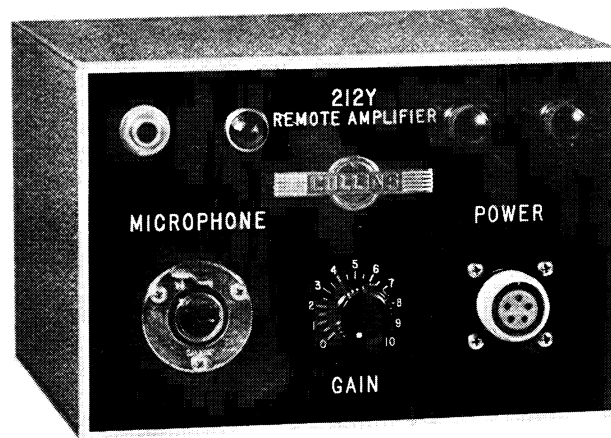




TYPE 212Y

BROADCAST REMOTE AMPLIFIER



COLLINS RADIO COMPANY CEDAR RAPIDS, IOWA

INSTRUCTION BOOK

for

TYPE 212Y BROADCAST REMOTE AMPLIFIER

Manufactured by

COLLINS RADIO COMPANY

Cedar Rapids, Iowa

**520 9313 00
15 December 1952
Second Edition
20 July 1955**

GUARANTEE

The equipment described herein is sold under the following guarantee:

Collins agrees to repair or replace, without charge, any equipment, parts, or accessories which are defective as to design, workmanship or material, and which are returned to Collins at its factory, transportation prepaid, provided

- (a) Notice of the claimed defect is given Collins within one (1) year from date of delivery and goods are returned in accordance with Collins' instructions.
- (b) Equipment, accessories, tubes, and batteries not manufactured by Collins or from Collins' designs are subject to only such adjustments as Collins may obtain from the supplier thereof.
- (c) No equipment or accessory shall be deemed to be defective if, due to exposure or excessive moisture in the atmosphere or otherwise after delivery, it shall fail to operate in a normal or proper manner.

Collins further guarantees that any radio transmitter described herein will deliver full radio frequency power output at the antenna lead when connected to a suitable load, but such guarantee shall not be construed as a guarantee of any definite coverage or range of said apparatus.

The guarantee of these paragraphs is void if equipment is altered or repaired by others than Collins or its authorized service center.

No other warranties, expressed or implied, shall be applicable to any equipment sold hereunder, and the foregoing shall constitute the Buyer's sole right and remedy under the agreements in this paragraph contained. In no event shall Collins have any liability for consequential damages, or for loss, damage or expense directly or indirectly arising from the use of the products, or any inability to use them either separately or in combination with other equipment or materials, or from any other cause.

HOW TO RETURN MATERIAL OR EQUIPMENT. If, for any reason, you should wish to return material or equipment, whether under the guarantee or otherwise, you should notify us, giving full particulars including the details listed below, insofar as applicable. If the item is thought to be defective, such notice must give full information as to nature of defect and identification (including part number if possible) of part considered defective. (With respect to tubes we suggest that your adjustments can be speeded up if you give notice of defect directly to the tube manufacturer.) Upon receipt of such notice, Collins will promptly advise you respecting the return. Failure to secure our advice prior to the forwarding of the goods or failure to provide full particulars may cause unnecessary delay in handling of your returned merchandise.

ADDRESS:

Collins Radio Company
Sales Service Department
Cedar Rapids, Iowa

INFORMATION NEEDED:

- (A) Type number, name, and serial number of equipment
- (B) Date of delivery of equipment
- (C) Date placed in service
- (D) Number of hours of service
- (E) Nature of trouble
- (F) Cause of trouble if known
- (G) Part number (9 or 10 digit number) and name of part thought to be causing trouble
- (H) Item or symbol number of same obtained from parts list or schematic
- (I) Collins' number (and name) of unit sub-assemblies involved in trouble
- (J) Remarks

HOW TO ORDER REPLACEMENT PARTS.

When ordering replacement parts, you should direct your order as indicated below and furnish the following information insofar as applicable. To enable us to give you better replacement service, please be sure to give us complete information.

ADDRESS:

Collins Radio Company
Sales Service Department
Cedar Rapids, Iowa

INFORMATION NEEDED:

- (A) Quantity required
- (B) Collins' part number (9 or 10 digit number) and description
- (C) Item or symbol number obtained from parts list or schematic
- (D) Collins' type number, name, and serial number of principal equipment
- (E) Unit sub-assembly number (where applicable)

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SECTION I

GENERAL DESCRIPTION

1. GENERAL

a. This Instruction Book is intended to serve as a guide to the installation, adjustment, operation and maintenance of the Collins 212Y Broadcast Remote Amplifier.

b. The Collins 212Y Remote Amplifier combines small size and light weight with high fidelity. Careful engineering design has produced an extremely compact, completely accessible unit suitable for dance orchestra and newsroom pickups, sports broadcasts, and any other application where fast "set up" is important or necessary.

c. EQUIPMENT DESCRIPTION.

(1) The amplifier is constructed on a sheet metal chassis and has an aluminum panel and cover. The chassis is held in the cover by means of a dzus type fastener that is located on the rear of the cover. The amplifier may be removed by rotating the fastener 90 degrees counterclockwise, using a screwdriver or coin, then pulling the amplifier out of the cover. The power supply is self contained.

(2) The electrical design of the type 212Y includes all features necessary to provide dependable remote operation. One high fidelity channel is incorporated, which operates from a low level velocity, dynamic or other self-generating microphone. A universal input transformer matches all low impedance commercial type microphones. Three stages of amplification provide an overall gain of 85 db, with an output of ± 17 dbm*. A headphone jack connected across the output terminals permits program monitoring as well as talk back from the studio. Merely exchanging plugs in the power input receptacle permits quick change from a-c to d-c operation. Current drain from batteries on d-c operation is very low.

2. REFERENCE DATA

a. The following equipment is included in each standard shipment:

<u>Collins Type No.</u>	<u>Description</u>	<u>Overall Dimensions</u>	<u>Weight</u>
212Y	Remote Amplifier	7" w, 4-3/4" h, 0-1/4" d	10 lbs.
011 0007 00	Carrying case with pouch for power and microphone cables	7-1/4" w, 7-1/8" h, 7-8" d	
520 9313 00	Instruction Book		

* 1 mw 600 ohm reference level

(1) If d-c operation is desired a type 412C-2 battery box and interconnecting cable will be necessary. Battery box is finished in black wrinkle. Weight including batteries is approximately 16 pounds.

- b. GAIN: 85 db maximum
- c. INPUT IMPEDANCE: 50, 150 or 250 ohms (with T101 Collins Part Number 677 0318 00).
- d. OUTPUT IMPEDANCE: 600 ohms.
- e. POWER OUTPUT: +17 dbm*.
- f. DISTORTION: less than 1.5% between 50-15,000 cps.
- g. NOISE LEVEL: 65 db below normal program level.
- h. FREQUENCY RESPONSE: within ± 1.0 db from 30 to 15,000 cps.
- i. POWER SOURCE: 115 volts a-c, 60 cps. Power supply is self-contained.
- j. FINISH: Black anodic aluminum panel, black wrinkle cover.

3. VACUUM TUBE COMPLEMENT.

The vacuum tubes employed in the type 212Y Remote Amplifier are listed below:

<u>Quantity</u>	<u>Tube Type</u>	<u>Function</u>
1	6AQ6	Input Amplifier
1	6AQ6	Interstage Amplifier
1	6AK6	Output Amplifier
1	7Y4	Rectifier

* 1 mw 600 ohm reference level

SECTION II

INSTALLATION AND INITIAL ADJUSTMENTS

1. INSTALLATION.

a. PRELIMINARY.

(1) UNPACKING. - All equipment supplied with the type 212Y-1 amplifier is shipped in one carton. Remove all packing material and lift unit out carefully. Inspect for apparent damage. Be certain controls work properly. All claims for damage should be filed promptly with the transportation company. If a claim is to be filed the original packing case and material must be preserved.

b. PLACING AMPLIFIER IN OPERATION. - It is suggested that the following procedure be followed in detail when the amplifier is placed in operation for the first time.

(1) Remove the amplifier from the cover by inserting a coin or screwdriver into the slot in the fastener on the rear cover, rotating the fastener on the rear cover, rotating the fastener 90 degrees in a counterclockwise direction, and pulling the amplifier out of the cabinet.

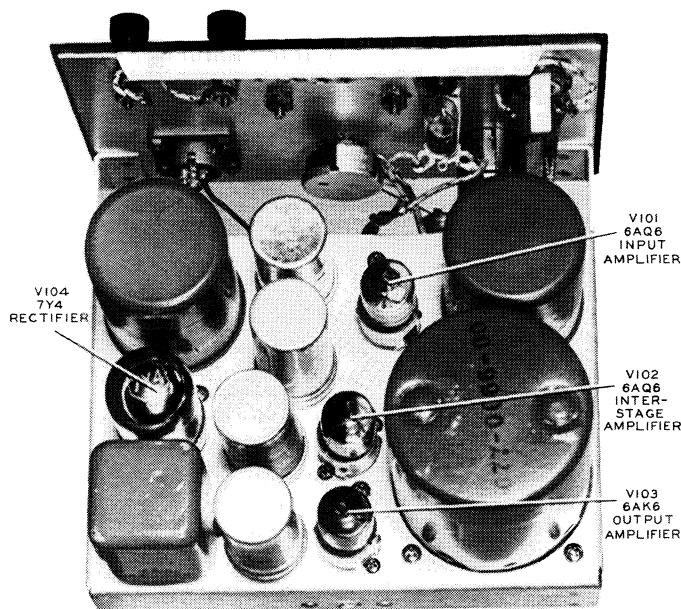


Figure 2-1 Tube Locating Diagram

(2) Insert the tubes in the sockets. Refer to figure 2-1. Check to see that the pilot lamp is screwed firmly into the socket.

(3) The amplifier is supplied to operate with a microphone having an impedance of 50 ohms. For 150 ohm input, remove the two wires from terminals 3 and 6 and connect them to terminals 2 and 7 respectively. For 250 ohm input, connect these two wires to terminals 1 and 8.

(4) Replace the amplifier in cover and fasten in place.

(5) Insert the microphone plug into the MICROPHONE receptacle on the front panel. The two conductors of the microphone cable should be connected to pins 2 and 3 on the plug, and the shield should be connected to pin 1. The 212Y unit is supplied with a cannon type XL-3-13 microphone connector. Adapters are available for other types of connectors. Refer to page 5-7 of the parts list.

(6) Insert the plug, P104, into the POWER receptacle V103 of the 212Y unit.

(7) Connect the outgoing line to the binding posts on the front panel.

(8) Plug the monitor headphone cord plug into the jack on the front panel.

(9) Plug the line cord plug into a source of 110 volts 60 cycle ac. If the pilot lamp lights, it may be assumed that the amplifier is ready for operation.

SECTION III OPERATION

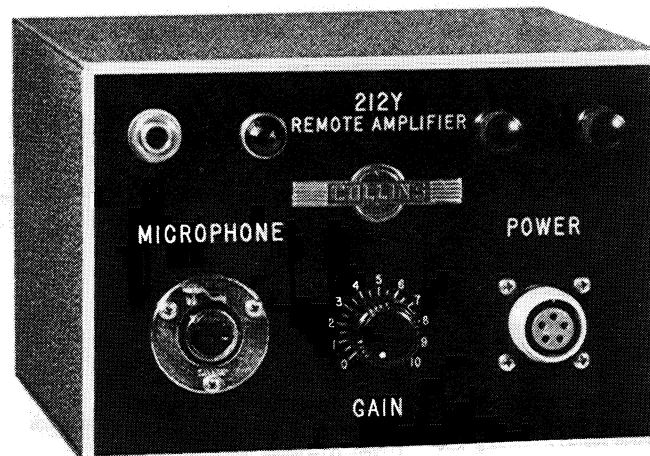


Figure 3-1 Type 212Y Remote Amplifier - Front

1. GENERAL

The type 212Y Remote Amplifier has been designed for extreme simplicity in operation, since it will often be operated by non-technical persons. The only adjustment is that of GAIN and this is intended to be set before the beginning of the program. A pair of monitor headphones connected to the jack on the front panel permits the operator to monitor the outgoing program. Since the phones are connected directly across the output line, it is possible for the remote operator to carry on two way communications with the studio provided the studio is equipped with a Collins 212A, 212B or similar incorporating a remote Cue Circuit. The amplifier is turned off by removing the line cord plug from the a-c socket.

2. TUBE REPLACEMENTS

All replacement tubes, regardless of type or make, should be tested and selected for uniform characteristics and low noise in order to obtain best results

from the 212Y amplifier. Selected tubes can be obtained from the Collins Radio Company at any time at prevailing prices.

3. BATTERY OPERATION.

The 212Y is primarily designed for a-c operation, but may be battery operated if desired. For this purpose a Collins Type 412C-2 Battery Box and interconnecting cable will be required. Refer to figure 3-2. The weight of battery box and batteries is approximately 16 pounds.

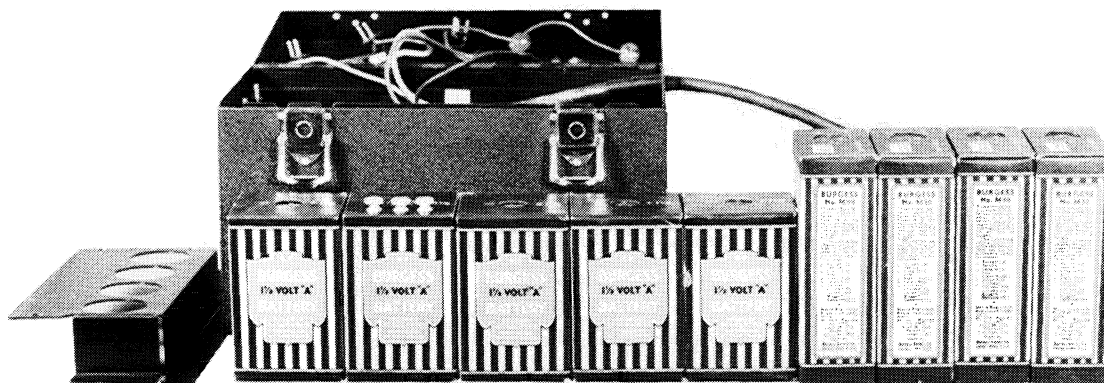


Figure 3-2 Type 412C-2 Battery Box and Batteries

The current drain is very low, with the batteries listed in the table below filament battery life is approximately 50 hours and B battery life is over 100 hours.

a. The following table lists the various A batteries known to be suitable for use with the type 212Y:

Manufacturer	No. Required	Mfr's No.	Total Service Hours	
			2 hr. per day	Continuous
Burgess	5 (Series)	4F	50	30
Eveready	5 (Series)	742	50	30

Other manufacturers of "A" battery types that are interchangeable with the above table are:

Ray O Vac P94A	General 4F1	Usalite 634	Advance 247	Bright Star 462
Winchester 4816	Bond 4826	Philco P94	Sears Roebuck 5089	Montg'y Ward 5021

b. The "B" battery requirement of the type 212Y is 16 ma. at 180 volts. The following table lists the various B batteries known to be suitable for use in the 212Y:

Manufacturer	No. Required	Mfr's No.	Total Service Hours	
			2 hr. per day Continuous	
Burgess	4 (Series)	M30	110	80
Eveready	4 (Series)	482	110	80

Other manufacturers of "B" battery types that are interchangeable with the above table are:

Ray O Vac P7830	Usalite 640	Advance 284	Bright Star 30-33
Winchester 6210	Bond 6220	Sears Roebuck 5079	

All of the above data on service life was supplied by the battery manufacturer and no liability is assumed by the Collins Radio Company for failure of the batteries to deliver the indicated service.

4. FREQUENCY RESPONSE MEASUREMENTS.

In testing high fidelity amplifiers do not rely upon the signal generator for constant output over the entire range. It is recommended that a vacuum tube voltmeter be placed across the amplifier input and the input voltage be held constant when making frequency response measurements.

SECTION IV

MAINTENANCE

This radio equipment has been constructed of materials considered to be the best obtainable for the purpose, and has been carefully inspected and adjusted at the factory. A minimum amount of maintenance should be required.

1. TROUBLE SHOOTING.

a. GENERAL. - In case of failure or improper operation of the amplifier, an attempt should be made to localize the fault. In many cases the defect will result in abnormal plate current or voltage measurement. The readings may give a clue to the source of trouble. By means of systematic checking, the trouble can be narrowed down to a single stage, after which inspection and localized checking with test instruments can be used to isolate the fault. The procedure of investigation might be outlined as follows:

- (1) INPUT AMPLIFIER STAGE
 - (a) input transformer
 - (b) filament circuit
 - (c) grid circuit
 - (d) plate circuit
- (2) INTERSTAGE AMPLIFIER
 - (a) gain control
 - (b) filament circuit
 - (c) grid circuit
 - (d) plate circuit
- (3) OUTPUT AMPLIFIER
 - (a) grid circuit
 - (b) filament circuit
 - (c) plate circuit
 - (d) output transformer

(4) POWER SUPPLY

- (a) plate voltage
- (b) filament voltage

b. IMPROPER AUDIO FREQUENCY RESPONSE. - If all operating voltages are correct but the audio frequency response is unsatisfactory, the following suggestions may be followed in locating the trouble.

(1) Determine first if the poor response is from the associated microphone. If possible, a variable frequency audio oscillator should be fed into the input circuit at proper level and termination and a frequency response curve taken. This will indicate whether or not the fault lies in the 212Y unit.

(2) If a poor response is obtained under all conditions, in the above paragraph, the output of the oscillator should be connected at the intermediate amplifier and the frequency response measured. If the response is still poor, connect the oscillator to the grid of the output amplifier. A poor response at this point indicates the fault lies in the output stage.

(3) Once the fault has been localized it will be necessary to find the exact point of the defect by a careful check of the circuit components and wiring. Since practically all parts in the amplifier have some bearing on the performance it is not practicable to attempt to give a detailed cause and effect. Service work of this nature should be undertaken only by a competent technician.

c. DISTORTION. - Excessive amplitude distortion can be caused by a defective tube or improper operating voltage.

d. NOISE. - Noise in the type 212Y can be divided into four classes: (1) microphonics, (2) hum, (3) hiss, (4) intermittent noise other than the three just listed. The first three are usually present to some degree in any amplifying system.

Their magnitude depends upon circuit design and unit construction. In the Collins Type 212Y, these undesirable effects have been reduced to a negligible value, even at full gain.

(1) Should microphonics become excessive, the trouble will usually be eliminated by replacing the troublesome tube or tubes.

(2) Hum can be caused by induction, by defective tubes, by incomplete shielding of the input leads, or by a defective power supply.

(a) Induction will occur only when the unit is near a very strong alternating magnetic field.

(b) Hum caused by defective tubes can best be located by substitution of other tubes known to be in good condition. It is suggested that one or more spare tubes of each type be kept available.

(c) A defective power supply can cause hum due to insufficient filtering of the high voltage supply.

(3) Hiss can be caused by an open circuit in a low level stage or a defective tube. In either case, it is not likely that a signal will pass through the defective stage, and this point should be checked first. The defective stage can be located most easily by progressively checking the output of each stage.

(4) Intermittent noises do not occur very often, however, when they do occur, it is quite difficult to locate the cause. Intermittent noises are usually caused by faulty connections either in circuit wiring or in a circuit component. A good procedure to follow in locating such trouble is to listen to the noise in the headphones while removing first the input connections, then the first tube, then each tube in turn until the noise stops. It is quite likely that the noise is associated with the apparatus or wiring connected with the last tube or connector removed. The associated apparatus and wiring should be checked closely, and if necessary parts thought to be defective should be replaced by others known to be in good working order.

e. VOLTAGE MEASUREMENTS. - The following table lists typical voltages measured in the circuit during normal operation. All dc voltages were measured between ground, chassis, and the point indicated using the highest readable range on a 20,000 ohm-per-volt meter.

The negative terminal of the meter was grounded. The supply line voltage was 105 volts. Reading must be corrected for other values of line voltage.

Tube	Point of Test	Voltage
V101	Terminal pin No. 2	1.13 v
6AQ6	Terminal pin No. 7 at point of C106 and R110	95 v 155 v
V102	Terminal pin No. 2	1.17 v
6AQ6	Terminal pin No. 7 at point of C107, R110, and R111	105 v 160 v
V103	Terminal pin No. 2, 5 6	152 v
6AK6	Terminal pin No. 7 at points C108, L101 R111	2.2 v 175 v
V104	Terminal pin No. 1	3 v ac
7Y4	Terminal pin No. 3	172 v ac
	Terminal pin No. 6	172 v ac
	Terminal pin No. 7	185 v
	Terminal pin No. 8	3 v ac

f. RESISTANCE MEASUREMENTS. - The following table lists typical resistance measurements in the type 212Y amplifier. All measurements are from socket terminals to ground.

Pin No.	V101 6AQ6	V102 6AQ6	V103 6AK6
1	7000 ohms	260,000 ohms with R103 at max	460,000 ohms 460,000 ohms
2	1800 ohms	2130 ohms	13,000 ohms
3	.5 ohm	.5 ohm	.5 ohm
4	.5 ohm	.5 ohm	.5 ohm
5	GND	GND	13,000 ohms
6	GND	GND	13,000 ohms
7	280,000 ohms	280,000 ohms	680 ohms

Note: All measurements are from socket terminals to ground, POWER OFF.
Tubes in sockets.

2. REPLACEMENT PARTS.

The detailed parts list which follows in the next section will aid in the choice of correct replacement parts. Should the type 212Y amplifier develop difficulties which cannot be handled in the field, the factory should be notified. However, it is difficult to suggest possible solutions unless complete information is given as to the symptoms and the behavior of the equipment.

NOTES

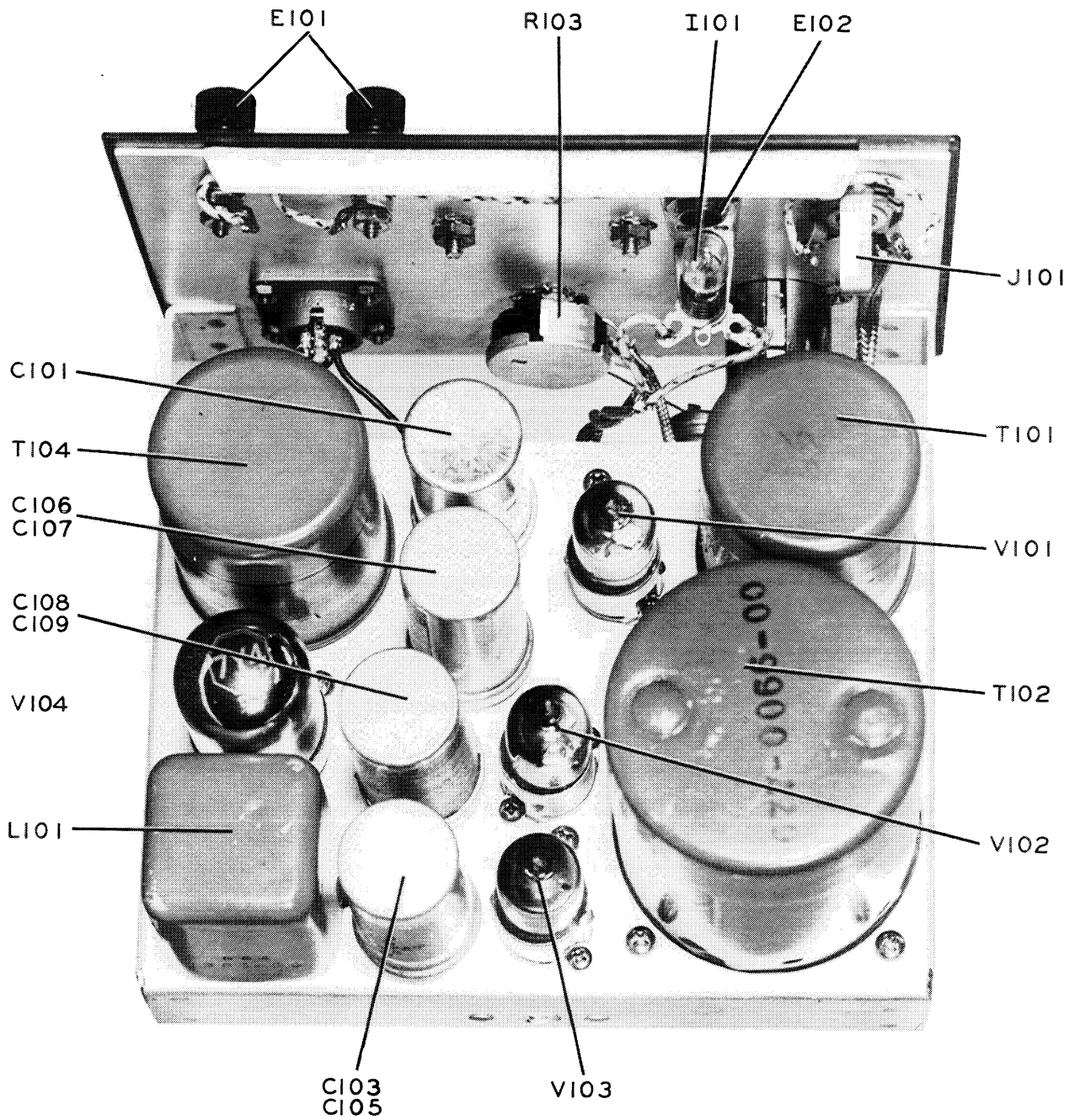


Figure 4-1 Type 212Y Remote Amplifier, Parts Arrangement - Top

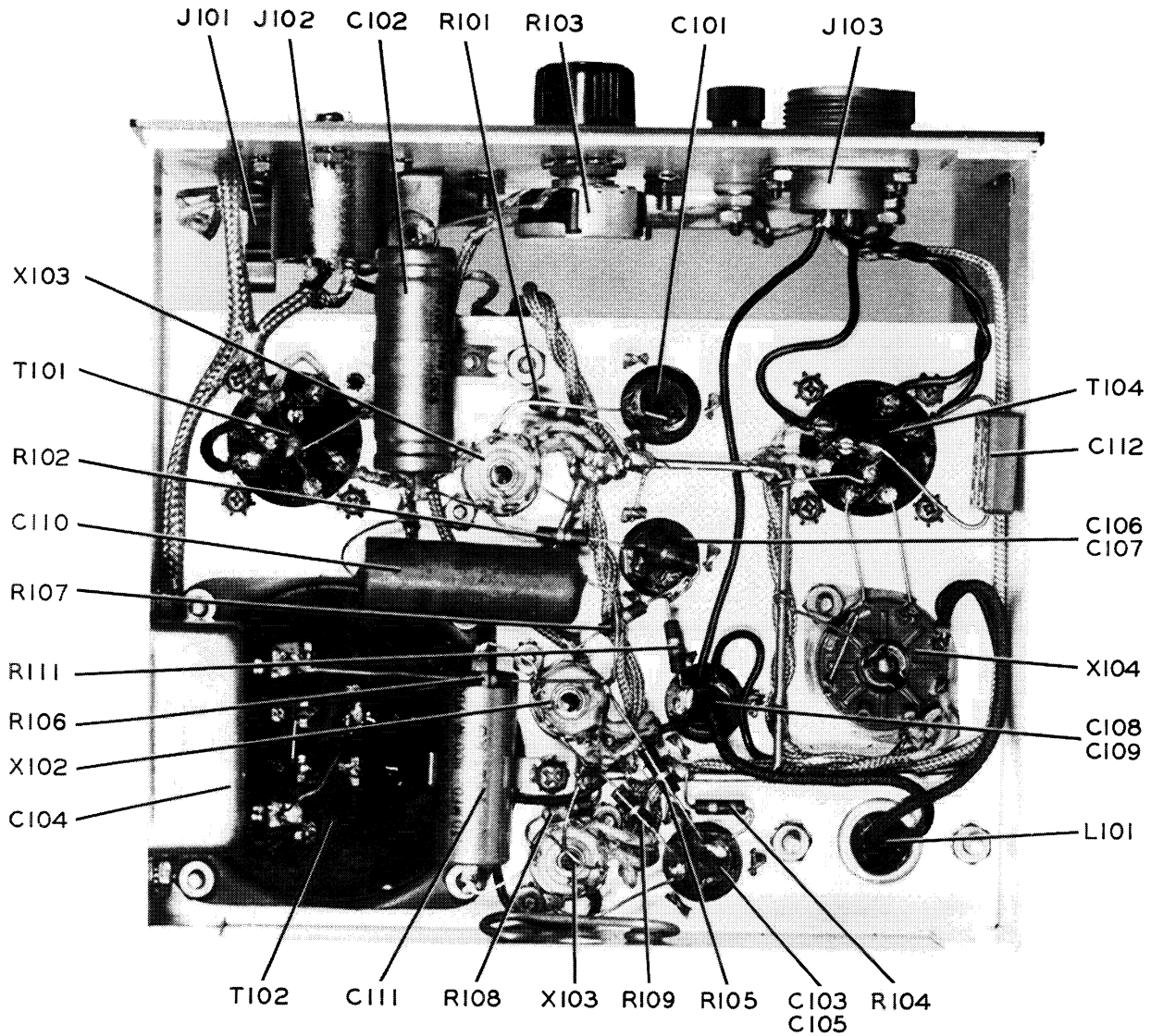


Figure 4-2 Type 212Y Remote Amplifier, Parts Arrangement - Bottom

SECTION V PARTS LIST

TYPE 212Y REMOTE AMPLIFIER

520 3095 00

ITEM	CIRCUIT FUNCTION	DESCRIPTION	COLLINS PART NUMBER
C101	Input-amplifier cathode bypass	CAPACITOR: Fixed; electrolytic; dual section; 40-40 mf -15% +100%; 25 WV; metal case 2" lg x 1" diam excluding terminals; case is common negative terminal; solder lug terminals.	183 1005 00
C102	Input-interstage amplifier coupling	CAPACITOR: Fixed; foil paper; .1 mf $\pm 20\%$; 600 WVDC; metal case 1-9/16" lg x 5/8" diam excluding term; solder lug term; includes mtg bracket.	930 0007 00
C103	Interstage amplifier cathode bypass	CAPACITOR: Fixed; electrolytic; dual section; 40-40 mf -15% +100%; 25 WV; metal case 2" lg x 1" diam excluding terminals; case is common negative terminal; solder lug terminals.	183 1005 00
C104	Inverse feedback	CAPACITOR: Fixed; foil paper; single sect; .1 mf $\pm 20\%$; 600 WVDC.	956 2016 40
C105	Output amplifier cathode bypass	CAPACITOR: Section of C103	
C106	Plate supply voltage filter	CAPACITOR: Fixed; electrolytic; dual sect; 20-20 mf -15% +100%; 250 WV; metal case 2" lg x 1" diam excluding term; case is common negative term; solder lug term	183 1006 00
C107	Plate supply voltage filter	CAPACITOR: Section of C106	
C108	Plate supply voltage filter	CAPACITOR: Fixed; electrolytic; dual sect; 20-20 mf -15% +100%; 250 WV; metal case 2" lg x 1" diam excluding term; case is common negative term; solder lug term	183 1006 00

TYPE 212Y REMOTE AMPLIFIER

520 3095 00

ITEM	CIRCUIT FUNCTION	DESCRIPTION	COLLINS PART NUMBER
C109	Plate supply voltage filter	CAPACITOR: Section of C108	
*C110	Interstage amplifier cathode bypass	CAPACITOR: Fixed; paper; .03 mf $\pm 10\%$; 600 WV; 1/2" diam x 1-5/8" lg tubular cardboard case; axial leads	931 3520 00
C111	Interstage-output amplifier coupling	CAPACITOR: Fixed; foil paper; .1 mf $\pm 20\%$; 600 WVDC; metal case 1-9/16" lg x 5/8" diam excluding term; solder lug term; includes mtg bracket.	930 0007 00
C112	AC line filter	CAPACITOR: Fixed; mica; 10,000 mmf $\pm 20\%$; 300 WVDC.	935 5009 00
E101	Pilot light socket	SOCKET: Mtg bracket for miniature screw base bulb; 1" lg x 1/2" wd x 1-13/32" h overall.	262 1110 00
	Pilot light jewel for E101	JEWEL: Red; faceted jewel 3/16" h x 9/16" diam; bushing 7/16-27 thd 3/8" lg includes hex nut.	262 2110 00
E102	Gain control knob for R103	KNOB: Molded black bakelite; for 1/4" diam shaft; 8-32 setscrew; 17/32" h x 13/16" diam.	503 1509 001
1101	Pilot lamp	BULB: Miniature screw base; 6.3 v at 0.25 amp; type T 3-1/4.	262 0001 00
J101	Line monitoring jack	JACK: Phone; midget two conductor; for plug with 1/4" diam barrel; bushing 3/8-32 thd 3/8" lg; 1-5/16" lg x 3/4" diam overall; includes hex nut and washer.	358 1080 00
J102	Microphone receptacle	RECEPTACLE: Wall mtg; 3 female polarized contacts; contact rating 15 amp; 1-1/16" lg x 1-7/16" diam excluding term; term accommodate #14 wire.	370 2019 00

* Used for operation with 250 ohm input impedance

TYPE 212Y REMOTE AMPLIFIER

520 3095 00

ITEM	CIRCUIT FUNCTION	DESCRIPTION	COLLINS PART NUMBER
J103	Power receptacle	RECEPTACLE: Five contact; box mtg; 7/8-20 NEF-2 thd for coupling; type RB; size 14; 1-3/16" sq mtg plate x 1-5/16" lg overall	357 2000 00
J104	Output connector	POST, BINDING: Insulated; black phenolic cap; fits mtg hole .343" lg x .300" wd; 6-32 stud 1/2" lg; wire hole 3/32" diam; 1-7/16" lg x 1/2" diam overall.	372 3000 00
J105	Output connector	POST, BINDING: Insulated; black phenolic cap; fits mtg hole .343" lg x .300" wd; 6-32 stud 1/2" lg; wire hole 3/32" diam; 1-7/16" lg x 1/2" diam overall.	372 3000 00
L101	Plate voltage supply filter	REACTOR: Filter; 15 hy; .015 amp; 600 ohm DC resistance; 12" insulated wire leads; compound filled metal case 1.350" lg x 1.350" wd x 2" h excluding mtg studs.	668 3362 00
P101		CONNECTOR: Not used	
P102		CONNECTOR: Not used	
P103		CONNECTOR: Not used	
P104	AC cable connector	CONNECTOR: Pin insert; 5 polarized male contacts; type PA; shell size 14S; 7/8-20 EF-2 thd in locking ring; 1-11/16" lg x 1-1/8" diam overall. CLAMP: Cable; 3/4-20 thd to fit connector; cable opening 7/16" diam min; screw type clamp; use with P104.	357 5001 00 357 8002 00
P105	AC service plug	CONNECTOR: Plug; ac; 2 prong male; black rubber body; 11/32" diam cord way; 1-5/16" lg x 1-3/8" diam excluding prongs; prongs 3/4" lg.	368 0024 00

TYPE 212Y REMOTE AMPLIFIER

520 3095 00

ITEM	CIRCUIT FUNCTION	DESCRIPTION	COLLINS PART NUMBER
R101	Input amplifier cathode	RESISTOR: Fixed; composition; 1800 ohm $\pm 10\%$; 1/2 w.	745 1097 00
R102	Input amplifier plate	RESISTOR: Fixed; composition; 100,000 ohm $\pm 10\%$; 1/2 w	745 1170 00
R103	Gain control	RESISTOR: Variable; composition; 250,000 ohm $\pm 20\%$; 1/2 w min; mechanical rotation 274 to 318 deg; 1/4" diam shaft; 3/4" lg, case 1-5/32" diam x 19/32" d; mtg bushing thd 3/8-32 NF-2; solder lug term	376 3011 00
R104	Interstage amplifier cathode	RESISTOR: Fixed; composition; 1800 ohm $\pm 10\%$; 1/2 w.	745 1097 00
R105	Interstage amplifier cathode	RESISTOR: Fixed; composition; 330 ohm $\pm 10\%$; 1/2 w.	745 1065 00
R106	Inverse feedback	RESISTOR: Fixed; composition; 68,000 ohm $\pm 10\%$; 1/4 w	745 0163 00
R107	Interstage amplifier grid	RESISTOR: Fixed; composition; 100,000 ohm $\pm 10\%$; 1/2 w	745 1170 00
R108	Output amplifier grid	RESISTOR: Fixed; composition; 470,000 ohm $\pm 10\%$; 1/2 w	745 1198 00
R109	Output amplifier cathode	RESISTOR: Fixed; composition; 680 ohm $\pm 10\%$; 1/2 w.	745 1079 00
R110	Plate supply voltage filter	RESISTOR: Fixed; composition; 10,000 ohm $\pm 10\%$; 1/2 w.	745 1128 00
R111	Plate supply voltage filter	RESISTOR: Fixed; composition; 10,000 ohm $\pm 10\%$; 1 w	745 3128 00
T101	Input	TRANSFORMER: Audio input; high fidelity; Pri: 50, 150 or 250 ohm nom impedance CT; Sec: 50,000 ohm nom impedance; 500 rms TV; freq response ± 0.4 db from 30 to 5000cps, 0.5 db rise from 5000 to 15,000 cps measured; sealed metal case 1-63/64" x 1-7/8" x 2-3/4 h; four 4-40 mtg inserts spaced 90° on 1.312 diam; solder lug term.	677 0318 00

TYPE 212Y REMOTE AMPLIFIER

520 3095 00

ITEM	CIRCUIT FUNCTION	DESCRIPTION	COLLINS PART NUMBER
T101	Input (ALTERNATE PART)	TRANSFORMER: Audio input; high fidelity; Pri: 50 or 250 ohm nom impedance CT; Sec: 50,000 ohm nom impedance; 500 rms TV; freq response ± 0.4 db from 50 to 1000 cps, gradual rise from 1000 cps to 15,000 cps with response at 15,000 cps $+0.3$ db to $+1.0$ db; sealed metal case 1-15/16" diam x 2 1/2" h; four 4-40 mtg inserts spaced 90° on 1-5/16" diam; solder post term	677 0065 00
T102	Output	TRANSFORMER: Audio output; high fidelity; Pri: 10,000 ohm nom impedance; Sec: 600 ohm nom impedance CT; 1500 rms TV; freq response not more than 1.2 db down from max response level at 30 cps and not more than 1.5 db down from max response level at 12,000 cps; sealed metal case 2-9/16" diam x 3-3/8" lg excluding term; four .169" mtg holes on 2-3/32" x 2-3/32" mtg/c; solder post term.	677 0066 00
T103		TRANSFORMER: Not used	
T104	Power	TRANSFORMER: Power; Pri: 115 v; 50/60 cps; sec #1: 140 v DC at 12 ma, 1600 TV; sec #2: 6.3 v CT; temp rise above 45° C, ambient not above 50° C; sealed metal case 1-15/16" diam x 2-1/2" h excluding term; four 4-40 thd mtg inserts spaced 90° on 21/32" rad; solder post term.	672 0064 00
V101	Input amplifier	TUBE: Type 6AQ6; duplex-diode high-mu triode; miniature.	257 0023 00
V102	Interstage amplifier	TUBE: Type 6AQ6; duplex-diode high-mu triode; miniature.	257 0023 00
V103	Output amplifier	TUBE: Type 6AK6; power amplifier pentode; miniature.	254 0632 00
V104	Rectifier	TUBE: Type 7Y4; full-wave high-vacuum rectifier	255 0183 00

TYPE 212Y REMOTE AMPLIFIER

520 3095 00

ITEM	CIRCUIT FUNCTION	DESCRIPTION	COLLINS PART NUMBER
X101	Socket for V101	SOCKET: Miniature 7 pin ceramic; steel mtg plate with mtg holes .875" c to c.	220 1004 00
X102	Socket for V102	SOCKET: Miniature 7 pin ceramic; steel mtg plate with mtg holes .875" c to c.	220 1004 00
X103	Socket for V103	SOCKET: Miniature 7 pin ceramic; steel mtg plate with mtg holes .875" c to c.	220 1004 00
X104	Socket for V104	SOCKET: Loctal; mica filled bakelite; steel mtg plate with mtg holes 1.312" c to c.	220 1002 00
65S-2	MICROPHONE ADAPTER		520 3225 00
J201	Microphone connector	CONNECTOR: 3 cord female; with cable clamp; 2-17/32" lg x 1-5/32" diam overall.	370 2160 00
P201	Microphone cable plug	PLUG: 3 male polarized contacts; 15 amp contacts; 9/32" diam cable opening; 2-5/8" lg x 3/4" diam overall.	370 2021 00
65S-3	MICROPHONE ADAPTER		520 3226 00
J301	Microphone connector	CONNECTOR: 3 cord female; 10 amp 250 v or 15 amp 125 v; with cable clamp; bakelite body; 2-1/4" lg x 1-17/32" diam overall.	368 0005 00
P301	Microphone cable plug	PLUG: 3 male polarized contacts; 15 amp contacts; 9/32" diam cable opening; 2-5/8" lg x 3/4" diam overall.	370 2021 00
65S-4	MICROPHONE ADAPTER		520 3227 00
J401	Microphone connector	CONNECTOR: 3 cord female; 10 amp 250 v or 20 amp 125 v; cad pl body with cable clamp; 3-3/8" lg x 1-5/8" diam overall.	368 0021 00

TYPE 212Y REMOTE AMPLIFIER

520 3095 00

ITEM	CIRCUIT FUNCTION	DESCRIPTION	COLLINS PART NUMBER
P401	Microphone cable plug	PLUG: 3 male polarized contacts; 15 amp contacts; 9/32" diam cable opening; 2-5/8" lg x 3/4" diam overall.	370 2021 00
65S-5	MICROPHONE ADAPTER		520 3228 00
J501	Microphone connector	CONNECTOR: Twist-lock; 3 cord female; 10 amp 250 v or 15 amp 125 v; bakelite body; with cable clamp; 1-1/2" lg x 1-13/32" diam overall.	368 1700 00
P501	Microphone cable plug	PLUG: 3 male polarized contacts; 15 amp contacts; 9/32" diam cable opening; 2-5/8" lg x 3/4" diam overall.	370 2021 00
65S-6	MICROPHONE ADAPTER		520 3229 00
J601	Microphone connector	CONNECTOR: Twist-lock; midget; 3 cord female; 10 amp 250 v or 15 amp 125 v; bakelite body; with cable clamp; 1-21/32" lg x 1-5/32" diam overall.	368 0015 00
P601	Microphone cable plug	PLUG: 3 male polarized contacts; 15 amp contacts; 9/32" diam cable opening; 2-5/8" lg x 3/4" diam overall.	370 2021 00
412C-2	BATTERY POWER SUPPLY		
P701	Power supply connector	CONNECTOR: 5 polarized male cont; 7/8-20 thd locking ring; 3/4-20 thd for cable clamp; 1-11/16" lg x 1-1/8" diam overall	357 5001 00
	Part of P701	CLAMP: Cable; 3/4-20 thd to fit connector; cable opening 7/16" diam min; screw type clamp.	357 8002 00
P702	Battery plug	PLUG: 2 prong battery connector; fits standard 1.5 v socket; bakelite base; 11/16" diam x 11/16" lg overall.	372 1007 00

TYPE 212Y REMOTE AMPLIFIER

520 3095 00

ITEM	CIRCUIT FUNCTION	DESCRIPTION	COLLINS PART NUMBER
P703	Battery plug	PLUG: 2 prong battery connector; fits standard 1.5 v socket; bakelite base; 11/16" diam x 11/16" lg overall.	372 1007 00
P704	Battery plug	PLUG: 2 prong battery connector; fits standard 1.5 v socket; bakelite base; 11/16" diam x 11/16" lg overall.	372 1007 00
P705	Battery plug	PLUG: 2 prong battery connector; fits standard 1.5 v socket; bakelite base; 11/16" diam x 11/16" lg overall.	372 1007 00
P706	Battery plug	PLUG: 2 prong battery connector; fits standard 1.5 v socket; bakelite base; 11/16" diam x 11/16" lg overall.	372 1007 00
P707	Battery plug	PLUG: 3 prong battery connector; fits std 45 v socket; bakelite base; 11/16" diam x 11/16" lg overall.	372 1008 00
P708	Battery plug	PLUG: 3 prong battery connector; fits std 45 v socket; bakelite base 11/16" diam x 11/16" lg overall.	372 1008 00
P709	Battery plug	PLUG: 3 prong battery connector; fits std 45 v socket; bakelite base 11/16" diam x 11/16" lg overall.	372 1008 00
P710	Battery plug	PLUG: 3 prong battery connector; fits std 45 v socket; bakelite base 11/16" diam x 11/16" lg overall.	372 1008 00
BT701	A Battery	BATTERY: Dry; 1.5 v approx 100 hrs service at 280 ma, voltage drop to 1.0 v; 1.5 v std socket; 2-9/16" sq x 4" h.	015 0020 00
BT702	A Battery	BATTERY: Dry; 1.5 v approx 100 hrs service at 280 ma, voltage drop to 1.0 v; 1.5 v std socket; 2-9/16" sq x 4" h.	015 0020 00

TYPE 212Y REMOTE AMPLIFIER

520 3095 00

ITEM	CIRCUIT FUNCTION	DESCRIPTION	COLLINS PART NUMBER
BT703	A Battery	BATTERY: Dry; 1.5 v approx 100 hrs service at 280 ma, voltage drop to 1.0 v; 1.5 v std socket; 2-9/16" sq x 4" h.	015 0020 00
BT704	A Battery	BATTERY: Dry; 1.5 v approx 100 hrs service at 280 ma, voltage drop to 1.0 v; 1.5 v std socket; 2-9/16" sq x 4" h.	015 0020 00
BT705	A Battery	BATTERY: Dry; 1.5 v approx 100 hrs service at 280 ma, voltage drop to 1.0 v; 1.5 v std socket; 2-9/16" sq x 4" h.	015 0020 00
BT706	B Battery	BATTERY: Dry; 45 v; approx 100 hrs service at 17.5 ma, voltage drop to 24 v; 45 v std socket; 3-1/2" lg x 1-23/32" wd x 5-7/16" h.	015 0021 00
BT707	B Battery	BATTERY: Dry; 45 v; approx 100 hrs service at 17.5 ma, voltage drop to 24 v; 45 v std socket; 3-1/2" lg x 1-23/32" wd x 5-7/16" h.	015 0021 00
BT708	B Battery	BATTERY: Dry; 45 v; approx 100 hrs service at 17.5 ma, voltage drop to 24 v; 45 v std socket; 3-1/2" lg x 1-23/32" wd x 5-7/16" h.	015 0021 00
BT709	B Battery	BATTERY: Dry; 45 v approx 100 hrs service at 17.5 ma, voltage drop to 24 v; 45 v std socket; 3-1/2" lg x 1-23/32" wd x 5-7/16" h.	015 0021 00

**SECTION VI
DRAWINGS**

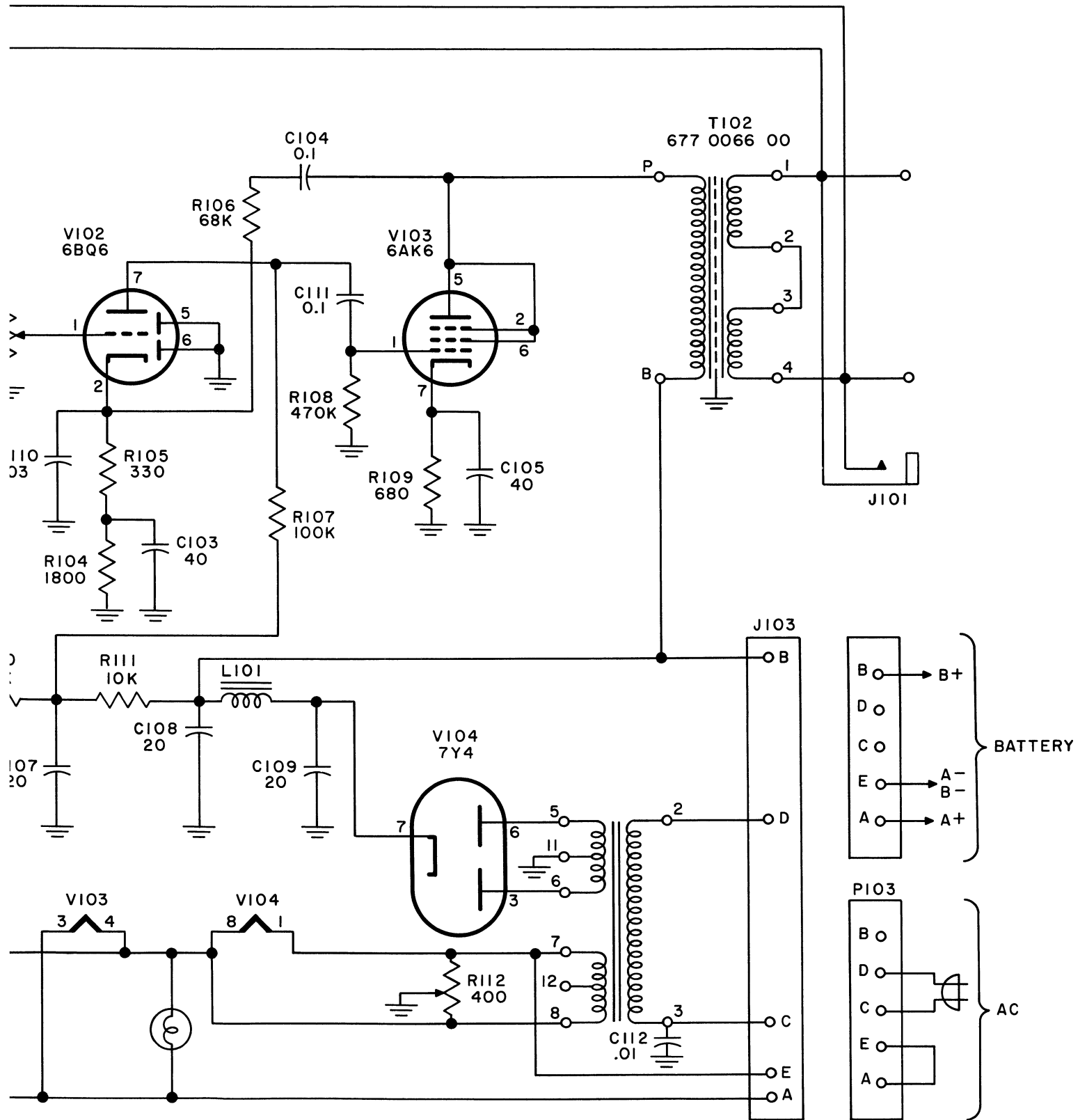
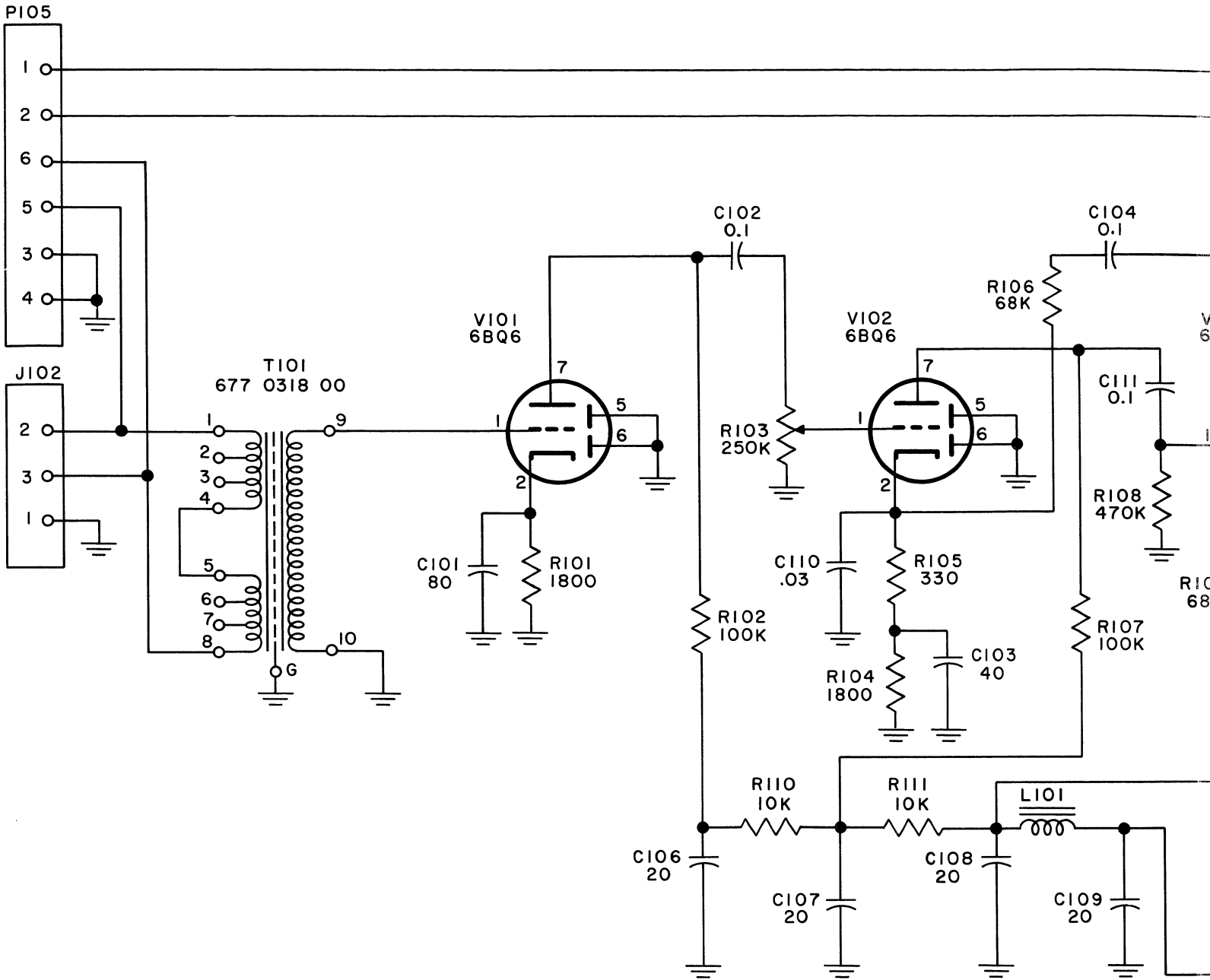
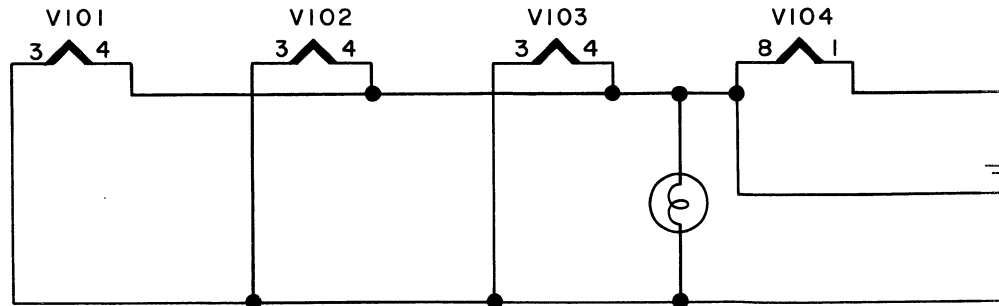


Figure 6-1 212Y-1 Remote Amplifier Schematic Diagram

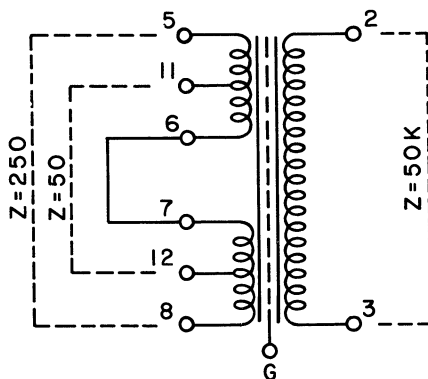
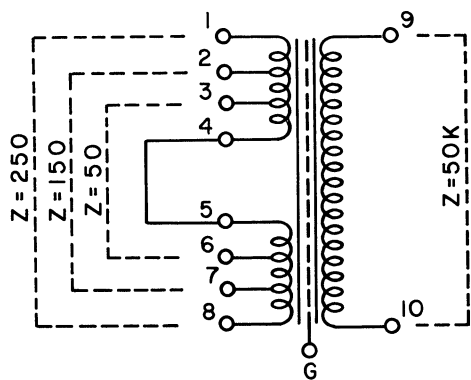


NOTE:
 UNLESS OTHERWISE INDICATED,
 ALL RESISTANCE VALUES ARE
 IN OHMS & ALL CAPACITANCE
 VALUES ARE IN MICROFARADS.
 K = 1000 OHMS

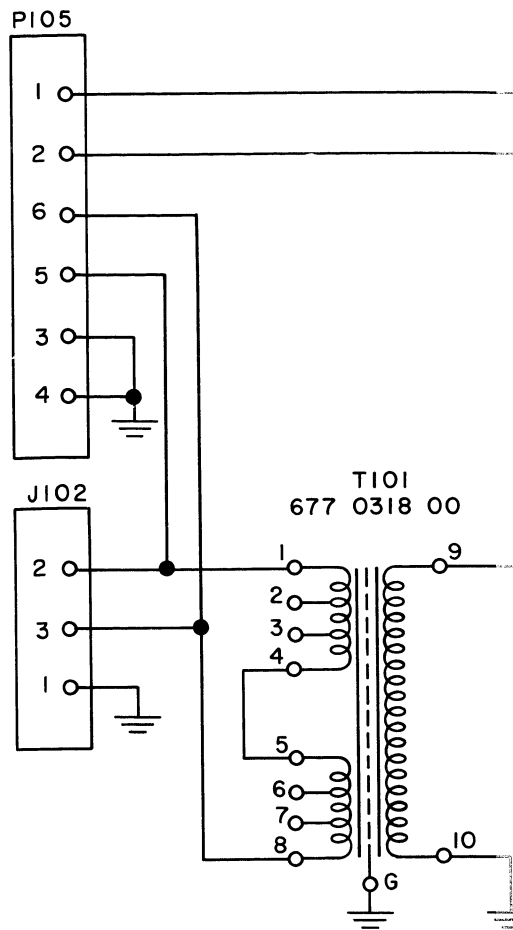


Figur

INPUT CONNECTIONS FOR T101
COLLINS PART NO.
677 0318 00



INPUT CONNECTIONS FOR
ALTERNATE T101
COLLINS PART NO.
677 0065 00



NOTE:
UNLESS OTHERWISE INDICATED,
ALL RESISTANCE VALUES ARE
IN OHMS & ALL CAPACITANCE
VALUES ARE IN MICROFARADS.
K = 1000 OHMS

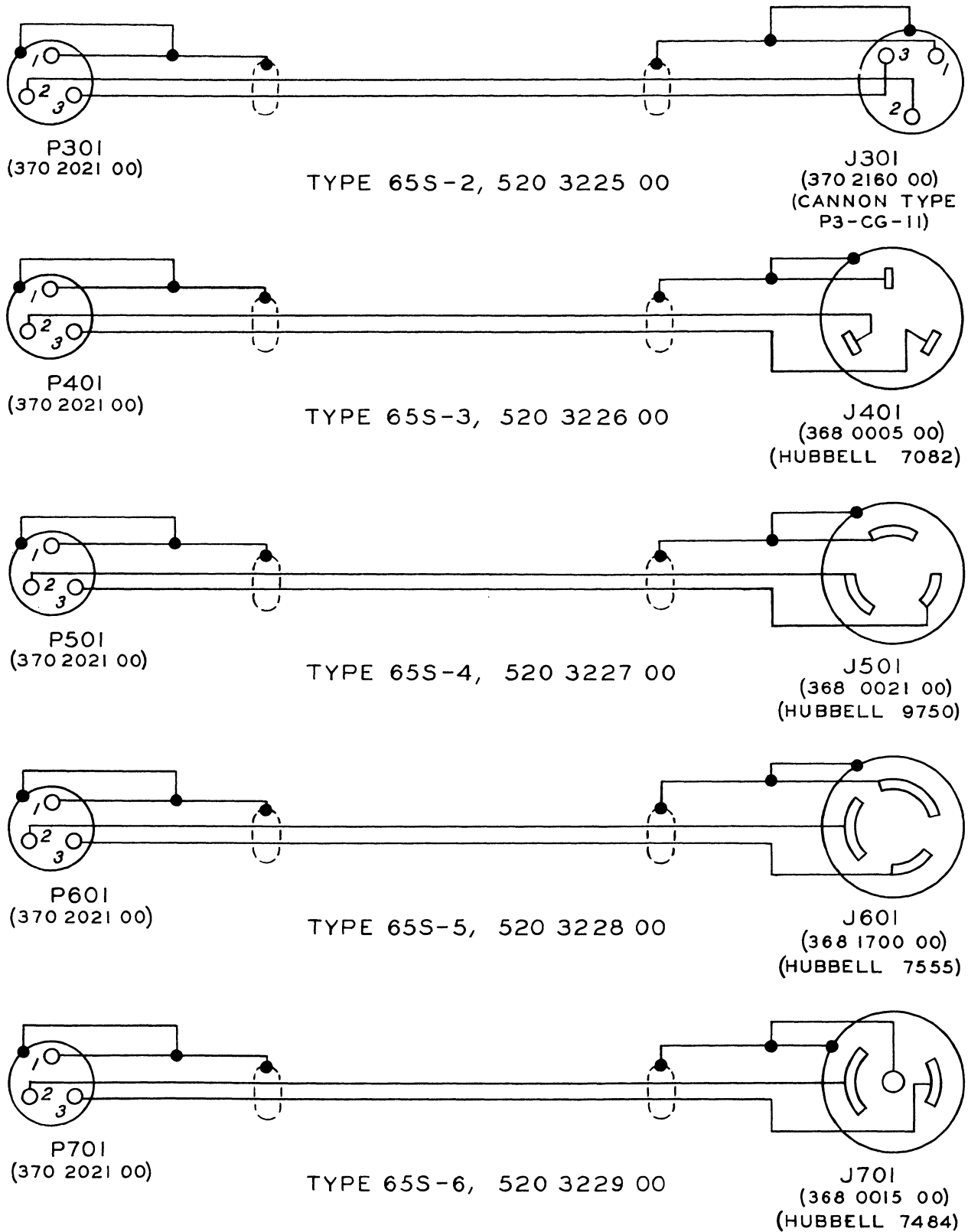


Figure 6-2 Microphone Adapter Wiring Schematic Diagram