

FIG. 1. RADIO RECEIVER MODEL 5R10

INSTALLATION

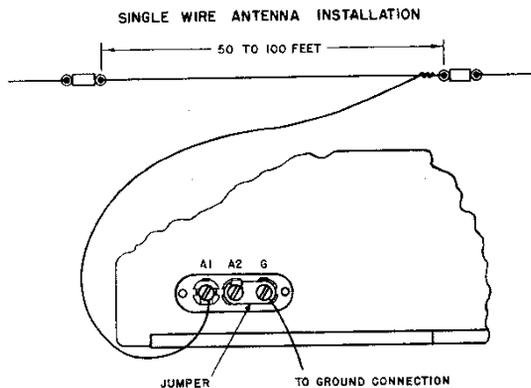
LOCATION - The receiver is equipped with rubber feet for table top or shelf mounting. When locating and mounting the receiver, avoid excessively warm locations such as those found near radiators and hot air registers or recessed installations which prevent proper circulation of air. If the receiver is placed with its back to the wall, leave about an inch or two of clearance between the back of the cabinet and the wall for proper ventilation.

POWER SOURCE - The receiver operates from a 105-125 volt DC (direct current) or 60 cycles AC (alternating current) source. The normal power consumption of the receiver is 30 watts. The receiver will not operate from a 25-cycle AC source directly. If in doubt as to the voltage and frequency rating of your power source, contact the local power company representative to avoid costly repairs. If the receiver does not respond after a minute warm-up period when operating on a DC source, it may be necessary to reverse the power plug at the wall outlet.

Operation from a 210-250 volt AC/DC source is possible by using a special line cord adapter available as an accessory. Consult your Hallicrafters dealer regarding this adapter unit (Hallicrafters part number 87D1566) if 210-250 volt operation is desired.

ANTENNA - A three terminal strip is provided on the rear chassis apron for antenna connections. The terminals are marked "A1", "A2" and "G". A jumper bar is normally connected between terminals "A2" and "G" for single wire antenna systems and unbalanced antenna transmission lines. For doublet antenna installations using a balanced transmission line, the jumper between "A2" and "G" is disconnected. A good ground connection, when used, is connected to terminal "G".

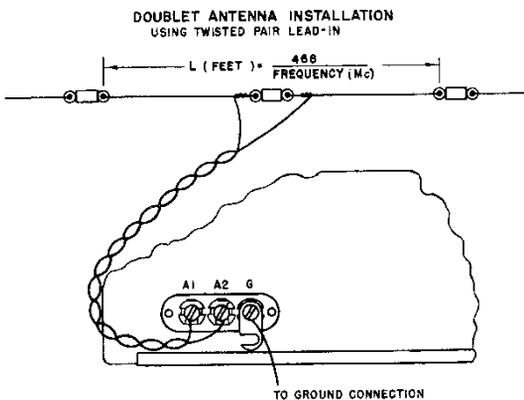
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FIG. 2. SINGLE WIRE ANTENNA INSTALLATION

SINGLE WIRE ANTENNA - For a single wire antenna installation, connect a jumper between antenna terminals "A2" and "G". A single wire antenna of about 50 to 100 feet long (including lead-in) is then connected to terminal "A1". Erect the antenna as high and free of surrounding objects as possible. For improved reception, it may be desirable to connect a ground wire between terminal "G" and a suitable ground such as a water pipe or outside ground stake.



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FIG. 3. DOUBLET ANTENNA INSTALLATION

DOUBLET ANTENNA - The doublet antenna is recommended for the high frequency bands, especially where a maximum signal to noise ratio is required over a relatively narrow range of frequencies. The antenna transmission line is connected to terminals "A1" and "A2". If a concentric line with a grounded outer conductor is used, connect the inner conductor to terminal "A1", the outer conductor to terminal "A2", and connect a jumper between terminals "A2" and "G".

The overall length (feet) of a doublet antenna may be determined by dividing the constant 468 by the desired frequency in megacycles. Keep in mind that this type of antenna is directional broadside to its length and should be so oriented if maximum pickup from a given direction is desired.

OPERATION

STANDARD BROADCAST RECEPTION - For standard broadcast reception set the BAND SELECTOR switch to position "1", the SPEAKER/PHONES switch to "SPEAKER" and the BAND SPREAD dial pointer to "0". Note that the main tuning dial calibration will be true only when the bandspread dial pointer is set at zero. Turn on the receiver with the VOLUME control by turning it clockwise beyond the point of switch action. Adjust the TUNING and VOLUME controls in the usual manner, tuning carefully for the clearest reception. When operating the receiver from a DC source allow about a minute for warm-up. If the receiver doesn't respond after this warm-up period, reverse the power plug at the wall outlet to obtain proper polarity. In certain cases hum picked up from an AC outlet may be reduced by properly polarizing the power plug.

To turn off the receiver, turn the VOLUME control fully counter-clockwise beyond the point of switch action.

SHORT-WAVE RECEPTION - Reception in the short-wave bands is accomplished as described above for standard broadcast reception except that the BAND SELECTOR is set for bands 2, 3, or 4. The frequency of reception is read from the dial scale which corresponds to the setting of the BAND SELECTOR. Any narrow range of frequencies covered by the receiver may be spread out by tuning the stations with the BAND SPREAD control as explained below.

BAND SPREAD TUNING - To use the band spread dial, set the bandspread dial pointer to zero, set the main tuning dial pointer at the high frequency limit of the range of frequencies to be covered and then tune in the stations with the **BAND SPREAD** control. For example: Assume that the 40 meter amateur band is to be covered. Set the **BAND SELECTOR** to position "3", the main tuning dial pointer to 7.3 MC and tune in the stations with the **BAND SPREAD** control.

IMPORTANT - The calibrations on the main tuning dial scale are correct only when the **BAND SPREAD** dial pointer is set at "0".

SPEAKER PHONES - Normally this switch is set at "SPEAKER" for loud speaker operation. Setting the switch to the "PHONES" position switches the output circuit from the speaker to the headset output jacks located on the rear apron of the chassis.

SERVICE

GENERAL SPECIFICATION

Tubes Four plus rectifier
 Speaker 5-inch PM
 Voice coil impedance 3.2 ohms
 Headset output High impedance
 (1500 to 5000 ohms)
 Antenna Provisions for external antenna
 with transmission line or single
 wire feed.
 Intermediate frequency 455 KC
 Power Supply 105-125 volts DC or
 60 cycles AC
 Power Consumption 30 watts
 Tuning Manual

TUNING RANGE

Band Selector Position	Frequency Range
1	540 KC - 1650 KC
2	1.65 MC - 5.1 MC
3	5 MC - 14.5 MC
4	13 MC - 31 MC

RESTRINGING DIAL CORD

MAIN TUNING DIAL POINTER DRIVE

Restring the main tuning dial pointer drive with a 39-inch length of 30 lb. test dial cord. Set the main tuning capacitor in a fully closed position. Tie one end of the cord to the tension spring at position "A" and follow the stringing procedure "A" through "I" as illustrated in Fig. 4. At position "I", stretch the tension spring and tie the cord securely. Note that three and a quarter turns of dial cord are wrapped around the main tuning drive shaft for proper traction.

Index the main tuning dial pointer by setting the main tuning gang at maximum capacity (fully closed) and aligning the dial pointer with the left hand dial index marker.

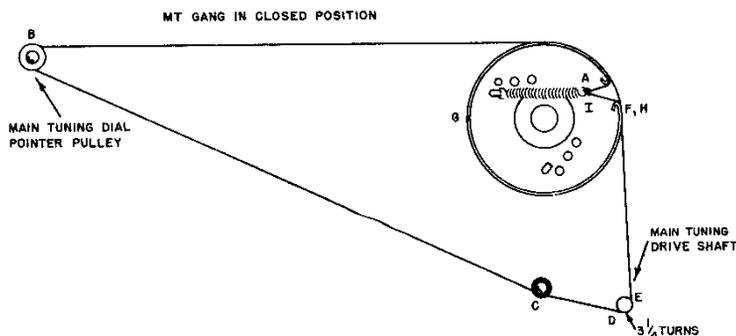


FIG. 4. MAIN TUNING DIAL POINTER DRIVE STRINGING PROCEDURE

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MAIN TUNING GANG DRIVE

Restraining the main tuning capacitor drive with a 30-inch length of 30 lb. test dial cord. Set the main tuning capacitor in a fully open position. Tie one end of the cord to the tie point at position "1" and follow the stringing sequence "1" through "14" as shown in Fig. 5. At position "14", stretch the tension spring and tie the cord securely to the spring.

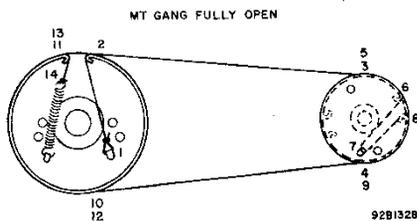


FIG. 5. MAIN TUNING GANG DRIVE STRINGING PROCEDURE

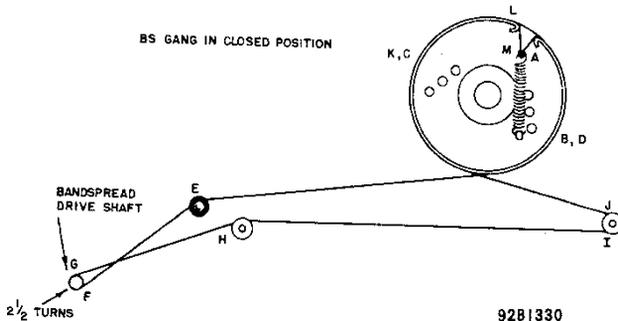


FIG. 6. BAND SPREAD GANG AND DIAL POINTER DRIVE STRINGING PROCEDURE

BAND SPREAD GANG AND POINTER DRIVE

Restraining the band spread gang and pointer drive with a 44-inch length of 30 lb. test dial cord. Set the band spread capacitor in a fully closed position. Tie one end of the cord to the tension spring at position "A" and follow the sequence outlined in Fig. 6. At position "M", stretch the tension spring and tie the cord securely.

Index the band spread dial pointer by setting the band spread gang at maximum capacity and aligning the pointer with the position marked "100" on the band spread dial.

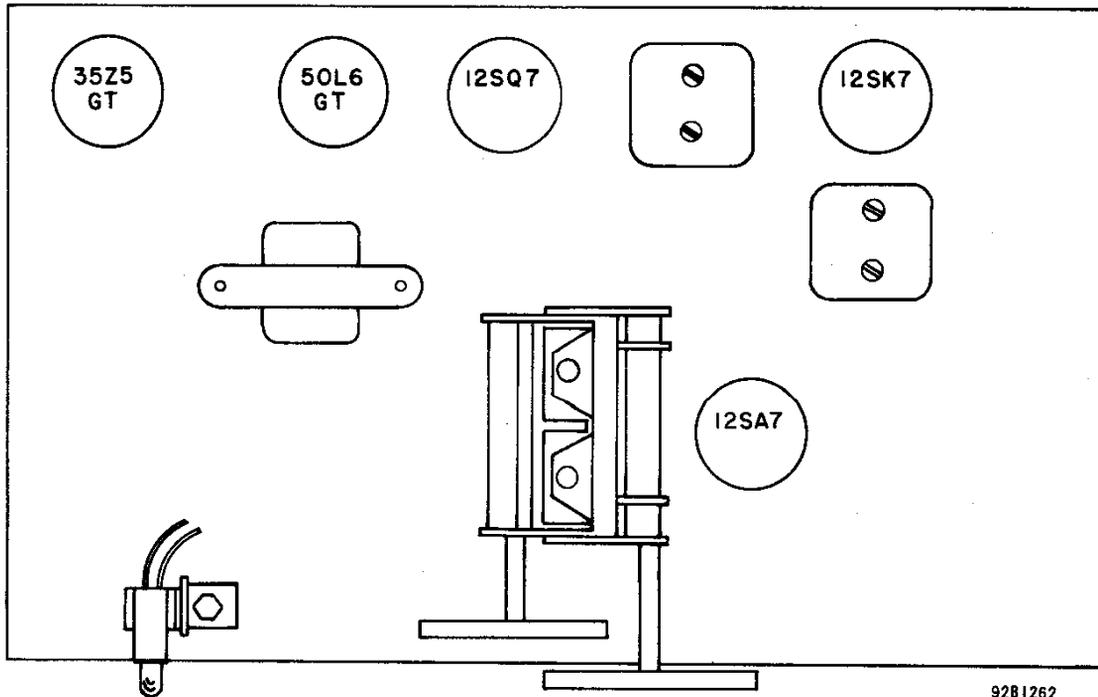


FIG. 7. TOP VIEW, LOCATION OF TUBES AND DIAL LAMPS

DIAL LAMP
MAZDA #47

92B1262

TUBE REPLACEMENT

The tube types and their relative position in the receiver are shown in the illustration, Fig. 7. When installing a replacement tube, insert the center guide pin into the center hole of the tube socket; rotate the tube until the key on the guide pin drops into the notch in the socket hole and then push down until the tube rests firmly on the socket.

Handle tubes with care as they are considered fragile and do not tolerate much mechanical abuse.

DIAL LAMP REPLACEMENT

Refer to Fig. 7. for the location of the dial lamp used in the receiver. To replace a defective lamp, remove the cabinet back, reach in through the rear of the cabinet and unclip the dial lamp socket from the mounting clip. The socket may then be brought out into the open for dial lamp replacement. Make replacement with 6-8 volt Mazda #47 (brown bead) lamps or equivalent.

ALIGNMENT PROCEDURE

Holes in the bottom cover permit minor adjustment of the oscillator and converter stage trimmers; however for complete alignment, the chassis will have to be removed from the cabinet. To separate the chassis from the cabinet, first remove the cabinet back, the bottom cover which is held in place by the four mounting feet, and the front control knobs. Next, remove the speaker from the cabinet. The chassis is fastened to the cabinet by four Phillips head screws located at the bottom of the cabinet.

CAUTION - The rubber grommets, fiber washers and nylon insulators are used to insulate the chassis from the cabinet. Check the condition of these insulators and replace them if necessary.

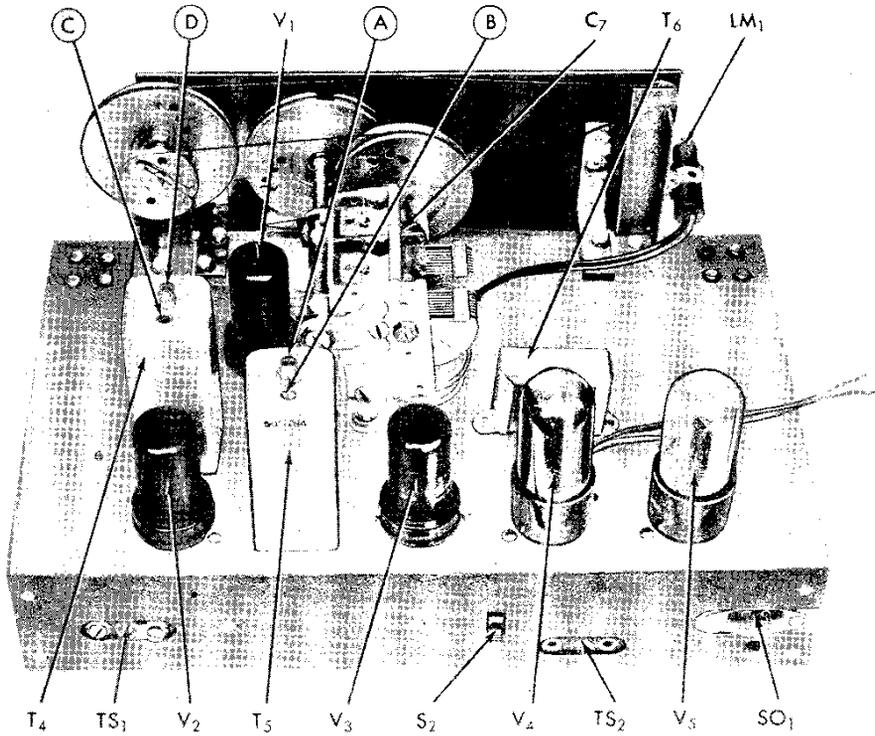
The standard RMA dummy antenna specified in the alignment chart consists of a 200 mmf. capacitor in series with a 20 micro-henry r-f choke which is shunted by a 400 mmf. capacitor in series with a 400 ohm carbon resistor.

Before starting alignment, set the SPEAKER/PHONES switch at SPEAKER, the VOLUME control fully clockwise and the BAND SPREAD control to zero. For the settings of the remaining controls, see the alignment chart.

ALIGNMENT CHART

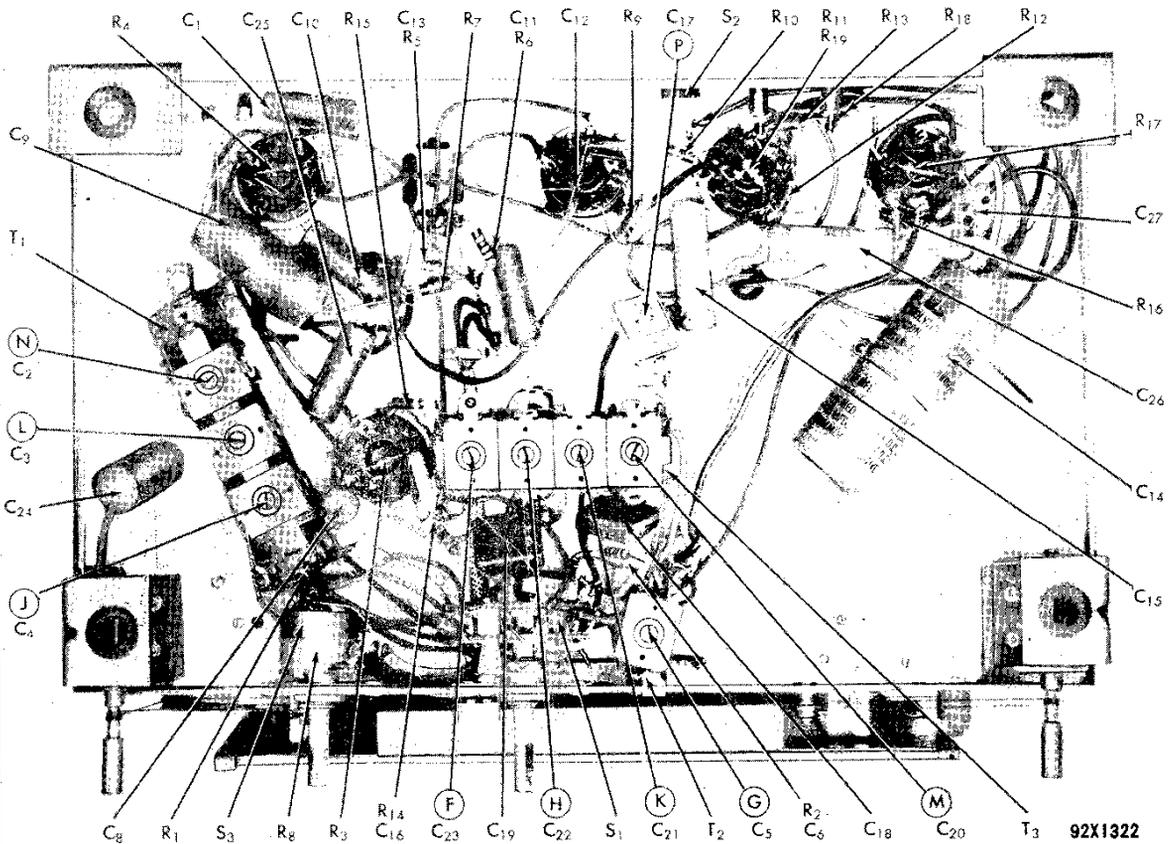
Step	Dummy Antenna	Signal Generator Coupling	Signal Generator Frequency	Band Selector Setting	Receiver Dial Setting	Adjust	Remarks
1	.01 mfd cap.	Stator plates, front section of tuning gang.	455 kc	1	1000 kc	A,B, C,D	Adjust for max. audio output at speaker voice coil. Use just enough signal generator output to obtain a suitable output indication.
2	Std. RMA dummy	High side to term. A1 on antenna strip. Jumper wire between A2 and G.	30 mc	4	30 mc	F,G	Max. output as in step 1.
3	Std. RMA dummy	See step 2.	14 mc	3	14 mc	H,J	Max. output as in step 1.
4	Std. RMA dummy	See step 2.	5 mc	2	5 mc	K,L	Max. output as in step 1.
5	Std. RMA dummy	See step 2.	1500 kc 600 kc	1	1500 kc 600 kc	M,N P	Max. output as in step 1.

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FIG. 8. TOP VIEW, ALIGNMENT POINTS AND COMPONENT LOCATIONS



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FIG. 9. BOTTOM VIEW, ALIGNMENT POINTS AND COMPONENT LOCATIONS

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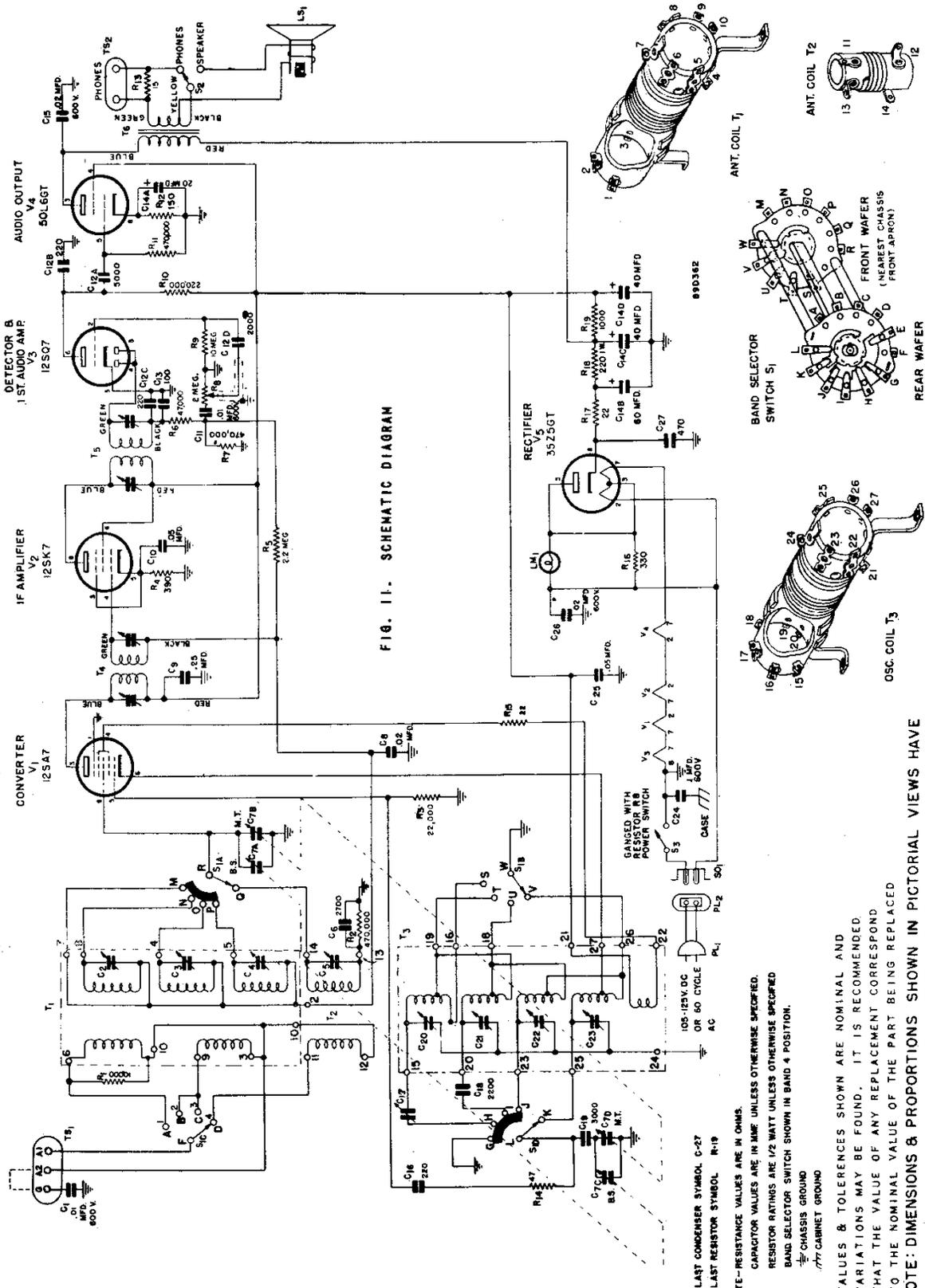


FIG. 11. SCHEMATIC DIAGRAM

LAST CONDENSER SYMBOL, C-27
 LAST RESISTOR SYMBOL, R-19
 NOTE—RESISTANCE VALUES ARE IN OHMS.
 CAPACITOR VALUES ARE IN MMF UNLESS OTHERWISE SPECIFIED.
 RESISTOR RATINGS ARE 1/2 WATT UNLESS OTHERWISE SPECIFIED.
 BAND SELECTOR SWITCH SHOWN IN BAND 4 POSITION.
 — CHASSIS GROUND
 — CABINET GROUND

VALUES & TOLERANCES SHOWN ARE NOMINAL AND VARIATIONS MAY BE FOUND. IT IS RECOMMENDED THAT THE VALUE OF ANY REPLACEMENT CORRESPOND TO THE NOMINAL VALUE OF THE PART BEING REPLACED.
 NOTE: DIMENSIONS & PROPORTIONS SHOWN IN PICTORIAL VIEWS HAVE BEEN EXAGGERATED FOR CLARITY OF TERMINAL LUG LOCATION.

SERVICE PARTS LIST

Ref. No.	Description	Manufacturer's Part Number	Ref. No.	Description	Manufacturer's Part Number
CAPACITORS			TRANSFORMERS AND COILS (Cont.)		
C-1,11	.01 mfd. 600 V., tubular paper	46AZ103J	T-2	Coil, antenna (band 4)	51B1015
C-2,3,4	Trimmer, adj. (part of antenna coil T-1)		T-3	Coil, oscillator (all bands)	51C822
C-5	Trimmer, adj. (for antenna coil T-2)	44A039	T-4	Transformer, 1st i-f	50B183
C-6	2700 mmf. 500 V., mica	47X30B272J	T-5	Transformer, i-f (detector)	50B184
C-7	Tuning capacitor, 2 section	48C246-B	T-6	Transformer, audio output	55A127
C-8	.02 mfd. 400 V., tubular paper	46AW203J	SWITCHES		
C-9	.25 mfd. 200 V., tubular paper	46AT254J	S-1	Bandswitch assembly	60C393
C-10,25	.05 mfd. 200 V., tubular paper	46AU503J	S-2	Switch, slide; SPEAKER-PHONES	60A243
C-12	Capacitor, composite; 5000, 2X220, and 2000 mmf. 500 V.; ceramic	46A151	S-3	Switch, power (part of VOLUME control R-8)	
C-13	100 mmf. 500 V., mica	47X20B101K	CONNECTORS		
C-14	60-40-40 mfd. 150 V., 20 mfd. 25 V., electrolytic	45B091	PL-1	Line cord and plug	87A1668-1
C-15,26	.02 mfd. 600 V., tubular paper	46AY203J	TS-1	Terminal strip, antenna	88A671
C-16	220 mmf. 500 V., mica	47X20B221K	TS-2	Jack, PHONES	88A071
C-17	Padder, adj. (for oscillator coil T-3, band 1)	44A349	SO-1	Socket, power	10A286
C-18	2200 mmf. 500 V., mica	47X30B222J		Socket, dial lamp	86B105
C-19	3000 mmf. 500 V., mica	47X30B302J		Socket, octal; tube	6A250
C-20,21,22,23	Trimmer, adj. (part of oscillator coil T-3)		TUBES, RECTIFIERS AND DIAL LAMPS		
C-24	.1 mfd. 600 V., tubular paper	46AZ104J	V-1	Type 12SA7, converter	90X12SA7
C-27	470 mmf. 500 V., mica	47X20B471M	V-2	Type 12SK7, i-f amplifier	90X12SK7
			V-3	Type 12SQ7, detector and 1st audio amplifier	90X12SQ7
			V-4	Type 50L6GT, audio output	90X50L6GT
			V-5	Type 35Z5GT, rectifier	90X35Z5GT
			LM-1	Lamp, dial; Mazda #47	39A004
RESISTORS			CABINET PARTS		
R-1	10,000 ohms 1/2 watt, carbon.	23X20X103M		Baffle, speaker	78B579-B
R-2,7,11	470,000 ohms 1/2 watt, carbon	23X20X474M		Cabinet	66B634-B
R-3	22,000 ohms 1/2 watt, carbon	23X20X223M		Cabinet back	8C1204-B
R-4	390 ohms 1/2 watt, carbon	23X20X391K		Channel, rubber; 4 inch (for escutcheon glass)	16A211
R-5	2.2 megohms 1/2 watt, carbon	23X20X225M		Channel, rubber, 3/8 inch (for escutcheon glass)	16A212
R-6	47,000 ohms 1/2 watt, carbon	23X20X473M		Cover, cabinet bottom	8C1212
R-8	2 megohms; VOLUME control	25B896		Clip, antenna coil T-2 mtg.	76A326
R-9	10 megohms 1/2 watt, carbon	23X20X106M		Dial background	32B488
R-10	220,000 ohms 1/2 watt, carbon	23X20X224M		Dial cord	38A019
R-12	150 ohms 1/2 watt, carbon	23X20X151K		Dial scale (glass)	22B318-C
R-13	15 ohms 1/2 watt, carbon	23X20X150M		Escutcheon	7C248
R-14	47 ohms 1/2 watt, carbon	23X20X470M		Foot, mounting; rubber	16A007
R-15,17	22 ohms 1/2 watt, carbon	23X20X220M		Glass, escutcheon	22B319
R-16	330 ohms 1/2 watt, carbon	23X20X331M		Grommet, rubber; brown	16A015
R-18	220 ohms 1 watt, carbon	23X30X221M		Grommet, rubber; red	16A201
R-19	1000 ohms 1/2 watt, carbon	23X20X102M		Insulator, nylon (fits in red insulating grommet)	4A647
TRANSFORMERS AND COILS				Knob, BAND SELECTOR	15B322
T-1	Coil, antenna (bands 1, 2 and 3)	51C821		Knob, BANDSPREAD, OFF-VOLUME and TUNING	15B323
			LS-1	Pointer, bandspread tuning	82A179
				Pointer, main tuning	82A180
				Shield, dial lamp	8A1249
				Speaker, PM; 5 inch	85C030
				Spring, dial cord	75A012
				Washer, insulating	4A646