SERVICE DATA
Model S-38E

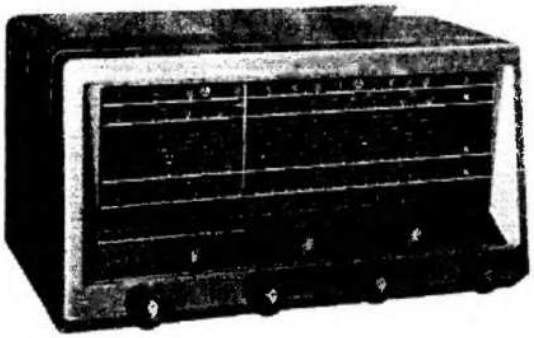


Fig. 1. Hallicrafters Model S-38E

TECHNICAL SPECIFICATIONS

TUBES	Five including rectifier
SPEAKER	5-inch PM; 3.2-ohm voice coil
HEADPHONE OUTPUT	15 ohms
ANTENNA INPUT	For single wire or 52-600 ohm balanced or unbalanced line
POWER SOURCE	105-125 volts DC or 50/60 cycles AC
POWER CONSUMPTION	30 watts
RECEPTION	AM and CW
INTERMEDIATE FREQUENCY	455 KC
WEIGHT	Net-12 lb., Shipping-14 lb.
DIMENSIONS	12-7/8" x 7" x 9" deep

TUBE AND DIAL LAMP REPLACEMENT

The dial lamp and tubes are accessible for replacement by removing the cabinet. For types used, refer to Page 4.

CAUTION: Before attempting to make any replacement, rotate the Bandspread control fully clockwise and the Tuning control fully counterclockwise to prevent damage to the tuning gang.

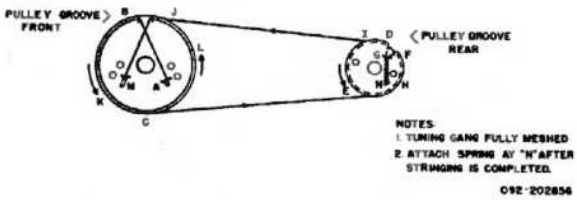


Fig. 2. Main Tuning Gang Drive Stringing Diagram

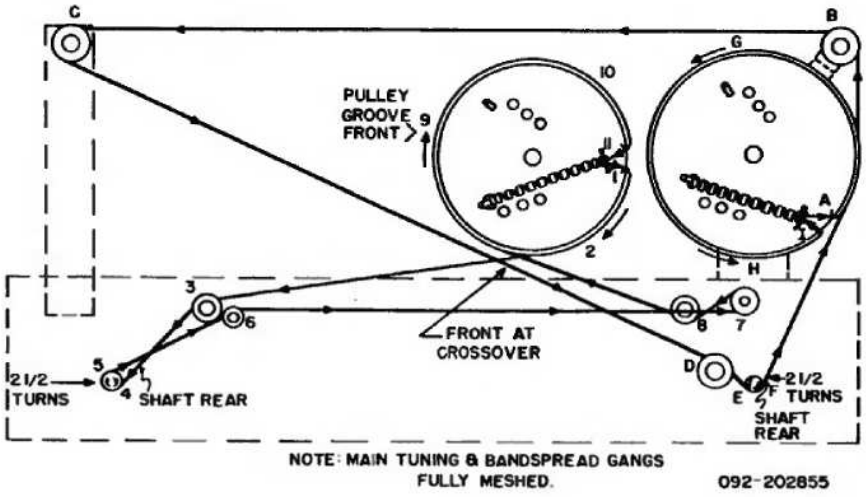


Fig. 3. Main Tuning and Bandspread Gang Pointer Drive Stringing Diagrams

the hallicrafters co.
4401 W. FIFTH AVENUE · CHICAGO 24, ILLINOIS

ALIGNMENT PROCEDURE

- Use an amplitude modulated generator covering 455 KC to 30 MC.
- Use a modulated output for every step except Step 2.
- Connect output meter across speaker voice coil.
- Use a non-metallic alignment tool.
- Standard RETMA dummy antenna as shown in Fig. 4.
- Set the AM/CW switch at AM, (except for BFO adjustment), SPEAKER/PHONES switch at SPEAKER, VOLUME control at maximum. RECEIVE/STANDBY switch at RECEIVE and the BAND SPREAD control at 0.

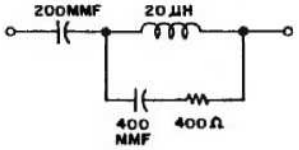


Fig. 4. RETMA Dummy Antenna

Step	Signal Generator Connections	Generator Frequency	Band Selector Setting	Receiver Dial Setting	Adjust
		IF ALIGNMENT			
1	High side thru a .01 mfd. capacitor to stator plates of front section of TUNING gang. Low side to chassis.	455 KC	1	1.0 MC	A, B, C and D for maximum output. Keep reducing gen. output so that the reading on the output meter does not exceed 50 milliwatts.
		BFO ADJUSTMENT			
*2	Same as Step 1.	455 KC (No Mod.)	1	1.0 MC	Set the AM/CW switch at CW. For correct BFO operation, vary the coupling between lead E and pins 1 and 5 of 12BA6 (V2) for a nominal beat note. Phasing lead E toward pin 1 increases the strength of the beat.
		RF ALIGNMENT			
3	High side thru RETMA antenna to terminal A1 on back of chassis. Low side to chassis. Connect jumper between A2 and G.	30 MC	4	30 MC	F and G for maximum output as in Step 1.
4	Same as Step 3.	14 MC	3	14 MC	H and J for maximum output as in Step 1.
5	Same as Step 3.	5 MC	2	5 MC	K and L for maximum output as in Step 1.
6	Same as Step 3.	1500 KC	1	1.5 MC	M and N for maximum output as in Step 1.
		600 KC	1	.6 MC	P for maximum output as in Step 1.

* Step 2 is usually unnecessary. Adjustment should be made ONLY if a weak beat note is obtained on strong CW signals indicating lack of coupling between wire lead E and pins 1 and 5 of 12BA6.

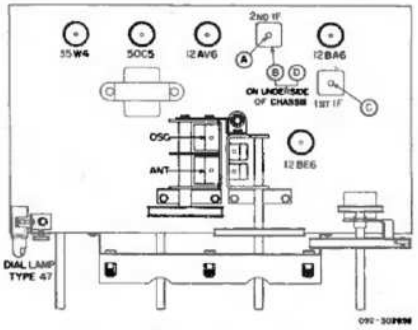


Fig. 5. Top View of Chassis

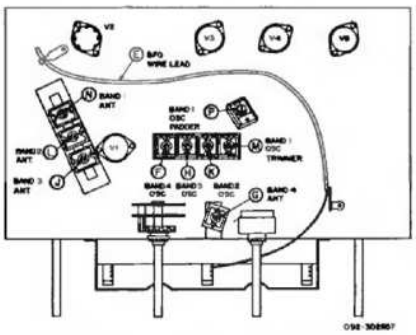
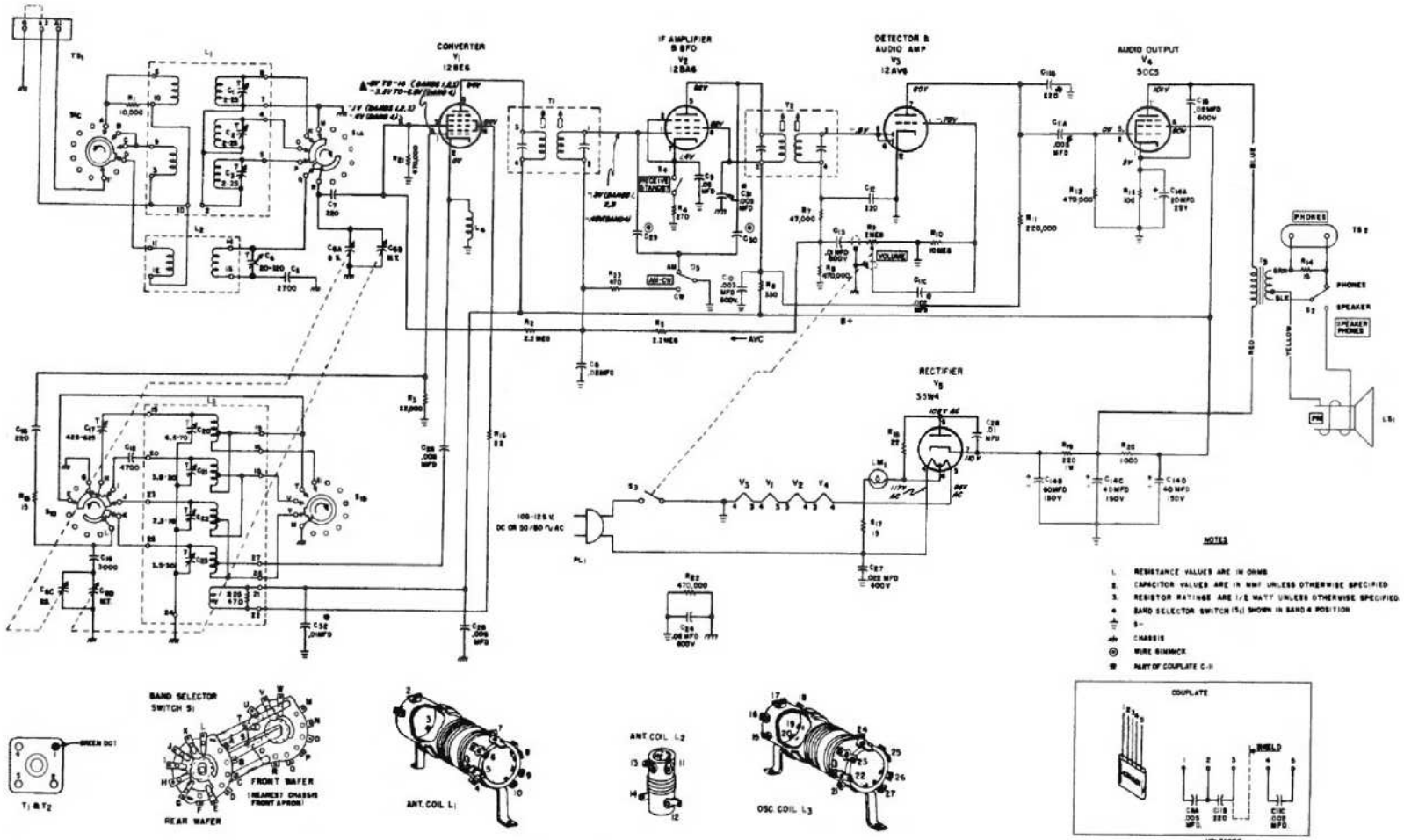


Fig. 6. Bottom View of Chassis



NOTE: VALUES & TOLERANCES SHOWN ARE NOMINAL AND VARIATIONS MAY BE FOUND. IT IS RECOMMENDED THAT THE VALUES OF ANY REPLACEMENT CORRESPOND TO THE NOMINAL VALUE OF THE PART BEING REPLACED.

NOTES

1. RESISTANCE VALUES ARE IN OHMS
2. CAPACITOR VALUES ARE IN MMF UNLESS OTHERWISE SPECIFIED
3. RESISTOR RATINGS ARE 1/2 WATT UNLESS OTHERWISE SPECIFIED
4. BAND SELECTOR SWITCH (S1) SHOWN IN BAND 4 POSITION
5. B-
6. CHASSIS
7. WIRE SWAMOCK
8. PART OF COUPLATE C-H

VOLTAGES

1. ALL VOLTAGES ARE MEASURED BETWEEN TUBE SOCKET TERMINALS AND B- (PIN 6 OF J2A/B) WITH ANTENNA TERMINALS SHORTED. AM/CW SWITCH AT AM, AND RECEIVE / STANDBY SWITCH AT RECEIVE.
2. LINE VOLTAGE - 117 VOLTS AC
3. ALL VOLTAGES WERE MEASURED WITH A VACUUM TUBE VOLTMETER (VTVM) AND ARE DC AND POSITIVE UNLESS OTHERWISE SPECIFIED.
4. VARIES WITH TUNING GANG SETTING

SERVICE PARTS LIST

Schematic Symbol	Description	Hallicrafters Part Number
	CAPACITORS	
C-1, 2, 3	Trimmer, Compression Mica, 3 Section; 2-25 mmf	044-200129
C-4	20-120 mmf; Ceramic Trimmer	044-100424
C-5	2700 mmf, 5%, 500V; Mica	470-412272
C-6A-B-C-D	Tuning, General Coverage; Inc. Bracket and Pulley	048-300372
C-6A-B-C-D	Tuning, Band Spread; Inc. Bracket and Pulley	048-000410
C-7, 12, 16	220 mmf, 10%, 500V; Mica	470-213221
C-8, 15	. 02 mfd, 600V; Tubular Paper	499-033203
C-9	. 05 mfd, 200V; Tubular Paper	499-013503
C-10	. 003 mfd, 600V; Tubular Paper	499-034302
C-11A-B-C	Printed Circuit Plate, . 005 mfd, 220 mmf, . 002 mfd	047-100581
C-13	. 01 mfd, 600V; Tubular Paper	499-033103
C-14A-B-C-D	Filter, 4 Section; 20 mfd @ 25V; 60-40-40 mfd @ 150V	045-300091
C-17	425-625 mmf; Mica Trimmer	044-100349
C-18	4700 mmf, 5%, 500V; Mica	470-412472
C-19	3000 mmf, 5%, 500V; Mica	470-412302
C-20, 21, 22, 23	Trimmer, Compression Mica, 4 Section; 6. 5-70 mmf, 3. 5-30 mmf, 2. 5-16 mmf, 3. 5-30 mmf	044-200159
C-24	. 05 mfd, 600V; Tubular Paper	499-033503
C-25, 26, 31	. 005 mfd, 450V; Ceramic Disc	047-100168
C-27	. 022 mfd, 600V; Molded Tubular Paper	499-034223
C-28	. 01 mfd, 450V; Ceramic Disc	047-000224
C-32	. 01 mfd, 200V; Tubular Paper	499-013103
	***RESISTORS**	
R-1	10K ohms	451-252103
R-2, 5	2. 2 megohms	451-252225
R-3	22K ohms	451-252223
R-4	270 ohms	451-252271
R-6	330 ohms	451-252331
R-7	47K ohms	451-252473
R-8, 12, 21, 22	470K ohms	451-252474
R-9	2 megohms, Variable; Volume Control (Inc. On-Off Switch-S-3)	025-201479
R-10	10 megohms	451-252106
R-11	220K ohms	451-252224
R-13	100 ohms	451-252101
R-14, 15, 17	15 ohms	451-252150
R-16, 18	22 ohms	451-252220
R-19	220 ohms, 1 watt	451-452221
R-20	1K ohm	451-252103
R-23, 25	470 ohms	451-252471

*All Resistors 10%, 1/2 watt carbon type unless otherwise specified.

	COILS AND TRANSFORMERS	
**L-1, C-1, 2, 3	Coil and Trimmer Assembly, Antenna; Bands 1, 2, and 3	051-302132
L-2	Coil, Antenna; Band 4	051-201015
**L-3, C-20, 21, 22, 23	Coil and Trimmer Assembly, Oscillator; All Bands	051-302133
L-4	Choke, RF; 540 uh	053-100107
T-1	Transformer, 1st IF	050-300531
T-2	Transformer, 2nd IF	050-300532
T-3	Transformer, Audio Output	055-300347

**The Trimmer Capacitor Assemblies are also available separately. See "CAPACITORS".

Schematic Symbol	Description	Hallicrafters Part Number
	SWITCHES	
S-1A-B-C-D	Rotary Wafer; Band Selector	060-300861
S-2, 5	SPDT Slide; Speaker-Phones and AM-CW	060-100477
S-3	On-Off; Part of R-9	----------
S-4	SPST Slide; Receiver-Standby	060-100476
	SOCKETS AND CONNECTORS	
TS-1	Terminal Strip, Antenna	088-100671
TS-2	Twin Jack Strip, Phones	088-100071
	Socket, Dial Lamp (Inc. Leads)	086-100122
	Socket, 7-Pin Miniature	006-100306
	TUBES AND DIAL LAMP	
V-1	12BE6; Converter	090-900040
V-2	12BA6; IF Amplifier and BFO	090-900039
V-3	12AV6; Detector and Audio Amplifier	090-901187
V-4	50C5; Audio Output	090-900541
V-5	35W4; Rectifier	090-900384
LM-1	Lamp, Dial Type #47	039-100004
	MISCELLANEOUS	
	Back, Cabinet	032-400754
	Background, Dial (Paper)	032-300749
	Bracket, Dial Plate Mtg.	067-205189
	Bracket-Left (Glass Retaining)	067-205253
	Bracket-Right (Glass Retaining)	067-205236
	Bracket, Idler, Pulley, and Dial Lamp	067-205191
	Bracket, Pulley Mtg.	067-205190
	Bracket, Switch	067-305192
	Bushing, Tuning and Band Spread Shaft	077-201684
	Cabinet	066-401754
	Clip, Dial Mtg.	076-100646
	Clip, IF Mtg.	076-100385
	Clip, Dial Lamp Mtg.	076-100660
	Cover, Cabinet Bottom	032-300501
	Dial Cord (Specify Length)	038-100026
	Foot, Mtg.	016-200983
	Gasket, Rubber	016-200929
	Glass, Dial Window	022-200870
	Knob, Band Selector	015-201259
	Knob, Band Spread, Off-Volume, or Main Tuning	015-201258
	Line Cord and Plug	087-100078
	Line Cord Lock (Male Section)	076-100397-01
	Line Cord Lock (Female Section)	076-100397-02
	Pointer, Band Spread	082-200350
	Pointer, Main Tuning	082-200349
	Pulley, 3. 125" od	028-200256
	Pulley, 2. 875" od	028-200257
	Shield, Tube	069-100232
	Shield, Dial Lamp	008-101249
	Speaker, 5" PM; 3. 2 ohm v. c.	065-300030

ERRATA SHEET
FOR
MODEL S-38E

After the service data for your S-38E receiver was published, electrical modifications were made for improved performance. The following amendments to the schematic and service parts list should be made at this time:

1. Correct the high side of C-30 (wire gimmick) to connect pins 5 and 6 of 12AV6. Delete C-30 connection to the plate of 12BA6.

2. Add C-33, a .01 mfd, 450V., ceramic disc capacitor, part number 047-000224. C-33 is wired from pin 6 of 50C5 to chassis.

3. Correct filament string by interchanging pins 4 and 3 of V3 (12AV6). Pin 3 of V3 is wired to chassis, whereas, pin 4 is wired in series with pin 4 of V1 (12BE6).

4. On schematic under the title VOLTAGES, correct item 1 to read, "All voltages are measured between tube socket terminals and B- (pin 3 of 12AV6) with antenna terminals shorted, AM/CW switch at AM, and Receive/Standby switch at Receive."

Pack with Service Data
#094-901866
Form #094-901875

SERVICE OR OPERATING QUESTIONS—For any further information regarding operation or servicing of your radio, contact your Hallicrafters dealer. The Hallicrafters Co. maintains an extensive system of authorized service centers where any required service will be performed promptly and efficiently at a nominal charge. All Hallicrafters Authorized Service Centers display the sign shown at the right. For the location of the one nearest you, consult your dealer or telephone directory.

Authorized hallicrafters Service Center
communications equipment

9231681-C

Warranty

"The Hallicrafter's Company warrants each new radio product manufactured by it to be free from defective material and workmanship and agrees to remedy any such defect or to furnish a new part in exchange for any part of any unit of its manufacture which under normal installation, use and service discloses such defect, provided the unit is delivered by the owner to our authorized radio dealer, wholesaler, from whom purchased, or, authorized service center, intact, for examination, with all transportation charges prepaid within ninety days from the date of sale to original purchaser and provided that such examination discloses in our judgment that it is thus defective.

This warranty does not extend to any of our radio products which have been subjected to misuse, neglect, accident, incorrect wiring not our own, improper installation, or to use in violation of instructions furnished by us, nor extend to units which have been repaired or altered outside of our factory or authorized service center, nor to cases where the serial number thereof has been removed, defaced or changed, nor to accessories used therewith not of our own manufacture.

Any part of a unit approved for remedy or exchange hereunder will be remedied or exchanged by the authorized radio dealer or wholesaler without charge to the owner.

This warranty is in lieu of all other warranties expressed or implied and no representative or person is authorized to assume for us any other liability in connection with the sale of our radio products.

94X622

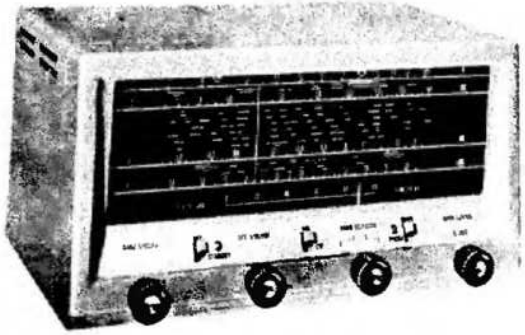
the Hallicrafters co.

the hallicrafters co.
4401 WEST 5TH AVENUE
Chicago 24, Ill.

094-901834-A

Owner's Guide

Model S-38E



GENERAL DESCRIPTION

Your new Hallicrafters Receiver tunes from 540 kilocycles to 31 megacycles to bring you the finest in world-wide radio reception. You'll hear foreign and domestic shortwave broadcasts, amateurs, police, aircraft, ships, and countless other exciting distant stations... as well as all your favorite programs on standard broadcast. The receiver employs the latest type superheterodyne circuit and provides for reception of AM (voice) and CW (code) signals over its entire tuning range. Special features in your receiver include an electrical bandspread dial for fine tuning of the amateur and shortwave bands, a powerful built-in Alnico V permanent magnet speaker, provisions for headphone operation, and a receive-standby switch on the front panel that permits you to silence the receiver without turning it off. Your receiver has an unusually high degree of sensitivity necessary to receive weak and distant stations. Careless operation may result in excess noise or background hiss. These undesirable effects can be held to a minimum by careful adjustment of the tuning controls as well as the proper selection and arrangement of the antenna.

POWER SOURCE

The receiver is designed to operate on 105 to 125 volt 50/60 cycle, AC, or DC current. It may also be operated on 210 to 250 volt AC/DC current by using Line Cord Adapter 087-401566, available as an accessory from your Hallicrafters dealer. Power consumption is 30 watts.

HEADPHONES

Connections are provided at the rear of the receiver for connecting headphones. Any commercial headphones ranging from 50 to 10,000 ohms may be used. For headphone operation, set the Speaker-Phones selector switch at "Phones".

the hallicrafters co.
MANUFACTURERS OF RADIO, TELEVISION AND ELECTRONIC EQUIPMENT, CHICAGO 24, U. S. A.

ANTENNAS

The receiver is designed to operate from either a single-wire antenna, or a halfwave doublet or other tuned antenna. Antenna connections are made to a three terminal strip at the rear of the receiver marked "A1", "A2", and "G".

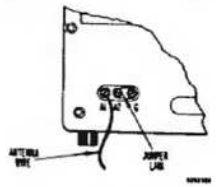


Fig. 2. Single-Wire Antenna

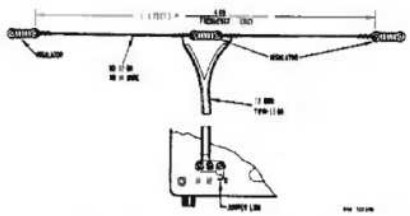


Fig. 3. Doublet Antenna Using Twin-Lead Transmission Line

SINGLE-WIRE ANTENNA

The simplest antenna and one which will provide satisfactory performance throughout the entire tuning range is a conventional single-wire antenna. In most localities, satisfactory results can be obtained with just the 15-foot antenna wire included with the receiver. It is simply necessary to attach one end of this wire to terminal "A1", connect the jumper link between "A2" and "G", and then run the wire about the room in any convenient manner. (See Fig. 2) If the receiver is operated in a steel constructed building or where receiving conditions are exceptionally poor, an outside antenna 50 to 100 feet long may be necessary. In some locations, reception may be improved by connecting a ground wire (ordinary copper wire) from terminal "G" to a cold water pipe or outside ground rod. While the use of an outside ground rod installed in accordance with Insurance Underwriter's Laboratories requirements is adequate protection against lightning, we strongly recommend an additional connection to the nearest cold water pipe to eliminate any shock hazard.

HALF-WAVE DOUBLET ANTENNA

For top performance, especially on the shortwave and amateur bands, the use of a half-wave doublet or other type of antenna employing a 52 to 600 ohm transmission line is recommended. A typical doublet antenna installation is shown in Fig. 3. The doublet antenna should be cut to the proper length for the most used frequency or band of frequencies. The overall length in feet of a doublet antenna is determined by the following formula:

$$\text{Length in feet} = \frac{468}{\text{Frequency in megacycles}}$$

For maximum signal pickup, the doublet antenna should be erected with its length at right angles to the desired station. When a transmission line such as "twinlead" or a twisted pair is used, the transmission line connects to terminals "A1" and "A2", and the jumper link between "A2" and "G" is disconnected. The doublet antenna provides optimum performance only at the frequency for which it is cut. Therefore, it may be desirable for reception on frequencies remote from the antenna frequency to utilize the antenna as a single wire type. This is accomplished by connecting the two transmission line leads together and connecting them to terminal "A1". The jumper link in this case should be connected between terminals "A2" and "G"

TUNING DIAL

The top dial scale is the standard broadcast band. To convert the readings on this band to kilocycles simply add one zero. For example: 70 on the dial is 700 kilocycles. The shortwave bands are marked 2, 3, and 4. The readings on these bands are in megacycles. The standard broadcast band is marked with a "CD" emblem and a dot at 640 and 1240 kilocycles to indicate the two official civil defense frequencies. In a civil defense emergency, tune to either of these two frequencies for official civil defense news, instructions, and information.

RECEIVE-STANDBY SWITCH

This switch is normally set at "Receive". When set at "Standby", the receiver is silenced but the tubes remain at operating temperature for instant use. To resume reception at any time, simply return the switch to "Receive" position.

AM-CW SWITCH

Set this switch at "AM" to listen to voice or musical broadcasts. Set it at "CW" only if you wish to hear code signals.

BAND SELECTOR CONTROL

Set this control for the band you wish to tune. The four positions of this control correspond to the band numbers at the left side of the dial.

OFF-VOLUME CONTROL

Turn this control clockwise to turn the receiver on and to increase volume. Allow about one minute for the tubes to warm up. When operating on DC (direct current), reverse the power plug in the wall outlet if the receiver does not operate after the one minute warm up, as the receiver will operate ONLY with the plug in one position. When operating on AC (alternating current), try reversing the power plug for minimum hum after the receiver is in operation. To turn the receiver off, simply rotate the Off-Volume control fully counterclockwise, until a click is heard.

TUNING AND BANDSPREAD CONTROLS

Wide tuning is performed with the Tuning control and fine tuning with the Bandspread control. To tune the receiver, set the Bandspread dial pointer at "O" and then slowly turn the Tuning control to the desired station. When trying to locate weak distant stations, it is suggested that the Off-Volume control be initially set near maximum and then readjusted for the desired level after the station has been tuned in. For CW (code) reception, adjust the Tuning control for the desired pitch when tuning in the station. The dial readings will correspond to the station frequencies only if the Bandspread dial pointer is set at "O".

The Bandspread control is an electrical fine tuning adjustment which permits you to accurately tune in stations on crowded bands by spreading them out. It may be used in two different ways. The first method of tuning is used when it is desired to tune in a single signal with precision accuracy. The Bandspread dial pointer is set at about "5", then the signal is located with the Tuning control, and finally the signal is accurately tuned in by "rocking" the Bandspread control (turning it a few degrees to the left and right) until the signal is loudest and clearest. The second method of tuning is used when it is desired to tune through a range of frequencies, such as the amateur bands. Set the bandspread dial pointer at "O", set the Tuning control for the high end of the selected band or range of frequencies, and then tune through the range with the Bandspread control. Turning the Bandspread control from "O" to "100" tunes the receiver progressively lower in frequency.