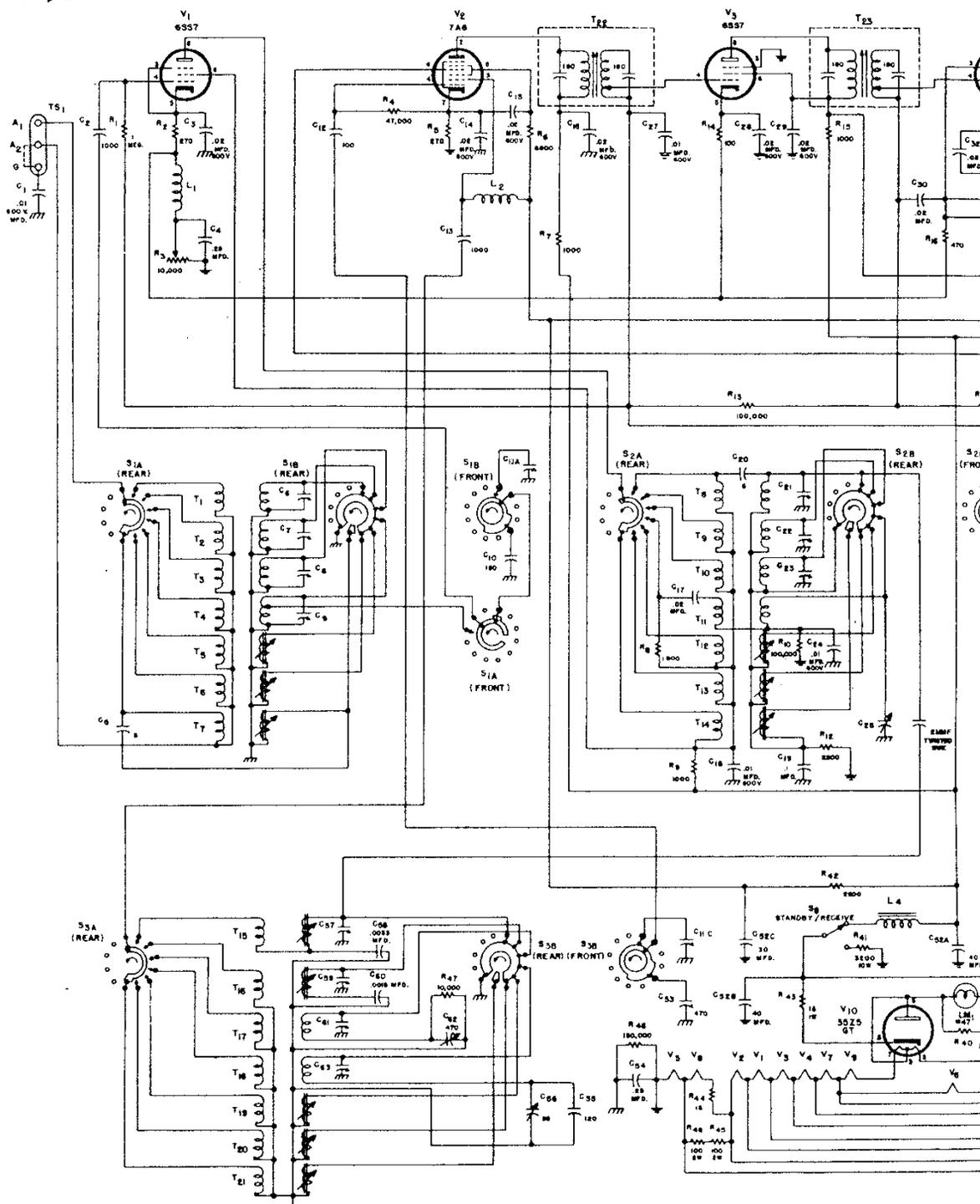


MODEL S-51



RANGE SWITCH POSITION	FREQUENCY RANGE	TYPE OF RECEPTION
A.	2.00 - 3.00 KC	FIXED FREQUENCY
B.	2.0 - 3.0 MC	" "
C.	2.0 - 3.0 MC	" "
1.	152 - 40.5 KC	GENERAL COVERAGE
2.	485 - 1550 KC	" "
3.	1450 - 4850	" "
4.	4.2 - 13.0 MC	" "

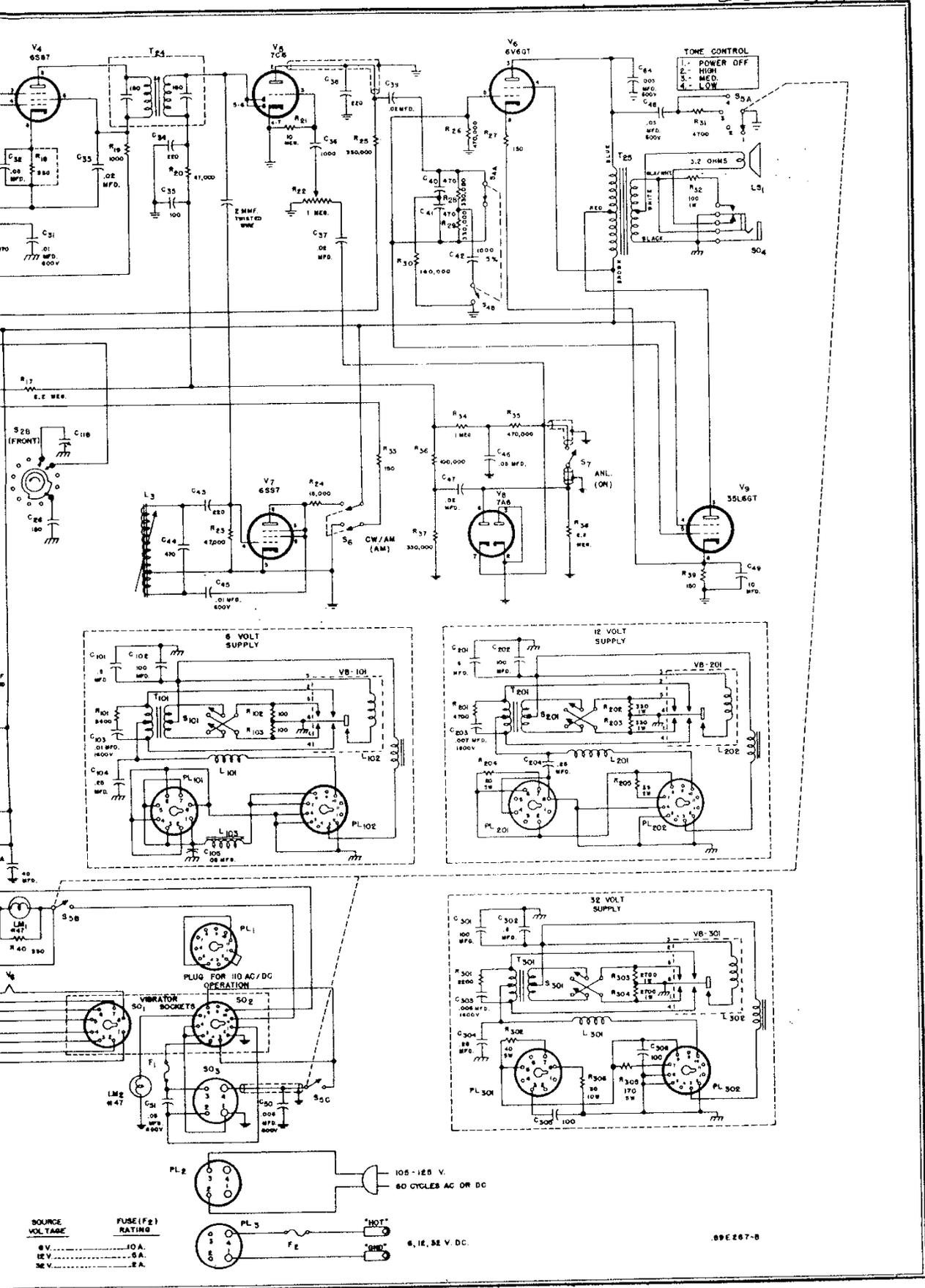
BAND SWITCH IN "A" BAND, EXTREME COUNTER CLOCKWISE POSITION.

NOTE:
 RESISTOR VALUES ARE IN OHMS.
 ALL RESISTORS ARE 1/2 W. UNLESS OTHERWISE SPECIFIED.
 CAPACITOR VALUES ARE IN MMF. UNLESS OTHERWISE SPECIFIED.

CHASSIS GROUND.
 CIRCUIT GROUND.

LAST CAPACITOR — C64, C105, C204, C308
 LAST RESISTOR — R46, R103, R202, R308

20 23, 24



GENERAL

- Tubes Nine plus rectifier
- Speaker 5-inch P.M.
- Speaker V.C. Impedance. 3.2 ohms
- Headset Output. Low Impedance
- Antenna Provision for external antenna
- Tuning Manual

Tuning Range

Range	Frequency	Reception
A	200 kc - 300 kc	Fixed Frequency
B	2.0 mc - 3.0 mc	" "
C	2.0 mc - 3.0 mc	" "
1	132 kc - 405 kc	General Coverage
2	485 kc - 1530 kc	" "
3	1450 kc - 4550 kc	" "
4	4.2 mc - 13.0 mc	" "

- Intermediate Frequency. 445 kc.
- Power Supply 105-125 V. DC or 60 cycles AC. Provisions for 6V., 12V., 32 V. DC operation.
- Power Consumption 30 Watts

6 V., 12 V., AND 32 V. OPERATION

The Model S-51 Receiver may be operated from a 6 V., 12 V., or 32 V. source by inserting the correct power supply adapter unit. This adapter unit is plugged into the dual socket located on the top of the receiver chassis. Remove the jumper plug before inserting the low voltage adapter unit. One adapter unit is available for each of the above source voltages.

DC Source Voltage	Adapter Unit Part No.	Identification Stamp	Use Cable No.	Fuse Rating
6 Volts	1X629	6 VOLTS	87B1661	10 amperes
12 Volts	1X630	12 VOLTS	87B1661-1	5 amperes
32 Volts	1X631	32 VOLTS	87B1661-2	2 amperes

When operating the receiver with the adapter, the power cable normally used for 117 V. AC/DC operation is replaced with the power cable supplied with the adapter unit and plugged into the same receptacle on the receiver. Connect the fused power cable lead to the "hot" side of the DC source and the unfused lead to the ground or "cold" side of the supply. Disregard polarity of the DC supply as this is taken care of by a reversing switch located on the back side of the adapter unit.

RESTRINGING DIAL CORD

To restring the general coverage tuning dial cord, cut a 24-inch length of 30 lb. test dial cord and tie one end to the tension spring of the main tuning capacitor drive pulley at position "1" on the diagram. Follow the numbers "1" through "7" and at position "7" stretch the tension spring and tie the cord securely.

REPLACING LAMPS

Refer to Fig. 7. for location of the two dial lamps used in the receiver. Defective lamps may be replaced through the cabinet cover. Replace defective lamps with 6-8 V. Mazda #47 (Brown bead) lamps or equivalent.

REPLACING FUSES

A line fuse protects the receiver when operating from a 105-125 V. AC/DC source. This fuse is accessible at the rear apron of the receiver chassis. Replace defective fuses with type 3AG fuses with a one ampere rating.

Protective fuses for 6 V., 12 V., and 32 V. operation are located in the power cable. Refer to the paragraph on low voltage operation for fuse ratings. Replace defective fuses with the type 3AG body size.

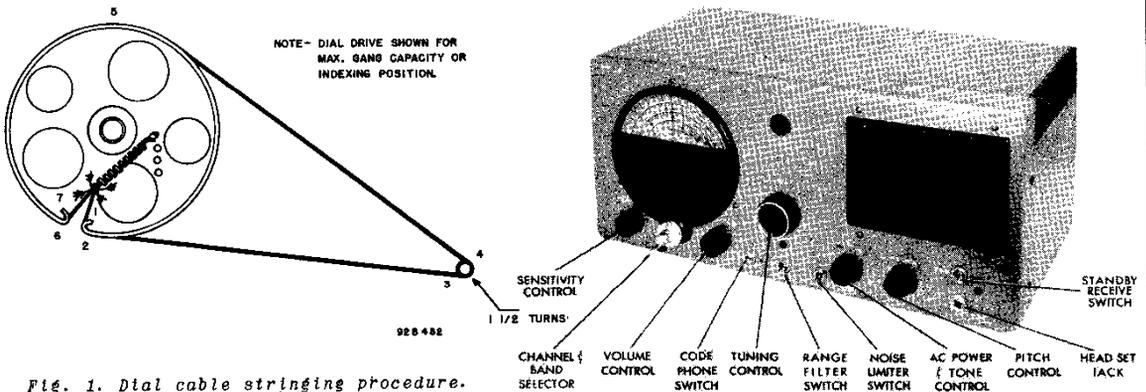
CAUTION - Do not replace defective fuses with one of higher current rating than specified. Use the correct fuse and avoid costly repairs.

FIXED FREQUENCY CHANNEL ADJUSTMENTS

Adjustment of the fixed frequency channels for code and radio telephone reception in the 200 kc to 300 kc or 2000 kc to 3000 kc ranges is accomplished as described below. A total of three fixed frequency channels are available, one channel in the 200 kc to 300 kc range and two channels in the 2000 kc to 3000 kc range.

Set the band or range switch at "A" for a channel in the 200 kc to 300 kc band or either "B" or "C" for a channel in the 2000 kc to 3000 kc band.

Lift the hinged cabinet cover and with a small screwdriver, adjust the screws identified as "Ao", "Am", and "Aa" for the "A" band or "Bo", "Bm", and "Ba" for the "B" band, etc. Refer to Fig. 2. Make the adjustments in the order "O" "M" "A" (Oscillator, Mixer and Antenna),



MODEL S-51

ALIGNMENT CHART

Step	Dummy Antenna	Signal Generator Coupling	Signal Generator Frequency	Band Switch Setting	Receiver Dial Setting	Adjust	Remarks
1	.1 mfd. If an isolation transformer is not used, change dummy ant. to .001 mfd. to reduce hum modulation	High side to stator plates in center section of tuning gang; low side to chassis.	445 kc	"2"	Tuning cap. fully open	S1,2,3, 4,5,6	Adjust for maximum audio output at speaker voice coil. Use just enough signal generator output to obtain a 50 mw audio level.
2	See step 1.	See step 1	445 kc (No modulation)	"2"	See step 1	S7	With the CW/AM switch set at CW remove the pitch control knob and adjust S-7 for zero beat. Replace the knob with the dot in the center position.
3	Std. RMA dummy	High side to "A1" on antenna strip; low side to chassis. Jumper connected between "A2" and "G"	350 kc 150 kc	"1"	350 kc 150 kc	*A,B,C *D	Maximum output as in step 1.
4	Std. RMA dummy	See step 3	1400 kc	"2"	1400 kc	*E,F,G	Maximum output as in step 1.
5	Std. RMA dummy	See step 3	600 kc 4 mc	"3"	600 kc 4 mc	*H *I,J,K	Maximum output as in step 1.
6	Std. RMA dummy	See step 3	1800 kc 12 mc 5 mc	"4"	1800 kc 12 mc 5 mc	*S8 *L,M,N *S9	Maximum output as in step 1.

*Note - Calibration adjustments.

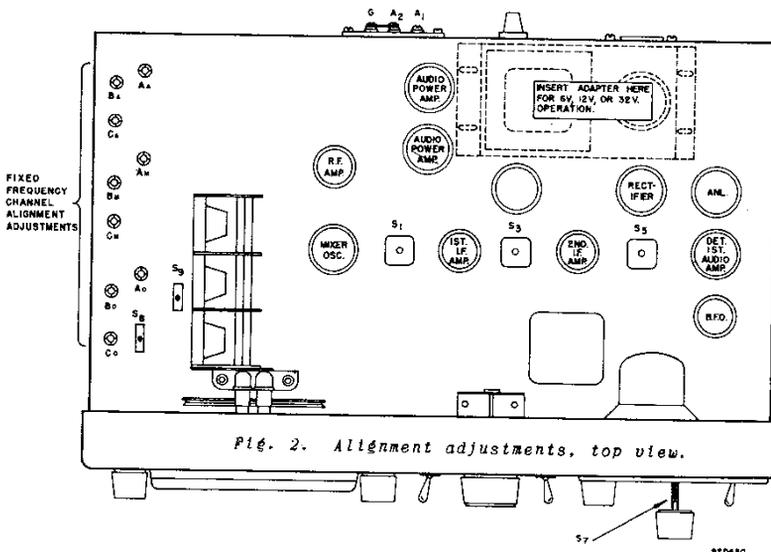


Fig. 2. Alignment adjustments, top view.

TONE Set at HIGH
STANBY-RECEIVE Set at RECEIVE

For the settings of the remaining controls, refer to the alignment chart.

It will be necessary to remove the receiver chassis from the cabinet to make some of the alignment adjustments. The chassis is held in the cabinet by three screws along both the bottom edge of the front panel and the rear of the cabinet, and two screws on either side of the front panel.

The standard RMA dummy mentioned in the alignment chart consists of a 200 mmf. condenser in series with a 20 uh r-f choke which is shunted by a 400 mmf condenser in series with a 400 ohm carbon resistor.

adjusting the oscillator screw ("O") as you would normally tune in a station and adjusting the "M" and "A" screws for maximum volume. When setting up a channel for code reception, set the PITCH CONTROL at mid position and tune the "O" adjustment for zero beat. The PITCH CONTROL may then be set for the desired pitch when copying code signals on the particular fixed frequency channel.

ALIGNMENT PROCEDURE

Set the following controls before alignment:

SENSITIVITY	Set at maximum
VOLUME	Set at maximum
CW/AM switch	Set at AM (see step 2)
RANGE FILTER	Set at OFF
NOISE LIMITER	Set at OFF

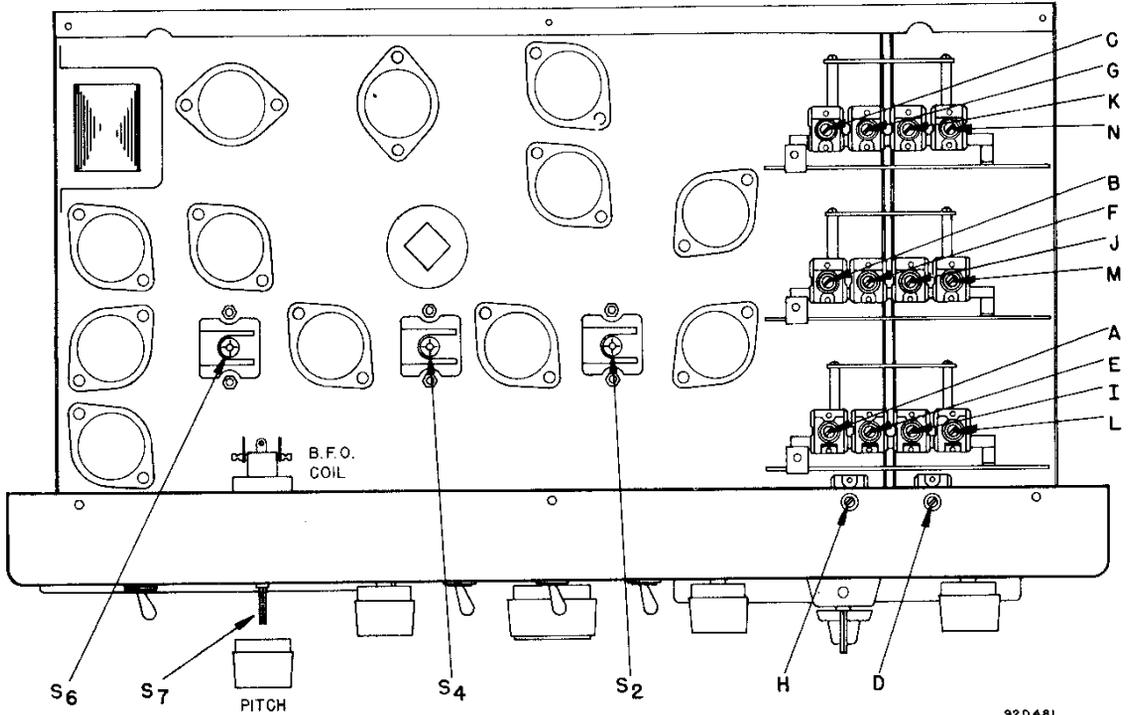


Fig. 3. Alignment adjustments, bottom view.

92D481

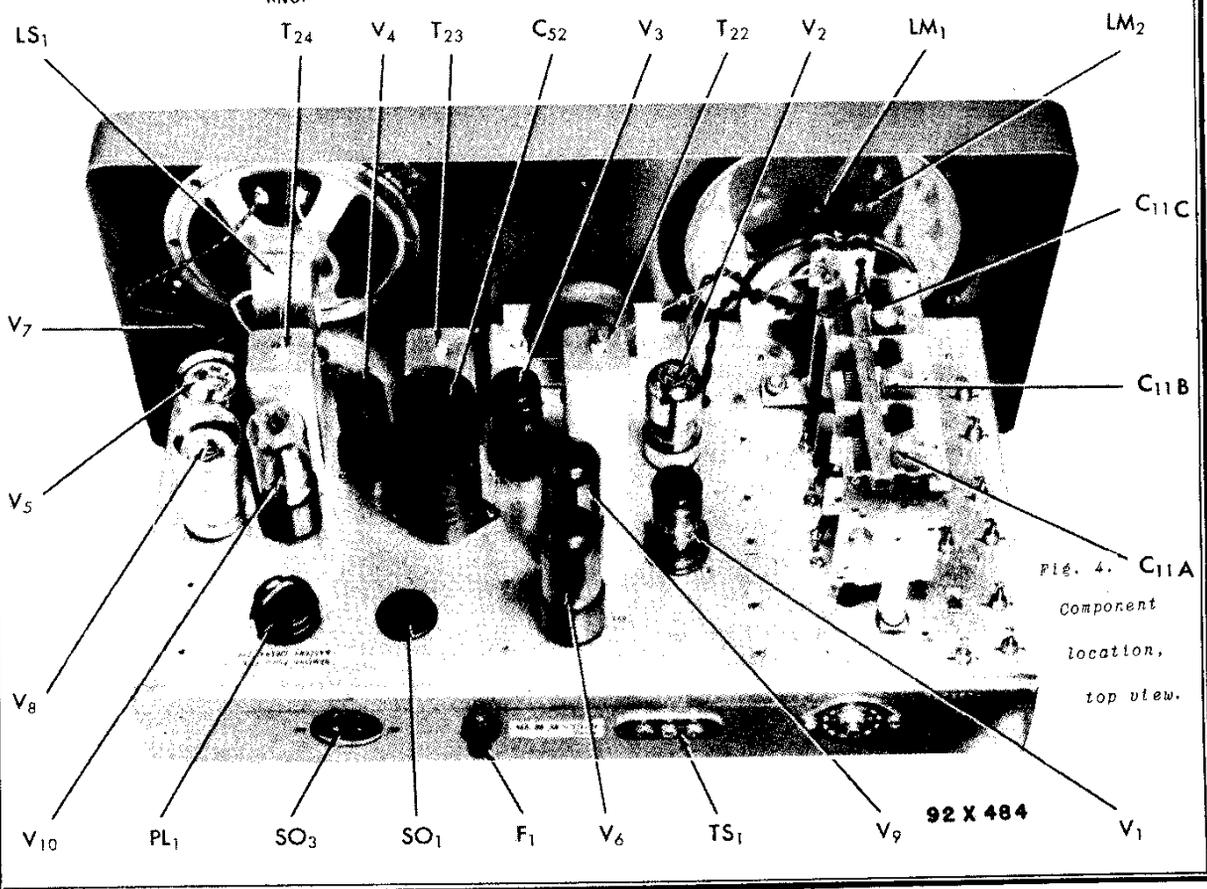


Fig. 4. C11A Component location, top view.

92 X 484

MODEL S-51

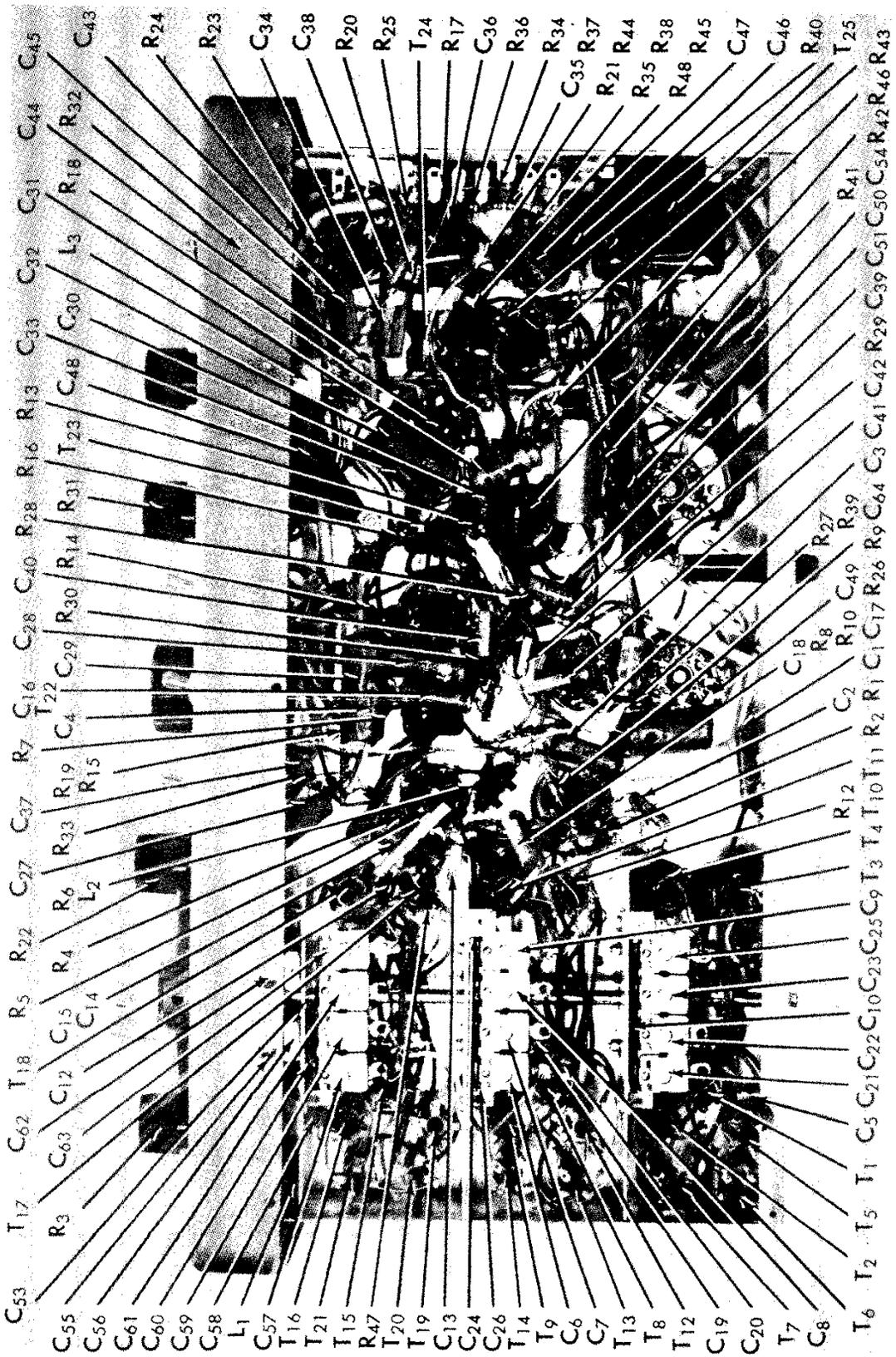


Fig. 5. Component location, bottom view.

92X485

Fig. 6.
6-volt adapter unit.

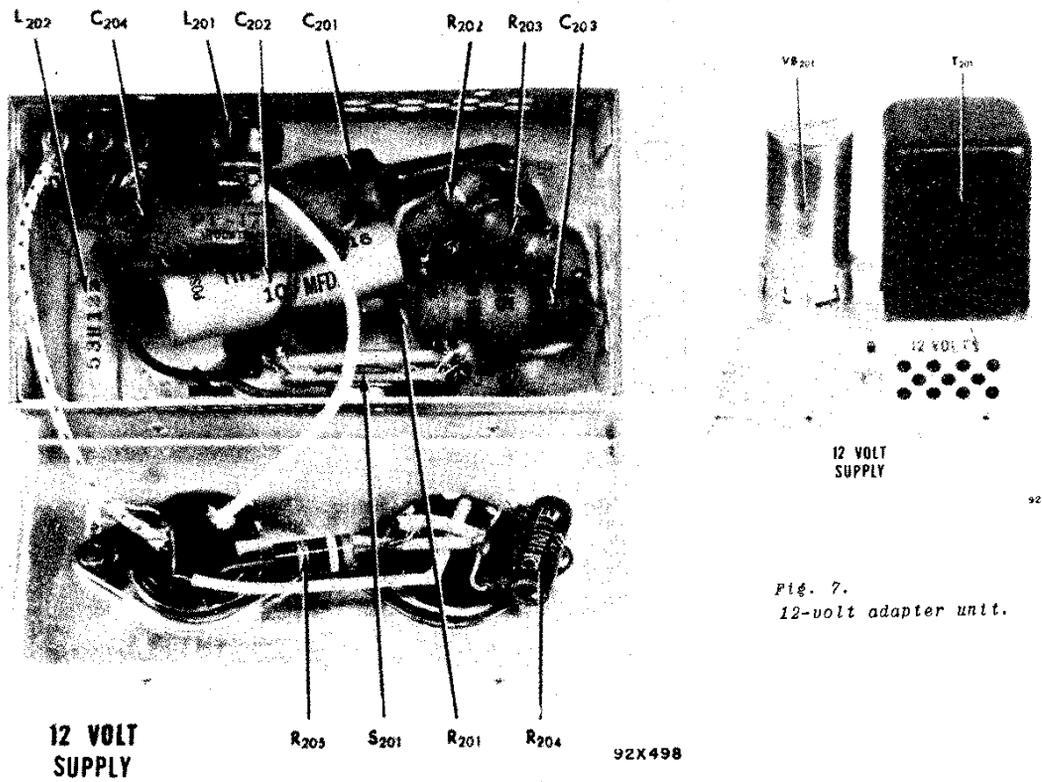
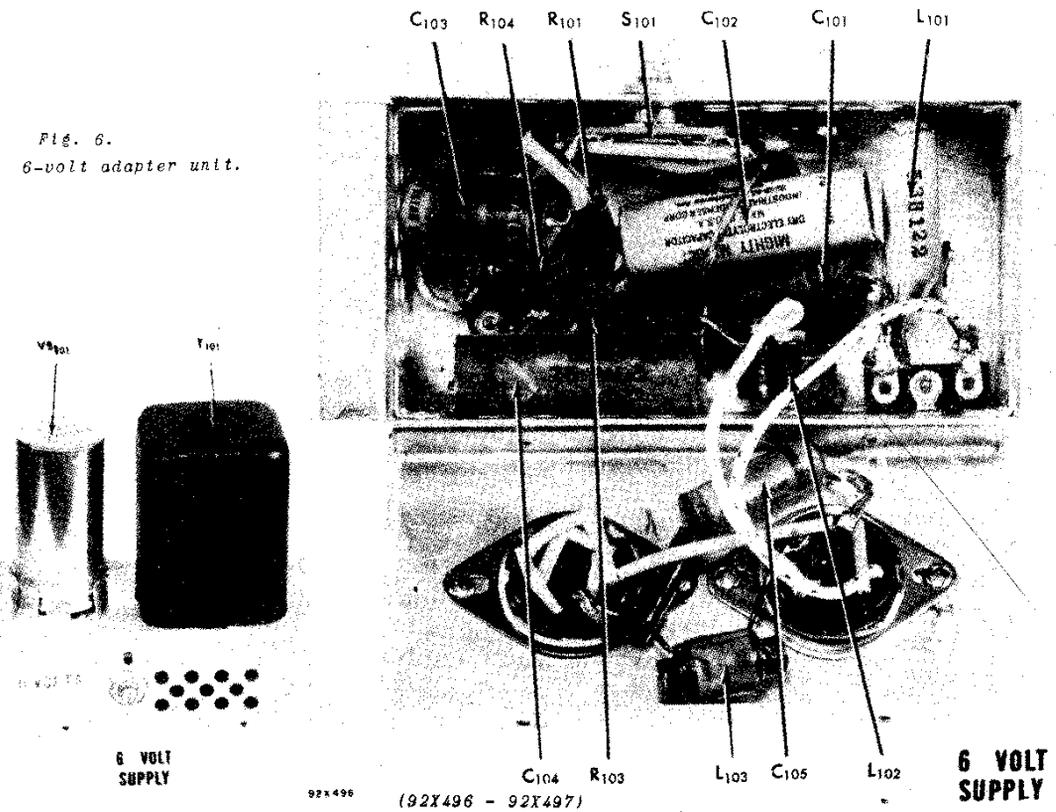


Fig. 7.
12-volt adapter unit.

MODEL S-51

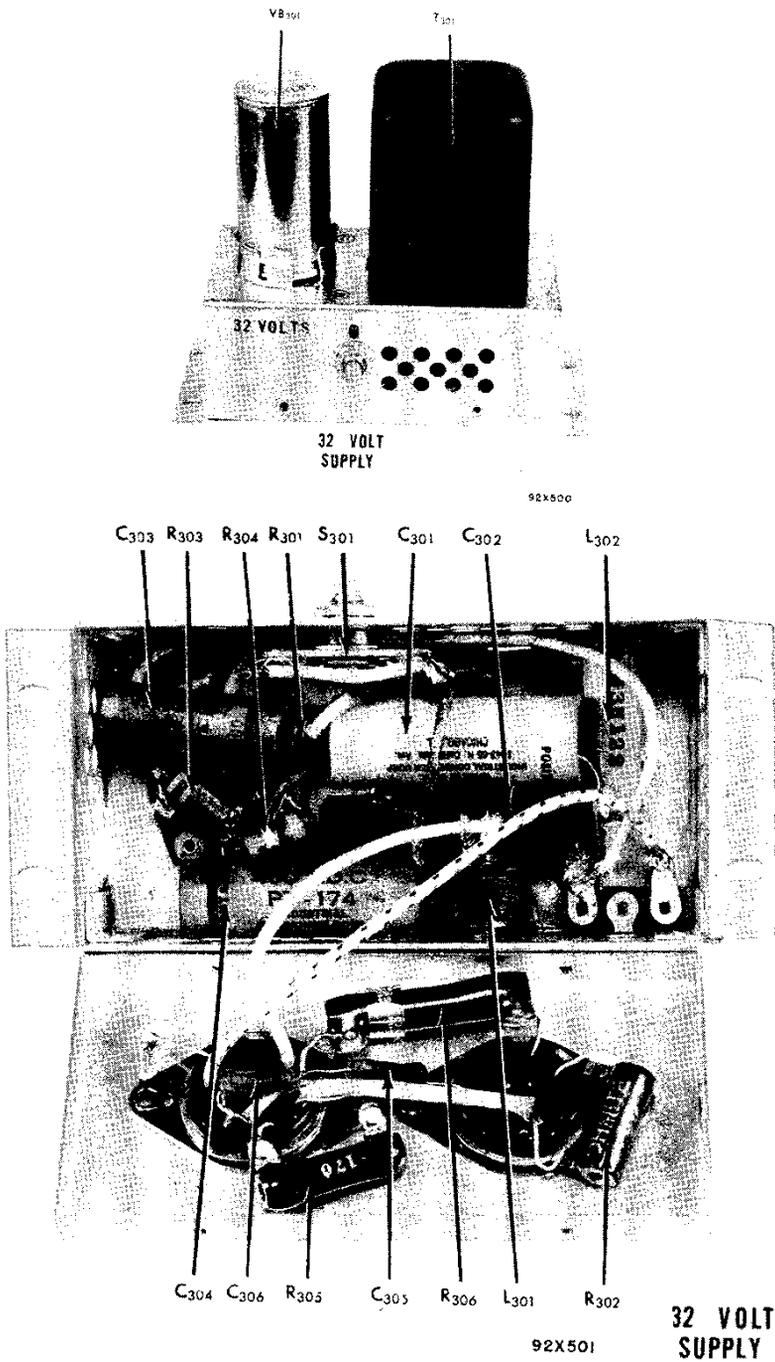
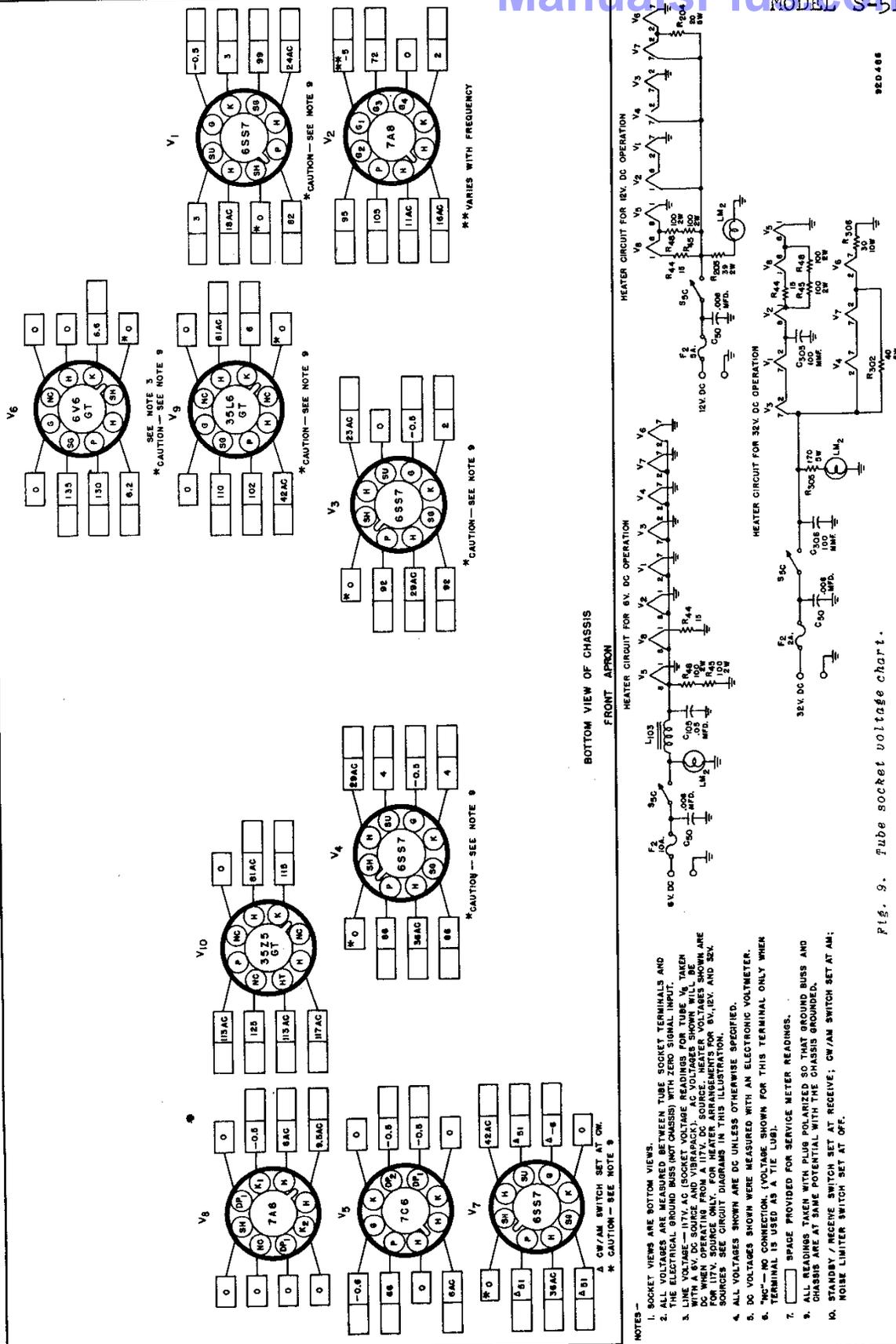


Fig. 8. Component location, 32-volt adapter unit.

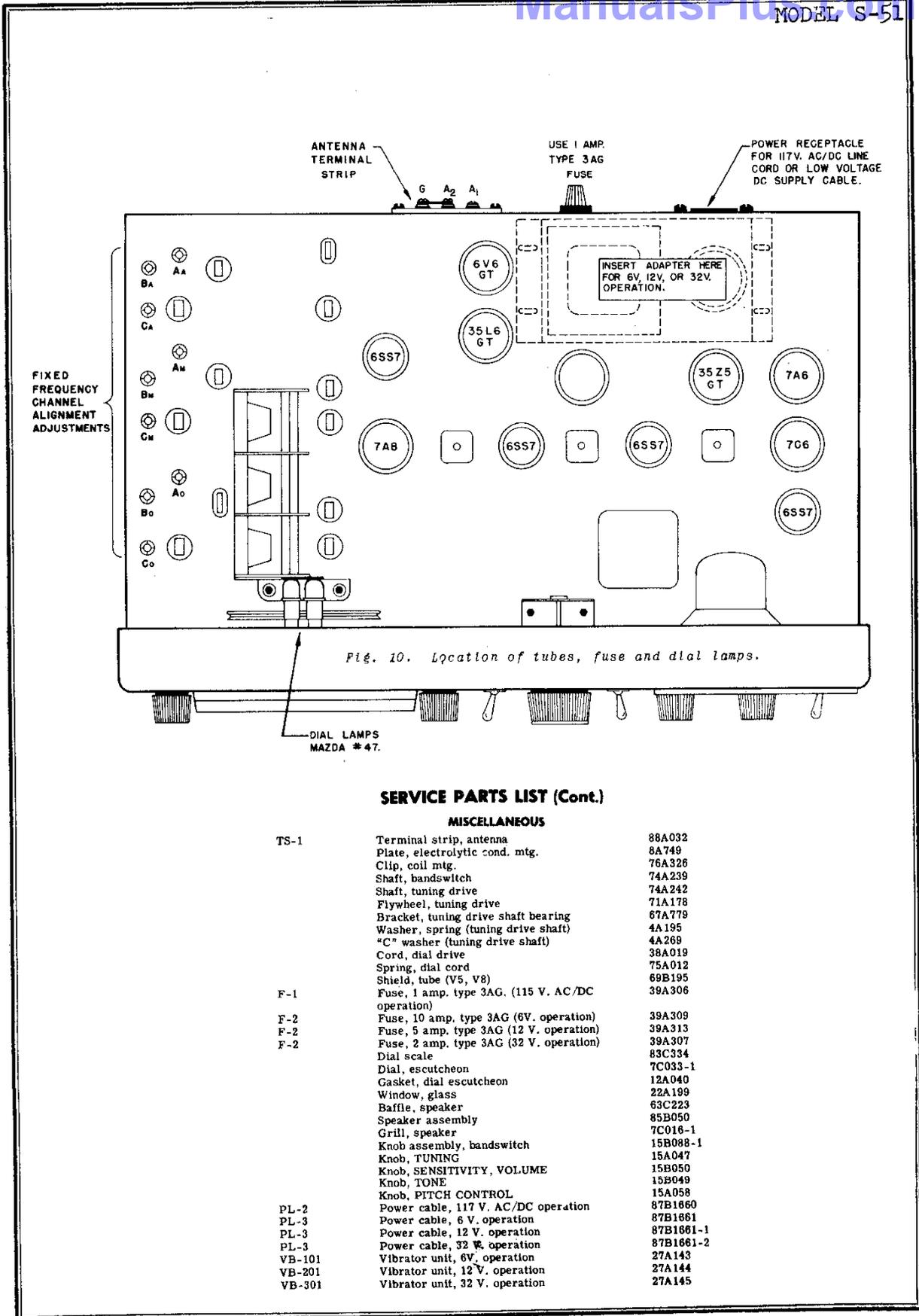


• John F. Rider

- NOTES -**
1. SOCKET VIEWS ARE BOTTOM VIEWS.
 2. ALL VOLTAGES ARE MEASURED BETWEEN TUBE SOCKET TERMINALS AND THE ELECTRICAL GROUND BUSS (NOT GROUND) WITH ZERO SIGNAL INPUT.
 3. LINE VOLTAGE - 117V. AC (SOCKET VOLTAGE READINGS FOR TUBE V₆ ARE WITH POWER OPERATING FROM 117V. DC SOURCE HEATER VOLTAGES SHOWN ARE FOR 117V. SOURCE ONLY. FOR HEATER ARRANGEMENTS FOR 8V, 12V, AND 32V. SOURCES SEE CIRCUIT DIAGRAMS IN THIS ILLUSTRATION.
 4. ALL VOLTAGES SHOWN ARE DC UNLESS OTHERWISE SPECIFIED.
 5. DC VOLTAGES SHOWN WERE MEASURED WITH AN ELECTRONIC VOLTMETER.
 6. "NOT" - NO CONNECTION. (VOLTAGE SHOWN FOR THIS TERMINAL ONLY WHEN TERMINAL IS USED AS A TIE LUG).
 7. □ SPACE PROVIDED FOR SERVICE METER READINGS.
 8. ALL READINGS TAKEN WITH PLUS POLARIZED SO THAT GROUND BUSS AND CHASSIS ARE AT SAME POTENTIAL WITH THE CHASSIS GROUNDED.
 9. □ STANDBY / RECEIVE SWITCH SET AT RECEIVE; CW/AM SWITCH SET AT AM; NOISE LIMITER SWITCH SET AT OFF.

Fig. 9. Tube socket voltage chart.

980-488



SERVICE PARTS LIST (Cont.)

MISCELLANEOUS

TS-1	Terminal strip, antenna	88A032
	Plate, electrolytic cond. mtg.	8A749
	Clip, coil mtg.	76A326
	Shaft, bandswitch	74A239
	Shaft, tuning drive	74A242
	Flywheel, tuning drive	71A178
	Bracket, tuning drive shaft bearing	67A779
	Washer, spring (tuning drive shaft)	4A195
	"C" washer (tuning drive shaft)	4A269
	Cord, dial drive	38A019
	Spring, dial cord	75A012
	Shield, tube (V5, V8)	69B195
F-1	Fuse, 1 amp. type 3AG. (115 V. AC/DC operation)	39A306
F-2	Fuse, 10 amp. type 3AG (6V. operation)	39A309
F-2	Fuse, 5 amp. type 3AG (12 V. operation)	39A313
F-2	Fuse, 2 amp. type 3AG (32 V. operation)	39A307
	Dial scale	83C334
	Dial, escutcheon	7C033-1
	Gasket, dial escutcheon	12A040
	Window, glass	22A199
	Baffle, speaker	63C223
	Speaker assembly	85B050
	Grill, speaker	7C018-1
	Knob assembly, bandswitch	15B088-1
	Knob, TUNING	15A047
	Knob, SENSITIVITY, VOLUME	15B050
	Knob, TONE	15B049
	Knob, PITCH CONTROL	15A058
PL-2	Power cable, 117 V. AC/DC operation	87B1860
PL-3	Power cable, 6 V. operation	87B1861
PL-3	Power cable, 12 V. operation	87B1861-1
PL-3	Power cable, 32 V. operation	87B1861-2
VB-101	Vibrator unit, 6V. operation	27A143
VB-201	Vibrator unit, 12 V. operation	27A144
VB-301	Vibrator unit, 32 V. operation	27A145