



MODEL 9W125



RCA VICTOR



RADIO & DUAL PHONOGRAPH COMBINATION

MODEL 9W125

SERVICE DATA

— 1949 No. 25 —

GENERAL SERVICE DIVISION
RCA VICTOR COMPANY LIMITED
MONTREAL, QUE.

Electrical and Mechanical Specifications

Frequency Ranges:

Standard Broadcast ----- 540-1600 KC.
Short Wave "SW₁" ----- 5.8-10 MC.
Short Wave "SW₂" ----- 11.4-18.2 MC
Frequency Modulation "FM" ----- 88-108 MC

I.F. Frequencies

Amplitude Modulation ----- 455 KC
Frequency Modulation ----- 10.7 MC

Tube Complement

(1) RCA 6BA6 ----- R.F. Amplifier
(2) RCA 6BE6 ----- A.M. Converter
(3) RCA 6J6 ----- F.M. Converter
(4) RCA 6BA6 ----- A.M.—F.M. IF Amplifier
(5) RCA 6AU6 ----- F.M. IF Amplifier
(6) RCA 6AL5 ----- Ratio Detector
(7) RCA 6AV6 ----- Audio
(8) RCA 6AV ----- Det.—A.V.C Phase Inverter
(9) RCA 6C4 ----- Driver
(10) RCA 6V6GT ----- Output
(11) RCA 6V6GT ----- Output
(12) RCA 5Y3GT ----- Rectifier

DIAL LAMPS ----- (2) Mazda 51
PILOT LAMP ----- (1) Mazda 51
TUNING DRIVE RATIO ----- (19:1) or 9½ turns of knob.

POWER OUTPUT

Undistorted ----- 8 Watts
Maximum ----- 12 watts

Loudspeaker

Type ----- 12" P.M.
Voice Coil Impedance ----- 2.2 ohms at 400 cycles

Power Supply Ratings:

Rating A-105-125 volts, 60 cycles, 1.0 amp. ----- 115 watts
Rating B-105-125 volts, 25 cycles, 1.0 amp. ----- 115 watts

Cabinet Dimensions:

Height ----- 35-13/16 inches
Width ----- 34-3/4 "
Depth ----- 17-1/4 "

Phonograph (45 RPM)

Type ----- RP-168A
Record Capacity ----- Eight 7 inch
Turntable speed ----- 45 R.P.M.
Pickup ----- Crystal (Medium Output)

Phonograph (78 RPM)

Type ----- RP-178
Record capacity ----- Twelve 10 inch or Ten 12 inch
Turntable Speed ----- 78 R.P.M.
Pickup ----- Crystal (Standard Output)

General Description

The RCA Victor Model 9W125 receiver is a twelve tube, four bands, long and short wave AM-FM radio phonograph combination.

The receiver tunes the standard broadcast band (540-1600 KC); the short wave bands (16 M to 49 M) (in two ranges) and the F.M. band (88-108 MC). The receiver incorporates an R.F. amplifier on the AM, long and short wave bands, and a combined oscillator and mixer for the F.M. band. The A.M. section has one stage of I.F. amplification which

gives good sensitivity and adequate gain for the audio stages. The F.M. section has two stages of I.F. amplification, the second being the driver for the Ratio Detector. The audio amplifier in this receiver is of the high quality type incorporating a "High" and "Low Frequency" tone control and delivers an undistorted output of eight watts.

The receiver also incorporates the latest RCA Victor 45 R.P.M. (RP-168A) record changer, and the standard RP178 record changer, which may be selected by the range switch.

The Model 9W125 receiver has two internal antennas housed in the cabinet. A loop antenna for standard broadcast; and a folded dipole for F.M. and short wave reception.

Standard Broadcast:

The loop antenna is very sensitive and therefore should result in good signal pickup, but in some cases, where the noise level is high or reception is weak, it is recommended that an external antenna be used. To connect an external antenna, connect the 'lead in' from the external antenna to terminal No. 3 on the antenna terminal board.

If reception is not improved, that is, the noise level still persists, it is advisable to check and see if the noise is being picked up by the loop antenna; if it is, terminal No. 1 and 2 of the antenna terminal board must be shorted. This short circuits the loop antenna and detunes the input circuit. It is then necessary to re-adjust the antenna core (L-1) at 580 KC and the trimmer (C-5) at 1500 KC. No other adjustments should be made.

Short Wave Antenna:

The short wave antenna consists of the F.M. folded dipole antenna, with the input terminals 3 and 4 short circuited by S-3 on Range switch position SW₁ and SW₂. This makes the FM dipole antenna act as the internal short wave antenna. Should the location be such, that short wave reception be poor, an external antenna is recommended. This external antenna should be connected to terminal No. 3 of the antenna terminal board.

Frequency Modulation:

The antenna used on the F.M. band, is the F.M. folded dipole, which is located in the cabinet. Should, due to receiver position in the house or other obstruction such as high buildings or being located at a great distance away from the transmitting antenna, cause poor or weak F.M. reception, an external dipole antenna is recommended. The internal dipole should be disconnected from terminal 3 and 4 of the antenna terminal board, and the external dipole lead-in should be connected in its place.

NOTE:

If the receiver is connected to an external F.M. dipole antenna, it is not necessary to install any external short wave or broadcast band antenna. The reason being that the dipole and antenna lead in form a good antenna for the broadcast and short wave bands.

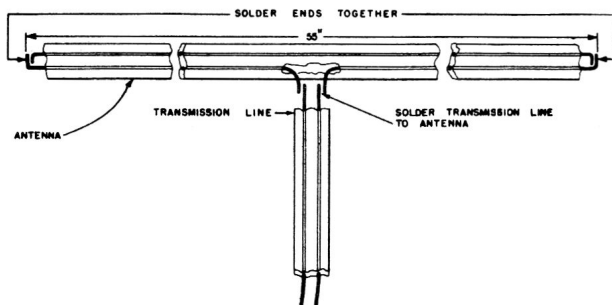


FIG. 1 F.M. FOLDED DIPOLE IN CABINET

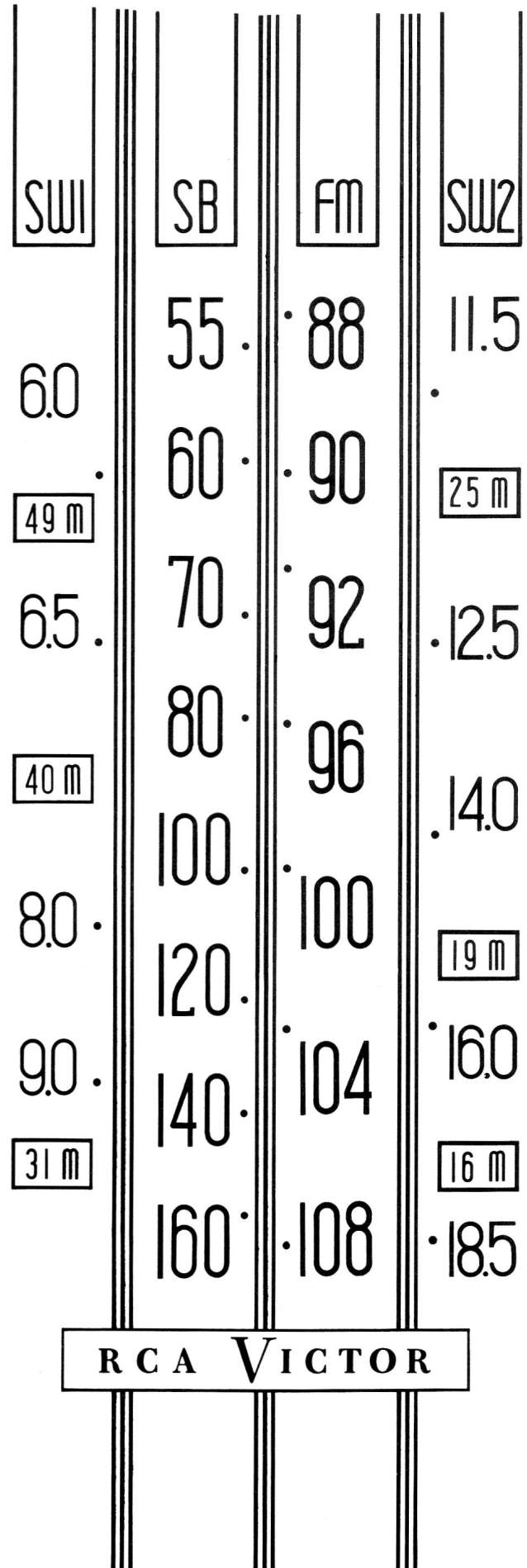


FIG. 2 DIAL SCALE DRAWING (FULL SCALE)

Critical Lead Dress

- (1) Keep blue lead from ratio detector, pin "D" to 6AL5 Pin 5, as short as possible.
- (2) Keep brown lead from 6AV6 and red from terminal board away from aforementioned blue lead.

- (3) Keep B + lead, from pin 5 of S-4 (rear), away from FM antenna transmission line.

NOTE:

Make sure that the special "disc" type capacitors are always replaced by similar types. The reason being, that paper capacitors of the same value are not as efficient.

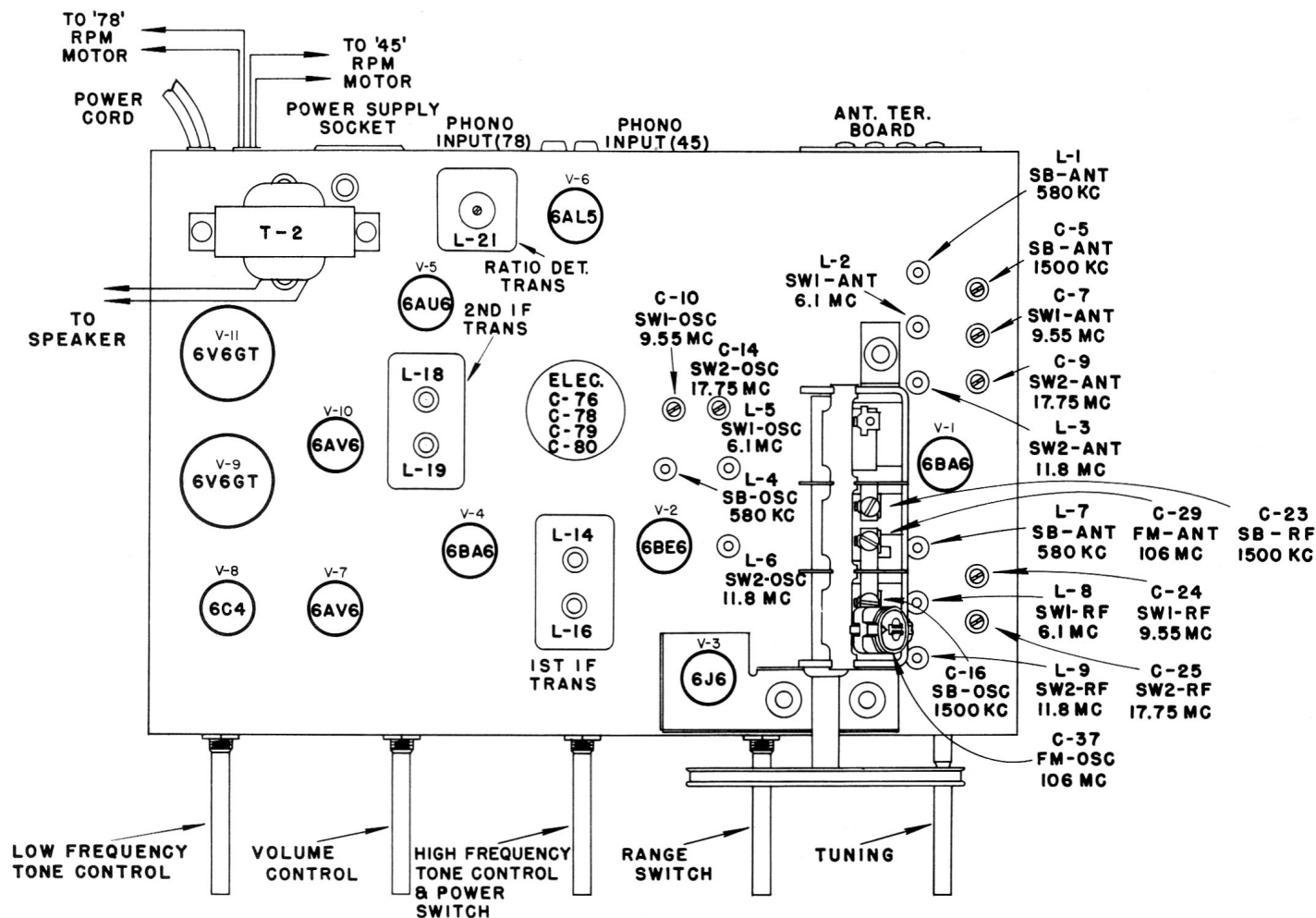


FIG. 3 CHASSIS LAYOUT & ALIGNMENT ADJUSTMENTS

Alignment Procedure

Before aligning the receiver follow procedure outlined below:

- (1) Set pointer opposite 60 on the dial scale.
- (2) Unhook the pointer from the dial cord, without disturbing its position.
- (3) Set gang at maximum capacity, fully meshed.
- (4) Move pointer one inch to the right.
- (5) Hook up pointer to dial cord.

This gives the initial position of the pointer before alignment.

When only a portion of the circuit it to be aligned, select the required portion and perform all the remaining steps.

It is recommended that the I.F.'s be aligned with a cathode ray oscilloscope and sweep generator. If this equipment is not available, use the method outlined in the alignment chart.

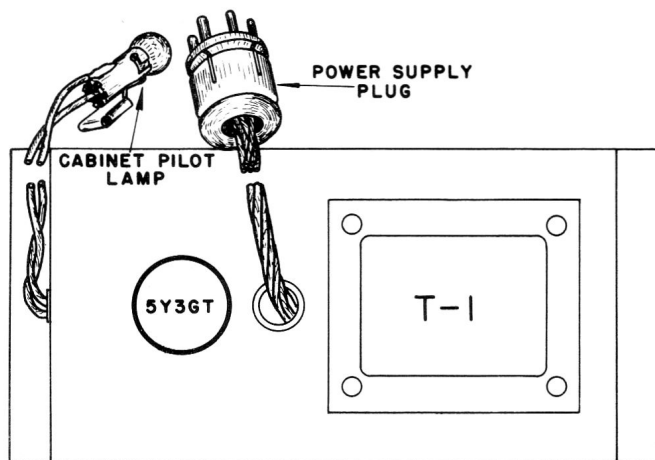
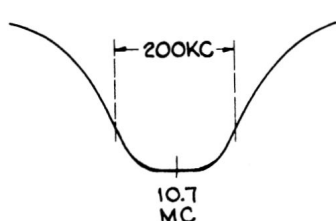


FIG. 4 POWER SUPPLY CHASSIS LAYOUT

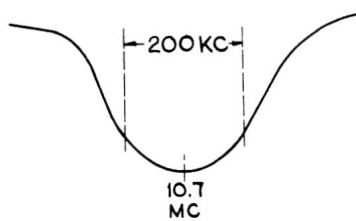
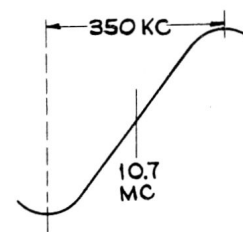
ALIGNMENT CHART

ORDER OF ALIGNMENT		TEST OSCILLATOR				RECEIVER				
		CONNECT "HI" SIDE TO	CONNECT "LO" SIDE TO	DUMMY ANTENNA	FREQUENCY SETTING	RANGE SELECTOR	DIAL SETTING	CIRCUIT TO ADJUST	ADJUSTMENT SYMBOLS	NOTES
A.M.-I.F. ALIGNMENT	1	V-4 6BA6 Pin 1	Gnd	.1 mfd.	455 Kc	S.B.	"HI END"	2nd I.F. Trans.	L-19 L-20	Max. Out
	2	S-1 Rear Pin 1	Same	Same	Same	Same	Same	1st I.F. Trans.	L-15 L-16	Same
	3	Repeat Steps 1 & 2.								
S.B. ALIGNMENT	4	Ter. Board Ter. 1	Gnd	220 mmf	580 Kc	S.B.	580 Kc	Osc. R. F. Ant.	L-4 L-7 L-1	Max. Out
	5	Same	Same	Same	1500 Kc	Same	1500 Kc	Osc. R. F. Ant.	C-16 C-23 C-5	Same
	6	Repeat Steps 4 & 5.								
S.W.1 ALIGNMENT	7	Ter. Board Ter. 3	Gnd	300 Ohms	6.1 Mc	S.W.1	6.1 Mc	Osc. R. F. Ant.	L-5 L-8 L-2	Max. Out
	8	Same	Same	Same	9.55 Mc	Same	9.55 Mc	Osc. R. F. Ant.	C-10 C-24 C-7	Same
	9	Repeat Steps 7 & 8.								
S.W.2 ALIGNMENT	10	Ter. Board Ter. 3	Gnd	300 Ohms	11.8 Mc	S.W.2	11.8 Mc	Osc. R. F. Ant.	L-6 L-9 L-3	Max. Out
	11	Same	Same	Same	17.75 Mc	Same	17.75 Mc	Osc. R. F. Ant.	C-14 C-25 C-9	Same
	12	Repeat Steps 10 & 11.								
F.M.-RATIO DET. ALIGNMENT	13	Connect Volttohyst probe to negative side of 2 mfd. electrolytic (C-60) Capacitor and low side to chassis.								
	14	V-5 6AU6 Pin 1	Gnd	.1 mfd.	10.7 Mc (Standard)	F.M.	"HI End"	Ratio Det. Trans.	L-21	Max. Out On Volttohyst
	15	Same	Same	Same	Same	Same	Same	Same	L-22	Min. Out.*
	16	Repeat Steps 14 & 15								
F.M.-I.F. ALIGNMENT	17	V-4 6BA6 Pin 1	Gnd	.1 mfd.	10.7 Mc (Standard)	F.M.	"HI End"	2nd I.F. Trans.	L-17 L-18	Max. Out. on Volttohyst
	18	Connect 1000 Ohm Resistor across 2nd I.F. Primary Ter. A. & H. Re-Adjust secondary L-18 at 10.7 Mc for maximum D.C. Voltage on Volttohyst.								
	19	Remove 1000 Ohm Resistor and connect across 2nd I.F. Trans. Primary Ter. C. & E. Re-Adjust Primary L-17 at 10.7 Mc for maximum D.C. Voltage on Volttohyst								
	20	Remove Resistor								
	21	Ter. Board Ter. 4	Gnd	.1 mfd.	10.7 Mc (Standard)	F.M.	"HI End"	1st I.F. Trans.	L-13 L-14	Max. Out. on Volttohyst
	22	Connect 1000 Ohm Resistor across 1st I.F. Trans. Primary Ter. A. & C. Re-Adjust Secondary L-14 at 10.7 Mc for Maximum D.C. Voltage on Volttohyst.								
	23	Remove 1000 Ohm Resistor and Connect across 1st I.F. Secondary Ter. D. & E. Re-Adjust Primary L-13 at 10.7 Mc for Maximum D.C. Voltage on Volttohyst.								
F.M.-ANT. & OSC. ALIGNMENT	24	Ter. Board Ter. 4	Gnd	300 Ohms	106 Mc (Standard)	F.M.	106 Mc	Osc. Ant.	C-37 C-29 (Rock In)	Max. Out.
	25	Same	Same	Same	89 Mc (Standard)	Same	89 Mc	Osc. Ant.	Adj. Spacing " " L-11 " " L-10	Same
	26	Repeat Steps 24 & 25.								

* Two or more points may be found which lower the audio output; at the correct point the minimum audio output is approached rapidly and is much lower than at any incorrect point. Due to this fact it is advisable to first, determine the correct peak by feeding in a 10.7 Mc (F.M.) signal with a sweep of about 20 Kc., then align the bottom core for maximum output. Switch the generator to A.M. and retouch the core for minimum audio output. Always check the response of the ratio detector on the scope to obtain best results.



2nd I.F. Response

1st and 2nd I.F. Response
Fig. 5—F.M. Response Curves

Ratio Det. Response

9W125

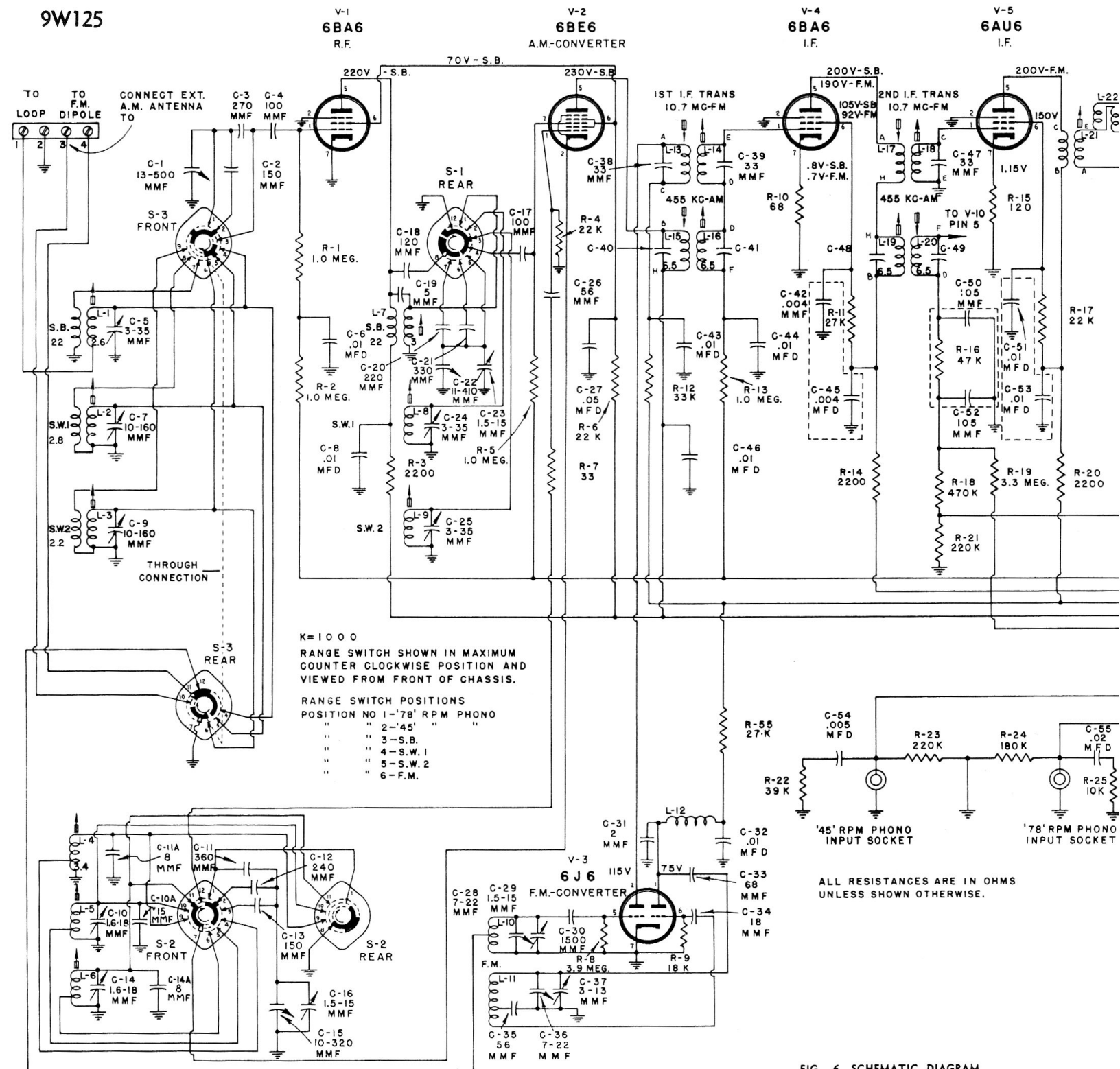
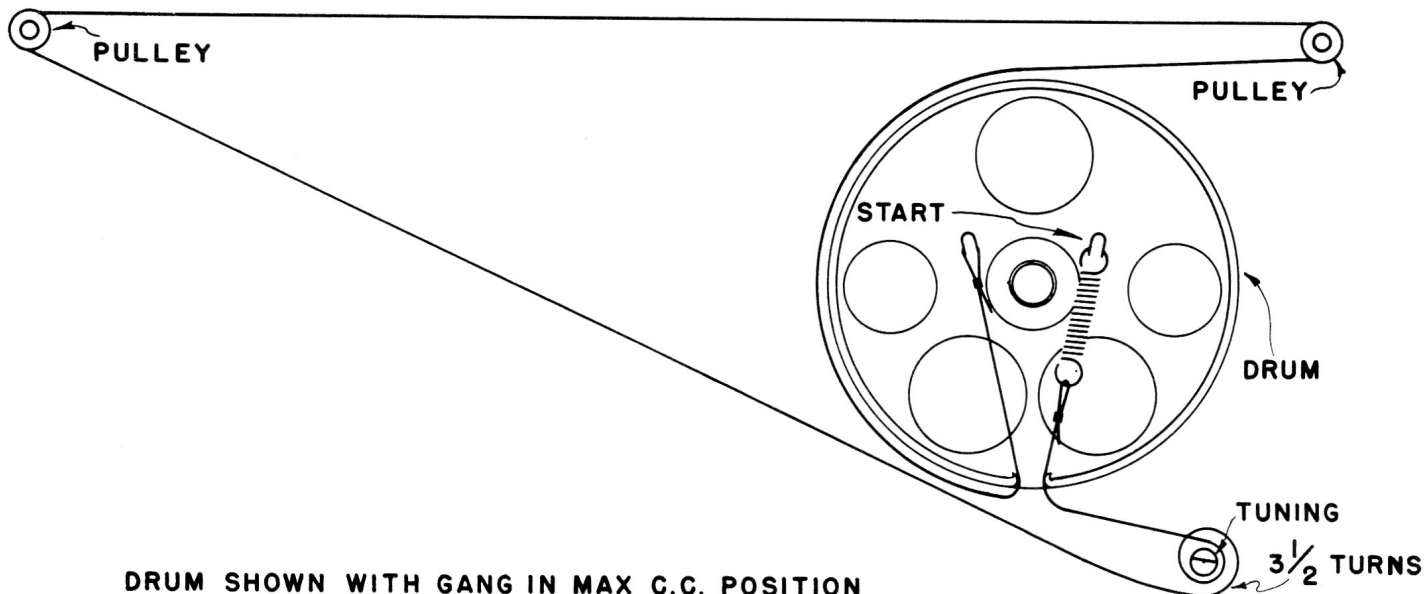


FIG. 6 SCHEMATIC DIAGRAM



DRUM SHOWN WITH GANG IN MAX C.C. POSITION

FIG. 7 DIAL CORD STRINGING

Record Changers

Due to the fact that mechanical adjustments may change after a period of operation or as a result of severe jolting during shipment, we are including herein several adjustments which the serviceman is most likely to be called upon to perform.

Separator Synchronization:

1. Make certain the two embedded gears (5 and 6) are meshed with gear (7A) on the upper end of the star wheel shaft so the action of the separator knives is synchronized.

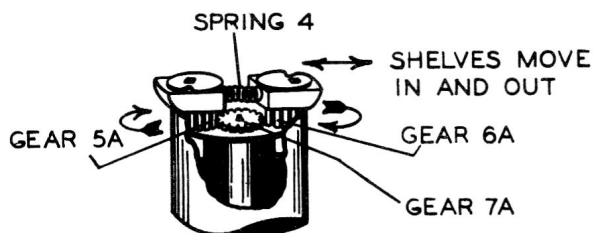


FIG. 8

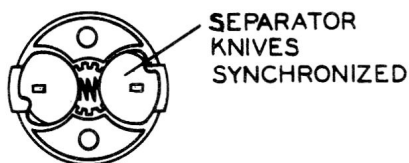


FIG. 9

Star Wheel Position:

1. Turn the star wheel so that the separator knives are in the position indicated in Figure 9. This may be determined by "feel" as the star wheel is turned.
2. Loosen the two set screws (61) sufficiently to permit the star wheel to rotate without disturbing the shaft(7).
3. Rotate the star wheel so that one tooth points directly to a cam screw as shown in Figure 10.
4. Tighten the two set screws (61) and rotate the mechanism through a complete cycle to check operation. The separator knives must rotate 360° to the starting position as indicated in Figure 9.

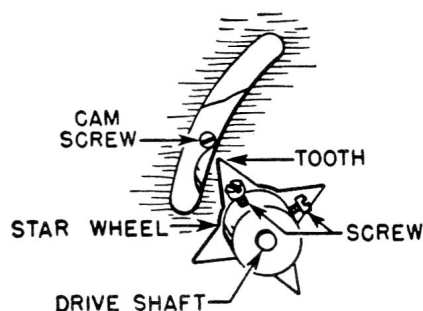


FIG. 10 STAR WHEEL TIMING

Director Lever Position:

Push reject lever and rotate the turntable slowly by hand until the end (41C) of the director lever moves in far enough, so when the star wheel is rotated it contacts by the amount indicated in Figure 11.

If the end of the director lever (main lever) is too close to the star wheel, it will jam. If too far away, it will cause erratic record dropping. If in doubt and unable to measure, move the end toward the star wheel until most of the play is removed when the star wheel is moved back and forth at this setting.

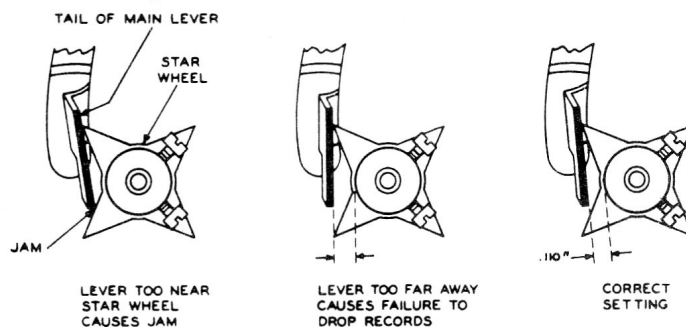


FIG. 11 SETTING OF DIRECTOR LEVER

Sapphire Height Adjustment (Out of Cycle):

Bend the lug on the pivot (40) so that the sapphire point is approximately 1/16" above the motorboard.

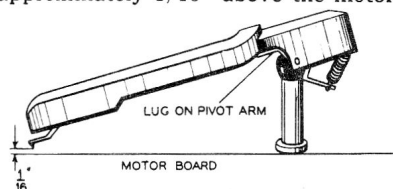


FIG. 12

Record Changers (cont'd)

Tripping Adjustment:

1. Assemble the pickup arm and trip lever assemblies as shown in Figure 13. Leave the clamping screw (57) loose enough to permit horizontal movement of the trip lever on the shaft. (Allow approximately .010 inch vertical end play.)
2. Turn the eccentric landing adjustment stud (45C) to determine the inward and outward limit of adjustment, then turn it to a setting half-way between the limits.

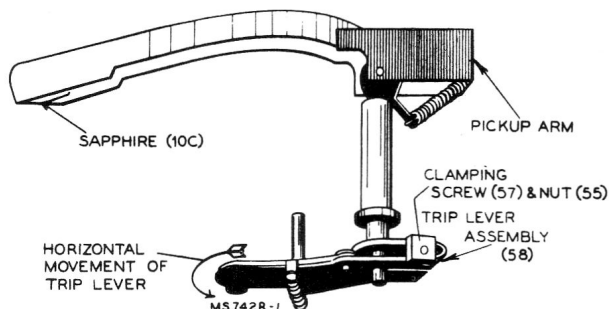


FIG. 13

3. Tripping should occur when the sapphire reaches a position $1 \frac{9}{32}$ " from the near side of the turntable spindle. This position is adjusted by holding the trip lever and moving the pickup arm inward or outward to obtain the specified position.
4. A convenient way of measuring this distance is to make a mark on the back side of a stroboscope disc $1 \frac{9}{32}$ " from the inner edge, place the disc on the turntable, with the turntable revolving, hold the disc stationary and move the pickup arm very slowly in towards the turntable spindle.
5. After this position has been obtained, tighten the clamping screw (57) and recheck the tripping position and vertical end play.

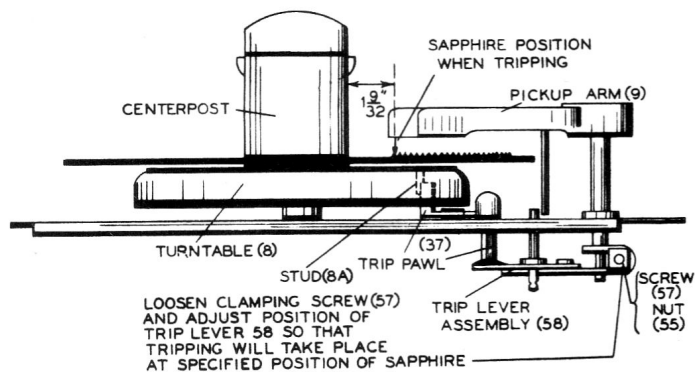


FIG. 14—TRIPPING POSITION

Landing Adjustment:

1. After the tripping adjustment has been made as described above, turn the eccentric landing adjustment stud (45C) so that the sapphire will set down on the record half-way between the outer edge and the first music groove. This position is $2 \frac{5}{8}$ " from the turntable spindle. The location of the adjustment stud is illustrated in Figure 18.

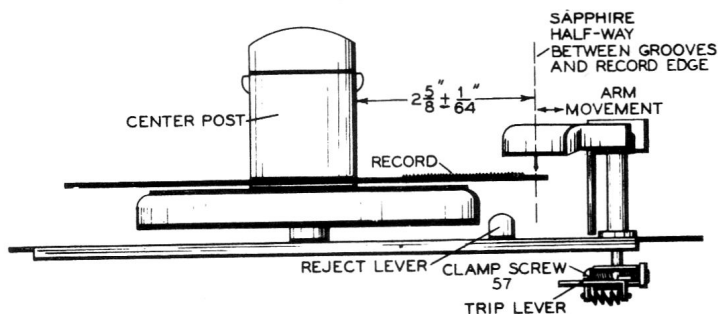


FIG. 15—LANDING POSITION

Pickup Arm Height Adjustment (In Cycle):

Set the mechanism in cycle. Turn the turntable by hand, until the pickup arm has reached its maximum height. By means of a screwdriver turn the height adjustment stud (45D) until the distance between the top of the turntable and the sapphire point is $\frac{3}{4}$ ". Use that position of the eccentric stud which causes the pickup arm to rise during clockwise adjustment of the stud. The location of the adjusting stud is illustrated in Figure 18.

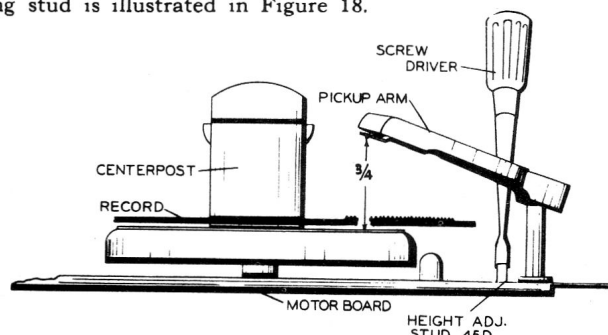


FIG. 16—HEIGHT ADJUSTMENT

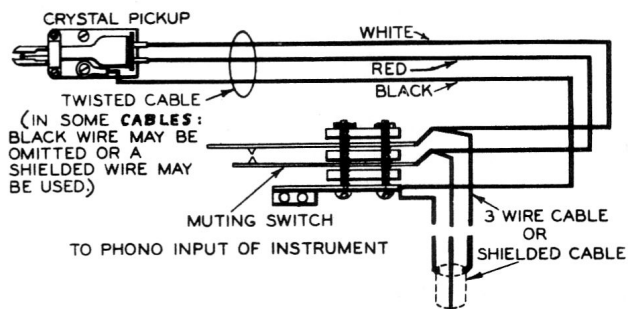


FIG. 17—PICKUP MUTING SWITCH WIRING

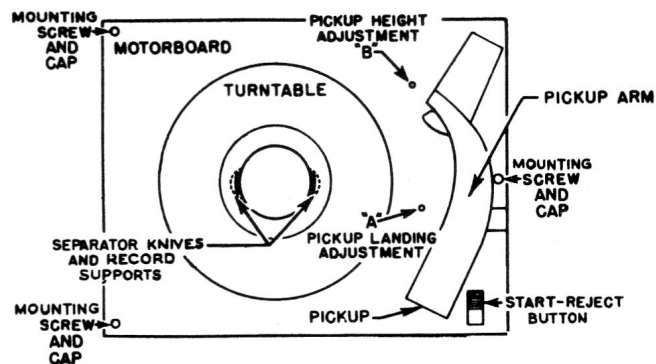


FIG. 18—TOP VIEW RP168A RECORD CHANGER

For Further Information on RP168A Record Changer Refer to RP168 Series Service Note.

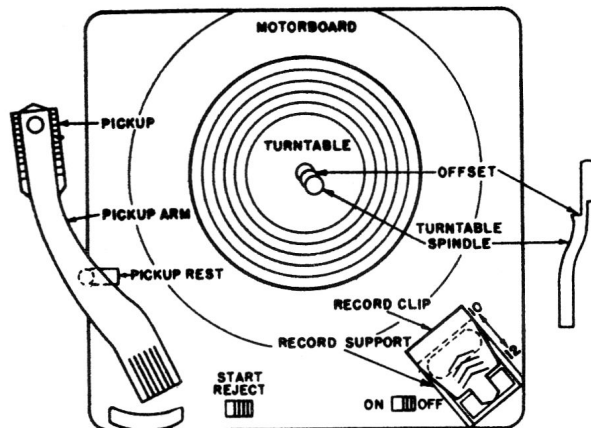


FIG. 19—TOP VIEW RP-178 RECORD CHANGER

For Further Information on RP-178 Record Changer Refer To RP178 SERVICE NOTE

