

SERVICE MANUAL

AND

PARTS LIST

FOR

CLAIRTONE

STEREOPHONIC

RADIO-PHONOGRAPH

Model S-400

Printed in Canada

ALIGNMENT PROCEDURE

F.M. DETECTOR CURVE

Preliminary:

Alignment is an exacting procedure and should be undertaken only when necessary. The following equipment is required:

1. Signal generator with a frequency range of at least from 455 kc to 1640kc.
2. Signal generator with a frequency range covering 10.7 mc. for FM-I.F. alignment.
3. Vacuum tube voltmeter,
OR
2. F.M. (sweep) signal generator usable at 10.7 mc
3. 10.7 Crystal or other accurate marker generator
4. Oscilloscope

Notes: Allow at least five minutes for the set to warm up before attempting alignment. An (8 ohm) speaker or dummy load (5-10 ohms) must be connected across the audio output transformer secondaries at all times.

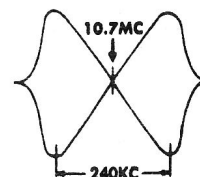


FIG. 1

F.M. I.F. PASSBAND

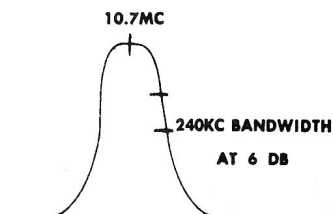


FIG. 2

AM IF & RF ALIGNMENT

Step	Signal Generator Coupling	Signal Generator Frequency	Band Switch Position	Radio Dial Setting	Connect VTVM	Adjust	Remarks
1.	High Side to Pin 7 of V6 (6BE6) Low Side to Chassis.	455 KC	A.M.	Tuning Gang Fully Open	High Side to Point 4, Low side to Chassis.	T4-T5 TOP AND BOTTOM	Adjust for maximum deflection.
2.	Loop (Radiated)	535 KC	A.M.	535 KC (A.M. Gang Fully Closed)	Same as in Step 1	RFT-2	Adjust for maximum deflection.
3.	Same as in Step 2	1625 KC	A.M.	1640 KC (A.M. Gang Fully Open)	Same as in Step 1	A.M. Osc. Trimmer C 30 B	Adjust for maximum deflection.
4.							Repeat steps 2 & 3 until no further increase is noted.
5.	Same as in Step 2	1400 KC	A.M.	1400 KC	Same as in Step 1	A.F.-R.F. Trimmer C 30 A	Adjust for maximum deflection.

F.M. - I.F. ALIGNMENT USING UNMODULATED SIGNAL GENERATOR AND VTVM

1.	HIGH AND LOW SIDE TO F.M. ANTENNA	10.7 (Unmod.)	F.M.	Point of Non-Interference	D.C. Probe to Point 1. Common lead to Chassis.	T3 Primary only (bottom) T2 PRI & Sec. GT1 PRI & Sec.	Adjust for maximum deflection.
2.	Same as in Step 1	10.7 (Unmod.)	F.M.	Same as in Step 1	D.C. Probe to Point 2. Common lead to Point 3	T3 Secondary (TOP)	Adjust for zero reading a positive and Negative reading will be obtained on either side of correct setting.

F.M. - I.F. ALIGNMENT USING F.M. SIGNAL GENERATOR AND OSCILLOSCOPE

FREQUENCY MODULATE THE I.F. SIGNAL WITH 60 CYCLE SINE WAVE TO A TOTAL DEVIATION OF 450 KC. ADJUST THE SCOPE INTERNAL HORIZONTAL DEFLECTION VOLTAGE TO 120 CYCLES, AND SYNCHRONIZE IT WITH THE 60 CYCLE SINE WAVE.

1.	High Side to Pin. 1 of V3 (second 6BA6 F/M—I.F. Amplifier)	10.7 mc 450 KC Total Sweep Deviation	F.M.	Point of non-interference	Vert. Amp. Input to Point 1, Common to Chassis	T3 Primary only (bottom)	Disconnect 2 MFD. Stabilizing capacitor, adjust for curve of maximum amplitude & symmetry.
2.	Same as in step 1	Same	F.M.	Same as in Step 1	Vert. Anip. Input to Point 2, Common to Chassis	T3 Secondary only (top)	Re-connect 2 MFD. Stabilizing capacitor, adjust so that 10.7 mc. occurs at centre of cross-over lines, similar to Fig. 1. Slightly re-touch T4 Primary for maximum amplitude & straightness of cross-over lines.
3.	Repeat Step No. 1						
4.	High Side to Pin 1 of V2 (first 6BA6 F/M—I.F. Amplifier)	Same	F.M.	Same as in Step 1	Vert. Amp. Input to point 1, Common to Chassis	T2 Primary & Secondary	With Stabilizing capacitor remaining disconnected (from step 3). Adjust T3 Top and Bottom for maximum amplitude and symmetry similar to Fig. 2.
5.	HIGH AND LOW SIDE TO F.M. ANTENNA	Same	F.M.	Same as in Step 1	Same as in Step 4	T1 Primary & Secondary	Adjust for maximum amplitude and symmetry.
6.	Same as in Step 5	Same	F.M.	Same as in Step 1	Vert. Amp. Input to Point 2, Common to Chassis	T3 Secondary (Top)	Re-connect 2 MFD. Stabilizing Capacitor and Trim Secondary for maximum symmetry while maintaining 10.7 mc. at cross-over lines (Fig. 1).

SWITCH BOX SOCKETS

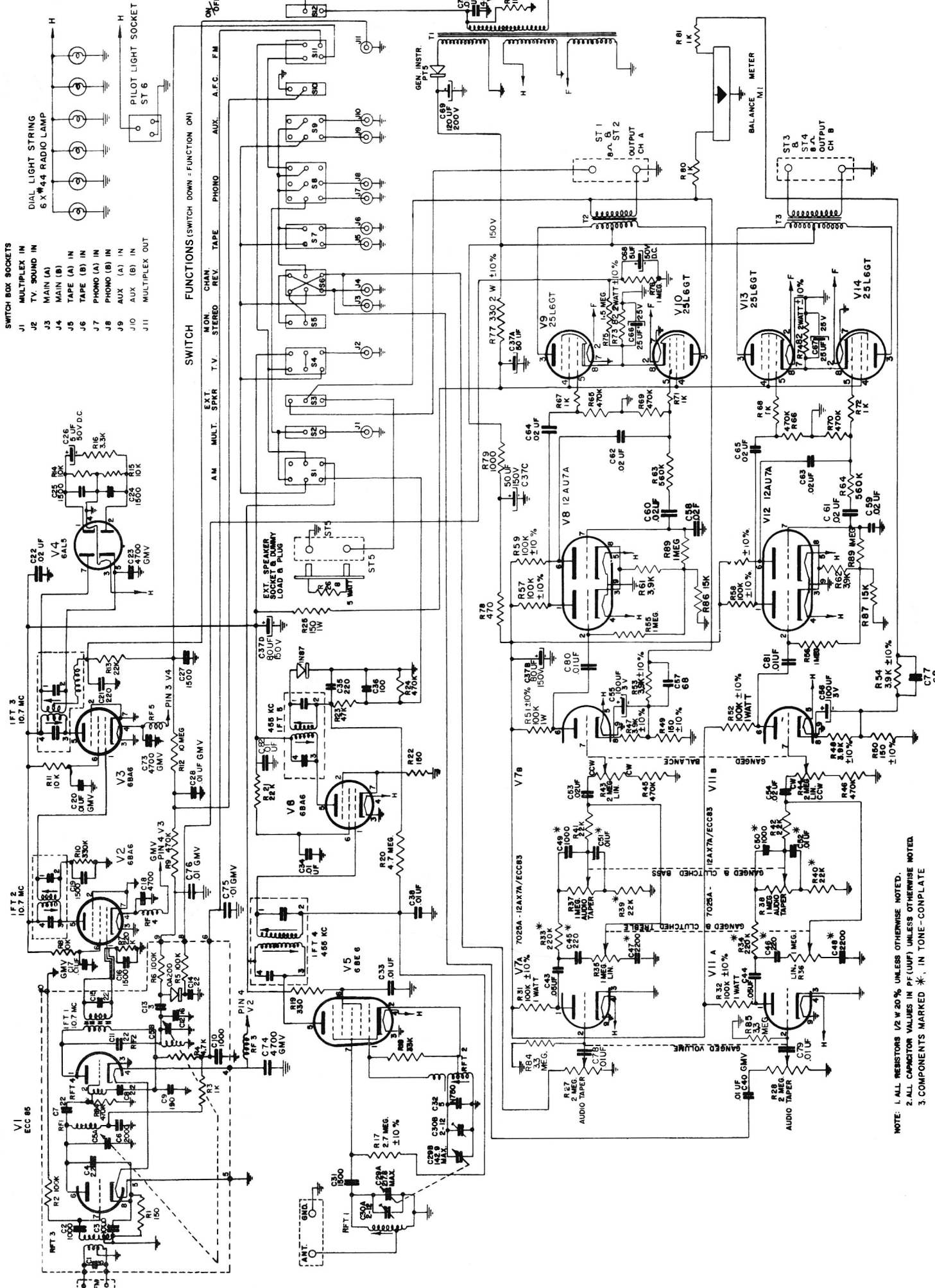
- J1 MULTIPLEX IN
- J2 TV SOUND IN
- J3 MAIN (A)
- J4 MAIN (B)
- J5 TAPE (A) IN
- J6 TAPE (B) IN
- J7 PHONO (A) IN
- J8 PHONO (B) IN
- J9 AUX (A) IN
- J10 AUX (B) IN
- J11 MULTIPLEX OUT

DIAL LIGHT STRING
6 X #44 RADIO LAMP

PILOT LIGHT SOCKET
ST 6

FUNCTIONS (SWITCH DOWN = FUNCTION ON)

- CH. MON. STEREO
- EXT. SPK. TV
- AM MULT.
- TAPE
- PHONO
- AUX. A.F.C. FM

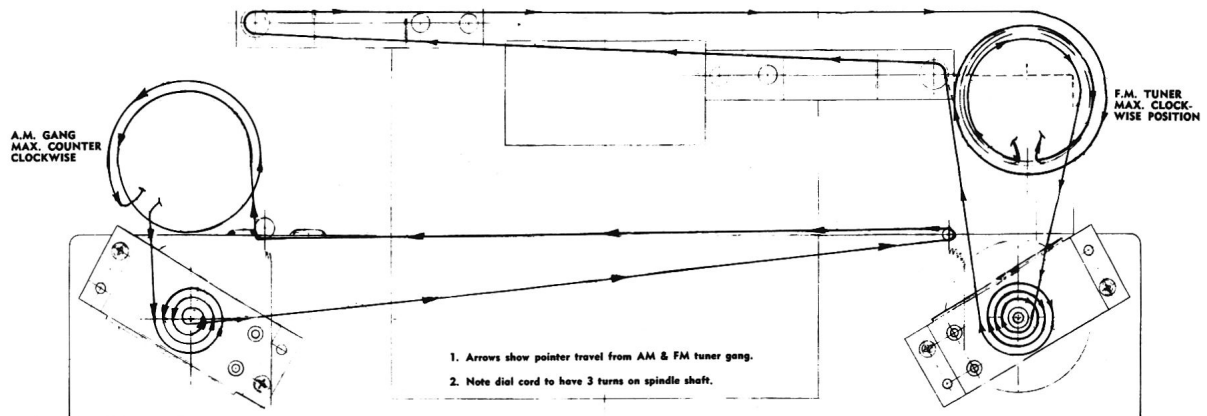


- NOTE: 1. ALL RESISTORS 1/2 W 20% UNLESS OTHERWISE NOTED.
- 2. ALL CAPACITOR VALUES IN PF (U/P) UNLESS OTHERWISE NOTED.
- 3. COMPONENTS MARKED *, IN TONE-CONPLATE

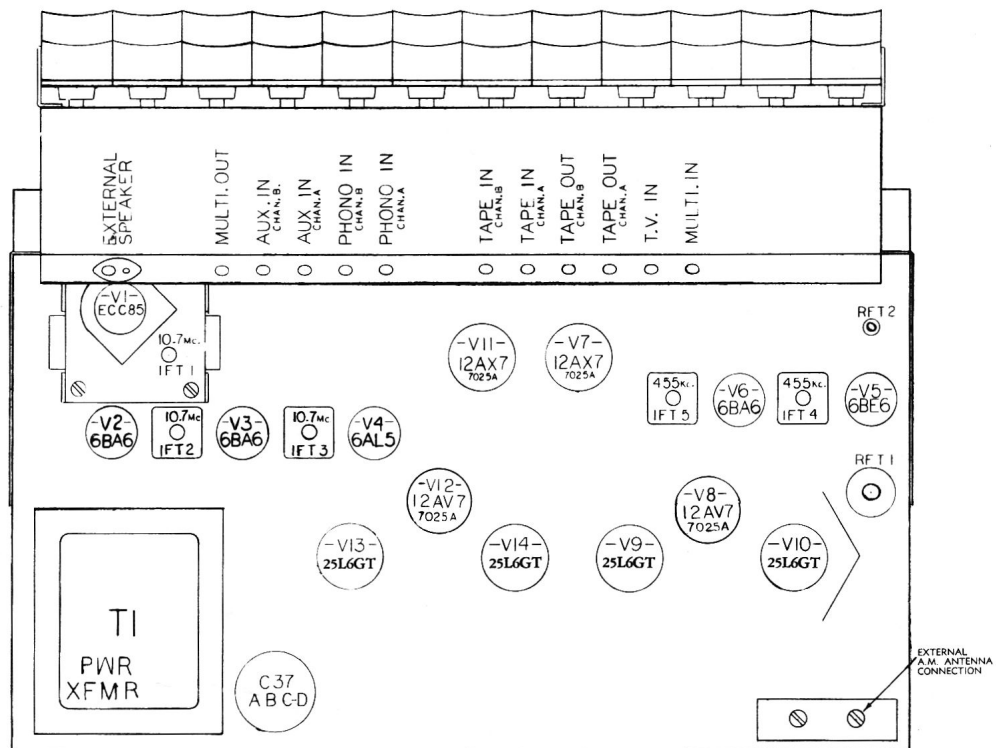
PARTS LIST

Schematic Location	Part Number	Description	Schematic Location	Part Number	Description
CAPACITORS					
C1 to C15		Included in torotor tuner FA531BB	R59-R60	33-41233	120 K ohm
C16-C24-			R61-R62	33-36833	68 K ohm
C25-C27-			R63-R64	33-456633	560 K ohm
C31-C19	32-9575-18	1500 pF G.M.V. ceramic disc	R67-R68-		
C17-C20-			R71-R72-		
C28-C33-			R80-R81	33-21035	1000 ohm
C34-C38-			R73-R74	33-08263	82 ohm 2 W
C39-C40-			R75	33-51035	1.5 meg ohm
C75-C76	32-200044-6B	.01 μ F ceramic disc	R77	33-13363	330 ohm 2 W
C18-C73-			R33-R34-		
C23-C74	32-250950-42	4700 pF ceramic disc	R39-R40	32A254557-1	Included in tone couplate
C21-C35	32-250950-41	220 pF ceramic disc	TRANSFORMERS AND COILS		
C22-C53-C54			RFT1	83A254591-1	Antenna coil
C58 to C65	32-200044-43	.02 μ F ceramic disc	RFT2	83A254592-2	Oscillator coil AM
C26-C68	32-254587-2	5 μ F 50 V DCW tub. elect.	RFT3		
C29-A & B	38-254594-1	AM tuning gang	RFT4		
C30-A & B		Trimmer to C29	RF1		
C36	32-250950-44	100 pF ceramic disc	RF2		Included in torotor tuner FA531BB
C37-A, B, C & D	32-254599-1	80+80+50+50 150 V WDC	1FT1		
C41-C42-			RF3-RF4 and RF5	39-12595-1	Heater choke F.M.
C55-C56	32-254587-6	100 μ F 3 V WDC tub. elect.	1FT2	1607-4	10.7 Mc transformer
C43-C44	32-254588-1	.05 μ F 400 V paper tub.	1FT3	2607-5	10.7 Mc ratio detector
C57-C77	32-250950-45	68 pF ceramic disc	1FT4-IFT5	1655-6	455 Kc transformer
C66-C67	32-254587-7	25 μ F 25 V DCW tub. elect.	T1	75-254564-2	Power transformer
C69	32-254587-8	120 μ F 200 V DCW tub. elect.	T2-T3	75-254565-2	Audio output transformer
C72	32-250950-43	.01 μ F 1400 V ceramic disc	MISCELLANEOUS PARTS		
C51-C52-			IN87	63-251913-6	Germanium diode IN87
C45-C46-			M1	52-254704-1	Balance meter
C47-C48	32-A254557-1	Tone couplate		103A200S-TB-1	Push button
RESISTORS			PT5		Rectifier
R1 to R6 and R84		Included in torotor tuner FA531BB		78-254566-1	500 ma Silicone diode PT5
R7	33-42235	220 K ohm	S1-S4-S6	58-254780-4	Switch DPDT
R8-R11-R14	33-31035	10 K ohm	S2-S5-S10	58-254780-1	Switch SPST
R9-R24-R45-			S3	58-254780-3	Switch SPDT
R46-R65-R66-			S7-S9-S11	58-254780-5	Switch DPST
R69-R70	33-44735	470 K ohm	S8	58-254781-1	Switch TPDT
R10	33-43335	330 K ohm	S12	58-254780-2	Switch SPST (3 amp)
R12	33-61035	10 meg ohm		116-254724-1	Torotor tuner FA531BB
R13-R21-			CABINET PARTS		
R41-R42	33-32235	22 K ohm	Part Number	Description	
R16	33-23335	3.3 K ohm	12-AS-73-3	Garrard auto turntable type A large with ACO873-2A-DS cartridge	
R17	33-52733	2.7 meg ohm	14-106-3	Y200-106 E.M.I. woofer 10 x 6	
R18	33-33335	33 K ohm	14-212-23	TW 34-2 E.M.I. Tweeter 2 1/2"	
R19	33-13335	330 ohm	20-149-23	Dial plate 14 3/8 x 11"	
R20	33-54735	4.7 meg ohm	21-134-23	Dial glass 13 3/8 x 3 3/4"	
R22-R49-			22-16-1-23	Knob, loudness, bass and treble	
R50	33-11533	150 ohm	22-16-2-23	Knob, AM, FM, tuning and balance	
R23	33-34735	47 K ohm	24-1-1234	1 MFD 20 V AC TCC capacitor type CE30CR	
R26	33-254644-6	8 ohm wire wound	26-4-3	Grille cloth 13 1/2 x 19 1/2"	
R25	33-11573	470 ohm 1 W	30-8-234	Pilot light lead and plug	
R29-R30	33-21833	1800 ohm	35-1-234	Lens for pilot light	
R31-R32	33-41073	100 K ohm 1 W			
R27-R28	33-254595-2	2 meg ohm volume control			
R35-R36	33-254596-1	1 meg ohm treble control			
R37-R38	33-254596-2	1 meg ohm bass control			
R43-R44	33-254595-3	2 meg ohm balance control			
R47-R48-					
R53-R54	33-23933	3.9 K ohm			
R51-R52	33-42773	270 K ohm 1 W			
R55-R56-					
R76-R83	33-51035	1 meg ohm			

A. M.— F. M. DIAL STRINGING



TOP VIEW OF CHASSIS



BACK VIEW OF CHASSIS

