Car radio cassette player AC566A.

Service
Service
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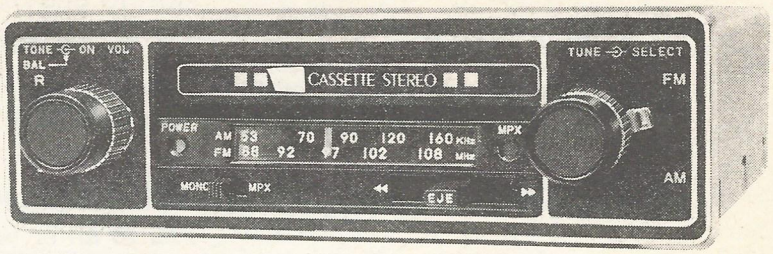

Service Manual

12 V

4-TRACK CASSETTE CAR STEREO
WITH AM/FM/FM STEREO RADIO

WARNING

CONNECT POWER LEAD OF RECEIVER TO POSITIVE BATTERY TERMINAL ONLY. RECEIVER WILL BE DAMAGED IF CONNECTED TO INCORRECT POLARITY.

November 1976

Subject to modification
3102 305 32031
Printed in Australia

PHILIPS

SPECIFICATIONS

	[RADIO SECTION]	[STEREO SECTION]
TUNING RANGE	AM: 515 to 1605 kHz FM: 88 to 108 MHz	
INTERMEDIATE FREQUENCY	AM: 455 kHz FM: 10.7 MHz	
SENSITIVITY	AM: 26 dB or better (at 0.5 watt output) FM: 20 dB or better (at S/N 30 dB)	
NUMBER OF TRACKS		4-track 2 channels
TAPE CARTRIDGE		Stereo/Monaural compact cassette
TAPE SPEED		4.75 cm/sec. (1⅞ i.p.s.)
FREQUENCY RESPONSE		125 to 6,300 Hz
CROSSTALK		40 dB or better between adjacent tracks 25 dB or better between right and left channels
WOW & FLUTTER		0.3% or less (WRMS)
POWER OUTPUT	3.5 watts min. RMS (at T.H.D.=10%) per channel	
SPEAKER IMPEDANCE	4 ohms per channel	
POWER INPUT	12-volt battery, negative terminal to ground	
Voltage	13.2 VDC	
Current	Approx. 0.7 ampere (at 0.5 watt output)	
TRANSISTORS & IC's	6, plus 5 ICs and 7 diodes	

BLOCK DIAGRAM

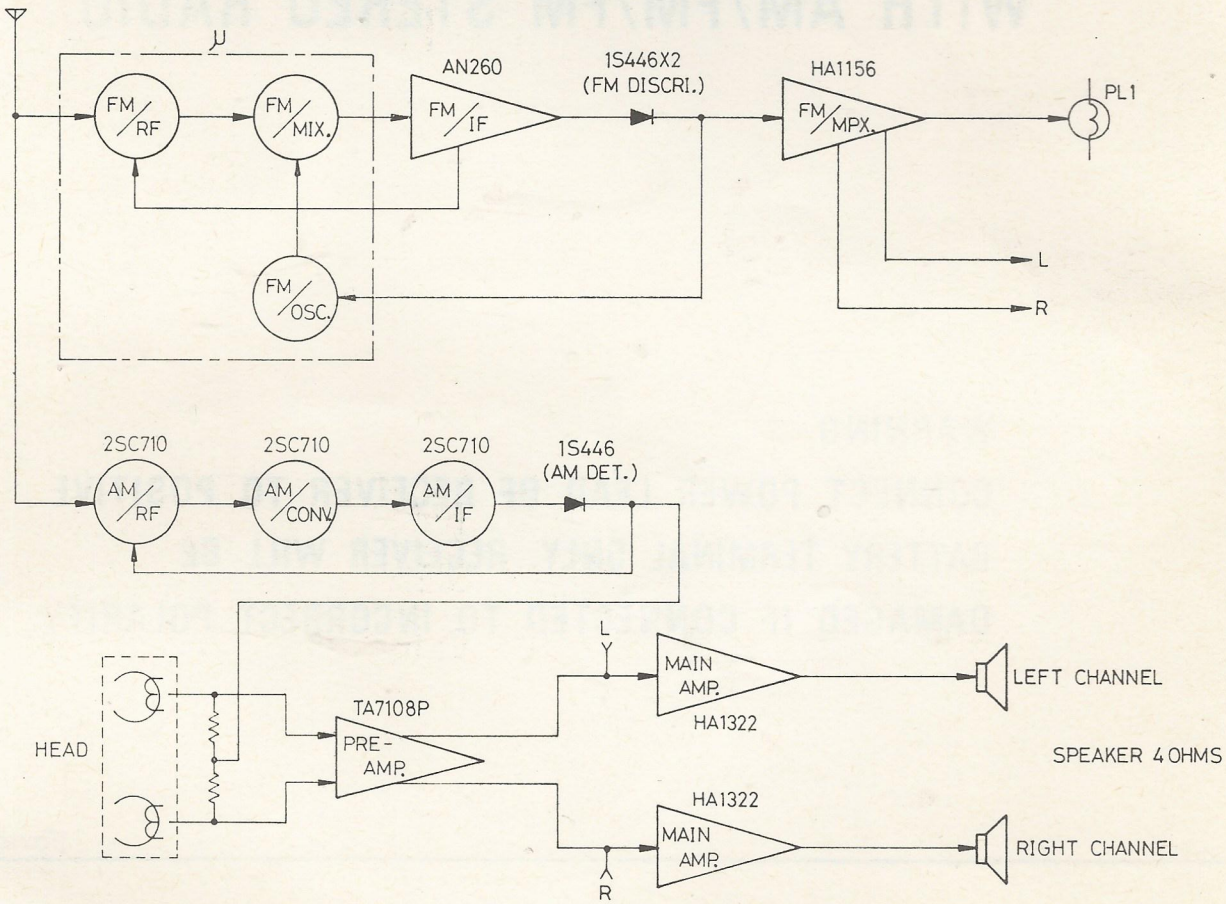

Fig. 1

PARTS LOCATION ON PC BOARD

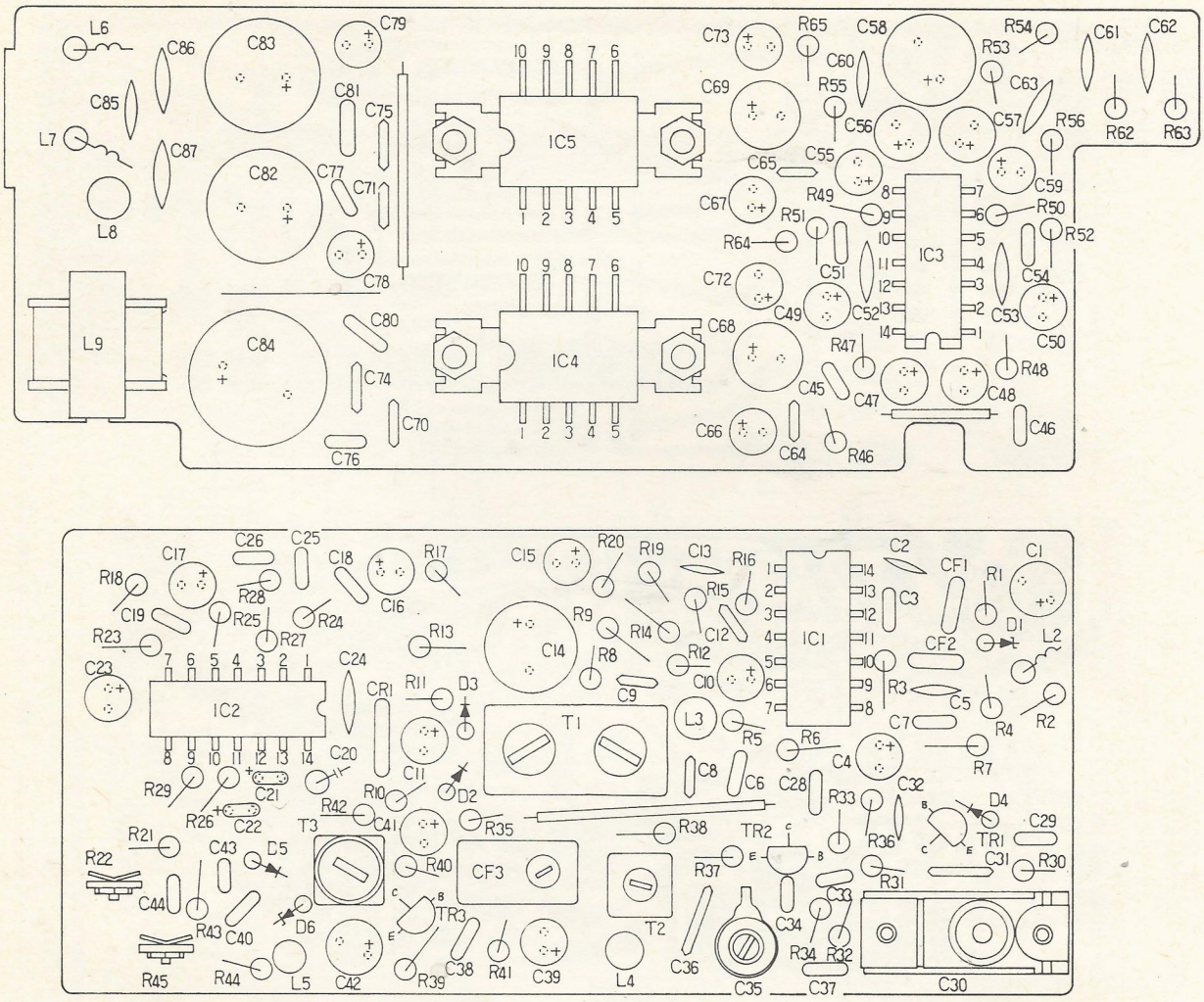

Fig. 2

IC & TRANSISTOR BASE CONNECTIONS

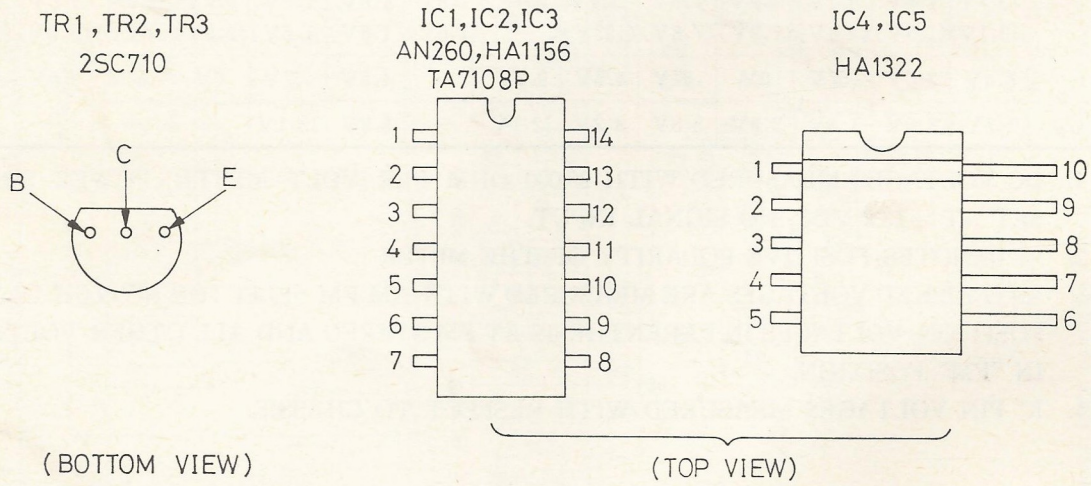

Fig. 3

CHECK POINTS ON PC BOARD

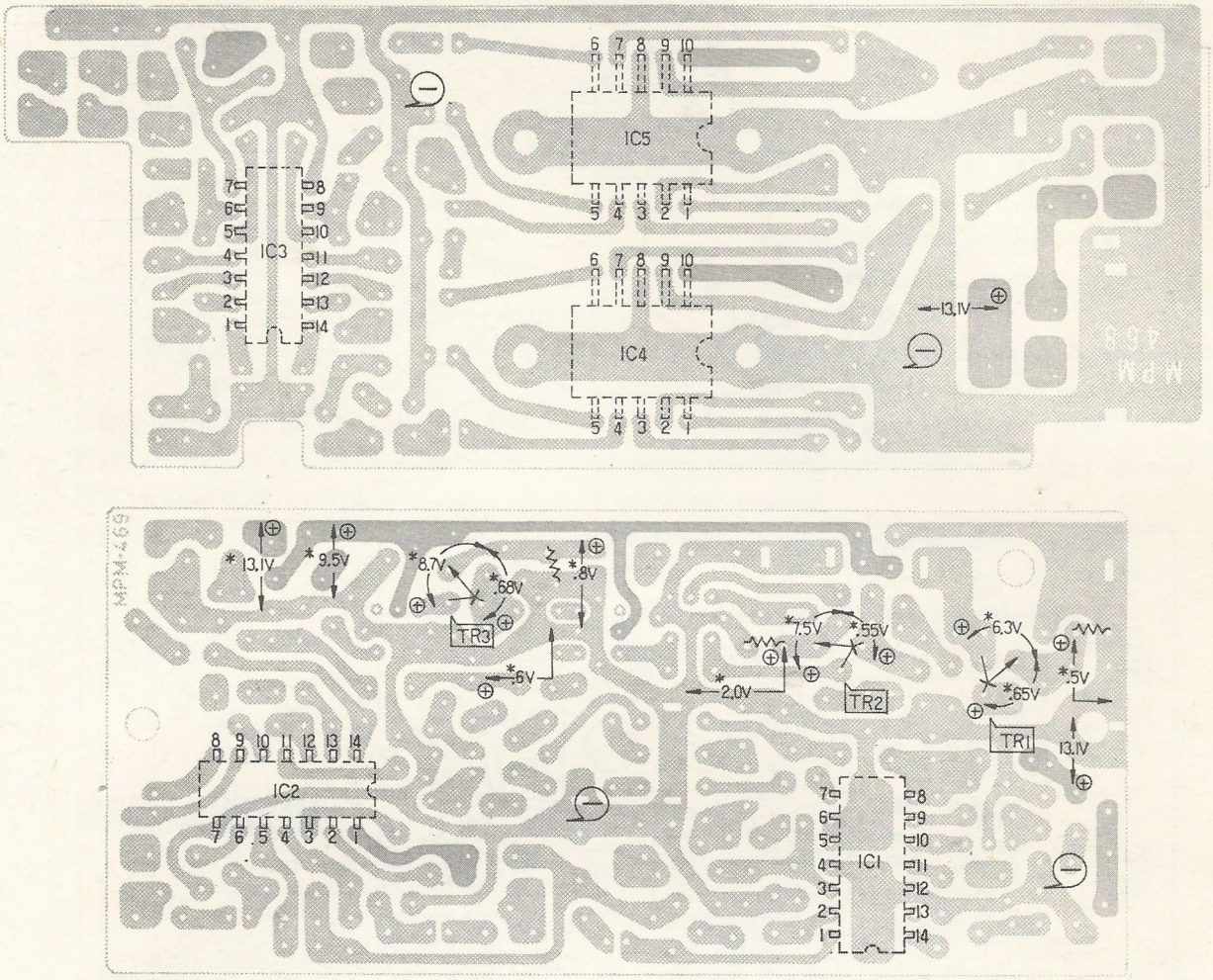

Fig. 4

IC \ Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
IC 1	6.1V	.9V	1.0V	—	—	—	4.8V	5.0V	.7V	4.6V	.7V	—	—	.68V
IC 2	13.1V (13.1V)	1.5V (1.5V)	5.4V (5.4V)	7.9V (7.9V)	7.8V (7.8V)	13.1V (.93V)	— —	1.6V (1.6V)	1.6V (1.6V)	1.6V (1.6V)	2.2V (2.2V)	2.2V (2.2V)	2.2V (2.2V)	3.4V (3.4V)
IC 3	8.4V	2.0V	.57V	0V	.67V	4.5V	9.3V	—	4.5V	.67V	0V	.57V	2.0V	8.4V
IC4, IC5	1.2V	8.0V	1.4V	2.9V	3.8V	3.2V	12.1V	—	6.8V	13.1V	—	—	—	—

NOTES:

1. DC VOLTAGES MEASURED WITH 25,000 OHM PER VOLT METER, POWER SUPPLY SET AT +13.2 VDC, NO SIGNAL INPUT.
2. ⊕ DENOTES POSITIVE POLARITY OF THE METER
3. ASTERISKED VOLTAGES ARE MEASURED WITH AM-FM SELECTOR SWITCH IN "AM" POSITION, VOLTAGES IN PARENTHESIS AT FM STEREO AND ALL OTHER VOLTAGES IN "FM" POSITION.
4. IC PIN VOLTAGES MEASURED WITH RESPECT TO CHASSIS.

WIRING DIAGRAM

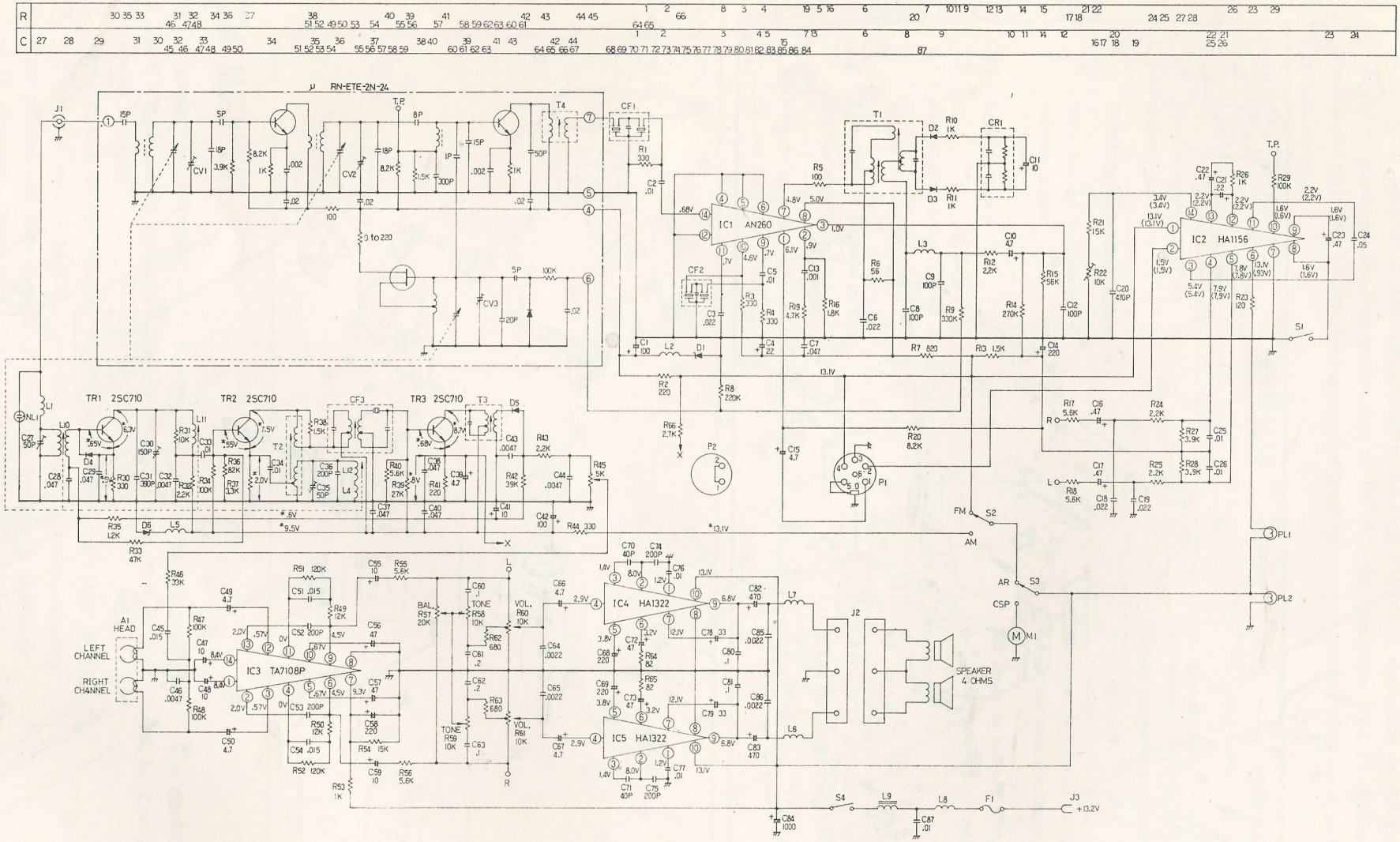

Fig. 5

NOTES:

1. ALL RESISTANCE IN OHMS, K=1,000.
2. ALL CAPACITANCE IN μF, P=μμF.
3. DC VOLTAGES MEASURED WITH 25,000 OHM PER VOLT METER, POWER SUPPLY SET AT +13.2 VDC, NO SIGNAL INPUT.
4. ASTERISKED VOLTAGES ARE MEASURED WITH AM-FM SELECTOR SWITCH IN "AM" POSITION, VOLTAGES IN PARENTHESIS AT FM STEREO AND ALL OTHER VOLTAGES IN "FM" POSITION.

EXPLODED VIEW

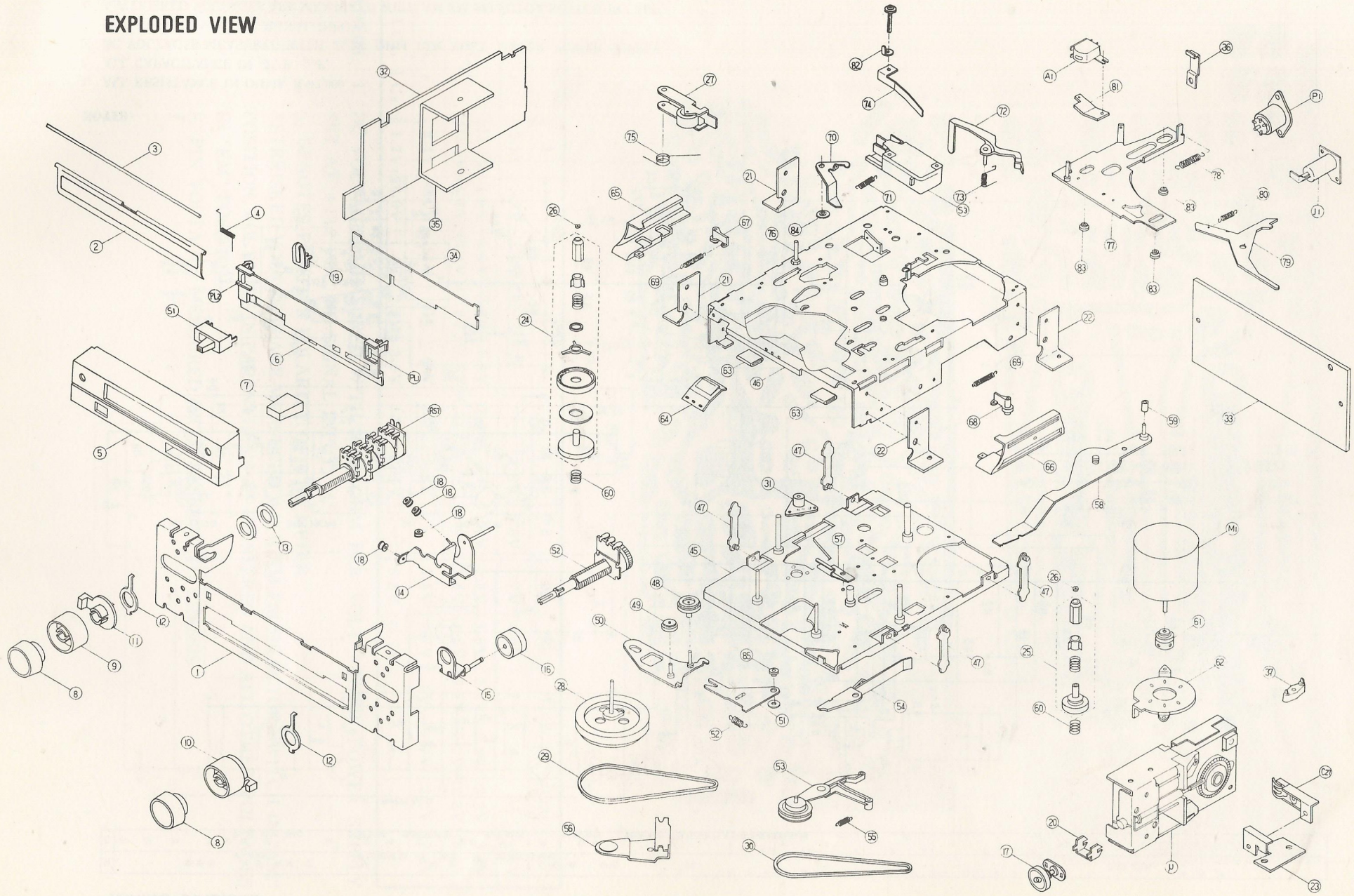

Fig. 6

AM ALIGNMENT

1. Measured output voltage with AC meter connected to speaker terminal or 4-ohm dummy load resistor.
2. Set AM-FM selector to AM. Turn volume and tone control to maximum (clockwise position)
3. Set signal generator for 30% modulation at 400 Hz. Set generator level to produce between one and three volts on meter and readjust generator level as required, during alignment, to keep output voltage in this range.

STEP	GENERATOR CONNECTION	GENERATOR FREQUENCY	ADJUST	PROCEDURE
	AM-IF ALIGNMENT			
1	Thru coupling circuit to antenna socket	455 kHz	CF_3, T_3	Set tuner to high-end stop. Adjust for maximum meter reading.
	TUNING FREQUENCY RANGE			
2	Thru dummy antenna to antenna socket	1660 kHz	C_{35}	Set tuner to high-end stop. Adjust for maximum meter reading.
3	Same as step 2	510 kHz	T_2	Set tuner to low-end stop. Adjust for maximum meter reading.
4	Repeat steps 2 and 3 until no further gain in output can be obtained.			
	AM-RF ALIGNMENT			
5	Thru dummy antenna to antenna socket	1400 kHz	C_{30}	Set tuner to generator frequency. Adjust for maximum meter reading.
6	With radio in car, antenna fully extended, tune in a weak station near 1400 kHz. Readjust antenna trimmer C_{27} for maximum volume.			

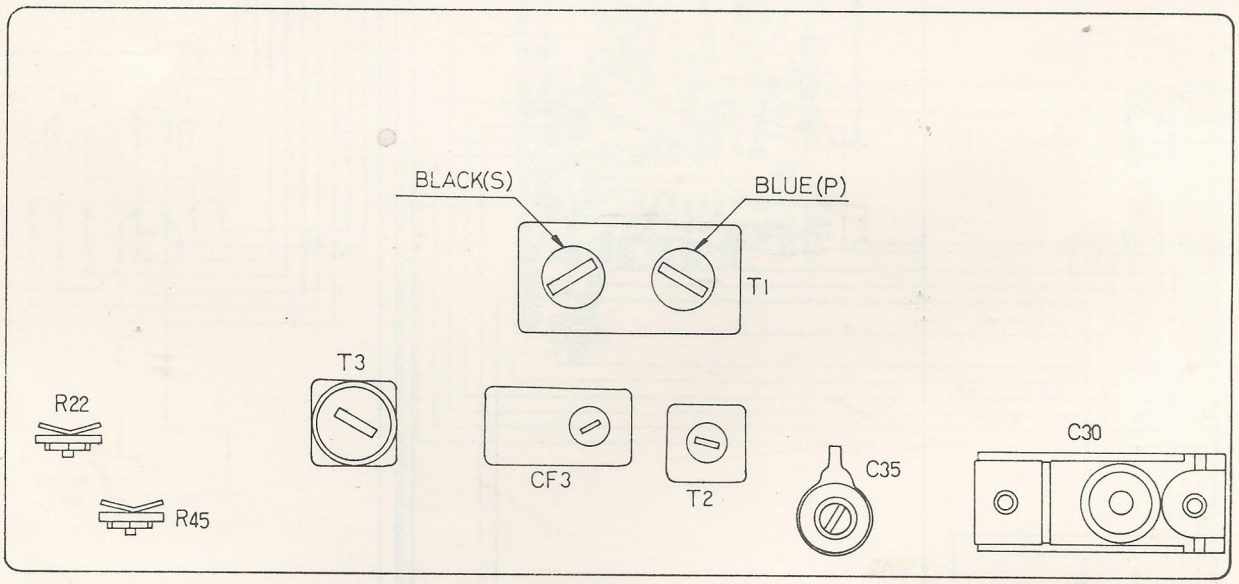

Fig. 8

FM ALIGNMENT

1. Alignment is performed at the factory with laboratory test equipment. The circuits are quite stable and not ordinarily subject to drift; before alignment, the receiver should be thoroughly checked for circuit troubles.
2. Input voltage to this receiver must be kept within 13.2 VDC ± 10%.
3. Set AM-FM selector to FM. Set tuner to high-frequency-end stop.
4. Turn volume and tone control to maximum (clockwise position).

   ◎ IF alignment (Refer to Fig. 8 for "ADJUST" points and Fig. 8 & 11 for connection of measuring instruments.)

   As connected in Fig. 11, align as follows, observing S-curve on the oscilloscope.

STEP	PURPOSE	ADJUST	PROCEDURE
1	S-curve	T_1, T_4 (blue) (primary side)	Adjust for full gain and length at linears.
2	S-curve	T_1 (black) (secondary side)	Keep S-curve straight at the center, and adjust waveform for best symmetry of S-curve against the axis.
3	Repeat STEP 1 to 2.		

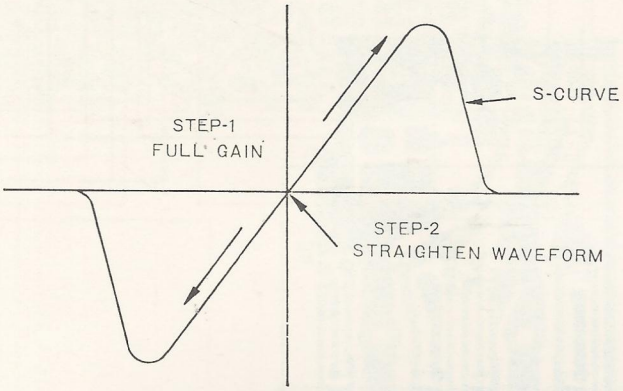

Fig. 9

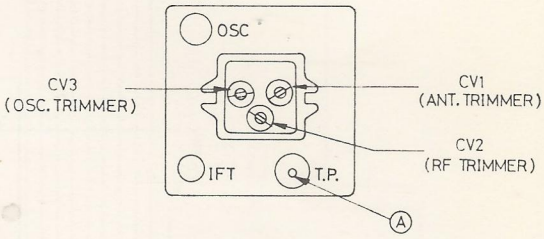

Fig. 10

Tracking alignment (Refer to Fig. 10 for "ADJUST" points. For this alignment, SSG is needed.)
After setting frequency range to the specified frequency, align sensitivity.

STEP	PURPOSE	ADJUST	PROCEDURE
1	Tuning frequency range	CV_3	87.5 MHz must be received at left end of dial.
2	108 MHz must be received at right end of dial.		
3	Tracking	CV_1, CV_2	Top sensitivity obtained at 98 MHz.

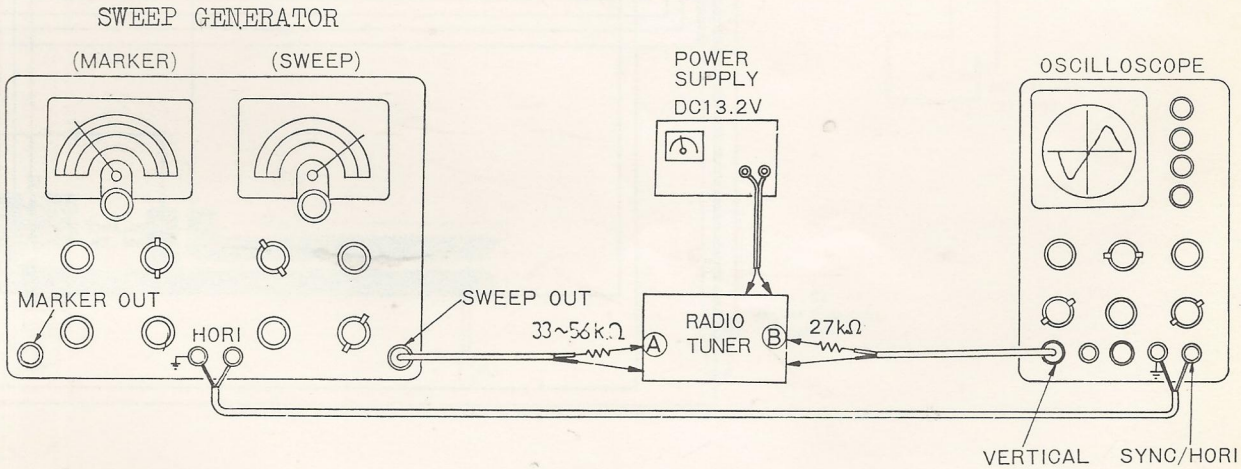

Fig. 11

STEREO (MULTIPLEX) DETECTOR ADJUSTMENT

*Measuring Instrument: Frequency Counter

1. Connect frequency counter to R_{29} as shown in Fig. 12.
2. Adjust the variable resistor R_{22} to get 19 kHz $\pm$570 Hz on the counter.

Remarks:

If a frequency counter is not provided, follow the procedure as follows;

Tune in a stereo broadcast station carefully, turn the variable resistor R_{22} slowly from one end to the other. While the resistor is turned, stereo indicator lamp lights then the light goes out by turning the resistor in the same rotation. Set the resistor R_{22} at the center position of lighting range.

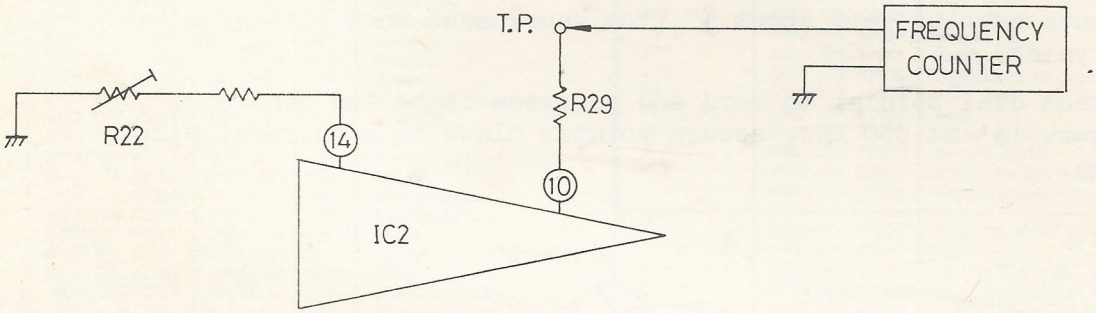

Fig. 12

REPLACEMENT OF DIAL CORD

1. Fully turn the tuning knob to left hand stop position.
2. Prepare a length of cord approx. $23\frac{5}{8}$" long (use only cord 0.4 mm (1/64" dia.)
   Knot end as shown in Fig. 1.
   To tighten knot pull (A) end.
3. Starting with the loop in position, refer Fig. 13(4), thread in direction of arrows.
4. Wind cord around tuning shaft as shown in Fig. 13(4), hold cord with tweezers.
5. Thread free cord (B) end through loop made in Step 2, tighten by pulling (B) end back towards tuning knob, and knot as shown in Fig. 13(3).
6. Remove surplus cord about $\frac{3}{8}$" from knob, seal knot with glue or paint.
7. Attach dial pointer to cord and position it to the centre of figure '5' at 530 KHz, secure pointer claws to cord, seal with glue.

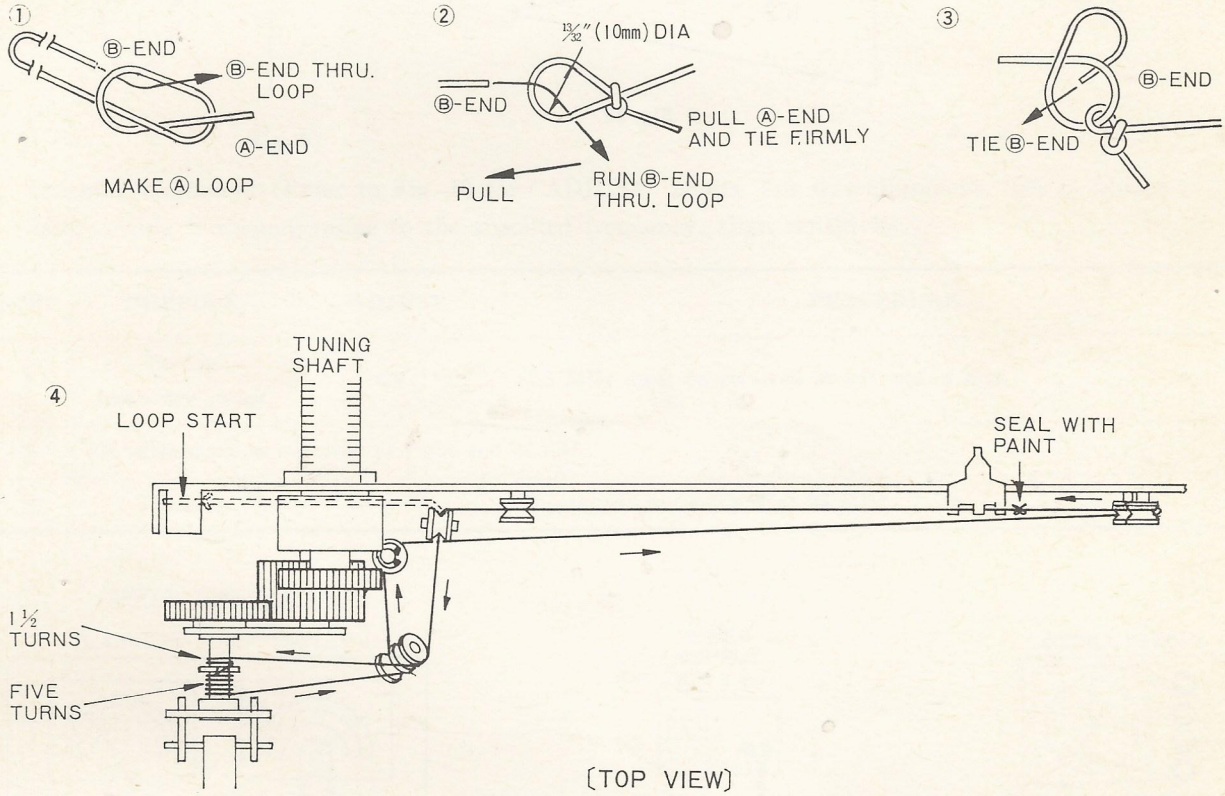

Fig. 13

REPLACEMENT PARTS LIST

SYMBOL NO.	CODE NO.	DESCRIPTION.		
CAPACITORS.				
C1	4802 124 47002	100 uf	10V	Electrolytic
C2, C5	4822 122 30043	.01 uf	50V	Ceramic
C3, C6	4802 121 47163	.022	50V	Mylar
C4	4802 124 47021	22 uf	16V	Electrolytic
C7	4802 121 47167	.047 uf	50V	Mylar
C8, C9	4802 122 37061	100 pf	50V	Ceramic
C10, C15	4802 124 47034	4.7 uf	25V	Electrolytic
C11	4802 124 47044	10 uf	16V	Electrolytic
C12	4802 122 37061	100 pf	50V	Ceramic
C13	4802 122 47022	.001 uf	50V	Ceramic
C14	4802 124 47018	220 uf	16V	Electrolytic
C16, C17	4802 124 47065	.47 uf	50V	Electrolytic
C18, C19	4802 121 47163	.022 uf	50V	Mylar
C20	4822 122 30034	470 pf		Styrol
C21	4802 124 47087	.22 uf		Alox
C22	4802 124 47014	.47 uf		Alox
C23	4802 124 47014	.47 uf	50V	Electrolytic
C24	4802 121 47167	.05 uf	12V	Ceramic
C25, C26	4802 121 47158	.01 uf	50V	Mylar
C27	4802 125 57033	50 pf		A.M. Ant. Trimmer
C28, C29	4802 121 47167	.047 uf	50V	Mylar
C30	4802 125 57032	150 pf		A.M. R.F. Trimmer
C31	4802 122 47095	390 pf	50V	Ceramic
C32	4822 122 30128	.0047 uf	50V	Ceramic
C33, C34	4802 122 47028	.01 uf	50V	Mylar
C35	4802 125 57033	50 pf		A.M. Osc. Trimmer
C36	4822 122 30094	200 pf	50V	Ceramic
C37, C38	4802 121 47167	.047 uf	50V	Mylar
C39	4802 124 47034	4.7 uf	25V	Electrolytic
C40	4802 121 47167	.047 uf	50V	Mylar
C41	4802 124 47044	10 uf	16V	Electrolytic
C42	4802 124 47002	100 uf	10V	Electrolytic
C43, C44	4802 121 47064	.0047 uf	50V	Mylar
C45	4802 121 47161	.015 uf	50V	Mylar
C46	4802 121 47064	.0047 uf	50V	Mylar
C47, C48	4802 124 47044	10 uf	16V	Electrolytic
C49, C50	4802 124 47034	4.7 uf	25V	Electrolytic
C51, C54	4802 121 47161	.015 uf	50V	Mylar
C52, C53	4802 122 47077	200 pf	500V	Ceramic
C55	4802 124 47044	10 uf	160V	Electrolytic
C56, C57	4802 124 47061	47 uf	6.3V	Electrolytic
C58	4802 124 47018	220 uf	16V	Electrolytic
C59	4802 124 47044	10 uf	16V	Electrolytic
C60, C63	4802 122 47055	.1 uf	12V	Ceramic
C61, C62	4802 122 47109	.2 uf	12V	Ceramic
C64, C65	4822 122 30114	.0022 uf	50V	Ceramic
C66, C67	4802 124 47034	4.7 uf	25V	Electrolytic
C68, C69	4802 124 47006	220 uf	10V	Electrolytic
C70, C71	4822 122 31069	40 pf	50V	Ceramic
C72, C73	4802 124 47001	47 uf	6.3V	Electrolytic
C74, C75	4822 122 30094	200 pf	50V	Ceramic
C76, C77	4802 122 47028	.01 uf	50V	Mylar
C78, C79	4802 129 47013	33 uf	10V	Electrolytic
C80, C81	4802 121 47134	.1 uf	50V	Mylar
C82, C83	4802 124 47024	470 uf	16V	Electrolytic
C84	4802 124 47051	1000 uf	16V	Electrolytic
C85, C86	4822 122 30114	.0022 uf	50V	Ceramic
C87	4822 122 30043	.01 uf	50V	Ceramic

RESISTORS AND CONTROLS.		
R57 - R61	4802 102 57004	Control Balance 20K ohm, Tone 10K ohm, Volume 10K ohm.
Note:-	Resistors are 1/8W 5% Type 'C' excepting R2, R23, R44 1/2W 10% Type 'S' R51, R52, R66 1/4W 5% Type 'C'	

I.C.'s, TRANSISTORS & DIODES.			
I.C.1	4802 209 87074	F.M.- I.F. Amp.	I.C.AN260
I.C.2	4802 209 87075	Multi-Control	I.C.HA1156
I.C.3	4802 209 87036	Pre-Amp	I.C.TA7108P
I.C.4 I.C.5	4802 209 87062	Power-Amp	I.C.HA1322
TR.1	4822 130 44195	A.M.-R.F. Amp	2SC710-E (BF494)
TR.2	4822 130 44195	A.M. Converter	2SC710-C (BF494)
TR.3	4822 130 44195	A.M.-I.F. Amp	2SC710-D (BF494)
D.1	4802 130 37072	Zener	HZ 9A (BZX70C9V1)
D.2, D.3	4822 130 30281	Ratio Detector	IS446-D (OA91)
D.4	4802 130 37022	Protector, Tr.	SR1K2
D.5	4822 130 30281	A.M.- detector A.G.C.	IS446 (OA91)
D.6	4802 130 37072	Zener	MZ209 (BZX70C9V1)

SYMBOL NO.	CODE NO.	DESCRIPTION.
COILS, TRANSFORMERS & CERAMIC FILTER.		
L.1		Choke 8.2 uH
L.2	4802 158 17077	Choke 0.74 uH
L.3	4802 158 17098	Choke 68 uH
L.4	4802 158 17099	Coil Osc. 5.6 uH
L.5	4802 158 17099	Choke 5.6 uH
L.6, L.7	4802 158 17077	Choke 0.74 uH
L.8	4802 158 17042	Choke 50 uH
L.9	4802 152 27028	Choke filter 3 mH
T.2	4802 152 27033	A.M. Oscillator
T.3	4802 153 17143	A.M.- I.F. 455 KHz
CF 1, CF 2	4802 242 77006	Ceramic filter 10.7 MHz
CF 3	4802 218 17011	Ceramic filter 10.7 MHz
MISCELLANEOUS ELECTRICAL.		
A 1	4802 249 37006	Playback Head
F 1	4802 253 47006	Fuse 3 amp
J 1	4802 267 17009	Socket Antenna
J 2	4802 321 27113	3P Connector & Lead Assy. Speaker
J 3	4802 321 27157	Fuse holder, term & lead assy. 'A'
M 1	4802 361 27038	D.C. Motor
CR 1	4802 214 57056	Module assy.
P 1	4822 267 40045	Connector 6P
P 2	4802 263 67005	Connector 6P short
NL 1	4822 134 20016	Neon Lamp
PL 1, PL 2	4802 134 47068	Lamp
PLS 1	4802 277 27037	Slide Switch Stereo/Mono
S 2	4802 273 37007	Switch AM/FM
S 3	4802 271 37002	Micro Switch Radio/Player
	4802 210 17068	Manual Tuner assy. (Inc. F.M. front end)
2	4802 423 47017	Door Cassette Opening
3	4802 535 97091	Shaft (2)
4	4802 492 37117	Spring (2)
5	4802 331 37025	Dial Plate assy.
7	4802 410 27063	Button eject
8	4802 413 37133	Knob, Vol.,Tune On/Off
9	4802 413 97133	Knob tone control
10	4802 411 57017	Knob AM/FM
11	4802 411 57018	Knob balance control
16	4802 522 37045	Gear tuning
17	4802 522 37046	Gear tuning
19	4802 450 87077	Pointer
20	4802 528 27034	Universal joint
24	4802 528 27032	Slip mechanism assy. left
25	4802 528 27033	Slip mechanism assy. right
27	4802 403 47016	Pinch wheel assy.
28	4802 528 67026	Fly wheel
29	4802 358 37043	Belt, drive
30	4822 358 30204	Belt, drive
32	4802 214 57048	P.C. Board assy. main
33	4802 214 57049	P.C. Board assy. radio
34	4802 214 57057	P.C. Board PL1, PL2 and S1
35	4802 255 47037	Radiator IC1, IC5
36	4802 401 17088	Clamp
37	4802 265 37004	Terminal
	4802 321 27158	Speaker Lead Assy.

			Qty.
	4822 502 10689	Screw 3 x 10	4
	4822 502 11064	Screw 3 x 6	20
	4822 502 11189	Screw 3 x 4	14
	4822 502 10999	Screw 3 x 20	1
	4822 505 10325	Nut 3 mm	4
	4822 530 80173	Washer 3 mm Spring	4
	4822 530 70121	Ring E (1.5 mm Shaft)	6
	4822 530 70122	Ring E (2 mm Shaft)	2
INSTALLATION ACCESSORIES.			
	4822 502 11131	Screw Washer attached 6x12	2
	4822 502 11132	Screw Washer attached 6x16	1
	4822 505 10328	Nut 6 mm	3
	4822 530 80164	Washer 5m Spring	1
	4802 505 17027	Nut 9.5 mm	4
	4802 532 17086	Washer 9.8 mm	4

WIRING ON PC BOARD

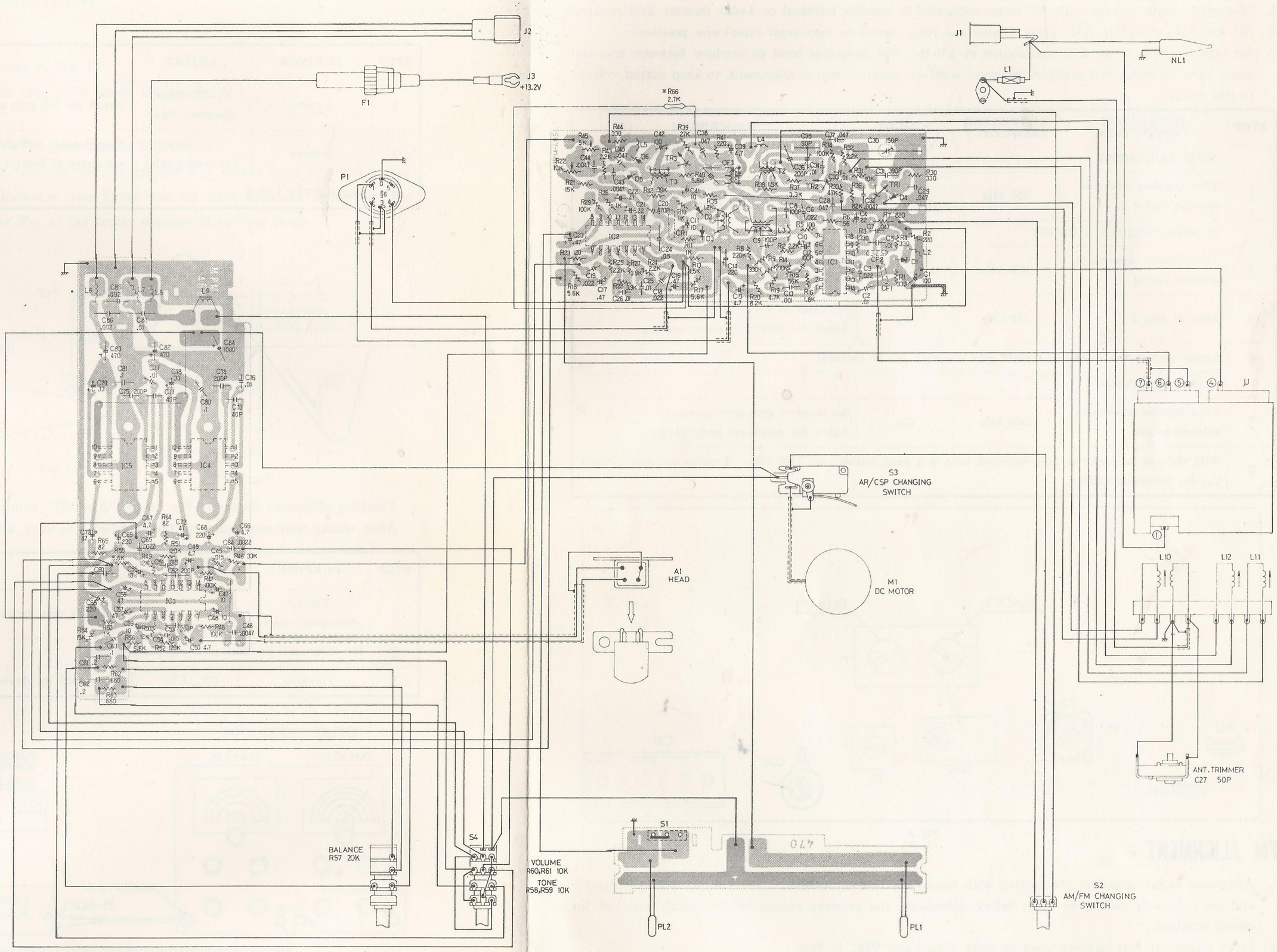

Fig. 7

NOTES: 1. ALL RESISTANCE IN OHMS, K=1,000.
2. ALL CAPACITANCE IN μF, P=$\mu\mu$F.