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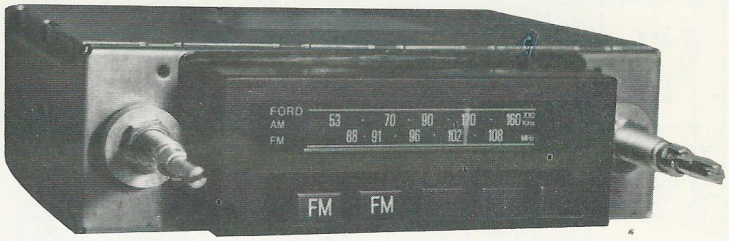


Service Manual

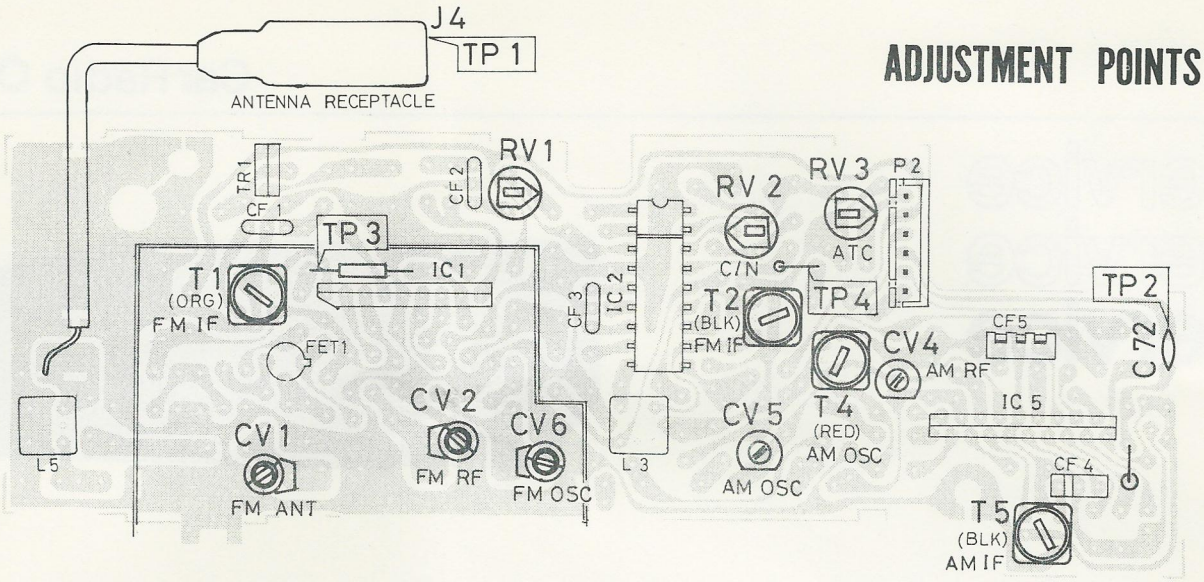
PRODUCED FOR FORD AUSTRALIA LTD. FOR FITMENT TO
FALCON XE1984
FORD PART No. 82DA – 19A241-AA

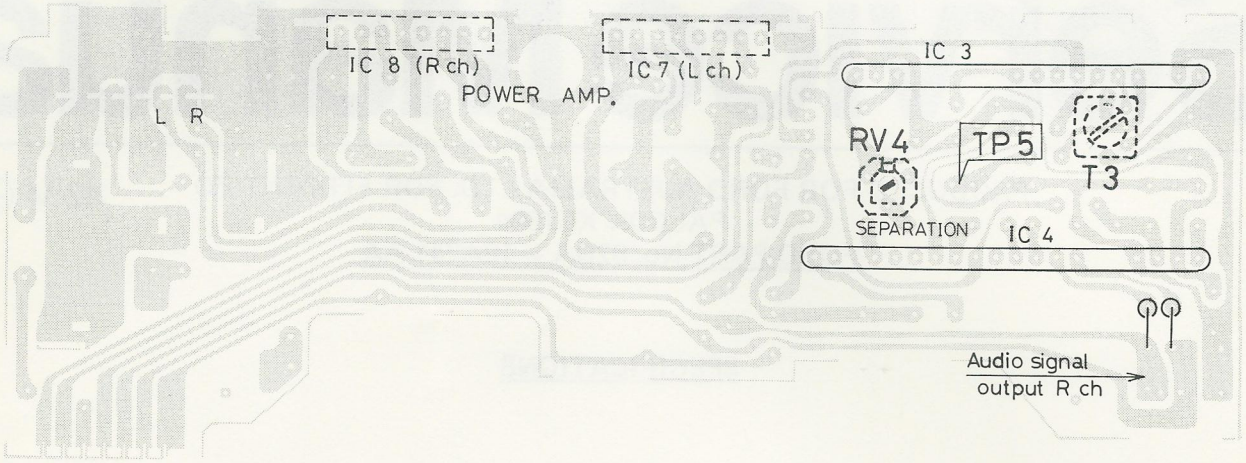
12 V

SPECIFICATIONS

TUNING RANGE	AM: 525 TO 1605 kHZ FM: 88 TO 108 MHz
IMMEDIATE FREQUENCY	AM: 455 kHZ FM: 10.7 MHz
POWER OUTPUT	4 WATTS RMS
SPEAKER IMPEDANCE	4 OHMS
POWER SUPPLY	12 VOLTS NEGATIVE TO EARTH
CURRENT	2 AMP. MAX.
SEMI CONDUCTORS	7 IC's 2 TRANSISTORS 1 FET

ADJUSTMENT POINTS





REPLACEMENT PARTS LIST

Ref. No.	Description	Service Code
CAPACITORS		
All Capacitors are standard Ceramic, Mylar, Polycarbonate or Electrolitic types unless specified otherwise.		
CV1	Trimmer Ant. 6 pF	4802 125 57109
CV2	Trimmer	4802 125 57109
CV3	Trimmer Ant. 50 pF	4802 125 57114
CV4	Trimmer AM. RF. 60 pF	4802 122 47152
CV5	Trimmer AM. Osc. 50 pF	4802 125 57111
CV6	Trimmer Ant. 6 pF	4802 125 57109
RESISTORS		
All Resistors are standard values and tolerances unless specified otherwise		
RV1	Res. Var. 300 ohm.	4802 100 17103
RV2	Res. Var. 20 k. ohm.	4802 100 17097
RV3-4	Res. Var. 50 k. ohm.	4802 100 17096
RV5	Res. Var. 20 k. Balance	4802 102 17077
RV6	Res. Var. Vol.+Tone+Sw.	4802 102 47057
MISCELLANEOUS		
SW1	Switch. Slide	4802 105 17187
	Tuner Assy.	4802 210 17132
	Button AM	4802 411 67136
	Button FM	4802 411 67134
J4	Receptacle Antenna	4802 267 17024
4	Pointer	4802 450 87169
9	Escutcheon (inc. Dialplate)	4802 459 27171
	Knobs	Supplied by Ford
	Lead Assy. Power	4802 321 27291

Ref. No.	Description	Service Code
SEMICONDUCTORS		
I.C.1	I.C. AN7254	4802 209 87473
I.C.2	I.C. AN7258	4802 209 87472
I.C.3	I.C. MH1536	4802 209 87502
I.C.4	I.C. MH1571	4802 209 87811
I.C.5	I.C. UPC1216VZ	4822 209 81222
I.C.6	I.C. MB3713M	4802 209 87259
I.C.7	I.C. MB3713M	4802 209 87259
D1	Diode Varactor FM. AFC.	4822 130 30988
D2	Diode 9V. Zener	4822 130 30862
TR1	Trstr. 2SC1847	4802 130 47431
TR2	Trstr. 2SC1684	4822 130 41532
FET1	Trstr. 3SK74L FET.	4822 130 41603
MISCELLANEOUS ELECTRICAL		
T1	Coil FM. IF. 10.7MHz (Org.)	4802 153 57056
T2	Coil FM. IF. 10.7MHz (Blk.)	4802 158 17361
T3	Coil Trap 19 kHz	4802 153 17354
T4	Coil AM. Osc. (Red)	4802 153 17353
T5	Coil AM. IF. 455 kHz (Blk.)	4802 153 17351
L6	Choke 4.7 uH	4802 158 17104
PL1	Lamp 14V. 50 M.A.	4802 134 47172
PL2	Lamp Assy.	4802 134 47171
CF1.2.3	Filter FM. IF. 10.7 MHz	4822 242 70259
CF4	Filter AM. IF. 455 kHz	4802 242 77102
CF5	Filter AM. IF. 455 kHz	4802 242 77089
17	P.C.B. Vol.	4802 466 17181

* Standard adjustment condition

a. Power supply ····· 13.2 VDC

b. AM/FM changing switch ····· AM

c. Balance and tone control ····· Center

d. Volume ····· Adjust to get 1V output level.

[1] IF Alignment

(1) Connections

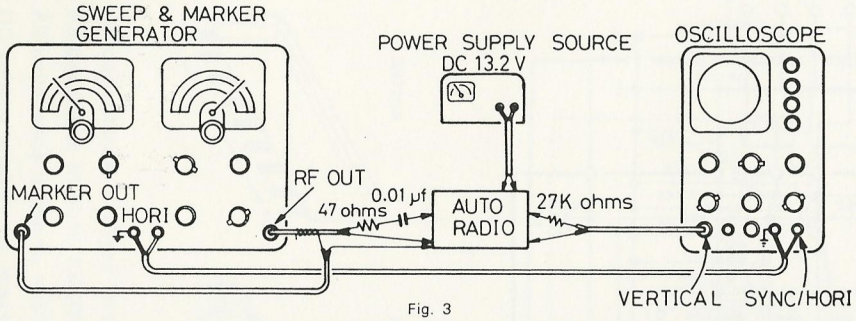


Fig. 3

SWEEP GENERATOR OUTPUT	OSCILLOSCOPE VERTICAL INPUT	OSCILLOSCOPE HORIZONTAL INPUT
Connect TP 1 in Fig. 8 through 0.01 μF capacitor & 47 ohm resistor	Connect TP 2 in Fig. 8 through 27k-ohm resistor	Connect with HORIZONTAL terminal of sweep generator

(2) Alignment (Refer to Fig. 8 for ADJUSTMENT POINTS.)

STEP	PURPOSE	SWEEP GENERATOR FREQUENCY	SET TUNER TO	ADJUSTMENT POINTS	PROCEDURE
1	IF	455 kHz	Near 1,000 kHz no signal exists	T 5	Get maximum IF curve and best symmetry on both sides.
2	Repeat STEP 1 until no further gain in output can be obtained.				

[2] Tracking Alignment

(1) Connections

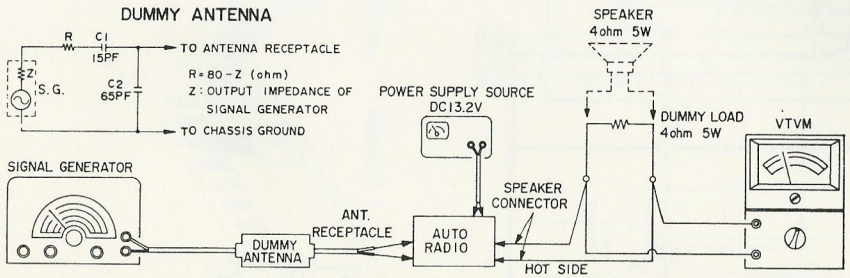


Fig. 4

1	Tuning range	1,635 kHz (400 Hz, 30% AM)	High-end stop	CV 5	Adjust for maximum meter indication.
2		505 kHz (400 Hz, 30% AM)	Low-end stop	T 4	
3	Repeat STEP 1 and 2 until no further gain in output can be obtained.				
4	Tracking	1,400 kHz (400 Hz, 30% AM)	Just tune in SG frequency	CV 4	Adjust for maximum meter indication.
5				CV 3	

NOTE: Always readjust antenna trimmer CV 3 when radio or antenna is reinstalled, tuning in a weak station around 1,400 kHz and get maximum volume.

FM ALIGNMENT

* Standard Adjustment Condition

FM adjustment should be the same as in AM standard adjusting condition. (AM/FM selector switch is, however, in FM position.)

[1] IF Alignment

(1) Connections

SWEEP GENERATOR OUTPUT	OSCILLOSCOPE VERTICAL INPUT	OSCILLOSCOPE HORIZONTAL INPUT
Connect TP 3 in Fig. 8 through 0.01 μF capacitor & 47 ohm resistor	Connect TP 4 in Fig. 8 through 27k-ohm resistor	Connect with HORIZONTAL terminal of sweep generator

(2) Alignment (Refer to Fig. 8 for ADJUSTMENT POINTS.)

STEP	PURPOSE	SWEEP GENERATOR FREQUENCY	SET TUNER TO	ADJUSTMENT POINTS	PROCEDURE
1	IF circuit	Center frequency varies according to the color of the ceramic filter (Refer to chart given below)	Near 98 MHz no signal exists	T 1	S-curve adjust for full gain and length of at linears. (See Fig. 6)
2					
3	Detector circuit			T 2	Keep S-curve straight at the center, and adjust waveform for best symmetry of S-curve against the axis as much as possible. (See Fig. 6)
4	Repeat STEP 1 to 3 until no further gain output can be obtained.				

COLOR	CENTER FREQUENCY
Black	10.64 MHz ± 30 kHz
Blue	10.67 MHz ± 30 kHz
Red	10.70 MHz ± 30 kHz
Orange	10.73 MHz ± 30 kHz
White	10.76 MHz ± 30 kHz

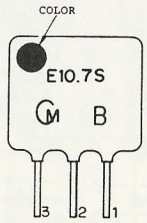


Fig. 5

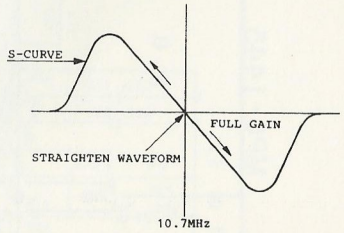


Fig. 6

NOTE: S curve center can be adjusted in the same manner by receiving local FM broadcast near 98.1 MHz.

◎Points to watch in replacing ceramic filter

In the FM circuit there are two ceramic filters. It is important that both filters have the same color. (i.e the same center frequency).

a. Readjustment is not necessary if a defective ceramic filter is replaced with one of the same color.

b. Both filters should be changed to the same color if one of them must be replaced with a different colored filter. Readjustment will be necessary because of the changed center frequency.

〔2〕 Tuning range alignment (Refer to Fig. 8 for ADJUSTMENT POINTS.)

(1) Connections

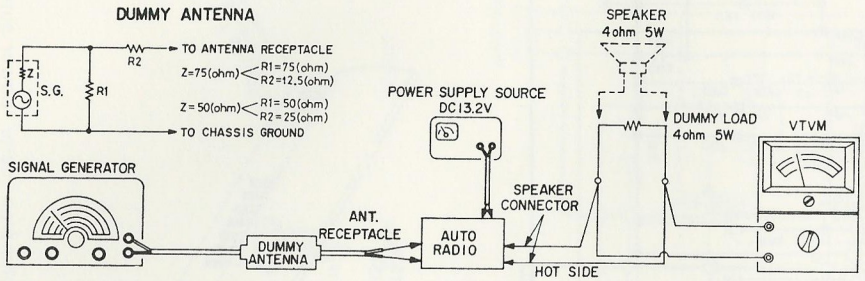


Fig. 7

(2) Alignment (Refer to Fig. 8 for ADJUSTMENT POINTS.)

STEP	PURPOSE	GENERATOR FREQUENCY	SET TUNER TO	ADJUSTMENT POINTS	PROCEDURE
1	Tuning range	87 MHz (400 Hz, 30% FM)	Low-end stop	CV 6	Adjust for maximum meter indication.
2		109.5 MHz (400 Hz, 30% FM)	High-end stop	—	109.5 MHz must be received.
3	Tracking	98 MHz (400 Hz, 30% FM)	Just tune in SG frequency	CV 1	Adjust for maximum meter indication.
4				CV 2	

〔3〕 Limiting Sensitivity

◎ Limiting sensitivity is defined as the antenna input voltage measured in the undermentioned procedure.

(a) Apply the antenna input voltage of 54 dB/μV to the receiver and adjust the volume control to get 0.5W output.

(b) Decrease the antenna input gradually so that the output gets 3 dB down, then read the input voltage. This is limiting sensitivity.

(1) Connections Refer to Fig. 7

(2) Adjustment (Refer to Fig. 8 for ADJUSTMENT POINTS.)

This model is so designed as to be 10 ± 3 dB limiting sensitivity in standard specifications.

(a) Set the output of the SSG to 54 dB (400 Hz, 30% modulated). (In case the level indicator of the SSG shows an open terminal voltage, set the level to 60 dB.)

(b) Adjust the volume control to get 0.5W (1.4V) output with the tone control at extreme treble.

(c) Reset the SSG level to 10 dB (to 16 dB in case of an open terminal indicator).

(d) Adjust the RV1 to get −3 dB (1V) of output reading.

NOTE: The receiver will not operate with the RV1 turned fully counterclockwise.

〔4〕 Noise blanker alignment

(1) Connections a. Stereo signal generator·····Connect the TP 1

b. Oscilloscope ·····Connect the TP 5

(2) Alignment (Refer to Fig. 8 for ADJUSTMENT POINTS.)

STEP	STEREO SIGNAL GENERATOR FREQUENCY	STEREO SIGNAL GENERATOR OUTPUT LEVEL	ADJUSTMENT POINT	PROCEDURE
1	98.1 MHz (No modulation, Stereo mode)	60 dBμ	T 3	After making sure of "STEREO" display, adjust the pilot signal wave (19 kHz) for minimum.

〔5〕 Separation alignment

(1) Connections a. Stereo signal generator·····Connect the TP 1

(2) Alignment (Refer to Fig. 8 for ADJUSTMENT POINTS.)

STEP	STEREO SIGNAL GENERATOR FREQUENCY	STEREO SIGNAL GENERATOR OUTPUT LEVEL	ADJUSTMENT POINT	PROCEDURE
1	98.1 MHz (L-ch: 400 Hz, 30% R-ch: no modulation)	60 dBμ	RV 4	Adjust R-ch. output level for minimum.

〔6〕 ATC Working sensitivity adjustment

ATC working sensitivity is expressed in terms of antenna input voltage value when the output is 3 dB down (1V) as the antenna input voltage is lowered after the volume control is adjusted so that 1V standard voltage may be obtained at 60 dBμ (10 kHz, 30% FM) specified antenna input voltage.

(1) Connections Same as separation alignment

(2) Alignment (Refer to Fig. 8 for ADJUSTMENT POINTS.)

STEP	SIGNAL GENERATOR FREQUENCY	SIGNAL GENERATOR OUTPUT LEVEL	ADJUSTMENT POINTS	PROCEDURE
1	98.1 MHz (10 kHz, 30%)	60 dBμ	—	Adjust volume control until the output voltage is 1.4V.
2		46 dBμ (±4 dBμ)	RV 3	Adjust the output voltage for −3 dB (1V)

〔7〕 C/N Alignment

(1) Connections Same as in section 〔7〕

(2) Alignment (Refer to Fig. 10 for ADJUSTMENT POINTS.)

STEP	SIGNAL GENERATOR FREQUENCY	SIGNAL GENERATOR OUTPUT LEVEL	ADJUSTMENT POINTS	PROCEDURE
1	98.1 MHz (400 Hz, 30%)	60 dBμ	—	Adjust volume control so that the output voltage may be 1V.
2	Disconnect the signal generator		RV 2	Adjust the output voltage (residual noise) for 32mV.

EXPLODED VIEW

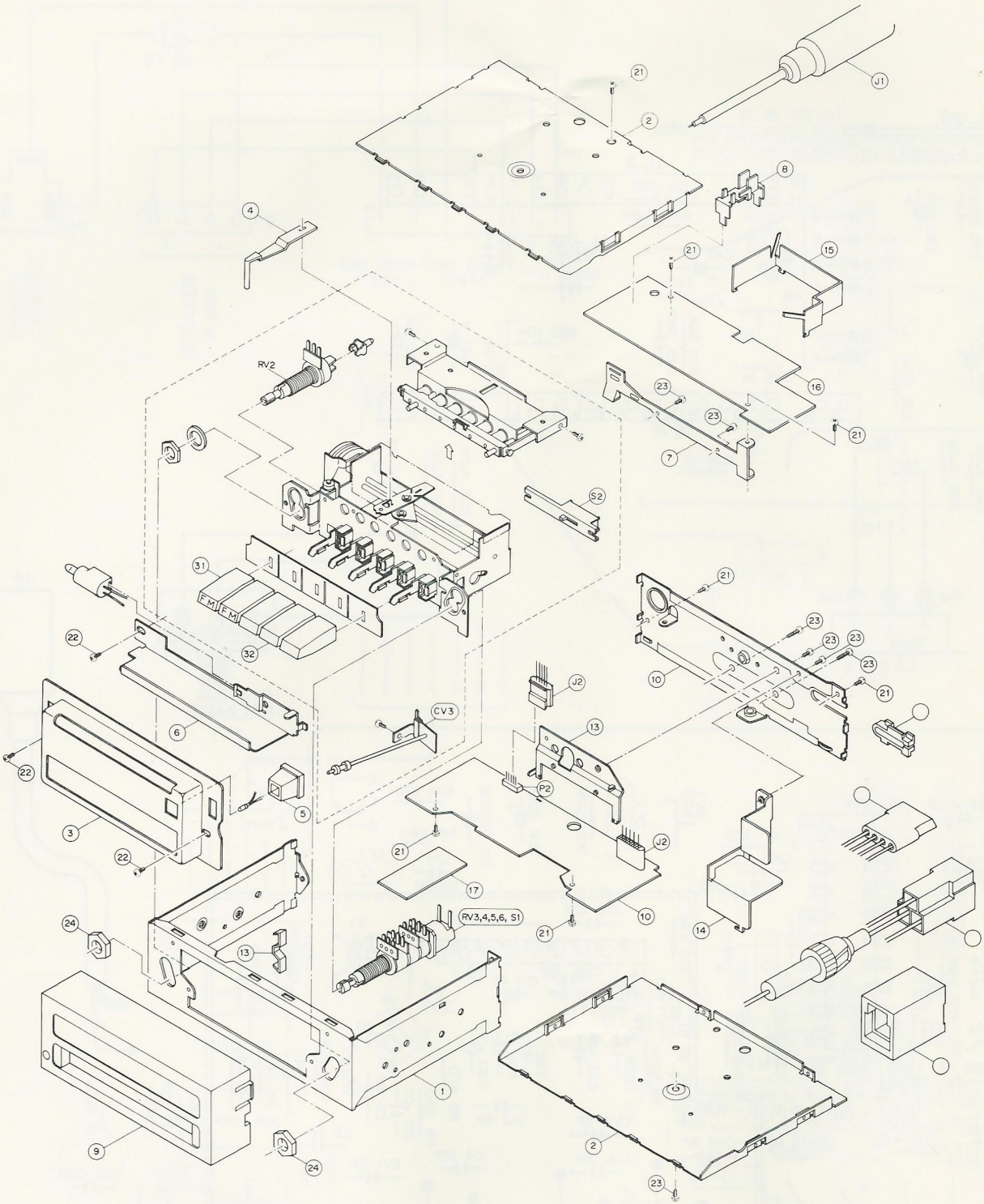
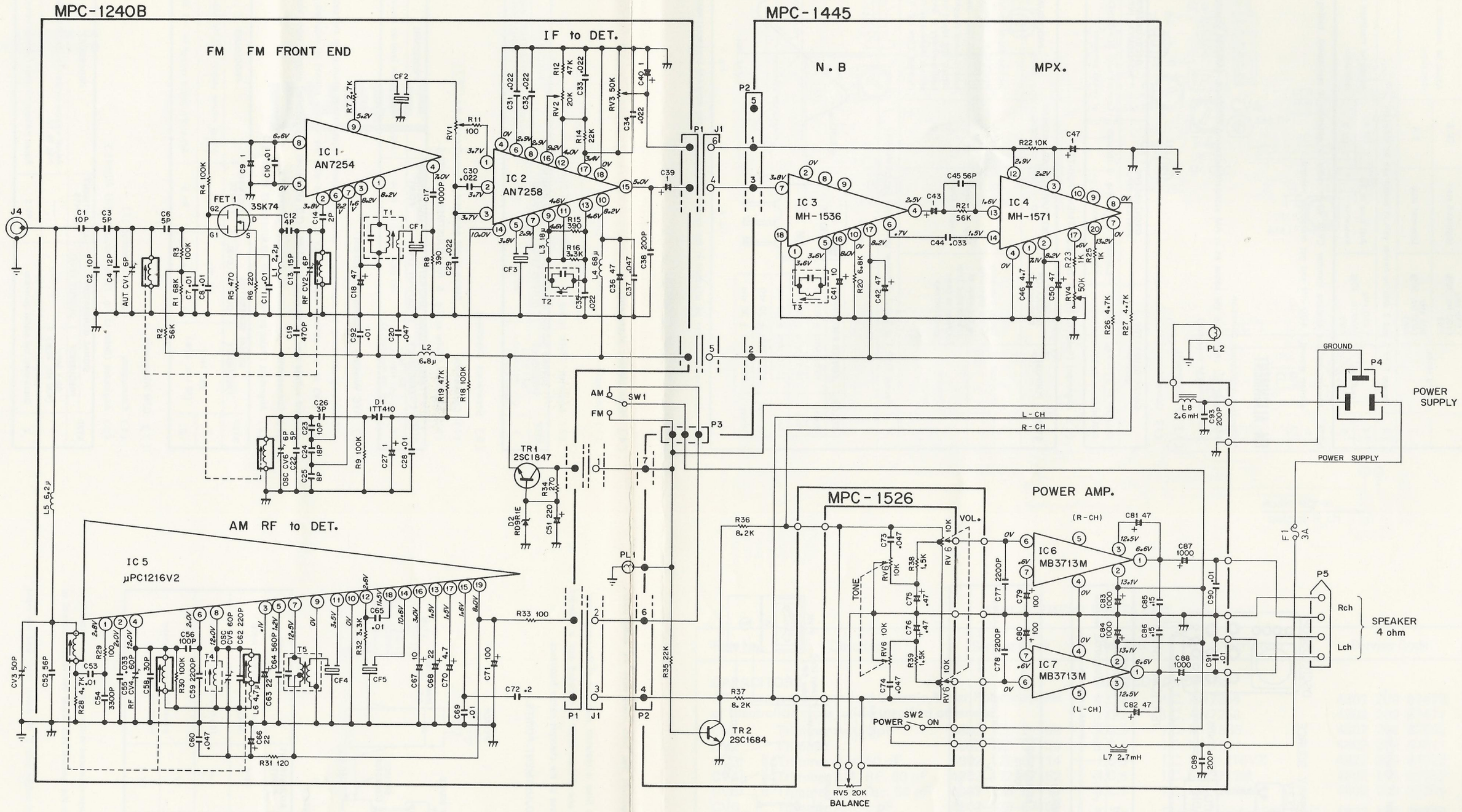


Fig. 9



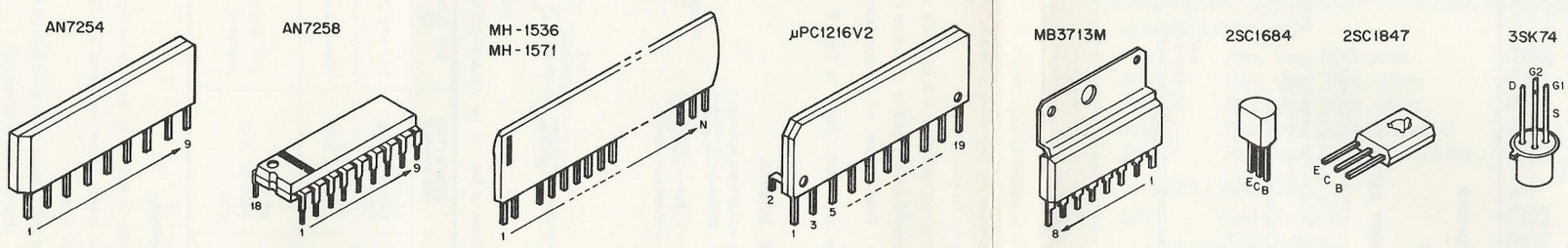


Fig. 1

NOTES:

1. All capacitance in Micro farad, $P=10^{-12}$
2. All resistance in ohm, $K=10^{3}$
3. All inductance in henry, $m=10^{-3}$, $\mu=10^{-6}$
4. DC voltage against the chassis measured with 100k ohm/volt meter, power supply set at +13.2 VDC, no signal input.

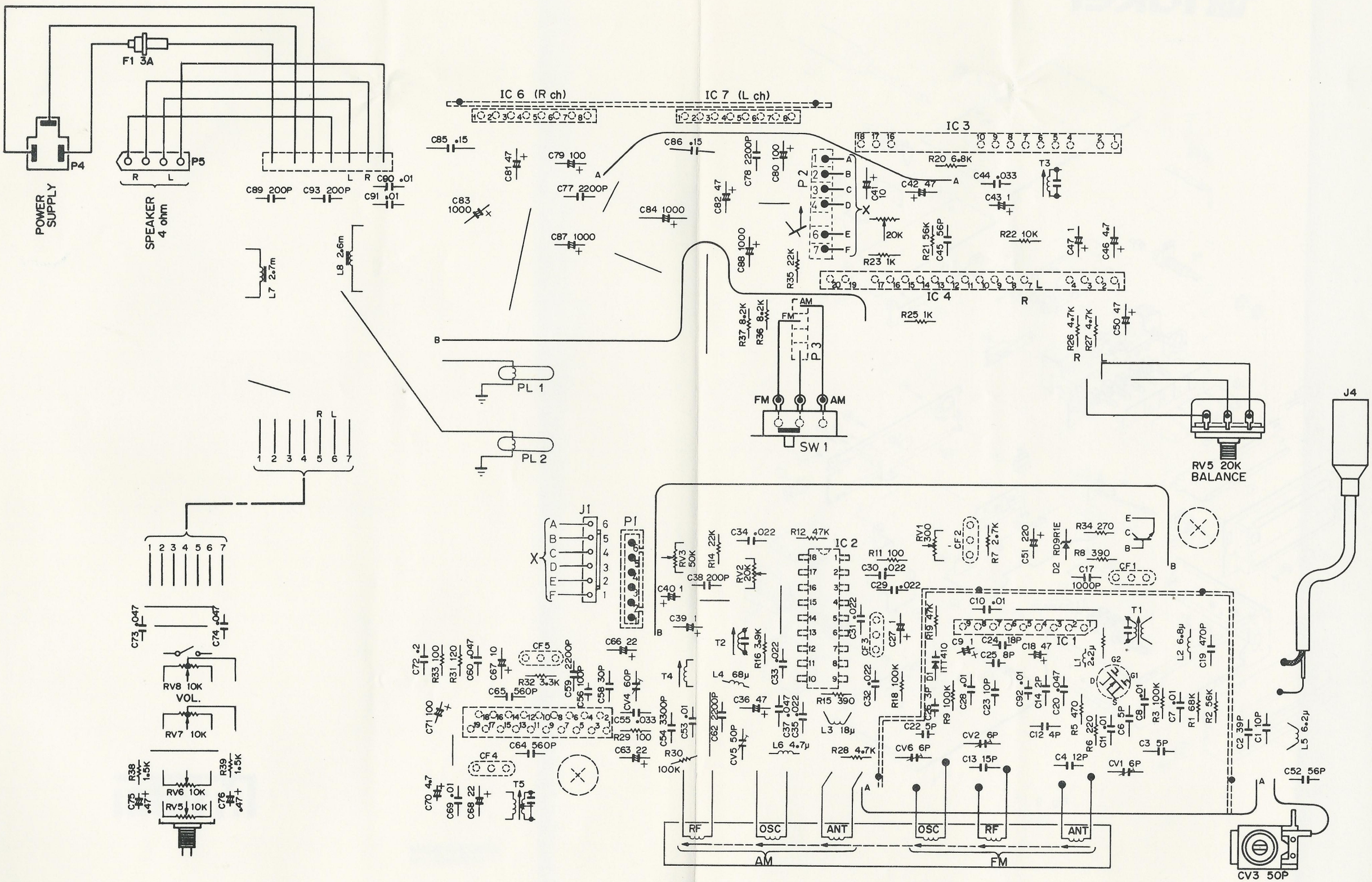

F1 3A
P4
P5
POWER SUPPLY
SPEAKER 4 ohm
IC 6 (R ch)
IC 7 (L ch)
IC 3
IC 4
IC 2
IC 1
P 2
P 3
P1
J1
J4
PL 1
PL 2
SW 1
FM
AM
RV5 20K BALANCE
RV8 10K VOL.
RV7 10K
RV6 10K
RV5 10K
CV3 50P
RF
OSC
ANT

Fig. 2