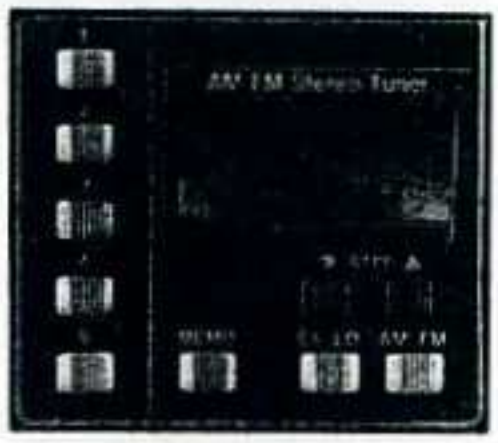
YAMAHA

SERVICE MANUAL

CASSETTE DECK
MODEL : CX-88

AM/FM-STEREO TUNER
MODEL : CJ-88



AMPLIFIER
MODEL : CV-88

CONTENTS

MITSUBISHI ELECTRIC SALES AMERICA.INC.
799 North Bierman Circle, Mt. Prospect, ILL.60056
MELCO SALES CANADA INC.
911A Denison Street, Markham, Ontario L3R 3K4

SPECIFICATIONS

Model CJ-88

- Tuning Range: AM 530~1620 kHz
  FM 87.9~107.9 MHz
- Intermediate Frequency: AM 450 kHz
  FM 10.7 MHz
- Usable Sensitivity: AM 38 dB μV (Norm)
  FM 18 dB μV (Norm)
- Stop Sensitivity: AM DX 30 dB μV (Norm)
  LOC 55 dB μV (Norm)
  FM DX 15 dB μV (Norm)
  LOC 40 dB μV (Norm)
- Stereo Separation: FM 20 dB (Min)
- Current Consumption: ACC 100mA (Max)
  MAIN 5mA (Max)
- Size: CJ-88P Width: 93mm
  Height: 82mm
  Depth: 30mm
  CJ-88B Width: 160mm
  Height: 50mm
  Depth: 100mm

Model CX-88

- Circuit System: 4-track 2-channel Stereo for Reproduction
- Tape Speed: 4.76 cm/sec
- Wow and Flutter: 0.3% WRMS (Max)
- FF/REW Time: C-60 140sec (Max)
- Current Consumption: ACC 1A (Max)
  MAIN 5mA (Max)
- Size: Width: 87mm
  Height: 142mm
  Depth: 162mm

Model CV-88

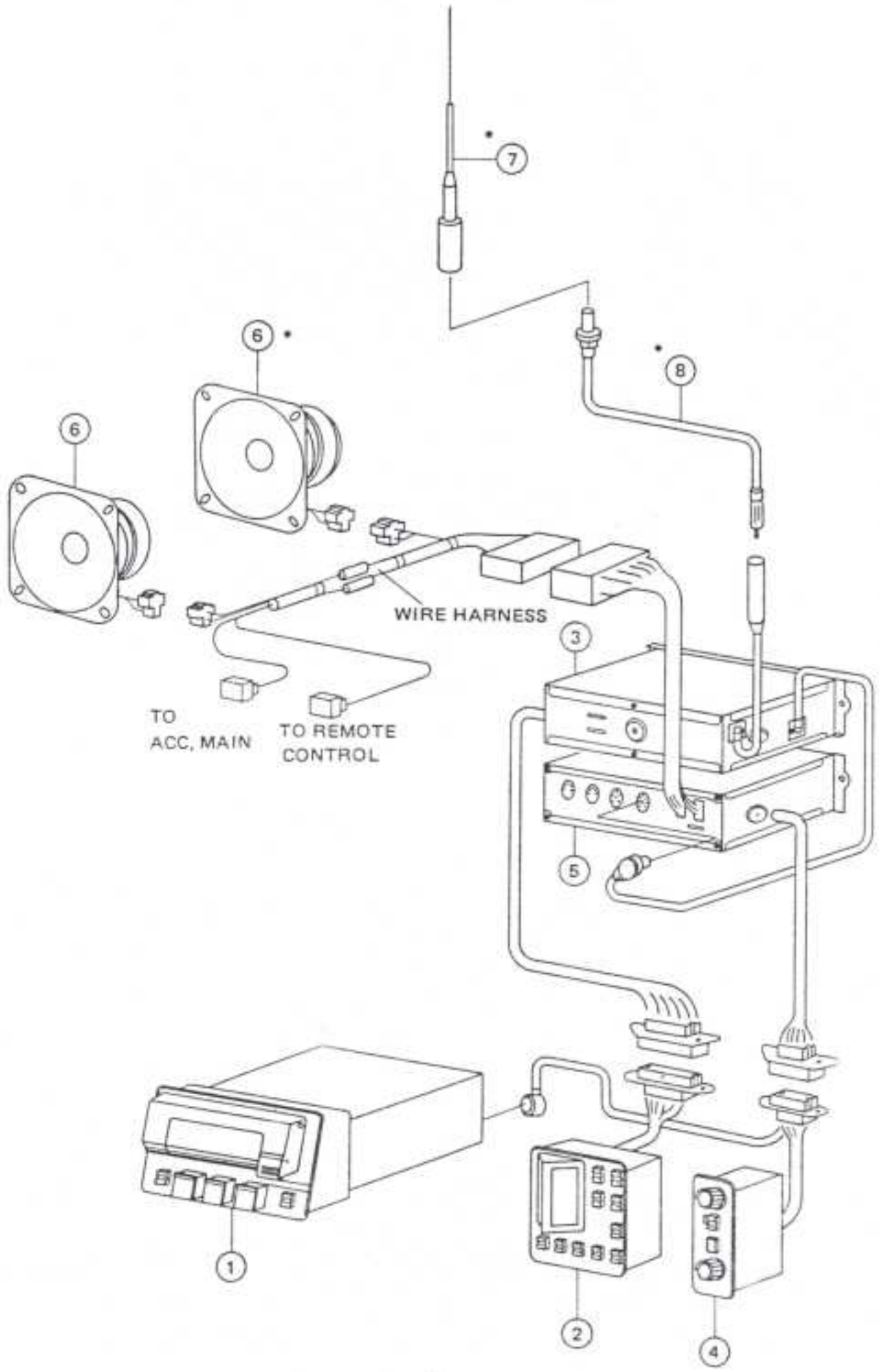
- Circuit System:
- Output Power: Radio, Tape-SP 15Wx2
  Radio, Tape-HP 70mWx2
- Output Impedance: SP: 4 ohm
  HP: 8 ohm
- Input Impedance: Radio, Deck 6.8k ohm
- Stereo Separation: 30 dB (Norm)
- Signal to Noise Ratio: Radio-Tape SP 50 dB (Min)
  Radio-Tape HP 50 dB (Min)
  Intercom 40 dB
- Intercom Gain: 55 dB (Max)
- Power Source: ACC DC 14.0V Negative ground
  MAIN DC 14.0V Negative ground
- Current Consumption: SW ON ACC 5.5A (Max)
  MAIN 100mA (Max)
- Size: CV-88P Width: 73mm
  Height: 32mm
  Depth: 45mm
  CV-88B Width: 160mm
  Height: 50mm
  Depth: 99mm

GENERAL BUCK UP CURRENT: MAIN D.C. 0.85mA (Max)

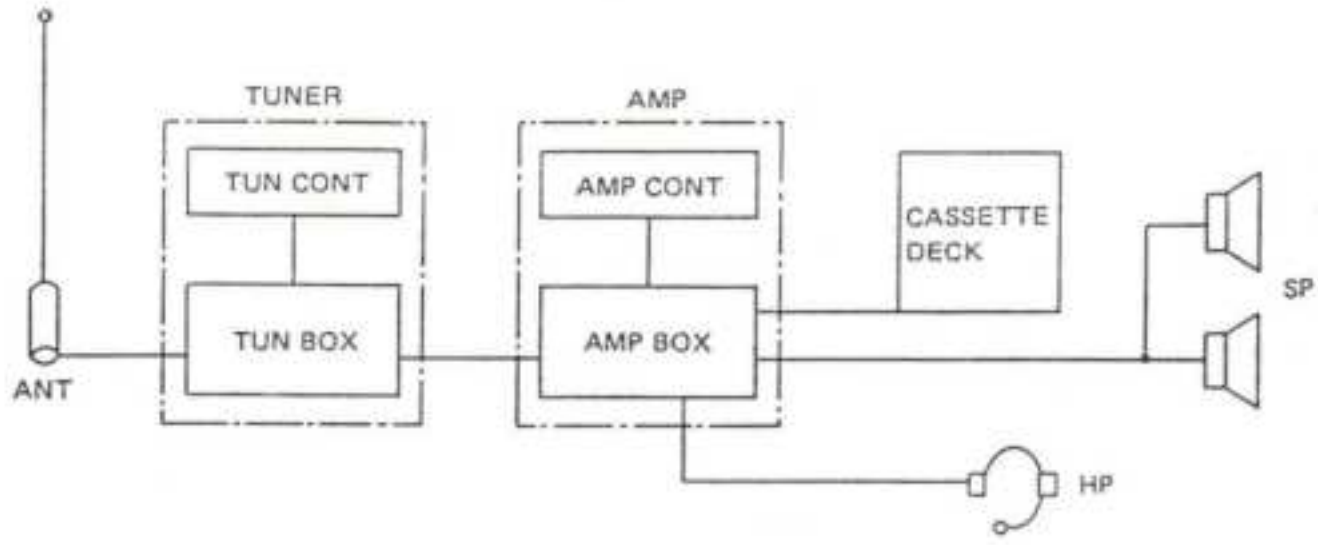
SYSTEM CONFIGURATION AND CONNECTION

No.	Description	Model No.	No.	Description	Model No.
1	Cassette Deck	CX-88	5	Amplifier	CV-88B
2	Control Tuner	CJ-88P	• 6	Speaker	SR-10WY-4
3	Tuner	CJ-88B	• 7	Antenna Pole	CA-2YH-M2
4	Control Amp.	CV-88P	• 8	Antenna Cable	CA-2YH-81

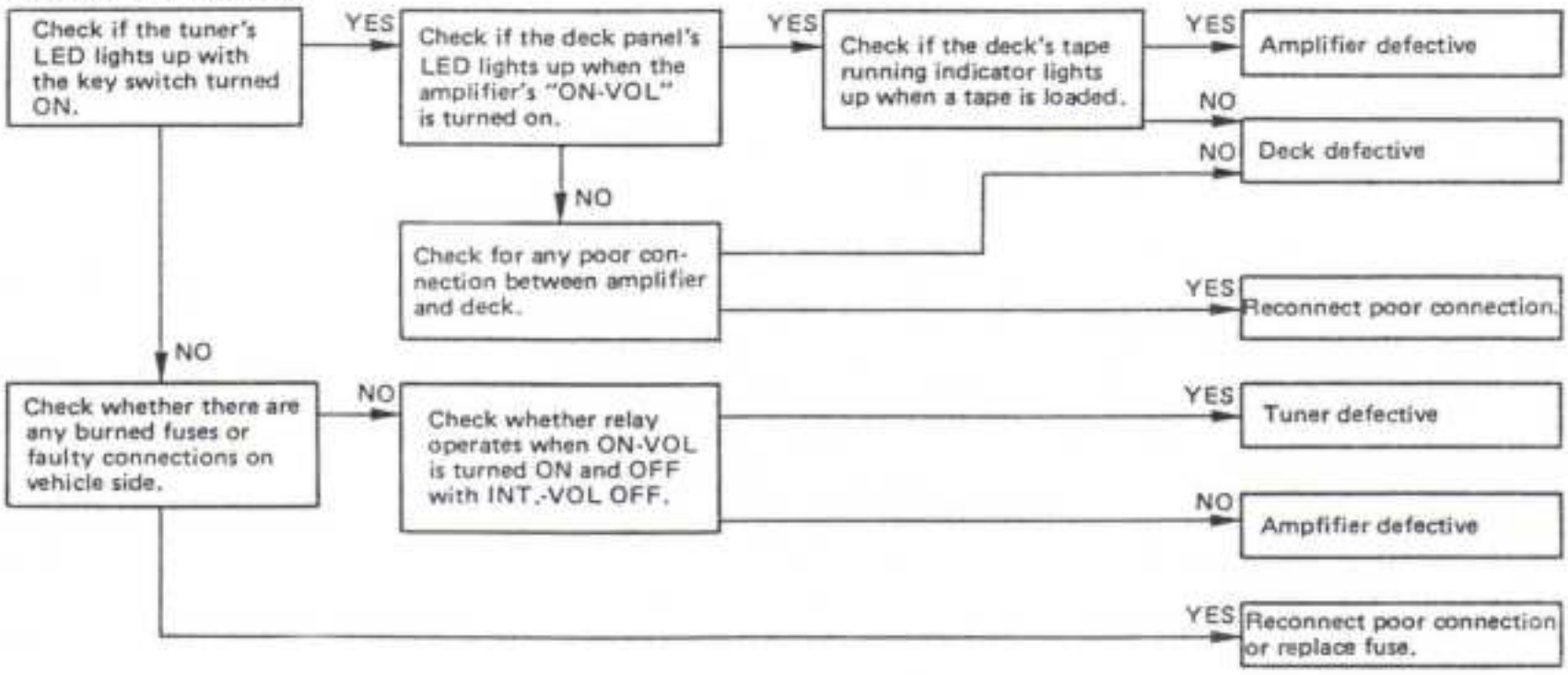
Parts marked with asterisk denote to be supplied by YAMAHA MOTORS CORP. not by MESA-SERVICE STATION.



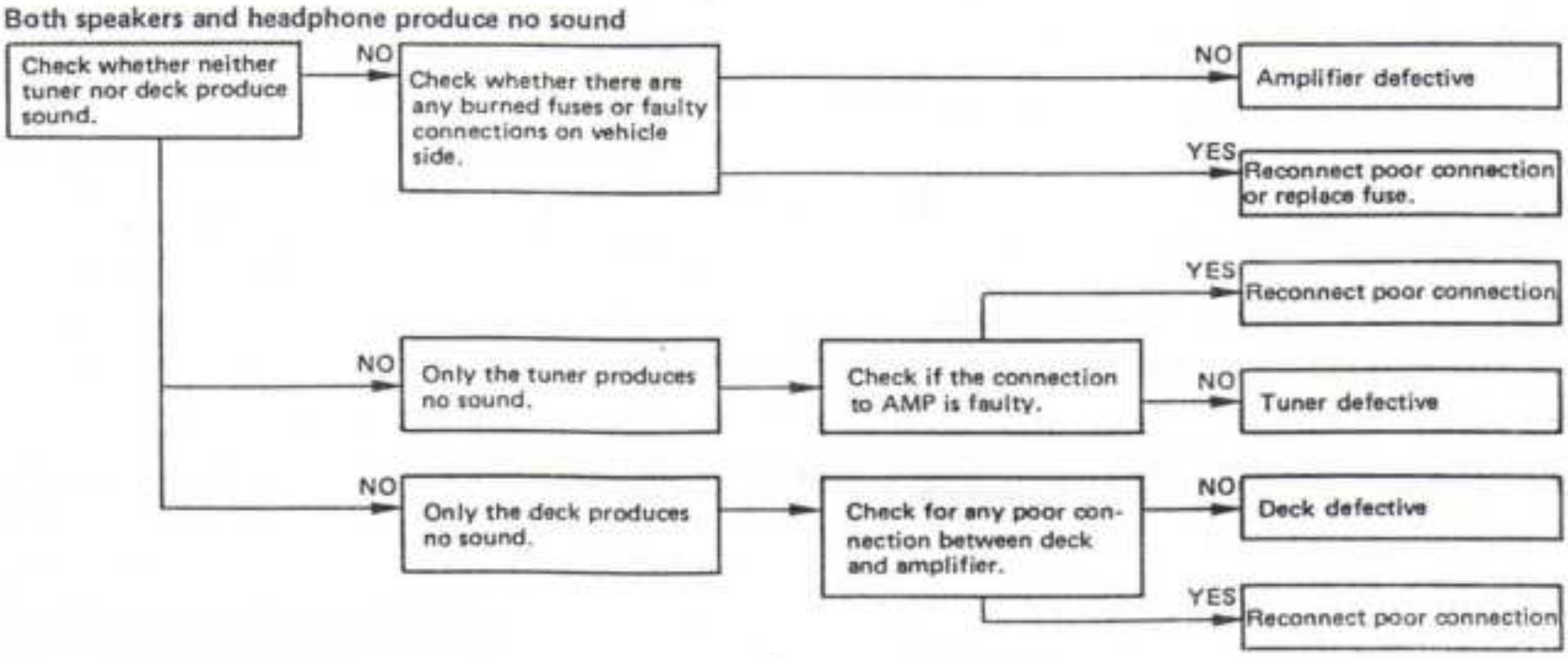
TROUBLE SHOOTING



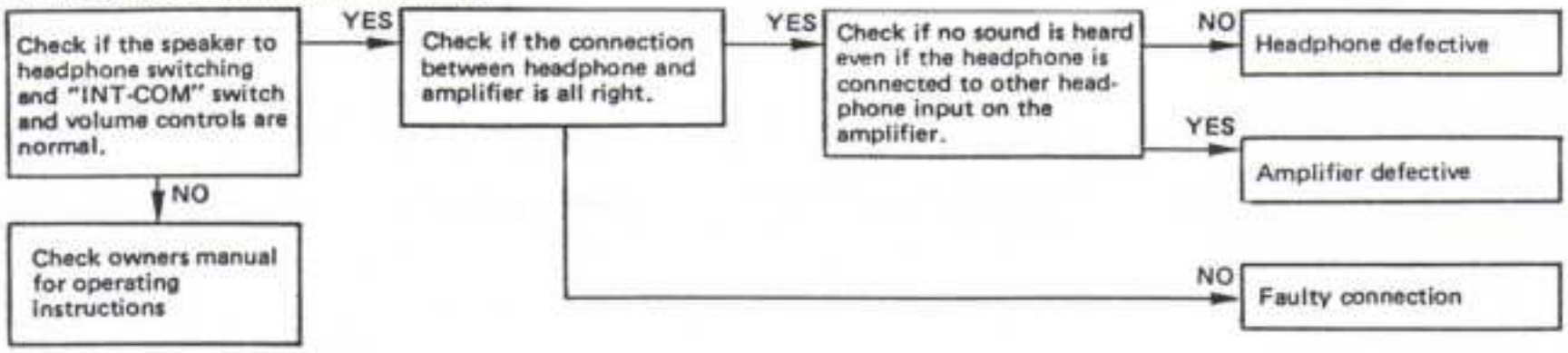
1. Unit is not turned ON.



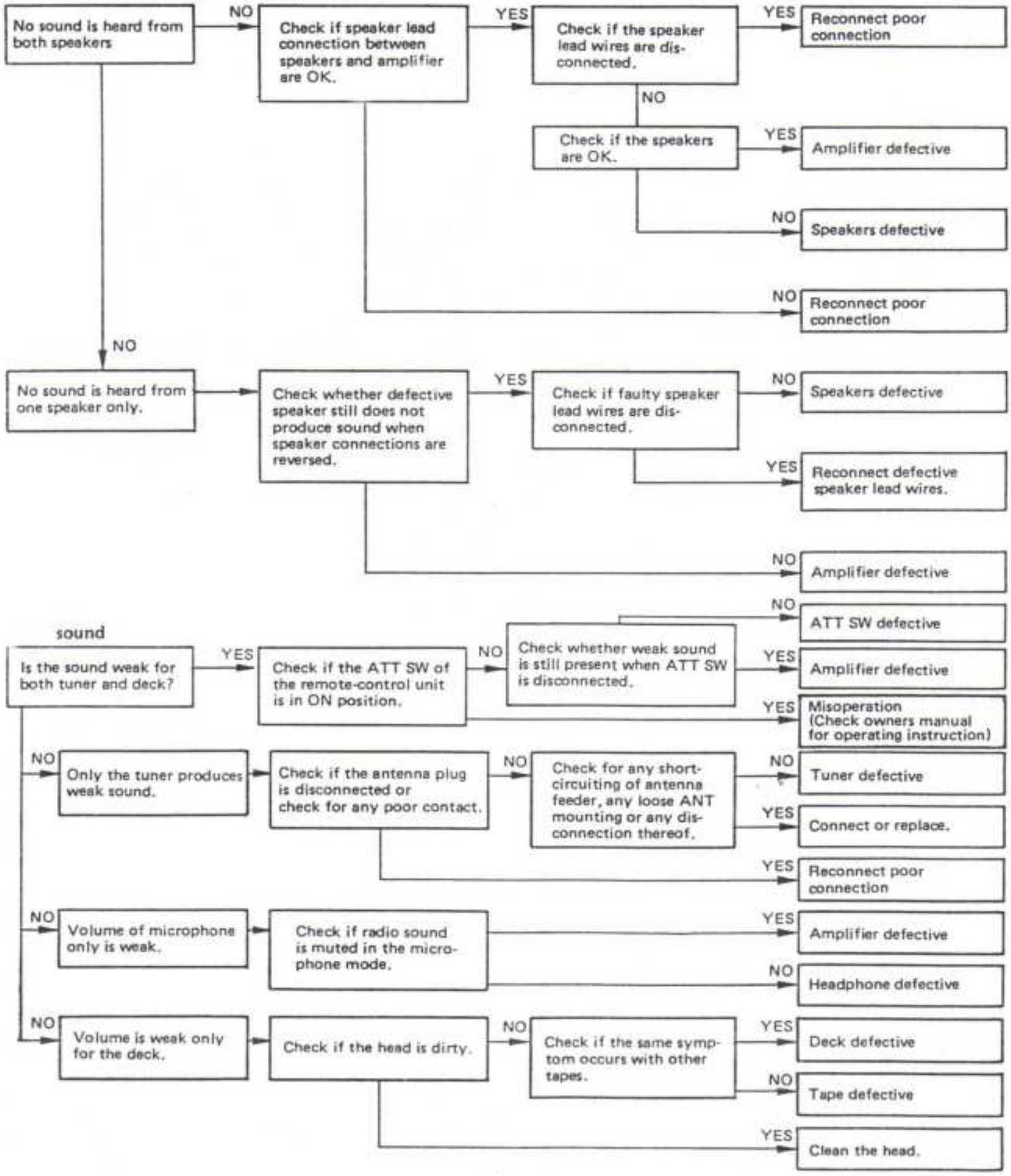
2. Both speakers and headphone produce no sound



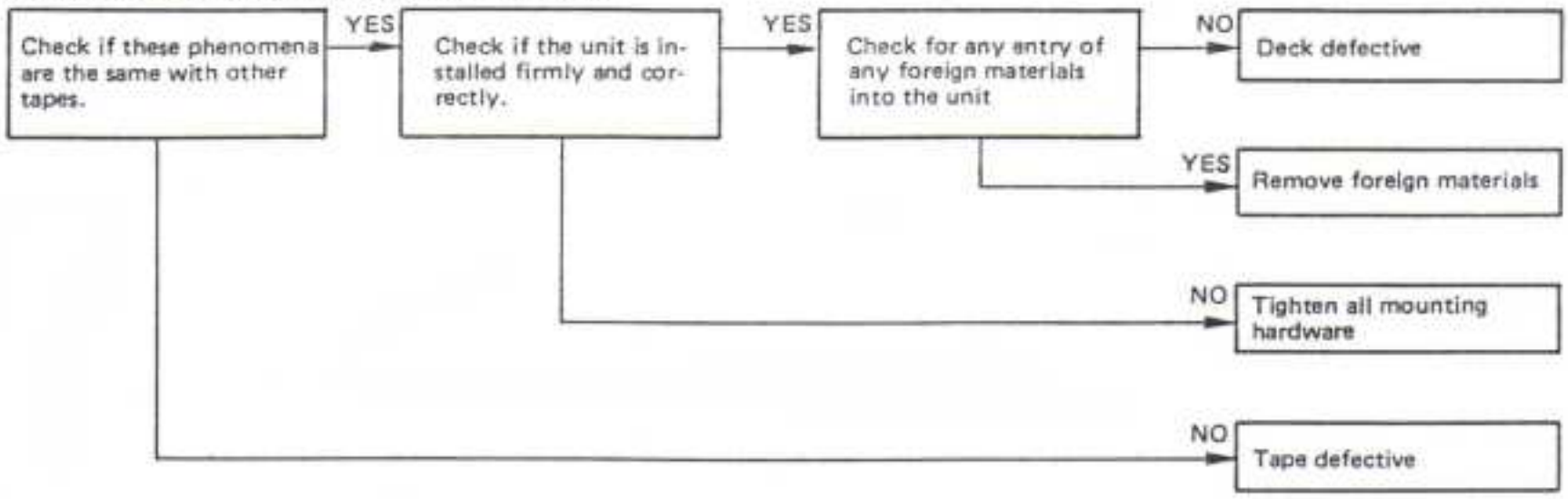
No sound heard from headphone only



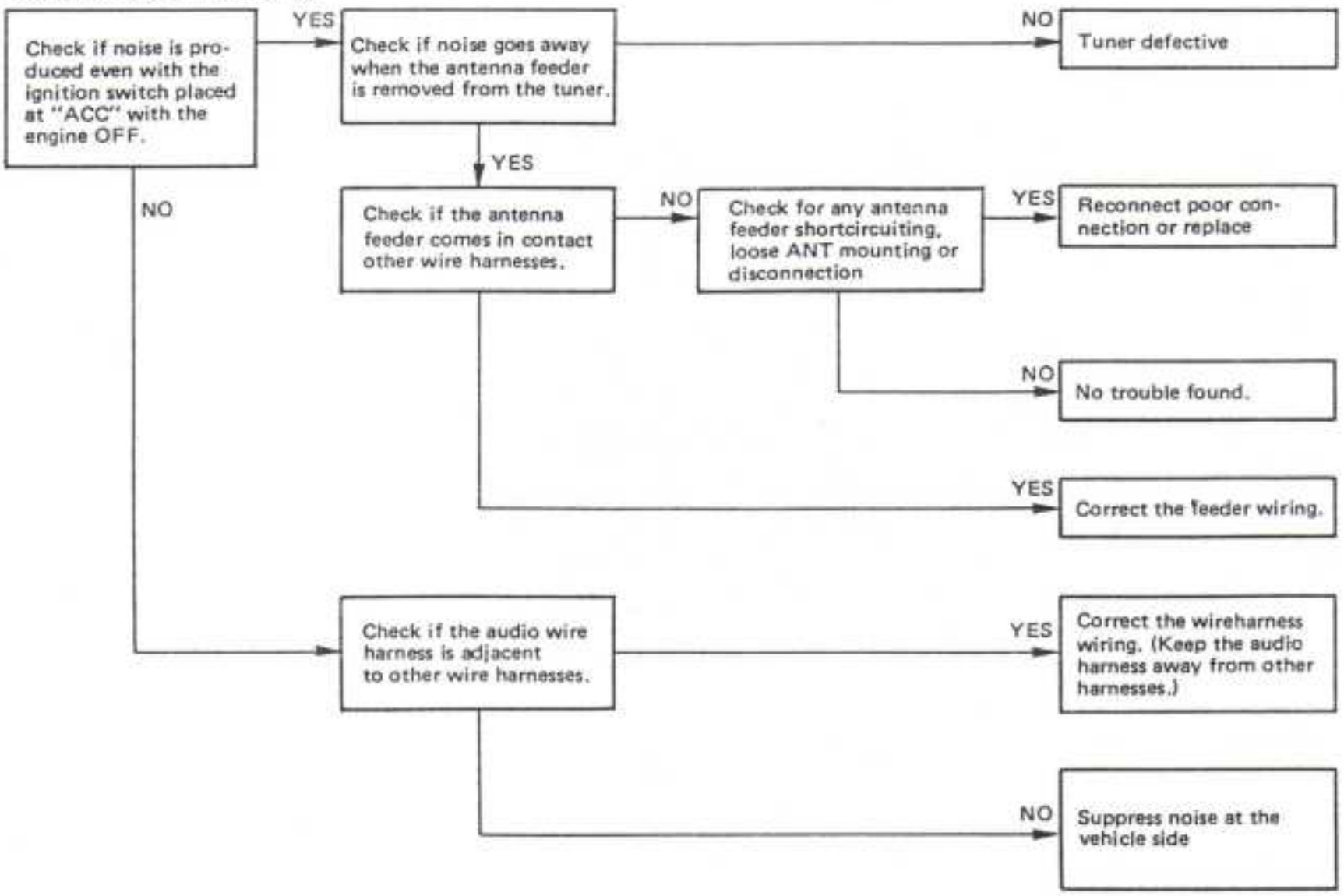
No sound heard from speakers only



6. Wow/Flutter or Speed variation are noticeable



7. Excessive noise interference

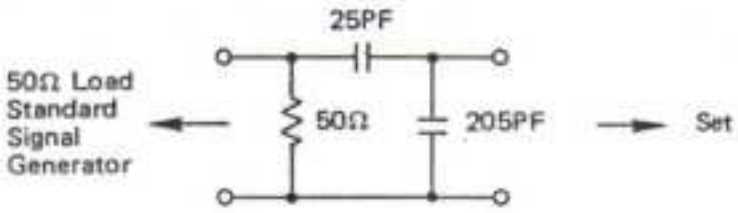


CJ-88 ADJUSTMENTS

1. Alighment Conditions

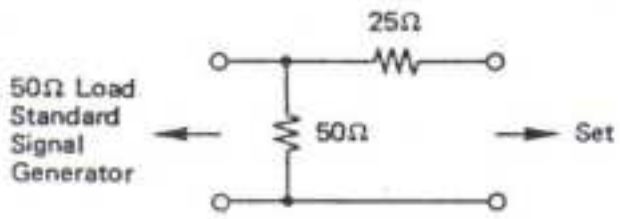
1.1 Supply voltage: ACC DC13.2 ±0.2V MAIN D.C. 5.6 ±0.2V.

1.2 Dummy antenna: When 50Ω load standard signal generator is used.



AM Dummy
Antenna

(Fig. 6)



FM Dummy
Antenna

(Fig. 7)

1.3 Connections

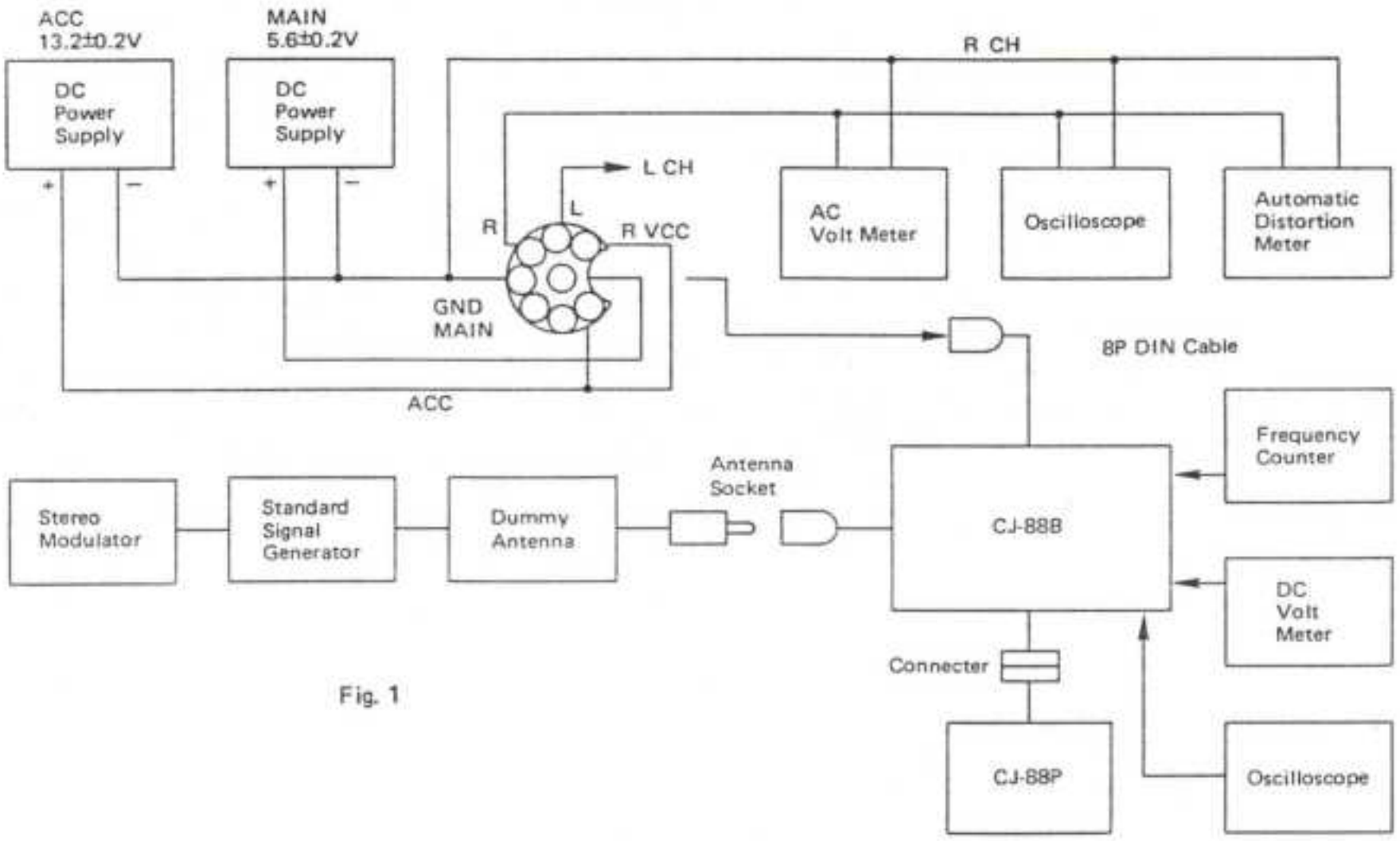


Fig. 1

2. Control section

2.1 Check of Initial Condition of Memory

1) With MAIN power ON, measure voltage at TP801 (IC801 (14) pin) to check that is 5 ±0.6V.

2.2 Checking SEEK operation

DIN (1) pin is shortcircuited to ground to check that signal seeking is initiated at 10 kHz step for AM and at 200 kHz step for FM.

2.3 Dimmer operation check

Check that the display LED dims when holding the CJ-88P photosensor.

2.4 Oscillation frequency alignment

1) Tune in AM 1400 KHz.
2) Connect a frequency counter to the TP4 of the PCB-RIF, and adjust the VC801 of the PCB-CONTROL so that the frequency is within 1850 KHz ± 10Hz.

3. AM Section

3.1 Local oscillation frequency alignment

Step	Connection	Frequency of signal generator	Radio tuning	Adjust	Remarks
• Set the AM/FM selector switch to "AM". • Preset VC1 and VC2 to the center position. • Ground TP5 (R8) using a lead wire.					
1	Connect a frequency counter to TP4	—	530 kHz	T6	Adjust so that TP4 frequency is 687±2 kHz.
• Remove the ground of TP5 (R8).					
2	Connect a DC volt-meter to TP6.	—	1620 kHz	—	Check that the voltage of TP6 is 7.8±0.5V.

3.2 RF & IF adjustment

Step	Connection	Frequency of signal generator	Radio tuning	Adjust	Remarks
• Turn VR41 fully counterclockwise. • Turn VR42 fully clockwise. • Preset VC1 and VC2 to the center. • Turn VR1 fully clockwise.					
1	As per the connection in Fig. (1).	580 kHz 1,000 Hz 30% Mod.	580 kHz (CH1)	T3,T4,T7	Adjust T3, T4, T7 so that the output is maximum.
2	"	1,400 kHz 1,000 Hz 30% MOd.	1,400 kHz (CH4)	VC1,VC2	"
3	Repeat steps 1 and 2 above.				

3.3 Stop sensitivity alignment

Step	Connection	Frequency of signal generator	Radio tuning	Adjust	Remarks
• Ground TP1 (R23) with a lead wire..					
	Connect an oscilloscope to TP3.	1,000 kHz 30 dB/μV 1,000 Hz 30% Mod.	1,000 kHz (CH3)		Adjust VR1 to the point where the stop signal at TP3 (R23) rises from 0V. 0V
• Remove the ground of TP1.					

4. FM Section

4.1 IF alignment

Step	Connection	Frequency of signal generator	Radio tuning	Adjust	Remarks
• Set the AM/FM selector switch to "FM".					
1	Connect a DC voltmeter to TP152.	—	No signal	T152	Adjust T152 so that voltage at TP152 (IC151 (15) pin) is 5.5±0.3V.

4.2 RF alignment

Step	Connection	Frequency of signal generator	Radio tuning	Adjust	Remarks
1	Connect a DC voltmeter to TP6.	—	107.9 MHz (CH5)	L103	Adjust L103 so that tuning voltage at TP6 is 7.5±0.2V.
2	"	—	87.9 MHz (CH1)	—	Check that tuning voltage at TP6 is more than 1.3V.
Turn VR151 and VR251 fully counterclockwise.					
3	As per the connection in Fig. (1).	107.9 MHz	107.9 MHz (CH5)	VC101,VC102	Adjust VC101 and VC102 so that the output is maximum.
4	"	87.9 MHz	87.9 MHz (CH1)	L101,T101	"
5	Repeat steps 3, 4 and 3 above.				
6	As per the connection in Fig. (1).	98.1 MHz 8~14 dB/μV	98.1 MHz (CH)	T102	Adjust T102 so that the output level is maximum and noise level is minimum.

4.3 Stop sensitivity alignment

Step	Connection	Frequency of signal generator	Radio tuning	Adjust	Remarks
1	Fig. 2	98.1 MHz 54 dB/μV No Mod.	98.1 MHz (CH2)	T151	Adjust T151 so that voltage between TP152 and TP153 is 0±0.06V.

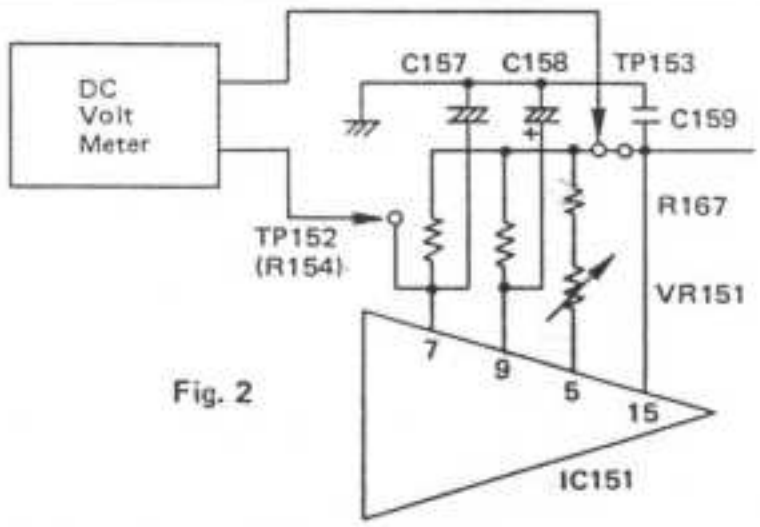


Fig. 2

4.4 Distortion alignment

Step	Connection	Frequency of signal generator	Radio tuning	Adjust	Remarks
1	As per the connection in Fig. (1).	98.1 MHz 400 Hz 100% Mod.	98.1 MHz (CH2)	T152	Adjust T152 so that the output distortion is minimum.

CX-88 ADJUSTMENTS

1. Alignment Conditions

1.1 Supply voltage: ACC/MAIN D.C. 14.0±0.2V

1.2 Connections

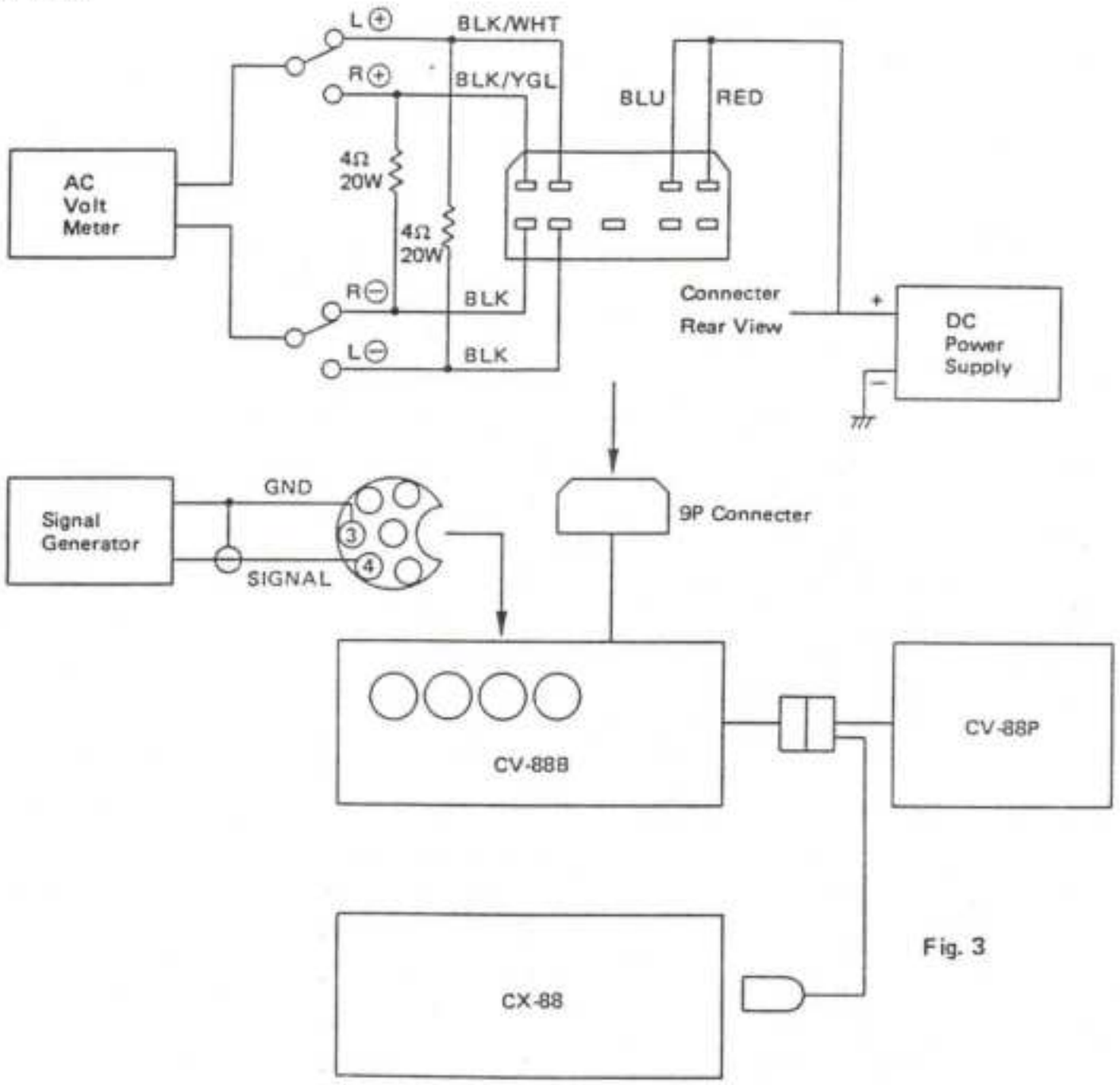


Fig. 3

2. Tape Player Section

2.1 Head azimuth alignment

Use a test tape - MTT-113C (8KHz) or equivalent - to adjust an azimuth adjusting screw so that the output is maximum for the left channel.

2.2 Checking tape speed

1) Use a test tape -MTT-111 (3KHz) or equivalent - to check that the output is 3KHz +3%, −2%

2) If the measurement does not satisfy the specification, adjust the motor speed regulator.

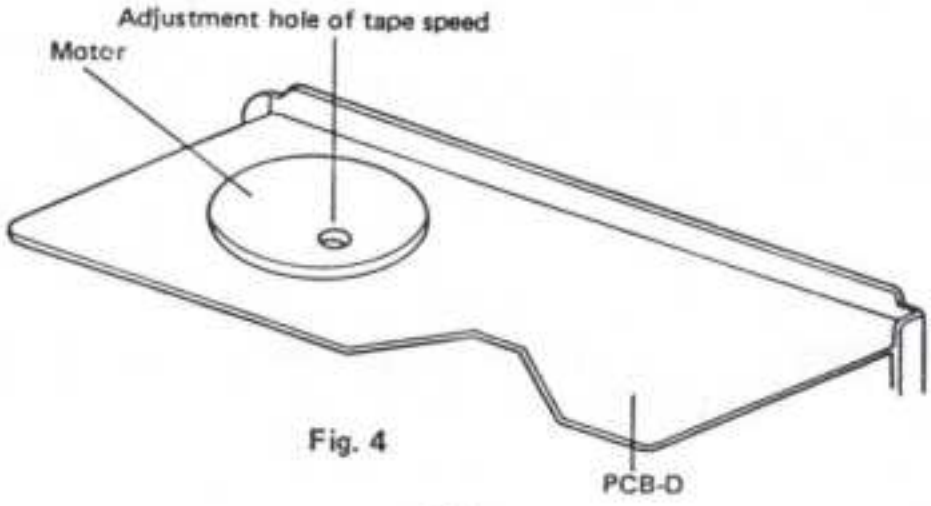


Fig. 4

CV-88 ADJUSTMENTS

1. Alignment Conditions

1.1 Supply voltage: ACC/MAIN D.C. 14.4±0.2V

1.2 Load resistance: 4Ω pure resistance

1.3 Connections

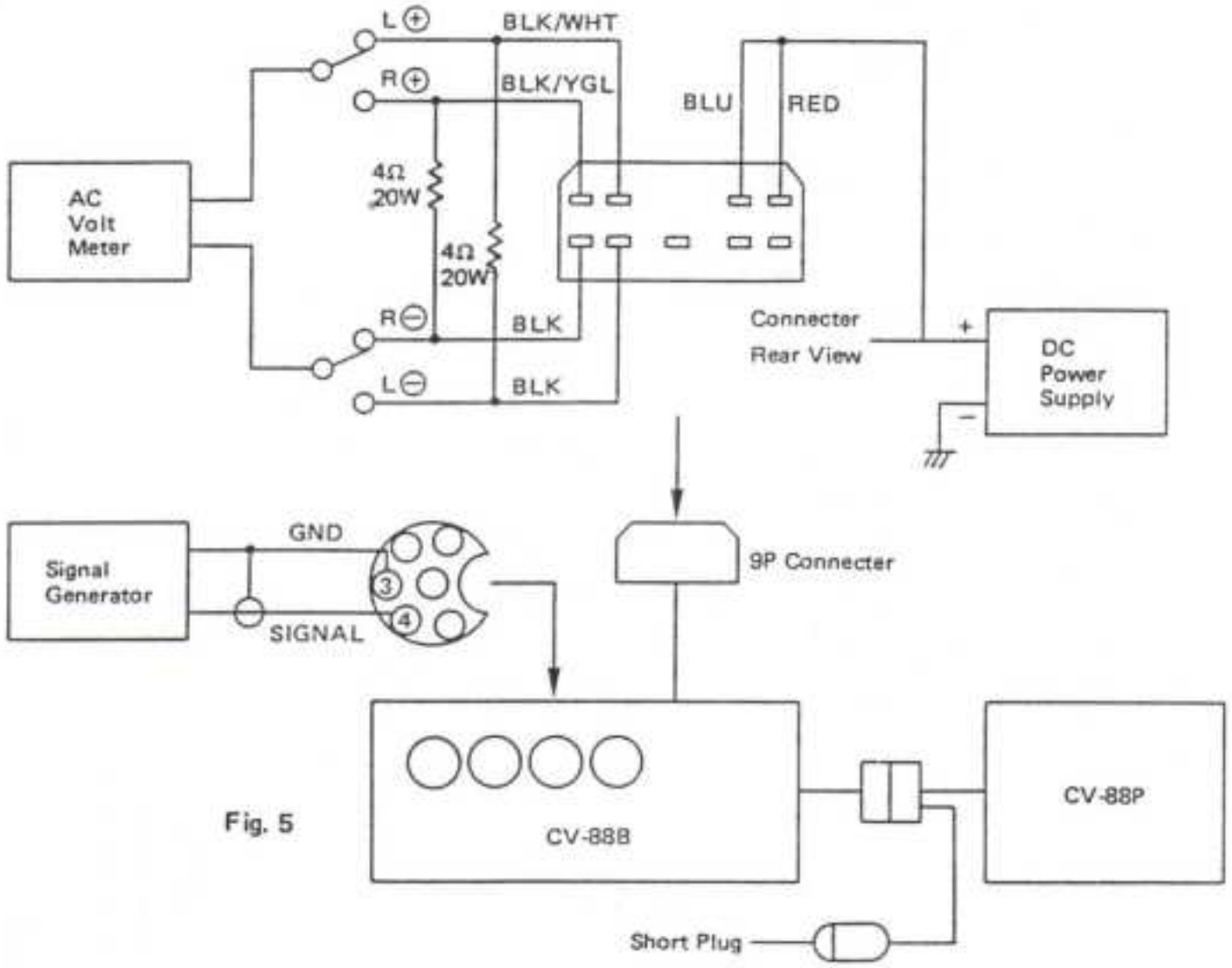


Fig. 5

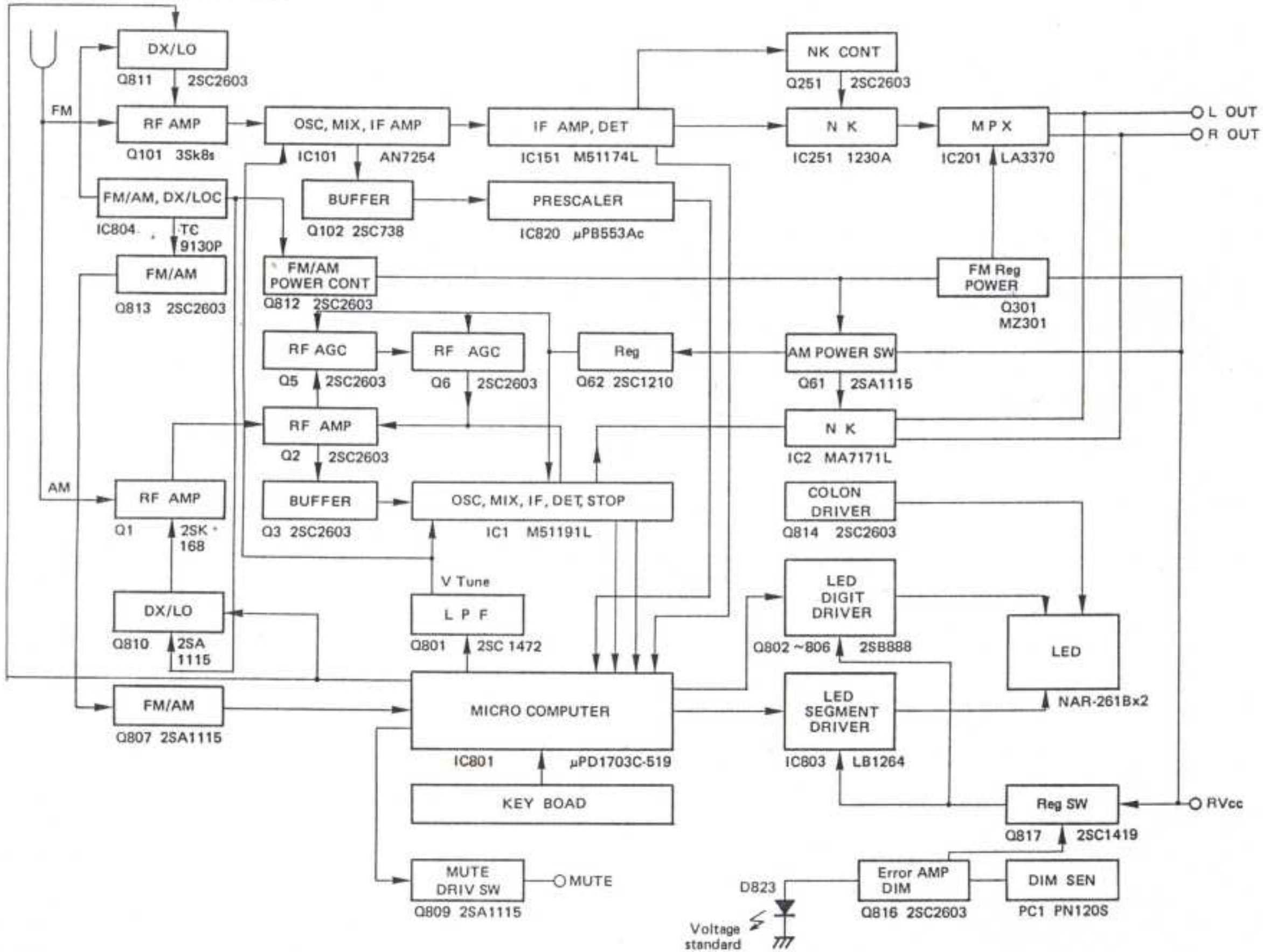
1.4 Operating control setting

Knob	Position
ON - VOL	ON
AUTO	Minimum
INT. VOL	ON/Minimum
TONE	High Maximum
H- PH	SP

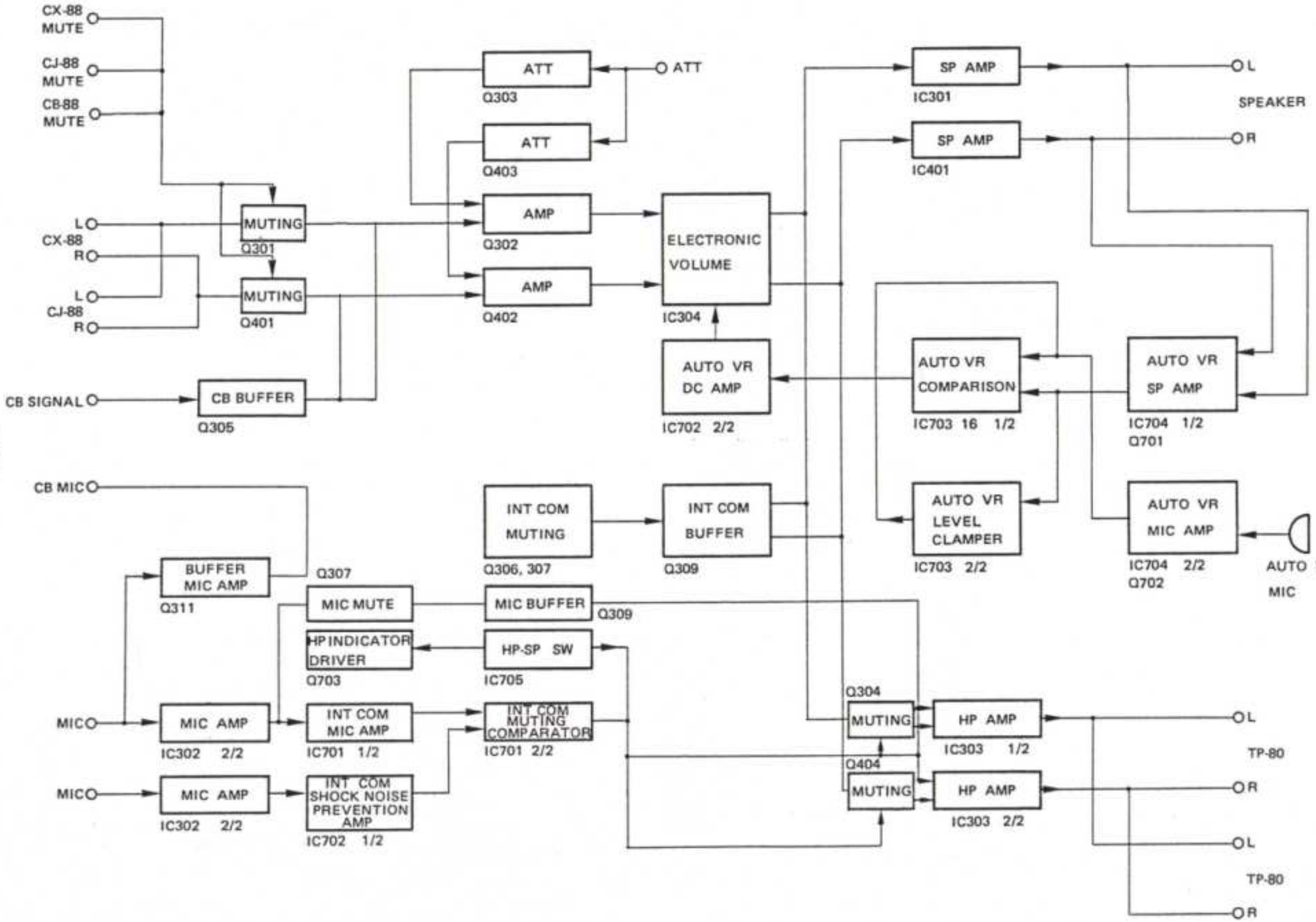
2. Auto vol Alignment

Step	Connection	Frequency of signal generator	Adjust	Remarks
• Turn VR701 fully clockwise. • Preset VR301 to the center position.				
1	As per the connection in Fig. (5).	1 kHz	Set the input level so that the output is 2V.	
2	〃	1 kHz	VR301	Adjust VR301 so that the right and left output level difference is within 0.5 dB.

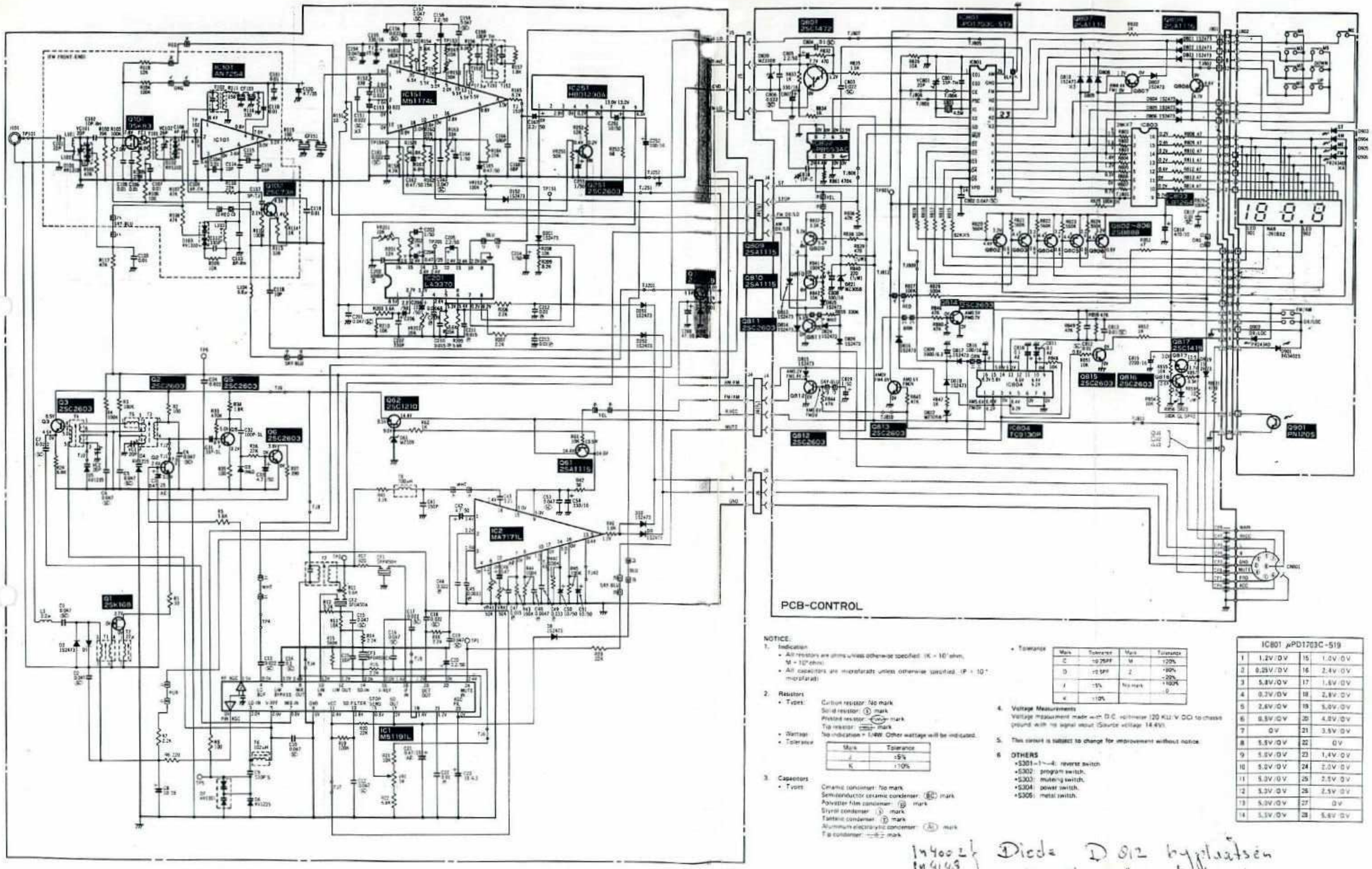
BLOCK DIAGRAM MODEL CJ-88



BLOCK DIAGRAM MODEL CV-88



SCHEMATIC DIAGRAM
MODEL: CJ-88B/P



NOTICE:

1. Indication
   - All resistors are ohms unless otherwise specified. (K = 10^3 ohm, M = 10^6 ohm)
   - All capacitors are microfarads unless otherwise specified. (P = 10^{-6} microfarad)
2. Resistors
   - Types: Carbon resistor: No mark; Solid resistor: (S) mark; Printed resistor: (PR) mark; Tip resistor: (TP) mark
   - Wattage: No indication = 1/4W. Other wattage will be indicated.
   - Tolerance

Mark	Tolerance
J	±5%
K	±10%

3. Capacitors
   - Types: Ceramic condenser: No mark; Semiconductor ceramic condenser: (BC) mark; Polyester film condenser: (P) mark; Styrol condenser: (S) mark; Tantalic condenser: (T) mark; Aluminum electrolytic condenser: (AL) mark; Tip condenser: (TP) mark
   - Tolerance

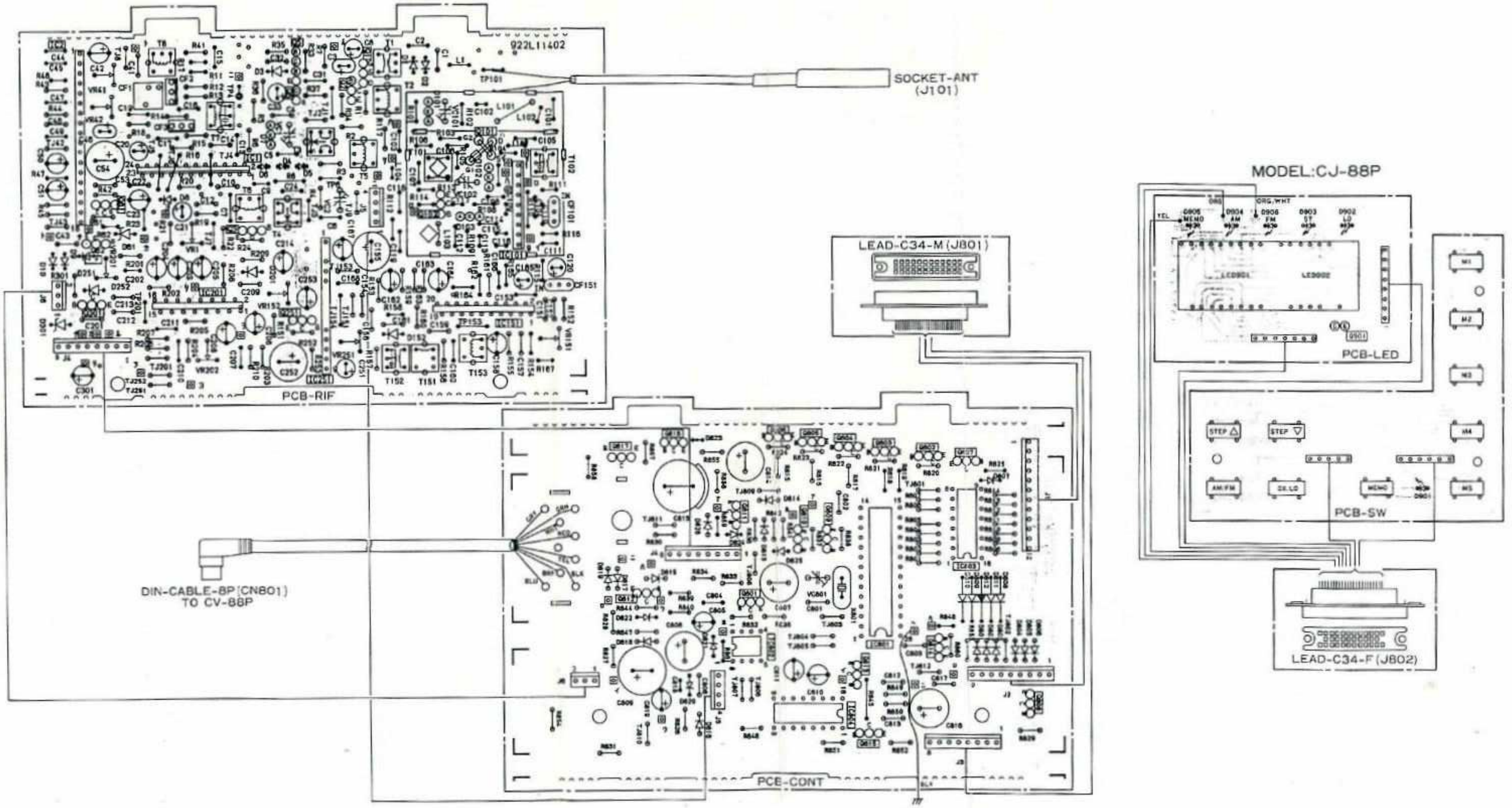
Mark	Tolerance	Mark	Tolerance
C	±0.25PF	M	±20%
D	±0.5PF	Z	+80% −20%
J	±5%	No mark	+100% −0
K	±10%		

4. Voltage Measurements
   Voltage measurement made with D.C. voltmeter (20 KΩ/V DC) to chassis ground with no signal input (Source voltage 14.4V).
5. This content is subject to change for improvement without notice.
6. OTHERS
   - S301~S304: reverse switch
   - S302: program switch.
   - S303: muteing switch.
   - S304: power switch.
   - S305: metal switch.

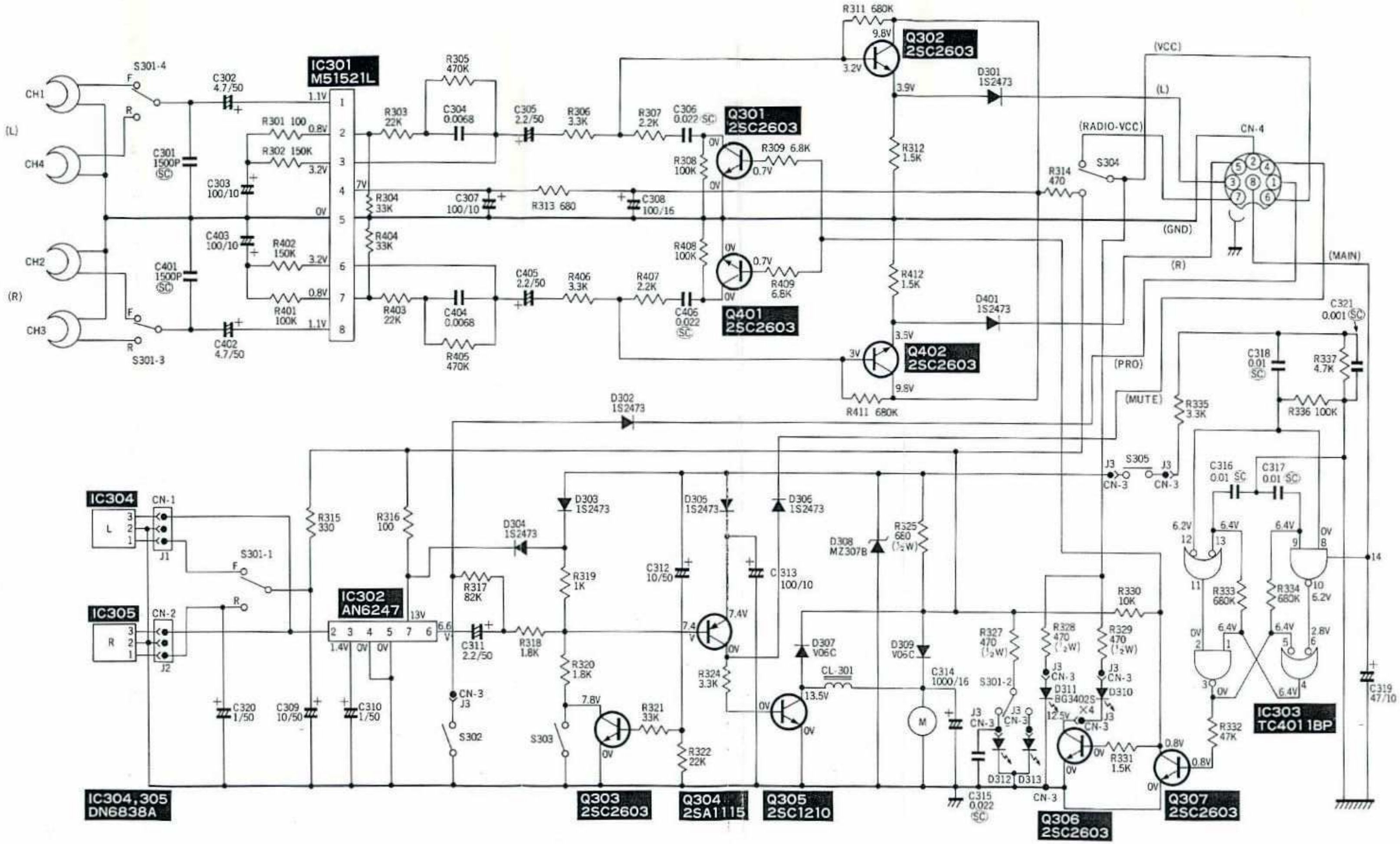
IC801 μPD1703C-519			
1	1.2V/0V	15	1.0V/0V
2	0.25V/0V	16	2.4V/0V
3	5.8V/0V	17	1.6V/0V
4	0.2V/0V	18	2.8V/0V
5	2.6V/0V	19	5.0V/0V
6	0.8V/0V	20	4.8V/0V
7	0V	21	3.5V/0V
8	5.8V/0V	22	0V
9	5.0V/0V	23	1.4V/0V
10	5.0V/0V	24	2.0V/0V
11	5.0V/0V	25	2.5V/0V
12	5.3V/0V	26	2.5V/0V
13	5.0V/0V	27	0V
14	5.3V/0V	28	5.6V/0V

1n4002 } Diode D 812 bypluatsen
1n4149 } voor MHz 100 mandt bereik.

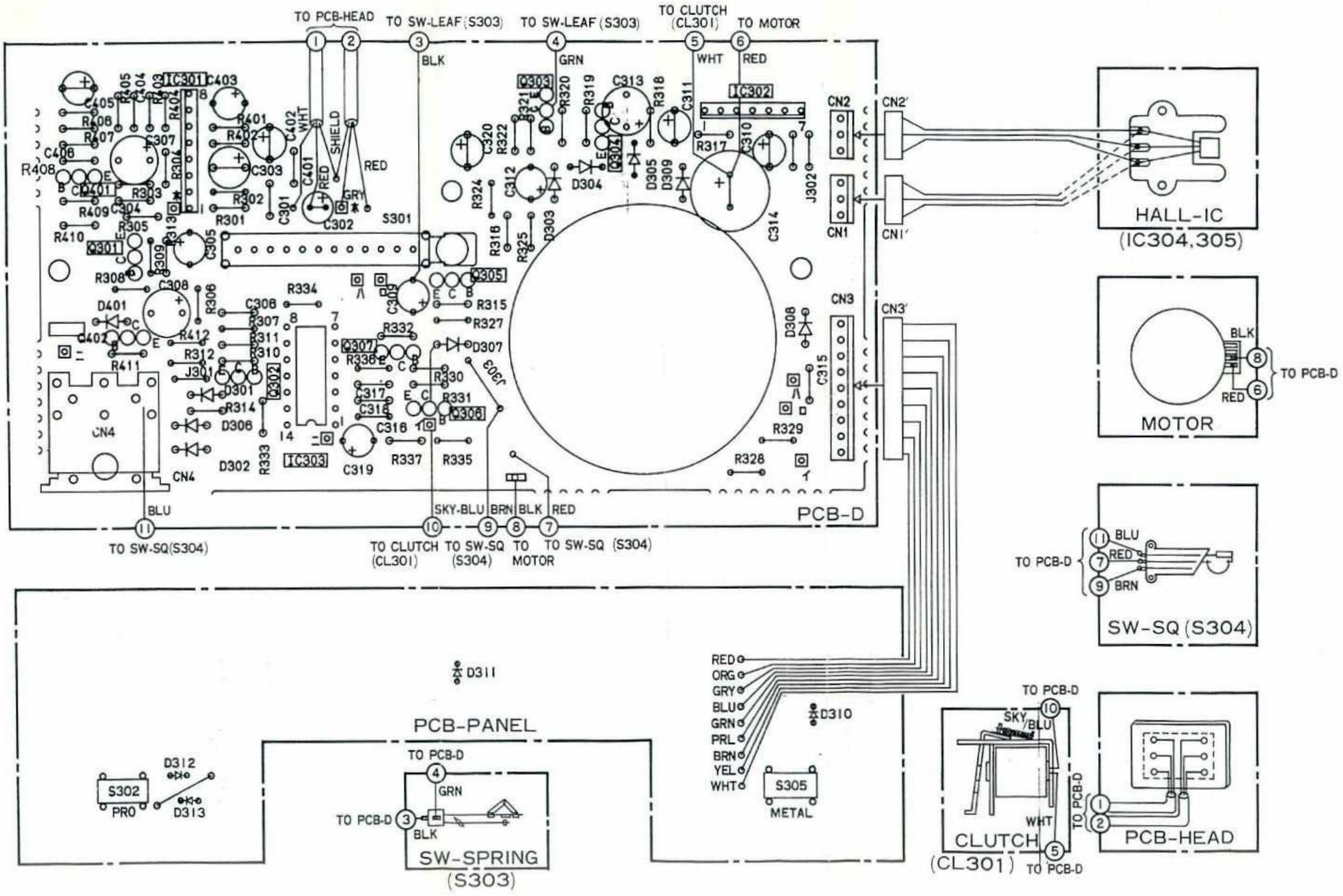
PRINTED CIRCUIT BOARD(Pattern Side)
MODEL:CJ-88B



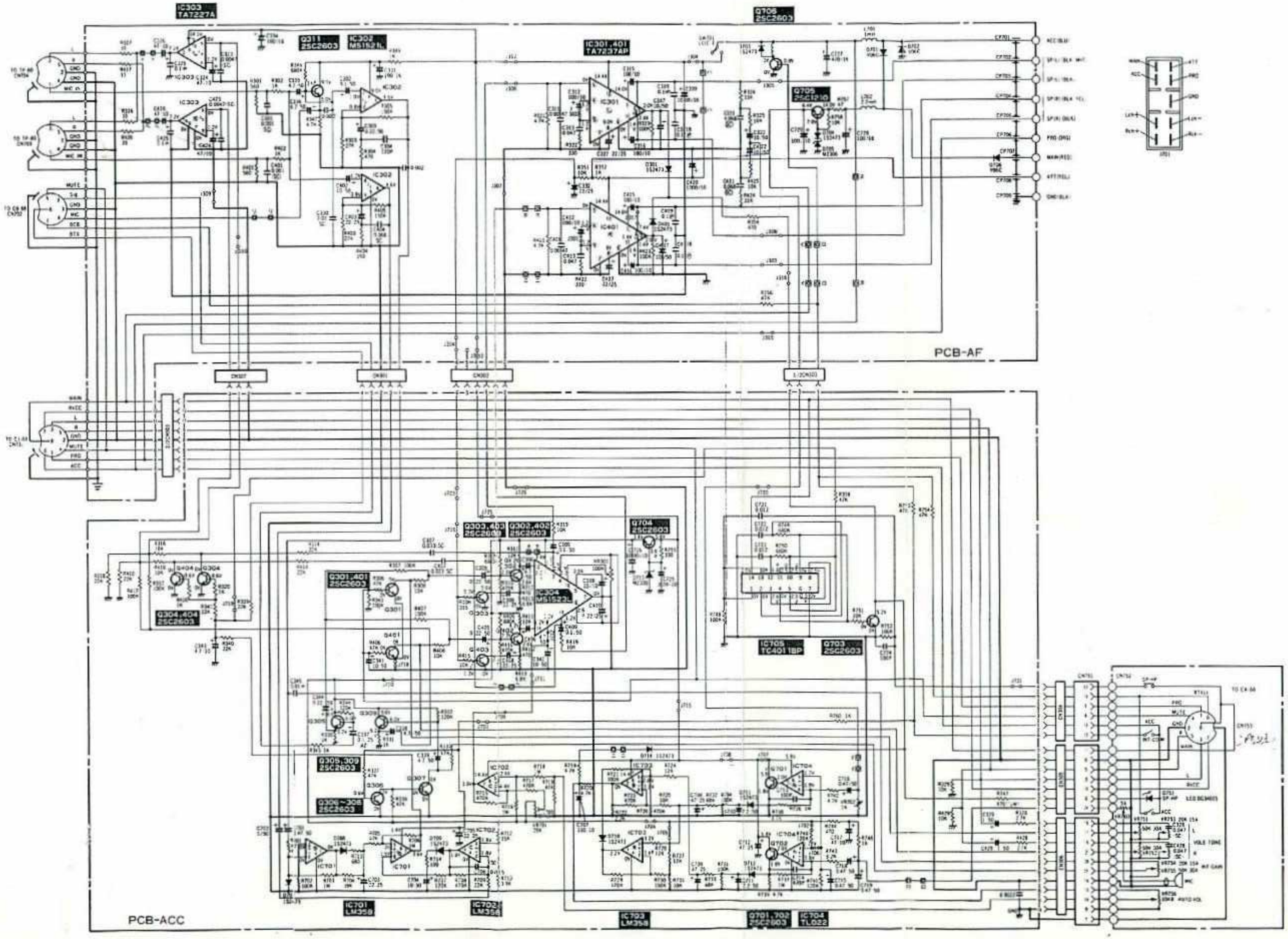
SCHEMATIC DIAGRAM
MODEL: CX-88



PRINTED CIRCUIT BOARD(Pattern Side)
MODEL:CX-88



SCHEMATIC DIAGRAM
MODEL:CV-88B/P



PRINTED CIRCUIT BOARD(Pattern Side)
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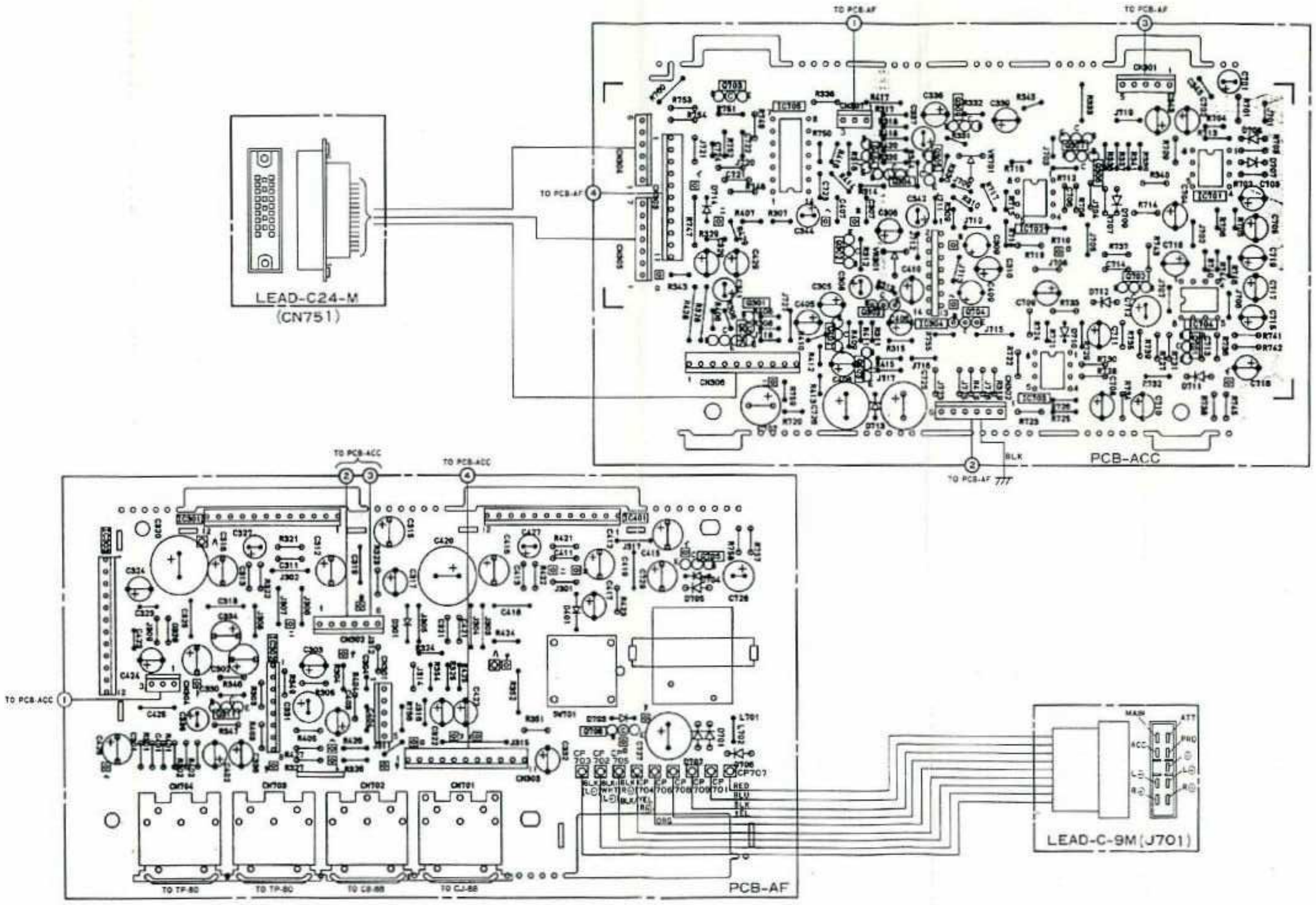

MODEL:CV-88P