

SERVICE KNOWHOW

XR-P740M, 740, 640M, 640, 440M, 440

340M, 340

XR-J25M, 22M, 22, 15M, 11M, 11

SX-J320, 420, 520, 720

RX-P840, 570, 570S, J33, 370

M-770

THE CIRCUIT OPERATION OF THE POWER AMP MODULE

Fig-1&2: THE BLOCK DIAGRAM OF POWER MODULE PROTECTION CIRCUIT

Page-1 : 1.THE PRECAUTION IN REPAIRING A SET

Page-2 : THE BLOCK DIAGRAM OF THE PROTECTION CIRCUIT

Page-3 : 2.THE CIRCUIT OPERATION OF THE DETECTORS

3.THE OPERATION OF THE FAN MOTOR

Page-4 : 4.TROUBLE SHOOTING

Page-6 : 5.HOW TO CHECK THE DETECTION CIRCUIT

1. PRECAUTION IN REPAIRING A SET

- a. A heat sink for the power transistors should be isolated from the ground.
A collector of the transistor is directly connected to the heat sink.
- b. A heat sink should be firmly installed onto the power transistors when checking the circuit, otherwise the transistor will get damaged or burn out due to thermal runaway.
- c. If the AC socket remains plugged into the outlet and power is in STAND-BY mode, then B1±50V and B2 ±25v are still being supplied.
- d. The potential at B1 and B2 on the power module circuit remains high although the AC socket is unplugged.
Discharge the potential by shorting smoother capacitors C1001 and C1002 on ±50V and C1005 and C1006 on ±25V lines if transistors and other components on the power module amp. are to be checked.

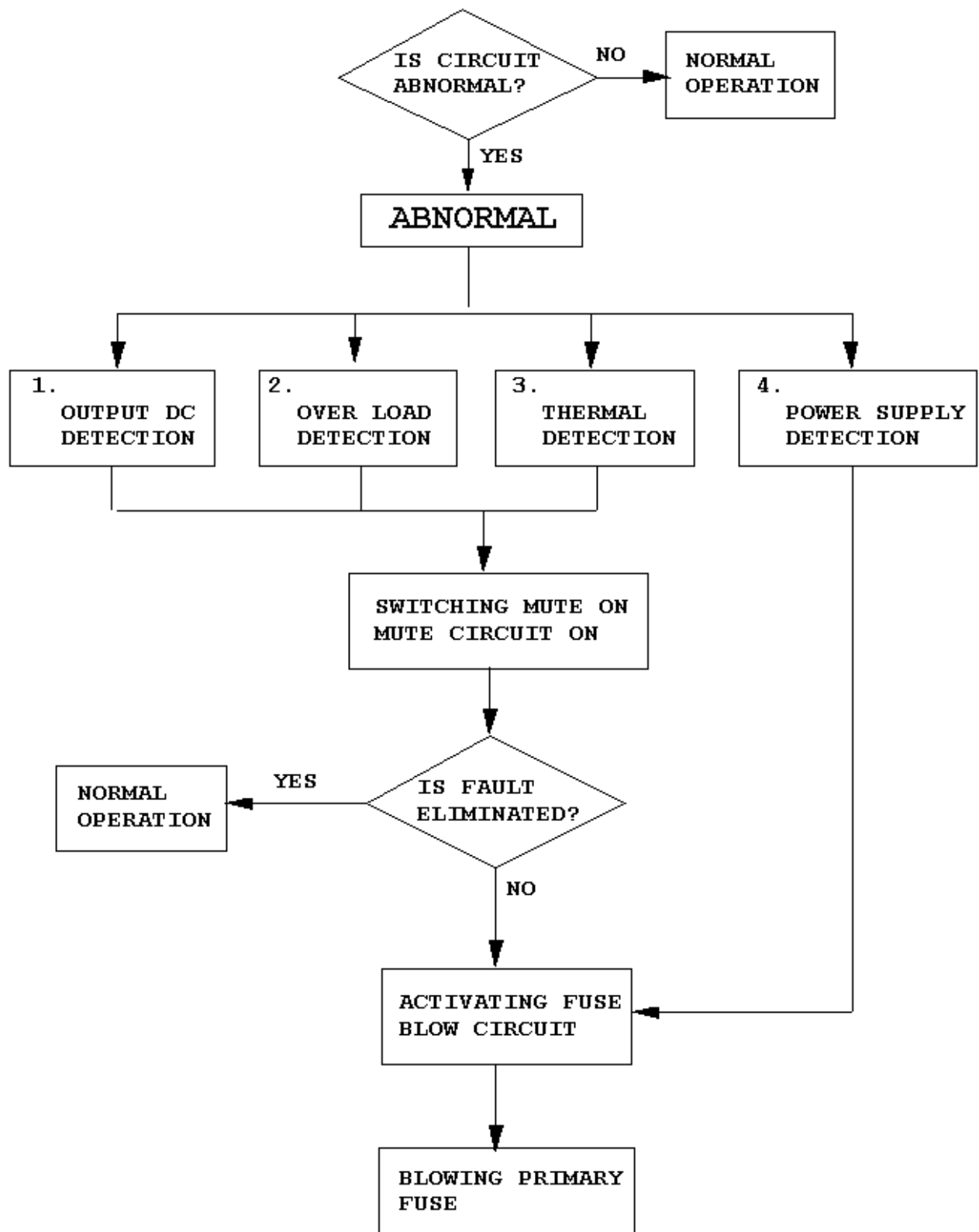
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"BLOCK DIAGRAM OF THE PROTECTION CIRCUIT"



2. THE CIRCUIT OPERATION OF THE DETECTORS

- a. DC detector: A circuit operates when neutral voltage at speaker output exceeds DC $\pm 3V$.
- b. Over load detector : Power supply $\pm 11V$ for the amp IC7501 is ceased and the signal is muted when speaker terminals are shorted.
- *An over load detector does not blow a fuse. A circuit keeps muting on as long as speakers are shorted.
- c. Thermal detector : A circuit operates when temperature on a heat sink exceeds 105 degree c.
- d. Power supply : A fuse blow circuit operates when neutral point of the power supply voltage $\pm 12V$, $\pm 25V$, $\pm 5.6V$ or $\pm 12V$ line exceeds $\pm 0.6V$. A fuse is blown immediately without switching mute circuit on.

*In case of detecting DC voltage at speaker output, an over load current or excessive heat on a heat sink, the amp circuit is muted by stopping supply of $\pm 11V$ for an amp IC7501 for two seconds.

If the detection signal is eliminated during muting on, the circuit resumes normal operation, but if the detection circuit keeps on, a fuse is immediately blown.

*In case of detecting abnormal power supply, a fuse is immediately blown.

3. THE OPERATION OF THE FAN MOTOR

- a. Condition of the fan motor rotating at high speed.
1. A speaker output voltage exceeds 3.8V p-p regardless of load in speakers or headphone.
*Position of the main volume is around 10 o'clock.
 2. Temperature on heat sink exceeds 95 degree c.
*Rotating at high speed caused by detecting thermal detector hardly occurs.
- b. Condition of the fan motor rotating at low speed.
1. Temperature on a heat sink exceeds 85 degree c.
 2. Function is CD or DECK and in playing.

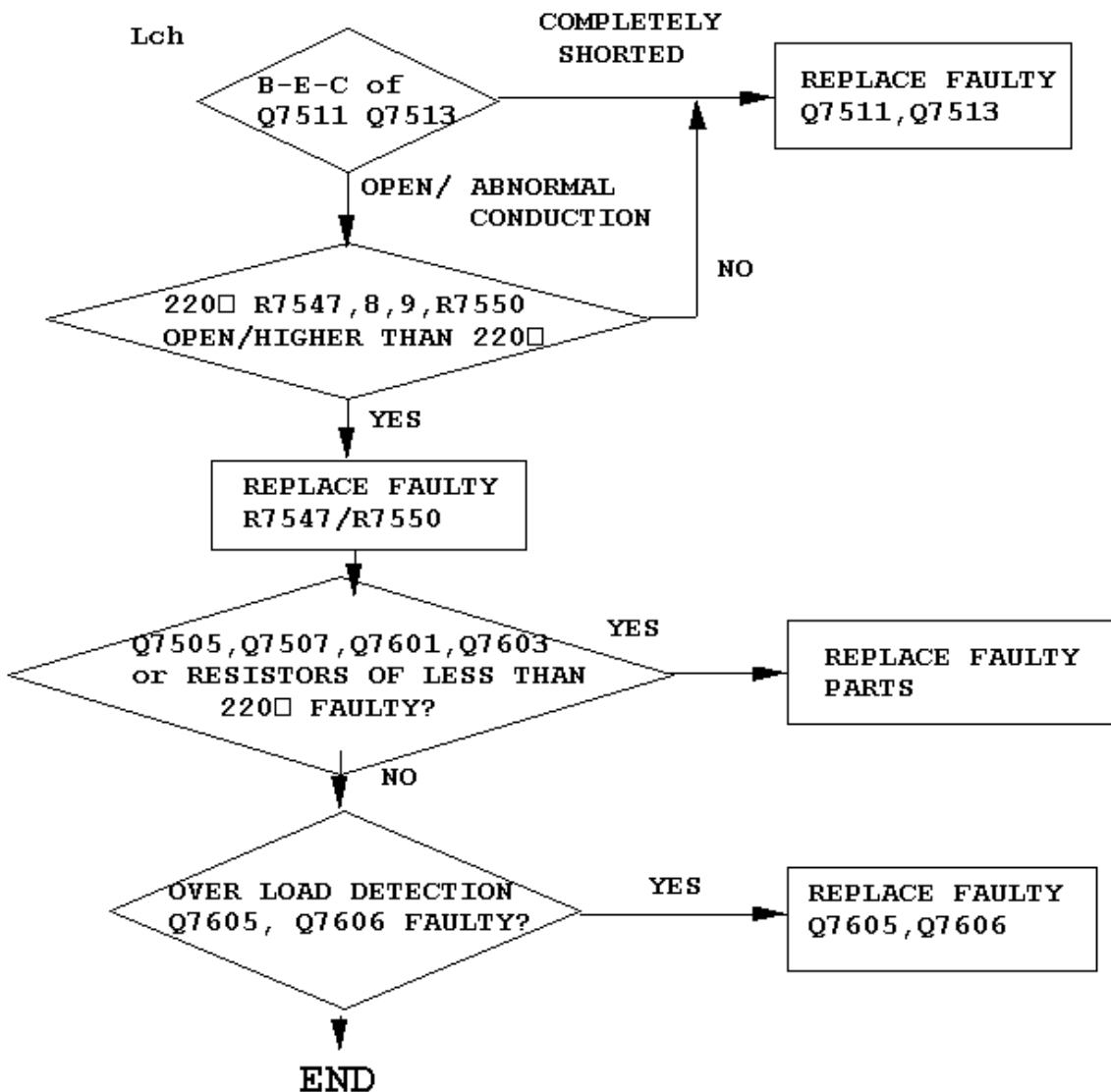
*The fan motor stops when temperature decreases to 75 degree c.

4. TROUBLE SHOOTING (In case of Lch, same as Rch)

- a. SYMPTOM :Fuse is open.
CAUSE :Fuse was simply opened.
REMEDY :Check power transistors Q7511 Q7513 are OK.

- b. SYMPTOM :Sound is muted.
CAUSE :Speakers or cables are shorted.
REMEDY :Check speaker terminals.

- c. SYMPTOM :Fuse keeps blowing.
CAUSE :Power transistors Q7511, Q7513, R7547, R7548, R7549, R7550
220 \square are faulty.
REMEDY :As follows;



- d. SYMPTOM :Fuse keeps blowing.
 CAUSE :A primary fuse or a fuse and power transistors are blown by a fuse-blow circuit.
 High tolerance or resistance of the components used in power supply-detection circuit caused misoperation.
 REMEDY :To minimise drift of potential at the neutral point, the type of resistors in power supply-detection are to be changed from tolerance 5% to 1% and 0,5%.

KEY NO	PARTS NO	NEW PARTS NO	TOLERANCE
R1014	FROM RS1/10S223J	TO RN1/10SE223D	0.5%
R1038	RS1/10S203J	RN1/10SE203D	"
R1010	RS1/10S203J	RN1/10SE203D	"
R1039	RS1/10S203J	RN1/10SE203D	"
R1011	RS1/10S103J	RN1/10SE103D	"
R1012	RS1/10S203J	RN1/10SE203D	"
R1009	RS1/10S303J	RN1/10SE303D	"
R1053	RS1/10S472J	RN1/10SE472D	"
R1054	RS1/10S472J	RN1/10SE472D	"
R1015	RD1/8PM223J	RN1/4PC2202F	1%
R1013	RD1/8PM562J	RN1/4PC5601F	"

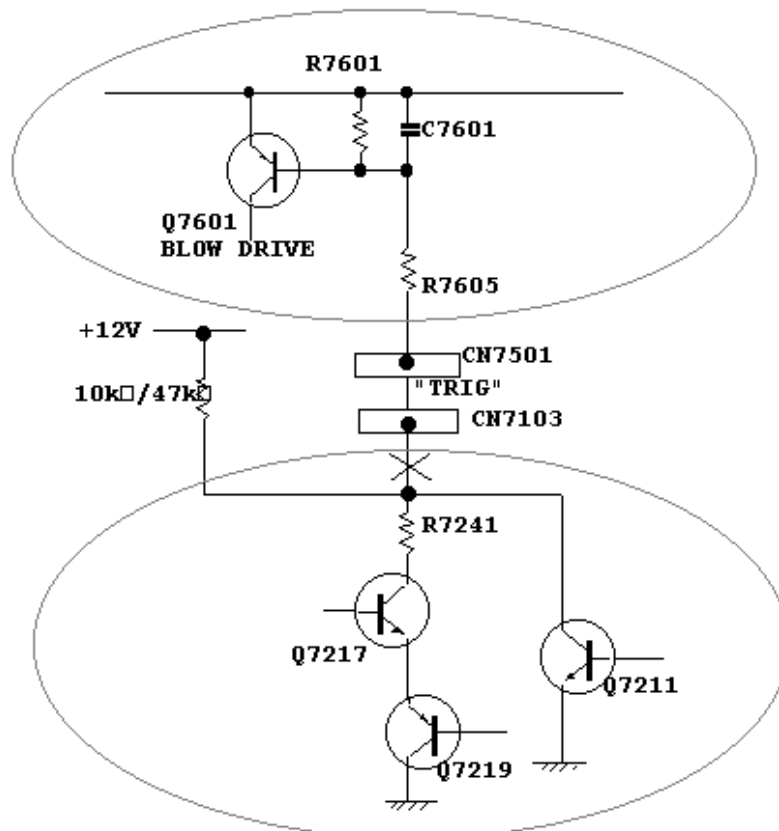
THE ABOVE RESISTORS ARE LOCATED ON THE RIGHT SIDE OF THE CIRCUIT DIAGRAM FIG-2.

NOTE :THE SERVICE INFORMATION WILL BE ISSUED LATER ON.
 THE ABOVE PARTS WILL BE SUPPLIED AS KIT.

5. HOW TO CHECK THE DETECTION CIRCUIT

If a fuse keeps blowing, take the following procedures to prevent the power transistors from being damaged in repair.

- a. Disconnect speakers.
- b. To isolate the fuse-blow-driver transistor Q7601, disconnect the circuit by removing jumper wire between CN7103 and R7241.
- c. Connect 10K Ω /47K Ω between +12V and R7241 to pull up Q7217.
- d. Observe potential at R7241 with oscilloscope.
 1. If the potential is +12V, the detection circuit has no trouble. The detection circuit is off.
 2. If the potential is 0V, the detection circuit is active. Check the troubled points.
- e. Put the circuit back as it was, after checking the above.



BLOCK DIAGRAM OF POWER MODULE PROTECTION CIRCUIT

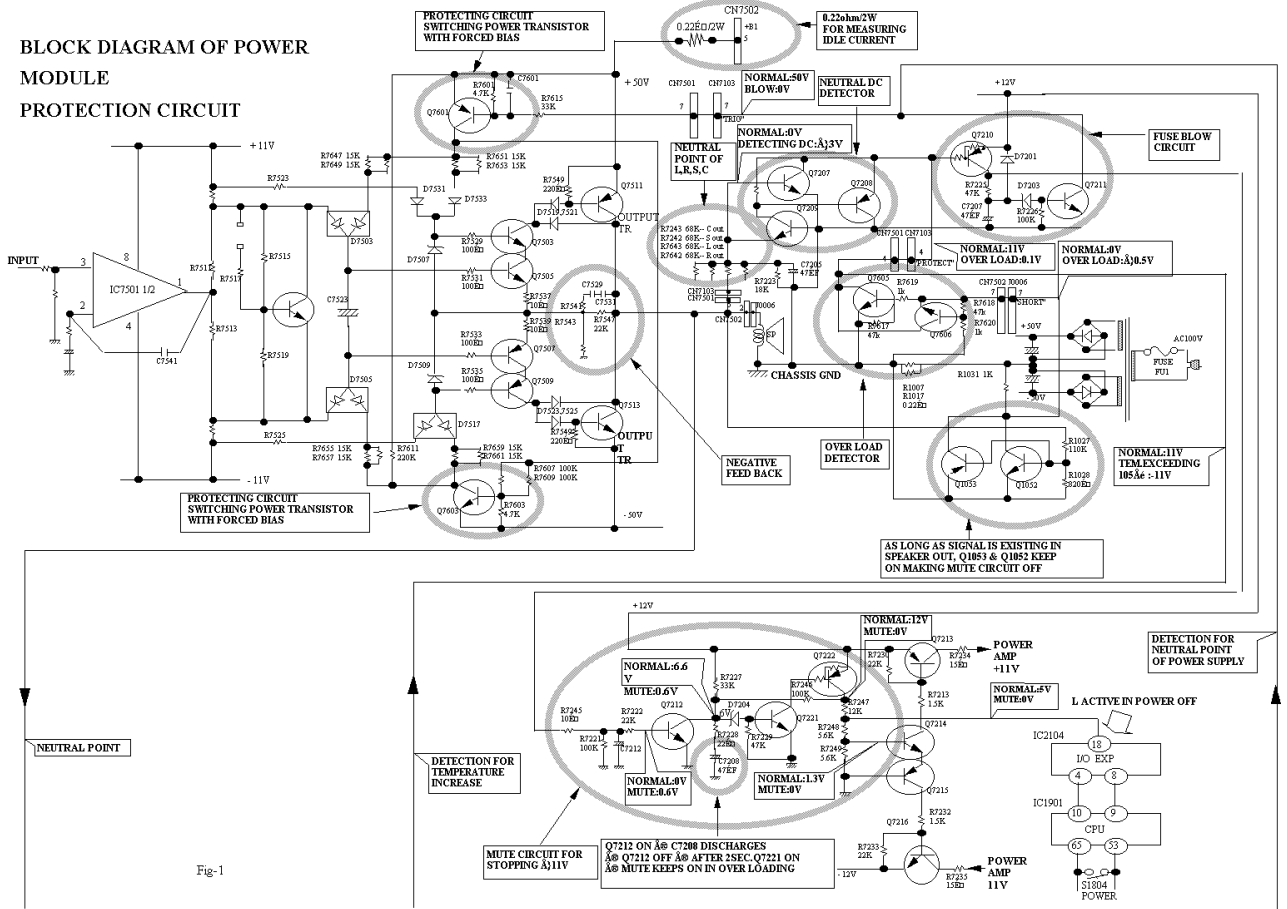


Fig-1

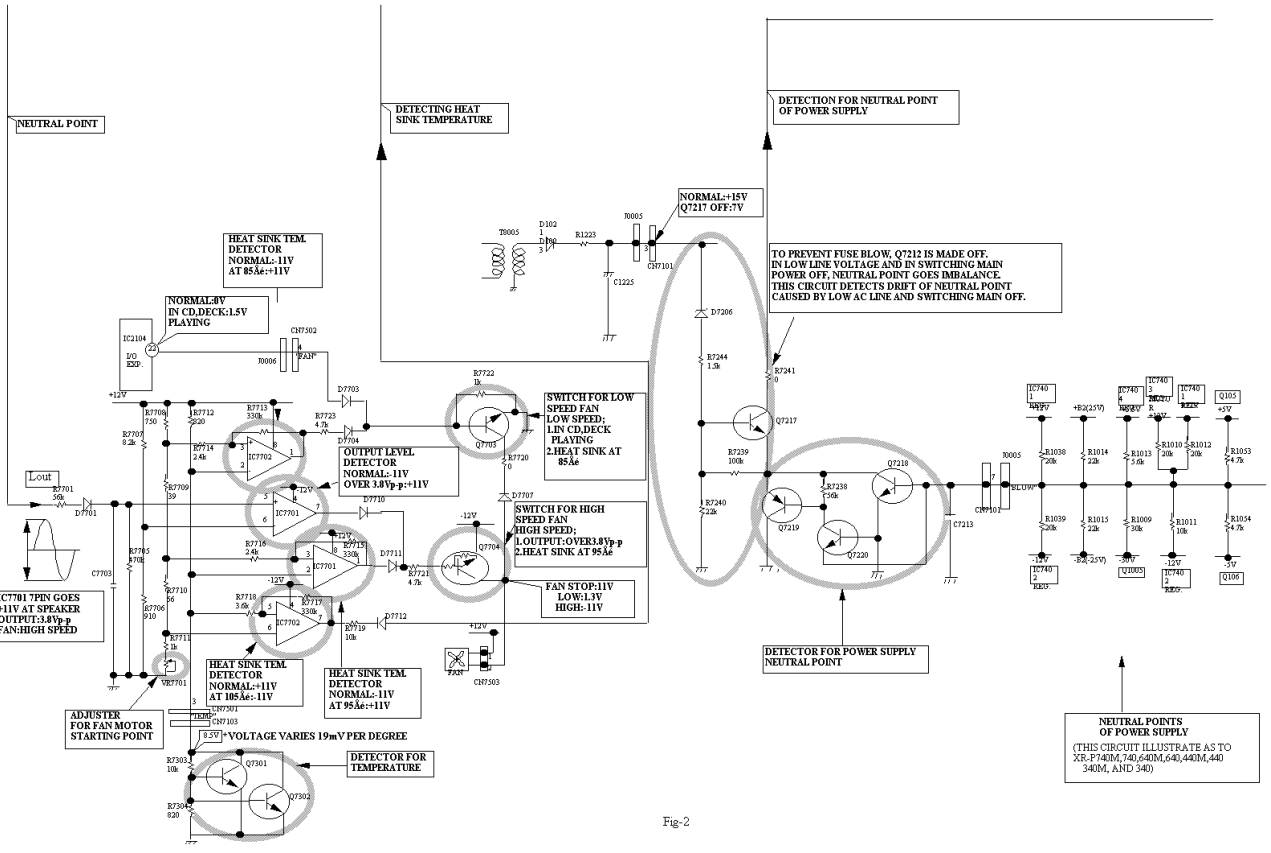


Fig-2