

Service Manual

Stereo Integrated DC Amplifier
SU-V6X(K)
 [M], [MC]



- * The black type model is indicated by (K) in the Service Manual.
- * The colors of this model is black type only.

Areas

- * [M] is available in the U.S.A.
- * [MC] is available in Canada.

Specifications

(Specifications are subject to change without notice for further improvement.)
 (Weights and dimensions shown are approximate.)

(IHF '78)

■ AMPLIFIER SECTION

Rated minimum sine wave RMS power output	
20 Hz~20 kHz both channels driven	100W per channel (8 ohms)
0.003% total harmonic distortion	
20 Hz~20 kHz both channels driven	100W per channel (4 ohms)
0.007% total harmonic distortion	
1 kHz continuous power output	100W per channel (8 ohms)
both channels driven	
0.001% total harmonic distortion	
0.0015% total harmonic distortion	100W per channel (4 ohms)
Total harmonic distortion	
rated power at 20 Hz~20 kHz	0.003% (8 ohms)
half power at 20 Hz~20 kHz	0.002% (8 ohms)
half power at 1 kHz	0.001% (8 ohms)
SMPTE intermodulation distortion	0.007% (8 ohms)
Frequency response	
PHONO	RIAA standard curve ± 0.5 dB
TUNER, CD, TV/AUX 1, VIDEO/AUX 2,	
TAPE 1/DA TAPE, TAPE 2	0.7 Hz~140 kHz, -3 dB
	20 Hz~20 kHz, +0 dB, -0.2 dB
Input sensitivity	
PHONO MM	0.25 mV (2.5 mV, IHF '66)
MC	17 μ V (170 μ V, IHF '66)
TUNER, CD, TV/AUX 1, VIDEO/AUX 2,	
TAPE 1/DA TAPE, TAPE 2	15 mV (150 mV, IHF '66)
S/N (IHF, A)	
PHONO MM	77 dB (88 dB, IHF '66 2.5mV input)
MC	77 dB (72 dB, IHF '66 250 μ V input)
TUNER, CD, TV/AUX 1, VIDEO/AUX 2,	
TAPE 1/DA TAPE, TAPE 2	82 dB (104 dB, IHF '66)

Maximum input voltage

PHONO MM	170 mV (210 mV, 1 kHz)
MC	12 mV (15 mV, 1 kHz)

Input impedance

PHONO MM	47 kilohms
MC	220 ohms

TUNER, CD, TV/AUX 1, VIDEO/AUX 2, TAPE 1/DA TAPE, TAPE 2

18 kilohms

Tone controls

BASS	50 Hz, +10 dB~ -10 dB
TREBLE	20 kHz, +10 dB~ -10 dB

Subsonic filter

30 Hz, -6 dB/oct.

Loudness control (volume at -30 dB)

50 Hz, +9 dB

Muting

-20 dB

Output voltage

TAPE 1, 2 REC OUT	150 mV
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Low frequency damping factor

80 (8 ohms)

40 (4 ohms)

Load impedance

MAIN or REMOTE	4~16 ohms
MAIN and REMOTE	8~16 ohms

■ GENERAL

Power consumption

420W, 520 VA

Power supply

AC 120V, 60 Hz

Dimensions (W×H×D)

430 × 142 × 380 mm

(16-15/16" × 5-9/16" × 14-15/16")

Weight

11 kg

(24.2 lb.)

Note:

Total harmonic distortion is measured by the digital spectrum analyzer (H.P. 3045 system).

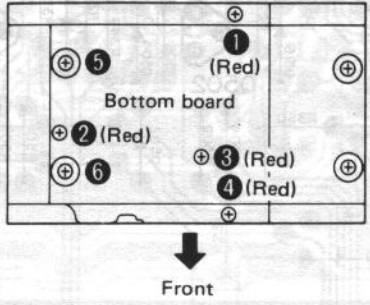
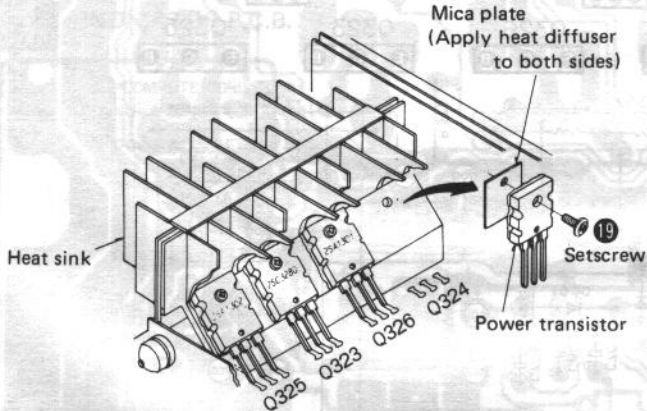
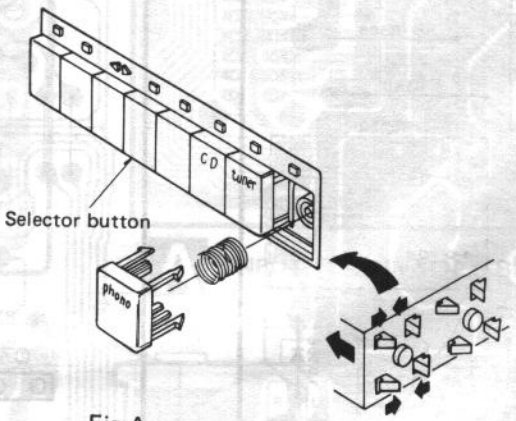
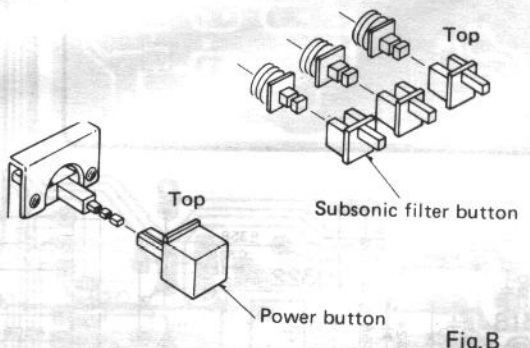
Technics

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Ref. No. 3	How to remove the Power Transistors	Ref. No. 4	How to remove the selector and push button
Procedure 1→3	<ul style="list-style-type: none"> Remove the 6 setscrews of bottom board Remove the setscrew of power transistor When mounting the power Transistors, apply heat diffuser to both sides of mica plate.  <p style="text-align: center;">Front</p>  <p>Heat sink</p> <p>Mica plate (Apply heat diffuser to both sides)</p> <p>Setscrew</p> <p>Power transistor</p> <p>Q325 Q323 Q326 Q324</p> <p>(When mounting the Power Transistors, apply silicone compound (SZZOL15) equivalent heat diffuser to the rear side of the mica plate (AC-262) and Power Transistors.)</p>	Procedure 1→2→4	<ul style="list-style-type: none"> Remove the claw (Fig. A) that fastens the selector button from the back of front panel, and push it forward. Fit the power switch button and subsonic filter switch button in the position as in Fig.B.  <p>Selector button</p> <p>Fig.A</p> <p>Back of front panel</p>  <p>Top</p> <p>Subsonic filter button</p> <p>Power button</p> <p>Fig.B</p>

MEASUREMENTS AND ADJUSTMENTS

Setting and Equipment used

1. Audio oscillator.
2. AC, DC, electronic voltmeters (VTVM).
3. Frequency counter.
4. Oscilloscope.

1. Idling (IcQ) Adjustment (after repairing the main amp)

1. After the repair, set the sound volume to minimum before turning on the power switch, and connect nothing to the speaker terminals.
2. Completely turn IcQ control (VR301, 302) counter-clockwise.
3. Increase the voltage applied to the amplifier gradually from 0V by means of a power supply voltage controller and make sure of the that the consumed current 120V 60Hz in no-signal mode is 330 ~ 600mA before adjustment.
4. Connect the DC electronic voltmeter to **TP302 (+)** and **TP301 (-)** [Lch] or **TP304 (+)** and **TP303 (-)** [Rch].

5. Adjust VR301 [Lch] or VR302 [Rch] so that the voltage is 20mV about 15 ~ 20min after power switch "on".
 - * In this set, ICQ is controlled by a microcomputer, and ICQ a little more than the normal level is applied by "PRE-HEAT" for about 14 ~ 16sec after power ON. After that, the output level and transistor temperature are detected by AUTO there automatically controlling ICQ.

2. Check of Muting with Power On/Off.

1. Connect AC voltmeter and 8Ω load (resistor or speaker) to main speaker terminals.
2. Set the sound volume to a proper level.
3. Apply 1 kHz 100 mV signal to AUX input terminal.
4. Make sure that output is gained 3 ~ 5 sec. after power switch "on" and that the output goes out immediately after power switch "off".

3. Check of Over load detection and Protection circuit

1. Set the volume control to maximum.
2. Connect the audio oscillator to the AUX terminal and apply the input signal of 1 kHz to the terminal. Then adjust the output level of the audio oscillator so that the output level of the speaker terminals becomes 1.5V.
3. With main speaker terminals [Lch] short-circuited by lead wire (as thick and short as possible):

Make sure [- relay is off.
 - "auto" indicator "on" goes out.
 - "safty operation" indicator blinks.

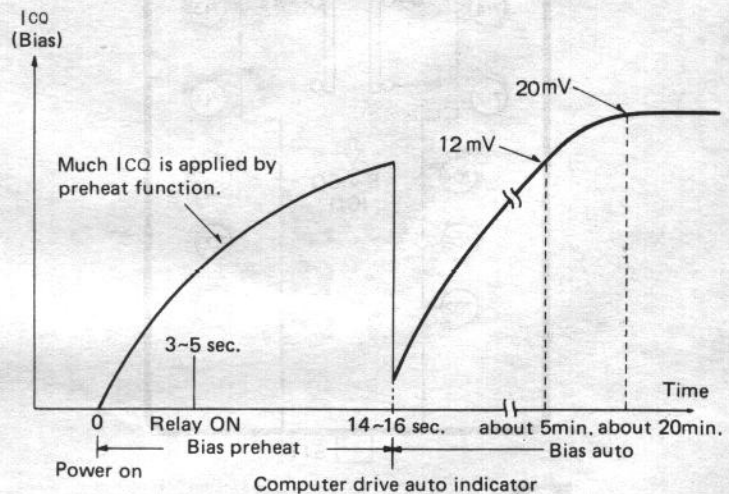
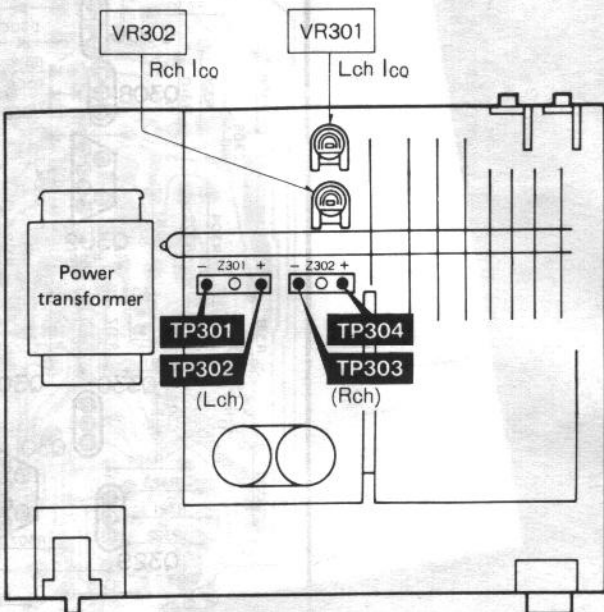
4. When relay is off, turn power "off" and unit for a while before turning it "on". Otherwise, the original conditions are not restored even when the circuit and load are normal.

4. Check of DC Detection Circuit

1. Set the input selector to the "tuner" position.
2. Apply DC voltage +1V [Lch] the tape1 playback terminal. -1V [Rch] to the tape2 playback terminal.
3. Set the input selector to the "tape1" position.

Make sure [- relay is off.
 - "auto" indicator "on" goes out.
 - "safty operation" indicator blinks.

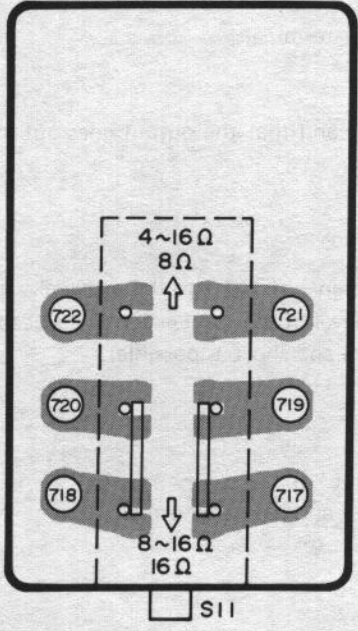
● **Adjustments points**



■ PRINTED CIRCUIT BOARDS

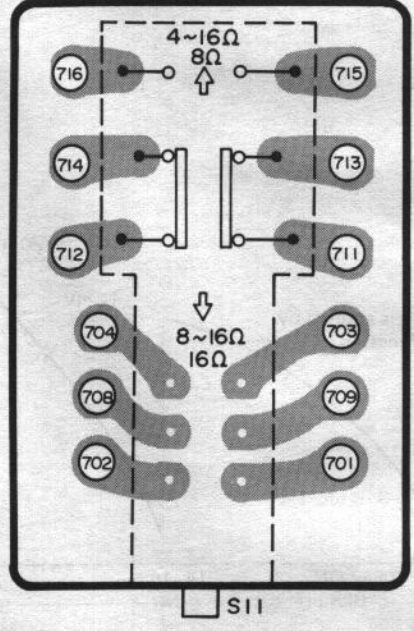
- SPEAKER INPEDANCE TO BE CHANGED AND THE AREAS

For the U.S.A ([M] area)



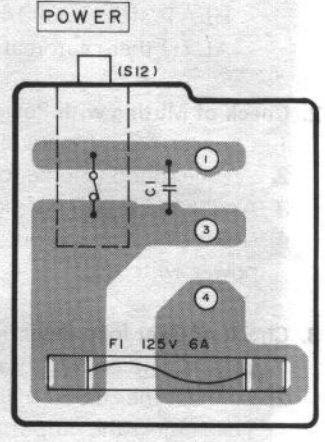
O SPERKER IMPEDANCE P.C.B.

For Canada ([MC] area)

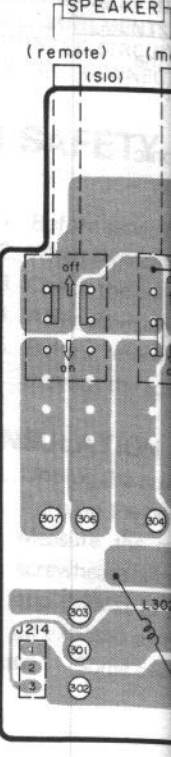


O SPEAKER IMPEDANCE P.C.B.

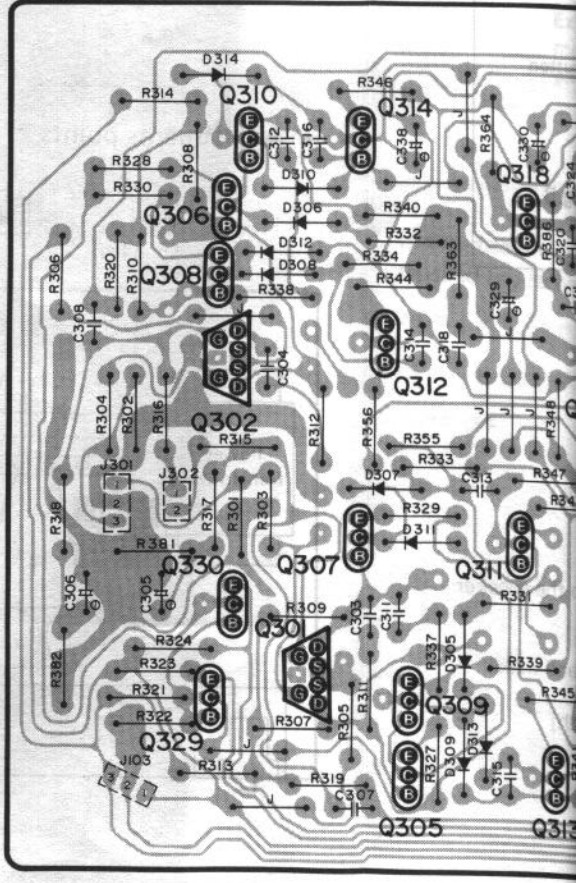
N POWER SWITCH P.C.B.



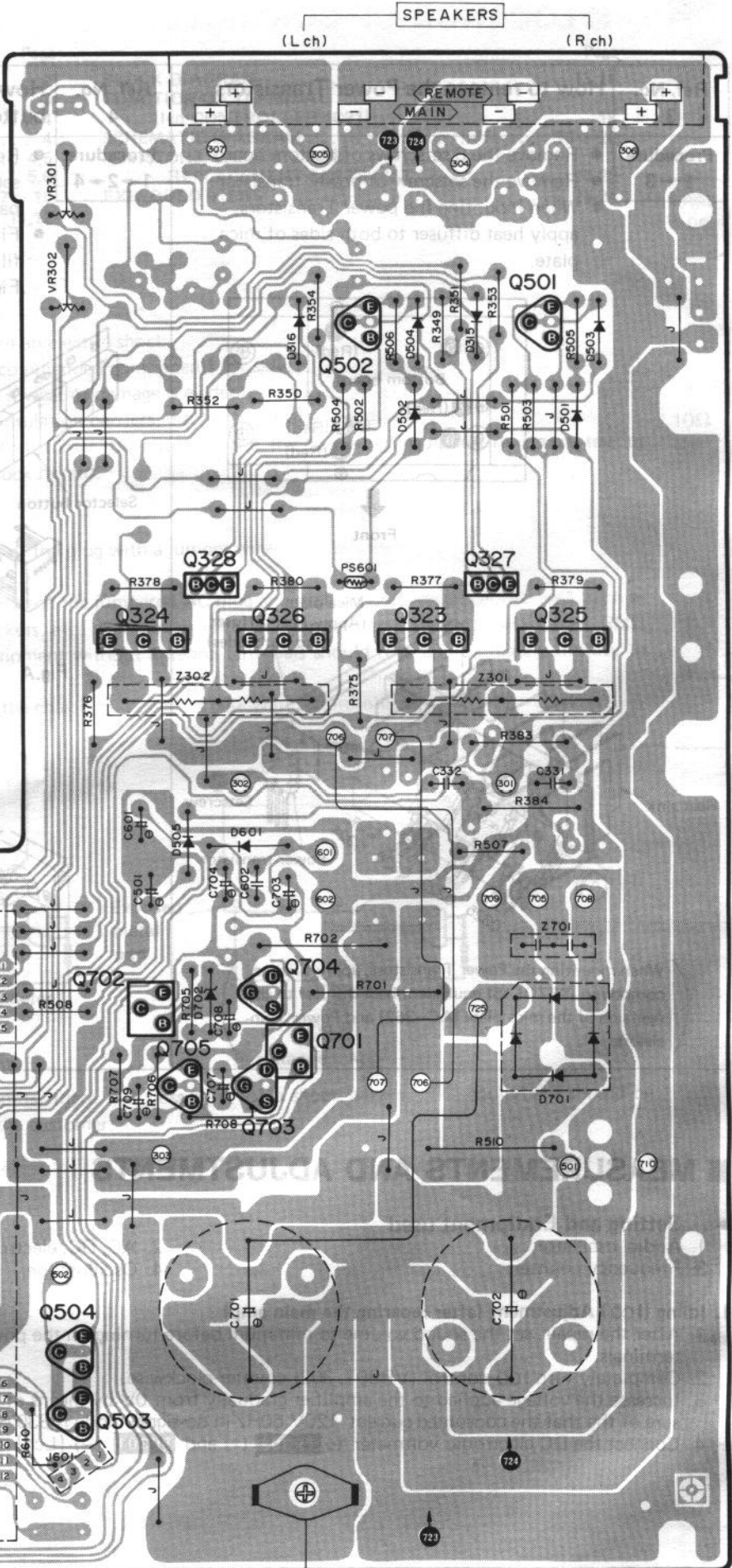
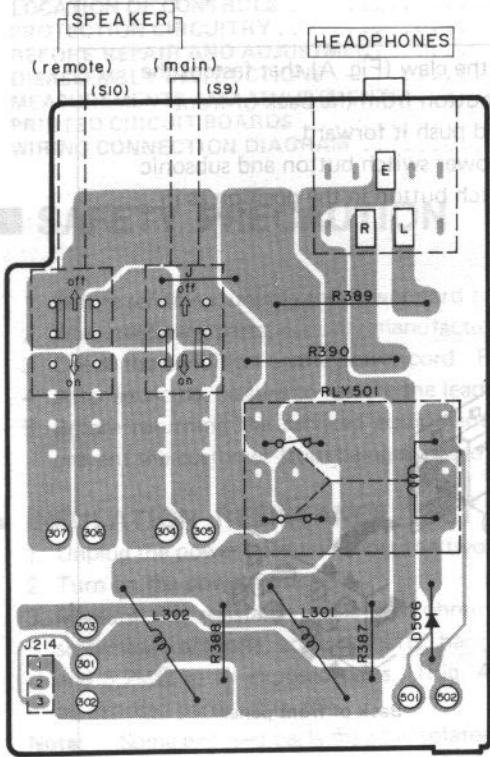
M SPEAKER



K POWER AMP/POWER P.C.B.

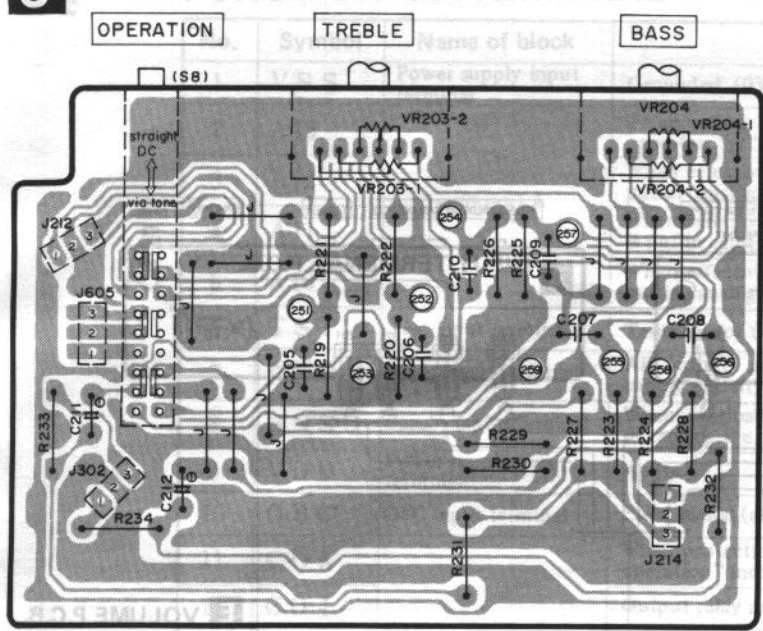


M SPEAKER SELECTOR P.C.B.

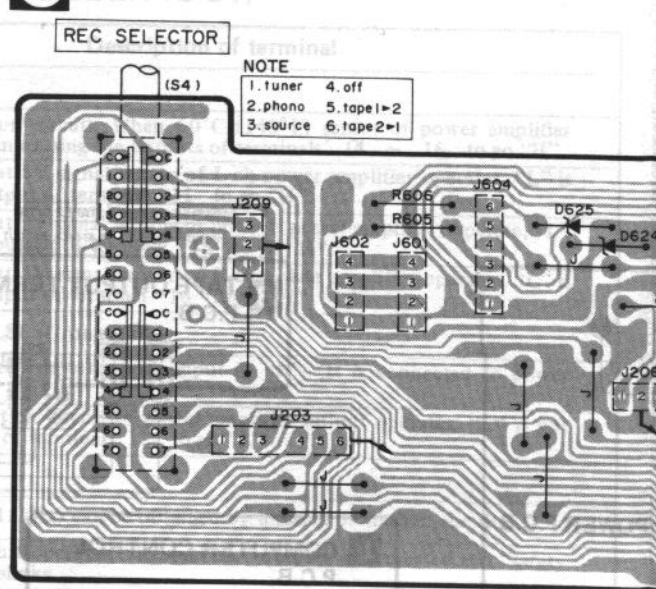


C.B.

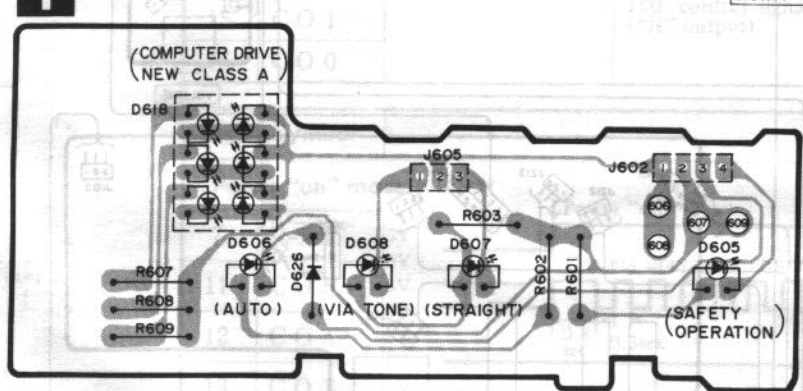
J TONE CONTROL P.C.B.



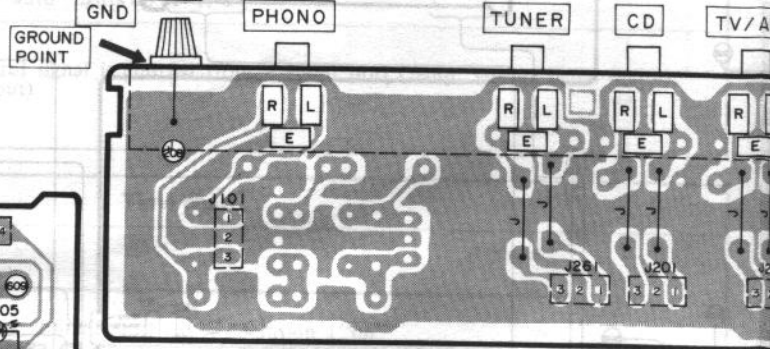
C INPUT SELECTOR P.C.B.



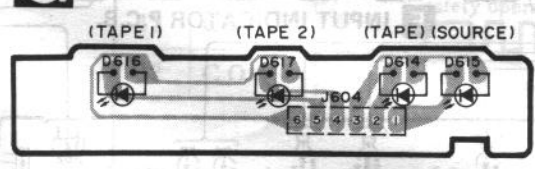
I INDICATOR P.C.B.



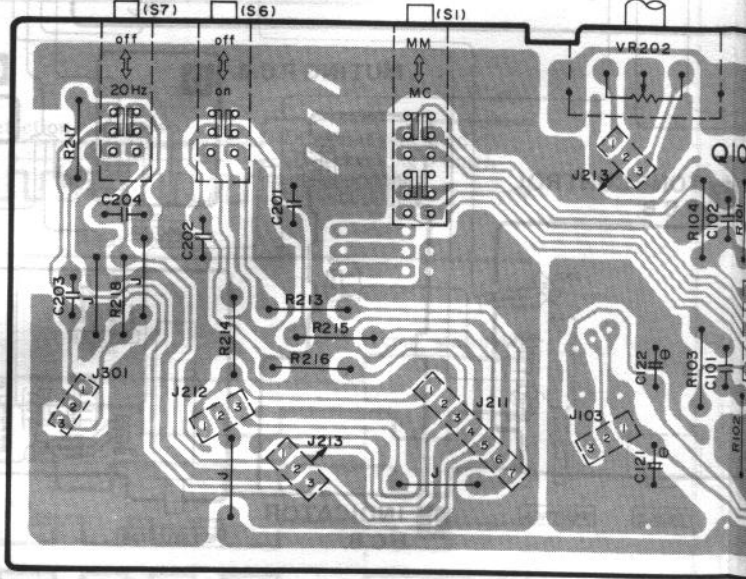
A INPUT TERMINAL P.C.B.



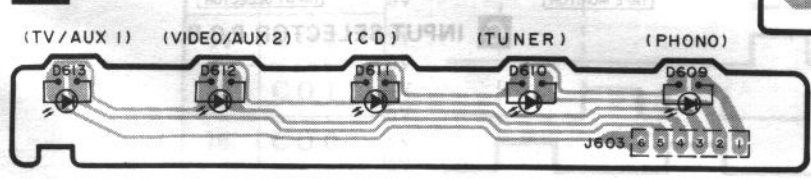
G TAPE MONITOR P.C.B.

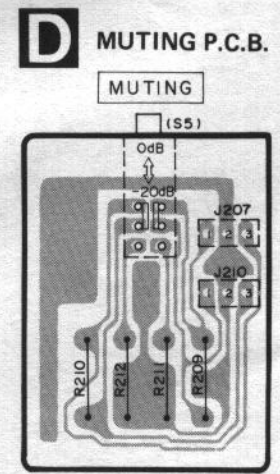
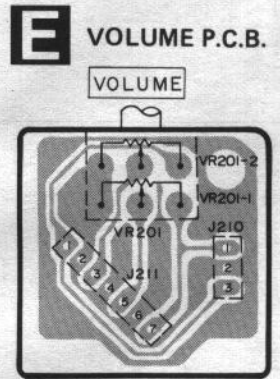
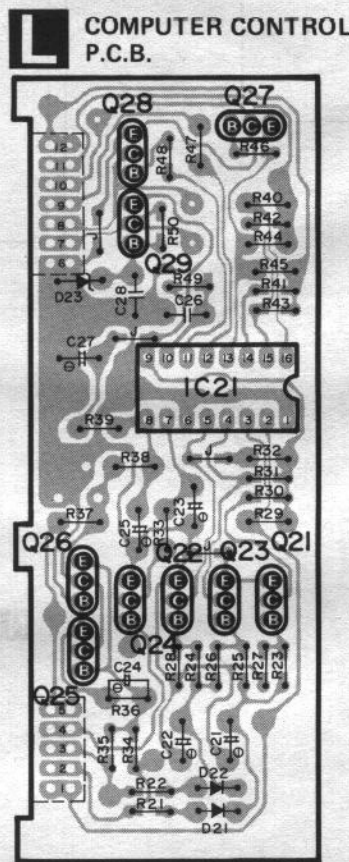
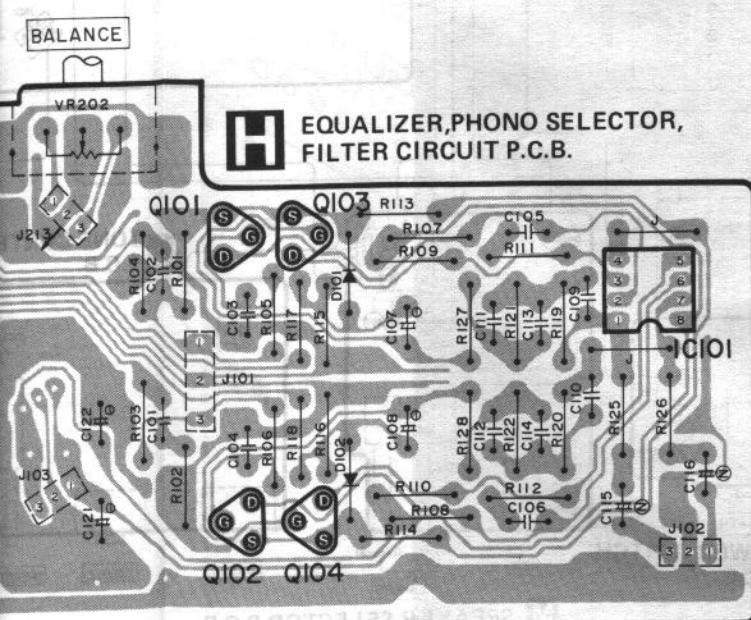
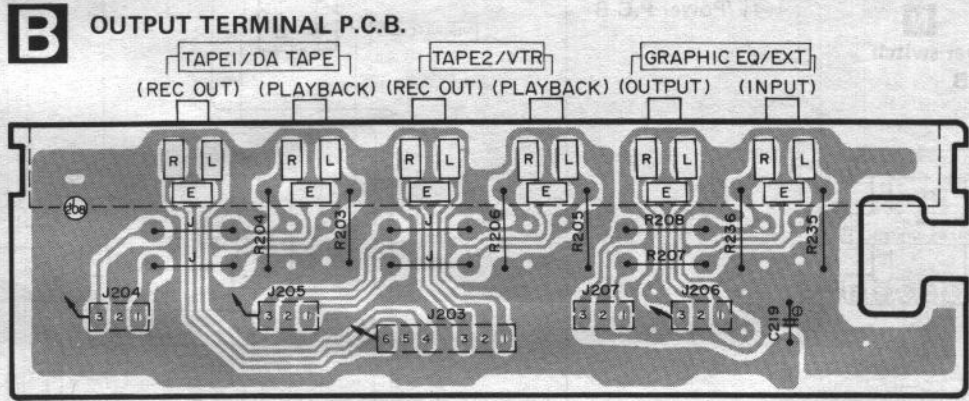
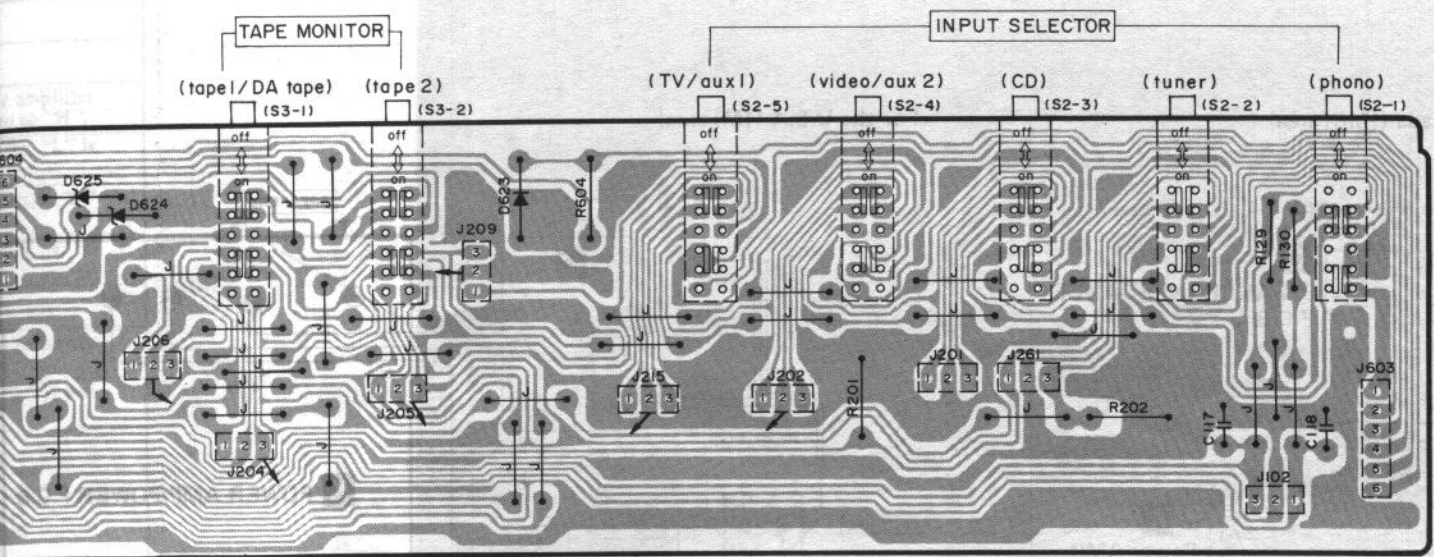


SUBSONIC FILTER LOUDNESS PHONO SELECTOR BALANCE

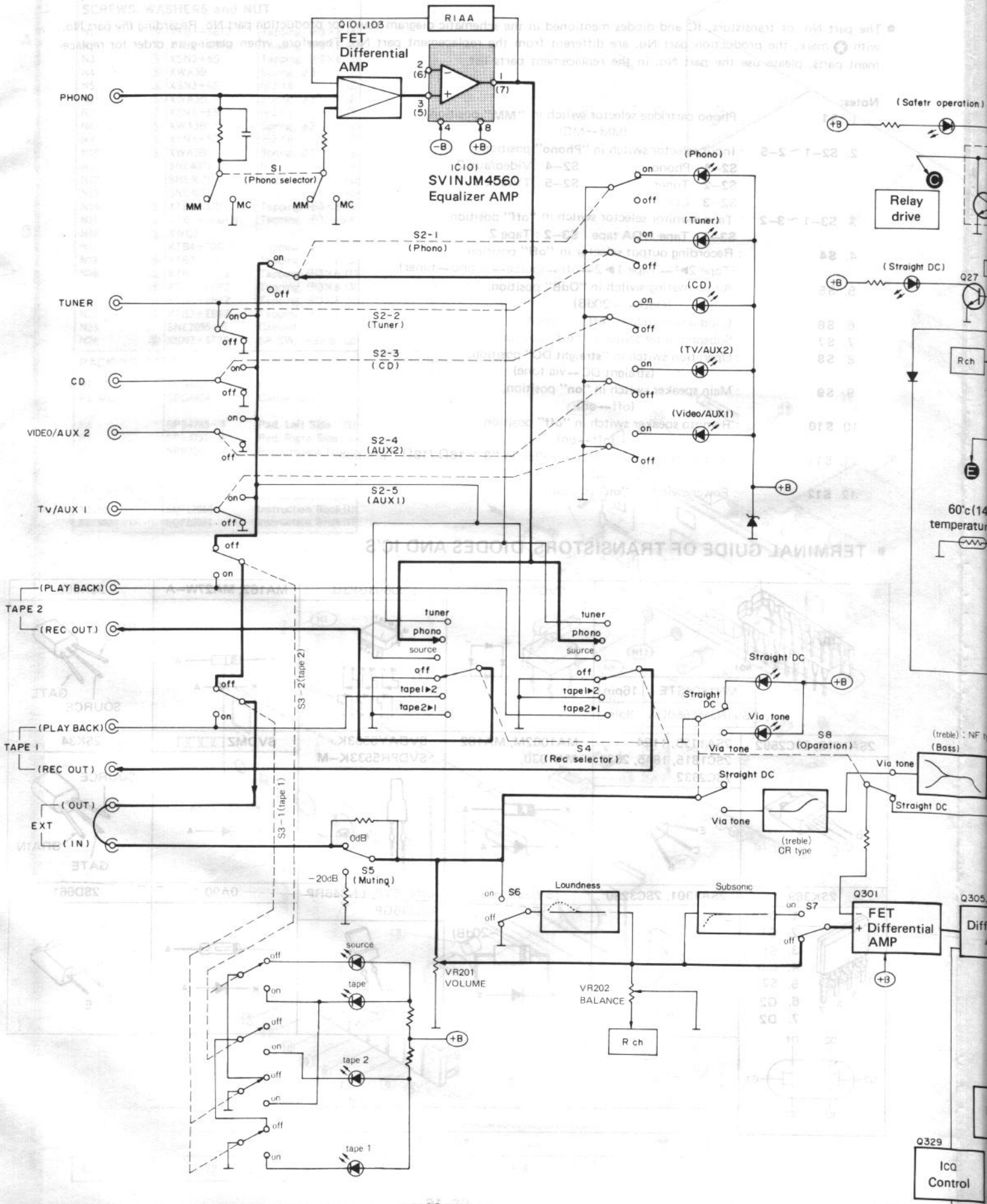


F INPUT INDICATOR P.C.B.

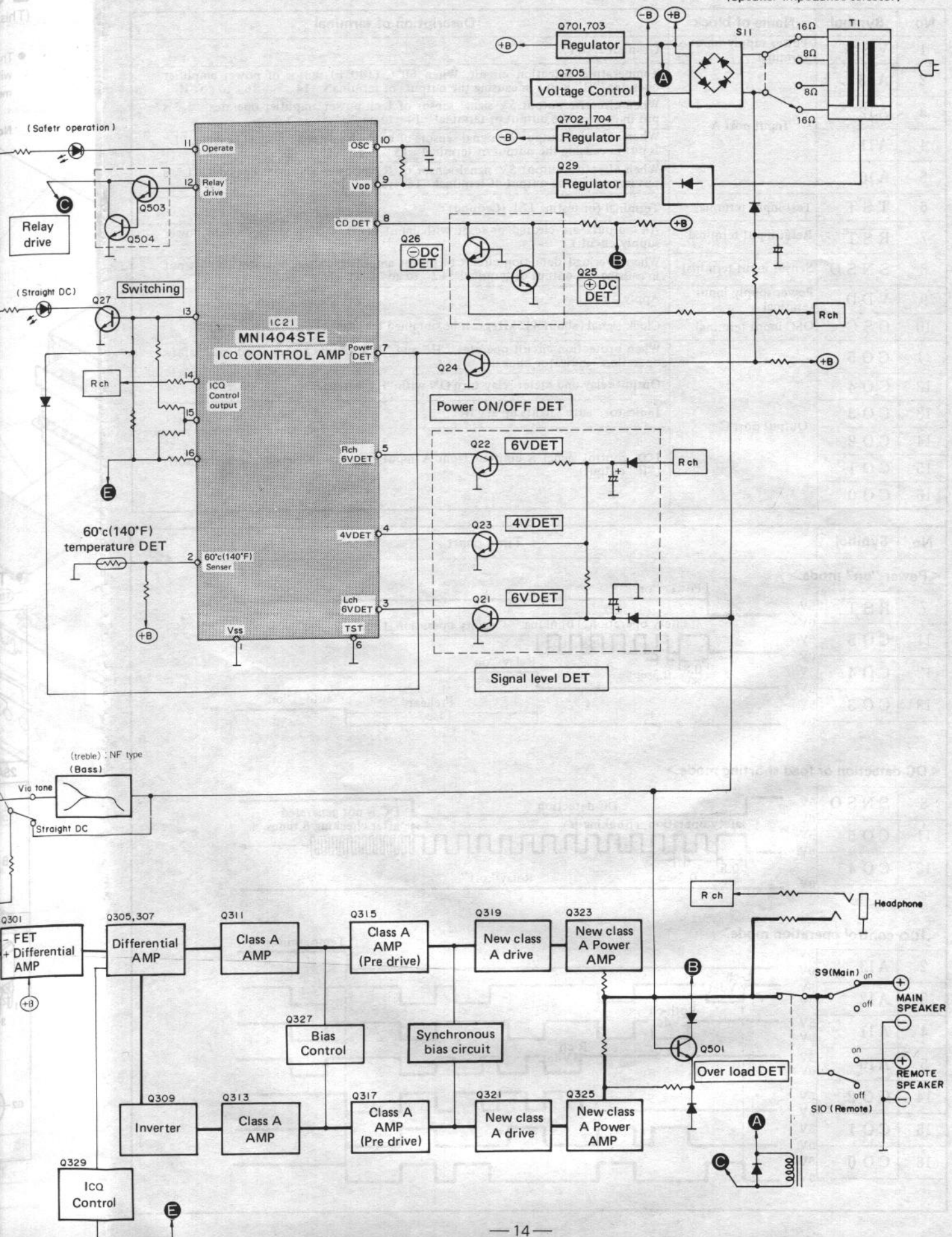




■ BLOCK DIAGRAM



(Speaker impedance selector)



1

2

3

4

5

A

B

C

D

E

F

A

B

C

D

A INPUT TERMINAL

C INPUT SELECTOR

F INPUT INDICATOR

G TAPE MONITOR

H EQUA

I INDICATOR

PHONO

TUNER

CD

TV/AUX 1

VIDEO/AUX 2

REC OUT

TAPE 1/DA TAPE

PLAYBACK

REC OUT

TAPE 2/VTR

PLAYBACK

OUT

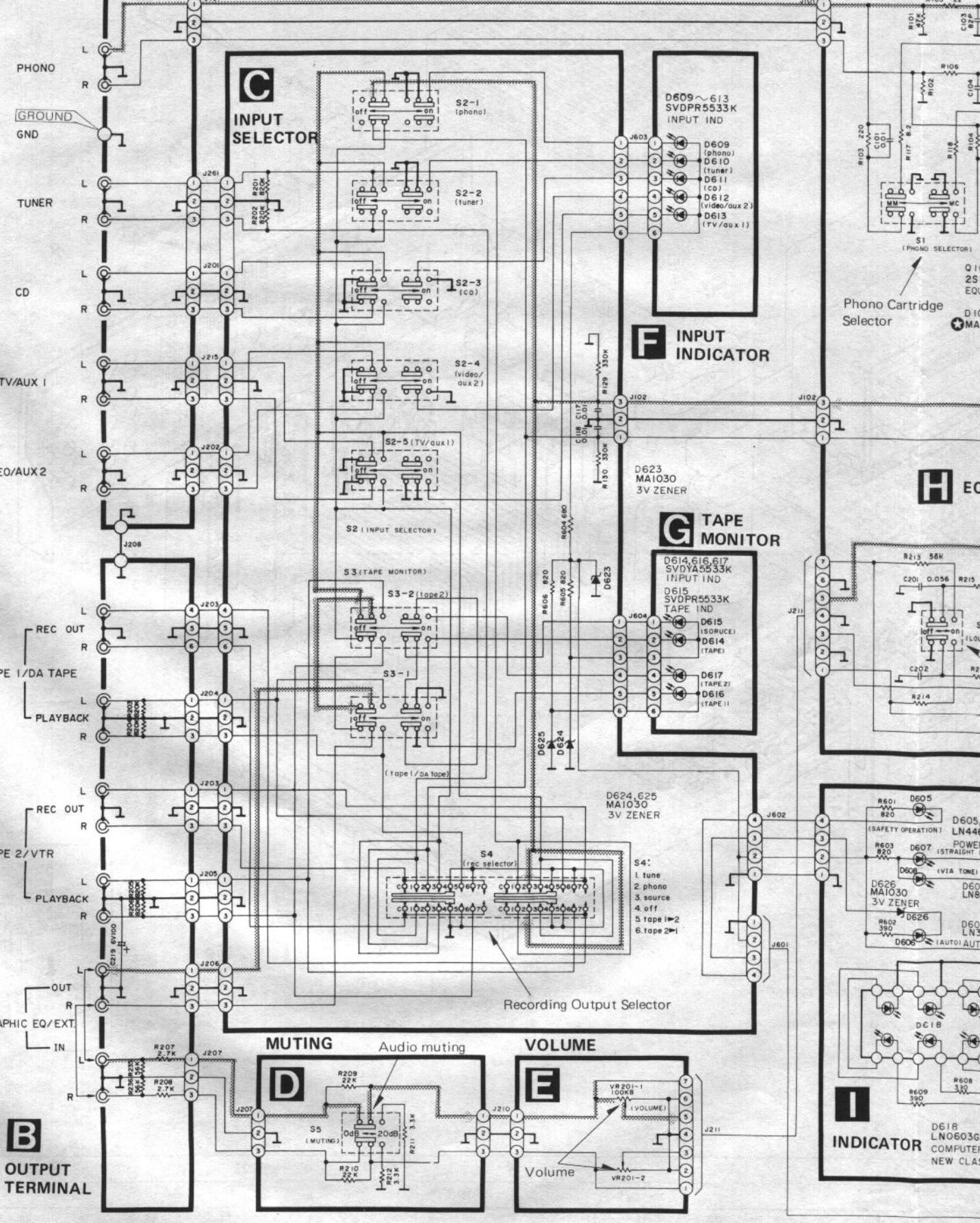
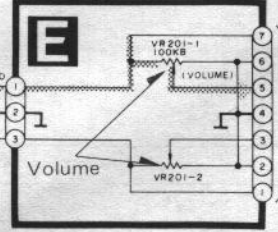
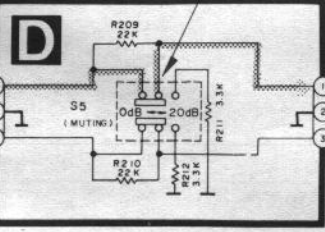
GRAPHIC EQ/EXT

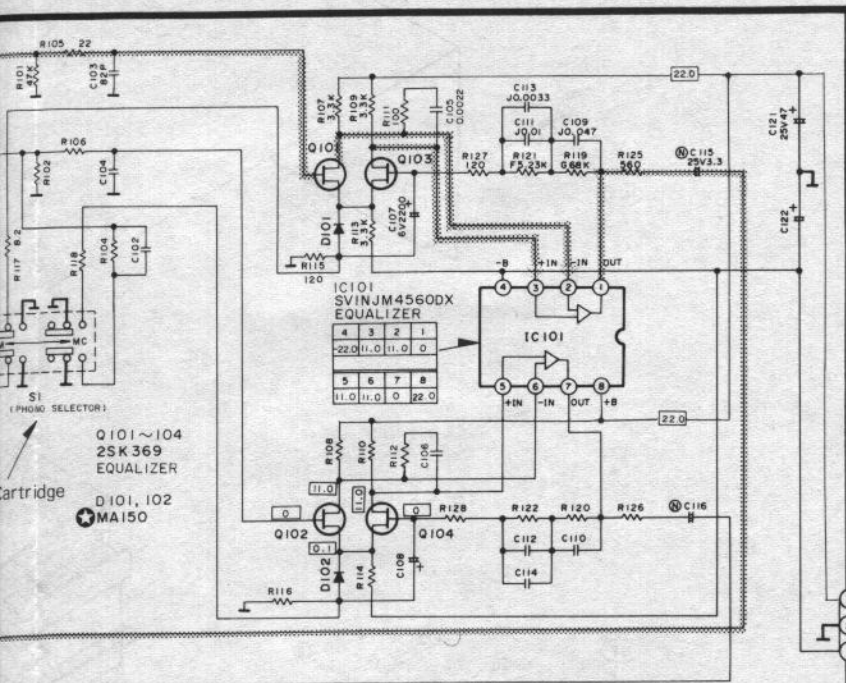
IN

B OUTPUT TERMINAL

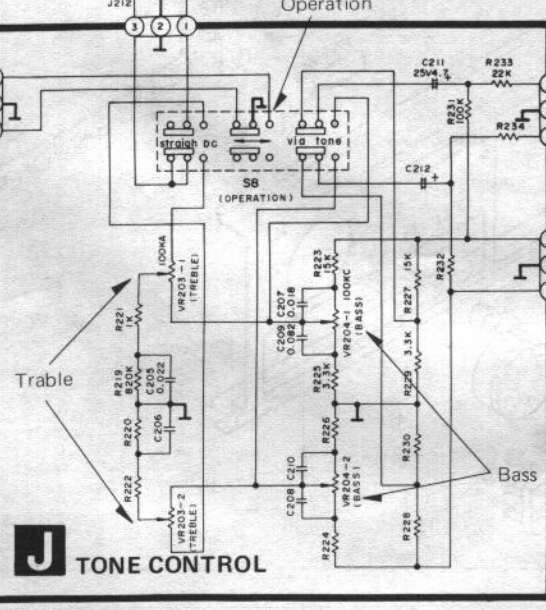
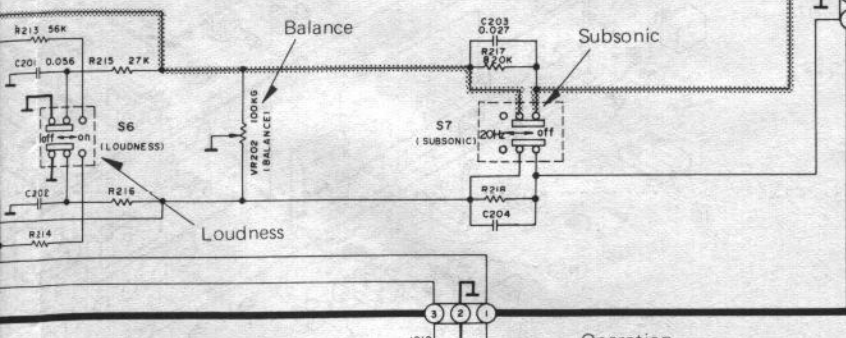
MUTING Audio muting

VOLUME

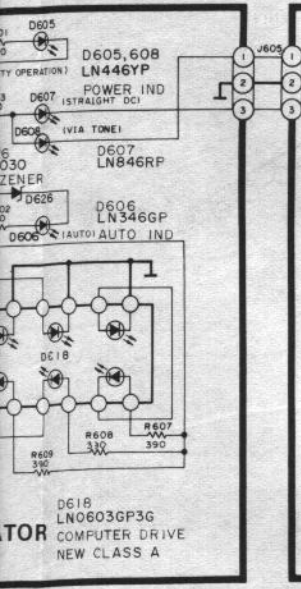




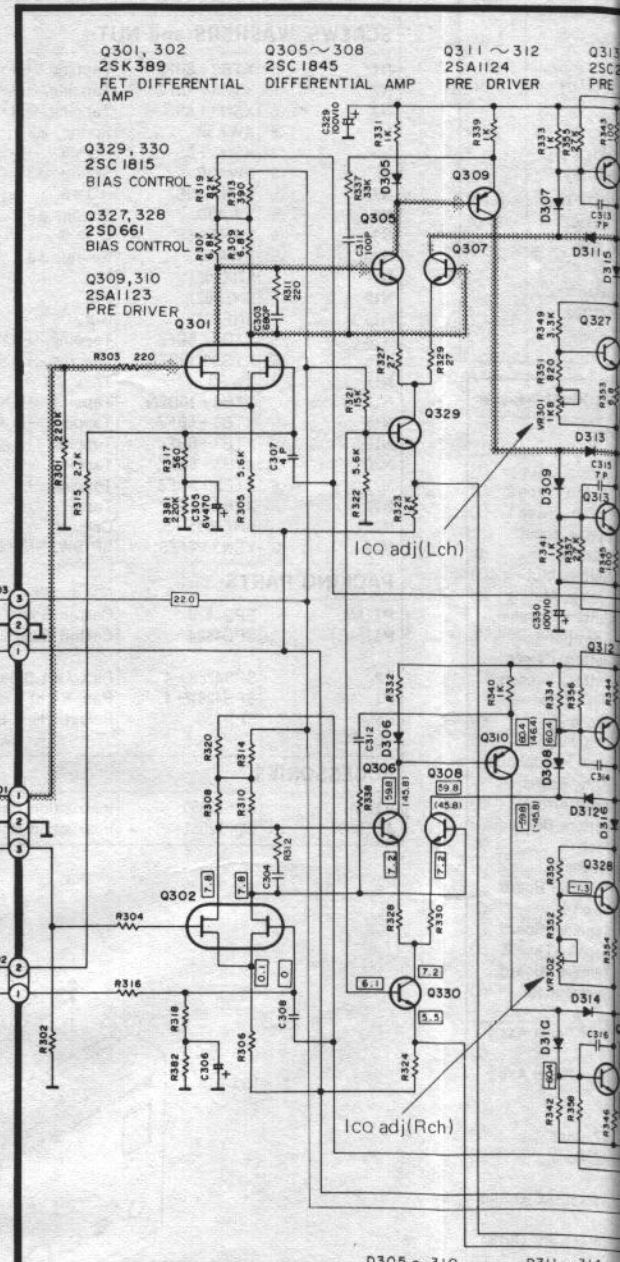
H EQUALIZER, PHONO SELECTOR, FILTER CIRCUIT



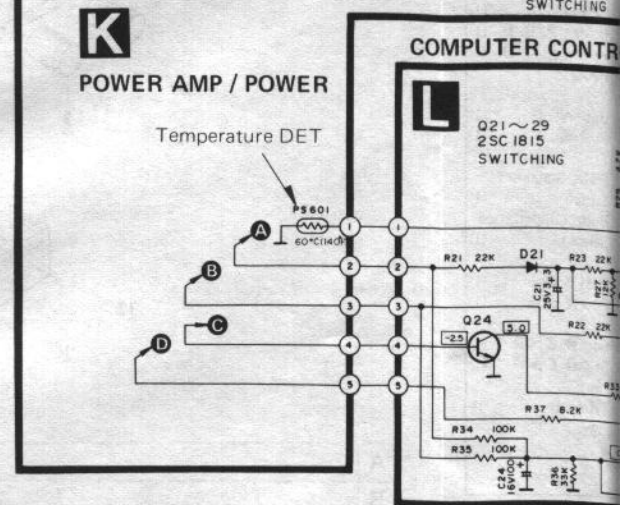
J TONE CONTROL



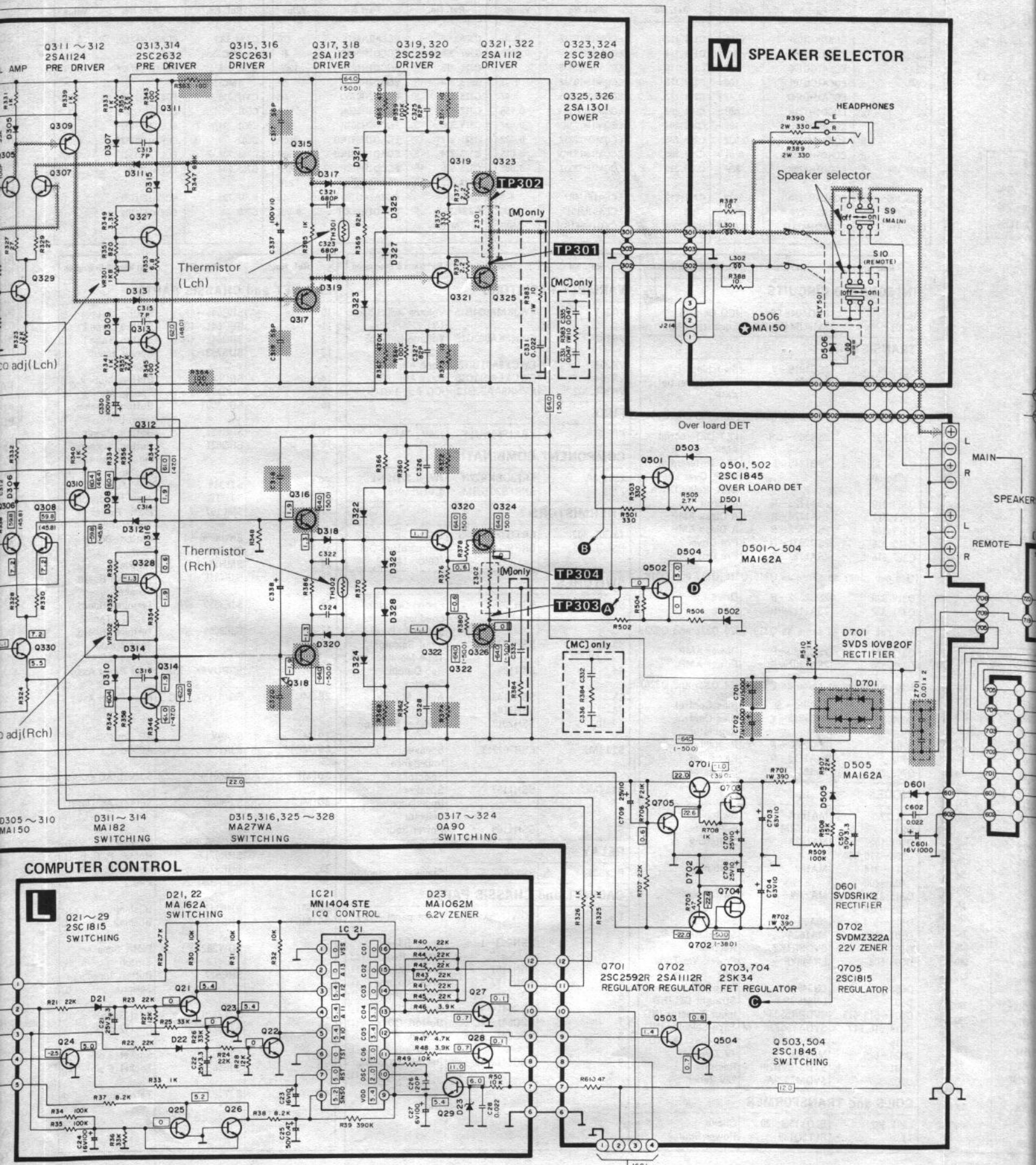
K POWER AMP / POWER



K POWER AMP / POWER



L COMPUTER CONTROL



Q311 ~ 312
2SA1124
PRE DRIVER

Q313, 314
2SC2632
PRE DRIVER

Q315, 316
2SC2631
DRIVER

Q317, 318
2SA1123
DRIVER

Q319, 320
2SC2592
DRIVER

Q321, 322
2SA1112
DRIVER

Q323, 324
2SC3280
POWER

Q325, 326
2SA1301
POWER

M SPEAKER SELECTOR

adj(Lch)

adj(Rch)

D305 ~ 310
MA150

L COMPUTER CONTROL

Q21 ~ 29
2SC1815
SWITCHING

D21, 22
MA162A
SWITCHING

IC21
MN1404 STE
ICQ CONTROL

D23
MA1062M
6.2V ZENER

Over load DET

Q501, 502
2SC1845
OVER LOARD DET

D501 ~ 504
MA162A

D701
SVDS10VB20F
RECTIFIER

D505
MA162A

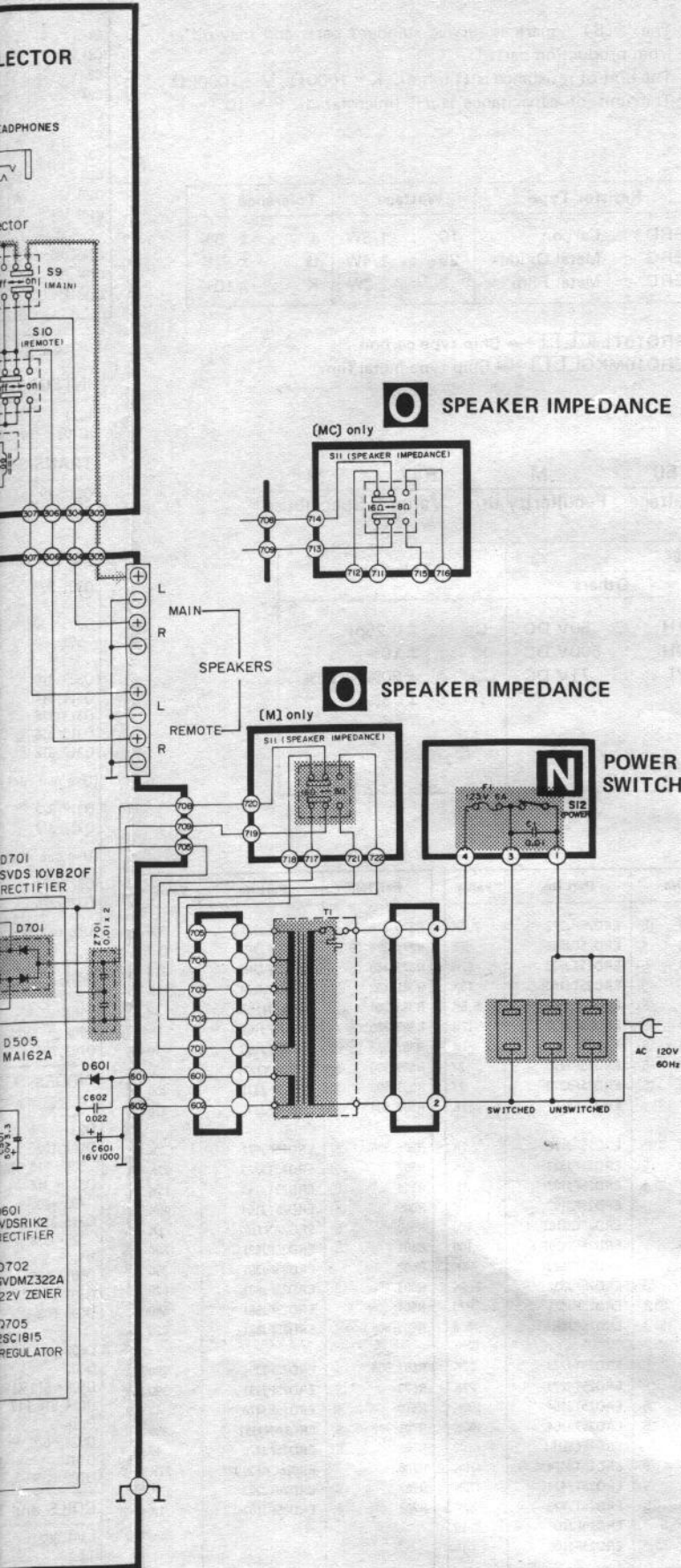
D601
SVDSRIK2
RECTIFIER

D702
SVDZM322A
22V ZENER

Q701 Q702 Q703, 704
2SC2592R 2SA1112R 2SK34
REGULATOR REGULATOR FET REGULATOR

Q705
2SC1815
REGULATOR

Q503, 504
2SC1845
SWITCHING



IMPORTANT SAFETY NOTICE

The shaded area on this schematic diagram incorporates special features important for protection from fire and electrical shock hazards. When servicing it is essential that only manufacturer's specified parts be used for the critical components in the shaded areas of the schematic.

- Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
 - * Figures in stand for DC voltage in Impedance selector switch high (8~16Ω/16Ω) position.
 - * Figures in () stand for DC voltage in Impedance selector switch low (4~6Ω/8Ω) position.
- Positive voltage lines
 - ⋯⋯ Phono signal line (Lch)