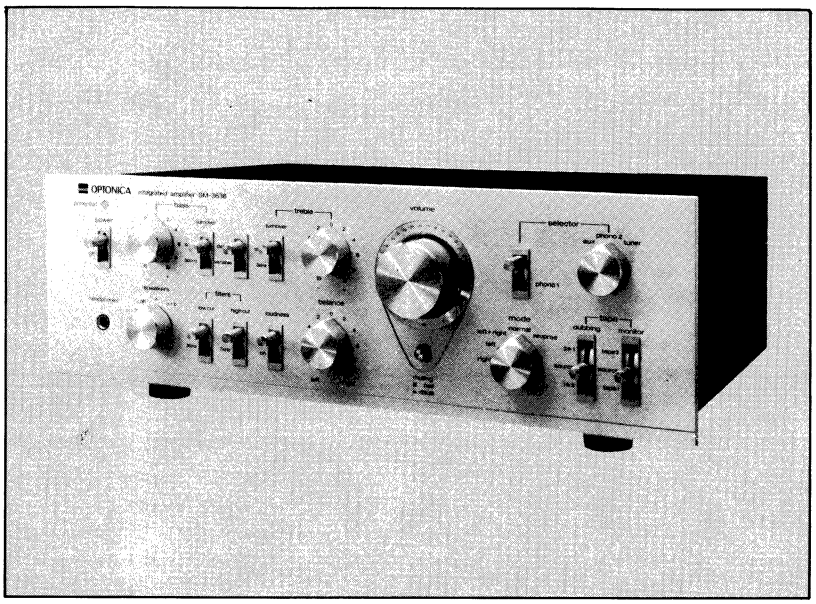
SHARP OPTONICA **SERVICE MANUAL**

SM-3636H
SM-3636HB



STEREO PRE/MAIN AMPLIFIER

MODEL SM-3636H
(SILVER PANEL)

SM-3636HB
(BLACK PANEL)

In the interests of user-safety the set should be restored to its original condition and only parts identical to those specified be used.

SPECIFICATIONS

GENERAL DESCRIPTION

Power source:	AC 110/220/240V, 50/60Hz
Power consumption:	380W
Semiconductors:	2-IC (Integrated circuit) 22-Transistor 4-FET 23-Diode 1-LED
Dimensions:	Width: 442 mm Height: 144 mm Depth: 363 mm
Weight:	14.5 kg

MAIN AMPLIFIER

Circuit: Differential amplifier, Pure complimentary system, OCL (Output Capacitor-Less)

Continuous power output:

2 x 65W/4 ohms, Both channels driven at 1kHz, 0.05% distortion

2 x 45W/8 ohms, Both channels driven at 1kHz, 0.05% distortion

Intermodulation distortion
0.1% at 65W

Damping factor: more than 40 (at 1kHz 8 ohms)

Power bandwidth: 10Hz ~ 30kHz at 0.1% distortion, 30W

Input sensitivity and input impedance:
800mV/47k ohms

PRE-AMPLIFIER

Equalizer amplifier: ICL (Input Capacitor-Less) dual power supply (plus and minus)

Tone control: ICL, Dual power supply (plus and minus), 'NF' type

Input sensitivity and input impedance:
PHONO 1 and 2: 2.5mV/47k ohms
AUX: 150mV/47k ohms
TUNER:150mV/47k ohms
TAPE: PB 1 and 2:
150mV/47k ohms
TAPE PB (DIN socket) 1 and 2:
150mV/47k ohms

Output level and loaded impedance:
REC 1 and 2: 150mV/47k ohms
REC 1 and 2: (DIN socket)
30mV/82k ohms

Phono overload: 220mV (RMS, 1kHz)

RIAA curve deviation: ±0.4dB (20Hz ~ 20kHz)

Frequency response: 10Hz ~ 70kHz ±1.5dB (TUNER, AUX TAPE PLAYBACK)

Signal to noise ratio: PHONO 1 and 2: 70 dB
AUX, TUNER, TAPE PB: 90dB

Tone control:
Bass: ±10dB (at 100Hz, turnover 600Hz)
±10dB (at 50Hz, turnover 300Hz)
Treble: ±10dB (at 10kHz, turnover 1.5kHz)
±10dB (at 20kHz, turnover 3kHz)

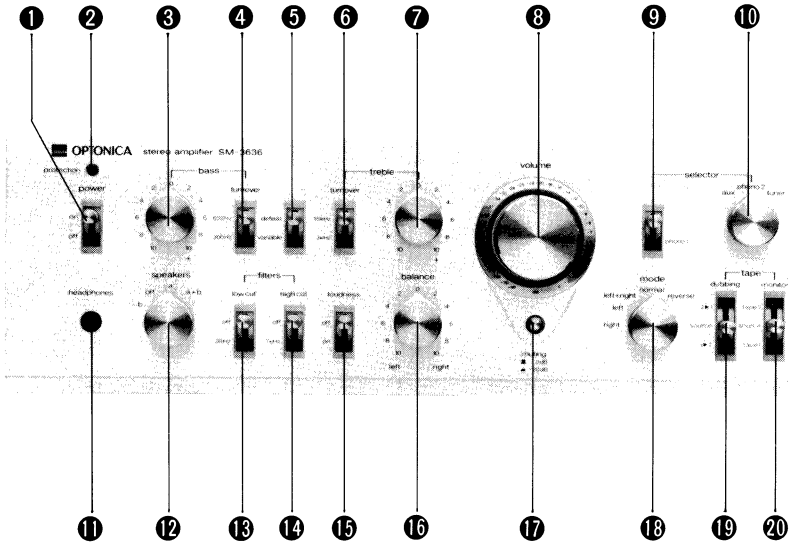
Low cut filter: –3dB at 30Hz, 6dB/oct

High cut filter: –3dB at 7kHz, 6dB/oct

Audio muting: –20dB

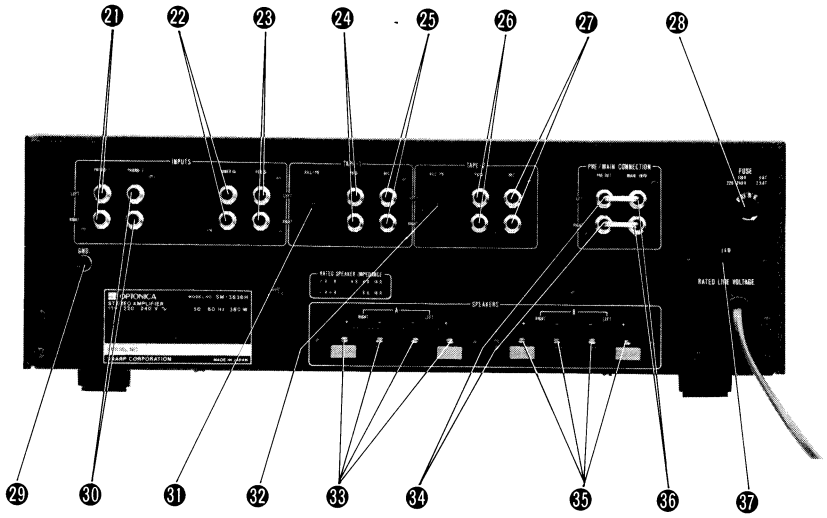
SHARP CORPORATION OSAKA, JAPAN

LAYOUT OF PARTS



❶ Power Switch
❷ Protection Lamp
❸ Bass Control
❹ Bass-Turnover Switch
❺ Defeat Switch
❻ Treble-Turnover Switch
❼ Treble Control
❽ Volume Control
❾ Function Selector 1 Switch
❿ Function Selector 2 Switch
⓫ Headphone Jack
⓬ Speakers Selector Switch
⓭ Low Cut Filter Switch
⓮ High Cut Filter Switch
⓯ Loudness Switch
⓰ Balance Control
⓱ Muting Switch
⓲ Mode Switch
⓳ Tape Dubbing Switch
⓴ Tape Monitor Switch

Figure 1



㉑ Phono 1 Socket
㉒ Tuner Socket
㉓ Auxiliary Socket
㉔ TAPE-1 (Playback) Socket
㉕ TAPE-1 (Recording) Socket
㉖ TAPE-2 (Playback) Socket
㉗ TAPE-2 (Recording) Socket
㉘ Fuse Socket
㉙ GND Terminal
㉚ Phono 2 Socket
㉛ TAPE-1 (Record/Playback) Socket
㉜ TAPE-2 (Record/Playback) Socket
㉝ Speaker Terminals A
㉞ PRE OUT Socket
㉟ Speaker Terminals B
㊱ MAIN IN Socket
㊲ Main Voltage Selector Socket

Figure 2

DISASSEMBLY (See Figure 3)

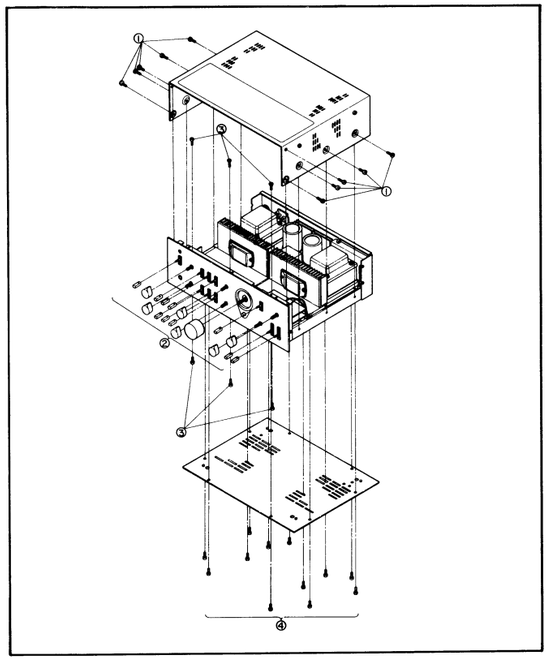


Figure 3

Caution; When disassembling the pre/main amplifier of this unit, be sure to disconnect the power supply cord from an wall outlet beforehand.

Remove the 10 screws ① retaining the top cabinet, 5 each provided at the right and left surfaces of the cabinet, then the top cabinet can be taken out.
Pull out the 17 knobs ② at the front panel and remove the 6 screws ③ retaining the front panel. As a result, the front panel can be detached from the unit.
Turn the unit over and remove the 12 screws ④ retaining the bottom cabinet. Then, the bottom cabinet can be taken out.

PREPARATION FOR USE

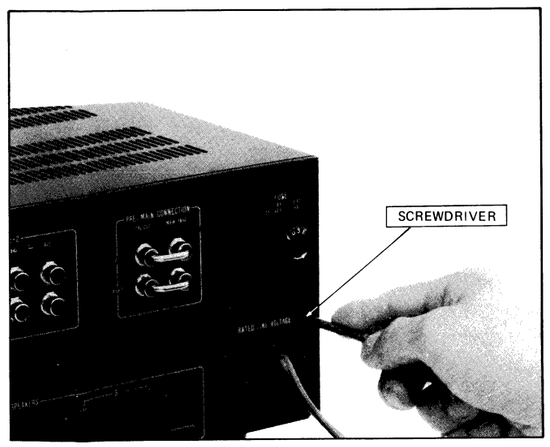


Figure 4

VOLTAGE SELECTION (See Figure 4)

Check the preset voltage before connecting the mains plug to a mains wall outlet. If the setting is different from your local supply mains voltage, the selector must be re-set as follows. Rotate the voltage selector by using a screwdriver so that your local voltage number can be seen.

BLOCK DIAGRAM

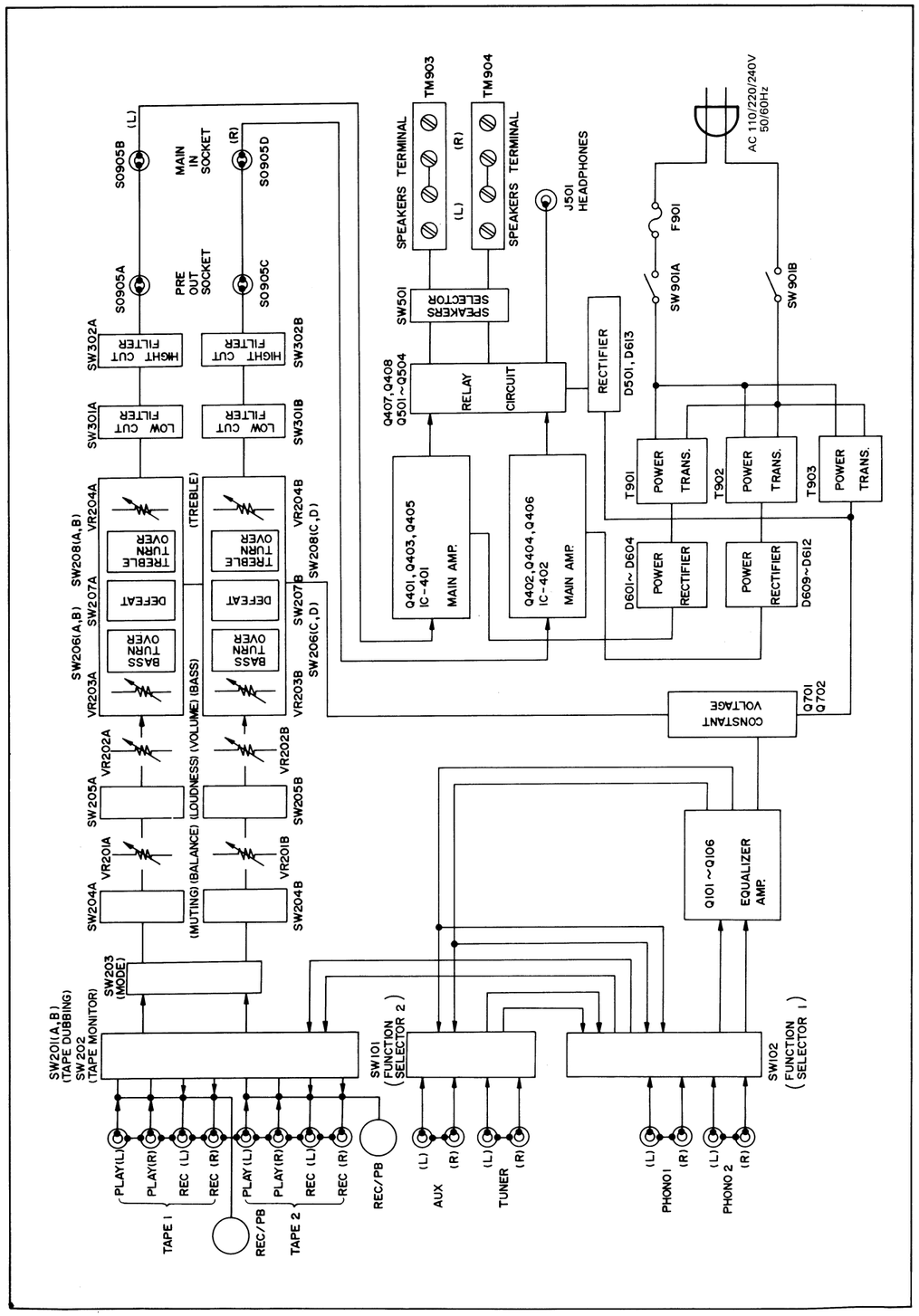


Figure 5

CIRCUIT DESCRIPTION

■ EQUALIZER CIRCUIT (See Figure 6)

The equalizer circuit is energized by two power supply sources (positive and negative). This circuit is of 3-stage directly coupled negative feedback type which assures lower distortion factor. At the 1st stage is employed junction type low-noise FET (Field Effect Transistor Q101 or Q102) which makes it unnecessary to use the input coupling capacitor (liable to adversely affect the tone quality). This results in that signal from the terminal bracket (Phono 1 or Phono 2) is able to be directly supplied to the gate (G) of FET (Q101 or Q102). Being applied to the gate (G) of FET, the signal is supplied, through the drain (D), directly to the base of the 2nd stage equalizer (Q103 or Q104) without a coupling capacitor.
This FET (Q101 or Q102) and the transistor (Q103 or Q104) serve to amplify the voltage. Coming out of the collector of the transistor (Q103 or Q104), the voltage thus amplified is applied to the base of the 3rd-stage equalizer transistor (Q105 or Q106). This 3rd-stage equalizer is of emitter follower circuit which provides higher input impedance while lower output impedance so that the characteristic will be outstanding in linearity and stability. To the emitter of the 3rd-stage equalizer transistor (Q105 or Q106) are connected as a load the negative feedback elements: resistors and capacitors (C111, C113, C115, R113, R117 or C112, C114, C116, R114, R118). These negative feedback elements are for the purpose to provide RIAA characteristic according to the recording characteristic of a disk record to be played – although the impedance is lowered in the high-frequency range, a better dynamic range is assured by the employment of the emitter follower circuit.

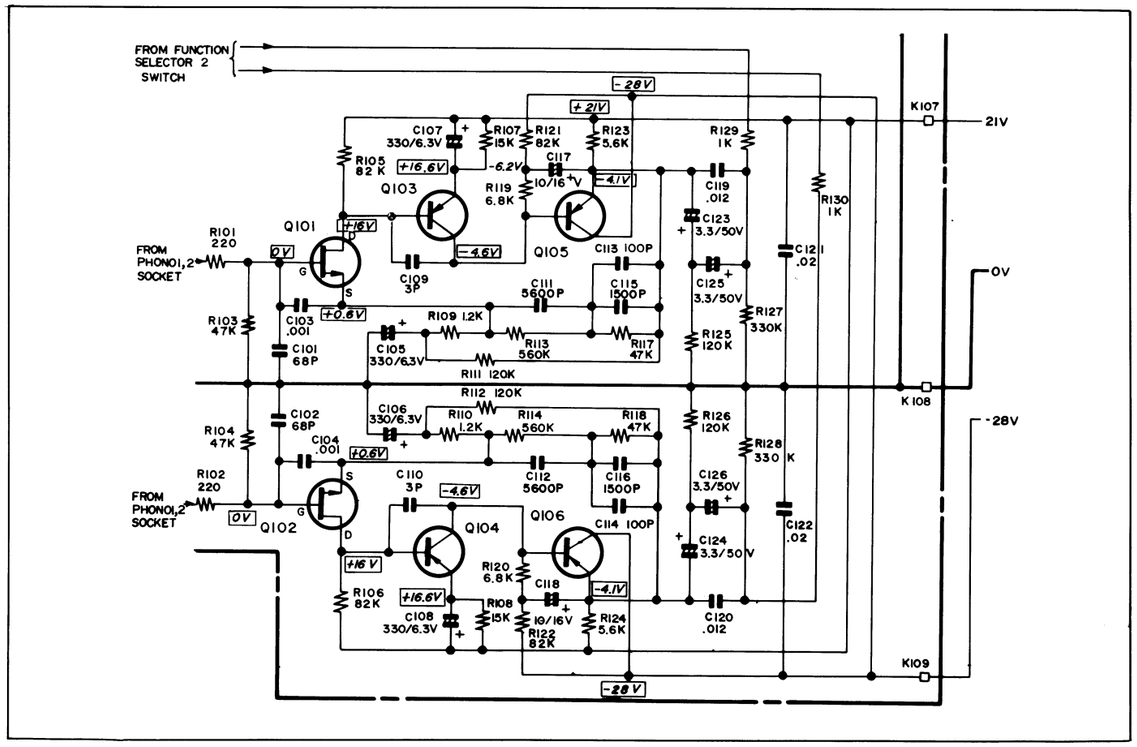


Figure 6

■ TONE CONTROL CIRCUIT (See Figure 7 and 8)

The tone control circuit is of 2-stage directly coupled negative feedback type and like the equalizer circuit, it is also energized by two power supply sources (positive and negative). The transistor (Q201 or Q202) out of the differential amplifier transistors (Q201, Q203 or Q202, Q204) is of junction type FET which makes it needless to use the input capacitor. Output from the FET is applied, throught the drain, to the base of the tone amplifier transistor (Q205 or Q206). To the base of the transistor (Q203 or Q204) is supplied, through the emitter of the transistor (Q205 or Q206), the signal coming from the negative feedback circuit which consists of the bass control (VR203A, VR203B) and treble control (VR204A, VR204B). By means of this signal, when the treble or bass control is rotated, the resistance and time constant are changed so that frequency characteristic will be able to be varied. The bass turn-over switch (SW206A, SW206B, SW206C, SW206D) which is to be set to "600Hz" or "300Hz" is for the purpose to change the capacitance of the capacitors (C215, C219, C217, C221 or C216, C220, C218, C222) so that the bass volume at the vicinity lower than 600Hz or 300Hz will be varied.
While, the treble turn-over switch (SW208A, SW208B, SW208C, SW208D) which is to be set to "1.5kHz" or "3kH" is for the purpose to charge the capacitance of the capacitors (C223, C225, C227, C229 or C224, C226, C228, C230) so that the treble volume at the vicinity higher than 1.5kHz or 3kHz will be varied.
The tone defeat switch (SW207A, SW207B), when set to "variable", makes it possible that when the bass control and/or

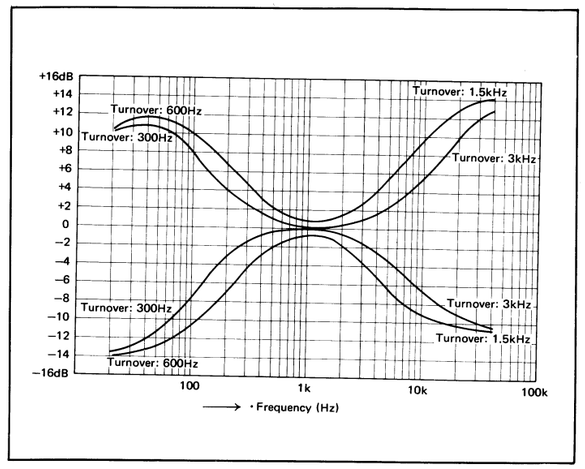


Figure 7

treble control is adjusted, signal of the bass control and/or treble control is also adjusted accordingly.
When the defeat switch (SW207A, SW207B) is, however, set the "defeat", signals of the bass control and treble control are shut out so that there will be avaialble a constant negative feedback component which has been subjected to voltage division by the resistors (R249, R251 or R250, R252). This results in there is a flat characteristic regardless of the bass control and treble control being set to any position.

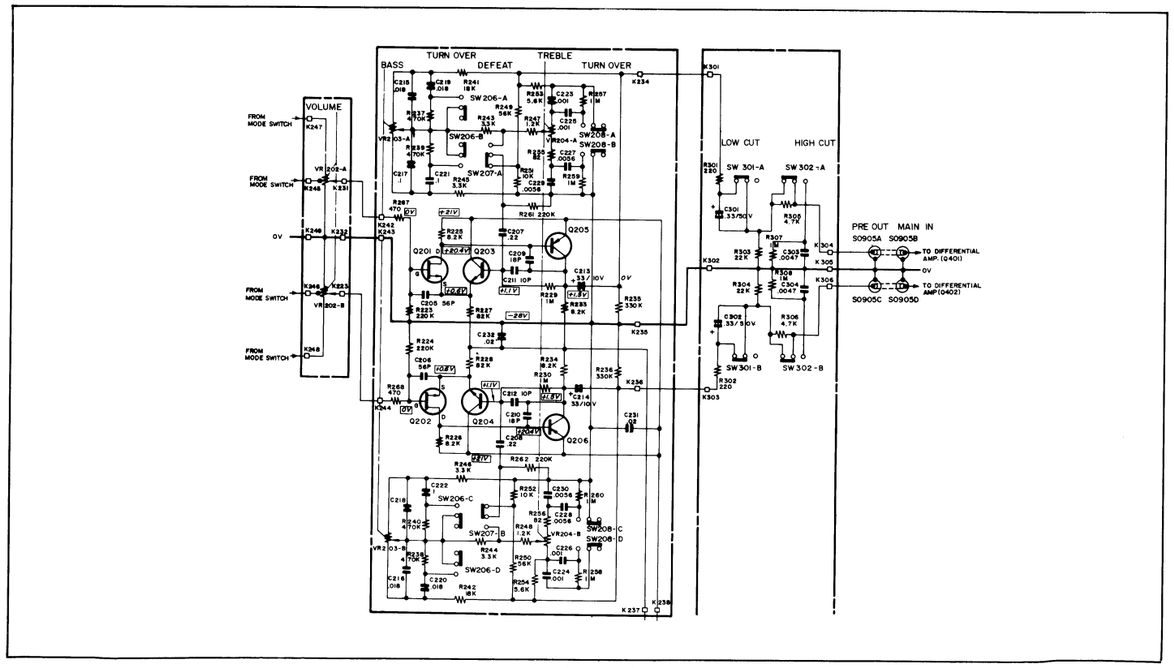


Figure 8

■ RELAY CIRCUIT (See Figure 9)

The relay circuit plays various roles such as to prevent noises possibly caused when the power switch (SW901) is turned "ON" or "OFF", to eliminate DC voltage interference to the speaker terminals A (TM903) or to the speaker terminals B (TM904) which may be caused by a trouble of the main amplifier circuit, to prevent the speaker terminals A (TM903) or the speaker terminals B (TM904) from being shortcircuited, to prevent connection of an extremely low load to the speaker terminals A (TM903) or the speaker terminals B (TM904) so that a trouble to the main amplifier circuit will be avoided, or to eliminate an abnormal temperature increase of the heat sink.

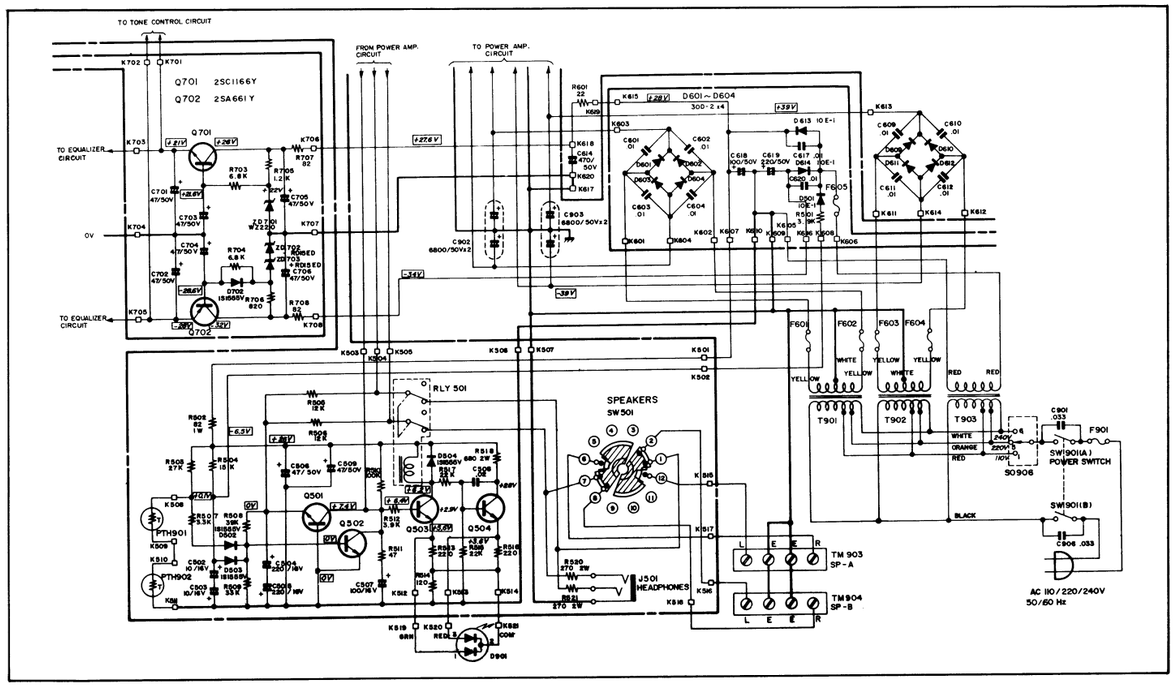


Figure 9

In the case of the power switch being turned "ON" (See Figure 9)

When the power switch (SW901) is turned "ON", a current runs through the power rectifier diode (D613) and resistor (R502) to enter the electrolytic capacitor (C507) to charge it. Then the potential of the base of Schmitt trigger transistor (Q503) will be increased. When the potential of the base of transistor (Q503) is lower than 6V, the transistor is turned "OFF" (opened) since the voltage is inferior to the working voltage while another Schmitt trigger transistor (Q504) is turned "ON" (closed). With the transistor (Q503) being turned "OFF" (opened), the relay (RLY501) will be given no current so that it won't be able to operate. Therefore, no signal is applied to the speaker terminals A or B.

Note that after the power switch is turned "ON", it takes 3 to 4 seconds for the potential of the base of Q503 to increase up to more than 6V [this charging time is determined by time constant of the resistors (R510, R511) and electrolytic capacitor (C507)]. During this time (3 to 4 seconds), a current from the transistor (Q504) is running in the red side of the light emitting diode (D901) so that the protection lamp is lit in red.

Meanwhile, when the potential of the base of transistor (Q503) exceeds 6V, the transistor (Q503) is turned "ON" (closed) while the transistor (Q504) is turned "OFF" (opened). With the transistor (Q503) being turned "ON", the relay (RLY501) starts to operate so that signals will be applied To the speaker terminals A or B. And a current from the transistor (Q503) runs in the green side of the light emitting diode (D901) so that the protection lamp will be lit in green.

In the case of the power switch being turned "OFF" (See Figure 9 and 10)

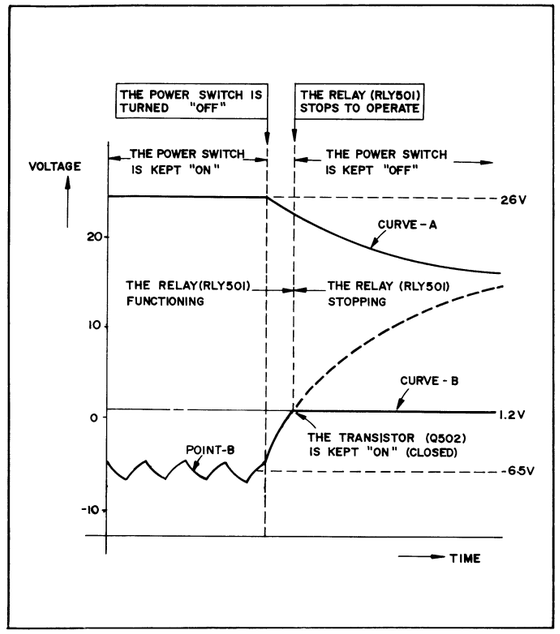


Figure 10

When the power switch is turned "OFF", the power rectifier diode (D501) stops to operate so that the potential (point-B) of the anode of the noise detector diode (D503), which was negative (–6.5V) when the power switch was turned "ON", will be discharged [this discharging time is determined by a time constant of the electrolytic capacitors (C502, C503) and resistor (R504)]. See curve-B in Figure 10. If such potential increases to more than 1.2V, the transistor (Q502) is turned "ON" (closed) and the electrolytic capacitor (C507) starts to discharge.

When the potential of the base of Schmitt trigger transistor (Q503) is decreased to lower than 6V, the transistor (Q503) is turned "OFF" (opened) while another Schmitt trigger transistor (Q504) is turned "ON" (closed). As a result, the relay (RLY501) is stopped to operate so that no signal will be applied to the speaker terminals A or B.

As to the power rectifier diode (D613), the voltage will be once increased to 28V just when the power switch is turned "ON" and it eventually decrease to 26V by means of the resistor (R502). When the power switch is turned "OFF", such potential will, however, be discharged (this discharging time is determined by a time constant of the electrolytic capacitors (C618, C506) and resistors (R518, R516, R514). See curve-A in Fig. 10.

In the case of DC voltage being created at the speaker terminals A or B (TM903, TM904) (See Figure 9 and 14)

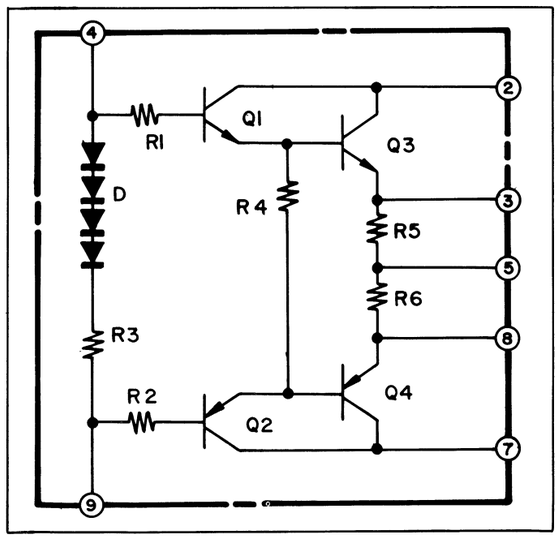


Figure 11

When the speaker terminals A and B are shortcircuited or when two or more speakers having the impedance (of below 8 ohms) are connected to the same speaker terminals. more current is applied to the circuit since the impedance is lessened by the said inconveniences.

As a result, much current will be applied to the terminals No. 2 and No. 7 of the output Amplifier (IC401 or IC402). The current will then run in the terminal No. 5 from the terminal No. 7 through the transistor (Q3) while in the terminal No. 7 from the terminal No. 5 through the transistor (Q4). At the time there is a higher voltage than that in a normal operation at the terminals No. 3 and No. 8 so that it will enter the over-current detector transistor (Q407 or Q408). When the potential of the base of the transistor (Q407 or Q408) exceeds 0.6V, the transistor is turned "ON" (closed) and the electrolytic capacitor (C507) starts to discharge. As a result, the potential of the base of the transistor (Q503) is decreased to below 6V, and the transistor (Q503) will then be turned "OFF" (opened) while the transistor (Q504) be turned "ON" (closed). Accordingly, the relay (RLY501) is stopped to operate so that no signal be applied to the speaker terminals A or B.

In the case of DC voltage being created at the speaker terminals A or B (TM903, TM904) (See Figure 9 and 14)

Should a positive DC voltage be generated at the output terminal No. 5 of the output amplifier (IC401 or IC402), it will be applied to the resistor (R505 or R506) and that (R508) so that the detector transistor (Q502) will be turned "ON" (closed). Then the electrolytic capacitor (C507) starts to discharge and when the potential at the base of Schmitt trigger transistor (Q503) is decreased to lower than 6V, the transistor (Q503) is turned "OFF" (opened) while the Schmitt trigger circuit (Q504) is turned "ON" (closed). Accordingly, the relay (RLY501) stops to operate so that no DC voltage will be applied to the speaker terminals A or B.

On the other hand, when a negative DC voltage is generated at the output terminal No. 5 of the output amplifier (IC401 or IC402), the detector transistor (Q501) is turned "ON" (closed). Then the electrolytic capacitor (C507) starts to discharge. Thereafter, there will be the same process as in the above stated hereinbefore and thus no positive DC voltage will be applied to the speaker terminals A or B.

In the case of the temperature of heat sink increasing abnormally (See Figure 9 and 12)

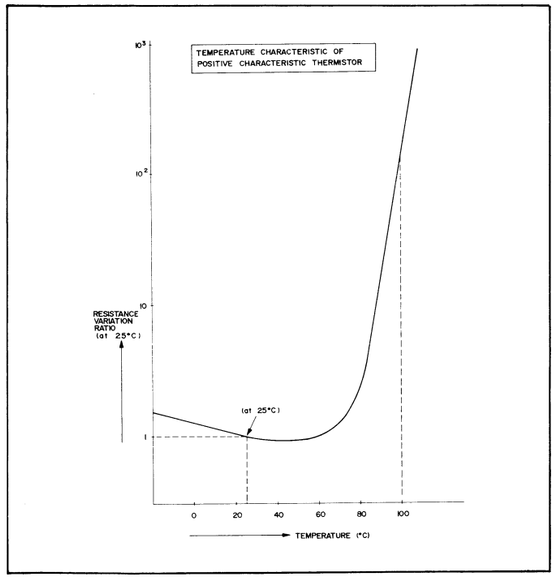


Figure 12

If the temperature of heat sink rises to more than 100°C, the resistance value of the positive-characteristic thermistor (PTH901, PTH902) will be increased, As a result, the voltage of the resistor (R503) is applied to the transistor (Q502) through the resistor (R507) and diode (D502). At the time the potential of the base of the transistor (Q502) is increased due to an increase of the resistance value of the positive characteristic thermistor (PTH901, PTH902) so that the transistor (Q502) will be turned "ON" (closed). As a result, the electrolytic capacitor (C507) starts to discharge so that the transistor (Q503) will eventually be turned "OFF" (opened) while the transistor (Q504) be turned "ON" (closed). Accordingly, the relay (RLY501) is stopped to operate so that no signal will be applied to the speaker terminals A or B.

■ MAIN AMPLIFIER CIRCUIT (See Figure 13 and 14)

The main amplifier circuit adopted for this unit is a differential 1-stage, all stage directly coupled pure complementary circuit which is very outstanding in speaker control characteristic (even at the extremely low-frequency range), low distortion factor and frequency characteristic.

Coming from the tone circuit, the signal is, through the coupling capacitor (C401 or C402), applied to the differential amplifier (Q401 or Q402) to the amplified. The two transistors (Q401 and Q402) are integrated into one pack to form a low-noise dual transistor circuit which can automatically hold the output potential to 0V and assures a high durability against the thermal increase. This circuit further provides such advantage as to be less affected by power supply's voltage variation since zener diode (ZD401 or ZD402) is adopted for the common emitter power source. As a load for the pre-driver transistor (Q405 or Q406), a constant current circuit consisting of transistor and diode (Q403, D401 or Q404, D402) is employed – this results in that the transistor is less affected by the variation of power supply voltage, assuring a higher gain and a lower distortion factor.

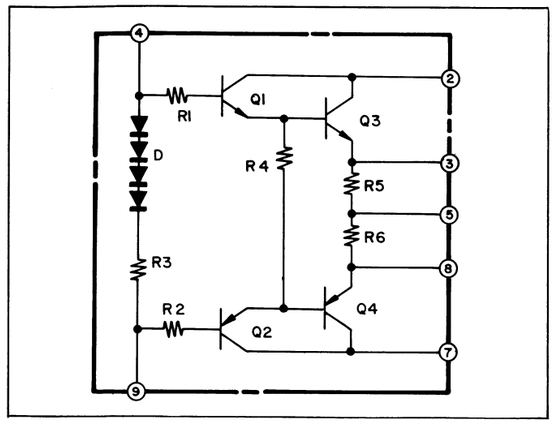


Figure 13

Coming from the transistor (Q401 or Q402), the signal is applied to the pre-driver transistor (Q405 or Q406) and it comes out of the collector to enter the terminals No. 4 and No. 9 of the output IC (IC401 or IC402) so that it will appear at the terminal No. 5 after being amplified. The signal thus amplified will then be applied to the speaker terminal A or B (TM903, TM904) through the speaker selector switch (SW501).

The internal circuit diagram of the output Amplifier (IC401 of IC402) is as shown in Figure 13.

Since idling current has been adjusted by this output IC, no further re-adjustment is required. The output IC incorporates a variator which ensures a better thermal durability. And this circuit is designed to be powered by two power supply sources (+45V and –45V) and the potential at the input and output is held to 0V.

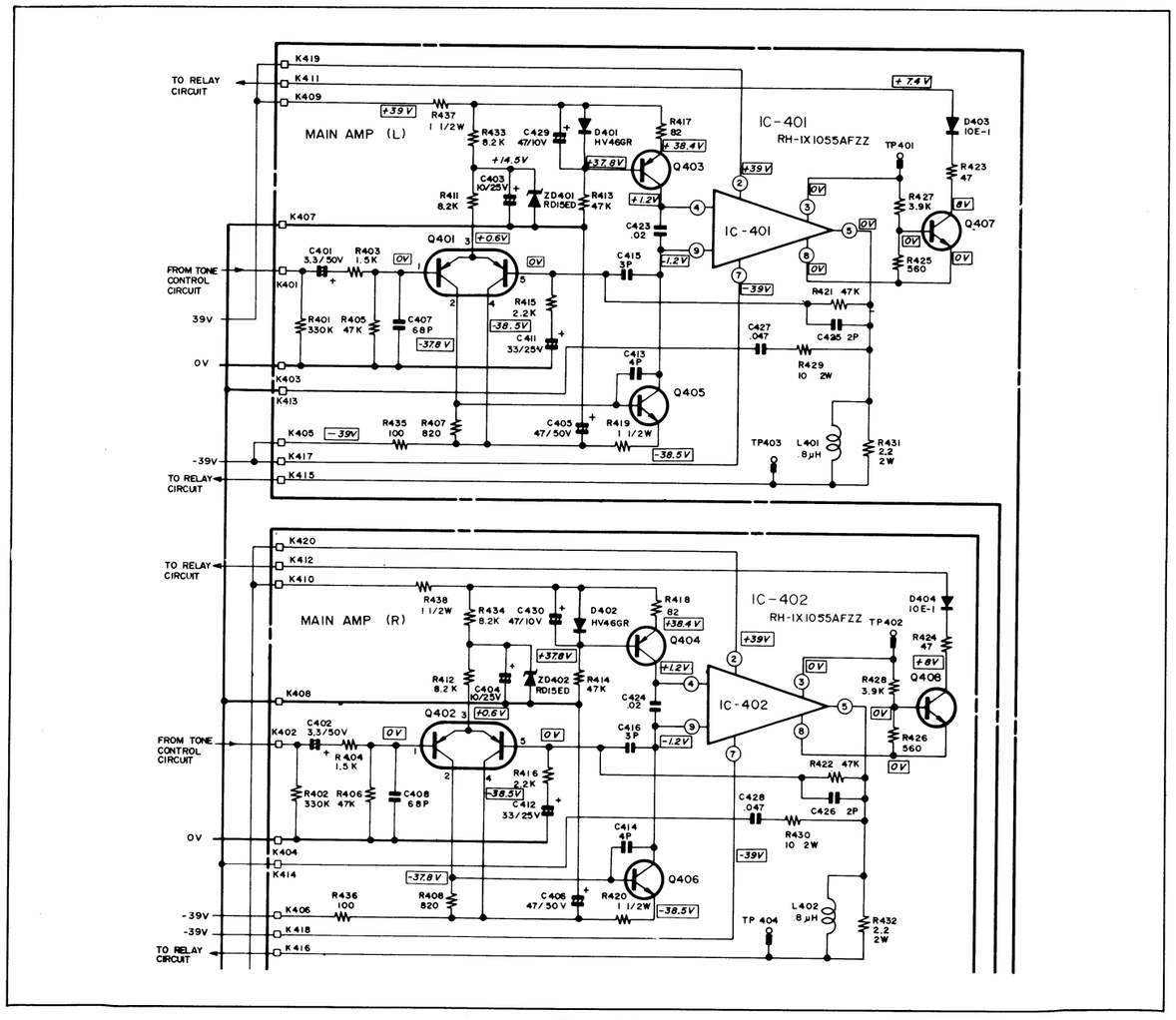
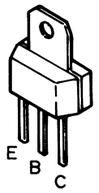
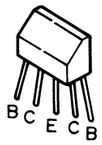


Figure 14

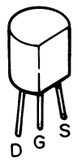
TRANSISTOR AND DIODE TYPES



Q403,Q404,Q405,Q406

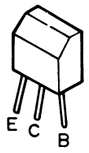


Q401,Q402

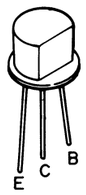


Q101,Q102
Q201,Q202

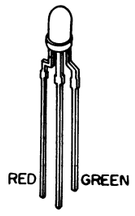
D= DRAIN
G= GATE
S= SOURCE



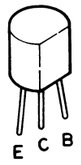
Q701,Q702



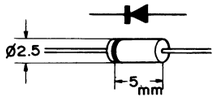
Q501,Q502
Q503,Q504



D901

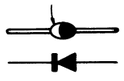


Q103, Q104
Q105, Q106
Q203,Q204
Q205,Q206
Q407, Q408

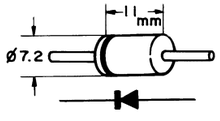


D403,D404,D501,
D613, D614

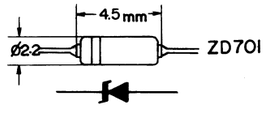
GREEN



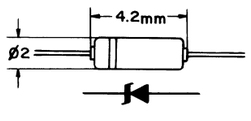
D401, D402



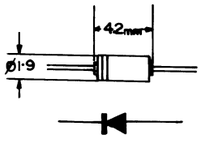
D601 ~ D604
D609 ~ D612



ZD701



ZD401,ZD402
ZD702,ZD703

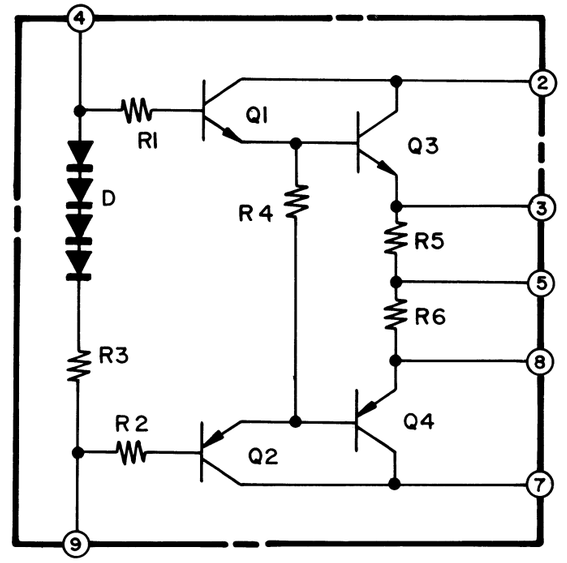


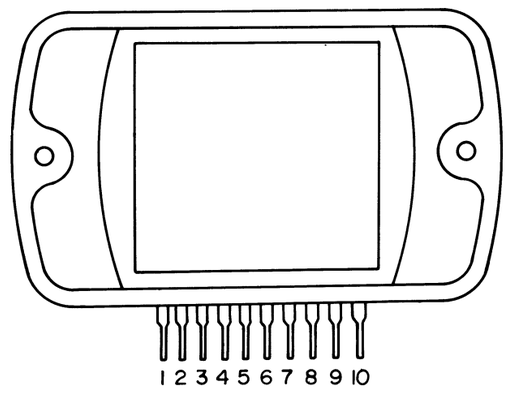
D502, D503
D504, D702

Figure 15

EQUIVALENT OF INTEGRATED CIRCUIT (IC-401, IC-402)

RH-IX1055AFZZ





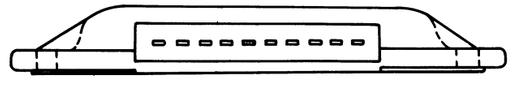
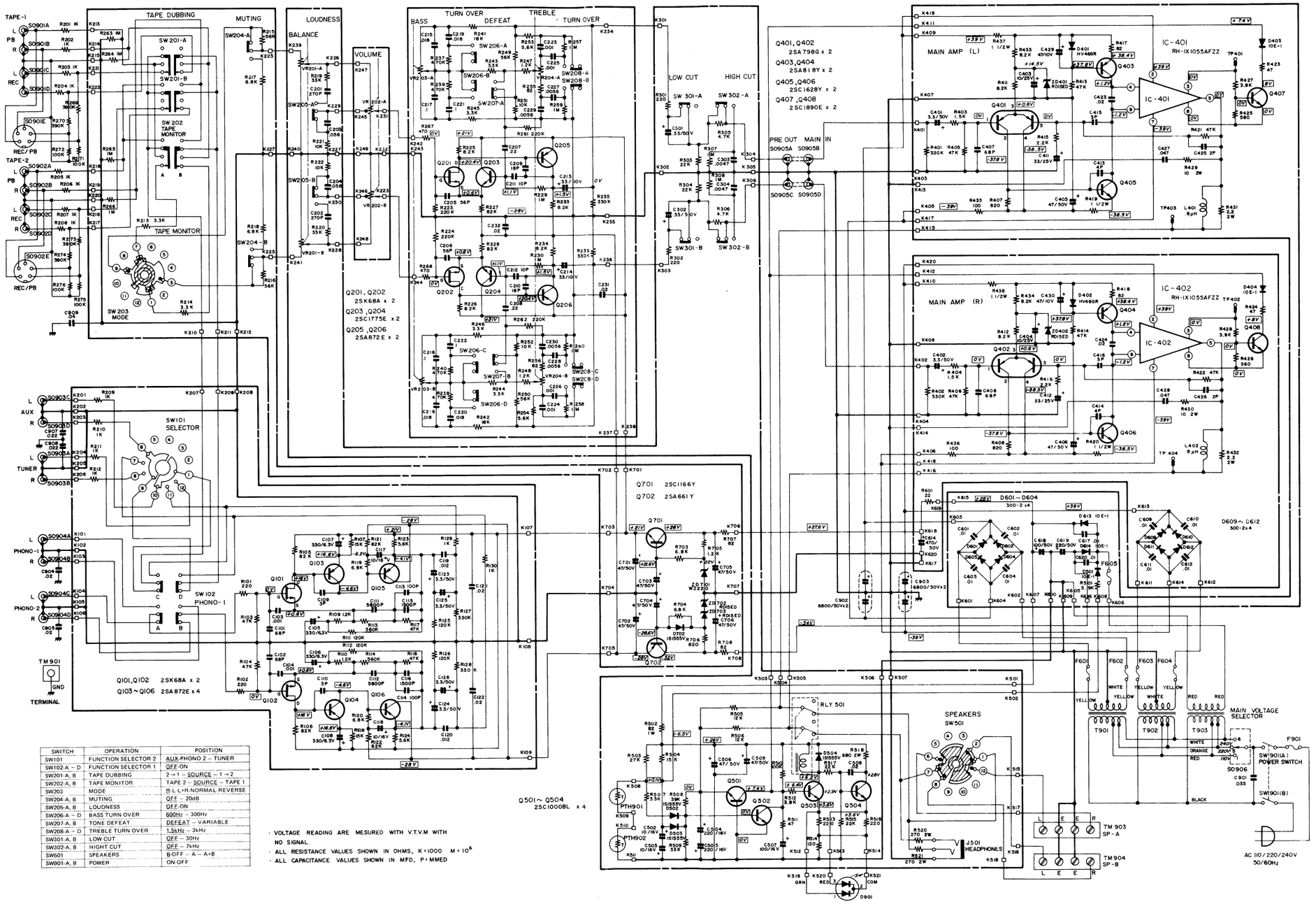


Figure 16



SWITCH	OPERATION	POSITION
SW101	FUNCTION SELECTOR 2	AUX-PHONO 2 – TUNER
SW102-A ~ D	FUNCTION SELECTOR 1	OFF-ON
SW201-A, B	TAPE DUBBING	2→1 – SOURCE – 1→2
SW202-A, B	TAPE MONITOR	TAPE 2 – SOURCE – TAPE 1
SW203	MODE	B-L L+R-NORMAL REVERSE
SW204-A, B	MUTING	OFF – 20dB
SW205-A, B	LOUDNESS	OFF-ON
SW206-A ~ D	BASS TURN OVER	600Hz – 300Hz
SW207-A, B	TONE DEFEAT	DEFEAT – VARIABLE
SW208-A ~ D	TREBLE TURN OVER	1.5kHz – 3kHz
SW301-A, B	LOW CUT	OFF – 30Hz
SW302-A, B	HIGHT CUT	OFF – 7kHz
SW501	SPEAKERS	B-OFF – A – A+B
SW901-A, B	POWER	ON-OFF

- VOLTAGE READING ARE MESURED WITH V.T.V.M WITH NO SIGNAL.
- ALL RESISTANCE VALUES SHOWN IN OHMS, K=1000 M=10^6
- ALL CAPACITANCE VALUES SHOWN IN MFD, P=MMED

(Specifications or wiring diagrams of this model are subject to change for the improvement without prior notice.)

Figure 17 **SCHEMATIC DIAGRAM**

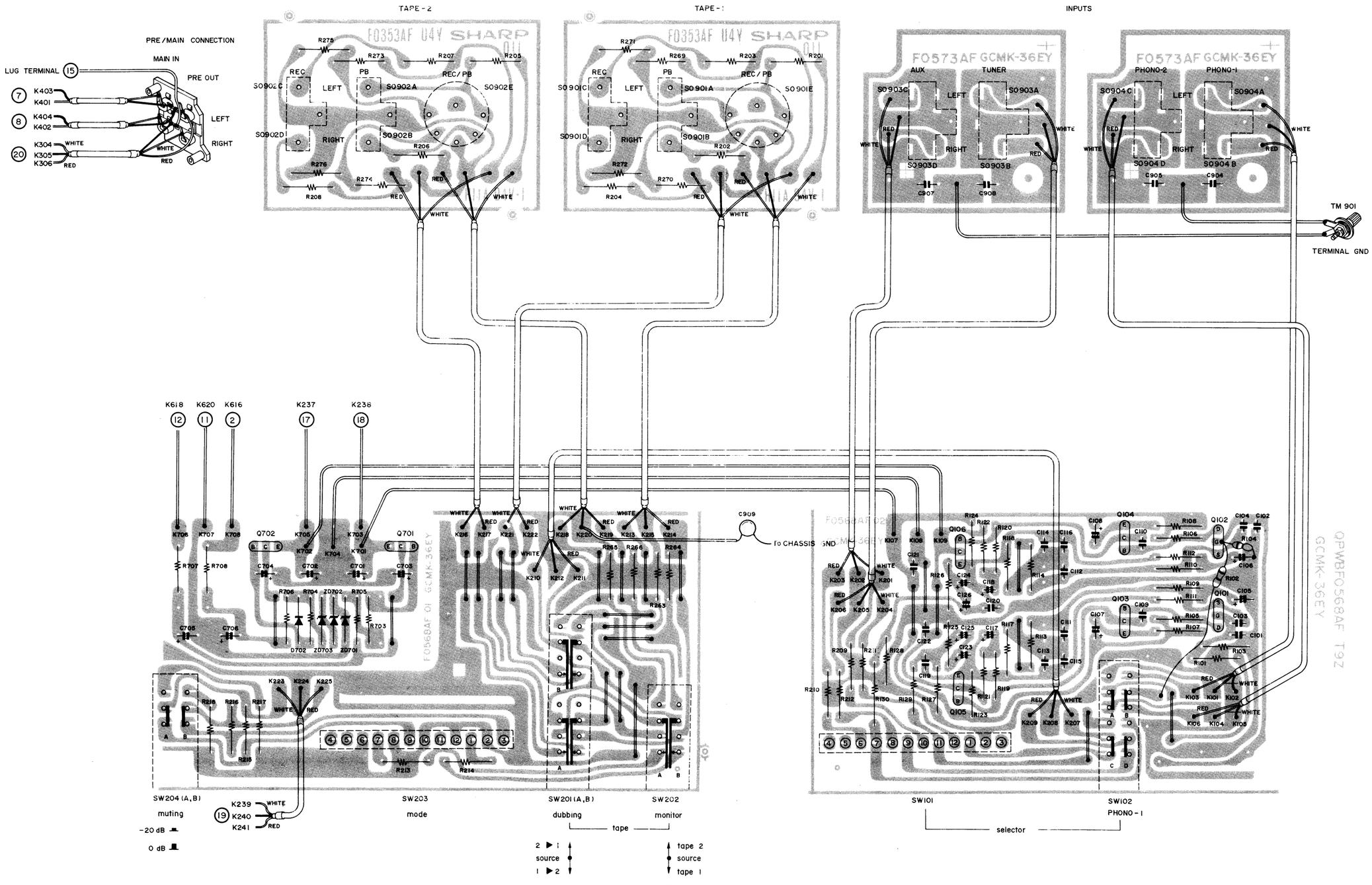


Figure 18 **WIRING SIDE OF P.W. BOARD**

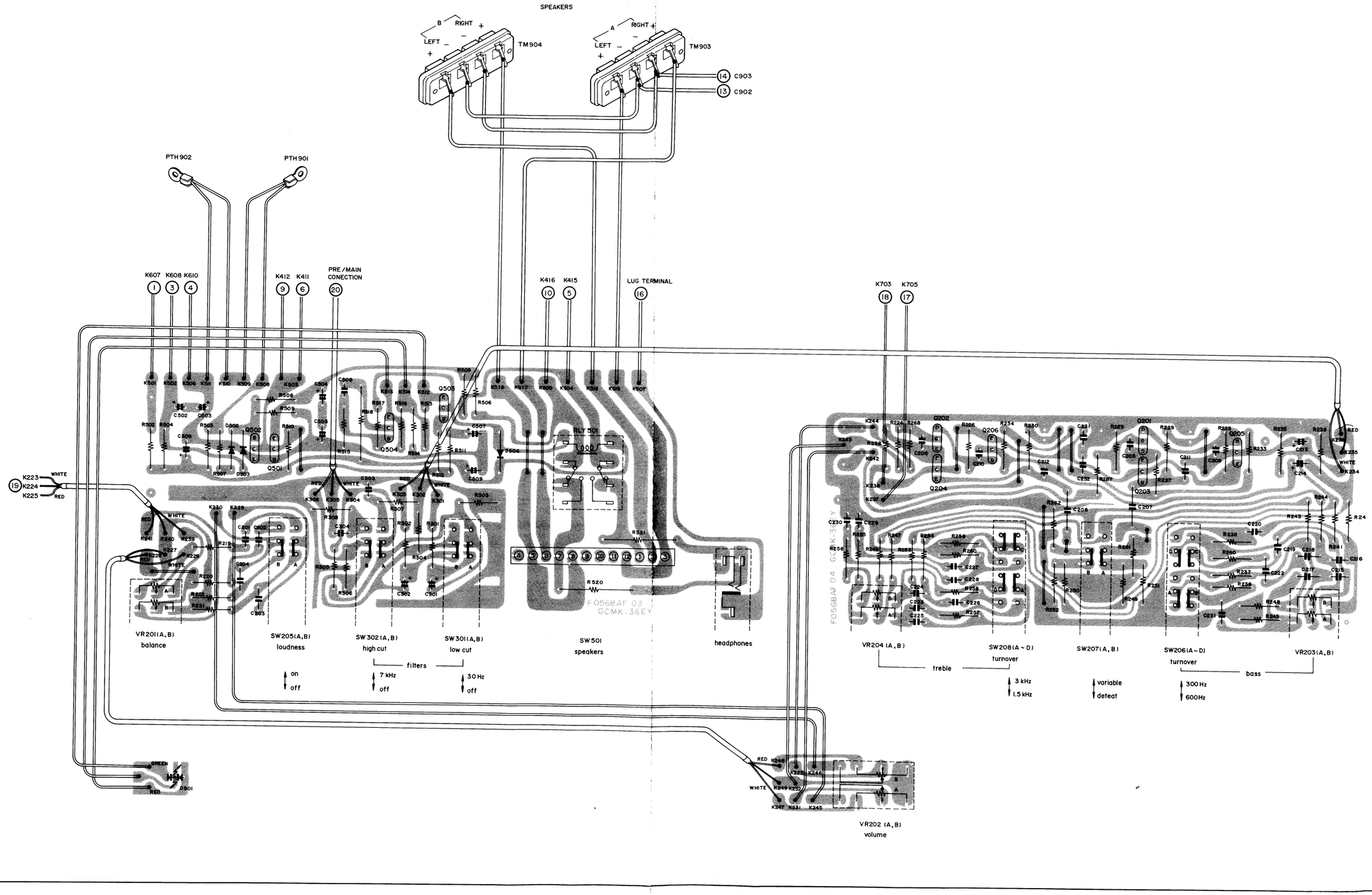


Figure 19 **WIRING SIDE OF P.W. BOARD**

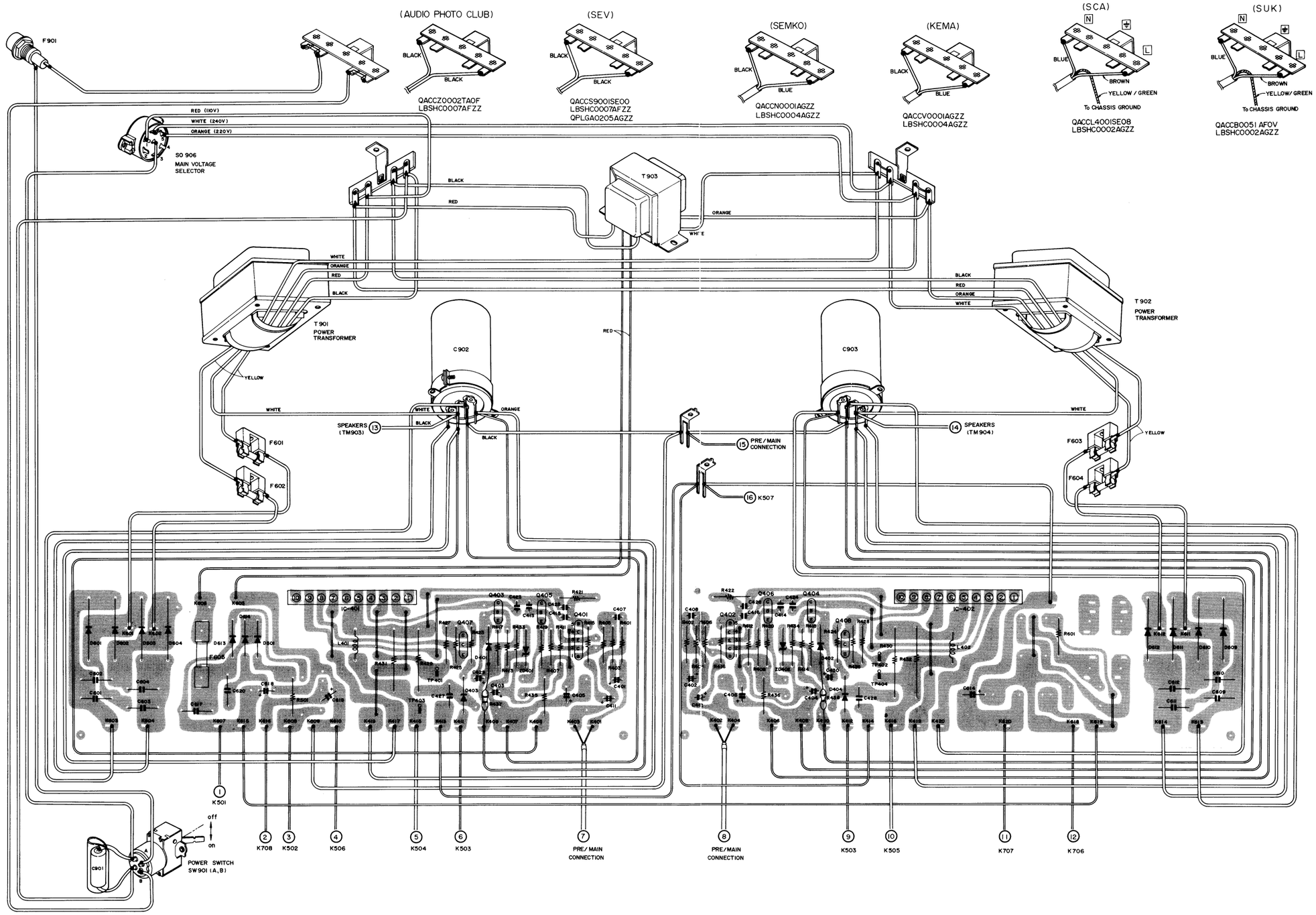
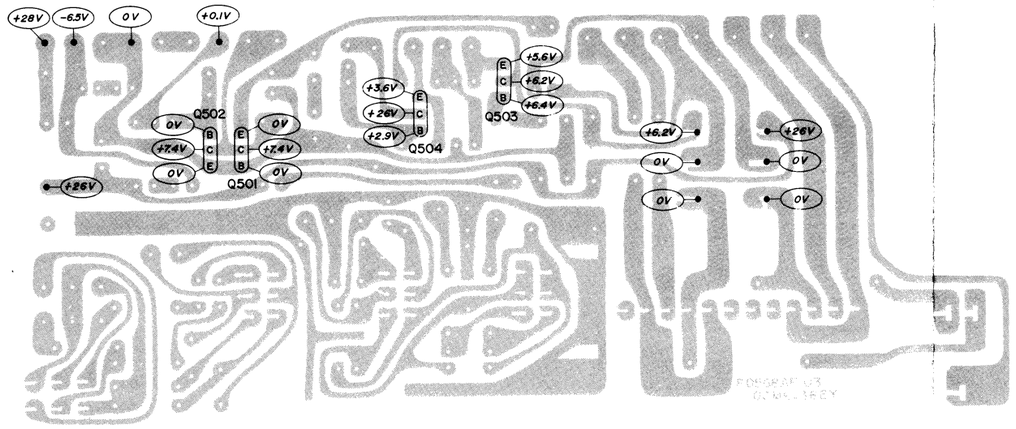
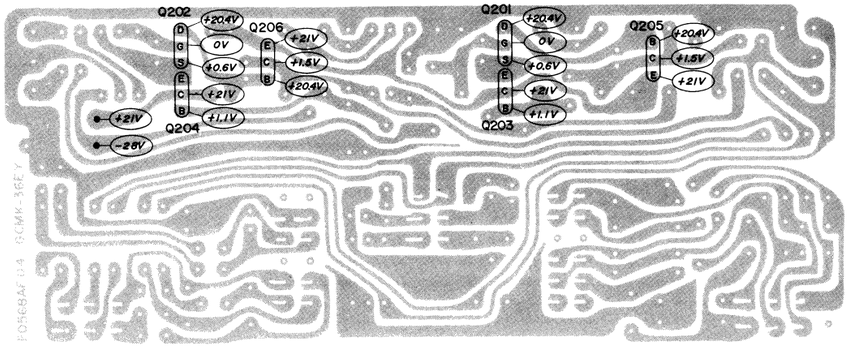
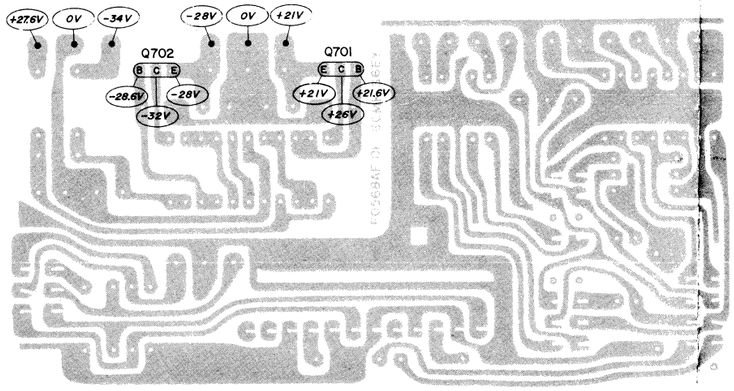
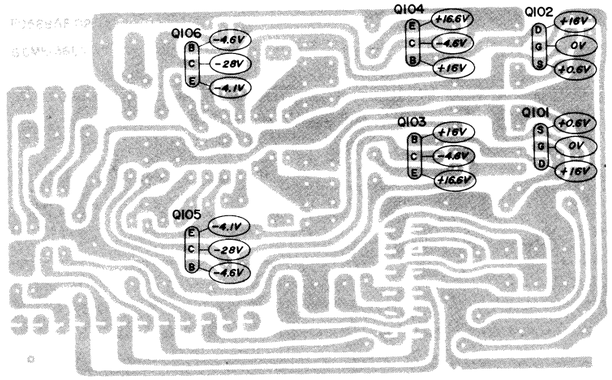


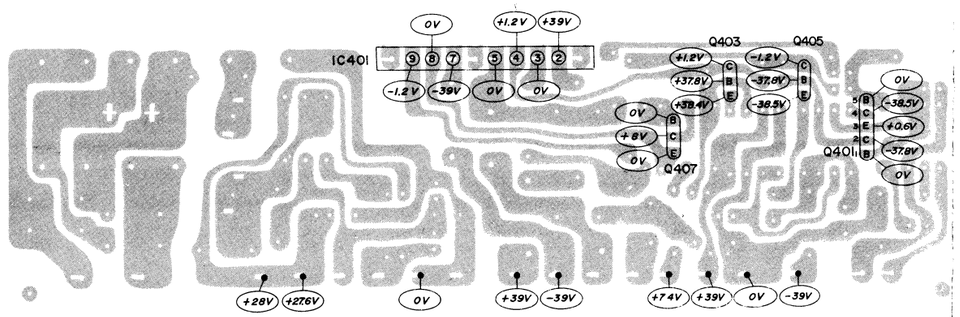
Figure 20 **WIRING SIDE OF P.W. BOARD**


+28V
-6.5V
0V
+0.1V
Q502
0V
+7.4V
0V
+26V
Q501
+3.6V
+26V
+2.9V
Q504
+5.6V
+6.2V
+6.4V
Q503
+6.2V
0V
0V
+26V
0V
0V


Q202
+20.4V
0V
+0.6V
+21V
+1.1V
Q204
+21V
-26V
Q206
+21V
+1.5V
+20.4V
Q201
+20.4V
0V
+0.6V
+21V
+1.1V
Q203
Q205
+20.4V
+1.5V
+21V


+27.6V
0V
-34V
Q702
-28.6V
-28V
-32V
-28V
0V
+21V
Q701
+21V
+21.6V
+26V


Q106
-4.6V
-28V
-4.1V
Q104
+16.6V
-4.6V
+18V
Q102
+18V
0V
+0.6V
Q103
+18V
-4.6V
+16.6V
Q101
+0.6V
0V
+18V
Q105
-4.1V
-28V
-4.6V


0V
+1.2V
+39V
IC401
-1.2V
-39V
0V
0V
Q403
+1.2V
+37.8V
+38.4V
Q405
-1.2V
-37.8V
-38.5V
0V
+8V
0V
Q407
Q401
0V
-38.5V
+0.6V
-37.8V
0V
+28V
+27.6V
0V
+39V
-39V
+74V
+39V
0V
-39V

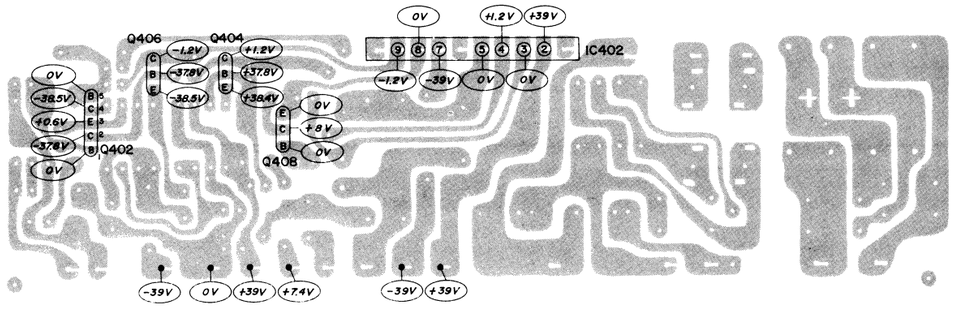

Q406
-1.2V
-37.8V
-38.5V
Q404
+1.2V
+37.8V
+38.4V
Q402
0V
-38.5V
+0.6V
-37.8V
0V
0V
+8V
0V
Q408
0V
+1.2V
+39V
IC402
-1.2V
-39V
0V
0V
-39V
0V
+39V
+74V
-39V
+39V

Figure 21

REPLACEMENT PARTS LIST

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NUMBER 2. REF. NO.
3. PART NO. 4. DESCRIPTION

REF. NO.	PART NO.	DESCRIPTION	CODE
		INTEGRATED CIRCUIT	
IC-401, IC-402	RH-IX1055AFZZ	Output	BD
		TRANSISTORS	
Q101, Q102	VS2SK68A///1F	FET, Low Noise/1st Stage Equalizer Amp. (2SK68A)	AF
Q103, Q104	VS2SA872-E/-1	2nd Stage Equalizer Amp. (2SA872E)	AE
Q105, Q106	VS2SA872-E/-1	3rd Stage Equalizer Amp. (2SA872E)	AE
Q201, Q202	VS2SK68A///1F	FET, Differential Amp. (2SK68A)	AF
Q203, Q204	VS2SC1775E/-1	Differential Amp. (2SC1775E)	AD
Q205, Q206	VS2SA872-E/-1	Tone Amp. (2SA872E)	AE
Q401, Q402	VS2SA798-G/-1	Differential Amp. (2SA798G)	AF
Q403, Q404	VS2SA818-Y/-1	Pre Driver/Constant Current (2SA818Y)	AH
Q405, Q406	VS2SC1628-Y-1	Pre Driver (2SC1628Y)	AH
Q407, Q408	VS2SC1890-E-1	Detection, Over Current (2SC1890E)	AD
Q501, Q502	VS2SC1000BL-1	Protection Circuit (2SC1000BL)	AD
Q503, Q504	VS2SC1000BL-1	Schmitt Trigger (2SC1000BL)	AD
Q701	VS2SC1166-Y-3	Constant Voltage (Positive) (2SC1166Y)	AE
Q702	VS2SA661-Y/-3	Constant Voltage (Negative) (2SA661Y)	AE
		DIODES	
D401, D402	VHVHV46-G//-1	Constant Current (HV-46GR)	AC
D403, D404	VHD10E1////-1	Detection, Over Current (10E-1)	AC
D501	VHD10E1////-1	Power Rectifier (10E-1)	AC
D502	VHD1S1555V/1G	Protection, Temperature of heat sink increasing abnormally (1S1555V)	AB
D503	VHD1S1555V/1G	Noise Detecter, Power ON/OFF (1S1555V)	AB
D504	VHD1S1555V/1G	Protection, Relay (1S1555V)	AB
D601, D602, D603	VHD30D2////-1	Power Rectifier (30D-2)	AF
D604, D609, D610, D611, D612	VHD30D2////-1	Power Rectifier (30D-2)	AF
D613, D614	VHD10E1////-1	Power Rectifier (10E-1)	AC
D702	VHD1S1555V/1G	Constant Voltage (1S1555V)	AB
D901	VHPGL-52RG/1F	Light Emitting (Protection Lamp)	
		ZENER DIODES	
ZD401, ZD402	VHERD15ED//1F	Voltage Regulator (14.7 ~ 15V)	AD
ZD701	VHEWZ220///-1	Voltage Regulator (20.8 ~ 23.2V)	AD
ZD702	VHERD15ED//1F	Voltage Regulator (14.7 ~ 15V)	AD
ZD703	VHERD15ED//1F	Voltage Regulator (14.7 ~ 15V)	AD
		THERMISTOR	
PTH901	RH-QX1001AFZZ	Positive Characteristic	AF
PTH902	RH-QX1001AFZZ	Positive Characteristic	AF
		COILS	
L401, L402	RCILZ0050AFZZ	.8μH	AD
		TRANSFORMERS	
T901, T902	RTRNP0486AFZZ	Power	
T903	RTRNP0487AFZZ	Power	
		CONTROLS	
VR201 (A, B)	RVR-G0051AFZZ	Balance, 100K (MN)	AH
VR202 (A, B)	RVR-Z0060AFZZ	Volume, 100K	AS
VR203 (A, B)	RVR-C0055AFZZ	Bass, 100K (C)	AK
VR204 (A, B)	RVR-C0055AFZZ	Treble, 100K (C)	AK
		ELECTROLYTIC CAPACITORS	
C105, C106	VCEAAU0JW337Y	330MFD, 6.3V, +50–10%	AC
C107, C108	VCEAAU0JW337Y	330MFD, 6.3V, +50–10%	AC

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
C117, C118	VCEAAU1CW106Y	10MFD, 16V, +50–10%	AB
C123, C124	VCEALU1HW335M	3.3MFD, 50V, ±20%	AC
C125, C126	VCEALU1HW335M	3.3MFD, 50V, ±20%	AC
C213, C214	VCEALU1AW336M	33MFD, 10V, ±20%	AC
C301, C302	VCEALU1HW334M	.33MFD, 50V, ±20%	AB
C401, C402	VCEALU1HW335M	3.3MFD, 50V, ±20%	AC
C403, C404	VCEAAU1EW106Y	10MFD, 25V, +50–10%	AB
C405, C406	RC-EZ1012AFZZ	47MFD, 50V, +50–10%	
C411, C412	RC-EZ1010AFZZ	33MFD, 25V, +50–10%	
C429, C430	VCEAAU1AW476Y	47MFD, 10V, +50–10%	AB
C502, C503	VCEAAU1CW106Y	10MFD, 16V, +50–10%	AB
C504, C505	RC-EZ1015AFZZ	220MFD, 16V, +50–10%	
C506	VCEAAU1HW476Y	47MFD, 50V, +50–10%	AC
C507	VCEAAU1CW107Y	100MFD, 16V, +50–10%	AC
C509	VCEAAU1HW476Y	47MFD, 50V, +50–10%	AC
C614	VCEAAU1HW477Y	470MFD, 50V, +50–10%	AG
C618	VCEAAU1HW107Y	100MFD, 50V, +50–10%	AD
C619	VCEAAU1HW227Y	220MFD, 50V, +50–10%	AD
C701, C702	RC-EZ1012AFZZ	47MFD, 50V, +50–10%	
C703, C704	VCEAAU1HW476Y	47MFD, 50V, +50–10%	AC
C705, C706	VCEAAU1HW476Y	47MFD, 50V, +50–10%	AC
C902, C903	RC-EZ1006AFZZ	6800MFD×2, 50V, +50 –10%	BA
		CAPACITORS	
		(Unless otherwise specified capacitors are 50V, ±5%, mylar type.)	
C101, C102	VCCSPU1HL680J	68PF, 50V, ±5%, Ceramic	
C103, C104	VCQYKU1HM102M	.001MFD, 50V, ±20%, Mylar	AB
C109, C110	VCCSPU1HL3R0C	3PF, 50V, ±.25PF, Ceramic	
C111, C112	VCQSMU1HD562G	5600PF, 50V, ±2%, Styrol	AD
C113, C114	VCQSMU1HS101J	100PF, 50V, ±5%, Styrol	AC
C115, C116	VCQSMU1HD152G	1500PF, 50V, ±2%, Styrol	AD
C119, C120	VCQYKU1HM123M	.012MFD, 50V, ±20%, Mylar	AB
C121, C122	VCKZPU1HF203Z	.02MFD, 50V, +80–20%,	
C201, C202	VCCSPU1HL271K	270PF, 50V, ±10%, Ceramic	
C203, C204	VCQYKU1HM563K	.056MFD, 50V, ±10%, Mylar	AC
C205, C206	VCCSPU1HL560J	56PF, 50V, ±5%, Ceramic	
C207, C208	VCQYKU1HM224M	.22MFD, 50V, ±20%, Mylar	AE
C209, C210	VCCSPU1HL180J	18PF, 50V, ±5%, Ceramic	
C211, C212	VCCSPU1HL100C	10PF, 50V, ±.25%, Ceramic	
C215, C216	VCQYKU1HM183J	.018MFD	AC
C217, C218	VCQYKU1HM104J	.1MFD	AD
C219, C220	VCQYKU1HM183J	.018MFD	AC
C221, C222	VCQYKU1HM104J	.1MFD	AD
C223, C224	VCQYKU1HM102J	.001MFD	AC
C225, C226	VCQYKU1HM102J	.001MFD	AC
C227, C228	VCQYKU1HM562J	.0056MFD	AC
C229, C230	VCQYKU1HM562J	.0056MFD	AC
C231, C232	VCKZPU1HF203Z	.02MFD, 50V, +80–20%, Ceramic	
C303, C304	VCQYKU1HM472J	.0047MFD,	AC
C407, C408	VCCSPU1HL680J	68PF, 50V, ±5%, Ceramic	
C413, C414	VCCSPU2HL4R0C	4PF, 500V, ±.25PF, Ceramic	
C415, C416	VCCSPU1HL3R0C	3PF, 50V, ±.25PF, Ceramic	
C423, C424	VCKZPU1HF203Z	.02MFD, 50V, +80–20%, Ceramic	
C425, C426	VCCSPU1HL2R0C	2PF, 50V, ±.25PF, Ceramic	
C427, C428	VCQYKU1HM473M	.047MFD, 50V, ±20%, Mylar	AC
C508	VCKZPU1HF203Z	.02MFD, 50V, +80–20%, Ceramic	
C601, C602	VCKZPU2TE103Z	.01MFD, 150V, +80–20%, Ceramic	
C603, C604	VCKZPU2TE103Z	.01MFD, 150V, +80–20%, Ceramic	
C609, C610	VCKZPU2TE103Z	.01MFD, 150V, +80–20%, Ceramic	
C611, C612	VCKZPU2TE103Z	.01MFD, 150V, +80–20%, Ceramic	
C617	VCKZPU2TE103Z	.01MFD, 150V, +80–20%, Ceramic	
C620	VCKZPU2TE103Z	.01MFD, 150V, +80–20%, Ceramic	
C901	RC-PZ062CAFZZ	.033MFD, 450V (AC)	AG
C904, C905	VCKZPU1HF203Z	.02MFD, 50V, +80–20%, Ceramic	
C907, C908	VCKZPU1HF223Z	.022MFD, 50V, +80–20%, Ceramic	
C909	VCKZPU1HF403Z	.04MFD, 50V, +80–20%, Ceramic	
		RESISTORS	
		(Unless otherwise specified resistors are 1/4W, ±5% Carbon type.)	
R101, R102	VRD-ST2EE221J	220 ohm	
R103, R104	VRD-ST2EE473J	47K ohm	

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
R105, R106	VRD-ST2EE823J	82K ohm	
R107, R108	VRD-ST2EE153J	15K ohm	
R109, R110	VRD-ST2EE122J	1.2K ohm	
R111, R112	VRD-ST2EE124J	120K ohm	
R113, R114	VRN-RT2EC564F	560K ohm, 1/4W, ±1%, Metal Film	
R117, R118	VRD-ST2EE473J	47K ohm	
R119, R120	VRD-ST2EE682J	6.8K ohm	
R121, R122	VRD-ST2EE823J	82K ohm	
R123, R124	VRD-ST2EE562J	5.6K ohm	
R125, R126	VRD-ST2EE124J	120K ohm	
R127, R128	VRD-ST2EE334J	330K ohm	
R129, R130	VRD-ST2EE102J	1K ohm	
R201	VRD-ST2EE102J	1K ohm	
R202	VRD-ST2EE102J	1K ohm	
R203	VRD-ST2EE102J	1K ohm	
R204	VRD-ST2EE102J	1K ohm	
R205	VRD-ST2EE102J	1K ohm	
R206	VRD-ST2EE102J	1K ohm	
R207	VRD-ST2EE102J	1K ohm	
R208	VRD-ST2EE102J	1K ohm	
R209, R210	VRD-ST2EE102J	1K ohm	
R211, R212	VRD-ST2EE102J	1K ohm	
R213, R214	VRD-ST2EE332J	3.3K ohm	
R215, R216	VRD-ST2EE563J	56K ohm	
R217, R218	VRD-ST2EE682J	6.8K ohm	
R219, R220	VRD-ST2EE333J	33K ohm	
R221, R222	VRD-ST2EE103J	10K ohm	
R223, R224	VRD-ST2EE224J	220K ohm	
R225, R226	VRD-ST2EE822J	8.2K ohm	
R227, R228	VRD-ST2EE823J	82K ohm	
R229, R230	VRD-ST2EE105J	1 Meg ohm	
R233, R234	VRD-ST2EE822J	8.2K ohm	
R235, R236	VRD-ST2EE334J	330K ohm	
R237, R238	VRD-ST2EE474J	470K ohm	
R239, R240	VRD-ST2EE474J	470K ohm	
R241, R242	VRD-ST2EE183J	18K ohm	
R243, R244	VRD-ST2EE332J	3.3K ohm	
R245, R246	VRD-ST2EE332J	3.3K ohm	
R247, R248	VRD-ST2EE122J	1.2K ohm	
R249, R250	VRD-ST2EE563J	56K ohm	
R251, R252	VRD-ST2EE103J	10K ohm	
R253, R254	VRD-ST2EE562J	5.6K ohm	
R255, R256	VRD-ST2EE820J	82 ohm	
R257, R258	VRD-ST2EE105J	1 Meg ohm	
R259, R260	VRD-ST2EE105J	1 Meg ohm	
R261, R262	VRD-ST2EE224J	220K ohm	
R263, R264	VRD-ST2EE105J	1 Meg ohm	
R265, R266	VRD-ST2EE105J	1 Meg ohm	
R267, R268	VRD-ST2EE471J	470 ohm	
R269, R270	VRD-ST2EE394J	390K ohm	
R271, R272	VRD-ST2EE104J	100K ohm	
R273, R274	VRD-ST2EE394J	390K ohm	
R275, R276	VRD-ST2EE104J	100K ohm	
R301, R302	VRD-ST2EE221J	220 ohm	
R303, R304	VRD-ST2EE223J	22K ohm	
R305, R306	VRD-ST2EE472J	4.7K ohm	
R307, R308	VRD-ST2EE105J	1 Meg ohm	
R401, R402	VRD-ST2EE334J	330K ohm	
R403, R404	VRD-ST2EE152J	1.5K ohm	
R405, R406	VRD-ST2EE473J	47K ohm	
R407, R408	VRD-ST2EE821J	820 ohm	
R411, R412	VRD-ST2EE822J	8.2K ohm	
R413, R414	VRD-ST2EE473J	47K ohm	
R415, R416	VRD-ST2EE222J	2.2K ohm	
R417, R418	VRG-ST2EA820J	82 ohm, 1/4W, ±5%, Fusible	AB
R419, R420	VRG-ST2HA1R0J	1 ohm, 1/2W, ±5%, Fusible	AB
R421, R422	VRD-ST2EE473J	47K ohm	
R423, R424	VRD-ST2EE470J	47 ohm	

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
R425, R426	VRD-ST2EE561J	560 ohm	
R427, R428	VRD-ST2EE392J	3.9K ohm	
R429, R430	VRS-PT3DB100K	10 ohm, 2W, ±10%, Metal Oxide Film	
R431, R432	VRS-PT3DB2R2K	2.2 ohm, 2W, ±10%, Metal Oxide Film	
R433, R434	VRD-ST2EE822J	8.2K ohm	
R435, R436	VRG-ST2EA101J	100 ohm, 1/4W, ±5%, Fusible	
R437, R438	VRG-ST2HA1R0J	1 ohm, 1/2W, ±5%, Fusible	AB
R501	VRD-ST2EE392J	3.9K ohm	
R502	VRG-ST2EA820J	82 ohm, 1/4W, ±5%, Fusible	AB
R503	VRD-ST2EE273J	27K ohm	
R504	VRD-ST2EE153J	15K ohm	
R505	VRD-ST2EE123J	12K ohm	
R506	VRD-ST2EE123J	12K ohm	
R507	VRD-ST2EE332J	3.3K ohm	
R508	VRD-ST2EE393J	39K ohm	
R509	VRD-ST2EE333J	33K ohm	
R510	VRD-ST2EE104J	100K ohm	
R511	VRD-ST2EE470J	47 ohm	
R512	VRD-ST2EE392J	3.9K ohm	
R513	VRD-ST2EE221J	220 ohm	
R514	VRD-ST2EE121J	120 ohm	
R515	VRD-ST2EE223J	22K ohm	
R516	VRD-ST2EE221J	220 ohm	
R517	VRD-ST2EE223J	22K ohm	
R518	VRS-PT3DB681K	680 ohm, 2W, ±10%, Metal Oxide Film	
R520	VRS-PT3DB271K	270 ohm, 2W, ±10%, Metal Oxide Film	
R521	VRS-PT3DB271K	270 ohm, 2W, ±10%, Oxide Film	
R601	VRG-ST2EA220J	22 ohm, 1/4W, ±5%, Fusible	AB
R703, R704	VRD-ST2EE682J	6.8K ohm	
R705	VRD-ST2EE122J	1.2K ohm	
R706	VRD-ST2EE821J	820 ohm	
R707, R708	VRG-ST2EA820J	82 ohm, 1/4W, ±5%, Fusible	AB

MISCELLANEOUS

GCAB-3038AFSA	Cabinet, Top	
GCOVA1070AFSC	Cover, Tape Dubbing Switch/ Tape Monitor Switch (SM-3636H)	AD
GCOVA1097AFSA	Cover, Tape Dubbing Switch/ Tape Monitor Switch (SM-3636HB)	
GFTAU3058AFZZ	Cabinet, Bottom	AQ
GLEGP0002SG00	Leg	
HPNLC3280AFSA	Panel, Front (SM-3636H)	AD
HPNLC3280AFSB	Panel, Front (SM-3636HB)	
JKNBM0136AFSE	Knob, Muting Switch	
JKNBM0136AFSE	Knob, Muting Switch (SM-3636H)	AC
JKNBM0136AFSD	Knob, Muting Switch (SM-3636HB)	
JKNBN0327AFSA	Knob, Volume Control (SM-3636H)	AN
JKNBN0327AFSB	Knob, Volume Control (SM-3636HB)	
JKNBN0330AFSA	Knob, Bass Control/Speakers Selector/Treble Control/ Balance Control/Mode Selector/Function Selector 2 (SM-3636H)	AH
JKNBN0330AFSB	Knob, Bass Control/Speakers Selector/Treble Control/ Balance Control/Mode Selector/Function Selector 2 (SM-3636HB)	
LANGF0374AFZZ	Bracket, Main P.W. Board	AD
LANGQ0514AFSA	Bracket, Terminal (SM-3636H)	
LANGQ0543AFSA	Bracket, Terminal (SM-3636HB)	
LANGR0407AFZZ	Bracket, Front	AM
LANGT0451AFZZ	Bracket, Main Chassis	AE
LBSHC0002AGZZ	Bushing, AC Supply Cord (SUK · SCA)	AB
LBSHC0004AGZZ	Bushing, AC Supply Cord (SEMKO · KEMA · NEMKO · DEMKO)	AC
LBSHC0007AFZZ	Bushing, AC Supply Cord (A.P.C · SEV)	AB
LCHSM0218AFZZ	Main Chassis	
LHLDF1204AFZZ	Holder, Shield Plate Settle	AB
LHLDZ8051AFZZ	Holder, Light Emitting Diode	
LX-HZ0053AFFD	Flange Head Screw	
LX-NZ0118AFFD	Nut, Headphone	AA
LX-WZ0019AFFW	Washer	AA
LX-WZ5065AGFE	Washer, Fuse Holder	AB
PCOVS3054AFZZ	Shield Plate, Power Switch	AC
PCOVS3061AFZZ	Shield Plate, Aux, Tuner/ Phono 1, 2 P.W. Board	
PRDAR0131AFFW	Heat Sink	AV
PSHEF0048AG00	Sheet, Top Cabinet	AA
QLUGZ015AAFZZ	Lug Terminal, GND	AA
PSPAI0106AFZZ	Spacer, Top Cabinet	AA
PSPAS0008SGSA	Spacer, Muting Switch (SM-3636H)	AB
PSPAS0008SGSB	Spacer, Muting Switch (SM-3636HB)	
QACCB0051AF0V	AC Supply Cord, (SUK)	AN
QACCL4001SE08	AC Supply Cord, (SCA)	AS
QACCN0001AGZZ	AC Supply Cord, (SEMKO)	AQ
QACCS9001SE00	AC Supply Cord, (SEV)	AG
QACCV0001AGZZ	AC Supply Cord, (KEMA)	AP
QACCZ0002AG08	AC Supply Cord	AF
QACCZ0002TA0F	AC Supply Cord, (A.P.C)	AF
QFS-C121CAGNI	Fuse, 125mAT	AF
QFS-C252CAGNI	Fuse, 2.5AT	AE
QFS-C322CAGNI	Fuse, 3.15AT	AE
QFS-C502CAGNI	Fuse, 5AT	
F601, F602, F603, F604	QFSHC0003AGZZ Fuse Holder	AD
F605	QFSHD1001AGZZ Fuse Holder	
F901	QFSHP1001AGZZ Socket, Fuse	AH
J501	QJAKJ0057AFZZ Jack, Headphone	AG
	QPLGA0201AGZZ Plug, AC Supply Cord	AE
	QPLGA0205AGZZ Plug, AC Supply Cord (SEV)	AK
	QPLGZ0150AFZZ Short Plug	AB
	QPWBF0353AFZZ P.W. Board, TAPE-1/TAPE-2	
	QPWBF0568AFZZ P.W. Board, Main	
	QPWBF0571AFZZ P.W. Board, Power	
	QPWBF0573AFZZ P.W. Board, AUX · TUNER/ PHONO-1 · PHONO-2	

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
SO906	QSOCE0554AFZZ	Socket, Main Voltage Selector	AK
SO901 (A ~ E), SO902 (A ~ E)	QSOCZ2450AFZZ	Socket, TAPE-1/TAPE-2	AK
SO905 (A ~ D)	QSOCJ2459AFZZ	Socket, PRE OUT/MAIN IN	AE
SO903 (A ~ D), SO904 (A ~ D)	QSOCZ2472AFZZ	Socket, AUX · TUNER/ PHONO 1 · PHONO 2	
SW102, SW206 (A ~ D), SW208 (A ~ D)	QSW-B0063AFZZ	Switch, Function Selector 1/ Bass-Turnover/Treble-Turnover	AH
SW901 (A, B)	QSW-B9059AFZZ	Switch, Power	AQ
SW201 (A, B)	QSW-B0054AFZZ	Switch, Tape Dubbing	AL
SW204 (A, B)	QSW-P0139AFZZ	Switch, Muting	AG
SW203	QSW-R0101AFZZ	Switch, Mode	AN
SW501	QSW-R0114AFZZ	Switch, Speakers Selector	AN
SW101	QSW-R0137AFZZ	Switch, Function Selector 2	AN
TM901	QTANN0150AFZZ	Terminal, GND	AD
TM903, TM904	QTANZ0454AFZZ	Terminal, Speakers A/ Speakers B	AG
RLY501	RRLYZ0050AFZZ	Relay	AW
	PSHEF0110AFZZ	Felt, Power Switch/Bass-Turnover Switch/Defeat Switch/Treble-Turnover Switch/Low Cut Filter Switch/High Cut Filter Switch/Loudness Switch/ Function Selector 1 Switch/ Tape Dubbing Switch/Tape Monitor Switch	AA
	JKNBP0070AFSA	Knob, Power Switch/Bass-Turnover Switch/Defeat Switch/Treble-Turnover Switch/Low Cut Filter Switch/High Cut Filter Switch/Loudness Switch/ Function Selector 1 Switch/ Tape Dubbing Switch/Tape Monitor Switch (SM-3636H)	AH
	JKNBP0070AFSC	Knob, Power Switch/Bass-Turnover Switch/Defeat Switch/Treble-Turnover Switch/Low Cut Filter Switch/High Cut Filter Switch/Loudness Switch/ Function Selector 1 Switch/ Tape Dubbing Switch/Tape Monitor Switch (SM-3636HB)	AH
	GCOVA1071AFSC	Cover, Power Switch/Bass-Turnover Switch/Defeat Switch/Treble-Turnover Switch/Low Cut Filter Switch/High Cut Filter Switch/Loudness Switch/ Function Selector 1 Switch (SM-3636H)	AD
	GCOVA1098AFSA	Cover, Power Switch/Bass-Turnover Switch/Defeat Switch/Treble-Turnover Switch/Low Cut Filter Switch/High Cut Filter Switch/Loudness Switch/ Function Selector 1 Switch (SM-3636HB)	
	QLUGL0402AGZZ	Terminal Strip, 4-Lug	
SW301, (A, B) SW302, (A, B) SW205, (A, B) SW207 (A, B)	QSW-B0051AFZZ	Switch, Low Cut Filter/High Cut Filter/Loudness/Defeat	AK
SW202 (A, B)	QSW-B0073AFZZ	Switch, Tape Monitor	AH
	SPAKA0447AFZZ	Packing Add.	AH
	SPAKA0456AFZZ	Packing Add.	AH
	SPAKC0998AFZZ	Packing Case (SM-3636H)	
	SPAKF0002AGZZ	Packing Material	AA
	SSAKA0023AGZZ	Polyethylene Bag	AC
	SSAKA0007SEZZ	Polyethylene Bag	AA
	SPAKC1054AFZZ	Packing Case (SM-3636HB)	
	LBSHC0056AFZZ	Bushing, Main Chassis	
	LHLDW1027AFZZ	Wire Holder	
	LHLDW1060AFZZ	Wire Clip	
	LHLDW1052AFZZ	Wire Holder	
	LHLDW1069AFZZ	Capacitor Clip	