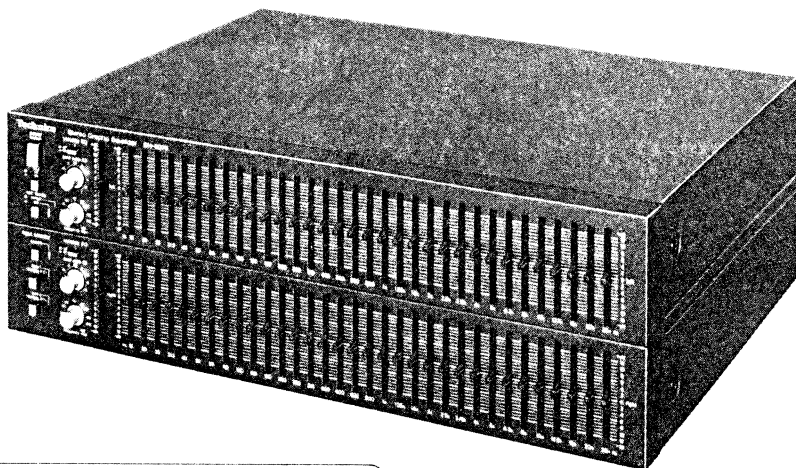


Service Manual

Stereo Graphic Equalizer SH-8075(K)

[EK],[EF],[EH],[EB],
[EGA]



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

Areas

- * [EK] is available in United Kingdom.
- * [EF] is available in France.
- * [EH] is available in Holland.
- * [EB] is available in Belgium.
- * [EGA] is available in F.R. Germany.

Specifications

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

(DIN 45 500)

Frequency response (center position)	: 5 Hz~100 kHz, -1 dB
Maximum output voltage	: 8 V (1 kHz, THD 0.01%) (LOW LEVEL 150 mV)
Rated output voltage	: 1 V
Rated total harmonic distortion	: 0.001% (20 Hz~20 kHz)
Input sensitivity	: 1 V
Signal-to-noise ratio	: 110 dB (120 dB, IHF 'A)/2 V 104 dB (114 dB, IHF 'A)/1 V
Maximum input voltage	: 8 V (1 kHz) (LOW LEVEL 150 mV)
Input impedance	: 47 kΩ
Output impedance	: 600Ω
Gain	: 0±1 dB
Channel balance 250 Hz~6300 Hz	: ±0.5 dB
Channel separation 1 kHz	: 70 dB
Band level controls	: +12 dB~-12 dB (33 elements continuously variable per channel)
Signal level selector	: 150 mV/1 V

Center frequency	: 16 Hz, 20 Hz, 25 Hz, 31.5 Hz, 40 Hz, 50 Hz, 63 Hz, 80 Hz, 100 Hz, 125 Hz, 160 Hz, 200 Hz, 250 Hz, 315 Hz, 400 Hz, 500 Hz, 630 Hz, 800 Hz, 1 kHz, 1.25 kHz, 1.6 kHz, 2 kHz, 2.5 kHz, 3.15 kHz, 4 kHz, 5 kHz, 6.3 kHz, 8 kHz, 10 kHz, 12.5 kHz, 16 kHz, 20 kHz, 25 kHz
------------------	--

Variable equalizer

Center-frequency controls (variable)	: 20 Hz~400 Hz
Bandwidth controls(Q)	: 0.7~7
Band level controls	: +12 dB~-12 dB

GENERAL

Power supply	: AC 110 V/120 V/220 V/240 V, 50 Hz/60 Hz
Power consumption	: 34 W
Dimensions (H×W×D)	: 153×430×330 mm (6-1/32"×16-15/16"×13")
Weight	: 6.6 kg (14.5 lb)

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Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

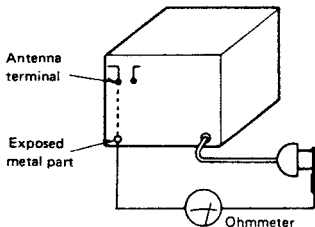
SAFETY PRECAUTION

- 1. Before servicing, unplug the power cord to prevent an electric shock.
- 2. When replacing parts, use only manufacturer's recommended components for safety.
- 3. Check the condition of the power cord. Replace if wear or damage is evident.
- 4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
- 5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

INSULATION RESISTANCE TEST

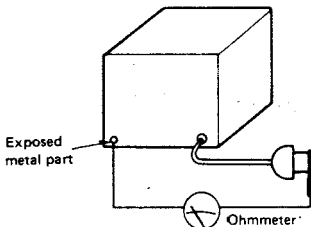
- 1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
- 2. Turn on the power switch.
- 3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between $3M\Omega$ and $5.2M\Omega$ to all exposed parts. (Fig. A) Equipment without antenna terminals should read approximately infinity to all exposed parts. (Fig. B).

Note: Some exposed parts may be isolated from the chassis by design. These will read infinity.



(Fig. A)

Resistance = $3M\Omega - 5.2M\Omega$

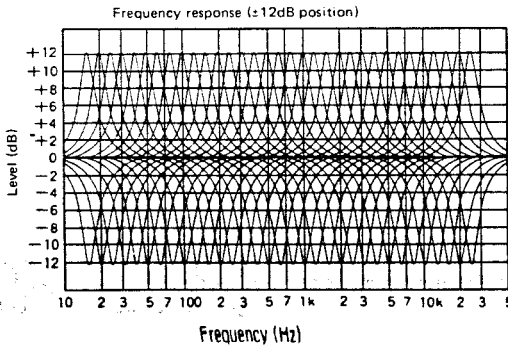


(Fig. B)

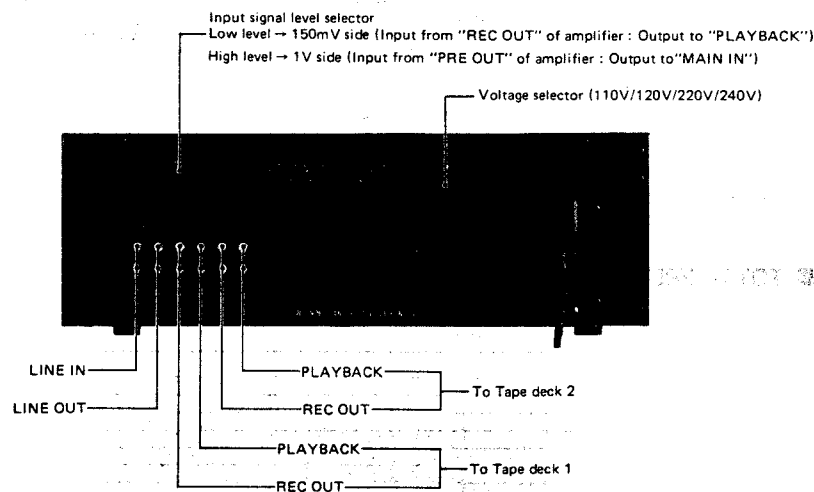
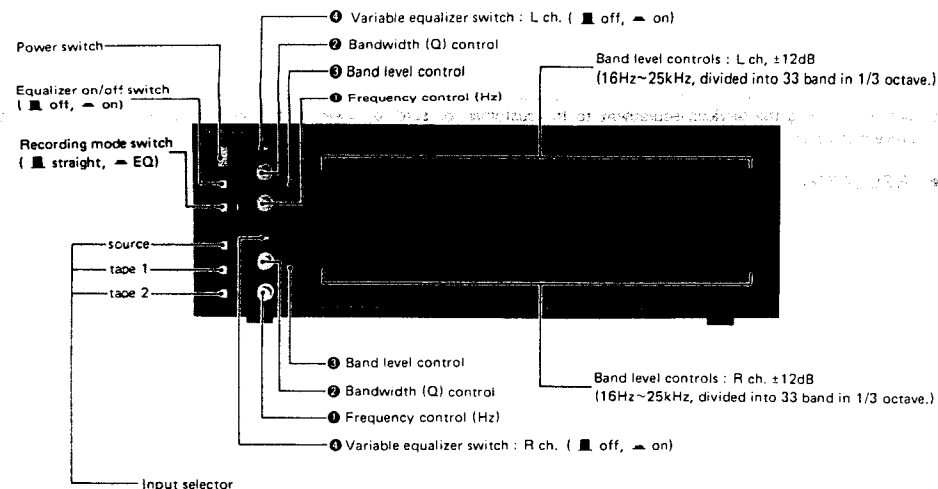
Resistance = Approx ∞

- 4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

TOTAL FREQUENCY RESPONSE



LOCATION OF CONTROLS



VARIABLE EQUALIZER

(The "Technica Information" on page 17 also describes the variable equalizer.)

The variable equalizer can be used for corrections of low-frequency characteristics. The functions in this unit are as follows:

- 1 **Center frequency control knob** (frequency, Hz) is able to continuously vary the frequency in a range of 20Hz ~ 400Hz to set it to the desired point.
- 2 **Band width knob** (bandwidth, Q) is able to continuously vary the resonance peak (Q) of frequency set by knob 1 in a range of 0.7~7. Turning it counterclockwise decreases the value of Q, making

the peak and dip gentle, while turning it clockwise increases the value of Q, making the peak and dip sharp, resulting in less interference given by or to adjacent channels.

- 3 **Variable equalizer band level control** is able to vary the frequency set by knob 1 by ± 12 dB.
 - If the frequency set by knob 1 is 63 Hz, then it can be varied ± 24 dB by using the knob 3 and the 33-division 63 Hz band level control knob.
- 4 **Variable equalizer switch** (variable EQ) is a switch to turn on/off the control knobs 1 ~ 3.

OTHER SWITCHES

★ Equalizer on/off switch (EQ)

This switch is used to turn on/off the equalizer circuit. With it set to "on", the frequency characteristic can be varied by the upper and lower band level controls (33 sets each) and the variable equalizer band level controls (1 set each).

With it set to "off", a signal is obtained not to make equalizer correction.

* Even when power switch is off with this switch turned off, the signal comes out through the unit.

★ Record mode switch (rec mode)

When recording on a tape deck, correction mode is selected by this switch.

"EQ" is the position for recording with correction given.

If the equalizer on/off switch is set to "off", the "straight" indicator lights up and signal without correction will be recorded. "Straight" is the position for recording without correction given.

★ Input selector switch

"Source" is the position for record play and radio broadcast.

"tape 1" is the position for playback on a tape deck connected to "TAPE 1" terminal on the rear chassis or for dubbing from tape deck 1 to 2.

"tape 2" is the position for playback on tape deck 2 or for dubbing from tape deck 2 to 1.

DISASSEMBLY INSTRUCTIONS

• How to remove the bottom board

1. Remove the 8 setscrews (red) as in [Fig. 1] to remove the bottom board.

* Remove the bottom board from underneath the front panel as shown by the arrows.

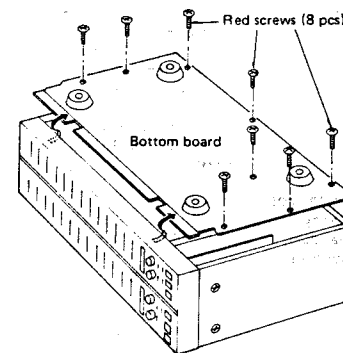


Fig. 1

• How to remove the front panel

1. Remove the setscrews 1 ~ 9 [Fig. 2] to remove the cabinet.
2. Remove the 5 setscrews [Fig. 2] of the front panel.
3. Pull out the 6-pin connector [terminals 20 ~ 25] from the switch P.C.B. on the left side. [Fig. 3]
4. Remove the front panel with care not to scratch the knobs.

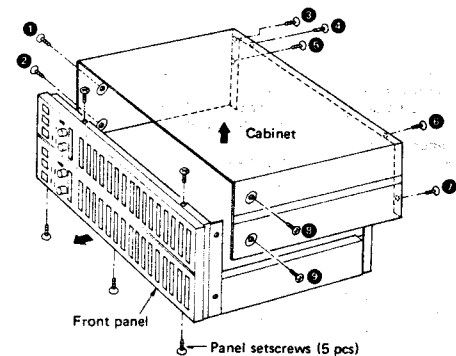


Fig. 2

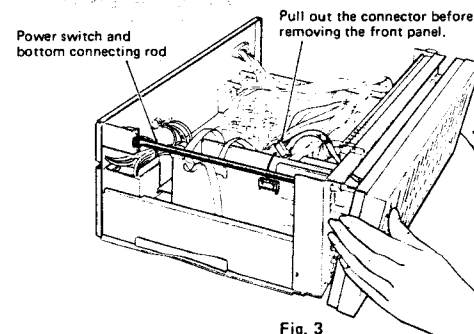


Fig. 3

● How to remove the band level control P.C.B.

1. Remove the front panel.
2. Remove the band level control knob. (The light guide plate is removed with it.)
3. Remove the light shielding cloth. [Fig. 4]
4. Remove the 9 setscrews which secure the R or L channel P.C.B. [Fig. 5]
5. Remove the band level control P.C.B.

* Each control LED is inserted into the volume lever with longer pin side down.

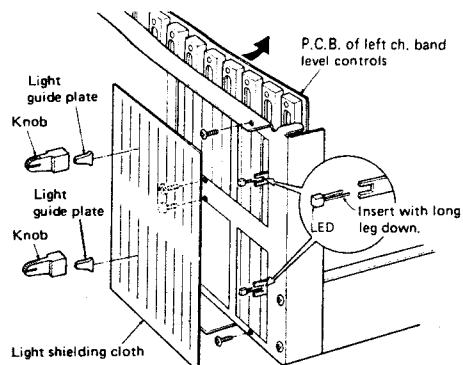


Fig. 4

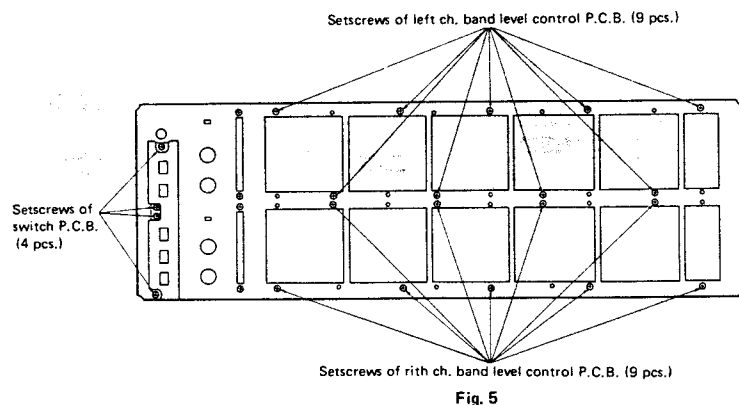


Fig. 5

● How to remove the switch P.C.B. and variable equalizer P.C.B.

1. Remove the front panel.
2. Remove the 4 setscrews of switch P.C.B. [Fig. 5].
3. Pull out the switch P.C.B. fixing pin [Fig. 8].
4. Remove the 6-pin [terminals (43) ~ (48)] and 7-pin [terminals (37) ~ (42)] connectors from the variable equalizer P.C.B. and then remove the switch P.C.B. as in Fig. 6.
5. Check the P.C.B. as shown in Fig. 7.

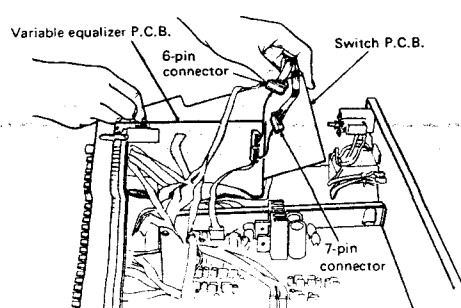


Fig. 6

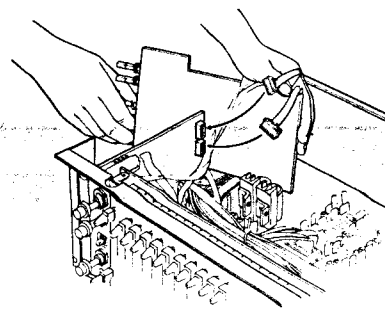


Fig. 7

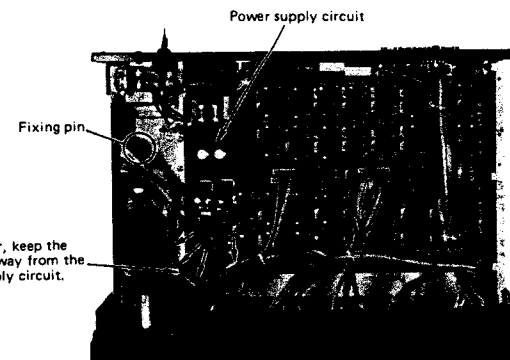


Fig. 8

● After repair

1. Make the wiring away from the power supply circuit as in Fig. 8.
2. Be sure to fit each button and switch in correct positions. [Fig. 9].

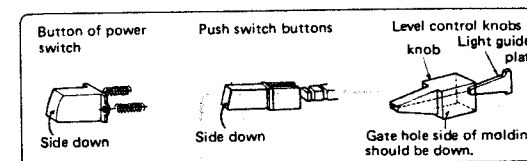


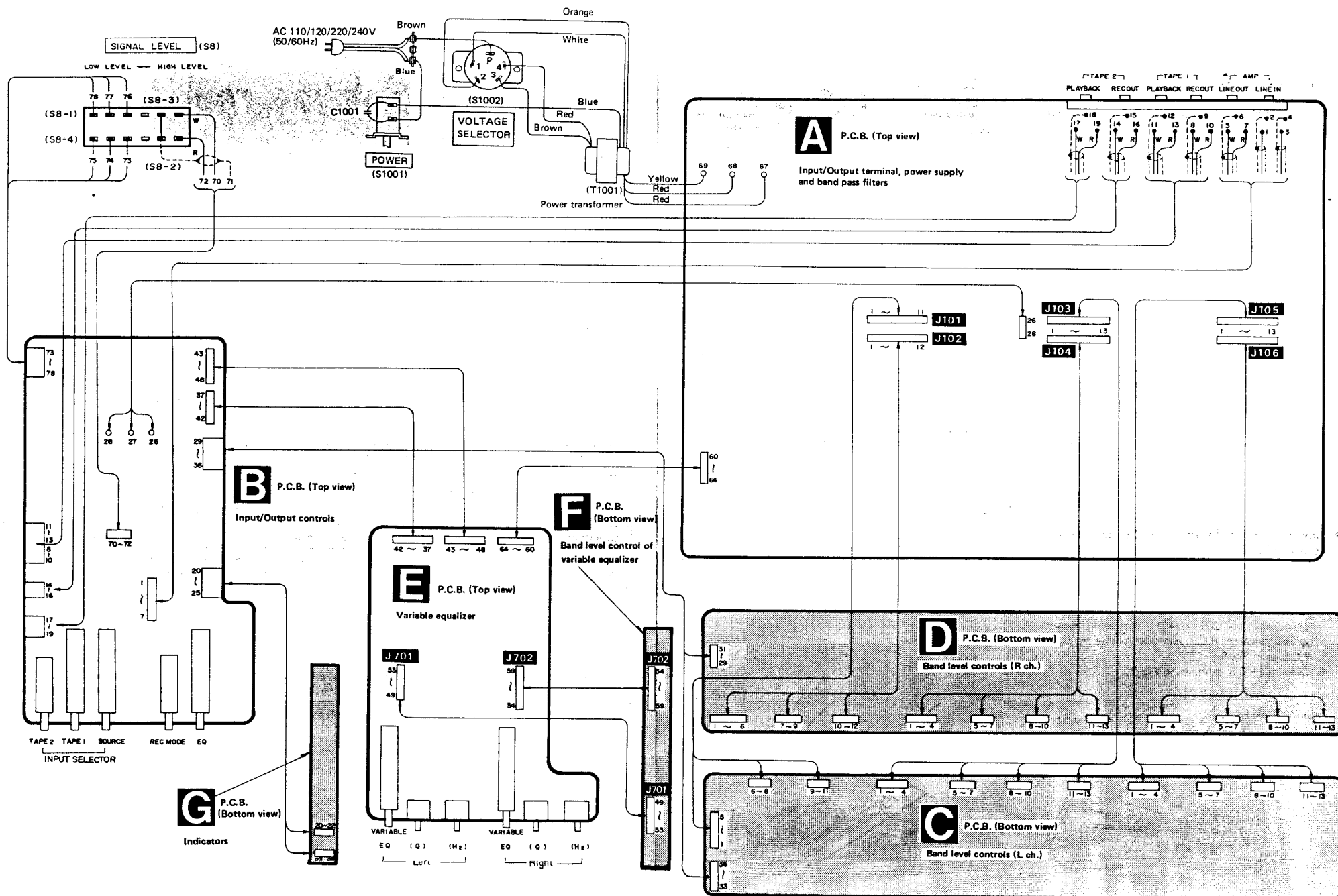
Fig. 9

■ MODEL NO. SH-8065 BE DIFFERENT MODEL NO. SH-8075

Model No.	SH-8065	SH-8075
Dimensions	430(W) x 153(H) x 330(D) mm	
Cabinet colour	Silver, Black	Black
Center frequency (No. of BPF elements)	33 elements (16 Hz ~ 25 kHz, 1/3 octave) Right and left, independent of each other.	
Recording selector	"EQ position" switch	"rec mode" switch
Input selector	source tape (Playback)	source tape 1 (dubbing from tape 1 to 2) tape 2 (dubbing from tape 2 to 1)
Positive/negative characteristic selection	Characteristic can be selected with the switch.	Not possible (Selecting switch is not provided.)
Variable range selector	± 12 dB/ ± 3 dB can be selected	Not possible (± 12 dB only)
(*) Variable equalizer selector	None	Possible
(*) Band width control (Q)	None	Possible (0.7 ~ 7 continuously variable)
(*) Center frequency control	None	Possible
(*) Variable EQ band level control	None	Possible

(*) SH-8075 is provided with variable equalizer circuit so that the center frequency (20 Hz ~ 400 Hz) and its band width other than the other band levels can be varied by variable EQ switch.

■ PRINTED CIRCUIT BOARDS WIRING CONNECTION DIAGRAM

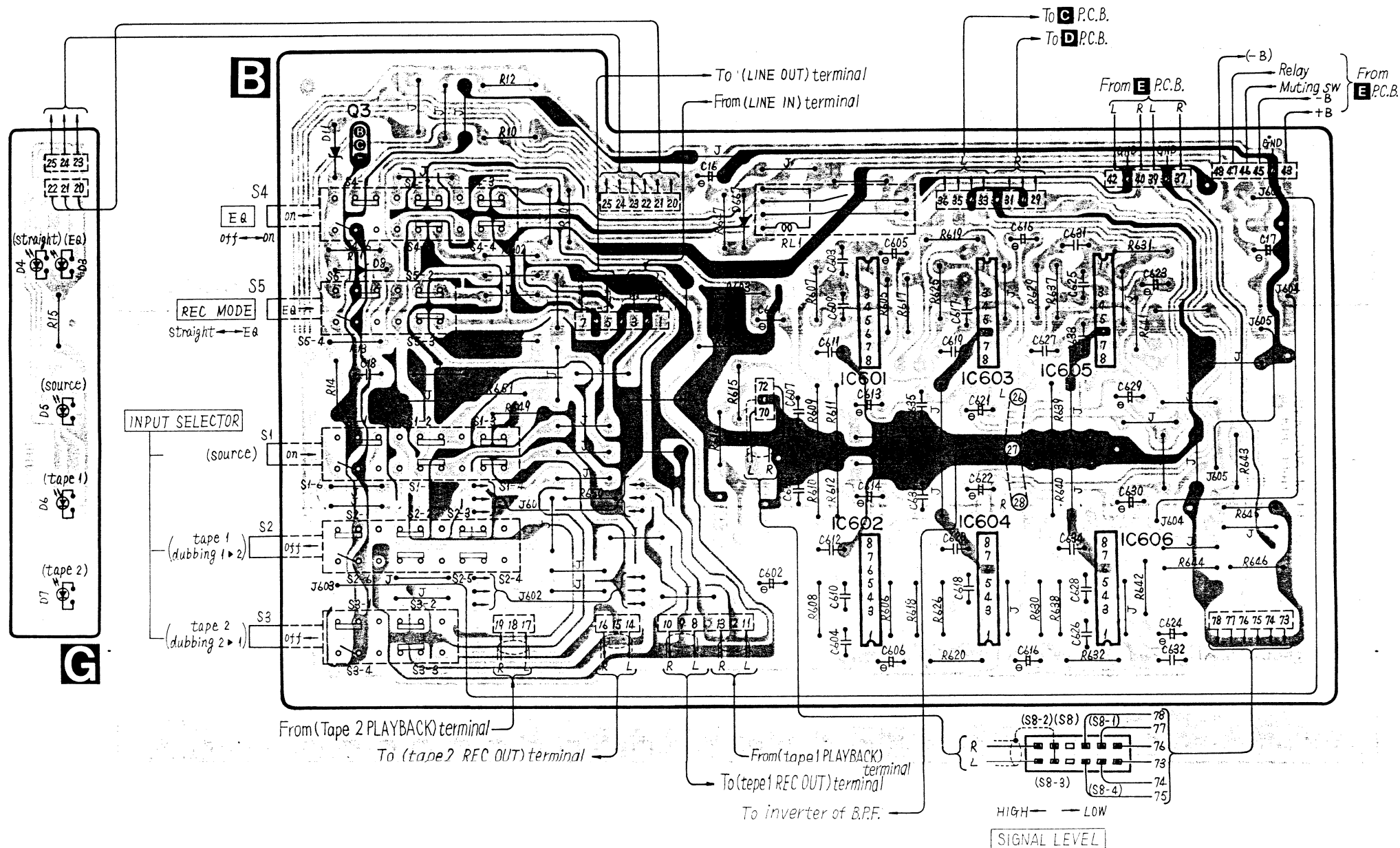


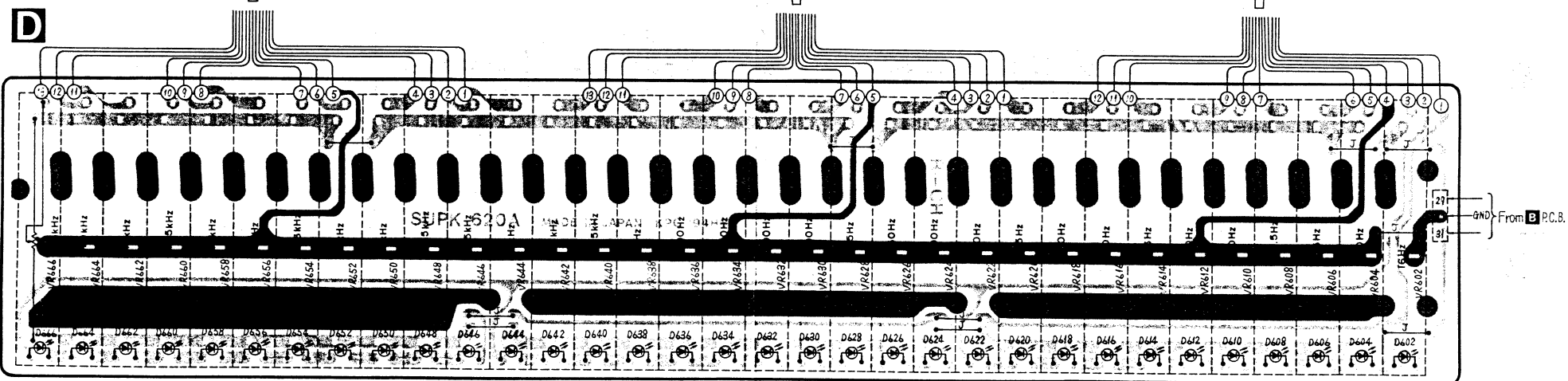
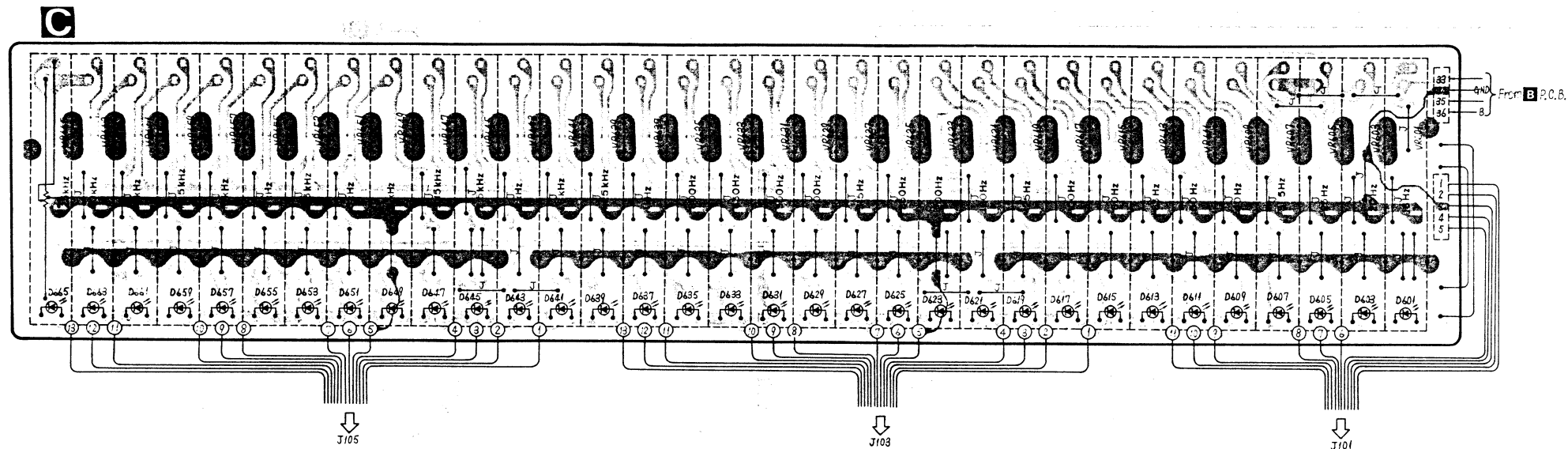
■ PRINTED CIRCUIT BOARDS

G P.C.B. (INDICATORS)

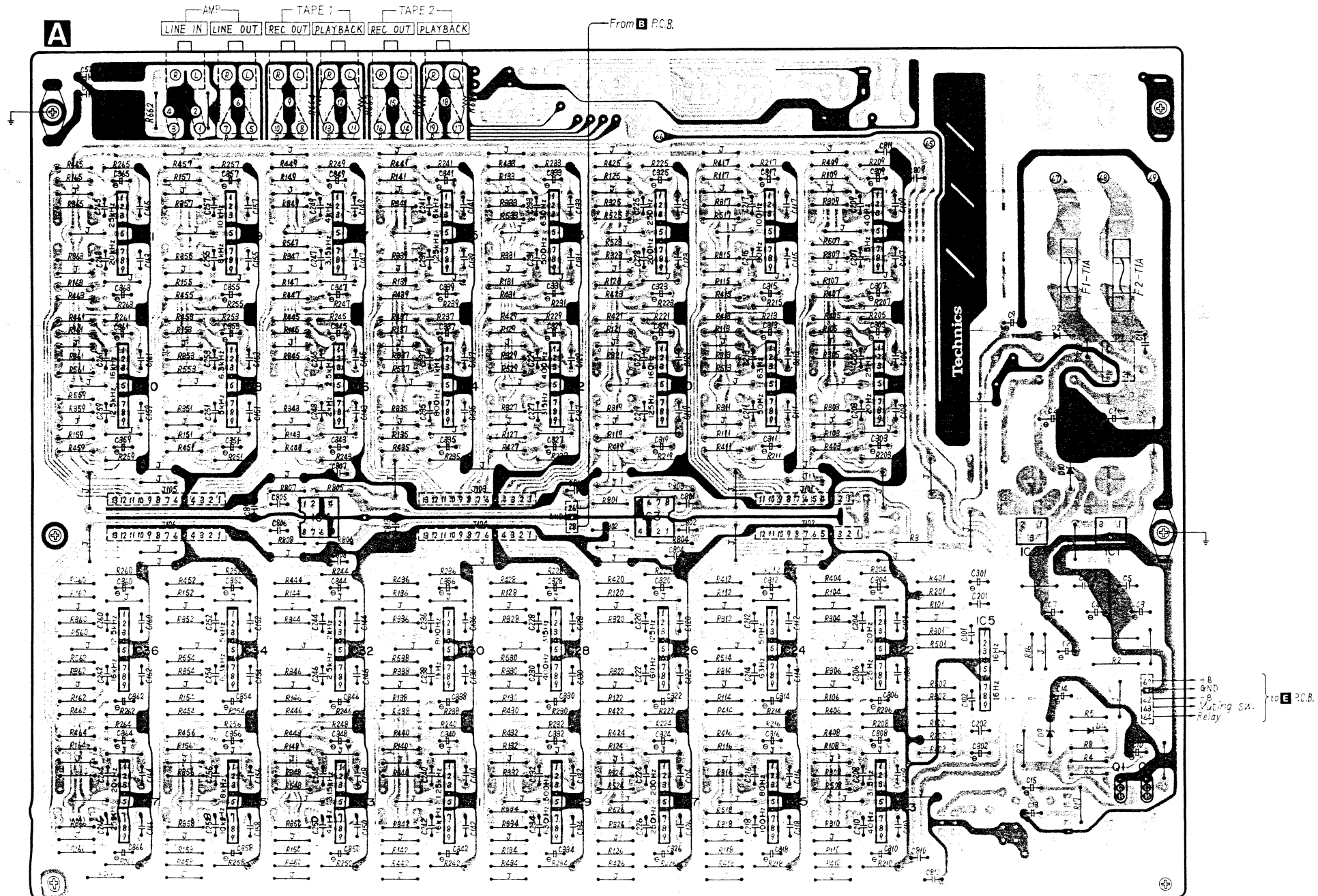
B P.C.B. (INPUT/OUTPUT CONTROLS)

Ground (Earth) Lines



C P.C.B. (BAND LEVEL CONTROLS, LEFT CH.)**D** P.C.B. (BAND LEVEL CONTROLS, RIGHT CH.)

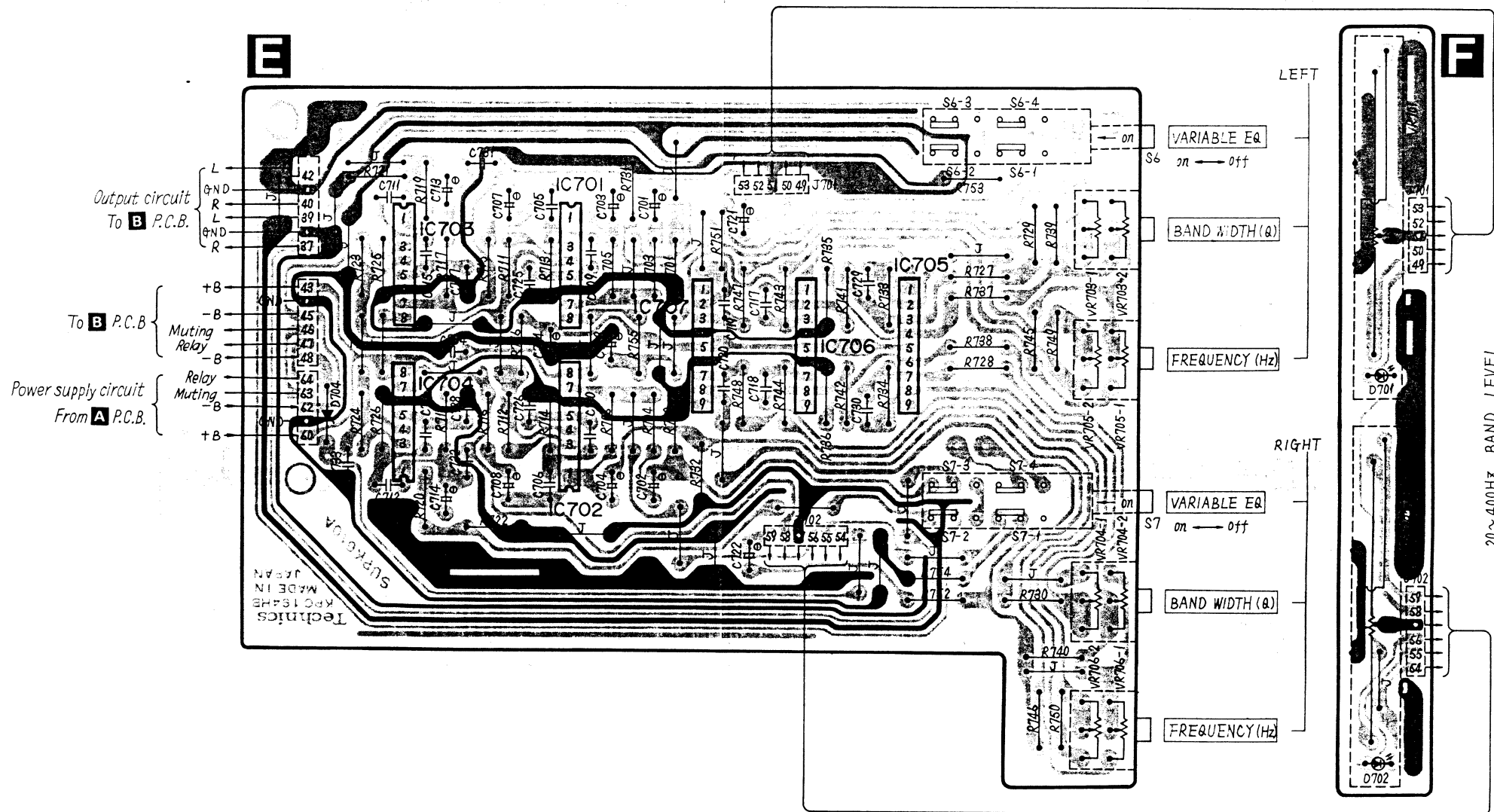
A P.C.B. (POWER SUPPLY AND BAND PASS FILTERS)



F P.C.B. (VARIABLE EQUALIZER)

F P.C.B.

(BAND LEVEL CONTROL
OF VARIABLE EQUALIZER)



■ TECHNICAL INFORMATION

- **Variable equalizer circuit**

(for varying the center frequency and band width)

The band pass filter of this unit is designed so that the resonance peak characteristic (band width: Q) is constant at 5. With the variable equalizer switch set at "on", the center frequency and resonance peak characteristic, only for 20 Hz ~ 400 Hz, and the frequency band level as well as the other band level can be varied.

Fig. 1 is a variable equalizer circuit consisting of 3 operation amplifiers (1 adder/subtractor and 2 integrators). The center frequency (f_0) of band pass filter is determined by the time constant of R and C , and the frequency is varied by double-acting volume R . The resonance peak characteristic is varied by double-acting volume r .

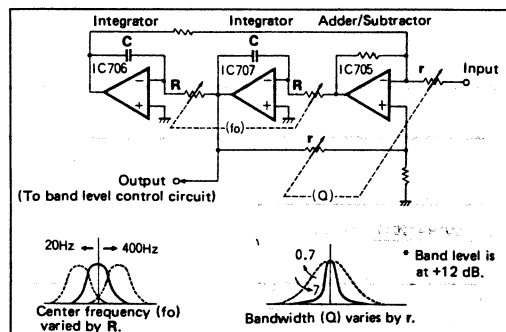


Fig. 1

- **Band level control circuit**

(for varying the center frequency by ± 12 dB)

Fig. 2 is a circuit that makes the frequency characteristic of peak and dip.

When the band level control volume is at middle position (A), BPF is off the circuit, therefore the input/output gain (G) is as follows:

$$G = \frac{R_2}{R_1} \times \frac{R_4}{R_3}$$

As VR is shifted to ③, input from R3 and output of BPF are added as the output to give the following:

$$G = \frac{R_2}{R_1} \times \left(\frac{R_4}{R_3} + \frac{R_4}{R_5} T_B \right)$$

T_B : gain characteristic of BPF

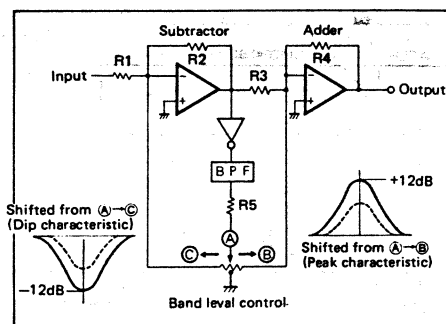
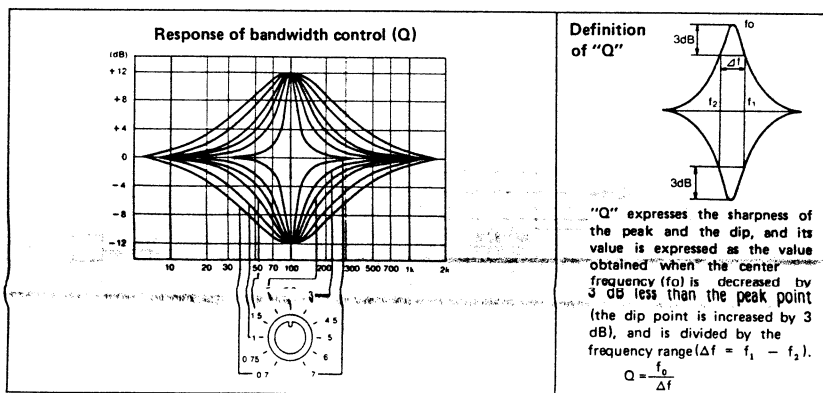


Fig. 2



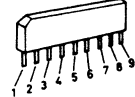
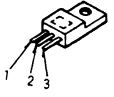

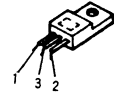
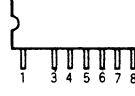
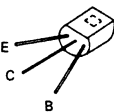
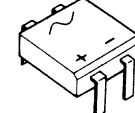
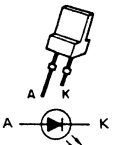
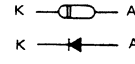
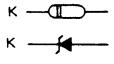
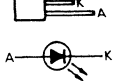
SH-8075

REPLACEMENT PARTS LIST

- Notes: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
 2. Important safety notice: Components identified by Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
 3. Bracketed indications in Ref. No. Columns specify the area. Parts without these indications can be used for all areas.
 4. The "S" mark is service standard parts and may differ from production parts.
 5. The parenthesized numbers in the column of description stand for the quantity per set.

Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
INTEGRATED CIRCUITS			CABINET and CHASSIS PARTS			SCREWS, WASHERS and NUTS		
IC1	AN78M24	Regulator, 24V	1	SGWKH8075KN	Front Panel Assy (1)	N1	XTS3+6BFZ	Screw, $\Phi 3 \times 6$ (5)
IC2	SVIUPC7918H	Regulator, -18V	2	SUS159	Spring, Power Switch (2)	N2	SNE4022	Nut (4)
IC3,4	SVINJM2043DE	Inverter	3	SBC435-1	Button, Power Switch (1)	N3	XTB3+8BFZ	Screw, $\Phi 3 \times 8$ (7)
ICS-11,22-27	SVINJM4558SE	Band Pass Filter	4	SUS213-1	Spring, EQ Switch (2)	N4	XSN3+6S	Screw, $\Phi 3 \times 6$ (6)
IC12-21,28-37	SVINJM2043SE	Band Pass Filter	5	SBC287-1	Button, EQ Switch (2)	N5	XWA3B	Washer, $\Phi 3$ (6)
IC601-606, 701-704	SVIHA12017	Buffer, Adder, Subtractor	6	SBN1167	Button (4)	N6	XSN2+4BV	Screw, $\Phi 2 \times 4$ (2)
IC705-707	SVINJM2043SE	Integrator	7	SBC367	Button, Push Switch (5)	N7	XTN3+8BFZ	Screw, $\Phi 3 \times 8$ (4)
TRANSISTORS			8	SBDK9	Button, Level Control (5)	N8	XWG3FZ	Washer, $\Phi 3$ (4)
QL2	2SC458T-C	Relay Drive	9	SBZK29	Spacer, Level Control (5)	N9	XWE3E10	Washer, $\Phi 3$ (2)
Q3	2SA1015-Y	Switching	10	SGXK72	Spacer (1)	N10	XTBS3+8CFYR1	Screw, $\Phi 3 \times 8$ (2)
DIODES			11	SHSK155	Spacer (2)	N11	XTB4+10BFZ	Screw, $\Phi 4 \times 10$ (2)
D1	Δ SVD1B4B42	Rectifier	12	SGXK70	Spacer (3)	N12	XWA4BFZ	Washer, $\Phi 4$ (2)
D2	Δ MA162A	Switching LED, (EQ, Source Tape 1,2)	13	SHSK156	Spacer (1)	N13	XWG4FZ	Washer, $\Phi 4$ (2)
D3,5-7	LN824WP	LED, (Straight)	14	SUBK5	Connection Rod (1)	N14	XTB4+12BFZ	Screw, $\Phi 4 \times 12$ (4)
D4	LN424WP	LED, (Straight)	15	SUWK260	Bracket, Power Switch (1)	N15	XTB3+8BFZ	Screw, $\Phi 3 \times 8$ (5)
D8,704	MA1180M	18V Zener	16	SHRK908	Holder, PCB (2)	N16	XTBS3+8BFZ1	Screw, $\Phi 3 \times 8$ (7)
D9	MA1220M	22V Zener	17	SUWK380	Bracket, PCB (1)	N17	XSN26+5FZ	Screw, $\Phi 2.6 \times 5$ (2)
D10,11	MA1062M	6.2V Zener	18(EK)	Δ QFC1205M	Cord, Power Source (1)	N18	XWA26BFZ	Washer, $\Phi 2.6$ (2)
D12,667	SVD1S2076A	Switching, Pulse Killer	18(other)	Δ SJA138-3	Cord, Power Source (1)	N19	XTB3+8BFZ	Screw, $\Phi 3 \times 8$ (8)
D601-666,701, 702	LN251RCPP	LED (Band Label Control)	19	SKCKH8075KN	Cabinet Assy (1)	N20	XTB3+10BFZ	Screw, $\Phi 3 \times 10$ (4)
POWER TRANSFORMER			20(EK)	SHR129	Bushing, AC Cord (1)	N21	XTB3+16BFZ	Screw, $\Phi 3 \times 16$ (2)
T1001	Δ SLTK5L8-W	Power Source	20(other)	SHR127	Bushing, AC Cord (1)	N22	XSN3+10S	Screw, $\Phi 3 \times 10$ (1)
VARIABLE RESISTORS			21	SGPKH8075-KE	Rear Panel Assy (1)	N23	XWA3B	Washer, $\Phi 3$ (1)
VR601-666, 701,702	EVAJN2J15G25	Level cont., 200k Ω (G)	22	SJF3049-2N	Terminal Board, In/Output (1)	N24	XWE3D8	Washer, $\Phi 3$ (1)
VR703,704	EWKENA530A15	Band Width cont., 100k Ω (A)	23	SHGK459	Spacer (1)	ACCESSORIES		
VR705,706	EWKENA530C15	Frequency cont., 100k Ω (C)	24	SKUK100-1	Bottom Board (1)	A1	SJP2129-5	Connection Cord (2)
RELAY			25	SKL227-2	Foot (4)	A2(EK)	SQFK10050	Instruction Book (1)
RLY1	SSY9	Muting	26	SMXA65	Cover (1)	A2(EGA)	SQFK10053	Instruction Book (1)
SWITCHES			27	SMN1635	Bracket, Voltage Selector (1)	A2(other)	SQFK10052	Instruction Book (1)
S1-3	SSHK33	Input Selector	28	SJR205	Holder (1)	A3	SPJ15	Bag (1)
S4,5	SSHK32	EQ Selector, Rec Mode	29	SJT347	Terminal, Fuse (2)	PACKING PARTS		
S6,7	SSHK34	Variable Equalizer	30	SHR301	Clamper, Read Wire (1)	P1(EF)	SPGK122	Carton Box (1)
S8	SSSK5	Signal Level				P1(other)	SPGK117	Carton Box (1)
S1001	Δ ESB90619S	Power Source				P2	SPSK36-1	Pad, Left & Right (2)
S1002	Δ ESE3787	Voltage Selector				P3	SPP651	Polyethylene Sheet (1)
FUSES								
FL2	Δ XBA2C10TRO	250V, T1A						

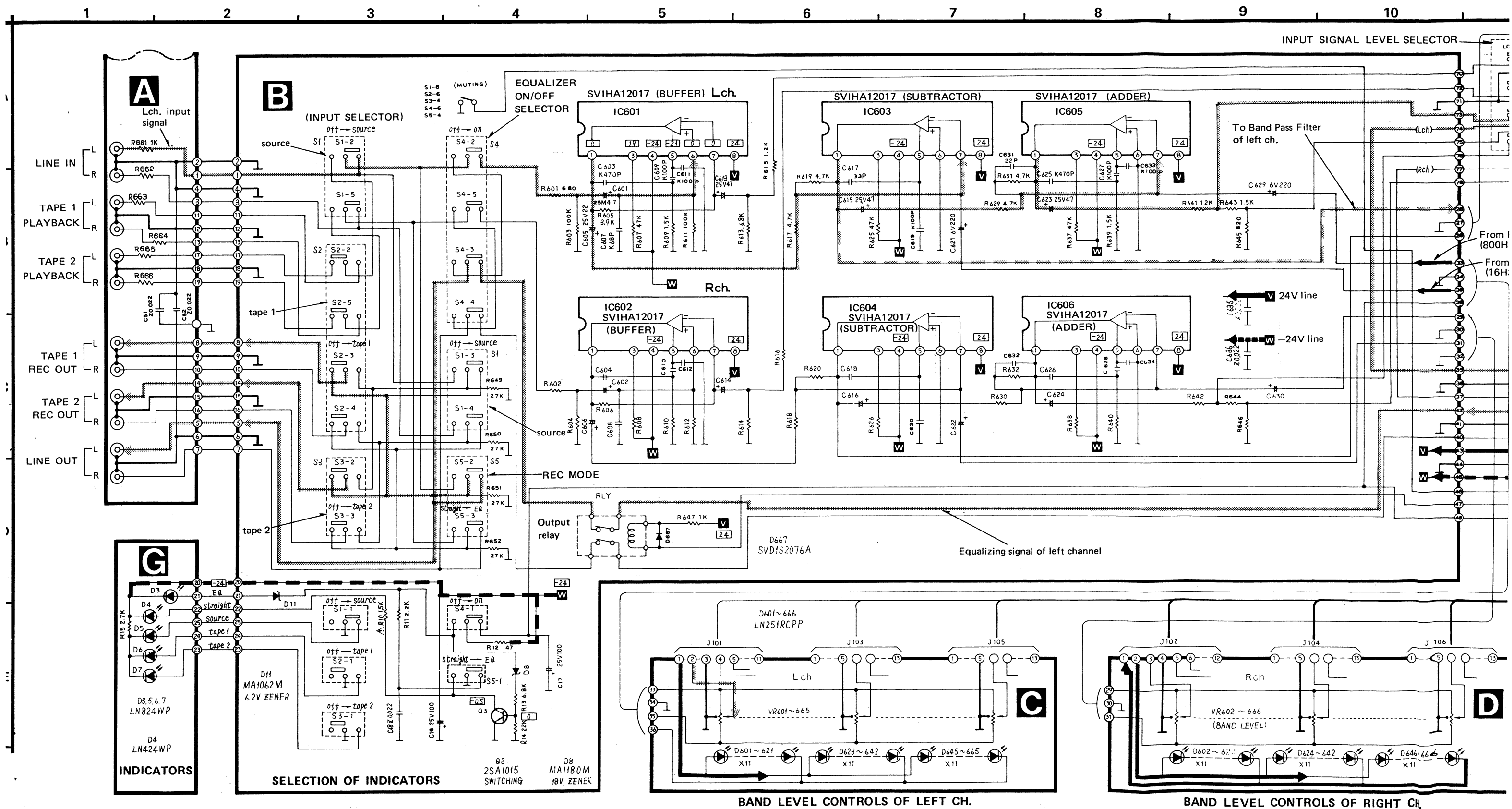
Terminal guide of transistors, IC's and diodes

SVINJM2043SE SVINJM4558SE 	AN78M24  <p>1. V input 2. Ground 3. V output</p>
SVINJM2043DE 	SVIUPC7918H  <p>1. Ground 2. V output 3. V input</p>
SVIHA12017 	2SC458 2SA1015 
SVD1B4B42 	LN424WP, LN824WP 
MA150 SVD1S2076 	MA1062M MA1220M MA1180 
LN251RCPP 	

Note:
 * The instruction book is provided with 3 sheets of frequency level recording chart (SQXK50007) and 1 sheet of recording method explanation chart (SQXK50007-2)

at any time with the development of new technology.)

(Input/Output circuit, Variable equalizer control circuit and Band level control circuit)



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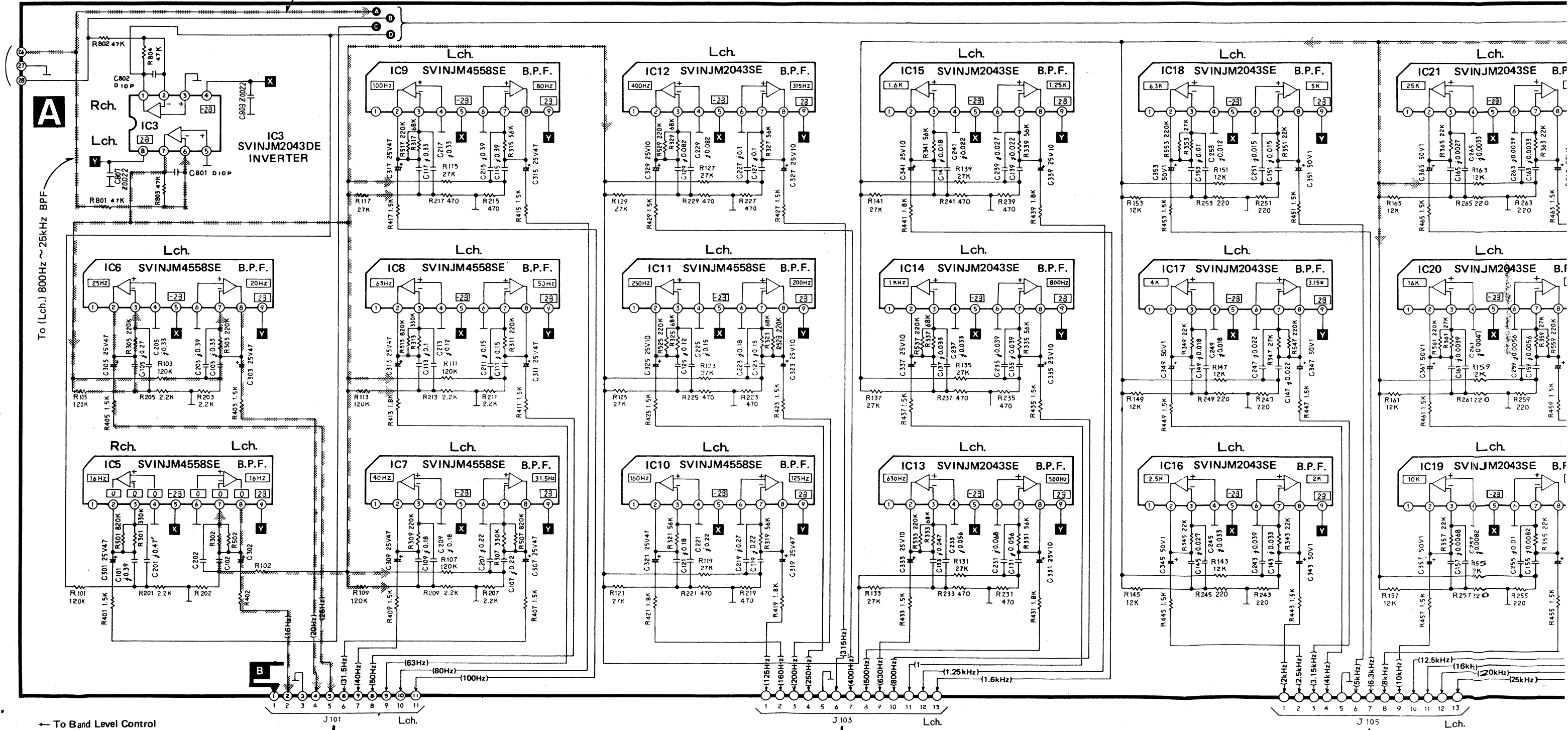
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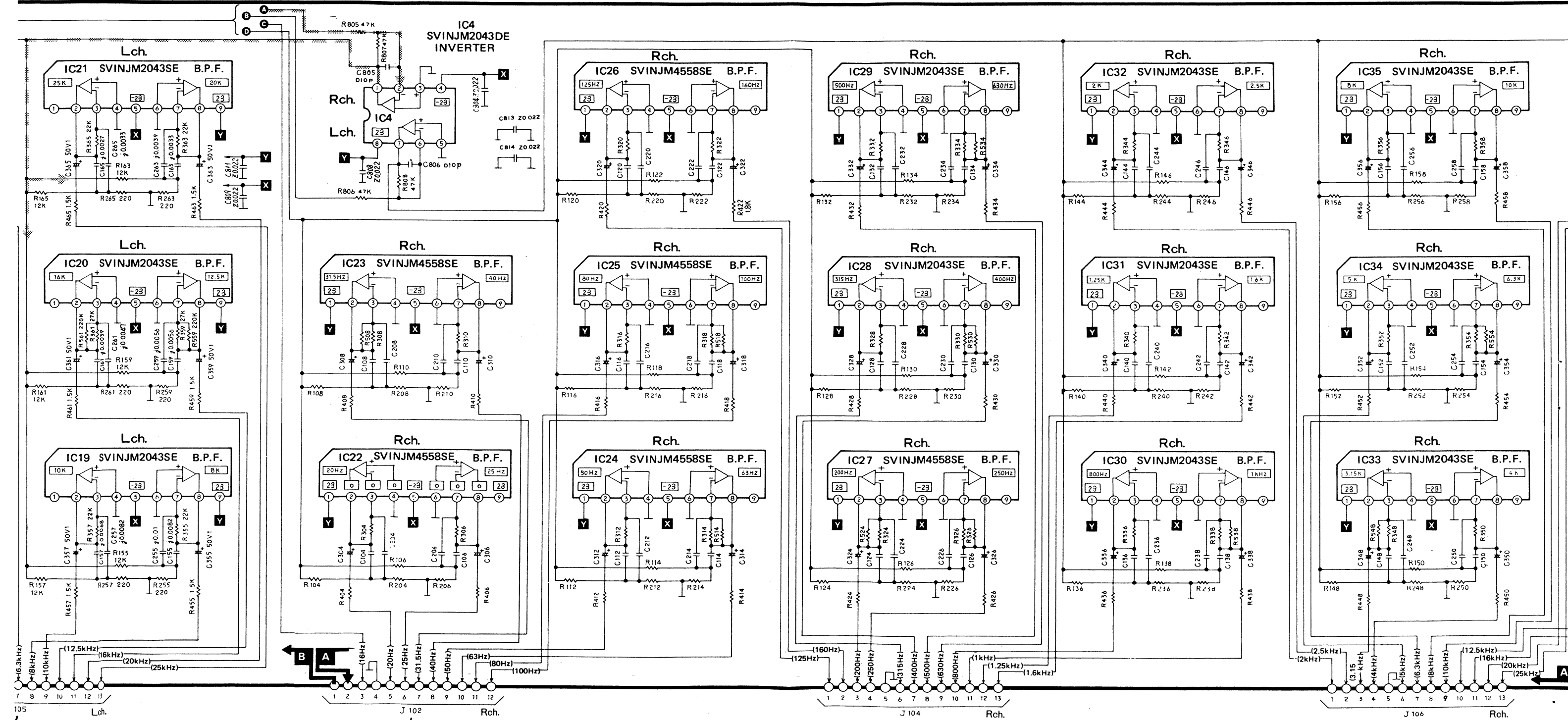
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BAND PASS FILTERS OF LEFT CHANNEL

To (Lch.) 16Hz ~ 630Hz BPF



BAND PASS FILTERS OF RIGHT CHANNEL



■ BLOCK DIAGRAM

