

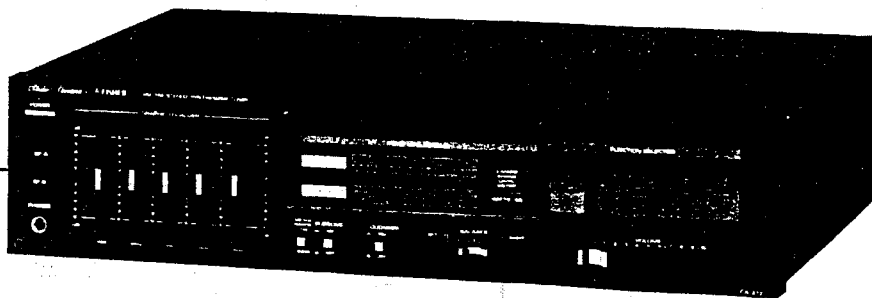
SERVICE MANUAL



**FISHER**

**CA-272**

**Integrated  
Stereo Amplifier  
(EUROPE)**

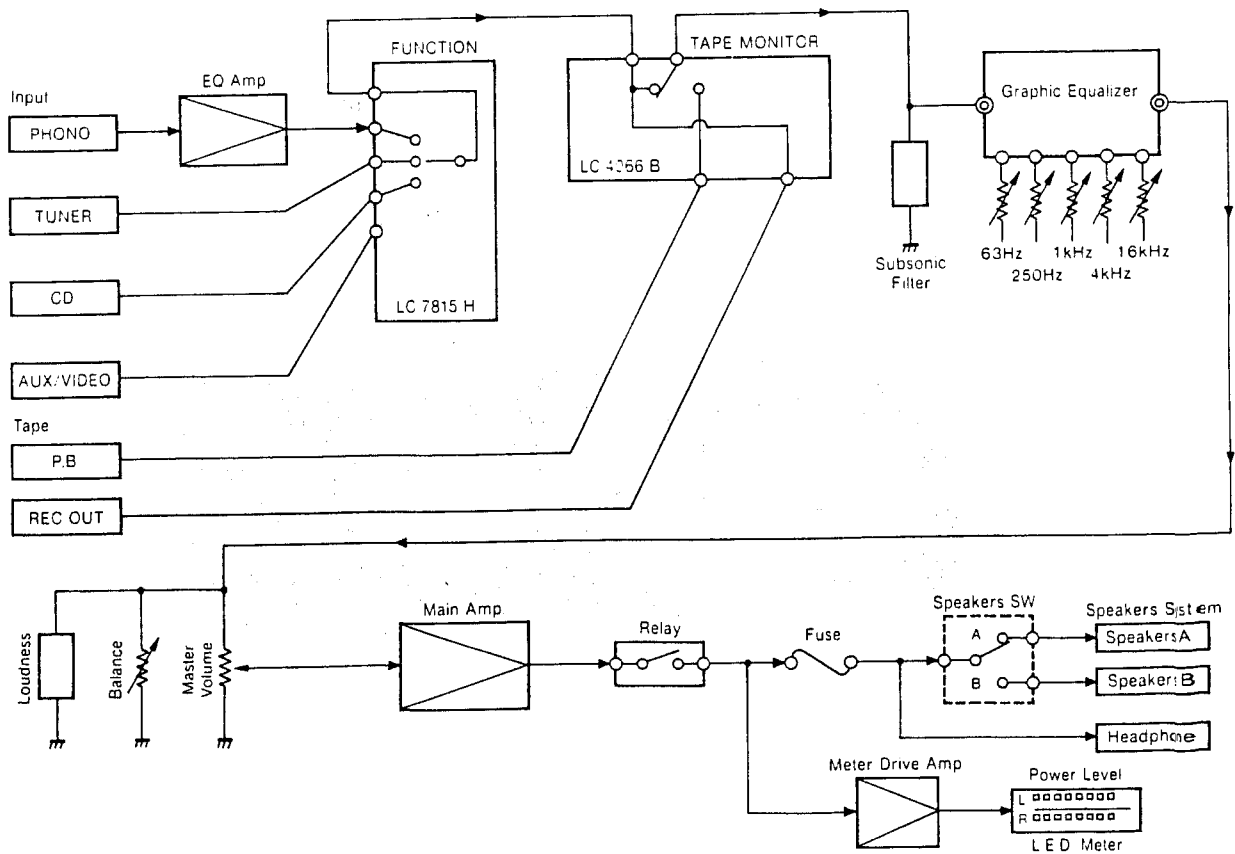


132 275 43

# CONTENTS

Functional Block Diagram .....	2
Specifications .....	3
Disassembly Instructions .....	4
Recommended Test Equipments .....	5
Harmonic Distortion Test .....	5
Cabinet & Chassis Exploded View .....	6
Parts List .....	7
IC Equivalent Circuit & Block Diagram .....	8,9
P.C.B. Assy Parts List .....	10,11,12,13,14
Printed Circuit Board (Bottom View) .....	15,16,17,18,19,20
Point to Point Wiring Diagram .....	21,22
Schematic Diagram .....	23,24
Semiconductor Lead Identification .....	25

## FUNCTIONAL BLOCK DIAGRAM



# SPECIFICATIONS

AMPLIFIER	CA-272
<b>POWER AMPLIFIER SECTION</b> Minimum RMS sine wave power per channel within stated bandwidth at no more than stated distortion and with 8-ohm load	100 Watts
Power Bandwidth	20 Hz – 20 kHz
Total Harmonic Distortion	0.05 %
I.M. Distortion	0.05 %
Speaker Damping	> 20
<b>PREAMPLIFIER SECTION</b>	
Frequency Response	
Phono (RIAA)	± 0.5 dB
Aux (20 Hz – 20 kHz)	± 0.5 dB
Input Sensitivity and Impedance	
Phono	2.5 mV/50 kΩ
Tape Monitor	150 mV/50 kΩ
Tuner/Auxiliary	150 mV/50 kΩ
Phono Max. Input Capability	
Phono	125 mV
Graphic Equalizer	
63 Hz	± 10 dB
250 Hz	± 10 dB
1 kHz	± 10 dB
4 kHz	± 10 dB
16 kHz	± 10 dB
Subsonic Filter (Below 20 Hz)	12 dB/Oct.
Loudness Contour (100 Hz/10 kHz)	+8 dB/+4 dB
Hum & Noise (IHF Short Circuit, A Network)	
Phono	72 dB
Tape Monitor	95 dB
Tuner/Auxiliary	95 dB
<b>GENERAL</b>	
Power Requirements (50 Hz)	110 / 220 V AC
Power Consumption	470 Watts
Dimensions (W x D x H)	440 x 268 x 108 mm
Weight (approx.)	8.5 kg

Because its products are subject to continuous improvement, Fisher Corporation reserves the right to modify product designs and specifications without notice and without incurring any obligation.

# DISASSEMBLY INSTRUCTIONS

## A. REMOVAL OF FRONT PANEL

1. Detach Cover by removing five screws.
2. Pull out TONE CONTROL Volume knobs (A). (Fig. 1)

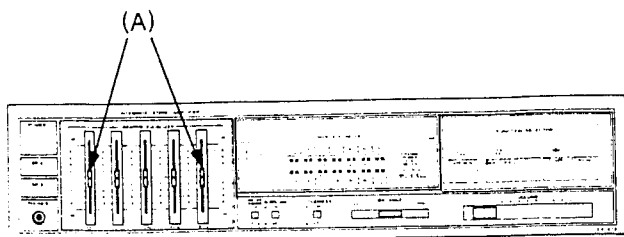


Fig. 1

3. Remove three screws (B) fastening Front Panel. (Fig. 2)

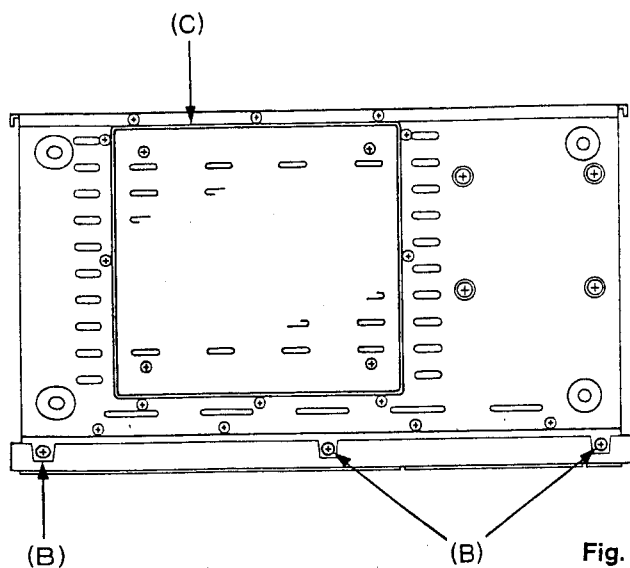


Fig. 2

4. Remove four screws (D) fastening Front Panel and then, pull Front Panel toward you. (Fig. 3)

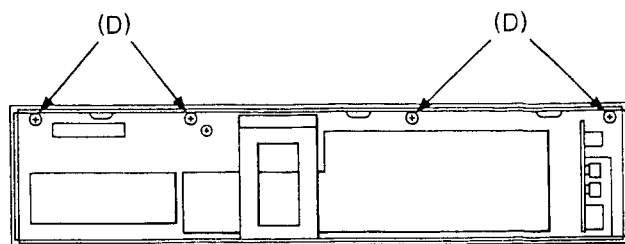


Fig. 3

## B. REPAIR AND ADJUSTMENT OF PRINTED CIRCUIT BOARD

1. The removal of Cabinet Bottom Cover (C) will give an access to the repair or adjustment work of Main Supply Printed Circuit Board. (Fig. 2)

# POWER AMPLIFIER ADJUSTMENT

## BEFORE ADJUSTMENT

This adjustment is very sensitive to changes in ambient temperature. Allow set to operate for 10 minutes before attempting this adjustment.

## IDLING CURRENT ADJUSTMENT

1. Set the SPEAKER switch to off position.
2. Turn VOLUME control to minimum.
3. Connect DC VTVM between TP13 and TP15 on the Main Amplifier P.C.Board.
4. Adjust VR01 for an indication of 7mV (30mA) on the DC VTVM.
5. Connect DC VTVM between TP14 and TP16 on the Main Amplifier P.C.Board.
6. Adjust VR02 for an indication of 7mV (30mA) on the DC VTVM.

# RECOMMENDED TEST EQUIPMENTS

The following test equipments are recommended to completely test and align the Amplifier:

- Line Voltage Isolation Transformer
- AC DC Multimeter
- Accurately Calibrated AC Voltmeter
- Oscilloscope (Flat to 100 kHz Minimum)
- Low-Distortion Audio Sine-Wave Generator
- Harmonic Distortion Analyzer
- Two (2) Load Resistors 8-ohms, 250 Watts (Minimum Rating)

## HARMONIC DISTORTION TEST

**CAUTION:** Limit the following tests to no more than ten minutes each. Use 8-ohm resistors, with a minimum power rating of 250 watts when connecting a load across the SPEAKERS terminal.

### CONTROL SETTINGS:

Unplug the AC power cord and set the front panel controls as follows:

- GRAPHIC EQUALIZER to center position.
- BALANCE control to center position.
- POWER switch to OFF
- SPEAKERS switch to SYSTEM-B
- FUNCTION switch to AUX
- LOUDNESS switch to OFF
- SUBSONIC FILTER to OFF
- VOLUME control to MINIMUM position
- LEFT CHANNEL DRIVEN

### ONE CHANNEL DRIVEN:

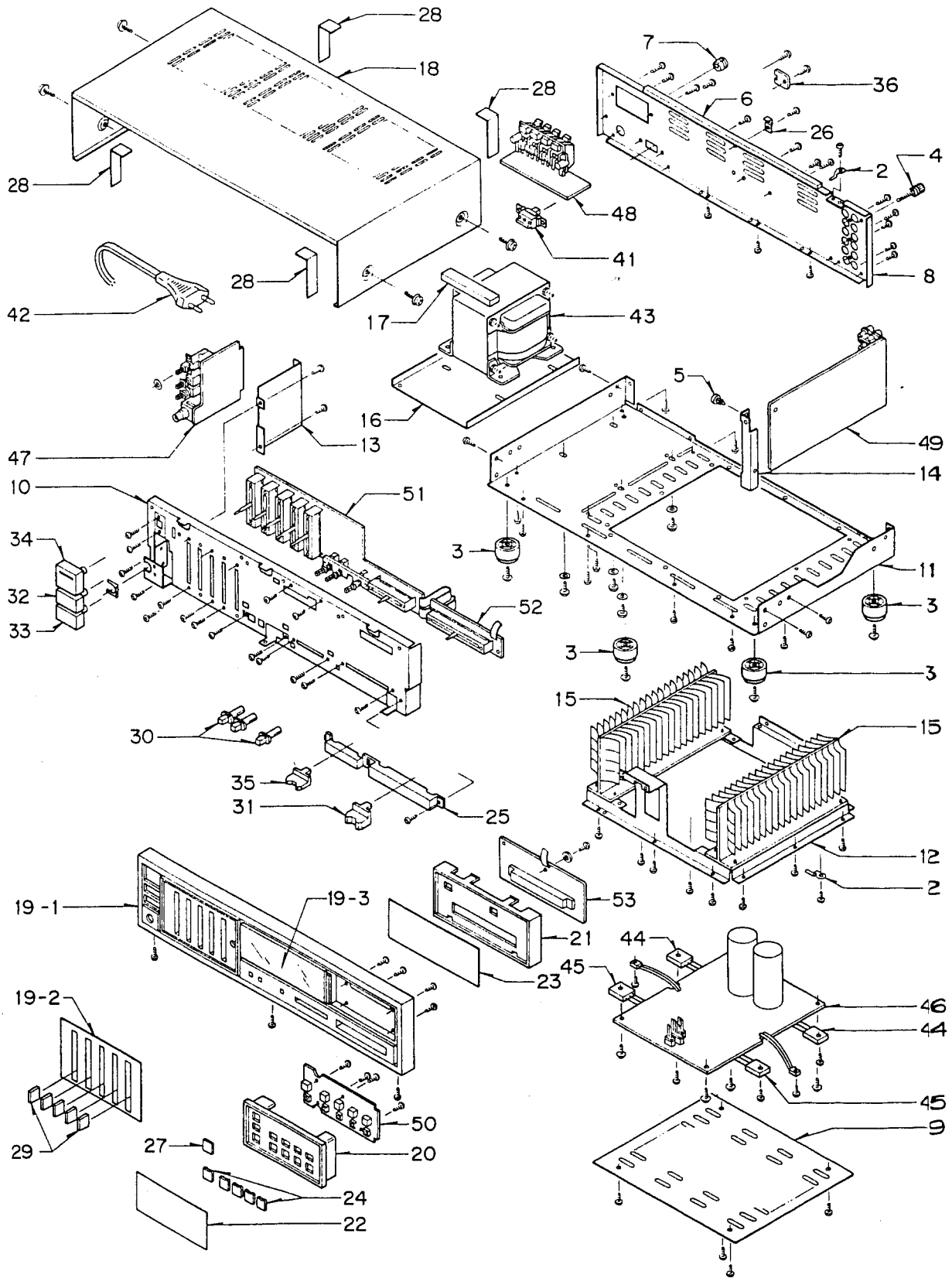
- 1) Connect a low distortion audio generator to LEFT AUX IN jack. Set generator frequency to 1 kHz and output to minimum.
- 2) Connect an 8-ohm load resistor between SPEAKERS SYSTEM-A LEFT and COM terminals. Connect a Harmonic Distortion Analyzer and an AC VTVM in parallel across the 8-ohm load.
- 3) Connect the AC power cord and set SPEAKERS switch to SYSTEM-A. Turn VOLUME control to MAX.
- 4) Increase generator output for 100 Watts RMS (28.2 volts across the 8-ohm load). Harmonic Distortion Analyzer should measure 0.05 % distortion or less.
- 5) Repeat steps 1 through 4 for RIGHT CHANNEL.

### BOTH CHANNELS DRIVEN

Connect 8-ohm load resistors across LEFT and RIGHT SPEAKERS SYSTEM-A terminals. Adjust generator output and "VOLUME" control for 100 watts at Left and Right Channels (28.2 volts across the 8-ohm loads). Harmonic Distortion Analyzer should measure 0.05 % distortion or less at each channel.

**CAUTION:** This precision high-fidelity instrument should be serviced only by qualified personnel, trained in the repair of transistor equipment and printed circuitry.



# CABINET & CHASSIS EXPLODED VIEW



# PARTS LIST

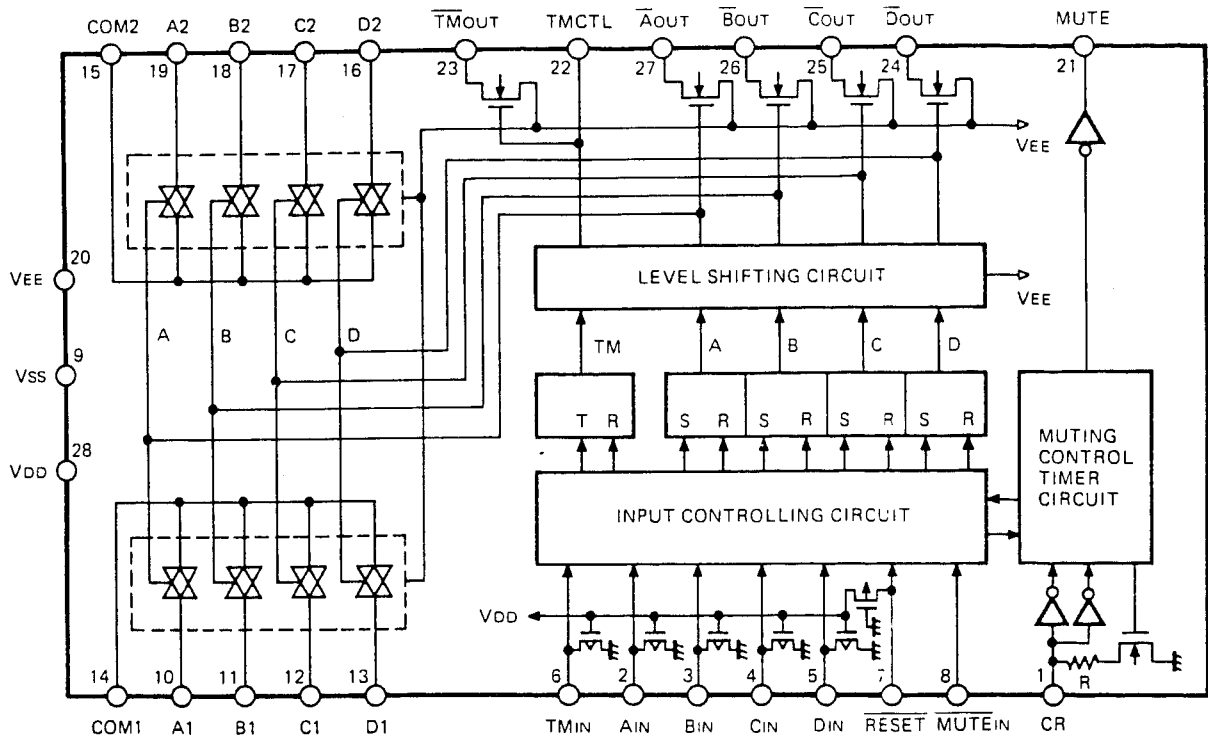
Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
<b>PACKING PARTS LIST</b>				20	141 2 1149 31500	Mount Switch P.C.B.	1
	3 9415 10300	Bag Polyethylene	1	21	141 2 1149 31600	Mount L.E.D. P.C.B.	1
131 6	2119 02090	Bag Polyethylene Exp.	1	22	141 2 1439 11601	Screen Switch	1
131 6	3069 16350	Patching Sheet	1	23	141 2 1449 55301	Index L.E.D.	1
131 6	4559 10900	Manufacturing No.	2	24	141 2 1659 19100	Button Switch	5
131 6	9459 00300	Rubber Band	1	25	141 2 2449 46600	Screen Volume	1
141 6	1139 86209	Box Corrugate-Exp.	1	26	141 2 3159 03300	Bracket Cover	1
141 6	1449 88000	Case Styrofoam (Left)	1	27	141 2 3529 38600	Spacer	1
141 6	1449 88001	Case Styrofoam (Right)	1	28	131 2 3202 13400	Metal Reinf	4
141 6	1469 00400	Pad (Top)	1	29	131 2 1601 69400	Knob (Graphic EQ.)	5
<b>ACCESSORIES PARTS LIST</b>				30	131 2 1601 69600	Knob (Push Switch)	3
131 6	2719 10801	Bag Fan	1	31	131 2 1601 84701	Knob (Main Volume)	1
142 6	4119 32105	Explanatory Booklet	1	32	131 2 1601 85005	Knob (Speaker-A)	1
131 6	4519 15700	Guarantee Certificate	1	33	131 2 1601 85006	Knob (Speaker-B)	1
131 6	4559 10900	Manufacturing No.	1	34	131 2 1601 85202	Knob (Power Switch)	1
				35	131 2 1601 85300	Knob (Balance)	1
				36	131 2 7104 00500	Plata Pad Switch	1
<b>CABINET &amp; CHASSIS PARTS LIST</b>				<b>ELECTRICAL PARTS LIST</b>			
2	4 2379 21522	Terminal Lug	2	41	△ 4 2312 01020	Switch Slide (Voltage Select)	1
3	131 2 1801 12900	Leg	4	42	△ 4 2432 00200	Power Cord	1
4	131 2 4201 17800	Screw Ground	1	43	△ 4 2512 23020	Power Trans	1
5	131 2 4221 00600	Rivet	1	44	4 2039 71961	Transistor, 2SA 1302 (Q03,Q4)	2
6	131 2 5205 15800	Cushion	1	45	4 2039 71971	Transistor, 2SC 3281 (Q01,Q2)	2
7	131 2 6111 14200	Bushing (Power Cord)	1	46	141 0 1939 06771	Main Amplifier P.C.B. Assy	1
8	141 2 1219 24810	Panel Rear	1	47	141 0 1939 06781	Switch Fuse P.C.B. Assy	1
9	141 2 1259 07500	Plate Bottom	1	48	141 0 1939 06791	Speaker Fuse P.C.B. Assy	1
10	141 2 2149 23200	Panel Front	1	49	141 0 1939 06721	Input P.C.B. Assy	1
11	141 2 3119 22700	Chassis	1	50	141 0 1939 06730	Function P.C.B. Assy	1
12	141 2 3129 05600	Sub Chassis	1	51	141 0 1939 06740	Graphic Equalizer P.C.B. Assy	1
13	141 2 3229 49800	Plate Shield	1	52	141 0 1939 06750	Volume P.C.B. Assy	1
14	141 2 3519 65900	Mount PCB	1	53	141 0 1939 06760	L.E.D. Meter P.C.B. Assy	1
15	141 2 3689 13300	Plate Heat Sink	2	<ol style="list-style-type: none"> <li>Parts order must contain Model Number, Part Number and Description.</li> <li>Ordering quantity of screws and resistors must be multiple of 10 pcs.</li> </ol>			
16	131 2 3101 99900	Metal Mount Trans	1				
17	131 2 5205 32900	Cushion	1				
18	131 2 1410 32900	Cover	1				
19	141 0 1129 05300	Cabinet Front Assy	1				
19-1	141 2 1129 08200	Cabinet Front	1				
19-2	141 2 1449 62600	Panel Control	1				
19-3	131 2 1205 27300	Decorate Plate Dial	1				

## PRODUCT SAFETY NOTICE

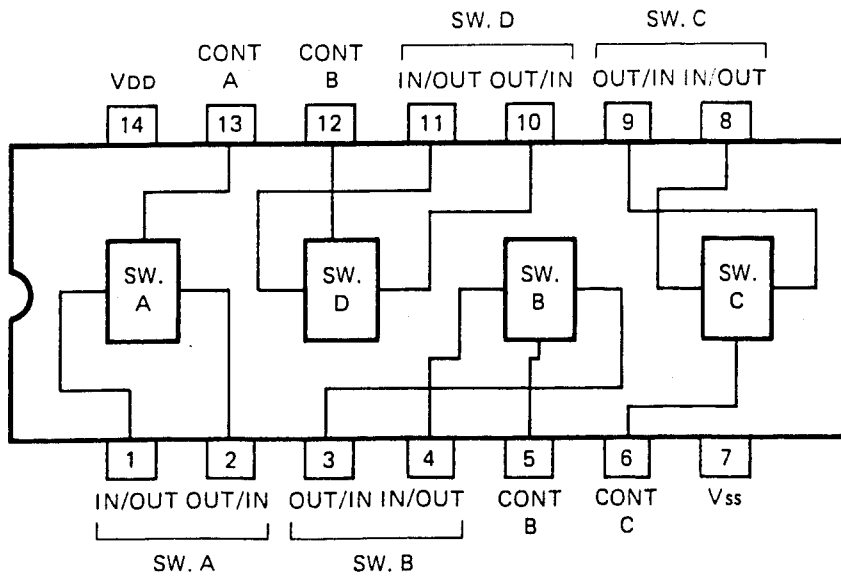
Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol  in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with , use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual. Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

# IC EQUIVALENT CIRCUIT & BLOCK DIAGRAM

## FUNCTION ANALOG SWITCH IC LC 7815 H



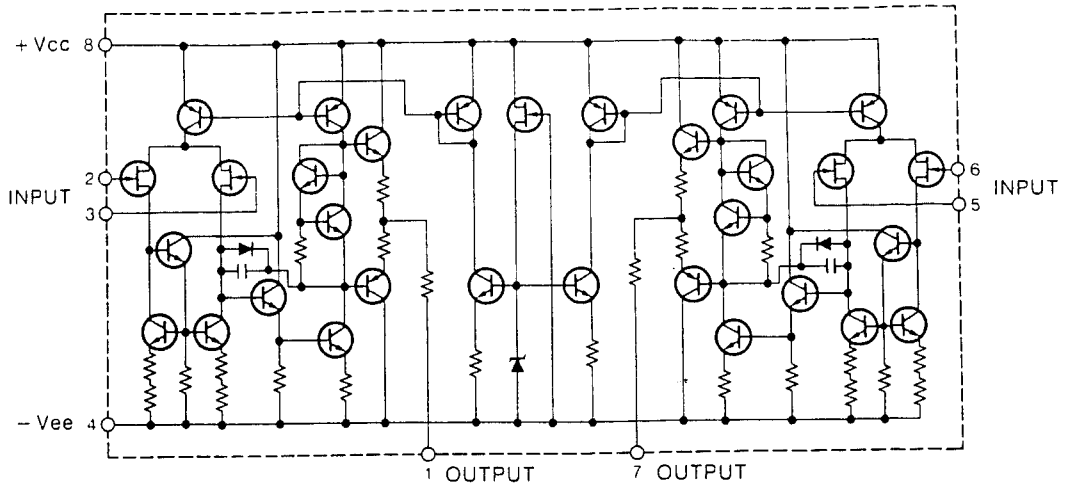
## TAPE INPUT ANALOG SWITCH IC LC 4066 B



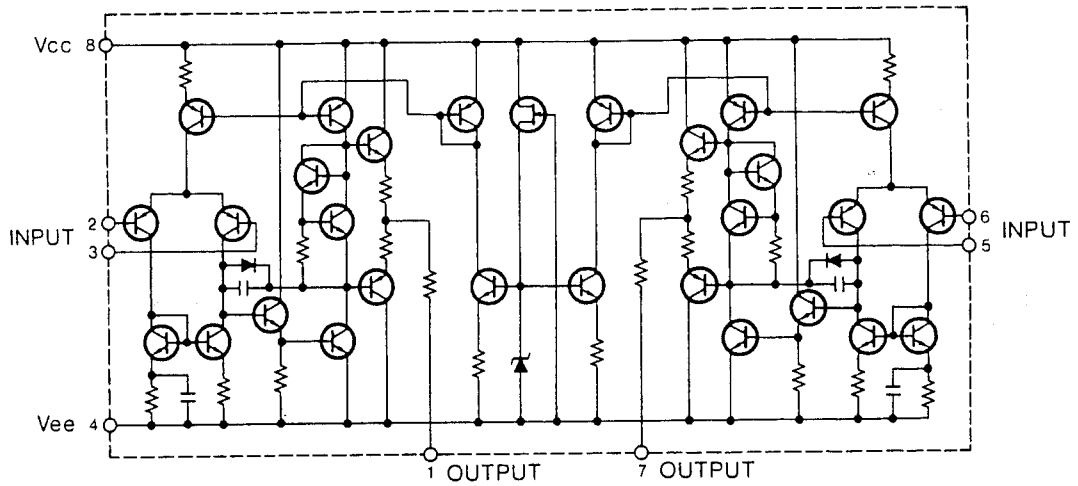


# IC EQUIVALENT CIRCUIT & BLOCK DIAGRAM (Continued)

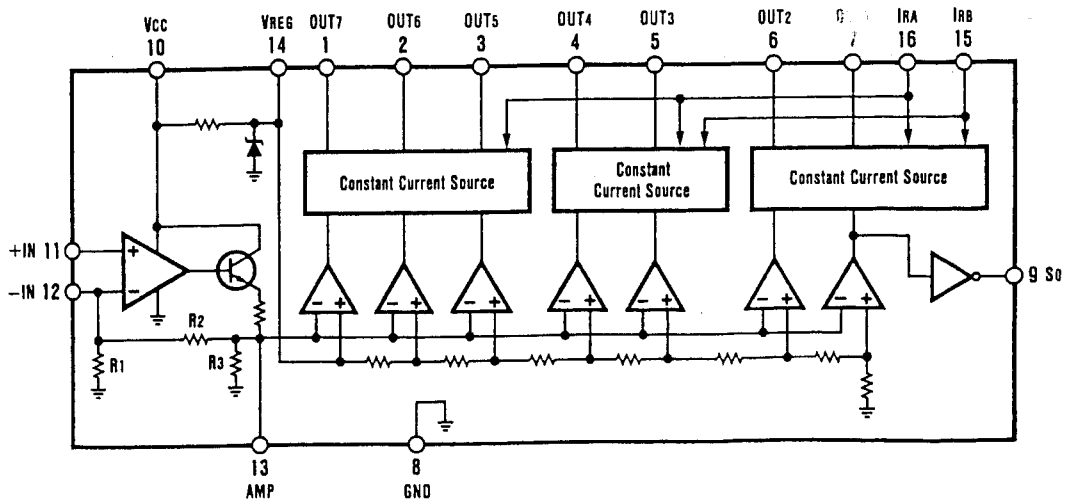
PHONO EQ IC NJM 072 D



PREAMP IC LA 6458 D



METER DRIVE AMP IC IR 2E19



# PARTS LIST

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
<b>MAIN AMPLIFIER P.C.B. ASSY</b>				C48	CD2 2 763A 0001V	Electrolytic 220 $\mu$ F 6.3V	1
141	0 1939 06771	Main Amplifier P.C.B. Assy	1	C49	CD1 0 6250 0001V	Electrolytic 10 $\mu$ F 25V	1
	4 2262 20130	Main Amplifier P.C.B.	1	C53	CC2 2 1500 KE00R	Ceramic 220pF 50V $\pm 10\%$	1
	4 2329 70330	Relay	1	C54	CC2 2 1500 KE00R	Ceramic 220pF 50V $\pm 10\%$	1
	△ 4 2349 20380	Fuse T 1.0A	2	<b>SEMICONDUCTORS</b>			
	△ 4 2349 21570	Fuse T 6.3A	2	D01	205 5 9040 44210	Diode, DS 442	1
	4 2352 00200	Fuse Holder	8	D02	205 5 9040 44210	Diode, DS 442	1
<b>F</b>	4 2369 73130	Connector 3P	1	D03	205 5 9040 44210	Diode, DS 442	1
<b>G</b>	4 2369 73160	Connector 6P	1	D04	205 5 9040 44210	Diode, DS 442	1
<b>H</b>	4 2369 73140	Connector 4P	1	D05	205 5 9040 44210	Diode, DS 442	1
	111 2 6220 11100	Wire Wrap Terminal	12	D06	205 5 9040 44210	Diode, DS 442	1
L01	4 2552 00650	AF Coil	1	D07	DAA - STV- 3H-Y	Diode, STV 3 H	1
L02	4 2552 00650	AF Coil	1	D08	DAA - STV- 3H-Y	Diode, STV 3 H	1
VR01	4 2222 01450	Semi-fixed 200 $\Omega$ -B	1	D09	△ 202 5 2750 06015	Bridge Diode, DBA 60 C	1
VR02	4 2222 01450	Semi-fixed 200 $\Omega$ -B	1	D10	202 5 2500 13541	Diode, DS 135	1
				D11	202 5 2500 13541	Diode, DS 135	1
				D12	202 5 2500 13541	Diode, DS 135	1
				D13	202 5 2500 13541	Diode, DS 135	1
				D14	202 5 3210 18011	Zener Diode, GZA 18 X	1
				D15	202 5 3210 18011	Zener Diode, GZA 18 X	1
				D16	202 5 3210 05112	Zener Diode, GZA 5.1 Y	1
				D17	202 5 2500 13541	Diode, DS 135	1
				D18	205 5 9040 44210	Diode, DS 442	1
				D19	202 5 2500 13541	Diode, DS 135	1
				D20	202 5 3210 18011	Zener Diode, GZA 18 X	1
				Q01	203 5 4921 01260	Transistor, 2SD 1012	1
				Q02	203 5 4921 01260	Transistor, 2SD 1012	1
				Q03	TMM - 2SC1 583-F	Transistor, 2SC 1583	1
				Q04	TMM - 2SC1 583-F	Transistor, 2SC 1583	1
				Q05	203 5 5251 57060	Transistor, 2SC 1570	1
				Q06	203 5 5251 57060	Transistor, 2SC 1570	1
				Q07	203 5 5251 57060	Transistor, 2SC 1570	1
				Q08	203 5 5251 57060	Transistor, 2SC 1570	1
				Q09	203 5 7230 60860	Transistor, 2SA 608	1
				Q10	203 5 7230 60860	Transistor, 2SA 608	1
				Q11	203 5 5681 20880	Transistor, 2SA 1208	1
				Q12	203 5 5681 20880	Transistor, 2SA 1208	1
				Q13	203 5 6931 20980	Transistor, 2SA 1209	1
				Q14	203 5 6931 20980	Transistor, 2SA 1209	1
				Q15	203 5 5632 91180	Transistor, 2SC 2911	1
				Q16	203 5 5632 91180	Transistor, 2SC 2911	1
				Q17	203 5 8122 34440	Transistor, 2SC 2344	1
				Q18	203 5 8122 34440	Transistor, 2SC 2344	1
				Q19	203 5 8631 01140	Transistor, 2SA 1011	1
				Q20	203 5 8631 01140	Transistor, 2SA 1011	1
				Q21	203 5 7330 61251	Transistor, 2SD 612	1
				Q22	203 5 7320 63251	Transistor, 2SB 632	1
				Q23	203 5 6830 43850	Transistor, 2SD 438	1
				Q24	203 5 5000 53660	Transistor, 2SC 536	1
				Q25	203 5 5000 53660	Transistor, 2SC 536	1
				<b>RESISTORS</b>			
				R01	RD1 2 2251 JM000	Carbon 1.2k $\Omega$ 1/4W $\pm 5\%$	1
				R02	RD1 2 2251 JM000	Carbon 1.2k $\Omega$ 1/4W $\pm 5\%$	1
				R03	RD3 3 2251 JM000	Carbon 3.3k $\Omega$ 1/4W $\pm 5\%$	1
				R04	RD3 3 2251 JM000	Carbon 3.3k $\Omega$ 1/4W $\pm 5\%$	1
				R05	RD1 0 4251 JM000	Carbon 100k $\Omega$ 1/4W $\pm 5\%$	1
				R06	RD1 0 4251 JM000	Carbon 100k $\Omega$ 1/4W $\pm 5\%$	1
				R07	RD8 2 2251 JM000	Carbon 8.2k $\Omega$ 1/4W $\pm 5\%$	1
				R08	RD8 2 2251 JM000	Carbon 8.2k $\Omega$ 1/4W $\pm 5\%$	1
				R09	RD3 9 3251 JM000	Carbon 39k $\Omega$ 1/4W $\pm 5\%$	1
				R10	RD3 9 3251 JM000	Carbon 39k $\Omega$ 1/4W $\pm 5\%$	1
				R11	RD8 2 2251 JM000	Carbon 8.2k $\Omega$ 1/4W $\pm 5\%$	1
C01	CD4 7 5250 0001V	Electrolytic 4.7 $\mu$ F 25V	1				
C02	CD4 7 5250 0001V	Electrolytic 4.7 $\mu$ F 25V	1				
C03	CC2 2 1500 KE00R	Ceramic 220pF 50V $\pm 10\%$	1				
C04	CC2 2 1500 KE00R	Ceramic 220pF 50V $\pm 10\%$	1				
C05	CC2 2 1500 KD00C	Ceramic 220pF 50V $\pm 10\%$	1				
C06	CC2 2 1500 KD00C	Ceramic 220pF 50V $\pm 10\%$	1				
C07	CC2 2 1500 KD00C	Ceramic 220pF 50V $\pm 10\%$	1				
C08	CC2 2 1500 KD00C	Ceramic 220pF 50V $\pm 10\%$	1				
C09	CD2 2 763A 0001V	Electrolytic 220 $\mu$ F 6.3V	1				
C10	CD2 2 763A 0001V	Electrolytic 220 $\mu$ F 6.3V	1				
C11	4 2239 71190	Capacitor 27pF 500V	1				
C12	4 2239 71190	Capacitor 27pF 500V	1				
C13	CM1 0 4500 J00TV	Mylar 0.1 $\mu$ F 50V $\pm 5\%$	1				
C14	CM1 0 4500 J00TV	Mylar 0.1 $\mu$ F 50V $\pm 5\%$	1				
C15	4 2239 72020	Ceramic 3pF 500V	1				
C16	4 2239 72020	Ceramic 3pF 500V	1				
C17	4 2239 71110	Capacitor 10pF 500V	1				
C18	4 2239 71110	Capacitor 10pF 500V	1				
C19	CM2 2 3500 K00SV	Mylar 0.022 $\mu$ F 50V $\pm 10\%$	1				
C20	CM2 2 3500 K00SV	Mylar 0.022 $\mu$ F 50V $\pm 10\%$	1				
C21	4 2239 71980	Ceramic 47pF 500V	1				
C22	4 2239 71980	Ceramic 47pF 500V	1				
C23	4 2239 71980	Ceramic 47pF 500V	1				
C24	4 2239 71980	Ceramic 47pF 500V	1				
C25	CM3 9 3500 K00SV	Mylar 0.039 $\mu$ F 50V $\pm 10\%$	1				
C26	CM3 9 3500 K00SV	Mylar 0.039 $\mu$ F 50V $\pm 10\%$	1				
C27	CD4 7 6101 0001V	Electrolytic 47 $\mu$ F 100V	1				
C28	CD4 7 6101 0001V	Electrolytic 47 $\mu$ F 100V	1				
C29	CD4 7 6101 0001V	Electrolytic 47 $\mu$ F 100V	1				
C30	CD4 7 6101 0001V	Electrolytic 47 $\mu$ F 100V	1				
C31	4 2232 00680	Ceramic 0.047 $\mu$ F 150V	1				
C32	4 2232 00680	Ceramic 0.047 $\mu$ F 150V	1				
C33	4 2232 00680	Ceramic 0.047 $\mu$ F 150V	1				
C34	4 2232 00680	Ceramic 0.047 $\mu$ F 150V	1				
C35	4 2239 71380	Electrolytic 6800 $\mu$ F 69V	1				
C36	4 2239 71380	Electrolytic 6800 $\mu$ F 69V	1				
C37	CC4 7 3500 ZG00C	Ceramic 0.047 $\mu$ F 50V $+80,-20\%$	1				
C38	CC4 7 3500 ZG00C	Ceramic 0.047 $\mu$ F 50V $+80,-20\%$	1				
C39	CC4 7 3500 ZG00C	Ceramic 0.047 $\mu$ F 50V $+80,-20\%$	1				
C40	CC4 7 3500 ZG00C	Ceramic 0.047 $\mu$ F 50V $+80,-20\%$	1				
C41	CD1 0 8350 0001V	Electrolytic 1000 $\mu$ F 35V	1				
C42	CD1 0 8350 0001V	Electrolytic 1000 $\mu$ F 35V	1				
C43	CD1 0 7250 0001V	Electrolytic 100 $\mu$ F 25V	1				
C44	CD1 0 7250 0001V	Electrolytic 100 $\mu$ F 25V	1				
C45	CD1 0 6250 0001V	Electrolytic 10 $\mu$ F 25V	1				
C46	CD1 0 6250 0001V	Electrolytic 10 $\mu$ F 25V	1				
C47	CD2 2 5500 0001V	Electrolytic 2.2 $\mu$ F 50V	1				

# PARTS LIST (Continued)

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
R12	RD8 2 2251 JM000	Carbon	8.2kΩ 1/4W ± 5%				1
R13	RD5 6 0251 JM000	Carbon	56Ω 1/4W ± 5%				1
R14	RD5 6 0251 JM000	Carbon	56Ω 1/4W ± 5%				1
R15	RD5 6 0251 JM000	Carbon	56Ω 1/4W ± 5%				1
R16	RD5 6 0251 JM000	Carbon	56Ω 1/4W ± 5%				1
R17	RD4 7 1251 JM000	Carbon	470Ω 1/4W ± 5%				1
R18	RD4 7 1251 JM000	Carbon	470Ω 1/4W ± 5%				1
R19	RD1 0 2251 JM000	Carbon	1kΩ 1/4W ± 5%				1
R20	RD1 0 2251 JM000	Carbon	1kΩ 1/4W ± 5%				1
R21	RF8 2 0251 JK000	Fuse	82Ω 1/4W ± 5%				1
R22	RF8 2 0251 JK000	Fuse	82Ω 1/4W ± 5%				1
R23	RD3 3 3251 JM000	Carbon	33kΩ 1/4W ± 5%				1
R24	RD3 3 3251 JM000	Carbon	33kΩ 1/4W ± 5%				1
R25	RD8 2 0251 JM000	Carbon	82Ω 1/4W ± 5%				1
R26	RD8 2 0251 JM000	Carbon	82Ω 1/4W ± 5%				1
R27	RF4 7 0251 JK000	Fuse	47Ω 1/4W ± 5%				1
R28	RF4 7 0251 JK000	Fuse	47Ω 1/4W ± 5%				1
R29	RD4 7 0251 JM000	Carbon	47Ω 1/4W ± 5%				1
R30	RD4 7 0251 JM000	Carbon	47Ω 1/4W ± 5%				1
R31	RD5 6 3251 JM000	Carbon	56kΩ 1/4W ± 5%				1
R32	RD5 6 3251 JM000	Carbon	56kΩ 1/4W ± 5%				1
R33	RD6 8 2251 JM000	Carbon	6.8kΩ 1/4W ± 5%				1
R34	RD6 8 2251 JM000	Carbon	6.8kΩ 1/4W ± 5%				1
R35	RH4 7 2102 JZ003	Metal	4.7kΩ 1W ± 5%				1
R37	RF3 3 1501 JZ000	Fuse	330Ω 1/2W ± 5%				1
R38	RF3 3 1501 JZ000	Fuse	330Ω 1/2W ± 5%				1
R39	4 2219 70370	Cement	0.22Ω x2 5W				1
R40	4 2219 70370	Cement	0.22Ω x2 5W				1
R41	RF1 0 0251 JK000	Fuse	10Ω 1/4W ± 5%				1
R42	RF1 0 0251 JK000	Fuse	10Ω 1/4W ± 5%				1
R43	RF1 0 0251 JK000	Fuse	10Ω 1/4W ± 5%				1
R44	RF1 0 0251 JK000	Fuse	10Ω 1/4W ± 5%				1
R45	RD4 7 A251 JM000	Carbon	4.7Ω 1/4W ± 5%				1
R46	RD4 7 A251 JM000	Carbon	4.7Ω 1/4W ± 5%				1
R47	RH1 0 0102 JZ000	Metal	10Ω 1W ± 5%				1
R48	RH1 0 0102 JZ000	Metal	10Ω 1W ± 5%				1
R49	RF2 2 A251 JK000	Fuse	2.2Ω 1/4W ± 5%				1
R50	RF2 2 A251 JK000	Fuse	2.2Ω 1/4W ± 5%				1
R51	RF2 2 A251 JK000	Fuse	2.2Ω 1/4W ± 5%				1
R52	RF2 2 A251 JK000	Fuse	2.2Ω 1/4W ± 5%				1
R53	RD1 5 4251 JM000	Carbon	150kΩ 1/4W ± 5%				1
R54	RD1 5 4251 JM000	Carbon	150kΩ 1/4W ± 5%				1
R55	RF3 9 0251 JK000	Fuse	39Ω 1/4W ± 5%				1
R56	RF3 9 0251 JK000	Fuse	39Ω 1/4W ± 5%				1
R57	RD8 2 1251 JM000	Carbon	820Ω 1/4W ± 5%				1
R58	RD8 2 1251 JM000	Carbon	820Ω 1/4W ± 5%				1
R59	RD3 3 1251 JM000	Carbon	330Ω 1/4W ± 5%				1
R60	RD3 3 1251 JM000	Carbon	330Ω 1/4W ± 5%				1
R61	RH8 2 0202 JZ003	Metal	82Ω 2W ± 5%				1
R62	RF2 2 0251 JK000	Fuse	22Ω 1/4W ± 5%				1
R63	RD2 2 3251 JM000	Carbon	22kΩ 1/4W ± 5%				1
R64	RD4 7 2251 JM000	Carbon	4.7kΩ 1/4W ± 5%				1
R65	RD1 5 2251 JM000	Carbon	1.5kΩ 1/4W ± 5%				1
R66	RD2 7 4251 JM000	Carbon	270kΩ 1/4W ± 5%				1
R67	RD2 2 3251 JM000	Carbon	22kΩ 1/4W ± 5%				1
<b>SWITCH FUSE P.C.B. ASSY</b>							
	141 0 1939 06781	Switch Fuse P.C.B. Assy					1
	4 2262 20140	Switch Fuse P.C.B.					1
SW07	△ 4 2312 05710	SW. Push Power (Power)					1
SW08	4 2319 77340	SW. Push 1 Key (Speaker A)					1
SW09	4 2319 77340	SW. Push 1 Key (Speaker B)					1
	△ 4 2349 20550	Fuse T 4.0A (Speaker Protector)					2
	4 2352 00970	Headphone Jack 3P (Headphones)					1
	4 2352 00200	Fuse Holder					4
	111 2 6220 11100	Wire Wrap Terminal					2
	131 2 6114 01400	Cover Safety					1
	4 2372 00830	EC Terminal 1P					2
<b>CAPACITOR</b>							
C01	△ 4 2239 70970	Ceramic	0.01μF 400V				1
<b>RESISTORS</b>							
R01	RH5 6 1202 JZ000	Metal	560Ω 2W ± 5%				1
R02	RH5 6 1202 JZ000	Metal	560Ω 2W ± 5%				1
R03	RD2 2 1251 JM000	Carbon	220Ω 1/4W ± 5%				1
R04	RD2 2 1251 JM000	Carbon	220Ω 1/4W ± 5%				1
R05	RD2 7 1251 JM000	Carbon	270Ω 1/4W ± 5%				1
R06	RD2 7 1251 JM000	Carbon	270Ω 1/4W ± 5%				1
<b>SPEAKER FUSE P.C.B. ASSY</b>							
	141 0 1939 06791	Speaker Fuse P.C.B. Assy					1
	4 2262 20150	Speaker Fuse P.C.B.					1
	4 2372 01160	SP. 8P Terminal (Speaker Terminal)					1
	111 2 6220 11100	Wire Wrap Terminal					4
<b>CAPACITORS</b>							
C01	CC4 7 1500 KE00C	Ceramic	470pF 50V ± 10%				1
C02	CC4 7 1500 KE00C	Ceramic	470pF 50V ± 10%				1
C03	CC4 7 1500 KE00C	Ceramic	470pF 50V ± 10%				1
C04	CC4 7 1500 KE00C	Ceramic	470pF 50V ± 10%				1
<b>INPUT P.C.B. ASSY</b>							
	141 0 1939 06721	Input P.C.B. Assy					1
	4 2262 20080	Input P.C.B.					1
	4 2352 01700	Pin Jack 4P (Phono, Tuner) (D, AUX/Video) (Tape)					3
A	4 2369 74730	Plug 6P					1
B	4 2369 73160	Connector 6P					1
C	4 2369 73150	Connector 5P					1
	141 2 3229 44600	Plate Shield					1
<b>CAPACITORS</b>							
C01	CD4 7 5250 0001V	Electrolytic	4.7μF 25V				1
C02	CD4 7 5250 0001V	Electrolytic	4.7μF 25V				1
C03	CC2 2 1500 KE00C	Ceramic	220pF 50V ± 10%				1
C04	CC2 2 1500 KE00C	Ceramic	220pF 50V ± 10%				1
C05	CC2 2 1500 KE00C	Ceramic	220pF 50V ± 10%				1
C06	CC2 2 1500 KE00C	Ceramic	220pF 50V ± 10%				1
C07	CD4 7 6160 0001V	Electrolytic	47μF 16V				1
C08	CD4 7 6160 0001V	Electrolytic	47μF 16V				1
C09	CM1 8 3500 K00SV	Mylar	0.01μF 50V ± 10%				1
C10	CM1 8 3500 K00SV	Mylar	0.01μF 50V ± 10%				1
C11	CM4 7 2500 K00SV	Mylar	0.0047μF 50V ± 10%				1
C12	CM4 7 2500 K00SV	Mylar	0.0047μF 50V ± 10%				1
C13	CD4 7 5250 0001V	Electrolytic	4.7μF 25V				1
C14	CD4 7 5250 0001V	Electrolytic	4.7μF 25V				1
C15	CC2 2 1500 KE00C	Ceramic	220pF 50V ± 10%				1
C16	CC2 2 1500 KE00C	Ceramic	220pF 50V ± 10%				1





# PARTS LIST (Continued)

Ref. No.	Part No.	Description	Q'ty
<b>L.E.D. METER P.C.B. ASSY</b>			
141 0	1939 06760	L.E.D. Meter P.C.B. Assy	1
	4 2262 20120	L.E.D. Meter P.C.B.	1
141 2	2419 28800	Shelter L.E.D.	1
141 2	3769 14800	Spacer L.E.D.	1
<b>H</b>	4 2359 77395	Connector 4P Assy	1
<b>CAPACITORS</b>			
C01	CD1 0 6250 0002V	Electrolytic	10 $\mu$ F 25V 1
C02	CD1 0 6250 0002V	Electrolytic	10 $\mu$ F 25V 1
C03	CD1 0 6250 0002V	Electrolytic	10 $\mu$ F 25V 1
C04	CD1 0 6250 0002V	Electrolytic	10 $\mu$ F 25V 1
C05	CD1 0 6250 0002V	Electrolytic	10 $\mu$ F 25V 1
C06	CD1 0 6250 0002V	Electrolytic	10 $\mu$ F 25V 1
C07	CC1 0 2500 KE00C	Ceramic	0.001 $\mu$ F 50V $\pm$ 10% 1
C08	CC1 0 2500 KE00C	Ceramic	0.001 $\mu$ F 50V $\pm$ 10% 1
C09	CD1 0 6250 0002V	Electrolytic	10 $\mu$ F 25V 1
<b>SEMICONDUCTORS</b>			
D01	4 2029 72670	L.E.D., SLP 258 B	1
D02	4 2029 72670	L.E.D., SLP 258 B	1
D03	4 2029 72670	L.E.D., SLP 258 B	1
D04	4 2029 72670	L.E.D., SLP 258 B	1
D05	4 2029 72670	L.E.D., SLP 258 B	1
D06	4 2029 72670	L.E.D., SLP 258 B	1
D07	4 2029 72670	L.E.D., SLP 258 B	1
D08	4 2029 72670	L.E.D., SLP 258 B	1
D09	4 2029 72670	L.E.D., SLP 258 B	1
D10	4 2029 72670	L.E.D., SLP 258 B	1
D11	4 2029 72670	L.E.D., SLP 258 B	1
D12	4 2029 72670	L.E.D., SLP 258 B	1
D13	4 2029 72670	L.E.D., SLP 258 B	1
D14	4 2029 72670	L.E.D., SLP 258 B	1
IC01	4 2069 73670	IC, IR2E19 (LED Drive)	1
IC02	4 2069 73670	IC, IR2E19 (LED Drive)	1
<b>RESISTORS</b>			
R01	R03 9 2161 JH000	Carbon	3.9k $\Omega$ 1/6W $\pm$ 5% 1
R02	R03 9 2161 JH000	Carbon	3.9k $\Omega$ 1/6W $\pm$ 5% 1
R03	R03 3 2161 JH000	Carbon	3.3k $\Omega$ 1/6W $\pm$ 5% 1
R04	R03 3 2161 JH000	Carbon	3.3k $\Omega$ 1/6W $\pm$ 5% 1

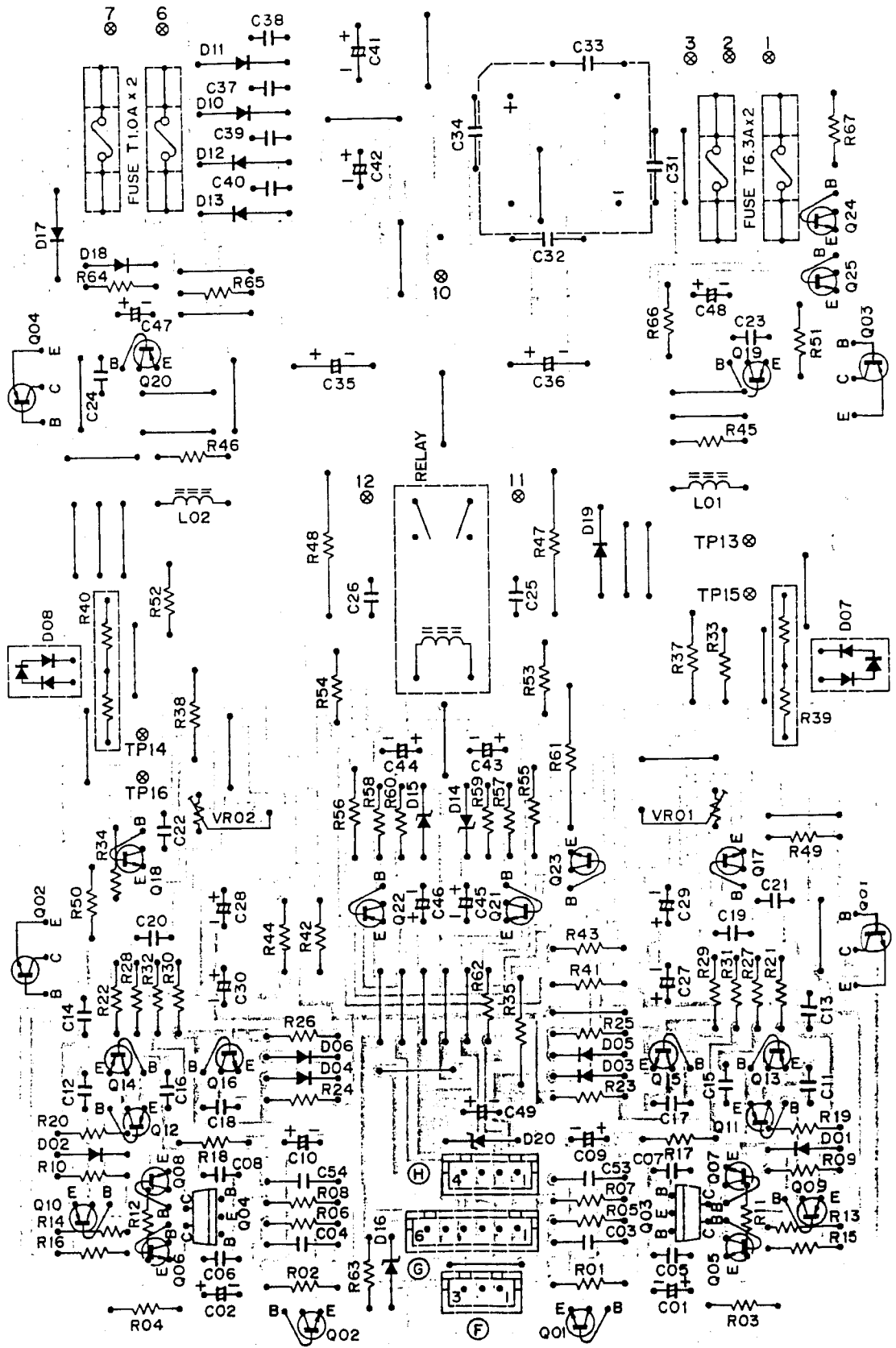
1. Parts order must contain Model Number, Part Number and Description.
2. Ordering quantity of screws and resistors must be multiple of 10 pcs.

## PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol  $\Delta$  in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with  $\Delta$ , use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual. Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

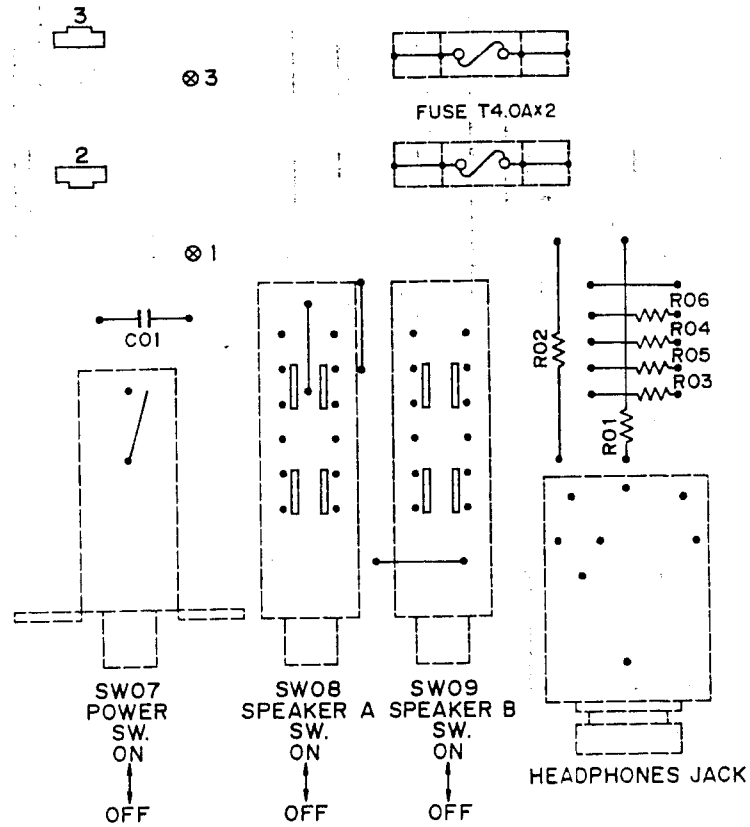
# MAIN AMPLIFIER P.C. BOARD

(BOTTOM VIEW)



# SWITCH FUSE P.C.BOARD

(BOTTOM VIEW)



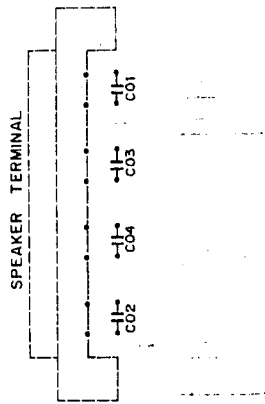
## MAIN AMPLIFIER P.C.BOARD

TRANSISTOR DC VOLTAGES									
SYMBOL No.	DEVICE	B	C	E	SYMBOL No.	DEVICE	B	C	E
Q01,02	2SD 1012	-3.0V	0V	0V	Q19,20	2SA 1011	-1.1V	-60.3V	-0.5V
Q03,04	2SC 1583	-0.1V	9.8V	-0.7V	Q21	2SD 612	17.8V	4.1V	17.2V
Q05,06	2SC 1570	10.3V	58.4V	9.8V	Q22	2SB 632	-17.7V	-24.9V	-17.2V
Q07,08	2SC 1570	10.3V	59.4V	9.8V	Q23	2SD 438	17.2V	0.3V	16.6V
Q09,10	2SA 608	59.4V	58.4V	59.8V	Q24	2SC 536	0.7V	0V	1.4V
Q11,12	2SA 1208	58.4V	1.5V	59.3V	Q25	2SC 536	1.4V	0.8V	0V
Q13,14	2SA 1209	59.3V	1.5V	59.5V					
Q15,16	2SC 2911	-59.1V	-1.4V	-59.5V	Q01,02	2SC 3281	0.6V	60.5V	0V
Q17,18	2SC 2344	1.1V	60.5V	0.6V	Q03,04	2SA 1302	-0.5V	-60.3V	0V



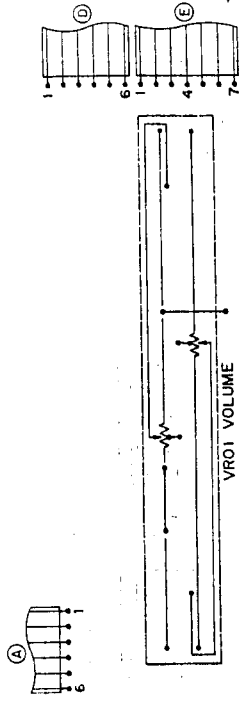
# SPEAKER FUSE P.C. BOARD

(BOTTOM VIEW)



# VOLUME P.C. BOARD

(BOTTOM VIEW)

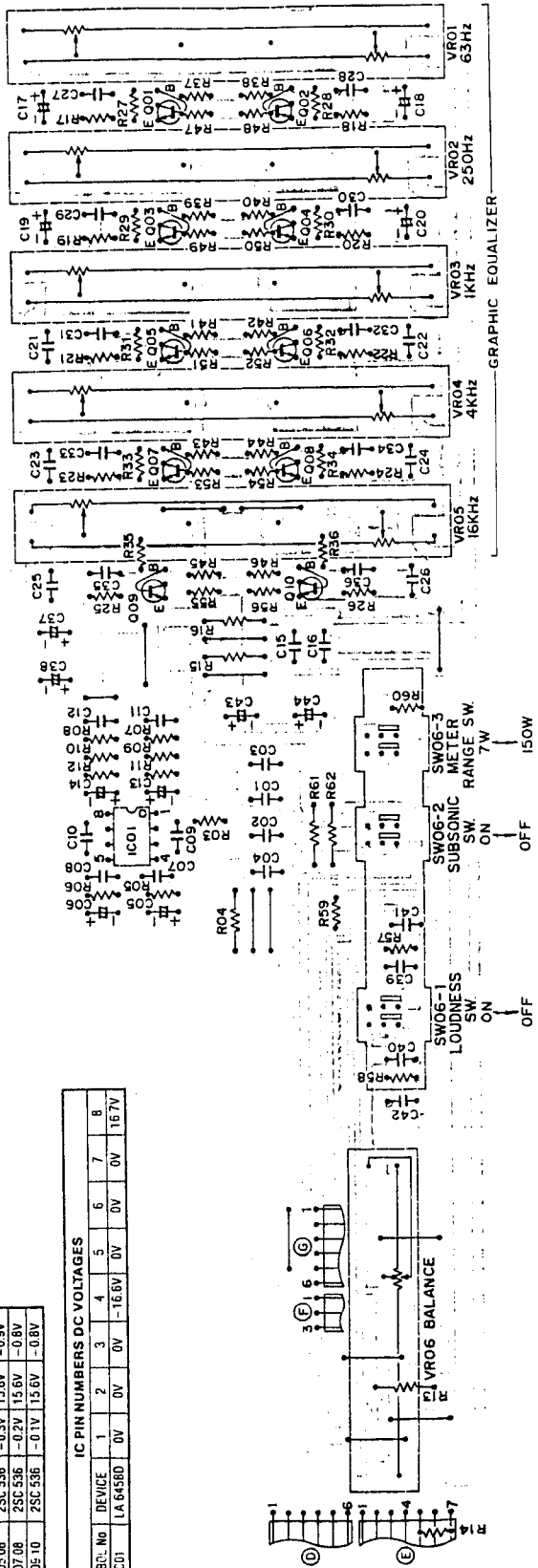


# GRAPHIC EQUALIZER P.C. BOARD

(BOTTOM VIEW)

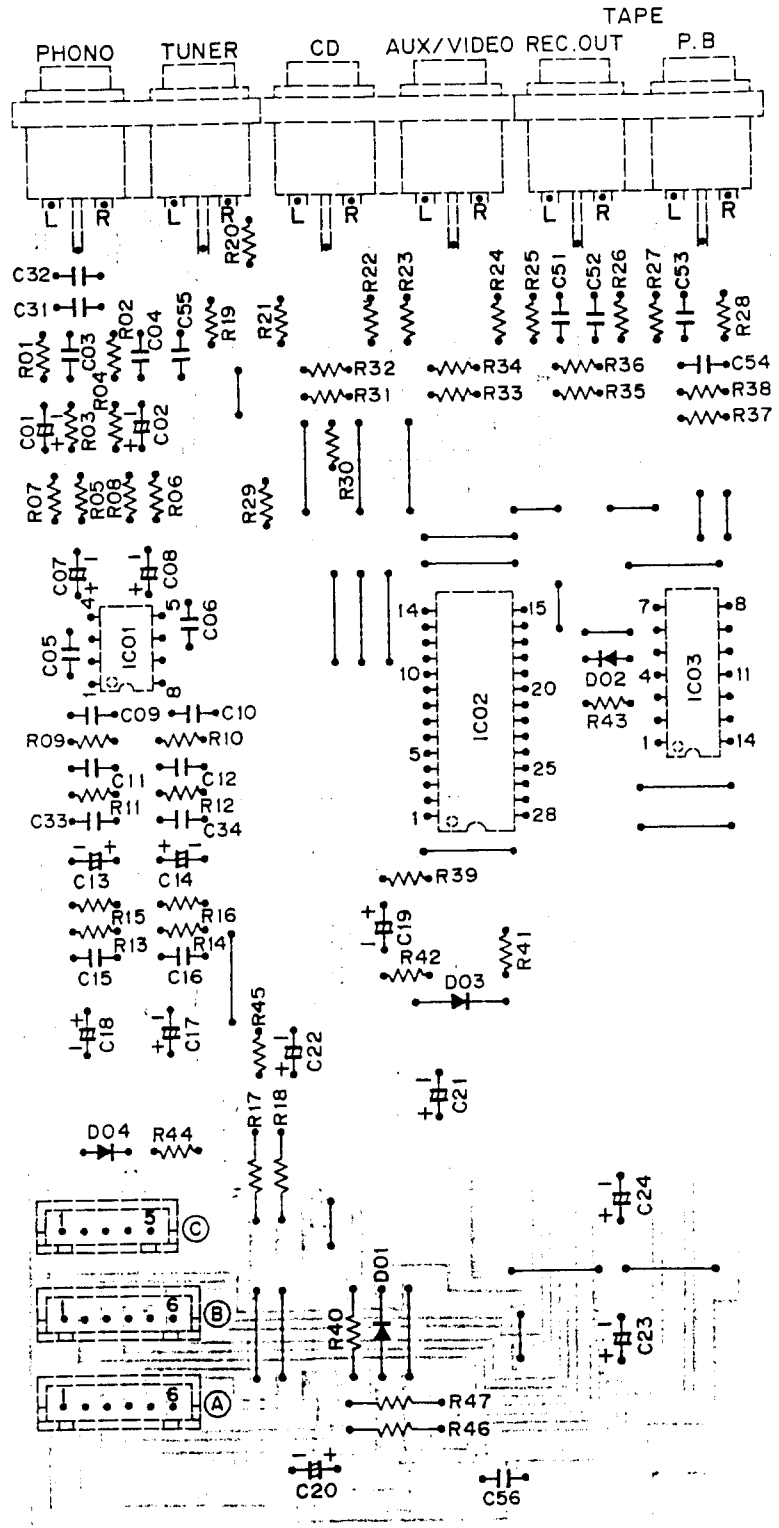
TRANSISTOR DC VOLTAGES				
SYMBOL No	DEVICE	B	C	E
001 02	2SC 536	0.1V	15.6V	-1.6V
003 04	2SC 536	-0.7V	15.6V	-1.4V
005 06	2SC 536	-0.3V	15.6V	-0.9V
007 08	2SC 536	-0.2V	15.6V	-0.8V
009 10	2SC 536	-0.1V	15.6V	-0.8V

IC PIN NUMBERS DC VOLTAGES									
SYMBOL No	DEVICE	1	2	3	4	5	6	7	8
IC01	LA 6458D	0V	0V	0V	-16.6V	0V	0V	0V	16.7V



# INPUT P.C. BOARD

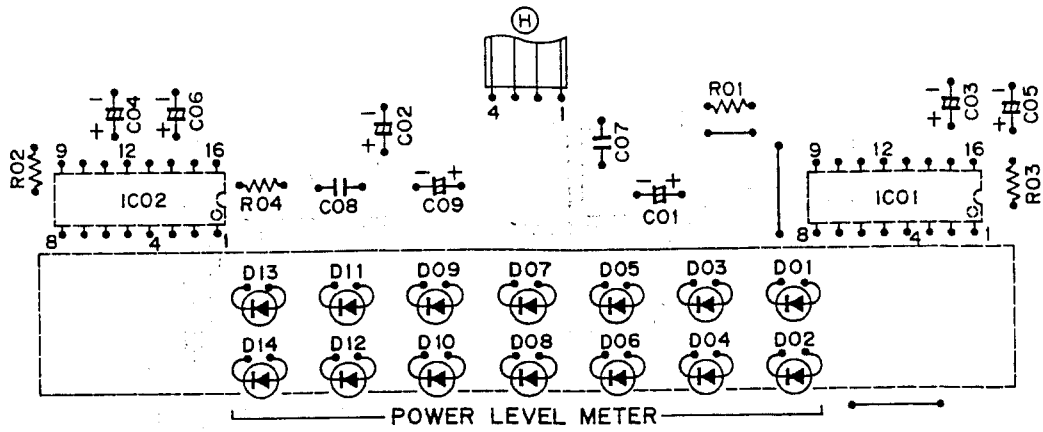
## (BOTTOM VIEW)



IC PIN NUMBERS DC VOLTAGES									
SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8
IC01	NJM 072	0V	0V	0V	-12.7V	0V	0V	0V	12.8V

# L.E.D. METER P.C. BOARD

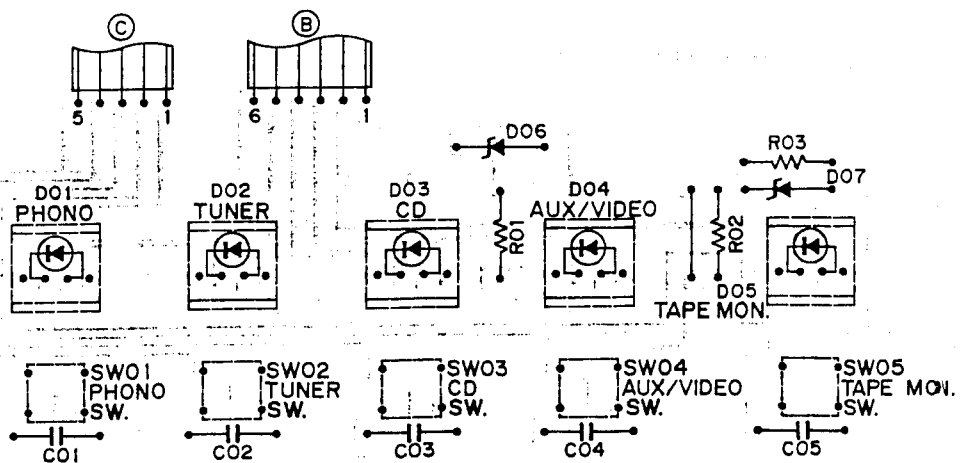
(BOTTOM VIEW)



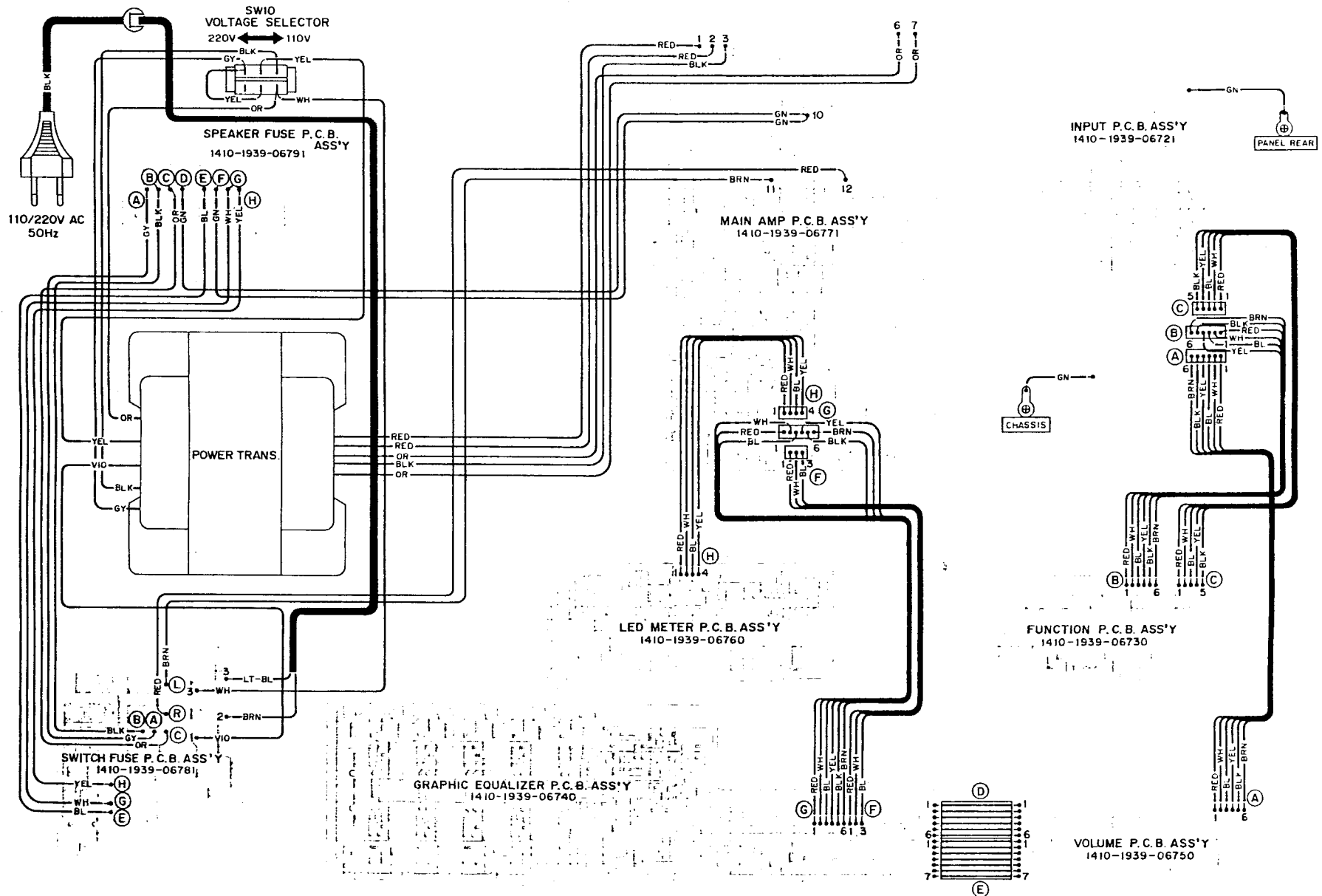
IC PIN NUMBERS DC VOLTAGES																	
SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IC01,02	IR 2E29	11.9V	13.3V	14.7V	13.2V	14.8V	13.3V	14.7V	0V	0.3V	16.3V	0V	0V	0V	2.7V	0.1V	0.9V

# FUNCTION P.C. BOARD

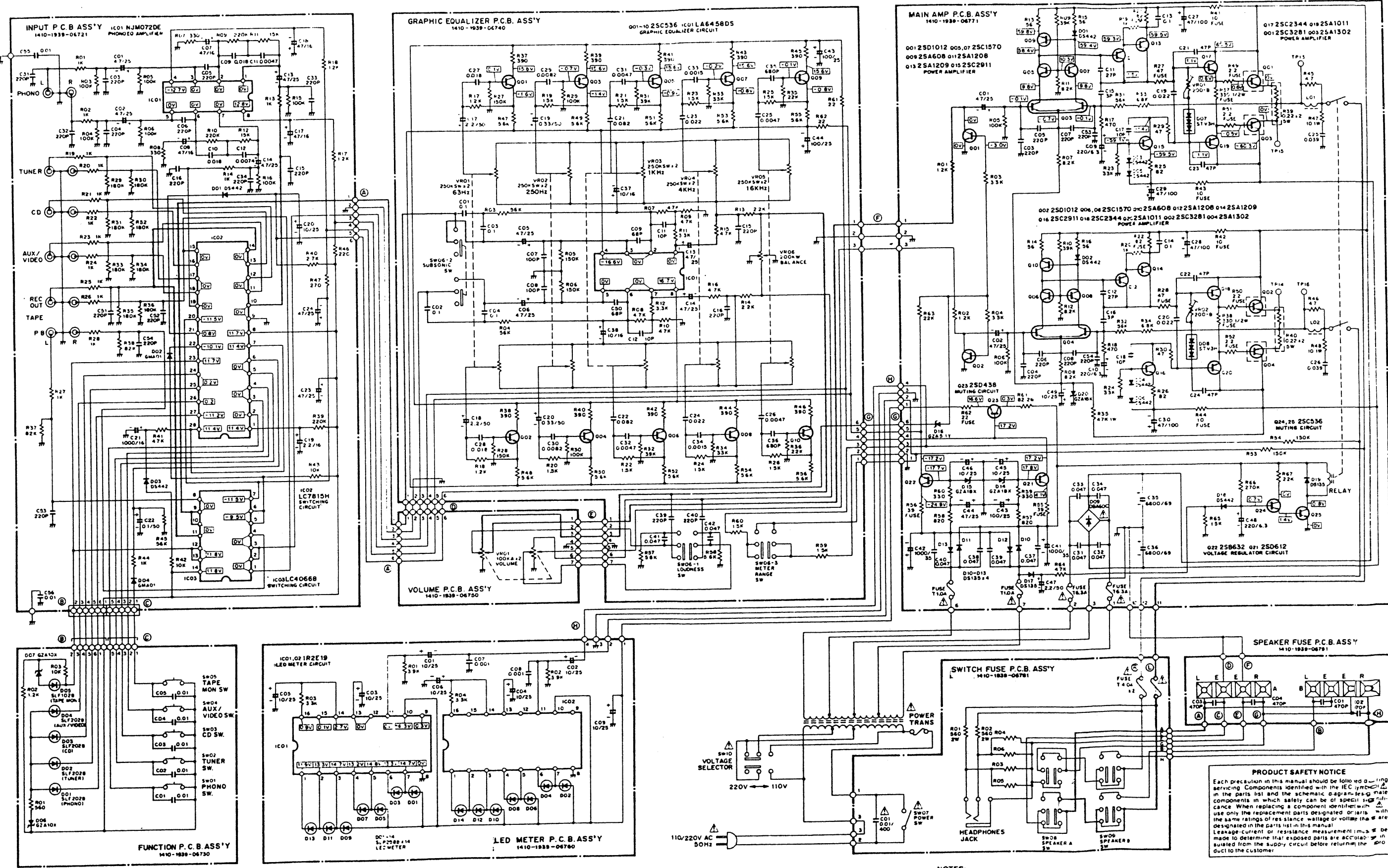
(BOTTOM VIEW)



# POINT TO POINT WIRING DIAGRAM



# SCHEMATIC DIAGRAM



Because Fisher products are subject to continuous improvement, Fisher Corporation reserves the right to make any changes or modifications without notice.

- NOTES:**
1. All resistor values are indicated in "ohm" ( $K=10^3$ ,  $M=10^6$ )
  2. All capacitor values are indicated in " $\mu F$ " ( $P=10^{-12}$ )
  3. All voltages indicated on the schematics are measured under the following conditions:
    - a. Use a V.T.V.M.

**PRODUCT SAFETY NOTICE**

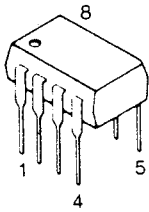
Each precaution in this manual should be followed when servicing components identified with the IEC symbol in the parts list and the schematic diagram—these are components in which safety can be of special significance. When replacing a component identified with the IEC symbol, use only the replacement parts designated or parts with the same ratings of resistance, wattage or voltage (as designated in the parts list in this manual). Leakage current or resistance measurement must be made to determine that exposed parts are adequately insulated from the supply circuit before returning the product to the customer.

- b. All voltages  $\pm 10\%$  with respect to chassis ground
- c. No signals at input terminals
- d. AC input at 220 volts 50 Hz
4. This is a basic schematic diagram.

# SEMICONDUCTOR LEAD IDENTIFICATION

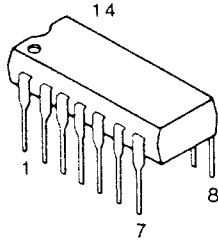
## INTEGRATED CIRCUITS

PHONO EQ AMP IC  
TONE CONTROL AMP IC



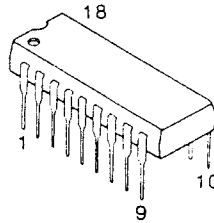
- NJM 072
- LA 6458 D

TAPE SW IC



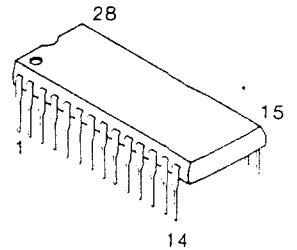
- LC 4066 B

L.E.D. LEVEL IC



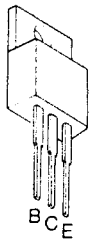
- IR 2E 19

FUNCTION SWITCH IC

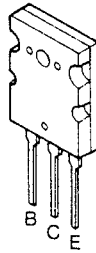


- LC 7815 H

## TRANSISTORS



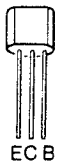
- 2SC 2344
- 2SD 1011



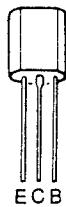
- 2SA 1302
- 2SC 3281



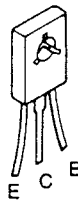
- 2SD 1012



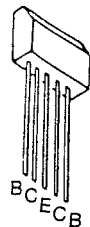
- 2SA 608
- 2SC 536
- 2SC 1570



- 2SA 1208
- 2SD 438



- 2SD 612
- 2SB 632
- 2SA 1209
- 2SC 2911



- 2SC 1583