

SERVICE MANUAL

FISHER

CA-250

**Integrated Stereo
Amplifier
(EUROPE)**

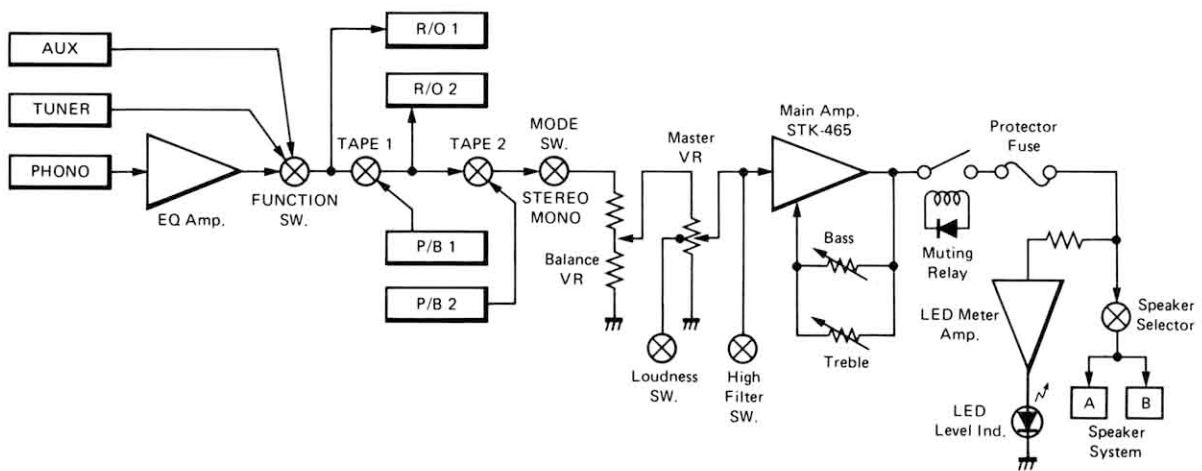


The first name in high fidelity

CONTENTS

Functional Block Diagram	2
Specifications	3
Cabinet & Chassis Exploded View	4
Parts List	5
Recommended Test Equipments	6
Harmonic Distortion Test	6
Adjustment of Power Level Ind. P.C.Board	7
Level Ind. P.C.Board Layout (Top View)	7
IC Equivalent Circuit & Block Diagram	8,9
DIN Terminal P.C.Board (Bottom View)	9
Fuse P.C.Board (Bottom View)	9
Level Indicator P.C.Board (Bottom View)	10
L.E.D. P.C.Board (Bottom View)	10
Headphone P.C.Board (Bottom View)	11
Control Printed Circuit Board (Bottom View)	11,12
Function Switch P.C.Board (Bottom View)	11,12
Master Volume P.C.Board (Bottom View)	12
Main Power Supply P.C.Board (Bottom View)	13,14
Printed Circuit Board Parts List	15,16
Point to Point Wiring Diagram	17,18
Schematic Diagram	19,20
Semiconductor Lead Identification	21

FUNCTIONAL BLOCK DIAGRAM

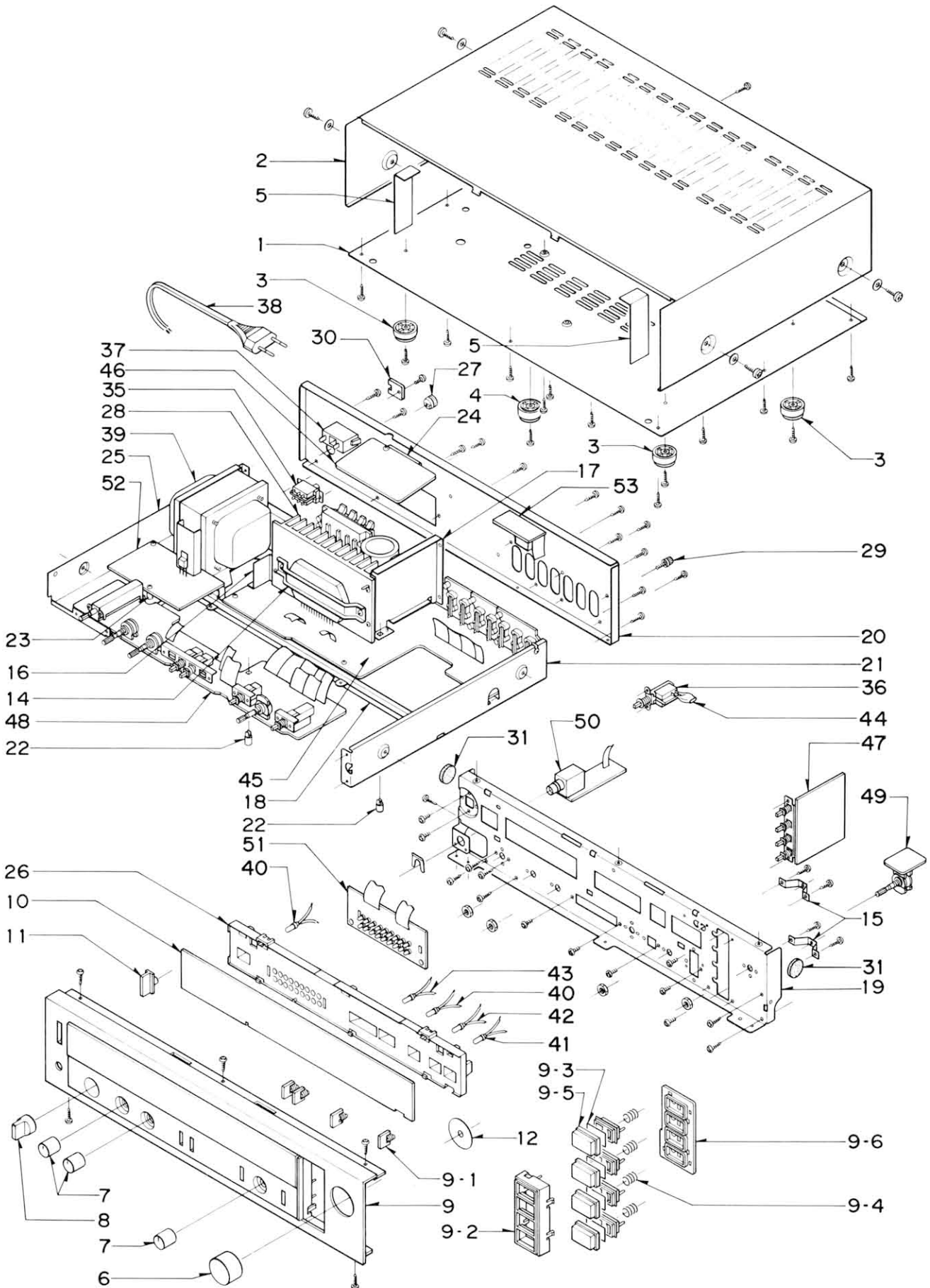


SPECIFICATIONS

AMPLIFIER	CA-250
Sine Wave Power	
at 1 000 Hz (8 ohms)	2 x 35 W
20 to 20 000 Hz (8 ohms)	2 x 30 W
Music Power (8 ohms)	2 x 40 W
T.H.D. (rated output)	0.09 %
I.M. (rated output)	0.09 %
Power Bandwidth	20 Hz – 20 kHz
Frequency Response (20 Hz – 20 kHz)	±0.5 dB
Damping Factor (8 ohms)	>20
Input Sensitivity and Impedance	
Phono	2.5 mV/50 kohms
Tape Monitor 1,2	150 mV/50 kohms
Tuner	150 mV/50 kohms
Auxiliary	150 mV/50 kohms
S/N Ratio (DIN)	
Phono	70 dB
Tape/Tuner/Aux	95 dB
Treble Control (10 kHz)	±10 dB
Bass Control (100 Hz)	±10 dB
Loudness Control (100 Hz/10 kHz)	+8 dB/+4 dB
High Filter (above 6 kHz)	6 dB/Oct.
Power Requirements	AC: 110/ 220V , 50 Hz
Power Consumption	160 W
Dimensions (W x D x H)	440 x 320 x 110 mm
Weight (approx.)	6.8 kg

* Specifications are subject to change without notice.

CABINET & CHASSIS EXPLODED VIEW



PARTS LIST

PACKING PARTS LIST

Ref. No.	Parts Number	Description
	131 6 1169 00503	Box Corrugate-EXP
	131 6 2119 02091	Bag Polyethylene-EXP
	131 6 3009 32380	Pad, Right
	131 6 3009 32390	Pad, Left

ACCESSORIES PARTS LIST

Ref. No.	Parts Number	Description
	131 6 2719 10801	Bag Fan
	131 6 4119 89101	Explanatory Booklet
	131 6 4519 15700	Guarantee Certificate

CABINET PARTS LIST

Ref. No.	Parts Number	Description
1	131 2 1105 28000	Plate Bottom
2	131 2 1410 26102	Cover
3	131 2 1801 12900	Leg
4	131 2 1801 13300	Leg
5	131 2 3202 13400	Metal Reinforce

APPEARANCE PARTS LIST

Ref. No.	Parts Number	Description
6	131 0 1001 59100	Knob (Volume)
7	131 0 1001 59200	Knob (Balance, Bass, Treble)
8	131 0 1001 59300	Knob (Selector)
9	131 0 1016 38607	Panel Decorate Assy
	131 2 1203 52407	Panel Control
	131 2 6113 41900	Shelter
	131 2 1202 18600	Escutcheson Dial
	131 2 1203 52604	Panel Control
9-1	131 0 1001 60000	Knob (Push)
	131 2 1205 25400	Decorative Plate Dial
9-2	131 2 1116 20200	Frame
	131 2 1601 69900	Knob
9-3	131 2 1310 37806	Name Plate (Tuner)
	131 2 1310 37807	Name Plate (Aux)
	131 2 1310 37808	Name Plate (Phono)
	131 2 1310 37809	Name Plate (Tape)
9-4	131 2 5101 19500	Spring
9-5	131 2 1601 70000	Knob (Base)
9-6	131 2 6110 30000	Shelter Light
10	131 2 1201 36304	Plate Dial
11	131 2 1601 69500	Knob (Power Switch)
12	131 2 6113 31800	Shelter (Volume)

CHASSIS PARTS LIST

Ref. No.	Parts Number	Description
14	* 131 2 3101 71300	Metal Mount (IC)
15	* 131 2 3101 78100	Metal Mount (Push Switch)
16	* 131 2 3101 80300	Metal Mount (P.H. Sink)
17	* 131 2 3202 13500	Metal Reinforce (Panel Rear)
18	* 131 2 3202 13700	Metal Reinforce
19	* 131 2 3305 31200	Panel Front
20	* 131 2 3306 34603	Panel Rear
21	* 131 2 3315 10400	Panel Side
22	* 131 2 3614 20300	Mount P.C.B.
23	* 131 2 3614 21800	Mount P.C.B.
24	* 131 2 3614 24400	Mount P.C.B.
25	* 131 2 3617 18700	Metal Mount Transformer
26	131 2 6110 30100	Shelter Light
27	131 2 6111 14200	Bushing
28	131 2 6201 28102	Plate Heat Sink
29	131 2 4201 17800	Screw (GND)
30	131 2 7104 00500	Plate Pad Switch
31	131 2 1801 13900	Leg (Panel Front)

ELECTRICAL PARTS LIST

Ref. No.	Parts Number	Description
35	△ 4 2312 01020	Switch Slide
36	△ 4 2312 02520	Switch Push Power
37	△ 4 2352 00450	AC Outlet
38	△ 4 2432 00140	Line Cord
39	△ 4 2512 17320	Power Transformer
40	4 6122 00120	Pilot Lamp (8 V, 60 mA)
41	4 6122 00130	Pilot Lamp (8 V, 60 mA)
42	4 6122 00320	Pilot Lamp (8 V, 60 mA)
43	4 6122 00230	Pilot Lamp (8 V, 60 mA)
44	131 2 6114 00200	Cover Safety
45	* 131 0 4001 07951	Main Power Supply P.C.B. Assy
46	* 131 0 4001 08550	Fuse P.C.B. Assy
47	* 131 0 4001 07981	Function Switch P.C.B. Assy
48	* 131 0 4001 07991	Control P.C.B. Assy
49	* 131 0 4001 08001	Master Volume P.C.B. Assy
50	* 131 0 4001 08011	Headphone P.C.B. Assy
51	* 131 0 4001 07130	L.E.D. P.C.B. Assy
52	* 131 0 4001 07123	Level Ind. P.C.B. Assy
53	* 131 0 4001 07961	DIN Terminal P.C.B. Assy
C01	△ C2GYDP103A	Ceramic 0.01 μF 400V +100,-0%

*—Not a service part.

PRODUCT SAFETY NOTICE

PRODUCT SAFETY SHOULD BE CONSIDERED WHEN A COMPONENT REPLACEMENT IS MADE IN ANY AREA OF AN UNIT. COMPONENTS INDICATED BY A MARK △ IN THIS PARTS LIST AND THE SCHEMATIC DIAGRAM SHOW COMPONENTS WHOSE VALUE HAS SPECIAL SIGNIFICANCE TO PRODUCT SAFETY. IT IS PARTICULARLY RECOMMENDED THAT ONLY PARTS SPECIFIED ON THE FOLLOWING PARTS LIST BE USED FOR COMPONENT REPLACEMENT POINTED OUT BY THE MARK.

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:

- BALANCE controls to center positions.
- POWER switch to OFF
- SPEAKERS switch to OFF
- FUNCTION switch to AUX
- MODE switch to STEREO
- TAPE MONITOR switch to SOURCE
- HIGH FILTERS switch to OFF
- LOUDNESS switch 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 MAIN 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 MAIN. Turn VOLUME control to MAX.
- 4) Increase generator output for 30 Watts RMS (15.5 V across the 8-ohm load). Harmonic Distortion Analyzer should measure 0.09 % distortion or less.
- 5) Repeat steps 1 through 4 for RIGHT CHANNEL.

BOTH CHANNELS DRIVEN

Connect 8-ohm load resistors across LEFT and RIGHT MAIN SPEAKERS terminals. Set MODE switch to "MONO". Adjust generator output and "BALANCE" control for 30 Watts at Left and Right Channels (15.5 volts across the 8-ohm loads). Harmonic Distortion Analyzer should measure 0.09 % 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.

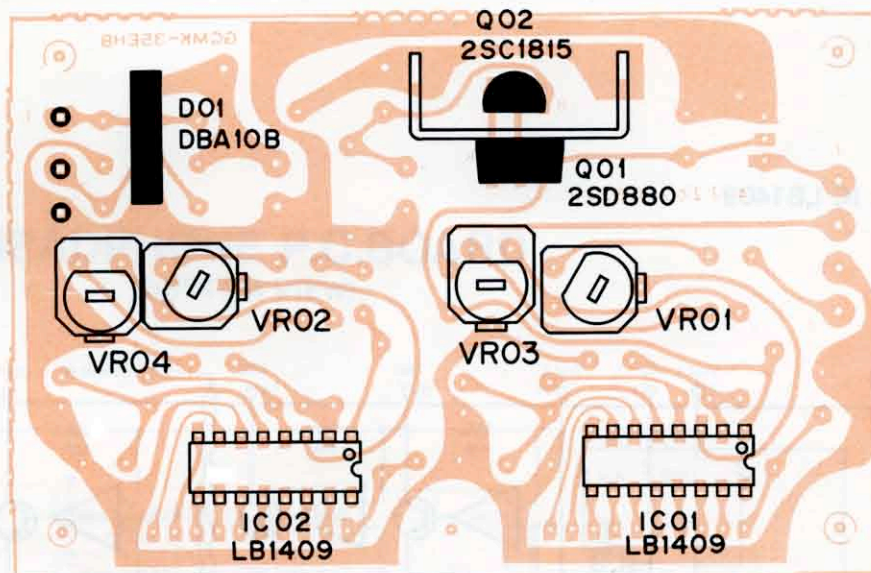
ADJUSTMENT OF POWER LEVEL IND. P.C.BOARD

POWER LEVEL INDICATOR ADJUSTMENT

When IC01 (LB1409) and IC02 (LB1409) in the P.C.Board and a component in the Power Amplifier P.C.Board are replaced, perform the readjustment by the following steps.

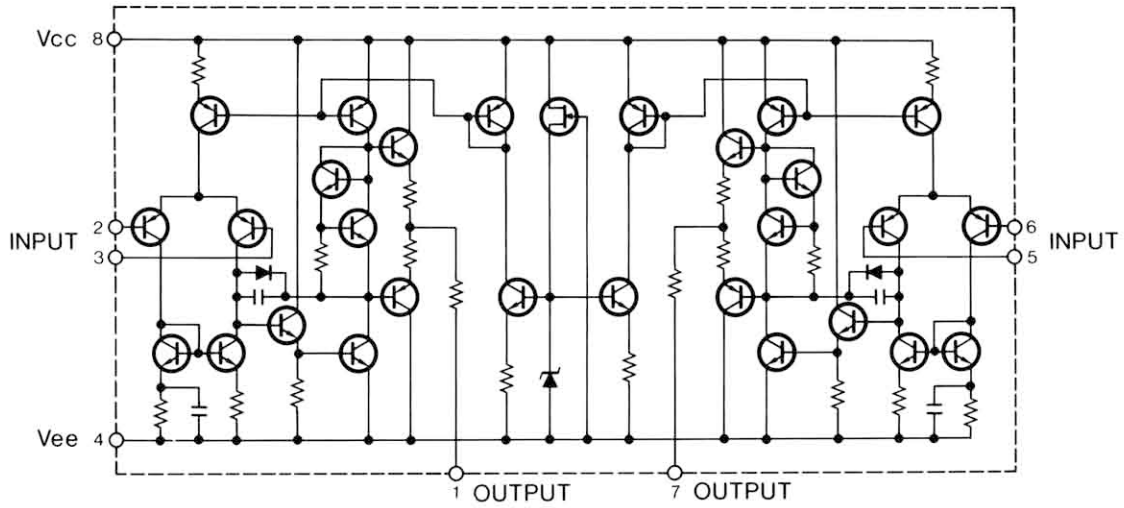
- 1) Set VR01 and VR02 to the maximum position (fully turned counter-clockwise).
- 2) Connect the low frequency oscillator to "AUX", and the oscilloscope, V.T.V.M., and 8-ohm load resistance to the speaker terminals.
- 3) Feed the 1 kHz input signal into "AUX" and adjust the master volume until the output voltage becomes 0.28 V.
- 4) Adjust VR03 and VR04, so that the first L.E.D. lights up in the L.E.D. P.C.Board.
- 5) Change the input level and adjust the master volume for 15.5 V.
- 6) Adjust VR01 and VR02, so that the ninth L.E.D. lights up in the L.E.D. P.C.Board.

LEVEL IND. P.C.BOARD LAYOUT (TOP VIEW)

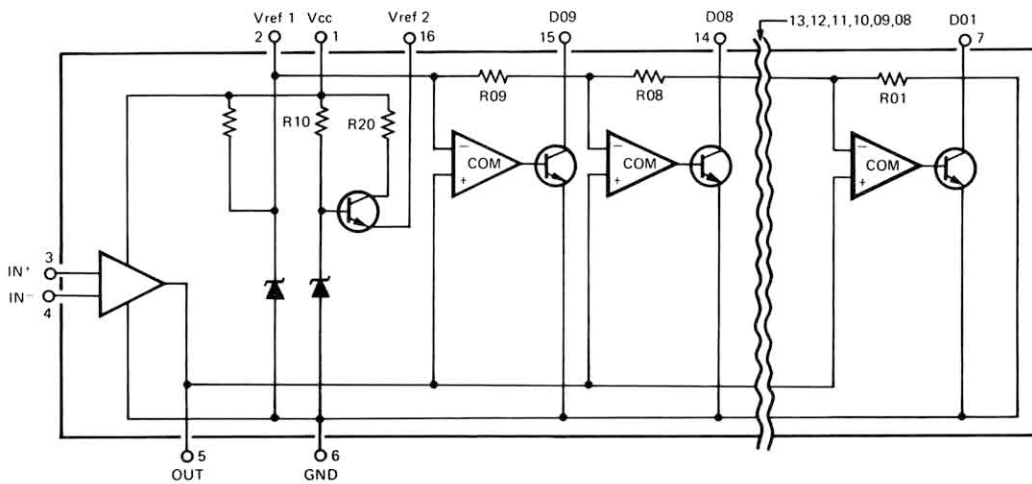


IC EQUIVALENT CIRCUIT & BLOCK DIAGRAM

EQ AMP IC NJM4559DX

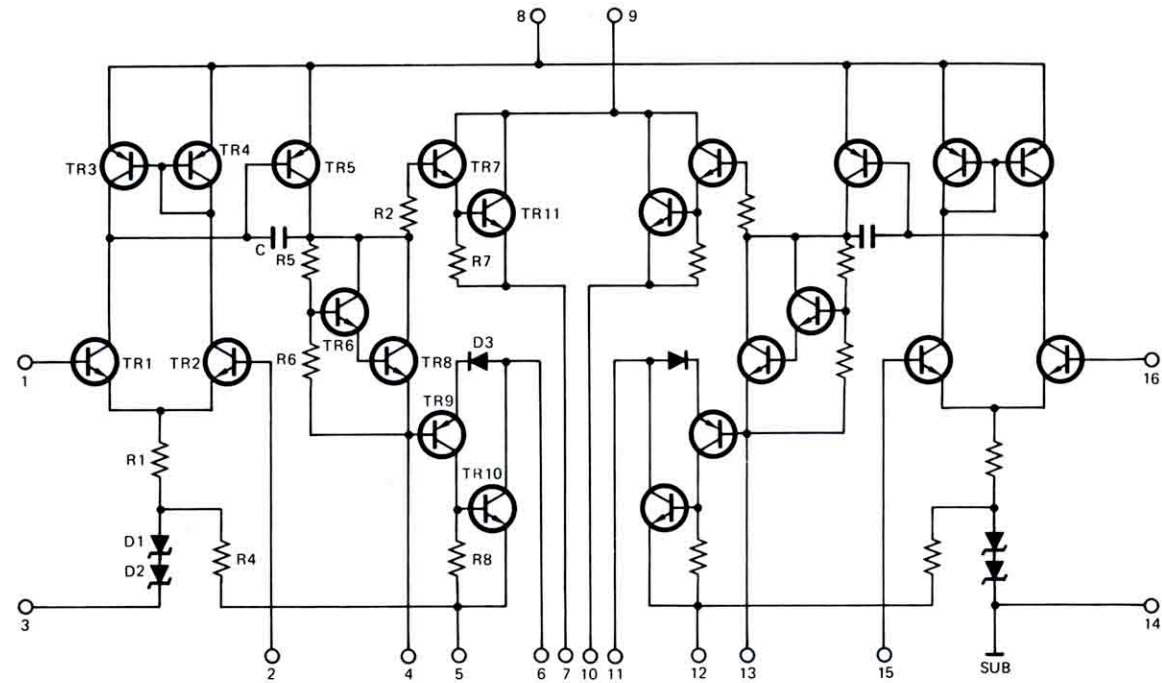


L.E.D. LEVEL METER IC LB1409

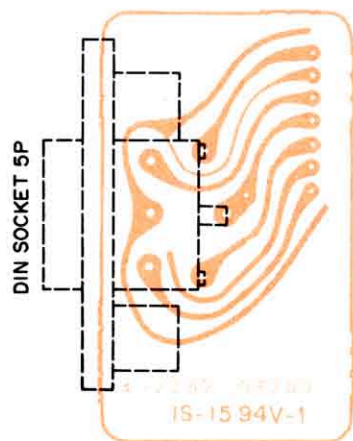


IC EQUIVALENT CIRCUIT & BLOCK DIAGRAM

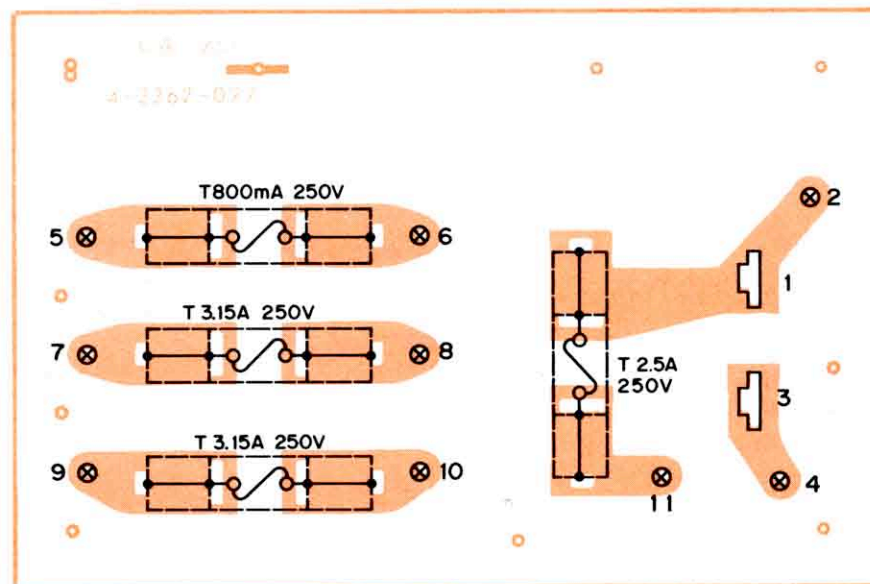
POWER AMP IC STK-465SA



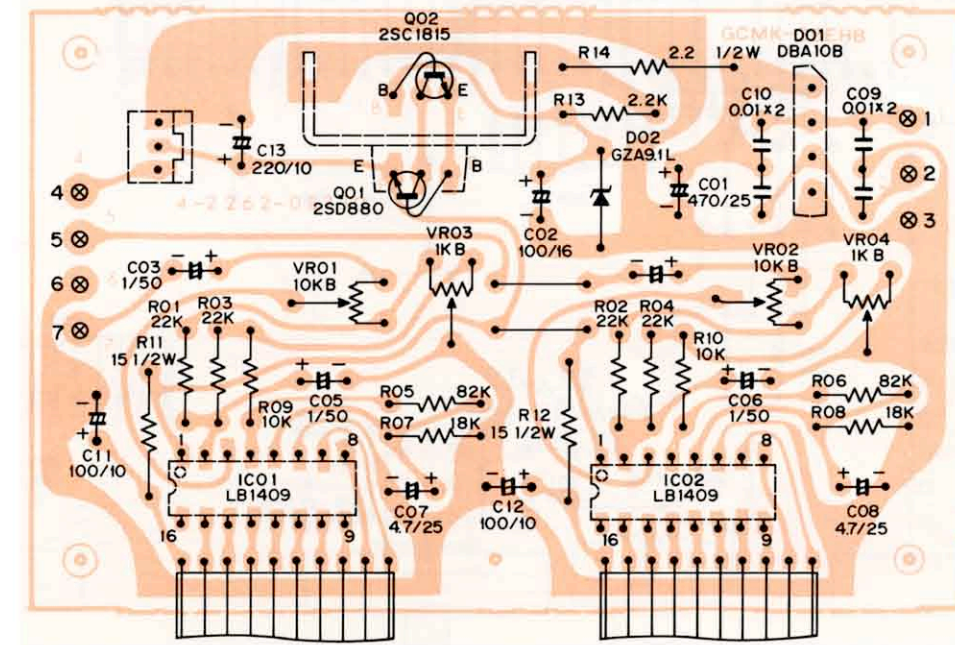
DIN TERMINAL P.C.BOARD (BOTTOM VIEW)



FUSE P.C.BOARD (BOTTOM VIEW)



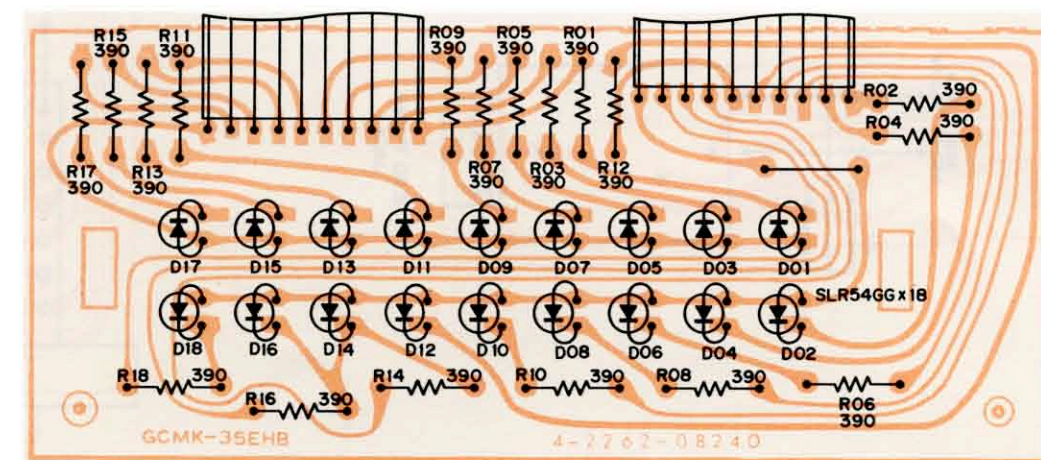
LEVEL INDICATOR P.C.BOARD (BOTTOM VIEW)



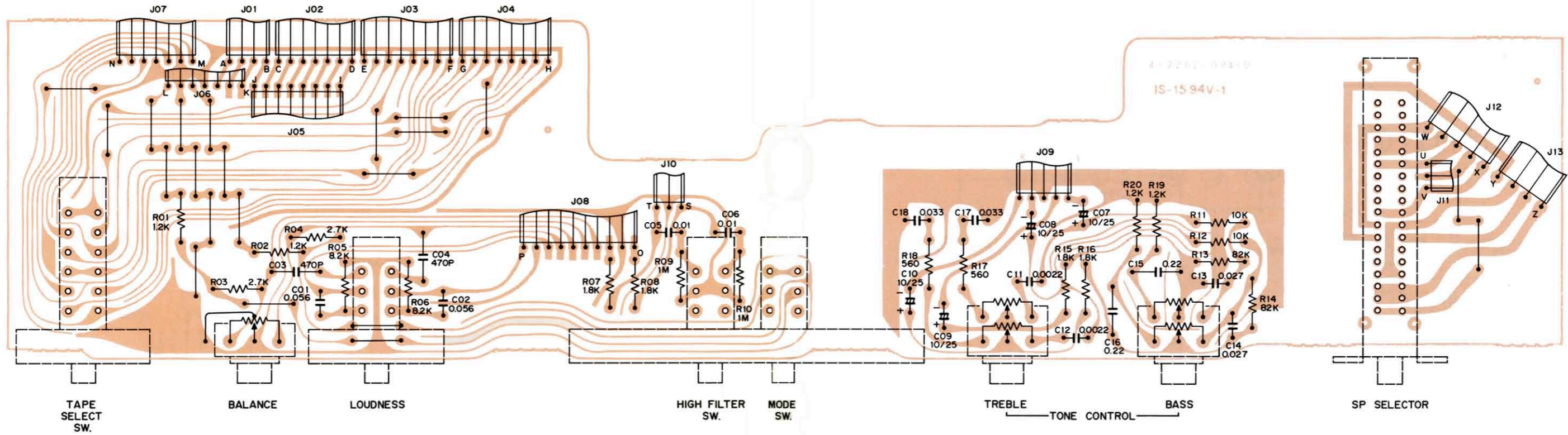
TRANSISTOR DC VOLTAGES				
SYMBOL No.	DEVICE	B	C	E
Q01	2SC1815	8.4V	12.4V	7.8V
Q02	2SD880	9.0V	12.4V	8.4V

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	LB1409	7.8V	2.8V	62 mV	0.3V	2.2V	0V	0.3V	0.3V	0.3V	0.3V	0.3V	0.3V	0.3V	0.3V	5.0V	-

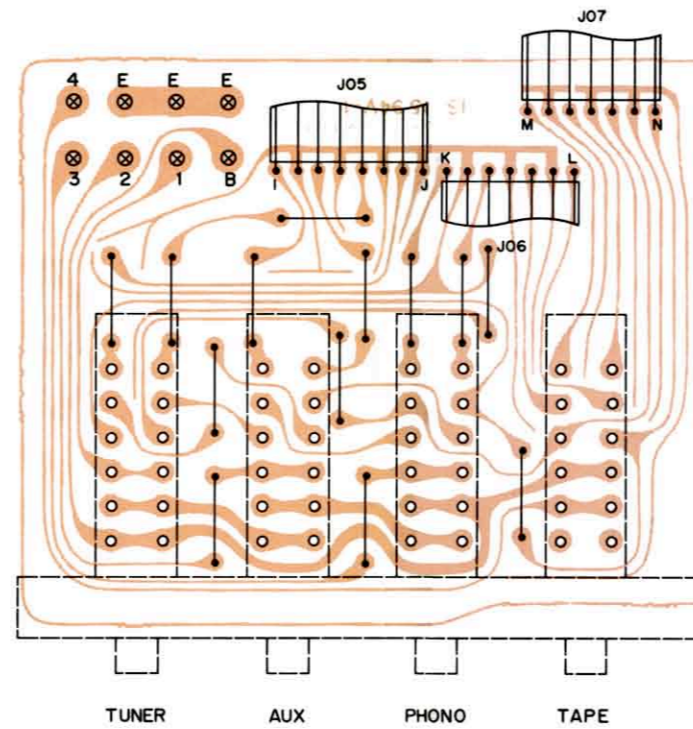
L.E.D. P.C.BOARD (BOTTOM VIEW)



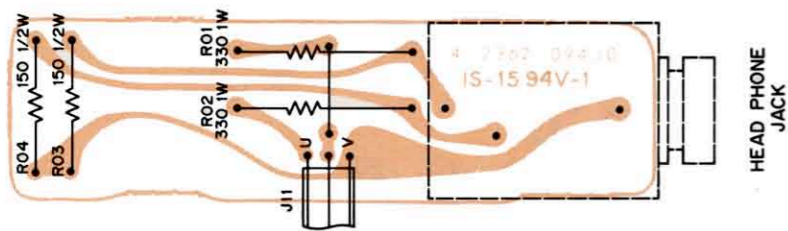
CONTROL PRINTED CIRCUIT BOARD (BOTTOM VIEW)



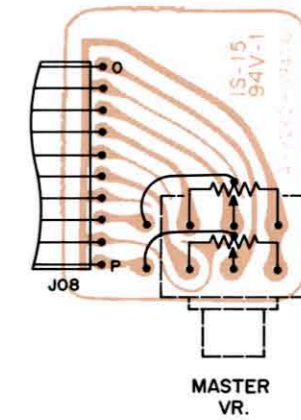
FUNCTION SWITCH P.C.BOARD (BOTTOM VIEW)



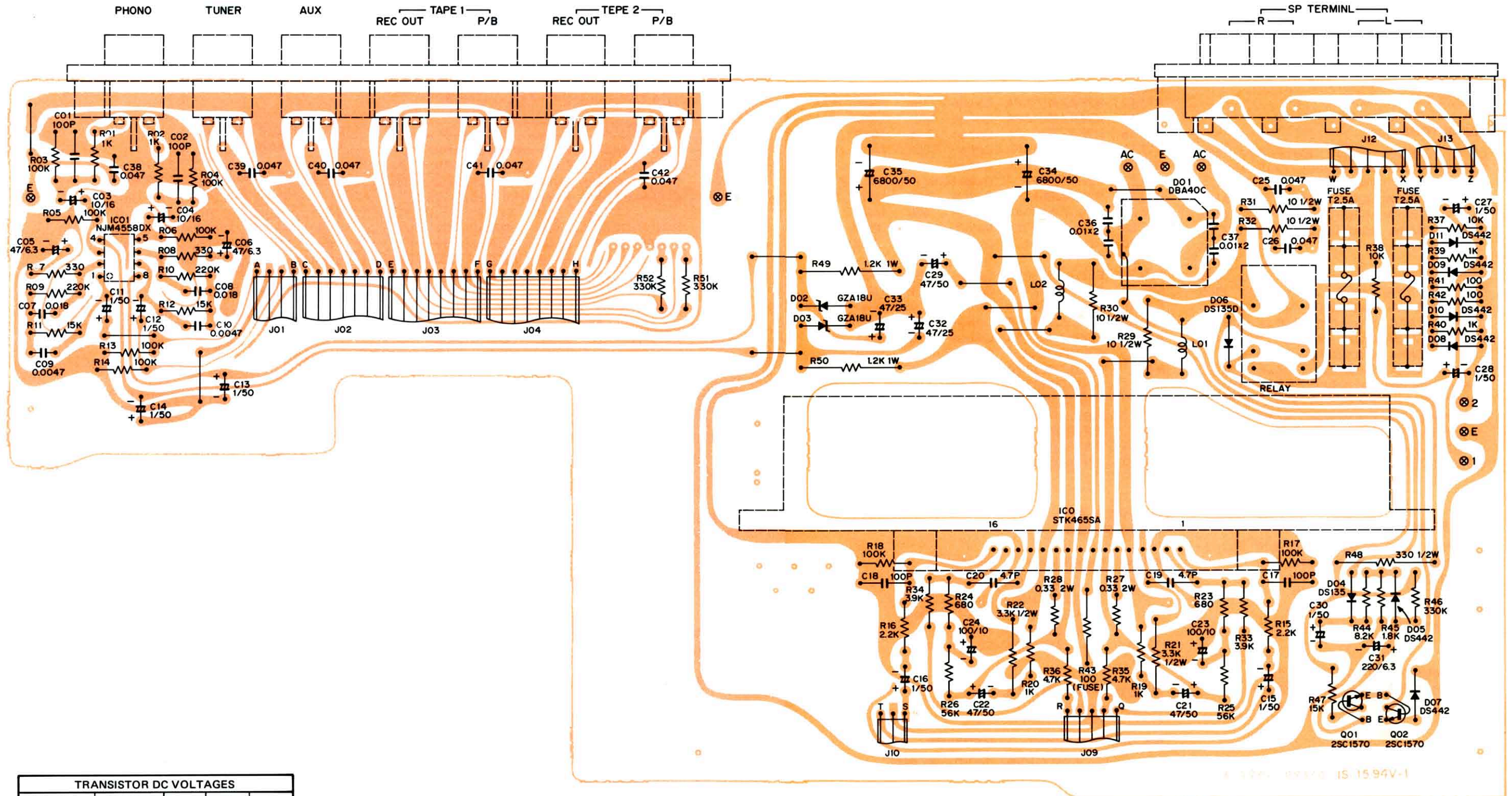
HEADPHONE P.C.BOARD (BOTTOM VIEW)



MASTER VOLUME P.C.BOARD (BOTTOM VIEW)



MAIN POWER SUPPLY P.C.BOARD (BOTTOM VIEW)



TRANSISTOR DC VOLTAGES				
SYMBOL No.	DEVICE	B	C	E
Q01	2SC1570	2.2V	1.6V	1.5V
Q02	2SC1570	1.5V	0.8V	0.7V

IC PIN NUMBERS DC VOLTAGES																
SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8	10	11	12	13	14	15	16
IC01	NJM4558	-5 mV	7 mV	4 mV	-18.9V	4 mV	5 mV	-7 mV	18.6V	-	-	-	-	-	-	-
IC02	STK465	-158 mV	-168 mV	0V	-0.2V	-33.7V	0.6V	0.6V	31.7V	33.7V	0.6V	0.6V	-33.7V	0.2V	0V	-143 mV -142 mV

PARTS LIST

MAIN POWER SUPPLY P.C.B. Assy 131 0 4001 07951

Ref. No.	Parts Number	Description
△	4 2322 00190	Relay
△	4 2349 20570	Fuse T2.5 A
	4 2352 00200	Fuse Clip
	4 2359 23180	Socket 4P
	4 2359 23220	RCA 6P Jack
	4 2372 00960	Terminal 8P
L01,02	4 2532 00180	RF Filter

CAPACITORS

C01,02	C1HCZJ101SPA	Ceramic 100 pF 50V ±5%
C03,04	C1CRY-106APA	Electrolytic 10 μF 16V
C05,06	C0JRY-476APA	Electrolytic 47 μF 6.3V
C07,08	C1HFYK183APA	Mylar 0.018 μF 50V ±10%
C09,10	C1HFYK472APA	Mylar 0.0047 μF 50V ±10%
C11,12	C1HRY-105APA	Electrolytic 1 μF 50V
13,14		
15,16		
C17,18	C1HCZJ101SPA	Ceramic 100 pF 50V ±5%
C19,20	C1HCZK4R7CPA	Ceramic 4.7 pF 50V ±10%
C21,22	C1HRY-476APA	Electrolytic 47 μF 50V
C23,24	C1ARY-107APA	Electrolytic 100 μF 10V
C25,26	C1HFYK473APA	Mylar 0.047 μF 50V ±10%
C27,28	C1HRY-105APA	Electrolytic 1 μF 50V
C29	C1HRY-476APA	Electrolytic 47 μF 50V
C30	C1HRY-105APA	Electrolytic 1 μF 50V
C31	C0JRY-227APA	Electrolytic 220 μF 6.3V
C32,33	C1ERY-476APA	Electrolytic 47 μF 25V
C34,35	4 2232 00381	Electrolytic 6800 μF 50V
C36,37	4 2232 00430	Ceramic 0.01 μF x2 250V
C38,39	C1HYYZ473APA	Ceramic 0.047 μF 50V +80,-20%
40,41		
42		

SEMICONDUCTORS

D01 △	202 5 2720 04015	Diode, DBA40C-K15
D02,03	202 5 3210 18020	Diode, GZA18U
D04	202 5 2470 13540	Diode, DS135D
D05	205 5 9040 44210	Diode, DS-442
D06	202 5 2470 13540	Diode, DS135D
D07,08	205 5 9040 44210	Diode, DS-442
09,10		
11		
IC01	IJJ-NJM4558DX	IC, NJM4558DX
IC02	206 5 5240 46510	IC, STK465SA (Power Amp)
Q01,02	203 5 5251 57060	TR 2SC1570 F, G

Ref. No.	Parts Number	Description
----------	--------------	-------------

RESISTORS

R01,02	R2EDZJ102APA	Carbon 1k 1/4W ±5%
R03,04	R2EDZJ104APA	Carbon 100k 1/4W ±5%
05,06		
R07,08	R2EDZJ331APA	Carbon 330 1/4W ±5%
R09,10	R2EDZJ224APA	Carbon 220k 1/4W ±5%
R11,12	R2EDZJ153APA	Carbon 15k 1/4W ±5%
R13,14	R2EDZJ104APA	Carbon 100k 1/4W ±5%
R15,16	R2EDZJ222APA	Carbon 2.2k 1/4W ±5%
R17,18	R2EDZJ104APA	Carbon 100k 1/4W ±5%
R19,20	R2EDZJ102APA	Carbon 1k 1/4W ±5%
R21,22	R2HXB3332A	Oxide Metal Film 3.3k 1/2W ±5%
R23,24	R2EDZJ681APA	Carbon 680 1/4W ±5%
R25,26	R2EDZJ563APA	Carbon 56k 1/4W ±5%
R27,28	4 2212 00130	Metallized Paper 0.33 2W
R29,30	R2HXB100A	Oxide Metal Film 10 1/2W ±5%
31,32		
R33,34	R2EDZJ392APA	Carbon 3.9k 1/4W ±5%
R35,36	R2EDZJ472APA	Carbon 4.7k 1/4W ±5%
R37,38	R2EDZJ103APA	Carbon 10k 1/4W ±5%
R39,40	R2EDZJ102APA	Carbon 1k 1/4W ±5%
R41,42	R2EDZJ101APA	Carbon 100 1/4W ±5%
R43	R2HZPK101A	Fuse 100 1/2W ±10%
R44	R2EDZJ822APA	Carbon 8.2k 1/4W ±5%
R45	R2EDZJ182APA	Carbon 1.8k 1/4W ±5%
R46	R2EDZJ334APA	Carbon 330k 1/4W ±5%
R47	R2EDZJ153APA	Carbon 15k 1/4W ±5%
R48	R2HZPK331A	Fuse 330 1/2W ±10%
R49,50	R3AXB122A	Oxide Metal Film 1.2k 1W ±5%
R51,52	R2EDZJ334APA	Carbon 330k 1/4W ±5%

FUSE P.C.B. Assy 131 0 4001 08550

Ref. No.	Parts Number	Description
△	4 2349 20570	Fuse T 2.5 A
△	4 2349 20580	Fuse T 3.15 A
△	4 2349 21540	Fuse T 800 mA
	4 2352 00200	Fuse Clip
	4 2372 00830	CE Terminal 1P

FUNCTION SWITCH P.C.B. Assy 131 0 4001 07981

Ref. No.	Parts Number	Description
	4 2312 02980	Switch Push 4Key
	111 2 6220 11100	Wire Wrap Terminal

PARTS LIST (Continued)

CONTROL P.C.B. Assy 131 0 4001 07991

Ref. No.	Parts Number	Description
	4 2222 02230	VR 200k-Wx1 (Balance)
	4 2312 02890	Switch Rotary Slide
	4 2312 03000	Switch Push 2Key (Mode, High)
	4 2312 03921	Switch Push 1Key (Tape Select)
	4 2312 04711	Switch Push 1Key (Loudness)
	4 2222 01341	VR 100k-Cx2 (Bass)
	4 2222 01341	VR 100k-Cx2 (Treble)

CAPACITORS

C01,02	C1HFYK563APA	Mylar	0.056 μ F	50V	\pm 10%
C03,04	C1HCZK471BPA	Ceramic	470 pF	50V	\pm 10%
C05,06	C1HFYK103APA	Mylar	0.01 μ F	50V	\pm 10%
C07,08 09,10	C1ERY-106APA	Electrolytic	10 μ F	25V	
C11,12	C1HFYK222APA	Mylar	0.0022 μ F	50V	\pm 10%
C13,14	C1HFYK273APA	Mylar	0.027 μ F	50V	\pm 10%
C15,16	C1HFRK224A	Mylar	0.22 μ F	50V	\pm 10%
C17,18	C1HFYK333APA	Mylar	0.033 μ F	50V	\pm 10%

RESISTORS

R01,02	R2EDZJ122APA	Carbon	1.2k	1/4W	\pm 5%
R03,04	R2EDZJ272APA	Carbon	2.7k	1/4W	\pm 5%
R05,06	R2EDZJ822APA	Carbon	8.2k	1/4W	\pm 5%
R07,08	R2EDZJ182APA	Carbon	1.8k	1/4W	\pm 5%
R09,10	R2EDZJ105APA	Carbon	1M	1/4W	\pm 5%
R11,12	R2EDZJ103APA	Carbon	10k	1/4W	\pm 5%
R13,14	R2EDZJ823APA	Carbon	82k	1/4W	\pm 5%
R15,16	R2EDZJ182APA	Carbon	1.8k	1/4W	\pm 5%
R17,18	R2EDZJ561APA	Carbon	560	1/4W	\pm 5%
R19,20	R2EDZJ122APA	Carbon	1.2k	1/4W	\pm 5%

MASTER VOLUME P.C.B. Assy 131 0 4001 08001

Ref. No.	Parts Number	Description
	4 2222 02220	VR 100k-Bx2 (Volume)

HEADPHONE P.C.B. Assy 131 0 4001 08011

Ref. No.	Parts Number	Description
	4 2352 00970	Headphone Jack 3P

RESISTORS

R01,02	R3AXBJ331A	Oxide Metal Film	330	1W	\pm 5%
R03,04	R2HXBj151A	Oxide Metal Film	150	1/2W	\pm 5%

L.E.D. P.C.B. Assy 131 0 4001 07130

Ref. No.	Parts Number	Description
SEMICONDUCTORS		
D01 ~ 18	DYY-SLR-54GG	L.E.D., SLR-54GG (Green)

RESISTORS

R01 ~ 18	R2EDZJ391APA	Carbon	390	1/4W	\pm 5%
----------	--------------	--------	-----	------	----------

LEVEL IND. P.C.B. Assy 131 0 4001 07123

Ref. No.	Parts Number	Description
	131 2 6201 28000	Plate Heat Sink
VR01	4 2222 01400	VR 10k-B
VR02	4 2222 01400	VR 10k-B
VR03	4 2222 00990	VR 1k-B
VR04	4 2222 00990	VR 1k-B

CAPACITORS

C01	C1ERE-477A	Electrolytic	470 μ F	25V
C02	C1CRE-107A	Electrolytic	100 μ F	16V
C03,04 05,06	C1HRY-105APA	Electrolytic	1 μ F	50V
C07,08	C1ERY-475APA	Electrolytic	4.7 μ F	25V
C09,10	4 2232 00430	Ceramic	0.01 μ Fx2	250V
C11,12	C1ARY-107APA	Electrolytic	100 μ F	10V
C13	C1ARY-227APA	Electrolytic	220 μ F	10V

SEMICONDUCTORS

D01	202 5 4610 01010	Diode, DBA-10B
D02	202 5 3210 09110	Diode, GZA9.1L
IC01,02	206 5 2441 40910	IC, LB1409
Q01	TTT-2SD880--GR	TR 2SD880 GR
Q02	TTT-2SC1815-BL	TR 2SC1815 BL

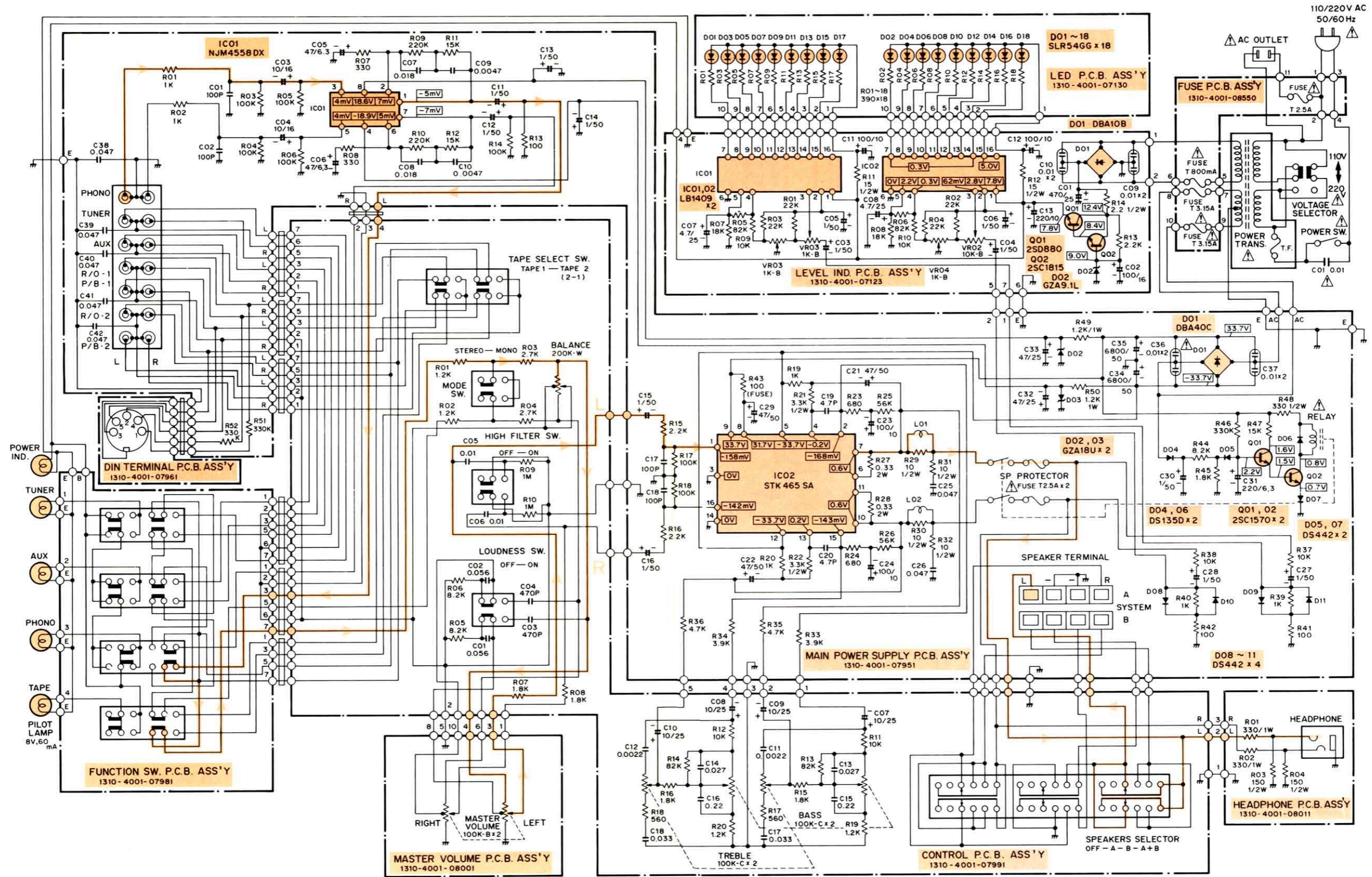
RESISTORS

R01,02 03,04	R2EDZJ223APA	Carbon	22k	1/4W	\pm 5%
R05,06	R2EDZJ823APA	Carbon	82k	1/4W	\pm 5%
R07,08	R2EDZJ183APA	Carbon	18k	1/4W	\pm 5%
R09,10	R2EDZJ103APA	Carbon	10k	1/4W	\pm 5%
R11,12	R2HXBj150A	Oxide Metal Film	15	1/2W	\pm 5%
R13	R2EDZJ222APA	Carbon	2.2k	1/4W	\pm 5%
R14	R2HXBj2R2A	Oxide Metal Film	2.2	1/2W	\pm 5%

DIN TERMINAL P.C.B. Assy 131 0 4001 07961

Ref. No.	Parts Number	Description
	4 2352 00780	DIN Socket 5P

SCHEMATIC DIAGRAM



PRODUCT SAFETY NOTICE

PRODUCT SAFETY SHOULD BE CONSIDERED WHEN A COMPONENT REPLACEMENT IS MADE IN ANY AREA OF AN UNIT. COMPONENTS INDICATED BY A MARK Δ IN THIS SCHEMATIC DIAGRAM SHOW COMPONENTS WHOSE VALUE HAS SPECIAL SIGNIFICANCE TO PRODUCT SAFETY. IT IS PARTICULARLY RECOMMENDED THAT ONLY PARTS SPECIFIED ON THE ATTACHED PARTS LIST BE USED FOR COMPONENT REPLACEMENT POINTED OUT BY THE MARK.

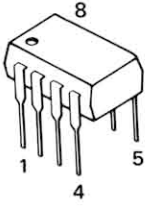
NOTES:

1. All resistors values are indicated in "ohm" ($K=10^3$, $M=10^6$).
2. All capacitors values are indicated in " μF " ($P=10^{-12}$).
3. All voltages indicated on the schematics are measured under the following conditions.
 - a. Use a V.T.V.M.
 - 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.

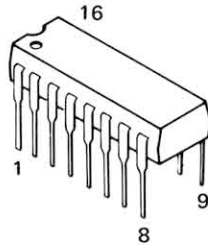
Because Fisher products are subject to continuous improvement, Fisher Corporation reserves the right to make any changes or modifications without notice.

SEMICONDUCTOR LEAD IDENTIFICATION

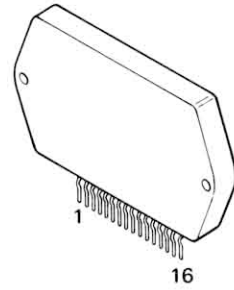
INTEGRATED CIRCUITS



- NJM4558DX



- LB1409

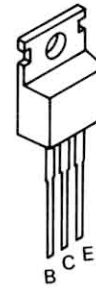


- STK465SA

TRANSISTORS

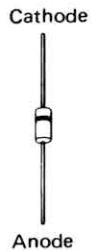


- 2SC1570
- 2SC1815



- 2SD880

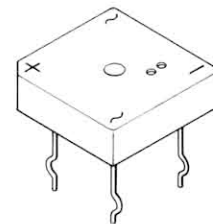
DIODES



- GZA9.1L
- GZA18U
- DS-442
- DS-135D



- DBA10B



- DBA40C

FISHER

Service/Ersatzteillager:
FISHER HiFi Europa Vertriebs-GmbH
Shönstraße 80, 8000 München 90
Telefon 089/2379-7
Telex 5-212384 D
Wenden Sie sich bitte mit technischen
Fragen an diese Adresse.

Verwaltung, Verkauf und Auslieferungslager:
FISHER HiFi Europa Vertriebs-GmbH
Truderingerstraße 13, 8000 München 80
Telefon 089/4145-0
Telex 5-24665 D
5-24033 D

PRINTED IN JAPAN

'81/Jul. **WM-6101**