

SERVICE MANUAL



FISHER

CA-225

**Integrated
Stereo Amplifier
(EUROPE)**

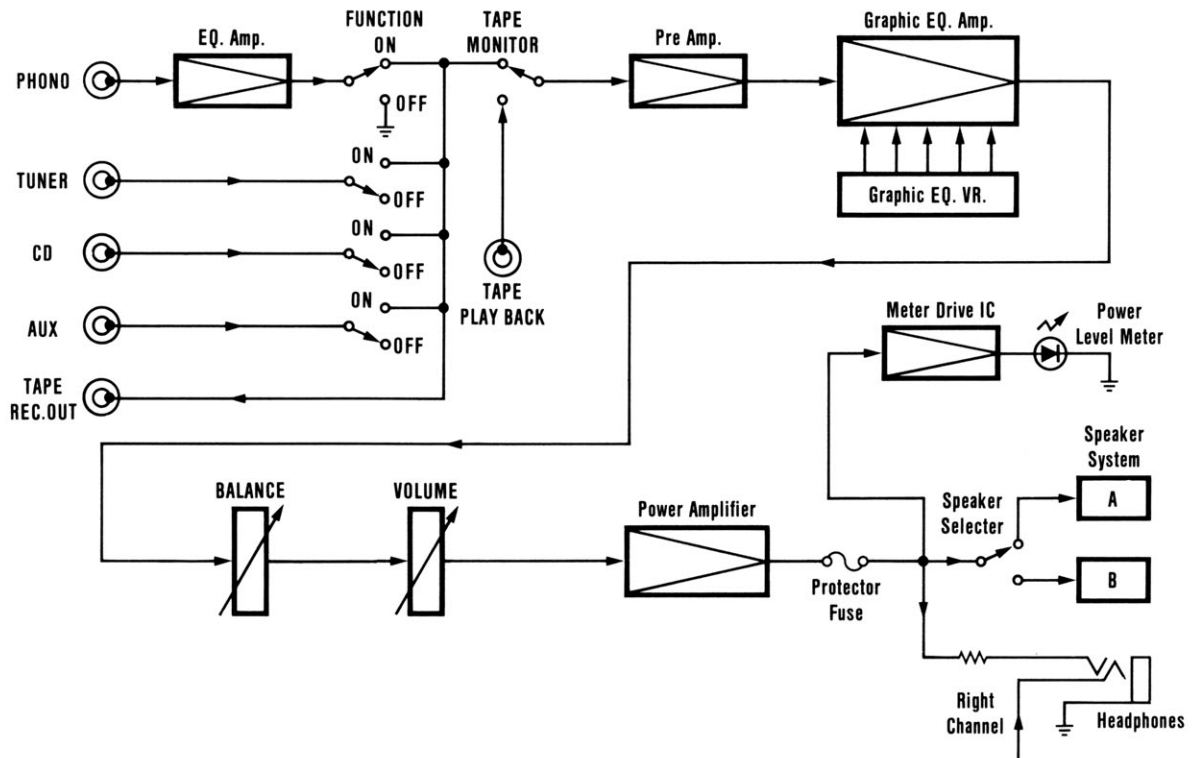


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FUNCTIONAL BLOCK DIAGRAM

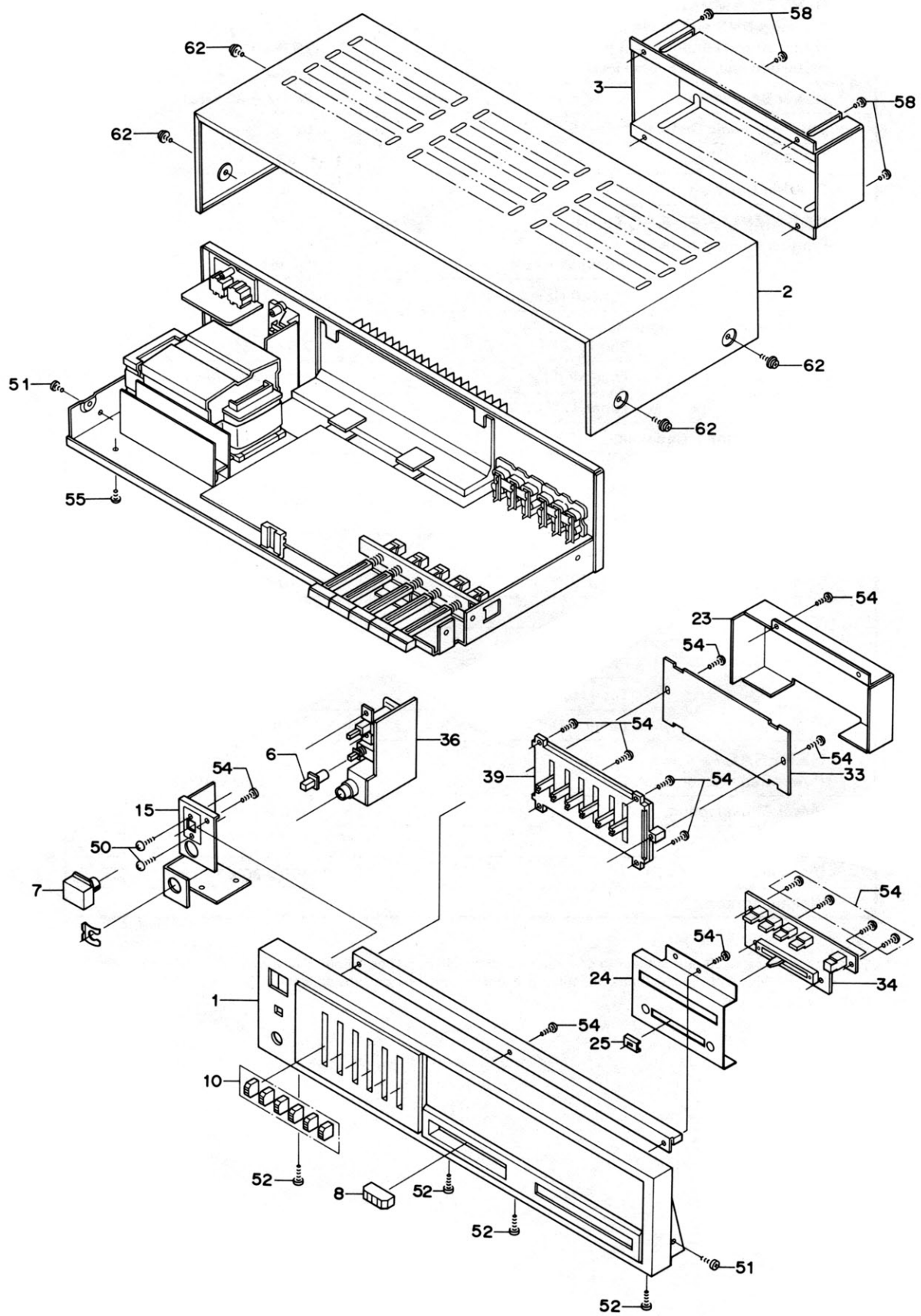


SPECIFICATIONS

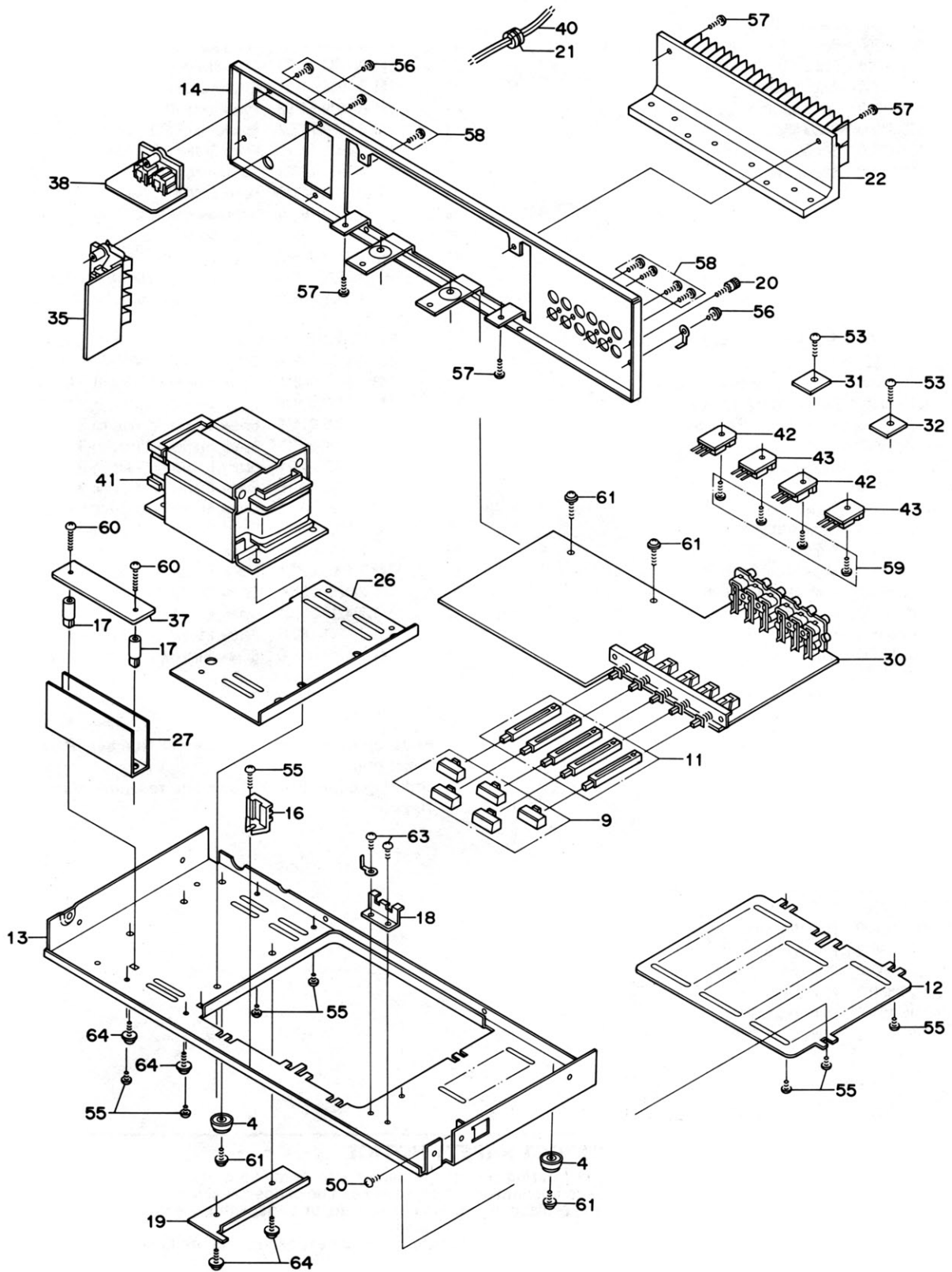
AMPLIFIER	CA-225
POWER AMPLIFIER SECTION	
Minimum RMS sine wave power per channel within stated bandwidth at no more than stated distortion and with 8-ohm load	70 Watts
Power Bandwidth	20 Hz – 20 kHz
Total Harmonic Distortion	0.5 %
I.M. Distortion	0.5 %
Speaker Damping	> 20
PREAMPLIFIER SECTION	
Frequency Response	
Phono (RIAA)	±1 dB
Aux (20 Hz – 20 kHz)	±1 dB
Input Sensitivity and Impedance	
Phono	2.5 mV/50 kΩ
Tape Monitor	150 mV/50 kΩ
Tuner/CD/TV/Video	150 mV/50 kΩ
Phono Max. Input Capability	150 mV
Graphic Equalizer	
63 Hz	±10 dB
250 Hz	±10 dB
1 kHz	±10 dB
4 kHz	±10 dB
16 kHz	±10 dB
Hum & Noise (IHF Short Circuit, A Network)	
Phono	68 dB
Tape Monitor	85 dB
Tuner/CD/TV/Video	85 dB
GENERAL	
Power Requirements (50 Hz)	110 / 220 V AC
Power Consumption	350 Watts
AC Outlets	2
Dimensions (W x H x D)	400 x 90 x 240 mm
Weight (approx.)	5.1 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.

CABINET & CHASSIS EXPLODED VIEW (1)



CABINET & CHASSIS EXPLODED VIEW (2)



CABINET & CHASSIS PARTS LIST

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
PACKING PARTS LIST				ELECTRICAL PARTS LIST			
	3-9415-10300	Bag Polyethylene	1	30	141-0-1939-14153	Main Amp. P.C.B. Assy	1
	131-6-3009-36000	Pad (Right)	1	31	141-0-1939-14160	Transistor (Left) P.C.B. Assy	1
	131-6-3009-36010	Pad (Left)	1	32	141-0-1939-14170	Transistor (Right) P.C.B. Assy	1
	131-6-3069-16350	Patching Sheet	1	33	141-0-1939-14182	Graphic Equalizer P.C.B. Assy	1
	131-6-4559-11200	Serial No. Sheet	2	34	141-0-1939-14192	Power Meter P.C.B. Assy	1
	131-6-9459-00300	Rubber Band	1	35	141-0-1939-14202	Speaker Out P.C.B. Assy	1
	141-6-1189-17700	Box Corrugate-Exp.	1	36	141-0-1939-14213	Power Switch P.C.B. Assy	1
	141-6-2519-22390	Sheet Polyethylene	1	37	141-0-1939-14222	AC Fuse P.C.B. Assy	1
				38	141-0-1939-14232	Power Supply P.C.B. Assy	1
				39	4-2229-76200	Slide Volume (SW-250k Ω x6)	1
				40	Δ 4-2432-00501	Power Cord	1
				41	Δ 4-2512-30922	Power Trans	1
				42	4-2039-71830	Transistor, 2SA 1264 [Q115, Q215]	2
				43	4-2039-71820	Transistor, 2SC 3181 [Q116, Q216]	2
ACCESSORIES PARTS LIST				SCREW PARTS LIST			
	131-6-2719-10401	Bag Fan	1	50	101-3-1303-00611	Screw, Pan Hd., +M3.0x6	3
	142-6-4119-32971	Explanatory Booklet	1	51	143-3-1703-00811	Screw, Bind Hd. Tapping-B, +M3.0x8	2
CABINET & CHASSIS PARTS LIS				52	143-3-1703-00818	Screw, Bind Hd. Tapping-B, +M3.0x8	4
	4-2379-21520	Terminal Lug	4	53	143-3-1903-01411	Screw, Brazier Hd. Tapping-B, +M3.0x14	2
	131-6-4559-11200	Serial No. Sheet	1	54	143-3-1902-60811	Screw, Brazier Hd. Tapping-B, +M2.6x8	14
1	131-0-1016-45302	Cabinet Front Assy	1	55	143-3-1903-00611	Screw, Brazier Hd. Tapping-B, +M3.0x6	9
	131-2-1110-39500	Plate Decorate (Equalizer)	1	56	143-3-1903-00618	Screw, Brazier Hd. Tapping-B, +M3.0x6	2
	131-2-1110-39602	Plate Decorate	1	57	143-3-1903-00811	Screw, Brazier Hd. Tapping-B, +M3.0x8	4
	131-2-1203-65800	Cabinet Front	1	58	143-3-1903-00818	Screw, Brazier Hd. Tapping-B, +M3.0x8	11
	131-2-1801-16200	Leg	2	59	143-3-1903-01211	Screw, Brazier Hd. Tapping-B, +M3.0x12	4
2	131-2-1410-34400	Cover	1	60	143-3-1903-02011	Screw, Brazier Hd. Tapping-B, +M3.0x20	2
3	131-2-1410-34603	Cover Heat Sink	1	61	131-2-4201-25200	Screw, Brazier Hd. Tapping-B, +M3.0x6	4
4	131-2-1801-12900	Leg	2	62	141-2-4219-33101	Screw, Bind Hd. Tapping-B, +M3.0x8	4
5	131-2-3604-16200	Metal Mount Cover	1	63	131-2-4201-16906	Screw, Pan Hd. Tapping-C, +M3.0x4	2
6	131-2-1601-69601	Knob (Speaker Select)	1	64	141-2-4219-43300	SCrew, Bind Hd. Tapping-C, +M4.0x10	4
7	131-2-1601-86200	Knob (Power)	1				
8	131-2-1601-86504	Knob (Master Volume)	1				
9	131-2-1601-96700	Knob (Function)	5				
10	131-2-1601-96800	Knob (Equalizer)	6				
11	131-2-4219-20200	Shaft	5				
12	131-2-1410-34500	Cover (Bottom)	1				
13	131-2-3301-32200	Chassis	1				
14	131-2-3306-40702	Panel Rear	1				
15	131-2-3604-16000	Metal Mount Switch	1				
16	131-2-3614-17500	Mount P.C.B.	1				
17	131-2-3614-21800	Mount P.C.B.	2				
18	131-2-3614-28600	Mount P.C.B.	1				
19	131-2-3617-19200	Metal Mount Trans	1				
20	131-2-4201-17800	Screw Ground	1				
21	131-2-6111-14200	Bushing (Power Cord)	1				
22	131-2-6201-37400	Plate Heat Sink	1				
23	141-2-3229-59800	Plate Shield	1				
24	141-2-3229-60000	Plate Shield	1				
25	141-2-3229-60100	Plate Earth	1				
26	131-2-3617-19300	Metal Mount Trans	1				
27	131-2-6108-12500	Cover Sever	1				

NOTES:

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 Δ in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with Δ , 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.

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 OFF
- FUNCTION switch to TV/VIDEO
- 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 ON position. Turn VOLUME control to MAX.
- 4) Increase generator output for 70 Watts RMS (23.6 volts across the 8-ohm load). Harmonic Distortion Analyzer should measure 0.5 % 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 70 watts at Left and Right Channels (23.6 volts across the 8-ohm loads). Harmonic Distortion Analyzer should measure 0.5 % 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.

POWER AMPLIFIER ADJUSTMENT

BEFORE ADJUSTMENT

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

- Power switch to the OFF position.
- Set the SPEAKERS switch to the OFF position.
- Turn the MASTER VOLUME control to the position marked 0 (minimum).
- IDLING CURRENT ADJUSTMENT VR101/VR201 (on the Main P.C.Board) setting to mechanical center position.
- Connect the AC power cord and Power switch to the ON position.

IDLING CURRENT ADJUSTMENT

This adjustment is very sensitive to changes in ambient temperature. Allow set to operate for 5 minutes before attempting this adjustment.

LEFT CHANNEL AMPLIFIER

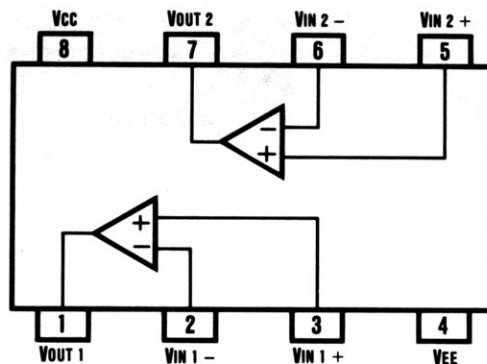
- 1) Connect the DC Voltmeter between R153 Left Leg and R152 Right Leg on the Main P.C.Board.
- 2) Adjust the VR101 for an indication of 6mV on the DC Voltmeter.

RIGHT CHANNEL AMPLIFIER

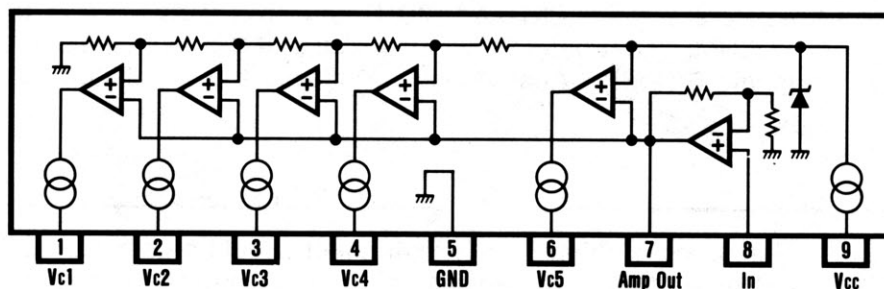
- 1) Connect the DC Voltmeter between R253 Left Leg and R252 Right Leg on the Main P.C.Board.
- 2) Adjust the VR201 for an indication of 6mV on the DC Voltmeter.

INTEGRATED CIRCUIT BLOCK DIAGRAM

PHONO / GRAPHIC EQUALIZER AMP IC NJM 072 DE / LA 6458 D



LED METER DRIVE AMP IC LB 1423



P.C.BOARD PARTS LIST

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty	
MAIN AMP. P.C.B. ASSY				C242	CC2-2-1500-KD00C	Ceramic	220pF 50V ±10%	
30	141-0-1939-14153	Main Amp. P.C.B. Assy	1	C243	CC2-2-1500-KD00C	Ceramic	220pF 50V ±10%	
	4-2262-26060	Main Amp. P.C.B.	1	C244	CC2-2-1500-KD00C	Ceramic	220pF 50V ±10%	
	△ 4-2349-20550	Fuse F4.0A	2	C245	CC2-2-1500-KD00C	Ceramic	220pF 50V ±10%	
	△ 4-2349-20590	Fuse T4.0A	2	C246	CC2-2-1500-KD00C	Ceramic	220pF 50V ±10%	
VR101	4-2222-01280	Potentiometer (B-100Ω)	1	C247	CC2-2-1500-KE00C	Ceramic	220pF 50V ±10%	
VR201	4-2222-01280	Potentiometer (B-100Ω)	1	C302	CC1-0-3501-YEY0C	Ceramic	0.01μF 500V +100,-0%	
S1	4-2319-78760	Push Switch 5Key (Tape Monitor/Function)	1	C303	CC1-0-3501-YEY0C	Ceramic	0.01μF 500V +100,-0%	
L101	4-2532-00420	RF Filter (5μH)	1	C304	CC1-0-3501-YEY0C	Ceramic	0.01μF 500V +100,-0%	
L201	4-2532-00420	RF Filter (5μH)	1	C305	CC1-0-3501-YEY0C	Ceramic	0.01μF 500V +100,-0%	
	4-2352-01780	Pin Jack 6P (Phono, Tuner, CD)	1	C306	4-2239-71180	Electrolytic	4700μF 55V	
	4-2352-01780	Pin Jack 6P (TV/Video, Tape)	1	C307	4-2239-71180	Electrolytic	4700μF 55V	
	4-2352-01940	Fuse Clip	8	C308	CD1-0-5500-0001V	Electrolytic	1μF 50V	
	111-2-6220-11100	Wire Wrap Terminal	3	C309	CD1-0-5500-0001V	Electrolytic	1μF 50V	
	131-2-6201-21500	Plate Heat Sink (for Q302)	1	C310	CD4-7-6250-0001V	Electrolytic	47μF 25V	
				C311	CD4-7-6250-0001V	Electrolytic	47μF 25V	
				C312	CC4-7-3500-ZG00C	Ceramic	0.047μF 50V +80,-20%	
				C313	CC4-7-3500-ZG00C	Ceramic	0.047μF 50V +80,-20%	
C101	CC2-2-1500-KD00C	Ceramic	220pF 50V ±10%	1	C320	CD3-3-7250-0001V	Electrolytic	330μF 25V
C102	CD4-7-5250-0001V	Electrolytic	4.7μF 25V	1	C321	CD4-7-6350-0001V	Electrolytic	47μF 35V
C103	CC2-2-1500-KD00C	Ceramic	220pF 50V ±10%	1	C325	CD2-2-7630-0001V	Electrolytic	220μF 63V
C104	CM1-8-3500-J00SV	Mylar	0.018μF 50V ±5%	1	C501	CC4-7-3500-ZG00C	Ceramic	0.047μF 50V +80,-20%
C105	CM4-7-2500-J00SV	Mylar	0.0047μF 50V ±5%	1				
C106	CC2-2-1500-KD00C	Ceramic	220pF 50V ±10%	1	SEMICONDUCTORS			
C107	CD4-7-663A-0001V	Electrolytic	47μF 6.3V	1	D101	205-5-9020-43010	Diode, DS 430	1
C108	CD1-0-5500-0001V	Electrolytic	1μF 50V	1	D102	202-5-3210-22012	Zener Diode, GZA 22 Y	1
C109	CC2-2-1500-KD00C	Ceramic	220pF 50V ±10%	1	D103	202-5-2810-44210	Diode, DS 442	1
C128	CC2-2-1500-KD00C	Ceramic	220pF 50V ±10%	1	D105	202-5-1410-00110	Diode, GMA 01	1
C129	CD1-0-6160-0001V	Electrolytic	10μF 16V	1	D106	202-5-1410-00110	Diode, GMA 01	1
C130	CC2-2-1500-KD00C	Ceramic	220pF 50V ±10%	1	D201	205-5-9020-43010	Diode, DS 430	1
C131	CC2-2-1500-KD00C	Ceramic	220pF 50V ±10%	1	D203	202-5-2810-44210	Diode, DS 442	1
C132	CC4-7-0500-KD00C	Ceramic	47pF 50V ±10%	1	D205	202-5-1410-00110	Diode, GMA 01	1
C133	CD1-0-763A-0001V	Electrolytic	100μF 6.3V	1	D206	202-5-1410-00110	Diode, GMA 01	1
C134	CD2-2-7630-0001V	Electrolytic	220μF 63V	1	D301	212-5-4550-02020	Diode, DSA 20 C	1
C135	CD2-2-7630-0001V	Electrolytic	220μF 63V	1	D302	212-5-4550-02020	Diode, DSA 20 C	1
C136	CD1-0-5500-0001V	Electrolytic	1μF 50V	1	D303	212-5-4550-02020	Diode, DSA 20 C	1
C137	CC4-7-3500-ZG00C	Ceramic	0.047μF 50V +80,-20%	1	D304	212-5-4550-02020	Diode, DSA 20 C	1
C140	CM1-0-4500-J00TV	Mylar	0.1μF 50V ±5%	1	D305	202-5-3210-18012	Zener Diode, GZA 18 Y	1
C141	CC2-2-1500-KD00C	Ceramic	220pF 50V ±10%	1	D306	202-5-3210-18012	Zener Diode, GZA 18 Y	1
C142	CC2-2-1500-KD00C	Ceramic	220pF 50V ±10%	1	D307	202-5-9620-44621	Diode, DS 446	1
C143	CC2-2-1500-KD00C	Ceramic	220pF 50V ±10%	1	D308	202-5-2810-44210	Diode, DS 442	1
C144	CC2-2-1500-KD00C	Ceramic	220pF 50V ±10%	1	D311	212-5-4390-13510	Diode, DS 135 D	1
C145	CC2-2-1500-KD00C	Ceramic	220pF 50V ±10%	1	D312	212-5-4390-13510	Diode, DS 135 D	1
C146	CC2-2-1500-KD00C	Ceramic	220pF 50V ±10%	1	IC1	IJJ---NJM0-72D-E	IC, NJM 072D E	1
C147	CC2-2-1500-KE00C	Ceramic	220pF 50V ±10%	1	Q106	203-5-4921-01264	Transistor, 2SD 1012	1
C201	CC2-2-1500-KD00C	Ceramic	220pF 50V ±10%	1	Q107	203-5-5000-53661	Transistor, 2SC 536	1
C202	CD4-7-5250-0001V	Electrolytic	4.7μF 25V	1	Q108	203-5-5000-53661	Transistor, 2SC 536	1
C203	CC2-2-1500-KD00C	Ceramic	220pF 50V ±10%	1	Q109	203-5-7230-60860	Transistor, 2SA 608	1
C204	CM1-8-3500-J00SV	Mylar	0.018μF 50V ±5%	1	Q110	203-5-4561-01760	Transistor, 2SA 1017	1
C205	CM4-7-2500-J00SV	Mylar	0.0047μF 50V ±5%	1	Q111	203-5-4542-36360	Transistor, 2SC 2363	1
C206	CC2-2-1500-KD00C	Ceramic	220pF 50V ±10%	1	Q113	203-5-1711-35250	Transistor, 2SA 1352	1
C207	CD4-7-663A-0001V	Electrolytic	47μF 6.3V	1	Q114	203-5-1743-41650	Transistor, 2SC 3416	1
C208	CD1-0-5500-0001V	Electrolytic	1μF 50V	1	Q206	203-5-4921-01264	Transistor, 2SD 1012	1
C209	CC2-2-1500-KD00C	Ceramic	220pF 50V ±10%	1	Q207	203-5-5000-53661	Transistor, 2SC 536	1
C228	CC2-2-1500-KD00C	Ceramic	220pF 50V ±10%	1	Q208	203-5-5000-53661	Transistor, 2SC 536	1
C229	CD1-0-6160-0001V	Electrolytic	10μF 16V	1	Q209	203-5-7230-60860	Transistor, 2SA 608	1
C230	CC2-2-1500-KD00C	Ceramic	220pF 50V ±10%	1	Q210	203-5-4561-01760	Transistor, 2SA 1017	1
C231	CC2-2-1500-KD00C	Ceramic	220pF 50V ±10%	1	Q211	203-5-4542-36360	Transistor, 2SC 2363	1
C232	CC4-7-0500-KD00C	Ceramic	47pF 50V ±10%	1	Q213	203-5-1711-35250	Transistor, 2SA 1352	1
C233	CD1-0-763A-0001V	Electrolytic	100μF 6.3V	1	Q214	203-5-1743-41650	Transistor, 2SC 3416	1
C234	CD2-2-7630-0001V	Electrolytic	220μF 63V	1	Q301	203-5-7230-60850	Transistor, 2SA 608	1
C235	CD2-2-7630-0001V	Electrolytic	220μF 63V	1	Q302	203-5-8620-32550	Transistor, 2SD 325	1
C237	CC4-7-3500-ZG00C	Ceramic	0.047μF 50V +80,-20%	1	Q303	203-5-7230-60850	Transistor, 2SA 608	1
C240	CM1-0-4500-J00TV	Mylar	0.1μF 50V ±5%	1				
C241	CC2-2-1500-KD00C	Ceramic	220pF 50V ±10%	1				

P.C.BOARD PARTS LIST (Continued)

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
RESISTORS				R305	401 012 5708	CARBON 1K JA 1/4W	1
R101	401 025 1605	CARBON 1.5K JA 1/6W	1	R306	401 022 1905	CARBON 680 JA 1/4W	1
R102	401 024 7707	CARBON 100K JA 1/6W	1	R307	401 022 1905	CARBON 680 JA 1/4W	1
R103	401 024 7707	CARBON 100K JA 1/6W	1	R312	401 060 8706	OXIDE-MT 2.7K JA 1W	1
R104	401 025 8703	CARBON 220K JA 1/6W	1	R314	401 027 9005	CARBON 82K JA 1/6W	1
R105	401 025 1902	CARBON 15K JA 1/6W	1	R315	401 024 7707	CARBON 100K JA 1/6W	1
R106	401 026 0607	CARBON 270 JA 1/6W	1	R316	401 020 2904	CARBON 47K JA 1/4W	1
R107	401 024 7707	CARBON 100K JA 1/6W	1	TRANSISTOR (LEFT) P.C.B. ASSY			
R108	401 025 7805	CARBON 2.2K JA 1/6W	1	31	141-0-1939-14160	Transistor (Left) P.C.B. Assy	1
R135	401 024 7004	CARBON 1K JA 1/6W	1		4-2262-26070	Transistor (Left) P.C.B.	1
R136	401 025 1902	CARBON 15K JA 1/6W	1	SEMICONDUCTORS			
R137	401 027 3003	CARBON 56K JA 1/6W	1	D104	202-5-2810-44210	Diode, DS 442	1
R138	401 021 1906	CARBON 560 JA 1/4W	1	Q112	4-2039-72100	Transistor, 2SD 947	1
R139	401 021 1906	CARBON 560 JA 1/4W	1	TRANSISTOR (RIGHT) P.C.B. ASSY			
R140	402 015 5603	FUSIBLE RES 82 J- 1/4W	1	32	141-0-1939-14170	Transistor (Right) P.C.B. Assy	1
R141	401 025 8208	CARBON 22K JA 1/6W	1		4-2262-26080	Transistor (Right) P.C.B.	1
R142	401 027 3003	CARBON 56K JA 1/6W	1	SEMICONDUCTORS			
R143	401 026 0607	CARBON 270 JA 1/6W	1	D204	202-5-2810-44210	Diode, DS 442	1
R144	401 027 8602	CARBON 8.2K JA 1/6W	1	Q212	4-2039-72100	Transistor, 2SD 947	1
R145	401 027 3003	CARBON 56K JA 1/6W	1	GRAPHIC EQUALIZER P.C.B. ASSY			
R146	402 015 5603	FUSIBLE RES 82 J- 1/4W	1	33	141-0-1939-14182	Graphic Equalizer P.C.B. Assy	1
R147	402 016 2601	FUSIBLE RES 33 J- 1/2W	1		4-2262-26090	Graphic Equalizer P.C.B.	1
R148	402 016 2601	FUSIBLE RES 33 J- 1/2W	1		4-2359-78220	Socket Jumper 7P	2
R149	402 015 3708	FUSIBLE RES 2.2 J- 1/4W	1		4-2359-78800	Socket Jumper 5P	1
R150	402 015 4408	FUSIBLE RES 330 J- 1/4W	1	CAPACITORS			
R151	402 015 3708	FUSIBLE RES 2.2 J- 1/4W	1	C110	CD1-0-5500-0001V	Electrolytic 1μF 50V	1
R152	401 064 0300	OXIDE-MT 0.22 JB 2W	1	C111	CC1-0-1500-KD00C	Ceramic 100pF 50V ±10%	1
R153	401 064 0300	OXIDE-MT 0.22 JB 2W	1	C112	CC6-8-0500-KD00C	Ceramic 68pF 50V ±10%	1
R154	401 012 3407	CARBON 10 JA 1/4W	1	C113	CC1-0-0500-DD00C	Ceramic 10pF 50V ±0.5%	1
R155	401 058 1207	OXIDE-MT 10 JB 1W	1	C114	CD2-2-6250-0001V	Electrolytic 22μF 25V	1
R158	401 023 2802	CARBON 8.2K JA 1/4W	1	C115	CM1-8-3500-K00SV	Mylar 0.018μF 50V ±10%	1
R201	401 025 1605	CARBON 1.5K JA 1/6W	1	C116	CD2-2-5500-0001V	Electrolytic 2.2μF 50V	1
R202	401 024 7707	CARBON 100K JA 1/6W	1	C117	CM6-8-2500-K00SV	Mylar 0.0068μF 50V ±10%	1
R203	401 024 7707	CARBON 100K JA 1/6W	1	C118	CD4-7-4500-0001V	Electrolytic 0.47μF 50V	1
R204	401 025 8703	CARBON 220K JA 1/6W	1	C119	CM4-7-2500-K00SV	Mylar 0.0047μF 50V ±10%	1
R205	401 025 1902	CARBON 15K JA 1/6W	1	C120	CM8-2-3500-J00TV	Mylar 0.082μF 50V ±5%	1
R206	401 026 0607	CARBON 270 JA 1/6W	1	C121	CM1-5-2500-K00SV	Mylar 0.0015μF 50V ±10%	1
R207	401 024 7707	CARBON 100K JA 1/6W	1	C122	CM2-2-3500-K00SV	Mylar 0.022μF 50V ±10%	1
R208	401 025 7805	CARBON 2.2K JA 1/6W	1	C123	CC6-8-1500-KE00C	Ceramic 680pF 50V ±10%	1
R235	401 024 7004	CARBON 1K JA 1/6W	1	C124	CM4-7-2500-K00SV	Mylar 0.0047μF 50V ±10%	1
R236	401 014 5201	CARBON 15K JA 1/4W	1	C210	CD1-0-5500-0001V	Electrolytic 1μF 50V	1
R237	401 021 4105	CARBON 56K JA 1/4W	1	C211	CC1-0-1500-KD00C	Ceramic 100pF 50V ±10%	1
R238	401 021 1906	CARBON 560 JA 1/4W	1	C212	CC6-8-0500-KD00C	Ceramic 68pF 50V ±10%	1
R239	401 021 1906	CARBON 560 JA 1/4W	1	C213	CC1-0-0500-DD00C	Ceramic 10pF 50V ±0.5%	1
R240	402 015 5603	FUSIBLE RES 82 J- 1/4W	1	C214	CD2-2-6250-0001V	Electrolytic 22μF 25V	1
R241	401 025 8208	CARBON 22K JA 1/6W	1	C215	CM1-8-3500-K00SV	Mylar 0.018μF 50V ±10%	1
R242	401 027 3003	CARBON 56K JA 1/6W	1	C216	CD2-2-5500-0001V	Electrolytic 2.2μF 50V	1
R243	401 026 0607	CARBON 270 JA 1/6W	1	C217	CM6-8-2500-K00SV	Mylar 0.0068μF 50V ±10%	1
R244	401 027 8602	CARBON 8.2K JA 1/6W	1	C218	CD4-7-4500-0001V	Electrolytic 0.47μF 50V	1
R245	401 027 3003	CARBON 56K JA 1/6W	1	C219	CM4-7-2500-K00SV	Mylar 0.0047μF 50V ±10%	1
R246	402 015 5603	FUSIBLE RES 82 J- 1/4W	1	C220	CM8-2-3500-J00TV	Mylar 0.082μF 50V ±5%	1
R247	402 016 2601	FUSIBLE RES 33 J- 1/2W	1	C221	CM1-5-2500-K00SV	Mylar 0.0015μF 50V ±10%	1
R248	402 016 2601	FUSIBLE RES 33 J- 1/2W	1	C222	CM2-2-3500-K00SV	Mylar 0.022μF 50V ±10%	1
R249	402 015 3708	FUSIBLE RES 2.2 J- 1/4W	1	C223	CC6-8-1500-KE00C	Ceramic 680pF 50V ±10%	1
R250	402 015 4408	FUSIBLE RES 330 J- 1/4W	1	C224	CM4-7-2500-K00SV	Mylar 0.0047μF 50V ±10%	1
R251	402 015 3708	FUSIBLE RES 2.2 J- 1/4W	1				
R252	401 064 0300	OXIDE-MT 0.22 JB 2W	1				
R253	401 064 0300	OXIDE-MT 0.22 JB 2W	1				
R254	401 012 3407	CARBON 10 JA 1/4W	1				
R255	401 058 1207	OXIDE-MT 10 JB 1W	1				
R258	401 023 2802	CARBON 8.2K JA 1/4W	1				
R302	401 066 9905	OXIDE-MT 270 JB 2W	1				
R303	401 063 6501	OXIDE-MT 820 JA 1W	1				
R304	401 015 2704	CARBON 1.8K JA 1/4W	1				

P.C.BOARD PARTS LIST (Continued)

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
C314	CD4-7-6250-0001V	Electrolytic	47μF 25V	1	R231	401 026 6609 CARBON 390 JA 1/6W	1
C315	CD4-7-6250-0001V	Electrolytic	47μF 25V	1	R232	401 025 1902 CARBON 15K JA 1/6W	1
SEMICONDUCTORS					R233	401 026 9907 CARBON 4.7K JA 1/6W	1
IC2	206-5-2726-45810	IC, LA 6458 DS		1	R308	401 012 4503 CARBON 100 JA 1/4W	1
Q101	203-5-5000-53660	Transistor, 2SC 536		1	R309	401 012 4503 CARBON 100 JA 1/4W	1
Q102	203-5-5000-53660	Transistor, 2SC 536		1	POWER METER P.C.B. ASSY		
Q103	203-5-5000-53660	Transistor, 2SC 536		1	34	141-0-1939-14192 Power Meter P.C.B. Assy	1
Q104	203-5-5000-53660	Transistor, 2SC 536		1		4-2262-26100 Power Meter P.C.B.	1
Q105	203-5-5000-53660	Transistor, 2SC 536		1	VR501	4-2229-76210 Slide Volume (A-100kΩx2, Volume)	1
Q201	203-5-5000-53660	Transistor, 2SC 536		1		131-2-4208-49100 Spacer LED	5
Q202	203-5-5000-53660	Transistor, 2SC 536		1		131-2-4208-49200 Spacer LED	1
Q203	203-5-5000-53660	Transistor, 2SC 536		1	CAPACITORS		
Q204	203-5-5000-53660	Transistor, 2SC 536		1	C125	CC3-3-1500-KD00C Ceramic 330pF 50V ±10%	1
Q205	203-5-5000-53660	Transistor, 2SC 536		1	C126	CM4-7-3500-K00SV Mylar 0.047μF 50V ±10%	1
RESISTORS					C225	CC3-3-1500-KD00C Ceramic 330pF 50V ±10%	1
R109	401 025 1605	CARBON 1.5K JA 1/6W		1	C226	CM4-7-3500-K00SV Mylar 0.047μF 50V ±10%	1
R110	401 027 3003	CARBON 56K JA 1/6W		1	C318	CD4-7-6250-0001V Electrolytic 47μF 25V	1
R111	401 026 9907	CARBON 4.7K JA 1/6W		1	C319	CD1-0-5500-0001V Electrolytic 1μF 50V	1
R112	401 027 2600	CARBON 5.6K JA 1/6W		1	C401	CD1-0-6250-0001V Electrolytic 10μF 25V	1
R113	401 024 9305	CARBON 1.2K JA 1/6W		1	SEMICONDUCTORS		
R114	401 025 2305	CARBON 150K JA 1/6W		1	D309	4-2029-72101 L.E.D., GL 9 PR 54 (Power)	1
R115	401 026 6609	CARBON 390 JA 1/6W		1	D310	202-5-3210-08212 Zener Diode, GZA 8.2 Y	1
R116	401 025 1902	CARBON 15K JA 1/6W		1	D401	D00---SLP--173B- L.E.D., SLP 173 B (Power Level Meter)	1
R117	401 024 9305	CARBON 1.2K JA 1/6W		1	D402	D00---SLP--173B- L.E.D., SLP 173 B (Power Level Meter)	1
R118	401 024 7707	CARBON 100K JA 1/6W		1	D403	D00---SLP--173B- L.E.D., SLP 173 B (Power Level Meter)	1
R119	401 026 6609	CARBON 390 JA 1/6W		1	D404	D00---SLP--173B- L.E.D., SLP 173 B (Power Level Meter)	1
R120	401 025 1902	CARBON 15K JA 1/6W		1	D405	D00---SLP--173B- L.E.D., SLP 173 B (Power Level Meter)	1
R121	401 025 1605	CARBON 1.5K JA 1/6W		1	D406	202-5-2810-44210 Diode, DS 442	1
R122	401 026 7408	CARBON 39K JA 1/6W		1	D407	202-5-2810-44210 Diode, DS 442	1
R123	401 026 6609	CARBON 390 JA 1/6W		1	IC3	206-5-2291-42310 IC, LB 1423	1
R124	401 025 1902	CARBON 15K JA 1/6W		1	RESISTORS		
R125	401 025 1605	CARBON 1.5K JA 1/6W		1	R134	401 026 9907 CARBON 4.7K JA 1/6W	1
R126	401 026 4605	CARBON 33K JA 1/6W		1	R234	401 026 9907 CARBON 4.7K JA 1/6W	1
R127	401 026 6609	CARBON 390 JA 1/6W		1	R310	401 012 4503 CARBON 100 JA 1/4W	1
R128	401 025 1902	CARBON 15K JA 1/6W		1	R311	401 027 2303 CARBON 560 JA 1/6W	1
R129	401 025 1605	CARBON 1.5K JA 1/6W		1	R313	401 020 0801 CARBON 470 JA 1/4W	1
R130	401 025 8208	CARBON 22K JA 1/6W		1	R401	401 014 2903 CARBON 150 JA 1/4W	1
R131	401 026 6609	CARBON 390 JA 1/6W		1	R402	401 012 7009 CARBON 10K JA 1/4W	1
R132	401 025 1902	CARBON 15K JA 1/6W		1	R403	401 015 2704 CARBON 1.8K JA 1/4W	1
R133	401 020 2003	CARBON 4.7K JA 1/4W		1	R404	401 012 7009 CARBON 10K JA 1/4W	1
R209	401 025 1605	CARBON 1.5K JA 1/6W		1	SPEAKER OUT P.C.B. ASSY		
R210	401 027 3003	CARBON 56K JA 1/6W		1	35	141-0-1939-14202 Speaker Out P.C.B. Assy	1
R211	401 026 9907	CARBON 4.7K JA 1/6W		1		4-2262-26110 Speaker Out P.C.B.	1
R212	401 021 3009	CARBON 5.6K JA 1/4W		1		4-2379-71080 8P Push Terminal (Speakers)	1
R213	401 024 9305	CARBON 1.2K JA 1/6W		1	CAPACITORS		
R214	401 025 2305	CARBON 150K JA 1/6W		1	C138	CC1-0-2500-KE00R Ceramic 1000pF 50V ±10%	1
R215	401 026 6609	CARBON 390 JA 1/6W		1	C139	CC1-0-2500-KE00R Ceramic 1000pF 50V ±10%	1
R216	401 025 1902	CARBON 15K JA 1/6W		1	C238	CC1-0-2500-KE00R Ceramic 1000pF 50V ±10%	1
R217	401 024 9305	CARBON 1.2K JA 1/6W		1	C239	CC1-0-2500-KE00R Ceramic 1000pF 50V ±10%	1
R218	401 024 7707	CARBON 100K JA 1/6W		1	POWER SWITCH P.C.B. ASSY		
R219	401 026 6609	CARBON 390 JA 1/6W		1	36	141-0-1939-14213 Power Switch P.C.B. Assy	1
R220	401 025 1902	CARBON 15K JA 1/6W		1		4-2262-26120 Power Switch P.C.B.	1
R221	401 025 1605	CARBON 1.5K JA 1/6W		1	S2	4-2312-05820 Switch Push 1Key (Speakers)	1
R222	401 026 7408	CARBON 39K JA 1/6W		1	S3	▲ 4-2312-05710 Switch Push Power (Power)	1
R223	401 026 6609	CARBON 390 JA 1/6W		1			
R224	401 025 1902	CARBON 15K JA 1/6W		1			
R225	401 025 1605	CARBON 1.5K JA 1/6W		1			
R226	401 026 4605	CARBON 33K JA 1/6W		1			
R227	401 026 6609	CARBON 390 JA 1/6W		1			
R228	401 025 1902	CARBON 15K JA 1/6W		1			
R229	401 025 1605	CARBON 1.5K JA 1/6W		1			
R230	401 025 8208	CARBON 22K JA 1/6W		1			

P.C.BOARD PARTS LIST (Continued)

Ref. No.	Part No.	Description	Q'ty
	4-2352-01170	Jack 7P 6.45 (Headphones)	1
	111-2-6220-11100	Wire Wrap Terminal	2
	131-2-6114-01400	Cover Safety	1
CAPACITOR			
C301	△ 4-2239-70970	Capacitor 0.01μF 400V +100,-0%	1
RESISTORS			
R156	401 061 6503	OXIDE-MT 390 JB 1W	1
R157	401 013 4205	CARBON 120 JA 1/4W	1
R256	401 061 6503	OXIDE-MT 390 JB 1W	1
R257	401 013 4205	CARBON 120 JA 1/4W	1
AC FUSE P.C.B. ASSY			
37	141-0-1939-14222	AC Fuse P.C.B. Assy	1
	4-2262-26130	AC Fuse P.C.B.	1
	4-2372-00830	EC Terminal 1P	2
	111-2-6220-11100	Wire Wrap Terminal	4
POWER SUPPLY P.C.B. ASSY			
38	141-0-1939-14232	Power Supply P.C.B. Assy	1
	4-2262-26140	Power Supply P.C.B.	1
	△ 4-2349-20380	Fuse T1.0A	2
	4-2352-01940	Fuse Clip	4
	△ 4-2359-79090	Socket 2P-2 (Power Supply Socket)	1
	111-2-6220-11100	Wire Wrap Terminal	4
	131-2-7103-52604	Label Fuse T1.0Ax2	1

NOTES:

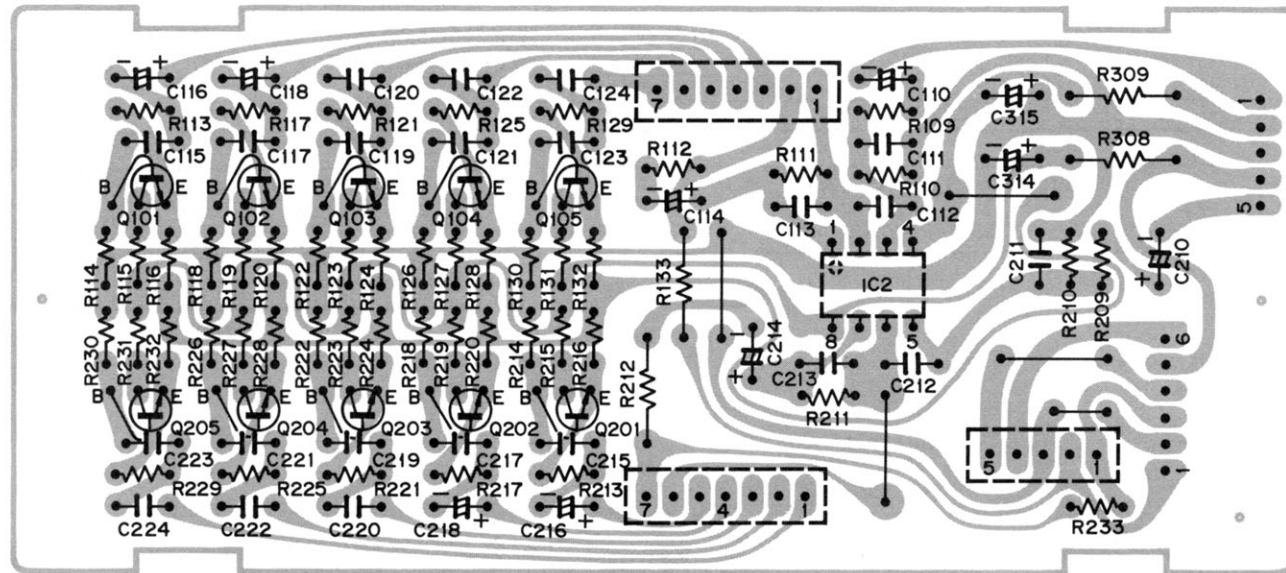
1. Parts order must contain Model Number, Part Number and Description.
2. Ordering quantity of screws and resistors must be multiple of 10 pcs.

PRODUCT SAFETY NOTICE

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GRAPHIC EQUALIZER P.C.BOARD

(BOTTOM VIEW)

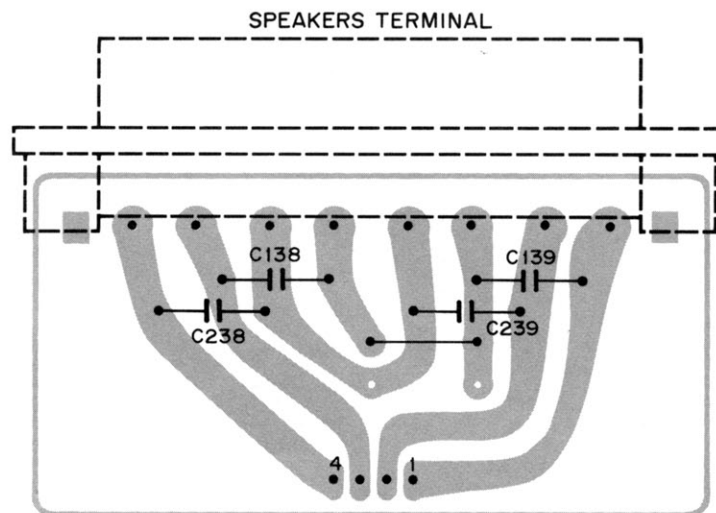


IC PIN NUMBERS DC VOLTAGES									
SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8
IC2	LA6458D	0V	0V	0V	-16.6V	0V	0V	0V	17.1V

TRANSISTOR DC VOLTAGES									
SYMBOL No.	DEVICE	B	C	E	SYMBOL No.	DEVICE	B	C	E
Q101,201	2SC536	-0.4V	16.7V	-1.0V	Q104,204	2SC536	-0.1V	16.7V	-0.7V
Q102,202	2SC536	-0.3V	16.7V	-0.9V	Q105,205	2SC536	-0.1V	16.7V	-0.6V
Q103,203	2SC536	-0.1V	16.7V	-0.7V					

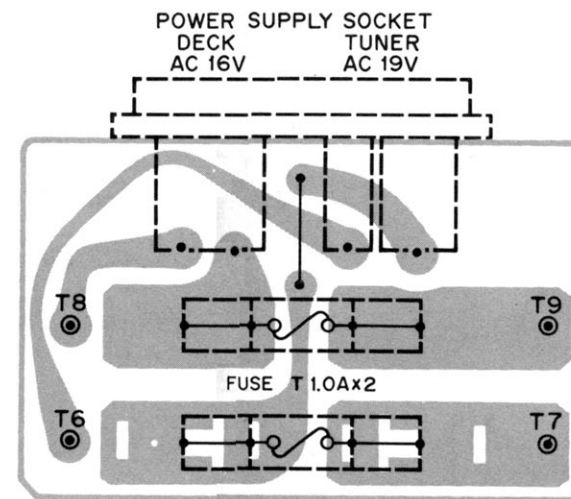
SPEAKER OUT P.C.BOARD

(BOTTOM VIEW)



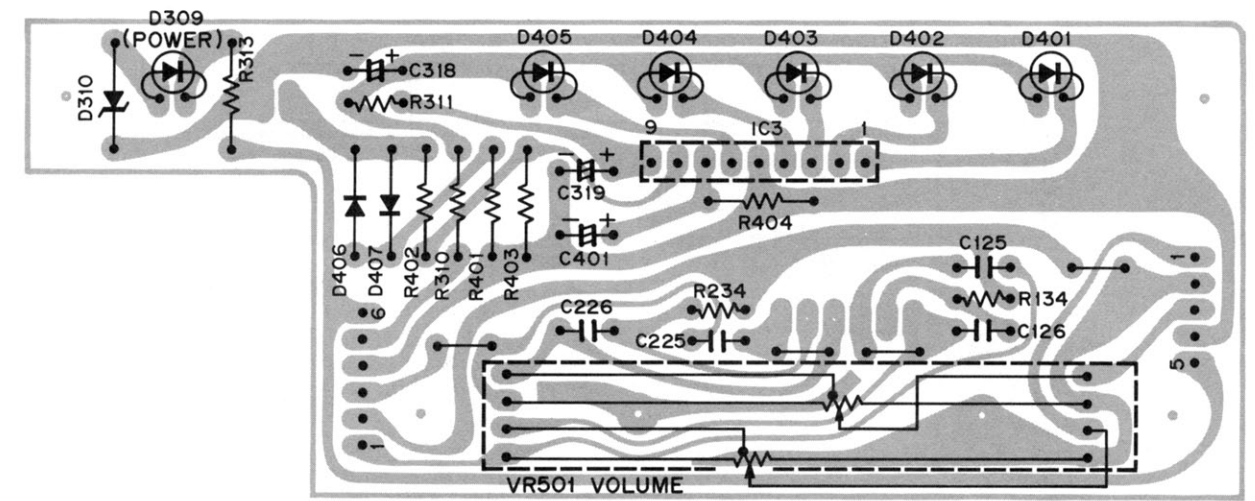
POWER SUPPLY P.C.BOARD

(BOTTOM VIEW)



POWER METER P.C.BOARD

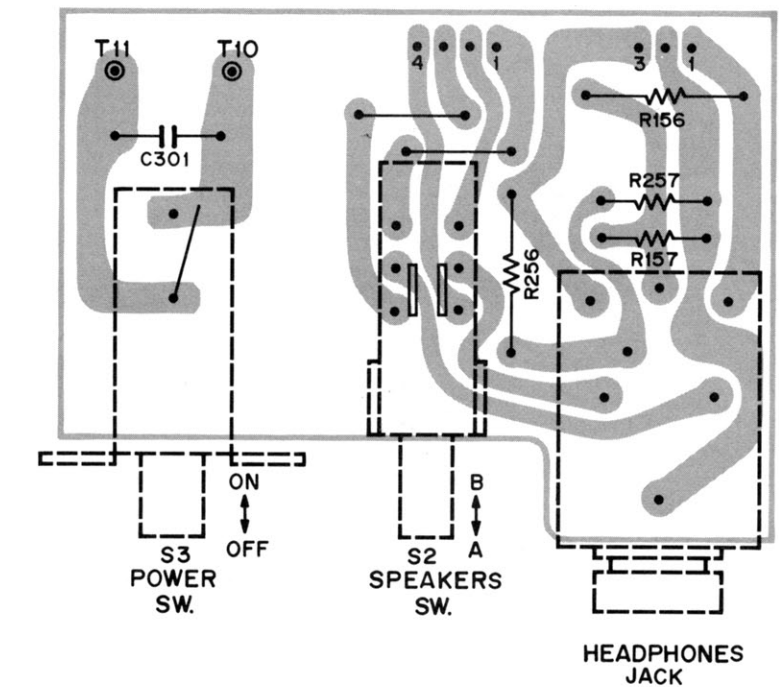
(BOTTOM VIEW)



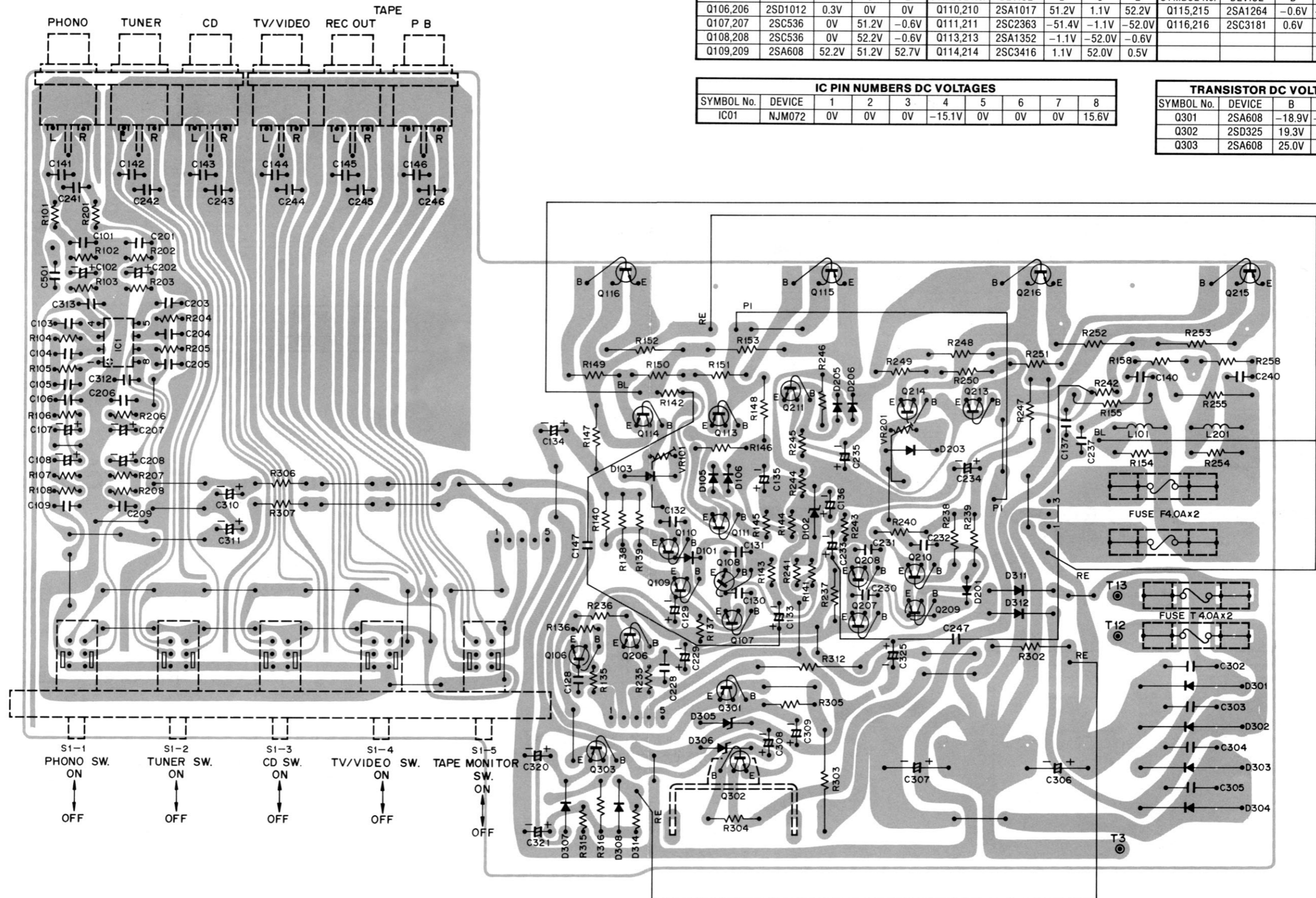
IC PIN NUMBERS DC VOLTAGES										
SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8	9
IC3	LB1423	16.7V	16.7V	16.7V	16.7V	0V	16.7V	0V	0V	15.5V

POWER SWITCH P.C.BOARD

(BOTTOM VIEW)



MAIN PRINTED CIRCUIT BOARD

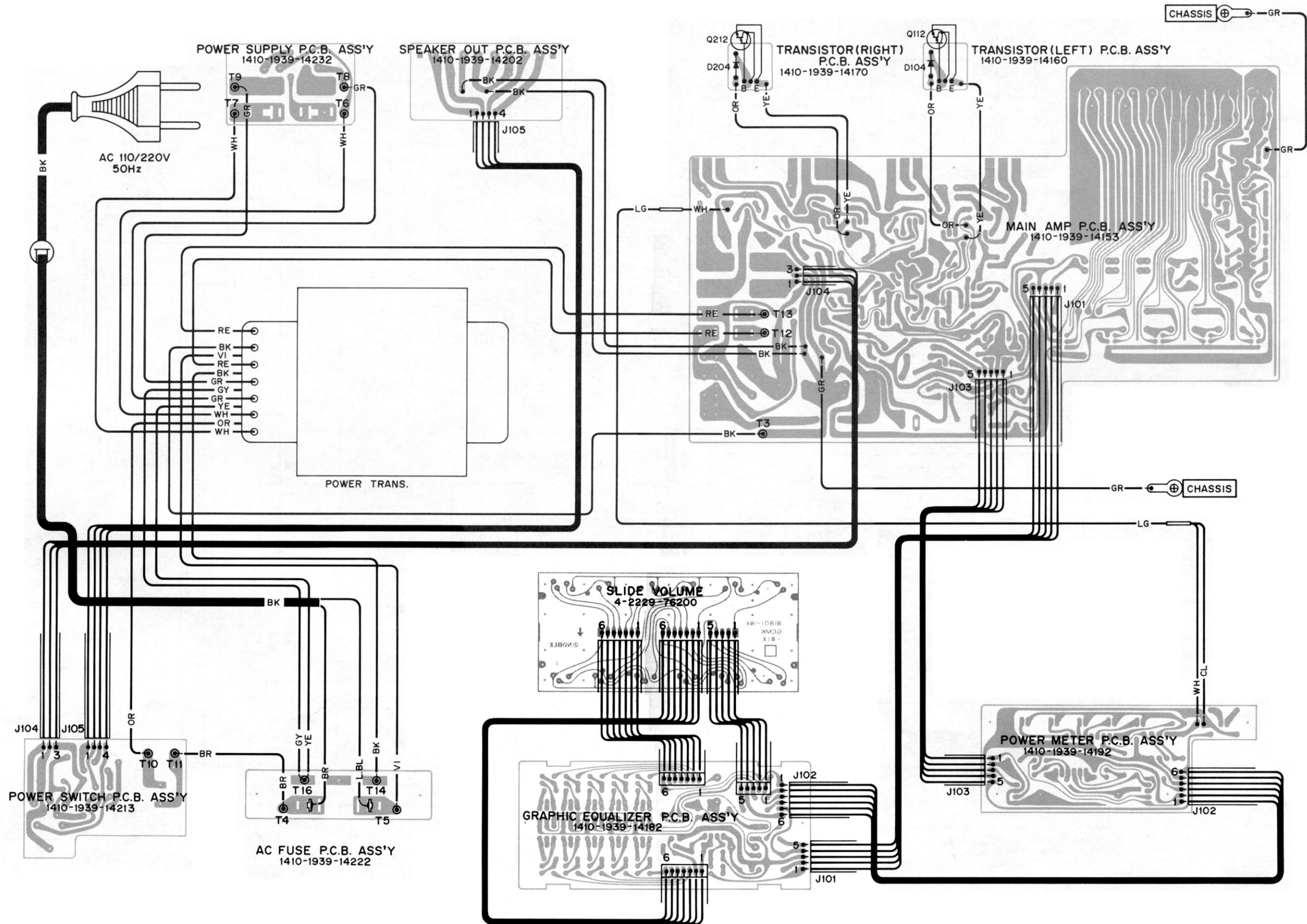


TRANSISTOR DC VOLTAGES														
SYMBOL No.	DEVICE	B	C	E	SYMBOL No.	DEVICE	B	C	E	SYMBOL No.	DEVICE	B	C	E
Q106,206	2SD1012	0.3V	0V	0V	Q110,210	2SA1017	51.2V	1.1V	52.2V	Q115,215	2SA1264	-0.6V	-52.0V	0.3V
Q107,207	2SC536	0V	51.2V	-0.6V	Q111,211	2SC2363	-51.4V	-1.1V	-52.0V	Q116,216	2SC3181	0.6V	52.0V	0.4V
Q108,208	2SC536	0V	52.2V	-0.6V	Q113,213	2SA1352	-1.1V	-52.0V	-0.6V					
Q109,209	2SA608	52.2V	51.2V	52.7V	Q114,214	2SC3416	1.1V	52.0V	0.5V					

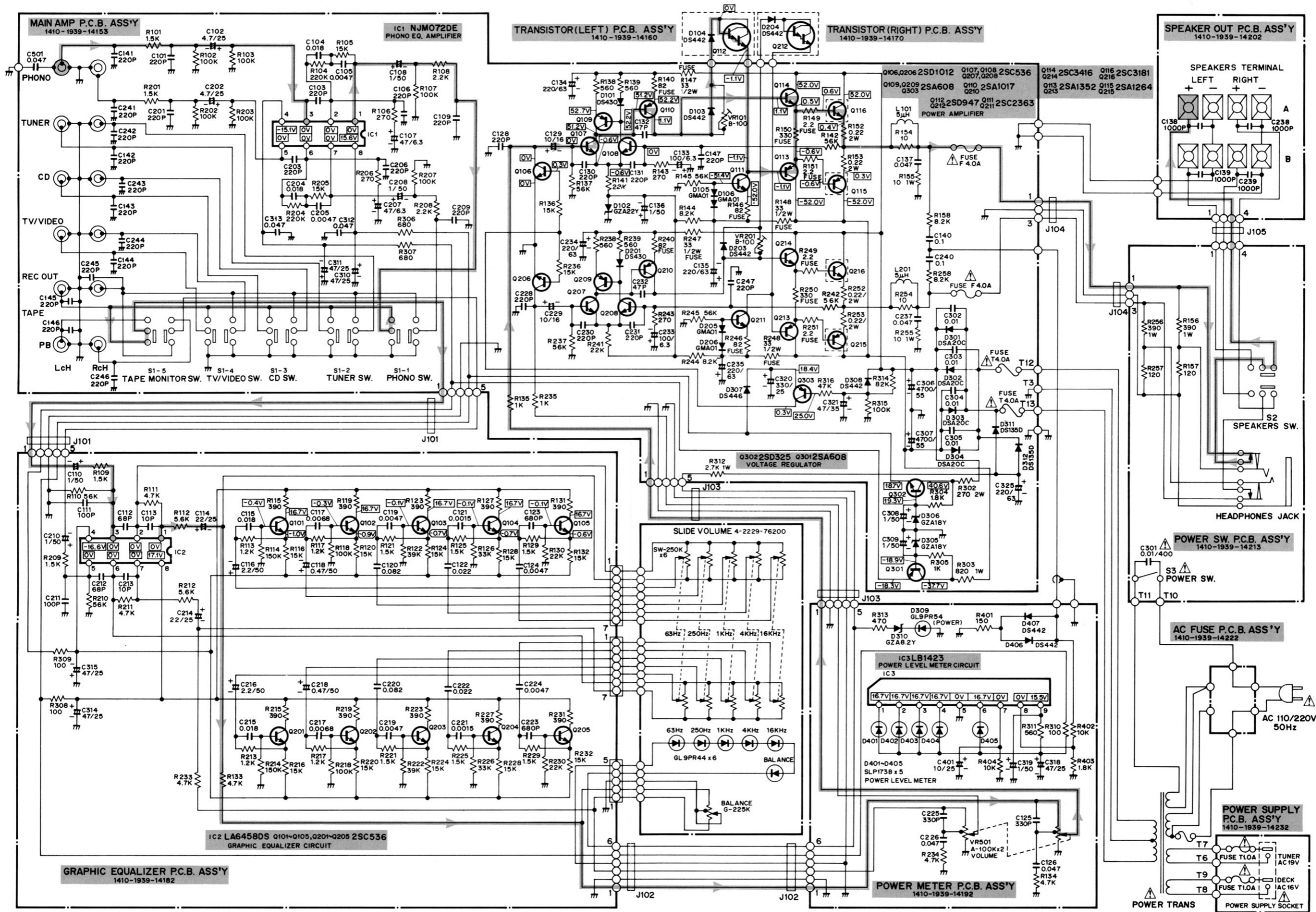
IC PIN NUMBERS DC VOLTAGES									
SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8
IC01	NJM072	0V	0V	0V	-15.1V	0V	0V	0V	15.6V

TRANSISTOR DC VOLTAGES				
SYMBOL No.	DEVICE	B	C	E
Q301	2SA608	-18.9V	-37.7V	-18.3V
Q302	2SD325	19.3V	40.6V	18.7V
Q303	2SA608	25.0V	0.3V	18.4V

POINT TO POINT WIRING DIAGRAM



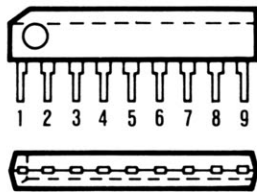
SCHEMATIC DIAGRAM



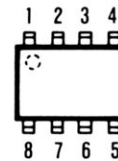
SEMICONDUCTOR LEAD IDENTIFICATION

TRANSISTOR	FRONT VIEW	BOTTOM VIEW	TRANSISTOR	FRONT VIEW	BOTTOM VIEW
2SC 536 2SA 608 2SA 1017 2SC 2363			2SA 1265 2SC 3182		
2SD 325			2SA 1352 2SC 3416 2SD 947		
2SD 1012			TERMINAL NAME		
B → BASE C → COLLECTOR E → EMITTER					

LB 1423 FRONT/BOTTOM VIEWS



NJM 072 / LA 6458 BOTTOM VIEW



SWITCH NAME & POSITION

No.	Name	Position	No.	Name	Position
S1-1	PHONO Switch	OFF	S1-5	TAPE MONITOR Switch	OFF
S1-2	TUNER Switch	OFF	S2	SPEAKERS Switch	A
S1-3	CD Switch	OFF	S3	POWER Switch	OFF
S1-4	TV/VIDEO Switch	OFF			

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NOTES:

1. All resistors values are indicated in "ohm" (K=10³, M=10⁶).
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 ±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.



FISHER

FISHER Hi-Fi Europa Vertriebs GmbH

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Hi-Fi/Audio	-168
Video	-172
Autoradio	-170
Ersatzteillager	-155/156
Techn. Schulung	-174

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Offenbach/ Frankfurt	Frankfurter Straße 121 6050 Offenbach	Tel: 069/88 80 45/48 Tlx: 4 12 558	Hamburg	Spaldingstraße 1 2000 Hamburg	Tel: 040/23 12 23/24 Tlx: 2 173 839
Military	Frankfurter Straße 121 6050 Offenbach	Tel: 069/88 80 45/48 Tlx: 4 12 558	Ditzingen	Max-Eyth-Straße 11 7257 Ditzingen	Tel: 07156/50 88 Tlx: 7 245 278
Düsseldorf-Erkrath	Albert-Einstein-Straße 8 4006 Erkrath 1	Tel: 0211/200 05-0 Tlx: 8 588 563	Berlin (Fisher Vertragswerkstatt)	Drewitz & Kaulbach Eisenacher Straße 53 1000 Berlin 62	Tel: 030/781 20 01 Tlx: 186 460

Unser FISHER-Team steht Ihnen jederzeit gerne zur Verfügung. Ersatzteilbestellungen wickeln Sie bitte ausschließlich mit unserer Service-Zentrale München ab.

Senden Sie uns im Garantiefall die ausgefüllte Garantiekarte ein. Bei unverkauften Lagergeräten des Fachhandels gilt als Garantienachweis eine eidesstattliche Versicherung mit eingetragener Modellbezeichnung und Geräte-Nummer oder ein Liefernachweis. Die gleiche Regelung besteht auch für Reparaturaufträge.

Bitte geben Sie unbedingt die Ersatzteil-Nummer und die Modellbezeichnung an.

Sie sparen so wertvolle Zeit. Vielen Dank.