

SERVICE MANUAL



FISHER

INTEGRATED STEREO AMPLIFIER

CA-1224

EUROPE

132 306 44

This Service Manual is prepared for Model CA-1224. As only the components in the chart below differ, refer to the Service Manual CA-224 (WM-17165) for other components.

| Ref. No. | CA-224 | CA-1224 | Description | Q'ty | Remark |
|----------|--|--------------------------------------|-------------------------------------|--------|--------|
| | PACKAGE 131-6-1169-19901 | 131-6-1169-19902 | Box Corrugate-Exp. | 1 | |
| | ACCESSORIES 142-6-4119-32973 | 142-6-4119-33027 | Explanatory Booklet | 1 | |
| 6 | CABINET 141-0-1129-23901 141-2-1129-49601 | 141-0-1129-23902 141-2-1129-49602 | Cabinet Front Assy Cabinet Front | 1 1 | |
| 13 | 131-2-3306-41101 | 131-2-3306-41102 | Panel Rear | 1 | |

Add this sheet to the Model CA-224 Service Manual (WM-17165).

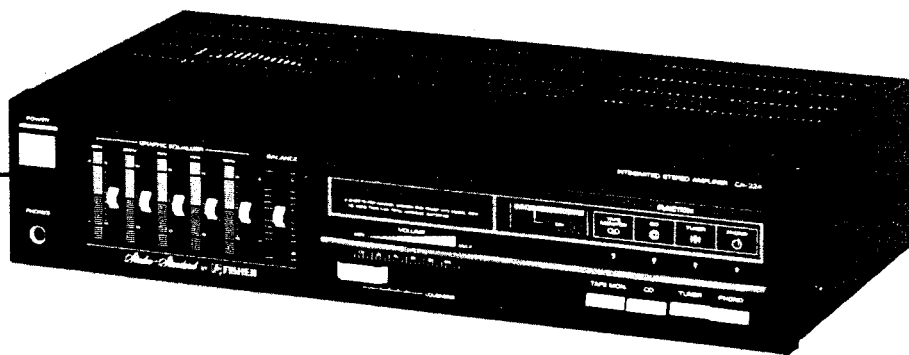
SERVICE MANUAL



FISHER

CA-224

Integrated
Stereo Amplifier
(EUROPE)

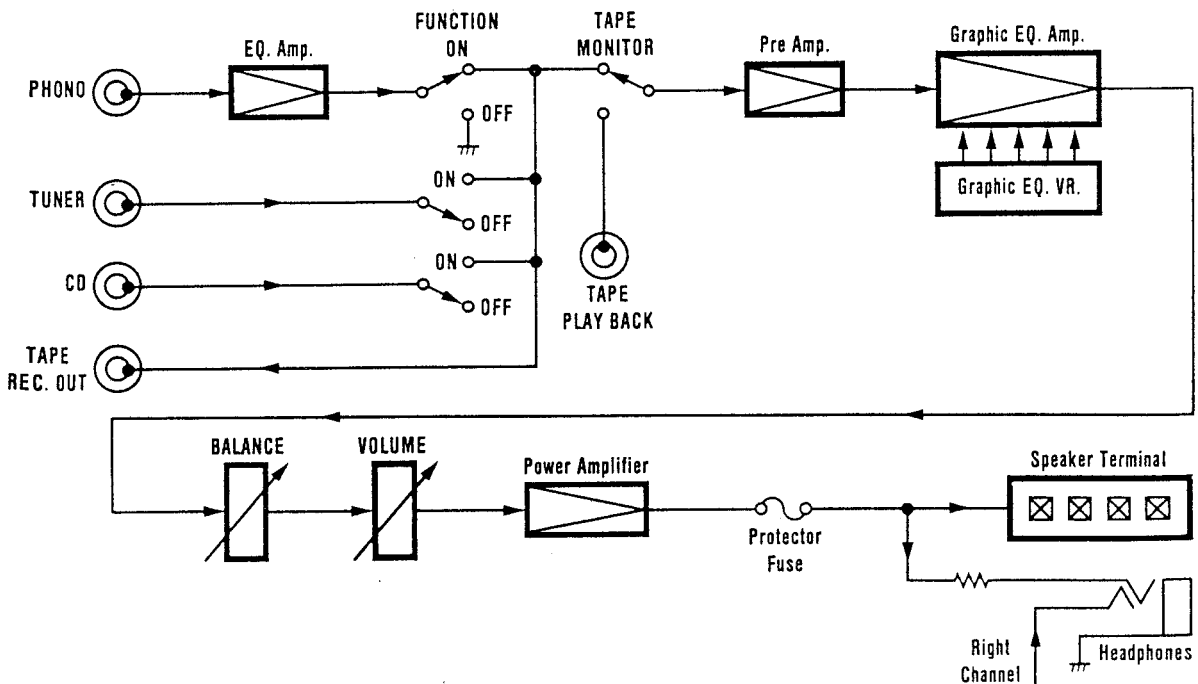


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FUNCTIONAL BLOCK DIAGRAM



SPECIFICATIONS

| AMPLIFIER | CA-224 |
|---|-------------------|
| POWER AMPLIFIER SECTION | |
| Minimum RMS sine wave power per channel within stated bandwidth at no more than stated distortion and with 8-ohm load | 35 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 | 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 | 85 dB |
| GENERAL | |
| Power Requirements (50 Hz) | 220 V AC |
| Power Consumption | 180 Watts |
| Dimensions (W x H x D) | 400 x 91 x 202 mm |
| Weight (approx.) | 4.1 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.

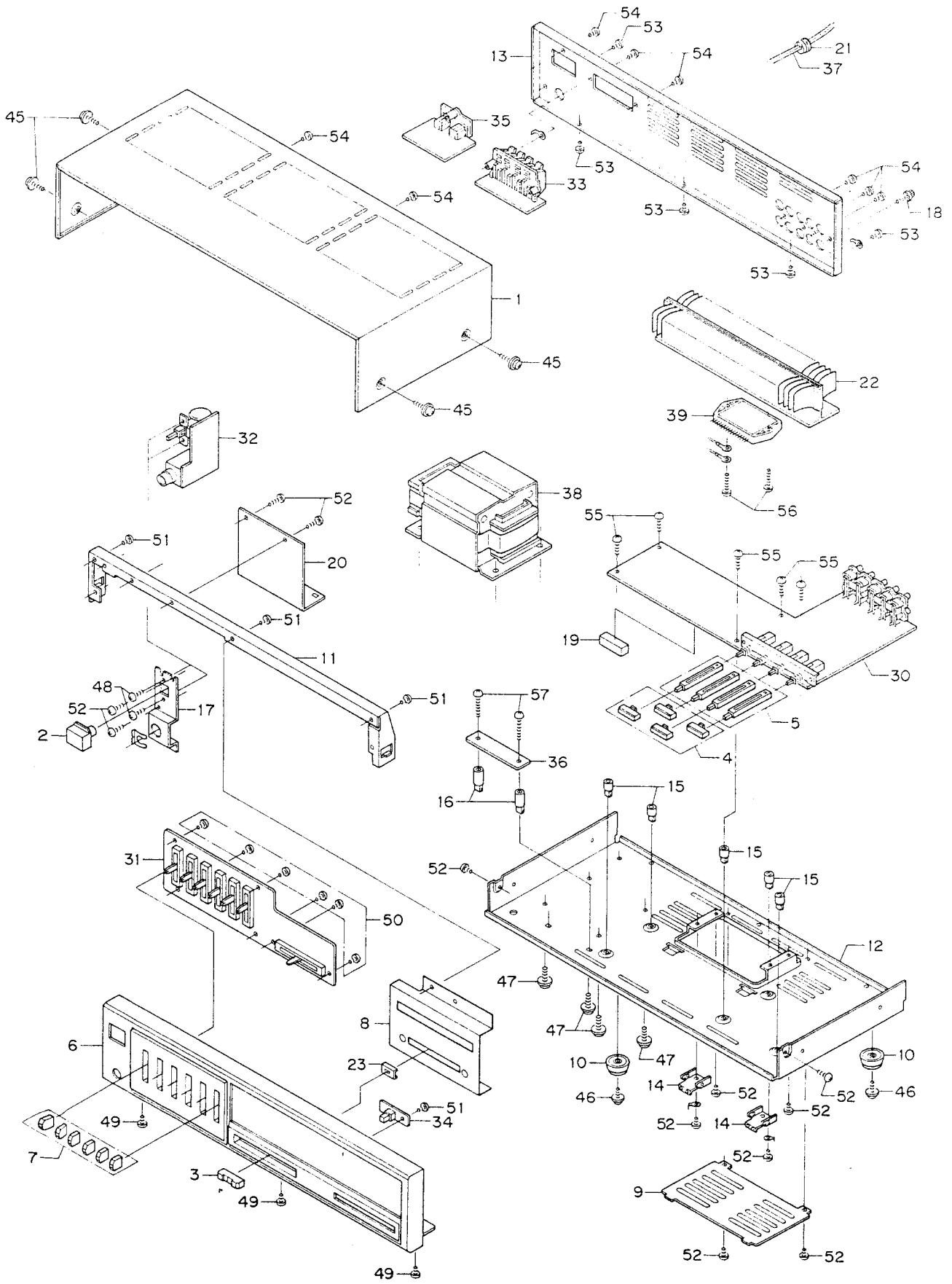
IMPORTANT NOTE

The amplifier has been Factory-adjusted for operation on 220V AC. The voltage can be changed for operation on 110V AC by making the following changes on the amplifier inside.

1. Remove the AC plug from the wall outlet.
2. Remove the screws securing the cover.
3. Disconnect Gray lead from AC Select P.C.Board Terminal No. 19, and then connect it to A C Select P.C.Board Terminal No. 16.
4. Disconnect Yellow lead from AC Select P.C.Board Terminal No. 19, and then connect it to A C Select P.C.Board Terminal No. 18.

The amplifier is now ready 110V operation. DO NOT attempt to operate the amplifier on 220V. Damage will result!

CABINET & CHASSIS EXPLODED VIEW



CABINET & CHASSIS PARTS LIST

PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol \triangle in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with \triangle , 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.

| Ref. No. | Part No. | Description | Q'ty | Ref. No. | Part No. | Description | Q'ty |
|---|------------------|---------------------------|------|--|--------------------------|--|------|
| PACKING PARTS LIST | | | | ELECTRICAL PARTS LIST | | | |
| | 131-6-1169-19901 | Box Corrugate-Exp. | 1 | 30 | 141-0-1939-17761 | Main Amp. P.C.B. Assy | 1 |
| | 131-6-3009-36250 | Pad (Left) | 1 | 31 | 141-0-1939-17770 | Control Amp. P.C.B. Assy | 1 |
| | 131-6-3009-36260 | Pad (Right) | 1 | 32 | 141-0-1939-17781 | Power Switch P.C.B. Assy | 1 |
| | 131-6-3069-16350 | Patching Sheet | 1 | 33 | 141-0-1939-17790 | Speaker Out P.C.B. Assy | 1 |
| | 131-6-4559-11200 | Serial No. Sheet | 2 | 34 | 141-0-1939-17800 | Power Ind. P.C.B. Assy | 1 |
| | 141-6-2519-22390 | Sheet Polyethylene | 1 | 35 | 141-0-1939-17810 | Socket 2P P.C.B. Assy | 1 |
| | | | | 36 | 141-0-1939-17820 | AC Select P.C.B. Assy | 1 |
| | | | | 37 | \triangle 4-2432-00501 | Power Cord | 1 |
| | | | | 38 | \triangle 4-2512-33320 | Power Trans | 1 |
| | | | | 39 | 205-5-3834-15240 | IC, STK 4152 MK2 [IC301] | 1 |
| ACCESSORIES PARTS LIST | | | | SCREW PARTS LIST | | | |
| | 131-6-2719-10401 | Bag Fan | 1 | 45 | 141-2-4219-33101 | Screw, Bind Hd. Tapping-B. +M3.0x8 Sems | 4 |
| | 142-6-4119-32973 | Explanatory Booklet | 1 | 46 | 131-2-4201-25200 | Screw, Brazier Hd. Tapping-B. +M3.0x6 Sems | 2 |
| | | | | 47 | 141-2-4219-43300 | Screw, Bind Hd. Tapping-C. +M4.0x10 Sems | 4 |
| | | | | 48 | 101-3-1303-00611 | Screw, Pan Hd., +M3.0x6 | 2 |
| | | | | 49 | 143-3-1703-00818 | Screw, Bind Hd. Tapping-B. +M3.0x8 | 3 |
| | | | | 50 | 143-3-1302-60811 | Screw, Pan Hd. Tapping-B. +M2.6x8 | 6 |
| | | | | 51 | 143-3-1902-60811 | Screw, Brazier Hd. Tapping-B. +M2.6x8 | 4 |
| | | | | 52 | 143-3-1903-00611 | Screw, Brazier Hd. Tapping-B. +M3.0x6 | 12 |
| | | | | 53 | 143-3-1903-00618 | Screw, Brazier Hd. Tapping-B. +M3.0x6 | 5 |
| | | | | 54 | 143-3-1903-00818 | Screw, Brazier Hd. Tapping-B. +M3.0x8 | 8 |
| | | | | 55 | 143-3-1903-01211 | Screw, Brazier Hd. Tapping-B. +M3.0x12 | 5 |
| | | | | 56 | 143-3-1903-01611 | Screw, Brazier Hd. Tapping-B. +M3.0x16 | 2 |
| | | | | 57 | 143-3-1903-02011 | Screw, Brazier Hd. Tapping-B. +M3.0x20 | 2 |
| | | | | C701 | CC4-7-3500-ZG00C | Ceramic 0.047 μ F 50V $\pm 20\%$ | 1 |
| | | | | C702 | CC4-7-3500-ZG00C | Ceramic 0.047 μ F 50V $\pm 20\%$ | 1 |
| CABINET & CHASSIS PARTS LIST | | | | NOTES: | | | |
| | 4-2379-21520 | Terminal Lug | 1 | 1. Parts order must contain Model Number, Part Number and Description. | | | |
| | 4-2379-21524 | Terminal Lug | 1 | 2. Ordering quantity of screws and resistors must be multiple of 10 pcs. | | | |
| | 131-6-4559-11200 | Serial No. Sheet | 1 | | | | |
| 1 | 131-2-1410-34400 | Cover | 1 | | | | |
| 2 | 131-2-1601-86200 | Knob (Power) | 1 | | | | |
| 3 | 131-2-1601-86504 | Knob (Volume) | 1 | | | | |
| 4 | 131-2-1601-96700 | Knob (Function) | 4 | | | | |
| 5 | 131-2-4219-20200 | Shaft | 4 | | | | |
| 6 | 141-0-1129-23901 | Cabinet Front Assy | 1 | | | | |
| | 131-2-1110-39604 | Plate Decorate | 1 | | | | |
| | 131-2-1110-40300 | Plate Decorate EQ. | 1 | | | | |
| | 131-2-1801-16200 | Leg | 2 | | | | |
| | 141-2-1129-49601 | Cabinet Front | 1 | | | | |
| 7 | 141-2-1659-35900 | Knob Slide (EQ., Balance) | 6 | | | | |
| 8 | 141-2-3229-60000 | Plate Shield | 1 | | | | |
| 9 | 131-2-1410-34900 | Cover Bottom | 1 | | | | |
| 10 | 131-2-1801-12900 | Leg | 2 | | | | |
| 11 | 131-2-3202-15900 | Metal Reinforce | 1 | | | | |
| 12 | 131-2-3301-32300 | Chassis | 1 | | | | |
| 13 | 131-2-3306-41101 | Panel Rear | 1 | | | | |
| 14 | 131-2-3310-18400 | Metal Support | 2 | | | | |
| 15 | 131-2-3614-20300 | Mount P.C.B. | 5 | | | | |
| 16 | 131-2-3614-21800 | Mount P.C.B. | 2 | | | | |
| 17 | 131-2-3701-30800 | Mount Electric Part | 1 | | | | |
| 18 | 131-2-4201-17800 | Screw Ground | 1 | | | | |
| 19 | 131-2-5205-34900 | Cushion | 1 | | | | |
| 20 | 131-2-6101-31800 | Plate Shield | 1 | | | | |
| 21 | 131-2-6111-14200 | Bushing (4N-4) | 1 | | | | |
| 22 | 131-2-6201-37800 | Plate Heat Sink | 1 | | | | |
| 23 | 141-2-3229-60100 | Plate Earth | 1 | | | | |

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
- FUNCTION switch to CD
- VOLUME control to MINIMUM position
- LEFT CHANNEL DRIVEN

ONE CHANNEL DRIVEN:

- 1) Connect a low distortion audio generator to LEFT CD IN jack. Set generator frequency to 1 kHz and output to minimum.
- 2) Connect an 8-ohm load resistor between SPEAKERS SYSTEM 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. Turn VOLUME control to MAX.
- 4) Increase generator output for 35 Watts RMS (16.7 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.

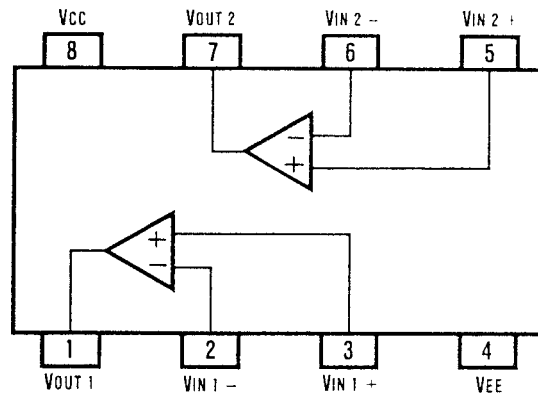
BOTH CHANNELS DRIVEN

Connect 8-ohm load resistors across LEFT and RIGHT SPEAKERS SYSTEM terminals. Adjust generator output and "VOLUME" control for 35 watts at Left and Right Channels (16.7 volts across the 8-ohm loads). Harmonic Distortion Analyzer should measure 0.5 % distortion or less at each channel.

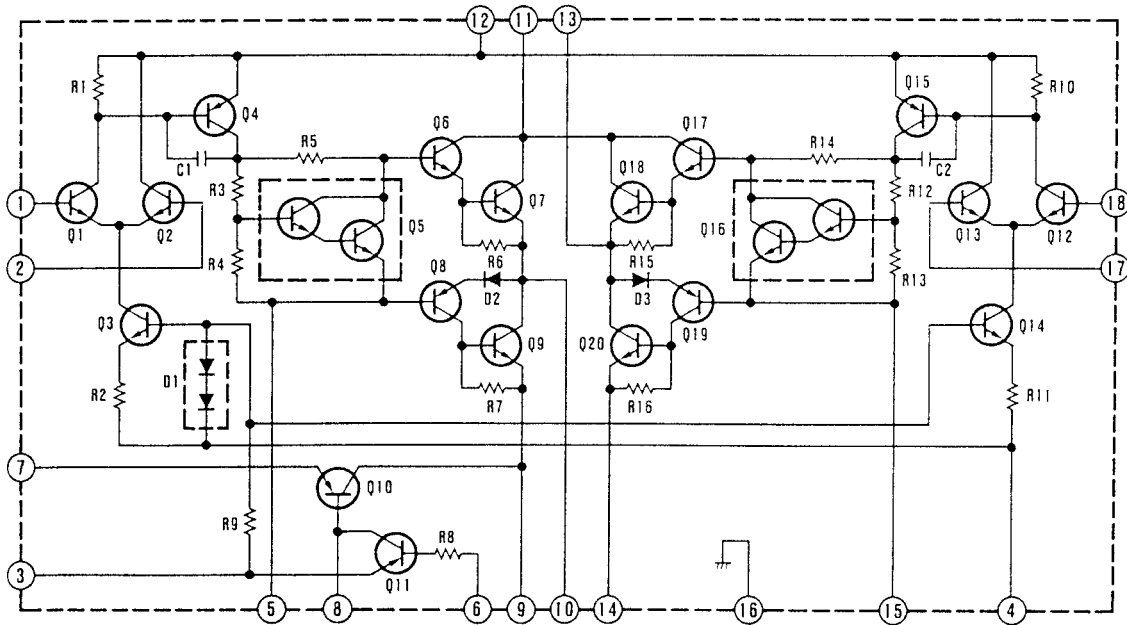
CAUTION: This precision high-fidelity instrument should be serviced only by qualified personnel, trained in the repair of transistor equipment and printed circuitry.

INTEGRATED CIRCUIT BLOCK DIAGRAM

PHONO / GRAPHIC EQUALIZER AMP IC LA 6458 D



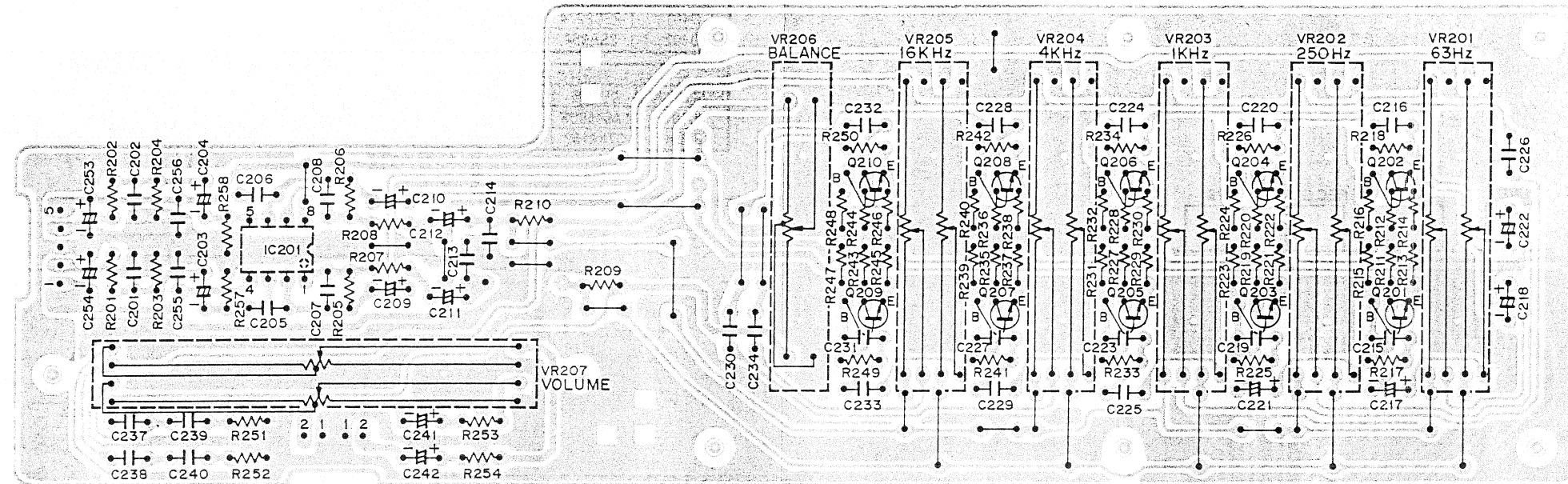
STK 4152 MK2 EQUIVALENT CIRCUIT



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 | | | | C316 | CD1-0-7500-0001V | Electrolytic 100μF 50V | 1 |
| 30 | 141-0-1939-17761 | Main Amp. P.C.B. Assy | 1 | C317 | CD1-0-6500-0001V | Electrolytic 10μF 50V | 1 |
| | 4-2262-29520 | Main Amp. P.C.B. | 1 | C318 | CB4-7-5500-0000V | None-polar 4.7μF 50V | 1 |
| S1 | 4-2319-79560 | Push Switch 4Key (Function, Tape Monitor) | 1 | C319 | CD2-2-7250-0001V | Electrolytic 220μF 25V | 1 |
| L301 | 4-2532-00420 | RF Filter (5μH) | 1 | C320 | CD4-7-6350-0001V | Electrolytic 47μF 35V | 1 |
| L302 | 4-2532-00420 | RF Filter (5μH) | 1 | C401 | CC4-7-3151-ZG00C | Ceramic 0.047μF 150V +80 -20% | 1 |
| | △ 4-2349-20570 | Fuse T2.5A | 2 | C402 | CC4-7-3151-ZG00C | Ceramic 0.047μF 150V +80 -20% | 1 |
| | △ 4-2349-20580 | Fuse T3.15A | 2 | C403 | CC4-7-3151-ZG00C | Ceramic 0.047μF 150V +80 -20% | 1 |
| | 4-2352-01700 | Pin Jack 4P (Tape) | 1 | C404 | CC4-7-3151-ZG00C | Ceramic 0.047μF 150V +80 -20% | 1 |
| | 4-2352-01780 | Pin Jack 6P (Phono, Tuner, CD) | 1 | C405 | CD3-3-8500-0005V | Electrolytic 3300μF 50V | 1 |
| | 4-2352-01940 | Fuse Clip | 8 | C406 | CD3-3-8500-0005V | Electrolytic 3300μF 50V | 1 |
| | 111-2-6220-11100 | Wire Wrap Terminal | 3 | C407 | CD4-7-5250-0001V | Electrolytic 4.7μF 25V | 1 |
| | 131-2-7103-52607 | Label Fuse T3.15Ax2 | 1 | C408 | CD4-7-5250-0001V | Electrolytic 4.7μF 25V | 1 |
| | 131-2-7103-52610 | Label Fuse T2.5Ax2 | 1 | C703 | CC4-7-3500-ZG00C | Ceramic 0.047μF 50V +80 -20% | 1 |
| | | | | C704 | CC4-7-3500-ZG00C | Ceramic 0.047μF 50V +80 -20% | 1 |
| | | | | C705 | CC1-0-1500-KD00C | Ceramic 100pF 50V ±10% | 1 |
| | | | | C706 | CC1-0-1500-KD00C | Ceramic 100pF 50V ±10% | 1 |
| | | | | C707 | CC1-0-3500-ZG00C | Ceramic 0.01μF 50V +80 -20% | 1 |
| | | | | C708 | CC1-0-3500-ZG00C | Ceramic 0.01μF 50V +80 -20% | 1 |
| C101 | CC3-3-1500-KD00C | Ceramic 330pF 50V ±10% | 1 | SEMICONDUCTORS | | | |
| C102 | CC3-3-1500-KD00C | Ceramic 330pF 50V ±10% | 1 | D101 | 202-5-1410-00110 | Diode, GMA 01 | 1 |
| C103 | CC3-3-1500-KD00C | Ceramic 330pF 50V ±10% | 1 | D102 | 202-5-1410-00110 | Diode, GMA 01 | 1 |
| C104 | CC3-3-1500-KD00C | Ceramic 330pF 50V ±10% | 1 | D201 | 202-5-9600-44610 | Diode, DS 446 | 1 |
| C105 | CD4-7-5250-0001V | Electrolytic 4.7μF 25V | 1 | D301 | 202-5-9600-44610 | Diode, DS 446 | 1 |
| C106 | CD4-7-5250-0001V | Electrolytic 4.7μF 25V | 1 | D302 | 205-5-9040-44210 | Diode, DS 442 | 1 |
| C107 | CC3-3-1500-KD00C | Ceramic 330pF 50V ±10% | 1 | D401 | 212-5-9360-01258 | Diode, DSA 12B | 1 |
| C108 | CC3-3-1500-KD00C | Ceramic 330pF 50V ±10% | 1 | D402 | 212-5-9360-01258 | Diode, DSA 12B | 1 |
| C109 | CD4-7-6100-0001V | Electrolytic 47μF 10V | 1 | D403 | 212-5-9360-01258 | Diode, DSA 12B | 1 |
| C110 | CD4-7-6100-0001V | Electrolytic 47μF 10V | 1 | D404 | 212-5-9360-01258 | Diode, DSA 12B | 1 |
| C111 | CM1-8-3500-K00SV | Mylar 0.018μF 50V ±10% | 1 | D405 | 202-5-3210-18012 | Zener Diode, GZA 18Y | 1 |
| C112 | CM1-8-3500-K00SV | Mylar 0.018μF 50V ±10% | 1 | D406 | 202-5-3210-18012 | Zener Diode, GZA 18Y | 1 |
| C113 | CM4-7-2500-J00SV | Mylar 0.0047μF 50V ±5% | 1 | D601 | 202-5-3210-27012 | Zener Diode, GZA 27Y | 1 |
| C114 | CM4-7-2500-J00SV | Mylar 0.0047μF 50V ±5% | 1 | IC101 | 206-5-2726-45810 | IC, LA 6458 DS | 1 |
| C115 | CD1-0-5500-0001V | Electrolytic 1μF 50V | 1 | Q301 | 203-5-5000-53670 | Transistor, 2SC 536 | 1 |
| C116 | CD1-0-5500-0001V | Electrolytic 1μF 50V | 1 | Q401 | 203-5-7252-27460 | Transistor, 2SC 2274 | 1 |
| C117 | CC3-3-1500-KD00C | Ceramic 330pF 50V ±10% | 1 | Q402 | 203-5-6820-98460 | Transistor, 2SA 984 | 1 |
| C118 | CC3-3-1500-KD00C | Ceramic 330pF 50V ±10% | 1 | RESISTORS | | | |
| C119 | CC2-2-1500-KD00C | Ceramic 220pF 50V ±10% | 1 | R101 | 401 025 7805 | CARBON 2.2K JA 1/6W | 1 |
| C120 | CC2-2-1500-KD00C | Ceramic 220pF 50V ±10% | 1 | R102 | 401 025 7805 | CARBON 2.2K JA 1/6W | 1 |
| C121 | CC2-2-1500-KD00C | Ceramic 220pF 50V ±10% | 1 | R103 | 401 024 7707 | CARBON 100K JA 1/6W | 1 |
| C122 | CC2-2-1500-KD00C | Ceramic 220pF 50V ±10% | 1 | R104 | 401 024 7707 | CARBON 100K JA 1/6W | 1 |
| C123 | CC2-2-1500-KD00C | Ceramic 220pF 50V ±10% | 1 | R105 | 401 024 7707 | CARBON 100K JA 1/6W | 1 |
| C124 | CC2-2-1500-KD00C | Ceramic 220pF 50V ±10% | 1 | R106 | 401 024 7707 | CARBON 100K JA 1/6W | 1 |
| C125 | CC2-2-1500-KD00C | Ceramic 220pF 50V ±10% | 1 | R107 | 401 026 3905 | CARBON 330 JA 1/6W | 1 |
| C126 | CC2-2-1500-KD00C | Ceramic 220pF 50V ±10% | 1 | R108 | 401 026 3905 | CARBON 330 JA 1/6W | 1 |
| C127 | CD4-7-6160-0001V | Electrolytic 47μF 16V | 1 | R109 | 401 025 8703 | CARBON 220K JA 1/6W | 1 |
| C128 | CD4-7-6160-0001V | Electrolytic 47μF 16V | 1 | R110 | 401 025 8703 | CARBON 220K JA 1/6W | 1 |
| C129 | CC4-7-3500-ZG00C | Ceramic 0.047μF 50V +80 -20% | 1 | R111 | 401 025 1902 | CARBON 15K JA 1/6W | 1 |
| C130 | CC4-7-3500-ZG00C | Ceramic 0.047μF 50V +80 -20% | 1 | R112 | 401 025 1902 | CARBON 15K JA 1/6W | 1 |
| C131 | CC3-3-1500-KD00C | Ceramic 330pF 50V ±10% | 1 | R113 | 401 024 7707 | CARBON 100K JA 1/6W | 1 |
| C132 | CC3-3-1500-KD00C | Ceramic 330pF 50V ±10% | 1 | R114 | 401 024 7707 | CARBON 100K JA 1/6W | 1 |
| C133 | CC3-3-1500-KD00C | Ceramic 330pF 50V ±10% | 1 | R115 | 401 012 5708 | CARBON 1K JA 1/4W | 1 |
| C134 | CC4-7-3500-ZG00C | Ceramic 0.047μF 50V +80 -20% | 1 | R116 | 401 012 5708 | CARBON 1K JA 1/4W | 1 |
| C301 | CC2-2-1500-KE01R | Ceramic 220pF 50V ±10% | 1 | R117 | 401 012 5708 | CARBON 1K JA 1/4W | 1 |
| C302 | CC2-2-1500-KE01R | Ceramic 220pF 50V ±10% | 1 | R118 | 401 012 5708 | CARBON 1K JA 1/4W | 1 |
| C303 | CC2-2-1500-KE01R | Ceramic 220pF 50V ±10% | 1 | R119 | 401 012 5708 | CARBON 1K JA 1/4W | 1 |
| C304 | CC2-2-1500-KE01R | Ceramic 220pF 50V ±10% | 1 | R120 | 401 012 5708 | CARBON 1K JA 1/4W | 1 |
| C305 | CC2-2-1500-KE01R | Ceramic 220pF 50V ±10% | 1 | R121 | 401 012 5708 | CARBON 1K JA 1/4W | 1 |
| C306 | CC2-2-1500-KE01R | Ceramic 220pF 50V ±10% | 1 | R122 | 401 012 5708 | CARBON 1K JA 1/4W | 1 |
| C307 | CD4-7-663A-0001V | Electrolytic 47μF 6.3V | 1 | R123 | 401 012 5708 | CARBON 1K JA 1/4W | 1 |
| C308 | CD4-7-663A-0001V | Electrolytic 47μF 6.3V | 1 | R124 | 401 012 5708 | CARBON 1K JA 1/4W | 1 |
| C309 | CD4-7-6500-0001V | Electrolytic 47μF 50V | 1 | R125 | 401 016 2604 | CARBON 220 JA 1/4W | 1 |
| C310 | CD4-7-6500-0001V | Electrolytic 47μF 50V | 1 | | | | |
| C311 | CC4-7-3500-ZG00C | Ceramic 0.047μF 50V +80 -20% | 1 | | | | |
| C312 | CC4-7-3500-ZG00C | Ceramic 0.047μF 50V +80 -20% | 1 | | | | |
| C313 | CD1-0-6500-0001V | Electrolytic 10μF 50V | 1 | | | | |
| C314 | CD1-0-6500-0001V | Electrolytic 10μF 50V | 1 | | | | |
| C315 | CD1-0-7500-0001V | Electrolytic 100μF 50V | 1 | | | | |

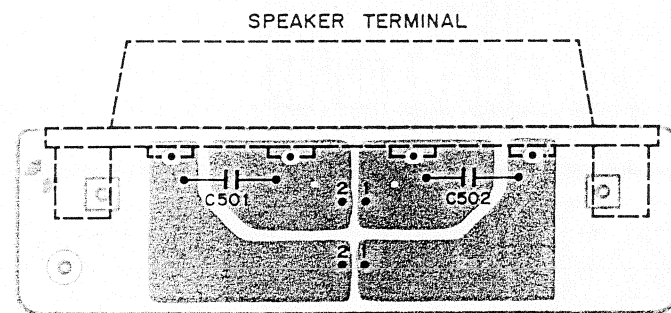
CONTROL AMPLIFIER P.C.BOARD (BOTTOM VIEW)



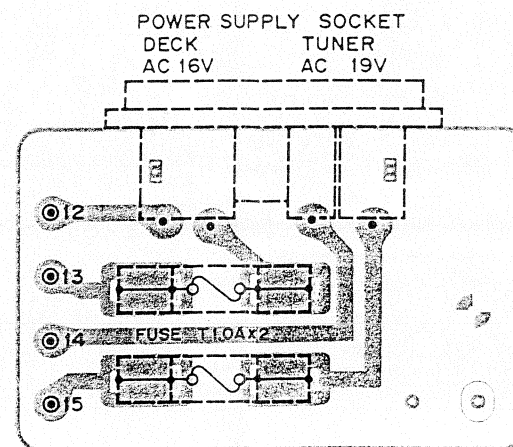
| IC PIN NUMBERS DC VOLTAGES | | | | | | | | | |
|----------------------------|----------|----|----|----|--------|----|----|----|-------|
| SYMBOL No. | DEVICE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| IC201 | LA6458DS | 0V | 0V | 0V | -16.5V | 0V | 0V | 0V | 16.5V |

| TRANSISTOR DC VOLTAGES | | | | | | | | | |
|------------------------|--------|-------|-------|-------|------------|--------|-------|-------|-------|
| SYMBOL No. | DEVICE | B | C | E | SYMBOL No. | DEVICE | B | C | E |
| Q201,202 | 2SC536 | -0.4V | 16.2V | -1.0V | Q207,208 | 2SC536 | -0.1V | 16.2V | -0.7V |
| Q203,204 | 2SC536 | -0.3V | 16.2V | -0.9V | Q209,210 | 2SC536 | -0.1V | 16.2V | -0.7V |
| Q205,206 | 2SC536 | -0.1V | 16.2V | -0.7V | | | | | |

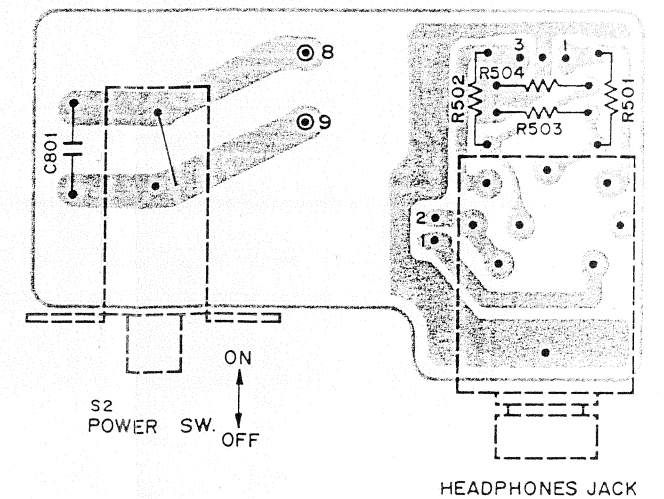
SPEAKER OUT P.C.BOARD (BOTTOM VIEW)



SOCKET 2P P.C.BOARD (BOTTOM VIEW)



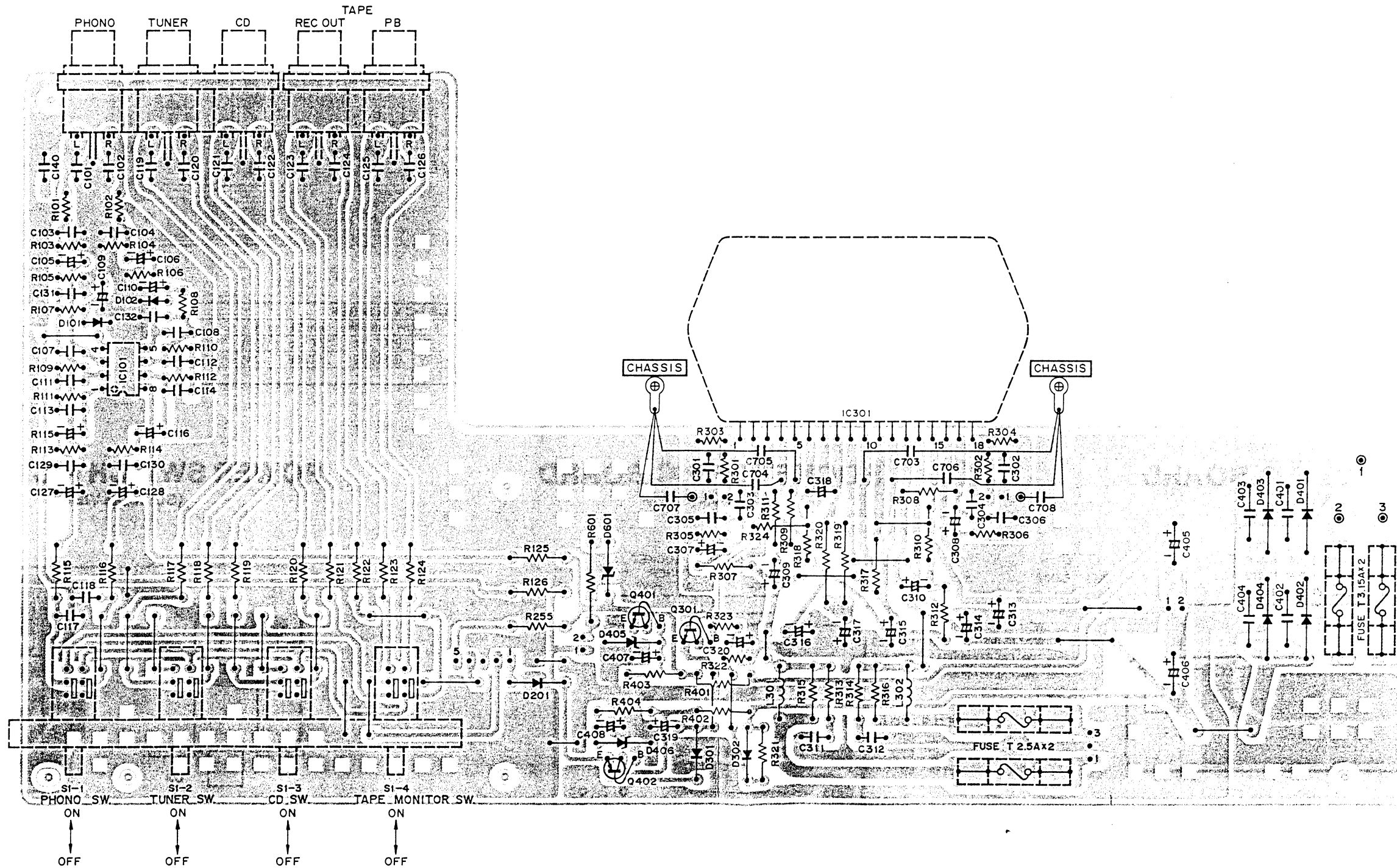
POWER SWITCH P.C.BOARD (BOTTOM VIEW)



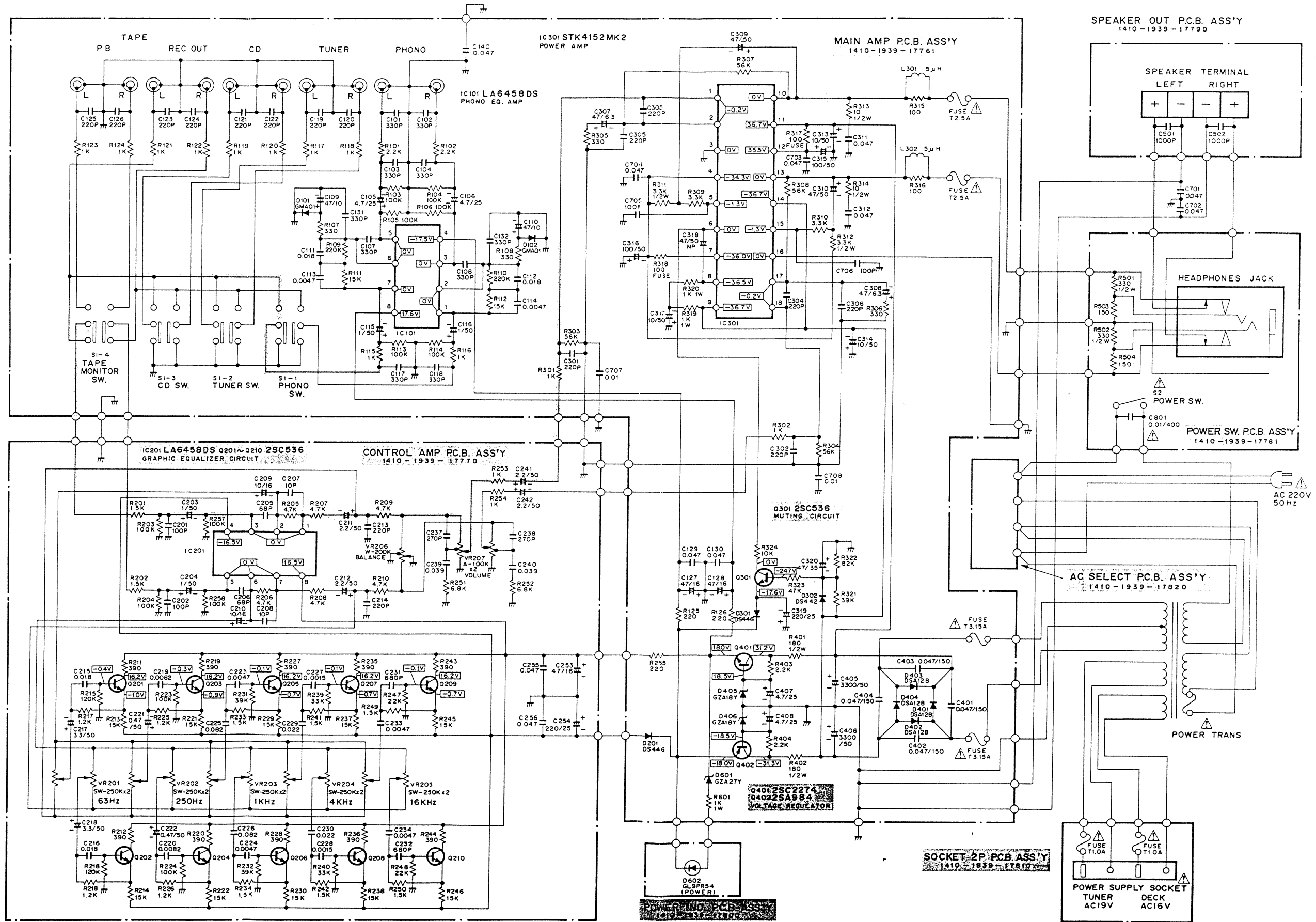
MAIN PRINTED CIRCUIT BOARD

| TRANSISTOR DC VOLTAGES | | | | |
|------------------------|---------|--------|--------|--------|
| SYMBOL No. | DEVICE | B | C | E |
| Q301 | 2SC536 | -24.7V | 0V | -17.6V |
| Q401 | 2SC2274 | 18.5V | 31.2V | 18.0V |
| Q402 | 2SA984 | -18.5V | -31.3V | -18.0V |

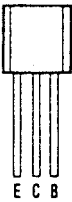
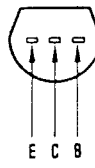
| IC PIN NUMBERS DC VOLTAGES | | | | | | | | | | | | | | | | | | | |
|----------------------------|----------|-------|-------|----|--------|-------|----|--------|--------|--------|----|-------|-------|----|--------|-------|----|-------|-------|
| SYMBOL No. | DEVICE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| IC101 | LA6458DS | 0V | 0V | 0V | -17.5V | 0V | 0V | 0V | 17.6V | | | | | | | | | | |
| IC301 | STK4152 | -0.2V | -0.2V | 0V | -34.3V | -1.3V | 0V | -36.0V | -36.5V | -36.7V | 0V | 36.7V | 35.5V | 0V | -36.7V | -1.3V | 0V | -0.2V | -0.2V |



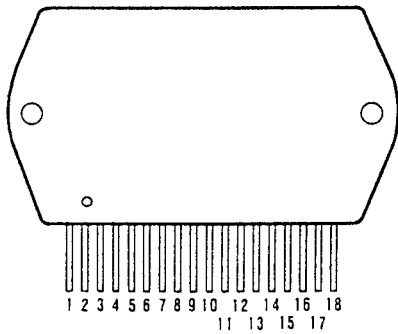
SCHEMATIC DIAGRAM



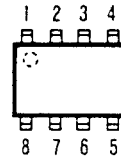
SEMICONDUCTOR LEAD IDENTIFICATION

| TRANSISTOR | FRONT VIEW | BOTTOM VIEW |
|--|---|---|
| 2SA 984 2SC 536 2SC 2274 |  |  |
| TERMINAL NAME | | |
| B → BASE C → COLLECTOR E → EMITTER | | |

STK 4152 MK2 BOTTOM VIEW



LA 6458 BOTTOM VIEW



SWITCH POSITION TABLE

| No. | Name | Position | No. | Name | Position |
|------|--------------|----------|------|---------------------|----------|
| S1-1 | PHONO Switch | OFF | S1-4 | TAPE MONITOR Switch | OFF |
| S1-2 | TUNER Switch | OFF | S2 | POWER Switch | OFF |
| S1-3 | CD Switch | OFF | | | |

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.

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.