

# POWERED MIXER

# EMX640

## SERVICE MANUAL



### ■ CONTENTS

|                              |    |
|------------------------------|----|
| SPECIFICATIONS .....         | 2  |
| PANEL LAYOUT .....           | 4  |
| CIRCUIT BOARD LAYOUT .....   | 5  |
| DIMENSIONS .....             | 5  |
| BLOCK & LEVEL DIAGRAMS ..... | 6  |
| DISASSEMBLY PROCEDURE .....  | 8  |
| LSI PIN DESCRIPTION .....    | 10 |
| IC BLOCK DIAGRAM .....       | 11 |
| CIRCUIT BOARDS .....         | 12 |
| INSPECTIONS .....            | 19 |
| CIRCUIT DIAGRAMS .....       | 24 |
| PARTS LIST .....             |    |

### IMPORTANT NOTICE

This manual has been provided for the use of authorized Yamaha Retailers and their service personnel. It has been assumed that basic service procedures inherent to the industry, and more specifically Yamaha Products, are already known and understood by the users, and have therefore not been restated.

**WARNING:** Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components and failure of the product to perform as specified. For these reasons, we advise all Yamaha product owners that all service required should be performed by an authorized Yamaha Retailer or the appointed service representative.

**IMPORTANT:** This presentation or sale of this manual to any individual or firm does not constitute authorization, certification, recognition of any applicable technical capabilities, or establish a principal-agent relationship of any form.

The data provided is believed to be accurate and applicable to the unit(s) indicated on the cover. The research engineering, and service departments of Yamaha are continually striving to improve Yamaha products. Modifications are, therefore, inevitable and changes in specification are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

**WARNING:** Static discharges can destroy expensive components. Discharge any static electricity you body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss.)

**IMPORTANT:** Turn the unit OFF during disassembly and parts replacement. Recheck all work before you apply power to the unit.

### WARNING: CHEMICAL CONTENT NOTICE!

The solder used in the production of this product contains LEAD. In addition, other electrical/electronic and/or plastic (where applicable) components may also contain traces of chemicals found by the California Health and Welfare Agency (and possibly other entities) to cause cancer and/or birth defects or other reproductive harm.

**DO NOT PLACE SOLDER, ELECTRICAL/ELECTRONIC OR PLASTIC COMPONENTS IN YOUR MOUTH FOR ANY REASON WHAT SO EVER!**

Avoid prolonged, unprotected contact between solder and your skin! When soldering, do not inhale solder fumes or expose eyes to solder/flux vapor!

If you come in contact with solder or components located inside the enclosure of this product, wash your hands before handling food.

### ■ WARNING

Components having special characteristics are marked  $\triangle$  and must be replaced with parts having specification equal to those originally installed.

$\triangle$ 印の商品は、安全を維持するために重要な部品です。交換する場合は、安全のため必ず指定の部品をご使用下さい。

## SPECIFICATIONS

### • General specifications

|                                                              |                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                     |
|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Maximum output power                                         | 200 W/4Ω @0.5% THD at 1 kHz                                                                                                                                                                                                                                                                                                                                                                                |                                                                                     |
| Frequency response                                           | 20 Hz~20 kHz +1 dB, -3 dB @1 W output into 8Ω (POWER AMP OUT)<br>20 Hz~20 kHz +1 dB, -3 dB @+4 dB output into 10 kΩ (MAIN OUT, MONITOR OUT, EFFECT SEND)                                                                                                                                                                                                                                                   |                                                                                     |
| Total harmonic distortion                                    | Less than 0.5% @20 Hz~20 kHz, 100 W output into 4Ω (POWER AMP OUT)<br>Less than 0.2% @20 Hz~20 kHz, +14 dB output into 10 kΩ (MAIN OUT, MONITOR OUT, EFFECT SEND)                                                                                                                                                                                                                                          |                                                                                     |
| Hum & noise<br>(Average, Rs=150Ω)<br>(with 20 Hz~20 kHz BPF) | -123 dB equivalent input noise, -65 dB residual output noise (POWER AMP OUT)                                                                                                                                                                                                                                                                                                                               |                                                                                     |
|                                                              | -88 dB residual output noise (MAIN OUT, MONITOR OUT, EFFECT SEND)                                                                                                                                                                                                                                                                                                                                          |                                                                                     |
|                                                              | -79 dB (83 dB S/N)<br>MAIN OUT, MONITOR OUT                                                                                                                                                                                                                                                                                                                                                                | Master level control at nominal level and all channel level controls at minimum.    |
|                                                              | -69 dB (73 dB S/N)<br>MAIN OUT, MONITOR OUT                                                                                                                                                                                                                                                                                                                                                                | Master level control at nominal level and 1 channel level control at nominal level. |
|                                                              | -75 dB (79 dB S/N)<br>EFFECT SEND                                                                                                                                                                                                                                                                                                                                                                          | Master level control at nominal level and all channel level controls at minimum.    |
|                                                              | -69 dB (73 dB S/N)<br>EFFECT SEND                                                                                                                                                                                                                                                                                                                                                                          | Master level control at nominal level and 1 channel level control at nominal level. |
|                                                              | Hum & noise are measured with a -6 dB/octave filter (LPF) @ 12.7 kHz; equivalent to a 20 kHz filter with infinite dB/octave attenuation.                                                                                                                                                                                                                                                                   |                                                                                     |
| Maximum voltage gain<br>(PAD: OFF)                           | 86 dB CH IN (Lo-Z) to POWER AMP OUT (CH1~4)<br>66 dB CH IN (Lo-Z) to MAIN OUT, MONITOR OUT (CH1~4)<br>72 dB CH IN (Lo-Z) to EFFECT OUT (CH1~4)<br>48 dB CH IN (Lo-Z) to REC OUT (CH1~4)<br>56 dB CH IN (Hi-Z) to MAIN OUT, MONITOR OUT (CH1~4)<br>26 dB AUX IN to MAIN OUT<br>22 dB TAPE IN to MAIN OUT<br>66 dB MIC IN to MAIN OUT, MONITOR OUT (CH5~6)<br>24 dB LINE IN to MAIN OUT, MONITOR OUT (CH5~6) |                                                                                     |
| Crosstalk at 1 kHz                                           | 65 dB adjacent input, 65 dB input to output                                                                                                                                                                                                                                                                                                                                                                |                                                                                     |
| Input channel equalization                                   | ±15 dB Maximum<br>HIGH                    12 kHz shelving<br>MID                     2.5 kHz peaking<br>LOW                    80 Hz shelving<br>* Turn over/roll-off frequency of shelving: 3 dB below maximum variable level.                                                                                                                                                                            |                                                                                     |
| Meters                                                       | 5 POINTS LED METER (-10, -5, 0, +3, +6 dB)                                                                                                                                                                                                                                                                                                                                                                 |                                                                                     |
| Graphic equalizer                                            | 7 bands (125, 250, 500, 1k, 2k, 4k, 8k Hz)<br>±12 dB Maximum                                                                                                                                                                                                                                                                                                                                               |                                                                                     |
| Internal digital effect                                      | 3 types (Vocal, L Hall, S Hall)                                                                                                                                                                                                                                                                                                                                                                            |                                                                                     |
| Phantom power                                                | +48 V is supplied to electrically balanced inputs for powering condenser microphones via 6.8 kΩ current limiting/isolation resistors.                                                                                                                                                                                                                                                                      |                                                                                     |
| Limiter                                                      | Comp. : THD≥0.5%                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                     |
| LIMIT indicators                                             | Turns on. : THD≥0.5%                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                     |
| Foot switch                                                  | DIGITAL EFFECT MUTE : on/off                                                                                                                                                                                                                                                                                                                                                                               |                                                                                     |
| Power requirement                                            | USA and Canada                    120 V AC 60 Hz<br>Europe                                230 V AC 50 Hz<br>Other                                    240 V AC 50 Hz                                                                                                                                                                                                                                        |                                                                                     |
| Power consumption                                            | 200 W                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                     |
| Dimensions (WxHxD)                                           | 480×275×275 mm                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                     |
| Weight                                                       | 15 kg                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                     |

## • Input specifications

| Input connectors           | PAD | Actual load impedance | Nominal impedance    | Input level              |                  |                      | Connector type      |
|----------------------------|-----|-----------------------|----------------------|--------------------------|------------------|----------------------|---------------------|
|                            |     |                       |                      | Sensitivity <sup>1</sup> | Nominal level    | Max. before clipping |                     |
| CH INPUT (Lo-Z)<br>(CH1-4) | OFF | 3 k $\Omega$          | 50-600 $\Omega$ Mics | -62 dB (616 $\mu$ V)     | -50 dB (2.45 mV) | -20 dB (77.5 mV)     | XLR3-31 type        |
|                            | ON  |                       | 600 $\Omega$ Lines   | -32 dB (19.5 mV)         | -20 dB (77.5 mV) | +10 dB (2.45 V)      |                     |
| CH INPUT (Hi-Z)<br>(CH1-4) | OFF | 10 k $\Omega$         | 50-600 $\Omega$ Mics | -52 dB (1.95 mV)         | -40 dB (7.75 mV) | -10 dB (245 mV)      | Phone jack<br>(TRS) |
|                            | ON  |                       | 600 $\Omega$ Lines   | -22 dB (61.6 mV)         | -10 dB (245 mV)  | +20 dB (7.75 V)      |                     |
| MIC INPUT (CH5-6)          |     | 3 k $\Omega$          | 50-600 $\Omega$ Mics | -62 dB (616 $\mu$ V)     | -50 dB (2.45 mV) | -20 dB (77.5 mV)     | XLR3-31 type        |
| LINE INPUT (CH5-6) (1, 2)  |     | 10 k $\Omega$         | 600 $\Omega$ Line    | -22 dB (61.6 mV)         | -10 dB (245 mV)  | +20 dB (7.75 V)      | Phone jack          |
| TAPE IN (1, 2)             |     | 10 k $\Omega$         | 600 $\Omega$ Line    | -20 dBV (100 mV)         | -10 dBV (316 mV) | +17.8 dBV (7.75 V)   | Phono jack          |
| AUX IN                     |     | 10 k $\Omega$         | 600 $\Omega$ Line    | -22 dB (61.6 mV)         | -10 dB (245 mV)  | +20 dB (7.75 V)      | Phone jack          |

1. Sensitivity is the lowest level that can produce an output of +4 dB (1.23 V) or the nominal output level when the unit is set at maximum gain.

(All level controls are at maximum position.)

- CH INPUT and MIC INPUT connectors are balanced and others are unbalanced.
- 0 dB=0.775 Vrms, 0 dBV=1 Vrms.

## • Output specifications

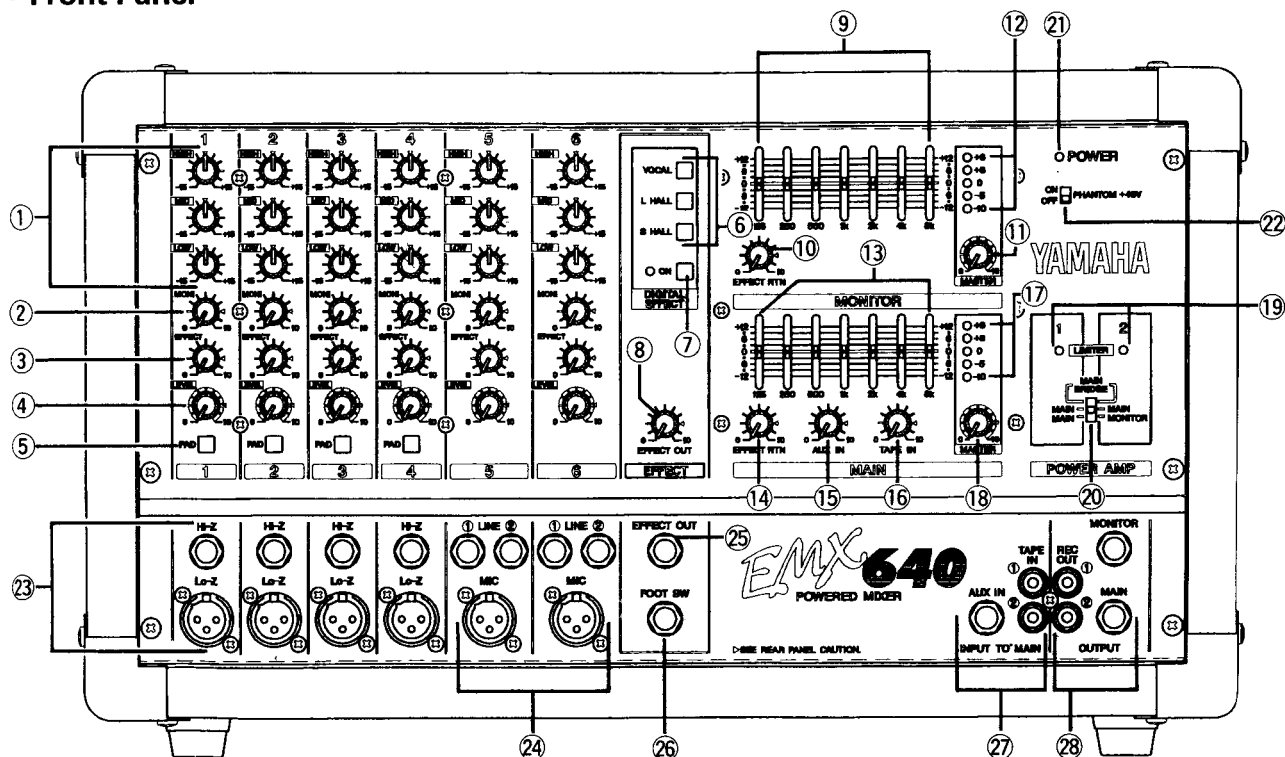
| Output connectors          | Actual source impedance | Nominal impedance    | Output level      |                      | Connector type |
|----------------------------|-------------------------|----------------------|-------------------|----------------------|----------------|
|                            |                         |                      | Nominal           | Max. before clipping |                |
| POWER AMP OUT (1-2) (A, B) | 0.1 $\Omega$            | 4/8 $\Omega$ Speaker | 37.7 W/4 $\Omega$ | (200 W/4 $\Omega$ )  | Phone jack     |
| BRIDGE OUT                 | 0.1 $\Omega$            | 8 $\Omega$ Speaker   | 75.4 W/8 $\Omega$ | (400 W/8 $\Omega$ )  | Phone jack     |
| MAIN OUT                   | 600 $\Omega$            | 10 k $\Omega$ Lines  | +4 dB (1.23 V)    | +20 dB (7.75 V)      | Phone jack     |
| MONITOR OUT                | 600 $\Omega$            | 10 k $\Omega$ Lines  | +4 dB (1.23 V)    | +20 dB (7.75 V)      | Phone jack     |
| EFFECT OUT                 | 600 $\Omega$            | 10 k $\Omega$ Lines  | +4 dB (1.23 V)    | +20 dB (7.75 V)      | Phone jack     |
| REC OUT (1, 2)             | 600 $\Omega$            | 10 k $\Omega$ Lines  | -10 dBV (316 mV)  | +10 dBV (3.16 V)     | Phono jack     |

- All output jacks are unbalanced.
- 0 dB=0.775 Vrms, 0 dBV=1 Vrms.



## ■ PANEL LAYOUT

### • Front Panel



① Equalizer controls (HIGH, MID, LOW)

② Monitor controls (MONI)

③ Effect control (EFFECT)

④ Level control (LEVEL)

⑤ Pad switch (PAD) (1~4 only)

⑥ Effect select switch

⑦ DIGITAL EFFECT ON switch

⑧ EFFECT OUT control

⑨ Graphic equalizer

⑩ EFFECT RTN control

⑪ MASTER control

⑫ Peak level indicator

⑬ Graphic equalizer

⑭ EFFECT RTN control

⑮ AUX IN control

⑯ TAPE IN

⑰ MASTER control

⑱ Peak level indicator

⑲ LIMITER indicator

⑳ Power amp select switch

• MAIN-MONITOR

• MAIN-MAIN

• MAIN-BRIDGE

㉑ POWER indicator

㉒ PHANTOM +48 V switch

㉓ Channel input jacks (Hi-Z, Lo-z) 1~4

㉔ Channel input jacks (MIC/LINE) 5~6

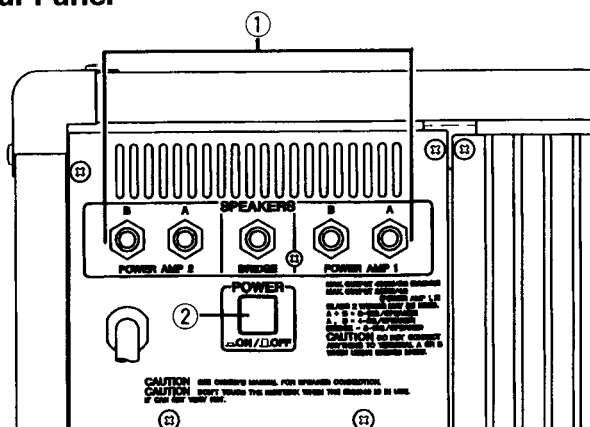
㉕ Effect output jack (EFFECT OUT)

㉖ Foot switch jack (FOOT SW)

㉗ External input jacks (AUX IN/TAPE IN)

㉘ External output jacks (REC OUT/MONITOR/MAIN)

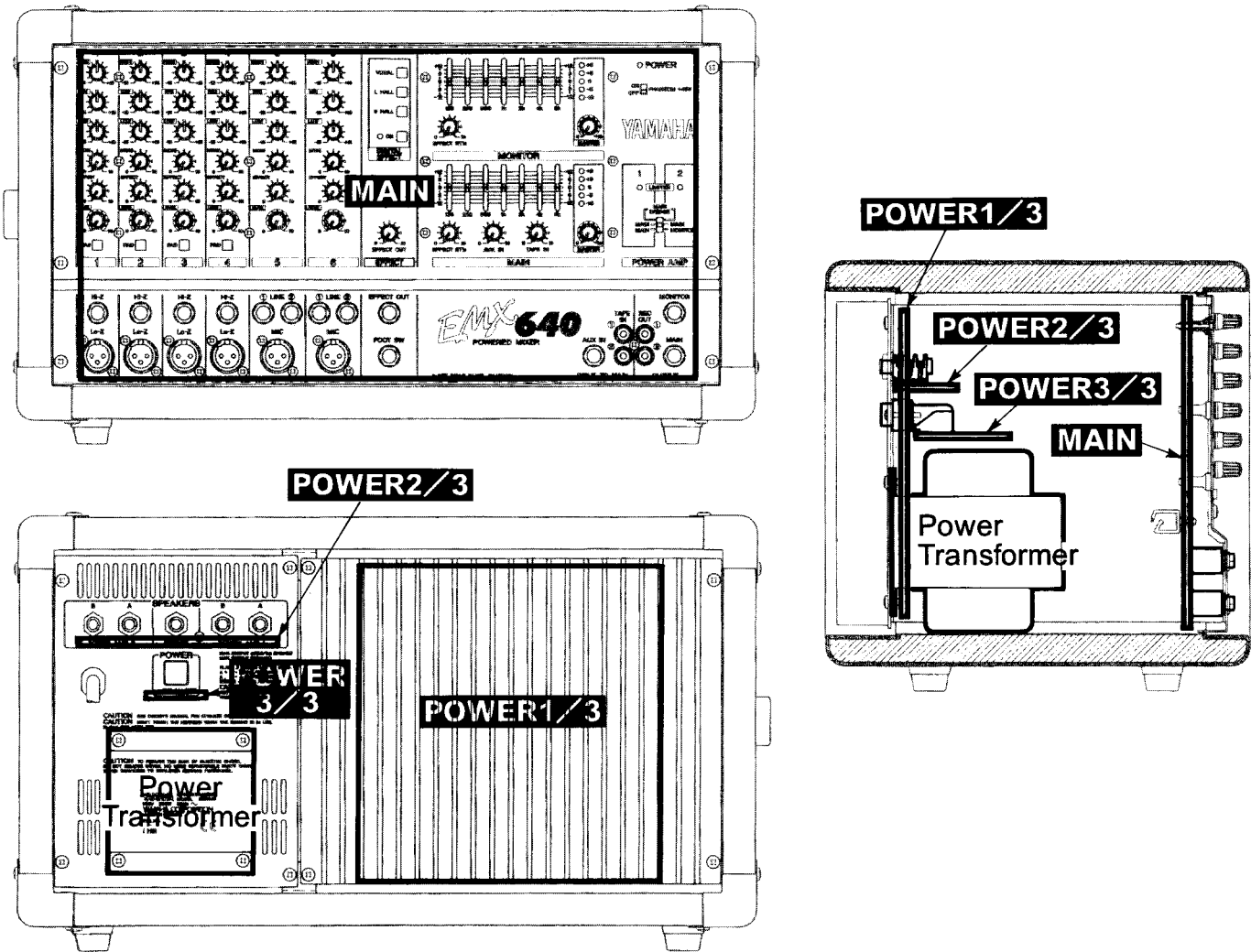
### • Rear Panel



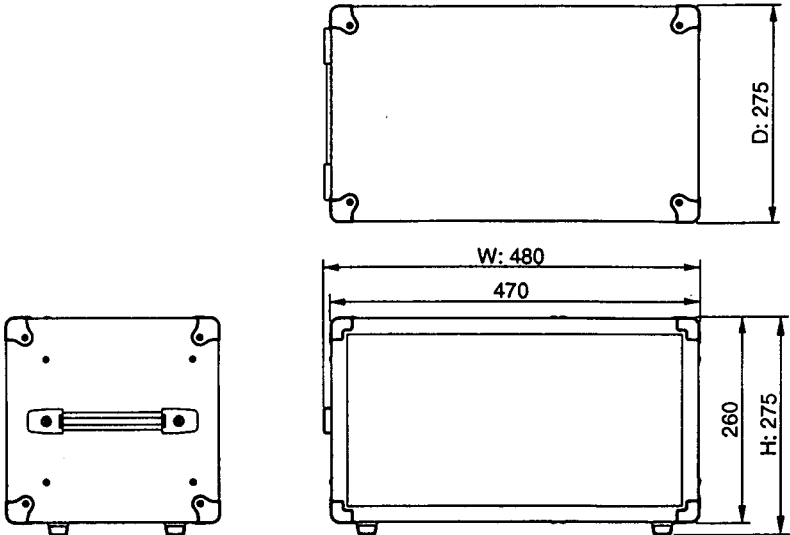
① Speaker output jacks (POWER AMP 1 A/B, POWER AMP 2 A/B, BRIDGE)

② Power switch

CIRCUIT BOARD LAYOUT

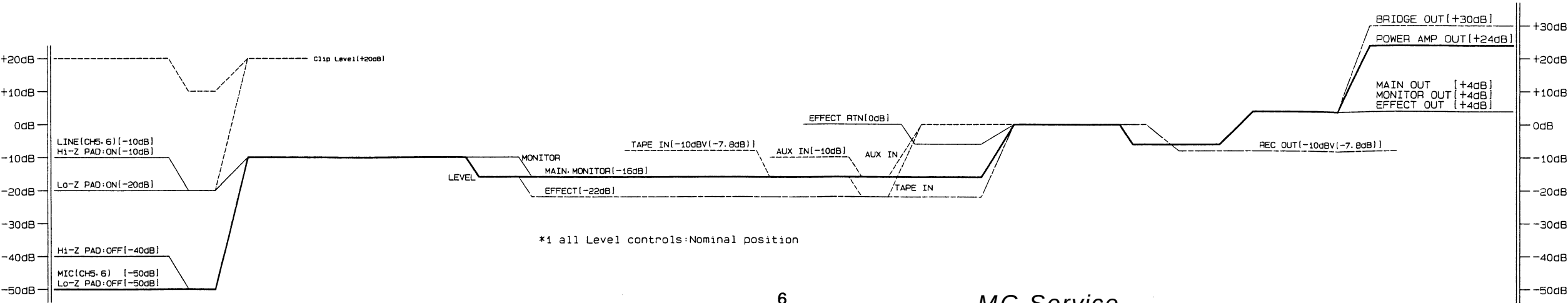
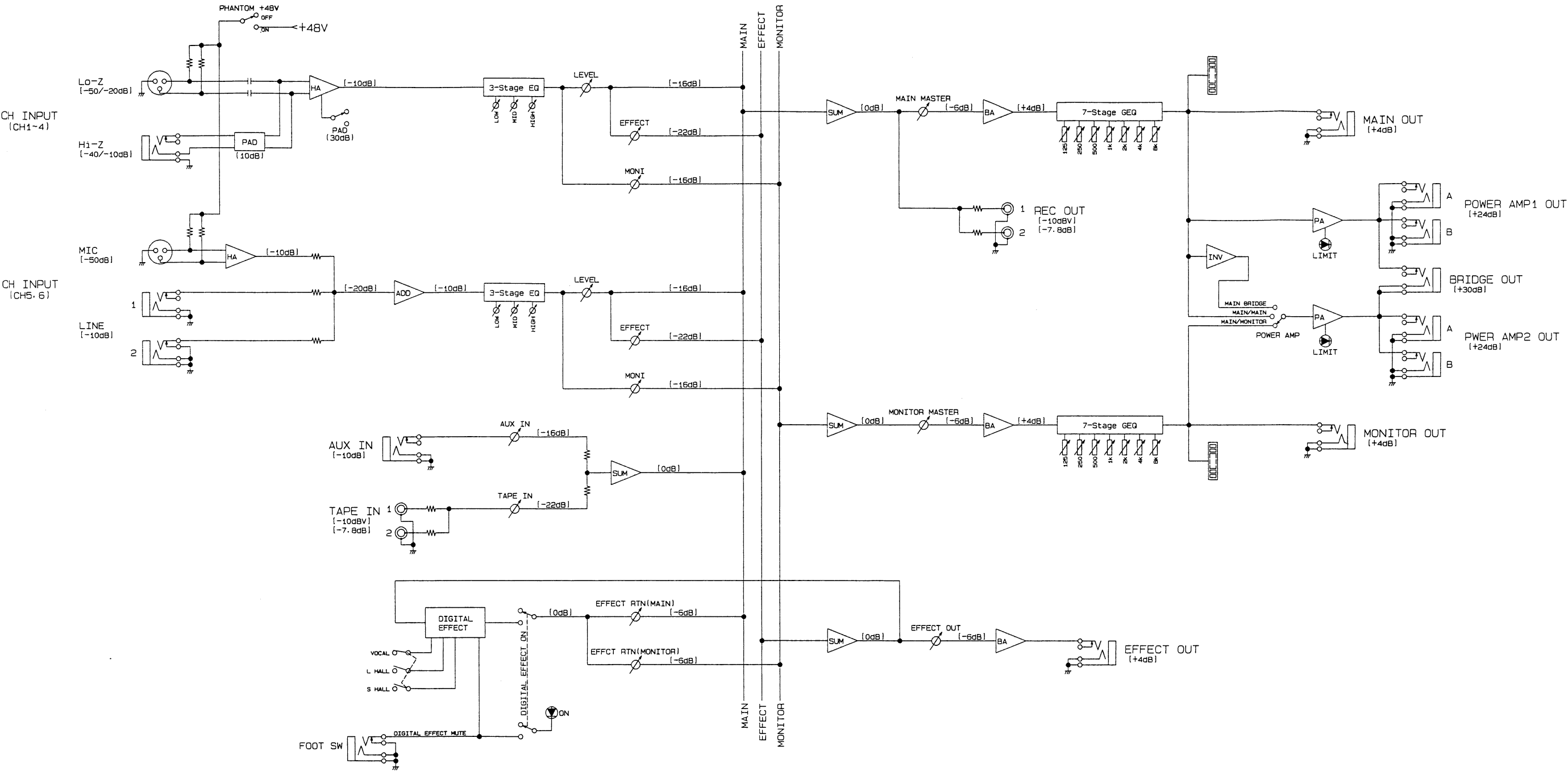


DIMENSIONS



Unit: mm

■ BLOCK & LEVEL DIAGRAMS



■ DISASSEMBLY PROCEDURE

1. MAIN Circuit Board

- 1-1 Remove the six (6) screws marked [50] from front; remove the panel assembly. (Fig. 1)
- 1-2 Remove the forty-three (43) knobs, the thirteen (13) nuts marked [A] and the thirteen (13) screws marked [100A]. (Fig. 1)
- 1-3 Remove the twelve (12) screws marked [40]; remove the MAIN circuit board. (Fig. 1 and Fig. 2)

2. POWER 1/3 Circuit Board

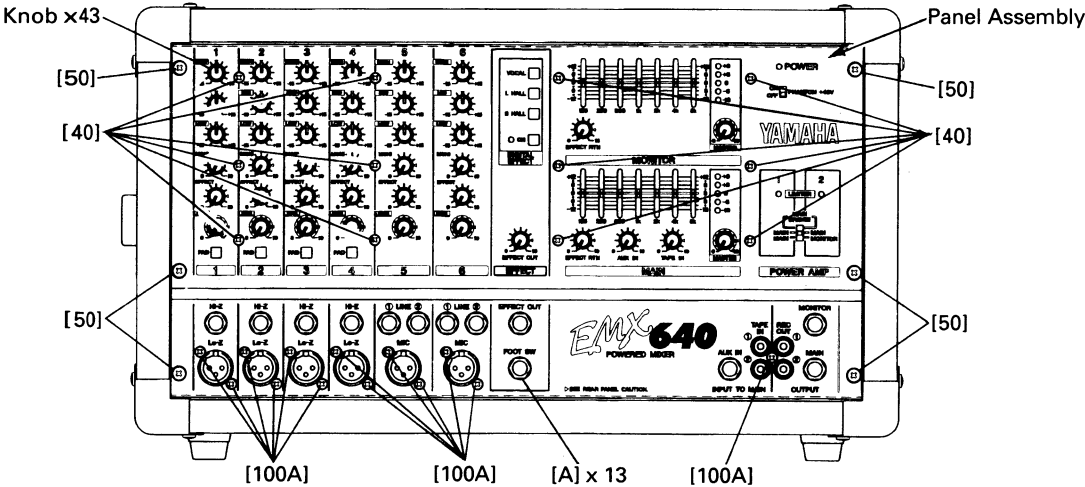
- 2-1 Remove the four (4) screws marked [90A] from rear; remove the rear assembly 1/2. (Fig. 3)
- 2-2 Remove the fifteen (15) screws marked [70] and the four (4) screws marked [60]; remove the POWER 1/3 circuit board. (Fig. 4)

3. POWER 2/3 Circuit Board and POWER 3/3 Circuit Board

- 3-1 Remove the rear assembly 1/2. (See procedure 2-1)
- 3-2 Remove the four (4) screws marked [90B]; remove the rear assembly 2/2. (Fig. 3)
- 3-3 Remove the five (5) hexagonal nuts marked [B]; remove the POWER 2/3 circuit board. (Fig. 5)
- 3-4 Remove the two (2) screws marked [100B]; remove the POWER 3/3 circuit board. (Fig. 5)

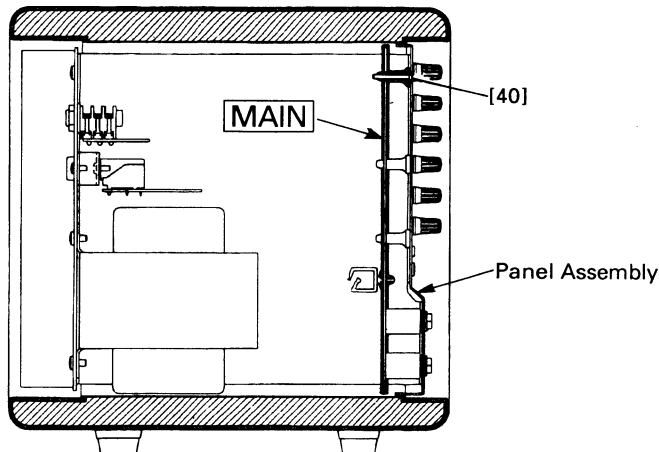
4. Power Transformer

- 4-1 Remove the rear assembly 1/2. (See procedure 2-1)
- 4-2 Remove the rear assembly 2/2. (See procedure 3-2)
- 4-3 Remove the four (4) screws [140]; remove the power transformer. (Fig. 5)

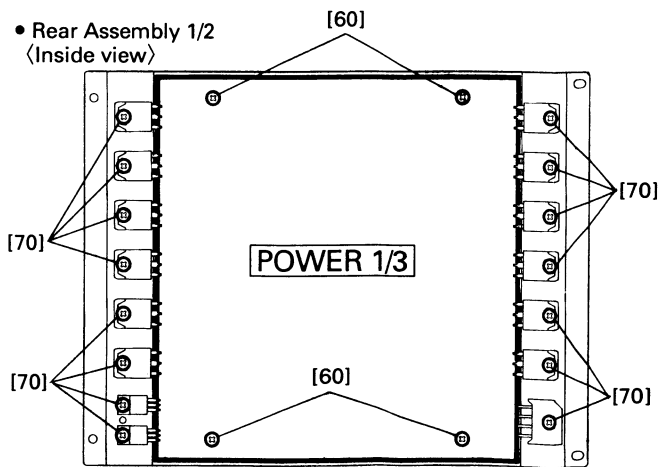


- [A]: Hexagonal Nut
- [40]: Flat Head Tapping Screw-B 3.0X25 MFZN2BL (VV095300)
- [50]: Bind Head Screw 4.0X8 MFZN2BL (EG340360)
- [100A]: Bonding Tapping Screw-B 3.0X8 MFZN2BL (VN413300)

(Fig. 1)

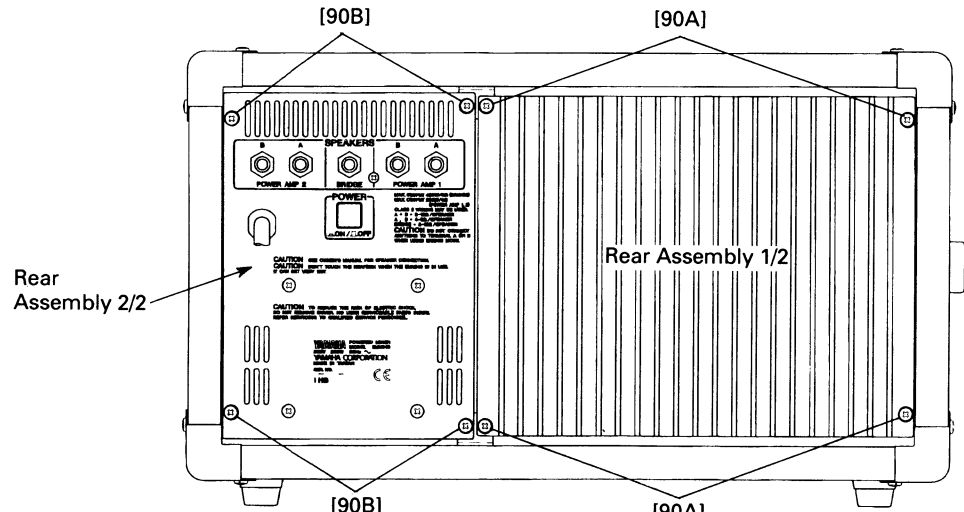


[40]: Flat Head Tapping Screw-B 3.0X25 MFZN2BL (VV095300)  
(Fig. 2)

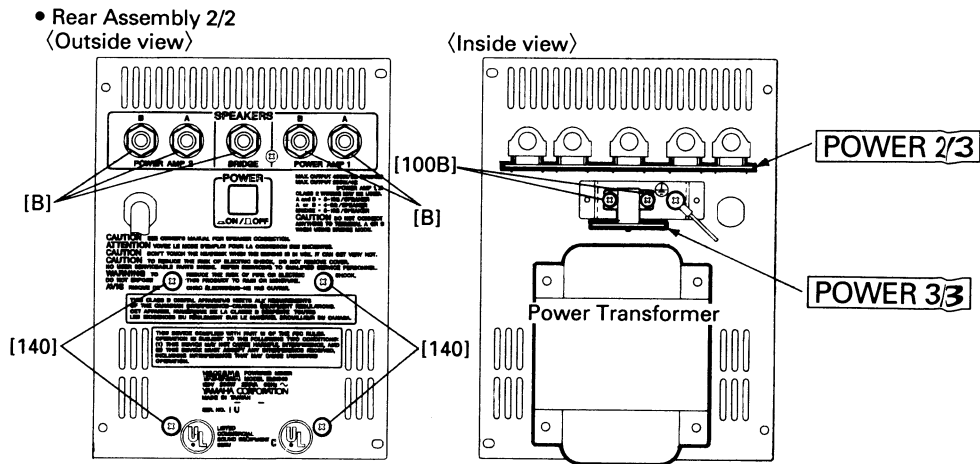


- [60]: Bind Head Screw SP 3.0X8 MFZN2Y (EG330290)
- [70]: Bind Head Screw SP 3.0X12 MFZN2Y (VB763800)

(Fig. 4)



[90]: Bind Head Screw 4.0X8 MFZN2BL (EG340360)  
(Fig. 3)



- [B]: Hexagonal Nut
- [100B]: Bonding Tapping Screw-B 3.0X8 MFZN2BL (VN413300)
- [140]: Bind Head Tapping Screw-B 4.0X8 MFZN2BL (EG340190)

(Fig. 5)

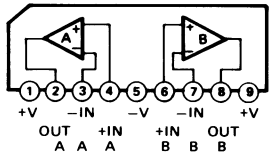
LSI PIN DESCRIPTION

YSS234 (XN299A00) Digital Sound Processor

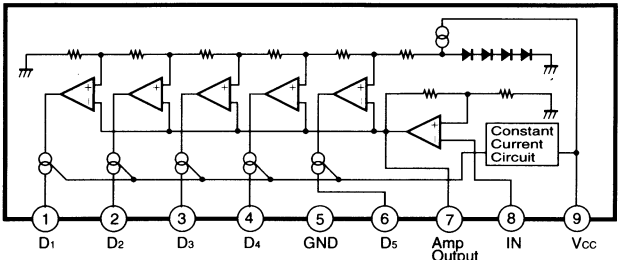
| PIN NO. | NAME  | I/O | FUNCTION                         | PIN NO. | NAME  | I/O | FUNCTION                       |
|---------|-------|-----|----------------------------------|---------|-------|-----|--------------------------------|
| 1       | MD4   | I/O | External RAM interface data      | 33      | AVDD  | -   | DC A+5Vs bus                   |
| 2       | MD3   | I/O |                                  | 34      | VDD   | -   | DC D+5V                        |
| 3       | MD0   | I/O |                                  | 35      | TST0  | -   | DC D+5V                        |
| 4       | MD1   | I/O |                                  | 36      | TST1  | -   | DC D+5V                        |
| 5       | MD2   | I/O |                                  | 37      | DOEN  | -   | DC D+5V                        |
| 6       | MCKO  | O   | Master clock output              | 38      | SDO1  | O   | N.C.                           |
| 7       | XO    | O   | Crystal oscillator connection    | 39      | SDO0  | O   | N.C.                           |
| 8       | XI    | I   | Crystal oscillator connection    | 40      | WC    | O   | N.C.                           |
| 9       | ER0   | I   | Early refrection preset select   | 41      | BCO   | O   | N.C.                           |
| 10      | ER1   | I   |                                  | 42      | MA0   | O   | External RAM interface address |
| 11      | ER2   | I   |                                  | 43      | MA1   | O   |                                |
| 12      | REV0  | I   | Effect select                    | 44      | MA2   | O   |                                |
| 13      | REV1  | I   |                                  | 45      | MA3   | O   |                                |
| 14      | REV2  | I   |                                  | 46      | MA4   | O   |                                |
| 15      | MUTEN | I   | DC D+5V                          | 47      | MA5   | O   |                                |
| 16      | ICN   | I   | Initial clear                    | 48      | MA6   | O   |                                |
| 17      | PRG   | I   | DC D+5V                          | 49      | MA7   | O   | Ground                         |
| 18      | MODE  | I   | Preset mode (H=DC +5V)           | 50      | MA12  | O   |                                |
| 19      | VSS   | -   | Ground                           | 51      | MA14  | O   |                                |
| 20      | AVSS  | -   | Ground                           | 52      | VSS   | -   | Ground                         |
| 21      | CVA   | -   | N.C.                             | 53      | MA10  | O   |                                |
| 22      | AORL  | O   | N.C.                             | 54      | MA011 | O   |                                |
| 23      | AORR  | O   | N.C.                             | 55      | MA09  | O   | External RAM interface address |
| 24      | CHL   | I   | Sample hold capacitor connection | 56      | MA8   | O   |                                |
| 25      | AIL   | -   | Lch ADC input                    | 57      | MA13  | O   |                                |
| 26      | VDD   | -   | DC D+5V                          | 58      | VDD   | -   | DC D+5V                        |
| 27      | AIR   | I   | Rch ADC input                    | 59      | WEN   | I   | Write enable                   |
| 28      | CHR   | I   | Sample hold capacitor connection | 60      | OEN   | I   | Output enable                  |
| 29      | AOFL  | O   | Lch DAC output                   | 61      | CEN   | I   | Chip select                    |
| 30      | AOFR  | O   | Rch DAC output                   | 62      | MD7   | I/O | External RAM interface data    |
| 31      | AVDD  | -   | DC A+5V                          | 63      | MD6   | I/O |                                |
| 32      | CVB   | I   | Rch midpoint voltage             | 64      | MD5   | I/O |                                |

IC BLOCK DIAGRAM

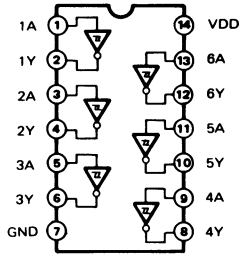
- NJM2068L-D (XM356A00)  
Dual Operational Amplifier



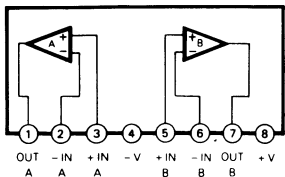
- BA6137 (XA534A00)  
LED Driver



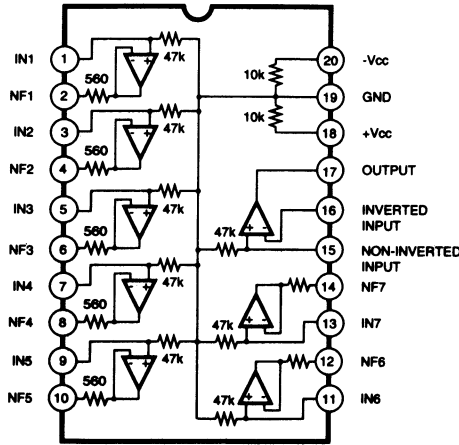
- TC74HC14AP (IR001400)  
Hex Inverter



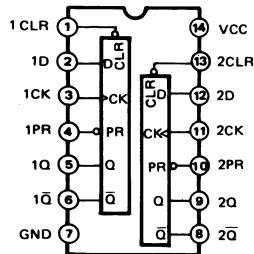
- NJM2082L (XN796A00)  
NJM4558L (XM922A00)  
Dual Operational Amplifier



- M5229P (XG203A00)  
7 SEGMENTS GRAPHIC EQUALIZER



- TC74HC74AP (IR007400)  
Dual D-Type Flip-Flop

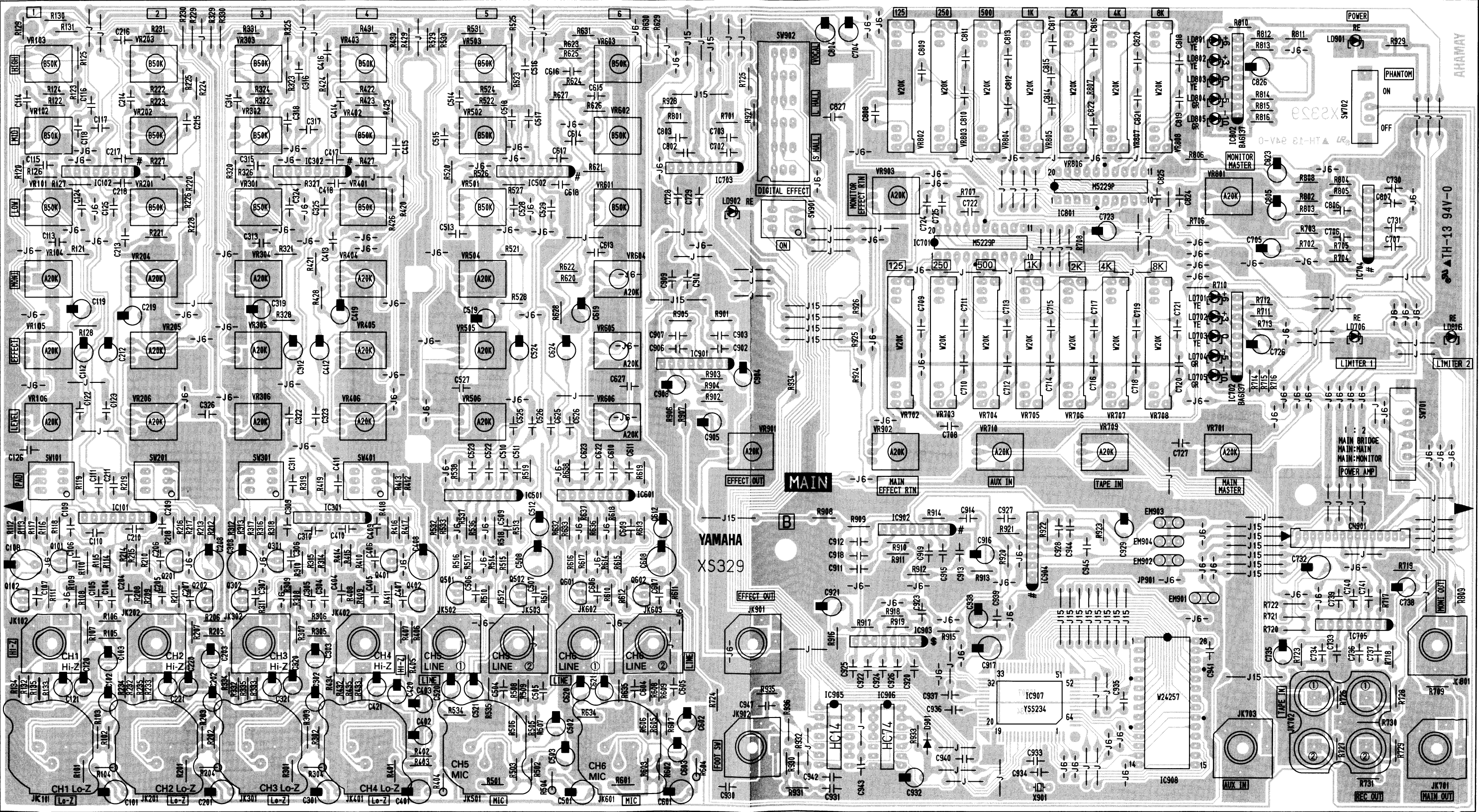


| INPUTS |     |     |   | OUTPUTS        |                 |
|--------|-----|-----|---|----------------|-----------------|
| PR     | CLR | CLK | D | Q              | Q̄              |
| L      | H   | X   | X | H              | L               |
| H      | L   | X   | X | L              | H               |
| L      | L   | X   | X | H              | H               |
| H      | H   | f   | H | H              | L               |
| H      | H   | f   | L | L              | H               |
| H      | H   | L   | X | Q <sub>o</sub> | Q̄ <sub>o</sub> |



■ CIRCUIT BOARDS

● MAIN Circuit Board



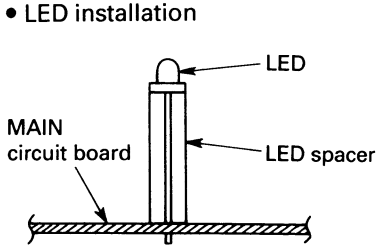
Component side

|                                                                                            |                                                |
|--------------------------------------------------------------------------------------------|------------------------------------------------|
| <b>Notes)</b>                                                                              |                                                |
| Circuit Board                                                                              | MAIN (VV084900) XS329B0                        |
| <b>01. IC</b>                                                                              |                                                |
| IC 101,301,501,601,703,705,901:                                                            | NJM2068L-D (XM356A00) OP AMP                   |
| IC 102,302,502,704,902,904:                                                                | NJM4558L (XM922A00) OP AMP                     |
| IC 701,801:                                                                                | M5229P (XG203A00) GRAPHIC EQUALIZER            |
| IC 702,802:                                                                                | BA6137 (XA534A00) LED DRIVER                   |
| IC 903:                                                                                    | NJM2082L (XN796A00) OP AMP                     |
| IC 905:                                                                                    | TC74HC14AP (IR001400) HEX INVERTER             |
| IC 906:                                                                                    | TC74HC74AP (IR007400) DFF                      |
| IC 907:                                                                                    | YSS234(SP3) (XN299A00) DIGITAL SOUND PROCESSOR |
| IC 908:                                                                                    | W24257-70LL (XQ696A00) SRAM                    |
| <b>02. Transistor</b>                                                                      |                                                |
| Q 101,102,201,202,301,302,401,402,501,502,601,602:                                         | 2SC2240 GR,BL (IC224030)                       |
| <b>03. Diode</b>                                                                           |                                                |
| D 901:                                                                                     | 1SS133,176,HSS10 (VD631600)                    |
| <b>04. LED</b>                                                                             |                                                |
| LD 701-703,801-803:                                                                        | LT331-41-C13 YE (VV938100)                     |
| LD 704,705,804,805:                                                                        | LT321-41-C13 GR (VV621000)                     |
| LD 706,806,901,902:                                                                        | LT311G-41-C13 RE (VV620800)                    |
| <b>05. Mylar Capacitor</b>                                                                 |                                                |
| C 113,213,313,413,513,613,718,818,911,914,923:                                             | 0.027 50V J (UA654270)                         |
| C 114,214,314,414,514,614:                                                                 | 5600P 50V J (UA353560)                         |
| C 115,215,315,415,515,615:                                                                 | 8200P 50V J (UA353820)                         |
| C 116,216,316,416,516,616,719,819,928:                                                     | 2200P 50V J (UA353220)                         |
| C 709,809:                                                                                 | 0.082 50V J (UA654820)                         |
| C 711,811:                                                                                 | 0.039 50V J (UA654390)                         |
| C 713,813:                                                                                 | 0.018 50V J (UA654180)                         |
| C 714,814,927:                                                                             | 0.1 50V J (UA655100)                           |
| C 715,815,913,922:                                                                         | 0.010 50V J (UA654100)                         |
| C 716,816:                                                                                 | 0.047 50V J (UA654470)                         |
| C 717,817:                                                                                 | 4700P 50V J (UA353470)                         |
| C 720,820:                                                                                 | 0.012 50V J (UA654120)                         |
| C 721,821:                                                                                 | 1200P 50V J (UA353120)                         |
| C 912,915,924:                                                                             | 1500P 50V J (UA353150)                         |
| C 936,937:                                                                                 | 3300P 50V J (UA353330)                         |
| <b>06. Monolithic Mylar Capacitor</b>                                                      |                                                |
| C 708,808:                                                                                 | 0.82 50V J (VV064400)                          |
| C 710,810:                                                                                 | 0.47 50V J (VV064100)                          |
| C 712,812:                                                                                 | 0.22 50V J (VV321100)                          |
| <b>07. Polypropylene Capacitor</b>                                                         |                                                |
| C 920:                                                                                     | 100P 50V J (UA352100)                          |
| <b>08. Ceramic Capacitor</b>                                                               |                                                |
| C 104-107,204-207,304-307,404-407,504-507,604-607,722,822:                                 | 470P 50V K (FG612470)                          |
| C 109-111,117,209-211,217,309-311,317,409-411,417,509-511,517,522,609-611,617,622,906,947: | 100P 50V J (FG652100)                          |
| C 118,218,318,418,518,618:                                                                 | 27P 50V J (FG651270)                           |

|                                                                                                                                |                         |
|--------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| C 122-125,322-325,525-529,625,626,724,725,728,729,730,731,739,740,824,825,909,910,918,919,925,926,944,945:                     | 0.0100 50V Z (FG644100) |
| C 126,326,527,627,727,741,827,930,902:                                                                                         | 1000P 50V K (FG613100)  |
| C 523,623,737:                                                                                                                 | 47P 50V J (FG651470)    |
| C 702,733,736,802,902:                                                                                                         | 220P 50V J (FG652220)   |
| C 703,803:                                                                                                                     | 10P 50V D (FG651100)    |
| C 707,807,907:                                                                                                                 | 68P 50V J (FG651680)    |
| C 706,806:                                                                                                                     | 330P 50V K (FG612330)   |
| C 734,903:                                                                                                                     | 6P 50V D (FG650600)     |
| C 933,934:                                                                                                                     | 33P 50V J (FG651330)    |
| <b>09. Monolithic Ceramic Cap.</b>                                                                                             |                         |
| C 931,935,939,940,941,942,943:                                                                                                 | 0.10 50V Z (VV059300)   |
| <b>10. Electrolytic Cap.</b>                                                                                                   |                         |
| C 101,201,301,401,501,601:                                                                                                     | 47.00 50.0V (UJ867470)  |
| C 108,208,308,408,508,608:                                                                                                     | 470.00 10.0V (VV330700) |
| C 112,120,121,212,220,221,312,320,321,412,420,421,512,520,521,524,612,620,621,624,705,726,735,804,805,826,904,905,916,921,929: | 10.00 25.0V (UJ847100)  |
| C 119,219,319,419,519,619,704,723,738,823,908,932:                                                                             | 47.00 25.0V (UJ847470)  |
| C 732,917:                                                                                                                     | 100.00 16.0V (UJ838100) |
| C 938:                                                                                                                         | 1.00 50.0V (UJ866100)   |
| <b>11. Low leak Electrolytic Cap.</b>                                                                                          |                         |
| C 102,103,202,203,302,303,402,403,502,503,602,603:                                                                             | 10.00 50.0V (VV488800)  |
| <b>12. Carbon Resistor</b>                                                                                                     |                         |
| R 101,134,135,201,234,235,301,334,335,401,434,435,501,534-536,601,634-636,708,719,724,808,906,916,924:                         | 100.0K 1/4 J (HF458100) |
| R 105,205,305,405,505,537,605,637,712,812,910:                                                                                 | 4.7K 1/4 J (HF456470)   |
| R 106,107,110,111,128,206,207,210,211,228,306,307,310,311,328,406,407,410,411,428,506,507,510,511,528,606,607,610,611,628:     | 10.0 1/4 J (HF454100)   |
| R 112,212,312,412,512,612:                                                                                                     | 150.0 1/4 J (HF455150)  |
| R 113,213,313,413,726,727:                                                                                                     | 8.2K 1/4 J (HF456820)   |
| R 120,121,126,220,221,226,320,321,326,420,421,426,520,521,526,538,620,621,626,638,705,710,713,805,810,813,905,922,930,933:     | 10.0K 1/4 J (HF457100)  |

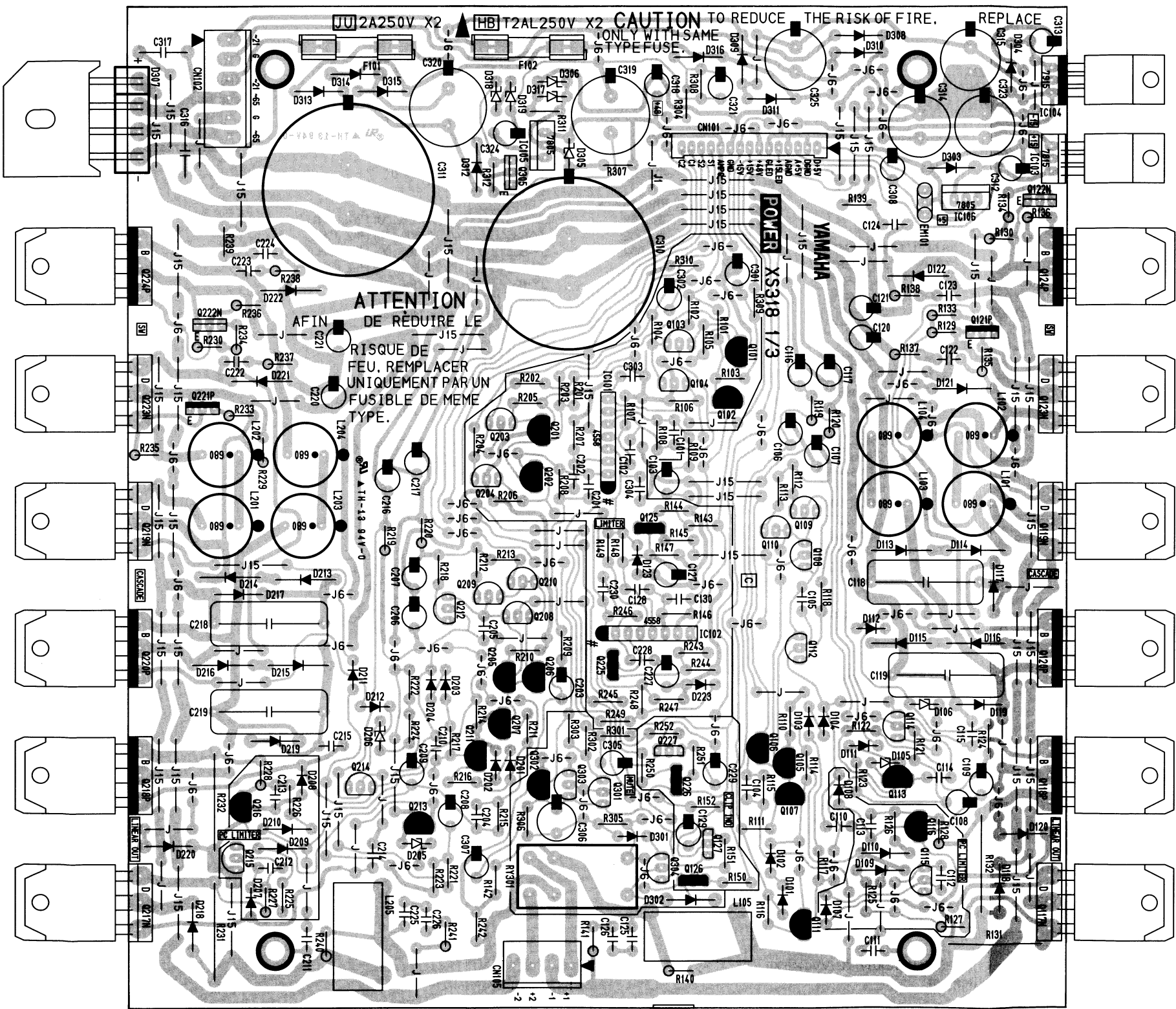
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| R 122,123,222,223,322,323,422,423,522,523,622,623,730,731:                  | 1.2K 1/4 J (HF456120)      |
| R 124,125,224,225,324,325,424,425,524,525,624,625,706,707,806,807,932:      | 3.3K 1/4 J (HF456330)      |
| R 127,227,327,427,527,627:                                                  | 3.9K 1/4 J (HF456390)      |
| R 129-131,229-231,329-331,429-431,513,529-533,613,629-633,702,720,802,902:  | 18.0K 1/4 J (HF457180)     |
| R 701,725,801:                                                              | 120.0K 1/4 J (HF458120)    |
| R 703,803,903:                                                              | 220.0 1/4 J (HF455220)     |
| R 704,804,904:                                                              | 4.3K 1/4 J (HF456430)      |
| R 709,809,907:                                                              | 560.0 1/4 J (HF455560)     |
| R 711,811:                                                                  | 750.0 1/4 J (HF455750)     |
| R 714-716,814-816,934:                                                      | 680.0 1/4 J (HF455680)     |
| R 721,722:                                                                  | 36.0K 1/4 J (HF457360)     |
| R 723,901:                                                                  | 220.0K 1/4 J (HF458220)    |
| R 728,729:                                                                  | 1.5K 1/4 J (HF456150)      |
| R 908,909,912,913,914,917,918,919:                                          | 2.2K 1/4 J (HF456220)      |
| R 911,921:                                                                  | 1.0K 1/4 J (HF456100)      |
| R 915,931:                                                                  | 47.0K 1/4 J (HF457470)     |
| R 923:                                                                      | 22.0 1/4 J (HF454220)      |
| R 920:                                                                      | 100.0 1/4 J (HF455100)     |
| R 925,926:                                                                  | 27.0K 1/4 J (HF457270)     |
| R 927,928:                                                                  | 68.0K 1/4 J (HF457680)     |
| R 929:                                                                      | 2.7K 1/4 J (HF456270)      |
| R 935,936:                                                                  | 240.0K 1/4 J (HF758240)    |
| <b>13. Flame Proof C. Resistor</b>                                          |                            |
| R 104,204,304,404,504,604:                                                  | 390.0 1/4 J (VV058400)     |
| <b>14. Metal Film Resistor</b>                                              |                            |
| R 102,103,202,203,302,303,402,403,502,503,602,603:                          | 6.8K 1/4 F (VB067300)      |
| R 108,109,208,209,308,309,408,409,508,509,608,609:                          | 47K 1/4 F (VB068800)       |
| R 114,115,214,215,314,315,414,415,514,515,614,615:                          | 8.2K 1/4 F (VB067400)      |
| R 116,117,216,217,316,317,416,417,516,517,616,617:                          | 2.2K 1/4 F (VB066300)      |
| R 118,119,218,219,318,319,418,419,518,519,618,619,717,718:                  | 10K 1/4 F (VA074400)       |
| R 132,133,232,233,332,333,432,433:                                          | 3.9K 1/4 F (VB066900)      |
| <b>15. Slide Variable Resistor</b>                                          |                            |
| VR 702-708,802-808:                                                         | RS20H11KD017-YL (VV044600) |
| <b>16. Rotary Variable Resistor</b>                                         |                            |
| VR 101-103,201-203,301-303,401-403,501-503,601-603:                         | B 50.0K RK09K1 (VV058900)  |
| VR 104-106,204-206,304-306,404-406,504-506,604-606,701,709,710,801,901-903: | A 20.0K RK09K1 (VU804600)  |
| <b>17. Noise Filter</b>                                                     |                            |
| EM 901-904:                                                                 | ZJSR5101-223TA (VV056900)  |

|                                |                                                                         |
|--------------------------------|-------------------------------------------------------------------------|
| <b>18. Ceramic Resonator</b>   |                                                                         |
| X 901:                         | 12M CSA12.0MTZ (QU007700)                                               |
| <b>19. Slide Switch</b>        |                                                                         |
| SW 701:                        | SSSU013NB1-YL (VV044700)                                                |
| SW 702:                        | SSSU012NB1-YL (VV051500)                                                |
| <b>20. Push Switch</b>         |                                                                         |
| SW 101,201,301,401,901:        | SPEA12MC15-YL (VU805000)                                                |
| SW 902:                        | SPEA31MC16-YL (VU804900)                                                |
| <b>21. Pin Jack</b>            |                                                                         |
| JK 702:                        | JK040057PN (VY704800)                                                   |
|                                | TAPE IN(1,2) RE                                                         |
| <b>22. Phone Jack</b>          |                                                                         |
| JK 102:                        | JY-6351B-02-340 (VU805400) Hi-Z (CH1)                                   |
| JK 202:                        | JY-6351B-02-340 (VU805400) Hi-Z (CH2)                                   |
| JK 302:                        | JY-6351B-02-340 (VU805400) Hi-Z (CH3)                                   |
| JK 402:                        | JY-6351B-02-340 (VU805400) Hi-Z (CH4)                                   |
| JK 502:                        | JY-6351B-02-340 (VU805400) LINE 1 (CH5)                                 |
| JK 503:                        | JY-6351B-02-340 (VU805400) LINE 2 (CH5)                                 |
| JK 602:                        | JY-6351B-02-340 (VU805400) LINE 1 (CH6)                                 |
| JK 603:                        | JY-6351B-02-340 (VU805400) LINE 2 (CH6)                                 |
| JK 701:                        | JY-6351B-02-340 (VU805400) MAIN (UTPUT)                                 |
| JK 703:                        | JY-6351B-02-340 (VU805400) AUX IN                                       |
| JK 801:                        | JY-6351B-02-340 (VU805400) MONITOR (OUTPUT)                             |
| JK 901:                        | JY-6351B-02-340 (VU805400) EFFECT OUT                                   |
| JK 902:                        | JY-6351B-02-340 (VU805400) FOOT SW                                      |
| <b>23. XLM Connector</b>       |                                                                         |
| JK 101:                        | XLR NC3FAV1-0 (VU805200) Lo-Z (CH1)                                     |
| JK 201:                        | XLR NC3FAV1-0 (VU805200) Lo-Z (CH2)                                     |
| JK 301:                        | XLR NC3FAV1-0 (VU805200) Lo-Z (CH3)                                     |
| JK 401:                        | XLR NC3FAV1-0 (VU805200) Lo-Z (CH4)                                     |
| JK 501:                        | XLR NC3FAV1-0 (VU805200) MIC (CH5)                                      |
| JK 601:                        | XLR NC3FAV1-0 (VU805200) MIC (CH6)                                      |
| <b>24. Connector Base Post</b> |                                                                         |
| CN 901:                        | M2426XX 15P (VV067500) to POWER 1/3-CN101                               |
| <b>25. Connector Assembly</b>  |                                                                         |
| :                              | 2426&2426 15P 60 (VV087700)                                             |
| <b>26. Button</b>              |                                                                         |
| :                              | CD-GRAY/WHITE (VU860700) DIGITAL EFFECT(VOCAL, ON, L HALL, S HALL), PAD |
| <b>27. Jumper Wire</b>         |                                                                         |
| JP 901:                        | 0.60 ( -- )                                                             |





• POWER1/3 Circuit Board



Component side

- IC103, IC104 installation
- D307 installation



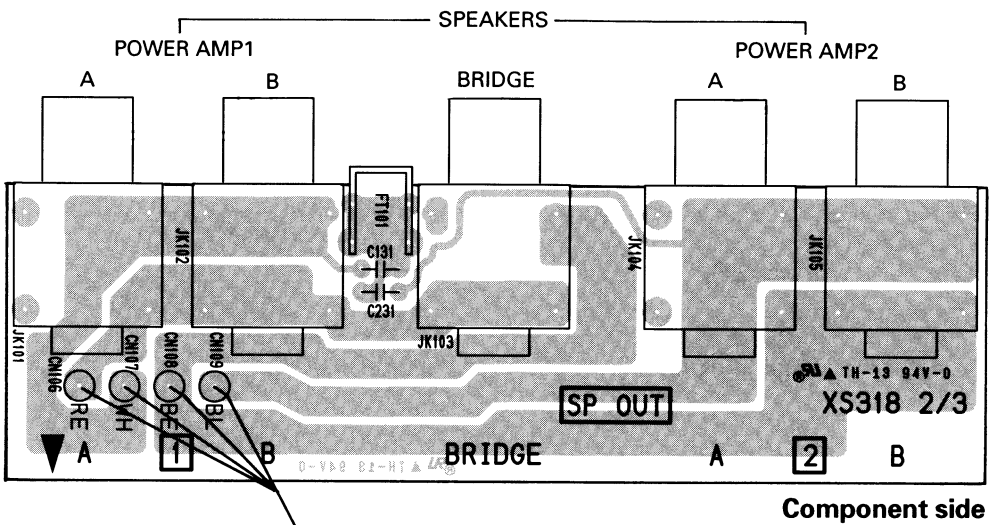
MC-Service

- Notes**
- Circuit Board: POWER(1/3) AMP (NX818520)  
XS318C0, U,C  
POWER(1/3) AMP (NX818530)  
XS318C0, A,B,H
- 01. IC**  
IC101,102: NJM4558L (XM922A00) OP AMP  
IC103: NJM7815FA (XD853A00) REGULATOR +15V  
IC104: NJM7915FA (XD854A00) REGULATOR -15V  
IC105,106: NJM7805FA (XJ607A00) REGULATOR +5V
- 02. Transistor**  
Q 101,102,201,202: 2SA1015 O,Y (IA101590)  
Q 103,104,109,110, 203,204,209,210: 2SC1815 Y,GR (IC1815M0)  
Q 105-107,205-207: 2SA970 GR,BL (IA097030)  
Q 108,208: 2SC2240 GR,BL (IC224030)  
Q 111,113,211,213: 2SA1145 O,Y (VE198700)  
Q 112,114,212,214: 2SC2705 O,Y (VE198800)  
Q 115,215,301,303, 304: 2SC2603 E,F (IC260320)  
Q 116,216,302: 2SA1115 E,F (IA111520)  
Q 121P,221P: 2SA1708 S,T (VP872600)  
Q 122N,222N,305: 2SC4488 S,T (VP872700)
- 03. Pair Transistor**  
Q 117N,118P,119N, 120P,123N,124P, 217N,218P,219N, 220P,223N,224P: B1647/D2560 (VV081700)
- 04. Digital Transistor**  
Q 125,126,225,226: DTA114ES (VD678500)  
Q 127,227: DTC114ES (VD678700)
- 05. Diode**  
D 101-104,107,108, 123,201-204,207, 208,223,301: 1SS133,176,HSS10 (VD631600)  
D 109,110,209,210: 1SS82TD (IF005560)  
D 111,112,211,212: SFT14 26 (VV306600)  
D 113-116,213-216: 2A01 (VV082000)  
D 117-120,217-220, 302-304,308-316: 1N4004L 26 (VU801600)  
D 121,122,221,222: SF22 (VV081900)
- 06. Diode Stack**  
D 307: KBU603 6.0A 20 (VV081800)
- 07. Zener Diode**  
D 105,205,305: MTZ J 8.2B 8.2 (VG438900)  
D 106,206: MTZ J 5.6B 5.6 (VG437700)  
D 306,317,319: MTZ J 43 43.0V (VV335500)  
D 318: MTZ J 27.0D 27. (VG443100)
- 08. Mylar Capacitor**  
C 118,119,218,219: 3.3000 100V M (VV082200)  
C 316,317: 0.1000 250V M (VV082300)
- 09. Ceramic Capacitor**  
C 101,201: 56P 50V J (FG651560)  
C 102,111,131,202, 211,231: 100P 50V J (FG652100)  
C 110,112,113,124, 210,212,213,224, 303,304: 0.0100 50V Z (FG644100)  
C 122,123,222,223: 0.0022 500V M (VV314600)  
C 128,228: 470P 50V K (FG612470)  
C 130,230: 1000P 50V K (FG613100)
- 10. Monolithic Ceramic Cap.**  
C 125,126,225,226: 0.10 50V Z (VV059300)
- 11. Electrolytic Cap.**  
C 103,203: 100.00 10.0V (UJ828100)  
C 106,107,116,117, 120,121,206,207, 216,217,220,221, 318,324: 4.7 100.0V (UJ896470)  
C 108,109,208,209, 308,312,313,321: 4.70 50.0V (UJ866470)
- 12. Mica Capacitor**  
C 104,204: 68P 500V J (FU451680)  
C 105,205: 82P 500V J (FU451820)  
C 114,115,214,215: 220P 500V J (FU452220)
- 13. Carbon Resistor**  
R 103,104,142,203, 204,242: 150.0K 1/4 J (HF458150)  
R 105,106,205,206: 68.0 1/4 J (HF454680)  
R 107,207: 33.0K 1/4 J (HF457330)  
R 110,149,210,249, 307: 22.0K 1/4 J (HF457220)  
R 111,112,113,211, 212,213: 560.0 1/4 J (HF455560)  
R 114,214,304,305: 56.0K 1/4 J (HF457560)  
R 116,118,216,218: 150.0 1/4 J (HF455150)  
R 117,217: 100.0 1/4 J (HF455100)  
R 121-124,221-224, 303,308: 10.0K 1/4 J (HF457100)  
R 125,126,225,226, 311: 15.0K 1/4 J (HF457150)  
R 139,239: 47.0 1/4 J (HF454470)  
R 143,243,301,302: 47.0K 1/4 J (HF457470)  
R 144,244: 330.0 1/4 J (HF455330)  
R 145,150,245,250: 330.0K 1/4 J (HF458330)  
R 146,246: 27.0K 1/4 J (HF457270)  
R 147,148,247,248: 390.0K 1/4 J (HF458390)  
R 151,251: 220.0 1/4 J (HF455220)  
R 152,252: 1.5K 1/4 J (HF456150)  
R 306: 4.7K 1/4 J (HF456470)  
R 309,310: 2.2K 1/4 J (HF456220)  
R 312: 3.9K 1/4 J (HF456390)
- 14. Flame Proof C. Resistor**  
R 119,120,127,128, 219,220,227,228: 220.0 1/4 J (VV313800)  
R 129,130,133,134, 229,230,233,234: 1.0 1/4 J (VV557800)  
R 135,136,235,236: 47.0 1/4 J (VV313700)  
R 137,138,237,238: 680.0 1/4 J (VV313900)  
R 140,141,240,241: 10.0 1/4 J (VV058500)
- 15. Metal Film Resistor**  
R 101,102,201,202: 220K 1/4 F (VB070400)  
R 108,208: 33K 1/4 F (VB068400)  
R 109,209: 680.0 1/4 F (VB064600)  
R 115,215: 22K 1/4 F (VB068100)  
R 131,132,231,232: 0.10 3W J (VR412900)
- 16. Coil**  
L 101-104,201-204: LHL13TB680K (VV082400)  
L 105,205: RZ-001 21mm (VR150900)
- 17. Noise Filter**  
EM 101: ZJSR5101-223TA (VV056900)
- 18. Fuse**  
F 101,102: TDS 2A 250V J/U/ (VV070600) U,C  
F 101,102: TSD 2A 250V SEMK (VV071500) A,B,H
- 19. Relay**  
RY 301: DC OSA-SS-224DM3 (VV315400)
- 20. Connector**  
CN 101: M2426XX 15P (VV067500) to MAIN-CN901  
CN 102: VH- 6P TE (LB932060) to power transformer secondary.  
CN 105: VH- 4P TE (LB932040) to POWER(2/3)-C106
- 21. Fuse Holder**  
: CQ-05CT (VV319600)
- 22. Terminal Plate**  
FT 101: (VV075700)
- Notes**  
C 127,227,305: 10.00 25.0V (UJ847100)  
C 129,229: 1.00 50.0V (UJ866100)  
C 301,302,307: 47.00 25.0V (UJ847470)  
C 306: 470.00 10.0V (UJ828470)  
C 310,311: 6800 80V (VV082100)  
C 314,315,323: 1000 35.0V (UJ659100)  
C 319,320: 330.00 100.0V (UJ698330)  
C 325: 470 50.0V (VV714300)



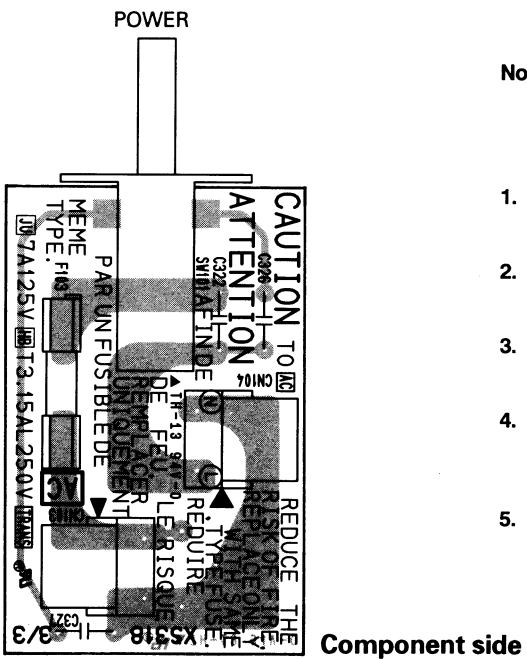


• POWER2/3 Circuit Board



- Notes)
- Circuit Board: POWER(2/3) SP (NX818540) XS318C0
1. Phone Jack
- JK 101: H30280072N (VV089300) POWER AMP 1 A
- JK 102: H30280072N (VV089300) POWER AMP 1 B
- JK 103: H30280072N (VV089300) BRIDGE
- JK 104: H30280072N (VV089300) POWER AMP 2 A
- JK 105: H30280072N (VV089300) POWER AMP 2 B
2. Connector Assembly
- W101: B&C#18 200L ( -- ) to POWER 1/3-CN

• POWER3/3 Circuit Board



- Notes)
- Circuit Board: POWER(3/3) PSW (NX818550) XS318C0, U,C
- POWER(3/3) PSW (NX818560) XS318C0, A,B,H
1. Capacitor
- C 322: 1000P 400V J.U.C (VV314800)
- C 326,327: 4700P 400V (VY704000) U,C,H
2. Push Switch
- SW 101: SFDLB11R7U-YL U, (VV089200) POWER SWITCH
3. Fuse
- F 103: TSD 3.15A 250V S (VV071700) A,B,H
- F 103: SIC(TL) 7.00A J (VV314500) U,C
4. Base Post Connector
- CN 103: VH- 3P SE (LB933030) to power transformer.
- CN 104: VH- 3P SE (LB933030) to AC cord
5. Fuse Holder
- : CQ-05CT (VV319600)

■ INSPECTIONS

1. Mixer Part

1-1. Setting Conditions

Setting conditions are as follows unless otherwise specified.

1-1-1. Initial Conditions

|                        |                                     |
|------------------------|-------------------------------------|
| AC Power Supply        |                                     |
| Standard Voltage:      | $\pm 2 \%$                          |
| Surrounding Conditions |                                     |
| Temperature:           | $25 \pm 5 \text{ }^{\circ}\text{C}$ |
| Humidity:              | $65 \pm 5 \%$                       |

1-1-2. Measuring Instruments

|                            |                                                          |
|----------------------------|----------------------------------------------------------|
| Low Frequency Oscillator : | Balance output, Output Impedance = $150 \text{ } \Omega$ |
| Oscilloscope:              | Input Impedance $\geq 100 \text{ k } \Omega$             |
| Level Meter:               | Input Impedance $\geq 100 \text{ k } \Omega$             |
| Note:                      |                                                          |

1. Use a balance input type measuring instruments.
2. Apply DIN low pass filter when measuring the noise level.
3.  $0 \text{ dBs} = 0.775 \text{ V}$

1-1-3. Control Panel Setting

|                                     |              |
|-------------------------------------|--------------|
| Channel Input (CH1-CH4) Section     |              |
| EQ (HIGH, MID, LOW) level controls: | Center       |
| MONITOR level control:              | Maximum      |
| EFFECT level control:               | Maximum      |
| LEVEL:                              | Maximum      |
| PAD:                                | OFF          |
| Channel Input (CH5-CH6) Section     |              |
| EQ level controls:                  | Center       |
| MONITOR level control:              | Maximum      |
| EFFECT level control:               | Maximum      |
| LEVEL:                              | Maximum      |
| EFFECT                              |              |
| DIGITAL EFFECT ON switch            | OFF          |
| EFFECT OUT                          | Maximum      |
| MAIN                                |              |
| GRAPHIC EQUALIZER (7 band)          |              |
| Fader:                              | Center       |
| EFFECT RTN:                         | Maximum      |
| AUX IN:                             | Maximum      |
| TAPE IN:                            | Maximum      |
| MASTER (MAIN):                      | Maximum      |
| MONITOR                             |              |
| GRAPHIC EQUALIZER (7 band)          |              |
| Fader:                              | Center       |
| EFFECT RTN:                         | Maximum      |
| MASTER (MAIN):                      | Maximum      |
| PHANTOM 48V switch                  | OFF          |
| POWER AMP switch                    | MAIN-MONITOR |

1-1-4. Input and Output Load

|               |                                                |
|---------------|------------------------------------------------|
| Input Signal: | 1 kHz, sine wave ( $R_s=150 \text{ } \Omega$ ) |
| Load          |                                                |
| MAIN OUTPUT:  | $10 \text{ k } \Omega$                         |

MONITOR OUTPUT: 10 k  $\Omega$   
 EFFECT OUT: 10 k  $\Omega$   
 REC OUT (1, 2): 10 k  $\Omega$

## 1-2. Mixer Part Inspections

### 1-2-1. Gain

Gain of each output should be as shown in the table below.

Table 1: INPUT CH 1-CH 4

| Input Terminal | Input Level         | MAIN OUTPUT       | MONITOR OUTPUT    | EFFECT OUT         | REC OUT (1, 2)       |
|----------------|---------------------|-------------------|-------------------|--------------------|----------------------|
| Lo-Z           | -62 dBs             | +4 dBs $\pm$ 2 dB | +4 dBs $\pm$ 2 dB | +10 dBs $\pm$ 2 dB | -13.8 dBs $\pm$ 2 dB |
|                | -32 dBs<br>(PAD ON) |                   |                   |                    |                      |
| Hi-Z           | -52 dBs             | +4 dBs $\pm$ 2 dB | -                 | -                  | -                    |

Table 2: INPUT CH5-CH6

| Input Terminal | Input Level | MAIN OUTPUT       | MONITOR OUTPUT    | EFFECT OUT         |
|----------------|-------------|-------------------|-------------------|--------------------|
| MIC            | -62 dBs     | +4 dBs $\pm$ 2 dB | +4 dBs $\pm$ 2 dB | +10 dBs $\pm$ 2 dB |
| LINE (1, 2)    | -22 dBs     | +4 dBs $\pm$ 2 dB | -                 | -                  |

Table 3: AUX IN and TAPE IN (1, 2)

| Input Terminal | Input Level | MAIN OUTPUT       |
|----------------|-------------|-------------------|
| AUX IN         | -22 dBs     | +4 dBs $\pm$ 2 dB |
| TAPE IN (1, 2) | -22 dBs     | +4 dBs $\pm$ 2 dB |

### 1-2-2. Frequency Response

Under the gain measurement conditions, the frequency response of each input and output should be within  $0 \pm \frac{1}{3}$  dB at 20 Hz and 20 kHz when 1 kHz is set as the reference. (0 dB)

### 1-2-3. Graphic Equalizer Characteristics

When the input signals shown below are applied to channel input and graphic equalizer level controls are changed from center position (flat), the boost/cut range at the MAIN OUTPUT and the MONITOR OUTPUT should be as follows:

| EQ Fader | Fader   | Input Signal Frequency | Response       |
|----------|---------|------------------------|----------------|
| 125 Hz   | Maximum | 125 Hz                 | +12 $\pm$ 2 dB |
|          | Minimum |                        | -12 $\pm$ 2 dB |
| 250 Hz   | Maximum | 250 Hz                 | +12 $\pm$ 2 dB |
|          | Minimum |                        | -12 $\pm$ 2 dB |
| 500 Hz   | Maximum | 500 Hz                 | +12 $\pm$ 2 dB |
|          | Minimum |                        | -12 $\pm$ 2 dB |
| 1 kHz    | Maximum | 1 kHz                  | +12 $\pm$ 2 dB |
|          | Minimum |                        | -12 $\pm$ 2 dB |
| 2 kHz    | Maximum | 2 kHz                  | +12 $\pm$ 2 dB |
|          | Minimum |                        | -12 $\pm$ 2 dB |
| 4 kHz    | Maximum | 4 kHz                  | +12 $\pm$ 2 dB |
|          | Minimum |                        | -12 $\pm$ 2 dB |
| 8 kHz    | Maximum | 8 kHz                  | +12 $\pm$ 2 dB |
|          | Minimum |                        | -12 $\pm$ 2 dB |

If the result of the graphic equalizer characteristic is out of specification, change the input signal frequency so that the output signal can be at the set level. At that time, its frequency should be in the range of 80 %-120 % standard frequency.

1-2-4. Equalizer Characteristics

When the input signals shown below are applied to the channel input and channel EQ (HIGH, MID, LOW) level controls are changed from center position (flat), the boost/cut range at the MAIN OUTPUT should be as follows:

| EQ Controls | GAIN    | Frequency | Response  |
|-------------|---------|-----------|-----------|
| HIGH        | Maximum | 12 kHz    | +12 ±2 dB |
|             | Minimum |           | -12 ±2 dB |
| MID         | Maximum | 2.5 kHz   | +14 ±2 dB |
|             | Minimum |           | -14 ±2 dB |
| LOW         | Maximum | 80 Hz     | +12 ±2 dB |
|             | Minimum |           | -12 ±2 dB |

If the result of the equalizer characteristic is out of specification, change the input signal frequency so that the output signal can be at the set level. At that time, its frequency should be in the range of 80 %-120 % of standard frequency.

1-2-5. Meter LED

When the MAIN OUTPUT and MONITOR OUTPUT output levels are as shown in the table below, the corresponding METER LED lights up.

| LED Name | Lighting Level |
|----------|----------------|
| +6       | +10 dBs ±2 dB  |
| +3       | +7 dBs ±2 dB   |
| 0        | +4 dBs ±2 dB   |
| -5       | -1 dBs ±2 dB   |
| -10      | -6 dBs ±2.5 dB |

1-2-6 Distortion

Set the level controls and faders of the INPUT section and MASTER section to nominal. When each output except REC OUT level reaches +14 dBs, the distortion ratio should be less than 0.1 % at 20 Hz through 20 kHz.

1-2-7 Maximum Output Level

Set the level controls and faders of the INPUT section and MASTER section to nominal and apply a 1 kHz signal. The maximum output levels of MAIN OUTPUT, MONITOR OUTPUT and EFFECT OUT should be +20 dBs with distortion less than 1%.

1-2-8 Equivalent Input Noise

When the Lo-Z and MIC input terminals are terminated with a 150 Ω resistor, the MAIN OUTPUT terminal noise level should be less than -46 dBs. If the noise level does not reach -46 dBs due to a gain variance, the converted noise level (= noise level minus actual gain of the channel) should be less than -121 dBs. (Apply DIN-AUDIO filter.)

1-2-9 Residual Noise

Set the input level controls at minimum. When the MASTER level controls in the MAIN and MONITOR section and EFFECT OUT level control in the EFFECT section are changed to maximum or minimum, the residual noise should be as shown in the table below. (Apply DIN-AUDIO filter.)

| MASTER VOLUME | MAIN OUTPUT | MONITOR OUT | EFFECT OUT |
|---------------|-------------|-------------|------------|
| Maximum       | -71 dBs     | -73 dBs     | -67 dBs    |
| Minimum       | -88 dBs     | -88 dBs     | -88 dBs    |

1-2-10 Phantom Power (+48 V)

When the PHANTOM switch is turned on, +48±4 V should be obtained between pin 2/3 and pin 1 of the XLR connector at no load resistance.

1-2-11 Digital Effect

Use music with vocals to confirm that the output sound has a digital effect.

## 2. Power Amplifier Part

### 2-1. Setting Conditions

Setting conditions are as follows unless otherwise specified.

#### 2-1-1. Initial Conditions

AC Power Supply

Standard Voltage:  $\pm 1 \%$

Surrounding Conditions

Temperature:  $25 \pm 5 \text{ }^{\circ}\text{C}$

Humidity:  $65 \pm 5 \%$

#### 2-1-2. Control Panel Setting

Input Terminal: INPUT CH 6 LINE 1

POWER AMP switch: MAIN-MONITOR

Measuring Output Terminal: SPEAKERS, POWER AMP 1-A, POWER AMP 2-A

Output Load:  $4 \Omega$  (200 W or higher, connect the resistor when inspecting the power amplifier section)

LEVEL (Input channel 1-5) Minimum

MONITOR level control Minimum

Note: Other control settings are the same as mixer part section 1-1-3.

## 2-2. Power Amplifier Inspections

### 2-2-1. Power ON Muting

The muting relay should turn on  $2.5 \pm 1$  seconds after the power switch is turned on.

### 2-2-2. Speaker Terminal DC Voltage

When input terminal is grounded, the POWER AMP 1 (A and B) and POWER AMP 2 (A and B) SPEAKERS terminal voltage should be  $0 \pm 100 \text{ mV}$ .

### 2-2-3. Gain

Set the INPUT channel 6 level control at nominal and apply a 1 kHz -26.0 dBs signal. The SPEAKERS terminal output levels should be  $+20.0 \text{ dBs} \pm 2 \text{ dB}$ .

Change the POWER AMP switch position to MAIN-MAIN, and confirm the POWER AMP 1-B and POWER AMP 2-B SPEAKERS terminals gain in the same manner as mentioned above.

### 2-2-4. Frequency Response

Apply a signal to the input; the output level should be  $0_{-3}^{+1} \text{ dB}$  at 20 Hz and 20 kHz when 1 kHz is set as the reference. (0 dB)

### 2-2-5. Harmonic Distortion

Apply a 1 kHz signal to the input; the output level should be  $200 \text{ W} + 200 \text{ W}/4 \Omega$  (31.2 dBs/ch); the distortion ratio should be less than 0.5 %.

Apply a signal of 20 Hz, 1 kHz and 20 kHz to the input separately; the output level should be  $100 \text{ W} + 100 \text{ W}/4 \Omega$  (28.2 dBs/ch); the distortion ratio should be less than 0.5 %.

### 2-2-6 Residual Noise

Set the MASTER level controls (MONITOR and MAIN) at minimum; the residual noise should be less than -68 dBs.

Notes:

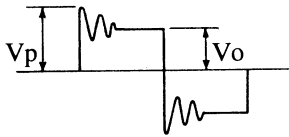
1. Apply DIN-AUDIO filter.
2. When measuring the residual noise, be sure that inductive noise does not interfere.

### 2-2-7 Stability

Apply a 10 kHz -26 dBs rectangular signal to the input and connect a  $4 \Omega$  resistor and a capacitor (10 pF to  $0.47 \mu\text{F}$ ) parallel to the load resistor; or connect an inductor ( $10 \mu\text{H}$  to 0.47 H) serial to the load resistor. Confirm that the output signal should be illustrated below.



Overshoot:  $V_p/V_o \leq 1.8$   
Ringing: 5 waves and less than 5 waves



Next, only connect a capacitor (10 pF to 0.47  $\mu$  F) to SPEAKERS terminal as a load, and confirm the output is as follows:

Overshoot  $V_p/V_o \leq 2.5$   
Ringing It should be ended within 7 waves and there is no oscillation.

### 2-2-8 Protection

Apply a 10 Hz signal to the input; increase the input signal so that the output signal is clipped. Confirm that the protection does not operate and the speaker relay should not activate.

When applying a 1 Hz, 4 Vp-p (5.2 dBs) sine wave signal to the input; confirm that the protection operates within 2 seconds and the speaker relay is turned off. When turning off the input signal, confirm that the protection stops the operation within 5 seconds and the speaker relay is turned on.

### 2-2-9 PC Limiter and Limiter

Apply a 1 kHz -20 dBs sine wave signal to the input and connect a 1  $\Omega$  ( $\pm 5\%$  100 W) resistor; confirm that the output signal is  $V_{p-p} \leq 20V$  and the signal is not rectangular.

### 2-2-10 LIMITER Indicator

When applying a 1 kHz -20 dBs sine wave signal to the input, the LIMITER indicator should light on.

### 2-2-11 Efficiency

When applying a 1 kHz -24 dBs sine wave signal to the input, confirm that the power consumption is  $180 \pm 50W$ .

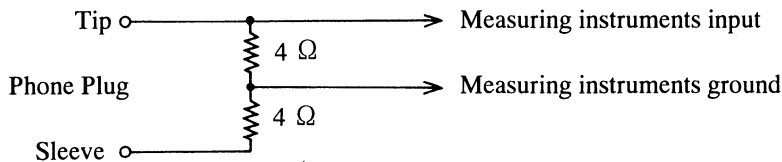
## 3. Main Bridge

### 3-1. Control Panel Setting

|                            |                                      |
|----------------------------|--------------------------------------|
| POWER AMP switch:          | MAIN BRIDGE                          |
| Input Terminal:            | INPUT CH 6 LINE 1                    |
| MASTER (MAIN)              | Maximum                              |
| Measuring Output Terminal: | SPEAKERS, BRIDGE                     |
| Output Load:               | 8 $\Omega$ (400W or more than 400 W) |
| MONITOR level control      | Minimum                              |

Note: Other control settings are the same as mixer part section 1-2.

#### 3-1-2. Connection



### 3-2. MAIN BRIDGE Inspection

#### 3-2-1. Gain

Apply a 1 kHz -26.0 dBs signal; confirm that the output levels are  $+20.0 \text{ dBs} \pm 2 \text{ dB}$ .

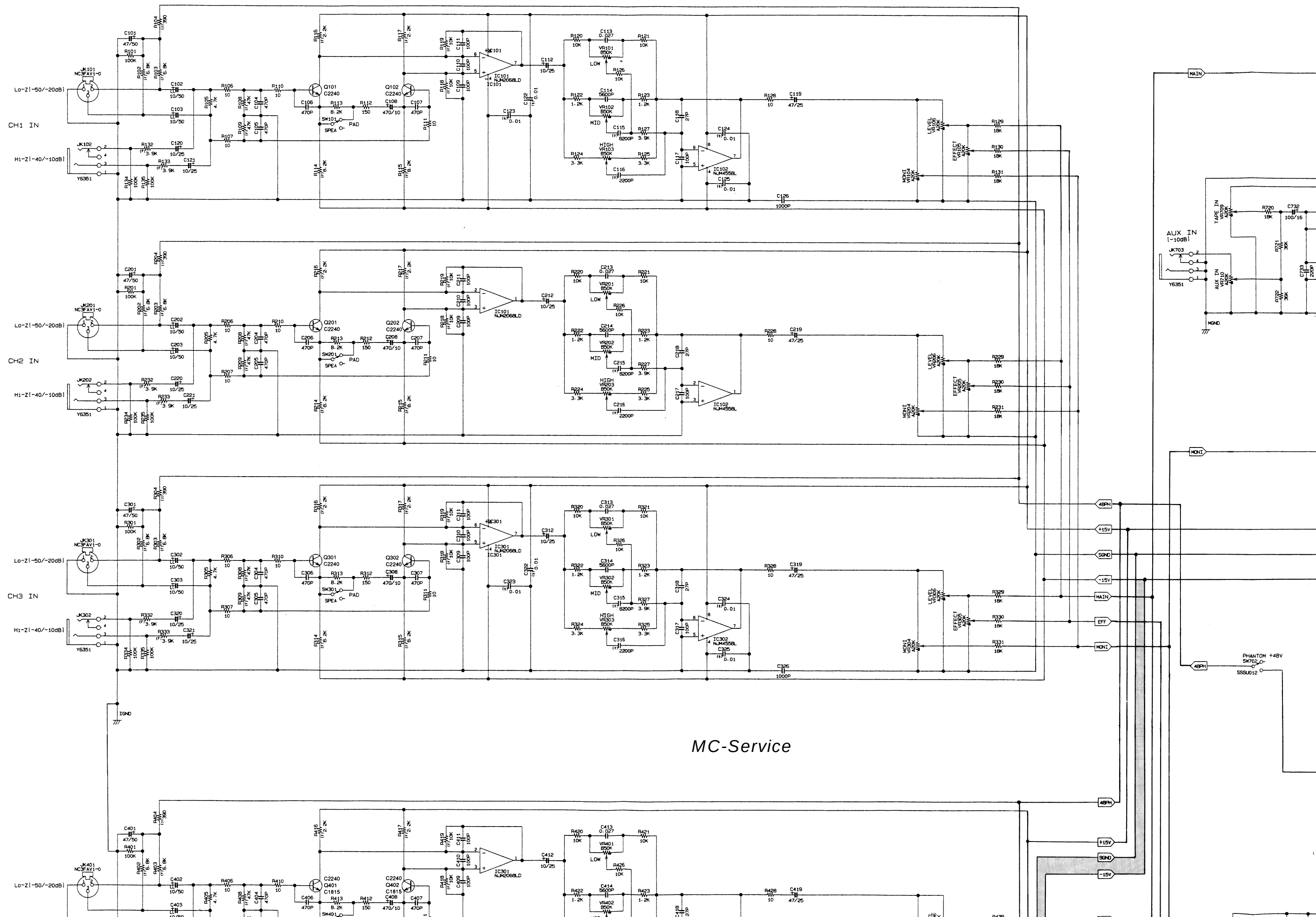
#### 3-2-2. Frequency Response

Apply a 1 kHz -26.0 dB sine wave signal to the input; the output level should be  $0_{-3}^{+1} \text{ dB}$  at 20 Hz and 20 kHz when 1 kHz is set as the reference. (0 dB)

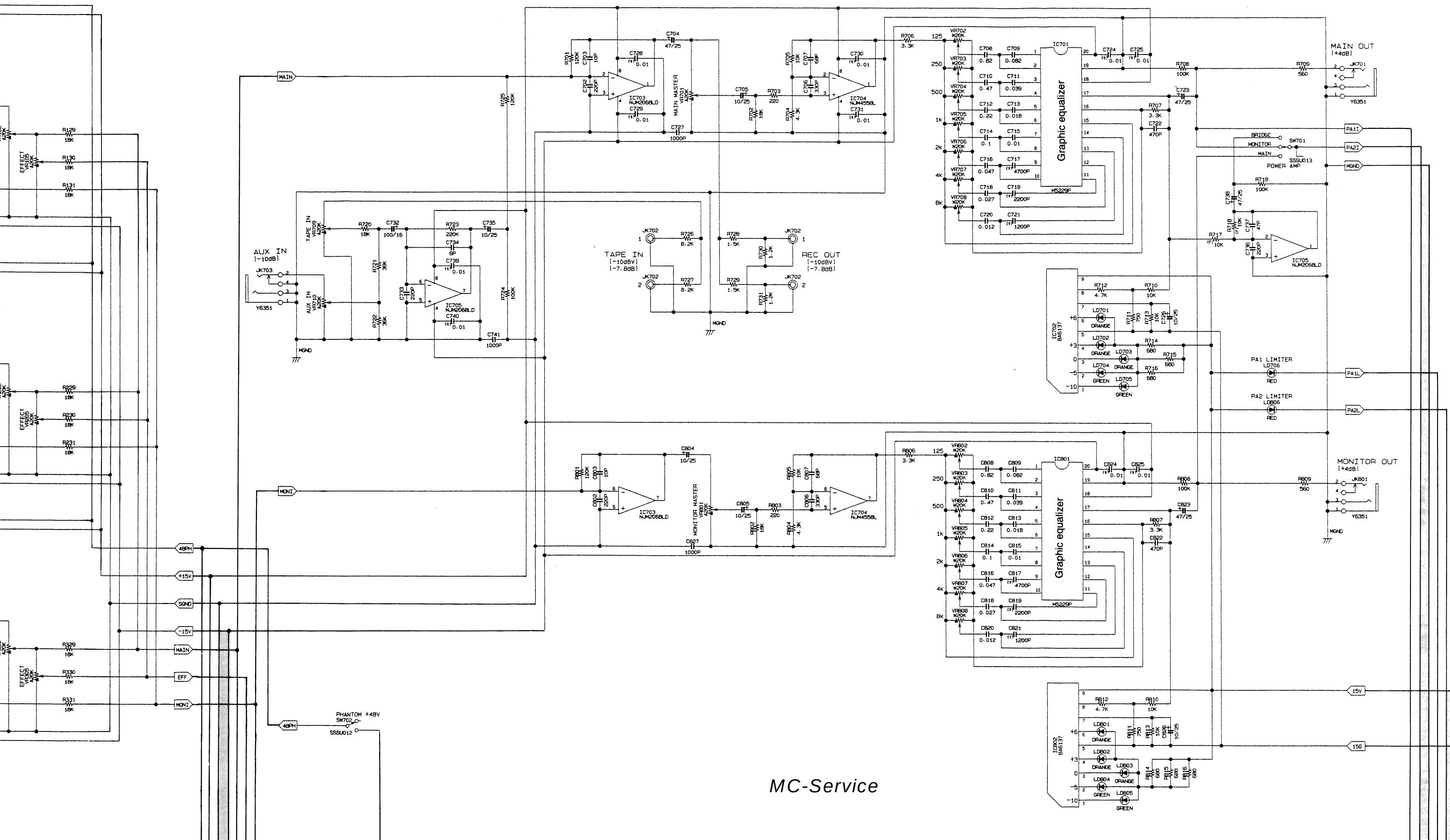
## 4. Power Supply Fluctuation

There should be no operational problem when the power supply fluctuation is within  $\pm 10\%$  of nominal voltage.

# ■ EMX640 CIRCUIT DIAGRAM 1/2 (MAIN)

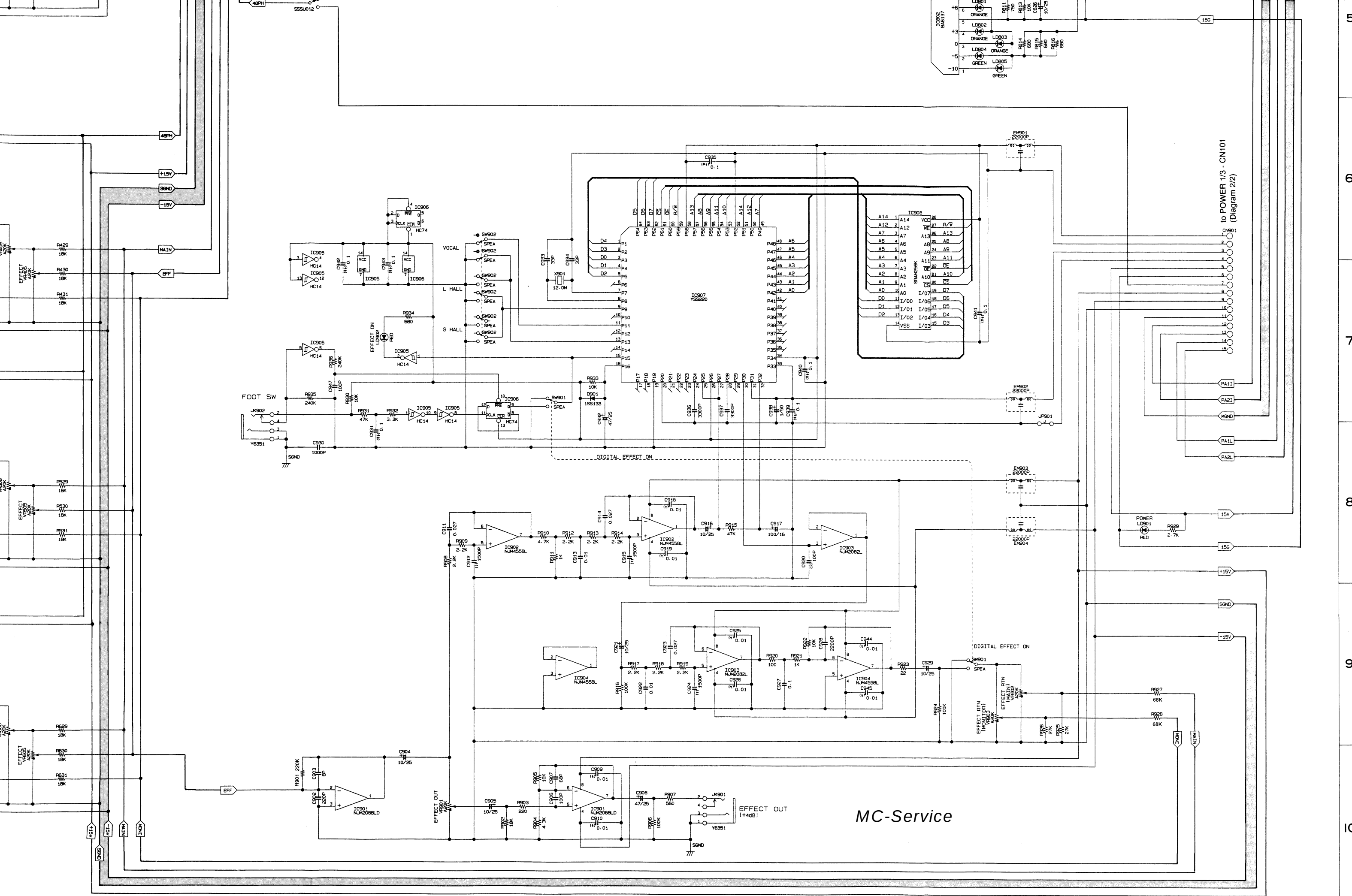


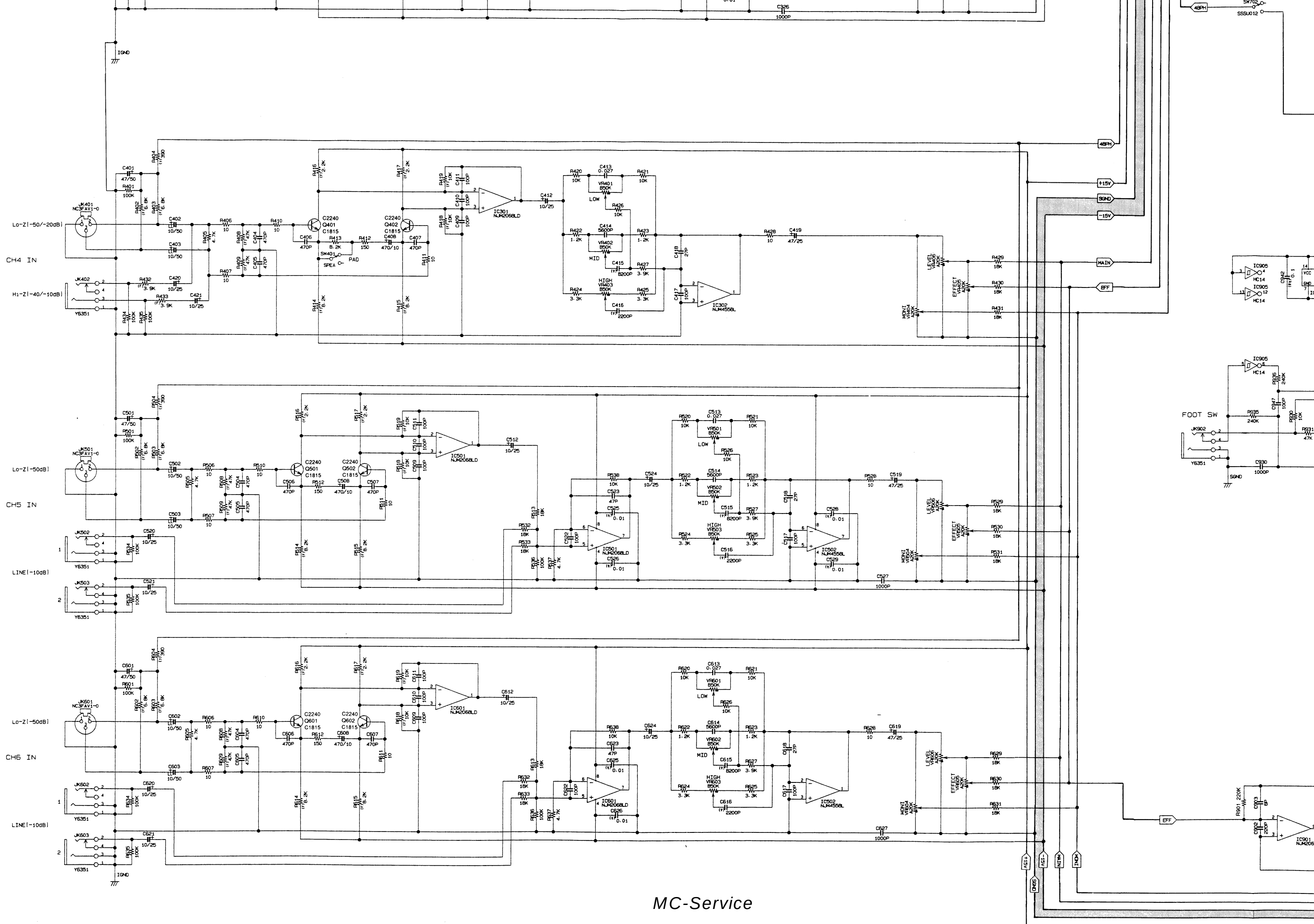
MC-Service

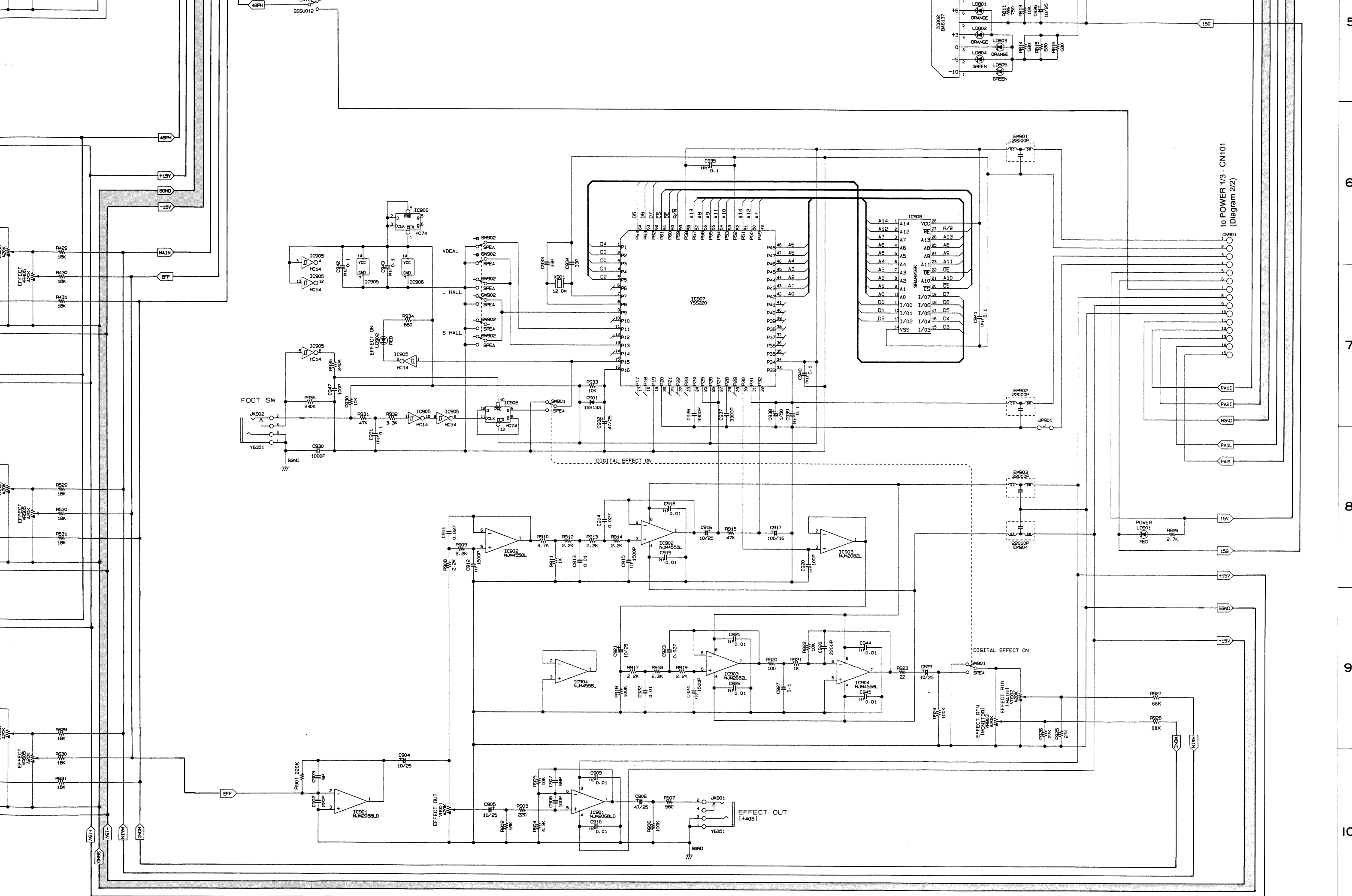


MC-Service

to POWER 1/3 - CN101  
(Diagram 2/2)







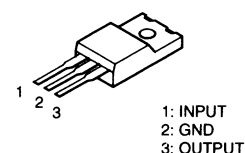


# ■ EMX640 CIRCUIT DIAGRAM 2/2 (POWER 1/3, POWER 2/3, POWER 3/3, POWER TRANSFORMER)

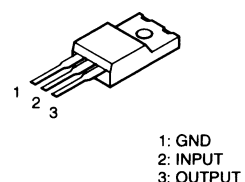
## POWER 1/3

MC-Service

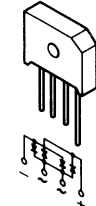
- NJM7815FA (XD853A00)  
REGULATOR +15V
- NJM7805FA (FX607A00)  
REGULATOR +5V



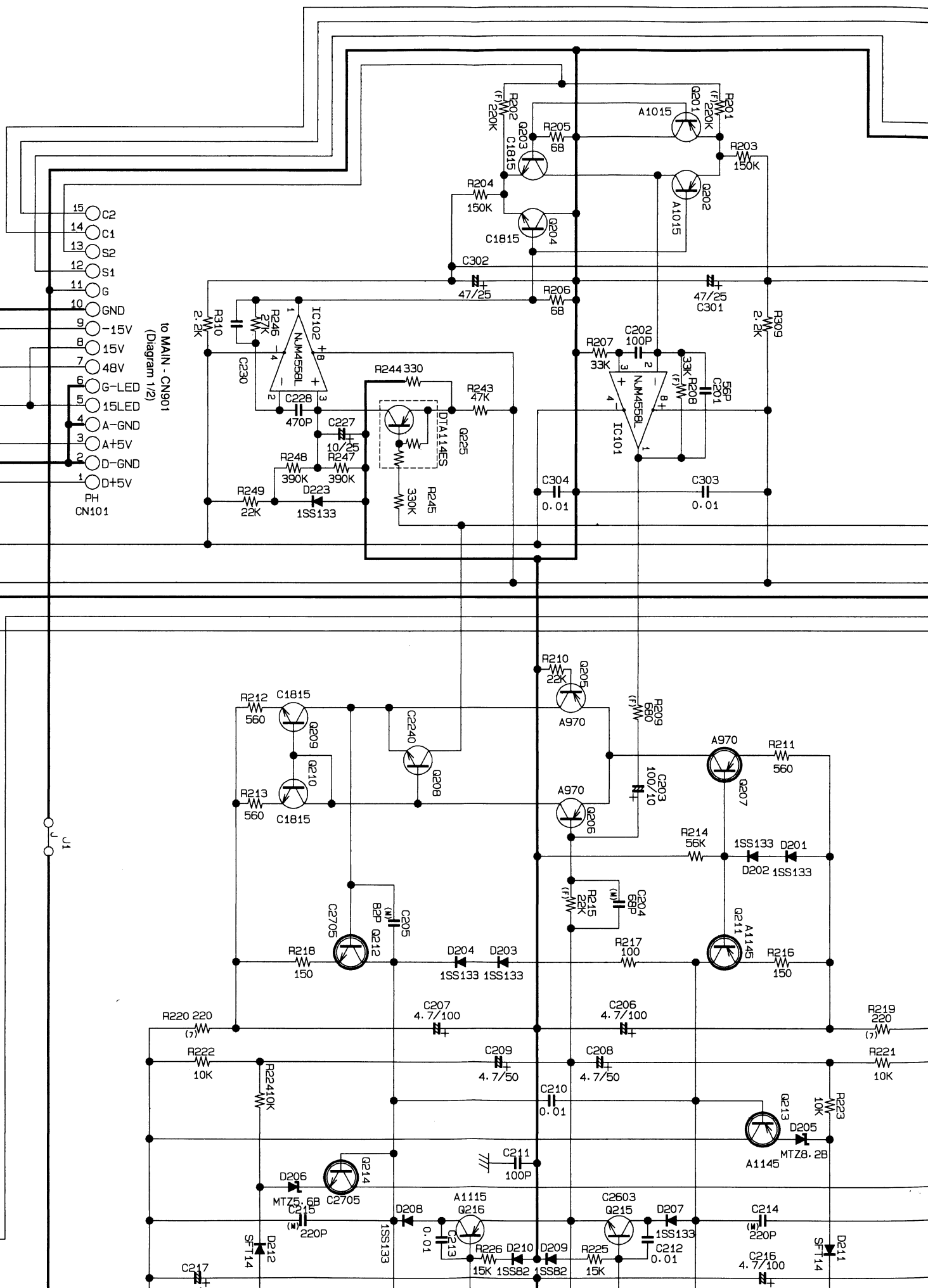
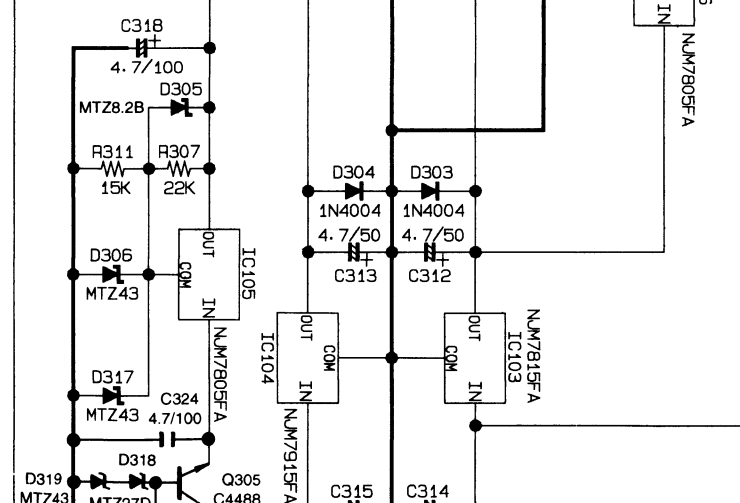
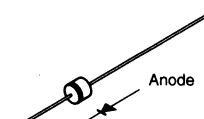
- NJM7915FA (XD854A00)  
REGULATOR -15V



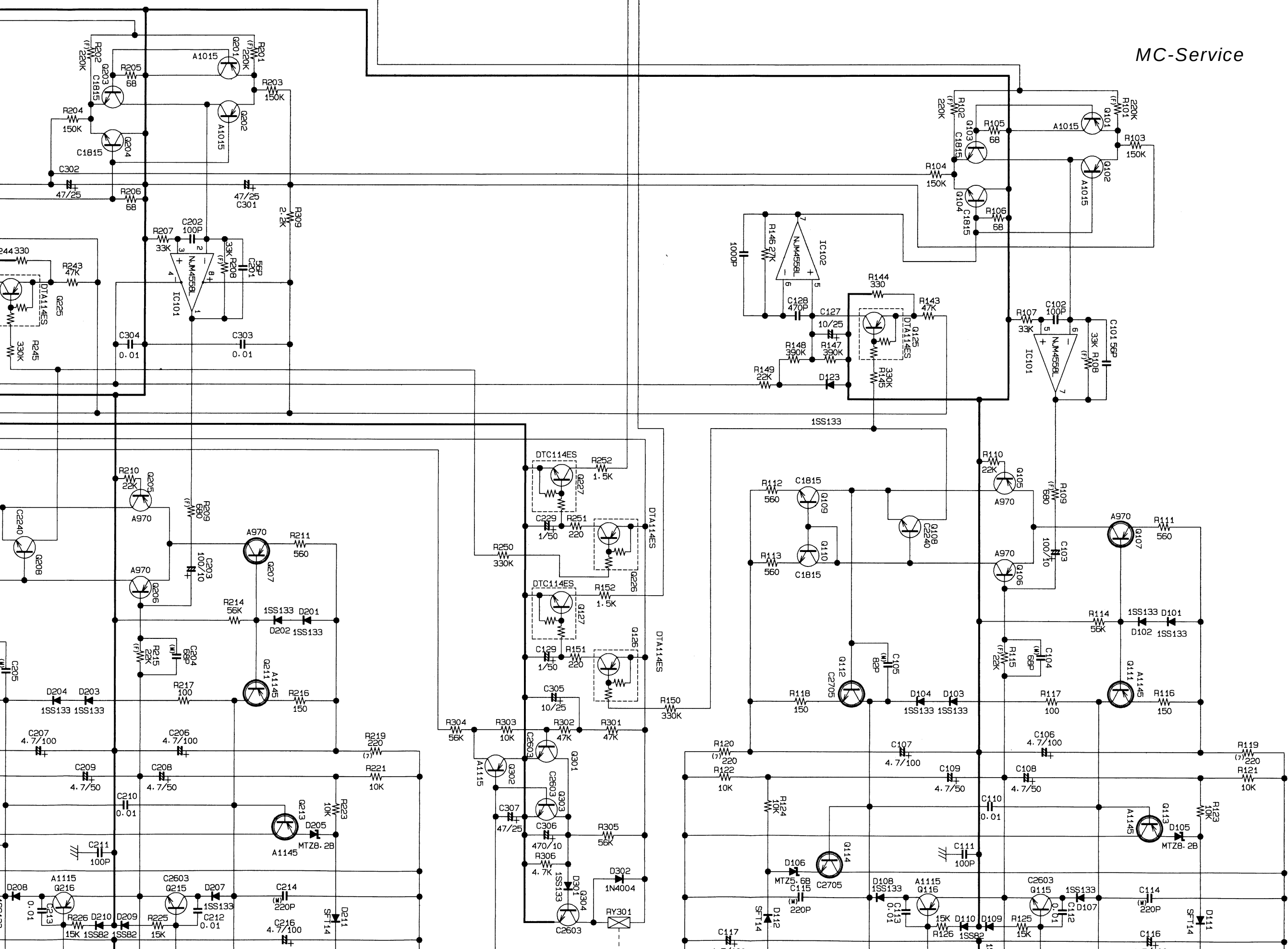
- KBU603 (VV081800)  
DIODE STACK

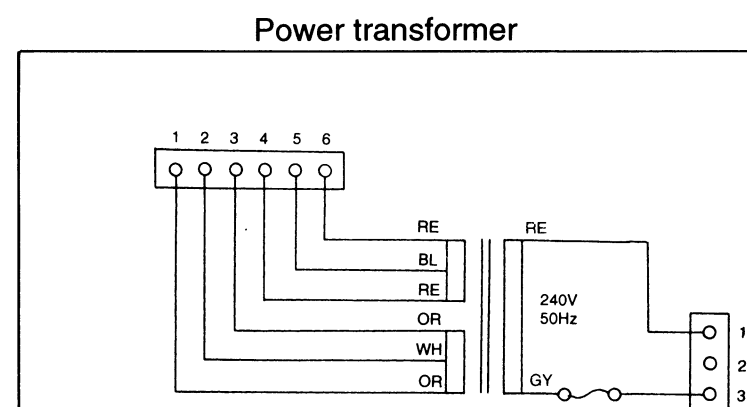
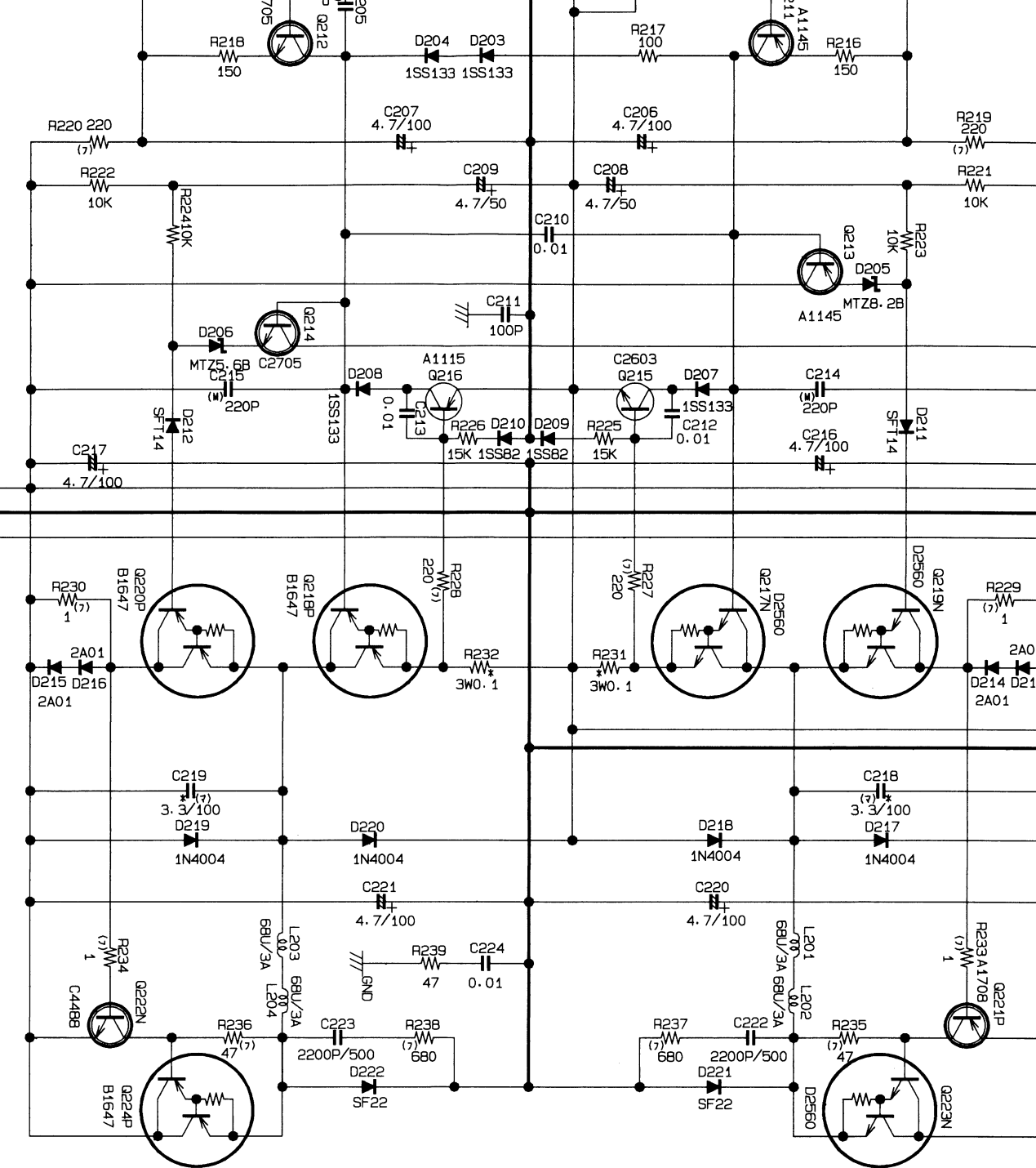


- 1N4004L (VU801600)  
DIODE

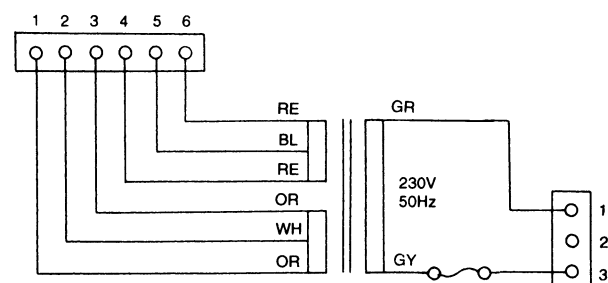




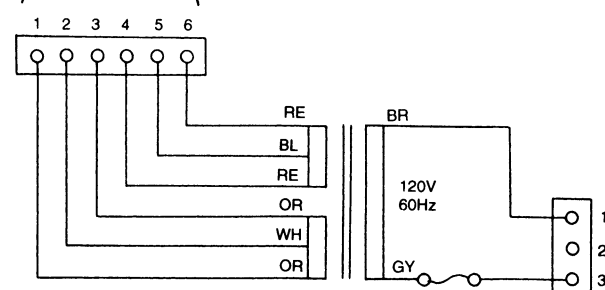




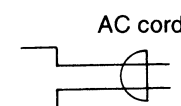
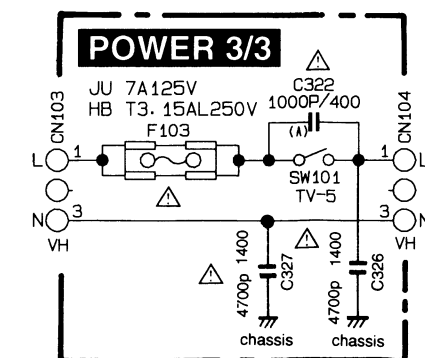
### Austrarian Model



### North European & British Models



## US & Canadian Models



*MC-Service*

**■ WARNING**

Components having special characteristics are marked  and may be replaced with parts having specifications equal to those originally in.

△ 印の部品は、安全を維持するために重要な部品です。交換する  
安全のため必ず指定の部品をご使用下さい。



# POWERED MIXER

# EMX640

# PARTS LIST

## ■ CONTENTS

|                        |   |
|------------------------|---|
| ELECTRICAL PARTS ..... | 1 |
| OVERALL ASSEMBLY ..... | 5 |

## Notes: DESTINATION ABBREVIATIONS

|                          |                                  |
|--------------------------|----------------------------------|
| A : Australian model     | J : Japanese model               |
| B : British model        | U : U.S. model                   |
| C : Canadian model       | V : General export model (110 V) |
| E : European model       | W : General export model (220 V) |
| H : North European model | X : General export model         |
| I : Indonesian model     | Y : Export model                 |

## ■WARNING

Components having special characteristics are marked  and must be replaced with having specifications equal to those originally installed.

⚠印の部品は、安全を維持するために重要な部品です。交換をする場合は、安全のため必ず指定の部品をご使用下さい。

- The numbers in "QTY" shows quantities for each unit.
- The parts with "--" in "Parts No." are not available as spare parts.
- 部品価格ランクは、変更になることがあります。
- QTY 欄に記されている数字は、各ユニット当たりの使用個数です。
- 部品 No.が "--" の部品は、サービス用部品として準備されていません。

■ ELECTRICAL PARTS

| REF NO. | PART NO. | DESCRIPTION                | 部 品 名               | REMARKS                   | QTY | ランク |
|---------|----------|----------------------------|---------------------|---------------------------|-----|-----|
|         |          | ELECTRICAL PARTS           | 電 気 部 品             | EMX640                    |     |     |
| *       | VV084900 | Circuit Board              | メ イ ン シ ー ト         | (XS329B0)                 |     |     |
| *       | NX818520 | Circuit Board              | パ ワ ー ア ン プ シ ー ト   | U,C (XS318C0)             |     |     |
| *       | NX818530 | Circuit Board              | パ ワ ー ア ン プ シ ー ト   | A,B,H (XS318C0)           |     |     |
| *       | NX818540 | Circuit Board              | ス ピ ー カ 端 子 シ ー ト   | (XS318C0)                 |     |     |
| *       | NX818550 | Circuit Board              | パ ワ ー ス イ ッ チ シ ー ト | U,C (XS318C0)             |     |     |
| *       | NX818560 | Circuit Board              | パ ワ ー ス イ ッ チ シ ー ト | A,B,H (XS318C0)           |     |     |
|         | VV084900 | Circuit Board              | メ イ ン シ ー ト         | (XS329B0)                 |     |     |
|         | VV307300 | LED Spacer                 | L E D ス ペ ー サ       |                           |     |     |
| *       | VV087700 | Connector Assembly         | 束 線 # 2 8           | DIGITAL EFFECT(VOCAL, ON, |     |     |
|         | VU860700 | Button                     | ボ タ ン               | L HALL, S HALL), PAD      |     |     |
|         | XG203A00 | IC                         | I C                 | GRAPHIC EQUALIZER         | 04  |     |
|         | XM356A00 | IC                         | I C                 | OP AMP                    | 01  |     |
|         | XN922A00 | IC                         | I C                 | OP AMP                    | 01  |     |
|         | XN796A00 | IC                         | I C                 | OP AMP                    | 02  |     |
|         | IR001400 | IC                         | I C                 | HEX INVERTER              | 05  |     |
|         | IR007400 | IC                         | I C                 | DDF                       | 04  |     |
| *       | XA534A00 | IC                         | I C                 | LED DRIVER                |     |     |
|         | XQ696A00 | IC                         | I C                 | SRAM                      | 08  |     |
|         | XN299A00 | IC                         | I C                 | DIGITAL SOUND PROCESSOR   | 11  |     |
|         | IC224030 | Transistor                 | ト ラ ン ジ ス タ         |                           | 01  |     |
|         | VD631600 | Diode                      | ダ イ オ ー ド           |                           | 01  |     |
|         | VV620800 | LED                        | L E D               |                           |     |     |
| *       | VV621000 | LED                        | L E D               |                           |     |     |
|         | VV938100 | LED                        | L E D               |                           |     |     |
|         | UA353120 | Mylar Capacitor            | マ イ ラ ー コ ン         |                           | 01  |     |
|         | UA353150 | Mylar Capacitor            | マ イ ラ ー コ ン         |                           |     |     |
|         | UA353220 | Mylar Capacitor            | マ イ ラ ー コ ン         |                           | 01  |     |
|         | UA353330 | Mylar Capacitor            | マ イ ラ ー コ ン         |                           |     |     |
|         | UA353470 | Mylar Capacitor            | マ イ ラ ー コ ン         |                           | 01  |     |
|         | UA353560 | Mylar Capacitor            | マ イ ラ ー コ ン         |                           |     |     |
|         | UA353820 | Mylar Capacitor            | マ イ ラ ー コ ン         |                           |     |     |
|         | UA654100 | Mylar Capacitor            | マ イ ラ ー コ ン         |                           | 01  |     |
|         | UA654120 | Mylar Capacitor            | マ イ ラ ー コ ン         |                           | 01  |     |
|         | UA654180 | Mylar Capacitor            | マ イ ラ ー コ ン         |                           | 01  |     |
|         | UA654270 | Mylar Capacitor            | マ イ ラ ー コ ン         |                           | 01  |     |
|         | UA654390 | Mylar Capacitor            | マ イ ラ ー コ ン         |                           | 01  |     |
|         | UA654470 | Mylar Capacitor            | マ イ ラ ー コ ン         |                           | 01  |     |
|         | UA654820 | Mylar Capacitor            | マ イ ラ ー コ ン         |                           | 01  |     |
|         | UA655100 | Mylar Capacitor            | マ イ ラ ー コ ン         |                           | 01  |     |
|         | VV064100 | Monolithic Mylar Capacitor | 積 層 マ イ ラ ー コ ン     |                           |     |     |
|         | VV064400 | Monolithic Mylar Capacitor | 積 層 マ イ ラ ー コ ン     |                           |     |     |
|         | VV321100 | Monolithic Mylar Capacitor | 積 層 マ イ ラ ー コ ン     |                           |     |     |
|         | UA352100 | Polypropylene Capacitor    | P P コ ン             |                           | 01  |     |
|         | F6612330 | Ceramic Cap.-B             | セ ラ コ ン B           |                           | 01  |     |
|         | F6612470 | Ceramic Capacitor-B        | セ ラ コ ン B           |                           | 01  |     |
|         | F6613100 | Ceramic Capacitor-B        | セ ラ コ ン B           |                           | 01  |     |
|         | F6650600 | Ceramic Capacitor-SL       | セ ラ コ ン ( S L )     |                           | 01  |     |
|         | F6651100 | Ceramic Capacitor-SL       | セ ラ コ ン ( S L )     |                           |     |     |
|         | F6651270 | Ceramic Capacitor-SL       | セ ラ コ ン ( S L )     |                           | 01  |     |
|         | F6651330 | Ceramic Capacitor-SL       | セ ラ コ ン ( S L )     |                           | 01  |     |
|         | F6651470 | Ceramic Capacitor-SL       | セ ラ コ ン ( S L )     |                           |     |     |
|         | F6651680 | Ceramic Capacitor-SL       | セ ラ コ ン ( S L )     |                           | 01  |     |
|         | F6652100 | Ceramic Capacitor-SL       | セ ラ コ ン ( S L )     |                           | 01  |     |
|         | F6652220 | Ceramic Capacitor-SL       | セ ラ コ ン ( S L )     |                           |     |     |
|         | F6644100 | Ceramic Capacitor-F        | セ ラ コ ン F           |                           | 01  |     |
|         | VV059300 | Monolithic Ceramic Cap.    | 積 層 セ ラ コ ン         |                           |     |     |
|         | UJ838100 | Electrolytic Cap.          | ケ ミ コ ン             |                           | 01  |     |
|         | UJ847100 | Electrolytic Cap.          | ケ ミ コ ン             |                           | 01  |     |
|         | UJ847470 | Electrolytic Cap.          | ケ ミ コ ン             |                           | 01  |     |
|         | UJ866100 | Electrolytic Cap.          | ケ ミ コ ン             |                           | 01  |     |
|         | UJ867470 | Electrolytic Cap.          | ケ ミ コ ン             |                           | 01  |     |
|         | VV330700 | Electrolytic Cap.          | ケ ミ コ ン S M         |                           |     |     |
|         | VV488800 | Low leak Electrolytic Cap. | ローリークケミコン L M       |                           |     |     |
|         | HF454100 | Carbon Resistor            | カ ー ボ ン 抵 抗         |                           | 01  |     |
|         | HF454220 | Carbon Resistor            | カ ー ボ ン 抵 抗         |                           | 01  |     |
|         | HF455100 | Carbon Resistor            | カ ー ボ ン 抵 抗         |                           | 01  |     |
|         | HF455150 | Carbon Resistor            | カ ー ボ ン 抵 抗         |                           | 01  |     |

\* New Parts (新規部品)

ランク : Japan only

| REF NO. | PART NO. | DESCRIPTION              | 部 品 名            | REMARKS              | QTY                       | ランク |
|---------|----------|--------------------------|------------------|----------------------|---------------------------|-----|
|         | HF455220 | Carbon Resistor          | 220.0 1/4 J      | カ ー ボ ン 抵 抗          |                           | 01  |
|         | HF455560 | Carbon Resistor          | 560.0 1/4 J      | カ ー ボ ン 抵 抗          |                           | 01  |
|         | HF455680 | Carbon Resistor          | 680.0 1/4 J      | カ ー ボ ン 抵 抗          |                           | 01  |
|         | HF455750 | Carbon Resistor          | 750.0 1/4 J      | カ ー ボ ン 抵 抗          |                           | 01  |
|         | HF456100 | Carbon Resistor          | 1.0K 1/4 J       | カ ー ボ ン 抵 抗          |                           | 01  |
|         | HF456120 | Carbon Resistor          | 1.2K 1/4 J       | カ ー ボ ン 抵 抗          |                           | 01  |
|         | HF456150 | Carbon Resistor          | 1.5K 1/4 J       | カ ー ボ ン 抵 抗          |                           | 01  |
|         | HF456220 | Carbon Resistor          | 2.2K 1/4 J       | カ ー ボ ン 抵 抗          |                           | 01  |
|         | HF456270 | Carbon Resistor          | 2.7K 1/4 J       | カ ー ボ ン 抵 抗          |                           | 01  |
|         | HF456330 | Carbon Resistor          | 3.3K 1/4 J       | カ ー ボ ン 抵 抗          |                           | 01  |
|         | HF456390 | Carbon Resistor          | 3.9K 1/4 J       | カ ー ボ ン 抵 抗          |                           | 01  |
|         | HF456430 | Carbon Resistor          | 4.3K 1/4 J       | カ ー ボ ン 抵 抗          |                           | 01  |
|         | HF456470 | Carbon Resistor          | 4.7K 1/4 J       | カ ー ボ ン 抵 抗          |                           | 01  |
|         | HF456820 | Carbon Resistor          | 8.2K 1/4 J       | カ ー ボ ン 抵 抗          |                           | 01  |
|         | HF457100 | Carbon Resistor          | 10.0K 1/4 J      | カ ー ボ ン 抵 抗          |                           | 01  |
|         | HF457180 | Carbon Resistor          | 18.0K 1/4 J      | カ ー ボ ン 抵 抗          |                           | 01  |
|         | HF457270 | Carbon Resistor          | 27.0K 1/4 J      | カ ー ボ ン 抵 抗          |                           | 01  |
|         | HF457360 | Carbon Resistor          | 36.0K 1/4 J      | カ ー ボ ン 抵 抗          |                           | 01  |
|         | HF457470 | Carbon Resistor          | 47.0K 1/4 J      | カ ー ボ ン 抵 抗          |                           | 01  |
|         | HF457680 | Carbon Resistor          | 68.0K 1/4 J      | カ ー ボ ン 抵 抗          |                           | 01  |
|         | HF458100 | Carbon Resistor          | 100.0K 1/4 J     | カ ー ボ ン 抵 抗          |                           | 01  |
|         | HF458120 | Carbon Resistor          | 120.0K 1/4 J     | カ ー ボ ン 抵 抗          |                           | 01  |
|         | HF458220 | Carbon Resistor          | 220.0K 1/4 J     | カ ー ボ ン 抵 抗          |                           | 01  |
|         | HF758240 | Carbon Resistor          | 240.0K 1/4 J     | カ ー ボ ン 抵 抗          |                           | 01  |
|         | VV058400 | Flame Proof C. Resistor  | 390.0 1/4 J      | 不 燃 化 カ ー ボ ン 抵 抗    |                           | 01  |
|         | VA074400 | Metal Film Resistor      | 10K 1/4 F        | 金 属 被 膜 抵 抗          |                           | 01  |
|         | VB066300 | Metal Film Resistor      | 2.2K 1/4 F       | 金 属 被 膜 抵 抗          |                           | 01  |
|         | VB066900 | Metal Film Resistor      | 3.9K 1/4 F       | 金 属 被 膜 抵 抗          |                           | 01  |
|         | VB067300 | Metal Film Resistor      | 6.8K 1/4 F       | 金 属 被 膜 抵 抗          |                           | 01  |
|         | VB067400 | Metal Film Resistor      | 8.2K 1/4 F       | 金 属 被 膜 抵 抗          |                           | 01  |
|         | VB068800 | Metal Film Resistor      | 47K 1/4 F        | 金 属 被 膜 抵 抗          |                           | 01  |
|         | VV044600 | Slide Variable Resistor  | RS20H11KD017-YL  | ス ラ イ ド 可 変 抵 抗 20mm |                           |     |
|         | VU804600 | Rotary Variable Resistor | A 20.0K RK09K113 | ロ ー タ リ ー 可 変 抵 抗    |                           |     |
|         | VV058900 | Rotary Variable Resistor | B 50.0K RK09K113 | ロ ー タ リ ー 可 変 抵 抗    |                           |     |
|         | VV056900 | Noise Filter             | ZJSR5101-223TA   | ノイズフィルタ EM I         |                           |     |
|         | QU007700 | Ceramic Resonator        | 12M CSA12.0MTZ   | セ ラ ミ ッ ク 振 動 子      |                           | 03  |
|         | VV044700 | Slide Switch             | SSSU013NB1-YL    | ス ラ イ ド ス witch      |                           |     |
|         | VV051500 | Slide Switch             | SSSU012NB1-YL    | ス ラ イ ド ス witch      |                           |     |
|         | VU804900 | Push Switch              | SPEA31MC16-YL    | プ ッ シ ュ ス witch      |                           |     |
|         | VU805000 | Push Switch              | SPEA12MC15-YL    | プ ッ シ ュ ス witch      |                           |     |
| JK101   | VU805200 | XLM Connector            | XLR NC3FAV1-0    | キ ャ ノ ン コ ネ ク タ      | Lo-Z (CH1)                |     |
| JK102   | VU805400 | Phone Jack               | JY-6351B-02-340  | ホ ー ン コ ネ ク タ        | Hi-Z (CH1)                |     |
| JK201   | VU805200 | XLM Connector            | XLR NC3FAV1-0    | キ ャ ノ ン コ ネ ク タ      | Lo-Z (CH2)                |     |
| JK202   | VU805400 | Phone Jack               | JY-6351B-02-340  | ホ ー ン コ ネ ク タ        | Hi-Z (CH2)                |     |
| JK301   | VU805200 | XLM Connector            | XLR NC3FAV1-0    | キ ャ ノ ン コ ネ ク タ      | Lo-Z (CH3)                |     |
| JK302   | VU805400 | Phone Jack               | JY-6351B-02-340  | ホ ー ン コ ネ ク タ        | Hi-Z (CH3)                |     |
| JK401   | VU805200 | XLM Connector            | XLR NC3FAV1-0    | キ ャ ノ ン コ ネ ク タ      | Lo-Z (CH4)                |     |
| JK402   | VU805400 | Phone Jack               | JY-6351B-02-340  | ホ ー ン コ ネ ク タ        | Hi-Z (CH4)                |     |
| JK501   | VU805200 | XLM Connector            | XLR NC3FAV1-0    | キ ャ ノ ン コ ネ ク タ      | MIC (CH5)                 |     |
| JK502   | VU805400 | Phone Jack               | JY-6351B-02-340  | ホ ー ン コ ネ ク タ        | LINE 1 (CH5)              |     |
| JK503   | VU805400 | Phone Jack               | JY-6351B-02-340  | ホ ー ン コ ネ ク タ        | LINE 2 (CH5)              |     |
| JK601   | VU805200 | XLM Connector            | XLR NC3FAV1-0    | キ ャ ノ ン コ ネ ク タ      | MIC (CH6)                 |     |
| JK602   | VU805400 | Phone Jack               | JY-6351B-02-340  | ホ ー ン コ ネ ク タ        | LINE 1 (CH6)              |     |
| JK603   | VU805400 | Phone Jack               | JY-6351B-02-340  | ホ ー ン コ ネ ク タ        | LINE 2 (CH6)              |     |
| JK701   | VU805400 | Phone Jack               | JY-6351B-02-340  | ホ ー ン コ ネ ク タ        | MAIN (UTPUT)              |     |
| JK702   | VY704800 | Pin Jack                 | JK040057PN       | ピ ン コ ネ ク タ 4 P      | TAPE IN(1,2) REC OUT(1,2) |     |
| JK703   | VU805400 | Phone Jack               | JY-6351B-02-340  | ホ ー ン コ ネ ク タ        | AUX IN                    |     |
| JK801   | VU805400 | Phone Jack               | JY-6351B-02-340  | ホ ー ン コ ネ ク タ        | MONITOR (OUTPUT)          |     |
| JK901   | VU805400 | Phone Jack               | JY-6351B-02-340  | ホ ー ン コ ネ ク タ        | EFFECT OUT                |     |
| JK902   | VU805400 | Phone Jack               | JY-6351B-02-340  | ホ ー ン コ ネ ク タ        | FOOT SW                   |     |
| CN901   | VV067500 | Connector Base Post      | M2426XX 15P TE   | コ ネ ク タ ベ ー ス ポ ス ト  | to POWER 1/3-CN101        |     |
|         | --       | Jumper Wire              | 0.60             | ジ ャ ン パ ー 線          | (VV29140)                 |     |
|         | NX818520 | Circuit Board            | POWER(1/3) AMP   | パ ワ ー ア ン プ シ ー ト    | U,C (XS318C0)             |     |
|         | NX818530 | Circuit Board            | POWER(1/3) AMP   | パ ワ ー ア ン プ シ ー ト    | A,B,H (XS318C0)           |     |
|         | XM922A00 | IC                       | NJM4558L         | イ                    | C OP AMP                  | 01  |
|         | XD853A00 | IC                       | NJM7815FA        | イ                    | C REGULATOR +15V          | 03  |
|         | XD854A00 | IC                       | NJM7915FA        | イ                    | C REGULATOR -15V          | 03  |
|         | XJ607A00 | IC                       | NJM7805FA        | イ                    | C REGULATOR +5V           | 02  |
|         | IA097030 | Transistor               | 2SA970 GR,BL     | ト ラ ン ジ ス タ          |                           | 01  |

\* New Parts (新規部品)

ランク : Japan only

| REF NO. | PART NO. | DESCRIPTION             | 部 品 名             | REMARKS             | QTY | ランク |
|---------|----------|-------------------------|-------------------|---------------------|-----|-----|
|         | 1A101590 | Transistor              | 2SA1015 O,Y       | ト ラ ン ジ ス タ         |     | 01  |
|         | 1A111520 | Transistor              | 2SA1115 E,F       | ト ラ ン ジ ス タ         |     | 01  |
|         | VE198700 | Transistor              | 2SA1145 O,Y       | ト ラ ン ジ ス タ         |     | 01  |
|         | VP872600 | Transistor              | 2SA1708 S,T       | ト ラ ン ジ ス タ         |     | 02  |
|         | 1C1815M0 | Transistor              | 2SC1815 Y,GR      | ト ラ ン ジ ス タ         |     | 01  |
|         | 1C224030 | Transistor              | 2SC2240 GR,BL     | ト ラ ン ジ ス タ         |     | 01  |
|         | 1C260320 | Transistor              | 2SC2603 E,F       | ト ラ ン ジ ス タ         |     | 01  |
|         | VE198800 | Transistor              | 2SC2705 O,Y       | ト ラ ン ジ ス タ         |     | 01  |
|         | VP872700 | Transistor              | 2SC4488 S,T       | ト ラ ン ジ ス タ         |     | 01  |
|         | VV081700 | Pair Transistor         | B1647/D2560       | ペア ト ラ ン ジ ス タ      |     |     |
|         | VD678500 | Digital Transistor      | DTA114ES          | デ ジ タ ル ト ラ ン ジ ス タ |     | 03  |
|         | VD678700 | Digital Transistor      | DTC114ES          | デ ジ タ ル ト ラ ン ジ ス タ |     | 03  |
|         | 1F005560 | Diode                   | 1SS82TD           | ダ イ オ ー ド           |     | 01  |
|         | VD631600 | Diode                   | 1SS133,176,HSS104 | ダ イ オ ー ド           |     | 01  |
|         | VU801600 | Diode                   | 1N4004L 26        | ダ イ オ ー ド           |     |     |
|         | VV081900 | Diode                   | SF22              | ダ イ オ ー ド           |     |     |
|         | VV082000 | Diode                   | 2A01              | ダ イ オ ー ド           |     |     |
|         | VV306600 | Diode                   | SFT14 26          | ダ イ オ ー ド           |     |     |
|         | VV081800 | Diode Stack             | KBU603 6.0A 200V  | ダイ オード スタック         |     |     |
|         | VG437700 | Zener Diode             | MTZ J 5.6B 5.6V   | ツェナー ダイオード          |     | 01  |
|         | VG438900 | Zener Diode             | MTZ J 8.2B 8.2V   | ツェナー ダイオード          |     | 01  |
|         | VG443100 | Zener Diode             | MTZ J 27.0D 27.0V | ツェナー ダイオード          |     | 01  |
|         | VV335500 | Zener Diode             | MTZ J 43 43.0V    | ツェナー ダイオード          |     |     |
|         | VV082200 | Mylar Capacitor         | 3.3000 100V M     | フ ィ ル ム コ ン         |     |     |
|         | VV082300 | Mylar Capacitor         | 0.1000 250V M     | フ ィ ル ム コ ン         |     |     |
|         | FG612470 | Ceramic Capacitor-B     | 470P 50V K        | セ ラ コ ン B           |     | 01  |
|         | FG613100 | Ceramic Capacitor-B     | 1000P 50V K       | セ ラ コ ン B           |     | 01  |
|         | FG651560 | Ceramic Capacitor-SL    | 56P 50V J         | セ ラ コ ン ( S L )     |     | 01  |
|         | FG652100 | Ceramic Capacitor-SL    | 100P 50V J        | セ ラ コ ン ( S L )     |     | 01  |
|         | FG644100 | Ceramic Capacitor-F     | 0.0100 50V Z      | セ ラ コ ン F           |     | 01  |
|         | VV314600 | Ceramic Capacitor-B     | 0.0022 500V M     | セ ラ コ ン B           |     |     |
|         | VV059300 | Monolithic Ceramic Cap. | 0.10 50V Z        | 積 層 セ ラ コ ン         |     |     |
|         | UJ698330 | Electrolytic Cap.       | 330.00 100.0V     | ケ ミ コ ン             |     |     |
|         | UJ828100 | Electrolytic Cap.       | 100.00 10.0V      | ケ ミ コ ン             |     | 01  |
|         | UJ828470 | Electrolytic Cap.       | 470.00 10.0V      | ケ ミ コ ン             |     | 01  |
|         | UJ847100 | Electrolytic Cap.       | 10.00 25.0V       | ケ ミ コ ン             |     | 01  |
|         | UJ847470 | Electrolytic Cap.       | 47.00 25.0V       | ケ ミ コ ン             |     | 01  |
|         | UJ866100 | Electrolytic Cap.       | 1.00 50.0V        | ケ ミ コ ン             |     | 01  |
|         | UJ866470 | Electrolytic Cap.       | 4.70 50.0V        | ケ ミ コ ン             |     | 01  |
|         | UJ896470 | Electrolytic Cap.       | 4.7 100.0V        | ケ ミ コ ン             |     | 01  |
|         | VV714300 | Electrolytic Cap.       | 470 50.0V         | ケ ミ コ ン             |     |     |
|         | UJ659100 | Electrolytic Cap.       | 1000 35.0V        | ケ ミ コ ン             |     | 02  |
|         | VV082100 | Electrolytic Cap.       | 6800 80V          | ケ ミ コ ン             |     |     |
|         | FU451680 | Mica Capacitor          | 68P 500V J        | マ イ カ コ ン           |     | 01  |
|         | FU451820 | Mica Capacitor          | 82P 500V J        | マ イ カ コ ン           |     | 01  |
|         | FU452220 | Mica Capacitor          | 220P 500V J       | マ イ カ コ ン           |     | 02  |
|         | HF454470 | Carbon Resistor         | 47.0 1/4 J        | カ ー ボ ン 抵 抗         |     | 01  |
|         | HF454680 | Carbon Resistor         | 68.0 1/4 J        | カ ー ボ ン 抵 抗         |     | 01  |
|         | HF455100 | Carbon Resistor         | 100.0 1/4 J       | カ ー ボ ン 抵 抗         |     | 01  |
|         | HF455150 | Carbon Resistor         | 150.0 1/4 J       | カ ー ボ ン 抵 抗         |     | 01  |
|         | HF455220 | Carbon Resistor         | 220.0 1/4 J       | カ ー ボ ン 抵 抗         |     | 01  |
|         | HF455330 | Carbon Resistor         | 330.0 1/4 J       | カ ー ボ ン 抵 抗         |     | 01  |
|         | HF455560 | Carbon Resistor         | 560.0 1/4 J       | カ ー ボ ン 抵 抗         |     | 01  |
|         | HF456150 | Carbon Resistor         | 1.5K 1/4 J        | カ ー ボ ン 抵 抗         |     | 01  |
|         | HF456220 | Carbon Resistor         | 2.2K 1/4 J        | カ ー ボ ン 抵 抗         |     | 01  |
|         | HF456390 | Carbon Resistor         | 3.9K 1/4 J        | カ ー ボ ン 抵 抗         |     | 01  |
|         | HF456470 | Carbon Resistor         | 4.7K 1/4 J        | カ ー ボ ン 抵 抗         |     | 01  |
|         | HF457100 | Carbon Resistor         | 10.0K 1/4 J       | カ ー ボ ン 抵 抗         |     | 01  |
|         | HF457150 | Carbon Resistor         | 15.0K 1/4 J       | カ ー ボ ン 抵 抗         |     | 01  |
|         | HF457220 | Carbon Resistor         | 22.0K 1/4 J       | カ ー ボ ン 抵 抗         |     | 01  |
|         | HF457270 | Carbon Resistor         | 27.0K 1/4 J       | カ ー ボ ン 抵 抗         |     | 01  |
|         | HF457330 | Carbon Resistor         | 33.0K 1/4 J       | カ ー ボ ン 抵 抗         |     | 01  |
|         | HF457470 | Carbon Resistor         | 47.0K 1/4 J       | カ ー ボ ン 抵 抗         |     | 01  |
|         | HF457560 | Carbon Resistor         | 56.0K 1/4 J       | カ ー ボ ン 抵 抗         |     | 01  |
|         | HF458150 | Carbon Resistor         | 150.0K 1/4 J      | カ ー ボ ン 抵 抗         |     | 01  |
|         | HF458330 | Carbon Resistor         | 330.0K 1/4 J      | カ ー ボ ン 抵 抗         |     | 01  |
|         | HF458390 | Carbon Resistor         | 390.0K 1/4 J      | カ ー ボ ン 抵 抗         |     | 01  |
|         | VV058500 | Flame Proof C. Resistor | 10.0 1/4 J        | 不 燃 化 カ ー ボ ン 抵 抗   |     |     |
|         | VV313700 | Flame Proof C. Resistor | 47.0 1/4 J        | 不 燃 化 カ ー ボ ン 抵 抗   |     |     |
|         | VV313800 | Flame Proof C. Resistor | 220.0 1/4 J       | 不 燃 化 カ ー ボ ン 抵 抗   |     |     |

\* New Parts (新規部品)

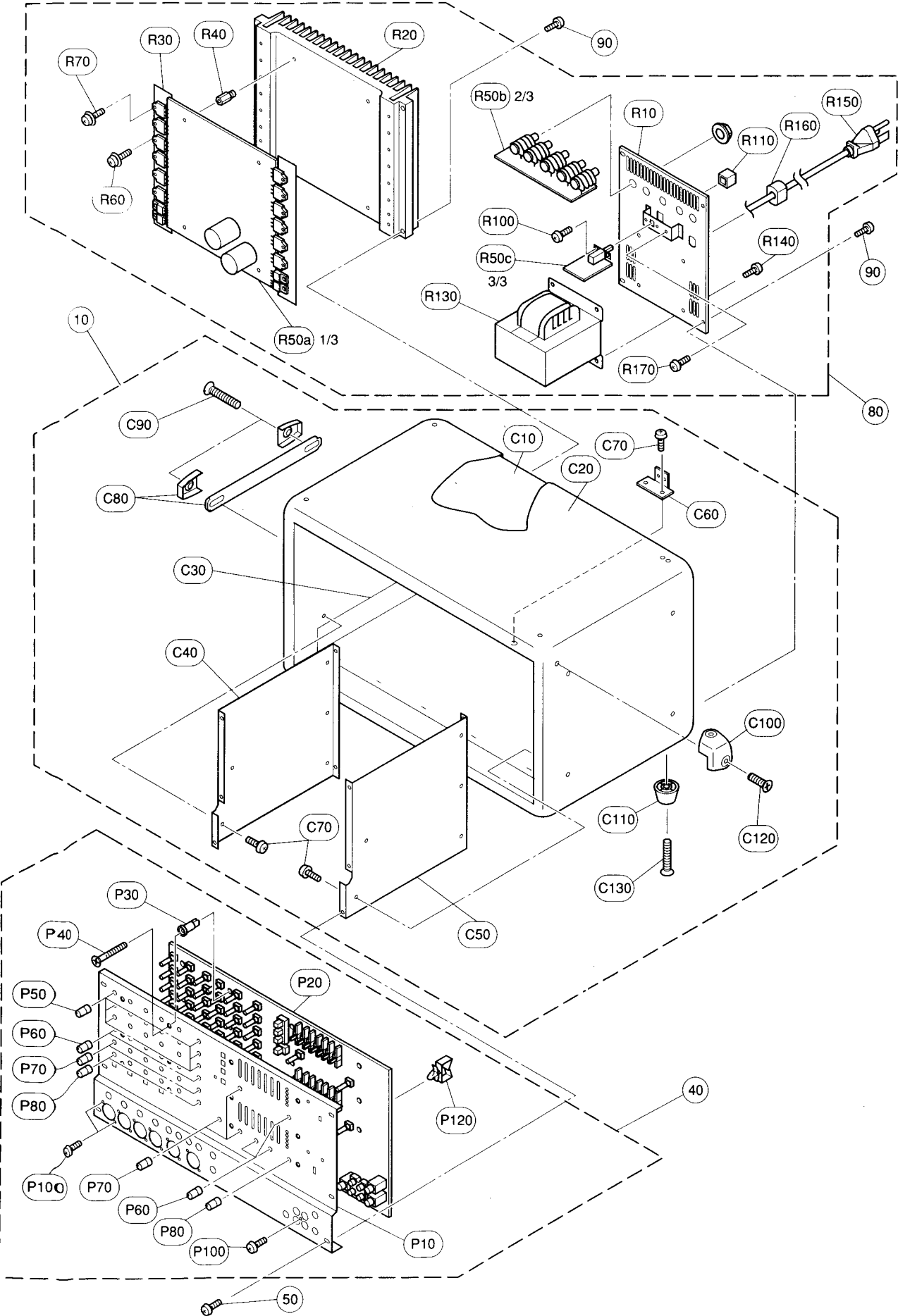
ランク : Japan only



| REF NO. | PART NO. | DESCRIPTION             |                    | 部 品 名               | REMARKS                   | QTY | ランク |
|---------|----------|-------------------------|--------------------|---------------------|---------------------------|-----|-----|
| * * *   | VV313900 | Flame Proof C. Resistor | 680.0 1/4 J        | 不 燃 化 カ ー ボ ン 抵 抗   |                           |     |     |
| * * *   | VV557800 | Flame Proof C. Resistor | 1.0 1/4 J          | 不 燃 化 カ ー ボ ン 抵 抗   |                           |     |     |
| * * *   | VR412900 | Metal Film Resistor     | 0.10 3W J          | 金 属 被 膜 抵 抗         |                           |     | 01  |
| * * *   | VB064600 | Metal Film Resistor     | 680.0 1/4 F        | 金 属 被 膜 抵 抗         |                           |     | 01  |
| * * *   | VB068100 | Metal Film Resistor     | 22K 1/4 F          | 金 属 被 膜 抵 抗         |                           |     | 01  |
|         | VB068400 | Metal Film Resistor     | 33K 1/4 F          | 金 属 被 膜 抵 抗         |                           |     | 01  |
|         | VB070400 | Metal Film Resistor     | 220K 1/4 F         | 金 属 被 膜 抵 抗         |                           |     | 01  |
|         | VR150900 | Coil                    | RZ-001 21mm        | 空 芯 コ イ ル           |                           |     | 02  |
|         | VV082400 | Coil                    | LHL13TB680K        | コ イ ル               |                           |     |     |
|         | VV056900 | Noise Filter            | ZJSR5101-223TA     | ノイズフィルター EMI        |                           |     |     |
| * F102  | VV070600 | Fuse                    | TDS 2A 250V J/U/C  | ヒ ュ ー ズ             | U,C                       |     |     |
| F102    | VV071500 | Fuse                    | TSD 2A 250V SEMKO  | ヒ ュ ー ズ             | A,B,H                     |     |     |
|         | VV315400 | Relay                   | DC OSA-SS-224DM3M  | リ レ ー 2 4 V         |                           |     |     |
| * CN101 | VV067500 | Connector Base Post     | M2426XX 15P TE     | コネクタベースポスト          | to MAIN-CN901             |     |     |
| * CN102 | LB932060 | Base Post Connector     | VH- 6P TE          | ベ ー ス ポ ス ト         | to power trans. secondary |     | 01  |
| * CN105 | LB932040 | Base Post Connector     | VH- 4P TE          | ベ ー ス ポ ス ト         | to POWER(2/3)-CN106-109)  |     | 01  |
|         | VV319600 | Fuse Holder             | CQ-05CT            | ヒ ュ ー ズ ホ ル ダ       |                           |     |     |
|         | VV075700 | Terminal Plate          |                    | タ ー ミ ナ ル 金 具       |                           |     |     |
|         | NX818540 | Circuit Board           | POWER(2/3) SP      | ス ピ ー カ 端 子 シ ー ト   | (XS318C0)                 |     |     |
| W101    | --       | Connector Assembly      | B&C#18 200L        | 束 線                 | to POWER 1/3-CN1(VV08120) |     |     |
| * JK101 | VV089300 | Phone Jack              | H30280072N         | ホ ー ン コ ネ ク タ       | POWER AMP 1 A             |     |     |
| * JK102 | VV089300 | Phone Jack              | H30280072N         | ホ ー ン コ ネ ク タ       | POWER AMP 1 B             |     |     |
| * JK103 | VV089300 | Phone Jack              | H30280072N         | ホ ー ン コ ネ ク タ       | BRIDGE                    |     |     |
| * JK104 | VV089300 | Phone Jack              | H30280072N         | ホ ー ン コ ネ ク タ       | POWER AMP 2 A             |     |     |
| * JK105 | VV089300 | Phone Jack              | H30280072N         | ホ ー ン コ ネ ク タ       | POWER AMP 2 B             |     |     |
|         | NX818550 | Circuit Board           | POWER(3/3) PSW     | パ ワ ー ス イ ッ チ シ ー ト | U,C (XS318C0)             |     |     |
|         | VV704000 | Capacitor               | 4700P 400V         | 規 格 認 定 コ ン         | U,C,H                     |     |     |
|         | VV314800 | Capacitor               | 1000P 400V J.U.C.S | 規 格 認 定 コ ン         |                           |     |     |
|         | NX818560 | Circuit Board           | POWER(3/3) PSW     | パ ワ ー ス イ ッ チ シ ー ト | A,B,H (XS318C0)           |     |     |
|         | VV319600 | Fuse Holder             | CQ-05CT            | ヒ ュ ー ズ ホ ル ダ       |                           |     |     |
| * F103  | VV071700 | Fuse                    | TSD 3.15A 250V SEM | ヒ ュ ー ズ             | A,B,H                     |     |     |
| * F103  | VV314500 | Fuse                    | SIC(TL) 7.00A JU   | ヒ ュ ー ズ             | U,C                       |     |     |
| * CN103 | LB933030 | Base Post Connector     | VH- 3P SE          | ベ ー ス ポ ス ト         | to power trans. primary   |     | 01  |
| * CN104 | LB933030 | Base Post Connector     | VH- 3P SE          | ベ ー ス ポ ス ト         | to AC cord                |     | 01  |
| * SW101 | VV089200 | Push Switch             | SFDLB11R7U-YL U,C, | プ ッ シ ュ S W         | POWER SWITCH              |     |     |
|         | XS167A00 | Power Transformer       |                    | 電 源 ト ラ ン ス         | U,C                       |     |     |
|         | XS168A00 | Power Transformer       |                    | 電 源 ト ラ ン ス         | H,B                       |     |     |
|         | XS169A00 | Power Transformer       |                    | 電 源 ト ラ ン ス         | A                         |     |     |
|         | VV205600 | AC Cord                 | SJT 3X#18 10A      | 電 源 コ ー ド           | U,C                       |     |     |
|         | VV058200 | AC Cord                 | H05VV-F3X0.75 6A   | 電 源 コ ー ド           | A,H                       |     |     |
|         | VV058300 | AC Cord                 | H05VV-F3X0.75      | 電 源 コ ー ド           | B                         |     |     |

ランク：Japan only

OVERALL ASSEMBLY



| REF NO. | PART NO. | DESCRIPTION                |                  | 部 品 名               | REMARKS                        | QTY | ランク |
|---------|----------|----------------------------|------------------|---------------------|--------------------------------|-----|-----|
| * 10    | VV087200 | OVERALL ASSEMBLY           |                  | 総 組 立               | EMX640                         |     |     |
| 40      | ---      | Case Assembly              |                  | ボ デ ィ ー 集 成         |                                |     |     |
| 50      | EG340360 | Panel Assembly             |                  | パ ネ ル A s s ' y     | (VV08390)                      |     |     |
| 80      | ---      | Bind Head Screw            | 4.0X8 MFZN2BL    | + バ イ ン ド 小 ネ ジ     |                                |     | 01  |
| 80      | ---      | Rear Assembly              |                  | リ ア A s s ' y       | U (VV08410)                    |     |     |
| 80      | ---      | Rear Assembly              |                  | リ ア A s s ' y       | H (VV08420)                    |     |     |
| 80      | ---      | Rear Assembly              |                  | リ ア A s s ' y       | B (VV08430)                    |     |     |
| 90      | EG340360 | Rear Assembly              |                  | リ ア A s s ' y       | A (VV56640)                    |     |     |
|         |          | Bind Head Screw            | 4.0X8 MFZN2BL    | + バ イ ン ド 小 ネ ジ     |                                |     | 01  |
| * C10   | VV087200 | CASE ASSEMBLY              |                  | ボ デ ィ ー 集 成         |                                |     |     |
| C20     | ---      | Case                       |                  | ボ デ ィ ー             | (VV08730)                      |     |     |
| C30     | ---      | Carpet                     |                  | カ ー ペ ッ ト           | (VV43490)                      |     |     |
| C40     | ---      | Shield Sheet               |                  | シ ー ル ド 紙           | (VV43470)                      |     |     |
| * C50   | VV102700 | Side Plate                 | LEFT             | サイドプレート (L)         |                                |     |     |
| * C60   | VV102800 | Side Plate                 | RIGHT            | サイドプレート (R)         |                                |     |     |
| * C70   | VV086300 | Rear Angle                 |                  | リ ア ア ン グ ル         |                                |     |     |
| * C80   | EG340110 | Bind Head Screw            | 4.0X16 MFZN2BL   | + バ イ ン ド 小 ネ ジ     |                                |     | 01  |
| * C90   | VV085400 | Handle Assembly            |                  | 取 手 A s s ' y       |                                |     |     |
| * C100  | VV435200 | Oval Head Screw            | 5.0X35 MFZN2BL   | + 丸 皿 小 ネ ジ         |                                |     |     |
| * C110  | VV085500 | Corner Protector           |                  | コ ー ナ ー 金 具         |                                |     |     |
| * C120  | VV085600 | Foot                       |                  | 脚                   |                                |     |     |
| * C130  | EX000950 | Truss Head Tapping Screw-1 | 4.0X12 MFZN2BL   | + ト ラ ス T P 1 種     | (03747270)                     |     | 01  |
|         | EH040208 | Truss Head Tapping Screw-1 | 4.0X20 MFZN2BL   | + ト ラ ス T P 1 種     | (03747290)                     |     | 01  |
| * P10   | ---      | PANEL ASSEMBLY             |                  | パ ネ ル A s s ' y     | (VV08390)                      |     |     |
| * P20   | VV085700 | Front Panel                |                  | フ ロ ン ト パ ネ ル       |                                |     |     |
| * P30   | VV084900 | Circuit Board              | MAIN             | メ イ ン シ ー ト         | (XS329B0)                      |     |     |
| * P40   | VV069200 | PCB Support                | NEW NIFCO        | P C B サ ポ ー ト       |                                |     |     |
|         | VV095300 | Flat Head Tapping Screw-B  | 3.0X25 MFZN2BL   | + 皿 B タ イ ト         |                                |     |     |
| P50     | VU860200 | Knob                       | MX-GREEN/D-GRAY  | ノ ブ ( シ ョ ウ )       | HIGH, MID, LOW                 |     |     |
| P60     | VU859700 | Knob                       | N-GRAY/D-GRAY    | ノ ブ ( シ ョ ウ )       | MONI, MASTER, AUX IN, TAPE IN  |     |     |
| P70     | VU860300 | Knob                       | MX-BLUE/D-GRAY   | ノ ブ ( シ ョ ウ )       | EFFECT, EFFECT OUT, EFFECT RTN |     |     |
| * P80   | VV625800 | Knob                       | ORANGE/D-GRAY    | ノ ブ ( シ ョ ウ )       | LEVEL, MASTER                  |     |     |
| * P100  | VN413300 | Bonding Tapping Screw-B    | 3.0X8 MFZN2BL    | ボ ン デ ィ ン グ B タ イ ト |                                |     | 01  |
| * P120  | VV903200 | Cord Binder                | KWS-1 KSS        | 束 線 止 め             |                                |     |     |
|         |          | REAR ASSEMBLY              |                  | リ ア A s s ' y       |                                |     |     |
|         | ---      | Rear Assembly              |                  | リ ア A s s ' y       | U (VV08410)                    |     |     |
|         | ---      | Rear Assembly              |                  | リ ア A s s ' y       | H (VV08420)                    |     |     |
|         | ---      | Rear Assembly              |                  | リ ア A s s ' y       | B (VV08430)                    |     |     |
|         | ---      | Rear Assembly              |                  | リ ア A s s ' y       | A (VV56640)                    |     |     |
| * R10   | VV087400 | Rear Panel                 |                  | リ ア パ ネ ル           | U                              |     |     |
| * R10   | VV087500 | Rear Panel                 |                  | リ ア パ ネ ル           | H,B                            |     |     |
| * R10   | VV565700 | Rear Panel                 |                  | リ ア パ ネ ル           | A                              |     |     |
| * R20   | VV086200 | Heat Sink                  |                  | ヒ ー ト シ ン ク         |                                |     |     |
| * R30   | VV435300 | Insulation Sheet           |                  | 放 熱 シ ー ト           |                                |     |     |
| * R40   | VV086500 | Support                    | H=7.4 B=5.5      | 支 柱                 |                                |     |     |
| * R50a  | NX818520 | Circuit Board              | POWER(1/3) AMP   | パ ワ ー ア ン プ シ ー ト   | U,C (XS318C0)                  |     |     |
| * R50a  | NX818530 | Circuit Board              | POWER(1/3) AMP   | パ ワ ー ア ン プ シ ー ト   | A,B,H (XS318C0)                |     |     |
| * R50b  | NX818540 | Circuit Board              | POWER(2/3) SP    | ス ピ ー カ 端 子 シ ー ト   | (XS318C0)                      |     |     |
| * R50c  | NX818550 | Circuit Board              | POWER(3/3) PSW   | パ ワ ー ス イ ッ チ シ ー ト | U,C (XS318C0)                  |     |     |
| * R50c  | NX818560 | Circuit Board              | POWER(3/3) PSW   | パ ワ ー ス イ ッ チ シ ー ト | A,B,H (XS318C0)                |     |     |
| R60     | EG330290 | Bind Head Screw            | SP 3.0X8 MFZN2Y  | + バ イ ン ド 小 ネ ジ     |                                |     | 01  |
| R70     | VB763800 | Bind Head Screw            | SP 3.0X12 MFZN2Y | + バ イ ン ド 小 ネ ジ     |                                |     | 01  |
| R100    | VN413300 | Bonding Tapping Screw-B    | 3.0X8 MFZN2BL    | ボ ン デ ィ ン グ B タ イ ト |                                |     | 01  |
| R110    | VU859000 | Power Switch Knob          |                  | P S W ノ ブ           |                                |     |     |
| * R130  | XS167A00 | Power Transformer          |                  | 電 源 ト ラ ン ス         | U,C                            |     |     |
| * R130  | XS168A00 | Power Transformer          |                  | 電 源 ト ラ ン ス         | BH                             |     |     |
| * R130  | XS169A00 | Power Transformer          |                  | 電 源 ト ラ ン ス         | A                              |     |     |
| R140    | EG340190 | Bind Head Tapping Screw-B  | 4.0X8 MFZN2BL    | + バ イ ン ド B タ イ ト   |                                |     | 01  |
| R150    | VV205600 | AC Cord                    | SJT 3X#18 10A    | 電 源 コ ー ド           | U,C                            |     |     |
| R150    | VV058200 | AC Cord                    | H05VV-F3X0.75 6A | 電 源 コ ー ド           | A,H                            |     |     |
| R150    | VV058300 | AC Cord                    | H05VV-F3X0.75    | 電 源 コ ー ド           | B                              |     |     |
| R160    | VV103100 | Cord Strain Relief         | SR-6P1           | コ ー ド ス ト ッ パ ー     | U                              |     |     |
| R160    | VV103000 | Cord Strain Relief         | SR-5R1           | コ ー ド ス ト ッ パ ー     | H,B                            |     |     |
| R170    | EG340360 | Bind Head Screw            | 4.0X8 MFZN2BL    | + バ イ ン ド 小 ネ ジ     |                                |     | 01  |

\* New Parts (新規部品)

ランク : Japan only