

# 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 WHATSOEVER 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) 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) Less than 0.2% @ 20 Hz~20 kHz, +14 dB output into 10 kΩ (MAIN OUT, MONITOR OUT, EFFECT SEND)	
Hum & noise (Average, Rs=150Ω) (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) MAIN OUT, MONITOR OUT	Master level control at nominal level and all channel level controls at minimum.
	-69 dB (73 dB S/N) MAIN OUT, MONITOR OUT	Master level control at nominal level and 1 channel level control at nominal level.
	-75 dB (79 dB S/N) EFFECT SEND	Master level control at nominal level and all channel level controls at minimum.
	-69 dB (73 dB S/N) 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 (PAD: OFF)	86 dB CH IN (Lo-Z) to POWER AMP OUT (CH1~4) 66 dB CH IN (Lo-Z) to MAIN OUT, MONITOR OUT (CH1~4) 72 dB CH IN (Lo-Z) to EFFECT OUT (CH1~4) 48 dB CH IN (Lo-Z) to REC OUT (CH1~4) 56 dB CH IN (Hi-Z) to MAIN OUT, MONITOR OUT (CH1~4) 26 dB AUX IN to MAIN OUT 22 dB TAPE IN to MAIN OUT 66 dB MIC IN to MAIN OUT, MONITOR OUT (CH5•6) 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 HIGH            12 kHz shelving MID             2.5 kHz peaking LOW             80 Hz shelving * 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) ±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
	Europe	230 V AC 50 Hz
	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) (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) (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 (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.

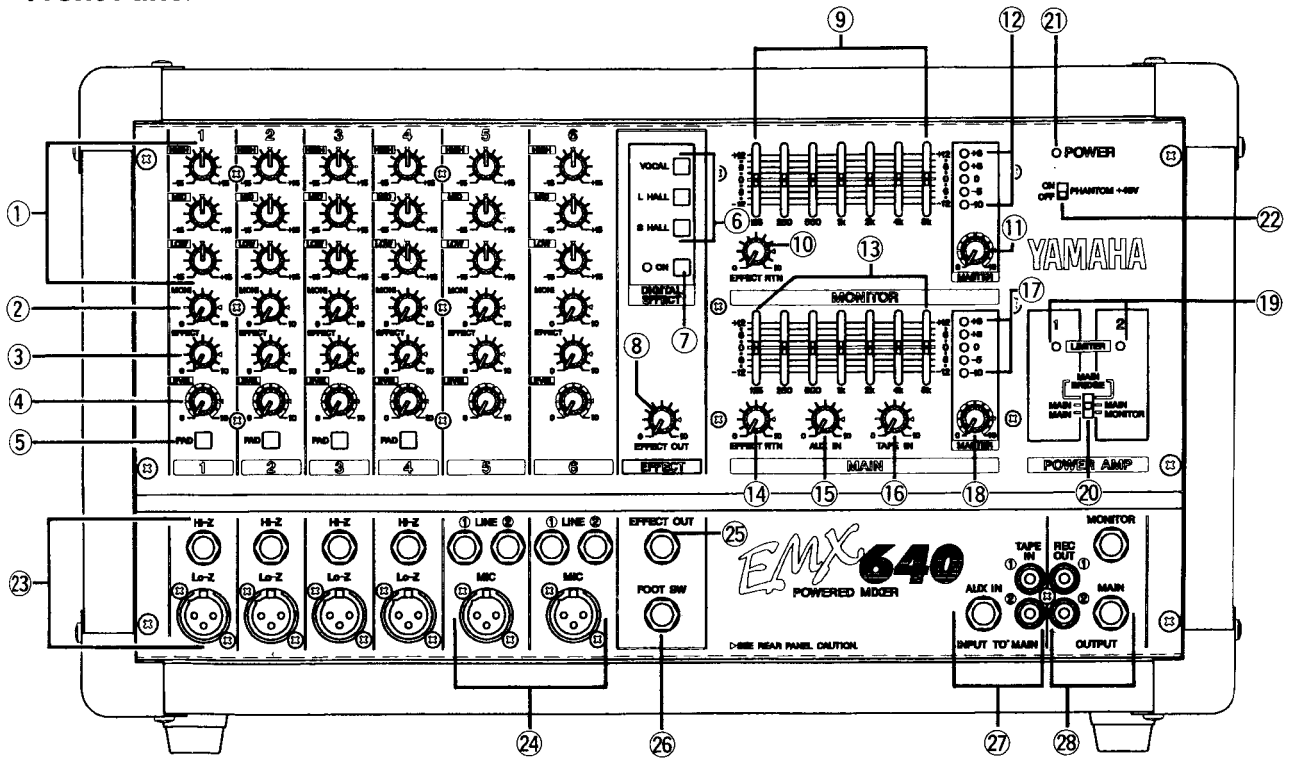
## • Output specifications

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.

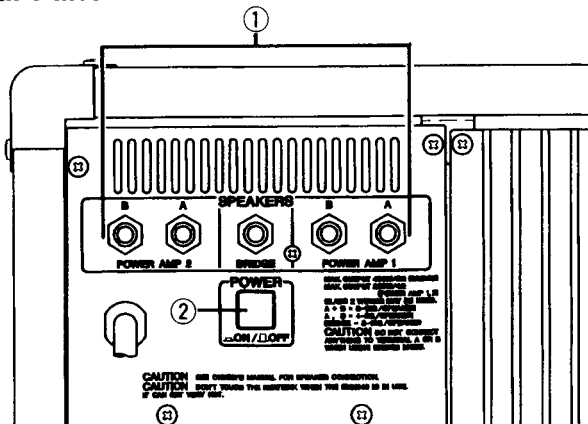
# ■ PANEL LAYOUT

## • Front Panel



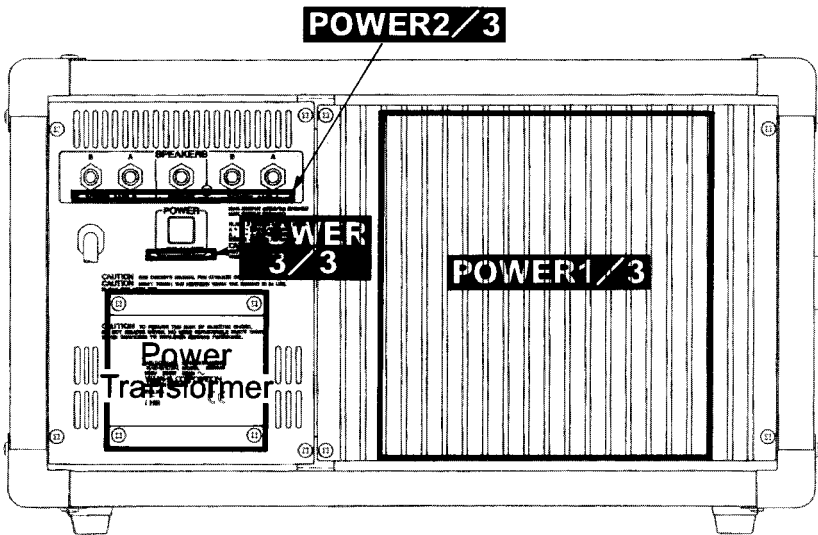
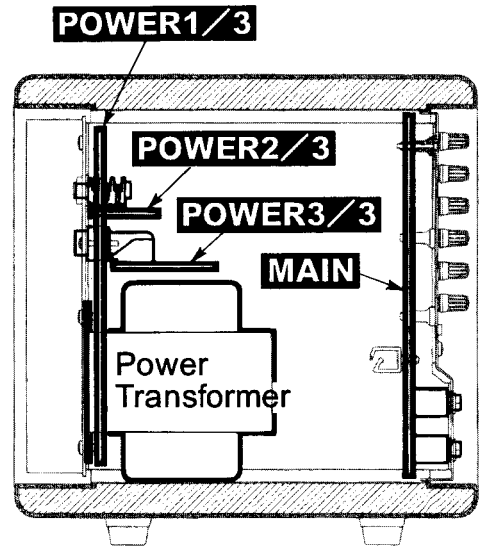
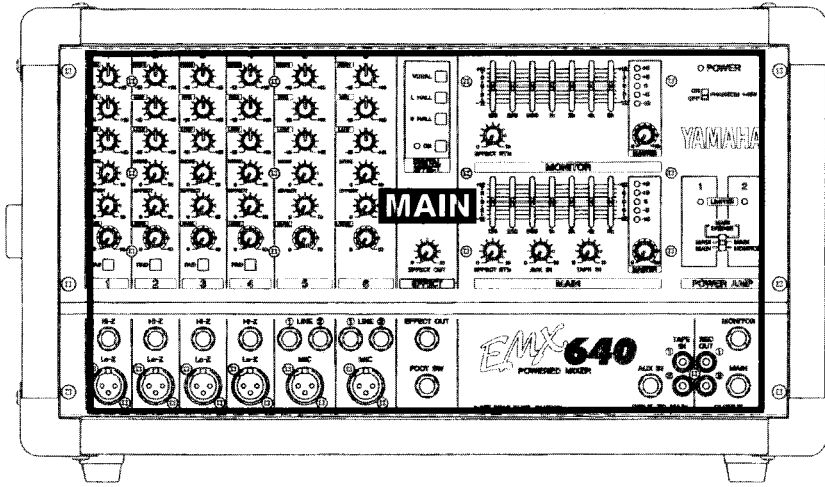
- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>① Equalizer controls (HIGH, MID, LOW)</li> <li>② Monitor controls (MONI)</li> <li>③ Effect control (EFFECT)</li> <li>④ Level control (LEVEL)</li> <li>⑤ Pad switch (PAD) (1~4 only)</li> <li>⑥ Effect select switch</li> <li>⑦ DIGITAL EFFECT ON switch</li> <li>⑧ EFFECT OUT control</li> <li>⑨ Graphic equalizer</li> <li>⑩ EFFECT RTN control</li> <li>⑪ MASTER control</li> <li>⑫ Peak level indicator</li> <li>⑬ Graphic equalizer</li> <li>⑭ EFFECT RTN control</li> <li>⑮ AUX IN control</li> <li>⑯ TAPE IN</li> </ul> | <ul style="list-style-type: none"> <li>⑰ MASTER control</li> <li>⑱ Peak level indicator</li> <li>⑲ LIMITER indicator</li> <li>⑳ Power amp select switch                     <ul style="list-style-type: none"> <li>· MAIN-MONITOR</li> <li>· MAIN-MAIN</li> <li>· MAIN-BRIDGE</li> </ul> </li> <li>㉑ POWER indicator</li> <li>㉒ PHANTOM +48 V switch</li> <li>㉓ Channel input jacks (Hi-Z, Lo-z) 1~4</li> <li>㉔ Channel input jacks (MIC/LINE) 5~6</li> <li>㉕ Effect output jack (EFFECT OUT)</li> <li>㉖ Foot switch jack (FOOT SW)</li> <li>㉗ External input jacks (AUX IN/TAPE IN)</li> <li>㉘ External output jacks (REC OUT/MONITOR/MAIN)</li> </ul> |
|--|---|

## • Rear Panel

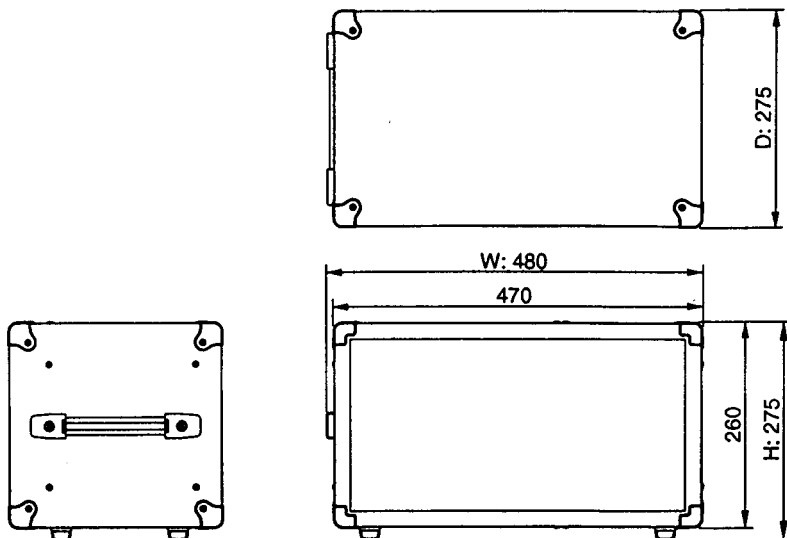


- ① Speaker output jacks (POWER AMP 1 A/B, POWER AMP 2 A/B, BRIDGE)
- ② Power switch

## ■ CIRCUIT BOARD LAYOUT

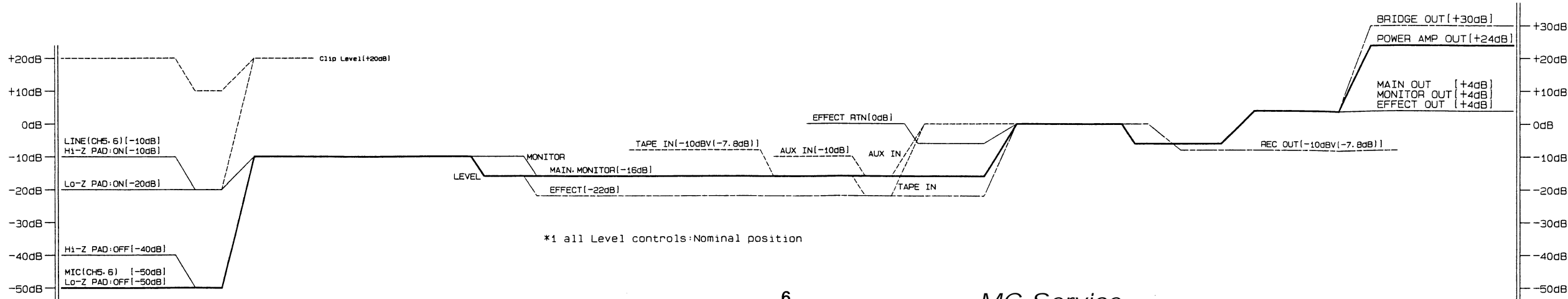
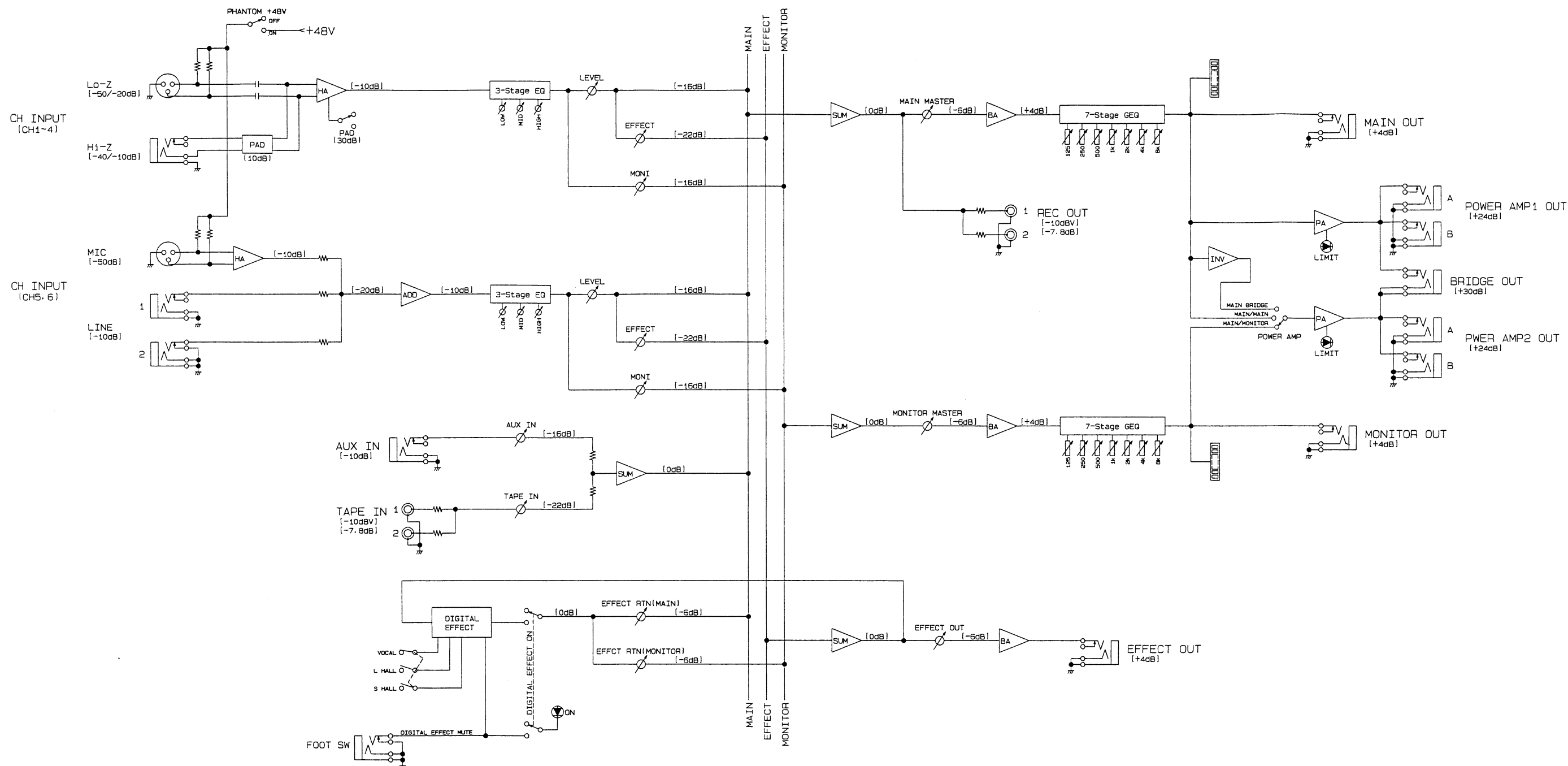


## ■ DIMENSIONS



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

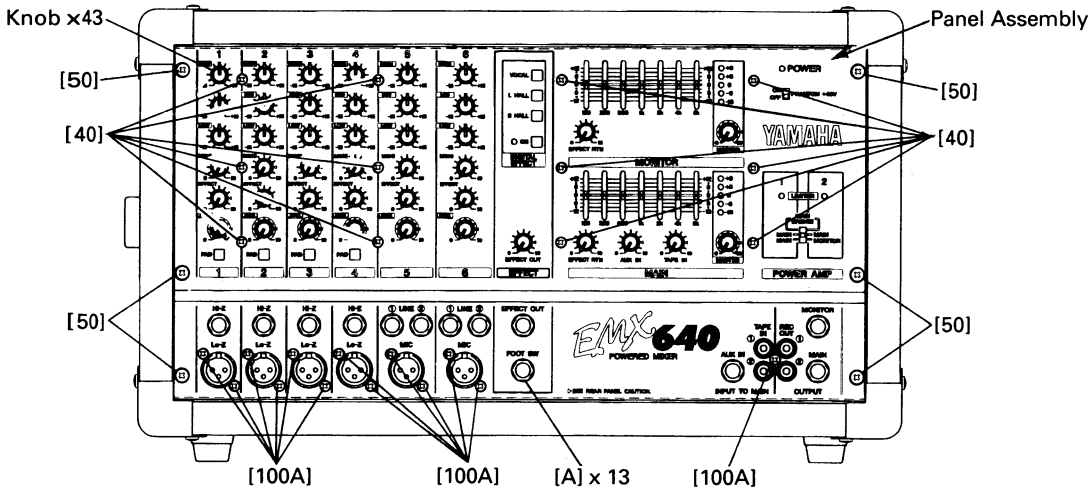
- 2-1 Remove the four (4) screws marked [90A] from rear; remove the rear assembly 1/2. (Fig. 3)
- 2-2 Remove the fifteen (15) screws marked [70] and the four (4) screws marked [60]; remove the POWER 1/3 circuit board. (Fig. 4)

#### 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)

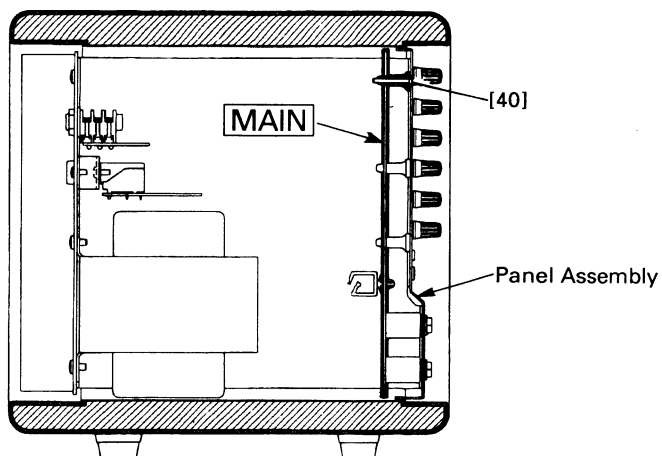
#### 4. Power Transformer

- 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)



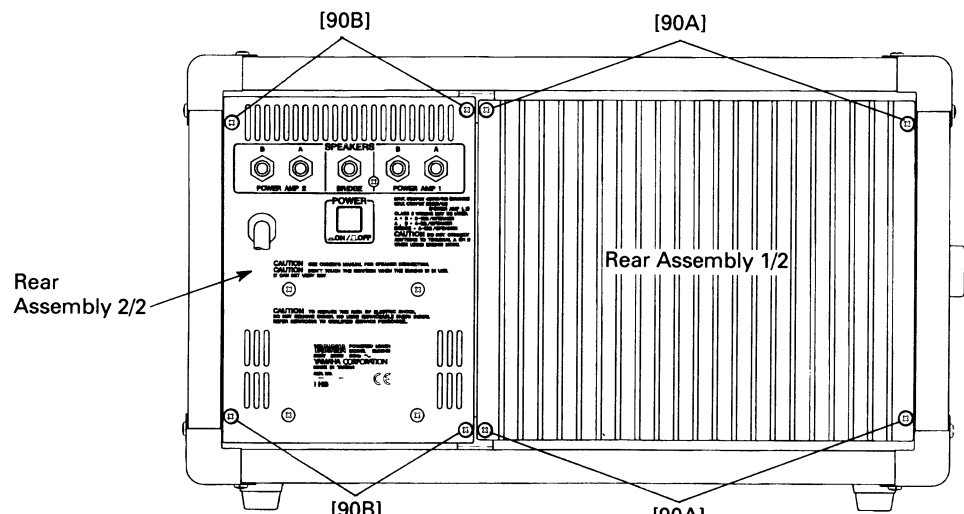
- [A]: Hexagonal Nut
- [40]: Flat Head Tapping Screw-B 3.0X25 MFZN2BL (VV095300)
- [50]: Bind Head Screw 4.0X8 MFZN2BL (EG340360)
- [100A]: Bonding Tapping Screw-B 3.0X8 MFZN2BL (VN413300)

(Fig. 1)



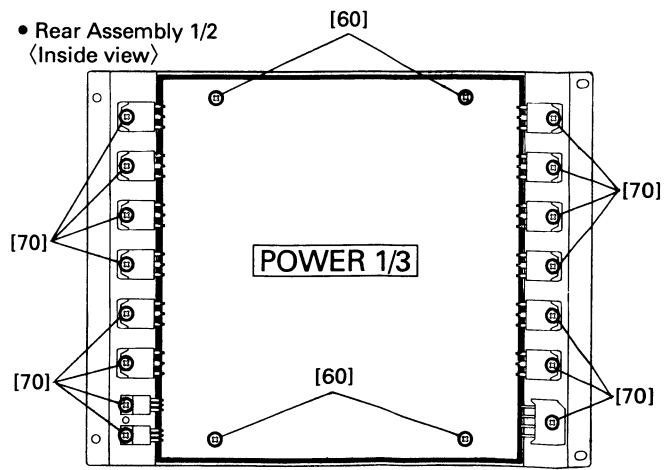
- [40]: Flat Head Tapping Screw-B 3.0X25 MFZN2BL (VV095300)

(Fig. 2)



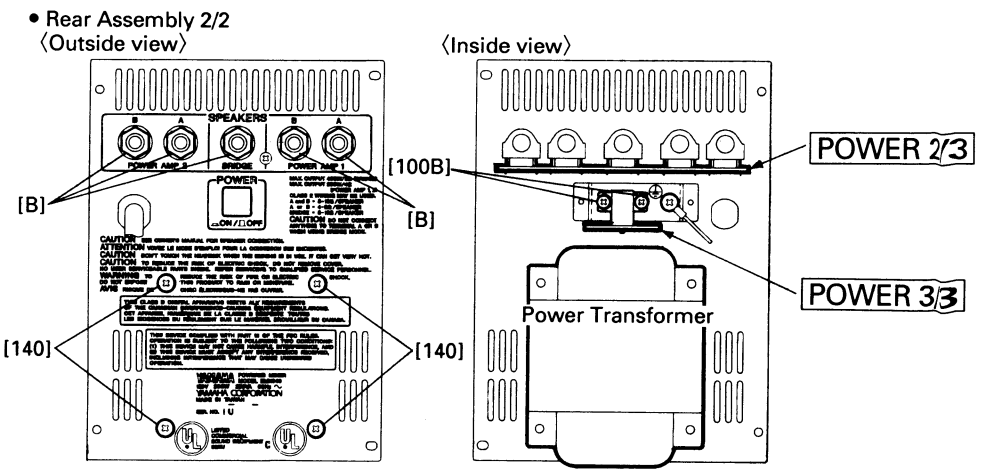
- [90]: Bind Head Screw 4.0X8 MFZN2BL (EG340360)

(Fig. 3)



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

(Fig. 4)



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

(Fig. 5)



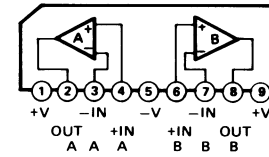
LSI PIN DESCRIPTION

YSS234 (XN299A00) Digital Sound Processor

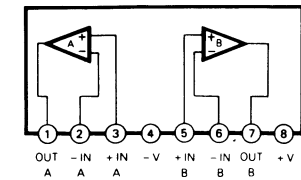
PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	MD4	I/O	External RAM interface data	33	AVDD	-	DC A+5Vs bus
2	MD3	I/O		34	VDD	-	DC D+5V
3	MD0	I/O		35	TST0	-	DC D+5V
4	MD1	I/O		36	TST1	-	DC D+5V
5	MD2	I/O		37	DOEN	-	DC D+5V
6	MCKO	O	Master clock output	38	SDO1	O	N.C.
7	XO	O	Crystal oscillator connection	39	SDO0	O	N.C.
8	XI	I	Crystal oscillator connection	40	WC	O	N.C.
9	ERO	I	Early refraction 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	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	
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	External RAM interface address
22	AORL	O	N.C.	54	MA011	O	
23	AORR	O	N.C.	55	MA09	O	
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

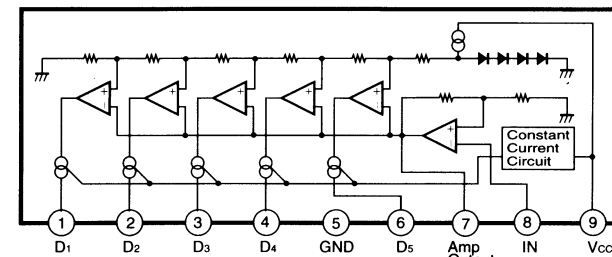
- NJM2068L-D (XM356A00) Dual Operational Amplifier



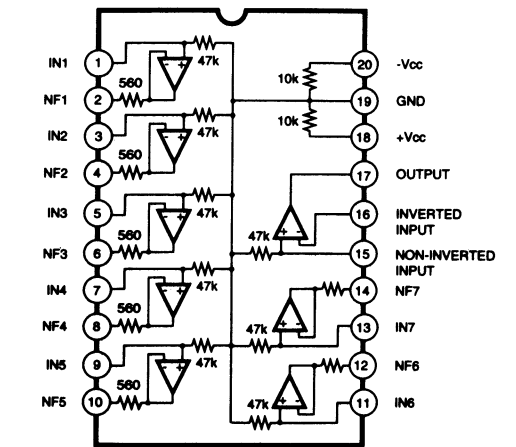
- NJM2082L (XN796A00) Dual Operational Amplifier
- NJM4558L (XM922A00) Dual Operational Amplifier



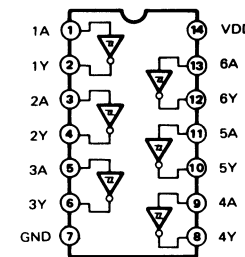
- BA6137 (XA534A00) LED Driver



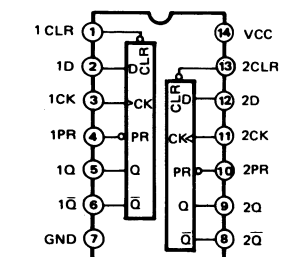
- M5229P (XG203A00) 7 SEGMENTS GRAPHIC EQUALIZER



- TC74HC14AP (IR001400) Hex Inverter



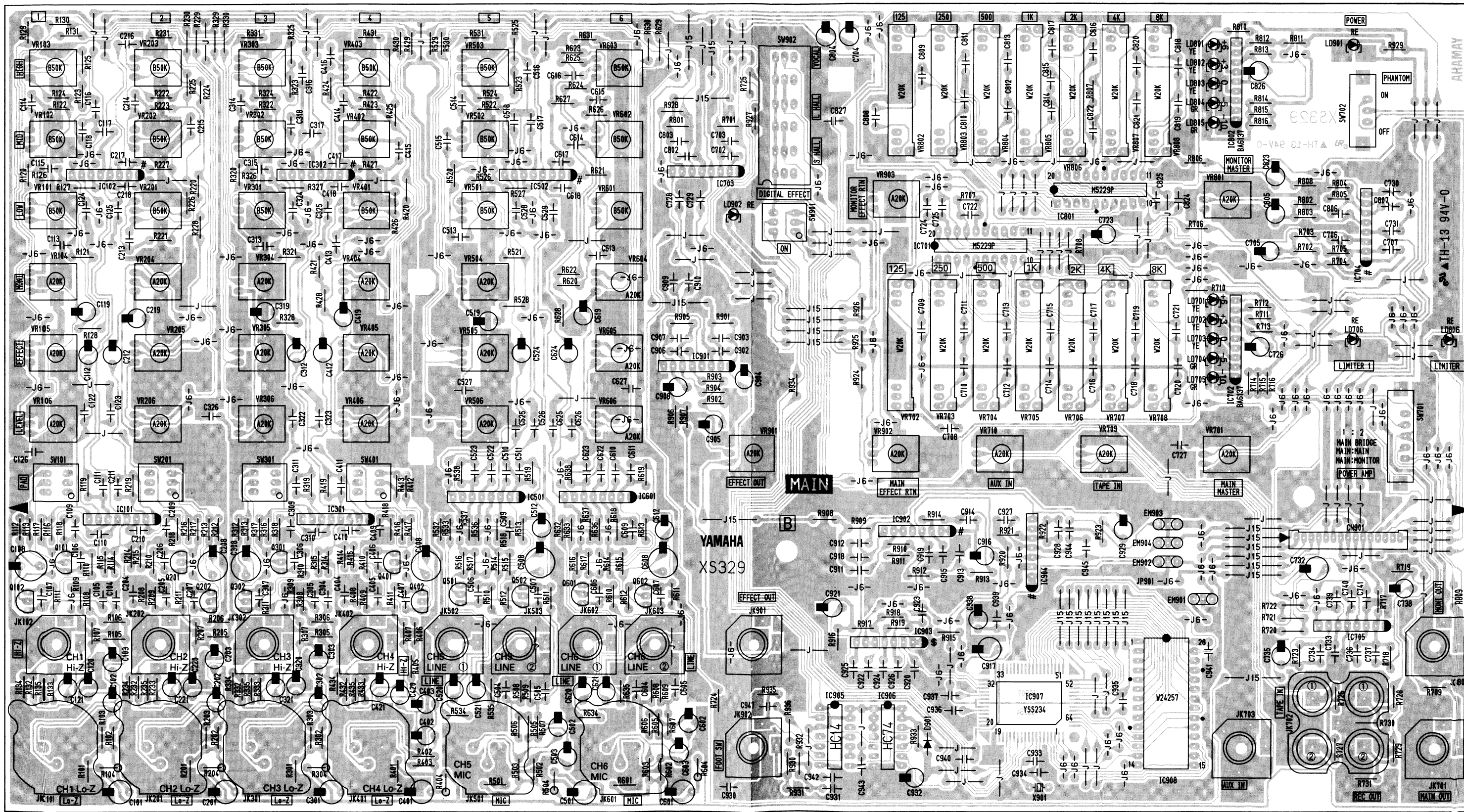
- TC74HC74AP (IR007400) Dual D-Type Flip-Flop



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



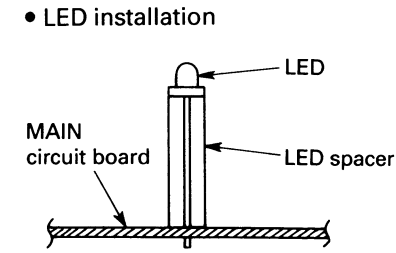
Component side

- Notes)**  
 Circuit Board MAIN (VV084900) XS329B0
- 01. IC**  
 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
- 02. Transistor**  
 Q 101,102,201,202,301,302,401,402,501,502,601,602: 2SC2240 GR,BL (IC224030)
- 03. Diode**  
 D 901: 1SS133,176,HSS10 (VD631600)
- 04. LED**  
 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)
- 05. Mylar Capacitor**  
 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)
- 06. Monolithic Mylar Capacitor**  
 C 708,808: 0.82 50V J (VV064400)  
 C 710,810: 0.47 50V J (VV064100)  
 C 712,812: 0.22 50V J (VV321100)
- 07. Polypropylene Capacitor**  
 C 920: 100P 50V J (UA352100)
- 08. Ceramic Capacitor**  
 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,: 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)
- 09. Monolithic Ceramic Cap.**  
 C 931,935,939,940,941,942,943: 0.10 50V Z (VV059300)
- 10. Electrolytic Cap.**  
 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)
- 11. Low leak Electrolytic Cap.**  
 C 102,103,202,203,302,303,402,403,502,503,602,603: 10.00 50.0V (VV488800)
- 12. Carbon Resistor**  
 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)

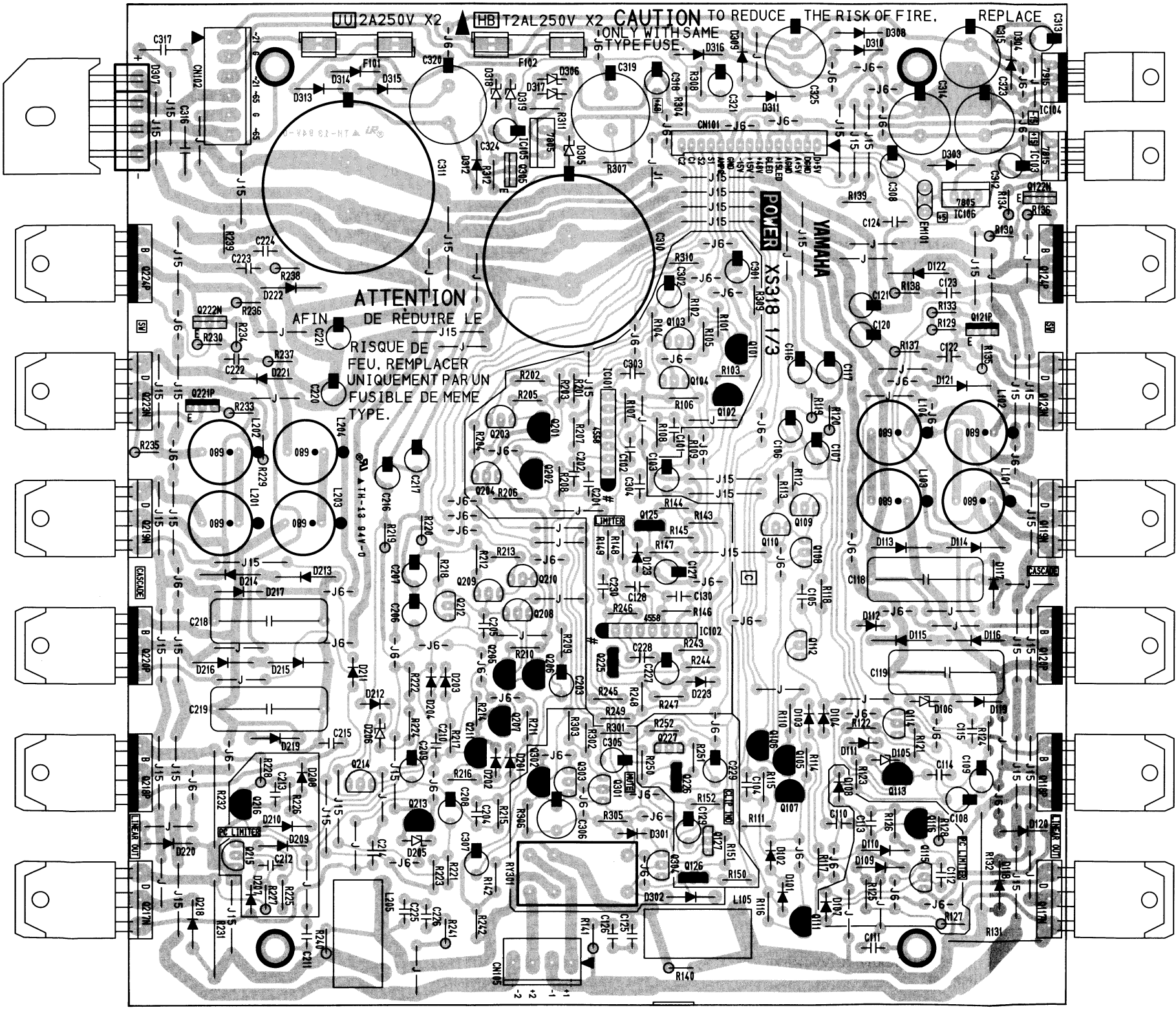
- R 122,123,222,223,322,323,422,423,522,523,622,623,730,731: 1.2K 1/4 J (HF456120)  
 R 124,125,224,225,324,325,424,425,524,525,624,625,706,707,806,807,932: 3.3K 1/4 J (HF456330)  
 R 127,227,327,427,527,627: 3.9K 1/4 J (HF456390)  
 R 129-131,229-231,329-331,429-431,513,529-533,613,629-633,702,720,802,902: 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)
- 13. Flame Proof C. Resistor**  
 R 104,204,304,404,504,604: 390.0 1/4 J (VV058400)
- 14. Metal Film Resistor**  
 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)
- 15. Slide Variable Resistor**  
 VR 702-708,802-808: RS20H11KD017-YL (VV044600)
- 16. Rotary Variable Resistor**  
 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)
- 17. Noise Filter**  
 EM 901-904: ZJSR5101-223TA (VV056900)

- 18. Ceramic Resonator**  
 X 901: 12M CSA12.0MTZ (QU007700)
- 19. Slide Switch**  
 SW 701: SSSU013NB1-YL (VV044700)  
 SW 702: SSSU012NB1-YL (VV051500)
- 20. Push Switch**  
 SW 101,201,301,401,901: SPEA12MC15-YL (VU805000)  
 SW 902: SPEA31MC16-YL (VU804900)
- 21. Pin Jack**  
 JK 702: JK040057PN (VY704800) TAPE IN(1,2) RE
- 22. Phone Jack**  
 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
- 23. XLM Connector**  
 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)
- 24. Connector Base Post**  
 CN 901: M2426XX 15P (VV067500) to POWER 1/3-CN101
- 25. Connector Assembly**  
 : 2426&2426 15P 60 (VV087700)
- 26. Button**  
 : CD-GRAY/WHITE (VU860700) DIGITAL EFFECT(VOCAL, ON, L HALL, S HALL), PAD
- 27. Jumper Wire**  
 JP 901: 0.60 ( -- )



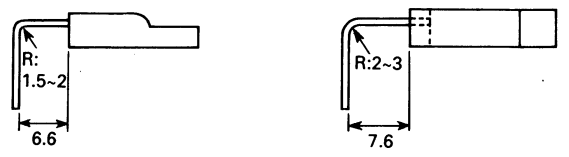
MC-Service

• POWER1/3 Circuit Board



Component side

- IC103, IC104 installation
- D307 installation

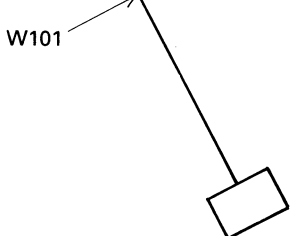
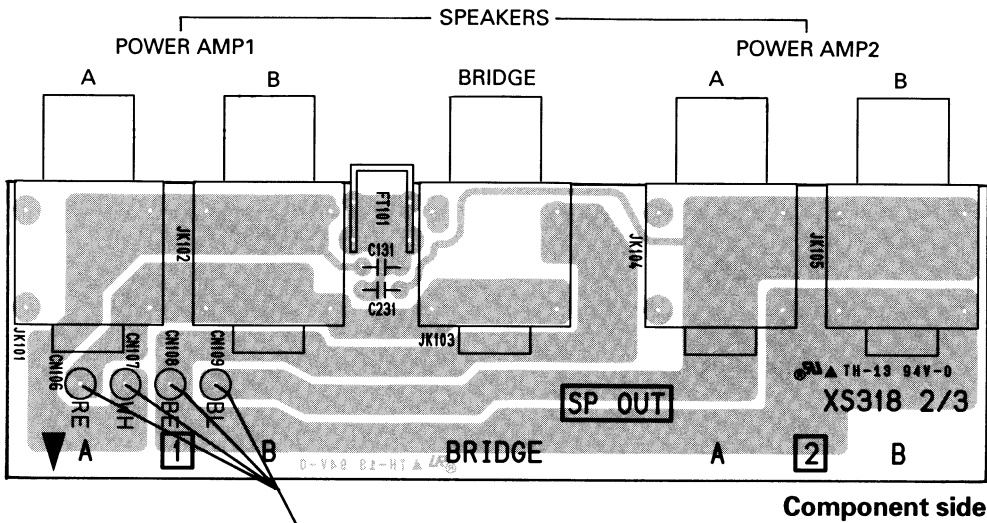


MC-Service

- 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  
NJM7815FA (XD853A00) REGULATOR +15V  
IC103: NJM7815FA (XD854A00) REGULATOR -15V  
IC104: NJM7805FA (XJ607A00) REGULATOR +5V  
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)



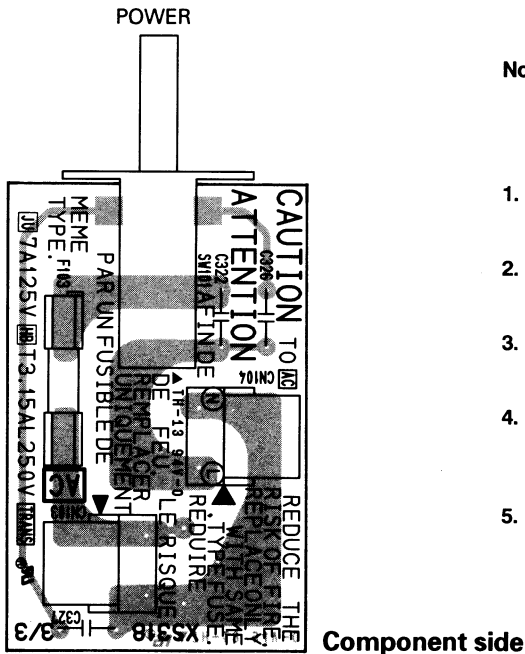
• POWER2/3 Circuit Board



Notes)

- Circuit Board: POWER(2/3) SP (NX818540) XS318C0
- 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
  - 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
- Capacitor**
    - C 322: 1000P 400V J.U.C (VV314800)
    - C 326,327: 4700P 400V (VY704000) U,C,H
  - Push Switch**
    - SW 101: SFDLB11R7U-YL U, (VV089200) POWER SWITCH
  - Fuse**
    - F 103: TSD 3.15A 250V S (VV071700) A,B,H
    - F 103: SIC(TL) 7.00A J (VV314500) U,C
  - Base Post Connector**
    - CN 103: VH- 3P SE (LB933030) to power transformer.
    - CN 104: VH- 3P SE (LB933030) to AC cord
  - 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 =  $150\ \Omega$

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 ( $R_s=150\ \Omega$ )

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 (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  $0 \begin{smallmatrix} +1 \\ -3 \end{smallmatrix}$  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,  $+48 \pm 4$  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  $0 \pm 100$  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  $0_{-3}^{+1}$  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.

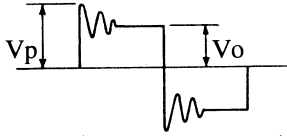
Notes:

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  $\mu$  F) parallel to the load resistor; or connect an inductor (10  $\mu$  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 be  $V_{p-p} \leq 20V$  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  $180 \pm 50W$ .

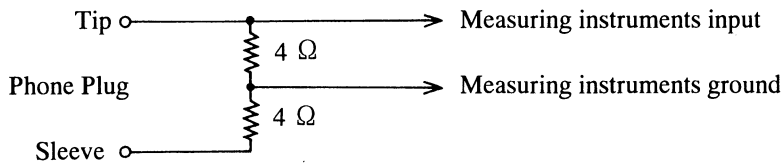
**3. Main Bridge**

**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  $+20.0 \text{ dBs} \pm 2 \text{ dB}$ .

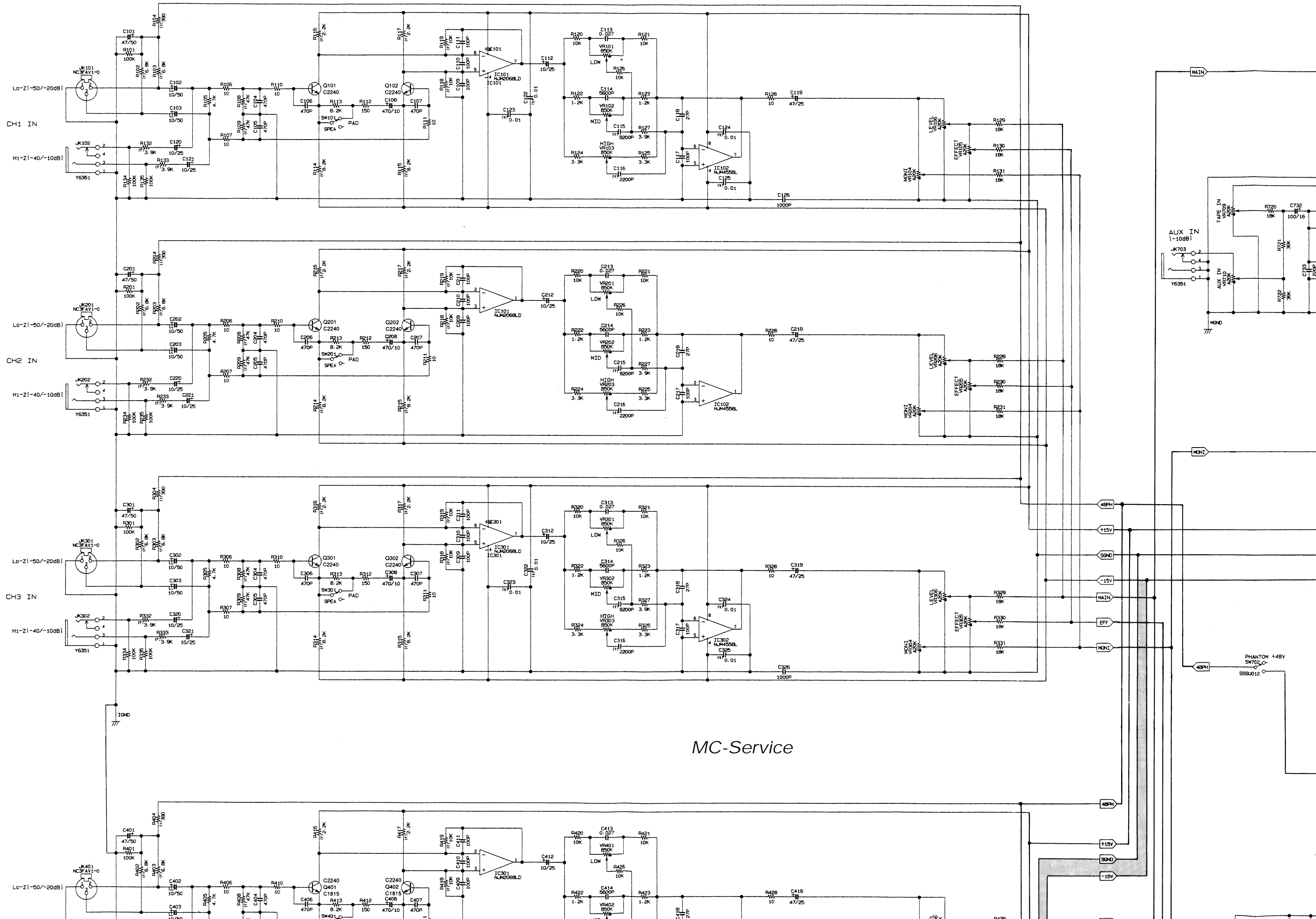
**3-2-2. Frequency Response**

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

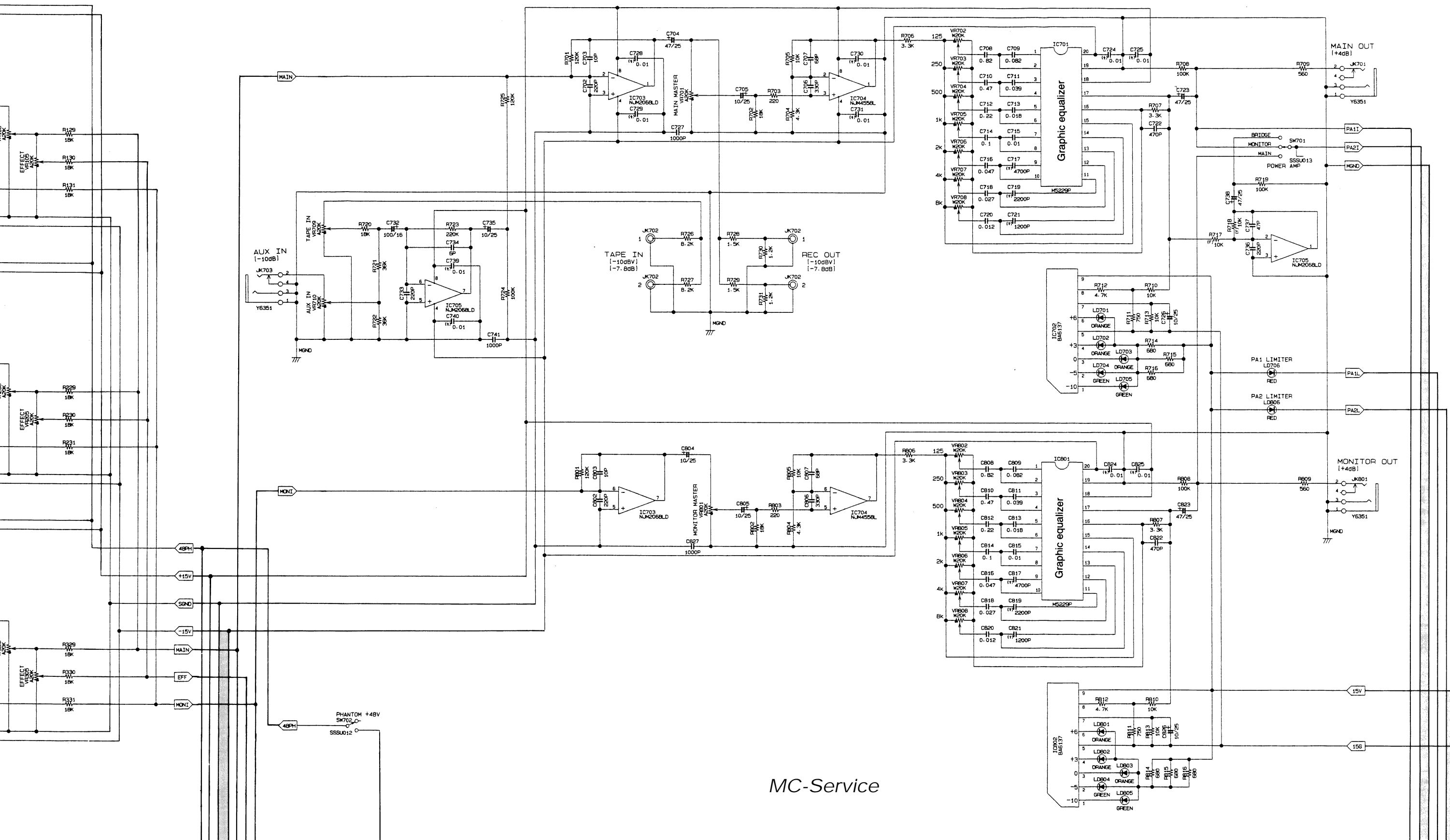
**4. Power Supply Fluctuation**

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

# EMX640 CIRCUIT DIAGRAM 1/2 (MAIN)

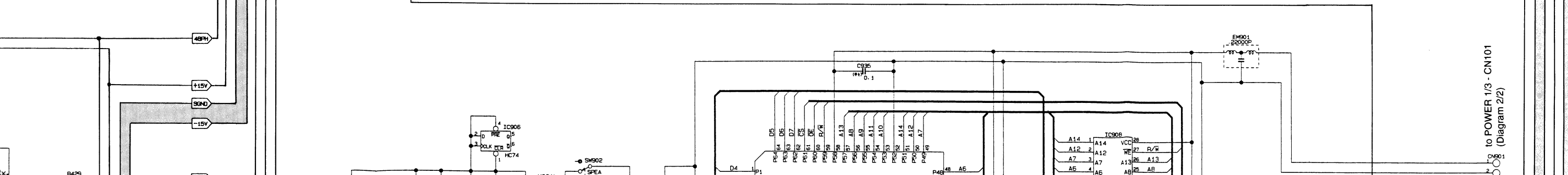


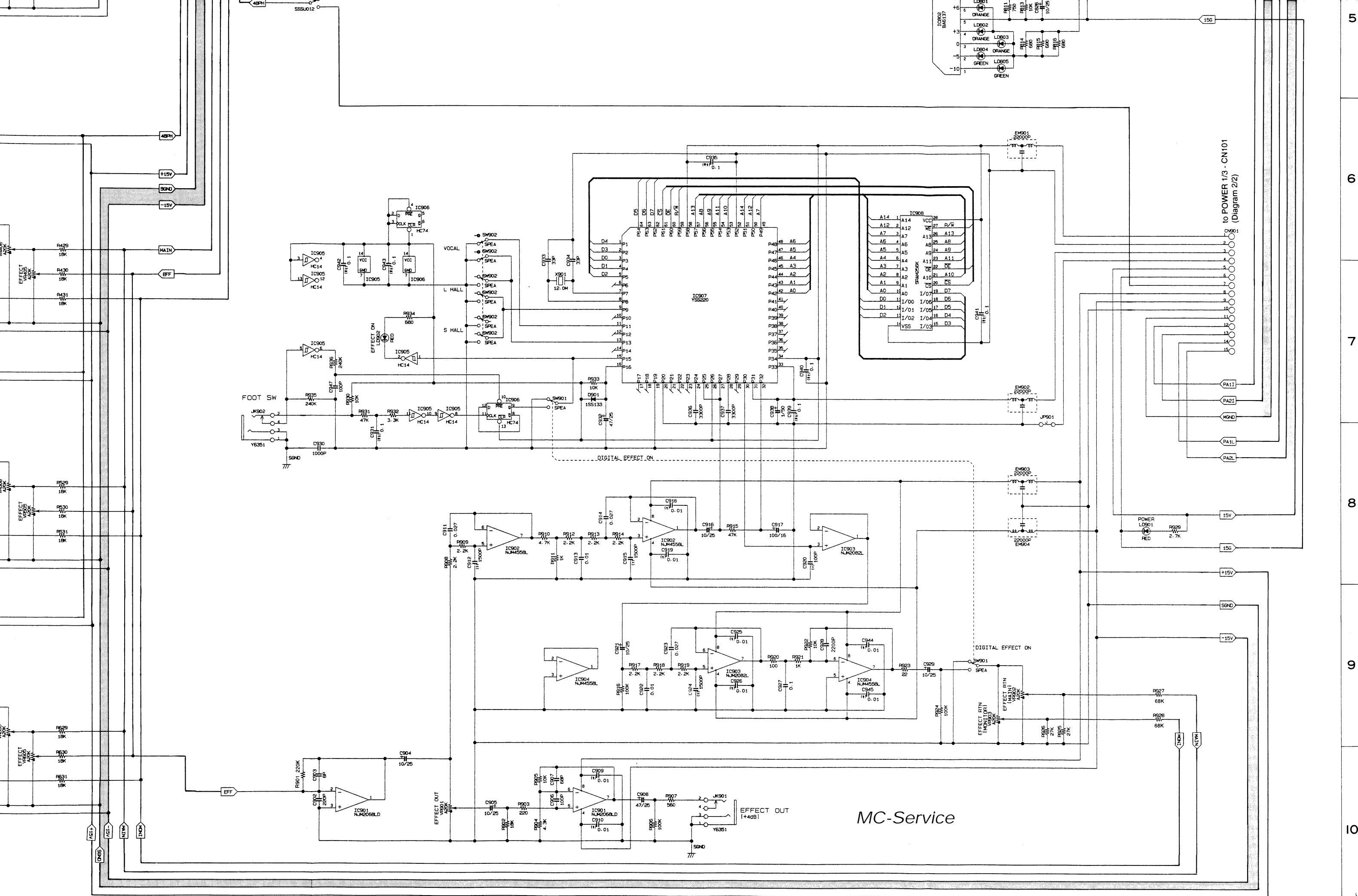
MC-Service



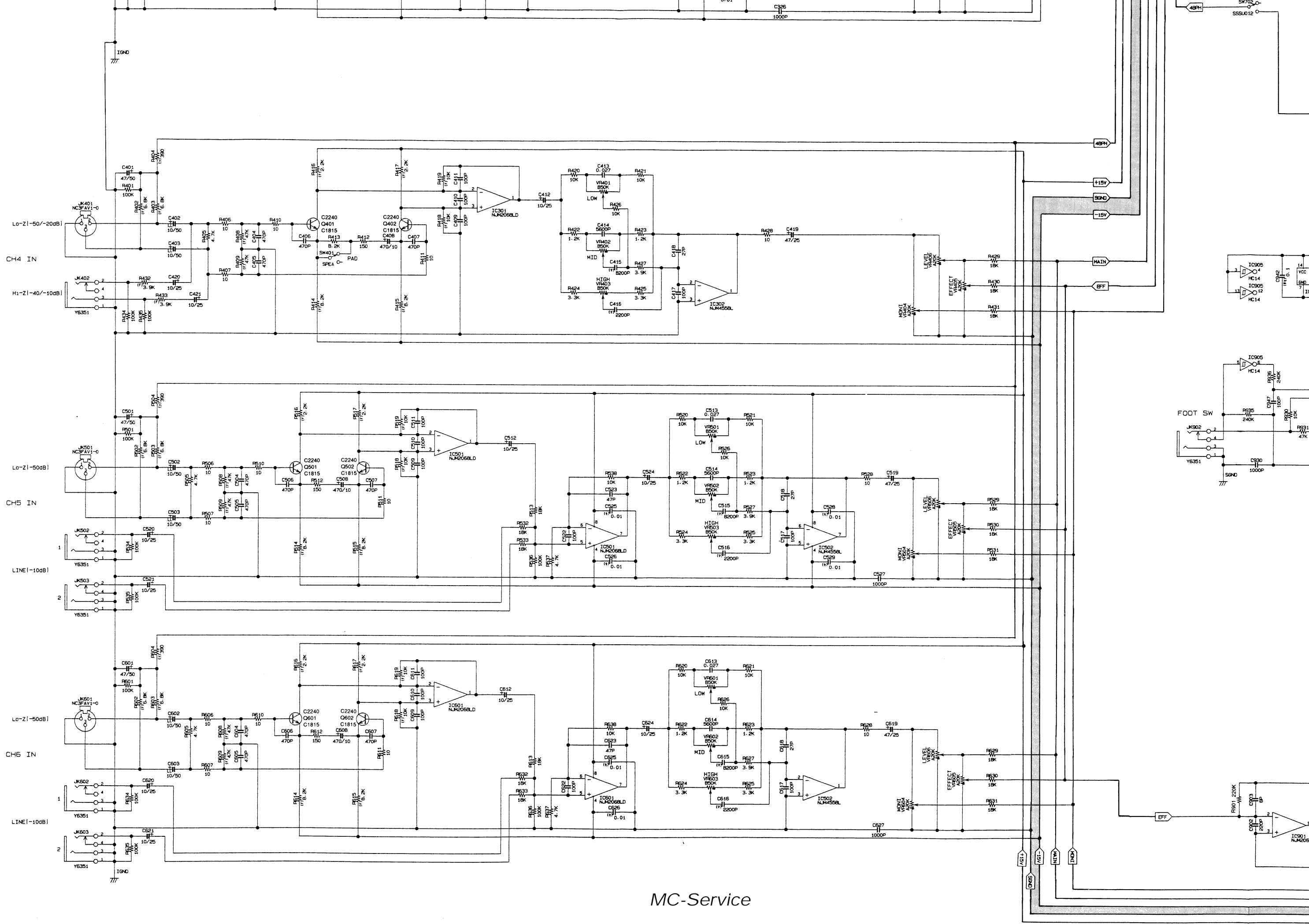
MC-Service

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

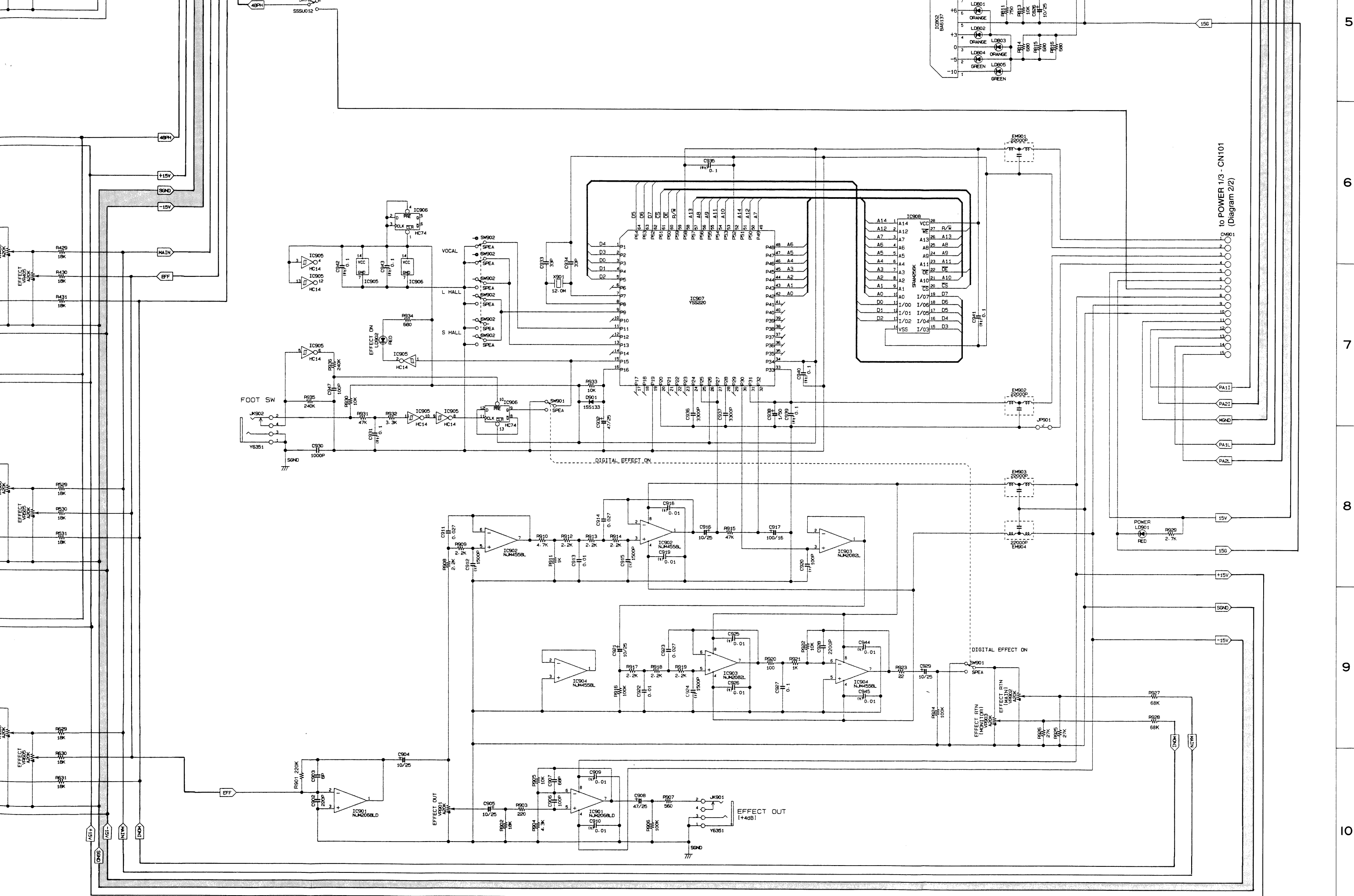




MC-Service



MC-Service



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

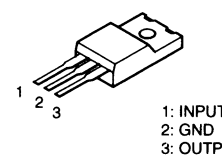
POWER 1/3

MC-Service

- 15 ○ C2
- 14 ○ C1
- 13 ○ S2
- 12 ○ S1
- 11 ○ G
- 10 ○ GND
- 9 ○ -15V
- 8 ○ 15V
- 7 ○ 48V
- 6 ○ G-LED
- 5 ○ 15LED
- 4 ○ A-GND
- 3 ○ A+5V
- 2 ○ D-GND
- 1 ○ D+5V
- PH CN101

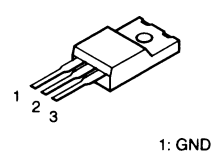
to MAIN - CN901  
(Diagram 1/2)

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



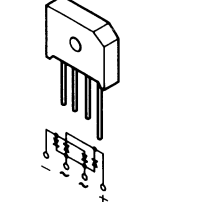
1: INPUT  
2: GND  
3: OUTPUT

- NJM7915FA (XD854A00)  
REGULATOR -15V




1: GND  
2: INPUT  
3: OUTPUT

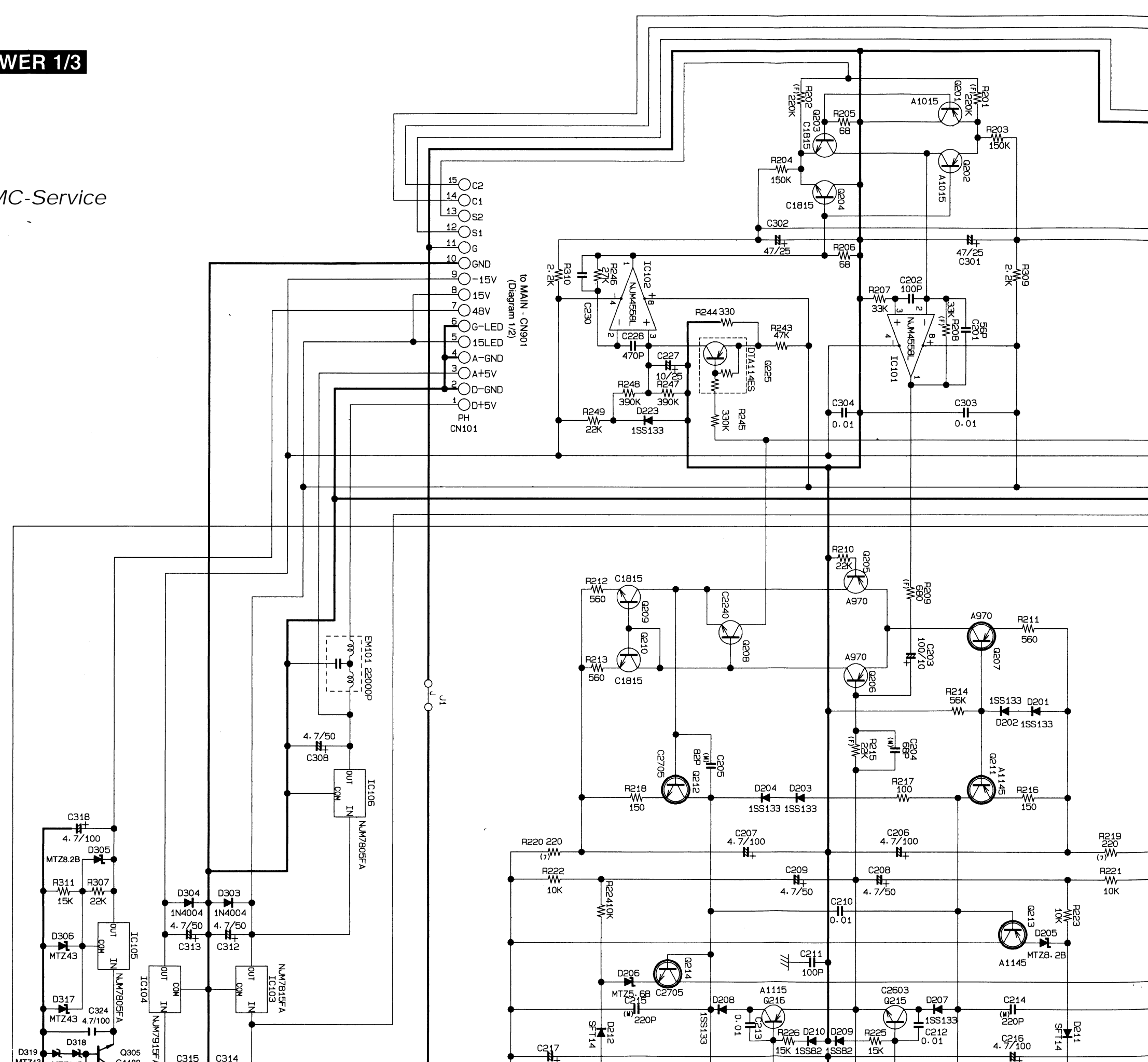
- KBU603 (VV081800)  
DIODE STACK



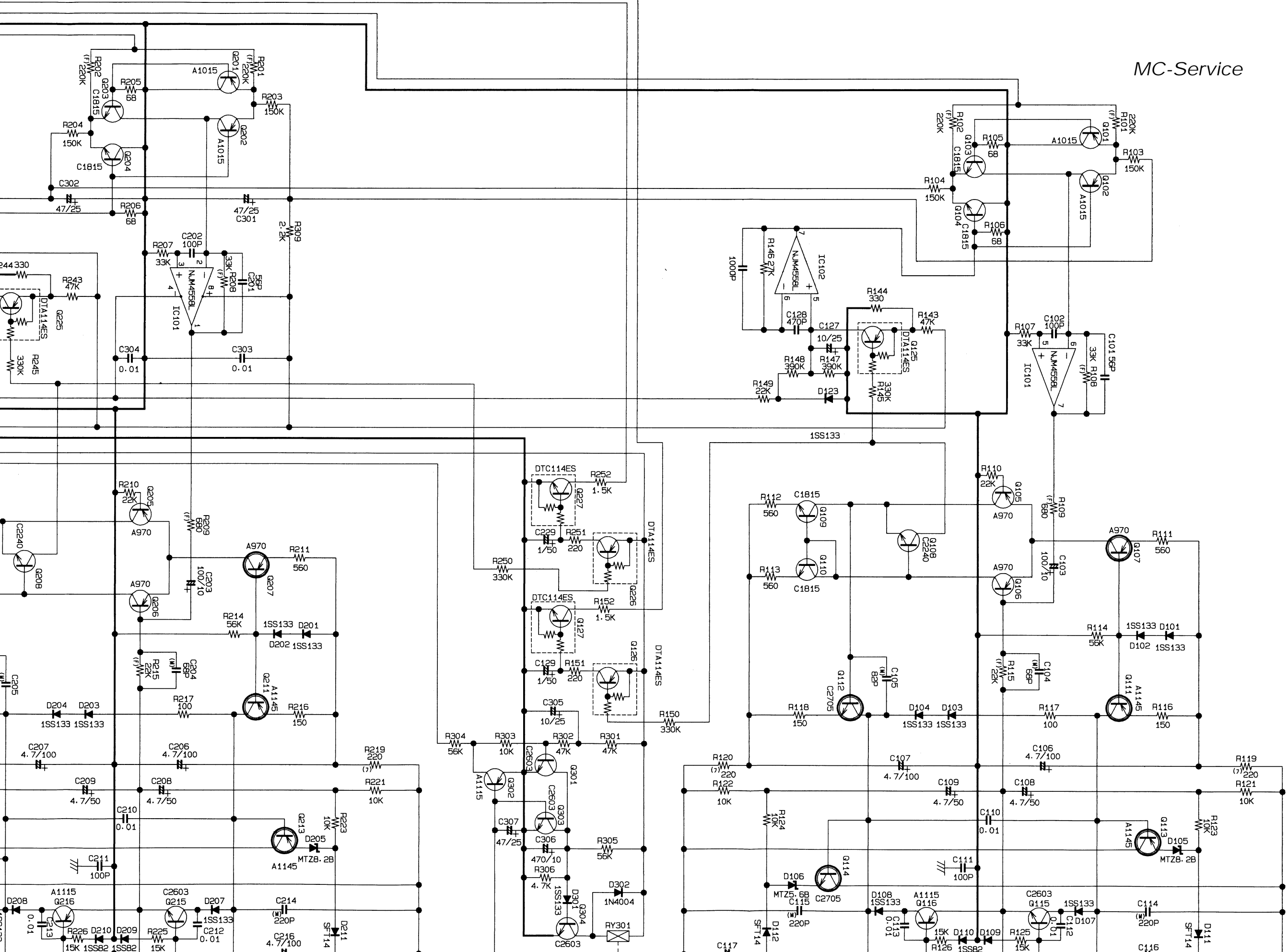
- 1N4004L (VU801600)  
DIODE



Anode

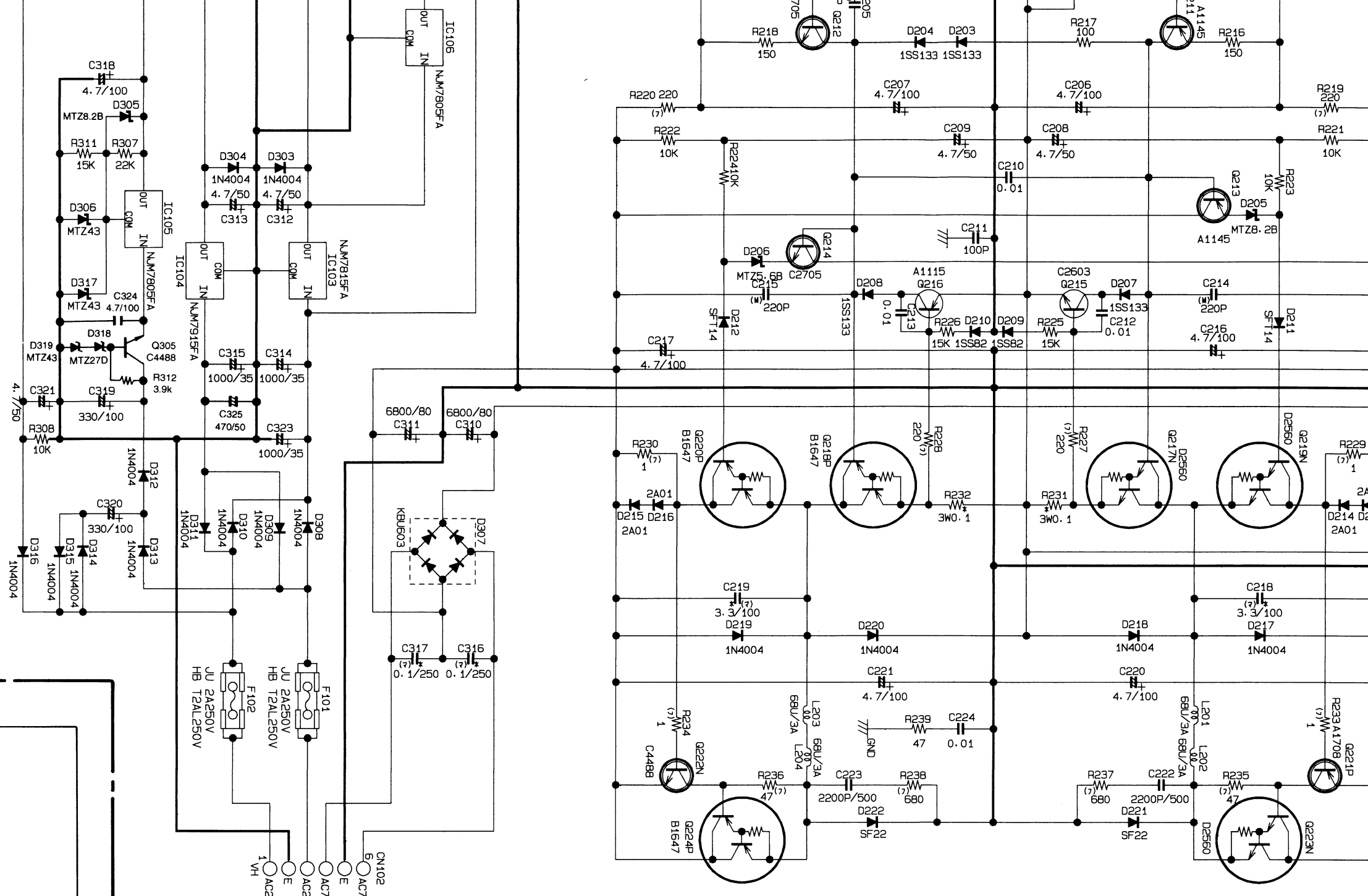
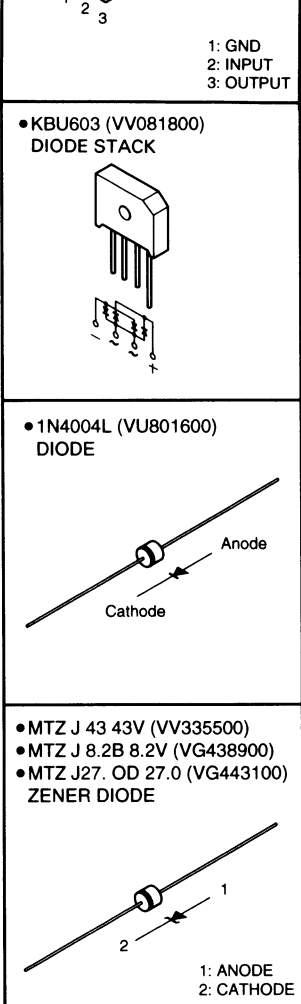




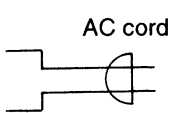
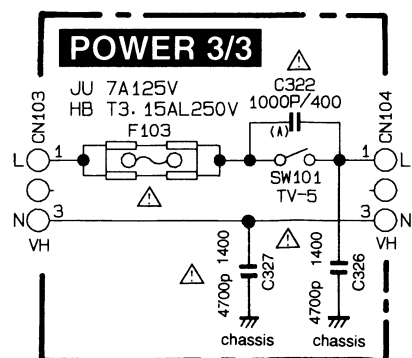
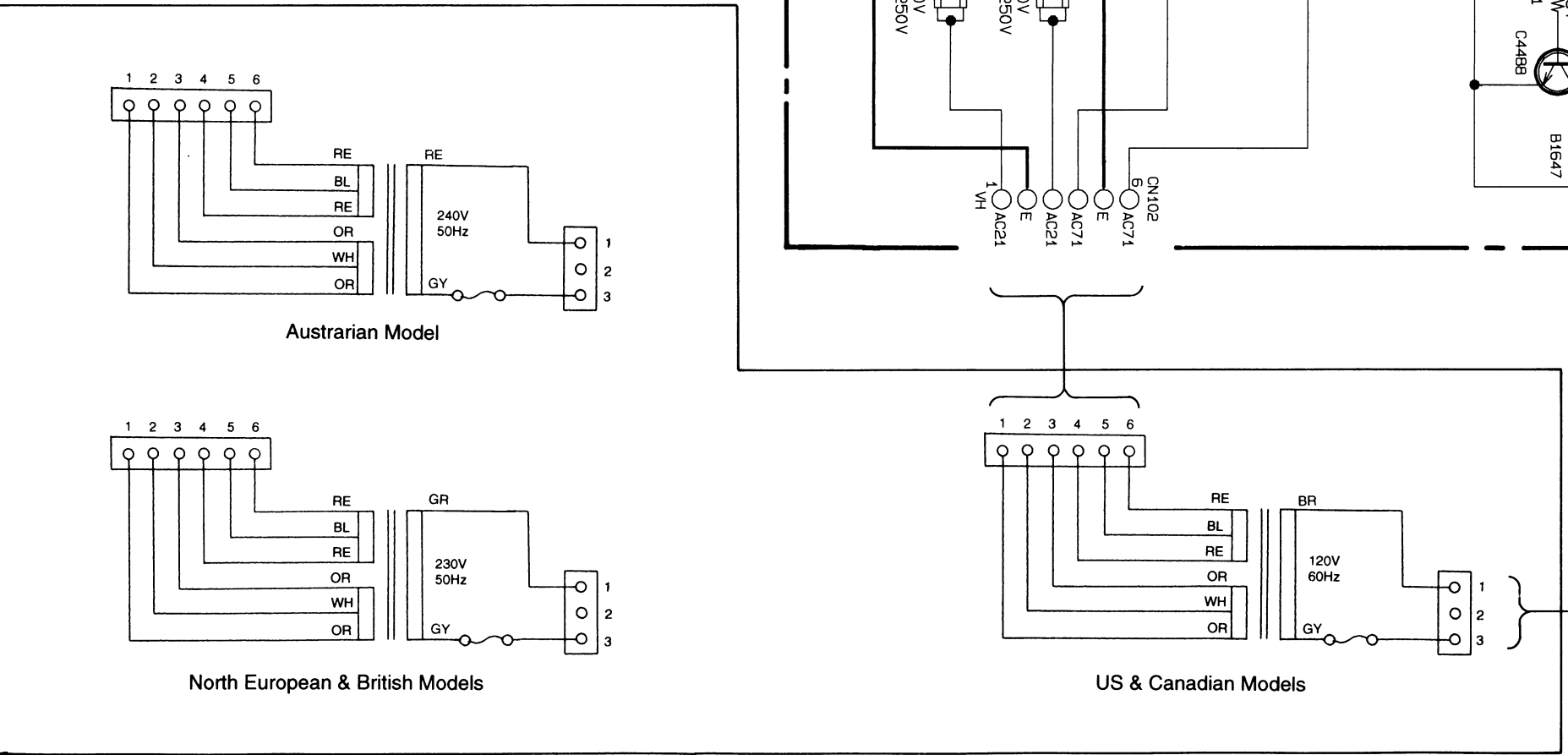


MC-Service

5  
6  
7  
8  
9  
10

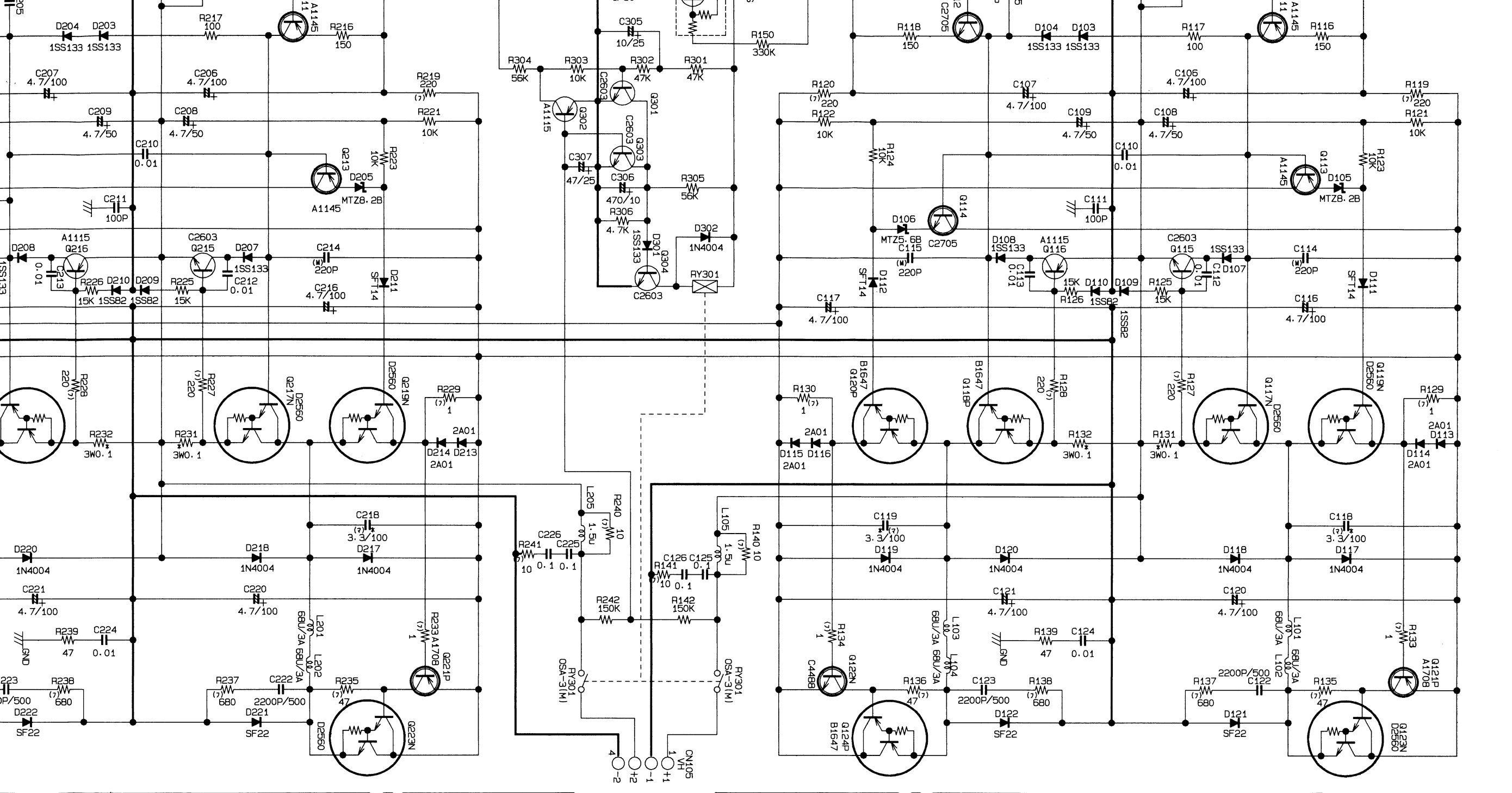


**Power transformer**



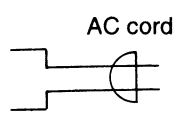
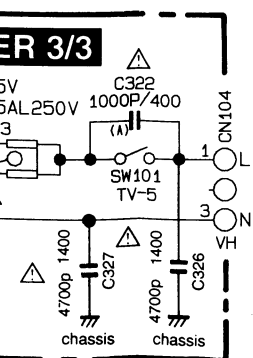
**WARNING**  
Components having special characteristics are marked  $\triangle$  and must be replaced with parts having specifications equal to those originally in the product.

$\triangle$  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。



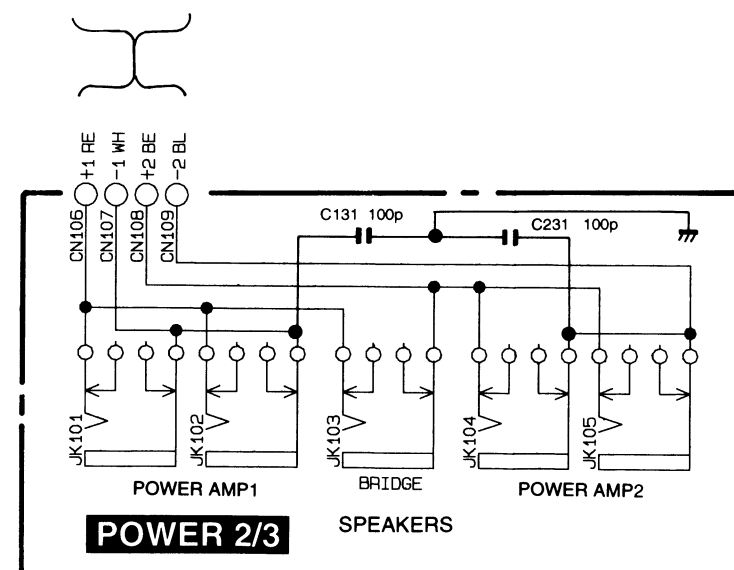
KEC-92257 2

MC-Service



**WARNING**  
Components having special characteristics are marked and must be replaced with parts 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。交換する場合は、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。

- |  |
|--|
| <ul style="list-style-type: none"> <li>• The numbers in “QTY” shows quantities for each unit.</li> <li>• The parts with “--” in “Parts No.” are not available as spare parts.</li> <li>• 部品価格ランクは、変更になることがあります。</li> <li>• 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。</li> <li>• 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。</li> </ul> |
|--|

## ■ ELECTRICAL PARTS

REF NO.	PART NO.	DESCRIPTION	部 品 名	REMARKS	QTY	ランク
	VV084900	ELECTRICAL PARTS	電 気 部 品	EMX640		
*	NX818520	Circuit Board	メ イ ン シ ー ト	(XS329B0)		
*	NX818530	Circuit Board	パ ワ ー ア ン プ シ ー ト	U,C (XS318C0)		
*	NX818540	Circuit Board	パ ワ ー ア ン プ シ ー ト	A,B,H (XS318C0)		
*	NX818550	Circuit Board	ス ピ ー カ 端 子 シ ー ト	(XS318C0)		
*	NX818560	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			
	VU860700	Button	ボ タ ン	DIGITAL EFFECT(VOCAL, ON, L HALL, S HALL), PAD		
	XG203A00	IC	M5229P	C GRAPHIC EQUALIZER	04	
	XM356A00	IC	NJM2068L-D	C OP AMP	01	
	XN922A00	IC	NJM4558L	C OP AMP	01	
	XN796A00	IC	NJM2082L	C OP AMP	02	
	IR001400	IC	TC74HC14AP	C HEX INVERTER	05	
	IR007400	IC	TC74HC74AP	C DFF	04	
*	XA534A00	IC	BA6137	C LED DRIVER		
	XQ696A00	IC	W24257-70LL	C SRAM	08	
	XN299A00	IC	YSS234(SP3)	C DIGITAL SOUND PROCESSOR	11	
	IC224030	Transistor	2SC2240 GR,BL	ト ラ ン ジ ス タ	01	
	VD631600	Diode	1SS133,176,HSS104	ダ イ オ ー ド	01	
	VV620800	LED	LT311G-41-C13 RE	L E D		
	VV621000	LED	LT321-41-C13 GR	L E D		
	VV938100	LED	LT331-41-C13 YE	L E D		
	UA353120	Mylar Capacitor	1200P 50V J	マ イ ラ ー コ ン	01	
	UA353150	Mylar Capacitor	1500P 50V J	マ イ ラ ー コ ン		
	UA353220	Mylar Capacitor	2200P 50V J	マ イ ラ ー コ ン	01	
	UA353330	Mylar Capacitor	3300P 50V J	マ イ ラ ー コ ン		
	UA353470	Mylar Capacitor	4700P 50V J	マ イ ラ ー コ ン	01	
	UA353560	Mylar Capacitor	5600P 50V J	マ イ ラ ー コ ン		
	UA353820	Mylar Capacitor	8200P 50V J	マ イ ラ ー コ ン		
	UA654100	Mylar Capacitor	0.010 50V J	マ イ ラ ー コ ン	01	
	UA654120	Mylar Capacitor	0.012 50V J	マ イ ラ ー コ ン	01	
	UA654180	Mylar Capacitor	0.018 50V J	マ イ ラ ー コ ン	01	
	UA654270	Mylar Capacitor	0.027 50V J	マ イ ラ ー コ ン	01	
	UA654390	Mylar Capacitor	0.039 50V J	マ イ ラ ー コ ン	01	
	UA654470	Mylar Capacitor	0.047 50V J	マ イ ラ ー コ ン	01	
	UA654820	Mylar Capacitor	0.082 50V J	マ イ ラ ー コ ン	01	
	UA655100	Mylar Capacitor	0.1 50V J	マ イ ラ ー コ ン	01	
	VV064100	Monolithic Mylar Capacitor	0.47 50V J	積 層 マ イ ラ ー コ ン		
	VV064400	Monolithic Mylar Capacitor	0.82 50V J	積 層 マ イ ラ ー コ ン		
	VV321100	Monolithic Mylar Capacitor	0.22 50V J	積 層 マ イ ラ ー コ ン		
	UA352100	Polypropylene Capacitor	100P 50V J	P P コ ン	01	
	F6612330	Ceramic Cap.-B	330P 50V K	セ ラ コ ン B	01	
	F6612470	Ceramic Capacitor-B	470P 50V K	セ ラ コ ン B	01	
	F6613100	Ceramic Capacitor-B	1000P 50V K	セ ラ コ ン B	01	
	F6650600	Ceramic Capacitor-SL	6P 50V D	セ ラ コ ン ( S L )	01	
	F6651100	Ceramic Capacitor-SL	10P 50V D	セ ラ コ ン ( S L )		
	F6651270	Ceramic Capacitor-SL	27P 50V J	セ ラ コ ン ( S L )	01	
	F6651330	Ceramic Capacitor-SL	33P 50V J	セ ラ コ ン ( S L )	01	
	F6651470	Ceramic Capacitor-SL	47P 50V J	セ ラ コ ン ( S L )		
	F6651680	Ceramic Capacitor-SL	68P 50V J	セ ラ コ ン ( S L )	01	
	F6652100	Ceramic Capacitor-SL	100P 50V J	セ ラ コ ン ( S L )	01	
	F6652220	Ceramic Capacitor-SL	220P 50V J	セ ラ コ ン ( S L )		
	F6644100	Ceramic Capacitor-F	0.0100 50V Z	セ ラ コ ン F	01	
	VV059300	Monolithic Ceramic Cap.	0.10 50V Z	積 層 セ ラ コ ン		
	UJ838100	Electrolytic Cap.	100.00 16.0V	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	
	UJ867470	Electrolytic Cap.	47.00 50.0V	ケ ミ コ ン	01	
	VV330700	Electrolytic Cap.	470.00 10.0V	ケ ミ コ ン S M		
	VV488800	Low leak Electrolytic Cap.	10.00 50.0V	ローリークケミコン L M		
	HF454100	Carbon Resistor	10.0 1/4 J	カ ー ボ ン 抵 抗	01	
	HF454220	Carbon Resistor	22.0 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	

\* 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VR 20mm		
	VU804600	Rotary Variable Resistor	A 20.0K RK09K113	ロータリーVR		
	VV058900	Rotary Variable Resistor	B 50.0K RK09K113	ロータリーVR		
	VV056900	Noise Filter	ZJSR5101-223TA	ノイズフィルター EMI		
	QU007700	Ceramic Resonator	12M CSA12.0MTZ	セラミック振動子		03
	VV044700	Slide Switch	SSSU013NB1-YL	スライドSW		
	VV051500	Slide Switch	SSSU012NB1-YL	スライドSW		
	VU804900	Push Switch	SPEA31MC16-YL	プッシュSW		
	VU805000	Push Switch	SPEA12MC15-YL	プッシュSW		
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	ホンコネクタ	LINE 1 (CH5)	
JK503	VU805400	Phone Jack	JY-6351B-02-340	ホンコネクタ	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	ホンコネクタ	LINE 1 (CH6)	
JK603	VU805400	Phone Jack	JY-6351B-02-340	ホンコネクタ	LINE 2 (CH6)	
JK701	VU805400	Phone Jack	JY-6351B-02-340	ホンコネクタ	MAIN (UTPUT)	
*	JK702	Pin Jack	JK040057PN	ピンコネクタ 4P	TAPE IN(1,2) REC OUT(1,2)	
JK703	VU805400	Phone Jack	JY-6351B-02-340	ホンコネクタ	AUX IN	
JK801	VU805400	Phone Jack	JY-6351B-02-340	ホンコネクタ	MONITOR (OUTPUT)	
JK901	VU805400	Phone Jack	JY-6351B-02-340	ホンコネクタ	EFFECT OUT	
JK902	VU805400	Phone Jack	JY-6351B-02-340	ホンコネクタ	FOOT SW	
*	CN901	Connector Base Post Jumper Wire	M2426XX 15P TE 0.60	コネクタベースポストジャンパー線	to POWER 1/3-CN101 (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	IC	OP AMP	01
	XD853A00	IC	NJM7815FA	IC	REGULATOR +15V	03
	XD854A00	IC	NJM7915FA	IC	REGULATOR -15V	03
	XJ607A00	IC	NJM7805FA	IC	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
	IA101590	Transistor	2SA1015 O,Y	ト ラ ン ジ ス タ		01
	IA111520	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
	IC1815M0	Transistor	2SC1815 Y,GR	ト ラ ン ジ ス タ		01
	IC224030	Transistor	2SC2240 GR,BL	ト ラ ン ジ ス タ		01
	IC260320	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
	IF005560	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

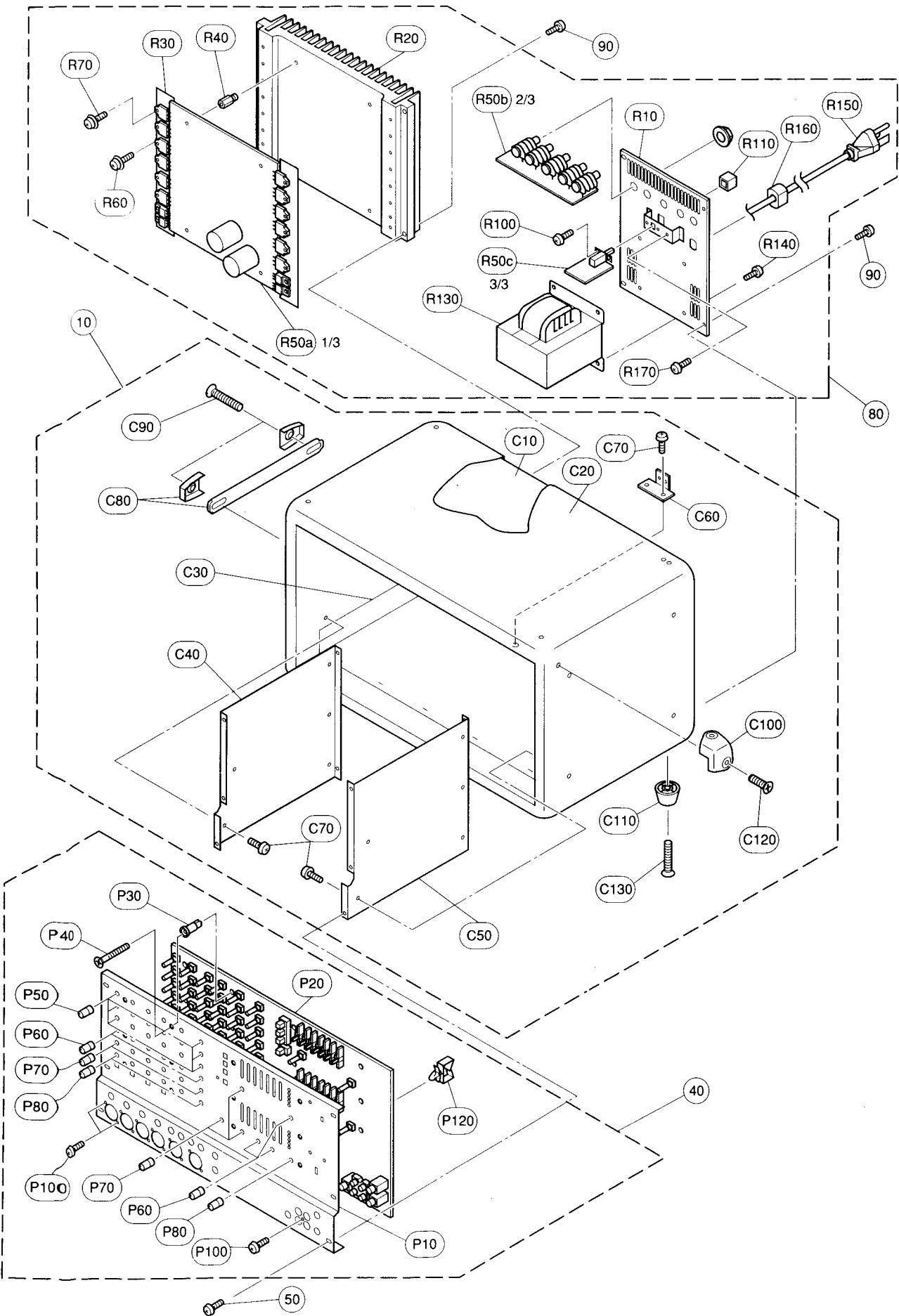
REF. NO.	PART NO.	DESCRIPTION		部 品 名	REMARKS	QTY	ランク
*	VV313900	Flame Proof C. Resistor	680.0 1/4 J	不 燃 化 カ ー ボ ン 抵 抗			
*	VV557800	Flame Proof C. Resistor	1.0 1/4 J	不 燃 化 カ ー ボ ン 抵 抗			
*	VR412900	Metal Film Resistor	0.10 3W J	金 属 被 膜 抵 抗			01
*	VB064600	Metal Film Resistor	680.0 1/4 F	金 属 被 膜 抵 抗			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 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		

\* New Parts (新規部品)

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 成	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)		
80	--	Rear Assembly	リ ア A s s ' y	A (VV56640)		
90	EG340360	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)		
* C40	VV102700	Side Plate	LEFT	サイ ド プ レ ー ト ( L )		
* C50	VV102800	Side Plate	RIGHT	サイ ド プ レ ー ト ( R )		
* C60	VV086300	Rear Angle	リ ア ア ン グ ル			
C70	EG340110	Bind Head Screw	4.0X16 MFZN2BL	+ バ イ ン ド 小 ネ ジ		01
* C80	VV085400	Handle Assembly	取 手 A s s ' y			
* C90	VV435200	Oval Head Screw	5.0X35 MFZN2BL	+ 丸 皿 小 ネ ジ		
* C100	VV085500	Corner Protector	コ ー ナ ー 金 具			
* C110	VV085600	Foot	脚			
C120	EX000950	Truss Head Tapping Screw-1	4.0X12 MFZN2BL	+ ト ラ ス T P 1 種	(03747270)	01
C130	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)		
* P10	VV085700	Front Panel	フ ロ ン ト パ ネ ル			
* P20	VV084900	Circuit Board	MAIN	メ イ ン シ ー ト	(XS329B0)	
P30	VV069200	PCB Support	NEW NIFCO	P C B サ ポ ー ト		
P40	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		
* R10	--	REAR ASSEMBLY	リ ア A s s ' y			
R10	--	Rear Assembly	リ ア A s s ' y	U (VV08410)		
R10	--	Rear Assembly	リ ア A s s ' y	H (VV08420)		
R10	--	Rear Assembly	リ ア A s s ' y	B (VV08430)		
R10	--	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