

GUITAR AMPLIFIER

DG60FX-112

SERVICE MANUAL



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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 your body may have accumulated by grounding yourself to the ground bus in the unit (heavy gauge black wires connect to this bus.)

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

LITHIUM BATTERY HANDLING

This product uses a lithium battery for memory back-up.

WARNING : Lithium batteries are dangerous because they can be exploded by improper handling. Observe the following precautions when handling or replacing lithium batteries.

- Leave lithium battery replacement to qualified service personnel.
- Always replace with batteries of the same type.
- When installing on the PC board by soldering, solder using the connection terminals provided on the battery cells.
- Never solder directly to the cells. Perform the soldering as quickly as possible.
- Never reverse the battery polarities when installing.
- Do not short the batteries.
- Do not attempt to recharge these batteries.
- Do not disassemble the batteries.
- Never heat batteries or throw them into fire.

ADVARSEL!

Lithiumbatteri-Eksplosionsfare ved fejlagtig handling. Udskiftning ma kun ske med batteri af samme fabrikat og type. lever det brugte batteri tilbage til leverandren.

VARNING

Explosionsfara vid felaktigt batteribyte.
Anvand samma batterityp eller en ekvivalent typ som rekommenderas av apparatillverkaren.
Kassera anvant batteri enligt fabrikantens instruktion.

VAROITUS

Paristo voi rajahtaa, jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin.
Havita kaytetty paristo valmistajan ohjeiden mukaisesti.

The following information complies with Dutch official Gazette 1995. 45; ESSENTIALS OF ORDER ON THE COLLECTION OF BATTERIES.

- Please refer to the disassembly procedure for the removal of Back-up Battery.
- Leest u voor het verwijderen van de backup batterij deze beschrijving.

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  and must be replaced with parts having specification equal to those originally installed.

SPECIFICATIONS

Digital Section

- Full Digital Signal Processing
- 8 Channel Preamp
- Digital Effects
 - Compressor
 - Chorus, Flanger, Phaser, Rotary Speaker, Tremolo
 - Digital Delay, Tape Echo
 - Spring Reverb, Hall Reverb, Plate Reverb
 - Tap Tempo Function (Delay Time)
- Speaker Simulator (16 Types)
- External Controller Function (EXP Pedal/MIDI):8 Controllers/Parameters
- Wah Function
- Tuner Function (Chromatic, Auto)

Analog Section

- 60 W Solid State Power Amp
- 30 cm Speaker (EMINENCE) x 1

MIDI Functions

Receive: Program Change (Program Change Table can be created), Control Change, Bulk In
 Transmit: Program Change, Control Change, Bulk Out, Merge Out

Controller Switch

Top Panel

Push Switch x17
 UP, DOWN, MANUAL, UTILITY, STORE, COMP, CHORUS, FLANGER, PHASER, ROTARY, TREMOLO, DELAY, TAPE ECHO, SPRING, HALL, PLATE, SP. SIM
 Knob x15
 AMP SELECT, GAIN, MASTER, TREBLE, MIDDLE, BASS, PRESENCE, COMP, SPEED, DEPTH, TIME, FEEDBACK, LEVEL, REVERB, OUTPUT

Rear Panel

Push Switch x1
 POWER

Display

7 Segment LED (3 digit) x1
 Push Switch LED x17

Connections/Jacks

INPUT HIGH, LOW: Standard Monaural Phone Jack
 LINE OUT L/MONO, R: Standard Monaural Phone Jack
 PHONES: Standard Stereo Phone Jack
 POWER AMP IN: Standard Monaural Phone Jack
 Foot Switch Unit Terminal: 13 pin DIN
 DIGITAL OUT: COAXIAL
 MIDI IN, MIDI OUT: 5 pin DIN

A/D Converter

20 bit + 3 bit Floating

D/A Converter

20 bit

Sampling Frequency

48 kHz

Memory Allocations

Preset: 90
 User: 90

Input Level/Impedance

INPUT HIGH: -25dBm/1M ohm
 INPUT LOW: -15dBm/1M ohm
 POWER AMP IN: 0 dBm/100k ohm

Output Level/Impedance

LINE OUT L/MONO, R: -3dBm/2.3k ohm
 PHONES: 0dBm/47 ohm (47ohm load)
 SPEAKER: 60W RMS/8 ohm

Power

U.S. and Canadian models : 120V, 60Hz
 General model : 230V, 50Hz

Power Consumption

70 W

Dimensions (WxHxD)

513 x 491 x 291 mm (20.2" x 19.3" x 11.5")

Weight

17 kg (37 lbs 8 oz)

Accessories

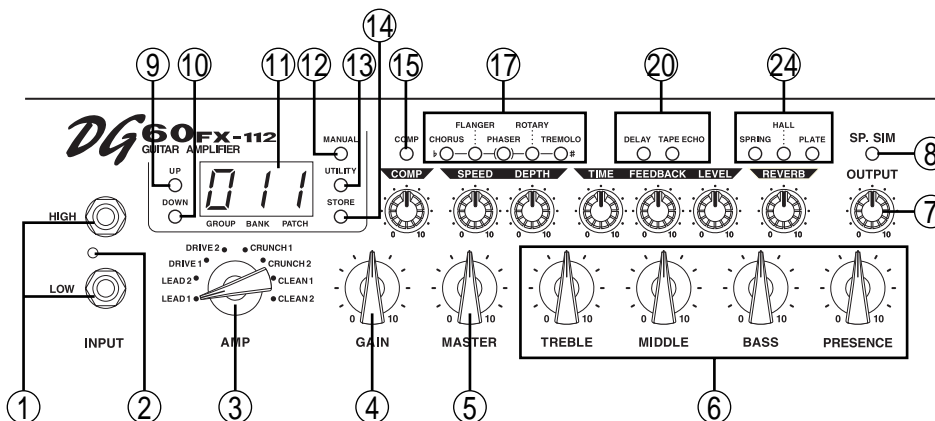
Foot Switch Unit
 Foot Switch Special Cable
 Owner's Manual
 Patch List

Foot Switch Unit

Footswitch x4 (1, 2, 3, BANK)
 LED x6 (1, 2, 3, BANK x3)
 Connections/Jacks
 EXP. PEDAL: Standard Stereo Phone Jack
 Connects main unit and foot switch: 13 pin DIN
 Dimensions (WxHxD) : 280 x55 x108 mm
 (11.0" x 2.2" x 4.3")
 Weight : 930 g (2 lbs 1 oz)

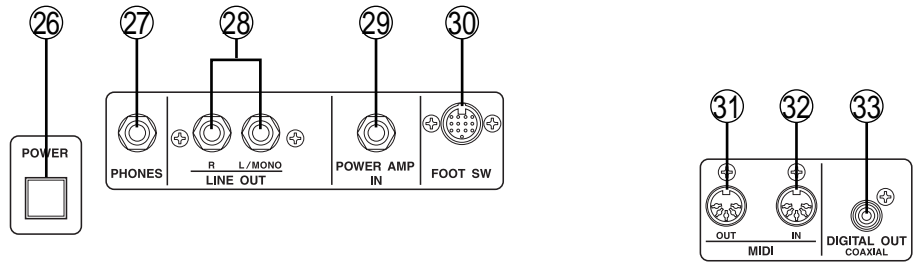
PANEL LAYOUT

Control Panel



- ① Input Jacks (INPUT HIGH, LOW)
- ② Peak Indicator
- ③ Amp Select Switch (LEAD1-CLEAN2)
- ④ Gain Control (GAIN)
- ⑤ Master Volume (MASTER)
- ⑥ Tone Controls (TREBLE, MIDDLE, BASS, PRESENCE)
- ⑦ Output Level Control (OUTPUT)
- ⑧ Speaker Simulator Button (SP. SIM)
- ⑨ Up Button (UP)
- ⑩ Down Button (DOWN)
- ⑪ Display
- ⑫ Manual Button (MANUAL)
- ⑬ Utility Button (UTILITY)
- ⑭ Store Button (STORE)
- ⑮ Compressor Button (COMP)
- ⑯ Compressor Knob (COMP)
- ⑰ Modulation Group Effect Buttons (CHORUS/FLANGER/PHASER /ROTARY/TREMOLO)
- ⑱ Speed Knob (SPEED)
- ⑲ Depth Knob (DEPTH)
- ⑳ Delay Group Effect Buttons (DELAY/TAPE ECHO)
- ㉑ Time Knob (TIME)
- ㉒ Feedback Knob (FEEDBACK)
- ㉓ Level Knob (LEVEL)
- ㉔ Reverb Group Effect Buttons (SPRING/HALL/PLATE)
- ㉕ Reverb Knob (REVERB)

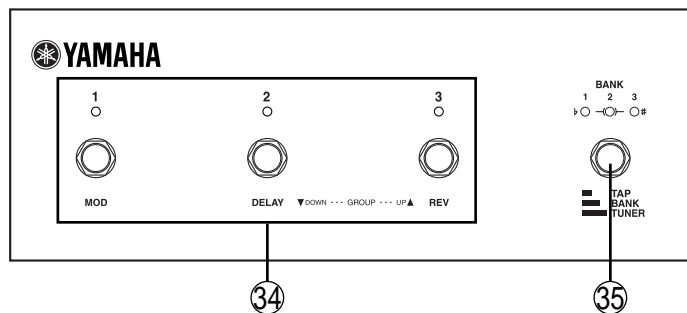
• Rear Panel



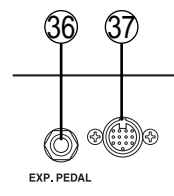
- ②⑥ Power Switch (POWER)
- ②⑦ Headphones Jack (PHONES)
- ②⑧ Line Out Jacks (LINE OUT R, L/MONO)
- ②⑨ POWER AMP IN Jack
- ③⑩ Foot Switch Unit Terminal (FOOT SW)
- ③① MIDI OUT Jack
- ③② MIDI IN Jack
- ③③ Digital Out Jack (DIGITAL OUT)

Foot Switch Unit

• Top Panel

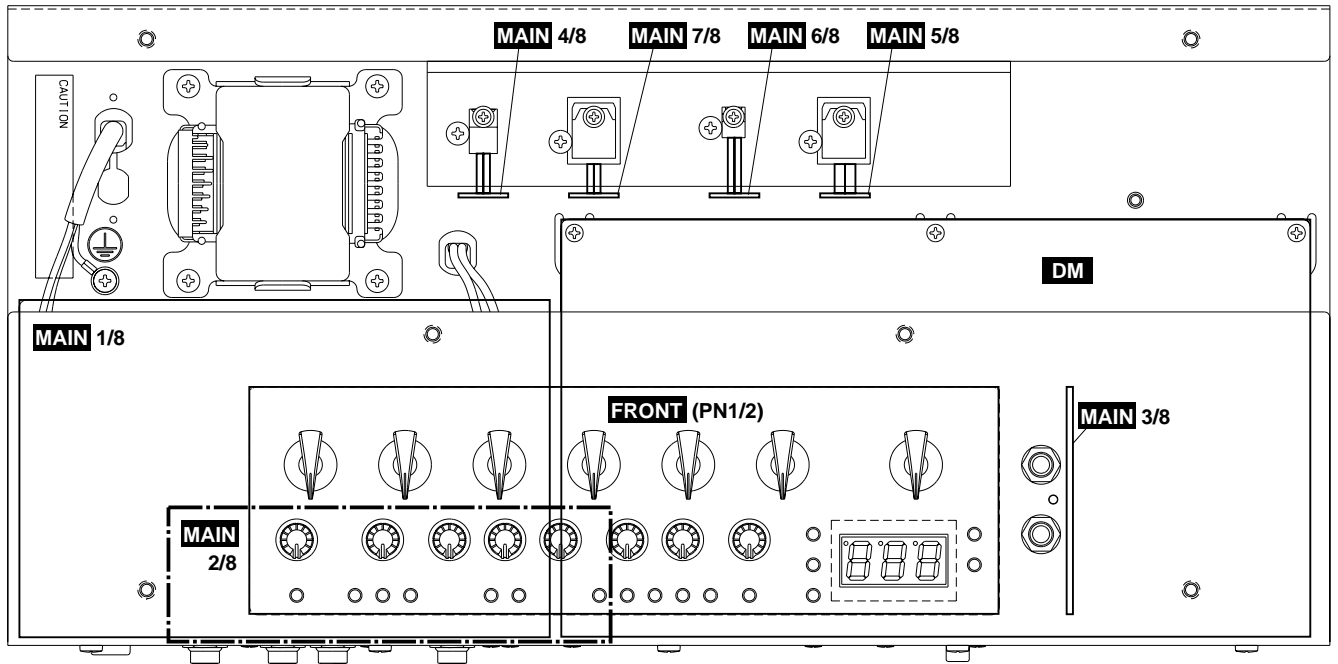


• Rear panel

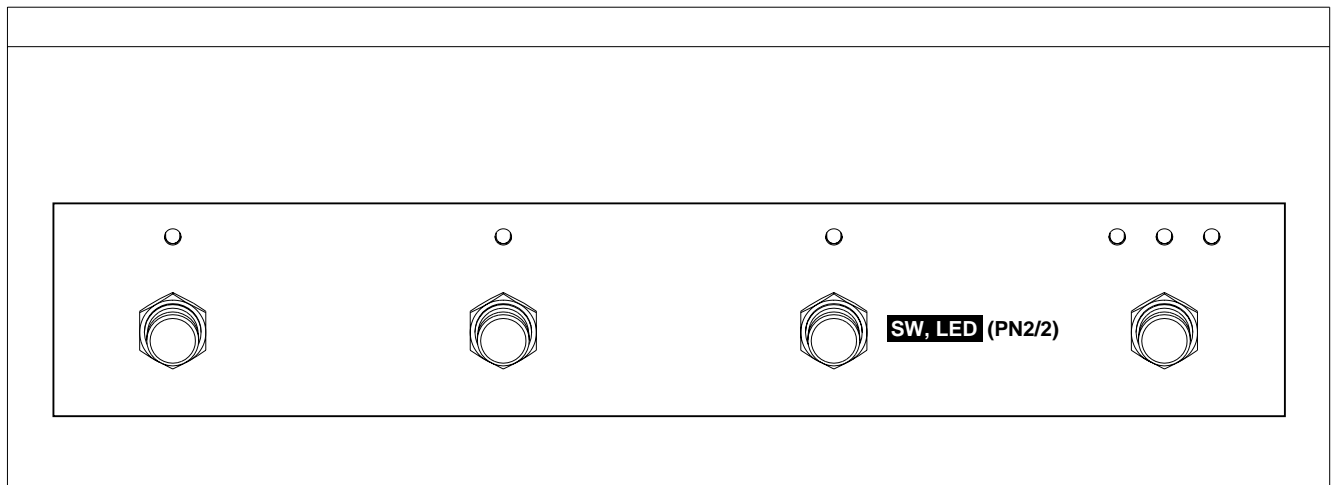
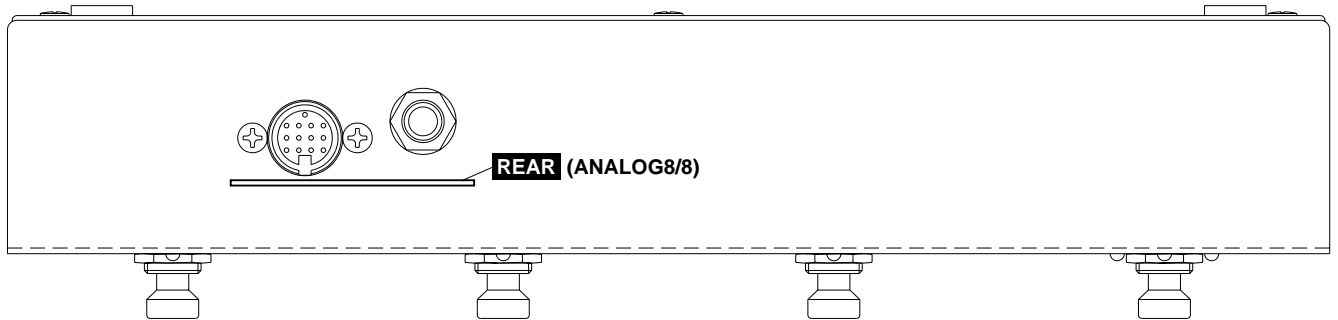


- ③④ Foot Switches 1, 2, 3
- ③⑤ Bank Switch (TAP/BANK/TUNER)
- ③⑥ EXP Pedal Jack (EXP. PEDAL)
- ③⑦ Unit Terminal

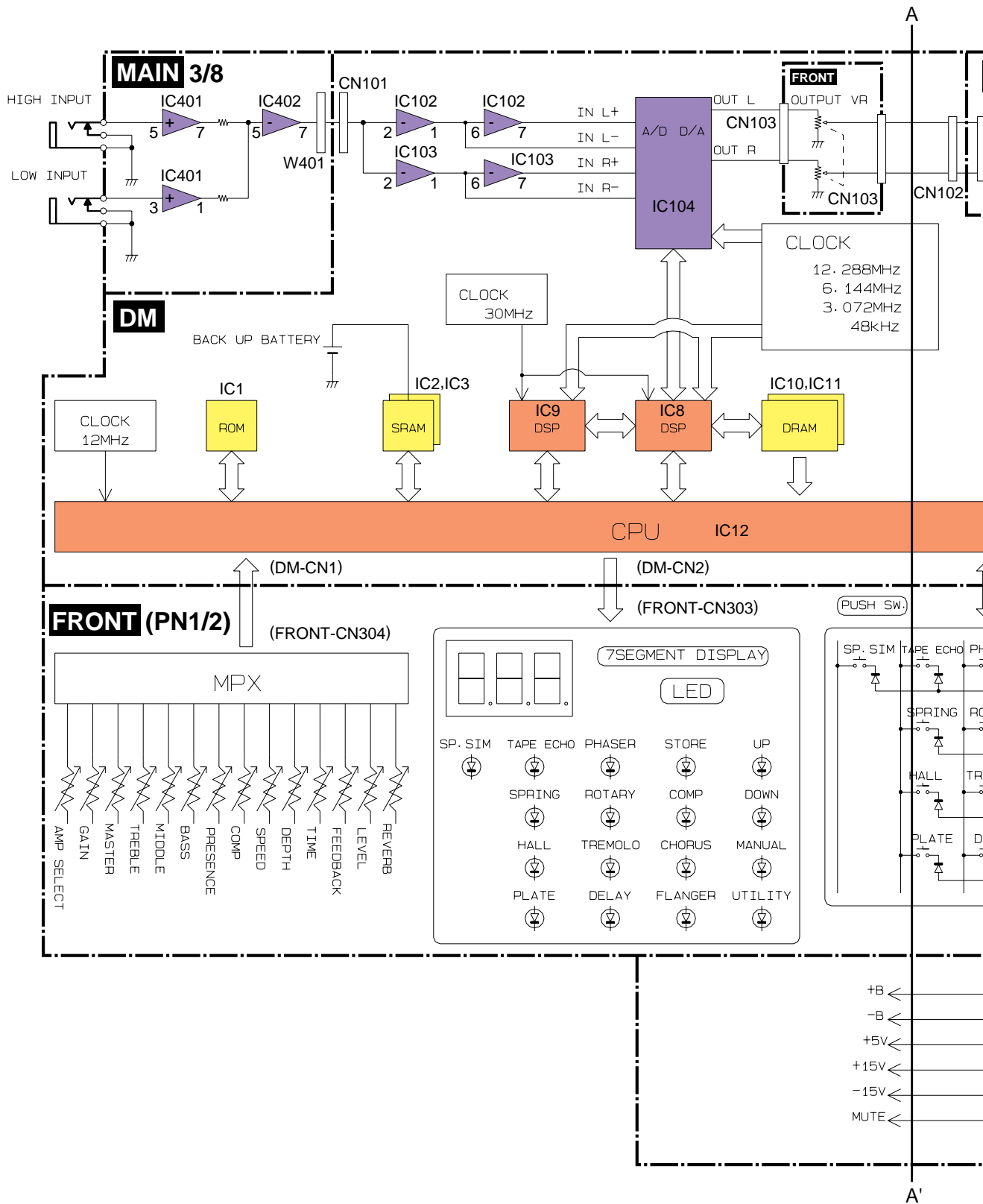
CIRCUIT BOARD LAYOUT

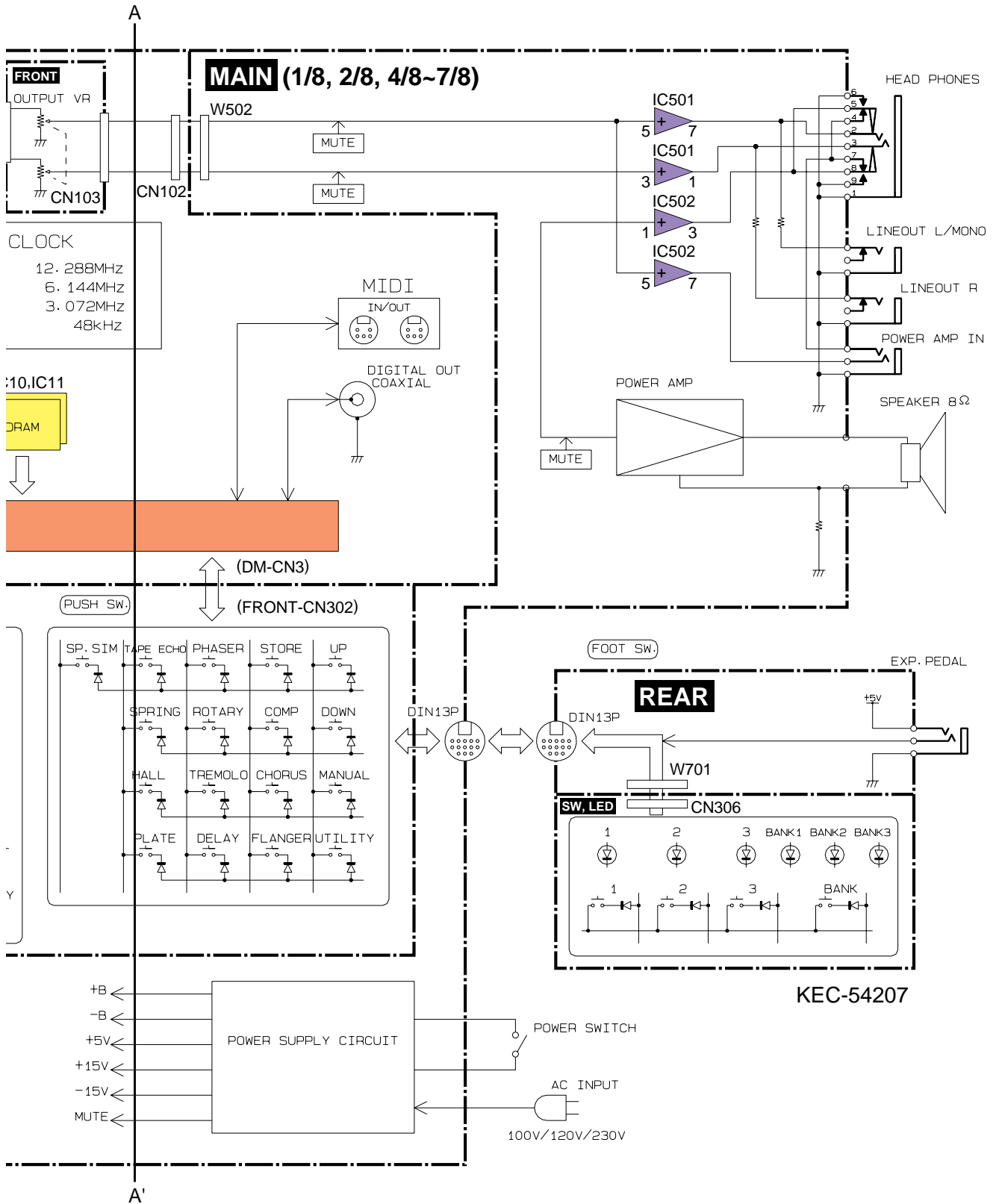


• Foot Switch

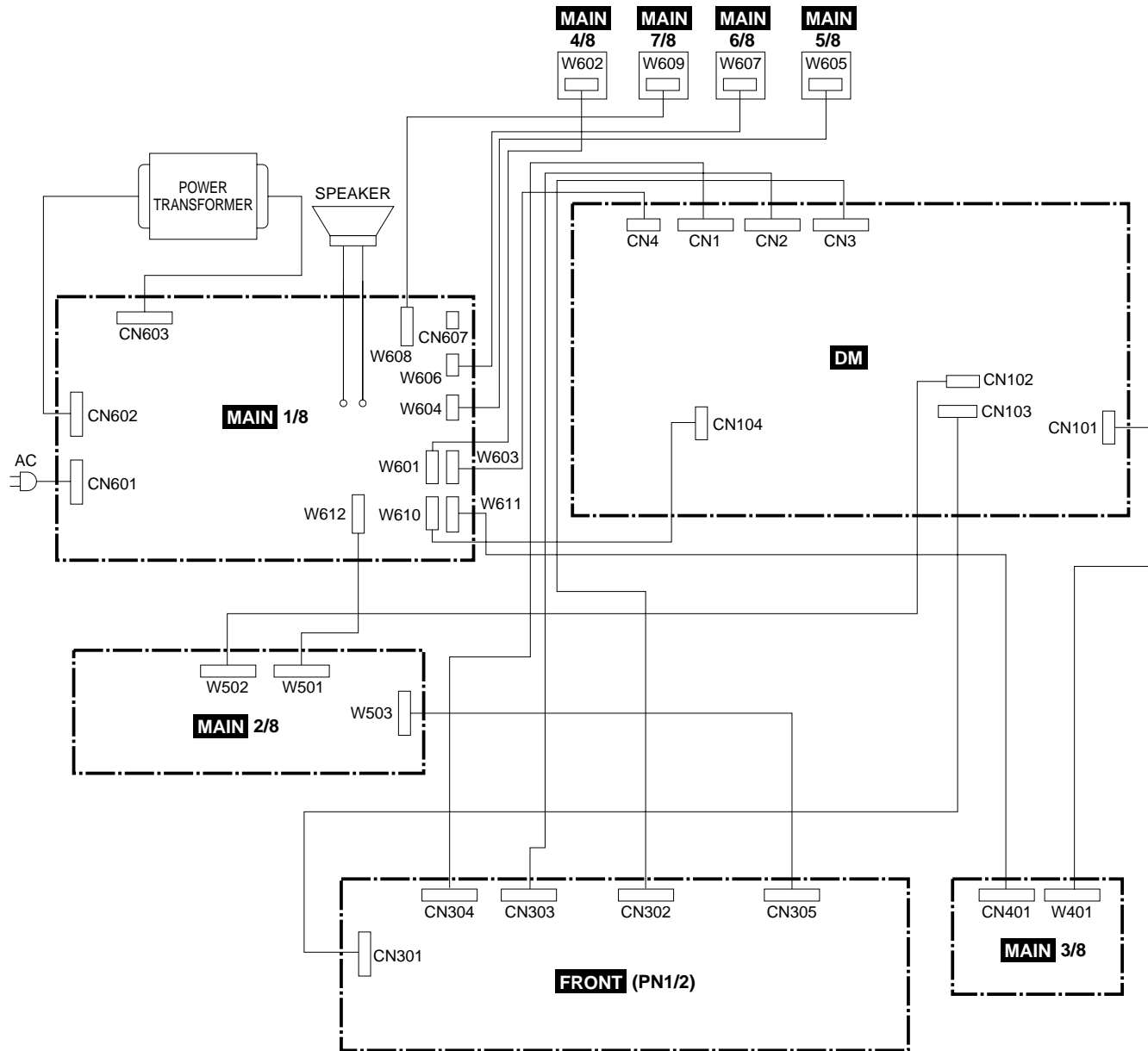


BLOCK DIAGRAM

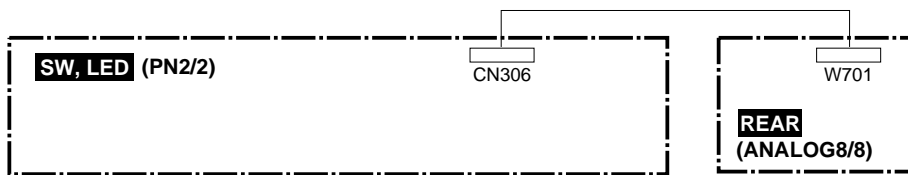




■ WIRING



● FOOT SWITCH OVERALL ASSEMBLY



■ DISASSEMBLY PROCEDURE

A. External components

1. Handle Assembly

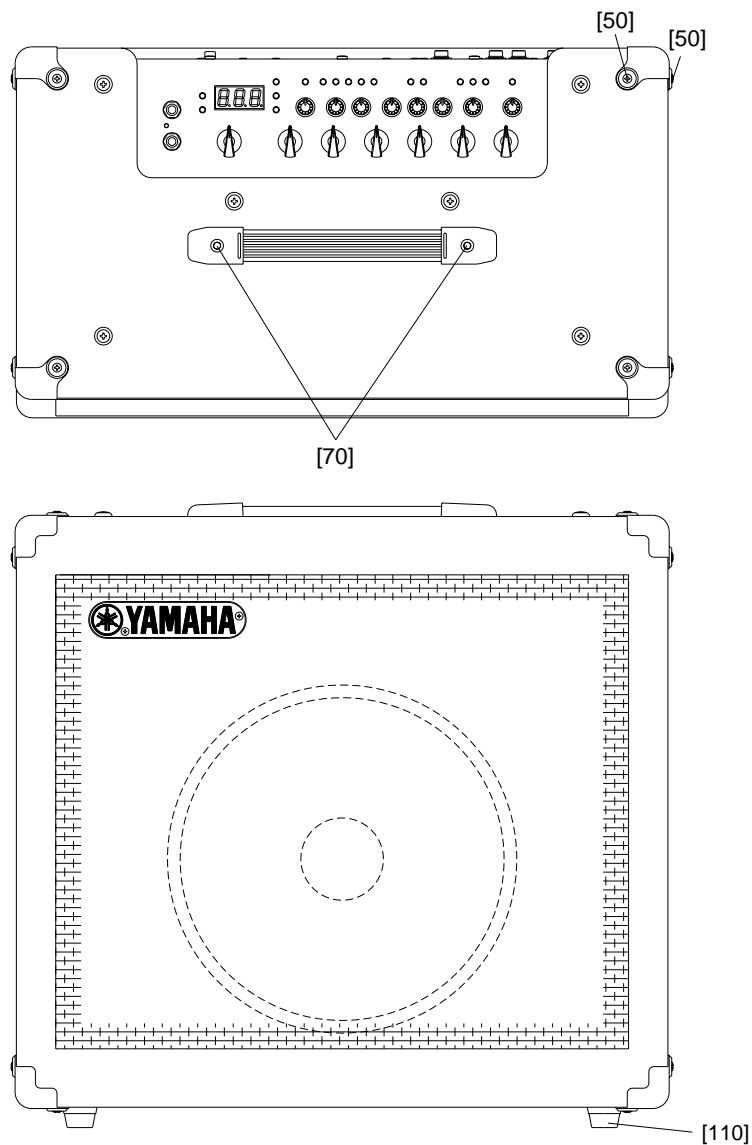
- 1-1. Remove the two (2) screws marked [70]. The handle assembly can then be removed. (Fig. 1)

2. Corner fitting

- 2-1. Remove the two (2) screws marked [50]. The corner fitting can then be removed. (Fig. 1)

3. Leg

- 3-1. Remove the screw marked [110]. The leg can then be removed. (Fig. 1)



[50]: Oval Head Tapping Screw 3.5X16 MFNI33 (V383360)

[70]: Oval Head Screw 0X25 FNM3-2B (V374370)

[110]: Truss Head Tapping Screw-1 4.0X20 MFZN2BL (O374729)

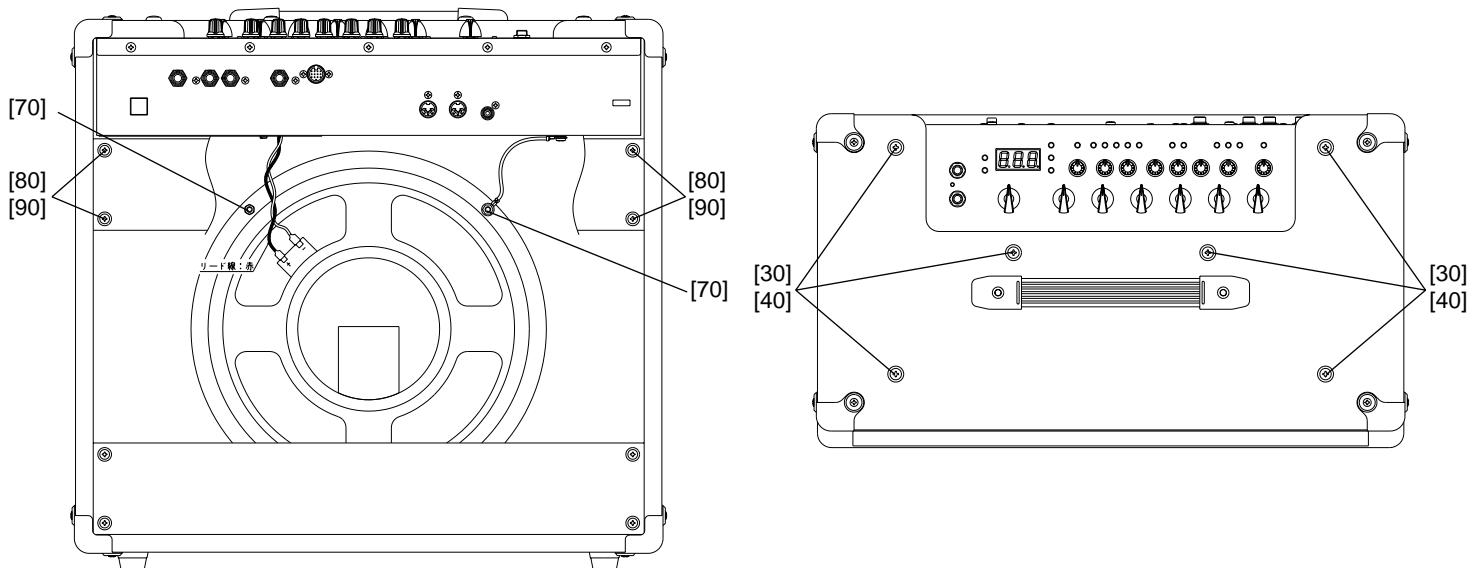
Fig.1

4. Removal of stereo amplifier unit

- 4-1. Remove the four (4) screws marked [80] and the four (4) washers marked [90] from the back plate and then remove the back plate. (Fig. 2)
- 4-2. Remove the six (6) screws marked [30] and the six (6) washers marked [40] from the top of the main unit. The pre main unit can then be removed. (Fig. 2)

5. Removal of speaker

- 5-1. Remove the pre main unit. (See Procedure 4.)
- 5-2. Remove the four (4) screws marked [70]. The speaker can then be removed. (Fig. 2)



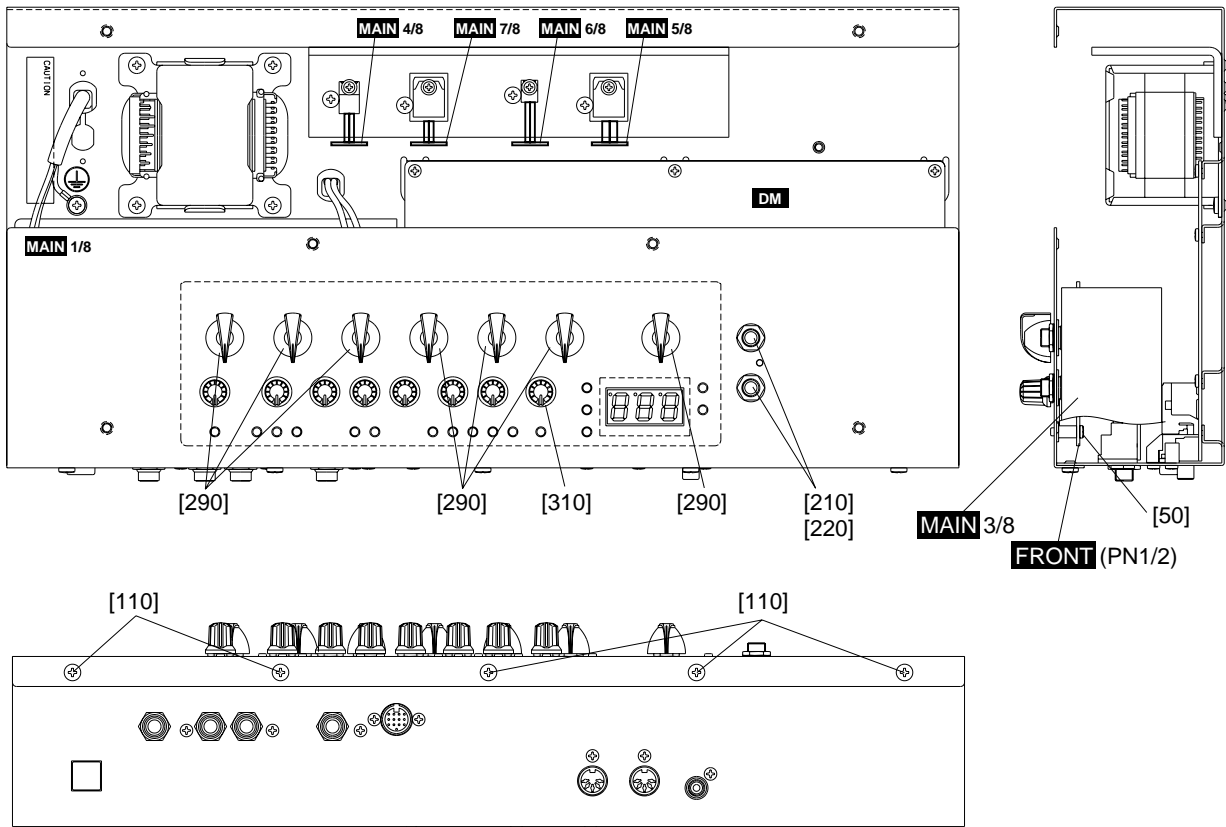
- [30]: Oval Head Screw 5.0X35 MFC2BL (V374938)
- [40]: Washer 5S MFC2BL (EW30002)
- [70]: Hexagonal Nut 4.0 MFZN2Y (O376090)
- [80]: Oval Head Tapping Screw 4.0X30 MFC2BL (V374940)
- [90]: Washer 4S MFC2BL (V389020)

Fig.2

B. Pre main unit

6. FRONT circuit board (PN 1/2), MAIN circuit board (3/8)

- 6-1. Remove the pre main unit. (See Procedure 4.)
- 6-2. Remove the five (5) screws marked [110] and then remove the panel. (Fig. 3)
- 6-3. Remove the seven (7) screws marked [290], eight (8) knobs marked [310], fifteen (15) hexagonal nuts, three (3) screws marked [50]. The FRONT circuit board (PN 1/2) can then be removed. (Fig. 3)
- 6-4. Remove the two (2) hexagonal nuts marked [210] and the two (2) flat washers marked [220]. The MAIN circuit board (3/8) can then be removed. (Fig. 3)



- [50]: Bind Head Tapping Screw-B 3.0X8 MFZN2BL (EP600190)
- [110]: Bind Head Tapping Screw-C A4.0X8 MFZN2BL (VC688900)
- [210]: Hexagonal Nut 9.0 12X2 MFNI33 (LX200060)
- [220]: Flat Washer 9X14 0.5 FNM3 (VL802300)

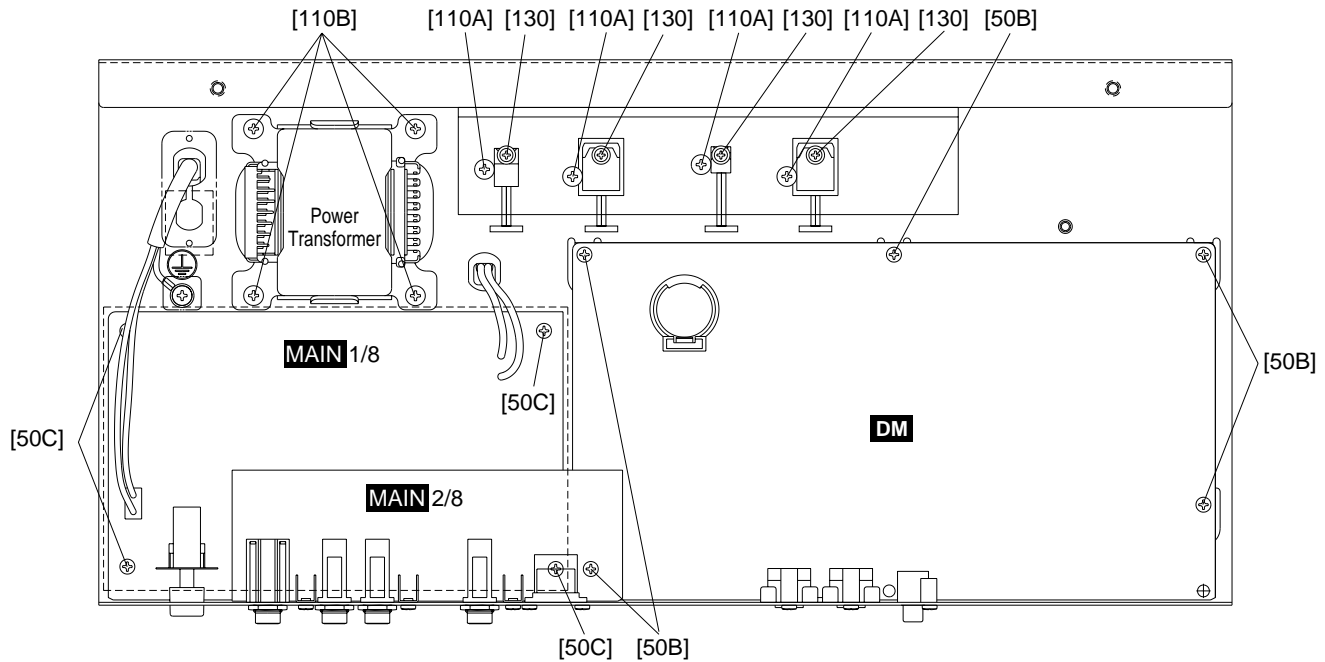
Fig.3

7. DM, MAIN circuit boards (1/8, 2/8, 4/8, 5/8, 6/8, 7/8), heat sink

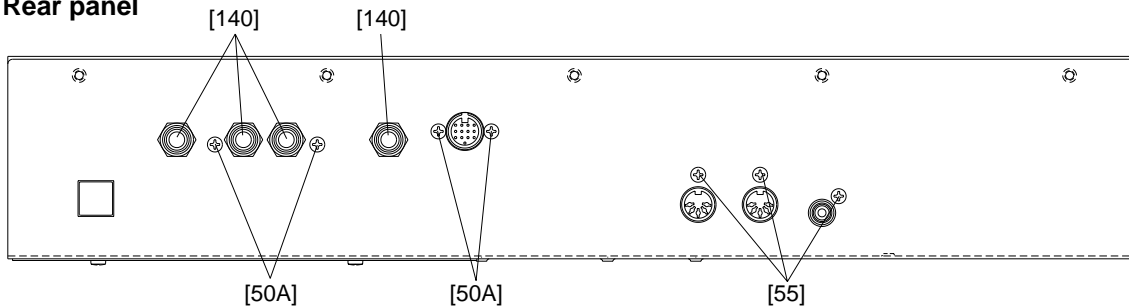
- 7-1. Remove the pre main unit. (See Procedure 4.)
- 7-2. Remove the panel. (See Step 6-2.)
- 7-3. Remove the four (4) hexagonal nuts marked [140] and four (4) screws marked [50A]. The MAIN circuit board (2/8) can then be removed. (Fig. 4)
- 7-4. Remove the five (5) screws marked [50B] and the three (3) screws marked [55] from the rear panel. The DM circuit board can then be removed. (Fig. 4)
- 7-5. Remove the four (4) screws marked [50C]. The MAIN circuit board (1/8) can then be removed. (Fig. 4)
- 7-6. Remove the four (4) screws marked [130]. The MAIN circuit boards (4/8, 5/8, 6/8, 7/8) can then be removed. (Fig. 4)
- 7-7. Remove the four (4) screws marked [110A]. The heat sink can then be removed. (Fig. 4)

8. Power transformer

- 8-1. Remove the pre main unit. (See Procedure 4.)
- 8-2. Remove the panel. (See Step 6-2.)
- 8-3. Remove the four (4) screws marked [110B]. The transformer can then be removed. (Fig. 4)



Rear panel



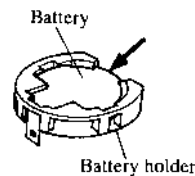
- [50]: Bind Head Tapping Screw-B 3.0X8 MFZN2BL (EP600190)
- [55]: Bind Head Tapping Screw-P 3.0X12 MFZN2BL (VC161100)
- [110]: Bind Head Tapping Screw-C A4.0X8 MFZN2BL (VC688900)
- [130]: Bind Head Screw SP 3.0X12 MFZN2Y (VB763800)
- [140]: Hexagonal Nut 12.0 14X2 MFC2BL (VD794100)

Fig.4

Battery VN103500

VN103600(Battery holder for VN103500)

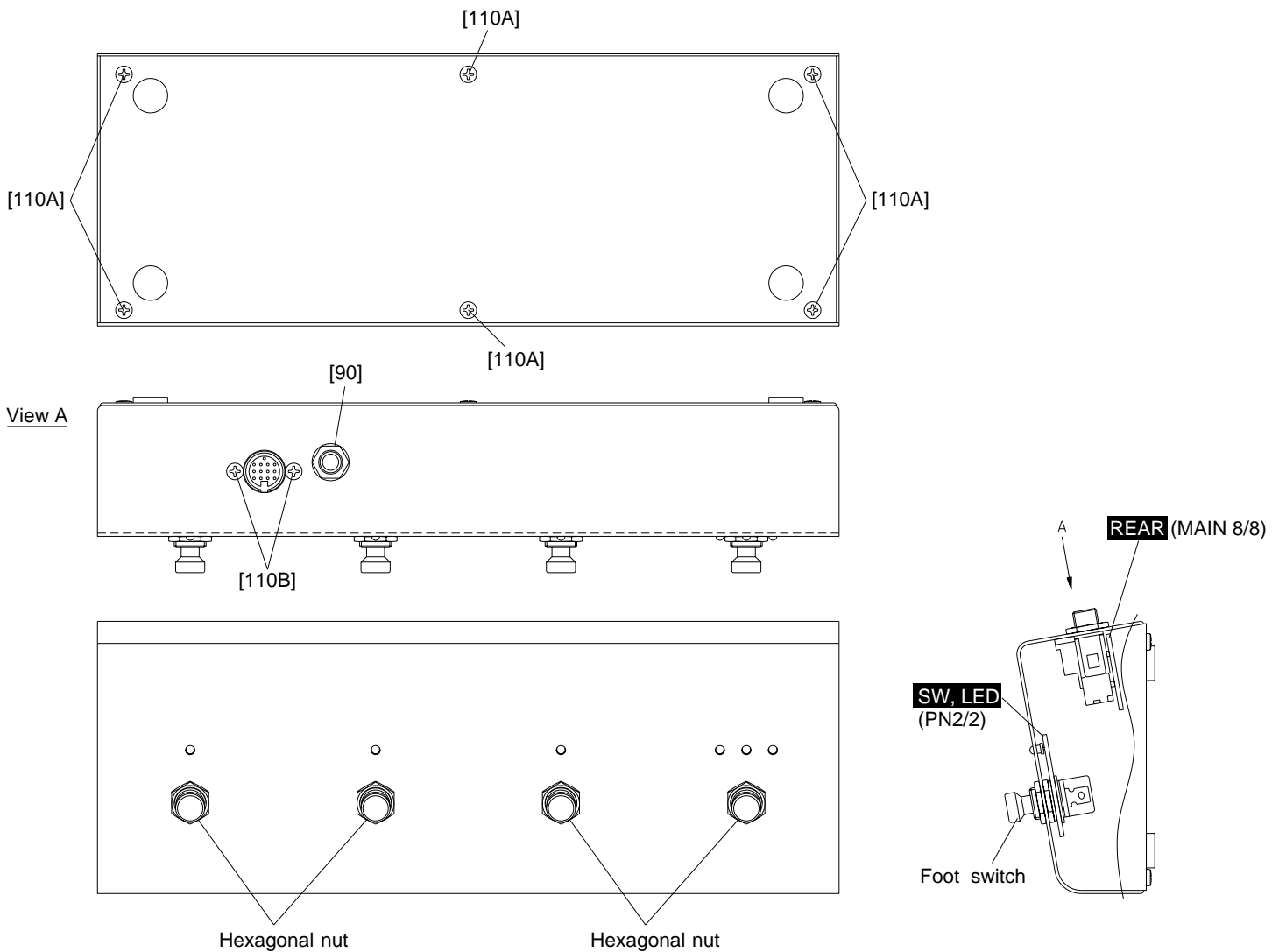
- Notice for back-up battery removal
Push the battery as shows in figure,
then the battery will pop up.



C. Foot switch

9. Foot switch

- 9-1. Remove the six (6) screws marked [110A] and then remove the bottom plate. (Fig. 5)
- 9-2. Remove the two (2) screws marked [110B] and hexagonal nuts marked [90] and then remove the REAR circuit board (MAIN 8/8). (Fig. 5)
- 9-3. Remove the four (4) hexagonal nuts from the foot switch. The SW, LED circuit board (PN2/2) can then be removed. (Fig. 5)



[90]: Hexagonal Nut 9.0 12X2 MFNI33 (LX200060)
 [110]: Bind Head Tapping Screw-B 3.0X8 MFZN2BL (EP600190)

Fig.5

LSI PIN DESCRIPTION

● HD6413002FP16 (XQ375A00) CPU <H8/3002>

DM: IC12

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION	
1	PA6	O	Port A	51	A12	O	} Address bus	
2	PA7	O	Address bus	52	A13	O		
3	VCC		Power supply	53	A14	O		
4	PB0	I	} Port B	54	A15	O		
5	PB1	I						
6	PB2	I						
7	PB3	I						
8	PB4	I						
9	PB5	I		55	A16	O		
10	PB6//DREQ0	I		56	A17	O		
11	PB7//DREQ1	I		57	A18	O		
12	/RESO	O	Reset	58	A19	O		
13	VSS		Ground	59	VSS		Ground	
14	P90/TXD0	O	Transmit data (MIDI OUT)	60	P60//WAIT	I	} Port 6	
15	P91/TXD1	O	KSN-ACK	61	P61//BREQ	I		
16	P92/RXD0	I	Receive data (MIDI IN)	62	P62//BACK	I		
17	P93/RXD1	I	KSN-RX	63	∅	O	∅out	
18	P94/SCK0	O	Port 9	64	/STBY	I	Stand-by mode signal	
19	P95/SCK1	I	Port 9	65	/RES	I	Reset	
20	P40/D0	I/O	} Data bus	66	NMI	I	Non-maskable interrupt	
21	P41/D1	I/O						
22	P42/D2	I/O						
23	P43/D3	I/O						
24	VSS			(Ground)	67	VSS		Ground
25	P44/D4	I/O						
26	P45/D5	I/O						
27	P46/D6	I/O						
28	P47/D7	I/O						
29	D8	I/O						
30	D9	I/O						
31	D10	I/O						
32	D11	I/O						
33	D12	I/O						
34	D13	I/O						
35	D14	I/O						
36	D15	I/O						
37	VCC		Power supply	68	EXTAL	I	Clock	
38	A0	O	} Address bus	69	XTAL	O	Clock	
39	A1	O						
40	A2	O						
41	A3	O						
42	A4	O						
43	A5	O						
44	A6	O						
45	A7	O						
46	VSS		(Ground)	70	VCC		Power supply	
47	A8	O		71	/AS	O	Address strobe	
48	A9	O		72	/RD	O	Read strobe	
49	A10	O		73	/HWR	O	Write strobe (High)	
50	A11	O		74	/LWR	O	Write strobe (Low)	
				75	MD0	I	} Mode select	
				76	MD1	I		
				77	MD2	I		
				78	AVCC		Analog power supply	
				79	VREF	I	Reference voltage	
				80	P70/AN0	I	Analog data input (EQ)	
				81	P71/AN1	I	Analog input (EQ)	
				82	P72/AN2	I	Analog data input	
				83	P73/AN3	I	Analog input (CS)	
				84	P74/AN4	I	Analog data input (BEND)	
				85	P75/AN5	I	Analog input (MOD)	
				86	P76/AN6	I	Analog input (FC)	
				87	P77/AN7	I	Analog input (BAT)	
				88	AVSS		Analog ground	
				89	P80	O	Port 8	
				90	P81//CS3	O	} Chip select	
				91	P82//CS2	O		
				92	P83//CS1	O		
				93	P84//CS0	O		
				94	VSS		Ground	
				95	PA0	I	} Port A	
				96	PA1	I		
				97	PA2	I		
				98	PA3	O		
				99	PA4	O		
				100	PA5	O		

● YM3437C-F (XM530A00) DIT2 (Digital Format Interface Transmitter)

DM: IC17

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION	
1	Vss		Ground	9	MUTE	I	Mute	
2	MCLK	I	Master clock input	10	VFL	I	Validity flag	
3	DM0	I	} DIN/BCLK/WCLK format select	11	CCK	I	C,U bit clock input/C bit data input	
4	DM1	I						
				DM1,DM0=0,0 DSP,LDSP (64 bit,LSB first)	12	CIN	I	C,U bit data input/U bit data input
				DM1,DM0=0,1 stereo,DSP (64 bit,MSB first)				
			DM1,DM0=1,0 DSP2 (128 bit,MSB first)					
			DM1,DM0=1,1 BB (64 bit,MSB first)					
5	RES	I	System reset	13	CLD	I	End of C,U bit input/16,20 bit/24 bit select	
6	WCIN	I	Word clock input	14	CNTR	I	32 bit counter reset/Top of block	
7	DIN	I	Digital audio serial data input	15	CSM	I	Channel status input mode select	
							CSM=0 Asynchronous mode	
							CSM=1 Synchronous mode	
8	VDD		Power supply (+5 V)	16	DOUT	O	Digital interface formatted data output	

● YSS910-S (XV988A00) DSP6 (Digital Signal Processor) DM: IC8, IC9

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION	
1	Vdd		Power supply (3.3 V)	89	Vss		Ground	
2	Vss		Ground	90	DB13	I/O	Parallel data bus	
3	XI	I	System master clock input (60 MHz or 30 MHz)	91	DB14	I/O		
4	XO	O	System master clock output (High or 30 MHz)	92	DB15	I/O		
5	Vdd		Power supply (5 V)	93	DB16	I/O		
6	/SYNCl	I	Sync. signal input	94	DB17	I/O		
7	/SYNCO	O	Sync. signal output	95	DB18	I/O		
8	Vdd		Power supply (5 V)	96	DB19	I/O		
9	CKI	I	System clock input (30 MHz)	97	DB20	I/O		
10	CKO	O	System clock output (30 MHz)	98	DB21	I/O		
11	CKSEL	I	System master clock select (0: 60 MHz, 1: 30 MHz)	99	DB22	I/O		
12	Vss		Ground	100	Vss		Ground	
13	MCKS	I	Serial I/O master clock input (128 x Fs)	101	Vdd		Power supply (3.3 V)	
14	/SSYNCl	I	Serial I/O Sync. signal input	102	DB23	I/O	Parallel data bus	
15	/IC	I	Initial clear	103	DB24	I/O		
16	/TEST	I	Test mode setting (0: Test, 1: Normal)	104	DB25	I/O		
17	BTYP	I	Data bus type select (0: 8 bit, 1: 16 bit)	105	DB26	I/O		
18	/IRQ	O	IRQ output	106	DB27	I/O		
19	TRIG	I/O	Trigger signal input/output	107	DB28	I/O		
20	Vdd		Power supply (5 V)	108	DB29	I/O		
21	Vss		Ground	109	DB30	I/O		
22	/CS	I	chip select signal input	110	DB31	I/O		
23	/WR	I	Write signal input	111	TIMO/DBOB	I/O		Timing signal output/ Parallel data bus output/ input
24	/RD	I	Read signal input	112	Vss		Ground	
25	CA7	I/O	Address bus of internal register	113	Vdd		Power supply (5 V)	
26	CA6	I/O						
27	CA5	I/O						
28	CA4	I/O						
29	CA3	I/O						
30	CA2	I/O						
31	CA1	I/O						
32	Vss		Ground	114	DA00	I/O	Memory data bus	
33	Vdd		Power supply (3.3 V)	115	DA01	I/O		
34	CD15	I/O	Data bus of internal register	116	DA02	I/O		
35	CD14	I/O						
36	CD13	I/O						
37	CD12	I/O						
38	CD11	I/O						
39	CD10	I/O						
40	CD09	I/O						
41	CD08	I/O						
42	CD07	I/O						
43	CD06	I/O						
44	Vss		Ground	117	DA03	I/O		
45	Vdd		Power supply (3.3 V)	118	DA04	I/O		
46	Vdd		Power supply (5 V)	119	DA05	I/O		
47	CD05	I/O	Data bus of internal register	120	DA06	I/O		
48	CD04	I/O						
49	CD03	I/O						
50	CD02	I/O						
51	CD01	I/O						
52	CD00	I/O						
53	/WAIT	O		WAIT output	121	DA07	I/O	
54	Vss			Ground	122	Vss		Ground
55	SI0	I		Serial data input	123	DA08	I/O	
56	SI1	I						
57	SI2	I						
58	SI3	I						
59	SI4	I						
60	SI5	I						
61	SI6	I						
62	SI7	I						
63	Vss		Ground	124	DA09	I/O		
64	Vdd		Power supply (5 V)	125	DA10	I/O		
65	SO0	O	Serial data output	126	DA11	I/O		
66	SO1	O						
67	SO2	O						
68	SO3	O						
69	SO4	O						
70	SO5	O						
71	SO6	O						
72	SO7	O						
73	Vss		Ground	127	DA12	I/O		
74	DB00	I/O	Parallel data bus	128	DA13	I/O		
75	DB01	I/O						
76	DB02	I/O						
77	DB03	I/O						
78	DB04	I/O						
79	DB05	I/O						
80	DB06	I/O						
81	DB07	I/O						
82	DB08	I/O						
83	DB09	I/O						
84	DB10	I/O						
85	DB11	I/O	Memory address (SRAM, PSRAM, DRAM)	129	DA14	I/O		
86	DB12	I/O						
87	Vdd			Power supply (5 V)	130	DA15	I/O	
88	Vdd			Power supply (3.3 V)	131	Vss		Ground
					132	Vdd		Power supply (3.3 V)
					133	(n.c)		Not used
					134	Vdd		Power supply (5 V)
					135	DA16	I/O	Memory data bus
					136	DA17	I/O	
					137	DA18	I/O	
				138	DA19	I/O		
				139	DA20	I/O		
				140	DA21	I/O		
				141	DA22	I/O		
				142	DA23	I/O		
				143	Vss		Ground	
				144	DA24	I/O		
				145	DA25	I/O		
				146	DA26	I/O		
				147	DA27	I/O		
				148	DA28	I/O		
				149	DA29	I/O		
				150	DA30	I/O		
				151	DA31	I/O		
				152	Vdd		Power supply (5 V)	
				153	Vss		Ground	
				154	A00	O	Memory address (SRAM, PSRAM, DRAM)	
				155	A01	O		
				156	A02	O		
				157	A03	O		
				158	A04	O		
				159	A05	O		
				160	A06	O		
				161	A07	O		
				162	A08	O		
				163	A09	O		
				164	Vss		Ground	
				165	Vdd		Power supply (3.3 V)	
				166	A10	O	Memory address (SRAM, PSRAM, DRAM)	
				167	A11	O		
				168	A12	O		
				169	A13	O		
				170	A14	O		
				171	A15/RAS	O		
				172	A16/CAS	O		
				173	A17/CE	O		
				174	/WE	O		
				175	/OE	O		
				176	Vdd		Power supply (5 V)	

● **AK4520A-VF-E2 (XT802A00) DAC & ADC**

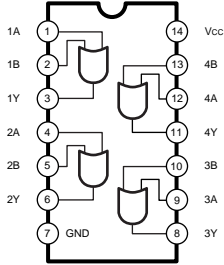
DM: IC104

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	VREFH	I	Positive Voltage Reference Input, VA	15	MCLK	I	Master Clock Input
2	VREFL	I	Negative Voltage Reference Input, AGND	16	DEM0	I	De-emphasis Frequency Select
3	AINR+	I	Rch Analog Positive Input	17	DEM1	I	De-emphasis Frequency Select
4	AINR-	I	Rch analog Negative Input	18	TST3	I/O	} Test Pins (Pull Down Pins)
5	AINL+	I	Lch Analog Positive Input	19	TST2	I/O	
6	AINL-	I	Lch analog Negative Input	20	TST1	I	
7	VA	-	Analog Power Supply	21	VD	-	Digital Power Supply
8	AGND	-	Analog Ground	22	DGND	-	Digital Ground
9	DIF0	I	Audio Data Interface Format	23	/PWDA	I	DAC power-Down Mode
10	DIF1	I	Audio Data Interface Format	24	/PWAD	I	ADC power-Down Mode
11	LRCK	I	Input/Output Channel Clock	25	CMODE	I	Master Clock Select ("H":384 fs,"L":256 fs)
12	SCLK	I	Audio Serial Data Clock	26	AOU TL	O	Lch Analog Output
13	SDTI	I	Audio Serial Data Input	27	AOU TR	O	Rch Analog Output
14	SDTO	O	Audio Serial Data Output	28	VCOM	O	Common Voltage Output, VA/2

■ **IC BLOCK DIAGRAM**

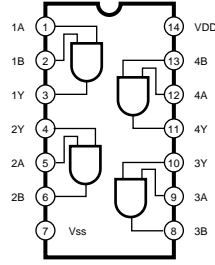
● **74AHC32DT (XZ103A00)**

DM: IC5, IC6
OR



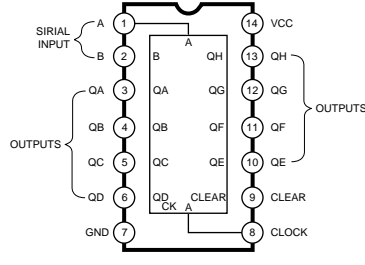
● **74HC08DT (XZ108A00)**

DM: IC7
AND



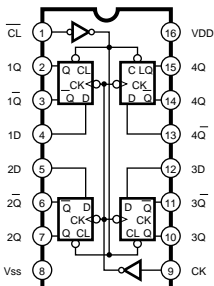
● **74HC164DT (XZ112A00)**

DM: IC109
SHIFT REGISTANT



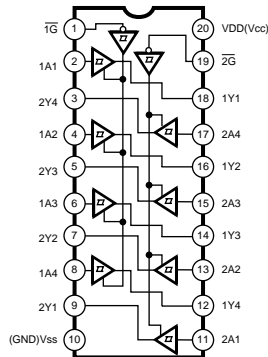
● **74HC175DT (XZ113A00)**

DM: IC110
D-FF



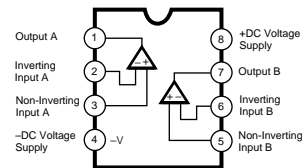
● **74HC244DT (XZ109A00)**

DM: IC14, IC15, IC16
Bus Buffer

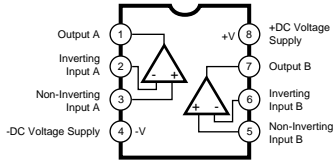


● **NJM072M (XC458A00)**

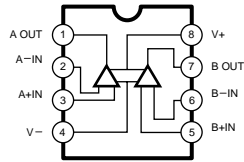
DM: IC101
OP AMP



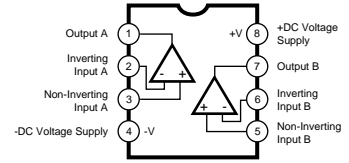
- **NJM4556AD** (XQ824A00)
MAIN: IC501
OP AMP



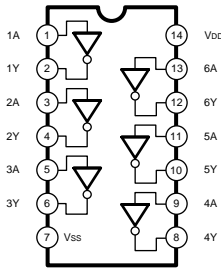
- **NJM5532M** (XC011A00)
DM: IC102, IC103, IC106
OP AMP
- **NJM4556AMT1** (XQ138A00)
DM: IC105
OP AMP



- **NE5532P** (IG102500)
DM: IC502
OP AMP

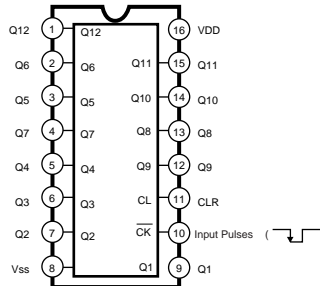


- **74HCU04DT** (XZ110A00)
DM: IC107
INVERTER

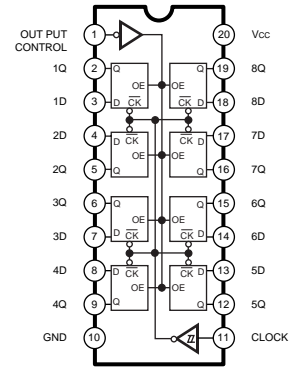


- **TC74HC4040F** (XR684A00)
DM: IC108
B. COUNTER

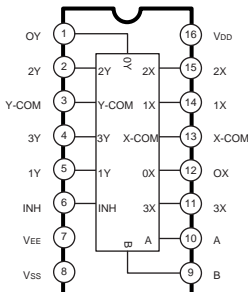
- **TC74HC4040DT** (XZ111A00)
DM: IC108
12-Stage Binary Ripple Counter



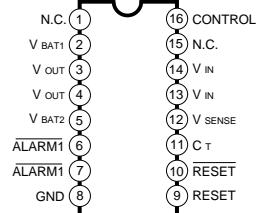
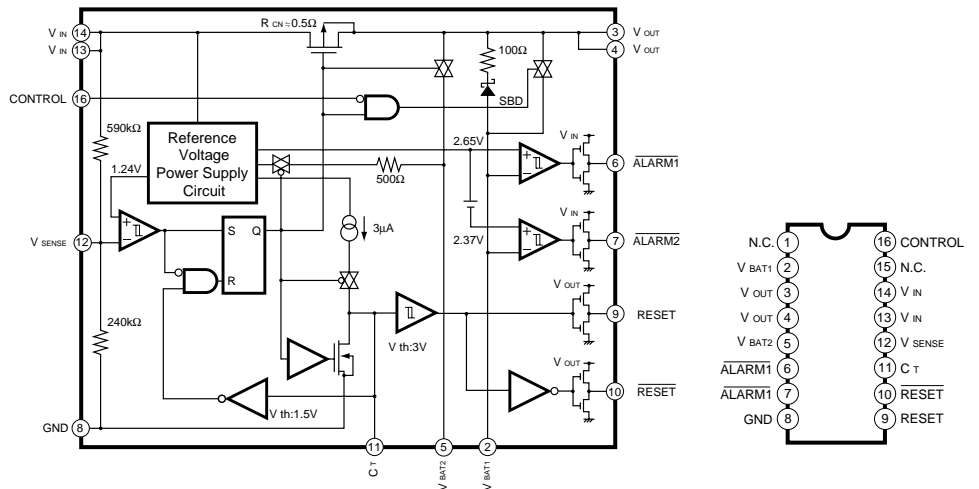
- **74HC374DT** (XZ102A00)
DM: IC301-IC307
D-FF



- **74HC4052DT** (XZ101A00)
DM: IC308, IC309
Multiplexer



- **MB3790PF** (XR967A00)
DM: IC4
ASSP



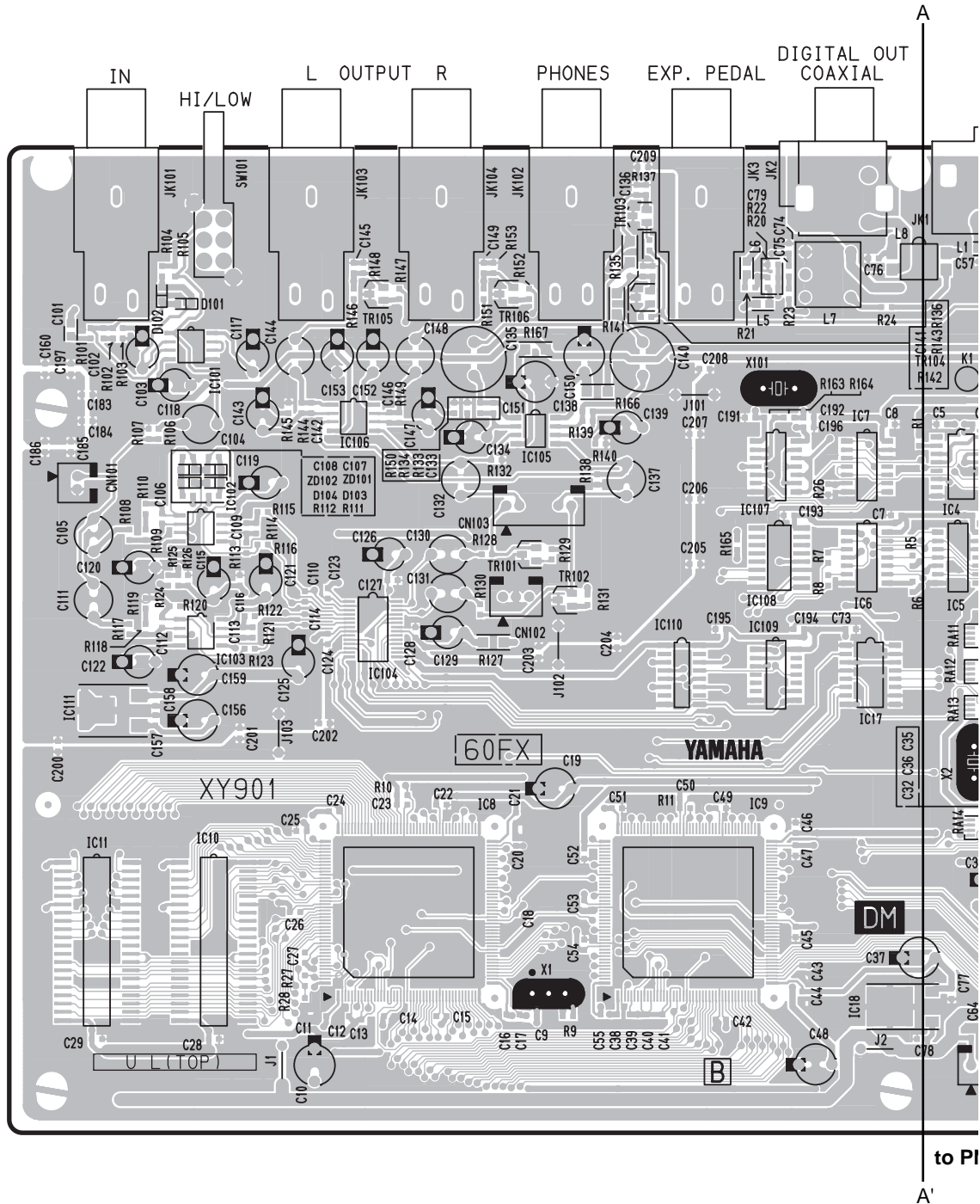
CIRCUIT BOARDS

• DM Circuit Board

CN101:
to MAIN3/8-W401

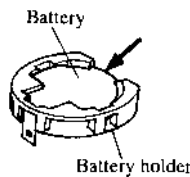
CN103:
to PN1/2-CN301

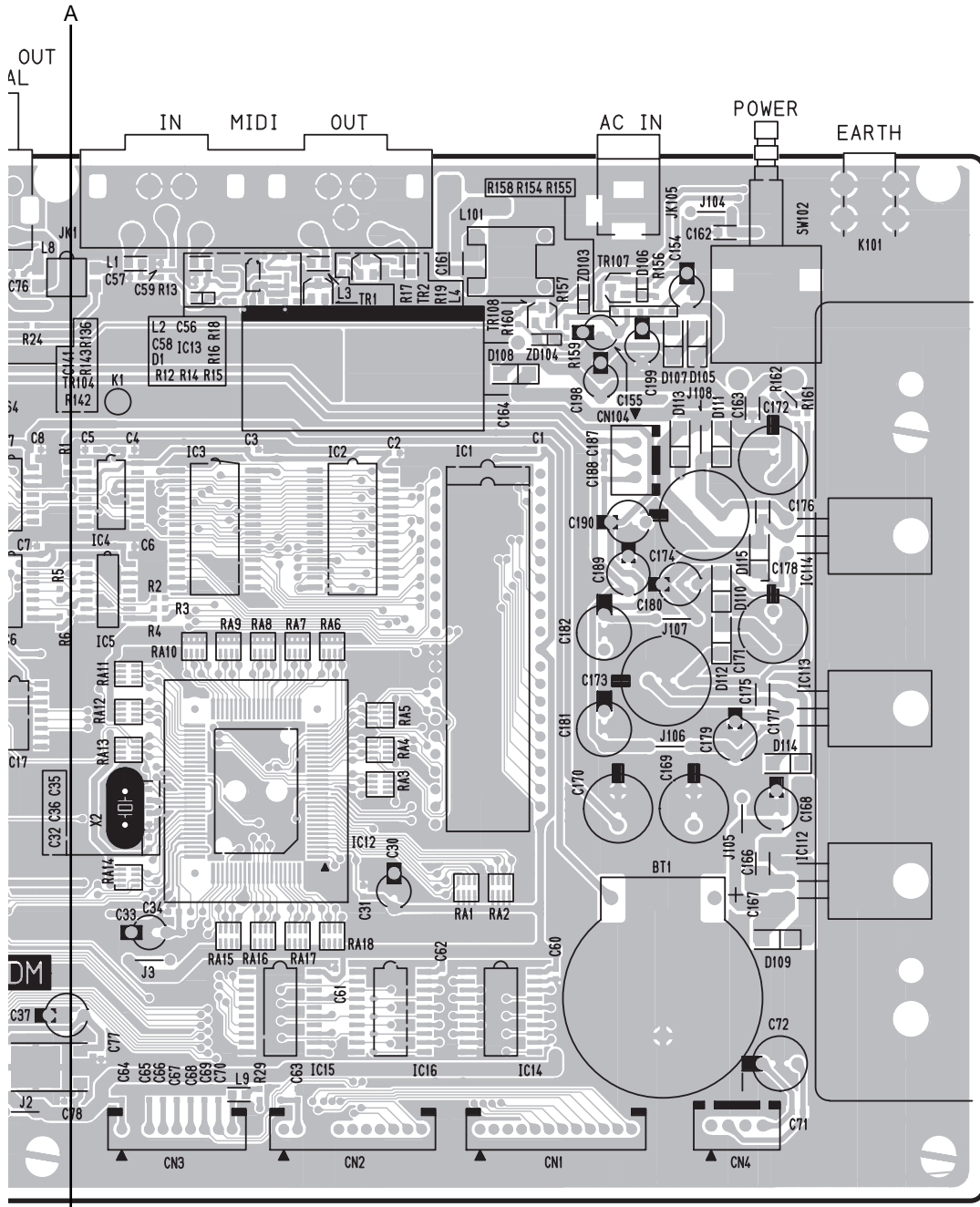
CN102:
to MAIN2/8-W502



Battery VN103500
VN103600(Battery holder for VN103500)

- Notice for back-up battery removal
Push the battery as shows in figure,
then the battery will pop up.



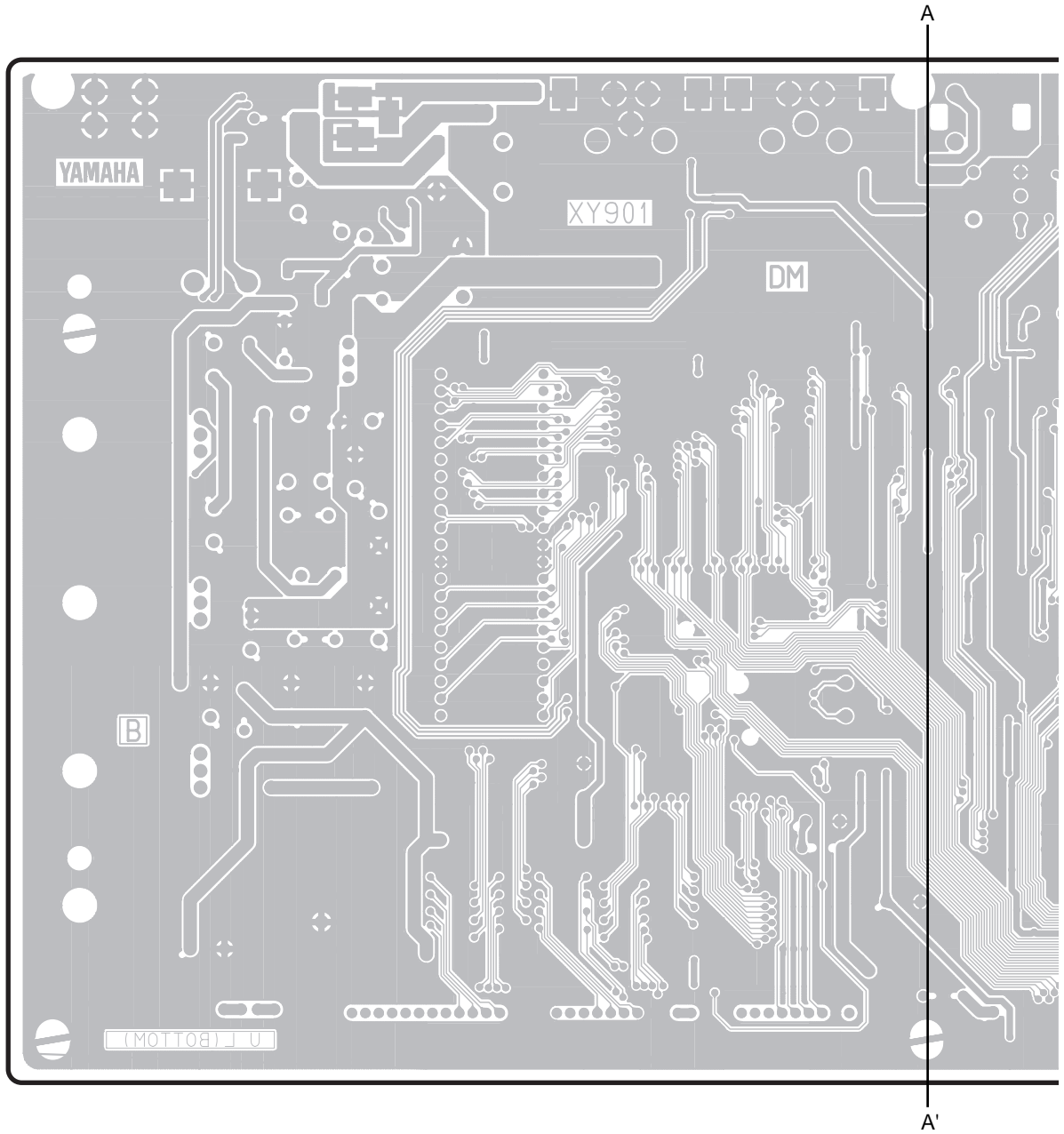


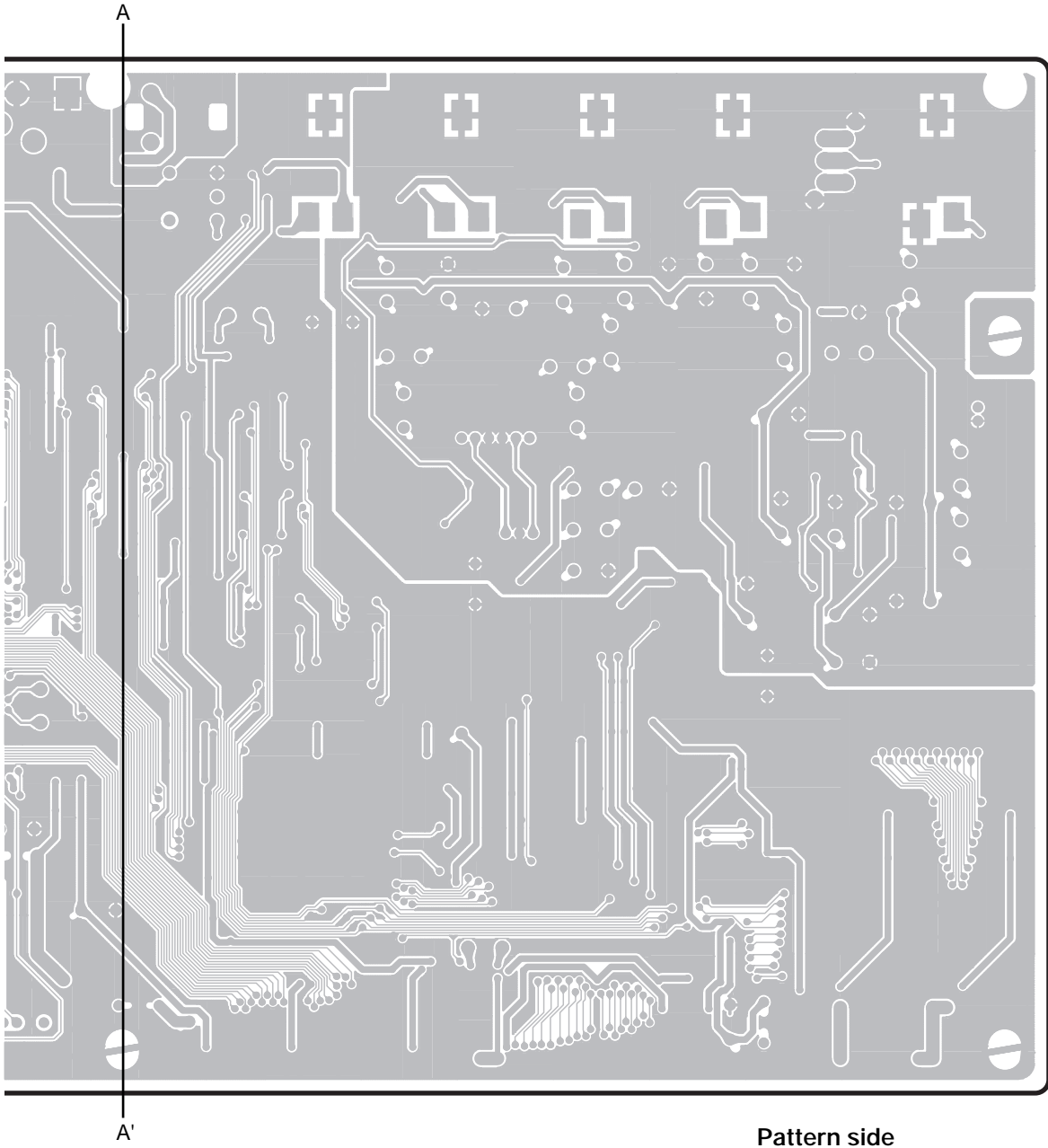
CN104:
to MAIN1/8-W601

to PN1/2-CN302 to PN1/2-CN303 to PN1/2-CN304 to MAIN1/8-W603

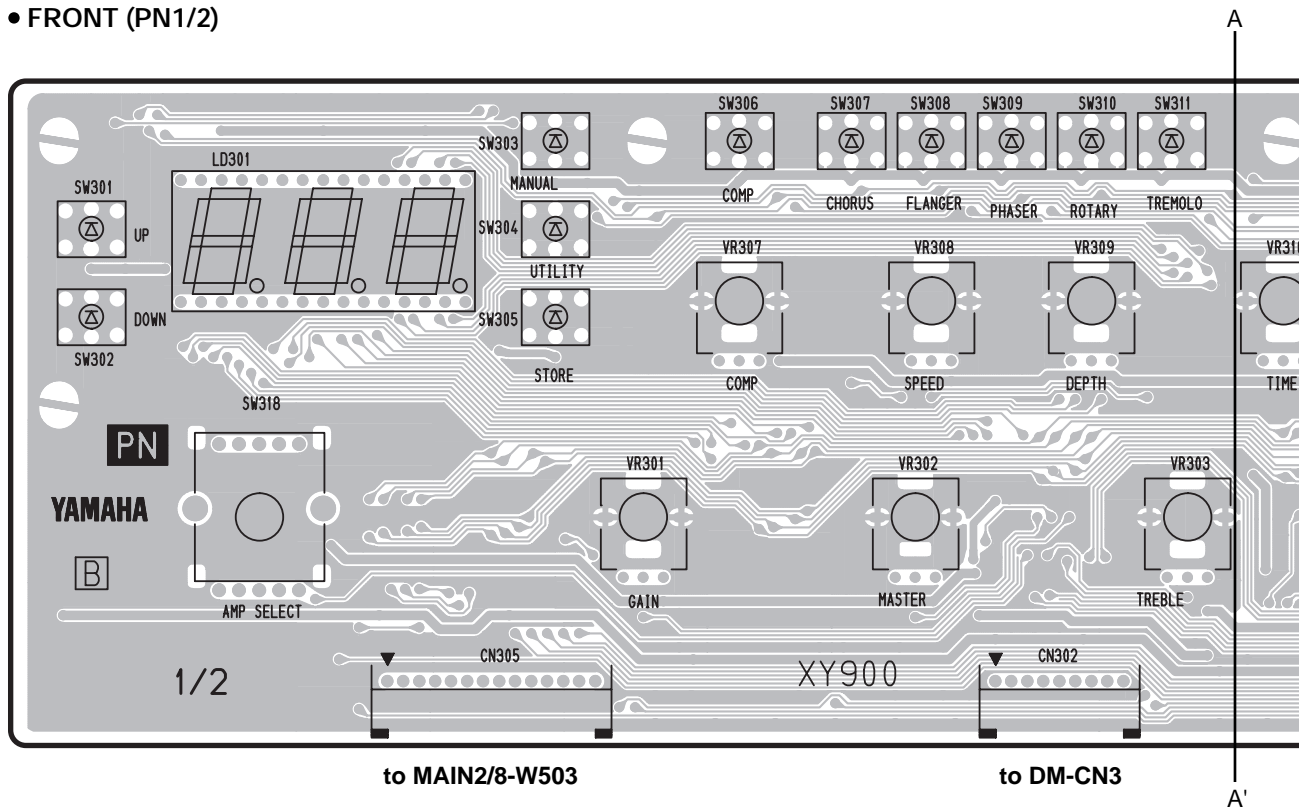
Component side

• DM Circuit Board

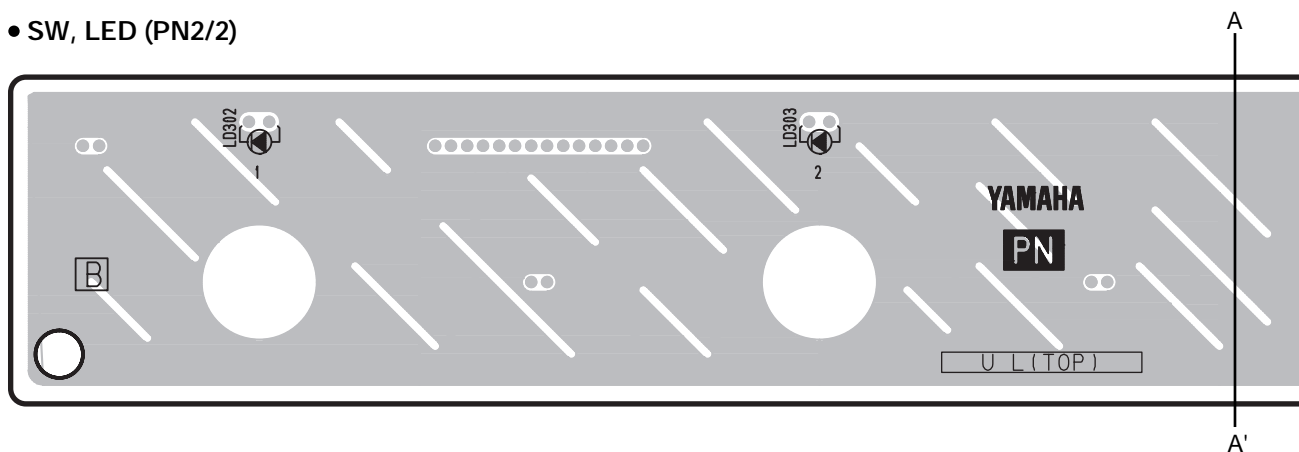




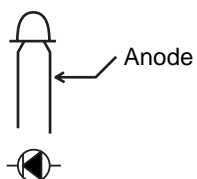
• FRONT (PN1/2)



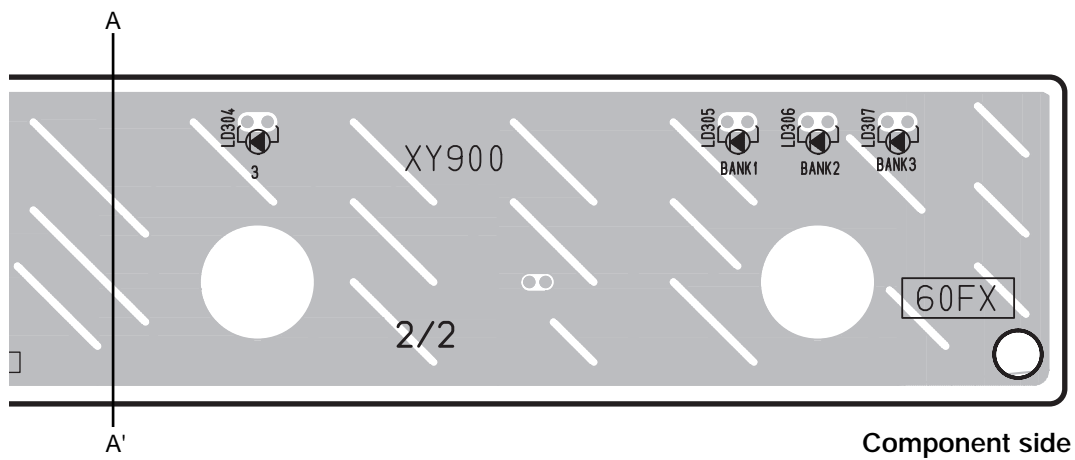
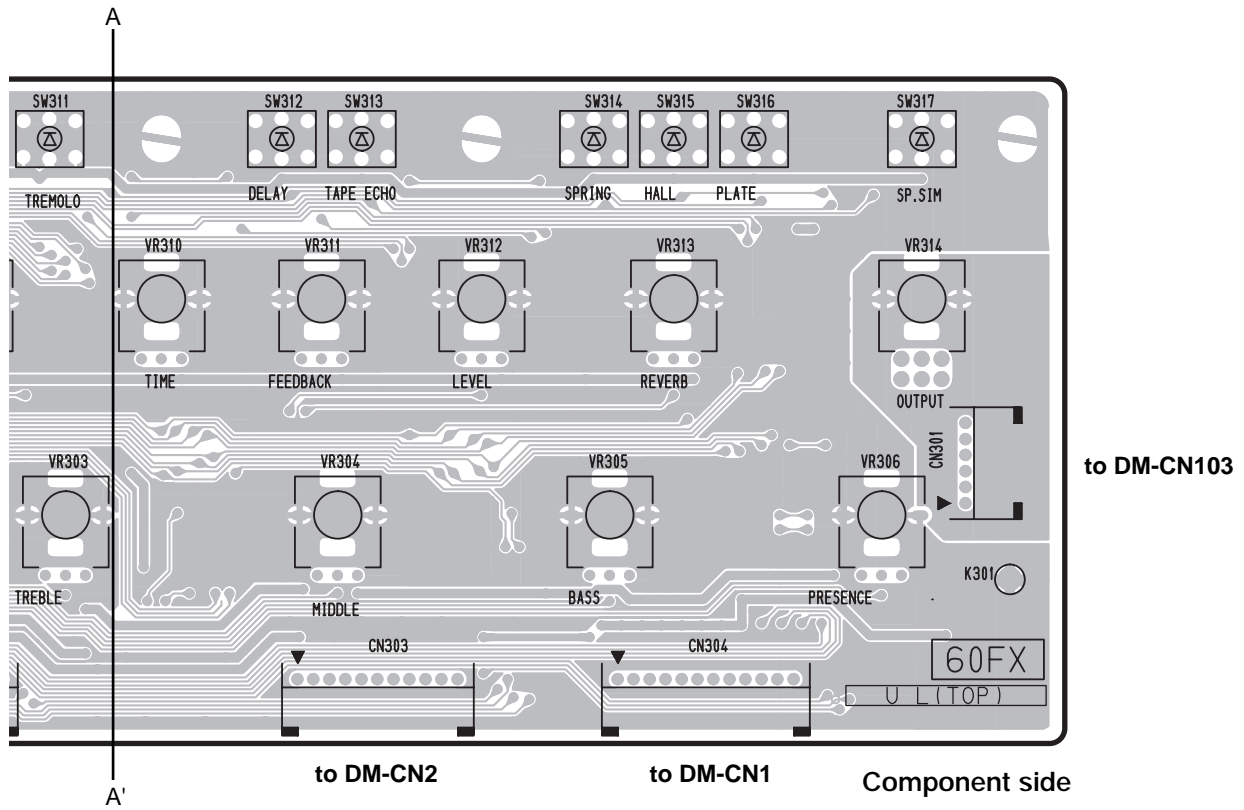
• SW, LED (PN2/2)



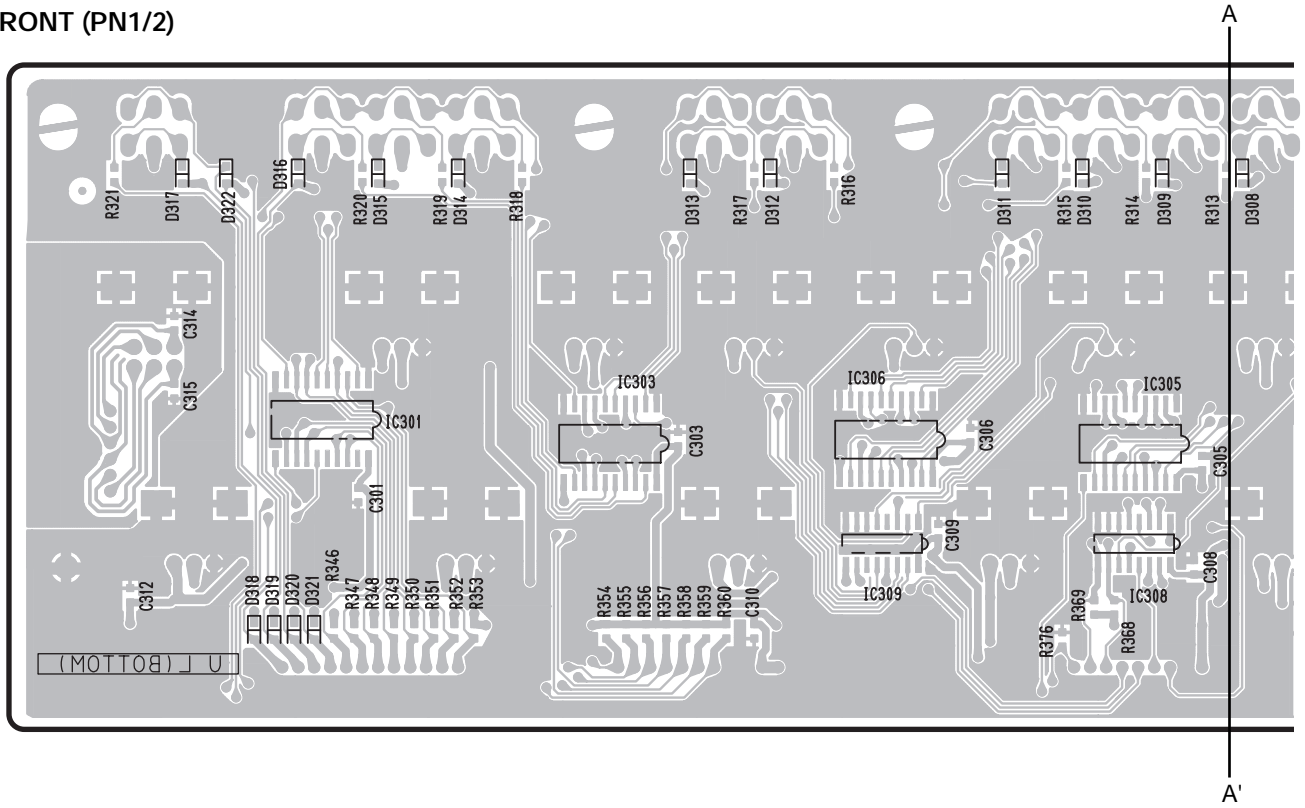
• LD302, LD303, LD304 and LD306 installation



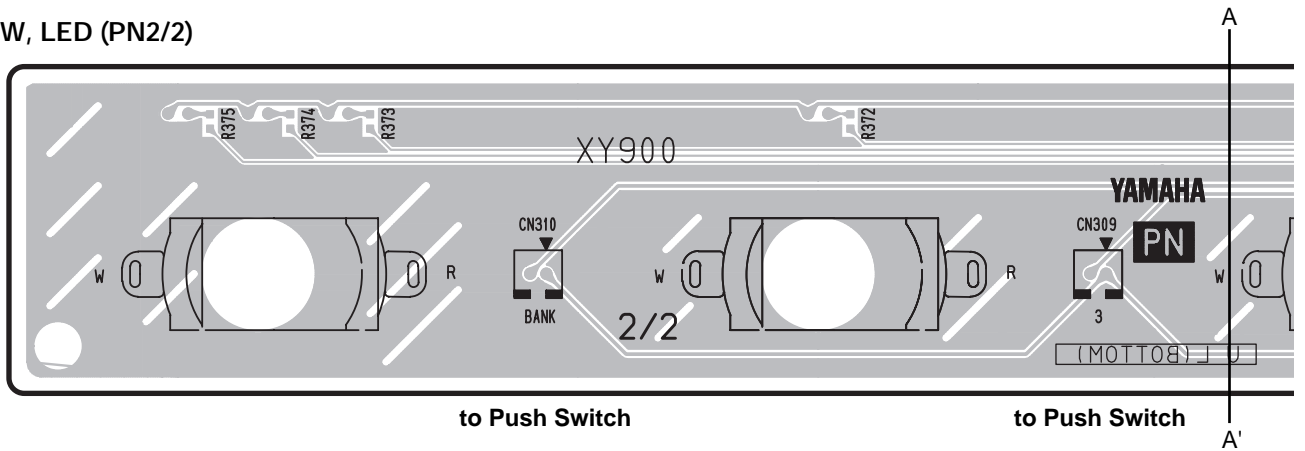
PN: CNA-V620230

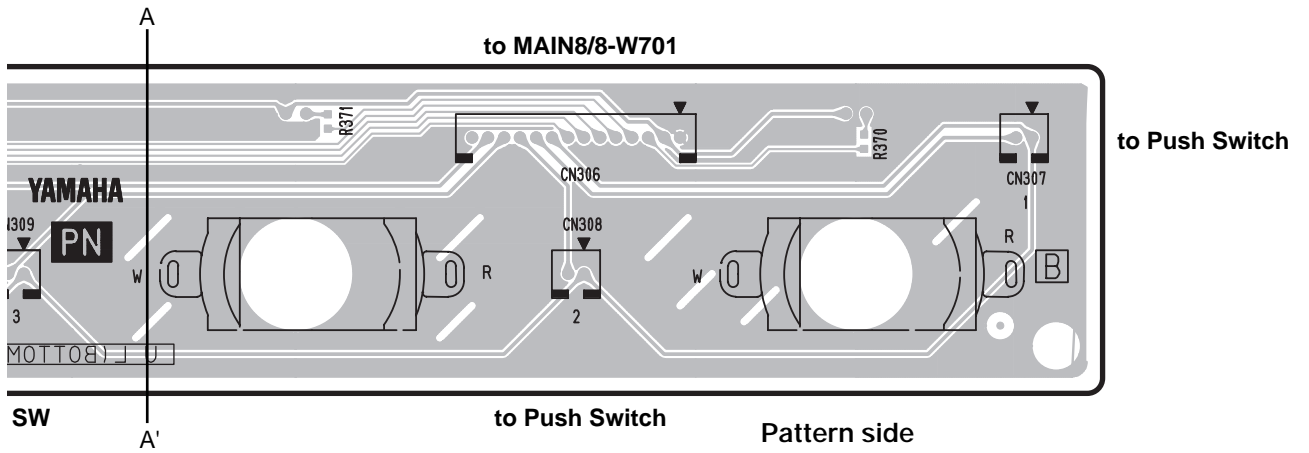
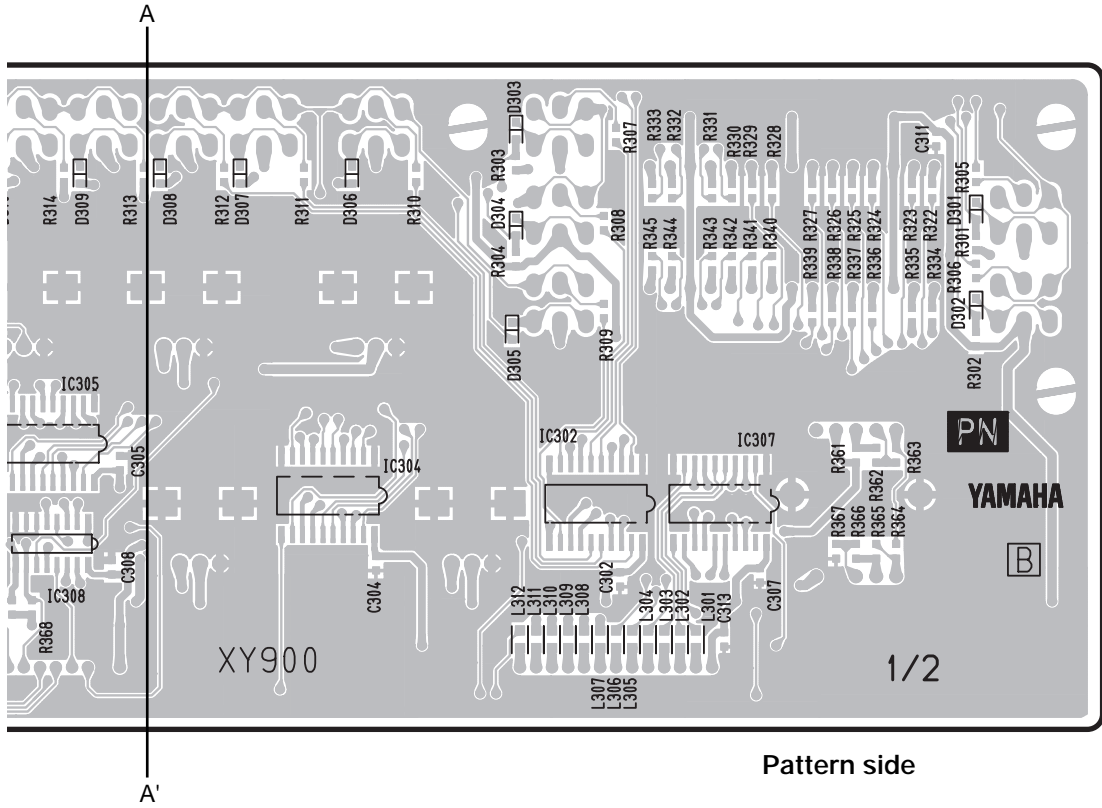


• FRONT (PN1/2)

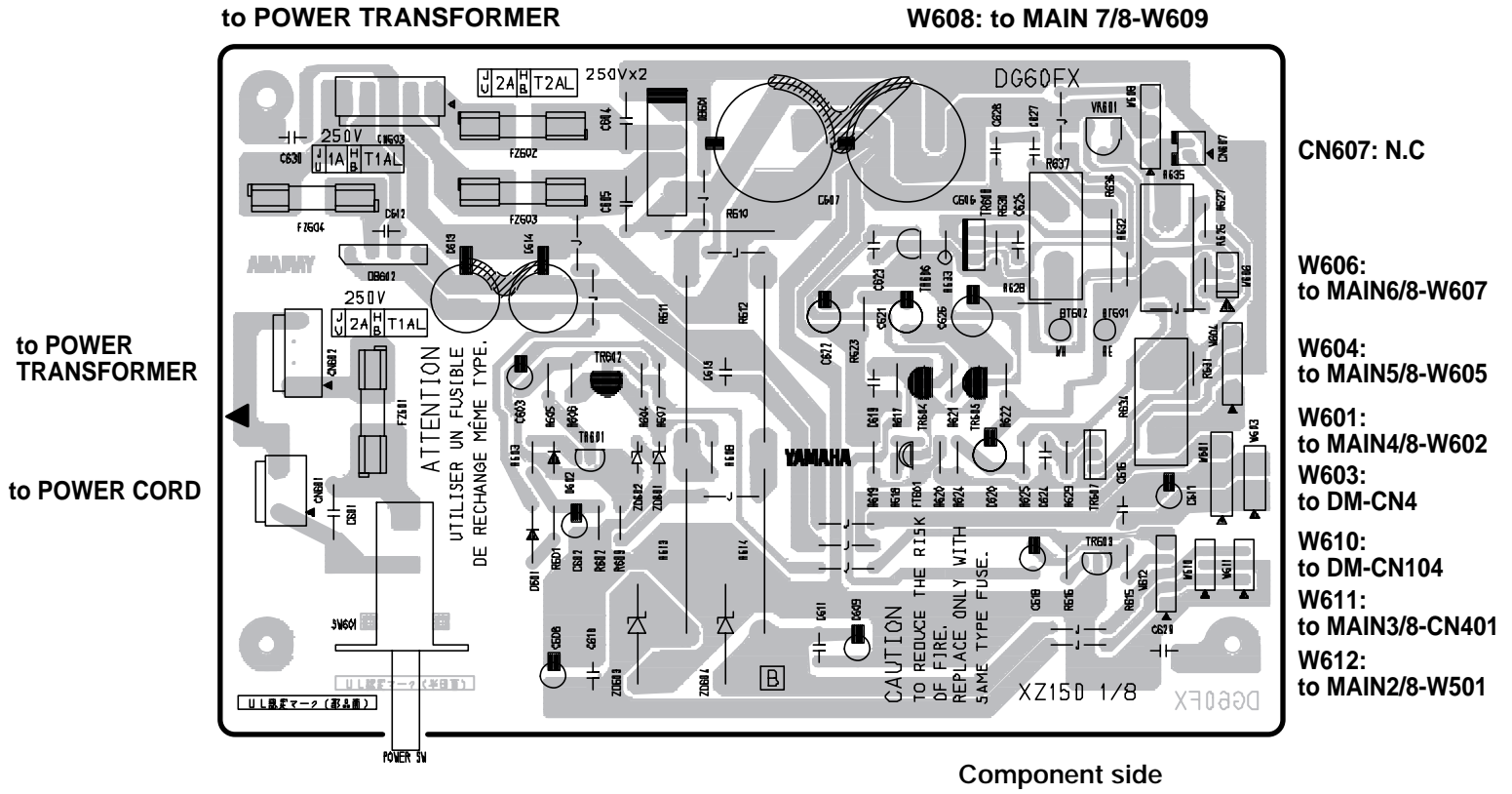


• SW, LED (PN2/2)



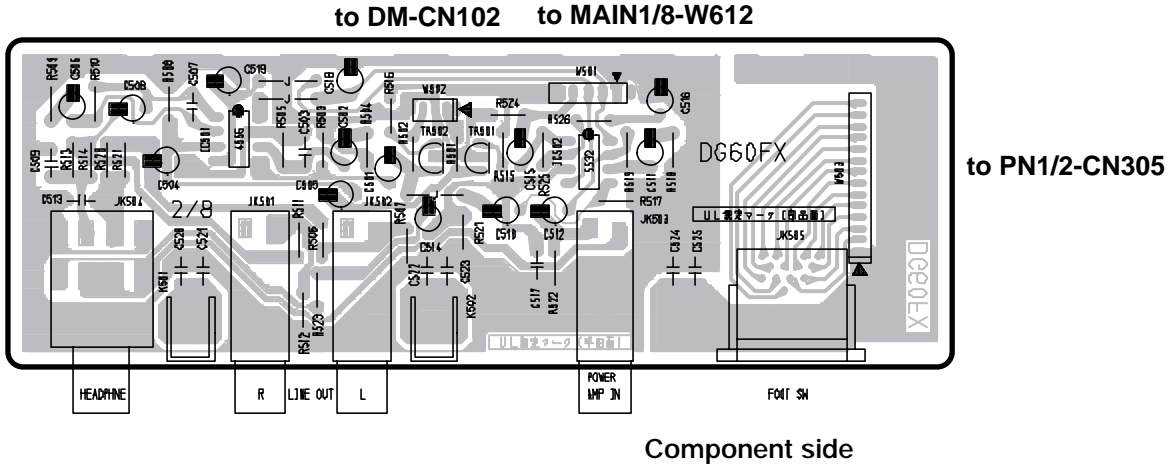


● MAIN (ANALOG)1/8 Circuit Board

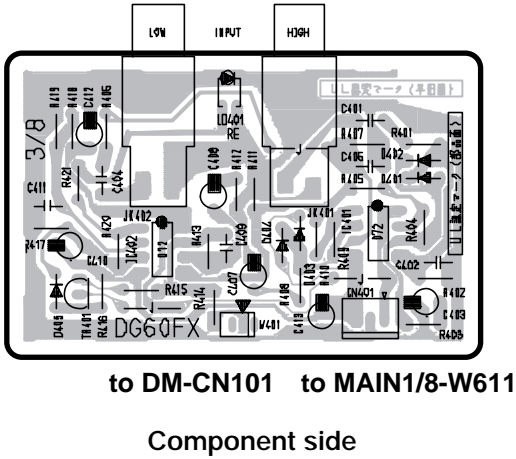


DESTINATION	MAIN Circuit Board No.	FZ601	FZ602 FZ603	FZ604
J, U, C	V610580	2A 250V	2A 250V	1A 250V
H, B, S	V610590	T1A L 250V	T2A L 250V	T1A L 250V

• MAIN (ANALOG)2/8 Circuit Board

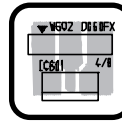


• MAIN (ANALOG)3/8 Circuit Board



• MAIN (ANALOG)4/8 Circuit Board

to MIAN1/8-W601



• MAIN (ANALOG)5/8 Circuit Board

to MIAN1/8-W604



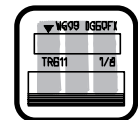
• MAIN (ANALOG)6/8 Circuit Board

to MIAN1/8-W606



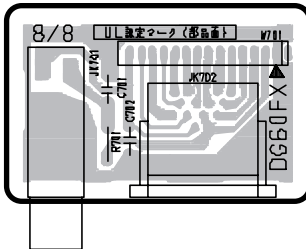
• MAIN (ANALOG)7/8 Circuit Board

to MIAN1/8-W608



• REAR (ANALOG)8/8 Circuit Board

to PN2/2-CN306



MAIN(ANALOG): CNA-V610580 (J, U, C)
: CNA-V610590 (H, B, S)

■ TEST PROGRAM

A. PREPARATION

- EXP. PEDAL Connect the B50KVR.
- DIGITAL OUT Connect the DA converter.
- MIDI IN Connect IN and OUT, using the DIN
- MIDI IN 5P cable.
- The input signal is a 1kHz sine wave.
- Set all rotary VR's and switches near their center position.
- Set the OUTPUT VR to the MAX position.
- Set the input impedance of the measuring instrument to 1Mohm or more.

B. CONTENTS OF TEST PROGRAM

- 0: LED Check
- 1: SW Check
- 2: VR Check
- 3: Battery Check
- 4: MIDI Check
- 5: SRAM Check
- 6: DSP Check

C. STARTING THE TEST PROGRAM

While pressing the MANUAL, STORE and HALL switches, turn on the POWER switch. The TEST program will then be started.

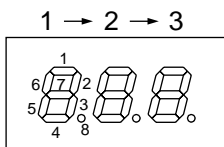
D. SELECTING THE TEST NUMBER

Using the UP and DOWN switches, select the test number and press the STORE switch to confirm selection.

E. TEST PROCEDURE

0: LED Check

- Using the UP and DOWN switches, select "0" and then press the STORE switch.
- LED segments light up one after another starting with "UP". When "SP.SIM" is reached, "BANK3", "BANK2", "BANK1", "3", "2" and "1" light up followed by 7 segments in the following order from the left end. After that, all LED segments light up and go out.



1: SW Check

- Using the UP and DOWN switches, select "1" and then press the STORE switch.
- Starting with the UP switch, press the switches whose LED lights up one after another. After "SP.SIM", "BANK", "3", "2" and "1", all LED segments light up and then go out.
- Numbers (0 to 20) are indicated at the right end of the 7 segment LED.
- If "E" representing an error appears at the left end, press the UTILITY switch for resetting.

2: VR Check

- Using the UP and DOWN switches, select “2” and then press the STORE switch.
- Press switches in the order of “AMP SELECT”, “GAIN” until “PRESENCE, then from “COMP” to “REVERB” and finally until “EXP.PEDAL” is reached.
- Turn the control fully in the direction toward the left 7 segment LED which is turned on. If the test result is OK, the right 7 segment LED lights up. Then turn the control to that direction. If the test result is OK, proceed to the next VR. After completing this check, return the control to the center position.
- If an error exists outside of the control being checked, “E” meaning an error appears at the left end OF LED. In such case, press the UTILITY switch for resetting.
- At the end of all VR checks, all LED segments light up and go out. Then checking advances to the next step.

3: Battery Check

- Using the UP and DOWN switches, select “3” and then press the STORE switch.
- If the check result is OK, all LED segments light up and go out. Then checking advances to the next step.
- In case of an error, “E” is indicated by LED.

4: MIDI Check

- Using the UP and DOWN switches, select “4” and then press the STORE switch.
- If the check result is OK, all LED segments light up and go out. Then checking advances to the next step.
- In case of an error, “E” is indicated by LED.
- The numeric figure at the right end of LEF represents, 0: transmission and 1: reception.

5: SRAM Check

- Using the UP and DOWN switches, select “5” and then press the STORE switch.
- If the check result is OK, all LED segments light up and go out. Then checking advances to the next step.
- The numeric figure at the right end of LEF represents, 0: IC2 and 1: IC3.

6: DSP Electric Characteristic

- Using the UP and DOWN switches, select “6” and then press the STORE switch. The same output level is obtained when No. at the right end is “0” and when it is “1”.
- To check the output level, noise level and distortion factor, enter the signal to be measured (short the input with GND for the noise level check).
- Initial setting: HIGH/LOW SW(SW101) --- OFF(LOW), VR --- Center, OUTPUT VR --- MAX

ITEM	INPUT	OUTPUT
1. INPUT sensitivity	CN101(INPUT) -20dBm(1kHz)	CN102 1pin(OUT R) -6.0dBm+/-3dB
2. INPUT sensitivity	CN101(INPUT) -20dBm(10kHz)	CN102 1pin(OUT R) -6.0dBm+/-3dB
3. INPUT sensitivity	CN101(INPUT) -20dBm(100Hz)	CN102 1pin(OUT R) -6.0dBm+/-3dB
4. INPUT sensitivity	CN101(INPUT) -20dBm(100Hz)	CN102 3pin(OUT L) -24.0dBm+/-3dB
5. INPUT sensitivity	CN101(INPUT) -20dBm(10kHz)	CN102 3pin(OUT L) -24.0dBm+/-3dB
6. INPUT sensitivity	CN101(INPUT) -20dBm(1kHz)	CN102 3pin(OUT L) -24.0dBm+/-3dB
7. INPUT sensitivity	CN101(INPUT) -20dBm(1kHz)	JK2(Digital out) Lch -18dBm+/-3dB Rch 0dBm+/-3dB

■ ERROR MESSAGES

If an error occurs during operation, one of the following error message numbers will appear on the display.

E 1: MIDI Receive Buffer Full

- CAUSE:** Too much MIDI data is being received by the DG amplifier at one time.
SOLUTION: Try reducing the amount of data being sent or, break the data into smaller blocks.

E 2: Communication Error.

- CAUSE:** An abnormality is detected during MIDI communications.
SOLUTION: Check all connections, etc. and try again.

E 3: Bulk Receive Check Sum Error.

- CAUSE:** The check sum does not match the received MIDI bulk data.
SOLUTION: Check all connections and data, and try again.

E 4: Bulk Receive Data Abnormality.

- CAUSE:** An abnormality is detected in the received MIDI bulk data.
SOLUTION: Check all connections and data, and try again.

E 5: Backup Battery Error.

- CAUSE:** Backup battery power is depleted.
SOLUTION: Continued use of the device will result in the loss of data. Return the device to the music dealer where you purchased it or, the nearest Yamaha Service center and have the battery replaced.

■ IDLING ADJUSTMENT

1. Turn the idling adjustment volume (VR601) counterclockwise fully.
2. Adjust the VR601 so that the DC voltage between the terminals of the CN607 is 3mV.

YAMAHA [Guitar Amplifier] Date:30-Jun-2000
 Model DG60FX-112 MIDI Implementation Chart Version : 1.0

Function ...	Transmitted	Recognized	Remarks
:Basic Default	: 1 - 16	: 1 - 16, off	: memorized
:Channel Changed	: 1 - 16	: 1 - 16, off	:
:Mode Default	: 1,3	: 1,3	: memorized
:Messages	: x	: x	:
:Altered	: *****	: x	:
:Note	: x	: x	:
:Number : True voice	: *****	: x	:
:Velocity Note ON	: x	: x	:
:Note OFF	: x	: x	:
:After Key's	: x	: x	:
:Touch Ch's	: x	: x	:
:Pitch Bender	: x	: x	:
: 0	: x	: x	:
: 1 - 31	: o	: o	:
: 32 - 63	: x	: x	:
: 64 - 95	: o	: o	:
: Control 95 -127	: x	: x	:
: Change	:	:	:
: Prog	: o 0 - 127	: o 0 - 127	:
: Change : True #	: *****	:	:
:System Exclusive	: o	: o	: Bulk Dump
:System : Song Pos.	: x	: x	:
: : Song Sel.	: x	: x	:
:common : Tune	: x	: x	:
:System :Clock	: x	: x	:
:Real Time :Commands	: x	: x	:
:Aux :All Sound OFF	: x	: x	:
: :Reset All Cntrls	: x	: x	:
: :Local ON/OFF	: x	: x	:
: :All Notes OFF	: x	: x	:
:Mes- :Active Sense	: o	: x	:
:sages:Reset	: x	: x	:
Mode 1 : OMNI ON, POLY	Mode 2 : OMNI ON, MONO	o : Yes	
Mode 3 : OMNI OFF, POLY	Mode 4 : OMNI OFF, MONO	x : No	

GUITAR AMPLIFIER

DG60FX-112

PARTS LIST


■ CONTENTS

OVERALL ASSEMBLY	2
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Notes : DESTINATION ABBREVIATIONS

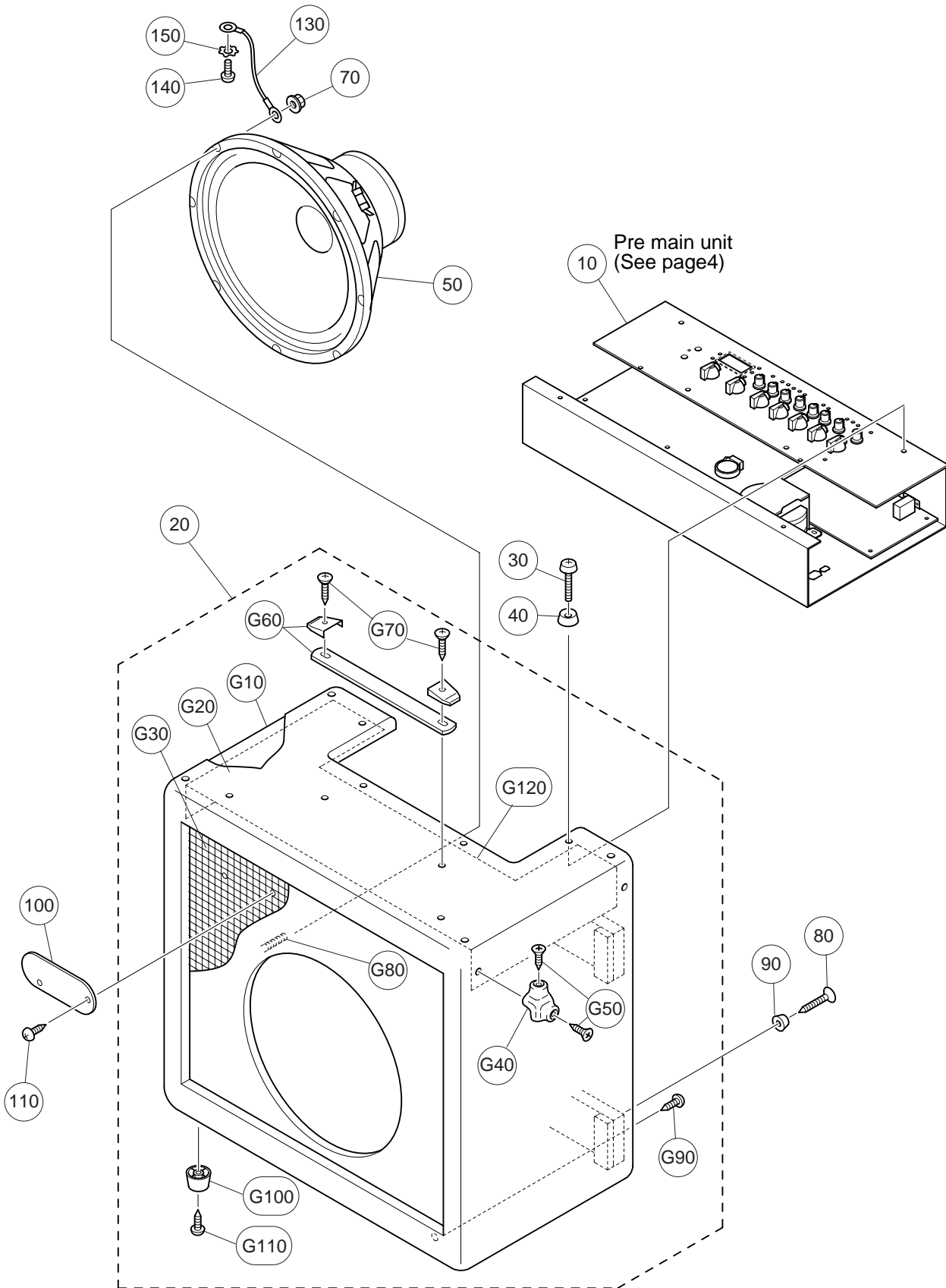
A : Australian model	M: South African model
B : British model	O : Chinese model
C : Canadian model	Q : South-east Asia model
D : German model	T : Taiwan model
E : European model	U : U.S.A. model
F : French model	V : General export model (110V)
H : North European model	W: General export model (220)
I : Indonesian model	N,X : General export model
J : Japanese model	Y : Export model

■ WARNING

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

- The numbers "QTY" show quantities for each unit.
- The parts with "--" in "PART NO." are not available as spare parts.
- This mark "}" in the REMARKS column means these parts are interchangeable.
- The second letter of the shaded (■) part number is O, not zero.
- The second letter of the shaded (■) part number is I, not one.

OVERALL ASSEMBLY

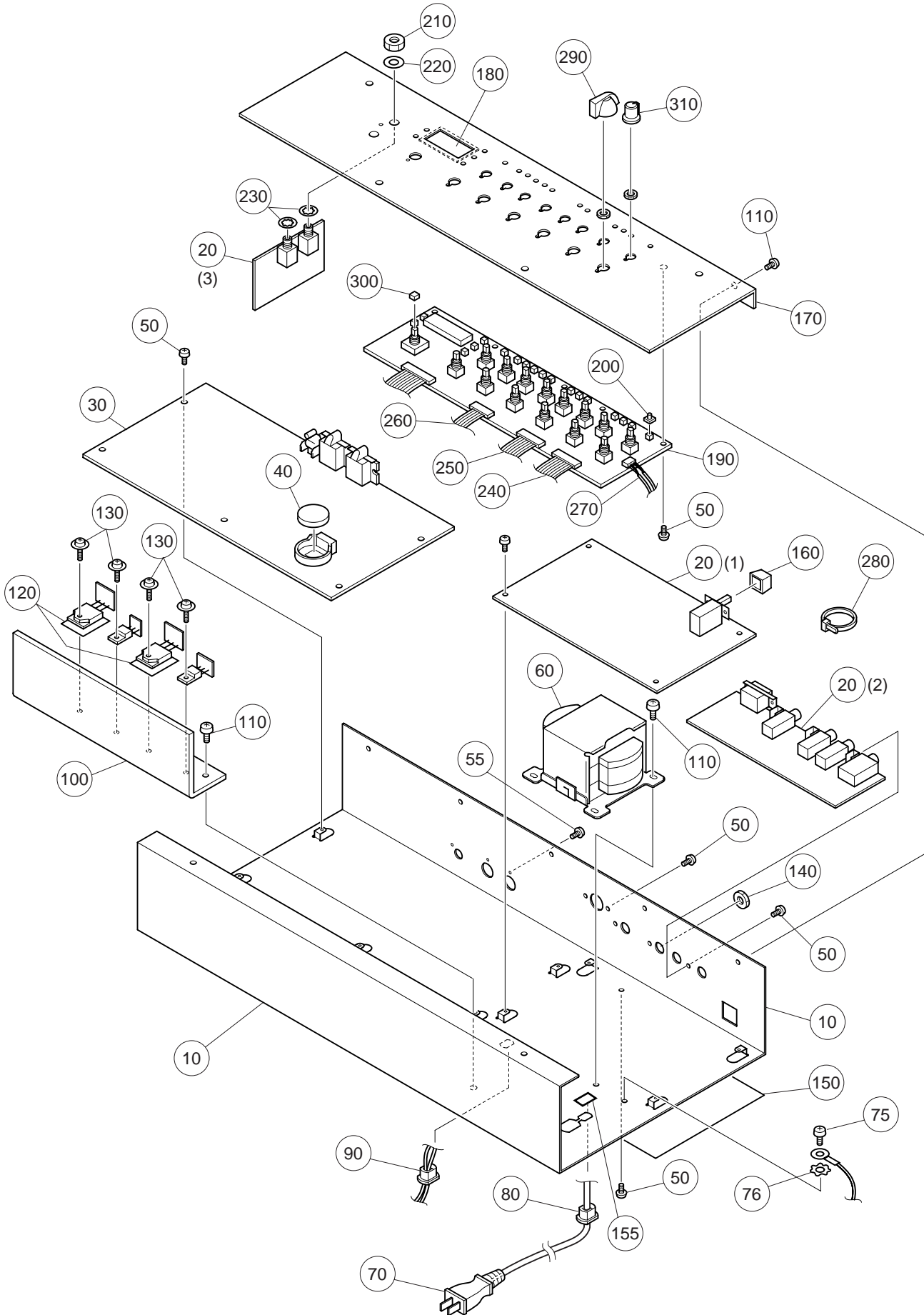


REF NO.	PART NO.	DESCRIPTION		REMARKS	QTY	RANK
	--	OVERALL ASSEMBLY		DG60FX		
	--	Overall Assembly		J (V632160)		
	--	Overall Assembly		C, U (V632170)		
	--	Overall Assembly		H (V632180)		
	--	Overall Assembly		B, S (V632190)		
10	--	Pre Main Unit		J (V632220)		
10	--	Pre Main Unit		C, U (V632230)		
10	--	Pre Main Unit		H (V632240)		
10	--	Pre Main Unit		B, S (V632250)		
20	--	Overall Assembly		(V611080)		
G10	--	Cabinet Assembly		(V612620)		
G20	--	Vinyl Leather	PVC#507	(V369430)		
G30	--	Saran Net	#1059	(V369860)		
G40	V3694400	Corner Protector			8	03
G50	V3833600	Oval Head Tapping Screw-1	3.5X16 MFNI33		16	01
G60	V3630300	Handle Assembly				06
G70	V3743700	Oval Head Screw	5.0X25 FNM3-2B		2	01
G80	V3749500	Screw	4.0X40 MFC2BL		4	
G90	03747250	Truss Head Tapping Screw-1	4.0X25 MFZN2Y		6	01
G100	VV085600	Leg			4	01
G110	03747290	Truss Head Tapping Screw-1	4.0X20 MFZN2BL		4	01
* 30	V3749300	Oval Head Screw	5.0X35 MFC2BL		6	
40	EW300020	Washer	5S MFC2BL		6	01
50	XW018A00	Speaker	JA3253 EMINENCE			19
70	03760900	Hexagonal Nut	4.0 MFZN2Y		4	01
* 80	V3749400	Oval Head Tapping Screw-1	4.0X30 MFC2BL		8	
90	VB890200	Washer	4S MFC2BL		8	01
* 100	V3624100	Name Plate	GA/BA			
110	V3623800	Truss Head Tapping Screw-1	3.0X10 FCM3-BL		2	
130	--	Connector Assembly	CUL #18CSA	(V374010)		
140	VC688900	Bind Head Tapping Screw-C	A4.0X8 MFZN2BL			01
150	ET900050	Toothed Lock Washer-B	4.0 MFZN2BL		2	01
*	V6177400	ACCESORIES DIN Cable				

*: New Parts

RANK: Japan only

PRE MAIN UNIT

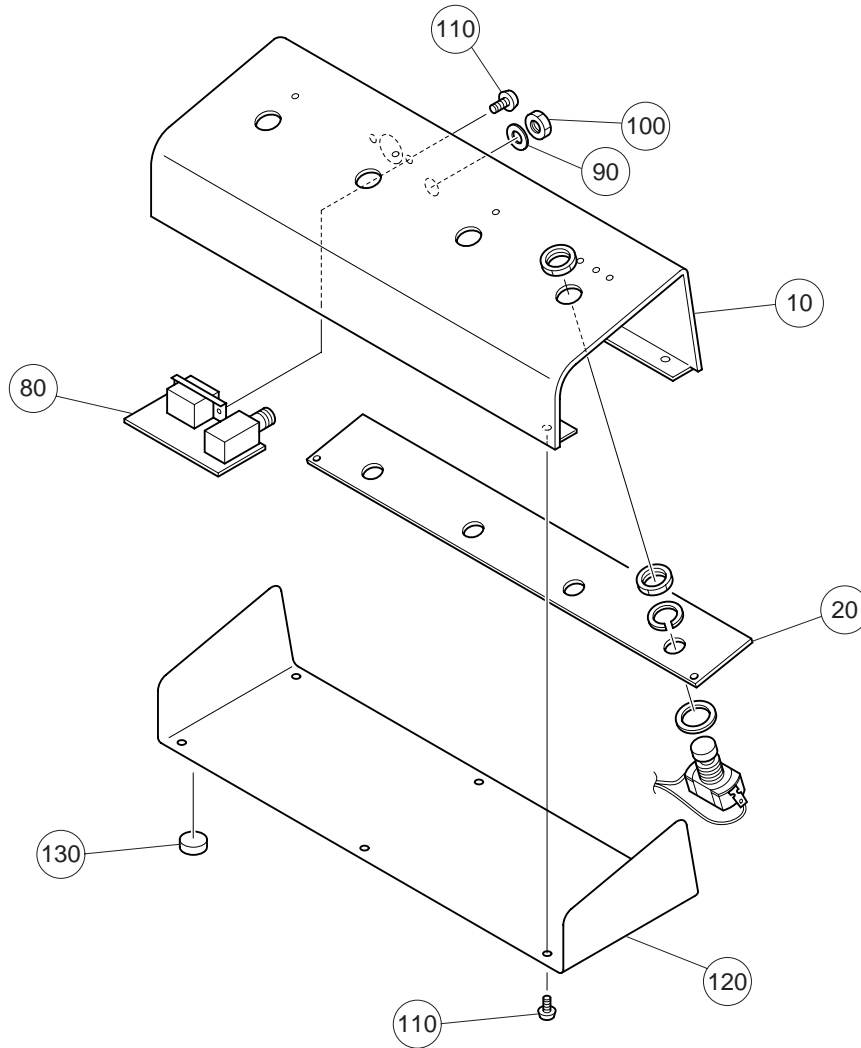


REF NO.	PART NO.	DESCRIPTION		REMARKS	QTY	RANK
	--	Pre Main Unit		J (V632220)		
	--	Pre Main Unit		C, U (V632230)		
	--	Pre Main Unit		H (V632240)		
	--	Pre Main Unit		B, S (V632250)		
* 10	V6125400	Chassis		J		
* 10	V6125500	Chassis		C, U		
* 10	V6125600	Chassis		H, B		
* 20	V6105800	Circuit Board	Main	J, U		
* 20	V6105900	Circuit Board	Main	E		
* 30	V6205300	Circuit Board	DM			
⚠ 40	VS246400	Lithium Battery	CR2450			03
50	EP600190	Bind Head Tapping Screw-B	3.0X8 MFZN2BL		18	01
55	VC161100	Bind Head Tapping Screw-P	3.0X12 MFZN2BL		3	01
⚠ 60	XZ082A00	Power Transformer	J			
⚠ 60	XZ083A00	Power Transformer	UC			
⚠ 60	XZ084A00	Power Transformer	H,BS			
⚠ 70	VV058200	AC Cord	E H05VV-F3X0.75 6A	E		06
⚠ 70	VV058300	AC Cord	BS H05VV-F3X0.75	B, S		08
⚠ 70	VV205600	AC Cord	UC SJT 3X#18 10A	U, C		06
⚠ 70	VZ461100	AC Cord	J VCTF 2X0.75 7A	J		05
75	EL200020	Pan Head Screw	SP 4.0X8 MFZN2Y			01
76	ET900050	Toothed Lock Washer-B	4.0 MFZN2BL			01
80	VV103000	Cord Strain Relief	SR-5R1			01
90	CB072750	Cord Strain Relief	SR-4N-4			01
95	--	Glass Tube		J (V704260)		
100	--	Heat Sink		(V612570)		
110	VC688900	Bind Head Tapping Screw-C	A4.0X8 MFZN2BL		13	01
120	V3637600	Insulation Sheet	UNISHEET T=0.15		2	
130	VB763800	Bind Head Screw	SP 3.0X12 MFZN2Y		4	01
140	VD794100	Hexagonal Nut	12.0 14X2 MFC2BL		4	01
* 150	V6206500	Insulation Sheet				
155	V4491100	Insulation Sheet (S)				
* 160	VU859000	Power Switch Knob				01
* 170	V6125100	Panel				
* 180	V5734500	Meter Cover				
* 190	V6337500	Circuit Board	Front			
200	V5852100	Button			17	
210	LX200060	Hexagonal Nut	9.0 12X2 MFNI33		2	01
220	VL802300	Flat Washer	9X14 0.5 FNM3		2	01
230	ET800150	Toothed Lock Washer-A	9.0 MFZN2Y		2	01
240	--	Connector Assembly	C&C #28 12P L200	(V621630)		
250	--	Connector Assembly	C&C #28 11P L200	(V621640)		
260	--	Connector Assembly	C&C #28 9P L200	(V621650)		
270	--	Connector Assembly	C&C #28 6P L400	(V621660)		
280	VV104600	Cord Holder			6	01
290	V3694100	Knob (CH)			7	02
300	V5851800	Spacer				
310	V5852300	Knob (FX)			8	

*: New Parts

RANK: Japan only

FOOT SWITCH OVERALL ASSEMBLY



REF NO.	PART NO.	DESCRIPTION		REMARKS	QTY	RANK
	--	Foot SW Overall Assembly		J, U (V632200)		
	--	Foot SW Overall Assembly		H (V632210)		
* 10	V6145800	SW Top Cover				
* 20	V6337600	LED Sheet				
* 80	V6337700	Rear Sheet Assembly		J, U		
* 80	V6337800	Rear Sheet Assembly		H		
	90	Hexagonal Nut	9.0 12X2 MFNI33			01
	100	Flat Washer	9X14 0.5 FNM3			01
	110	Bind Head Tapping Screw-B	3.0X8 MFZN2BL		8	01
* 120	V6145900	SW Bottom Case				
	130	Leg			4	01

*: New Parts

RANK: Japan only

ELECTRICAL PARTS

REF NO.	PART NO.	DESCRIPTION	REMARKS	QTY	RANK
		ELECTRICAL PARTS			
*	V6205300	Circuit Board	DM		
*	V6105800	Circuit Board	MAIN(1/8-7/8)	J, U	
*	V6105900	Circuit Board	MAIN(1/8-7/8)	H	
*	V6337700	Circuit Board	REAR	MAIN(8/8) J, U	
*	V6337800	Circuit Board	REAR	MAIN(8/8) H	
*	V6337500	Circuit Board	FRONT	PN 1/2	
*	V6337600	Circuit Board	SW,LED	PN 2/2	
	V6205300	Circuit Board	DM		
	VK863100	IC Socket	DICF-42CS-E		03
BT1	VS246300	Battery Holder	CR2450BH		03
C1	UX145100	Ceramic Cap. (chip)	0.1000 25V Z		
-9	UX145100	Ceramic Cap. (chip)	0.1000 25V Z		
C10	UR838100	Electrolytic Cap.	100.00 16.0V		01
C11	UX145100	Ceramic Cap. (chip)	0.1000 25V Z		
-18	UX145100	Ceramic Cap. (chip)	0.1000 25V Z		
C19	UR838100	Electrolytic Cap.	100.00 16.0V		01
C20	UX145100	Ceramic Cap. (chip)	0.1000 25V Z		
-29	UX145100	Ceramic Cap. (chip)	0.1000 25V Z		
C30	UR857100	Electrolytic Cap.	10.00 35.0V		01
C31	UX145100	Ceramic Cap. (chip)	0.1000 25V Z		
C32	UX145100	Ceramic Cap. (chip)	0.1000 25V Z		
C33	UR857100	Electrolytic Cap.	10.00 35.0V		01
C34	UX145100	Ceramic Cap. (chip)	0.1000 25V Z		
C35	UX061120	Ceramic Cap. (chip)	12P 50V J		
C36	UX061120	Ceramic Cap. (chip)	12P 50V J		
C37	UR838100	Electrolytic Cap.	100.00 16.0V		01
C38	UX145100	Ceramic Cap. (chip)	0.1000 25V Z		
-47	UX145100	Ceramic Cap. (chip)	0.1000 25V Z		
C48	UR838100	Electrolytic Cap.	100.00 16.0V		01
C49	UX145100	Ceramic Cap. (chip)	0.1000 25V Z		
-56	UX145100	Ceramic Cap. (chip)	0.1000 25V Z		
C57	UX064100	Ceramic Cap. (chip)	0.0100 50V K		
C58	UX064100	Ceramic Cap. (chip)	0.0100 50V K		
C59	UX145100	Ceramic Cap. (chip)	0.1000 25V Z		
-71	UX145100	Ceramic Cap. (chip)	0.1000 25V Z		
C72	UR848220	Electrolytic Cap.	220.00 25.0V		01
C73	UX145100	Ceramic Cap. (chip)	0.1000 25V Z		
C74	UX062220	Ceramic Cap. (chip)	220P 50V J		
C75	UX064100	Ceramic Cap. (chip)	0.0100 50V K		
C76	UX064100	Ceramic Cap. (chip)	0.0100 50V K		
C77	UX145100	Ceramic Cap. (chip)	0.1000 25V Z		
C78	UX145100	Ceramic Cap. (chip)	0.1000 25V Z		
C79	UX064100	Ceramic Cap. (chip)	0.0100 50V K		
* C105	V6197100	Electrolytic Cap.-BP	10.00 35.0V		
C106	UX061100	Ceramic Cap. (chip)	10P 50V D		
C107	UX145100	Ceramic Cap. (chip)	0.1000 25V Z		
C108	UX145100	Ceramic Cap. (chip)	0.1000 25V Z		
C109	UX061220	Ceramic Cap. (chip)	22P 50V J		
C110	UX063100	Ceramic Cap. (chip)	1000P 50V K		
* C111	V6197100	Electrolytic Cap.-BP	10.00 35.0V		
* C112	UX061680	Ceramic Cap. (chip)	68P 50V J		
C113	UX061220	Ceramic Cap. (chip)	22P 50V J		
C114	UX063100	Ceramic Cap. (chip)	1000P 50V K		
C115	UR857100	Electrolytic Cap.	10.00 35.0V		01
C116	UX145100	Ceramic Cap. (chip)	0.1000 25V Z		
C119	UR857100	Electrolytic Cap.	10.00 35.0V		01
-122	UR857100	Electrolytic Cap.	10.00 35.0V		01
C123	UX145100	Ceramic Cap. (chip)	0.1000 25V Z		
C124	UX145100	Ceramic Cap. (chip)	0.1000 25V Z		
C125	UR857100	Electrolytic Cap.	10.00 35.0V		01
C126	UR857100	Electrolytic Cap.	10.00 35.0V		01
C127	UX145100	Ceramic Cap. (chip)	0.1000 25V Z		
C128	UX145100	Ceramic Cap. (chip)	0.1000 25V Z		
C129	UR857100	Electrolytic Cap.	10.00 35.0V		01
* C130	V6197100	Electrolytic Cap.-BP	10.00 35.0V		
* C131	V6197100	Electrolytic Cap.-BP	10.00 35.0V		
C156	UR848100	Electrolytic Cap.	100.00 25.0V		01
C157	UX145100	Ceramic Cap. (chip)	0.1000 25V Z		

*: New Parts

RANK: Japan only

REF NO.	PART NO.	DESCRIPTION		REMARKS	QTY	RANK
C158	UX145100	Ceramic Cap. (chip)	0.1000 25V Z			
C159	UR848100	Electrolytic Cap.	100.00 25.0V			01
C160	UX145100	Ceramic Cap. (chip)	0.1000 25V Z			
-188	UX145100	Ceramic Cap. (chip)	0.1000 25V Z			
C189	UR848100	Electrolytic Cap.	100.00 25.0V			01
C190	UR848100	Electrolytic Cap.	100.00 25.0V			01
* C191	UX060500	Ceramic Cap. (chip)	5P 50V C			
* C192	UX060500	Ceramic Cap. (chip)	5P 50V C			
C193	UX145100	Ceramic Cap. (chip)	0.1000 25V Z			
-197	UX145100	Ceramic Cap. (chip)	0.1000 25V Z			
C200	UX145100	Ceramic Cap. (chip)	0.1000 25V Z			
-209	UX145100	Ceramic Cap. (chip)	0.1000 25V Z			
CN1	VV067200	Connector Base Post	M2426XX 12P TE			01
CN2	VV067100	Connector Base Post	M2426XX 11P TE			01
CN3	VV066900	Connector Base Post	M2426XX 9P TE			01
* CN4	V3764200	Connector Base Post	M24185XX 4P TE			
CN101	VV066200	Connector Base Post	M2426XX 2P TE			01
CN102	VV066300	Connector Base Post	M2426XX 3P TE			01
CN103	VV066600	Connector Base Post	M2426XX 6P TE			01
* CN104	V3764100	Connector Base Post	M24185XX 3P TE			
D1	VT332900	Diode	1SS355 TE-17			01
D103	VT332900	Diode	1SS355 TE-17			01
D104	VT332900	Diode	1SS355 TE-17			01
* IC1	XZ198100	IC	MX23C8100PC-10	8M ROM		
IC2	XV411A00	IC	W24258S-70LE-EL10	256K		07
IC2	XW433A00	IC	CY62256LL-70SNCT	256K		05
IC3	XV411A00	IC	W24258S-70LE-EL10	256K		07
IC3	XW433A00	IC	CY62256LL-70SNCT	256K		05
IC4	XR967A00	IC	MB3790PF	ASSP		05
IC5	XZ103A00	IC	74AHC32DT	OR		
IC6	XZ103A00	IC	74AHC32DT	OR		
IC7	XZ108A00	IC	74HC08DT	AND		
IC8	XV988A00	IC	YSS910-S	DSP6		10
IC9	XV988A00	IC	YSS910-S	DSP6		10
IC10	XV077A00	IC	MSM514260C-60JS	4M		07
IC10	XV839A00	IC	SDM4260CLU-6S	4M		08
IC11	XV077A00	IC	MSM514260C-60JS	4M		07
IC11	XV839A00	IC	SDM4260CLU-6S	4M		08
IC12	XQ375A00	IC	HD6413002FP16	CPU		09
IC13	VN686000	Photo Coupler	PC410T			04
IC13	VR903700	Photo Coupler	HCPL-M600			04
IC14	XZ109A00	IC	74HC244DT	BUS BUF		
-16	XZ109A00	IC	74HC244DT	BUS BUF		
IC17	XM530A00	IC	YM3437C-F	DIT2		07
IC18	XU965A00	IC	UPC29M33T-E1	3.3V		03
IC102	XC011A00	IC	NJM5532M	OP AMP		03
IC103	XC011A00	IC	NJM5532M	OP AMP		03
IC104	XT802A00	IC	AK4520A-VF-E2	ADC & DAC		07
IC107	XZ110A00	IC	74HCU04DT	INVERTOR		
IC108	XR684A00	IC	TC74HC4040F	B. COUNTER		03
IC109	XZ112A00	IC	74HC164DT	SHIFT RESIST		
IC110	XZ113A00	IC	74HC175DT	D-FF		
IC111	XZ162A00	IC	NJM78M05DLA	5.0V REGULATOR		
JK1	V6177500	DIN Connector	5P3 HDC-052A			
JK2	V6178000	Pin Connector	HSP-241V1B			
J1	--	Jumper Wire	0.55	(VA07890)		
J2	--	Jumper Wire	0.55	(VA07890)		
J3	--	Jumper Wire	0.55	(VA07890)		
L1	VS740100	Chip Inductance	BLM21B751S			03
-4	VS740100	Chip Inductance	BLM21B751S			03
L7	VC548200	Pulse Transformer	TC-1019-06			04
L8	V6178900	Noise Filter	ZJYS51R5-2PT			
L9	VS740100	Chip Inductance	BLM21B751S			03
R1	RG007100	Carbon Resistor (chip)	10K 0.1 J			
R2	RG005100	Carbon Resistor (chip)	100 0.1 J			
-8	RG005100	Carbon Resistor (chip)	100 0.1 J			
* R9	RG005270	Carbon Resistor (chip)	270 0.1 J			
R10	RG007100	Carbon Resistor (chip)	10K 0.1 J			
R11	RG007100	Carbon Resistor (chip)	10K 0.1 J			
R12	RG006100	Carbon Resistor (chip)	1.0K 0.1 J			

*: New Parts

RANK: Japan only

REF NO.	PART NO.	DESCRIPTION		REMARKS	QTY	RANK
R13	RG005220	Carbon Resistor (chip)	220 0.1 J			
R14	RG007100	Carbon Resistor (chip)	10K 0.1 J			
-16	RG007100	Carbon Resistor (chip)	10K 0.1 J			
R17	RG006220	Carbon Resistor (chip)	2.2K 0.1 J			
R18	RG005220	Carbon Resistor (chip)	220 0.1 J			
R19	RG005220	Carbon Resistor (chip)	220 0.1 J			
R22	RG009100	Carbon Resistor (chip)	1.0M 0.1 J			
* R23	RG004470	Carbon Resistor (chip)	47 0.1 J			
* R24	RG004750	Carbon Resistor (chip)	75 0.1 J			
R26	RG007100	Carbon Resistor (chip)	10K 0.1 J			
R27	RG000000	Carbon Resistor (chip)	0 0.1 J			
R29	RG006100	Carbon Resistor (chip)	1.0K 0.1 J			
R107	RG008100	Carbon Resistor (chip)	100K 0.1 J			
* R108	RG107100	Carbon Resistor (chip)	10K 0.1 F			
* R109	RG107220	Carbon Resistor (chip)	22K 0.1 F			
* R110	RG106330	Carbon Resistor (chip)	3.3K 0.1 F			
R111	RG007100	Carbon Resistor (chip)	10K 0.1 J			
R112	RG007100	Carbon Resistor (chip)	10K 0.1 J			
* R113	RG006560	Carbon Resistor (chip)	5.6K 0.1 J			
* R114	RG006560	Carbon Resistor (chip)	5.6K 0.1 J			
* R115	RG005470	Carbon Resistor (chip)	470 0.1 J			
* R116	RG005470	Carbon Resistor (chip)	470 0.1 J			
* R117	RG107100	Carbon Resistor (chip)	10K 0.1 F			
* R118	RG105470	Carbon Resistor (chip)	470 0.1 F			
* R119	RG106270	Carbon Resistor (chip)	2.7K 0.1 F			
* R120	RG006560	Carbon Resistor (chip)	5.6K 0.1 J			
* R121	RG006560	Carbon Resistor (chip)	5.6K 0.1 J			
* R122	RG005470	Carbon Resistor (chip)	470 0.1 J			
* R123	RG005470	Carbon Resistor (chip)	470 0.1 J			
R124	RG006470	Carbon Resistor (chip)	4.7K 0.1 J			
R125	RG004330	Carbon Resistor (chip)	33 0.1 J			
R126	RG006470	Carbon Resistor (chip)	4.7K 0.1 J			
* R127	RG203470	Carbon Resistor (chip)	4.7 1/4 J			
R128	RG006100	Carbon Resistor (chip)	1.0K 0.1 J			
R130	RG006100	Carbon Resistor (chip)	1.0K 0.1 J			
R163	RG009100	Carbon Resistor (chip)	1.0M 0.1 J			
* R164	RG005680	Carbon Resistor (chip)	680 0.1 J			
R165	RG005220	Carbon Resistor (chip)	220 0.1 J			
RA1	RH047100	Resistor Array	10KX4			
-18	RH047100	Resistor Array	10KX4			
TR1	VV556400	Transistor	2SC2412K Q,R,S			01
TR2	VV556400	Transistor	2SC2412K Q,R,S			01
X1	VU682100	Quartz Crystal Unit	30.00M HZ DOC-49S2			06
X2	VE463500	Quartz Crystal Unit	AT-49/12.0000MHZ			03
X101	VN277000	Quartz Crystal Unit	24.576M AF3817CQA			03
* ZD101	VU170900	Zener Diode	UDZ 2.0BTE-17 2.0V			
* ZD102	VU170900	Zener Diode	UDZ 2.0BTE-17 2.0V			
	--	Circuit Board	ANALOG	J, U (V633730)		
	--	Circuit Board	ANALOG	E (V633740)		
* V6105800		Circuit Board	MAIN(1/8-7/8)	J, U		
* V6105900		Circuit Board	MAIN(1/8-7/8)	H		
* V6337700		Circuit Board	REAR	MAIN8/8 J, U		
* V6337800		Circuit Board	REAR	MAIN8/8 H		
	--	Jumper Wire	0.60		(VV29140)	20 01
	VV319600	Fuse Holder	CQ-05CT			8 01
BT601	V3632400	Connector Assembly	#18 2P L 300			
C401	VV321100	Monolithic Mylar Capacitor	0.22 50V J			01
C402	VZ353500	Ceramic Capacitor-SL	100P 50V J			01
C403	UR847100	Electrolytic Cap.	10.00 25.0V			01
C404	VV321100	Monolithic Mylar Capacitor	0.22 50V J			01
C406	VZ353500	Ceramic Capacitor-SL	100P 50V J			01
C407	UR847100	Electrolytic Cap.	10.00 25.0V			01
C408	UR847100	Electrolytic Cap.	10.00 25.0V			01
C409	VZ353500	Ceramic Capacitor-SL	100P 50V J			01
C410	UR866470	Electrolytic Cap.	4.70 50.0V			01
C411	VV062800	Mylar Capacitor	0.1 50V J			01
C412	UR847100	Electrolytic Cap.	10.00 25.0V			01
C413	UR847100	Electrolytic Cap.	10.00 25.0V			01
C501	UR847100	Electrolytic Cap.	10.00 25.0V			01

*: New Parts

RANK: Japan only

REF NO.	PART NO.	DESCRIPTION	REMARKS	QTY	RANK
C502	UR847100	Electrolytic Cap.	10.00 25.0V		01
C503	VZ353500	Ceramic Capacitor-SL	100P 50V J		01
C504	UR847470	Electrolytic Cap.	47.00 25.0V		01
C505	UR847100	Electrolytic Cap.	10.00 25.0V		01
C506	UR847100	Electrolytic Cap.	10.00 25.0V		01
C507	VZ353500	Ceramic Capacitor-SL	100P 50V J		01
C508	UR847470	Electrolytic Cap.	47.00 25.0V		01
C509	VZ353900	Ceramic Cap.-B	1000P 50V K		01
C510	UR847100	Electrolytic Cap.	10.00 25.0V		01
-512	UR847100	Electrolytic Cap.	10.00 25.0V		01
C513	VZ353900	Ceramic Cap.-B	1000P 50V K		01
C514	UR847100	Electrolytic Cap.	10.00 25.0V		01
-516	UR847100	Electrolytic Cap.	10.00 25.0V		01
C517	VZ353500	Ceramic Capacitor-SL	100P 50V J		01
C518	UR847100	Electrolytic Cap.	10.00 25.0V		01
C519	UR847100	Electrolytic Cap.	10.00 25.0V		01
C520	VZ354600	Monolithic Ceramic Cap.	0.10 50V Z		01
-525	VZ354600	Monolithic Ceramic Cap.	0.10 50V Z		01
C601	VV520600	Capacitor	0.01 400V J.U.C.S		02
C602	UR866100	Electrolytic Cap.	1.00 50.0V		01
C603	UR866470	Electrolytic Cap.	4.70 50.0V		01
* C604	V3632700	Polypropylene Capacitor	0.022U/250V		
* C605	V3632700	Polypropylene Capacitor	0.022U/250V		
C606	V3632800	Electrolytic Cap. -LP	3300U 50V SNAP IN		
C607	V3632800	Electrolytic Cap. -LP	3300U 50V SNAP IN		
C608	UR847100	Electrolytic Cap.	10.00 25.0V		01
C609	UR847100	Electrolytic Cap.	10.00 25.0V		01
C610	VZ354000	Ceramic Capacitor-F	0.0100 50V Z		01
C611	VZ354000	Ceramic Capacitor-F	0.0100 50V Z		01
C612	VZ354600	Monolithic Ceramic Cap.	0.10 50V Z		01
* C613	UR639220	Electrolytic Cap.	2200 16.0V		
* C614	UR639220	Electrolytic Cap.	2200 16.0V		
C615	VZ354000	Ceramic Capacitor-F	0.0100 50V Z		01
C616	VZ354000	Ceramic Capacitor-F	0.0100 50V Z		01
C617	UR847100	Electrolytic Cap.	10.00 25.0V		01
C618	UR866100	Electrolytic Cap.	1.00 50.0V		01
C619	VZ353900	Ceramic Cap.-B	1000P 50V K		01
C620	UR867470	Electrolytic Cap.	47.00 50.0V		01
-622	UR867470	Electrolytic Cap.	47.00 50.0V		01
C623	VZ353500	Ceramic Capacitor-SL	100P 50V J		01
C624	VZ353600	Ceramic Cap.-B	220P 50V K		01
C625	VZ353600	Ceramic Cap.-B	220P 50V K		01
C626	UR858100	Electrolytic Cap.	100.00 35.0V		01
C627	VV062800	Mylar Capacitor	0.1 50V J		01
C628	VV062800	Mylar Capacitor	0.1 50V J		01
C629	VZ354600	Monolithic Ceramic Cap.	0.10 50V Z		01
C630	VZ354600	Monolithic Ceramic Cap.	0.10 50V Z		01
C701	VZ354600	Monolithic Ceramic Cap.	0.10 50V Z		01
C702	VZ354600	Monolithic Ceramic Cap.	0.10 50V Z		01
* CN401	V3764100	Connector Base Post	M24185XX 3P TE		
CN601	VG879900	Base Post Connector	VA- 2P TE		01
CN602	LB932040	Base Post Connector	VH- 4P TE		01
CN603	LB932050	Base Post Connector	VH- 5P TE		01
CN607	VV066200	Connector Base Post	M2426XX 2P TE		01
D401	VD631600	Diode	1SS133,176,HSS104		01
-405	VD631600	Diode	1SS133,176,HSS104		01
D601	IF005560	Diode	1SS82TD		01
D602	VD631600	Diode	1SS133,176,HSS104		01
DB601	VV518200	Diode Stack	PBU403 4.0A 200V		03
DB602	VQ379300	Diode Stack	S1VB20 1.0A 200V		02
FT601	IE000010	FET	2SK30ATM Y		03
FZ601	VV070600	Fuse	TDS 2A 250V J/U/C		01
-603	VV070600	Fuse	TDS 2A 250V J/U/C		01
FZ604	VV070300	Fuse	TDS 1A 250V J/U/C		01
IC401	IG107000	IC	NJM072D	OP AMP	04
IC402	IG107000	IC	NJM072D	OP AMP	04
IC501	XQ824A00	IC	NJM4556AD	OP AMP	02
IC502	IG102500	IC	NE5532P	OP AMP	06
IC601	XJ607A00	IC	NJM7805FA	5V REGULATOR	02
JK401	V3633400	Phone Jack	HTJ-064-12I		

*: New Parts

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REF NO.	PART NO.	DESCRIPTION		REMARKS	QTY	RANK
JK402	V3633400	Phone Jack	HTJ-064-12I			
JK501	VV278300	Phone Jack	HTJ-064			02
	-503	Phone Jack	HTJ-064			02
* JK504	V6176500	Phone Jack	HTJ-064-05B			
JK505	VR309600	DIN Connector	TCS5094-10-4151			04
JK701	V6177700	Phone Jack	STEREO HTJ-064-12D			
JK702	VR309600	DIN Connector	TCS5094-10-4151			04
K501	VV075700	Terminal Plate				01
K502	VV075700	Terminal Plate				01
LD401	VV620800	LED RED	LT311G-41-C13			01
R401	HF457100	Carbon Resistor	10.0K 1/4 J			01
R402	HF459100	Carbon Resistor	1.0M 1/4 J			01
R403	HF456470	Carbon Resistor	4.7K 1/4 J			01
R404	HF457270	Carbon Resistor	27.0K 1/4 J			01
R405	HF457100	Carbon Resistor	10.0K 1/4 J			01
R406	HF457100	Carbon Resistor	10.0K 1/4 J			01
R407	HF459100	Carbon Resistor	1.0M 1/4 J			01
R408	HF456470	Carbon Resistor	4.7K 1/4 J			01
R409	HF456470	Carbon Resistor	4.7K 1/4 J			01
R410	HF457100	Carbon Resistor	10.0K 1/4 J			01
R411	HF457100	Carbon Resistor	10.0K 1/4 J			01
R412	HF456470	Carbon Resistor	4.7K 1/4 J			01
R413	HF455100	Carbon Resistor	100.0 1/4 J			01
R414	HF456100	Carbon Resistor	1.0K 1/4 J			01
R415	HF457100	Carbon Resistor	10.0K 1/4 J			01
-418	HF457100	Carbon Resistor	10.0K 1/4 J			01
R419	HF456120	Carbon Resistor	1.2K 1/4 J			01
R420	HF458100	Carbon Resistor	100.0K 1/4 J			01
R421	HF456100	Carbon Resistor	1.0K 1/4 J			01
R501	HF456100	Carbon Resistor	1.0K 1/4 J			01
R502	HF456100	Carbon Resistor	1.0K 1/4 J			01
R503	HF458220	Carbon Resistor	220.0K 1/4 J			01
R504	HF456100	Carbon Resistor	1.0K 1/4 J			01
R505	HF457100	Carbon Resistor	10.0K 1/4 J			01
R506	HF456470	Carbon Resistor	4.7K 1/4 J			01
R507	HF456470	Carbon Resistor	4.7K 1/4 J			01
R508	HF458100	Carbon Resistor	100.0K 1/4 J			01
R509	HF456100	Carbon Resistor	1.0K 1/4 J			01
R510	HF457100	Carbon Resistor	10.0K 1/4 J			01
R511	HF456470	Carbon Resistor	4.7K 1/4 J			01
R512	HF456470	Carbon Resistor	4.7K 1/4 J			01
R513	HF455100	Carbon Resistor	100.0 1/4 J			01
R514	HF455100	Carbon Resistor	100.0 1/4 J			01
-516	HF457100	Carbon Resistor	10.0K 1/4 J			01
R517	HF458220	Carbon Resistor	220.0K 1/4 J			01
R518	HF456680	Carbon Resistor	6.8K 1/4 J			01
R519	HF457220	Carbon Resistor	22.0K 1/4 J			01
R520	HF455100	Carbon Resistor	100.0 1/4 J			01
R521	HF455100	Carbon Resistor	100.0 1/4 J			01
R522	HF458100	Carbon Resistor	100.0K 1/4 J			01
R523	HF456220	Carbon Resistor	2.2K 1/4 J			01
R524	HF458100	Carbon Resistor	100.0K 1/4 J			01
R525	HF455100	Carbon Resistor	100.0 1/4 J			01
R526	HF457100	Carbon Resistor	10.0K 1/4 J			01
R527	HF458100	Carbon Resistor	100.0K 1/4 J			01
R601	HF457100	Carbon Resistor	10.0K 1/4 J			01
R602	HF458100	Carbon Resistor	100.0K 1/4 J			01
R603	HF457220	Carbon Resistor	22.0K 1/4 J			01
R604	HF458100	Carbon Resistor	100.0K 1/4 J			01
R605	HF456220	Carbon Resistor	2.2K 1/4 J			01
R606	HF458100	Carbon Resistor	100.0K 1/4 J			01
R607	HF458100	Carbon Resistor	100.0K 1/4 J			01
R608	HF456470	Carbon Resistor	4.7K 1/4 J			01
R609	HF456470	Carbon Resistor	4.7K 1/4 J			01
R610	V3633200	Metal Oxide Film Resistor	2.2K 3W J			
R611	V3751900	Metal Oxide Film Resistor	180 5W J			
-614	V3751900	Metal Oxide Film Resistor	180 5W J			
R615	HF456220	Carbon Resistor	2.2K 1/4 J			01
R616	HF457100	Carbon Resistor	10.0K 1/4 J			01
R617	HF457560	Carbon Resistor	56.0K 1/4 J			01

*: New Parts

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REF NO.	PART NO.	DESCRIPTION		REMARKS	QTY	RANK
R618	HF455470	Carbon Resistor	470.0 1/4 J			01
R619	HF457120	Carbon Resistor	12.0K 1/4 J			01
R620	HF456100	Carbon Resistor	1.0K 1/4 J			01
R621	HF456150	Carbon Resistor	1.5K 1/4 J			01
R622	HF457560	Carbon Resistor	56.0K 1/4 J			01
R623	HF456100	Carbon Resistor	1.0K 1/4 J			01
R624	HF456330	Carbon Resistor	3.3K 1/4 J			01
R625	HF456560	Carbon Resistor	5.6K 1/4 J			01
R626	HF456330	Carbon Resistor	3.3K 1/4 J			01
R627	HF456100	Carbon Resistor	1.0K 1/4 J			01
R628	HF456220	Carbon Resistor	2.2K 1/4 J			01
-630	HF455220	Carbon Resistor	220.0 1/4 J			01
R631	HF455330	Carbon Resistor	330.0 1/4 J			01
R632	HF455330	Carbon Resistor	330.0 1/4 J			01
R633	VV276800	Flame Proof C. Resistor	100 1/4 J			01
R634	V4480100	Wire Wound Resistor	0.33 5W J			
R635	V4480100	Wire Wound Resistor	0.33 5W J			
* R636	V3632900	Metal Oxide Film Resistor	4.7 1W J			
R637	V4480100	Wire Wound Resistor	0.33 5W J			
R701	HF456100	Carbon Resistor	1.0K 1/4 J			01
SW601	VV059400	Push Switch	SDDL11874-YL			03
TR401	IC1815M0	Transistor	2SC1815 Y,GR			01
TR501	IC287820	Transistor	2SC2878 A,B			01
TR502	IC287820	Transistor	2SC2878 A,B			01
TR601	IC1815M0	Transistor	2SC1815 Y,GR			01
TR602	IA101590	Transistor	2SA1015 O,Y			01
TR603	IC287820	Transistor	2SC2878 A,B			01
TR604	IA097030	Transistor	2SA970 GR,BL			01
TR605	IA097030	Transistor	2SA970 GR,BL			01
TR606	VE198800	Transistor	2SC2705 O,Y			01
TR607	IC342100	Transistor	2SC3421 O,Y			02
TR608	IA135800	Transistor	2SA1358 O,Y			02
* TR609	VV597200	Pair Transistor	A1492(Z)/C3856(Z)			
TR610	IC342100	Transistor	2SC3421 O,Y			02
* VR601	V3633500	Trimmer Potentiometer	B 1K TB655MC			
W401	--	Connector Assembly	B&C #28 2P L 150	(V620350)		
W501	--	Connector Assembly	B&B #24 5P L 150	(V620380)		
W502	--	Connector Assembly	B&C #26 3P L 350	(V620340)		
W503	--	Connector Assembly	B&C #28 14P L 200	(V621760)		
W601	--	Connector Assembly	B&B #24 3P L 200	(V363250)		
W603	--	Connector Assembly	B&C #24 4P L 150	(V620370)		
W604	--	Connector Assembly	B&B #24 3P L 200	(V363250)		
W606	--	Connector Assembly	B&B #26 3P L 150	(V620410)		
W608	--	Connector Assembly	B&B #24 3P L 200	(V363250)		
W610	--	Connector Assembly	B&C #24 3P L 130	(V363210)		
W611	--	Connector Assembly	B&C #24 3P L 300	(V620360)		
W701	--	Connector Assembly	B&C #28 14P L 100	(V620390)		
ZD601	VG440800	Zener Diode	MTZ J 15.0B 15.0V			01
ZD602	VG440800	Zener Diode	MTZ J 15.0B 15.0V			01
ZD603	V3752000	Zener Diode	3Z15 15V 3W			
ZD604	V3752000	Zener Diode	3Z15 15V 3W			
* --	--	Circuit Board	PN	(V620230)		
* V6337500	V6337500	Circuit Board	FRONT	PN 1/2		
* V6337600	V6337600	Circuit Board	SW,LED	PN 2/2		
V6220800	V6220800	SW Spacer			8	
V6624600	V6624600	LED Holder	LED3-1A		6	
--	--	Connector Assembly	#24 2P L60	(V654510)	4	
V6124500	V6124500	Push Switch	ADS-003-A10		4	
C301	UX145100	Ceramic Cap. (chip)	0.1000 25V Z			
-315	UX145100	Ceramic Cap. (chip)	0.1000 25V Z			
CN301	VV068000	Connector Base Post	M2426XXR 6P SE			01
CN302	VV068300	Connector Base Post	M2426XXR 9P SE			01
CN303	VV068500	Connector Base Post	M2426XXR 11P SE			
CN304	VV068600	Connector Base Post	M2426XXR 12P SE			01
CN305	VV068800	Connector Base Post	M2426XXR 14P SE			01
CN306	VV067400	Connector Base Post	M2426XX 14P TE			
CN307	VV066200	Connector Base Post	M2426XX 2P TE			01
-310	VV066200	Connector Base Post	M2426XX 2P TE			01
D301	VT332900	Diode	1SS355 TE-17			01

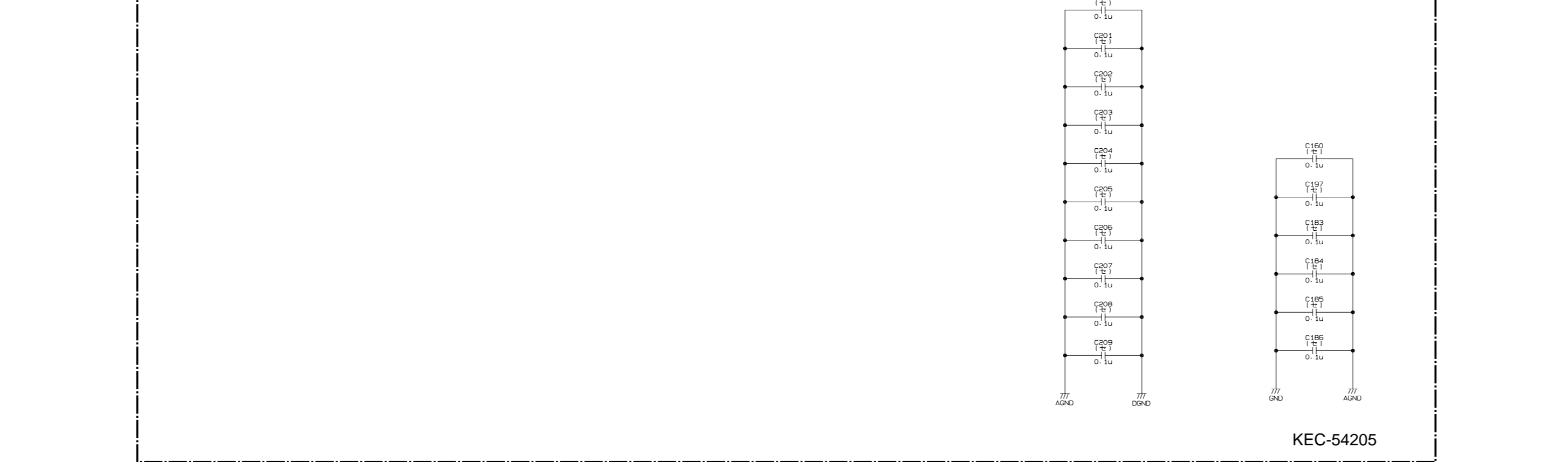
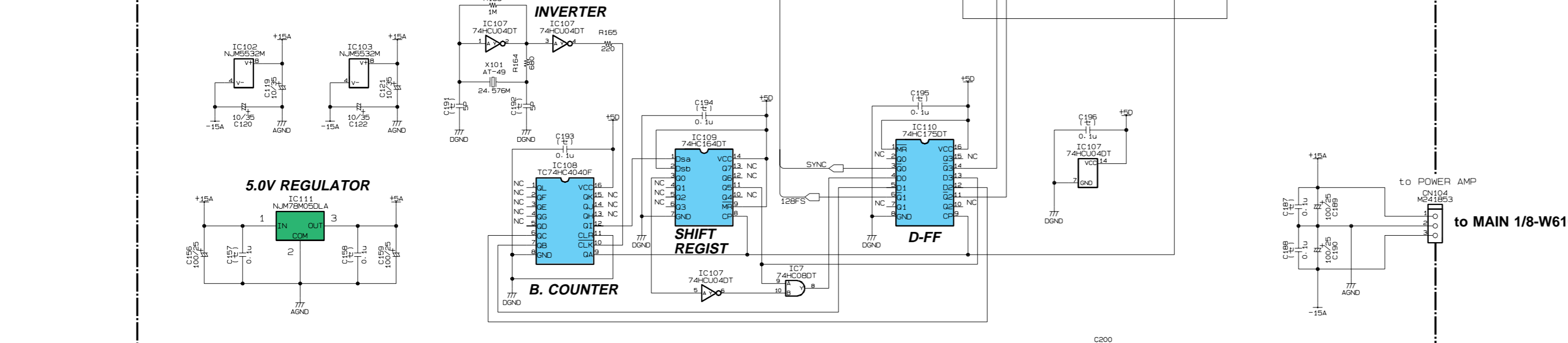
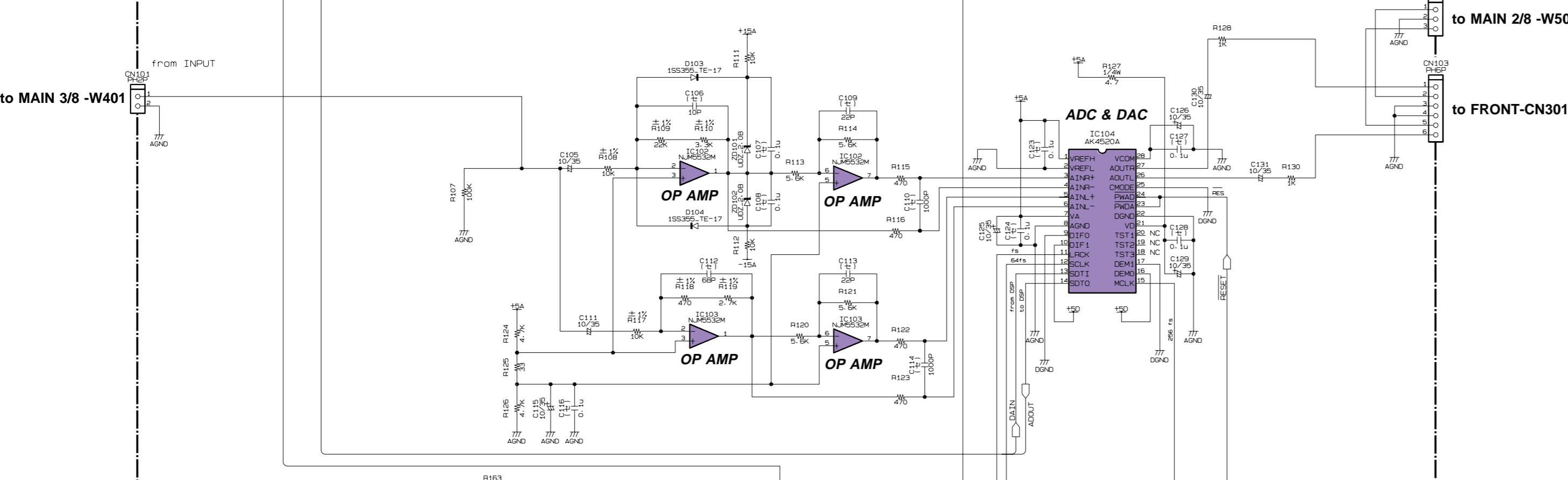
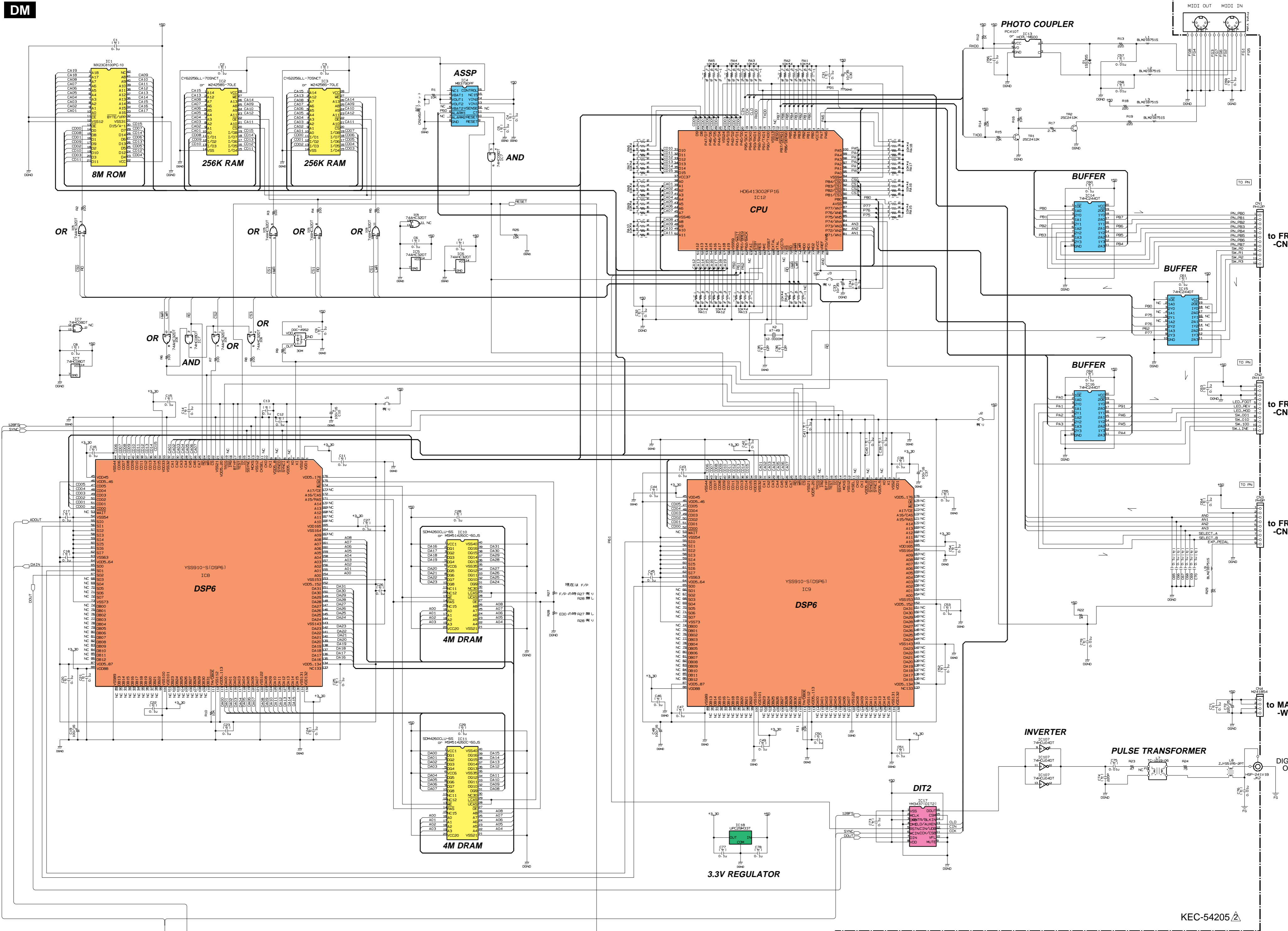
*: New Parts

RANK: Japan only

REF NO.	PART NO.	DESCRIPTION		REMARKS	QTY	RANK
-322	VT332900	Diode	1SS355 TE-17			01
IC301	XZ102A00	IC	74HC374DT	D-FF		
-307	XZ102A00	IC	74HC374DT	D-FF		
IC308	XZ101A00	IC	74HC4052DT	MULTIPLEXER		
IC309	XZ101A00	IC	74HC4052DT	MULTIPLEXER		
LD301	V5801000	LED Display	LTC-5836E			
LD302	VV620800	LED RED	LT311G-41-C13			01
-307	VV620800	LED RED	LT311G-41-C13			01
L301	VS740100	Chip Inductance	BLM21B751S			03
-312	VS740100	Chip Inductance	BLM21B751S			03
R301	RG007100	Carbon Resistor (chip)	10K 0.1 J			
-304	RG007100	Carbon Resistor (chip)	10K 0.1 J			
R305	RG005560	Carbon Resistor (chip)	560 0.1 J			
-321	RG005560	Carbon Resistor (chip)	560 0.1 J			
R322	RG005820	Carbon Resistor (chip)	820 0.1 J			
-345	RG005820	Carbon Resistor (chip)	820 0.1 J			
R346	RG007100	Carbon Resistor (chip)	10K 0.1 J			
-360	RG007100	Carbon Resistor (chip)	10K 0.1 J			
R361	RG006100	Carbon Resistor (chip)	1.0K 0.1 J			
-367	RG006100	Carbon Resistor (chip)	1.0K 0.1 J			
R368	RG007100	Carbon Resistor (chip)	10K 0.1 J			
R369	RG007100	Carbon Resistor (chip)	10K 0.1 J			
R370	RG005560	Carbon Resistor (chip)	560 0.1 J			
-375	RG005560	Carbon Resistor (chip)	560 0.1 J			
SW301	VK701100	Push Switch	SKHQFN GREEN			02
-317	VK701100	Push Switch	SKHQFN GREEN			02
SW318	V3633800	Rotary Switch	SRBV18 1C-8S			07
VR301	V5264800	Rotary Variable Resistor	RK09L1140 10KB			
-313	V5264800	Rotary Variable Resistor	RK09L1140 10KB			
VR314	V5265100	Rotary Variable Resistor	RK09L12D0 20KA X2			

*: New Parts

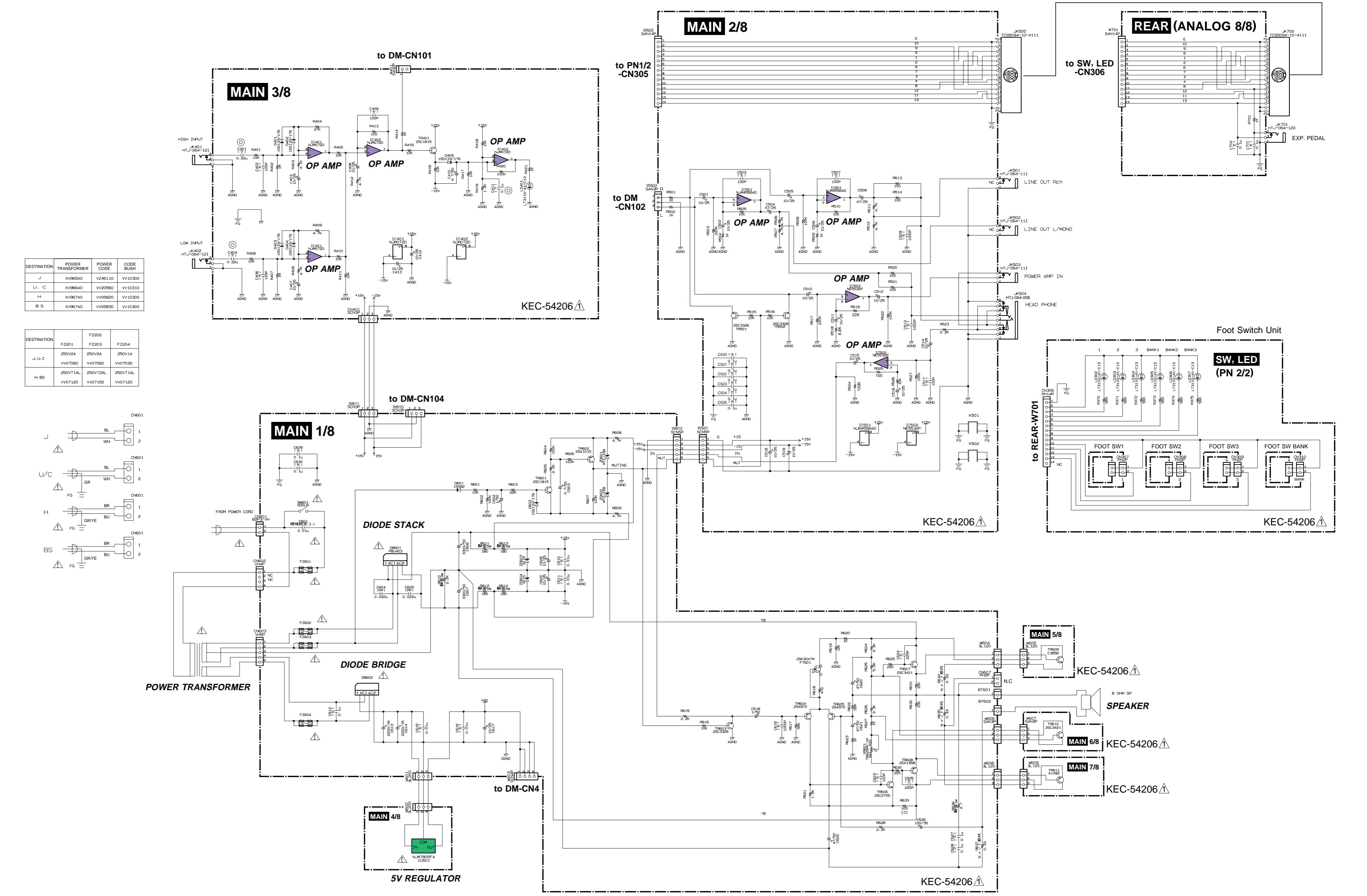
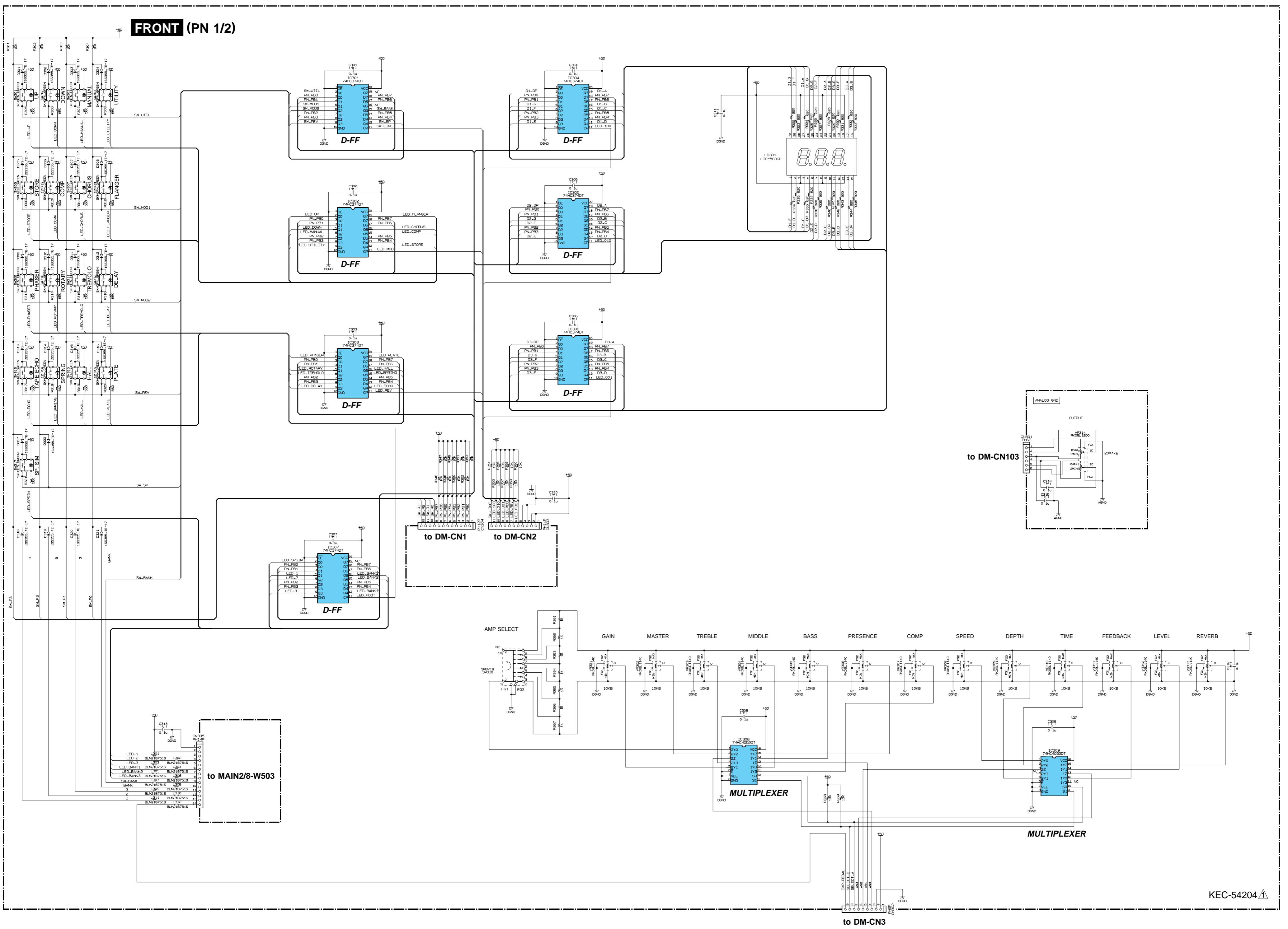
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<ul style="list-style-type: none"> •UPC293M33T-E1 (XU965A00) REGULATOR +3.3V 	<ul style="list-style-type: none"> •NJM78M05DLA (XZ162A00) REGULATOR +5V 	<ul style="list-style-type: none"> •NJM7805FA (XJ607A00) REGULATOR +5V
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(マ) : Mylar Capacitor
 (セ) : Ceramic Capacitor
 (フ) : Flame Proof C.
 セメント抵抗 : Wire Wound Resistor
 酸化 : Metal Oxide Film Resistor

Note : See parts list for details of circuit board component parts.



DESTINATION	POWER TRANSFORMER	POWER CODE	CODE
J	X196540	V24113	V193300
U, C	X196540	V192990	V193310
H	X196740	V195830	V193300
B S	X196740	V195830	V193300

DESTINATION	F2201	F2203	F2204
L, L, C	250V24	250V24	250V14
	V197060	V197060	V197330
H, BS	250V134L	250V124L	250V134L
	V197120	V197120	V197120

