



Loopfactory

DX200

SERVICE MANUAL



CONTENTS

SPECIFICATIONS	3
PANEL LAYOUT	4
CIRCUIT BOARD LAYOUT	6
WIRING	6
BLOCK DIAGRAM	7
DISASSEMBLY PROCEDURE	8
LSI PIN DISCRPTION	11
IC BLOCK DIAGRAM	15
DIMENSIONS	17
CIRCUIT BOARDS	18
TEST PROGRAM & INITIALIZE	28
MIDI IMPLEMENTATION CHART	40
PARTS LIST	
OVERALL CIRCUIT DIAGRAM	

This document is printed on chlorine free (ECF) paper with soy ink.

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 buss in the unit (heavy gauge black wires connect to this buss).

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

WARNING: CHEMICAL CONTENT NOTICE!

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

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

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

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

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 håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandoren.

VARNING

Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.

VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty 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.

■ SPECIFICATIONS

1. FUNCTIONS

Tone Generator FM Synthesis (6 Operator FM, Filter(FEG), Amp(AEG), PEG, Noise) + AWM2	
Timber	1 (FM) + 3 (AWM2) parts
Polyphony	16 (FM) + 32 (AWM2) Notes
Effector	Distortion, 3-Band EQ (only FM) + 1 Effector (Tempo Delay/Reverb, Flanger/Chorus, Phaser, Amp.Simulator)
Pattern	Preset Pattern x 256, User Pattern x 128
Scene	2 Scene/Pattern
Step Sequencer	MIDI Sync, MIDI Transmit
Others	Free EG (4 tracks)

2. CONTROLLERS

Sound Control Knob	x 16
(Cutoff/Filter Type, Resonance, FEG Depth, Modulator Harmonic, Modulator FM Depth, Modulator Decay, Noise Level, EG Attack, EG Decay, EG Sustain, EG Release, Portamento Time, Effect Param/Pan, Effect Wet/Vol, LFO Speed, Scene Control)	
Master Volume Knob	x 1
Rotary Encoder	x 1

3. PANEL SWITCHES

Sound Control Sw.	x 8
(LFO Detail, Key Assign, Algorithm, Modulator Select, Effect Type, EG Select, Dist Sw)	
Scene x 2, Sequencer. Sw x 2, Mode x 2, Pattern Select x 1, Keyboard Mode x 1, Step Select x 16, Step Group Select x 2, Track Select x 2, Play Effect x 2, Octave x 2, Tap Tempo x 1, Free EG Sw. x 4, Free EG Mode x 1, Free EG Length x 1, Store x 1, Show Value x 1, Shift x 1, Exit x 1	

4. DISPLAY

7SEG LED	x 4
----------	-----

5. CONNECTORS

OUTPUT L(MONO)/R	Phone x 2
MIDI IN/OUT	Din x 2
DC IN	
PHONES	Stereo phone

6. MAXIMUM OUTPUT LEVEL

Phones	+0.5dBm (33ohm)
Stereo Output	+9.0dBm (10kohm)

7. OUTPUT IMPEDANCE

Phones	47Ω
Stereo Output	1kΩ

8. POWER CONSUMPTION

7.6W (DEMO PLAY)

9. DIMENSIONS, WEIGHT

338.0(W) x 208.9(D) x 51.7(H) mm, 1600 g

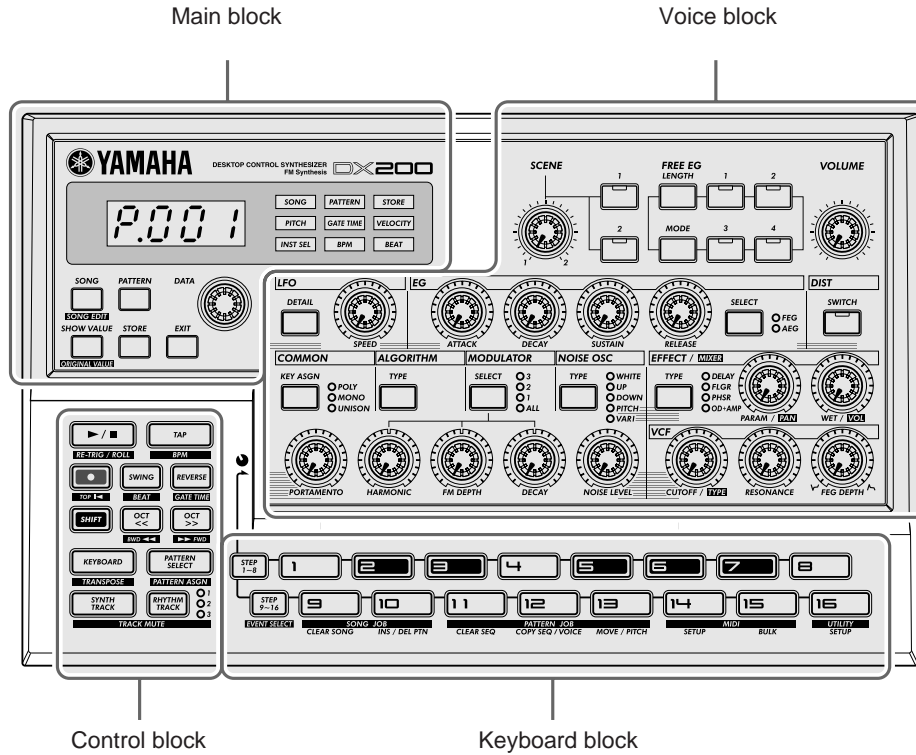
10. ACCESSORIES

CD ROM (for Windows and Macintosh)	x 1
Owner's Manual	x 1
AC Adaptor	x 1

(Power supply recommendation may vary from country to country. Please check with your nearest Yamaha dealer for further details.)

■ PANEL LAYOUT

• Top Panel



Main Block

- [SONG]
- [PATTERN]
- [DATA] knob
- [SHOW VOLUME]
- [STORE]
- [EXIT]

VOICE BLOCK

- [SCENE] group
 - [SCENE] knob
 - [1] button
 - [2] button
- [FREE EG] group
 - [LENGTH] button
 - [1] button
 - [2] button
 - [MODE] button
 - [3] button
 - [4] button
- [VOLUME] knob
- [LFO] group
 - [DETAIL] button
 - [SPEED] knob
- [EG] group
 - [ATTACK] knob
 - [DECAY] knob
 - [SUSTAIN] knob

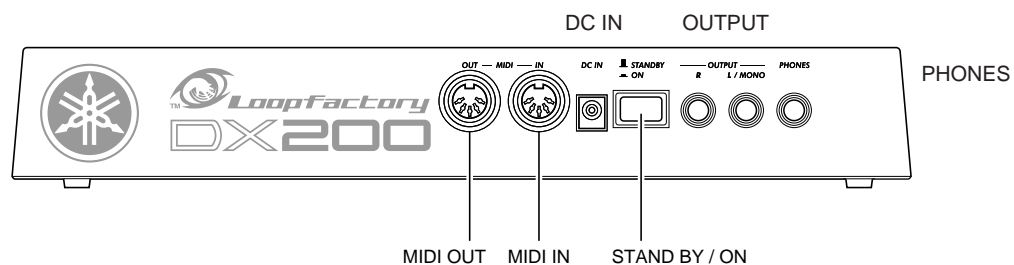
[RELEASE] knob
 [SELECT] button
 [DIST] group
 [SWITCH] button
 [COMMON] group
 [KEY ASGN] button
 [ALGORITHM] group
 [TYPE] button
 [MODULATOR] group
 [SELECT] button
 [NOISE OSC] group
 [TYPE] button
 [PORTAMENTO] knob
 [HARMONIC] knob
 [FM DEPTH] knob
 [DECAY] knob
 [NOISE LEVEL] knob
 [EFFECT MIXER] group
 [TYPE] button
 [PARAM / PAN] knob
 [WET / VOL] knob
 [VCF] group
 [CUTOFF / TYPE] knob
 [RESONANCE] knob
 [FEG DEPTH] knob

CONTROL BLOCK

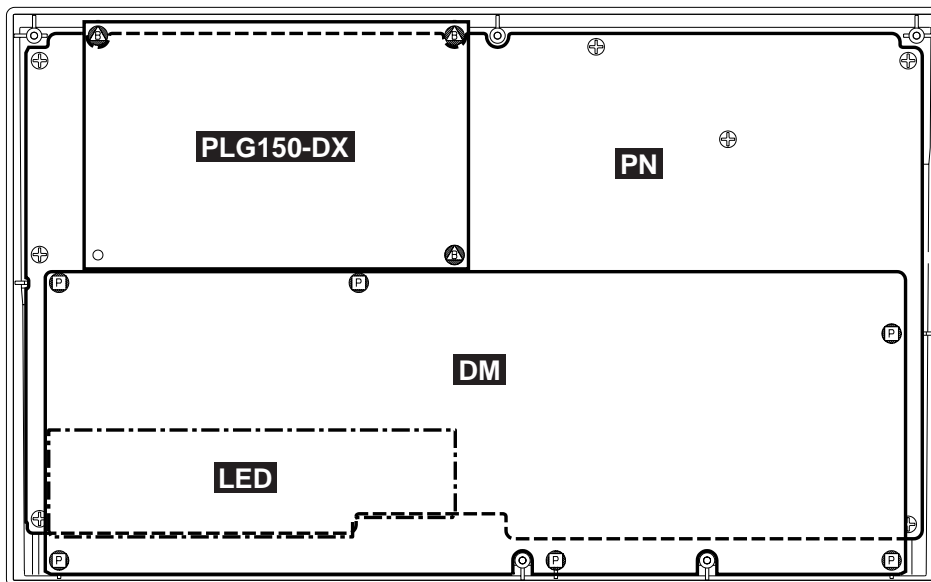
[▶ / ■] (START / STOP) button
 [TAP] button
 [●] button
 [SWING] button
 [REVERSE] button
 [SHIFT] button
 [OCT <<] button
 [OCT >>] button
 [KEYBOARD] button
 [PATTERN SELECT] button
 [SYNTH TRACK] button
 [RHYTHM TRACK] button

KEYBOARD BLOCK

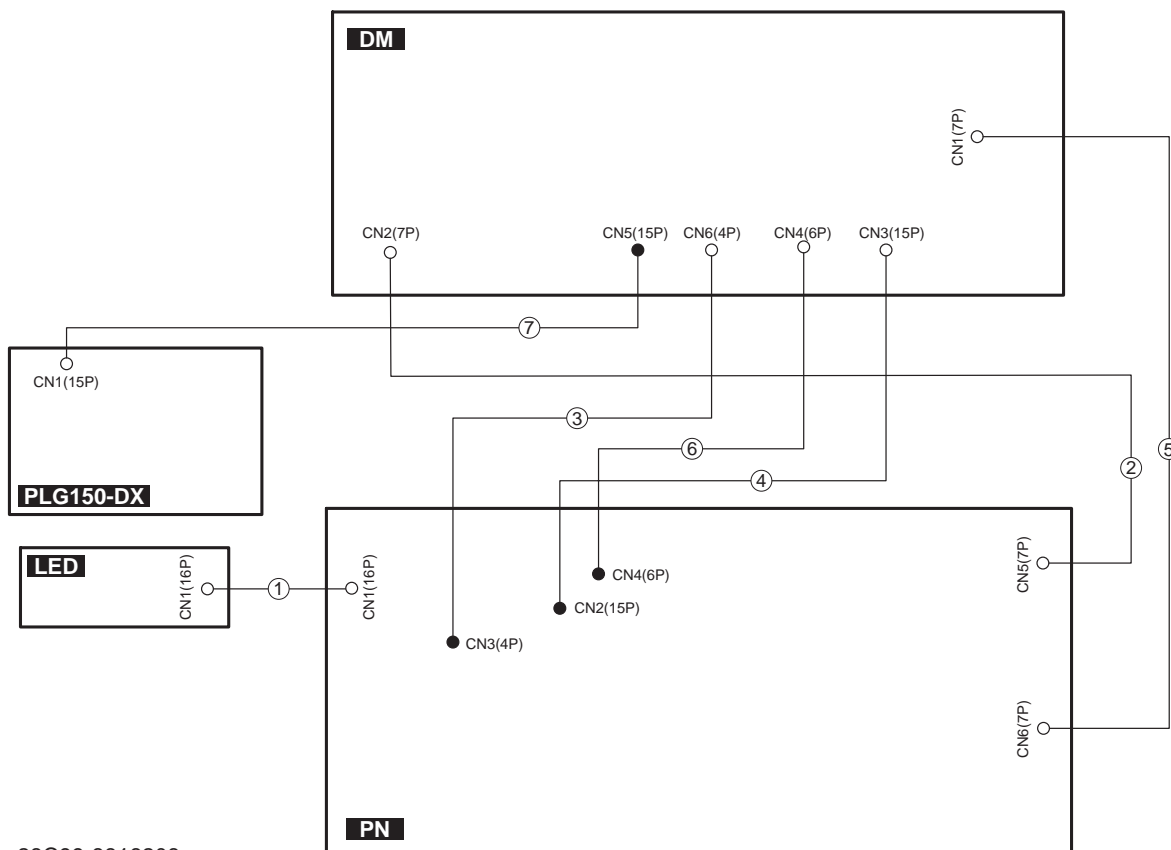
• Rear Panel



■ CIRCUIT BOARD LAYOUT



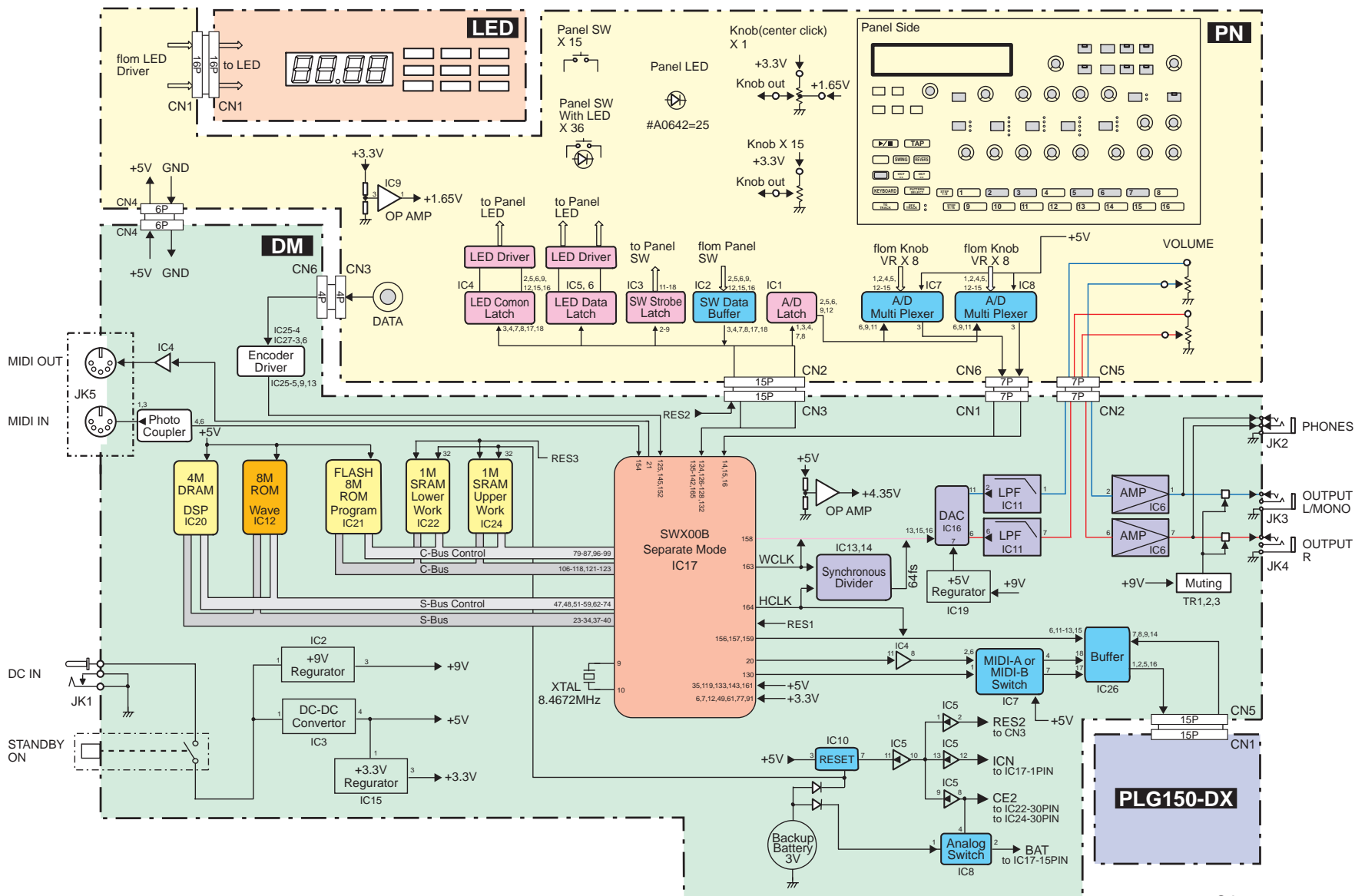
■ WIRING



28C99-8818208

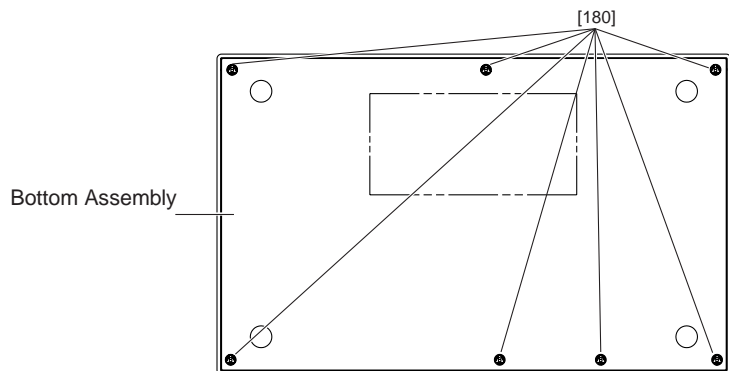
LOCATION	CONNECTOR NAME	PIN/LENGTH	DESTINATION	
①		16P / L=80	PN-CN1	LED-CN1
②	KR-KR	7P / L=450	DM-CN2	PN-CN5
③	DS-KR	4P / L=380	DM-CN6	PN-CN3
④	DS-KR	15P / L=220	DM-CN3	PN-CN2
⑤	KR-KR	7P / L=150	DM-CN1	PN-CN6
⑥	DS-KR	6P / L=200	DM-CN4	PN-CN4
⑦	PLG-DM	15P / L=50	DM-CN5	PLG150-DX

■ BLOCK DIAGRAM

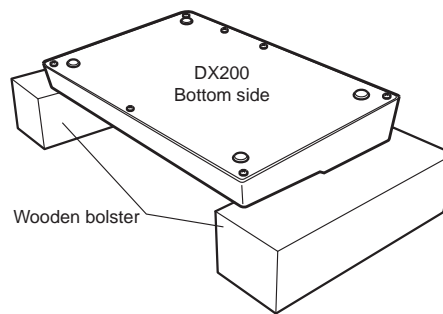


28CA1-8818204

■ DISASSEMBLY PROCEDURE



(Fig. 1)



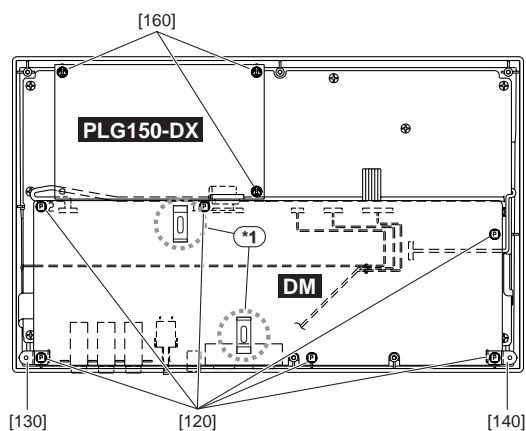
(Fig. 1-1)

[180]: Bind Head Tapping Screw-B 3.0X6 MFZN2Y (EP600130)

1. Bottom Assembly (time required: about 1 min)

1-1 Remove the seven (7) screws marked [180]. The bottom assembly can then be removed. (Fig. 1)

* If you turn the mixer upside down for disassembling and assembling, put 2 wooden bolsters underneath the unit at its both side ends to protect PN sheet from being damaged. (Fig. 1-1)



(Fig. 2)

[120]: Bind Head Tapping Screw-P 2.6X8 MFZN2Y (EP620100)

[130]: Angle, L (V655450)

[140]: Angle, R (V655460)

[160]: Bind Head Tapping Screw-B 3.0X86 MFZN2Y (EP620130)

2. PLG150-DX Circuit Board (time required: about 1 min)

2-1 Remove the bottom assembly. (See Procedure 1.)

2-1 Remove the three (3) screws marked [160]. The PLG150-DX circuit board can then be removed. (Fig. 2)

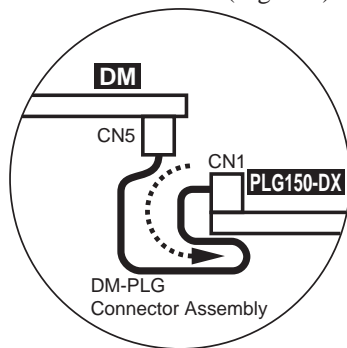
* Attachment consideration of the PLG150-DX circuit board.

When installing the PLG150-DX circuit board, do with connector assembly as shown in the fig 2-1. Fit the PLG150-DX circuit board caring not to let the connector assembly in it.

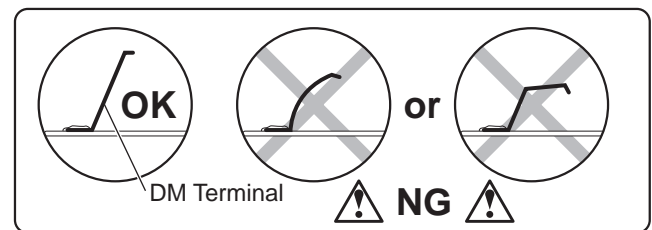
3. DM Circuit Board (time required: about 2 min)

- 3-1 Remove the bottom assembly. (See Procedure 1.)
- 3-2 Remove the PLG150-DX circuit Board. (See Procedure 2.)
- 3-3 Remove the six (6) screws marked [120]. The DM circuit board can then be removed. (Fig. 2)

* Attachment consideration of the DM circuit board
 Confirm that the DM contact terminal (110b), which is on the backside of the DM circuit board, is not distorted or bent. Contact it appropriately on the bottom board assembly. Replace any terminal when it is bent or broken. (Fig. 2-2)

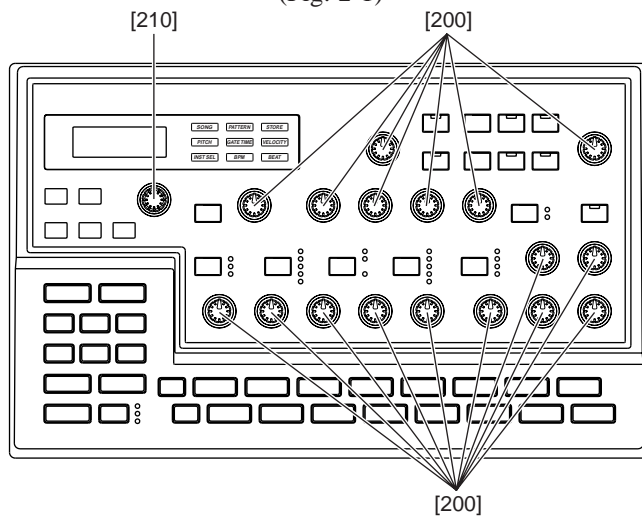


(Fig. 2-1)

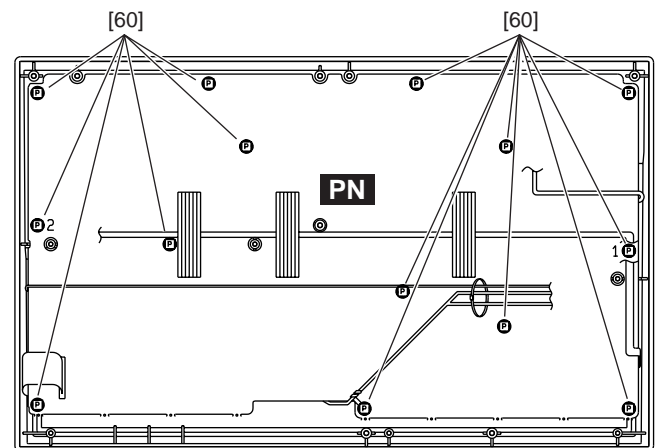


(Fig. 2-2)

DM Terminal (V7450500)



(Fig. 3)



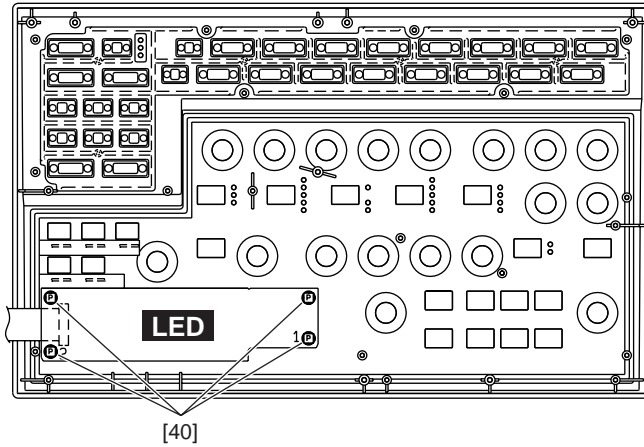
(Fig. 4)

[200]: Knob K-CB (V4765800)
 [210]: Knob (VU931600)

[60]: Bind Head Tapping Screw-P 2.6X8 MFZN2Y (EP620100)

4. PN Circuit Board (time required: about 4 min)

- 4-1 Remove the bottom assembly. (See Procedure 1.)
- 4-2 Remove the PLG150-DX circuit Board. (See Procedure 2.)
- 4-3 Remove the DM circuit Board. (See Procedure 3.)
- 4-4 Remove the seventeen (17) knobs marked [200] and one (1) knob marked [210]. (Fig. 3)
- 4-5 Remove the fourteen (14) screws marked [60]. The PN circuit board can then be removed. (Fig. 4)



(Fig. 5)

[40]: Bind Head Tapping Screw-P 2.6X8 MFZN2Y (EP620100)

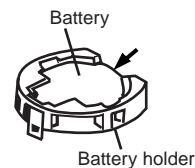
5. LED Circuit Board (time required: about 5 min)

- 5-1 Remove the bottom assembly. (See Procedure 1.)
- 5-2 Remove the PLG150-DX circuit Board.
(See Procedure 2.)
- 5-3 Remove the DM circuit Board. (See Procedure 3.)
- 5-4 Remove the PN circuit Board. (See Procedure 4.)
- 5-5 Remove the four (4) screws marked [40]. The LED circuit board can then be removed. (Fig. 5)

Battery VN103500

VN103600 (Battery holder for VN103500)

- Notice for back-up battery removal push the battery as shown in figure, then the battery will pop up.
- Druk de batterij neer beneden zoals aangeven in de tekening, de batterij springt dan neer voren.



LSI PIN DISCRIPTOIN

● HG73C205AFD (XU947C00) SWX00B TONE GENERATOR

DM: IC17

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION	
1	ICN	I	Initial clear	85	CMA3	O	Program address bus	
2	RFCLKI	I	PLL Clock	86	CMA8	O		
3	TM2	I	PLL Control	87	CMA2	O		
4	AVDD_PLL		Power supply	88	CRD	O	read signal	
5	AVSS_PLL		Ground	89	CMA1	O	Program address bus	
6	MODE0	I	SWX dual mode	90	CUB	O	high byte effective signal	
7	VCC7		Power supply	91	VCC91		Power supply	
8	GND8		Ground	92	GHND92		Ground	
9	XIN	I	crystal oscillator	93	CS1	O	CS signal	
10	XOUT	I	crystal oscillator	94	CMA0	O	Program address bus	
11	MODE1	O	SWX separate mode	95	CLB	O	low byte effective signal	
12	TEST0	I	TEST pin	96	CMA12	O	Program address bus	
13	TESTON	I	TEST pin	97	CMA11	O		
14	AN0-P40	I	A/D converter	98	CMA10	O		
15	AN1-P41	I						
16	AN2-P42	I						
17	AN3-P43	I						
18	AVDD_AN		Power supply	100	GND100		Ground	
19	AVSS_AN		Ground	101	CWE	O	write signal	
20	TXD0	O	for MIDI or TO-HOST	102	CMA16	O	Program address bus	
21	TXD1	O	for MIDI	103	CMA15	O		
22	EXCLK	I	Crystal oscillator	104	CMA14	O		
23	SMD11	I/O	Wave memory data bus	105	CMA13	O	Program memory Data bus	
24	SMD4	I/O						
25	SMD3	I/O						
26	SMD12	I/O						
27	SMD10	I/O						
28	SMD5	I/O						
29	SMD2	I/O						
30	SMD13	I/O						
31	SMD9	I/O						
32	SMD6	I/O						
33	SMD1	I/O	Power supply Ground	106	CMD8	I/O	Program memory Data bus	
34	SMD14	I/O						
35	VCC35							
36	GND36							
37	SMD8	I/O						
38	SMD7	I/O						
39	SMD0	I/O						
40	SMD15	I/O						
41	SOE	O		read signal	107	CMD7		I/O
42	SWE	O		write signal	108	CMD9		I/O
43	SRAS	O	RAS signal	109	CMD6	I/O		
44	SCAS	O	CAS signal	110	CMD10	I/O		
45	REFRESH	O	REFRESH signal	111	CMD5	I/O		
46	CS0	O	CS signal	112	CMD11	I/O		
47	SMA0	O	Memory address bus	113	CMD4	I/O		
48	SMA16	O	Memory address bus	114	CMD12	I/O		
49	VCC49							
50	GND50							
51	SMA1	O						
52	SMA15	O						
53	SMA2	O						
54	SMA14	O						
55	SMA3	O						
56	SMA13	O						
57	SMA4	O						
58	SMA12	O	Power supply Ground	115	CMD3	I/O	SWX access data bus	
59	SMA5	O						
60	GND60							
61	VCC61							
62	SMA11	O						
63	SMA6	O						
64	SMA10	O						
65	SMA7	O						
66	SMA9	O						
67	SMA17	O						
68	SMA8	O	Memory address bus	116	CMD13	I/O		
69	SMA18	O						
70	SMA19	O						
71	SMA20	O						
72	SMA21	O						
73	SMA22	O						
74	SMA23	O						
75	CMA20	O						
76	CMA19	O						
77	VCC77			Power supply	117	CMD2	I/O	
78	GND78		Ground	118	CMD14	I/O		
79	CMA18	O	Program address bus	119	VCC119		Power supply	
80	CMA17	O						
81	CMA5	O						
82	CMA6	O						
83	CMA4	O						
84	CMA7	O						
					120	GND115		Ground
					121	CMD1	I/O	Program memory Data bus
					122	CMD15	I/O	
					123	CMD0	I/O	
				124	CMA21	O	Program address bus	
				125	PDT15	I/O		
				126	PDT14	I/O		
				127	PDT13	I/O	SWX access data bus	
				128	PDT12	I/O		
				129	PDT11	I/O		
				130	PDT10	I/O	Power supply Ground	
				131	PDT9	I/O		
				132	PDT8	I/O		
				133	VCC133		Power supply	
				134	GND134		Ground	
				135	PDT7	I/O	SWX access data bus	
				136	PDT6	I/O		
				137	PDT5	I/O		
				138	PDT4	I/O	Power supply Ground	
				139	PDT3	I/O		
				140	PDT2	I/O		
				141	PDT1	I/O	Power supply Ground	
				142	PDT0	I/O		
				143	VCA143			
				144	GND144		Ground	
				145	PAD2	I	SWX access address bus	
				146	PAD1	I		
				147	PAD0	I		
				148	VCC148		Power supply	
				149	GND149		Ground	
				150	PCS	I	Chip select	
				151	PWR	I	write enable	
				152	PRD	I	read enable	
				153	RXD0	I	for Midi or TO-HOST	
				154	RXD1	I	for Midi or Key scan	
				155	SCLKI	I	EXT Clock	
				156	ADIN	I	A/D converter	
				157	ADLR	O	A/D converter LR clock	
				158	DO0	O	DAC	
				159	DO1	O		
				160	YSCLK	O		
				161	VCC161		Power supply	
				162	GND162		Ground	
				163	WCLK	O	for DAC LR clock	
				164	QCLK	O	1/12 clock	
				165	BCLK	O	IIS-DAC clock	
				166	SYI	I	Synch signal	
				167	IRQ0	I	Interrupt request	
				168	NMI	I		

● HD6437043E00F (XS936A00) CPU

PLG150-DX: IC2

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION	
1	/WRHH	O	HH write	73	D15	I/O	Data bus	
2	DACK0	O	DMA transfer strobe	74	D14	I/O		
3	/WRHL	O	HL write	75	D13	I/O		
4	/CASHH	O	HH Column address strobe	76	D12	I/O	Power supply	
5	PE15	I/O	Port E	77	VCC	I		
6	VSS	I	Ground	78	D11	I/O		
7	A0	O	Address bus	79	VSS	I	Ground	
8	A1	O						
9	A2	O						
10	A3	O						
11	A4	O						
12	VCC	I		Power supply	80	D10	I/O	Data bus
13	A5	O	Address bus	81	D9	I/O		
14	VSS	I	Ground	82	D8	I/O		
15	A6	O	Address bus	83	D7	I/O	Power supply	
16	A7	O						
17	A8	O						
18	A9	O						
19	A10	O						
20	A11	O						
21	A12	O	Address bus	84	D6	I/O	Ground	
22	A13	O						
23	A14	O						
24	A15	O						
25	A16	O						
26	VCC	I		Power supply	85	VCC	I	Power supply
27	A17	O	Address bus	86	D5	I/O	Data bus	
28	VSS	I	Ground	87	VSS	I	Ground	
29	/CASHL	O	HL Column address strobe	88	D4	I/O	Data bus	
30	PA19	I/O	Port A	89	D3	I/O		
31	/RAS	O	Row address strobe	90	D2	I/O		
32	/CASL	O	Column address strobe (low)	91	D1	I/O		
33	PA18	I/O	Port A	92	D0	I/O		
34	/CASH	O	Column address strobe (high)	93	VSS	I		Ground
35	VSS	I	Ground	94	XTAL	I	Crystal oscillator	
36	RDWR	O	DRAM read/write	95	MD3	I	Mode select	
37	A18	O	Address bus	96	EXTAL	I	Crystal oscillator	
38	A19	O						
39	A20	O						
40	VCC	I		Power supply	97	MD2	I	Mode select
41	A21	O		Address bus	98	NMI	-	Non-maskable interrupt
42	VSS	I		Ground	99	VCC	I	Power supply
43	/RD	O	Read	100	PA16	I/O	Port A	
44	/WDTOVF	O	Watch dog timer overflow	101	PA17	I/O	Port A	
45	D31	I/O	Data bus	102	MD1	I	Mode select	
46	D30	I/O	Data bus	103	MD0	I	Mode select	
47	/WRH	O	High write	104	PLLVCC	I	PLL Power supply	
48	/WRL	O	Low write	105	PLLCAP	I	PLL capacitor	
49	/CS1	O	Chip select	106	PLLVSS	I	PLL Ground	
50	/CS0	O	Chip select	107	PA15	I/O	Port A	
51	/IRQ3	I	Interrupt request	108	/RES	I	Reset	
52	/IRQ2	I	Interrupt request	109	/DREQ0	I	DMA transfer request	
53	/CS3	O	Chip select	110	TIOC0B	I/O	MTU input capture/output compare (ch 0)	
54	/CS2	O	Chip select	111	PE2	I/O	Port E	
55	VSS	I	Ground	112	VCC	I	Power supply	
56	D29	I/O	Data bus	113	PE3	I/O	Port E	
57	D28	I/O						
58	D27	I/O						
59	D26	I/O						
60	D25	I/O						
61	VSS	I		Ground	114	PE4	I/O	
62	D24	I/O	Data bus	115	PE5	I/O	Analog input	
63	VCC	I	Power supply	116	PE6	I/O		
64	D23	I/O	Data bus	117	VSS	I		Ground
65	D22	I/O						
66	D21	I/O						
67	D20	I/O						
68	D19	I/O						
69	D18	I/O						
70	D17	I/O	Data bus	118	AN0	I	Port F	
71	VSS	I	Ground	119	AN1	I		
72	D16	I/O	Data bus	120	AN2	I		
				121	AN3	I	Analog ground	
				122	PF4	I/O		
				123	PF5	I/O		
				124	AVSS	I	Port F	
				125	PF6	I/O	Port F	
				126	PF7	I/O	Port F	
				127	AVREF	I	Analogreference voltage	
				128	AVCC	I	Analog power supply	
				129	VSS	I	Ground	
				130	RxD0	I	Receive data	
				131	TxD0	O	Transmit data	
				132	/IRQ1	I	Interrupt request	
				133	RxD1	I	Receive data	
				134	PA4	I/O	Port A	
				135	VCC	I	Power supply	
				136	SCK1	I/O	Serial clock	
				137	PE7	I/O	Port E	
				138	PE8	I/O		
				139	PE9	I/O		
				140	PE10	I/O	Ground	
				141	VSS	I		
				142	TIOC3D	I/O		MTU input capture/output compare (ch 3)
				143	PE12	I/O	Port E	
				144	PE13	I/O	Port E	

• YMP706-F (XT329A00) FS1-AB AWM Tone Generator & Digital Filter

PLG150-DX: IC8

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION	
1	CHIN0	I/O	Channel data input	65	TEST	O	NC	
2	CHIN1	I/O		66	TEST	O		
3	CHOUT0	O	Channel data output	67	VSS	-	Ground	
4	CHOUT1	O		68	TEST	O		
5	VSS	-	Ground	69	TEST	O	NC	
6	A0	I	Address input	70	TEST	O		
7	A1	I		71	TEST	O		
8	A2	I		72	TEST	O		
9	A3	I		73	TEST	O		
10	A4	I		74	TEST	O		
11	A5	I	Data input	75	TEST	O	Power supply	
12	A6	I		76	VDD	-		
13	A7	I		77	TEST	O		
14	A8	I		78	TEST	O		
15	A9	I		79	TEST	O		
16	D0	I	Data input	80	TEST	O	NC	
17	D1	I		81	TEST	O		
18	D2	I		82	TEST	O		
19	D3	I		83	TEST	O		
20	D4	I		84	TEST	O		
21	D5	I		85	VSS	-		Ground
22	D6	I		86	TEST	O		
23	D7	I	87	TEST	O	NC		
24	ICL	I	Initial clear	88	TEST		O	
25	TSTEN	I	Test pin	89	TEST		O	
26	VDD	-	Power supply	90	TEST		O	
27	CLK	I	Clock input	91	TEST		O	
28	VSS	-	Digital ground	92	TEST	O	Power supply	
29	SYWD	O	SYWD synch. signal output	93	TEST	O		
30	SYWI	I	SYW synch. signal input	94	VDD	-		
31	WEL	I	Write enable	95	TEST	I/O		
32	OBEN	I	Test pin	96	TEST	I/O		
33	CE0L	I	Chip enable	97	TEST	I/O	NC	
34	CE1	I		98	TEST	I/O		
35	TSTEG	I	Test pin	99	TEST	I/O		
36	PBUSY	O	Busy output	100	TEST	I/O		
37	TMODE	I	Test pin	101	TEST	I/O		
38	HCLK	I/O	Synch. clock output	102	TEST	I/O	NC	
39	SYW	I/O	SYW synch. signal output	103	TEST	I		
40	TEST	I	NC	104	TEST	I		
41	TEST	I		105	TEST	I		
42	TEST	I		106	TEST	I		
43	TEST	I		107	TEST	I		
44	TEST	I		108	TEST	I		
45	TEST	I	Ground	109	TEST	I		
46	TEST	I		110	TEST	I		
47	TEST	I		111	VSS	-		
48	TEST	I		112	TEST	I		
49	VSS	-		Ground	113	TEST	I	
50	TEST	I	NC	114	TEST	I		
51	TEST	I		115	TEST	I		
52	TEST	I		116	TEST	I		
53	TEST	I		117	TEST	I		
54	TEST	I		118	TEST	I		
55	TEST	I	Power supply	119	TEST	I		
56	TEST	I		120	VDD	-		
57	TEST	I		121	DIN0	I/O		
58	VDD	-		Power supply	122	DIN1	I/O	
59	TEST	O		DRY output	123	DOUT0	O	
60	TEST	O	124		DOUT1	O		
61	TEST	O	NC	125	SIN0	I/O		
62	TEST	O		126	SIN1	I/O		
63	TEST	O		127	SOUT0	O		
64	TEST	O		128	SOUT1	O		
								SEND output

• μ PD63200GS-E1 (XP867A00) DAC (Digital to Analog Converter)

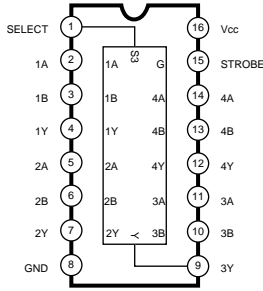
DM: IC16

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	4/8F	I	4/8 Fs selection	9	R. REF		Channel R voltage reference
2	D. GND		Digital ground	10	L. REF		Channel L voltage reference
3	16 BIT	I	16 bit/18 bit selection	11	L. OUT	O	Channel L output
4	D. VDD		Digital power supply	12	A. GND		Analog ground
5	A. GND		Analog ground	13	WDCK	I	Word clock
6	R. OUT	O	Channel R output	14	RSI	I	Channel R series input
7	A. VDD		Analog power supply	15	SI/LSI	I	Series input/Channel L series input
8	A. VDD			16	CLK	I	Clock

IC BLOCK DIAGRAM

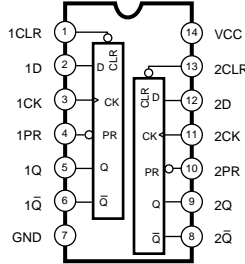
- **SN74HC157NSR** (XW110A00)
MM74HC157SJX (XY310A00)
Quad 2 to 1 Multiplexer

DM: IC7



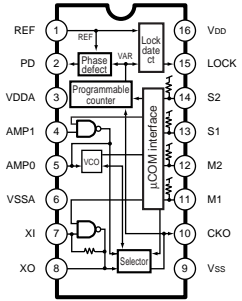
- **HD74HC74FPEL** (XL096A00)
TC74HC74AF(EL) (XW890A00)
MM74HC74ASJX (XY153A00)
Dual D-Type Flip-Flop

DM: IC14, IC25



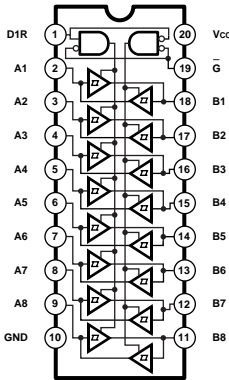
INPUTS				OUTPUTS	
PR	CLR	CLK	D	Q	Q-bar
L	H	X	X	H	L
H	L	X	X	L	H
L	L	X	X	H	H
H	H	f	H	H	L
H	H	f	L	L	H
H	H	L	X	Q _o	Q _o

- **TC9246F -TEL**(XR339A00)
Phase Locked Loop
PLG150-DX: IC9



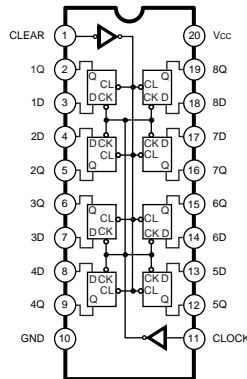
- **TC74HC245AF** (XS720A00)
HD74HC245FPV (XV611A00)
MM74HC245ASJX (XW107A00)
TRANSCEIVER

DM: IC26
PN: IC3



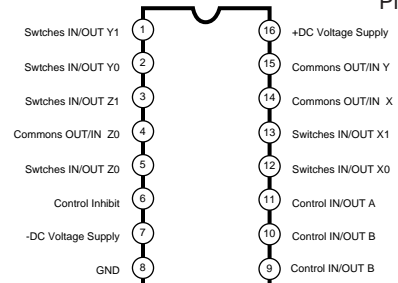
- **HD74HC273FP** (XU533A00)
MM74HC273SJX (XY198A00)
D-FF

PN: IC1,IC2,IC4,IC5,IC6



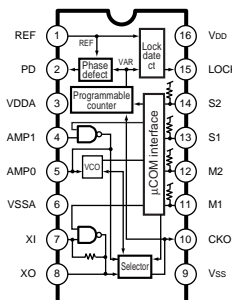
- **HD74HC4051FPEL** (XP373A00)
TC74HC4051AFEL (XY549A00)
MM74HC4051SJX (XY550A00)
Triple 2-Ch. Multiplexer/Demultiplexer

PN: IC7, IC8



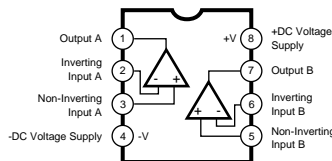
- **TC9246F -TEL**(XR339A00)
Phase Locked Loop

PLG150-DX: IC9



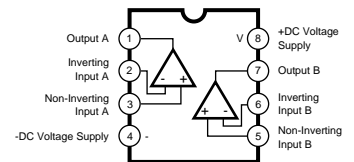
- **NJM4556AMT1** (XQ138A00)
M5216FP-600C (XP263A00)
μPC4570G2 (XF291A00)
Dual Operational Amplifier

DM: IC6,IC18



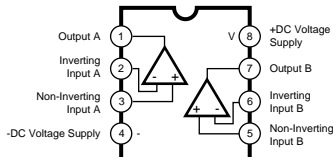
- **NJM4580E-T1** (XQ178A00)
Dual Operational Amplifier

DM: IC11



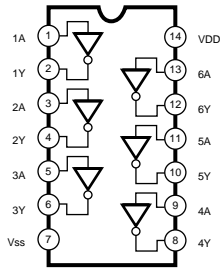
- **NJM3414AM-T1** (XR294A00)
Dual Operational Amplifier

PN: IC9



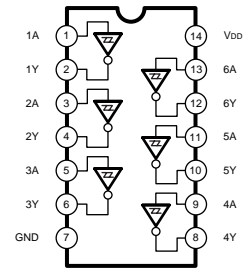
- **TC74HCT04AF-T1** (XI297A00)
Hex Inverter

DM: IC4



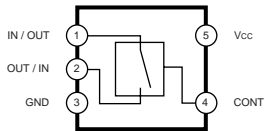
- **TC74HC14AF** (XD657A00)
MM74HC14JX (XW104A00)
Hex Inverter

DM: IC5
PGL150-DX: IC1



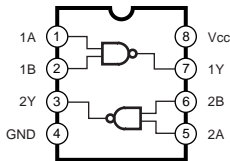
- **TC7S66F** (XR682A00)
Bilateral Switch

DM: IC8



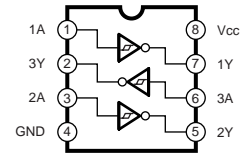
- **TC7W00FU** (XV189A00)
Dual 2-input Nand Gate

DM: IC13



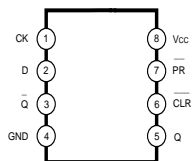
- **TC7W14FU** (XN883A00)
Schmitt Inverter

DM: IC27

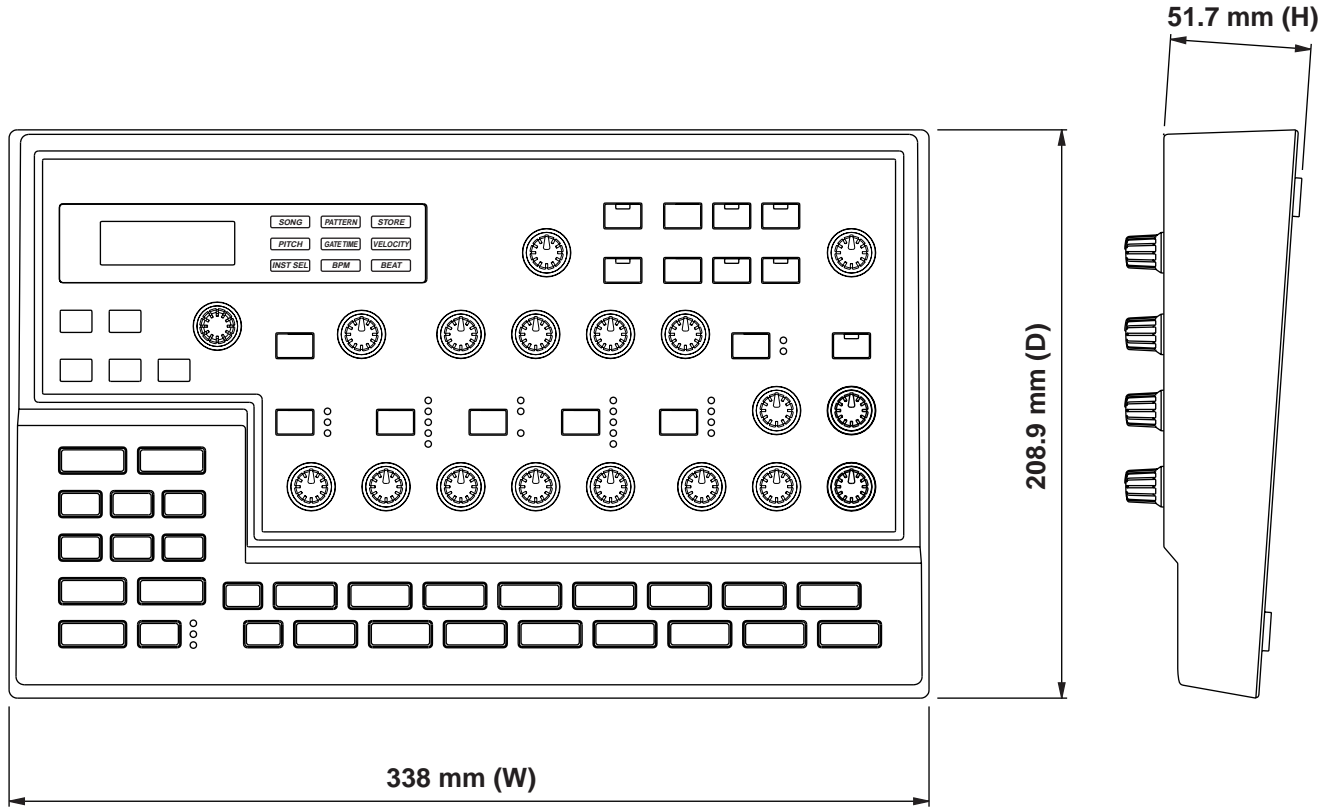


- **TC7W74FU** (XN243A00)
D-Type Flip Flop

PLG150-DX: IC10

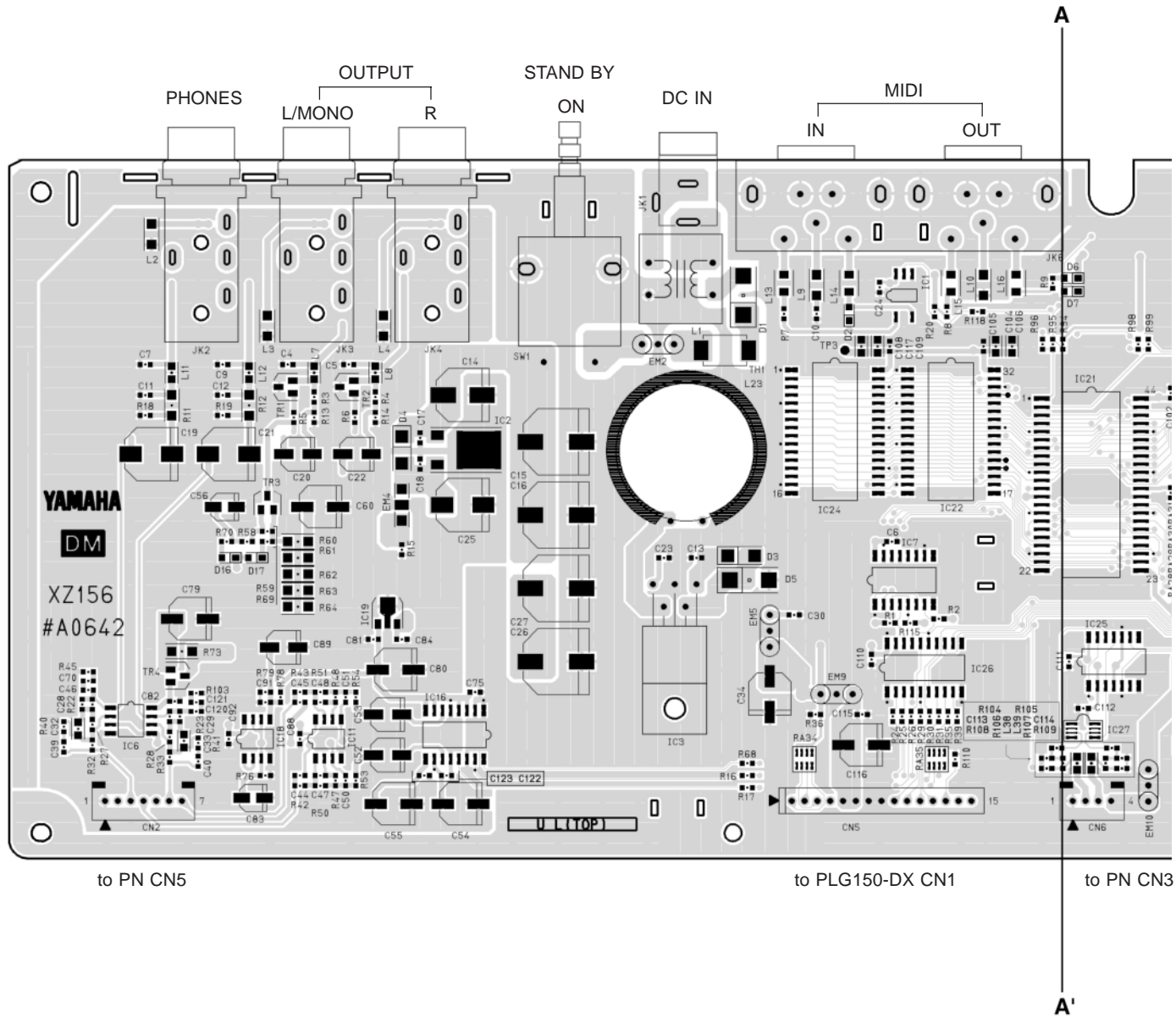


■ DIMENSIONS



■ CIRCUIT BOARD

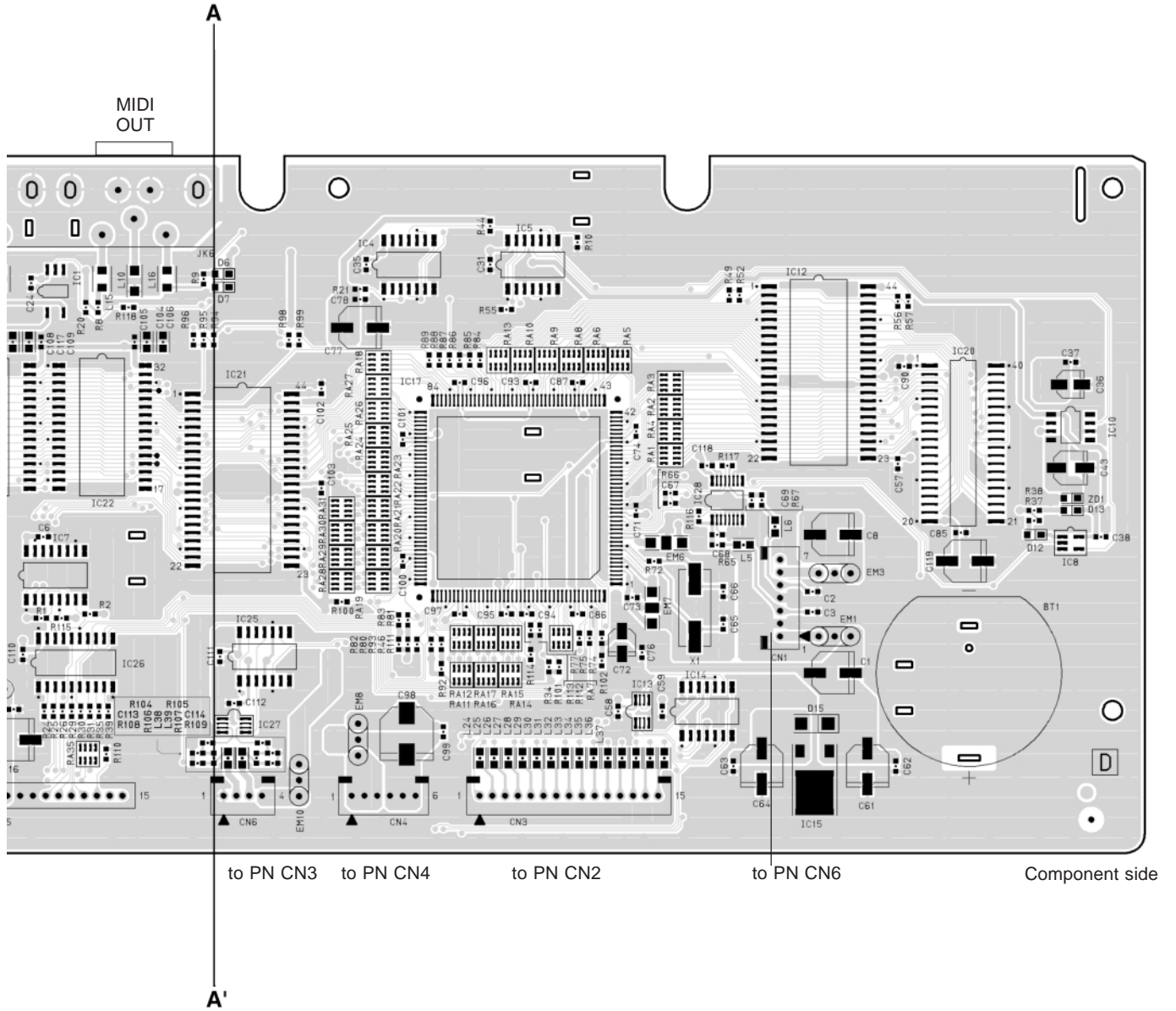
● DM CIRCUIT BOARD



Battery VN103500
 VN103600 (Battery holder for VN103500)

- Notice for back-up battery removal push the battery as shown in figure, then the battery will pop up.
- Druk de batterij neer beneden zoals aangeven in de tekening, de batterij springt dan neer voren.

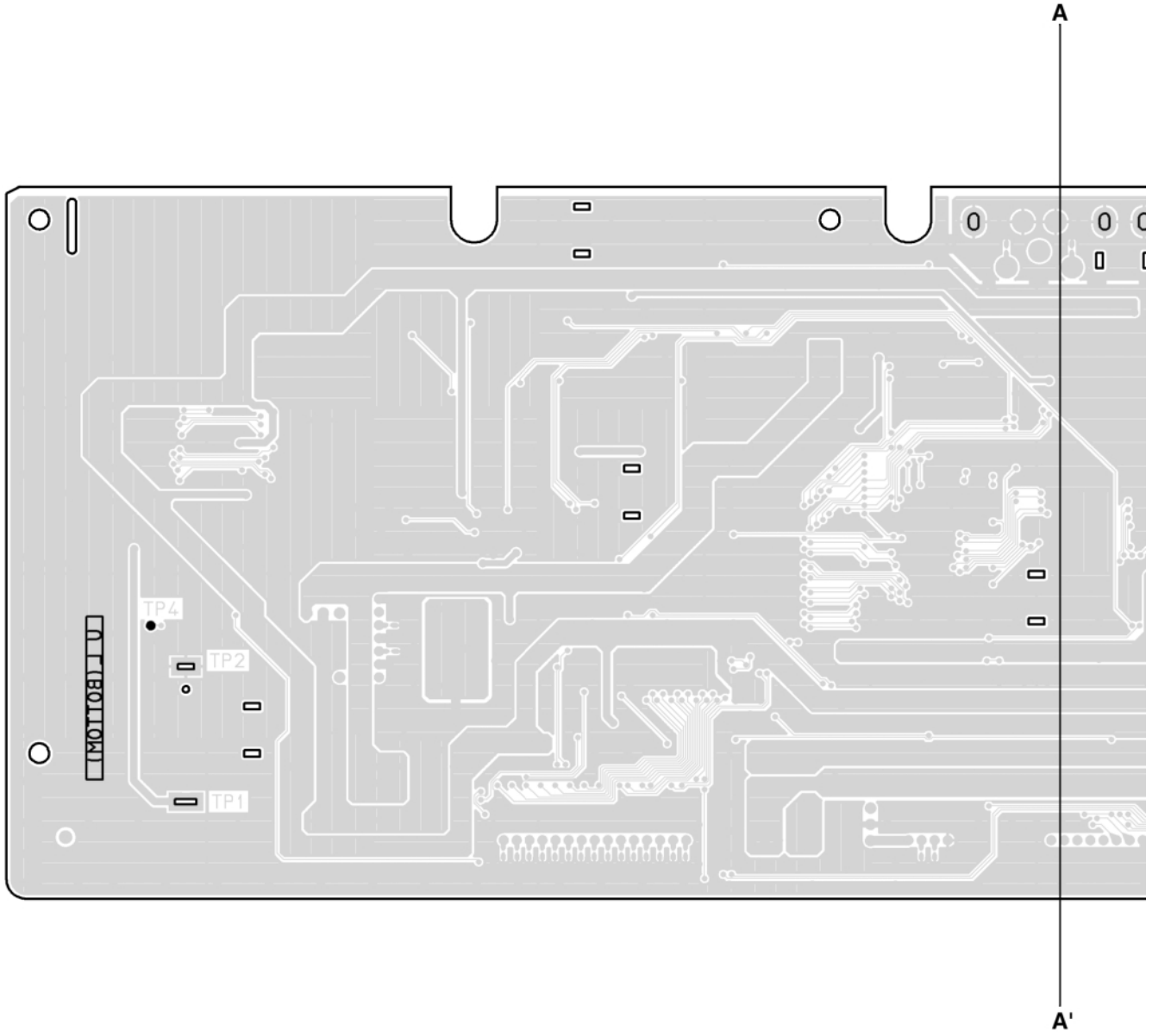
DM: 2NA-V625760




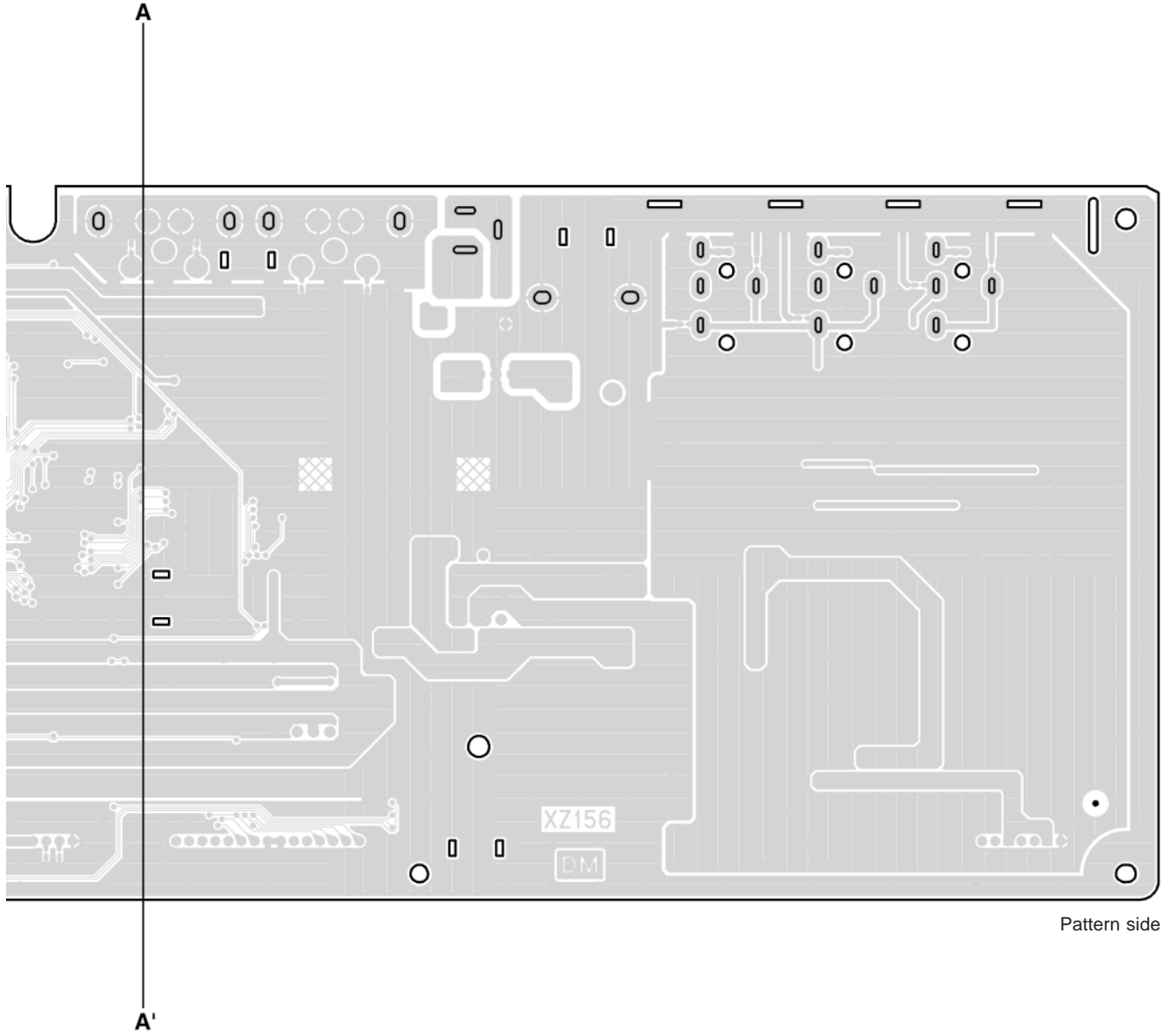
DM: 2NA-V625760 


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

• DM CIRCUIT BOARD

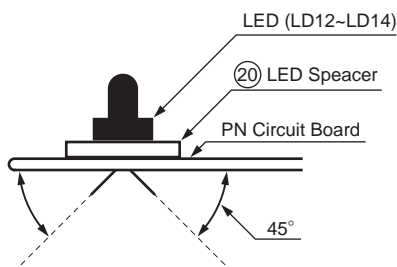
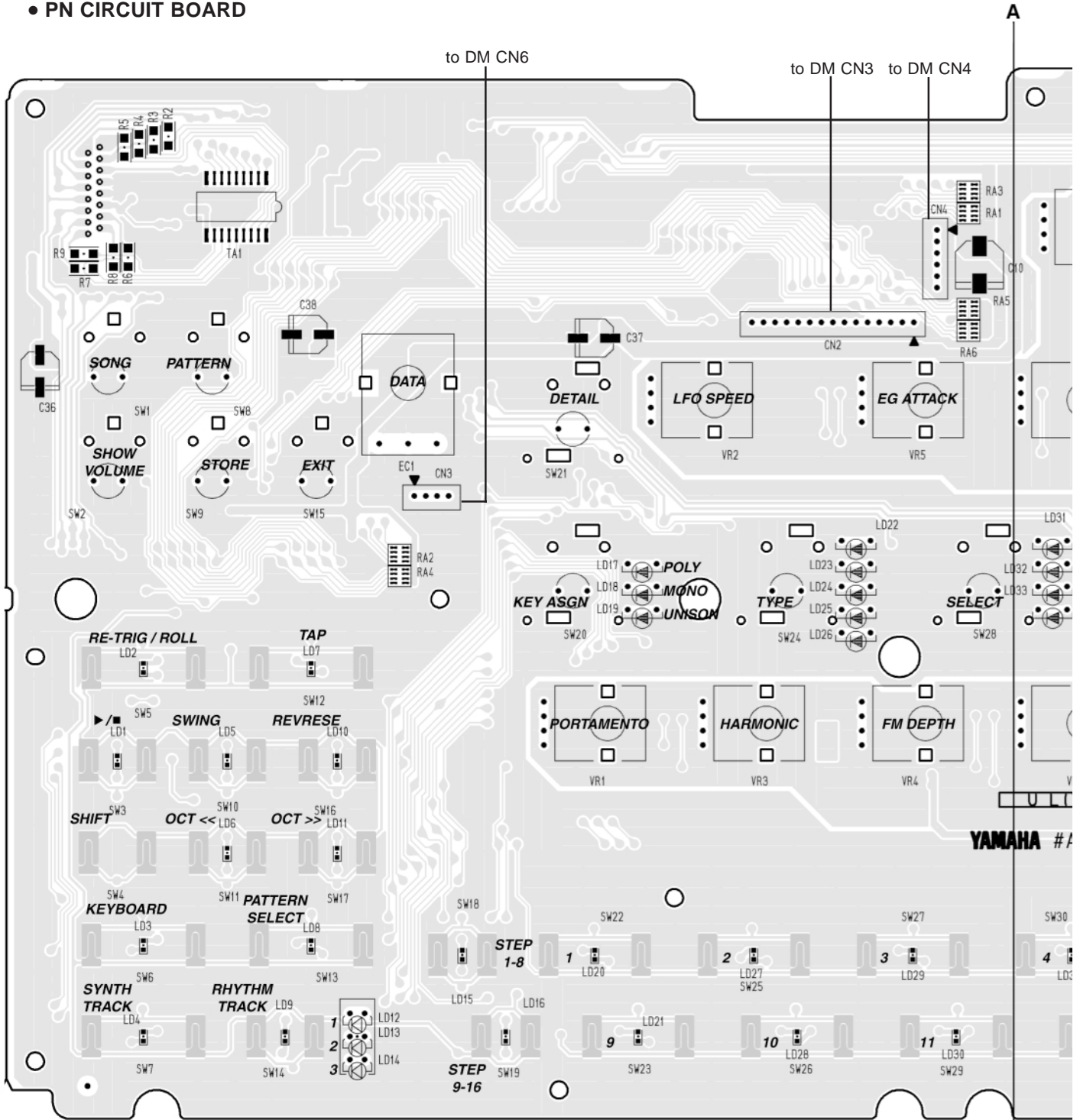


DM: 2NA-V625760 

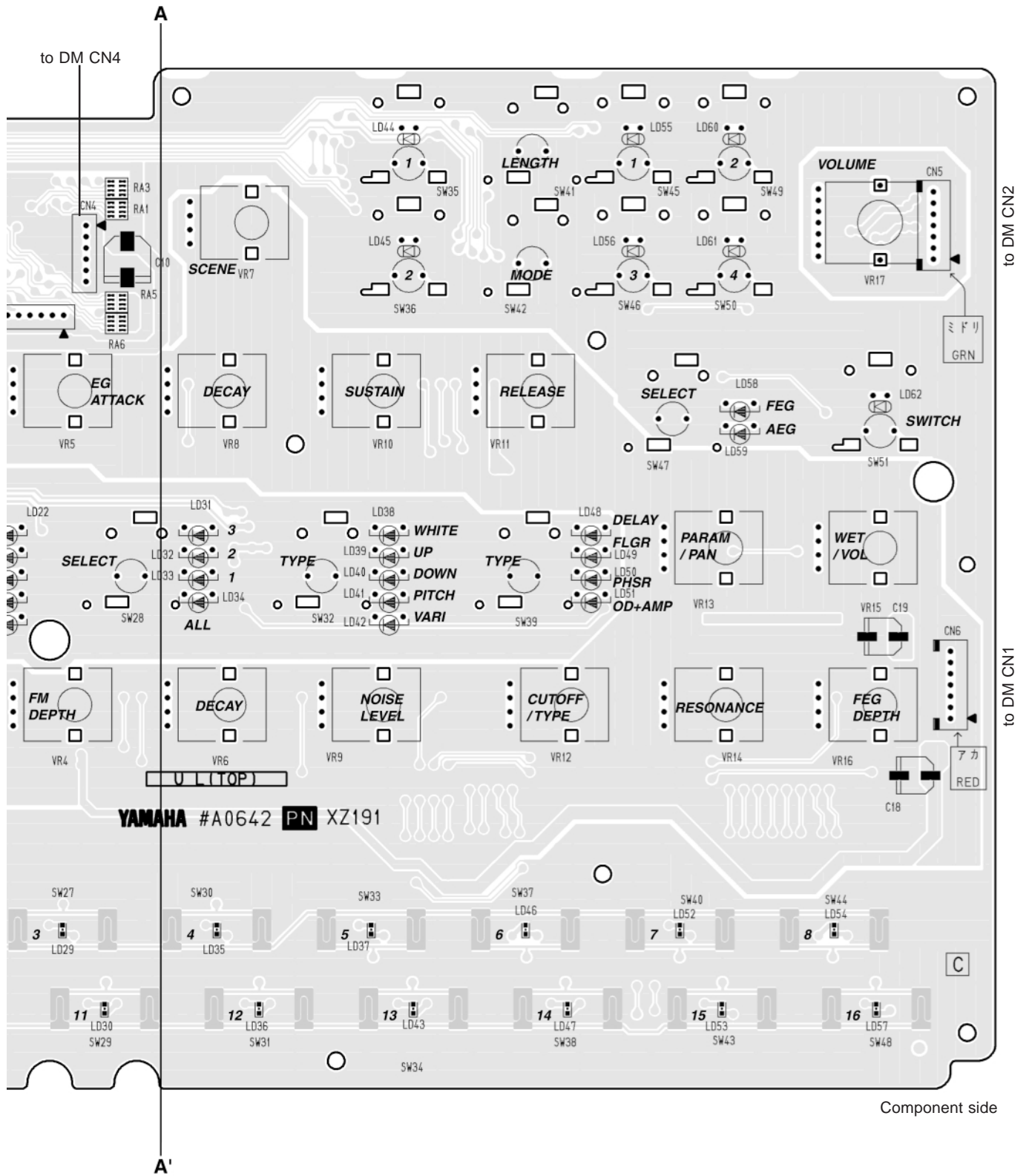


DM: 2NA-V625760 

• PN CIRCUIT BOARD



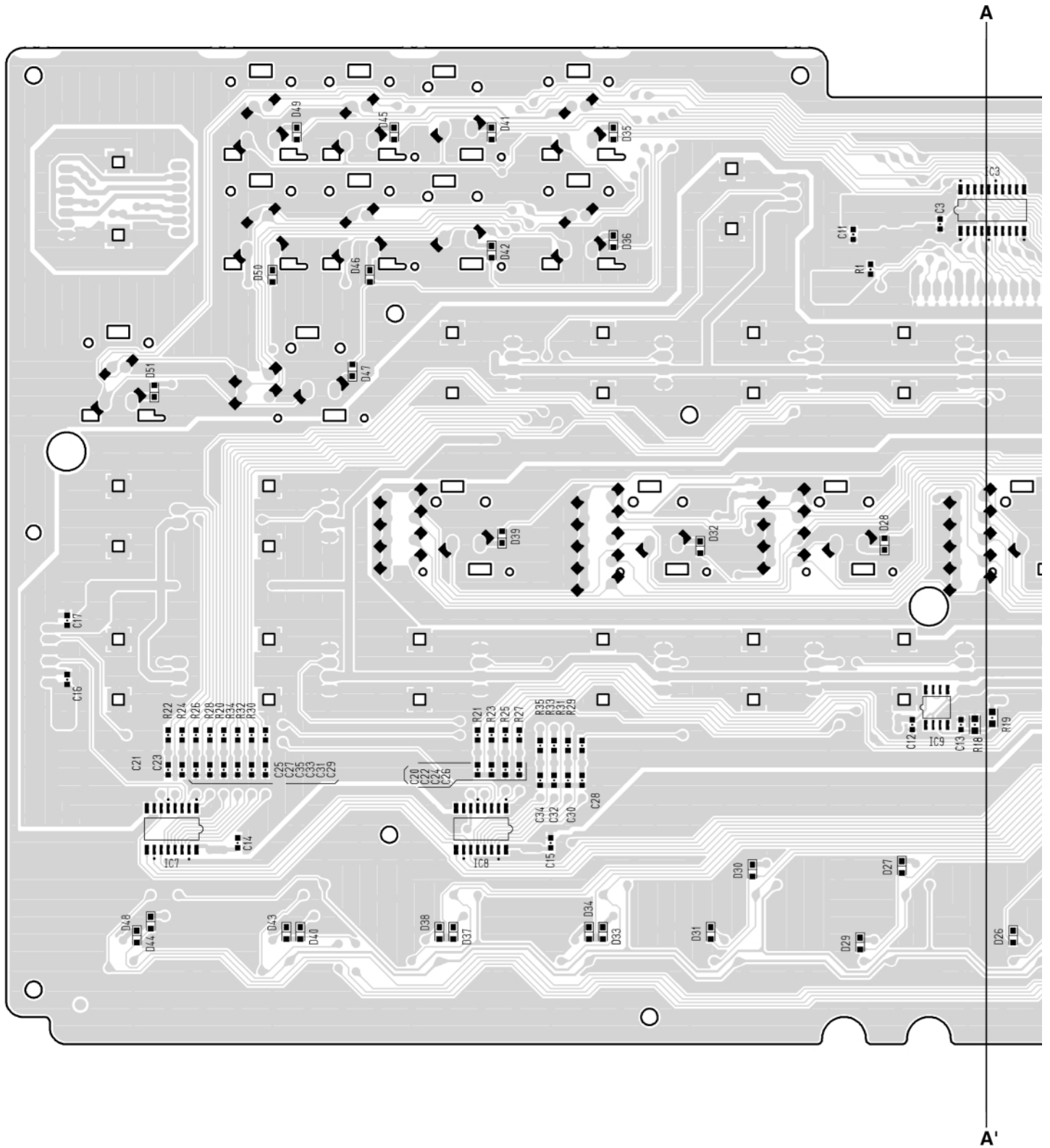
PN: 2NA-V488620



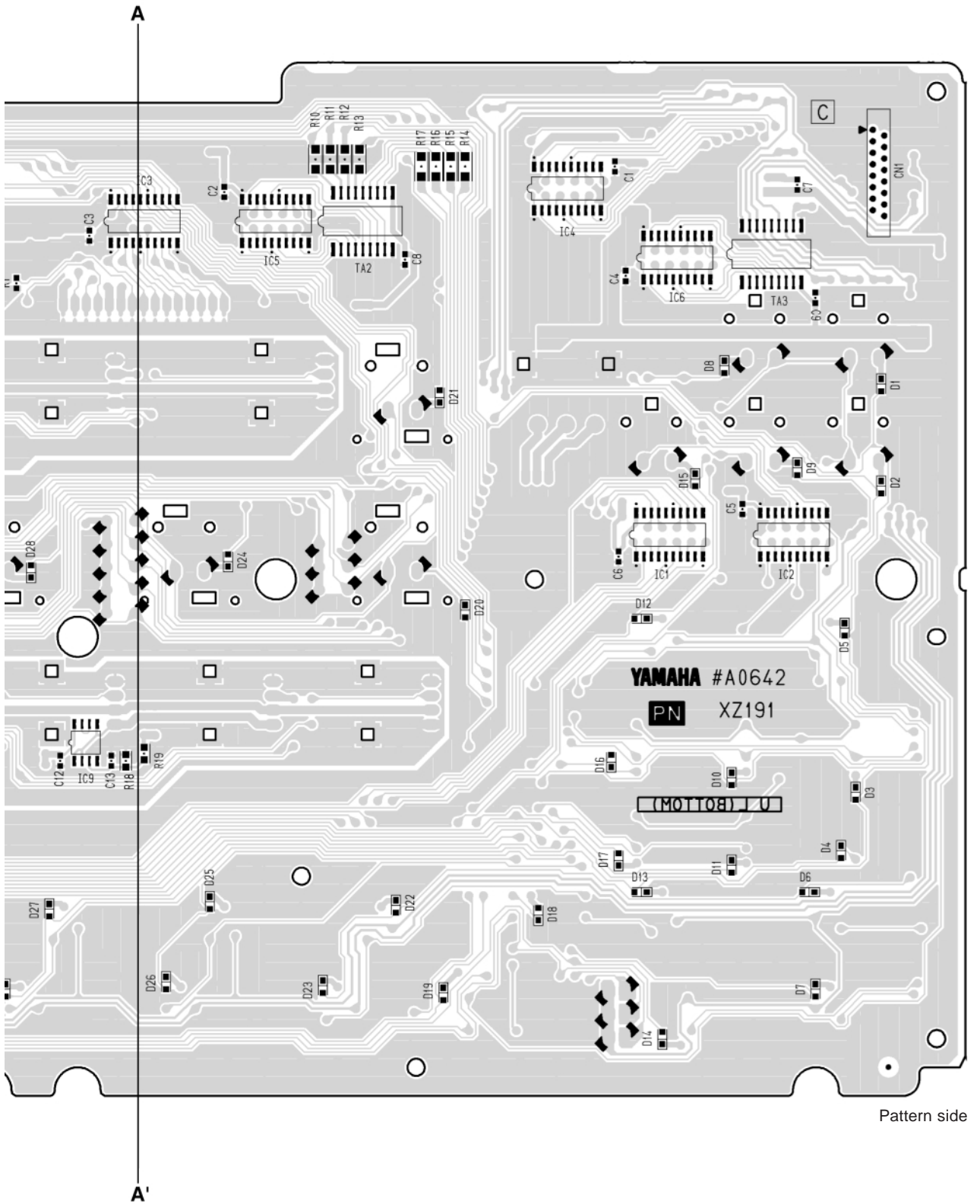
PN: 2NA-V488620

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

• PN CIRCUIT BOARD



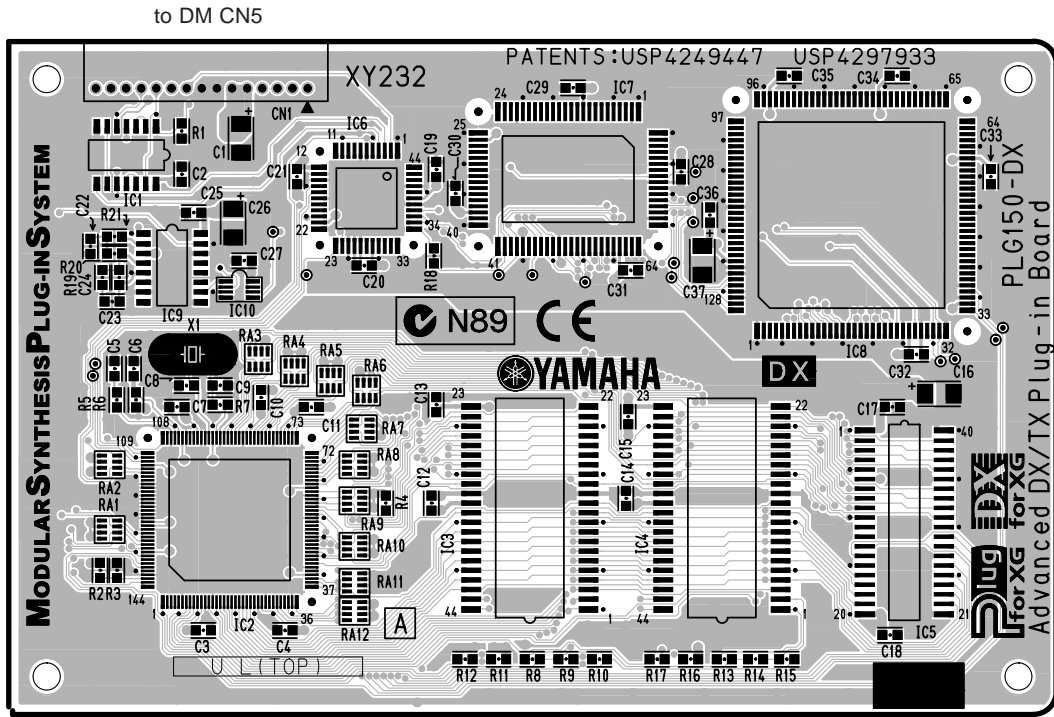
PN: 2NA-V488620



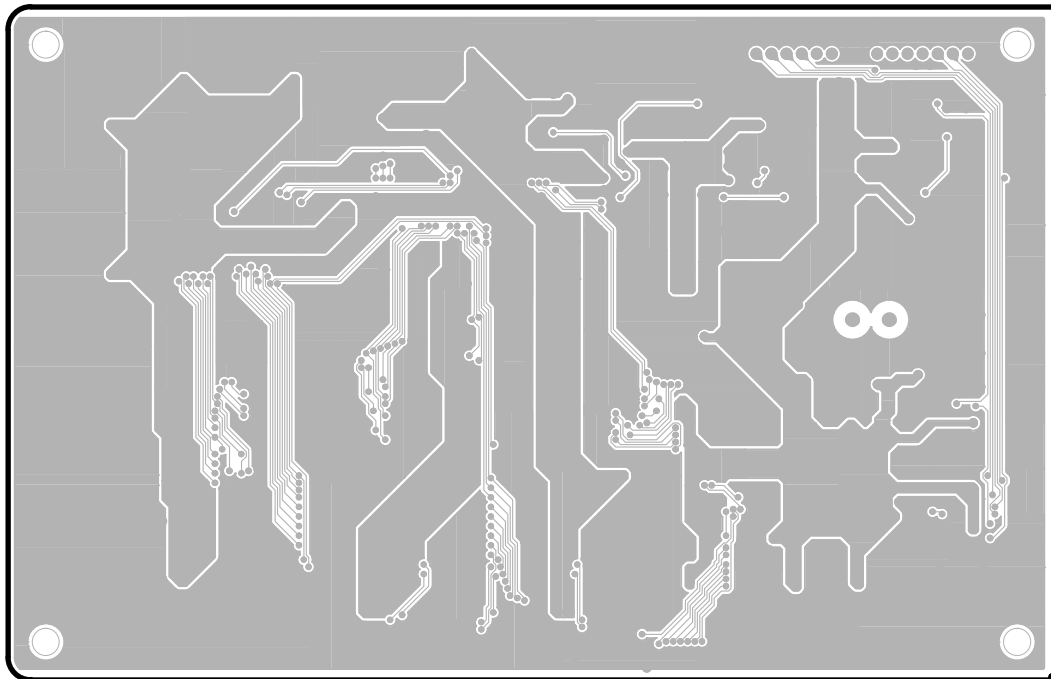
PN: 2NA-V488620

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

• PLG150-DX Circuit Board



Component side

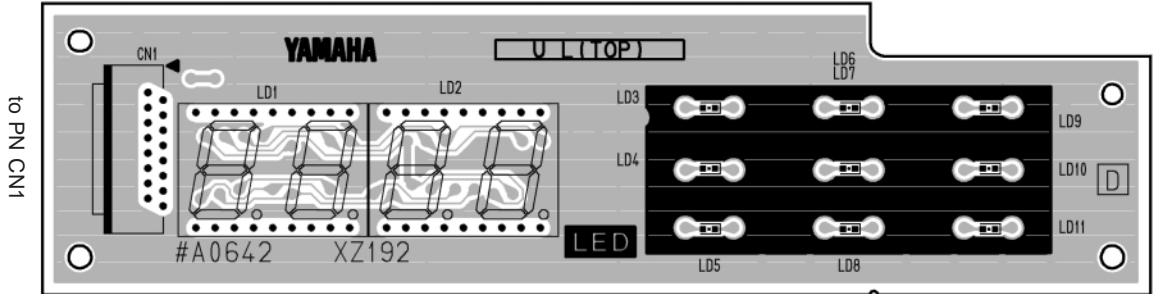


Pattern side

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

PLG150-DX: 2NA-V414740

• LED CIRCUIT BOARD



Component side

SONG	PATTERN	STORE
PITCH	GATE TIME	VELOCITY
INST SEL	BPM	BEAT

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

LED: 2NA-V488650

■ TEST PROGRAM & INITIALIZE

1. TEST PROGRAM

PREPERATIONS

Following measuring instruments and jigs are required for the test.

Measuring instruments :

- frequency counter(input impedance: more than 1M Ω)
- oscilloscope(input impedance: more than 1M Ω)
- volt meter(JIS-C curve, input impedance: more than 1M Ω , 0 dBm: 1mW 600 Ω)
- distortion meter(input impedance: more than 1M Ω)
- digital multimeter(input impedance: more than 1M Ω)
- keyboard amplifier(a KS15-equivalence)

Jigs : MIDI cable

Confirm to rotate every control/knob counterclockwise to bottom.

Precautions before starting the test program:

After disassembling/ assembling the unit, confirm that following caution is properly observed before performing any test program.
After assembling the panel assembly, confirm that the voltage between the measuring points TP1 and TP2 (ground) on the soldered surface of the DM circuit board is from 2.9 V up to 3.4 V (during the power standby mode).

● Start up of the test program

While pressing the [SHOW VALUE], [STORE] and [EXIT] keys, turn on the STANDBY switch.

● Proceeding through the test program

When the test program is started, first “TEST” will appear on the LED display for about one second and then the test program version and the test number will appear consecutively.

Display on the starting up of the test program



Display of the test version



Rotate the [DATA] knob to select the appropriate test program.

Press [STORE] key to perform the test.

When the result is normal (OK), the number of the next test will appear on the LED.

In each test, if “NG” (No Good) error is detected, [Test No. nG] will be displayed on the LED and the program will be put on hold.

Press [EXIT] key to proceed to the next program.

● The test procedure when an error is detected

In each test, if “NG” (No Good) error is detected, press [EXIT] to indicate the LCD display where you can select the next test number.

• The test program

Test No.	Test Item	Test Conditions, Judgment Criteria, etc
C-1	RAM	OK/NG
C-2	RAM BATTERY	OK/NG
C-3	SW & LED	OK/NG LED visually check the lights
C-4	DATA ENTRY	OK/NG (0-23-0)
C-5	KNOB	OK/NG (255,254-127-1, 0)
C-6	MIDI	OK/NG
C-7	WAVE ROM	OK/NG
C-8	1kHz OUTPUT(L) SOUND (SWX00B)	OUTPUT(L) +3.0 +/- 2dBm load 10kΩ OUTPUT(R) less than -80dBm
C-9	1kHz OUTPUT(R) SOUND (SWX00B)	OUTPUT(R) +3.0 +/- 2dBm load 10kΩ OUTPUT(L) less than -80dBm
C-10	PB NAME	OK/NG
C-11	PB RAM	OK/NG
C-12	PB MIDI IN	OK/NG
C-13	PB MEL	OUTPUT(L) -2.0 +/- 2dBm load 10kΩ -5.0 +/- 2dBm load 10 kΩ
C-14	Factory set	
C-15	EXIT	Reverberated noise level OUTPUT(L), OUTPUT(R) less than -88 dBm
C-16		OK/NG

• The test program

C-1 CPU RAM

This is the read/ write/ verify check for the MAIN CPU RAM.

Display of Test Results

OK:

NG:

Test End

The test result is displayed and the test will be finished.

Refer to “The test procedure when an error is detected” when “NG” (No Good) error is detected.

C-2 RAM BATTERY

This test checks that the voltage of the RAM backup battery is within the range from 2.9 V up to 3.4 V.

Display of Test Results

OK:

NG:

Test End

The test result is displayed and the test will be finished.

Refer to “The test procedure when an error is detected” when “NG” (No Good) error is detected.

C-3 SW & LED



Press the panel switches according to the order indicated by the LCD and confirm that all switches are working properly. Confirm that the LED corresponding to the panel switch lights on.

After about one second, LED display and all LED's light on for about three seconds and then off to indicate following on the display:



Sine waves sound while the panel switches are being pressed on according to the order indicated by the LED display. When another switch, which is not indicated by the LED display, is pressed, the test stops. The test advances to the next switch test when a correct switch is pressed.

The "OK" will appear when all switches are normal.

The order of the switch check is shown below.

[SONG]>[PATTERN]>[SHOW VALUE]>[STORE]>[EXIT]>[SCENE 1]>[FREE EG LENGTH]>[FREE EG 1]>[FREE EG 2]>[SCENE 2]>[FREE EG MODE]>[FREE EG 3]>[FREE EG 4]>[LFO DETAIL]>[EG SELECT]>[DIST SWITCH]>[COMMON KEY ASGN]>[ALGORITHM TYPE]>[MODULATOR SELECT]>[NOISE OSC]>[EFFECT_TYPE]>[RETRIGGER]>[TAP]>[TOP]>[SWING]>[REVERSE]>[SHIFT]>[OCT<<]>[OCT>>]>[KEYBOARD]>[PATTERN SELECT]>[SYNTH TRACK]>[RHYTHM TRACK]>[STEP 1-8]>[1]>[2]>[3]>[4]>[5]>[6]>[7]>[8]>[STEP 9-16]>[9]>[10]>[11]>[12]>[13]>[14]>[15]>[16]

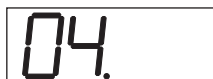
Display of Test Results



Test End

When all switches are checked normally, the "OK" is displayed and the test will be finished.

C-4 DATA ENTRY



Rotate slowly the knob for DATA ENTRY clockwise until the value 23 appears on the LED display. When 23 appears, a sine wave sounds. After this, rotate slowly the knob counterclockwise to confirm that a sine wave sounds again and the "OK" is displayed on the LED when the value becomes 0 (zero).

Display of Test Results

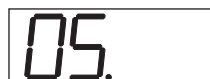


Test End

The test result is displayed and the test will be finished.

Refer to "The test procedure when an error is detected" when "NG" (No Good) error is detected.

C-5 KNOB



Rotate slowly the knob indicated by LED display clockwise and then counterclockwise to confirm that the value on the LED increases from 0 to 255 and then decreases from 255 to 0 respectively.

When one knob is confirmed to work properly, a sine wave sounds and the name of the next knob will appear on the LED.

The "OK" will appear when all knobs are normal.

The order of the knob check is shown below.

[SCENE]>[SPEED]>[ATAK]>[DECAY]>[SUSTAIN]>RELEASE]>[PARAM]>[WET/VOL]>[PORTAMENTO]>[HARMONIC]>[FM DEPTH]>[FM DECA Y]>[NOISE LEVEL]>[CUT OFF]>[RESONANCE]>[FEG DEPTH]

Display of Test Results



Test End

The test result is displayed and the test will be finished.

Refer to "The test procedure when an error is detected" when "NG" (No Good) error is detected.

C-6 MIDI



After connecting the MIDI IN to the MIDI OUT via a MIDI cable, execute the test. MIDI IN transmits the test pattern (AA 50 5F) to be received by MIDI IN.

Display of Test Results



Test End

The test result is displayed and the test will be finished.

C-7 WAVE ROM



This is the data read/ verify check for the WAVE ROM.

Display of Test Results



Test End

The test result is displayed and the test will be finished. Refer to “The test procedure when an error is detected” when “NG” (No Good) error is detected.

C-8 1kHz OUTPUT-L



Insert the appropriate phone plugs into each output jack of the OUTPUT (L, R) and PHONE (L, R), and then connect them to a frequency counter, oscilloscope and AC volt meter.

The VOLUME control must be set at maximum.

Verify that the following signals are output from OUTPUT-L and PHONES-L.

OUTPUT-L: 1kHz +/- 3Hz Asine wave,+3.0 +/- 2dBm (load 10kΩ),Distortion: less than 0.6%

OUTPUT-R: less than -80dBm(load 10kΩ)

PHONES-L: -4.0 +/- 2 dBm (load 33 Ω) ADistortion: less than 0.6%

PHONES-R: less than -60dBm(load 33 Ω)

Display of Test Results

Not appearing

Test End

Rotate [DATA ENTRY] knob clockwise to proceed to the next test.

C-9 1kHz OUTPUT-R



Insert the appropriate phone plugs into each output jack of the OUTPUT (L, R) and PHONE (L, R), and then connect them to a frequency counter, oscilloscope and AC volt meter.

The VOLUME control must be set at maximum.

Verify that the following signals are output from OUTPUT-R and PHONES-R0.

OUTPUT-L: less than -80dBm(load 10kΩ)

OUTPUT-R: 1kHz +/- 3Hz Asine wave, +3.0 +/- 2dBm (load 10kΩ), Distortion: less than 0.6%

PHONES-L: less than -60dBm(load 33 Ω)

PHONES-R: -4.0 +/- 2 dBm (load 33 Ω),Distortion: less than 0.6%

Display of Test Results

Not appearing

Test End

Rotate [DATA ENTRY] knob clockwise to proceed to the next test.

C-10 PB NAME



Confirm the proper connection, the name/ version of the plug-in board through transmitting and receiving data between the unit and the plug-in board, which is built in the unit.

Display of Test Results



Test End

The test result is displayed and the test will be finished.

C-11 PB RAM


Check RAM of the plug-in board which is built in the unit.

Display of Test Results

OK: 

NG: 

Test End

The test result is displayed and the test will be finished.

C-12 PB MIDI IN


Transmit the test pattern from the unit to MIDI IN of the plug-in board, which is built in the unit, and then transmit the test result to the unit. Then confirm the test result.

Display of Test Results

OK: 

NG: 

Test End

The test result is displayed and the test will be finished.

C-13 PB MEL


Check if the power and MEL OUT of the plug-in board are working properly. Confirm that MEL OUT outputs properly to OUTPUT (L, R) of the unit.

Set MEL OUT of the plug-in board in the unit to output properly to OUTPUT (L, R) of the unit. Then insert the appropriate phone plugs into each output jack of the OUTPUT (L, R) and connect them to a frequency counter, oscilloscope and AC volt meter.

The VOLUME control must be set at maximum.

Verify that the following signals are output from OUTPUT-L.

Frequency: 1kHz +/- 3Hz

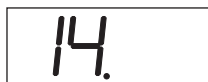
Level: -2.0dBm +/- 2dBm

Display of Test Results

Not appearing

Test End

Rotate [DATA ENTRY] knob clockwise to proceed to the next test.

C-14 FACTORY SET


This test is used to initialize the data to the factory settings.

Following operation will execute the test.

Press [STORE] to execute the factory settings.

Press [EXIT] to indicate the LCD display where you can select the next test number.

C-15 EXIT


Following operation ends the test mode and returns to the play mode.

Press [STORE] to end the test mode.

Press [EXIT] to indicate the LCD display where you can select the next test number.

OTHERS

When the unit exits the test mode, it executes a normal start-up sequence same as what it does when the power switch is turned ON.

When the [STANDBY] switch of the unit is turned ON and OFF, confirm that the clicking noises of the OUTPUT (L, R) is less than 0.5 V p-p.

When the unit exits the test mode and returns to the play mode, confirm that the noise levels of each output are as follows. An AC volt meter must be connected for the measurements.

OUTPUT (L,R): less than -88dBm (load 33 Ω)

PHONES (L,R): less than -88dBm (load 33 Ω)

■ ERROR MESSAGES

Display indication	Message	Comment
<i>Err 1</i> (flashes)	Battery Low	This appears when the voltage of the internal backup battery becomes low. Have the battery replaced by your local Yamaha dealer or any Yamaha-authorized service personnel.
<i>Err 2</i> (flashes)	MIDI Buffer Full	This appears when too much MIDI data has been received at one time, causing the unit to stop processing data.
<i>Err 3</i> (flashes)	MIDI Data Error	This appears when the received MIDI data is incorrect or contains errors.
<i>Err 4</i> (flashes)	MIDI Checksum Error	This appears when checksum of the received System Exclusive data is incorrect.

■ MIDI IMPLEMENTATION CHART

YAMAHA [DESKTOP CONTROL SYNTHESIZER]
Model DX200 MIDI Implementation Chart

Date:23-JAN-2001
Version : 1.0

Function...	Transmitted	Recognized	Remarks
Basic Default Channel Changed	1 - 16 1 - 16	1 - 16 1 - 16	Memorised
Mode Default Messages Altered	3 x *****	3 3,4 (m=1) *1 x	
Note Number : True voice	0 - 127 *****	0 - 127 0 - 127	
Velocity Note ON Note OFF	o 9nH,v=1-127 o 9nH,v=0	o 9nH,v=1-127 x	
After Key's Touch Ch's	x x	x x	
Pitch Bend	x	o 0-24 semi	
Control Change	0,32 o 1,5,7,10 o 11 x 6,38 o 64,65 x 71-75 o 94 o 98-99 o 16,18,19,80-83 o 100-101 o	o o o o o o o o o o	Bank Select Data Entry Sound Controller Effect Depth NRPN LSB,MSB Knob Control RPN LSB,MSB
Prog Change : True #	o *****	o 0 - 127 0 - 127	
System Exclusive	o	o	
: Song Pos. Common : Song Sel. : Tune	o *3 x x	o *2 x x	
System : Clock Real Time: Commands	o *3 o *3	o *4 o *2	
Aux :All Sound off :Reset All Cntrls :Local ON/OFF :All Notes OFF Mes- :Active Sense sages:Reset	x x x x o x	o(120,126,127) o(121) x o(123-125) o x	
Notes:	*1 m is always treated as "1" regardless of its value. *2 if MIDI control is in or on *3 if MIDI control is out or on *4 if MIDI sync is external		

Mode 1 : OMNI ON , POLY
Mode 3 : OMNI OFF, POLY

Mode 2 : OMNI ON ,MONO
Mode 4 : OMNI OFF,MONO

o : Yes
x : No



PARTS LIST

■ CONTENTS

OVERALL ASSEMBLY 2
 PN ASSEMBLY 4
 ELECTRICAL PARTS 5

Note) DESTINATION ABBREVIATIONS

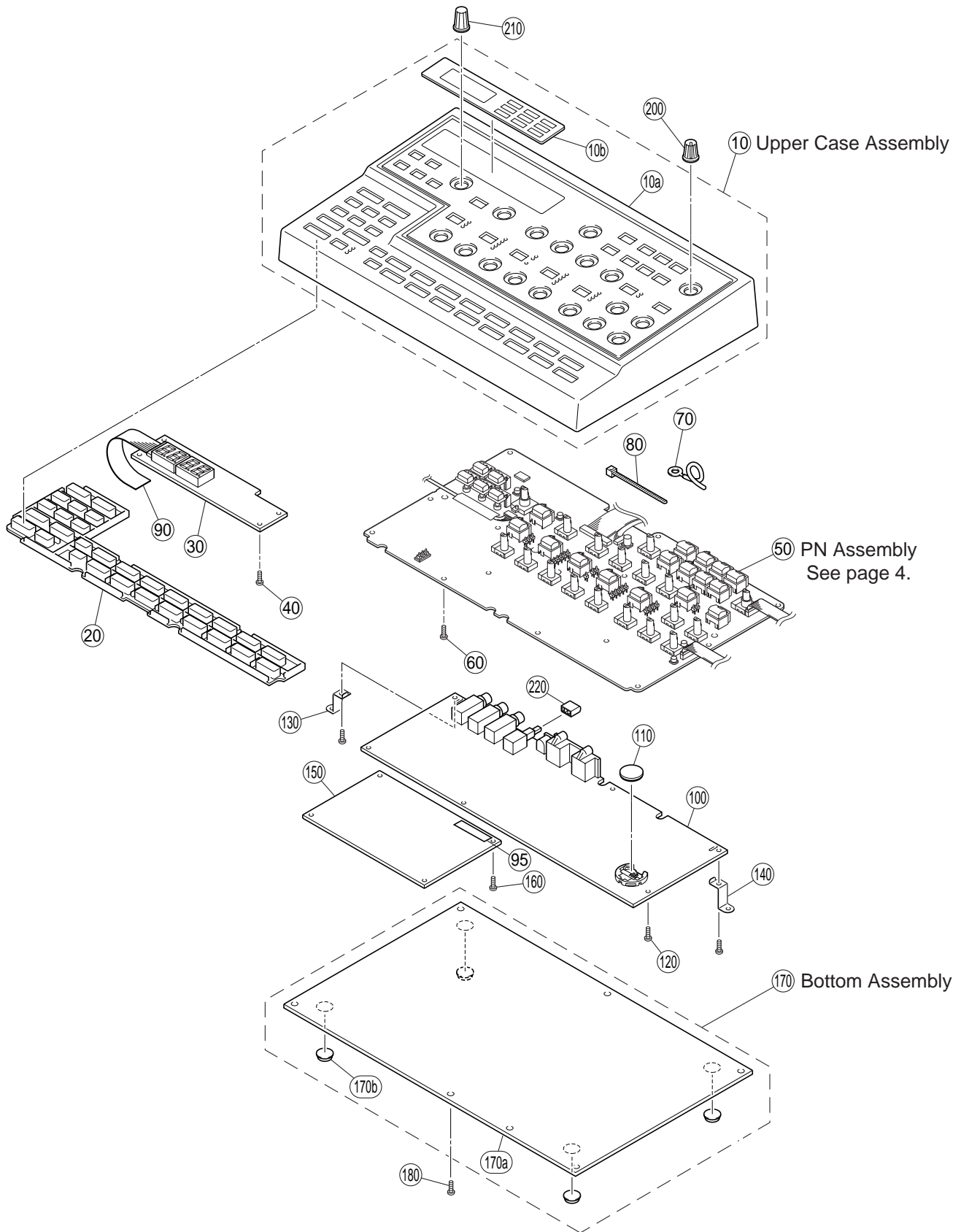
A: Australian model	M: South African model
B: British model	O: Chinese model
C: Canadian model	Q: South-east Asia model
D: German model	T: Taiwan model
E: European model	U: U.S.A. model
F: French model	V: General export model (110V)
H: North European model	W: General export model (220V)
I: Indonesian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

■ WARNING

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

- The numbers in "QTY" shows quantities for each unit.
- The parts with "--" in "Part No." are not available as spare parts.
- The second letter of the shaded () part number is I, not one.
- The second letter of the shaded () part number is O, not zero.

OVERALL ASSEMBLY



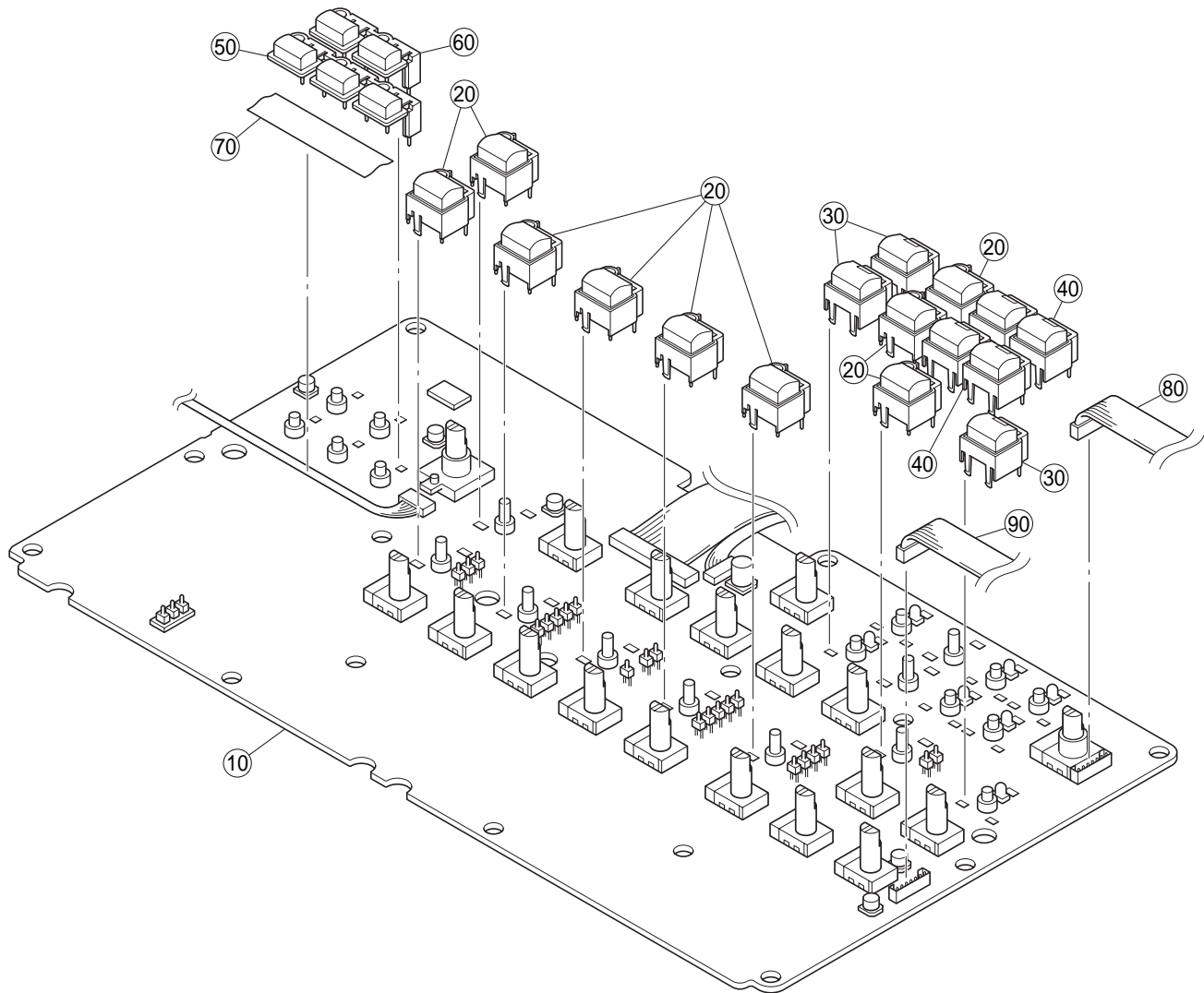
REF NO.	PART NO.	DESCRIPTION		REMARKS	QTY	RANK
* 10	--	Overall Assembly	LM	DX200 JUEW (V678980)		
	V6953200	Upper Case Assembly	DE			
10a	--	Upper Case	NA0643	(V679190)		
* 10b	V6553600	Protector				
10c	V7543700	Adhesive Tape	#500 8mm			
* 20	V6554200	Rubber Contact		PLAY, TAP, REC, SWING, REVERSE, SHIFT, OCT<<, OCT>>, KEYBOARD, PATTERN SELECT, SYNTH TRACK, RHYTHM TRACK STEP 1-8,STEP 9-16, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 16	2	
* 30	V4886400	Circuit Board	J			
40	EP620100	Bind Head Tapping Screw-P	2.6X8 MFZN2Y		4	01
50	--	PN Assembly	DE	(V679230)		
60	EP620100	Bind Head Tapping Screw-P	2.6X8 MFZN2Y		14	01
70	CB829850	Cord Binder	S-34Z			03
80	CB069250	Cord Holder	BK-1			01
* 90	MFA16080	Connector Assembly	16P 80mm P=1.0			
95	VP834600	Adhesive Tape	12X50		5	
* 100	V4886100	Circuit Board	J			
110	VN103500	Lithium Battery	CR2032			03
120	EP620100	Bind Head Tapping Screw-P	2.6X8 MFZN2Y		6	01
130	--	Angle, L		(V655450)		
140	--	Angle, R		(V655460)		
150	V5135200	Circuit Board	PLG150-DX			31
160	EP600130	Bind Head Tapping Screw-B	3.0X6 MFZN2Y		3	01
170	--	Lower Case Assembly	DE	(V679210)		
* 170a	V6792600	Lower Case				
* 170b	V6893600	Foot	3M		4	
180	EP600130	Bind Head Tapping Screw-B	3.0X6 MFZN2Y		7	01
200	V4765800	Knob	K-CB	SCENE, VOLUME, SPEED, ATTACK, DECAY, SUSTAIN, RELEASE, PARAM/PAN, WET/VOL, PORTAMENTO, HARMONIC, FM DEPTH, DECAY NOISE LEVEL, CUTOFF/TYPE RESONANCE, FEG DEPTH DATA	17	02
210	VU931600	Knob		STANDBY ON		03
220	VN129100	Knob, Power Switch	BLACK			03
		ACCESSORIES		DX200		
40	VT368600	AC Adapter	PA-3B JP	J		09
40	VT368700	AC Adapter	PA-3B UC	U		
40	VT368800	AC Adapter	PA-3B CEE	E		08
60	--	CD-ROM	CDROM 74 12cm	JUEW (XZ638A0)		



*: New Parts

RANK: Japan only

PN ASSEMBLY



REF. NO.	PART NO.	DESCRIPTION		REMARKS	QTY	RANK
		PN ASSEMBLY		DX200		
	--	PN Assembly	DE	(V679230)		
* 10	V5830700	Circuit Board	J		9	01
20	V4162600	Button	M1B	LENGHT, MODE, LFO DETAIL, EG SELECT, KEY ASGN, ALGORITHM TYPE, MODULATOR SELECT, NOISE OSC TYPE, EFFECT TYPE 1, 2, DIST SWITCH		
* 30	V6776500	Button	MR1B	FREE EG 1, FREE EG 2	3	
* 40	V6776600	Button	MR2B	SHOW VALUE, STORE, EXIT SONG, PATTERN	2	
50	V6747300	Button	3B			
60	V6747400	Button	2B			
70	--	Adhesive Tape	12X50	(VP83460)		02
80	--	Connector Assembly	7P(KR-KR)-450L	(V677500)		
90	--	Connector Assembly	7P(KR-KR)-150L	(V677510)		

*: New Parts

RANK: Japan only

ELECTRICAL PARTS

REF NO.	PART NO.	DESCRIPTION		REMARKS	QTY	RANK
		ELECTRICAL PARTS		DX200		
*	V4886100	Circuit Board	DM J	(XZ156D0)		
*	V4886400	Circuit Board	LED J	(XZ192D0)		
*	V5830700	circuit Board	PN J	(XZ191C0)		
	V5135200	Circuit Board	PLG150-DX	(XY232A0)		31
*	V4886100	Circuit Board	DM J	(XZ156D0)		
*	V7450400	JK Terminal				
*	V7450500	DM Terminal				
BT1	VN103600	Battery Holder	CR2032			03
CN1	VB390300	Connector Base Post	PH- 7P TE			01
CN2	VB390300	Connector Base Post	PH- 7P TE			01
CN3	VF283300	Connector Base Post	PH-15P TE			01
CN4	VB390200	Connector Base Post	PH- 6P TE			01
CN5	--	Connector Assembly	15P-50L	(V640470)		
CN6	VB390000	Connector Base Post	PH- 4P TE			01
C1	UF038100	Electrolytic Cap. (chip)	100 16V			01
C2	US063100	Ceramic Capacitor-B (chip)	1000P 50V K			01
C3	US063100	Ceramic Capacitor-B (chip)	1000P 50V K			01
C4	US063220	Ceramic Capacitor-B (chip)	2200P 50V K			01
C5	US063220	Ceramic Capacitor-B (chip)	2200P 50V K			01
C6	US064100	Ceramic Capacitor-B (chip)	0.0100 50V K			01
C8	UF038100	Electrolytic Cap. (chip)	100 16V			01
C10	US064100	Ceramic Capacitor-B (chip)	0.0100 50V K			01
C11	US063100	Ceramic Capacitor-B (chip)	1000P 50V K			01
C12	US063100	Ceramic Capacitor-B (chip)	1000P 50V K			01
C13	US145100	Ceramic Capacitor-F (chip)	0.1000 25V Z			01
C14	UF148100	Electrolytic Cap. (chip)	100 25V UUR1E1			01
C15	UF148330	Electrolytic Cap. (chip)	330 25V UUR1E3			02
C16	UF148330	Electrolytic Cap. (chip)	330 25V UUR1E3			02
C17	US145100	Ceramic Capacitor-F (chip)	0.1000 25V Z			01
C18	US135100	Ceramic Capacitor-F (chip)	0.1000 16V Z			01
C19	UF138220	Electrolytic Cap. (chip)	220 16V UUR1C2			01
C20	VE237220	Electrolytic Cap. (chip)	22 16V			01
C21	UF138220	Electrolytic Cap. (chip)	220 16V UUR1C2			01
C22	VE237220	Electrolytic Cap. (chip)	22 16V			01
C23	US064100	Ceramic Capacitor-B (chip)	0.0100 50V K			01
C24	US135100	Ceramic Capacitor-F (chip)	0.1000 16V Z			01
C25	VE238220	Electrolytic Cap. (chip)	220 16V UUR1C2			01
C26	UF148330	Electrolytic Cap. (chip)	330 25V UUR1E3			02
C27	UF148330	Electrolytic Cap. (chip)	330 25V UUR1E3			02
C28	US062100	Ceramic Capacitor-SL(chip)	100P 50V J			01
C29	US062100	Ceramic Capacitor-SL(chip)	100P 50V J			01
C30	US135100	Ceramic Capacitor-F (chip)	0.1000 16V Z			01
C31	US064100	Ceramic Capacitor-B (chip)	0.0100 50V K			01
C34	UF038100	Electrolytic Cap. (chip)	100 16V			01
C35	US064100	Ceramic Capacitor-B (chip)	0.0100 50V K			01
C36	UF037100	Electrolytic Cap. (chip)	10 16V			01
C37	US064100	Ceramic Capacitor-B (chip)	0.0100 50V K			01
C38	US064100	Ceramic Capacitor-B (chip)	0.0100 50V K			01
C43	UF066470	Electrolytic Cap. (chip)	4.7 50V			01
C44	US063470	Ceramic Capacitor-B (chip)	4700P 50V K			01
C45	US063470	Ceramic Capacitor-B (chip)	4700P 50V K			01
C46	US063220	Ceramic Capacitor-B (chip)	2200P 50V K			01
C47	US062270	Ceramic Capacitor-SL(chip)	270P 50V J			01
C48	US062270	Ceramic Capacitor-SL(chip)	270P 50V J			01
C50	US063220	Ceramic Capacitor-B (chip)	2200P 50V K			01
C51	US063220	Ceramic Capacitor-B (chip)	2200P 50V K			01
C52	VE237220	Electrolytic Cap. (chip)	22 16V			01
C53	VE237220	Electrolytic Cap. (chip)	22 16V			01
C54	UF037470	Electrolytic Cap. (chip)	47 16V			01
C55	UF037470	Electrolytic Cap. (chip)	47 16V			01
C56	UF037100	Electrolytic Cap. (chip)	10 16V			01
C57	US135100	Ceramic Capacitor-F (chip)	0.1000 16V Z			01
C58	US064100	Ceramic Capacitor-B (chip)	0.0100 50V K			01
C59	US064100	Ceramic Capacitor-B (chip)	0.0100 50V K			01
C60	UF038100	Electrolytic Cap. (chip)	100 16V			01
C61	UF038100	Electrolytic Cap. (chip)	100 16V			01
C62	US135100	Ceramic Capacitor-F (chip)	0.1000 16V Z			01
C63	US135100	Ceramic Capacitor-F (chip)	0.1000 16V Z			01

*: New Parts

RANK: Japan only

REF NO.	PART NO.	DESCRIPTION	REMARKS	QTY	RANK
C64	UF038100	Electrolytic Cap. (chip)	100 16V		01
C65	US061220	Ceramic Capacitor-CH(chip)	22P 50V J		01
C66	US061270	Ceramic Capacitor-CH(chip)	27P 50V J		01
C67	US063100	Ceramic Capacitor-B (chip)	1000P 50V K		01
C70	US063220	Ceramic Capacitor-B (chip)	2200P 50V K		01
C71	US135100	Ceramic Capacitor-F (chip)	0.1000 16V Z		01
C72	UF037100	Electrolytic Cap. (chip)	10 16V		01
C73	US135100	Ceramic Capacitor-F (chip)	0.1000 16V Z		01
C74	US064100	Ceramic Capacitor-B (chip)	0.0100 50V K		01
C75	US135100	Ceramic Capacitor-F (chip)	0.1000 16V Z		01
C76	US064100	Ceramic Capacitor-B (chip)	0.0100 50V K		01
C77	UF038100	Electrolytic Cap. (chip)	100 16V		01
C78	US064100	Ceramic Capacitor-B (chip)	0.0100 50V K		01
C79	UF038100	Electrolytic Cap. (chip)	100 16V		01
C80	UF037470	Electrolytic Cap. (chip)	47 16V		01
C81	US135100	Ceramic Capacitor-F (chip)	0.1000 16V Z		01
C82	US135100	Ceramic Capacitor-F (chip)	0.1000 16V Z		01
C83	UF037100	Electrolytic Cap. (chip)	10 16V		01
C84	US135100	Ceramic Capacitor-F (chip)	0.1000 16V Z		01
C85	US064100	Ceramic Capacitor-B (chip)	0.0100 50V K		01
-87	US064100	Ceramic Capacitor-B (chip)	0.0100 50V K		01
C88	US135100	Ceramic Capacitor-F (chip)	0.1000 16V Z		01
C89	UF037220	Electrolytic Cap. (chip)	22 16V		01
C90	US135100	Ceramic Capacitor-F (chip)	0.1000 16V Z		01
C91	US135100	Ceramic Capacitor-F (chip)	0.1000 16V Z		01
C92	US135100	Ceramic Capacitor-F (chip)	0.1000 16V Z		01
C93	US064100	Ceramic Capacitor-B (chip)	0.0100 50V K		01
-97	US064100	Ceramic Capacitor-B (chip)	0.0100 50V K		01
C98	UF138220	Electrolytic Cap. (chip)	220 16V UUR1C2		01
C99	US064100	Ceramic Capacitor-B (chip)	0.0100 50V K		01
-103	US135100	Ceramic Capacitor-F (chip)	0.1000 16V Z		01
C104	UB446100	Ceramic Capacitor-F (chip)	F 1.0 16V Z		01
C105	US064100	Ceramic Capacitor-B (chip)	0.0100 50V K		01
C106	UB446100	Ceramic Capacitor-F (chip)	F 1.0 16V Z		01
C108	UB446100	Ceramic Capacitor-F (chip)	F 1.0 16V Z		01
C109	US064100	Ceramic Capacitor-B (chip)	0.0100 50V K		01
-115	US064100	Ceramic Capacitor-B (chip)	0.0100 50V K		01
C116	UF038100	Electrolytic Cap. (chip)	100 16V		01
C117	UB446100	Ceramic Capacitor-F (chip)	F 1.0 16V Z		01
C118	US064100	Ceramic Capacitor-B (chip)	0.0100 50V K		01
C119	UF037470	Electrolytic Cap. (chip)	47 16V		01
C120	US063220	Ceramic Capacitor-B (chip)	2200P 50V K		01
C121	US063220	Ceramic Capacitor-B (chip)	2200P 50V K		01
C122	US135100	Ceramic Capacitor-F (chip)	0.1000 16V Z		01
-124	US135100	Ceramic Capacitor-F (chip)	0.1000 16V Z		01
D1	VZ016600	Diode	D3FP3		03
D2	VT332900	Diode	1SS355 TE-17		01
D3	VS201100	Diode	D1F60		01
D4	VS201100	Diode	D1F60		01
D5	VZ016600	Diode	D3FP3		03
D6	VT332900	Diode	1SS355 TE-17		01
D7	VT332900	Diode	1SS355 TE-17		01
D12	VT332900	Diode	1SS355 TE-17		01
D13	VT332900	Diode	1SS355 TE-17		01
D15	VS201100	Diode	D1F60		01
D16	VT332900	Diode	1SS355 TE-17		01
D17	VT332900	Diode	1SS355 TE-17		01
EM1	VR193800	LC Filter	STF-104ZB-TBM		01
EM2	VR193800	LC Filter	STF-104ZB-TBM		01
EM3	VR193800	LC Filter	STF-104ZB-TBM		01
EM4	V6196600	EMI Filter (chip)	NFM4516P13C204FT1		01
EM5	VR193800	LC Filter	STF-104ZB-TBM		01
EM6	V6196600	EMI Filter (chip)	NFM4516P13C204FT1		01
EM7	V6196600	EMI Filter (chip)	NFM4516P13C204FT1		01
EM8	VR193800	LC Filter	STF-104ZB-TBM		01
-10	VR193800	LC Filter	STF-104ZB-TBM		01
IC1	VN686000	Photo Coupler	PC410T		04
IC1	VR903700	Photo Coupler	HCPL-M600		04
IC2	XT441A00	IC	UPC2909T-E1	REGULATOR +9V	03
IC3	XT514A00	IC	SI-8050S(LF1103)	REGULATOR +5V	05

*: New Parts

RANK: Japan only

REF. NO.	PART NO.	DESCRIPTION		REMARKS	QTY	RANK
IC4	XI297A00	IC	TC74HCT04AF-T1	INVERTER		01
IC5	XW104A00	IC	MM74HC14SJX	INVERTER		01
IC6	XP263A00	IC	M5216FP-600C	OP AMP		03
IC6	XQ138A00	IC	NJM4556AMT1	OP AMP		03
IC7	XW110A00	IC	SN74HC157NSR	MULTIPLEXER		02
IC7	XY310A00	IC	MM74HC157SJX	MULTIPLEXER		01
IC8	XR682A00	IC	TC7S66F	BILATERAL SWITCH		01
IC10	XI686A00	IC	M62021FP	SYSTEM RESET		04
IC11	XQ178A00	IC	NJM4580E-T1	OP AMP		03
* IC12	XZ582100	IC	K3N4C1000D-GC	(WAVE)		
* IC13	XV189A00	IC	TC7W00FU	NAND		
IC14	XL096A00	IC	HD74HC74FPEL	D-FF		01
IC14	XW890A00	IC	TC74HC74AF(EL)	D-FF		01
IC14	XY153A00	IC	MM74HC74ASJX	D-FF		01
IC15	XS516A00	IC	UPC2933T-E1	REGURATOR +3.3V		03
IC16	XP867A00	IC	UPD63200GS-E1	DAC		07
IC17	XU947C00	IC	HG73C205AFD	SWX00B		09
IC18	XF291A00	IC	UPC4570G2	OP AMP		03
IC19	XJ598A00	IC	NJM78L05UA	REGURATOR +5V		02
IC20	XV077A00	IC	MSM514260C-60JS	DRAM 4M		07
IC20	XV839A00	IC	SDM4260CLU-6S	DRAM 4M		08
* IC21	XZ581C00	IC	643SV100	FLASH ROM		
IC22	XT138A00	IC	UPD431000AGW-70LL	SRAM		07
IC22	XV976A00	IC	M5M51008CFP-70H	SRAM		07
IC24	XT138A00	IC	UPD431000AGW-70LL	SRAM		07
IC24	XV976A00	IC	M5M51008CFP-70H	SRAM		07
IC25	XL096A00	IC	HD74HC74FPEL	D-FF		01
IC25	XW890A00	IC	TC74HC74AF(EL)	D-FF		01
IC25	XY153A00	IC	MM74HC74ASJX	D-FF		01
IC26	XS720A00	IC	TC74HC245AF	TRANSCEIVER		03
IC26	XV611A00	IC	HD74HC245FPV	TRANSCEIVER		03
IC26	XW107A00	IC	MM74HC245ASJX	TRANSCEIVER		03
IC27	XN883A00	IC	TC7W14FU	INVERTER		02
JK1	LB302260	Connector	HEC0470-01-630	DC IN		02
JK2	VS115400	Phone Jack	LGR4609-7000	PHONES		01
JK3	VS115400	Phone Jack	LGR4609-7000	OUTPUT L/MONO		01
JK4	VS115400	Phone Jack	LGR4609-7000	OUTPUT R		01
JK6	VK519000	DIN Connector	5P3 YKF51-50	MIDI IN/OUT		04
L1	VH746100	Coil	PLT09H-2003R			04
L2	VL139800	Chip Solid Inductance	BLM31A700SPT 70ohm			01
-4	VL139800	Chip Solid Inductance	BLM31A700SPT 70ohm			01
L5	VR579900	Chip Inductance	BK2125HS601-T			01
-8	VR579900	Chip Inductance	BK2125HS601-T			01
L9	VL139800	Chip Solid Inductance	BLM31A700SPT 70ohm			01
L10	VL139800	Chip Solid Inductance	BLM31A700SPT 70ohm			01
L11	VR579900	Chip Inductance	BK2125HS601-T			01
L12	VR579900	Chip Inductance	BK2125HS601-T			01
L13	VR243700	Chip Inductance	56U LEM2520 T 560J			01
-16	VR243700	Chip Inductance	56U LEM2520 T 560J			01
L23	V4678200	Coil	HP-022Z			05
L24	VR579900	Chip Inductance	BK2125HS601-T			01
-39	VR579900	Chip Inductance	BK2125HS601-T			01
RA1	RE044680	Resistor Array	68X4			01
-10	RE044680	Resistor Array	68X4			01
RA11	RE047220	Resistor Array	22KX4			01
RA12	RE044680	Resistor Array	68X4			01
RA13	RE044680	Resistor Array	68X4			01
RA14	RE047220	Resistor Array	22KX4			01
RA15	RE044680	Resistor Array	68X4			01
RA16	RE047220	Resistor Array	22KX4			01
RA17	RE044680	Resistor Array	68X4			01
-27	RE044680	Resistor Array	68X4			01
RA28	RE047220	Resistor Array	22KX4			01
-31	RE047220	Resistor Array	22KX4			01
RA34	RE047220	Resistor Array	22KX4			01
RA35	RE047220	Resistor Array	22KX4			01
R1	RD357220	Carbon Resistor (chip)	22K 63M J			01
R2	RD357220	Carbon Resistor (chip)	22K 63M J			01
R3	RD356100	Carbon Resistor (chip)	1.0K 63M J			01
R4	RD356100	Carbon Resistor (chip)	1.0K 63M J			01

*: New Parts

RANK: Japan only

REF NO.	PART NO.	DESCRIPTION	REMARKS	QTY	RANK
R5	RD356470	Carbon Resistor (chip)	4.7K 63M J		01
R6	RD356470	Carbon Resistor (chip)	4.7K 63M J		01
R7	RD355220	Carbon Resistor (chip)	220 63M J		01
R8	RD355220	Carbon Resistor (chip)	220 63M J		01
R9	RD355220	Carbon Resistor (chip)	220 63M J		01
R10	RD356470	Carbon Resistor (chip)	4.7K 63M J		01
R11	RD154470	Carbon Resistor (chip)	47.0 1/4 J		01
R12	RD154470	Carbon Resistor (chip)	47.0 1/4 J		01
R13	RD357100	Carbon Resistor (chip)	10K 63M J		01
R14	RD357100	Carbon Resistor (chip)	10K 63M J		01
R15	RD357100	Carbon Resistor (chip)	10K 63M J		01
R16	RD355220	Carbon Resistor (chip)	220 63M J		01
R17	RD355220	Carbon Resistor (chip)	220 63M J		01
R18	RD357100	Carbon Resistor (chip)	10K 63M J		01
R19	RD357100	Carbon Resistor (chip)	10K 63M J		01
R20	RD356100	Carbon Resistor (chip)	1.0K 63M J		01
R21	RD357220	Carbon Resistor (chip)	22K 63M J		01
R22	RD357240	Carbon Resistor (chip)	24K 63M J		01
R23	RD357240	Carbon Resistor (chip)	24K 63M J		01
R24	RD355100	Carbon Resistor (chip)	100 63M J		01
-26	RD355100	Carbon Resistor (chip)	100 63M J		01
R27	RD350000	Carbon Resistor (chip)	0 63M J		01
R28	RD350000	Carbon Resistor (chip)	0 63M J		01
R29	RD355100	Carbon Resistor (chip)	100 63M J		01
-31	RD355100	Carbon Resistor (chip)	100 63M J		01
R32	RD357100	Carbon Resistor (chip)	10K 63M J		01
R33	RD357100	Carbon Resistor (chip)	10K 63M J		01
R34	RD357220	Carbon Resistor (chip)	22K 63M J		01
R35	RD355100	Carbon Resistor (chip)	100 63M J		01
R36	RD357100	Carbon Resistor (chip)	10K 63M J		01
-38	RD357100	Carbon Resistor (chip)	10K 63M J		01
R39	RD355100	Carbon Resistor (chip)	100 63M J		01
R42	RD356100	Carbon Resistor (chip)	1.0K 63M J		01
R43	RD356100	Carbon Resistor (chip)	1.0K 63M J		01
R44	RD357220	Carbon Resistor (chip)	22K 63M J		01
R45	RD355220	Carbon Resistor (chip)	220 63M J		01
R46	RD357220	Carbon Resistor (chip)	22K 63M J		01
R47	RD356680	Carbon Resistor (chip)	6.8K 63M J		01
R48	RD356680	Carbon Resistor (chip)	6.8K 63M J		01
R49	RD350000	Carbon Resistor (chip)	0 63M J		01
R50	RD357120	Carbon Resistor (chip)	12K 63M J		01
R51	RD357120	Carbon Resistor (chip)	12K 63M J		01
R53	RD356680	Carbon Resistor (chip)	6.8K 63M J		01
R54	RD356680	Carbon Resistor (chip)	6.8K 63M J		01
R55	RD356470	Carbon Resistor (chip)	4.7K 63M J		01
R56	RD350000	Carbon Resistor (chip)	0 63M J		01
R58	RD358100	Carbon Resistor (chip)	100K 63M J		01
R59	RD357330	Carbon Resistor (chip)	33K 63M J		01
R60	RD155390	Carbon Resistor (chip)	390.0 1/4 J		01
-64	RD155390	Carbon Resistor (chip)	390.0 1/4 J		01
R65	RD350000	Carbon Resistor (chip)	0 63M J		01
R66	RD356330	Carbon Resistor (chip)	3.3K 63M J		01
R67	RD350000	Carbon Resistor (chip)	0 63M J		01
R68	RD355330	Carbon Resistor (chip)	330 63M J		01
R69	RD354100	Carbon Resistor (chip)	10 63M J		01
R70	RD355150	Carbon Resistor (chip)	150 63M J		01
R72	RD356100	Carbon Resistor (chip)	1.0K 63M J		01
R73	RD155470	Carbon Resistor (chip)	470.0 1/4 J		01
R74	RD356100	Carbon Resistor (chip)	1.0K 63M J		01
R75	RD354560	Carbon Resistor (chip)	56 63M J		01
R76	RD357100	Carbon Resistor (chip)	10K 63M J		01
R77	RD354560	Carbon Resistor (chip)	56 63M J		01
R78	RD356150	Carbon Resistor (chip)	1.5K 63M J		01
R79	RD357100	Carbon Resistor (chip)	10K 63M J		01
R80	RD357220	Carbon Resistor (chip)	22K 63M J		01
R81	RD354560	Carbon Resistor (chip)	56 63M J		01
R82	RD357220	Carbon Resistor (chip)	22K 63M J		01
R83	RD354560	Carbon Resistor (chip)	56 63M J		01
R84	RD354560	Carbon Resistor (chip)	56 63M J		01
R85	RD357220	Carbon Resistor (chip)	22K 63M J		01

*: New Parts

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REF NO.	PART NO.	DESCRIPTION	REMARKS	QTY	RANK
R86	RD357220	Carbon Resistor (chip)	22K 63M J		01
R87	RD354560	Carbon Resistor (chip)	56 63M J		01
R88	RD354560	Carbon Resistor (chip)	56 63M J		01
R89	RD354560	Carbon Resistor (chip)	56 63M J		01
R92	RD357220	Carbon Resistor (chip)	22K 63M J		01
-94	RD357220	Carbon Resistor (chip)	22K 63M J		01
R95	RD350000	Carbon Resistor (chip)	0 63M J		01
R98	RD350000	Carbon Resistor (chip)	0 63M J		01
R100	RD357220	Carbon Resistor (chip)	22K 63M J		01
-102	RD357220	Carbon Resistor (chip)	22K 63M J		01
R103	RD355220	Carbon Resistor (chip)	220 63M J		01
R104	RD356100	Carbon Resistor (chip)	1.0K 63M J		01
R105	RD356100	Carbon Resistor (chip)	1.0K 63M J		01
R106	RD358100	Carbon Resistor (chip)	100K 63M J		01
R107	RD358100	Carbon Resistor (chip)	100K 63M J		01
R108	RD357220	Carbon Resistor (chip)	22K 63M J		01
R109	RD357220	Carbon Resistor (chip)	22K 63M J		01
R110	RD355100	Carbon Resistor (chip)	100 63M J		01
R111	RD354560	Carbon Resistor (chip)	56 63M J		01
R112	RD357220	Carbon Resistor (chip)	22K 63M J		01
-115	RD357220	Carbon Resistor (chip)	22K 63M J		01
R116	RD350000	Carbon Resistor (chip)	0 63M J		01
R117	RD350000	Carbon Resistor (chip)	0 63M J		01
SW1	V4577800	Push Switch	SDKLA10200	STANDBY ON	03
TH1	VV111400	Poly Switch	SMD075-2 SMD	for current limitation	03
TR1	VD303700	Transistor	2SC3326 A,B TE85R		01
TR2	VD303700	Transistor	2SC3326 A,B TE85R		01
TR3	VJ927200	Transistor	2SA1162 O,Y		01
TR4	VD303700	Transistor	2SC3326 A,B TE85R		01
X1	VZ703600	Quartz Crystal Unit	8.4672M SMD-49		03
ZD1	VU171500	Zener Diode	UDZ 3.6BTE-17 3.6V		01
* CN1	V4886400	Circuit Board	LED J	(XZ192D0)	
LD1	--	Connector	HLW 16P SE	(V675910)	
LD2	V5640100	LED Display	LB-602VA2		04
LD3	V5640100	LED Display	LB-602VA2		04
LD4	V3990400	LED	TLOU1008	SONG	01
LD5	V3990400	LED	TLOU1008	PITCH	01
LD6	V3990400	LED	TLOU1008	INST SEL	01
LD7	V3990400	LED	TLOU1008	PATTERN	01
LD8	V3990400	LED	TLOU1008	GATE TIME	01
LD9	V3990400	LED	TLOU1008	BPM	01
LD10	V3990400	LED	TLOU1008	STORE	01
LD11	V3990400	LED	TLOU1008	VELOCITY	01
				BEAT	01
* 20	V5830700	circuit Board	PN J	(XZ191C0)	
CN1	V6679800	LED Spacer			
CN2	VS666700	Connector	SLW 16P TE		02
CN3	--	Connector Assembly	15P-220	(VZ29860)	
CN4	--	Connector Assembly	4P-380	(VU65380)	
CN5	--	Connector Assembly	6P-200	(V636120)	
CN6	VB390300	Connector Base Post	PH- 7P TE		01
C1	VB390300	Connector Base Post	PH- 7P TE		01
-9	US135100	Ceramic Capacitor-F (chip)	0.1000 16V Z		01
C10	US135100	Ceramic Capacitor-F (chip)	0.1000 16V Z		01
C11	UF138220	Electrolytic Cap. (chip)	220 16V UUR1C2		01
-17	US135100	Ceramic Capacitor-F (chip)	0.1000 16V Z		01
C18	US135100	Ceramic Capacitor-F (chip)	0.1000 16V Z		01
C19	UF037470	Electrolytic Cap. (chip)	47 16V		01
C20	UF037470	Electrolytic Cap. (chip)	47 16V		01
C21	US064100	Ceramic Capacitor-B (chip)	0.0100 50V K		01
-35	US064100	Ceramic Capacitor-B (chip)	0.0100 50V K		01
C36	US064100	Ceramic Capacitor-B (chip)	0.0100 50V K		01
C37	UF038100	Electrolytic Cap. (chip)	100 16V		01
C38	UF038100	Electrolytic Cap. (chip)	100 16V		01
D1	VT332900	Diode	1SS355 TE-17		01
-51	VT332900	Diode	1SS355 TE-17		01
EC1	VV637500	Rotary Encoder	REB161(9x5)PVB15FH	DATA	03

*: New Parts

RANK: Japan only

REF NO.	PART NO.	DESCRIPTION	REMARKS	QTY	RANK
IC1	XU533A00	IC	HD74HC273FP	D-FF	03
IC1	XY198A00	IC	MM74HC273SJX	D-FF	03
IC2	XU533A00	IC	HD74HC273FP	D-FF	03
IC2	XY198A00	IC	MM74HC273SJX	D-FF	03
IC3	XS720A00	IC	TC74HC245AF	TRANSCEIVER	03
IC3	XV611A00	IC	HD74HC245FPV	TRANSCEIVER	03
IC3	XW107A00	IC	MM74HC245ASJX	TRANSCEIVER	03
IC4	XU533A00	IC	HD74HC273FP	D-FF	03
IC4	XY198A00	IC	MM74HC273SJX	D-FF	03
IC5	XU533A00	IC	HD74HC273FP	D-FF	03
IC5	XY198A00	IC	MM74HC273SJX	D-FF	03
IC6	XU533A00	IC	HD74HC273FP	D-FF	03
IC6	XY198A00	IC	MM74HC273SJX	D-FF	03
IC7	XP373A00	IC	HD74HC4051FPFL	MULTIPLEXER	02
IC7	XY549A00	IC	TC74HC4051AFEL	MULTIPLEXER	02
* IC7	XY550A00	IC	MM74HC4051SJX	MULTIPLEXER	
IC8	XP373A00	IC	HD74HC4051FPFL	MULTIPLEXER	02
IC8	XY549A00	IC	TC74HC4051AFEL	MULTIPLEXER	02
* IC8	XY550A00	IC	MM74HC4051SJX	MULTIPLEXER	
IC9	XR294A00	IC	NJM3414AM(T1)	OP AMP	02
LD1	V3990400	LED	TLOU1008	REC	01
LD2	V3990400	LED	TLOU1008	PLAY/STOP	01
LD3	V3990400	LED	TLOU1008	KEYBOARD	01
LD4	V3990400	LED	TLOU1008	TG TRACK	01
LD5	V3990400	LED	TLOU1008	SWING	01
LD6	V3990400	LED	TLOU1008	OCT<<	01
LD7	V3990400	LED	TLOU1008	TAP	01
LD8	V3990400	LED	TLOU1008	PATTERN SELECT	01
LD9	V3990400	LED	TLOU1008	SFX TRACK	01
LD10	V3990400	LED	TLOU1008	REVERS	01
LD11	V3990400	LED	TLOU1008	OCT>>	01
* LD12	V6486700	LED	LN282RPX RED	1	
* LD13	V6486700	LED	LN282RPX RED	2	
* LD14	V6486700	LED	LN282RPX RED	3	
LD15	V3990400	LED	TLOU1008	STEP 1-8	01
LD16	V3990400	LED	TLOU1008	STEP 9-16	01
* LD17	V6487000	LED	LN282RPX-(TX3) RED	POLY	
* LD18	V6487000	LED	LN282RPX-(TX3) RED	MONO	
* LD19	V6487000	LED	LN282RPX-(TX3) RED	UNISON	
LD20	V3990400	LED	TLOU1008	1	01
LD21	V3990400	LED	TLOU1008	9	01
LD27	V3990400	LED	TLOU1008	2	01
LD28	V3990400	LED	TLOU1008	10	01
LD29	V3990400	LED	TLOU1008	3	01
LD30	V3990400	LED	TLOU1008	11	01
* LD31	V6487000	LED	LN282RPX-(TX3) RED	3	
* LD32	V6487000	LED	LN282RPX-(TX3) RED	2	
* LD34	V6487000	LED	LN282RPX-(TX3) RED	ALL	
LD35	V3990400	LED	TLOU1008	4	01
LD36	V3990400	LED	TLOU1008	12	01
LD37	V3990400	LED	TLOU1008	5	01
* LD38	V6487000	LED	LN282RPX-(TX3) RED	WHIT	
* LD39	V6487000	LED	LN282RPX-(TX3) RED	UP	
* LD40	V6487000	LED	LN282RPX-(TX3) RED	DOWN	
* LD41	V6487000	LED	LN282RPX-(TX3) RED	PITCH	
* LD42	V6487000	LED	LN282RPX-(TX3) RED	VARI	
LD43	V3990400	LED	TLOU1008	13	01
LD44	VU067800	LED	SEL6210S-TP5 RED	1	01
LD45	VU067800	LED	SEL6210S-TP5 RED	2	01
LD46	V3990400	LED	TLOU1008	6	01
LD47	V3990400	LED	TLOU1008	14	01
* LD48	V6487000	LED	LN282RPX-(TX3) RED	DELAY	
* LD49	V6487000	LED	LN282RPX-(TX3) RED	FLGR	
* LD50	V6487000	LED	LN282RPX-(TX3) RED	PHSR	
* LD51	V6487000	LED	LN282RPX-(TX3) RED	OD+AMP	
LD52	V3990400	LED	TLOU1008	7	01
LD53	V3990400	LED	TLOU1008	15	01
LD54	V3990400	LED	TLOU1008	8	01
LD55	VU067800	LED	SEL6210S-TP5 RED	1	01
LD56	VU067800	LED	SEL6210S-TP5 RED	3	01

*: New Parts

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REF NO.	PART NO.	DESCRIPTION		REMARKS	QTY	RANK
LD57	V3990400	LED	TLOU1008		16	01
LD58	V6487000	LED	LN282RPX-(TX3) RED		FEG	
LD59	V6487000	LED	LN282RPX-(TX3) RED		AEG	
LD60	VU067800	LED	SEL6210S-TP5 RED		2	01
LD61	VU067800	LED	SEL6210S-TP5 RED		4	01
LD62	VU067800	LED	SEL6210S-TP5 RED		SWITCH	01
RA1	RE047470	Resistor Array	47KX4			01
RA2	RE047220	Resistor Array	22KX4			01
RA3	RE047470	Resistor Array	22KX4			01
RA4	RE047220	Resistor Array	22KX4			01
-6	RE047220	Resistor Array	22KX4			01
R1	RD357220	Carbon Resistor (chip)	22K 63M J			01
R2	RD154680	Carbon Resistor (chip)	68.0 1/4 J			01
-17	RD154680	Carbon Resistor (chip)	68.0 1/4 J			01
R18	VI197400	Carbon Resistor (chip)	10.0K 1/10 D			01
R19	VI197400	Carbon Resistor (chip)	10.0K 1/10 D			01
R20	RD356100	Carbon Resistor (chip)	1.0K 63M J			01
-35	RD356100	Carbon Resistor (chip)	1.0K 63M J			01
SW1	VV439800	Tact Switch	SKQNAJ	SONG		01
SW2	VV439800	Tact Switch	SKQNAJ	SHOW VALUE		01
SW8	VV439800	Tact Switch	SKQNAJ	PATTERN		01
SW9	VV439800	Tact Switch	SKQNAJ	STORE		01
SW15	VV439800	Tact Switch	SKQNAJ	EXIT		01
SW20	VZ085500	Tact Switch	SKQNAM004A	KEY ASGN		01
SW21	VZ085500	Tact Switch	SKQNAM004A	DETAIL		01
SW24	VZ085500	Tact Switch	SKQNAM004A	ALGORITHM TYPE		01
SW28	VZ085500	Tact Switch	SKQNAM004A	MODULATOR SELECT		01
SW32	VZ085500	Tact Switch	SKQNAM004A	NOISE OSC TYPE		01
SW35	VV600200	Tact Switch	SKQNAHD010	1		01
SW36	VV600200	Tact Switch	SKQNAHD010	2		01
SW39	VZ085500	Tact Switch	SKQNAM004A	EFFECT TYPE		01
SW41	VZ085500	Tact Switch	SKQNAM004A	LENGTH		01
SW42	VZ085500	Tact Switch	SKQNAM004A	MODE		01
SW45	VV600200	Tact Switch	SKQNAHD010	1		01
SW46	VV600200	Tact Switch	SKQNAHD010	3		01
SW47	VZ085500	Tact Switch	SKQNAM004A	EG SELECT		01
SW49	VV600200	Tact Switch	SKQNAHD010	2		01
SW50	VV600200	Tact Switch	SKQNAHD010	4		01
SW51	VV600200	Tact Switch	SKQNAHD010	SWITCH		01
TA1	VQ248500	Transistor Array	TD62381F			04
TA2	VQ248500	Transistor Array	TD62381F			04
TA3	VT943400	Transistor Array	TD62785F(TP1)			04
VR1	V0075900	Rotary Variable Resistor	B 10.0K RK11K1130	PORTAMENTO		02
VR2	V0075900	Rotary Variable Resistor	B 10.0K RK11K1130	LFO SPED		02
VR3	V6788200	Rotary Variable Resistor	B 10.0K RK11K1130	HARMONIC		02
VR4	V0075900	Rotary Variable Resistor	B 10.0K RK11K1130	FM DEPTH		02
VR5	V0075900	Rotary Variable Resistor	B 10.0K RK11K1130	EG ATTACK		02
VR6	V0075900	Rotary Variable Resistor	B 10.0K RK11K1130	DECAY		02
VR7	V0075900	Rotary Variable Resistor	B 10.0K RK11K1130	SCENE		02
VR8	V0075900	Rotary Variable Resistor	B 10.0K RK11K1130	EG DECAY		02
VR9	V0075900	Rotary Variable Resistor	B 10.0K RK11K1130	NOISE LEVEL		02
VR10	V0075900	Rotary Variable Resistor	B 10.0K RK11K1130	EG SUSTAIN		02
VR11	V0075900	Rotary Variable Resistor	B 10.0K RK11K1130	EG RELEASE		02
VR12	V0075900	Rotary Variable Resistor	B 10.0K RK11K1130	CUTOFF/TYPE		02
VR13	V0075900	Rotary Variable Resistor	B 10.0K RK11K1130	PARAM/PAN		02
VR14	V0075900	Rotary Variable Resistor	B 10.0K RK11K1130	RESONANCE		02
VR15	V0075900	Rotary Variable Resistor	B 10.0K RK11K1130	WET/VOL		02
VR16	V0075900	Rotary Variable Resistor	B 10.0K RK11K1130	FEG DEPTH		02
VR17	VY691300	Rotary Variable Resistor	A 10.0K RK14K12D	VOLUME		03
	V5135200	Circuit Board	PLG150-DX	(XY232A0)		31
C2	UB245100	Monolithic Ceramic Cap.	F 0.100 25V Z			01
-4	UB245100	Monolithic Ceramic Cap.	F 0.100 25V Z			01
C5	UB012470	Monolithic Ceramic Cap.	B 470P 50V K			01
C6	UB245100	Monolithic Ceramic Cap.	F 0.100 25V Z			01
C7	UB245100	Monolithic Ceramic Cap.	F 0.100 25V Z			01
C8	UB051220	Monolithic Ceramic Cap.	SL 22P 50V J			01
C9	UB051220	Monolithic Ceramic Cap.	SL 22P 50V J			01
C10	UB245100	Monolithic Ceramic Cap.	F 0.100 25V Z			01
-21	UB245100	Monolithic Ceramic Cap.	F 0.100 25V Z			01

*: New Parts

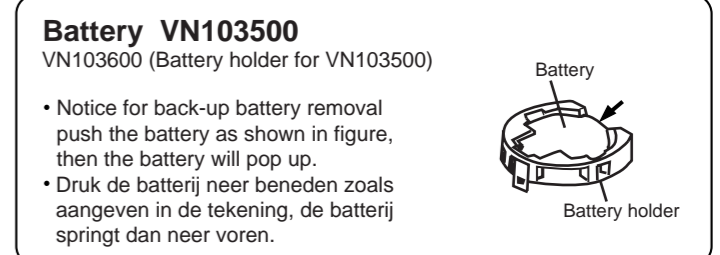
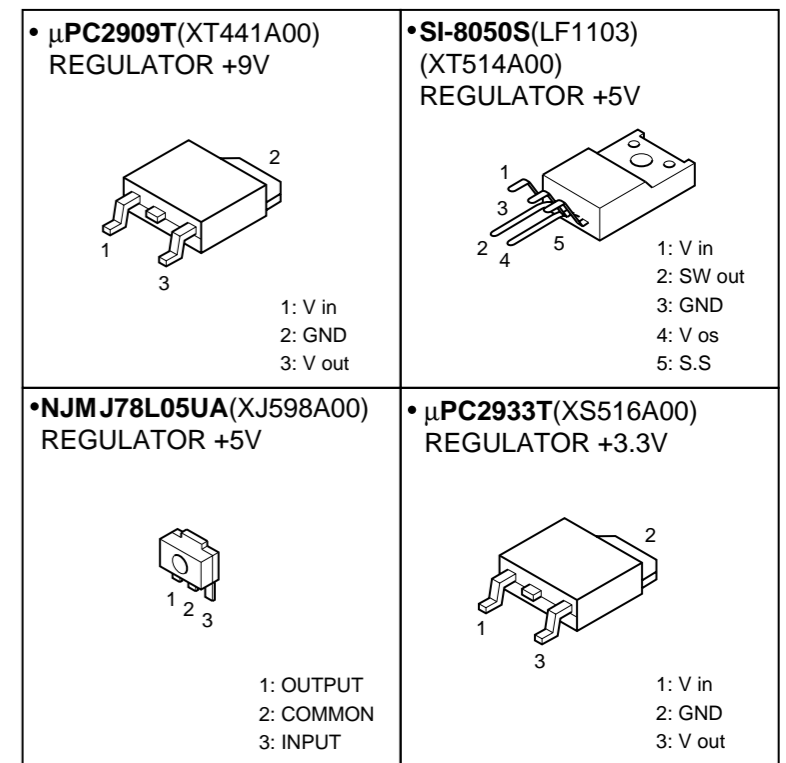
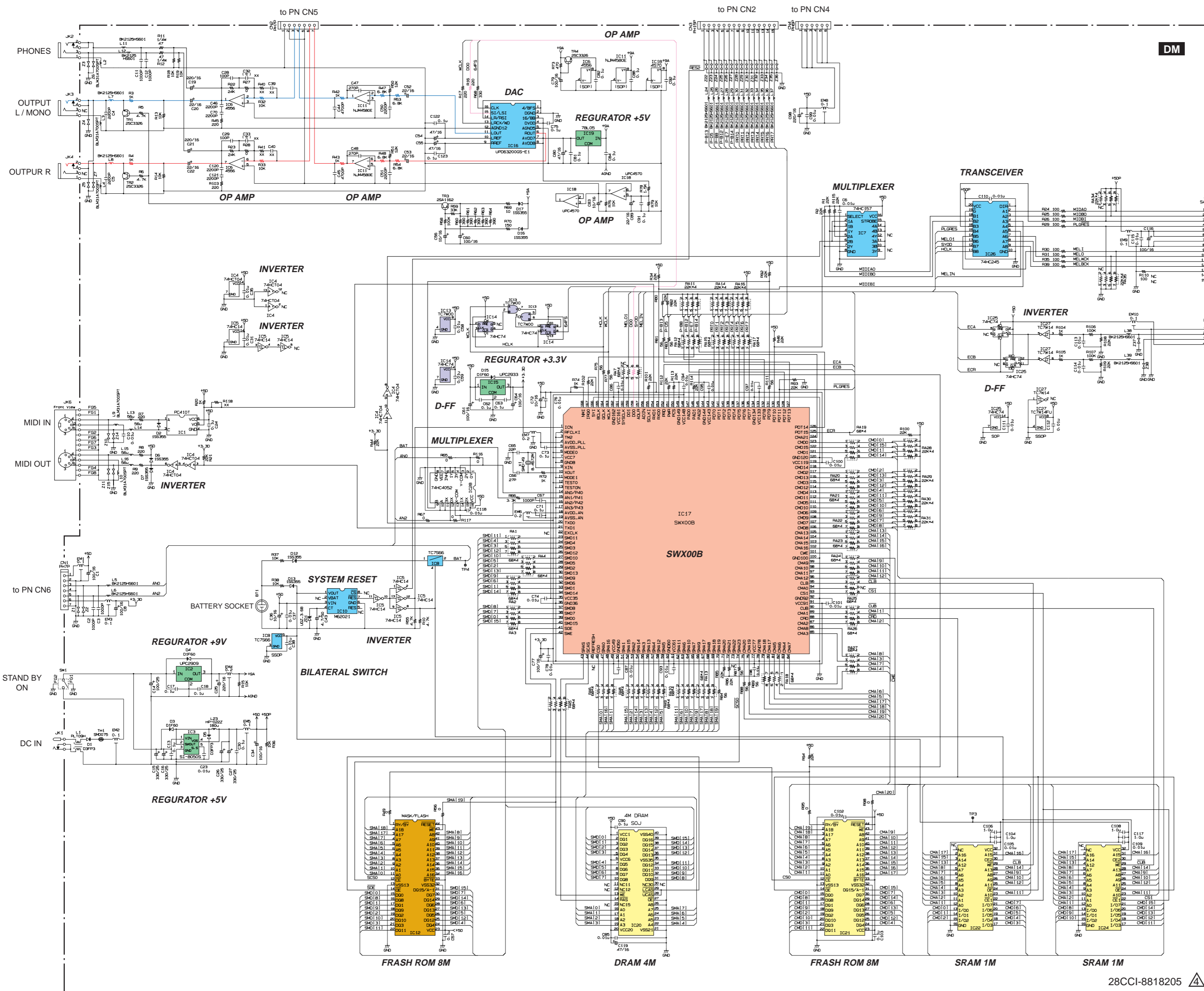
RANK: Japan only

REF NO.	PART NO.	DESCRIPTION		REMARKS	QTY	RANK
C22	UB051150	Monolithic Ceramic Cap.	SL 15P 50V J			01
C23	UB445470	Monolithic Ceramic Cap.	F 0.470 16V Z			01
C24	UB044100	Monolithic Ceramic Cap.	F 0.010 50V Z			01
C25	UB245100	Monolithic Ceramic Cap.	F 0.100 25V Z			01
C26	VY722900	Tantalum Capacitor	10 10V M			
* C27	UB245100	Monolithic Ceramic Cap.	F 0.100 25V Z			01
-36	UB245100	Monolithic Ceramic Cap.	F 0.100 25V Z			01
CN1	VE389600	Base Post Connector	53015 15P SE			01
IC1	XD657A00	IC	TC74HC14AF-TP1	INVERTER		02
IC2	XS936A00	IC	HD6437043E00F	CPU		11
* IC3	XY259B00	IC	584V100	FLASH ROM H		
* IC4	XY260B00	IC	584V100	FLASH ROM L		
IC5	XV077B00	IC	MSM514260C-60JS	DRAM 4M		07
IC6	XS992A00	IC	LC21011B-Z87	GATE ARRAY		06
IC7	XP268A00	IC	YSS233-F	MDSP		12
IC8	XT329A00	IC	YMP706-F	AWM		16
IC9	XR339A00	IC	TC9246F-TEL	PLL		04
IC10	XN243A00	IC	TC7W74FU	D-FF		02
RA-1	RE047100	Resistor Array	10KX4			01
9	RE047100	Resistor Array	10KX4			01
R1	RD257100	Carbon Resistor (chip)	10.0K 0.1 J			01
R3	RD257100	Carbon Resistor (chip)	10.0K 0.1 J			01
R4	RD257100	Carbon Resistor (chip)	10.0K 0.1 J			01
R5	RD256330	Carbon Resistor (chip)	3.3K 0.1 J			01
R6	RD255220	Carbon Resistor (chip)	220.0 0.1 J			01
R7	RD255680	Carbon Resistor (chip)	680.0 0.1 J			01
R9	RD250000	Carbon Resistor (chip)	0.0 0.0 J			01
R11	RD250000	Carbon Resistor (chip)	0.0 0.0 J			01
R12	RD250000	Carbon Resistor (chip)	0.0 0.0 J			01
R14	RD250000	Carbon Resistor (chip)	0.0 0.0 J			01
R16	RD250000	Carbon Resistor (chip)	0.0 0.0 J			01
R17	RD250000	Carbon Resistor (chip)	0.0 0.0 J			01
R18	RD254470	Carbon Resistor (chip)	47.0 0.1 J			01
R19	RD255100	Carbon Resistor (chip)	100.0 0.1 J			01
R20	RD258220	Carbon Resistor (chip)	220.0K 0.1 J			01
R21	RD256150	Carbon Resistor (chip)	1.5K 0.1 J			01
RA10	RE047100	Resistor Array	10KX4			01
RA11	RE047100	Resistor Array	10KX4			01
RA12	RE047100	Resistor Array	10KX4			01
* X1	VZ363600	Quartz Crystal Unit	6.000M AT-49			
* V6554200	V6554200	Rubber Contact		PLAY, TAP, REC, SWING, REVERSE, SHIFT, OCT<<, OCT>>, KEYBOARD, PATTERN SELECT, SYNTH TRACK, RHYTHM TRACK STEP 1-8,STEP 9-16, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 16		
* MFA16080	MFA16080	Connector Assembly	16P 80mm P=1.0			
△	VT368600	AC Adapter	PA-3B JP	J		09
△	VT368700	AC Adapter	PA-3B UC	U		
△	VT368800	AC Adapter	PA-3B CEE	E		08

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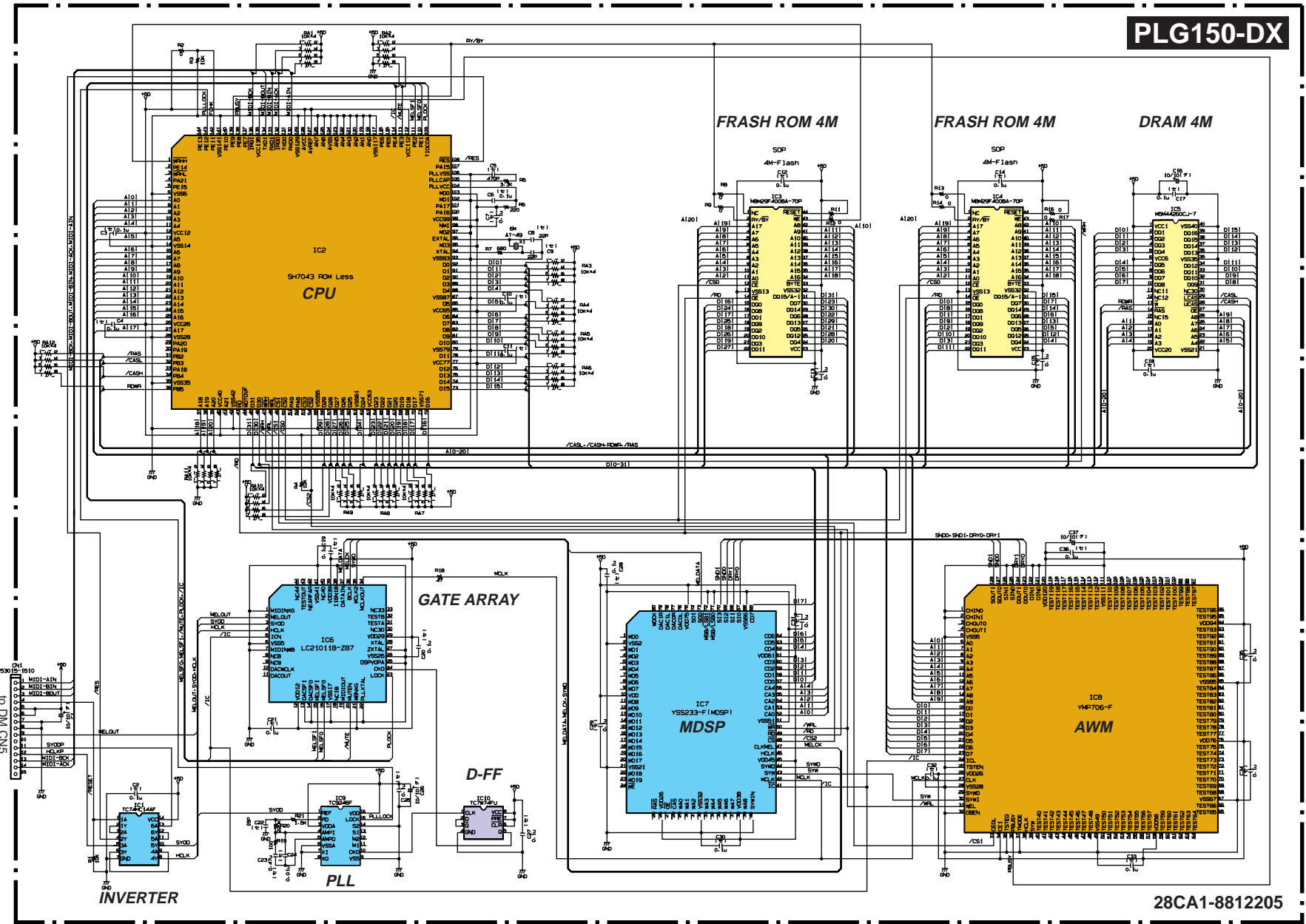
DX200 OVERALL CIRCUIT DIAGRAM (DM)



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

DX200 OVERALL CIRCUIT DIAGRAM (PLG150-DX)

PLG150-DX



28CA1-8812205