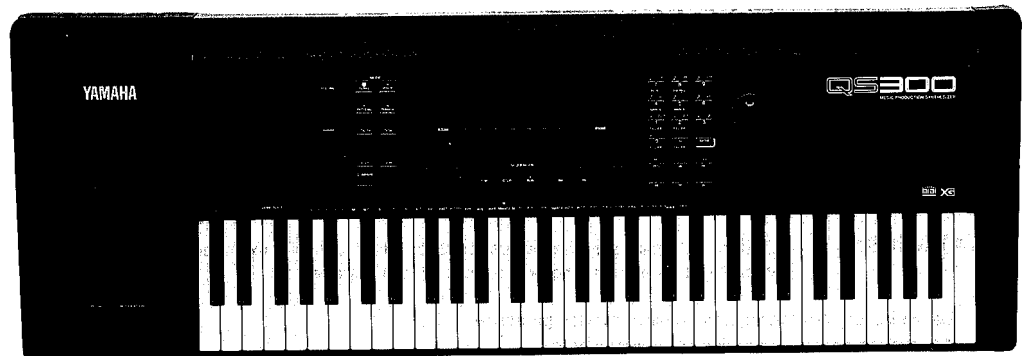


MUSIC SYNTHESIZER

QS300

SERVICE MANUAL



■ CONTENTS (目次)

SPECIFICATIONS (総合仕様)	2/3
PANEL LAYOUT (パネルレイアウト)	4
BLOCK DIAGRAM (ブロックダイアグラム)	6
CIRCUIT BOARD LAYOUT (ユニットレイアウト)	8
DISASSEMBLY PROCEDURE (分解手順)	12
LSI PIN DESCRIPTION (LSI端子機能表)	17
IC BLOCK DIAGRAM (ICブロック図)	20
CIRCUIT BOARDS (シート基板図)	22
TEST PROGRAM (テストプログラム)	32/40
WARNING AND ERROR MESSAGES (エラーメッセージ) ..	48/50
MIDI DATA FORMAT	52
MIDI IMPLEMENTATION CHART	70
PARTS LIST	

IMPORTANT NOTICE

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

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

IMPORTANT: The 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.

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 battery replacement to qualified service personnel.
- Always replace with batteries of the same type.
- When installing on the PC board, 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.
Udskiftning ma kun foretages af en sagkyndig, og som beskrevet i servicemanualen.

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.

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

■ SPECIFICATIONS

Tone Generator

Type	AWM2 (Advanced Wave Memory 2)
Maximum Polyphony	32 notes
System Module	Normal (XG), TG-B (TG300B)
Multi-timbral Capacity	Song mode: 24 (16 for Sequencer tracks + 8 for Pattern tracks) Pattern mode: 8
Voices	XG: 480, and 11 drum kits TG300B: 579 and 10 drum kits Preset: 128 User: 128, and 1 drum kit

Sequencer

Tracks	Song mode: 19 (Tracks 1 — 16, Pattern, Chord, Tempo) Pattern mode: 8 (Tracks 1 — 8) Phrase mode: 1
Data Capacity	Approx. 86,000 notes 10 Songs 100 Styles x 8 Sections (800 Patterns) 100 User Phrases
Preset Phrases	3093 Preset Styles 100 Styles x 8 Sections(800 Patterns)
Record Modes	Realtime, Step, Punch-in, Edit Insert
Preset Chords	28 (including "Thru")
Note Resolution	96 clocks/quarter note
Edit modes	Song Edit, Phrase Edit
Jobs	Song: 24 Pattern: 7 Phrase: 15
Song Chain	10 Songs
Sequence File Format	SMF (Standard MIDI File), ESEQ, QY300

General

Keyboard	61 keys, with initial touch and after touch
Display	240 x 64 dot graphic liquid crystal display (backlit, with contrast control)
External Memory	3.5" 2DD/2HD-type floppy disk drive
Connectors	PHONES, OUTPUT (L/MONO, R), FOOT VOLUME, FOOT CONTROLLER, SUSTAIN, MIDI IN/OUT/THRU, AC INLET
Output Level	PHONES: +7.0 dBm (33 ohm) Main OUTPUT: +6.5 dBm (10 kohm)
Power	Consumption: 20 W Requirements: U;120V,OTHER;220~240V
Dimensions (W x D x H)	1067 x 371 x 121 mm (42" x 14-5/8" x 4-3/4")
Weight	13.0 kg (28 lbs., 10 oz.)
Included Accessories	Factory Set & Demonstration Disk, Owner's Manual, power cord

■ 総合仕様

シンセサイザー部

鍵盤 61鍵(イニシャルタッチ/アフタータッチ付き)

音源部

音源方式	AWM2音源	
最大同時発音数	32音	
マルチティンバー数		
ソングモード	:24マルチ(シーケンストラック16+パターン8)	
パターンモード	:8マルチ	
フレーズモード(DVA付き)	:シングル	
プリセット音色数		
ノーマルボイス	トータル	932
	XG	480
	TG300B	579
ドラムボイス	トータル	22
	XG	11
	TG300B	10
エフェクター種類	リバーブ	11
	コーラス	11
	バリエーション	43

シーケンサー部

メモリー容量	約86,000音(420KB)
音符分解能	4分音符/96
最大同時発音数	32音
テンポ	25.0~300.0
レコーディング方式	リアルタイムレコーディング、パンチレコーディング、ステップレコーディング
トラック数	
ソング	:19トラック(TR1-TR16、パターン、コード、テンポ)
パターン	:8トラック(TR1-TR8)
フレーズ	:1トラック
ソング	10ソング(チェーンプレイ可能)
パターン数	100プリセットスタイル×8セクション(800プリセットパターン) 100ユーザースタイル×8セクション(800ユーザーパターン)
フレーズ数	3,093プリセットフレーズ 100ユーザーフレーズ
コードプリセット	325種類(スルーを含む)
エディット	
ボイスエディット	(コモンエディット、エレメントエディット)
ドラムボイスエディット	
ソングエディット	
パターンパッチ	
フレーズエディット	
ジョブ	
ソングジョブ	:24
パターンジョブ	:7
フレーズジョブ	:15
プレイエフェクト	
クオンタイズ、スイング、トランスポーズ、クロックシフト、ペロシティモディファイ、ゲートタイムモディファイ	
フィンガードコード機能	
コードルート、コードタイプ、オンベース、オリジナルベース	
シーケンスフォーマット	
QY300オリジナルシーケンスフォーマット、ESEQ、SMF	

操作子

電源スイッチ(POWER ON/OFF)
 ボリュームスライダー(VOLUME)
 ピッチベンドホイール
 モジュレーションホイール
 モードボタン([SONG]、[VOICE]、[PATTERN]、[PHRASE]、[UTILITY]、[DISK])
 サブモードボタン([EDIT]、[JOB]、[STORE])
 ファンクションボタン([F1]~[F8])
 [SHIFT]×1、[EXIT]×1
 シーケンサーボタン([RECORD]、[TOP]、[STOP]、[RUN])
 早送り、巻き戻しボタン([▶]、[◀])
 ダイヤル
 データエントリーボタン([DEC/NO]、[INC/YES])
 カーソルボタン([▲]、[▼]、[◀]、[▶])
 テンキー([0]~[9]、[-])、エンターボタン([ENTER])

ディスプレイ(LCD)

64×240ドットグラフィックLCD(バックライト、コントラスト調整機能付き)

LED

MODE×4(赤)
 REC×1(赤)
 RUN×1(緑)

接続端子

PHONES(ステレオ標準フォンジャック)
 定格出力: +7.0 ±2 dBm(出力インピーダンス 33 Ω)
 OUTPUT(標準フォンジャック)×2 (L/MONO, R)
 定格出力: +6.5 ±2 dBm(出力インピーダンス 10 k Ω)
 FOOT CONTROLLER
 FOOT VOLUME
 SUSTAIN
 AC INLET
 MIDI×3(IN, OUT, THRU)

フロッピーディスクドライブ

3.5インチ2HD(MF2HD)および3.5インチ2DD(MF2DD)の両タイプに対応

電源

AC: 100 V (7 W)

寸法

1,067(W)×371(D)×121(H) (mm)

重量

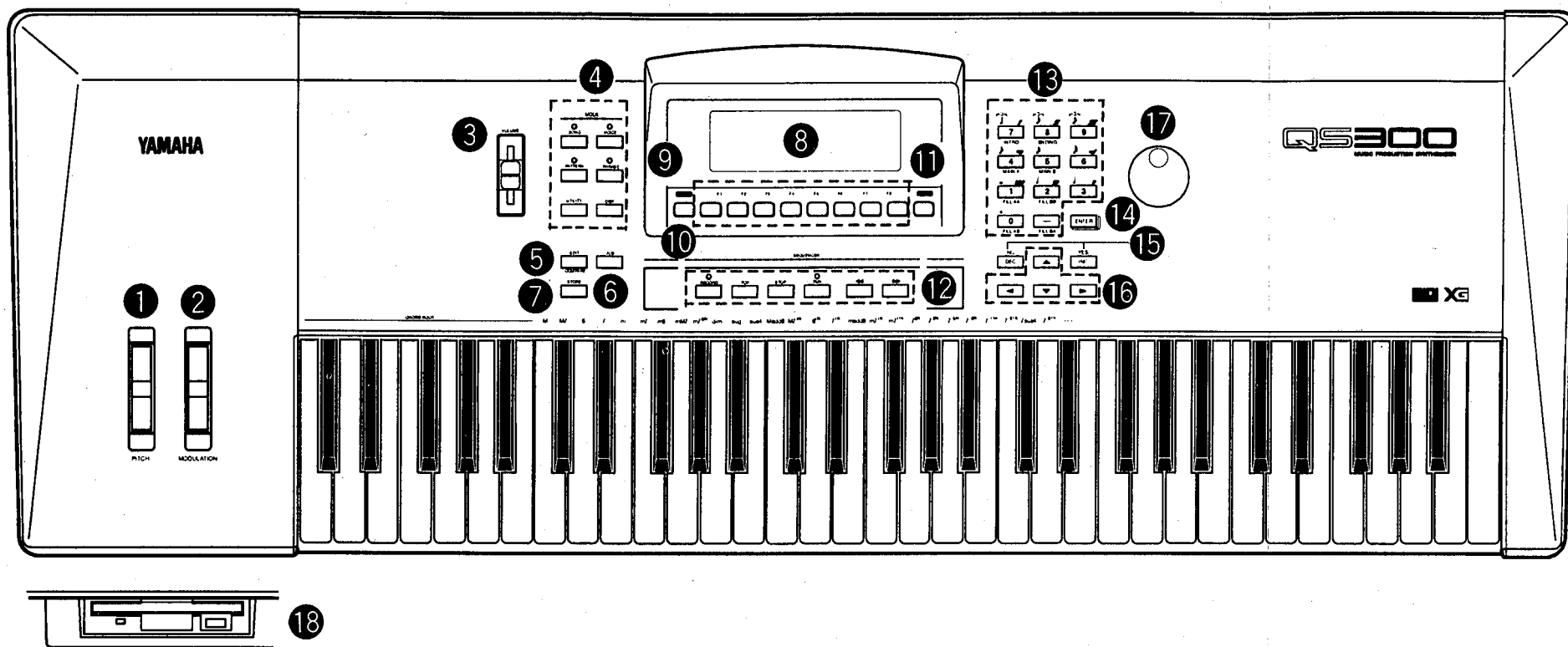
13.0 kg

付属品

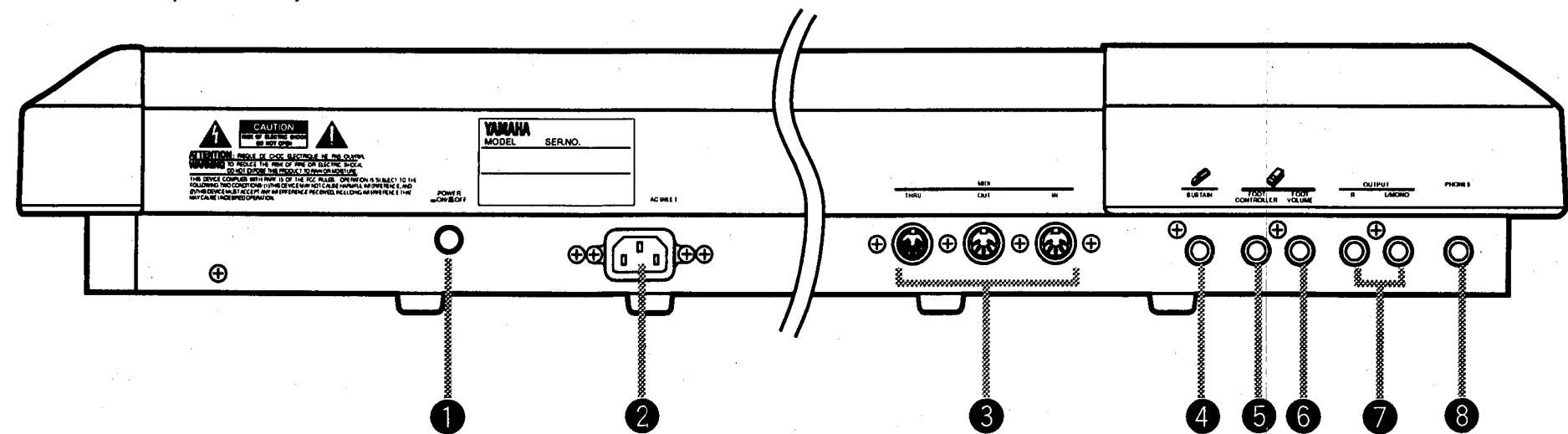
FACTORY & DEMONSTRATION(フロッピーディスク)
 電源コード(2P-3P変換アダプター付)
 取扱説明書セット: ベーシック+リファレンス+リストブック
 保証書

■ PANEL LAYOUT (パネルレイアウト)

● Front Panel (フロントパネル)



● Rear Panel (リアパネル)



● Front Panel

- ① PITCH Wheel
- ② MODULATION Wheel
- ③ VOLUME Slider
- ④ MODE Buttons
SONG Button
VOICE Button
PATTERN Button
PHRASE Button
UTILITY Button
DISK Button
- ⑤ **EDIT** Button
- ⑥ **JOB** Button
- ⑦ **STORE** Button
- ⑧ Display
- ⑨ **SHIFT** Button
- ⑩ Function Buttons, **F1** ~ **F8**
- ⑪ **EXIT** Button
- ⑫ Sequencer Controls
RECORD Button
TOP Button
STOP Button
RUN Button
REW Button
FF Button
- ⑬ Keypads (**0**, **1**, **2**, **3**, **4**,
5, **6**, **7**, **8**, **9**, **0** and **-**)
- ⑭ **ENTER** Button
- ⑮ **INC** and **DEC** Buttons
- ⑯ Cursor Buttons
- ⑰ Rotary Dial
- ⑱ Floppy Disk Drive

● Rear Panel

- ① POWER Switch
- ② AC INLET
- ③ MIDI IN/OUT/THRU Terminals
- ④ SUSTAIN Jack
- ⑤ FOOT CONTROLLER Jack
- ⑥ FOOT VOLUME Jack
- ⑦ OUTPUT (L/MONO, R) Jacks
- ⑧ PHONES Jack

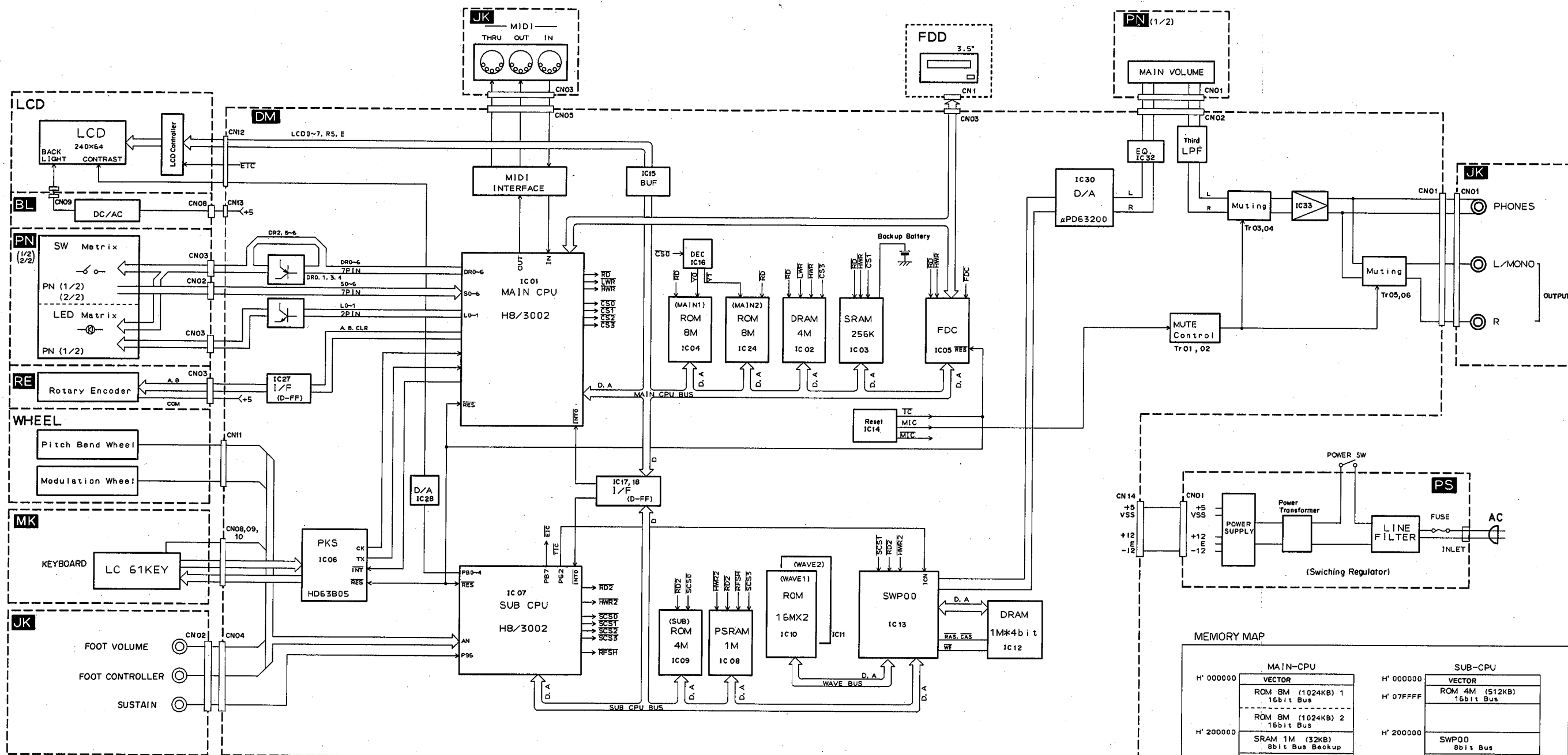
● トップパネル

- ① PITCH (ピッチ) ベンドホイール
- ② MODULATION (モジュレーション) ホイール
- ③ VOLUME (ボリューム) スライダー
- ④ モードボタン
SONG (ソング) ボタン
VOICE (ボイス) ボタン
PATTERN (パターン) ボタン
PHRASE (フレーズ) ボタン
UTILITY (ユーティリティ) ボタン
DISK (ディスク) ボタン
- ⑤ **EDIT** (エディット) ボタン
- ⑥ **JOB** (ジョブ) ボタン
- ⑦ **STORE** (ストア) ボタン
- ⑧ ディスプレイ
- ⑨ **SHIFT** (シフト) ボタン
- ⑩ **F1**~**F8** (ファンクション) ボタン
- ⑪ **EXIT** (エグジット) ボタン
- ⑫ シーケンサーボタン
RECORD (レコード) ボタン
TOP (トップ) ボタン
STOP (ストップ) ボタン
RUN (ラン) ボタン
REW (リワインド) ボタン
FF (フォワード) ボタン
- ⑬ テンキー
- ⑭ **ENTER** (エンター) ボタン
- ⑮ **INC** (インクリメント) ボタン、**DEC** (デクリメント) ボタン
- ⑯ カーソルボタン
- ⑰ ダイアル
- ⑱ フロッピーディスクドライブ

● リアパネル

- ① POWER (パワー) スイッチ
- ② AC INLET (電源) 端子
- ③ MIDI (ミディ) 端子
- ④ SUSTAIN (サステイン) 端子
- ⑤ FOOT CONTROLLER (フットコントローラー) 端子
- ⑥ FOOT VOLUME (フットボリューム) 端子
- ⑦ OUTPUT (アウトプット) 端子
- ⑧ PHONES (ヘッドフォン) 端子

■ BLOCK DIAGRAM (ブロックダイアグラム)

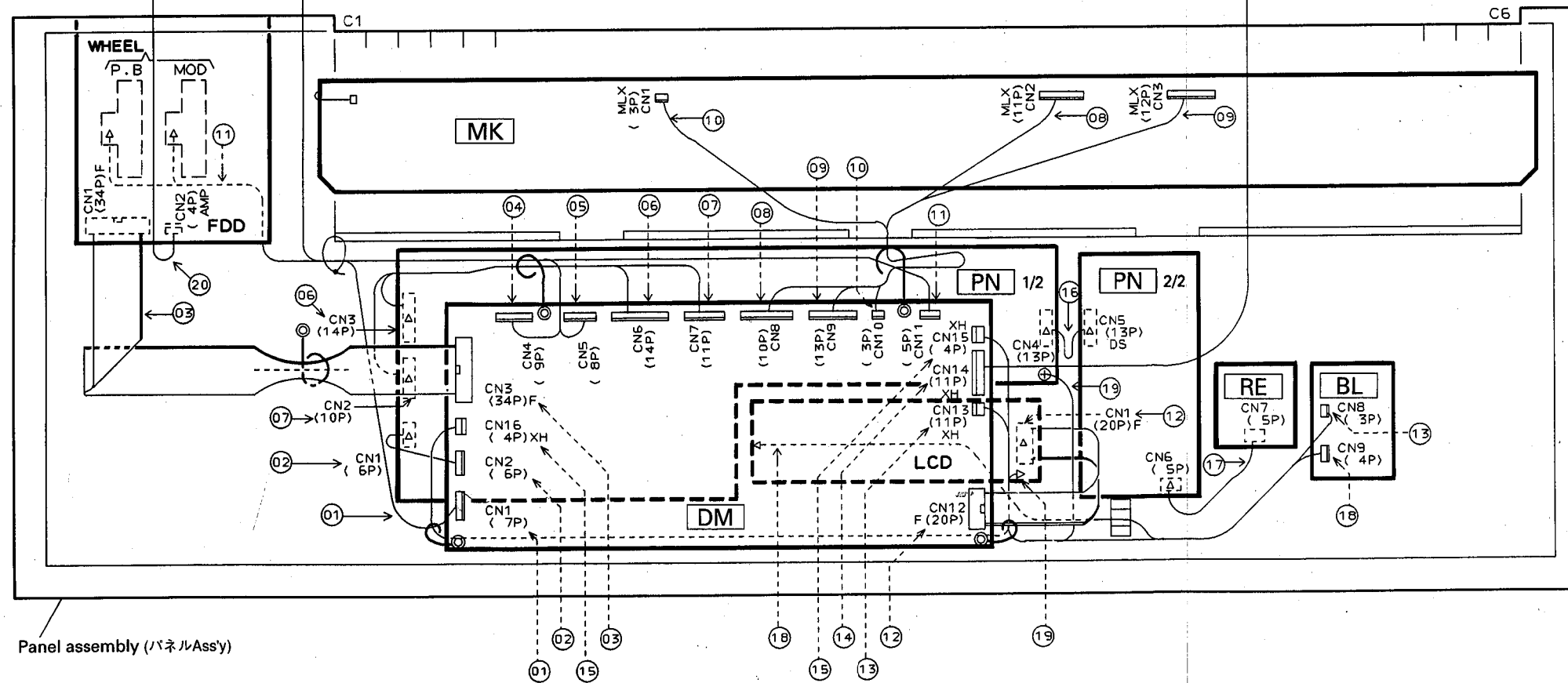
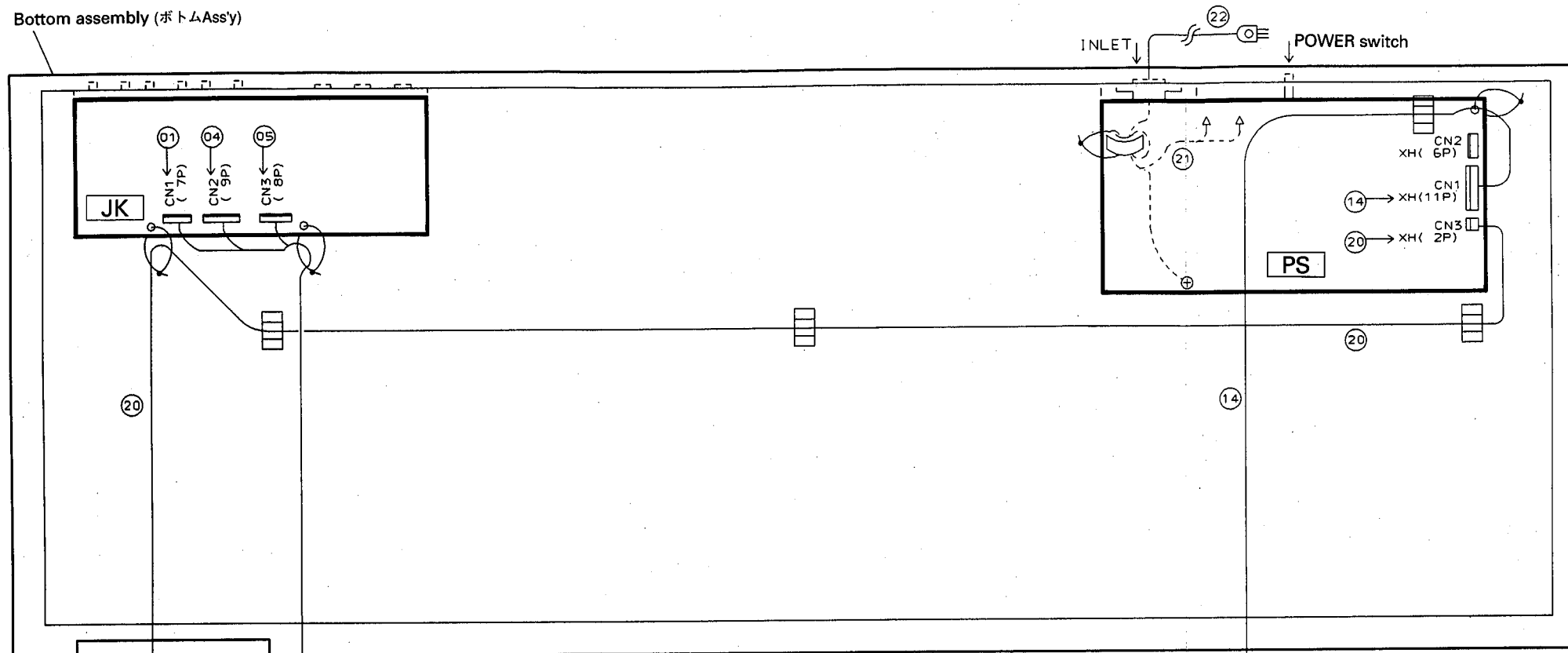


MEMORY MAP

MAIN-CPU		SUB-CPU	
H' 000000	VECTOR	H' 000000	VECTOR
H' 000000	ROM 8M (1024KB) 1 16bit Bus	H' 07FFFF	ROM 4M (512KB) 16bit Bus
H' 000000	ROM 8M (1024KB) 2 16bit Bus	H' 200000	SWP00 8bit Bus
H' 200000	SRAM 1M (32KB) 8bit Bus Backup	H' 400000	MAIN CPU I/F 8bit Bus
H' 420000	SUB CPU I/F 8bit Bus	H' 600000	PSRAM 1M (128KB) 8bit Bus
H' 440000	LCDC I/F 8bit Bus	H' 61FFFF	
H' 480000	FDC I/F 8bit Bus		
H' 4C0000	FDCDMA I/F 8bit Bus		
H' 600000	DRAM 4M (512KB) 16bit Bus		
H' 61FFFF			
H' FFFD10	INTERNAL RAM (512B)	H' FFFD10	INTERNAL RAM (512B)
H' FFFF0F		H' FFFF0F	
H' FFFF1C	INTERNAL I/O REGISTER	H' FFFF1C	INTERNAL I/O REGISTER
H' FFFFFF		H' FFFFFF	

■ CIRCUIT BOARD LAYOUT (ユニットレイアウト)

Bottom assembly (ボトムAss'y)



Panel assembly (パネルAss'y)

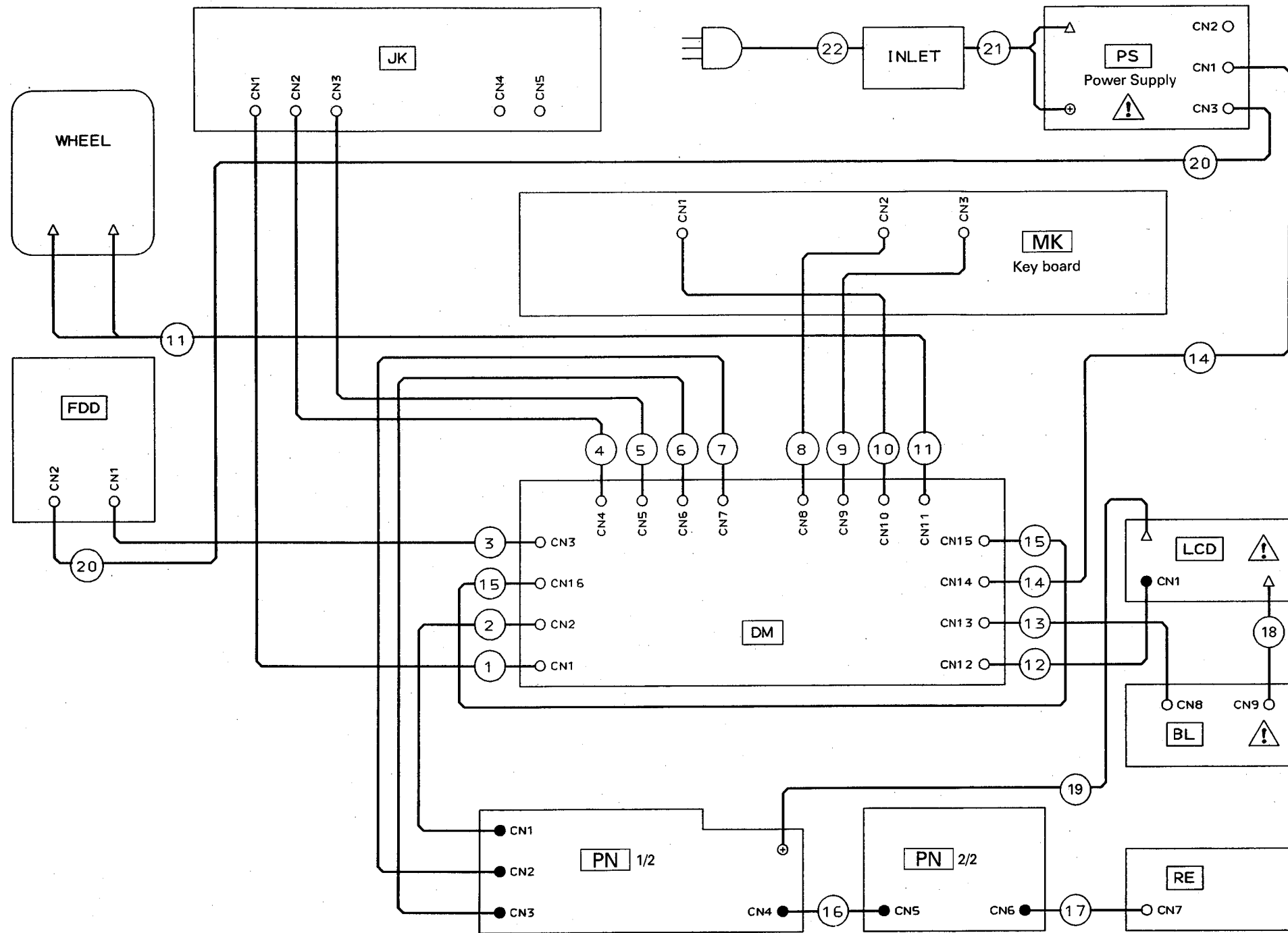
NO	PART NO	NAME	PIN	LENGTH	DESTINATION
①	VT54240	JK-DM	7	550	DM-CN1~JK-CN1
②	VT06370	DS-KR	6	150	DM-CN2-PN1/2-CN1
③	VS67540	Flat cable	34	400	DM-CN3-FDD-CN1
④	VK11250	KRD-KRD	9	500	DM-CN4~JK-CN2
⑤	VK11110	KRD-KRD	8	450	DM-CN5~JK-CN3
⑥	VT06390	DS-KR	14	250	DM-CN6-PN1/2-CN3
⑦	VT06380	DS-KR	10	250	DM-CN7-PN1/2-CN2
⑧	VS25230	DM-KS C	13-11	450	DM-CN8-MK-CN2
⑨	VS25220	DM-KS B	12	500	DM-CN9-MK-CN3
⑩	VS25210	DM-KS A	3	300	DM-CN10-MK-CN1
⑪	VS25320	WHEEL	5	550	DM-CN11-WHEELS
⑫	VS25290	DM-LCD	20	200	DM-CN12-LCD-CN1
⑬	VK10750	KRD-KRD	3	350	DM-CN13-BL-CN8
⑭	VS25240	DM-SWR A	11	550	DM-CN14-PS-CN1
⑮	VS67560	XH-XH	4	550	DM-CN15-DM-CN16
⑯	VT06350	DS-DS	13	90	PN1/2-CN4-PN2/2-CN5
⑰	VT06360	DS-KR	5	100	PN2/2-CN6-RE-CN7
⑱	VS25300	ELB	4	450	BL-CN9-LCD
⑲	VS75910	CP-LCD	1	200	PN1/2-LCD
㉑	VS67550	FDD power supply	2-4	1250	FDD-CN2-PS-CN3
㉒	VS25340	IN (A) J,U	3	220	PS-AC INLET
㉓	VS25350	IN (B) E,V	3	220	PS-AC INLET
㉔	-	AC cord	-	-	ACINLET-Accord

* The connector assemblies listed above are not prepared as service parts.
* 上記の束線類は補修部品としては準備されていません。

MARK	NAME
○	Cold holder BK-1 (CB06925)

MARK	NAME
⊞	Filament tape 12X50 (VP83460)

● Wiring (基板結線図)



- △ : Soldering (半田付け)
- : Board-in connector (ボードイン)
- : Connector (コネクタ)
- ⊕ : Screw (ネジ止め)

NO	PART NO	NAME	PIN	LENGTH	DESTINATION
①	VT54240	JK-DM	7	550	DM-CN1-JK-CN1
②	VT06370	DS-KR	6	150	DM-CN2-PN1/2-CN1
③	VS67540	Flat cable	34	400	DM-CN3-FDD-CN1
④	VK11250	KRD-KRD	9	500	DM-CN4-JK-CN2
⑤	VK11110	KRD-KRD	8	450	DM-CN5-JK-CN3
⑥	VT06390	DS-KR	14	250	DM-CN6-PN1/2-CN3
⑦	VT06380	DS-KR	10	250	DM-CN7-PN1/2-CN2
⑧	VS25230	DM-KS C	13-11	450	DM-CN8-MK-CN2
⑨	VS25220	DM-KS B	12	500	DM-CN9-MK-CN3
⑩	VS25210	DM-KS A	3	300	DM-CN10-MK-CN1
⑪	VS25320	WHEEL	5	550	DM-CN11-WHEELS
⑫	VS25290	DM-LCD	20	200	DM-CN12-LCD-CN1
⑬	VK10750	KRD-KRD	3	350	DM-CN13-BL-CN8
⑭	VS25240	DM-SWR A	11	550	DM-CN14-PS-CN1
⑮	VS67560	XH-XH	4	550	DM-CN15-DM-CN16
⑯	VT06350	DS-DS	13	90	PN1/2-CN4-PN2/2-CN5
⑰	VT06360	DS-KR	5	100	PN2/2-CN6-RE-CN7
⑱	VS25300	ELB	4	450	BL-CN9-LCD
⑲	VS75910	CP-LCD	1	200	PN1/2-LCD
⑳	VS67550	FDD power supply	2-4	1250	FDD-CN2-PS-CN3
㉑	VS25340	IN (A) J,U	3	220	PS-AC INLET
㉒	VS25350	IN (B) E,V	3	220	PS-AC INLET
㉓	—	AC cord			ACINLET-Accord

* The connector assemblies listed above are not prepared as service parts.

* 上記の束線類は補修部品としては準備されていません。

■ WARNING

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

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

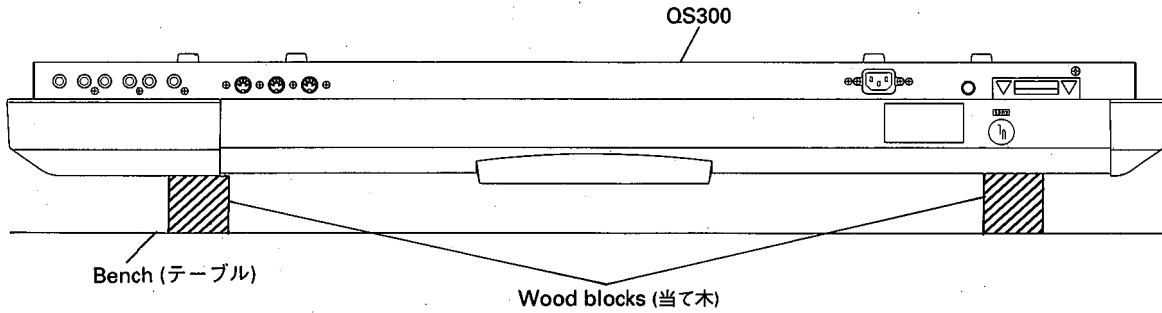
■ DISASSEMBLY PROCEDURE (分解手順)

1 Bottom Assembly

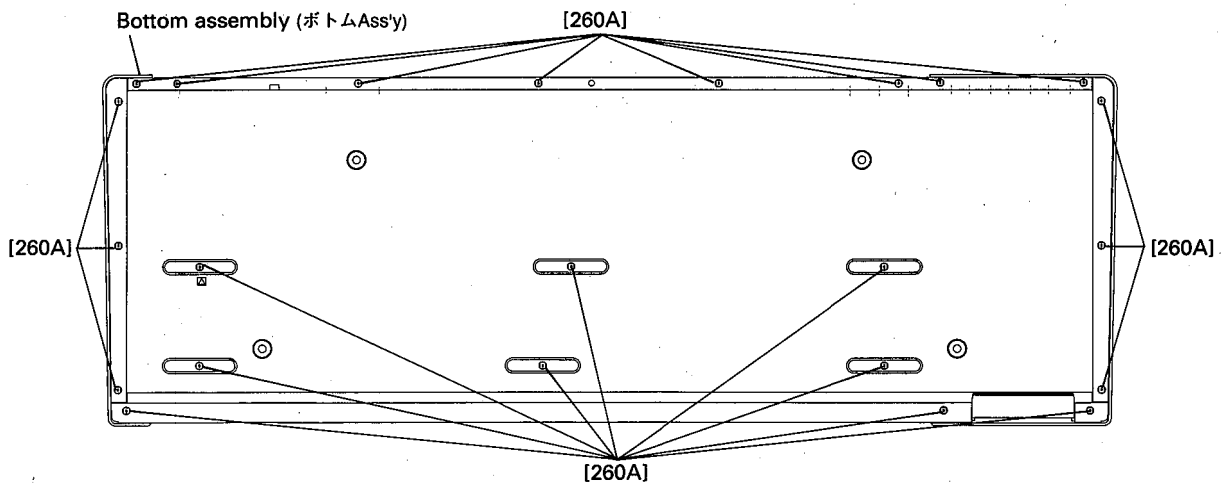
- 1-1 Place the QS300 upside down on the wood blocks that have been placed on the bench. (Fig. 1)
Take care that the wood blocks don't touch the keyboard and wheels.
- 1-2 Remove the twenty-three (23) screws marked as [260A], then remove the bottom assembly. (Fig. 2)

1 ボトムAss'y

- 1-1 図に示すように、当て木をして、パネル面が下になるように本体を裏返します。
このとき、当て木がホイールと鍵盤に当たらないように注意して下さい。(図1)
- 1-2 [260A]のネジ23本を外し、ボトムAss'yを外します。(図2)



(Fig. 1)



[260A]: Bonding Tapping Screw-B 4.0X10 MFZN2BL (VJ254100) ボンディングBタイト

(Fig. 2)

2 DM Circuit Board

- 2-1 Remove the bottom assembly. (See procedure 1)
- 2-2 Remove the eight (8) screws marked as [140], then remove the DM circuit board. (Fig. 3)
- * The jumper socket is not a part of the DM circuit board.
Attach the jumper socket removed from the previous DM circuit board to the new DM circuit board when replacing the DM circuit board of the unit.

2 DMシート

- 2-1 ボトムAss'yを外します。(1項参照)
- 2-2 [140]のネジ8本を外し、DMシートを外します。(図3)
- * ジャンパーソケットは、DMシートの構成部品ではありません。DMシートを交換するときは、製品に付いていたDMシートのジャンパーソケットを取り外し、新たに取り付けたDMシートに差し込んで下さい。

3 Keyboard Assembly

- 3-1 Remove the bottom assembly. (See procedure 1)
- 3-2 Remove the six (6) screws marked as [120A], then remove the keyboard assembly with the front rail. (Fig. 3)
- 3-3 Remove the four (4) screws marked as [120B], then remove the front rail from the keyboard assembly. (Fig. 3)

4 Floppy Disk Drive Assembly

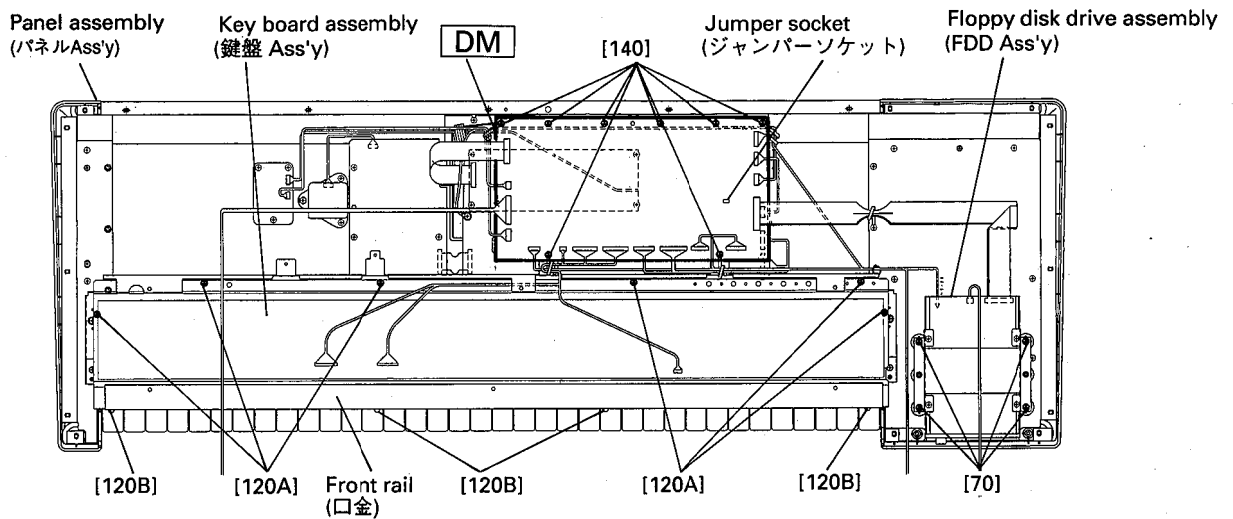
- 4-1 Remove the bottom assembly. (See procedure 1)
- 4-2 Remove the four (4) screws marked as [70], then remove the floppy disk drive assembly. (Fig. 3)
- 4-3 The holder can be removed from the floppy disk drive by removing the four (4) screws marked as [30A]. (Fig. 4)

3 鍵盤Ass'y

- 3-1 ボトムAss'yを外します。(1項参照)
- 3-2 [120A]のネジ6本を外し、口金と共に鍵盤Ass'yを外します。(図3)
- 3-3 口金は、[120B]のネジ4本を外すと、鍵盤Ass'yから外すことができます。(図3)

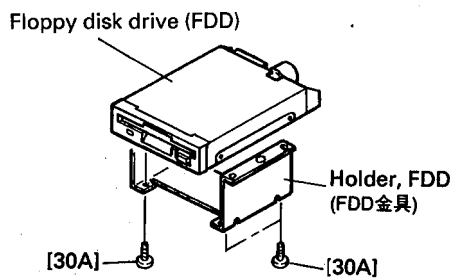
4 FDD Ass'y

- 4-1 ボトムAss'yを外します。(1項参照)
- 4-2 [70]のネジ4本を外し、FDD Ass'yを外します。(図3)
- 4-3 FDD金具は、[30A]のネジ4本を外すと、FDD Ass'yから外すことができます。(図4)



- [70]: Bind Head Tapping Screw-B 3.0X8 MFZN2BL (EP600190) + バインドBタイト
- [120A]: Bonding Tapping Screw-B 3.0X8 MFZN2BL (VN413300) ボンディングBタイト
- [120B]: Bonding Tapping Screw-B 3.0X8 MFZN2BL (VN413300) ボンディングBタイト
- [140]: Bind Head Tapping Screw-B 3.0X8 MFZN2BL (EP600190) + バインドBタイト

(Fig. 3)



- [30A]: Bind Head Tapping Screw-C 3.0X6 MFZN2BL (EP630240) + バインドCタイト

(Fig. 4)

5 BL Circuit Board

- 5-1 Remove the bottom assembly. (See procedure 1)
- 5-2 Remove the three screws marked as [240A], then remove the BL circuit board. (Fig. 5)

6 RE Circuit Board

- 6-1 Remove the bottom assembly. (See procedure 1)
- 6-2 Pull off the JOG knob. (Fig. 6)
- 6-3 Remove the three screws marked as [220A], then remove the RE circuit board. (Fig. 5)
- 6-4 Remove the escutcheon from the RE circuit board by removing the hexagonal nut.

7 PN-1/2 and PN-2/2 Circuit Boards and Display Assembly

- 7-1 Remove the bottom assembly. (See procedure 1)
- 7-2 Remove the DM circuit board. (See procedure 2)
- 7-3 Remove the keyboard assembly. (See procedure 3)
- 7-4 Pull off the VOLUME knob. (Fig. 6)
- 7-5 Remove the ten screws marked as [260B], then remove the center angle bracket. (Fig. 5)
- 7-6 Remove the four (4) screws marked as [130A], then remove the PN-2/2 circuit board. (Fig. 5)
- 7-7 Remove the three (3) screws marked as [130B] and the three (3) screws marked as [120C], then remove the PN-1/2 circuit board. (Fig. 5)
- 7-8 Remove the six (6) screws marked as [30B], then remove the display assembly. (Fig. 7)

5 BLシート

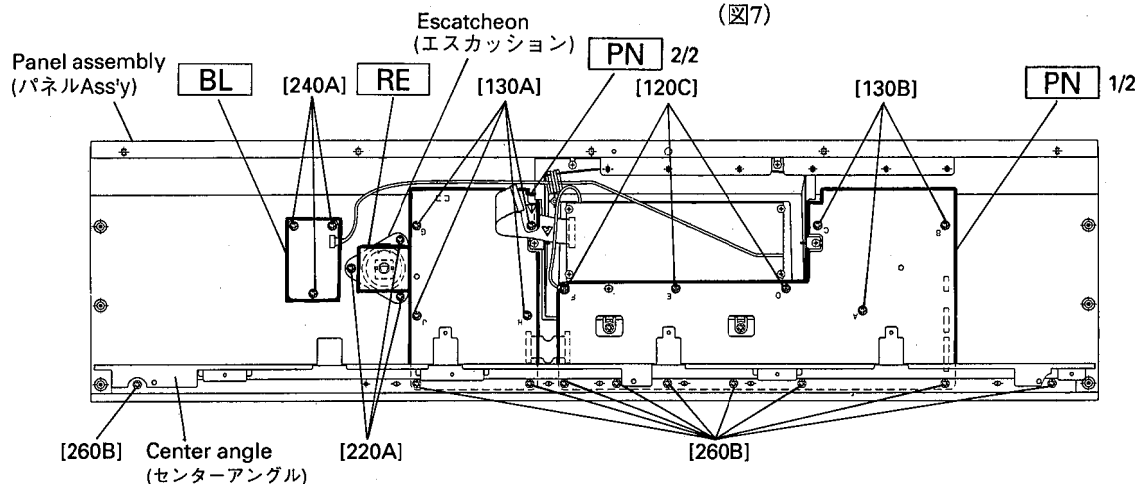
- 5-1 ボトムAss'yを外します。(1項参照)
- 5-2 [240A]のネジ3本を外し、BLシートを外します。(図5)

6 REシート

- 6-1 ボトムAss'yを外します。(1項参照)
- 6-2 パネル表側より、JOGツマミを引き抜きます。(図6)
- 6-3 [220A]のネジ3本を外し、REシートを外します。(図5)
- 6-3 六角ナット1個を外して、REシートからREエスキャッションを外します。

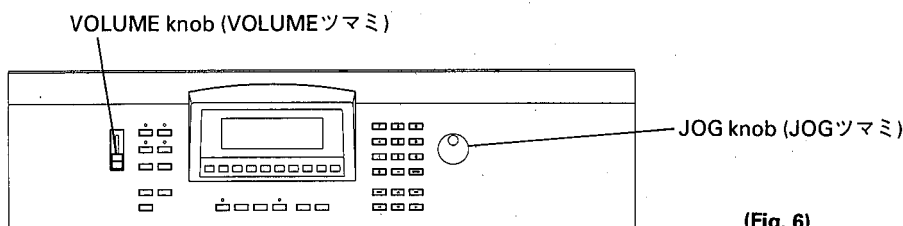
7 PN-1/2シートとPN-2/2シートとディスプレイAss'y

- 7-1 ボトムAss'yを外します。(1項参照)
- 7-2 DMシートを外します。(2項参照)
- 7-3 鍵盤Ass'yを外します。(3項参照)
- 7-4 パネル表側より、VOLUMEツマミを引き抜きます。(図6)
- 7-5 [260B]のネジ10本を外し、センターアングルを外します。(図5)
- 7-6 [130A]のネジ4本を外し、PN-2/2シートを外します。(図5)
- 7-7 [130B]のネジ3本と[120C]のネジ3本を外し、PN-1/2シートを外します。(図5)
- 7-8 [30B]のネジ6本を外し、ディスプレイAss'yを外します。(図7)

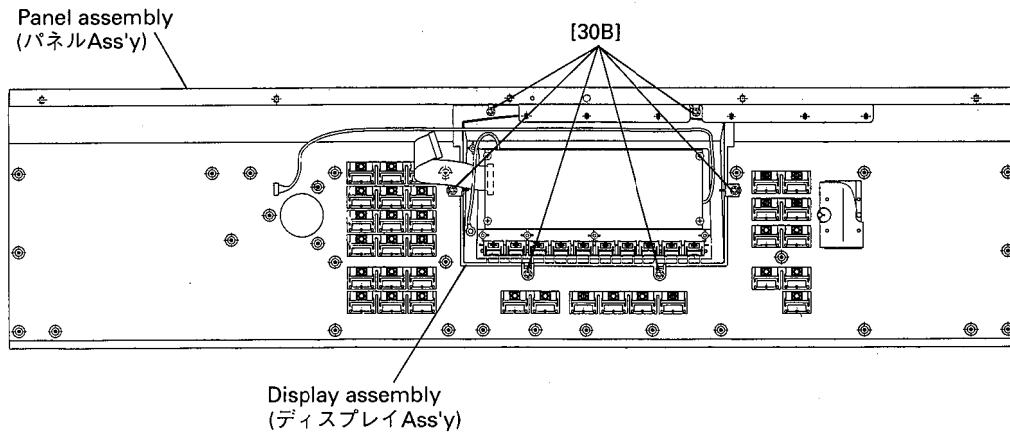


(Fig. 5)

- [120C]: Bind Head Tapping Screw-B 3.0X12 MFZN2BL (VQ074600) + バインドBタイト
- [130A]: Bind Head Tapping Screw-C 3.0X6 MFZN2BL (EP630240) + バインドCタイト
- [130B]: Bind Head Tapping Screw-C 3.0X6 MFZN2BL (EP630240) + バインドCタイト
- [220A]: Bind Head Tapping Screw-C 3.0X6 MFZN2BL (EP630240) + バインドCタイト
- [240A]: Bind Head Tapping Screw-C 3.0X6 MFZN2BL (EP630240) + バインドCタイト
- [260B]: Bonding Tapping Screw-C 3.0X8 MFZN2BL (VR139300) ボンディングCタイト



(Fig. 6)



[30B]: Bonding Tapping Screw-C 3.0X6 MFZN2BL (VR060400) ボンディングCタイト

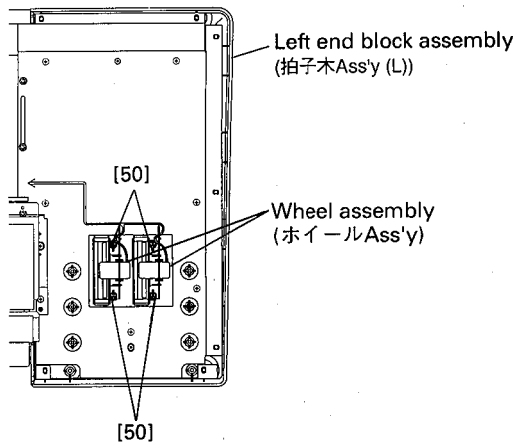
(Fig. 7)

8 Wheel Assembly

- 8-1 Remove the bottom assembly. (See procedure 1)
- 8-2 Remove the floppy disk drive assembly. (See procedure 4)
- 8-3 Remove the four (4) screws marked as [50], then remove the wheel assembly. (Fig. 8)

8 ホイールAss'y

- 8-1 ボトムAss'yを外します。(1項参照)
- 8-2 FDD Ass'yを外します。(4項参照)
- 8-3 [50]のネジ4本を外し、ホイールAss'yを外します。(図8)



(Fig. 8)

[50]: Bind Head Tapping Screw-B 3.0X8 MFZN2BL (EP600190) +バインドBタイト

9 JK Circuit Board

- 9-1 Remove the bottom assembly. (See procedure 1)
- 9-2 Remove the seven (7) screws marked as [170], then remove the JK circuit board. (Fig. 9)

9 JKシート

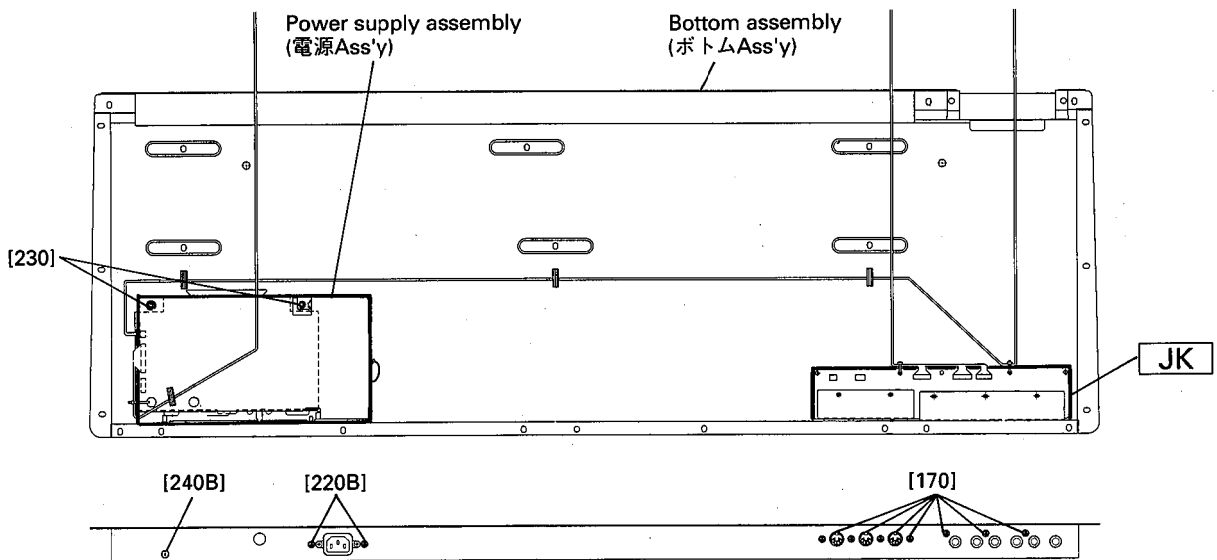
- 9-1 ボトムAss'yを外します。(1項参照)
- 9-2 [170]のネジ7本を外し、JKシートを外します。(図9)

10 PS Circuit Board

- 10-1 Remove the bottom assembly. (See procedure 1)
- 10-2 Remove the two (2) screws marked as [220B], the two (2) screws marked as [230] and the screw marked as [240B], then take out the power supply assembly of the unit with the POWER switch knob and insulation sheet. (Fig. 9)
- 10-3 Pull off the POWER switch knob and remove the insulation sheet from the bottom of the power supply assembly (Fig. 10)
- 10-4 Remove the two (2) screws marked as [30C], then remove the PS circuit board from the power supply assembly. (Fig. 11)

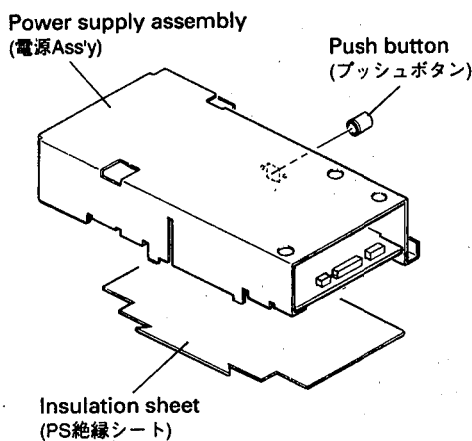
10 PSシート

- 10-1 ボトムAss'yを外します。(1項参照)
- 10-2 [220B]のネジ2本と[240B]のネジ1本と[230]のネジ2本を外し、PS絶縁シートとプッシュボタンと共に電源Ass'yを外します。(図9)
- 10-3 プッシュボタンを引き抜き、電源Ass'yの底側からPS絶縁シートを外します。(図10)
- 10-4 [30C]のネジ2本を外し、電源Ass'yからPSシートを外します。(図11)

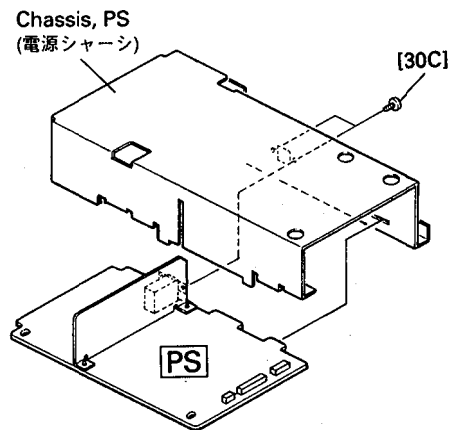


- [170]: Bonding Tapping Screw-B 3.0X8 MFZN2BL (VN413300) ボンディングBタイト
- [220B]: Bonding Tapping Screw-B 3.0X8 MFZN2BL (VN413300) ボンディングBタイト
- [230]: Bonding Tapping Screw-C 3.0X6 MFZN2BL (VR060400) ボンディングCタイト
- [240B]: Bonding Tapping Screw-B 4.0X10 MFZN2BL (VJ254100) ボンディングBタイト

(Fig. 9)



(Fig. 10)



- [30C]: Bind Head Tapping Screw-C 3.0X6 MFZN2BL (EP630240) + バインドCタイト

(Fig. 11)

■ LSI PIN DESCRIPTION (LSI端子機能表)

● HD6413002FP16 (XQ375A00) CPU <H8/3002>

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION	
1	A21	O	Address bus	51	A12	O	Address bus	
2	A20	O		52	A13	O		
3	VCC			53	A14	O		
4	PB0	I/O	Port B	54	A15	O		
5	PB1	/O		55	A16	O		
6	PB2	/O		56	A17	O		
7	PB3	/O		57	A18	O		
8	PB4	/O		58	A19	O		
9	PB5	/O		59	VSS			Ground
10	PB6	/O		60	/WAIT	I	Bus cycle wait	
11	PB7	/O	Reset	61	P61	I/O	Port 6	
12	/RESO	I		62	P62	I/O		
13	VSS		Ground	63	φ		Not connected	
14	TXD0	O	Transmit data (MIDI OUT)	64	/STBY	I	Stand-by mode signal	
15	P91	I/O	Port 9	65	/RES	I	Reset	
16	RXD0	I	Receive data (MIDI IN)	66	NMI	I	Non-maskable interrupt	
17	RXD1	I	Receive data (Keyboard)	67	VSS		Ground	
18	P94	I/O	Port 9	68	EXTAL	I	Clock	
19	SCK1	O	Sync. signal	69	XTAL	O		
20	P40	I/O	Port 4	70	VCC		Power supply	
21	P41	I/O		71	/AS	O	Address strobe	
22	P42	I/O		72	/RD	O	Read strobe	
23	P43	I/O		73	/HWR	O	Write strobe (High)	
24	VSS			(Ground)	74	/LWR	O	Write strobe (Low)
25	P44	I/O	Mode select	75	MD0	I		
26	P45	I/O		76	MD1	I		
27	P46	I/O		77	MD2	I		
28	P47	I/O	Analog power supply	78	AVCC			
29	D08	I/O		79	VREF	I	Reference voltage	
30	D09	I/O	Data bus	80	AN0	I	Analog data input (Power)	
31	D10	I/O		81	AN1	I	Analog data input (SUSTAIN)	
32	D11	I/O		82	P72	I/O	Port 7	
33	D12	I/O		83	P73	I/O		
34	D13	I/O		84	P74	I/O		
35	D14	I/O		85	P75	I/O		
36	D15	I/O	86	P76	I/O			
37	VCC		Power supply	87	P77	I/O		
38	A00	O	Address bus	88	AVSS		Analog ground	
39	A01	O		89	P80	I/O	Port 8	
40	A02	O		Chip select	90	/CS3	I	
41	A03	O			91	/CS2	I	
42	A04	O			92	/CS1	I	
43	A05	O		Ground	93	/CS0	I	
44	A06	O			94	VSS		
45	A07	O		Port A	95	PA0	I/O	
46	VSS				(Ground)	96	PA1	I/O
47	A08	O			97	PA2	I/O	
48	A09	O	98		PA3	I/O		
49	A10	O	Address bus	99	A23	O		
50	A11	O		100	A22	O		

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

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

● HD63266FP (XI939A00) FDC (Floppy Disk Controller)

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION	
1	8"/5"	I	Data transmission speed	33	/TRKO	I	Track 00 signal	
2	XTALSET	I	Clock select	34	/INDEX	I	Index signal	
3	/RESET	I	Rest	35	/RDATA	I	Read data input from FDD	
4	E//RD	I	Enable/Read	36	XTAL2	I	Clock	
5	RW//WR	I	Read/write/Write	37	EXTAL2	I		
6	/CS	I	Chip select	38	NC	I	Clock	
7	/DACK	I	DMA acknowledge	39	XTAL1	I		
8	RS0	I	Register select	40	EXTAL1	I		
9	RS1	I	Ground	41	VSS4	I	Ground	
10	VSS1	I						
11	VSS2	I						
12	D0	I/O		Data bus	42	VSS5	I	Power supply
13	D1	I/O						
14	D2	I/O						
15	D3	I/O						
16	D4	I/O						
17	D5	I/O						
18	D6	I/O						
19	D7	I/O	DMA request	44	VCC2	I	Write control	
20	/DREQ	O						
21	/IRQ	O	Interrupt request	45	VCC3	I		Writ data to FDD
22	/DEND	I	Data end	46	VCC4	I		
23	VSS3	I	Ground	47	/WGATE	O	Ground	
24	1/2 EX1	I	Power supply	48	/WDATA	O		
25	VCC1	I						
26	NUM1	I						
27	NUM3	I	Host interface select	49	VSS6	I	Step signal to control head of FDD	
28	IFS	I						
29	SFORM	I	Format data	50	/STEP	O	Direction	
30	/INP	I	Index pulse	51	/HDIR	O		
31	/READY	I	Ready from FDD	52	/HLOAD	O	Head load	
32	/WPRT	I	Write control signal	53	/HSEL	O		
				54	VSS7	I	Ground	
				55	/DS0	O		
				56	/DS1	O	Drive select	
				57	/DS2	O		
				58	/DS3	O		
				59	VSS8	I	Ground	
				60	/MON0	O		
				61	/MON1	O	Motor on	
				62	/MON2	O		
				63	/MON3	O		
				64	VSS9	I	Ground	

● HD63B05V0E65F (XN668A00) PKS

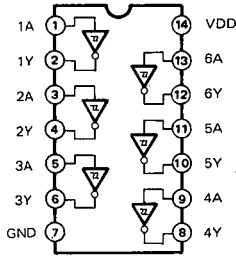
PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	C7	O	Block signal B08	28	RES	I	Reset
2	C6	O	Block signal B07	29	INT	I	Interrupt
3	C5	O	Block signal B06	30	NUM	I	Grounding
4	C4	O	Block signal B05	31	NC	I	Not used.
5	NC		Not used.	32	A7	I	Grounding
6	NC		Not used.	33	A6	I	Grounding
7	C3	O	Block signal B04	34	NC	I	Not used.
8	C2	O	Block signal B03	35	A5	I	Note data N15
9	C1	O	Block signal B02	36	A4	I	Note data N14
10	C0		Not used.	37	NC	I	Not used.
11	NC		Not used.	38	A3	I	Note data N13
12	NC		Not used.	39	A2	I	Note data N12
13	D0	O	Block signal B09	40	A1	I	Note data N11
14	D1	O	Block signal B10	41	A0	I	Note data N10
15	D2	O	Block signal B11	42	NC	I	Not used
16	D3/TX	O	Send signal to CPU	43	NC	I	Not used
17	NC		Not used.	44	B0	I	Note data N00
18	D4/RX	O	Block signal B12	45	B1	I	Note data N01
19	D5//CK	I	Clock	46	B2	I	Note data N02
20	D6//INT2	I	Not used	47	B3	I	Note data N03
21	NC		Not used.	48	NC	I	Not used.
22	/STBY	I	Stand by +5V	49	B4	I	Note data N04
23	TIMER	I	+ 5V	50	B5	I	Note data N05
24	XTAL	I	Clock 8MHz	51	B6	I	Grounding
25	EXTAL	I					
26	Vcc	I	Power Supply +5V	52	B7	I	Grounding
27	SUB	I	Grounding	53	NC	I	Not used.
				54	Vss	I	Ground

• TC170C120SF (XQ036A00) SWP00 (AWM Tone Generator) Standard Wave Processor

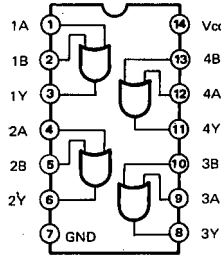
PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION		
1	CA0	I	CPU address bus	51	MD1	I	Wave memory data bus		
2	CA1	I		52	MD2	I			
3	CA2	I		53	MD3	I			
4	CA3	I		54	MD4	I			
5	CA4	I		55	MD5	I			
6	CA5	I		56	MD6	I			
7	VDD			(Power supply)	57	MD7		I	Power supply
8	CA6	I		58	VDD				
9	CA7	I		CPU data bus	59	MA0		O	Wave memory address bus
10	CA8	I			60	MA1		O	
11	CA9	I	61		MA2	O			
12	CA10	I	62		MA3	O			
13	CD0	I/O	(Ground)		63	MA4	O		
14	CD1	I/O			64	MA5	O		
15	VSS		DRAM data bus		65	MA6	O	(Ground)	
16	CD2	I/O			66	VSS			
17	CD3	I/O			67	MA7	O		
18	CD4	I/O			68	MA8	O		
19	CD5	I/O		69	MA9	O			
20	CD6	I/O		70	MA10	O			
21	CD7	I/O		71	MA11	O			
22	VDD			Power supply	72	MA12	O		(Power supply)
23	CSN	I		Chip select	73	VDD			
24	WRN	I		Data write strobe	74	MA13	O		Wave memory address bus
25	RDN	I	Data read strobe	75	MA14	O			
26	DACL	O	DAC output (L or L/R)	76	MA15	O			
27	DACR	O	DAC output (R)	77	MA16	O			
28	BCLK	O	Bit clock	78	MA17	O			
29	WCLK	O	Word clock	79	MA18	O			
30	VSS		Ground	80	VSS		(Ground)		
31	RD0	I/O	DRAM address bus	81	MA19	O			
32	RD1	I/O		82	MA20	O			
33	RD2	I/O		83	MA21	O			
34	RD3	I/O		84	MA22	O			
35	RA0	O	(Ground)	85	MA23	O	Initial clear		
36	RA1	O		86	ICN	I			
37	RA2	O		87	VSS			Ground	
38	RA3	O		88	XIN	I		Crystal osc.	
39	RA4	O	(Power supply)	89	XOUT	O	Crystal osc.		
40	VSS			89	VSS		Ground		
41	VDD		Power supply	90	VDD		Power supply		
42	RA5	O	DRAM row address bus	91	VDD		Clock output		
43	RA6	O		92	MCLKO	O	Master clock input		
44	RA7	O	DRAM column address bus	93	MCLKI	I	Synch. signal		
45	RA8	O		94	SYI	I	1/2 master clock		
46	RASN	O	DRAM write enable	95	SYCLK	O	NSYS expansion enable		
47	CASN	O		96	NSYSON	I	Test pin		
48	RWEN	O	Wave memory data bus	97	TESTON	I	Test pin		
49	MD0	I		98	ACIN	I	Test pin		
50	VSS		Power supply	99	DCTEST	I	Test pin		
				100	VDD		Ground		

■ IC BLOCK DIAGRAM (ICブロック図)

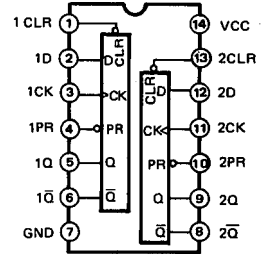
- **SN74HC14NSR** (XC725A00)
Inverter



- **SN74HC32NSR** (XD833A00)
Quad 2 Input OR

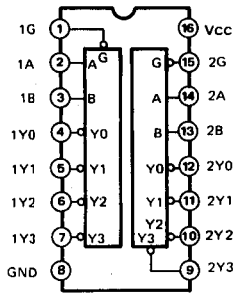


- **SN74HC74NSR** (XC726A00)
Dual D-Type Flip-Flop

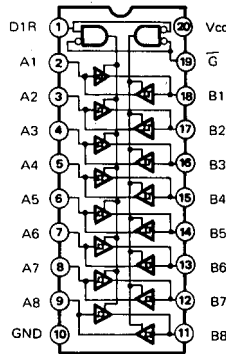


INPUTS				OUTPUTS	
PR	CLR	CLK	D	Q	Q̄
L	H	X	X	H	L
H	L	X	X	L	H
L	L	X	X	H	H
H	H	↑	H	H	L
H	H	↑	L	L	H
H	H	L	X	Q _o	Q̄ _o

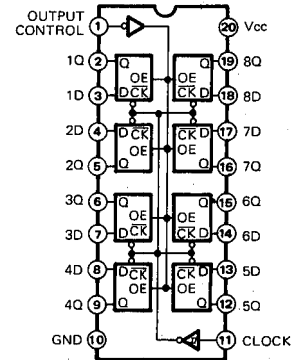
- **SN74HC139NSR** (XC727A00)
- **TC74AC139F** (XP231A00)
1 to 4 Demultiplexer



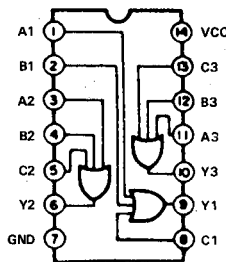
- **SN74HC245NSR** (XD838A00)
Octal 3-State Bus Transceiver



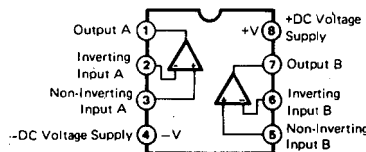
- **SN74HC374ANSR** (XQ042A00)
Octal 3-State D-Type Flip Flop



- **TC74HC4075AF** (XL393A00)
Input OR Gate

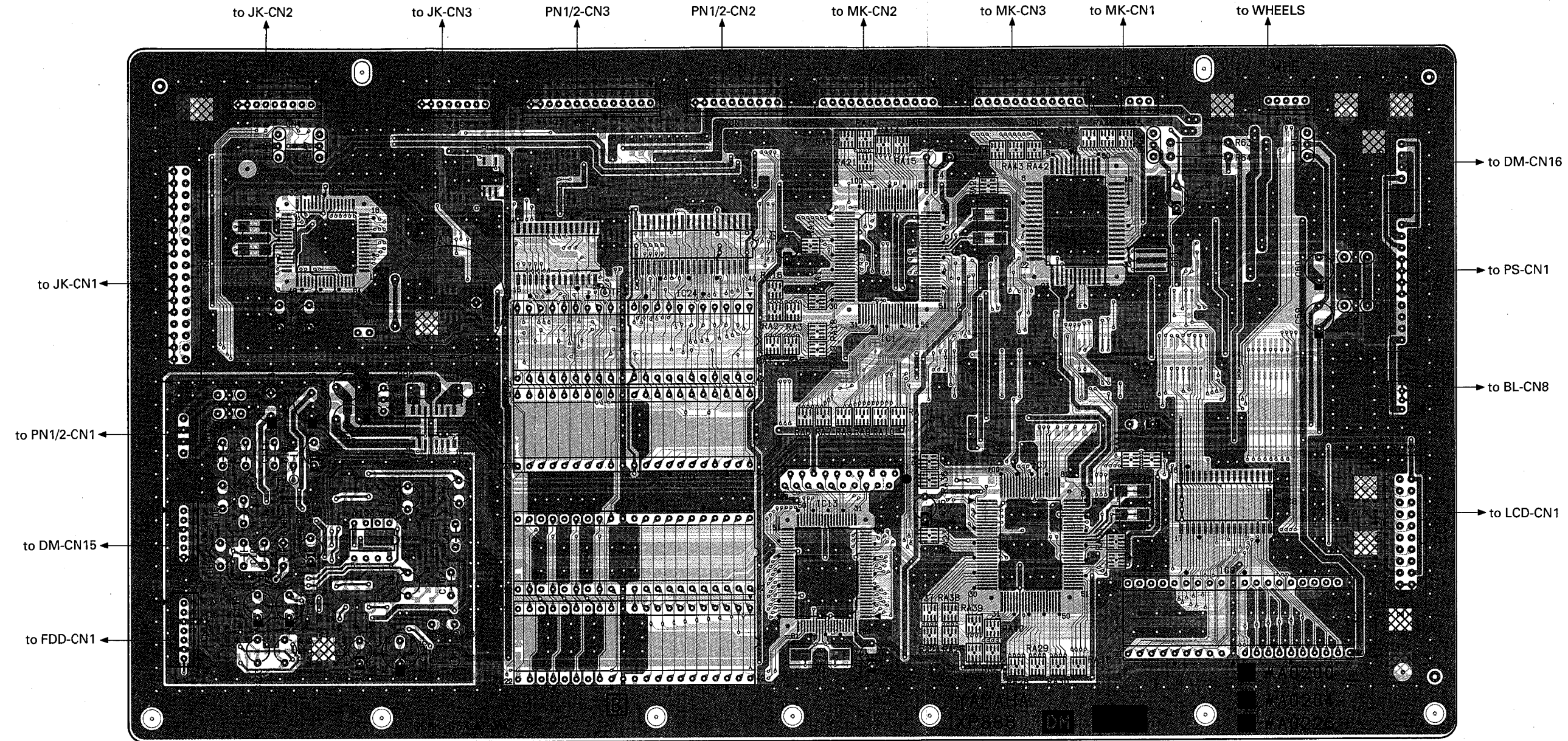


- **RC4558D-V** (IG001390)
- **μPC4570G2** (XF291A00)
- **NJM4556AMT1** (XQ138A00)
- **NJM4556AD** (XQ824A00)
Dual Operational Amplifier



■ CIRCUIT BOARDS (シート基板図)

● DM Circuit Board (Component side-部品側)



Jumper socket
(ジャンパーソケット)

* The jumper socket is not a part of the DM circuit board. Attach the jumper socket removed from the previous DM circuit board to the new DM circuit board when replacing the DM circuit board of the unit.

* ジャンパーソケットは、DMシートの構成部品ではありません。DMシートを交換するときは、製品に付いていたDMシートのジャンパーソケットを取り外し、新たに取り付けたDMシートに差し込んでください。

Notes

- Circuit Board: DM (VS557500) XP888B0
- 1. Mylar Capacitor**
 C 101,102: 2700P 50V J (UA353270)
 C 109,110: 1000P 50V J (UA353100)
 C 111,112: 6800P 50V J (UA353680)
 C 187,188: 1800P 50V J (UA353180)
 - 2. Monolithic Mylar Capacitor**
 C 107,108: 0.22 50V J (VE326400)
 - 3. Monolithic Ceramic Cap.**
 C 2,3,7,8,10,12-18,23-27, 36,37,41-46,48,52-54, 56-58,61,62,71-85,89, 90,93,94,129,130,178, 182,: F 0.100 25V Z (UB245100)
 C 5,6,39,40: SL 18P 50V J (UB051180)
 C 19,20: SL 12P 50V J (UB051120)
 C 28-34,86,87,121,122, 176,177,180,181: F 0.010 50V Z (UB044100)
 C 49,50: SL 10P 50V D (UB051100)

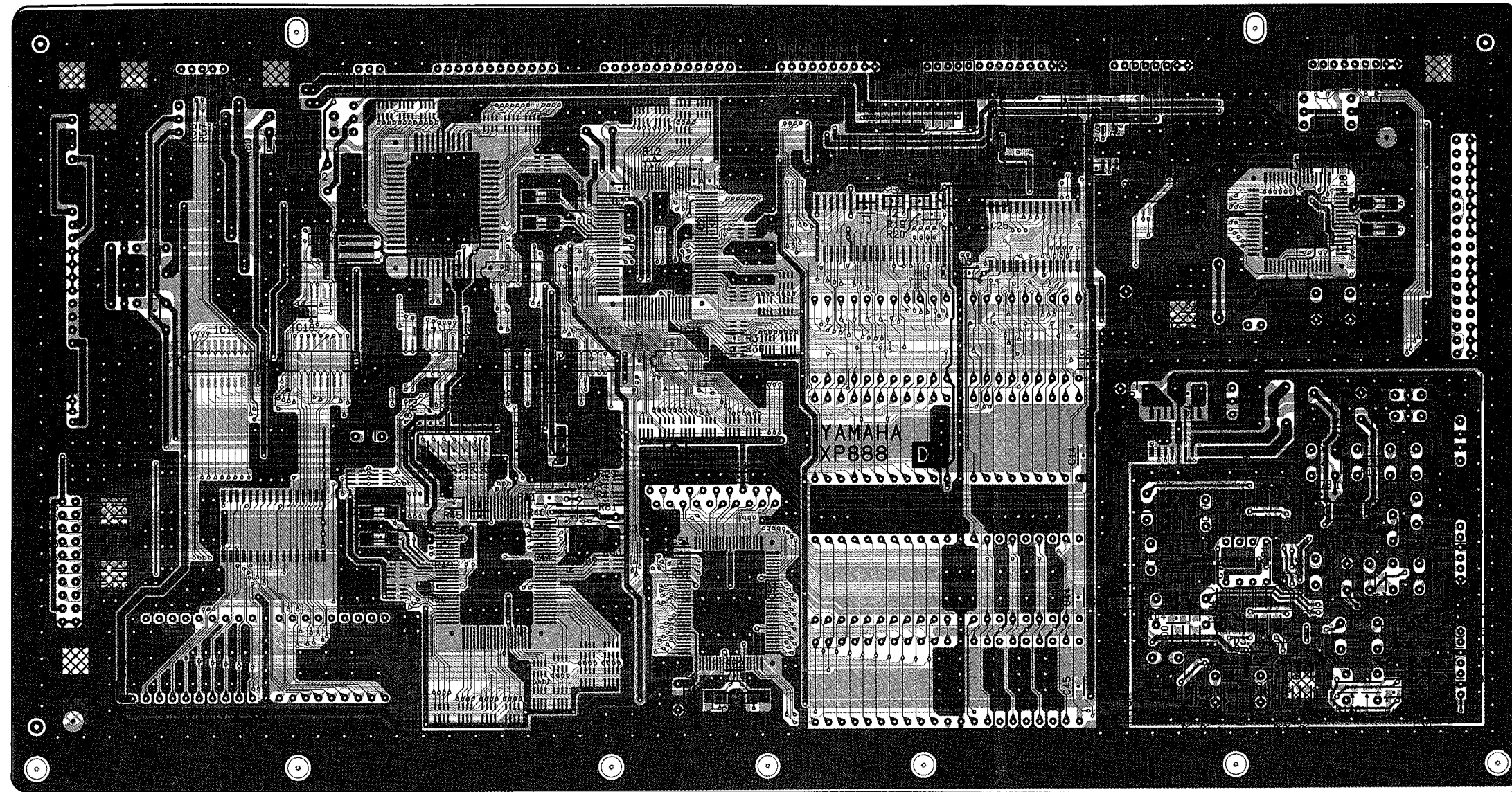
- 4. Electrolytic Cap.**
 C 1,4,11,35,38,47, 91: 10.00 16.0V (UJ837100)
 C 9: 3.30 50.0V (UJ866330)
 C 55: 1.00 50.0V (UJ866100)
 C 59,60: 220.00 6.3V (UJ818220)
 C 63,64,125: 220.00 16.0V (UJ838220)
 C 92,: 47.00 16.0V (UJ837470)
 C 95,96,119,120: 100.00 16.0V (UJ838100)
 C 126: 22.00 16.0V (UJ837220)
 C 185,186: 4.70 50.0V (UJ866470)

- 5. Electrolytic Cap.-BP**
 C 97,98,105,106, 127,128: 10.00 16.0V (UN837100)
 C 123,124,: 22.00 16.0V (UN837220)
- 6. Carbon Resistor (chip)**
 J 4: 0.0 0.0 J (RD250000)
 R 1-5,133,134: 220.0 0.1 J (RD255220)
 R 8,61,62,98,99, 139,140,147: 1.0K 0.1 J (RD256100)
 R 10,150,151: 470.0 1/4 J (RD155470)
 R 11: 330.0 1/4 J (RD155330)
 R 12,46,48,49,51, 149: 100.0 0.1 J (RD255100)
 R 13-17,19,20,27, 28,30,31: 68.0 0.1 J (RD254680)
 R 18,21,29,33-37,39,44, 45,47,50,55,56,76,83, 125,126,129,130,141, 142,148,153: 10.0K 0.1 J (RD257100)
 R 22-26: 2.2K 0.1 J (RD256220)
 R 32,52: 1.0M 0.1 J (RD259100)

- 7. Carbon Resistor (through-hole)**
 R 38,101,102,113, 114,131,132,152: 100.0K 0.1 J (RD258100)
 R 40: 150.0K 0.1 J (RD258150)
 R 41,: 82.0K 0.1 J (RD257820)
 R 42,57,58,81,84, 91-97,135,136, 145,146,: 47.0K 0.1 J (RD257470)
 R 43,87-90,: 22.0K 0.1 J (RD257220)
 R 53,143,144: 680.0 0.1 J (RD255680)
 R 59: 10.0 0.1 J (RD254100)
 R 60,: 82.0 0.1 J (RD254820)
 R 65-69,154: 470.0K 0.1 J (RD258470)
 R 71,72,74,75: 470.0 0.1 J (RD255470)
 R 79,80: 2.7K 0.1 J (RD256270)
 R 85,86,137,138: 47.0 1/4 J (RD154470)
 R 103-108,117, 118,121,122,: 6.8K 0.1 J (RD256680)
 R 109,110: 47.0 0.1 J (RD254470)
 R 111,112,119, 120,: 3.3K 0.1 J (RD256330)

DM : 2NA-VS55750

● DM Circuit Board (Pattern side-パターン側)



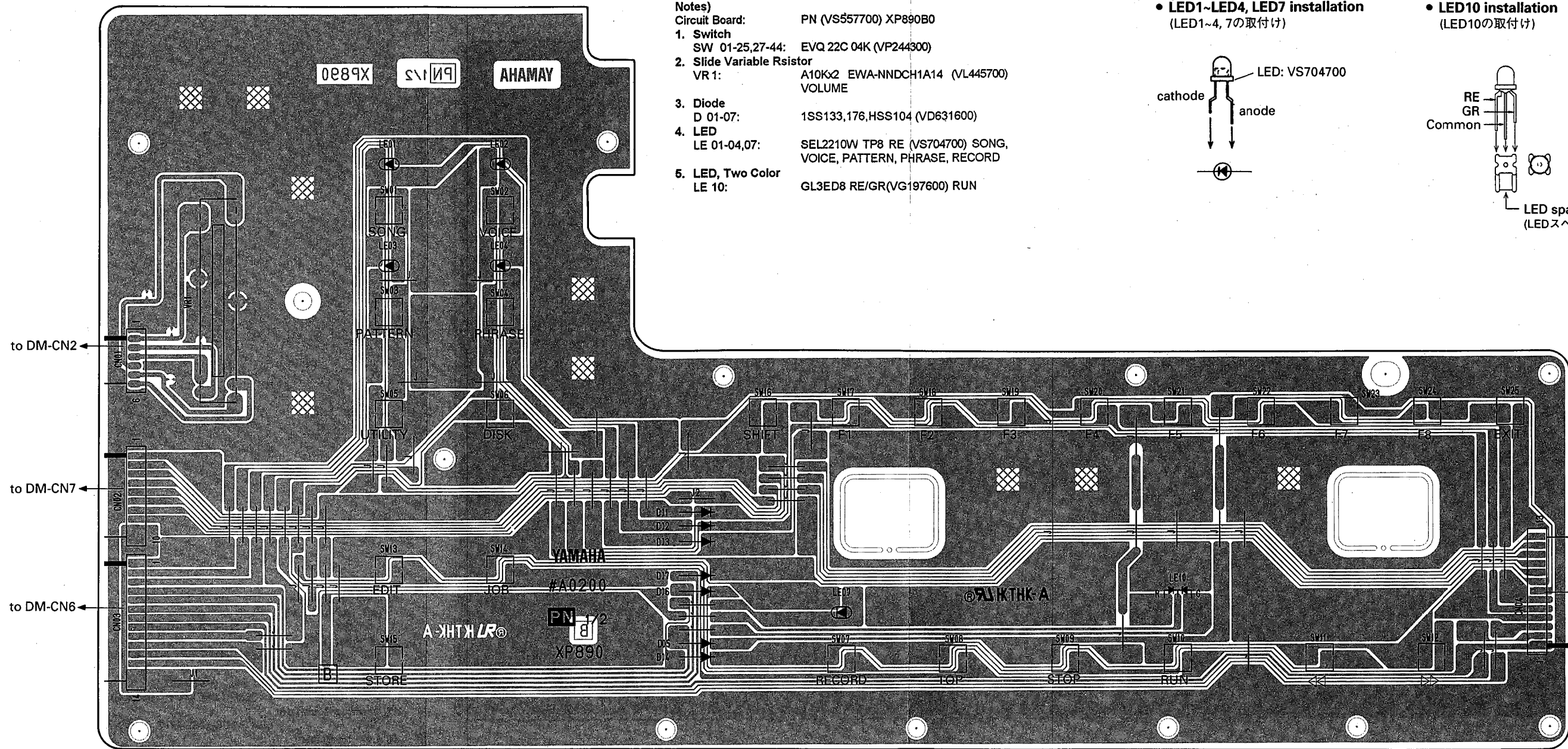
- R 115,116,127,128: 4.7K 0.1 J (RD256470)
- R 123,124: 5.6K 0.1 J (RD256560)
- 7. Metal Oxide Film Resistor
 - R 63: 120.0 1W J (VC745200)
 - R 64: 360.0 1W J (VC746300)
- 8. Resistor Array (chip)
 - RA 1-13,22-36: EXB-V8V103JV (VM506100) 10Kx4
 - RA 14,15: EXB-V8V473JV (VM811600) 47Kx4
 - RA 16-21,37-44: EXB-V8V101JV (VQ018400) 100x4
 - RA 45-47: EXB-V8V223JV (VM506200) 22Kx4
- 9. IC
 - IC 1,7: HD6413002FP16 (XQ375A00) CPU,SUB CPU
 - IC 2: HM514170AJ-7 (XP775A00) DRAM 4M
 - IC 3: M5M52255BFP-70LL (XP218A00) SRAM 256
 - IC 4: UPD27C888DZ-12 (XQ055B00) EPROM 8M MAIN1
 - IC 5: HD63266F FDC (XI939A00) FDC

- IC 6: HD63B05V0E65F (XN668A00) PKS
- IC 8: TC518128CFL-80 (XK832C00) PSRAM 1M
- IC 9: M27C4002-10F1 (XQ056B00) EPROM 4M SUB
- IC 10: MB8316200BP-G-0H9 (XQ057C00) EPROM1 WAVE1
- IC 11: MX23C1610PC-12 (XQ058C00) EPROM 16M WAVE2
- IC 12: MB81C4256A-70PS (XN978A00) DRAM 1M
- IC 13: TC170C120SF-002 (XQ036A00) SWP00
- IC 14: M62021FP (XI688A00) RESET
- IC 15: SN74HC245NSR (XD838A00) BUFFER
- IC 16: TC74AC139F (XP231A00) DECODER
- IC 17,18: SN74HC374ANSR (XQ042A00) D-FF
- IC 19,26: SN74HC14NSR (XC725A00) INVERTER
- IC 20: SN74HC32NSR (XD833A00) OR
- IC 21,22,27: SN74HC74NSR (XC726A00) D-FF
- IC 23: TC74HC4075AF (XL393A00) 3IN OR

- IC 24: MSM538022C-81RS (XQ320B00) EPROM 8M MAIN2
- IC 25: SN74HC139NSR (XC727A00) DECODER
- IC 28: NJM4556AMT1 (XQ138A00) OP AMP
- IC 29: NJM78L05A-T3 (XJ757A00) REGULATOR +5V
- IC 30: UPD63200GS-E1 (XP867A00) DAC
- IC 31,32: UPC4570G2 (XF291A00) OP AMP
- IC 33: NJM4556AD (XQ824A00) OP AMP
- 10. Transistor (chip)
 - TR 1: 2SA1162 O,Y (VJ927200) or 2SA1052 B,C (VQ395600)
 - TR 2-6: 2SC3326 A,B (VD303700)
- 11. Transistor Array (chip)
 - TA 2,3: HN1A01F-Y/GR (VM810300)
 - TA 4: HN1C01F-Y/GR (VS056500)
- 12. Diode (chip)
 - D 1-5: MA221 (VB493900) or RLS-73 (VB797600)
- 13. Photo Coupler
 - PC 1: PC410T (VN686000) or HCPL-M600 (VR903700)

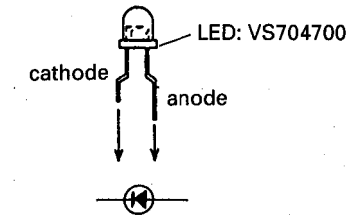
- 14. Chip Inductance
 - L 1-18,21-28,30-38, 40-53: BK2125HS601-T (VR579900)
- 15. LC Filter (EMI)
 - EMI 1-8: DSS306-93F223Z1 (VD542700)
- 16. Quartz Crystal Unit
 - X 1-3: 16M SX-1 (VS669500)
 - X 4: 33.8688M SMD-49 (VT685200)
- 17. Ceramic Resonator
 - CR 1: 8M CSTCS8.00MT-TC (VS669700)
- 18. Lithium Battery
 - BAT 1: CR2450-F2MX1H 3V (VS405700)
- 19. IC Socket
 - IC 9: DICF-40CS-E (VK405200)
 - IC 4,24: DICF-42CS-E (VK863100)
- 20. Connector Base Post
 - CN 01: PH- 7P TE (VB390300)
 - CN 02: PH- 6P TE (VB390200)
 - CN 04: PH- 9P TE (VB390500)
 - CN 05: PH- 8P TE (VB390400)
 - CN 08: PH-14P TE (VE352600)
 - CN 07: PH-10P TE (VB390600)
 - CN 08: PH-13P TE (VF283100)
 - CN 09: PH-12P TE (VB390800)
 - CN 10,13: PH- 3P TE (VB389900)
 - CN 11: PH- 5P TE (VB390100)
 - CN 14: XH-11P TE (LB918110)
 - CN 15,16: XH- 4P TE (LB918040)
- 21. Connector
 - CN 03: 34P TE (VQ391300)
 - CN 12: 20P TE (VS702300)
- 22. Jumper Header
 - J 1: RF 2P TE (VG518300)
- 23. Jumper Wire
 - J 2,3: not installed
 - J 4: 0.0 0.0 J (RD250000)
 - Chip carbon resistor

• PN 1/2 Circuit Board

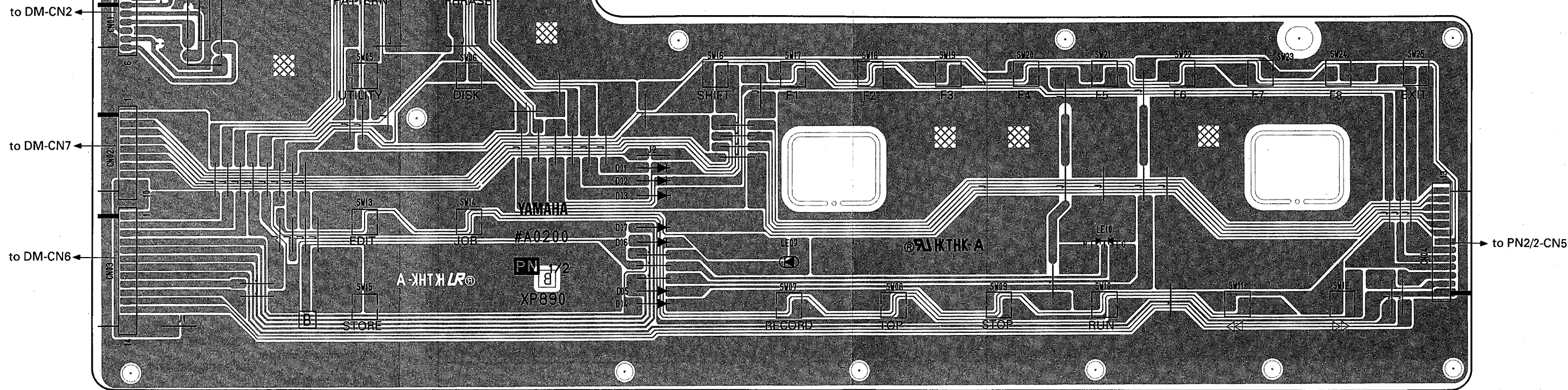
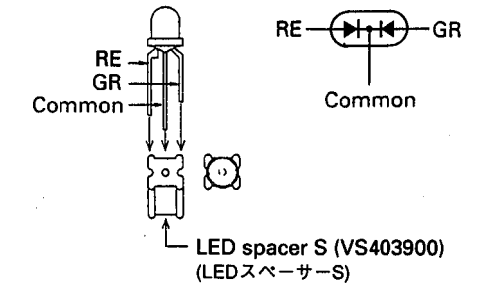


- Notes)
Circuit Board: PN (VS557700) XP890B0
1. Switch
SW 01-25,27-44: EVQ 22C 04K (VP244300)
 2. Slide Variable Resistor
VR 1: A10Kx2 EWA-NNDCH1A14 (VL445700) VOLUME
 3. Diode
D 01-07: 1SS133,176,HSS104 (VD631600)
 4. LED
LE 01-04,07: SEL2210W TP8 RE (VS704700) SONG, VOICE, PATTERN, PHRASE, RECORD
 5. LED, Two Color
LE 10: GL3ED8 RE/GR(VG197600) RUN

• LED1~LED4, LED7 installation (LED1~4, 7の取付け)

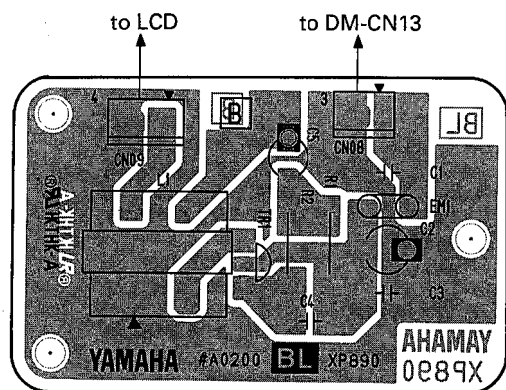


• LED10 installation (LED10の取付け)



Component side(部品側)

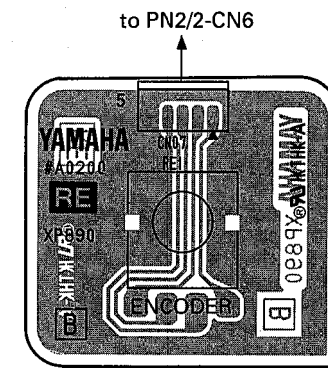
• BL Circuit Board



Component side(部品側)

- Notes)
Circuit Board: BL (VT075100) XP890B0
1. Semiconductive Cera. Cap.
C 1,3: 0.1000 25V Z (VC694800)
 2. Electrolytic Cap.
C 2: 100.00 16.0V (UJ838100)
C 5: 4.70 25.0V (UJ846470)
 3. Mylar Capacitor
C 4: 0.0470 50V J (UA654470)
 4. Carbon Resistor
R 1: 6.8K 1/4 J (HF456680)
R 2: 33.0 1/4 J (HF454330)
 5. Transistor
TR 1: 2SC945A PA (IC094530)
 6. Inverter Transformer
L 1: D32-49A (VK458100)
 7. LC Filter
EM1: DSS306-93F223Z1 (VD542700)
 8. Connector Base Post
CN 08: PH- 3P TE (VB389900)
CN 09: PH- 4P TE (VB390000)

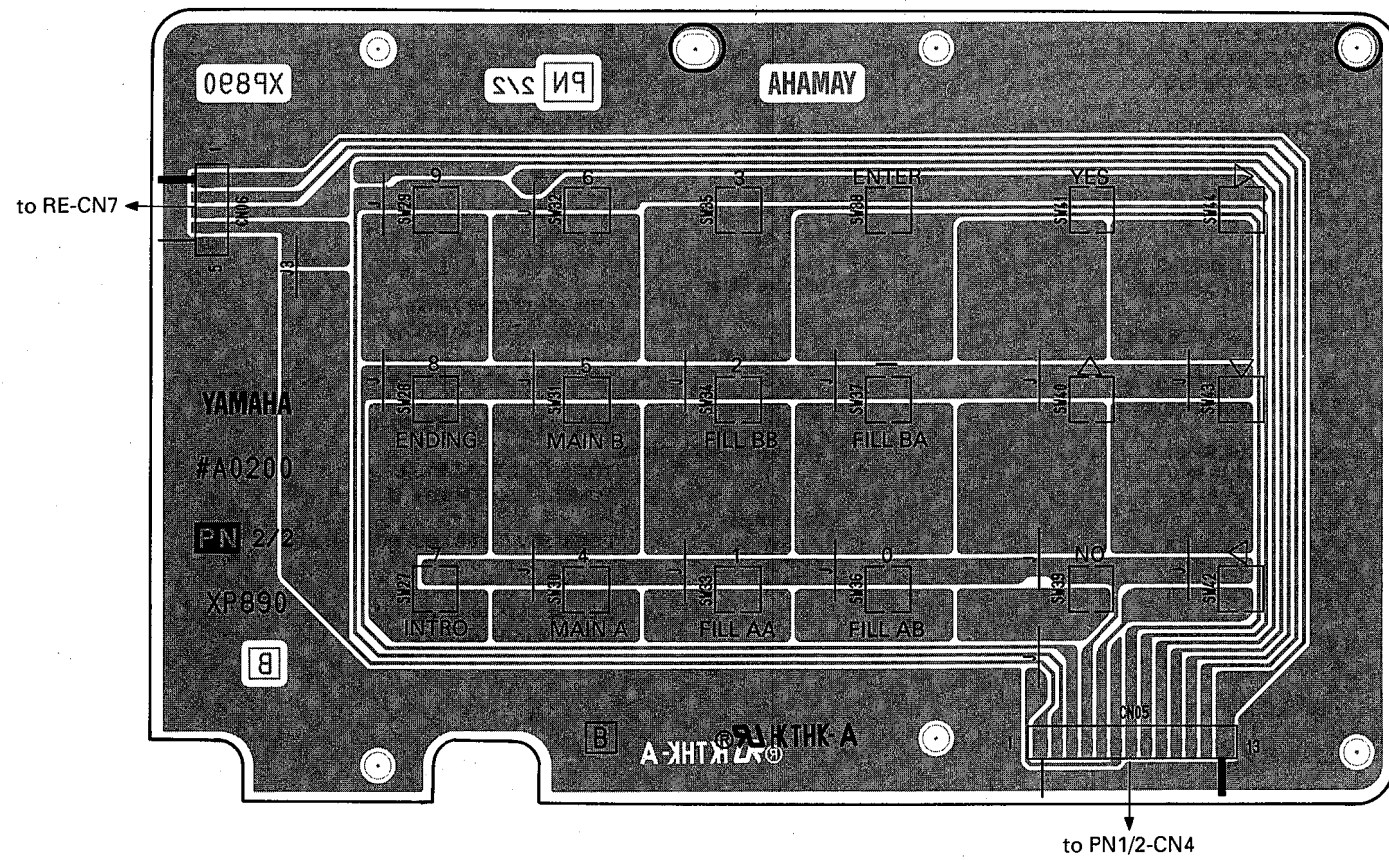
• RE Circuit Board



Component side(部品側)

- Notes)
Circuit Board: RE (VT075000) XP890B0
1. Encoder
ENC1: EVQ VEN F02 24B (VT080100) ENCODER
 2. Connector Base Post
CN07: PH- 5P SE (VB858400)

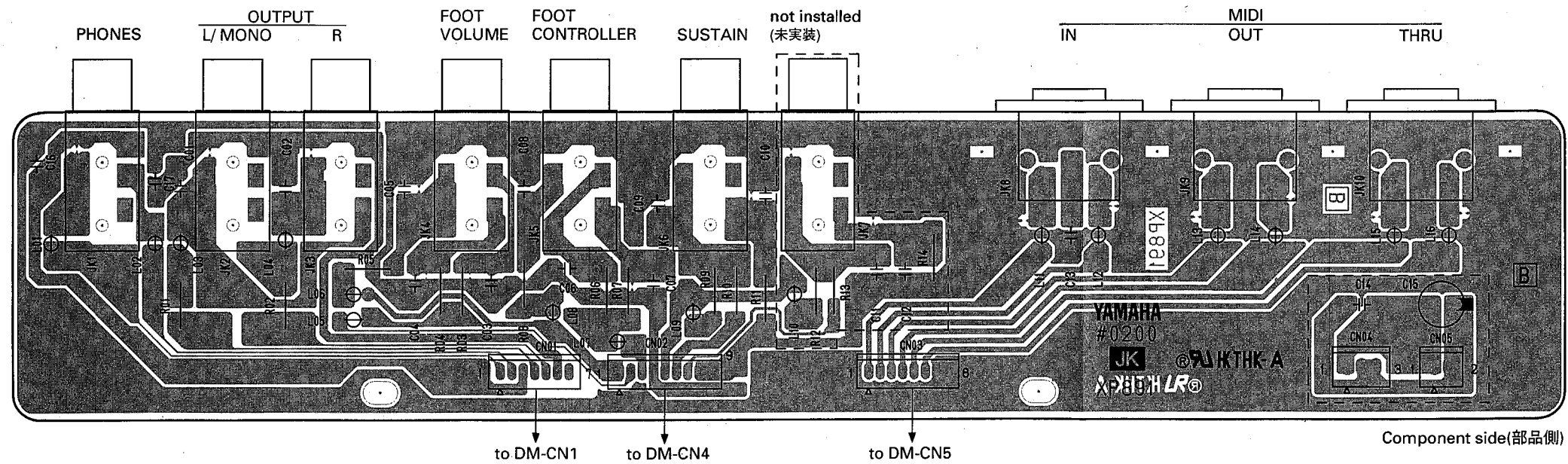
• PN 2/2 Circuit Board



Notes)



- Circuit Board: PN (VS557700) XP890B0
1. Switch
SW 01-25,27-44: EVQ 22C 04K (VP244300)
 2. Slide Variable Resistor
VR 1: A10Kx2 EWA-NNDCH1A14 (VL445700) VOLUME
 3. Diode
D 01-07: 1SS133,176,HSS104 (VD631600)
 4. LED
LE 01-04,07: SEL2210W TP8 RE (VS704700) SONG, VOICE, PATTERN, PHRASE, RECORD
 5. LED, Two Color
LE 10: GL3ED8 RE/GR(VG197600) RUN

• JK Circuit Board

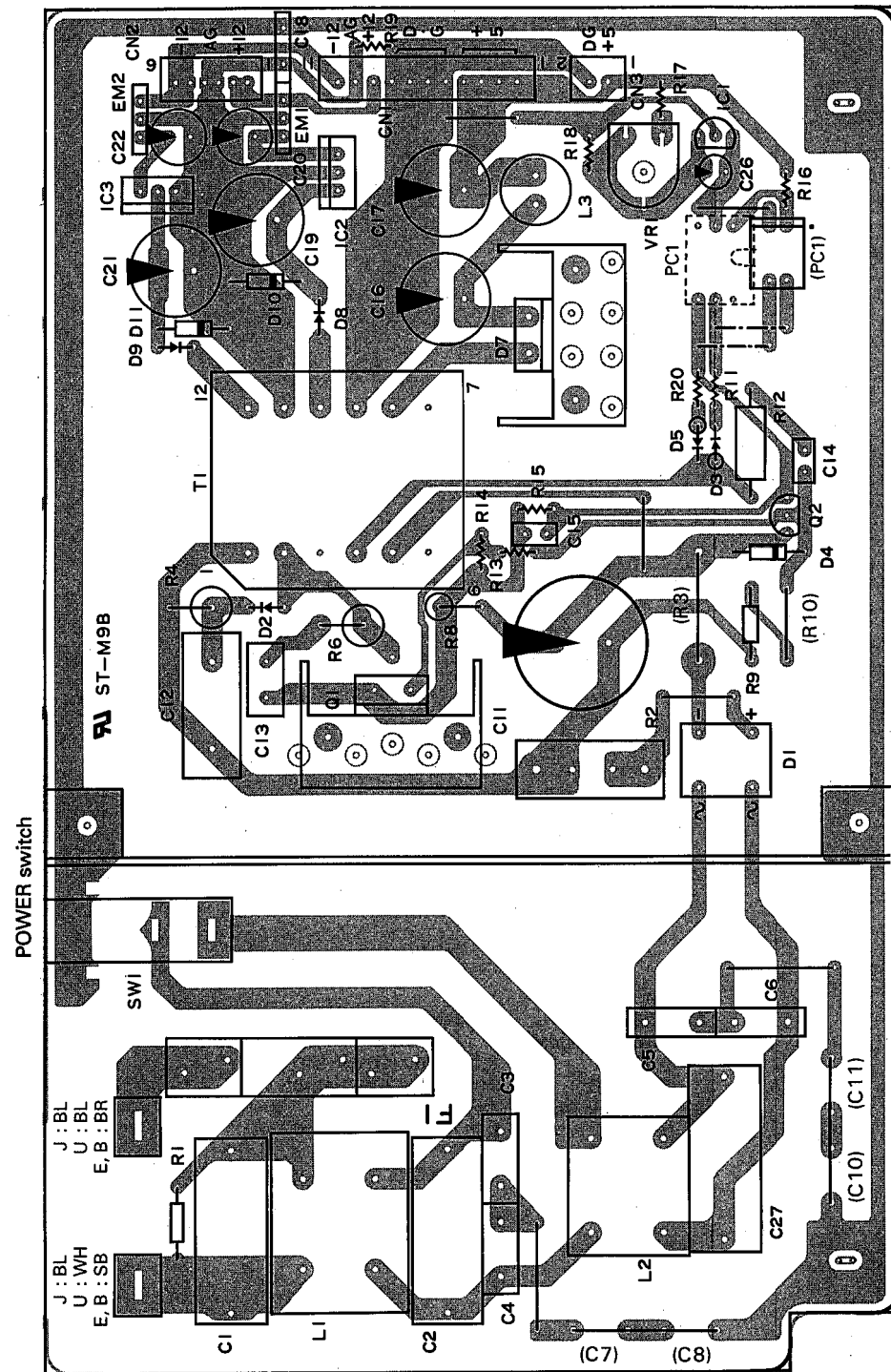


Notes)

- Circuit Board: JK (VT076400) XP891B0
1. Ceramic Capacitor
C 1,2: 1000P 50V K (FG613100)
C 3-10,13: 0.0100 50V Z (FG644100)
 2. Monolithic Ceramic Cap.
C 16,17: 1.500 25V Z (VD534400)
 3. Coil
L 1-9,11-16: FL5R200QNT 20uH (VB835000)
 4. Carbon Resistor
R 1,2: 100.0 1/4 J (HF455100)
R 3,6: 1.0K 1/4 J (HF456100)
R 4,7: 2.7K 1/4 J (HF456270)
R 5,8: 220.0 1/4 J (HF455220)
R 9: 100.0K 1/4 J (HF458100)
R 10: 22.0K 1/4 J (HF457220)
R 11: 4.7K 1/4 J (HF456470)
 5. Phone Connector
JK 1-6: LGR4609-7000 BL (VS115400) PHONES, OUTPUT (L/MONO R), FOOT VOLUME, FOOT CONTROLLER, SUSTAIN
 6. DIN Connector
JK 8-10: 5P TCS4650 (LB500520) MIDI IN, OUT, THRU
 7. Connector Base Post
CN 1: PH- 7P TE (VB390300)
CN 2: PH- 9P TE (VB390500)
CN 3: PH- 8P TE (VB390400)
 8. Jumper Wire
J 1-3: not installed

PN : 3NA1-VS55760 
JK : 3NA1-VS55780 

• PS Circuit Board



Component side(部品側)

Notes)

- Circuit Board: PS (VN225500) J
 Circuit Board: PS (VN225600) U
 Circuit Board: PS (VN225700) E,B
- IC**
 IC 1: uPC1093J (IX801910) REGULATOR
 IC 2: uPC78N12H(F) (IX806870) REGULATOR +12V
 IC 3: uPC79N12H(F) (IX806880) REGULATOR -12V
 - Photo Coupler**
 PC 1: PC817CD (IX806740) J,U
 CNY17GF-2 (IX805930)
 - Transistor**
 Q 2: 2SC2655 O,Y (IC265500)
 - FET**
 Q 1: 2SK1153 (IX803780) J,U
 2SK1338 (IX806750) E,B
 - Diode**
 D 2: 10ELS6 (IX805850)
 D 3 : 1SS84 (IF001380)
 D 4: HZ12B2 (IF003550)
 D 5 : HZ06B1,B2 (IX806850)
 D 7: F5KQ40 (IX806860)
 D 8,9: 10ELS2 (IX806760)
 D 11,12: HZ24B2 (IX806730)
 - Diode Stack**
 D 1: S1WB40 (VB845200) J,U
 S1WB60 (VB845300) E,B
 - Thermostat**
 R 2: A53K-6R8J (HX806790) U
 - Metalized Capacitor**
 C 1,2,27: 0.22 250V (FX801260)
 - Film Capacitor**
 C 14,15: 0.022 50V (FX801270)
 - Ceramic Cap.**
 C 3-6: 1000p 400V (VA879600)
 C 7-10: 2200p 400V (VA879900) E,B
 C 12: 0.01 125V (FX801430)
 C 13: 100p 1kV (FX800810) J,U
 47p 1kV (FX801440) E,B
 C 18: 0.01 50V (FG744100)
 - Electrolytic Cap.**
 C 3-6: 150 200V (FX801370) J,U
 100 400V (FX801380) E,B
 C 16: 3300 10V (FX801390)
 C 17: 2200 10V (FX801400)
 C 19,21: 1000 25V
 C 20,22: 100 25V (FX801420)
 C 26: 1 50V (FX801360)
 - Trimmer Potentiometer**
 VR 1: B1K RVF08P (HT570540)
 - Metal Oxide Film Resistor**
 R 2: 6.8 3W (HX806860) J
 R 2,3: 6.8 3W (HX806860) E,B
 R 4: 33.0K 3W (HX806750) J,U
 68.0K 3W (HX806800) E,B
 R 6: 150.0 3W (HX806810) J,U
 330.0 3W (HX806820) E,B
 R 8: 0.47 2W (HL322470) J,U
 1.20 2W (HX806830) E,B
 R 12: 82.0 1W (HL315820)
 - Flame Proof C. Resistor**
 R 11: 470.0 1/4W (HV755470) E,B
 R 13: 15.0 1/4W (HV454150)
 R 14: 15.0K 1/4 (HV457150) E,B
 R 15: 1.2K 1/4 (HV456120) E,B

15. Carbon Resistor

- R 1: 680K 1/2W
 R 9: 560 1/2W
 R 10: 560 1/2W E,B
 R 11: 470 1/4W J,U
 R 14: 15K 1/4W J,U
 R 15: 1.2K 1/4W J,U
 R 16: 100 1/4W
 R 17: 3.3K 1/4W
 R 18: 3.6K 1/4W
 R 19: 10 1/4W
 R 20: 5.1K 1/4W
16. Line Filter
 L 1: LUMR3403 (GX803460)
 L 2: NFR5UA203A (GX803380)
17. Choke Coil
 L 3: SC9H470K-30 (GX803400)
18. EMI Filter
 EMI 1,2: IFS206-F223ZA (GX803240)
19. Power Transformer
 T 1: TUM050 (GX803470) J,U
 TUM051 (GX803480) E,B
20. Switch
 SW 1: ESB8235V (KX803330) POWER SW
21. Fuse
 F 1: 1.5A/250V (KX803310) J,U
 2.0A/250V (KX803320) J,U
 1.25 218 (KX803270) E,B

TEST PROGRAM

1 PREPARATIONS

Testing in auto-mode or manual mode will require the following measuring devices and jigs.

Measuring instruments: Frequency counter, oscilloscope, level meter (JIS-C curve), distortion meter (flat), keyboard amp, etc.

Jigs: MIDI cable, etc.

Test No.	Item	Judgment Criteria
T1	RAM Read/Write	OK/NG
T2	WAVE ROM	OK/NG
T3	MIDI In/Out	OK/NG
T4	Disk Read/Write	OK/NG; Track 0, 40, 70 Format/W/R/V
T5	Pitch Bend	OK/NG; 64-127-00-64
T6	Modulation Wheel	OK; 0-10-120-127-120-10-0
T7	Aftertouch	OK; 0-10-120-127-120-10-0
T8	Foot Volume	OK; 0-10-120-127-120-10-0
T9	Foot Controller	OK; 0-10-120-127-120-10-0
T10	Sustain Switch	OK; 0-1
T11	Panel Switches	OK; ON/OFF
T12	Keyboard	OK; Key codes, Key touch
T13	Battery	OK/NG; voltage reading
T14	All LEDs On	Even brightness
T15	LCD/Rotary Encoder	All dots: black, white, contrast
T16	1 kHz OUTPUT-L	OUTPUT(L) = +6.5 +/- 2 dBm (10 kohms load) (Reference: Distortion <= 0.42%) OUTPUT(R) <= -66.0 dBm (10 kohms load) PHONES(L) = +7.0 +/- 2 dBm (33 ohms load) PHONES(R) <= -53.0dBm (33 ohms load)
T17	1 kHz OUTPUT-R	OUTPUT(R) = +6.5 +/- 2 dBm (10 kohms load) (Reference: Distortion <= 0.42%) OUTPUT(L) <= -66.0 dBm (10 kohms load) PHONES(R) = +7.0 +/- 2 dBm (33ohms load) PHONES(L) <= -53.0 dBm (33 ohms load)
T20	Factory Set	OK/NG
T21	Exit (Noise Level)	OUTPUT(L,R) <= -84.0 dBm (10 kohms load) PHONES(L,R) <= -83.0 dBm (33 ohms load)

2. Starting the Test Program

Switch on the unit and allow a few seconds for start-up. Then hold down [SONG] and press [EXIT] to produce the following screen.

```
Test
Main Date=xxxx/xx/xx, VER.=Ver##. ##
Slave ##. ##
```

Then produces the following screen.

```
[EXIT]=EXIT, [ENTER]=FACTORY SET
[-1]=AUTO MODE, [+1]=MANUAL MODE
```

Select the operation by pressing one of the four switches, as follows.

- [-1]: Starts test execution in automatic mode.
- [+1]: Starts test execution in manual mode.
- [ENTER]: Executes T-20 ("Factory settings") to set parameters to their factory values, then terminates TEST mode and returns to PLAY mode.
- [EXIT]: Terminates TEST mode and returns to the previous screen (without resetting parameters to factory settings).

3. Running the Tests

Running in Manual Mode;

When you first select manual mode, the following display appears.

```
00: Test No. ?
```

To move through the various tests by pressing one or more of the following switches: [+1], [-1], [ENTER], [>], [<], [0] ~ [9], [EXIT]. Switch action is as follows.

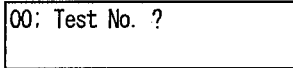
- [+1]: Selects and executes the next test.
- [-1]: Selects and executes the "previous" test.
- [ENTER]: Executes the currently selected test.
- [>]: Selects the test which follows the current test and displays the test items.
- [<]: Selects the test which precedes the current test and displays the test items.
- [EXIT]: Terminates TEST mode and returns to the previous screen (refer to T21, "EXIT" for details).

[0]~[9]: You can use the number pad to select any test by inputting its (two-digit) test number.

In automatic mode, the unit automatically executes tests one by one, in order of test number. Testing continues through to test 21 ("EXIT") or until an error condition (NG result) is returned.

Running in Automatic Mode:

When you first select automatic mode, the following display appears.



To execute all tests, starting from Test 1 (RAM R/W), press [ENTER]. To start execution from a test other than Test 1, enter the number of the test (using [<], [>], or the number pad), then press [ENTER] to begin execution. The unit executes the selected test, then executes all subsequent tests, one by one, until an NG is returned or testing is completed. If a test returns an NG (error condition), the unit displays the NG screen and stops the test procedure. You can clear the error by pressing [ENTER] (to reexecute), [+1] (to proceed to the next test), or [EXIT] (to exit from TEST mode).

4. Handling an NG Test Result

If a test returns an NG ("no good"), testing stops. You can resume testing as described below.

In manual mode:

Press [EXIT]. The unit then awaits input of another test number. (But note that you can not terminate the test by pressing [EXIT] during the PANEL SWITCH TEST [T11]).

In automatic mode:

When an NG occurs, the unit displays the corresponding NG screen and interrupts testing. Proceed in either of the following ways.

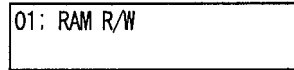
- (a) Press [-1] to clear the NG condition, then press [ENTER] to resume automatic testing starting from the failed test, or [+1] to resume automatic testing starting from the next test.
- (b) Press [EXIT] to select test 21 ("EXIT"). Then press [+1] to exit, terminating TEST mode; or else press [-1] to cancel the exit and return to the test-number selection screen.

5. Hidden Operations

- (1) To forcibly reinitialize the unit: switch on the power while holding down [SHIFT], [SONG], and [VOICE].
- (2) Voice Play Mode operation: Press [SHIFT]+[STORE] to load all slave-side user voices to the main side.
- (3) Phrase Mode operation: Press [SHIFT] + [EDIT] to advance to screens that enable you to set pitch ranges for phrase chord developments.

T1 RAM READ/WRITE

Initial Display



Executes a write/read/verify test of SRAM, DRAM, and PSRAM. Tested addresses are as follows.

IC3 = h'200000 - h'207FFF

Test points:

h'00001 00002 00004 00008 00010 00020 00040
00080
h'00100 00200 00400 00800 01000 02000 04000

IC2 = h'600000 - h'6FFFFF

Test points:

h'00002 00004 00008 00010 00020 00040 00080
h'00100 00200 00400 00800 01000 02000 04000
08000

IC8 = h'600000 - h'61FFFF

Test points:

h'00000 00001 00002 00004 00008 00010 00020
00040 00080
h'00100 00200 00400 00800 01000 02000 04000
08000 10000

The test executes a write/verify check of the above addresses, incrementing the address and data values by bit shift until testing is completed.

Result Screens



Termination

The test displays the result, then terminates.

Comments

The program restores all original RAM data prior to test termination.

T2 WAVE ROM

Initial Display

02: WAVE ROM

Executes a data read check of the following WAVE ROM addresses:

h'000000 - h'0FFFFFF IC10
h'100000 - h'1FFFFFF IC11

Test points are as follows:

h'00000 00001 00002 00004 00008 00010 00020
00040 00080
h'00100 00200 00400 00800 01000 02000 04000
08000
h'01000 02000 04000 08000 10000 20000 40000
80000

Result Screens

OK 02: WAVE ROM OK

NG 02: WAVE ROM
W-ROM ICxxx NG
(xxx : IC number of the failed IC)

Termination

The test displays the result, then terminates.

T3 MIDI IN/OUT/THRU

Initial Display

03: MIDI I/O/T

Checks operation of the MIDI IN and OUT connectors. The test pattern is "AA FF 00 55".

Before starting the test, connect the unit's MIDI IN to OUT connector via a MIDI cable. When you start the test, the program checks the operation of the IN and OUT connectors.

Result Screens

OK 03: MIDI I/O/T OK

NG 03: MIDI I/O/T NG

Termination

In manual mode: Press [EXIT] to terminate output of the test pattern. The LCD then prompts for input of another test number.

In automatic mode: Press [+1] to terminate output of the test pattern and proceed to execution of the next test.

T4 DISK READ/WRITE

Initial Display

04: FDD F/W/R
Insert Disk, and then Hit [ENTER]

This test checks floppy-disk access (format, read, and write). The test assumes the use of a 3.5" 2DD unformatted floppy disk.

The following disk tracks are tested:

SIDE 0 = 40(SEC 4) - 00(SEC 1) - 79(SEC 9)
SIDE 1 = 40(SEC 4) - 00(SEC 1) - 79(SEC 9)

Use a blank (unformatted) 3.5" floppy disk. Check that the disk's write-protect tab is set to "off", then insert the disk and start the test. When the test is finished, remove the disk.

Result Screens

OK 04: FDD F/W/R
verify:C79:H1 OK

NG 04: FDD F/W/R
nnnnnn:Cyy:Hx NG

(x : gives the side, yy : gives the track,)
(nnnnnn : gives the error-time status.)

Termination

If the test result is OK, the program displays the result, then displays the following message.

04: FDD F/W/R
Remove Disk

Be sure that the disk is removed, then terminate the test. If the test returns an NG, clear the condition as described under Section 4 ("Handling an NG Test Result"), above.

Comment

The program will not advance to another operation until you remove the disk.

T5 PITCH BENDER

Initial Display

05: PITCH BENDER
xxx 064

xxx: Current data-entry value.

This test checks for proper operation of the pitchbend wheel.

The LCD shows both the current pitchbend value and the next target value. Move the wheel smoothly toward the next target value: from center to top, then to bottom, then back to center.

The target values are as follows:

64 (Center) -> 127 (Top) -> 00 (Bottom) -> 64 (Center)

The LCD appears as follows.

```
05: PITCH BENDER
xxx yyy
```

xxx: current pitch-bend value
yyy: next target value

Watch the screen to confirm that pitchbend positions and changes are correctly registered. Values should change smoothly, without sticking. Also confirm that the test returns an OK result.

Result Screens

OK

```
05: PITCH BENDER
064 064 OK
```

NG

```
05: PITCH BENDER
xxx Center NG
```

(If pitchbend value at start or end of test is not CENTER [=64], the LCD returns the NG screen, with "xxx" indicating the erroneous value.)
(The test terminates when the pitchbend wheel passes through center position after moving through values 64 -> 127 -> 00.)

Termination

The test displays the result, then terminates. If the test returns an NG, clear the condition as described under Section 4 ("Handling an NG Test Result"), above.

T6, T8, T9 MODULATION WHEEL, FOOT VOLUME & FOOT CONTROLLER

Initial Display

```
06: MODULATION WHEEL
xxx 000
```

```
08: FOOT VOLUME
xxx 000
```

```
09: FOOT CONTROLLER
xxx 000
```

xxx: Controller's current value.

Checks for proper operation of the corresponding controller.

The LCD shows both the current controller value and the next target value (range). Move the controller smoothly to the targets: from bottom to top, then back to the bottom.

The target values are as follows:

00 (Bottom) -> 10-120 -> 127 (Top) -> 120-10 -> 00 (Bottom)

The LCD screens are as follows.

```
06: MODULATION WHEEL
xxx yyy
```

```
08: FOOT VOLUME
xxx yyy
```

```
09: FOOT CONTROLLER
xxx yyy
```

```
06: MODULATION WHEEL
xxx yyy-zzz
```

```
08: FOOT VOLUME
xxx yyy-zzz
```

```
09: FOOT CONTROLLER
xxx yyy-zzz
```

xxx: current pitch-bend value
yyy,yyy-zzz: next target

Watch the screen to confirm that controller values change smoothly. Confirm that the test returns an OK result.

Result Screens

```
06: MODULATION WHEEL
000 000 OK
```

```
08: FOOT VOLUME
000 000 OK
```

```
09: FOOT CONTROLLER
000 000 OK
```

NG No display

Termination

The test displays the result, then terminates. If the test result is NG, clear the condition as described under Section 4 ("Handling an NG Test Result"), above.

T7 AFTERTOUCH

Initial Display

```
07: AFTERTOUCH
xxx 000
```

xxx: Current aftertouch value

Checks for correct aftertouch operation.

The LCD shows the current aftertouch value and the next target value (range). Change the applied aftertouch (pressure on key D3) to match the next target, as follows:

The target values are as follows:

00-02 (Weak) -> 10-120 -> 127 (Strong) -> 120-10 -> 00-02 (Weak)

The LCD screens are as follows.

07: AFTER TOUCH
xxx yyy

07: AFTER TOUCH
xxx yyy-zzz

xxx: current aftertouch value
yyy,yyy-zzz: next target

Watch the screen to confirm that the aftertouch value changes smoothly, without sticking. Also confirm that the test returns an OK result.

Result Screens

OK 07: AFTER TOUCH
000 000-002 OK

NG No display

Termination

The test displays the result, then terminates. If the test result is NG, clear the condition as described under Section 4 ("Handling an NG Test Result"), above.

T10 SUSTAIN SWITCH

Initial Display

10: SUSTAIN SW
0

Switch the sustain pedal on and off to check that sustain-switch input is operating correctly.

Check that the value changes and that the LCD returns an OK.

Result Screens

OK 10: SUSTAIN SW
1 OK

NG No display

Termination

The test displays the result, then terminates. If the test result is NG, clear the condition as described under Section 4 ("Handling an NG Test Result"), above.

T11 PANEL SWITCHES

Initial Display

11: PANEL SWITCH
Rest xx switches

This test checks that panel switches and LEDs are working properly. It also checks that all 32 channels can correctly produce sound.

Set panel switches ON/OFF one by one, starting from [REC] and proceeding to [>]. The LCD indicates the number of switches remaining to be checked.

11: PANEL SWITCH
Rest xx switches

xx: the number of switches remaining to be checked

During the test, each switch triggers a specific LED and pitch, as indicated in the table below. While the switch is on, the unit responds by lighting the corresponding LED and producing the corresponding pitch (PIANO voice). The LED and sound output should go off when the switch is set off.

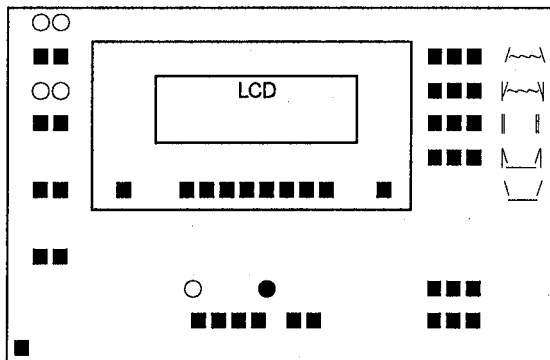
Once a switch has been judged OK, it becomes inactive; subsequent pressing of the switch will have no effect.

When the program has detected ON/OFF action for all switches, it returns the OK verdict and terminates the test.

Consecutive sounds are produced over different channels. Correct sound output for 32 consecutive switch presses confirms that all channels are producing sound.

SWITCH	LED	PITCH
SONG	SONG	C3
VOICE	VOICE	D3
PATTERN	PATTERN	E3
PHRASE	PHRASE	F3
UTILITY	SONG	G3
DISK	VOICE	A3
EDIT	PATTERN	B3
JOB	PHRASE	C4
STORE	SONG	D4
SHIFT	VOICE	C3
F1	PATTERN	D3
F2	PHRASE	E3
F3	SONG	F3
F4	VOICE	G3
F5	PATTERN	A3
F6	PHRASE	B3
F7	SONG	C4
F8	VOICE	D4
EXIT	PATTERN	E4
RECORD	RECORD	C3
TOP	RUN	D3
STOP	RECORD	E3
RUN	RUN	F3

SWITCH	LED	PITCH
BWD	RECORD	G3
FWD	RUN	A3
7	SONG	C3
8	VOICE	D3
9	PATTERN	E3
4	PHRASE	F3
5	SONG	G3
6	VOICE	A3
1	PATTERN	B3
2	PHRASE	C4
3	SONG	D4
0	VOICE	E4
-	PATTERN	F4
ENTER	PHRASE	G4
DEC/NO	RECORD	C3
UP	RUN	D3
INC/YES	RECORD	E3
LEFT	RUN	F3
DOWN	RECORD	G3
RIGHT	RUN	A3



Note) ○ : Red LED
 ● : Green LED
 ■ : Switch (button)

Confirm that all switches (buttons) operate correctly, that all LEDs go on and off as expected, and that all 32 channels are producing sound correctly.

Result Screens

OK 11: PANEL SWITCH OK

NG No display

Termination

When the program has determined correct operation of all switches, it returns the OK screen and terminates the test.

Comment

In general you can exit the test by pressing [EXIT]. Note that if you have not yet tested the [EXIT] switch, the program will interpret the first [EXIT] press as part of the test: you will therefore have to press the switch twice in order to exit.

T12 KEYBOARD

Initial Display

12: KEYBOARD

This test checks for correct keyboard operation. Hit each of the 61 keys (C1 to C6), using velocity between h'10 and h'6F.

12: KEYBOARD
 Note=G#3, Vel=103

(assuming tested note was G#3)

If key action is normal, Key-On will produce output of the corresponding note. Sound will then go off when Key-Off is received.

When the program has detected correct action for all keys, it returns an OK.

Result Screens

OK 12: KEYBOARD OK

NG No display

Termination

When the program has determined correct operation of all keys, it returns the OK screen and terminates the test.

T13 BATTERY

Initial Display

13: BATTERY

This test returns the voltage of the backup battery. Confirm that the voltage is between 2.6V and 3.5V which is displayed on the LCD.

Result Screens

OK 13: BATTERY
xxxV OK

NG 13: BATTERY
xxxV Lo NG

(xxx : gives the battery voltage. If voltage is too low, the screen also indicates "Lo NG")

Termination

The test displays the result, then terminates.

Comments

Battery voltage may be erratic immediately following power-up. Do not execute this test within the first 20 seconds following power-on.

T14 ALL LEDs ON

Initial Display

14: LED	
All	On

Use this test to visually confirm that all LEDs are producing appropriate brightness.

Result Screens

None

Termination

In automatic mode: Press [+1] to proceed to execution of the next test.

T15 LCD/ROTARY ENCODER

Use this test to check correct operation of LCD dots.

Start the test, then rotate the rotary encoder to change the contrast.

Check that all dots are blinking black/white. Also check that the contrast changes smoothly, and that dots can produce perfect blacks and whites.

Result Screens

None

Termination

In manual mode: Press [EXIT] to end the test. The LCD responds by prompting for input of another test number.

In automatic mode: Press [+1] to proceed to execution of the next test.

T16 1 kHz OUTPUT - L

Initial Display

16: 1 kHz L	
-------------	--

This test checks OUTPUT-L and PHONES-L for correct signal output.

Insert plugs into OUTPUT-L, OUTPUT-R, PHONES(L), and PHONES(R). Set the master volume to MAX. Use the frequency counter, oscilloscope, and level meter (with JIS-C filter) to measure frequency, waveform, and output level at each output.

While output is in progress, the LCD appears as follows:

16: 1 kHz L	
Output On	

Checkpoints

Confirm that outputs meet the following criteria.

OUTPUT-L: 1 kHz +/-1.5 Hz, sine wave, +6.5 +/- 2 dBm (10 kohm load) (Reference value: Distortion <= 0.42%)

OUTPUT-R: Not above -66 dBm (10 kohm load)

PHONES(L): 1 kHz, sine wave, +7.0 +/- 2dBm (33 ohm load) (Reference value: Distortion <= 0.58%)

PHONES(R): Not above -53 dBm (33 ohm load)

Result Screens

OK No display

NG

16: 1 kHz L	
Output Off	NG

Result screen appears only if output during test is abnormal.

Termination

In manual mode: Press [EXIT] to end output. The LCD responds by prompting for input of another test number.

In automatic mode: Press [+1] to terminate output and proceed to the next test.

T17 1 kHz OUTPUT - R

Initial Display

17: 1 kHz R	
-------------	--

This test checks OUTPUT-R and PHONES-R for correct signal output.

Insert plugs into OUTPUT-L, OUTPUT-R, PHONES(L), and PHONES(R). Set the master volume to MAX. Use the frequency counter, oscilloscope, and level meter (with JIS-C filter) to measure frequency, waveform, and output level at each output.

While output is in progress, the LCD appears as follows:

17: 1 kHz R	
Output On	

Checkpoints

Confirm that outputs meet the following criteria.

OUTPUT-L: Not above -66dBm (10-kohm load)
 OUTPUT-R: 1 kHz +/- 1.5 Hz, sine wave, +6.5 +/- 2 dBm (10 kohm load) (Reference value: Distortion <= 0.42%)

PHONES(L): Not above -53 dBm (33 ohm load)
 PHONES(R): 1 kHz, sine wave, +7.0 +/- 2dBm (33 ohm load) (Reference value: Distortion <= 0.58%)

Result Screens

OK No display

NG

17: 1 kHz R	
Output Off	NG

Result screen appears only if output during test is abnormal.

Termination

In manual mode: Press [EXIT] to end output. The LCD responds by prompting for input of another test number. In automatic mode: Press [+1] to terminate output and proceed to the next test.

T20 FACTORY SETTINGS

Initial Display

20: FACTORY SET
Insert Disk, and then Hit [ENTER]

This test sets parameters to their factory values, as read in from the Factory Settings disk.

Upon execution, the following display appears:

20: FACTORY SET
Sure?

Press [+1] to load the factory settings, or [-1] if you want to leave current parameter settings unchanged. In either case, the test program will then automatically proceed to T21 (EXIT).

Result Screen

When parameters have been reset to factory values:

20: FACTORY SET
OK

Termination

The test displays the result, then terminates. Factory settings are listed below.

System Setup

MASTER TUNE:	0[cent]
MASTER VOLUME:	127
TRANSPOSE:	0
Keyboard Transpose:	0
Foot Volume Ctrl Number:	7(volume)
System Mode:	XG
Local:	on
Device Number:	all
Voice Mode Receive Ch.:	omni
Voice Mode Transmit Ch.:	1
RX Pitch Bend:	on
RX Ch's After Touch:	off
RX Program Change:	on
RX Control Change:	on
RX Key's After Touch:	off
RX Note:	on
RX NRPN:	off
RX Bank Change:	on
RX System Exclusive:	on
MIDI Sync:	int
MIDI Control:	on
Interval Time:	1[*100msec]
Click Beat:	8
Click Mode:	rec
Click Level:	100

LCD Contrast:	7
Greeting Message:	'Welcome to QS world.' ' I am ready!! '

Drum Setup1
Drum Setup2
Set to produce GM Drum 1.

User Voice
As loaded from Factory Settings disk.

Song
New song (Cleared)
Multi value is same as at XG On.

User Pattern
cleared

User Phrase
cleared

Power-up Mode: Voice Play, Bank= Preset, Voice Number = 1

T21 EXIT

Initial Display

21: EXIT

Exits from TEST mode.

Upon execution, the following display appears:

21: EXIT
Sure?

Press [+1] to exit, or [-1] to cancel exit.

Termination

The test terminates when you press [+1] or [-1], as described above.

Comments

The system responds to the EXIT by executing the normal power-up sequence. The system will require a few seconds to enable itself for normal play.

Next, measure the click produced by ON/OFF of the unit's power switch. The click level must not exceed 100 mV-pp at any output (OUTPUTS, PHONES).

After loading the factory values and exiting from TEST mode, but (before) sending any Note-On messages, please also check the noise levels at OUTPUT and PHONES. Noise levels must meet the following conditions.

OUTPUT -L:	Not above -84 dBm (10 kohm load)
OUTPUT -R:	Not above -84 dBm (10 kohm load)
PHONES -L:	Not above -83 dBm (33 ohm load)
PHONES -R:	Not above -83 dBm (33 kohm load)

■ テストプログラム

番号	項目	判定条件など
T1	Ram Read/Write	OK/NG
T2	WAVE ROM	OK/NG
T3	MIDI In/Out	OK/NG
T4	Disk Read/Write	OK/NG, Track 0,40,79 Format/W/R/V
T5	Pitch Bend	OK/NG, 64-127-00-64
T6	Modulation Wheel	OK, 0-10-120-127-120-10-0
T7	After Touch	OK, 0-10-120-127-120-10-0
T8	Foot Volume	OK, 0-10-120-127-120-10-0
T9	Foot Controller	OK, 0-10-120-127-120-10-0
T10	Sustain Switch	OK, 0-1
T11	Panel Switch	OK, ON/OFF
T12	Keyboard	OK, Key Code/Key Touch
T13	Battery	OK/NG, 電圧が読める
T14	LED 全点灯	明るさのむらがないか
T15	LCD/Rotary Encoder	全ドット黒、白、コントラスト調整効果
T16	1 kHz OUTPUT-L 発音	OUTPUT(L)= +6.5 ± 2 dBm (10 kohm) 参考(歪率=0.42%以下) OUTPUT(R)= -66.0 dBm 以下 (負荷 10 kohm) PHONES(L)= +7.0 ± 2 dBm (負荷 33 ohm) PHONES(R)= -53.0 dBm 以下 (負荷 33 ohm)
T17	1 kHz OUTPUT-R 発音	OUTPUT(R)= +6.5 ± 2 dBm (負荷 10 kohm) 参考(歪率=0.42%以下) OUTPUT(L)= -66.0 dBm 以下 (負荷 10kohm) PHONES(R)= +7.0 ± 2 dBm (負荷 33ohm) PHONES(L)= -53.0 dBm 以下 (負荷 33ohm)
T20	Factory Set	OK/NG
T21	Exit (Noise Level)	OUTPUT(L,R)= -84.0 dBm 以下 (負荷 10 kohm) PHONES(L,R)= -83.0 dBm 以下 (負荷 33 ohm)

1. 測定条件

マニュアルモード、オートモードで本体をテストする場合、次の測定器、治具が必要です。

測定器: 周波数カウンタ、オシロスコープ、レベル計 (JIS-C カーブ)、歪率計 (Flat)、キーボードアンプなど

治具: MIDIケーブルなど

[ENTER] を押すと、” T-20. ファクトリーセット” を実行した後、自動的にテストモードから抜け、プレイモードになります。

[EXIT] を押すと、テストモードを抜けて直前の画面に戻ります。このとき、ファクトリーセットは実行されません。

2. テストエントリー

本体の電源立ち上げ後、数秒待ち、次の操作をします。マニュアルモードとオートモード共に、[SONG] を押しながら [EXIT] を押すと、次の画面が表示されます。

```
Test
Main Date=xxxx/xx/xx, VER.=Ver###.##
Slave ##.##
```

しばらくすると、次の画面が表示されるので、[-1]、[+1]、[ENTER] および [EXIT] を使用して、テストモードの選択を行います。

```
[EXIT]=EXIT, [ENTER]=FACTORY SET
[-1]=AUTO MODE, [+1]=MANUAL MODE
```

[-1] を押すと、オートモードで、テストにエントリーされます。

[+1] を押すと、マニュアルモードで、テストにエントリーされます。

3. テストの進め方

(マニュアルモード)

マニュアルモードでテストにエントリーすると、まず、次の画面が表示されます。

```
00: Test No. ?
```

[+1]、[-1]、[ENTER]、[>]、[<]、[EXIT] を使用してテストを進めます。

[+1] を押すと、現在選択されているテストの次のテストが実行されます。

[-1] を押すと、現在選択されているテストの一つ前のテストが実行されます。

[ENTER] を押すと、現在選択されているテストが実行されます。

[>] を押すと、現在選択されているテストの次のテストが選択され、テスト項目が表示されます。

[<] を押すと、現在選択されているテストの一つ前のテストが選択され、テスト項目が表示されます。

[EXIT]を押すと、"T-21.EXIT"が実行されます。
[TEN KEY 0] から [TEN KEY 9] を使用して、2桁の数字を入力することにより、テストの選択を行うことができます。

(オートモード)
オートモードでテストにエントリーすると、まず次の画面が表示されます。

00: Test No. ?

[<], [>], [TEN KEY](0)-(9)を使用してテスト番号を選択し、[ENTER] 押すことでダイレクトにテストの選択を行うことができます。そして即座に、その設定したテストナンバーより、テストナンバー順に自動的にテストが実行されます。

何も設定せずに [ENTER] を押すと、"T-1.RAM R/W" より、テストナンバー順に自動的にテストが実行されます。

エラーが発生した場合、エラー表示を行って、テストは止まります。この場合、[ENTER]、[+] または [EXIT] のいずれかのスイッチを押すことにより、エラー処理が行われます。

[+] を押すと、エラーが発生したテストの次のテストより、再び自動的にテストが実行されます。
[EXIT] を押すと、"T-21.EXIT"が実行されます。

4. NG と判断したときのテストの進めかた

各テストにおいて、NG と判断した場合、以下に示す操作により

マニュアルモード: テストナンバー待ち状態

オートモード: エラー処理状態

になり、他のテストを行うことができます。

(マニュアルモード)

[EXIT] を押すと、テストナンバー待ち状態となります。ただし、"T-11. パネルスイッチ" の [EXIT] のテストの場合には、この方法は対応していません。

(オートモード)

エラーが発生した場合、エラー表示を行ってテストは止まります。

この場合、

[+] または [EXIT] のいずれかのスイッチを押すことにより、エラー処理が行われます。

[-] を押すとNG表示が解除され、その後 [ENTER] を押すと、テストが再実行されます。

[+] を押すと、エラーが発生したテストの次のテストより、再び自動的にテストが実行されます。

[EXIT] を押すと "T-21.EXIT" に入り、[+] を押すと実行されます。このとき、[-] を押すと、[<]、[>]、[TEN KEY] によるテストナンバーの選択モードになります。

5. 隠し機能

- (1) [SHIFT] + [SONG] + [VOICE] を押しながら電源をオンすると、強制イニシャライズされます。
- (2) Voice Play Mode において、[SHIFT] + [STORE] で、スレーブの User Voice を全てメインに取り込めます。
- (3) Phase Mode において、[SHIFT] + [EDIT] で、各フレーズのコード展開の音程範囲などの詳しい情報が設定できる画面に入ります。

T1 Ram Read/Write

(最初の表示)

01: RAM R/W

SRAM, DRAM, PSRAMの次のアドレスに対して、ライト/リード/ベリファイテストを行います。

IC3 = h200000 - h207FFF

テストポイントは

h00001 00002 00004 00008 00010 00020 00040
00080
h00100 00200 00400 00800 01000 02000 04000

IC2 = h600000 - h6FFFFF

テストポイントは

h00002 00004 00008 00010 00020 00040 00080
h00100 00200 00400 00800 01000 02000 04000
08000

IC8 = h600000 - h61FFFF

テストポイントは

h00000 00001 00002 00004 00008 00010 00020
00040 00080
h00100 00200 00400 00800 01000 02000 04000
08000 10000

テストを実行させると、上記アドレスに対して、ADDRESS/DATA を順に bit shiftしながらライト/ベリファイします。

(判定結果の表示)

OK

01: RAM R/W OK

NG

01: RAM R/W NG

(テストの終了方法)

判定を表示して終了します。

(その他)

すべてのRAMのデータは保存されます。

T2 Wave ROM

(最初の表示)

02: WAVE ROM

次の WAVE ROM のアドレスに対して、DATA チェックを行います。

h000000-h0FFFFFF IC10
h100000-h1FFFFFF IC11

テストポイントは

h00000 00001 00002 00004 00008 00010 00020
00040 00080
h00100 00200 00400 00800 01000 02000 04000
08000
h01000 02000 04000 08000 10000 20000 40000
80000

(判定結果の表示)

OK 02: WAVE ROM OK

NG 02: WAVE ROM
W-ROM ICxxx NG

(ROM n が NG の場合、xxx: NG となった IC の番号)

(テストの終了方法)

判定を表示して終了します。

T3 MIDI In/Out

(最初の表示)

03: MIDI I/O/T

MIDI IN/OUT の動作確認を、テストパターン (AA FF 00 55) により行います。

MIDI IN 端子と MIDI OUT 端子を MIDI ケーブルで接続した後、テストを実行します。

(判定結果の表示)

OK 03: MIDI I/O/T OK

NG 03: MIDI I/O/T NG

(テストの終了方法)

マニュアルモード: テスト終了後もテストパターンは出し続け、[EXIT] を押すと次の画面を表示してテストナンバー待ち状態になります。

オートモード: テスト終了後もテストパターンは出し続け、[+1/YES] を押すと次のテストへ進みます。

T4 Disk Read/Write

(最初の表示)

04: FDD F/W/R
Insert Disk, and then Hit [ENTER]

3.5 inch 2DD の生ディスクを使用し、ディスクのフォーマット/リード/ライトを2種類の Data を用いてテストし、Disk In の確認を行います。

ライトプロテクトをオフにした生ディスクを差し込んでテストを実行させます。テスト終了後、ディスクを抜きます。

次のトラックに対してテストを行います。

SIDE 0 = 40(SEC 4) - 00(SEC 1) - 79(SEC 9)
SIDE 1 = 40(SEC 4) - 00(SEC 1) - 79(SEC 9)

(判定結果の表示)

OK 04: FDD F/W/R
verify: C79:H1 OK

NG 04: FDD F/W/R
nnnnnn: Cyy:Hx NG

(x: Side 番号, yy: トラック番号)

(nnnnnn: エラー時の状態)

(テストの終了方法)

判定を表示した後、OK の場合は下記表示となり、

04: FDD F/W/R
Remove Disk

ディスクを抜いたことを確認して、終了します。

テスト途中で NG と判断した場合の処理方法は、”4. NG と判断したときのテストの進めかた” を参照して下さい。

(その他)

ディスクを抜かないと、他の項目への操作は受け付けられません。

T5 Pitch Bender

(最初の表示)

05: PITCH BENDER
xxx 064

xxx: 現在のデータエントリーの値

ピッチバンドを、以下のような LCD 表示に従って、64-127-00-64 (中央-上-下-中央) と滑らかに動かします。このとき、引っ掛かりがなく、数字が滑らかに変化し、OK の判定が出ることを確認します。

05: PITCH BENDER
xxx yyy

xxx: 現在のピッチバンドの値

yyy: 次の目標値

(判定結果の表示)

OK

05: PITCH BENDER
064 064
OK

NG

05: PITCH BENDER
xxx Center
NG

(テスト開始時および終了時にピッチベンドの値が Center でなかった場合。xxx:NG 判定時のピッチベンドの値)
(テスト終了時とは、ピッチベンドの値が 64—127—00 と経過した後、Center を通過したときです)

(テストの終了方法)

判定を表示して終了します。
テスト途中でNG と判断した場合の処理方法は、” 4. NGと判断したときのテストの進めかた” を参照して下さい。

T6, T8, T9 Modulation Wheel, Foot Volume, Foot Controller

(最初の表示)

06: MODULATION WHEEL
xxx 000

08: FOOT VOLUME
xxx 000

09: FOOT CONTROLLER
xxx 000

xxx: 現在の各コントローラーの値

各コントローラーを、以下のようなLCD表示に従って、00—10-120—127—120-10—00 (下—上—下) と滑らかに動かします。このとき、引っ掛かりがなく、数字が滑らかに変化し、OK の判定が出ることを確認します。

06: MODULATION WHEEL
xxx yyy

08: FOOT VOLUME
xxx yyy

09: FOOT CONTROLLER
xxx yyy

06: MODULATION WHEEL
xxx yyy-zzz

08: FOOT VOLUME
xxx yyy-zzz

09: FOOT CONTROLLER
xxx yyy-zzz

xxx: 現在の各コントローラーの値
yyy, yyy-zzz: 次の目標値

(判定結果の表示)

08: FOOT VOLUME
000 000
OK

09: FOOT CONTROLLER
000 000
OK

06: MODULATION WHEEL
000 000
OK

NG 表示なし

(テストの終了方法)

判定を表示して終了します。
テスト途中でNG と判断した場合の処理方法は、” 4. NGと判断したときのテストの進めかた” を参照して下さい。

T7 After Touch

(最初の表示)

07: AFTER TOUCH
xxx 000

xxx: 現在のアフタータッチの値

アフタータッチを、以下のような LCD 表示に従って、00-02 — 10-120 — 127 — 120-10 — 00-02 (弱 — 強 — 弱) と鍵盤を押します。(測定ポイントは、D3 とします)

このとき、引っ掛かりがなく、数字が滑らかに変化し、OK の判定が出ることを確認します。

07: AFTER TOUCH
xxx yyy

07: AFTER TOUCH
xxx yyy-zzz

xxx: 現在のアフタータッチの値
yyy, yyy-zzz: 次の目標値

(判定結果の表示)

OK

07: AFTER TOUCH
000 000-002
OK

NG 表示なし

(テストの終了方法)

判定を表示して終了します。
テスト途中でNG と判断した場合の処理方法は、” 4. NGと判断したときのテストの進めかた” を参照して下さい。

T10 Sustain Switch

(最初の表示)

10: SUSTAIN SW 0

サステーンペダルを、ON/OFF します。このとき、LCDに表示される数字が変化し、OK の判定が出ることを確認します。

(判定結果の表示)

OK

10: SUSTAIN SW 1	OK
---------------------	----

NG 表示なし

(テストの終了方法)

判定を表示して終了します。
テスト途中でNG と判断した場合の処理方法は、” 4. NGと判断したときのテストの進めかた” を参照して下さい。

T11 Panel Switch

(最初の表示)

11: PANEL SWITCH Rest xx switches

このテストでは、以下の3項目について確認します。
パネルスイッチが正常に動作することを確認。
LED の点灯消灯の確認。
32 チャンネル発音の確認。

[REC] から [>] までのパネルスイッチを、以下のようなLCD の表示に従ってON/OFF します。

11: PANEL SWITCH Rest xx switches

(xx:OK と判定されていないスイッチの数)

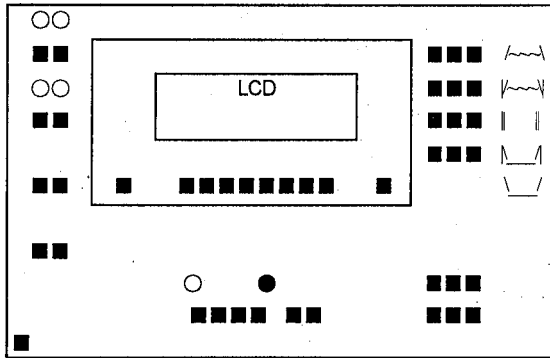
スイッチONが正常な場合、ON している間は下記の表に従った LED が点灯し、ピアノ音が発音します。OFF を検出すると、LED が消灯し発音も止まります。一度OKとなったスイッチは、もう一度押ししても反応しません。

全てのスイッチの ON/OFF が、正常にチェック終了することができれば、OK が表示されます。

連続して32 回の発音が起こった場合、32CH 分の発音動作の確認とみなせることを利用して、32CH 発音チェックを兼ねています。

スイッチ	LED	ピッチ
SONG	SONG	C3
VOICE	VOICE	D3
PATTERN	PATTERN	E3
PHRASE	PHRASE	F3
UTILITY	SONG	G3
DISK	VOICE	A3
EDIT	PATTERN	B3
JOB	PHRASE	C4
STORE	SONG	D4
SHIFT	VOICE	C3
F1	PATTERN	D3
F2	PHRASE	E3
F3	SONG	F3
F4	VOICE	G3
F5	PATTERN	A3
F6	PHRASE	B3
F7	SONG	C4
F8	VOICE	D4
EXIT	PATTERN	E4
RECORD	RECORD	C3
TOP	RUN	D3
STOP	RECORD	E3
RUN	RUN	F3

スイッチ	LED	ピッチ
BWD	RECORD	G3
FWD	RUN	A3
7	SONG	C3
8	VOICE	D3
9	PATTERN	E3
4	PHRASE	F3
5	SONG	G3
6	VOICE	A3
1	PATTERN	B3
2	PHRASE	C4
3	SONG	D4
0	VOICE	E4
-	PATTERN	F4
ENTER	PHRASE	G4
DEC/NO	RECORD	C3
UP	RUN	D3
INC/YES	RECORD	E3
LEFT	RUN	F3
DOWN	RECORD	G3
RIGHT	RUN	A3



- 印: 赤
- 印: 緑LED
- 印: プッシュスイッチ

このテストにおいては、以下の3項目について確認します。

- 全ての ■ 印スイッチが、正常であること。
- 全ての LED が点灯、消灯をすること。
- 全てのチャンネルが、正しく発音すること。

(判定結果の表示)

OK 11: PANEL SWITCH OK

NG 表示なし

(テストの終了方法)

全てのスイッチを正常と判断し、チェックが終了するとOKが表示され、テストは終了します。

(その他)

テストの途中で脱出する場合には、[EXIT]を押します。ただし、期待するキーが [EXIT] のときには、そのキーでテストを中止することはできません。すなわち、[EXIT] のみ2回以上受け付け、2回目以降は中断操作として扱われます。

T12 Keyboard

(最初の表示)

12: KEYBOARD

C1 から C6 まで 61 鍵を、イニシャルタッチ h10 - h6F の強さでスケーリングし、キーボードが正常に動作することを確認します。

12: KEYBOARD
Note=G#3, Vel=103

(G#3 のチェックの場合)

正常な場合、Key On 中そのノートの音を出力し、Key Off で発音を停止します。全ての鍵が正常にチェックできれば、OK が表示されます。

(判定結果の表示)

OK 12: KEYBOARD OK

NG 表示なし

(テストの終了方法)

すべての鍵が正常にチェックされれば、OK が表示されてテストは終了します。

T13 Battery

(最初の表示)

13: BATTERY

テストを実行させると、RAM バックアップバッテリー電圧が自動的にチェックされます。電圧値が、2.6 V 以上、3.5 V 以下であることを確認します。

(判定結果の表示)

OK 13: BATTERY
xxxV OK

NG 13: BATTERY
xxxV Lo NG

(電圧が低くて NG になった場合、xxxx: 電圧で示されます。)

(テストの終了方法)

判定を表示して終了します。

(その他)

POWER ON 後、電圧が落ち着くまでは測定値の誤差が大きいので、POWER ON 後 20 秒以上待ってからテストを実行して下さい。

T14 LED 全点灯

(最初の表示)

14: LED
All On

テストを実行すると、全ての LED が点灯します。LED の明るさを目で見て確認し、各LEDに明るさのむらがないことを、チェックします。

(判定結果の表示)

なし

(テストの終了方法)

オートモード: [+1] を押すと、LEDを全消灯して、次のテストへ進みます。

T15 LCD/Rotary Encoder

テストを実行させたとき、LCDの全ドットが黒と白に
ブリンクしていることを、目で見て確認します。
次に、Rotary Encoder を回して、コントラストを変更し
ます。コントラストが、スムーズに変化すること、お
よび完全に白黒になることを確認します。

(判定結果の表示)
なし

(テストの終了方法)
マニュアルモード: [EXIT] を押すと、テストは終了し
てテストナンバー待ち状態になり
ます。
オートモード: [+1] を押すと、テストは終了して
次のテストへ進みます。

T16 1 kHz Output-L

(最初の表示)

16: 1 kHz L

OUTPUT-L 端子および PHONES(L) 端子より、正常な信
号が出力されていることを確認します。
OUTPUT-L、OUTPUT-R、PHONES (L)、PHONES (R) 端
子共にプラグを差し込み、各出力の周波数、出力波形、
出力レベルを周波数カウンタ、オシロスコープ、レベ
ル計 (JIS_C フィルター付き) で観測します。
マスターボリュームは max とします。発音中は、LCD
表示が以下ようになります。

16: 1 kHz L
Output On

(チェック項目)
OUTPUT-L: 1 kHz ± 1.5 Hz、sine波、+6.5 ± 2 dBm (負
荷 10 kohm)(参考値 歪率 0.42% 以下)
OUTPUT-R: -66 dBm 以下(負荷 10 kohm)
PHONES(L): 1 kHz、sine波、+7.0 ± 2 dBm (負荷 33 ohm)
(参考値 歪率 0.58% 以下)
PHONES(R): -53 dBm 以下(負荷 33 ohm)

(判定結果の表示)
OK 表示なし

NG 16: 1 kHz L
Output Off NG

(テスト発音動作が正常に行なわれなかつ
たときのみ表示)

(テストの終了方法)
マニュアルモード: [EXIT] を押すと、次の画面を表示
して発音は終了し、テストナン
バー待ち状態になります。
オートモード: [+1] を押すと、次の画面を表示し
て発音は終了します。

T17 1 kHz Output-R

(最初の表示)

17: 1 kHz R

OUTPUT-R 端子および PHONES(R) 端子より、正常な信
号が出力されていることを確認します。
OUTPUT-L、OUTPUT-R、PHONES (L)、PHONES (R) 端
子共にプラグを差し込み、各出力の出力波形、出力レ
ベルを、オシロスコープ、レベル計 (JIS_C フィルター
付き) で観測します。
マスターボリュームは max とします。発音中は、LCD
表示が以下ようになります。

17: 1 kHz R
Output On

(チェック項目)
OUTPUT-L: -66 dBm 以下(負荷 10 kohm)
OUTPUT-R: 1 kHz ± 1.5 Hz、sine波、+6.5 ± 2 dBm (負
荷 10 kohm)(参考値 歪率 0.42% 以下)
PHONES(L): -53 dBm 以下(負荷 33 ohm)
PHONES(R): 1 kHz、sine波、+7.0 ± 2 dBm (負荷 33
ohm)(参考値 歪率 0.58% 以下)

(判定結果の表示)
OK 表示なし

NG 17: 1 kHz R
Output Off NG

(テスト発音動作が正常に行なわれなかつ
たときのみ表示)

(テストの終了方法)
マニュアルモード: [EXIT] を押すと、次の画面を表示
して発音は終了し、テストナン
バー待ち状態になります。
オートモード: [+1] を押すと、次の画面を表示し
て発音は終了します。

T20 Factory Set

(最初の表示)

20: FACTORY SET
Insert Disk, and then Hit [ENTER]

各データを付属の Factory Set Disk より読み込み、工場
出荷データにセットします。
テストを実行すると、次の画面が表示されます。

20: FACTORY SET
Sure?

[+1] を押すと、ファクトリーセットされ、T21 へ移行し
てEXITします。
[-1] を押すと、セットされずに T21 へ移行してEXITし
ます。

(判定結果の表示)
 ファクトリーセットされた場合

20: FACTORY SET
 OK

(テストの終了方法)
 判定を表示して終了します。

ファクトリーセット終了後、次に示すデータがセット
 されます。

System Setup

MASTER TUNE : 0[cent]
 MASTER VOLUME : 127
 TRANSPOSE : 0
 Keyboard Transpose : 0
 Foot Volume Ctrl Number : 7(volume)
 System Mode : XG
 Local : on
 Device Number : all
 Voice Mode Receive Ch. : omni
 Voice Mode Transmit Ch. : 1
 RX Pitch Bend : on
 RX Ch's After Touch : off
 RX Program Change : on
 RX Control Change : on
 RX Key's After Touch : off
 RX Note : on
 RX NRPN : off
 RX Bank Change : on
 RX System Exclusive : on
 MIDI Sync : int
 MIDI Control : on
 Interval Time : 1[*100msec]
 Click Beat : 8
 Click Mode : rec
 Click Level : 100
 LCD Contrast : 7
 Greeting Message : 'Welcome to QS
 world'
 : ' I am ready!! '

Drum Setup1

Drum Setup2

GM Drum 1 番を、そのまま再現できる状態。

User Voice

付属の Factory Set Disk より Load.

Song

New Song(Clear された状態)
 Multi は XG on のときと同じ。

User Pattern

Clear された状態。

User Phrase

Clear された状態。

Power on 立ち上がりモード : Voice Play, Bank = Preset,
 Voice Number = 1

T21 Exit
 (最初の表示)

21: EXIT

テストを実行すると、次の画面が表示されます。

21: EXIT
 Sure?

[+1] を押すと、EXIT します。

[-1] を押すと、EXIT を中止します。

(その他)

テストモードを抜けると、通常の電源立ち上げ時と同じシーケンスを行います。

従って、実際のプレイ状態になるまでに、数秒の時間が掛かります。

本体パワースイッチの ON/OFF クリックノイズが、Output端子、Phones 端子共に、100 mV-pp 以下であることも確認します。

また、ファクトリーセット後、テストを抜けてソングプレイモードになった場合、一度もノートオンしていないときのノイズレベルが、次の条件を満たすことを確認します。

OUTPUT-L - 84 dBm 以下 (負荷 10 kohm)

OUTPUT-R - 84 dBm 以下 (負荷 10 kohm)

PHONES-L - 83 dBm 以下 (負荷 33 ohm)

PHONES-R - 83 dBm 以下 (負荷 33 ohm)

■ WARNING AND ERROR MESSAGES

The following messages may appear during operation, indicating problems or incorrect operation. Follow the instructions in the explanations below to remedy the problem.

Warning/Information Messages

Battery Low	The memory-backup battery is low; memory cannot be backed up. Have the battery changed by your local Yamaha dealer or any other authorized Yamaha service personnel.
Now TG-B Mode Active	When the System Mode is set to TG-B , the following modes are not available: Voice Edit mode, Voice Job, Pattern mode, and Phrase mode. Pressing any of the corresponding mode buttons results in the message above; press EXIT to return to normal operation.
Bulk	Currently receiving bulk data in a receivable format.

Error Messages

● Monitor

Illegal Input	Improper data was input.
Preset Pattern	Attempted to edit a Preset Pattern. Only User Patterns can be edited.
No Data	There is no data (in the specified track, measures, etc.), and the job/function cannot be executed. Select a track or range of measures having data and attempt the operation again.
Illegal Backup Data	The memory-backup battery may have been too low to back up the data properly, resulting in corrupted backup data.

● MIDI

MIDI Data Error	A data error resulted during reception of MIDI messages. Check that the MIDI cable connections are secure or that the MIDI cable itself is not bad, and attempt the operation again.
Checksum Error	The checksum of the received System Exclusive message is incorrect. Check the message and try transmitting again.
Buffer Full	Too much MIDI data is being received by the QS300 at one time. Reduce the amount of data being transmitted.
DvNum	Cannot receive MIDI bulk data, due to improper Device Number setting. (Bulk data operations only.)

● **Disk**

No Disk	There is no disk in the disk drive. Insert a proper disk and attempt the operation again.
Illegal Format Disk	The inserted floppy disk is not of the proper format. Insert a disk of the appropriate format, or format the disk.
Bad Disk	The floppy disk is damaged or dirty and cannot be read. Clean the disk surface if possible, and try cleaning the disk drive itself, then attempt the operation again.
File Not Found	Unable to find the specified file. Try specifying a different file name, or insert a disk containing the proper file name.
Write Protected	Cannot write to the disk because the write-protect tab is set to the "protect" position. Set the tab to the "write" position and attempt the operation again.
Disk Full	Cannot write additional data to the disk, because the disk's data capacity or director capacity has been exceeded. Delete unnecessary files from the disk and attempt the operation again, or use another blank disk.
Illegal File Type	Attempted to read a file type not supported by the QS300. (The QS300 supports SMF and ESEQ files only.)
Can't Change File Name	Attempted to change an existing file name.

● **System**

Memory Full	The sequencer's memory is full and no more data can be recorded. Also, no related jobs can be executed. If possible, delete unneeded data from the Song and try recording again.
Voice Memory Full	The User Voice memory is full and no more data can be stored. Save the desired User Voice data to floppy disk, and delete that User Voice data from internal memory, then attempt the operation again.

■ エラーメッセージ

操作関係

Illegal Input

不当な操作や入力を行ったときに表示されます。入力方法を再度確認してください。

Preset Phrase

プリセットフレーズからエディット入ろうとしたときに表示されます。プリセットフレーズをエディットしたいときは、一度ユーザーフレーズにコピーしてから行ってください。

No Data

ジョブを実行する際、選択したトラックや設定した範囲にデータが無くジョブが無効のときに表示されます。範囲を選びなおしてください。

Preset Pattern

プリセットパターンのパッチを変更しようとしたときに表示されます。ユーザーパターンを選びなおしてください。

Illegal Backup Data

メモリーバックアップ用のバッテリーが消耗し、バックアップができなくなるなど、メモリー内容が破壊されたときに表示されます。電源を切る前にフロッピーディスクにデータをセーブしてください。

MIDI関係

MIDI Data Error

本機に送られてきたMIDIデータにエラーがあったことを示しています。MIDIの設定や、MIDIケーブルなどを確認して、もう一度受信しなおしてください。

Check Sum Error

本機に送られてきたバルクデータにエラーがあったことを示しています。MIDIの設定などを確認して、もう一度受信しなおしてください。

Buffer Full

本機のMIDIの受信バッファ一杯になって処理できなかったことを示します。もう一度受信しなおしてください。

DvNum

デバイスナンバーがオフになっているため、バルクデータの送受信ができなかったことを示しています。またはデバイスナンバーが一致していないため、バルクデータの受信ができなかったことを示しています。デバイスナンバーを設定して操作をやりなおしてください。

DISK関係

No Disk

フロッピーディスクが本体に正しくセットされていないときに表示されます。フロッピーディスクを正しくセットしなおしてください。

Illegal Format Disk

フロッピーディスクが本機で処理できないフォーマットのときに表示されます。ディスクの内容を確認してください。

Bad Disk

フロッピーディスクが不良です。別のフロッピーディスクを用意してください。

File Not Found

ロードのとき、フロッピーディスクの中に目的のファイルが存在しないときに表示されます。ディスクを挿入しなおして、操作をやりなおしてください。

Write Protected

フロッピーディスクのライトプロテクトタブが、書き込み禁止状態になっているときに表示されます。フロッピーディスクを取り出し、ライトプロテクトタブを閉めてから操作をやりなおしてください。

Disk Full

フロッピーディスクの容量一杯でファイルがセーブできないときに表示されます。新しいフロッピーディスクを用意するか、不要なファイルを消去してから操作をやりなおしてください。

Illegal Type File

ロードのとき、目的のファイルが本機で扱えないときに表示されます。ファイルの内容を確認してください。

Can't Change File Name

リネームのとき、フロッピーディスクの中に、設定したファイル名と同じファイル名のファイルがすでにあるときに表示されます。別のファイル名を設定しなおしてください。

本体システム関係

Memory Full

内部メモリーが一杯で、レコーディングやエディット、ジョブの実行、MIDIの受信、フロッピーディスクのロードができないときに表示されます。不要なソングやパターン、ユーザーフレーズを消去してから、操作をやりなおしてください。

Voice Memory Full

ユーザーボイスメモリーが一杯になり、ボイスデータのストアが実行できないときに表示されます。不要なボイスのエレメントを減らしたり、オフにしてストアすることで、メモリー空き容量を増やしてください。

Battery Low

本体内のバックアップバッテリーの電圧が下がったときに表示されます。

Now TG-B Mode Active

TG300Bモードなので、パターンやフレーズ機能が動作しないことを示しています。ノーマルモードに切り替えてください。

エラーメッセージ以外のメッセージ

Over write?(Yes/No)

ロード、セーブ先のソングやファイルに、すでにデータが入っているときに表示されます。現在入っているソングやファイルを消してロード、セーブを実行してもいいときは YES を押して実行します。消したくないときは NO を押し、データの入っていないソングやファイルを選び直してから操作をやりなおしてください。

Can't Undo. Ok?(Yes/No)

あるジョブを実行すると、内部メモリーが一杯になり、操作のアンドゥーができなくなる場合に表示されます。アンドゥーができなくても良いときは YES を押します。中止するときは NO を押し、不要なソングやパターン、ユーザーフレーズを消去してから、操作をやりなおしてください。

Are you sure?(Yes/No)

各操作を実行したときの、確認をもとめる表示です。 YES / NO で操作を進めてください。

Initializing Data

電源を入れたとき、内部データの修復が行われている場合に表示されます。内部データの修復が終わると自動的に消えます。そのままお待ちください。

Executing...

ロード、セーブ、フォーマット中や、ジョブの実行中に表示されます。そのままお待ちください。

Bulk

受信できるフォーマットのパルクデータを受信したとき、画面の左上のモード表示部分に表示されます。そのまま操作を続けてください。

Loading Directry...

そのフロッピーディスクに初めてアクセスしたときに表示されます。フロッピーディスクのディレクトリー情報を取り込んでいます。

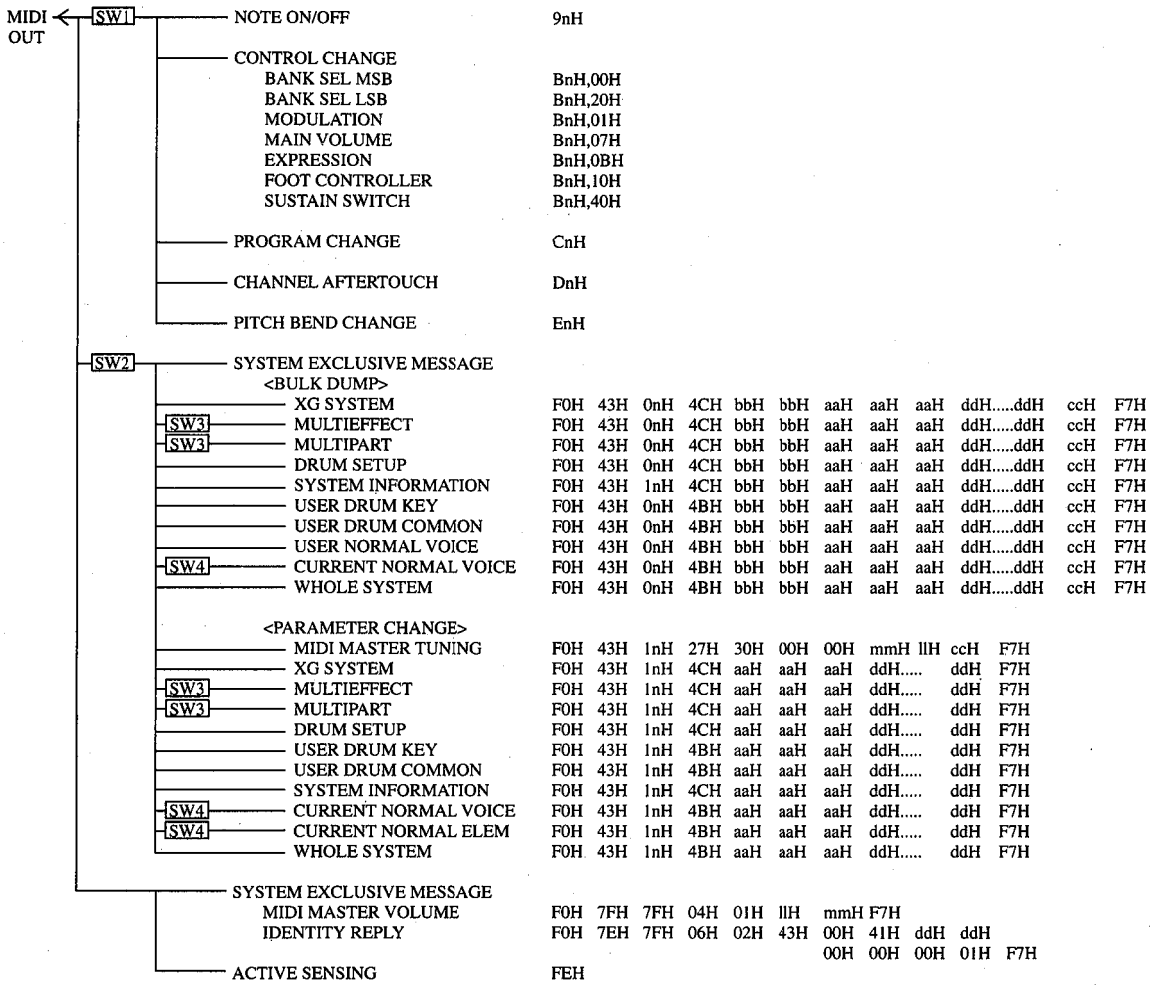
Completed

ジョブなどが終了したときに表示されます。

MIDI DATA FORMAT

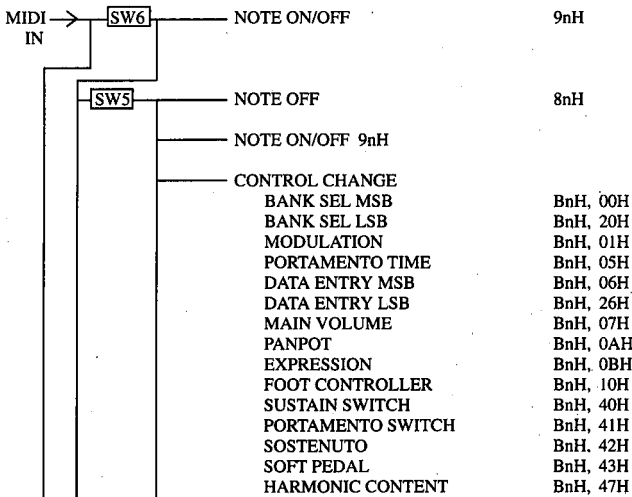
Synthesizer Part

(1) TRANSMIT FLOW



- [SW1] MIDI Transmit Channel
If Voice Mode, then equal to Keyboard Transmit Channel.
Otherwise, selected by Output MIDI Ch.
- [SW2] MIDI Device Number
If "all", message carries device number "1".
- [SW3] SONG,PATTERN,PHRASE MODE
- [SW4] NORMAL VOICE MODE

(2) RECEIVE FLOW



RELEASE TIME BnH, 48H
 ATTACK TIME BnH, 49H
 BRIGHTNESS BnH, 4AH
 PORTAMENTO CONTROL BnH, 54H
 EFFECT SEND LEVEL 1 BnH, 5BH
 EFFECT SEND LEVEL 3 BnH, 5DH
 EFFECT SEND LEVEL 4 BnH, 5EH
 DATA ENTRY INC BnH, 60H
 DATA ENTRY DEC BnH, 61H
 ASSIGNABLE CONTROLLER BnH, 00H..5FH

NRPN

VIBRATO RATE BnH, 63H, 01H, 62H, 08H, 06H, mmH
 VIBRATO DEPTH BnH, 63H, 01H, 62H, 09H, 06H, mmH
 VIBRATO DELAY BnH, 63H, 01H, 62H, 0AH, 06H, mmH
 FILTER CUTOFF FREQ BnH, 63H, 01H, 62H, 20H, 06H, mmH
 FILTER RESONANCE BnH, 63H, 01H, 62H, 21H, 06H, mmH
 AEG ATTACK TIME BnH, 63H, 01H, 62H, 63H, 06H, mmH
 AEG DECAY TIME BnH, 63H, 01H, 62H, 64H, 06H, mmH
 AEG RELEASE TIME BnH, 63H, 01H, 62H, 66H, 06H, mmH
 DRUM INST *1
 CUTOFF FREQ. BnH, 63H, 14H, 62H, rH, 06H, mmH
 FILTER RESONANCE BnH, 63H, 15H, 62H, rH, 06H, mmH
 AEG ATTACK RATE BnH, 63H, 16H, 62H, rH, 06H, mmH
 AEG DECAY RATE BnH, 63H, 17H, 62H, rH, 06H, mmH
 PITCH COARSE BnH, 63H, 18H, 62H, rH, 06H, mmH
 LEVEL BnH, 63H, 1AH, 62H, rH, 06H, mmH
 PANPOT BnH, 63H, 1CH, 62H, rH, 06H, mmH
 REVERB SEND BnH, 63H, 1DH, 62H, rH, 06H, mmH
 CHORUS SEND BnH, 63H, 1EH, 62H, rH, 06H, mmH
 VARIATION SEND BnH, 63H, 1FH, 62H, rH, 06H, mmH

RPN

PITCH BEND SENS. BnH, 64H, 00H, 65H, 00H, 06H, mmH
 FINE TUNING BnH, 64H, 01H, 65H, 00H, 06H, mmH, 26H, llH
 COARSE TUNING BnH, 64H, 02H, 65H, 00H, 06H, mmH
 RPN RESET BnH, 64H, 7FH, 65H, 7FH
 ALL SOUND OFF BnH, 78H, 00H
 RESET ALL CONTROLLERS BnH, 79H, 00H
 ALL NOTES OFF BnH, 7BH
 OMNI MODE OFF BnH, 7CH
 OMNI MODE ON BnH, 7DH
 MONO MODE BnH, 7EH
 POLY MODE BnH, 7FH

SW7 PROGRAM CHANGE CnH
 CHANNEL AFTERTOUCH DnH
 PITCH BEND CHANGE EnH

SW2

SYSTEM EXCLUSIVE MESSAGE
 <BULK DUMP>

SW3 XG SYSTEM F0H 43H 0nH 4CH bbH bbH aaH aaH aaH ddH.....ddH ccH F7H
 SW3 MULTIEFFECT F0H 43H 0nH 4CH bbH bbH aaH aaH aaH ddH.....ddH ccH F7H
 SW3 MULTIPART F0H 43H 0nH 4CH bbH bbH aaH aaH aaH ddH.....ddH ccH F7H
 DRUM SETUP F0H 43H 0nH 4CH bbH bbH aaH aaH aaH ddH.....ddH ccH F7H
 USER DRUM KEY F0H 43H 0nH 4BH bbH bbH aaH aaH aaH ddH.....ddH ccH F7H
 USER DRUM COMMON F0H 43H 0nH 4BH bbH bbH aaH aaH aaH ddH.....ddH ccH F7H
 USER NORMAL VOICE F0H 43H 0nH 4BH bbH bbH aaH aaH aaH ddH.....ddH ccH F7H
 SW4 CURRENT NORMAL VOICE F0H 43H 0nH 4BH bbH bbH aaH aaH aaH ddH.....ddH ccH F7H
 WHOLE SYSTEM F0H 43H 0nH 4BH bbH bbH aaH aaH aaH ddH.....ddH ccH F7H

<PARAMETER CHANGE>

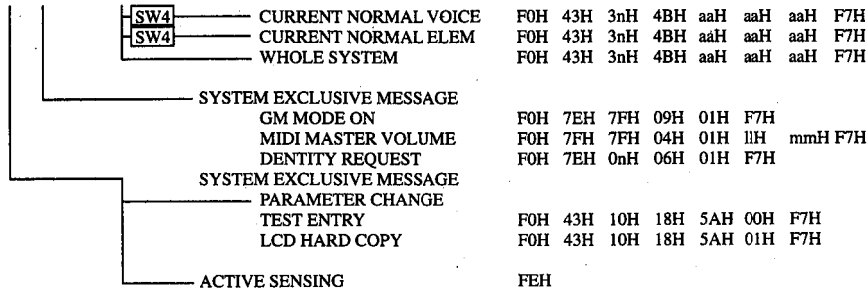
MIDI MASTER TUNING F0H 43H 1nH 27H 30H 00H 00H mmH llH ccH F7H
 XG SYSTEM ON F0H 43H 1nH 4CH 00H 00H 7EH 00H F7H
 XG SYSTEM F0H 43H 1nH 4CH aaH aaH aaH ddH..... ddH F7H
 SW3 MULTIEFFECT F0H 43H 1nH 4CH aaH aaH aaH ddH..... ddH F7H
 SW3 MULTIPART F0H 43H 1nH 4CH aaH aaH aaH ddH..... ddH F7H
 SW3 DRUM SETUP F0H 43H 1nH 4CH aaH aaH aaH ddH..... ddH F7H
 USER DRUM KEY F0H 43H 1nH 4BH aaH aaH aaH ddH..... ddH F7H
 USER DRUM COMMON F0H 43H 1nH 4BH aaH aaH aaH ddH..... ddH F7H
 SW4 CURRENT NORMAL VOICE F0H 43H 1nH 4BH aaH aaH aaH ddH..... ddH F7H
 SW4 CURRENT NORMAL ELEM F0H 43H 1nH 4BH aaH aaH aaH ddH..... ddH F7H
 WHOLE SYSTEM F0H 43H 1nH 4BH aaH aaH aaH ddH..... ddH F7H

<BULK DUMP REQUEST>

SW3 XG SYSTEM F0H 43H 2nH 4CH aaH aaH aaH F7H
 SW3 MULTIEFFECT F0H 43H 2nH 4CH aaH aaH aaH F7H
 SW3 MULTIPART F0H 43H 2nH 4CH aaH aaH aaH F7H
 SW3 DRUM SETUP F0H 43H 2nH 4CH aaH aaH aaH F7H
 SYSTEM INFORMATION F0H 43H 2nH 4CH aaH aaH aaH F7H
 USER DRUM KEY F0H 43H 2nH 4BH aaH aaH aaH F7H
 USER DRUM COMMON F0H 43H 2nH 4BH aaH aaH aaH F7H
 USER NORMAL VOICE F0H 43H 2nH 4BH aaH aaH aaH F7H
 SW4 CURRENT NORMAL VOICE F0H 43H 2nH 4BH aaH aaH aaH F7H
 WHOLE SYSTEM F0H 43H 2nH 4BH aaH aaH aaH F7H

<PARAMETER REQUEST>

SW3 XG SYSTEM F0H 43H 3nH 4CH aaH aaH aaH F7H
 SW3 MULTIEFFECT F0H 43H 3nH 4CH aaH aaH aaH F7H
 SW3 MULTIPART F0H 43H 3nH 4CH aaH aaH aaH F7H
 SW3 DRUM SETUP F0H 43H 3nH 4CH aaH aaH aaH F7H
 USER DRUM KEY F0H 43H 3nH 4BH aaH aaH aaH F7H
 USER DRUM COMMON F0H 43H 3nH 4BH aaH aaH aaH F7H
 SYSTEM INFORMATION F0H 43H 3nH 4CH aaH aaH aaH F7H



- SW2** MIDI Device Number
- SW3** SONG, PATTERN, PHRASE MODE
- SW4** NORMAL VOICE MODE
- SW5** MIDI Receive Channel
If Voice Mode, then according to Voice Receive Channel.
- SW6** Receive Filter
- SW7** If Voice Mode, then Play Mode only.

*1 Not effective in Voice Mode

(3) TRANSMIT/RECEIVE DATA

(3-1) CHANNEL VOICE MESSAGES

(3-1-1) NOTE OFF
 STATUS 1000nnnn(8nH) n = 0 - 15 VOICE CHANNEL NUMBER
 NOTE NUMBER 0kkkkkkk k = 0 (C-2) - 127 (G8)
 VELOCITY 0vvvvvvv v: ignored

Receive only

(3-1-2) NOTE ON/OFF
 STATUS 1001nnnn(9nH) n = 0 - 15 VOICE CHANNEL NUMBER
 NOTE NUMBER 0kkkkkkk k = 0 (C-2) - 127 (G8) (when receiving)
 k = 36(C1) - 96(C6) (when transmitting)
 k = 0 (C-2) - 127 (G8) (when transposed)
 VELOCITY 0vvvvvvv (v≠0) NOTE ON
 00000000 (v=0) NOTE OFF

(3-1-3) PROGRAM CHANGE
 STATUS 1100nnnn(CnH) n = 0 - 15 VOICE CHANNEL NUMBER
 PROGRAM NUMBER 0ppppppp p = 0 - 127

* PROGRAM NUMBER : XG DRUM VOICE NUMBER Correspondence

P = 1	DR1	Standard
P = 2	DR2	Standard2
P = 9	DR3	Room
P = 17	DR4	Rock
P = 25	DR5	Electric
P = 26	DR6	Analog
P = 33	DR7	Jazz
P = 41	DR8	Brush
P = 49	DR9	Classic

* PROGRAM NUMBER : XG SFX KIT NUMBER Correspondence

P = 1	DR10	SFX1
P = 2	DR11	SFX2

If received Program Change causes switch from one drum voice to another, the drum setup reinitializes to the values for the new drum voice.

(3-1-4) CHANNEL AFTERTOUCH
 STATUS 1101nnnn(DnH) n = 0 - 15 VOICE CHANNEL NUMBER
 VALUE 0vvvvvvv v = 0 - 127 AFTERTOUCH VALUE

(3-1-5) PITCH BEND CHANGE
 STATUS 1110nnnn(EnH) n = 0 - 15 VOICE CHANNEL NUMBER
 LSB 0vvvvvvv PITCH BEND CHANGE LSB
 MSB 0vvvvvvv PITCH BEND CHANGE MSB

Resolution: 14 bits

MSB		
0000000B	(00H)	Minimum value
0100000B	(40H)	Center value
0111111B	(7FH)	Maximum value

(3-1-6) CONTROL CHANGE
 STATUS 1011nnnn(BnH) n = 0 - 15 VOICE CHANNEL NUMBER
 CONTROL NUMBER 0ccccccc
 CONTROL VALUE 0vvvvvvv

* Transmitted Control Number			
c = 0	BANK SEL MSB	; v = 0: XG NORMAL, 63: USER/PRESET NORMAL, 64: SFX NORMAL, 126: XG SFX KIT, 127: XG DRUM	
c = 32	BANK SEL LSB	; v = 0 - 127	*3
c = 1	MODULATION	; v = 0 - 127	*2
c = 7	MAIN VOLUME	; v = 0 - 127	
c = 11	EXPRESSION	; v = 0 - 127	
c = 16	FOOT CONTROLLER	; v = 0 - 127	*2
c = 64	SUSTAIN SWITCH	; v = 0-63: OFF, 64-127: ON	*2

* Received Control Number

c=0	BANK SEL MSB	: v = 0: XG NORMAL, 63: USER/PRESET NORMAL, 64: SFX NORMAL, 126: XG SFX KIT, 127: XG DRUM	
c=32	BANK SEL LSB	: v = 0 - 127	
c=1	MODULATION	: v = 0 - 127	*2
c=5	PORTAMENTO TIME	: v = 0 - 127	*2
c=6	DATA ENTRY MSB	: v = 0 - 127	*1
c=38	DATA ENTRY LSB	: v = 0 - 127	*1
c=7	MAIN VOLUME	: v = 0 - 127	
c=10	PANPOT	: v = 0 - 127	
c=11	EXPRESSION	: v = 0 - 127	
c=16	FOOT CONTROLLER	: v = 0 - 127	*2
c=64	SUSTAIN SWITCH	: v = 0-63: OFF, 64-127: ON	*2
c=65	PORTAMENTO SWITCH	: v = 0-63: OFF, 64-127: ON	*2
c=66	SOSTENUTO	: v = 0-63: OFF, 64-127: ON	*2
c=67	SOFT PEDAL	: v = 0-63: OFF, 64-127: ON	*2
c=71	HARMONIC CONTENT	: v = 0:-64-64: 0-127:+63	*2
c=72	RELEASE TIME	: v = 0:-64-64: 0-127:+63	*2
c=73	ATTACK TIME	: v = 0:-64-64: 0-127:+63	*2
c=74	BRIGHTNESS	: v = 0:-64-64: 0-127:+63	*2
c=84	PORTAMENTO CONTROL	: v = 0 - 127	*2
c=91	EFFECT SEND LEVEL 1	: v = 0 - 127	
c=93	EFFECT SEND LEVEL 3	: v = 0 - 127	
c=94	EFFECT SEND LEVEL 4	: v = 0: OFF, 1-127: ON (Connection = 0 if Insertion; 1 if System) v = 0 - 127 (Connection = 0 if Insertion; 1 if System)	
c=96	DATA ENTRY INC	: v = 127	*1
c=97	DATA ENTRY DEC	: v = 127	*1
c=00..95	ASSIGNABLE CONT	: v = 0 - 127	*2

- *1 Used only when setting RPN-designated parameter.
- *2 Not effective for rhythm voices.
- *3 If MSB ≠ 0, 63, or 127, then v=0.
If MSB = 0, then v can be any of the following: 0,1,3,5,8,12,14,16,17,18,19,20,24,25,27,28,32,33,34,35,36,37,38,39,40,
41,42,43,45,64,65,66,67,68,69,70,71,72,96,97,98,99,100,101
If MSB = 63, then v = 0 (Preset Normal) or 1 (User Normal)
If MSB = 127, then v = 0 (XG) or 111 (User Drum)

MODULATION controls vibrato depth.

PORTAMENTO TIME sets pitch-change speed used while Portamento Switch = On. PORTAMENTO TIME = 0 selects fastest portamento; 127 selects slowest (longest) portamento. To maintain conformity with GMx portamento control, this parameter is effective only in regard to the portamento switch (Ctrl#65).

PANPOT applies relative change to preset value (for both melody and rhythm voices). PANPOT is not effective on currently sounding note(s).

Portamento time for PORTAMENTO CONTROL is always 0.

EFFECT SEND LEVEL 1 controls reverb send.
EFFECT SEND LEVEL 3 controls chorus send.
EFFECT SEND LEVEL 4 controls variation send.

HARMONIC CONTENT adjusts the voice-set resonance. The adjustment is relative; a value of 64 applies zero change, with higher values producing more extreme resonance. On some voices the effective parameter range is narrower than the legal range.

RELEASE TIME applies relative adjustment to the voice-set envelope release time, with a value of 64 producing zero adjustment.

ATTACK TIME applies relative adjustment to the voice-set envelope attack time, with a value of 64 producing zero adjustment.

BRIGHTNESS applies relative adjustment to the cutoff frequency set by the voice, with value 64 producing zero adjustment. Lower values produce a softer sound. For some voices, the effective parameter range is narrower than the legal range.

Received BANK SELECT data does not become effective until receipt of the subsequent Program Change message. Note the following points about Bank Select operation.

- (a) Bank Select MSB values from 60h to 7Eh will switch off sound on models that do not support GMx. On this unit, these values currently operate as equivalent to MSB = 00h (allowing for future expansion of melodic voices).
- (b) All MSBs other than 0 and 60h-7Fh set voices OFF.
- (c) While the currently selected MSB is 0 or 60h-7Fh, incoming LSB values are recognized only if supported.

(3-2) CHANNEL MODE MESSAGES

STATUS	1011nnnn(BnH)	n = 0 ~ 15 VOICE CHANNEL NUMBER
CONTROL NUMBER	0ccccccc	c = CONTROL NUMBER
CONTROL VALUE	0vvvvvvv	v = DATA VALUE

(3-2-1) ALL SOUND OFF (CONTROL NUMBER = 78H , DATA VALUE = 0)

Switches off all sound from the channel, and cancels Channel Message conditions such as Note On and Hold On.

(3-2-2) RESET ALL CONTROLLERS (CONTROL NUMBER = 79H , DATA VALUE = 0)

Resets the following controllers to the indicated values:

Pitchbend change	0 (center)
After touch	0 (min)
Modulation	0 (off)
Foot controller	0 (min)
Expression	127 (max)
Sustain Switch	0 (off)
Portamento Switch	1 (on)
Sostenuto switch	0 (off)
Soft pedal	0 (off)
NRPN	Null (Internal data remains unchanged.)
RPN	Null (Internal data remains unchanged.)
Portamento control	Reset
Assignable Controller	0 (min)

The RESET leaves the following values unchanged:

PROGRAM CHANGE, BANK SELECT MSB/LSB, VOLUME, PAN, HARMONIC CONTENT, RELEASE TIME, ATTACK TIME, BRIGHTNESS, DRY SEND LEVEL, EFFECT SEND LEVEL 1, EFFECT SEND LEVEL 3, EFFECT SEND LEVEL 4, PITCH BEND SENSITIVITY, FINE TUNING, COARSE TUNING

(3-2-3) ALL NOTES OFF (CONTROL NUMBER = 7BH , DATA VALUE = 0)

Switches off all of the channel's "on" notes. Notes being held by SUSTAIN or SOSTENUTO continue to sound until SUSTAIN/SOSTENUTO goes off.

- (3-2-4) OMNI MODE OFF (CONTROL NUMBER = 7CH , DATA VALUE = 0)
Same processing as for All Notes Off. Voice Receive Channel becomes Channel 1 (OMNI = OFF).
- (3-2-5) OMNI MODE ON (CONTROL NUMBER = 7DH , DATA VALUE = 0)
Same processing as for All Notes Off (no OMNI ON action). Voice Receive Channel becomes "OMNI ON".
- (3-2-6) MONO (CONTROL NUMBER = 7EH , DATA VALUE = 0)
Generates "All Sound Off" operation. If the value of the third byte (mono number) is 0 to 16, the channel changes to Mode 4 (m=1); except that if operation is in Voice Mode, the mode may become Mode 2 (m=1), depending on the Voice Receive Channel.
- (3-2-7) POLY (CONTROL NUMBER = 7FH , DATA VALUE = 0)
Generates "All Sound Off" operation, and sets the channel to Mode 3; except that if operation is in Voice Mode, the mode may become Mode 1, depending on the Voice Receive Channel.

(3-3) REGISTERED PARAMETER NUMBER

STATUS	1011nnnn(BnH)	n = 0 ~ 15 VOICE CHANNEL NUMBER
LSB	01100100(64H)	
RPN LSB	0ppppppp	p = RPN LSB (See table below.)
MSB	01100101(65H)	
RPN MSB	0qqqqqqq	q = RPN MSB (See table below.)
DATA ENTRY MSB	00000110(06H)	
DATA VALUE	0mmmmmmm	m = Data Value
DATA ENTRY LSB	00100110(26H)	
DATA VALUE	0lllllll	l = Data Value

First send the RPN MSB and LSB to select the control parameter, then set the value by Data Entry.

RPN LSB	D.ENTRY MSB	LSB	PARAMETER NAME	DATA RANGE	
00H	00H	mmH	—	PITCH BEND SENSITIVITY	00H ~ 18H (0 to 24 semitones)
01H	00H	mmH	llH	MASTER FINE TUNE	{mmH, llH} = {00H, 00H} - {40H, 00H} - {7FH, 7FH} (-8192*100/8192) - 0 - (+8192*100/8192)
02H	00H	mmH	—	MASTER COARSE TUNE	28H ~ 40H ~ 50H (-24 ~ 0 ~ +24 semitones)
7FH	7FH	—	—	RPN RESET	RPN value becomes null; internal data remains unchanged.

(3-4) NON-REGISTERED PARAMETER NUMBER

STATUS	1011nnnn(BnH)	n = 0 ~ 15 VOICE CHANNEL NUMBER
LSB	01100010(62H)	
RPN LSB	0ppppppp	p = NRPN LSB (See table below.)
MSB	01100011(63H)	
RPN MSB	0qqqqqqq	q = NRPN MSB (See table below.)
DATA ENTRY MSB	00000110(06H)	
DATA VALUE	0mmmmmmm	m = Data Value

First send the NRPN MSB and LSB to select the control parameter, then set the value by Data Entry.

NRPN MSB	D.ENTRY LSB	MSB	LSB	PARAMETER NAME	DATA RANGE
01H	08H	mmH	—	VIBRATO RATE	00H - 40H - 7FH (-64 - 0 - +63)
01H	09H	mmH	—	VIBRATO DEPTH	00H - 40H - 7FH (-64 - 0 - +63)
01H	0AH	mmH	—	VIBRATO DELAY	00H - 40H - 7FH (-64 - 0 - +63)
01H	20H	mmH	—	FILTER CUTOFF FREQUENCY	00H - 40H - 7FH (-64 - 0 - +63)
01H	21H	mmH	—	FILTER RESONANCE	00H - 40H - 7FH (-64 - 0 - +63)
01H	63H	mmH	—	EG ATTACK TIME	00H - 40H - 7FH (-64 - 0 - +63)
01H	64H	mmH	—	EG DECAY TIME	00H - 40H - 7FH (-64 - 0 - +63)
01H	66H	mmH	—	EG RELEASE TIME	00H - 40H - 7FH (-64 - 0 - +63)
14H	rrH	mmH	—	DRUM INST FILTER CUTOFF FREQ.	00H - 40H - 7FH (-64 - 0 - +63)
15H	rrH	mmH	—	DRUM INST FILTER RESONANCE	00H - 40H - 7FH (-64 - 0 - +63)
16H	rrH	mmH	—	DRUM INST AEG ATTACK RATE	00H - 40H - 7FH (-64 - 0 - +63)
17H	rrH	mmH	—	DRUM INST AEG DECAY RATE	00H - 40H - 7FH (-64 - 0 - +63)
18H	rrH	mmH	—	DRUM INST PITCH COARSE	00H - 40H - 7FH (-64 - 0 - +63)
19H	rrH	mmH	—	DRUM INST PITCH FINE	00H - 40H - 7FH (-64 - 0 - +63)
1AH	rrH	mmH	—	DRUM INST LEVEL	00H - 7FH (0 ~ max)
1CH	rrH	mmH	—	DRUM INST PANPOT	00H, 01H - 40H - 7FH (random, left - center - right)
1DH	rrH	mmH	—	DRUM INST REVERB SEND LEVEL	00H - 7FH (0 - max)
1EH	rrH	mmH	—	DRUM INST CHORUS SEND LEVEL	00H - 7FH (0 - max)
1FH	rrH	mmH	—	DRUM INST VARIATION SEND LEVEL	00H - 7FH (0 - max)

MSB values 14H ~ 1FH (drum-related) are effective only if channel is in drum mode.
rrH: drum instrument note number

(3-5) SYSTEM REALTIME MESSAGES

(3-5-1) ACTIVE SENSING

STATUS	11111110	(FEH)
--------	----------	-------

The unit sends this message approximately once every 175msec, except that the message is not sent while a Disk Read or Disk Write is in progress.

The first time the unit receives this code, it will begin active sensing. If any time thereafter the unit receives no status or data for a period of 350ms, it will clear the MIDI buffer, force off the SUSTAIN SW and all currently sounding notes, and reset all control settings to predetermined values.

(3-6) SYSTEM EXCLUSIVE MESSAGE

(3-6-1) UNIVERSAL NON-REALTIME MESSAGE

(3-6-1-1) GENERAL MIDI MODE ON

FOH 7EH 7FH 09H 01H F7H

Resets the following controllers to the indicated values.

VOLUME	100
PAN	Center
PROGRAM CHANGE	1 (Grandpno)
BANK SELECT MSB	0
REVERB DEPTH	4
Pitchbend change	0 (center)
Modulation	0 (off)
Expression	127 (max)
Sustain Switch	0 (off)
SOSTENUTO SWITCH	0 (off)
RPN	Null (Internal data remains unchanged.)
Portamento control	Reset
MIDI master volume	127 (max)
Pitchbend sensitivity	02 (2 semitones)
Fine tuning	0
Coarse tuning	0

(3-6-1-2) IDENTITY REQUEST (Receive only)

FOH 7EH 0nH 06H 01H F7H (where n is the Device No. But message is valid regardless of device ("omni")).

(3-6-1-3) IDENTITY REPLY (Send only)

FOH 7EH 7FH 06H 02H 43H 00H 41H ddH ddH 00H 00H 00H 01H F7H

dd; Device Number Code

If QS300:	48	01
If B900:	4C	01
If SDX3000:	62	01

(3-6-2) UNIVERSAL REALTIME MESSAGE

(3-6-2-1) MIDI MASTER VOLUME

FOH 7FH 7FH 04H 01H lIH mmH F7H

Changes the Master Volume value, where mm gives the new volume setting. (Byte ll is ignored.)

(3-6-3) PARAMETER CHANGE

(3-6-3-1) MIDI MASTER TUNING

FOH 43H 1nH 27H 30H 00H 00H mmH lIH ccH F7H

Changes the Master Tune value, where mm and ll give the new setting, as described below. (Values n and cc are ignored.)
 $T = M * 200 / 256 - 100$

where T : Actual tuning value (-99 ~ +99)

M : One-byte value, where bits 0 to 3 of mm give the high-order nibble, and bits 0 to 3 of ll give the low-order nibble.

(3-6-3-2) XG SYSTEM ON

11110000	F0	Exclusive status
01000011	43	YAMAHA ID
0001nnnn	1n	Device Number
01001100	4C	Model ID
0aaaaaaa	00	Address High
0aaaaaaa	00	Address Mid
0aaaaaaa	7E	Address Low
00000000	00	Data
11110111	F7	End of Exclusive

This message switches the SYSTEM MODE to XG. The message requires approximately 50ms to execute, so sufficient time should be allowed before the next message is sent.

The message resets all controllers. It also resets to their defaults all MultiPart and Multieffect-values (see appended tables), as well as the Whole System values denoted by "(XG)" (again, see appended table).

(3-6-3-3) XG PARAMETER CHANGE

11110000	F0	Exclusive status
01000011	43	YAMAHA ID
0001nnnn	1n	Device Number
01001100	4C	Model ID
0aaaaaaa	aaaaaa	Address High
0aaaaaaa	aaaaaa	Address Mid
0aaaaaaa	aaaaaa	Address Low
0ddddddd	ddddddd	Data
11110111	F7	End of Exclusive

Data size matches parameter size (2 or 4 bytes). For address and byte count, refer to attached table.

The following four data types can be sent or received. (The unit will send only upon receipt of a Parameter Change Request.)

System data	
Multieffect data	(Ignored if Voice Mode)
Multipart data	(Ignored if Voice Mode)
Drums setup data	

(3-6-3-4) QS300 NATIVE PARAMETER CHANGE

11110000	F0	Exclusive status
01000011	43	YAMAHA ID
0001nnnn	1n	Device Number
01001011	4B	Model ID
0aaaaaaa	aaaaaaa	Address High
0aaaaaaa	aaaaaaa	Address Mid
0aaaaaaa	aaaaaaa	Address Low
0ddddddd	ddddddd	Data
11110111	F7	End of Exclusive

Data size matches parameter size (2 or 4 bytes).
For address and byte count, refer to attached table.

The following five types of data are received.

System Data	
Current Normal Voice Data	(Effective only during Normal Voice Mode)
Current Normal Element Data	(Effective only during Normal Voice Mode)
User Drum Key Data	
User Drum Common Data	

(3-6-4) BULK DUMP

(3-6-4-1) XG BULK DUMP

11110000	F0	Exclusive status
01000011	43	YAMAHA ID
0000nnnn	0n	Device Number
01001100	4C	Model ID
0bbbbbbb	bbbbbbb	ByteCount
0bbbbbbb	bbbbbbb	ByteCount
0aaaaaaa	aaaaaaa	Address High
0aaaaaaa	aaaaaaa	Address Mid
0aaaaaaa	aaaaaaa	Address Low
00000000	00	Data
0ccccccc	ccccccc	Checksum
11110111	F7	End of Exclusive

For address and byte count, refer to appended table.

The checksum value is set such that the sum of Byte Count, Start Address, Data, and Checksum has value zero in its seven least significant bits.

No more than 512 bytes should be sent in a single transmission. If the Dump Request asks for more than 512 bytes, data should be sent in packets of 512 bytes or less, with at least 120ms between transmission of consecutive packets.

The following five data types can be sent or received. (The unit will send only upon receipt of a Bulk Dump Request.)

System data	
Multieffect data (by module)	(Ignored if Voice Mode)
Multipart data (by part)	(Ignored if Voice Mode)
Drums setup data (by note)	
System Information	(Send only)

(3-6-4-2) QS300 NATIVE BULK DUMP

11110000	F0	Exclusive status
01000011	43	YAMAHA ID
0000nnnn	0n	Device Number
01001011	4B	Model ID
0bbbbbbb	bbbbbbb	ByteCount
0bbbbbbb	bbbbbbb	ByteCount
0aaaaaaa	aaaaaaa	Address High
0aaaaaaa	aaaaaaa	Address Mid
0aaaaaaa	aaaaaaa	Address Low
00000000	00	Data
0ccccccc	ccccccc	Checksum
11110111	F7	End of Exclusive

For address and byte count, refer to attached table.

Except for the addition of the Model ID byte, conditions are the same as for XG BULK DUMP, described above.

Note that it is assumed (regardless of Parameter Address values indicated in attached table) that Voice Data exists in the following continuous sequence starting from the Top Address: Voice Common, Voice Element 1, 2, 3, 4. (Whereas Parameter Change messages use different Top Address for Voice Common and Voice Elements, Bulk Dump always proceeds from Voice Common.)

Also note that Address (=1m nn 00) and Byte Count (=3D+50*4=17D) are fixed; any other values are ignored. (It is not possible to send or receive from midpoint to midpoint.)

The following five data types can be sent or received. (The unit will send only upon receipt of a Bulk Dump Request.)

All System Data	
User Normal Voice Data	(with Element Data following)
Current Normal Voice Data	(Effective only during Normal Voice Mode)
User Drum Key Data	(with Element Data following)
User Drum Common Data	

(3-6-6) DUMP REQUEST

(3-6-6-1) XG DUMP REQUEST

11110000	F0	Exclusive status
01000011	43	YAMAHA ID
0010nnnn	2n	Device Number
01001100	4C	Model ID
0aaaaaaa	aaaaaaa	Address High
0aaaaaaa	aaaaaaa	Address Mid
0aaaaaaa	aaaaaaa	Address Low
11110111	F7	End of Exclusive

For address and byte count, refer to appended table.

The following four data types are received.

System Data	
Multieffect data (by module)	(Ignored if Voice Mode)
Multipart data (by part)	(Ignored if Voice Mode)
Drums setup data (by note)	

(3-6-2) QS300 NATIVE DUMP REQUEST

11110000	F0	Exclusive status
01000011	43	YAMAHA ID
0010nnnn	2n	Device Number
01001011	4B	Model ID
0aaaaaaa	aaaaaa	Address High
0aaaaaaa	aaaaaa	Address Mid
0aaaaaaa	aaaaaa	Address Low
11110111	F7	End of Exclusive

For address and byte count, refer to attached table.

The following six data types are received.

- All System Data
- User Normal Voice Data
- Current Normal Voice Data (Effective only during Normal Voice Mode)
- User Drum Key Data
- User Drum Common Data
- System Information

(3-6-5) XG PARAMETER REQUEST

11110000	F0	Exclusive status
01000011	43	YAMAHA ID
0011nnnn	3n	Device Number
01001100	4C	Model ID
0aaaaaaa	aaaaaa	Address High
0aaaaaaa	aaaaaa	Address Mid
0aaaaaaa	aaaaaa	Address Low
11110111	F7	End of Exclusive

For address and byte count, refer to appended table.

The following four data types are received.

- System Data
- Multieffect data (by module) (Ignored if Voice Mode)
- Multipart data (by part) (Ignored if Voice Mode)
- Drums Setup Data

(3-6-6) QS300 NATIVE PARAMETER REQUEST

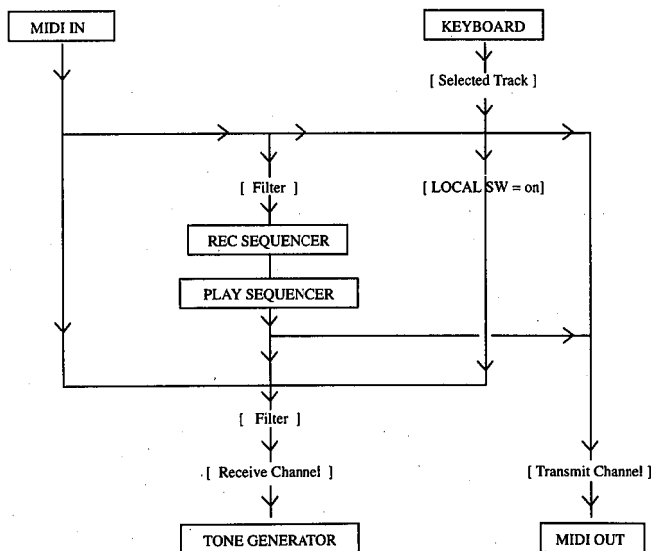
11110000	F0	Exclusive status
01000011	43	YAMAHA ID
0011nnnn	3n	Device Number
01001011	4B	Model ID
0aaaaaaa	aaaaaa	Address High
0aaaaaaa	aaaaaa	Address Mid
0aaaaaaa	aaaaaa	Address Low
11110111	F7	End of Exclusive

For address and byte count, refer to attached table.

The following five data types are received.

- System Data
- Current Normal Voice Data (Effective only during Normal Voice Mode)
- Current Normal Element Data (Effective only during Normal Voice Mode)
- User Drum Key Data
- User Drum Common Data

(4) Structural Diagram: Keyboard Switch Section, Sequencer Section, and Tone Generator



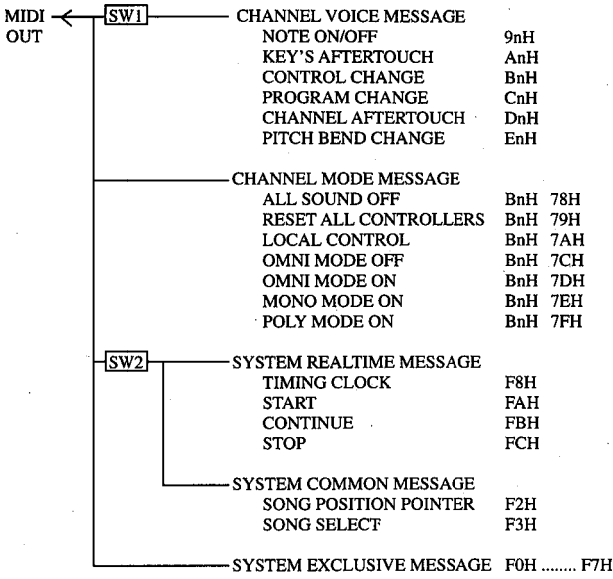
The system distinguishes between note data received via MIDI and note data generated by the sequencer and local keyboard. But sustain, sostenuto, and all other controllers apply unconditionally to all notes, regardless of the source.

The ALL SOUND OFF message also makes no distinction; it shuts off all notes in the targeted channel, regardless of whether the source is local or MIDI.

ALL NOTES OFF received via MIDI is effective only on MIDI notes currently sounding through the targeted channel. The sequencer does not record this message.

Sequencer Part

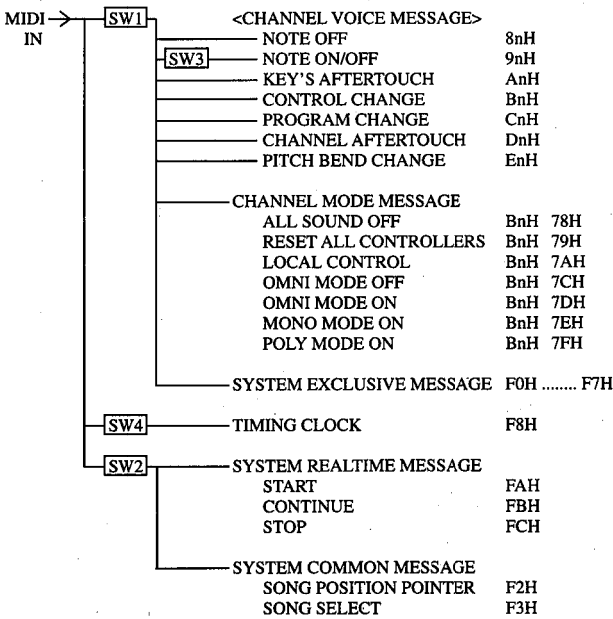
(1) TRANSMIT FLOW



[SW1] MIDI Transmit Channel
Transmit enable/disable and Transmit Channel can be set separately for each track.

[SW2] MIDI Control
Transmission can be set on or off.

(2) RECEIVE FLOW



[SW1] Input Filter
Enables/disables reception for each filter item.

[SW2] MIDI Control
Reception can be enabled or disabled.

[SW3] Velocity Filter
Sets velocity step recording and edit-input On/Off.

[SW4] Clock Condition Select
Select timing clock from (a) internal clock, (b) clock signal received over MIDI In.

(3) TRANSMIT/RECEIVE DATA

(3-1) CHANNEL VOICE MESSAGE

Transmission occurs only while recording or play is in progress. You can set the transmit channel, and switch transmission on or off, by track.

Reception is enabled only while recording is in progress. Receive channel is always "omni on". For multitrack recording, tracks 0 to 15 record data from MIDI CH 0 to 15, respectively.

* RECORD MODE recording is "omni on," except for multitrack recording, where operation is "omni off" and MIDI CH 0 ~ 15 data is recorded onto tracks 0 ~ 15, respectively.

(3-1-1) NOTE OFF

STATUS	1000nnnn(8nH)	n = 0 ~ 15 TRACK CHANNEL NUMBER
NOTE NUMBER	0kkkkkkk	k = 0 (C-2) ~ 127 (G8)
VELOCITY	0vvvvvvv	v: ignored

Record only. During playback, converts to 9nH kkH 00H.

(3-1-2) NOTE ON/OFF

STATUS	1001nnnn(9nH)	n = 0 ~ 15 TRACK CHANNEL NUMBER
NOTE NUMBER	0kkkkkkk	k = 0 (C-2) ~ 127 (G8)
VELOCITY	0vvvvvvv	(v≠0) NOTE ON (v=0) NOTE OFF

During recording, can set velocity-step recording and edit-input On/Off.

(3-1-3) POLYPHONIC KEY PRESSURE

STATUS	1010nnnn(AnH)	n = 0 ~ 15 TRACK CHANNEL NUMBER
NOTE NUMBER	0kkkkkkk	k = 0 (C-2) ~ 127 (G8)
VALUE	0vvvvvvv	v = 0 ~ 127

(3-1-4) CONTROL CHANGE

STATUS	1011nnnn(BnH)	n = 0 ~ 15 TRACK CHANNEL NUMBER
CONTROL NUMBER	0ccccccc	
CONTROL VALUE	0vvvvvvv	

All controller-change data is recorded/replayed.

Bank Select MSB and LSB are recorded together with subsequent Program Change data: it is not possible to record Bank Select data independently of Program Change. During replay, the unit transmits Bank Select data immediately ahead of Program Change data; the unit never sends Bank Select data independently.

(3-1-5) PROGRAM CHANGE

STATUS	1100nnnn(CnH)	n = 0 ~ 15 TRACK CHANNEL NUMBER
PROGRAM NUMBER	0ppppppp	p = 0 ~ 127

When PROGRAM CHANGE is received, the unit records it together with the last received BANK SELECT data. If no BANK SELECT data has been received, the unit uses MSB=0, LSB=0 for recording/replay.

During play, the unit always sends BANK SELECT along with PROGRAM CHANGE. PROGRAM CHANGE is never sent independently of BANK SELECT.

(3-1-6) CHANNEL PRESSURE

STATUS	1101nnnn(DnH)	n = 0 ~ 15 TRACK CHANNEL NUMBER
VALUE	0vvvvvvv	v = 0 ~ 127

(3-1-7) PITCH BEND CHANGE

STATUS	1110nnnn(EnH)	n = 0 ~ 15 TRACK CHANNEL NUMBER
LSB	0vvvvvvv	PITCH BEND LSB 0 ~ 127
MSB	0vvvvvvv	PITCH BEND MSB 0 ~ 127

(3-2) CHANNEL MODE MESSAGE

The following messages are recorded/replayed.

RESET ALL CONTROLLERS	BnH	78H
LOCAL CONTROL	BnH	7AH
OMNI MODE OFF	BnH	7CH
OMNI MODE ON	BnH	7DH
MONO MODE ON	BnH	7EH
POLY MODE ON	BnH	7FH

(3-3) SYSTEM COMMON MESSAGE

Used to control unit functioning. Both sending and receiving are supported. Messages are not recorded as sequence data.

(3-3-1) SONG POSITION POINTER

STATUS	11110010(F2H)	
LSB	0vvvvvvv	SONG POSITION LSB
MSB	0vvvvvvv	SONG POSITION MSB

Transmitted during SONG PLAY MODE to change the bar.
Receivable during SONG PLAY MODE standby.

(3-3-2) SONG SELECT

STATUS 11110011(F3H)
 SONG NO 0vvvvvvv v = 0 - 9

Transmitted during SONG PLAY MODE to change the song.
 Receivable during SONG PLAY MODE standby.

(3-4) SYSTEM REALTIME MESSAGE

Not recorded as sequence data.

(3-4-1) TIMING CLOCK

STATUS 11111000(F8H)

Selects timing clock from (a) internal clock, (b) clock signal received over MIDI In.
 Sending and receiving can be enabled/disabled.

(3-4-2) START

STATUS 11111010(FAH)

Transmission, reception can be enabled/disabled.

(3-4-3) CONTINUE

STATUS 11111011(FBH)

Transmission, reception can be enabled/disabled.

(3-4-4) STOP

STATUS 11111100(FCH)

Transmission, reception can be enabled/disabled.

(3-5) SYSTEM EXCLUSIVE MESSAGE

All exclusive messages are recorded/replayed.
 Regardless of any time lags during reception, all message content (from F0 through F7) is recorded with equal time between bytes. For replay, intervals can be interposed after every 1Kbytes.

<Table 1-1>

Parameter Base Address

	Parameter Change Address			Description	Address			Parameter		
	(H)	(M)	(L)							
SYSTEM	00	00	00	System						
	00	00	7D	Drum Setup Reset						
	00	00	7E	XG System On						
	00	00	7F	All Parameter Reset						
INFORMATION	01	00	00	System Information						
EFFECT 1	02	01	00	Effect 1(Reverb,Chorus,Variation)"						
	02	40	00	Reserved						
MULTIPART	08	00	00	Multipart 1						
	08	0F	00	Multipart 16						
	08	10	00	Reserved						
	08	:	:	:						
DRUM	30	18	00	Drum Setup 1	3n	18	00	note number 24		
	31	18	00	Drum Setup 2	3n	19	00	note number 25		
	32	18	00	Reserved						
	3F	nn	nn	Reserved	3n	54	00	note number 84		

<Table 1-2>

MIDI Parameter Change table (SYSTEM)

Address (H)	Size (H)	Data (H)	Parameter Name	Description	Default value(H)
00 00 01	4	0000	Master Tune	-102.4..+102.3[cent]	00 04 00 00
01 02 03		.07FF		1st bit3-0→bit15-12 2nd bit3-0→bit11-8 3rd bit3-0→bit7-4 4th bit3-0→bit3-0	(0400) (Not reset by XG ON, GM ON)
04 05 06	1	00..7F	Master Volume	0..127	7F
07 08 09	1	00..7F	not used		
0A 0B 0C	1	28..58	Transpose	-24..+24[semitones]	40
0D 0E 0F		n	Drum Setup Reset	n=Drum Setup Number	
10 11 12		00	XG System On	00=XG System on (receive only)	
13 14 15		00	All Parameter Reset	00=on (receive only)	
TOTAL	SIZE	06			

<Table 1-3>

MIDI Parameter table (System information)

Address (H)	Size (H)	Data (H)	Parameter Name	Description	Default value(H)
01 00 00	F	20..7F	Model Name	32..127(ASCII)	
0E		20..7F			
0F 1		00..7F	XG Support Level	0..127	

TOTAL SIZE 10
(Send only. Issued in response to Dump Request. Bulk Dump only.)

<Table 1-4>

MIDI Parameter Change table (EFFECT 1)

Address (H)	Size (H)	Data (H)	Parameter Name	Description	Default value(H)
02 01 00	2	00..7F	Reverb Type MSB	Refer to Effect Type List	01(=HALL1)
		00..7F	Reverb Type LSB	00 : basic type	00
02 1		00..7F	Reverb Parameter 1	Refer to Ef. Parameter List	depends on Reverb type
03 1		00..7F	Reverb Parameter 2	Refer to Ef. Parameter List	depends on Reverb type
04 1		00..7F	Reverb Parameter 3	Refer to Ef. Parameter List	depends on Reverb type
05 1		00..7F	Reverb Parameter 4	Refer to Ef. Parameter List	depends on Reverb type
06 1		00..7F	Reverb Parameter 5	Refer to Ef. Parameter List	depends on Reverb type
07 1		00..7F	Reverb Parameter 6	Refer to Ef. Parameter List	depends on Reverb type
08 1		00..7F	Reverb Parameter 7	Refer to Ef. Parameter List	depends on Reverb type
09 1		00..7F	Reverb Parameter 8	Refer to Ef. Parameter List	depends on Reverb type
0A 1		00..7F	Reverb Parameter 9	Refer to Ef. Parameter List	depends on Reverb type
0B 1		00..7F	Reverb Parameter 10	Refer to Ef. Parameter List	depends on Reverb type
0C 1		00..7F	Reverb Return	--..0..+6dB(0..96..127)	60
0D 1		01..7F	Reverb Pan	L63..C..R63(1..64..127)	40
TOTAL	SIZE	0E			
02 01 10	1	00..7F	Reverb Parameter 11	Refer to Ef. Parameter List	depends on Reverb type
		00..7F	Reverb Parameter 12	Refer to Ef. Parameter List	depends on Reverb type
		00..7F	Reverb Parameter 13	Refer to Ef. Parameter List	depends on Reverb type
		00..7F	Reverb Parameter 14	Refer to Ef. Parameter List	depends on Reverb type
		00..7F	Reverb Parameter 15	Refer to Ef. Parameter List	depends on Reverb type
		00..7F	Reverb Parameter 16	Refer to Ef. Parameter List	depends on Reverb type
TOTAL	SIZE	6			
02 01 20	2	00..7F	Chorus type MSB	Refer to Effect Type List	41(=Chorus1)
		00..7F	Chorus type LSB	00 : basic type	00
22 1		00..7F	Chorus Parameter 1	Refer to Ef. Parameter List	depends on Chorus type
23 1		00..7F	Chorus Parameter 2	Refer to Ef. Parameter List	depends on Chorus type
24 1		00..7F	Chorus Parameter 3	Refer to Ef. Parameter List	depends on Chorus type
25 1		00..7F	Chorus Parameter 4	Refer to Ef. Parameter List	depends on Chorus type
26 1		00..7F	Chorus Parameter 5	Refer to Ef. Parameter List	depends on Chorus type
27 1		00..7F	Chorus Parameter 6	Refer to Ef. Parameter List	depends on Chorus type
28 1		00..7F	Chorus Parameter 7	Refer to Ef. Parameter List	depends on Chorus type
29 1		00..7F	Chorus Parameter 8	Refer to Ef. Parameter List	depends on Chorus type
2A 1		00..7F	Chorus Parameter 9	Refer to Ef. Parameter List	depends on Chorus type
2B 1		00..7F	Chorus Parameter 10	Refer to Ef. Parameter List	depends on Chorus type
2C 1		00..7F	Chorus Return	--..0..+6dB(0..96..127)	60
2D 1		01..7F	Chorus Pan	L63..C..R63(1..64..127)	40
2E 1		00..7F	Send Chorus To Reverb	--..0..+6dB(0..96..127)	00
TOTAL	SIZE	0F			
02 01 30	1	00..7F	Chorus Parameter 11	Refer to Ef. Parameter List	depends on Chorus type
		00..7F	Chorus Parameter 12	Refer to Ef. Parameter List	depends on Chorus type
		00..7F	Chorus Parameter 13	Refer to Ef. Parameter List	depends on Chorus type
		00..7F	Chorus Parameter 14	Refer to Ef. Parameter List	depends on Chorus type
		00..7F	Chorus Parameter 15	Refer to Ef. Parameter List	depends on Chorus type
		00..7F	Chorus Parameter 16	Refer to Ef. Parameter List	depends on Chorus type
TOTAL	SIZE	6			
02 01 40	2	00..7F	Variation Type MSB	Refer to Ef. Type List	"05(=DELAY L,C,R)"
		00..7F	Variation Type LSB	00 : basic type	00
42 2		00..7F	Variation Param 1 MSB	Refer to Ef. Parameter List	depends on vari. type
		00..7F	Variation Param 1 LSB	Refer to Ef. Parameter List	depends on vari. type
44 2		00..7F	Variation Param 2 MSB	Refer to Ef. Parameter List	depends on vari. type
		00..7F	Variation Param 2 LSB	Refer to Ef. Parameter List	depends on vari. type
46 2		00..7F	Variation Param 3 MSB	Refer to Ef. Parameter List	depends on vari. type
		00..7F	Variation Param 3 LSB	Refer to Ef. Parameter List	depends on vari. type
48 2		00..7F	Variation Param 4 MSB	Refer to Ef. Parameter List	depends on vari. type
		00..7F	Variation Param 4 LSB	Refer to Ef. Parameter List	depends on vari. type
4A 2		00..7F	Variation Param 5 MSB	Refer to Ef. Parameter List	depends on vari. type
		00..7F	Variation Param 5 LSB	Refer to Ef. Parameter List	depends on vari. type
4C 2		00..7F	Variation Param 6 MSB	Refer to Ef. Parameter List	depends on vari. type
		00..7F	Variation Param 6 LSB	Refer to Ef. Parameter List	depends on vari. type
4E 2		00..7F	Variation Param 7 MSB	Refer to Ef. Parameter List	depends on vari. type
		00..7F	Variation Param 7 LSB	Refer to Ef. Parameter List	depends on vari. type
50 2		00..7F	Variation Param 8 MSB	Refer to Ef. Parameter List	depends on vari. type
		00..7F	Variation Param 8 LSB	Refer to Ef. Parameter List	depends on vari. type
52 2		00..7F	Variation Param 9 MSB	Refer to Ef. Parameter List	depends on vari. type
		00..7F	Variation Param 9 LSB	Refer to Ef. Parameter List	depends on vari. type
54 2		00..7F	Variation Param 10 MSB	Refer to Ef. Parameter List	depends on vari. type
		00..7F	Variation Param 10 LSB	Refer to Ef. Parameter List	depends on vari. type
56 1		00..7F	Variation Return	--..0..+6dB(0..96..127)	60
57 1		01..7F	Variation Pan	L63..C..R63(1..64..127)	40
58 1		00..7F	Send Variation To Rev.	--..0..+6dB(0..96..127)	00
59 1		00..7F	Send Variation To Cho.	--..0..+6dB(0..96..127)	00
5A 1		00..01	Variation Connection	0:insertion,1:system	00
5B 1		00..1F	Variation Part	part1..32(0..31),off(127)	7F
5C 1		01..7F	MW Variation Ctrl Depth	-63..+63	00
5D 1		01..7F	PB Variation Ctrl Depth	-63..+63	00

	SE	1	01..7F	AT Variation Ctrl Depth	-63..+63	00
	5F	1	01..7F	FC Variation CtrlDepth	-63..+63	00
	60	1	01..7F	AC2 Variation CtrlDepth	-63..+63	00
TOTAL	SIZE	21				
02	01	71	1 00..7F	Variation Parameter 11	option Parameter	depends on vari. type
		70	1 00..7F	Variation Parameter 12	option Parameter	depends on vari. type
		73	1 00..7F	Variation Parameter 13	option Parameter	depends on vari. type
		72	1 00..7F	Variation Parameter 14	option Parameter	depends on vari. type
		74	1 00..7F	Variation Parameter 15	option Parameter	depends on vari. type
		75	1 00..7F	Variation Parameter 16	option Parameter	depends on vari. type
TOTAL	SIZE	6				

<Table 1-5>

MIDI Parameter Change table (MULTIPART)

Address (H)	Size (H)	Data (H)	Parameter Name	Description	Default value(H)
08	nn	00 1	Element Reserve	0..32	0(Part10),2(Others)
	nn	01 1	Bank Select MSB	0..127	7F(Part10),00(Others)
	nn	02 1	Bank Select LSB	0..127	00
	nn	03 1	Program Number	1..128	00
	nn	04 1	Rcv Channel	0..16;1..16,127;off	Part No.
	nn	05 1	Mono/Poly Mode	0:single,1:poly	01
	nn	06 1	Same Note Number Key On Assign	0:single,1:multi,2:inst (for DRUM)	00
	nn	07 1	Part Mode	0:normal,1..3:drum thru, drum1..2	00 (All parts except 10) 01 (Part10)
	nn	08 1	Note Shift	-24..+24[semitones]	40
	nn	09 2	Detune	-12.8..+12.7[Hz]	08 00
	nn	0A	1st	bit3..0→bit7..4 2nd bit3..0→bit3..0	(80)
	nn	0B 1	Volume	0..127	64
	nn	0C 1	Velocity Sense Depth	0..127	40
	nn	0D 1	Velocity Sense Offset	0..127	40
	nn	0E 1	Pan	0:random L63..C..R63(1..64..127)	40
	nn	0F 1	Note Limit Low	C-2..G8	00
	nn	10 1	Note Limit High	C-2..G8	7F
	nn	11 1	Dry Level	0..127	7F
	nn	12 1	Chorus Send	0..127	00
	nn	13 1	Reverb Send	0..127	28
	nn	14 1	Variation Send	0..127	00
	nn	15 1	Vibrato Rate	-64..+63	40
	nn	16 1	Vibrato Depth	-64..+63	40
	nn	17 1	Vibrato Delay	-64..+63	40
	nn	18 1	Filter Cutoff Frequency	-64..+63	40
	nn	19 1	Filter Resonance	-64..+63	40
	nn	1A 1	EG Attack Time	-64..+63	40
	nn	1B 1	EG Decay Time	-64..+63	40
	nn	1C 1	EG Release Time	-64..+63	40
	nn	1D 1	MW Pitch Control	-24..+24[semitones]	40
	nn	1E 1	MW Filter Control	-9600..+9450[cent]	40
	nn	1F 1	MW Amplitude Control	-100..+100[%]	40
	nn	20 1	MW LFO PMod Depth	0..127	0A
	nn	21 1	MW LFO FMod Depth	0..127	00
	nn	22 1	MW LFO AMod Depth	0..127	00
	nn	23 1	Bend Pitch Control	-24..+24[semitones]	42
	nn	24 1	Bend Filter Control	-9600..+9450[cent]	40
	nn	25 1	Bend Amplitude Control	-100..+100[%]	40
	nn	26 1	Bend LFO PMod Depth	0..127	00
	nn	27 1	Bend LFO FMod Depth	0..127	00
	nn	28 1	Bend LFO AMod Depth	0..127	00
TOTAL	SIZE	29			
	nn	30 1	Rev Pitch Bend	off/on	01
	nn	31 1	Rev Ch After touch	off/on	01
	nn	32 1	Rev Program Change	off/on	01
	nn	33 1	Rev Control Change	off/on	01
	nn	34 1	Rev Key's After touch	off/on	01
	nn	35 1	Rev Note Message	off/on	01
	nn	36 1	Rev RPN	off/on	01
	nn	37 1	Rev NRPN	off/on	01(XG),00(GM)
	nn	38 1	Rev Modulation	off/on	01
	nn	39 1	Rev Volume	off/on	01
	nn	3A 1	Rev Pan	off/on	01
	nn	3B 1	Rev Expression	off/on	01
	nn	3C 1	Rev Hold1	off/on	01
	nn	3D 1	Rev Portamento	off/on	01
	nn	3E 1	Rev Sostenute	off/on	01
	nn	3F 1	Rev Soft Pedal	off/on	01
	nn	40 1	Rev Bank Select	off/on	01(XG),00(GM)
	nn	41 1	Scale Tuning C	-64..+63[cent]	40
	nn	42 1	Scale Tuning C#	-64..+63[cent]	40
	nn	43 1	Scale Tuning D	-64..+63[cent]	40
	nn	44 1	Scale Tuning D#	-64..+63[cent]	40
	nn	45 1	Scale Tuning E	-64..+63[cent]	40
	nn	46 1	Scale Tuning F	-64..+63[cent]	40
	nn	47 1	Scale Tuning F#	-64..+63[cent]	40
	nn	48 1	Scale Tuning G	-64..+63[cent]	40
	nn	49 1	Scale Tuning G#	-64..+63[cent]	40
	nn	4A 1	Scale Tuning A	-64..+63[cent]	40
	nn	4B 1	Scale Tuning A#	-64..+63[cent]	40
	nn	4C 1	Scale Tuning B	-64..+63[cent]	40

nn	4D	1	28..58	Ch's AT Pitch Control	-24..+24[semitones]	40
nn	4E	1	00..7F	Ch's AT Filter Control	-9600..+9450[cent]	40
nn	4F	1	00..7F	Ch's AT Amp. Control	-100..+100[%]	40
nn	50	1	00..7F	Ch's AT LFO PMod Depth	0..127	00
nn	51	1	00..7F	Ch's AT LFO FMod Depth	0..127	00
nn	52	1	00	Ch's AT Reserved	0	00
nn	53	1	28..58	Key's AT Pitch Control	-24..+24[semitones]	40
nn	54	1	00..7F	Key's AT Filter Control	-9600..+9450[cent]	40
nn	55	1	00..7F	Key's AT Amp. Control	-100..+100[%]	40
nn	56	1	00..7F	Key's AT LFO PMod Depth	0..127	00
nn	57	1	00..7F	Key's AT LFO FMod Depth	0..127	00
nn	58	1	00	Key's AT Reserved	0	00
nn	59	1	00..5F	AC1(FC) Control Number	0..95	10
nn	5A	1	28..58	AC1(FC) Pitch Control	-24..+24[semitones]	40
nn	5B	1	00..7F	AC1(FC) Filter Control	-9600..+9450[cent]	40
nn	5C	1	00..7F	AC1(FC) Amplitude Cntrl	-100..+100[%]	40
nn	5D	1	00..7F	AC1(FC) LFO PMod Depth	0..127	00
nn	5E	1	00..7F	AC1(FC) LFO FMod Depth	0..127	00
nn	5F	1	00..7F	AC1(FC) LFO AMod Depth	0..127	00
nn	60	1	00..5F	AC2 Control Number	0..95	11
nn	61	1	28..58	AC2 Pitch Control	-24..+24[semitones]	40
nn	62	1	00..7F	AC2 Filter Control	-9600..+9450[cent]	40
nn	63	1	00..7F	AC2 Amplitude Cntrl	-100..+100[%]	7F
nn	64	1	00..7F	AC2 LFO PMod Depth	0..127	00
nn	65	1	00..7F	AC2 LFO FMod Depth	0..127	00
nn	66	1	00..7F	AC2 LFO AMod Depth	0..127	00
nn	67	1	00..01	Portamento Switch	off/on	00
nn	68	1	00..7F	Portamento Time	0..127	00
nn	69	1	00..7F	Pitch EG Initial Level	-64..+63	40
nn	6A	1	00..7F	Pitch EG Attack Time	-64..+63	40
nn	6B	1	00..7F	Pitch EG Release Level	-64..+63	40
nn	6C	1	00..7F	Pitch EG Release Time	-64..+63	40
nn	6D	1	00..7F	Velocity Limit Low	1..127	01
nn	6E	1	00..7F	Velocity Limit High	1..127	7F

TOTAL SIZE 3F

nn = PartNumber

The following parameters have no effect on drum parts:

- Bank Select LSB
- Amp EG
- Portamento
- Soft Pedal
- Mono/Poly
- Scale Tuning
- Pitch EG

<Table 1-6>

MIDI Parameter Change table (DRUM SETUP)

Address (H)	Size (H)	Data (H)	Parameter Name	Description	Default value(H)
3n	rr	00	Pitch Coarse	-64..+63	Relative 00
3n	rr	01	Pitch Fine	-64..+63[cent]	Relative 00
3n	rr	02	Level	0..127	Absolute XG Drum1
3n	rr	03	Alternate Group	0:off,1..127	Absolute XG Drum1
3n	rr	04	Pan	0:random L63..C..R63(1..64..127)	Absolute XG Drum1
3n	rr	05	Reverb Send Level	0..127	Absolute XG Drum1
3n	rr	06	Chorus Send Level	0..127	Absolute XG Drum1
3n	rr	07	Variation Send Level	0..127	Absolute XG Drum1
3n	rr	08	Key Assign	0;single,1;multi	Absolute XG Drum1
3n	rr	09	Rev Note Off	off/on (Ineffective on voices required to recognized Key Off under GMx.)	Absolute XG Drum1
3n	rr	0A	Rev Note On	off/on	Absolute XG Drum1
3n	rr	0B	Filter Cutoff Frequency	-64..63	Relative 00
3n	rr	0C	Filter Resonance	-64..63	Relative 00
3n	rr	0D	EG Attack Rate	-64..63	Relative 00
3n	rr	0E	EG Decay1 Rate	-64..63	Relative 00
3n	rr	0F	EG Decay2 Rate	-64..63	Relative 00

TOTAL SIZE 10

n:Drum Setup Number - 1

rr:note number(0D - 5B)

Receipt of XG SYSTEM ON or GM SYSTEM ON message generates reinitialization of all drum setup parameters. The Drum Setup Reset message can be used to reinitialize individual drum setup parameters.

<Table 1-7>

Effect Type List

REVERB TYPE	MSB TYPE	TYPE LSB	Bracketed values indicate display sequence.	
DEC	HEX	00	01	02
000	0	[00]No Effect		
001	1	[01]Rev Hall 1	[02]Rev Hall 2	
002	2	[03]Rev Room 1	[04]Rev Room 2	[05]Rev Room 3
003	3	[06]Rev Stage 1	[07]Rev Stage 2	
004	4	[08]Rev Plate		
005	5	No Effect		
:	:			
015	F	No Effect		
016	10	[09]Rev WhiteRm		
017	11	[10]Rev Tunnel		
018	12	No Effect		

019	13	[11]Rev Basement
020	14	No Effect
:	:	:
127	7F	No Effect

CHORUS TYPE		TYPE LSB			
TYPE	MSB	00	01	02	06
DEC	HEX				
000	0	[00]No Effect			
001	1	No Effect			
:	:	:	:	:	:
064	40	No Effect			
065	41	[01]Chorus 1	[02]Chorus 2	[03]Chorus 3	[04]Chorus 4
066	42	[05]Celeste 1	[06]Celeste 2	[07]Celeste 3	[08]Celeste 4
067	43	[09]Flanger 1	[10]Flanger 2		[11]Flanger 3
068	46	No Effect			
069	45	No Effect			
:	:	:	:	:	:
127	7F	No Effect			

VARIATION TYPE(0-63)		TYPE LSB		
TYPE	MSB	00	01	02
DEC	HEX			
000	0	[00]No Effect		
001	1	[01]Rev Hall 1	[02]Rev Hall 2	
002	2	[03]Rev Room 1	[04]	[05]Rev Room 3
003	3	[06]Rev Stage1	[07]Rev Stage2	
004	4	[08]Rev Plate		
005	5	[09]Delay L,C,R		
006	6	[10]Delay L,R		
007	7	[11]Echo		
008	8	[12]CrossDelay		
009	9	[13]EarlyRef.1	[14]EarlyRef.2	
010	A	[15]GateReverb		
011	B	[16]ReversGate		
012	C	No Effect (sys), THRU (ins)		
:	:	:	:	:
019	13	No Effect (sys), THRU (ins)		
020	14	[17]RevKaraok1	[18]RevKaraok2	[19]RevKaraok3
021	15	No Effect (sys), THRU (ins)		
:	:	:	:	:
063	3F	No Effect (sys), THRU (ins)		

VARIATION TYPE(64-127)		TYPE LSB			
TYPE	MSB	00	01	02	06
DEC	HEX				
064	40	[43]THRU			
065	41	[20]Chorus 1	[21]Chorus 2	[22]Chorus 3	[23]Chorus 4
066	42	[24]Celeste 1	[25]Celeste 2	[26]Celeste 3	[27]Celeste 4
067	43	[28]Flanger 1	[29]Flanger 2		[30]Flanger 3
068	44	[31]Symphonic			
069	45	[32]RotarySp.			
070	46	[33]Tremolo			
071	47	[34]Auto PAN			
072	48	[35]Phaser 1			[36]Phaser 2
073	49	[37]Distortion			
074	4A	[38]Overdrive			
075	4B	[39]G-Amp.Sim.			
076	4C	[40]3 Band EQ			
077	4D	[41]2 Band EQ			
078	4E	[42]Auto Wah			
079	4F	THRU			
:	:	:	:	:	:
127	7F	THRU			

<Table 2-1>

Parameter Base Address

Parameter Change Address	(H) (M) (L)	Description
SYSTEM	00 00 00	All System
NORMALVOICE	10 00 00	Current Normal Voice
	11 00 00	User Normal Voice1 with Element(Bulk Dump Only)
	:	:
	11 7F 00	User Normal Voice128 with Element(Bulk Dump Only)
NORMAL ELEM	20 00 00	Current Normal Voice Element1 (Parameter Change Only)
	:	:
	23 00 00	Current Normal Voice Element4 (Parameter Change Only)
DRUM KEY	30 18 00	Drum Voice Key C0
	:	:
	30 54 00	Drum Voice Key C5
DRUM COMMON	40 00 00	Drum Voice Common

<Table 2-2>

MIDI Parameter-Change Table (Whole System)

"(XG)" indicates that the value resets whenever XG ON or GM ON is received.

Address (H)	Size (H)	Data (H)	Parameter Name	Description	Default value(H)
00 00	00 4	0000	Master Tune	-102.4..+102.3[cent] 1st bit3-0→bit15-12 2nd bit3-0→bit11-8 3rd bit3-0→bit7-4 4th bit3-0→bit3-0	00 04 00 00 (0400)
04 01	00.7F	00.7F	Master Volume	0..127	7F(XG)
05 01	34.4C	34.4C	Sequencer Transpose	-12..+12[semitones]	40
06 01	1C.64	1C.64	Keyboard Transpose	-36..+36[semitones]	40
07 01	7.11	7.11	Foot Volume Ctrl Number	7,11	07
08 01	0.1	0.1	System Mode	0/1;XG/TG300B	00(XG)
09 01	0.1	0.1	Local	0/1:off/on	01
0A 01	0..17	0..17	Device Number	0:off,1..16,17:all	17
0B 01	0..16	0..16	Voice Mode Receive Ch.	1..16,omni	16
0C 01	0..15	0..15	Voice Mode Transmit Ch.	1..16	00
0D 01	0.1	0.1	RX Filter Pitch Bend	0/1:off/on	01
0E 01	0.1	0.1	RX Filter Ch's AfterTch	0/1:off/on	01
0F 01	0.1	0.1	RX Filter ProgramChange	0/1:off/on	01
10 01	0.1	0.1	RX Filter ControlChange	0/1:off/on	01
11 01	0.1	0.1	RX Filter Key'sAfterTch	0/1:off/on	01
12 01	0.1	0.1	RX Filter Note On/Off	0/1:off/on	01
13 01	0.1	0.1	RX Filter NRPN	0/1:off/on	01
14 01	0.1	0.1	RX Filter Bank Change	0/1:off/on	01
15 01	0.1	0.1	RX Filter Sys.Exclusive	0/1:off/on	01
16 01	0.1	0.1	MIDI Sync	0/1:int/ext	00
17 01	0.1	0.1	MIDI Control	0/1:off/on	01
18 01	0.8	0.8	Interval Time	1..9[*100msec]	00
19 01	0.4	0.4	Click Beat	16,8,4,2,1	02
1A 01	0.3	0.3	Click Mode	off,rec,rec&play,always	01
1B 01	0..127	0..127	Click Level	0..127	127
1C 01	31..4F	31..4F	LCD Contrast	-15..+15	40
1D 01	0.1	0.1	Fingered on/off	0/1:off/on	0
1E 01	0..7F	0..7F	Fingered Chord Zone Lo	C-2..G8	24
1F 01	0..7F	0..7F	Fingered Chord Zone Hi	C-2..G8	36
20 01	20..7E	20..7E	Greeting Message1	32..126(ASCII)	'W' (Greeting Message on QS300)
21 01	20..7E	20..7E	Greeting Message2	32..126(ASCII)	'e'
22 01	20..7E	20..7E	Greeting Message3	32..126(ASCII)	'i'
23 01	20..7E	20..7E	Greeting Message4	32..126(ASCII)	'c'
24 01	20..7E	20..7E	Greeting Message5	32..126(ASCII)	'o'
25 01	20..7E	20..7E	Greeting Message6	32..126(ASCII)	'm'
26 01	20..7E	20..7E	Greeting Message7	32..126(ASCII)	'e'
27 01	20..7E	20..7E	Greeting Message8	32..126(ASCII)	'.'
28 01	20..7E	20..7E	Greeting Message9	32..126(ASCII)	'T'
29 01	20..7E	20..7E	Greeting Message10	32..126(ASCII)	'o'
2A 01	20..7E	20..7E	Greeting Message11	32..126(ASCII)	'.'
2B 01	20..7E	20..7E	Greeting Message12	32..126(ASCII)	'.'
2C 01	20..7E	20..7E	Greeting Message13	32..126(ASCII)	'W'
2D 01	20..7E	20..7E	Greeting Message14	32..126(ASCII)	'.'
2E 01	20..7E	20..7E	Greeting Message15	32..126(ASCII)	'.'
2F 01	20..7E	20..7E	Greeting Message16	32..126(ASCII)	'W'
30 01	20..7E	20..7E	Greeting Message17	32..126(ASCII)	'o'
31 01	20..7E	20..7E	Greeting Message18	32..126(ASCII)	'r'
32 01	20..7E	20..7E	Greeting Message19	32..126(ASCII)	'l'
33 01	20..7E	20..7E	Greeting Message20	32..126(ASCII)	'd'
34 01	20..7E	20..7E	Greeting Message21	32..126(ASCII)	'.'
35 01	20..7E	20..7E	Greeting Message22	32..126(ASCII)	'.'
36 01	20..7E	20..7E	Greeting Message23	32..126(ASCII)	'.'
37 01	20..7E	20..7E	Greeting Message24	32..126(ASCII)	'.'
38 01	20..7E	20..7E	Greeting Message25	32..126(ASCII)	'l'
39 01	20..7E	20..7E	Greeting Message26	32..126(ASCII)	'.'
3A 01	20..7E	20..7E	Greeting Message27	32..126(ASCII)	'a'
3B 01	20..7E	20..7E	Greeting Message28	32..126(ASCII)	'm'
3C 01	20..7E	20..7E	Greeting Message29	32..126(ASCII)	'.'
3D 01	20..7E	20..7E	Greeting Message30	32..126(ASCII)	'r'
3E 01	20..7E	20..7E	Greeting Message31	32..126(ASCII)	'e'
3F 01	20..7E	20..7E	Greeting Message32	32..126(ASCII)	'a'
40 01	20..7E	20..7E	Greeting Message33	32..126(ASCII)	'd'
41 01	20..7E	20..7E	Greeting Message34	32..126(ASCII)	'y'
42 01	20..7E	20..7E	Greeting Message35	32..126(ASCII)	'.'
43 01	20..7E	20..7E	Greeting Message36	32..126(ASCII)	'!'
44 01	20..7E	20..7E	Greeting Message37	32..126(ASCII)	'!'
45 01	20..7E	20..7E	Greeting Message38	32..126(ASCII)	'.'
46 01	20..7E	20..7E	Greeting Message39	32..126(ASCII)	'.'
47 01	20..7E	20..7E	Greeting Message40	32..126(ASCII)	'.'
48 01	0.7	0.7	Keyboard Velocity Curve normal...cross2	32..126(ASCII)	0:normal

TOTAL SIZE 49

<Table 2-3>

MIDI Parameter Change table (NORMAL VOICE COMMON)

Address (H)	Size (H)	Data (H)	Parameter Name	Description	Default value(H)
10 00 00	1	20..7E	Voice Name1	32..126(ASCII)	
01	1	20..7E	Voice Name2	32..126(ASCII)	
02	1	20..7E	Voice Name3	32..126(ASCII)	
03	1	20..7E	Voice Name4	32..126(ASCII)	
04	1	20..7E	Voice Name5	32..126(ASCII)	
05	1	20..7E	Voice Name6	32..126(ASCII)	
06	1	20..7E	Voice Name7	32..126(ASCII)	
07	1	20..7E	Voice Name8	32..126(ASCII)	
08	1	20..7E	Voice Name9	32..126(ASCII)	
09	1	20..7E	Voice Name10	32..126(ASCII)	
0A	1	00..15	Voice Category	00..21(—..Wv)	
0B	1	00..0F	Element Switch	Bit0..Bit3;EL1..EL4	
0C	1	00..7F	Voice Level	0/1;off/on	0..127
0D	1	00..7F	Velocity Sens Depth		0..127
0E	1	00..7F	Velocity Sens Offset		0..127
0F	1	00..7F	Reverb Send Level		0..127
10	1	00..7F	Chorus Send Level		0..127
11	1	00..7F	Send Chorus To Reverb	-∞..0..+6dB(0..96..127)	
12	2	00..7F	Variation Type MSB	Refer to Ef. Program List	
		00..7F	Variation Type LSB	00 : basic type	
14	2	00..7F	Variation Param 1 MSB	Refer to Ef. Program List	
		00..7F	Variation Param 1 LSB	Refer to Ef. Program List	
16	2	00..7F	Variation Param 2 MSB	Refer to Ef. Program List	
		00..7F	Variation Param 2 LSB	Refer to Ef. Program List	
18	2	00..7F	Variation Param 3 MSB	Refer to Ef. Program List	
		00..7F	Variation Param 3 LSB	Refer to Ef. Program List	
1A	2	00..7F	Variation Param 4 MSB	Refer to Ef. Program List	
		00..7F	Variation Param 4 LSB	Refer to Ef. Program List	
1C	2	00..7F	Variation Param 5 MSB	Refer to Ef. Program List	
		00..7F	Variation Param 5 LSB	Refer to Ef. Program List	
1E	1	00..7F	Variation Attenuate Lvl		0..127
1F	1	00..7F	Variation Param 10 LSB	Refer to Ef. Program List	
20	1	00..01	Play Mode	0/1;mono/poly	
21	1	00..01	Portamento Switch	0/1;off/on	
22	1	00..127	Portamento Time		0..127
23	1	28..58	Bend Wheel Pitch Ctrl.	-24..+24(semitones)	
24	1	00..7F	Bend Wheel Cutoff Ctrl.	-9600..+9600(cent)	
25	1	00..7F	Bend Wheel Amp Ctrl.	-100..+100(%)	
26	1	00..7F	Bend Wheel PM Ctrl.		0..127
27	1	00..7F	Bend Wheel FM Ctrl.		0..127
28	1	00..7F	Bend Wheel AM Ctrl.		0..127
29	1	28..58	Mod. Wheel Pitch Ctrl.	-24..+24(semitones)	
2A	1	00..7F	Mod. Wheel Cutoff Ctrl.	-9600..+9600(cent)	
2B	1	00..7F	Mod. Wheel Amp Ctrl.	-100..+100(%)	
2C	1	00..7F	Mod. Wheel PM Ctrl.		0..127
2D	1	00..7F	Mod. Wheel FM Ctrl.		0..127
2E	1	00..7F	Mod. Wheel AM Ctrl.		0..127
2F	1	01..7F	Mod. Wheel VariEf Ctrl	-63..+63	
30	1	28..58	After touch Pitch Ctrl	-24..+24(semitones)	
31	1	00..7F	After touch Cutoff Ctrl.	-9600..+9600(cent)	
32	1	00..7F	After touch Amp Ctrl.	-100..+100(%)	
33	1	00..7F	After touch PM Ctrl.		0..127
34	1	00..7F	After touch FM Ctrl.		0..127
35	1	00..7F	After touch AM Ctrl.		0..127
36	1	28..58	Foot Cont. Pitch Ctrl.	-24..+24(semitones)	
37	1	00..7F	Foot Cont. Cutoff Ctrl.	-9600..+9600(cent)	
38	1	00..7F	Foot Cont. Amp Ctrl.	-100..+100(%)	
39	1	00..7F	Foot Cont. PM Ctrl.		0..127
3A	1	00..7F	Foot Cont. FM Ctrl.		0..127
3B	1	00..7F	Foot Cont. AM Ctrl.		0..127
3C	1	01..7F	Foot Cont. VariEf Ctrl.	-63..+63	

<Table 2-4>

MIDI Parameter Change table (NORMAL VOICE ELEMENT)

Address (H)	Size (H)	Data (H)	Parameter Name	Description	Default value(H)
2e 00 00	2	0000	Wave Num	1st Bit13..7	
		..3FFF		2nd Bit6..0	
02	1	00..7F	Note Limit Low	C-2..G8	
03	1	00..7F	Note Limit High	C-2..G8	
04	1	01..7F	Velocity Limit Low	1..127	
05	1	01..7F	Velocity Limit High	1..127	
06	1	00..01	Filter Curve	0..1(lin,Exp)	
07	1	00..02	LFO Wave	0;saw/1;tri/2;S&H	
08	1	00..01	LFO Phase Init	off/on	
09	1	00..3F	LFO Speed	0..63	
0A	1	00..7F	PLFO Delay	0..127	
0B	1	00..7F	PLFO Fade Time	0..127	
0C	1	00..3F	LFO PMD	0..63	
0D	1	00..0F	LFO FMD	0..15	
0E	1	00..1F	LFO AMD	0..31	
0F	1	20..60	Note Shift	-32..+32(semitones)	
10	1	0E..72	Detune	-50..+50(cent)	
11	1	00..05	Pitch Scaling Rate	100,50,20,10,5,0(%)	
12	1	00..7F	Pitch Scaling Center	C-2..G8	
13	1	00..03	Pitch EG Depth	1/2,1,2,4(oct)	
14	1	39..47	PEG Depth VelLevelSens.	-7..+7	
15	1	39..47	PEG Depth VelRateSens.	-7..+7	
16	1	39..47	PEG Depth Rate Scaling	-7..+7	
17	1	00..7F	PEGDepth RateScalCenter	C-2..G8	
18	1	00..3F	PEG Rate1(Attack)	0..63	

YAMAHA [Music Synthesizer---synthesizer part]
Model QS300 MIDI Implementation Chart

Date:10-MAY-1995
Version : 1.0

Function ...	Transmitted	Recognized	Remarks
:Basic Default	: 1 - 16	: 1 - 16	: Memorized
:Channel Changed	: 1 - 16	: 1 - 16	:
: Mode Default	: 3	: 1 - 4 (m=1)	: Memorized
: Mode Messages	: x	: 1 - 4 (m=1)	*1:
: Mode Altered	: *****	: x	:
:Note	: 0 - 127	: 0 - 127	*1: Transpose
:Number : True voice	: *****	: 0 - 127	:
:Velocity Note ON	: o 9nH, v=1-127	: o v=1-127	:
: Note OFF	: x 9nH, v=0	: x	:
:After Key's	: x	: o	*1:
:Touch Ch's	: o	: o	*1:
:Pitch Bender	: o	: o 0-24 semi	*1:7 bit resolution:
: 0,32	: o	: o	*1:Bank Select
: 1,7,11,16,64	: o	: o	*1:
: 5,6,10,38,65-67	: x	: o	*1:
: Control 0-95	: x	: o	*1:Assignable Cntrl:
: 71-74	: x	: o	*1:Sound Controller:
: Change 84	: x	: o	*1:Portamento Cntrl:
: 91,93,94	: x	: o	*1:Effect SendLevel:
: 96,97	: x	: o	*1:Data Inc,Dec
: 98,99	: x	: o	*1:NRPN LSB,MSB
: 100,101	: x	: o	*1:RPN LSB,MSB
: 120	: x	: o	*1:All Sound Off
: 121	: x	: o	*1:Reset All Cntrls:
:	:	:	:
:Prog	: o 0 - 127	: o 0 - 127	*1:
:Change : True #	: *****	: 0 - 127	:
:System Exclusive	: o	: o	*1:
:System : Song Pos	: x	: x	:
: : Song Sel	: x	: x	:
:Common : Tune	: x	: x	:
:System :Clock	: x	: x	:
:Real Time :Commands	: x	: x	:
:Aux :Local ON/OFF	: x	: x	:
: :All Notes OFF	: x	: o(123-127)	*1:
:Mes- :Active Sense	: o	: o	:
:sages:Reset	: x	: x	:
:Notes:*1 receive if filter switch is off.			
:			
:			
:			
:			

Function ...	Transmitted	Recognized	Remarks
:Basic Default	: 1 - 16	: 1 - 16	: Memorized
:Channel Changed	: x	: x	:
: Mode Default	: x	: x	:
: Mode Messages	: x	: x	:
: Mode Altered	: *****	: x	:
:Note	: 0 - 127	: 0 - 127	*1:
:Number : True voice	: *****	:	:
:Velocity Note ON	: o 9nH,v=1-127	: o v=1-127	:
: Note OFF	: x 9nH,v=0	: x	:
:After Key's	: o	: o	*1:
:Touch Ch's	: o	: o	*1:
:Pitch Bender	: o	: o	*1:
: 0-121	: o	: o	*1:
: Control	:	:	:
: Change	:	:	:
: Prog	: o 0 - 127	: o 0 - 127	*1:
:Change : True #	: *****	:	:
:System Exclusive	: o	: o	*1:
:System : Song Pos	: o	*3: o	*3:
: : Song Sel	: o	*3: o	*3:
:Common : Tune	: x	: x	:
:System :Clock	: o	*3: o	*2:
:Real Time :Commands	: o	*3: o	*3:
:Aux :Local ON/OFF	: o	: o	*1:
: :All Notes OFF	: x	: x	:
:Mes- :Active Sense	: o	: x	:
:sages:Reset	: x	: x	:
:Notes:*1	receive if filter switch is off.		
: *2	receive clock at MIDI sync mode.		
: *3	if MIDI control switch is on.		

MUSIC SYNTHESIZER

QS300

PARTS LIST

■ CONTENTS (目次)

OVERALL ASSEMBLY (総組立)	1
PANEL ASSEMBLY (パネルAss'y)	3
WHEEL ASSEMBLY (ホイールAss'y)	5
KEYBOARD ASSEMBLY (鍵盤Ass'y)	6
POWER SUPPLY ASSEMBLY (電源Ass'y)	7
ELECTRICAL PARTS (電気部品)	8~11

Note) DESTINATION ABBREVIATIONS

J : Japanese model	A : Australian model
U : U.S. model	E : European model
C : Canadian model	D : German model
X : General model	B : British model
M : South African model	I : Indonesian model
H : North European model	

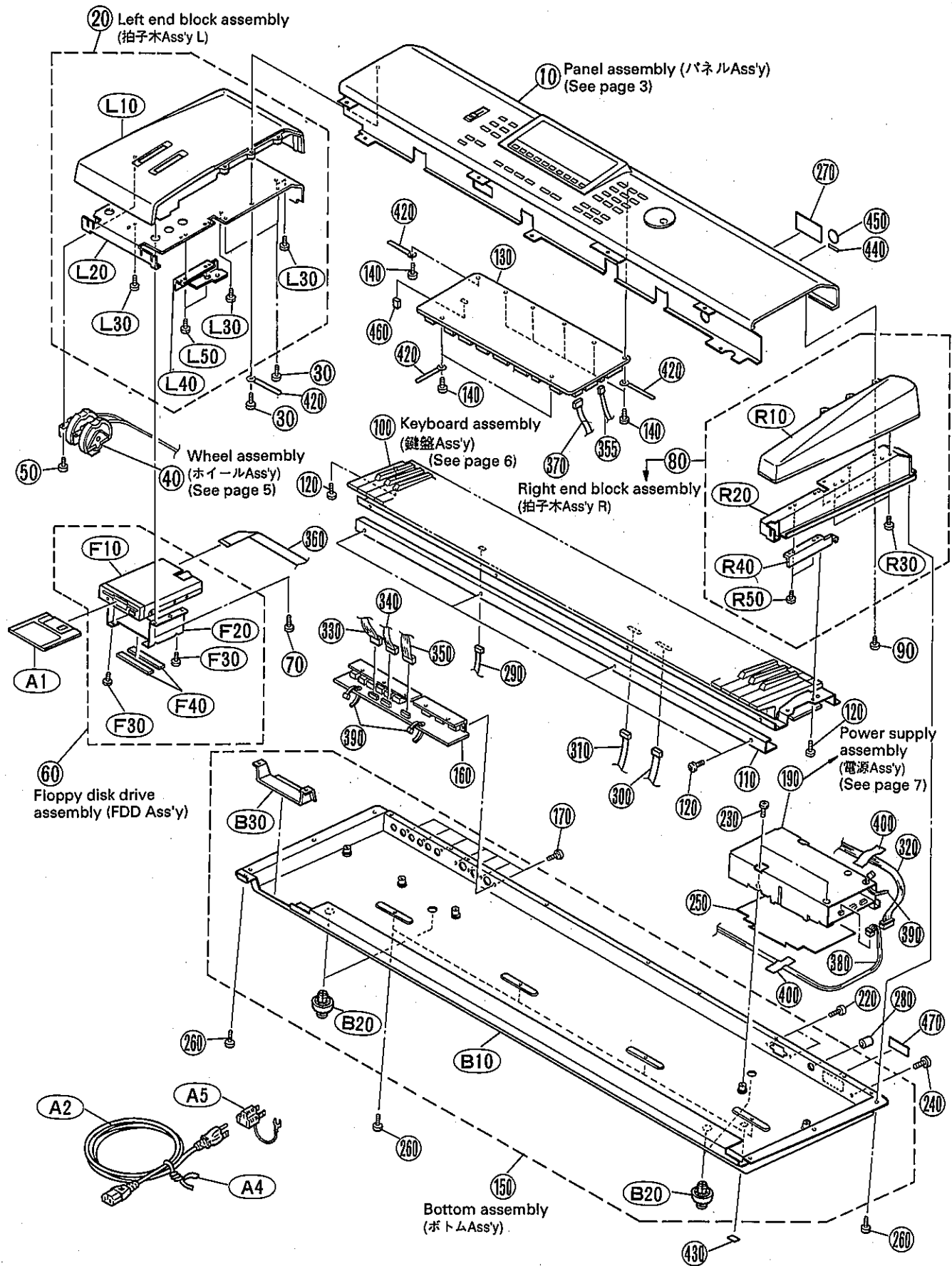
■ WARNING

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

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

- The numbers with "pc." or "pcs" in "Remarks" show quantities for each unit.
- The parts with "--" in "Part No." are not available as spare parts.
- 部品価格ランクは、変更になることがあります。
- Remarks欄に記されている数字は、使用個数です。
- 部品No.が"--"の部品は、サービス用部品として準備されておりません。

OVERALL ASSEMBLY (総組立)



112
 (45) 20041900
 KR204750

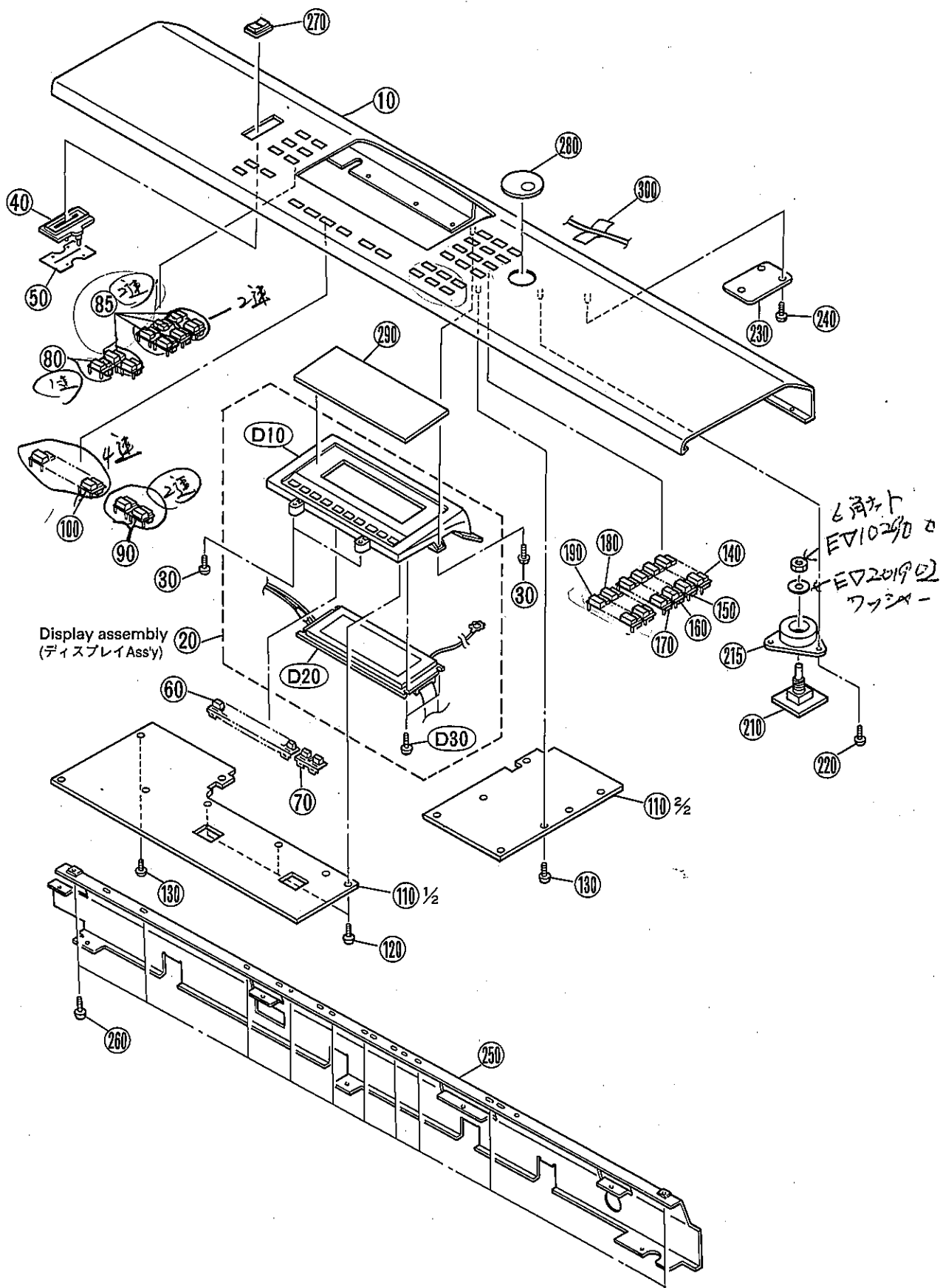
REF NO.	PART NO.	DESCRIPTION	部 品 名	REMARKS	ラック
		OVERALL ASSEMBLY	総 組 立	QS300	
10	--	Panel Assembly	パネル A s s ' y	(VT09380)	
20	--	End Block Assembly	拍子木 A s s ' y (L)	(VT09390)	
30	VR060400	Bonding Tapping Screw-C	ボンディング C タイ	3pcs	01
40	--	Wheel Assembly	ホイール A s s ' y	(VS24680)	
50	EP600190	Bind Head Tapping Screw-B	+ バインド B タイ	4pcs	01
60	--	Floppy Disk Drive Ass'y	F D D A s s ' y	(VT03080)	
70	EP600190	Bind Head Tapping Screw-B	+ バインド B タイ	4pcs	01
80	--	End Block Assembly	拍子木 A s s ' y (R)	(VS24700)	
90	VR060400	Bonding Tapping Screw-C	ボンディング C タイ	3pcs	01
100	VN399200	Keyboard Assembly	C61K6		29
110	VR723400	Front Rail	7		08
120	VN413300	Bonding Tapping Screw-B	3.0X8 MFZN2BL	10pcs	01
130	VS557500	Circuit Board	DM		
140	EP600190	Bind Head Tapping Screw-B	3.0X8 MFZN2BL	8pcs	01
150	VT094000	Bottom Assembly	ボトム A s s ' y		18
160	VT076400	Circuit Board	JK		
170	VN413300	Bonding Tapping Screw-B	3.0X8 MFZN2BL	7pcs	01
190	--	Power Supply Assembly	電 源 A s s ' y		
220	VN413300	Bonding Tapping Screw-B	3.0X8 MFZN2BL	2pcs	01
230	VR060400	Bonding Tapping Screw-C	3.0X6 MFZN2BL	2pcs	01
240	VJ254100	Bonding Tapping Screw-B	4.0X10 MFZN2BL	1pc.	01
250	VS020700	PS Insulation Sheet	P S 絶 縁 シ ー ト		05
260	VJ254100	Bonding Tapping Screw-B	4.0X10 MFZN2BL	23pcs	01
270	--	Name Plate	銘 板		
280	CB825380	Push Button	プッシュボタン	POWER	03
290	--	Connector Assembly	PH-51004 3P 300L	(VS25210)	
300	--	Connector Assembly	PH-51004 12P 500L	(VS25220)	
310	--	Connector Assembly	PH13P-5100411P450L	(VS25230)	
320	--	Connector Assembly	XH-XH 11P 550L	(VS25240)	
330	--	Connector Assembly	PH-PH 7P 550L(S)	(VT54240)	
340	--	Connector Assembly	9P-500	(VK11250)	
350	--	Connector Assembly	8P-450	(VK11110)	
355	--	Connector Assembly	3P-350	(VK10750)	
360	VS675400	Connector Assembly	34P-400		09
370	--	Connector Assembly	4P-550	(VS67560)	
380	VS675500	Connector Assembly	FDD (3-4P)-500		07
390	CB069250	Cord Holder	BK-1	4pcs	01
420	CB502030	Cord Holder	S-75B	5pcs	01
430	--	Graphic Mark	東 線 止 め	U	
440	--	Label	グラフィックマー	U	(VB95140)
450	--	Label	ラベ	U	(VA03930)
460	VG617000	Jumper Socket	UL JM 2P	U	(CB81113)
470	--	Caution Label	ジャンパーソケッ	J	(VT87040)
			注 意 ラベ		
		ACCESSORIES			
A1	XQ399A00	Floppy Disk	FACTORY SET 1.0	付 属 品	05
A2	VT119800	AC Cord	7A 125V 3P 2.5m	送 付 品	06
A2	VB927800	AC Cord		電 源 コ ー ド	08
A2	VB928000	AC Cord		電 源 コ ー ド	08
A2	VP204400	AC Cord		電 源 コ ー ド	10
A3	VH096700	Caution Label, Cord		コ ー ド 注 意 ラベ	01
A4	CB033610	Cord Holder		東 線 止 め	01
A5	VQ240200	Plug Adapter	KPR-25	変 換 アダプター	06
A6	--	CE Label		C E ラベ	(VT41590)
		END BLOCK ASSEMBLY			
L10	VT095000	End Block	LEFT	拍子木 A s s ' y (L)	(VT09390)
L20	VR723100	Shield Plate	LEFT	拍子木 (L) 塗装印刷品	
L30	EP600250	Bind Head Tapping Screw-B	3.0X8 MFZN2Y	シールド板 (L)	08
L40	VS021000	MKL Angle		+ バインド B タイ	01
L50	VQ074600	Bind Head Tapping Screw-B	3.0X12 MFZN2BL	M K L アングル	03
		END BLOCK ASSEMBLY		+ バインド B タイ	01
R10	VR724100	End Block Assembly	RIGHT	拍子木 A s s ' y (R)	(VS24700)
R20	VR723200	Shield Plate	RIGHT	拍子木 (R) 塗装品	06
R30	EP600250	Bind Head Tapping Screw-B	3.0X8 MFZN2Y	シールド板 (R)	07
R40	VS020900	MKR Angle		+ バインド B タイ	01
R50	VQ074600	Bind Head Tapping Screw-B	3.0X12 MFZN2BL	M K R アングル	03
		FLOPPY DISK DRIVE ASSEMBLY		+ バインド B タイ	01
F10	VS722600	Floppy Disk Drive	D359T5 3.5inch	F D D A s s ' y	(VT03080)
F20	VQ377000	Holder, FDD		3 . 5 " F D D	
F30	EP630240	Bind Head Tapping Screw-C	3.0X6 MFZN2BL	F D D 金 具	05
F40	VS808300	Sheet	EPDM	+ バインド C タイ	01
		BOTTOM ASSEMBLY		ダン プ シ ー ト	03
B10	VT094000	Bottom Board		ボトム A s s ' y	18
B20	VC999400	Foot	205Y4179	底 板	02
B30	VQ409400	FDD Escutcheon		ゴ ム 足	05
				F D D エスカッション	

* New Parts (新規部品)

新-A54727 74711-2-11 XQ 399 B00 ¥640

ラック: Japan only 2

■ PANEL ASSEMBLY (パネルAss'y)

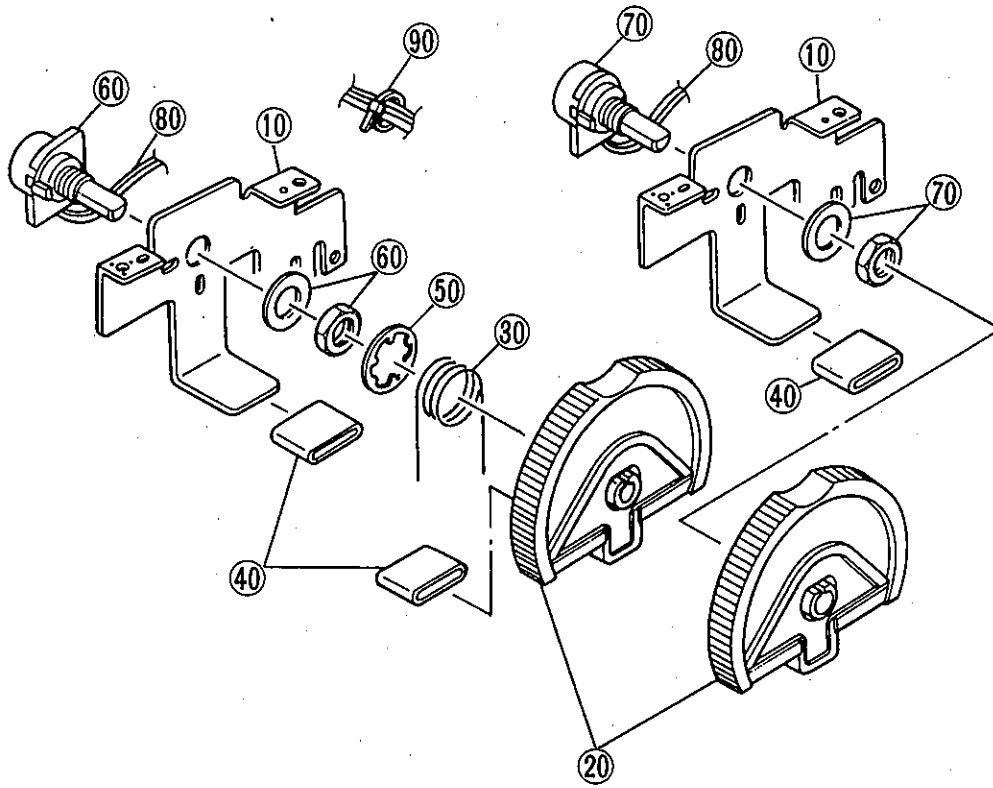


REF NO.	PART NO.	DESCRIPTION	部 品 名	REMARKS	クック
* 10	VT094600	PANEL ASSEMBLY	パネル A s s y	QS300 (VT09380)	
20	VS247300	Control Panel	コンパネ塗装印刷品		22
30	VR060400	Display Assembly → VS 254 300 of 257	ディスプレイ A s s y		10
40	VS262000	Bonding Tapping Screw-C	ボンディング C タイト	6pcs	01
50	VH810100	SVR Escutcheon	S V R エスカッション		04
60	VS790800	Dust-Proof Cloth	防塵クロス		01
70	VS790900	Switch Knob	スイッチツマミ M 8 T	SHIFT,F1-F7	04
* 80	VT409000	Switch Knob	スイッチツマミ M 2 T	F8,EXIT	03
* 85	VT409200	Switch Knob	S1 QS GY	STORE	03
90	VR724600	Switch Knob	S2 QS GY	EDIT,JOB,MODE	03
* 100	VR724300	Switch Knob	S2	<<>	03
* 110	VS557700	Circuit Board	S4	RECORD, TOP, STOP	03
120	VQ074600	Bind Head Tapping Screw-B	PN		
130	EP630240	Bind Head Tapping Screw-C	3.0X12 MFZN2BL	+ バインド B タイト	3pcs
* 140	VT409400	Switch Knob	3.0X6 MFZN2BL	+ バインド C タイト	7pcs
* 150	VT409500	Switch Knob	S3P7 QS GY	スイッチツマミ S 3 P 7	7,8,9
* 160	VT409600	Switch Knob	S3P4 QS GY	スイッチツマミ S 3 P 4	4,5,6
* 170	VT409700	Switch Knob	S3P1 QS GY	スイッチツマミ S 3 P 1	1,2,3
* 180	VT409800	Switch Knob	S3P0 QS GY	スイッチツマミ S 3 P 0	0,-,ENTER
* 190	VT409900	Switch Knob	S3P1 QS GY	スイッチツマミ S 3 P 1	DEC,Δ,INC yes, no
* 210	VT075000	Circuit Board	S3PL QS GY	スイッチツマミ S 3 P L	<,V, >
* 215	VT011500	RE Escutcheon	RE	R E シ ー ト	
220	EP630240	Bind Head Tapping Screw-C	3.0X6 MFZN2BL	RE エスカッション	
* 230	VT075100	Circuit Board	BL	+ バインド C タイト	3pcs
240	EP630240	Bind Head Tapping Screw-C	3.0X6 MFZN2BL	B L シ ー ト	
250	VR723300	Center Angle	3.0X6 MFZN2BL	+ バインド C タイト	3pcs
260	VR139300	Bonding Tapping Screw-C	3.0X8 MFZN2BL	センターアングル	
270	VB774000	Knob	ボンディング C タイト	10pcs	01
* 280	VT410000	Encoder Knob	QS GY	スイッチツマミ	VOLUME
290	VR723600	Filter		エンコーダツマミ	ENCODER
保 護 板					
DISPLAY ASSEMBLY					
D10	VR723900	Escutcheon, LED	ディスプレイ A s s y	(VS24730)	
D20	VS254300	LCD Assembly	LCD ESC 塗装印刷品		09
D20a	---	LCD	LCD A s s y		29
D20b	---	Connector Assembly	液晶ディスプレイ	(VS25460)	
D20c	---	Connector Assembly	7920-7820 20P 200L	(VS25290)	
D20d	VS759100	Connector Assembly	PH4P-2F 300L(S)	(VS25300)	
D30	EP600190	Bind Head Tapping Screw-B	CP-LCD 200I	CP-LCD 線材	03
			3.0X8 MFZN2BL	+ バインド B タイト	4pcs

* New Parts (新規部品)

ランク: Japan only

■ WHEEL ASSEMBLY (ホイールAss'y)

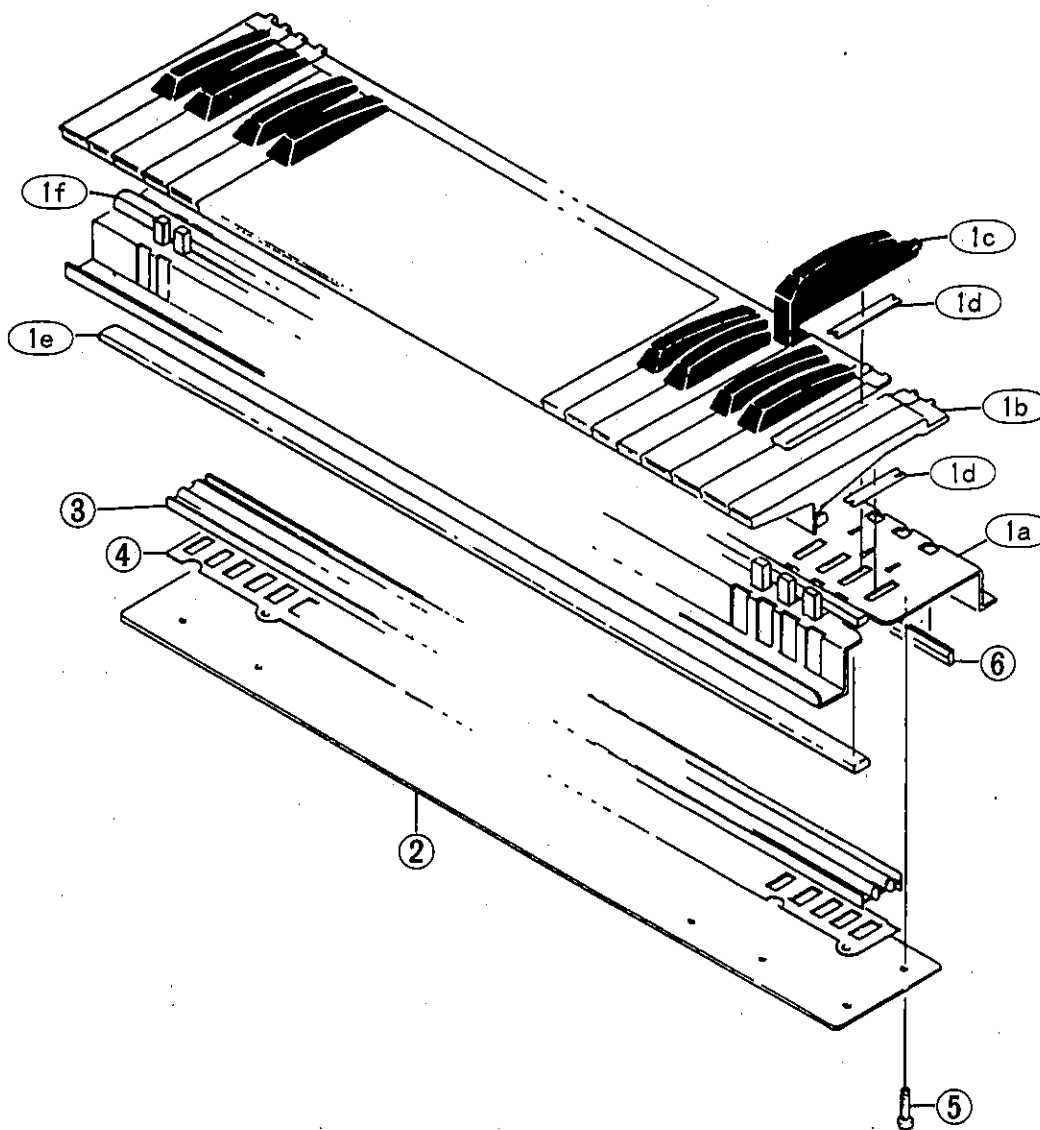


REF NO.	PART NO.	DESCRIPTION		部 品 名	REMARKS	ランク
10	--	WHEEL ASSEMBLY		ホイール Ass'y	QS300 (VS24680)	
		Frame	M	フレーム M	2pcs (VQ56140)	
20	VQ546400	Wheel	V	ホイール V	2pcs	06
30	VC792800	Spring, Return		リターン S P		01
40	CB819020	Wheel Tube		ホイールチューブ	3pcs	04
50	EW600110	CS Ring	12.0	C S 形 止 め 輪		01
60	VQ764300	Rotary Variable Resistor	10.0K RK1631110T54	ロータリー V R	PITCH BEND	03
70	VN245400	Rotary Variable Resistor	10.0K K161100S	ロータリー V R	MODULATION	03
80	--	Connector Assembly	PH5P-5F 550L+85L	W H E E L 束 線	(VS25320)	
90	CB069250	Cord Holder	BK-1	インシュロックタイ	2pcs	01

* New Parts (新規部品)

ランク : Japan only

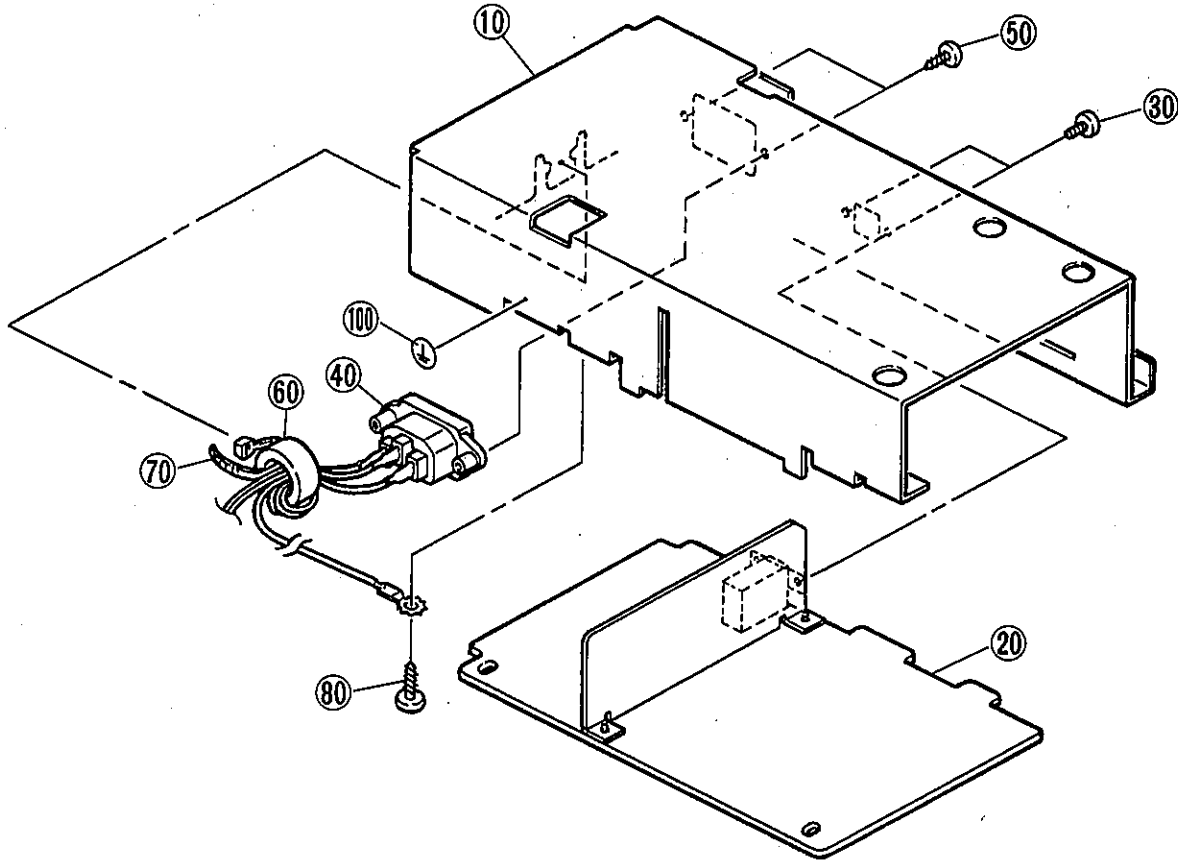
KEYBOARD ASSEMBLY (鍵盤Ass'y)



REF NO.	PART NO.	DESCRIPTION		部 品 名	REMARKS	ランク
1	VN399200	KEYBOARD ASSEMBLY	C61K6	LC 鍵盤 Ass'y	QS300	29
1a	--	MK Frame Assembly	LC C61	MK フレーム Ass'y	(VN40550)	
1b	VL570000	White Key	BL/NY	M K フレーム	(VM63000)	
1b	VL570100	White Key	CF	白 鍵 C	10pcs	03
1b	VL570200	White Key	D	白 鍵 D	5pcs	03
1b	VL570300	White Key	BE	白 鍵 B E	10pcs	03
1b	VL570400	White Key	G	白 鍵 G	5pcs	03
1b	VL570500	White Key	A	白 鍵 A	5pcs	03
1b	VL570600	White Key	C'	白 鍵 C		03
1c	VL570600	Black Key		黒 鍵	25pcs	03
1d	VC077600	Spring		パネ	61pcs	01
1e	VR857100	Felt	820X6X3.6 WH	フェルト (白)		03
1f	VN406100	PC Sensor	MK-LC61TO-N	PC センサー		10
2	V1912000	Circuit Board	MK C61	M K シー		14
3	VF834100	Rubber Contact		可 動 導 電 ゴム		09
4	VM630100	Insulation Spacer		絶 縁 スペーサ		06
5	EP630630	Bind Head Tapping Screw-S	3.0X10 MFZN2Y	ナ イ ン ド ス タ イ	16pcs	01
6	VC079800	Stopper		ス ト ッ パ		02

* New Parts (新規部品)

POWER SUPPLY ASSEMBLY (電源Ass'y)



REF NO.	PART NO.	DESCRIPTION	部 品 名	REMARKS	ランク
		POWER SUPPLY ASSEMBLY	電 源 A s s y	QS300	
	--	Chassis, Power Supply	電 源 シ ャ ー シ	(VR72350)	
△	20	VN225500	PS	J	19
△	20	VN225600	PS	U	19
△	20	VN225700	PS	E,B	19
	30	EP630240	3.0X6 MFZN2BL	2pcs	01
*	40	VS253400	IN A	J,U	08
*	40	VS253500	IN B	E,B	08
	40a	VL785200	AC-P01CR02	J,U	03
	40a	VL785200	AC-P01CR02	E,B	03
	50	VN413300	3.0X6 MFZN2BL	2pcs	01
	60	VC362700	FR25/15/12-1400L		04
	70	CB069250	BK-1		01
	80	VJ254100	4.0X10 MFZN2BL	1pc.	01
	100	CA060690			01

* New Parts (新規部品)

ランク : Japan only

ELECTRICAL PARTS (電気部品)

REF NO.	PART NO.	DESCRIPTION	部 品 名	REMARKS	ランク
	VT075100	ELECTRICAL PARTS	電 気 部 品	QS300	
*	VS557500	Circuit Board	B L シ ー ト	(XP890B0)	
*	VT076400	Circuit Board	D M シ ー ト	(XP888B0)	
*	VI912000	Circuit Board	J K シ ー ト	(XP891B0)	
	VS557700	Circuit Board	M K シ ー ト	(XH247G0)	14
	VN225500	Circuit Board	P N シ ー ト	(XP890B0)	19
△	VN225600	Circuit Board	P S シ ー ト	J	19
△	VN225700	Circuit Board	P S シ ー ト	U	19
*	VT075000	Circuit Board	R E シ ー ト	E, B	(XP890B0)
	VT075100	Circuit Board	B L シ ー ト	(XP890B0)	
	VC694800	Semiconductive Cera. Cap.	半 導 体 セ ラ コ		01
	UJ846470	Electrolytic Cap.	ケ ケ ミ コ		01
	UJ838100	Electrolytic Cap.	ケ ケ ミ コ		01
	UA654470	Mylar Capacitor	マ イ ラ ー コ		01
	HF454330	Carbon Resistor	カ カ ー ボ ン 抵 抗		01
	HF456680	Carbon Resistor	カ カ ー ボ ン 抵 抗		01
	IC094530	Transistor	ト ラ ン ジ ャ		01
	VK458100	Inverter Transformer	D/Aインバータトランス		07
	V0542700	LC Filter	L C フィルター		01
	V8389900	Connector Base Post	コネクタベースポスト		01
	V8390000	Connector Base Post	コネクタベースポスト		01
	VS557500	Circuit Board	D M シ ー ト	(XP888B0)	
	UA353100	Mylar Capacitor	マ イ ラ ー コ		01
	UA353180	Mylar Capacitor	マ イ ラ ー コ		01
	UA353270	Mylar Capacitor	マ イ ラ ー コ		01
	UA353680	Mylar Capacitor	マ イ ラ ー コ		01
	VE326400	Monolithic Mylar Capacitor	積 層 マ イ ラ ー コ		01
	UB013100	Monolithic Ceramic Cap.	B 1000P 50V K		01
	UB051100	Monolithic Ceramic Cap.	SL 10P 50V D		01
	UB051120	Monolithic Ceramic Cap.	SL 12P 50V J		01
	UB051180	Monolithic Ceramic Cap.	SL 18P 50V J		01
	UB051330	Monolithic Ceramic Cap.	SL 33P 50V J		01
	UB051470	Monolithic Ceramic Cap.	SL 47P 50V J		01
	UB052100	Monolithic Ceramic Cap.	SL 100P 50V J		01
	UB052150	Monolithic Ceramic Cap.	SL 150P 50V J		01
	UB044100	Monolithic Ceramic Cap.	F 0.010 50V Z		01
	UB044220	Monolithic Ceramic Cap.	F 0.022 50V Z		01
	UB245100	Monolithic Ceramic Cap.	F 0.100 25V Z		01
	VJ927300	Monolithic Ceramic Cap.	1.500 16V F		01
	UJ818220	Electrolytic Cap.	ケ ケ ミ コ		01
	UJ837100	Electrolytic Cap.	ケ ケ ミ コ		01
	UJ837220	Electrolytic Cap.	ケ ケ ミ コ		01
	UJ837470	Electrolytic Cap.	ケ ケ ミ コ		01
	UJ838100	Electrolytic Cap.	ケ ケ ミ コ		01
	UJ838220	Electrolytic Cap.	ケ ケ ミ コ		01
	UJ866100	Electrolytic Cap.	ケ ケ ミ コ		01
	UJ866330	Electrolytic Cap.	ケ ケ ミ コ		01
	UJ866470	Electrolytic Cap.	ケ ケ ミ コ		01
	UN837100	Electrolytic Cap.-BP	B P ケ ケ ミ コ		01
	UN837220	Electrolytic Cap.-BP	B P ケ ケ ミ コ		01
	VR579900	Chip Inductance	チ ッ プ イ ン ダ ク		01
	RD154470	Carbon Resistor (chip)	チ ッ プ 抵 抗		01
	RD155330	Carbon Resistor (chip)	チ ッ プ 抵 抗		01
	RD155470	Carbon Resistor (chip)	チ ッ プ 抵 抗		01
	RD250000	Carbon Resistor (chip)	チ ッ プ 抵 抗		01
	RD254100	Carbon Resistor (chip)	チ ッ プ 抵 抗		01
	RD254470	Carbon Resistor (chip)	チ ッ プ 抵 抗		01
	RD254680	Carbon Resistor (chip)	チ ッ プ 抵 抗		01
	RD254820	Carbon Resistor (chip)	チ ッ プ 抵 抗		01
	RD255100	Carbon Resistor (chip)	チ ッ プ 抵 抗		01
	RD255220	Carbon Resistor (chip)	チ ッ プ 抵 抗		01
	RD255470	Carbon Resistor (chip)	チ ッ プ 抵 抗		01
	RD255680	Carbon Resistor (chip)	チ ッ プ 抵 抗		01
	RD256100	Carbon Resistor (chip)	チ ッ プ 抵 抗		01
	RD256220	Carbon Resistor (chip)	チ ッ プ 抵 抗		01
	RD256270	Carbon Resistor (chip)	チ ッ プ 抵 抗		01
	RD256330	Carbon Resistor (chip)	チ ッ プ 抵 抗		01

* New Parts (新規部品)

ランク: Japan only

REF NO.	PART NO.	DESCRIPTION	部 品 名	REMARKS	ランク
	RD256470	Carbon Resistor (chip)	4.7K 0.1 J	チ ッ プ 抵 抗	01
	RD256560	Carbon Resistor (chip)	5.6K 0.1 J	チ ッ プ 抵 抗	01
	RD256680	Carbon Resistor (chip)	6.8K 0.1 J	チ ッ プ 抵 抗	01
	RD257100	Carbon Resistor (chip)	10.0K 0.1 J	チ ッ プ 抵 抗	01
	RD257220	Carbon Resistor (chip)	22.0K 0.1 J	チ ッ プ 抵 抗	01
	RD257470	Carbon Resistor (chip)	47.0K 0.1 J	チ ッ プ 抵 抗	01
	RD257820	Carbon Resistor (chip)	82.0K 0.1 J	チ ッ プ 抵 抗	01
	RD258100	Carbon Resistor (chip)	100.0K 0.1 J	チ ッ プ 抵 抗	01
	RD258150	Carbon Resistor (chip)	150.0K 0.1 J	チ ッ プ 抵 抗	01
	RD258470	Carbon Resistor (chip)	470.0K 0.1 J	チ ッ プ 抵 抗	01
	RD259100	Carbon Resistor (chip)	1.0M 0.1 J	チ ッ プ 抵 抗	01
	VC745200	Metal Oxide Film Resistor	120.0 1W J	酸 化 金 属 被 膜 抵 抗	
	VC746300	Metal Oxide Film Resistor	360.0 1W J	酸 化 金 属 被 膜 抵 抗	
	VM506100	Resistor Array	EXB-V8V103JV	抵 抗 ア	01
	VM506200	Resistor Array	EXB-V8V223JV	抵 抗 ア	01
	VM811600	Resistor Array	EXB-V8V473JV	抵 抗 ア	01
	VQ018400	Resistor Array	EXB-V8V101JV	抵 抗 ア	01
	XF291A00	IC	UPC4570G2	イ	OP AMP
	XQ138A00	IC	NJM4556AMT1	イ	OP AMP
	XQ824A00	IC	NJM4556AD	イ	OP AMP
	XJ757A00	IC	NJM78L05A-T3	イ	REGULATOR +5V
	XC725A00	IC	SN74HC14NSR	イ	INVERTER
	XC726A00	IC	SN74HC74NSR	イ	D-FF
	XC727A00	IC	SN74HC139NSR	イ	DECODER
	XD833A00	IC	SN74HC32NSR	イ	OR
	XD838A00	IC	SN74HC245NSR	イ	BUFFER
	XL393A00	IC	TC74HC4075AF	イ	3IN OR
	XP231A00	IC	TC74AC139F	イ	DECODER
	XQ042A00	IC	SN74HC374ANSR	イ	D-FF
	XI939A00	IC	HD63266F FDC	イ	FDC
	XN688A00	IC	HD63B05V0E65F	イ	PKS
	XQ375A00	IC	HD6413002FP16	イ	CPU,SUB CPU
	XQ036A00	IC	TC170C120SF-002	イ	SWP00
	XK832C00	IC	TC518128CFL-80	イ	PSRAM 1M
	XN978A00	IC	MB81C4256A-70PS	イ	DRAM 1M
	XP218A00	IC	MSM52255BFP-70LL	イ	SRAM 256K
	XP775A00	IC	HM514170AJ-7	イ	DRAM 4M
	XQ057C00	IC	MB8316200BP-G-0H9	イ	EPROM 16M WAVE1
	XQ058C00	IC	MX23C1610PC-12	イ	EPROM 16M WAVE2
	XQ055B00	IC	UPD27C888DZ-12	イ	EPROM 8M MAIN1
	XQ056B00	IC	M27C4002-10F1	イ	EPROM 4M SUB
	XQ320B00	IC	MSM538022C-81RS	イ	EPROM 8M MAIN2
	XI686A00	IC	M62021FP	イ	RESET
	XP867A00	IC	UPD63200GS-E1	イ	DAC
	LB918040	Base Post Connector	XH-4P TE	ベ ース ツ キ ポ ス ト	01
	LB918110	Base Post Connector	XH-11P TE	ベ ース ツ キ ポ ス ト	01
	VB389900	Connector Base Post	PH-3P TE	コ ネ ク タ ベ ース ポ ス ト	01
	VB390100	Connector Base Post	PH-5P TE	コ ネ ク タ ベ ース ポ ス ト	01
	VB390200	Connector Base Post	PH-6P TE	コ ネ ク タ ベ ース ポ ス ト	01
	VB390300	Connector Base Post	PH-7P TE	コ ネ ク タ ベ ース ポ ス ト	01
	VB390400	Connector Base Post	PH-8P TE	コ ネ ク タ ベ ース ポ ス ト	01
	VB390500	Connector Base Post	PH-9P TE	コ ネ ク タ ベ ース ポ ス ト	03
	VB390600	Connector Base Post	PH-10P TE	コ ネ ク タ ベ ース ポ ス ト	01
	VB390800	Connector Base Post	PH-12P TE	コ ネ ク タ ベ ース ポ ス ト	01
	VE352600	Connector Base Post	PH-14P TE	コ ネ ク タ ベ ース ポ ス ト	01
	VF283100	Connector Base Post	PH-13P TE	コ ネ ク タ ベ ース ポ ス ト	01
	VG518300	Connector	RF 2P TE	ジ ャ ン パ ー ヘ ッ ダ	01
	VQ391300	Connector	34P TE	コ ネ ク タ	03
	VS702300	Connector	20P TE	コ ネ ク タ	02
	VK405200	IC Socket	DICF-40CS-E	イ C ソ ケ ッ ト	03
	VK863100	IC Socket	DICF-42CS-E	イ C ソ ケ ッ ト	03
	VD542700	LC Filter	DSS306-93F223Z1	LC フ ィ ル タ	01
	VS669500	Quartz Crystal Unit	16M SX-1	水 晶 振 動 子	03
	VT685200	Quartz Crystal Unit	33.8688M SMD-49	水 晶 振 動 子	04
	VS669700	Ceramic Resonator	8M CSTCS8.00MT-TC	セ ラ ミ ッ ク 発 振 子	02
	VD303700	Transistor	2SC3326 A,B	ト ラ ン ジ ス ト	01
	VM810300	Transistor Array	HN1A01F-Y/GR	ト ラ ン ジ ス タ ア レ イ	01
	VS056500	Transistor Array	HN1C01F-Y/GR	ト ラ ン ジ ス タ ア レ イ	01
	VS405700	Lithium Battery	CR2450-F2MX1H	リ チ ウ ム 電 池	05
	VA078900	Jumper Wire	0.55	ジ ャ ン パ	

* New Parts (新規部品)

ランク : Japan only

REF NO.	PART NO.	DESCRIPTION		部 品 名	REMARKS	ランク
1	VB493900	Diode	MA221	ダイオード		01
1	VB797600	Diode	RLS-73	ダイオード		01
2	VN686000	Photo Coupler	PC410T	フォトカプラー		04
2	VR903700	Photo Coupler	HCPL-M600	フォトカプラー		04
3	VJ927200	Transistor	2SA1162 O,Y	トランジスタ		01
3	VQ395600	Transistor	2SA1052 B,C	トランジスタ		01
* (XP891B0)						
	VT076400	Circuit Board	JK	ジャンパー		
	FG613100	Ceramic Capacitor	1000P 50V K	セラミックコンデンサ		01
	FG644100	Ceramic Capacitor	0.0100 50V Z	セラミックコンデンサ		01
	VD534400	Monolithic Ceramic Cap.	1.500 25V Z	積層セラミックコンデンサ		01
	VB835000	Coil	FL5R200QNT 20uH	コイル		01
	HF455100	Carbon Resistor	100.0 1/4 J	カーボン抵抗		01
	HF455220	Carbon Resistor	220.0 1/4 J	カーボン抵抗		01
	HF456100	Carbon Resistor	1.0K 1/4 J	カーボン抵抗		01
	HF456270	Carbon Resistor	2.7K 1/4 J	カーボン抵抗		01
	HF456470	Carbon Resistor	4.7K 1/4 J	カーボン抵抗		01
	HF457220	Carbon Resistor	22.0K 1/4 J	カーボン抵抗		01
	HF458100	Carbon Resistor	100.0K 1/4 J	カーボン抵抗		01
	VS115400	Phone Jack	LGR4609-7000 BL	ホーンジャック (黒)	PHONES,OUTPUT, FOOT VOL.,SUSTAIN MIDI IN/OUT/THRU	01
	LB500520	DIN Connector	5P TCS4650	DINコネクタ		03
	VB390300	Connector Base Post	PH- 7P TE	コネクタベースポスト		01
	VB390400	Connector Base Post	PH- 8P TE	コネクタベースポスト		01
	VB390500	Connector Base Post	PH- 9P TE	コネクタベースポスト		03
	VR722500	JK Angle, Out Side	JK-OUT	JKアングルOUT		05
	VR722600	JK Angle, Middle	JK-M	JKアングルM		05
* (XH247G0)						
	VI912000	Circuit Board	MK C61	MK シート		14
	UJ827470	Electrolytic Cap.	47.00 10.0V	ケミコンデンサ		01
	YC694800	Semiconductive Cera. Cap.	0.1000 25V Z	半導体セラミックコンデンサ		01
	HF755150	Carbon Resistor	150.0 1/4 J	カーボン抵抗		01
	HF756100	Carbon Resistor	1.0K 1/4 J	カーボン抵抗		01
	HF756220	Carbon Resistor	2.2K 1/4 J	カーボン抵抗		01
	HF756680	Carbon Resistor	6.8K 1/4 J	カーボン抵抗		01
	HF757470	Carbon Resistor	47.0K 1/4 J	カーボン抵抗		01
	IG001390	IC	RC4558D-V	IC	OP AMP	03
	LB016030	Connector	FFC 3P TE	コネクタ		01
	VE387000	Base Post Connector	53014 3P TE	ベースポスト		03
	VE387800	Base Post Connector	53014 11P TE	ベースポスト		01
	VE387900	Base Post Connector	53014 12P TE	ベースポスト		01
	VQ359100	Adhesive Tape	24mm 330m	粘着テープ		
	HT370260	Trimmer Potentiometer	B 100.0K 3P EVN	半固定VR	OFFSET adj.	02
	HT370280	Trimmer Potentiometer	B 500.0K 3P EVN	半固定VR	GAIN adj.	02
	VB941200	Diode	1SS133,1SS176	ダイオード		01
	VA078900	Jumper Wire	0.55	ジャンパー線		
* (XP890B0)						
	VS557700	Circuit Board	PN	プリントシート		
	VP244300	Switch	EVQ 22C 04K	ライトタッチSW		01
	VL445700	Slide Variable Resistor	A10Kx2 EWA-NNDCH1A	二連スライドVR	VOLUME	03
	VD631600	Diode	1SS133,176,HSS104	ダイオード		01
	VS704700	LED	SEL2210W TP8 RE	LED	SONG,VOICE,PATTEN PHRASE, RECORD RUN	01
	VG197600	LED, Two Color	GL3ED8 RE/GR	2色LED		
	VA078900	Jumper Wire	0.55	ジャンパー線		
	VS403900	Spacer, LED	S	LEDスペーサー		03
	--	Connector Assembly	13P-90 DS-DS	DS-DS 東線	(VT06350)	
	--	Connector Assembly	5P-100 DS-KR	DS-KR 東線	(VT06360)	
	--	Connector Assembly	6P-150 DS-KR	DS-KR 東線	(VT06370)	
	--	Connector Assembly	10P-250 DS-KR	DS-KR 東線	(VT06380)	
	--	Connector Assembly	14P-250 DS-KR	DS-KR 東線	(VT06390)	
△ △ △						
	VN225500	Circuit Board	PS	プリントシート	J	19
	VN225600	Circuit Board	PS	プリントシート	U	19
	VN225700	Circuit Board	PS	プリントシート	E,B	19
	IX801910	IC	uPC1093J	IC	REGULATOR	03
	IX806870	IC	uPC78N12H(F)	IC	REGULATOR +12V	03
	IX806880	IC	uPC79N12H(F)	IC	REGULATOR -12V	04
	IX806740	Photo Coupler	PC817CD	フォトカプラー	J,U	01
	IX805930	Photo Coupler	CNY17GF-2	フォトカプラー		06

* New Parts (新規部品)

ランク: Japan only

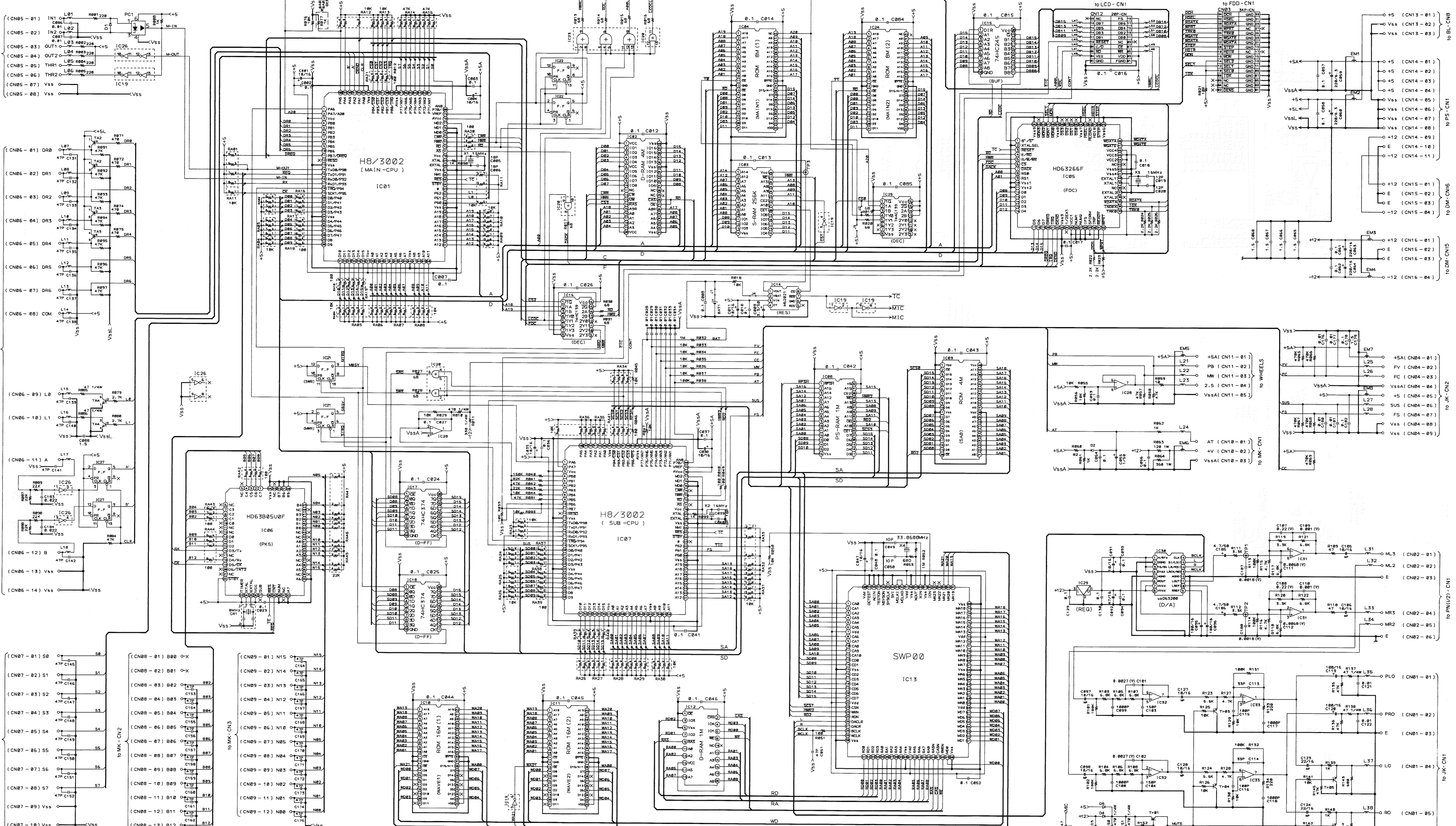
REF NO.	PART NO.	DESCRIPTION	部 品 名	REMARKS	ランク
	IX803780	FET	2SK1153	F E T	J,U 04
	IX806750	FET	2SK1338	F E T	E,B 05
	IX805850	Diode	10ELS6	ダイオード	02
	IF001380	Diode	1SS84	ダイオード	01
	IF003550	Zener Diode	HZ12B2	ツェナーダイオード	01
	IX806850	Zener Diode	HZ06B1,B2	ツェナーダイオード	01
	IX806860	Diode	F5KQ40	ダイオード	04
	IX806760	Diode	10ELS2	ダイオード	01
	IX806730	Zener Diode	HZ24B2	ツェナーダイオード	01
	VB845200	Diode Stack	S1WB40	ダイオードスタック	J,U 02
	VB845300	Diode Stack	S1WB60	ダイオードスタック	E,B 02
	HT570540	Trimmer Potentiometer	B1K RVF08P	半固定抵抗	02
	HL315820	Metal Oxide Film Resistor	82.0 1W	酸化金属被膜抵抗	01
	HL322470	Metal Oxide Film Resistor	0.47 2W	酸化金属被膜抵抗	J,U 01
	HX806830	Metal Oxide Film Resistor	1.20 2W	酸化金属被膜抵抗	E,B 01
	HX806860	Metal Oxide Film Resistor	6.8 3W	酸化金属被膜抵抗	J,E,B 01
	HX806810	Metal Oxide Film Resistor	150.0 3W	酸化金属被膜抵抗	J,U 01
	HX806820	Metal Oxide Film Resistor	330.0 3W	酸化金属被膜抵抗	J,U 01
	HX806750	Metal Oxide Film Resistor	33.0K 3W	酸化金属被膜抵抗	J,U 03
	HX806800	Metal Oxide Film Resistor	68.0K 3W	酸化金属被膜抵抗	E,B 01
	HV454150	Flame Proof C. Resistor	15.0 1/4W	不燃化カーボン抵抗	01
	HV755470	Flame Proof C. Resistor	470.0 1/4W	不燃化カーボン抵抗	E,B 01
	HV456120	Flame Proof C. Resistor	1.2K 1/4	不燃化カーボン抵抗	E,B 01
	HV457150	Flame Proof C. Resistor	15.0K 1/4	不燃化カーボン抵抗	E,B 01
	HX806790	Thermostat	A53K-6R8J	サーモスタット	U 03
	FX801260	Metalized Capacitor	0.22 250V	メタライズドコンデンサ	03
	FX801270	Film Capacitor	0.022 50V	フィルムコンデンサ	01
	FX801430	Ceramic Cap.	0.01 125V	セラミックコンデンサ	01
	VA879600	Ceramic Cap.	1000p 400V	セラミックコンデンサ	01
	VA879900	Ceramic Cap.	2200p 400V	セラミックコンデンサ	E,B 01
	FX801440	Ceramic Cap.	47p 1KV	セラミックコンデンサ	E,B 01
	FX800810	Ceramic Cap.	100p 1KV	セラミックコンデンサ	J,U 01
	FX801400	Electrolytic Cap.	2200 10V	ケミコンデンサ	01
	FX801390	Electrolytic Cap.	3300 10V	ケミコンデンサ	01
	FX801420	Electrolytic Cap.	100 25V	ケミコンデンサ	01
	FX801420	Electrolytic Cap.	1000 25V	ケミコンデンサ	01
	FG744100	Ceramic Cap.	0.01 50V	セラミックコンデンサ	01
	FX801360	Electrolytic Cap.	1 50V	ケミコンデンサ	01
	FX801370	Electrolytic Cap.	150 200V	ケミコンデンサ	J,U 01
	FX801380	Electrolytic Cap.	100 400V	ケミコンデンサ	E,B 06
	GX803460	Line Filter	LUMR3403	ラインフィルタ	05
	GX803380	Line Filter	NFR5UA203A	ラインフィルタ	04
	GX803400	Choke Coil	SC9H470K-30	チョークコイル	02
	GX803240	EMI Filter	IFS206-F223ZA	E M I フィルタ	02
	GX803470	Power Transformer	TUM050	電源トランス	J,U 09
	GX803480	Power Transformer	TUM051	電源トランス	E,B 09
	KX803330	Switch	ESB8235V	スイッチ	POWER SW
	KX803310	Fuse	1.5A/250V	ヒューズ	J,U 01
	KX803320	Fuse	2.0A/250V	ヒューズ	J,U 02
	KX803270	Fuse	1.25 218	ヒューズ	E,B 02
	LB201530	Fuse Holder	PC-FH1	ヒューズホルダー	J,U 01
	VT075000	Circuit Board	RE	R E シート	(XP890B0)
	VT080100	Encoder	EVQ VEN F02 24B	14形エンコーダ	ENCODER 04
	VB858400	Connector Base Post	PH-5P SE	コネクタベースポスト	01
	VS722600	Floppy Disk Drive	D359T5 3.5inch	3.5" F D D	21
	VS254300	LCD Assembly		L C D A s s ' y	29
	VT119800	AC Cord	7A 125V 3P 2.5m	電源コード	06
	VB927800	AC Cord		電源コード	08
	VB928000	AC Cord		電源コード	08
	VP204400	AC Cord		電源コード	10
	VQ764300	Rotary Variable Resistor	10.0K RK1631110T54	ロータリーVR	PITCH BEND 03
	VW245400	Rotary Variable Resistor	10.0K K161100S	ロータリーVR	MODULATION 03
	VS253400	Connector Assembly	IN A	I N 東線 A	J,U AC INLET 08
	VS253500	Connector Assembly	IN B	I N 東線 B	E,B AC INLET 08
	VL785200	AC Inlet	AC-P01CR02	A C インレット	J,U 03
	VL785200	AC Inlet	AC-P01CR02	A C インレット	E,B 03

* New Parts (新規部品)

ランク: Japan only

DM CIRCUIT DIAGRAM

DM



- Notes
- Circuit Board: DM (V556700) XP8880
1. Mylar Capacitor
 C 101.102: 270P 50V J (UJ353270)
 C 109.110: 100P 50V J (UJ353100)
 C 111.112: 680P 50V J (UJ353800)
 C 167.168: 180P 50V J (UJ353180)
2. Monolithic Mylar Capacitor
 C 107.108: 0.22 50V J (VE326400)
3. Monolithic Ceramic Cap.
 C 2.37.6.10: 12:16:25:27, 36:37:41:46:48:52:54, 56:58:61:62:71:85:89, 90:93:94:129:130:176, 182, F: 0.100 25V J (UJ245100)
 C 5.36.39.40: SL 150P 50V J (UB051180)
 C 19.20: SL 33P 50V J (UB051300)
 C 28.34.86.87.121.122, 176.177.180.181: F: 0.010 50V J (UB044100)
 C 49.50: SL 10P 50V J (UB051100)
 C 51.51.131.142, 149:75: SL 47P 50V J (UB051470)
 C 65:68.88.179: 1.500 15V F (UJ027300)
 C 99.100.117.118: B 100P 50V K (UB013100)
 C 103.104: SL 150P 50V J (UB052100)
 C 113.114: SL 33P 50V J (UB051300)
 C 115.116: SL 100P 50V J (UB052100)
 C 183.184: F: 0.022 50V J (UB044200)
4. Electrolytic Cap.
 C 91: 10.00 16.0V (UJ237100)
 C 9: 3.30 50.0V (UJ866300)
 C 55: 1.50 50.0V (UJ866100)
- C 59.60: 220K 6.3V (UJ818220)
 C 63.64.125: 220K 16.0V (UJ838220)
 C 92: 47.00 16.0V (UJ237470)
 C 95.96.119.120: 100K 18.0V (UJ358100)
 C 128: 22.00 16.0V (UJ373220)
 C 185.186: 470 50.0V (UJ866470)
 C 97.98.105.106: 0.9 98.105.106, 127.128, 22.00 16.0V (UN372220)
 C 123.124: 0.10 1.0 J (RD250000)
 C 6. Carbon Resistor (chip)
 R 1.5.133.134: 220.0 0.1 J (RD259200)
 R 8.01.82.86.96, 135.140.147, 1.0K 0.1 J (RD256100)
 R 10.150.151: 47.0 0.1 J (RD155470)
 R 11: 330.0 0.1 J (RD155300)
 R 12.46.48.49.51, 149: 100.0 0.1 J (RD256100)
 R 13.17.19.20.27, 28.30.31, 68.0 0.1 J (RD254800)
 R 16.21.29.33.37.39.44, 45.47.50.55.56.76.83, 125.126.129.130.141, 142.148.153, 1.0K 0.1 J (RD257100)
 R 22.26: 2.2K 0.1 J (RD256200)
 R 32.52: 1.0M 0.1 J (RD259100)
 R 36.101.102.113, 114.131.132.152: 100.0K 0.1 J (RD258100)
 R 40: 150.0K 0.1 J (RD258150)
 R 41: 82.0K 0.1 J (RD257820)
 R 42.57.58.81.84, 91.97.135.136, 145.146: 47.0K 0.1 J (RD257470)
- R 43.87.90: 22.0K 0.1 J (RD257220)
 R 53.143.144: 680.0 0.1 J (RD256800)
 R 59: 10.0 0.1 J (RD254100)
 R 60: 82.0 0.1 J (RD254800)
 R 65:89.154: 47.0K 0.1 J (RD256470)
 R 71.72.74.75: 47.0 0.1 J (RD256470)
 R 79.80: 2.7K 0.1 J (RD256270)
 R 86.88.137.138: 47.0 1/4 J (RD154470)
 R 103.108.117, 118.121.122: 6.8K 0.1 J (RD256800)
 R 109.110: 47.0 0.1 J (RD254470)
 R 111.112.119, 120, 3.3K 0.1 J (RD256300)
 R 115.116.127.128: 4.7K 0.1 J (RD256470)
 R 123.124: 5.6K 0.1 J (RD256500)
 R 127, 120.0 1W (VJ742000)
 R 64: 360.0 1W (VJ743000)
8. Resistor Array (chip)
 RA-13:22:36: EXB-IV81V12J (VM506100) 10k/4
 RA-14: EXB-IV81V13J (VM511600) 47k/4
 RA-15: EXB-IV81V14J (VM018400) 100k/4
 RA-16:21:37:44: EXB-IV82V13J (VM506200) 22k/4
9. IC
 IC1: HD641302P16 (XQ375A00) CPU/SUB CPU
 IC2: UPD728802-1X (XQ055B00) EPROM 8K
 IC3: MM52568FP-70LL (XP218A00) SRAM 256
 IC4: UPD728802-1X (XQ055B00) EPROM 8K
 IC5: HD63266F (XK193A00) FDC
 IC6: HD63806E5F (XK688A00) PKS
- IC8: TC518128FL-80 (XK632C00) PSRAM 1M
 IC9: M27C002-10P1 (XQ056B00) EPROM 4K
 IC10: M83C1600P-G-09 (XQ057C00) EPROM 1M
 IC11: M83C1600P-12 (XQ058C00) EPROM 1M
 IC12: M83C256A-70PS (XN978A00) DRAM 1M
 IC13: TC74C120SF-00 (XQ036A00) SWP00
 IC14: M82021F (XK688A00) RESET
 IC15: SN74HC245NSR (XK258A00) BUFFER
 IC16: TC74AC139F (XQ231A00) DECODER X
 IC17: SN74HC74NSR (XQ243A00) D-FF
 IC18: SN74HC14NSR (XQ275A00) INVERTER
 IC19: SN74HC259SR (XK259A00) OR
 IC20: SN74HC74NSR (XQ275A00) D-FF
 IC21: TC74HC4079AF (XK193A00) 3IN OR
 IC22: MM53832C-81RS (XQ358B00) EPROM 8K
 IC23: SN74HC139SR (XQ277A00) DECODER
 IC24: MM5456AMT (XQ138A00) OP AMP
 IC25: NM78L05A-73 (XQ75A00) OP AMP
 IC26: REGULATOR -5V
 IC27: UPD4052C5 (XP887A00) DAC
 IC28: UPD4052C2 (XF291A00) OP AMP
 IC29: MM5456AD (XK294A00) OP AMP
10. Transistor (chip)
 TR 1: 2SA1162-QY (VJ927200) or 2SA1152-E (VJ309600)
 TR 2: 2SC338-B (VJ303700)
11. Transistor Array (chip)
 TA 3: H1A101F-VGR (VM510300)
 TA 4: H1C101F-VGR (VM505600)
12. Diode (chip)
 D 1-5: MA221 (VB43900) or RLS-73 (VJ797600)
13. Photo Coupler
 PC1: PC410T (VM66600) or HPL-M800 (VJ903700)
14. Chip Inductance
 L 1-18: 21.28.30.36, 40.53
15. LC Filter (EM)
 EM 1-8: DS5306-83F23221 (VD542700)
16. Quartz Crystal Unit
 X 1-3: 16M SX1 (VJ669500)
17. Ceramic Resonator
 CR1: BM C850S-00M1T-3C (VJ669700)
18. Lithium Battery
 BAT 1: CR2450-F2M1X1H 3V (VJ405700)
19. IC Socket
 IC9: DIF-40CS-E (VM405200)
 IC2: DIF-40CS-E (VM63100)
20. Connector Base Post
 CN1: PH-7P TE (VJ930300)
 CN2: PH-6P TE (VJ930200)
 CN4: PH-8P TE (VJ930500)
 CN5: PH-8P TE (VJ930400)
 CN6: PH-14P TE (VJ932600)
 CN7: PH-13P TE (VJ931600)
 CN8: PH-12P TE (VJ930800)
 CN9: PH-13P TE (VJ931000)
 CN10,13: PH-8P TE (VJ930900)
 CN11: PH-8P TE (VJ930100)
 CN14: XH-11P TE (LJ918110)
 CN15: XH-4P TE (LJ918040)
21. Connector
 CN10: 94P TE (VJ931300)
 CN12: 20P TE (VJ702300)
 J 1: RF 2P TE (VJ918300)
22. Jumper Header
 J 2,3: not installed
 J 4: 0.0 0.0 J (RD250000)
 Chip carbon resistor
- Capacitors at IC19-IC23, IC26, IC28, IC29, IC31, IC33 (IC19-23, 26, 27, 29+5-VSSの間にバスコン0.1を入れる)

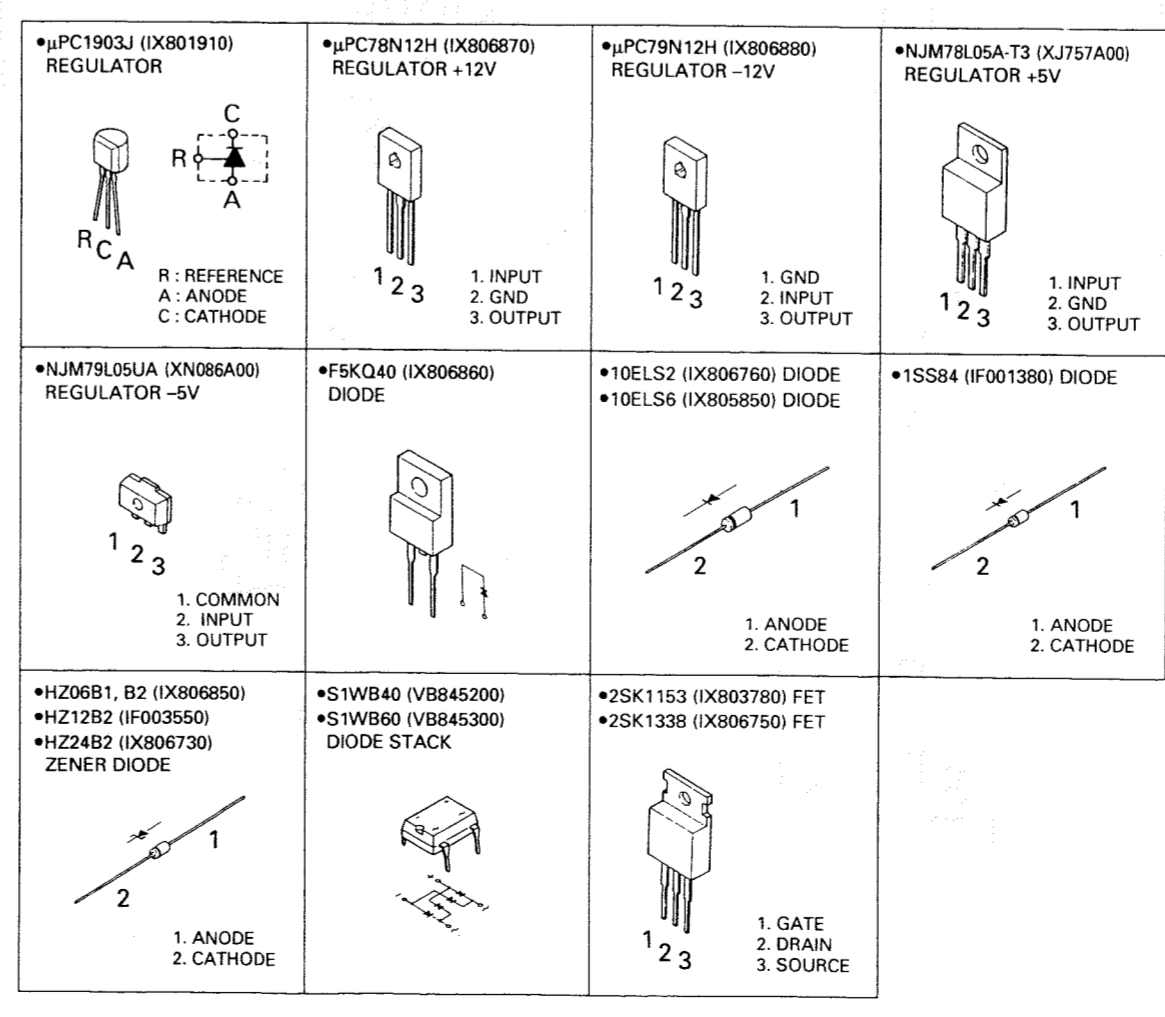
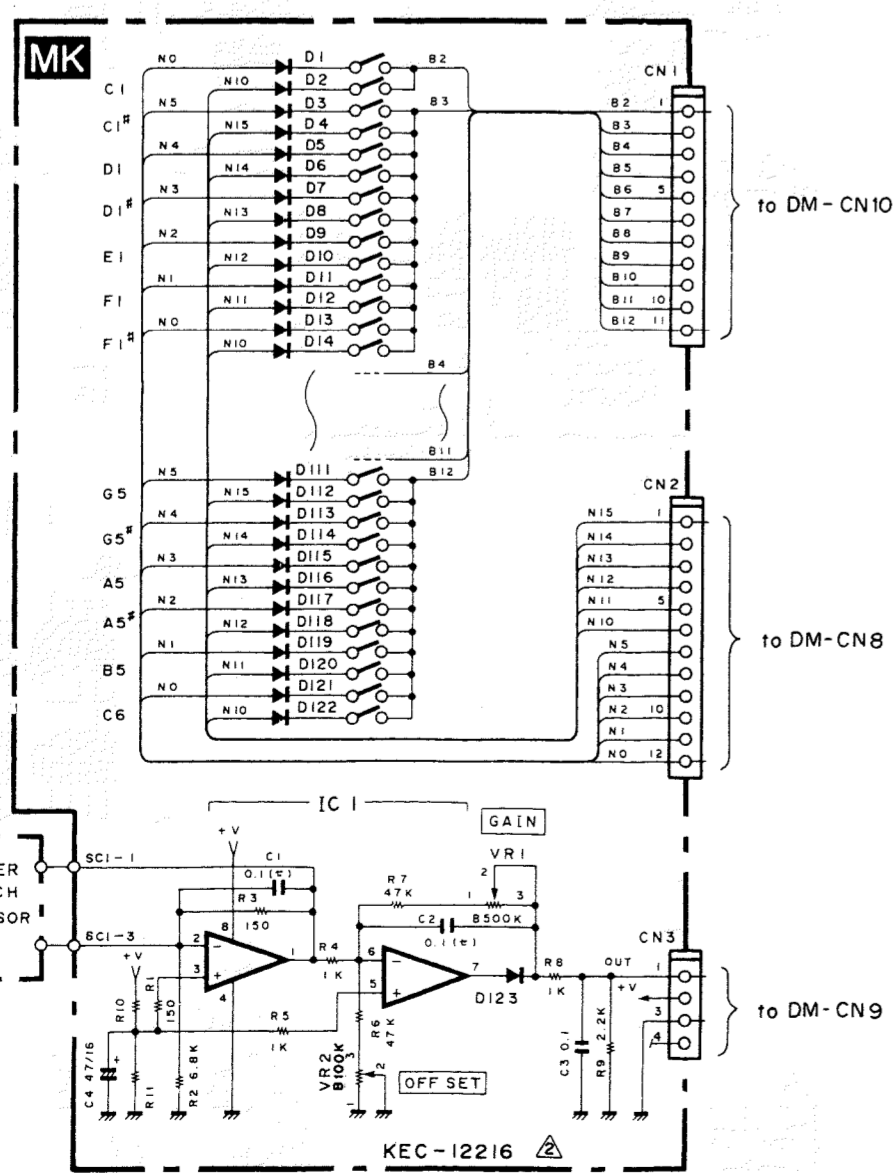
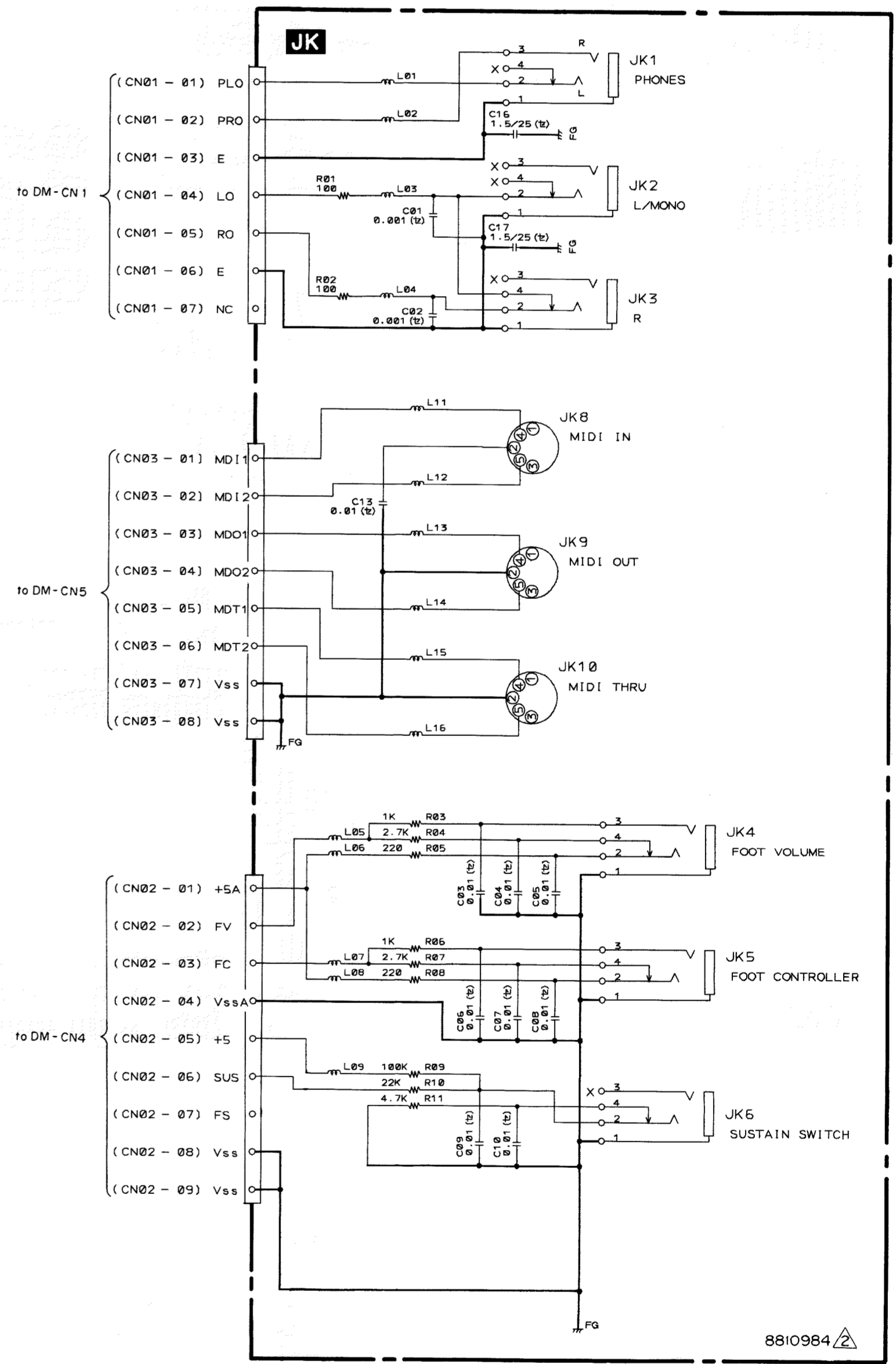
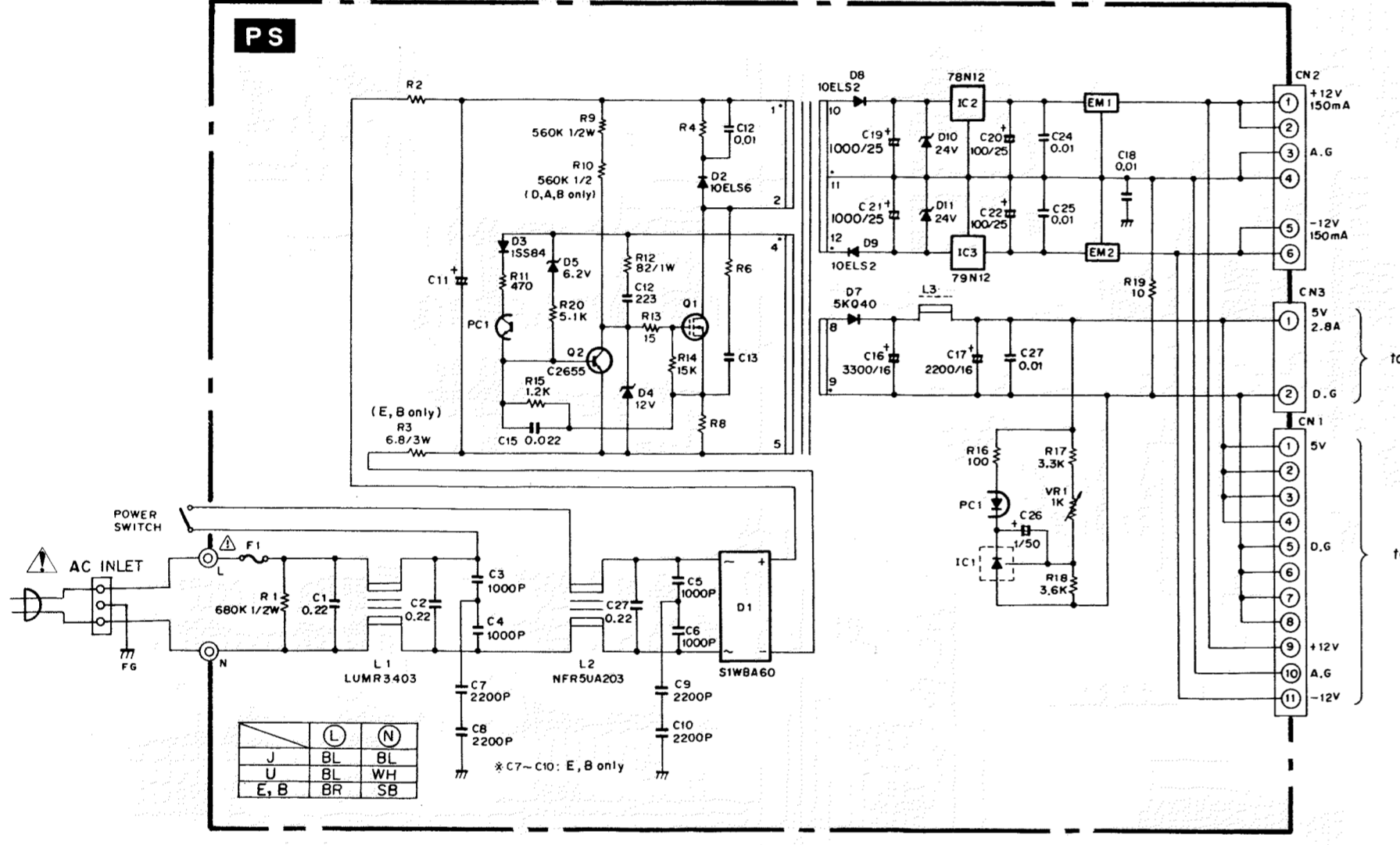
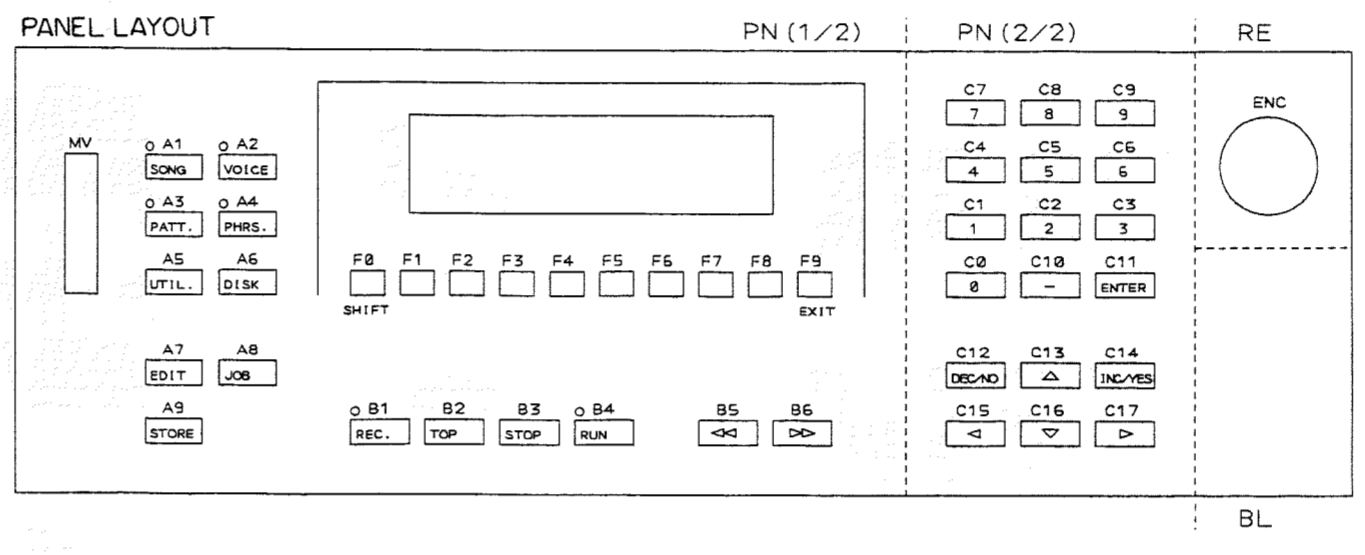
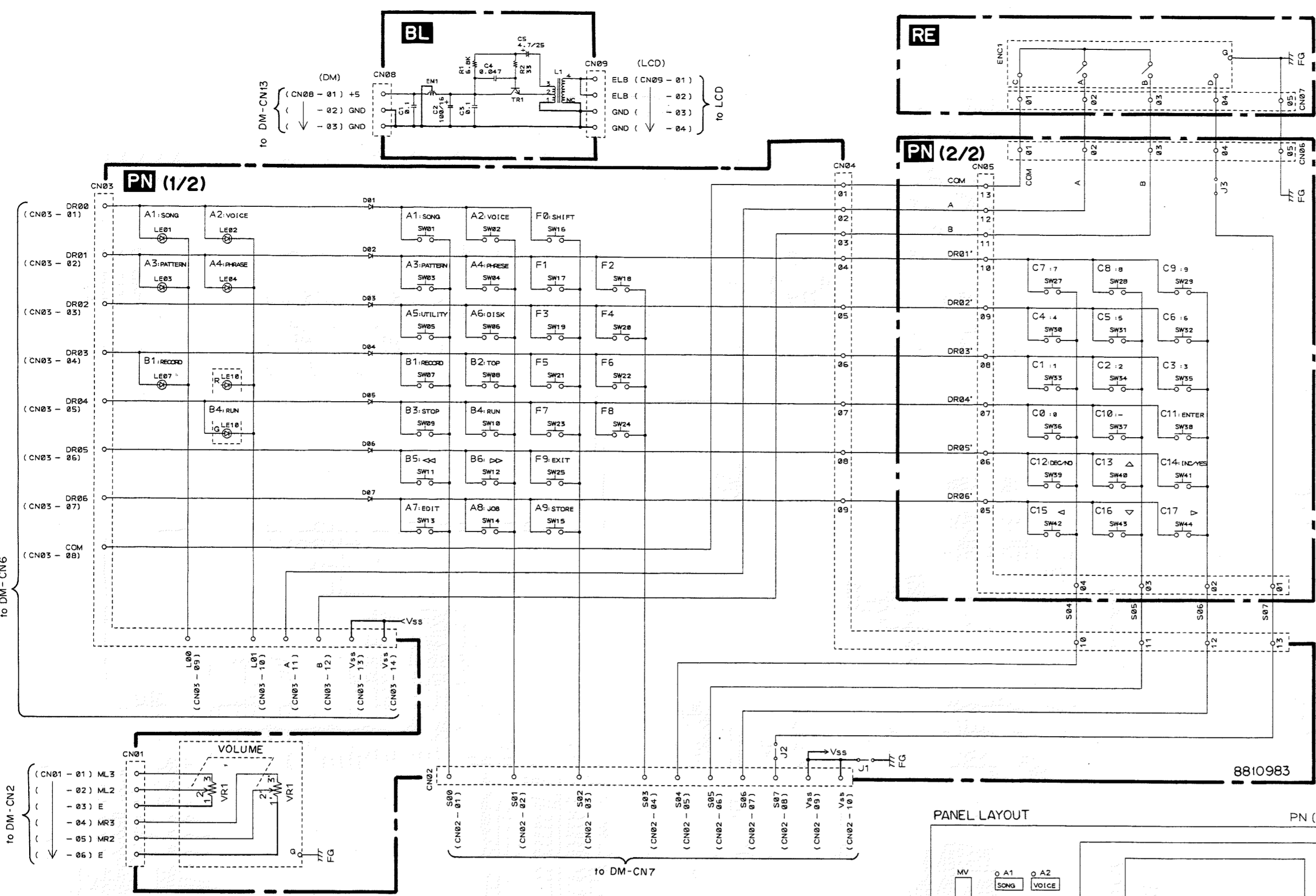
IC	VSS	+5
IC19	7	14
IC28	7	14
IC21	7	14
IC22	7	14
IC23	7	14
IC26	7	14
IC27	7	14

Capacitors at IC28, IC31-IC33 (IC28, 31-33, 37-12, +12とEの間にバスコン0.1を入れる)

IC	-12V	+12V
IC31	4	8
IC32	4	8
IC33	4	8
IC28	4	8

8810982

PN, BL, RE, JK, MK, PS CIRCUIT DIAGRAMS



WARNING
 Components having special characteristics are marked Δ and must be replaced with parts having specifications equal to those originally installed.
 △印の部品は、安全を維持するために重要な部品です。交換をする場合は、安全のため必ず指定の部品をご使用下さい。