PARTS LIST/パーツリスト

SAFETY PRECAUTIONS:
The parts marked 3 have safety-related characteristics.
Use only listed parts for replacement.
Safety is important. Do not use parts other than the ones listed.

CONSIDERATIONS ON PARTS ORDERING:
When ordering any parts listed in the parts list, please specify the following items in the order sheet.

<table>
<thead>
<tr>
<th>QTY</th>
<th>PART NUMBER</th>
<th>DESCRIPTION</th>
<th>MODEL NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>225775921</td>
<td>Sharp Key</td>
<td>C0200</td>
</tr>
<tr>
<td>16</td>
<td>247017300</td>
<td>Knob (orange)</td>
<td>DAC-150</td>
</tr>
</tbody>
</table>

Failure to completely fill out the above items with correct number and description will result in delayed or even undelivered replacement.

<necessary information

1. Company Name
2. Model
3. Serial Number
4. Symptom

NOTE:
1.反映了的機器に原稿を正しい記入しない。例は除く。
2.各種の部品の確認が必要です。各部品の確認が必要です。
3.指標が付いている場合は、指標を確認してから行なってください。
4.必要に応じて、どちらかの部品を指定して下さい。

IC

<table>
<thead>
<tr>
<th>Code</th>
<th>IC Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>15195707</td>
<td>$PD 70320GJ-8BQ</td>
</tr>
<tr>
<td>15238120</td>
<td>TC23326CA0-002</td>
</tr>
<tr>
<td>15238114</td>
<td>TC17G6005-078</td>
</tr>
<tr>
<td>15238112</td>
<td>MR60114-04F</td>
</tr>
<tr>
<td>15189359</td>
<td>M5M44641-12</td>
</tr>
<tr>
<td>15189349</td>
<td>MS682650-12L</td>
</tr>
<tr>
<td>15139985</td>
<td>TCS20101C</td>
</tr>
<tr>
<td>15139985</td>
<td>TCS41000</td>
</tr>
</tbody>
</table>

KNOB, BUTTON

Power

SWITCH スイッチ

<table>
<thead>
<tr>
<th>Code</th>
<th>SW Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3132124</td>
<td>SDDGA305A</td>
</tr>
<tr>
<td>3132174</td>
<td>SKHAF (taping)</td>
</tr>
</tbody>
</table>

NOTE: EVO-QVT is an ordinary type switch and used on products which can be substituted by "type SKHAF.

Jack, Socket

<table>
<thead>
<tr>
<th>Code</th>
<th>Jack Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1349146</td>
<td>YKB21-5012</td>
</tr>
<tr>
<td>1349149</td>
<td>YKB21-5011</td>
</tr>
</tbody>
</table>

PCB ASSY 要品品名

<table>
<thead>
<tr>
<th>Code</th>
<th>PCB Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>731595500</td>
<td>MAIN BOARD (pcb. 2292082020)</td>
</tr>
<tr>
<td>731055400</td>
<td>ANALOG BOARD (pcb. 2292082401)</td>
</tr>
<tr>
<td>731055600</td>
<td>SW BOARD (pcb. 2292082301)</td>
</tr>
</tbody>
</table>

NOTE: LED BOARD (pcb. 2292082301)
15209142 LC78B1 D/A Converter IC13
15169514 TC4410D04P Hex Inverter IC8
15209140 MS2070L6 VCA IC6
15191910J0 NM78L05A +5V Voltage Regulator IC17 to IC20

POTENTIOMETER ボリューム
13299252 RH06A4AC1J (10KΩ) Trimmer VR1 on Main Board
13279958 EVO-WQVF15248 Rotary Encoder Encoder Board
13279959 RX08A10-250KA INPUT LEVEL VR1 on Volume Board

TRANSISTOR トランジスタ
△15119883 2SB1375 Power Tr Q17, Q18 on Analog Board
△15129884 2SD2012 Power Tr Q16, Q19 on Analog Board
15119149 2SA1048GR P2 on Main Board
15129165 2SC2458GR Q14, Q23 on Analog Board
15129185 2SC2332Y Q1, Q13 on Analog Board
15129186 2SC3227A G3 on Analog Board
15139131 2SK1848R FET Q1 on Volume Board

DIODE, LED, PHOTOCouPLER ダイオード, LED, フォト・カプラ
15019209T0 55S005 Photocoupler (Opto-isolator) D6 on Main Board
15229706 TLF952 Rectifier Bridge D7, D8, D9
15019275 3R4481 IC7, IC9 on Analog Board
15019125 15S13 Photocoupler (Opto-isolator) D10 on Analog Board
15019132 Photocoupler (Opto-isolator) D1 to D5 on Main Board
15019236 Photocoupler (Opto-isolator) D1 to D7, D12, D13 on Analog Board
15019238 Photocoupler (Opto-isolator) D1 to D16 on Switch Board
15019340 2DF1E5B 16V Zener D10, D11 on Analog Board
15023934 2DN314 LED (red) D1, D8, D9 on LED Board
15023936 2DN314 LED (green) D12, D6, D7 on LED Board
15023937 2DN1041C LED (yellow) D2, D6
15025901 SL 232D 1x7 Seg LED D10

RESISTOR 抵抗子
13910102M1 RGSD 8 x 103 10k x 8 RA3, RA7 to RA18 on Main Board
13910113 RGSD 4 x 103 10k x 4 RA4 to RA6
13919118M1 RGSD 16L 104 0.1R 1 ohm RA1, RA2
13829152 342 1W 1 ohm RB7 on Analog Board
12559807 FRN144.7 ohm Flexible Resistor RB3, RA3 on Analog Board
13797958D0 CRB20FX-T24E 10k (Taping) Metal Film

CAPACITOR コンデンサー
△13558958 ECO-B1H103KZ Polypropylene CS1 to CS3 on Analog Board
△13592910M1 MIDEJ7150F472MVA1 4700pF Line Filter 4700pF
X' TAL 頻振子
15299126 DOC-70 49.152MHz Xtal X2 on Main Board
12398917 AT-49 16MHz X1

COIL コイル
△12449220M1 FK08120M115 Choke EMI Filter
13299505 BO2RN2962 L1 to L5 on Main Board
13529145 DS3606-55FZ103M EMI Filter L1 to L13 on Analog Board
13529198 ELKTH-101GA Digital Noise Filter FL1 on Analog Board

POWER TRANSFORMER 電圧トランス
△22456586NO 100V FL501 on PS Board
△22456586NO 117V FL1 on Analog Board
△22456600DO 220/240V FL1 on Main Board

LCD UNIT LCDユニット
15025900 M045Z-7BL7 LCD Assy

NOTE: Replacement should be made on a unit basis. No replacements available for individual parts.

ACCESSORIES 附属品
2601020700 Owner’s Manual (English) 2601020800 取扱説明書 (日本語)
TEST MODE ／ テストモード

Caution: Before running test routine, save user data (if any) onto appropriate memorizable machine such as MC-500MK2, to avoid data loss. For saving method, refer to Data Transmission (Bulk dump), Reception and Verification (Bulk load, Verify) on page 10.

Equipment required
MIDI Device (which can receive exclusive events, example: MC-500MK2, GP-16 or equivalent), Oscillator, Oscilloscope, empty plug (× 1pc), Noise Meter, MIDI cable, Foot controller (FC-100MK2), RRC cable

Entering TEST MODE
While pressing [FUNCTION ▼], [WRITE] and [BANK (VALUE ▼)] simultaneously, turn the power ON. Then GP-16 will ask for the ID number. Input [5], [2], [1] and [8] at that time. The inspection items are changed by [FUNCTION ▼] and [FUNCTION ▲].

Exiting TEST MODE
Press the [ESCAPE] to exit test mode.

1. Battery check

1. バッテリーチェック

OK／正常 ／ Battery is full! Battery empty! Please change ／ NG／異常

2. Data Initializing

Warning
Before running test routine, save user data (if any) onto appropriate memorizable machine such as MC-500MK2, to avoid data loss. For saving method, refer to Data Transmission (Bulk dump), Reception and Verification (Bulk load, Verify) on page 10.

2. データ初期化

警告
テストモードを実行する前に、ユーザーのデータを保存する機器（例: MC-500MK2、GP-16等）に保存してください。保存方法は、データ転送（バッチダンプ）、受信と送信確認（バッチロード、検証）をご参照ください。

Press [FUNCTION ▲] key, [FUNCTION ▼]キーを押す。

Press [FUNCTION ▼] key, [FUNCTION ▲]キーを押す。

2. INIT ALL factory & system

3. DSP0, 1, 2 check

3. DSP0, 1, 2チェック

OK／正常 ／ NG／異常

DSP0, 1, 2 OK!

4. D-RA M BUS check

4. D-RA M バスチェック

OK／正常 ／ NG／異常

D_RAM & BUS OK!

NOTE: The above display shows by MASK ROM's identifying version number is Ver.1.02-up 注: 上記の表示は、MASK ROM Ver.1.02以降で表示されます

NOTE: The "IC xx Error" shows by MASK ROM's identifying version number is Ver.1.02-up 注: "IC xx Error" の表示は、MASK ROM Ver.1.02以降で表示されます

Error Display
エラー表示内容

Summisible cause
想定される原因

DSP0 error!
IC17 N.G．
IC17の動作不良

DSP1 error!
IC18 N.G．
IC18の動作不良

DSP2 error!
IC19 N.G．
IC19の動作不良

Error in DATA transfer from IC17 to IC18 (IC17 pin 7 or 8)
IC17からIC18へのデータ転送がおかしい（IC17の7、8番ピン）

Error in DATA transfer from IC19 to IC18 (IC18 pin 7 or 8)
IC19からIC18へのデータ転送がおかしい（IC18の7、8番ピン）

Error in DATA transfer from IC19 to IC17 (IC17 pin 7 or 8)
IC19からIC17へのデータ転送がおかしい（IC17の7、8番ピン）

Trans error 1 → 2
IC18からIC19へのデータ転送がおかしい（IC19の7、8番ピン）
オフセット・インジケーター "CLIP" を消す。 ₀W のオフセットを消す。
7. Sein Check
A/D mute

d) Make sure that no at output.

f) Change the input to rear INPUT jack and the insert the emptyplug into front input jack.

g) Verify no output when the emptyplug is in the jack.
h) Connect the noise meter and pull out all input plug.
i) This time, make sure that noise meter reads the following.
   Unbalance output level
   Balanced output level

Press [FUNCTION ▲] key.

8. MIDI check

8. MIDI チェック

○Check 1
a) Connect “MIDI IN” and “MIDI OUT” together.

OK/正常
NG/異常

Press [FUNCTION ▲] key.

9. RRC check

9. RRC チェック

○Check 1
a) Connect FC-100MK2 to RRC jack.
b) Make sure that “SIGNAL OUT (FOR TUNER)” is being output at FC-100MK2's "SIGNAL OUT (FOR TUNER)" jack.

Press [FUNCTION ▲] key.

10. Key and LED check

10. キー及びLEDのチェック

○Check 1
a) Press buttons one by one as directed by the display a “Push **** key” in sequence.

OK/正常
NG/異常

Press [FUNCTION ▲] key.

Display remains unchanged.

○No change Display
◇表示変わらず！

○Check 2
a) Input a sine wave (1kHz, ±9dBm) to FRONT INPUT jack.
b) Make sure that a sine wave (-4dBm ±3dB) is being output at FRONT INPUT jack.

Press [FUNCTION ▲] key.

Return to No.1 Battery check.
最初のテスト "Battery check" へ戻る。

To PLAY MODE
プレイモードへ
DATA INITIALIZING/ファクトリー・プリセットのロードの方法

(Step 1)
Turn the power switch "OFF".

(Step 2)
Holding the number buttons [6], [7] and [8], turn the power switch "ON".

a. Initializing all patches

(Step 3-a)
Using [FUNCTION] key, call up the parameter (have it appear in the display) as shown below.

(操作 1)
電源スイッチをオフにする。

(操作 2)
ナンバー・ボタン [6], [7], [8]を同時に押しながら電源スイッチをオンする。

a. すべてのパッチの初期化

(Step 3-a)
[FUNCTION]キーで下記のパラメーターを呼び出します。
(ディスプレイに表示されます。)

2.Factory Preset
All Patch Load

(Step 4-a)
Press [WRITE] key.

(操作 4-a)
[WRITE]キーを押す。

FCT Preset Load
Push WRITE KEY!

(Step 5-a)
Press [WRITE] key.

(操作 5-a)
[WRITE]キーを押す。

Sure ? (Yes/No)
Y-WRITE N-ESCAPE

(Step 6-a)
Press [WRITE] key to store into memory. If you decide to cancel, press [ESCAPE] key, and you will return to where you were in (Step 4-a).

(操作 6-a)
[WRITE]キーを押して記憶させます。記憶を中止する場合は、[ESCAPE]キーを押すと、(操作 4-a)の状態に戻ります。

Loading !
REMAINDER=E [ ]

Press [ESCAPE] key once to return to normal operation (the Play mode).

(操作 6-a)
[WRITE]キーを押すと通常の使用状態（プレイモード）になります。

b. Initializing the System data.

b. システムデータの初期化

(Step 3-b)
Using [FUNCTION] key, call up the parameter (have it appear in the display) as shown below.

(操作 3-b)
[FUNCTION]キーで下記のパラメーターを呼び出します。

G.SYSTEM Data
Initialize

(Step 4-b)
Press [WRITE] key.

(操作 4-b)
[WRITE]キーを押します。

System Data Init
Push WRITE Key!
DATA SAVE AND LOAD/データのセーブとロードの方法

◆GP-16 Transmission of Data (Bulk Dump) Data Reception and Verification (Bulk Load/Verify) ways

* One-way means that the data is transmitted across the interface without any regard for the conditions on the receiving end.

Connect the GP-16 to the device to which data are to be sent.
Below shows MIDI connection taken additional GP-16 or sequencer (MC-50MK2) as example.

1) Data transmission to another

◆GP-16 データのセーブとロードの方法

* データの送信は“ワンウェイ方式”で行います。

データを送信する場合、他のMIDI機器とは次のように接続します。
このシステムを新たに接続されている機器は、GP-16とシンセサイザー（MC-50MK2）のいずれかです。

1) 別のGP-16を使用してデータを転送する場合

NOTE: After setting the GP-16 on the receiving end so it is ready to receive, transmission is started.

To avoid confusion, call transmitting GP-16 as GP-16T and receiving one GP-16R.

(Step 1-1:GP-16T)
From the normal play mode, press [SYSTEM] key to enter the System mode.

(Step 1-2:GP-16T)
In the System Mode, use [FUNCTION] key to call up the following parameter (have it appear in the display).

5. BULK DUMP MODE=OFF

VALUE: OFF/NUMBER/BANK/GROUP/ALL/TEMP

(Step 1-3:GP-16T)
Using the [?] Dial, specify the type of data that is to be transmitted. Each type, and the contents which will be transmitted are as follows:

ALL: Transmits the data for all 128 patches

* For details of transmission of other parameters, see GP-16 Owner's manual Section 5, System setting, 5 Data transmission (Bulk dump) on page 49.

The message “Push SYSTEM key!” will appear blinking in the upper line of the display.

(Step 1-4:GP-16T)
Press [SYSTEM] key.

(When “ALL” has been selected in (Step 1-3:GP-16T))

“All”

ALL DATA DUMP
Push WRITE key!

(When transmitting the data for all patches.)
(すべてのパッチデータを転送する場合)

NOTE: Set GP-16R to ready for receiving status.

注: ここで、受信側のGP-16を受信待機状態にします。

◆GP-16 データのセーブとロードの方法

* データの送信は“ワンウェイ方式”で行います。

データを送信する場合、他のMIDI機器とは次のように接続します。
このシステムを新たに接続されている機器は、GP-16とシンセサイザー（MC-50MK2）のいずれかです。

1) 別のGP-16を使用してデータを転送する場合

NOTE: After setting the GP-16 on the receiving end so it is ready to receive, transmission is started.

To avoid confusion, call transmitting GP-16 as GP-16T and receiving one GP-16R.

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(Step 1-2:GP-16T)
In the System Mode, use [FUNCTION] key to call up the following parameter (have it appear in the display).

5. BULK DUMP MODE=OFF

VALUE: OFF/NUMBER/BANK/GROUP/ALL/TEMP

(Step 1-3:GP-16T)
Using the [?] Dial, specify the type of data that is to be transmitted. Each type, and the contents which will be transmitted are as follows:

ALL: Transmits the data for all 128 patches

* For details of transmission of other parameters, see GP-16 Owner’s manual Section 5, System setting, 5 Data transmission (Bulk dump) on page 49.

The message “Push SYSTEM key!” will appear blinking in the upper line of the display.

(Step 1-4:GP-16T)
Press [SYSTEM] key.

(When “ALL” has been selected in (Step 1-3:GP-16T))

“All”

ALL DATA DUMP
Push WRITE key!

(When transmitting the data for all patches.)
(すべてのパッチデータを転送する場合)

NOTE: Set GP-16R to ready for receiving status.

注: ここで、受信側のGP-16を受信待機状態にします。
Data received correctly

LOAD
DATA LOAD READY
INPUT BULK DATA

VERIFY
VERIFY OK!
ALL DATA

Example: When receiving "ALL" (ALL) "ALL" was accepted.

The message "Push ESCAPE key!" will appear, blinking on the lower line of the display.

Step 1-10: GP-16
A single depression of [ESCAPE] key returns the GP-16 to the system mode and twice to the play mode.

Step 1-11: GP-16
When transfer has completed, press [ESCAPE] key and return to the Play mode.

To return the data back to the GP-16T, repeat steps 1-1 to 1-11. This time, of course, previous GP-16T is called GP-16R and vice versa.

2) Data saving onto a MIDI sequencer (MC-500MK2)

2) MIDI シーケンサー（MC-500MK2）を使用した場合

3) MIDI シーケンサー（MC-500MK2）を使用した場合

When using different sequencer, refer to its Owner's manual.

NOTE: After setting the MIDI sequencer so that is ready and waiting for reception of exclusive messages, start transmission of data from the GP-16.

Data transfer (GP-16 → MC-500MK2)

Step 2-1:GP-16
Press [SYSTEM] key to enter the System mode.

Step 2-2:GP-16
In the System Mode, use [FUNCTION] key to call up the following parameter: (have it appear in the display).

5. BULK DUMP
MODE=OFF
VALUE: OFF/NUMBER/BANK/GROUP/ALL/TEMP

Step 2-3:GP-16
Using the [a](Dial), specify the type of data to be transmitted. The contents which will be transmitted are as follows:

ALL: Transmits the data for all 128 patches

For details of transmission of other parameters refer to the GP-16 Owner's manual Section 5, System setting, 5 Data transmission (Bulk dump) on page 49.

The message "Push SYSTEM key!" will appear, blinking in the upper line of the display.

Step 2-4:GP-16
Press [SYSTEM] key.

When "ALL" has been selected in (Step 2-3:GP-16)

"ALL" ALL DATA DUMP
Push WRITE Key!

When transmitting the data for all patches.

NOTE: Set the receiving MC-500MK2 to a ready for reception status.

Step 2-6:MC-500MK2
Turn MC-500MK2 on and it will display the following.

Insert System Disk and Press ENTER

Step 2-7:MC-500MK2
Verify the following display.

Song number ソングナンバー
Bar/小節
Tempo テレポ
Record mode レコードモード

Step 2-8:MC-500MK2
Using the cursor key [→] or [←], move the cursor to SONG NUMBER.

Step 2-9:MC-500MK2
Key in the song number containing the data to be input.

[Tenkey] → [SHIFT] key + [ENTER] key

Step 2-10:MC-500MK2
Press [RECORD] key. The MC-500MK2 displays the following, showing it is ready for bulk data reception.

Press PLAY >> RECORD
M1 J = 128 REAL

Step 2-11:MC-500MK2
Press [PLAY/SAVE] key. This puts the MC-500MK2 into recording mode and enables the GP-16 to send the bulk data.

※操作2-11:MC-500MK2
[PLAY/SAVE] 移す。
MC-500MK2がセッションング状態になるので、GP-16 からパッチデータを送信する。
(Step 2-12: GP-16)
Press [WRITE] key and Data will be transmitted.

Upon completion of data transmission, the GP-16 returns back to the bulk dump starting status (system mode).

(Step 2-13: MC-500MK2)
When GP-16 has finished data transmission, press [STOP] key to exit recording mode.

(Step 2-14: GP-16)
When transfer has completed, press [ESCAPE] key and return to the Play mode.

This completes bulk data transmission.

(Step 2-15: MC-500MK2)
Using the [9 Dial] key or tenkey and [ENTER] key, go to the beginning of the measure.

NOTE: Don't start transfer before putting the GP-16 to ready for reception.

(Step 2-16: GP-16)
Press [SYSTEM] key to enter the system mode.

(Step 2-17: GP-16)
In the system mode, using [FUNCTION] key, call up the following parameter (have it appear in the display).

DATA LOAD MODE=LOAD

The message “Push SYSTEM key!” will appear, blinking in the upper line of the display.

(Step 2-18: GP-16)
Select LOAD or VERIFY mode by using 9 Dial.

Note: In VERIFY mode data returning back to the GP-16 are verified.

(Step 2-19: GP-16)
Press [SYSTEM] key to put the GP-16 into ready for reception status. Either of the following messages, as appropriate, will appear.

DATA LOAD READY INPUT BULK DATA

DATA LOAD READY INPUT BULK DATA

VERIFY READY INPUT BULK DATA

(Step 2-20: MC-500MK2)
Press [PLAY/SAVE] key.

When data is received, the following appears in the display.

(Data being received)

“LOAD” DATA LOAD READY RECEIVING

“VERIFY” TYPE=ALL NOW VERIFY

Example: When receiving “ALL” (example “ALL” is received)

The display on the GP-16 shows one of the following messages, indicating the end of data transfer.

(Data received correctly)

“LOAD” DATA LOAD READY INPUT BULK DATA

“VERIFY” VERIFY OK! ALL DATA

Example: When receiving “ALL” (example “ALL” is received)

The message “Push ESCAPE key!” will appear, blinking in the lower line of the display.

Press [ESCAPE] key once to return to the System mode, or twice to return to the Play mode.

(Step 2-21: MC-500MK2)
Press [STOP] key to stop the sequencer.

This completes bulk dump data receive.

(Step 2-22: GP-16)
Press [STOP] key to stop the sequencer.

以上で、バックデータの受信終了が確認されます。
**TROUBLESHOOTING/トラブルシューティング**

Switch power on. (7-seg LED Display)

<table>
<thead>
<tr>
<th>Error message</th>
<th>Surmountable cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>· After turning on the Power SW, BANK and NUMBER 7-seg LEDs alternately flash (B).</td>
<td>· LCD connector or circuit is no good.</td>
</tr>
<tr>
<td>· Error message is also displayed.</td>
<td>· LCD connector is not good.</td>
</tr>
</tbody>
</table>

Error message in play mode. (LCD display)

<table>
<thead>
<tr>
<th>Error display content</th>
<th>Surmountable cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>· M60014 OR DSP ERROR NEED CHECK 1</td>
<td>· Master clock is not supplied to M60014 (IC10) or to any of IC17, 18 or IC19. (DC 70 No.8 pin outputs 49.152 MHz)</td>
</tr>
<tr>
<td>· M60014 (IC10) or IC17, 18, 19 of whose D outputs are stuck at &quot; 1 &quot; (DC 70 No.8 pin output 49.152 MHz)</td>
<td></td>
</tr>
<tr>
<td>· M90014 (IC10) or IC17 No. 12 pin N. G.</td>
<td></td>
</tr>
<tr>
<td>· M60014 (IC10) or IC18 N. G. / IC19 N. G. or IC18, 19 of whose D outputs are stuck at &quot; 1 &quot;</td>
<td></td>
</tr>
<tr>
<td>· DSP0 error</td>
<td></td>
</tr>
<tr>
<td>· DSP1 error</td>
<td></td>
</tr>
<tr>
<td>· DSP2 error</td>
<td></td>
</tr>
<tr>
<td>· trans error 0→1</td>
<td></td>
</tr>
<tr>
<td>· DATA transfer from IC17 to IC18 N. G. (Check IC17 No.1 pin and 8 pin)</td>
<td></td>
</tr>
<tr>
<td>· IC17, IC18, IC19 and IC18, 19, 19 of whose D outputs are stuck at &quot; 1 &quot;</td>
<td></td>
</tr>
<tr>
<td>·trans error 1→2</td>
<td></td>
</tr>
<tr>
<td>· DATA transfer from IC18 to IC19 N. G. (Check IC18 No.7 pin and 8 pin)</td>
<td></td>
</tr>
<tr>
<td>· IC18, IC19, IC18, 19, 19 of whose D outputs are stuck at &quot; 1 &quot;</td>
<td></td>
</tr>
<tr>
<td>·trans error 2→0</td>
<td></td>
</tr>
<tr>
<td>· DATA transfer from IC19 to IC17 N. G. (Check IC19 No.7 pin and 8 pin)</td>
<td></td>
</tr>
<tr>
<td>· IC19, IC17, IC19, IC18, 19 of whose D outputs are stuck at &quot; 1 &quot;</td>
<td></td>
</tr>
<tr>
<td>· Battery empty!</td>
<td></td>
</tr>
<tr>
<td>· Please change</td>
<td></td>
</tr>
<tr>
<td>· Battery empty or no battery.</td>
<td></td>
</tr>
</tbody>
</table>

**ADJUSTMENT (For LCD)/調整仕様 (LCD 用)**

LDC contrast adjustment.

This adjustment can be done in the system mode by using parameters. The adjustment also be done from VR1 (Potentiometer) on Main Board.

Adjustment procedure:

1. While in the normal mode, press the [SYSTEM] key to enter the system mode.
2. In the System mode, use [FUNCTION] key to call up the following parameter: (have it appear in the display).

| 12.LCD_CONTRAST CONTRAST= |
| VALUE: 0-100 |
| CONTRAST= |

3. Using the [±-Dial], display "CONTRAST = 50."
4. Using Potentiometer (VR1: Refer to the Fig. 1) on Main Board adjust the display contrast so that the displayed characters are easy to read.

---

![Diagram](image-url)
CIRCUIT DIAGRAM (SW Board)/回路図（スイッチ基板）

To Main Board CN6

SW Board
ASSY 7315556000
 pcb 2292082301 1/2

All Diodes: 15S133
All Switches: SKH4AF ST
EVQ-DVT 05G

CIRCUIT DIAGRAM (LED Board)/回路図（LED基板）

To Main Board CN3

To Main Board CN4

CIRCUIT DIAGRAM

LED Board
ASSY 73155570 00

D1, D8, D9: LN01201C (RED)
D2, D6: LN01401C (YELLOW)
D3, D4, D5, D7: LN01501C (GREEN)

View from component side
POWER SUPPLY BOARD/電源基板
ASSY 7315557000
 pcb 2292082900

NOTE: POWER SUPPLY BOARD is corresponded to voltages (100/117/220/240V).
注：パワー・サプライ基板は全電圧共通です。

CIRCUIT DIAGRAM (Power Supply Board)/回路図（電源基板）

View from component side
CONSIDERATIONS ON MOUNTING SUB BOARD
/SUB BOARD取り付け上の注意点

NOTE: Remove a 47 pF capacitor across IC13 pins 4 and 8 on the main board, if soldered. See Fig. 1.

GP-16 bearing Prior to SN 27249 and 27249 (is not furnished with SUB board. Added this PCB as follow:

1. Desolder IC15 (T74HC132P) on the main board. (Fig. 2)

2. Insert the board into holes where IC15 was and solder. (Fig. 3: Next page)

NOTE: (When the board has been on the existing main board (SN ZA82750-ZA96249), remove the IC socket from the new board and reuse the existing one.) (Fig. 4: Next page)

(Referring to Fig. 5: Next page)

3. Bend IC10 pin 31 and solder it to the solder pool but not to the orginal conductor pattern connecting to pin 31 terminal.

4. Solder the yellow wiring to the solder pool next to pin 31.

5. Solder the green wiring to pin 4 of IC13.

NOTE: View from the arrow side.

注1. この面は実印の方向から見た図です。
CHANGE INFORMATION/変更案内

Main Board Change History

①メイン基板変更箇所

<table>
<thead>
<tr>
<th>SN</th>
<th>ZA00100-ZA00149</th>
<th>ZA00150-ZA00169</th>
<th>ZB00200-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change</td>
<td>変更内容</td>
<td>変更内容</td>
<td>変更内容</td>
</tr>
</tbody>
</table>
| | • Join pins 2 and 23 of IC13 (TC17G005) through a 100Ω. | • Re-layout of conductor, silk and resist patterns. | • Add resistors and capacitors. | • Change PCB code to ZB02102102.
| | • Cut off foil pattern connecting to pin 21 of the IC13 (see Fig. 1). | • Add silk for R200. | • Change PCB code to ZB02102201. | • pcb 2292082202に変更 |
| | • PCB code is 2292082200. | • Change PCB code to ZB02102201. | • PCB 2292082202に変更 |
| | • TC17G005 (IC13 on Main Board) の2番ピンと23番ピンを100Ωの抵抗で接続する。 | • PCB 2292082202に変更 |
| | • TC17G005 (IC13 on Main Board) の2番ピンのパターンを切りる。 | • PCB 2292082202に変更 |
| | （上記の変更については、Fig. 1参照） | | |
| Reason | 理由 | 理由 | 理由 |
| | For more effective protection against radiowave interference. | To provide mounting hole to accommodate surface mounted R200. | To accommodate circuits on SUB board, obliterating the board. |
| | "電源を切ってもGP-16が起動しない。"という症状の対策のため。 | 面付けをなくすため。 | GP-16 SUB BOARD を削除するため |

NOTES: 1. SUB board can mount without the help of adhesive and cushion.
2. View from the arrow side.

注1. GP-16 SUB BOARD を取付ける時はピンド付け、クッションは不要です。
注2. この図はFig.3と同じ方向から見た図です。

NOTES: 1. SUB board can mount without the help of adhesive and cushion.
2. View from the arrow side as with in Fig. 3.

注1. GP-16 SUB BOARD を交換する際は、ボンド付け、クッションは不要です。
注2. この図はFig. 3と同じ方向から見た図です。

Bridge pins 2 and 23 of TC17G005 with a 100Ω.
TC17G005 の2番と23番ピンを100Ωで接続する

Cut pattern here at pin 2 of TC17G005.
TC17G005 の2番ピンのこのパターンを切る

View from component side.
View from foil side
**OGP-16 SUB Board Change History**

**OGP-16 SUB BOARD 適合**

<table>
<thead>
<tr>
<th>SNs.</th>
<th>Prior to SN ZB17849/ ZB17850 -</th>
<th>ZA93750/ ZA93750 -</th>
<th>ZB18900/ ZB18900 -</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Change</strong></td>
<td>No SUB board.</td>
<td>GP-16 SUB BOARD なし.</td>
<td>Add SUB board.</td>
</tr>
<tr>
<td><strong>Reason</strong></td>
<td>The following proble will be encountered on few products (1~2%) already shipped, when repeating power on and off cycle several times in sequence.</td>
<td>The SUB board cures the problems described at the left.</td>
<td>The SUB board cures the problems described at the left.</td>
</tr>
<tr>
<td><strong>症状</strong></td>
<td>1. GP-16 won't run while the LCD displaying stationary message, either &quot;Super GP Ver.1.0&quot; or &quot;M60014 or DSP can't open&quot;. 2. No sound or oscillation sound.</td>
<td>GP-16 SUB BOARD を交換する場合に、GP-16 SUB BOARD の交換が必要となります。</td>
<td>GP-16 SUB BOARD を交換する場合に、GP-16 SUB BOARD の交換が必要となります。</td>
</tr>
</tbody>
</table>

---

**Fig. 2**

View from component side
APPENDIX (Identifying Version Number)/付録（バージョン・ナンバーの確認）

There are three ways to identify version of the program ROM (IC11).

1. Major Version up. (Ex: Ver. 1.00 → 2.00)

The display flashes the version on 1) power-up, 2) upon entering the test mode and 3) on loading the factory preset.

2. Minor Version up. (Ex: Ver. 1.01 → 1.02)

3. Verifying version during test mode for procedures to enter the test mode, refer to Test Mode on page 6. Although version is not explicitly shown, it is identified by the way of display shown at a step during "4. D-RAM BUS Check" in the test mode.

The version here is that of the Program ROM (IC11 on the Main Board).

The display shows the version of the program ROM (IC11 on Main Board) so it can be verified.

2. 小さな変更の場合（例：1.01 → 1.02）

実際のプログラム ROM を見て、バージョンを確認する。

3. テスト・モード利用してバージョンを確認する方法

テスト・モードへの入力方法は、「テスト・モード」(P. 6) を参照してください。

テスト・モードの中の "4. D-RAM BUS Check" において、プログラム ROM のバージョンによって、それぞれ下記のように表示されます。

Ver. 1.02

OK/正常

D_RAM & BUS OK!

NG/異常

BIT** Error or IC** Error

Ver. 1.00

OK/正常

D_RAM BUS OK!

NG/異常

BIT** Error
**Changing of replacement parts supply unit.**

It is impossible to supply ANALOG BOARD ASSY (7315554000) including VR BOARD and ENCODER BOARD as a set, because of no production. Instead, from now on, ANALOG BOARD, VR BOARD and ENCODER BOARD are supplied separately.

Please be notice that ANALOG BOARD (7315554000) does not includes VR BOARD and ENCODER BOARD.

If you need replacement VR BOARD or ENCODER BOARD, please order with the following part number that is based on new parts supply unit.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PNo 7315554000</td>
<td>ANALOG BOARD</td>
</tr>
<tr>
<td>PNo 17048290</td>
<td>VR BOARD</td>
</tr>
<tr>
<td>PNo 17048289</td>
<td>ENCODER BOARD</td>
</tr>
</tbody>
</table>

Please correct the SERVICE NOTES for GP-16 as follows:

Page 2  EXPLODED VIEW  PARTS

29 ANALOG BOARD (pcb 2292082401 1/3)

*NOTE:* Replacement ANALOG BOARD does not includes VR BOARD and ENCODER BOARD.

Page 3  PARTS LIST  PCB ASSY

7315554000 ANALOG BOARD (pcb 2292082401 1/3)

*NOTE:* Replacement ANALOG BOARD does not includes VR BOARD and ENCODER BOARD.

Add the following 2 pcb in the parts list:

Page 3  PARTS LIST  PCB ASSY

PNo 17048290  VR BOARD(pcb 2292082401 2/3)
PNo 17048289  ENCODER BOARD(pcb 2292082401 3/3)
Part number error. Please amend all existing service notes as follows.

/ パーツコードに誤記がありました。該当サービスノートを下記のように訂正して下さい。

Page 2   EXPLODED VIEW / 分解図： #24
Page 4   PARTS LIST / パーツリスト： MISCELLANEOUS / その他

WRONG / 誤: LITHIUM BATTERY (+3V) CR2032-1HS #12569410
CORRECT / 正: LITHIUM BATTERY (+3V) CR2032 #12569249S0