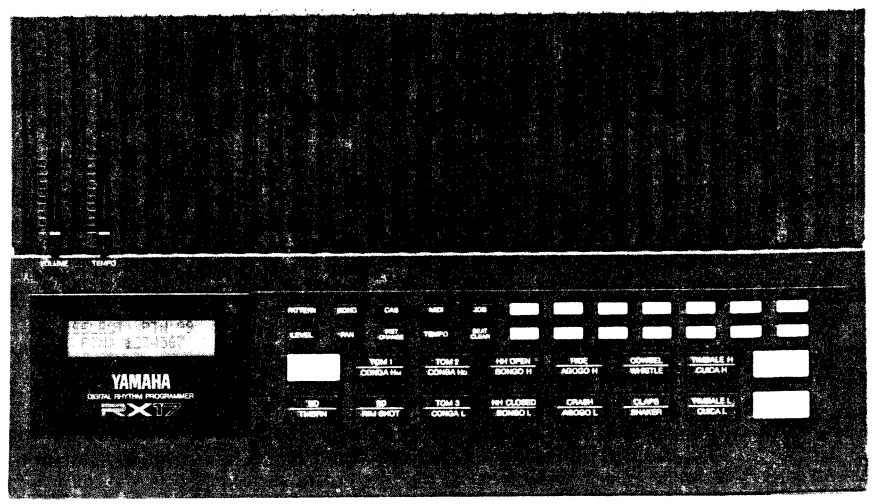
# DIGITAL RHYTHM PROGRAMMER

# RX17

# SERVICE MANUAL

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006746

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# IMPORTANT NOTICE

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

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

**IMPORTANT:** 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 principle-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 lithium 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 må kun foretages af en sagkyndig, og som beskrevet i servicemanualen.

# ■ SPECIFICATIONS

**SOUND SOURCE**
ROM: PCM, 2 MBYTE ROM

**NUMBER OF VOICES**
26

**MEMORY CAPACITY**
PATTERNS: 100
SONGS: 10 (UP TO 999 PARTS PER SONG.
TOTAL SONG MEMORY: 1200 PARTS)

**CONTROLLERS**
KEYS: PATTERN, SONG, CAS, MIDI, JOB, LEVEL, PAN, INST CHANGE, TEMPO, BEAT CLEAR, NUMERIC KEYS (10, NUMBERED 0—9), −1 NO, +1 YES, ◀, ▶, STOP/CONTINUE, START, ACCENT, INSTRUMENT KEYS (13, DUAL-FUNCTION)
SLIDERS: VOLUME, TEMPO

**DISPLAY**
LCD: 16 CHARACTERS ×2 ROWS

**CONNECTIONS**
5-PIN DIN: MIDI IN, MIDI OUT
8-PIN DIN: CASSETTE IN/OUT
STEREO 1/4" PHONE JACK: HEADPHONES
MONO 1/4" PHONE JACK: AUDIO OUT R, L (MONO)
DC 9—12V IN (TIP POSITIVE)

**SUPPLIED ACCESSORIES**
PA-1 12V POWER CONVERTOR
CRC-1 CASSETTE INTERFACE CABLE

**DIMENSIONS (W × H × D)**
350 × 54.5 × 202mm (13 25/32" × 2 5/32" × 7 31/32")

**WEIGHT**
1.4 kg (3 lbs 7 oz.)

Specifications are subject to change without notice.





# ■総合仕様

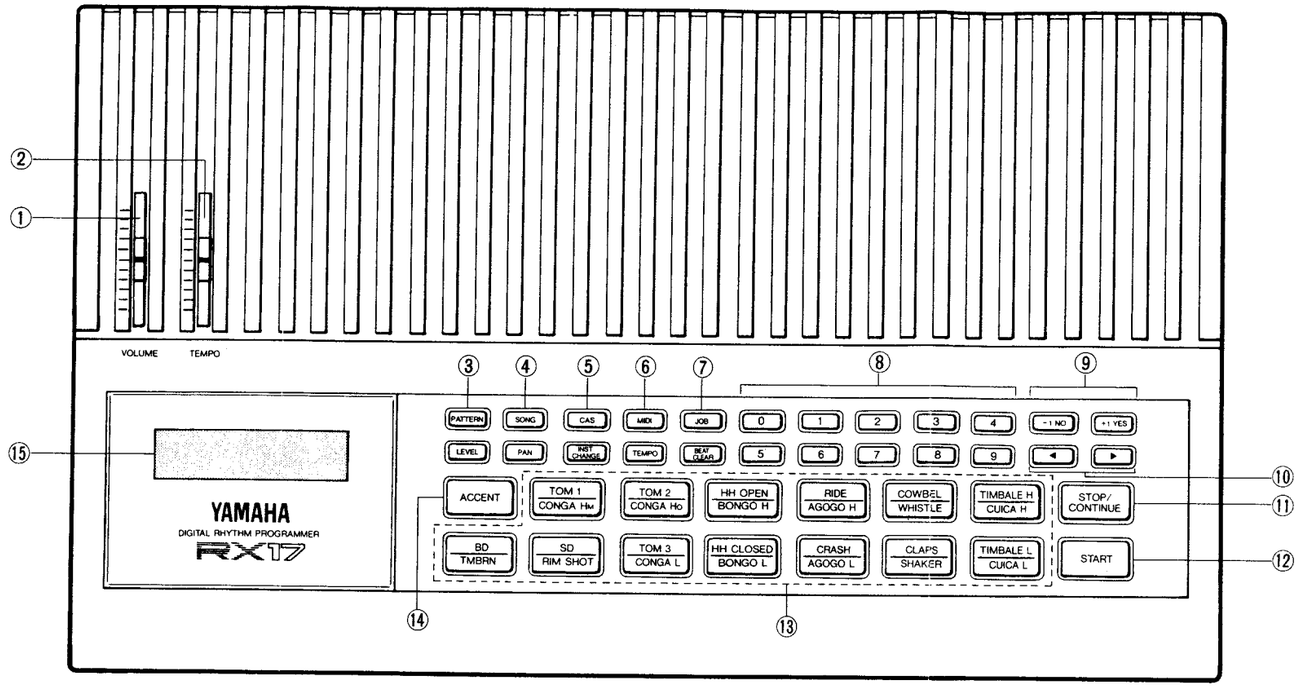
| | |
|---|---|
| **音　　源** | |
| R O M | 2MビットWAVE ROM ×1 |
| 音 色 数 | 26 |
| 音　　色 | バスドラム,スネアドラム,タム1,タム2,タム3,ハイハット クローズド,ハイハット オープン,ライド シンバル,クラッシュ シンバル,クラップス,カウベル,ティンバレ ハイ ティンバレ ロー,タンバリン,リムショット,コンガ ハイ ミュート,コンガ ハイオープン,コンガ ロー,ボンゴ ハイ,ボンゴロー,アゴゴ ハイ,アゴゴ ロー,シェイカー,ホイッスル,クィーカ ハイ,クィーカ ロー |
| **メモリー容量** | |
| パターンデータ | 100 |
| ソングデータ | 10 |
| コントローラー | |
| スライダー | VOLUMEスライダー,TEMPOスライダー |
| ボ タ ン | ACCENTボタン,楽器ボタン×13,STOP/CONTINUEボタン,STARTボタン |
| キ　　ー | PATTERN キー,SONG キー,CASSETTE キー,MIDIキー,JOBキー,LEVELキー,PANキー,INST CHANGEキー,TEMPOキー,BEAT CLEARキー,テンキー,データエントリーキー(-1 NO, +1 YES) ,◀キー,▶キー |
| スイッチ | POWERスイッチ |
| **ディスプレイ** | LCD(16文字×2段) |
| **接続端子** | OUTPUT L(MONO), OUTPUT R, MIDI IN, MIDI OUT,CASSETTE, PHONES, DC 9V-12V IN |
| **電　　源** | ACアダプター PA-1を使用 |
| **寸法(W×H×D)** | 350mm ×54.5mm× 202mm |
| **重　　量** | 1.4kg |
| **付 属 品** | ACアダプター PA-1,カセットケーブル CRC-1 |

※仕様および外観は、改良のため予告なく変更することがあります。

RX17

## ■PANEL LAYOUT（パネルレイアウト）

### ●FRONT PANEL（フロントパネル）




① **MASTER VOLUME** slider control.

② **TEMPO** slider control.

③ **PATTERN MODE** key.

④ **SONG MODE** key.

⑤ **CASSETTE MODE** key.

⑥ **MIDI MODE** key.

⑦ **JOB** key.

⑧ **Numeric Key Pad**.

⑨ **−1/NO** and **+1/YES** keys.

⑩ ◄ ► keys.

⑪ **STOP/CONTINUE** key.

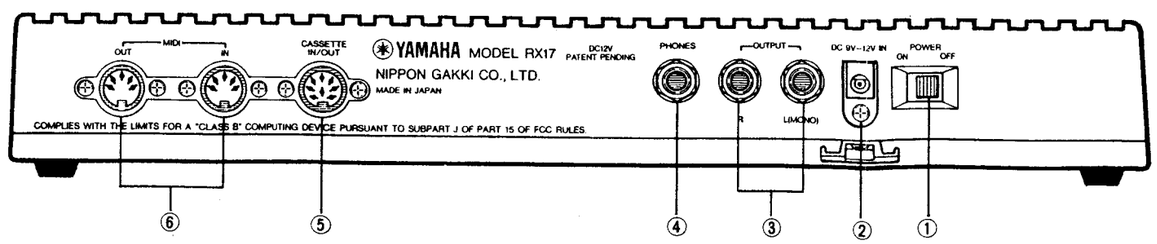
⑫ **START** key.

⑬ **INSTRUMENT** keys.

⑭ **ACCENT** key.

⑮ **LCD** (Liquid Crystal Display).

### ●REAR PANEL（リアパネル）




① POWER ON/OFF SWITCH

② DC9V-12V IN

③ OUTPUT R,L (MONO)

④ HEADPHONES

⑤ CASSETTE IN/OUT

⑥ MIDI IN, MIDI OUT

| MESSAGE | CAUSE | REMEDY |
|---|---|---|
| * init PARAM. * | A malfunction in the RX17 has caused all parameters (voice level, accent level, pan, MIDI settings) to be initialized. | |
| * illegal PTN * or * illegal SONG* | A malfunction in the RX17 has caused all Pattern and Song data to be cleared. | Use operation 2.1.2 to load the Preset Patterns and Songs, or operation 4.2 to load Patterns and Songs saved on cassette. |
| ! ERROR ! | During MIDI Bulk Receive, incorrect data was sent due to faulty cable or electrical interference. | Check that the MIDI cable is not faulty. Also, read the PRECAUTIONS section of this manual for advice on electrical interference. |
| ! LOAD ERROR ! | There is a checksum error in sequence data that you have tried to load from cassette, due to a fault in transmission. | Repeat the Load operation, making sure that the tape playback level is high. Also, check that the cassette cable is functioning correctly. If necessary, clean and demagnetize the tape heads. |
| ! VERIFY ERROR ! | The RX17 contains different data to the data saved on cassette. | Make sure that the cassette you are using contains data that was just saved. If there is still a problem, save the data again and execute the Verify operation once more. |
| ! Different Type ! | During Bulk Receive, you are sending data to the RX17 that is not formatted for the RX17. | Make sure that the MIDI device connected to the RX17 is transmitting the correct type of data (i.e. RX17 Pattern, Song and Instrument data). |
| ! Data Destroyed ! | During Bulk Receive or Cassette Load, you have cleared all data in the RX17 by attempting to load the wrong type of data. | Make sure that the type of data you are loading is correct for the RX17, then execute the load operation again. |
| ! MIDI BUFFER ! ! FULL ! | Too large amounts of MIDI data are being sent to the RX17 too rapidly. | Press any key to clear the LCD. Send less dense data, or send data at a slower tempo. |
| ! MEMORY FULL ! | The RX17's Pattern or Song Memory is full, and further data cannot be entered. | Use operation 4.1 to save the Pattern and Song data to cassette, then use operation 2.4 to clear Patterns, or operation 3.3 to clear Songs, prior to entering new data. |
| ! TOO LARGE PTN ! | You have exceeded the maximum size of a Pattern, and further data cannot be entered. | Write two or more shorter Patterns, each of which forms a section of the Pattern you were trying to write. Then use operation 3.2 to combine the short Patterns into a Song. |
| Part Overflow ! | You have entered data in the Copy Part function which would result in a Song containing more than 999 Parts. | See if you can enter repeats in the Song to bring it up to the required length. |
| Illegal Input ! | 1. You have entered Part numbers in the Copy Part function where the second Part number is smaller than the first.<br>2. You have entered Part numbers in the Copy Part function which include the destination Part number. | 1. Enter correct Part numbers.<br>2. Copy a different group of Parts so that the destination Part is outside the Parts to be copied. |
| ! CHANGE BATTERY ! | You have entered a Part number in the Copy Part function which is higher than the total number of Parts in the Song. | Enter the correct Part number. |
| ! NO BATTERY ! | You have tried to change the length of a Pattern that already contains data. | Write a new Pattern at the desired Pattern length. |
| End of SONG ! | The lithium battery, for memory backup, is running at less than 2.2 V. | Press +1 YES to restore the RX17 to normal operation. Consult your Yamaha dealer about battery replacement. |
| Not Found ! | The lithium battery, for memory backup, is running at less than 1.5 V. | Press +1 YES to restore the RX17 to normal operation. Consult your Yamaha dealer about battery replacement as soon as possible. |
| ! Already Set ! | 1. In the Copy Part function, you have entered a copy destination Part number that is higher than the total number of Parts in the Song.<br>2. In the Search Part function, you have entered a Part number that is higher than the total number of Parts on the Song. | 1. The LCD will next display the empty Part following the last Part of the Song. Continue the Copy Part operation to copy to this Part, or enter a new Part number.<br>2. The LCD will next show the empty Part following the last Part of the Song. You can now edit from this point, or select the Search Part function again in the normal way. |

## ■エラーメッセージ

●RX17では、正しくデーターの送受信(入出力)ができなかった場合には、次のようなエラーメッセージをディスプレイに表示します。

| 症　状 | 原　因 | 処　置 |
|---|---|---|
| * init PARAM * | 電源をＯＮにした際、パラメータに異常があった。（データは、全て初期化されます。） | データを作成しなおしてください。 |
| ! illegal PTN !<br>! illegal SONG ! | 電源をＯＮにした際、作成済みみのデータに異常があった。 | データをロードしなおしてください。 |
| ! ERRER ! | もう一台のＲＸ17のデータを受信した際、エラーが発生した。 | 再度、操作を行なってください。 |
| ! LOAD ERRER ! | カセットテープ内のデータをロードした際、チェックサムエラーとなった。 | 再度、操作を行なってください。 |
| ! VERIFY ERRER ! | カセットテープ内のデータをベリファイした際、本機のフォーマットと異なるものをベリファイした。 | しっかりと頭出ししたうえで、再度、操作を行にってください。 |
| ! ERRER !<br>!Different Type! | もう一台のＲＸ17でない、異なるなった機器のデータを受信した。 | ＲＸ17同士でなければ、データをやりととりできません。 |
| ! ERRER !<br>!Data Destroyed! | もう１台のＲＸ17のデータを受信した際、受信したデータに異常があった。(本機内のデータは全て消去されます。) | 再度、操作を行なってください。 |
| ! LOAD ERRER !<br>!Data Destroyed! | カセットテープ内のデータをロードした際、受信したデータに異常があった。（データは消去される。） | 再度、操作を行なってください。カセットテープが痛んでいる場合もあります。 |
| ! MIDI BUFFER !<br>! FULL ! | ＭＩＤＩの送受信バッファがオーバーフローした。（送受信バッファ内のデータは、初期化されます。） | 再度、操作を行なってください。 |
| ! MEMORY FULL ! | パターンデータの作成中、パターンメモリーが使い果たされた。 | パターンデータを作成したい場合には、必要のないパターンデータを消去するか、カセットテープにデータをセーブしてください。 |
| | ソングデータの作成中、ソングメモリーが使い果たされた。 | ソングデータを作成したい場合には、必要のないソングデータを消去するか、カセットテープにデータをセーブしてください。 |
| ! TOO LARGE PTN! | パターンデータの作成中、１つのパターンのメモリー許容量を使い果たした。 | 許容量の範囲内で作成してください。 |

[ Digital Rythm Programmer ]  Date : 12/13, 1986

Model RX17  MIDI Implementation Chart  Version : 1.0

| Function ... | | Transmitted | Recognized | Remarks |
|---|---|---|---|---|
| Basic | Default | 1 - 16 | 1 - 16 | memorized |
| Channel | Changed | 1 - 16 | 1 - 16 | |
| Mode | Default | 3 | 3 | |
| | Messages | x | x | |
| | Altered | XXXXXXXXXXXXXX | x | |
| Note Number | | 36 - 99 X1 | 36 - 99 X1 | |
| | True voice | XXXXXXXXXXXXXX | 36 - 99 | |
| Velocity | Note ON | o 9nH,v=1-127 | o v=1-127 | |
| | Note OFF | x 8nH,v=64 | x | |
| After Touch | Key's | x | x | |
| | Ch's | x | x | |
| Pitch Bender | | x | x | |
| Control Change | | x | x | |
| Prog Change | | x | x | |
| | True # | XXXXXXXXXXXXXX | x | |
| System Exclusive | | o | o X2 | Pattern, Song |
| System Common | Song Pos | x | o | |
| | Song Sel | o 0 - 9 | o 0 - 9 | |
| | Tune | x | x | |
| System Real Time | Clock | o | o (MIDI mode) | |
| | Commands | o | o | |
| Aux Mes- sages | Local ON/OFF | x | x | |
| | All Notes OFF | x | x | |
| | Active Sense | x | x | |
| | Reset | x | x | |

Notes: When ECHO BACK switch is on, all messages except System Exclusive are bypassed to MIDI out.
X1 = When CH message switch is on, note number 36 - 99 which assigned to each instrument are recognized or transmitted.
X2 = When BULK RECEIVE is ready, Sys Ex messages are recognized.

Mode 1 : OMNI ON, POLY  Mode 2 : OMNI ON, MONO  o : Yes
Mode 3 : OMNI OFF, POLY  Mode 4 : OMNI OFF, MONO  x : No

# ■LSI DATA TABLE（LSI端子機能表）

## ● YM2154 (IT215400) RYP4

| PIN NO. | NAME | I/O | FUNCTION | PIN NO. | NAME | I/O | FUNCTION |
|---|---|---|---|---|---|---|---|
| 1 | Vss | I | Digital ground | 34 | CT1/ SH3 | O | CT1/LED control SH3/Sample and hold |
| 2 | $\overline{INT}$ | O | Interrupt request | | | | |
| 3 | S2 | M | Exponent Output to DAC | 35 | SHR/ SH2 | O | SHR/Sample and hold SH2/ " |
| 4 | S1 | O | | | | | |
| 5 | S0 | O | | 36 | SHL/ SH1 | O | SHL/ " S SH1/ " |
| 6 | B9 | O | Mantissa Output to DAC | 37 | $\overline{CTO}$ | O | LED control |
| 7 | B8 | O | | 38 | $\overline{RD}$ | I | Read Enable |
| 8 | B7 | O | | 39 | $\overline{WR}$ | I | Write Enable |
| 9 | B6 | O | | 40 | $\overline{CS}$ | I | Chip select |
| 10 | B5 | O | | 41 | A0 | I | Address bus |
| 11 | B4 | O | | 42 | A1 | I | |
| 12 | B3 | O | | 43 | A2 | I | |
| 13 | B2 | O | | 44 | A3 | I | |
| 14 | B1 | O | | 45 | A4 | I | |
| 15 | $\phi$B/BO0 | O | $\phi$B/Clock for DAC BO/Maintissa (LSB) | 46 | A5 | I | |
| 16 | SD | O | Serial data output | 47 | A6 | I | |
| 17 | Vss | I | Digital ground | 48 | D0 | I/O | Data bus |
| 18 | VREF | I | Reference voltage for ADC | 49 | D1 | I/O | |
| 19 | VDD2 | I | Analog DC supply | 50 | D2 | I/O | |
| 20 | VGND | I | Analog ground | 51 | D3 | I/O | |
| 21 | AN1 | I | Analog data in | 52 | D4 | I/O | |
| 22 | AN2 | I | | 53 | D5 | I/O | |
| 23 | AN3 | I | | 54 | D6 | I/O | |
| 24 | AN4 | I | | 55 | D7 | I/O | |
| 25 | AN5 | I | | 56 | RDA2 | I | ROM data 2 (ch 7 ~ 12) |
| 26 | AN6 | I | | 57 | RDA1 | I | " 1 (ch 1 ~ 6) |
| 27 | AN7 | I | | 58 | RSYNC | O | ROM data syncro pulse |
| 28 | AN8 | I | | 59 | RAD2 | O | ROM address 2 (ch7 ~ 12) |
| 29 | AN9 | I | | 60 | RAD1 | O | " 1 (ch1 ~ 6) |
| 30 | AN10 | I | | 61 | VDD | I | Digital DC supply (+5V) |
| 31 | $\overline{IC}$ | I | Initial clear | 62 | $\phi$1 OUT | O | ROM CLOCK |
| 32 | $\overline{CT3}$/ ST | O | CT3/LED control ST/Strobe DAC data | 64 | ]M1 | O | Master clock pulse |
| 33 | $\overline{CT2}$/ SH4 | O | CT2/LED control SH4/Sample and hold | 64 | $\phi$M1 | O | " |

## ● YM3012 (IT301200) DAC (2-Channel serial input Floating D/A Converter)

| PIN NO. | NAME | I/O | FUNCTION | PIN NO. | NAME | I/O | FUNCTION |
|---|---|---|---|---|---|---|---|
| 1 | VDD | I | DC supply (+5V) | 9 | CH1 | O | Sample and hold analog SW output (Ch1) |
| 2 | CLOCK | I | Timing clock | 10 | CH2 | O | Sample and hold analog SW output (Ch2) |
| 3 | D.GND | I | Digital Ground | 11 | COM | I | Ch1 Ch2 analog SW common input |
| 4 | SD | I | Serial data input | 12 | AOUT | O | Analog output to Buffer AMP |
| 5 | SAM2 | I | Sample and hold (ch2) | 13 | MP | I | Middle point 1/2 VDD Bias |
| 6 | SAM1 | I | Sample and hold (ch1) | 14 | BC | I | Bias compensation |
| 7 | $\overline{ICL}$ | I | Initial clear | 15 | RB | O | Bias-R |
| 8 | A.GND | I | Analog Ground | 16 | A.GND | I | Analog ground |

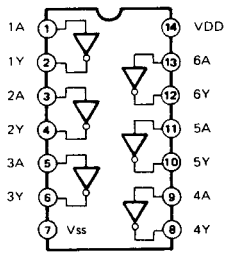
## ● HD6303RP (IG093500) Central Processing Unit

| Pin No. | Name | I/O | Function | Pin No. | Name | I/O | Function |
|---|---|---|---|---|---|---|---|
| 1 | Vss | | Ground | 21 | Vcc | | +5V |
| 2 | XTAL | I | Clock | 22 | A15 | | Address bus |
| 3 | EXTAL | I | | 23 | A14 | | |
| 4 | $\overline{NMI}$ | I | Non-maskable Interrupt | 24 | A13 | | |
| 5 | $\overline{IRQ1}$ | I | Interrupt Request | 25 | A12 | | |
| 6 | $\overline{RESET}$ | I | Reset | 26 | A11 | | |
| 7 | $\overline{STBY}$ | I | Stand-by mode Signal | 27 | A10 | | |
| 8 | P20 | | Port | 28 | A9 | | |
| 9 | P21 | | | 29 | A8 | | |
| 10 | P22 | | | 30 | D7/A7 | | (Data bus /) Address bus |
| 11 | P23 | | | 31 | D6/A6 | | |
| 12 | P24 | | | 32 | D5/A5 | | |
| 13 | A0/P10 | | Address bus (/ Port) | 33 | D4/A4 | | |
| 14 | A1/P11 | | | 34 | D3/A3 | | |
| 15 | A2/P12 | | | 35 | D2/A2 | | |
| 16 | A3/P13 | | | 36 | D1/A1 | | |
| 17 | A4/P14 | | | 37 | D0/A0 | | |
| 18 | A5/P15 | | | 38 | R/$\overline{W}$ | | Read/Write control |
| 19 | A6/P16 | | | 39 | AS | | Not used |
| 20 | A7/P17 | | | 40 | E | | |

# ■IC BLOCK DIAGRAM (ICブロック図)

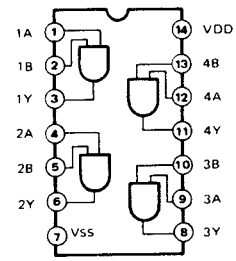
## ● SN74HC04N (IR000450)

Hex Inverter



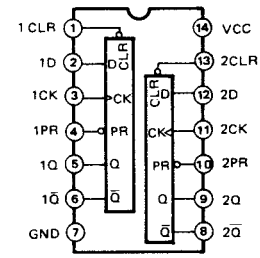

## ● HD74LS09P0 (IG122510)

Quad 2 Input AND




## ● SN74HC74N (IR007450)

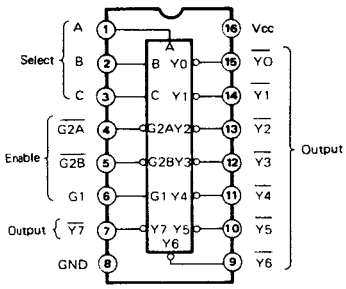
Dual D-Type Flip-Flop




| 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 | $Q_0$ | $\bar{Q}_0$ |

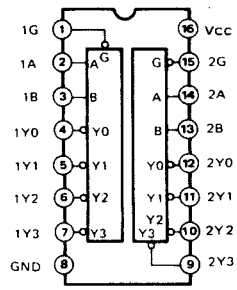
## ● M74LS138 (IG106700)

3 to 8 Demultiplexer



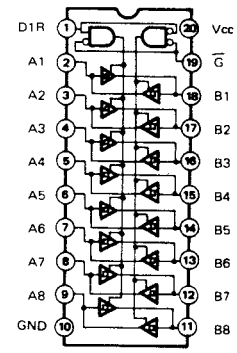

## ● M74LS139P (IG049970)

Dual 2 to 4 Demultiplexer



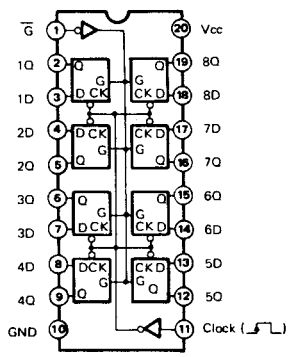

## ● SN74HC245N (IR024550)

Octal 3-State Bus Transceiver



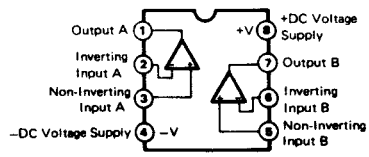

## ● M74LS373P (IG060360)

8-Bit D-Type Flip-Flop



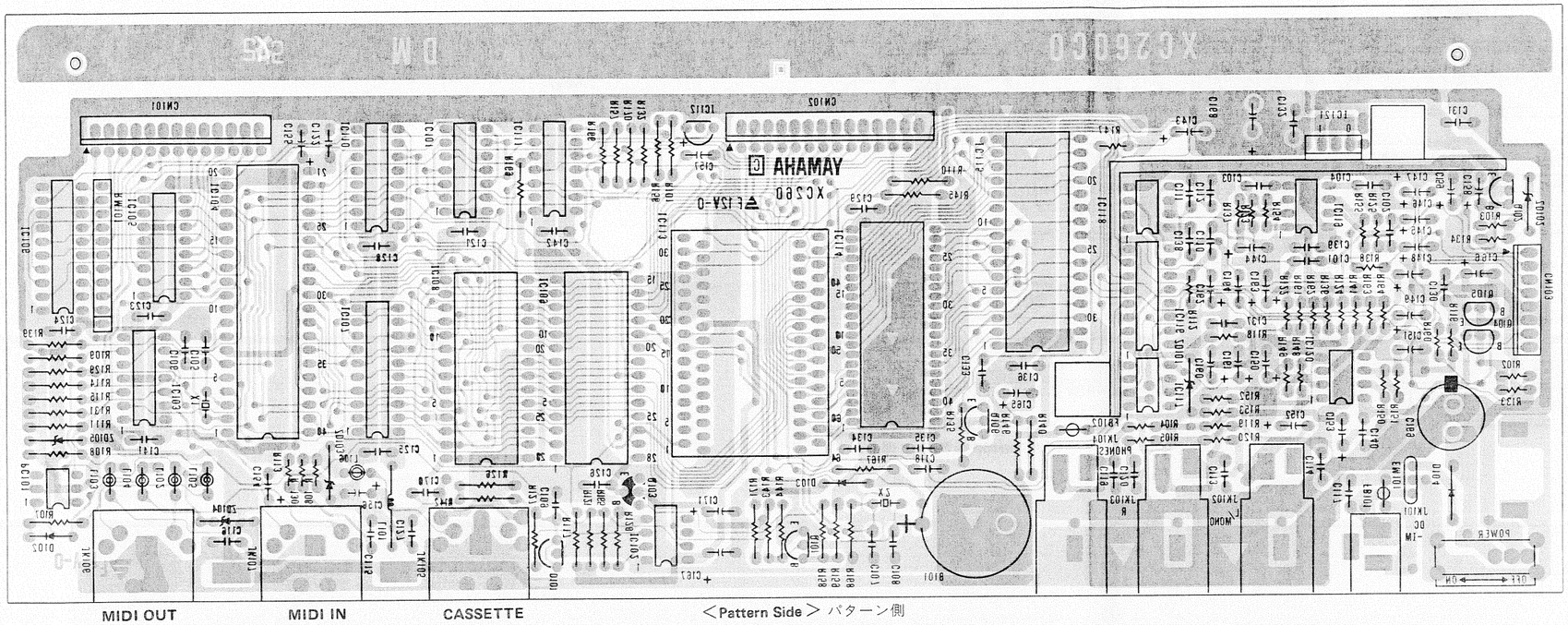

## ● NJM4558 (IG042500)

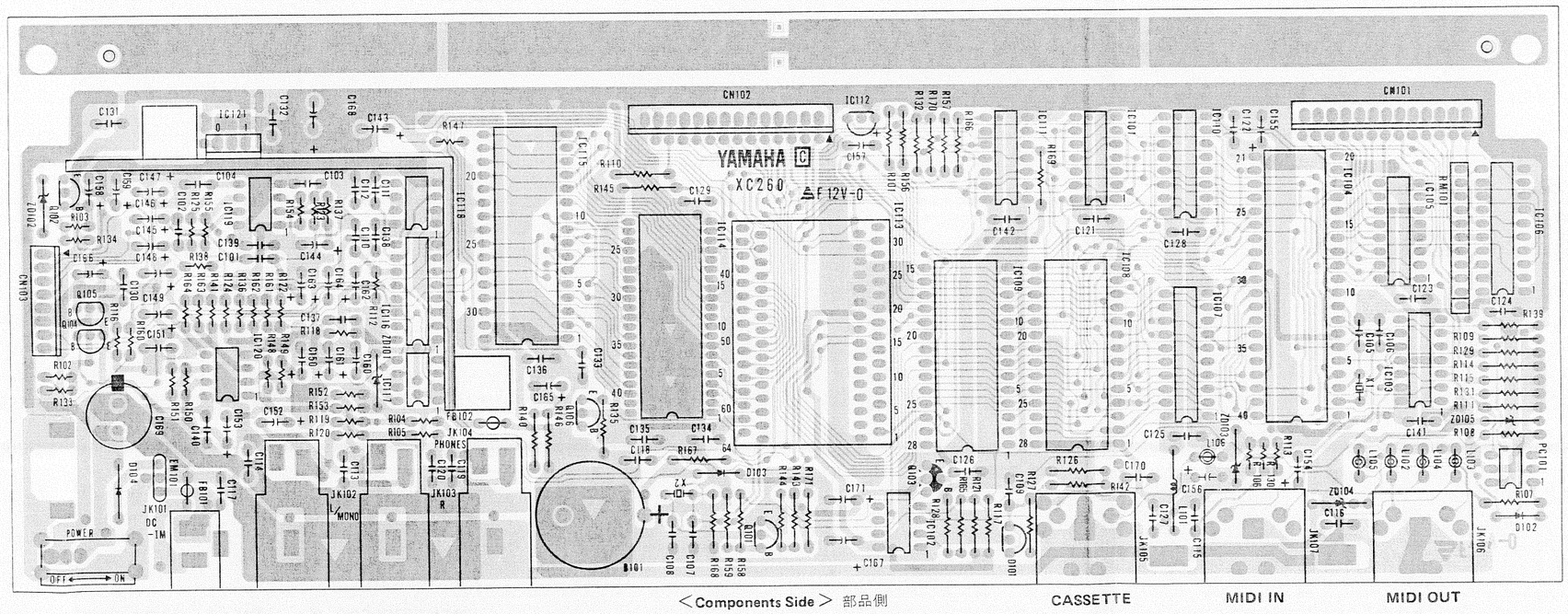
Dual Operational Amplifier



## ■CIRCUIT BOARDS（シート基板図）

### ●DM Circuit Board




Notes)

1. Circuit Board: XC260B0

2. IC
   - IC101: 74HC74 (IR007450) DFF
   - 102: IR9311 (IG134900) COMPARATOR
   - 103: 74LS09 (IG122510) AND
   - 104: HD6303RP (IG093500) 8 BIT CPU
   - 105: 74LS138 (IG106700) DECODER
   - 106: 74HC245 (IR024550) TRANSCEIVER
   - 107: 74LS373 (IR060360) D LATCH
   - 108: 27C256-25 (XC429002) EP ROM
   - 109: TC5564PL-15 (XB013001) SRAM
   - 110: 74LS139 (IG049970) DECODER
   - 111: 74HC04 (IR000450) INVERTER
   - 112: PSTS18B-2 (IG116200) RESEET
   - 113: YM2154 (IT215400) RYP4
   - 114: TC17G008AN (XB811001)
   - 115: TC532000P-7885 (XC258001) ROM
   - 116: YM3012 (IT301200) SUX
   - 117～120: NJM4556 (IG042500) OP AMP.
   - 121: μPC7305 (IG03350) REGULATER

3. Transistor
   - Q101, 102, 104 ～106: 2SC1815 (O, Y)
   - 103: 2SA950 (O, Y)

4. Diode
   - D101: MC931
   - 102, 103: 1SS133
   - 104: 10E-1
   - 201～220: DAP201

5. Zener Diode
   - ZD101, 103, 104: RDS 1EB2
   - 102: RD9 1EB3
   - 105: RD6 2EB2

6. Photo Coupller
   - PC101: PC900

7. Resonator
   - X1: Cerarоc 4.00MHz
   - 2: 2.70MHz

8. Lithium Battery
   - B101: CR2032

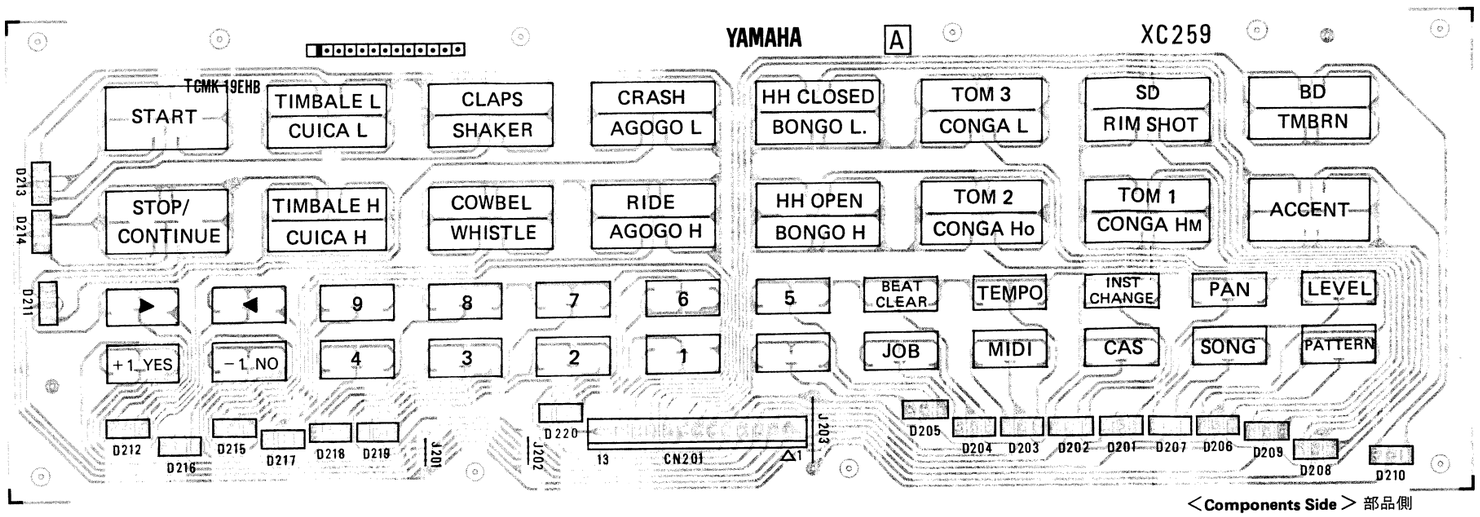
9. Ferrite Beads
   - FB101, 102: BL02RN1-R62

10. EMI Filter, Coil
    - EMI101: DSS310-55D223S
    - L101: Choke Coil 68μH
    - 102～105: FL Coil

11. Resistor Array
    - RM101: RMNG10-472/103J

RX17

## ● PN Circuit Board

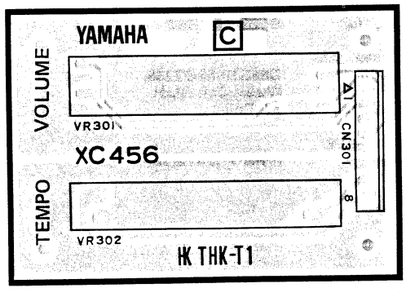



＜**Components Side**＞ 部品側

**Notes)**

1. Circuit Board: XC259A0
2. Diode
   D201 ～ 220: DAP201, MC911

## ● VR Circuit Board




＜**Components Side**＞ 部品側

**Notes)**

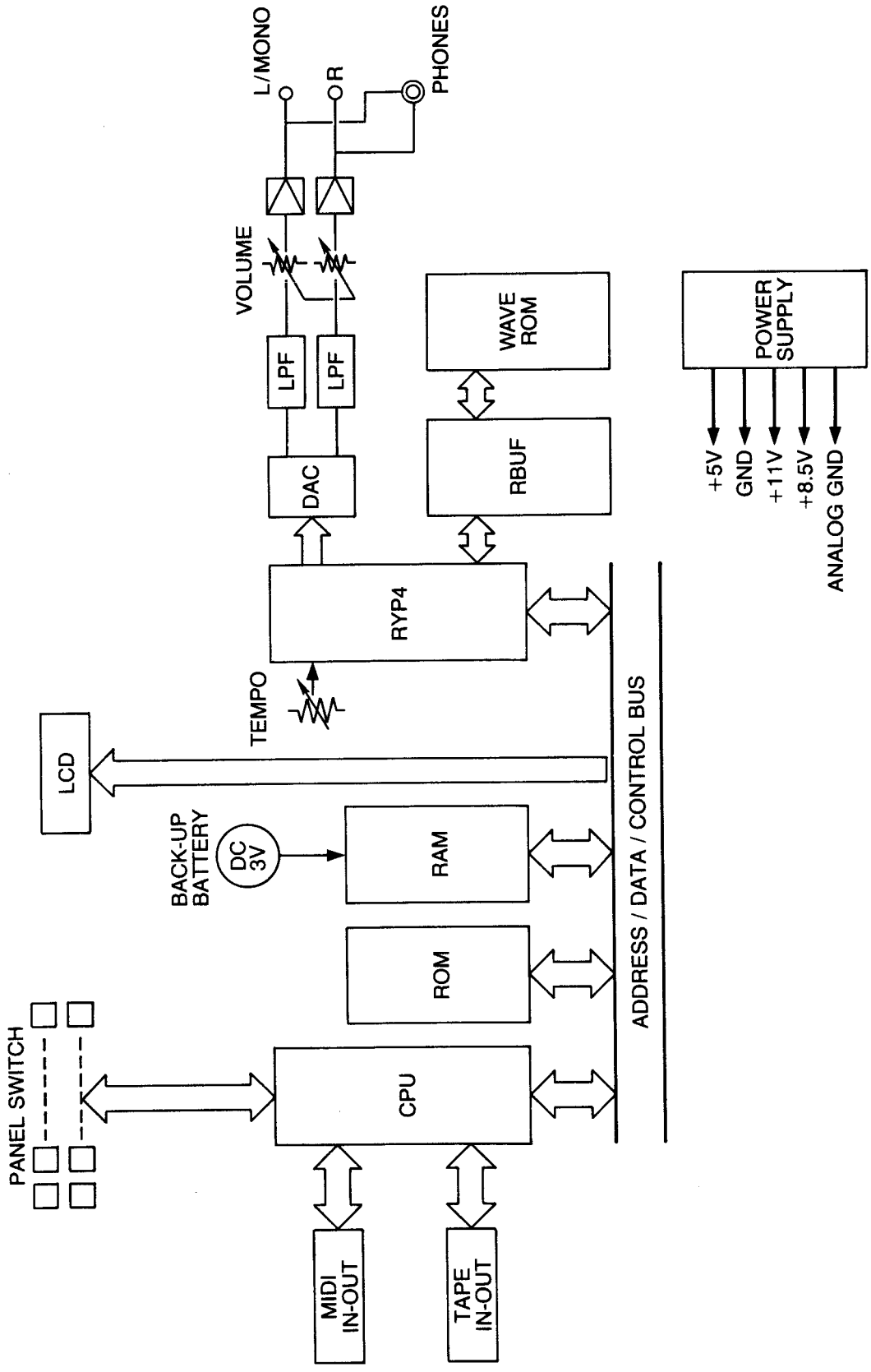
1. Circuit Board: XC456B0
2. Slild VR
   VR302: VC19530
   VR302: VC65880





3NA-VC79520-⚠1 : PN Circuit Board
3NA-VC99960 ⚠1 : VR Circuit Board

## ■BLOCK DIAGRAM（ブロックダイアグラム）



# RX17 OVERALL CIRCUIT DIAGRM

DM

IC101 IC102 IC103 3/4 IC103 4/4 IC103 2/4 IC103 1/4 IC103 3/6 IC103 6/6 IC103 2/6 IC103 1/6 IC103
IC104 HD6303RP (40-PIN) CPU
IC105 74LS138 IC106 TRANSCEIVER IC107 74LS373 LATCH
IC108 27C256-25 ROM IC109 TC5564PL RAM
IC110 74LS139 IC111 4/6 IC111 5/6 IC112 IC121
PC101 RM101 4.7Kx5 10Kx5
JK105 TAPE JK107 MIDI-IN JK106 MIDI-OUT JK101 DC IN
LCD POWER
(CN101-1) ... (CN101-13) (CN201-1) ... (CN201-13) (CN102-1) ... (CN102-14)

PN

| | | | | |
|---|---|---|---|---|
| 9 | 4 | 3 | 2 | 1 |
| D201 | D202 | D203 | D204 | D205 |
| → | ← | 8 | 7 | 6 |
| RIDE AGOGO H | COWBELL WHISTLE | CRASH AGOGO L | CLAPS SHAKER | START |
| D206 | D207 | D208 | D209 | D210 |
| +1/YES | −1/NO | TIMBALE L CUICA L | TIMBALE H CUICA H | STOP/ CONTINUE |
| TOM 1 CONGA HM | LEVEL | BD TAMBOURIN | ACCENT | PAN |
| D211 | D212 | D213 | D214 | D215 |
| HH CLOSED BONGO L | TOM 2 CONGA HO | SD RIM | TOM3 CONGA L | HH OPEN BONGO L |
| PATTERN | INST CHANGE | TEMPO | BEAT CLEAR | 0 |
| D216 | D217 | D218 | D219 | D220 |
| SONG | CASSETTE | MIDI | JOB | 5 |

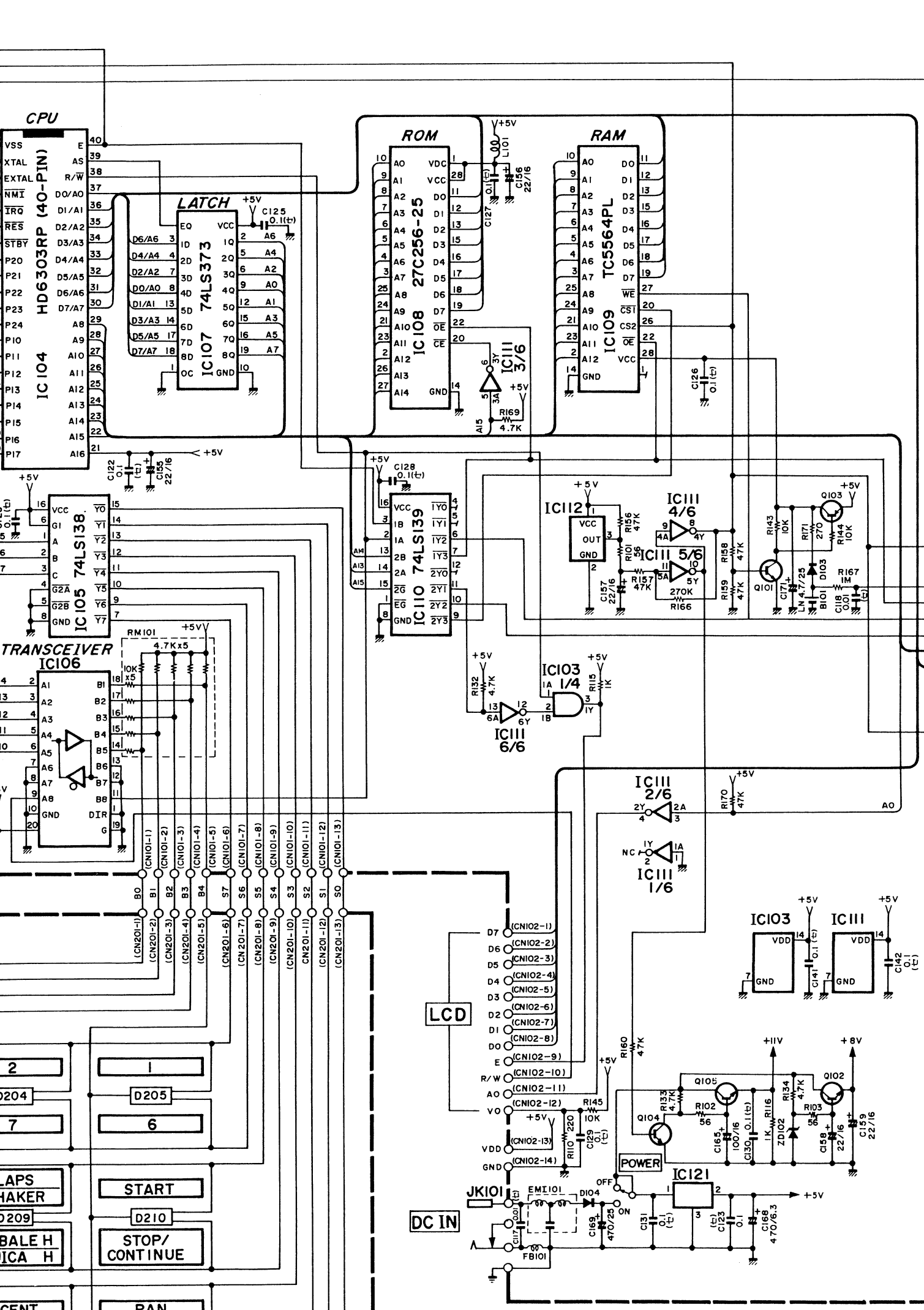
D NO.

Notes: 1. IC

| | | | |
|---|---|---|---|
| IC101: | 74HC74 (IR007450) DFF | 117~20: | NJ |
| 102: | IR9311 (IG134900) COMP. | 121: | μP RE |
| 103: | 74LS09 (IG122510) AND | | |
| 104: | HD6303RP (IG093500) CPU | 2. Transistor | |
| 105: | 74LS138 (IG106700) DECODER | Q1,2,4~6: | 2S |
| 106: | 74HC245 (IR024550) TRANS. | 3: | 2S |
| 107: | 74LS373 (IG060360) LATCH | | |
| 108: | 27C256-25 (XC429003) ROM | 3. Diode | |
| 109: | TC5564-15 (XB013001) RAM | D1: | MC |
| 110: | 74LS139 (IG049970) DECODER | 2,3: | IS |
| 111: | 74HC04 (IR000450) INVERTER | 4: | 10 |
| 112: | PST518B-2 (IG116200) RESET | 201~220: | DA |
| 113: | YM2154 (IT215400) RYP4 | | |
| 114: | TC17G008 (XB811001) RBUF | 4. Zener Diode | |
| 115: | TC532000P (XC258001) WAVE ROM | ZD 1~4: | RD |
| 116: | YM3012 (IT301200) DAC | 2: | RD |

RX17

# DIAGRM




Notes: 1. IC

| | | | |
|---|---|---|---|
| IC101: | 74HC74 (IR007450) DFF | 117~20: | NJM4556 (IG042500) OP AMP |
| 102: | IR9311 (IG134900) COMP. | 121: | μpc7805H (IG033350) REGULATOR |
| 103: | 74LS09 (IG122510) AND | | |
| 104: | HD6303RP (IG093500) CPU | 2. Transistor | |
| 105: | 74LS138 (IG106700) DECODER | Q1,2,4~6: | 2SC1815 (O,Y) |
| 106: | 74HC245 (IR024550) TRANS. | 3: | 2SA950 (O,Y) |
| 107: | 74LS373 (IG060360) LATCH | | |
| 108: | 27C256-25 (XC429003) ROM | 3. Diode | |
| 109: | TC5564-15 (XB013001) RAM | D1: | MC931 |
| 110: | 74LS139 (IG049970) DECODER | 2,3: | 1SS176 |
| 111: | 74HC04 (IR000450) INVERTER | 4: | 10E-1 |
| 112: | PST518B-2 (IG116200) RESET | 201~220: | DAP201 |
| 113: | YM2154 (IT215400) RYP4 | | |
| 114: | TC17G008 (XB811001) RBUF | 4. Zener Diode | |
| 115: | TC532000P (XC258001) WAVE ROM | ZD1~4: | RD5.1EB2 |
| 116: | YM3012 (IT301200) DAC | 2: | RD9.1EB3 |

| | |
|---|---|
| ZD5: | RD6.2EB2 |

5. Resonator

| | |
|---|---|
| X1: | Ceramic Resonator 4.00MHz |
| X2: | Ceramic Resonator 2.70MHz |

6. Photo coupller

| | |
|---|---|
| PC1: | PC900 |

7. Lithium battery

| | |
|---|---|
| B1: | CR 2332 |

8. Ferite bead, EMI filter, coil

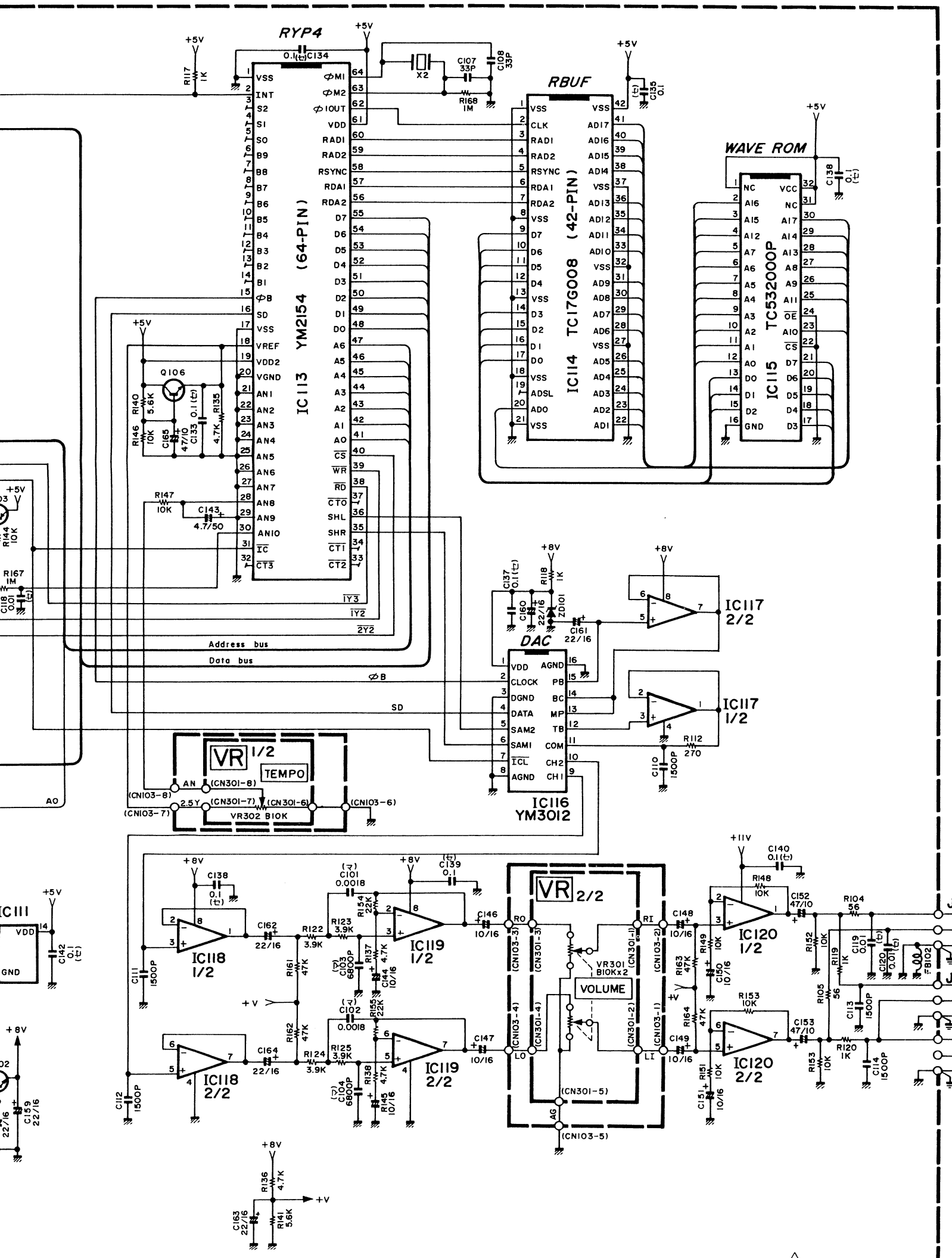
| | |
|---|---|
| F1,2: | BL02RN1-R62 |
| EMI1: | DSS310-55D223S |
| L1: | Choke coil 68μH |
| L101~106: | FL Coil |

9. Capacito
Marked (

10. Resistor
RM1:

11. CPU Ac

| Addre |
|---|
| $ 20 |
| $ 40 |
| $ 60 |
| $ 80 |




KEC 91269-65 ⚠2

14556 (IG042500)OP AMP
7805H (IG033350)
GULATOR
1815 (O,Y)
950 (O,Y)
931
176
-1
201
.IEB2
.IEB3

5. Resonator
   - X1: Ceramic Resonator 4.00MHz
   - X2: Ceramic Resonator 2.70MHz

6. Photo coupller
   - PC1: PC900

7. Lithium battery
   - B1: CR 2332

8. Ferite bead, EMI filter, coil
   - F1,2: BL02RN1-R62
   - EMI1: DSS310-55D223S
   - L1: Choke coil 68μH
   - L101~106: FL Coil

ZD5: RD6.2EB2

9. Capacitor
   - Marked (七): Ceramic Capacitor
   - (マ): Mylar Capacitor
   - LN: Low noise Electrolytic Capacitor

10. Resistor array
    - RM1: RMNG10-472/103J

11. CPU Address map

| Address | Description |
|---|---|
| $ 2000 | LCD |
| $ 4000 | RYP4 |
| $ 6000 | RAM |
| $ 8000 | ROM |

# DIGITAL RHYTHM PROGRAMMER

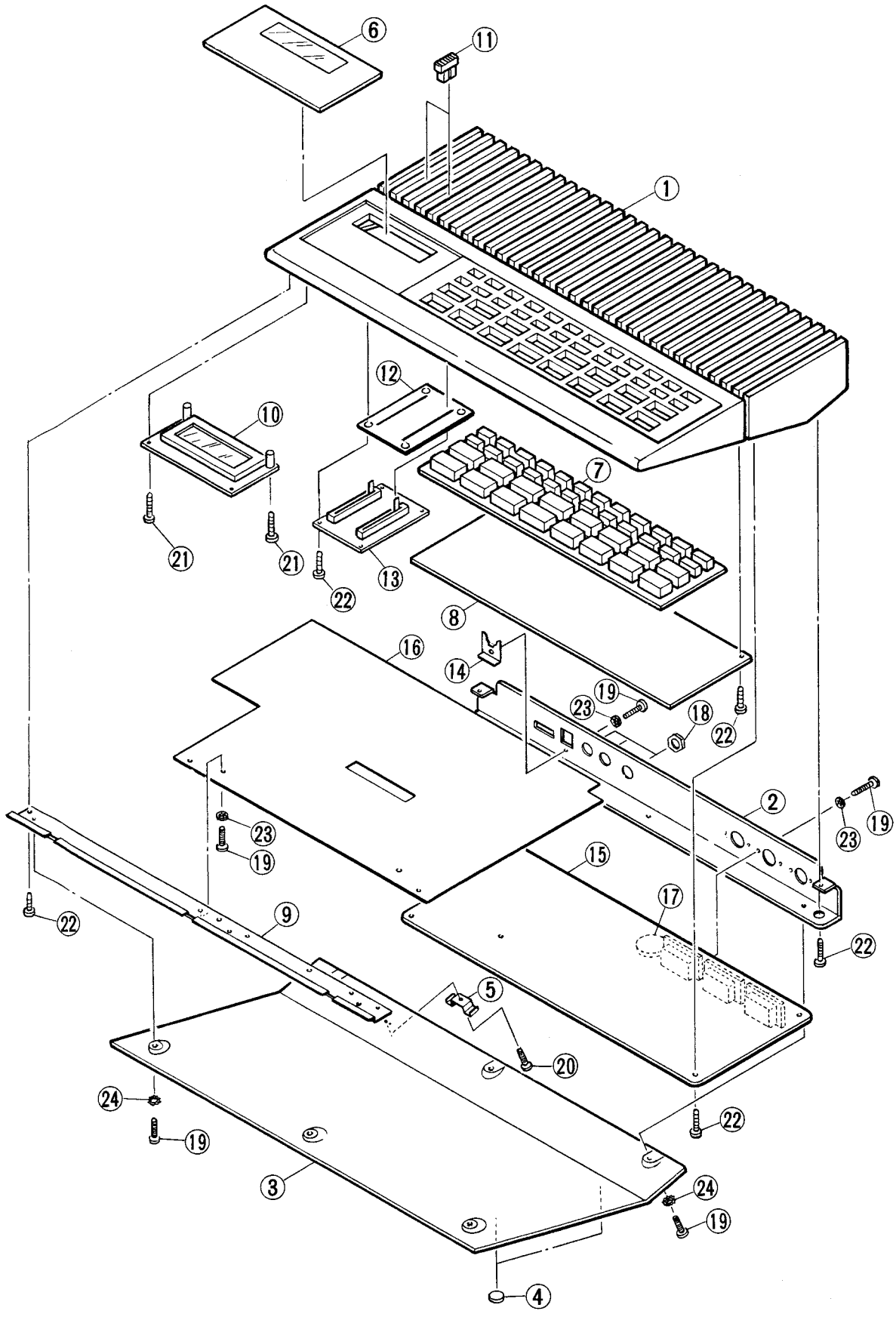
# RX17

# PARTS LIST

Notes DESTINATION ABBREVIATIONS

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

## ■ OVERALL ASSEMBLY（総組立）



## ■ OVERALL ASSEMBLY (総組立)

| | Ref | Part No | Description | | 部品名 | Remarks | ランク |
|---|---|---|---|---|---|---|---|
| * | 1 | VC794500 | Top Cover | | トップカバー | | 08 |
| ** | 2 | VC795600 | Rear Panel | | リアパネル | | 03 |
| * | 3 | VC794400 | Bottom Cover | | ボトムカバー | | 05 |
| | 4 | CB837640 | Foot | | ゴム足 | | 01 |
| | 5 | VC407100 | Column,DC Cord | | DCコードコラム | | 01 |
| * | 6 | VC794700 | Filter,LCD | | LCDフィルター | | 04 |
| ** | 7 | VC795000 | Rubber Contact | | ラバーコンタクト | | 08 |
| ** | 8 | VC795200 | Circuit Board | PN | PNシート | | 09 |
| ** | 9 | VC795400 | Stay | | ステー | | 03 |
| ** | 10 | VC945900 | LCD Display | | LCDディスプレイ | | 13 |
| ** | 11 | VC921500 | Knob | | スライドツマミ | | 01 |
| ** | 12 | VC945800 | Dust Proof Cloth | | 防塵クロス | | 01 |
| ** | 13 | VC999600 | Circuit Board | VR | VRシート | | 06 |
| | 14 | AA834380 | Angle Bracket,DC Plug | | DCプラグ固定金具 | | 01 |
| ** | 15 | VC795300 | Circuit Board | DM | DMシート | | 57 |
| ** | 16 | VC795700 | Insulation Sheet | | シールド板 | | 05 |
| | 17 | VB436900 | Lithium Battery | CR2032-P5-2 | リチュウム電池 | | 05 |
| | 18 | LX200060 | Hexagonal Nut | 9.0 FNM33G | 特殊六角ナット | | 01 |
| | 19 | ED330066 | Bind Head Screw | 3.0X6 FCM3BL | バインド小ネジ | PACK | 01 |
| | 20 | ED330086 | Bind Head Screw | 3.0X8 FCM3BL | バインド小ネジ | PACK | 01 |
| | 21 | EI326066 | Bind Tapping Screw | 2.6X6 ZMC2BL | ﾊﾞｲﾝﾄﾞﾀｯﾋﾟﾝｸﾞﾈｼﾞ | PACK | 01 |
| | 22 | EI330066 | Bind Tapping Screw | 3.0X6 FCM3BL | ﾊﾞｲﾝﾄﾞﾀｯﾋﾟﾝｸﾞﾈｼﾞ | PACK | 01 |
| | 23 | EV413036 | Tootehed Lock Washer | A 3.0 FCM3BL | 歯付座金 | PACK | 01 |
| | 24 | EV423036 | Tootehed Lock Washer | B 3.0 ZMC2BL | 歯付座金 | PACK | 01 |

*New Parts (新規部品)

ランク：Japan only

## ■ELECTRICAL PARTS（電気部品）

| | Ref | Part No | Description | | 部品名 | Remarks | ランク |
|---|---|---|---|---|---|---|---|
| * | | VC795300 | Circuit Board | DM | DMシート | | 57 |
| * | | VC795200 | Circuit Board | PN | PNシート | | 09 |
| * | | VC999600 | Circuit Board | VR | VRシート | | 06 |
| * | | VC795300 | Circuit Board | DM | DMシート | | 57 |
| * | | XC429003 | IC | 520V100 | IC | ROM | |
| | | IG042500 | IC | NJM4556 | IC | OP AMP | 04 |
| | | IG033350 | IC | μPC7805H 5V1A | IC | REGULATER | 05 |
| | | IG116200 | IC | PST518B-2 | IC | RESET | 04 |
| | | IG134900 | IC | IR9311 | IC | COMPARATOR | 04 |
| | | IG049970 | IC | M74LS139P | IC | DECODER | 03 |
| | | IG060360 | IC | M74LS373P | IC | D LATCH | 05 |
| | | IG106700 | IC | M74LS138 | IC | DECODER | 03 |
| | | IG122510 | IC | HD74LS09P0 | IC | AND | 03 |
| | | IR000450 | IC | SN74HC04N | IC | INVERTER | 03 |
| | | IR007450 | IC | SN74HC74N | IC | DFF | 04 |
| | | IR024550 | IC | SN74HC245N | IC | TRANSCEIVER | 06 |
| | | IG093500 | IC | HD6303RP | IC | 8BIT CPU | 16 |
| | | XB811001 | IC | TC17G008AN-0013 | IC | | 07 |
| | | XB013001 | IC | TC5564PL15Y | IC | SRAM | 20 |
| * | | XC258001 | IC | TC532000P-7885 | IC | ROM | 11 |
| | | IT215400 | IC | YM2154 | IC | RYP4 | 14 |
| | | IT301200 | IC | YM3012 | IC | SUX DAC | 08 |
| | | IA095010 | Transistor | 2SA950 O,Y | トランジスタ | | 03 |
| | | IC181520 | Transistor | 2SC1815 Y | トランジスタ | | 03 |
| | | IH000590 | Diode | 10E-1 | ダイオード | | 01 |
| | | IF003450 | Diode | 1SS133 | ダイオード | | 01 |
| | | IF001680 | Zener Diode | RD9.1EB3 9.1V | ツェナーダイオード | | 01 |
| | | IF001470 | Zener Diode | RD6.2EB2 6.2V | ツェナーダイオード | | 01 |
| | | IF005700 | Zener Diode | RD5.1EB2 5.1V | ツェナーダイオード | | 01 |
| | | IF005120 | Diode Array | MC931 0.3A X2 | ダイオードアレイ | | 01 |
| | | IK000420 | Photo Coupller | PC-900 | フォトカプラ | | 05 |
| | | FZ004170 | Semiconductive Cera. Cap. | 0.1 16V M | 半導体セラコン | | 01 |
| | | FG213150 | Ceramic Cap. | 1500P 50V K | セラコン（B） | | 01 |
| | | GE300350 | Coil | 68μ LAL04NAK | 空芯コイル | | 01 |
| | | VB835000 | Coil | 20μ L5R200QNT | コイル | | 01 |
| | | GE300600 | Ferrite Bead | BL02RN1-R62 | フェライトビーズ | | 01 |
| | | HZ005000 | Resistor Array | RMNG10-472/103J | 抵抗アレイ | | 02 |
| | | QU004800 | Ceramic Resonator | 4M CSA4.00MG | セラミック振動子 | | 03 |
| | | QU007200 | Ceramic Resonator | 2.7M CSA2.70MG | セラミック振動子 | | 03 |
| | | FI364220 | EMI Filter | DSS310-54D223S | LCフィルターEMI | | 02 |
| | | KA401780 | Slide Switch | HSW0273-01-740 | スライドSW | | 02 |
| | | LB301800 | Phone Jack | HLJ0544 | ホーンジヤック | Monaural | 03 |
| | | LB302070 | Phone Jack | HLJ0544 | ホーンジヤック | Stereo | 03 |
| | | LB500590 | DIN Connecter | 5P TCS4650- | DINコネクタ | | 02 |
| | | LB605820 | DIN Connecter | 8P TCS4680- | DINコネクタ | | 03 |
| | | AA834370 | Holder,Din Socket | | DINソケットホルダ | | 03 |
| | | BA810650 | Heat Sink | | 放熱板 | | 03 |
| * | | VC795200 | Circuit Board | PN | PNシート | | 09 |
| | | IF007740 | Diode Array | DAP201 | ダイオードアレイ | | 01 |
| * | | VC999600 | Circuit Board | VR | VRシート | | 06 |
| | | VC658800 | Slide Pot. | B 10K RS30111A | スライドVR | TEMPO | 03 |
| | | VC195300 | Slide Pot. | B 10KX2 | 二連スライドVR | VOLUME | 03 |
| * | | VC945900 | LCD Display | | LCDディスプレイ | | 13 |
| | | VB436900 | Lithium Battery | CR2032-P5-2 | リチュウム電池 | | 05 |
| | | NP003300 | AC Adaptor | PA-1 | 電源アダプタ | B | 12 |
| | | NP003360 | AC Adaptor | PA-1 | 電源アダプタ | H,D | |
| | | NP003380 | AC Adapter | PA-1 | 電源アダプタ | U,C | |
| | | NP003310 | AC Adaptor | PA-1 | 電源アダプタ | J | 10 |
| | | VA113500 | Cassette Cable | | ケーブル 1.0M | | 07 |

* New Parts（新規部品）

ランク：Japan only