

E-30

INTELLIGENT SYNTHESIZER

SERVICE NOTES

First Edition

SPECIFICATIONS/仕様

- ◎Keyboard 61 Keys velocity sensitive
- ◎Sound Source System LA Digital Synthesis
- ◎Sound Source Total number of Tones : 128
 - Drums : 30 PCM
 - Sound Effects : 30 PCM (+4 Mixtures)
- ◎Music Style Preset: 32 type+ [EASY 8: 8 type] =40 type
 - User Program: 48 type (includes 8 type Factory Preset)
- ◎Composer Record (Punch IN) and Play (six tracks)
 - Song Memory: 3 songs. (1 song: approx. 200 measures)
- ◎Built-in Effects Digital Reverb
 - (8 type: Room 1-2, Hall 1-2, Plate 1-2, Delay 1-2)
- ◎Display 16 characters x 2 lines (LCD back-lit.)
- ◎Built-in Speakers 4 ohm x 2
- ◎Power Amplifier 5W x 2 (stereo)
- ◎Power Consumption 30W
- ◎Dimensions 1023(W) x 105(H) x 330(D) mm
 - 40-1/4(W) x 4-1/8(H) x 13(D) inch
- ◎Weight 10.5 kg/23 lb 2 oz.
- ◎Accessories Music Rest N,002 (PNo.22198641)
 - Music Score Holder N,002 (PNo.22208320)
 - △AC CORD (detachable/着脱式)
 - 100/117V :UL498/3SVT2x18AWG-VII (PNo.13499151RI)
 - 220V :VXII-H03VVH2F-2x0.75-VII (PNo.13449149RI)
 - 240VE :GBBS/13/H05VV-F3G0.75-V2.7 (PNo.13449152RI)
 - 240VA :AUS SAA/3-OD3CCFCx0.75-V2.7 (PNo.13449150RI)
 - Owner's Manual (English/Germany/French) : 26048292
 - Owner's Manual (English/Japanese/Italy) : 26048291
- ◎Options Music Style Card (ROM) : TN-SC1 series
 - Memory Card M-256D/E (RAM)
 - (Battery CR-2016: 12569374)
 - FV-200 (Expression Pedal)

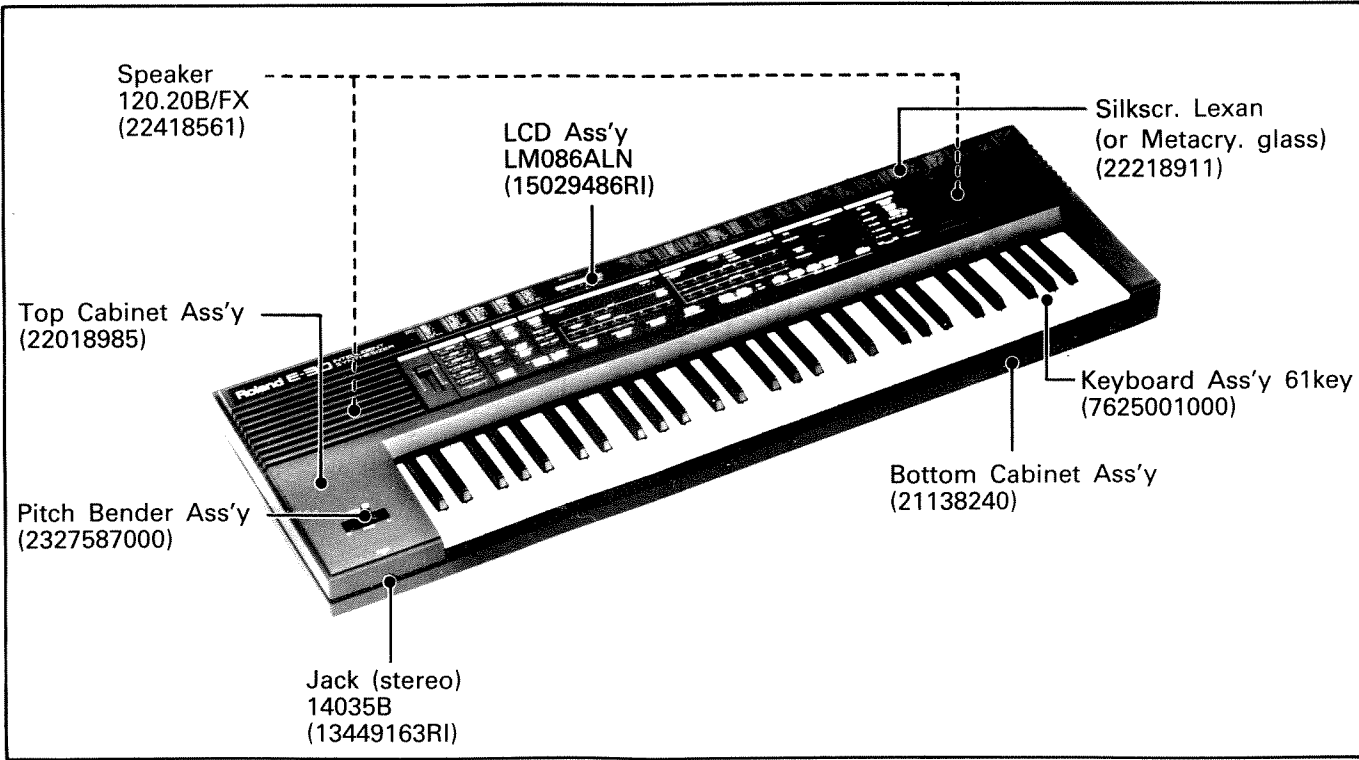
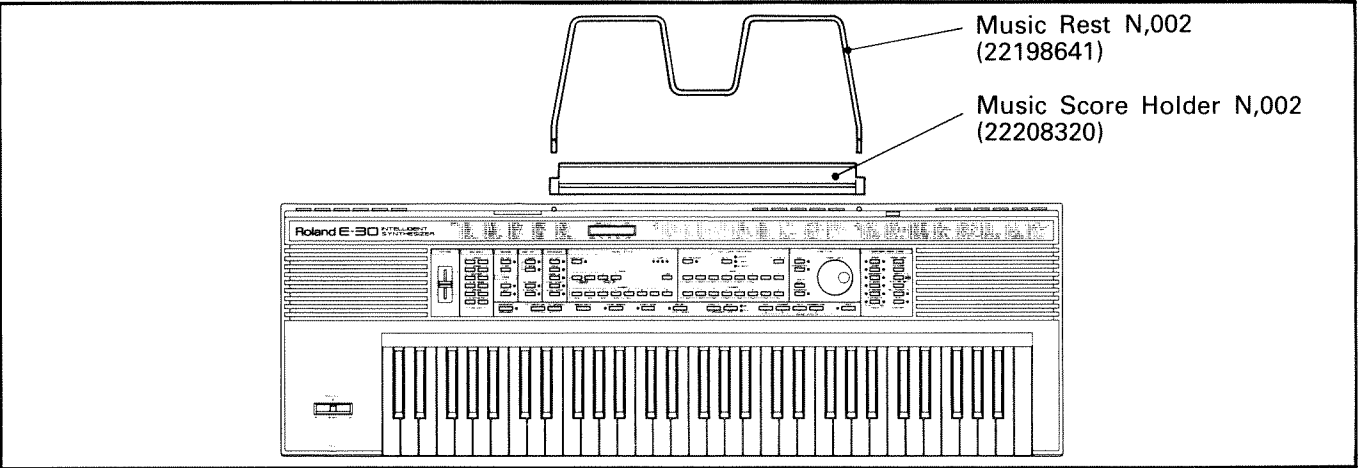
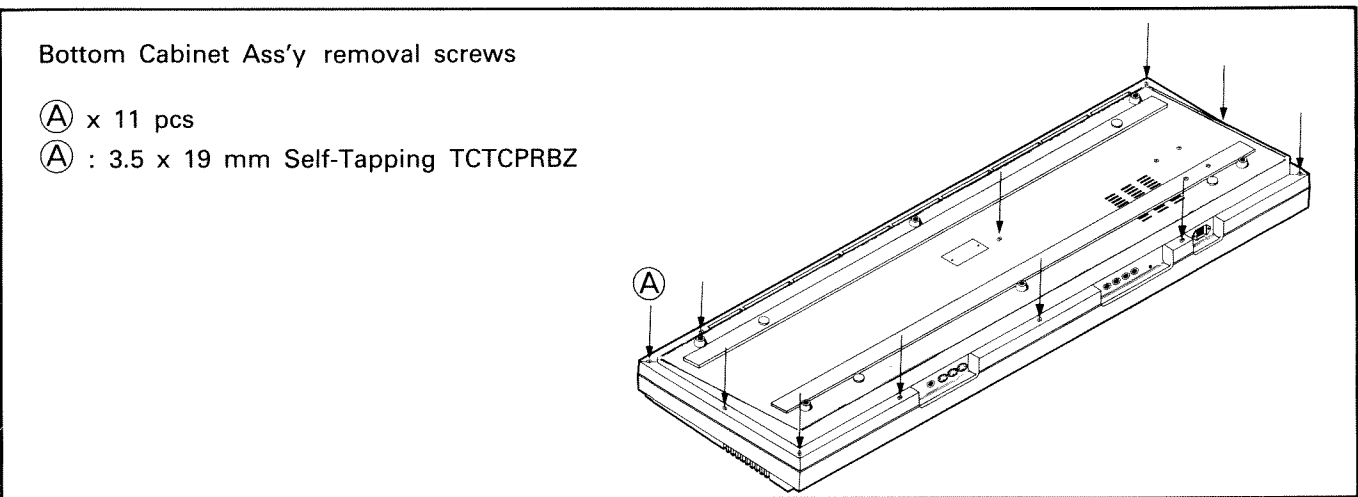


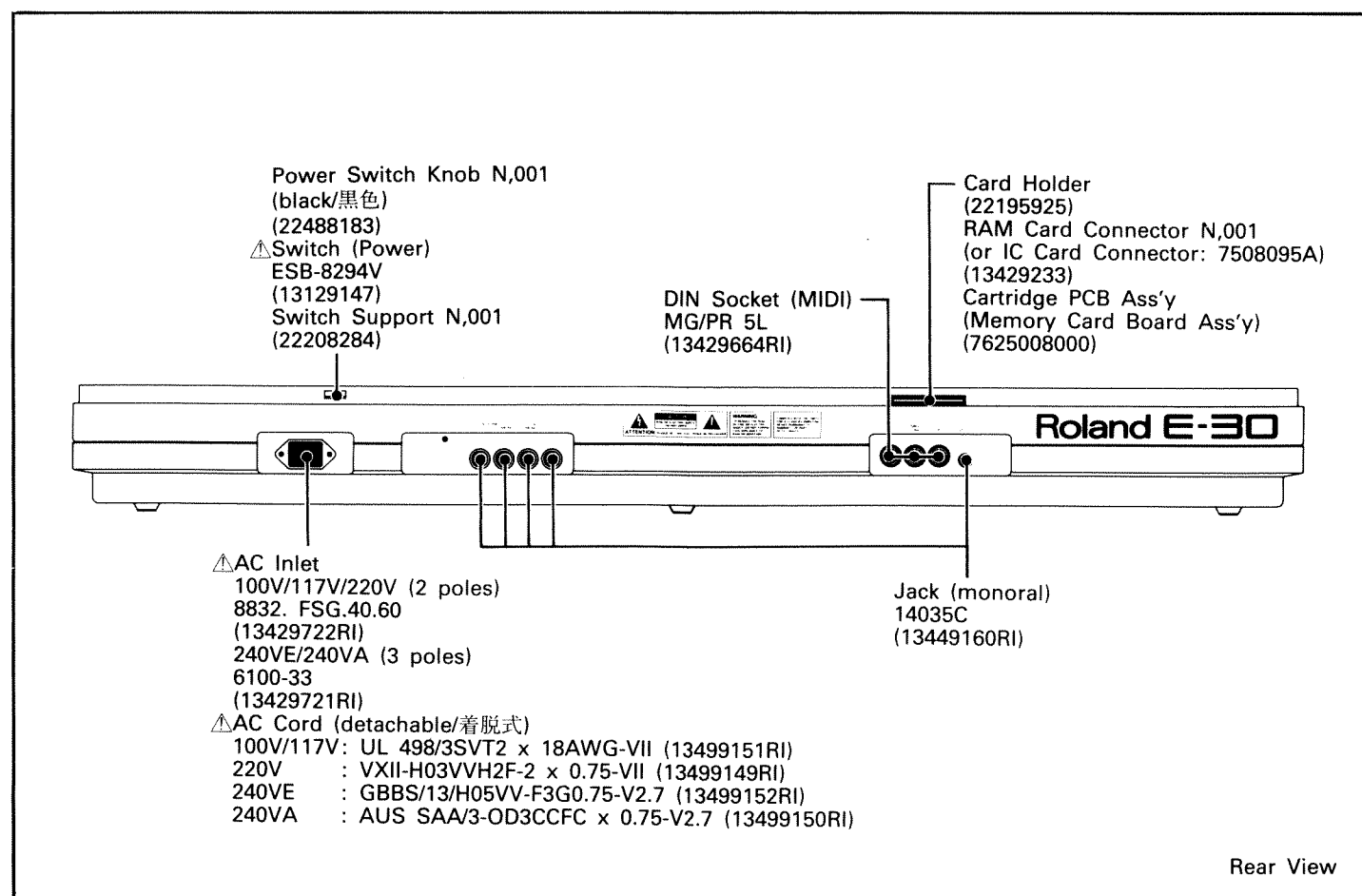
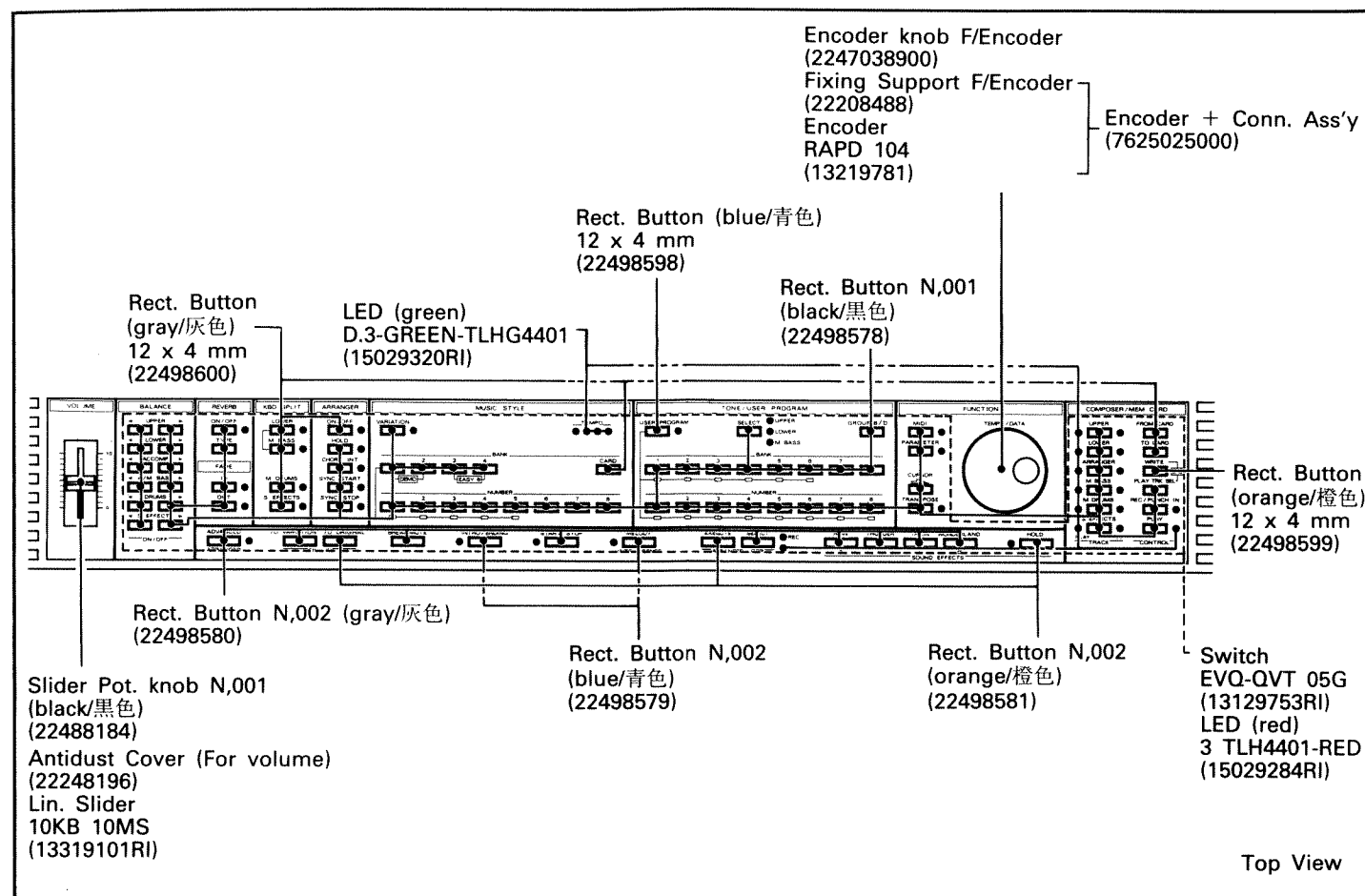
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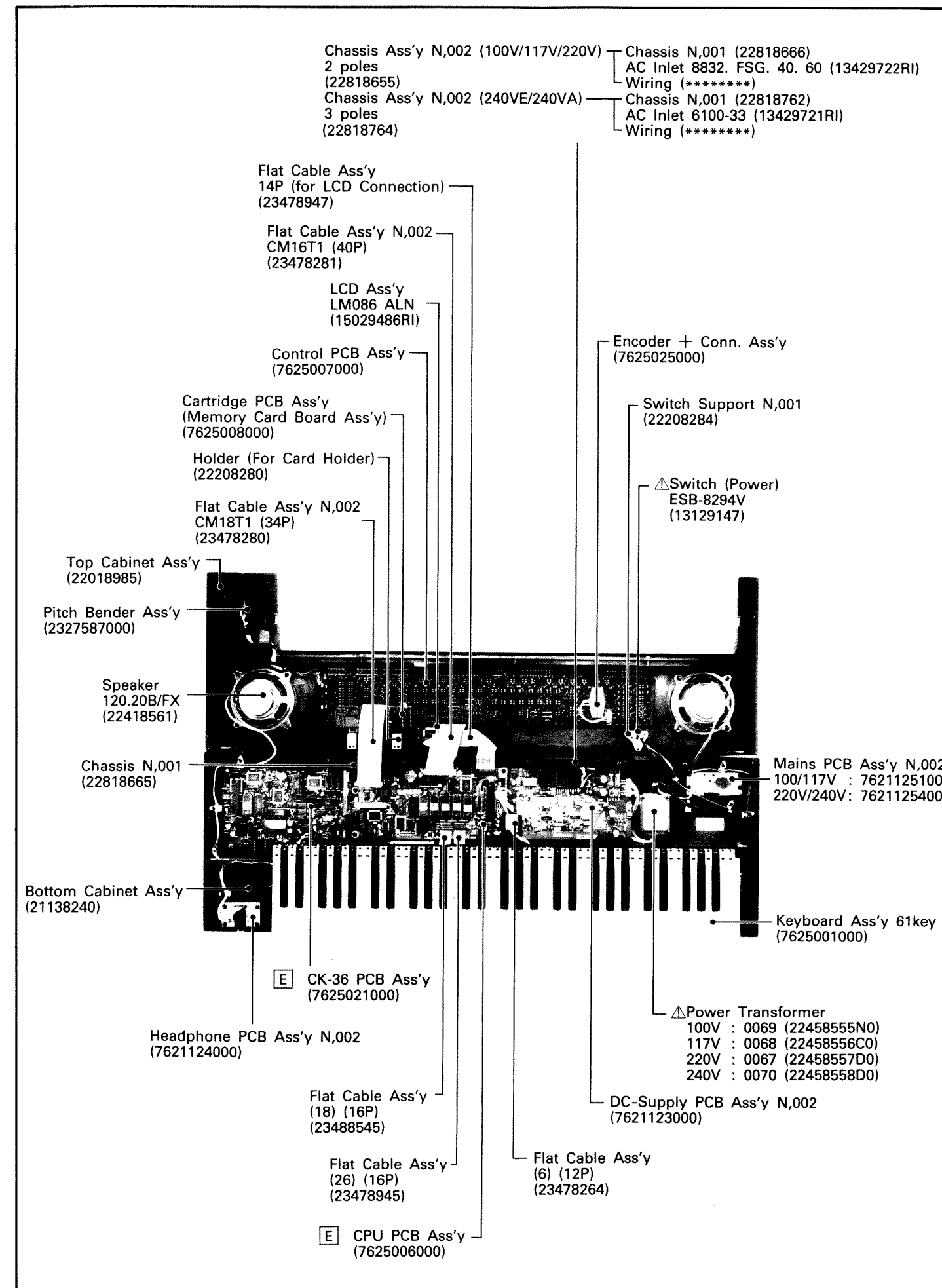


DISASSEMBLY/分解手順

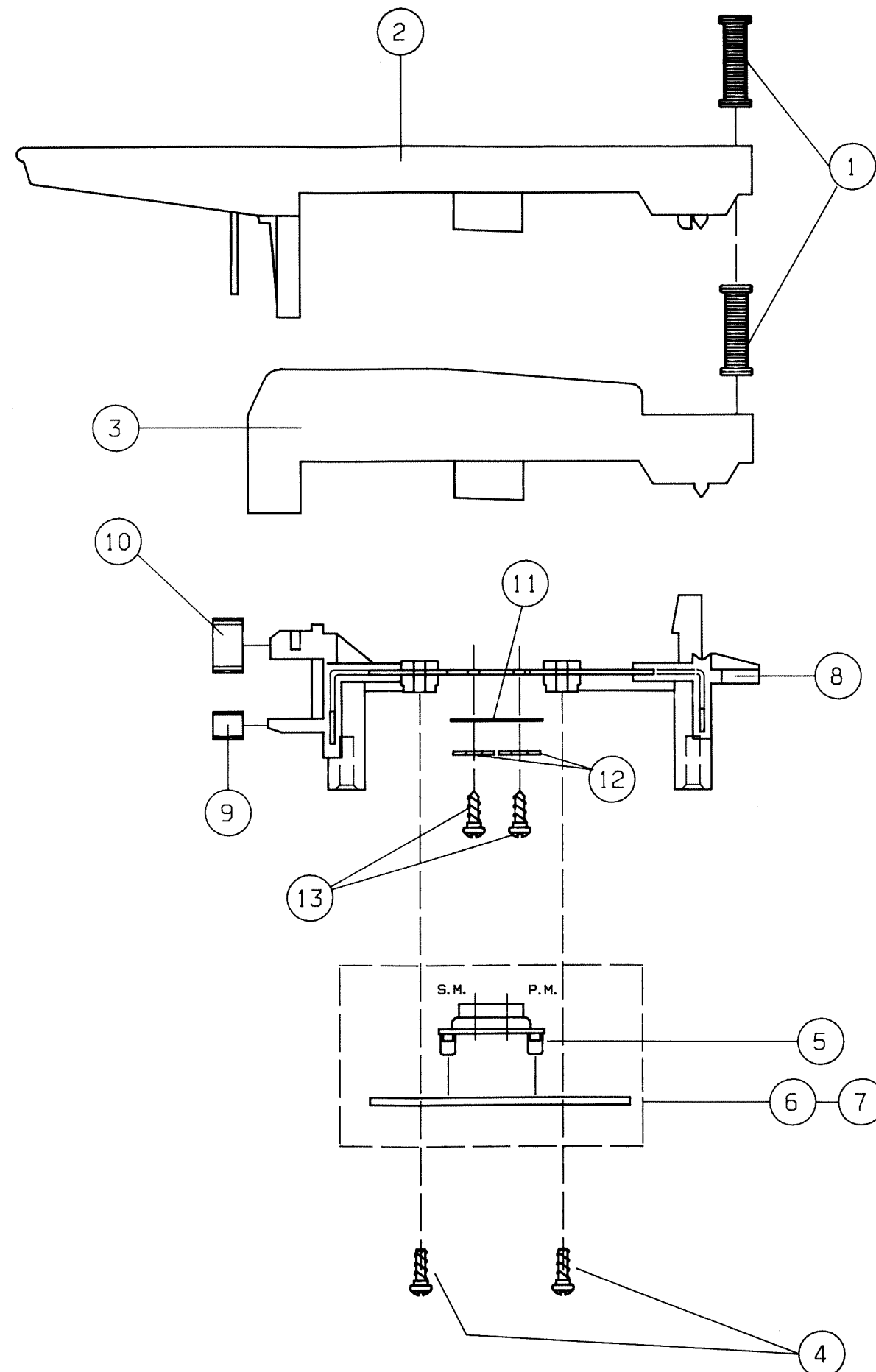




EXPLODED VIEW/分解図



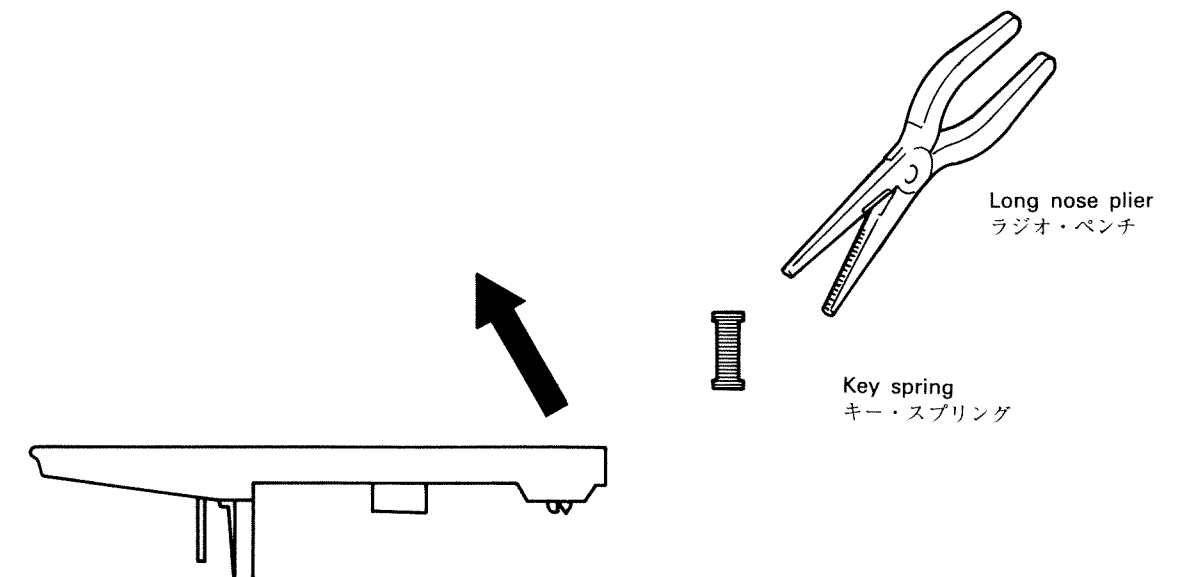
KEYBOARD PARTS LIST



| No. | PART | PART NAME |
|-----|------------|---|
| 1 | 22178233 | Key Spring キー・スプリング |
| 2 | 22578319 | Natural Key C5 (DO) 白鍵 C5 |
| | 22578328 | Natural Key D6 (RE) 白鍵 D6 |
| | 22578329 | Natural Key E7 (MI) 白鍵 E7 |
| | 22578330 | Natural Key F1 (FA) 白鍵 F1 |
| | 22578331 | Natural Key G2 (SOL) 白鍵 G2 |
| | 22578332 | Natural Key A3 (LA) 白鍵 A3 |
| | 22578333 | Natural Key B4 (SI) 白鍵 B4 |
| | 22578334 | Natural Key C8 (DO fin) 白鍵 C8 |
| 3 | 22578335 | Sharp Key 黒鍵 |
| 4 | ***** | 2.9 x 8 mm Self-Tapping Screw TCTC PRBZ タッピングネジ |
| 5 | 22185238 | Rubber Contact (12P) ゴム接片 (12P) |
| | 22185239 | Rubber Contact (13P) ゴム接片 (13P) |
| 6 | 7624505000 | Contact PCB Ass'y L (Contact Board L) w/ Rubber Contact コンタクト PCB 基板(左) (ゴム接片を含む) |
| 7 | 7624504000 | Contact PCB Ass'y R (Contact Board R) w/ Rubber Contact コンタクト PCB 基板(右) (ゴム接片を含む) |
| 8 | 22818761 | Prastic Chassis プラスチック・シャーシ |
| 9 | 22158793 | Guide Bushing ガイド・ブッシュ |
| 10 | 22158792 | Guide Bushing ガイド・ブッシュ |
| 11 | 22178234 | Copper Strip 銅片 |
| 12 | ***** | Flat Washer 平ワッシャ |
| 13 | ***** | 2.9 x 6 mm Self-Tapping Screw TCTC タッピングネジ |

KEY DISASSEMBLY/鍵盤分解手順

1. Remove the key spring from key to be removed.
2. Remove the key by lifting one end of the key as shown below.



PARTS LIST

SAFETY PRECAUTIONS

The parts marked Δ have safety-related characteristics. Use only listed parts for replacement.

安全上の注意：
 Δ が付いている部品は、安全上特別な規格でつくられたものです。
交換の際は、指定された部品番号以外の部品は使わないようにして下さい。

CONSIDERATIONS ON PARTS ORDERING

When ordering any parts listed in the parts list, please specify the following items in the order sheet.

| QTY | PART NUMBER | DESCRIPTION | MODEL NUMBER |
|--------|-------------|---------------|--------------|
| Ex. 10 | 22575241 | Sharp Key | C-20/50 |
| 15 | 2247017300 | Knob (orange) | DAC-15D |

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

パーツ発注に関するお願い

オーダーシートには、必ず下記の4項目は正確に記入して下さい。(例外は除く)

| 必要数 | パーツナンバー | 品名 | 使用機種 |
|-------|------------|---------------|---------|
| 例) 10 | 22575241 | Sharp Key | C-20/50 |
| 15 | 2247017300 | Knob (orange) | DAC-15D |

もし記入漏れ、誤記等がある場合、必要部品が発送出来なかったり、大幅な遅れの原因になります。御協力をお願いします。

| CASING ケース | | | | | | |
|---|--|--|---|--|--|--|
| 22018985 | Top Cabinet Ass'y | | | | | |
| 21138240 | Bottom Cabinet Ass'y | | | | | |
| 22218911 | Silksr. Lexan (or Metacry.glass) | | | | | |
| 22195925 | Card Holder | | | | | |
| CHASSIS シャーシ | | | | | | |
| 22818665 | Chassis N,001 (For CPU PCB Ass'y) | | | | | |
| 22818655 | Chassis Ass'y N,002 (For DC-Supply PCB Ass'y) 2 poles 100V/117V/220V Chassis Ass'y N,002 (100V/117V/220V) consists of the following parts. Chassis Ass'y N,002 (100V/117V/220V)は、下記の部品から構成されます。 22818666 Chassis N,001 (100V/117V/220V) Δ 13429722RI AC Inlet 8832. FSG. 40. 60 2 poles ***** Wiring | | | | | |
| 22818764 | Chassis Ass'y N,002 (For DC-Supply PCB Ass'y) 3 poles 240VE/240VA Chassis Ass'y N,002 (240VE/240VA) consists of the following parts. Chassis Ass'y N,002 (240VE/240VA)は、下記の部品から構成されます。 22818762 Chassis N,001 (240VE/240VA) Δ 13429721RI AC Inlet 6100-33 3 poles ***** Wiring | | | | | |
| 22208280 | Holder (For Card Holder) | | | | | |
| 22208284 | Switch Support N,001 (For Power Switch) | | | | | |
| KNOB, BUTTON つまみ, ボタン | | | | | | |
| 22498581 | Rect. Button N,002 (orange/橙色) | TO ORIGINAL, EXECUTE, HOLD | | | | |
| 22498579 | Rect. Button N,002 (blue/青色) | INTRO/ENDING, MELODY(INTELLIGENCE) | | | | |
| 22498580 | Rect. Button N,002 (gray/灰色) | ADVANCED(ARRANGER), TO VARIATION, START/STOP, SELECT, RAIN, THUNDER, TRAIN, WONDERLAND, BREAK MUTE | | | | |
| 22498599 | Rect. Button (orange/橙色) | 12 x 4 mm WRITE | | | | |
| 22498598 | Rect. Button (blue/青色) | 12 x 4 mm USER PROGRAM | | | | |
| 22498600 | Rect. Button (gray/灰色) | 12 x 4 mm LOWER, M BASS, M DRUMS, S EFFECTS, ON/OFF CARD, FROM CARD, TO CARD | | | | |
| 22488183 | Power Switch Knob N,001 (black/黒色) | (For Power) | | | | |
| 22498578 | Rect. Button N,001 (black/黒色) | (All Button expect above.) | | | | |
| 2247038900 | Encoder Knob F/Encoder | (For α -Dial) | | | | |
| 22488184 | Slider Pot. Knob N,001 (black/黒色) | (For Volume) | | | | |
| SWITCH スイッチ | | | | | | |
| 13129753RI | EVQ-QVT 05G | (on CONT) | | | | |
| Δ 13129147 | ESB-8294V | (For POWER) | | | | |
| JACK, SOCKET ジャック, ソケット | | | | | | |
| 13449163RI | 14035B | Stereo | PHONES | | | |
| 13449160RI | 14035C | Monoral | AUX INPUT [R/L (MONO)], OUTPUT [R/L (MONO)] FOOT SWITCH | | | |
| 13429664RI | MG/PR 5L | DIN | MIDI IN, OUT, THRU | | | |
| 13429550RI | IC Socket | (28pin) | IC28 on CK36, IC1 on MCB IC4, 6, 7, 17, 18 on CPU | | | |
| LCD UNIT LCD ユニット | | | | | | |
| 15029486RI | LM086ALN with PCB. (基板を含む) | | LCD Ass'y (2 lines of 16 charactors) | | | |
| NOTE :Replacement should be made on a unit bassis. No replacements available for individual parts. | | | | | | |
| 注：交換は、ユニット単位でおこなって下さい。 補修用はユニット単位で供給されます。 | | | | | | |
| BENDER UNIT ベンダー・ユニット | | | | | | |
| 2327587000 | Pitch Bender Ass'y | | | | | |
| NOTE :Replacement should be made on a unit bassis. No replacements available for individual parts. | | | | | | |
| 注：交換は、ユニット単位でおこなって下さい。 補修用はユニット単位で供給されます。 | | | | | | |

| SPEAKER スピーカー | | | | | | |
|--|---|--|---------------------------------------|--|--|--|
| 22418561 | Speaker + RES. 120.20B/FX (4 ohm) | | | | | |
| KEYBOARD ASS'Y 鍵盤完成品 | | | | | | |
| 7625001000 | Keyboard Ass'y 61 key | | | | | |
| NOTE :See "KEYBOARD PARTS LIST" (P.3) for details. | | | | | | |
| 注：詳細は“KEYBOARD PARTS LIST”(P.3)参照。 | | | | | | |
| PCB ASS'Y 基板完成品 | | | | | | |
| Δ 7625006000 | CPU PCB ASS'Y | | | | | |
| Δ 7625021000 | CK-36 PCB ASS'Y | | | | | |
| 7625007000 | CONTROL PCB ASS'Y | | | | | |
| 7625008000 | CARTRIDGE PCB ASS'Y (MEMORY CARD BOARD ASS'Y) | | | | | |
| 7621123000 | DC SUPPLY PCB ASS'Y N,002 | | | | | |
| 7621125100 | MAINS PCB ASS'Y N,002 (100/117V) (PRIMARY POWER SUPPLY BOARD ASS'Y) | | | | | |
| 7621125400 | MAINS PCB ASS'Y N,002 (220/240V) (PRIMARY POWER SUPPLY BOARD ASS'Y) | | | | | |
| 7621124000 | HEADPHONE PCB ASS'Y N,002 | | | | | |
| IC 集積回路 | | | | | | |
| 15179291RI | MC68HC11AOP (DIP) | CPU | IC1 on CPU | | | |
| 15238122 | M60012-0148FP (Flat) | Gate Array | IC2 on CPU | | | |
| 15229848 | UPF65005G-062 (Flat) | Gate Array(Card Interface) | IC10 on CPU | | | |
| 15229830 | MB63H149 (Flat) | Gate Array(Key Scan) | IC15 on CPU | | | |
| 15279508RI | HM62256LP-12 (DIP) | S RAM | IC5 on CPU | | | |
| 15279517 | HM6116FP-2 (Flat) | S RAM (16k) | IC16 on CPU | | | |
| 15449234RI | TMS27C128-25 (DIP) | EP-ROM(Program) | IC4 on CPU | | | |
| 17049344 | TMS27C128-25 (DIP) | EP-ROM(blank) | IC4 on CPU | | | |
| 15449235RI | TMS27C512-25 (DIP) | EP-ROM(Program) | IC6 on CPU | | | |
| 15449236RI | TMS27C512-25 (DIP) | EP-ROM(Data) | IC7 on CPU | | | |
| 15449237RI | TMS27C512-25 (DIP) | EP-ROM(Data) | IC17 on CPU | | | |
| 15449238RI | TMS27C512-25 (DIP) | EP-ROM(Data) | IC18 on CPU | | | |
| 15449239RI | TMS27C512-25 (DIP) | EP-ROM(Program) | IC28 on CK36 | | | |
| 15179798 | TMS27C512-25 (DIP) | EP-ROM(blank) | IC6, 7, 17, 18 on CPU IC28 on CK36 | | | |
| 15179211RI | 63B50P (DIP) | UART | IC11 on CPU | | | |
| 15169358RI | 74LS373 (DIP) | Octal 3-State D-Latches | IC20 on CPU | | | |
| 15169331RI | 74LS244 (DIP) | Octal 3-State Bus Buffers | IC21 on CPU | | | |
| 15189228RI | TL082P (DIP) | Op-Amp | IC13 on CPU | | | |
| 15189230RI | LM393P (DIP) | Op-Amp | IC14 on CPU | | | |
| 15169514RI | 74HC04 (DIP) | Hex Inverters | IC9 on CPU IC25 on CK36 | | | |
| 15169549RI | 74HC32 (DIP) | Quad 2 Input OR | IC3 on CPU | | | |
| 15169513RI | 74HC74 (DIP) | Dual D Flip Flop with Preset and Clear | IC19 on CPU | | | |
| 15229718RI | 6N137 (DIP) | Photo Coupler(Opto-isolatoee) | IC12 on CPU | | | |
| 15169550RI | 74HC138 (DIP) | 3 to 8 Demultiplexer | IC8 on CPU | | | |
| 15179286 | P8098 (DIP) | CPU | IC34 on CK36 | | | |
| 15229896 | LA32 (Flat) | LA Chip | IC36 on CK36 | | | |
| 15229863 | MG61H20R36F (Flat) | Gate Array | IC17 on CK36 | | | |
| 15239106 | MG61H15B72F (Flat) | Gate Array | IC35 on CK36 | | | |
| 15179345 | M5M4416P-12 (DIP) | D RAM | IC9, 10, 11, 12 on CK36 | | | |
| 15179917 | HN623257PZ-21 (DIP) | Mask ROM(Reverb) | IC13 on CK36 | | | |
| 15179438 | M5M5256BP-12L (DIP) | 32k RAM | IC26 on CK36 | | | |
| 15449121 | TC534000P-7476 (DIP) | Mask ROM(PCM) | IC37 on CK36 | | | |
| 15209219 | HN62304BPH46 (DIP) | Mask ROM(PCM) | IC38 on CK36 | | | |
| 15159113 | 4051 (DIP) | Analog Switch | IC6 on CK36 | | | |
| 15169334 | 74LS05P (DIP) | Hex O.C. Inverters | IC14 on CK36 | | | |
| 15219183 | M51953 (SIP) | Reset IC | IC30 on CK36 | | | |
| 15189147 | MJM072D (DIP) | OP AMP | IC2, 18, 19 on CK36 | | | |
| 15189171 | M5218P (DIP) | OP AMP | IC1, 3, 4 on CK36 | | | |
| 15189188 | M5238L (SIP) | OP AMP | IC7 on CK36 | | | |
| 15219181 | M5207L01 (SIP) | Dual VCA | IC5 on CK36 | | | |
| 15219162 | PCM-54MP (DIP) | D/A Convertor | IC8 on CK36 | | | |
| 15169516 | 74HC02 (DIP) | Quad 2 Input NOR | IC32 on CK36 | | | |
| 15169537 | 74HC27 (DIP) | Triple 3 Input NOR | IC15 on CK36 | | | |
| 15169512 | 74HCU04P (DIP) | Hex Inverters | IC24 on CK36 | | | |
| 15169515 | 74HC00 (DIP) | Quad 2 Input NAND | IC16 on CK36 (DIP) IC2 on MCB | | | |
| 15449233RI | 27C256-25 (DIP) | EP-ROM(Program) | IC1 on MCB | | | |
| 15209251RI | 27C256-25 (DIP) | EP-ROM(blank) | IC1 on MCB | | | |
| 15189227RI | LM833 (DIP) | Low Noise OP AMP | IC1 on DS | | | |
| Δ 15199197RI | UA7805 | +5V Voltage Regulator | T5 on DS | | | |
| Δ 15199550RI | TDA1905 (DIP) | Power Amplifier | IC2,3 on DS | | | |
| 15169620RI | 4093 (DIP) | Quad 2 Input NAND | IC2 on CONT | | | |

| TRANSISTOR トランジスター | | | |
|-------------------------------|-----------------------------|--------------------------|-------------------------|
| 15199155RI | BC/560-B | PNP | |
| 15199154RI | BC/549-B | | |
| 15129114 | 2SC-1815GR | | Q5,Q7,Q8 on CK36 |
| 15119113 | 2SA-1015GR | | Q6 on CK36 |
| 15129136 | 2SC-2878 A/B | | Q1,Q2 on CK36 |
| 15119419 | 2SA-935Q | Power Transistor | Q4 on CK36 |
| 15129602 | 2SD-667C | Power Transistor | Q3 on CK36 |
| DIODE ダイオード | | | |
| 15019159RI | 1H-4149 | | |
| 15019126 | 1SS-133T (Taping) | | D2,D4 on CK36 |
| 15029320RI | D.3-GREEN-TLHG4401 | LED (green/緑色) | |
| 15029284RI | 3 TLH4401-RED | LED (red/赤色) | |
| 15019332RI | BZX55C | Zener (6.2V) | DZ1 on CPU |
| 15019406 | MTZ6.8B T77 (Taping) | Zener (6.8V) | D1,D3,D7 on CK36 |
| Δ 15019158RI | 1N-4001 | | |
| RESISTOR 抵抗 | | | |
| 13910103RI | S.L.8X10K +C 10k ohm x 8 | Resistor Array | |
| | (RGLD8X103J) | | |
| 13919142RI | S.L.8X100K +C 100k ohm x 8 | Resistor Array | |
| | (RGLD8X104J) | | |
| 13919117RI | S.L.8X33K +C 33k ohm x 8 | Resistor Array | |
| | (RGSD8X333J) | | |
| 13919222RI | SL4X680 OHM E/U 680 ohm x 4 | Resistor Array | |
| | (RGSD4X681J) | | |
| 13919221RI | SL4X1.8K E/U 1.8k ohm x 4 | Resistor Array | |
| | (RGSD4X182J) | | |
| 13919160RI | SL4X3.3K E/U 3.3k ohm x 4 | Resistor Array | |
| | (RGSD4X332J) | | |
| 13819132RI | Uninfl. Resistor | 100 ohm 0.6W 5% | |
| 13819131RI | Uninfl. Resistor | 10 ohm 0.6W 5% | R45 on CK36 |
| | | | R45 on DS |
| 13819302RI | Resistor | 150 ohm 1W 10% | R2,3 on HP |
| POTENTIOMETOR 可変抵抗器 | | | |
| 13229227RI | 22k ohm 5 x 10 | Cermet (Trimmer) | |
| 13299226RI | 4.7k 2.5 x 5 | Cermet (Trimmer) | |
| 13319101RI | 10kB 10MS | Lin.Slider | VR1 on CONT |
| CAPACITOR コンデンサー | | | |
| 13519905RI | 47nF/50VZ | Ceramic Cond. | |
| 13529179RI | 100k 20% | Multilayer Ceramic Cond. | |
| 13649668RI | 47uF/25V | Electric Cond.-AX | |
| 13639154 | 1000uF/16V | Electric Cond.-V | C39, 40, 69, 72 on CK36 |
| 13639153RI | 470uF/16V | Electric Cond.-V | C8 on CPU |
| 13639179RI | 100uF/25V | Electric Cond.-V | |
| 13639661RI | 2200uF/25V | Electric Cond.-V | C21,29 on DS |
| 13639167RI | 22uF/25V | Electric Cond.-V | |
| Δ 13649662RI | 3300uF/25V | Electric Cond.-V | C16,17,20,47 on DS |
| 13639169RI | 47uF/25V | Electric Cond.-V | |
| 13639206RI | 10uF/50V | Electric Cond.-V | |
| 13639223RI | 4.7uF/63V | Electric Cond.-V | |
| 13639255RI | 1uF/100V | Electric Cond.-V | |
| Δ 13529104RI | DE7150F472M | Special Cond. | C2 on MAINS |
| 13829147RI | 8 x 100pF | Capacitor Array | |
| 13529151 | 4 x 22pF | Capacitor Array | |
| 13529152 | 6 x 22pF | Capacitor Array | |
| INDUCTOR, COIL インダクタ, コイル | | | |
| 22488240 | BL02RN2-R62 | Noise Sup. (EMI Filter) | |
| Δ 13529148RI | DSR1100-56E222MVA2EA | Noise Sup. (EMI Filter) | FL1 on MAINS |
| 12449229RI | FKOB-160MH15 | Noise Sup. (EMI Filter) | FL2 on MAINS |
| 12449348RI | BL02RN1-R62 | Noise Sup. (EMI Filter) | L1,2 on MAINS |
| 13529105 | DSS310-55D223S | Noise Sup. (EMI Filter) | |
| 12449305 | ECE-A 330MA | Coil | L1 on CK36 |
| CRYSTAL, RESONATOR クリスタル, 発振子 | | | |
| 15299108 | HC-49N 16.304MHz | Quartz | X1 on CK36 |
| 12379717 | 12MHz | Quartz | X2 on CK36 |
| 15299115RI | 16MHz | Ceramic | XL1 on CPU |
| RELAY リレー | | | |
| 12439224RI | DS2EM-12V-H55 | | "RELE" on DS |

4

ENCODER エンコーダー

7625025000 Encoder + Conn. Ass'y

NOTE :Encoder + Conn. Ass'y consists the following 2 parts.

注 : Encoder + Conn. Ass'y は下記の 2 部品で構成されます。

22208488 Fixing Support F/Encoder
13279781 Encoder RAPD104

FUSE, FUSE HOLDER ヒューズ, ヒューズ・ホルダー

| | | | |
|-------------|---------------------|-------------|--------------|
| △12559604RI | T-1.6A(S) | 5 x 20 mm | (on DS) |
| △12559605RI | T-2A(S) | 5 x 20 mm | (on DS) |
| △12559606RI | T-315mA(S) 220/240V | 5 x 20 mm | FL1 on MAINS |
| △12559607RI | T-600m(UL) 100/117V | 5 x 20 mm | FL1 on MAINS |
| 12199597RI | T.P1 | Fuse Holder | |

CONNECTOR コネクタ

| | | | |
|------------|---|--------|--|
| 13369544RI | AMP P2.5 12P | Male | "A" on CPU "A" on DS |
| 13429266RI | AMP 2.5 12P | Female | |
| 13369545RI | AMP P2.5 14P | Male | "E" on CPU |
| 13429268RI | AMP 2.5 14P | Female | |
| 13429233 | RAM CARD Connector N,001 (IC Card Connector: 7508095A) 34P | | "CARD" on MCB |
| 13369540RI | BPH9B34B0 34P | Male | "B" on CPU |
| 13419676RI | Molex 8P | Male | "C" on CPU "C" on CK36 (on HP),(on DS) |
| 13419675RI | Molex 8P | Female | |
| 13369688RI | C 25 4P | Male | (on CK36) |
| 13419674RI | Molex 4P | Female | |
| 13419677RI | AMP C/1.27 16P | Female | F1,F2 on CPU CN4 on CONT R CN3 on CONT L |

WIRING, CABLE ワイヤリング, ケーブル

| | | |
|----------|----------------------------|----------------------|
| 23478280 | Flat Cable Ass'y N,002 34P | CM18T1 |
| 23478281 | Flat Cable Ass'y N,002 40P | CM16T1 |
| 23478946 | Flat Cable Ass'y 8P | (27) |
| 23478947 | Flat Cable Ass'y 14P | (for LCD connection) |
| 23478264 | Flat Cable Ass'y 12P | (6) |
| 23488545 | Flat Cable Ass'y 16P | (18) |
| 23478945 | Flat Cable Ass'y 16P | (26) |
| ***** | Cable (white) AWG18 | 12 cm |
| ***** | Cable (black) AWG18 | 13 cm |
| ***** | Cable (black) AWG18 | 30 cm |

TRANSFORMER トランス

| | | |
|-------------|------|----------------------------------|
| △22458555N0 | 0069 | Power Transformer for 100V model |
| △22458556C0 | 0068 | Power Transformer for 117V model |
| △22458557D0 | 0067 | Power Transformer for 220V model |
| △22458558D0 | 0070 | Power Transformer for 240V model |

ACINLET AC インレット

| | | |
|-------------|----------------|----------------------|
| △13429722RI | 8832.FSG.40.60 | 2 poles 100/117/220V |
| △13429721RI | 6100-33 | 3 poles 240VE/240VA |

BATTERY 電池

△12569149RI Lithium Battery CR2032

SCREWS ネジ類

| | | |
|-------|-----------------------------------|----------|
| ***** | 2.2 x 6 mm Self-Tapping | TCTC |
| ***** | 2.9 x 6 mm Self-Tapping | TCTC |
| ***** | 2.9 x 10 mm Self-Tapping | TCTC |
| ***** | 2.9 x 8 mm Self-Tapping | TCTCPRBZ |
| ***** | 3.5 x 19 mm Self-Tapping | TCTCPRBZ |
| ***** | MA 3 x 10 mm TCTC | |
| ***** | MA 3 x 25 mm TCTC | |
| ***** | 3.5 x 9.5 mm PR T.8 Special Screw | |
| ***** | Nut MA3 H.3 | |
| ***** | M6 x 15 mm Hex.Spacer | |
| ***** | Spacer M3 ART. SJ5012 | |

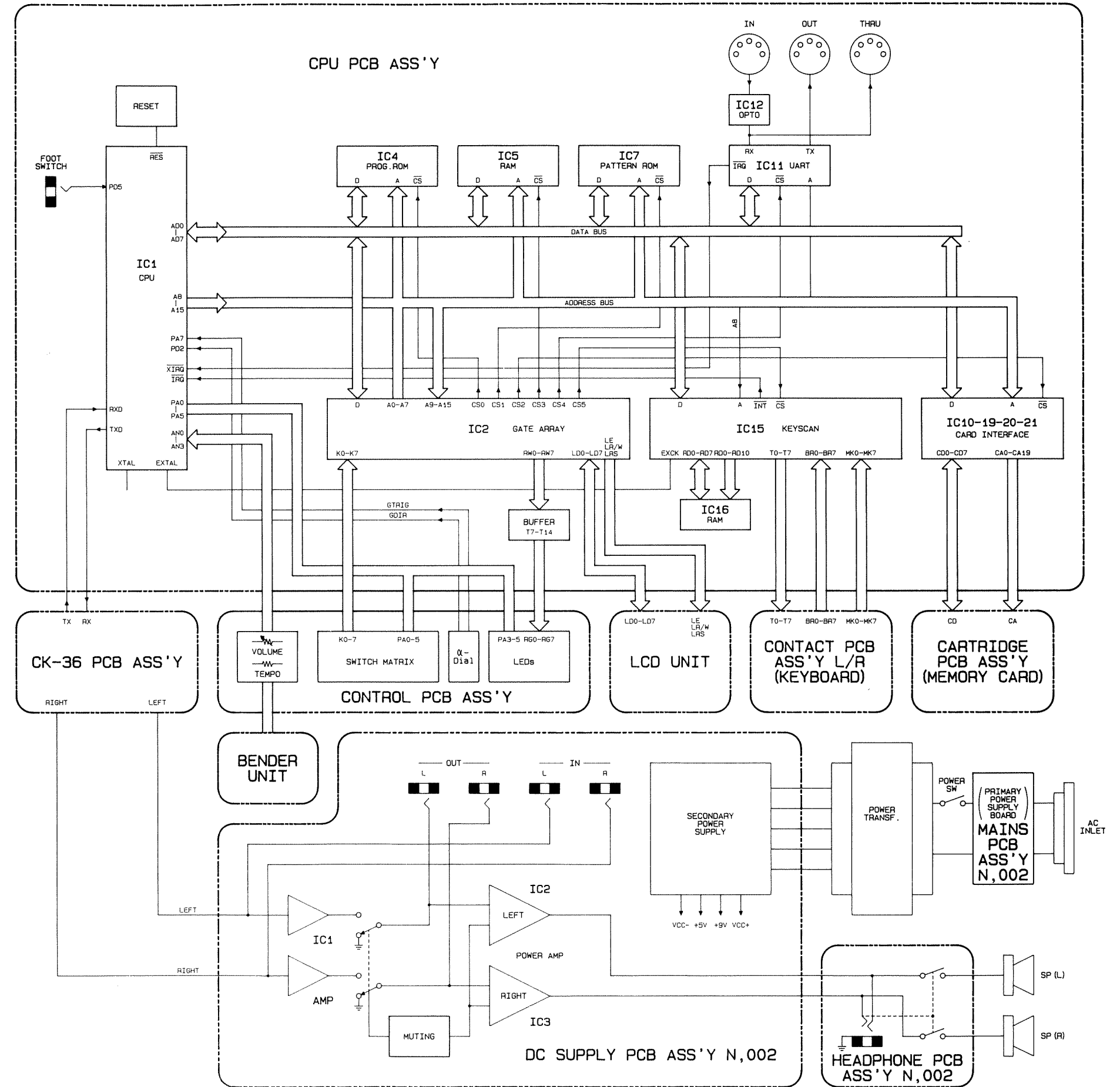
MISCELLANEOUS その他

| | | |
|------------|--|------------------|
| 22248196 | Antidust Cover (For Volume) | ダスト・カバー (ボリューム用) |
| 22268521 | Vibration-Damping Rubber 振動防止ゴム | |
| 7621131000 | Connector PCB (or Wire Connector as for 7805) | |
| 12199570 | Battery Holder 2032 (or BBH-1) | BT1 on CPU |

ACCESSORIES 付属品

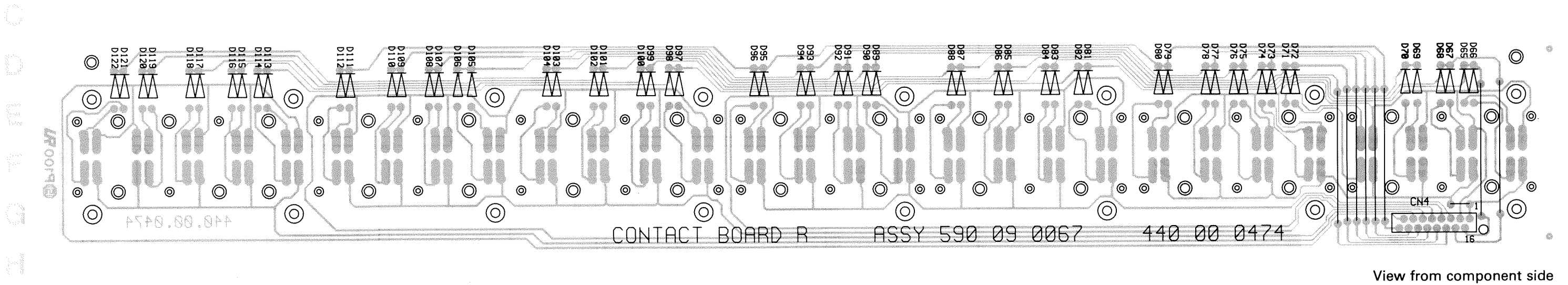
| | | |
|-------------|---|--|
| 22198641 | Music Rest N,002 | |
| 22208320 | Music Score Holder N,002 | |
| △13499151RI | AC Cord 100/117V | UL498/3SVT2x18AWG-VII (detachable/着脱式) |
| △13499149RI | AC Cord 220V | VXII-H03VVH2F-2x0.75-VII (detachable/着脱式) |
| △13499152RI | AC Cord 240VE | GBBS/13/H05VV-F3G0.75-V2.7 (detachable/着脱式) |
| △13499150RI | AC Cord 240VA | AUS SAA/3-OD3CCFCx0.75-V2.7 (detachable/着脱式) |
| 26048292 | Owner's Manual (English/Germany/French) | |
| 26048291 | Owner's Manual (English/Japanese/Italy) | |

BLOCK DIAGRAM/ブロック図

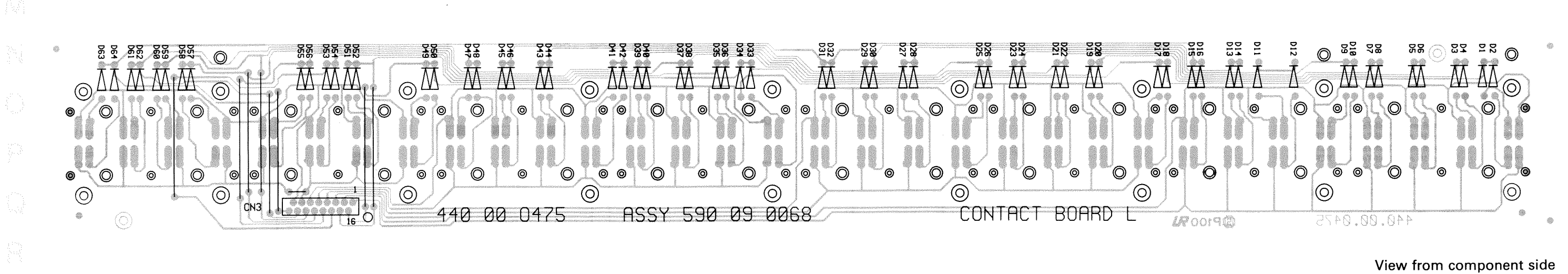


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

A **CONTACT PCB ASS'Y R (CONTACT BOARD R)**
w/Rubber Contact
ASSY 7624504000



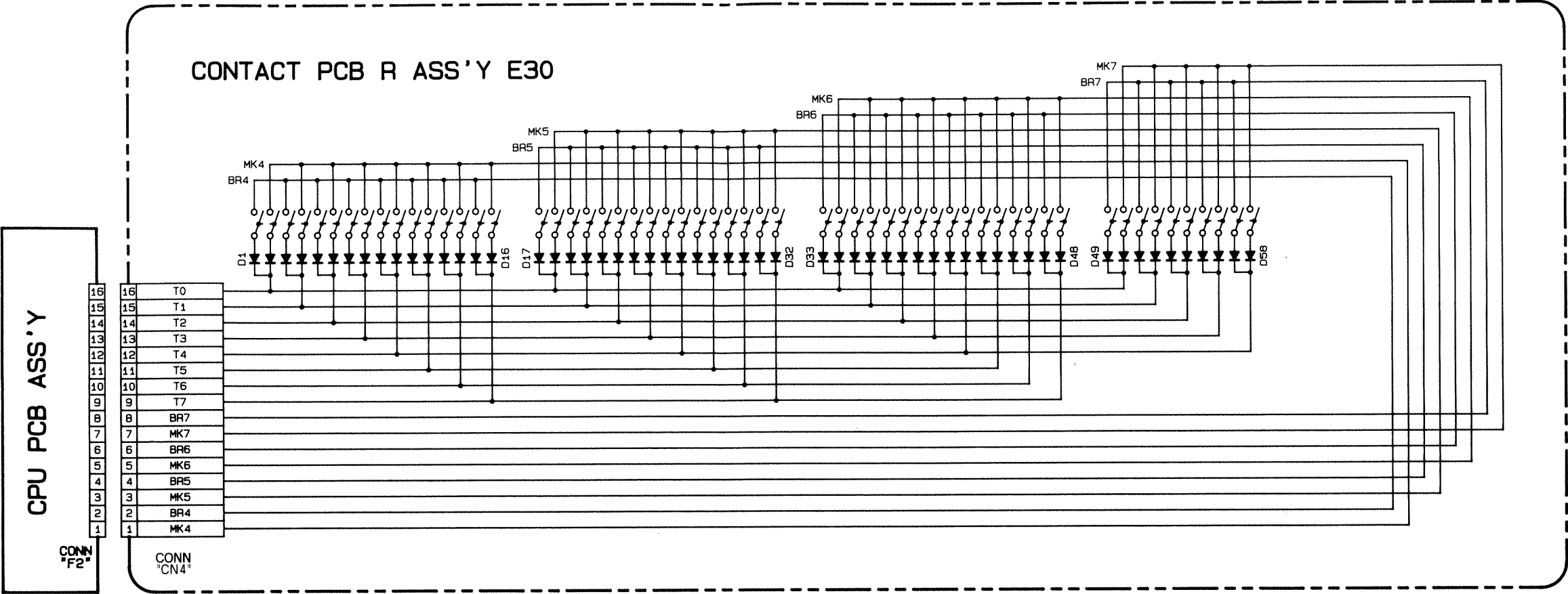
K **CONTACT PCB ASS'Y L (CONTACT BOARD L)**
w/Rubber Contact
ASSY 7624505000



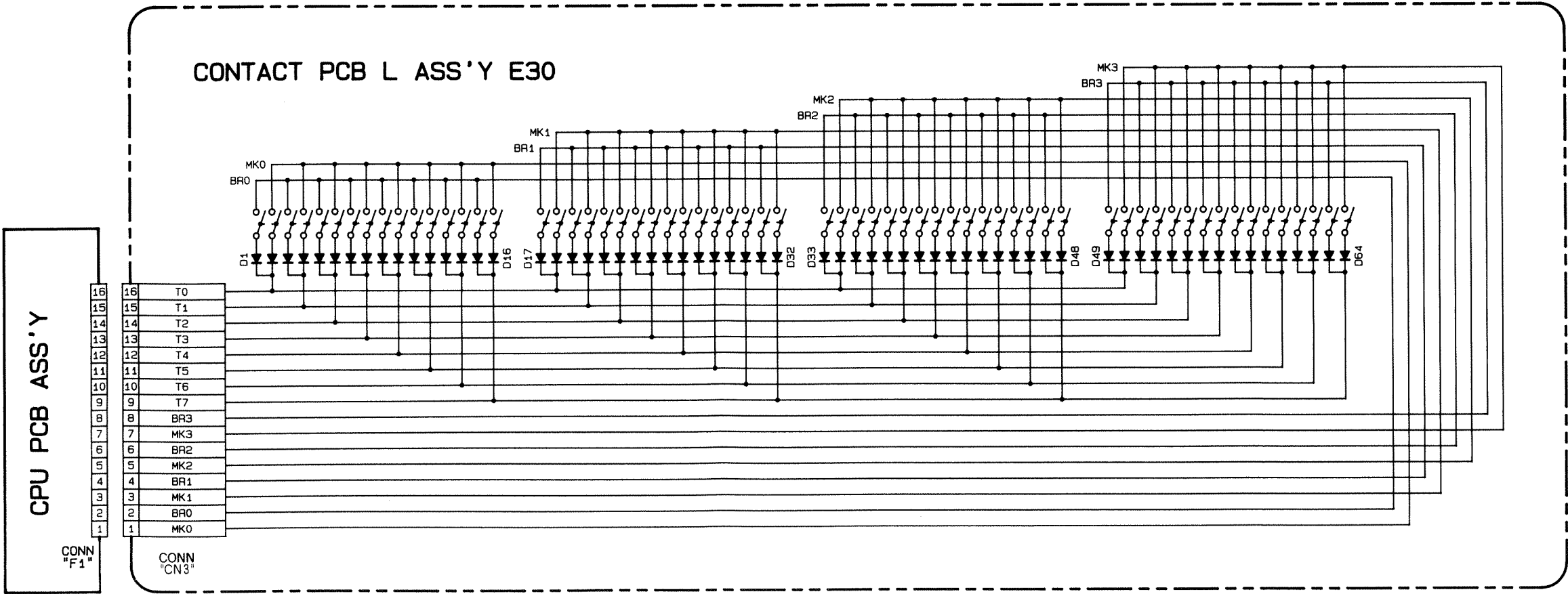
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

A
B
C
D
E
F
G
H
I
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K
L
M
N
O
P
Q
R
S
T
U

CIRCUIT DIAGRAM (Contact PCB Ass'y R/Contact Board R)



CIRCUIT DIAGRAM (Contact PCB Ass'y L/Contact Board L)



ASSY 7625006000

ADVARSEL!

Lithiumbatteri. Eksplosionsfare.
Udskiftning må kun foretages af en sagkyndig,
og som beskrevet i servicemanual.

Lithium batteri må kun udskiftes med samme type og fabrikat.

VAROITUS!

Lithiumparisto. Räjähdyksenvaaraton.
Pariston saa vaihtaa ainoastaan
alan ammottimies.

Kun vaihat lithium pariston KÄYTÄ saman valmistajan samaa tyyppiä.

ADVARSEL!

Lithiumbatteri. Fare for eksplosjon.
Måbare skiftes av kvalifisert tekniker som
beskrevet i servicemanualen.

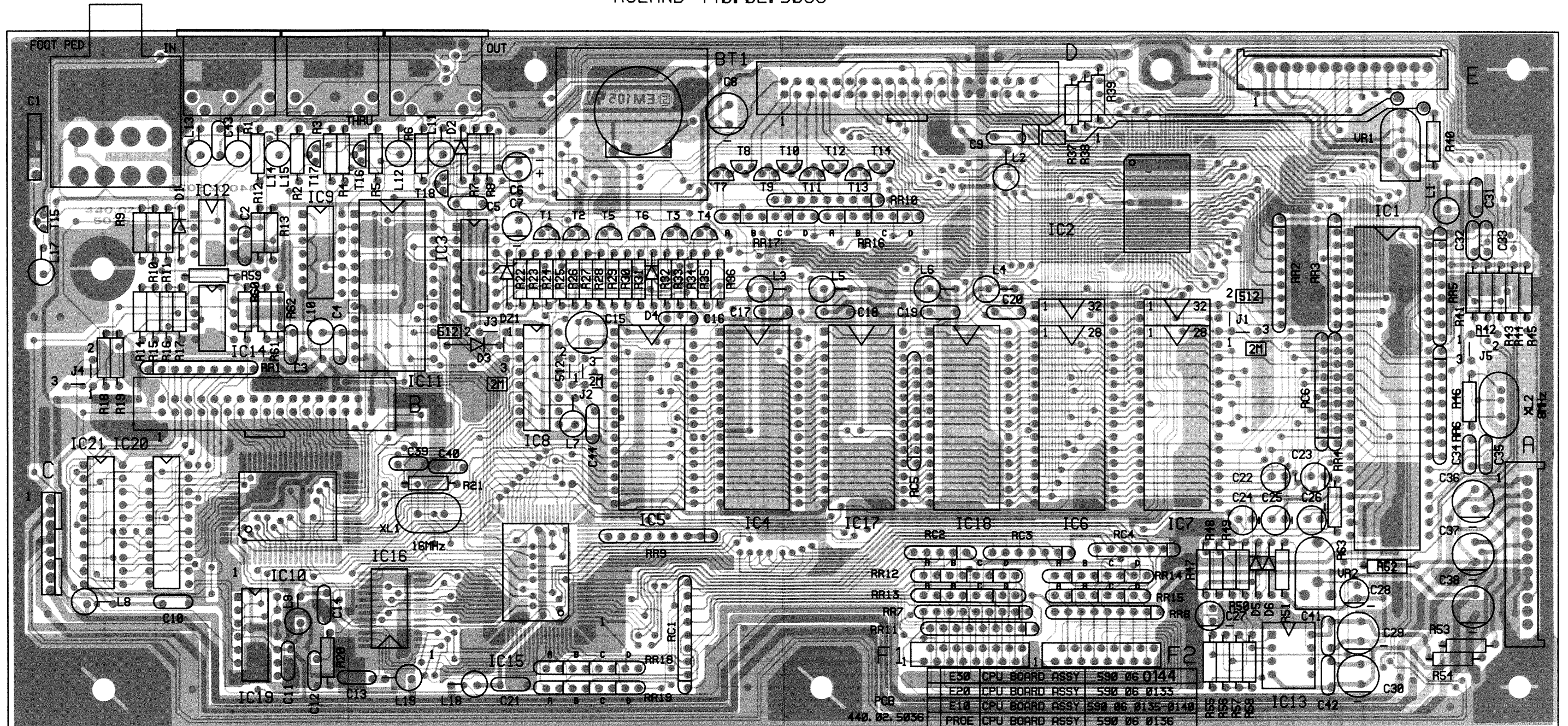
Lithium batteri må kun udskiftes med samme type og fabrikat.

VARNING!

Lithiumbatteri. Explosionsrisk.
Får endast bytas av behörig servicetekniker.
Se instruktioner i servicemanualen.

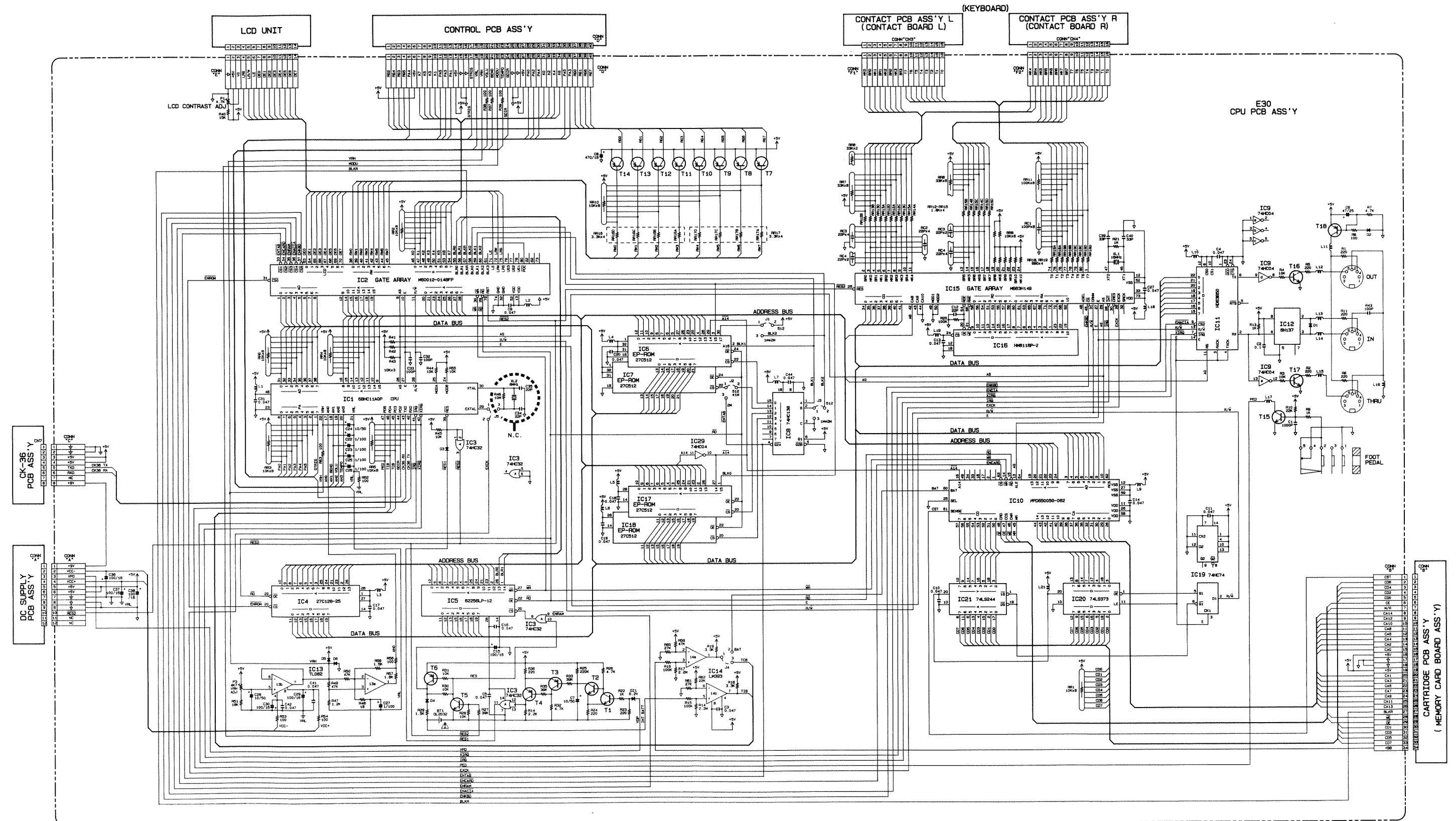
Lithium batteri för endast ersättes med samme typ och fabrikat.

ROLAND 440. 02. 5036

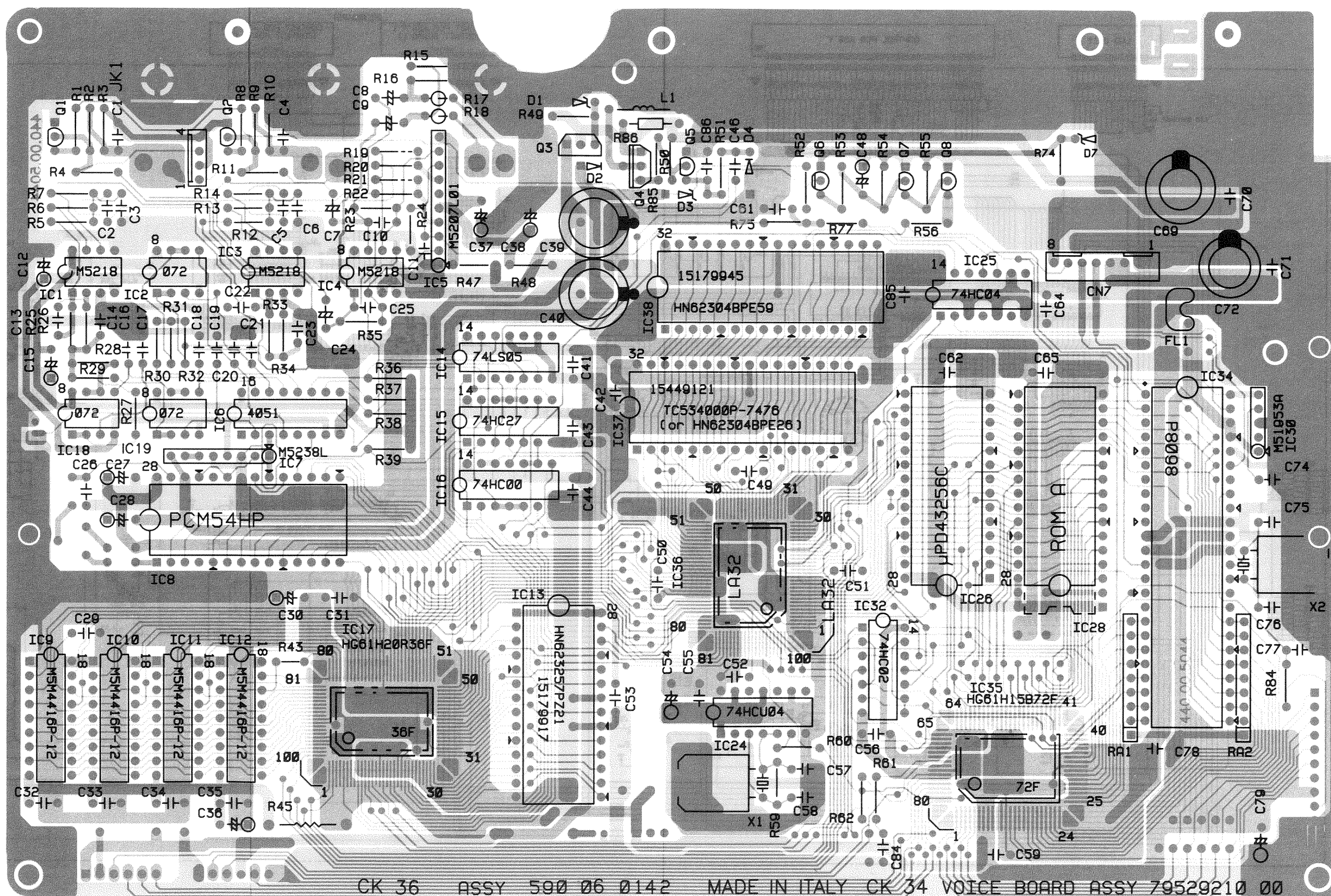


View from component side

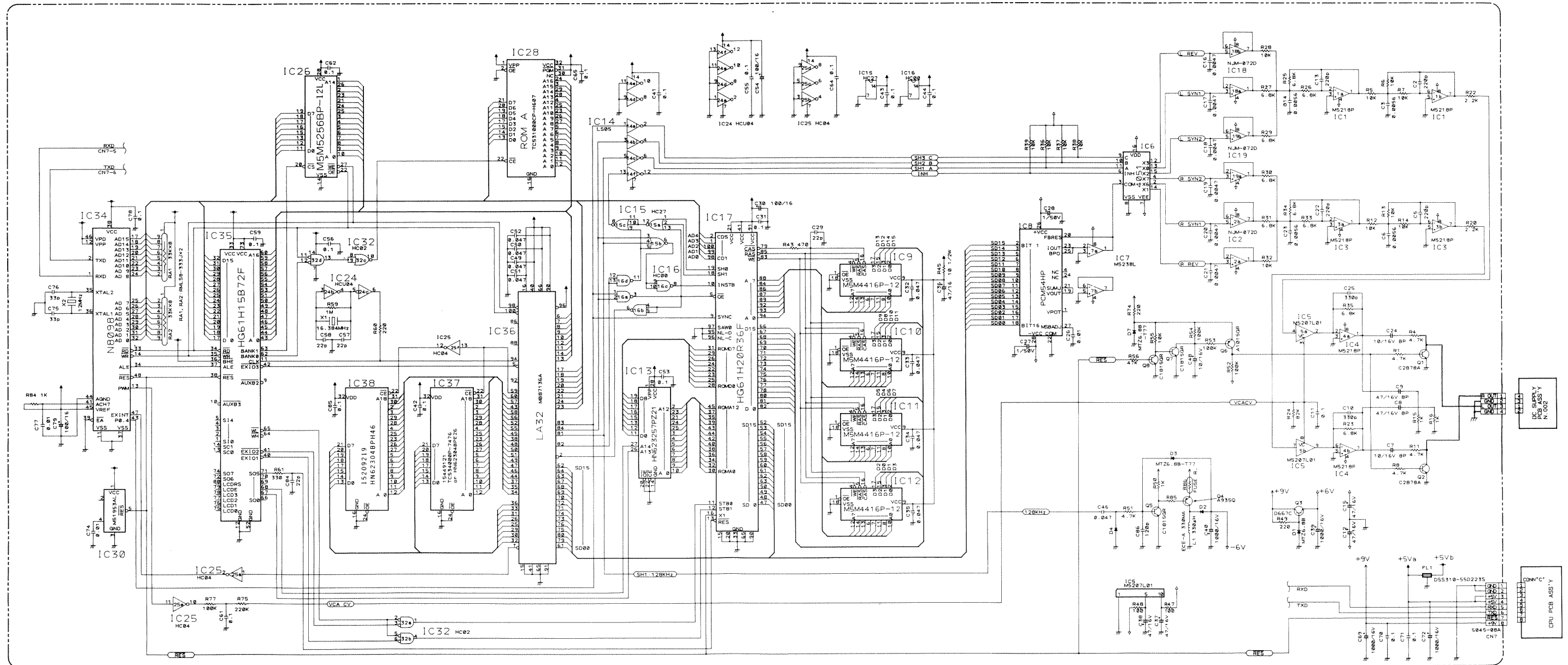
CIRCUIT DIAGRAM (CPU PCB ASS'Y)



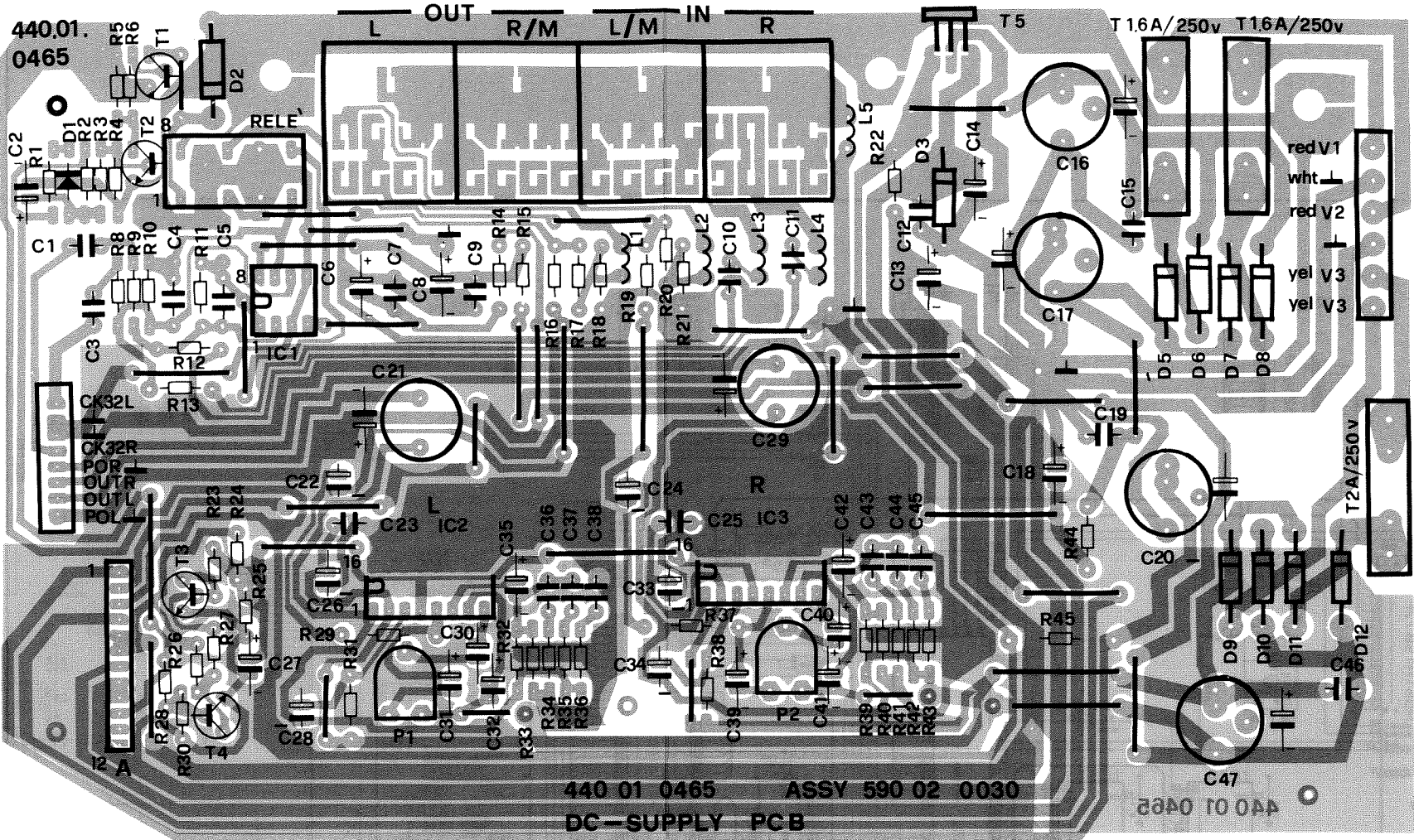
ASSY 7625021000



CIRCUIT DIAGRAM (CK-36 PCB ASS'Y)

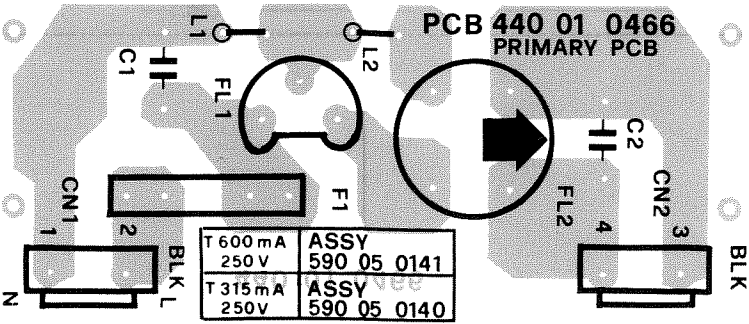


DC-SUPPLY PCB ASS'Y N,002
ASSY 7621123000



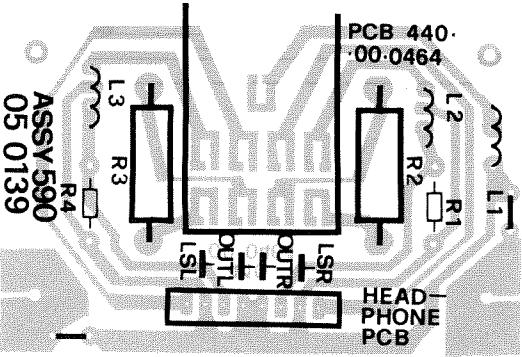
View from component side

MAINS PCB ASS'Y N,002
(PRIMARY POWER SUPPLY BOARD ASS'Y)
ASSY 7621125100 (100V/117V)
ASSY 7621125400 (220V/240V)



View from component side

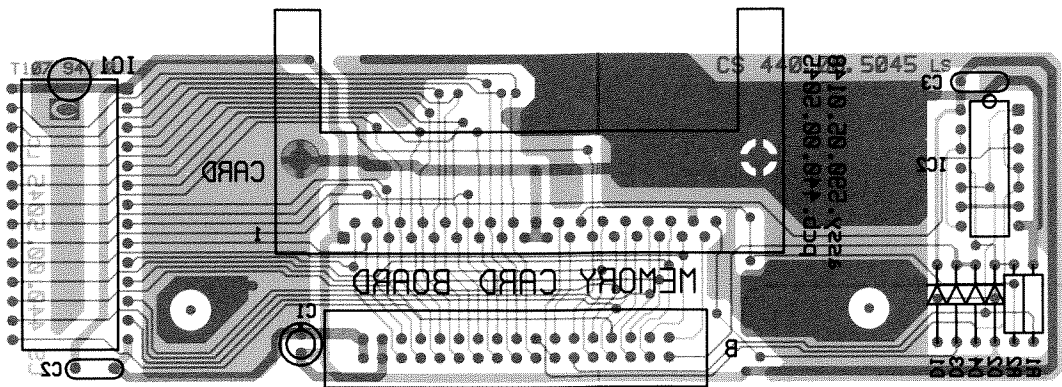
HEADPHONE PCB ASS'Y N,002
ASSY 7621124000



View from component side

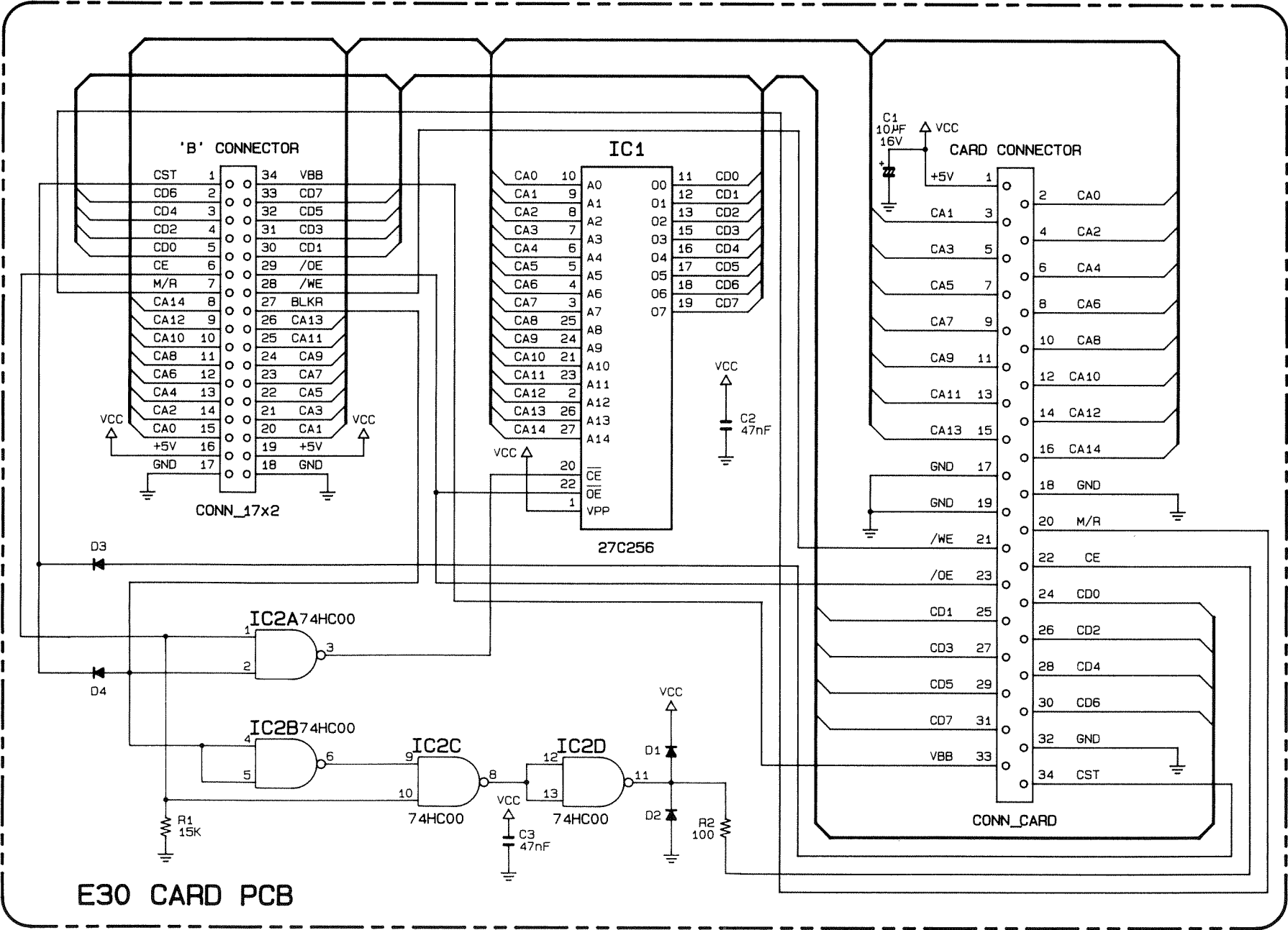
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34

CARTRIDGE PCB ASS'Y (MEMORY CARD BOARD ASS'Y)
ASSY 7625008000



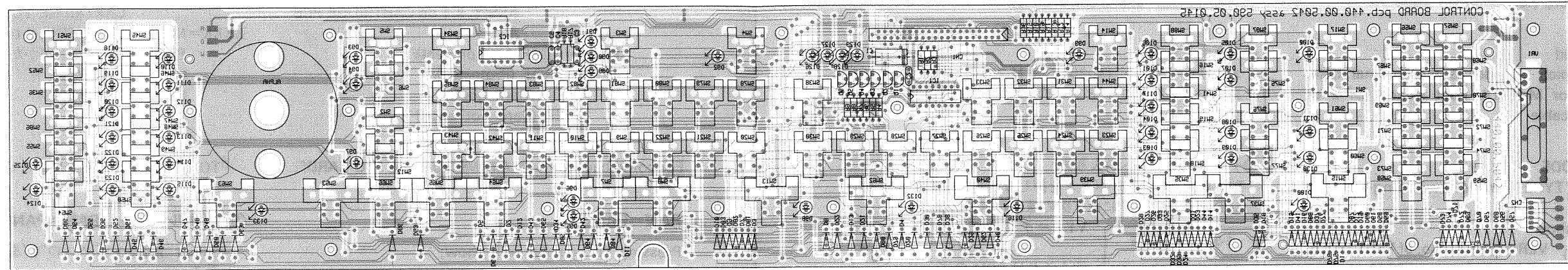
View from foil side

CIRCUIT DIAGRAM (CARTRIDGE PCB ASS'Y/MEMORY CARD BOARD ASS'Y)



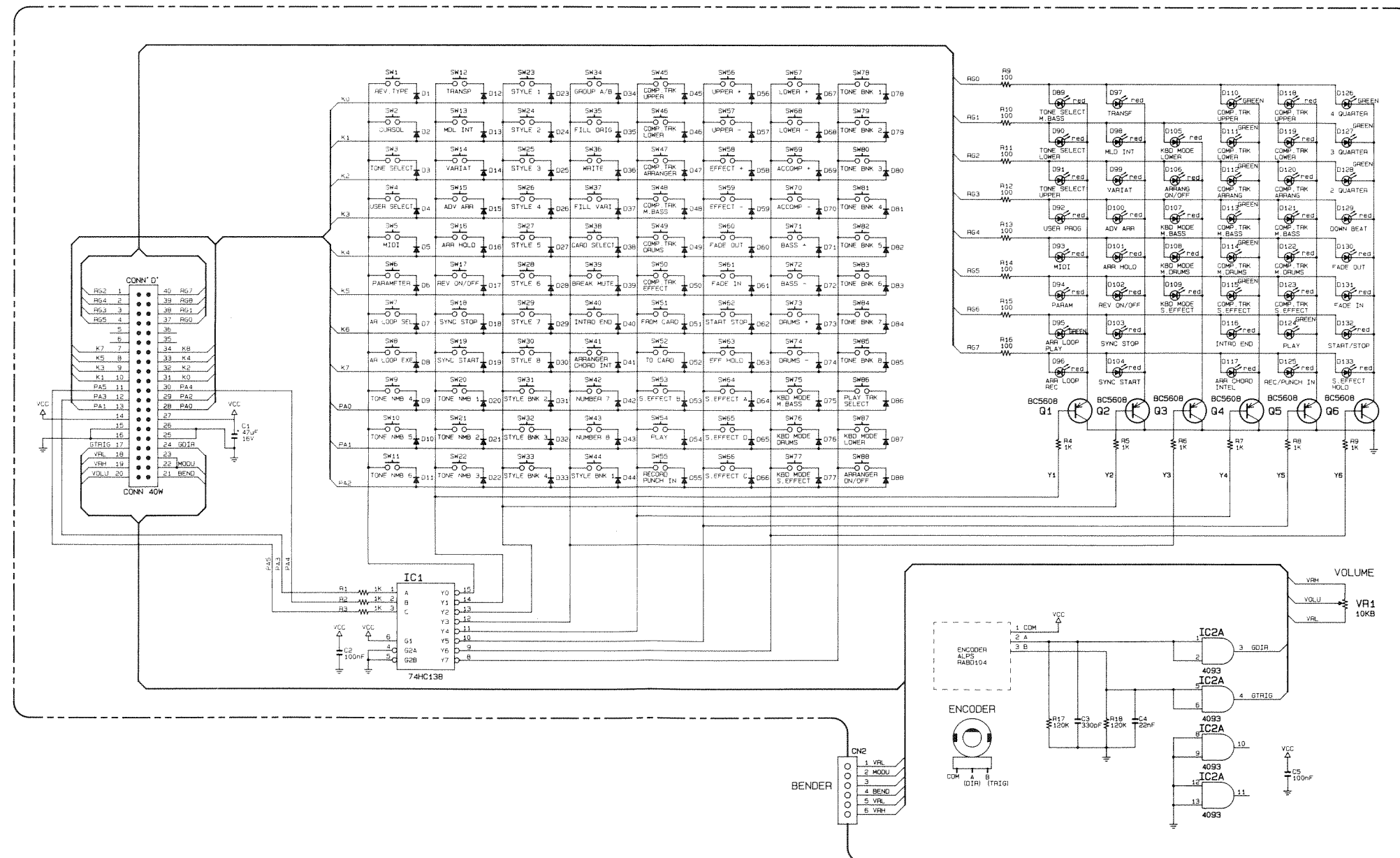
CONTROL PCB ASS'Y

ASSY 7625007000



View from foil side

CIRCUIT DIAGRAM (CONTROL PCB ASS'Y)



Caution! Before running test routine, save user data (if any) onto appropriate memorizable machine such as Memory card M-256 D/E to avoid data loss. For saving method, refer to Data Transmission, Reception on page 19.

Memory Card (which can delete the internal data, example M-256E or M-256D). Foot switch (DP-2 or equivalent), MIDI cable

E-30 TEST MODE
VER XX.XX MMDDYY

| MEM | PAN | CON | KBD |
|-----|-----|-----|-----|
| a | b | c | d |

a; b; c; d=Sound Effects

Pressing "a" display will show:

Sound Effects ボタンの"a"を押すと下図の様に表示される。

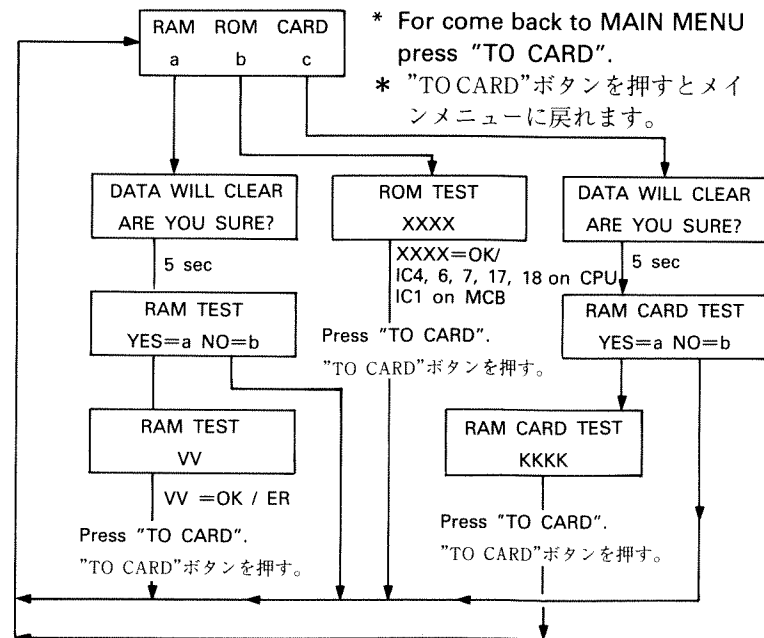
◎テスト・モードの抜け方
電源を切る。

メモリー・カード（M-256E or M-256D：内部データが消えても良い物）フット・スイッチ（DP-2 等），MIDI ケーブル

E-30 TEST MODE
 VER XX.XX MMDDYY

VER=テストモードのバージョン・ナンバー
 注：これはROMのバージョン・ナンバーではありません。ROMのバージョンについては”バージョン・ナンバーの確認”(P.17)を参照のこと。
 MM=月
 DD=日
 YY=年

すぐに表示は下図の様になる。



| | | | |
|-----|-----|-----|-----|
| MDI | PED | SWT | L&L |
| a | b | c | d |

MIDI TEST XX
Connect OUT==>IN

PEDAL TEST XXX
Connect FOOT PED

Hit any switch
XXXXX=Name of the poressed switch

| LEDS LCD | |
|----------|---|
| a | b |

d-1) Pressing "a" display will show:

| | | | |
|-----|-----|-----|-----|
| MDI | PED | SWT | L&L |
| a | b | c | d |

| | |
|------------------|-----------------|
| MIDI TEST XX | XX=OK (テスト異常無し) |
| Connect OUT==>IN | ER (テスト異常有り) |

| | |
|------------------|--------------------|
| PEDAL TEST XXX | XXX=ON (ペダルオン時の表示) |
| Connect FOOT PED | OFF (ペダloff時の表示) |

Hit any switch
XXXXXX

| LEDS LCD | |
|----------|---|
| a | b |

d-1) "a" ボタンを押すと下図の様に表示される。

LEDS TEST

(all the LEDs are lighted ON sequentially)
(all LEDs lights finally)

For coming out from this MEMU press "TO CARD".

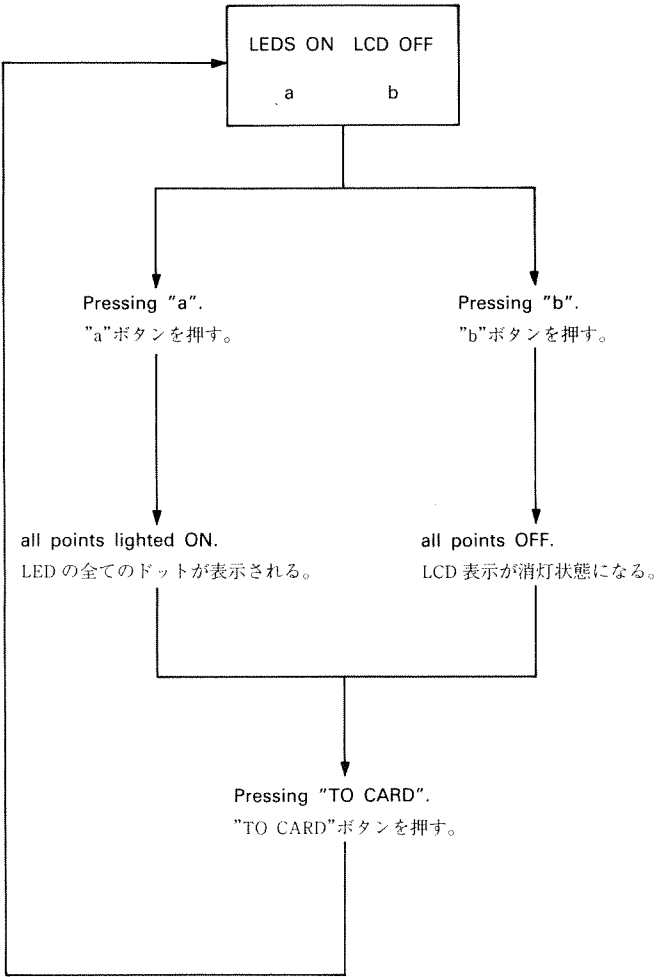
d-2) Pressing "b" display will show:

LEDS TEST

(全てのLEDが順次点灯してゆくことを確認する。最後に全てのLEDが点灯する。)

"TO CARD"ボタンを押し、LEDテスト・モードから抜ける。

d-2)"b"ボタンを押すと下図の様に表示される。



For coming out from this MENU, press "TO CARD".
For commig back to the MAIN MENU, press "TO CARD" several times.

3) CON=CONTROLS

Press "c" display will show:

MOD BEND VOL α-D
XXX XXXX XXX XXX

XXX=readed value 00 to 127
XXXX=readed value -127 to +127

For coming out press "TO CARD".

3) コントロール・テスト (CON=CONTROLS)

"c"ボタンをおすと下図の様に表示される。

MOD BEND VOL α-D
XXX XXXX XXX XXX

XXX=00 to 127
(VOLUME, TEMPOのスライドボリュームやベンダーでMODULATIONを変化させ確認する。)
XXXX=-127 to +127
(ベンダーを変化させ確認する。)

"TO CARD"を押しこのモードから抜ける。

4) KBD=KEYBOARD

Pressing "d" display will show:

Hit any key
Key=NNN
Vel=VVV

NNN=Key name from C2 to C7
VVV=Velocity value 00 to 127

Note: when key released VEL=00
if more than one key pressed, the last will be recoginized.

4) キーボードテスト (KBD=KEYBOARD)

"d"ボタンを押すと下図の様に表示される。

Hit any key
Key=NNN
Vel=VVV

NNN=押されているキーの名前 (C2～C7)
VVV=押されているキーのペロシテイ (00 to 127)

注) キーが離された時、ペロシテイ値 (Vel) は00と表示される。
もし同時にキーが押された時は、最後に押されたキーが認識される。

RECOVERING RAM DATA

Caution! Save user data (if any) onto appropriate memorizable machine such as Memory card M-256 D/E to avoid data loss. For saving method, refer to Data Transmission, Reception on page 19.

When the Back-up Battery or CMOS S-RAM (IC5) has been replaced, take the following operation to initialize the CMOS S-RAM (IC5).

1. Hold WRITE button on, then switch the power on.
When the display will show:

FACTORY SETUP
LOADED !!

the CMOS S-RAM (IC5) will be initialized in this way.

1. Factory user program is loaded.
2. All composer data are cleared.
3. Pitch Bender range is set to 2.
4. Master Tune is set to 442.0Hz.

2. The instrument will enter into normal operation.

RAM データの設定

注意！ユーザーのデータが入っている時は、必ずデータを他のもの（メモリー・カード M-256 D/E 等）に移しておいて下さい。（ユーザーデータ保管方法は、“データ セーブ／ロード”（P.19）を参照して下さい。）

注）バックアップ用電池や CMOS S-RAM（IC5）を交換した場合、CMOS S-RAM（IC5）を工場出荷時データにイニシャライズする必要があります。このため下記の手順を実行して下さい。

1. WRITE ボタンを押しながら、電源を入れる。
電源を入れると下図の様な表示が現れる。

FACTORY SETUP
LOADED !!

CMOS S-RAM（IC5）は下記の順番で自動的に工場出荷時データにイニシャライズされる。

1-1. 工場出荷時データをロードする。
1-2. コンポーザデータが全てクリアされる。
1-3. ピッチベンダーレンジが"2"にセットされる。
1-4. マスターチューニングが"442.0Hz"にセットされる。

2. 通常モードに戻る。

IDENTIFYING VERSION NUMBER

Hold REVERB ON/OFF button on, then switch the power on.

The display should show the current ROM version number and the version date, then the instrument will enter automatically into normal operation.

ROLAND E-30
VER.**.** MMDDYY

. : Version Number
MM : Month
D D : Day (Version Date)
Y Y : Year

バージョン・ナンバーの確認

REVERB ON/OFF ボタンを押しながら、電源を入れる。ディスプレイは ROM のバージョン・ナンバーと日付けを表示する。
暫くして自動的に通常モード表示に戻る。

ROLAND E-30
VER.**.** MMDDYY

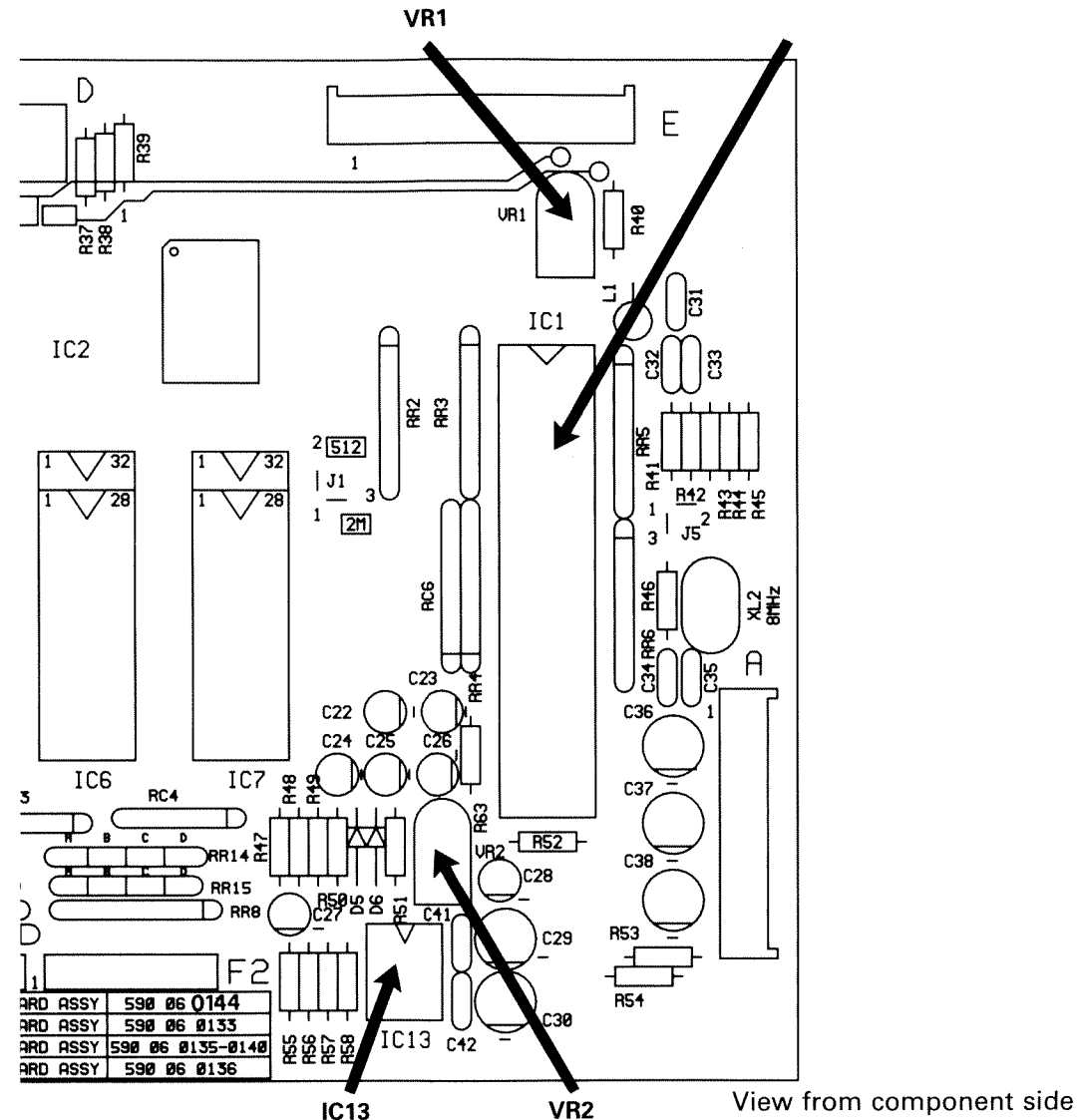
..* : バージョン・ナンバー
MM : 月
D D : 日 (日付け)
Y Y : 年

ADJUSTMENT

1. A/D VOLTAGE REFERENCE (VRH)

*Adjust VR2 (CPU PCB ASS'Y) to have, +4.750VDC, to the pin1 of IC13.
(Refer to Fig. a)

Fig. a



2. LCD CONTRAST

*Adjust VR1 (CPU PCB ASS'Y) so that the LCD would give the best visibility to the keyboard player.
(Refer to Fig. a)

3. AUDIO TEST

*Hold "FADE IN" button ON, then switch the power on.
The display will show:

E-30 AUDIO TEST
VER XX.XX MMDDYY

VER=Release No. of TEST MODE
(Note: It is not "ROM version number". See "IDENTIFYING VERSION NUMBER" (P. 17) for ROM version number.)
MM=Month
DD=Day
YY=Year

E-30 AUDIO TEST
VER XX.XX MMDDYY

VER=テストモードのバージョン・ナンバー
注：これはROMのバージョン・ナンバーではありません。ROMのバージョンについては”バージョン・ナンバーの確認”
(P.17)のページを参照のこと。

MM=月
DD=日
YY=年

調整

1. A/D基準電圧 (VRH)

*CPU基板のIC13の1番ピンが+4.750V(DC)になる様に、VR2 (CPU 基板上のボリューム) を調整する。
(Fig. a 参照)

2. LCD コントラスト

*LCD の表示がはっきり見える様に VR1 (CPU 基板上のボリューム) を調整する。
(Fig. a 参照)

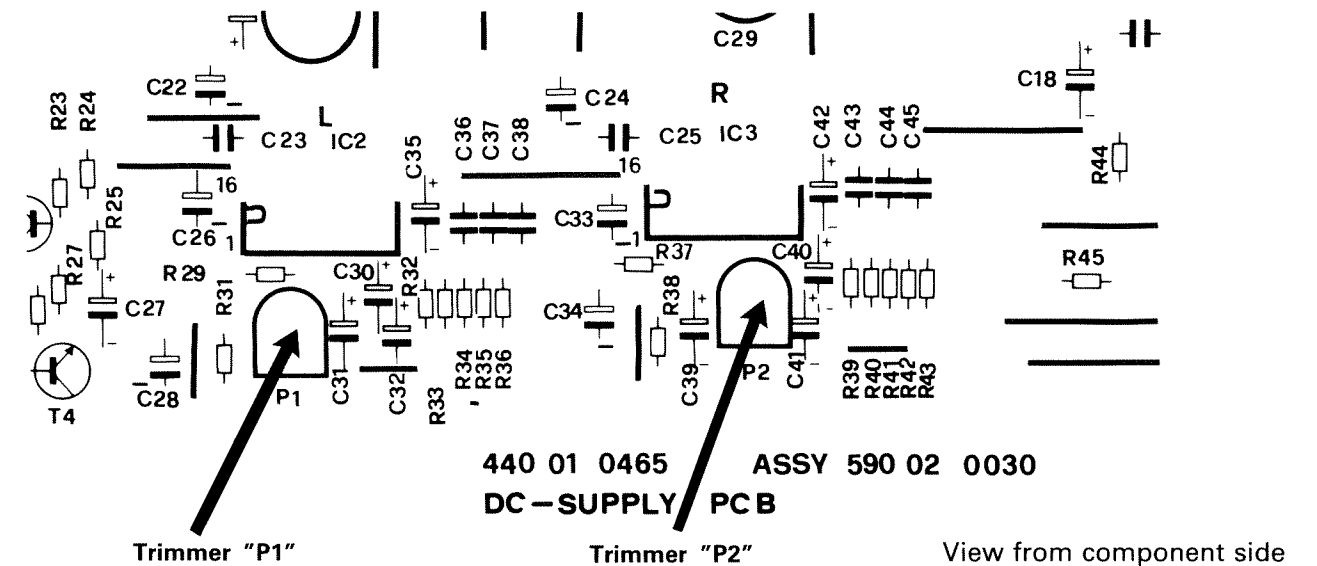
3. オーディオ・テスト

*"FADE IN"ボタンを押しながら、電源を入れる。
すると下図の様に表示される。

A 440Hz sine wave will be output from right speaker and a 880Hz sine wave will be output from left speaker.

Contact the oscilloscope across right loud speaker and adjust the signal output level at 8.5Vp-p by Trimmer P1 located on DC-Supply PCB Ass'y. (Refer to Fig. b)
Repeat the same as above for adjusting the left channel by Trimmer P2 located on the same PCB. (Refer to Fig. b)

Fig. b



For coming out from this situation, switch OFF the instrument.

440Hz のサイン波が右のスピーカーから、880Hz のサイン波が左のスピーカーから出力される。

1. 右のスピーカー端子にオシロスコープを接続する。
2. 出力レベルが, 8.5V_{p-p} になるように DC-SUPPLY PCB ASS'Y のトリマー "P1" (Fig. b 参照) を調整する。
3. 同様に, 左のスピーカーを DC-SUPPLY PCB ASS'Y のトリマー "P2" (Fig. b 参照) で調整する。

電源を切れば、このテストから抜ける。

CHECKING

1. ANALOG TO DIGITAL CONVERSION

*The outputs controls, analog value, are fed to the CPU (IC1) pins 17, 18, 19 and converted to the corresponding digital value by the CPU's internal ADC. The reference voltage VRH for A/D conversion is being originated at IC13 of CPU PCB ASS'Y. (Refer to Fig. a)

*Before this test, the A/D reference voltage (VRH) must be checked and adjusted.

(See "ADJUSTMENT" (P.18) section.)

$$V_{RH} = +4.75VDC$$

ANALOG CONTROL VOLTAGE TEST

| CONTROL ツマミ | TEST POINT テストポイント (CPU BOARD) | ANALOG READING (DC VOLTAGE) 電圧値 (DC) |
|----------------|-----------------------------------|--|
| MODULATION | pin17 of IC1 | OFF (OFF 状態) -----> PRESSED (押された状態) 93mV DC 4.3V DC |
| PITCH BENDER | pin18 of IC1 | LEFT (左側) <-----> CENTER (中央) <---> RIGHT (右側) 840mV DC 2.45V DC 3.95V DC |
| VOLUME | pin19 of IC1 | DOWN (最小) -----> UP (最大) 126mV DC 基準電圧 VRH (+4.75V DC) |

確認

1. A/D 变换

- *各ツマミに対するアナログ電圧は CPU (IC1) の 17, 18, 19 番ピンに加えられ、CPU 内部の AD コンバータでデジタル値に、それぞれ変換される。
A/D 変換の為の基準電圧 (VRH) は CPU 基板の IC13 でつくられている。(Fig. a 参照)
- *このテストをする前に、A/D 基準電圧 (VRH) を確認し、もし基準値外であれば調整しなければならない。
("調整"(P.18) の項を参照のこと)。
$$VRH = +4.75VDC$$
- *アナログ電圧値がそれぞれ下表の様であることを確認する。

各ツマミに対する電圧

DATA SAVE/LOAD

*When the backup battery or SRAM (IC5) are replaced, a customer's data will be erased. Therefore it is recommended to back up the customer's data before changing them.

●WRITING DATA ONTO THE MEMORY CARD

To "write" and store data onto the Memory Card:

- 1. Insert the Memory Card card into the MEMORY CARD SLOT with the label facing upwards.
- 2. Make sure that the PROTECT switch of the Memory Card is set to OFF position.
- 3. Press and hold the TO CARD button in the COMPOSER/MEM CARD section. The display will respond with:

Stores all Composer songs and User Programs TO the Card.

SONGS/USER PROG
TO MEMORY CARD

- 4. While holding the TO CARD button, press the WRITE button. IF the card has not been used before, the display will respond with:

ILLEGAL CARD !!
WRITE AGAIN?

- 5. While holding the TO CARD button, press the WRITE button once more. The display will respond with:

OK !!
SAVE COMPLETE

The selected writing operation has now been executed. After releasing both buttons, the Master Display will return.
*To protect the data (Songs and User Programs) stored on the card, set the PROTECT switch to ON before removing the card.

データ セーブ／ロード

*リチウム電池, SRAM (IC5) を交換すると、データが消えてしまいます。交換前にお客様のデータをバックアップすることをお勧めします。

●データの保存

メモリー・カードへのデータを書き込んで保存するには以下のようにします：

- 1. メモリー・カードの差し込み口にメモリー・カードをラベルを上向きにして差し込みます。
- 2. メモリー・カードのプロテクト・スイッチが OFF の位置にあるのを確認します。
- 3. "COMPOSER/MEN CARD"セクションの **TO CARD** を押したままにします。表示は次のようになります。

メモリー・カードに全てのコンポーザーの曲とユーザー・プログラムを保存します。

- 4. **TO CARD** を押しながら **WRITE** を押します。
以前 E-30 で使われたことのないカードを使用すると次の表示が表れます。

- 5. **TO CARD** を押しながら **WRITE** をもう一度押します。表示は次のようになります。

この表示は、選択した書き込み操作が実行されたことを示します。両方のボタンから手を離すと、表示は基本画面に戻ります。
*カードのデータ（ソングとユーザー・プログラム）を不用意に消さないために、抜き取る前にカードのプロテクト・スイッチを ON にします。

●LOADING DATA FROM THE MEMORY CARD INTO THE E-30

To "write" and load data into the E-30:

- 1. Insert the Memory Card into the MEMORY CARD SLOT with the label facing upwards.
- 2. Press and hold the FROM CARD button in the COMPOSER/MEM CARD section. The display will respond with:

Loads all Composer songs and User Programs from the Card.

SONGS/USER PROG
FROM MEMORY CARD

- 3. While holding the FROM CARD button, press the WRITE button. The display will respond with:

OK !!
LOAD COMPLETE

The selected loading operation has now been executed. After releasing both buttons, the Master Display will return.
*If the Internal Memory Protection parameter is in ON position when the WRITE button was pressed, the display will indicate:

INTERNAL MEMORY
PROTECTED !!

To enable loading of the selected operation, set the Internal Memory Protection parameter to OFF position (See INTERNAL MEMORY Protection (P. 19)), and perform the procedure 3 again.

●INTERNAL MEMORY Protection

To safeguard any loss in internal data, the Internal Memory of the PRO-E is always protected when the instrument is turned on. To turn off the protection and enable writing of new of data, press the PARAMETER button, rotate the TEMPO/FUNCTION Dial until the display responds with:

INTERNAL MEMORY
protection = ON ← Crrrent ON/OFF Position

Press the CURSOR button, the current ON/OFF position will begin to flash. Turn the protection ON or OFF by rotating the TEMPO/FUNCTION Dial counterclockwise or clockwise. The display will indicate the change.

To exit this operation, press the PARAMETER button once more, LED will be turned off and the Master Display will return.

●データの呼び出し

E-30 にデータを読み込むのには次の様にします。
1. メモリー・カードをラベルを上向きにしてメモリー・カード差し込み口に挿入します。
2. "COMPOSER/MEN CARD"セクションの **FROM CARD** を押したままにいます。表示は次のようになります。

カードから全てのコンポーザーのソングとユーザー・プログラムを読み込みます。

- 3. **FROM CARD** を押しながら **WRITE** を押します。表示は次のようになります。

この表示は、選択した読み込み操作が実行されたことを示します。両方のボタンから手を離すと表示は基本画面に戻ります。
* **WRITE** を押したとき、本体の内部メモリーのプロテクト・ボタンが"ON"に設定されていると次の表示が現れます。

選んだ操作の読み込みをできるようにするには、メモリー・プロテクトのパラメーターを"OFF"に設定します("メモリー・プロテクト"(P.19)参照)。その後で、操作3をもう一度します。

●メモリー・プロテクト

内部のデータが消えないように、本体の電源を入れた時には必ず内部メモリーがプロテクト(保護)されています。新たにデータの内容を変える場合、まずプロテクトを外す必要があります。プロテクトをはずすには、**PARAMETER** を押して、ディスプレイが次の様になるまで TEMPO/FUNCTION ダイアルを回します。

次に **CURSOR** を押して、"ON"もしくは"OFF"の文字を点滅させます。TEMPO/FUNCTION ダイアルを左右に回して機能の"ON/OFF"を設定します。設定するとディスプレイの表示も変わります。

この操作を終えるには、**PARAMETER** をもう一度押して、ランプを消します。押すとディスプレイは基本画面に戻ります。

CHANGE INFORMATION

DISAPPEAEANCE OF THE CHARACTERS ON LCD

[PROBLEM]
The characters on LCD are sometimes disappeared, when cleaning the LCD several times (about ten times).

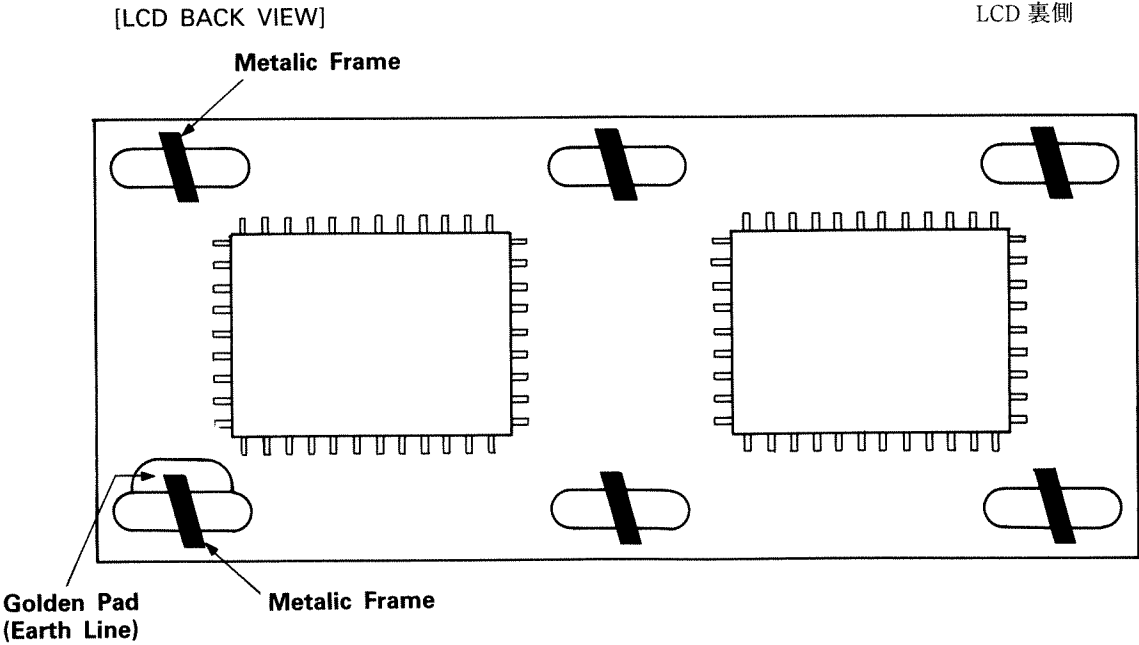
[REASON]
There is not contact between the Metallic Frame of LCD and the Earth(ground) Line(Golden Pad) on LCD PCB.
Because the metallic frame is painted.

[COUNTERMEASURE]
Please connect the Metaric Frame of LCD and Earth(ground) Line(Golden Pad) by soldering.
Measure from the following serial number has been taken for each voltages.

- * Effective serial number/変更実施開始製番
- 117V -----> SNo.ZB2****-up (on and after March, 1990)
- 220V -----> SNo.ZB11475-up
- 240VE -----> SNo.ZB11703-up
- 240VA -----> SNo.ZB11730-up
- 100V -----> SNo.ZB2**** 以降 (1990年 3 月以降)

Please soldering as following procedure.

- 1) Remove the black paint from the Metallic Frame.
- 2) Solder the Metallic Frame to Earth(ground) Line(Golden Pad) on PCB.



変更案内

LCD の表示消滅

[変更理由]
LCD を数回 (10回程度) 清掃すると表示が消えてしまうことがある。

[原因]
LCD の金属枠が塗装されているため、基板のアース端子と完全に接触しない。このため静電気が放電しない。

[改良点]
LCD の金属枠を基板のアース端子へ半田付する (下記参照)。
下記の製造番号以降の製品は製造時に対策を実施していますから、半田付は不要です。

改良方法

1. 金属枠の塗装を一部剥す。
2. 露出した金属部を基板の金色のアース端子へ半田付する。

APPENDIX

CHANGED PROCEDURE FROM EP-ROM TO Mask ROM.

REFERRED TO:

- 1) EP-ROM 27C512 ----- (4 pcs)
- 2) Mask ROM **** ----- (1 pcs)
When changing the EP-ROM to Mask ROM, refer to the circuit diagram and the table below.

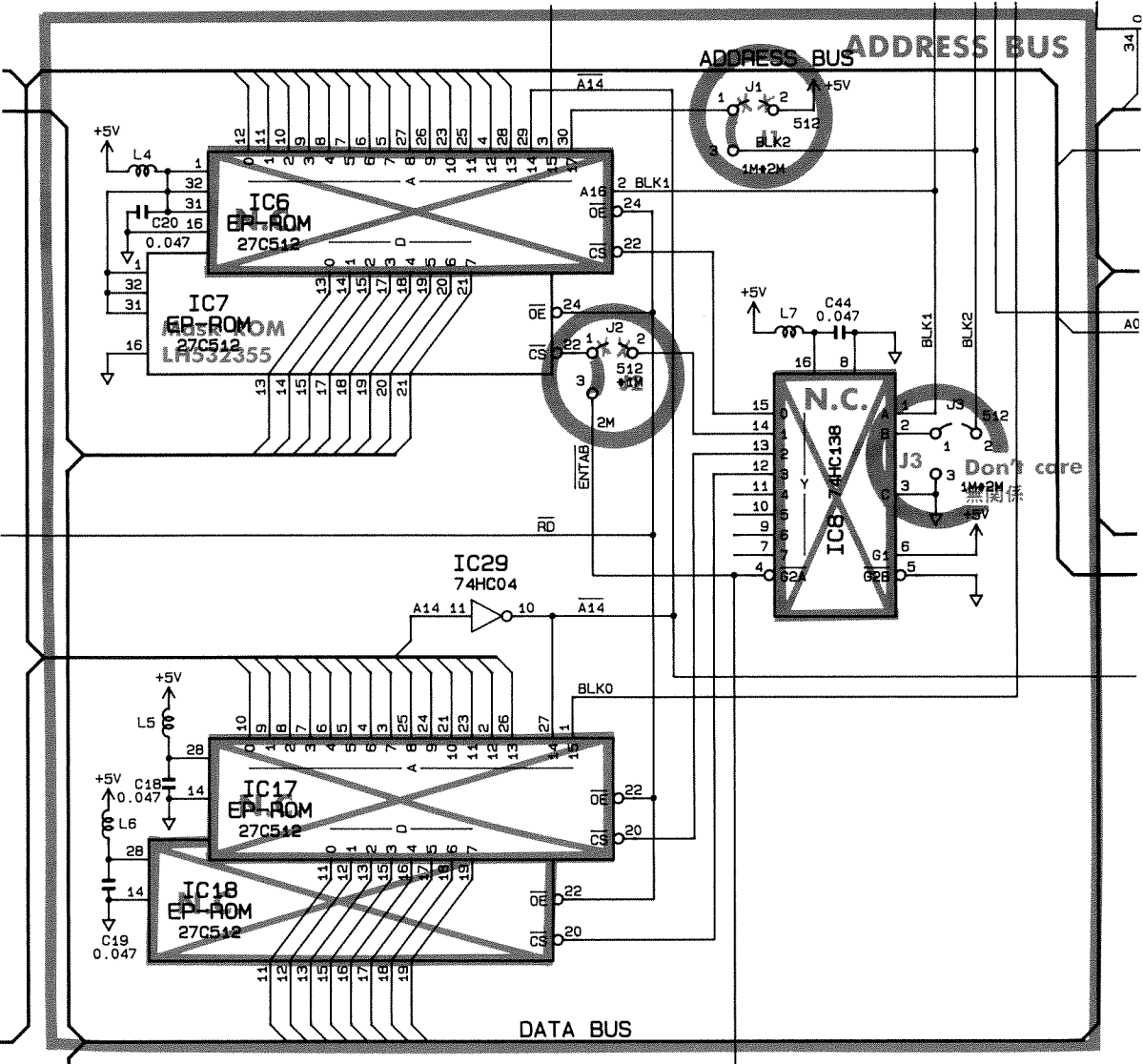
| | EP-ROM | Mask ROM |
|------|--------|---------------------|
| IC6 | 27C512 | N.C. |
| IC7 | 27C512 | **** |
| IC17 | 27C512 | N.C. |
| IC18 | 27C512 | N.C. |
| IC8 | HC138 | N.C. |
| J1 | 1-2 | 1-3 |
| J2 | 1-2 | 1-3 |
| J3 | 1-2 | Don't care (無関係) |

付録

EP-ROM から Mask ROM へ交換する手順

下記参照:

- 1) EP-ROM 27C512 ----- (4 個)
- 2) Mask ROM **** ----- (1 個)
交換する際は、下記の回路図と表を参照してください。



IC DATA/IC データ

CPU (IC1 on CPU)
MC68HC11AOP
(15179291RI)

TOP VIEW

OP AMP (IC13 on CPU)
TL082P
(15189228RI)

TOP VIEW

OP AMP (IC14 on CPU)
LM393P
(15189230RI)

TOP VIEW

UART (IC11 on CPU)
63B50P
(15179211RI)

TOP VIEW

+5V Voltage Regulator (T5 on DS)
UA7805 SCNC
(15199197RI)

FRONT VIEW

Photo Coupler (Opto-isolator)
(IC12 on CPU)
6N137
(15229718RI)

TOP VIEW

EP-ROM
TMS27C512-25
(blank: 15179798)

TOP VIEW

Hex Inverters
(IC9 on CPU)
(IC25 on CK36)
74HC04
(15169514RI)

TOP VIEW

Quad 2 Input NOR
(IC32 on CK36)
74HC02
(15169516)

TOP VIEW

Octal 3-State Bus Buffers
(IC21 on CPU)
74LS244
(15169331RI)

TOP VIEW

Octal 3-State D-Latches
(IC20 on CPU)
74LS373
(15169358RI)

TOP VIEW

Power Amplifier (IC2, 3 on DS)
TDA1905
(15199550RI)

TOP VIEW

S RAM (IC5 on CPU)
HM62256LP-12
(15279508RI)

TOP VIEW

3 to 8 Demultiplexer (IC8 on CPU)
74HC138
(15169550RI)

TOP VIEW

| PIN NO. | NAME | I/O | PIN NO. | NAME | I/O | PIN NO. | NAME | I/O | PIN NO. | NAME | I/O |
|---------|-------|-----|---------|-------|-----|---------|-------|-----|---------|-------|-----|
| 1 | SI0 | I | 21 | AD4 | I | 41 | EXI02 | 0 | 61 | A17 | 0 |
| 2 | SI1 | I | 22 | AD5 | I | 42 | EXI03 | 0 | 62 | BANK0 | 0 |
| 3 | SI2 | I | 23 | AD6 | I | 43 | A0 | 0 | 63 | BANK0 | 0 |
| 4 | SI3 | I | 24 | AD7 | I | 44 | A1 | 0 | 64 | WR H | 0 |
| 5 | SI4 | I | 25 | AD8 | I | 45 | A2 | 0 | 65 | WR L | 0 |
| 6 | SI5 | I | 26 | AD9 | I | 46 | A3 | 0 | 66 | S00 | 0 |
| 7 | SI6 | I | 27 | AD10 | I | 47 | A4 | 0 | 67 | S01 | 0 |
| 8 | SI7 | I | 28 | AD11 | I | 48 | A5 | 0 | 68 | S02 | 0 |
| 9 | AUXB2 | I | 29 | AD12 | I | 49 | A6 | 0 | 69 | S03 | 0 |
| 10 | AUXB3 | 0 | 30 | AD13 | I | 50 | A7 | 0 | 70 | S04 | 0 |
| 11 | CLK | 0 | 31 | AD14 | I | 51 | A8 | 0 | 71 | S05 | 0 |
| 12 | GND | - | 32 | AD15 | I | 52 | GND | - | 72 | S06 | 0 |
| 13 | SC0 | 0 | 33 | VCC | - | 53 | A9 | 0 | 73 | VCC | - |
| 14 | SC1 | 0 | 34 | PD | I | 54 | A10 | 0 | 74 | S07 | 0 |
| 15 | SC2 | 0 | 35 | WR | I | 55 | A11 | 0 | 75 | LC00 | 0 |
| 16 | SC3 | 0 | 36 | BHE | I | 56 | A12 | 0 | 76 | LC01 | 0 |
| 17 | AD0 | I | 37 | ALE | I | 57 | A13 | 0 | 77 | LC02 | 0 |
| 18 | AD1 | I | 38 | RES | I | 58 | A14 | 0 | 78 | LC03 | 0 |
| 19 | AD2 | I | 39 | INT | 0 | 59 | A15 | 0 | 79 | LC05 | 0 |
| 20 | AD3 | I | 40 | EXI01 | 0 | 60 | A16 | 0 | 80 | LC08 | 0 |

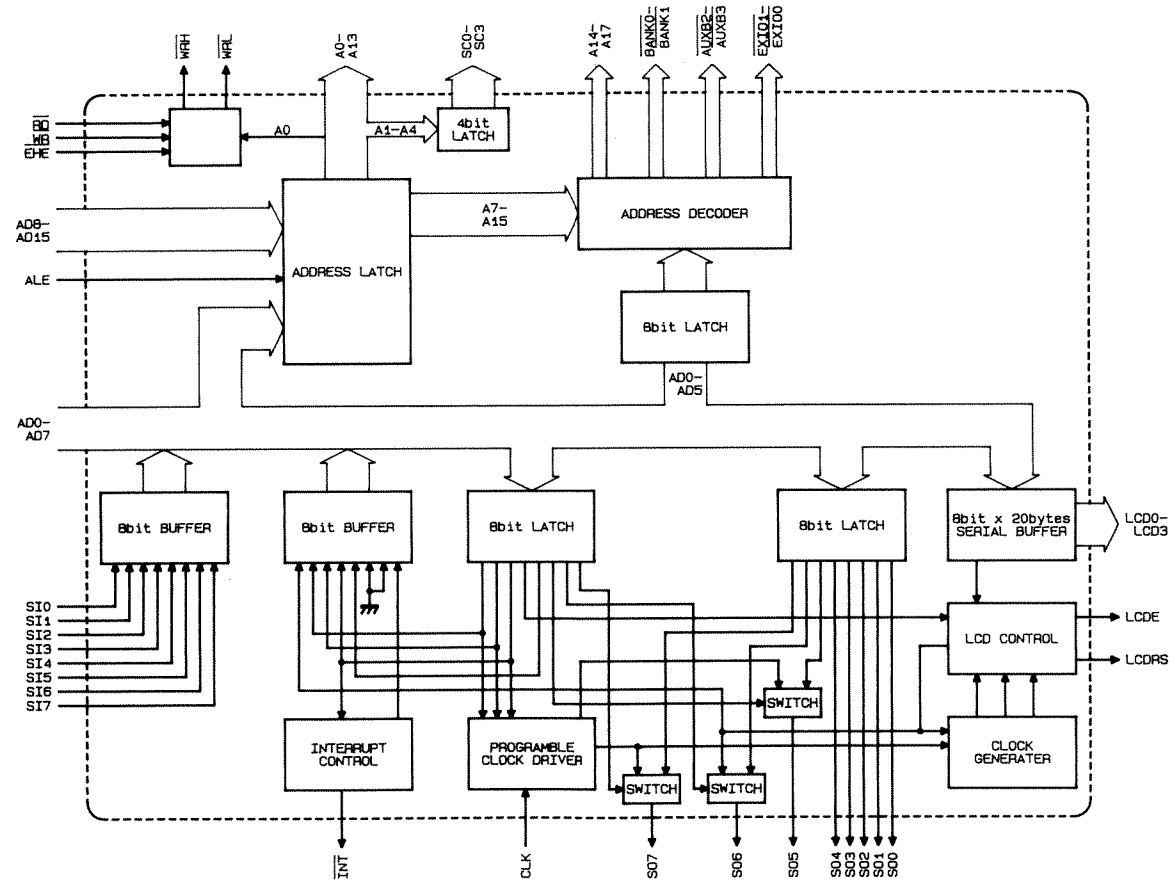


Diagram showing the top view of a rectangular plate. The plate has a width of 80 and a height of 100. A hole is located in the bottom-left corner. The distance from the left edge to the hole is 1, and the distance from the bottom edge to the hole is 30. The distance from the right edge to the hole is 51, and the distance from the top edge to the hole is 81. The total width is 80, and the total height is 100. The distance from the right edge to the hole is 51, and the distance from the top edge to the hole is 81. The distance from the left edge to the hole is 1, and the distance from the bottom edge to the hole is 30.

The top view shows a rectangular plate with overall dimensions of 80 units by 100 units. The plate has a central rectangular hole with dimensions of 51 units by 50 units. A circular hole with a diameter of 31 units is located at the bottom-left corner of the outer rectangle. The distance from the left edge of the outer rectangle to the center of the circular hole is 1 unit.

| | | | |
|-----------------|----|----|------------------|
| RXD/P2.1 | 1 | 48 | RESET |
| TXD/P2.0 | 2 | 47 | EXTINT/P2.2 |
| HSI0 | 3 | 46 | V _{pp} |
| HSI1 | 4 | 45 | V _{ref} |
| HSI2/HS04 | 5 | 44 | ANGND |
| HSI3/HS05 | 6 | 43 | AQ14/P0.4 |
| HS00 | 7 | 42 | AQ15/P0.5 |
| HS01 | 8 | 41 | AQ17/P0.7 |
| HS02 | 9 | 40 | AQ16/P0.6 |
| HS03 | 10 | 39 | EA |
| V _{ss} | 11 | 38 | V _{cc} |
| V _{pp} | 12 | 37 | V _{ss} |
| PWM/P2.5 | 13 | 36 | XTAL1 |
| WR | 14 | 35 | XTAL2 |
| N.C. | 15 | 34 | ALE/ADV |
| READY | 16 | 33 | P0 |
| A15/P4.7 | 17 | 32 | AD0/P3.0 |
| A14/P4.6 | 18 | 31 | AD1/P3.1 |
| A13/P4.5 | 19 | 30 | AD2/P3.2 |
| A12/P4.4 | 20 | 29 | AD3/P3.3 |
| A11/P4.3 | 21 | 28 | AD4/P3.4 |
| A10/P4.2 | 22 | 27 | AD5/P3.5 |
| A9/P4.1 | 23 | 26 | AD6/P3.6 |
| A8/P4.0 | 24 | 25 | AD7/P3.7 |

TOP VIEW

| Pin | Function |
|-----|------------------|
| 1 | Trim |
| 2 | Bit1 (MSB) |
| 3 | Bit2 |
| 4 | NC |
| 5 | Bit3 |
| 6 | Bit4 |
| 7 | Bit5 |
| 8 | Bit6 |
| 9 | Bit7 |
| 10 | Bit8 |
| 11 | Bit9 |
| 12 | Bit10 |
| 13 | Bit11 |
| 14 | Bit12 |
| 28 | -Vcc |
| 27 | MSB Adjust |
| 26 | +Vcc |
| 25 | I _{imp} |
| 24 | NC |
| 23 | I _{arr} |
| 22 | Common |
| 21 | SJ |
| 20 | R _{int} |
| 19 | V _{arr} |
| 18 | Bit16 (LSB) |
| 17 | Bit15 |
| 16 | Bit14 |
| 15 | Bit13 |

TOP VIEW

MS207L

| | |
|----|-----------|
| 10 | +Vcc |
| 9 | OUT 2 |
| 8 | LINE Vc 2 |
| 7 | IN 2 |
| 6 | NC |
| 5 | -Vcc |
| 4 | IN 1 |
| 3 | LINE Vc 1 |
| 2 | OUT 1 |
| 1 | GND |

TOP VIEW

Pinout diagram for the 74VHC04 (hex inverters). The diagram shows a 14-pin package with pins numbered 1 to 14 on the left. The right side shows the logic symbols for the inverters: V_{CC}, WE, A₅, A₆, A₉, A₁₁, \overline{OE} , A₁₀, CS, D₇, D₆, D₅, D₄, and D₃. The package is labeled "TOP VIEW" at the bottom.

Pinout diagram for the 74VHC04 hex inverters. The diagram shows a 14-pin package with pins numbered 1 to 14. Pin 1 is VPP, Pin 2 is A12, Pin 3 is A7, Pin 4 is A8, Pin 5 is A5, Pin 6 is A4, Pin 7 is A3, Pin 8 is A2, Pin 9 is A1, Pin 10 is A0, Pin 11 is D0, Pin 12 is D1, Pin 13 is D2, and Pin 14 is GND. On the right side, Pin 28 is VCC, Pin 27 is A14, Pin 26 is A13, Pin 25 is A6, Pin 24 is A9, Pin 23 is A11, Pin 22 is OE, Pin 21 is A10, Pin 20 is CE, Pin 19 is D7, Pin 18 is D6, Pin 17 is D5, Pin 16 is D4, and Pin 15 is D3. The package is labeled 'TOP VIEW'.

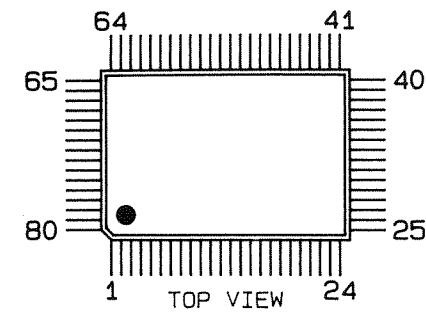
TOP VIEW

TOP VIEW

Pin diagram of the 74VHC00 hex inverters. The chip has 14 pins. Pin 1 is labeled '4', pin 2 '6', pin 3 'COM', pin 4 '7', pin 5 '5', pin 6 'INH', pin 7 'V_{cc}', pin 8 'V_{cc}', pin 16 'V_{cc}', pin 15 '2', pin 14 '1', pin 13 '0', pin 12 '3', pin 11 'A', pin 10 'B', pin 9 'C'. The text 'TOP VIEW' is at the bottom.

Gate Array (IC2 on CPU)

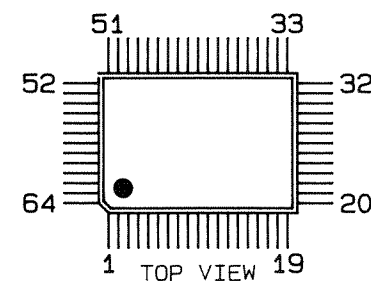
M60012-0148FP
(15238122)



| PIN NO. | NAME | I/O | PIN NO. | NAME | I/O | PIN NO. | NAME | I/O | PIN NO. | NAME | I/O |
|---------|------|-----|---------|------|-----|---------|------|-----|---------|------|-----|
| 1 | AD0 | I/O | 21 | A1 | 0 | 41 | RW3 | 0 | 61 | BLK3 | 0 |
| 2 | AD1 | I/O | 22 | NC | - | 42 | RW4 | 0 | 62 | NC | - |
| 3 | AD2 | I/O | 23 | A2 | 0 | 43 | RW5 | 0 | 63 | LCD0 | I/O |
| 4 | AD3 | I/O | 24 | A3 | 0 | 44 | RW6 | 0 | 64 | LCD1 | I/O |
| 5 | AD4 | I/O | 25 | A4 | 0 | 45 | RW7 | 0 | 65 | LCD2 | I/O |
| 6 | AD5 | I/O | 26 | A5 | 0 | 46 | K0 | I | 66 | LC03 | I/O |
| 7 | AD6 | I/O | 27 | A6 | 0 | 47 | K1 | I | 67 | LC04 | I/O |
| 8 | AD7 | I/O | 28 | A7 | 0 | 48 | K2 | I | 68 | LC05 | I/O |
| 9 | AS | I | 29 | RD | 0 | 49 | K3 | I | 69 | LC06 | I/O |
| 10 | E | I | 30 | WR | 0 | 50 | K4 | I | 70 | LC07 | I/O |
| 11 | R/W | I | 31 | CS0 | 0 | 51 | K5 | I | 71 | LE | 0 |
| 12 | A9 | I | 32 | GND | - | 52 | VDD | - | 72 | LA/W | 0 |
| 13 | VDD | - | 33 | CS1 | 0 | 53 | K6 | I | 73 | NC | - |
| 14 | A10 | I | 34 | CS2 | 0 | 54 | K7 | I | 74 | GND | - |
| 15 | A11 | I | 35 | CS3 | 0 | 55 | BLR0 | 0 | 75 | LRS | 0 |
| 16 | A12 | I | 36 | CS4 | 0 | 56 | BLR1 | 0 | 76 | US3 | 0 |
| 17 | A13 | I | 37 | CS5 | 0 | 57 | BLKR | 0 | 77 | US2 | 0 |
| 18 | A14 | I | 38 | RW0 | 0 | 58 | BLK0 | 0 | 78 | US1 | 0 |
| 19 | A15 | I | 39 | RW1 | 0 | 59 | BLK1 | 0 | 79 | RST | 0 |
| 20 | A0 | 0 | 40 | RW2 | 0 | 60 | BLK2 | 0 | 80 | POC | 0 |

Gate Array (IC10 on CPU)

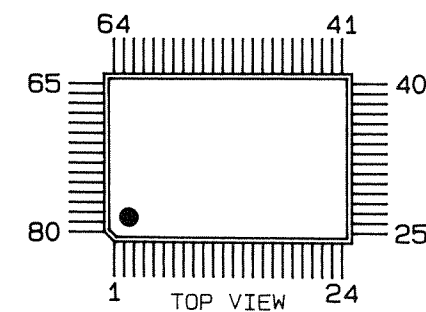
MPD65005G-062
(15229848)



| PIN NO. | NAME | I/O | PIN NO. | NAME | I/O | PIN NO. | NAME | I/O | PIN NO. | NAME | I/O |
|---------|------|-----|---------|------|---------|---------|------|-----|---------|------|---------|
| 1 | NC | - | 17 | NC | - | 33 | NC | - | 49 | NC | - |
| 2 | NC | - | 18 | NC | - | 34 | NC | - | 50 | CD0 | I/O |
| 3 | AD7 | I/O | 19 | A13 | I | 35 | CA5 | 0 | 51 | CD1 | I/O |
| 4 | AD6 | I/O | 20 | A12 | I | 36 | CA6 | 0 | 52 | CD2 | I/O |
| 5 | AD5 | I/O | 21 | A11 | I | 37 | CA7 | 0 | 53 | CD3 | I/O |
| 6 | AD4 | I/O | 22 | A10 | I | 38 | CA8 | 0 | 54 | CD4 | I/O |
| 7 | AD3 | I/O | 23 | A9 | I | 39 | CA9 | 0 | 55 | CD5 | I/O |
| 8 | AD2 | I/O | 24 | A8 | I | 40 | CA10 | 0 | 56 | CD6 | I/O |
| 9 | AD1 | I/O | 25 | SEL | I (LOW) | 41 | CA11 | 0 | 57 | CD7 | I/O |
| 10 | AD0 | I/O | 26 | VSS | - | 42 | CA12 | 0 | 58 | VSS | - |
| 11 | VSS | - | 27 | VDD | - | 43 | CA13 | 0 | 59 | VDD | - |
| 12 | VDD | - | 28 | CA0 | 0 | 44 | CA14 | 0 | 60 | BATT | I (LOW) |
| 13 | ALE | I | 29 | CA1 | 0 | 45 | MR | 0 | 61 | SENS | I (NC) |
| 14 | WR | I | 30 | CA2 | 0 | 46 | CWR | 0 | 62 | RCS | I |
| 15 | RD | I | 31 | CA3 | 0 | 47 | CCS | 0 | 63 | CS | I |
| 16 | A14 | I | 32 | CA4 | 0 | 48 | CRD | 0 | 64 | NC | - |

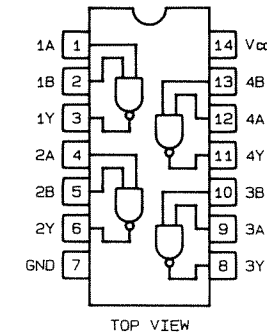
Gate Array (IC15 on CPU)

MB63H149
(15229830)

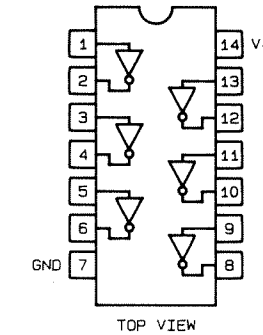


| PIN NO. | NAME | I/O | PIN NO. | NAME | I/O | PIN NO. | NAME | I/O | PIN NO. | NAME | I/O |
|---------|------|-----|---------|------|----------|---------|------|----------|---------|------|-----|
| 1 | T7 | O | 21 | BR9 | I | 41 | AD7 | I/O | 61 | RA1 | O |
| 2 | BR0 | I | 22 | MK9 | I | 42 | CAB | I | 62 | RA10 | O |
| 3 | MK0 | I | 23 | BR10 | I | 43 | CA9 | I | 63 | RA2 | O |
| 4 | BR1 | I | 24 | MK10 | I | 44 | CA10 | I (LOW) | 64 | RAE | I/O |
| 5 | MK1 | I | 25 | RES | I | 45 | CS | I | 65 | RA3 | O |
| 6 | BR2 | I | 26 | EXCK | I/O | 46 | XT1 | I | 66 | RAE | O |
| 7 | MK2 | I | 27 | E | I (HIGH) | 47 | XT2 | O (NC) | 67 | RA4 | O |
| 8 | BR3 | I | 28 | INT | O | 48 | ASEL | O (NC) | 68 | RA9 | O |
| 9 | MK3 | I | 29 | AS | I | 49 | MOD1 | I (HIGH) | 69 | RA5 | O |
| 10 | BR4 | I | 30 | CRES | O (NC) | 50 | MOD2 | I (LOW) | 70 | RA8 | O |
| 11 | MK4 | I | 31 | CRNW | I | 51 | RD3 | I/O | 71 | RA6 | O |
| 12 | VSS | - | 32 | SACK | O (NC) | 52 | VSS | - | 72 | RA7 | O |
| 13 | BR5 | I | 33 | VDD | - | 53 | RD4 | I/O | 73 | VDD | - |
| 14 | MK5 | I | 34 | AD0 | I/O | 54 | RD2 | I/O | 74 | T0 | O |
| 15 | BR6 | I | 35 | AD1 | I/O | 55 | RD5 | I/O | 75 | T1 | O |
| 16 | MK6 | I | 36 | AD2 | I/O | 56 | RD1 | I/O | 76 | T2 | O |
| 17 | BR7 | I | 37 | AD3 | I/O | 57 | RD6 | I/O | 77 | T3 | O |
| 18 | MK7 | I | 38 | AD4 | I/O | 58 | RD0 | I/O | 78 | T4 | O |
| 19 | BR8 | I | 39 | AD5 | I/O | 59 | RD7 | I/O | 79 | T5 | O |
| 20 | MK8 | I | 40 | AD6 | I/O | 60 | RA0 | O | 80 | T6 | O |

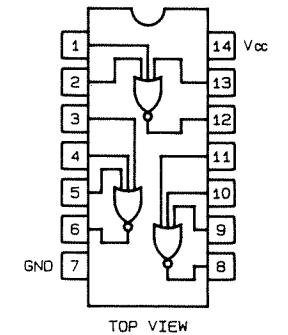
Quad 2 Input NAND
(IC16 on CK36)
(IC2 on MCB)
74HC00
(15169515)



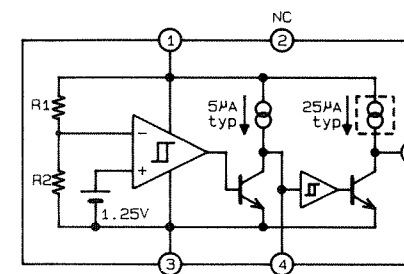
Hex 0.C.Inverters
74LS05P
(15169334)



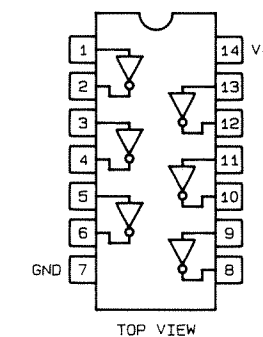
Triple 3 Input NOR (IC15 on CK36)
74HC27
(15169537)



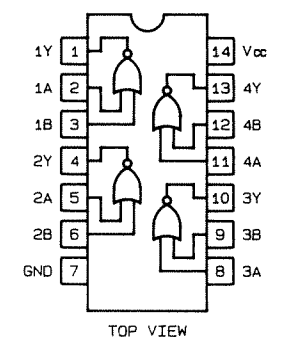
Reset IC (IC30 on CK36)
M51953
(15219183)



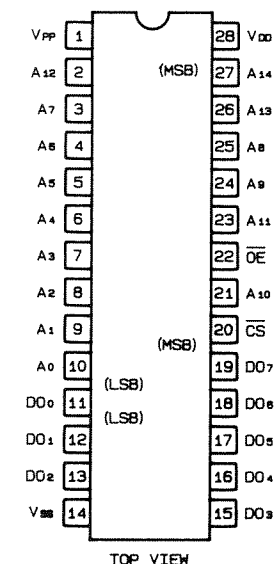
Hex Inverters (IC24 on CK36)
74HCU04P
(15169512)



Quad 2 Input NOR (IC32 on CK36)
74HC02
(15169516)



EP-ROM (IC1 on MCB)
27C256-25
(program: 15449233RI)
(blank : 15209251RI)



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