CD AUTO CHANGER

# KDC–C811/CPS81

KENWOOD

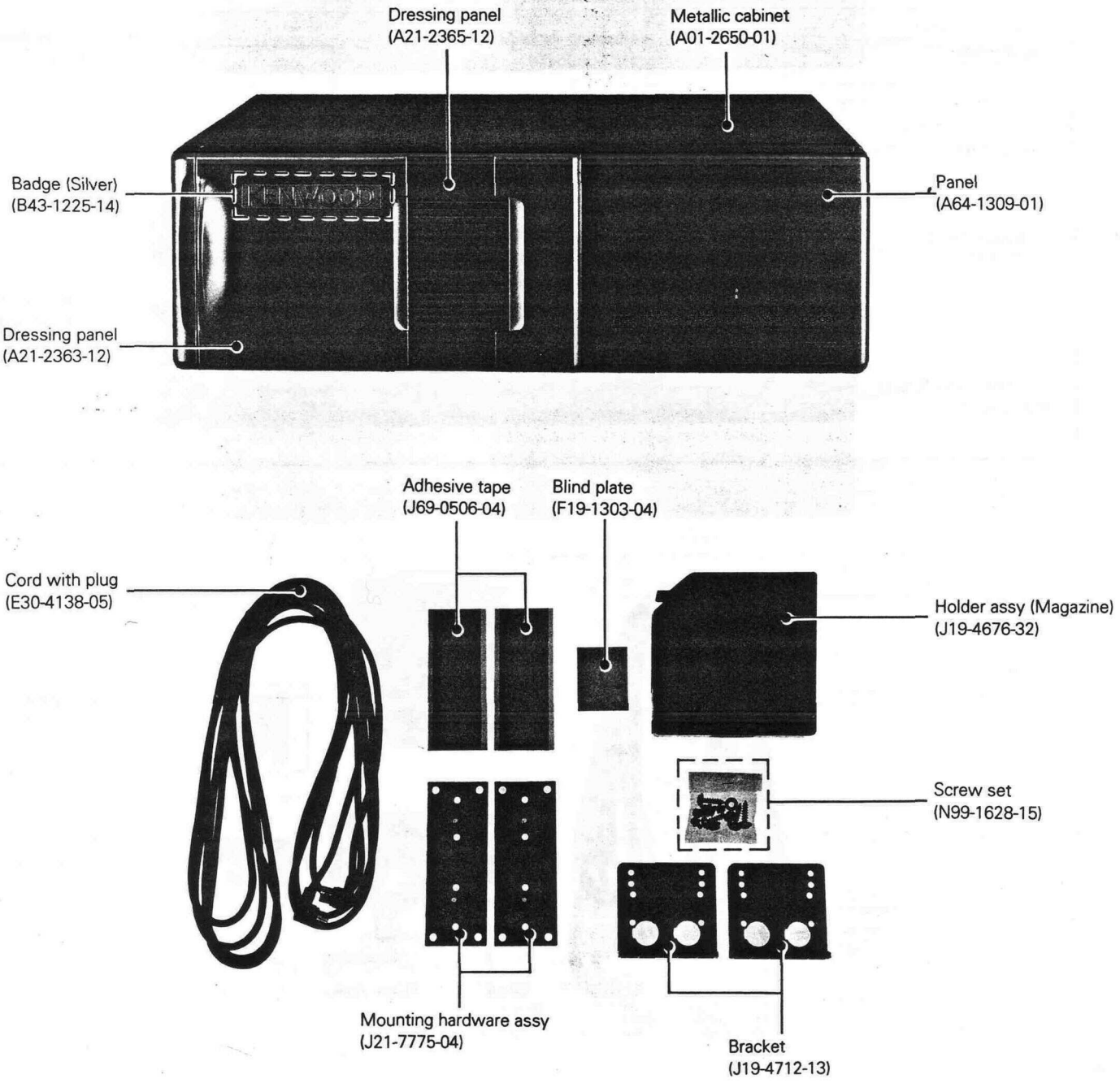
## SERVICE MANUAL


B51–7281–00(S) 3296

When transporting these models, always attach CAUTION CARD and STEPPED SCREW (for transportation).
CAUTION CARD :B58–1275–04
STEPPED SCREW :N09–4186–25

| Service jig | Parts No. |
|---|---|
| For initial position setting | W05–0635–00 |

## Photo is KDC–C811

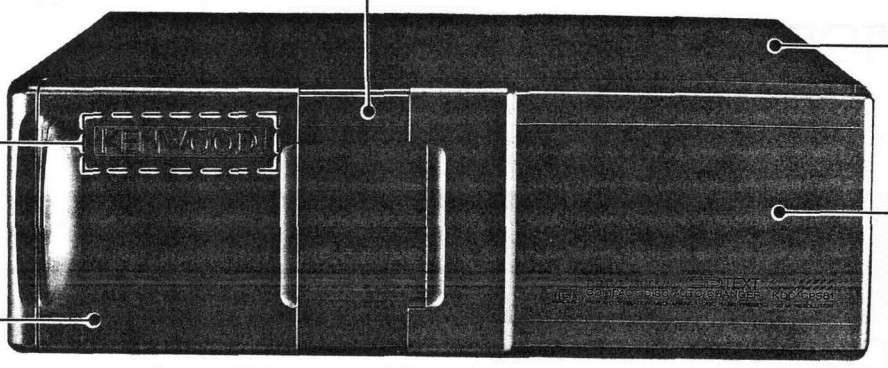



The MECHANISM OPERATION DESCRIPTION is the same as model KDC–C810.
Please refer to the service manual of model KDC–C810 (B51–7103–00).

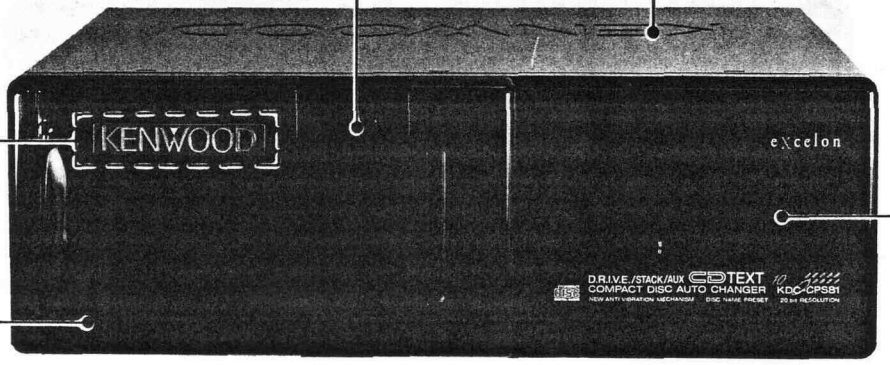
# KDC–C811/CPS81

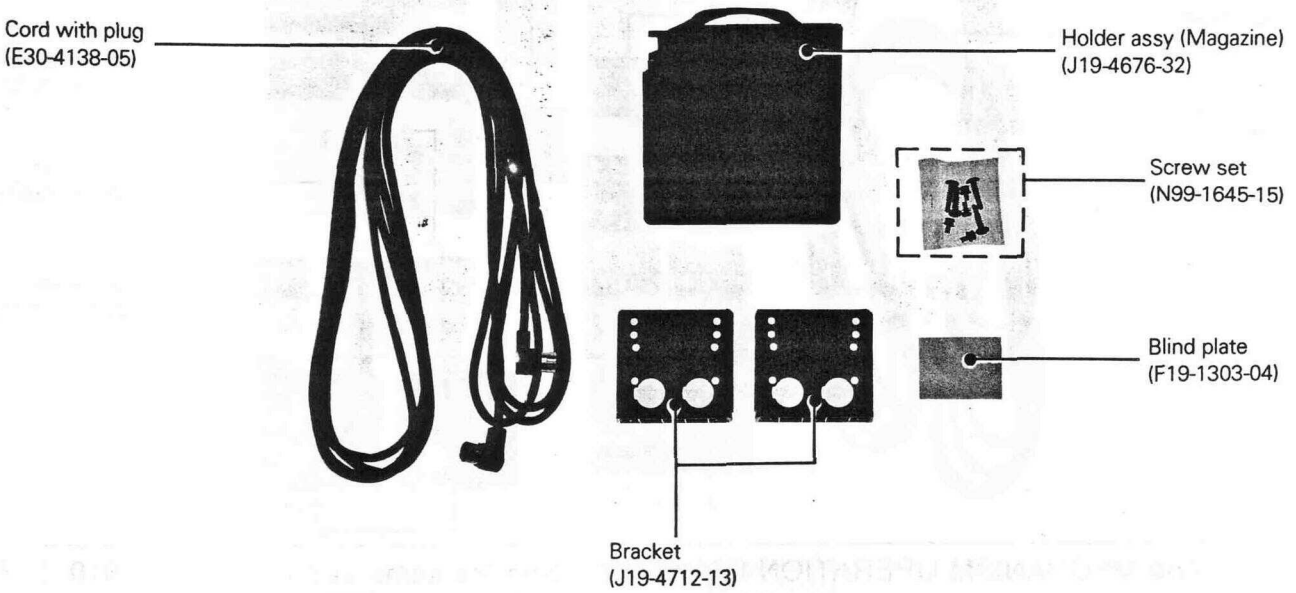
## Photo is KDC–CPS81

### E-type

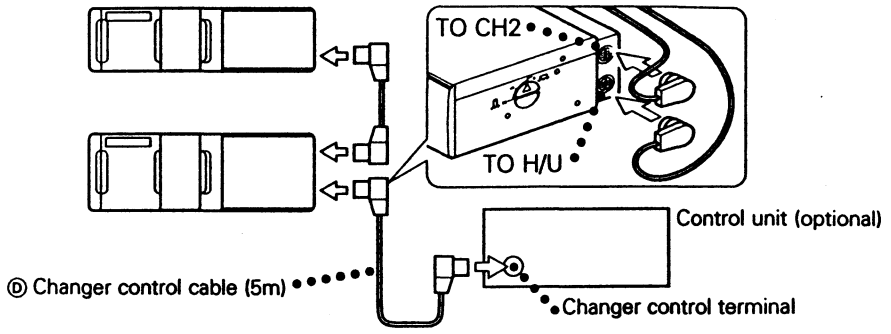



### K-type



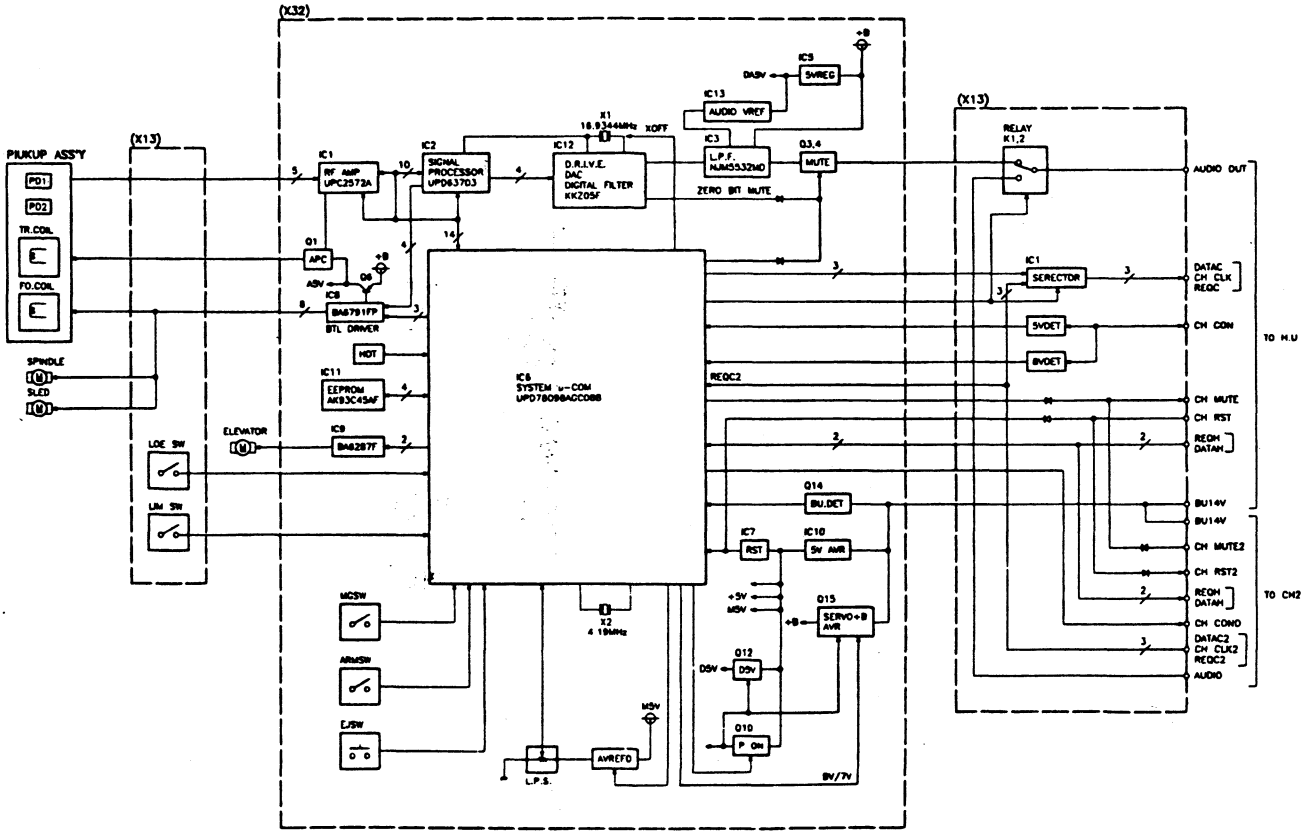
# CONNECTIONS




**▲CAUTION**

- Do not connect the changer control cable while the control unit is turned ON.
- Be sure to press the reset button after installation.
- The model connected to the TO CH2 jacks may not be recognized immediately after the connection. In this case, switch the source mode to TUNER or other source then return to the changer mode again. This makes operation possible by dividing the changer more to 1 and 2.
- Leave the TO CH2 terminal capped while it is not used.
- If the control unit in use does not have the changer switching function, do not connect anything to the TO CH2 terminal.
- Do not install an antenna of radio equipment or distribute the antenna cable near the changer output cable, for this could cause malfunction with this unit.

# BLOCK DIAGRAM



# COMPONENTS DESCRIPTION

## ● CD PLAYER UNIT(X32-4410-00)

| Component | Component Name | Application/Function | Operation/Condition/Compatibility |
|---|---|---|---|
| IC1 | NJM5532MD | D/A converter output active filter | Differential amplifier |
| IC2 | NJM4565MD | D/A 5V 1/2 Vcc regulator | Reference power supply for the audio filters |
| IC3 | TA78L05F | 3-pin regulator | Supplies 5V to the DSP and 5v to the active filter |
| IC4 | TC74HC4072AF | Chip select control for IC11 | Generates the communication permission signal from IC11 to IC7 |
| IC5 | LC3564BT-70 | Text data memory | Data from the text decoder is stored in the memory via the μ-com |
| IC6 | KKZ05F | Drive IC | Drive system, OSC,DAC |
| IC7 | UPD784214GC011 | System μ-com | |
| IC8 | LC89170M | Text decoder | Decode sub-code data |
| IC9 | UPD63702A | Digital servo data processor | Digital servo data processor, 8fs over-sampling filter, digital loop filter |
| IC10 | AK93C45AF | Memory IC | Storage of the data on the initial position of the mechanism deck up-down operation |
| IC11 | B6219BFP-Y | Motor drive | Drives the mechanism deck up-down motor |
| IC12 | BA6791FP | Motor drive | Drives the Focusing/Tracking actuators, sled motor and spindle motor |
| IC13 | UPC2572A | RF amp & error amp | RF amplifier, Focusing/Tracking error amplifier, APC circuit, reference amplifier, mirror circuit, defect circuit, RF OK circuit, EFM comparator and vibration detector circuit |
| Q1 , 2 | 2SD2114K | Audio muting | Muting is turned ON when IC7 A.MUTE = "L" |
| Q3 , 4 | DTA124EK | 0 bit muting | Lch muting is turned ON when IC6 LZ = "H". Rch muting is turned ON when IC6 RZ = "H" |
| Q5 | DTA124EK | Audio muting | Muting is turned ON when IC7 A.MUTE = "L" |
| Q6 | DTA143EK | H/U communication control | Inverts the CH-CON logic |
| Q7 | DAT114EK | LPS power SW | Goes ON when LPSCO of IC7 of goes "L" at P-ON or during up-down operation |
| Q8 | DTC124EK | Clock ON/OFF | Clock is turned OFF when the IC7 XOFF terminal outputs "H" |
| Q9 | DTC124EK | Audio muting | The system μ-com is reset when CH-RST is "H" |
| Q10 | DTC124EK | H/U communication control | Inverts the CH-CON logic |
| Q11 | DTA143EK | 8V AVR SW | Tuner ON/OFF by P-ON |
| Q12 | DTC124EK | | |
| Q13 | DTC124EK | AVR 8V/7V SW | 7V when "H" (normal play mode). 8V when "L"(mechanism loading-ejection operation, ELV) |
| Q14 | DTC124EK | AVR 9V/8V control | |
| Q15 | 2SC2412K | 8V AVR drive | |
| Q16 | 2SA1362(Y) | P-ON SW | |
| Q17 | 2SC2412K | μ-com 5V drive | P-ANT is output when the base of Q17 goes "H" |
| Q20 | 2SC2412K | Kick pulse when scratch detected | A lens correction kick pulse is generated when a scratch is detected |
| Q21 | 2SB1188 | 5V optics power | Supplies the power from AVR 8V to the A.VDD of the Pick up, IC1 and IC2 |
| Q22 | 2SA1362(Y) | Laser control | Controls the laser current according to the voltage output from the IC1 LD terminal |
| Q23 , 24 | DTC124EK | 0 bit muting | Lch muting is turned ON when IC6 LZ = "H". Rch muting is turned ON when IC6 RZ = "H" |

## ● SUB CIRCUIT UNIT(X13-9200-00)

| Component | Component Name | Application/Function | Operation/Condition/Compatibility |
|---|---|---|---|
| IC1 | UPD7805GCA66T | μ-com | Interface μ-com |
| IC2 | PST9137NR | Reset IC | |
| Q1 | DTC124EK | Relay drive | Switches the audio signal between CH1 and CH2 |
| Q3 | DTB123YK | | |
| Q2 | DTC124EK | Relay drive | Switches the audio signal between CH1 and AUX |
| Q4 | DTB123YK | | |
| Q5 , 6 | 2SC2412K | CH-CON SW | Control switching for CH1 and CH2 |
| Q7 | DTC124EK | Monentary power down SW | OFF when monentary power down is detected |
| Q8 | DTC124EK | Reset SW | ON when reset signal is input from H/U |

# KDC-C811/CPS81

## MICROCOMPUTER'S DESCRIPTION

### Interface μ-com : UPD7805GCA66T(X13-9200-00 : IC1)

●Terminal desctiption

| Pin No. | Pin Name | I/O | Function | Description | Processing Operation |
|---|---|---|---|---|---|
| 1 - 3 | P15/ANI5 - P17/ANI7 | O | | (Not used) | |
| 4 | AVss | - | | A/D converter reference GND terminal | |
| 5 | P130/ANO0 | O | RST OUT | Reset output | H : Changer reset |
| 6 | P131/ANO1 | O | REQH1 | Communication request to CH1 | L : Communication request |
| 7 | AVref1 | I | AVref1 | A/D converter reference power terminal | |
| 8 | P70/SI2/RXD | I | DATAC1 | Data input from CH1 | |
| 9 | P71/SO2/TXD | O | DATAH1 | Data output to CH1 | |
| 10 | P72/SCK2/ASCK | I/O | HCLK1 | Clock output to CH1 | |
| 11 | P20/SI1 | I | DATAH0 | Data input from CH1 | |
| 12 | P21/SO1 | O | DATAC0 | Data output from H/U | |
| 13 | P22/SCK1 | I/O | HCLK0 | Clock input from H/U | |
| 14 | P23/STB | O | REQC0 | Communication request to H/U | L : Communication request |
| 15 | P24/BUSY | O | REQH2 | Communication request to CH2 | L : Communication request |
| 16 | P25/SI0/SB0/SDA0 | I | DATAC2 | Data input from CH2 | |
| 17 | P26/SO0/SB1/SDA1 | O | DATAH2 | Data output to CH2 | |
| 18 | P27/SCK0/SCL | I/O | HCLK2 | Clock output to CH2 | |
| 19 | P40/AD0 | O | CHCONO1 | Changer1 control output | H : CH1 control request |
| 20 | P41/AD1 | O | CHCONO2 | Changer2 control output | H : CH2 control request |
| 21 | P42/AD2 | O | RELAY1 | Relay 1 control terminal | H : AUX L : CH1 |
| 22 | P43/AD3 | O | RELAY2 | Relay 1 control terminal | H : CH1 L : CH2 |
| 23 | P44/AD4 | O | MSTOP | (Not used) | H : CH monentary power down |
| 24 - 26 | P45/AD5 - P47/AD7 | O | | (Not used) | |
| 27 - 32 | P50/A8 - P55/A13 | O | | (Not used) | |
| 33 | Vss | - | | GND | |
| 34 , 35 | P56/A14 , P57/A15 | O | | (Not used) | |
| 36 - 43 | P60 - P67 | O | | (Not used) | |
| 44 - 50 | P30 - 37 | O | | (Not used) | |
| 52 - 59 | P120/RTP0 - P127/RTP7 | O | | (Not used) | |
| 60 | RESET | I | | Reset input | L : Reset |
| 61 | P00/INTP0/TI00 | I | REQC2 | Communication request from CH2 | L : Communication request |
| 62 | P01/INTP1/TI01 | I | BUDET | Momentary power down detection | H : Momentary power down detection |
| 63 | P02/INTP2 | I | AUX SW | AUX input switch | H : AUX input |
| 64 | P03/INTP3 | I | REQH0 | Communication request from H/U | L : Communication request |
| 65 | P04/INTP4 | I | REQC1 | Communication request from CH1 | L : Communication request |
| 66 | P05/INTP5 | I | CHCON1 | CH1 control input from H/U | L : Changer control request |
| 67 | P06/INTP6 | I | COMMSW | 5-line communication previous/new switch | H : New L : Previous |
| 68 | Vdd | - | VDD | Positive power voltage connection terminal | |
| 69 | X2 | - | X2 | Oscillator connection terminal 2 | |
| 70 | X1 | I | X1 | Oscillator connection terminal 1 | |
| 71 | IC(Vpp) | - | | Inner connection terminal | |
| 72 | XT2 | - | | (Not used) | |
| 73 | XT1/P07 | I | CHCON2 | CH2 control input from H/U | L : CH2 control request |
| 74 | AVdd | - | AVDD | A/D converter analog power terminal | |
| 75 | AVref0 | I | AVREF0 | (Not used) | |
| 76 - 80 | P10/ANI0 - P14/ANI4 | O | | (Not used) | |

# MICROCOMPUTER'S DESCRIPTION

## System μ-com : UPD784214-011-8EU(X32-4410-00 : IC7)

●Terminal desctiption

| Pin No. | Pin Name | I/O | Function | Description | Processing Operation |
|---|---|---|---|---|---|
| 1 | P120/RTP0 | O | LDON | Pick Up laser ON | H : Laser ON |
| 2 | P121/RTP1 | O | TBCO | Tracking filter coefficient switching signal output | H : Gain up mode |
| 3 | P122/RTP2 | I | TBCI | Tracking filter coefficient switching signal input | H : Gain up mode |
| 4 | P123/RTP3 | I | RFOK | Focus ON status signal input | H : Focus ON |
| 5 | P124/RTP4 | O | XOFF | Servo IC oscillation stop control | H : Stop oscillation |
| 6 | P125/RTP5 | O | RST | Servo IC reset terminal | L : Reset |
| 7 | P126/RTP6 | O | SA0 | Servo IC communication address setting | |
| 8 | P127/RTP7 | O | SSTB | Servo IC communication strobe | |
| 9 | VDD | | VDD | Positive power voltage connection terminal | |
| 10 | X2 | | X2 | Oscillator connection terminal 2 | |
| 11 | X1 | I | X1 | Oscillator connection terminal 1 | |
| 12 | VSS | | VSS | Connected to GND potential | |
| 13 | XT2 | | XT2 | Sub-clock connection terminal 2 | Not used |
| 14 | XT1 | I | XT1 | Sub-clock connection terminal 1 | Not used |
| 15 | RESET | I | RESET | Reset | |
| 16 | P00/INTP0 | I | SBSY | Sub-code Q read timing detection terminal | |
| 17 | P01/INTP1 | I | MGSW | Magazine switch | H : Magazine IN |
| 18 | P02/INTP2 | I | EJSW | Eject switch | H : Switch ON |
| 19 | P03/INTP3 | I | COMMSW | 5-line communication previous/new switch | H : New communication |
| 20 | P04/INTP4 | I | DQSY | Text data read permission signal input | |
| 21 | P05/INTP5 | I | CHCON | Changer control input from H/U | |
| 22 | P06/INTP6 | I | BUDET | B.U power detection terminal | |
| 23 | AVDD | | AVDD | A/D converter analog power terminal | |
| 24 | AVREF0 | I | AVREF0 | A/D converter reference voltage input | |
| 25 | P10/ANI0 | I | HOT | Hot temperature detection | |
| 26 | P11/ANI1 | I | LPS | MD deck up/down position detection | |
| 27 | P12/ANI2 | I | LOESW | Loading completion switch | L : Loading completed |
| 28 | P13/ANI3 | I | LIMSW | Limit switch | L : Pickup at innermost position |
| 29 | P14/ANI4 | I | TYPE0 | For test mode | |
| 30 | P15/ANI5 | I | TYPE1 | For test mode | |
| 31 | P16/ANI6 | I | SLG1 | Sled loop gain setting | |
| 32 | P17/ANI7 | I | SLG2 | Sled loop gain setting | |
| 33 | AVSS | | AVSS | A/D converter reference GND terminal | |
| 34 | P130/ANO0 | O | LPSCO | A/D converter reference power control | |
| 35 | P131/ANO1 | O | AMUTE | Audio mute | L : Mute ON |
| 36 | AVREF1 | | AVREF1 | A/D converter reference power terminal | |
| 37 | P70/RxD2/SI2 | I | SDI | Servo IC communication serial data input | |
| 38 | P71/TxD2/SO2 | O | SDO | Servo IC communication serial data output | |
| 39 | P72/ASCK2/SCK2 | O | SCK | Servo IC communication serial clock output | |
| 40 | P20/RxD1/SI1 | I | DATAH | Data input from H/U | |
| 41 | P21/TxD1/SO1 | O | DATAC | Data output from changer | |
| 42 | P22/ASCK1/SCK1 | I/O | HCLK | Communication clock input from H/U | |

# MICROCOMPUTER'S DESCRIPTION

| Pin No. | Pin Name | I/O | Function | Description | Processing Operation |
|---|---|---|---|---|---|
| 43 | P23/PCL | O | REQC | Communication request to H/U | |
| 44 | P24/BUZ | O | CHMUTE | Audio muting output to H/U | L : Mute ON |
| 45 | P25/SI0/SDA0 | I | TXTDATA | Text data input | |
| 46 | P26/SO0 | O | | (Not used) | |
| 47 | P27/SCK0/SCL0 | O | TXTCLK | Text clock output | |
| 48 - 55 | P80/A0 - P87/A7 | O | A0 - A7 | Address setting output to S-RAM | |
| 56 - 63 | P40/AD0 - P47/AD7 | I/O | D0 - D7 | Data input/output with S-RAM | |
| 64 - 68 | P50/A8 - P54/A12 | O | A8 - 12 | Address setting output to S-RAM | |
| 69 - 71 | P55/A13 - P57/A15 | O | A13 - 15 | S-RAM enable control terminal | |
| 72 | VSS | | VSS | GND connection terminal | |
| 73 | P60/A16 | O | A16 | S-RAM enable control terminal | |
| 74 | P61/A17 | O | A17 | S-RAM enable control terminal | |
| 75 | P62/A18 | O | RAMOK | RAM check result terminal for use in production process | |
| 76 | P63/A19 | I | ELVADJ | MD deck elevation position adjustment mode | |
| 77 | P64/RD | O | RD | Read control output to S-RAM | |
| 78 | P65/WR | O | WR | Write control output to S-RAM | |
| 79 | P66/WAIT | I | WAIT | Wait insertion during access with S-RAM | |
| 80 | P67/ASTB | O | ASTB | S-RAM chip select output | |
| 81 | VDD | | VDD | Positive power voltage connection terminal | |
| 82 | P100/TI5/TO5 | I | RAMTEST | RAM check mode for use in production process | |
| 83 | P101/TI6/TO6 | I | REQH | Communication request from H/U | |
| 84 | P102/TI7/TO7 | O | SP/LO+ | Spindle/Loading control terminal + | |
| 85 | P103/TI8/TO8 | O | SP/LO- | Spindle/Loading control terminal - | |
| 86 | P30/TO0 | O | ELV+ | MD elevation control terminal + | |
| 87 | P31/TO1 | O | ELV- | MD elevation control terminal - | |
| 88 | P32/TO2 | I | EDI | EEPROM data input | |
| 89 | P33/TI1 | O | EDO | EEPROM data output | |
| 90 | P34/TI2 | O | ECLK | EEPROM clock output | |
| 91 | P35/TI00 | O | ECS | EEPROM chip select output | |
| 92 | P36/TI01 | O | 8V/7V | Mechanism operation drive IC power voltage control | |
| 93 | P37 | I | ADJSEL | Automatic servo adjustment ON/OFF terminal | L : Automatic servo adjustment ON |
| 94 | TEST/VPP | I | TEST/VPP | Flash ROM program mode | |
| 95 | P90 | I | SRVSEL | Servo operation mode (without mechanism operation) | H : Servo mode |
| 96 | P91 | I | SLNSA | Sled non-sensitive band ON/OFF terminal | L : Sled non-sensitive band ON |
| 97 | P92 | I | TEST1 | Destination type terminal | |
| 98 | P93 | I | TEST2 | Destination type terminal | |
| 99 | P94 | O | PON | PON output | |
| 100 | P95 | I | ARMSW | Arm switch | |

## ● TEST MODE

**1. How to enter**

While holding the magazine EJECT switch, reset the unit and keep on holding the EJECT switch for more second to enter the E-88

(NOTE) In the E-88 mode, the initial position detection operation at the time of reset start is not performed.

**2. Manual operation functions**

The E-88 display appears when the H/U is set to the changer mode. In this condition, the changer mechanism can be operated manually using the Track search UP/DOWN and Disc search UP/DOWN keys.

Track search UP key :

Operates the Spindle/Loading motor in the direction for pulling the disc tray into the mechanism deck

Track search DOWN key :

Operates the Spindle/Loading motor in the direction for returning the disc tray into the magazine

Disc search UP key :

Operates the ELV motor in the direction for moving the mechanism deck upward

Disc search DOWN key :

Operates the ELV motor in the direction for moving the mechanism deck downward

## ● POSITION ADJUSTMENT

**1. LPS initial position adjustment procedure**

Connect the changer to the H/U. While holding the magazine [EJECT] key of the changer, press the [RESET] key of the H/U and, in about 1 second, release the magazine [EJECT] key. Press the [CD] key of the H/U to enter the E-88 mode. Move the mechanism deck to around the 1st stage by pressing the [DISC−] or [DISC+] key. Insert the adjustment tool into the tool hole on the changer mechanism. Then press the [DISC+] key to move the mechanism deck until the mechanism's slider hits the adjustment tool. When the motor locks (stops) press the [REPEAT] key of the H/U.

When the [REPEAT] key is pressed, the mechanism moves automatically to the 1st stage and the initial position adjustment completes. (The data is written in the EEPROM at this time)

**3. Position adjustment funcion**

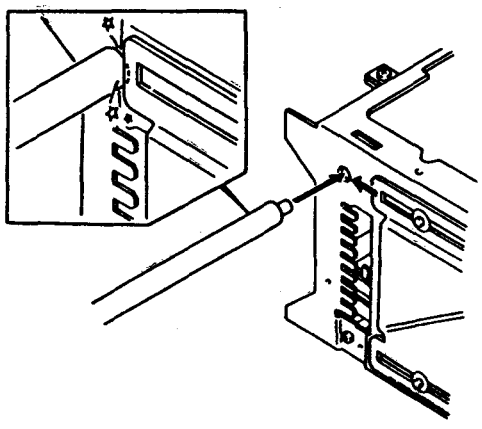
This function writes the mechanism position adjustment values in the EEPROM in the E-88 mode

[Adjustment procedure]

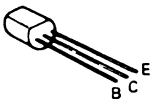
- With the mechanism in the magazine ejection condition, move the mechanism manually up and down to set the mechanism to the reference position
- Pressing the REP key of the H/U starts the judgment of the mechanism position, and the distinction whether the changer is a 6-disc or 10-disc changer.
  If the mechanism position is extremely deviated from the reference position, the processing is aborted immediately
- The offset from the reference position is calculated and the 10 data and offset values are written in the EEPROM
- Data is read from the EEPROM to judge whether it has been written normally.
  When it is judged that the write operation has completed normally, the mechanism deck moves to the magazine ejection standby position.
  When it is judged that the write operation was abnormal, the mechanism performs no operation.

(NOTE) Mechanism reference position

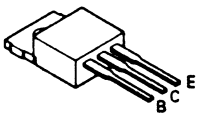
10 disc mechanism : 6th stage



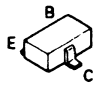
ADJUSTMENT TOOL : W05-0635-00



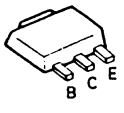

AK93C45AF
BA6219BFP-Y
BA6791FP
DAP202K
KKZ05F
LC3564BT-70
MA3056-M
MA3056WA
MA3062-L
MA3062-M
MA3075-M
MA3091-L
MA3100-M
NTH5G40B333K0
TC74HC4072AF
UPC2572A
UPD63702A
UPD78058GCA66T
UPD784214GC01
1SR154-400



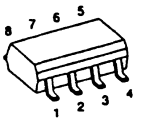

2SB1565



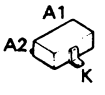

DTA114EK
DTA124EK
DTA143EK
DTB123YK
DTC124EK
2SA1362
2SC2412K
2SD2114K




2SB1188

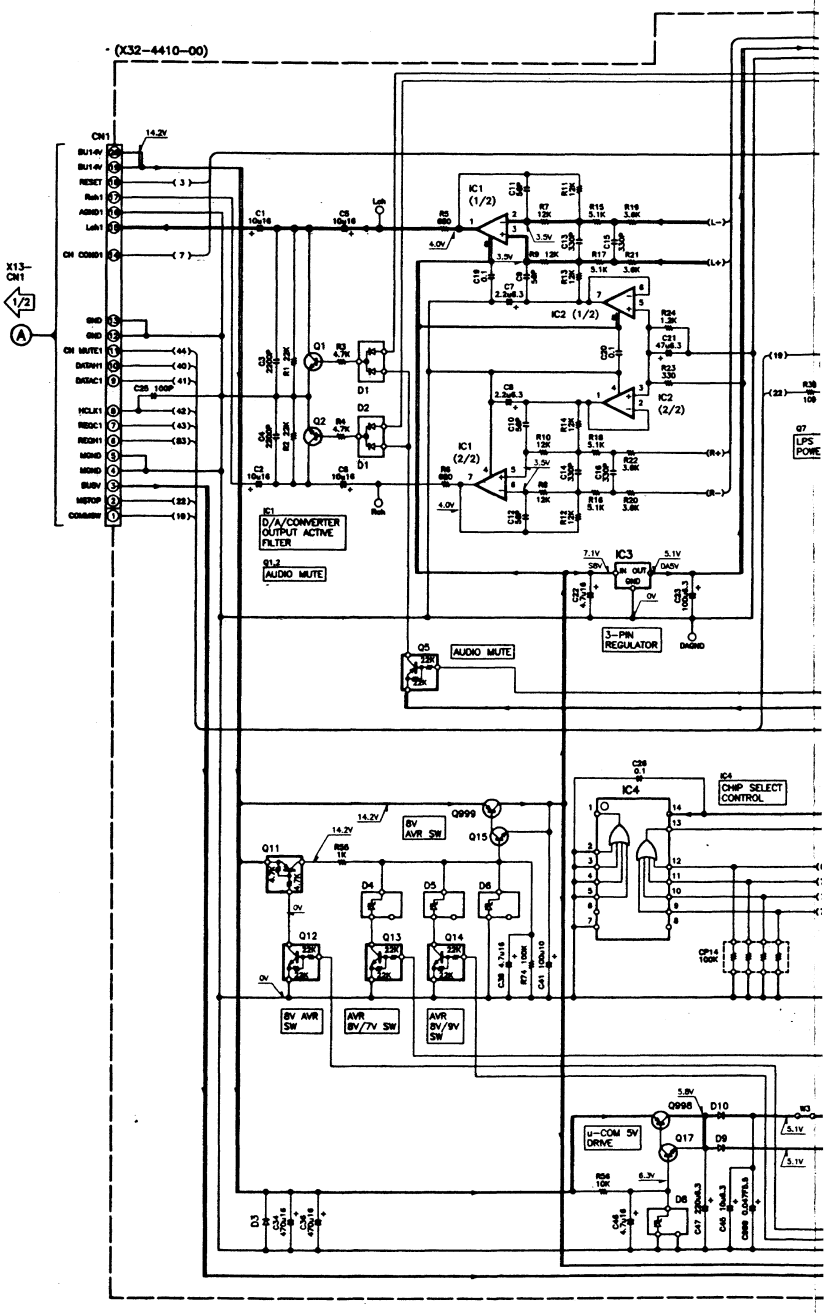


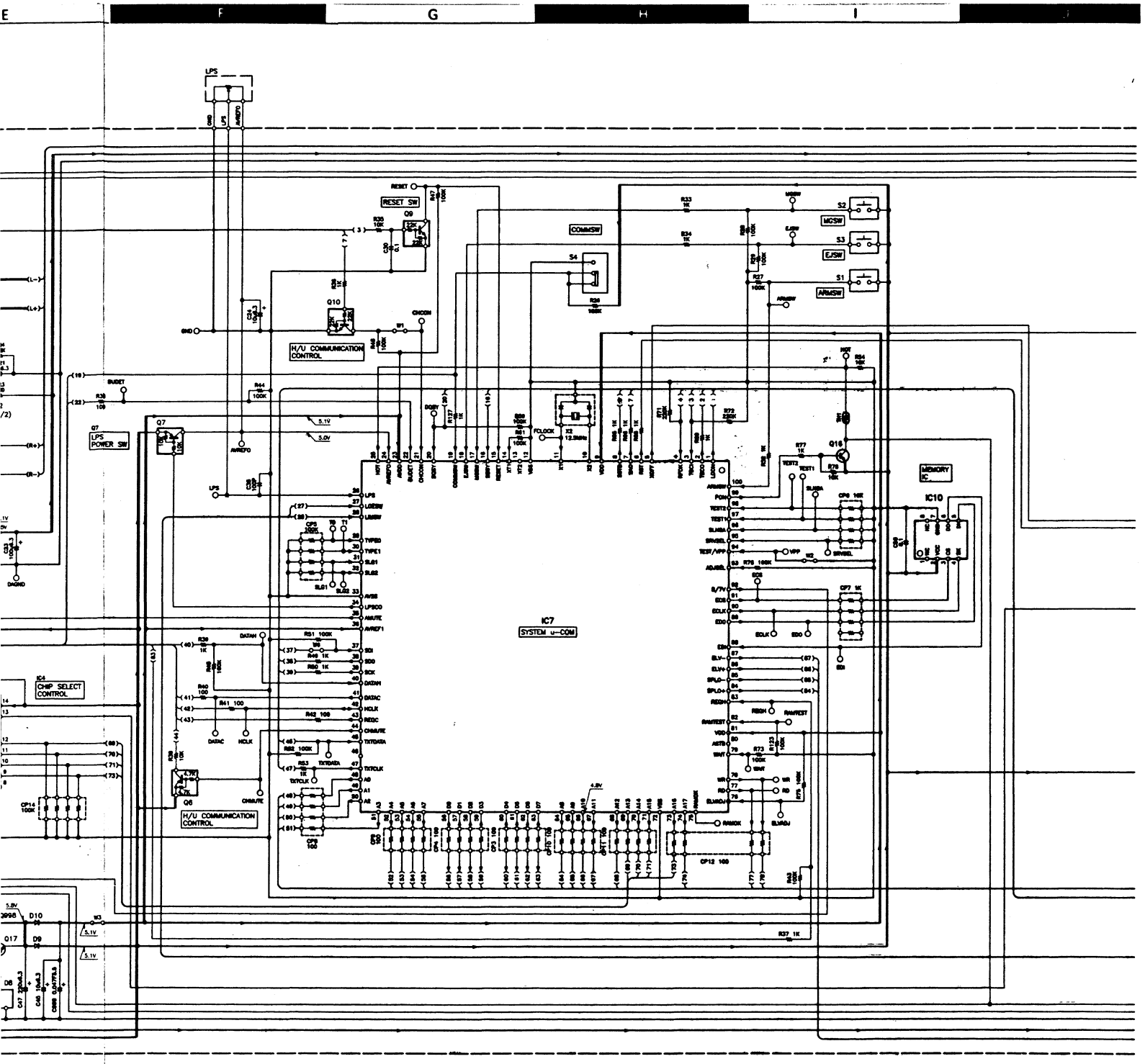

NJM4565MD
MJM5532MD




DAN202K

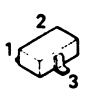

TA78L05F



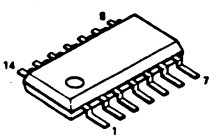




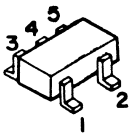
TA78L05F



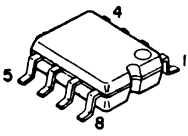

DA204K



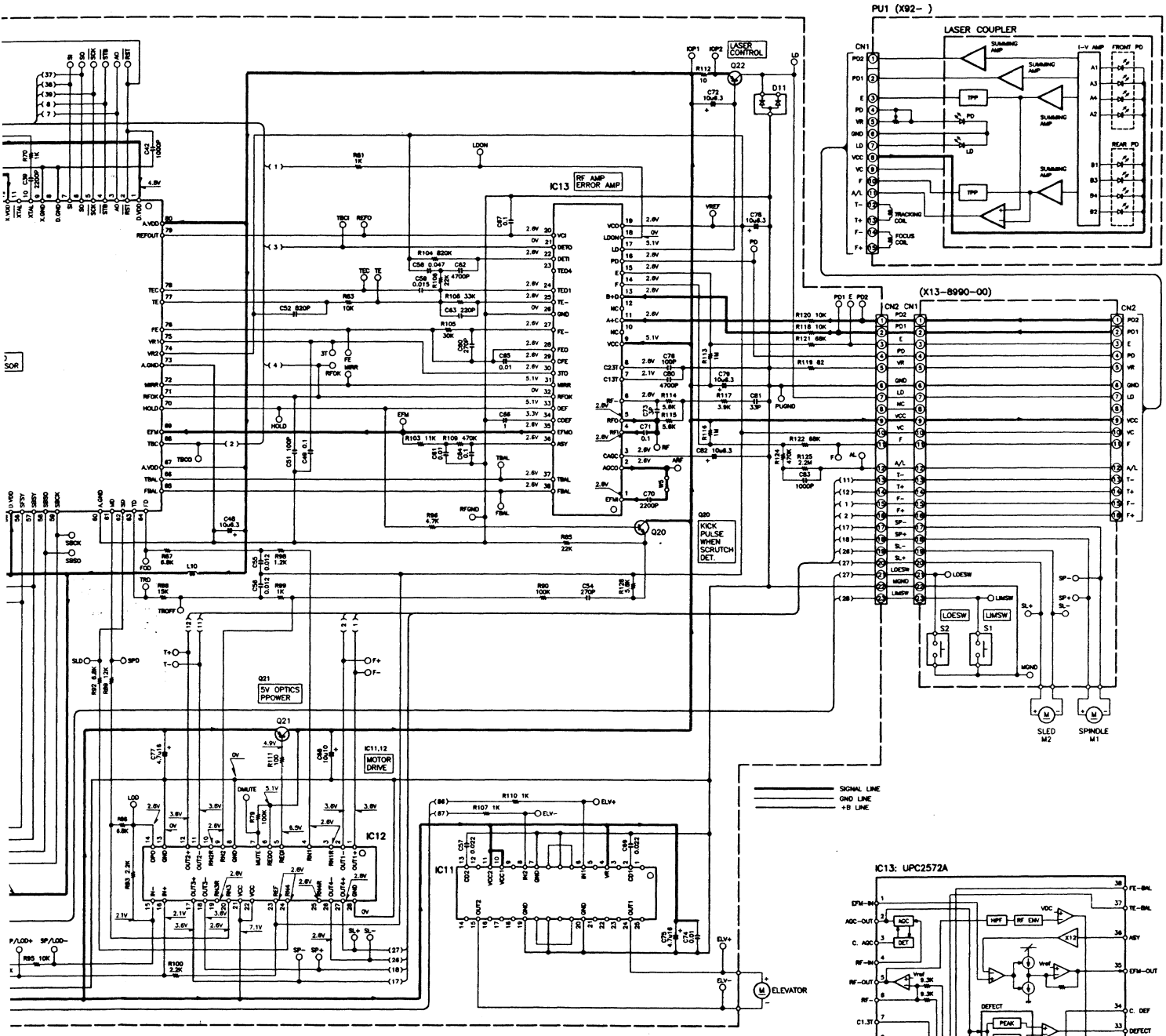

LC89170M

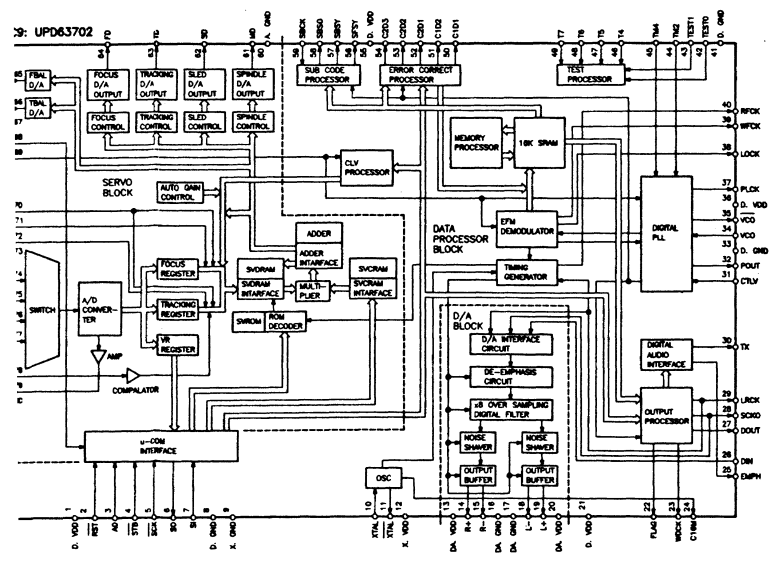


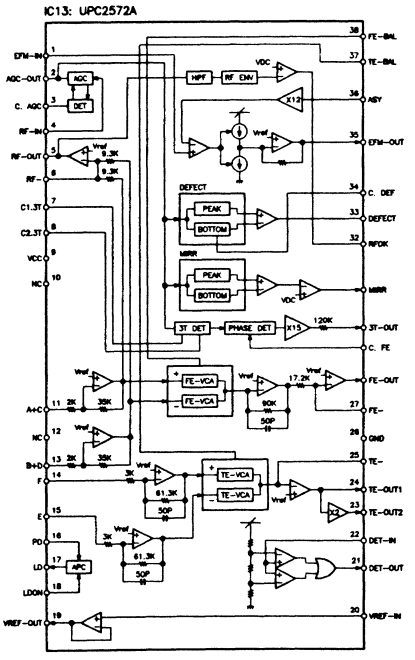

PST9137NR




BR93LC46AF



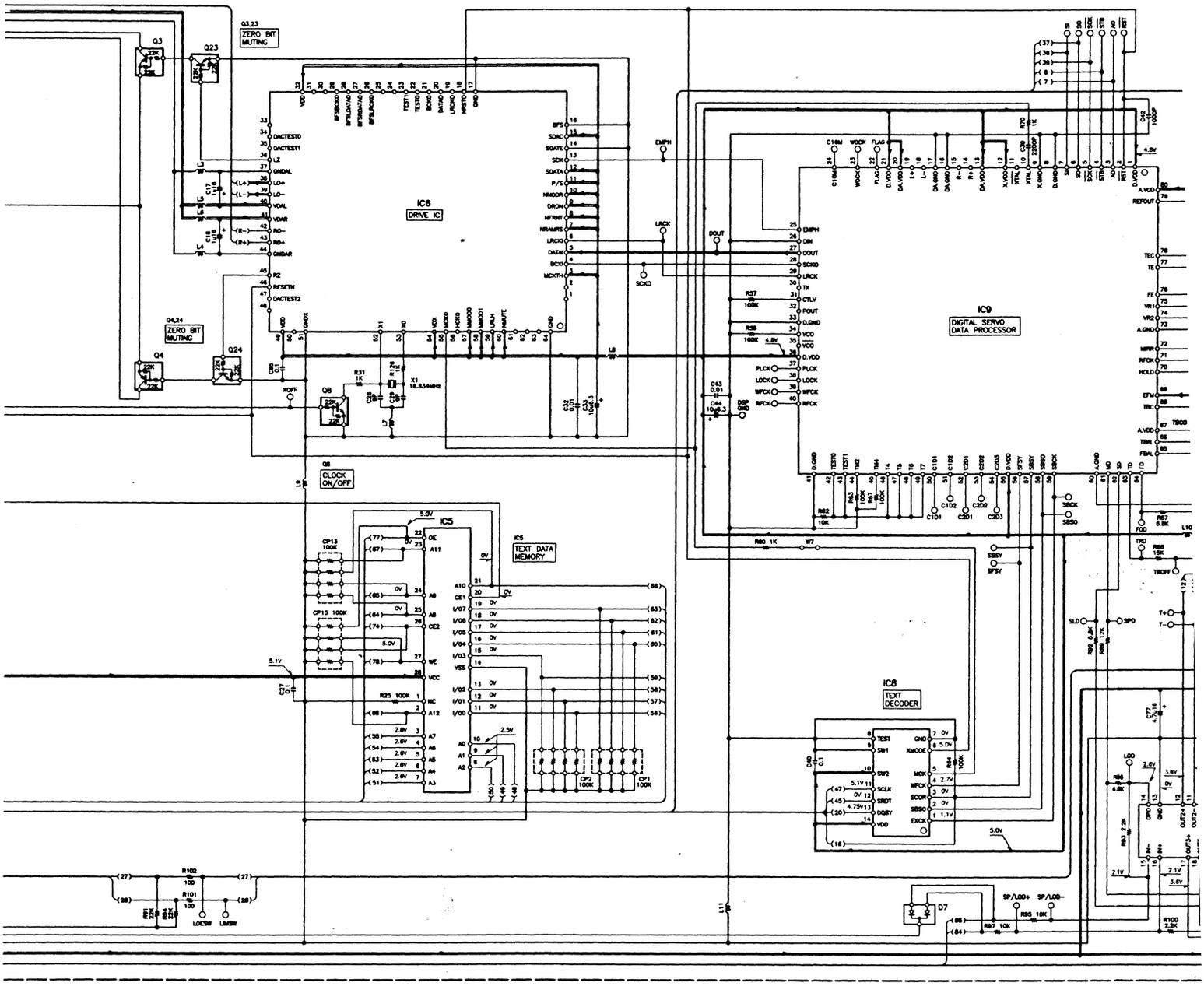




2/2

# KDC-C811/CPS81

KENWOOD

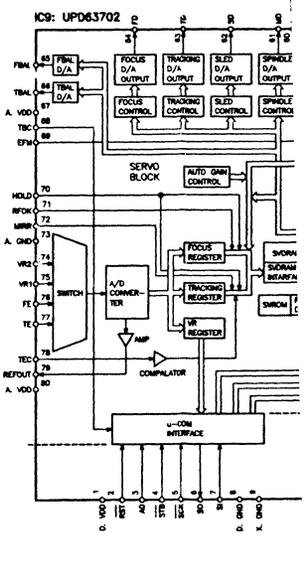


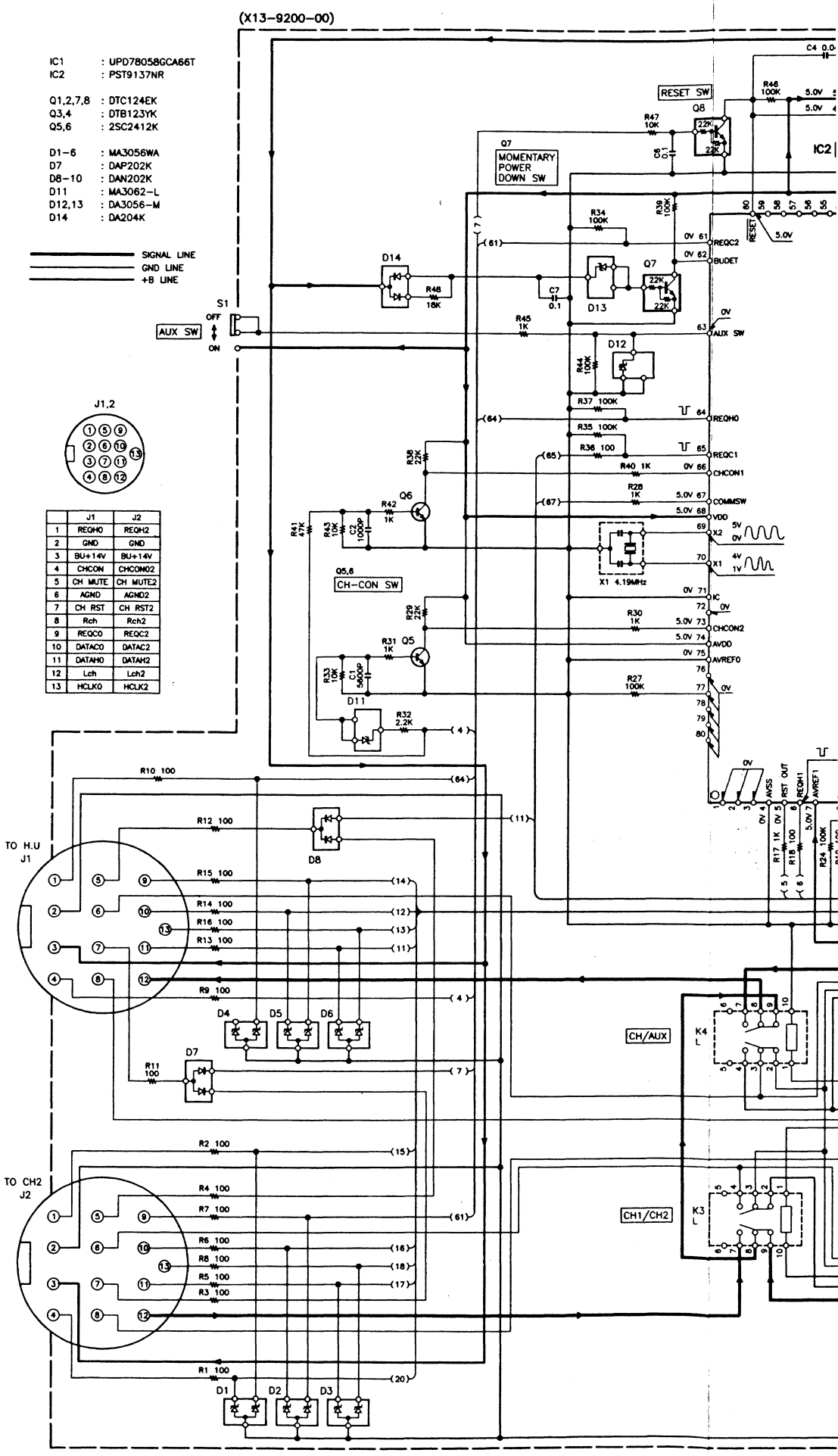

| | | | |
|---|---|---|---|
| IC1 | : NJM5532MD | Q1,2 | : 2SD2114K |
| IC2 | : NJM4565MD | Q3–5 | : DTA124EK |
| IC3 | : TA78L05F | Q6,11 | : DTA143EK |
| IC4 | : TC74HC4072AF | Q7 | : DTA114EK |
| IC5 | : LC35664BT–70 | Q8–10,12–14,23,24 | : DTC124EK |
| IC6 | : KKZ05F | Q15,17,20 | : 2SC2412K |
| IC7 | : UPD784214GC011 | Q16,22 | : 2SA1362(Y) |
| IC8 | : LC89170M | Q21 | : 2SB1188 |
| IC9 | : UPD63702A | Q998,999 | : 2SB1565(B,F) |
| IC10 | : AK93C45AF or BR93LC46AF | D1,2,7 | : DAN202K |
| IC11 | : BA6219BFP–Y | D3,9,10 | : 1SR154–400 |
| IC12 | : BA6791FP | D4 | : MA3075–M |
| IC13 | : UPC2572A | D5 | : MA3091–L |
| | | D6 | : MA3100–M |
| | | D8 | : MA3062–M |
| | | D11 | : DAP202K |

**CAUTION:** For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to, parts list). ⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

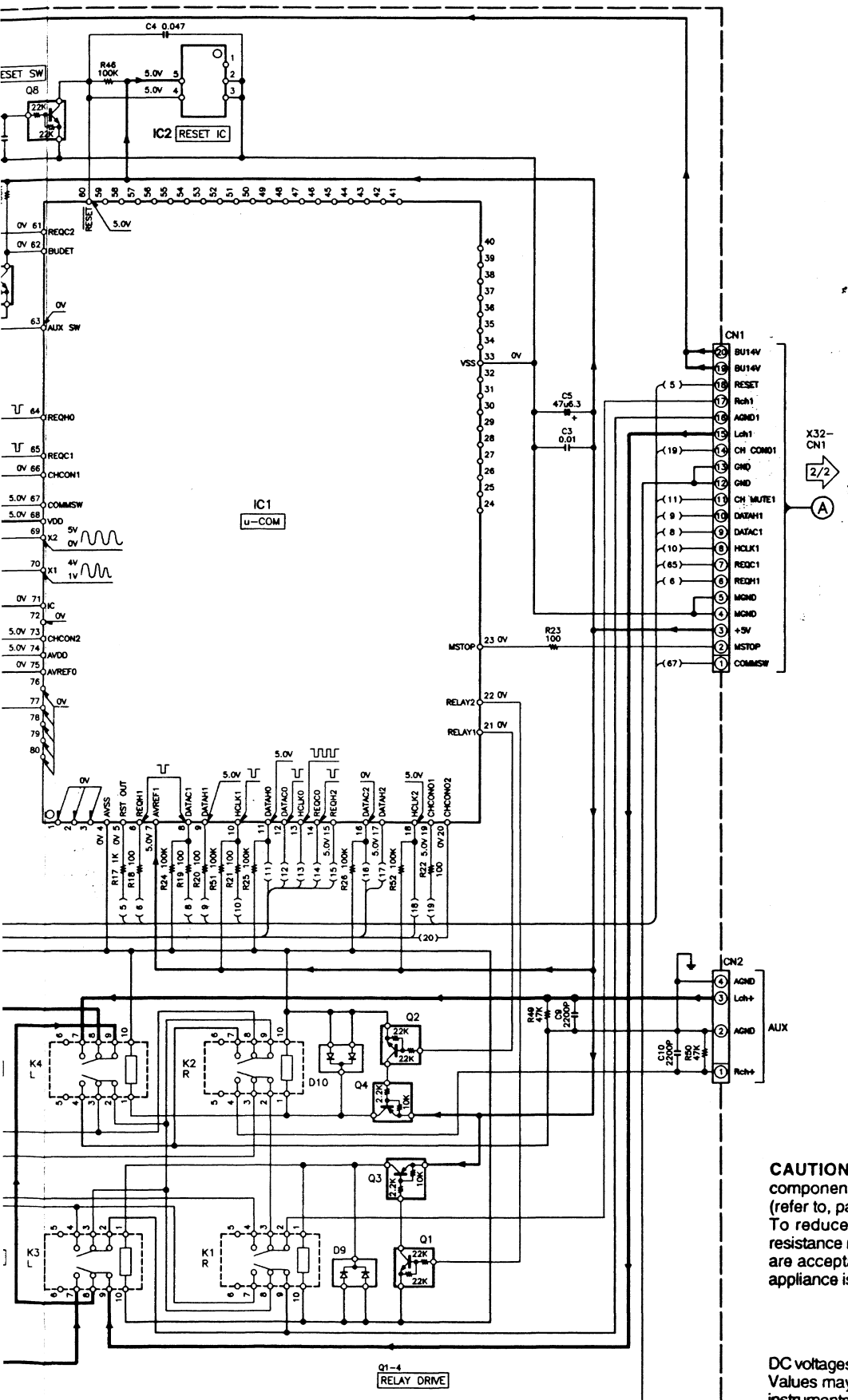
DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

IC9: UPD63702






| | J1 | J2 |
|---|---|---|
| 1 | REQH0 | REQH2 |
| 2 | GND | GND |
| 3 | BU+14V | BU+14V |
| 4 | CHCON | CHCON02 |
| 5 | CH MUTE | CH MUTE2 |
| 6 | AGND | AGND2 |
| 7 | CH RST | CH RST2 |
| 8 | Rch | Rch2 |
| 9 | REQC0 | REQC2 |
| 10 | DATAC0 | DATAC2 |
| 11 | DATAH0 | DATAH2 |
| 12 | Lch | Lch2 |
| 13 | HCLK0 | HCLK2 |




**CAUTION**:For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to, parts list). ⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

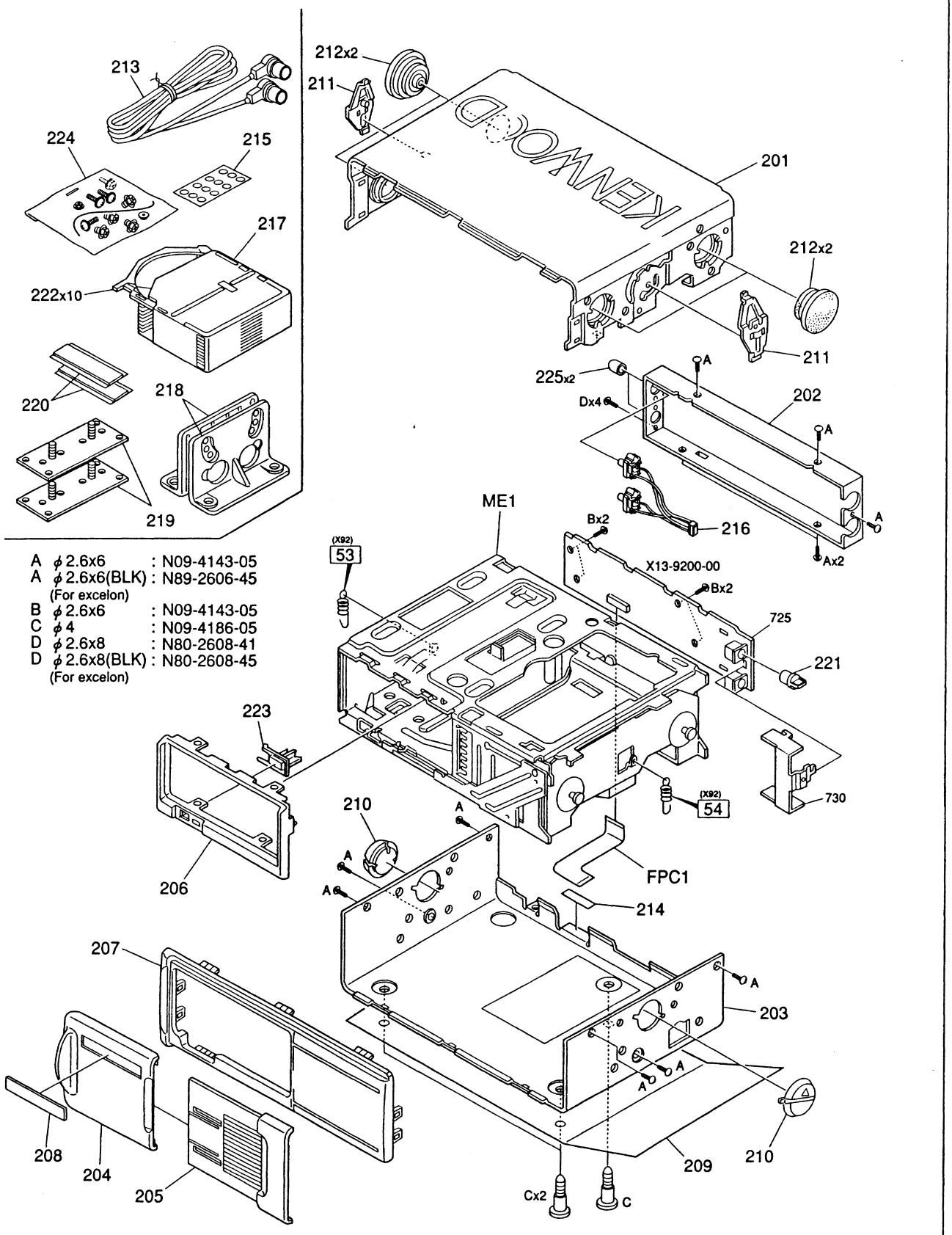
DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.



KDC-C811/CPS81

KENWOOD

# EXPLODED VIEW (UNIT)



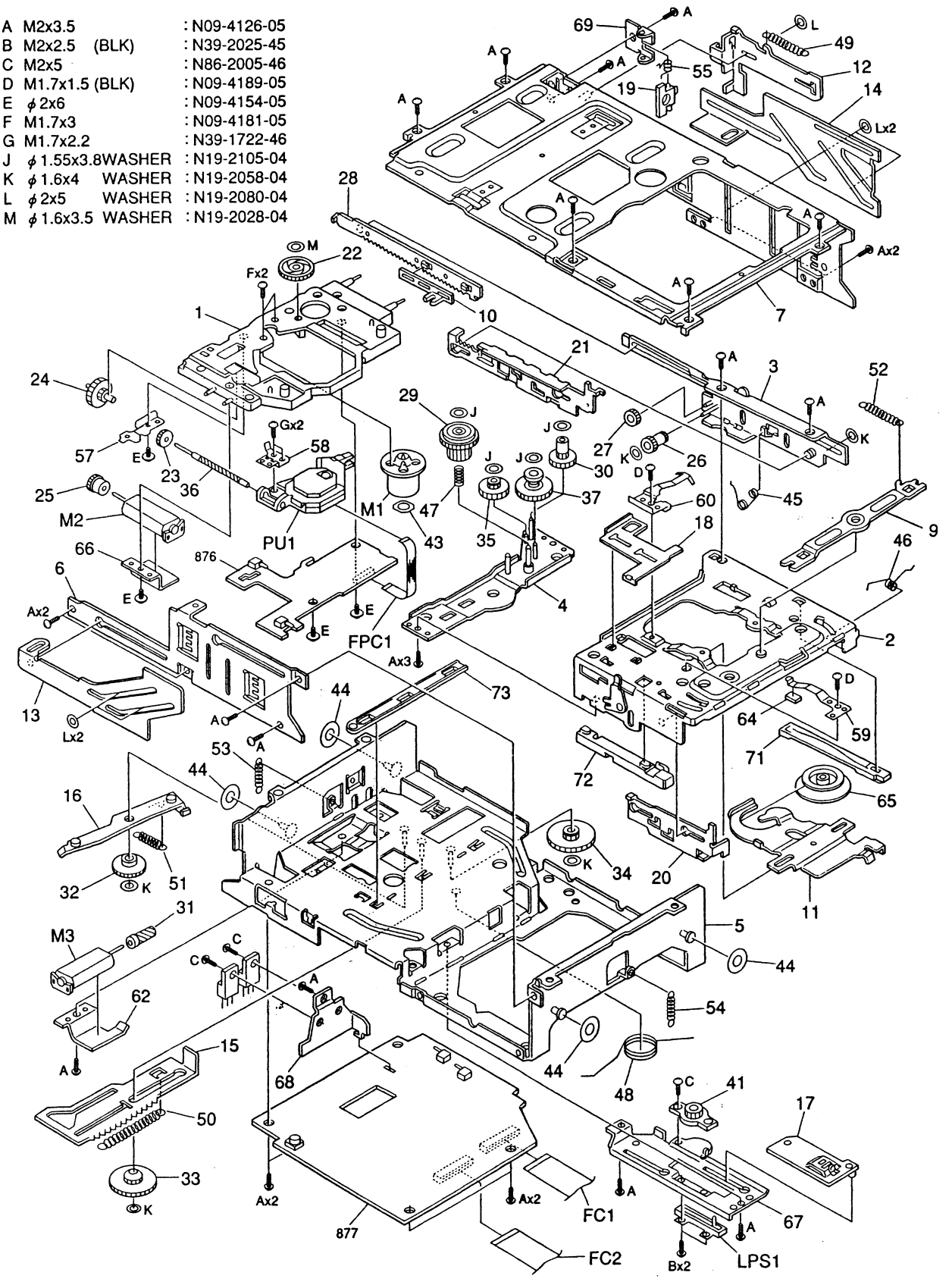

A φ2.6x6 : N09-4143-05
A φ2.6x6(BLK) : N89-2606-45
(For excelon)
B φ2.6x6 : N09-4143-05
C φ4 : N09-4186-05
D φ2.6x8 : N80-2608-41
D φ2.6x8(BLK) : N80-2608-45
(For excelon)



**Parts with the exploded numbers larger than 700 are not supplied.**

# EXPLODED VIEW (MECHANISM UNIT)

| | | |
|---|---|---|
| A | M2x3.5 | : N09-4126-05 |
| B | M2x2.5 (BLK) | : N39-2025-45 |
| C | M2x5 | : N86-2005-46 |
| D | M1.7x1.5 (BLK) | : N09-4189-05 |
| E | φ2x6 | : N09-4154-05 |
| F | M1.7x3 | : N09-4181-05 |
| G | M1.7x2.2 | : N39-1722-46 |
| J | φ1.55x3.8WASHER | : N19-2105-04 |
| K | φ1.6x4 WASHER | : N19-2058-04 |
| L | φ2x5 WASHER | : N19-2080-04 |
| M | φ1.6x3.5 WASHER | : N19-2028-04 |






**Parts with the exploded numbers larger than 700 are not supplied.**