Ref. No. 3662
092000

# ONKYO® SERVICE MANUAL

## CD/MD TUNER AMPLIFIER

## MODEL FR-155

Silver model

| | |
|---|---|
| UDT | 120V AC, 60Hz |
| UGT | 220 -230V AC, 50/60Hz |

### SAFETY-RELATED COMPONENT WARNING!!

**COMPONENTS IDENTIFIED BY MARK ⚠ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL.**

**MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.**

ONKYO®
AUDIO COMPONENTS

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# SPECIFICATIONS

## General

| | |
|---|---|
| **Power supply** | AC 220-230 V, 50/60 Hz<br>AC 120 V, 60 Hz |
| **Power consumption** | 63 W (220-230 V, 50/60 Hz)<br>82 W (120 V, 60 Hz) |
| **(Standby)** | 7 W |
| **(Energy Save)** | 1.5 W |
| **Clock precision** | monthly error: ±30 seconds<br>(at 25 degrees Celsius) |
| **Dimensions (W × H × D)** | 205 × 154 × 356 mm<br>8-1/16" × 6-1/16" × 14" |
| **Weight** | 5.5 kg, 12.1 lbs |

## Amplifier

| | |
|---|---|
| **Power output** | 2 × 26 W at 4 W EIAJ<br>2 × 21 W at 6 W EIAJ<br>Rated Power<br>2 × 19 W min, RMS at 4 W<br>1 kHz no more than<br>0.2 % THD |
| **Dynamic power** | 2 × 23 W at 4 W |
| **Total harmonic distortion** | 0.4 % at rated power |
| **IM distortion** | 0.2 % at rated power |
| **Damping factor** | 25 at 8 Ω |
| **Sensitivity and impedance** | LINE, TAPE:<br>150 mV, 50 kW<br>CDR: 150 mV, 50 kW |
| **Frequency response** | 10 to 50,000 Hz : +0dB / -3 dB |
| **Tone Control** | S.BASS1: +4 dB at 40 Hz<br>S.BASS2: +8 dB at 50 Hz<br>S.BASS3: +4 dB at 10 kHz/<br>+8 dB at 50 Hz |
| **Signal to noise ratio** | LINE, CDR, TAPE: 100dB<br>(IHF-A) |
| **Muting** | 50 dB |

## CD player

| | |
|---|---|
| **Signal readout system** | Optical non-contact |
| **Frequency response** | 10 Hz to 20 kHz (±3 dB) |
| **Wow and flutter** | Below threshold of<br>measurability |

## MD recorder

| | |
|---|---|
| **Signal readout system** | Optical non-contact |
| **Recording time** | 320 minutes maximum<br>(at LP4 mode) |
| **Frequency response** | 10 Hz to 20 kHz (±3 dB) |
| **Wow and flutter** | Below threshold of<br>measurability |

## Tuner

| | |
|---|---|
| **Tuning range** | FM: 87.50 to 108.00 MHz<br>(50 kHz steps)<br>AM: 522 to 1611 kHz<br>(9 kHz steps) |
| **Usable sensitivity** | FM Mono:11.2 dBf,<br>1.0 µV (75 WIHF)<br>Stereo:17.2 dBf,<br>2.0 µV (75 WIHF)<br>AM: 30 µV |
| **50 dB quieting sensitivity** | FM Mono:17.2 dBf,<br>2.0 µV (75 W)<br>Stereo:37.2 dBf,<br>20.0 µV (75 W) |
| **Capture ratio** | 2.0 dB |
| **Image rejection ratio** | FM: 85 dB<br>AM: 40 dB |
| **IF rejection ratio** | FM: 90 dB<br>AM: 40 dB |
| **Signal to noise ratio** | FM Mono : 73 dB IHF<br>Stereo : 67 dB IHF<br>AM: 40 dB |
| **Selectivity** | FM: 50 dB<br>(±300 kHz at 40 kHz devi.) |
| **Harmonic distortion** | FM: Mono: 0.7 %<br>Stereo: 0.3 %<br>AM: 0.7 % |
| **Frequency response** | FM: 30 to 15,000 Hz (±1.5 dB) |
| **Stereo separation** | FM: 40 dB at 1,000 Hz<br>FM: 30 dB at 100 to 10,000 Hz |

Specifications and features are subject to change without noitce.

# CAUTION ON REPLACEMENT OF OPTICAL PICKUP

The laser diode in the optical pickup block is so sensitive to static electricity, surge current and etc., that the components are liable to be broken down or its reliability remarkably deteriorated.

During repair,carefully take the following precautions. (The following precautions are included in the service parts.)

**PRECAUTIONS**

1.Ground for the work-desk.
Place a conductive sheet such as a sheet of copper (with impedance lower than 10 Mohm) on the work-desk and place the set on the conductive sheet so that the chassis can be grounded.

2.Grounding for the test equipments and tools.
Test equipments and toolings should be grounded in order that their ground level is the same the ground of the power source.

3. Grounding for the human body.
Be sure to put on a wrist-strap for grounding whose other end is grounded.
Be particularly careful when the workers wear synthetic fiber clothes, or air is dry.

4. Select a soldering iron that permits no leakage and have the tip of the iron well-grounded.

5. Do not check the laser diode terminals with the probe of a circuit tester or oscilloscope.

# PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs a laser. Therefore, be sure to follow carefully the instructions below when servicing.

**WARNING!!**

**SERVICE WARNING : DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY.**

**IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.**

### Laser Diode Properties

Material: GaAS/GaALAs
Wavelength: 780nm
Laser output: max. 0.5mW*
Emission Duration: continuous
*This output is the value measured at a distance about 1.8mm from the objective lens surface on the Optical Pick-up Block.

# LASER WARNING LABEL

The label shown below are affixed.

### 1. Warning label


### 2. Class 1 label


**LUOKAN 1 LASERLAITE**

**KLASS 1 LASER APPARAT**

# SERVICE PROCEDURE

### 1. Replacing the fuses

This symbol located near the fuse indicates that the fuse used is show operating type, For continued protection against fire hazard, replace with same type fuse , For fuse rating, refer to the marking adjest to the symbol.

Ce symbole indique que le fusible utilise est e lent. Pour une protection permanente, n'utiliser que des fusibles de meme type. Ce demier est indique la qu le present symbol est apposre.

| REF.NO. | PART NO. | | DESCRIPTION |
|---|---|---|---|
| F901 | 252157 | ⚠ | 1.25A-UL/T-237, Fuse <DT> |
| | 252083 | ⚠ | 0.4A-SE-EAW, Fuse <GT> |

NOTE : <DT> : 120 V model only
<GT> : 220 V~230 V model only

### 2. To initialize the unit

1. Press and the hold down the CD STOP button , then press the STANDBY/ON button.
2. After " All lighting " is displayed, the preset memory and each mode stored in the memory, are initialized and will return to the factory settings.
3. Press the STANDBY/ON button.
4. Unplug the AC plug from the wall outlet.

### 3. Safety-check out

(Only U.S.A. model)
After correcting the original service problem perform the follwing safety check before releasing the set to the customer
Connect the insulating-resistance tester between the plug of power supply cord and terminal GND on the back panel.
Specifications: More than 10Mohm at 500V

### 4. Memory Preservation

This unit does not require memory preservation batteries. A built-in memory power back-up system preserves the contents of the memory during power failures and even when the unit is un-plugged. The unit must be plugged in order to charge the back-up system.
The memory preservation period after the unit has been unplugged varies depending on climate and placement of the unit. On the average, memory contents are protected over a period of a few weeks after the last time the unit has been unplugged. This period is shorter when the unit is exposed to a highly humid climate.

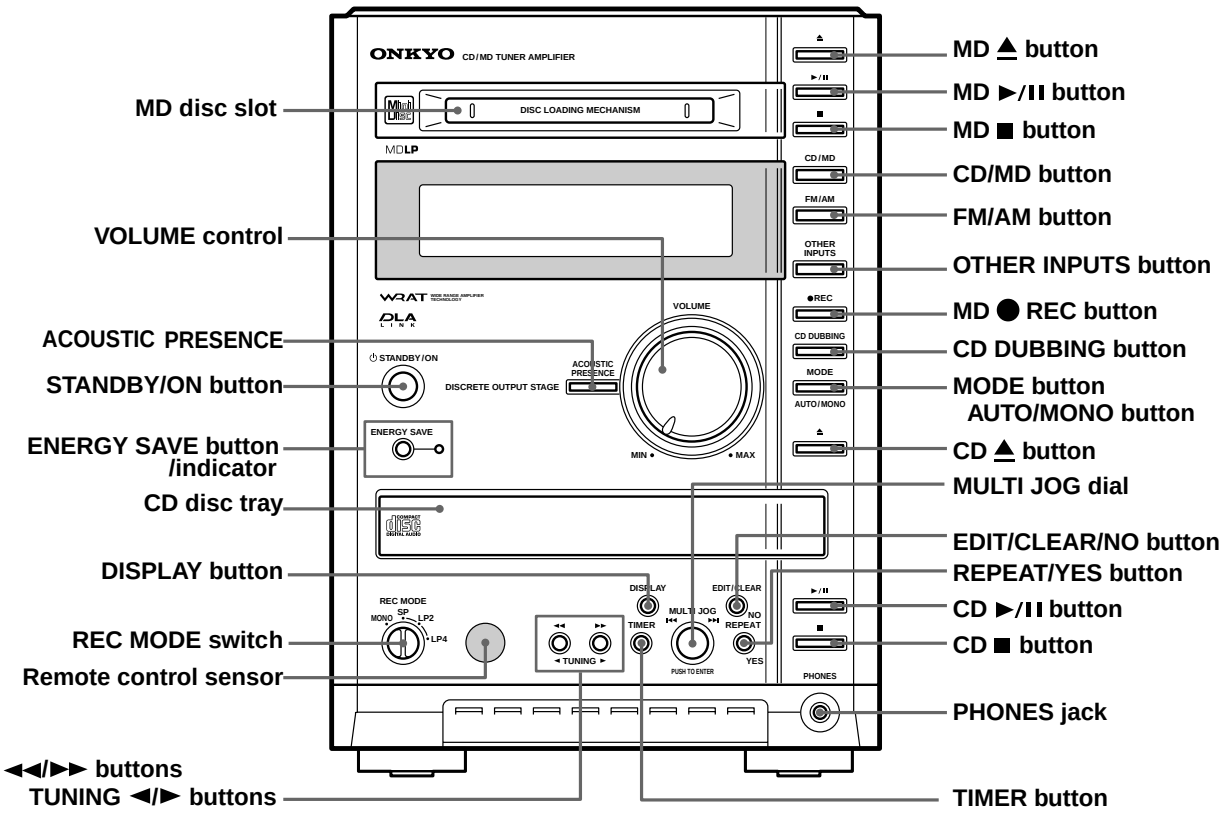
### 5. Changing the AM band step

With the exception of the worldwide models, a tuning step selector switch is not provided. When you change the band step, change the parts as shown below.

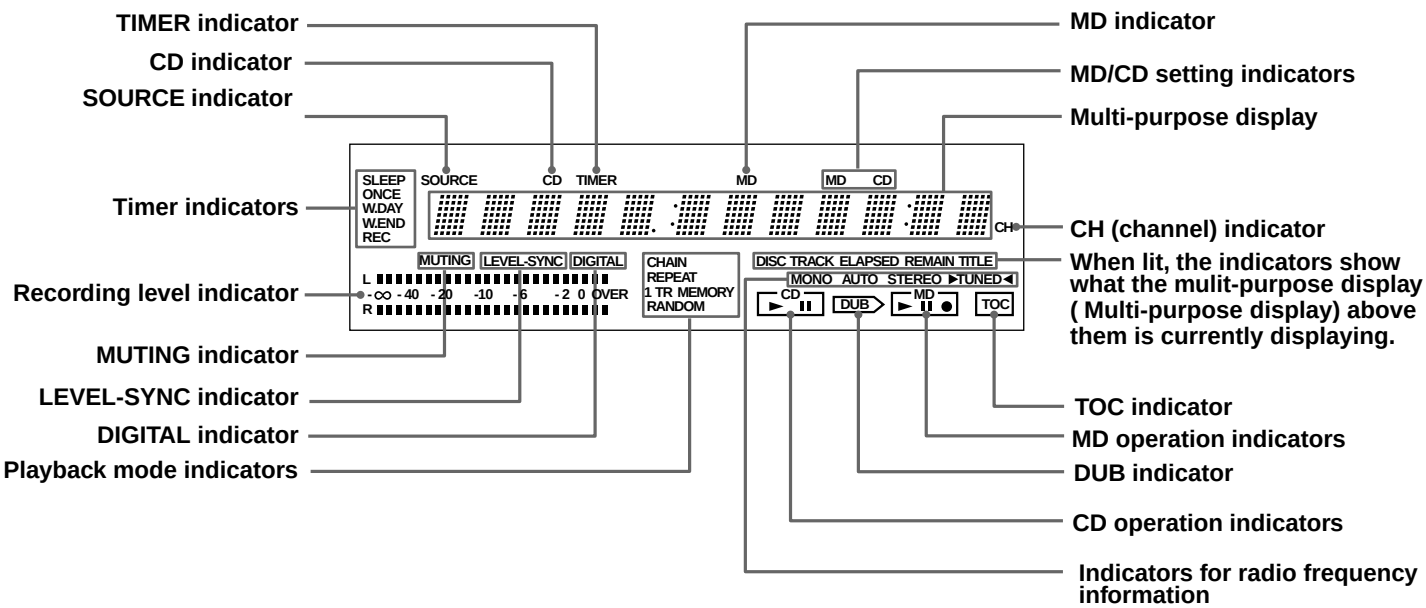
| | To 10kHz | To 9kHz |
|---|---|---|
| R748 | open | 1 kohms |
| R749 | 1 koms | open |

R748 and R749 on the microprocessor PC board (NADG-6933)

## FRONT PANEL VIEW



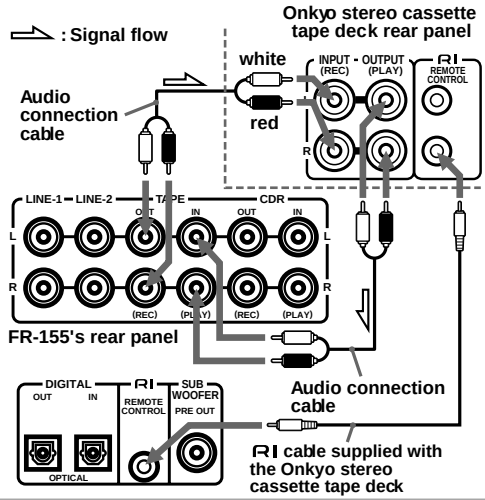

## DISPLAY



# CONNECTING TO OTHER COMPONETS

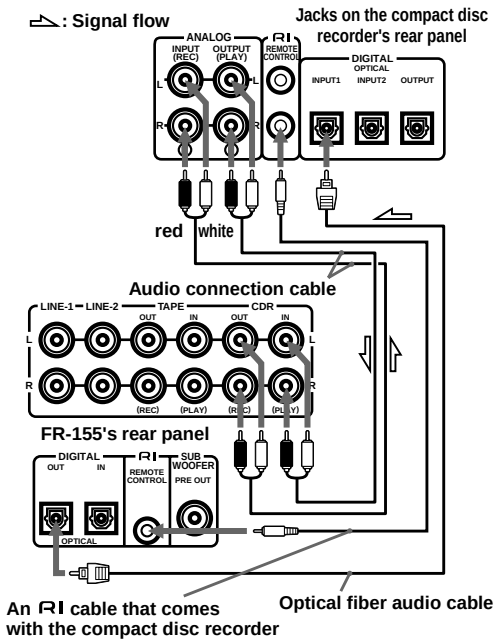
## ◆ Connecting an Onkyo stereo cassette tape deck

The illustration below describes the connections to an Onkyo stereo cassette tape deck. To connect to another cassette tape deck, connect the TAPE OUT (REC) and IN (PLAY) jacks of the unit to the INPUT (REC) and OUTPUT (PLAY) jacks of the cassette tape deck, respectively.




## ◆ Connecting an Onkyo compact disc recorder

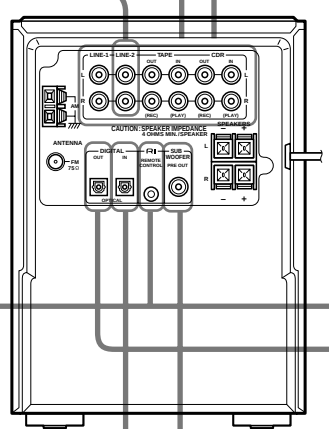
The following diagram shows how to connect an optional Onkyo compact disc recorder to the FR-155. Connect its CDR OUT (REC) jacks and IN (PLAY) jacks to the disc recorderÕs INPUT (REC) jacks and OUTPUT (PLAY) jacks respectively.




**The jack connection enables you to use the following functions:**

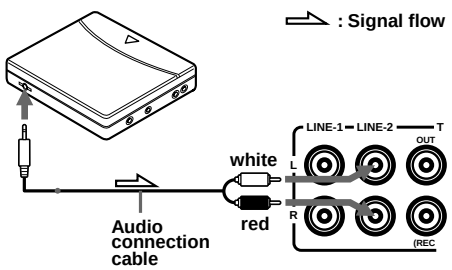
- You can control a connected Onkyo compact disc recorder from the FR-155's remote controller.
- When the connected Onkyo compact disc recorder plays back, the Input Selector on the FR-155 is automatically switched to CD-R.
- To connect both CD recorder and a cassette tape deck to the FR-155, connect the connectors of both devices.

**Rear Panel View**



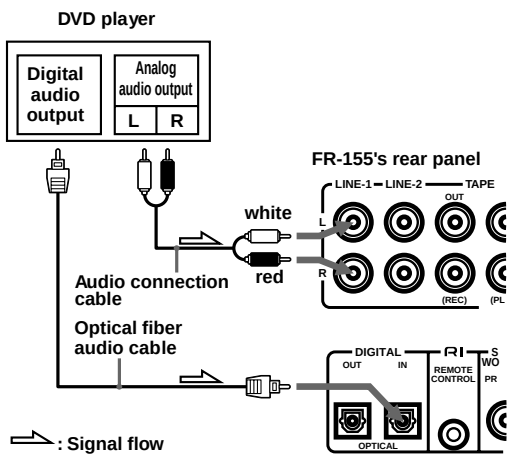
## ◆ Connecting a portable MD player

Refer to the portable MD playerÕs Instruction Manual.



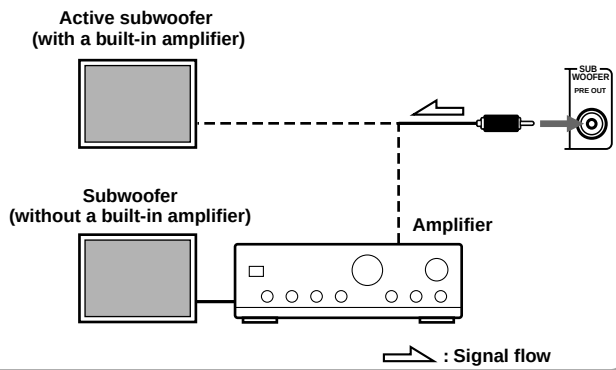

## ◆ Connecting a DVD player

In addition to the optical digital audio connections,you must also make analog connections.To connect to the Onkyo DVD player, be sure to connect to the LINE-1 jacks with the audio connection cable, not the LINE-2 jacks.

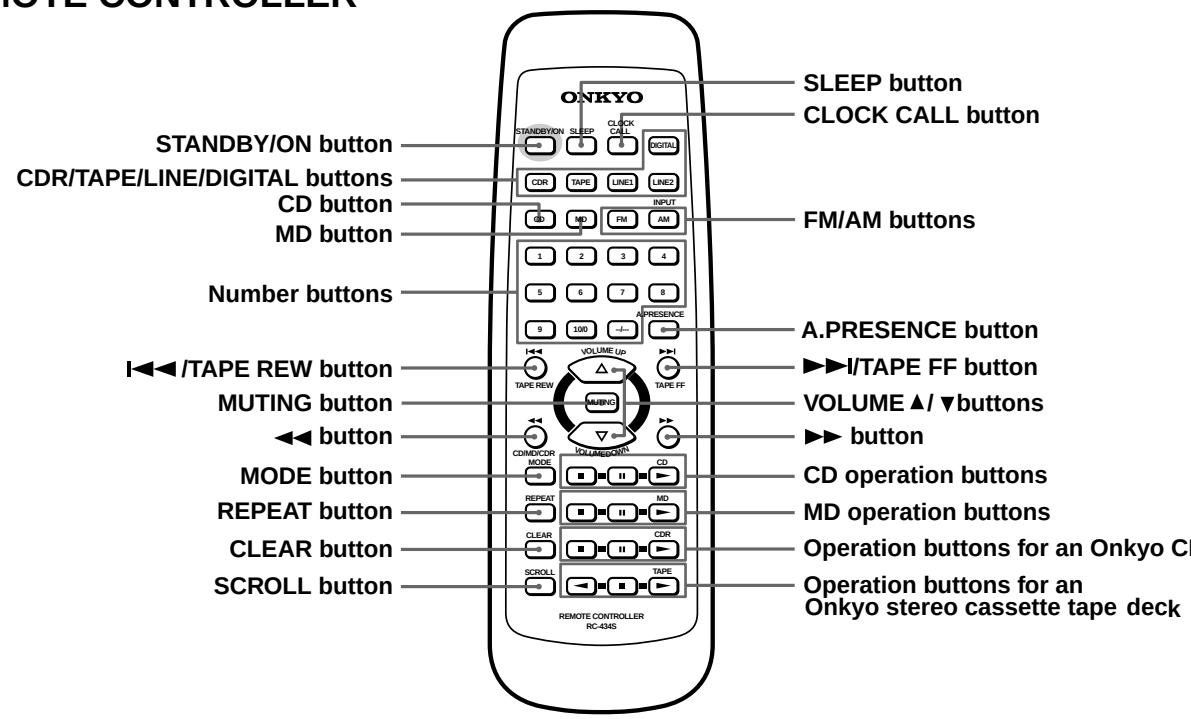



## ◆ Connecting a subwoofer

The FR-155 has a SUBWOOFER PRE OUT jack. Connect an active subwoofer (a subwoofer that contains an amplifier), or connect an amplifier to the FR-155, then connect a non-active subwoofer to the amplifier.



# REMOTE CONTROLLER

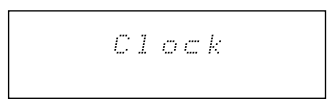



# SETTING THE DAY OF THE WEEK AND THE TIME

**You can select either the 12-hour display or 24-hour display. (This section explains how to set the time based on the 24-hour display.)**

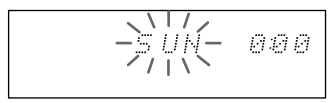
**1** TIMER

**Press TIMER repeatedly until "Clock" appears in the display.**




**2** MULTI JOG / PUSH TO

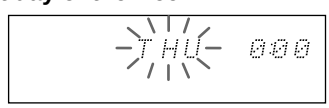
**Press MULTI JOG.**




You can now set the day of the week.
If you prefer the 12-hour display, press DISPLAY.

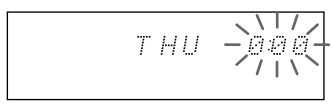
**3** MULTI JOG / PUSH TO ENTER

**Turn MULTI JOG to select the current day of the week.**

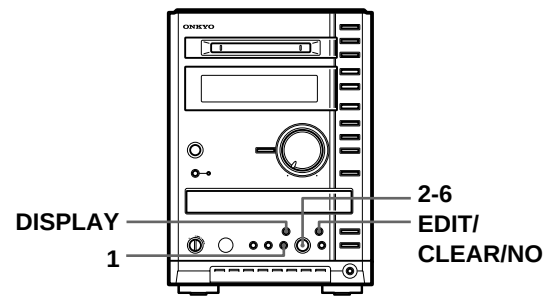



**4** MULTI JOG / PUSH TO

**Press MULTI JOG to confirm thesetting.**

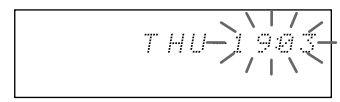



You can now set the time .



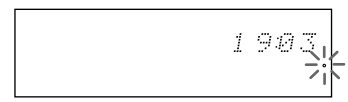

**5** MULTI JOG / PUSH TO ENTER

**Turn MULTI JOG to set the current time . (This example shows the 24-hour display.)**




**6** MULTI JOG / PUSH TO

**Press MULTI JOG in sync with the time signal.**

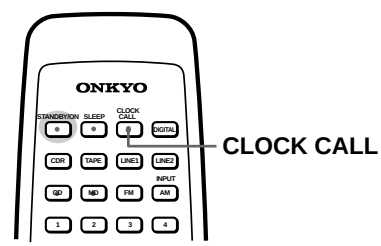



The clock starts operating and a dot indicating seconds starts to flash.

**To cancel the clock setting**
Press EDIT/CLEAR /**NO**.

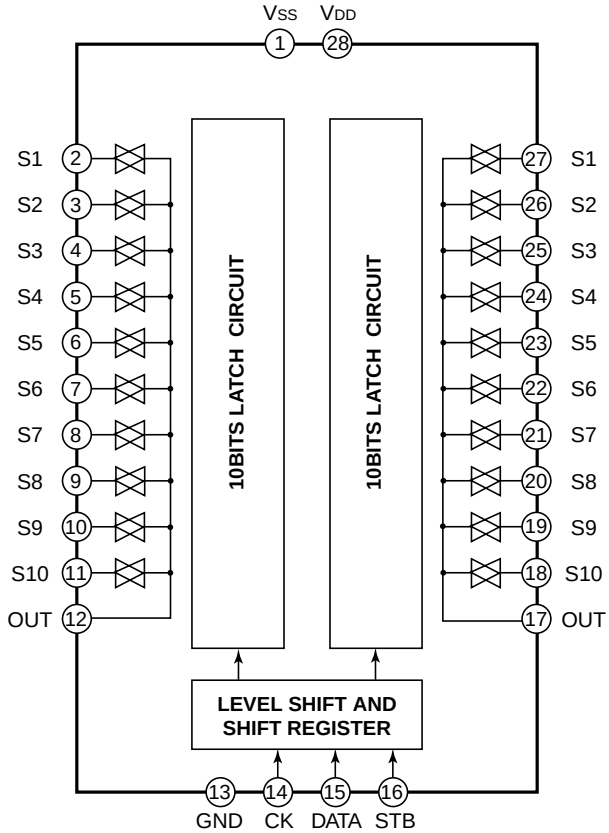
## Checking the time and the day of the week

To check the time and the day of the week, press TIMER to display "Clock, then press DISPLAY.The display now indicates the day of the week and the current time.Alternatively,press CLOCK CALL on the remote controller. To switch between the 12-hour and 24-hour displays,press DISPLAY while the current time is indicated on the display.

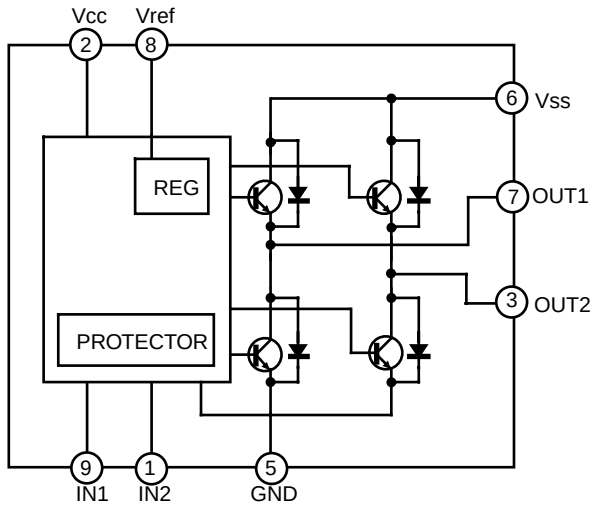


# I C BLOCK DIAGRAM AND DESCRIPTIONS

## Q401:TC9273N-004 (Analog function switch)



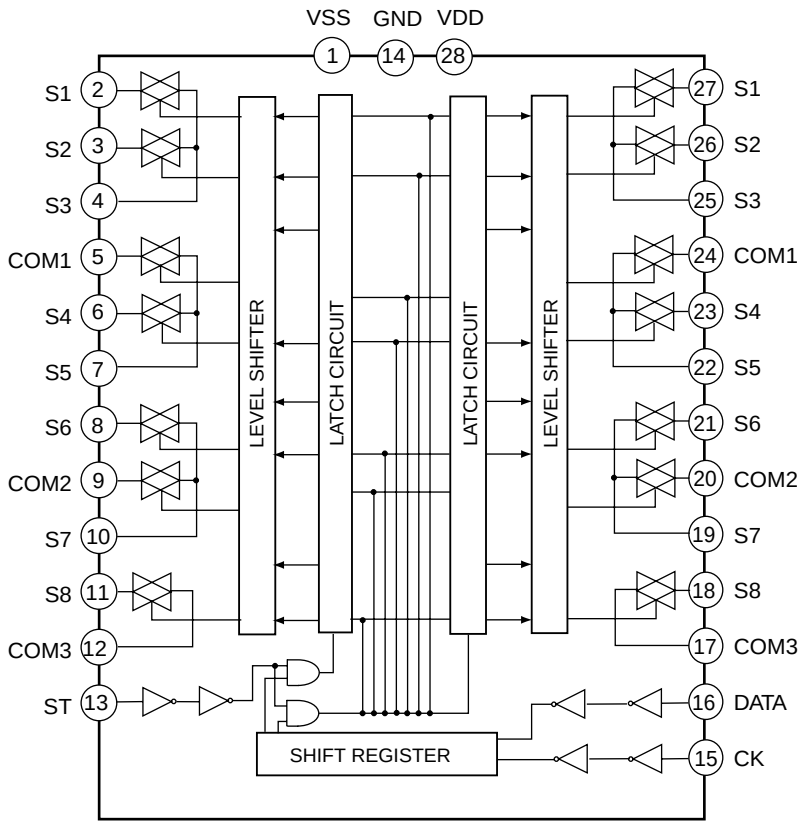

## Q103,Q181:TA7291S (Motor driver)




| INPUT | | OUTPUT | | |
|---|---|---|---|---|
| IN1 | IN2 | OUT1 | OUT2 | MODE |
| 0 | 0 | ∞ | ∞ | STOP |
| 1 | 0 | H | L | CW/CCW |
| 0 | 1 | H | H | CCW/SW |
| 1 | 1 | L | L | BRAKE |

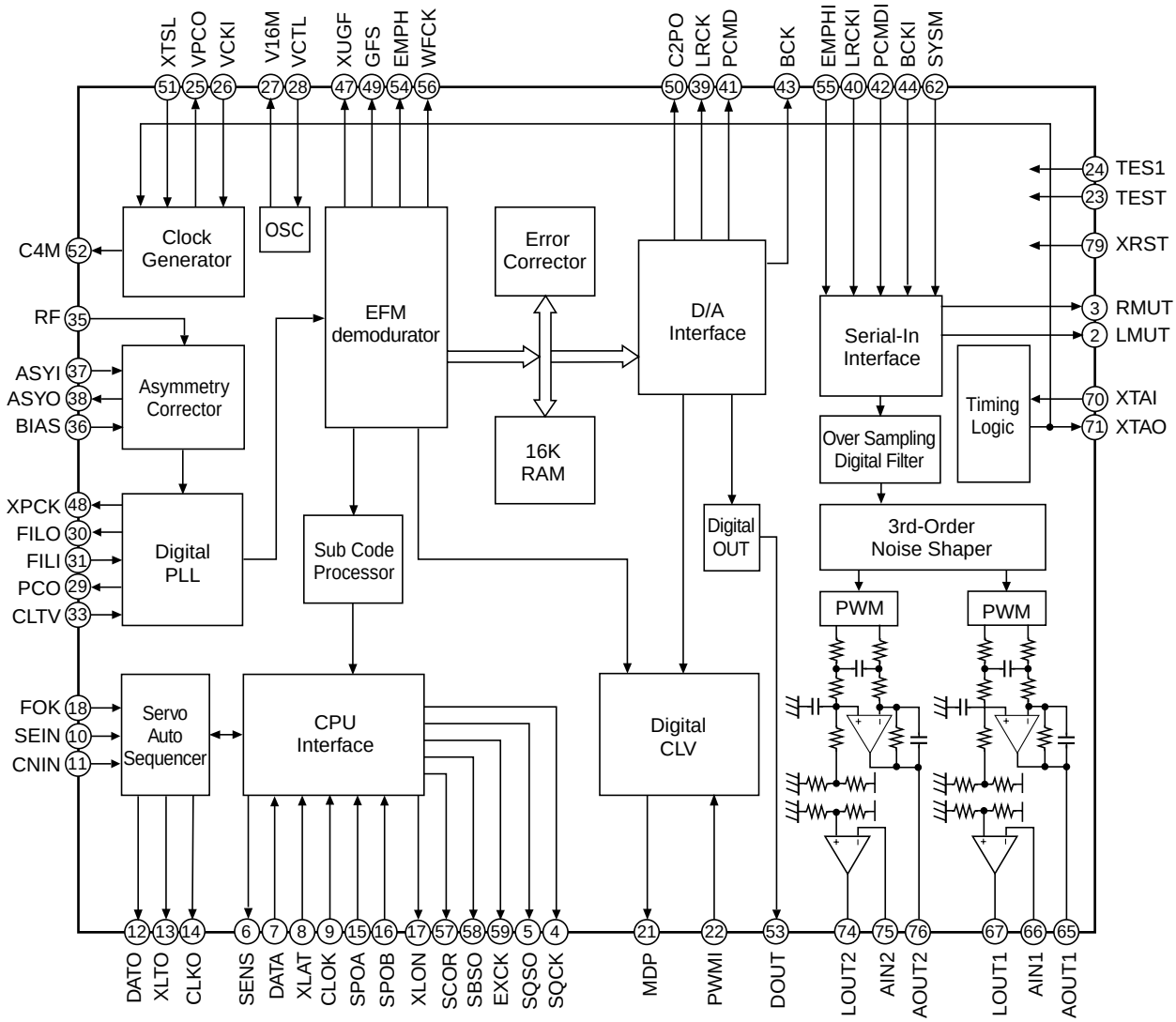
CCW : Counter clockwise direction
CW : Clockwise direction

## Q447:TC9162AN (Analog function switch)



## Q351:CXD2589Q (CD Digital Signal Processor)

Block Diagram

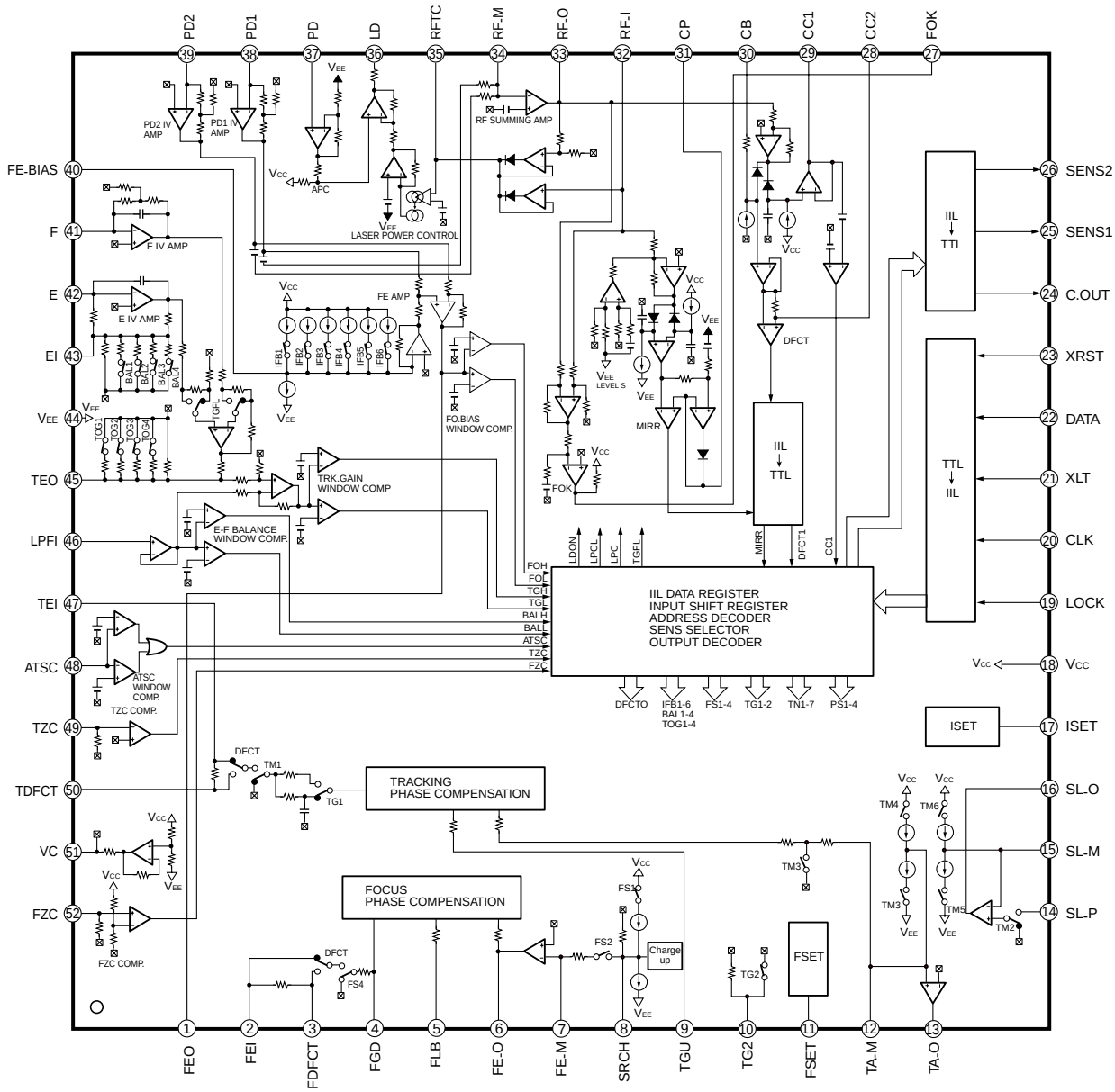


## PIN Description

| Pin No. | Symbol | I/O | Description | Pin No. | Symbol | I/O | Description |
|---|---|---|---|---|---|---|---|
| 1 | VSS | — | GND | 43 | BCK | O | D/A interface. Bit clock output. |
| 2 | LMUT | O | Left-channel zero detection flag. | 44 | BCKI | I | D/A interface. Bit clock input. |
| 3 | RMUT | O | Right-channel zero detection flag. | 45 | VSS | — | GND |
| 4 | SQCK | I | SQSO readout clock input. | 46 | VDD | — | Power supply (+5V). |
| 5 | SQSO | O | Sub Q 80-bit serial output. | 47 | XUGF | O | XUGF output. Switched to MNT1 or RFCK output by a command. |
| 6 | SENS | O | SENS output to CPU. | | | | |
| 7 | DATA | I | Serial data input from CPU. | 48 | XPCK | O | XPLCK output. Switched to MNT0 output by a command. |
| 8 | XLAT | I | Latch input from CPU. Serial data is latched at the falling edge. | 49 | GFS | O | GFS output. Switched to MNT3 or XRAOF output by a command. |
| 9 | CLOK | I | Serial data transfer clock input from CPU. | | | | |
| 10 | SEIN | I | SENS input from SSP. | 50 | C2PO | O | C2PO output. Switched to GTOP output by a command. |
| 11 | CNIN | I | Track jump count signal input. | | | | |
| 12 | DATO | O | Serial data output to SSP. | 51 | XTSL | I | Crystal selector input. Low: 16.9344MHz; high: 33.8688MHz. |
| 13 | XLTO | O | Serial data latch output to SSP. Latched at the falling edge. | 52 | C4M | O | 4.2336MHz output. 1/4 frequency-divided VCKI output in CAV-W mode. |
| 14 | CLKO | O | Serial data transfer clock output to SSP. | | | | |
| 15 | SPOA | I | Microcomputer extended interface (input A). | 53 | DOUT | O | Digital Out output. |
| 16 | SPOB | I | Microcomputer extended interface (input B). | 54 | EMPH | O | Outputs a high signal when the playback disc has emphasis, and a low signal when there is no emphasis. |
| 17 | XLON | O | Microcomputer extended interface (output). | | | | |
| 18 | FOK | I | Focus OK input.<br>Used for SENS output and the servo auto sequencer. | 55 | EMPHI | I | Inputs a high signal when de-emphasis is on, and a low signal when de-emphasis is off. |
| 19 | VDD | — | Power supply (+5V). | 56 | WFCK | O | WFCK output. |
| 20 | VSS | — | GND | 57 | SCOR | O | Outputs a high signal when either subcode sync S0 or S1 is detected. |
| 21 | MDP | O | Spindle motor servo control. | | | | |
| 22 | PWMI | I | Spindle motor external control input. | 58 | SBSO | O | Sub P to W serial output. |
| 23 | TEST | I | TEST pin; normally GND. | 59 | EXCK | I | SBSO readout clock input. |
| 24 | TES1 | I | TEST pin; normally GND. | 60 | VSS | — | GND |
| 25 | VPCO | O | Charge pump output for the wide-band EFM PLL. | 61 | VDD | — | Power supply (+5V). |
| 26 | VCKI | I | VCO2 oscillation input for the wide-band EFM PLL. | 62 | SYSM | I | Mute input. Active when high. |
| 27 | V16M | O | VCO2 oscillation output for the wide-band EFM PLL. | 63 | AVSS | — | Analog GND. |
| | | | | 64 | AVDD | — | Analog power supply (+5V). |
| 28 | VCTL | I | VCO2 control voltage input for the wide-band EFM PLL. | 65 | AOUT1 | O | Left-channel analog output. |
| | | | | 66 | AIN1 | I | Left-channel operational amplifier input. |
| 29 | PCO | O | Master PLL charge pump output. | 67 | LOUT1 | O | Left-channel LINE output. |
| 30 | FILO | O | Master PLL (slave = digital PLL) filter output. | 68 | AVSS | — | Analog GND. |
| 31 | FILI | I | Master PLL filter input. | 69 | XVDD | | Power supply for master clock. |
| 32 | AVSS | — | Analog GND. | 70 | XTAI | I | Crystal oscillation circuit input. Input the external master clock via this pin. |
| 33 | CLTV | I | Master VCO control voltage input. | | | | |
| 34 | AVDD | — | Analog power supply (+5V). | 71 | XTAO | O | Crystal oscillation circuit output. |
| 35 | RF | I | EFM signal input. | 72 | XVSS | | GND for master clock. |
| 36 | BIAS | I | Constant current input of the asymmetry circuit. | 73 | AVSS | — | Analog GND. |
| 37 | ASYI | I | Asymmetry comparator voltage input. | 74 | LOUT2 | O | Right-channel LINE output. |
| 38 | ASYO | O | EFM full-swing output (low = VSS, high = VDD). | 75 | AIN2 | I | Right-channel operational amplifier input. |
| 39 | LRCK | O | D/A interface. LR clock output f = Fs. | 76 | AOUT2 | O | Right-channel analog output. |
| 40 | LRCKI | I | LR clock input. | 77 | AVDD | — | Analog power supply (+5V). |
| 41 | PCMD | O | D/A interface. Serial data output (two's complement, MSB first). | 78 | AVSS | — | Analog GND. |
| | | | | 79 | XRST | I | System reset. Reset when low. |
| 42 | PCMDI | I | D/A interface. Serial data input (two's complement, MSB first). | 80 | VDD | — | Power supply (+5V). |

## Q101:CXA1992BR (RF Signal Processing Servo Amplifier)

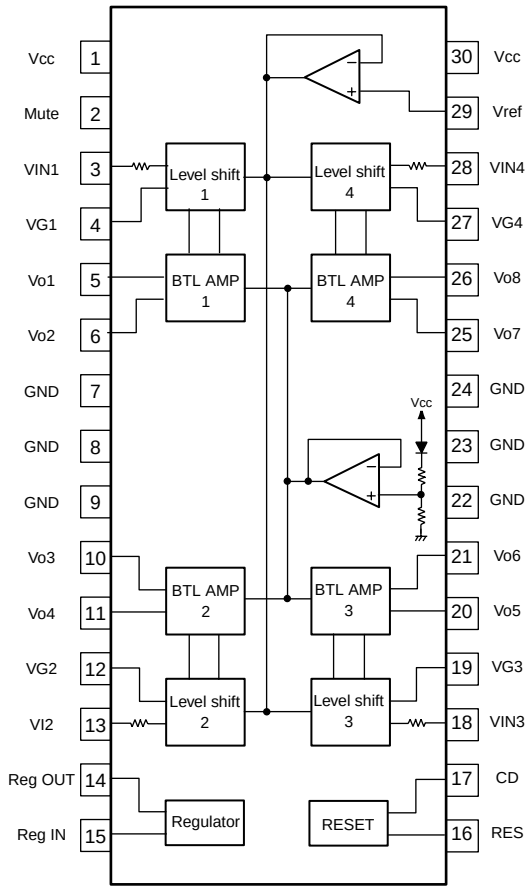
### Block Diagram



## Pin Description

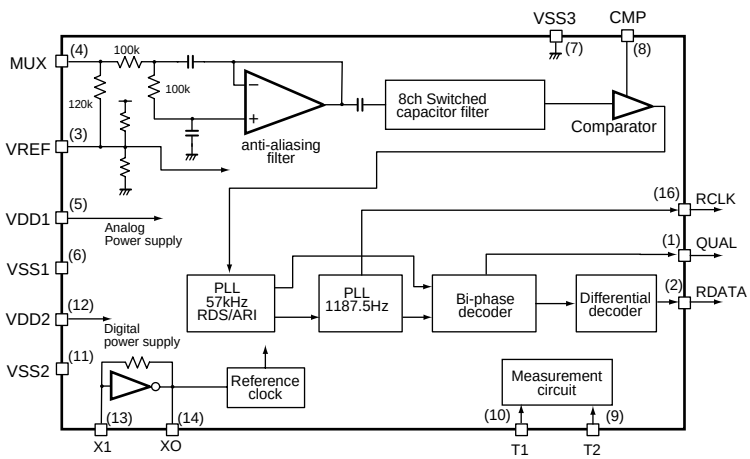
| Pin No. | Symbol | I/O | Description | Pin No. | Symbol | I/O | Description |
|---|---|---|---|---|---|---|---|
| 1 | FEO | O | Focus error amplifier output. Connected internally to the window comparator input for bias adjustment. | 26 | SENS2 | O | Outputs DFCT2, MIRR, BALL, TGL, FOL, and others according to the command from the CPU. |
| | | | | 27 | FOK | O | Focus OK comparator output. |
| 2 | FEI | I | Focus error input. | 28 | CC2 | I | Input for the defect bottom hold output with capacitance coupled. |
| 3 | FDFCT | I | Capacitor connection pin for defect time constant. | | | | |
| 4 | FGD | I | Ground this pin through a capacitor for cutting the focus servo high-frequency gain. | 29 | CC1 | O | Defect bottom hold output. Connected internally to the interruption comparator input. |
| 5 | FLB | I | External time constant setting pin for boosting the focus servo low-frequency. | 30 | CB | I | Connection pin for defect bottom hold capacitor. |
| | | | | 31 | CP | I | Connection pin for MIRR hold capacitor. MIRR comparator non-inverted input. |
| 6 | FE_O | O | Focus drive output. | | | | |
| 7 | FE_M | I | Focus amplifier inverted input. | 32 | RF_I | I | Input for the RF summing amplifier output with capacitance coupled. |
| 8 | SRCH | I | External time constant setting pin for generating focus search waveform. | | | | |
| | | | | 33 | RF_O | O | RF sunning amplifier output. Eyepattern check point. |
| 9 | TGU | I | External time constant setting pin for switching tracking high-frequency gain. | 34 | RF_M | I | RF summing amplifier inverted input. The RF amplifier gain is determined by the resistance connected between this pin and RFO pin. |
| 10 | TG2 | I | External time constant setting pin for switching tracking high-frequency gain. | | | | |
| 11 | FSET | I | Peak frequency setting pin for focus and tracking phase compensation amplifier. | 35 | RFTC | I | External time constant setting pin during RF level control. |
| 12 | TA_M | I | Tracking amplifier inverted input. | 36 | LD | O | APC amplifier output. |
| 13 | TA_O | O | Tracking drive output. | 37 | PD | I | APC amplifier input. |
| 14 | SL_P | I | Sled amplifier non-inverted input. | 38 | PD1 | I | RF I-V amplifier inverted input. Connect these pins |
| 15 | SL_M | I | Sled amplifier inverted input. | 39 | PD2 | I | to the photo diode A + C and B + D pins. |
| 16 | SL_O | O | Sled drive output. | 40 | FE_BIAS | I | Bias adjustment of focus error amplifier. Leave this pin open for automatic adjustment. |
| 17 | ISET | I | Connect an external capacitance to set the current which determines the Focus search, Track jump, and Sled kick heights. | | | | |
| | | | | 41 | F | I | F I-V and E I-V amplifier inverted input. |
| | | | | 42 | E | I | Connect these pins to photo diodes F and E. |
| 18 | VCC | I | Positive power supply. | 43 | EI | — | I-V amplifier E gain adjustment. (When not using automatic balance adjustment) |
| 19 | LOCK | I | The sled overrun prevention circuit operates when this pin is Low. (no pull-up resistance) | | | | |
| | | | | 44 | VEE | — | Negative power supply. |
| 20 | CLK | I | Serial data transfer clock input from CPU. (no pull-up resistance) | 45 | TEO | O | Tracking error amplifier output. E-F signal is output. |
| | | | | 46 | LPFI | I | Comparator input for balance adjustment. (Input from TEO through LPF) |
| 21 | XLT | I | Latch input from CPU. (no pull-up resistance) | | | | |
| 22 | DATA | I | Serial data input from CPU. (no pull-up resistance) | 47 | TEI | I | Tracking error input. |
| 23 | XRST | I | Reset input; resets at Low. (no pull-up resistance) | 48 | ATSC | I | Window comparator input for ATSC detection. |
| 24 | C. OUT | O | Track number count signal output. | 49 | TZC | I | Tracking zero-cross comparator input. |
| 25 | SENS1 | O | Outputs FZC, DFCT1, TZC, BALH, TGH, FOH, ATSC, and others according to the command from CPU. | 50 | TDFCT | I | Capacitor connection pin for defect time constant. |
| | | | | 51 | VC | O | (VCC + VEE)/2 direct voltage output. |
| | | | | 52 | FZC | I | Focus zero-cross comparator input. |

## Q102:LA6541D (CD 4-channel BTL Driver )



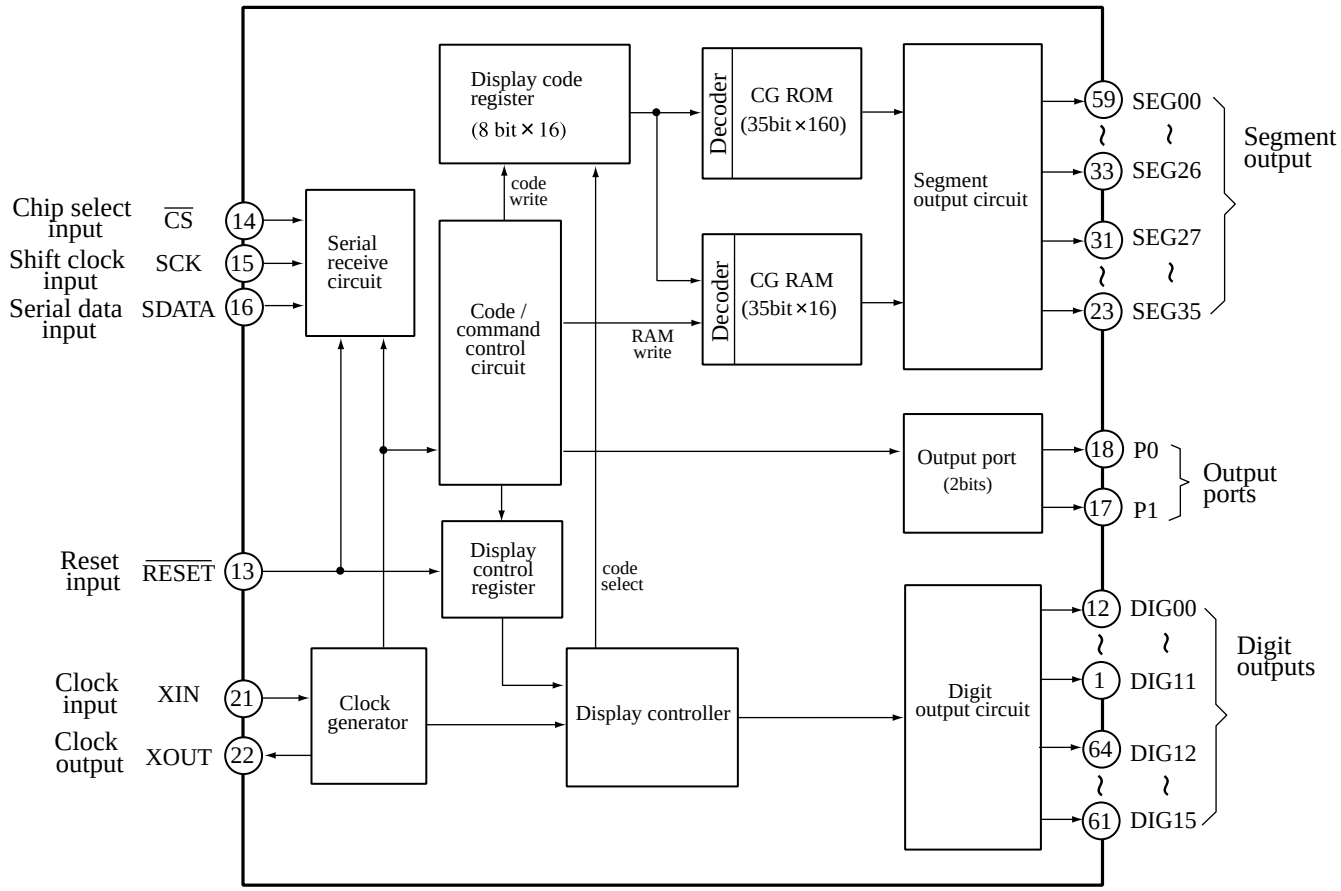

| Pin No. | Pin Name | Description (Function) |
|---|---|---|
| **1** | $V_{CC}$ | Power supply (shorted with pin 30) |
| **2** | Mute | ON/OFF control for all BTL AMP outputs |
| **3** | $V_{IN}1$ | BTL AMP 1 input |
| **4** | VG1 | BTL AMP 1 input (for gain control) |
| **5** | Vo1 | BTL AMP 1 output (non-inverting side) |
| **6** | Vo2 | BTL AMP 1 output (inverting side) |
| **7** | GND | GND (minimum electric potential) |
| **8** | GND | GND (minimum electric potential) |
| **9** | GND | GND (minimum electric potential) |
| **10** | $V_O3$ | BTL AMP 2 output (inverting side) |
| **11** | $V_O4$ | BTL AMP 2 output (non-inverting side) |
| **12** | VG2 | BTL AMP 2 input (for gain control) |
| **13** | $V_{IN}2$ | BTL AMP 2 input |
| **14** | REG OUT | Connection for collector of external transistor (PNP); 5 V supply output |
| **15** | REG IN | Connection for base of external transistor (PNP) |
| **16** | $\overline{RES}$ | Reset output |
| **17** | $C_D$ | Reset output delay time setting (with capacitor) |
| **18** | $V_{IN}3$ | BTL AMP 3 input |
| **19** | VG3 | BTL AMP 3 input (for gain control) |
| **20** | $V_O5$ | BTL AMP 3 output (non-inverting side) |
| **21** | $V_O6$ | BTL AMP 3 output (inverting side) |
| **22** | GND | GND (minimum electric potential) |
| **23** | GND | GND (minimum electric potential) |
| **24** | GND | GND (minimum electric potential) |
| **25** | $V_O7$ | BTL AMP 4 output (inverting side) |
| **26** | $V_O8$ | BTL AMP 4 output (non-inverting side) |
| **27** | VG4 | BTL AMP 4 input (for gain control) |
| **28** | $V_{IN}4$ | BTL AMP 4 input |
| **29** | $V_{REF}$ | Reference voltage input for level shift circuit |
| **30** | $V_{CC}$ | Power supply (shorted with pin 1) |

## Q171:BU1923(RDS Decoder)



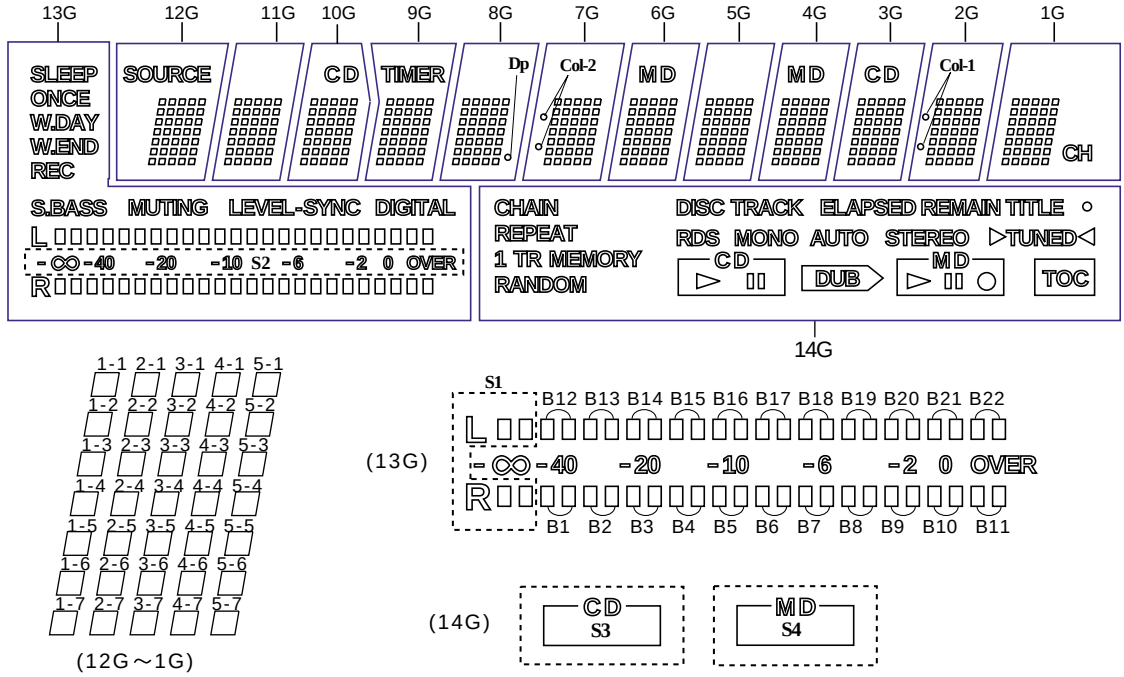

| Pin No. | Symbol | Pin name | Function |
|---|---|---|---|
| **1** | QUAL | Demodulator quality | Good data : High , bad data : Low |
| **2** | RDATA | Demodulator data | Refer to output data trimming |
| **3** | Vref | Reference voltage | 1/2 VDD1 (refer to input/output circuits) |
| **4** | MUX | Input | Composite signal input |
| **5** | VDD1 | Analog power supply | 4.5V to 5.5V |
| **6** | Vss1 | | |
| **7** | Vss3 | GND | - |
| **8** | CMP | Comparator input | C-junction |
| **9** | T2 | Test input | Open or connected to ground |
| **10** | T1 | | |
| **11** | VDD2 | Digital power supply | 4.5V to 5.5V |
| **12** | Vss2 | | |
| **13** | XI | Crystal oscillor | Connects to 4.332MHz oscillator |
| **14** | XO | | (refer to input/output circuit) |
| **15** | (NC) | - | - |
| **16** | RCLK | Demodulator clock | 1187.5Hz clock |

## Q752:M66004F (FL Tube Driver)




| Pin No. | Symbol | Pin name | Function |
|---|---|---|---|
| **13** | $\overline{\text{RESET}}$ | Reset input | This pin is used to initialize the internal state on the M66004 |
| **14** | $\overline{\text{CS}}$ | Chip select input | "L" : communication with the MCU is possible.<br>"H" : any instruction from teh MCU is neglected. |
| **15** | SCK | Shift select input | At the rising edge from "L"to"H" , input data is shifted. |
| **16** | SDATA | Serial data input | Character code or command data to display is input from MSB. |
| **21, 22** | XIN, XOUT | Clock input<br>Clock output | Set oscillation frequency |
| **1-12 61-64** | DIG00 - DIG15 | Digit output | These pins are used to connect to digit pins of VFD. |
| **23-31 33-59** | SEG00 - SEG35 | Segment output | These pins are used to connect to segment pins of VFD. |
| **17,18** | P0,PI | | Output port (static operation) |
| **19** | VCC1 | | Positive power supply for internal logic. |
| **60** | VCC2 | | Positive power supply for high-pressure-resistant output port. |
| **22** | VSS | | GND |
| **32** | VP | | Negative power supply for VFD drive. |

## Q751:BJ780GNK(FL Tube)







(12G～1G)

(13G)

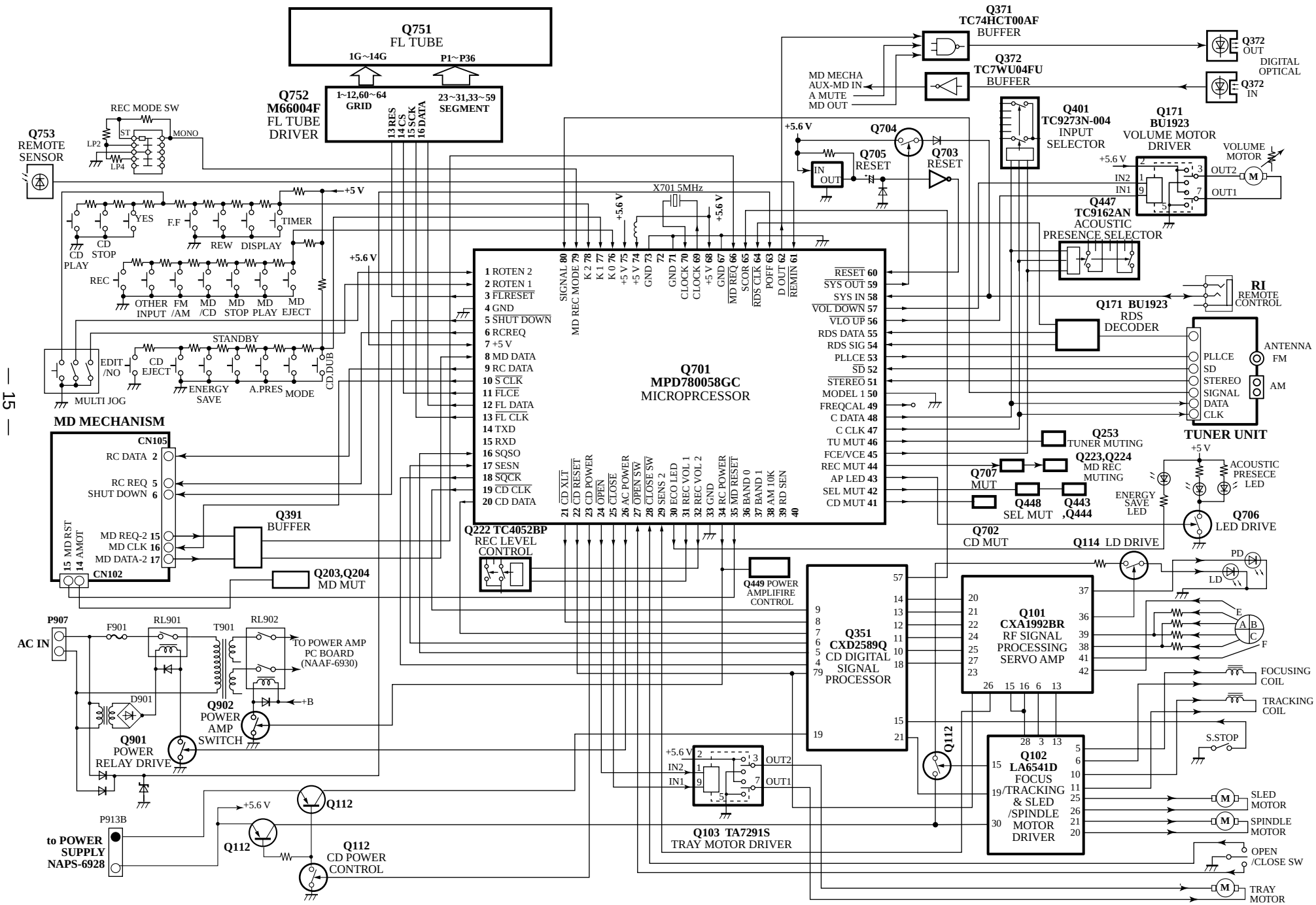



(14G)




| | 14G | 13G | 12G | 11G | 10G | 9G | 8G | 7G | 6G | 5G | 4G | 3G | 2G | 1G |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P1 | CHAIN | B1 | 1-1 | 1-1 | 1-1 | 1-1 | 1-1 | 1-1 | 1-1 | 1-1 | 1-1 | 1-1 | 1-1 | 1-1 |
| P2 | REPEAT | B8 | 2-1 | 2-1 | 2-1 | 2-1 | 2-1 | 2-1 | 2-1 | 2-1 | 2-1 | 2-1 | 2-1 | 2-1 |
| P3 | 1 TR | B12 | 3-1 | 3-1 | 3-1 | 3-1 | 3-1 | 3-1 | 3-1 | 3-1 | 3-1 | 3-1 | 3-1 | 3-1 |
| P4 | MEMORY | B19 | 4-1 | 4-1 | 4-1 | 4-1 | 4-1 | 4-1 | 4-1 | 4-1 | 4-1 | 4-1 | 4-1 | 4-1 |
| P5 | RANDOM | S1 | 5-1 | 5-1 | 5-1 | 5-1 | 5-1 | 5-1 | 5-1 | 5-1 | 5-1 | 5-1 | 5-1 | 5-1 |
| P6 | DISC | B2 | 1-2 | 1-2 | 1-2 | 1-2 | 1-2 | 1-2 | 1-2 | 1-2 | 1-2 | 1-2 | 1-2 | 1-2 |
| P7 | TRACK | B9 | 2-2 | 2-2 | 2-2 | 2-2 | 2-2 | 2-2 | 2-2 | 2-2 | 2-2 | 2-2 | 2-2 | 2-2 |
| P8 | ELAPSED | B13 | 3-2 | 3-2 | 3-2 | 3-2 | 3-2 | 3-2 | 3-2 | 3-2 | 3-2 | 3-2 | 3-2 | 3-2 |
| P9 | REMAIN | B20 | 4-2 | 4-2 | 4-2 | 4-2 | 4-2 | 4-2 | 4-2 | 4-2 | 4-2 | 4-2 | 4-2 | 4-2 |
| P10 | TITLE | S2 | 5-2 | 5-2 | 5-2 | 5-2 | 5-2 | 5-2 | 5-2 | 5-2 | 5-2 | 5-2 | 5-2 | 5-2 |
| P11 | RDS | B3 | 1-3 | 1-3 | 1-3 | 1-3 | 1-3 | 1-3 | 1-3 | 1-3 | 1-3 | 1-3 | 1-3 | 1-3 |
| P12 | MONO | B10 | 2-3 | 2-3 | 2-3 | 2-3 | 2-3 | 2-3 | 2-3 | 2-3 | 2-3 | 2-3 | 2-3 | 2-3 |
| P13 | AUTO | B14 | 3-3 | 3-3 | 3-3 | 3-3 | 3-3 | 3-3 | 3-3 | 3-3 | 3-3 | 3-3 | 3-3 | 3-3 |
| P14 | STEREO | B21 | 4-3 | 4-3 | 4-3 | 4-3 | 4-3 | 4-3 | 4-3 | 4-3 | 4-3 | 4-3 | 4-3 | 4-3 |
| P15 | ▷TUNED◁ | OVER | 5-3 | 5-3 | 5-3 | 5-3 | 5-3 | 5-3 | 5-3 | 5-3 | 5-3 | 5-3 | 5-3 | 5-3 |
| P16 | S3 | B4 | 1-4 | 1-4 | 1-4 | 1-4 | 1-4 | 1-4 | 1-4 | 1-4 | 1-4 | 1-4 | 1-4 | 1-4 |
| P17 | ▷ (CD) | B11 | 2-4 | 2-4 | 2-4 | 2-4 | 2-4 | 2-4 | 2-4 | 2-4 | 2-4 | 2-4 | 2-4 | 2-4 |
| P18 | ▯▯ (CD) | B15 | 3-4 | 3-4 | 3-4 | 3-4 | 3-4 | 3-4 | 3-4 | 3-4 | 3-4 | 3-4 | 3-4 | 3-4 |
| P19 | DUB | B22 | 4-4 | 4-4 | 4-4 | 4-4 | 4-4 | 4-4 | 4-4 | 4-4 | 4-4 | 4-4 | 4-4 | 4-4 |
| P20 | S4 | SLEEP | 5-4 | 5-4 | 5-4 | 5-4 | 5-4 | 5-4 | 5-4 | 5-4 | 5-4 | 5-4 | 5-4 | 5-4 |
| P21 | ▷ (MD) | B5 | 1-5 | 1-5 | 1-5 | 1-5 | 1-5 | 1-5 | 1-5 | 1-5 | 1-5 | 1-5 | 1-5 | 1-5 |
| P22 | ▯▯ (MD) | ONCE | 2-5 | 2-5 | 2-5 | 2-5 | 2-5 | 2-5 | 2-5 | 2-5 | 2-5 | 2-5 | 2-5 | 2-5 |
| P23 | ○ (MD) | B16 | 3-5 | 3-5 | 3-5 | 3-5 | 3-5 | 3-5 | 3-5 | 3-5 | 3-5 | 3-5 | 3-5 | 3-5 |
| P24 | TOC | W.DAY | 4-5 | 4-5 | 4-5 | 4-5 | 4-5 | 4-5 | 4-5 | 4-5 | 4-5 | 4-5 | 4-5 | 4-5 |
| P25 | ○ (TITLE) | W.END | 5-5 | 5-5 | 5-5 | 5-5 | 5-5 | 5-5 | 5-5 | 5-5 | 5-5 | 5-5 | 5-5 | 5-5 |
| P26 | - | B6 | 1-6 | 1-6 | 1-6 | 1-6 | 1-6 | 1-6 | 1-6 | 1-6 | 1-6 | 1-6 | 1-6 | 1-6 |
| P27 | - | REC | 2-6 | 2-6 | 2-6 | 2-6 | 2-6 | 2-6 | 2-6 | 2-6 | 2-6 | 2-6 | 2-6 | 2-6 |
| P28 | - | S.BASS | 5-7 | 5-7 | 5-7 | 5-7 | 5-7 | 5-7 | 5-7 | 5-7 | 5-7 | 5-7 | 5-7 | 5-7 |
| P29 | - | MUTING | 4-7 | 4-7 | 4-7 | 4-7 | 4-7 | 4-7 | 4-7 | 4-7 | 4-7 | 4-7 | 4-7 | 4-7 |
| P30 | - | B18 | 3-7 | 3-7 | 3-7 | 3-7 | 3-7 | 3-7 | 3-7 | 3-7 | 3-7 | 3-7 | 3-7 | 3-7 |
| P31 | - | LEVEL-SYNC | 2-7 | 2-7 | 2-7 | 2-7 | 2-7 | 2-7 | 2-7 | 2-7 | 2-7 | 2-7 | 2-7 | 2-7 |
| P32 | - | B7 | 1-7 | 1-7 | 1-7 | 1-7 | 1-7 | 1-7 | 1-7 | 1-7 | 1-7 | 1-7 | 1-7 | 1-7 |
| P33 | - | DIGITAL | 5-6 | 5-6 | 5-6 | 5-6 | 5-6 | 5-6 | 5-6 | 5-6 | 5-6 | 5-6 | 5-6 | 5-6 |
| P34 | - | - | 4-6 | 4-6 | 4-6 | 4-6 | 4-6 | 4-6 | 4-6 | 4-6 | 4-6 | 4-6 | 4-6 | 4-6 |
| P35 | - | B17 | 3-6 | 3-6 | 3-6 | 3-6 | 3-6 | 3-6 | 3-6 | 3-6 | 3-6 | 3-6 | 3-6 | 3-6 |
| P36 | - | - | SOURCE | - | CD | TIMER | Dp | col 2 | MD | - | MD | CD | col 1 | CH |

# MICROPROCESSOR CONNECTION DIAGRAM



# MICROPROCESSOR TERMINAL DESCRIPTION

Q701:MPD780058GC-8BT

| PIN No. | Function | I/O | Description | PIN No. | Function | I/O | Description |
|---|---|---|---|---|---|---|---|
| 1 | ROTEN2 | I | Pulse input pin 1 from rotary encoder. | 41 | CDMUT | O | Muting signal output pin for CD analog signal. |
| 2 | ROTEN1 | I | Pulse input pin 2 from rotary encoder. | 42 | SELMUT | O | Muting signal output pin for audio section. |
| 3 | FLRESET | O | Reset signal output pin for FL driver IC(M66004) | 43 | APLED | O | Control output pin of acoustic presence indicator. |
| 4 | GND | I | Ground pin. | 44 | RECMUT | O | Muting signal output pin for muting of MD recording signal. |
| 5 | SHUTDOWN | O | Output pin of power failure signal for MD mechanism microcomputer. | 45 | FCE/VCE | O | Chip enable signal output pin for function ICs(T9273,TC9162). |
| 6 | RCREQ | O | Serial data output pin for communication of MD microcomputer. | 46 | TUMUT | O | Muting signal output pin for tuner signal. |
| 7 | AVDD | I | Power supply pin for A/D converter. | 47 | CCLK | O | Clock data output pin for Ics of receiver section. |
| 8 | MDDATA | I | Serial transfer data input pin from MD mechanism microcomputer. | 48 | CDATA | O | Serial data output pin for Ics of receiver section. |
| 9 | RCDATA | O | Serial transfer data output pin to MD mechanism microcomputer. | 49 | FREQCAL | O | Output pin for adjustment of main clock frequency |
| 10 | SCLK | O | Serial transfer clock output pin to MD mechanism microcomputer. | 50 | MODEL1 | I | Initialization input pin for model set. |
| 11 | FLCE | O | Chip enable signal output pin for FL drover IC(M66004). | 51 | STEREO | I | FM stereo broadcast detection input pin. |
| 12 | FLDATA | O | Serial data output pin for FL drover IC(M66004). | 52 | SD | I | Broadcast detection input pin. |
| 13 | FLCLK | O | Clock data output pin for FL drover IC(M66004). | 53 | PLLCE | O | Chip enable signal output pin for tuner PLL IC. |
| 14 | TXD | O | Output pin for flash writer. | 54 | RDSSIG | I | Not used. |
| 15 | RXD | I | Input pin for flash writer. | 55 | RDSDATA | I | Not used. |
| 16 | SQSO | I | Input pin of subcode data from CD signal processor IC(CXD2589). | 56 | VOLUP | O | Control output pin for motor driver IC of volume. |
| 17 | SENS | I | Input pin of sens data from CD signal processor IC(CXD2589). | 57 | VOLDOWN | O | Control output pin for motor driver IC of volume. |
| 18 | SQCK | O | Clock signal output pin for read out to signal processor IC(CXD2589). | 58 | SYSIN | I | System code input pin. |
| 19 | CDCLK | O | Command output pin for transfer the clock signal to CD signal processor IC(CDX2589). | 59 | SYSOUT | O | System code output pin. |
| 20 | CDDATA | O | Command output pin for transfer the data signal to CD signal processor IC(CXD2589). | 60 | RESET | I | System reset input pin. |
| 21 | CDXLT | O | Command output pin for transfer the latch signal to CD signal processor IC(CXD2589). | 61 | REMIN | I | Signal input pin from remote sensor. |
| 22 | CDRESET | O | Reset signal output pin for CD circuit ICs(CXD2589,CXA1992) | 62 | DOUT | O | Control output pin for CD/MD digital output selector. (H=CD, L=MD) |
| 23 | CDPOWER | O | Control signal output pin for CD circuit. | 63 | POFF | I | Power failure detect input pin. |
| 24 | OPEN | O | Control signal output pin for motor driver IC of CD tray. | 64 | RDSCLK | I | Not used. |
| 25 | CLOSE | O | Control signal output pin for motor driver IC of CD tray. | 65 | SCOR | I | Detection signal input pin CD signal processor IC(CXD2589). |
| 26 | ACPOWER | O | Control signal output pin for relay of main power supply. | 66 | MDREQ | I | Signal input pin for communication from MD mechanism microprocessor. |
| 27 | OPENSW | I | Detection signal input pin for the opening completion of CD tray. | 67 | GND | I | Ground pin. |
| 28 | CLOSESW | I | Detection signal input pin for the closing completion of CD tray. | 68 | VDD | I | Power supply pin. (+5V) |
| 29 | SENS2 | I | Sens2 signal input pin from CD servo IC(CXA1992) | 69 | CLOCK | O | Master clock connection pin. |
| 30 | ECOLED | O | Control output pin of energy save indicator. | 70 | CLOCK | I | Master clock connection pin. (connect the trimming capacitor) |
| 31 | RECVOL1 | O | Output pin 1 for MD recording level adjust IC. | 71 | GND | I | Not used. (connect ground) |
| 32 | RECVOL2 | O | Output pin 2 for MD recording level adjust IC. | 72 | | O | Not used. |
| 33 | GND | I | Ground pin. | 73 | GND | I | Not used. (connect ground) |
| 34 | RCPOWER | O | Output pin for control relay of power supply in receiver section. | 74 | VDD | I | Power supply pin. (+5V) |
| 35 | MDRESET | O | Output pin of reset signal for MD mechanism. | 75 | AVDD | I | Power supply for A/D converter. |
| 36 | BAND0 | I | Initializing input pin 1 for FM band. | 76 | K0 | I | Operation key-1 connection input pin. |
| 37 | BAND1 | I | Initializing input pin 2 for FM band. | 77 | K1 | I | Operation key-2 connection input pin. |
| 38 | AM10K | I | Initializing input pin 2 for AM band step. | 78 | K2 | I | Operation key-3 connection input pin. |
| 39 | RDSEN | I | Initializing input pin of RDS function. (H=Function, L=Not function) | 79 | MDRECMODE | I | Connect the MD recording mode serector. |
| 40 | | I | Not used.(ground) | 80 | SIGNAL | I | Signal level input pin for automatic memory. |

# OPERATION OF THE MICROPROCESSOR

**OPERATION OF THE MICROPROCESSOR TERMINAL LINKED WITH THE ENERGY SAVE FUNCTION**

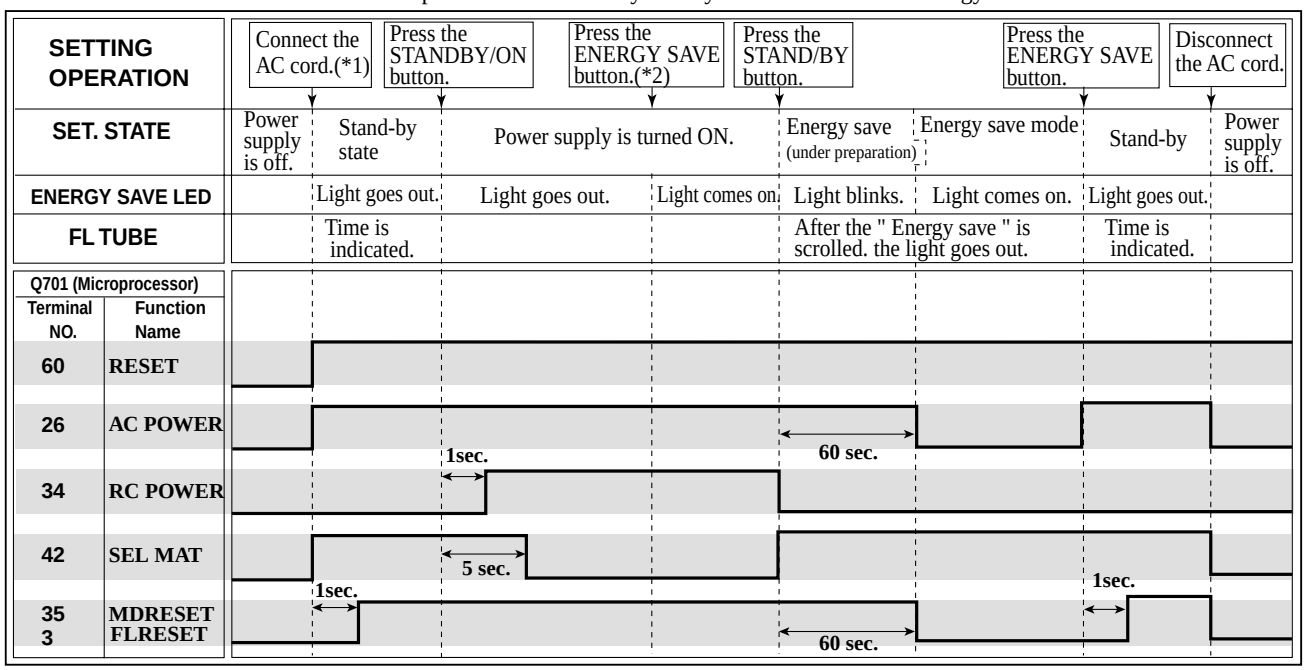
In the energy save mode (including the preparation period). only the STANDBY/ON button and the ENERGY SAVE button can be operated. 60 seconds after the energy save is operated. the microprocessor is turned to the energy save mode.

Even if the AC cord is removed. the energy save mode is stored. (the stored period is about 2 or 3 weeks that are the same as the stored period of the preset values for the tuner.) When the initial values are set. the energy save mode is released.

(*1) : The back-up voltage for the microprocessor is supposed to be 0 volt after the initial values are set.

(*2) : The energy save mode is set when the power supply is on.

When the ENERGY SAVE button is pressed in the stand-by state. you can also enter the energy save mode.




**OPERATION of RECVOL1 and RECVOL 2**

Analog switch (TC-4052) is controlled here.

| Terminal No. | Function Name | Rec. Level 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 31 | REC VOL1 | L | H | L | H |
| 32 | REC VOL2 | L | L | H | H |

**OPERATION of CDMUT. TUMUT and REC MUT**

ON means that the mute function is always on and OFF means that the mute function is always off. The mute functions shown by CONTROL become ON or OFF according to the set states.

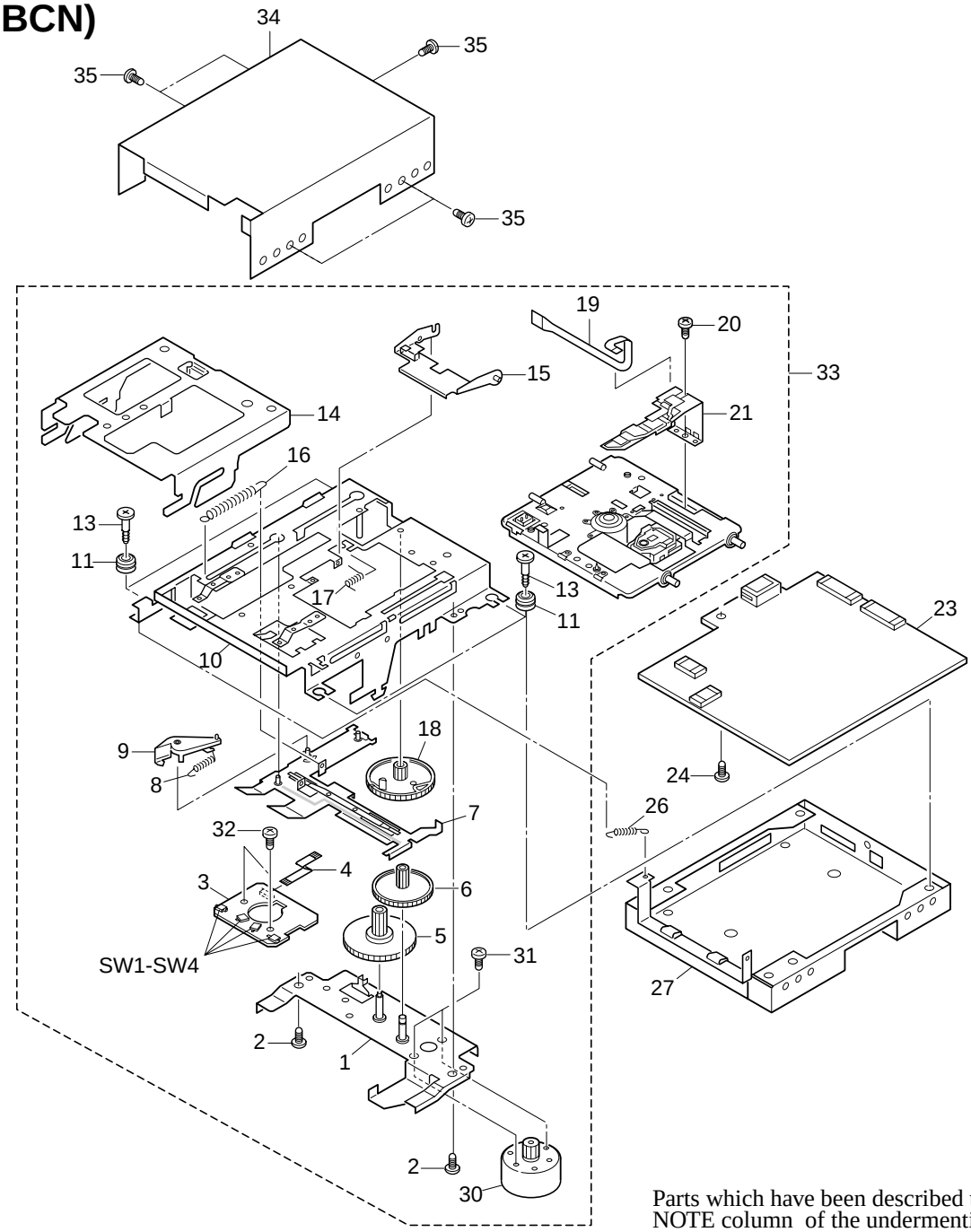
| Terminal No. | Function Name | Input Selector MD | CD | FM/AM | TAPE | CD R | LINE-1 | LINE-2 | DIGITAL |
|---|---|---|---|---|---|---|---|---|---|
| 41 | CD MUT | ON | CONTROL | ON | ON | ON | ON | ON | ON |
| 46 | TU MUT | ON | ON | CONTROL | ON | ON | ON | ON | ON |
| 44 | REC MUT | ON | OFF | OFF | OFF | OFF | OFF | OFF | ON |

**OTHER OPERATIONS**

H means the high level and L means the low level. The state shown by CONTROL varies with the set state.

| Terminal No. | Function Name | Input Selector CD | CD Except | In stand-by state | In energy save state | Terminal No. | Function Name | Input Selector CD | CD Except | In stand-by state | In energy save state |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | ~FLRESET | CONTROL | CONTROL | CONTROL | L | 31 | RECVOL1 | CONTROL | CONTROL | L | L |
| 5 | ~SHUTDOWN | H | | H | L | 32 | RECVOL2 | CONTROL | CONTROL | L | L |
| 6 | ~RICKRACK | CONTROL | CONTROL | CONTROL | L | 33 | GOD | - | - | - | - |
| 9 | RCDATA | CONTROL | CONTROL | CONTROL | L | 34 | RCPOWER | H | H | L | L |
| 10 | ~SILK | CONTROL | CONTROL | CONTROL | L | 35 | ~MDRESET | CONTROL | CONTROL | H | L |
| 11 | ~FACE | CONTROL | CONTROL | CONTROL | L | 41 | CDMUT | CONTROL | L | L | L |
| 12 | FLAT | CONTROL | CONTROL | CONTROL | L | 42 | SELMUT | CONTROL | CONTROL | H | H |
| 13 | ~FLCLK | CONTROL | CONTROL | CONTROL | L | 43 | AILED | CONTROL | CONTROL | L | L |
| 14 | TAD | CONTROL | L | L | L | 44 | RECUT | CONTROL | CONTROL | H | H |
| 15 | RED | L | L | L | L | 45 | FCE/VCE | CONTROL | CONTROL | L | L |
| 18 | ~SACK | L | L | L | L | 46 | TUMULT | CONTROL | CONTROL | H | H |
| 19 | ~CDCLK | CONTROL | L | L | L | 47 | CLACK | CONTROL | CONTROL | L | L |
| 20 | CDDATA | CONTROL | L | L | L | 48 | DATA | CONTROL | CONTROL | L | L |
| 21 | ~CDXLT | CONTROL | L | L | L | 49 | FRECKLE | L | L | L | L |
| 22 | ~CDRESET | CONTROL | L | L | L | 53 | PLACE | CONTROL | CONTROL | L | L |
| 23 | CDPOWER | CONTROL | L | L | L | 56 | ~VOLUP | CONTROL | CONTROL | H | L |
| 24 | ~OPEN | CONTROL | H | H | L | 57 | ~VOLDOWN | CONTROL | CONTROL | H | L |
| 25 | ~CLOSE | CONTROL | H | H | L | 59 | ~SYSOUT | CONTROL | CONTROL | CONTROL | CONTROL |
| 26 | ACPOWER | H | H | H | L | 62 | DOLT | CONTROL | CONTROL | L | L |
| 30 | EQUALLED | CONTROL | CONTROL | CONTROL | CONTROL | | | | | | |

# MD MECHANISM EXPLODED VIEW(1)
# (KMK-260BCN)

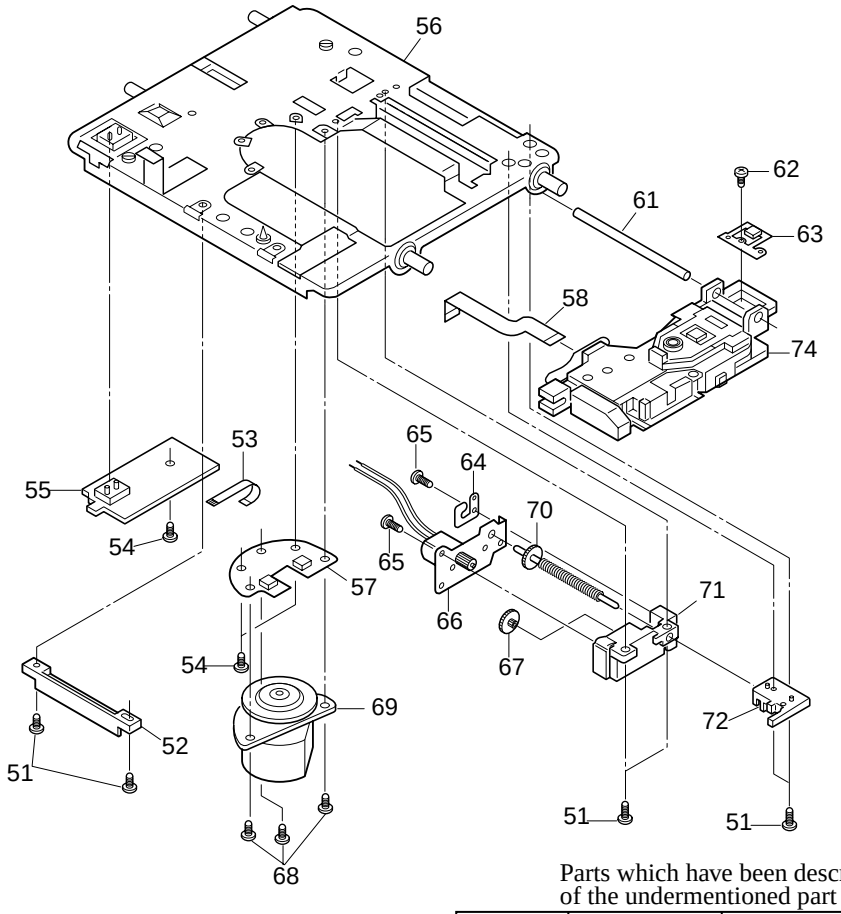



Parts which have been described to the NOTE column of the undermentioned part list as NSP are not supplied.

| Ref. No. | Part No. | Description | NOTE |
|---|---|---|---|
| 1 | - | Motor Plate ass'y | NSP |
| 2 | 7685-790-09 | Screw(+PTT2.6×4 Type S) | |
| 3 | - | L-SW pc board | NSP |
| 4 | - | Flexible flat cable(5 core) | NSP |
| 5 | 2646-555-02 | Gear(Relay B) | |
| 6 | 2646-554-11 | Gear(Relay A) | |
| 7 | X2646-249-1 | Slot Frame ass'y | |
| 8 | 2646-563-01 | Spring(Slot arm), Tension coil | |
| 9 | 2646-556-01 | Slot Arm | |
| 10 | - | Load Frame ass'y | NSP |
| 11 | 2646-548-01 | Insulator | |
| 13 | 2647-337-01 | Screw, Step | |
| 14 | - | Slide Frame | NSP |
| 15 | 2646-559-02 | Head Arm, | |
| 16 | 2646-561-01 | Spring, SP Tension | |

| Ref. No. | Part No. | Description | NOTE |
|---|---|---|---|
| 17 | 2646-562-01 | Spring | |
| 18 | 2646-560-02 | Gear | |
| 19 | 1669-181-11 | Head flexible pc board | |
| 20 | 2627-529-01 | Screw (+P1.7×2.5) | |
| 21 | 1500-518-11 | MD Over write head | |
| 23 | - | MD mount | NSP |
| 24 | 7685-791-09 | Screw (+PTT2.6×5 Type S) | |
| 26 | 2646-545-01 | Spring(Door arm), Tension coil | |
| 27 | - | Case(Lower) | NSP |
| 30 | X2626-328-1 | Loading motor ass'y | |
| 31 | 7627-852-38 | Special screw(+P1.7×1.8 Type 3) | |
| 32 | 7685-780-09 | Screw (+TT2×3 Type S) | |
| 33 | - | Loading ass'y | NSP |
| 34 | - | Case(Upper) | NSP |
| 35 | 7621-259-25 | Screw (+P2.6×4) | |

# MD MECHANISM EXPLODED VIEW(2)
# (KMK-260BCN)




| Ref. No. | Part No. | Description | NOTE |
|---|---|---|---|
| 51 | 2627-404-01 | Screw (+P1.4×3.5 Type3) | |
| 52 | 2646-453-01 | Sub Guide | |
| 53 | 1783-387-11 | Flexible flat cable(7 core) | |
| 54 | 7627-850-79 | Special screw(+P1.4×1.8 Type 3) | |
| 55 | 1677-526-11 | D-SW pc board | |
| 56 | - | Mechanical Chassis | NSP |
| 57 | - | Bracket, Spindle motor | NSP |
| 58 | 1669-180-11 | Flexible pc board, Optical pick-up | |
| 61 | 2646-452-01 | Guide Shaft | |
| 62 | 2627-529-01 | Screw (+P1.7×2.5) | |
| 63 | 2647-338-01 | Rack Spring | |
| 64 | 2646-567-01 | Pre load Plate | |
| 65 | 2627-431-01 | Special screw(1.2×3.3) | |
| 66 | X2626-329-2 | Slid motor ass'y | |
| 67 | 2646-571-11 | Gear (MD) | |
| 68 | 7627-852-18 | Special screw(+P1.7×4 Type 3) | |
| 69 | X2626-327-1 | Spindle motor Ass'y | |
| 70 | X2626-330-1 | Lead screw Ass'y | |
| 71 | 2646-574-03 | Lead holder(A) | |
| 72 | 2646-573-01 | Lead holder(B) | |
| 74 | A4672-541-A | KMS-260A/JIN | |

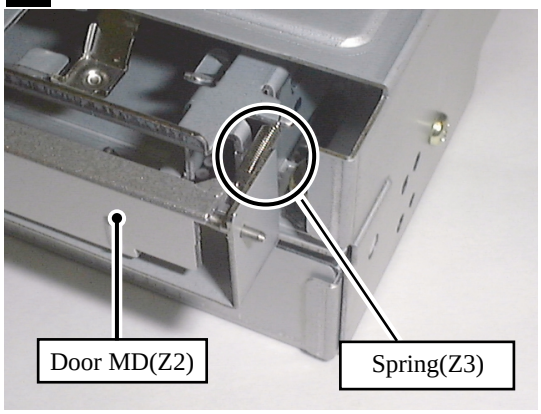
Parts which have been described to the NOTE column of the undermentioned part list as NSP are not supplied.

| Ref. No. | Part No. | Description | NOTE |
|---|---|---|---|
| - | - | L-SW PWB | NSP |
| - | - | D-SWPWB | NSP |
| - | - | MD PWB | NSP |
| IC101 | 8752-080-95 | CXA2523AR | |
| IC102 | 1781-569-21 | 90 MHz | |
| IC103 | 8729-903-10 | FMW1-T-148 | |
| IC104 | 8759-689-63 | RH5RZ35CA-TI | |
| IC121 | 8752-404-64 | CXD2662R | |
| IC122 | 8759-234-20 | TC7S08F | |
| IC125 | 8759-498-44 | MSM51V4400D-70TSK | |
| IC152 | 8759-574-24 | BA5984FP-E2 | |
| IC171 | 8759-640-39 | BR24C02F-WE2 | |
| IC181 | 8759-523-35 | TC74ACT02FT(EL) | |
| IC201 | 8759-919-21 | CXP740010-048R | |
| IC301 | 8759-689-64 | AK4522VF-E2 | |
| Q101,Q163 | 8729-028-91 | DTA144EUA-T106 | |
| Q102 | 8729-026-52 | 2SA1576A-T106-QR | |
| Q162 | 8729-101-07 | 2SB798-T1DK | |
| Q181 | 8729-018-75 | 2SJ278MY | |
| Q182 | 8729-017-65 | 2SK1764KY | |
| Q303 | 8729-028-73 | DTA114EUA-T106 | |
| D101 | 223233R1 | 1SS355TE-17 | |
| D181,D183 | 8719-046-87 | F1J6, Diode | |
| X201 | 1767-179-31 | 12 MHz, Crystal | |
| SW1~4 | 1771-092-21 | Push switch(1key) | |
| SW5 | 1771-327-11 | 2pin push switch (2key) | |
| CN101 | 1691-385-21 | FFC/FPC connector 21P | |
| CN102 | 1774-794-11 | FFC/FPC connector 26P | |
| CN103 | 1779-341-11 | FFC/FPC connector 23P | |
| CN104 | 1778-283-11 | FFC/FPC connector 4P | |
| CN105 | 1779-345-11 | FFC/FPC connector 7P | |
| CN107 | - | FFC/FPC connector 5P | NSP |
| CN110 | 1779-353-21 | FFC/FPC connector 5P | |

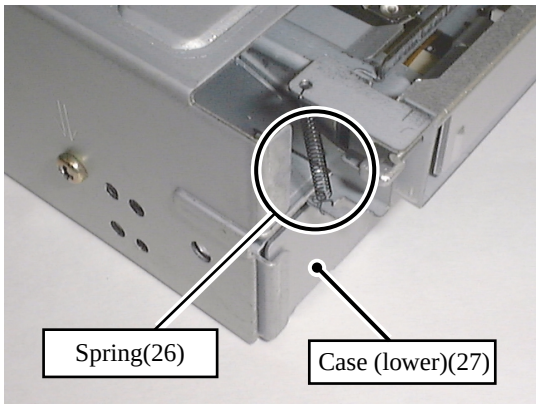
# MD MECHANISM DISASSEMBLY

**1** MD Mechanism KMK-260BCN

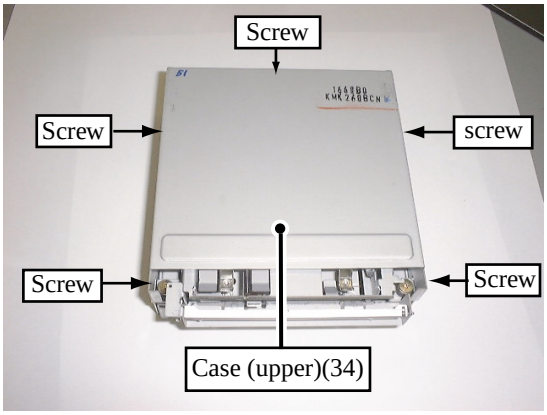
**2** Remove the spring(Z3) from the door MD(Z3).



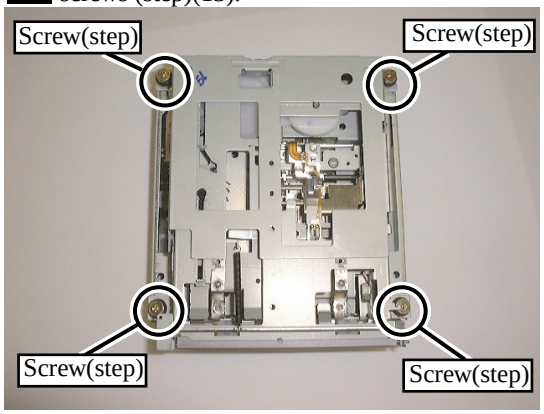

**3** Remove the spring(26) from the case (lower)(27).



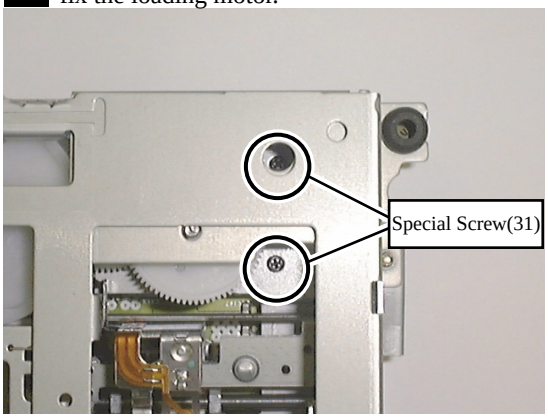

**4** Remove the case (upper)(34) by unscrewing the five screws.



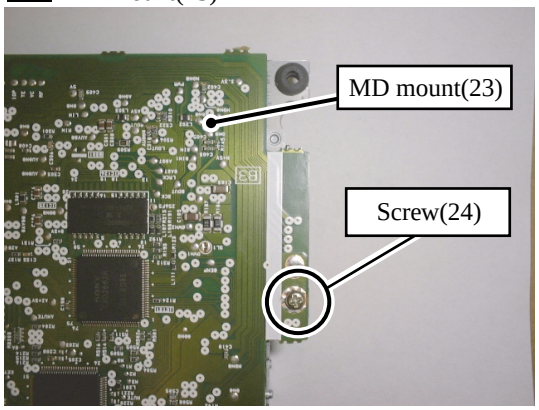

**5** Remove the case (lower)(27) by unscrewing the four screws (step)(13).



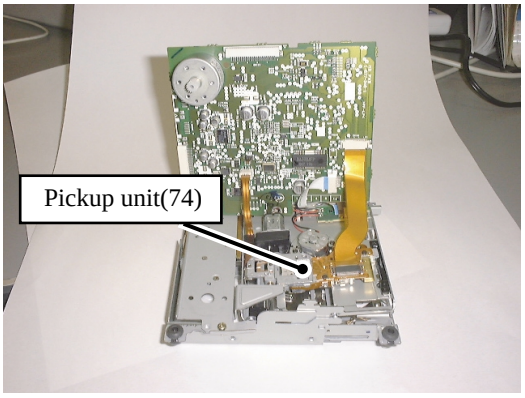

**6** Remove the two special screws(31)used to fix the loading motor.




**7** Remove the screw(24) used to fix the MD mount(23)




**8** Keep the MD mount(23) upright.

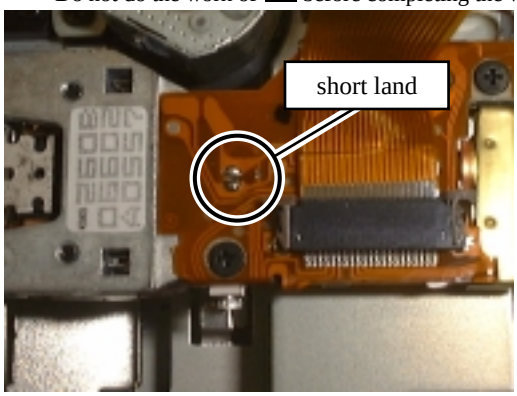


# MD MECHANISM DISASSEMBLY

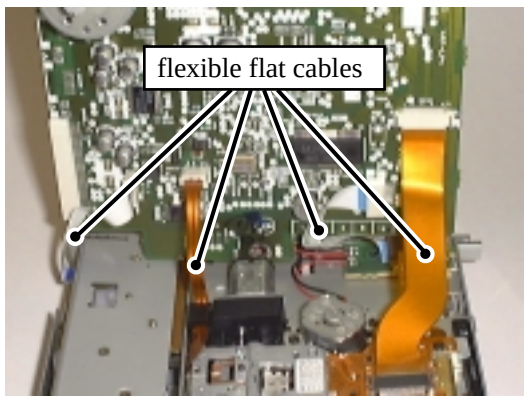
**9** Short circuit with solder the short land on the pick-up unit(74).

**[NOTE]**

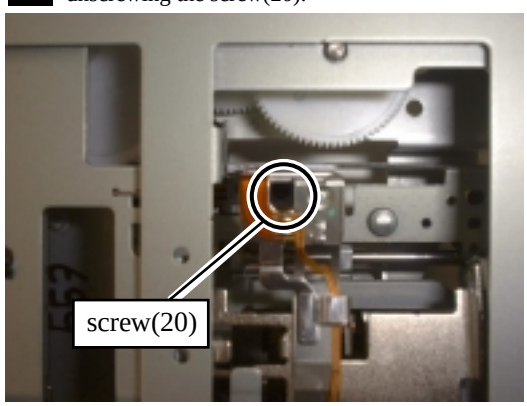
Do not do the work of **8** before completing the work of **9** .



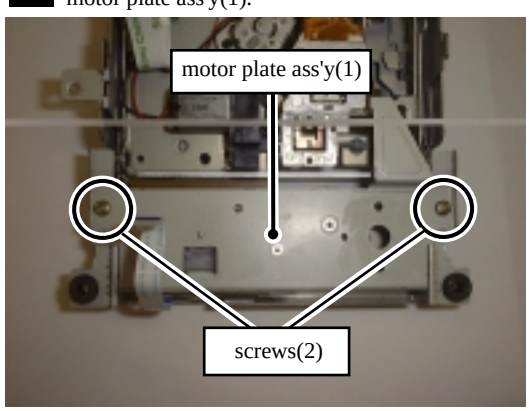

**10** Disconnect the four flexible flat cables.



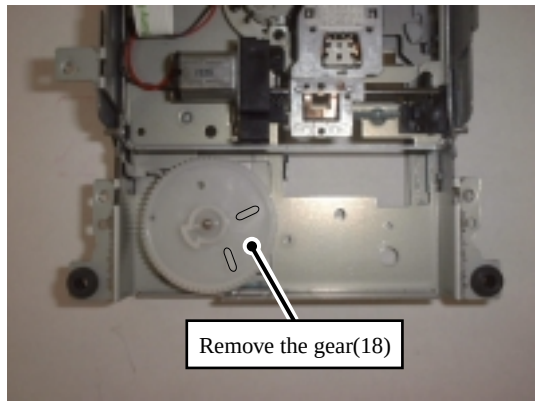

**11** Remove the MD overwrite-head(21) by unscrewing the screw(20).



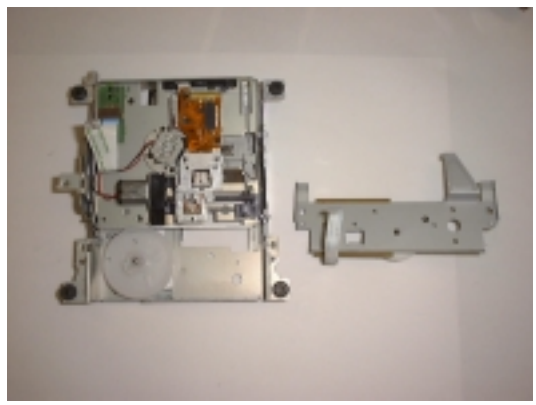

**12** Remove the two screws(2) used to fix the motor plate ass'y(1).



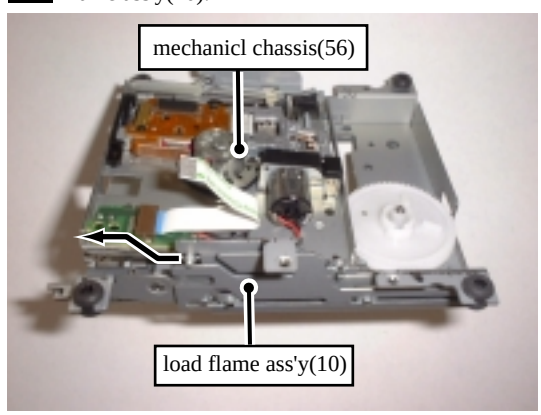

**13** Remove the gear(18).



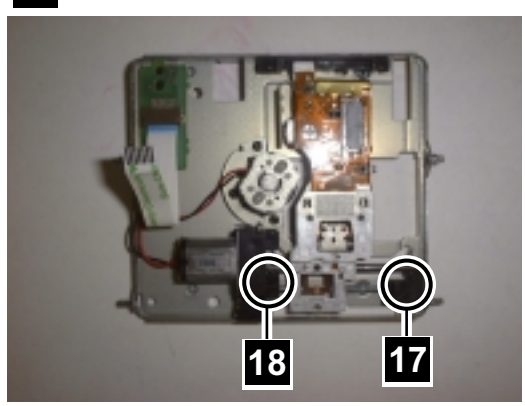

**14** Remove the motor plate ass'y(1).



**15** Remove the mechanical chassis(56) from the load flame ass'y(10).

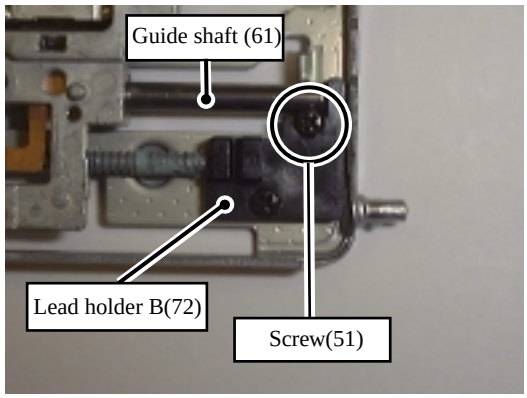



**16** Load flame ass'y(10)

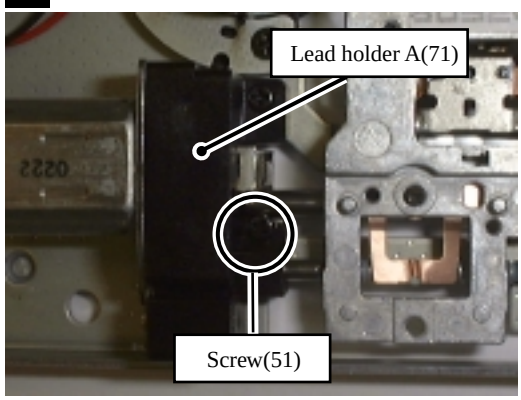


# MD MECHANISM DISASSEMBLY

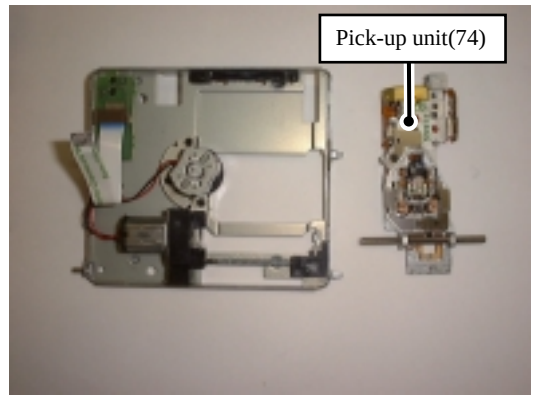
**17** Remove the screw(51) used to fix the guide shaft(61).




**18** Loosen the screw(51) used to fix the guide shaft (61).




**19** Remove the pick-up unit(74).




**20** Pick-up unit(74) is exchanged.

# MD MECHANISM REASSEMBLY

1. To reassemble each mechanism, reverse the applicable disassembling procedure.
2. Do not do unsoldering short land on the pick-up unit before connecting the flexible flat cables.
3. When motor plate ass'y is installed in the MD mechanism, it is necessary to note the position of the gear. And it is necessary to place the push switch on L-SW prited circuit board (3) and note not getting crowded.

# MD RECORDING ADJUSTMENT PROCEDURES

## 1.TEST MODE

### 1. Precaution for using the test mode

**(1)** It is necessary to adjust in the test mode.

**(2)** Make clear the test mode after ending the adjustment.

**(3)** In the following, the rotation of the disc dose not stop even if EJECT key is pushed.

CPLAY MODE , CREC MODE

Take out the disc pushing EJECT key after the rotation of the disc is stopped pushing EDIT/CLEAR/NO key once.

**(4)** In the following, the function of the mis-deletion prevention becomes invalid.
Note when you use the disc not deleted for the adjustment.

LDPWR ADJUST, LDPWR CHECK, CREC MODE, CPLAY MODE, EFBAL ADJUST
and press the REC key.

### 2. Setting the test mode

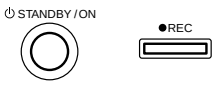
**(1)** The power supply code is inserted in the wall outlet.

**(2)** Press the STANDBY/ON key

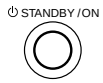

**(3)** The input selector is put into the state of MD.


**(4)** The set is put into the state of the standby once pushing the STANBY/ON key.

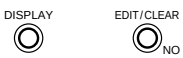

**(5)** While hold down REC key at the standby mode, press STANDBY/ON key to set the power unit on.



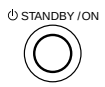

**(6)** The set is put into the state of the standby again pushing the STANDBY/ON key.




**(7)** While hold down EDIT/CLEAR NO key, press DISPLAY key.




**(8)** Press the STANDBY key to set the unit power on.



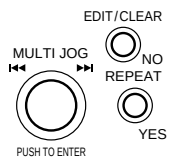

The display shows TEMP ADJUST indicating that the test mode has been selected.

### 3. Exiting the Test Mode

Unplug the power supply coad from the wall outlet.

### 4. Basic operation of each operation key

All the operations are done with MULTI JOG key, REPEAT/YES key, and EDIT/CLEAR/NO key.




| Key name | Function |
|---|---|
| MULTI JOG I<< >>I | Changes the parameter and test item. |
| MULTI JOG PUSH REPEART/YES | Proceeds to the next step or finalizes the operation. |
| EDIT/CLEAR NO | Returns to previous step or abouts the operation. |

### 5. Selection of test mode

The multijog key is turned in the state of **2 - (8)** and a necessary test mode is selected.
It is possible to escape from the mode to other test modes by mistake when selecting by pushing the EDIT/CLEAR/NO key.

| Test mode name | Display | Function |
|---|---|---|
| **TEMP ADJUST** | *TEMP ADJUST* | Temperature compensation offset adjustment |
| **LD POWER ADJUST** | *LD POWER ADJUST* | Laser power adjustment |
| **LD POWER CHECK** | *LD POWER CHECK* | Confirmation of laser power. |
| **LOAD CHECK** | *LOAD CHECK* | Confirmation of lodhing operation. |
| **SLEVEL CHECK** | *SLEVEL CHECK* | Operation confirmation of object lens of pickiup |
| **EFBALANCE ADJUST** | *EFBALANCE ADJUST* | Traverse adjustment |
| **FBIAS ADJUST** | *FBIAS ADJUST* | Focus bias adjustment |
| **FBIAS CHECK** | *FBIAS CHECK* | Comfirmation of focus bias. |
| **CPLAY MODE** | *CPLAY MODE* | Continuous play mode |
| **CREC MODE** | *CREC MODE* | Continuous recording mode |
| **EEP MODE** | *EEP MODE* | The data memorized in non-volatile memory is rewritten. |
| **POINT MODE** | *POINT MODE* | In CREC mode and the CPLAY mode, the accessed address is changed. |

# 2. PRECAUTIONS

## 1. Precaution for chacking laser emmition from the laser diode.

Never look into the laser diode when checking the laser emmition durring adjustments.
During so may cause loss of your eyesight.

## 2. Adjustment information.

| Test mode | Replacement pickup | Replacement PC board | Replacement other parts |
|---|---|---|---|
| TEMP ADJUST | × | ○ | ○ |
| LDPR ADJUST | ○ | ○ | ○ |
| EFBAL ADJUST | ○ | ○ | ○ |

## 3. Measuring instruments and test disc.

Measuring instruments
Laser power meter : LPM-8010 (manufactured by LEADER)
Oscilloscope : Band width 40 MHz or higher calibrate the probe prior to measurement.
Digital volt meter : Digital volt meter
Test disc
Standard disc for recording/playback)

## 4. Precautions for adjustments.

When an oscilloscope is used to monitor signal waveforms, do not connect the VC to GND inside the oscilloscope.

# 3. ADJUSTMENT

## 1. Temperature compensation offset adjustment

Save the temperature data at that time in the non-volatile memory as 25 ℃ referance data.

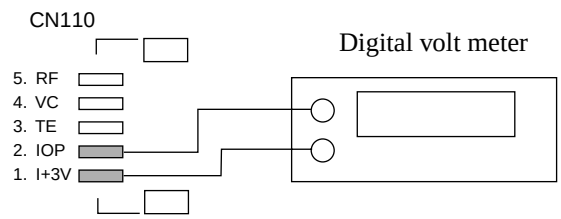
**[Note]**

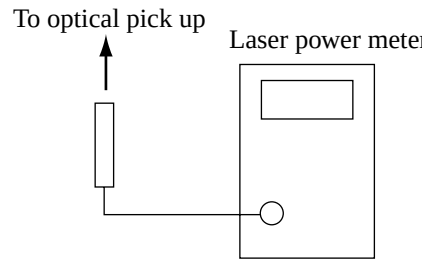
1. Usually, do not perform this adjustment.
2. Performe this adjustment in an ambient temperature of 22 ℃ to 28 ℃.
3. When D101 has been replaced, perform this adjustment after the temperature of this part has become the ambien temperature.

**[Procedure]**

| Operation | Display | |
|---|---|---|
| 1.Enter the test mode select "TEMP ADJUST" | *TEMP ADJUST* | |
| 2. Press the MULTI JOG knob. | *TEMP= # #* | Present temperature data is shown. |
| 3. Press the MULTI JOG knob, when data is memorized. | *TEMP # # SAVE* | |
| | *TEMP ADJUST* | The adjustment value of the temperature is memorized in non-volatile memory. |
| 4. Press the EDIT/CLEAR/NO keyb,when data is not memorized. | *TEMP ADJUST* | |

## 2. Laser power adjustment




**[Preparation]**

1. Connect the digital voltmeter to between IOP and I+3V of test point CN110.
2. Install the laser power meter on the objective lens of the laser pick-up.

**[Procedure]**

| Operation | Display | |
|---|---|---|
| 1. Enter the test mode select "LD POWER" | *LDPWR ADJUST* | |
| 2. Press the MULTI JOG knob. | *LD 0.9mW $ # #* | |
| 3. Rotate the MULTI JOG knob so that the reading of laser power meter becomes from 0.86mW to 0.92 mW. | | |
| 4. Range of the laser power meter is set in 10mW. | | |
| 5. Press the MULTI JOG knob. | *LD SAVE $ # #* | |
| | *LD 7.0mW $ # #* | The adjustment value of the laser power is memorized in non-volatile memory. |
| 6. Turn the MULTI JOG knob so that the reading of laser power meter becomes from 6.9mW to 7.1mW. | | |
| 7. Press the MULTI JOG knob. | *LD SAVE $ # #* | |
| | *LD 0.9mW $ # #* | The adjustment value of the laser power is memorized in non-volatile memory. |

**[NOTE]**
**Do not continue the luminescence of 7mW of the laser power for 15 seconds or more.**

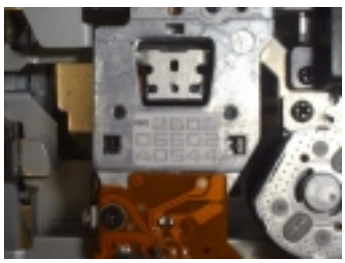
**Do not continue the luminescence of 7mW of the laser power for 15 seconds or more.**

## 3. Laser power check

**[Procedure]**

| Operation | Display | |
|---|---|---|
| 1. Install the laser power meter on the objective lens<br>2. Enter the test mode select "LDPWR CHECK"<br>3. Press the MULTI JOG knob.<br>4. Verify that the laser power meter reading **from 0.85mW to 0.91mW.** | *LD PWR CHECK*<br>*LD 0.9mW $ # #* | |
| 5. Range of the laser power meter is set in 10mW.<br>6. Press the MULTI JOG knob.<br>7. Verify that the the laser power meter reading is below the specification. **[Specification] 7.0 mW± 0.1mW** | *LD 7.0mW $ # #* | |
| 8. Verify that the the laser digital volt meter leading is below the specification. **[Specification] Optical pick-up value ± 10%** | | |

Pick-up unit



In this case

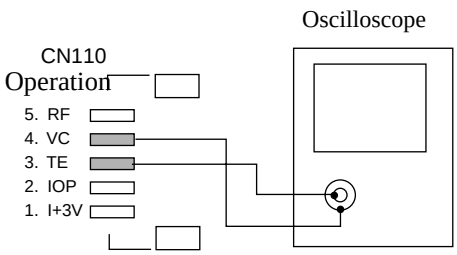
KMS2606
06602
A0544

*Iop = 54.4 mA*

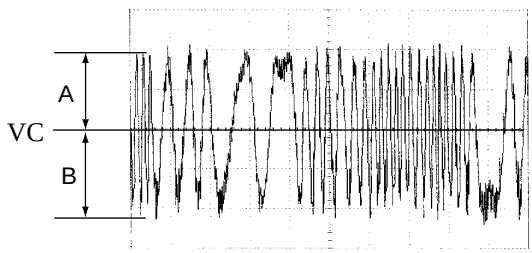
Iop = Digital volt meter reading(mV / 1 Ω )

| | | |
|---|---|---|
| 9. Press the EDIT/CLEAR /NO key. | *LD PWR CHECK* | |

## 4. EF balance adjustment




Traverse waveform




**Specification : A = B**

**[Preparation]**

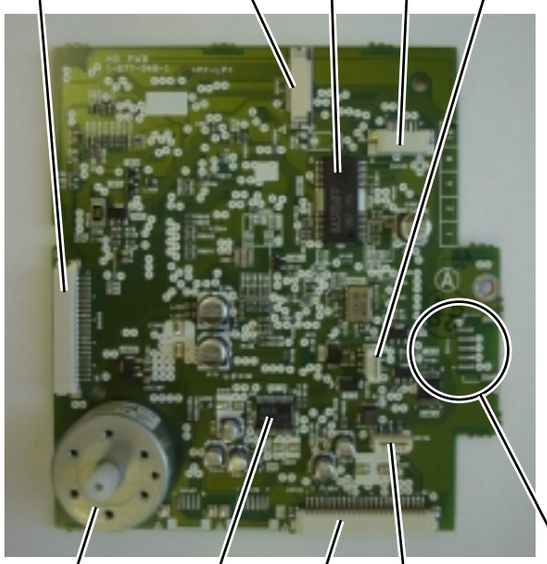
1. Connect the oscilloscope to between TE and VC of test point CN110.
2. Insert the test disc.

**[Procedure]**

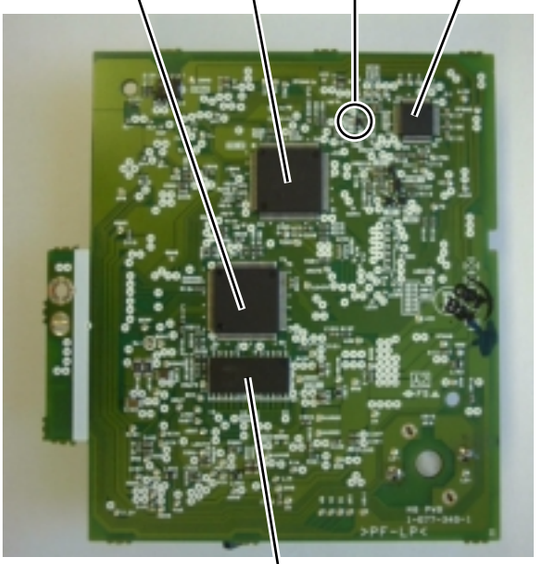
| Operation | Display | |
|---|---|---|
| 1. Enter the test mode select " EFBAL ADJUST" .<br>2. Press the MULTI JOG knob.<br>3. Rotate the MULTI JOG knob so that the readings of the oscilloscope becomes the specified valure. In this adjustment, waveform varies at intervals of approximately 3%. Adjust the waveform so that the specified value is satisfied as possible. | *EFBAL ADJUST*<br>*EFBAL # # MO-W* | |
| 4. Press the MULTI JOG knob. | *EFBAL = # # SAVE*<br>*EFBAL MO - W*<br>*EFBAL ADJUST* | The adjustment value is memorized in non-volatile memory. |

# MD MOUNT VIEW

**MD Mount (side A)**




**MD Mount (side B)**




Test point for MD adjustment

CN110

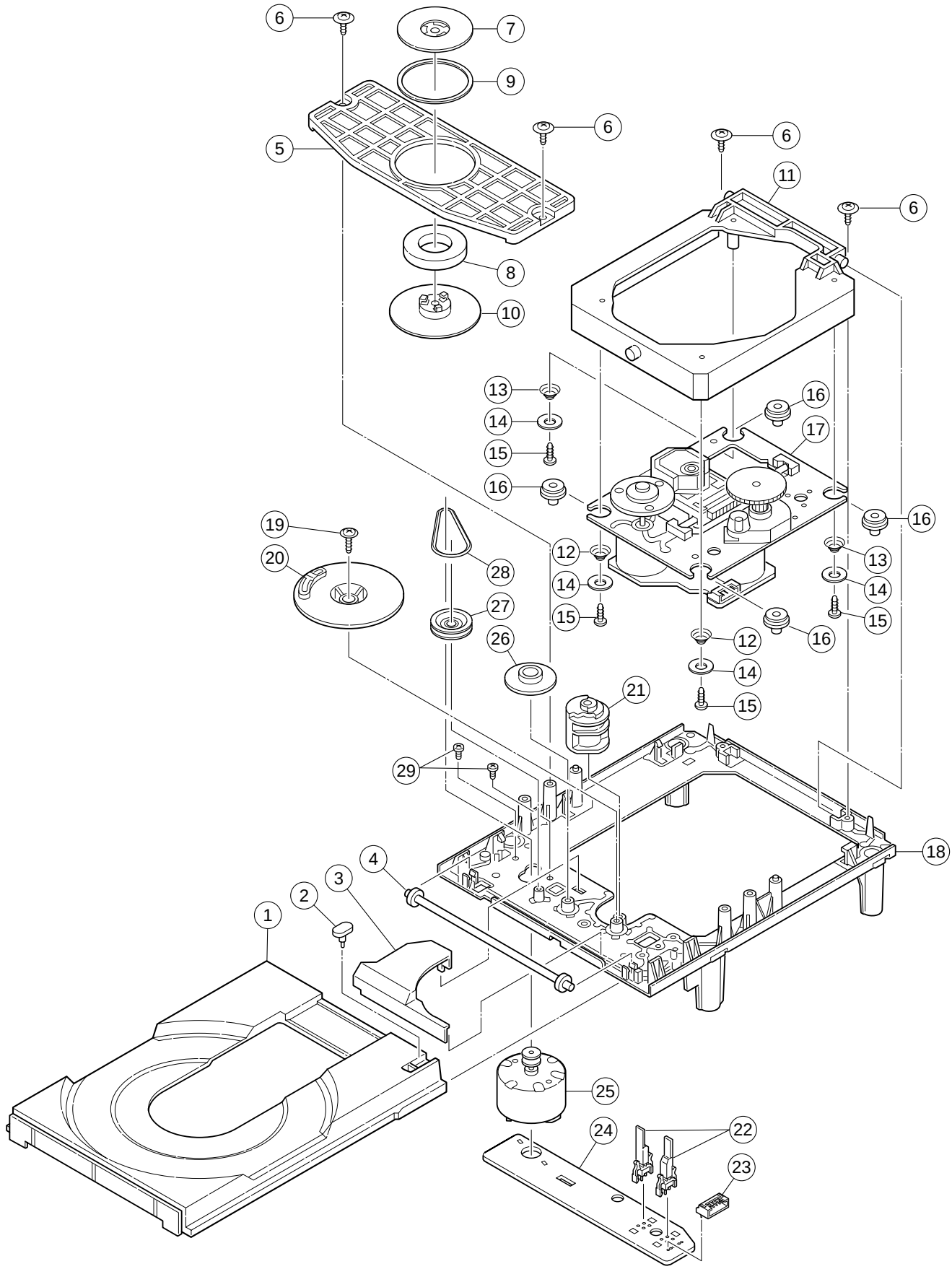
5. RF
4. VC
3. TE
2. IOP
1. I+3V

# MESSAGES

The following table explains the messages that appear in the display.

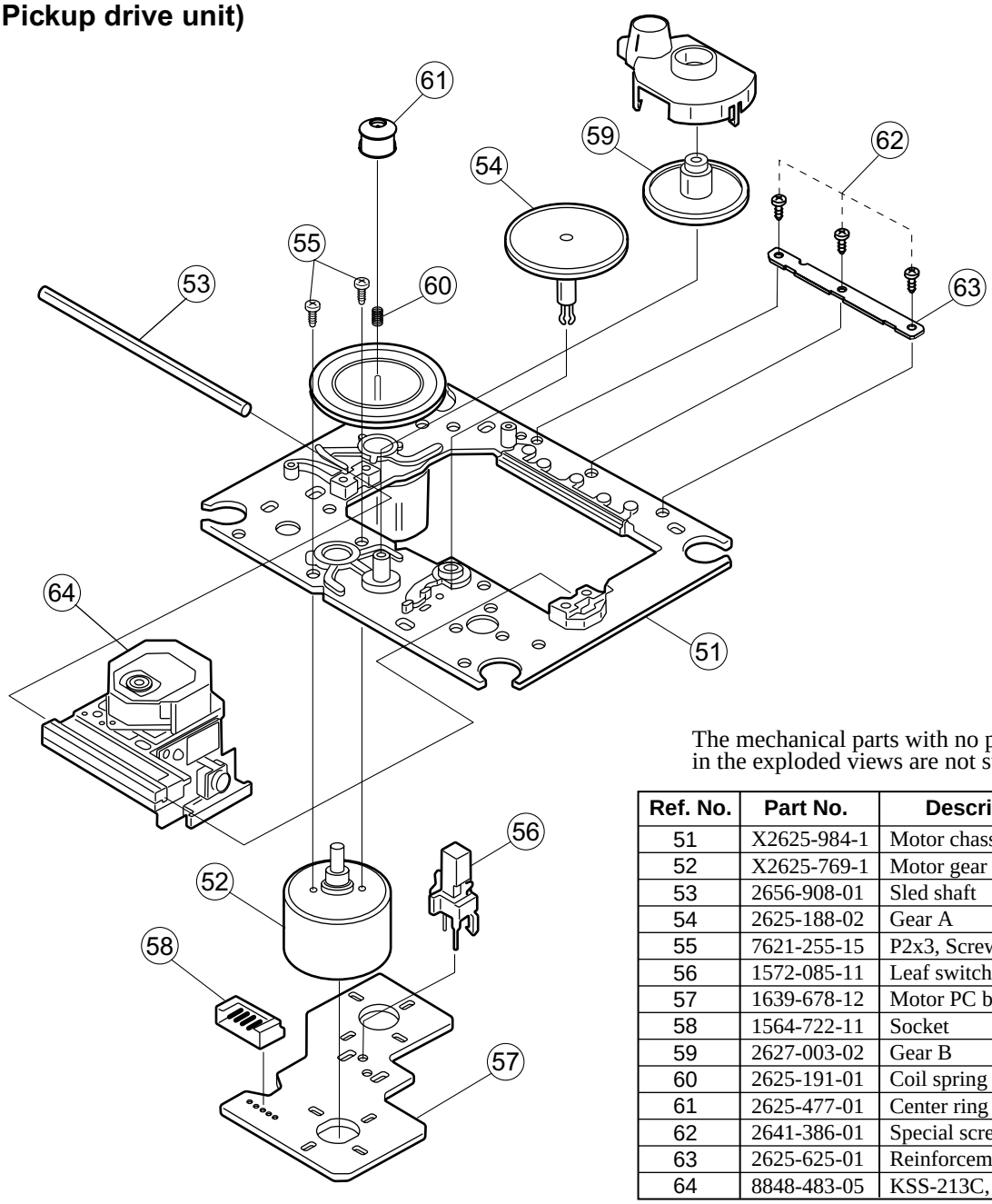
| Message | Meaning | Message | Meaning |
|---|---|---|---|
| ***Blank Disc*** | A recordable MD without disc or track names is inserted. | ***Name Full*** | The naming capacity of the disc or unit has reached its limit. |
| ***Cannot Copy*** | An attempt was made to make a second digital copy from a digitally dubbed MD | ***No Change*** | The name has not been changed. |
| | | ***No Disc*** | There is no disc in the unit. |
| ***Cannot Edit*** | You tried to edit a playback-only disc. | ***No Track*** | The inserted disc has a disc name but no tracks |
| ***Cannot Rec*** | You tried to record onto a playback-only disc. | ***Over*** | In pause mode (when playing is paused), ►► (Fast Forward) was pressed to the end of the disc. |
| ***Cannot Set*** | You tried to set a timer while another timer is operating. | ***Protected*** | The inserted disc is record-protected. |
| ***D.In Unlock*** | The digital equipment (CD player, DAT, etc.) is not connected properly, or else not operating properly. | ***Recording*** | You tried to switch to another source while recording or perform a CD or tuner operation that is disabled during recording. |
| ***Disc Error*** | The disc is abnormal (scratched or missing a TOC). | ***Retry Error*** | The recording attempt failed due to consecutive disturbances from scratches on the MD or from applied vibration. |
| ***Disc Full*** | The disc is full | | |
| ***Full*** | You tried to enter a character over the maximum character capacity while naming. | ***Sorry*** | You tried to (a) combine tracks that cannot be combined, (b) divide a track at its beginning, or (c) edit a disc using a function not available due to MD system limitations. |
| ***Impossible*** | You tried to edit a disc using a function not available due to some reason other than the MD system limitation. | | |
| ***MD Writing*** | The unit is writing the recorded or edited contents to the MD. | ***Time Protect*** | You tried to repeat double-speed dubbing using the same CD. |
| ***Mecha Error*** | An error occurred in the unit's internal mechanism. | ***TOC Error*** | The reading of the disc or the recording onto the disc failed. |
| ***Memory Full*** | You tried to store a 26th track or a 31st channel. | | |

# CD MECHANISM EXPLODED VIEW (1)



# CD MECHANISM EXPLODED VIEW(2)

**(NCD-170S Pickup drive unit)**




The mechanical parts with no part number in the exploded views are not supplied.

| Ref. No. | Part No. | Description |
|---|---|---|
| 51 | X2625-984-1 | Motor chassis ass'y |
| 52 | X2625-769-1 | Motor gear ass'y |
| 53 | 2656-908-01 | Sled shaft |
| 54 | 2625-188-02 | Gear A |
| 55 | 7621-255-15 | P2x3, Screw |
| 56 | 1572-085-11 | Leaf switch |
| 57 | 1639-678-12 | Motor PC board |
| 58 | 1564-722-11 | Socket |
| 59 | 2627-003-02 | Gear B |
| 60 | 2625-191-01 | Coil spring |
| 61 | 2625-477-01 | Center ring |
| 62 | 2641-386-01 | Special screw, 2*5 |
| 63 | 2625-625-01 | Reinforcement board |
| 64 | 8848-483-05 | KSS-213C, Pickup |

| Ref. No. | Part No. | Description |
|---|---|---|
| 1 | 2646-290-01 | Tray |
| 2 | | Stopper |
| 3 | 2625-544-01 | Gear cover |
| 4 | 2625-535-01 | Tray Gear |
| 5 | 2625-546-01 | Chucking plate |
| 6 | | PTPWH2.6*7,Screw |
| 7 | 2625-537-01 | Chucking yoke |
| 8 | 1452-493-21 | Magnet |
| 9 | 2625-541-02 | Damper |
| 10 | 2646-291-01 | Chucking pulley |
| 11 | 2646-288-01 | Sub chassis |
| 12 | 2627-236-01 | Coil spring (front) |
| 13 | 2627-235-01 | Coil spring (back) |
| 14 | 2646-289-01 | Washer |
| 15 | | P2.6*10,Screw |

| Ref. No. | Part No. | Description |
|---|---|---|
| 16 | 2627-234-01 | Insulator |
| 17 | | KSM-213CCM |
| 18 | 2625-552-06 | Main chassis |
| 19 | 3319-501-51 | PTPWH2.6*16, Screw |
| 20 | 2625-547-01 | Drive Gear |
| 21 | 2625-545-04 | Control cam |
| 22 | 1692-667-11 | Leaf switch |
| 23 | 1564-721-11 | Socket |
| 24 | 1640-523-11 | Loading PC board |
| 25 | X2625-117-1 | Loading motor |
| 26 | 2625-274-02 | Middle gear |
| 27 | 2625-536-02 | Loading pulley |
| 28 | 3653-387-00 | LM belt |
| 29 | | B2.6*2.5, Screw |

# CD ADJUSTMENT PROCEDURES

## Preparation

Set the trimming resistors R123 to center.

## Focus gain adjustment

1. Set the output of the audio oscillator to 1kHz and 1～1.5Vp-p.
2. Connect the oscilloscope and audio oscillator as shown below. (Refer to Fig-1)
3. Load the test disc YEDS-18 on the tray and play the track 2.
4. Adjust the trimming resistor R123 so the signal of channel 2 on the oscilloscope becomes 1.25 times of channel 1. (Refer to Fig-2)
5. Remove the oscilloscope and audio oscillator.

Fig-1

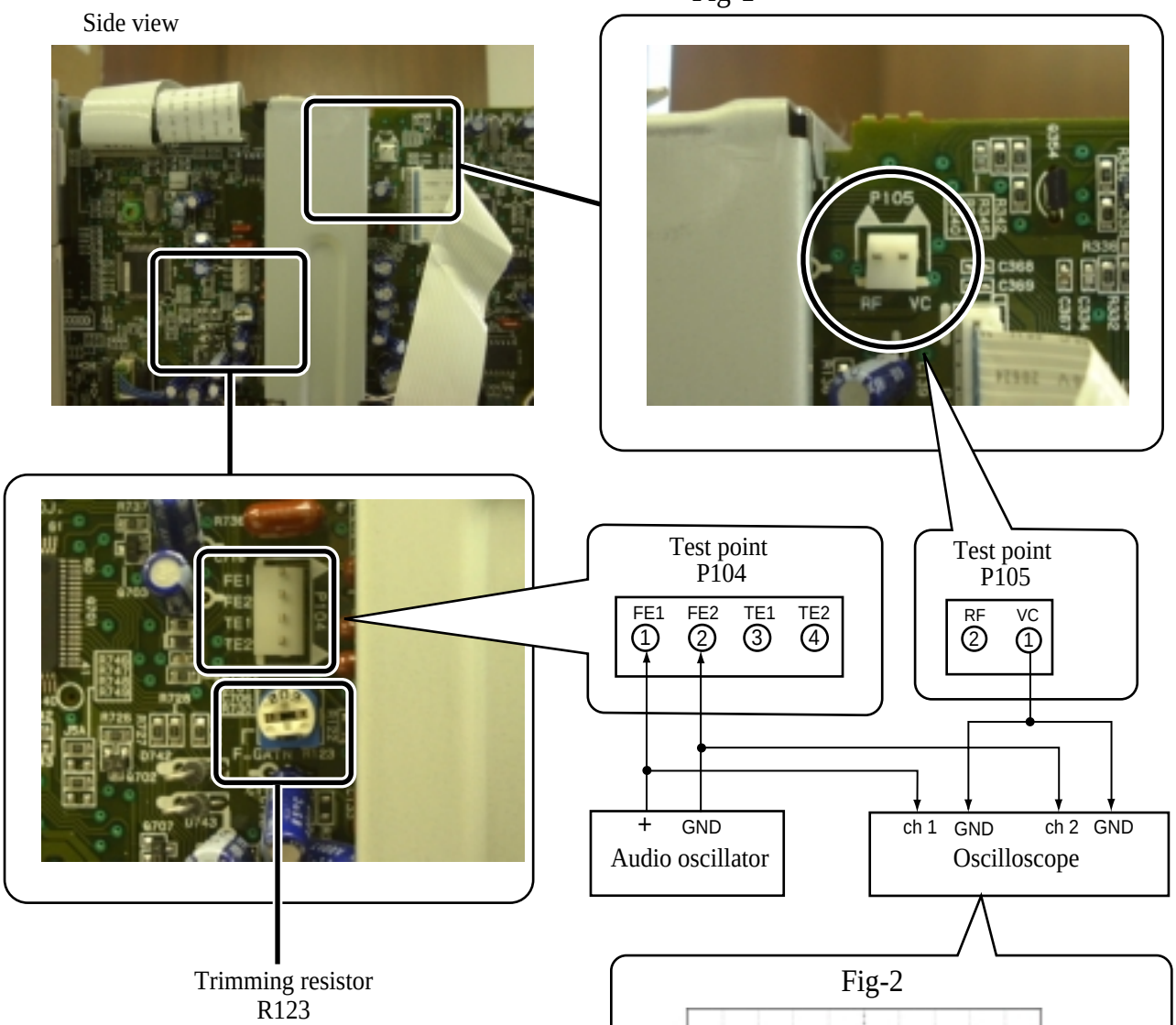
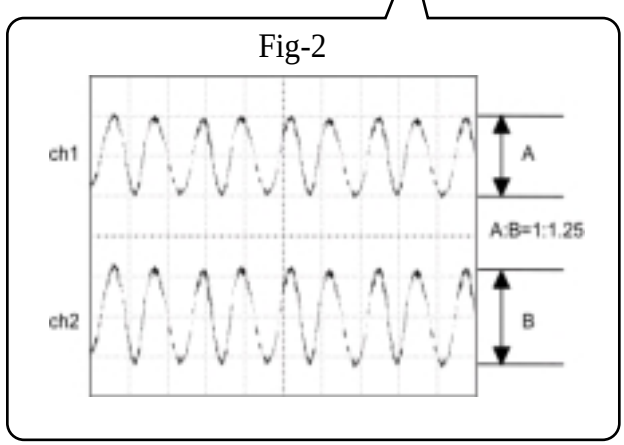
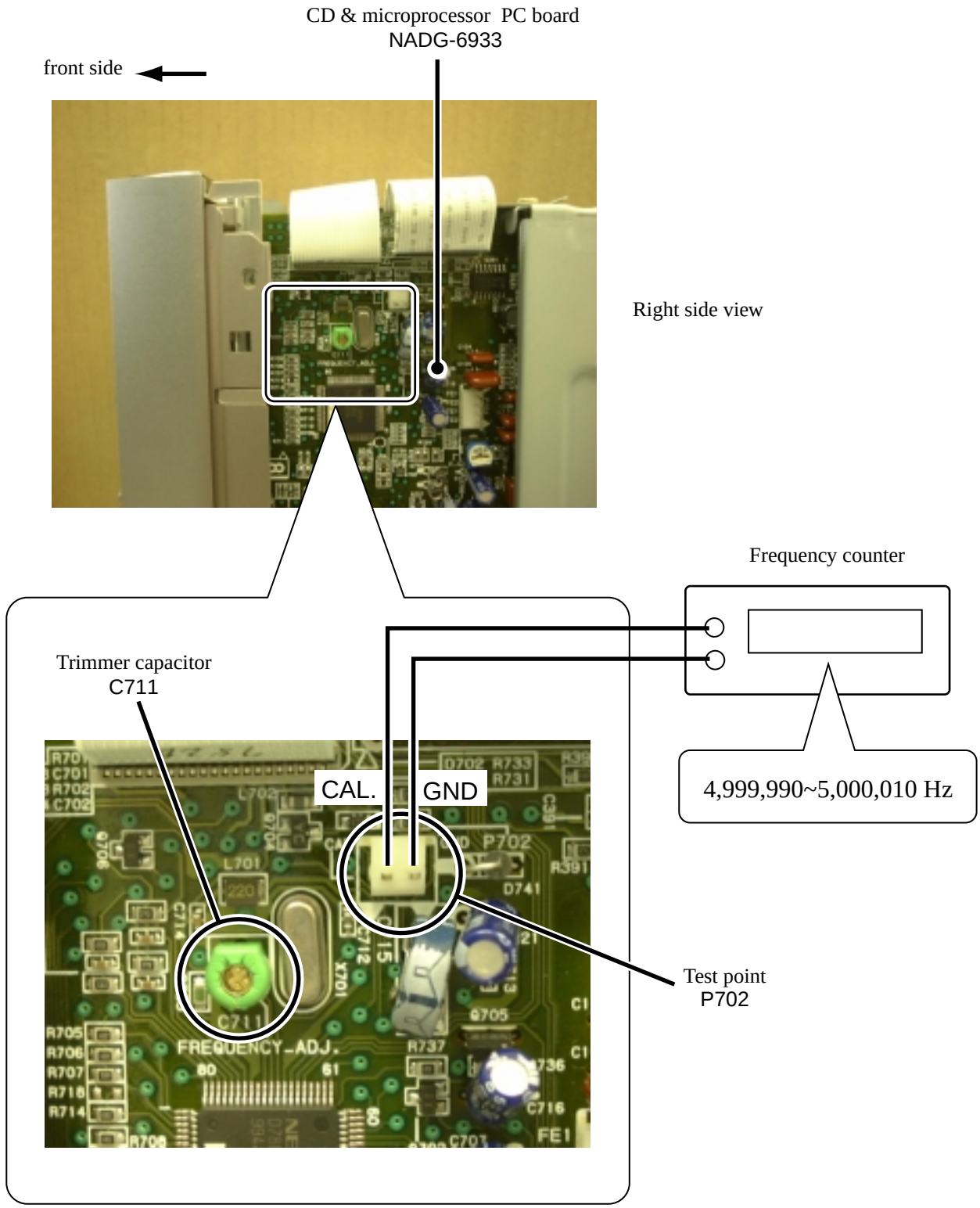



Fig-2



# ADJUSTMENT OF CLOCK FREQUENCY

1. Remove the top cover.
2. Connect the frequency counter to the terminal P702 on the CD & microprocessor PC board (NADG-6939)
3. While hold down CD STOP key, press STANDBY/ON key to set the test mode.
   (All segments on FL tube light on and scroll the character for FL tube test.)
4. Adjust the trimmer capacitor C711 so that the reading of frequency counter becomes 5000000 ±10 Hz.



## HANDLING OF OPTICAL PICKUP

The laser diode in the optical pickup block is so sensitive to static electricity,surge current and etc. That the components are liable to be broken down or its reliability remarkably deteriorated. During repair,carefully take the following precautions.

1. Work procedure

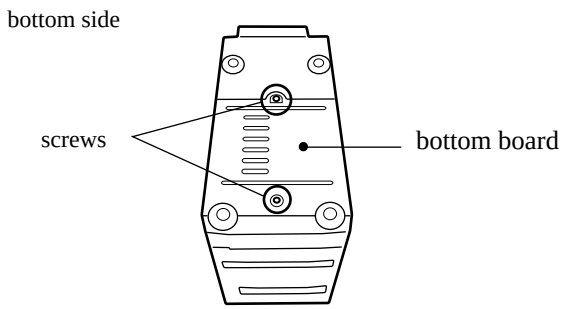
Disasembling

**1** → **2** → **3** → **4** → **5** → **6** → **7**

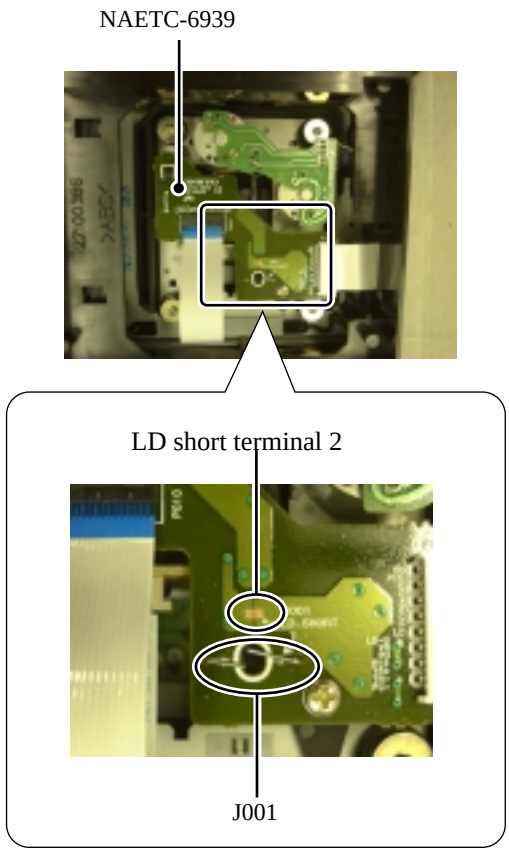
Assembling

**7** → **6** → **5** → **4** → **3** → **2** → **1**

**1** Remove the two machine screws and remove the bottom board is detached.

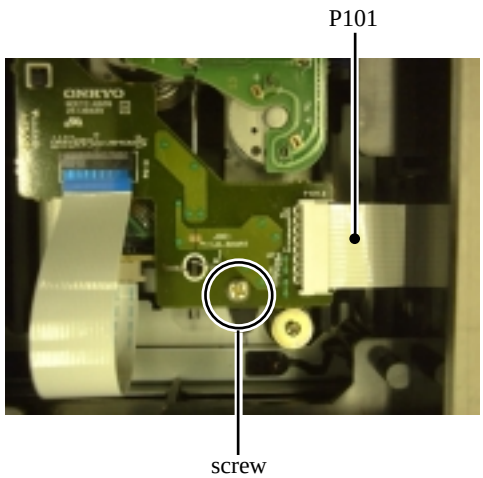



**2** Connect J001 (or LD short terminal 2) on CD connector PC board (NAETC-6939) first.

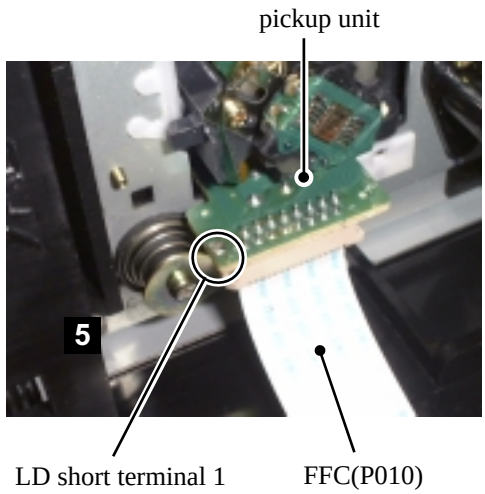



**3** Remove FFC P101 on the CD connector PC board.

**4** Remove the screw.




**5** Solder the LD short terminal 1 on pickup unit.




**6** Disconnect the flexible flat cable P010.

**7** Replace the pickup.

2. Exchange picking up the MD mechanism done according to the work procedure which has been described to method (P21) of decomposing the MD mechanism.

# CHASSIS EXPLODED VIEW PARTS LIST

| REF. NO. | PART NO. | | DESCRIPTION |
|---|---|---|---|
| 1 | 27111174A | | Front bracket |
| 2 | 28325814 | | Knob, AOC |
| 3 | 28325815 | | Knob, AT |
| 4 | 28191895 | | Clear plate, RE |
| 5 | 27130848 | | Bracket, MD |
| 6 | 838430107 | | 3TTB+10S(BC), Special screw |
| 7 | 838130088 | | 3TTB+8B, Self tapping screw |
| 8 | 27100386 | | Chassis |
| 9 | 28141435 | | Cushion |
| 10 | 27130849 | | Bracket, PT |
| 11 | 27130850 | | Bracket, CD |
| 12 | 27130851 | | Bracket, U |
| 13 | 27160478 | | Heat sink |
| 14 | 801433 | | 3SMS8W.SW+14B(BC), Special screw |
| 15 | 28175263 | | Isolated plate, A |
| 16 | 27150453 | | Shield plate |
| 17 | 27300750 | ⚠ | Busing, cord |
| 18 | 830440089 | | 4TTC+8C(BC), Self tapping screw |
| 19 | 838430068 | | 3TTB+6B(BC), Self tapping screw |
| 20 | 28184786A | | Cover, back |
| 22 | 29110082 | | Tape, cross |
| 23 | 27170332 | | Bottom board |
| 24 | 28191893 | | Clear plate, top |
| 25 | 28184788 | | Top cover |
| 26 | 838930088 | | 3TTB+8B(UN), Self tapping screw |
| 27 | 27212237B | | Front panel |
| 28 | 28191896 | | Clear plate |
| 29 | 28198912 | | Facet |
| 31 | 28148456A | | Tray, CD |
| 32 | 28325819 | | Knob, Volume |
| 35 | 28325817A | | Knob, Jog |
| 36 | 27191133 | | Holder, MD |
| 37 | 27191134 | | Holder, S |
| 38 | 28175266 | | Isolated plate, MD |
| 39 | 27122756 | | Rear panel |
| 40 | 831430088 | | 3TTW+8B(BC), Self tapping screw |
| 41 | 29362706 | | Spec. label<DT> |
| | 29362707 | | Spec. label<GT> |
| 42 | 29362285 | ⚠ | Label caution<GT> |
| 43 | 29360687 | ⚠ | Label , class1 |
| F901 | 252083 | ⚠ | 0.4A-SE-EAWK, Fuse<GT> |
| | 252157 | ⚠ | 1.25A-UL/T-237, Fuse<DT> |
| J22 | 1F999010 | | Faston AS |
| P010C | 2042161012 | | NCFC2-161012, Flexible flat cable |
| P101C | 2046162012 | | NCFC6-162012, Flexible flat cable |
| P102C | 2009990645 | | NSAS-12P0895, Socket AS |
| P103C | 20022391020 | | NSAS-10P0843, Socket AS |
| P203C | 2044260172 | | NCFC4-260172, Flexible flat cable |
| P250C | 2046151512 | | NCFC6-151512, Flexible flat cable |
| P391C | 2044230162 | | NCFC4-230162, Flexible flat cable |
| P404C | 2044150182 | | NCFC4-150182, Flexible flat cable |
| P752C | 2045214012 | | NCFC5-214012, Flexible flat cable |
| P901 | 253237HIT | ⚠ | AS-CEE, Power supply cord<GT> |
| | 253294HDK | ⚠ | AS-UC-2#18, Power supply cord<DT> |

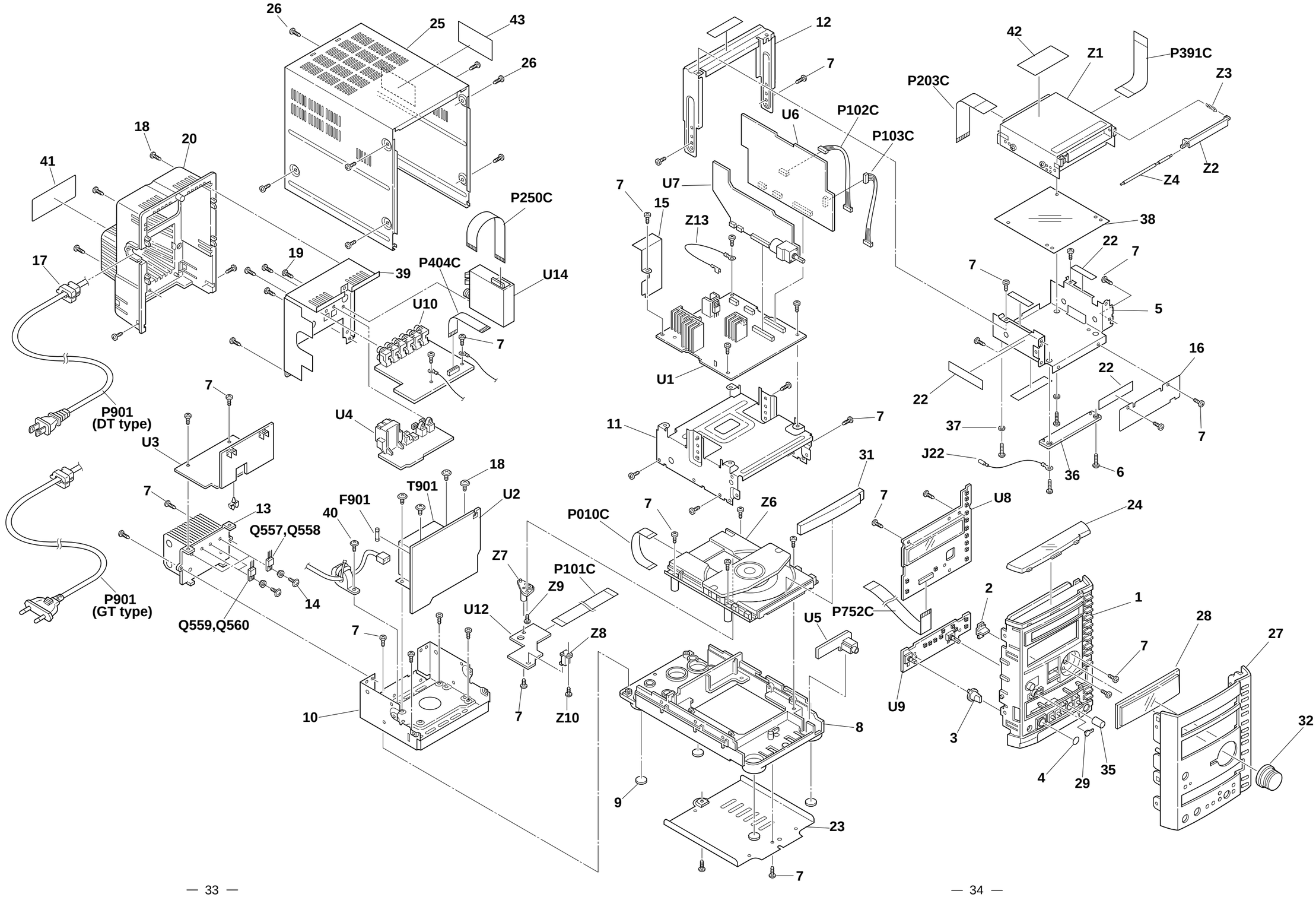
| REF. NO. | PART NO. | | DESCRIPTION |
|---|---|---|---|
| Q557 | 2203383 or | * | 2SC3851-O or |
| , Q558 | 2203384 | * | 2SC3851-Y, Transistor |
| Q559 | 2203393 or | * | 2SA1488-O or |
| , Q560 | 2203394 | * | 2SA1488-Y, Transistor |
| T901 | 2301467 | ⚠ | NPT-1399D <DT> |
| | 2301468 | ⚠ | NPT-1399G, Power transformer<GT> |
| Z1 | 24650033 | | KMK-260BCN, MD Mechanism |
| Z2 | 24611660 | | Door, MD |
| Z3 | 24605828 | | Spring |
| Z4 | 24604139A | | Shaft |
| Z6 | 24800018A | | NCD-170S, CD mechanism |
| Z7 | 24840133 | | Boss, PCB |
| Z8 | 24840135 | | Boss, PCB3 |
| Z9 | 838120080 | | 2TTB+8P, Special screw |
| Z10 | 838426088 | | 2.6TTB+8B(BC), Special screw |
| Z13 | 2061A12100 | | Crimp AS |
| U1 | 1A887528-1B | | NAPS-6928-1B, Power supply circuit PC board ass'y<DT> |
| | 1A887528-1C | | NAPS-6928-1C, Power supply circuit PC board ass'y<GT> |
| U2 | 1A887529-1B | | NAPS-6929-1B, Primary circuit PC board ass'y<DT> |
| | 1A887529-1C | | NAPS-6929-1C, Primary circuit PC board ass'y<GT> |
| U3 | 1A887530-1B | | NAAF-6930-1B, Power amplifier circuit PC board ass'y<DT> |
| | 1A887530-1C | | NAAF-6930-1C, Power amplifier circuit PC board ass'y<GT> |
| U4 | 1A887532-1B | | NAETC-6932-1B, Speaker terminal PC board ass'y<DT> |
| | 1A887532-1C | | NAETC-6932-1C, Speaker terminal PC board ass'y<GT> |
| U5 | 1A887034-1B | | NAETC-7034-1B, Headphone jack PC board ass'y<DT> |
| | 1A887034-1C | | NAETC-7034-1C, Headphone jack PC board ass'y<GT> |
| U6 | 1A887533-1B | | NADG-6933-1B, Microprocessor & CD circuit PC board ass'y<DT> |
| | 1A887533-1C | | NADG-6933-1C, Microprocessor & CD circuit PC board ass'y<GT> |
| U7 | 1A887534-1B | | NAAF-6934-1B, Acoustic circuit PC board ass'y<DT> |
| | 1A887534-1C | | NAAF-6934-1C, Acoustic circuit PC board ass'y<GT> |
| U8 | 1A887535-1B | | NADIS-6935-1B, Display circuit PC board ass'y<DT> |
| | 1A887535-1C | | NADIS-6935-1C, Display circuit PC board ass'y<GT> |
| U9 | 1A887536-1B | | NASW-6936-1B, Control switch PC board ass'y<DT> |
| | 1A887536-1C | | NASW-6936-1C, Control switch PC board ass'y<GT> |
| U10 | 1A887537-1B | | NASW-6937-1B, Selector circuit PC board ass'y<DT> |
| | 1A887537-1C | | NASW-6937-1C, Selector circuit PC board ass'y<GT> |
| U12 | 1A887539-1B | | NAETC-6939-1B, CD connector PC board ass'y<DT> |
| | 1A887539-1C | | NAETC-6939-1C, CD connector PC board ass'y<GT> |
| U14 | 240135 | | TFCE1E512A, Tuner unit |

NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

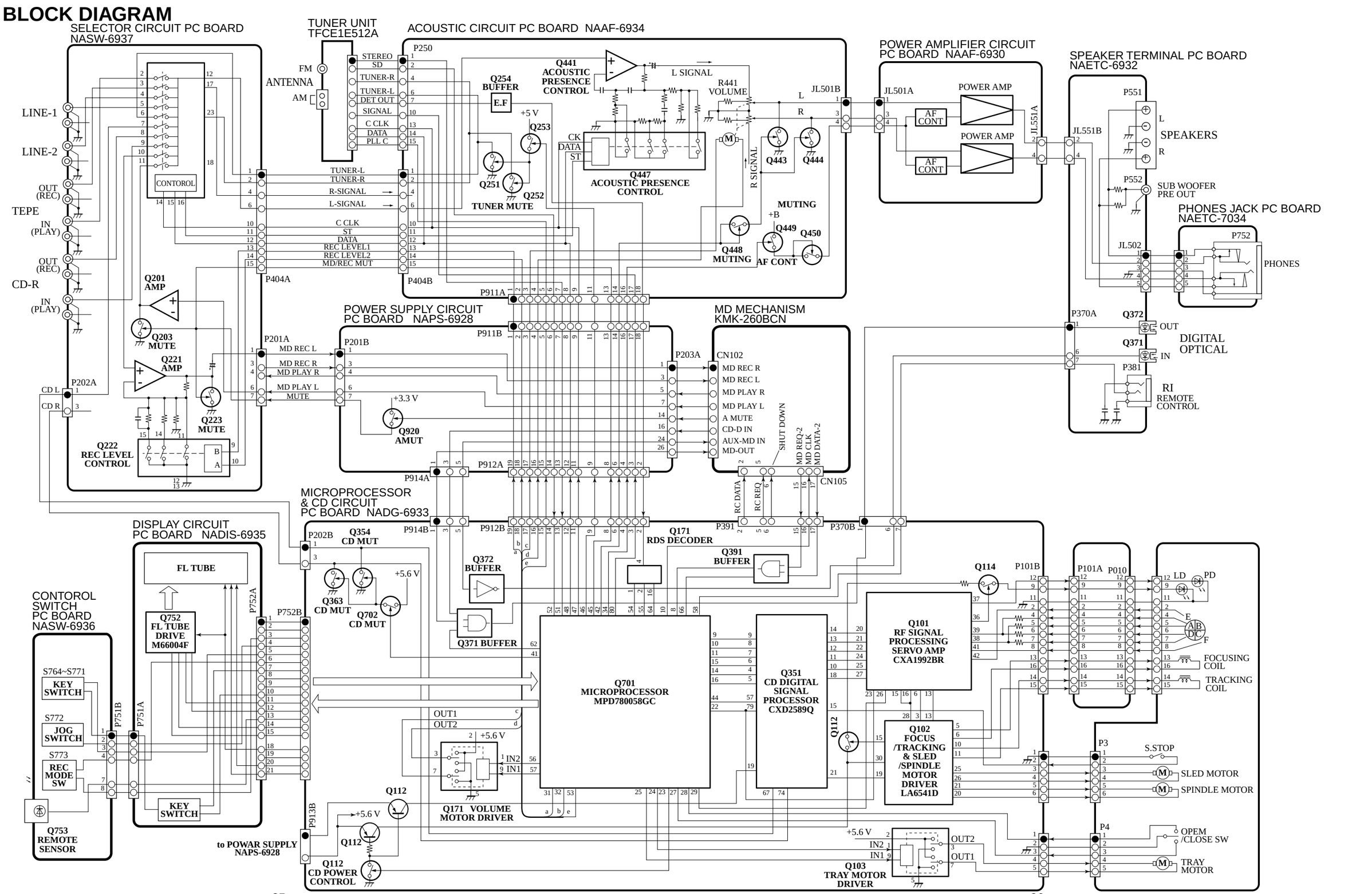
**CAUTION** : Replacement of the transistor of mark * ,if necessary, must be made from the same beta group (HFE) as the original type.

**NOTE** : <DT> : Taiwanese Model only
<GT> : Asian Model only

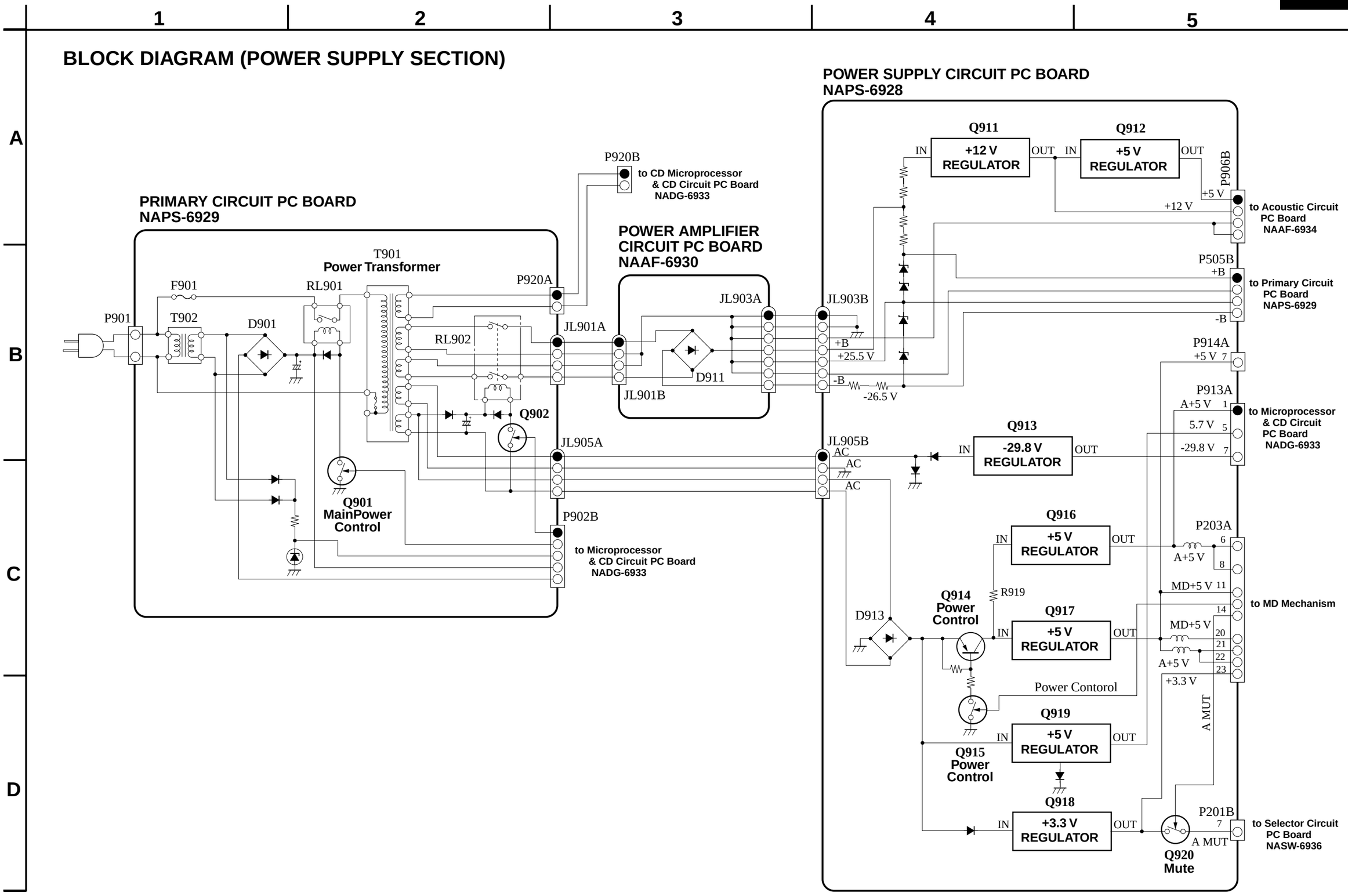
# CHASSIS EXPLODED VIEW



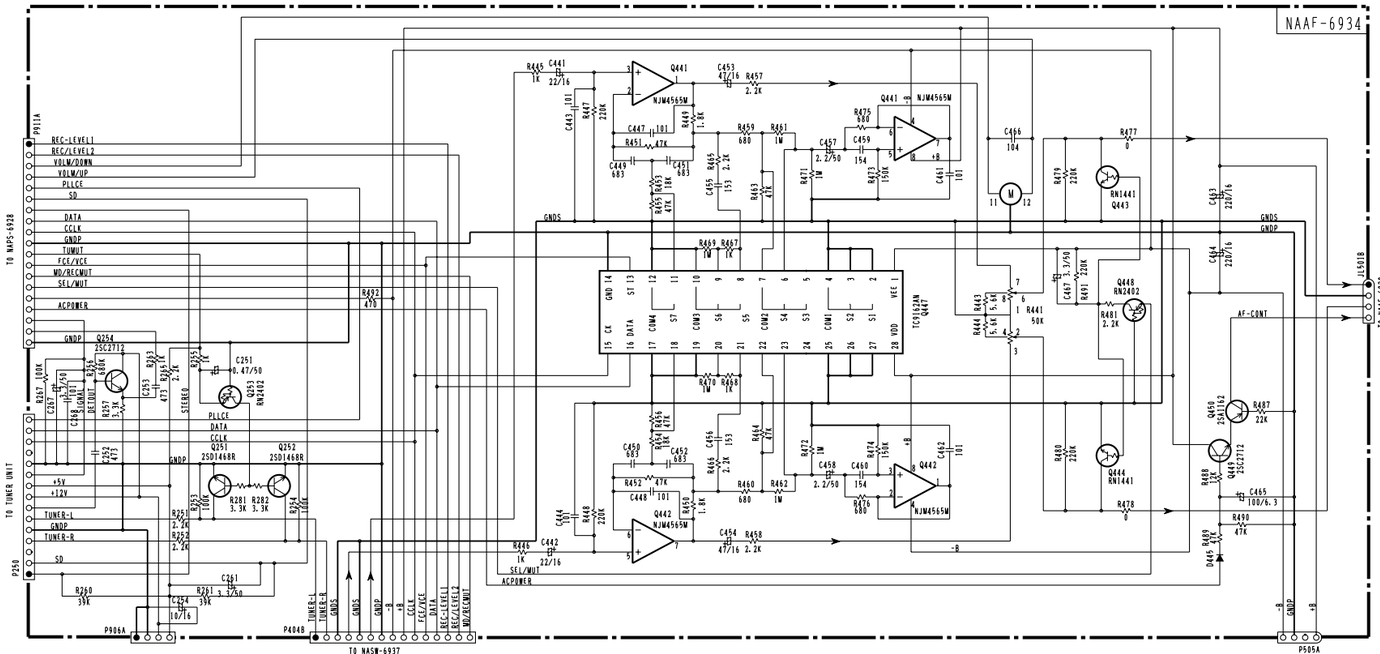
# BLOCK DIAGRAM

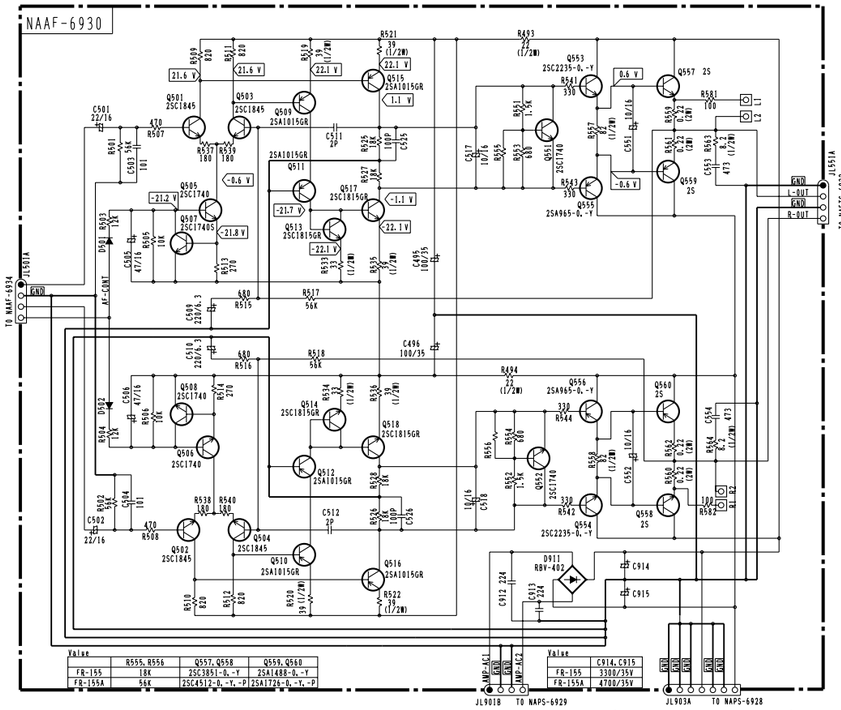


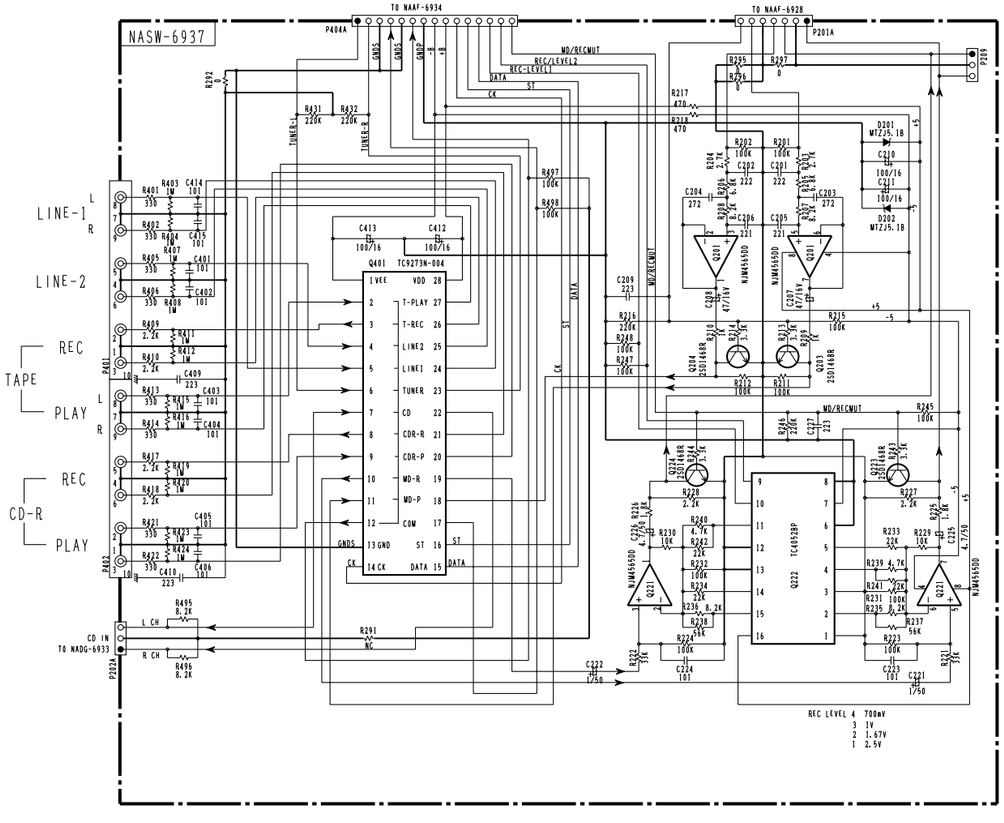
# BLOCK DIAGRAM (POWER SUPPLY SECTION)

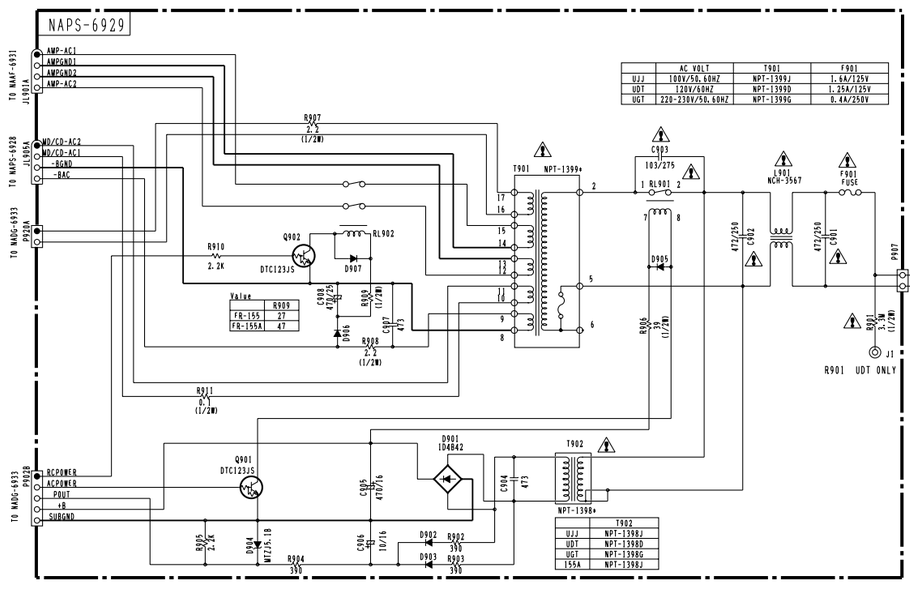


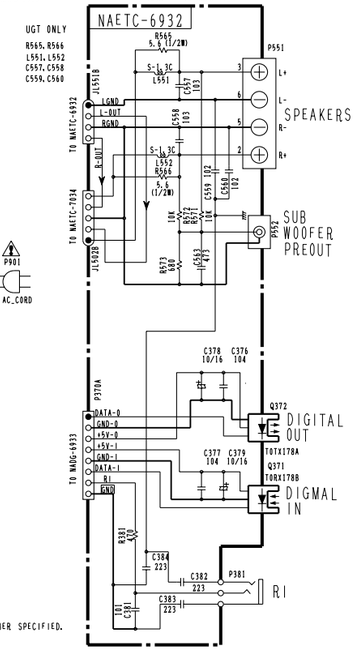
# SCHEMATIC DIAGRAM (AMPLIFIER SECTION)




CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH FUSE OF SAME TYPE AND RATING INDICATED.

ATTENTION
AFIN D'ASSURER UNE PROTECTION PERMANENTE CONTRE LES RISQUES D'INCENDIE, REMPLACER UNIQUEMENT PAR UN FUSIBLE DE MEME TYPE ET CALIBRATION COMME INDIQUE.

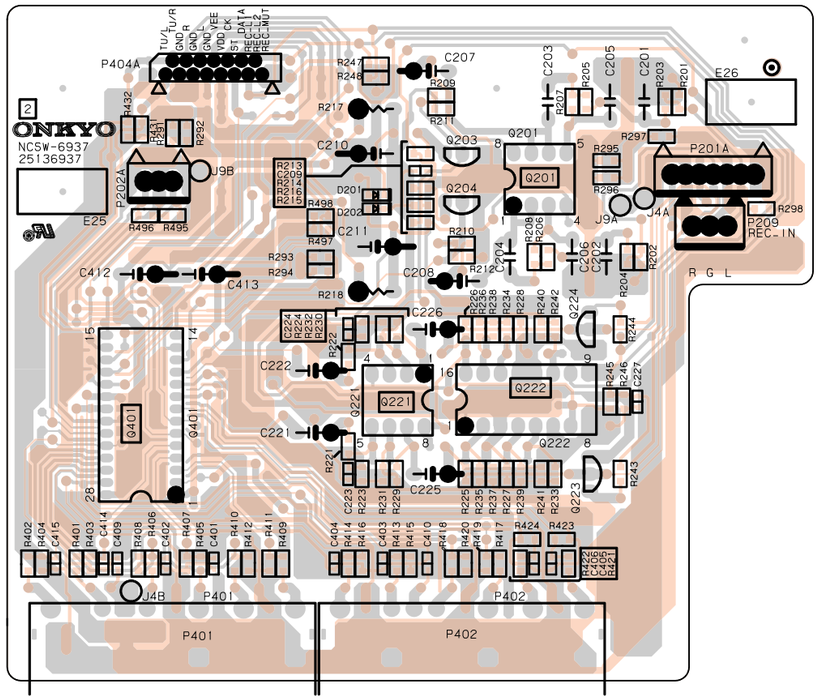
THIS SYMBOL LOCATED NEAR THE FUSE INDICATES THAT THE FUSE USED IS SLOW OPERATING TYPE FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE WITH SAME TYPE FUSE. FOR FUSE RATING REFER TO THE MARKING ADJACENT TO THE SYMBOL.

CE SYMBOLE INDIQUE QUE LE FUSIBLE UTLISE EST E LENT. POUR UNE PROTECTION PERMANENTE, N'UTILISER QUE DES FUSIBLES DE MEME TYPE. CE DARNIER EST INDIQUE LA QU LE PRESENT SYMBOL EST APPOSE.

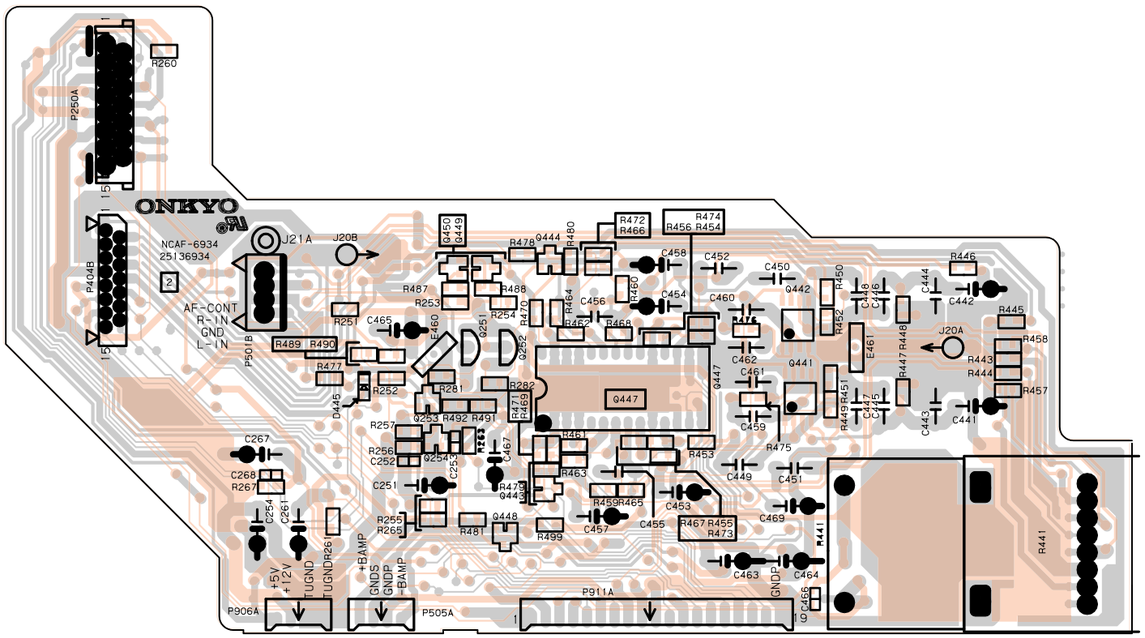
NOTE
- THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR SAFETY REPLACE ONLY WITH PART NUMBER SPECIFIED.
- VOLTAGE(MEASURED WITH VOLTMETER) ⟨ ⟩ IS DC VOLTAGE. (NO INPUT SIGNAL)
- ALL PNP TRANSISTORS ARE EQUIVALENT TO 2SA1015-GR UNLESS OTHERWISE NOTED.
- ALL NPN TRANSISTORS ARE EQUIVALENT TO 2SC1815-GR UNLESS OTHERWISE NOTED.
- ALL DIODES ARE EQUIVALENT TO 1SS133 UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS ( ─|(─ ) ARE IN μF/WV.
- ALL CAPACITORS ARE IN pF/50WV UNLESS OTHERWISE NOTED.
  EX) 030=3pF 330=33pF 331=330pF 333=0.033μF
- ALL RESISTORS ARE IN OHMS 1/4WATTS UNLESS OTHERWISE NOTED.
- THE THICK LINES ON PC BOARD ARE THE PRINTING SIDE OF THE PARTS.
  EX) ○○○ PRINTING SIDE
- CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.

# PRINTED CIRCUIT BOARD VIEW 1

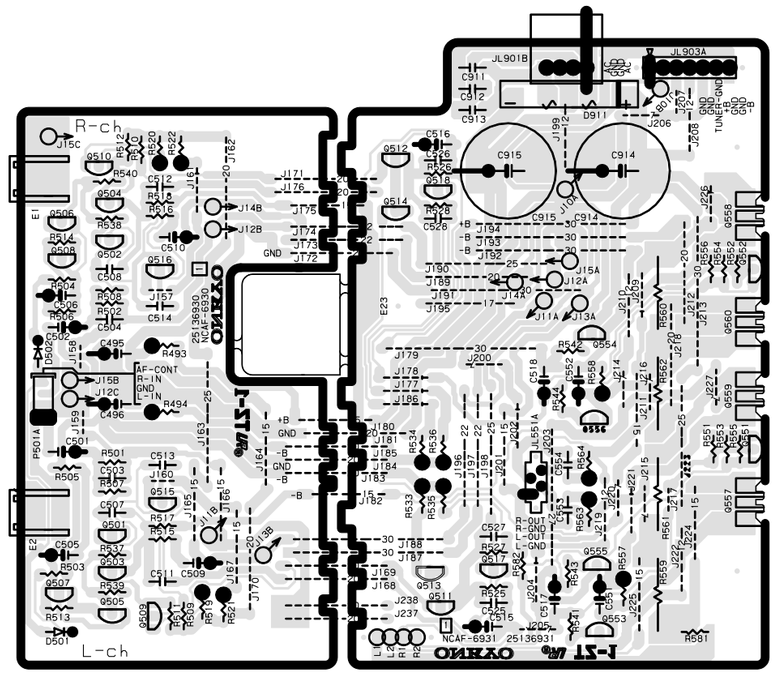
## U10 SELECTOR CIRCUIT PC BOARD (NASW-6937)



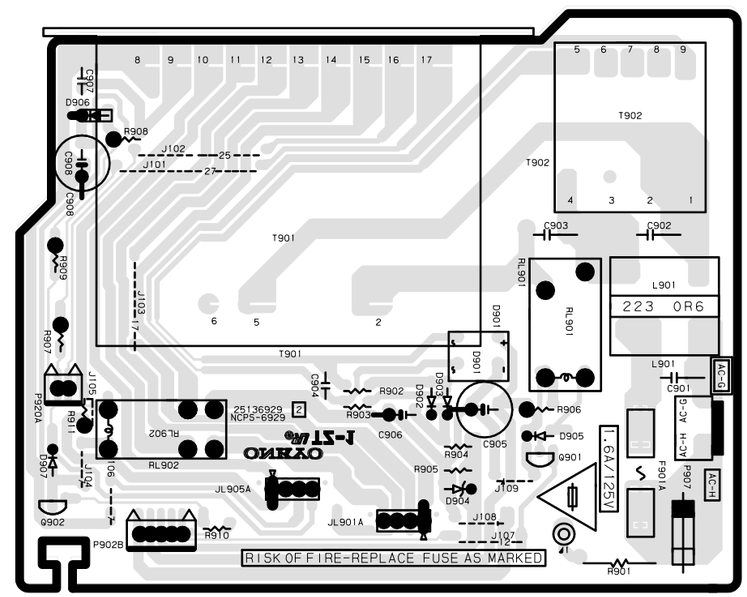

## U7 ACOUSTIC CIRCUIT PC BOARD (NAAF-6934)



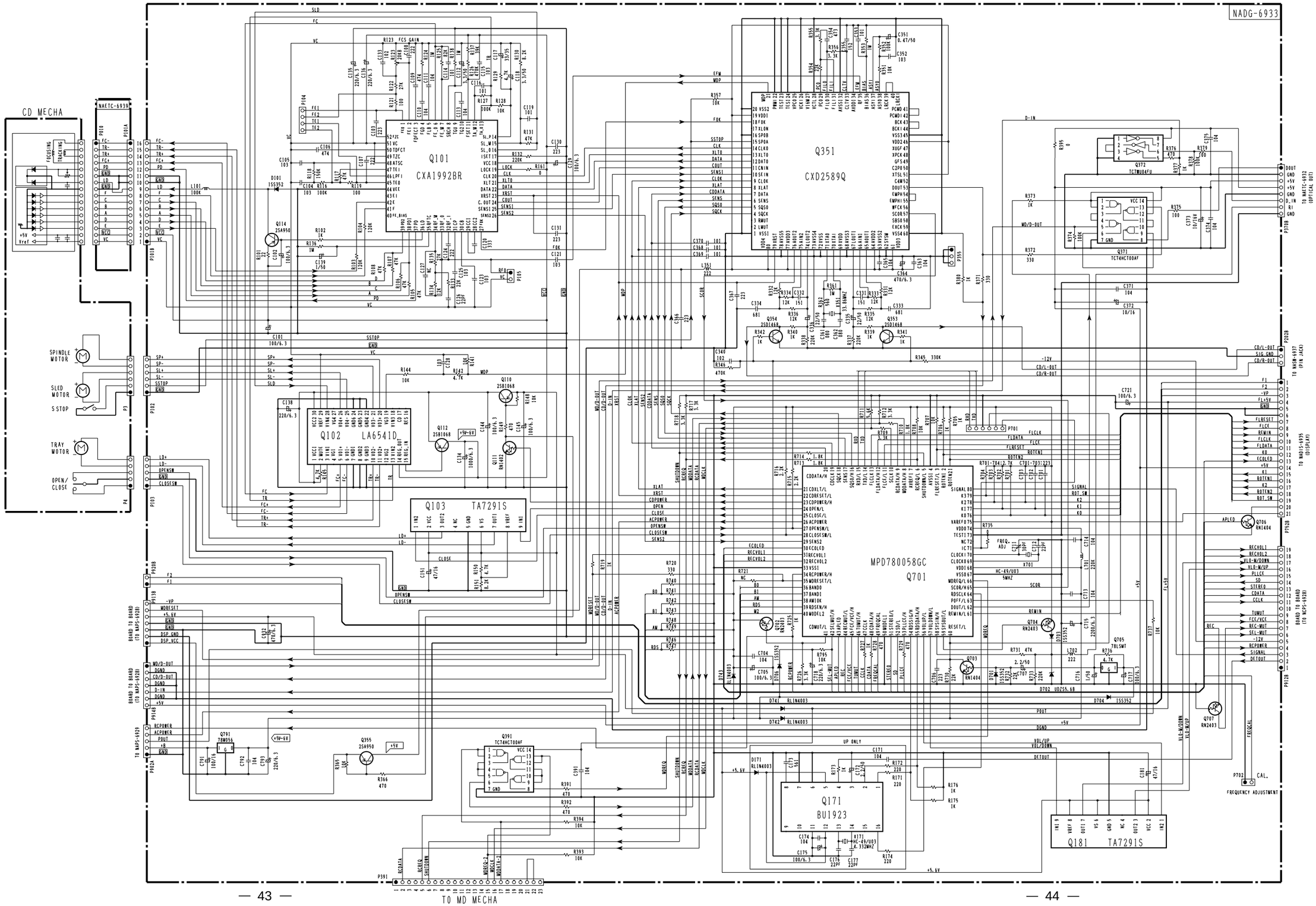

## U3 POWER AMPLIFIER CIRCUIT PC BOARD (NAAF-6930)




## U2 PRIMARY CIRCUIT PC BOARD ( NAPS-6929)

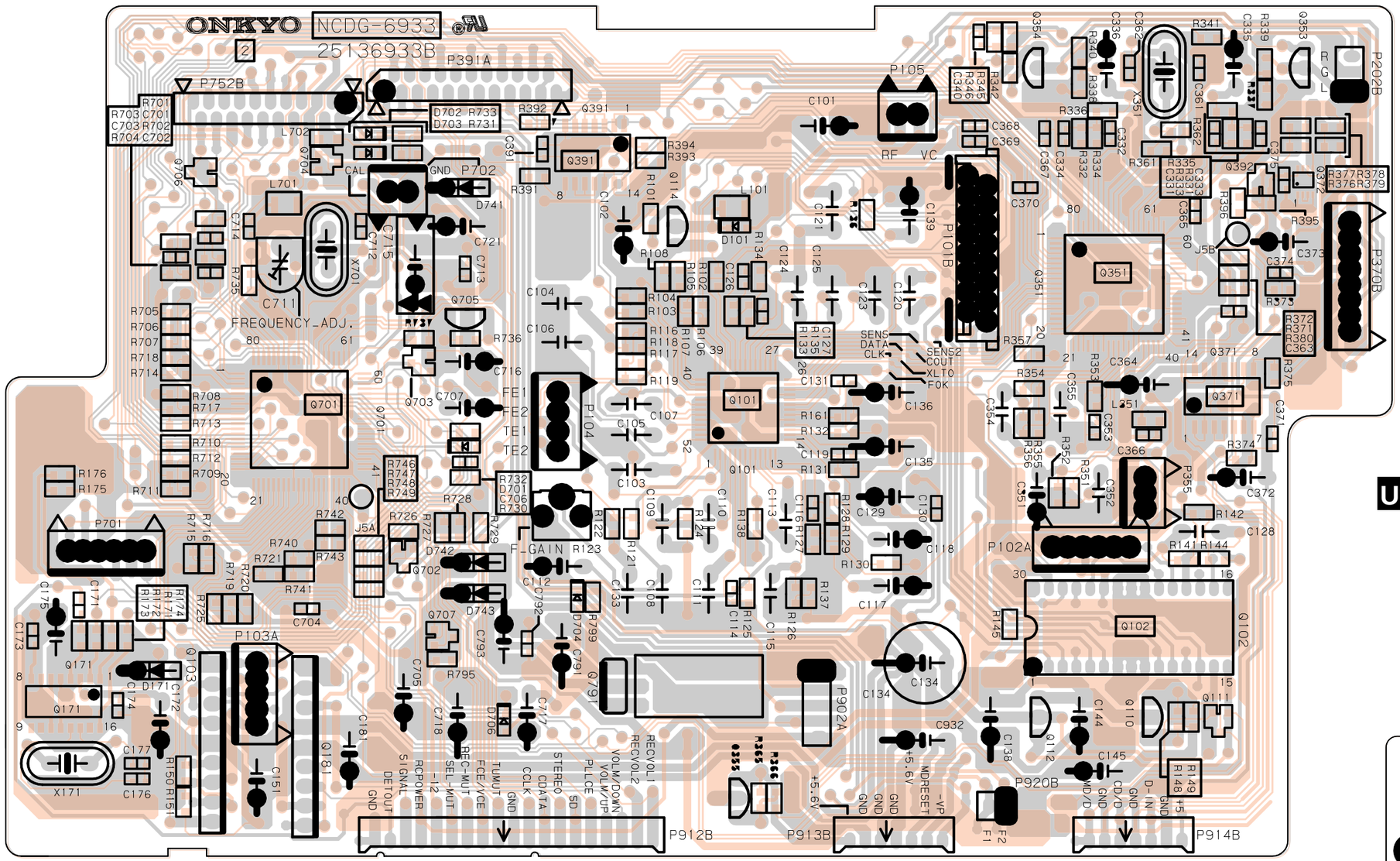


# SCHEMATIC DIAGRAM(CD&MICROPROSSEOR SECTION)

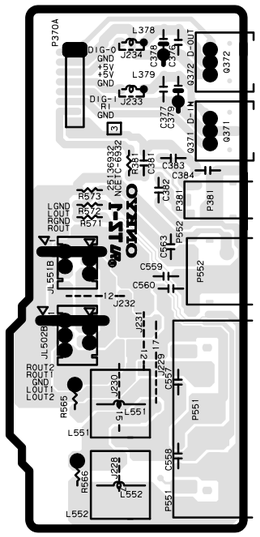


# PRINTED CIRCUIT BOARD VIEW 2

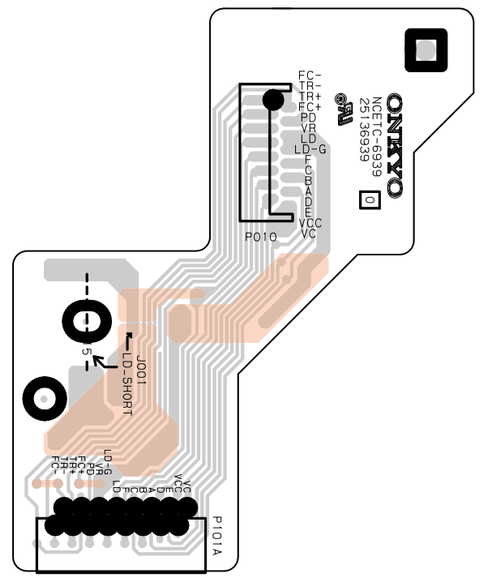
## U6 MICROPROCESSOR & CD CIRCUIT PC BOARD (NADG-6933)



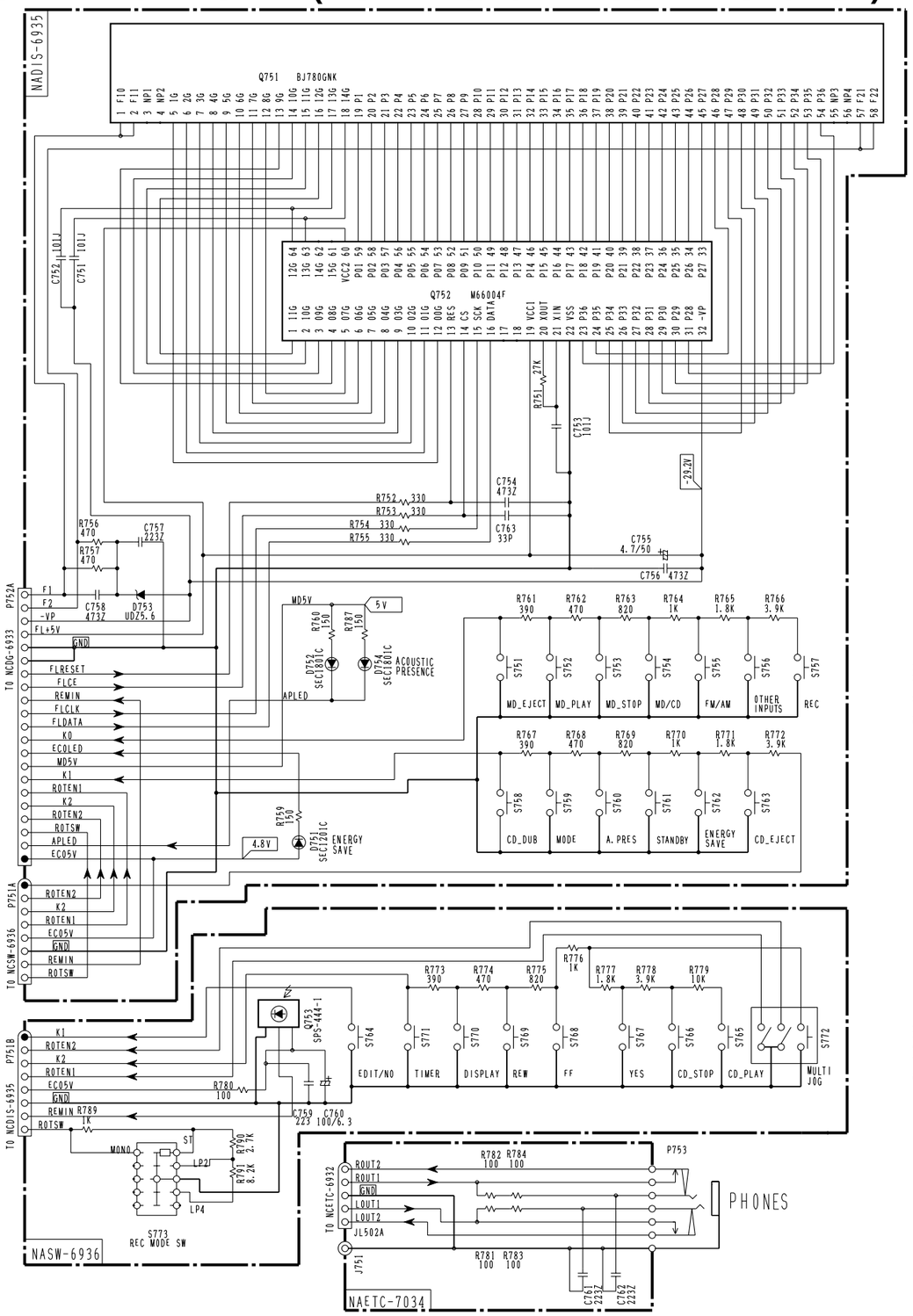

## U4 SPEAKER TERMINAL PC BOARD (NAETC-6932)

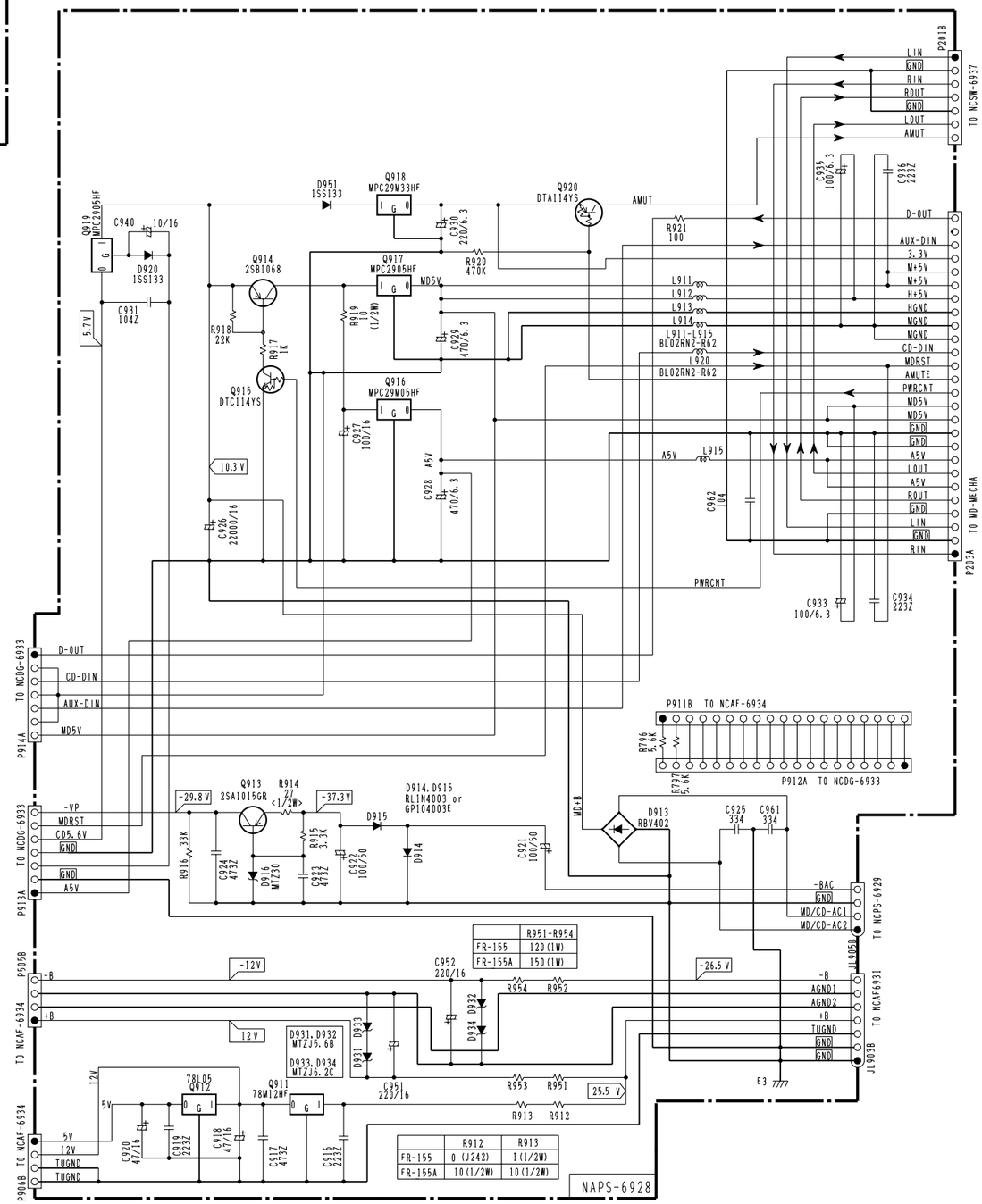



## U12 CD CONNECTOR PC BOARD (NAETC-6939)



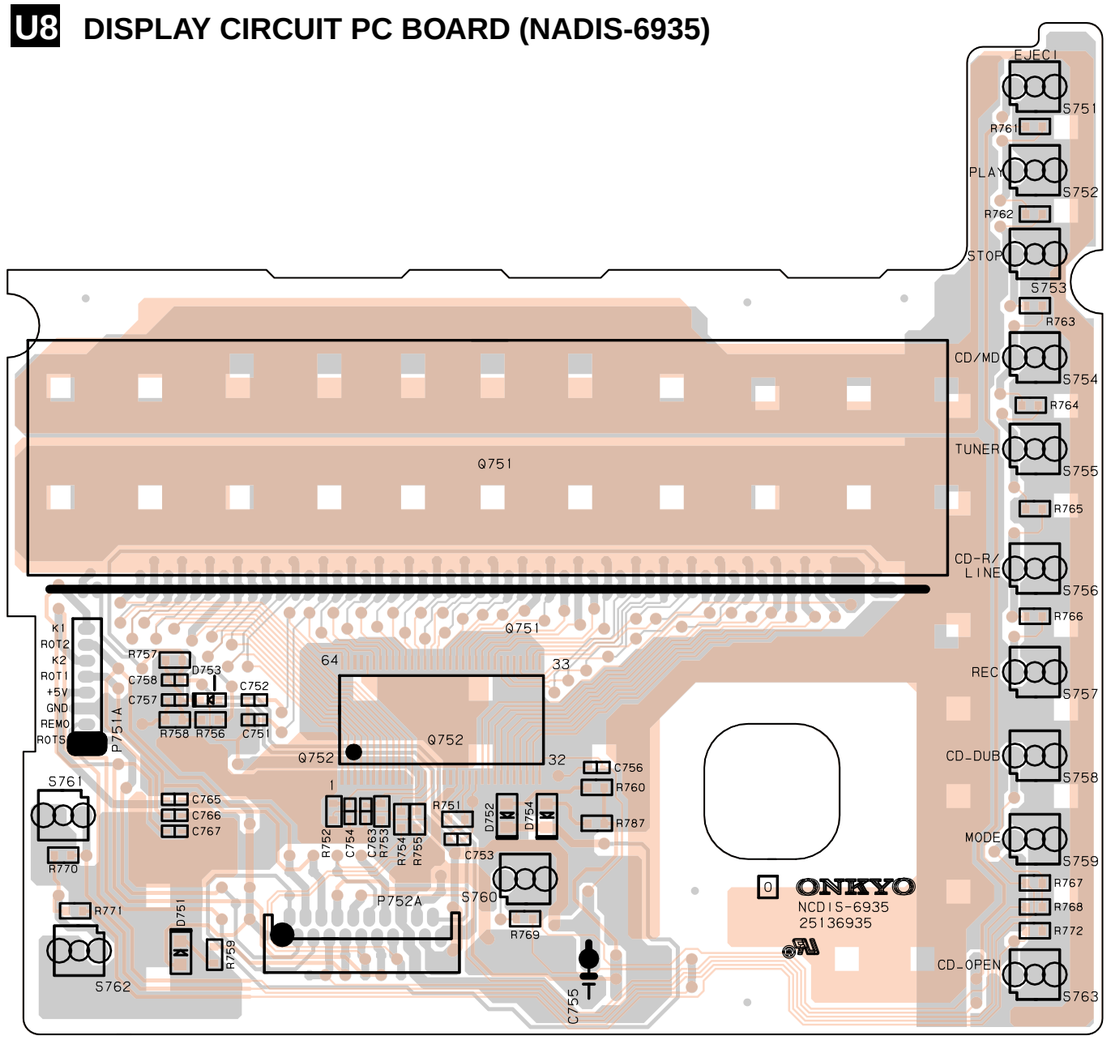
# SCHEMATIC DIAGRAM (DISPLAY &POWER SUPPLY SECTION)



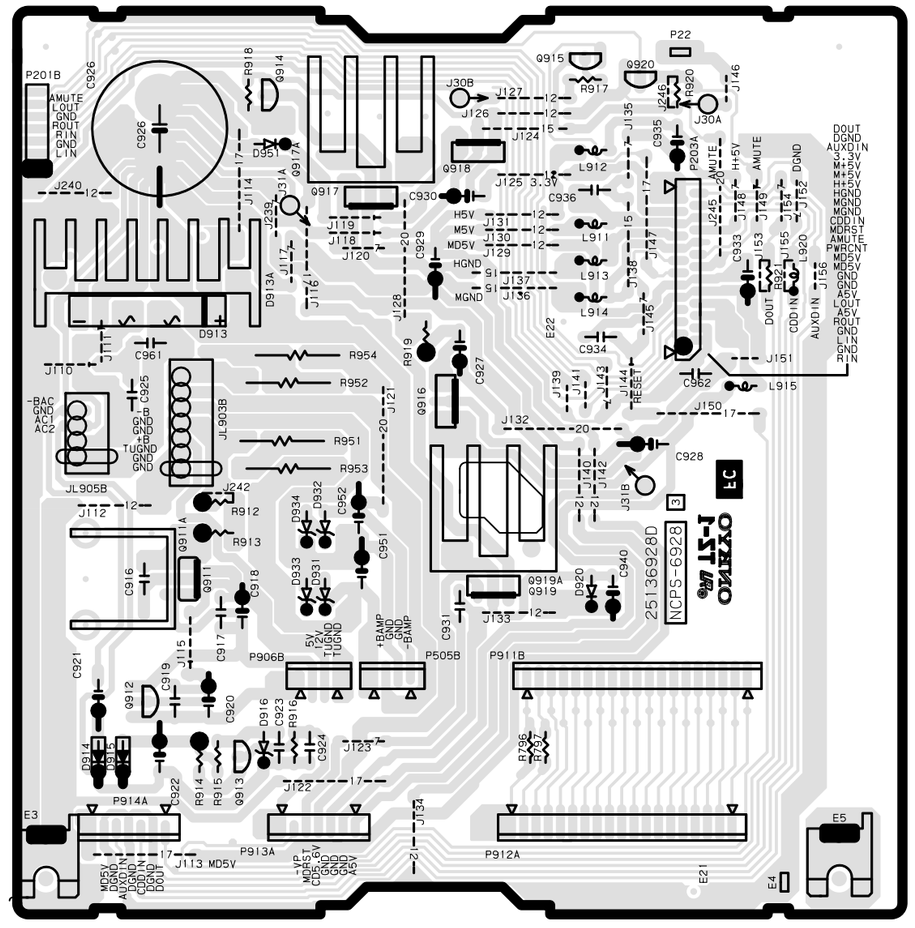



# PRINTED CIRCUIT BOARD VIEW 3

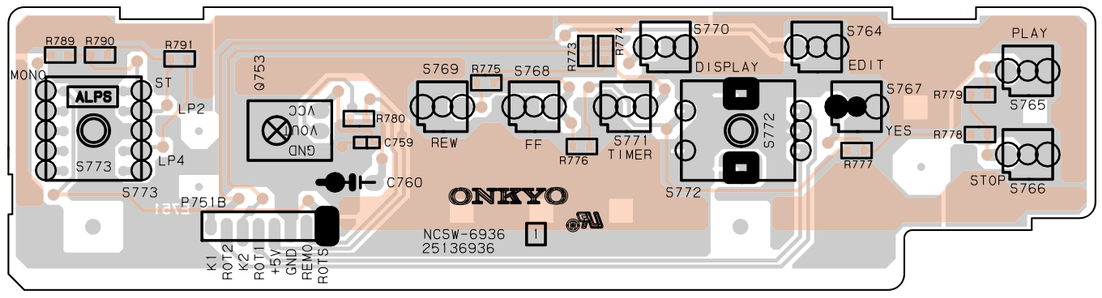
## U8 DISPLAY CIRCUIT PC BOARD (NADIS-6935)



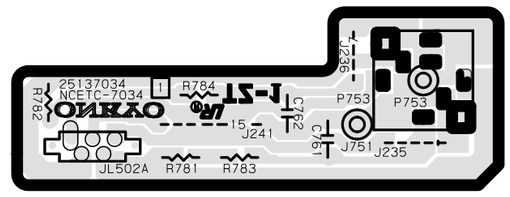

## U1 POWER SUPPLY CIRCUIT PC BOARD (NAPS-6928)




## U9 CONTROL SWITCH PC BOARD (NASW-6936)




## U5 HEADPHONE JACK PC BOARD (NAETC-7034)



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# PRINTED CIRCUIT BOARD PARTS LIST

**POWER SUPPLY CIRCUIT PC BOARD(NAPS-6928-1B/1C)**

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|---|---|---|
| | **ICs** | |
| **Q911** | 222780125JRC or | NJM78M12FA or |
| | 222780125NEC | MPC78M12HF |
| **Q912** | 222780053 | 78L05 |
| **Q916** | 22278005ENEC | MPC29M05HF |
| **Q917, Q919** | 22278005DNEC | MPC2905HF |
| **Q918** | 22278033ENEC | MPC29M33HF |
| | **Transistors** | |
| **Q913** | 2211455 | 2SA1015-GR |
| **Q914** | 2212853 or | 2SB1068-K or |
| | 2212855 | 2SB1068-U |
| **Q915** | 221281 or | DTC114YS or |
| | 2213570 | RN1207 |
| **Q920** | 2213090 or | DTA114YS or |
| | 2213590 | RN2207 |
| | **Diodes** | |
| **D913** | 22380271 or | D3SBA20 or |
| | 22380022 | RBV402 |
| **D914,D915** | 22380260 or | RL1N4003 or |
| | 22380032 or | 1SR139-100 or |
| | 22380035 | GP104003E |
| **D916** | 224473004 | MTZJ30D,Zener |
| **D920,D951** | 223163 or | 1SS133 or |
| | 223205 | 1SS270A |
| **D931,D932** | 224470562 | MTZJ5.6B,Zener |
| **D933,D934** | 224470623 | MTZJ6.2C,Zener |
| | **Coils** | |
| **L911~L915,L920** | 230906 | BL02RN2-R62 |
| | **Capacitors** | |
| **C918,C920** | 393344707 | 47 μF, 16 V, Elect. |
| **C921,C922** | 393381017 | 100 μF, 50 V, Elect. |
| **C925,C961** | 374723344 | 0.33 μF ±5 %, 50 V, Plastic |
| **C926** | 3504348 | 22000 μF, 16 V, Elect. |
| **C927** | 393341017 | 100 μF, 16 V, Elect. |
| **C928,C929** | 393324717 | 470 μF, 6.3 V, Elect. |
| **C930** | 393322217 | 220 μF, 6.3 V, Elect. |
| **C933,C935** | 393321017 | 100 μF, 6.3 V, Elect. |
| **C940** | 393341007 | 10 μF, 16 V, Elect. |
| **C951,C952** | 393342217 | 220 μF, 16 V, Elect. |
| | **Resistors** | |
| **R911** | 4500252 | 0.1 Ω ±5 %, 1/2 W, Metal |
| **R913** | 453530104 | 1 Ω ±5 %, 1/2 W, Metal |
| **R914** | 443522704 | 27 Ω ±5%, 1/2 W, Metal oxide |
| **R919** | 443521004 | 10 Ω ±5%, 1/2 W, Metal |
| **R951-R954** | 442621214F | 120 Ω ±5%, 1 W, Metal oxide |
| | **Sockets** | |
| **JL903B** | 25050271 | NSCT-7P99 |
| **JL905B** | 25050268 | NSCT-4P96 |
| **P201B** | 2009990630 | NSAS-14P0865 |
| **P203A** | 25052326 | NSCT-26P2223 |
| | **Plugs** | |
| **P505B,P906B** | 25055804 | NPLG-4P760 |
| **P911B,P912A** | 25055808 | NPLG-19P764 |
| **P913A,P914A** | 25055703 | NPLG-7P659 |
| | **Heatsink** | |
| **D913A** | 27160271 | RAD-083 |
| **Q911A** | 27160211-1 | RAD-68 |
| **Q917A** | 27160472 | RAD-141 |
| **Q919A** | 27160471 | RAD-140 |
| | **Screws** | |
| **Q917B,Q919B** | 82143010 | 3P+10FN(BC) |
| **D913B,Q911B** | 82143010 | 3P+10FN(BC) |
| | Holder | |
| **E21** | 27190540-1 | Holder |

**PRIMARY CIRCUIT PC BOARD(NAPS-6929-1B/1C)**

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|---|---|---|
| | **Transistors** | |
| **Q501-Q504** | 2211733 | 2SC1845-E |
| **Q505-Q508** | 2213284 | 2SC1740S-R |
| **Q509,Q510** | 2211455 | 2SA1015-GR |
| **Q511,Q512** | 2211455 | 2SA1015-GR |
| **Q513,Q514** | 2211255 | 2SC1815-GR |
| **Q515,Q516** | 2211455 | 2SA1015-GR |
| **Q517,Q518** | 2211255 | 2SC1815-GR |
| **Q551,Q552** | 2213284 | 2SC1740S-R |
| **Q553,Q554** | 2211654 or | 2SC2235-Y or |
| | 2211653 | 2SC2235-O |
| **Q555,Q556** | 2211644 or | 2SA965-Y or |
| | 2211643 | 2SA965-O |
| | **Diodes** | |
| **D901** | 22380039 | 1D4B42 |
| **D902,D903** | 223163 or | 1SS133 or |
| | 223205 | 1SS270A |
| **D904** | 224470512 | MTZJ5.1B,Zener |
| **D905,D907** | 223163 or | 1SS133 or |
| | 223205 | 1SS270A |
| **D906** | 22380260 or | RL1N4003 or |
| | 22380032 or | 1SR139-100 or |
| | 22380035 | GP104003E |
| | **Coils** | |
| **L901** | 231287 or | ⚠ NCH-3567 or |
| | 231252 | ⚠ NCH-3489 |
| **T902** | 2301464 | ⚠ NPT-1398D<DT> |
| | 2301465 | ⚠ NPT-1398G<GT> |
| | **Capacitors** | |
| **C901,C902** | 3500077 or | ⚠ DE7150F-472M or |
| | 3300030 | ⚠ DE1307E472M-KH |
| **C903** | 3500196S | ⚠ RE275V-103M |
| **C904,C907** | 374724734 | 0.047 μF 5 %, 50 V, Elect. |
| **C905,C908** | 393344717 | 470 μF, 16 V, Elect. |
| **C906** | 393341007 | 10 μF, 16 V, Elect. |
| | **Resistors** | |
| **R901** | 431533355 | ⚠3.3 MΩ , 1/2 W, Solid <DT> |
| **R906** | 443523904 | 39 Ω ±5 %, 1/2 W, Metal oxide |
| **R907,R908** | 453530224 | 2.2 Ω ±5 %, 1/2 W, Metal |
| **R909,R914** | 443522704 | 27 Ω ±5 %, 1/2 W, Metal oxide <DT> |
| | **Relays** | |
| **RL901** | 25065601 or | NRL-1P5A-DC9-150 or |
| | 25065603 | NRL-1P5A-DC9-152 |
| **RL902** | 25065582 or | NRL-2P5A-DC18-138 or |
| | 25065605 | NRL-2P5A-DC18-154 |
| | **Fuse holder** | |
| **F901A** | 25050065 | ⚠YSH403T |
| | **Sockets** | |
| **JL901A** | 25051108 | NSCT-4P895 |
| **JL905A** | 25051108 | NSCT-4P895 |
| | **Plugs** | |
| **P902B** | 25055369 | NPLG-5P352 |
| **P907** | 25055675 | NPLG-2P631 |
| **P920A** | 25055146 | NPLG-2P130 |
| | **Fuse label** | |
| **F901B** | 29361919 | T400MAL250V <GT> |
| | 29362309 | 1.25 A/125 V <DT> |

**POWER AMPLIFIER CIRCUIT PC BOARD(NAAF-6930-1B/1C)**

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|---|---|---|
| | **Transistors** | |
| **Q901,Q902** | 2213640 | DTC123JS |
| | **Diodes** | |
| **D501,D502** | 223163 or | 1SS133 or |
| | 223205 | 1SS270A or |
| **D911** | 22380271F or | D3SBA20 or |
| | 22380022F | RBV402 |
| | **Capacitors** | |
| **C495,C496** | 393361017 | 100 μF, 35 V, Elect. |
| **C501,C502** | 393342207 | 22 μF, 16 V, Elect. |
| **C503,C504** | 374721015 | 100 pF ±10 %, 50 V, Plastic |
| **C505,C506** | 393344707 | 47 μF, 16 V, Elect. |
| **C509,C510** | 393322217 | 220 μF, 6.3 V, Elect. |
| **C517,C518** | 393341007 | 10 μF, 16 V, Elect. |
| **C525,C526** | 374721015 | 100 pF ±10 %, 50 V, Plastic |
| **C551,C552** | 393341007 | 10 μF, 16 V, Elect. |
| **C553,C554** | 374724734 | 0.047 μF ±5 %, 50 V, Plastic |
| **C912,C913** | 374722244 | 0.22 μF ±5 %, 50 V, Plastic |
| **C914,C915** | 354763329S | 3300 μF, 35 V, Elect. |
| | **Resistors** | |
| **R493,R494** | 443522204 | 22 Ω ±5 %, 1/2 W, Metal oxide |
| **R519-R522** | 443523904 | 39 Ω ±5 %, 1/2W, Metal oxide |
| **R533,R534** | 443523304 | 33 Ω ±5 %, 1/2W, Metal oxide |
| **R535,R536** | 443523904 | 39 Ω ±5 %, 1/2W, Metal oxide |
| **R557,R558** | 443528204 | 82 Ω ±5 %, 1/2W, Metal oxide |
| **R559-R562** | 452732294F | 0.22 Ω ±5 %, 1/2W, Metal |
| **R563,R564** | 453630824 | 8.2 Ω ±5 %, 1W, Metal |
| | **Sockets** | |
| **JL551A** | 25051088 | NSCT-4P875 |
| **JL901B** | 25050281 | NSCT-4P109 |
| **JL903A** | 25051111 | NSCT-7P898 |
| **P501A** | 2009990622UL | NSAS-8P0852 |
| | **Holder** | |
| **E23** | 27190608-1 | UA-0 V0 |

**SPEAKER TERMINAL PC BOARD(NAETC-6932-1B/1C)**

| | | |
|---|---|---|
| | **Photo couplers** | |
| **Q371** | 24120037 | TORX178B |
| **Q372** | 24120031 | TOTX178A |
| | **Coils** | |
| **L551,L552** | 231176S | S-1.3C <GT> |
| | **Capacitors** | |
| **C378,C379** | 393341007 | 10 μF, 16 V, Elect. |
| **C557,C558** | 374721034 | 0.01 μF ±5 %, 50 V, Plastic <GT> |
| **C563** | 374724734 | 0.047 μF±5 %, 50 V, Plastic |
| | **Resistors** | |
| **R565,R566** | 443520564 | 5.6 Ω ±5 %, 1/2 W, Metal <GT> |
| | **Jacks** | |
| **P381** | 25045504 | NPJ-1PDBL319 |
| **P552** | 25045567 | NPJ-1PDBL382 |
| | **Terminal** | |
| **P551** | 25060161 | NTM-4PDML087,Speakers |
| | **Sockets** | |
| **JL502B** | 25051089 | NSCT-5P876 |
| **JL551B** | 25051088 | NSCT-4P875 |
| **P370A** | 2009990621 | NSAS-16P0851 |

**MICROPROCESSOR AND CD CIRCUIT PC BOARD (NADG-6933-1B/1C)**

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|---|---|---|
| | **ICs** | |
| **Q101** | 22241499R3 | CXA1992BR |
| **Q102** | 22241247 | LA6541D |
| **Q103,Q181** | 22240239 | TA7291S |
| **Q351** | 22241500R3 | CXD2589Q |
| **Q371,Q391** | 222740007R2TO | TC74HCT00AF |
| **Q372** | 22240935R2 | TC7WU04FU |
| **Q701** | 22241514R3 | MPD780058GC-206-8BT |
| **Q705** | 22241210 | BMR-0101D |
| **Q791** | 222780565JRC | NJM78M56FA |
| | **Transistors** | |
| **Q110,Q112** | 2212853 or | 2SB1068-K or |
| | 2212855 | 2SB1068-U |
| **Q111** | 2214470R2 | RN1402 |
| **Q114,Q355** | 2211504 or | 2SA950-Y or |
| | 2211503 | 2SA950-O |
| **Q353,Q354** | 2215024 or | 2SD1468S-R or |
| | 2212794 | 2SD1468-R |
| **Q702,Q704,Q707** | 2214540R2 | RN2403 |
| **Q703,Q706** | 2214490R2 | RN1404 |
| | **Diodes** | |
| **D101,D701** | 223234R2 or | 1SS352 or |
| | 223269R2 | 1SS355 |
| **D202** | 224490510R2 or | UDZ5.1B or |
| | 224550510R2 | UDZS5.1B,Zener |
| **D702** | 224490560R2 or | UDZ5.6B or |
| | 224550560R2 | UDZS5.6B,Zener |
| **D703,D704,D706** | 223234R2 or | 1SS352 or |
| | 223269R2 | 1SS355 |
| **D741 -D743** | 22380260 or | RL1N4003 or |
| | 22380035 or | GP104003E or |
| | 22380032 | 1SR139-100 |
| | **Crystals** | |
| **X351** | 3010325 | HC-49U/03 33.8688MHz |
| **X701** | 3010312 | HC-49/U03 5MHz |
| | **Coils** | |
| **L101** | 231237K101R2 | NCH-1481 |
| **L351,L702** | 230921R2 | BLM21B222SPT |
| **L701** | 231237K220R2 | NCH-1477 |

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|---|---|---|
| | **Capacitors** | |
| **C101,C102** | 355721019 | 100 μF, 6.3 V, Elect. |
| **C103** | 374722234 | 0.022 μF ±5 %, 50 V, Plastic |
| **C104,C105,C115** | 374721034 | 0.01 μF±5 %, 50 V, Plastic |
| **C106,C109** | 374724744 | 0.47 μF±5 %, 50 V, Plastic |
| **C107,C108,C124** | 374722224 | 2200 pF ±5 %, 50 V, Plastic |
| **C110,C111,C113** | 374721044 | 0.1 μF ±5 %, 50 V, Plastic |
| **C112,C118** | 393380337 | 3.3 μF, 50 V, Elect. |
| **C117** | 393363307 | 33 μF, 3 5 V, Elect. |
| **C120** | 374723334 | 0.033 μF ±5 %, 50 V, Plastic |
| **C121,C123,C125** | 374721034 | 0.01 μF ±5 %, 50 V, Plastic |
| **C128,C352** | 374721034 | 0.01 μF ±5 %, 50 V, Plastic |
| **C129,C144,C145** | 393321017 | 100 μF, 6.3 V, Elect. |
| **C133** | 374721024 | 1000 pF ±5 %, 50 V, Plastic |
| **C134** | 393321027 | 1000 μF, 6.3 V, Elect. |
| **C135,C136,C138** | 393322217 | 220 μF, 6.3 V, Elect. |
| **C139,C716** | 393380107 | 1 μF, 50 V, Elect. |
| **C151,C181** | 393344707 | 47 μF, 16 V, Elect. |
| **C335,C336** | 393382207 | 22 μF, 50 V, Elect. |
| **C351** | 393384797 | 0.47 μF, 50 V, Elect. |
| **C354** | 374724734 | 0.047μF ±5 %, 50 V, Plastic |
| **C355** | 374721524 | 1500 pF ±5%, 50 V, Plastic |
| **C364,C932** | 393324717 | 470 μF, 6.3 V, Elect. |
| **C372,C373** | 393341007 | 10 μF, 16 V, Elect. |
| **C469** | 393381007 | 10 μF, 50 V, Elect. |
| **C705,C717,C721** | 393321017 | 100 μF, 6.3 V, Elect. |
| **C707** | 393380227 | 2.2 μF, 50 V, Elect. |
| **C711** | 3060016 | NTC-30P14, Trimming |
| **C715** | 3000078 | DX-5R5L104,Super capacitor |
| **C718,C793** | 393322217 | 220 μF, 6.3 V, Elect. |
| **C755** | 353780479 | 4.7 μF, 50 V, Elect. |
| **C791** | 393341017 | 100 μF, 16 V, Elect. |
| | **Resistors** | |
| **R123** | 5210263 | N06HR20KBC,Trimming |
| **R217,R218** | 443524714 | 470 Ω ±5%, 1/2 W, Metal oxide |
| | **Sockets** | |
| **P101B** | 25052212 | NSCT-16P2109 |
| **P202B** | 2009990617 | NSAS-6P0844 |
| **P752B** | 25052321 | NSCT-21P2218 |
| **P902A** | 2002A391010 | NSAS-10P0845 |
| **P912B** | 25051530 | NSCT-19P1317 |
| **P913B,P914B** | 25051232 | NSCT-7P1022 |
| **P920B** | 2002A390410 | NSAS-4P0894 |
| | **Plugs** | |
| **P102A** | 25055150 | NPLG-6P134 |
| **P103A** | 25055149 | NPLG-5P133 |
| **P104** | 25055045 | NPLG-4P33 |
| **P105,P702** | 25055038 | NPLG-2P29 |
| **P370B** | 25055446 | NPLG-8P428 |
| **P391A** | 25052323 | NSCT-23P2220 |

**ACOUSTIC CIRCUIT PC BOARD (NAAF-6934-1B/1C)**

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|---|---|---|
| | **ICs** | |
| **Q441,Q442** | 22240583R2 or 22241383R2 | TC51832FL-10 or NJM4565M-D |
| **Q447** | 22240798 | TC9162AN |
| | **Transistors** | |
| **Q251,Q252** | 2215024 or 2212794 | 2SD1468S-R or 2SD1468-R |
| **Q253,Q448** | 2214530R2 or 2213144R2 | RN2402 or 2SC2712-Y |
| **Q254,Q449** | 2213145R2 or 2215410R2 | 2SC2712-GR or RN1441 |
| **Q450** | 2214374R2 or 2214375R2 | 2SA1162-Y or 2SA1162-GR |
| | **Diodes** | |
| **D445** | 223234R2 or 223269R2 | 1SS352 or 1SS355 |
| **D754** | 225386R2 | SEC1801C, LED |
| | **Capacitors** | |
| **C251** | 393384797 | 0.47 μF, 50 V, Elect. |
| **C254** | 393341007 | 10 μF, 16 V, Elect. |
| **C261,C267,C467** | 393380337 | 3.3 μF, 50 V, Elect. |
| **C441,C442** | 393342207 | 22 μF, 16 V, Elect. |
| **C443,C444** | 374721015 | 100 pF ±10 %, 50 V, Plastic |
| **C447,C448** | 374721015 | 100 pF ±10 %, 50 V, Plastic |
| **C449,C452** | 374726834 | 0.068 μF ±5 %, 50 V, Plastic |
| **C453,C454** | 393344707 | 47 μF, 16 V, Elect. |
| **C455,C456** | 374721534 | 0.015 μF ±5 %, 50 V, Plastic |
| **C457,C458** | 393380227 | 2.2 μF, 50 V, Elect. |
| **C459,C460** | 374721544 | 0.15 μF ±5 %, 50 V, Plastic |
| **C461,C462** | 374721015 | 100 pF ±10 %, 50 V, Plastic |
| **C463,C464** | 393342217 | 220 μF, 16 V, Elect. |
| **C465** | 393321017 | 100 μF, 6.3 V, Elect. |
| | **Resistor** | |
| **R441** | 5104478 | N16RGL50KBT20F,Volume |
| | **Sockets** | |
| **P250A** | 25052211 | NSCT-15P2108 |
| **P404B** | 25052315 | NSCT-15P2212 |
| | **Plugs** | |
| **P501B** | 25055442 | NPLG-4P424 |
| **P505A,P906A** | 25051526 | NSCT-4P1313 |
| **P911A** | 25051530 | NSCT-19P1317 |

**DISPLAY CIRCUIT PC BOARD (NADIS-6935-1B/1C)**

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|---|---|---|
| | **FL tube** | |
| Q751 | 212211 | BJ780GNK |
| | **ICs** | |
| Q752 | 22240685R9 | M66004FP |
| | **LED** | |
| D751 | 225385R2 | SEC1201C |
| D752 | 225386R2 | SEC1801C |
| | **Diodes** | |
| D753 | 224490560R2 or | UDZ5.6B or |
| | 224550560R2 | UDZS5.6B,Zener |
| | **Sockets** | |
| P751 | 200AE391615A | NSAS-16P0869 |
| P752A | 25052358 | NSCT-21P2255 |
| | **Push switchs** | |
| S751-S763 | 25035652 | NPS-111-S604 |

**CONTROL SWITCH PC BOARD (NASW-6936-1B/1C)**

| | | |
|---|---|---|
| | **Remote Sensor** | |
| Q753 | 241335 | SPS-444-1 |
| | **Capacitor** | |
| C760 | 355721019 | 100 μF, 6.3 V, Elect. |
| | **Push switchs** | |
| S764-S771 | 25035652 | NPS-111-S604 |
| | **Rotary encoder** | |
| S772 | 25065507 | EC11B15244,Jog |
| | **Rotary switch** | |
| S773 | 25030417 | NRSF-119-06SRB, Rec mode |
| | **Holder** | |
| E751 | 27190540-1 | Holder |

**SELECTOR CIRCUIT PC BOARD (NASW-6937-1B/1C)**

| | | |
|---|---|---|
| | **ICs** | |
| Q201-Q221 | 22240191 | NJM4565D-D |
| Q222 | 222840521TOS | TC4052BP |
| Q401 | 22240864 | TC9273N-004 |
| | **Transistors** | |
| Q203,Q204 | 2215024 or | 2SD1468S-R or |
| | 2212794 | 2SD1468-R |
| Q223,Q224 | 2215024 or | 2SD1468S-R or |
| | 2212794 | 2SD1468-R |
| | **Diode** | |
| D201 | 224490510R2 or | UDZ5.1B or |
| | 224550510R2 | UDZS5.1B,Zener |
| | **Capacitors** | |
| C201-C204 | 374722224 | 2200 pF±5 %, 50 V, Plastic |
| C205,C206 | 374721815 | 180 pF±5 %, 50 V, Plastic |
| C207,C208 | 393344707 | 47 μF, 16 V, Elect. |
| C210,C211 | 393341017 | 100 μF, 16 V, Elect. |
| C221,C222 | 393380107 | 1 μF, 50 V, Elect. |
| C225,C226 | 393380477 | 4.7 μF, 50 V, Elect. |
| C412,C413 | 393341017 | 100 μF, 16 V, Elect. |
| | **Jacks** | |
| P401 | 25045300 or | NPJ-6PDBL159 or |
| | 25045571 | NPJ-6PDRW386 |
| P402 | 25045300 or | NPJ-6PDBL159 or |
| | 25045571 | NPJ-6PDRW386 |
| | **Socket** | |
| P404A | 25052315 | NSCT-15P2212 |
| | **Plugs** | |
| P201A | 25055445 | NPLG-7P427 |
| P202A | 25055441 | NPLG-3P423 |
| P209 | 25055042 | NPLG-3P32 |

**CD CONNECTOR PC BOARD (NAETC-6939-1B/1C)**

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|---|---|---|
| | Sockets | |
| P010 | 25052483 | NSCT-16P2380 |
| P101A | 25052249 | NSCT-16P2146 |

**HEADPHONE JACK PC BOARD(NAETC-7034-1B/1C)**

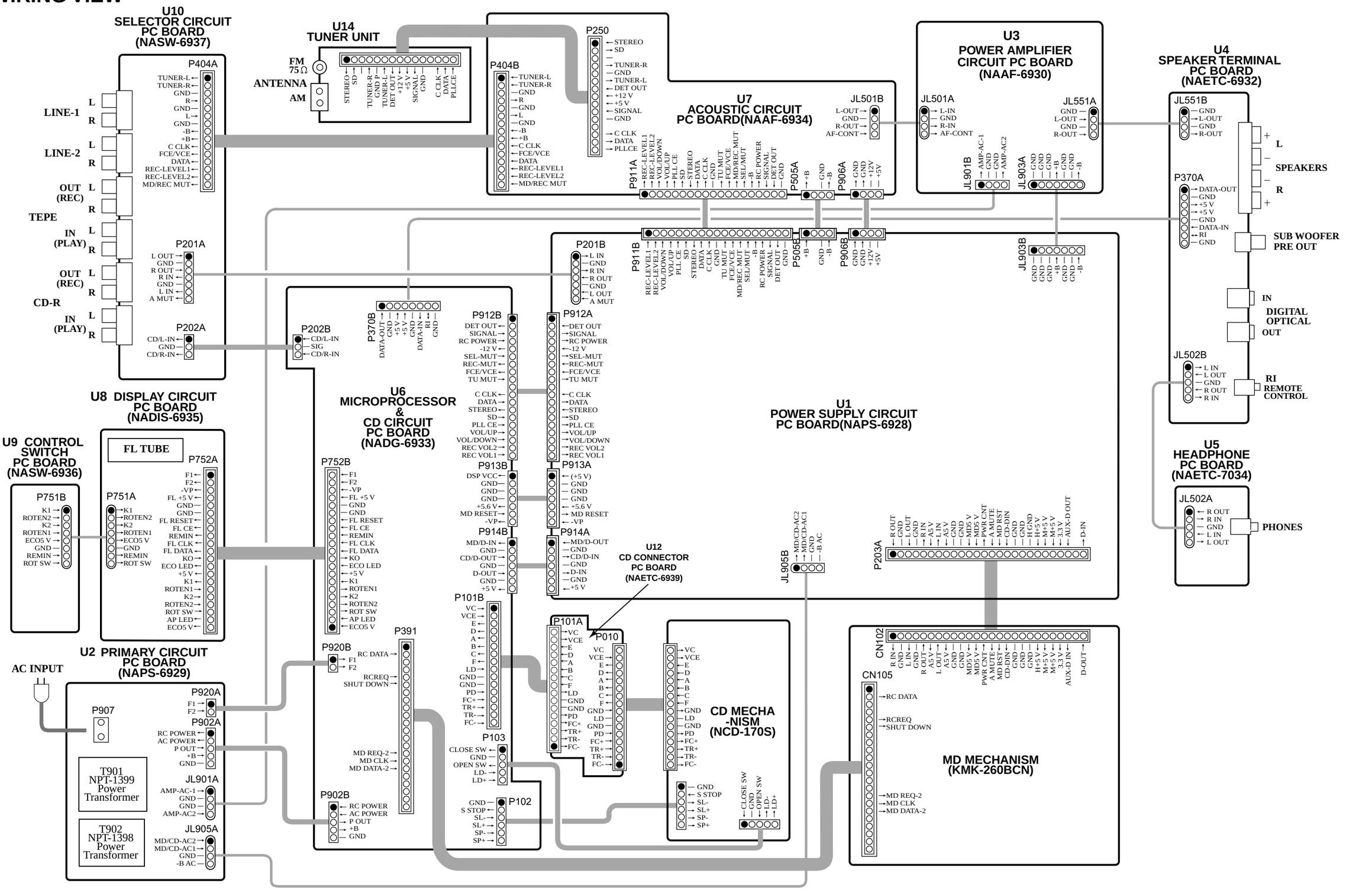
| | | |
|---|---|---|
| | **Jack** | |
| P753 | 25045396 | LGT1516-0101,Phones |
| | **Socket** | |
| JL502A | 25051089 | NSCT-5P876 |

**NOTE :**

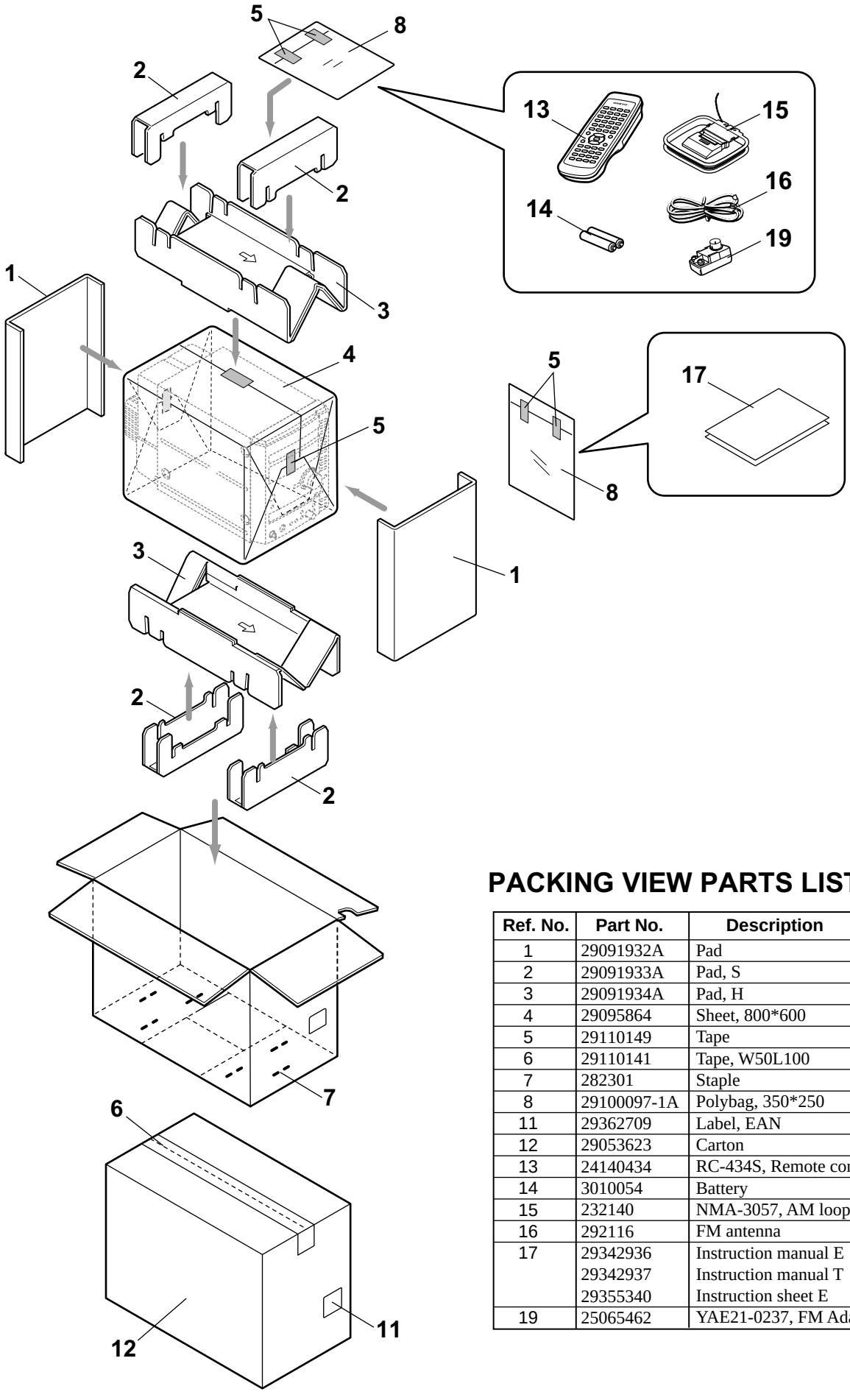
<DT> : Taiwanese Model only
<GT> : Asian Model only

NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

# WIRING VIEW


U10
SELECTOR CIRCUIT
PC BOARD
(NASW-6937)
LINE-1
LINE-2
OUT (REC)
TEPE
IN (PLAY)
OUT (REC)
CD-R
IN (PLAY)
P404A
P201A
P202A
U14
TUNER UNIT
FM 75Ω
ANTENNA
AM
P404B
P250
U7
ACOUSTIC CIRCUIT
PC BOARD(NAAF-6934)
JL501B
U3
POWER AMPLIFIER
CIRCUIT PC BOARD
(NAAF-6930)
JL501A
JL551A
JL901B
JL903A
U4
SPEAKER TERMINAL
PC BOARD
(NAETC-6932)
JL551B
P370A
L
SPEAKERS
R
SUB WOOFER
PRE OUT
IN
DIGITAL
OPTICAL
OUT
JL502B
RI
REMOTE
CONTROL
P911A
P505A
P906A
P911B
P505B
P906B
JL903B
P201B
P912B
P912A
P370B
P202B
U6
MICROPROCESSOR
&
CD CIRCUIT
PC BOARD
(NADG-6933)
U1
POWER SUPPLY CIRCUIT
PC BOARD(NAPS-6928)
U8 DISPLAY CIRCUIT
PC BOARD
(NADIS-6935)
U9 CONTROL
SWITCH
PC BOARD
(NASW-6936)
FL TUBE
P751B
P751A
P752A
P752B
P913B
P913A
P914B
P914A
U12
CD CONNECTOR
PC BOARD
(NAETC-6939)
JL905B
P203A
U5
HEADPHONE
PC BOARD
(NAETC-7034)
JL502A
PHONES
AC INPUT
U2 PRIMARY CIRCUIT
PC BOARD
(NAPS-6929)
P907
P920A
P902A
T901
NPT-1399
Power
Transformer
T902
NPT-1398
Power
Transformer
JL901A
JL905A
P391
P920B
P902B
P101B
P101A
P010
P103
P102
CD MECHA
-NISM
(NCD-170S)
CN102
CN105
MD MECHANISM
(KMK-260BCN)

# PACKING VIEW




## PACKING VIEW PARTS LIST

| Ref. No. | Part No. | Description |
|---|---|---|
| 1 | 29091932A | Pad |
| 2 | 29091933A | Pad, S |
| 3 | 29091934A | Pad, H |
| 4 | 29095864 | Sheet, 800*600 |
| 5 | 29110149 | Tape |
| 6 | 29110141 | Tape, W50L100 |
| 7 | 282301 | Staple |
| 8 | 29100097-1A | Polybag, 350*250 |
| 11 | 29362709 | Label, EAN |
| 12 | 29053623 | Carton |
| 13 | 24140434 | RC-434S, Remote controller |
| 14 | 3010054 | Battery |
| 15 | 232140 | NMA-3057, AM loop antenna |
| 16 | 292116 | FM antenna |
| 17 | 29342936<br>29342937<br>29355340 | Instruction manual E<br>Instruction manual T<br>Instruction sheet E |
| 19 | 25065462 | YAE21-0237, FM Adapter |

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