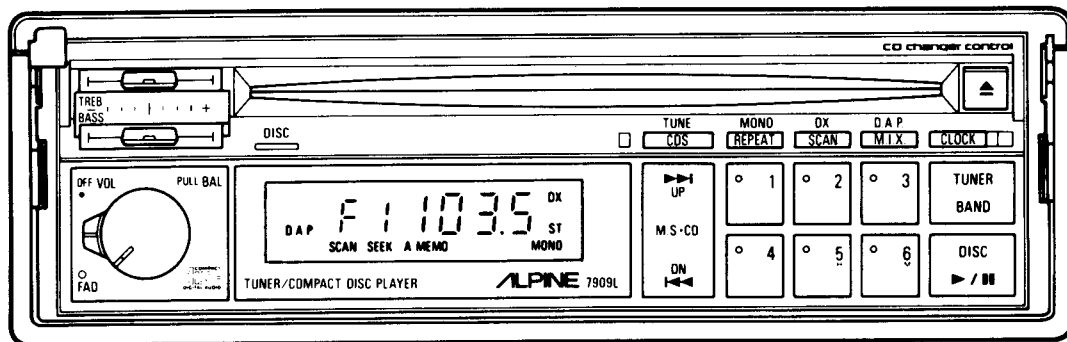


# ALPINE SERVICE MANUAL

## Digital FM/MW/LW Compact Disc Player

- For the CD player mechanism parts (DP22A080) of this model, refer to the DP-S Series•Service Manual (Part No. 68P13315W02).



# 7909L

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# Specifications

## <CD SECTION>

System .....	Optical (Compact Disc System)
Quantizing 16 Bit Number .....	16 Bit Linear System
Channels .....	2 Channels
Distortion (1kHz) .....	0.005%
Frequency Response (1kHz) .....	20Hz : $\pm 1$ dB 100Hz ~ 10kHz : $\pm 1$ dB 20kHz : $\pm 2$ dB
S/N Ratio .....	95dB
Separation .....	80dB (1kHz)
Noise Level .....	0.1mV
Currents (at play) .....	1.2A
Tone Control Effect .....	Bass : 100Hz $\pm 14$ dB $\pm 3$ dB Treble : 10kHz $\pm 13$ dB $\pm 3$ dB

## <FM SECTION>

Intermediate Frequency .....	107 $\pm$ 0.1MHz
Frequency Range .....	87.5 ~ 108MHz
Usable Sensitivity (Stereo at 98.1MHz) .....	17.2dBf
Limiting Sensitivity (at 98.1MHz) .....	14.2 + 3dBf 14.2 - 5dBf
S/N Ratio (Stereo 98.1MHz) .....	48dB
Image Rejection (at 98.1MHz) .....	40dB
IF Rejection (at 90.1MHz) .....	60dB
Distortion (Input 1mV at 98.1MHz) .....	1%
Frequency Response (400Hz) .....	100Hz : 0 $\pm$ 3dB 10kHz : -12 $\pm$ 3dB
Stereo Separation (at 1000Hz) .....	25dB

## <LW SECTION>

Intermediate Frequency .....	450 $\pm$ 5kHz
Frequency Range .....	153 ~ 281kHz
Sensitivity (20dB S/N, at 218kHz) .....	52.2dBf
S/N Ratio (at 218kHz) .....	40dB
Image Rejection (at 272kHz) .....	40dB
IF Rejection (at 218kHz) .....	50dB
Distortion (at 218kHz) .....	2%
Frequency Response (at 400Hz) .....	100Hz : -3 $\pm$ 3dB 4kHz : -12 $\pm$ 6dB

## <MW SECTION>

Intermediate Frequency .....	450 $\pm$ 5kHz
Frequency Range .....	531 ~ 1,602kHz
Sensitivity (20dB S/N, at 999kHz) .....	46.2dBf
S/N Ratio (at 999kHz) .....	44dB
Image Rejection (at 1404kHz) .....	50dB
IF Rejection (at 603kHz) .....	60dB
Distortion (at 999kHz) .....	1%
Frequency Response (400Hz) .....	100Hz : -3 $\pm$ 4dB 4kHz : -12 $\pm$ 6dB



## ERROR INDICATION FOR 5952

INDICATION	CAUSE	SOLUTION
E - 01	Disc-change malfunction.	Consult your Alpine dealer.
E - 02	Disc is in player mechanism.	Press the magazine eject button, and insert an empty magazine.
E - 03 E - 04 E - 05	Disc-change malfunction.	If the code disappears within a few seconds, the unit is OK. If not, consult your Alpine dealer.
E - 06	Disc-change malfunction.	Press the magazine eject button and pull out the magazine. And check no error indication. Try again. If the magazine can not be pulled out, consult your Alpine dealer.
E - 07	Magazine ejection impossible.	Press the magazine eject button. If the magazine does not eject, consult your Alpine dealer.
E - 30	High temperature.	Will disappear when the temperature returns to operation range.
EEEE	Incorrect connection or disconnection of the CD changer.	Check connection between the CD changer and the control unit.
----	No CD magazine in the CD changer.	Insert a CD magazine.
no-2	No CD at No. 2 pocket of the CD magazine.	Insert a CD into the No. 2 pocket of the CD magazine.

## FEATURES

- **FULL FRONT DIN™**
- **CD CHANGER CONTROLS (when used with the Alpine 5952)**
- **QUICK RELEASE BRACKET (Q.R.B.)**  
Alpine's exclusive Q.R.B. design allows for easy removal and insertion of the 7909L while still maintaining the unit's memory. The 7909L can be removed and taken with the owner for theft prevention.
- <**COMPACT DISC PLAYER FEATURES**>
  - **8 TIMES OVERSAMPLING DIGITAL FILTER**
  - **18-BIT, DUAL DIGITAL-TO-ANALOG CONVERTERS**
  - **POWER LOADING/SELF LOADING**  
It gently pulls the partially inserted compact disc into the play position and begins playback.
  - **MUSIC SENSOR UP/DOWN**  
For locating the beginning of the next track (up), or the track currently in playback (down).
  - **M.I.X.**  
When the M.I.X. button is pressed, the microprocessor inside the 7909L will randomly select tracks for playback. After all tracks have been played, the M.I.X. feature will go into Repeat Mode and begin again.
  - **C.D.S. (Compact Disc Straight)**  
Pressing the CDS button bypasses the tone and balance control circuits to play back very clear, natural and dynamic CD sound. This ensures that fewer analog components will contribute to the noise level of the digital-to-analog conversion.
  - **REPEAT**
  - **3-INCH DISCS**  
This unit plays 3-inch compact discs without using an adaptor ring.
  - **DISC SCAN**  
Locates the beginning of each track and plays 10 seconds.
- <**RADIO FEATURES**>
  - **T-10 II TUNER**  
Alpine's premier tuner utilizes a number of innovations to ensure stable, noise-free FM reception in both strong and weak signal areas.
  - **A. MEMO (Auto Memory)**  
In the Auto Memory mode, the 6 strongest FM or MW/LW stations will be stored automatically.
  - **D.A.P. (Direct Access Preset)**  
D.A.P. allows the storage of MW, LW and FM presets on the same band, eliminating the need to press the TUNER/BAND button. Up to 6 FM and MW, LW stations can be mixed in the D.A.P. Band.
  - **DUAL PRE-AMP OUTPUTS**  
This allows you to easily expand your system by providing Front and Rear Preamp Outputs and a Pre-Amp Fader.
  - **LITETOUCH™ 30-STATION PRESETS**  
6 FM1, 6 FM2, 6 MW, 6 LW, 6 D.A.P.

## CONTROLS AND INDICATORS

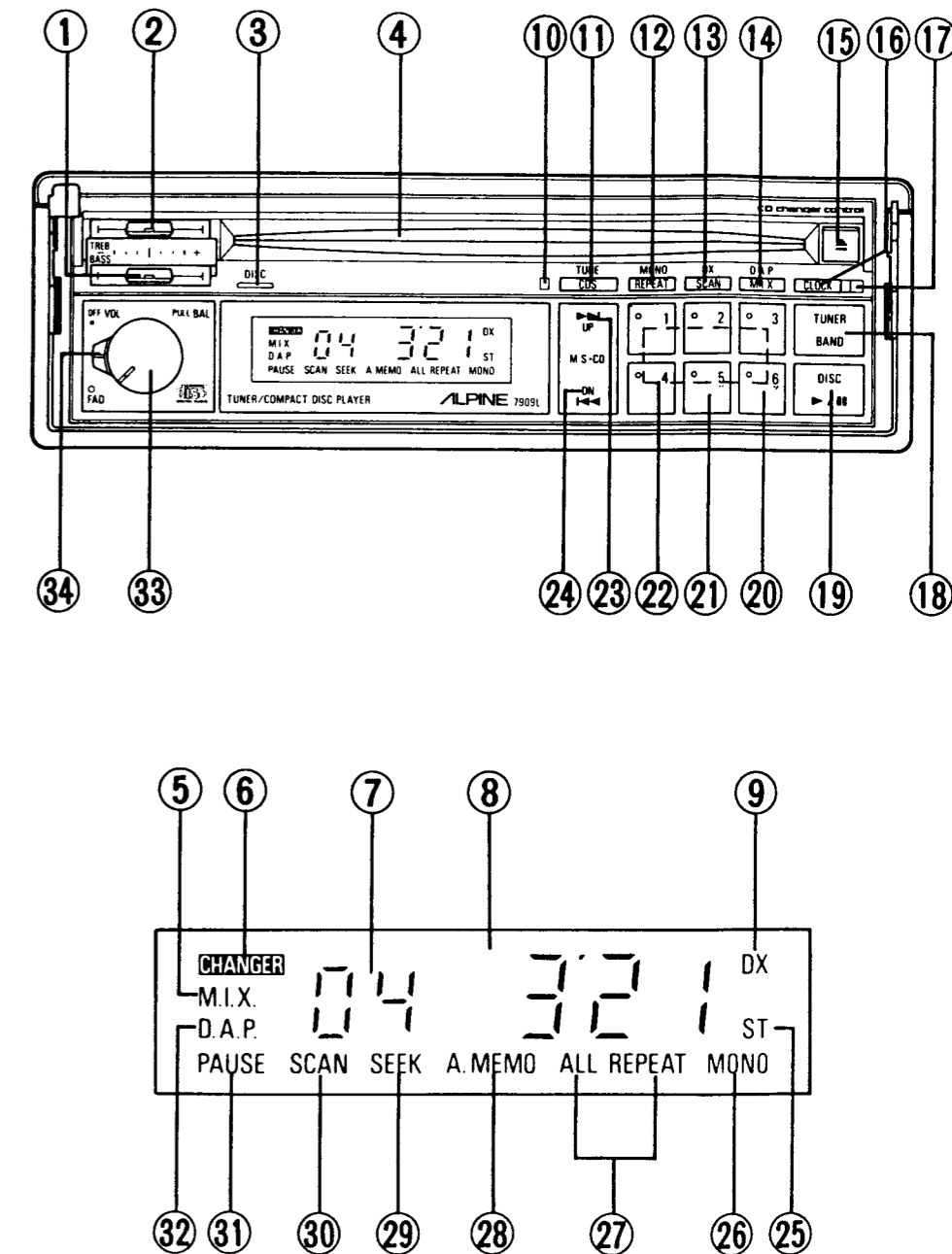


Fig. 1/Abb. 1

## FEATURES

### FULL FRONT DIN™

#### 3-D CHANGER CONTROLS (when used with the Alpine 5952)

#### QUICK RELEASE BRACKET (Q.R.B.)

Alpine's exclusive Q.R.B. design allows for easy removal and insertion of the 7909L while still maintaining the unit's memory. The 7909L can be removed and taken with the owner for theft prevention.

#### COMPACT DISC PLAYER FEATURES>

##### 24-BIT TIMES OVERSAMPLING DIGITAL FILTER

##### 16-BIT, DUAL DIGITAL-TO-ANALOG CONVERTERS

##### SOFT LOADING/SELF LOADING

Gently pulls the partially inserted compact disc into the play position and begins playback.

##### MUSIC SENSOR UP/DOWN

For locating the beginning of the next track (up), or the track currently in playback (down).

##### M.I.X.

When the M.I.X. button is pressed, the microprocessor inside the 7909L will randomly select tracks for playback. After all tracks have been played, the M.I.X. feature will go into Repeat Mode and begin again.

##### D.S. (Compact Disc Straight)

Pressing the CDS button bypasses the tone and balance control circuits to play back every clear, natural and dynamic CD sound. This ensures that fewer analog components will contribute to the noise level of the digital-to-analog conversion.

##### REPEAT

##### 3-INCH DISCS

This unit plays 3-inch compact discs without using an adaptor ring.

##### DISC SCAN

Locates the beginning of each track and plays 10 seconds.

##### RADIO FEATURES>

##### 10 II TUNER

Alpine's premier tuner utilizes a number of innovations to ensure stable, noise-free AM reception in both strong and weak signal areas.

##### MEMO (Auto Memory)

In the Auto Memory mode, the 6 strongest FM or MW/LW stations will be stored automatically.

##### A.P. (Direct Access Preset)

A.P. allows the storage of MW, LW and FM presets on the same band, eliminating the need to press the TUNER/BAND button. Up to 6 FM and MW, LW stations can be stored in the D.A.P. Band.

##### DUAL PRE-AMP OUTPUTS

This allows you to easily expand your system by providing Front and Rear Preamp outputs and a Pre-Amp Fader.

##### 16 TOUCH™ 30-STATION PRESETS

6 FM1, 6 FM2, 6 MW, 6 LW, 6 D.A.P.

## CONTROLS AND INDICATORS

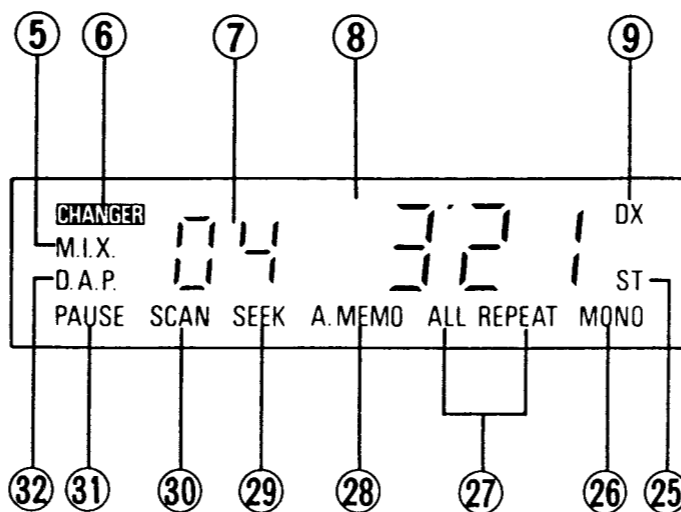
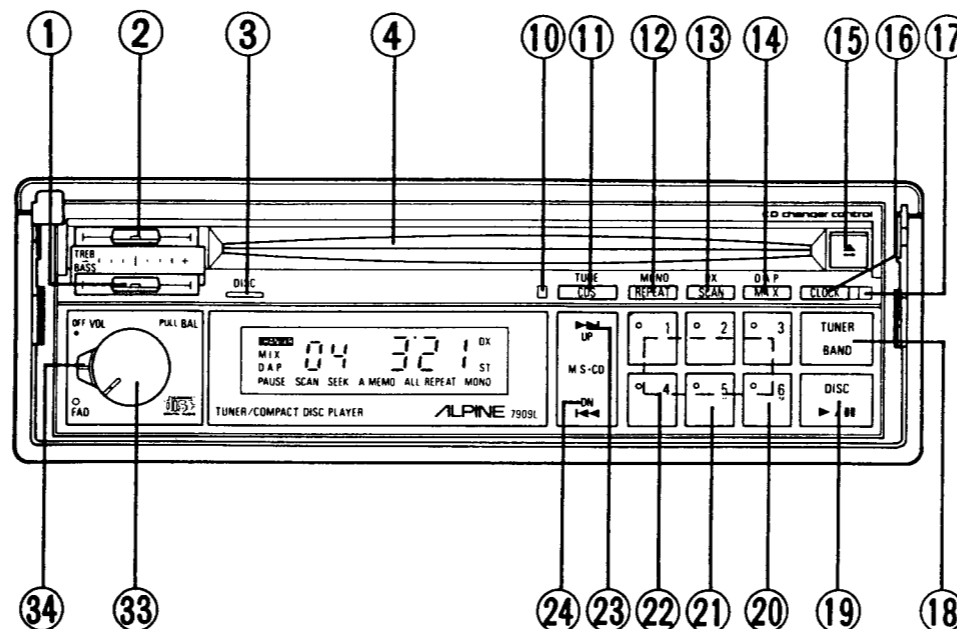


Fig. 1/Abb. 1

## CONTROLS AND INDICATORS

- ① BASS Control
- ② TREBLE Control
- ③ DISC Indicator
- ④ Disc Slot
- ⑤ M.I.X. Indicator
- ⑥ CHANGER Indicator
- ⑦ Band Indicator/Disc Track No. Indicator
- ⑧ Digital Indicator/Disc Elapsed Time Indicator
- ⑨ DX (Distance) Indicator
- ⑩ CDS Indicator
- ⑪ TUNE Button/CDS Button
- ⑫ MONO Button/REPEAT Button
- ⑬ DX (Local/Distance) Button/SCAN Button
- ⑭ D.A.P. Button/M.I.X. Button
- ⑮ Eject (Reload) Button
- ⑯ CLOCK Button
- ⑰ Reset Switch
- ⑱ TUNER/BAND Button
- ⑲ DISC (Play/Pause) Button (▶/||)
- ⑳ Minute Button
- ㉑ Hour Button
- ㉒ Station Preset and Direct Disc Access Buttons/Indicators
- ㉓ M.S./CD UP (▶▶) Button
- ㉔ M.S./CD Down (◀◀) Button
- ㉕ STereo Indicator
- ㉖ MONO Indicator
- ㉗ ALL/REPEAT Indicators
- ㉘ A. MEMO Indicator
- ㉙ SEEK Indicator
- ㉚ SCAN Indicator
- ㉛ PAUSE Indicator
- ㉜ D.A.P. Indicator
- ㉝ Power Switch/VOLUME Control/BALANCE Control (Pull)
- ㉞ FADER Control

## CONNECTIONS

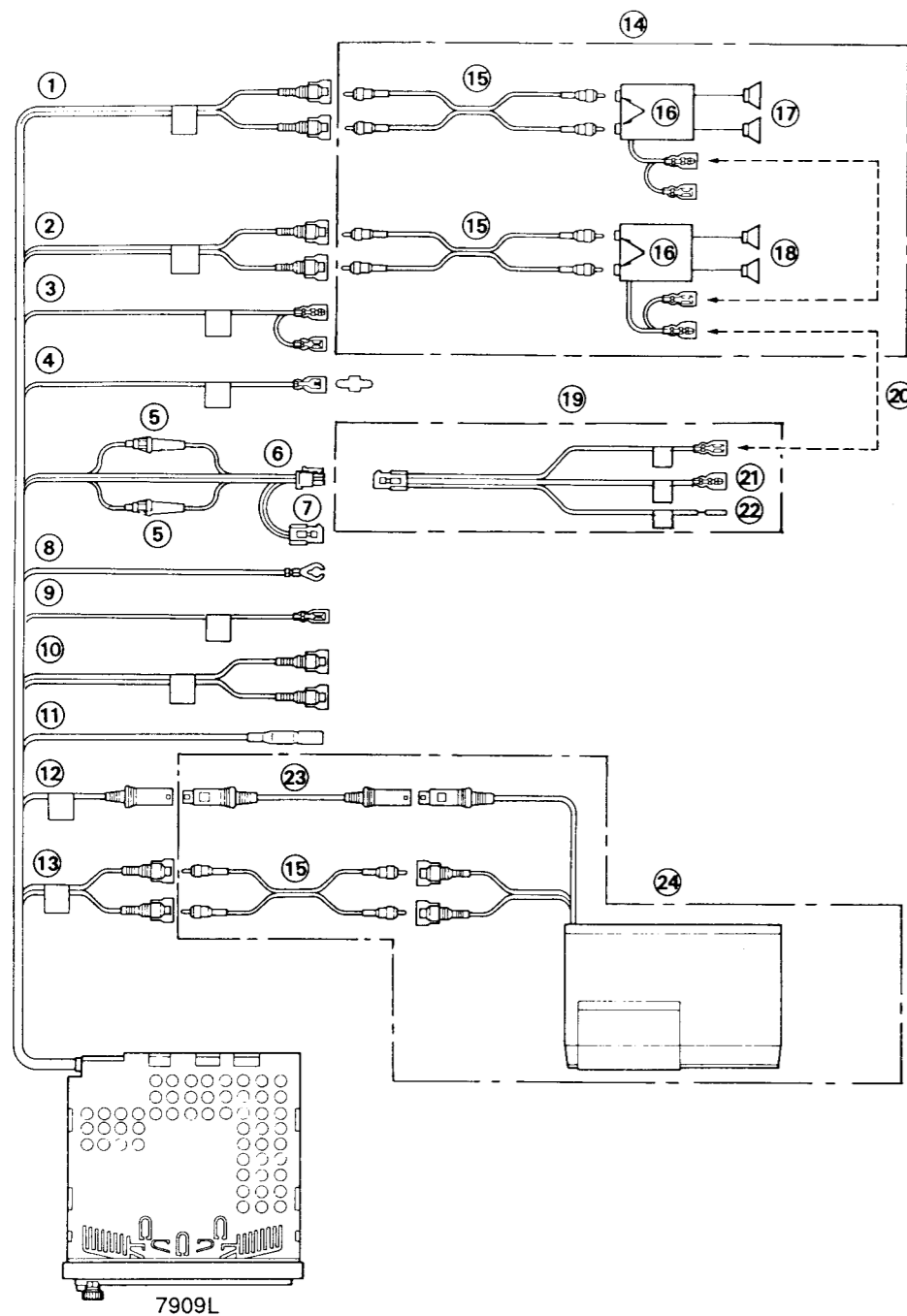


Fig. 2/Abb. 2

## CONNECTIONS

This unit is designed for 12-volt DC negative ground operation. Check to be sure that your vehicle has this type of system before connecting the power cable.

- ① **Front Output RCA Connectors (Labeled LINE OUT FRONT)**  
RED is Right and WHITE is Left.
- ② **Rear Output RCA Connectors (Labeled LINE OUT REAR)**  
RED is Right and WHITE is Left.
- ③ **Dimmer Control Lead (WHITE/BLUE)**  
This lead is for connection to a rheostat such as the dashboard light dimmer in your vehicle. Applying (+)12V to this lead causes the maximum dimming. Varying the voltage controls the brightness of the display. This allows you to dim the unit's display with the dashboard lights.
- ④ **Power Antenna Lead (BLUE)**  
When loaded with a power antenna, connect to the +B terminal of the power antenna.
- ⑤ **Fuse Holder (3A)**
- ⑥ **Main Power Connector**  
Connect to Power Wiring Harness (item 19 below).
- ⑦ **Aux. Power Connector**  
Connect this to the matching connector on another Alpine source unit or an Alpine adaptor.
- ⑧ **Ground Lead (BLACK)**  
Connect this lead to a good chassis ground on the vehicle. Make sure the connection is made to bare metal and is securely fastened using the sheet metal screw provided.
- ⑨ **Audio Interrupt In Lead (PINK/WHITE)**  
Applying (+)12V to this lead mutes the audio output. This works well when connecting the 7909L with a Cellular Phone equipped with Audio Interface output. Removing (+)12V from this lead deactivates the muting circuit.
- ⑩ **Input RCA Connectors (Labeled LINE IN)**  
RED is Right and WHITE is left.
- ⑪ **Antenna Receptacle**
- ⑫ **DIN Connector**  
Connect this to 5952 CD changer only for control.
- ⑬ **Input RCA Connectors (Labeled TO CHANGER)**  
RED is Right and WHITE is Left.

## CONNECTIONS

- ⑭ **Option**
- ⑮ **RCA Extension Cable**
- ⑯ **RCA Input of Amplifier**
- ⑰ **Front Speakers (Right/Left)**
- ⑱ **Rear Speakers (Right/Left)**
- ⑲ **Power Wiring Harness**  
Connect the BLUE/WHITE, RED, and YELLOW leads.
- ⑳ **Remote Turn-On Lead (Labeled REMOTE ON) (BLUE/WHITE)**  
Connect this lead to the remote turn-on lead of your amplifier or signal processor.
- ㉑ **Switched Power Lead (Labeled IGNITION) (RED)**  
Connect this lead to an open terminal on the vehicle's fuse box or another unswitched power source which provides (+)12V only when the ignition is turned on or in accessory position.

### CAUTION:

You must be very careful when connecting wires to the vehicle's electrical system. Be sure you do not interface leads that are being used for factory components in your vehicle (like an on-board computer). When making connections at the fuse box, be sure there is an appropriate value fuse on the circuit you plan to use. Failure to do so may result in damage to the unit and/or the vehicle.

- ㉒ **Battery Lead (YELLOW)**  
Connect this lead to the positive (+) post of the vehicle's battery.
- ㉓ **Extension DIN Connector**
- ㉔ **5952 (Sold separately)**

## CONNECTIONS

This unit is designed for 12-volt DC negative ground operation. Check to be sure that your vehicle has this type of system before connecting the power cable.

- ① **Front Output RCA Connectors (Labeled LINE OUT FRONT)**  
RED is Right and WHITE is Left.
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RED is Right and WHITE is Left.
- ③ **Dimmer Control Lead (WHITE/BLUE)**  
This lead is for connection to a rheostat such as the dashboard light dimmer in your vehicle. Applying (+)12V to this lead causes the maximum dimming. Varying the voltage controls the brightness of the display. This allows you to dim the unit's display with the dashboard lights.
- ④ **Power Antenna Lead (BLUE)**  
When loaded with a power antenna, connect to the +B terminal of the power antenna.
- ⑤ **Fuse Holder (3A)**
- ⑥ **Main Power Connector**  
Connect to Power Wiring Harness (item 19 below).
- ⑦ **Aux. Power Connector**  
Connect this to the matching connector on another Alpine source unit or an Alpine adaptor.
- ⑧ **Ground Lead (BLACK)**  
Connect this lead to a good chassis ground on the vehicle. Make sure the connection is made to bare metal and is securely fastened using the sheet metal screw provided.
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Connect this to 5952 CD changer only for control.
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RED is Right and WHITE is Left.

## CONNECTIONS

- ⑭ **Option**
- ⑮ **RCA Extension Cable**
- ⑯ **RCA Input of Amplifier**
- ⑰ **Front Speakers (Right/Left)**
- ⑱ **Rear Speakers (Right/Left)**
- ⑲ **Power Wiring Harness**  
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Connect this lead to the remote turn-on lead of your amplifier or signal processor.
- ㉑ **Switched Power Lead (Labeled IGNITION) (RED)**  
Connect this lead to an open terminal on the vehicle's fuse box or another unused power source which provides (+)12V only when the ignition is turned on or in the accessory position.

### CAUTION:

You must be very careful when connecting wires to the vehicle's electrical system. Be sure you do not interface leads that are being used for factory components in the vehicle (like an on-board computer). When making connections at the fuse box, make sure there is an appropriate value fuse on the circuit you plan to use. Failure to do so may result in damage to the unit and/or the vehicle.

- ㉒ **Battery Lead (YELLOW)**  
Connect this lead to the positive (+) post of the vehicle's battery.
- ㉓ **Extension DIN Connector**
- ㉔ **5952 (Sold separately)**

## OPERATION

### ● BASIC OPERATION

#### Initial System Set-up

When operating for the very first time after installation or replacement of the car battery, press the Reset switch ⑰ with a mechanical pencil or other pointed object.

#### Power Switching and Volume Control ㉓

Rotating the Power switch ㉓ clockwise turns power ON and continuously increases the volume. Rotating the control counterclockwise will continuously decrease the volume, and turn the Power OFF.

#### NOTE:

The noise level on compact discs is much lower than on analog-type records or tapes; therefore, when inserting a disc, keep the volume control turned fully counterclockwise, then adjust volume by gradually turning the control clockwise once playback begins. Do not turn clockwise abruptly as the excessive power could damage the speakers.

#### Balance Control ㉓

Pull on the VOLume control ㉓ and rotate to balance between left and right speakers.

#### Fader Control ㉔

Rotate the FADer control ㉔ for your desired front to rear volume balance.

#### Separate Bass and Treble Controls (①, ②)

Slide these controls to the right to increase, and to the left to decrease the level of Bass or Treble.

#### Function Switching

1. Tuner Mode  
With no disc loaded, the unit is normally in the tuner mode. Press the TUNER button ⑰ to switch from CD to Radio.
2. CD Mode  
When a disc is loaded, the unit automatically goes into the CD mode. Press the DISC (▶/||) button ⑱ to switch from Radio to CD.

#### Cautions During CD Playback

Playing a disc while driving on a very bumpy road may result in skips but this will not scratch the disc or damage the player.

#### NOTES:

1. Your player accepts only one disc at a time for playback. Do not attempt to load more than one disc.
2. Make sure the label side is facing up, when you insert the disc. Your player will automatically eject any disc that is inserted incorrectly. If the player continues to eject a correctly inserted disc, push the Reset switch ⑰ with a pointed object such as a mechanical pencil.



## OPERATION

3. You can play 3-inch CDs in this player without using an adaptor ring.
4. Make sure your discs are labeled as shown below:



### <CLOCK OPERATION>

1. Turn the power off or press the CLOCK button (16) for more than 2 seconds during the radio or CD play mode to display the time.
2. To adjust the "Hour," press and hold the CLOCK button (16) and press the Hour button (21) to advance the hours.
3. To adjust the "Minute," press and hold the CLOCK button (16) and press the Minute button (20) to advance the minutes.

### <RADIO OPERATION>

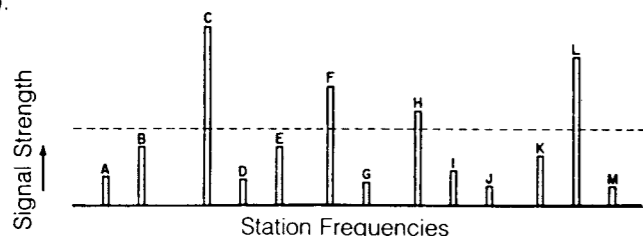
Turn the power on and set the unit to the radio mode.

#### Tuning Band Selection

Press the BAND button (18) to select the desired tuning band. The Band indicator (7) shows your selection.

#### Local/Distance (DX) Seek Sensitivity for FM, MW and LW

You can select the radio seek sensitivity, local or distance (DX), by pressing the DX (distance) button (13). In the distance mode, with DX indication (9), the radio tunes in both strong and weak stations (all stations from A to M in the illustration). In the local mode, with no DX indication (9), the radio tunes in only strong stations (stations C, F, H and L in the illustration).



#### FM Stereo/Mono Switching

You can select the Stereo/Monaural – the Auto Switching or Monaural mode for FM reception by pressing the MONO button (12). In the Auto Switching mode, you can receive stereo broadcasts in Stereo and monaural broadcasts in MONO. The STereo (25) or MONO (26) indicator shows your reception mode. In the monaural only mode, you will always receive the broadcast in monaural, even if the broadcast is in stereo. The Monaural only mode quiets the noisy stereo signal of weaker broadcasts. The STereo indicator will not appear while the monaural only mode is selected.

## OPERATION

#### Manual Tuning

1. Press the TUNE button (11) until the SEEK (29) and A. MEMO (28) indicators disappear in the display.
2. To select the tuning band, press the BAND button (18). The Band indicator (7) shows your selection.
3. To tune to higher frequencies, press the M.S./CD button on the top (UP (▶▶)) (23). To tune to lower frequencies, press this same button on the bottom (DN (◀◀)) (24).

#### Auto SEEK Tuning

1. Press the TUNE button (11) until the SEEK indicator (29) appears in the display.
2. Select the tuning band with the BAND button (18).
3. Press the UP (▶▶) (23) or Down (◀◀) (24) button. The unit automatically tunes to the next higher or lower frequency and locks on that station.

#### Preset Memory Programming

Follow the instructions below to program stations into preset memory:

1. Select the tuning band (FM1, FM2, MW or LW) with the BAND button (18).
2. Tune in your desired station using Manual or Auto SEEK tuning.
3. Press and hold any Preset button (22) for more than two seconds. The tuned frequency in the Digital Display (8) will begin to blink. Press that button a second time while the indication is blinking (within five seconds).
4. Your selected station will be placed into that preset location and the indicator will light.

#### NOTE:

If a preset memory has already been programmed in that location, it will be cleared and the new station will replace in the preset memory.

#### Auto MEMORY Preset

1. Press the TUNE button (11) to light up the A. MEMO indicator (28).
2. Select the desired tuning band (FM1, FM2, MW or LW) with the BAND button (18).
3. Press the UP (23) or DN (24) button. The tuner will automatically seek the six strongest stations in each band and memorize them in order of the signal strength. These stations are automatically placed in the preset memory with the strongest station in Preset No. 1 and the 6th strongest station in Preset No. 6. When seeking stations, the tuner first seeks in the local tuning mode. If less than 6 stations are memorized, the tuner seeks again in the distance (DX) mode.
4. After finishing the Auto Memory Preset, the tuner goes to the station placed in preset memory No. 1. If no stations are memorized, it returns to the original station you were listening to before the Auto Memory Preset procedure began. When the auto memory presetting is completed, the A. MEMO indicator (28) will disappear and the SEEK indicator (29) will appear.

#### Preset Tuning

After the preset stations have been memorized, you can tune in your desired station with just a touch of a button.

1. Select the tuning band (FM1, FM2, MW or LW) with the BAND button (18).

## OPERATION

2. Press one of the Preset buttons (22) and the number of that preset will illuminate in the preset address display. The tuner will be tuned to the frequency programmed in that preset location.

#### D.A.P. (Direct Access Preset)

This feature allows the storage of FM, MW and LW presets on the same band. Press the D.A.P. button (14) to light up the D.A.P. indicator (32). To program stations into the D.A.P. band, follow steps 1-3 as described in the Preset Memory Programming section on page 17.

#### Accessing the D.A.P. Presets

1. Press the D.A.P. button (14). The D.A.P. indicator (32) will illuminate in the display.
2. Press one of the Preset buttons (22) and the indicator in that button will light.
3. The frequency of the station placed in the selected D.A.P. location will appear in the display.

### <CD OPERATION>

If the unit is not in the CD mode, press the DISC button (19).

#### Load

1. Insert a disc into the Disc Slot (4). When the disc is halfway in, the power loading system will pull the disc in and guide it into the play position.
2. If the disc is left at least halfway in, press the DISC button (19) or press the disc edge lightly to move it forward. "LOAD" will show in the display (8) while loading.
3. When the unit is in the CD mode, the Digital Display shows "00 0'00" for a second while the data on the disc is read.
4. When a disc is loaded while the unit is in the tuner mode, it will automatically switch to the CD mode.

#### Disk Indicator (3)

The indicator lights red when a 3-inch disk is inserted, green when a 5-inch disk is inserted.

#### Disc Eject and Reload

Press the EJECT button (15). The Digital Display (8) will show "EJEC" for a second, then the disc will come halfway out. If a 5-inch disc is left in this position for more than 15 seconds, the self loading system will be automatically actuated and the disc will be reloaded into the mechanism and the player will be set to the pause mode. Press the DISC button (19) to resume playback. When using 3-inch discs, the disc will remain ejected until it is pushed back in.

#### Pause

Press the DISC button (19) to hold playback temporarily. The playback stops, but the disc remains inside the player. To resume playback, press the DISC button (19) again.

#### Music Sensor (Skip)

This feature allows you to access the beginning of your musical track selection simply and quickly. It is functional in the play or pause mode. The display (7) shows the track number you have selected.

## OPERATION

### Manual Tuning

Press the TUNE button (11) until the SEEK (29) and A. MEMO (28) indicators disappear in the display.

To select the tuning band, press the BAND button (18). The Band indicator (7) shows your selection.

To tune to higher frequencies, press the M.S./CD button on the top (UP ►►) (23). To tune to lower frequencies, press this same button on the bottom (DN ◄◄) (24).

### SEEK Tuning

Press the TUNE button (11) until the SEEK indicator (29) appears in the display.

Select the tuning band with the BAND button (18).

Press the UP (►►) (23) or Down (◄◄) (24) button. The unit automatically tunes to the next higher or lower frequency and locks on that station.

### Preset Memory Programming

Follow the instructions below to program stations into preset memory:

1. Select the tuning band (FM1, FM2, MW or LW) with the BAND button (18).

2. Tune in your desired station using Manual or Auto SEEK tuning.

3. Press and hold any Preset button (22) for more than two seconds. The tuned frequency in the Digital Display (8) will begin to blink. Press that button a second time while the indication is blinking (within five seconds).

4. Your selected station will be placed into that preset location and the indicator will illuminate.

5. If a preset memory has already been programmed in that location, it will be cleared and the new station will replace in the preset memory.

### Auto Memory Preset

Press the TUNE button (11) to light up the A. MEMO indicator (28).

Select the desired tuning band (FM1, FM2, MW or LW) with the BAND button (18). Press the UP (►►) (23) or DN (◄◄) (24) button. The tuner will automatically seek the six strongest stations in each band and memorize them in order of the signal strength. These stations are automatically placed in the preset memory with the strongest station in Preset No. 1 and the 6th strongest station in Preset No. 6. When seeking stations, the tuner first seeks in the local tuning mode. If less than 6 stations are memorized, the tuner seeks again in the distance (DX) mode.

After finishing the Auto Memory Preset, the tuner goes to the station placed in preset memory No. 1. If no stations are memorized, it returns to the original station you were listening to before the Auto Memory Preset procedure began. When the auto memory presetting is completed, the A. MEMO indicator (28) will disappear and the SEEK indicator (29) will appear.

6. After finishing the Auto Memory Preset, the tuner goes to the station placed in preset memory No. 1. If no stations are memorized, it returns to the original station you were listening to before the Auto Memory Preset procedure began. When the auto memory presetting is completed, the A. MEMO indicator (28) will disappear and the SEEK indicator (29) will appear.

### Direct Tuning

When the preset stations have been memorized, you can tune in your desired station with a touch of a button.

Select the tuning band (FM1, FM2, MW or LW) with the BAND button (18).

## OPERATION

- Press one of the Preset buttons (22) and the number of that preset will illuminate in the preset address display. The tuner will be tuned to the frequency programmed in that preset location.

### D.A.P. (Direct Access Preset)

This feature allows the storage of FM, MW and LW presets on the same band. Press the D.A.P. button (14) to light up the D.A.P. indicator (32). To program stations into the D.A.P. band, follow steps 1-3 as described in the Preset Memory Programming section on page 17.

### Accessing the D.A.P. Presets

- Press the D.A.P. button (14). The D.A.P. indicator (32) will illuminate in the display.
- Press one of the Preset buttons (22) and the indicator in that button will light.
- The frequency of the station placed in the selected D.A.P. location will appear in the display.

### <CD OPERATION>

If the unit is not in the CD mode, press the DISC button (19).

### Load

- Insert a disc into the Disc Slot (4). When the disc is halfway in, the power loading system will pull the disc in and guide it into the play position.
- If the disc is left at least halfway in, press the DISC button (19) or press the disc edge lightly to move it forward. "LOAD" will show in the display (8) while loading.
- When the unit is in the CD mode, the Digital Display shows "00 0'00" for a second while the data on the disc is read.
- When a disc is loaded while the unit is in the tuner mode, it will automatically switch to the CD mode.

### Disk Indicator (3)

The indicator lights red when a 3-inch disk is inserted, green when a 5-inch disk is inserted.

### Disc Eject and Reload

Press the EJECT button (15). The Digital Display (8) will show "EJEC" for a second, then the disc will come halfway out. If a 5-inch disc is left in this position for more than 15 seconds, the self loading system will be automatically actuated and the disc will be reloaded into the mechanism and the player will be set to the pause mode. Press the DISC button (19) to resume playback. When using 3-inch discs, the disc will remain ejected until it is pushed back in.

### Pause

Press the DISC button (19) to hold playback temporarily. The playback stops, but the disc remains inside the player. To resume playback, press the DISC button (19) again.

### Music Sensor (Skip)

This feature allows you to access the beginning of your musical track selection simply and quickly. It is functional in the play or pause mode. The display (7) shows the track number you have selected.

## OPERATION

To advance to the next track on the disc, press the ►► side of the M.S. button (23).

- Playback stops, the pickup moves up to the beginning of the next track. That track number appears in the display (7).
- Playback begins immediately.
- If you wish to access a track further ahead on the disc, continue pressing the ►► side of the M.S. button (23) until you reach the track of your choice.

To replay the track that is currently playing, press the ◄◄ side of the M.S. button (24).

- Playback stops, the pickup moves back to the beginning of the current track. The track number in the display (7) remains the same.
- Playback begins immediately from the beginning of the track.
- If you wish to access a track further towards the beginning of the disc, continue pressing the ◄◄ side of the M.S. button (24) until you reach the track of your choice.

### Fast Forward/Fast Backward

The Fast Forward/Fast Backward feature works in the play mode.

- Press either the M.S. UP (►►) (23) or the M.S. DN (◄◄) (24) button and hold it for more than one second.
- To move the pickup forward rapidly, hold down the M.S. UP (►►) button (23).
- To move the pickup backward rapidly, hold down the M.S. DN (◄◄) button (24).
- When the pickup reaches the end of the disc, it automatically returns to the beginning. Playback will then start from the beginning of the disc.

### Repeat (One)

This feature allows you to continuously play back a single track.

- Press the REPEAT button (12). The REPEAT indicator (27) shows in the display.
- The musical track shown in the display will be played back repeatedly.
- To defeat the Repeat function, press the REPEAT button (12) a second time.

### Scan

Press the SCAN button (13) and the player will play back the first 10 seconds of each track in succession. This function is useful in searching for a specific program ahead on a disc. Press the SCAN button (13) a second time to deactivate this function.

### M.I.X. (Random Play)

Depress the M.I.X. button (14) while in the CD mode and the musical tracks will be played back in a random sequence generated by the microprocessor. After all the tracks on the disc have been played back once, the player will begin a new random sequence.

### CDS (CD Straight)

Press the CDS button (11) to activate the CDS mode. The input signal bypasses the tone and balance circuits so that very natural, clear and dynamic CD sound will be produced.

## OPERATION

### <CD CHANGER OPERATION>

The following instructions apply only to systems that incorporate the Alpine 5952 CD changer (option) with the 7909L.

Turn the unit on and access the CD Changer mode by pressing the DISC button ⑱ for more than two seconds. The CHANGER indicator ⑥ shows in the display.

#### Initial System Turn-On

When operating the system for the first time after installation or after the vehicle's battery has been disconnected and reconnected, press the Reset switch ⑰ with a mechanical pencil or other pointed object.

#### Direct Disc Access

1. Press one of the Direct Disc Access buttons ⑳ to select from discs 1 - 6. The disc and track numbers will appear in the display.
2. Press the M.S./CD UP (▶▶) ㉓ or DN (◀◀) ㉔ button for musical track selection.

#### Repeat (One/All)

This feature allows you to continuously repeat a single track or one entire disc.

#### To Repeat a Single Track

1. Locate the music track of your choice using the M.S./CD UP (▶▶) ㉓ or DN (◀◀) ㉔ button.
2. Press the REPEAT button ⑫. The REPEAT indicator ㉗ will illuminate. The music track will be played back repeatedly.
3. To stop repeat play, press the REPEAT button ⑫ twice. The indicator switches from "REPEAT" to "ALL REPEAT" and the illumination will be off.

#### To Repeat an Entire Disc

1. While playing a disc, press the REPEAT button ⑫ until the "ALL REPEAT" indicator ㉗ is displayed.
2. The disc will be played back repeatedly.
3. To stop repeat play, press the REPEAT button ⑫ once. The indicator illumination will be off.

For other operations of the 5952 Changer, refer to the CD OPERATION section on pages 18 through 19.

## PROPER CARE OF YOUR DISC

#### ● Proper Handling

Handle your disc as shown. Do not drop the disc while handling. Hold the disc so you will not leave fingerprints on the surface. If the surface is scratched, it may cause the pickup to skip signal tracks. Do not affix tape, paper, or gummed labels on the disc. Do not write on the disc.



#### ● Keep Your Discs Clean

Fingerprints, dust, or soil on the surface could cause the pickup to skip signal tracks. For routine cleaning, wipe the playing surface with a clean, soft cloth from the center of the disc to the outer edge. If the surface is heavily soiled, dampen a clean soft cloth in a solution of mild neutral detergent before cleaning the disc (Fig. A).

#### ● Damaged Disc

Do not attempt to play cracked, warped, or otherwise damaged discs. Playing a bad disc could severely damage the playback mechanism.

#### ● Storage

When not in use, place your discs in their individual case and store them in a cool place away from the sun, heat, and dust.

- Do not grip or pull out the disc while the disc is being pulled back into the player by automatic Reloading mechanism (Fig. B).

- Do not pull the unit out from the dash immediately after a disc is inserted or the Eject Button has been pressed. If the unit is pulled out before an operation is completed, the disc will be unstable in the unit and may be damaged. Do not attempt to insert a disc into the unit when the unit is out of the dash or the power is off.



Fig. A

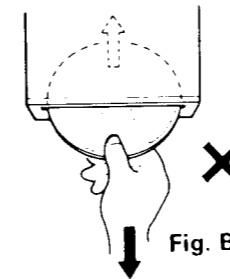


Fig. B

## IMPORTANT NOTICE

This compact disc player has been type tested and found to comply with the limits of Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules. This equipment generates and uses radio frequency energy, and it may be installed and used properly in accordance with the manufacturer's instructions.

## PRECAUTIONS

- When replacing a fuse, make sure the replacement fuse has the same amperage rating (3A) as shown on the fuse holder. If the fuse continues to blow, carefully check all electrical connections for short circuits. It is also a good idea to check the voltage regulator. Do not attempt to repair or service the unit yourself. Return the unit to your nearest authorized Alpine Service Station for servicing.
- When your car is parked for a long period of time during the summer or winter, the temperature inside the car fluctuates greatly. Be sure the temperature inside the vehicle is between +60°C (+140°F) and -10°C (+14°F) before attempting to play a disc. When the temperature is over +60°C (+140°F), the protection circuit functions to stop the CD player, and " - - H" is displayed.
- When playing 3-inch CDs in the 7909L, do not use an adaptor ring. Adaptor rings may become stuck inside the player and damage the mechanism.
- Be sure to eject the disc from the player before removing the unit from the bracket. The disc must be ejected to activate the EJECT AUTO-LOCK feature. This will prevent the laser mechanism while the unit is being transported.

#### Cautions During Playback

Playing a disc while driving on a very bumpy road may result in skips but this will not scratch the disc or damage the player.

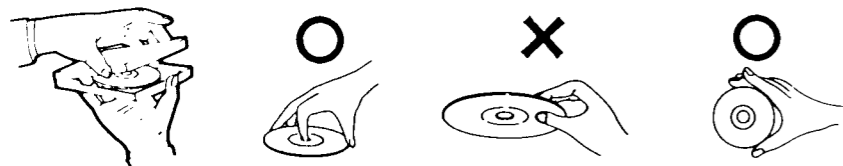
#### NOTES:

1. Your player accepts only one disc at a time for playback. Do not attempt to insert more than one disc.
2. Make sure the label side is facing up when you insert the disc. Your player will automatically eject any disc that is inserted incorrectly. If the player continues to eject a correctly inserted disc, push the Reset switch with a pointed object such as a ballpoint pen.
3. To use 3-inch CDs in this player, you need not to use the 3-inch CD adaptor ring.

## PROPER CARE OF YOUR DISC

### ● Proper Handling

Handle your disc as shown. Do not drop the disc while handling. Hold the disc so you will not leave fingerprints on the surface. If the surface is scratched, it may cause the pickup to skip signal tracks. Do not affix tape, paper, or gummed labels on the disc. Do not write on the disc.



### ● Keep Your Discs Clean

Fingerprints, dust, or soil on the surface could cause the pickup to skip signal tracks. For routine cleaning, wipe the playing surface with a clean, soft cloth from the center of the disc to the outer edge. If the surface is heavily soiled, dampen a clean soft cloth in a solution of mild neutral detergent before cleaning the disc (Fig. A).

### ● Damaged Disc

Do not attempt to play cracked, warped, or otherwise damaged discs. Playing a bad disc could severely damage the playback mechanism.

### ● Storage

When not in use, place your discs in their individual case and store them in a cool place away from the sun, heat, and dust.

Do not grip or pull out the disc while the disc is being pulled back into the player by automatic Reloading mechanism (Fig. B).

Do not pull the unit out from the dash immediately after a disc is inserted or the Eject Button has been pressed. If the unit is pulled out before an operation is completed, the disc will be unstable in the unit and may be damaged.

Do not attempt to insert a disc into the unit when the unit is out of the dash or the power is off.



Fig. A

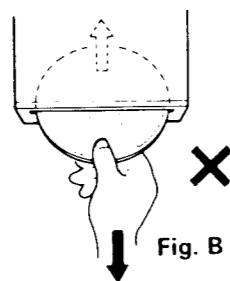


Fig. B

## IMPORTANT NOTICE

This compact disc player has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules. This equipment generates and uses radio frequency energy, and it must be installed and used properly in accordance with the manufacturer's instructions.

## PRECAUTIONS

- When replacing a fuse, make sure the replacement fuse has the same amperage rating (3A) as shown on the fuse holder. If the fuse continues to blow, carefully check all electrical connections for short circuits. It is also a good idea to check the car's voltage regulator. Do not attempt to repair or service the unit yourself. Return the unit to your nearest authorized Alpine Service Station for servicing.
- When your car is parked for a long period of time during the summer or winter, the temperature inside the car fluctuates greatly. Be sure the temperature inside the vehicle is between +60°C (+140°F) and -10°C (+14°F) before attempting to play a disc. When the temperature is over +60°C (+140°F), the protection circuit functions to stop the CD player, and "- - H" is displayed.
- When playing 3-inch CDs in the 7909L, do not use an adaptor ring. Adaptor rings may become stuck inside the player and damage the mechanism.
- Be sure to eject the disc from the player before removing the unit from the bracket. The disc must be ejected to activate the EJECT AUTO-LOCK feature. This will protect the laser mechanism while the unit is being transported.

### Cautions During Playback

Playing a disc while driving on a very bumpy road may result in skips but this will not scratch the disc or damage the player.

### NOTES:

1. Your player accepts only one disc at a time for playback. Do not attempt to load more than one disc.
2. Make sure the label side is facing up when you insert the disc. Your player will automatically eject any disc that is inserted incorrectly. If the player continues to eject a correctly inserted disc, push the Reset switch with a pointed object such as a ballpoint pen.
3. To use 3-inch CDs in this player, you need not to use the 3-inch CD adaptor ring.

## PRECAUTIONS

### Installation Location

The 7909L is designed for in-dash mounting. For optimum performance, make sure the player will not be exposed to:

1. Direct sun and heat
2. High humidity
3. Excessive dust
4. Excessive vibrations.

### Moisture Condensation

You may notice the playback sound wavering. When this happens, remove the disc from the player and wait about an hour or until the moisture evaporates and the sound becomes normal.

### Handling of the Unit When Removed From Quick Release Bracket.

When the 7909L is removed from the in-dash bracket, remember these care tips:

1. Do not drop or apply shock to the unit. It might cause permanent damage.
2. Keep the unit away from:
  - a: Water and moisture
  - b: Direct sun and heat
  - c: Excessive dust
  - d: Strong magnetic fields such as an audio speaker, magnet, or TV.
3. Your authorized Alpine dealer carries an optional carrying case for transporting the player when it is out of the vehicle.

### CAUTION:

In the event of road vibration, rapid acceleration, or vehicle collision, this unit may become dislodged from its case unless the handle is fully down. This could result in personal injury to occupants of the vehicle or physical damage to the unit. Please see the illustrations for further information on how to properly secure the handle.



# Disassembly Instructions

## 1. Removal of the Nosepiece

- (1) After removal of the top cover, remove the volume, fader control and two slide volume knobs as shown in Figure 1.
- (2) Remove the six hooks (A) as shown in Figures 1, 2 and 3. The nosepiece will be removed.

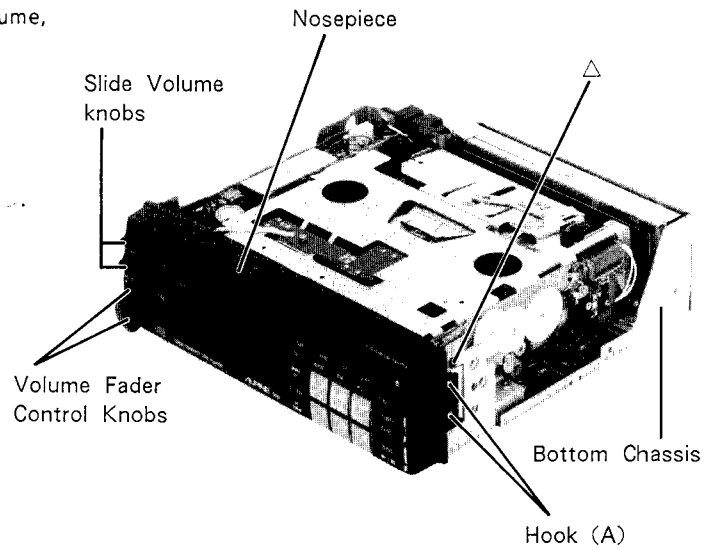


Figure 1

## 2. Removal of Main P.C.Board.

- (1) After removal of Nosepiece and Top Cover, remove the four screws marked with "△" as shown in Figures 1, 2 and 4.
- (2) Disconnect all wires from the QRB Connector.
- (3) Main P.C.Board with CD Mechanism, Front Chassis and Main Front P.C.Board, can be removed completely.

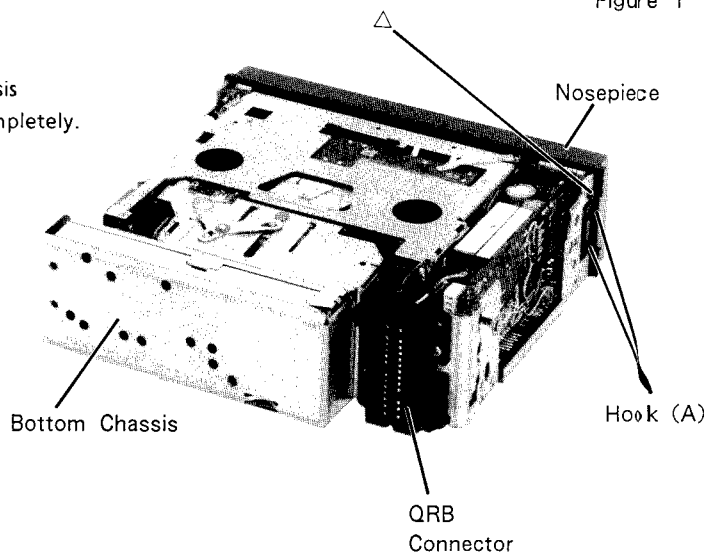


Figure 2

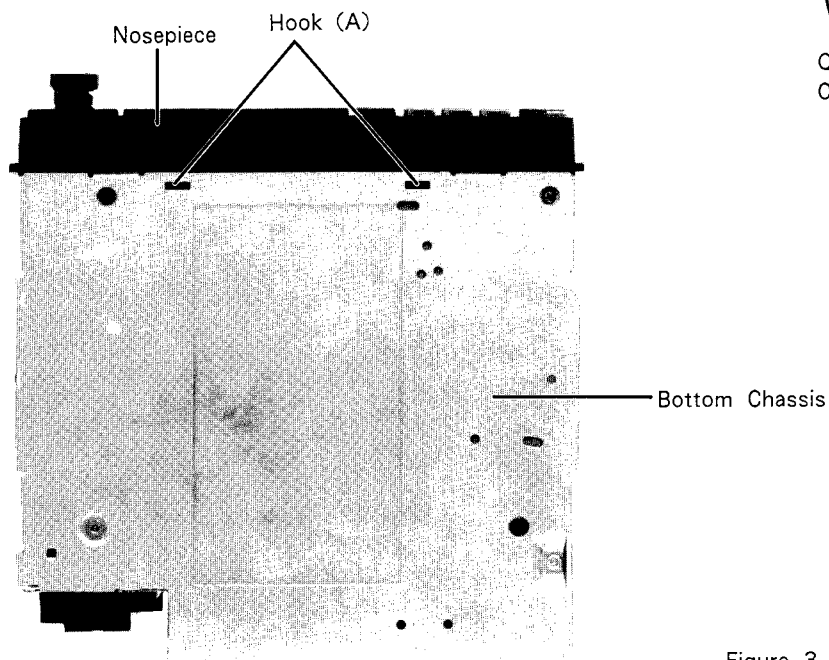


Figure 3

### 3. Removal of CD Mechanism.

- (1) After removal of the Main P.C.Board, remove three screws marked with "□" as shown in Figure 5.
- (2) Disconnect two connectors to the Main P.C.Board, while lifting up the CD Mechanism.

### 4. Removal of Main Front P.C.Board.

- (1) After removal of the Main P.C.Board, remove three hooks (B) as shown in Figure 6.
- (2) Disconnect the 10-pin and 14-pin connectors to the Main P.C.Board as shown in Figure 6.

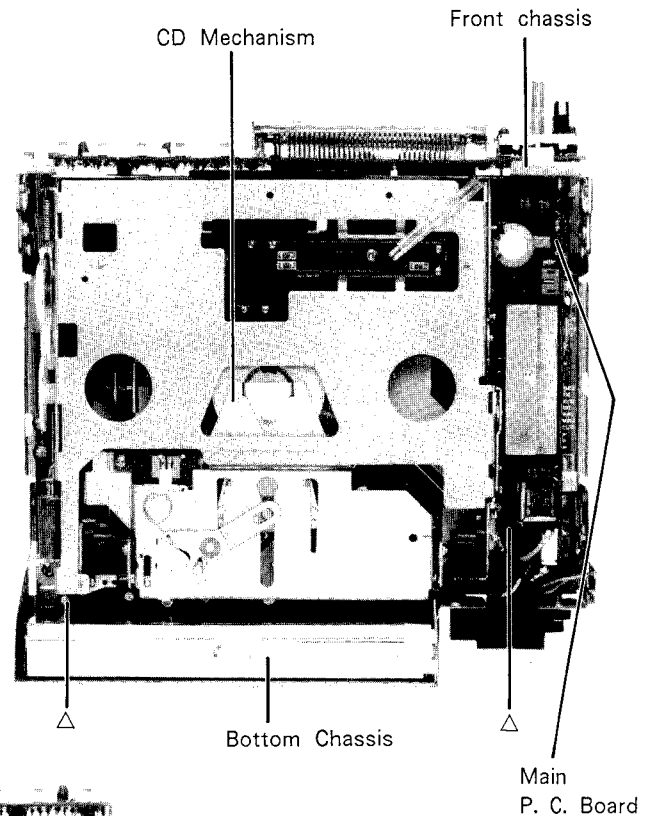


Figure 4

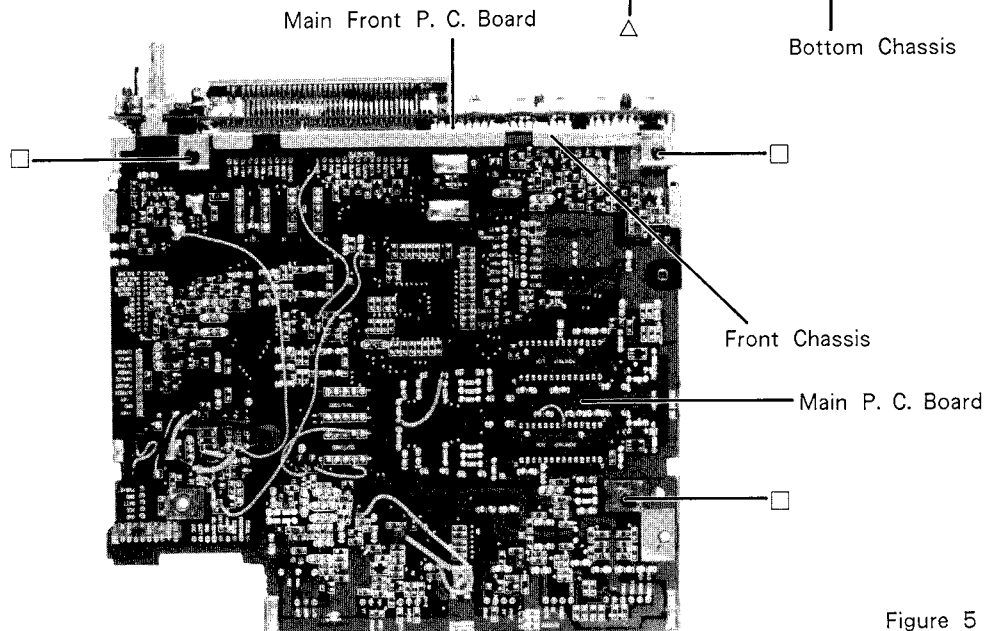


Figure 5

### < Caution when assembly the Main Front P.C.Board >

When assembling, take care not to bend the pins of the 10-pin and 14-pin connectors.

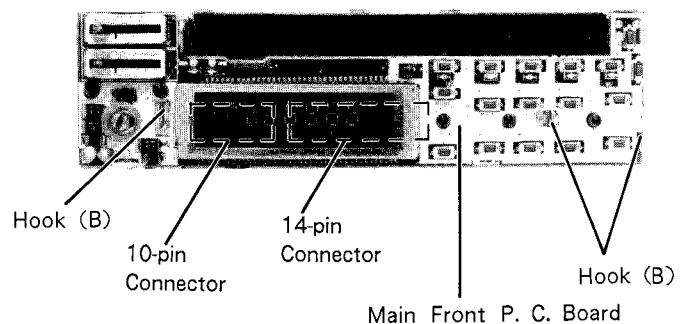
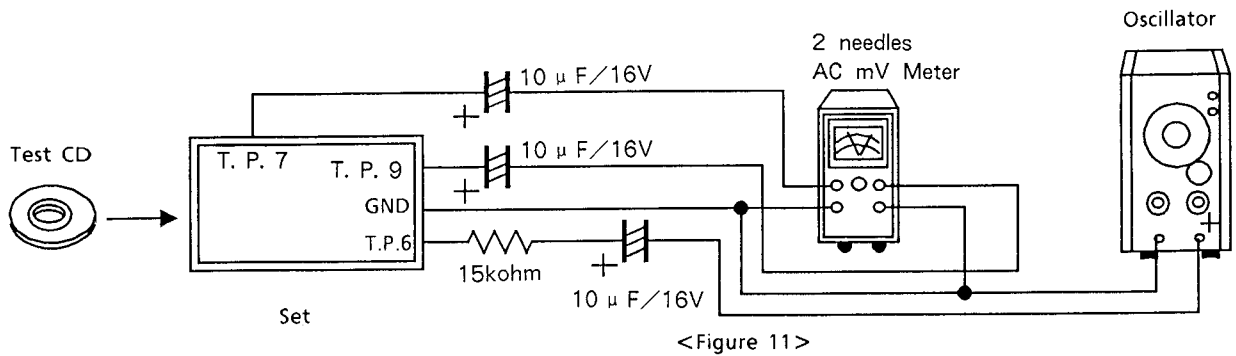
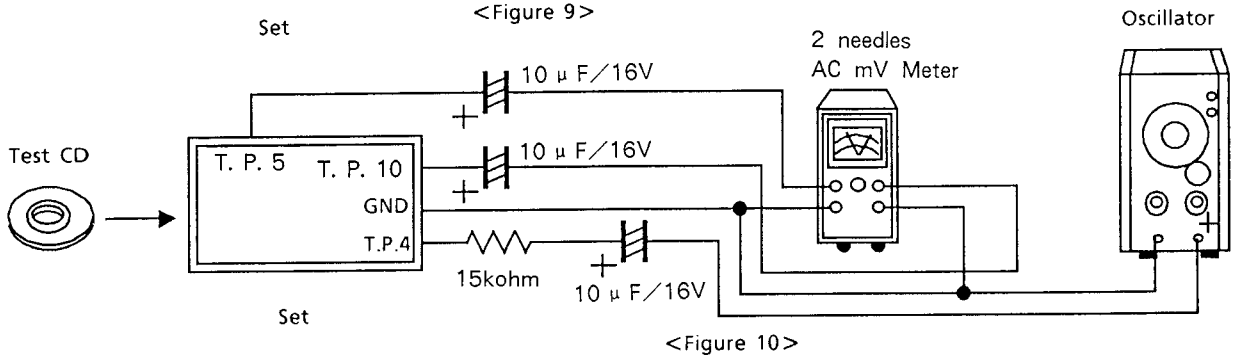
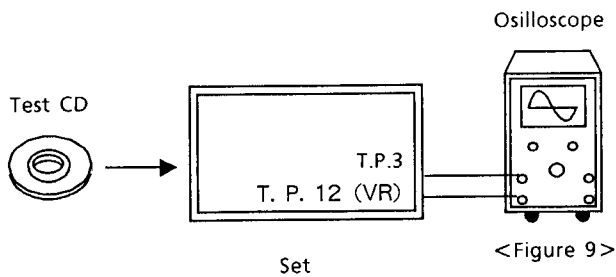
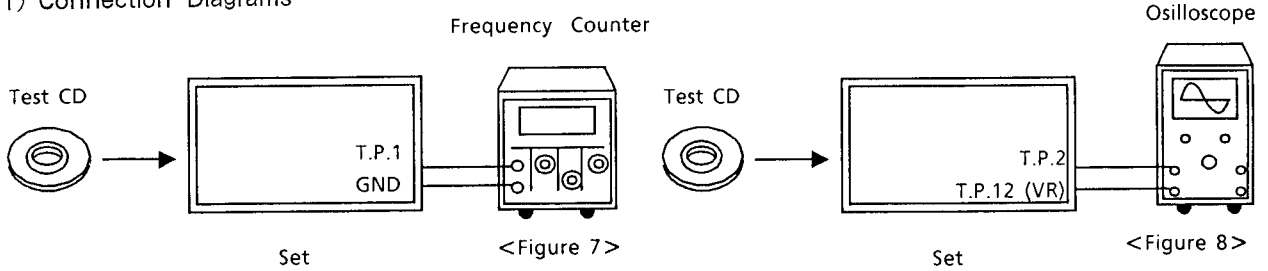


Figure 6

# Adjustment Procedures

## 1. Compact Disc

### (1) Connection Diagrams



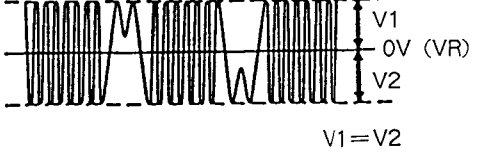
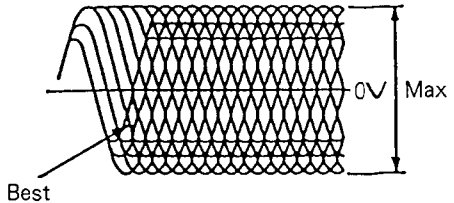
### (2) Preparation

○ Use test CD

Example: SONY, YEDS-18  
A-BEX, TCD-782

○ Set the power supply voltage at 14 volts DC.

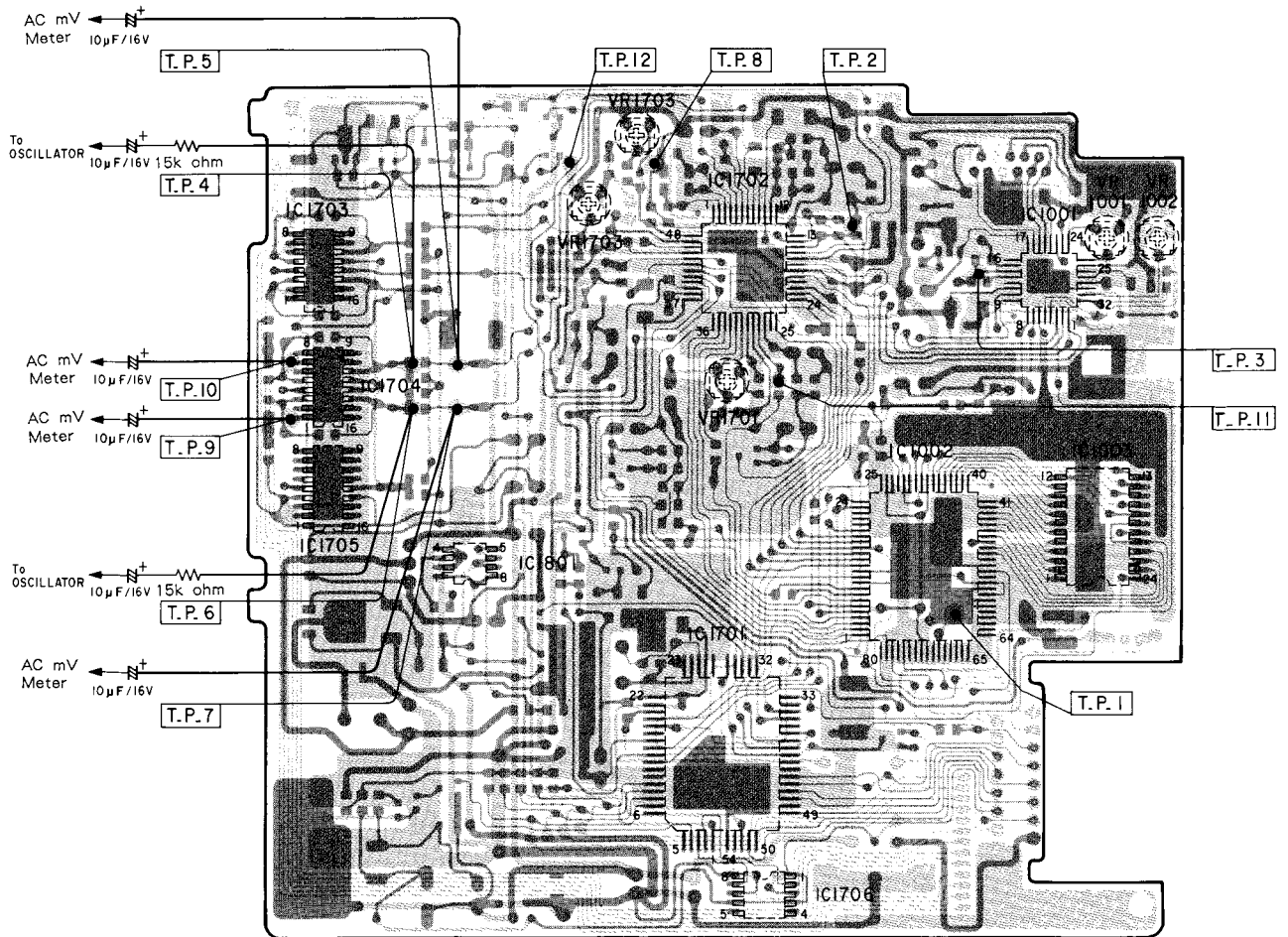
## (3) Adjustment Procedures

Step	Description	Connection	Oscillator	Test Point	Adjustment
1	VCO Adjustment	Figure 7	-	T. P. 1 T. P. 11 T. P. 12	<ol style="list-style-type: none"> <li>Load a CD into the DP-S mechanism, and enter the PLAY mode. Note) • Music CDs may be used when in PLAY state. • Reload the CD. (It should have been error-ejected about 10 seconds after it was loaded).</li> <li>Use wire to connect T.P.11 to T.P.12.</li> <li>Adjust VR1701 so that frequency is <math>4.32\text{MHz} \pm 0.005\text{MHz}</math>.</li> </ol>
2	Tracking, Balance Adjustment	Figure 8	-	T. P. 2	<ol style="list-style-type: none"> <li>Load the test CD into DP-S mechanism and play non-signal (<math>-\infty\text{dB}</math>) track. EX) A-BEX TCD-782 : TNo. 8 SONY YEDS-18 : TNo. 7</li> <li>Use wire to connect the center terminals of T.P.8 and T.P.12 (VR).</li> <li>Adjust VR1001 so that the positive and negative deflection widths of the T.P.2 signal are at the same level, relative to VR (0V).</li> </ol>  <p style="text-align: center;"><math>V1 = V2</math></p>
3	Focus, Balance	Figure 9	-	T. P. 3	<ol style="list-style-type: none"> <li>Load test CD into the DP-S mechanism and play, and then do "REPEAT (One)" mode, the first tune.</li> <li>Adjust VR1002 so that the T.P.3 (Eye pattern) signal is at its maximum, with a favorable Eye pattern.</li> </ol>  <p style="text-align: center;">Best</p>
4	Focus, Gain	Figure 10	1kHz 150mV (P-P)	T. P. 4 T. P. 5 T. P. 10	<ol style="list-style-type: none"> <li>Adjust the oscillator output to 1kHz, 150mVp-p.</li> <li>Load the test CD into DP-S mechanism and play non-signal (<math>-\infty\text{dB}</math>) track, and then do "REPEAT (One)" mode. EX) A-BEX TCD-782 : TNo. 8 SONY YEDS-18 : TNo. 7</li> <li>Using T.P.5 (input 1) as the standard, adjust VR1703 so that the output of T.P.10 (input 2) becomes +6dB.</li> </ol>



Step	Description	Connection	Oscillator	Test Point	Adjustment
5	Tracking, Gain	Figure 11	1kHz 150mV (p-p)	T. P. 6 T. P. 7 T. P. 9	<ol style="list-style-type: none"> <li>Adjust the oscillator to 1kHz, 150mVp-p.</li> <li>Load the test CD into DP-S mechanism and play non-signal (<math>-\infty</math>dB) track, and then do "REPEAT (One)" mode. EX) A-BEX TCD-782 : TNo. 8 SONY YEDS-18 : TNo. 7</li> <li>Using T.P.7 (input 1) as the standard, adjust VR1702 so that the output of T.P.9 (input 2) becomes +6dB.</li> </ol>

## Adjustment Locations



DP Main P. C. Board (Foil Side View)

## Description of IC Terminals

### ● 16449W03 : IC601

No.	Symbol	I/O	Terminal Description
1	AREA O		
2	V REF		
3	VDD		Ground
4	VDD		Ground
5	CD SON	O	CD straight output
6	P112		
7	P111		
8	FL-BLANK	O	FL driver out control output
9	FL-LOAD	O	Serial data latch output to FL driver
10	FL-CLOCK	O	Serial clock output to FL driver
11	FL-DATA	O	Serial data output to FL driver
12	KEY-P/S	I/O	Key serial input/output
13	KEY-INPUT	I	Key input
14	TSENS	I/O	Unit abnormal temperature sensor
15	P91		
16	P90		
17	IN-DIM	I	Dimmer SW input
18	IN-INT	I	External interrupt input
19	IN-PUS	I	Pause signal input from external unit
20	IN-REM	I	Remote signal input from external unit
21	7909/CHANGER	O	7909/Changer selector signal output
22	7909/AUX	O	7909/AUX selector signal output
23	OUT-PUS	O	Unit pause signal output
24	OUT-REM	O	Unit remote signal output
25	OUT-LAMP	O	Lighting signal output
26	OUT-PWR	O	Power line output
27	OUT-CDS	O	7909/CDS selector signal output
28	AMUTE	O	Mute signal output
29	CD/TUNE	O	CD/TUNER selector signal output
30	ENPH	O	CD emphasis output
31	P51		
32	CD-RDY	O	Command ready output to DP control microcomputer
33	GND		Ground
34	P DATA3	I/O	4-bit parallel data input/output on DP control microcomputer
35	P DATA2	I/O	4-bit parallel data input/output on DP control microcomputer
36	P DATA1	I/O	4-bit parallel data input/output on DP control microcomputer
37	P DATA0	I/O	4-bit parallel data input/output on DP control microcomputer
38	CD-ACK	I	Command reception input from DP control microcomputer
39	CD-STANDBY	O	Stand-by control output to DP control microcomputer
40	CD-RESET	O	Reset output to DP control microcomputer
41	CONT-DATA	O	Changer control data output
42	EJECT	I	Eject key input
43	CDS	I	CDS key input

No.	Symbol	I/O	Terminal Description
44	PWR+5	I	Power SW input
45	DTS-MUTE	I	Mute input from DTS microcomputer
46	DTS-CMD	I	Start signal input during serial transmission to DTS microcomputer
47	ACC	I	IGN line input
48	DISPLAY-DATA	I	Changer display data input
49	QINT	I	Input to receive status from DP control microcomputer
50	DTS-STS	I	Status data input from DTS microcomputer
51	DTS-CMD	O	Command data output to DTS microcomputer
52	DTS-CLK	I	Sync signal input for serial transmission with DTS microcomputer
53	BATT	I	Forced stand-by input
54	GND		Ground
55	XT1	I	Sub-system clock OSC crystal connection terminal
56	XT2	I	Sub-system clock OSC crystal connection terminal
57	IC		Test port
58	X1	I	Main system clock OSC ceramic connection terminal
59	X2	I	Main system clock OSC ceramic connection terminal
60	RESET	I	System reset
61	CLOCK-SEL	I/O	12H/24H selector
62	A MEMO		
63	AREA1	I/O	Area selector
64	AREA2	I/O	Area selector
65	AREA0		
66	AREA0		
67	AREA0		
68	AREA0		
69	AREA0		
70	AREA0		
71	AREA0		
72	AREA0		
73	GND		Ground
74	AREA0		
75	AREA0		
76	AREA0		
77	AREA0		
78	AREA0		
79	AREA0		
80	AREA0		

## ● SM5813AF : IC301

No.	Symbol	I/O	Terminal Description
1	/CKSL	I	Selector for input frequency of XTI.
2	/CKDV	I	Selector for input frequency of XTI.
3	XTI	I	Oscillator section input (/CXSL=H, /CKDV=H⇒192fs) (/CXSL=H, /CXDV=L⇒384fs) (/CXSL=L, /CXDV=H⇒256fs) (/CXSL=L, /CXDV=L⇒512fs)
4	XTO	O	Oscillator output.
5	NC		No connection
6	VSS1		GND-1
7			
8	NC		No connection.
9			
10	CKO	O	Oscillator output, clock (frequency same as XTI pin)
11	/SYN	I	Jitter free mode, forced synchronous mode selector.
12			
13			
14	NC		No connection.
15			
16			
17	/RST	I	System reset.
18	NC		No connection.
19	/COB	I	Complement of 2, COB selector.
20	/OW20	I	Number of output bit selection (16⇒H, 18⇒H, 20⇒L)
21	NC		No connection.
22	/OW18	I	Number of output bit selection (16⇒H, 18⇒L, 20⇒H)
23			
24	NC		No connection.
25	DG	O	Deglitch control clock.
26	NC		No connection.
27	VSS2		GND-2
28	VDD		Power supply (5V)
29			
30	NC		No connection.
31	DOR	O	8-time oversampling output data for R-ch.
32	NC		No connection.
33	DOL	O	8-time oversampling output data for L-ch.
34	WCKO	O	Word clock output data.
35	BCKO	O	Bit clock output data.
36	FSCO	O	Internal operation timing clock for FS period.
37	LRCI	I	Input data sample rate (FS) clock.
38			
39			
40	NC		No connection.
41			

No.	Symbol	I/O	Terminal description
42	DIN	I	Input data.
43	BCKI	I	Input data bit clock.
44	NC		No connection.

● 94468F04 : IC1

No.	Symbol	I/O	Terminal description												
1	EO1	O	PLL error output When the oscillation frequency is higher than the reference frequency, "H" will be output from this. When the oscillation frequency is lower than the reference frequency, "L" will be output. When same, it becomes floating.												
2	EO2														
3	VDD		Power supply.												
4	VCOL	I	No connection.												
5	VCOH	I	FM/LW/MW VCO input .												
6	CE	I	When ignition turned on, high level input.												
7	VDD		Power supply.												
8	NARROW	O	No connection.												
9	MONO	O	No connection.												
10	A MEMO & LOCAL	O	No connection.												
11	A MEMO	O	No connection.												
12	LW/MW	I	LW/MW IF input.												
13	FM IF	I	FM IF input.												
14	COMMAND	I	Input for serial data from the main microprocessor.												
15	STATUS	O	Output for serial data to the main microprocessor.												
16	STRT	O	Synchronous signal of communication commands to the main microprocessor.												
17	MUTE	O	DTS mute output.(active low)												
18	LOCAL	O	High while local seek tuning.												
19	LOCAL	O	High while local seek tuning.												
20	XO		Pins for connecting crystal oscillator (4.5MHz)												
21	XI														
22	GND		Ground.												
23	CO		No connection.												
24	TUNER ON	O	High while synchronizing tuner.												
25	BAND 3	O	<table border="1"> <thead> <tr> <th></th> <th>BAND 1</th> <th>BAND 2</th> <th>BAND 3</th> </tr> </thead> <tbody> <tr> <td>FM</td> <td>1</td> <td>0</td> <td>0</td> </tr> <tr> <td>LW/MW</td> <td>0</td> <td>1</td> <td>0</td> </tr> </tbody> </table>		BAND 1	BAND 2	BAND 3	FM	1	0	0	LW/MW	0	1	0
	BAND 1	BAND 2		BAND 3											
FM	1	0		0											
LW/MW	0	1	0												
26	BAND 2	O													
27	BAND 1	O													
28	} NC		No connection.												
41															
42	GND		Ground.												

No.	Symbol	I/O	Terminal description
43	DK	I	No connection.
44	$\overline{SK}$	I	No connection
45	$\overline{STEREO}$	I	Low level input in stereo mode.
46	SD	I	High level input while in seek stop status.
47	S. METER	I	FM/LW/MW signal meter input.
48	Ci	I	Initial selection , crystal oscillator oscillates during stand-by mode, oscillation continues at pull up.

● CXD1135Q : IC1002 (DP22A080)

No.	Symbol	I/O	Terminal description
1	FSW	O	Time constant switching output for output filter of spindle motor.
2	MON	O	Spindle motor on/off control output.
3	MDP	O	Spindle motor drive output. Rough control in the CLV-S mode and phase control in CLV-P mode.
4	MDS	O	Spindle motor drive output. Speed control in CLV-P mode.
5	EFM	I	EFM signal input from RF amp.
6	ASY	O	Output to control slice level of EFM signal.
7	LOCK		By sampling GFS signal with WFCK/16, if "H", outputs "H" and if "L" for 8 times consecutively, outputs "L".
8	VCOO	O	VCO output. When locked with EFM signal, $f=8,6436\text{MHz}$ .
9	VCOI	I	VCO input.
10	TEST	I	(0V)
11	PDO	O	Phase comparison output between EFM signal and VCO/2.
12	Vss	-	GND (0V)
13	CLK	I	Serial data transmitting clock input from CPU. Latches data at the clock rising edge.
14	XLT	I	Latch input from CPU. Latches data (serial data from CPU) of 8bit shift register at each register.
15	DATA	I	Serial data input from CPU.
16	XRST	I	System reset input, Resets when "L".
17	CNIN	I	Tracking pulse input.
18	SENS	O	By responding to address, output internal status.
19	MUTG	I	Muting input. When ATTM of internal register "A" is "L", MUTG will be "L" and in normal status. When ATTM of internal register "A" is "H", it is in mute status.
20	CRCF	O	Outputs result of CRC check on subcode Q.
21	EXCK	I	Clock input for serial output of subcode.
22	SBSO	O	Serial output of subcode.
23	SUBQ	O	Output of subcode Q.
24	SCOR	O	Subcode sync S0+S1 output.
25	SQCK	I/O	Reading clock of subcode Q.
26	SQEX	I	Selection input of SQCK.

No.	Symbol	I/O	Terminal description
27	DOTX	O	Digital output,(When CXD1130Q or DO is off, outputs WFCK)
28	GFS	O	Display output for clock status of frame sync.
29	DB08	I/O	Outer RAM data, DATA8 (MSB).
30	DB07	I/O	Outer RAM data, DATA7.
31	DB06	I/O	Outer RAM data, DATA6.
32	DB05	I/O	Outer RAM data, DATA5.
33	V <sub>DD</sub>	-	Power supply (+5V)
34	DB04	I/O	Outer RAM data, DATA4.
35	DB03	I/O	Outer RAM data, DATA3.
36	DB02	I/O	Outer RAM data, DATA2.
37	DB01	I/O	Outer RAM data, DATA1 (LSB).
38	RA01	O	Outer RAM address output. ADDR01 (LSB).
39	RA02	O	Outer RAM address output. ADDR02.
40	RA03	O	Outer RAM address output. ADDR03.
41	RA04	O	Outer RAM address output. ADDR04.
42	RA05	O	Outer RAM address output. ADDR05.
43	RA06	O	Outer RAM address output. ADDR06.
44	RA07	O	Outer RAM address output. ADDR07.
45	RA08	O	Outer RAM address output. ADDR08.
46	RA09	O	Outer RAM address output. ADDR09.
47	RA10	O	Outer RAM address output. ADDR10.
48	RA11	O	Outer RAM address output. ADDR11 (MSB)
49	RAWE	O	Write enable signal output to outer RAM,(Active at "L")
50	RACS	O	Chip selection signal output to outer RAM,(Active at "L")
51	C4M	O	Frequency demultiplication output of crystal f=4,2336MHz.
52	V <sub>SS</sub>	-	GND (0V)
53	XTA1	I	Crystal oscillator circuit input. f=8,4672MHz or 16,9344MHz switchable by mode
54	XTA0	O	Crystal oscillator circuit input. f=8,4672MHz or 16,9344MHz switchable by mode.
55	MD1	I	Mode selector input 1.
56	MD2	I	Mode selector input 2.
57	MD3	I	Mode selector input 3.
58	SLOB	I	Code switching input for audio data output. When "L", it will output 2's compliment, and when "H", it will output offset binary.
59	PSSL	I	Mode switching input for audio data output. When "L", it will output serial signal, and when "H", it will output parallel signal.
60	APTR	O	Aperture compensation control output. When R-ch, this is "H".
61	APTL	O	Aperture compensation control output. When L-ch, this is "H".
62	DA01	O	When PSSL= "H", outputs DA01 (LSB of parallel audio data). When PSSL= "L", outputs C1F1.
63	DA02	O	When PSSL= "H", outputs DA02. When PSSL= "L", outputs C1F2.
64	DA03	O	When PSSL= "H", outputs DA03. When PSSL= "L", outputs C2F1.
65	DA04	O	When PSSL= "H", outputs DA04. When PSSL= "L", outputs C2F2.
66	DA05	O	When PSSL= "H", outputs DA05. When PSSL= "L", outputs C2FL.
67	DA06	O	When PSSL= "H", outputs DA06. When PSSL= "L", outputs C2PO.
68	DA07	O	When PSSL= "H", outputs DA07. When PSSL= "L", outputs RFCK.
69	DA08	O	When PSSL= "H", outputs DA08. When PSSL= "L", outputs WFCK.

No.	Symbol	I/O	Terminal description
70	DA09	O	When PSSL= "H", outputs DA09. When PSSL= "L", outputs $\overline{\text{PLCK}}$ .
71	DA10	O	When PSSL= "H", outputs DA10. When PSSL= "L", outputs UGFS.
72	DA11	O	When PSSL= "H", outputs DA11. When PSSL= "L", outputs GTOP.
73	V <sub>DD</sub>	-	Power supply (+5V).
74	DA12	O	When PSSL= "H", outputs DA12. When PSSL= "L", outputs RAOV.
75	DA13	O	When PSSL= "H", outputs DA13. When PSSL= "L", outputs C4LR.
76	DA14	O	When PSSL= "H", outputs DA14. When PSSL= "L", outputs $\overline{\text{C2T0}}$ .
77	DA15	O	When PSSL= "H", outputs DA15. When PSSL= "L", outputs C210.
78	DA16	O	When PSSL= "H", outputs DA16 (MSB for parallel audio data) When PSSL= "L", outputs DATA.
79	WDCK	O	Strobe signal output. When DF is on, 176.4kHz, and when DF is off, 88.2kHz.
80	LRCK	O	Strobe signal output. When DF is on, 88.2kHz, and when DF is off, 44.1kHz.

● CXK5816M : IC1003 (DP22A080)

No.	Symbol	I/O	Terminal description
1	A7	I	Address input.
2	A6	I	Address input.
3	A5	I	Address input.
4	A4	I	Address input.
5	A3	I	Address input.
6	A2	I	Address input.
7	A1	I	Address input.
8	A0	I	Address input.
9	I/O1	I/O	Data input/output.
10	I/O2	I/O	Data input/output.
11	I/O3	I/O	Data input/output.
12	GND		GND
13	I/O4	I/O	Data input/output.
14	I/O5	I/O	Data input/output.
15	I/O6	I/O	Data input/output.
16	I/O7	I/O	Data input/output.
17	I/O8	I/O	Data input/output.
18	$\overline{\text{CE}}$	I	Chip enable input.
19	A10	I	Address input.
20	$\overline{\text{OE}}$	I	Output enable input.
21	$\overline{\text{WE}}$	I	Write enable input.
22	A9	I	Address input.
23	A8	I	Address input.
24	V <sub>cc</sub>		Power supply (+5V).



## ● CXA1081Q : IC1001 (DP22A080)

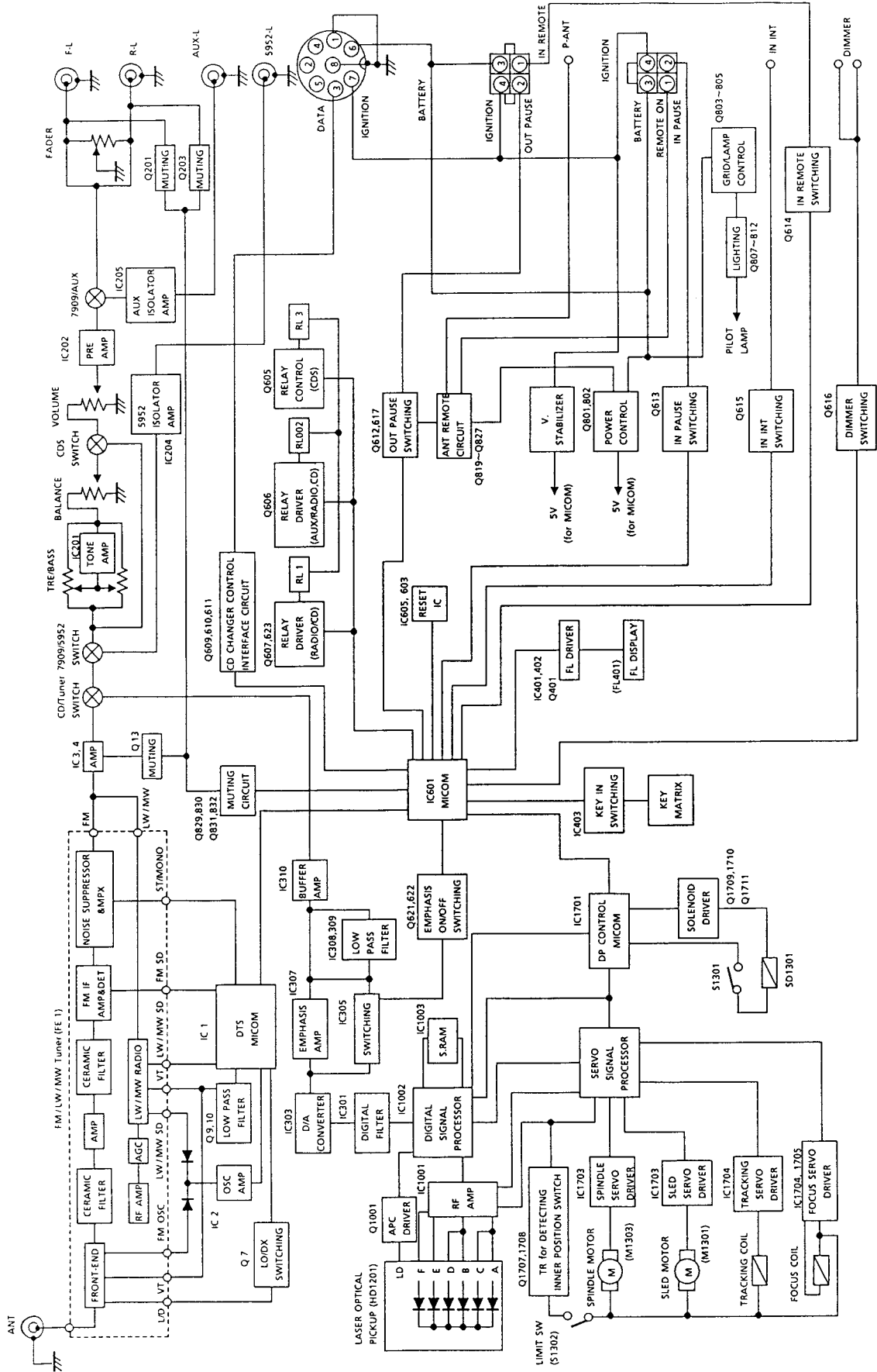
No.	Symbol	I/O	Terminal description	Note
1	TE	I	Tracking error amp output.	
2	DEFECT	O	Defect comparator output.	
3	MIRR	O	MIRR comparator output.	
4	CP	I	MIRR hold capacitor connection.	MIRR comparator noninversion input.
5	CB	I	Defect bottom hold capacitor connection.	
6	DGND		GND	
7	ASY	I	Auto asymmetry control input.	
8	EFM	O	EFM comparator output.	
9	FOK	O	Focus OK comparator output.	
10	LD ON	I	Laser diode on/off switching.	
11	Vcc		Positive power (+2.5V).	
12	NC		No connection.	
13	RF1	I	Input for capacity coupled RF summing amp output.	
14	RF0	O	RF summing amp output.	Eye pattern check point.
15	RF ⊖	I	RF summing amp feedback input.	
16	P/N	I	Laser diode P-sub/N-sub switching.	
17	LD	O	APC LD amp output.	
18	PD	I	APC PD amp input.	
19	PD1	I	RF I-V amp (1) inversion input.	Connect to photo diode A+C pin.
20	PD2	I	RF I-V amp (2) inversion input.	Connect to photo diode B+D pin.
21	VC		VR (connect to 26).	
22	F	I	F I-V amp inversion input.	Connect to photo diode F pin.
23	E	I	E I-V amp inversion input.	Connect to photo diode E pin.
24	E0	O	E I-V amp output.	
25	E1	I	E I-V amp feedback input.	For adjustment of E I-V amp gain.
26	VR	O	$(V_{CC} + V_{EE}) / 2$ DC voltage output.	
27	TEST		Open	
28	CC2	I	Input for capacity coupled DEFECT bottom hold output.	
29	CC1	O	Defect bottom hold output.	
30	VEE		GND	
31	FE BIAS	I	Focus error amp noninverting bias.	For adjustment of focus error amp CMR.
32	FE	O	Focus error amp output.	

## ● CXA1082BQ : IC1702 (DP22A080)

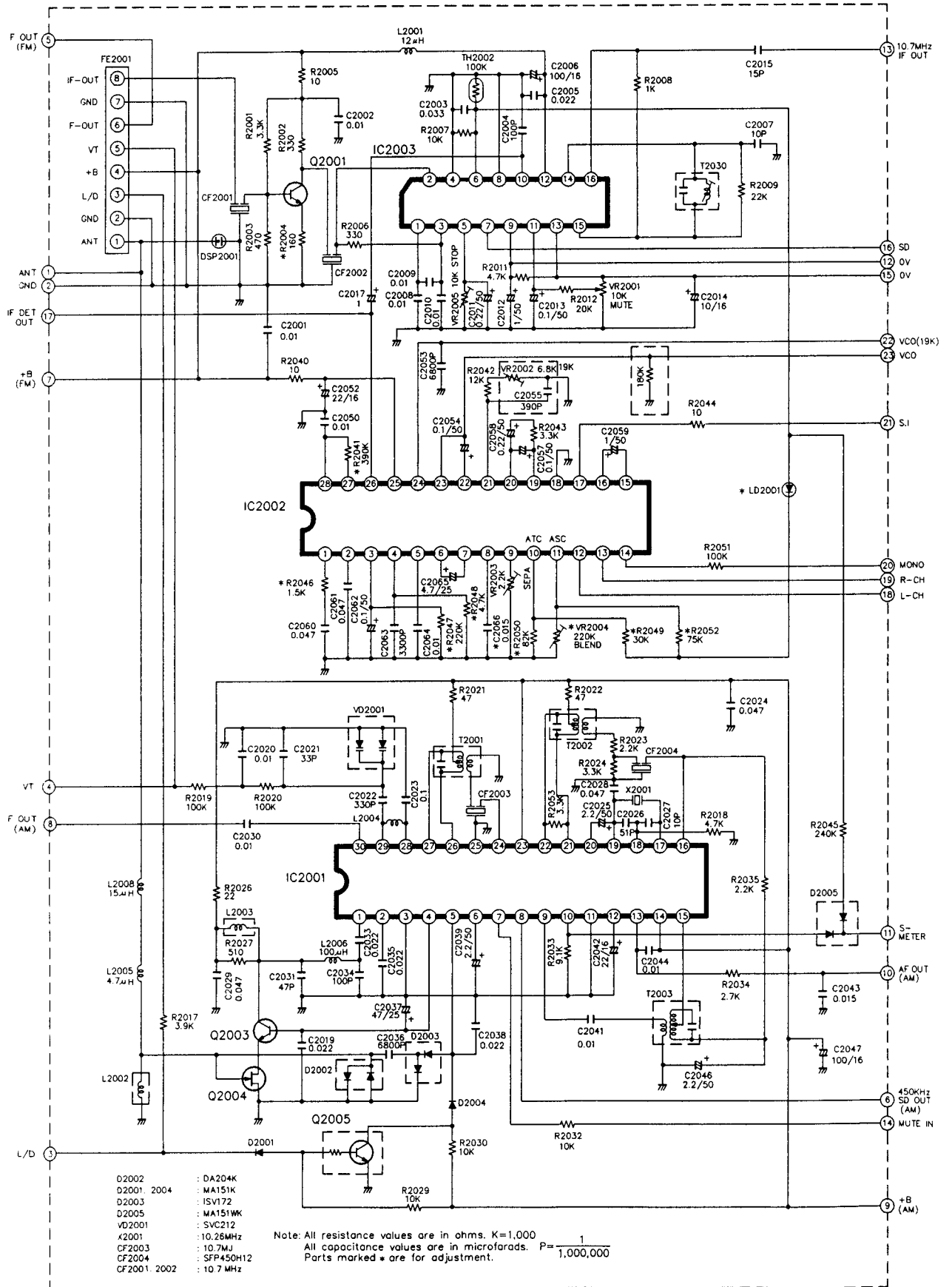
No.	Symbol	I/O	Terminal description
1	VC		Power supply (+2.5V).
2	FGD		To reduce the high frequency gain of focus servo, add a capacitor between this pin and No.3 pin.

No.	Symbol	I/O	Terminal description
3	FS3		Turning FS3 on or off switches high frequency gain of focus servo.
4	FLB		External for time constant to increase low frequency of focus servo.
5	FEO	O	Operation amp output for power transistor drive.
6	FE $\ominus$	I	Focus amp inversion input.
7	SRCH		External for time constant to form focus search waveform.
8	TGU		External for time constant to switch tracking high frequency gain.
9	TG2		External for time constant to switch tracking high frequency gain.
10	A V <sub>CC</sub>		Positive power supply (+2.5V).
11	TAO	O	Operation amp output for power transistor drive.
12	TA $\ominus$	I	Tracking amp inversion input.
13	SL $\oplus$	I	Sled amp noninversion input.
14	SL0	O	Operation amp output for power transistor drive.
15	SL $\ominus$	I	Sled amp inversion input.
16	S, STOP	I	For on/off detecting signal of limit switch to detect disc's inner most track.
17	FSTE	I	For setting peak of focus tracking phase compensation and "f <sub>0</sub> " of CLV LPF.
18	SENS	O	Output for microprocessor and interface.
19	A V <sub>EE</sub>		GND
20	C, OUT	O	Output for interface with microprocessor.
21	DIRECT	I	Input for interface with microprocessor.
22	XRST		
23	DATA		
24	XLT		
25	CLK		
26	D GND		GND
27	BW	I	External for time constant of loop filter.
28	PDI	I	Input for phase comparator output PDO.
29	ISET	I	Outputs current to decide the height of focus search, track jump and sled kick.
30	VCOF	I	Time constant frequency will be almost in proportion to resistance value between this pin and No.31 pin.
31	3.5V		+3.5V output.
32	C864	O	8,64MHz VCO output.
33	LOCK	I	Input for interface with microprocessor.
34	MDP	I	Pin to connect MDP.
35	MON	I	Pin to connect MON.
36	FSW	I	External for LPF time constant of CLV servo error signal.
37	D V <sub>CC</sub>		Power supply (+5V).
38	SPDL $\ominus$	I	Spindle drive amp inversion input.
39	SPDL0	O	Operation amp output for power transistor drive.
40	WDCK	I	Input for interface with microprocessor.
41	FOK		
42	MIRR		
43	D V <sub>EE</sub>		GND
44	DFCT	I	Input for interface with microprocessor.
45	TE	I	Tracking error signal input.
46	TZC	I	Tracking zero cross comparator input.
47	ATSC	I	Window comparator input for ATSC detection.
48	FE	I	Focus error signal input.

# Block Diagram



# Tuner Schematic Diagram

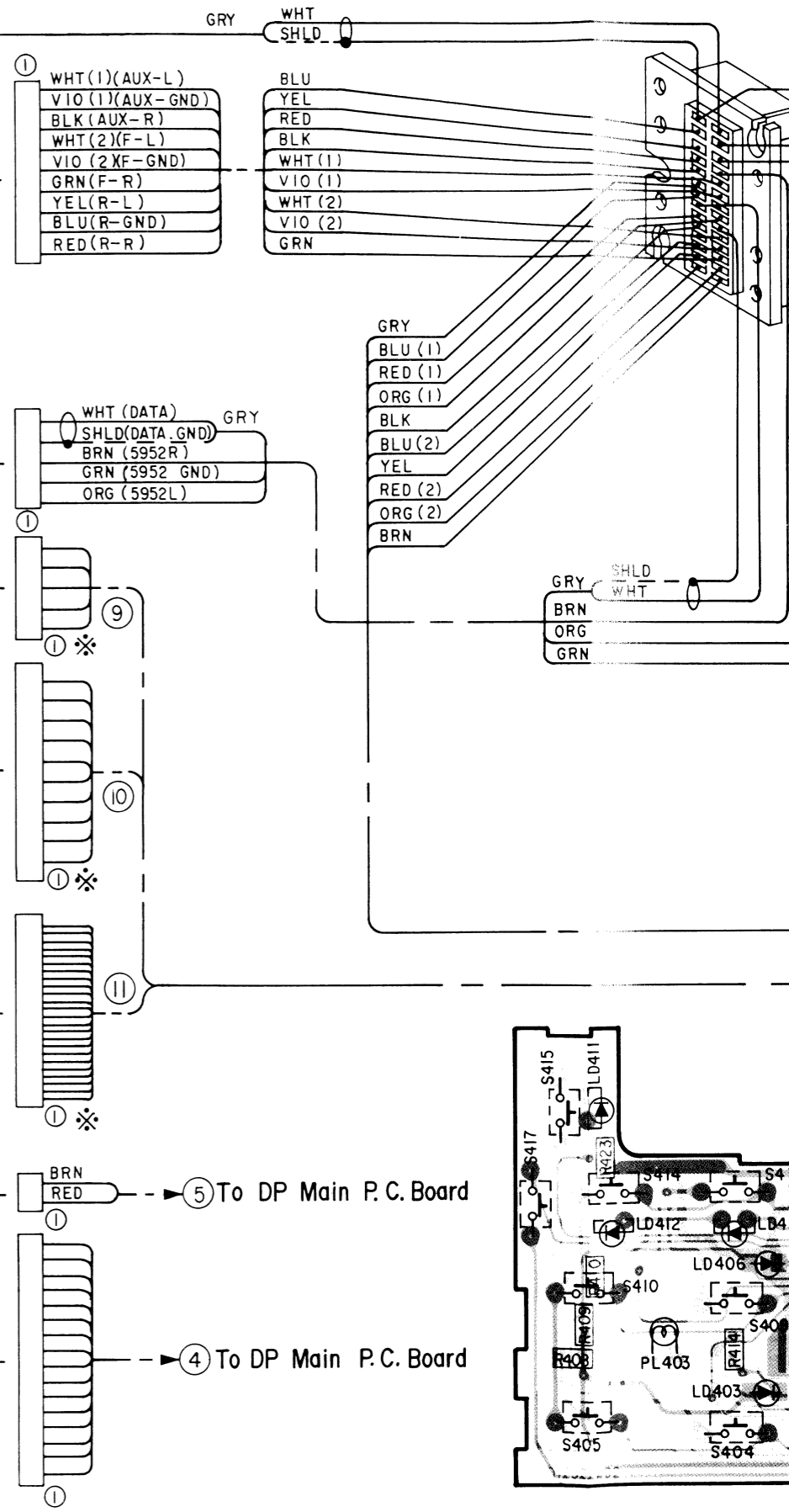
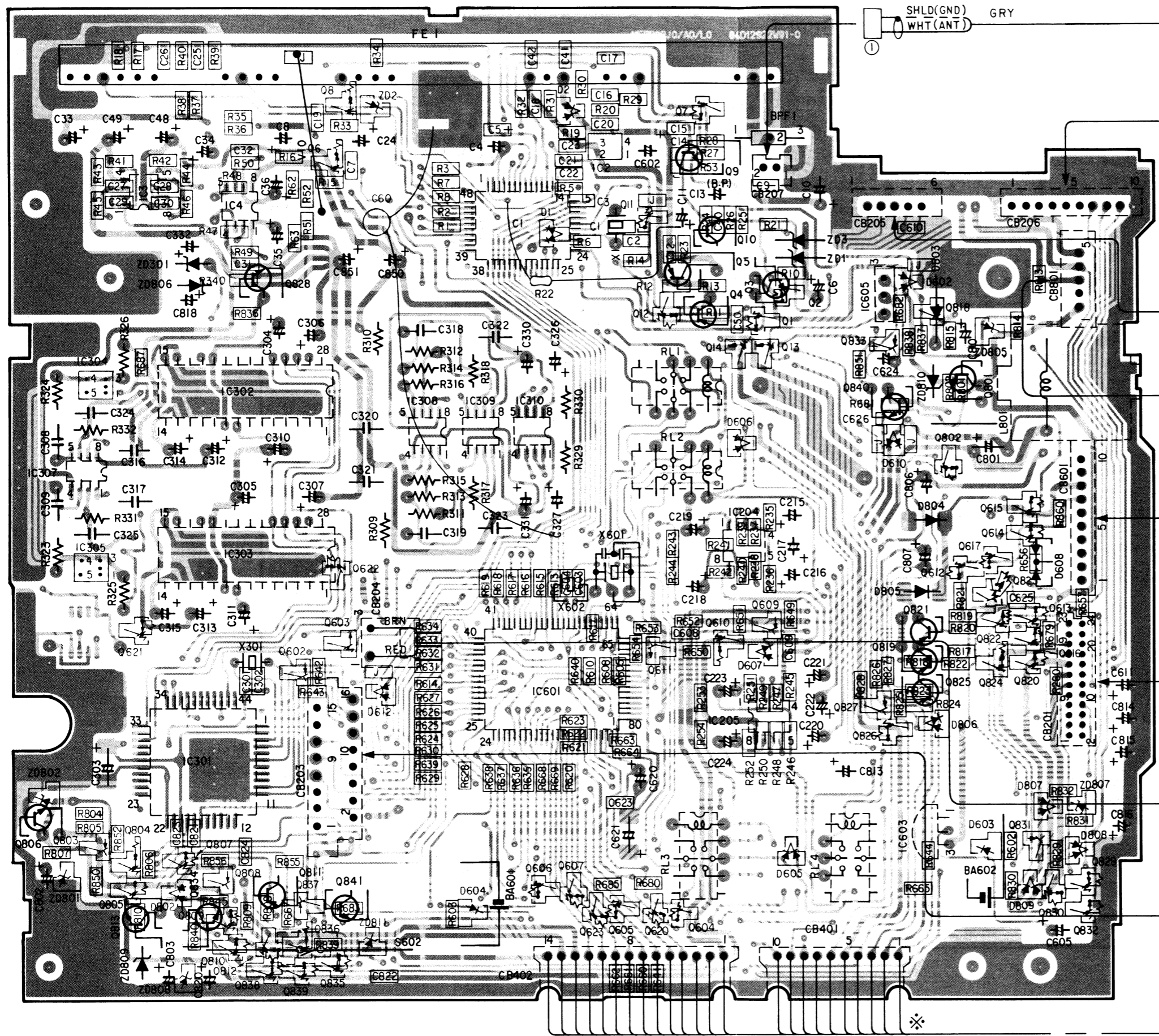


# Parts Layout on P.C. Boards and Wiring Diagram (1/2)

## Main P.C. Board

## Assy., QRB Connector (ET)

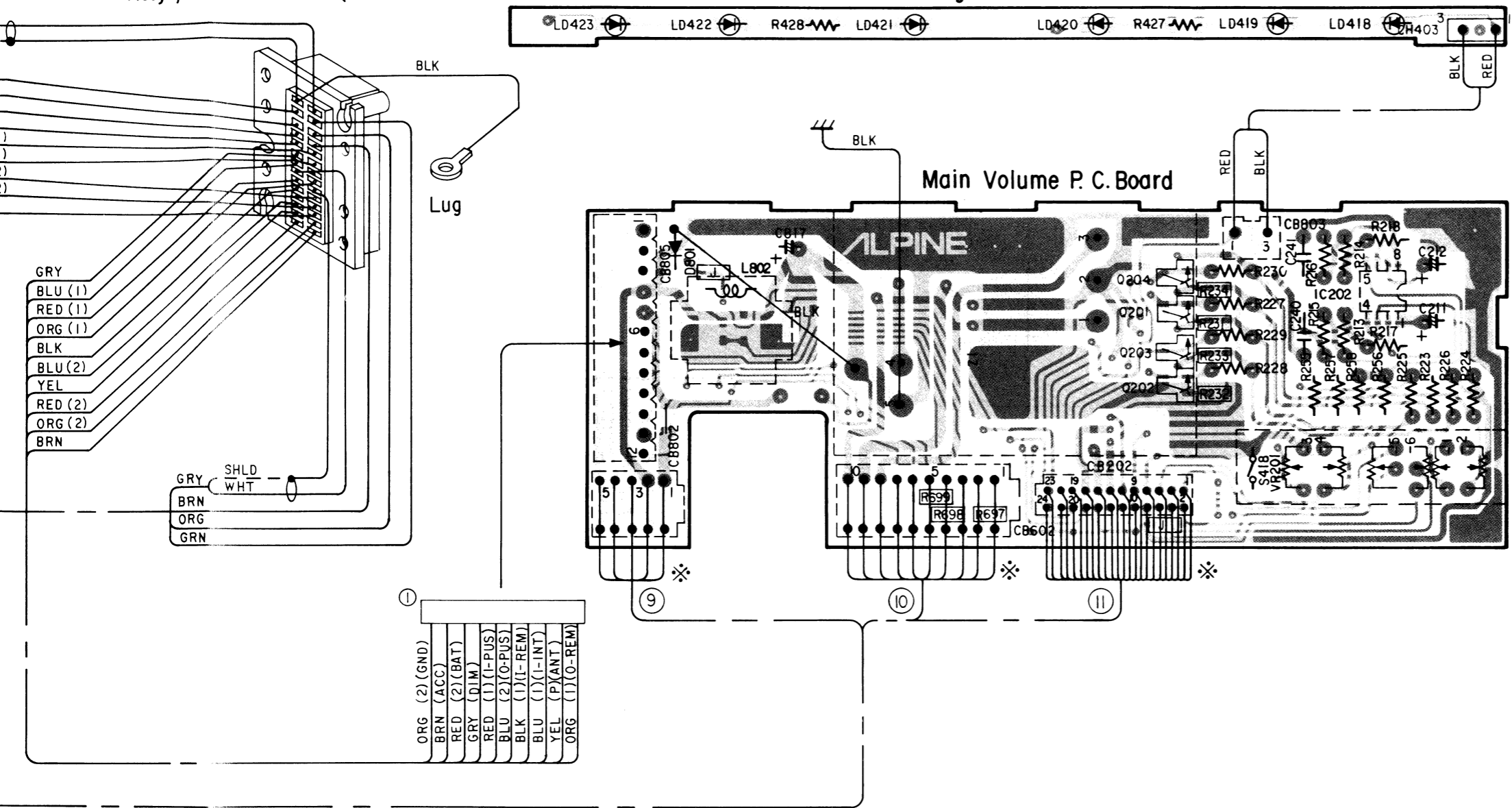
1  
2  
3  
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5



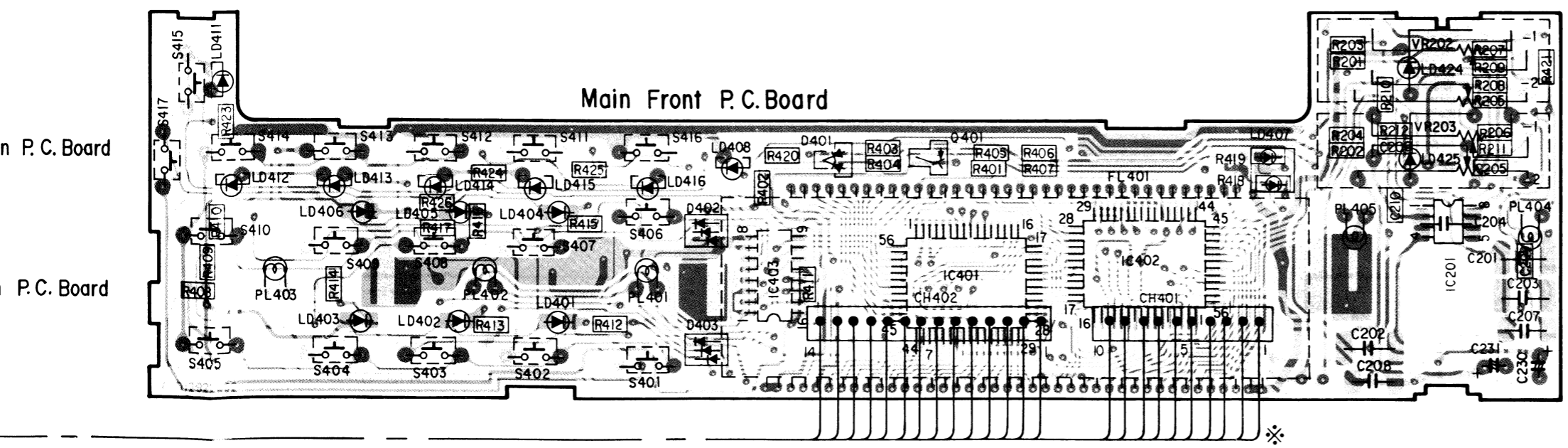
A | B - 33 - | C | D | E | F - 34 - | G | H |

Assy., QRB Connector (ET801)

Main Light P.C. Board



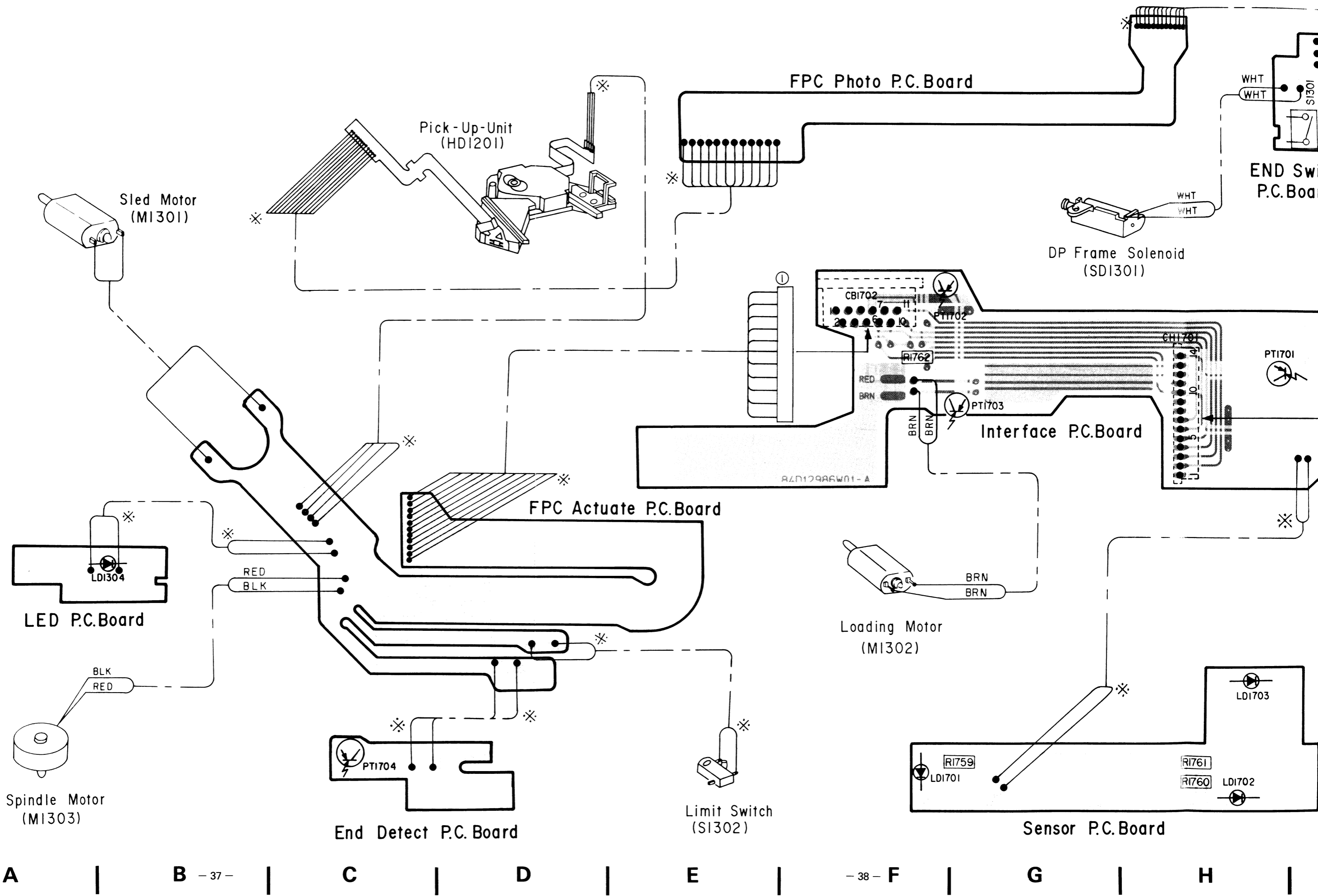
Main Front P.C. Board



- BLU ..... Blue
- GRN ..... Green
- BLK ..... Black
- GRY ..... Gray
- WHT ..... White
- RED ..... Red
- BRN ..... Brown
- ORG ..... Orange
- YEL ..... Yellow
- PNK ..... Pink
- VIO ..... Violet
- GRN/WHT ..... Green/White
- GRY/WHT ..... Gray/White
- GRY/YEL ..... Gray/Yellow
- GRN/YEL ..... Green/Yellow
- SHLD ..... Shield

# Parts Layout on P.C. Boards and Wiring Diagram (2/2)

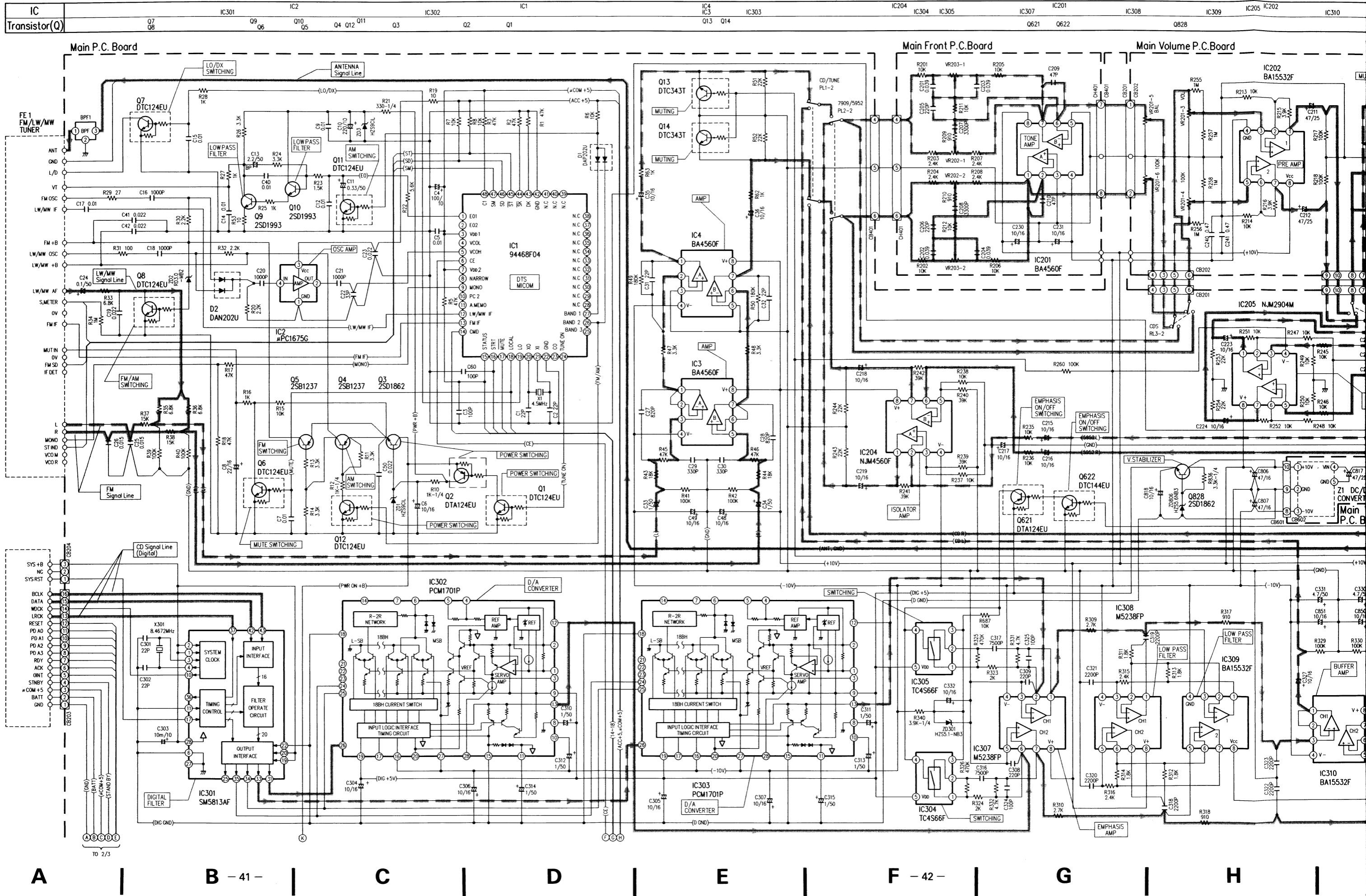
1  
2  
3  
4  
5  
A | B - 37 - | C | D | E | - 38 - | F | G | H |



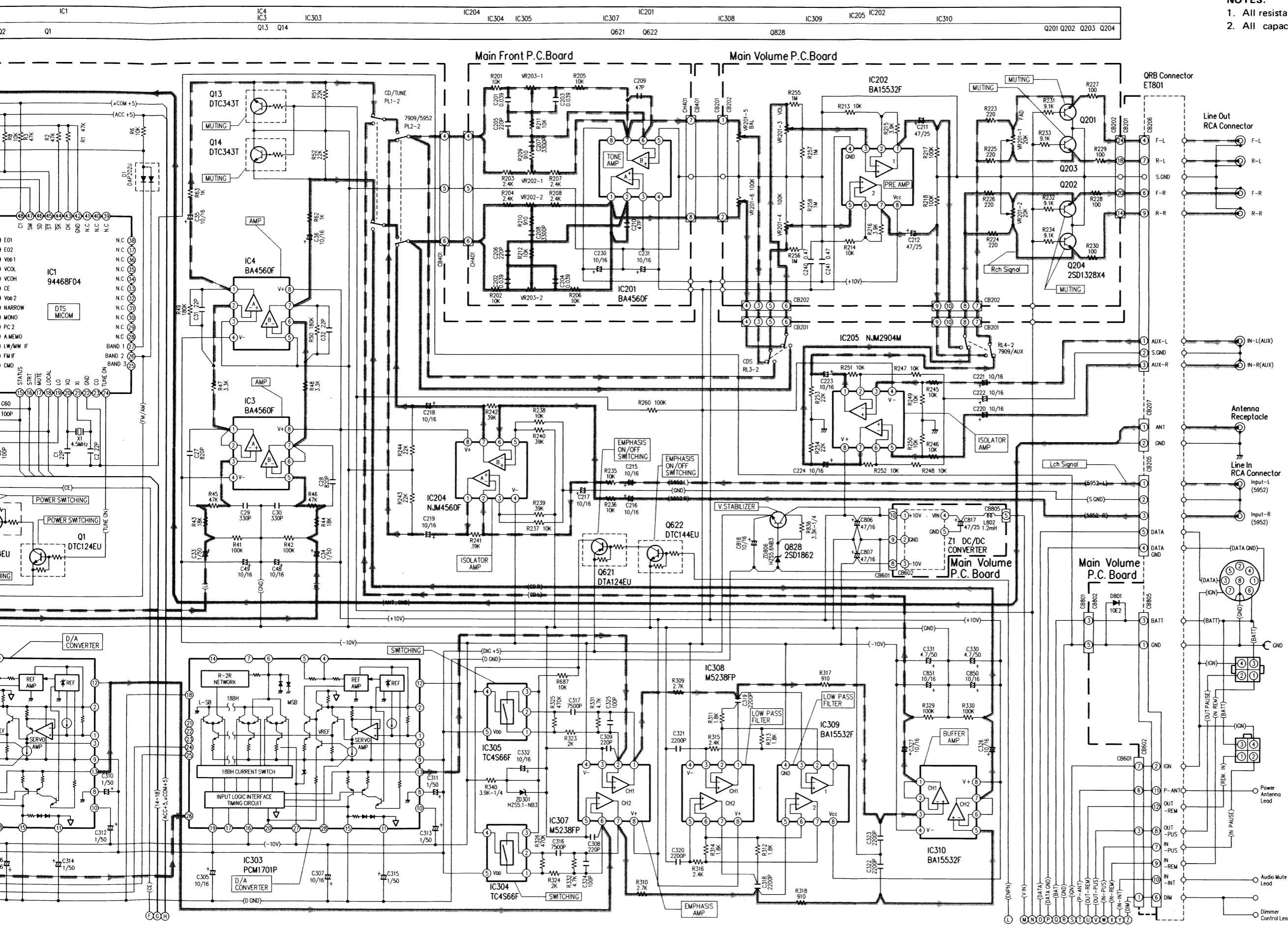




# Schematic Diagram (1/3)



**NOTES:**  
 1. All resistance values are in ohms. K = 1,000  
 2. All capacitance values are in microfarads. P = 1,000,000



IC3	1	2	3	4	5	6	7	8
IC4	3.3V	3.3V	3.3V	-9.9V	3.3V	3.3V	3.3V	10V
IC201	3.3V	3.3V	3.3V	-9.9V	3.3V	3.3V	3.3V	10V
IC204	3.3V	3.3V	3.3V	-9.9V	3.3V	3.3V	3.3V	10V
IC205	3.3V	3.3V	3.3V	-9.9V	3.3V	3.3V	3.3V	10V
IC307	3.3V	3.3V	3.3V	-9.9V	3.3V	3.3V	3.3V	10V
IC308	3.3V	3.3V	3.3V	-9.9V	3.3V	3.3V	3.3V	10V
IC309	3.3V	3.3V	3.3V	-9.9V	3.3V	3.3V	3.3V	10V
IC310	3.3V	3.3V	3.3V	-9.9V	3.3V	3.3V	3.3V	10V

IC2	1	2	3	4	5	6
IC304	4.9V	0V	0V	-5V	-4.9V	-
IC305	4.9V	0V	0.5V	-5V	-4.9V	-

IC1	1	2	3	4	5	6	7	8	9	10
1.1V	0.5V	5V	0V	1.9V	5.1V	5V	0V	0V	0V	0V
11	12	13	14	15	16	17	18	19	20	
0V	0.1V	0V	0V	PS	PS	PS	5V	0V	PS	
21	22	23	24	25	26	27	28	29	30	
PS	0V	0V	5V/10V	0V	0.2V	5V	0V	0V	0V	
31	32	33	34	35	36	37	38	39	40	
0V	0V	5V	PS	PS	PS	0V	0.2V	0V	0V	
41	42	43	44	45	46	47	48	49		
0.2V	0V	0V	0V	3.6V	0V	0.4V	4.8V			

IC301	1	2	3	4	5	6	7	8	9	10
5V	5V	1.7V	2.6V/PS	0.7V	0V	0.4V	0.4V	0.4V	1.9V	
11	12	13	14	15	16	17	18	19	20	
0V	0.4V	0.5V	0.4V	0.5V	0.5V	4.9V	0.4V	5.1V	5.1V	
21	22	23	24	25	26	27	28	29	30	
0.4V	0V	0.2V	0.3V	PS	0V	0V	5.1V	0.3V	0.3V	
31	32	33	34	35	36	37	38	39	40	
5.1V	0.2V	PS	PS	PS	PS	0V	0.2V	0.2V	0.2V	
41	42	43	44	45	46	47	48	49		
0V	PS	PS	1.3V							

IC302, IC303	1	2	3	4	5	6	7	8	9	10
0.1V	0.1V	-8.6V	-8.6V	-8.6V	-8.6V	-8V	1.8V	4.8V	-3.9V	
11	12	13	14	15	16	17	18	19	20	
3.1V	0V	0V	0.2V	0V	-10V	0V	0V	4.8V	0.2V	
21	22	23	24	25	26	27	28	29	30	
0.2V	0.3V	3.2V	PS	PS	PS	-10V	0V			

	01	02	03	04	05	06	07	08	09
E	0V	13.6V/0.1V	8.6V	8.6V	8.6V	0V	0V	0V	0V
C	0V/12.9V	13.6V/0.5V	13.6V	1.3V	8.5V	0V/5.4V	0V	0V	7.6V
B	5V/0V	0V	9.2V	8.6V	7.9V	5V/0V	7.4V	6.4V/0V	0.9V
0	010	011	012	013	014	0201	0202	0203	0204
E	0.5V	0V	0V	0V	0V	0V	0V	0V	0V
C	9.4V	0.9V	8.5V/0V	0V	0V	0V	0V	0V	0V
B	0.9V	5V	0.2V/4.9V	-8.5V	-8.5V	-8.4V/8.6V	-8.4V/8.6V	-8.4V/8.6V	
0621	0622	0828							
E	4.9V	0V	4.9V						
C	-5V	4.5V	10V						
B	4.7V	0V	5.5V						

- [Measuring Conditions]
- Power Supply: 14.4 V DC
  - Measuring Tool: Digital Multi Voltmeter.
  - Measuring Standard: Ground=0V
  - Unit Condition: Be playing back the 2nd.
- Music of the Test CD (YEDS-18)  
 Tuner: 400Hz Input  
 FM: 98.1MHz  
 MW: 999KHz  
 LW: 218KHz

# Schematic Diagram (2/3)

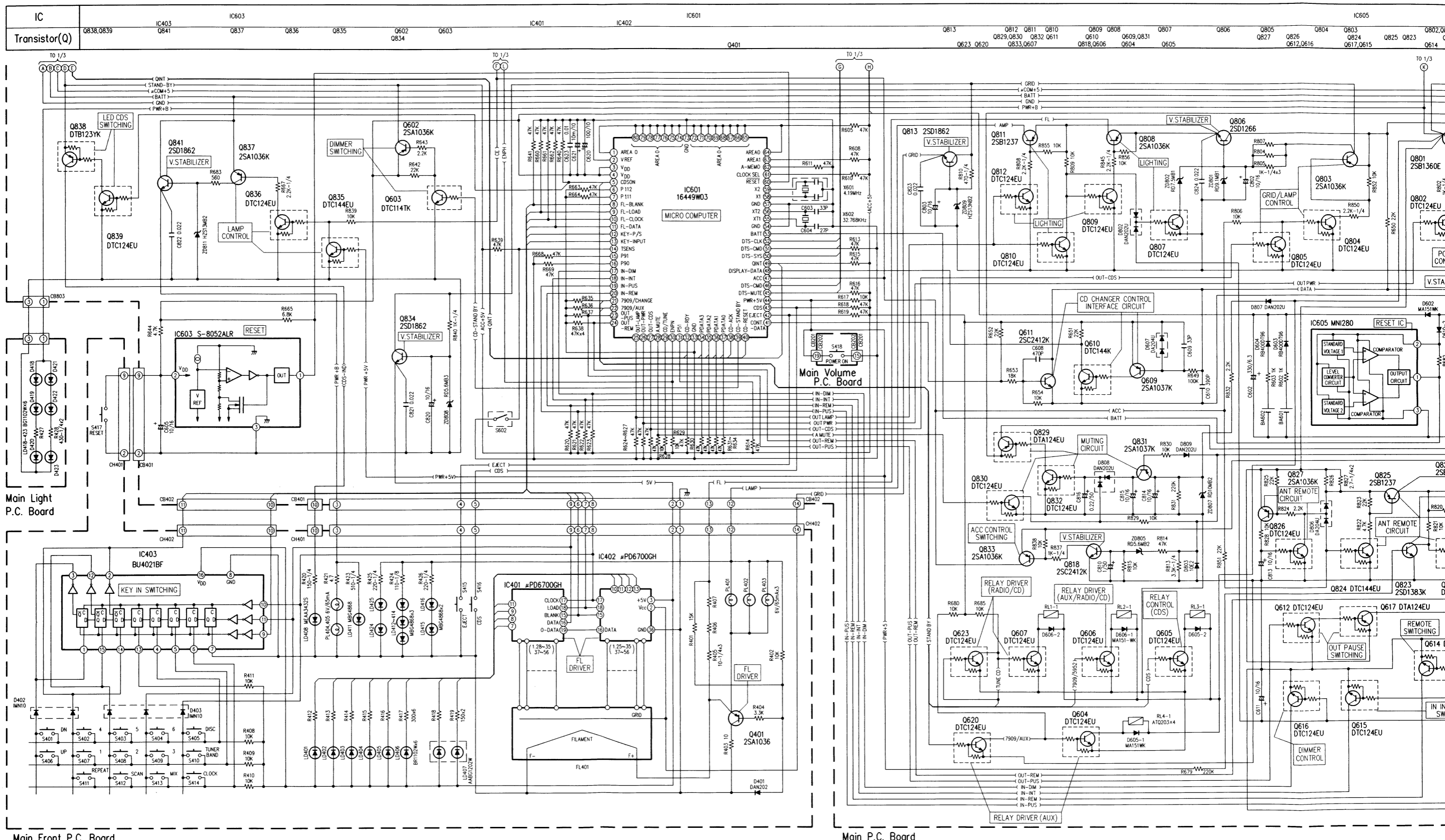
1

2

3

4

5



Main Front P.C. Board

Main P.C. Board

A

B - 44 -

C

D

E

- 45 - F

G

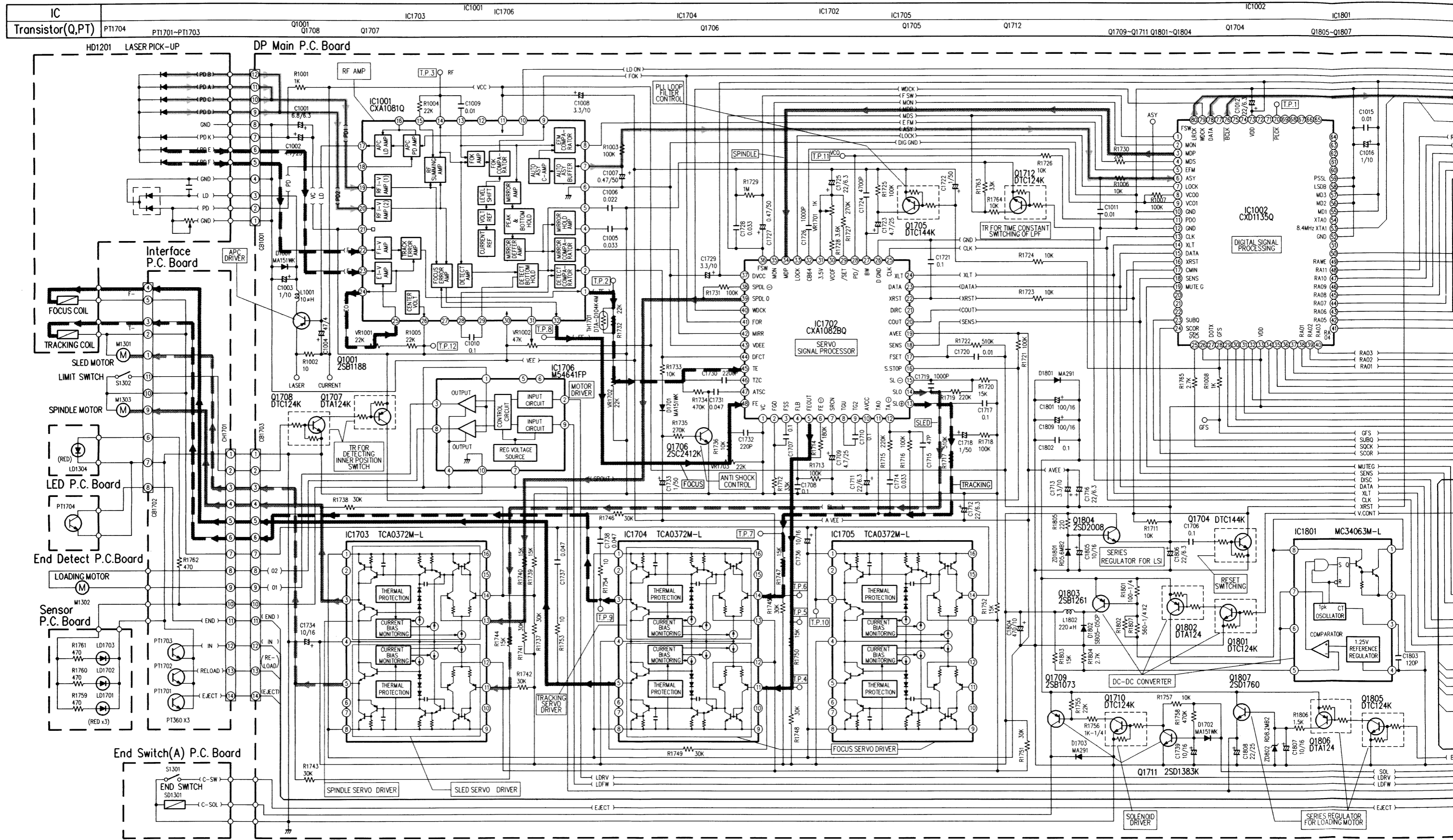
H



# Schematic Diagram (3/3)

7909L

7909I



1

2

3

4

5

A

B - 47 -

C

D

E

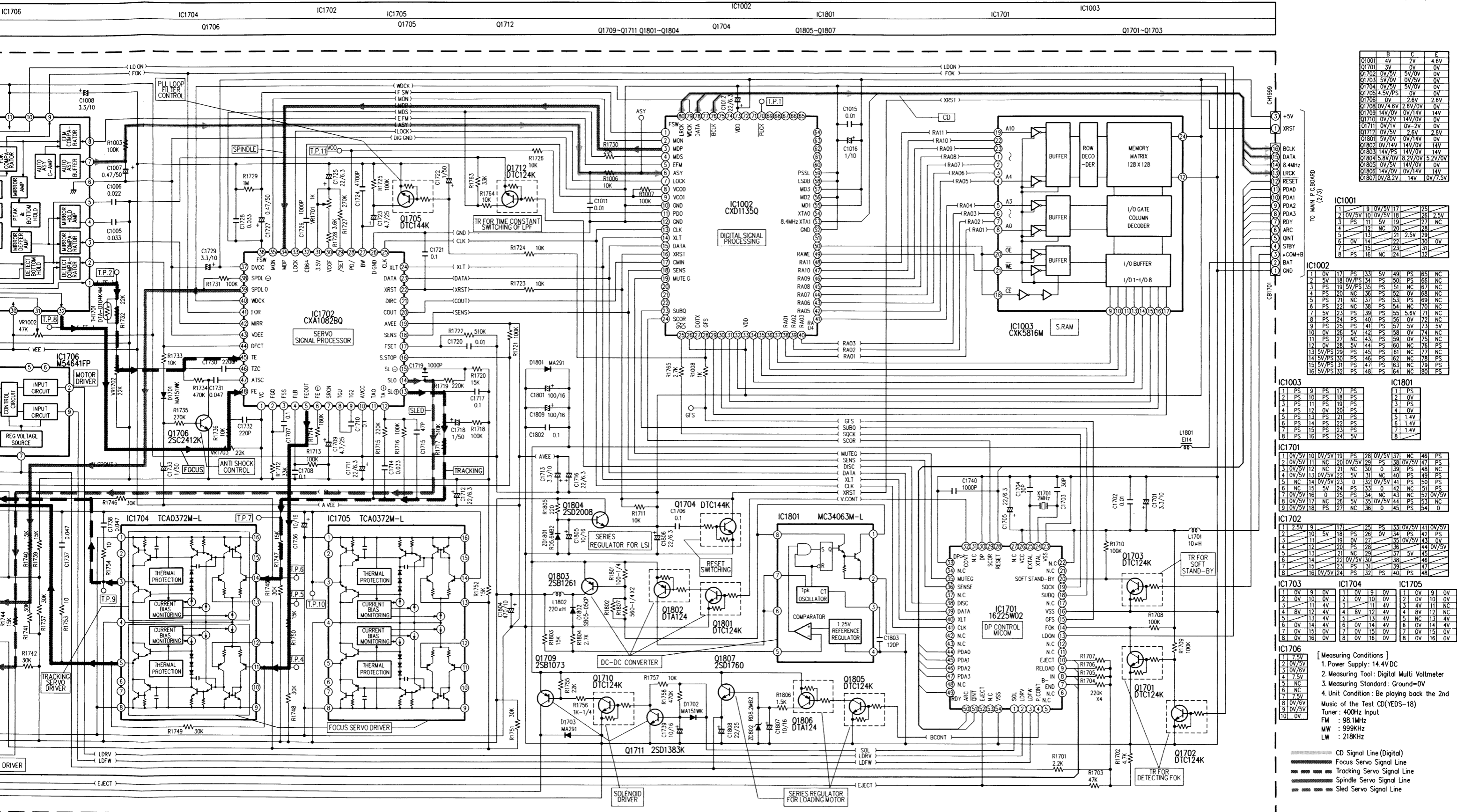
F - 48 -

G

H

NOTES:

- 1. All resistance values are in ohms. K = 1,000
- 2. All capacitance values are in microfarads. P =  $\frac{1}{1,000,000}$



	B	C	E
Q1701	4V	2V	4.6V
Q1702	3V	0V	0V
Q1703	5V/5V	5V/5V	0V
Q1704	0V/5V	0V/5V	0V
Q1705	4.5V/PS	0V	0V
Q1706	0V	2.6V	2.6V
Q1708	0V/4.6V	2.6V/0V	0V
Q1709	14V/0V	0V/14V	14V
Q1710	0V/2V	14V/0V	0V
Q1711	0V/1V	0V-2V	0V
Q1712	0V/5V	0V/2.5V	2.5V
Q1801	5V/0V	0V/14V	0V
Q1802	0V/14V	14V/0V	14V
Q1803	14V/PS	14V/0V	14V
Q1804	5.8V/0V	8.2V/0V	5.2V/0V
Q1805	0V/5V	14V/0V	0V
Q1806	14V/0V	0V/14V	14V
Q1807	0V/6.2V	14V	0V/7.5V

IC1001 (2/3)			
1	PS	9	10V/5V/17
2	0V/5V	11	0V/5V/18
3	PS	11	5V/19
4	17	NC	20
5	PS	22	2.5V
6	0V	14	2.5V
7	PS	15	23
8	PS	16	NC

IC1002			
1	0V	17	PS
2	5V	18	0V/PS
3	PS	19	5V/PS
4	PS	20	NC
5	PS	21	NC
6	PS	22	NC
7	5V	23	PS
8	PS	24	PS
9	PS	25	PS
10	0V	26	5V
11	PS	27	NC
12	0V	28	PS
13	5V/PS	29	PS
14	5V/PS	30	PS
15	5V/PS	31	PS
16	5V/PS	32	PS

IC1003		IC1801	
1	PS	1	PS
2	PS	2	PS
3	PS	3	PS
4	PS	4	PS
5	PS	5	1.4V
6	PS	6	1.4V
7	PS	7	1.4V
8	PS	8	1.4V

IC1701			
1	0V/5V	10	0V/5V
2	0V/5V	11	NC
3	0V/5V	12	NC
4	0V/5V	13	0V/5V
5	NC	14	0V/5V
6	NC	15	5V
7	0V/5V	16	0V
8	0V/5V	17	NC
9	0V/5V	18	NC

IC1702			
1	2.5V	9	17
2	10	5V	18
3	11	19	0V
4	12	20	PS
5	13	21	NC
6	14	22	0V/5V
7	15	23	PS
8	16	0V/5V	24

IC1703		IC1704		IC1705	
1	0V	9	0V	1	0V
2	0V	10	0V	2	0V
3	11	4V	3	11	4V
4	8V	12	4V	4	8V
5	13	4V	5	13	4V
6	0V	14	0V	6	0V
7	0V	15	0V	7	0V
8	0V	16	0V	8	0V

IC1706			
1	7.5V		
2	0V/5V		
3	0V/6V		
4	7.5V		
5	NC		
6	NC		
7	7.5V		
8	0V/6V		
9	0V/5V		
10	0V		

- [Measuring Conditions]
- Power Supply: 14.4VDC
  - Measuring Tool: Digital Multi Voltmeter
  - Measuring Standard: Ground=0V
  - Unit Condition: Be playing back the 2nd Music of the Test CD (YEDS-18)
- Tuner: 400Hz Input  
 FM: 98.1MHz  
 MW: 999KHz  
 LW: 218KHz

- CD Signal Line (Digital)
- Focus Servo Signal Line
- Tracking Servo Signal Line
- Spindle Servo Signal Line
- Sled Servo Signal Line

# Electrical Parts List

Resistor : Carbon resistors under 1/4 watts are not mentioned in the parts list, please confirm them by schematic diagram.  
 uF=microfarads, pF=picofarads

Abbreviations					Symbol No.	Part No.	Description		
RES.=Resistor					Q11	48T94606F03	CP., DTC124EU		
C.F.=Carbon Film					Q12	48T94606F03	CP., DTC124EU		
M.F.=Metal Film					Q13	48T62967F33	CP., DTC343T		
M.O.=Metal Oxide Film					Q14	48T62967F33	CP., DTC343T		
M.P.=Metal Plate					Q602	48T63419F01	CP., 2SA1036K		
TR.=Transistor					Q603	48T62967F20	CP., DTC114TK		
TRANS.=Transformer					Q604	48T94606F03	CP., DTC124EU		
CP.=Chip					Q605	48T94606F03	CP., DTC124EU		
CAP.=Capacitor					Q606	48T94606F03	CP., DTC124EU		
ELY.=Electrolytic					Q607	48T94606F03	CP., DTC124EU		
CER.=Ceramic					Q609	48T63420F01	CP., 2SA1037K		
MYL.=Mylar					Q610	48T62967F14	CP., DTC144K		
TAN.=Tantalum					Q611	48T63417F01	CP., 2SC2412K		
POLY.=Polystyrol					Q612	48T94606F03	CP., DTC124EU		
PP.=Polypropylene					Q613	48T94606F03	CP., DTC124EU		
PLT.=Polyethylene					Q614	48T94606F03	CP., DTC124EU		
Symbol No.	Part No.	Description			Q615	48T94606F03	CP., DTC124EU		
Main P. C. Board					Q616	48T94606F03	CP., DTC124EU		
IC's					Q617	48T94606F53	CP., DTA124EU		
IC1	51T94468F04	94468F04			Q620	48T94606F03	CP., DTC124EU		
IC2	51T96030F01	μ PC1675G			Q621	48T94606F53	CP., DTA124EU		
or	51T96030F02	μ PC1675G			Q622	48T94606F01	CP., DTC144EU		
IC3	51T92001F01	BA4560F			Q623	48T94606F03	CP., DTC124EU		
or	51T93338F01	NJM4560E			Q801	48T15701W02	2SB1360E		
IC4	51T92001F01	BA4560F			Q802	48T94606F03	CP., DTC124EU		
or	51T93338F01	NJM4560E			Q803	48T63419F01	CP., 2SA1036K		
IC204	51T92001F01	BA4560F			Q804	48T94606F03	CP., DTC124EU		
or	51T93338F01	NJM4560E			Q805	48T94606F03	CP., DTC124EU		
IC205	51T93338F01	NJM2904M			Q806	48T56031F01	2SD1266		
IC301	51T15628W02	SM5813AF			Q807	48T94606F03	CP., DTC124EU		
IC302	51T16104W03	PCM1701P			Q808	48T63419F01	CP., 2SA1036K		
IC303	51T16104W03	PCM1701P			Q809	48T94606F03	CP., DTC124EU		
IC304	51T93532F07	TC4S66F			Q810	48T94606F03	CP., DTC124EU		
IC305	51T93532F07	TC4S66F			Q811	48T83417F03	2SB1237		
IC307	51T95009F01	M5238FP			Q812	48T94606F03	CP., DTC124EU		
IC308	51T95009F01	M5238FP			Q813	48T83834F04	2SD1862		
IC309	51T25154W01	BA15532F			Q818	48T63417F01	CP., 2SC2412K		
IC310	51T25154W01	BA15532F			Q819	48T83417F03	2SB1237		
IC601	51T16449W03	16449W03			Q820	48T94606F03	CP., DTC124EU		
IC603	51T92166F01	S-8052ALR			Q821	48T83417F03	2SB1237		
IC605	51T72309F01	MN1280			Q822	48T94606F03	CP., DTC124EU		
Transistors					Q823	48T81552F01	CP., 2SD1383K		
Q1	48T94606F03	CP., DTC124EU			Q824	48T94606F01	CP., DTC144EU		
Q2	48T94606F53	CP., DTA124EU			Q825	48T83417F03	2SB1237		
Q3	48T83834F04	2SD1862			Q826	48T94606F03	CP., DTC124EU		
Q4	48T83417F03	2SB1237			Q827	48T63419F01	CP., 2SA1036K		
Q5	48T83417F03	2SB1237			Q828	48T83834F04	2SD1862		
Q6	48T94606F03	CP., DTC124EU			Q829	48T94606F53	CP., DTA124EU		
Q7	48T94606F03	CP., DTC124EU							
Q8	48T94606F03	CP., DTC124EU							
Q9	48T90181F05	2SD1993							
Q10	48T90181F05	2SD1993							

Symbol No.	Part No.	Description			Symbol No.	Part No.	Description		
Q830	48T94606F03	CP., DTC124EU			ZD809	48T90517F54	Zener, HZS13NB2		
Q831	48T63420F01	CP., 2SA1037K			ZD810	48T90517F31	Zener, HZS6.2NB3		
Q832	48T94606F03	CP., DTC124EU			ZD811	48T62934F49	Zener, CP., RD13MB2		
Q833	48T63419F01	CP., 2SA1036K			Coil/Filter				
Q834	48T83834F04	2SD1862			L801	25C40894G06	Filter, Choke1.2mH		
Q835	48T94606F01	CP., DTC144EU			BPF1	91T16380W01	Band Pass Filter 10828K		
Q836	48T94606F03	CP., DTC124EU			Relays				
Q837	48T63419F01	CP., 2SA1036K			RL1	80T90324F01	ATQ203		
Q838	48T94875F04	CP., DTB123YK			RL2	80T90324F01	ATQ203		
Q839	48T94606F03	CP., DTC124EU			RL3	80T90324F01	ATQ203		
Q840	48T83834F04	2SD1862			RL4	80T90324F01	ATQ203		
Q841	48T83834F04	2SD1862			Switch				
Diodes					S602	40T72772F02	TR87B10F		
D1	48T94608F02	CP., DAP202U			Crystals				
D2	48T94608F03	CP., DAN202U			X1	48T82502F02	AT-51 4.5MHz		
D602	48T52446F01	CP., MA151WK			X301	48T72757F01	8.4672MHz		
D603	48T15254W01	CP., RB400DT96			X601	91T15285W01	CER., Lock, 4.19MHz		
D604	48T15254W01	CP., RB400DT96			X602	48T15849W02	32.768KHz		
D605	48T52446F01	CP., MA151WK			Capacitors				
D606	48T52446F01	CP., MA151WK			C1	08S82122F21	CP., 22pF		
D607	48T94608F01	CP., DA204U			C2	08S82122F21	CP., 22pF		
D608	48T15290W01	DAN213			C3	08S65128F35	CP., 100pF		
D610	48T94608F02	CP., DAP202U			C4	23T25149W13	ELY., 100 $\mu$ F/10V		
D612	48T52446F01	CP., MA151WK			C5	08S65128F69	CP., 0.01 $\mu$ F		
D801	48C40235G02	10E2			C6	23T25149W09	ELY., 10 $\mu$ F/16V		
D802	48T94608F03	CP., DAN202U			C7	08S65128F69	CP., 0.01 $\mu$ F		
D803	48C40235G02	10E2			C8	23T25149W10	ELY., 22 $\mu$ F/16V		
D804	48T15512W01	CP., DSM10			C9	08S65128F69	CP., 0.01 $\mu$ F		
D805	48T15512W01	CP., DSM10			C10	23T16086W01	ELY., 220 $\mu$ F/10V		
D806	48T94608F01	CP., DA204U			C11	23S57422F03	ELY., 0.33 $\mu$ F/50V		
D807	48T94608F03	CP., DAN202U			C12	08S65128F69	CP., 0.01 $\mu$ F		
D808	48T94608F03	CP., DAN202U			C13	23T82372F19	ELY., (B. P) 2.2 $\mu$ F/50V		
D809	48T94608F03	CP., DAN202U			C14	08S65128F69	CP., 0.01 $\mu$ F		
ZD1	48T83128F25	Zener, HZS9C1L			C15	08S65128F69	CP., 0.01 $\mu$ F		
ZD2	48T62934F05	Zener, CP., RD3.0MB2			C16	08S65128F57	CP., 1000pF		
ZD3	48T83128F25	Zener, HZS9C1L			C17	08S65128F69	CP., 0.01 $\mu$ F		
ZD301	48T90517F25	Zener, HZS5.1NB3			C18	08S65128F57	CP., 1000pF		
ZD801	48T62934F36	Zener, CP., RD9.1MB1			C19	08S53332F51	CP., 0.022 $\mu$ F		
ZD802	48T62934F30	Zener, CP., RD7.5MB1			C20	08S65128F57	CP., 1000pF		
ZD805	48T62934F22	Zener, CP., RD5.6MB2							
ZD806	48T90517F28	Zener, HZS5.6NB3							
ZD807	48T62934F40	Zener, CP., RD10MB2							
ZD808	48T62934F23	Zener, CP., RD5.6MB3							



Symbol No.	Part No.	Description			Symbol No.	Part No.	Description		
C21	08S65128F57	CP., 1000pF			C318	08T93406F33	P.P., 2200pF		
C22	08S65128F23	CP., 33pF			C319	08T93406F33	P.P., 2200pF		
C23	08S65128F72	CP., 0.022 $\mu$ F			C320	08T93406F33	P.P., 2200pF		
C24	23T25149W01	ELY., 0.1 $\mu$ F/50V			C321	08T93406F33	P.P., 2200pF		
C25	08S65128F71	CP., 0.015 $\mu$ F			C322	08T93406F33	P.P., 2200pF		
C26	08S65128F71	CP., 0.015 $\mu$ F			C323	08T93406F33	P.P., 2200pF		
C27	08S65128F56	CP., 820pF			C324	08T00151L01	P.P., 100pF		
C28	08S65128F56	CP., 820pF			C325	08T00151L01	P.P., 100pF		
C29	08S65128F47	CP., 330pF			C326	23T25149W09	ELY., 10 $\mu$ F/16V		
C30	08S65128F47	CP., 330pF			C327	23T25149W09	ELY., 10 $\mu$ F/16V		
C31	08S82122F21	CP., 22pF			C330	23T25149W08	ELY., 4.7 $\mu$ F/50V		
C32	08S82122F21	CP., 22pF			C331	23T25149W08	ELY., 4.7 $\mu$ F/50V		
C33	23T25149W05	ELY., 1 $\mu$ F/50V			C332	23T25149W09	ELY., 10 $\mu$ F/16V		
C34	23T25149W05	ELY., 1 $\mu$ F/50V			C602	23T16086W02	ELY., 330 $\mu$ F/6.3V		
C35	23T25149W09	ELY., 10 $\mu$ F/16V			C603	08S82122F25	CP., 33pF		
C36	23T25149W09	ELY., 10 $\mu$ F/16V			C604	08S82122F23	CP., 27pF		
C40	08S65128F69	CP., 0.01 $\mu$ F			C605	23T25149W09	ELY., 10 $\mu$ F/16V		
C41	08T15399W01	CP., 0.022 $\mu$ F			C608	08S65128F51	CP., 470pF		
C42	08T15399W01	CP., 0.022 $\mu$ F			C609	08S65128F23	CP., 33pF		
C48	23T74437F32	TAN., 10 $\mu$ F/16V			C610	08S65128F49	CP., 390pF		
C49	23T74437F32	TAN., 10 $\mu$ F/16V			C611	23T25149W09	ELY., 10 $\mu$ F/16V		
C50	08S65128F72	CP., 0.022 $\mu$ F			C620	23T25149W13	ELY., 100 $\mu$ F/10V		
C60	21C45322G22	CER., 100pF			C621	23T74181F38	CP., T.T., 10mF/10V		
C215	23T25149W09	ELY., 10 $\mu$ F/16V			C623	08S65128F69	CP., 0.01 $\mu$ F		
C216	23T25149W09	ELY., 10 $\mu$ F/16V			C624	23T25149W09	ELY., 10 $\mu$ F/16V		
C217	23T25149W09	ELY., 10 $\mu$ F/16V			C625	08S65128F69	CP., 0.01 $\mu$ F		
C218	23T25149W09	ELY., 10 $\mu$ F/16V			C626	08S65128F72	CP., 0.022 $\mu$ F		
C219	23T25149W09	ELY., 10 $\mu$ F/16V			C801	23T25364W01	ELY., 1000 $\mu$ F/16V		
C220	23T25149W09	ELY., 10 $\mu$ F/16V			C802	23T25149W09	ELY., 10 $\mu$ F/16V		
C221	23T25149W09	ELY., 10 $\mu$ F/16V			C803	23T25149W09	ELY., 10 $\mu$ F/16V		
C222	23T25149W09	ELY., 10 $\mu$ F/16V			C806	23T25149W12	ELY., 47 $\mu$ F/16V		
C223	23T25149W09	ELY., 10 $\mu$ F/16V			C807	23T25149W12	ELY., 47 $\mu$ F/16V		
C224	23T25149W09	ELY., 10 $\mu$ F/16V			C810	23T25149W05	ELY., 1 $\mu$ F/50V		
C301	08S82122F21	CP., 22pF			C813	23T25149W09	ELY., 10 $\mu$ F/16V		
C302	08S82122F21	CP., 22pF			C814	23T25149W09	ELY., 10 $\mu$ F/16V		
C303	23T74181F38	CP., T.T., 10mF/10V			C815	23T25149W09	ELY., 10 $\mu$ F/16V		
C304	23S41059P26	TAN., 10 $\mu$ F/16V			C816	23T25149W02	ELY., 0.22 $\mu$ F/50V		
C305	23S41059P26	TAN., 10 $\mu$ F/16V			C818	23T25149W09	ELY., 10 $\mu$ F/16V		
C306	23S41059P26	TAN., 10 $\mu$ F/16V			C820	23T25149W09	ELY., 10 $\mu$ F/16V		
C307	23S41059P26	TAN., 10 $\mu$ F/16V			C821	08S65128F72	CP., 0.022 $\mu$ F		
C308	08T00151L05	P.P., 220pF			C822	08S65128F72	CP., 0.022 $\mu$ F		
C309	08T00151L05	P.P., 220pF			C823	08S65128F72	CP., 0.022 $\mu$ F		
C310	23T25149W05	ELY., 1 $\mu$ F/50V			C824	08S53332F51	CP., 0.022 $\mu$ F		
C311	23T25149W05	ELY., 1 $\mu$ F/50V			C850	23T25149W09	ELY., 10 $\mu$ F/16V		
C312	23T25149W05	ELY., 1 $\mu$ F/50V			C851	23T25149W09	ELY., 10 $\mu$ F/16V		
C313	23T25149W05	ELY., 1 $\mu$ F/50V							
C314	23T25149W05	ELY., 1 $\mu$ F/50V							
C315	23T25149W05	ELY., 1 $\mu$ F/50V							
C316	08T93406F46	P.P., 7500pF							
C317	08T93406F46	P.P., 7500pF							

Symbol No.	Part No.	Description			Symbol No.	Part No.	Description		
Resistors (All resistors are chip 1/16W±5% unless otherwise noted.)									
R1	06S64995F93	47k ohm			R62	06S64995F53	1k ohm		
R2	06S64995F93	47k ohm			R63	06S64995F53	1k ohm		
R3	06S64995F93	47k ohm			R235	06S64995F77	10k ohm		
R5	06S64995F93	47k ohm			R236	06S64995F77	10k ohm		
R6	06S64995F77	10k ohm			R237	06S64995F77	10k ohm		
R7	06S64995F77	10k ohm			R238	06S64995F77	10k ohm		
R8	06S64995F77	10k ohm			R239	06S64995F91	39k ohm		
R10	06T70072F53	1k ohm 1/4W			R240	06S64995F91	39k ohm		
R11	06S64995F65	3.3k ohm			R241	06S64995F91	39k ohm		
R12	06T70072F53	1k ohm 1/4W			R242	06S64995F91	39k ohm		
R13	06S64995F65	3.3k ohm			R243	06S64995F85	22k ohm		
R14	06S64995F65	3.3k ohm			R244	06S64995F85	22k ohm		
R15	06S64995F77	10k ohm			R245	06S64995F77	10k ohm		
R16	06S64995F53	1k ohm			R246	06S64995F77	10k ohm		
R17	06S64995F93	47k ohm			R247	06S64995F77	10k ohm		
R18	06S64995F93	47k ohm			R248	06S64995F77	10k ohm		
R19	06S64995F05	10 ohm			R249	06S64995F77	10k ohm		
R20	06S64995F61	2.2k ohm			R250	06S64995F77	10k ohm		
R21	06T70072F41	330 ohm 1/4W			R251	06S64995F77	10k ohm		
R23	06S64995F57	1.5k ohm			R252	06S64995F77	10k ohm		
R24	06S64995F65	3.3k ohm			R253	06S64995F85	22k ohm		
R25	06S64995F53	1k ohm			R254	06S64995F85	22k ohm		
R26	06S64995F65	3.3k ohm			R260	06S64996F02	100k ohm		
R27	06S64995F53	1k ohm			R340	06T70072F67	3.9k ohm 1/4W		
R28	06S64995F53	1k ohm			R602	06S64995F53	1k ohm		
R29	06S64995F15	27 ohm			R603	06S64995F53	1k ohm		
R30	06S64995F61	2.2k ohm			R605	06S64995F93	47k ohm		
R31	06S64995F29	100 ohm			R608	06S64995F93	47k ohm		
R32	06S64995F61	2.2k ohm			R610	06S64995F93	47k ohm		
R33	06S64995F73	6.8k ohm			R611	06S64995F93	47k ohm		
R34	06S64996F26	1M ohm			R613	06S64995F93	47k ohm		
R35	06S64995F73	6.8k ohm			R614	06S64995F93	47k ohm		
R36	06S64995F73	6.8k ohm			R615	06S64995F93	47k ohm		
R37	06S64995F81	15k ohm			R616	06S64995F93	47k ohm		
R38	06S64995F81	15k ohm			R617	06S64995F77	10k ohm		
R39	06S64996F02	100k ohm			R618	06S64995F93	47k ohm		
R40	06S64996F02	100k ohm			R619	06S64995F93	47k ohm		
R41	06S64996F02	100k ohm			R620	06S64995F93	47k ohm		
R42	06S64996F02	100k ohm			R621	06S64995F93	47k ohm		
R43	06S64995F83	18k ohm			R622	06S64995F93	47k ohm		
R44	06S64995F83	18k ohm			R623	06S64995F93	47k ohm		
R45	06S64995F93	47k ohm			R624	06S64995F93	47k ohm		
R46	06S64995F93	47k ohm			R625	06S64995F93	47k ohm		
R47	06S64995F65	3.3k ohm			R626	06S64995F93	47k ohm		
R48	06S64995F65	3.3k ohm			R627	06S64995F93	47k ohm		
R49	06S64996F08	180k ohm			R628	06S64995F77	10k ohm		
R50	06S64996F08	180k ohm			R629	06S64995F77	10k ohm		
R51	06S64995F85	22k ohm			R630	06S64995F93	47k ohm		
R52	06S64995F85	22k ohm			R631	06S64995F93	47k ohm		
R53	06S64995F05	10 ohm			R632	06S64995F93	47k ohm		

Symbol No.	Part No.	Description			Symbol No.	Part No.	Description		
R633	06S64995F93	47k ohm			R819	06S64995F69	4.7k ohm		
R634	06S64995F93	47k ohm			R820	06S64995F85	22k ohm		
R635	06S64995F93	47k ohm			R821	06S64995F77	10k ohm		
R636	06S64995F93	47k ohm			R822	06S64995F69	4.7k ohm		
R637	06S64995F93	47k ohm			R823	06S64995F85	22k ohm		
R638	06S64995F93	47k ohm			R824	06S64995F61	2.2k ohm		
R639	06S64995F93	47k ohm			R825	06S64995F85	22k ohm		
R640	06S64995F93	47k ohm			R826	06T70072F80	2.7 ohm 1/4W		
R641	06S64995F93	47k ohm			R827	06T70072F80	2.7 ohm 1/4W		
R642	06S64995F85	22k ohm			R828	06S64995F77	10k ohm		
R643	06S64995F61	2.2k ohm			R829	06S64995F77	10k ohm		
R644	06S64995F69	4.7k ohm			R830	06S64995F77	10k ohm		
R649	06S64996F02	100k ohm			R831	06S64996F10	220k ohm		
R650	06S64995F85	22k ohm			R832	06S64995F61	2.2k ohm		
R651	06S64995F85	22k ohm			R836	06T70072F65	3.3K ohm 1/4W		
R652	06S53330F85	22k ohm 1/8W			R837	06T70072F53	1k ohm 1/4W		
R653	06S64995F83	18k ohm			R838	06S64995F77	10k ohm		
R654	06S64995F77	10k ohm			R839	06S64995F77	10k ohm		
R656	06T70072F53	1k ohm 1/4W			R840	06T70072F53	1k ohm 1/4W		
R657	06S64995F77	10k ohm			R845	06T70072F61	2.2k ohm 1/4W		
R660	06S64995F93	47k ohm			R850	06T70072F61	2.2k ohm 1/4W		
R661	06S64995F93	47k ohm			R851	06S64995F85	22k ohm		
R662	06S64995F93	47k ohm			R852	06S64995F77	10k ohm		
R663	06S64995F93	47k ohm			R855	06S64995F77	10k ohm		
R664	06S64995F93	47k ohm			R856	06S64995F77	10k ohm		
R665	06S53330F73	6.8k ohm 1/8W			R860	06S53330F77	10K ohm 1/8W		
R667	06T70072F61	2.2k ohm 1/4W			Main Volume P. C. Board				
R668	06S64995F93	47k ohm			IC/Coil/Converter				
R669	06S64995F93	47k ohm			IC202	51T25154W01	IC, BA15532F		
R679	06S64996F10	220k ohm			L802	25T47510F04	Choke, Filter		
R680	06S64995F77	10k ohm			Z1	50T16438W01	DC/DC Converter		
R681	06S64995F77	10k ohm			Transistors				
R682	06S64996F02	100k ohm			Q201	48T63788F01	CP., 2SD1328		
R683	06S64995F47	560 ohm			Q202	48T63788F01	CP., 2SD1328		
R685	06S64995F77	10k ohm			Q203	48T63788F01	CP., 2SD1328		
R687	06S64995F77	10k ohm			Q204	48T63788F01	CP., 2SD1328		
R801	06S53330F77	10k ohm 1/8W			Capacitors				
R802	06T70072F53	1k ohm 1/4W			C211	23T25365W01	ELY., 47 $\mu$ F/25V		
R804	06T70072F53	1k ohm 1/4W			C212	23T25365W01	ELY., 47 $\mu$ F/25V		
R805	06T70072F53	1k ohm 1/4W			C240	08T94422F01	CER., 0.47 $\mu$ F		
R806	06S64995F77	10k ohm			C241	08T94422F01	CER., 0.47 $\mu$ F		
R807	06T70072F53	1k ohm 1/4W			C817	23T25365W01	ELY., 47 $\mu$ F/25V		
R808	06T70072F61	2.2k ohm 1/4W							
R809	06S64995F77	10k ohm							
R810	06T70072F45	470 ohm 1/4W							
R813	06T70072F65	3.3k ohm 1/4W							
R814	06S64995F93	47k ohm							
R815	06S64995F77	10k ohm							
R817	06S64995F69	4.7k ohm							
R818	06S64995F85	22k ohm							

Symbol No.	Part No.	Description			
Volume					
VR201 S418	18T16434W01	Volume, Rotary (Power)			
Resistors (All resistors are chip 1/16W±5% unless otherwise noted.)					
R697	06S64996F02	100k ohm			
R698	06S64996F02	100k ohm			
R699	06S64996F02	100k ohm			
R231	06S64995F76	9.1k ohm			
R232	06S64995F76	9.1k ohm			
R233	06S64995F76	9.1k ohm			
R234	06S64995F76	9.1k ohm			
Main Front P. C. Board					
IC's					
IC201	51T92001F01	BA4560F			
IC401	51T16032W01	μ PD6700GH			
IC402	51T16032W01	μ PD6700GH			
IC403	51T11037W01	BU4021BF			
Transistor					
Q401	48T63419F01	CP., 2SA1036K			
Diodes					
D401	48T94608F03	CP., DAN202U			
D402	48T94471F01	CP., IMN10			
D403	48T94471F01	CP., IMN10			
LEDs					
LD401	48T90476F02	CP., BR1102W (RED)			
LD402	48T90476F02	CP., BR1102W (RED)			
LD403	48T90476F02	CP., BR1102W (RED)			
LD404	48T90476F02	CP., BR1102W (RED)			
LD405	48T90476F02	CP., BR1102W (RED)			
LD406	48T90476F02	CP., BR1102W (RED)			
LD407	48T84017F08	CP., AABG1202W (ORG/GRN)			
LD408	48T52953F06	EAA3432S (ORG)			
LD411	48T15700W02	MBG4868K (GRN)			
LD412	48T15700W02	MBG4868K (GRN)			
LD413	48T15700W02	MBG4868K (GRN)			
LD414	48T15700W02	MBG4868K (GRN)			
LD415	48T15700W02	MBG4868K (GRN)			
LD416	48T15700W02	MBG4868K (GRN)			
Switches					
S401	40T10876W02	Tact (DN)			
S402	40T10876W02	Tact (4)			
S403	40T10876W02	Tact (5)			
S404	40T10876W02	Tact (6)			
S405	40T10876W02	Tact (DISC)			
S406	40T10876W02	Tact (UP)			
S407	40T10876W02	Tact (1)			
S408	40T10876W02	Tact (2)			
S409	40T10876W02	Tact (3)			
S410	40T10876W02	Tact (TUNER BAND)			
S411	40T10876W02	Tact (REPEAT)			
S412	40T10876W02	Tact (SCAN)			
S413	40T10876W02	Tact (M.I.X.)			
S414	40T10876W02	Tact (CLOCK)			
S415	40T10876W02	Tact (EJECT)			
S416	40T10876W02	Tact (CDS)			
S417	40T10876W02	Tact (RESET)			
Lamps					
PL401	65T80294F05	Pilot, 6V-65mA			
PL402	65T80294F05	Pilot, 6V-65mA			
PL403	65T80294F05	Pilot, 6V-65mA			
PL404	65T63304F05	Pilot, 6V-65mA			
PL405	65T63304F05	Pilot, 6V-65mA			
Capacitors					
C201	08T15559W20	CP., TF., 0.039 μ F			
C202	08T15559W20	CP., TF., 0.039 μ F			
C203	08T15559W20	CP., TF., 0.039 μ F			
C204	08T15559W20	CP., TF., 0.039 μ F			
C205	08S82122F45	CP., 220pF			
C206	08S82122F45	CP., 220pF			
C207	08T15559W07	CP., TF., 3300pF			
C208	08T15559W07	CP., TF., 3300pF			
C209	08S82122F29	CP., 47pF			
C210	08S82122F29	CP., 47pF			
C230	23T25149W09	ELY., 10 μ F/16V			
C231	23T25149W09	ELY., 10 μ F/16V			
Resistors (All resistors are chip 1/16w±5% unless otherwise noted.)					
R201	06S64995F77	10k ohm			
R202	06S64995F77	10k ohm			
R203	06S64995F62	2.4k ohm			
R204	06S64995F62	2.4k ohm			
R205	06S64995F77	10k ohm			

Symbol No.	Part No.	Description			Symbol No.	Part No.	Description		
R206	06S64995F77	10k ohm			LD423	48T84017F02	CP., BG1102W (GRN)		
R207	06S64995F62	2.4k ohm							
R208	06S64995F62	2.4k ohm			Resistors (All resistors are chip 1/16W±5% unless otherwise noted.)				
R209	06S64995F52	910 ohm			R427	06T70072F44	430 ohm 1/4W		
R210	06S64995F52	910 ohm			R428	06T70072F44	430 ohm 1/4W		
R211	06S64995F77	10k ohm			DP Main P. C. Board				
R212	06S64995F77	10k ohm			IC's				
R401	06S64995F81	15k ohm			IC1001	51T92280F01	CXA1081Q		
R402	06S64995F77	10k ohm			IC1002	51T84719F02	CXD1135Q		
R403	06S64995F05	10 ohm			IC1003	51T90640F01	CXK5816M		
R404	06S64995F65	3.3k ohm			or	51T84723F02	LC3516AML		
R405	06T70072F05	10 ohm 1/4W			or	51T15420W01	TC5517FL		
R406	06T70072F05	10 ohm 1/4W			IC1701	51T16225W02	16225W02		
R407	06T70072F05	10 ohm 1/4W			or	51T92369F01	92369F01		
R408	06S64995F77	10k ohm			IC1702	51T84119F02	CXA1082BQ		
R409	06S64995F77	10k ohm			IC1703	51T15264W01	TCA0372M-L		
R410	06S64995F77	10k ohm			IC1704	51T15264W01	TCA0372M-L		
R411	06S64995F77	10k ohm			IC1705	51T15264W01	TCA0372M-L		
R412	06S64995F40	300 ohm			IC1706	51T92373F02	M54641 FP		
R413	06S64995F40	300 ohm			IC1801	51T15510W01	MC34063M-L		
R414	06S64995F40	300 ohm			Transistors				
R415	06S64995F40	300 ohm			Q1001	48T80612F01	CP., 2SB1188		
R416	06S64995F40	300 ohm			Q1701	48T62967F03	CP., DTC124K		
R417	06S64995F40	300 ohm			Q1702	48T62967F03	CP., DTC124K		
R418	06S64995F33	150 ohm			Q1703	48T62967F03	CP., DTC124K		
R419	06S64995F33	150 ohm			Q1704	48T62967F04	CP., DTC144K		
R420	06T70072F33	150 ohm 1/4W			Q1705	48T62967F04	CP., DTC144K		
R421	06S64995F01	4.7 ohm			Q1706	48T63417F01	CP., 2SC2412K		
R423	06T70072F46	510 ohm 1/4W			Q1707	48T62966F03	CP., DTA124		
R424	06S53330F30	110 ohm 1/8W			Q1708	48T62967F03	CP., DTC124K		
R425	06T70072F37	220 ohm 1/4W			Q1709	48T93351F01	CP., 2SB1073		
R426	06T70072F37	220 ohm 1/4W			Q1710	48T62967F03	CP., DTC124K		
VR202	18T16435W01	Volume, Slide (Treble) (LD424 Included)			Q1711	48T81552F01	CP., 2SD1383K		
VR203	18T16435W01	Volume, Slide (BASS) (LD425 Included)			Q1712	48T62967F03	CP., DTC124K		
Main Light P. C. Board					Q1801	48T62967F03	CP., DTC124K		
LED's					Q1802	48T62966F03	CP., DTA124		
LD418	48T84017F02	CP., BG1102W (GRN)			Q1803	48T15511W02	CP., 2SB1261		
LD419	48T84017F02	CP., BG1102W (GRN)			Q1804	48T15289W01	2SD2008		
LD420	48T84017F02	CP., BG1102W (GRN)			Q1805	48T62967F03	CP., DTC124K		
LD421	48T84017F02	CP., BG1102W (GRN)			Q1806	48T62966F03	CP., DTA124		
LD422	48T84017F02	CP., BG1102W (GRN)			Q1807	48T92368F01	CP., 2SD1760		

Symbol No.	Part No.	Description			Symbol No.	Part No.	Description		
Diodes									
D1001	48T52446F01	CP., MA151WK			C1702	08S65128F69	CP., 0.01 $\mu$ F		
D1701	48T52446F01	CP., MA151WK			C1703	08S65128F22	CP., 30pF		
D1702	48T52446F01	CP., MA151WK			C1704	08S65128F22	CP., 30pF		
D1703	48T74692F02	CP., MA291			C1705	23T74180F01	ELY., CP., 22 $\mu$ F/6.3V		
D1801	48T74692F02	CP., MA291			C1706	08T15807W05	CP., 0.1 $\mu$ F		
D1802	48T15702W01	CP., SB05			C1707	08T15807W05	CP., 0.1 $\mu$ F		
ZD1801	48T62934F22	Zener, CP., RD5.6MB2			C1708	08T15807W05	CP., 0.1 $\mu$ F		
ZD1802	48T62934F34	Zener, CP., RD8.2MB2			C1709	23T74180F05	ELY., CP., 4.7 $\mu$ F/25V		
Thermistor/Coils/Filter									
TH1701	48T93439F06	Thermistor, 100k ohm			C1710	08T15807W05	CP., 0.1 $\mu$ F		
L1001	24T51656F22	Coil, Inductor 10 $\mu$ H			C1711	23T74180F01	ELY., CP., 22 $\mu$ F/6.3V		
L1701	24T51656F22	Coil, Inductor 10 $\mu$ H			C1712	23T74180F01	ELY., CP., 22 $\mu$ F/6.3V		
L1801	25T47510F04	Choke Filter			C1713	23T74181F23	CP., T.T., 3.3 $\mu$ F/10V		
L1802	24T711179F05	Coil, Inductor (RC805) 220 $\mu$ H			C1714	08T15399W02	CP., 0.033 $\mu$ F		
X1701	91T72630F01	Filter, Ceramic 2MHz			C1715	08S65128F27	CP., 47pF		
Capacitors									
C1001	23T74181F32	CP., T.T., 6.8 $\mu$ F/6.3V			C1716	23T74180F01	ELY., CP., 22 $\mu$ F/6.3V		
C1002	23T74180F05	ELY., CP., 4.7 $\mu$ F/25V			C1717	08T15807W05	CP., 0.1 $\mu$ F		
C1003	23T74181F11	CP., T.T., 1 $\mu$ F/10V			C1718	23T74180F14	ELY., CP., 1 $\mu$ F/50V		
C1004	23T74180F22	ELY., CP., 47 $\mu$ F/4V			C1719	08S65128F57	CP., 1000p		
C1005	08T15399W02	CP., 0.033 $\mu$ F			C1720	08S65128F69	CP., 0.01 $\mu$ F		
C1006	08T15399W01	CP., 0.022 $\mu$ F			C1721	08T15807W05	CP., 0.1 $\mu$ F		
C1007	23T74180F12	ELY., CP., 0.47 $\mu$ F/50V			C1722	23T74180F14	ELY., CP., 1 $\mu$ F/50V		
C1008	23T74181F23	CP., T.T., 3.3 $\mu$ F/10V			C1723	23T74180F05	ELY., CP., 4.7 $\mu$ F/25V		
C1009	08S65128F69	CP., 0.01 $\mu$ F			C1724	08S65128F65	CP., 4700pF		
C1010	08T15807W05	CP., 0.1 $\mu$ F			C1725	23T74180F01	ELY., CP., 22 $\mu$ F/6.3V		
C1011	08S65128F69	CP., 0.01 $\mu$ F			C1726	08S65128F57	CP., 1000pF		
C1012	23T74181F43	CP., T.T., 22 $\mu$ F/6.3V			C1727	23T74180F12	ELY., CP., 0.47 $\mu$ F/50V		
C1015	08S65128F69	CP., 0.01 $\mu$ F			C1728	08T15399W02	CP., 0.033 $\mu$ F		
C1016	23T74181F11	CP., T.T., 1 $\mu$ F/10V			C1729	23T74181F23	CP., T.T., 3.3 $\mu$ F/10V		
C1701	23T74181F23	CP., T.T., 3.3 $\mu$ F/10V			C1730	08S65128F61	CP., 2200pF		
					C1731	08T15399W03	CP., 0.047 $\mu$ F		
					C1732	08S65128F43	CP., 220pF		
					C1733	23T74180F14	ELY., CP., 1 $\mu$ F/50V		
					C1734	23T74180F03	ELY., CP., 10 $\mu$ F/16V		
					C1736	23T74180F03	ELY., CP., 10 $\mu$ F/16V		
					C1737	08T15399W03	CP., 0.047 $\mu$ F		

Symbol No.	Part No.	Description			Symbol No.	Part No.	Description		
C1738	08T15399W03	CP., 0.047 $\mu$ F			R1723	06S64995F77	10k ohm		
C1739	23T74180F03	ELY., CP., 10 $\mu$ F/16V			R1724	06S64995F77	10k ohm		
C1740	08S65128F57	CP., 1000pF			R1725	06S64996F02	100k ohm		
C1801	23S82482F02	ELY., 100 $\mu$ F/16V			R1726	06S64995F77	10k ohm		
C1802	08T15807W05	CP., 0.1 $\mu$ F			R1727	06S64996F12	270k ohm		
C1803	08S65128F37	CP., 120pF			R1728	06S64995F66	3.6k ohm		
C1804	23C42170G32	ELY., 470 $\mu$ F/10V			R1729	06S64996F26	1M ohm		
C1805	23T74180F03	ELY., CP., 10 $\mu$ F/16V			R1730	06S64995F84	20k ohm		
C1806	23T74180F01	ELY., CP., 22 $\mu$ F/6.3V			R1731	06S64996F02	100k ohm		
C1807	23T74180F03	ELY., CP., 10 $\mu$ F/16V			R1732	06S64995F85	22k ohm		
C1808	23T74180F06	ELY., CP., 22 $\mu$ F/25V			R1733	06S64995F77	10k ohm		
C1809	23S82482F02	ELY., 100 $\mu$ F/16V			R1734	06S64996F18	470k ohm		
Resistors (All resistors are chip 1/16W $\pm$ 5% unless otherwise noted.)					R1735	06S64996F12	270k ohm		
R1001	06S64995F53	1k ohm			R1736	06S64995F77	10k ohm		
R1002	06S64995F05	10 ohm			R1737	06S64995F88	30k ohm		
R1003	06S64996F02	100k ohm			R1738	06S64995F88	30k ohm		
R1004	06S64995F85	22k ohm			R1739	06S64995F81	15k ohm		
R1005	06S64995F85	22k ohm			R1740	06S64995F81	15k ohm		
R1006	06S64995F77	10k ohm			R1741	06S64995F88	30k ohm		
R1007	06S64996F02	100k ohm			R1742	06S64995F88	30k ohm		
R1008	06S64995F53	1k ohm			R1743	06S64995F88	30k ohm		
R1701	06S64995F61	2.2k ohm			R1744	06S64995F81	15k ohm		
R1702	06S64995F69	4.7k ohm			R1745	06S64995F88	30k ohm		
R1703	06S64995F93	47k ohm			R1746	06S64995F88	30k ohm		
R1704	06S64996F10	220k ohm			R1747	06S64995F81	15k ohm		
R1705	06S64996F10	220k ohm			R1748	06S64995F88	30k ohm		
R1706	06S64996F10	220k ohm			R1749	06S64995F88	30k ohm		
R1707	06S64996F10	220k ohm			R1750	06S64995F81	15k ohm		
R1708	06S64996F02	100k ohm			R1751	06S64995F88	30k ohm		
R1709	06S64996F02	100k ohm			R1752	06S64995F81	15k ohm		
R1710	06S64996F02	100k ohm			R1753	06S64995F05	10 ohm		
R1711	06S64995F77	10k ohm			R1754	06S64995F05	10 ohm		
R1712	06S64995F89	33k ohm			R1755	06S64995F85	22k ohm		
R1713	06S64996F02	100k ohm			R1756	06T70072F53	1k ohm 1/4W		
R1714	06S64996F08	180k ohm			R1757	06S64995F77	10k ohm		
R1715	06S64996F10	220k ohm			R1758	06S64996F18	470k ohm		
R1716	06S64996F02	100k ohm			R1763	06S64995F89	33k ohm		
R1717	06S64996F19	510k ohm			R1764	06S64995F77	10k ohm		
R1718	06S64996F02	100k ohm			R1765	06S64995F63	2.7k ohm		
R1719	06S64996F10	220k ohm			R1801	06T70072F29	100 ohm 1/4W		
R1720	06S64995F81	15k ohm			R1802	06T70072F47	560 ohm 1/4W		
R1721	06S64996F02	100k ohm			R1803	06S64995F81	15k ohm		
R1722	06S64996F19	510k ohm			R1804	06S64995F63	2.7k ohm		
					R1805	06S64995F37	220 ohm		
					R1806	06S64995F57	1.5k ohm		
					R1807	06T70072F47	560 ohm 1/4W		
					VR1001	18T93996F15	Variable, RH0422C 22k ohm		
					VR1002	18T93996F17	Variable RH0422C 47k ohm		
					VR1701	18T93996F07	Variable, RH0422C 1k ohm		

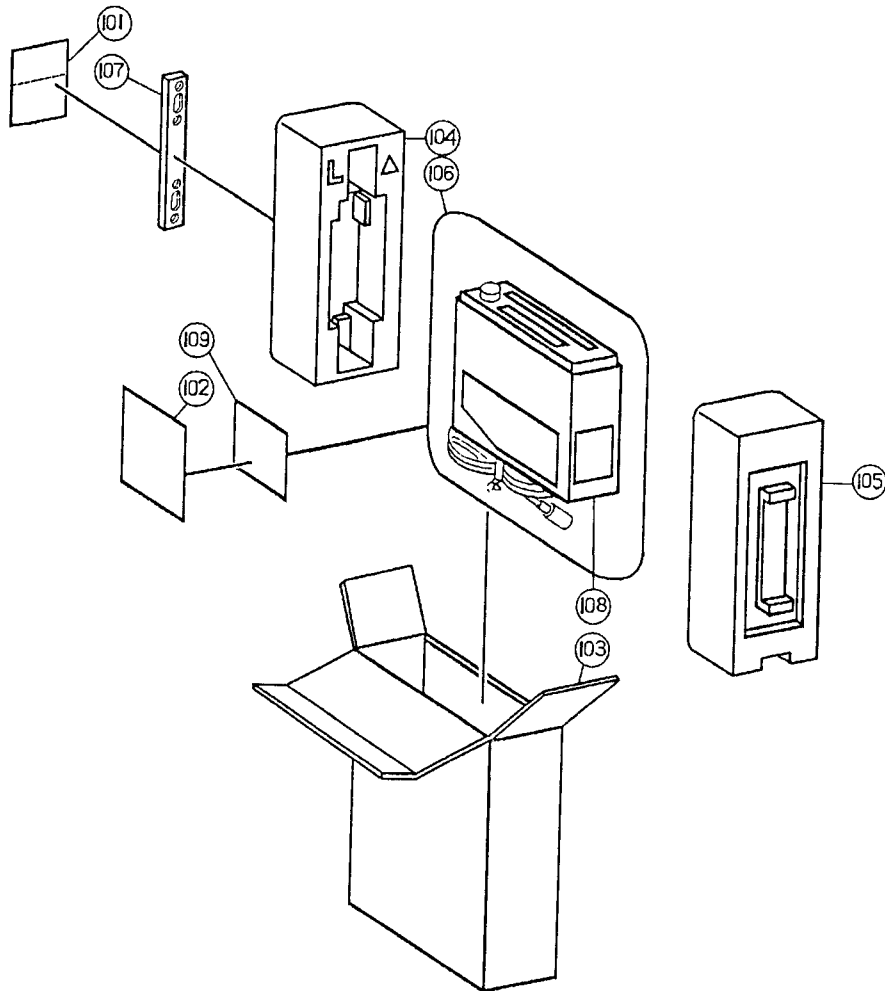
Symbol No.	Part No.	Description			Symbol No.	Part No.	Description		
VR1702	18T93996F15	Variable, RH0422C 22k ohm			LD1304	48T16057W02	LED, AN501 - B1 (RED)		
VR1703	18T93996F15	Variable, RH0422C 22k ohm			M1301	01V21900W45	Assy., Motor Load		
<b>Interface P. C. Board</b>					M1302	59T90879F01	Motor, Load		
<b>Transistors</b>					M1303	59T91005F01	Motor, Spindle		
PT1701	48T92913F01	TR., Photo PT360			PT1704	48T92913F01	Transistor, Photo PT360		
PT1702	48T92913F01	TR., Photo PT360			S1301	40T71025F03	Switch, Detector (END)		
PT1703	48T92913F01	TR., Photo PT360			S1302	40T71025F01	Switch, Detector (LIMIT)		
<b>Resistor</b>					SD1301	01A90816F01	Assy., DP Frame Solenoid		
R1762	06S53330F45	CP., 470 ohm 1/8W							
<b>Sensor P. C. Board</b>									
<b>LEDs</b>									
LD701	48T16057W02	AN501 - B1 (RED)							
LD702	48T16057W02	AN501 - B1 (RED)							
LD703	48T16057W02	AN501 - B1 (RED)							
<b>Resistors</b>									
R759	06S53330F45	CP., 470 ohm 1/8W							
R760	06S53330F45	CP., 470 ohm 1/8W							
R761	06S53330F45	CP., 470 ohm 1/8W							
<b>Miscellaneous</b>									
BA601	60T15855W01	Battery, Lithium (CR2450 - HW1)							
BA602	60T15855W03	Battery, Lithium (CR2450 - VE2)							
ET801	01T25091W01	Assy., QRB Connector							
FL401	65T16436W01	VFD Display (FV356)							
HD1201	88T90878F01	Pick Up Unit							



## Packing Assembly Parts List

Symbol No.	Part No.	Description			Symbol No.	Part No.	Description		
101	01V16500W62	Assy., Kit			102	68P13420W38	Owners, Manual		
101-1	02B47353F01	Nut, Hex (M5)			103	56S20232W02	Carton, Packing (Individual)		
101-2	03S40012G66	Screw, Tapping (M5×20)			104	56D13048W01	Tray, Packing (L)		
101-3	03B44963F03	Bolt, Hex W/Washer (M5×10)			105	56D13048W02	Tray, Packing (R)		
101-4	03A40155F05	Bolt, Hex (M5×14)			106	56B40990T36	Sack, Polyethylene		
101-5	03A40155F01	Bolt, Hex (M5×8)			107	07B64552F01	Bracket, Strap Receiver		
101-6	65A40348G04	Fuse, 3A (For Battery Line)			108	01V21500W49	Assy., Mother Case		
101-7	03A84814F04	Screw, Bind			109	01T96095F01	Assy., Connector (4P)		
101-8	43A58272F04	Spacer							
101-9	45A41684U01	Arm, Adapter							

## Packing Method View



## Cabinet Assembly Parts List

Symbol No.	Index	Part No.	Description			Symbol No.	Index	Part No.	Description		
1	3-C	13C13744W03	Assy., Nosepiece			48	2-C	36C10722W12	Knob, Preset/6		
2	2-E	15C10943W01	Cover, Top			49	2-C	36A10723W01	Knob, Base (PRE)		
4	5-B	07C20703W01	Assy., Handle Bracket			50	2-C	61A11530W01	Lens, Indicator		
5	3-B	36A13682W01	Assy., Control Knob (F)			51	2-C	36B94092F01	Knob, Band/Disc		
6	3-B	36A13683W01	Assy., Control Knob (B)			52	2-C	36B94092F02	Knob, Disc		
7	1-B	36B13674W01	Knob, Slide			53	2-C	36A94093F01	Knob, Band Base		
8	1-B	36B13674W02	Knob, Slide (B)			55	2-C	75A13670W01	Cushion, Knob (B)		
11	3-D	14S94461F55	Insulator, Cover			56	2-C	61A11530W02	Lens, Indicator		
12		03S44205G34	Screw, Pan (M2.6 × 5)			57	2-F	03S44205G29	Screw, Bind (M2.6 × 6)		
13	2-E	03D40014G18	Screw, W/Washer (M2.6 × 6)								
14		03S68555F07	Screw, Pan (M2 × 4)								
15	1-C	04A41345P14	Washer, Lock (M4)								
16	4-G	03S44205G76	Screw, Pan (M2.6 × 8)								
17	2-E	75A20928W01	Rubber, Top Chassis								
19	3-C	75S72374F26	Cushion, Rubber								
20	4-E	03C40121T23	Screw, W/Double Washer (M2.6 × 6)								
23	4-B	26A13680W01	Reflector, Sheet								
25	2-F	77T96028F01	FM/MW/LW Tuner (MB4E7010) (FE1)								
26	3-E	14S58462F74	Insulator, Cover								
27	4-C	43A13227W01	Spacer, LED								
28	4-C	15B13679W01	Case, LED								
29	3-B	07A93877F01	Support, LED (B)								
35	1-C	36B13655W01	Knob, Push								
36	1-C	36B13655W02	Knob, Push (SCAN)								
37	2-C	36B13655W03	Knob, Push (MIX)								
38	2-C	36B13655W04	Knob, Push (CLOCK)								
39	2-C	36B13656W01	Knob, UP/DN								
40	1-C	36A13657W01	Knob, Push (CDS)								
41	2-C	36A13658W01	Knob, Eject								
42	2-C	36A13659W01	Knob, Reset								
43	2-C	36C10722W07	Knob, Preset/1								
44	2-C	36C10722W08	Knob, Preset/2								
45	2-C	36C10722W09	Knob, Preset/3								
46	2-C	36C10722W10	Knob, Preset/4								
47	2-C	36C10722W11	Knob, Preset/5								

NOTE: The parts without part numbers are not supplied.

# Exploded View (Cabinet)

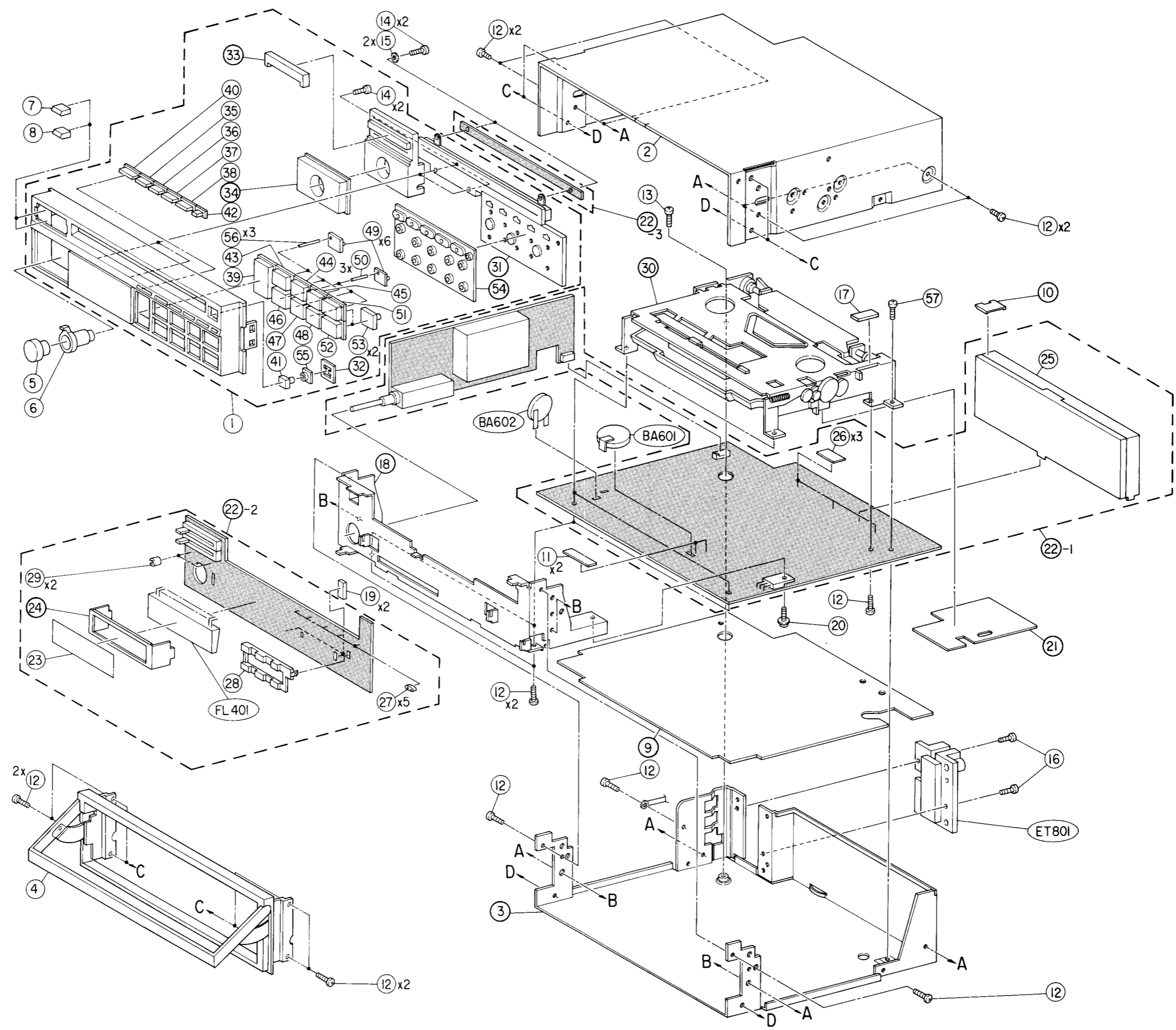
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2

3

4

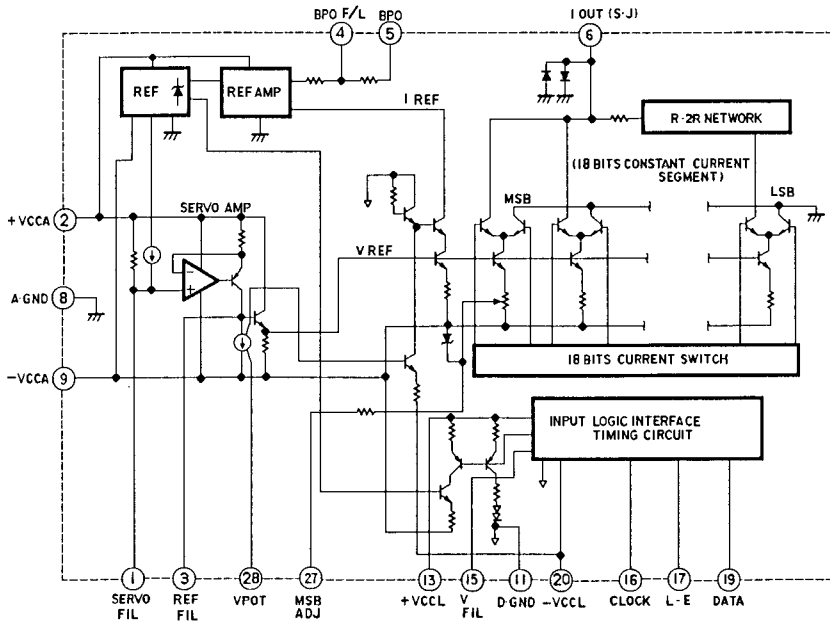
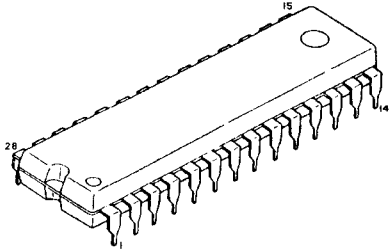
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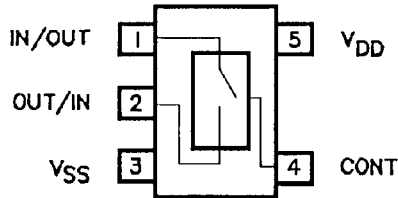
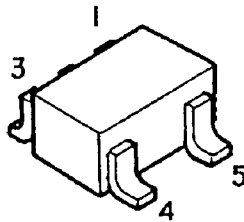
A | B - 62 - | C | D | E | F - 63 - | G | H



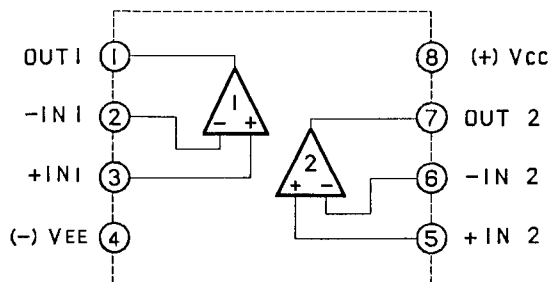
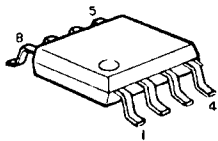
**PCM1701P** : IC302, 303



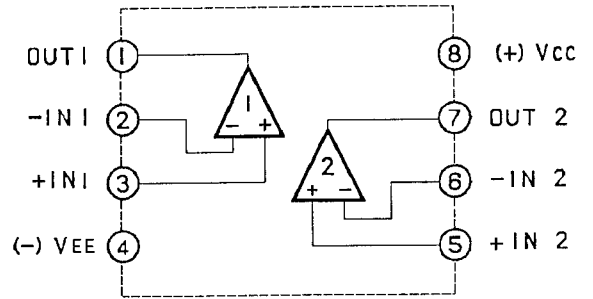
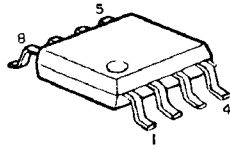
**TC4S66F** : IC304, 305



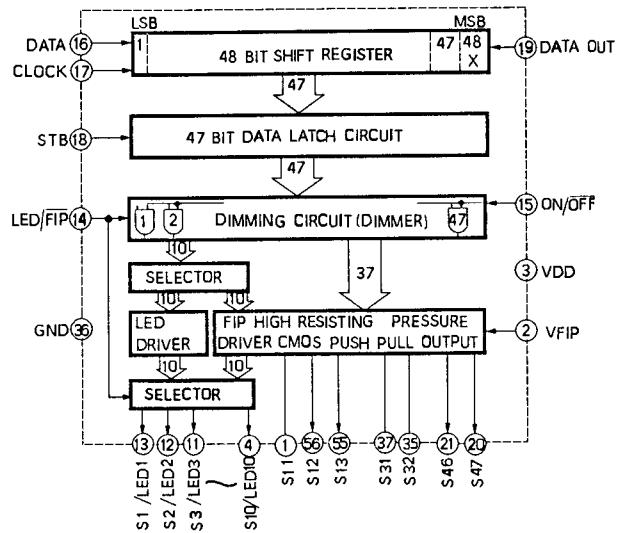
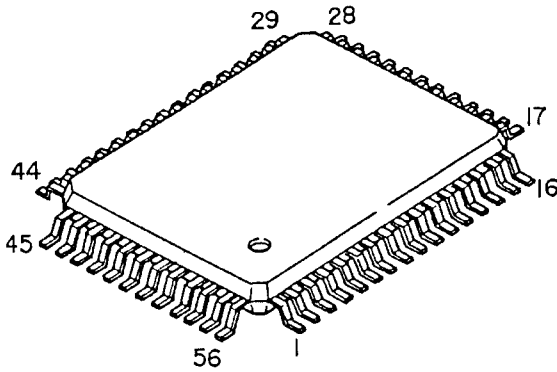
**M5238FP** : IC307, 308



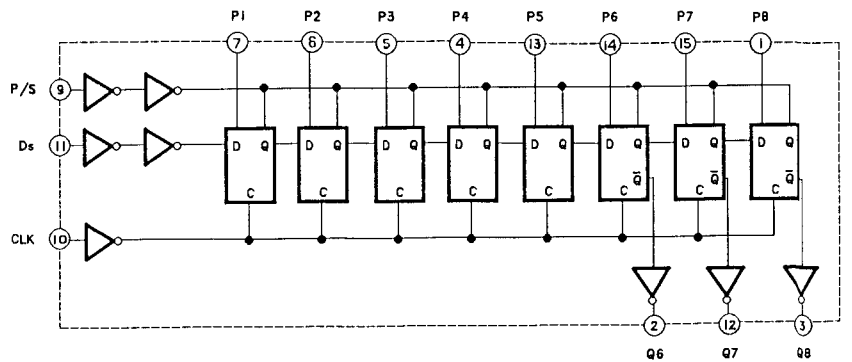
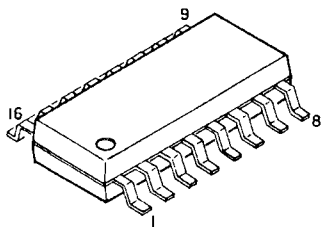
**BA15532F** : IC309, 310, 202



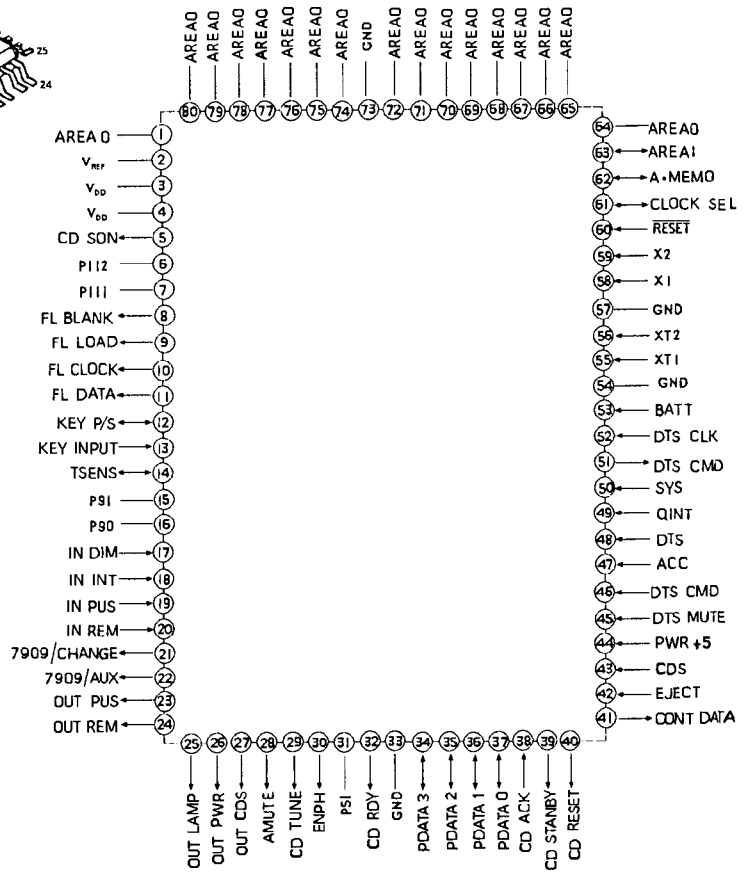
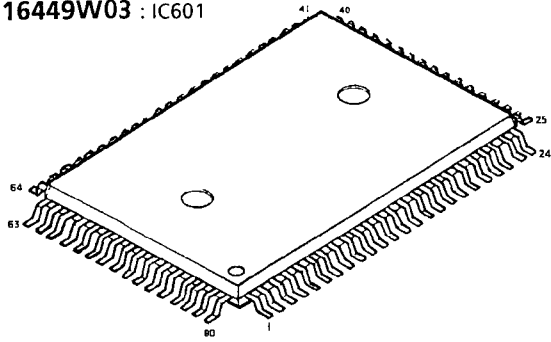
**μPD6700GH** : IC401, 402



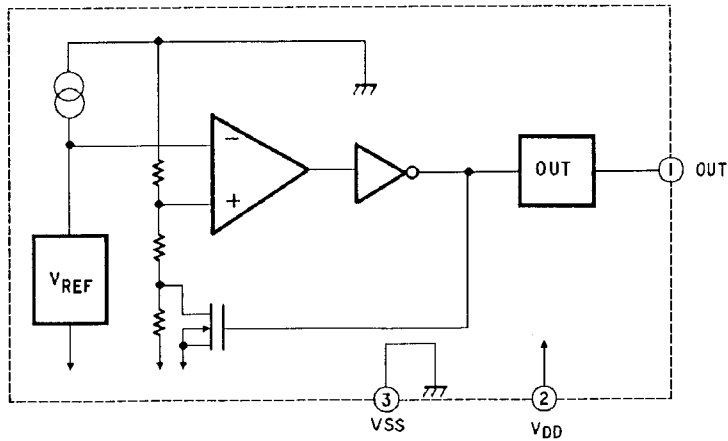
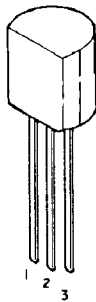
**BU4021BF** : IC403



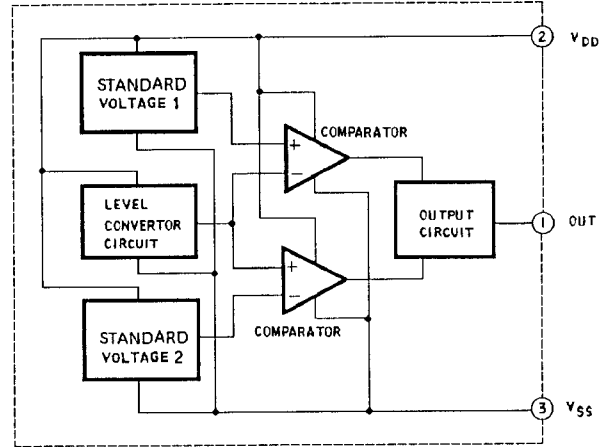
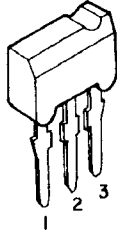
16449W03 : IC601



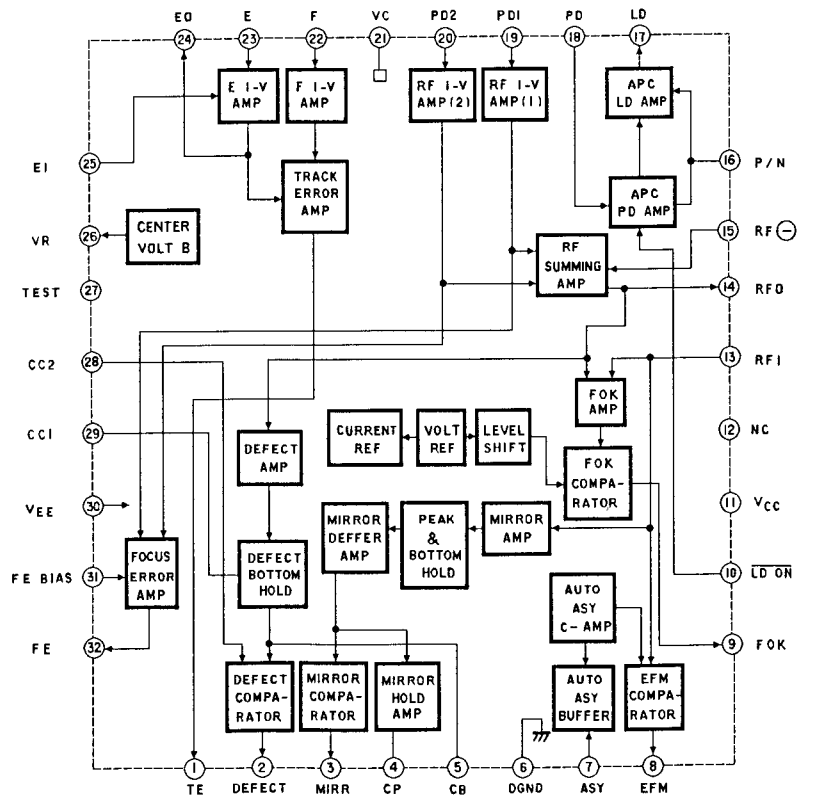
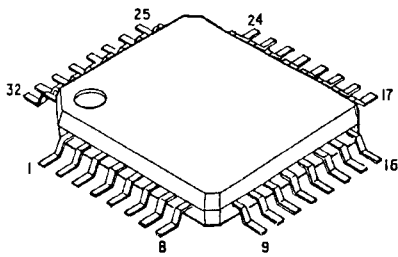
S - 8052ALR : IC603



**MN1280 : IC605**

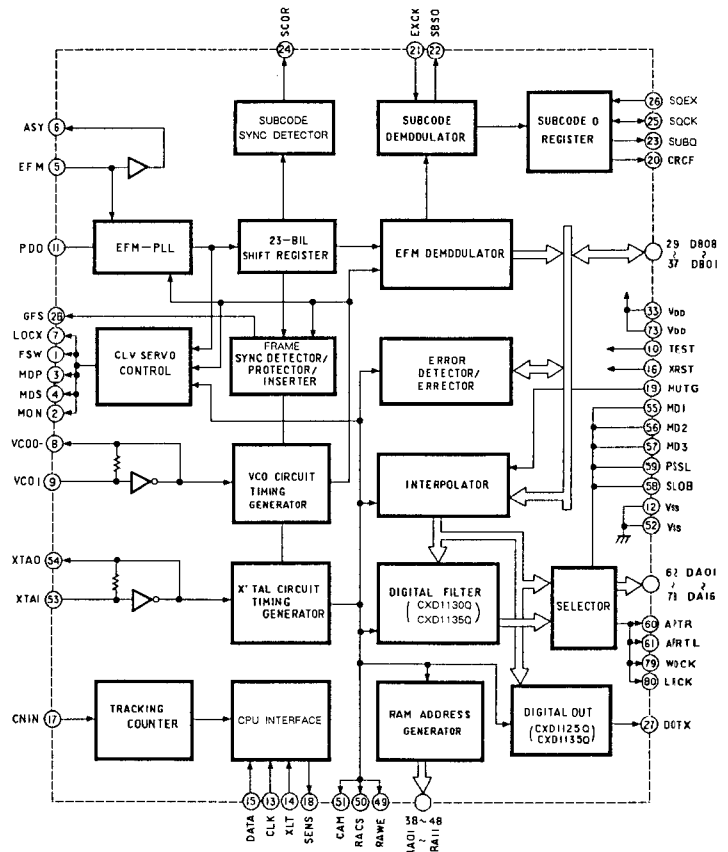
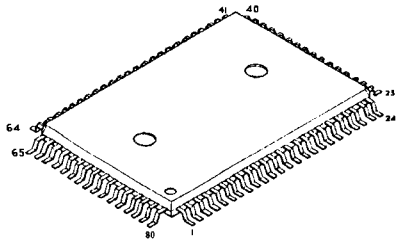


**CXA1081Q : IC1001 (DP22A080)**

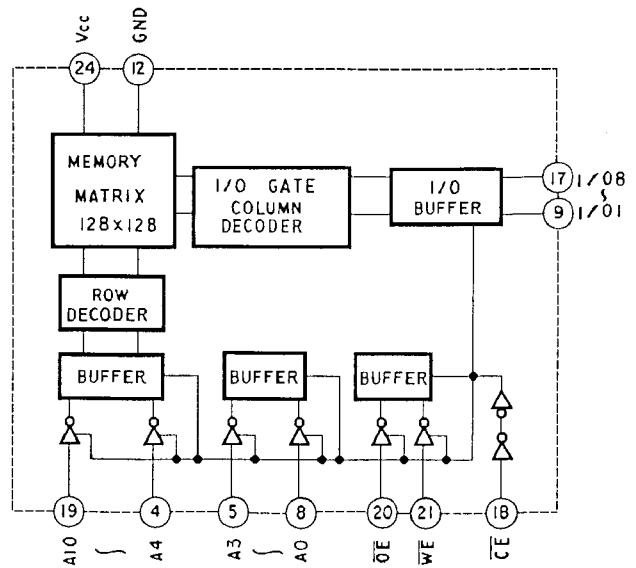
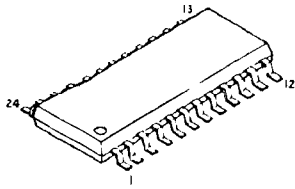




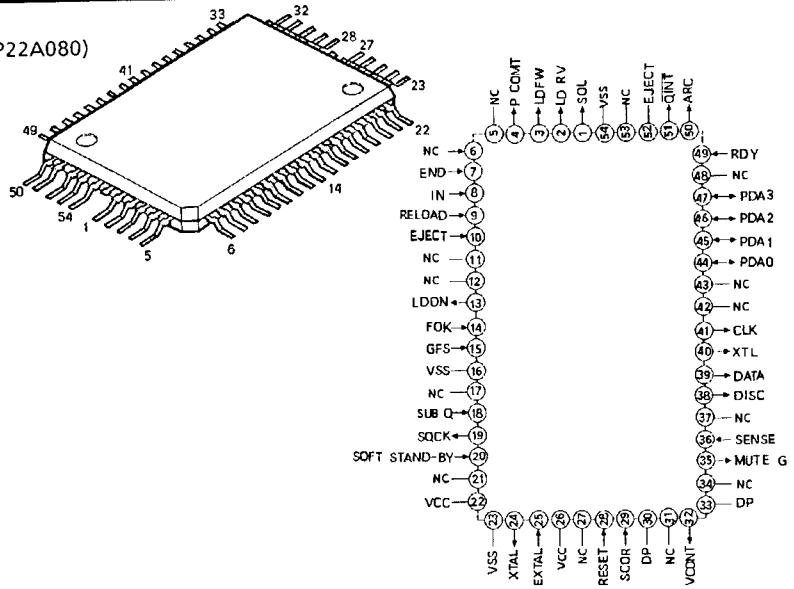
**CXD1135Q : IC1002 (DP22A080)**



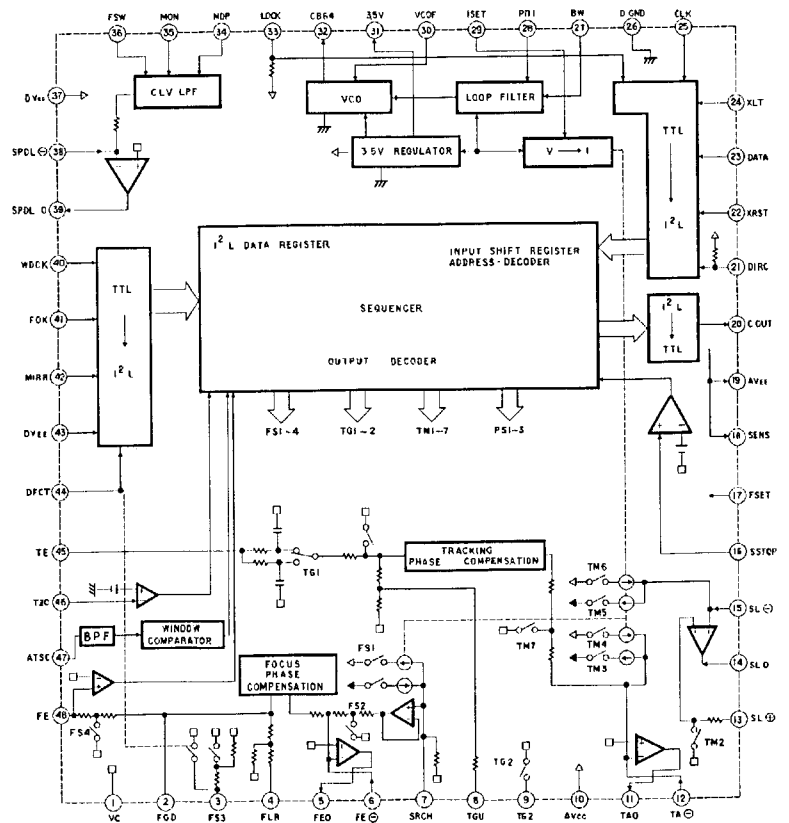
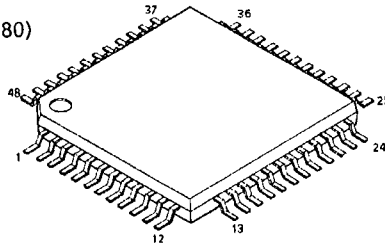
**CXK5816M  
LC3516AML  
TC5517FL** } : IC1003 (DP22A080)



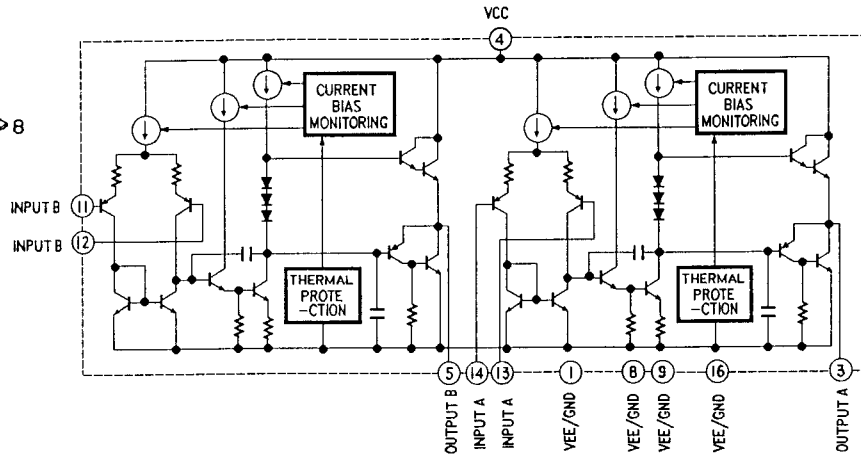
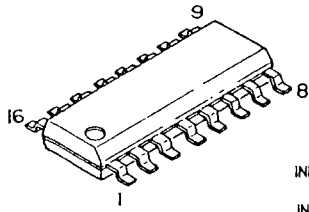
16225W02 : IC1701 (DP22A080)  
 92639F01



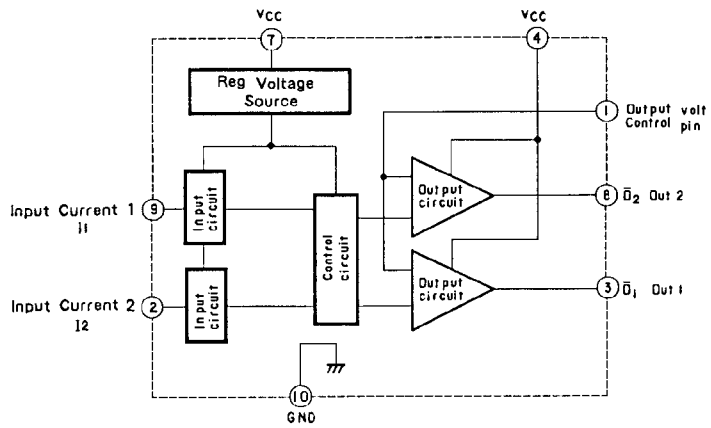
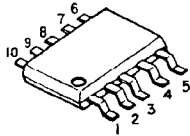
CXA1082BQ : IC1702 (DP22A080)



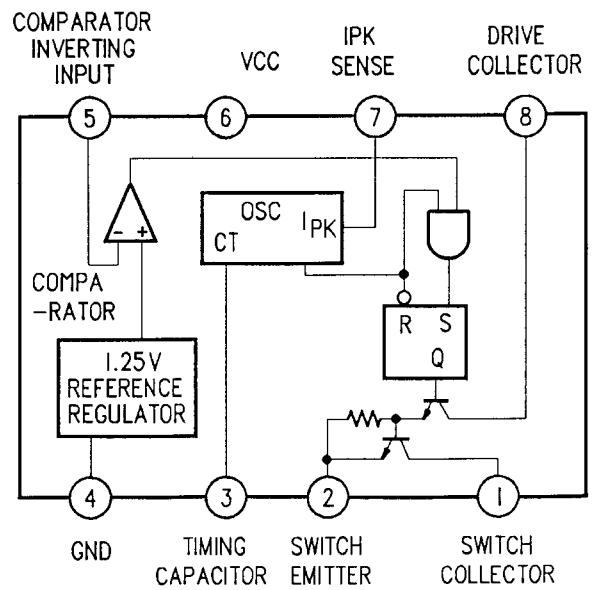
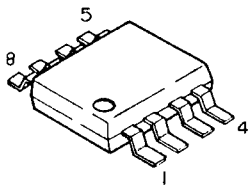
**TCA0372M - L** : IC1703, 1704, 1705 (DP22A080)

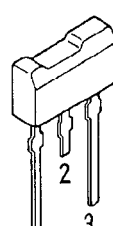
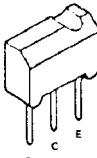
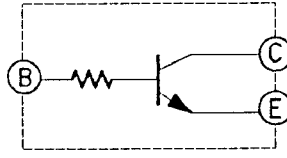
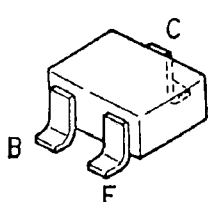
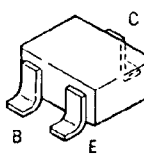
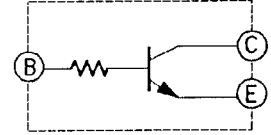
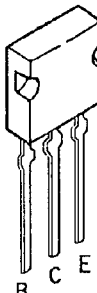
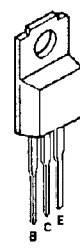
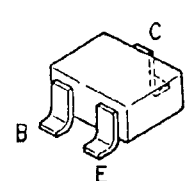
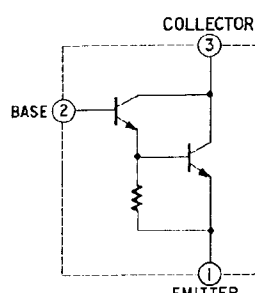
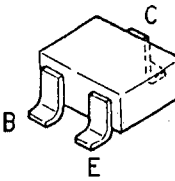
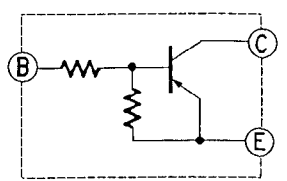


**M54641FP** : IC1706 (DP22A080)

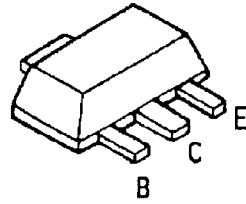


**MC34063M** : IC1801 (DP22A080)

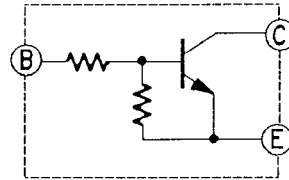
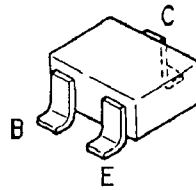


<p> <b>2SD1862</b> : Q3, 813, 828, 834, 840, 841  <b>2SB1237</b> : Q4, 5, 811, 819, 821, 825  <b>2SD1993</b> : Q9, 10         </p>  <p>           1. Emitter            2. Collector            3. Base         </p>	<p><b>DTC343T</b> : Q13, 14</p>  
<p> <b>2SA1036K</b> : Q401, 602, 803, 808, 827, 833, 837  <b>2SC2412K</b> : Q1706 (DP22A080), 611, 818  <b>2SA1037K</b> : Q609, 831  <b>2SD1328</b> : Q201, 202, 203, 204         </p> 	<p><b>DTC114TK</b> : Q603</p>  
<p><b>2SB1360E</b> : Q801</p> 	<p><b>2SD1266</b> : Q806</p> 
<p><b>2SD1383K</b> : Q1711 (DP22A080), 823</p>  	<p> <b>DTB123YK</b> : Q838  <b>DTA124EU</b> : Q2, 617, 621, 829  <b>DTA124</b> : Q1707, 1802, 1806 (DP22A080)         </p>  

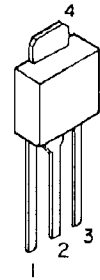
**2SB1188** : Q1001 (DP22A080)  
**2SB1073** : Q1709 (DP22A080)



**DTC124K** : Q1701, 1702, 1703, 1708, 1710, 1712, 1801, 1805 (DP22A080)  
**DTC144K** : Q1704, 1705 (DP22A080), 610  
**DTC144EU** : Q622, 824, 835  
**DTC124EU** : Q1, 6, 7, 8, 11, 12, 604, 605, 606  
 Q607, 612, 613, 614, 615, 616, 620, 623  
 Q802, 804, 805, 807, 809, 810, 812, 820  
 Q822, 826, 830, 832, 836, 839

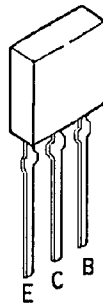


**2SB1261** : Q1803 (DP22A080)

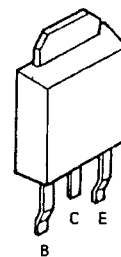


1. BASE  
 2. COLLECTOR  
 3. EMITTER  
 4. COLLECTOR (FIN)

**2SD2008** : Q1804 (DP22A080)



**2SD1760** : Q1807 (DP22A080)



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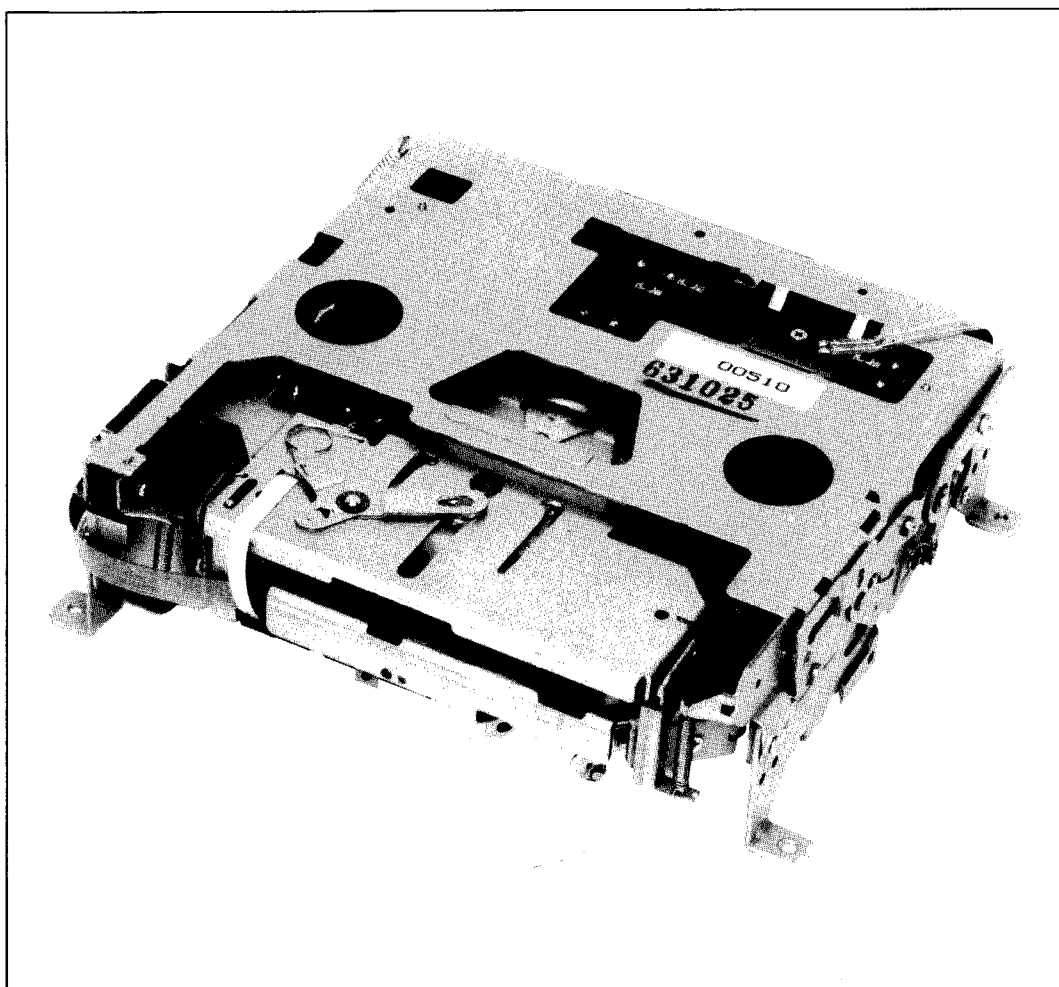
# ALPINE SERVICE MANUAL

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## CD Player Mechanism

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ADDENDUM & REVISED (III)



**DP-S SERIES**

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# Mechanism Function Description

Function	Step	Description	Illustration
LOADING (of a 12cm CD)	①	The beam to the photo sensor (A) will be broken when a disc is inserted into the loading position.	Figure 1
	②	The mechanism detects the disc insertion and actuates the Loading motor to rotate. The rotation of motor is transmitted to the drive roller through gears (E), (D), (B) and (A).	Figure 2 Figure 7
	③	The disc will be pinched between the drive roller and the upper guide and pulled into the mechanism.	Figure 7
	④	The disc reaches to the sensor gate mechanism. The beam to the photo sensor (D) is broken, and simultaneously the micro-processor discriminates 12 or 8cm CD size depending on the photo sensor (B). If the beam to the photo sensor (B) is broken, the micro-processor detects that the disc is a 12cm CD and it continues feeding the disc.	Figure 3

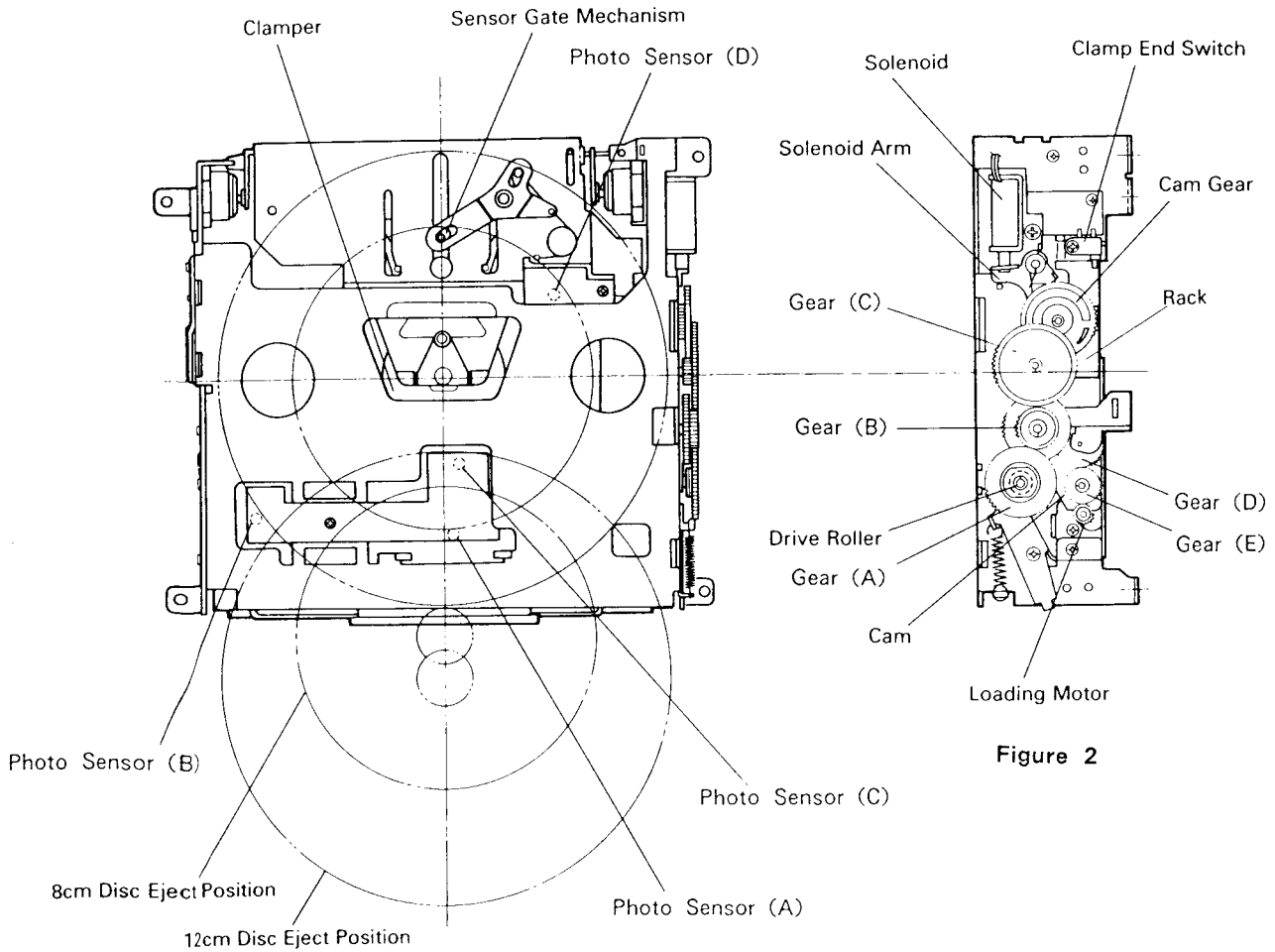


Figure 1

Figure 2

Function	Step	Description	Illustration
LOADING (of a 12cm CD)	⑤	The disc touches the left and right stopper pins, and push them by the feed mechanism. By pushing the stopper pins, the left and right lock levers rotate and the lock pins remove from the lock position of the guide holes.	Figure 3
	⑥	The disc touches the disc stopper and moves the unlocked sensor gate to the outer direction by the feed mechanism.	Figure 4
	⑦	If the disc reaches to the end position, the beam reaches to the photo sensor (B).	Figure 4
	⑧	The mechanism detects that the disc is pulled into the chucking position and starts chucking action.	Figure 4

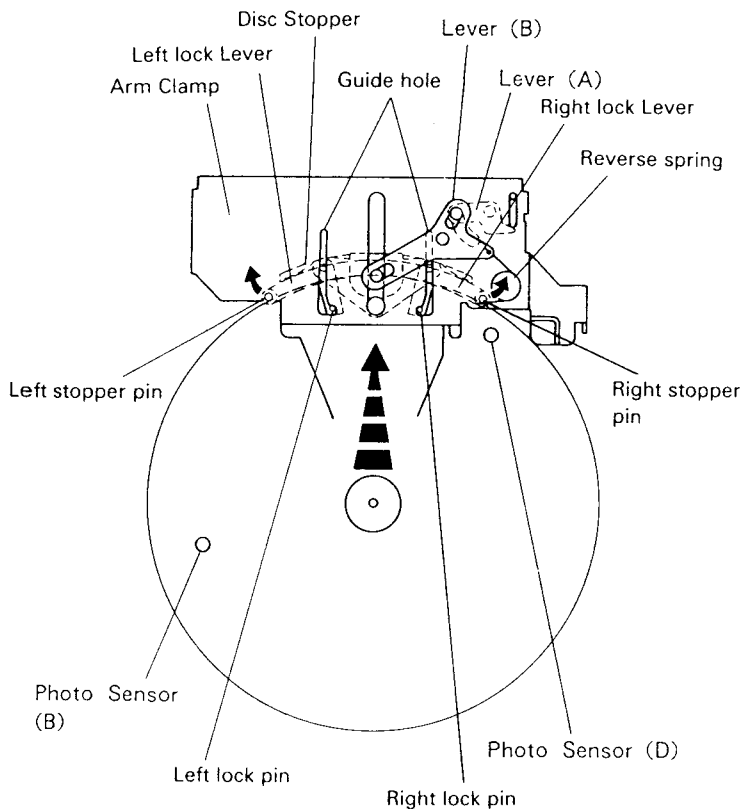


Figure 3

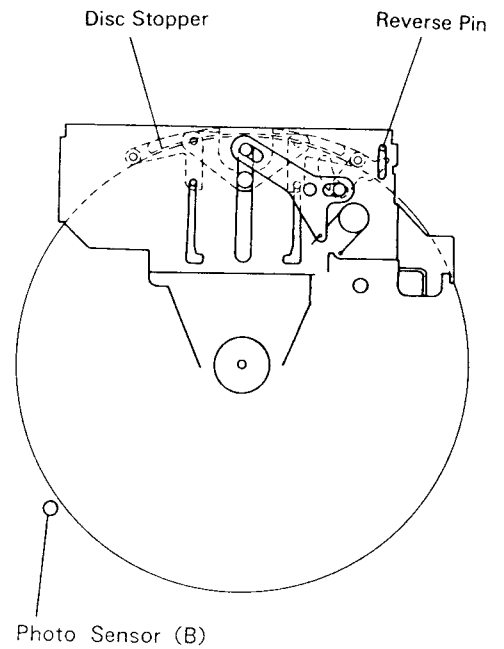


Figure 4

Function	Step	Description	Illustration
LOADING (of a 8cm CD)	① ② ③	The same process as 12cm CD loading operation steps①~③.	Figure 1 Figure 2 Figure 7
	④	The disc reaches to the sensor gate mechanism. The sensor gate mechanism moves depending on the disc insertion position at the disc slot as follows. A) When the disc is inserted at the center of the slot. The disc touches to the disc stopper. The disc cannot push both the left and right stopper pins, so that the locking pins cannot be released. The disc movement stops there. B) When the disc is inserted at the deviated position to the left or right from the center of the slot. First, the disc pushes the left or right stopper pin. The disc cannot push the another stopper pin, so that the locking pins cannot be released. The disc moves by the shape of the disc stopper to the center position and stops.	Figure 5
	⑤	If the beam reaches to the photo sensor (B) and (C) when the beam to the photo sensor (D) is broken by the disc, the mechanism discriminates that the 8cm CD is in the chucking position, and starts chucking action.	Figure 5

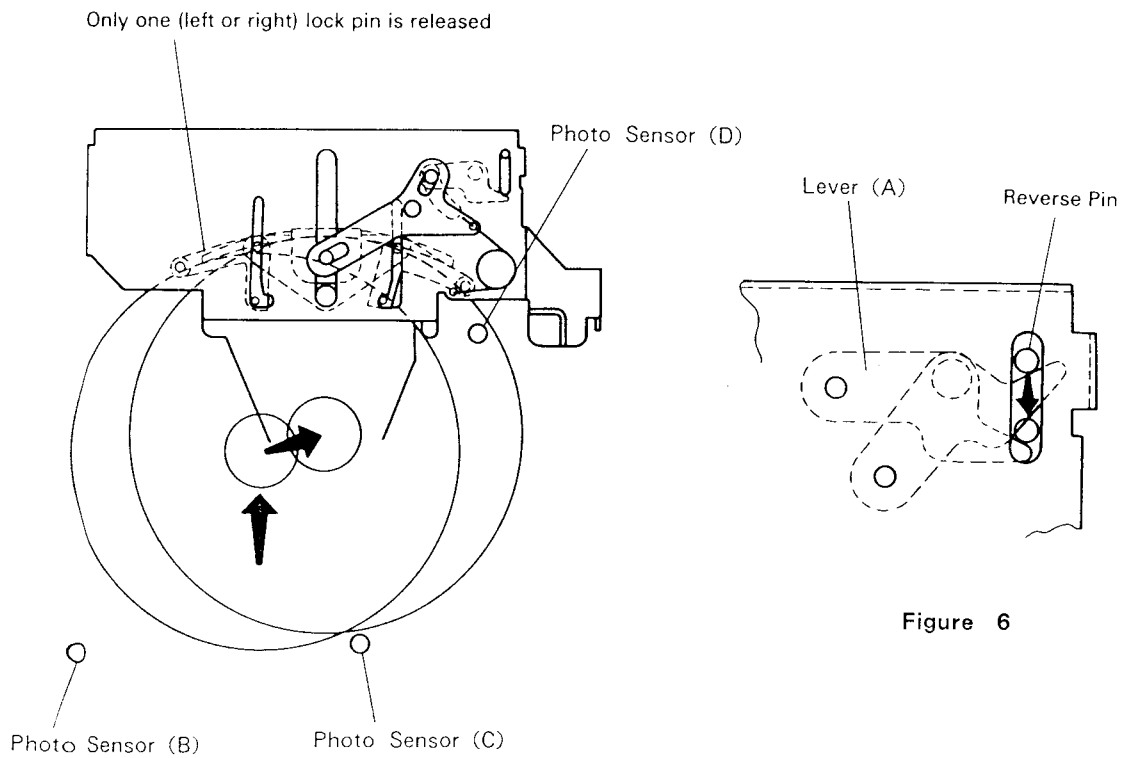


Figure 6

When a disc is inserted at the left from the center of the slot.

Figure 5

Function	Step	Description	Illustration
CHUCKING	①	The mechanism detects that the disc is pulled into the Chucking position and pulls the solenoid.	Figure 8
	②	The solenoid arm connected with the solenoid starts to rotate and transmits the rotation to the cam gear.	Figure 8
	③	The cam gear starts to rotate and engages with the gear (C) then the driving power of the Loading motor will be transmitted to the cam gear.	Figure 8
	④	The rotating cam gear engages with rack, and moves the rack toward the right.	Figure 8
	⑤	With the movement of the rack, the following functions will be performed simultaneously. A. The clamber moves downward and chucks the disc. B. The drive roller moves downward and releases the disc pinched previously and moves the disc downward. C. Releases the locking on the pickup block and places the unit in the floating status.	Figure 8 Figure 9 Figure 10
	⑥	The rack slides to the right end and releases the engagements between the gear (C) and the cam gear as well as the cam gear and rack, and turns the clamp end switch on.	Figure 8
	⑦	The mechanism detects that the clamp operation has finished, and the Loading motor stops rotating.	Figure 8

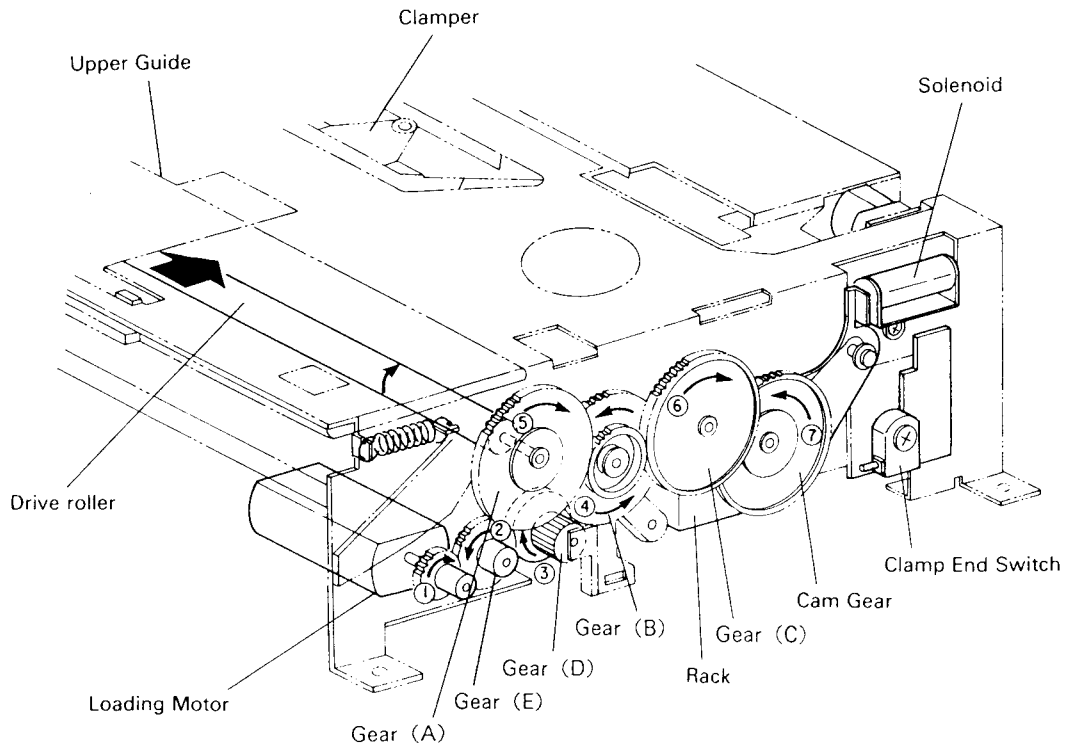


Figure 7

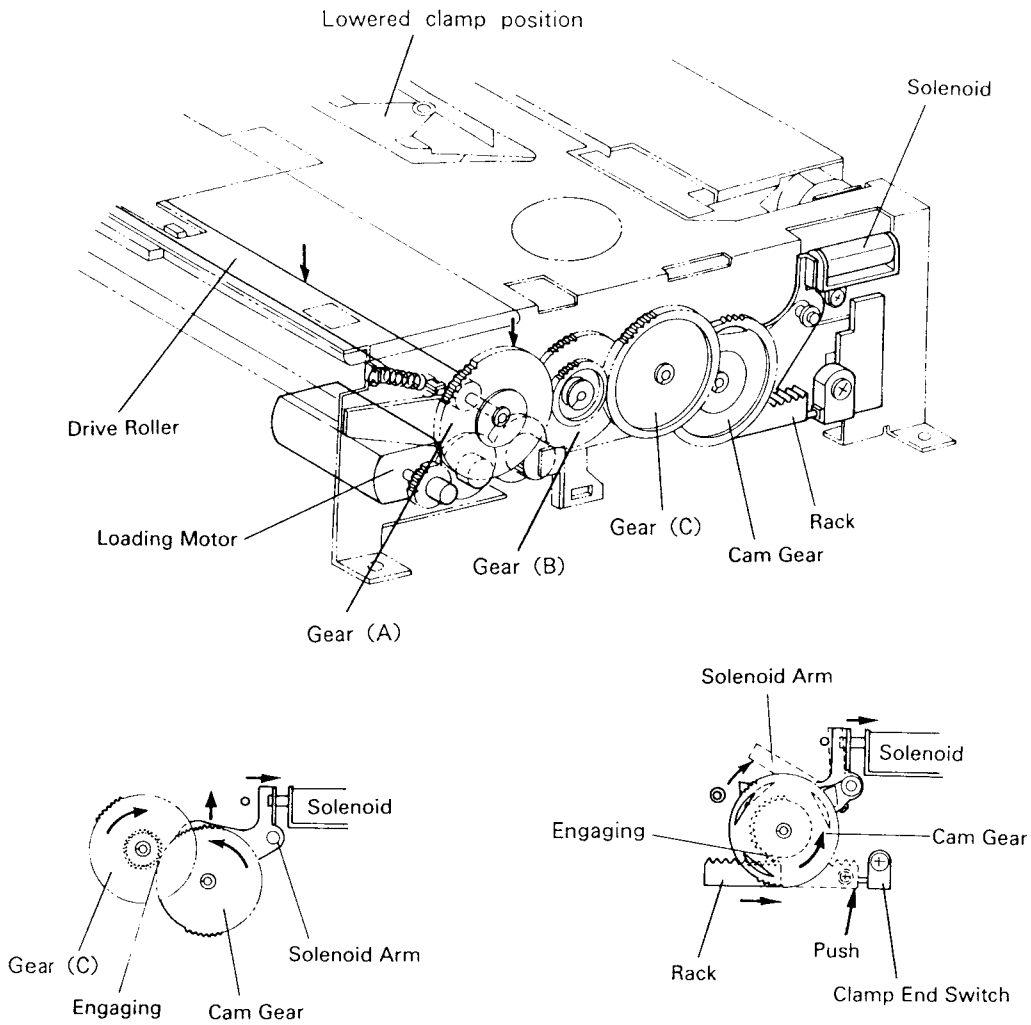


Figure 8

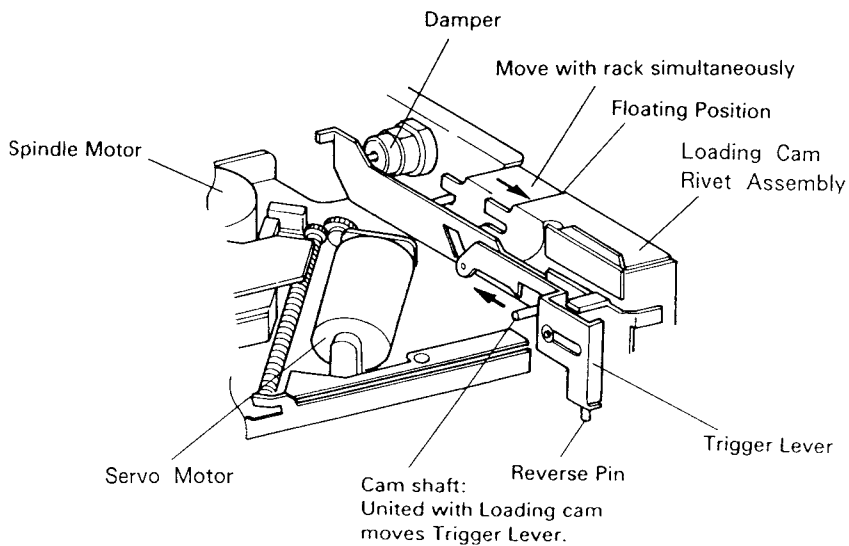


Figure 9

Function	Step	Description	Illustration
PLAY	①	The spindle motor rotates the disc.	Figure 10
	②	The rotation of the servo motor is transmitted to the shaft screw through the gear, moves the pickup.	Figure 10
	③	The Inner limit switch detects the lead-in position of the disc, and the mechanism begins to read the information of the disc.	Figure 10

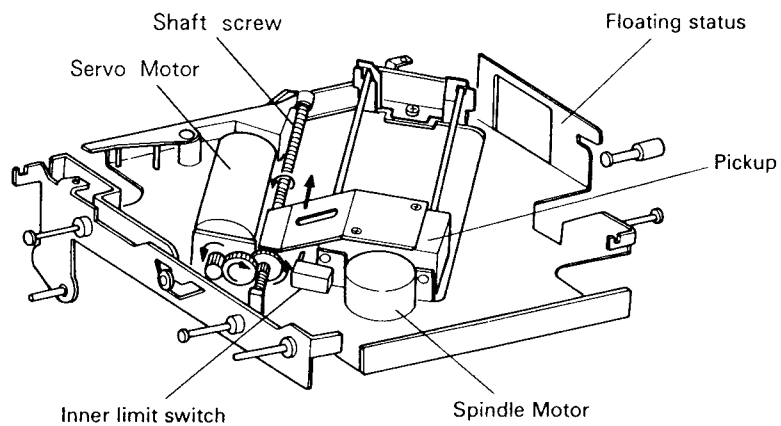


Figure 10

Function	Step	Description
EJECTION (of a 12cm CD)	①	The Loading motor rotates in the reverse direction when loading.
	②	Pulls the solenoid.
	③	The solenoid arm engaged with the solenoid starts rotating and the cam gear engages with the gear (C).
	④	The cam gear rotates and engages with the rack and then moves the rack in the left direction.
	⑤	Engaging with the movement of the rack, the following functions will be performed simultaneously. A. The clamber moves upward and releases the disc. B. The driving roller moves up and lifts the disc, and pinches the disc between it and the upper guide. C. Locks the pickup block. D. The reverse pin moves with engaging the levers (A) and (B), which moves the sensor gate mechanism to the original position.
	⑥	When the rack moves to the left, the engagements between the gear (C) and the cam gear, the cam gear and the rack will be released.

Function	Step	Description
EJECTION (of a 12cm CD)	⑦	The disc which is pinched between the drive roller and the upper guide moves to the outside of the mechanism. When the disc is sent out to the EJECT position, the beam broken by the disc is released and reaches the photo sensor (B).
	⑧	The mechanism detects that the disc has come out to the EJECT position and stops the motor rotation.
	⑨	The mechanism detects that all functions have finished when the disc is pulled out from the mechanism and beam is passed through to the photo sensor (A).
RELOAD (of a 12cm CD)	①	If the disc is not pulled out from the mechanism for 15 seconds after it comes to the EJECT position, the mechanism actuates the Loading function steps ① - ⑧.
EJECTION (of a 8cm CD)	① ② ③ ④	The same process as 12cm CD Eject operation steps ①~④.
	⑤	Engaging with the movement of the rack, the following functions will be performed simultaneously. A. ] B. ] The same process as 12cm CD Eject operation step⑤ --A, B, C. C. ]
	⑥	The same process as 12cm CD Eject operation step ⑥.
	⑦	The disc which is pinched between the drive roller and the upper guide moves to the outside of the mechanism. The disc is released from the drive roller and stops.
	⑧	If the beam reaches the photo sensor (C) after 1.5 seconds from starting ejection, the motor stops.
	⑨	The mechanism detects that all functions have finished, when the disc is pulled out from the mechanism and beam is passed through to the photo sensor (A).

Function	Step	Description
TROUBLE SHOOTING (While Loading a 12cm CD)	①	If the beam to the photo sensor (D) is not broken within 3 seconds after the Loading motor begins rotating as described in the Loading operation step ②, the mechanism takes it as trouble and rotates the Loading motor inversely and pushes the disc out to the EJECT position.
	②	In the Loading step ④, if the beam does not reach the photo sensor (D) within 3 seconds after the beam to the photo sensor (B) is broken, the mechanism take it as trouble and rotates the loading motor inversely and push the disc out to the eject position.  If the disc is removed and the beam reaches the photo sensor (A), the mechanism performs loading, chucking and ejection without a disc. (To place the sensor gate mechanism from the END position to the original position the mechanism operates the Ejection step ⑤ - d)
	③	When the disc is pulled out during the loading process, the Loading motor rotates inversely and stops the rotating after certain seconds.
(While loading a 8cm CD)	①	The same process as 12cm CD loading operation step①.
	②	The same process as 12cm CD loading operation step③.
(While Chucking)	①	In the chucking operation (step ①) if the Clamp End Switch doesn't turn on within 3 seconds after the solenoid is pulled, the mechanism takes it as trouble and rotates the Loading motor inversely and pushes the disc out and stops at the EJECT position. When the disc doesn't come to the EJECT position, the motor stops the rotating after certain seconds.
(While Playing)	①	After disc chucking, if the mechanism is unable to read the information of the disc for some reason, it actuates the EJECTION operation steps.
(While Ejecting a 12cm CD)	①	If the disc doesn't come to the EJECT position within 5 seconds after the solenoid is pulled in the EJECTION operation step ①, the mechanism takes it as trouble and rotates the Loading motor inversely and performs the Loading operation steps.
(While Ejecting a 8cm CD)	①	If the beam does not reach the photo sensor (C) within 1.5 seconds after starting ejection, the motor continues rotating. If the beam does not reach the photo sensor (C) within 5 seconds after starting ejection, the mechanism takes it as trouble and changes the motor rotating direction and performs loading steps.



# Disassembly Instructions

- For DP24A010 / DP24A020 / DP24A110 / DP24A11A / DP24A210 / DP24A220 models

### 1. Removal of the Load/Photo P. C. Boards

- (1) Remove three screws marked with "○" as shown in Figures 11 and 12.
- (2) Remove the solder (c) as shown in Figure 11.

### 2. Removal of the LED P. C. Board

- (1) Remove the solder (b) as shown in Figure 12.
- (2) Remove the screw marked with "▲" as shown in Figure 12.

### 3. Removal of the End Switch (A) P. C. Board

- (1) Remove the two screws marked with "●" as shown in Figure 13.
- (2) Remove the two lead wires from the solenoid.

### 4. Removal of the Pick-Up Unit

- (1) Remove the cam gear and the gear (C) as shown in Figure 13.
- (2) Remove the four screws marked with "※" as shown Figures 13 and 14.
- (3) Both the Pick-Up Unit and Rivet Loading Bracket Assembly will be removed.

**Note :**The cam gear and gear (C) are mounted with washers. Do not lose the washers, keep them carefully.

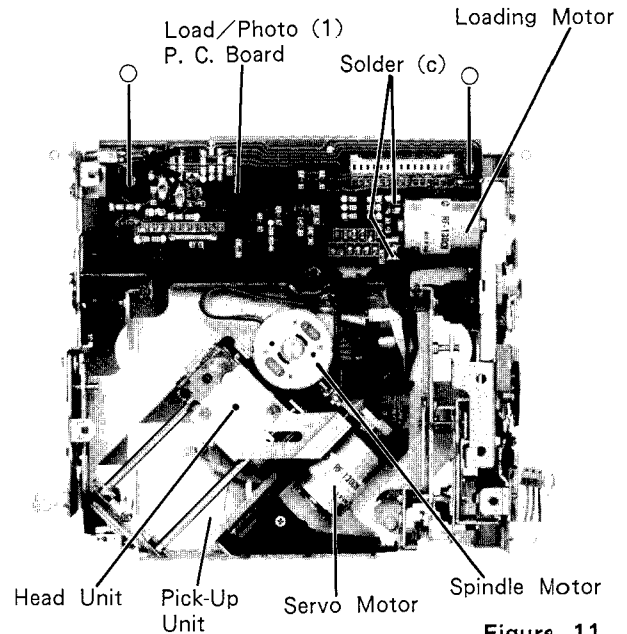


Figure 11

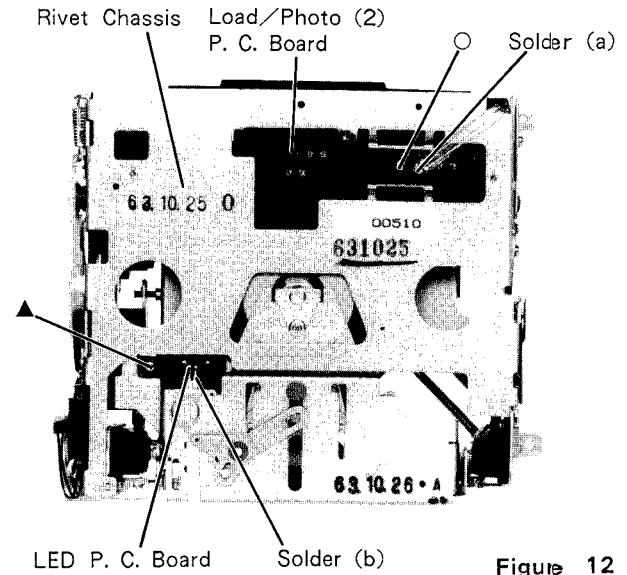


Figure 12

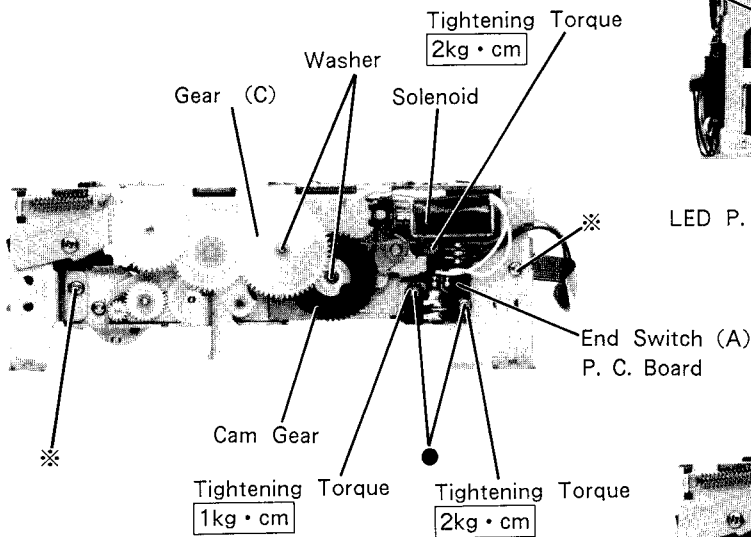


Figure 13

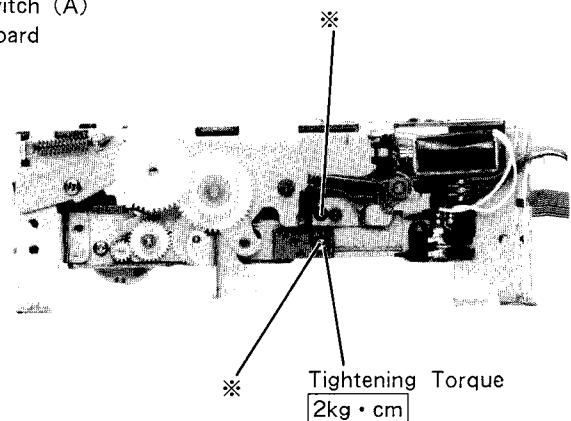


Figure 14

**5. Removal of the Rivet Loading Bracket Assembly**

(1) After removing the Pick-Up Unit, pull the Rivet Loading Bracket Assembly toward you while twisting it in the direction shown by the arrow, as shown in Figure 15.

**6. Removal of the Servo Motor [For DP24A010 / DP24A020 / DP24A110 / DP24A11A / DP24A210 models only]**

(1) After removing the Rivet Loading Bracket Assembly, remove the two screws marked with "□" as shown in Figure 16.

**Note :**Both the Servo Motor and Flexible wire will be removed. Do not damage the flexible wire.

**7. Removal of the Head Unit [For DP24A010 / DP24A020 / DP24A110 / DP24A11A / DP24A210 models only]**

(1) After removing the Servo Motor, remove the two screws marked with "◆" as shown in Figure 16.

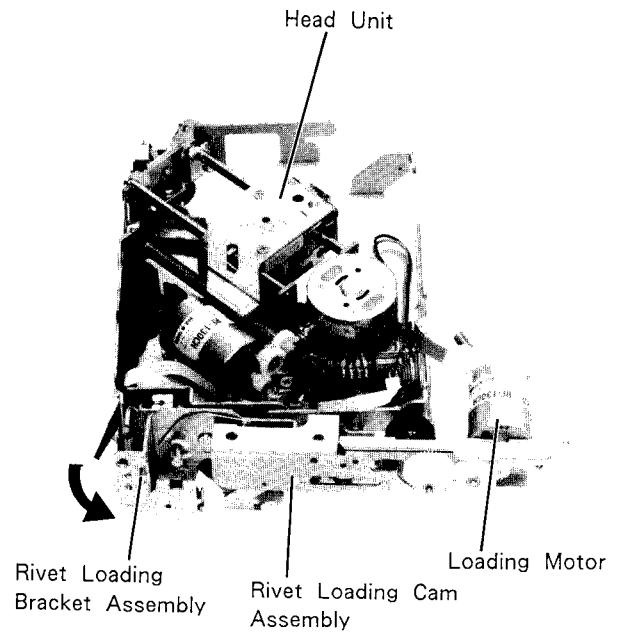


Figure 15

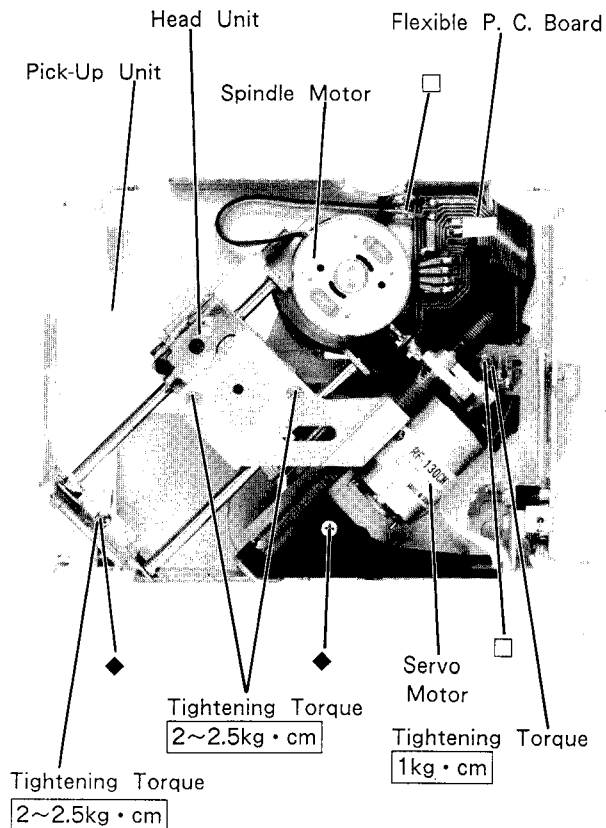


Figure 16

**6. Removal of the Servo Motor [For DP24A220 models only]**

(1) After removing the Rivet Loading Bracket Assembly, remove the two screws marked with "□" as shown in Figure 17.

**Note :** Both the Servo Motor and Flexible wire will be removed. Do not damage the flexible wire.

**7. Removal of the Head Unit [For DP24A220 models only]**

(1) After removing the Servo Motor, remove the five screws marked with "◆" as shown in Figure 17.

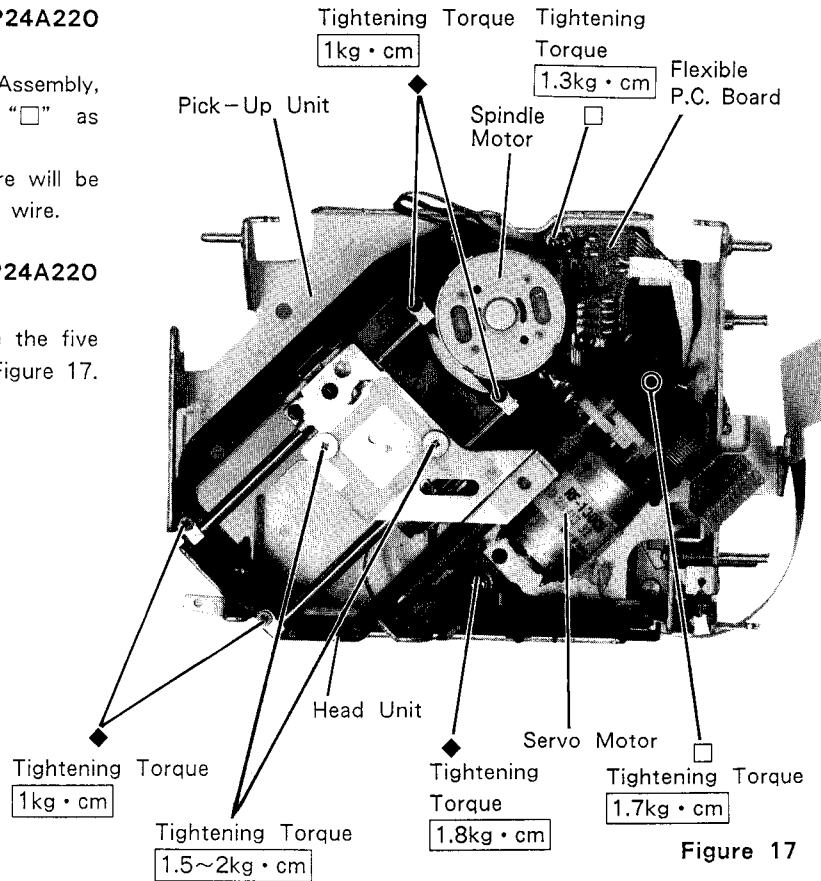


Figure 17

**8. Removal of the Rivet Loading Cam Assembly**

(1) After removing the Rivet Loading Bracket Assembly, remove the gear (D) and gear (E) as shown in Figure 18.

(2) Remove the Washer and "E" ring as shown in Figures 18 and 20.

**Note :** 1) Do not lose the washer and "E" ring and keep them carefully.

2) Remove the spring and them at the same time as shown in Figure 18.

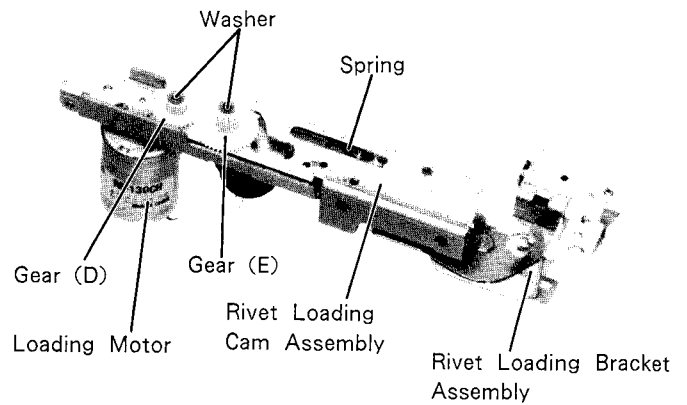


Figure 18

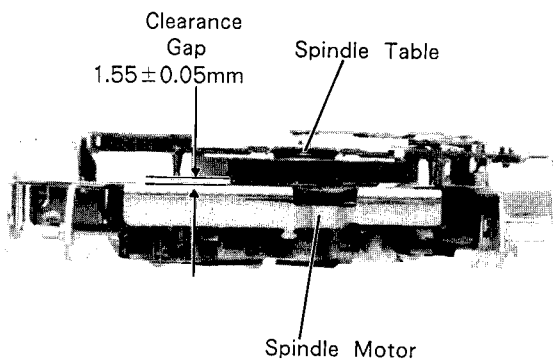


Figure 19

**9. Removal of the Loading Motor.**

- (1) After removing the Rivet Loading Cam Assembly, remove the two screws marked with "△" as shown in Figure 20.

※Useful hints for remounting the cam gear and gear (C).

- (1) Set the Rivet Loading cam Assembly to the loading position as shown in Figure 21.
- (2) Engage the cam gear with the gear (C) as shown in the Figure 22, and mount them on the shafts (A) of the Arm Load (R) Assembly as shown in Figure 21.

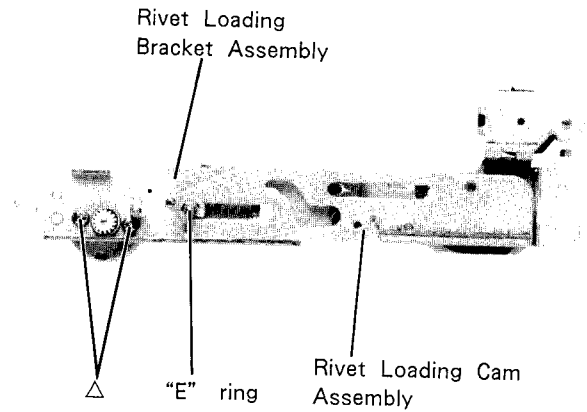


Figure 20

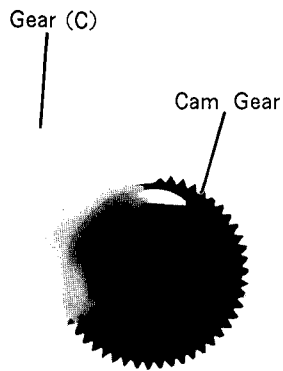


Figure 22

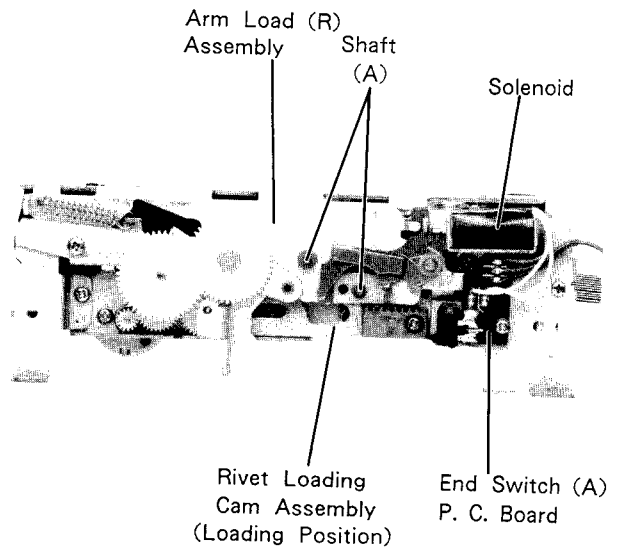


Figure 21

※Caution on remounting the Servo Motor.

- (1) After mounting the servo motor, make sure the clearance between the servo motor and flexible wire is more than 0.5mm as shown in Figure 23.

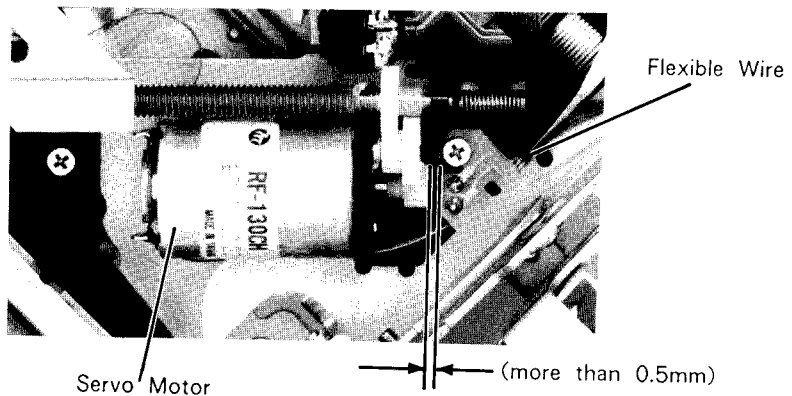


Figure 23

DP-S SERIES

Symbol No.	Index	Part No.	Description			Symbol No.	Index	Part No.	Description		
282	4-B	43A20208W01	Spacer, LED								
283	4-E	30T73687F19	Parallel Wire (2P)								
284	3-D	01A92321F02	Assy., Bracket Rivet (CLP-LP)								
287	5-G	01T15181W01	Assy., Clutch DP								
288	2-C	75A21138W01	Sheet, Shaft								
289		03A90175F01	Screw, Bind (M2 × 4)								
290		03A90175F02	Screw, Bind (M2 × 3)								
291	4-E	41B90875F07	Spring, Pull								
292	5-F	44A90834F01	Gear (B)								
293	4-F	44A90835F01	Gear (C)								
294	3-C	43A13508W01	Spacer, Shaft								
295	3-F	41A96086F01	Spring, Arm Clamp								
296	3-F	43A41006F01	Spacer, Polyslider								
297	3-C	43A22457W01	Spacer								
or		43A22457W02	Spacer								
298	2-G	75A20928W01	Rubber, Top Chassis								
299	4-F	04B41345P24	Washer, Lock (M2.1)								
300	4-A	43A20208W02	Spacer, LED (A)								
301	4-F	03S94385F14	Screw, Countersink (M2.6 × 3)								
302		03S94385F25	Screw, Pan (M2 × 4)								
303	4-E	75A20128W01	Sheet, Holder								
304	4-G	03S44205G96	Screw, Bind (M2 × 5)								
305	4-G	03S44205G95	Screw, Bind (M2 × 3)								
306	3-E	03S94385F24	Screw, Pan (M2 × 3)								
Miscellaneous											
501	3-C	88T15309W01	Pick-up, Unit								
502	4-E	48T16057W02	LED, AN501 (RED)								
503	4-D	01V13100W97	Assy., Motor Load								
504	3-C	59T91005F01	Motor, Spindle								
505	3-B	59T52973F03	Motor, Servo								
506	4-B	48T92913F01	Transistor, Photo PT360								
507	4-F	40T71025F03	Switch, Detector (CAM END)								
508	3-A	40T71025F01	Switch, Detector (LIMIT)								
509	4-F	01A90816F01	Assy., Solenoid DP Frame								

NOTE : The parts without part numbers are not supplied.

# CD Mechanism Assembly Parts List

● For DP24A010/DP24A020/DP24A110/DP24A11A/DP24A210 Models

Symbol No.	Index	Part No.	Description	Symbol No.	Index	Part No.	Description
202	4-H	15C13518W01	Guide, Top (DP-2)	241	4-A	03D40014G75	Screw, W/Washer (M2 × 9)
203	5-C	03S44205G14	Screw, Pan (M2 × 5)	242	3-B	03D40121T38	Screw, W/Double Washer (M2 × 5)
204	5-B	30T73687F18	Parallel Wire (2P)	243	3-E	43A22104W01	Table, Spindle
205	4-C	41B12249W02	Spring, Pull	244	3-B	07B10923W01	Bracket, Screw Shaft, Pick-up
206		04B41345P06	Washer, Lock (M2.1)	245	2-C	47A20146W01	
207	1-E	41A20219W01	Spring, ROL (L)	246	4-D	43A11901W01	Bush, Triger (A)
208	5-F	45A90817F01	Arm, Solenoid (1)	247		04B41345P15	Washer, Lock (M1.2)
209	5-F	45A90818F01	Arm, Solenoid (2)	248	3-D	01B12125W01	Assy., Riv. Pick Chassis
210	5-F	41A92364F01	Spring, Solenoid	249	3-B	47A10927W01	Shaft, Screw
211	2-F	07B10907W01	Stopper, Disc	250	3-B	44A90998F01	Gear, Screw
212	4-F	47A61544F02	Plunger, RF Solenoid	252	4-B	44A90996F01	Gear, Motor
213	3-G	75A20934W01	Cushion, Magnet (B)	253	4-G	41B12249W08	Spring, Pull
214	4-F	84A92276F01	END Switch (A) P.C. Board	254	4-C	44A90997F01	Gear, Middle
215		03D40014G66	Screw, W/Washer (M2 × 3.5)	255		04B41345P02	Washer, Lock (M1.7)
216		03D40014G07	Screw, W/Washer (M2 × 4)	256	4-F	03S94385F23	Screw, Pan (M2 × 5)
217	4-F	44B90838F01	Gear, Cam	257	5-D	03S94385F07	Screw, Pan (M2 × 2)
218	4-C	46A91007F02	Stud, Gear	258	3-C	07C10922W01	Bracket, Motor
219	4-E	41B12249W07	Spring, Pull	259	4-B	41A10928W03	Spring, Shaft
221	2-F	49B90822F01	Roller (G)	262	5-G	04S40075G12	Washer, Polyslider (M3.1)
223		43A90873F01	Bush, Roller	263	3-B	41C10925W01	Spring, Nut
225	4-C	41A90877F01	Spring, Cam	264	3-E	14A96087F01	Sheet, Table
226		03D40014G62	Screw, W/Washer (M2 × 3)	265	4-B	84T15149W01	FPC Actuate P.C.Board
227	5-C	44A90836F01	Gear (D)	266	4-E	01A12222W01	Assy., Clamper Rivet
228	5-C	44A90837F01	Gear (E)	267	4-E	01B12123W01	Assy., Riv. Arm Clamp
229	5-C	04B41345P01	Washer, Lock (M1.2)	269	3-F	41A11903W01	Spring, Lever
230		75B11922W02	Damper, DP-3	270	3-F	04B41345P04	Washer, Lock (M2.6)
231		15A12929W01	Holder, Damper-3	271	3-E	07A30152W01	Bracket, Disc Stopper
232	4-D	04C42091G06	Ring "E" (M1.5)	272	3-F	41B12249W01	Spring, Pull
233	5-C	04C42091G11	Ring "E" (M2.5)	273	4-F	07A11468W01	Plate, Top
234	3-C	03S94385F01	Screw, Pan (M1.7 × 2.3)	274	5-C	44A90830F01	Rack, Cam
236	4-C	41A11905W01	Spring, Trigger	275	4-F	03S44205G94	Screw, Pan (M1.7 × 2)
237	4-F	04C42091G05	Ring "E" (M2)	277	2-B	47A21175W01	Shaft, Pick-up
238	2-B	07A10921W01	Bracket, Shaft	279	1-C	41B12249W03	Spring, Pull
239	4-A	03A90175F05	Screw, Bind (M2 × 3.7)	280	2-E	41B12249W04	Spring, Pull
240		03S94385F09	Screw, Pan (M2 × 3)	281	4-D	41B12249W05	Spring, Pull

NOTE : The parts without part numbers are not supplied.



# CD Mechanism Assembly Parts List

● For DP24A220 Model

Symbol No.	Index	Part No.	Description	Symbol No.	Index	Part No.	Description
202	4-H	15C13518W01	Guide, Top (DP-2)	241	4-A	03S94385F20	Screw, Pan (M2 × 8.5)
203	5-C	03S44205G14	Screw, Pan (M2 × 5)	242	3-B	03D40121T38	Screw, W/Double Washer (M2 × 5)
204	5-B	30T73687F18	Parallel Wire (2P)	243	3-E	43A30923W01	Table, Spindle
205	4-C	41B12249W02	Spring, Pull	244	3-B	07B10923W01	Bracket, Screw
206		04B41345P06	Washer, Lock (M2.1)	245		47A30925W01	Shaft, Pick-up
207	1-E	41A20219W01	Spring, ROL (L)	246	4-D	43A11901W01	Bush, Triger (A)
208	5-F	45A90817F01	Arm, Solenoid (1)	247		04B41345P15	Washer, Lock (M1.2)
209	5-F	45A90818F01	Arm, Solenoid (2)	248	3-D	01B12125W01	Assy., Riv. Pick Chassis
210	5-F	41A92364F01	Spring, Solenoid	249	3-B	47A10927W02	Shaft, Screw
211	2-F	07B10907W01	Stopper, Disc	250	3-B	44A90998F01	Gear, Screw
212	4-F	47A61544F02	Plunger, RF Solenoid	252	4-B	44A90996F01	Gear, Motor
213	3-G	75A20934W01	Cushion, Magnet (B)	253	4-G	41B12249W08	Spring, Pull
214	3-F	84A92276F01	END Switch (A) P.C. Board	254	4-C	44A90997F01	Gear, Middle
215		03D40014G66	Screw, W/Washer (M2 × 3.5)	255		04B41345P02	Washer, Lock (M1.7)
216		03D40014G07	Screw, W/Washer (M2 × 4)	256	4-F	03S94385F23	Screw, Pan (M2 × 5)
217	4-F	44B90838F01	Gear, Cam	257	5-D	03S94385F07	Screw, Pan (M2 × 2)
218	4-C	46A91007F02	Stud, Gear	258	3-C	07C10922W01	Bracket, Motor
219	4-E	41B12249W07	Spring, Pull	259	4-B	41A10928W03	Spring, Shaft
221	2-F	49B90822F01	Roller (G)	261		03D40014G02	Screw, W/Washer (M2 × 6)
223		43A90873F01	Bush, Roller	262	3-E	41A10928W04	Spring, Comp
225	4-C	41A90877F01	Spring, Cam	263	3-B	41C10925W02	Spring, Nut
226		03D40014G62	Screw, W/Washer (M2 × 3)	264	3-E	14A96087F01	Sheet, Table
227	5-C	44A90836F01	Gear (D)	265	4-B	84T15149W01	FPC Actuate P.C.Board
228	5-C	44A90837F01	Gear (E)	266	4-E	01A31429W01	Assy., Clamper Rivet
229	5-C	04B41345P01	Washer, Lock (M1.2)	267	3-E	01B12123W01	Assy., Riv. Arm Clamp
230		75B11922W02	Damper, DP-3	269	4-E	41A11903W01	Spring, Lever
231		15A12929W01	Holder, Damper-3	270	3-F	04B41345P04	Washer, Lock (M2.6)
232		04C42091G06	Ring "E" (M1.5)	271	3-E	07A30152W01	Bracket, Disc Stopper
233	5-C	04C42091G11	Ring "E" (M2.5)	272	3-F	41B12249W01	Spring, Pull
234	3-C	27C30861W01	Base, Pick-up	273	4-F	07A11468W01	Plate, Top
236	4-C	41A11905W01	Spring, Trigger	274	5-C	44A90830F01	Rack, Cam
237	4-F	04C42091G05	Ring "E" (M2)	275	4-F	03S44205G94	Screw, Pan (M1.7 × 2)
238	3-D	03S94385F26	Screw Countersink (M1.7 × 2.6)	277	3-E	43B30924W01	Spindle, Hub
239	4-A	03A90175F05	Screw, Bind (M2 × 3.7)	279	1-C	41B12249W03	Spring, Pull
240		03S94385F09	Screw, Pan (M2 × 3)	280	2-E	41B12249W04	Spring, Pull

NOTE: The parts without part numbers are not supplied.

Symbol No.	Index	Part No.	Description	Symbol No.	Index	Part No.	Description
281	4-D	41B12249W05	Spring, Pull				
282	4-B	43A20208W01	Spacer, LED				
283	4-E	30T73687F19	Parallel Wire (2P)				
284	3-D	01A92321F02	Assy., Bracket Rivet (CLP-LP)				
287	5-G	01T15181W01	Assy., Clutch DP				
288		07A30961W01	Stopper, Shaft (B)				
289		03A90175F01	Screw, Bind (M2 × 4)				
290		03A90175F02	Screw, Bind (M2 × 3)				
291	4-E	41B90875F07	Spring, Pull				
292	5-F	44A90834F01	Gear (B)				
293	4-F	44A90835F01	Gear (C)				
294		03S70494F14	Screw, Pan (M1.7 × 4)				
295	3-F	04S40075G06	Washer, Plyslider (M2.1)				
296	3-F	43A41006F01	Spacer, Polyslider				
297	3-E	03S94385F24	Screw, Pan (M2 × 3)				
298	2-G	75A20928W01	Rubber, Top Chassis				
299	4-F	04B41345P24	Washer, Lock (M2.1)				
300	4-A	43A20208W02	Spacer, LED (A)				
301	4-F	03S94385F14	Screw, Countersink (M2.6 × 3)				
302	2-B	03S94385F25	Screw, Pan (M2 × 4)				
303	4-E	75A20128W01	Sheet, Holder				
304	4-G	03S44205G96	Screw, Bind (M2 × 5)				
305	4-G	03S44205G95	Screw, Bind (M2 × 4)				
Miscellaneous							
501	3-C	88T15309W01	Pick-up, Unit				
502	4-E	48T16057W02	LED, AN501 (RED)				
503	4-D	01V13100W97	Assy., Motor Load				
504	3-C	59T91005F02	Motor, Spindle				
505	3-B	59T52973F03	Motor, Servo				
506	4-B	48T92913F01	Transistor, Photo PT360				
507	4-F	40T71025F03	Switch, Detector (CAM END)				
508	3-A	40T71025F01	Switch, Detector (LIMIT)				
509	4-F	01A90816F01	Assy., Solenoid DP Frame				

NOTE: The parts without part numbers are not supplied.



# Exploded View (CD Mechanism)

● For DP24A22O Model

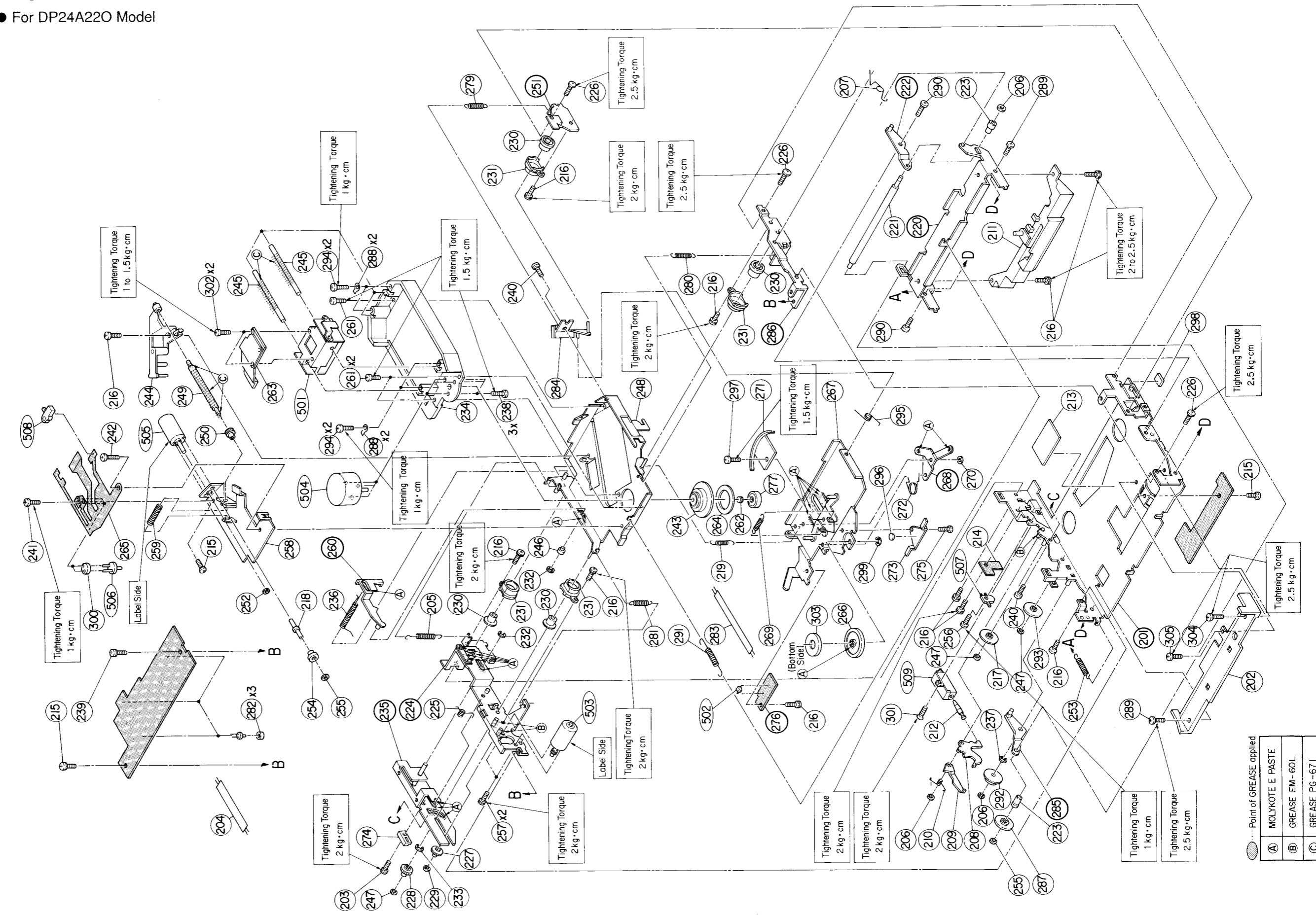
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A | B -21- | C | D | E | F -22- | G | H

.....	Point of GREASE applied
(A)	MOLYKOTE E PASTE
(B)	GREASE EM-60L
(C)	GREASE PG-67I

# CD Mechanism Assembly Parts List

● For DP22A070/DP22A080/DP22A310/DP22A320 Models

Symbol No.	Index	Part No.	Description	Symbol No.	Index	Part No.	Description
202	4-H	15C13518W01	Guide, Top (DP-2)	233		04C42091G11	Ring "E" (M2.5)
203	5-C	03S44205G14	Screw, Pan (M2×5)	234	3-D	03S94385F01	Screw, Pan (M1.7×2.3)
204	5-B	30T73687F18	Parallel, Wire (2P)	236	4-B	41A11905W01	Spring, Trigger
205		03A90175F01	Screw, Bind (M2×4)	237	3-F	04B41345P04	Washer, Lock (M2.6)
206		04B41345P06	Washer, Lock (M2.1)	239		04B41345P24	Washer, Lock (M2.1)
207	1-E	41A20219W01	Spring, ROL	240		03S94385F09	Screw, Pan (M2×3)
208	5-F	45A90817F01	Arm, Solenoid, (1)	241		04B41345P15	Washer, Lock (M1.2)
209	5-F	45A90818F01	Arm, Solenoid, (2)	242	3-F	30T73687F14	Parallel, Wire (3P)
210	5-F	41A92364F01	Spring, Solenoid.	243	3-E	43A22104W01	Table, Spindle
□ 211	2-F	07B10907W02	Stopper, Disc	244	3-A	07A90992F01	Bracket, Screw
☆ 211	2-F	07B10907W02	Stopper, Disc	245	3-D	47A91004F01	Shaft, Pick-up
◇ 211	2-F	07B10907W02	Stopper, Disc	246	4-D	43A11901W01	Bush, Trigger (A)
212	4-F	47A61544F02	Plunger, F/R	247		03S94385F10	Screw, Pan (M2×4)
213	4-F	03S94385F14	Screw, Countersink (M2.6×3)	248	3-E	07A92196F01	Bracket, Flex Wire
214	4-F	84A92276F01	END Switch (A) P.C. Board	249	3-C	03A91001F01	Shaft, Screw
215		03D40014G66	Screw, W/Washer (M2×3.5)	250	3-C	44A90998F01	Gear, Screw
216		03D40014G07	Screw, W/Washer (M2×4)	252	4-B	44A90996F01	Gear, Motor
217	4-F	44B90838F01	Gear, Cam	253	4-G	41B12249W08	Spring, Pull
218	4-B	46A91007F01	Stud, Gear	254	4-B	44A90997F01	Gear, Middle
219	4-E	41B12249W07	Spring, Pull	255	4-B	04B41345P13	Washer, Lock (M1.7)
221	2-F	49B90822F01	Roller (G)	256	4-F	03S94385F23	Screw, Pan (M2×5)
223		43A90873F01	Bush, Roller	△ 257	1-A	03S44205G42	Screw, Pan (M2.6×4)
225	4-C	41A90877F01	Spring, Cam	□ 257	1-A	03S44205G42	Screw, Pan (M2.6×4)
226		03D40014G62	Screw, W/Washer (M2×3)	◇ 257	1-A	03S44205G42	Screw, Pan (M2.6×4)
227	5-C	44A90836F01	Gear (D)	258	3-B	01V91700F07	Assy., Motor Unit
228	5-C	44A90837F01	Gear (E)	259	3-A	41A90999F01	Spring, Screw
229	5-C	04B41345P01	Washer Lock (M1.2)	261	1-C	41B21241W02	Spring, Pull
230		75B11922W02	Damper, DP-3	262	2-C	30T92773F01	Cable, Flex (16P)
231		15A12929W01	Holder, Damper DP-3	263	2-B	26A94948F01	Shield
232		04C42091G06	Ring "E" (M1.5)	△ 263	2-B	26A94948F01	Shield
				□ 263	2-B	26A94948F01	Shield
				◇ 263	2-B	26A94948F01	Shield

Notes : The parts without part numbers are not supplied.

△ : For DP22A070 model only, □ : For DP22A080 model only, ☆ : For DP22A310 model only, ◇ : For DP22A320 model only, Others : Common

Symbol No.	Index	Part No.	Description	Symbol No.	Index	Part No.	Description
264	3-E	14A96087F01	Sheet, Table	302	3-D	03S94385F03	Screw, Pan (M1.7×1.8)
265	4-B	84T15747W01	FPC Actuator P. C. Board	303	3-E	84T90887F01	FPC PHOTO P. C. Board
266	4-E	01A12222W01	Assy., Clamper Rivet	304	3-D	14S71058F40	Insulator, Cover
267	3-E	01B12123W01	Assy., Riv. Arm Clamp	305	3-D	03S94385F06	Screw, Pan (M2×1.8)
269	3-F	41B12249W01	Spring, Slider	306	3-B	41A94452F01	Spring, Motor
270		43A90995F01	Stopper, Shaft	307	3-E	14A28008W01	Spacer
271	3-E	07A30152W01	Bracket, Disc Stopper	308	3-F	41A96086F01	Spring, Arm Clamp
272	4-E	41A11903W01	Spring, Lever	309	3-F	43A41006F01	Spacer, Polyslider
273	4-F	07A11468W01	Plate, Top	310	3-E	03S94385F24	Screw, Pan (M2 × 3)
274	5-C	44A90830F01	Rack, Cam	311	4-G	03S44205G96	Screw, Bind (M2 × 5)
275	4-F	03S44205G94	Screw, CounterSink (M2.6 × 8)	312	4-G	03S44205G95	Screw, Bind (M2 × 4)
△ 277	2-C	01V23100W27	Assy., Pick-up Unit-S2	Miscellaneous			
□ 277	2-C	01V24900W02	Assy., Pick-up Unit-S2	501	3-C	88T90878F01	Pick-up, Unit
☆ 277	2-C	01V24900W02	Assy., Pick-up Unit-S2	502	4-E	48T16057W02	LED, AN501-B1 (RED)
◇ 277	2-C	01V24900W02	Assy., Pick-up Unit-S2	503	4-D	01V21900W45	Assy., Motor Load
279	4-C	41B21241W01	Spring, Pull	504	3-B	59T90879F01	Motor, Servo
280	2-E	41B21241W03	Spring, Pull	505	3-C	59T91005F01	Motor, Spindle
281	4-D	41B21241W04	Spring, Pull	506	3-D	48T92913F01	Transistor, Photo PT360
282	5-B	43A20208W01	Spacer, LED	507	4-F	40T71025F03	Switch, Detector
283	4-E	30T73687F20	Parallel, Wire (2P)	508	3-B	40T71025F01	Switch, Detector
284	3-D	01A92321F02	Assy., Bracket, Rivet (CLP-LP)	509	4-F	01A90816F01	Assy., Solenoid DP Frame
287	5-F	01T15181W01	Assy., DP Clutch				
288	5-F	04B41345P02	Washer, Lock (M1.7)				
290		03A90175F02	Screw, Bind (M2×3)				
291	4-E	41B90875F07	Spring, Pull				
292	5-F	44A90834F01	Gear (B)				
293	4-F	44A90835F01	Gear (C)				
295	4-D	43A20208W03	Spacer, LED (A)				
296	4-E	75A20128W01	Sheet, Holder				
297		03S94385F10	Screw, Pan (M2×4)				
298	3-B	03S94385F12	Screw, Pan (M2.6×6)				
299	3-A	43A41006F05	Spacer, Polyslider				
300	3-C	07A90993F01	Bracket, Pick-up				
301	2-D	01A90994F01	Spring, Nut				

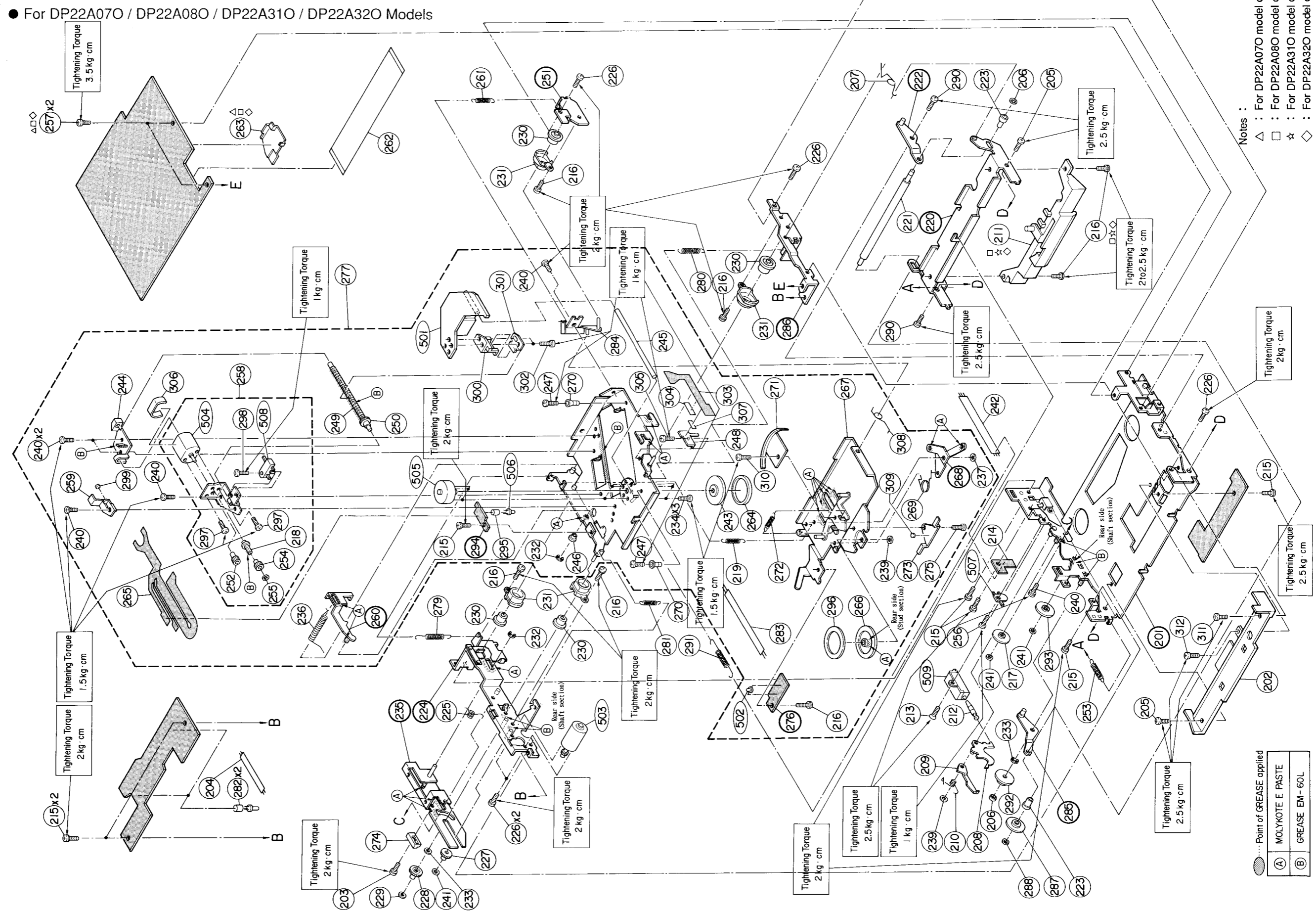
Notes : The parts without part numbers are not supplied.

△ : For DP22A070 model only, □ : For DP22A080 model only, ☆ : For DP22A310 model only, ◇ : For DP22A320 model only, Others : Common

# Exploded View (CD Mechanism)

● For DP22A070 / DP22A080 / DP22A310 / DP22A320 Models

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Notes :

- △ : For DP22A070 model only
- : For DP22A080 model only
- ☆ : For DP22A310 model only
- ◇ : For DP22A320 model only
- Others : Common

● Point of GREASE applied

(A)	MOLYKOTE E PASTE
(B)	GREASE EM-60L

A | B -25- | C | D | E | F -26- | G | H

# Disassembly Instructions

● For DP22A070 / DP22A080 / DP22A310 / DP22A320 models

## 1. Removal of Main P. C. Board

- (1) Unsolder the solder (a) as shown in Figure 24.
- (2) Remove two screws marked "○" as shown in Figure 24.
- (3) Disconnect all connectors from the Main P. C. Board while lifting up the Main P. C. Board A section.

**Note :** When unsoldering the solder (a), take care not to break the parallel wire.

## 2. Removal of Interface P. C. Board

- (1) After removing the Main P. C. Board, unsolder the solder (b) as shown in Figure 25.
- (2) Remove two screws marked "x" as shown in Figure 25.
- (3) Remove two jumper wires connected to the loading motor.

**Note :** When unsoldering the solder (b), take care not to break the parallel wire.

## 3. Removal of Sensor P. C. Board

- (1) Unsolder the solder (c) as shown in Figure 26.
- (2) Remove one screw marked "△" as shown in Figure 26.

**Note :** When unsoldering the solder (c), take care not to break the parallel wire.

## 4. Removal of End Switch P. C. Board

- (1) Unsolder the solder (d) and (e) as shown in Figure 27.
- (2) Remove two screws marked "□" as shown in Figure 27.

**Note :** When unsoldering the solder (d), take care not to break the parallel wire.

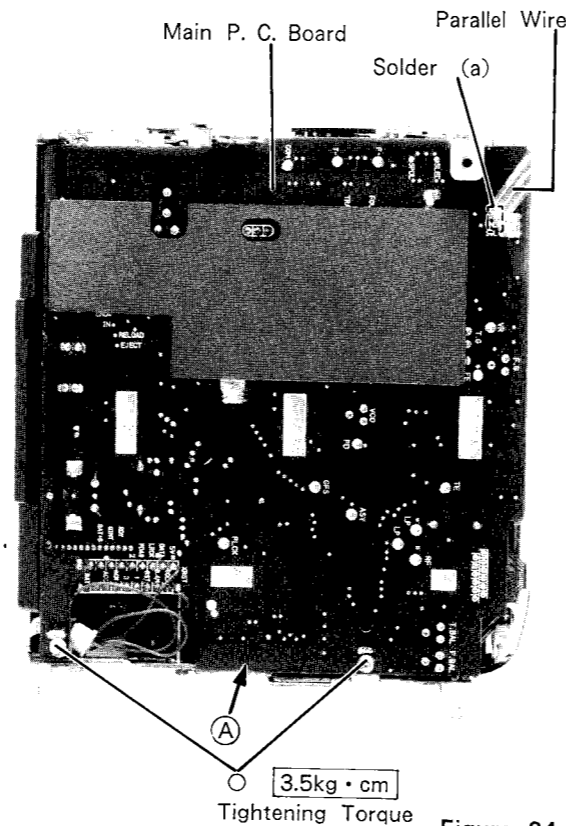


Figure 24

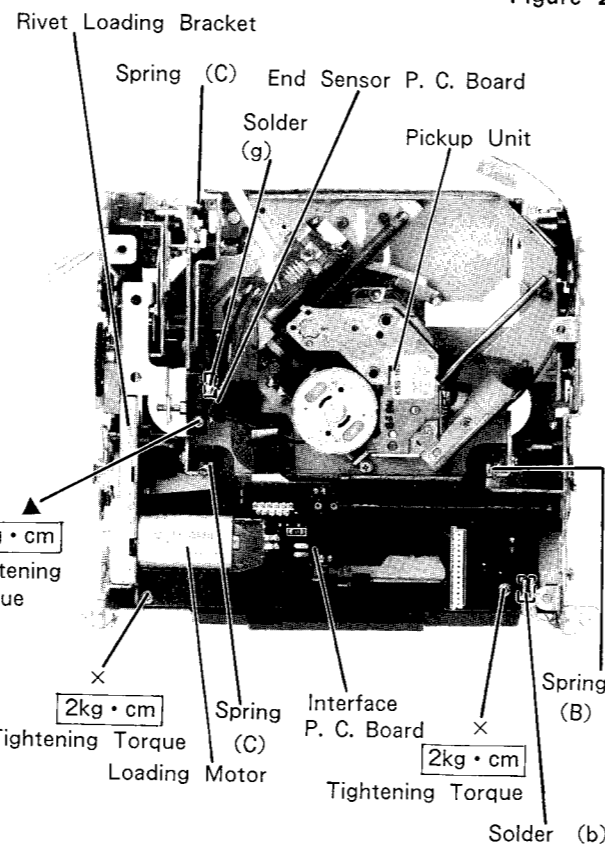


Figure 25

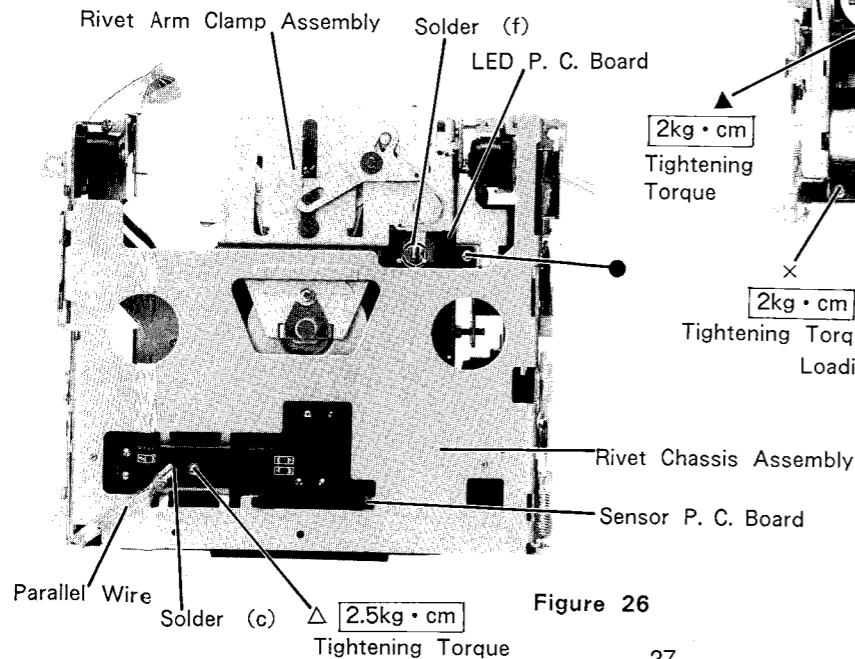


Figure 26

## 5. Removal of LED P. C. Board

- (1) Unsolder the solder (f) as shown in Figure 26.
- (2) Remove one screw marked "●" as shown in Figure 26.

**Note :** When unsoldering the solder (f), take care not to break the parallel wire.

## 6. Removal of End Sensor P. C. Board

- (1) After removing the Main P. C. Board, unsolder the solder (g) as shown in Figure 25.
- (2) Remove one screw marked "▲" as shown in Figure 25.

**Note :** When unsoldering the solder (g), take care not to break the parallel wire.

## 7. Removal of Damper (L) Bracket

- (1) After removing the Main and Interface P. C. Boards, remove one spring (A) as shown in Figure 28.
- (2) Remove one screw marked "■" as shown in Figure 28.
- (3) Remove the damper from the Pickup Unit shaft, and the bracket can be removed.

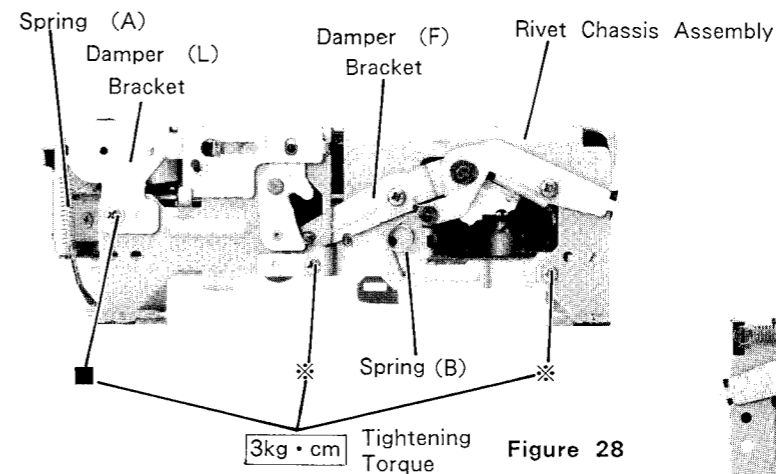


Figure 28

## 8. Removal of Damper (F) Bracket

- (1) After removing the Main and Interface P. C. Boards, remove two springs (B) as shown in Figures 25 and 28.
- (2) Remove two screws marked "※" as shown in Figure 28.
- (3) Remove the damper from the Pickup Unit shaft, and the bracket can be removed.

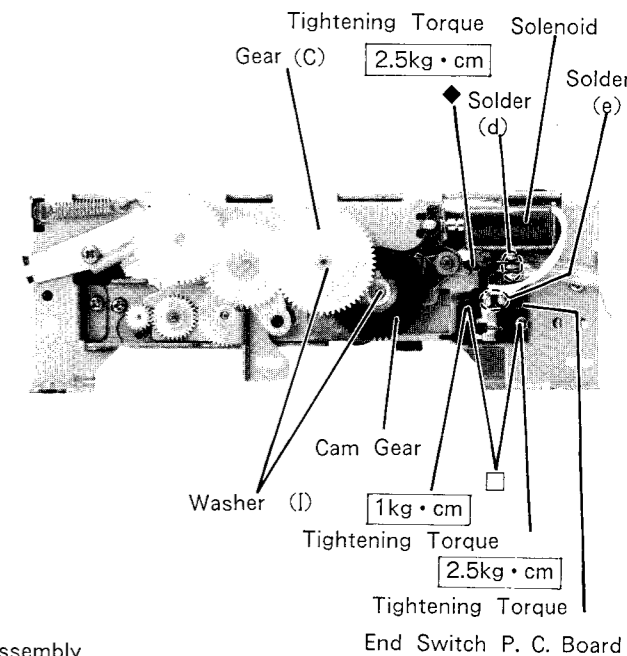


Figure 27

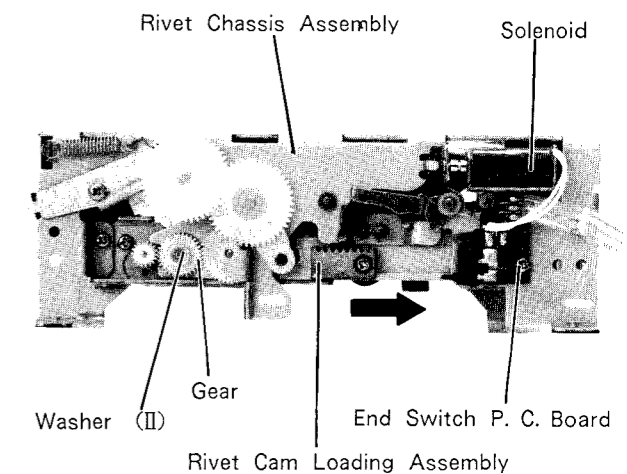


Figure 29

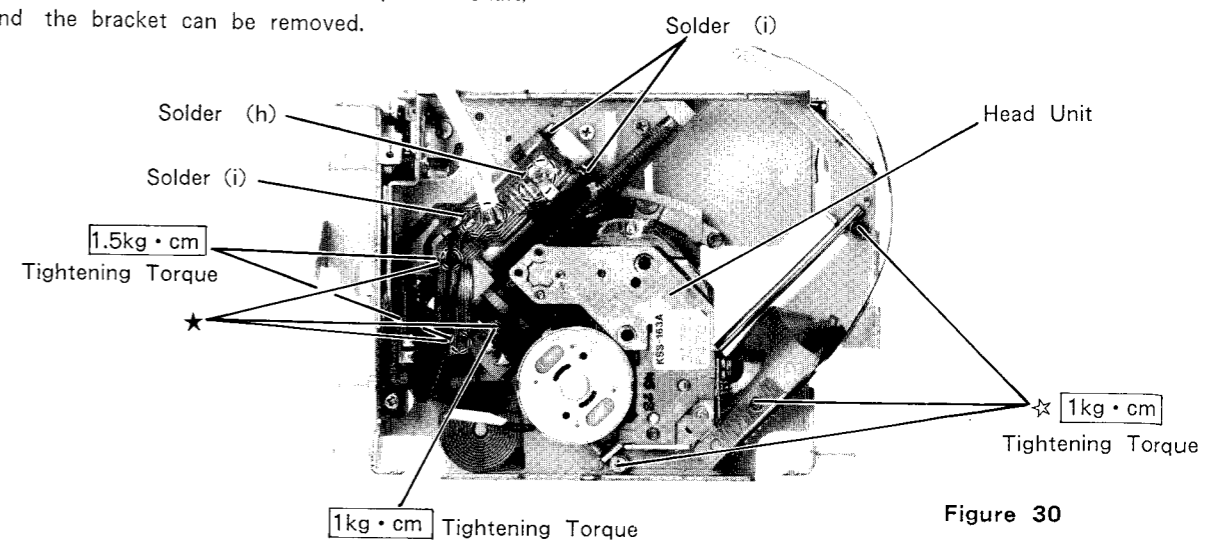


Figure 30

**9. Removal of Pickup Unit**

- (1) After removing the both bracket for the damper (L) and (F), remove the washer (I), cam gear and gear (C) as shown in Figure 27.
- (2) Remove three screws marked "\*", and the Pickup Unit with Rivet Loading bracket Assembly can be removed as shown in Figure 31.
- (3) Remove two springs (C), remove the damper from the Pickup Unit shaft, and then the Rivet Loading Bracket Assembly can be removed as shown in Figure 25.

**10. Removal of Head Unit**

- (1) Unsolder solder (h) as shown in Figure 30.
- (2) Remove three screws marked "☆" as shown in Figure 30.

**11. Removal of Servo Motor P. C. Board**

- (1) After removing the Head Unit, unsolder three solder (i) as shown in Figure 30.
- (2) Remove three screws marked "★" as shown in Figure 30.

**12. Removal of Loading Motor**

- (1) After removing the Rivet Loading Bracket, remove one washer (II) and gear as shown in Figure 29.
- (2) After moving the Rivet Cam Loading Assembly in the arrow direction, remove two screws marked "◇" as shown in Figures 29 and 31.

**13. Removal of Solenoid**

- (1) Unsolder the solder (e) as shown in Figure 27.
- (2) Remove one screw marked "◆" as shown in Figure 27.

**Precautions during Disassembling and Assembling**

- 1) Be sure to use brand-new washer and do not use any washer which was previously used. The new washer should not have peeling on cleavage.
- 2) When performing soldering, take care that temperature of the iron tip will not exceed 320°C and soldering time should be less than 3 seconds. Also make sure there is no defect soldering such as loose solder, solder short and foil breakage.
- 3) Useful hints for remounting the can gear and gear (C).
  - ① Set the Rivet Loading can Assembly to the loading position as shown in Figure 33.
  - ② Engage the gear can with the gear (C) as shown in the Figure 32, and mount them on the shafts (A) of the Arm Load (R) Assembly as shown in Figure 33.

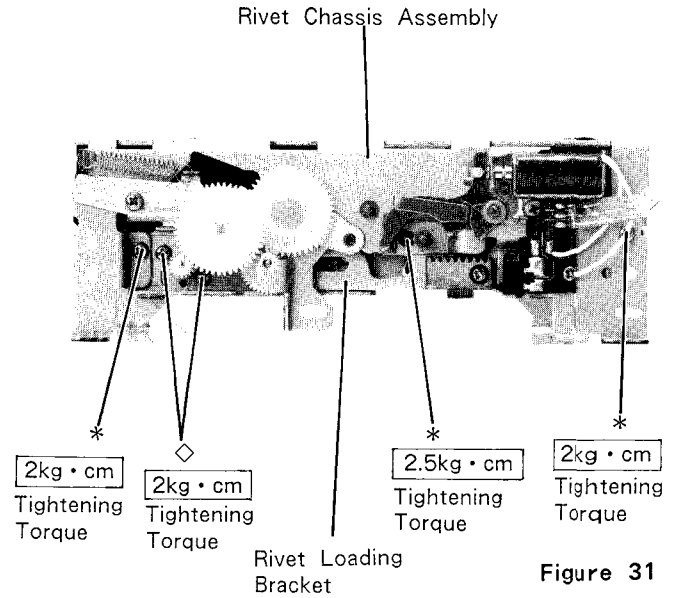


Figure 31

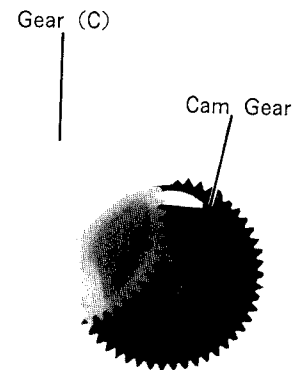


Figure 32

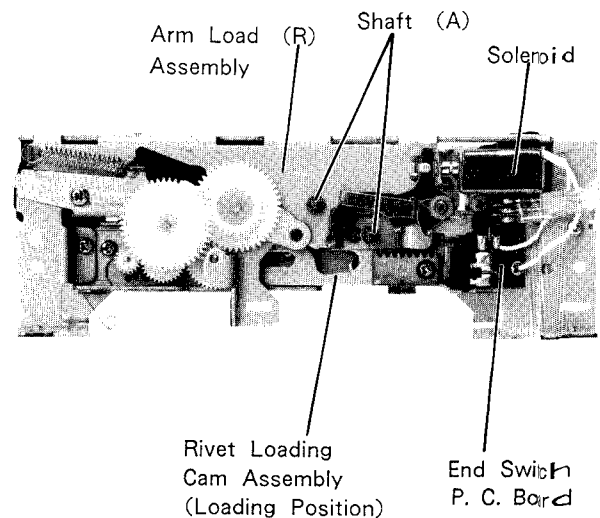


Figure 33