

harman/kardon

Model CDR2

Dual Tray CD/CD-R/CD-RW Recorder/Player

SERVICE MANUAL



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LASER BEAM SAFETY PRECAUTIONS

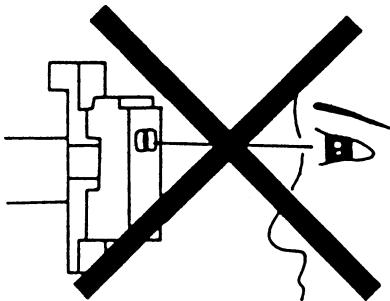
CLASS 1 LASER PRODUCT



CAUTION

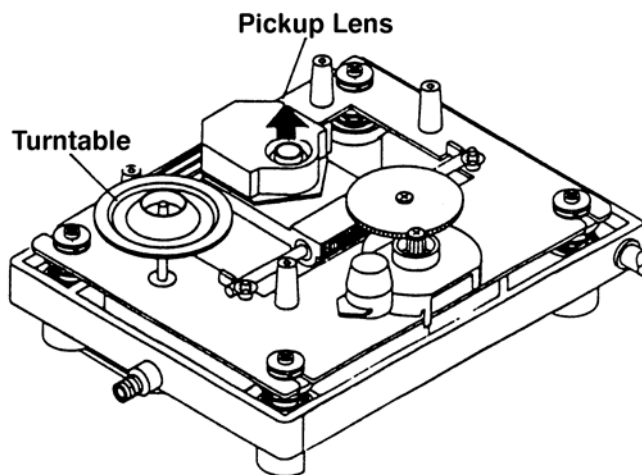
**Invisible laser radiation when the unit is open.
Do not stare into beam.**

CAUTION: USE OF ANY CONTROLS, ADJUSTMENT, OR PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.



Do not look directly at the laser beam coming from the pickup or allow it to strike against your skin.

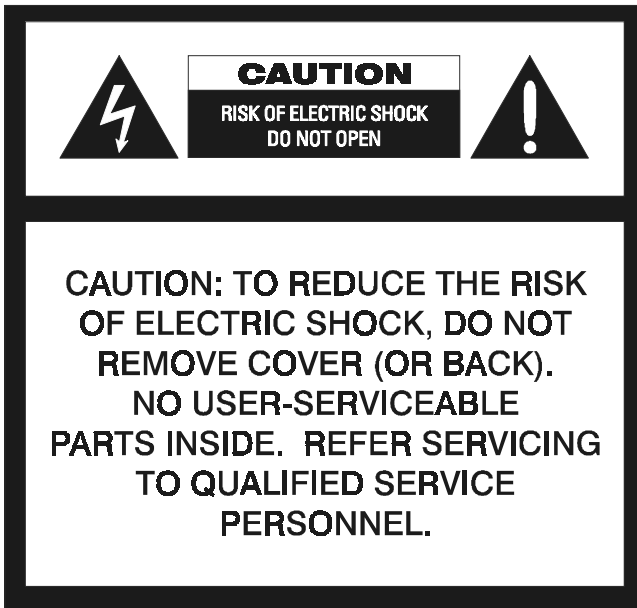
This compact disc player uses a pickup that emits a laser beam. The laser beam is emitted from the location shown in the figure. When checking the laser diode, be sure to keep your eyes at least 1 foot away from the pickup lens when the diode is turned on. Do not look directly at the laser beam.



CAUTION:

Using controls and adjustment, or doing procedures other than those specified herein, may result in hazardous radiation exposure.

SAFETY PRECAUTIONS



WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Caution: To prevent electric shock do not use this (polarized) plug with an extension cord, receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure.

Attention: Pour prévenir les chocs électriques ne pas utiliser cette fiche polarisée avec un prolongateur, une prise de courant ou une autre sortie de courant, sauf si les lames peuvent être insérées à fond sans en laisser aucune partie à découvert.

HANDLING LASER PICKUP

The laser diode in the optical system of this player can be damaged by electrostatic discharge from your clothes or your body. Proper electrostatic grounding for service personal is required during servicing.

BEFORE REPAIRING THE COMPACT DISC PLAYER

Preparation

Human Body Grounding:

Many of the components used in this compact disc player, including the laser pickup, are sensitive to electrostatic discharge. Service personal should be grounded with an electrostatic armband (1 Mohm).

Caution:

Static charge on clothing does not escape through a body grounding wrist band.

Be careful not to contact the pickup or electrical components with your clothing.

Workbench and Tool Grounding:

A properly-grounded electroconductive plate (1Mohm) or metal sheet should be fitted to the workbench surface. Tools and instruments (such as soldering irons and scopes) should be grounded to prevent AC leakage.



Fig. 1

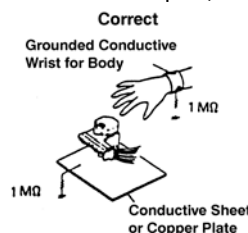


Fig. 2

Note: Laser diodes are so susceptible to damage from static electricity that, even if a static discharge does not ruin a diode, it can shorten its life or cause it to work improperly.

CDR 2 Important Notes – including issues that may be confused with “defects” when they are part of normal operation

1. ALWAYS remove all discs before moving or repacking the unit! Since the discs are not seated on a spindle, they have a tendency to slip out of the trays. At best, the top cover needs to be removed in order to retrieve the discs. At worst, loose discs inside the chassis can damage delicate optical parts.
2. DO NOT STARE INTO THE LASER BEAM.
3. Although coaxial digital jacks may look the same as analog RCA jacks, they are connected to different circuitry which is designed to process a different type of signal. Do not connect coaxial digital jacks to analog RCA jacks, and do not use audio interconnects that use twisted pair construction for coaxial digital connections.
4. All optical connectors are not the same. Make sure to use only “TOS” type connectors, which will audibly click when fully inserted into the jack. Remember to save the plastic dust cap for the optical jack, and replace it when the jack is not in use.
5. When playing CDs in Single mode, the audio signal will be routed to all output jacks, regardless of which deck of the CDR 2 is playing.
6. **The CDR 2 will only record on AUDIO CD-R and CD-RW discs.** Only use discs that bear the “Compact Disc Digital Audio Recordable” or “Compact Disc Digital Audio ReWritable” logo. The packaging for these discs should specify that they are intended for use in consumer CD audio recorders.
7. The CDR 2 will NOT record on discs designed for use in computer CD-R or CD-RW drives.
8. If a computer CD-R or CD-RW disc has been previously recorded on in a computer drive and properly finalized in accordance with audio standard IEC958, it can be played in the CDR 2. However, the CDR 2 will not erase and record over a computer CD-RW disc.
9. In order to remove a program list, you must either turn the unit off or remove the disc (or open the drawer so that the CDR 2 thinks you have removed the disc).
10. Lower the volume when dubbing at high speed. You will be able to hear the playback, and the higher pitch of the sound at high volumes may cause damage to your speakers.
11. A program list may only be dubbed at 1x speed. If you attempt to dub at a higher speed, the CDR 2 will automatically switch to 1x speed.
12. The CDR 2 is equipped with the Serial Copying Management System (SCMS). This means that you cannot make a digital copy of a digital copy of a disc; you can only make an analog copy of the first digital copy. If the disc you are trying to dub is itself a digital copy, or if it contains copy prohibit signals, the CDR 2 will automatically switch to analog mode. This will be indicated in the front panel display.
13. The record level control only works in analog mode. If you find the level control is having an effect on the recording, then the CDR 2 switched into

- analog mode to dub that particular disc. When recording in analog mode, make sure to use the level control to properly adjust the recording level.
14. In digital mode, if the CDR 2 senses a pause in the signal of more than 3 seconds, it will assume the recording session has ended and stop recording. This means that if, for example, you program a set of tracks from different discs on an external CD changer for recording, you may find that the CDR 2 stops recording after each disc. The CDR 2 is sensing a delay of more than three seconds while the CD changer switches to a different disc, and this causes the CDR 2 to end the recording session. Simply record tracks from one disc at a time on the external changer.
 15. In analog mode, the CDR 2 will stop recording after a pause lasting for 10 seconds. If you have pressed the Auto/Manual button to place the unit in Auto mode, it will increment the track number when it senses a 3 second pause. In Manual mode, you must increment the track number manually by pressing either the Track Increment or Next button.
 16. The CDR 2 has a convenient front panel digital input for use in recording from external sources, such as a portable CD player. Since it can only record from one input at a time, if the CDR 2 senses a signal at both the front and rear panel inputs, it will automatically record only from the front panel input.
 17. Tracks on a CD-RW disc that has been unfinalized may only be erased in reverse sequential order. This means that you cannot erase a track in the beginning or middle of the disc until all of the tracks after it have also been erased.
 18. Unfinalized discs will only play in the record deck, not the play deck.
 19. In dual mode, only the output of the play deck will go to headphones.
 20. Except when dubbing, make sure to press the Input button to select the correct source. This is necessary whenever you are recording or using the CD Sync function with an external source.
 21. The pause button will not work while dubbing.
 22. The CD Sync feature requires a digital input. Sync recordings may not be made from an analog source.

For complaint: "CR2 defaults back to X1 speed when attempting a recording at X4 speed" :

Normal conditions -

- 1) Will occur when an external input is selected.
- 2) Will occur when dubbing from a copied CD. (automatically goes into analog recording)
- 3) Will occur when dubbing from a copy protected CD. (automatically goes into analog recording)
- 4) Will occur when dubbing a programmed play list.
- 5) Certain CDR disc brands may only copy at X1 speed. Try another brand.

SPECIFICATIONS

Signal Format

Playback Sampling Frequency	44.1 kHz
D/A Conversion	96kHz, Multi-Bit Delta-Sigma Conversion
Oversampling	128 Times

Playback Specifications

Frequency Response	2Hz – 20,050Hz
Playback S/N	105dB
Playback Dynamic Range	105dB
Playback THD	0.005% / –88dB
Analog Audio Output	2V RMS, ± 2dB
Digital-Coaxial Output	0.5 Vpp/75.
Headphone Output	1V RMS/32. Load

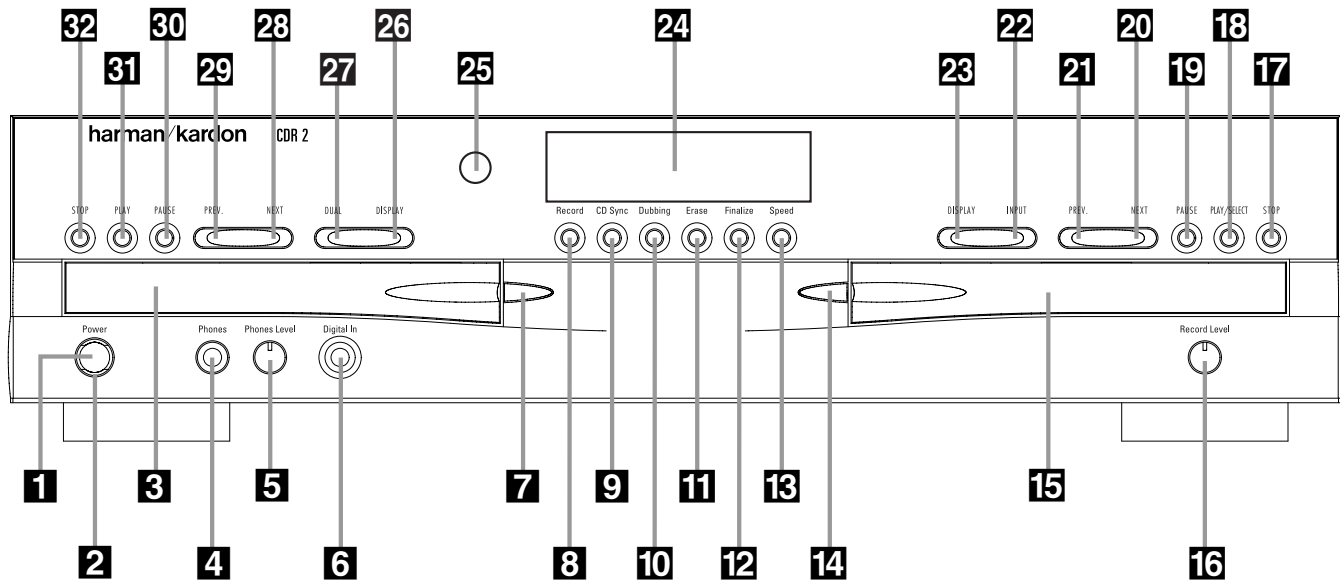
Record Specifications

Digital Input Sample Rates	32kHz – 96kHz
Recording S/N: Analog	91dB
Recording S/N: Digital Dub Mode	Equal to Source
Recording S/N: Digital External Source	Source –10dB
Recording Dynamic Range	91dB
Recording THD	0.005% / –85dB
Analog Input Sensitivity	330 mV RMS 47k. = 0dB
Digital Inputs (Direct Recording)	44.1kHz, ±100 ppm/min.

General

Power Requirement	120VAC/60Hz
Power Consumption	48 Watts
Dimensions	Width 17.3"/440mm Height 4.4"/112mm Depth 14.2"/363mm
Weight	13.2 lb/6 kg

Front-Panel Controls



- 1** Power Switch
- 2** Status-Mode Indicator
- 3** Play Deck
- 4** Headphone Jack
- 5** Headphone Level Control
- 6** Digital Input
- 7** Play-Deck Open
- 8** Record Button
- 9** CD Sync
- 10** Dubbing
- 11** Erase
- 12** Finalize
- 13** Speed
- 14** Record-Deck Open
- 15** Record Deck
- 16** Analog-Record Level Control
- 17** Record-Deck Stop
- 18** Record-Deck Play/Select
- 19** Record-Deck Pause
- 20** Record-Deck Next
- 21** Record-Deck Previous
- 22** Input Select
- 23** Record-Deck Display Select
- 24** Information Display
- 25** Remote Sensor
- 26** Play-Deck Display Select
- 27** Dual-Play Selector
- 28** Play-Deck Next
- 29** Play-Deck Previous
- 30** Play-Deck Pause
- 31** Play-Deck Play
- 32** Play-Deck Stop

1 Power Switch: Press this switch to apply power to the CDR 2. When the unit is first turned on, the **Status-Mode Indicator 2** surrounding the switch will turn green. Once the unit has been turned on with this switch, it may be operated from either the front panel or remote control. Press the switch again to turn the unit completely off.

2 Status-Mode Indicator: When the CDR 2 is in the ON mode, this indicator will glow green. When the unit has been placed in the Standby mode by pressing the **Power-Off button 32** on the remote, the indicator will glow amber, indicating that the unit is still connected to the AC main supply and is ready to be turned on from the remote control.

3 Play Deck: This disc deck is used to play conventional CD discs and CD-R or CD-RW discs that have been finalized.

4 Headphone Jack: Connect standard headphones to this jack for private listening.

5 Headphone Level Control: Turn this control to adjust the volume level to the headphones. Note that the use of this control will not change the analog output levels at the rear-panel audio outputs **1 2**.

6 Digital Input: This coaxial digital input may be used to connect a portable digital audio player to the CDR 2 for digital recording. When an active digital signal is connected to both the front- and rear-panel coaxial inputs, the source connected to the front-panel input will be selected for recording.

7 Play-Deck Open: Press this button to open the Play Deck **3**.

8 Record Button: Press this button to begin the recording process. See pages 20-22 for more information on CD recording.

9 CD Sync: Press this button once to begin an automated recording of a single track from an external CD player when a digital connection is used. Press it twice to begin automated recording of an entire disc. See page 21 for more information on CD Sync recording.

10 Dubbing: Press this button to begin the process of making a complete copy of the disc in the Play Deck **3** to a CD-R or CD-RW disc in the Record Deck **15**. See page 20 for more information on dubbing.

11 Erase: Press this button to erase one or more tracks or the entire contents of an un-finalized CD-RW disc. When a CD-RW disc has already been finalized you may erase the entire disc or you may "unfinalize" the disc by erasing the **TOC** data. See page 22 for more information on erasing CD-RW discs.

Front-Panel Controls

12 Finalize: Press this button when a recording is complete to initiate the finalization process. **The Play/Select Button 18 10** must be pressed within three seconds to activate finalization. Until this button is pressed and the finalization process is complete, CD-R discs may not be played on conventional CD machines. See page 22 for more information on finalization.

13 Speed: Press this button to select the recording speed for internal dubs. See page 20 for more information on selecting the proper speed.

14 Record-Deck Open: Press this button to open the Record Deck **15**.

15 Record Deck: This Disc Deck is used to play back CD, CD-R and CD-RW discs; it is also used for recording CDs.

16 Analog-Record Level Control: The control is used to adjust the input level when making recordings from analog sources such as cassettes, or when CDs are recorded in an analog mode. See page 21 for more information on record levels.

17 Record-Deck Stop: Press this button to stop the CD in the Record Deck.

18 Record-Deck Play/Select: This button has two functions. It may be pressed when a standard CD is in the Record Deck to put the machine in play, or it may be used to enter a selection or start certain record functions.

19 Record-Deck Pause: When the Record Deck is in the Play mode, pressing this button will pause the disc. If the disc has previously been paused, pressing this button will restart the playback.

20 Record-Deck Next: This button has two functions. When a disc is playing in the Record Deck **15**, press and hold this button to play the disc in a fast-forward mode to quickly locate a desired passage. At any time, tapping the button and quickly releasing it will move to the next track on a disc in play, or enter the track for programming or play when the disc is stopped. Once a track is entered, it may be played by simply pressing the **Play** button **18 8**.

21 Record Deck Previous: This button has two functions. When a disc is playing in the Record Deck **15**, press and hold this button to play the disc in a fast reverse mode to quickly locate a desired passage. At any time, tapping the button and quickly releasing it will move to the beginning of the current track, and the next press will move to the previous track. When a disc is stopped, each press will move back one for programming or play when the disc is stopped. Once a track is entered, it may be played by simply pressing the **Play** button **18 8**.

22 Input Select: Press this button to select the input source (analog, digital coax or digital optical) for recording. See page 21 for more information on input selection.

23 Record-Deck Display Select: Press this button to cycle through the time display options for the Record Deck. See page 17 for more information on the time display.

24 Information Display: The indicators in the Information Display provide status reports on the operation of the CDR 2. See page 7 for complete explanations of each indicator.

25 Remote Sensor: The IR sensor that receives the commands from the remote control is behind this area. Do not cover or obscure this part of the front panel to avoid any malfunction with the remote.

26 Play-Deck Display Select: Press this button to cycle through the time display options for the Play Deck. See page 17 for more information on the time display.

27 Dual-Play Selector: Press this button to enable both CD Decks to playback at the same time and function as separate, independent CD units. In this mode it is also possible to record from an external source while the Play Deck is functioning as a standard CD player. See page 17 for more information on dual-play capability.

28 Play-Deck Next: This button has two functions. When a disc is playing in the Play Deck **31**, press and hold this button to play the disc in a fast-forward mode to quickly locate a desired passage. At any time, tapping the button and quickly releasing it will move to the

next track on a disc in play, or enter the track for programming or play when the disc is stopped. Once a track is entered, it may be played by simply pressing the **Play** button **31 8**.

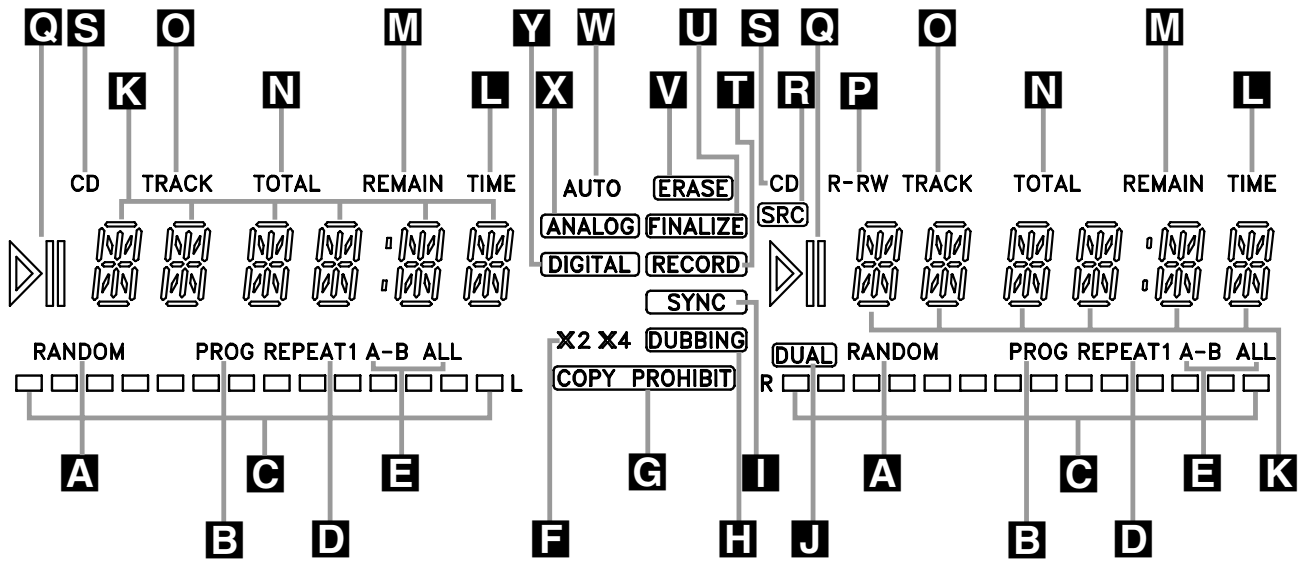
29 Play-Deck Previous: This button has two functions. When a disc is playing in the Play Deck **31**, press and hold this button to play the disc in a fast-reverse mode to quickly locate a desired passage. At any time, tapping the button and quickly releasing it will move to the beginning of the current track, and the next press will move to the previous track. When a disc is stopped, each press will move back one for programming or play when the disc is stopped. Once a track is entered, it may be played by simply pressing the **Play** button **31 8**.

30 Play-Deck Pause: When the Play Deck is running, pressing this button will pause the disc. If the disc has previously been paused, pressing this button will restart the playback.

31 Play-Deck Play: Press this button to begin playback of a CD in the Play Deck or the dubbing process.

32 Play-Deck Stop: Press this button to stop the CD in the Play Deck.

Front-Panel Information Display



- A** Random Indicators
- B** Program Indicators
- C** Level Indicators
- D** Repeat Indicators
- E** Repeat-Status Indicators
- F** Speed Indicators
- G** Copy-Prohibit Indicator
- H** Dubbing Indicator
- I** Sync Indicator

- J** Dual-Play Indicator
- K** Information Displays
- L** Time Indicators
- M** Remaining-Time Indicators
- N** Total-Time Indicators
- O** Track-Time Indicators
- P** R/RW Indicator
- Q** Play/Pause Indicators
- R** Sample-Rate Converter

- S** CD Indicators
- T** Record Indicator
- U** Finalize Indicator
- V** Erase Indicator
- W** Auto Indicator
- X** Analog Indicator
- Y** Digital Indicator

Important Note: Since the CDR 2 is a dual-deck player/recorder, there are two separate sets of indicators for the Random, Program, Repeat, Repeat Status, Time, Total Time and Track Time. In addition, there is a separate Information Display, Play/Pause Indicator and CD Indicator for each deck. As the function of these indicators is identical for both decks, they are described in this manual with a common letter. When the CDR 2 is playing or recording a disc, any indicators that light on the left side of the display describe to the status of the Play Deck, while those that light on the right side of the display describe the status of the Record Deck. Depending on the activity of the unit and the settings you select, different indicators may light on the two sides at the same time.

A Random Indicators: These indicators light when random playback has been programmed for one of the CD decks. See page 16 for more information on random play.

B Program Indicators: These indicators light when one of the CD decks is being programmed for playback options. See page 16 for more information on programmed play.

C Level Indicators: These LEDs display the input level during an analog recording, and the output level during playback. See page 21 for more information on record levels.

D Repeat Indicator: This indicator lights when a repeat function is being used. See page 18 for more information on repeat play.

E Repeat-Status Indicator: These indicators display the type of repeat function being used. See page 18 for more information on repeat status.

F Speed Indicators: These indicators show which record speed has been selected for dub recordings. See page 20 for more information on record-speed selection.

G Copy-Prohibit Indicator: This indicator lights when a recording is not possible due to the intervention of the Serial Copy Management System (SCMS). See page 20 for more information on SCMS.

H Dubbing Indicator: This indicator lights when a dub is in progress between the two CD

Decks. See page 20 for more information on CD dubbing.

I Sync Indicator: This indicator lights when the unit has been programmed for a CD Sync recording. See page 21 for more information on CD Sync recordings.

J Dual Play Indicator: The indicator lights when the unit is playing in the Dual mode, which allows both CD Decks to act as playback decks at the same time. See page 17 for more information on the dual-play mode.

K Information Display: This display serves two functions, showing the time displays for discs playing, as well as displaying messages about discs or recordings.

L Time Indicator: This indicator lights in conjunction with one of the time indicators **O** **P** **Q** to show which of the time status modes is active.

M Remaining-Time Indicator: This indicator lights when the Information Display **K** shows the time remaining on a disc.

N Total Time: This indicator lights when the Information Display **K** shows the total time of all tracks on a disc.

O Track Time: This indicator lights when the Information Display **K** shows the running time of the individual track being played.

P R/RW Indicator: This indicator shows which type of recordable disc is present in the Record Deck **15**. When a CD-R disc is present, only the R is lit. The RW lights when an erasable CD-RW disc is in use.

Q Play/Pause Indicator: These indicators show the status of the individual CD Decks. The **▷** lights when the CD is playing, and the **▷||** lights when the unit is in a Pause mode.

R Sample-Rate Converter: This indicator lights when the Sample-Rate Converter is in use to change the digital sample rate when the incoming signal is not the standard 44.1kHz used by standard CDs. This is an automatic function and does not require any user intervention.

S CD Indicator: This indicator lights when a standard CD is playing in either deck **3** or **15**.

T Record Indicator: This indicator lights when the unit is making a recording and flashes during the preparations for recording.

U Finalize Indicator: This indicator lights when the unit is in the Finalization process, which is required before a CD-R disc may be played on a standard CD machine. See page 22 for more information on Finalization.

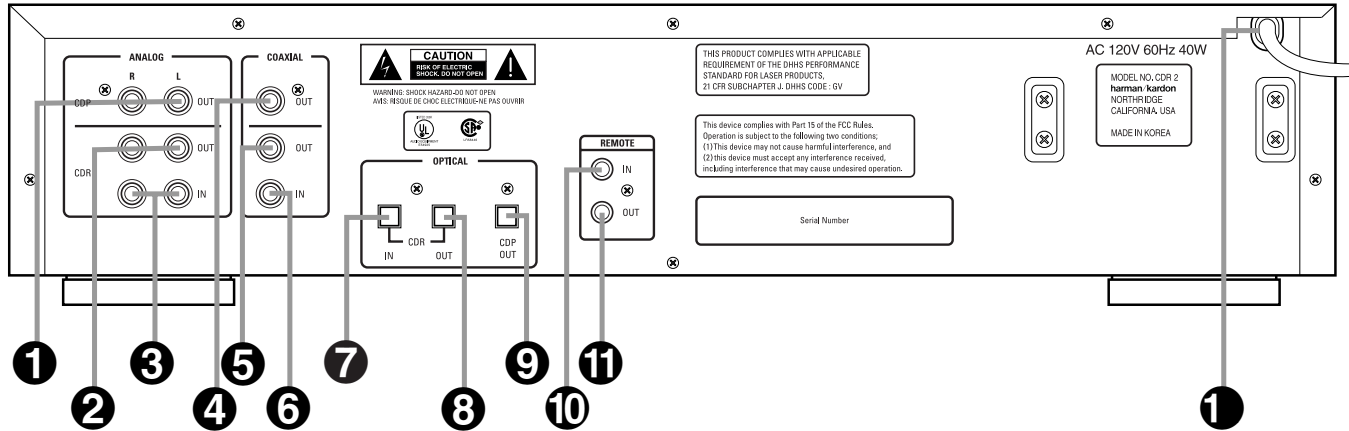
V Erase Indicator: This indicator lights when a CD-RW disc is being erased. Note that only CD-RW discs may be erased; it is not possible to erase a CD-R disc. See page 22 for more information on erasing discs.

W Auto Indicator: This indicator lights when the automatic method of incrementing tracks is selected for a recording session.

X Analog Indicator: This indicator lights when an analog source is being recorded. See page 20 for more information on source selection.

Y Digital Indicator: This indicator lights when a digital source is being recorded. See page 20 for more information on source selection.

Rear-Panel Connections



- 1 Play (CDP)-Deck Analog Output
- 2 Record (CDR)-Deck Analog Output
- 3 Record (CDR)-Deck Analog Input
- 4 Play (CDP)-Deck Coaxial-Digital Output

- 5 Record (CDR)-Deck Coaxial-Digital Output
- 6 Record (CDR)-Deck Coaxial-Digital Input
- 7 Record (CDR)-Deck Optical-Digital Input
- 8 Record (CDR)-Deck Optical-Digital Output

- 9 Play (CDP)-Deck Optical-Digital Output
- 10 Remote IR Input
- 11 Remote IR Output
- 1 AC Power Cord

1 Play (CDP)-Deck Analog Output: These jacks carry the analog audio output signal from the **Play Deck 3**. Connect them to the CD input jacks on a receiver, preamp or processor.

2 Record (CDR)-Deck Analog Output: These jacks carry the output signal from the **Record Deck 15**. Connect them to the **Tape Play/In** input jacks on a receiver, preamp or processor.

3 Record (CDR)-Deck Analog Input: These jacks accept the analog signals that are used for CD recordings. Connect them to the **Tape Rec/Play** outputs on a receiver, preamp or processor.

4 Play (CDP)-Deck Coaxial-Digital Output: This jack carries the digital-audio output signal from the **Play Deck 3**. Connect it to a coaxial-digital input on a receiver, processor or digital decoder.

5 Record (CDR)-Deck Coaxial-Digital Output: This jack carries the digital audio output signal from the **Record Deck 15**. Connect it to a coaxial digital input on a receiver, processor or digital decoder.

6 Record (CDR)-Deck Coaxial-Digital Input: This jack accepts the digital-audio input signal from a compatible digital audio product and should be connected directly to a digital player or to a coaxial-digital output on a CD or DVD player or an A/V receiver or processor.

IMPORTANT NOTE: The coaxial digital inputs should only be connected to **digital** input or output jacks. Even though they use the same RCA type connector as standard analog audio connections, **DO NOT** connect them to conventional analog input or output jacks.

7 Record (CDR)-Deck Optical-Digital Input: This jack accepts the digital-audio input signal from a compatible digital audio product, and should be connected directly to the optical-digital output on a CD or DVD player or an A/V receiver or processor.

8 Record (CDR)-Deck Optical-Digital Output: This jack carries the digital audio output signal from the **Record Deck 15**. Connect it to an optical digital input on a receiver, processor or digital decoder.

9 Play (CDP)-Deck Optical-Digital Output: This jack carries the digital audio output signal from the **Play Deck 3**. Connect it to an optical-digital input on a receiver, processor or digital decoder.

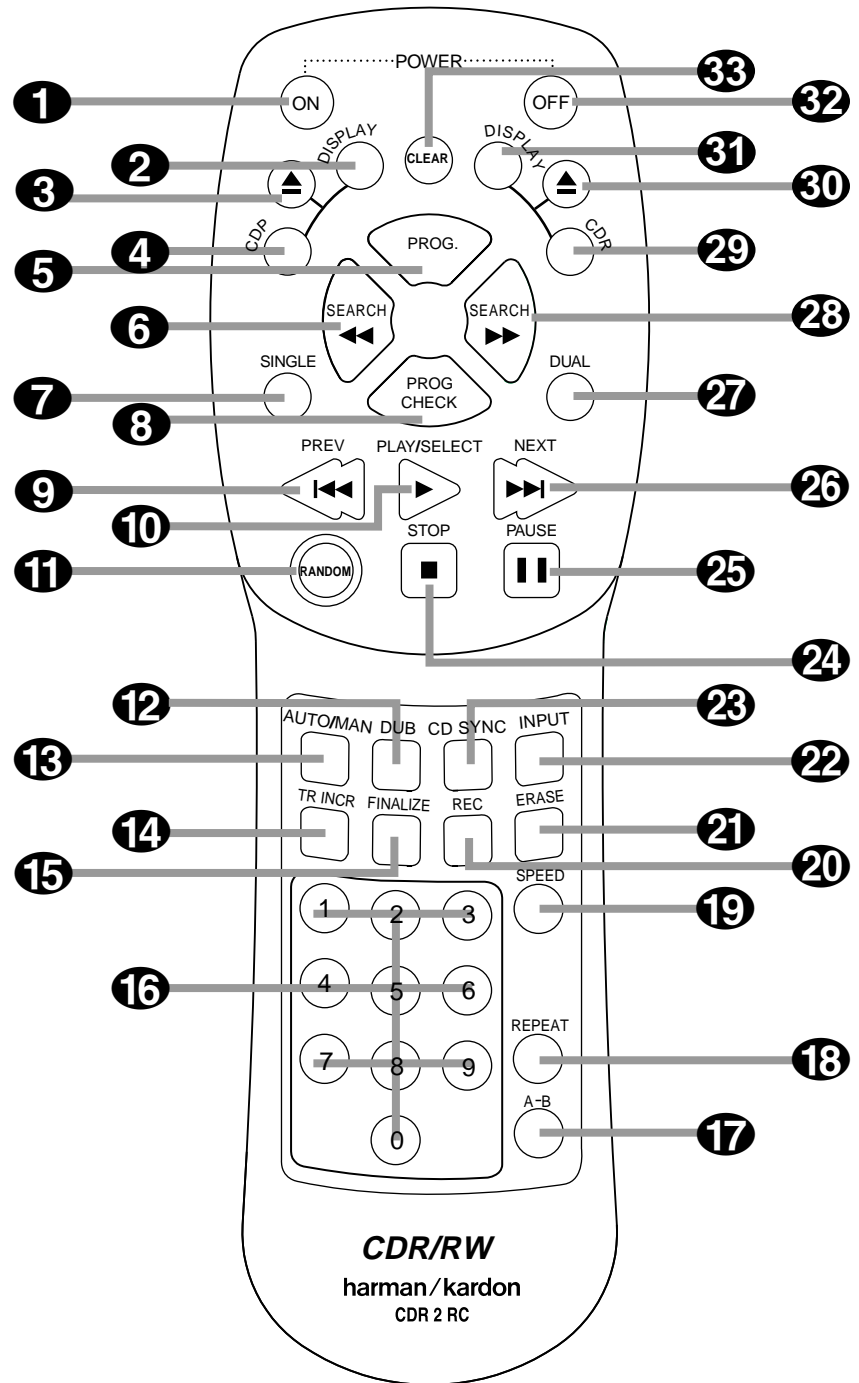
10 Remote IR Input: Connect the output of a remote infrared sensor or the remote control output of another compatible Harman Kardon product to this jack. This will enable the remote control to operate even when the front-panel **Remote Sensor 25** is blocked. This jack may also be used with compatible IR remote control based automation systems.

11 Remote IR Output: Connect this jack to the IR input jack of another compatible Harman Kardon remote controlled product to have the built-in remote sensor **25** on the CDR 2 provide IR signals to other compatible products.

1 AC Power Cord: Connect this plug to an AC outlet. If the outlet is switch controlled, make certain that it is in the **ON** position.

Remote Control Functions

- 1 Power-On Button
- 2 Play (CDP)-Deck Display Control
- 3 Play (CDP)-Deck Open
- 4 Play (CDP)-Deck Select
- 5 Program
- 6 Reverse Search
- 7 Single
- 8 Program Check
- 9 Previous-Track Skip
- 10 Play/Select
- 11 Random Play
- 12 Dub
- 13 Automatic/Manual Track Increment Selector
- 14 Track Increment
- 15 Finalize
- 16 Numeric Keys
- 17 A-B Repeat
- 18 Repeat
- 19 Speed Select
- 20 Record Button
- 21 Erase Button
- 22 Input Select
- 23 CD Sync
- 24 Stop
- 25 Pause
- 26 Next Track
- 27 Dual Playback
- 28 Forward Search
- 29 Record (CDR)-Deck Select
- 30 Record (CDR)-Deck Open
- 31 Record (CDR)-Deck Display Control
- 32 Power Off
- 33 Clear



IMPORTANT NOTE: Some of the remote's functions including Play, Pause, Stop, Search, Next and Previous Track, are shared between the two decks. Always remember the press the CDP Select button 4 to use the remote to control the Play Deck, or press the CDR Select button 29 to control the Record Deck.

Remote Control Functions

- 1 Power-On Button:** Press this button to turn the CDR 2 on. Note that in order for this control to function, the **Front-Panel Power Switch 1** must first be pressed so that the unit is in the Standby mode.
- 2 Play (CDP)-Deck Display Control:** Press this button to cycle through the various time display options for the disc in the **Play Deck 3**. See page 17 for more information on time-display options.
- 3 Play (CDP)-Deck Open:** Press this button to open the **Play Deck 3**.
- 4 Play (CDP)-Deck Select:** Press this button to control or program the functions of the disc in the **Play Deck 3**.
- 5 Program:** Press this button to begin the programming sequence for one of the CD decks. See page 18 for more information on programming the CDR 2.
- 6 Reverse Search:** Press this button to play the selected disc in reverse to locate a desired passage.
- 7 Single:** When this button is pressed, the CDR 2 will function as a two-disc CD player/changer. In the Single mode, the audio output will be routed to all output jacks **1 2 4 5 8 9** regardless of which CD deck is actually playing. See page 17 for more information on the Single-Play mode.
- 8 Program Check:** Press this button to check or edit a programmed playback sequence. See page 18 for more information on programmed playback.
- 9 Previous-Track Skip:** Press this button to skip backwards to the beginning of the track currently being played. Press it a second time to move back to the beginning of each previous track.
- 10 Play/Select:** This button has two functions. It will most often be used as a standard play button, but when setting up certain record functions, it is also used as an Enter or Select button.
- 11 Random Play:** When the CD Deck is stopped, press this button to begin random play of all tracks on a disc.
- 12 Dub:** Press this button to begin a dub. See page 20 for more information on dubbing.
- 13 Automatic/Manual Track Increment Selector:** Press this button to select between automatic and manual track increments during a recording session. See page 20 for more information on track increments.
- 14 Track Increment:** When the Manual mode for track increments is selected during recording, press this button to increase the track number. **NOTE:** This function does not operate during CD Sync or dub recording.
- 15 Finalize:** Press this button when a recording is complete to initiate the finalization process. The **Play/Select** button **18 10** must be pressed within three seconds to activate finalization. Until this button is pressed and the finalization process is complete, CD-R discs may not be played on conventional CD machines. See page 22 for more information on Finalization.
- 16 Numeric Keys:** Press these buttons to access a specific track for playback or during the programming process. See page 18 for more information on programmed playback.
- 17 A-B Repeat:** Press this button to specify a segment of a disc for repeat play. See page 18 for more information on repeat play.
- 18 Repeat:** Press this button once to repeat the current track. To repeat an entire disc, press the button twice.
- 19 Speed Select:** Press this button to select the recording speed for internal dubs. See page 20 for more information on selecting the proper speed.
- 20 Record Button:** Press this button to begin a manual recording.
- 21 Erase Button:** Press this button to initiate the erasure of a track or of an entire CD-RW disc or to Unfinalize a disc. Note that erasure is only possible on CD-RW discs. See page 22 for more information on erasing discs.
- 22 Input Select:** Press this button to select the input source (analog, digital-coax or digital-optical) for recording. See page 20 for more information on input selection.
- 23 CD Sync:** Press this button once to begin an automated recording of a single track from an external CD player when a digital connection is used. Press it twice to begin automated recording of an entire disc. See page 21 for more information on CD Sync recording.
- 24 Stop:** Press this button to stop playback or recording.
- 25 Pause:** Press this button to momentarily pause playback. Press it again to resume playback.
- 26 Next Track:** Press this button to skip forward to the next track on a disc.
- 27 Dual Playback:** Press this button to enable both CD Decks to play back at the same time and function as separate, independent CD units. In this mode it is also possible to record from an external source while the Play Deck is functioning as a standard CD player. See page 17 for more information on dual-play capability.
- 28 Forward Search:** Press this button to play a disc in a fast-forward mode.
- 29 Record (CDR)-Deck Select:** Press this button to control or program the functions of the disc in the **Record Deck 15**.
- 30 Record (CDR)-Deck Open:** Press this button to open the **Record Deck 15**.
- 31 Record (CDR)-Deck Display Control:** Press this button to cycle through the various time-display options for the disc in the **Record Deck 15**. See page 17 for more information on time-display options.
- 32 Power-Off:** Press this button to place the unit in a Standby mode.
- 33 Clear:** Press this button to clear an item in a program sequence. See page 18 for more information..

Troubleshooting Guide and Error Messages

TROUBLE SHOOTING GUIDE

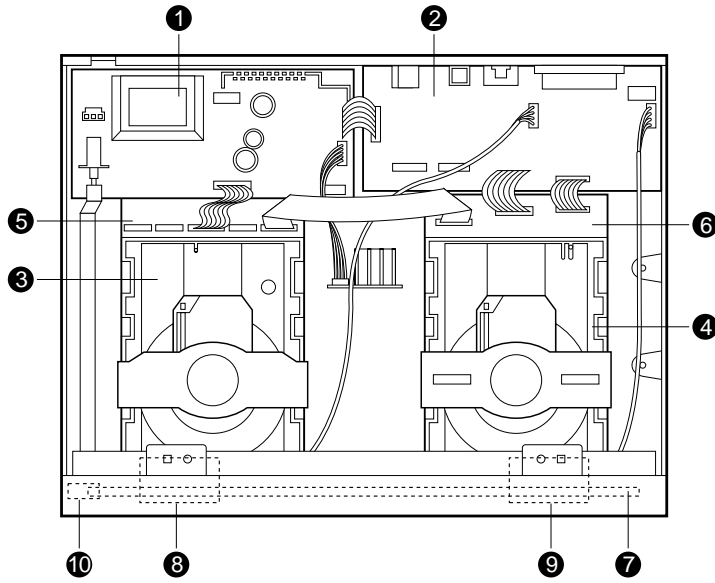
SYMPTOM	POSSIBLE CAUSE	SOLUTION
Unit does not operate when Standby switch or remote Power-On is pressed	<ul style="list-style-type: none"> No AC power Main Power Switch is off 	<ul style="list-style-type: none"> Make certain AC power cord is plugged into a live outlet. Check to see if AC outlet is switch controlled. Turn on Main Power
Remote does not function	<ul style="list-style-type: none"> Wrong deck selected Dead batteries Sensor blocked 	<ul style="list-style-type: none"> Press the CDP button to control the Play Deck; press the CDR button to control the Record Deck Replace both batteries Remove obstructions from front panel or connect a remote sensor to the Remote-In Jack
Disc does not erase	<ul style="list-style-type: none"> CD-R disc in use 	<ul style="list-style-type: none"> CD-R discs do not erase. Use a CD-RW disc
Recorded CD-R disc does not play in another CD player or DISC ERROR message appears in Play Deck	<ul style="list-style-type: none"> CD-R disc not finalized 	<ul style="list-style-type: none"> Finalize the CD-R disc in the CDR 2's Record Deck (see page 22)
Recording suddenly stops	<ul style="list-style-type: none"> Input source stopped or paused 	<ul style="list-style-type: none"> Recordings will always stop when the input source is paused for more than 3 seconds for digital recordings and 10 seconds for analog recordings

ERROR MESSAGES

ERROR MESSAGE	EXPLANATION AND PROBABLE CAUSE	SOLUTION
CHECK DISC	<ul style="list-style-type: none"> A record-related button has been pressed when a Finalized disc is in the Record Deck 15 A record-related button has been pressed when a standard CD is in the Record Deck 15 	<ul style="list-style-type: none"> Unfinalize the disc to add tracks to a CD-RW disc Replace the disc with a blank CD-R or CD-RW disc Replace the disc with a blank CD-R or CD-RW disc
DATA DISC	<ul style="list-style-type: none"> A non-audio CD-ROM or a CD-Video disc has been placed in the machine 	<ul style="list-style-type: none"> Only CD Audio and DTS discs will play in the CDR 2; replace the disc
DISC ERROR	<ul style="list-style-type: none"> An Unfinalized disc has been placed in the Play Deck 3 A DVD disc has been placed in the unit 	<ul style="list-style-type: none"> Finalize the disc (see page 22) Replace the disc. The CDR 2 does not play or dub DVD discs
DISC FULL	<ul style="list-style-type: none"> There is not enough time left on the disc to complete a planned recording 	<ul style="list-style-type: none"> Use another blank CD-R or CD-RW disc Erase one or more tracks on a CD-RW disc
ERROR	<ul style="list-style-type: none"> The disc is not seated properly There is a problem with the disc 	<ul style="list-style-type: none"> Open the drawer and check to see that the disc is properly seated Try another disc
FAILED	<ul style="list-style-type: none"> A dub has not been completed properly 	<ul style="list-style-type: none"> Check the play disc Repeat the dub process
FULL	<ul style="list-style-type: none"> More than 20 tracks have been programmed 	<ul style="list-style-type: none"> Clear all programmed tracks over 20 (see page 18)
NO AUDIO	<ul style="list-style-type: none"> A record-related button has been pressed when a non-audio disc is in the Record Drawer 15 	<ul style="list-style-type: none"> Replace the disc with a blank CD-R or CD-RW Audio disc
SVC - 1	<ul style="list-style-type: none"> There is an internal problem with the CDR 2 	<ul style="list-style-type: none"> Contact an authorized Harman Kardon service depot

INTERNAL VIEW

● TOP VIEW



❶ POWER P.C. BOARD (PCB-1)

❷ IO P.C. BOARD (PCB-2)

❸ CDP MECHANISM ASSY (MECHA-1)

❹ CDR MECHANISM ASSY (MECHA-2)

❺ CDP P.C. BOARD (PCB-3)

❻ CDR P.C. BOARD (PCB-4)

❼ FRONT P.C. BOARD (PCB-5)

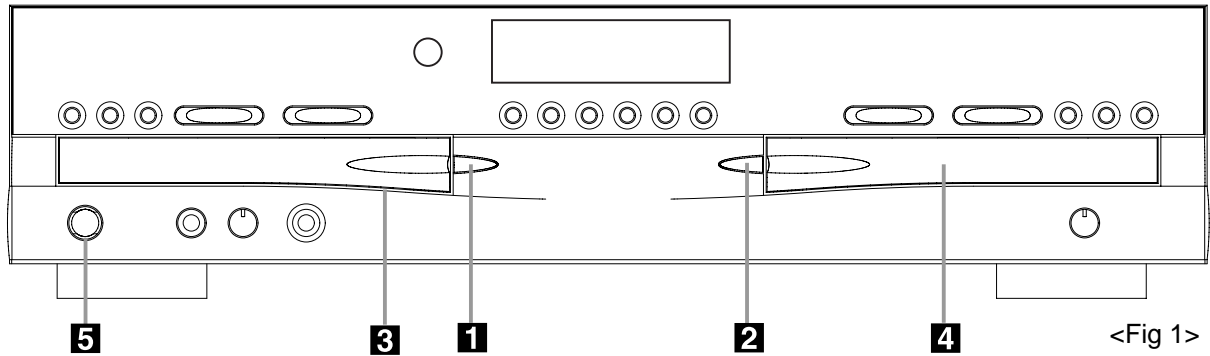
❽ HEADPHONE P.C. BOARD (PCB-6)

❾ REC VOLUME P.C. BOARD (PCB-7)

❿ POWER LED P.C. BOARD (PCB-8)

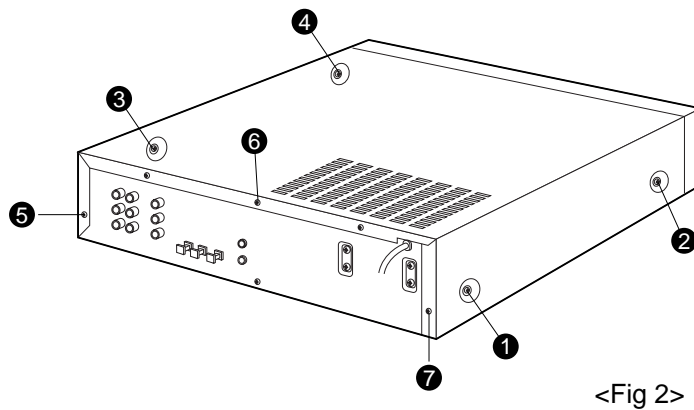
DISASSEMBLY PROCEDURES

1. PCB-(POWER SWITCH) REMOVAL



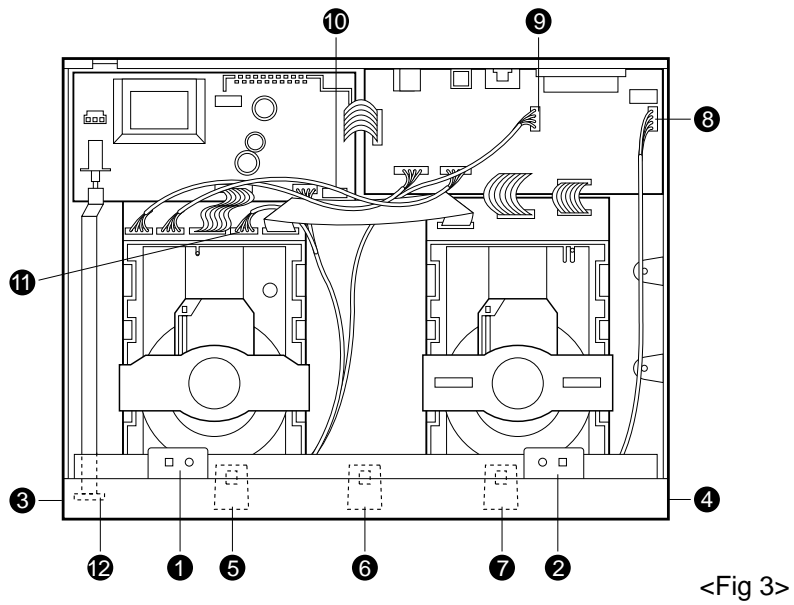
1. Power on and press open buttons **1** and **2** in Fig.1
2. Remove the CD Door **3** and **4** by pulling it toward you gently.

2. CABINET TOP REMOVAL



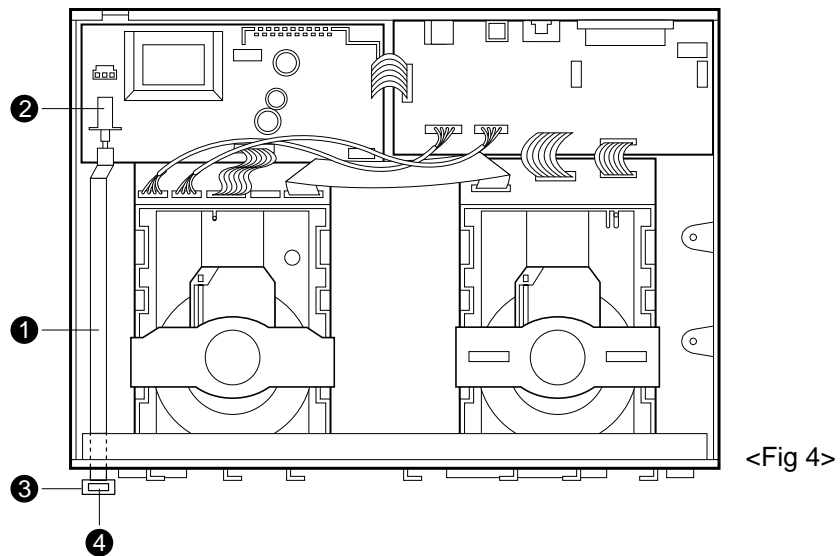
1. Remove screws **1** to **7** in Fig.2, and then remove the cover by sliding it to its rear a little.
2. Remove the cabinet top.

3. FRONT PANEL ASSEMBLY REMOVAL



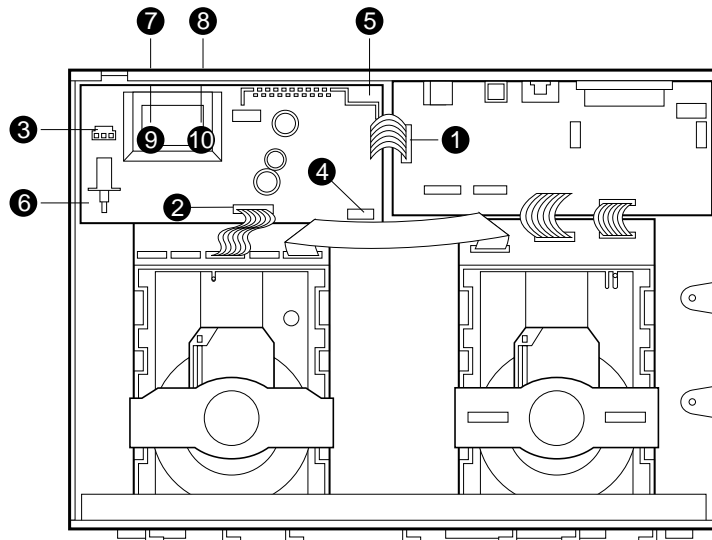
1. Detach the connector ❶ to ❾ in Fig.3
2. Remove the front panel by hook-off ❶ to ❷ in Fig.3 and pulling it toward you gently.
3. Detach the connector ❿

4. POWER LEVER ASSEMBLY REMOVAL



1. Pull-out the Power Lever assembly(❶) from Power Switch on the PCB-1.
2. Pull-out the Power Knob assembly(❸) from the power Lever(❶)
3. Remove the PCB-8(Power LED ❹) from the Power Knob assembly(❸)

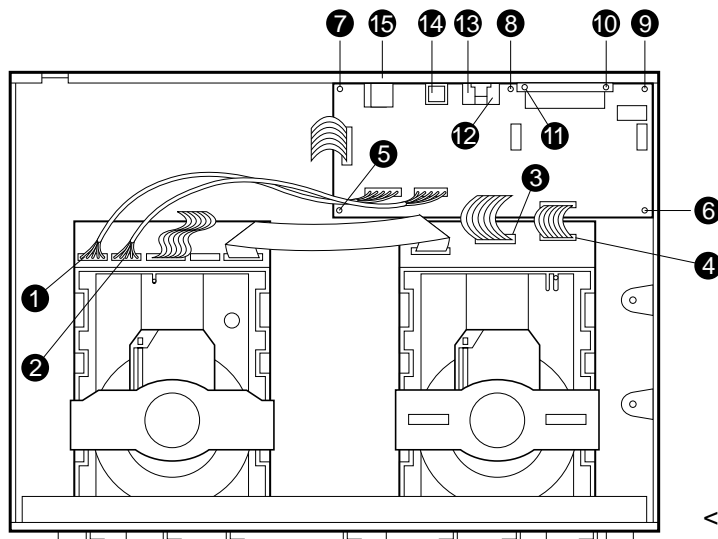
5. PCB-1(Power) REMOVAL



<Fig 5>

1. Detach the connector ❶ to ❸ in Fig.5
2. Remove screws ❷ to ❿ in Fig.5, and then remove PCB-1.

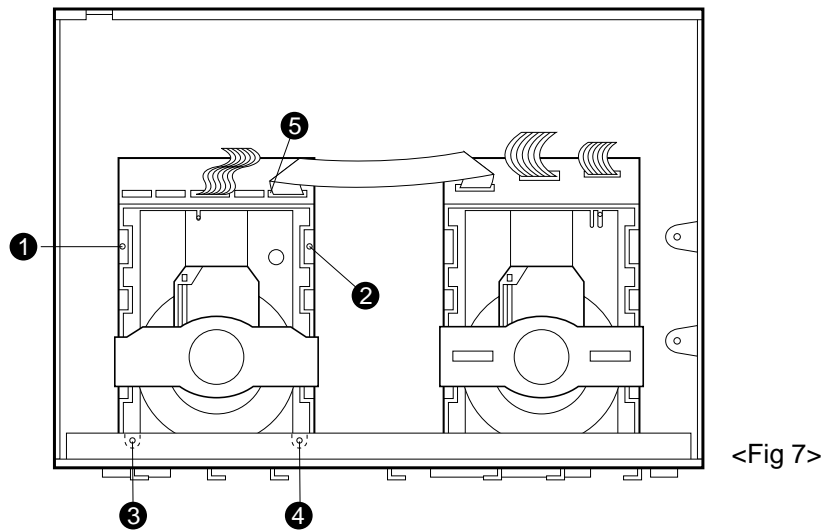
6. PCB-2(I/O) REMOVAL



<Fig 6>

1. Detach the connector ❶ to ❹ in Fig.6
2. Remove screws ❺ to ❿ in Fig.6, and then remove PCB-2.

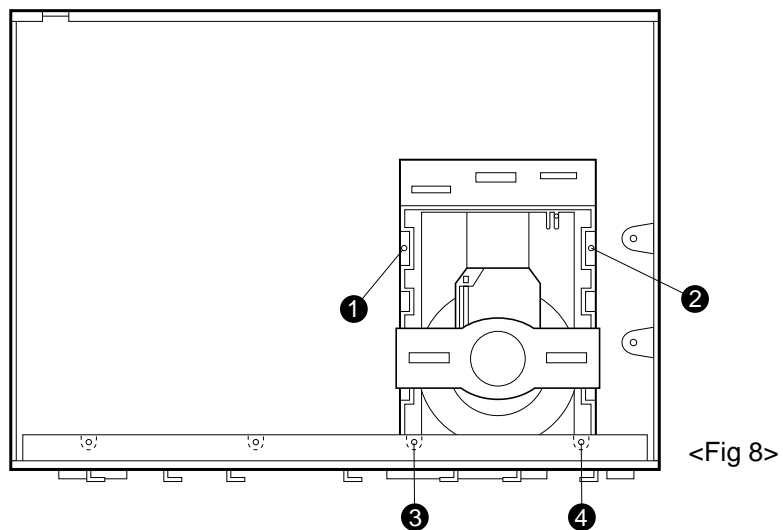
7. MECHA-1 (CDP) ASSEMBLY REMOVAL



<Fig 7>

1. Remove screws 1 to 4 in Fig.7
2. Detach the connector 5 in Fig.7, and the remove the Mecha-1.

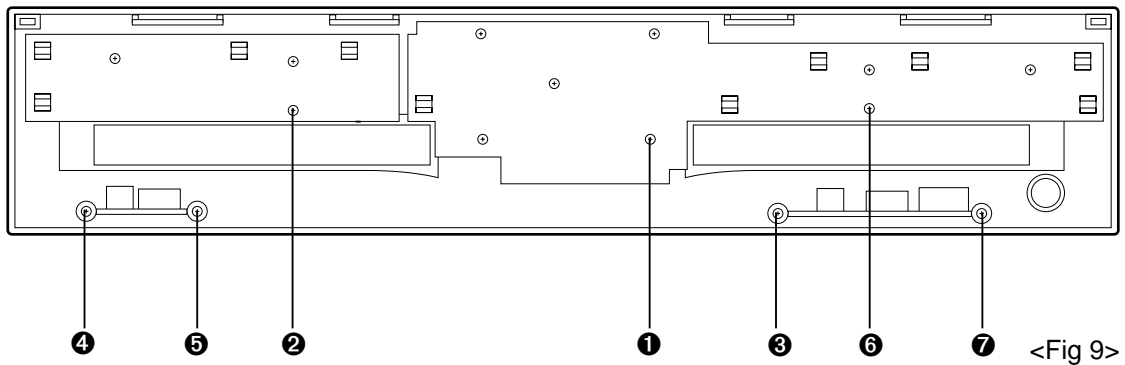
8. MECHA-2 (CDR) ASSEMBLY REMOVAL



<Fig 8>

1. Remove screws 1 to 4 in Fig.8
2. Remove the Mecha-2 and Cover Deck at the same time.

9. PCB-5 (Front) REMOVAL



1. Remove screws **1** to **3** in Fig.9
2. Pull-out the PCB-5 from the Front Panel.

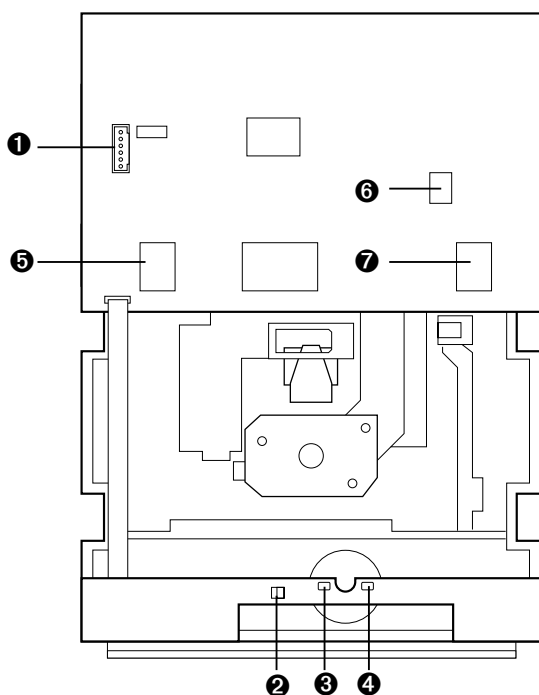
10. PCB-6(Headphone) Removal.

1. Remove screws **6** to **7** in Fig.9
2. Pull-out the Rotate Volume **6** in Fig.1 from the PCB-6(Headphone).
3. Remove the PCB-6 from the Front Panel.

11. PCB-7(REC Volume) Removal.

1. Remove screws **4** to **5** in Fig.9
2. Pull-out the Rotate Volume **5** in Fig.1 from the PCB-7(REC Volume).
3. Remove the PCB-7 from the Front Panel.

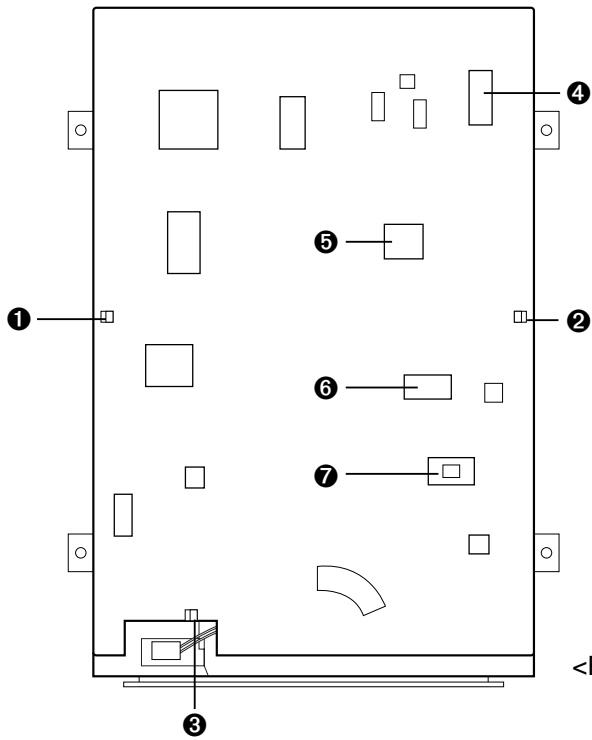
12. PCB-3(CDP) REMOVAL



1. unsolder the motor lead **3** to **4** which are connected to PCB-3.
2. Pull-out the PCB-3 by hook-off **1** to **2** in Fig.10 from the MECHA-1(CDP)
3. Detach the connector **5** to **7** in Fig.10
4. Remove the PCB-3 from the MECHA-1(CDP).

<Fig 10>

13. PCB-4(CDR) REMOVAL



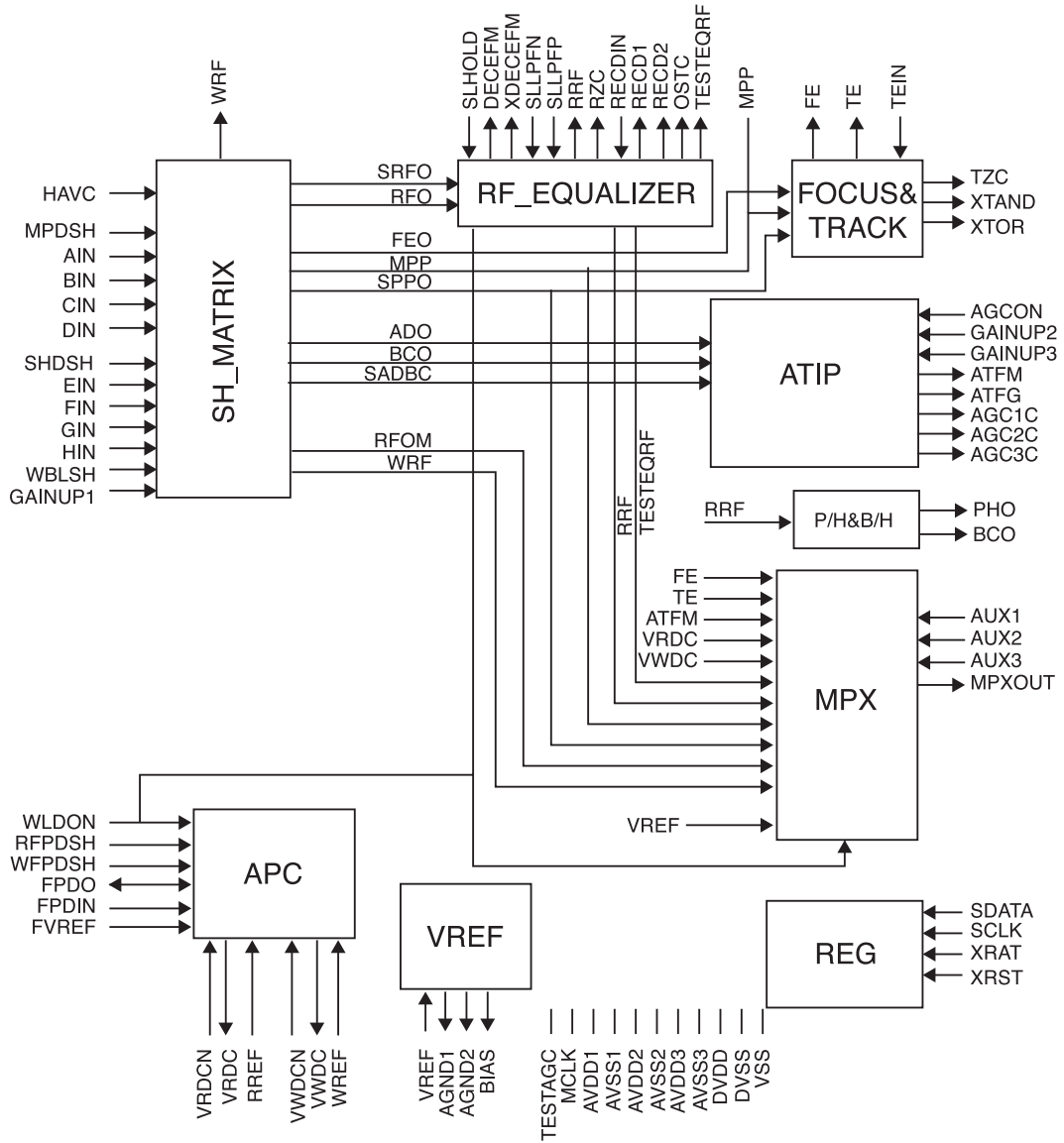
1. Pull-out the PCB-4 by hook-off ❶ to ❸ in Fig.11 from the MECHA-2(CDR)
2. Detach the connector ❹ to ❷ in Fig.11
3. Remove the PCB-4 from the MECHA-1(CDR)

<Fig 11>

BLOCK DIAGRAM

1. AK8563

① Block Diagram



② Pin Functions

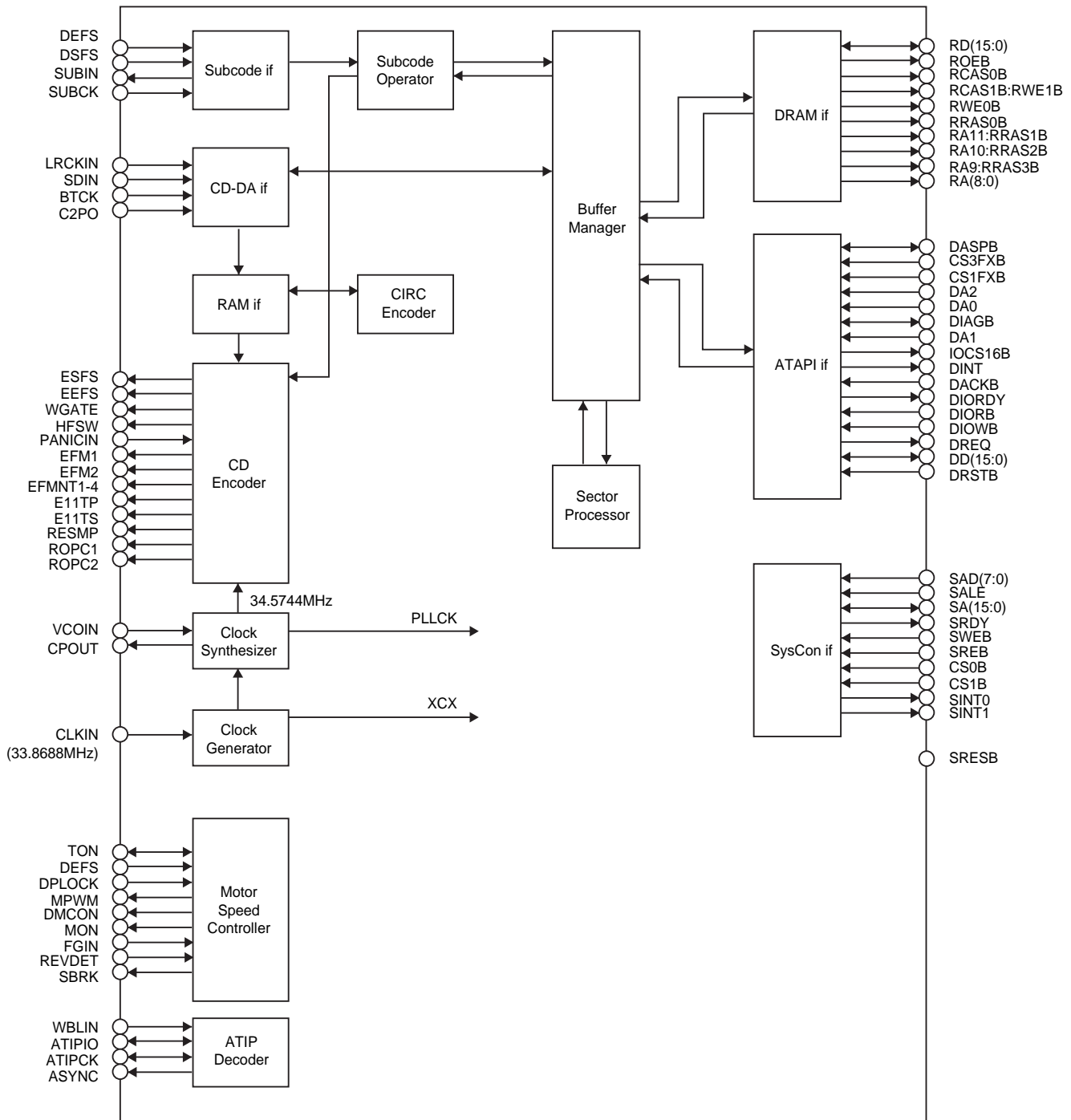
Pin Number	Designator	I/O	Functions
1	AVDD3	I	Analog Positive Power Source Pin
2	FPDIN	I	Laser Monitor Diode Contact Pin
3	FVREF	I	Reference Voltage Level Input Pin for APC
4	FPDO	I/O	Laser Monitor Output (Connect I/V conversion resistor between FPDIN)/Laser Monitor Voltage Input
5	WREF	I	Power Setting Voltage Input for Write APC
6	VWDC	O	Laser Driver Control Output for Write
7	VWDCN	I	Laser Driver Control Amp (-) Pin for Write
8	MPP	O	Main Push-Pull Signal Output
9	TEIN	I	Input for Tracking Signal Processor
10	TE	O	Tracking Error Signal Output
11	FE	O	Focus Error Signal Output
12	BIAS	O	Bias Resistance Contact Pin. RBIAS=4.7kΩ
13	AGND1	O	Decoupling Pin for Internal Reference Voltage
14	VREF	I/O	Decoupling Pin for Internal Reference Voltage/Reference Voltage Input Pin
15	NC(VSS)	-	
16	XLAT	I	Latch Input for Register Settings
17	SDATA	I	Data Input for Register Settings
18	SCLK	I	Clock Input for Register Settings
19	MCLK	I	Main Clock Input (34.5744 MHz)
20	DVSS	I	Digital Ground Pin
21	DVDD	I	Digital Positive Power Source Pin
22	ATFG	O	ATIP FG Output (Wobble Signal after binary Operation)
23	XTOR	O	Tracking Amplitude Detection Output
24	XTAND	O	Off-Track Detection Output
25	TZC	O	Tracking Zero-Cross Detection Signal Output
26	RECD2	O	Recording Area Detection Signal 2. "H" Recorded Section, "L" Unrecorded Section
27	RECD1	O	Recording Area Detection Signal 1. "H" Recorded section, "L" Unrecorded Section
28	RZC	O	RF Zero-Cross Detection Signal Output
29	DECEFM	O	EFM Output after Slice (reverse)
30	XDECEFM	O	EFM Output after Slice (normal rotation)
31	GAINUP3	I	0, +18dB Switch Control Input Pin. "H" +18dB, "L" 0dB
32	GAINUP2	I	0, +18dB Switch Control Input Pin. "H" +18dB, "L" 0dB
33	GAINUP1	I	0, +18dB Switch Control Input Pin. "H" +18dB, "L" 0dB
34	SLHOLD	I	Slice Level Hold Signal Input Pin. "H" Hold
35	MPDSH	I	Sample Pulse Input for Main Beam Signal. "H" Sample, "L" Hold
36	SPDSH	I	Sample Pulse Input for Side Beam Signal. "H" Sample, "L" Hold
37	WBLSH	I	Sample Pulse Input for Wobble Signal. "H" Sample, "L" Hold
38	RFPDSH	I	Sample Pulse Input for Read APC. "H" Sample, "L" Hold
39	WFPDSH	I	Sainple Pulse Input for Write APC. "H" Sample, "L" Hold

Pin Number	Designator	I/O	Functions
40	AVSS2	I	Analog Ground Pin
41	AVDD2	I	Analog Positive Power Source Pin
42	XRST	I	Register Reset Pin. "L" Register Initialization
43	WLDON	I	Write LD Control Input. "L" Write APC Setting to Zero, "H" LD 0N
44	AGCON	I	Wobble AGC Enable Input. "H" AGC ON, "L" AGC reset
45	TESTAGC	O	Test Pin
46	ATFM	O	Wobble Signal Output
47	AGC1C	O	External CAP Connector Pin for AGC Response Speed Setting
48	AGC2C	O	External CAP Connector Pin for AGC Response Speed Setting
49	AGC3C	O	External CAP Connector Pin for AGC Response Speed Setting
50	AGND2	O	Decoupling Pin for Internal Reference Voltage
51	BHO	O	RRF Signal Bottom Level Output Pin
52	PHO	O	RRF Signal Peak Level Output Pin
53	TESTEQRFN	O	Test Pin
54	TESTEQRFP	O	Test pin
55	SLLPFP	I	LPF Input (+) for Auto Slice
56	SLLPEN	I	LPF Input (-) for Auto Slice
57	OSTCC	O	CAP Connector Pin for Equalizer Output Offset Canceller fc
58	WRF	O	Write RF Signal Output
59	NC(VSS)	-	
60	AVSS1	O	Analog Ground Pin
61	AVDD1	I	Analog Positive Power Source Pin
62	RECDIN	I	RF Input for Recording Area Detection
63	RRF	O	Read RF Signal Output
64	MPXOUT	O	Multiplexer Output for Signal Monitoring
65	AUX1	I	Auxiliary Input Pin for Signal Monitoring (1)
66	AUX2	I	Auxiliary Input Pin for Signal Monitoring (2)
67	AUX3	I	Auxiliary Input Pin for Signal Monitoring (3)
68	GIN	I	Side Beam Signal (G) Input
69	HIN	I	Side Beam Signal (H) Input
70	EIN	I	Side Beam Signal (E) Input
71	FIN	I	Side Beam Signal (F) Input
72	HAVC	I	Main • Side Beam Signal Midpoint Voltage Input
73	DIN	I	Main Beam Signal (D) Input
74	CIN	I	Main Beam Signal (C) Input
75	BIN	I	Main Beam Signal (B) Input
76	AIN	I	Main Beam Signal (A) Input
77	RREF	I	Power Setting Voltage Input for Read APC
78	VRDCN	I	Laser Driver Control Amp (-) Pin for Read
79	VRDC	O	Laser Driver Control Output for Read
80	AVSS3	I	Analog Ground Pin

Use NC (unused) pin by connecting to VSS.

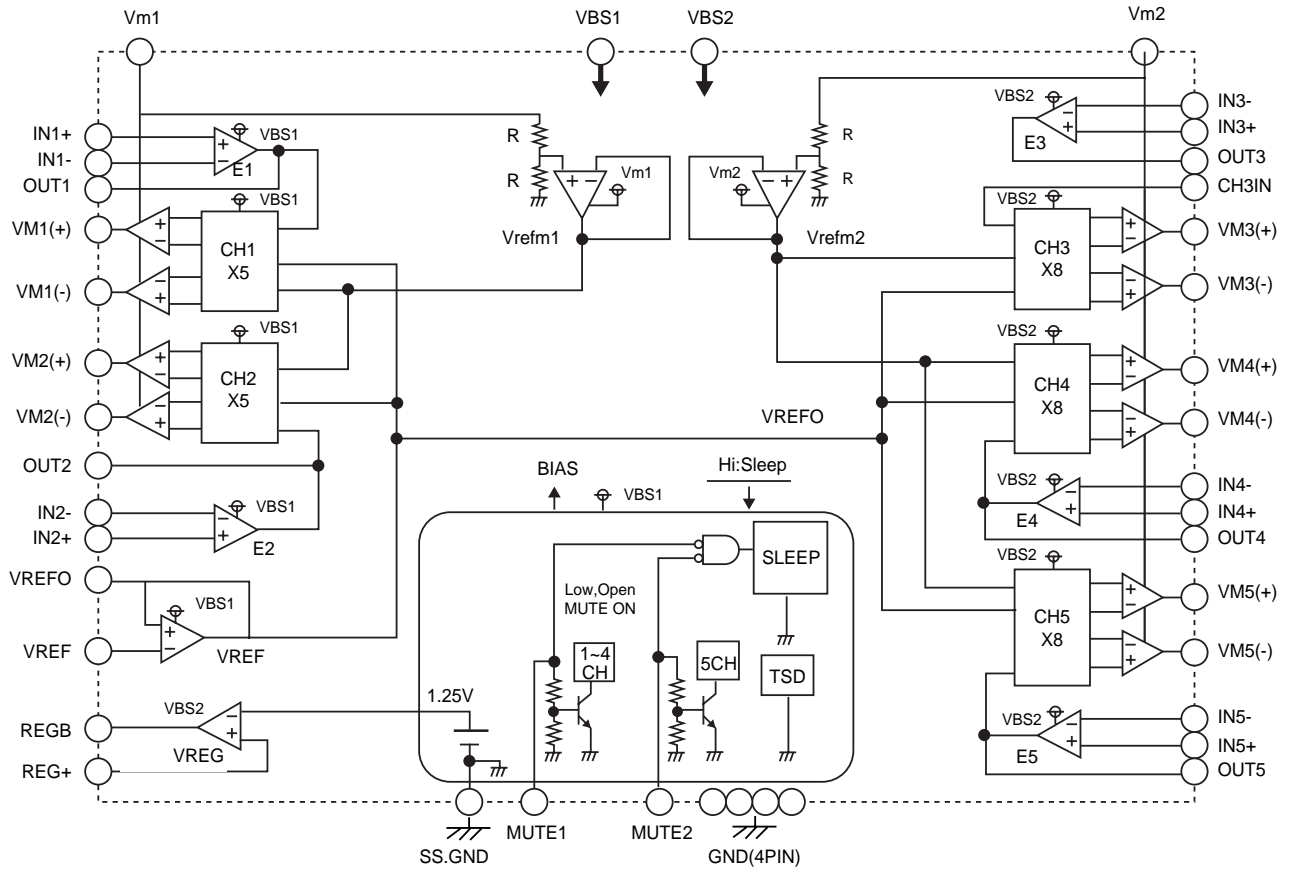
2. RL5E808

① Block Diagram



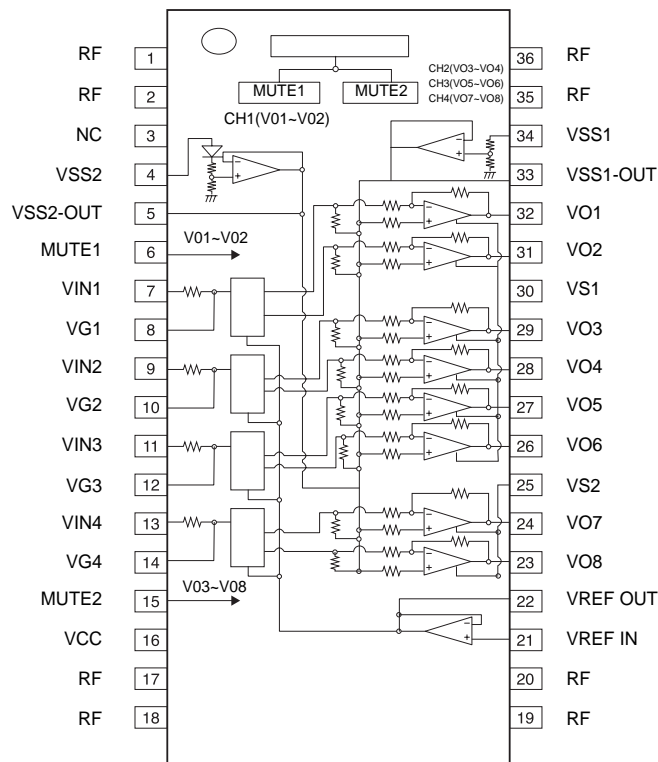
3. M56788

① Block Diagram



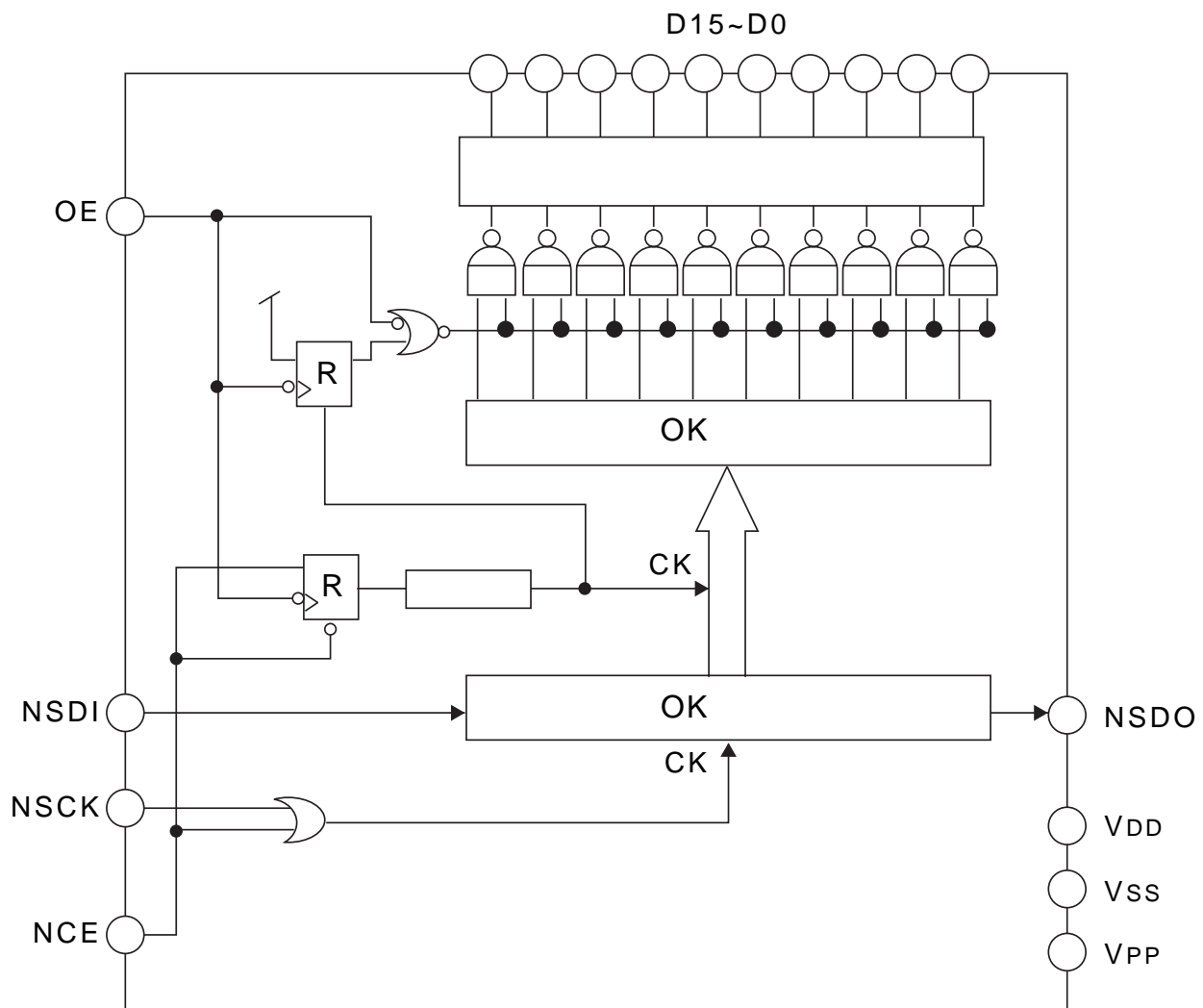
4. LA 6543M

① Block Diagram

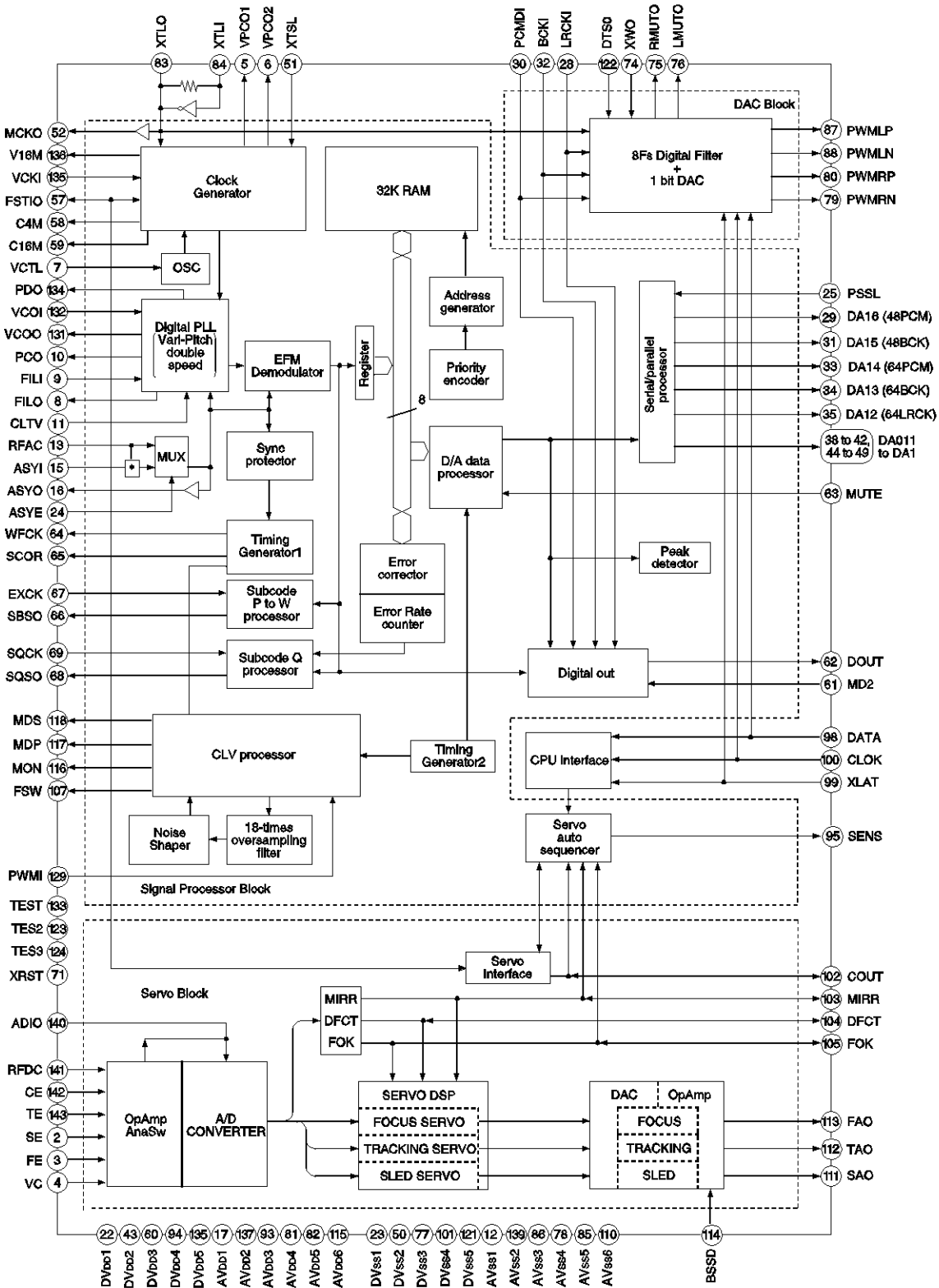


5. MN12511

① Block Diagram



①



PIN FUNCTIONS

②

Pin No.	Symbol	I/O		Description
2	SE	I		Sled error signal input.
3	FE	I		Focus error signal input.
4	VC	I		Center voltage input.
5	VPCO1	O	1, Z, 0	Wide-band EFM PLL VCO2 charge pump output.
6	VPCO2	O	1, Z, 0	Wide-band EFM PLL VCO2 charge pump output 2. Turned on and off by \$E command FCSW.
7	VCTL	I		Wide-band EFM PLL VCO2 control voltage input.
8	FILO	O	Analog	Master PLL filter output (slave = digital PLL).
9	FILI	I		Master PLL filter input.
10	PCO	O	1, Z, 0	Master PLL charge pump output.
11	CLTV	I		Multiplier VCO control voltage input.
12	AVss1			Analog GND.
13	RFAC	I		EFM signal input.
14	BIAS	I		Asymmetry circuit constant current input.
15	ASYI	I		Asymmetry comparator voltage input.
16	ASYO	O	1, 0	EFM full-swing output (low = Vss, high = VDD).
17	AVDD1			Analog power supply.
22	DVDD1			Digital power supply.
23	DVss1			Digital GND.
24	ASYE	I		Asymmetry circuit on/off (low = off, high = on).
25	PSSL	I		Audio data output mode switching input (low: serial, high: parallel).
26	WDCK	O	1, 0	D/A interface for 48-bit slot. Word clock $f = 2F_s$.
27	LRCK	O	1, 0	D/A interface for 48-bit slot. LR clock $f = F_s$.
28	LRCKI	I		LR clock input to DAC (48-bit slot).
29	DA16	O	1, 0	DA16 (MSB) output when PSSL = 1, 48-bit slot serial data output (two's complement, MSB first) when PSSL = 0.
30	PCMDI	I		Audio data input to DAC (48-bit slot).
31	DA15	O	1, 0	DA15 output when PSSL = 1, 48-bit slot bit clock output when PSSL = 0.
32	BCKI	I		Bit clock input to DAC (48-bit slot).
33	DA14	O	1, 0	DA14 output when PSSL = 1, 64-bit slot serial data output (two' complement, LSB first) when PSSL = 0.
34	DA13	O	1, 0	DA13 output when PSSL = 1, 64-bit slot bit clock output when PSSL = 0.
35	DA12	O	1, 0	DA12 output when PSSL = 1, 64-bit slot LR clock output when PSSL = 0.
38	DA11	O	1, 0	DA11 output when PSSL = 1, GTOP output when PSSL = 0.
39	DA10	O	1, 0	DA10 output when PSSL = 1, XUGF output when PSSL = 0.
40	DA09	O	1, 0	DA09 output when PSSL = 1, XPLCK output when PSSL = 0.

Pin No.	Symbol	I/O		Description
41	DA08	O	1, 0	DA08 output when PSSL = 1, GFS output when PSSL = 0.
42	DA07	O	1, 0	DA07 output when PSSL = 1, RFCK output when PSSL = 0.
43	DV _{DD2}			Digital power supply.
44	DA06	O	1, 0	DA06 output when PSSL = 1, C2PO output when PSSL = 0.
45	DA05	O	1, 0	DA05 output when PSSL = 1, XRAOF output when PSSL = 0.
46	DA04	O	1, 0	DA04 output when PSSL = 1, MNT3 output when PSSL = 0.
47	DA03	O	1, 0	DA03 output when PSSL = 1, MNT2 output when PSSL = 0.
48	DA02	O	1, 0	DA02 output when PSSL = 1, MNT1 output when PSSL = 0.
49	DA01	O	1, 0	DA01 output when PSSL = 1, MNT0 output when PSSL = 0.
50	DV _{SS2}			Digital GND.
51	XTSL	I		Crystal selection input.
52	MCKO	O	1, 0	Clock output. Inverted output of XTLL.
57	FSTIO	I/O	1, 0	Digital servo clock input/output. (2/3 frequency division for XTLL pin is internally connected.)
58	C4M	O	1, 0	1/4 frequency division output for XTLL pin. Changes with variable pitch.
59	C16M	O	1, 0	16.9344MHz output. Changes simultaneously with variable pitch.
60	DV _{DD3}			Digital power supply.
61	MD2	I		Digital Out on/off control (low = off, high = on).
62	DOUT	O	1, 0	Digital Out output.
63	MUTE	I		Mute (low: off, high: on).
64	WFCK	O	1, 0	WFCK (Write Frame Clock) output.
65	SCOR	O	1, 0	Outputs a high signal when either subcode sync S0 or S1 is detected.
66	SBSO	O	1, 0	Sub P to W serial output.
67	EXCK	I		SBSO readout clock input.
68	SQSO	O	1, 0	Sub-Q 80-bit, PCM peak and level data 16-bit outputs.
69	SQCK	I		SQSO readout clock input.
70	SCSY	I		GRSCOR resynchronization input. Normally low, resynchronization is executed when high.
71	XRST	I		System reset. Reset when low.
74	XWO	I		Audio DAC sync window open input. Normally high, window open when low.
75	RMUTO	O	1, 0	Audio DAC right channel zero detection flag.
76	LMUTO	O	1, 0	Audio DAC left channel zero detection flag.
77	DV _{SS3}			Digital GND.
78	AV _{SS4}			Analog GND.
79	PWMRN	O	1, Z, 0	Audio DAC PWM output. Right channel, reversed phase.

Pin No.	Symbol	I/O		Description
80	PWMRP	O	1, Z, 0	Audio DAC PWM output. Right channel, forward phase.
81	AV _{DD4}			Analog power supply.
82	AV _{DD5}			Master clock power supply.
83	XTLO	O	1, 0	Master clock crystal oscillation circuit output.
84	XTLI	I		Master clock crystal oscillation circuit input.
85	AV _{SS5}			Master clock GND.
86	AV _{SS3}			Analog GND.
87	PWMLP	O	1, Z, 0	Audio DAC PWM output. Left channel, forward phase.
88	PWMLN	O	1, Z, 0	Audio DAC PWM output. Left channel, reversed phase.
93	AV _{DD3}			Analog power supply.
94	DV _{DD4}			Digital power supply.
95	SENS	O	1, Z, 0	SENS output to CPU.
96	SCLK	I		SENS serial data readout clock input. Set to high when not used.
97	ATSK	I		Anti-shock pin. Set to low when not used.
98	DATA	I		Serial data input from CPU.
99	XLAT	I		Latch input from CPU. Serial data is latched at the falling edge.
100	CLOCK	I		Serial data transfer clock input from CPU.
101	DV _{SS4}			Digital GND.
102	COUT	I/O	1, 0	Track count signal I/O.
103	MIRR	I/O	1, 0	Mirror signal I/O.
104	DFCT	I/O	1, 0	Defect signal I/O.
105	FOK	I/O	1, 0	Focus OK signal I/O.
106	TESO	O		Test pin. Leave this open.
107	FSW	O	1, Z, 0	Spindle motor output filter switching output. GRSCOR output when \$8 command SCOR SEL = high.
110	AV _{SS6}			Analog GND.
111	SAO	O		Sled filter DAC analog output.
112	TAO	O		Tracking filter DAC analog output.
113	FAO	O		Focus filter DAC analog output.
114	BSSD	I		Constant current input for servo filter DAC analog output.
115	AV _{DD6}			Analog power supply.
116	MON	O	1, 0	Spindle motor on/off control output.
117	MDP	O	1, Z, 0	Spindle motor servo control output.
118	MDS	O	1, Z, 0	Spindle motor servo control output.

Pin No.	Symbol	I/O		Description
119	LOCK	I/O	1, 0	GFS is sampled at 460Hz; when GFS is high, this pin outputs a high signal. If GFS is low eight consecutive samples, this pin outputs low. Input when LKIN = high. (See §3E.)
120	SSTP	I		Disc innermost track detection signal input.
121	DV _{ss5}			Digital GND.
122	DTS0	I		Test pin. Normally fixed to low.
123	TES2	I		Test pin. Normally fixed to low.
124	TES3	I		Test pin. Normally fixed to low.
129	PWMI	I		Spindle motor external pin input.
130	DV _{DD5}			Digital power supply.
131	VCOO	O	1, 0	Analog EFM PLL oscillation circuit output.
132	VCOI	I		Analog EFM PLL oscillation circuit input. flock = 8.6436MHz.
133	TEST	I		Test pin. Normally fixed to low.
134	PDO	O	1, Z, 0	Analog EFM PLL charge pump output.
135	VCKI	I		Variable pitch clock input from the external VCO. fcenter = 16.9344MHz. Set VCKI to low when the external clock is not input to this pin.
136	V16M	O	1, 0	Wide-band EFM PLL VCO2 oscillation output.
137	AV _{DD2}			Analog power supply.
138	IGEN	I		Connects the operational amplifier current source reference resistance.
139	AV _{ss2}		—	Analog GND.
140	ADIO	O		Operational amplifier output.
141	RFDC	I		RF signal input.
142	CE	I		Center servo analog input.
143	TE	I		Tracking error signal input.

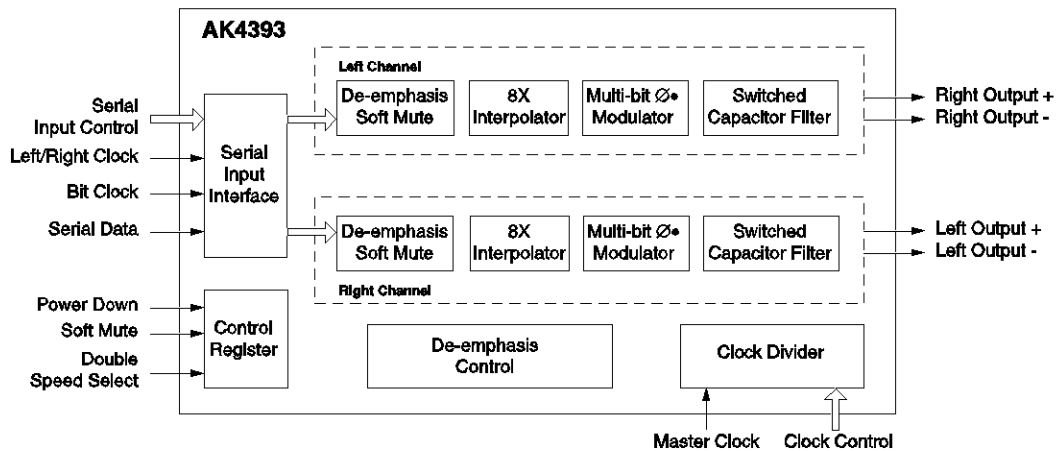
*In the CXD3011R, the following pins are NC.

Pins 1, 18 to 21, 36, 37, 53 to 56, 72, 73, 89 to 92, 108, 109, 125 to 128 and 144

Notes) • The 64-bit slot is a LSB first, two's complement output. The 48-bit slot is a MSB first, two's complement output.

- G_{TOP} is used to monitor the frame sync protection status. (High: sync protection window released.)
- X_{UGF} is the frame sync obtained from the EFM signal, and is negative pulse. It is the signal before sync protection.
- X_{PLCK} is the inverse of the EFM PLL clock. The PLL is designed so that the falling edge and the EFM signal transition point coincide.
- The GFS signal goes high when the frame sync and the insertion protection timing match. (See §348.)
- R_{FCK} is derived from the crystal accuracy, and has a cycle of 136µs. (during normal speed)
- C_{2PO} represents the data error status.
- X_{RAOF} is generated when the 32K RAM exceeds the ±28F jitter margin.

①

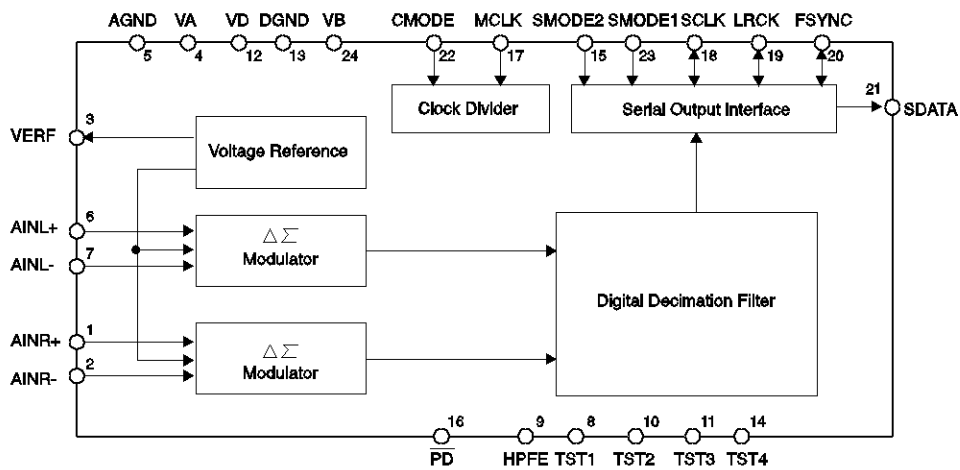


②

No.	Pin Name	I/O	Pin Function and Description
1	DVSS	-	Digital Ground. Digital ground is 0V.
2	DVDD	-	Digital Supply. 3.3V or 5.0V nominal.
3	MCLK	I	Master Clock Input. See Table 1.
4	PD	I	Power-down and Reset. When low the AK4393 is in Power-down Mode and held in reset. The AK4393 should always be reset after power-up.
5	BICK	I	Audio Serial Data Clock Input. A clock input of 64fs or more is recommended.
6	SDATA	I	Serial Data Input.
7	LRCK	I	Left/Right Clock Input. Defines the sampling rate, F_s .
8	SMUTE (or CS)	I	Soft Mute Input or Chip Select Input. If the P/S pin (pin 25) is high, SMUTE controls the soft mute function as follows: <ul style="list-style-type: none"> • When SMUTE goes high, the soft mute cycle is initiated. • When SMUTE goes low, the output mute is slowly released. If the P/S pin is low, SMUTE is the Chip Select Input for the Serial Control Mode. Chip select is active when SMUTE is low.
9	DFS	I	Double Sampling Speed Input. When low, this pin defines the Normal Speed Mode, and $128 \times F_s$ oversampling is implemented. When high, the DFS pin defines the Double Speed Mode, implemented with $64 \times F_s$ oversampling. This pin features an internal pull-down.
10	DEM0 (or CCLK)	I	De-emphasis Enable #0 or Control Data Clock Input. If the P/S pin (pin 25) is high, DEM0 is used to select the De-emphasis Mode according to Table 3. If the P/S pin is low, DEM0 is the clock input for the Serial Control Mode.
11	DEM1 (or CDTI)	I	De-emphasis Enable #1 or Control Data Input. If the P/S pin (pin 25) is high, DEM1 is used to select the De-emphasis Mode according to Table 3. If the P/S pin is low, DEM1 is the control data input for the Serial Control Mode.
12	DIF0	I	Digital Input Format Select #0. See Table 2.
13	DIF1	I	Digital Input Format Select #1. See Table 2.
14	DIF2	I	Digital Input Format Select #2. See Table 2.
15	BVSS	-	Substrate Ground Pin. Substrate ground is 0V.
16	VREFL	I	Low Level Voltage Reference Input. Normally connected to analog ground.
17	VREFH	I	High Level Voltage Reference Input. Normally connected to analog supply.
18	AVDD	-	Analog Supply. Analog supply is 5V nominal.
19	AVSS	-	Analog Ground. Analog ground is 0V.

No.	Pin Name	I/O	Pin Function and Description
20	AOUTR-	O	Right Channel Negative Output.
21	AOUTR+	O	Right Channel Positive Output.
22	AOUTL-	O	Left Channel Negative Output.
23	AOUTL+	O	Left Channel Positive Output.
24	VCOM	O	Common Voltage Output. Common voltage output is 2.6V nominal.
25	P/S	I	Parallel/Serial Control Mode Select Input. If Low, the Serial Control Mode is implemented. If High, the Parallel Control Mode is selected. This pin has an internal pull-up.
26	CKS0	I	Master Clock Select #0. See Table 1.
27	CKS1	I	Master Clock Select #1. See Table 1.
28	CKS2	I	Master Clock Select #2. See Table 1.

①



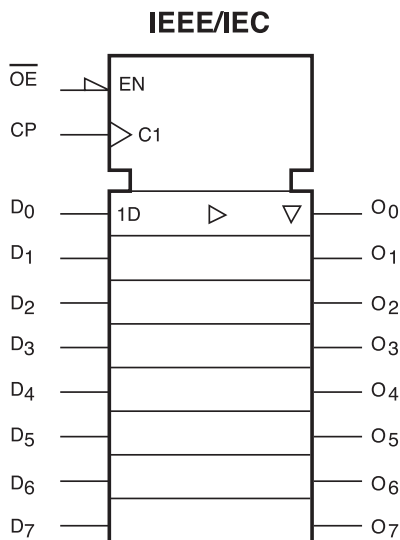
② Pin Descriptions

No.	Pin Name	I/O	FUNCTION
1	AINR+	I	Right channel analog positive input pin
2	AINR-	I	Right channel analog negative input Pin
3	VREF	O	Voltage Reference output pin (VA-2.6V) Normally connected to VA with a 0.1uF ceramic capacitor in parallel with a 10uF electrolytic capacitor.
4	VA	—	Analog section Analog Power Supply, +5V
5	AGND	—	Analog section Analog Ground
6	AINL+	I	Left channel analog positive input pin
7	AINL-	I	Left channel analog negative input pin
8 10 11 14	TST1 TST2 TST3 TST4		Test pin (Pull-down pin) Should be left floating.
9	HPFE	I	High Pass Filter Enable pin(Pull-up pin) "H": ON "L": OFF
12	VD	—	Digital section Digital Power Supply pin, +5V
13	DGND	—	Digital section Digital Ground pin
16	\overline{PD}	I	Power Down pin "L" brings the device into power-down mode. Must be done once after power-on.
17	MCLK	I	Master Clock input pin CMODE="H" : 384fs CMODE="L" : 256fs
18	SCLK	I/O	Serial Data Clock pin Data is clocked out at the falling edge of SCLK. Slave mode: 64fs clock is input usually. Master mode: SCLK outputs a 64fs clock. SCLK stays low during the power-down mode(\overline{PD} ="L").
19	LRCK	I/O	L/R Channel Clock Select pin Slave mode: An fs clock is fed to this LRCK pin. Master mode: LRCK output an fs clock. LRCK goes "H" at SMODE2="L" and "L" at SMODE2="H" during reset when SMODE1 "H".
20	FSYNC	I/O	Frame Synchronization Signal pin Slave mode: When "H", data bits are clocked out on SDATA. As I ² S slave mode ignores FSYNC, it should hold "L" or "H". Master mode: FSYNC outputs 2fs clock. Stay low during the power-down mode(\overline{PD} ="L")
21	SDATA	O	Serial Data Output pin Data are output with MSB first, in 2's complement format. After 20 bits are output it turns to "L". It also remains "L" at a power-down mode(\overline{PD} ="L").

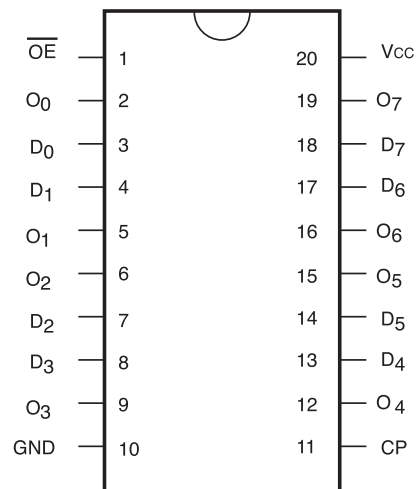
No.	Pin Name	I/O	FUNCTION																				
22	CMODE	I	Master Clock Selection pin "L": MCLK=256fs "H": MCLK=384fs																				
23 15	SMODE1 SMODE2	I I	Serial Interface Mode Select pin Defines the directions of LRCK, SCLK and FSYNC pins and Output Data Format. SMODE2 is pull-down pin. <table border="0"> <tr> <td>SMODE1</td> <td>SMODE2</td> <td>MODE</td> <td>LRCK</td> </tr> <tr> <td>L</td> <td>L</td> <td>Slave mode: MSB justified:</td> <td>:H/L</td> </tr> <tr> <td>H</td> <td>L</td> <td>Master mode: Similar to I²S</td> <td>:H/L</td> </tr> <tr> <td>L</td> <td>H</td> <td>Slavemode:I²S</td> <td>:L/H</td> </tr> <tr> <td>H</td> <td>H</td> <td>Master mode:I²S</td> <td>:L/H</td> </tr> </table>	SMODE1	SMODE2	MODE	LRCK	L	L	Slave mode: MSB justified:	:H/L	H	L	Master mode: Similar to I ² S	:H/L	L	H	Slavemode:I ² S	:L/H	H	H	Master mode:I ² S	:L/H
SMODE1	SMODE2	MODE	LRCK																				
L	L	Slave mode: MSB justified:	:H/L																				
H	L	Master mode: Similar to I ² S	:H/L																				
L	H	Slavemode:I ² S	:L/H																				
H	H	Master mode:I ² S	:L/H																				
24	VB	—	Substrate Power Supply, +5V																				

9. 74VHC374

① Logic Symbol



② Connection Diagram

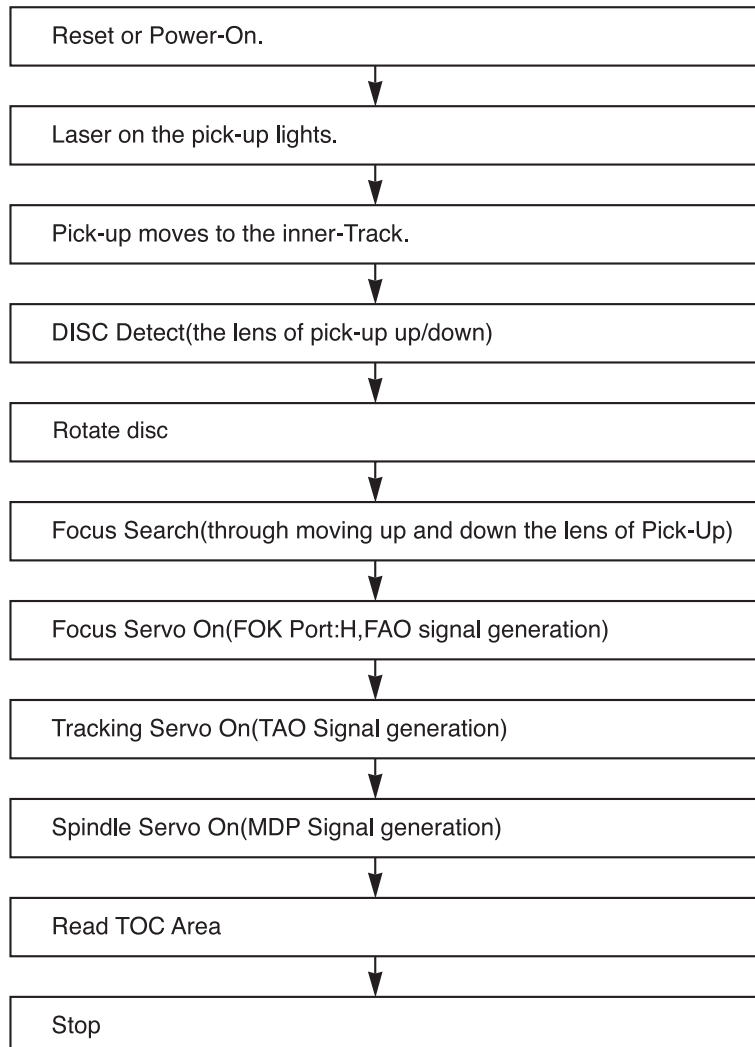


③ Pin Descriptions

Pin Names	Description
D ₀ -D ₇	Data Inputs
CP	Clock Pulse Input
\overline{OE}	3-STATE Output Enable Input
O ₀ -O ₇	3-STATE Outputs

TROUBLESHOOTING GUIDE

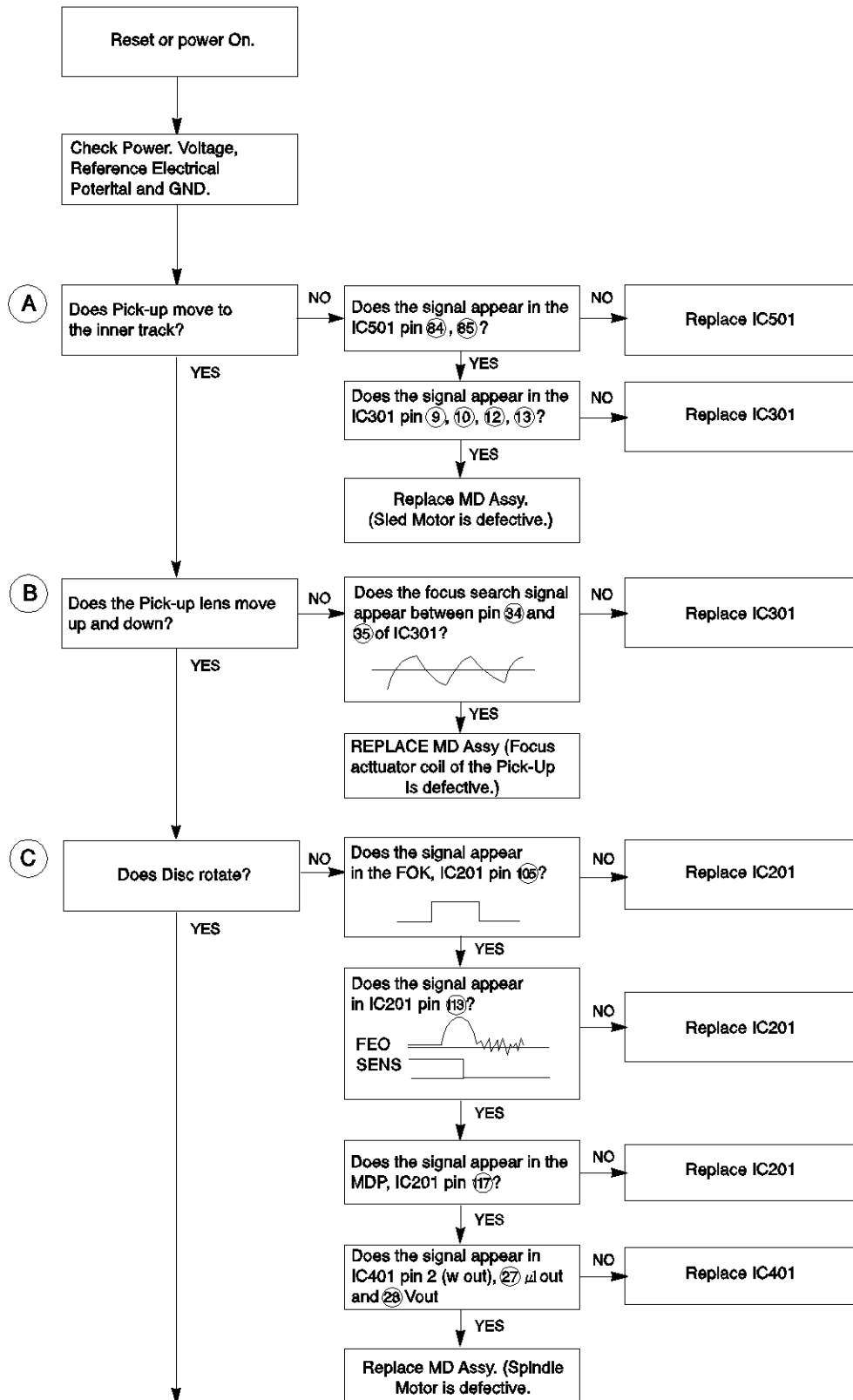
1. Initial Lead-in Operation

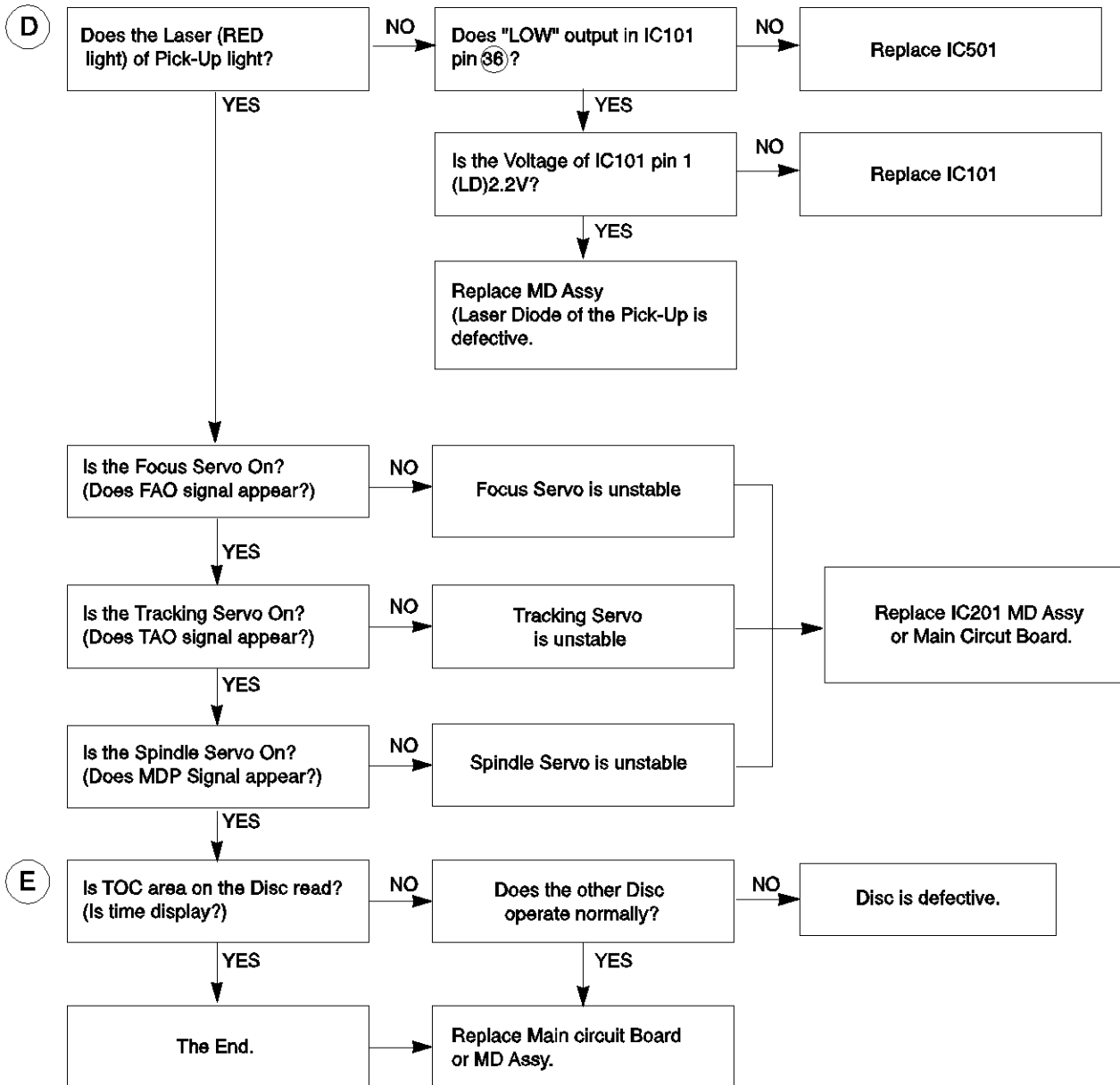


2. Trouble List(Circuit)

(In the Initial Lead-in Operation Mode)

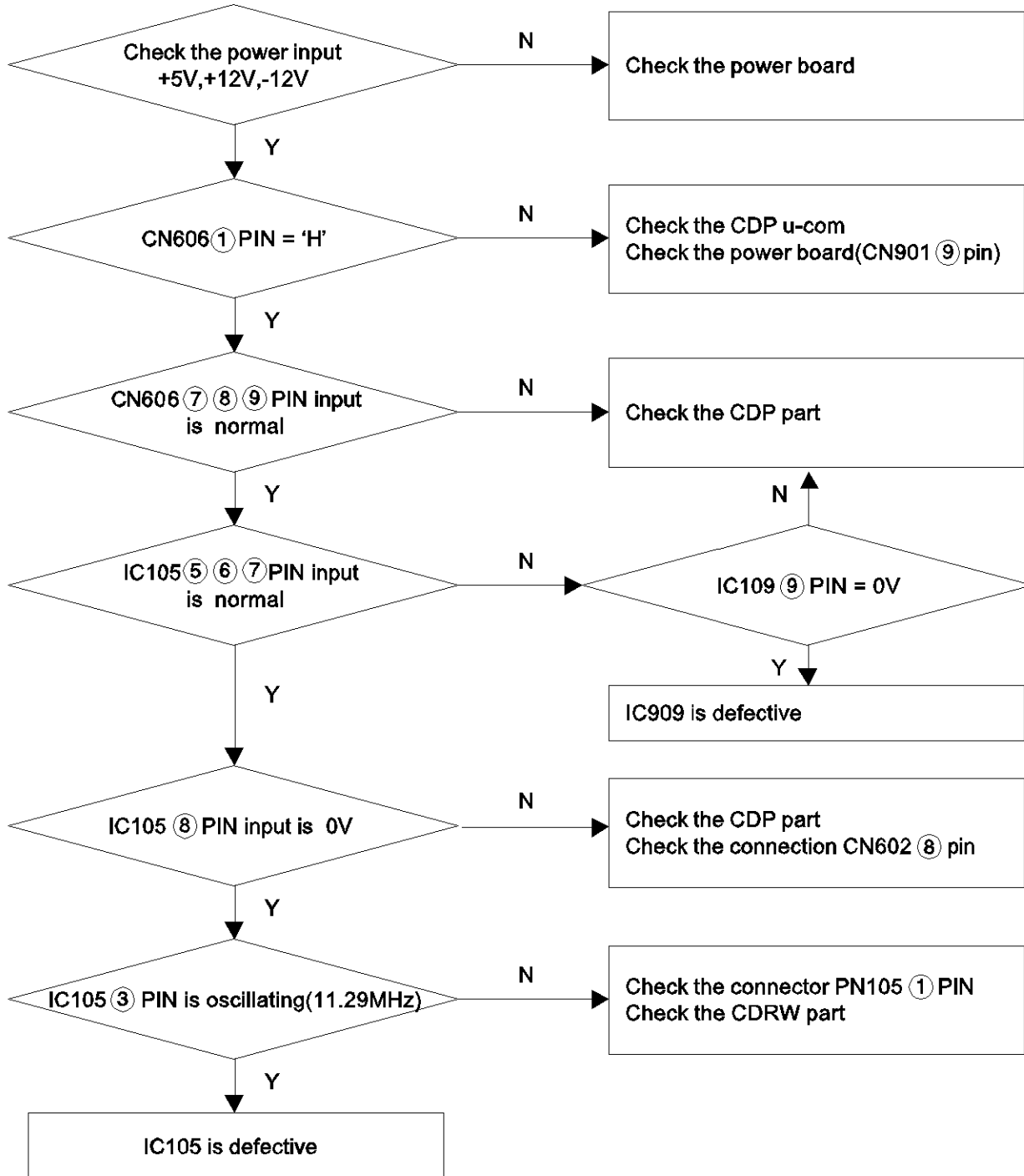
- A. Pick-Up doesn't move to the inner-track.
- B. Pick-Up lens doesn't move up and down.
- C. Disc doesn't rotate.
- D. The Laser(RED) of Pick-Up doesn't light.
- E. TOC isn't read.





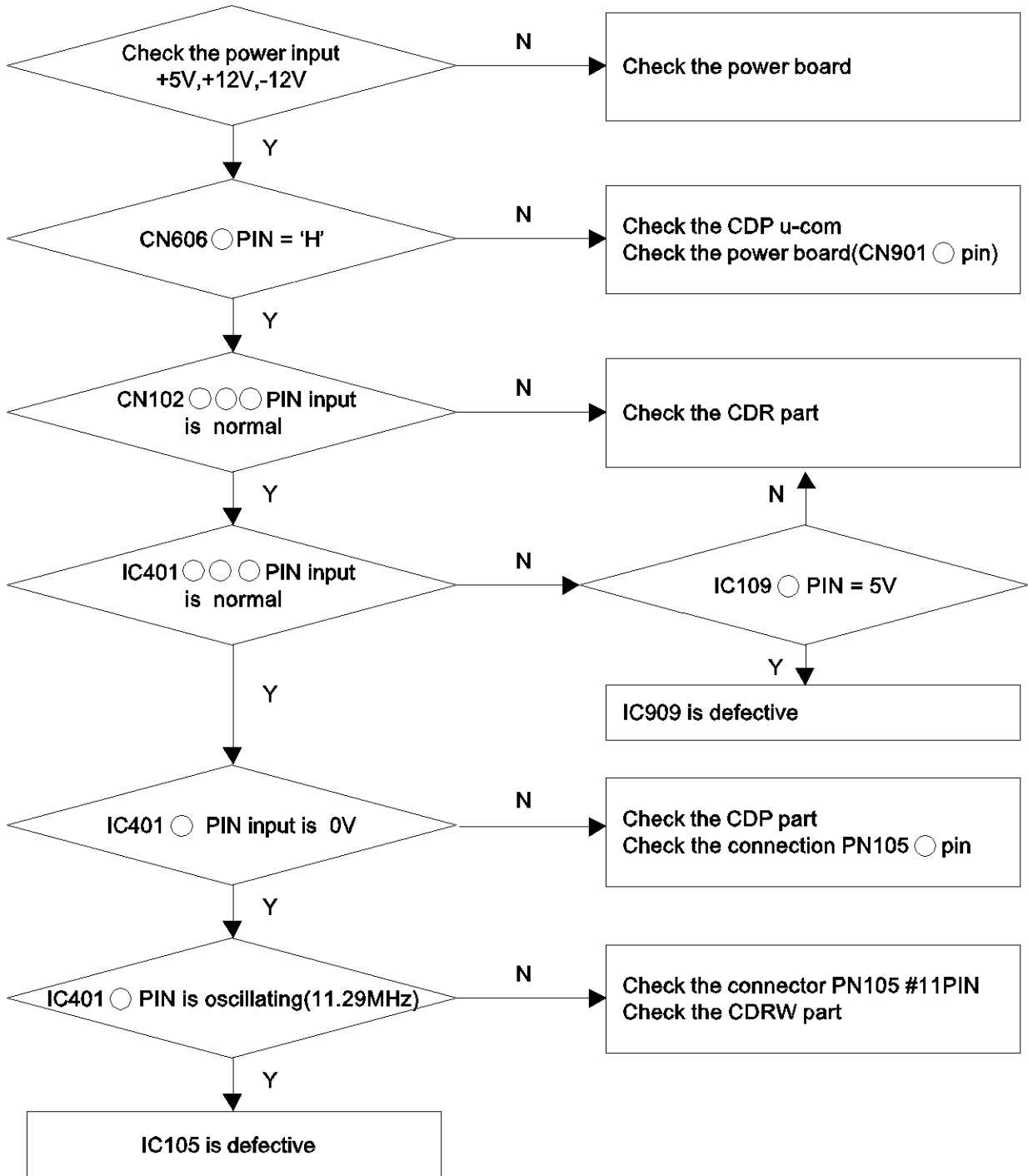
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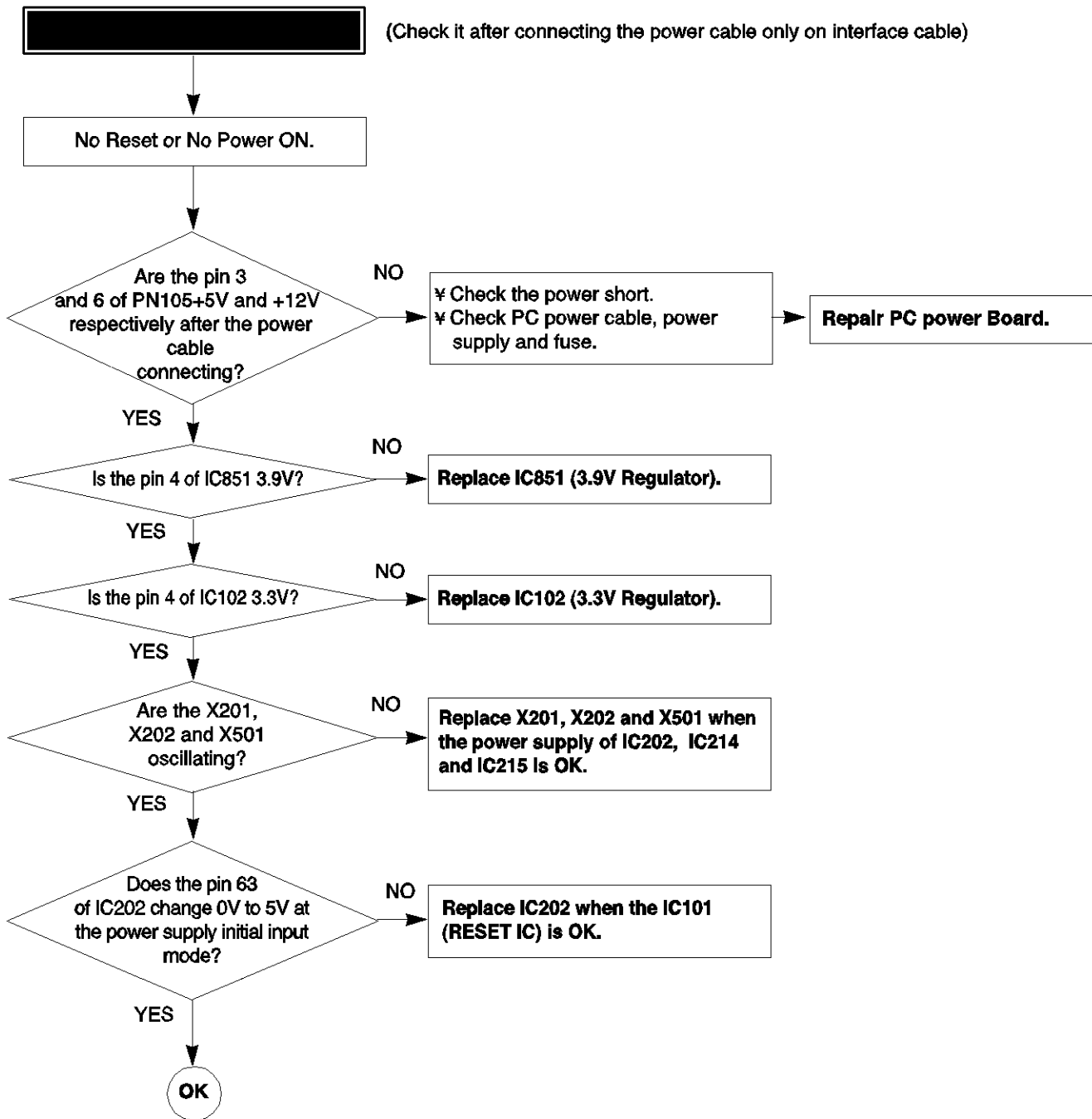
CURRENT DECK IS CDP

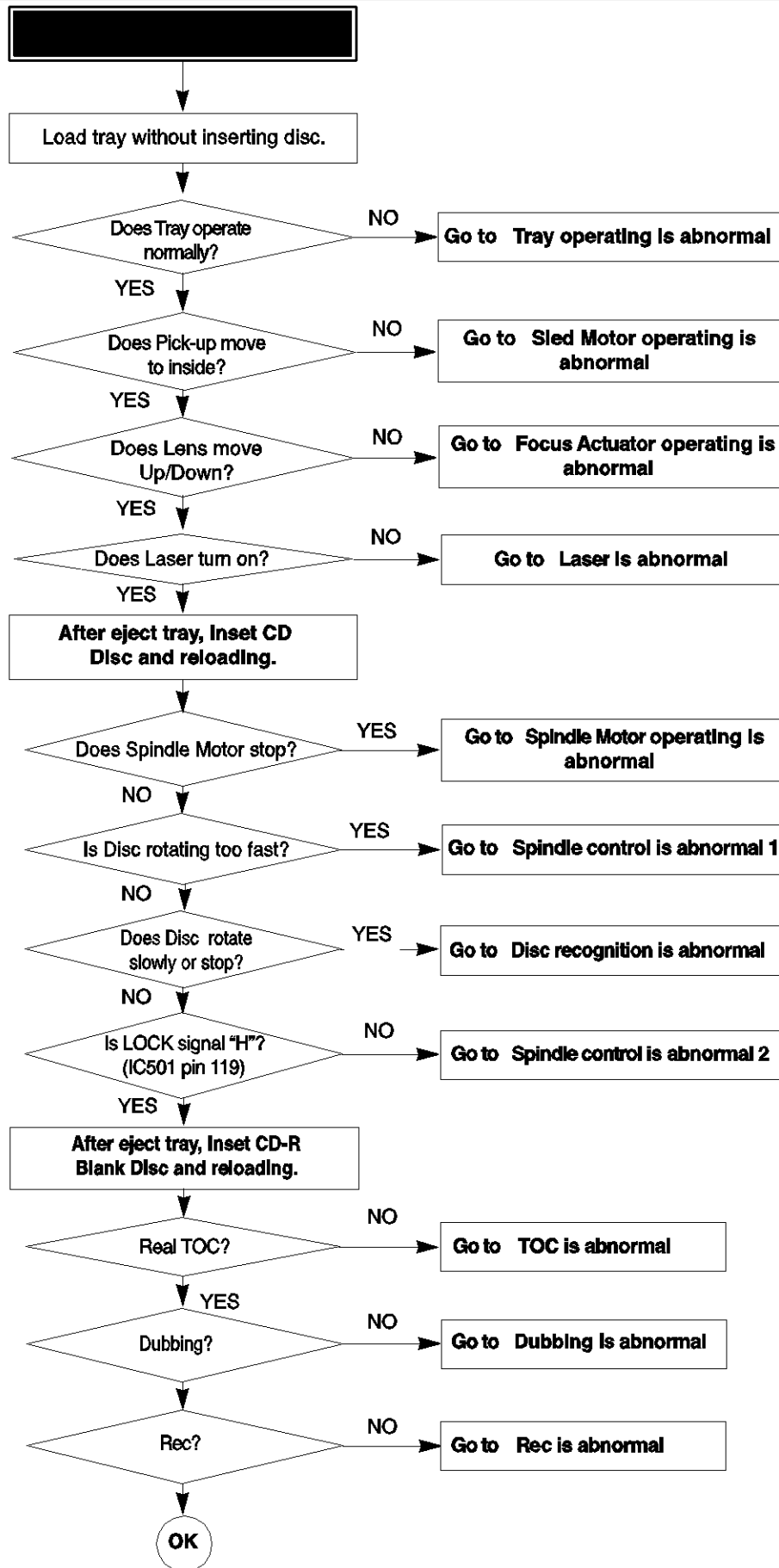


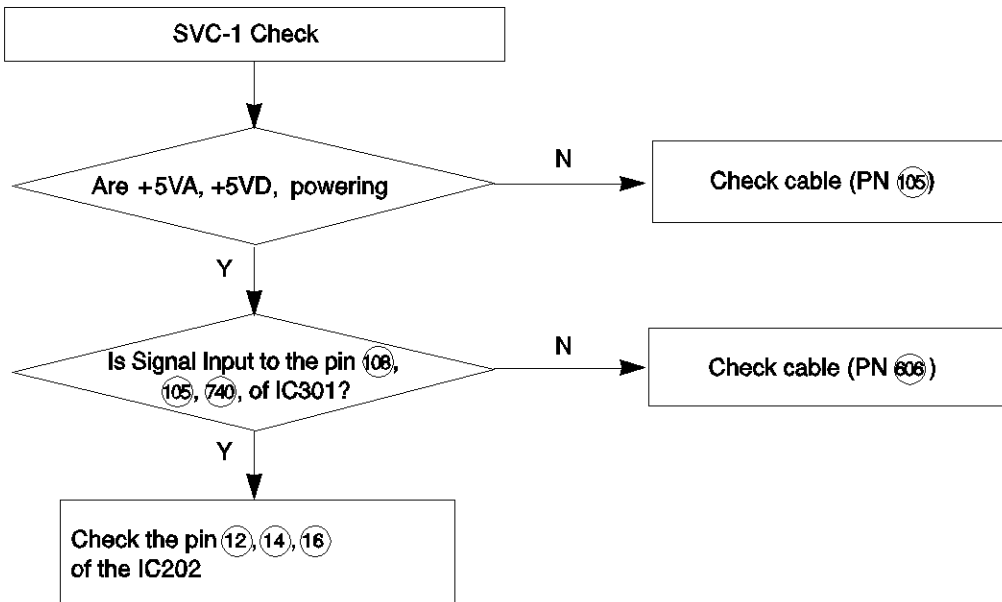
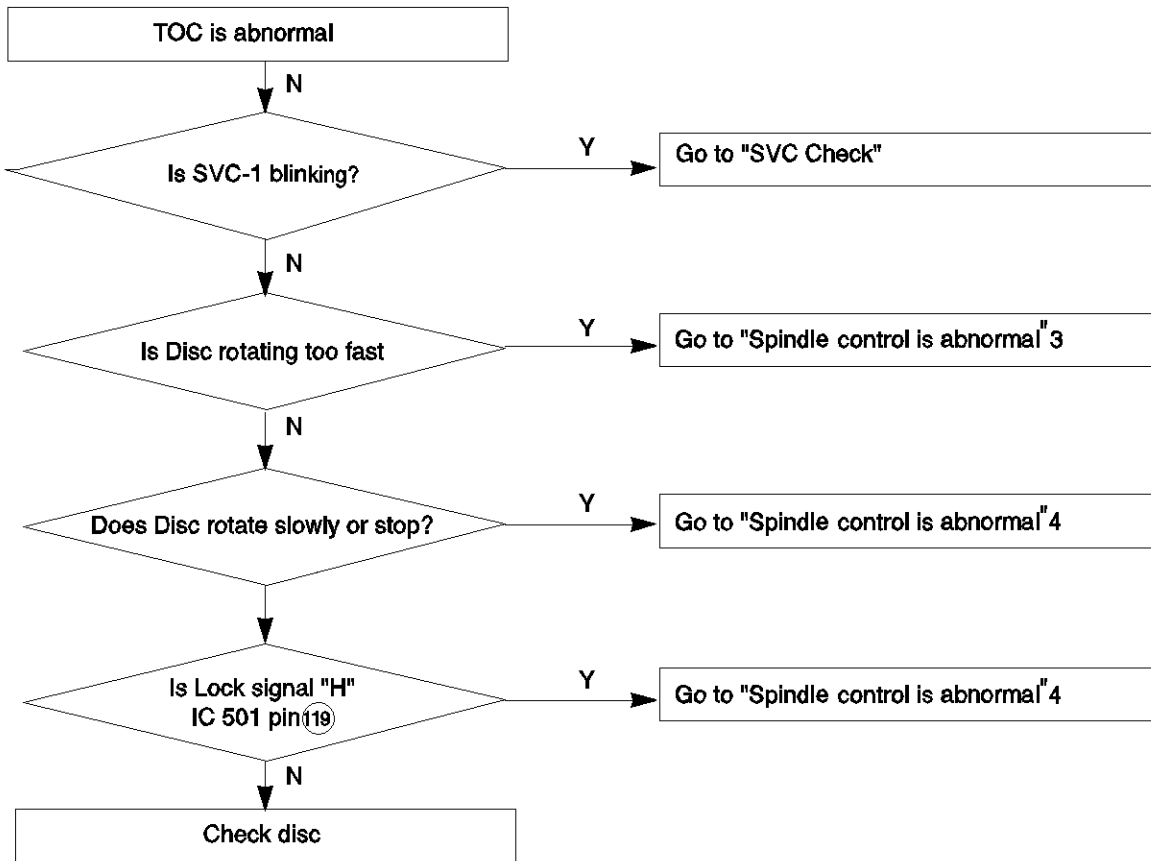
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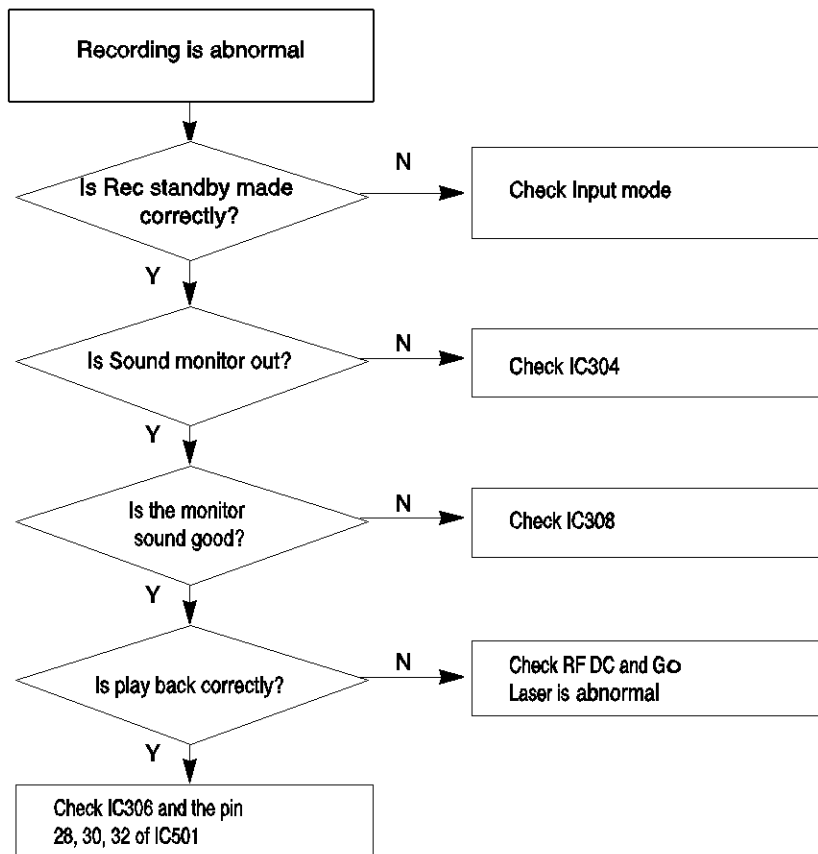
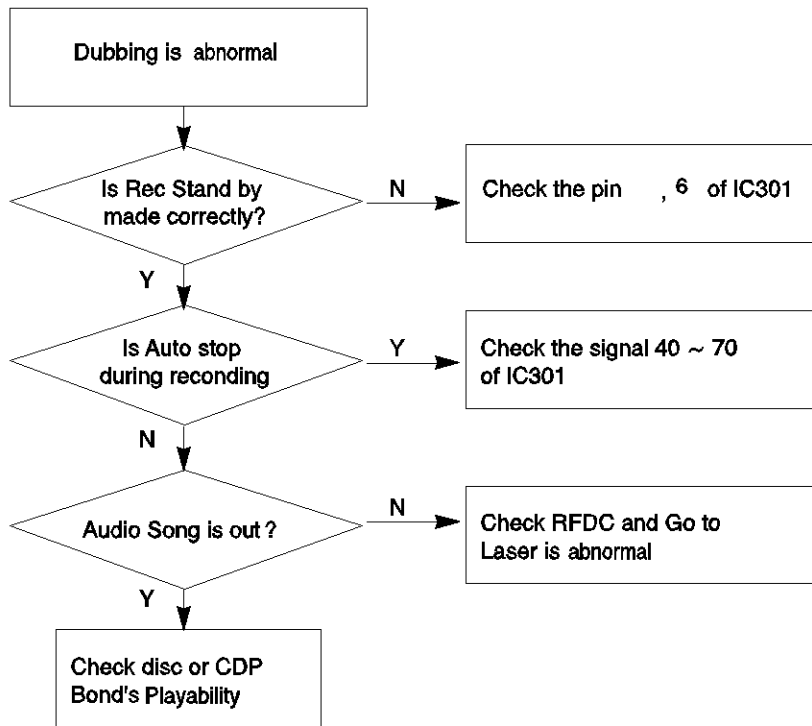
CURRENT DECK IS CDR

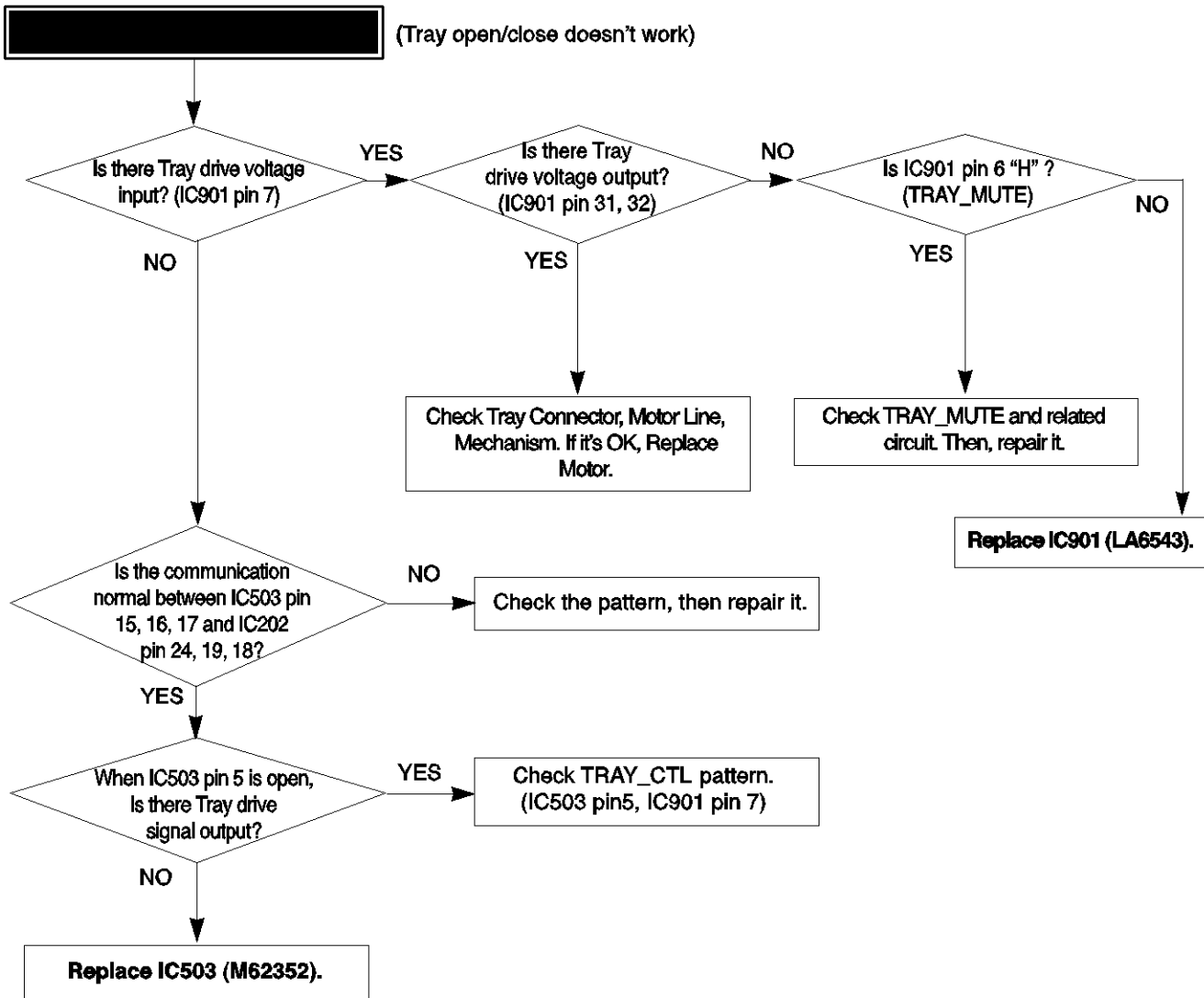


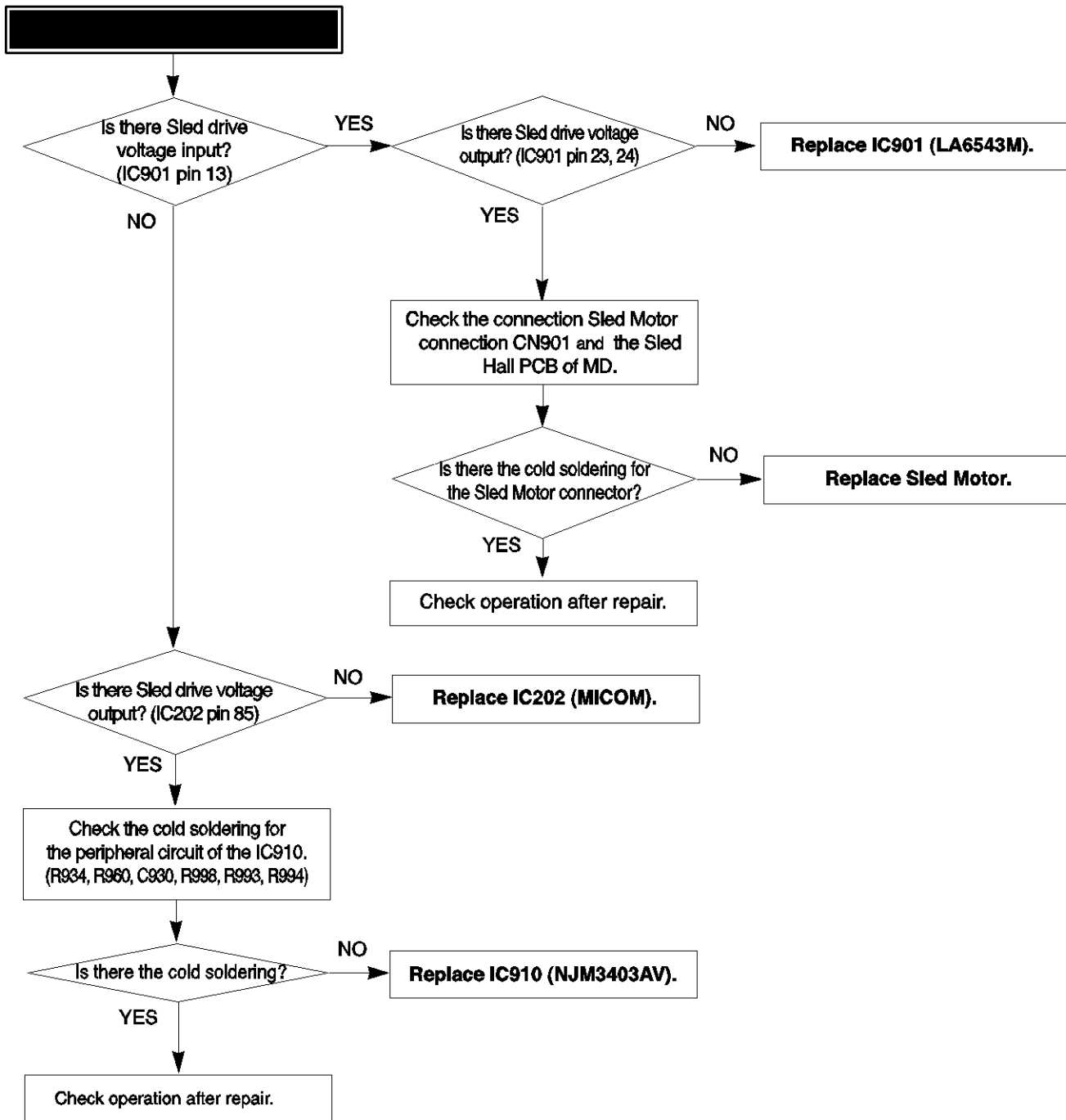


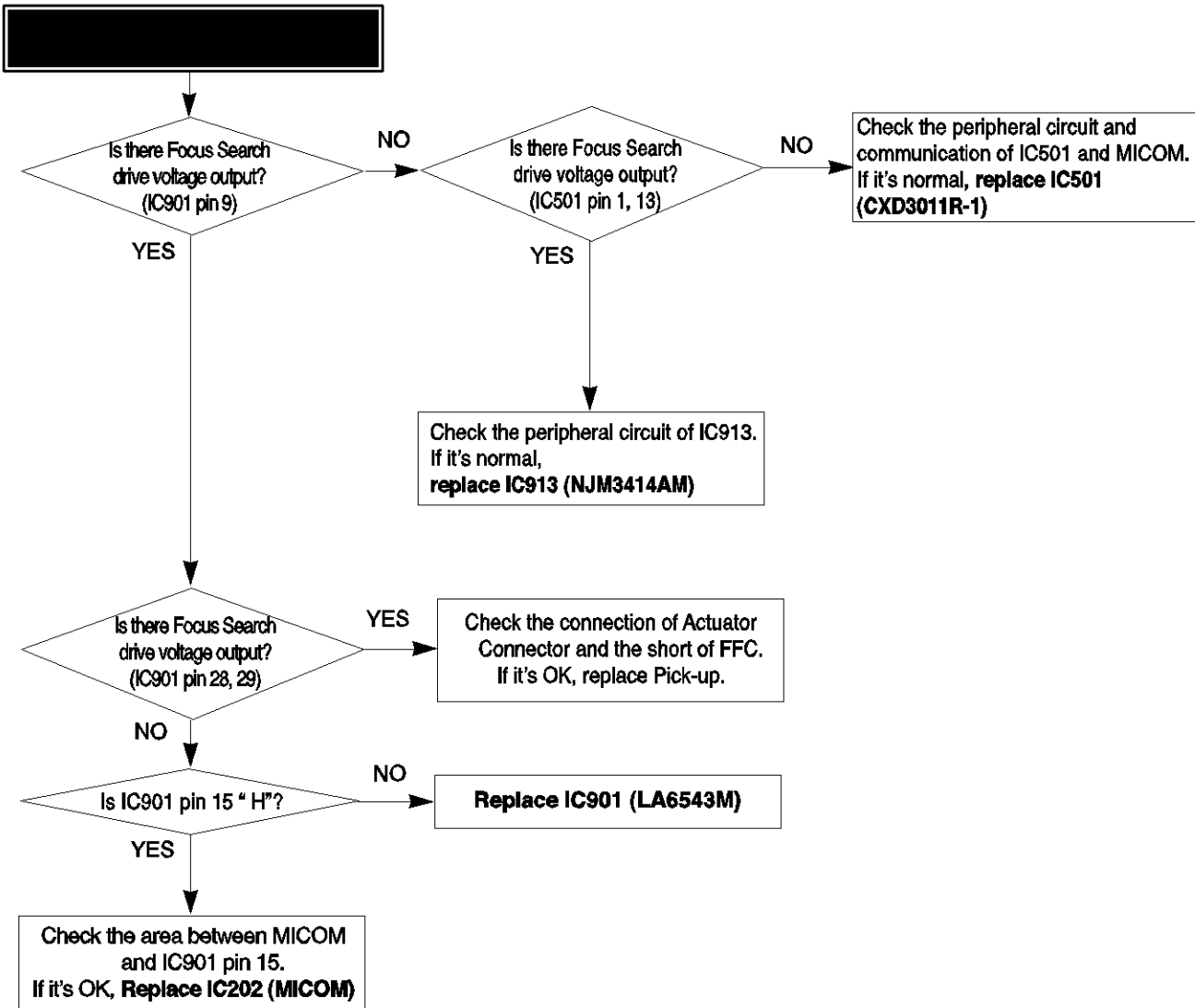




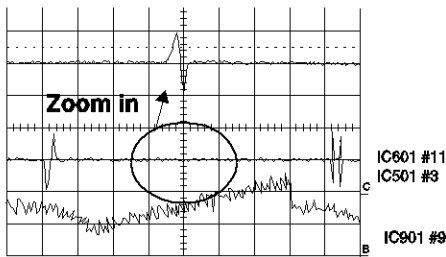


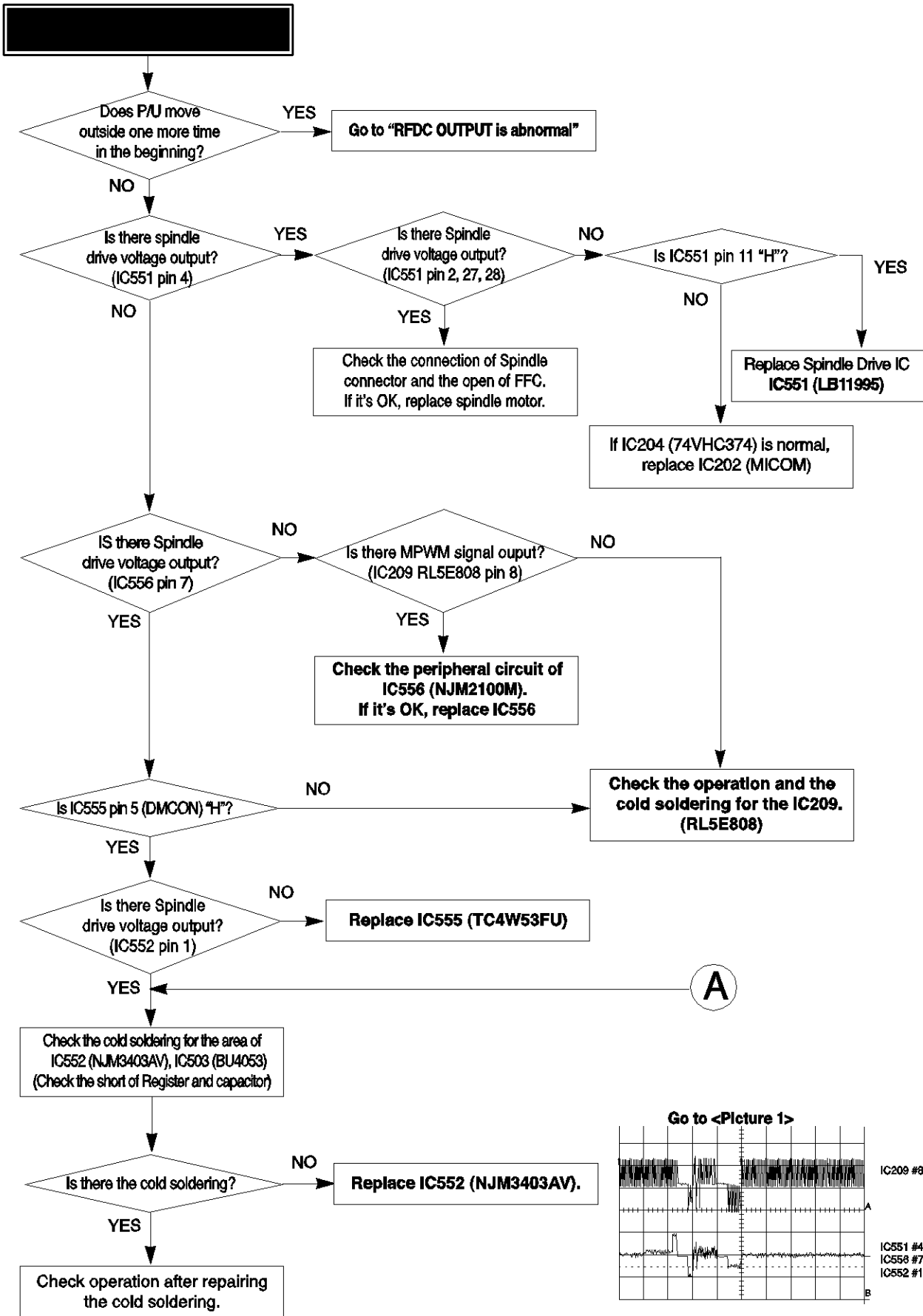


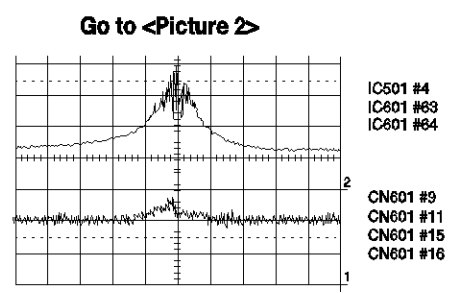
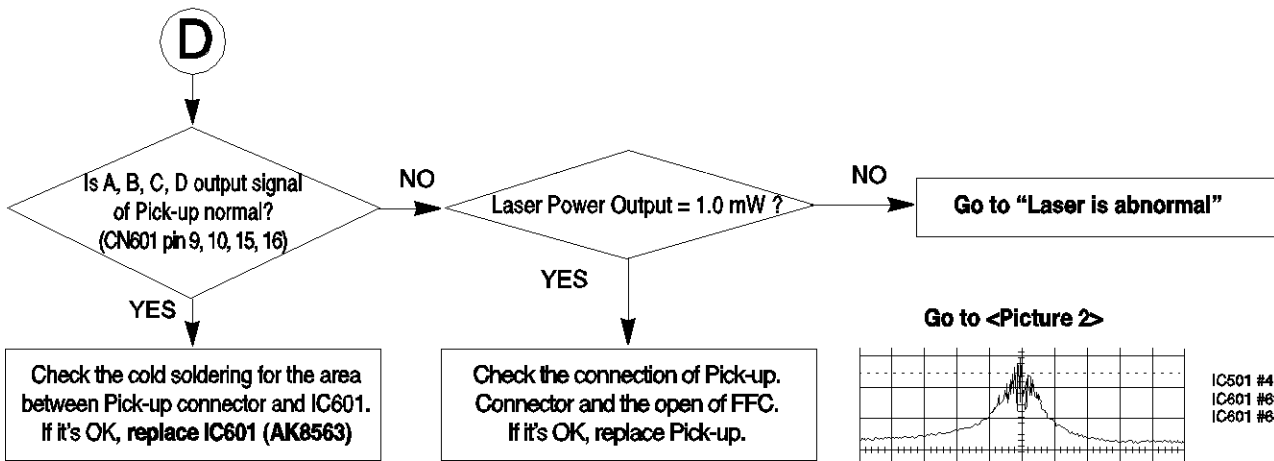
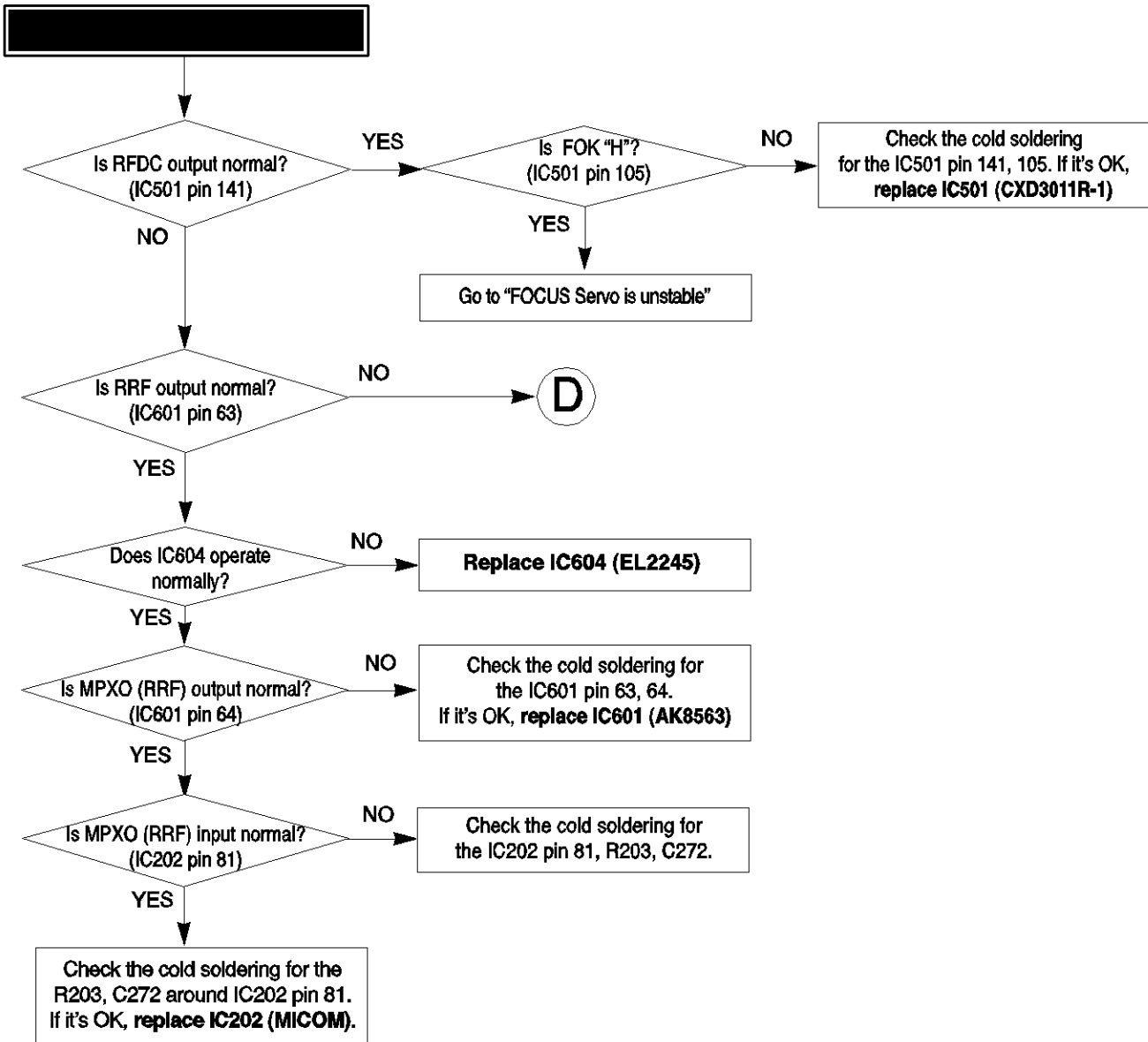


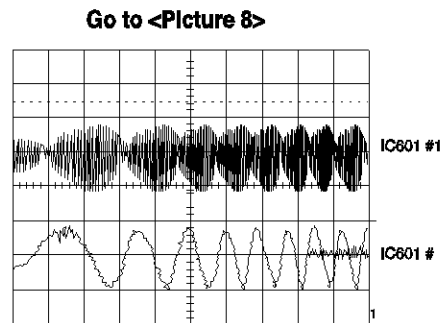
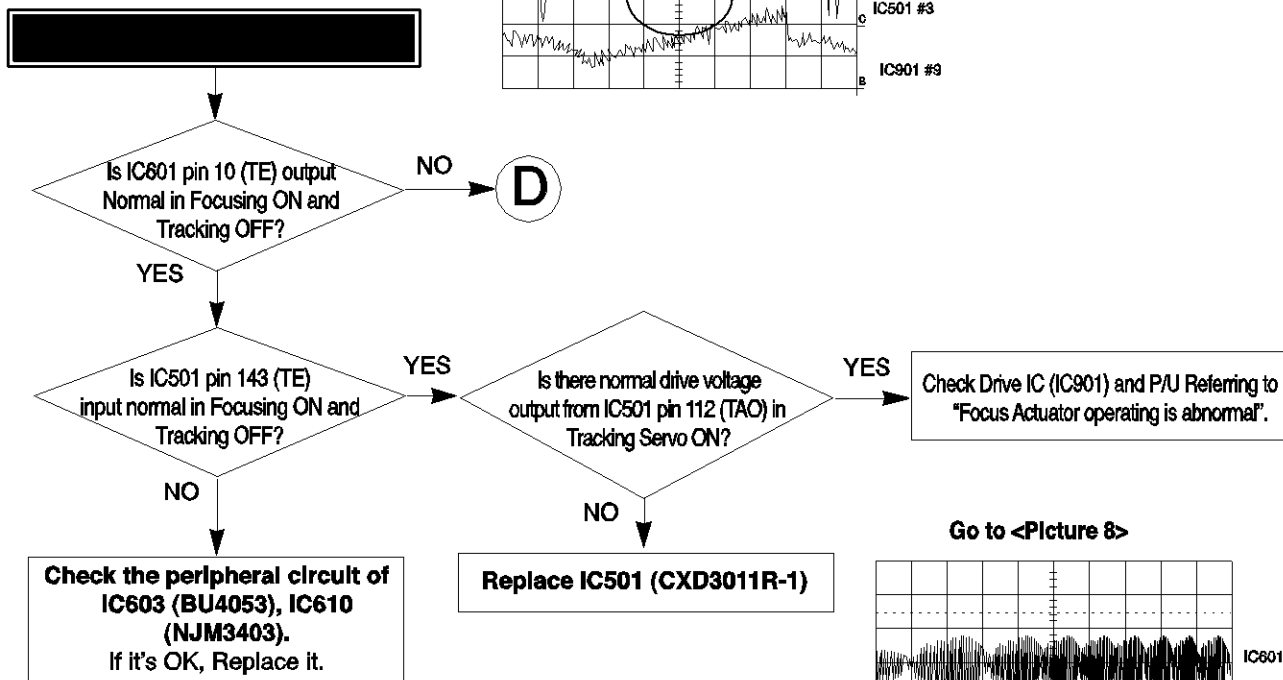
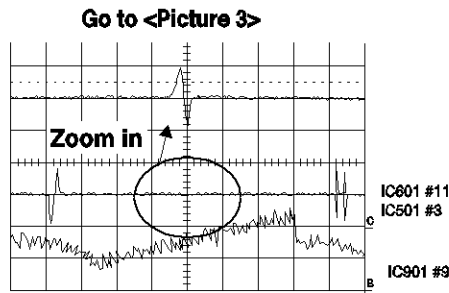
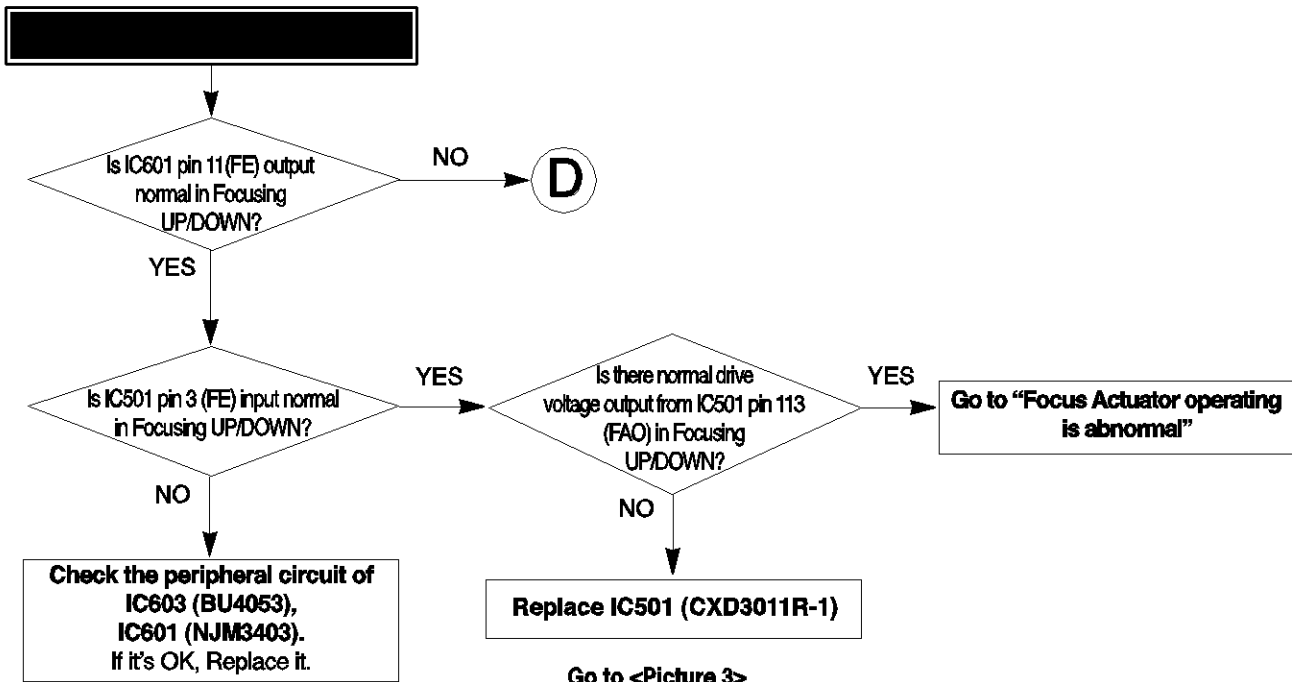


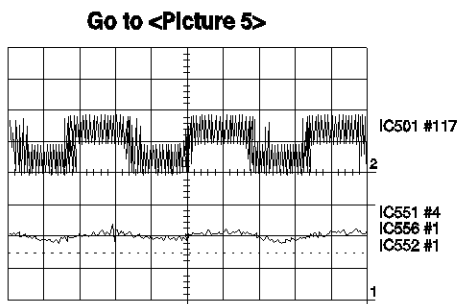
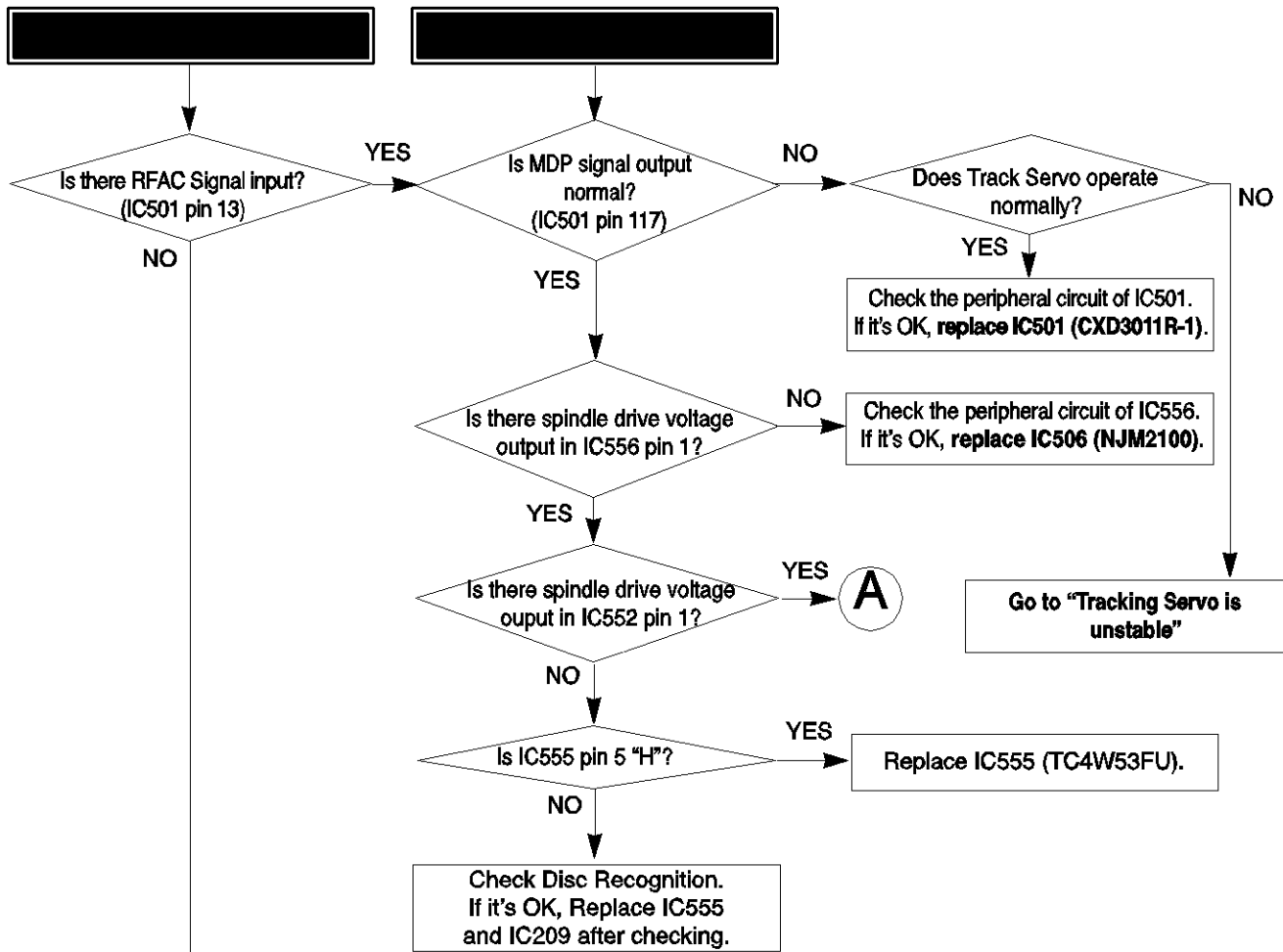
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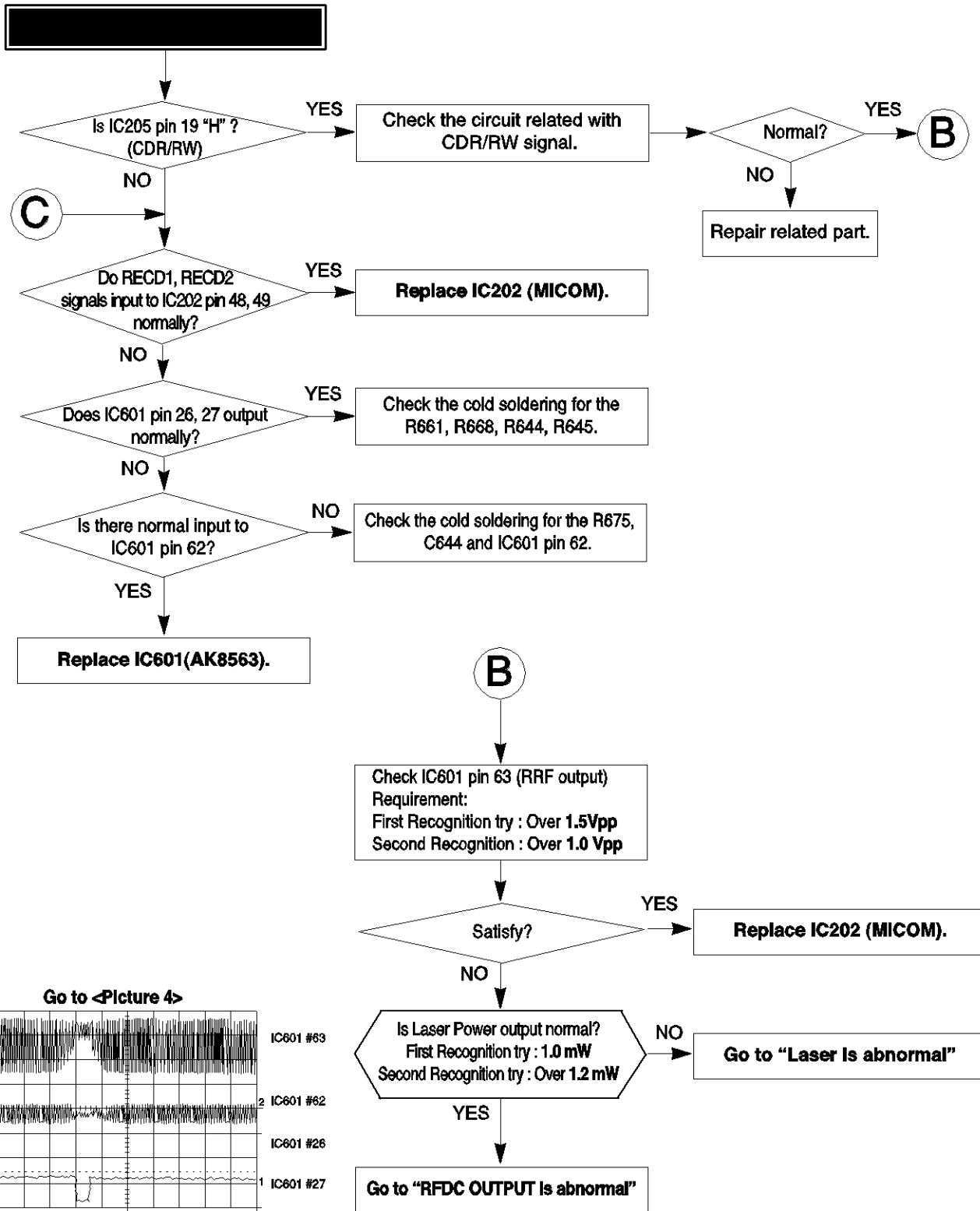


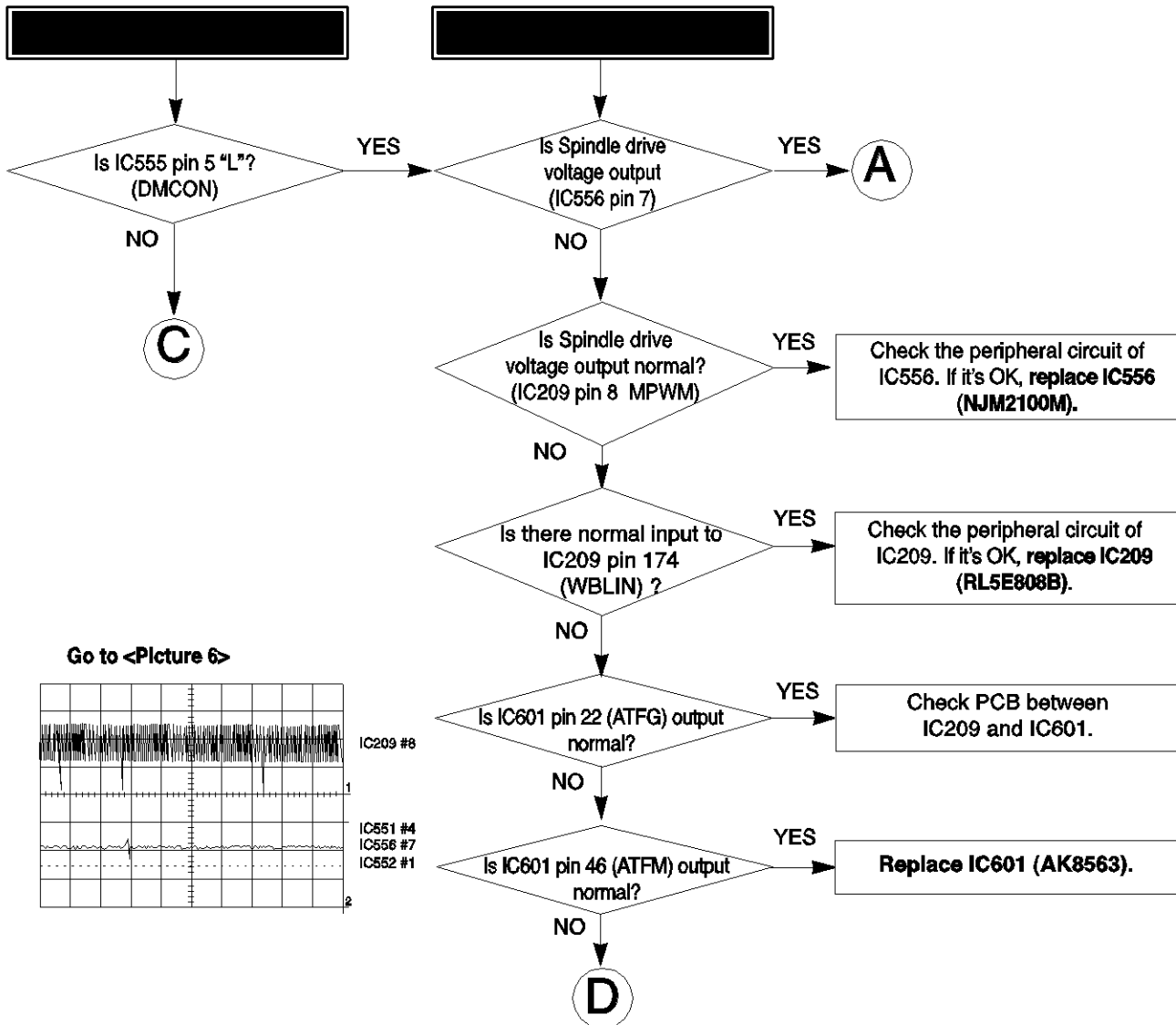




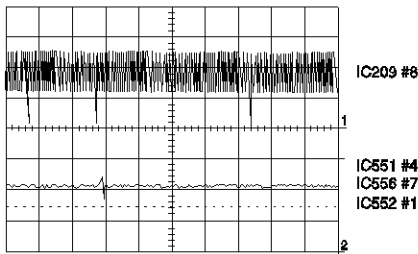


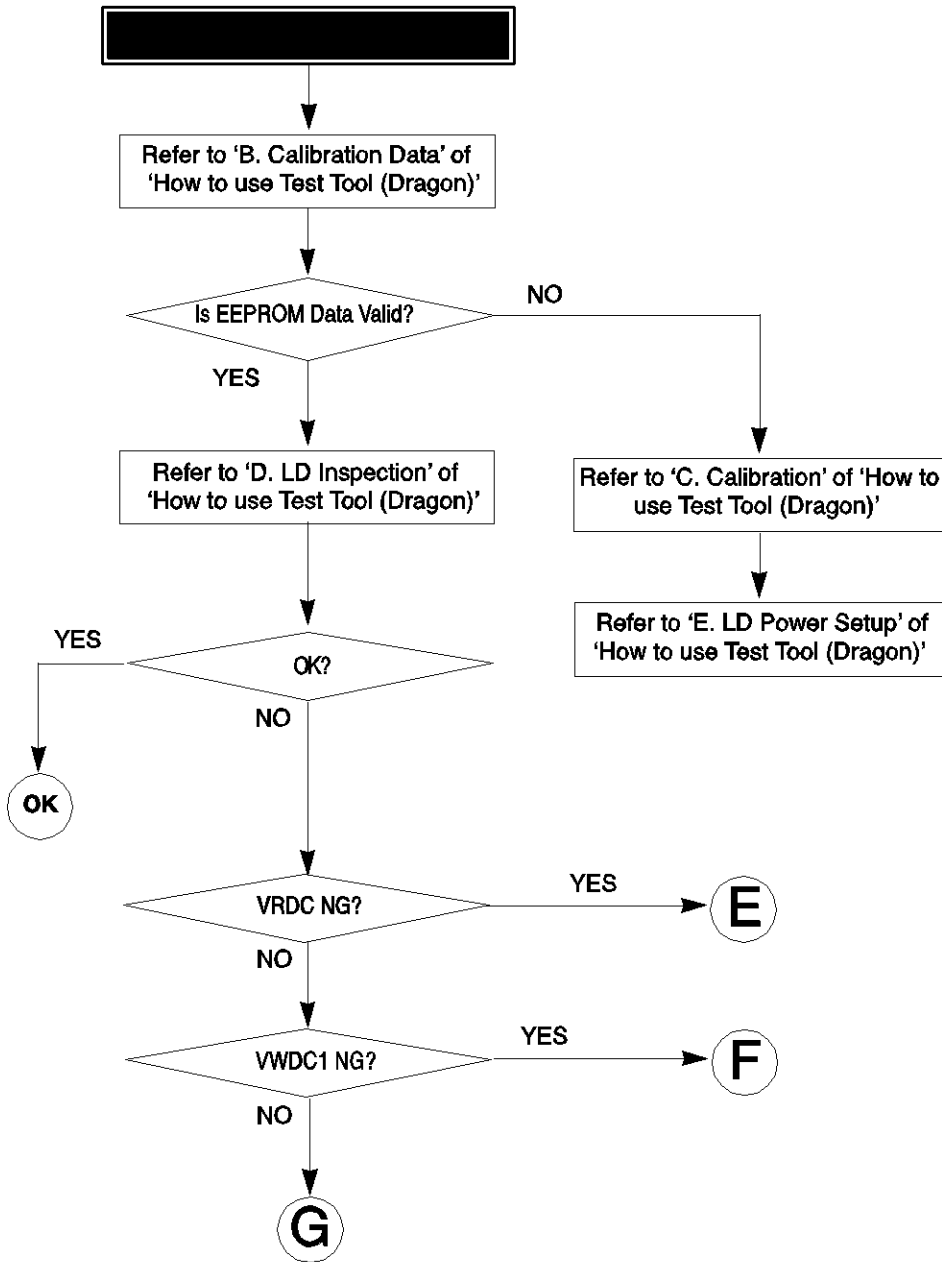


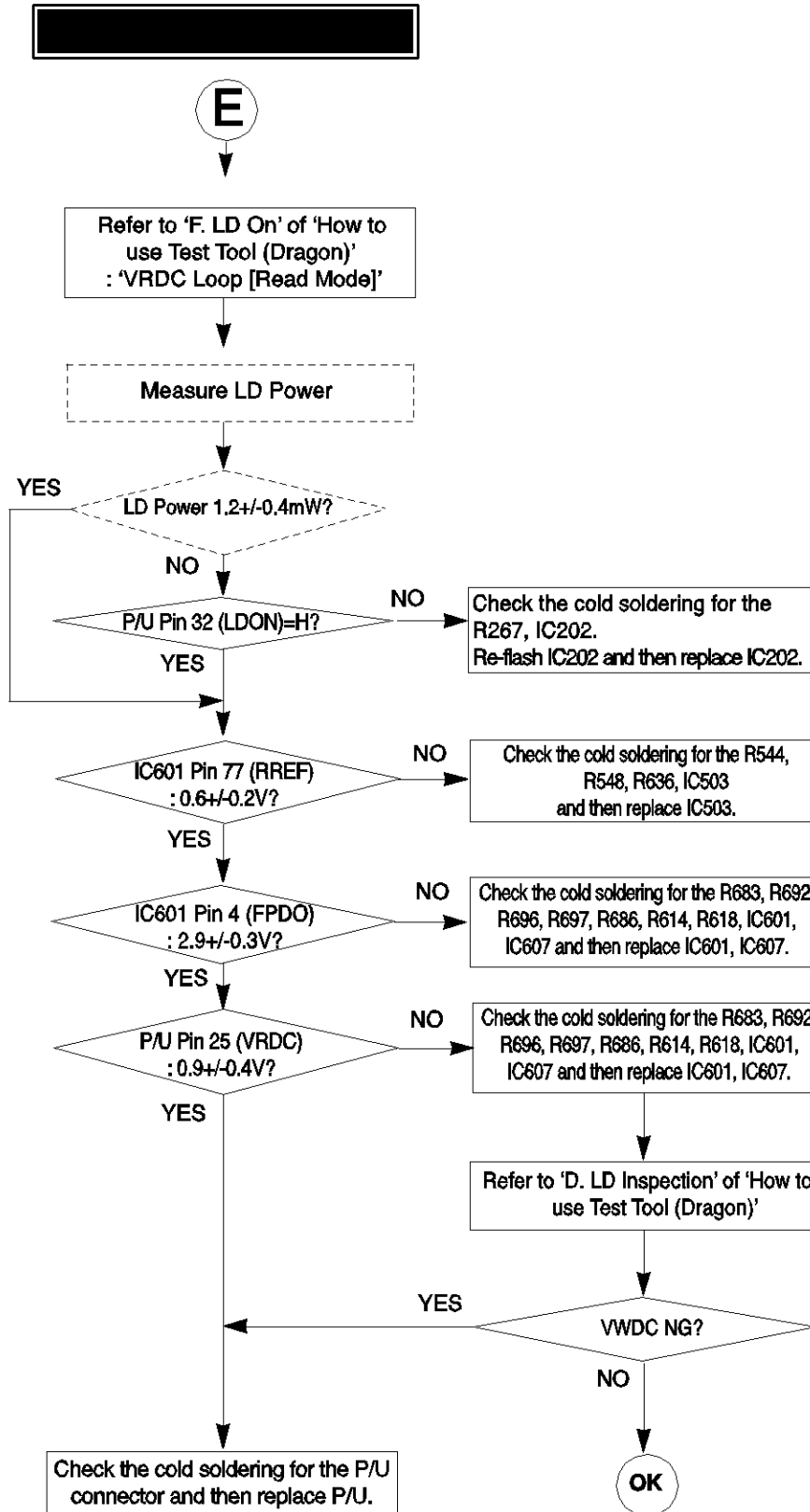


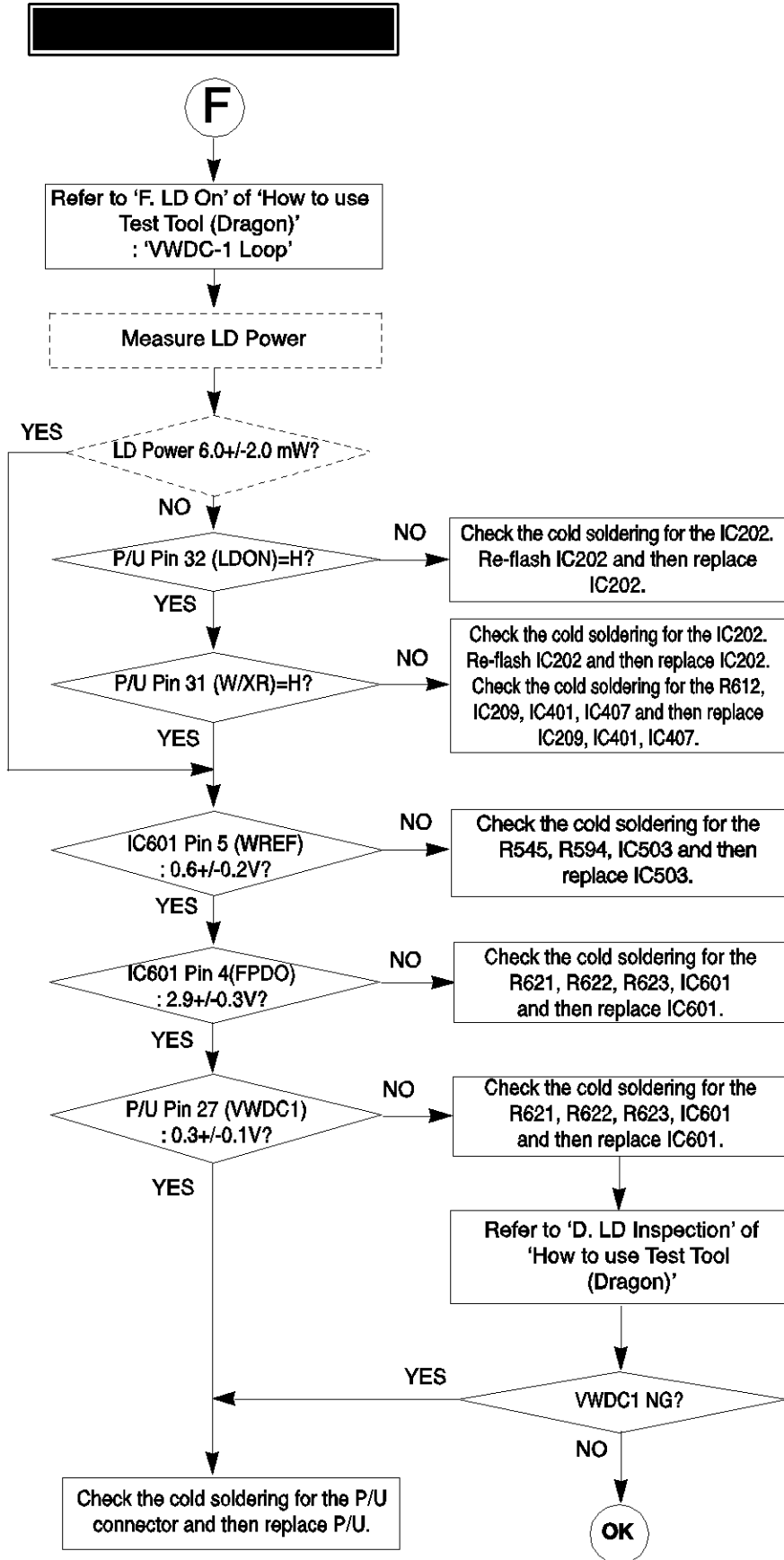


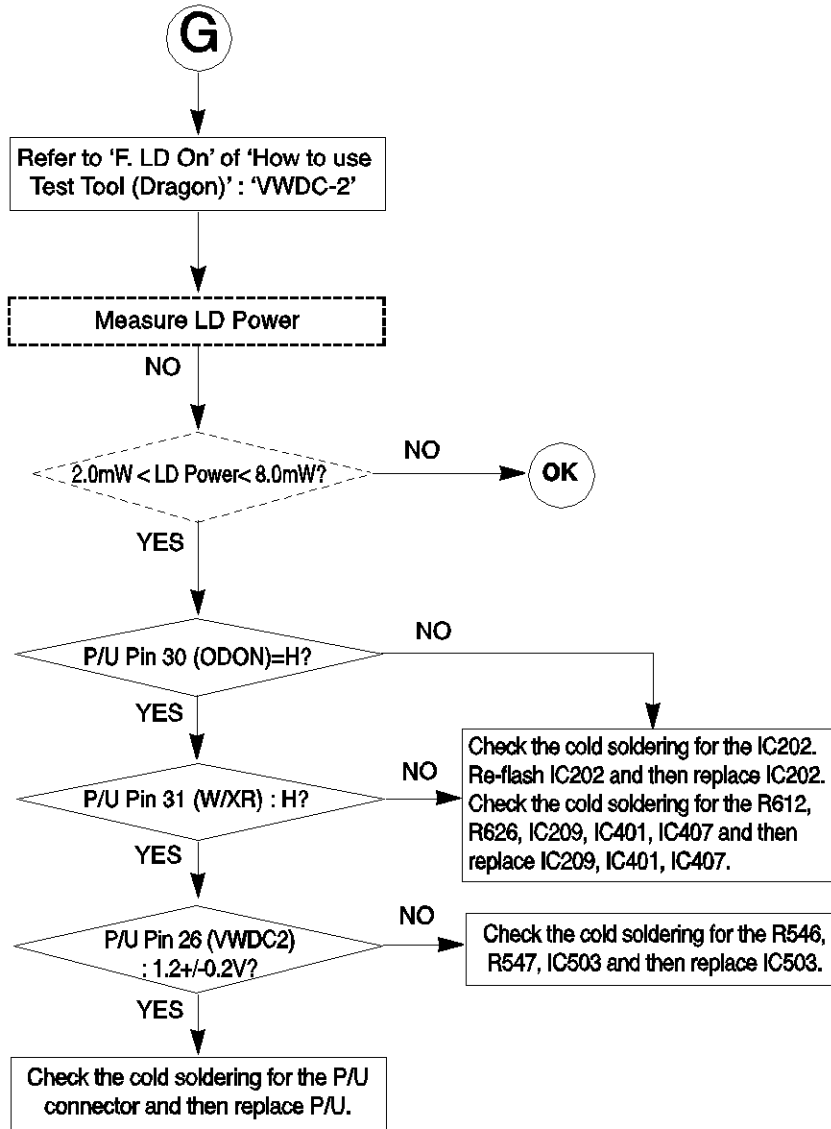
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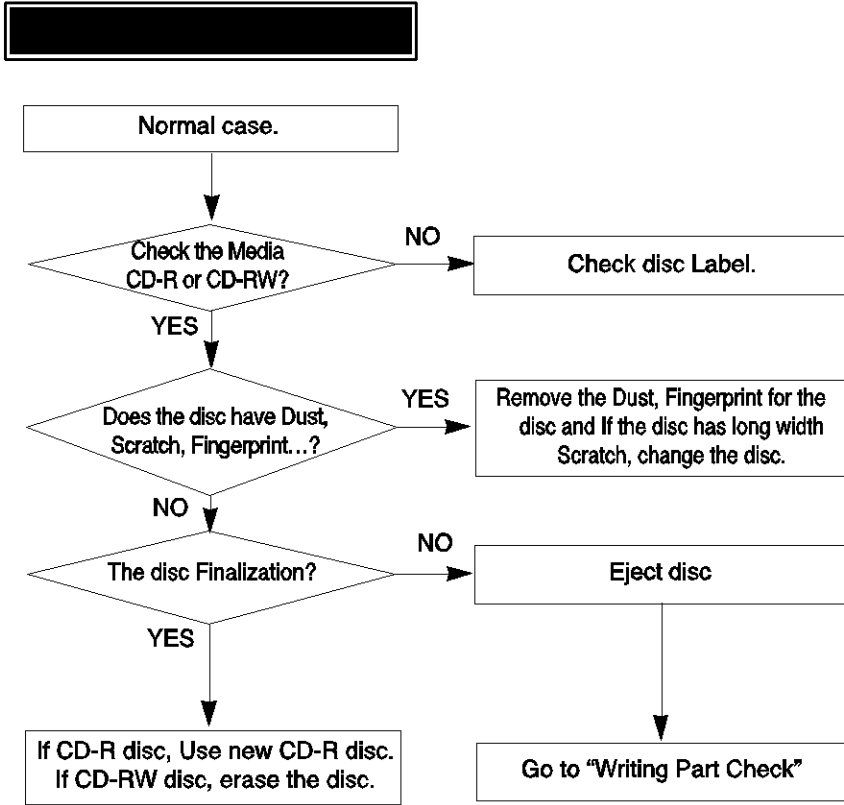


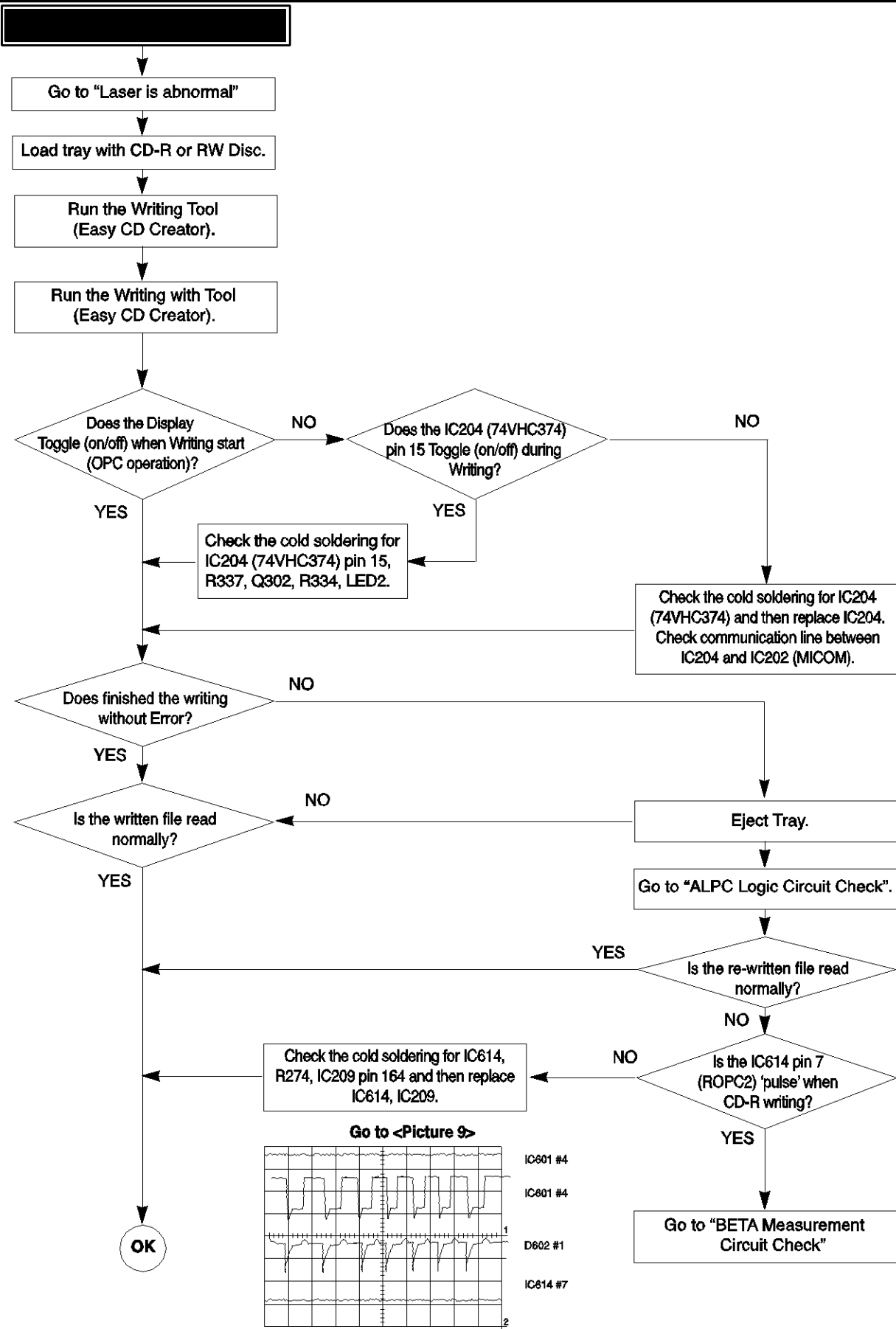


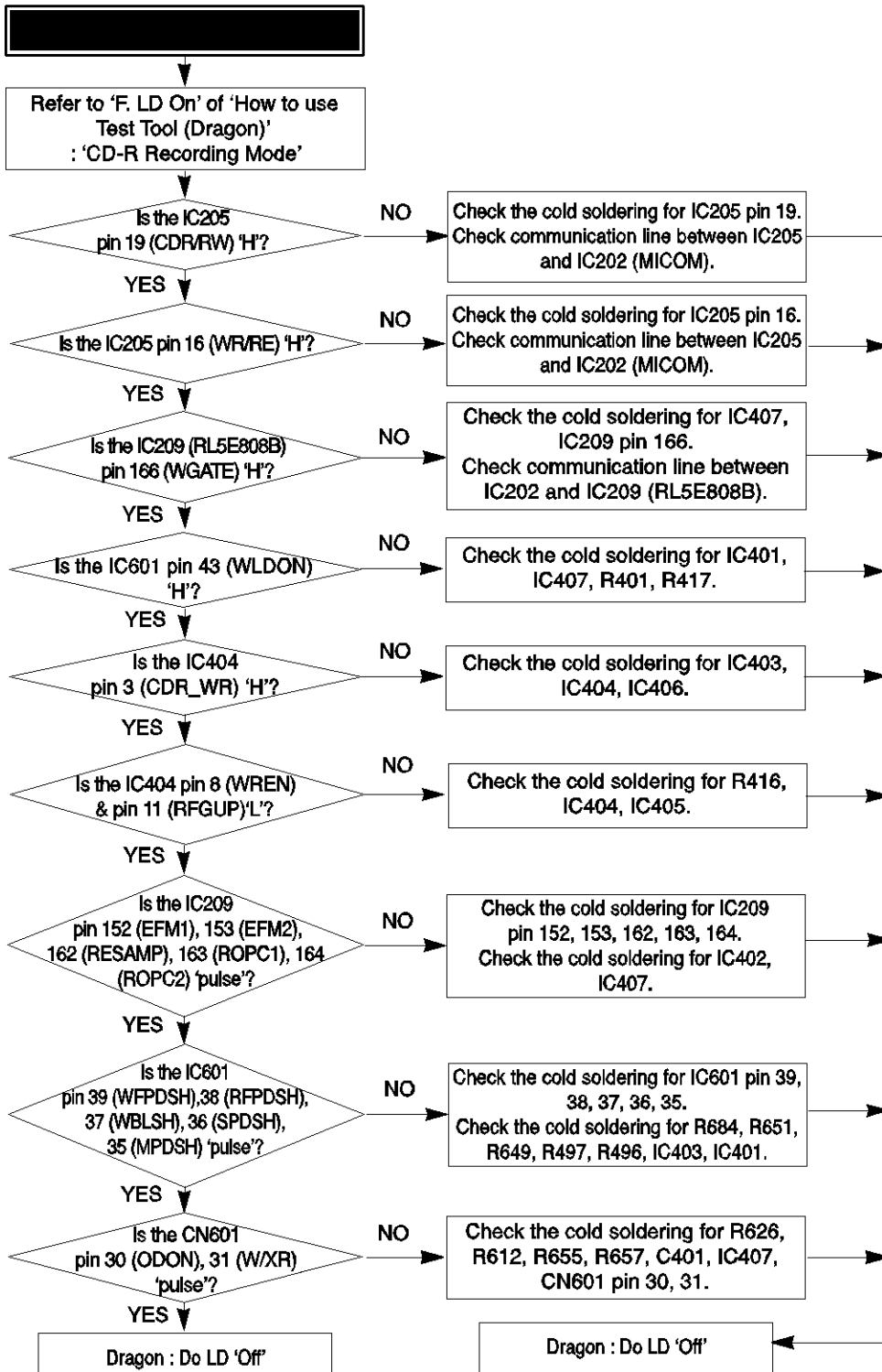




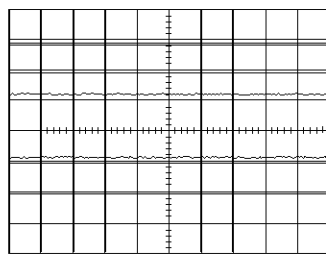




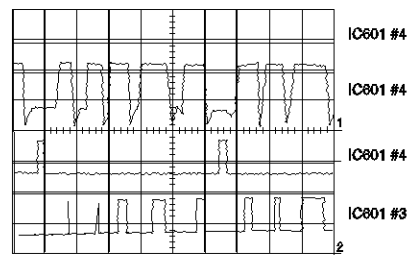


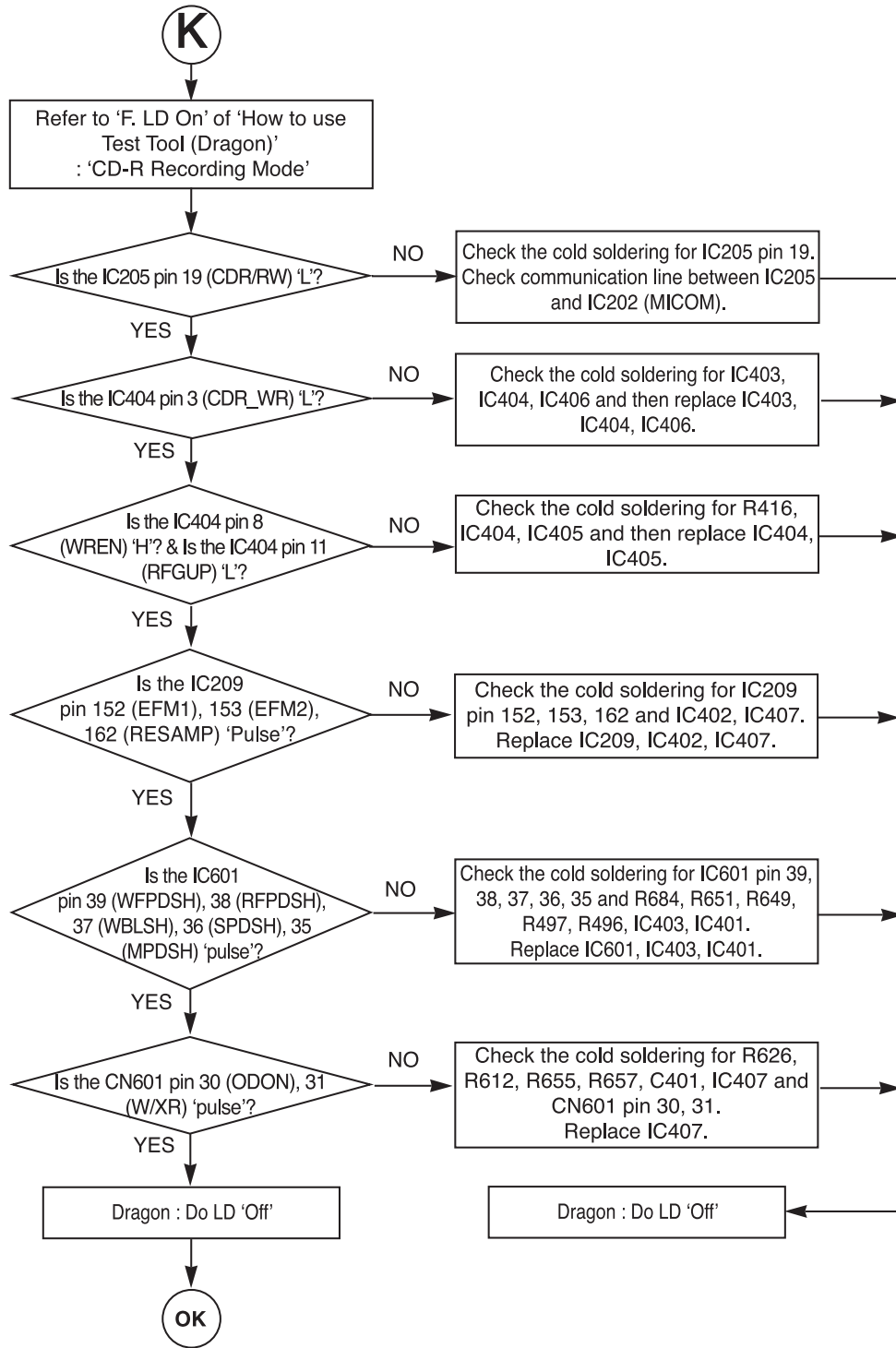


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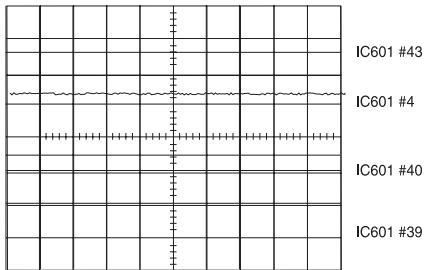


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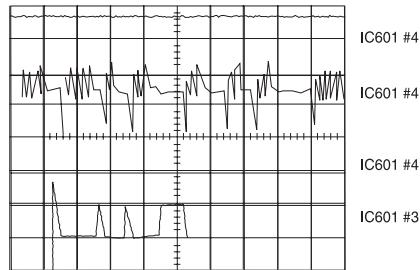


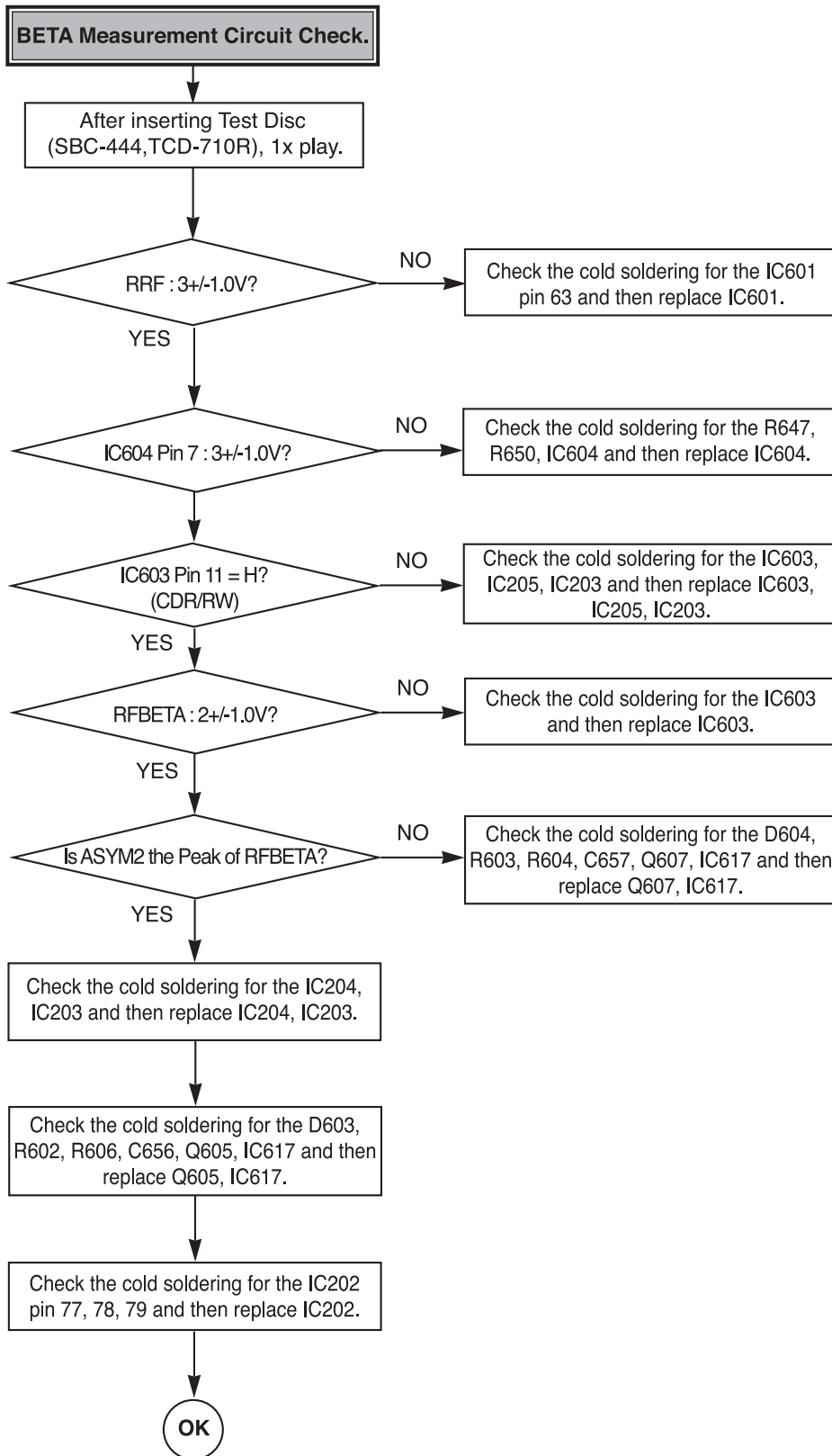


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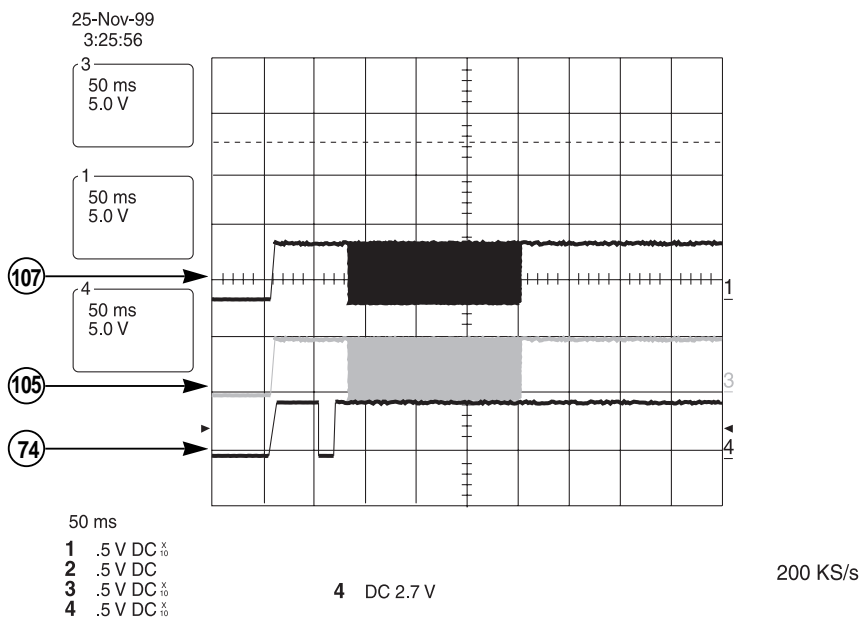
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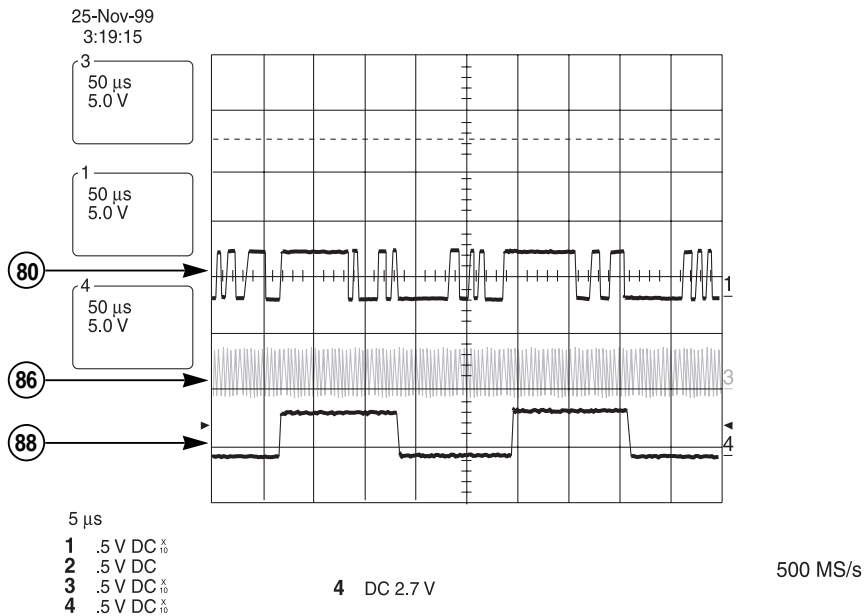
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IC 301(74,105,107)



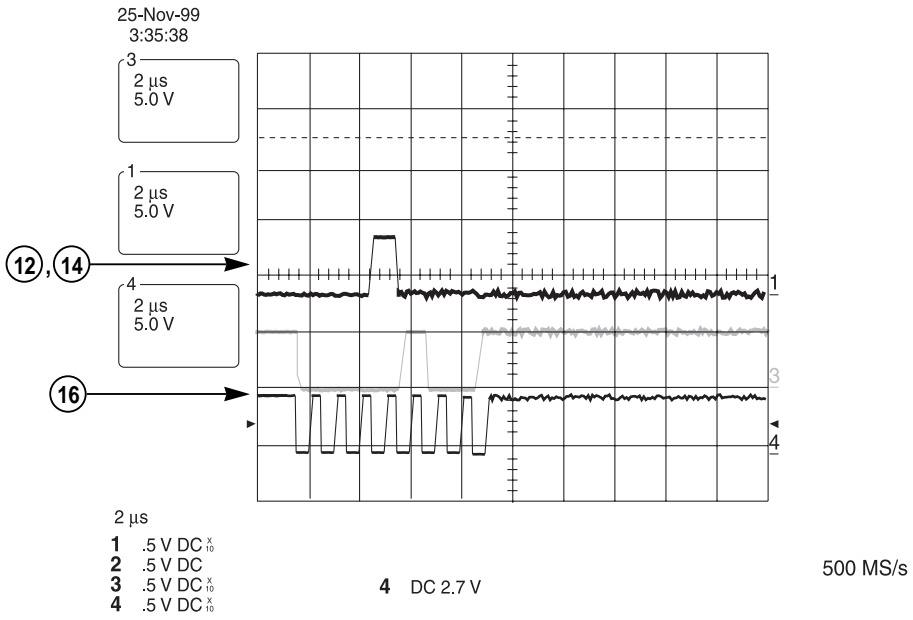
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IC 301(80,86,88)



• U-COM

IC 202(12,14,16)



harman/kardon

Service Bulletin

Service bulletin # H/K2000-08 Rev3 – September 2005

To: All harman/kardon Service Centers

Models: CDR2

Subject: Complaints Related To Early Software

In the event you receive a CDR2 with one or more of the symptoms listed below, an upgrade in the software may be necessary. Confirmation may be made by checking the serial numbers listed below.

- 1) When dubbing from the CDP deck, the unit randomly skips some of the tracks during the recording process
- 2) Audio drop out every 15-30 seconds, for less than a second each time, using the analog CDR outputs while playing a disc in the CDP deck
- 3) Analog outputs of both wells have glitching/skipping sounds, but when monitored via headphones the sound is normal
- 4) Intermittent Recording
- 5) CDs played on CDP deck have wow & flutter. Wow characterized by a slight hesitation in the sound and flutter as a rapid fluttering sound
- 6) CDR deck during the recording process "chopping off" (truncating) the first few seconds of each track using digital inputs
- 7) Will not SYNCH record with MD player digital connections
- 8) Will not SYNCH record with DVD player connections
- 9) CDR deck when played as normal CD output mutes randomly
- 10) Switches to normal (x1) dubbing speed even though x2 or x4 had been selected
- 11) Jumps to another part of the track dubbing at x4 speed
- 12) Low music input causes the unit to skip to the next track during recording
- 13) CDR deck during the recording process does not automatically set track increments

For additional information and current resources available to perform upgrades, please contact:

Harman Service Technical Support
 Phone: 516-682-6435
 E-mail: techsupport@harman.com

Model	Serial number 120V	Serial number 230V	Status	Action (Upgrade)
CDR2	LG0001-10793 to LG0001-12428 LG0001-14329 to LG0001-14675 LG0001-21381 to LG0001-26340		Has early software/hardware version – no upgrade possible	NONE POSSIBLE NONE REQUIRED
CDR2	LG0001-01001 to LG0001-10792 LG0001-12429 to LG0001-14328 LG0001-14676 to LG0001-21380 LG0001-26341 to LG0001-29500	LG0002-01001 to LG0002-08500	Has later software/hardware version	UPGRADABLE
CDR2	LG0001-29501 and above	LG0002-08501 and above	Factory Installed latest version	NONE REQUIRED

harman/kardon

Service Bulletin

Service bulletin # H/K2001-008 November 2001

Warranty labor rate: MINOR repair

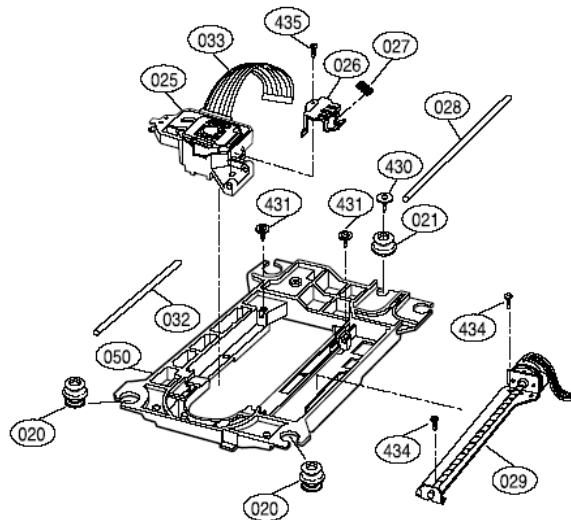
To: All harman/kardon Service Centers

Model: CDR2

Subject: Mechanical noise from Play section and laser sled stops.

In the event you receive a CDR2 Player/Recorder with this complaint: "There is a mechanical clicking noise in the player section, either when the CDR2 turns "ON" or when it starts to play a CD":

- 1) Clean and re-grease all the mechanical tracking parts:
2 shafts #028/32, laser #025, guide feed #026 tracking motor #029



CDP section exploded view

- 2) Change R237 on the CDP board from 470 Ω to 180 Ω .
Location is next to pin 52 of IC201. 180 Ω resistor is h/k part # 6044437091.



Troubleshooting tips and solutions to common service problems

For model: CDR2

TIP# HKTT2001-02 Rev1

Issue: Power Failure During A Recording Session

Power loss is defined as: CDR2 was switched OFF by the POWER button on the front panel, or by the OFF button on the remote control, or through a power failure.

Circumstance #1

Power loss during the actual recording process

Symptom:

Attempts to read the disc in the Record drawer now produces an ERROR message in the display.

Solution:

Unfortunately, the disc is ruined and there is no way to retrieve this information. When you record a track, the CDR2 updates the information on the disc so that it can read it even though the disc has not been finalized. By turning off the unit *while recording is in process*, the unit never had the opportunity to update the disc. As a result, the disc is no longer useable.

Circumstance #2

Power loss after the recording process took place, but before finalizing

Symptom:

A CDR with recordings will not finalize after the Finalize and Play/Select select buttons on the remote control are pressed. Instead, when these buttons are pressed, the CDR (or a CD in the Play drawer) begins to *Play* - not Finalize. (However, when the Finalize and Play/Select buttons on the front panel are used, the CDR2 will finalize the CDR with recordings properly).

Solution:

After turning the CDR2 on, and the unit has read the information from both drawers, press the CDR button on the remote control and follow the owner's manuals' instructions to complete the finalization process. This problem will not occur when the recording and finalizing "session" are done at the same time, without a power loss to the CDR2 off in the middle of the session.

Model	Serial Numbers 120V	Serial Numbers 230V	STATUS	ACTION
CDR2	All products affected	All products affected	Power loss during the recording session	When recording: Disc is ruined When recording is complete, but before finalizing: Press the CDR button on the remote control before Finalizing

Troubleshooting tips and solutions to common service problems

For models: CDR2

TIP# HKTT2003-04

VARIOUS COMPLAINTS - TIPS AND SOLUTIONS

Complaint Of Noisy Recording, Dropout, "Static" Or "Ticking" Sound During Recording: Check Flat Cable Connecting Record And Play Decks – order part# 6850R-GZ21Z. Also ground cable to chassis (with paper clip or alligator clip)

No Digital Signal Output:

Check T401

Check X501

Units with serial #'s LG0001-8001 (120v) and higher should not have a problem with components.

Check T101

Units with serial #'s LG0001-29501 (120v) and higher should not have a problem with component.

Playability Upgrades:

Remove C121,C222

C104: change from 0.1ohms to 0.015 ohms.

R130: change from 5.6Ω to 8.2Ω.

R312: change from 15Ω to 22Ω.

R310: change from 22Ω to 15Ω.

Units with serial #'s LG0001-29501(120v) and higher have been modified

Digital Signal Output Level

R254,R259 change from 100Ω to 330Ω

R257,R263 change from 330Ω to 100Ω

For complaint: "CR2 defaults back to X1 speed when attempting to record at X4 speed" :

Normal conditions -

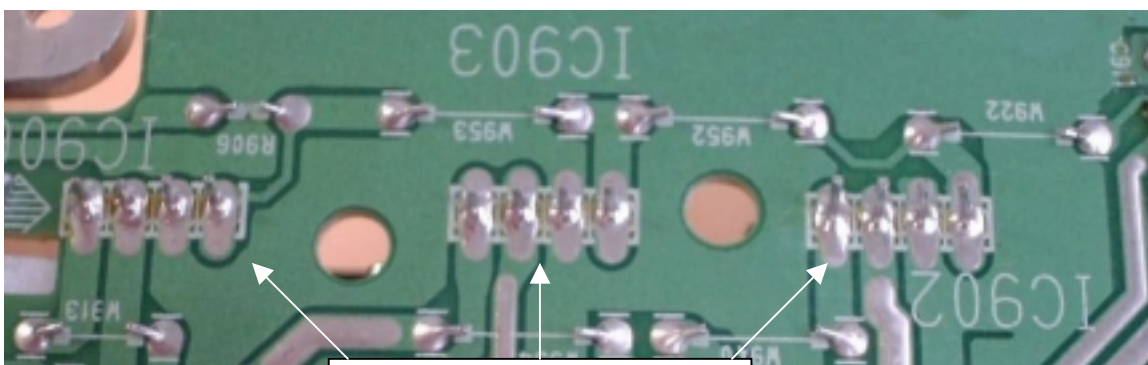
- 1) Will occur when an external input is selected.
- 2) Will occur when dubbing from a copied CD. (automatically goes into analog recording)
- 3) Will occur when dubbing from a copy protected CD. (automatically goes into analog recording)
- 4) Will occur when dubbing a programmed play list.
- 5) Certain CDR disc brands may only copy at X1 speed. Try another brand.

Otherwise replace IC209.

CDR2 DEAD (NO POWER/SHUTDOWN) AFTER IT WAS MOVED, SHIPPED, OR DROPPED:

Check for a broken Power Supply traces in PCB area around power transformer.

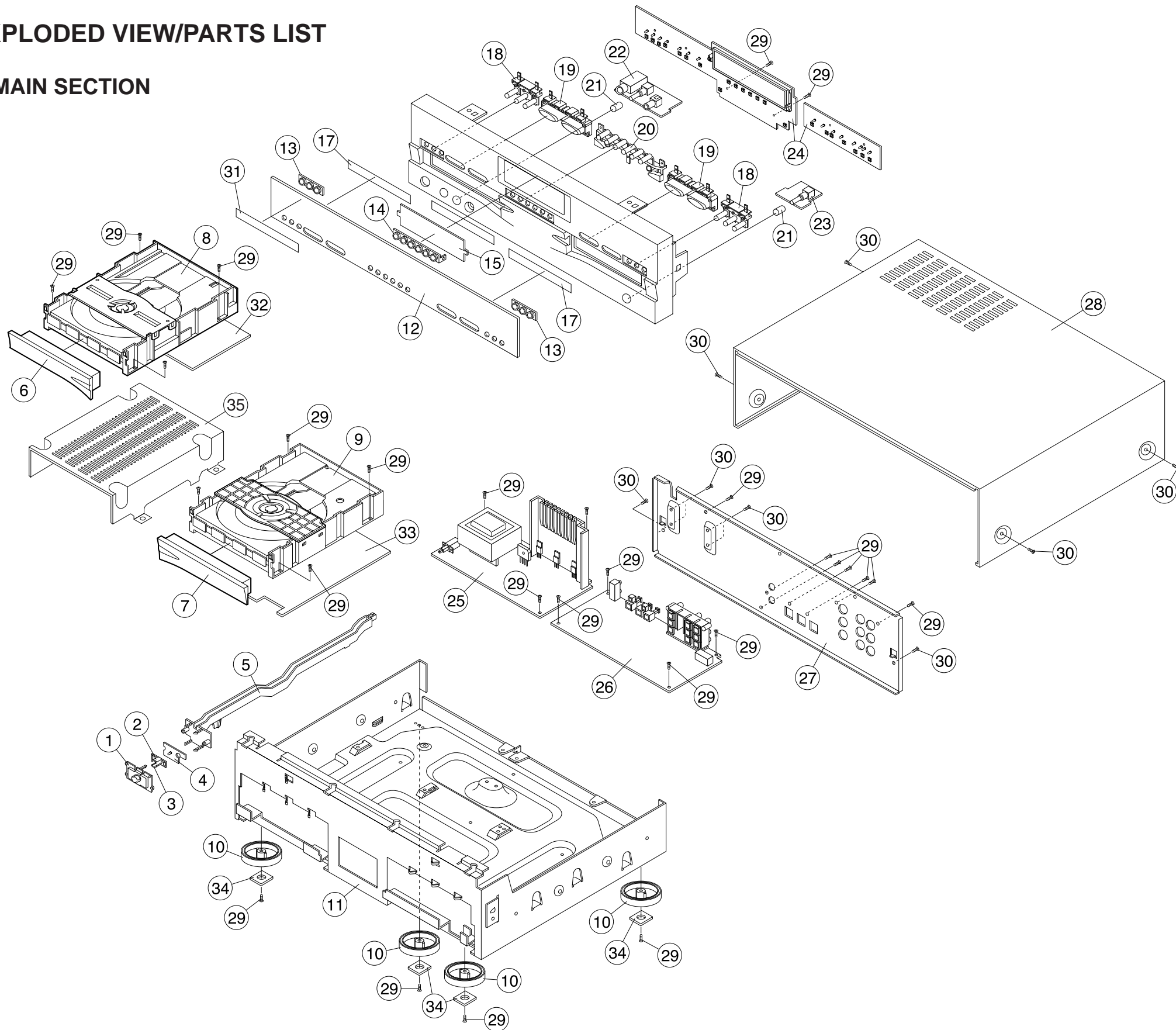
Units with serial #'s LG0001-10793 (120v) and higher have been modified



Please check the power supply soldering. Especially all the components mounted on the heatsink

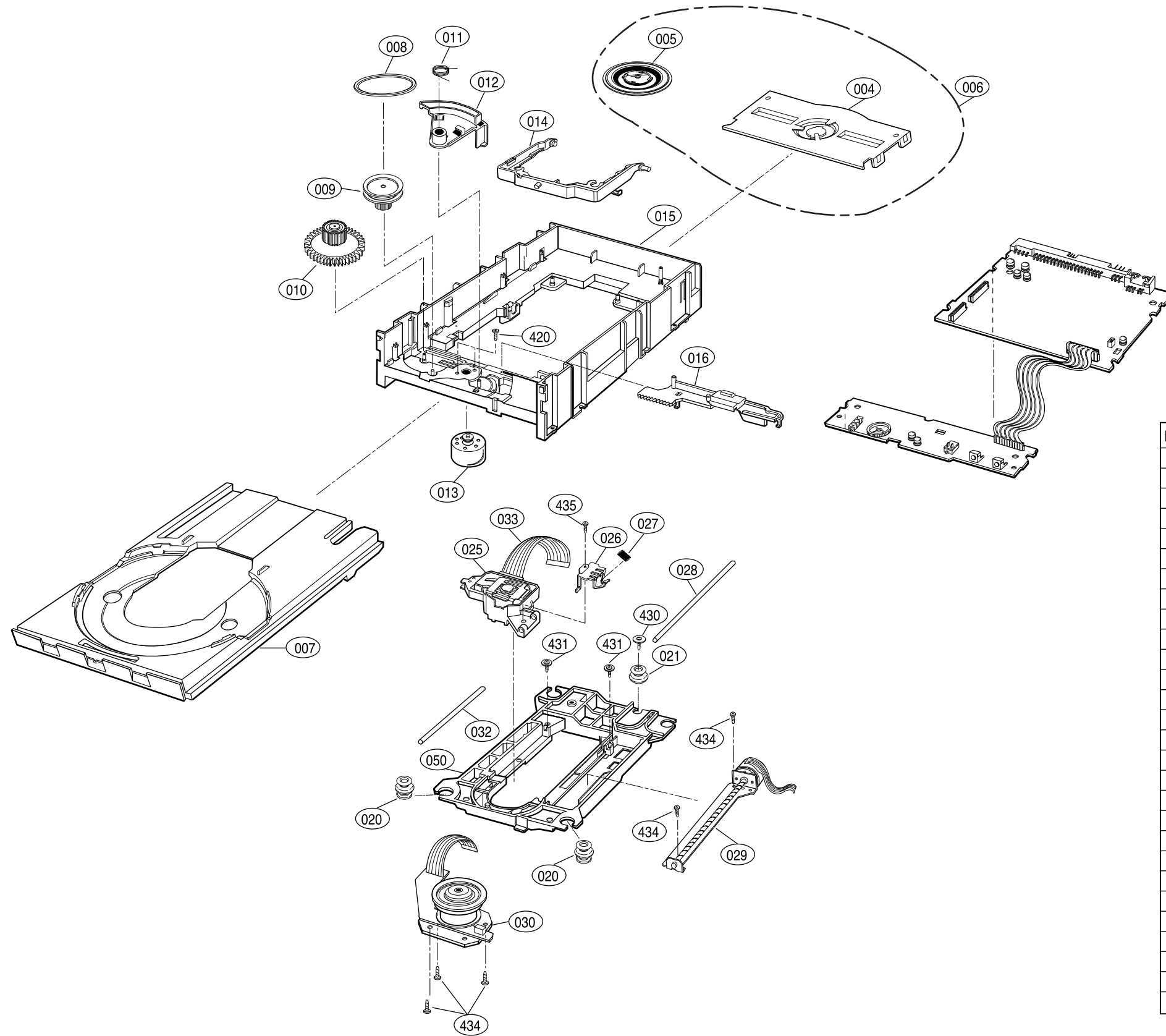
EXPLODED VIEW/PARTS LIST

• **MAIN SECTION**



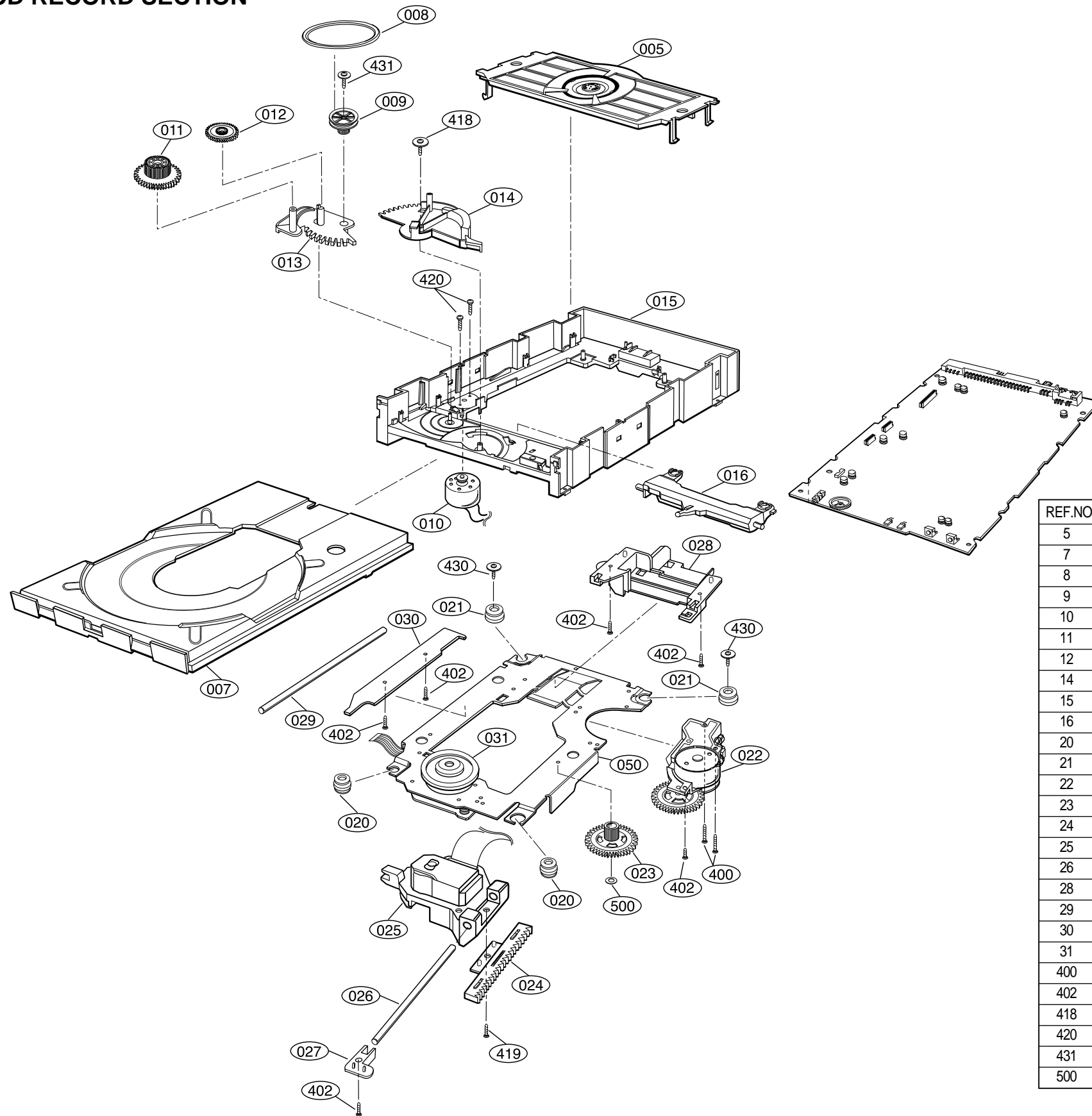
REF.NO.	PART NO	DESCRIPTION
1	4940S-6939A	KNOB POWER
2	3790S-M079A	WINDOW POWER
3	3300S-X002A	PLATE PET
4	6871RZ1963A	PCB ASSY LED
5	4510S-1019A	LEVER POWER
6	3580S-C108A	DOOR PLAY
7	3580S-C105A	DOOR ACDR
8	6721R-0301A	MECHA Q1(PLAYER)
9	4405H-1068C	MECHA E2
10	3610S-0192A	FOOT BOTTOM
11	3140S-P913B	CHASSIS MAIN
12	3790S-M072A	WINDOW FL
13	4350S-0001A	RING 3 KEY
14	4350S-0002A	RING 6 KEY
15	3858S-X170A	SHEET FL
16	3720S-M113A	PANEL FRONT
17	3858S-X171A	SHEET LCD
18	4940S-6938A	KNOB PLAY 3K
19	4940S-6937A	KNOB SEESAW 4K
20	4940S-6940A	KNOB REC 8K
21	4940S-6941A	KNOB VOLUME
22	6871RJ1963A	PCB ASSY HEADPHONE
23	6871RU0001A	PCB ASSY VOLUME
24	6871SF42GAA	PCB ASSY FL/KEY
25	6871RP42NAA	PCB ASSY POWER
26	6871S-429AB	PCB ASSY IO
27	3720S-P014A	PANEL BACK
28	3140S-P911C	CHASSIS TOP
29	353-046K	SCREW(M3)
30	353-633A	SCREW(M4)
31	3846S-0208A	MARK BADGE
32	6871S-423AB	PCB PLAY
33	6871S-42QAA	PCB REC
34	4766R-0003A	FELT FOOT
35	3550S-1027B	COVER-RW DECK

• CD PLAY SECTION



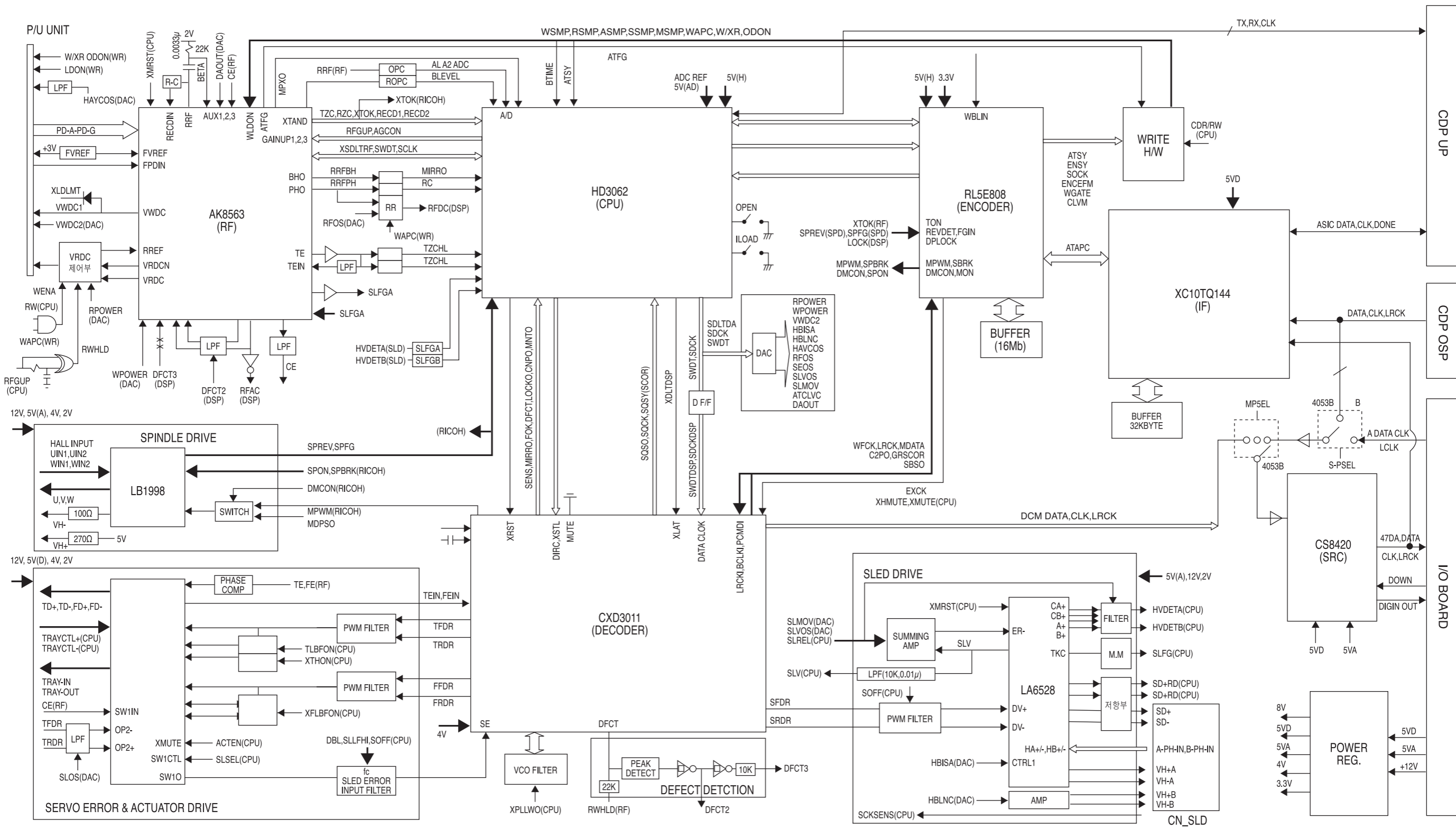
REF.NO.	PART NO	DESCRIPTION
004	4930H-1061A	HOLDER ASSY CLAMP(Q1, ACDR)
005	4861R-D004A	CLAMP ASSY Q1 & E2 ACDR
006	4931R-0033A	HOLDER ASSY CLAMP(Q1, ACDR)
007	3390H-1016C	TRAY DISC, BLACK)
008	4400H-1009A	BELT GM-RT 1332A
009	4560H-1005A	PULLEY MOTER(GM-R512)
010	4470H-115A	GEAR LOADING(Q1)
011	4970H-1087A	SPRING LEVER SWITCH
012	4510H-1033A	LEVER SWITCH(Q1)
013	4680HP-2001A	MOTER(MECH) RF-300CH-11440 M/C
014	3040H-1056A	BASE UP/DOWN(Q1)
015	3040H-1055A	BASE MAIN(Q1)
016	4974H-1034A	GUIDE UP/DOWN(Q1)
020	5040H-1053A	RUBBER GM-RT1332A(F)
021	5040H-1052A	RUBBER GM-RT1332A(R)
025	6716S-E001A	PICK UP SF-P151EXVA SANYO ACDR
026	4974H-1039A	GUIDE FEED
027	4970H-1086A	SPRING FEED
028	4370H-1024C	SHAFT P/U
029	4680HP-50028	MOTOR 15S1R10F6NC3 MATSUSHITA STEPPI
030	4680HB-1019A	MOTOR GCS-L32A LGEC SPINDLE
032	4370H-1025B	SHAFT P/U
033	6850HD-1L16A	CABLE, FLEXIBLE 2896-A-1.0-17(05*65)160 BANDO
050	3040H-1057A	BASE P/U(Q1)
420	4000H-1006B	SCREW + D1.7 4.5MM SWRCH16A/ZNY 4MM
431	1SSXXH-1004A	SCREW + D1.7 5MM SWRCH16A/ZNY 3.5MM
434	1SSXXH-1007B	SCREW + D2.0 6MM SWRCH16A/ZNBK 4MM 1
435	1SSXXH-1011B	SCREW + D1.7 6MM SWRCH16A/NIY 3.5MM

• CD RECORD SECTION

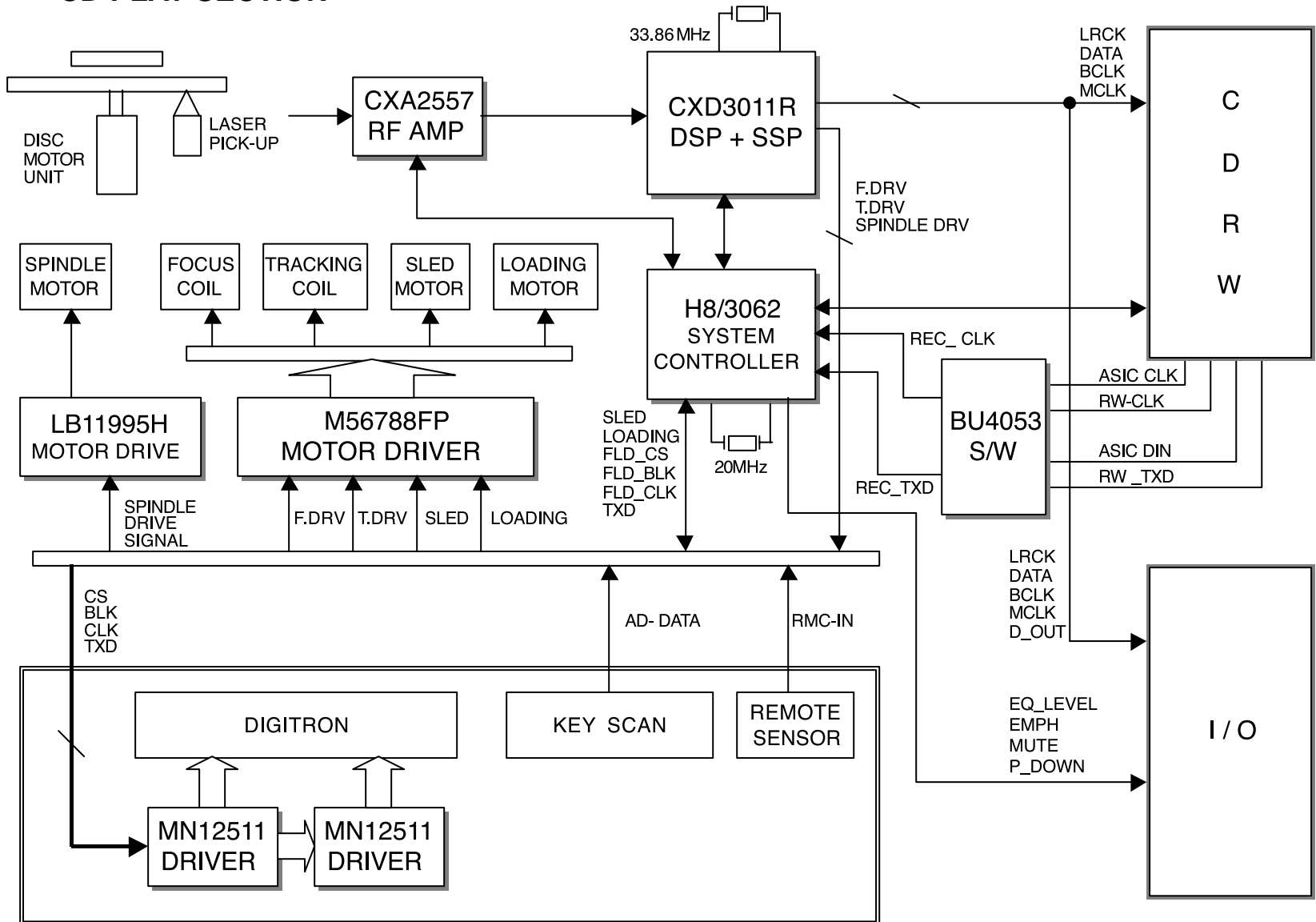


REF.NO.	PART NO	DESCRIPTION
5	4861R-0005A	CLAMP ASSY ACDR E2(4861H-0008A)
7	3390R-0007A	TRAY DISC(E2, 3390H-1011C)
8	4400R-0007A	BELT ACDR E2(4400H-1003A)
9	4560R-0009A	PULLEY GEAR(E2, 4560H-1004A)
10	4681R-1022A	MOTOR ASSY LOADING(E2, 4681H-1024A)
11	4470R-0059A	GEAR LOADING(E2, 4470H-1015A)
12	4470R-0060A	GEAR MIDDLE(E2, 4470H-1016A)
14	3040R-0030A	BASE UP/DOWN(E2, 3040H-1059A)
15	3040R-0029A	BASE MAIN(E2, 3040H-1035B)
16	4974R-0028A	GUIDE UP/DOWN(E2, 4974H-1023A)
20	5040R-0048A	RUBBER FRONT(E2, 5040H-1055A)
21	5040R-0047A	RUBBER REAR(E2, 5040H-1054A)
22	4680R-E002A	MOTOR(MECH) FEEDING RF-300PA-11400 MABUCHI E2(4680HP4001A)
23	4470R-0065A	GEAR PINION(U, E2, 4470H-1123A)
24	4470R-0063A	GEAR RACK(B, E2, 4470H-1121A)
25	6716R-E001A	PICK UP KRS-200A SONY E2(6716HSW201A)
26	4370R-0033A	SHAFT P/U(R/E2, 4370H-1079A)
28	4930R-0194A	HOLDER FFC(E2, 4930H-1063A)
29	4370R-0032A	SHAFT P/U(L/E2, 4370H-1078A)
30	4810R-0076A	BRACKET WEIGHT BALANCER(E2, 4810H-1042A)
31	4680R-C001A	MOTOR(MECH) SPINDLE GRS-R01A LGC&D(E2, 4680HB 1025A)
400	1SZZR-0022A	SCREW D1.7 5MM SWRCH16A/NIY(E2, 1SZZH-1005A)
402	1SZZR-0020A	SCREW D2.0 4.5MM SWRCH16A/ZNY(E2, 1SZZH-1020C)
418	1SZZR-0014A	SCREW D1.7 7MM SWRCH16A/ZNY(E2, 1SZZH-1006A)
420	1SZZR-0016A	SCREW D1.7 4MM SWRCH16A/ZNBK(E2, 4000H-1006A)
431	1SZZR-0013A	SCREW D1.7 5MM SWRCH16A/ZNY(E2, 1SZZH-1004A)
500	1WZZR-0008A	WASHER BLACK Y POLY N(E2, 1WZZH-1009A)

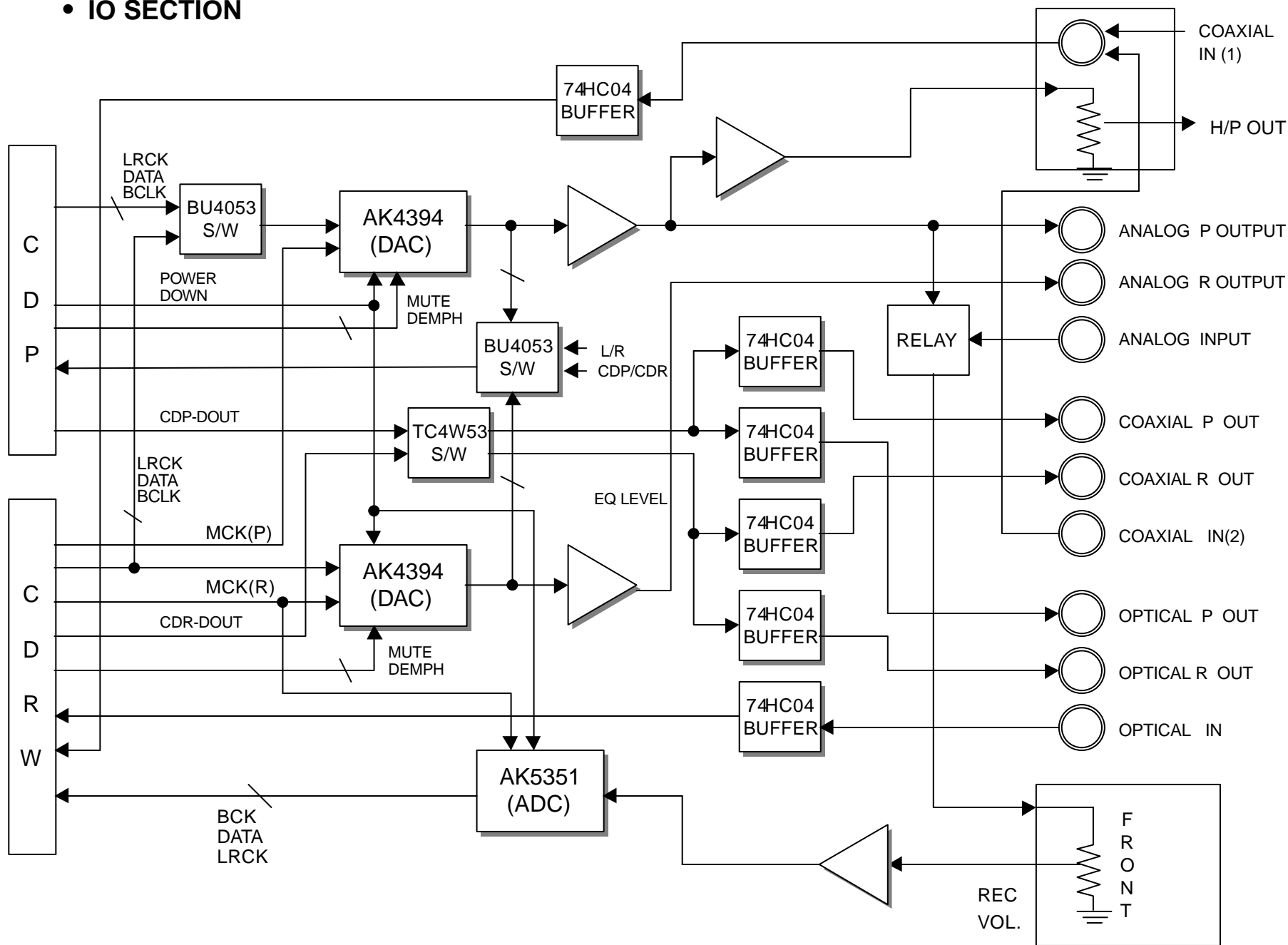
• CD RECORD SECTION



• CD PLAY SECTION

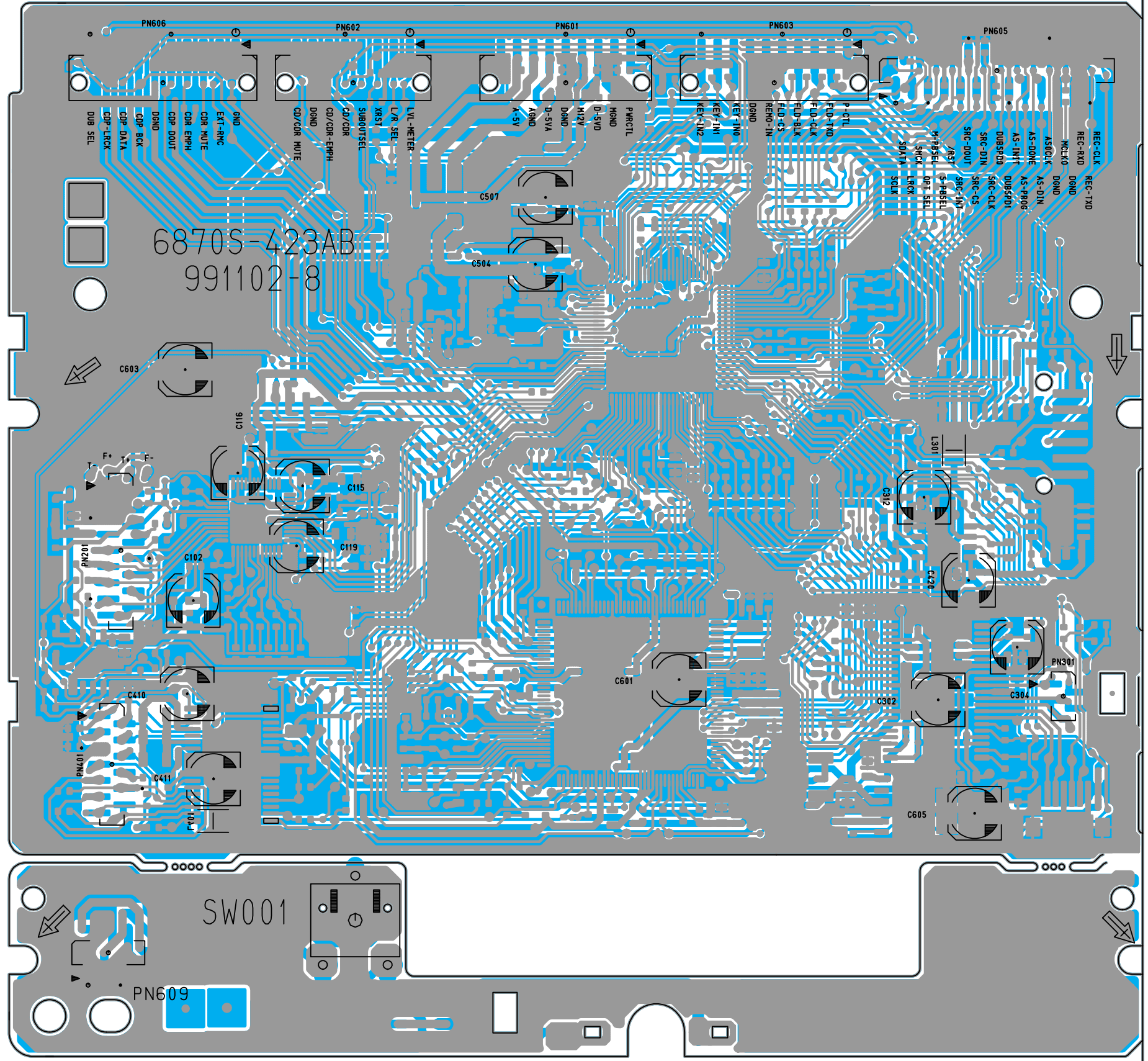


• IO SECTION

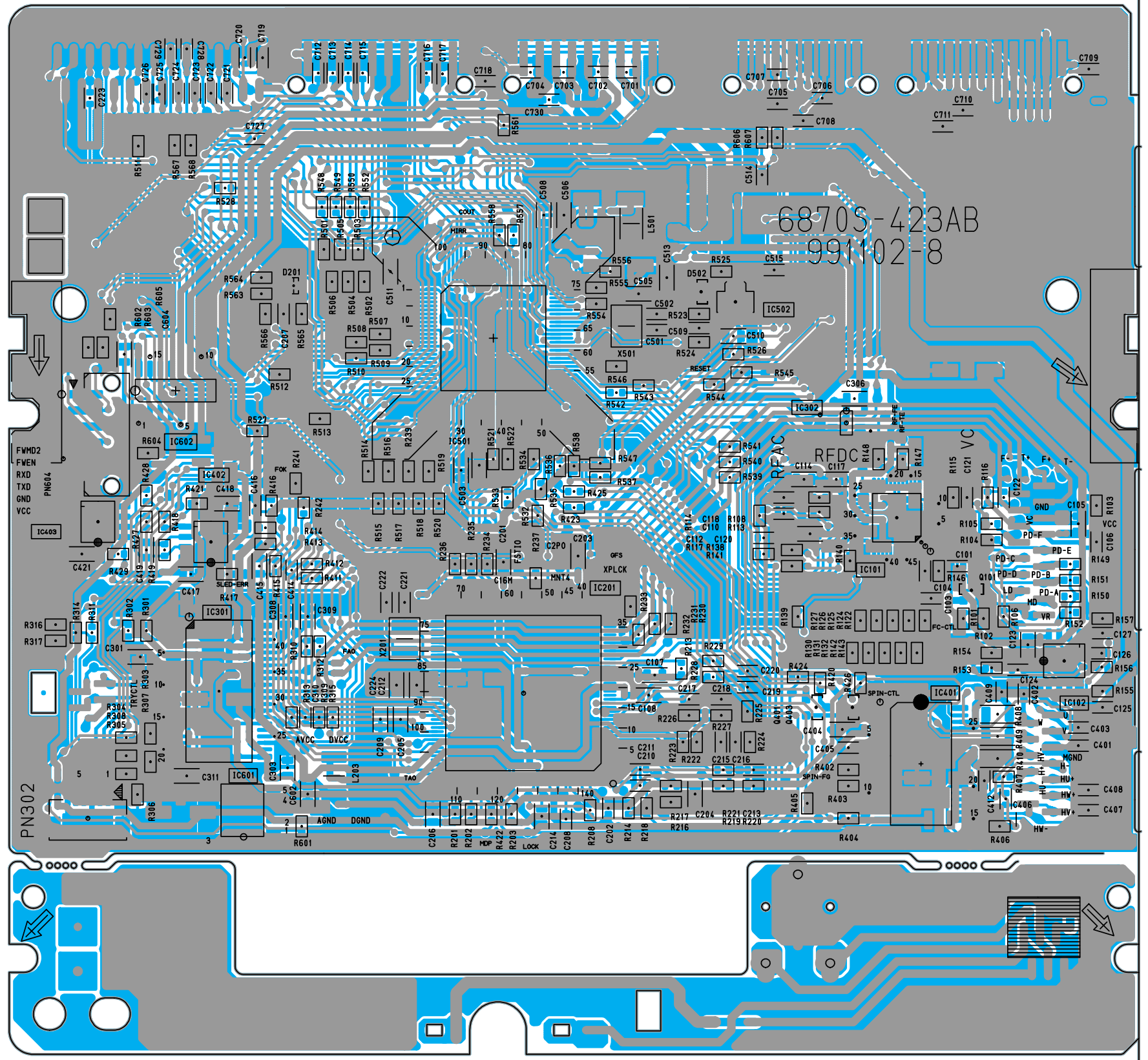


PCB LAYOUT

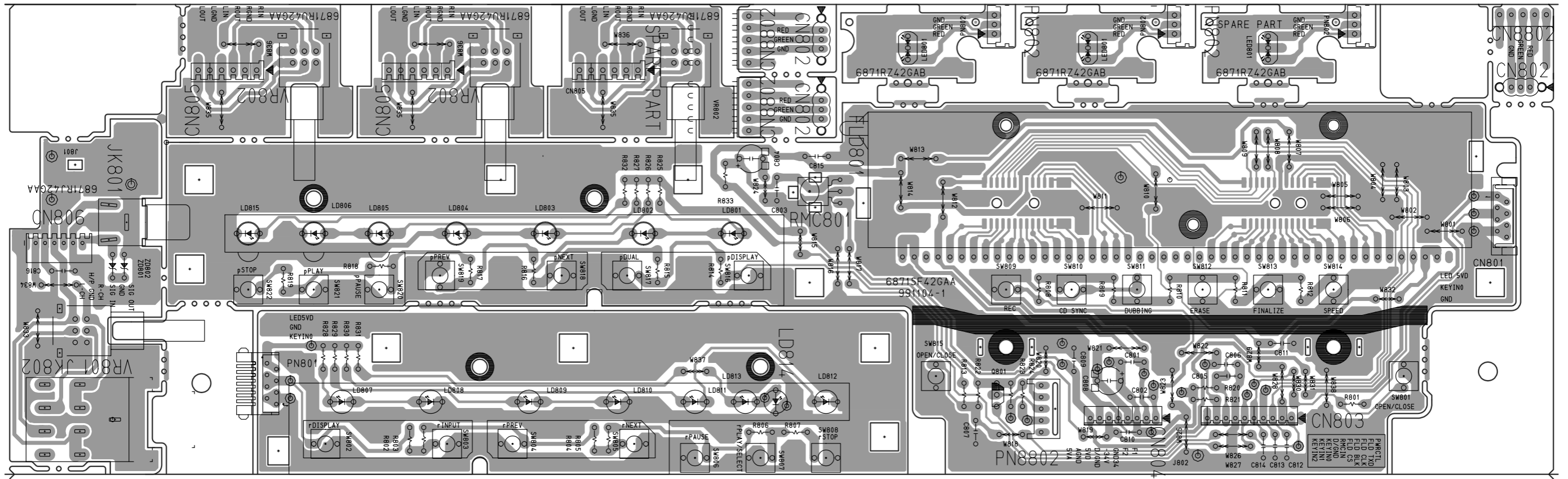
• CD-PLAY TOP SECTION



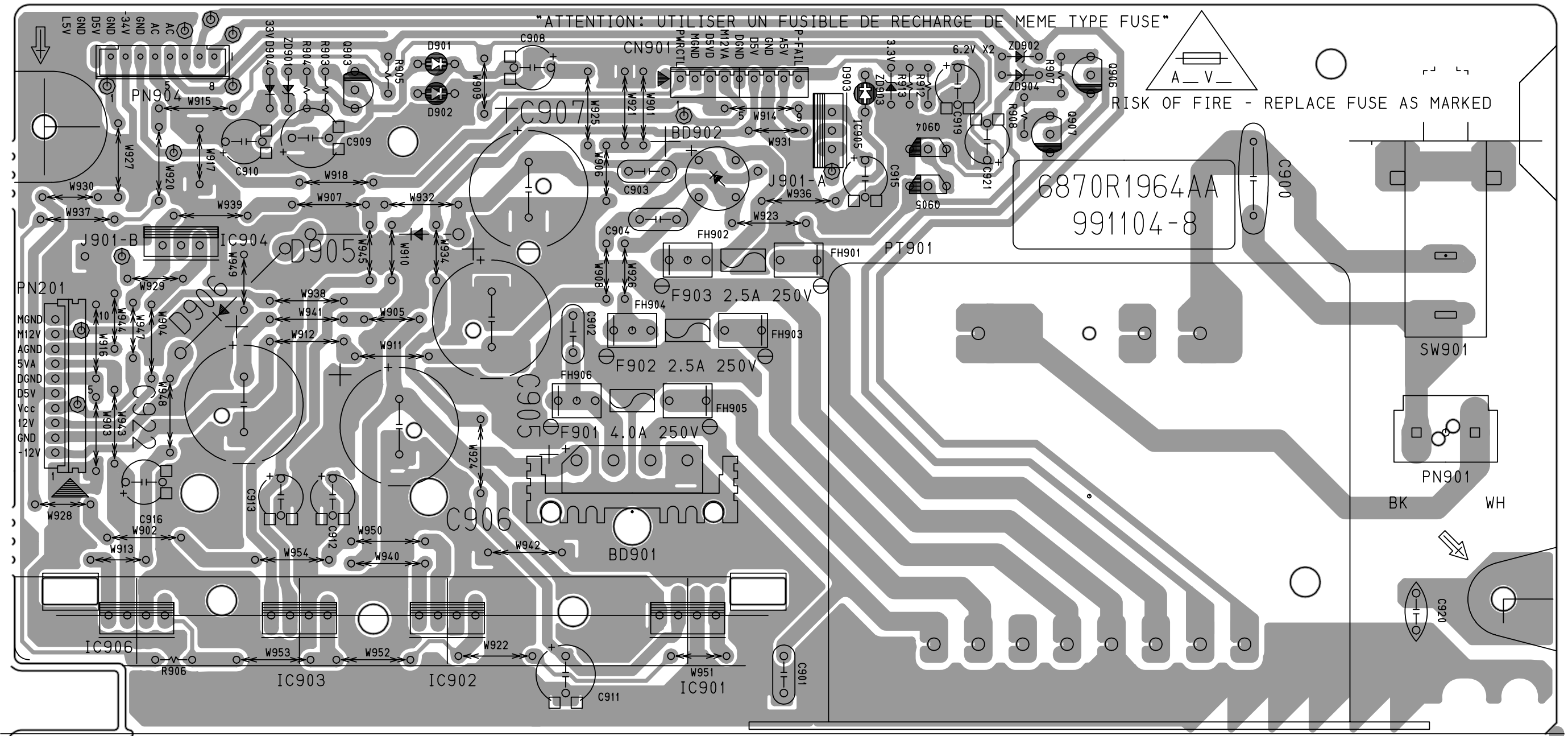
• CD-PLAY BOTTOM SECTION



• FRONT SECTION



• POWER SECTION



Ref. No.	Part No.	Description
CHASSIS MISCELLANEOUS		
	564-036D	PLUG CONTACT CORD,PHONE
	564-036J	CORD DIGIATL 1.5M 1365#30
	6852R-N001A	CORD 1.5M NAMIL REMOTE CONTROL
	255-717A	HEAT SINK DIODE(GSA-PA10/FA-5000)
PT901	6170S-I03AH	TRANSFORMER,POWER
	6850R-GZ20Y	CABLE,FLAT
ACDR I/O PART P.C. BOARD		
CAPACITORS		
C101,106,120,123,127	0CE4766J618	47M SMS 35V M FM(5) TP(5)
C102,104	0CH1102K566	1000PF 50V K X7R(X) 2012 R/TP
C103	0CE4756K618	4.7M SMS 50V M FL TP(5)
C105,108,110,119,122	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C109,239	0CH1103K946	0.01UF 50V Z Y5V(F) 2012 R/TP
C114,115,116,117,131	0CE2266K618	22M SMS 50V M FM5 TP(5)
C118,121,124,125,214	0CH4101K416	100P 50V J NP0 2.0*1.25 R/TP
C126,128,134,135,136	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C129,204,205,209,401	0CE4766J618	47M SMS 35V M FM(5) TP(5)
C130,132,219,240,429	0CH4221K416	220P 50V J 2.0X1.25 R/TP
C133,220,231,425,426	0CE2266K618	22M SMS 50V M FM5 TP(5)
C137,138,139,140,141	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C142,143,144,145,206	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C202,212,411,412,471	0CE1076F618	100M SMS 16V M FM5 TP(5)
C203,218,225,227,416	0CH1821K516	CONDENSER
C207,229,234,238,241	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C208	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C210,211,223,224,408	0CE1076D618	100M SMS 10V M FM5 TP(5)
C213,221,222,415,418	0CH1332K566	3300PF 50V K X7R(X) 2012 R/TP
C217	0CE2276H618	220M SMS 25V FM5 TP(5)
C236,237,427,428	0CQ3921N409	0.0039U 100V J POLY TP
C242,245,402,404,407	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C246,999	0CH1105F946	1UF 16V Z Y5V(F) 2012 R/TP
C247,248,251	0CH4101K416	100P 50V J NP0 2.0*1.25 R/TP
C249	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C250,252	0CH4470K416	47P 50V J NP0 2.0X1.25 R/TP
C405,406	0CE4766J618	47M SMS 35V M FM(5) TP(5)
C409,413,414	0CE1076D618	100M SMS 10V M FM5 TP(5)
C417,419,424	0CH1821K516	CONDENSER
C430	0CH4221K416	220P 50V J 2.0X1.25 R/TP
C472	0CE1076F618	100M SMS 16V M FM5 TP(5)
C473,474	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
COIL,CHOKE		
T101,102	6140R-C001A	T3-300 KWANGSUNG 100UH BULK
CONNECTOR		
CN105	563-602P	GIL-S/GIL-T 6PIN 60M/M UL1571
CN301	561-640J	GL200-10P-TS P=2.0 HOLDER GSC
CN602	563-602M	GS IL-S10/T10 1571#28 320 28 3
CN606	563-602D	P=2.0 GIL-S08/T08 1571#28 280
PN105	6630S-FB07P	00-6232-016-008-800 ELCO KOREA
PN401	561-711F	*WAFER,G/S GIL-S-06P-S2T2-EF
PN501	561-715F	GIL-G-06P-S3T2-E LG CABLE 6PIN

Ref. No.	Part No.	Description
	DIODE	
D201	0DD202009AG	DAN202U-T107 ROHM-J
	FILTER(CIRC)	
L103,104	6200S-JC01A	HB-1M2012-121JT CERATECH SMD T
	INTEGRATED CIRCUITS	
IC101	657-063A	LTV-817B,PHOTO COUPLER(LITEON)
IC102,103	0IJR456500A	NJM4565M-A,OP-AMP,JRC
IC104,404	0IJR553200A	NJM5532 OP AMP JRC
IC105,401	0IAK439320A	AK4393VF-E2 28SOP TP DAC 1K RE
IC106,107	0IPH740400F	74HCU04D SOT108-1 TP INVERTER
IC108,109,110	0IRH405300A	BU4053BCFV 16P,SSOP TP TRIPLE
IC112	0IAK535120A	AK5351VF-E2 24SOP TP ADC 1K RE
IC115	0ISS791200A	KA7912 ST REGULATOR IC
IC406	0IJR456000B	NJM4560M-TE1-DMP,OP AMP.JRC
	JACK	
JK101	6612S-C008A	PJ6031 PARK ELEC 12YEON ACDR
JK102	6612S-A005A	LGA6502-0150 SMK 2YEON .
JK103,104	6620S-L001A	GP1F32T SHARP OPTICAL "H"
JK105	6612S-L001A	GP1F32R SHARP AN
	RELAY	
LY402	6920S-0001A	UD2H-1U-5VDC YUYU 5V 40MA 5V 4
	RESISTORS	
R101,102,103,109	0RH0472D622	47 1/10W 5 D.R/TP
R104,236,237,423,429	0RH4700D622	470 1/10W 5 D.R/TP
R105,106,107,108,111	0RH3300D622	330 1/10W 5 D.R/TP
R110,112,113,114,115	0RH4702D622	47K 1/10W 5 D.R/TP
R116,118,119,124,125	0RH1002D622	10K 1/10W 5 D.R/TP
R117,142,257,262,263	0RH1000D622	100 1/10W 5 D.R/TP
R120,121,133,203,229	0RH4701D622	4.7K 1/10W 5 D.R/TP
R126,127,131,138,141	0RH3301D622	3.3K 1/10W 5 D.R/TP
R128,129,226	0RH2701D622	2.7K 1/10W 5 D.R/TP
R130,205,268	0RH3901D622	3.9K 1/10W 5 D.R/TP
R132,134,427,428	0RH2202D622	22K 1/10W 5 D.R/TP
R135,136,143,144,264	0RH0222D622	22 1/10W 5 D.R/TP
R137,140,202,204,211	0RH1001D622	1.0K 1/10W 5 D.R/TP
R145,146,147,218,225	0RH3301D622	3.3K 1/10W 5 D.R/TP
R201,206,402,403,404	0RH1002D622	10K 1/10W 5 D.R/TP
R208,209,215,216,405	0RH1201D622	1.2K 1/10W 5 D.R/TP
R210,213,217,219,407	0RH1501D622	1.5K 1/10W 5 D.R/TP
R212,214,222,223,224	0RH1001D622	1.0K 1/10W 5 D.R/TP
R228,238,239,401,408	0RH1001D622	1.0K 1/10W 5 D.R/TP
R230,231	0RH2201D622	2.2K 1/10W 5 D.R/TP
R249	0RH4701D622	4.7K 1/10W 5 D.R/TP
R251,252,266,267	0RH0682D622	68 1/10W 5 D.R/TP
R254,259	0RH3300D622	330 1/10W 5 D.R/TP
R255,256,258,260,261	0RH3301D622	3.3K 1/10W 5 D.R/TP
R406,415,416	0RH1201D622	1.2K 1/10W 5 D.R/TP
R413,417,421,422,424	0RH1001D622	1.0K 1/10W 5 D.R/TP
R414,419,420	0RH1501D622	1.5K 1/10W 5 D.R/TP
R425,475,478	0RH1001D622	1.0K 1/10W 5 D.R/TP
R430	0RH4700D622	470 1/10W 5 D.R/TP

Ref. No.	Part No.	Description
R451	0RH1002D622	10K 1/10W 5 D.R/TP
R476,477	0RH0222D622	22 1/10W 5 D.R/TP
	TRANSISTOR	
Q201,205,405	0TR103009AF	KRA103M-TP (KRA2203) KEC
Q202,203,206,401,402	0TR319809AC	KTC3198-TP-BL (KTC1815)KEC
Q204,207,208,403,404	0TR130209AA	KTD1302 MUTING TP KEC TO92
Q410,411	0TR319809AC	KTC3198-TP-BL (KTC1815)KEC
POWER P.C. BOARD		
	CAPACITORS	
C901,902,903,904	0CQ4731N409	0.047U 100V J POLY TP
C905,922	0CE3386H650	3300M SMS 25V M FM7.5
C906,907	0CE688CH650	6800UF SHL 25V M FM7.5 BULK
C908,910,921	0CE4766K618	47M SMS 50V M FM5 TP(5)
C909	0CE1076K618	100UF SMS 50V M FL TP5
C911,912,913,915,916	0CE1076F618	100M SMS 16V M FM5 TP(5)
C919	0CE2256K618	2.2M SMS 50V M FL TP(5)
	CONNECTORS	
CN901	563-602Q	GIL-S/GIL-T 9PIN 60M/M UL1571
PN201	561-644J	52147-1010 K-MOLEX 10PIN 2.0MM
PN901	561-292BAAA	GP390 LGC 3P 3.96 STRAIGHT SN
PN904	561-711HAAA	*WAFER,G/S GIL-S-08P-S2T2-EF
	DIODES	
BD901	0DD604000CB	PBU604(FORMING) BK LITEON 400V
BD902	0DD202000EA	2W02G BK LITEON 200V 2A 60A .S
D901,902,903	0DD352009BA	1SR35-200A T-93X 2K TP ROHM/K
D904	0DD133009AA	1SS133 DETECT,SW TP
D905,906	0DD540200CA	1N5402 BK LITEON DO-201AD 3W 1
ZD901	0DZ330009AH	MTZ33D-T-77 ROHM-K
ZD902,904	0DZ620009AA	MTZ6.2B (TA)
ZD903	0DZ330009CD	MTZJ3.3B TP ROHM-K DO34 0.5W 3
	FUSE & HOLDER	
F901	0FT4001B510	4000MA 250 V 5.2X20 CY/GL ECT
F902,903	0FT2501B510	2.50A 250V 5.2X20 CY/GL
FH901,902,903,904,905	586-008B	FUSE CLIP TP SINSUNG
FH906	586-008B	FUSE CLIP TP SINSUNG
	INTEGRAED CURCUITS	
IC901,902,906	0ISS780500D	KA78R05 TO-220 LD 1A REG
IC903	0ISS781200E	KA78R12 TO-220 LD 1A REGL
IC904	0IKE781200B	KIA7812PI 12V 1A,KEC
IC905	0IKE780500Q	KIA7805API 3P TO-220 ST REGULA
	RESISTORS	
R903,907,908	0RD1002F608	10K 1/6W 5 TA26
R904	0RD1500F608	150 1/6W 5 TA26
R906	0RD1201F608	1.2K 1/6W 5 TA26
R912	0RD2201F608	2.2K 1/6W 5 TA26
R913	0RD5601F608	5.6K 1/6W 5 TA26
	SWITCH	
SW901	6600R-PV01A	SDDL1PASL021 POSTEC UL/CSA 250
	TRANSISTOR	
Q903	0TR127109AA	KTA1271-TP-Y (KTA950)KEC
Q904	0TR103009AF	KRA103M-TP (KRA2203) KEC

Ref. No.	Part No.	Description
Q905	0TR103009AE	KRC103M-TP (KRC1203) KEC
Q906,907	0TR130209AA	KTD1302 MUTING TP KEC TO92
FRONT P.C. BOARD		
CAPACITORS		
C801,802,809,810	0CN1040K948	0.1UF 50V Z F TA26 D
C804	0CE1073F638	100M SRE 16V M FM5 TP(5)
C805,806,807	0CN2230H948	0.022M 25V Z F TA26
C811,812,813,814	0CN1010K418	100PF 50V J B TA26
CONNECTOR		
CN801	6630S-BC02H	B TO B P=1.25 8 PIN, 53045-081
CN803	563-602M	GS IL-S10/T10 1571#28 320 28 3
CN804	563-602D	P=2.0 GIL-S08/T08 1571#28 280
PN801	6630S-BC01H	B TO B P=1.25 8 PIN, 52061-081
PN8802	6630R-BF03E	JE121-05 JAE EUN 5PIN 2.54MM B
DIGITRON		
FLD801	6302S-V007A	16BT-72GNK FUTABA CDR-600
INTEGRAED CURCUITS		
IC801,802	0IMA125110A	MN12511 SOP024 TP FLD DRIVE
RMC801	0IRH693840A	RPM6938-V4 3P BK REMOCON MODUL
LED		
LD801,802,803,804,805	0DL341829AA	SM3418F2T TP AUK GREEN .
LD806,807,808,809,810	0DL341829AA	SM3418F2T TP AUK GREEN .
LD811,812,813,814,815	0DL341829AA	SM3418F2T TP AUK GREEN .
RESISTORS		
R801,802,808,809,813	0RD2201F608	2.2K 1/6W 5 TA26
R803,810,815	0RD3301F608	3.3K 1/6W 5 TA26
R804,811,816	0RD4701F608	4.7K 1/6W 5 TA26
R805,812,817	0RD5601F608	5.6K 1/6W 5 TA26
R806,818	0RD8201F608	8.2K 1/6W 5 TA26
R807,819	0RD1502F608	15K 1/6W 5 TA26
R814	0RD2201F608	2.2K 1/6W 5 TA26
R820,821,822	0RD1802F608	18K 1/6W 5 TA26
R823,824	0RD1500F608	150 1/6W 5 TA26
R825,826,827,828,829	0RD0182F608	18 1/6W 5 TA26
R830	0RD0182F608	18 1/6W 5 TA26
R831	0RD0332F608	33 1/6W 5 TA26
R832	0RD0822F608	82 1/6W 5 TA26
R833	0RD1000F608	100 1/6W 5 TA26
SWITCH		
SW801,802,803,804,805	558T026A	EVQ-214 04M MATSUSHITA NON 0V
SW806,807,808,809,810	558T026A	EVQ-214 04M MATSUSHITA NON 0V
SW811,812,813,814,815	558T026A	EVQ-214 04M MATSUSHITA NON 0V
SW816,817,818,819,820	558T026A	EVQ-214 04M MATSUSHITA NON 0V
SW821,822	558T026A	EVQ-214 04M MATSUSHITA NON 0V
TRANSISTOR		
Q801	0TR102009AE	KRA102M (KRA2202) TP KEC TO
VOLUME P.C. BOARD		
VR802	6110R-RK01B	VOLUME,ROTARY
HEADPHONE P.C. BOARD		
CAPACITORS		
C816	0CN1040K948	0.1UF 50V Z F TA26 D

Ref. No.	Part No.	Description
	CONNECTOR	
CN806	6631R-E006A	IL-S/9073AN 6PIN 400M/M UL2547
J801	563-638E	SPECIAL RING TER. AY 1007#24 G
	DIODE	
ZD801,802	0DZ510009EB	MTZ5.1B 0.5W TP ROHM-K
	JACK	
JK802	572-359J	SOQ4694-01-4101 K-HOSIDEN H=6.
JK801	6612S-C004A	WA6013-35-40 PARK ELEC ORANGE
	VOLUME,ROTARY	
VR801	6110R-RK01A	RK09L12B0-500BX2 J-ALPS D=9 H
LED P.C. BOARD		
PN802	561-643C	CONNECTOR 52151-0310 3PIN 2.0MM
LED801	0DL325319AA	LED SPR325MVWT31 GREEN/RED
PLAY P.C. BOARD		
	CAPACITORS	
C101,220,223,514,704	0CH1103K562	10000F 50V K X7R(X) 1508 R/TP
C102,116,119,312,420	0CH8107C621	100UF 6.3V M 85STD(CYL) R/TP
C103	0CH1105D942	1UF 10V Z Y5V(F) 1508 R/TP
C104,106,118,210,213	0CH1104K942	0.1UF 50V Z Y5V(F) 1508 R/TP
C105,120,123,201,203	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C107,108,114,117,204	0CH1105F946	1UF 16V Z Y5V(F) 2012 R/TP
C115,411,601	0CH8476F621	47UF 16V M 6666 R/TP
C121,122,207,211,712	0CH4101K412	100P 50V J COG 1.6X0.8 R/TP
C125,126,127	0CH1222K512	2200PF 50V K B 1608 R/TP
C202	0CH4471K412	470PF 50V J NP0 1508 R/TP
C205,212,301,303,308	0CH1105F946	1UF 16V Z Y5V(F) 2012 R/TP
C206,209,214,224,306	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C208,218	0CH4221K412	220P 50V J COG 1.6X0.8 R/TP
C215,219,414	0CH1473H942	0.0470UF 25V Z Y5V(F) 1608 R/T
C216	0CH4151K412	150P 50V J COG 1.6X0.8 R/TP
C217	0CH1332K562	3300P 50V K X7R 1.6X0.8 R/TP
C221,222	0CH4220K442	22PF 50V J N220 1508 R/TP
C304	0CH8227C621	220000000F 6.3V M 105STD(CYL)
C309,510	0CH1105F946	1UF 16V Z Y5V(F) 2012 R/TP
C310	0CH1122K562	1200P 50V K X7R 1.6X0.8 R/TP
C311,404,417,421,503	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C401,402,403,405,406	0CH1104K942	0.1UF 50V Z Y5V(F) 1508 R/TP
C407,408,409,412,509	0CH1104K942	0.1UF 50V Z Y5V(F) 1508 R/TP
C410	0CH8107F621	100UF 16V M 6666 R/TP
C415,416	0CH1823K946	0.0820UF 50V Z Y5V(F) 2012 R/T
C418	0CH1152K566	1500PF 50V K X7R(X) 2012 R/TP
C419	0CH1683H566	0.0680UF 25V K X7R(X) 2012 R/T
C501,502	0CH4150K472	15PF 50V J N750 1508 R/TP
C504,507,603	0CH8107C621	100UF 6.3V M 85STD(CYL) R/TP
C505,506,508,511,513	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C515,602,701,702,703	0CH1104K942	0.1UF 50V Z Y5V(F) 1508 R/TP
C604	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C705,706,707,708,709	0CH1103K562	10000F 50V K X7R(X) 1508 R/TP
C710,711,716,717,718	0CH1103K562	10000F 50V K X7R(X) 1508 R/TP
C713,714,715,724,725	0CH4101K412	100P 50V J COG 1.6X0.8 R/TP
C719,720,721,722,723	0CH1103K562	10000F 50V K X7R(X) 1508 R/TP

Ref. No.	Part No.	Description
C726,727,728,729	0CH4101K412	100P 50V J COG 1.6X0.8 R/TP
	COIL	
L301,401	6140H-B003G	NLC322522T-100K 10MH TDK
L501	6140H-B003G	NLC322522T-100K 10MH TDK
	CONNECTOR	
PN201	6630R-FB02Q	04-6232-117-008-800 ELCO 17PIN
PN301	6630R-FB02D	04-6232-104-008-800 ELCO 4PIN
PN302	6630R-FB06F	04-6232-106-102-800 ELCO 6PIN
PN401	6630R-FB02M	04-6232-113-008-800 ELCO 13PIN
PN601	6630R3S006E	GT200 LG CABLE 9PIN 2MM STRAIG
PN602	6630R3S006D	GT200 LG CABLE 8PIN 2.0MM STRA
PN603,606	6630R3S006C	GT200 LG CABLE 10PIN 2.0MM STR
PN604	6630R3S006A	GT200 LG CABLE 6PIN 2.0MM STRA
PN605	6630HXC126A	04-6232-126-008-800 ELCO 26PIN
PN609	6630R-FB02F	04-6232-106-008-800 ELCO 6PIN
	DIODE	
D201	0DS121009AA	KDS121 TP KEC UMT 85V 300MA 2A
D502	0DD187009AC	KDS187 CHIP KEC TP KEC
	FILTER(CIRC)	
L203	6140H-A001A	BEAD C,HH-1H4532-121JT.CERATEH
	INTEGRAED CURCUITS	
IC101	0ISO255700A	CXA2557R 48 QFP BK RF
IC102,402,403	0IJR210000A	NJM2100M-TE1-DMP,OP AMP,JRC
IC201	0ISO301110A	CXD3011R-1 144,LQFP BK DSP
IC301	0IMI567880A	M56788FP 42 SSOP TP DRIVE
IC302	0ITO453000C	TC4W53FU SSOP 8PIN
IC401	0ISA119950A	LB11995H-TLM 28P HSOP TP MOTOR
IC501	0IHI643062A	HD64F3062FBL20 FB-100B BK CD-R
IC502	0ITR613002C	XC61AN3002PR(SOT89) 3V 3K/TP
IC601	0IRH393900A	BA3939FP-E2
IC602	0IRH405320A	BU4053BCF-E2 16PIN,SOIC TP TTL
	RESISTORS	
R101,102,103	0RH0222C622	22 1/16W 5 D.R/TP
R104,105,217,402	0RH4702C622	47K 1/16W 5 D.R/TP
R106,108,147,148,554	0RH0000C622	0 1/16W 5 D.R/TP
R113,140,303,428,514	0RH1001C622	1K 1/16W 5 D.R/TP
R114,117,201,213,310	0RH2202C622	22K 1/16W 5 D.R/TP
R115,116,156,157,229	0RH1003C622	100K 1/16W 5 D.R/TP
R122,419,420	0RH3902C622	39K 1/16W J D.R/TP
R124,125,126,127,131	0RH1002C622	10K 1/16W 5 D.R/TP
R130,426	0RH5601C622	5.6K 1/16W 5 D.R/TP
R132,304	0RH2701C622	2.7K 1/16W 5 D.R/TP
R138,141,203,214,224	0RH1002C622	10K 1/16W 5 D.R/TP
R139	0RH3901C622	3.9K 1/16W 5 D.R/TP
R142,222,223,411,412	0RH3301C622	3.3K 1/16W 5 D.R/TP
R146,427,429	0RH2201C622	2.2K 1/16W 5 D.R/TP
R150,151,153,422,525	0RH2702C622	27K 1/16W 5 D.R/TP
R155	0RH6802C622	68K 1/16W 5 D.R/TP
R202,208,216,227,315	0RH3302C622	33K 1/16W 5 D.R/TP
R218,302,308	0RH1503C622	150K 1/16W 5 D.R/TP
R219,566	0RH4703C622	470K 1/16W 5 D.R/TP

Ref. No.	Part No.	Description
R220	0RH1504C622	1.50M 1/16W 5% D R/TP
R221	0RH2203C622	220K 1/16W 5 D.R/TP
R228,421,423,425,523	0RH1002C622	10K 1/16W 5 D.R/TP
R230,231	0RH2200C622	220 1/16W 5 D.R/TP
R232,233,406,407,565	0RH1500C622	150 1/16W 5 D.R/TP
R234,417,524,541,542	0RH4700C622	470 1/16W 5 D.R/TP
R235,236,239,241,242	0RH1000C622	100 1/16W 5 D.R/TP
R237	0RH6800C622	680 1/16W 5 D.R/TP
R301,307	0RH5602C622	56K 1/16W 5 D.R/TP
R305,306,563,564	0RH1003C622	100K 1/16W 5 D.R/TP
R311,314,403,404,405	0RH1000C622	100 1/16W 5 D.R/TP
R312,424	0RH1502C622	15K 1/16W 5 D.R/TP
R313,316,317,418,538	0RH2202C622	22K 1/16W 5 D.R/TP
R408,409,410	0RH0101G622	1 OHM 1 / 4 W 3216 5% D R/TP
R413,414,522,533	0RH3301C622	3.3K 1/16W 5 D.R/TP
R415,416	0RH8201C622	8.2K 1/16W 5 D.R/TP
R501,504,505,506,512	0RH3300C622	330 1/16W 5 D.R/TP
R502,503,507,508,509	0RH1000C622	100 1/16W 5 D.R/TP
R510,536,537,544,547	0RH1000C622	100 1/16W 5 D.R/TP
R513,518,519,520,527	0RH3300C622	330 1/16W 5 D.R/TP
R515,516,517,521	0RH1001C622	1K 1/16W 5 D.R/TP
R526	0RH8202C622	82K 1/16W 5 D.R/TP
R528,534,539,540	0RH1002C622	10K 1/16W 5 D.R/TP
R535,543,545,546,548	0RH3300C622	330 1/16W 5 D.R/TP
R549,550,552,561	0RH3300C622	330 1/16W 5 D.R/TP
R555	0RH0000C622	0 1/16W 5 D.R/TP
R556,601	0RH4701C622	4.7K 1/16W 5 D.R/TP
R557,558,567,568,602	0RH1000C622	100 1/16W 5 D.R/TP
R603,604,605,606,607	0RH1000C622	100 1/16W 5 D.R/TP
	RESONATOR	
X501	6212HA0202A	CSACV20.00MXJ040-TC20 MURATA 2
X201	6212HA3382A	CSACV33.86MX040-TC20 MURATA 33
	TRANSISTOR	
Q101	0TR103709BB	2SA1037K-Q CHIP ROHM-J
Q401,403	0TR130409BA	KTD1304S TP KEC SOT-23 MUTING

REC P.C. BOARD

CAPACITORS

C102,656	0CH1105F946	1UF 16V Z Y5V(F) 2012 R/TP
C103,108,923,940	0CH8107F621	100UF 16V M 6666 R/TP
C107	0CH8227C621	220000000F 6.3V M 105STD(CYL)
C109,301,302,303,304	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C111	0CH7476C621	47UF 6.3V M 3528 TP(-)
C112,113,212,216,217	0CH1104H942	0.1000UF 25V Z Y5V(F) 1508 R/T
C114,201,204,213,214	0CH1104K942	0.1UF 50V Z Y5V(F) 1508 R/TP
C117,240,253,305,306	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C202,203	0CH4150K412	15P 50V J COG 1.6X0.8 R/TP
C205,206	0CH4050K012	0.5F 50V C NP0 1508 R/TP
C207	0CH4101K412	100P 50V J COG 1.6X0.8 R/TP
C208,318,324,624	0CH4101K412	100P 50V J COG 1.6X0.8 R/TP
C209,267,401,531,588	0CH7106C611	10UF 6.3V M 3216 TP(-)
C210	0CH1683F562	68000F 16V K X7R(X) 1508 R/TP

Ref. No.	Part No.	Description
C211	0CH1822K562	8200P 50V K X7R 1.6X0.8 R/TP
C215,294,297,331,332	0CH1103K562	10000F 50V K X7R(X) 1508 R/TP
C218,219,220,222,223	0CH1104H942	0.1000UF 25V Z Y5V(F) 1508 R/T
C225,226,227,228,231	0CH1104H942	0.1000UF 25V Z Y5V(F) 1508 R/T
C232,233,234,235,236	0CH1104H942	0.1000UF 25V Z Y5V(F) 1508 R/T
C237,239,264,271,272	0CH1104H942	0.1000UF 25V Z Y5V(F) 1508 R/T
C250,251,252,255,256	0CH1104K942	0.1UF 50V Z Y5V(F) 1508 R/TP
C254,402,522,533,540	0CH7106C611	10UF 6.3V M 3216 TP(-)
C257,283,284,406,408	0CH1104K942	0.1UF 50V Z Y5V(F) 1508 R/TP
C281,282,701,702,760	0CH4220K412	22P 50V J COG 1.6X0.8 R/TP
C291,403,404,409,414	0CH1104H942	0.1000UF 25V Z Y5V(F) 1508 R/T
C307,308,311,312,321	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C309,310,313,314,316	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C315,319,338,339,340	0CH4101K416	100P 50V J NP0 2.0*1.25 R/TP
C317,327,329,657	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C320,322,335,851,852	0CH7106F621	10UF 16V M 3528MM TP(-)
C323,325,334,336,576	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C326,330,559,958	0CH7106F621	10UF 16V M 3528MM TP(-)
C333	0CH7474H611	0.47UF 25V M 3216 TP(-)
C407	0CH1182K562	1800P 50V K X7R 1.6X0.8 R/TP
C415,502,616	0CH4221K412	220P 50V J COG 1.6X0.8 R/TP
C501,503,623,637,640	0CH1105F946	1UF 16V Z Y5V(F) 2012 R/TP
C504,513,514,517,518	0CH1104K942	0.1UF 50V Z Y5V(F) 1508 R/TP
C506,567	0CH1473H942	0.0470UF 25V Z Y5V(F) 1608 R/T
C510	0CH1471K562	470P 50V K X7R 1.6X0.8 R/TP
C511,634,635,636	0CH1224H946	0.2200UF 25V Z Y5V(F) 2012 R/T
C512,563,564,602,606	0CH1103K562	10000F 50V K X7R(X) 1508 R/TP
C515,516,523,560,562	0CH1104H942	0.1000UF 25V Z Y5V(F) 1508 R/T
C519,521,524,526,527	0CH1104K942	0.1UF 50V Z Y5V(F) 1508 R/TP
C525,622,930	0CH1682K562	6800P 50V K X7R 1.6X0.8 R/TP
C529,530	0CH4221K412	220P 50V J COG 1.6X0.8 R/TP
C532,587,601,603,608	0CH1104K942	0.1UF 50V Z Y5V(F) 1508 R/TP
C551,552,553,625,647	0CH1473H942	0.0470UF 25V Z Y5V(F) 1608 R/T
C557,565,574	0CH1472K562	4700F 50V K X7R(X) 1508 R/TP
C566	0CH1474H946	0.4700UF 25V Z Y5V(F) 2012 R/T
C569,583,592,595,596	0CH1104H942	0.1000UF 25V Z Y5V(F) 1508 R/T
C571,585	0CH1222K562	2200F 50V K X7R(X) 1508 R/TP
C577,578	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C591,906,907	0CH1332K562	3300P 50V K X7R 1.6X0.8 R/TP
C597,611,630,661,696	0CH1104H942	0.1000UF 25V Z Y5V(F) 1508 R/T
C598,613,617,628,655	0CH7106C611	10UF 6.3V M 3216 TP(-)
C599	0CH4151K412	150P 50V J COG 1.6X0.8 R/TP
C604	0CH4331K412	330P 50V J COG 1.6X0.8 R/TP
C607,615,618,662,664	0CH7106C611	10UF 6.3V M 3216 TP(-)
C609,651,671,678,682	0CH1104K942	0.1UF 50V Z Y5V(F) 1508 R/TP
C612,642	0CH4331K412	330P 50V J COG 1.6X0.8 R/TP
C614	0CH4070K112	7P 50V D COG 1.6X0.8 R/TP
C619,620,621	0CH1224H946	0.2200UF 25V Z Y5V(F) 2012 R/T
C626	0CH1333K562	0.033UF 50V K X7R(X) 1508 R/TP
C631,632,654,705,706	0CH1103K562	10000F 50V K X7R(X) 1508 R/TP
C633,638	0CH1474H946	0.4700UF 25V Z Y5V(F) 2012 R/T

Ref. No.	Part No.	Description
C639	0CH1681K562	680P 50V K X7R 1.6X0.8 R/TP
C644	0CH4100K172	10P 50V D N750 1.6X0.8 R/TP
C650	0CH7476C621	47UF 6.3V M 3528 TP(-)
C663,695,865	0CH7106C611	10UF 6.3V M 3216 TP(-)
C672,673,676,857,858	0CH7106C611	10UF 6.3V M 3216 TP(-)
C685,691,692,707,709	0CH1104K942	0.1UF 50V Z Y5V(F) 1508 R/TP
C686,687,688	0CH1102K562	4.6566128752458E-007F 50V K X7
C697,710,855,856,903	0CH1104H942	0.1000UF 25V Z Y5V(F) 1508 R/T
C703,704	0CH4470K442	47PF 50V J N220 1508 R/TP
C711,712,770,861,862	0CH1104K942	0.1UF 50V Z Y5V(F) 1508 R/TP
C761	0CH4100K172	10P 50V D N750 1.6X0.8 R/TP
C859,860,918,932,934	0CH7106C611	10UF 6.3V M 3216 TP(-)
C863,922,926,927,953	0CH7106F621	10UF 16V M 3528MM TP(-)
C864,901	0CH1103K562	10000F 50V K X7R(X) 1508 R/TP
C902,904	0CH1103K562	10000F 50V K X7R(X) 1508 R/TP
C917,928,935,937,952	0CH1104H942	0.1000UF 25V Z Y5V(F) 1508 R/T
C929,933,941,942	0CH1104K942	0.1UF 50V Z Y5V(F) 1508 R/TP
C936	0CH1682K562	6800P 50V K X7R 1.6X0.8 R/TP
C957,963,964,965,966	0CH1104H942	0.1000UF 25V Z Y5V(F) 1508 R/T
C959	0CH4330K442	33PF 50V J N220 1508 R/TP
C960,979	0CH7106F621	10UF 16V M 3528MM TP(-)
	COIL	
L306,308,601	6140H-B003G	NLC322522T-100K 10MH TDK
L302,304,401,502,504	6140H-B003G	NLC322522T-100K 10MH TDK
L505,602,901	6140H-B003G	NLC322522T-100K 10MH TDK
	CONNECTOR	
CN101	561-712D	*WAFER GS GO;-S-04P-S2L2-EF
CN102	6630R-FB02P	04-6232-116-008-800 ELCO 16PIN
CN502	6630R-FB02K	04-6232-111-008-800 ELCO 11PIN
CN601	6630HXE232A	52559-3292 MOLEX 32PIN 0.5MM S
CN901	6630R-FB02H	04-6232-108-008-800 ELCO 8PIN
PN105	6630R3S006A	GT200 LG CABLE 6PIN 2.0MM STRA
PN201	6630R3S006A	GT200 LG CABLE 6PIN 2.0MM STRA
PN605	6630HXC126A	04-6232-126-008-800 ELCO 26PIN
	DIODE	
D101,504,701,702	0DD187009AC	KDS187 CHIP KEC TP KEC
D203	0DS121009AA	KDS121 TP KEC UMT 85V 300MA 2A
D602,603,604	0DD187009AC	KDS187 CHIP KEC TP KEC
	FILTER(CIRC)	
L103,113	6140H-A001A	BEAD C,HH-1H4532-121JT.CERATEH
L301	6140H-A001A	BEAD C,HH-1H4532-121JT.CERATEH
L604	6200S-JC01A	HB-1M2012-121JT CERATECH SMD T
	INTEGRAED CURCUITS	
IC101	0ITR613002C	XC61AN3002PR(SOT89) 3V 3K/TP
IC102	0IRH033000A	BA033SFP P/MOLD-5 TP REGULATOR
IC201	0IAL936610B	AT93C66-10SC 8PSOIC TP EEPROM
IC202	0IHI643062A	HD64F3062FBL20 FB-100B BK CD-R
IC204,205	0IFA743770D	74AC377MTCX 20TSSOP TP OCT D-F
IC208,607,907	0ITO453000C	TC4W53FU SSOP 8PIN
IC209	0IRI580800A	RL5E808 176 LQFP BK CD-RW CONT
IC210	0IGS711816P	GM71C18163C TSOP2 TP 5V 60N 1M

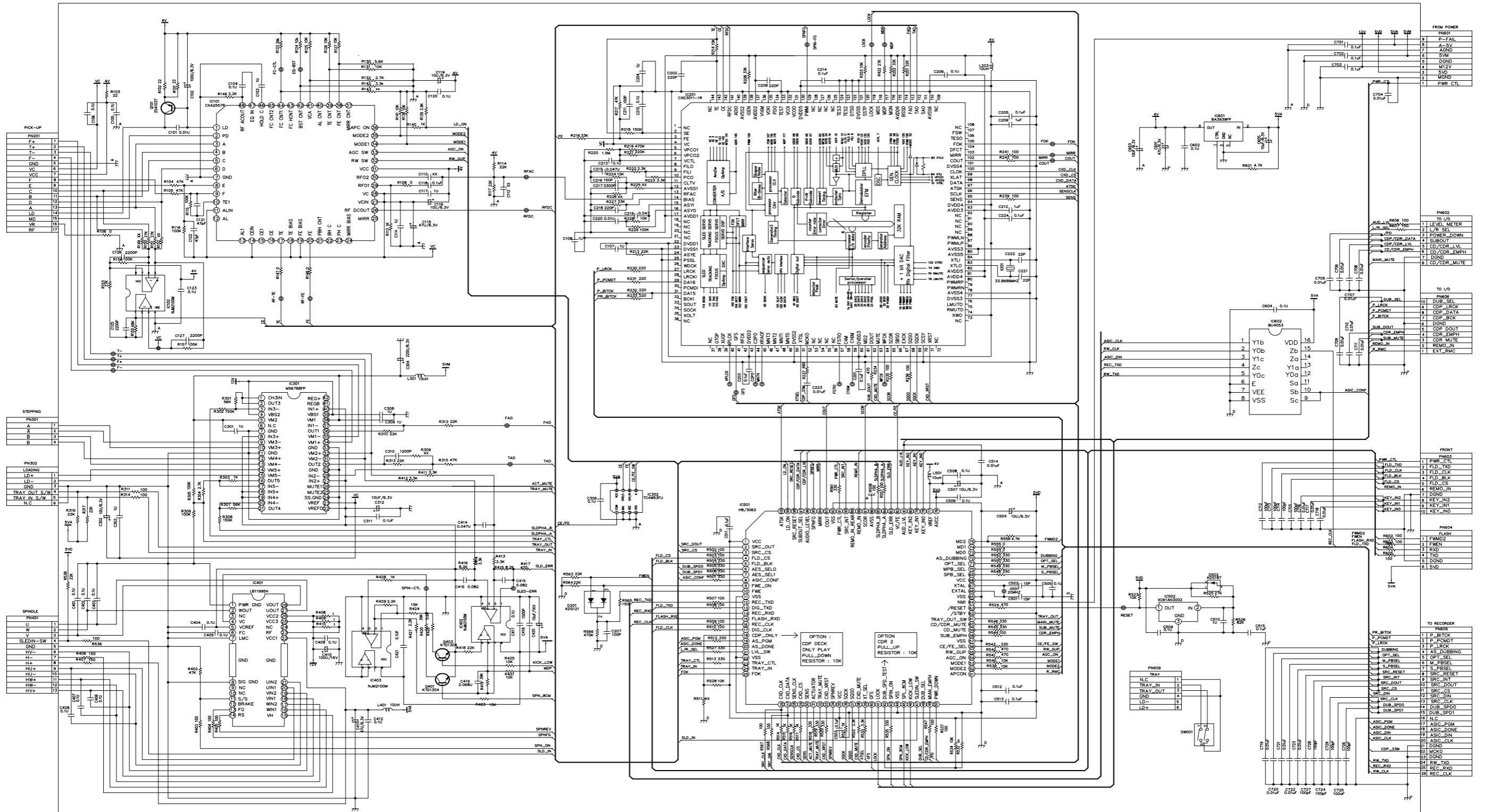
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IC211,405	0INS740400Y	74VHC04MTCX 14TSSOP TP HEX INV
IC212,555,761,854	0ITO453000C	TC4W53FU SSOP 8PIN
IC213	0INS704500C	NC7SZ04M5X 5P SOT23-5 TP INVER
IC214	0ITO704000A	TC7S04F INVERTER(GE85L)
IC301	0IXL103144A	XCS10-3TQ144C 144QFP BK FPGA
IC302	0IW1242573A	W24257AS-35 (TAPE&REEL) 1K/TP
IC303,507	0ITO704000A	TC7S04F INVERTER(GE85L)
IC304,305	0IRH405320A	BU4053BCF-E2 16PIN,SOIC TP TTL
IC306	0ICB842000A	CS8420-CS 28L SOIC TP DIGITAL
IC307	0IRH405300A	BU4053BCFV 16P,SSOP TP TRIPLE
IC401,404,407	0INS740800P	74VHC08MTCX 14TSSOP TP QUAD 2-
IC402	0ITO786000C	TC7SH86F SSOP 5P TP EX-OR GATE
IC403,553,603	0IRH405300A	BU4053BCFV 16P,SSOP TP TRIPLE
IC406,609,905	0INS786500A	NC7SZ86M5X 5P SOT23-5 TP 2-INP
IC409	0INS743200S	74VHC32MTCX 14TSSOP TP QUAD 2-
IC501	0ISO301110A	CXD3011R-1 144,LQFP BK DSP
IC503	0IMI623520B	M62352GP 20P SSOP TP 8BITS 12C
IC506,614	0ITO466000F	TC4W66FU SSOP8-P TP DUAL S/W
IC551	0ISA119950A	LB11995H-TLM 28P HSOP TP MOTOR
IC552,610,910	0IJR340300A	NJM3403AV-TE1 OP AMP
IC556	0IJR210000B	NJM2100V DUAL OP AMP,JRC
IC601	0IAK856300A	AK8563 80,LQFP BK ANALOG SIGSA
IC604	0IET224500A	EL2245CS SO8 TP ALPC 2CH OP AM
IC605	0IRH406600A	BU4066BCFV. 14P,SSOP TP QUAD A
IC608,702,912	0IJR341400C	NJM3414AM-TE1,3K/REEL. JRC
IC617,703,904	0IJR290300D	NJM2903V-TE1 8P SSOP TP COMPAR
IC701,903	0IJR340300A	NJM3403AV-TE1 OP AMP
IC760	0ITO708000D	TC7W08FUDUAL 2 INPUT AND GATE
IC851	0IRH393900A	BA3939FP-E2
IC852,853,913	0IJR341400C	NJM3414AM-TE1,3K/REEL. JRC
IC901	0ISA654300A	LA6543M-TLM MFP-36S-LF TP 4CH
IC902,909	0IJR780800C	NJM7808DLA 3 TP REGULATOR
IC908	0ITO466000F	TC4W66FU SSOP8-P TP DUAL S/W
	INDUCTOR	
L501	0LCZB00005A	HB-1M1608-601JT CERATECH 600 O
	RESISTORS	
R101	0RH8202C622	82K 1/16W 5 D.R/TP
R102,238,417,580,611	0RH0000C622	0 1/16W 5 D.R/TP
R103,711	0RH2702C622	27K 1/16W 5 D.R/TP
R106,221,222,234,235	0RH1002C622	10K 1/16W 5 D.R/TP
R110,111,113,114,226	0RH1000C622	100 1/16W 5 D.R/TP
R112,202,229,245,246	0RH1000C622	100 1/16W 5 D.R/TP
R118,252,276,334,574	0RH4701C622	4.7K 1/16W 5 D.R/TP
R201,525,533	0RH1001C622	1K 1/16W 5 D.R/TP
R203,367,401,414,521	0RH1001C622	1K 1/16W 5 D.R/TP
R204,258,410,415,549	0RH0000C622	0 1/16W 5 D.R/TP
R205,380	0RH1500C622	150 1/16W 5 D.R/TP
R206,516,517,550	0RH0472C622	47 1/16W 5 D.R/TP
R209,331,581,587,625	0RH4701C622	4.7K 1/16W 5 D.R/TP
R210,270,271,509,534	0RH1002C622	10K 1/16W 5 D.R/TP
R211,375	0RH3300C622	330 1/16W 5 D.R/TP

Ref. No.	Part No.	Description
R223,224	0RH4700C622	470 1/16W 5 D.R/TP
R227,228,230,231,232	0RH1000C622	100 1/16W 5 D.R/TP
R233,236,237,241,242	0RH1000C622	100 1/16W 5 D.R/TP
R239,240	0RH6800C622	680 1/16W 5 D.R/TP
R244	0RH3001C622	3K 1/16W 5% D R/TP
R249,250,251,504,528	0RH4703C622	470K 1/16W 5 D.R/TP
R253,254,293,320,321	0RH1002C622	10K 1/16W 5 D.R/TP
R255,263,266,267,269	0RH1000C622	100 1/16W 5 D.R/TP
R257,621,678,683,728	0RH1004C622	1M 1/16W 5 D.R/TP
R260,261,262,294,376	0RH1000C622	100 1/16W 5 D.R/TP
R274,277,355,530,539	0RH4702C622	47K 1/16W 5 D.R/TP
R279,280,514,729,909	0RH2202C622	22K 1/16W 5 D.R/TP
R283,285,286,287,288	0RH1000C622	100 1/16W 5 D.R/TP
R289,290,295,310,335	0RH1000C622	100 1/16W 5 D.R/TP
R306,307,308	0RH2200C622	220 1/16W 5 D.R/TP
R311,322,364,365,373	0RH2200C622	220 1/16W 5 D.R/TP
R323	0RH6800C622	680 1/16W 5 D.R/TP
R327,332,333,379,503	0RH1002C622	10K 1/16W 5 D.R/TP
R337,338,339,340,341	0RH1000C622	100 1/16W 5 D.R/TP
R342,343,344,345,346	0RH1000C622	100 1/16W 5 D.R/TP
R347,348,349,350,351	0RH1000C622	100 1/16W 5 D.R/TP
R352,353,354,356,357	0RH1000C622	100 1/16W 5 D.R/TP
R358,359,360,361,362	0RH1000C622	100 1/16W 5 D.R/TP
R363,368,369,370,416	0RH1000C622	100 1/16W 5 D.R/TP
R366	0RH3300C622	330 1/16W 5 D.R/TP
R371	0RH1801C622	1.8K 1/16W 5 D.R/TP
R372,381	0RH1504C622	1.50M 1/16W 5% D R/TP
R374	0RH2200C622	220 1/16W 5 D.R/TP
R377,378,496,497,590	0RH1000C622	100 1/16W 5 D.R/TP
R402,569,638,903,904	0RH1003C622	100K 1/16W 5 D.R/TP
R505	0RH1504C622	1.50M 1/16W 5% D R/TP
R506,667,669	0RH2203C622	220K 1/16W 5 D.R/TP
R507,508,712	0RH3301C622	3.3K 1/16W 5 D.R/TP
R511,513,564,573,663	0RH1003C622	100K 1/16W 5 D.R/TP
R512,583,588,606,610	0RH1002C622	10K 1/16W 5 D.R/TP
R519,527,537,664,665	0RH2202C622	22K 1/16W 5 D.R/TP
R520,522,531,557,577	0RH4702C622	47K 1/16W 5 D.R/TP
R523,543,602,603,636	0RH1001C622	1K 1/16W 5 D.R/TP
R524,578,579,622	0RH1002C422	10K 1/16W 1% D R/TP
R529,565,595,596,626	0RH1000C622	100 1/16W 5 D.R/TP
R532,567,576,720,724	0RH3302C622	33K 1/16W 5 D.R/TP
R535,601,627,628,631	0RH1002C622	10K 1/16W 5 D.R/TP
R536,982,985	0RH3302C622	33K 1/16W 5 D.R/TP
R538,675	0RH2201C622	2.2K 1/16W 5 D.R/TP
R540,541,575,584,597	0RH4702C622	47K 1/16W 5 D.R/TP
R542,604	0RH1501C622	1.5K 1/16W 5 D.R/TP
R544,548,582,731	0RH1002C422	10K 1/16W 1% D R/TP
R545	0RH1203C422	120KOHM 1 / 16 W 1608 1% D R/T
R546	0RH3902C422	39K OHM 1/16W 1608 1% D R/TP
R547	0RH2202C422	22K 1/16W 1% D R/TP
R551,552	0RH1500C622	150 1/16W 5 D.R/TP

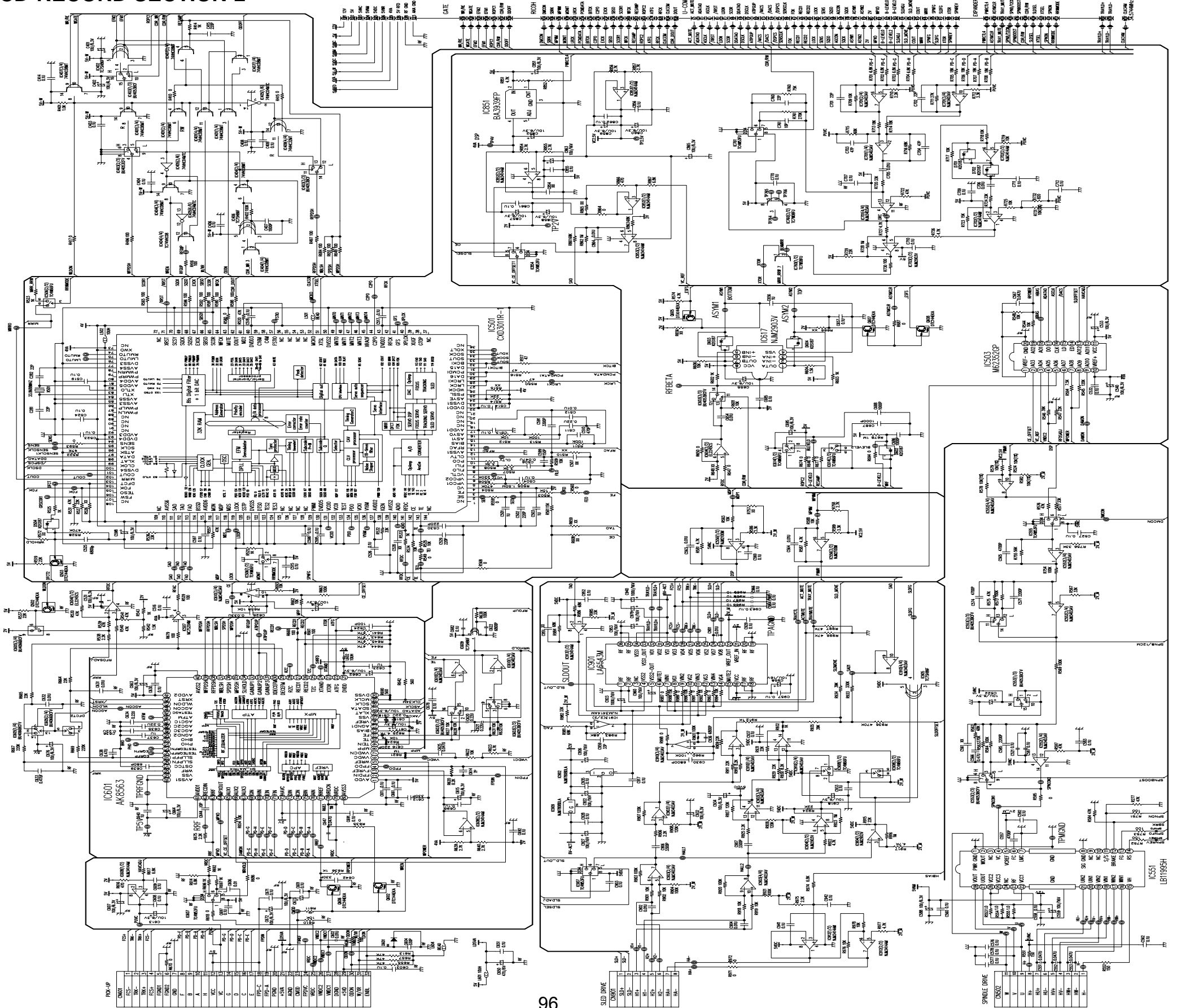
Ref. No.	Part No.	Description
R553,554,555	0RH0101G622	1 OHM 1 / 4 W 3216 5% D R/TP
R559,560,568,593,618	0RH0000C622	0 1/16W 5 D.R/TP
R561,988	0RH1502C622	15K 1/16W 5 D.R/TP
R562,861,863,981,983	0RH6802C622	68K 1/16W 5 D.R/TP
R563	0RH2703C622	270K 1/16W 5 D.R/TP
R586,589	0RH3301C622	3.3K 1/16W 5 D.R/TP
R591,592,598,612,661	0RH1000C622	100 1/16W 5 D.R/TP
R594	0RH7501C422	7.5K OHM 1 / 16 W 1608 1% D R/
R613,655,657,722,996	0RH4702C622	47K 1/16W 5 D.R/TP
R614,867	0RH6801C422	6.80K 1/16W 1% D R/TP
R616	0RH4700C622	470 1/16W 5 D.R/TP
R617,974	0RH6801C622	6.8K 1/16W 5 D.R/TP
R623	0RH4701C422	4.7K OHM 1 / 16 W 1608 1% D R/
R624,658,662,693,990	0RH1002C622	10K 1/16W 5 D.R/TP
R632,654,709,717,718	0RH1002C622	10K 1/16W 5 D.R/TP
R635,646,647,650,674	0RH0000C622	0 1/16W 5 D.R/TP
R639,758	0RH2701C622	2.7K 1/16W 5 D.R/TP
R640	0RH2701C622	2.7K 1/16W 5 D.R/TP
R641,643,644,645	0RH4702C622	47K 1/16W 5 D.R/TP
R642,690	0RH5600C622	560 1/16W 5 D.R/TP
R649,651,668,679,684	0RH1000C622	100 1/16W 5 D.R/TP
R670,686,687,998	0RH0000C622	0 1/16W 5 D.R/TP
R677,694,864,971,972	0RH0000C622	0 1/16W 5 D.R/TP
R692,696,697	0RH1001C422	1K 1/16W 1% D R/TP
R701,702,703,704	0RH6801C622	6.8K 1/16W 5 D.R/TP
R705,706,707,708	0RH1802C622	18K 1/16W 5 D.R/TP
R710,906,925,975	0RH2201C622	2.2K 1/16W 5 D.R/TP
R713,714	0RH1802C622	18K 1/16W 5 D.R/TP
R715,716	0RH6802C622	68K 1/16W 5 D.R/TP
R719,725,901,902,918	0RH1002C622	10K 1/16W 5 D.R/TP
R723	0RH1502C622	15K 1/16W 5 D.R/TP
R726,727,851,917,922	0RH4701C622	4.7K 1/16W 5 D.R/TP
R730,751,752,753	0RH1000C622	100 1/16W 5 D.R/TP
R732	0RH8200C422	820 OHM 1/16W 1608 1% D R/TP
R754,961	0RH1003C622	100K 1/16W 5 D.R/TP
R755	0RH5602C622	56K 1/16W 5 D.R/TP
R756	0RH3302C622	33K 1/16W 5 D.R/TP
R760	0RH7502C622	75K 1/16W 5 D.R/TP
R761	0RH2703C622	270K 1/16W 5 D.R/TP
R854,855,856,857	0RH2701C422	2.70K 1/16W 1% D R/TP
R862,916,923	0RH1004C622	1M 1/16W 5 D.R/TP
R907,908,927,928	0RH1203C622	120K 1/16W 5 D.R/TP
R910,930	0RH8201C622	8.2K 1/16W 5 D.R/TP
R911,915,924,929,931	0RH2202C622	22K 1/16W 5 D.R/TP
R912,932	0RH1001C622	1K 1/16W 5 D.R/TP
R919,976,978	0RH1002C622	10K 1/16W 5 D.R/TP
R920,921,960	0RH1003C622	100K 1/16W 5 D.R/TP
R933	0RH3303C622	330K 1/16W 5 D.R/TP
R934,935	0RH3902C622	39K 1/16W J D.R/TP
R936	0RH4703C622	470K 1/16W 5 D.R/TP
R966,967,968,969	0RH0102C622	10 1/16W 5 D.R/TP

Ref. No.	Part No.	Description
R977	0RH4701C622	4.7K 1/16W 5 D.R/TP
R984,986	0RH6802C622	68K 1/16W 5 D.R/TP
R987,989,991,993	0RH0000C622	0 1/16W 5 D.R/TP
R994	0RH1002C622	10K 1/16W 5 D.R/TP
R997	0RH4702C622	47K 1/16W 5 D.R/TP
	RESONATOR	
X201	6212HA0202A	CSACV20.00MXJ040-TC20 MURATA 2
X202	6212HA3452B	CSACV34.57MXJ040-TC20 MURATA 3
X501	6212HA3382A	CSACV33.86MX040-TC20 MURATA 33
	SWITCH	
SW303	6600HXF101A	SPVF21001A ALPS . 5V 1MAV 4.65
	TRANSISTOR	
Q302,502,602,606	0TR144009AH	DTC144EK CHIP ROHM-J
Q503,607,608	0TR144009AH	DTC144EK CHIP ROHM-J
Q605	0TR144009AI	DTA144EK CHIP ROHM-J

• CD-RECORD SECTION-1



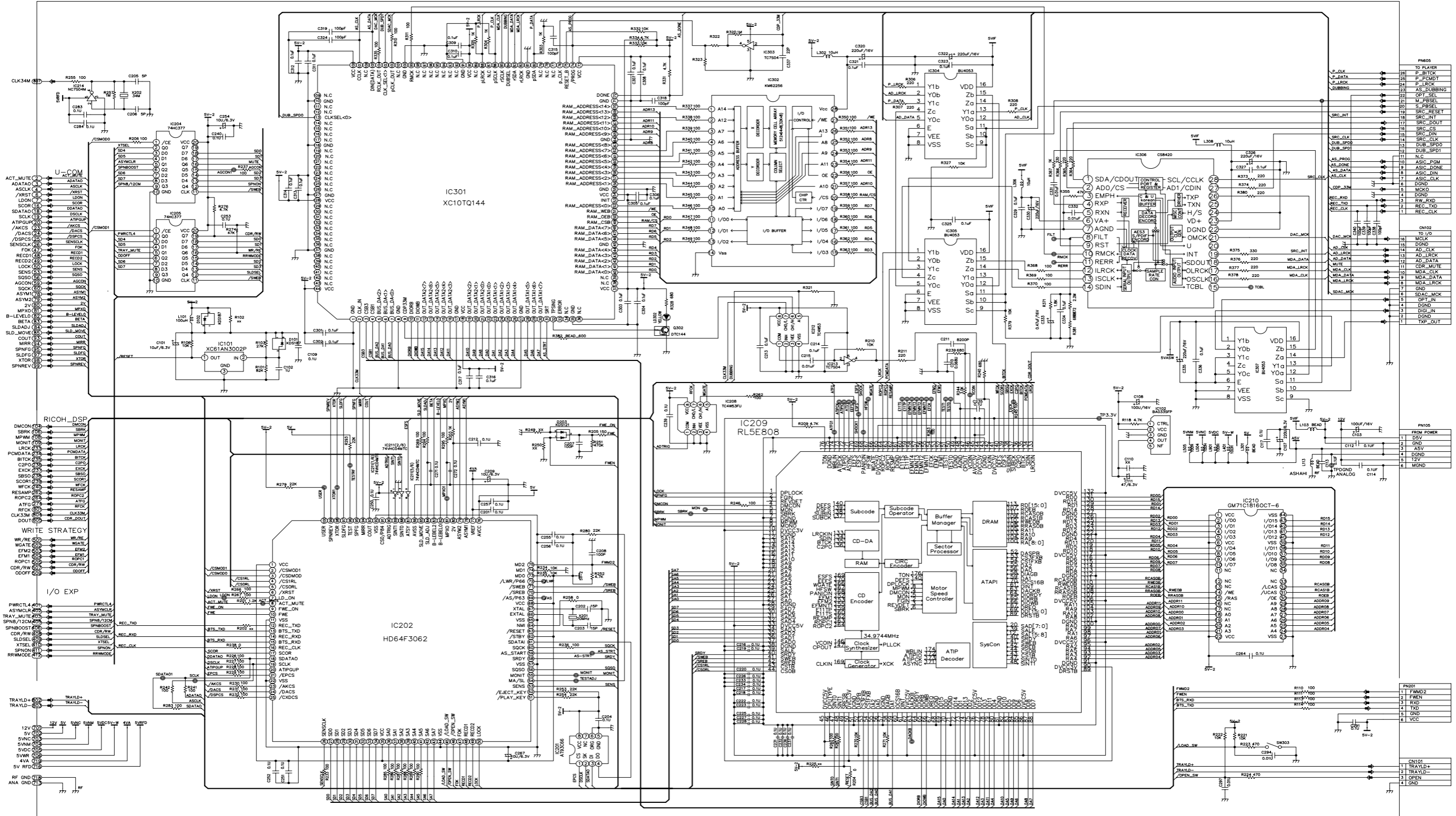
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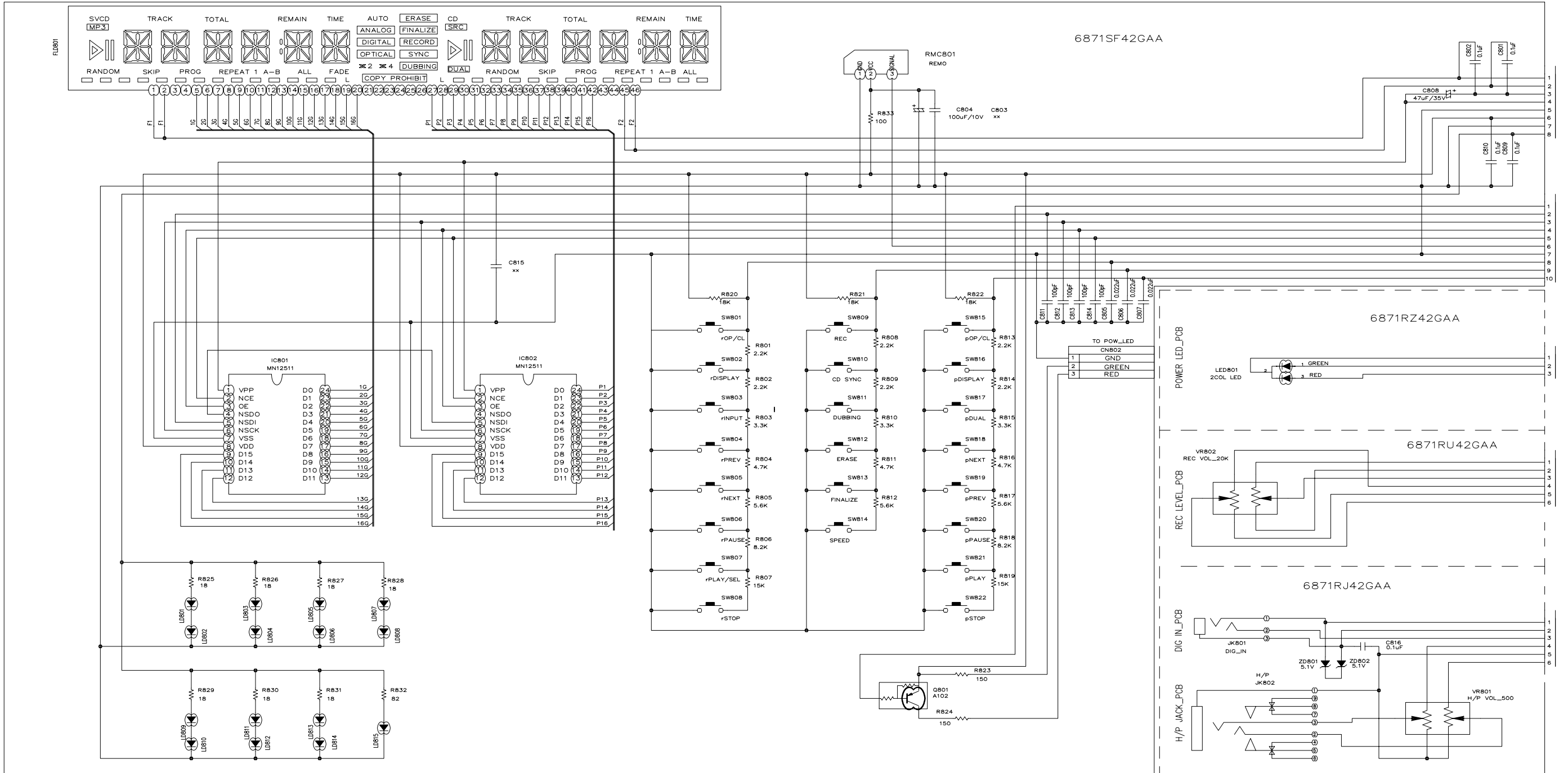


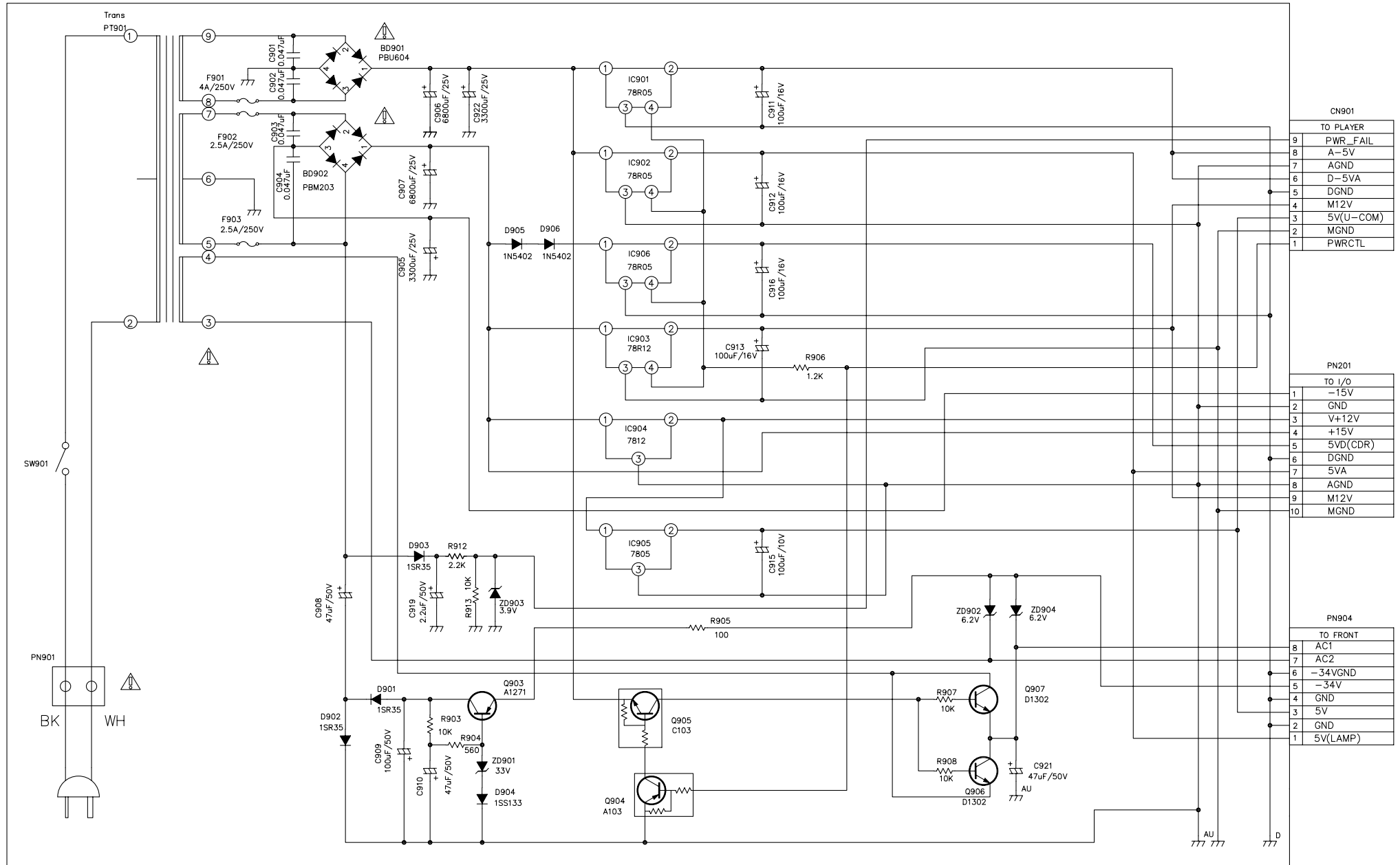
CD-PLAY SECTION

CDR2

harman/kardon







CN901

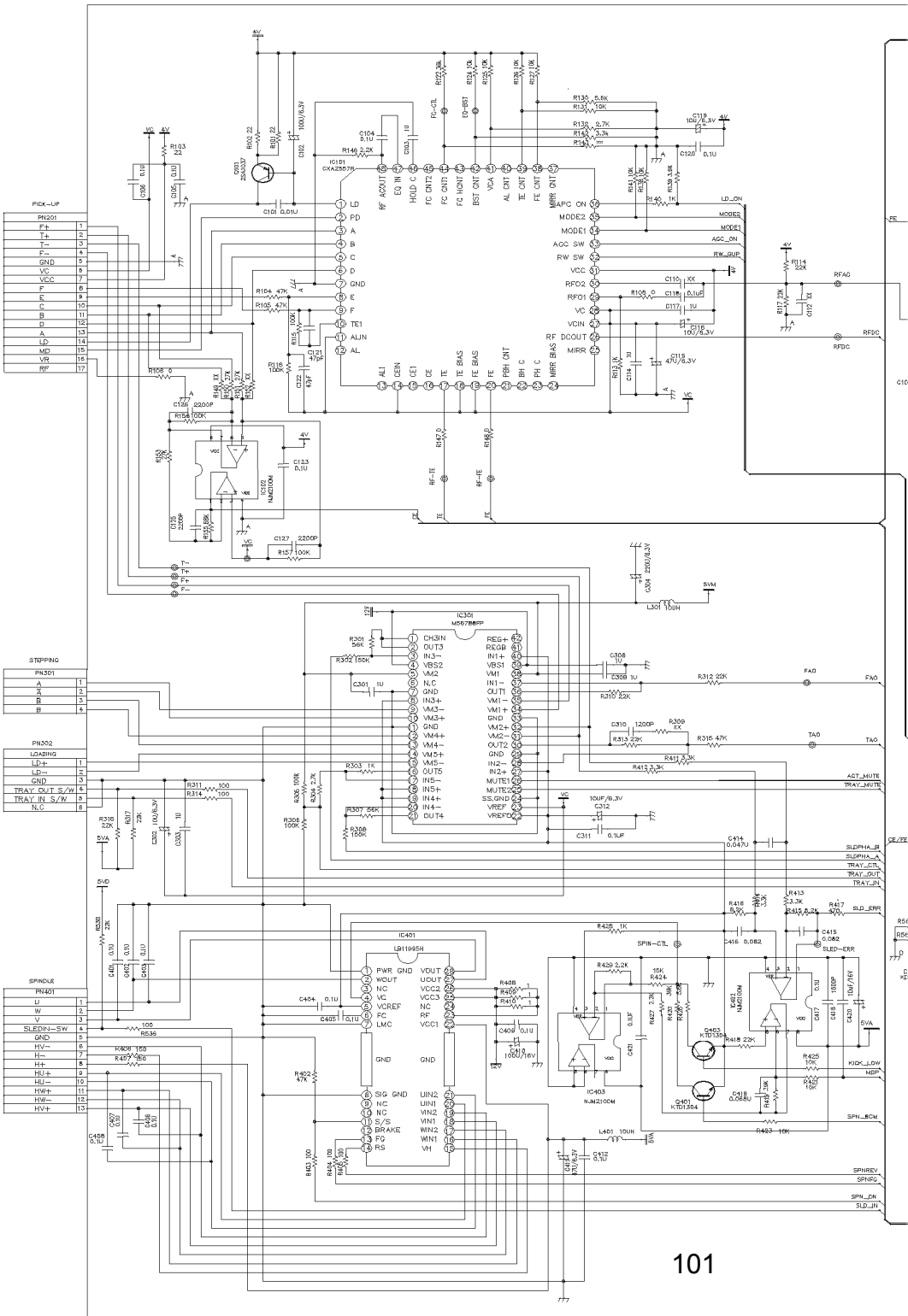
9	TO PLAYER
8	PWR_FAIL
7	A-5V
6	AGND
5	D-5VA
4	DGND
3	M12V
2	5V(U-COM)
1	MGND
1	PWRCTL

PN201

1	TO I/O
2	-15V
3	GND
4	V+12V
5	+15V
6	5V(CDR)
7	DGND
8	5VA
9	AGND
10	M12V
10	MGND

PN904

8	TO FRONT
7	AC1
6	AC2
5	-34V
4	-34V
3	GND
2	GND
1	5V(LAMP)



PICK-UP

PR201	1
F.A	2
F.A	3
F.A	4
F.A	5
GND	6
VC	7
VCC	8
F	9
F	10
B	11
D	12
A	13
LD	14
MD	15
VR	16
RF	17

STOPPING

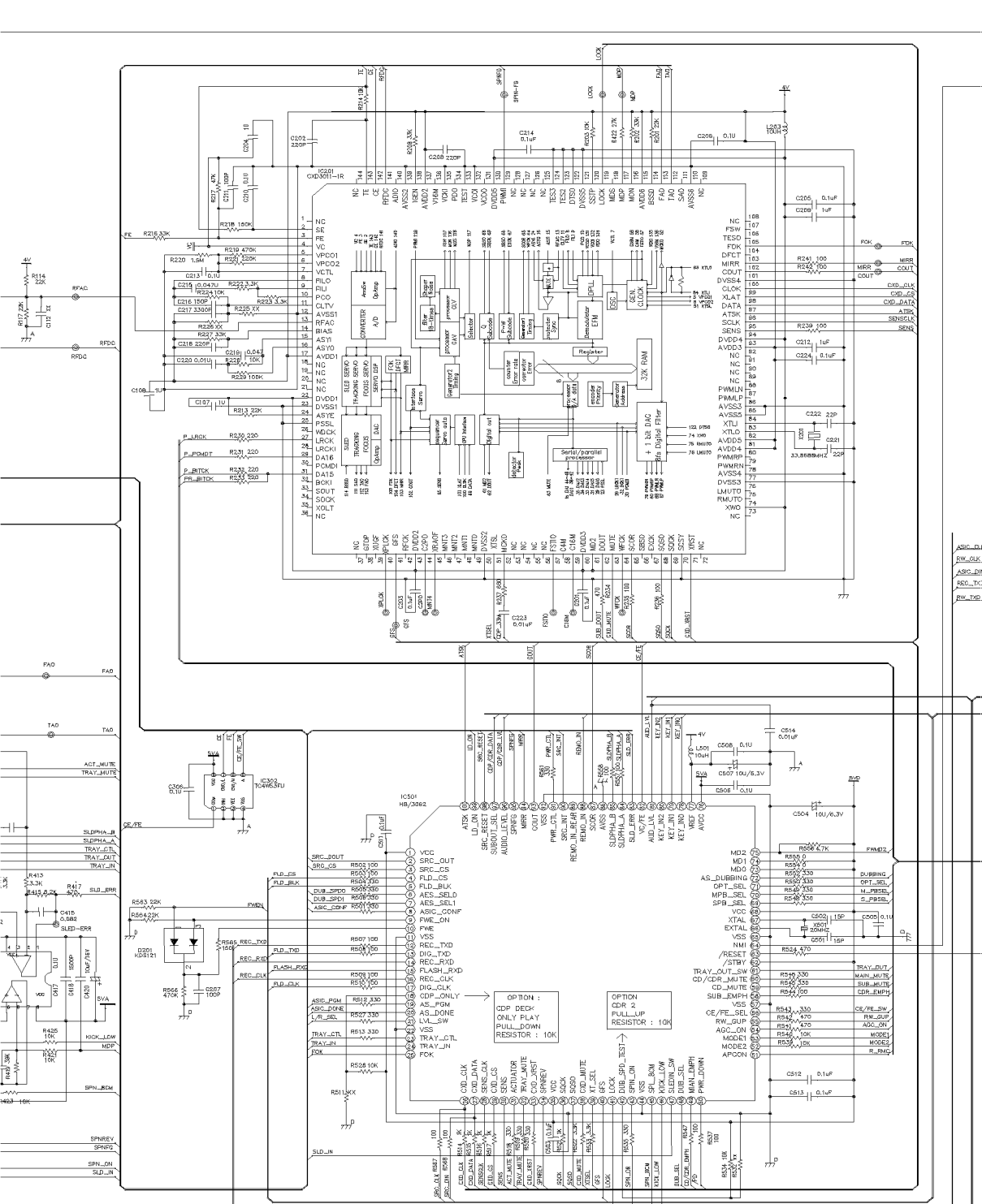
FA301	1
A	2
B	3
B	4

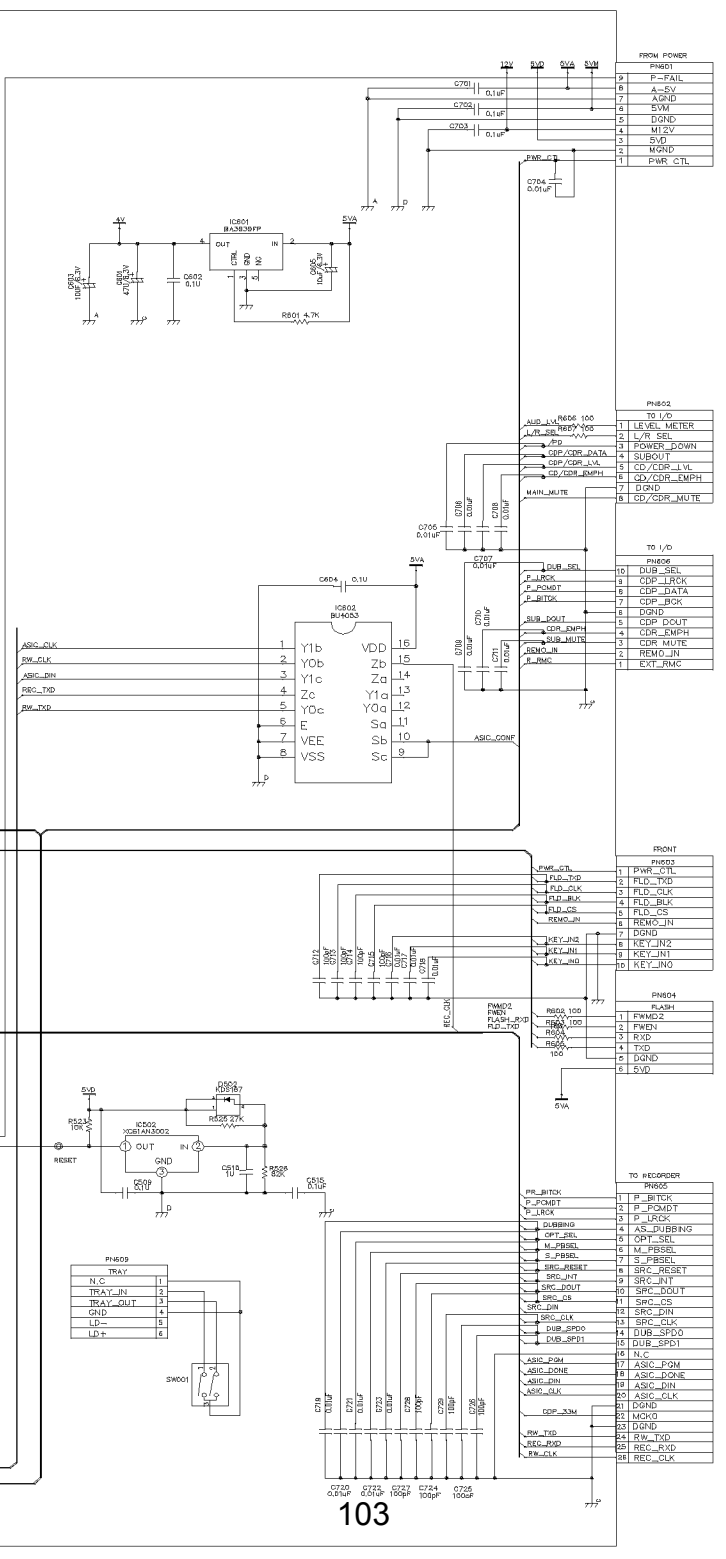
PN302

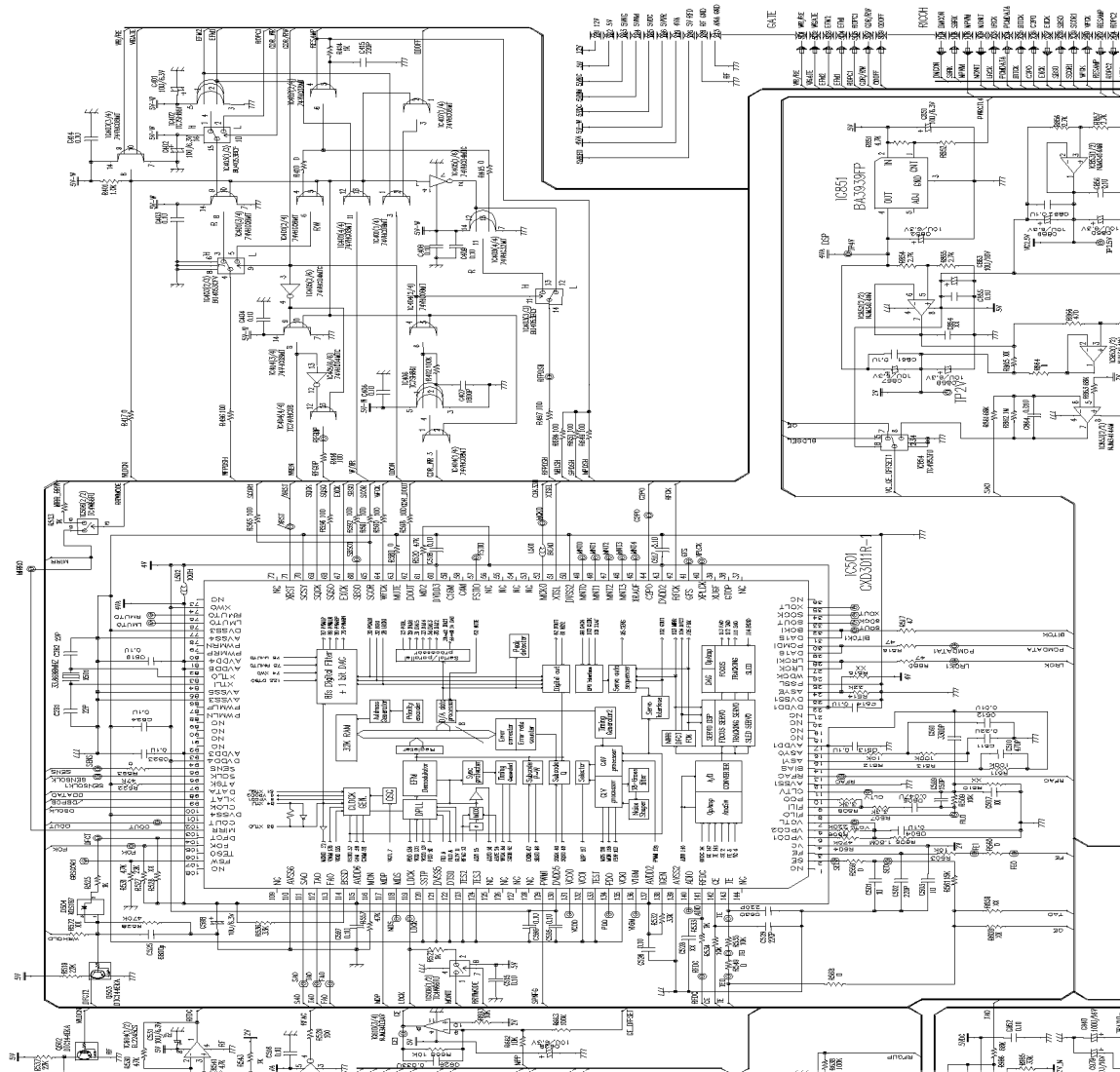
LOADING	1
LD+	2
LD-	3
GND	4
TRAY_OUT_S/W	5
TRAY_IN_S/W	6
N.C	7

SPINDLE

PR201	1
U	2
W	3
V	4
SLEWIN-SW	5
GND	6
H-	7
H+	8
HU+	9
HU-	10
HSR+	11
HW+	12
HW+	13







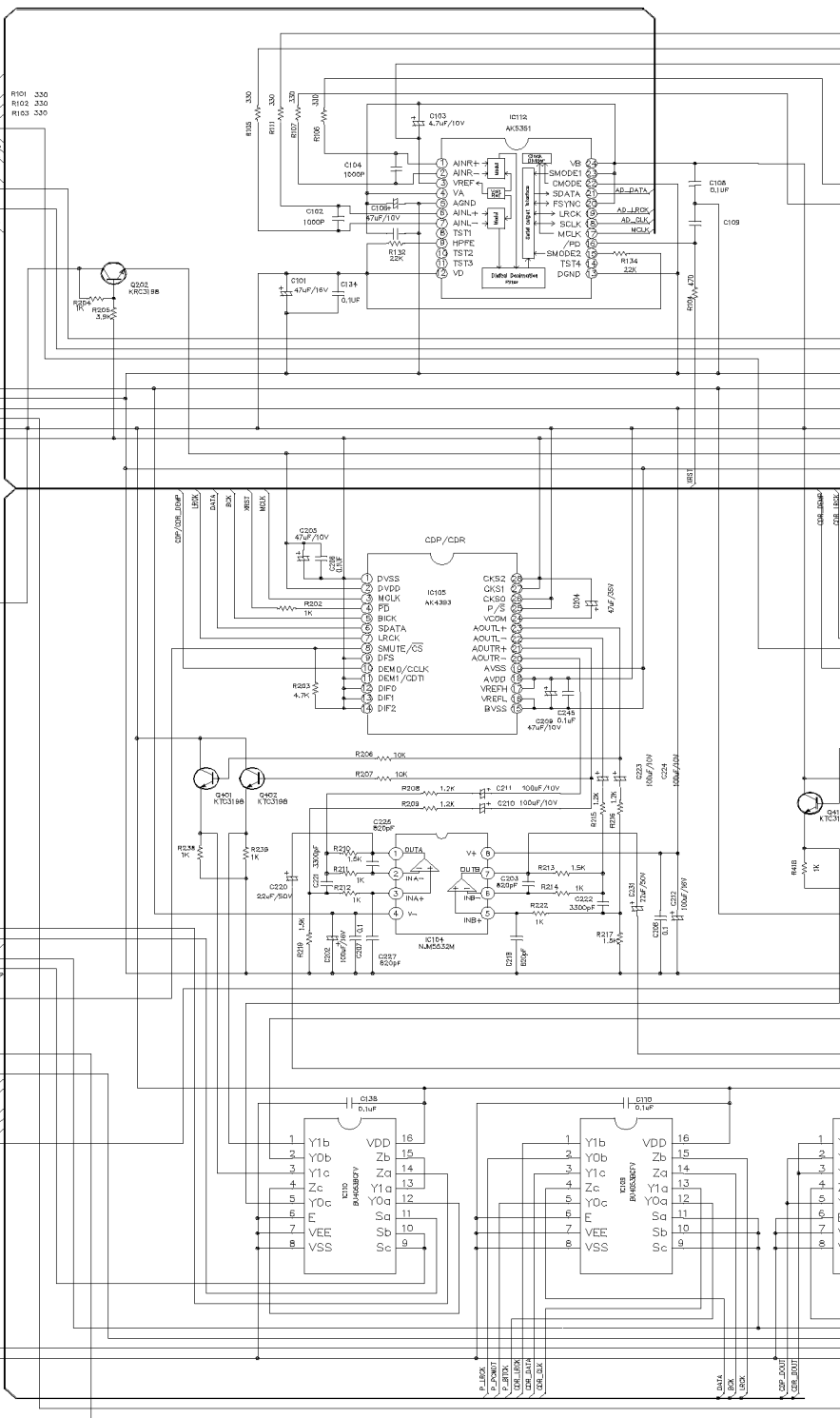
PFI02	
TO RECORDER	
1	MCLK
2	GND
3	AD_CLK
4	AD_LRCK
5	AD_DATA
6	CDR_MUTE
7	MDA_CLK
8	MDA_DATA
9	MDA_LRCK
10	MDA_MUTE
11	S_MCLK
12	OPF_IN
13	OPF_OUT
14	DIGI_IN
15	DIGI_OUT
16	CDR_DOUT

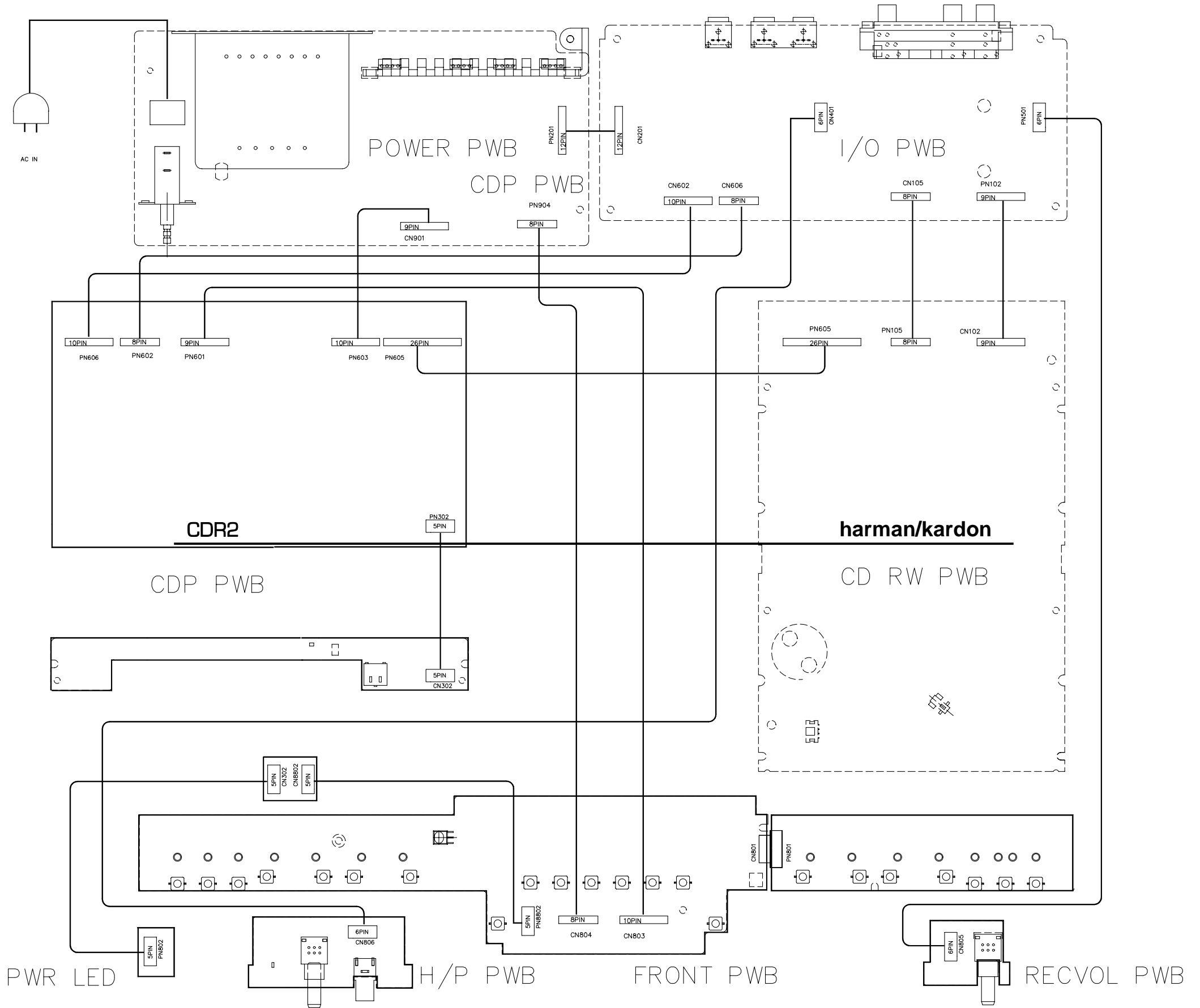
CA101	
REGM POWER	
1	V+12
2	GND
3	V+12
4	15V_gFv
5	SVA
6	DGND
7	SVA
8	AGND
9	M12V
10	MGND

CH05	
TO RECORDER	
1	SVD
2	DGND
3	SVA
4	AGND
5	M12V
6	MGND

CH02	
FROM CDR	
1	LEVEL METER
2	L/R SEL
3	POWER DOWN
4	P_OUT_SEL
5	CD_CDR_LVA
6	CD_CDR_SMPH
7	CDR
8	CD_CDR_MUTE

CH06	
FROM CDR	
1	PWM_MUTE
2	EXT_LRNC
3	R_OUT_SEL
4	CDR_SMPH
5	CDR_DOUT
6	DGND
7	P_BITCK
8	CDR_BCK
9	CDR_DATA
10	CDR_LRCK
11	DUB_SEL





PACKAGE

