

# MDP-500

## RMT-M23A

# SERVICE MANUAL

*US Model  
Canadian Model*



### SPECIFICATIONS

Type  
Signal readout  
Signal format system  
Playing time

CD/CDV/LD Player  
Optical (Laser beam reflection)  
EIA standard, NTSC color system  
(minutes)

LD	CAV	30 cm (12 in) double-sided	60
		20 cm (8 in) double-sided	28
		20 cm (8 in) single-sided	14
	CLV	30 cm (12 in) double-sided	120
		20 cm (8 in) double-sided	40
		20 cm (8 in) single-sided	20
CD		12 cm (5 in) single-sided	74
		8 cm (3 in) single-sided	20
CDV		Audio portion	20
		Video portion	5
VSD		Video portion	5

### Digital audio specifications

Frequency response 4 Hz to 20kHz ( $\pm 0.5$  dB)  
Signal-to-noise ratio More than 115 dB (EIAJ)\*  
Dynamic range More than 99 dB (EIAJ)  
Wow and flutter Below measurement limit ( $\pm 0.001\%$  W.PEAK) (EIAJ)

### Video specifications

Horizontal video resolution 425 lines  
Signal-to-noise ratio More than 49 dB

### Input/output specifications

Video output 1 1.0 Vp-p, 75 ohms, unbalanced  
Audio output 1, 2 Stereo L, R  
Analog: 200 mVrms (1 kHz, 40% modulation)  
Digital: 200 mVrms (1 kHz,  $-20$  dB)  
S Video output Luminance: 1 Vp-p, 75 ohms, unbalanced, sync negative  
Chrominance: 0.286 Vp-p, 75 ohms, unbalanced  
CONTROL S IN jack Mini jack

\* Measured according to EIAJ (Electronic Industries Association of Japan) standards.

— Continued on next page —

CD VIDEO CD/CDV/LD PLAYER  
**SONY**®

### Power requirements

Power requirements	120VAC 60Hz
Power consumption	40 W
Mass	10 kg (22 lb)
Dimensions	Approx. 430 × 117 × 429 mm (w/h/d) (17 × 4 5/8 × 17 in)
Operating temperature	+5 °C to +35 °C
Ambient humidity	5% to 90%

### Remote Commander RMT-M23A

Principle of operation	Infrared pulse
Power requirements	3 V DC (2 size AA batteries)
Dimensions	Approx. 44 × 23.5 × 214.5 mm (w/h/d) (1 3/4 × 15/16 × 8 1/2 in)
Mass	Approx. 100 g (3.5 oz) (including batteries)

### Supplied accessories

Remote Commander RMT-M23A (1)  
Size AA (R6) batteries (2)  
Audio/Video cable  
(phono plug 3 ↔ phono plug 3) (1)  
AC power cable (1)

Design and specifications are subject to change  
without notice.

### WARNING !!

WHEN SERVICING, DO NOT APPROACH THE LASER  
EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS  
NECESSARY TO CONFIRM LASER BEAM EMISSION,  
BE SURE TO OBSERVE FROM A DISTANCE OF MORE  
THAN 25 cm FROM THE SURFACE OF THE OBJECTIVE  
LENS ON THE OPTICAL PICK-UP BLOCK.



### CAUTION:

The use of optical instrument with this product will  
increase eye hazard.


### CAUTION

Use of controls or adjustments or performance  
of procedures other than those specified herein  
may result in hazardous radiation exposure.

### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  OR DOTTED  
LINE WITH MARK  ON THE SCHEMATIC DIAGRAMS  
AND IN THE PARTS LIST ARE CRITICAL TO SAFE  
OPERATION. REPLACE THESE COMPONENTS WITH  
SONY PARTS WHOSE PART NUMBERS APPEAR AS  
SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUB-  
LISHED BY SONY.

### ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE   
SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE  
DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ  
DE FONCTIONNEMENT. NE REMPLACER CES COM-  
POSANTS QUE PAR DES PIÈCES SONY DONT LES  
NUMÉROS SONT DONNÉS DANS CE MANUEL OU  
DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

## SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
6. Check the B+ voltage to see it is at the values specified.
7. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

### LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

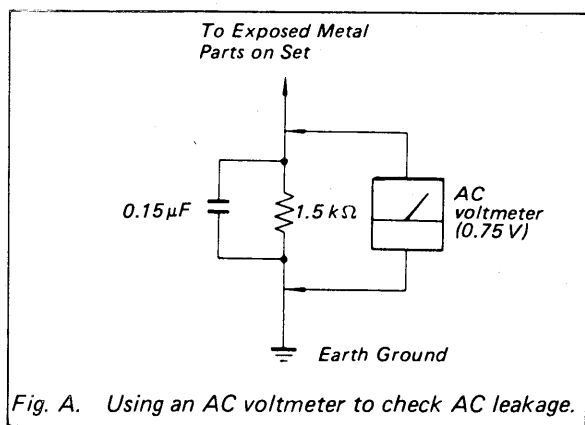


Fig. A. Using an AC voltmeter to check AC leakage.

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## SECTION 1 GENERAL

This section is extracted from  
MDP-500/A500 instruction manual.

### Introduction

This introduction explains the features and principles of operation of the Multi Disc Player (MDP).

Before operating the unit, please read this manual thoroughly and retain it for future reference.

### Introduction to Your Player

The Multi Disc Player is capable of playing laser discs (LDs), compact discs (CDs), and compact disc videos (CDVs). As operating procedures are the same or similar for all discs, each procedure applies to all disc types.

### Differences between models

This manual covers the MDP-500 and MDP-A500. Their differences are as follows:

	MDP-500	MDP-A500
<b>Rear Panel</b>		
• S VIDEO OUT output	equipped	not equipped
• CONTROL S IN input	equipped	not equipped
• Voltage selector	not equipped	equipped
• AC power cable	detachable	not detachable
<b>Supplied accessories</b>		
• AC plug adaptor	not supplied	supplied

The illustrations in this manual are of the MDP-500.

### To Play a Laser Disc (LD), Compact Disc (CD) or Compact Disc Video (CDV)

With the MDP-500/A500, you can playback both sides of an LD without replacing it and resume playback from any point on an LD by simply pressing the PLAY (▶) button —Auto Resume. Also unique to LD play are STILL/STEP for CAV LDs (see page 24) and FRAME/TIME search.

Most operations for CDs are comparable to those of LDs. The procedures for CLV LDs and CDs are also for the CDV's video and audio sections respectively. VSDs are CDVs that have no audio section.

### What to Do First

Once you have read through this page, read "The Principles of Operation" (page 6), then go ahead and connect up the Multi Disc Player to your television and/or stereo system using the connection diagrams on pages 11 and 12. You will then be ready to play a disc.

### About Operating Voltage

Before operating the Multi Disc Player, make sure that the operating voltage of your unit is identical with that of your local power supply.

### How to Determine the Correct Operating Voltage

- The MDP-500 operates at 120 V AC 60 Hz only and does not have a voltage selector.
- The MDP-A500 has a voltage selector.

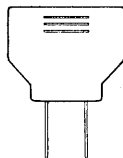
Before operating the unit, find out the local voltage, and if necessary reset the selector at the rear of the Multi Disc Player to the voltage corresponding to your local power supply (120, 220 or 240 volts AC). The voltage selector of this unit is set to 220 V AC originally. When using in Malaysia, reset the selector to 240 V AC.

To reset the voltage selector, disconnect the power cord and turn the selector with a blade screwdriver so that the arrow on the rear panel points to the appropriate voltage.



### How to Use the AC Plug Adaptor (supplied with the MDP-A500)

- If the AC plug on your MDP-A500 does not fit into the wall outlet, attach the supplied AC plug adaptor.



If you have any questions or problems concerning your unit, please contact your nearest Sony dealer.

## The Principles of Operation

The MDP-500/A500 allows you to play discs by simple operation. Although some functions of the player vary depending on what type of disc (laser disc, compact disc or compact disc video) you are playing, keep in mind that the majority of the buttons on the player and Remote Commander have been designed to achieve a comparable effect for each type of disc. The following paragraphs briefly summarize what the basic Multi Disc Player functions allow you to do.

### Primary Functions

include the traditional functions of disc players.

### Variable Speed Functions

let you vary play speed so that you can easily locate ("search") scenes or tracks as you watch or listen.

### Repeatable Functions

memory functions that let you repeat playback. Because the player locates a point on the disc and starts playing according to your request, some repeatable functions also serve as "search" functions.

### Auxiliary Functions

additional functions that simply add to what you can do with the Multi Disc Player.




Primary Functions	Variable Speed Functions	Repeatable Functions	Auxiliary Functions
Power Open/Close Play Pause Stop Side A/B	Speed Scan (SCAN) Still/Step Scan (STILL/STEP)	Auto Resume Playback Chapter/Track Search (ACS/AMS) Frame/Time Search (FRAME/TIME) Repeat Play (1/SIDE/ALL, REPEAT)	Sound Quality Functions: (AUDIO MONITOR, ANALOG/CX) On-Screen Display (DISPLAY)

## Playing Disc Types

The MDP-500/A500 Multi Disc Player integrates the functions of three machines into one: laser disc, compact disc, and compact disc video player. Below follows an explanation of the kinds of discs the Multi Disc Player can play.

### The MDP-500/A500 Plays Three Classes of Optical/Digital Discs\*

The MDP-500/A500 Multi Disc Player can play all three types of optical discs currently available for home entertainment. The following table illustrates their types and features.

Disc Class	Disc Logo	Disc Type	Size	Play Side	Play Time
Laser Discs For movies, operas, and concerts		LD Single	8 in. (20 cm)	Single Side	14 min CAV
		8-inch LD	8 in. (20 cm)	Double Side	20 min CLV
		12-inch LD	12 in. (30 cm)	Double Side	28 min CAV 40 min CLV
Compact Discs For music		CD Single	3 in. (8 cm)	Single Side	1 hr CAV
		CD	5 in. (12 cm)	Single Side	2 hr CLV
Compact Disc Videos For music videos and educational material (Digital Audio)		CDV	5 in. (12 cm)	Single Side	20 min Video+Audio Audio
		VSD	5 in. (12 cm)	Single Side	5 min Video+Audio

### Multi Audio Discs

**digital**  
AUDIO

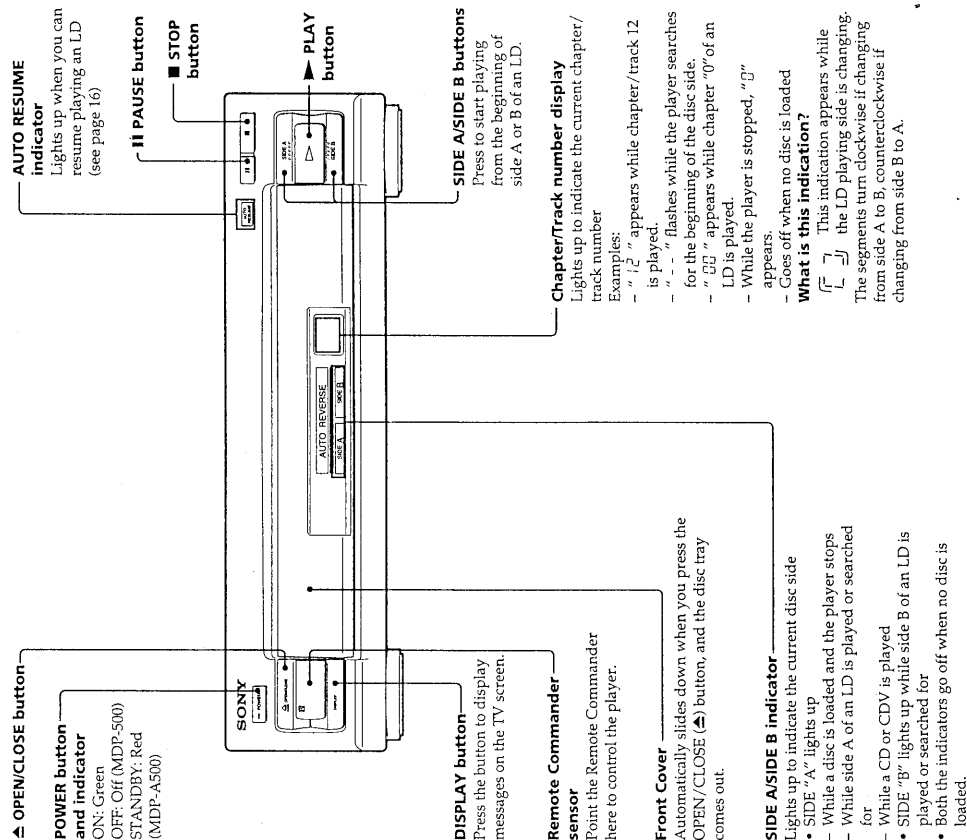
On laser discs bearing this logo, the analog tracks are recorded in multiplex, and the digital tracks are recorded in stereo.

\* These apply only to those discs recorded in the NTSC standard. The MDP-500/A500 cannot play CED, VHD discs or PAL video discs, CD-ROM, CD-Graphics, CD-I discs, aluminum-lined discs or MD (MiniDisc) discs.

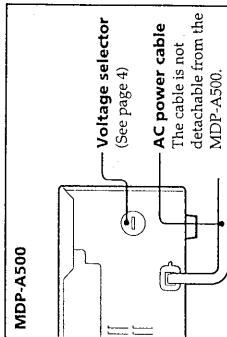
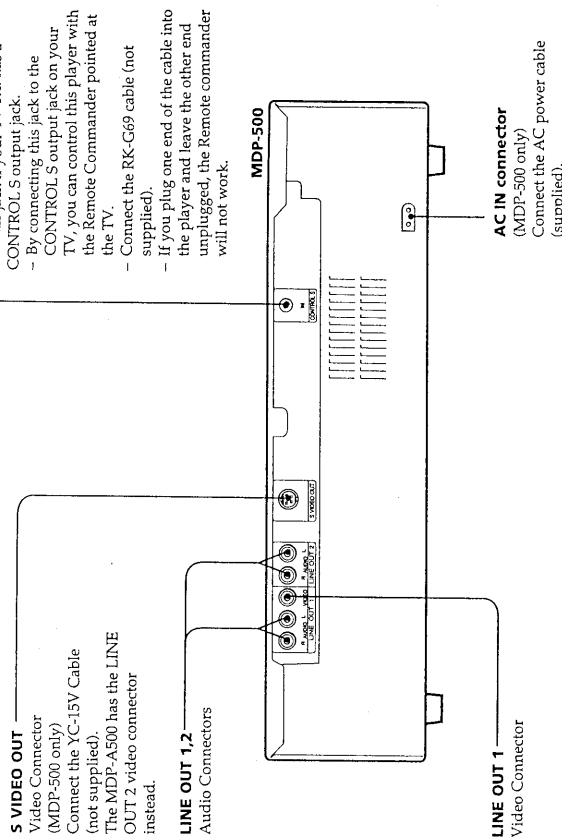
## Installation and Connection

### Front and Rear Panel Controls and Supplied Accessories

#### Front Panel



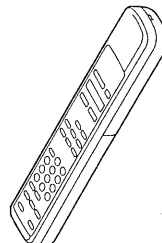
#### Rear Panel



#### Accessories

Make sure the shipping box contains the following accessories:

RMT-M23A Remote Commander



Audio/Video connecting cable  
(phono 3 ↔ phono 3)



AC power cable supplied with the MDP-500



Two AA (R6) batteries

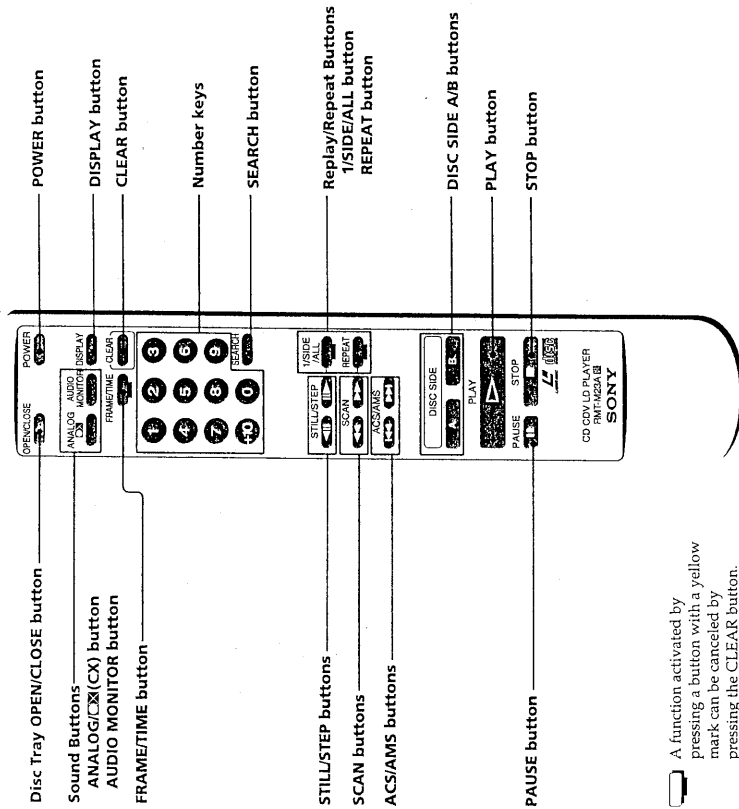


AC plug adaptor supplied with the MDP-A500  
(See page 4)



## Controls on the Remote Commander

You can use the Remote Commander to control the player or the identical buttons on the player itself.



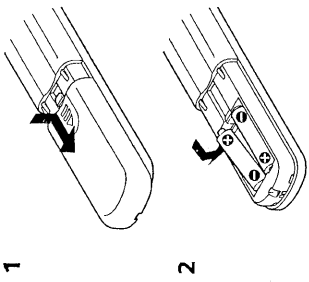
A function activated by pressing a button with a yellow mark can be canceled by pressing the CLEAR button.

## To Activate the Remote Commander

Open the back cover, and insert two size AA (R6) batteries according to the polarity indicated in the illustration. The batteries will last for about 6 months. If the range of the Remote Commander becomes noticeably short, replace all the batteries with new ones. If the Remote Commander is not to be used for a long time, remove the batteries to avoid damage from possible battery leakage.

## Remote Commander Precautions

- Do not let sunlight or powerful artificial light fall directly on the Remote Commander sensor on the front panel (of the Player) as it may interfere with Remote Commander operation.
- Use size AA (R6) batteries only.

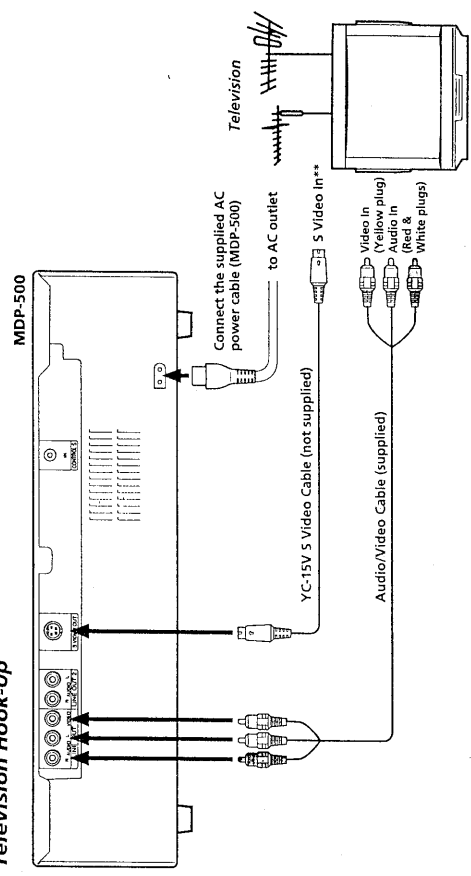


Insert two size AA (R6) batteries.

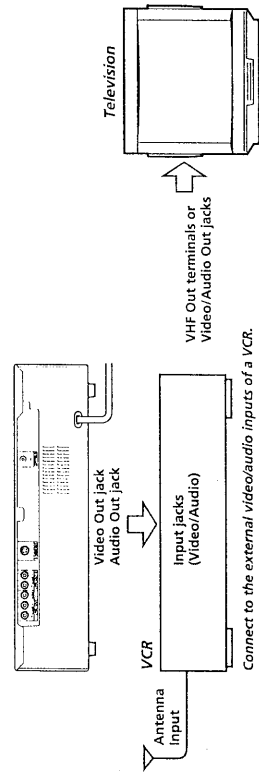
## How to Connect the Television

To play LDs or DVDs, hook up a television to the Multi Disc Player. Take out the supplied audio/video connecting cable (yellow, red and white plugs). Use this to connect the player to the television.\* Once you have hooked-up the television, set the input selector on the TV to "Video". Before connecting or disconnecting any of the cables, turn off all equipment.

### Television Hook-Up



### Television/VCR Hook-Up



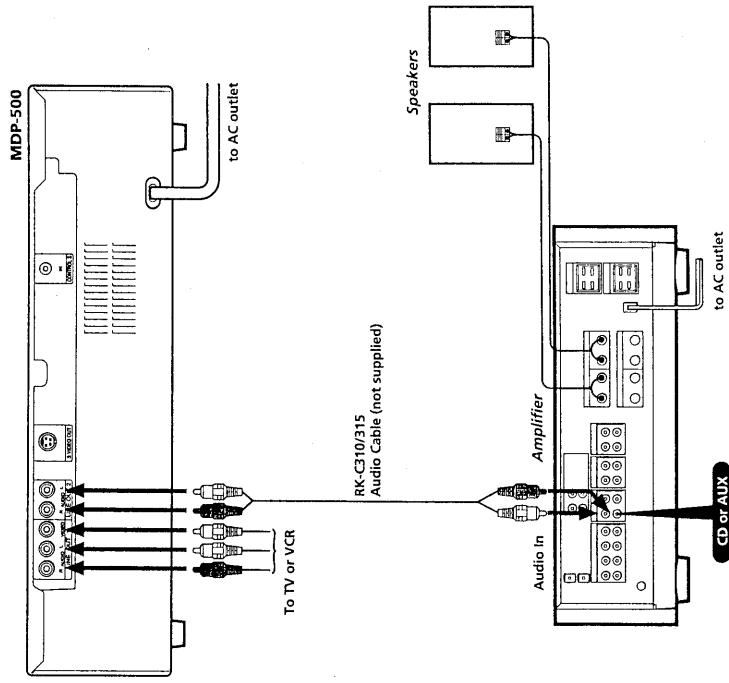
## Connecting Precautions

- Make sure all equipment is turned off before connecting or disconnecting any cables.
- Connection methods may differ; when in doubt about a connection consult the TV or VCR manufacturer's manual.
- If the sound or picture is disturbed by noise, try moving the equipment farther apart.
- Firmly insert plugs into the jacks. A loose connection may cause noise.
- To prevent later interference with TV broadcast reception, turn off all equipment connected but not currently in use.
- If the TV only has a monaural phono jack for audio input, use a VMC-910MS/915MS Connecting Cable (not supplied).
- With the MDP-500, you can use S Video connection. If your TV has an S Video Input jack, obtain a YC-15V S Video Connecting Cable and use it to connect the TV to your MDP-500 so that you can get a better image.

## How to Connect Audio Equipment

To achieve full stereo sound from your Multi Disc Player, hook up a stereo system following the diagram below. Use an RK-C310 (or RK-C315) audio connecting cable (not supplied) to connect the Multi Disc Player to your amplifier or receiver. Before connecting or disconnecting any of the below cables, turn off all equipment.

### Audio Equipment Hook-Up



### Connection Precautions

- Make sure all equipment is turned off before making any of the above connections.
- Firmly insert plugs into the jacks. A loose connection may cause noise.
- When listening to a radio broadcast, switch off the Multi Disc Player to get better reception.

## To Play a Disc

This section shows you how to conduct all the procedures associated with playing both LDs and CDs (CDVs).

### How to Load and Play a Disc

After you have connected the Multi Disc Player to the TV and/or stereo system, you can begin playing a disc. Locate the POWER, OPEN/CLOSE, and PLAY buttons on the Remote Commander or the front panel of the player.

#### 1 Turn on the multi disc player.

**POWER** (Player)  
**POWER** (Remote)  
**Press POWER** on the player or Remote Commander.  
You can also turn on the player by pressing **OPEN/CLOSE** (▲) or **PLAY** (▶) on the player. When using the Remote Commander, press **POWER**.

#### 2 Turn on the TV and stereo system.

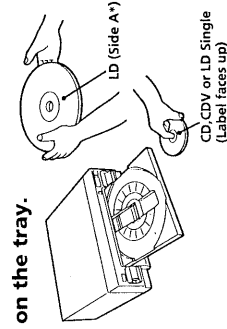
**TV:** Set the input selector on the TV to "Video".  
**Stereo System:** Turn on the amplifier or receiver and select CD or AUX for audio output.

#### 3 Open the disc tray.

**OPEN/CLOSE** (Player)  
**Press OPEN/CLOSE** (▲).  
The front cover of the player slides down and the disc tray comes out.

#### 4 Place a disc on the tray.

**Carefully center a single disc on the tray.**  
If you insert more than one disc, or if the disc is not seated properly, it may not play or it may damage the player.



**When playing a CD, do not use a CD stabilizer as it may cause damage to your disc or player.**

#### 5 Start playback.

**PLAY** (Player or Remote)  
**Press PLAY** (▶).  
The disc tray closes and the disc starts playing.\*\*  
You can also start playing by pressing the disc tray to close it.

**Do not transport the player while playing a disc as it may cause damage to the disc.**

\* When playing an LD, the player determines that the upper side of the LD is side "A," and the other side is "B," regardless of the label "A" or "B" printed on the disc.  
\*\* When playback of the upper side of an LD (side A) ends, the other side (side B) starts playing automatically.



### To Advance or Reverse .....

SCAN  (Remote)  
Hold down SCAN (◀◀ or ▶▶) on the Remote Commander


### To Advance or Go Back a Chapter or Track at a Time ....

ACS/AMS  (Remote)  
Press ACS/AMS (◀ or ▶) on the Remote Commander.


### To Start From the Beginning of Each LD Side .....

 (Player)  (Remote)  
Press (DISC) SIDE A to play the upper side of the LD from the beginning.  
Press (DISC) SIDE B to play the other side of the LD from the beginning.\*



### To Interrupt Playback .....

PAUSE  (Player or Remote)  
Press PAUSE (II).  
The sound mutes, and "PAUSE" appears on the TV screen. When playing a CAV disc, the picture freezes.\*\* To resume playback, press PAUSE (II) or PLAY (▶).



### To Stop Playback .....

STOP  (Player or Remote)  
Press STOP (■).  
To resume playback of an LD from the point you stopped at, press PLAY (▶) (see page 16). If you want to pause playing at the point before starting, press PAUSE (II) instead of PLAY (▶). To play again from the beginning of disc side A (or B), press (DISC) SIDE A (or B).


### To Stop Playback and Turn the Power Off .....

POWER  (Player)  (Remote)  
Press POWER on the player or Remote Commander.  
To resume playback of an LD from the point you stopped at, press PLAY (▶) (see page 16).



### To Stop Play and Remove the Disc.....

 (Player)  (Remote)  
Press OPEN/CLOSE (⇄).  
Remove the disc and press ⇄ again to close the empty tray.

### To Pause the Player Just Before Starting .....

PAUSE  (Player or Remote)  
Press PAUSE (II) after doing step 4 on page 13.  
The tray closes, "PAUSE" appears on the TV screen, and the player waits at the start of the disc until you press PLAY (▶) or PAUSE (II). If you want to play side B of an LD, press PAUSE (II), then (DISC) SIDE B.


### To Play a Stereo Disc or a Second Audio Program (SAP) Disc .....

PLAY  (Player or Remote)  (Remote)  
Press PLAY (▶), then press AUDIO MONITOR on the Remote Commander.  
This function alternates the sound output on a disc that has been recorded with two sound tracks, such as bilingual discs.


The procedure below indicates how the output and the display changes with each press. The active track appears for three seconds on the TV screen. When you select 1/L (or 2/R), the sound of the left (or right) channel is output from both speakers.

Procedure	Screen message	Output Sound	
		Stereo Disc	SAP Disc
1 Press PLAY (▶).	No message	Stereo (Both channels)	Soundtrack 1 (left channel) Soundtrack 2 (right channel)
2 Press AUDIO MONITOR.	1/L	Left channel	Soundtrack 1 (left channel)
3 Press AUDIO MONITOR again.	2/R	Right channel	Soundtrack 2 (right channel)
4 Press AUDIO MONITOR again to return to stereo status.	1/L 2/R	Stereo (Both channels)	Soundtrack 1 (left channel) Soundtrack 2 (right channel)

### To Switch from Digital to Analog Sound (for LDs only\*) .....

ANALOG  (Remote)  
Press ANALOG/⇄ on the Remote Commander to switch the player to analog or digital sound. Digital affords a better quality sound reproduction. If the LD contains a digital sound signal, the player automatically sends that output to the amplifier or receiver. To switch to analog sound, press ANALOG/⇄ on the Remote Commander. "b ANALOG" appears on screen for three seconds. To return to digital sound, press ANALOG/⇄ until "b DIGITAL" appears on screen. With certain discs there may be a difference in volume.

### LDs with a ⇄(CX) Label .....

ANALOG  (Remote)  
Discs bearing the ⇄ label are recorded with the CX noise reduction system, which gives lower noise levels and higher dynamic range on analog sound. The player detects most ⇄ discs and activates the CX noise reduction system automatically. When playing a ⇄ disc which does not contain a code to activate the CX noise reduction system, press ANALOG/⇄ on the Remote Commander until "CX ON" appears on screen. The CX noise reduction system will be activated.



\* All CDs and CDVs output digital, not analog sound.

\* When playback of LD side B ends, the player stops playing. When playing a CD, playback stops if you press (DISC) SIDE B.  
\*\* When playing a CLV LD or the video section of CDV, the TV screen goes blank.

## How to Resume Playback—Auto Resume (only for LDs)


This function can only be used for LDs. Even if you press STOP (■) or POWER to stop playback, you can still continue viewing from the scene you stopped at.

### To View From the Scene You Stopped at

- 1 Press STOP (■) or POWER to stop playback.  
 or   
(Player or Remote)

POWER The AUTO RESUME indicator on the front panel lights up and the point you stopped at is stored.\* When you press POWER, the indicator lights up briefly, then goes off with the power.

- 2 Press PLAY (▶).\*\*

PLAY   
(Player or Remote)

The AUTO RESUME indicator lights up as the player searches for the scene where you stopped playing, then playback starts. If you want to pause playing just before starting, press PAUSE (⏸) instead of PLAY (▶).


\* The point where you stopped playing is cleared when:  
—you press OPEN/CLOSE (⏻), (DISC/SIDE A/B or ACS/AMS (⏮⏭⏭⏭)).

\*\* When the power is off, press PLAY (▶) on the Front Panel. The player turns on automatically and resumes playback. When you use the Remote Commander, press POWER, then PLAY (▶).

## How to Search for a Particular Point on a Disc

To find a particular point, play the disc in reverse or forward at high speed.\* The sound is automatically muted while scanning an LD.\*\* You can monitor sound while scanning a CD. Locate the SCAN ◀▶/▶▶ buttons on the Remote Commander.

### To Scan in Forward or Reverse

SCAN   
Hold down SCAN (▶▶) on the Remote Commander to forward scan.  
Hold down SCAN (◀◀) to scan a disc in reverse.

### To Resume Normal Playback

Release SCAN (◀◀ or ▶▶).

\* A certain amount of visual noise and instability is inevitable while scanning an LD or the video section of a CDV.  
\*\* When scanning a CLV LD or the video section of a CDV, frames are skipped.

## Understanding Displays and Messages When Playing Discs

You can check the player operating status or disc information on the TV screen. Locate the DISPLAY button on the Remote Commander or the front panel of the player.

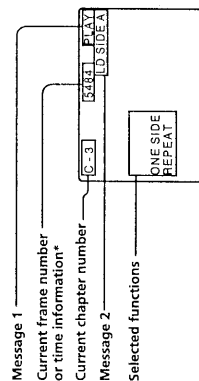
### To View On-Screen Information



Press DISPLAY twice.

When pressing DISPLAY once, only the first line appears. The tables below are keys to the messages that appear on the right of the screen.

#### Display for LD



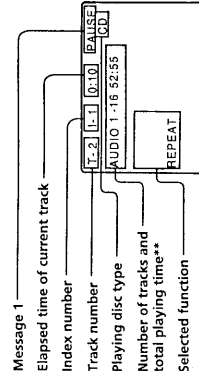
Message 1 (Examples for LD)

Screen Display	Current Status of the Player
OPEN	Disc tray open
CLOSE	Disc tray closed
PLAY	Playing LD
STOP	Operation stopped
PAUSE	Operation momentarily stopped
⏮/⏭	Speed scanning
SEARCH	Searching

Message 2 (Examples for LD)

Screen Display	Currently Playing
LD SIDE A	Side A of LD
LD SIDE B	Side B of LD
1/L	First soundtrack/left channel
2/R	Second soundtrack/right channel
D DIGITAL	Digital sound
A ANALOG	Analog sound

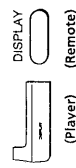
#### Display for CD or CDV



Message 1 (Examples for CD or CDV)

Screen Display	Current Status of the Player
OPEN	Disc tray open
CLOSE	Disc tray closed
PLAY	Playing CD or CDV
STOP	Operation stopped
PAUSE	Operation momentarily stopped
⏮/⏭	Speed scanning
SEARCH	Searching

### To Turn Off the Display



Press DISPLAY again.

\* When playing a CAV LD, the current frame number appears. When playing a CLV LD, the total elapsed time appears. CLV LDs not indicating time data to the second, indicate two-digit numbers such as "72".  
\*\* When playing a CDV, the number of the track and total playing time of the video section also appear.

## How to Search by Chapter/Track Numbers

LDs are divided into sections called "chapters". CDs are divided into sections called "tracks". Chapters or tracks are usually listed on the jacket or label of the disc. By entering the desired chapter/track number, you can have the player find the chapter/track and play it. Use ACS/AMS (◀▶) —Automatic Chapter Sensing/Automatic Music Sensing—to advance or reverse a chapter at a time.\* Locate the number keys and the ACS/AMS (◀▶) buttons on the Remote Commander.

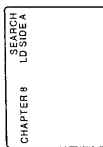
### To Locate a Particular Chapter or Track (Chapter/Track Search)

For example, to locate chapter 8, press "8" on the Remote Commander.\*\*

(8)

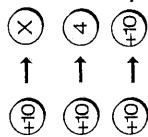
**Press one of the number keys** on the Remote Commander corresponding to the chapter/track you want to play.

The player starts searching for Chapter 8.



The player finds Chapter 8 and starts playing from the beginning of Chapter 8.

**Press +10 and one of the number keys.**

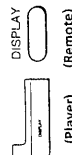


**To Enter a Number Greater Than 10** .....

Do this to make a numerical sum. For example, to enter 14, press +10 and 4; to enter 30, press +10, +10, +10 and 0.

..... "14"  
..... "30"  
If you make a mistake while entering numbers, press CLEAR on the Remote Commander, then enter the correct numbers.

### To Check the Current Chapter/Track Number



### To Advance or Go Back a Chapter/Track at a Time (Skip Search)

**Press ACS/AMS (◀▶) on the Remote Commander once** to return to the beginning of the current chapter/track.  
**Press ACS/AMS (▶▶)** to advance to the beginning of the next chapter/track.  
**Press ACS/AMS (◀◀) twice** before the picture reappears to return to the beginning of the previous chapter/track.  
**Hold down ACS/AMS (◀◀ or ▶▶)** for continuous skip search.

### To Resume Normal Playback

The player automatically resumes playback from the beginning of the selected chapter/track.

\* In addition to normal play mode, you can conduct Chapter/Track Search while in Freeze-Frame, Repeat or Pause mode. When the specified chapter or track is located after the search, playback continues in the same mode.  
\*\* Chapter Search does not function properly if the LD does not contain chapter numbers, or the chapter number entered does not exist.

18 To Play a Disc

## How to Search by Frame Number or Time —Frame/Time Search (only for LDs)

This function can only be used for LDs. Video scenes are counted as a series of still pictures or "frames". The player keeps track of the number of frames that have been played from the beginning of the disc to the current position. Similarly, the player also keeps track of the elapsed playing time from the beginning of the disc. To play from a particular frame or time, use the Frame/Time Search function. Locate the FRAME/TIME, SEARCH buttons, and number keys on the Remote Commander.

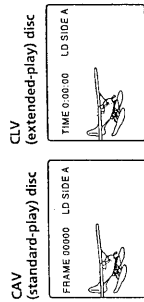
On CAV (standard-play) discs, enter a frame number.  
On CLV (extended-play) discs, enter the time.\*

### To Enter the Elapsed Frame or Time

**1 Press FRAME/TIME** on the Remote Commander.



The screen displays "000000" (for CAVs) or "0:00:00" (for CLVs).



**2 Enter the desired multi-digit number** corresponding to the frame or time you want to find.

Enter five digits for CAVs.  
Enter four digits for CLVs displaying the time to the second.  
Enter two digits for CLVs displaying the time to the minute.

#### Sample Entry for CAV Discs

To locate frame number 12340, press the number keys in the order on the right:



#### Sample Entry for CLV Discs

To locate the 12-minute, 5-second point, press the number keys on the Remote Commander in the order on the right:



If you pressed the wrong key, press FRAME/TIME to clear the number, then enter the correct number.

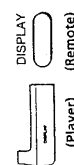
Play starts from the time or frame specified in step 2.\*\*

**3 Press SEARCH** on the Remote Commander.



### To Check the Frame/Time Numbers

**Press DISPLAY.**  
The current frame or current time number appears.



### To Cancel Frame/Time Search

**Press CLEAR** on the Remote Commander before pressing the SEARCH button.



\* In addition to normal play mode, you can conduct Frame/Time Search while in Freeze-Frame, Repeat or Pause mode. When the specified frame or time is located after the search, play continues in the same mode.  
\*\* "CAV" or "CLV" should be noted somewhere on the disc jacket.

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## How to Play Frame-by-Frame (only for CAV LDs)

Once you have found a particular scene on a CAV LD, you can examine the progression of that scene by advancing or reversing the action one frame at a time (Step Play),\* or freezing the action into a still picture (Freeze Frame).\*

Locate the STILL/STEP ◀/▶ buttons on the Remote Commander.

### To Play One Frame at a Time (Step Play)

- 1 Press STILL/STEP (◀/▶) on the Remote Commander once.  
The frame freezes.
  - 2 Press STILL/STEP (◀/▶) repeatedly.  
To reverse ▶▶▶  
To advance ▶▶▶
- Each press shifts the image one frame backward or forward.  
Hold down the button for continuous frame-by-frame action.

### To Freeze the Action (Freeze Frame)

Press PAUSE (II) once.  
PAUSE (II)  
(Player or Remote)

### To Resume Normal Play

Press PLAY (▶).  
PLAY (▶)  
(Player or Remote)

### Extended-Play (CLV) Discs

Freeze Frame and Step Play are not possible with CLV discs. When STILL/STEP is pressed, the screen goes blank and the message "CLV SIDE A (or B)" appears. When PAUSE (II) is pressed, the screen goes blank and the message "PAUSE" appears.

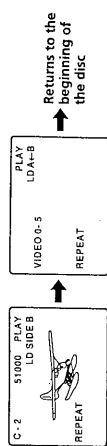
\* This function can only be performed on CAV LDs.

## How to Replay the Same Selections

These instructions show you how to set the player to play the same scenes or selections over and over until you signal the repetition to stop. You can replay both sides, a single side or one chapter of an LD, and a whole disc or a single track on a CD. Locate the REPEAT and 1/SIDE/ALL on the Remote Commander.

### To Repeat the Whole Disc (Whole Disc Repeat)

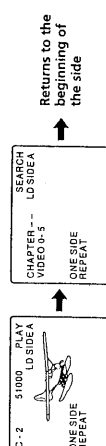
Press REPEAT on the Remote Commander.  
When playing an LD, the player repeats playing both disc sides, side A to B. When playing a CD or CDV, the player repeats playing all the tracks on the disc.



At the end of the disc

### To Repeat the Current Side of the LD (One Side Repeat)

Press 1/SIDE/ALL twice, then REPEAT on the Remote Commander.  
"REPEAT" and "ONE SIDE" appear on the screen for three seconds.\* The player repeats playing the current disc side.



At the end of one side of the disc

### To Repeat the Current Chapter or Track (Single Repeat)

Press 1/SIDE/ALL once, then REPEAT.  
"REPEAT" and "SINGLE" appear on the screen for three seconds. The current chapter repeats continuously. If you press 1/SIDE/ALL once and do not press REPEAT, the player plays the current chapter/track once, then stops.

### To Check the Replaying Status

Press DISPLAY twice.  
Playing status information appears on the TV screen as shown above.

### To Cancel Whole Repeat

Press REPEAT.\*\*

### To Cancel One Side Repeat

Press 1/SIDE/ALL once, then REPEAT.\*\*

### To Cancel Single Repeat

Press 1/SIDE/ALL twice, then REPEAT.\*\*

\* "ONE SIDE" appears only when playing an LD.

\*\* You can also cancel Whole Disc Repeat, One Side Repeat and Single Repeat by pressing CLEAR. "CLEAR" appears on the TV screen for three seconds.

## Troubleshooting

This section contains information that will help you if you have problems with your player. It also contains maintenance information and glossary.

### Additional Information

Check the following before requesting service.

Symptom	Point to check
<b>No power</b> <b>PLAY (▶) button or Number keys do not produce playback.</b>	<ul style="list-style-type: none"> <li>AC Power cable properly connected?</li> <li>Disc inserted?</li> <li>Disc properly seated?</li> <li>Label side of the CD facing upward?</li> </ul>
<b>No picture or sound</b>	<ul style="list-style-type: none"> <li>TV or monitor switched on?</li> <li>TV properly connected to player?</li> <li>The input selector on TV set to "Video"?</li> </ul>
<b>Poor picture or sound quality</b>	<ul style="list-style-type: none"> <li>TV properly connected?</li> <li>Any source of noise nearby?</li> <li>Disc dirty or scratched?</li> <li>Any condensation on player objective lens?</li> </ul>
<b>No sound</b>	<ul style="list-style-type: none"> <li>TV properly connected to player?</li> <li>Volume control on TV, monitor, or amplifier high enough?</li> <li>Playback at normal speed? (The player produces sound only during normal speed playback.)</li> </ul>
<b>Remote Commander does not operate.</b>	<ul style="list-style-type: none"> <li>Batteries correctly inserted?</li> <li>Batteries weak?</li> <li>Any obstacles between the Remote Commander and the Sensor on the player?</li> <li>The Remote Commander is pointed at the sensor on the player?</li> </ul>
<b>Picture distorted during scan.</b>	<ul style="list-style-type: none"> <li>Some distortion in the lower part of the picture is normal – even for CAV discs.</li> </ul>

## Optical Disc Maintenance

### Holding CDs or CDVs

Hold CDs and CDVs by putting your index finger through the center hole and grasping the edges of the disc with the thumb and other fingers as pictured in the illustration.

### Holding LDs

Hold LDs by grasping the outside edge in both hands as illustrated.

### Light Exposure

Do not expose the disc to direct sunlight or heat sources such as hot air ducts, or leave the disc in a car parked in direct sunlight where there can be a considerable rise in temperature.

### Cracked or Damaged Discs

Do not play cracked or damaged discs, or try to play discs that have been repaired with adhesive glues.

### Keeping the Disc Surface Clean

Clean the surface of the disc before playing, using a soft, dry cleaning cloth. Wipe the disc from the center out. Do not use solvents such as benzine, paint thinner, commercially available cleaners, or anti-static spray intended for LP record discs. To prevent marring, after playing, remove the disc and put it back into its jacket. Putting your fingers on, or adhering anything to the surface of the disc such as sticky note pad paper or adhesive tape will deteriorate the quality of the playing surface, and thus the output quality.

## Player Maintenance and Safety

### On Electrical Safety

- Should any foreign object or liquid fall into the cabinet of the player, unplug the player and have it checked by qualified personnel before operating it any further.
- Unplug the player from the wall outlet if you are not going to use it for an extended period of time. To disconnect the cord, pull it out by the plug. Never pull the cord itself.

### On Player Location

- Avoid placing the player where there is:
  - high humidity
  - high temperature
  - excessive dust
  - mechanical vibration
  - direct sunlight
- Allow adequate air circulation to prevent internal heat build-up. Do not place the player on surfaces such as shag pile rugs, blankets or near materials such as curtains, drapes that may block the ventilation holes.

### On Moisture Condensation

- Do not operate the player where the temperature has risen suddenly or in a location where the temperature is radically different from the previous location because moisture may condense in the operating section of the player. Wait about an hour before turning the power on in a different location or keep the rise in the room temperature gradual.
- If you operate the player with moisture condensation, the player and the disc may be damaged. Therefore, remove the disc immediately when there is a possibility of moisture condensation.
- To evaporate moisture rapidly, leave the player turned on without a disc inside.

### On Operation

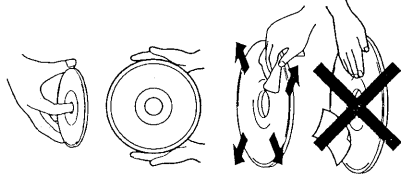
- Remove the disc from the tray after playing it if you are not going to use the player for any length of time. Do not transport the player with a disc in place.
- When the disc tray is in the open position, do not press down on it forcefully, or place heavy objects on it.

### On Cleaning

Clean the cabinet, panel, and controls with a soft dry cloth or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent, such as alcohol or benzine, which may damage the finish.

### On Repacking

Do not throw away the carton and the packing materials. The carton makes an ideal container to transport the player in.



## Glossary

**ACS/AMS** Automatic Chapter Sensor/ Automatic Music Sensor is a function in the player that allows the laser beam to sense the beginning of chapters or tracks on a disc.

**CAV Discs** Constant Angular Velocity (CAV) or standard-play discs rotate at a constant 1800 r/min. Each track traced by the laser for a single rotation of the disc produces a single frame. Up to 54,000 frames make up each side of the disc, for up to 30 minutes of play. Each frame has a number that is stored with other data on the disc. When searching for a particular location on CAV discs, you must enter that "frame number".

**Chapters** Some laser discs are divided into sections, called chapters. These are analogous to tracks on CDs. Such discs usually have a numbered list of chapters on the jacket or label. Each chapter has been numbered for easy location when you use Chapter Search or Repeat functions.

**CLV Discs** Constant Linear Velocity (CLV) or extended-play discs double maximum playing time to 60 minutes by varying the rotational speed from a maximum of 1800 r/min to a minimum of 600 r/min as the laser beam moves away from the center of the disc. The disc surface therefore moves past the laser head at a constant rate, and each track is longer than its predecessor. For this reason, Variable Speed Play, Freeze Frame, and Step Play are not possible with CLV discs, so when searching for a scene on CLV discs you must enter the time instead of the frame number.

**Digital Sound Recordings** Sound translated into digital signals has a better signal-to-noise ratio. Therefore, digital sound recordings offer a higher quality reproduction than the alternative, analog recordings (found on LPs and older audio cassette tapes). However, some laser discs have been recorded in the higher-quality digital audio signal as well as the conventional analog type signal. This player reproduces both signals with priority given to the digital signal when it is encountered.

**Indexes** Signs marked in a track so that you can find a particular point on the disc easily.

**MULTI AUDIO Disc** Different sounds are recorded on analog and digital tracks. You can select either sound by switching one to the other.

**SAP** Second Audio Programs are double soundtrack recordings found on bilingual and karaoke (sing-along) recordings. Two completely different sound programs have been recorded on the disc. By pressing the AUDIO MONITOR button, you can switch from one sound track to the other.

**Tracks** CDs and CDVs are divided into sections, called tracks. Each track has been numbered for easy location when you use Track Search or Repeat functions. The tracks usually correspond to the selections on the disc.

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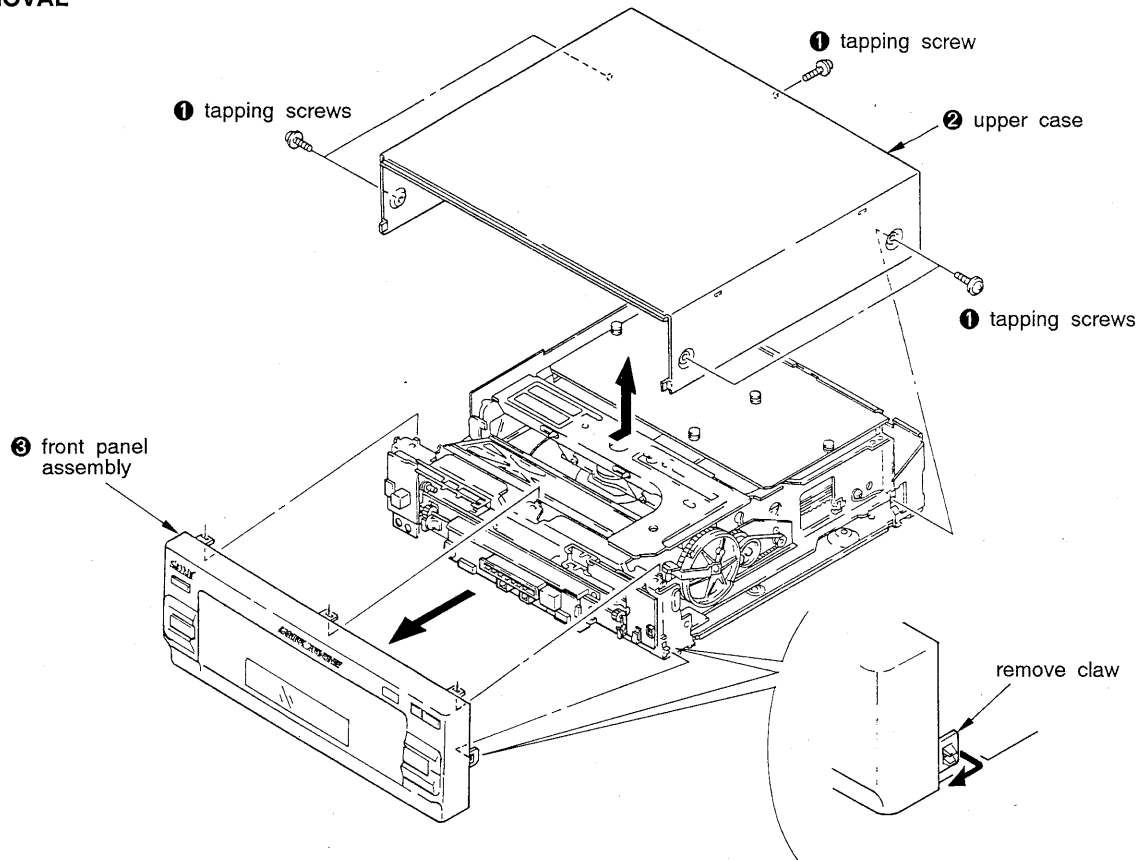
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## SECTION 2 DISASSEMBLY

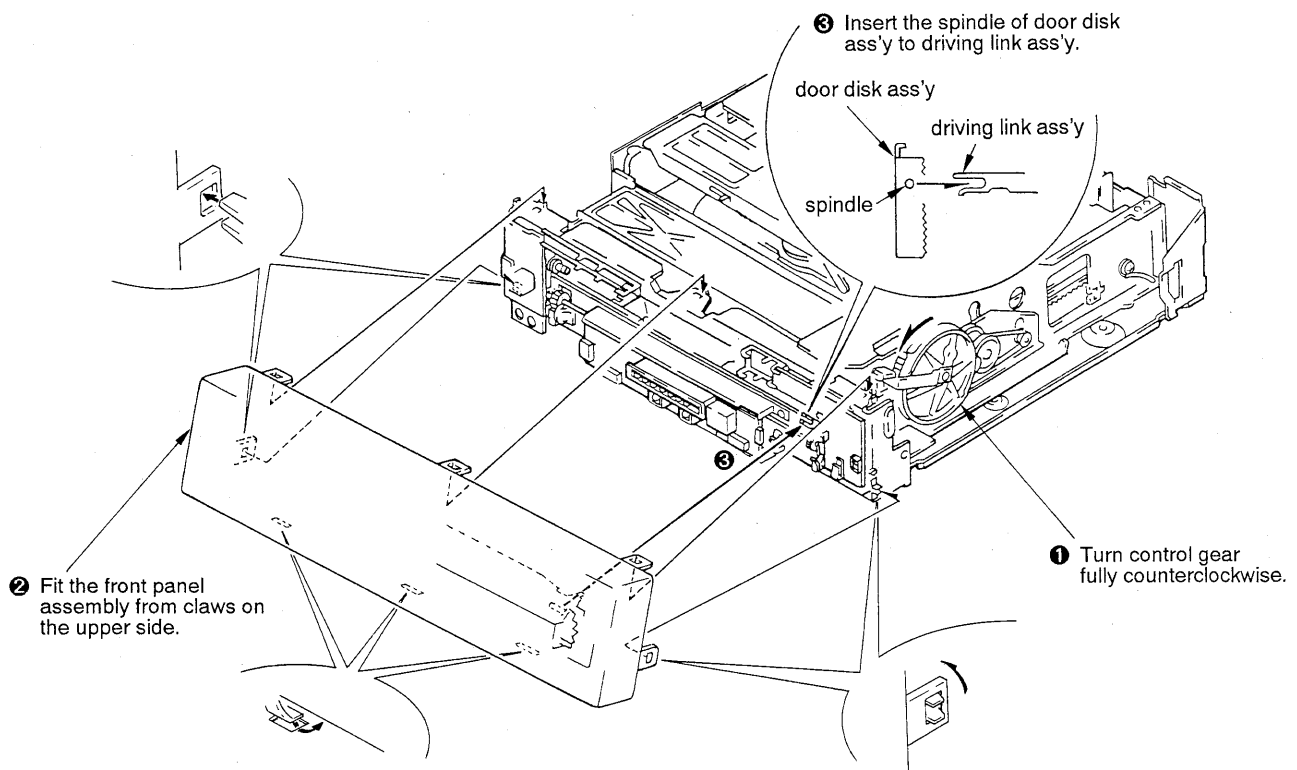
**Note:** Follow the disassembly procedure in the numerical order given.

### 2-1. UPPER CASE, FRONT PANEL ASSEMBLY

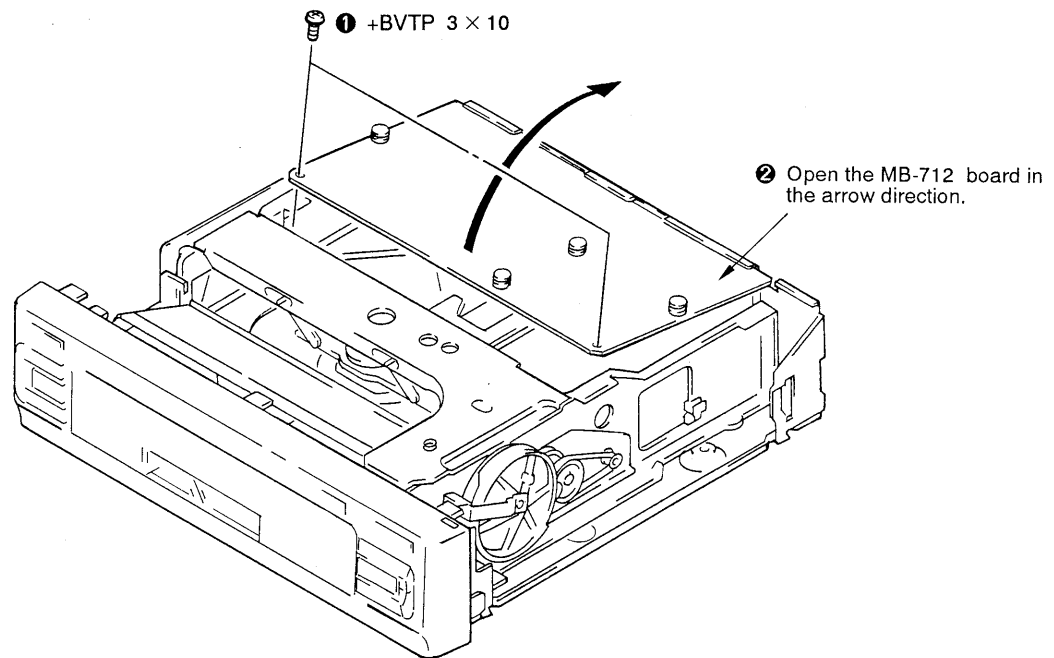
#### • REMOVAL



#### • FRONT PANEL ASSEMBLY FITTING

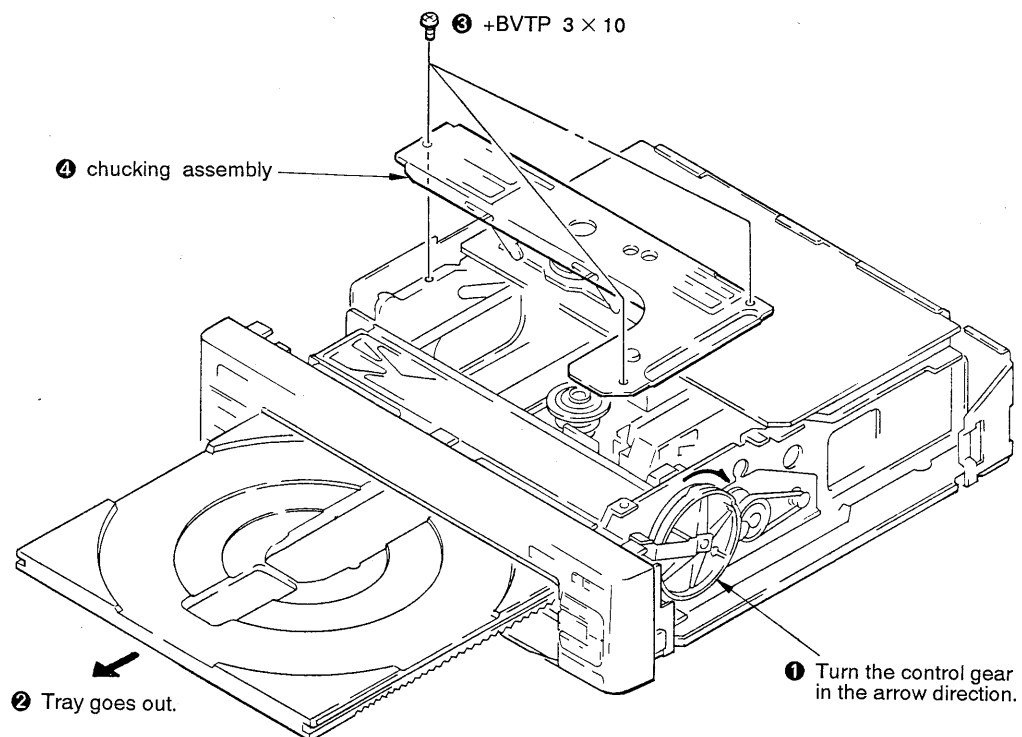


## 2-2. OPENING OF MB-712 BOARD

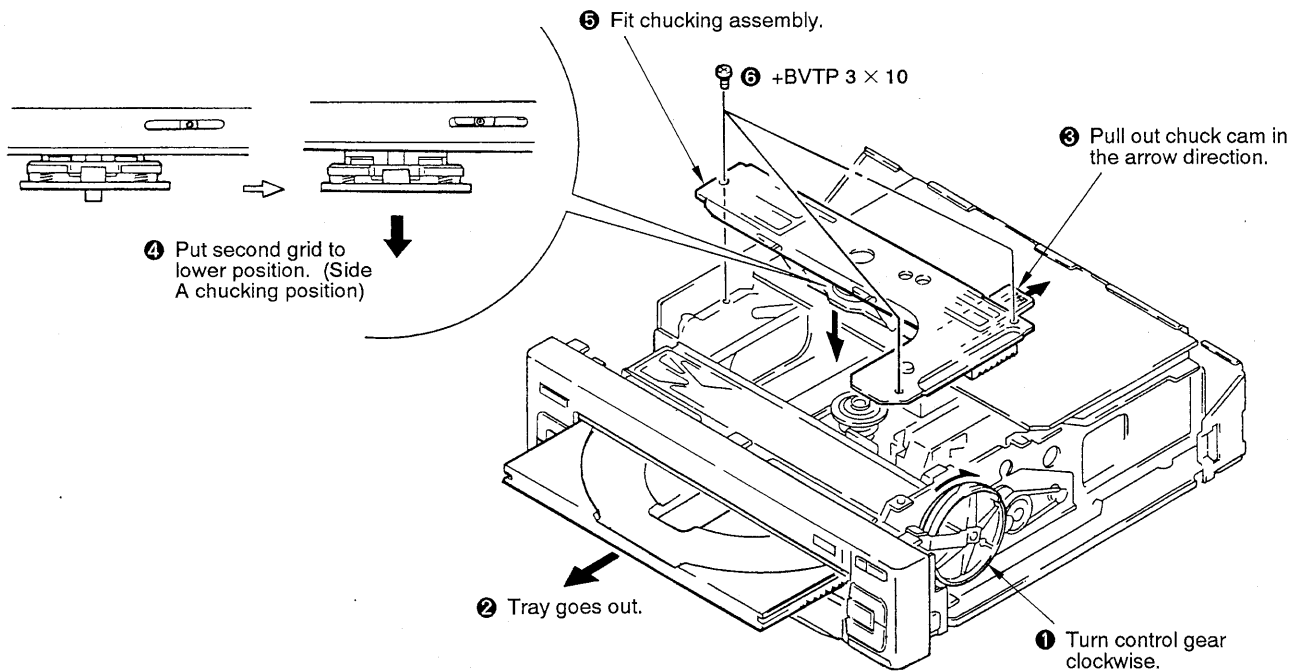


## 2-3. CHUCKING ASSEMBLY

### • REMOVAL

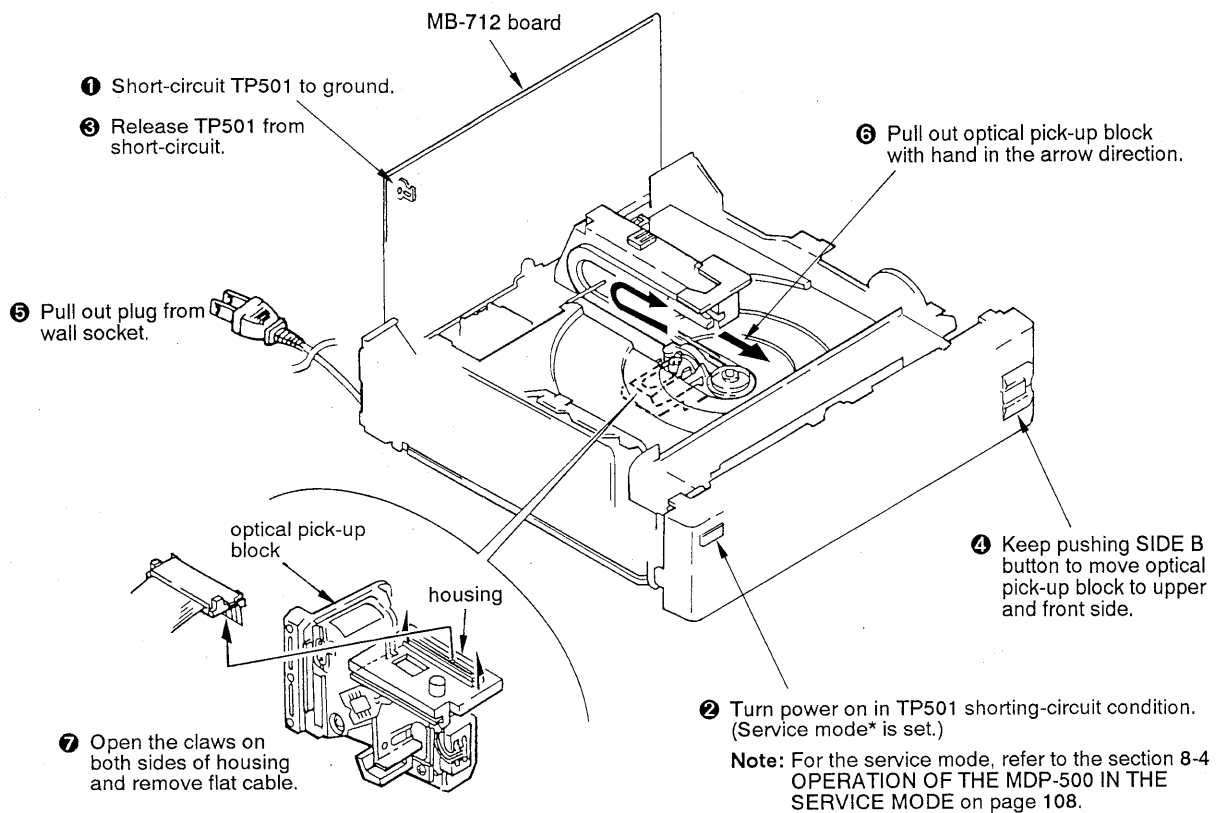


## • FITTING

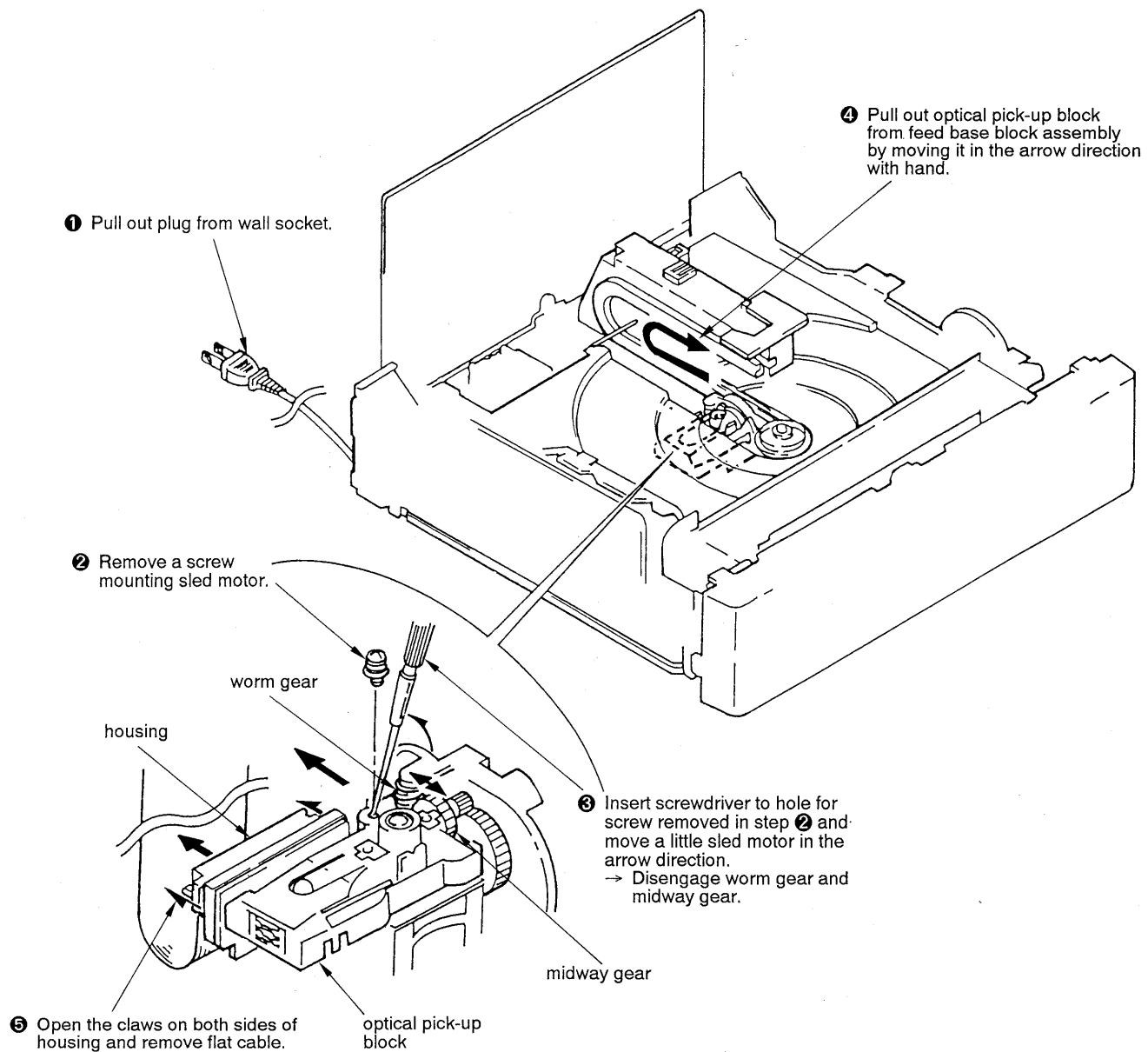


## 2-4. OPTICAL PICK-UP BLOCK

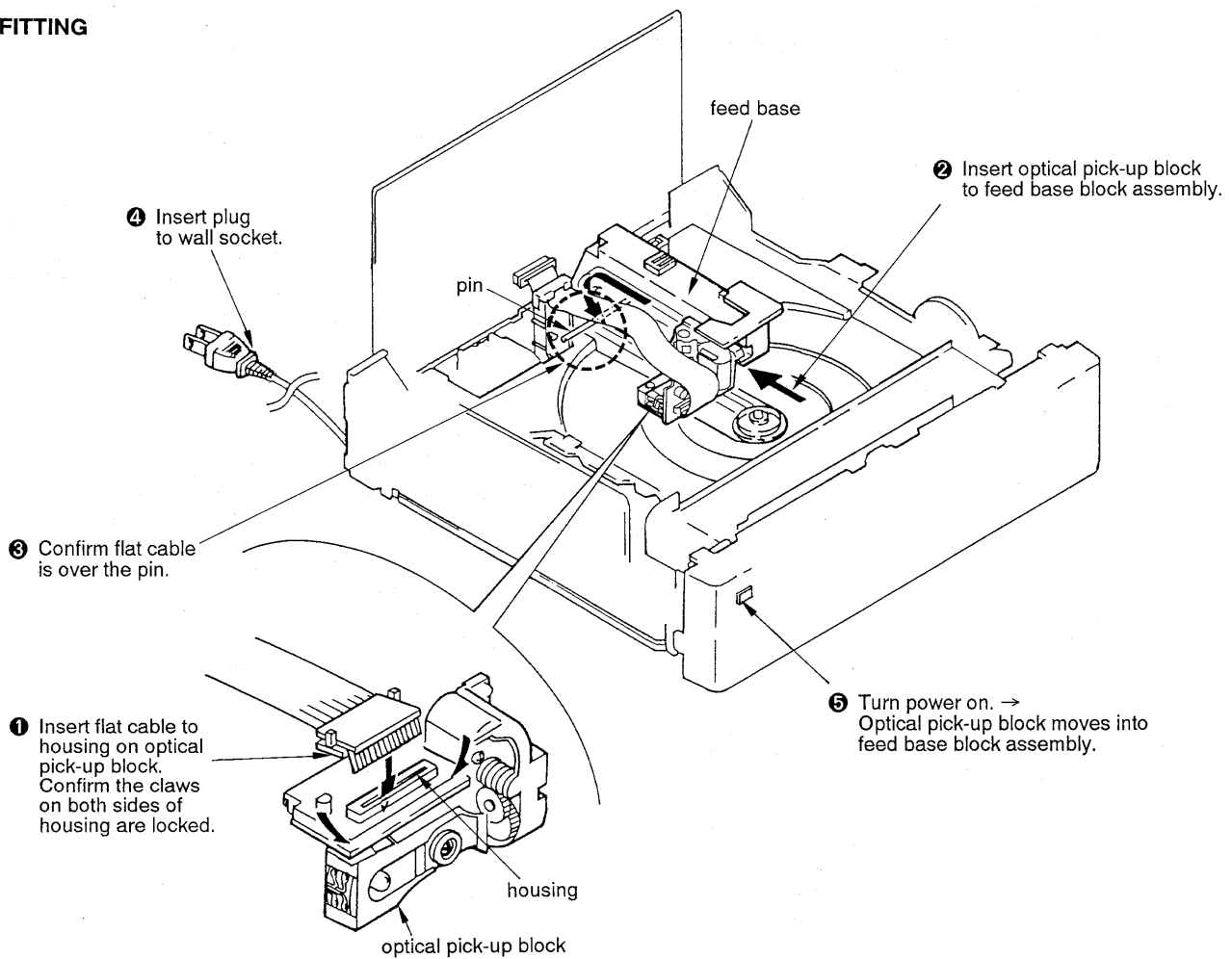
### • REMOVAL I (OPTICAL PICK-UP BLOCK MOTOR OPERATES)



• **REMOVAL II**  
**(OPTICAL PICK-UP BLOCK MOTOR DOESN'T OPERATE)**

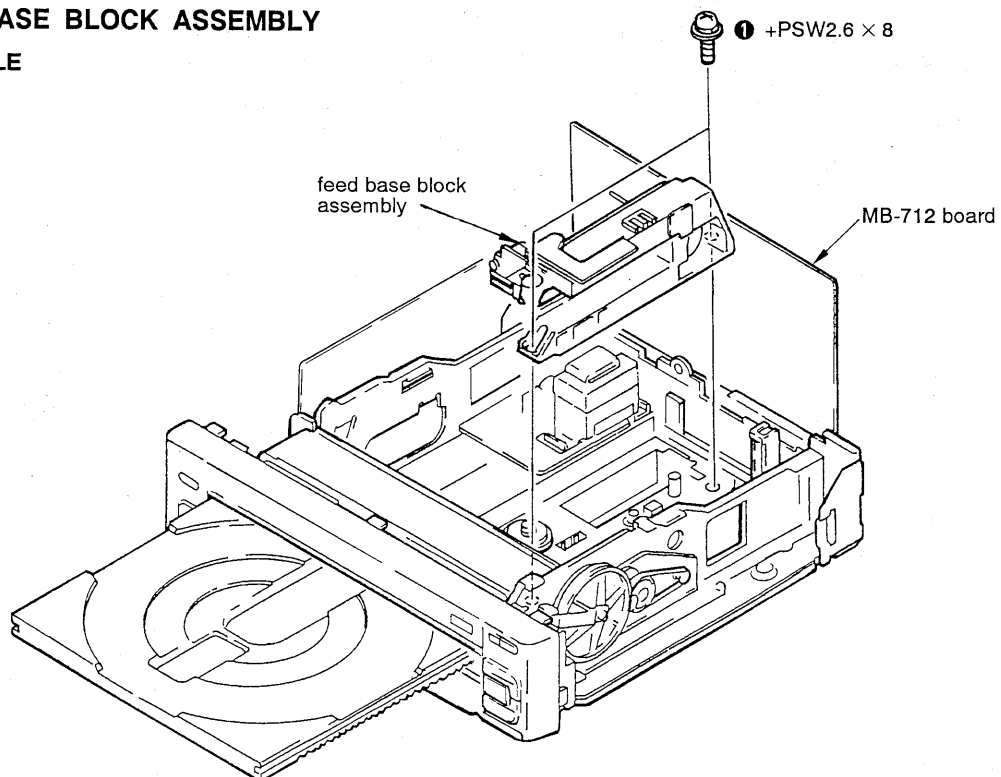


• FITTING



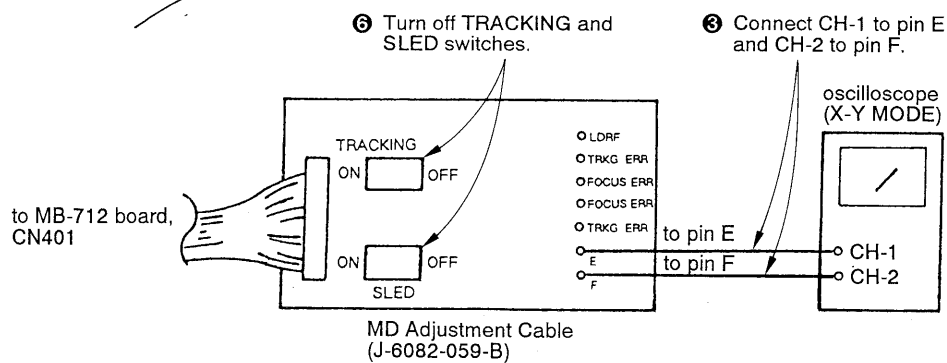
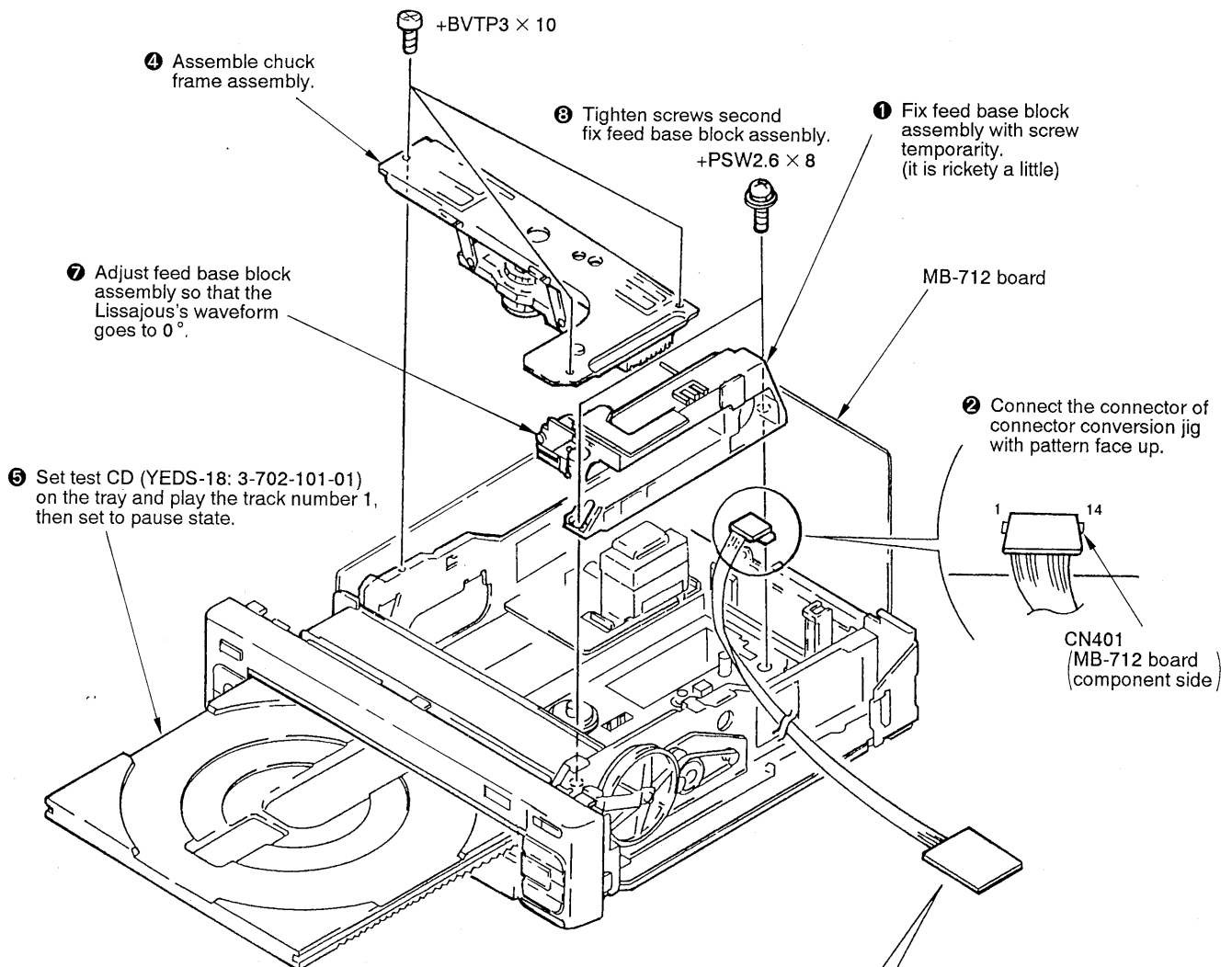
2-5. FEED BASE BLOCK ASSEMBLY

• DISASSEMBLE





## • INSTALLATION

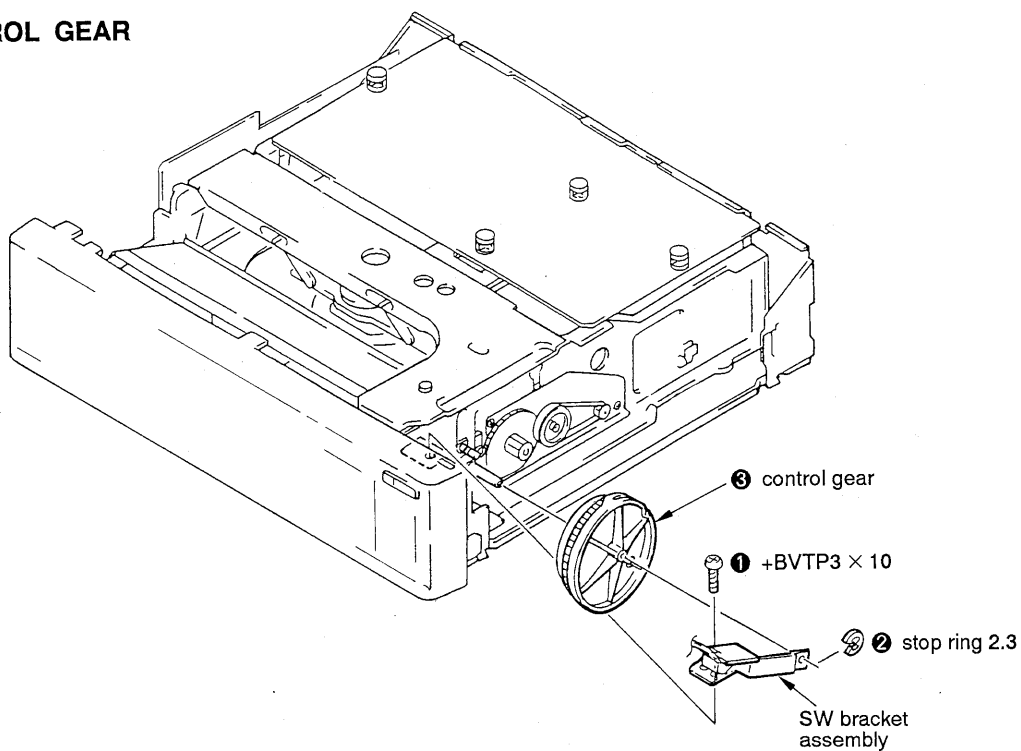


Lissajous's waveform

×	×	○
180°	90°	0°
↖	○	↗

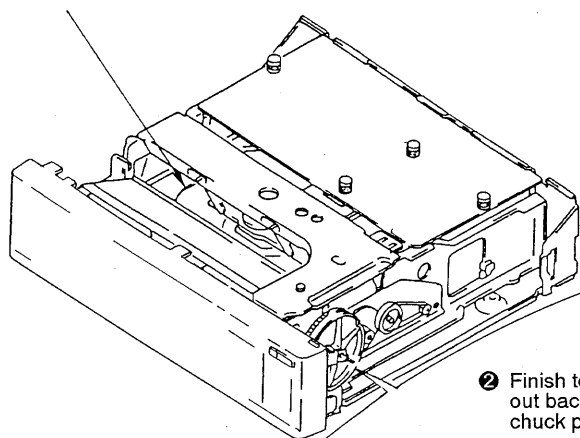
## 2-6. CONTROL GEAR

### • REMOVAL



### • FITTING

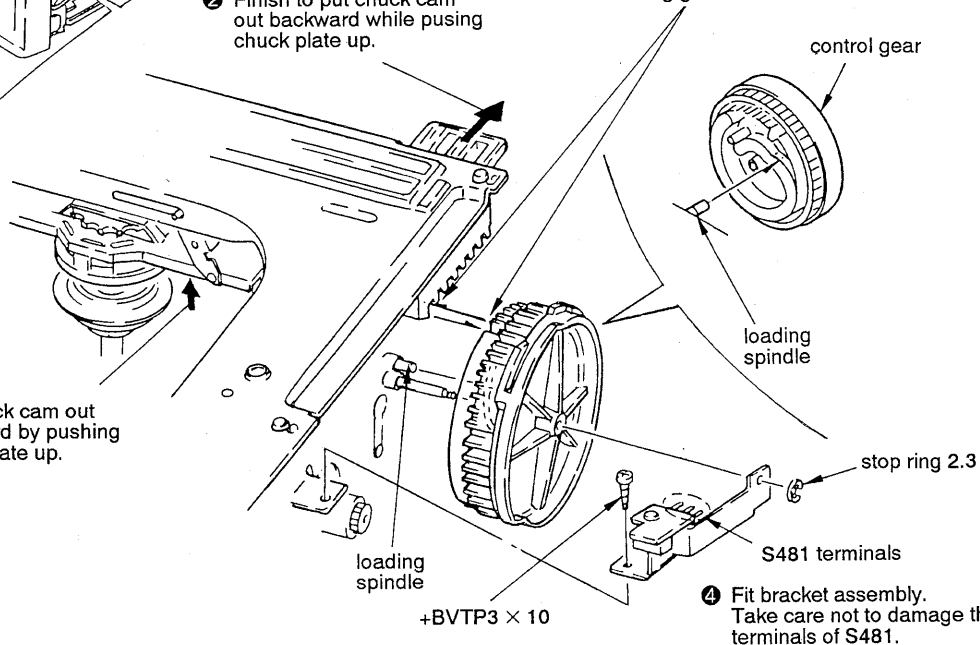
- 1 Make tray holding in the set.



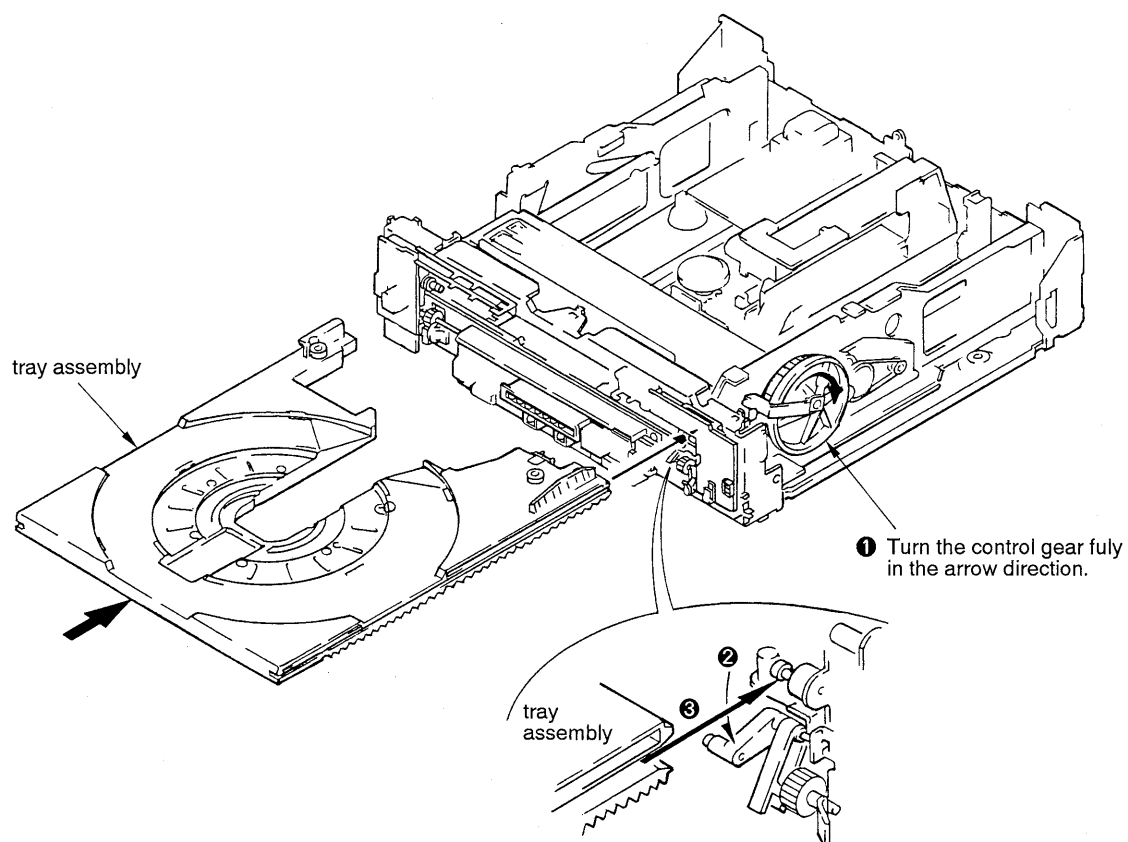
- 2 Finish to put chuck cam out backward while pushing chuck plate up.

- 2 Put chuck cam out backward by pushing chuck plate up.

- 3 Fit control gear so that its left end tooth on inner side engages the left end groove on chuck plate gear. At this time, insert loading spindle to loading groove.

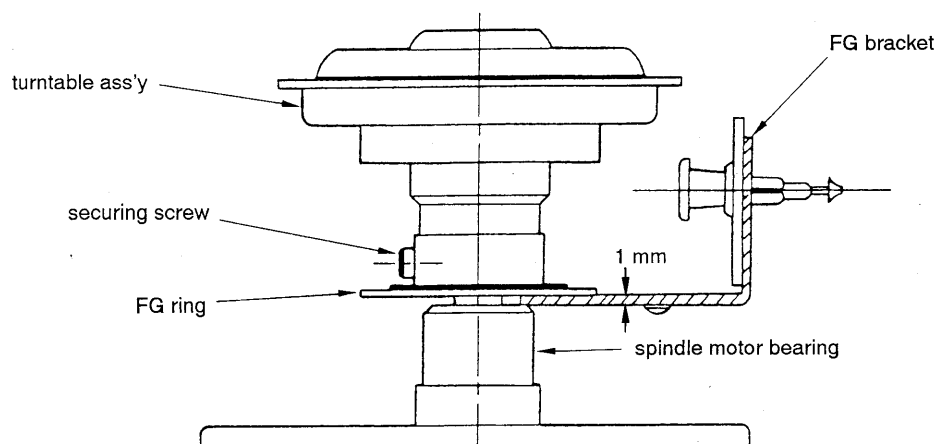


## 2-7. TRAY ASSEMBLY INSERTION



## 2-8. TURNTABLE ASSEMBLY HEIGHT ADJUSTMENT

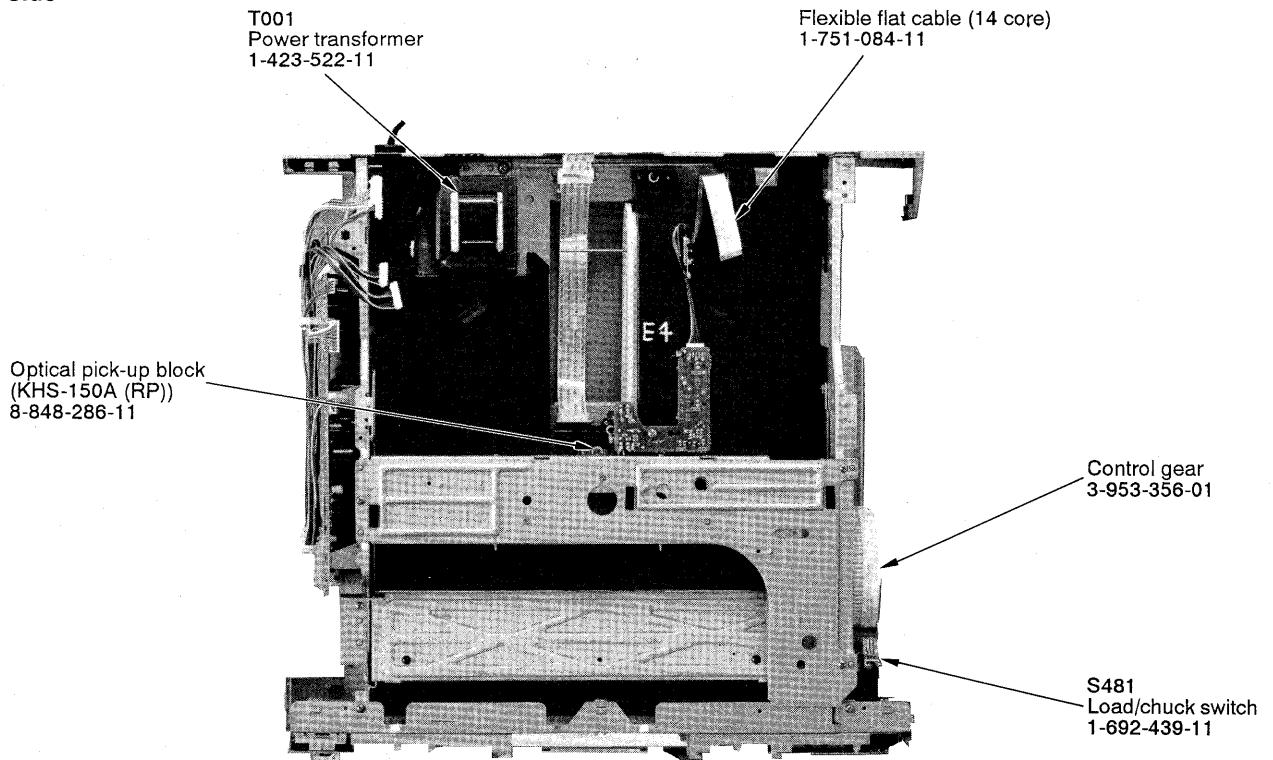
1. Open the tray by turning the control gear recured on the right side of the set clockwise.
2. Remove chucking assembly.
3. Remove FG bracket with FG board.
4. Replace turntable assembly.  
Adjust turntable assembly height using FG bracket (1 mm thickness) as followings.
5. Fit FG bracket with FG board in its original position.



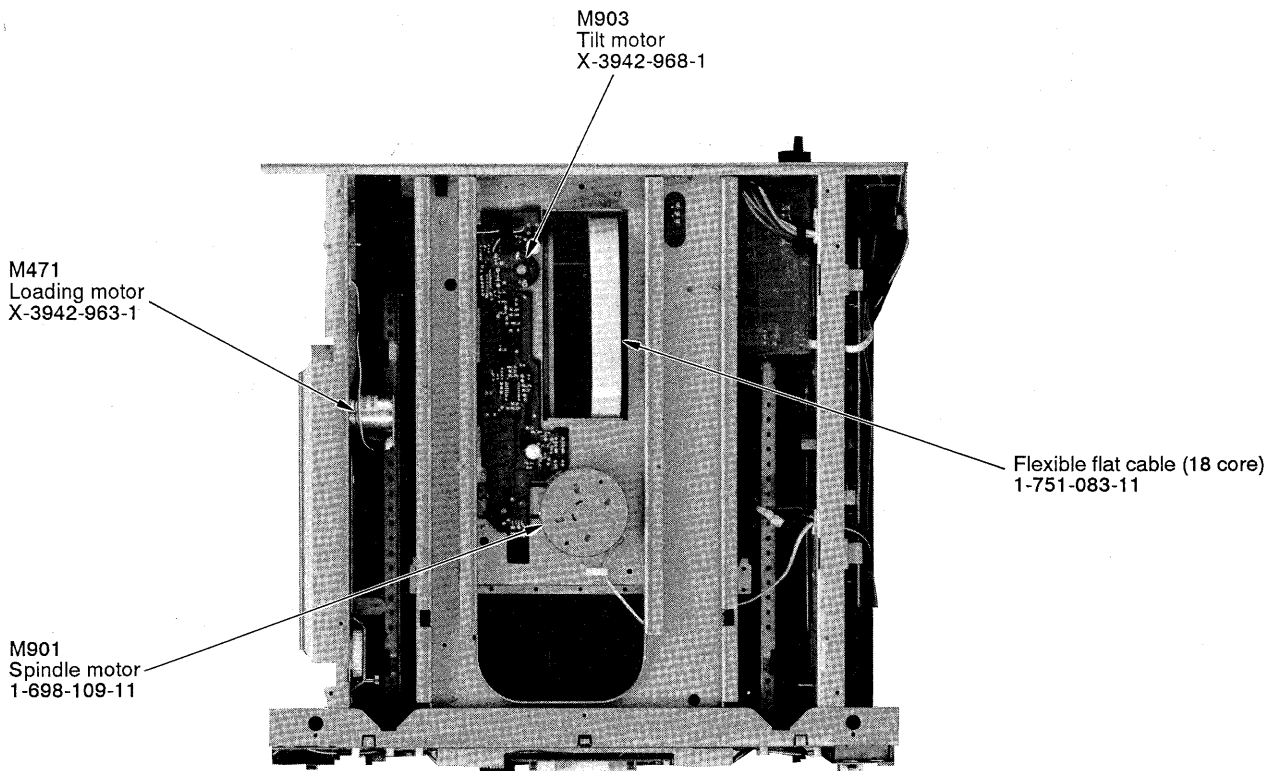
Insert FG bracket between spindle motor bearing and FG ring to set height and tighten securing screw.

## 2-9. INTERNAL VIEWS

— Top Side —

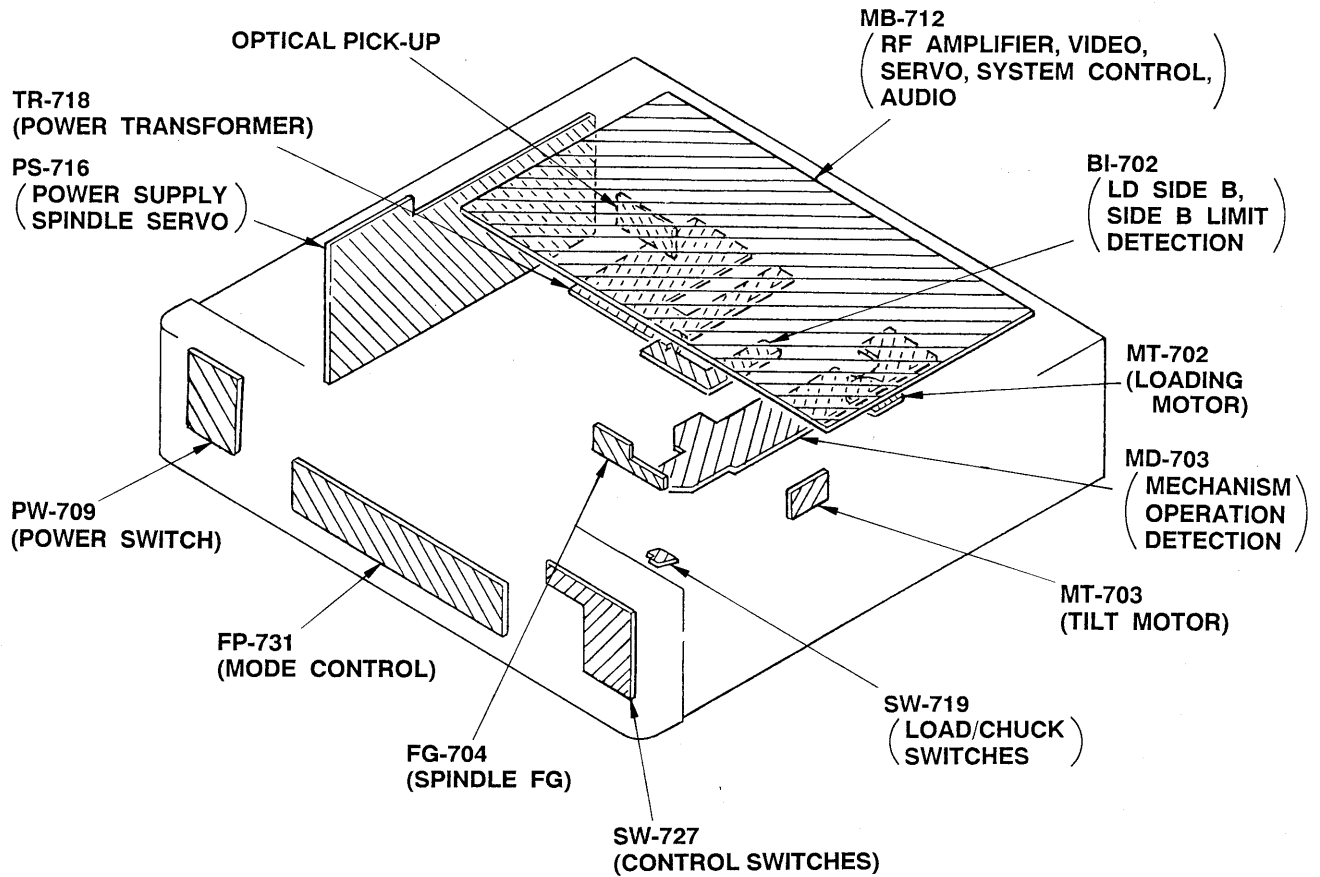


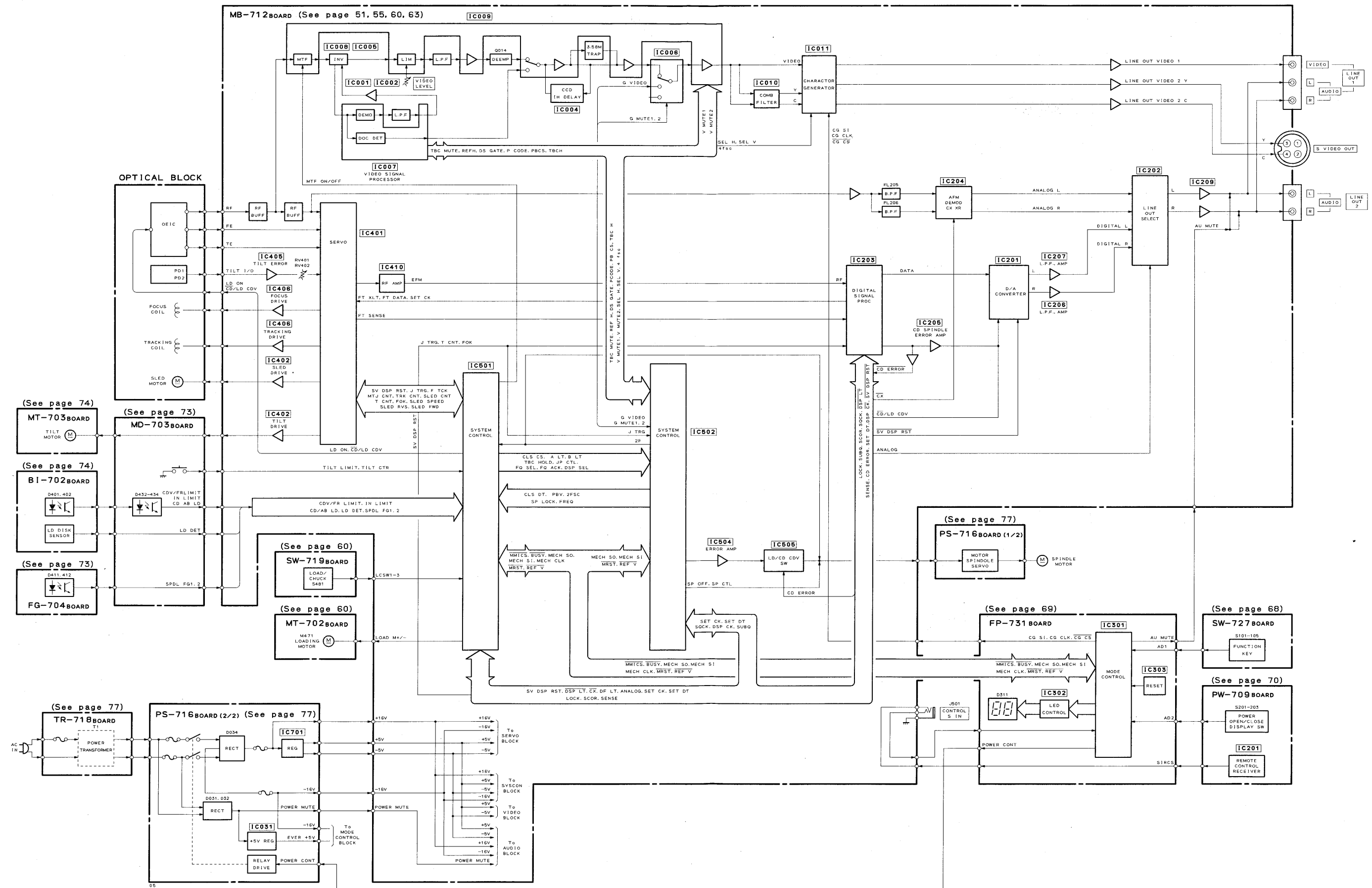
— Bottom Side —



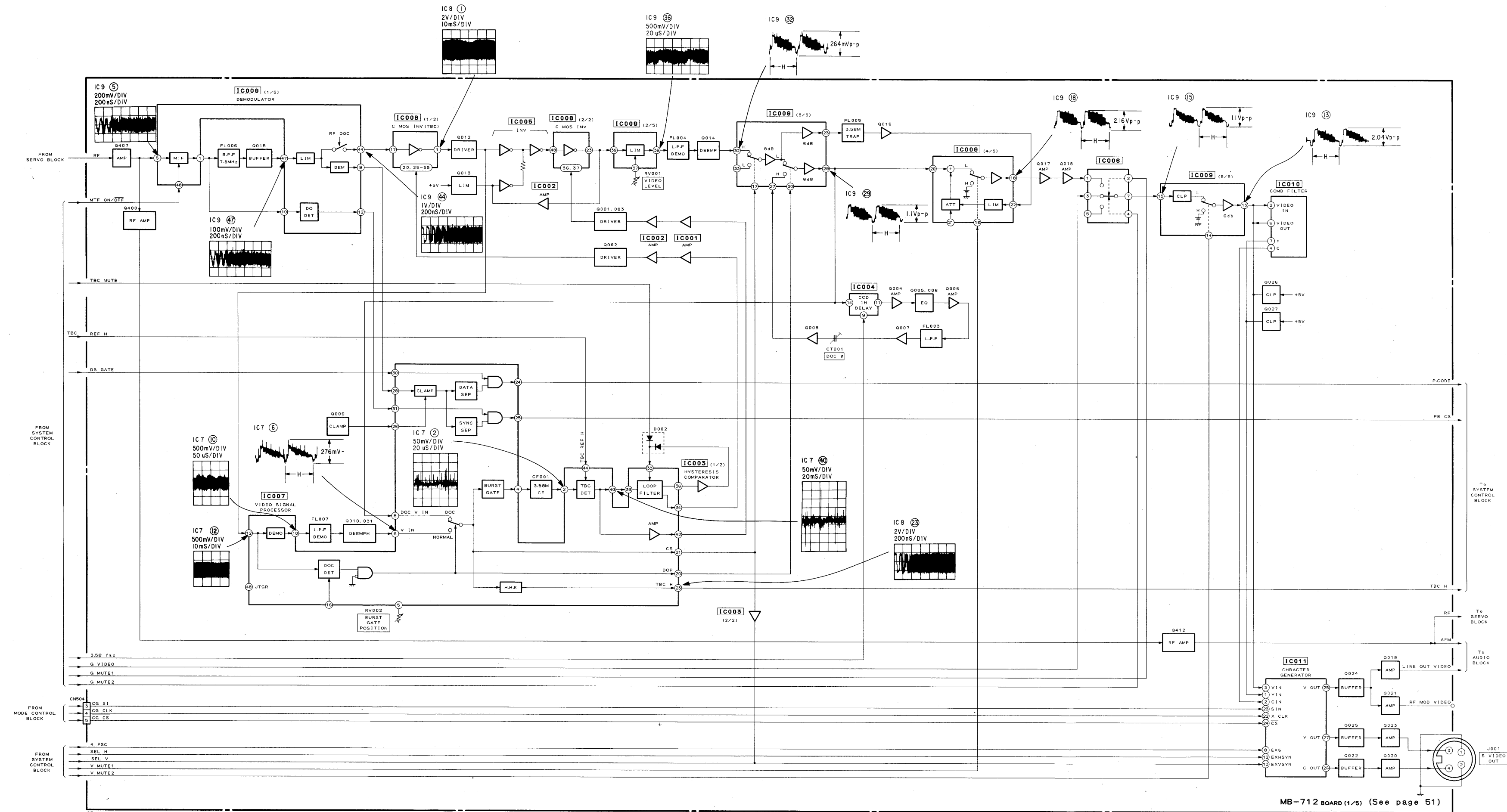
## SECTION 3 DIAGRAMS

### 3-1. CIRCUIT BOARDS LOCATION

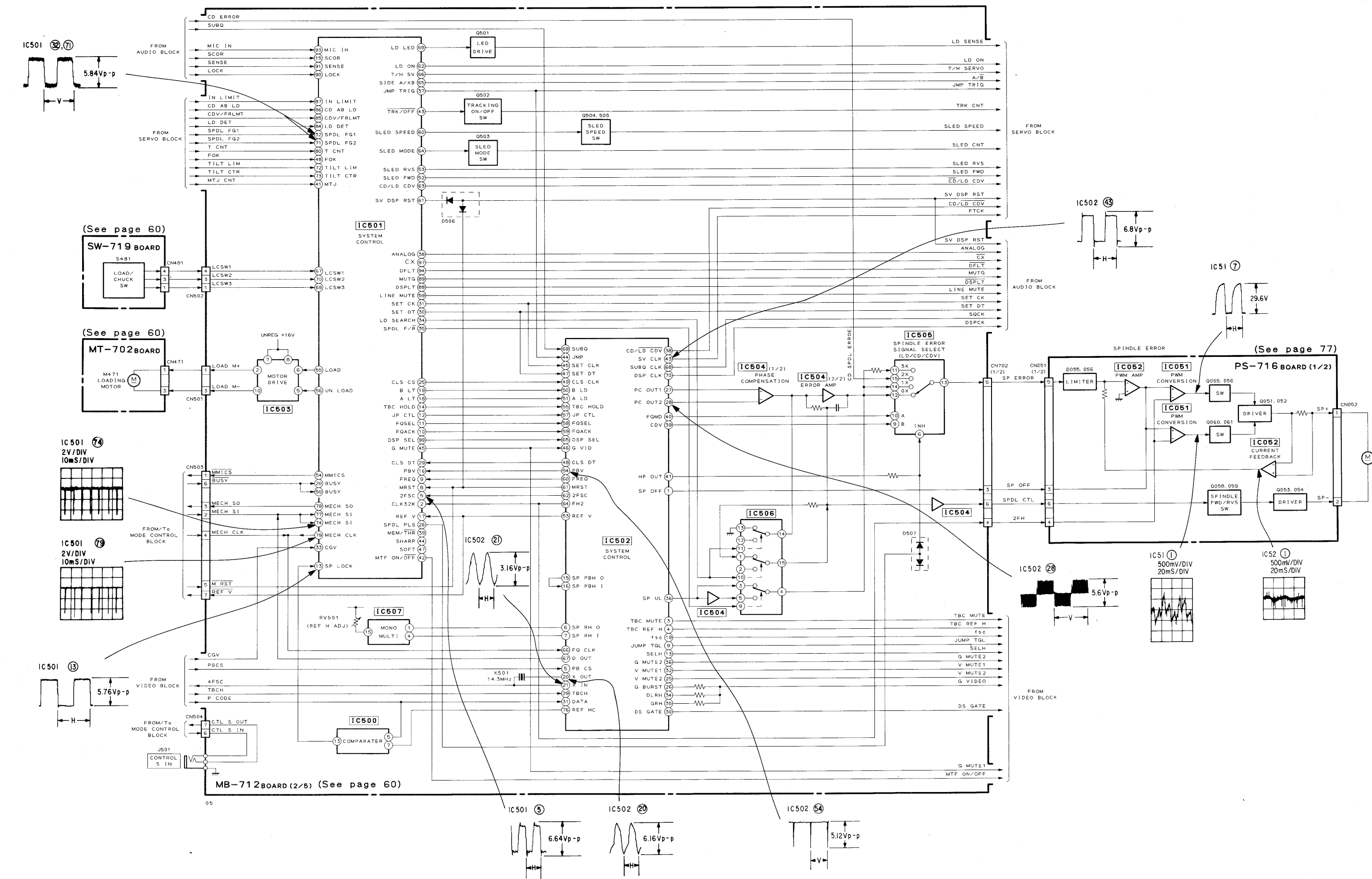




MDP-500  
3-3. VIDEO BLOCK DIAGRAM

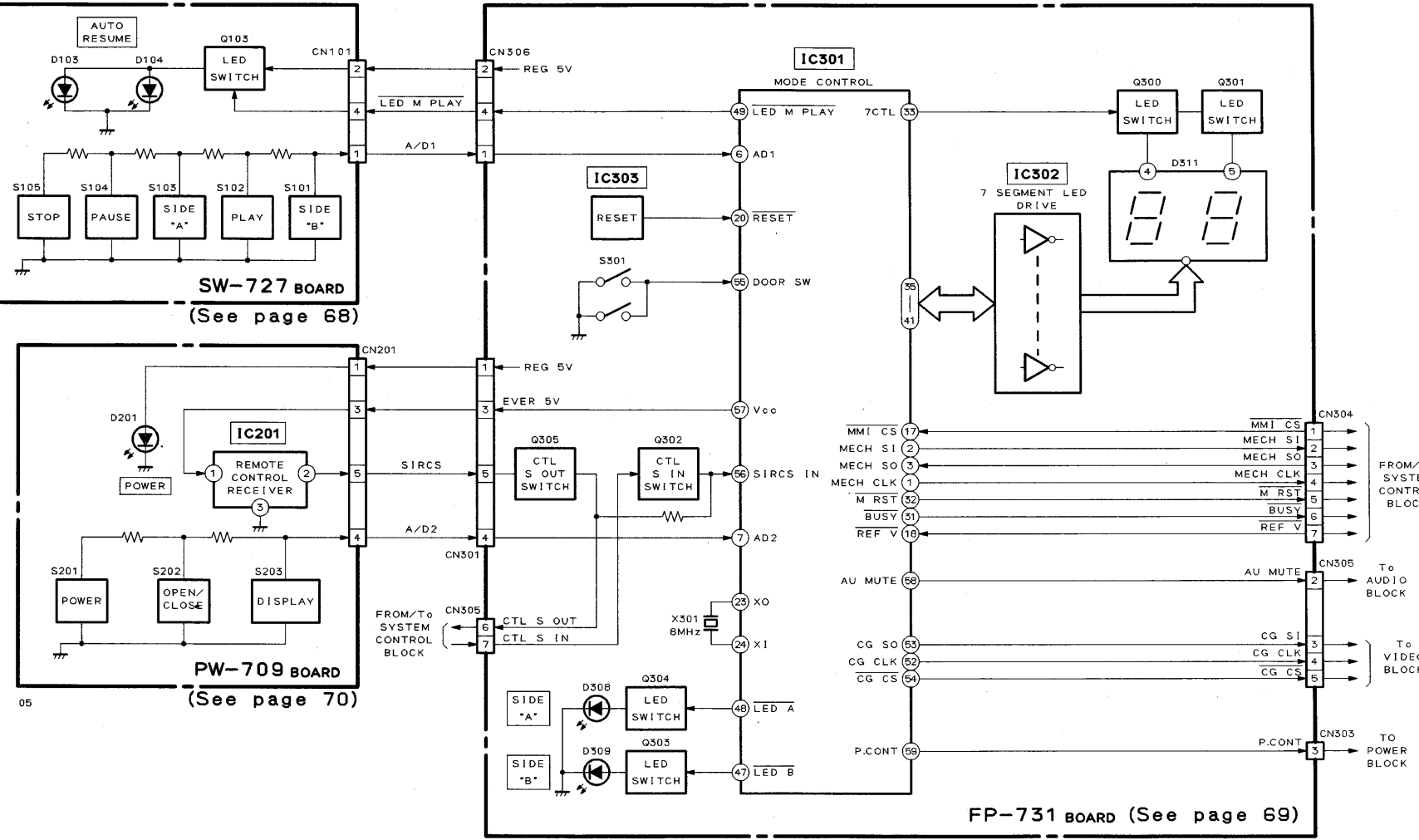


### 3-5. SYSTEM CONTROL BLOCK DIAGRAM

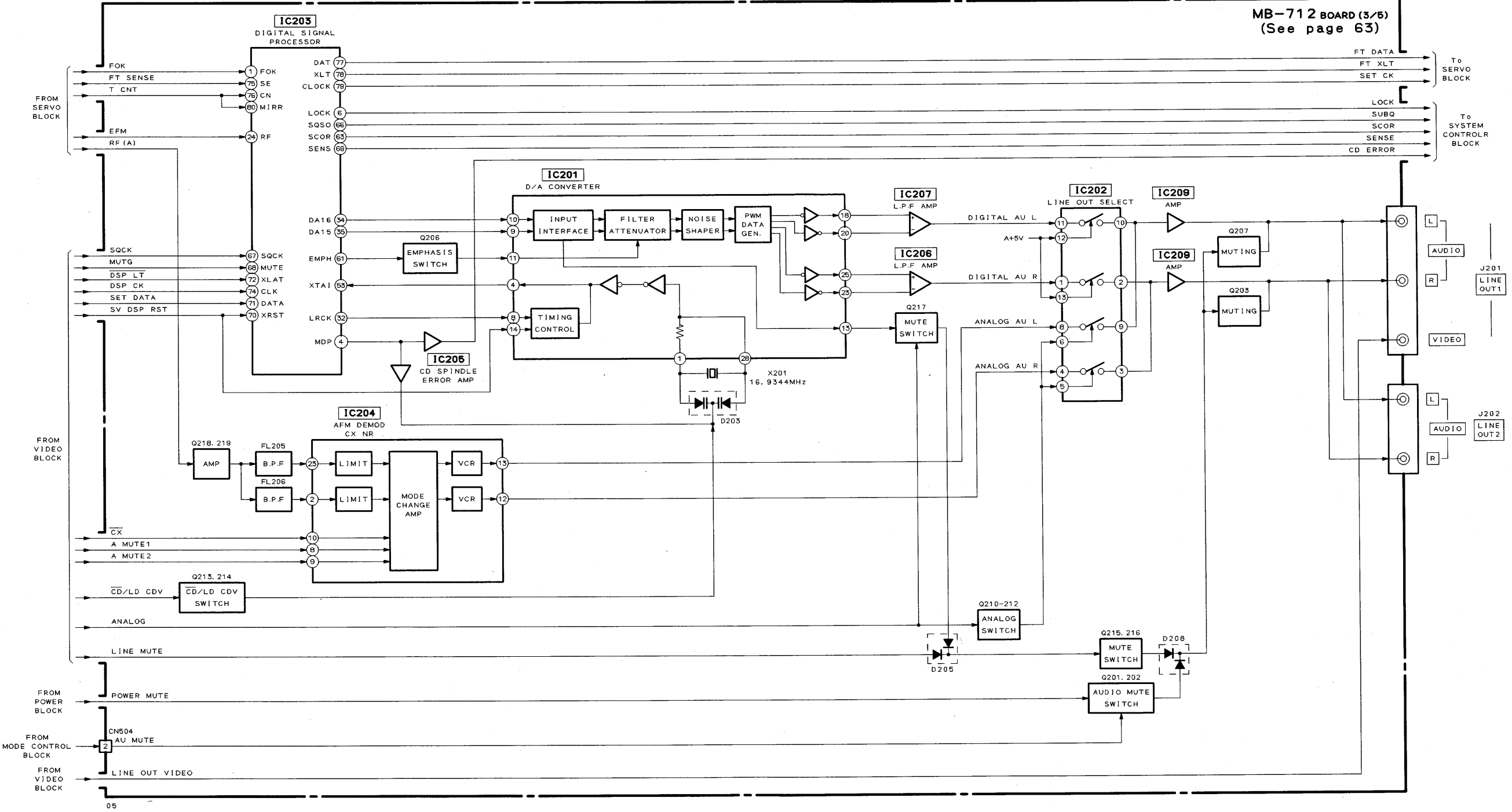




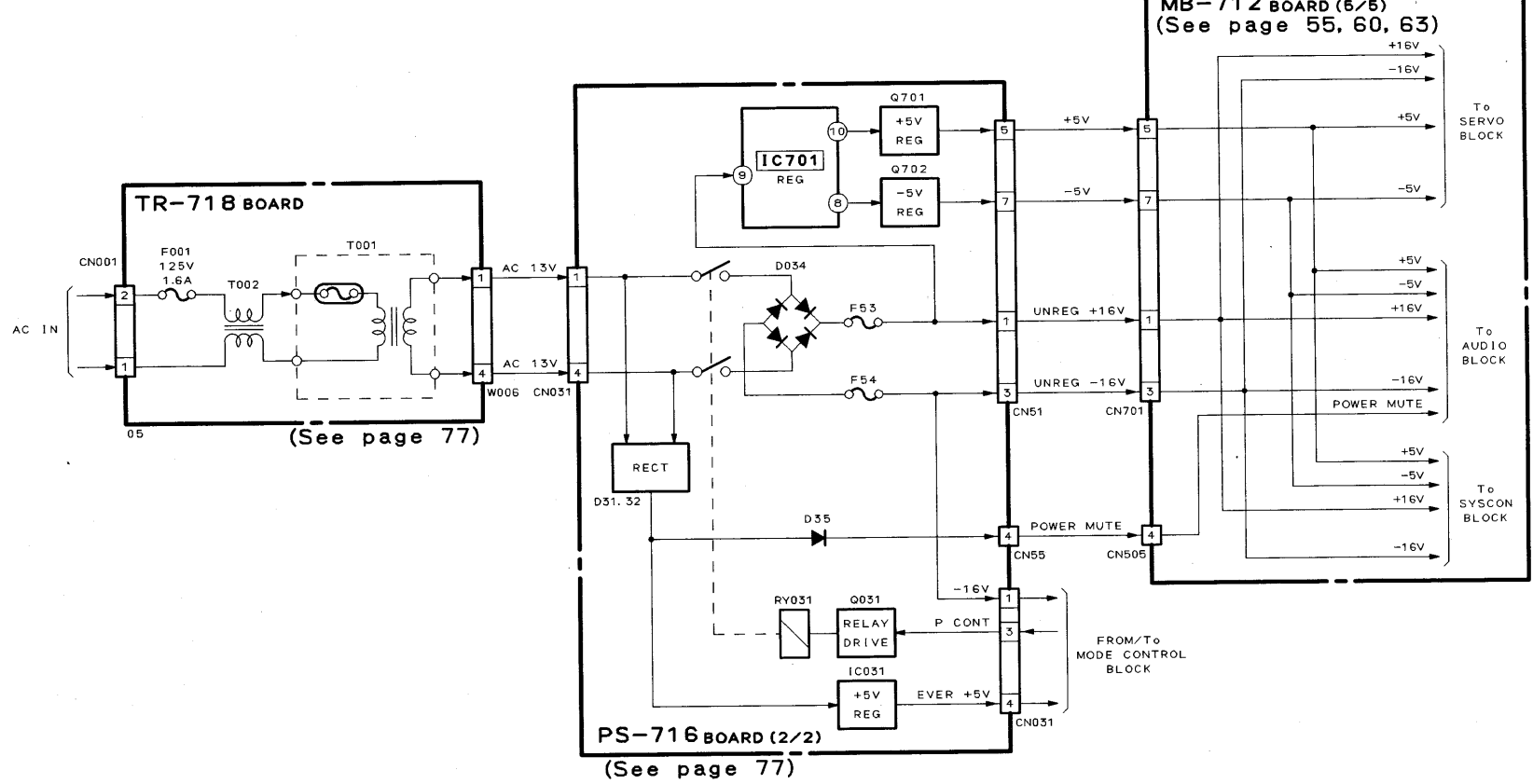
### 3-6. MODE CONTROL BLOCK DIAGRAM



### 3-7. AUDIO BLOCK DIAGRAM

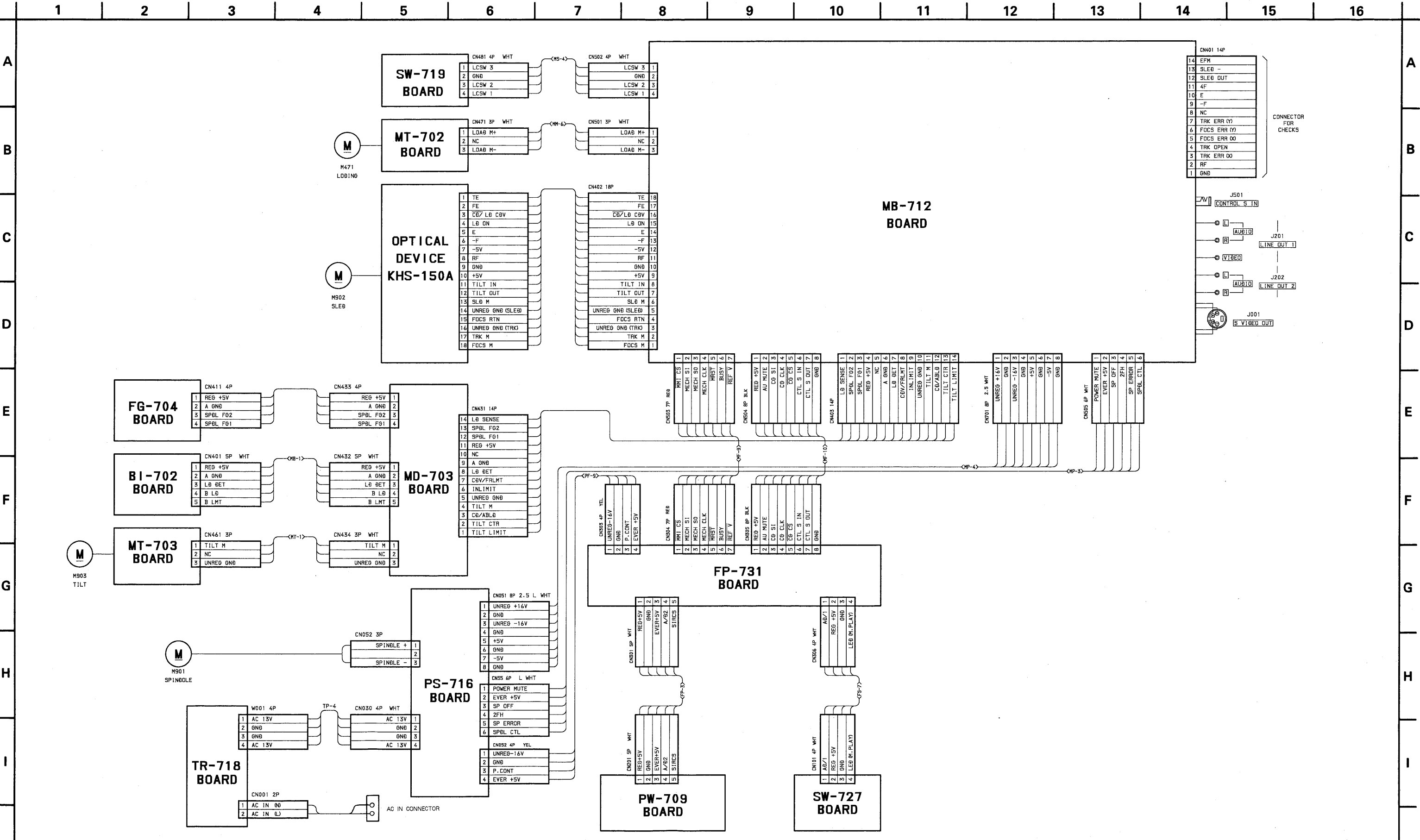


### 3-8. POWER SUPPLY BLOCK DIAGRAM



SECTION 4  
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM



4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.  
(In addition to this, the necessary note is printed in each block.)

- For printed wiring boards:
- Circled numbers refer to waveforms.
  - ○ : Through hole.
  - ■■■■■ : Pattern from the side which enables seeing.

**Caution:**  
Pattern face side: Parts on the pattern face side seen from the (Conductor Side) pattern face are indicated.  
Parts face side: Parts on the parts face side seen from the (Component Side) parts face are indicated.

- For schematic diagram:
- Caution when replacing chip parts.  
New parts must be attached after removal of chip.  
Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
  - All resistors are in ohms, 1/4W (Chip resistors: 1/10W) unless otherwise noted.  
kΩ: 1000Ω, MΩ: 1000kΩ.
  - All capacitors are in μF unless otherwise noted. pF: μF  
50V or less are not indicated except for electrolytics and tantalums.
  - All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
  - ■■■■■ : nonflammable resistor.
  - ■■■■■ : fusible resistor.
  - ■■■■■ : panel designation.
  - △ : internal component.
  - ■■■■■ : adjustment for repair.\*
  - ——— : B + Line.\*
  - - - - : B - Line.\*
  - Voltages are dc between measurement points and ground unless otherwise noted.\*
  - Readings are taken with a digital multimeter (DC10MΩ).\*
  - Voltage variations may be noted due to normal production tolerances.
  - ⇄ : IN/OUT direction of B line (+, -,)\*
  - Circled numbers refer to waveforms.\*

When indicating parts by reference number, please include the board name.

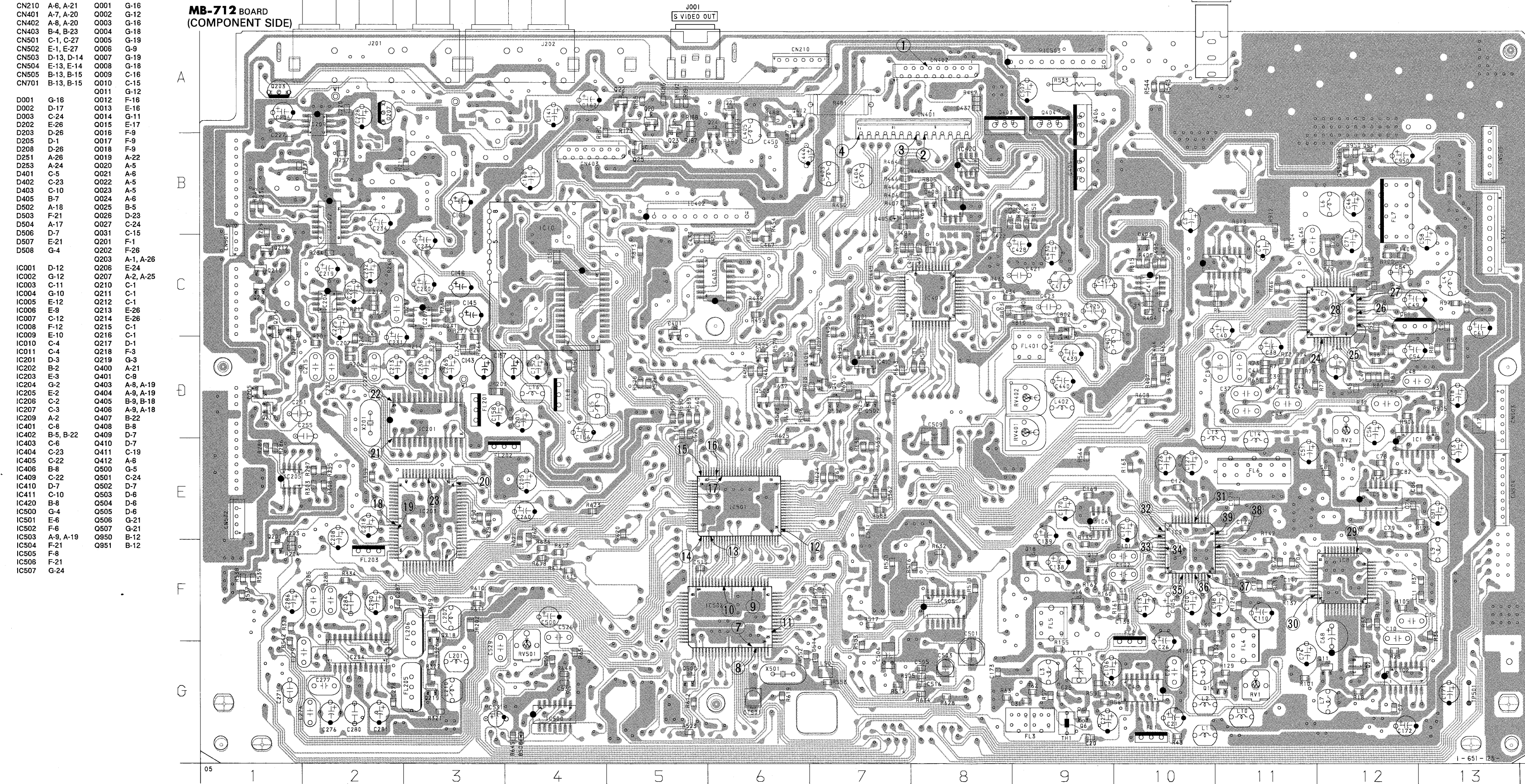
**Note:**  
The components identified by mark ▲ or dotted line with mark ▲ are critical for safety.  
Replace only with part number specified.

**Note:**  
Les composants identifiés par une marque ▲ sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

- \* : indicated by the color red.



MB-712 BOARD

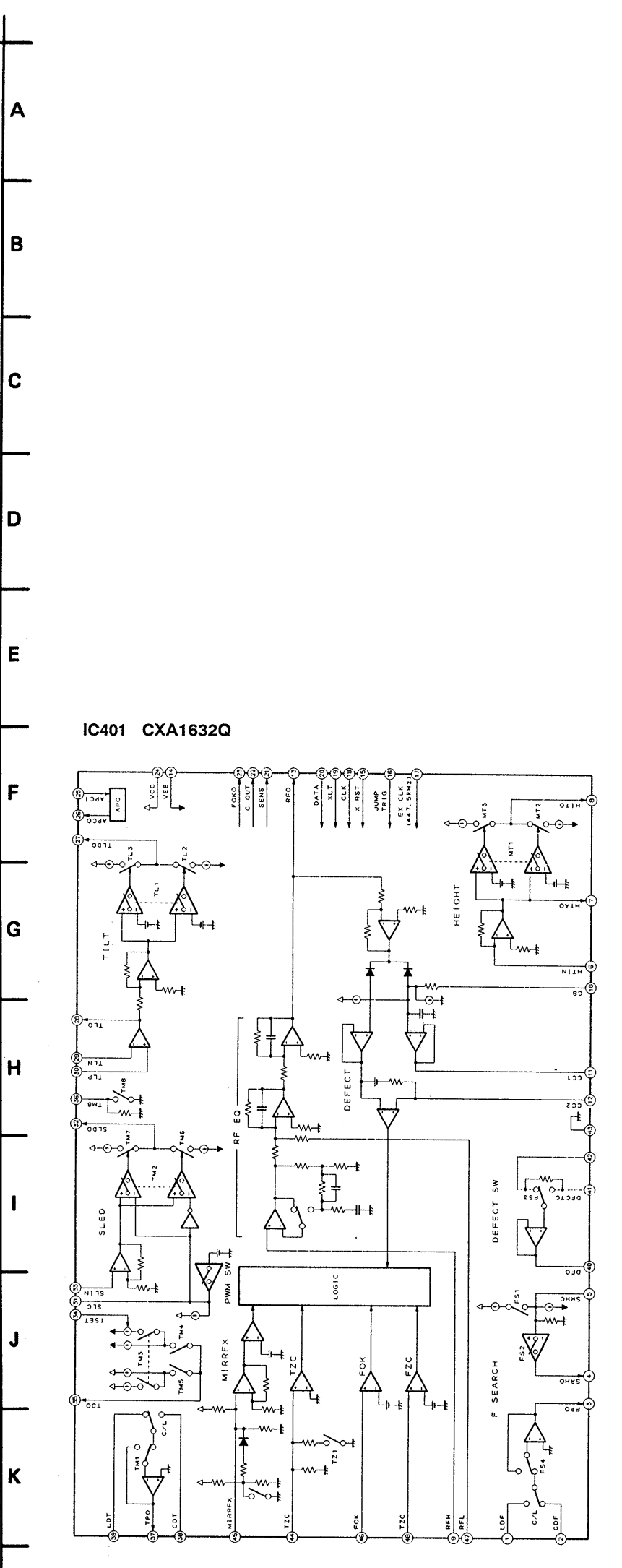
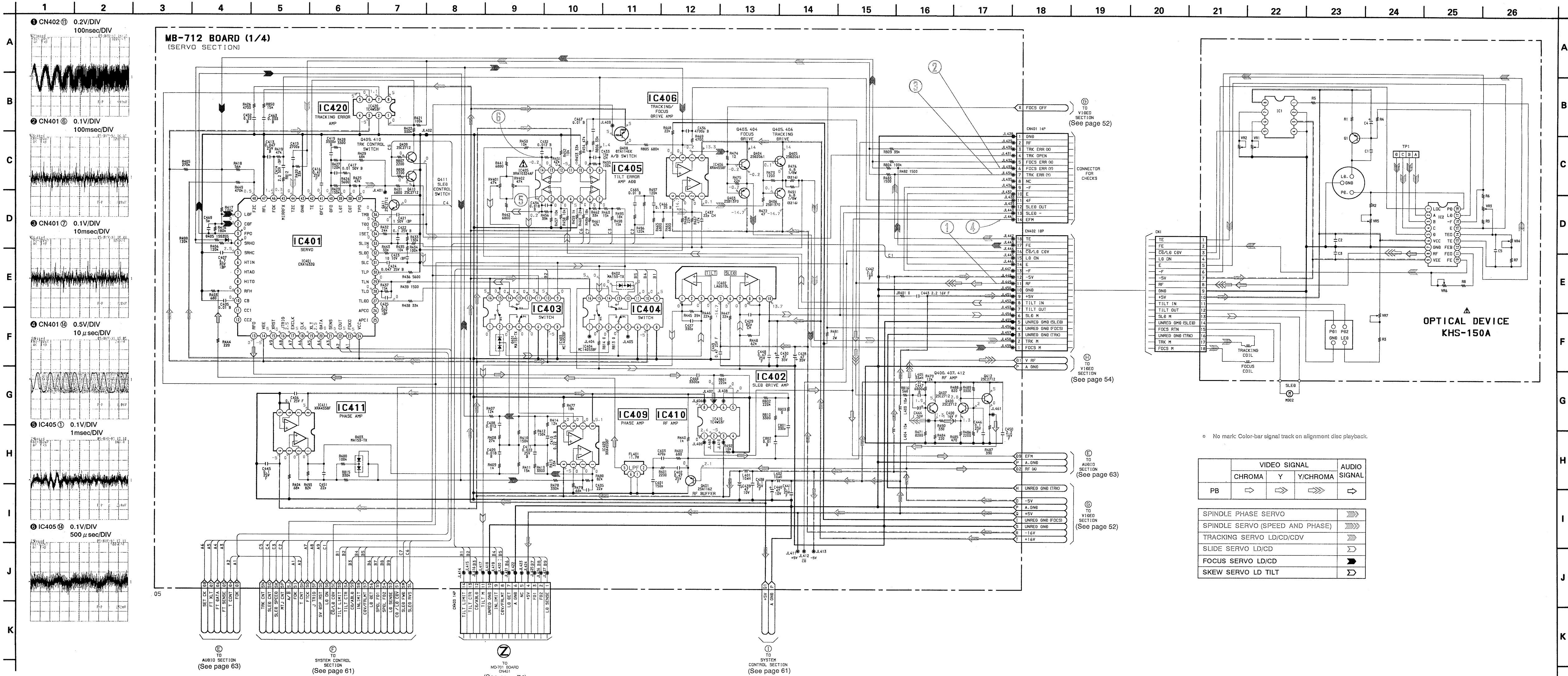




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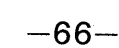


**MB-712 (RF AMPLIFIER, SERVO) SCHEMATIC DIAGRAM** • See pages 46 to 50 for MB-712 printed wiring board.  
– Ref. No.: MB-712 Board; I,000 series –



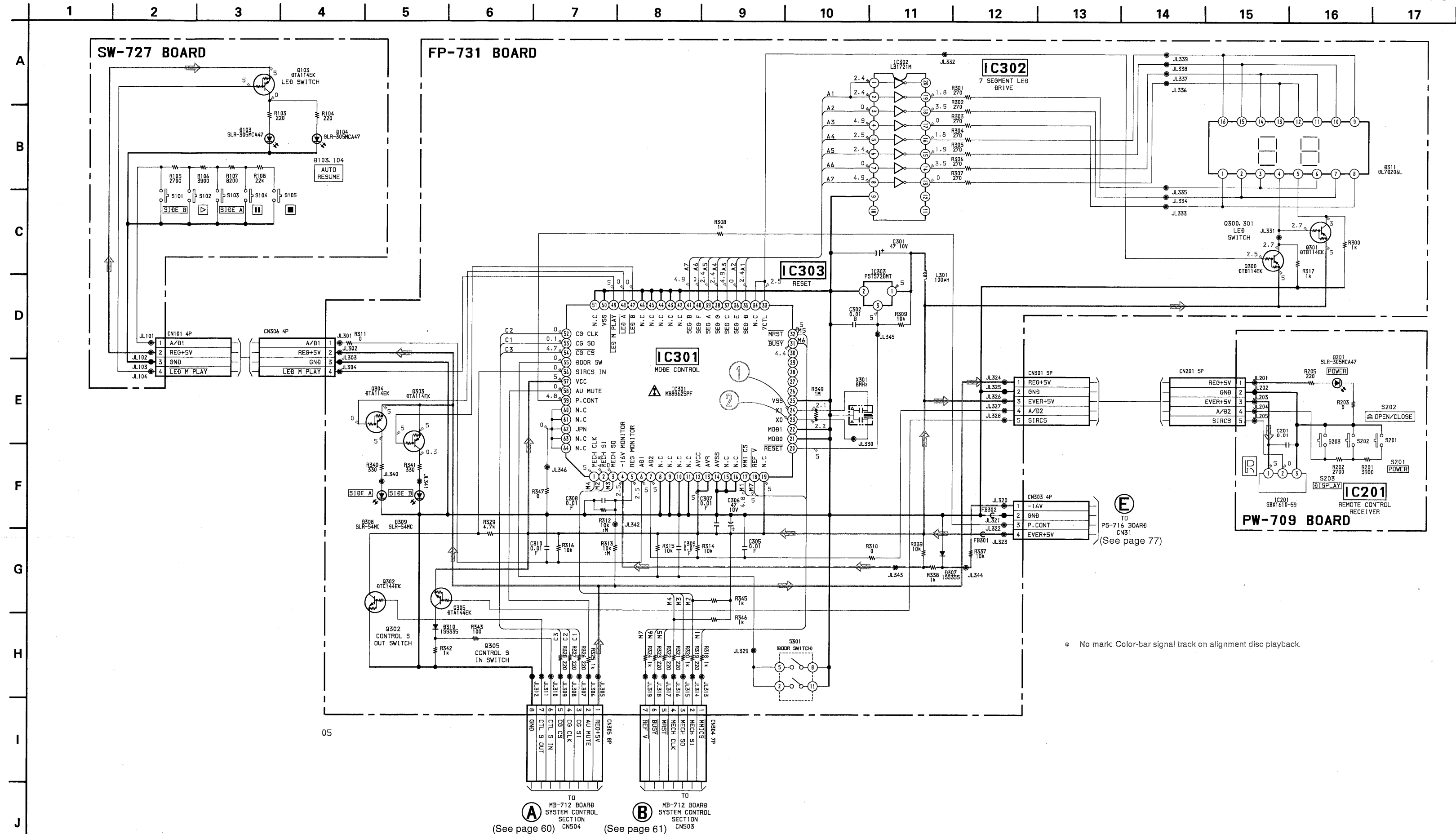
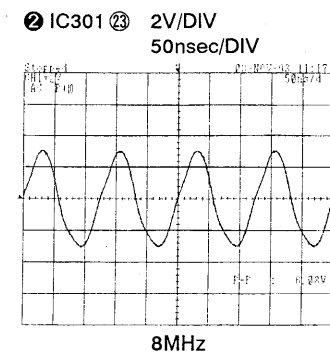
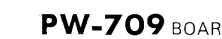
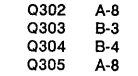






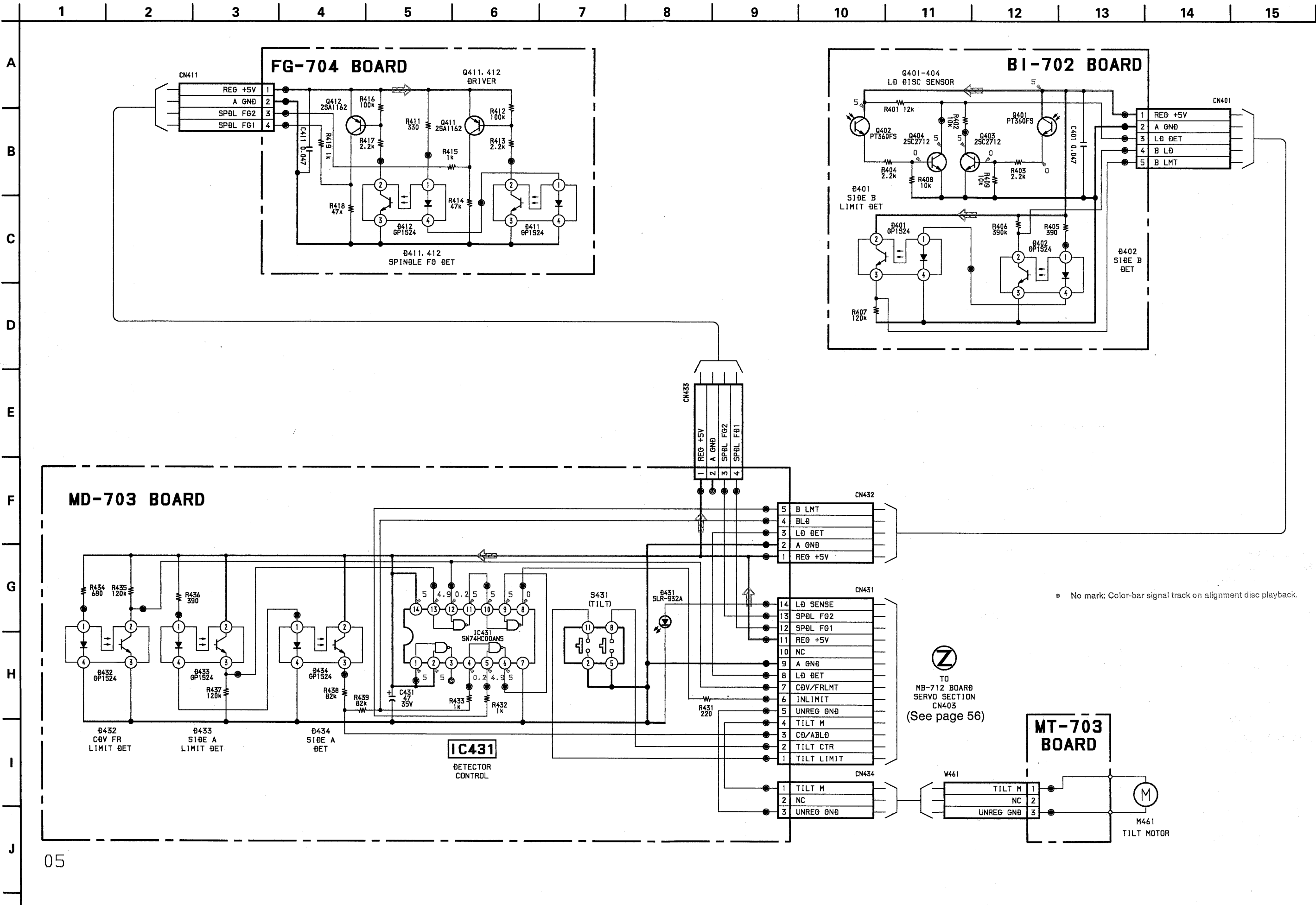
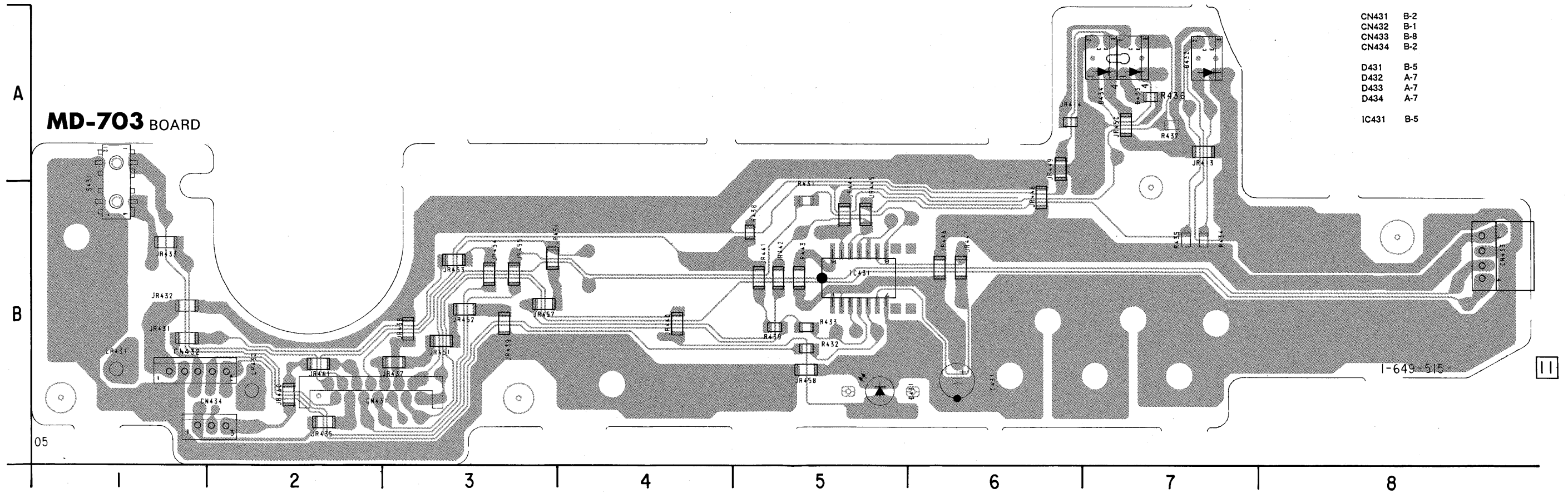
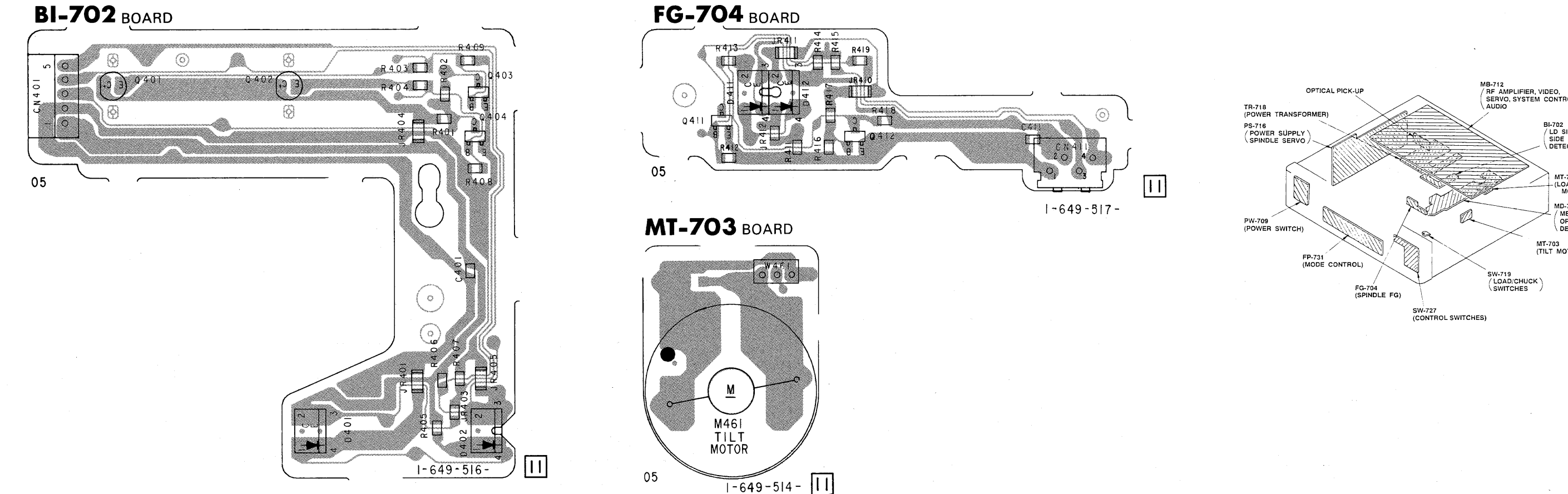


17

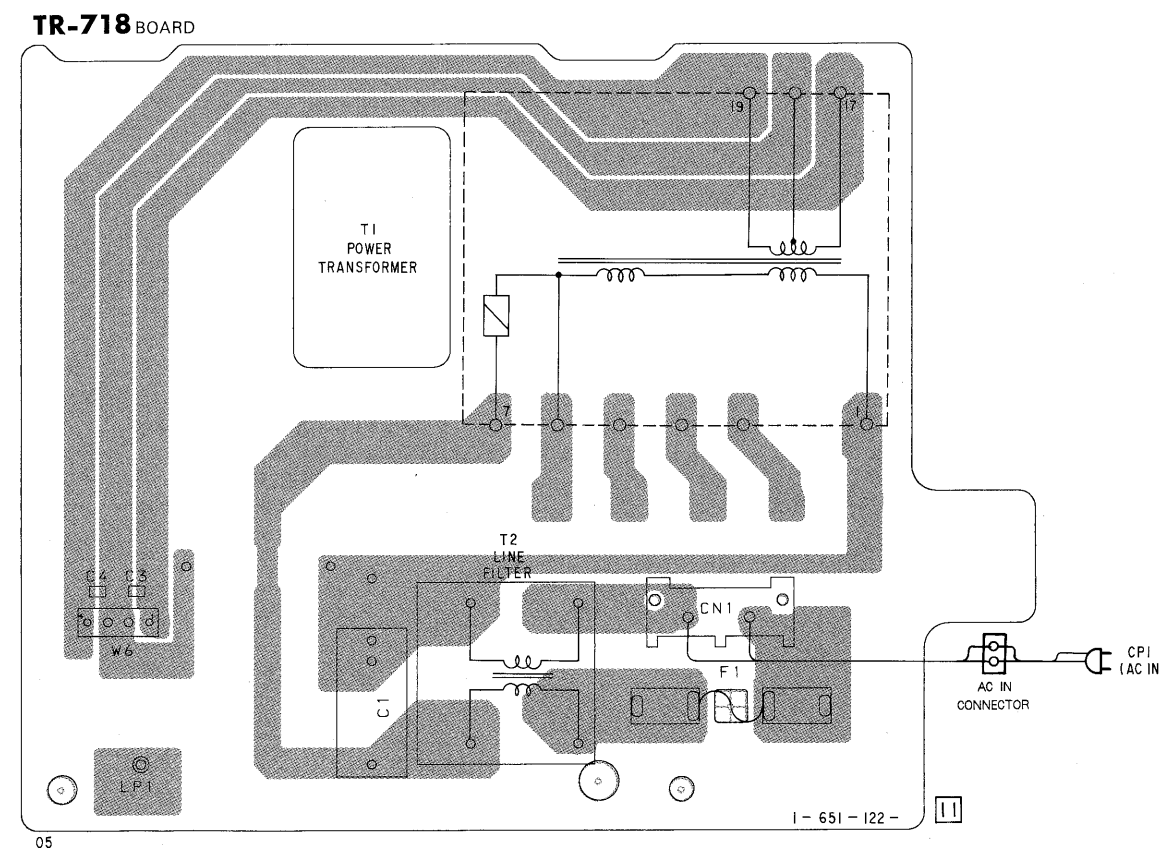
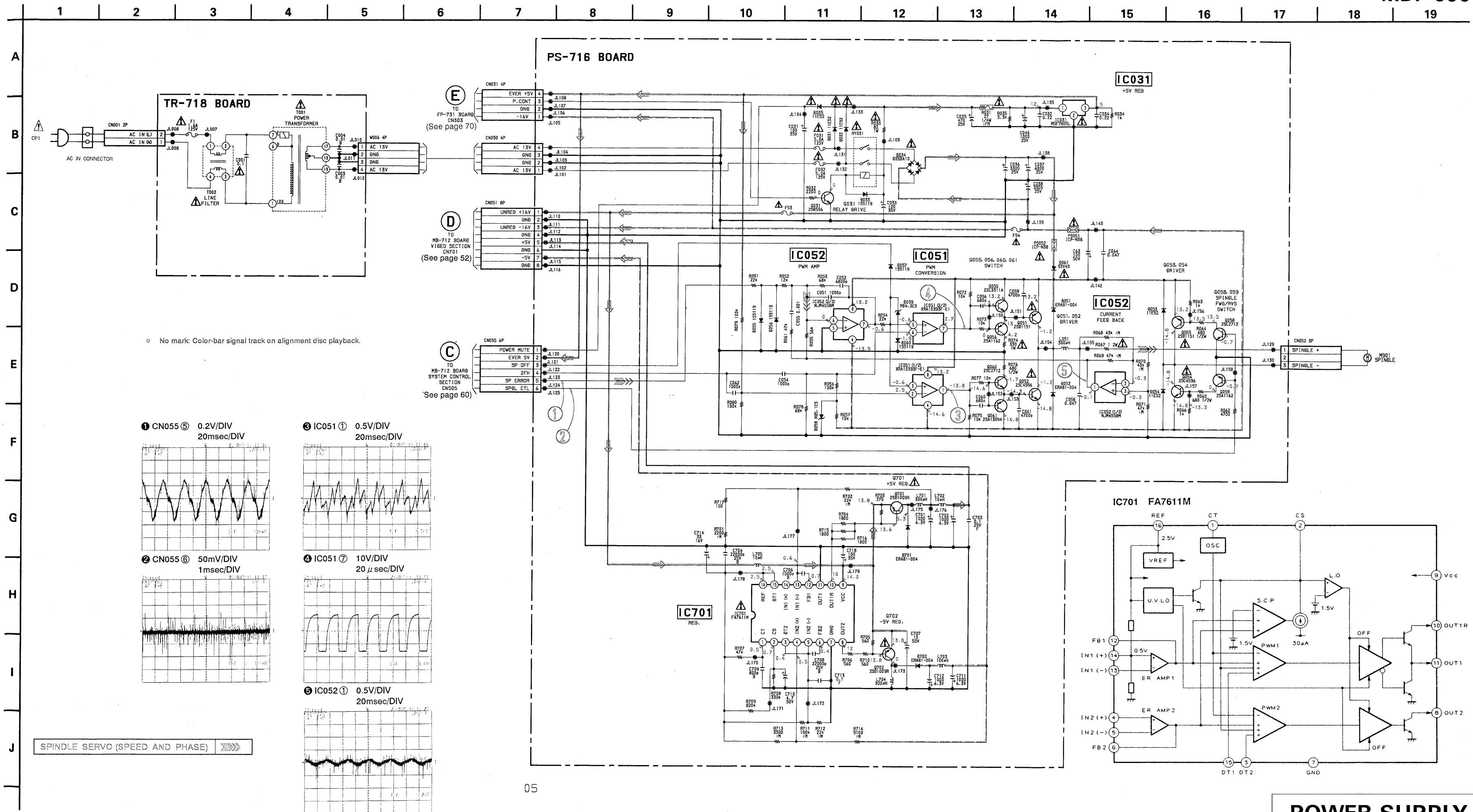


- No mark: Color-bar signal track on alignment disc playback.









## SECTION 5

### EXPLODED VIEWS

#### 4-3. SEMICONDUCTORS

DTA114EK  
DTC114EK  
2SA1162-G  
2SC2712-YG  
2SC3326N  
2SD596DV345

2SC2878-AB

KV1460TL00

1S2836

2SC4596E

MA152WK

PY5504S-1

2SD999-CLCK

MA3120-TX  
RD3.6M-B2  
RD5.1M-B2

SLR305MCA47  
SLR305MC3F

D3SBA10-4100

S3V40

SLR932A

ERA81-006  
RD4.3ES-B2  
RD5.1ES-B2  
1SS119  
11ES2

1SS226

GP1S24  
PT-360FS

1SS355

#### NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.

- Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

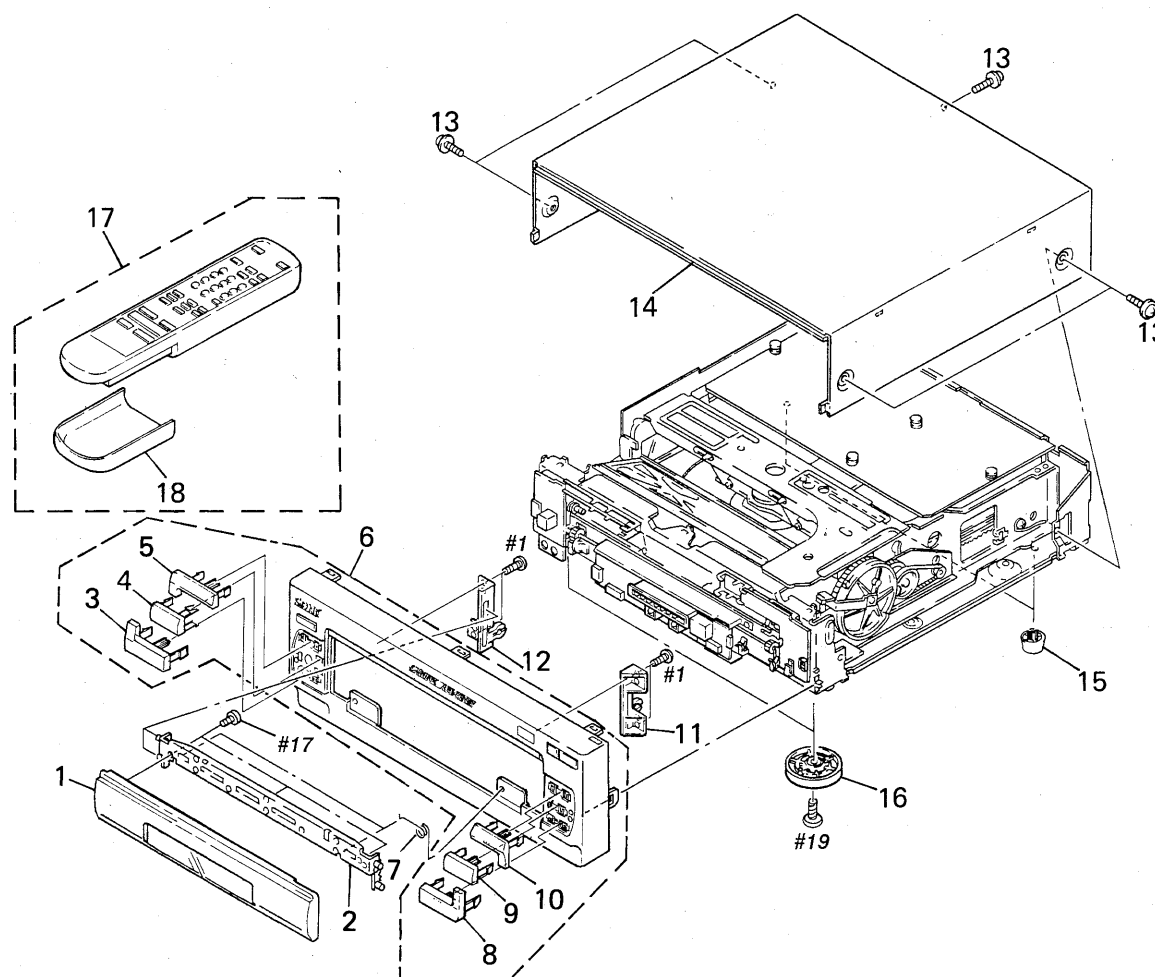
- The mechanical parts with no reference number in the exploded views are not supplied.

- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

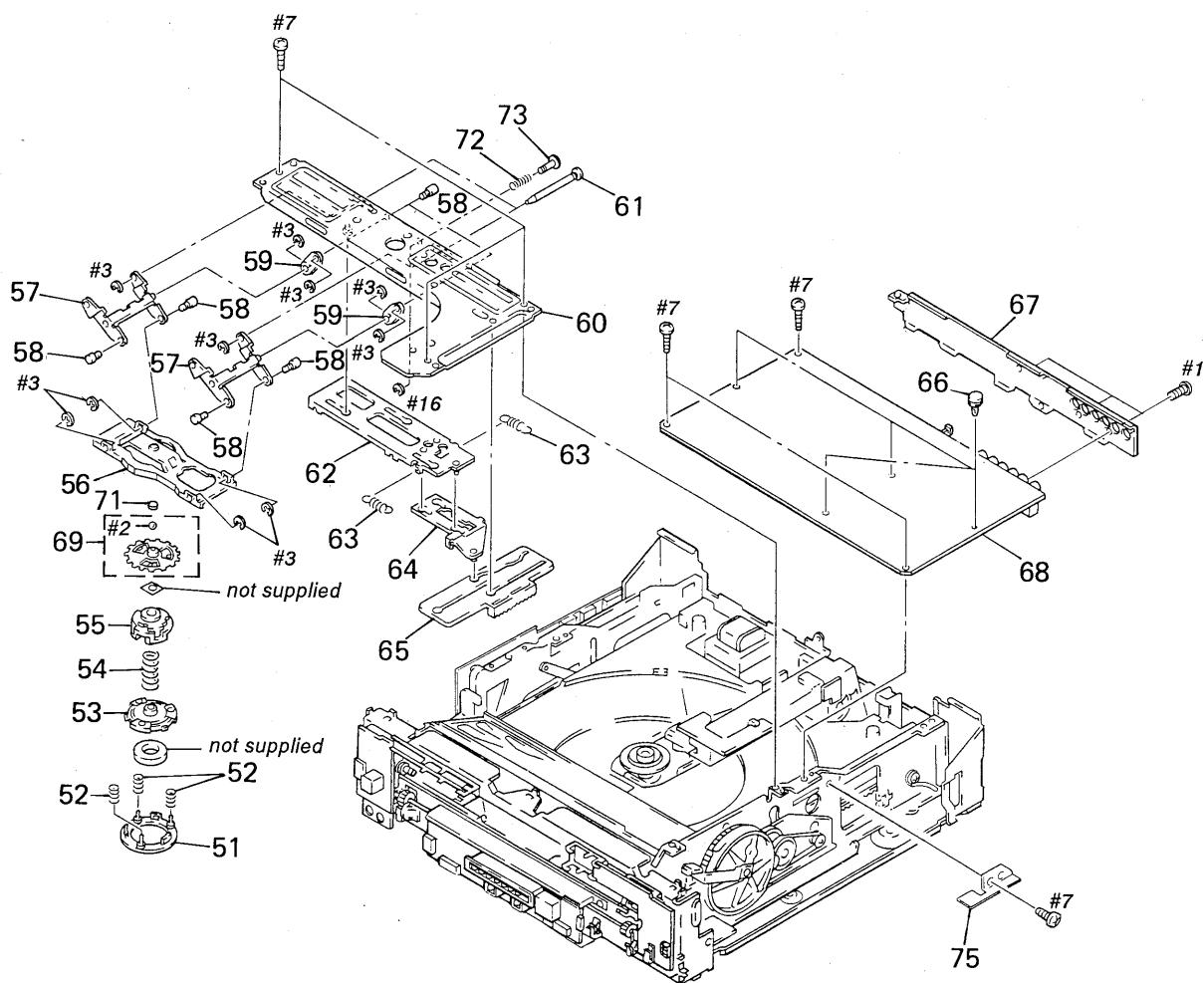
Les composants identifiés par une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

#### 5-1. UPPER CASE, FRONT PANEL ASSEMBLY



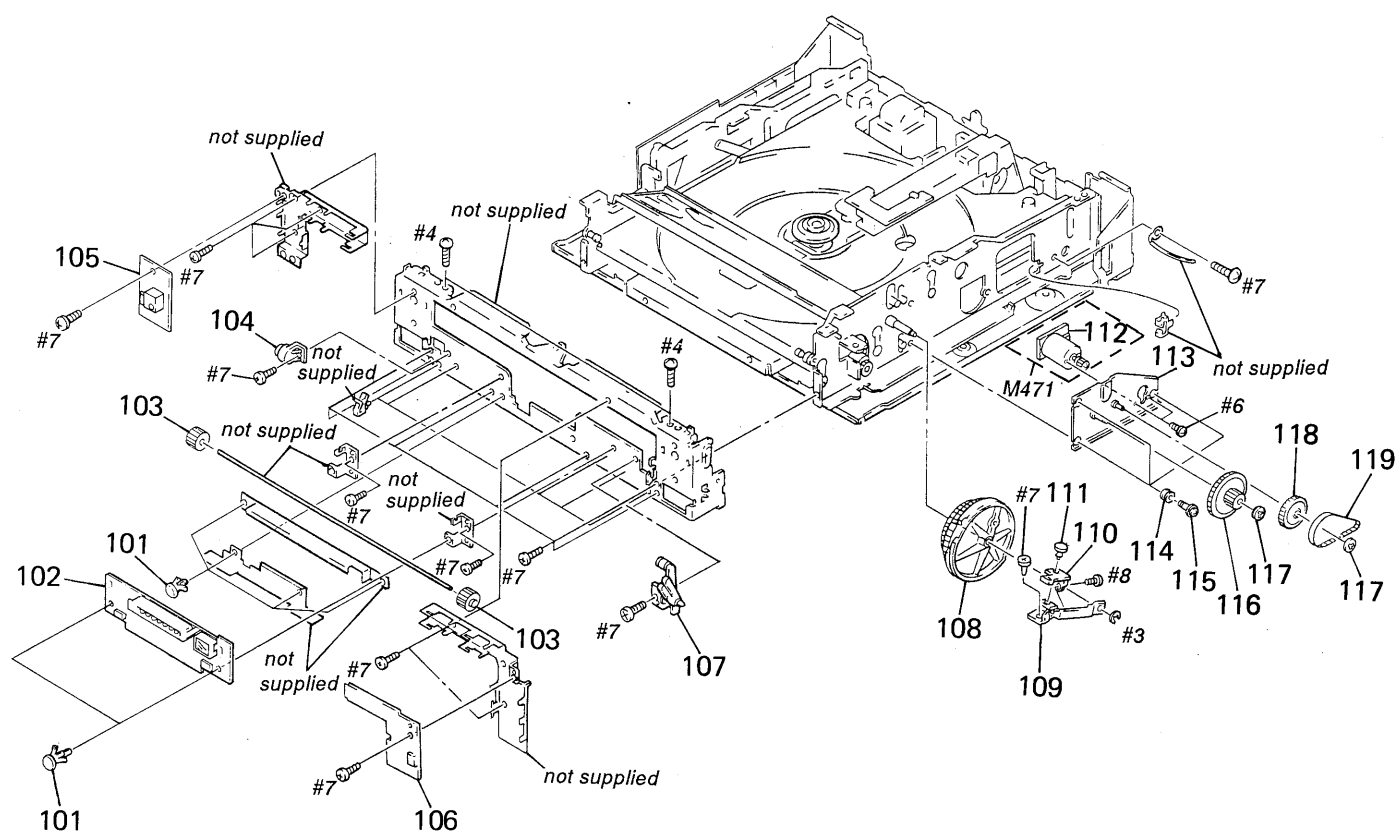
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	X-3943-470-1	DOOR ASSY		10	3-956-064-11	BUTTON, SIDE A	
2	X-3942-785-1	DISK ASSY, DOOR		* 11	3-956-073-01	HOLDER (R), SLIDE	
3	3-956-061-11	BUTTON, DISPLAY		* 12	3-956-074-01	HOLDER (L), SLIDE	
4	3-956-062-01	WINDOW, REMOTE CONTROL		13	3-710-901-41	SCREW, TAPPING	
5	3-956-060-11	BUTTON, OPEN		* 14	X-3943-912-1	CASE ASSY, UPPER	
6	X-3943-471-1	PANEL ASSY, FRONT		* 15	3-957-819-01	FOOT	
7	3-955-346-11	SPRING, TORSION		16	X-3943-320-1	FOOT ASSY	
8	3-956-065-11	BUTTON, SIDE B		17	1-467-603-21	REMOTE COMMANDER (RMT-M23A)	
9	3-956-066-01	BUTTON, PLAY		18	9-900-029-01	LID, BATTERY CASE	

## 5-2. CHUCK FRAME ASSEMBLY



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	X-3943-043-1	GUIDE (B) ASSY, CENTER		63	3-486-135-XX	SPRING, TENSION	
52	3-953-290-01	SPRING (2), COMPRESSION		* 64	X-3942-800-1	LIMITER ASSY	
53	X-3942-776-1	HOLDER ASSY, MAGNET		65	3-953-348-01	CAM, CHUCK	
54	3-953-291-01	SPRING (1), COMPRESSION		* 66	4-386-173-01	SPACER	
55	3-953-288-01	PLATE, CHUCKING		* 67	3-956-077-11	PLATE, JACK	
* 56	3-953-354-01	PLATE, CHUCK		* 68	A-6423-109-A	MB-712 BOARD, COMPLETE	
* 57	X-3942-801-1	ARM (L) ASSY		69	X-3942-787-1	PLATE ASSY, TOP	
* 58	3-953-345-01	SHAFT, ARM (S)		71	3-953-392-01	RETAINER, THRUST	
* 59	3-953-352-01	ARM (S)		72	3-353-241-01	SPRING, COMPRESSION	
* 60	X-3942-798-1	FRAME ASSY, CHUCK		* 73	3-953-831-01	STOPPER, OPT	
* 61	3-953-355-01	SHAFT, SLIDE		75	3-955-673-01	SPRING, LEAF	
* 62	X-3942-799-1	PLATE ASSY, SLIDE					

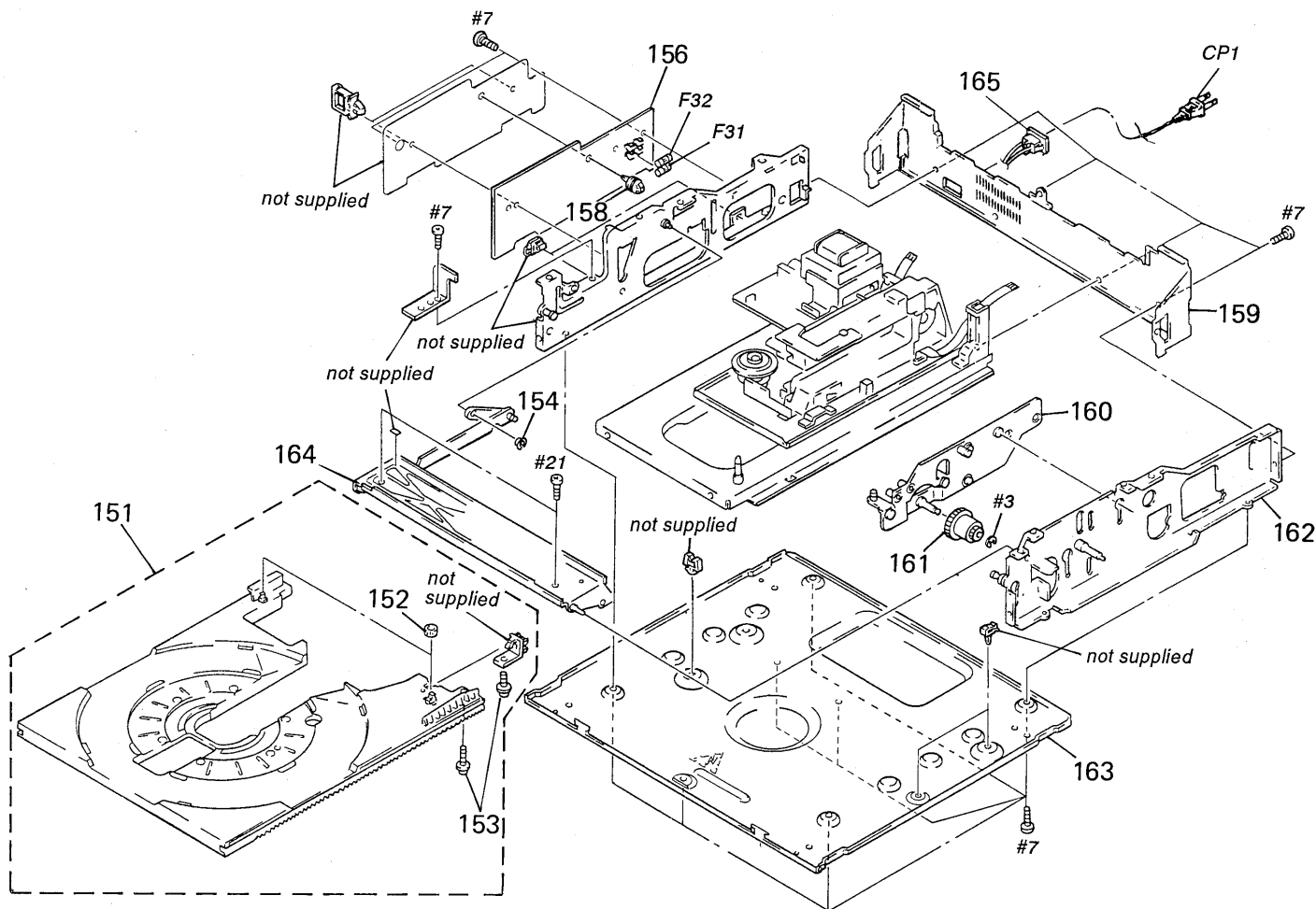
### 5-3. SUB FRONT PANEL ASSEMBLY



Ref. No.	Part No.	Description	Remark
101	4-812-134-11	RIVET NYLON, 3.5	
* 102	A-6423-110-A	FP-731 BOARD, COMPLETE	
103	3-953-325-01	GEAR, PHASE	
104	4-919-393-01	DAMPER	
* 105	A-6423-087-A	PW-709 BOARD, COMPLETE	
* 106	A-6423-085-A	SW-727 BOARD, COMPLETE	
107	X-3942-786-1	LINK ASSY, DRIVING	
108	3-953-356-01	GEAR, CONTROL	
* 109	3-953-357-01	BRACKET, SW	
* 110	A-6421-954-A	SW-719 BOARD, COMPLETE	

Ref. No.	Part No.	Description	Remark
111	3-531-576-11	RIVET	
* 112	A-6421-953-A	MT-702 BOARD, COMPLETE	
* 113	X-3942-805-1	BRACKET ASSY, GEAR	
114	3-570-118-00	CUSHION, MOTOR	
115	3-570-027-00	SCREW, MOTOR	
116	3-953-358-01	GEAR, MIDWAY	
117	3-669-595-00	WASHER (2), STOPPER	
118	3-953-394-01	PULLEY (A)	
119	3-953-393-01	BELT, TIMING	
M471	X-3942-963-1	MOTOR ASSY (LOADING)	

## 5-4. CHASSIS ASSEMBLY



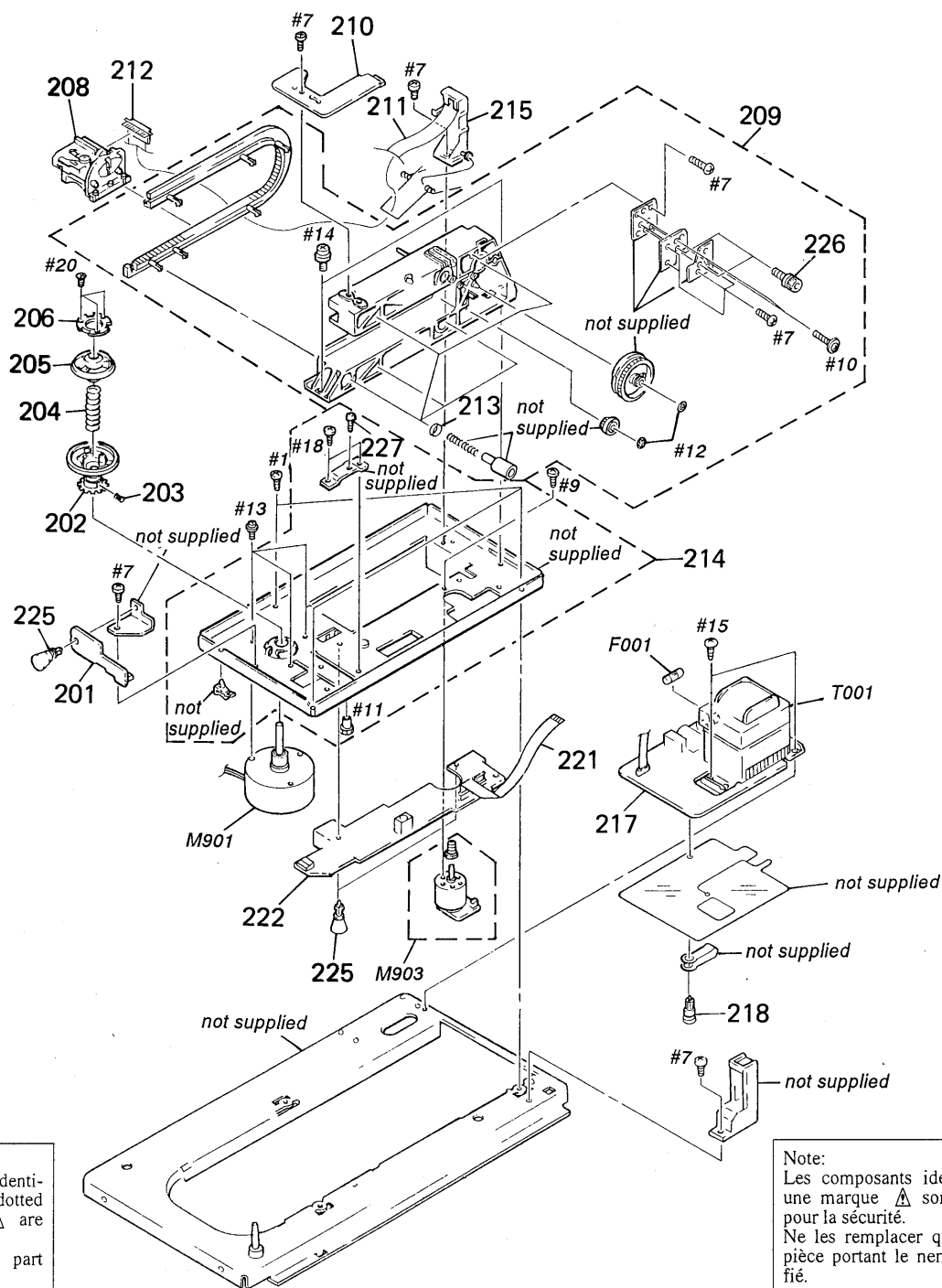
Ref. No.	Part No.	Description	Remark
151	X-3942-780-1	TRAY ASSY	
* 152	4-914-248-01	STOPPER, RUBBER	
153	3-710-901-11	SCREW, TAPPING	
154	3-703-074-01	CAP 3, SHAFT	
* 156	A-6423-082-A	PS-716 BOARD, COMPLETE	
* 158	4-884-834-00	SUPPORT, PC	
* 159	3-956-082-11	PANEL, REAR	
160	X-3942-802-1	PLATE ASSY, BASE, LOADING	

Ref. No.	Part No.	Description	Remark
161	3-953-361-01	GEAR, IDLER	
* 162	X-3943-483-2	FRAME (R) ASSY	
163	3-953-383-01	PLATE, BOTTOM	
* 164	X-3942-796-1	FRAME ASSY, TRAY T	
165	1-951-569-11	HARNESS (AC-1)	
△CP1	1-574-085-11	CORD, POWER	
△F31	1-532-747-11	FUSE, GLASS TUBE (5A 125V)	
△F32	1-532-747-11	FUSE, GLASS TUBE (5A 125V)	

Note:  
The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Note:  
Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

## 5-5. MD CHASSIS ASSEMBLY



Note:  
The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

Note:  
Les composants identifiés par une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
* 201	A-6421-957-A	FG-704 BOARD, COMPLETE	
202	X-3942-779-1	TURNABLE ASSY	
203	3-701-507-00	SET SCREW, DOUBLE POINT, (M3X5)	
204	3-953-289-01	SPRING (3), COMPRESSION	
205	3-953-292-01	GUIDE, CENTER	
206	3-953-293-01	PLATE (C), YOKE	
$\Delta$ 208	8-848-286-11	DEVICE, OPTICAL KHS-150A (RP)	
209	A-6404-082-A	BASE BLOCK ASSY, FEED	
* 210	A-6421-958-A	BI-702 BOARD, COMPLETE	
211	1-751-083-11	CABLE, FLEXIBLE FLAT (18 CORE)	
212	3-953-268-01	HOLDER (18P), FLEXIBLE	
213	3-953-830-01	WASHER, U	
* 214	A-6404-074-A	PLATE BLOCK ASSY, BASE	

Ref. No.	Part No.	Description	Remark
215	A-6404-076-A	STAND ASSY, FLEXIBLE RETAINER	
* 217	A-6423-083-A	TR-718 BOARD, COMPLETE	
218	3-531-576-11	RIVET	
221	1-751-084-11	CABLE, FLEXIBLE FLAT (14 CORE)	
* 222	A-6421-956-A	MD-703 BOARD, COMPLETE	
225	3-703-356-00	RIVET, T TYPE	
226	3-899-249-01	BOLT, HEXAGON SOCKET	
227	3-953-829-01	BOLT	
$\Delta$ F001	1-532-742-11	FUSE, GLASS TUBE (1.6A 125V)	
$\Delta$ M901	1-698-109-11	MOTOR, DD (SPINDLE)	
M903	X-3942-968-1	TILT MOTOR ASSY	
$\Delta$ T001	1-423-522-11	TRANSFORMER, POWER	



# SECTION 6

## ELECTRICAL PARTS LIST

## NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS  
All resistors are in ohms.  
METAL: Metal-film resistor.  
METAL OXIDE: Metal oxide-film resistor.  
F: nonflammable

- Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS  
In each case, u:  $\mu$ , for example:  
uA...:  $\mu$ A... uPA...:  $\mu$ PA...  
uPB...:  $\mu$ PB... uPC...:  $\mu$ PC... uPD...:  $\mu$ PD...
- CAPACITORS  
uF:  $\mu$ F
- COILS  
uH:  $\mu$ H

When indicating parts by reference number, please include the board.

The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
*	A-6421-958-A	BI-702 BOARD, COMPLETE ***** (Ref. NO. 2000 Series)	
	3-953-261-01	HOLDER, PD	
		< CAPACITOR >	
C401	1-163-035-00	CERAMIC CHIP 0.047uF	50V
		< CONNECTOR >	
CN401	1-506-484-11	PIN, CONNECTOR 5P	
		< DIODE >	
D401	8-729-020-74	DIODE GP1S24	
D402	8-729-020-74	DIODE GP1S24	
		< JUMPER RESISTOR >	
JR401	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR403	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR404	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR405	1-216-296-00	METAL GLAZE 0 5% 1/8W	
		< TRANSISTOR >	
Q401	8-729-904-10	TRANSISTOR PT-360FS	
Q402	8-729-904-10	TRANSISTOR PT-360FS	
Q403	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q404	8-729-230-49	TRANSISTOR 2SC2712-YG	
		< RESISTOR >	
R401	1-216-075-00	METAL CHIP 12K 5% 1/10W	
R402	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R403	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R404	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R405	1-216-039-00	METAL CHIP 390 5% 1/10W	
R406	1-216-111-00	METAL CHIP 390K 5% 1/10W	
R407	1-216-099-00	METAL CHIP 120K 5% 1/10W	
R408	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R409	1-216-073-00	METAL CHIP 10K 5% 1/10W	

\*\*\*\*\*

Ref. No.	Part No.	Description	Remark
*	A-6421-957-A	FG-704 BOARD, COMPLETE ***** (Ref. NO. 2000 Series)	
		< CAPACITOR >	
C411	1-163-035-00	CERAMIC CHIP 0.047uF	50V
		< CONNECTOR >	
CN411	1-691-863-11	CONNECTOR, BOARD TO BOARD	
		< DIODE >	
D411	8-729-020-74	DIODE GP1S24	
D412	8-729-020-74	DIODE GP1S24	
		< JUMPER RESISTOR >	
JR410	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR411	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR412	1-216-295-00	METAL CHIP 0 5% 1/10W	
		< TRANSISTOR >	
Q411	8-729-216-22	TRANSISTOR 2SA1162-G	
Q412	8-729-216-22	TRANSISTOR 2SA1162-G	
		< RESISTOR >	
R411	1-216-037-00	METAL CHIP 330 5% 1/10W	
R412	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R413	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R414	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R415	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R416	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R417	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R418	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R419	1-216-049-00	METAL CHIP 1K 5% 1/10W	

\*\*\*\*\*



Ref. No.	Part No.	Description	Remark		
*	A-6423-110-A	FP-731 BOARD, COMPLETE			
		*****			
		(Ref. NO. 3000 Series)			
*	3-956-076-01	HOLDER, SEGMENT			
*	3-956-078-01	REFLECTOR			
< CAPACITOR >					
C301	1-124-589-11	ELECT	47uF	20%	16V
C302	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C305	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C306	1-124-589-11	ELECT	47uF	20%	16V
C310	1-163-031-11	CERAMIC CHIP	0.01uF		50V
△C308	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C309	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C310	1-163-031-11	CERAMIC CHIP	0.01uF		50V
< CONNECTOR >					
CN301	1-506-484-11	PIN, CONNECTOR 5P			
CN303	1-506-483-21	PIN, CONNECTOR 4P			
CN304	1-506-486-11	PIN, CONNECTOR 7P			
* CN305	1-564-018-61	PIN, CONNECTOR 8P			
* CN306	1-564-014-51	PIN, CONNECTOR 4P			
< DIODE >					
△D307	8-719-988-62	DIODE 1SS355			
D308	8-719-955-04	LED PY5504S-1			
D309	8-719-955-04	LED PY5504S-1			
D310	8-719-988-62	DIODE 1SS355			
D311	8-719-046-96	DIODE GL7P206L			
< IC >					
△IC301	8-759-253-27	IC MB89625PF-G-141-BND			
IC302	8-759-043-33	IC LB1721M			
IC303	8-759-074-39	IC PST572DMT			
< COIL >					
L301	1-408-421-00	INDUCTOR 100uH			
< TRANSISTOR >					
Q300	8-729-904-57	TRANSISTOR DTB114EK			
Q301	8-729-904-57	TRANSISTOR DTB114EK			
Q302	8-729-901-01	TRANSISTOR DTC144EK			
Q303	8-729-901-04	TRANSISTOR DTA114EK			
Q304	8-729-901-04	TRANSISTOR DTA114EK			
Q305	8-729-901-06	TRANSISTOR DTA144EK			
< RESISTOR >					
R300	1-216-049-00	METAL CHIP	1K	5%	1/10W
R301	1-216-035-00	METAL CHIP	270	5%	1/10W

Ref. No.	Part No.	Description	Remark		
R302	1-216-035-00	METAL CHIP	270	5%	1/10W
R303	1-216-035-00	METAL CHIP	270	5%	1/10W
R304	1-216-035-00	METAL CHIP	270	5%	1/10W
R305	1-216-035-00	METAL CHIP	270	5%	1/10W
R306	1-216-035-00	METAL CHIP	270	5%	1/10W
R307	1-216-035-00	METAL CHIP	270	5%	1/10W
R308	1-216-049-00	METAL CHIP	1K	5%	1/10W
R309	1-216-073-00	METAL CHIP	10K	5%	1/10W
R310	1-216-295-00	METAL CHIP	0	5%	1/10W
R311	1-216-295-00	METAL CHIP	0	5%	1/10W
△R312	1-216-675-11	METAL CHIP	10K	0.5%	1/10W
△R313	1-216-675-11	METAL CHIP	10K	0.5%	1/10W
R314	1-216-073-00	METAL CHIP	10K	5%	1/10W
R315	1-216-073-00	METAL CHIP	10K	5%	1/10W
R316	1-216-073-00	METAL CHIP	10K	5%	1/10W
R317	1-216-049-00	METAL CHIP	1K	5%	1/10W
R318	1-216-049-00	METAL CHIP	1K	5%	1/10W
R319	1-216-033-00	METAL CHIP	220	5%	1/10W
R320	1-216-049-00	METAL CHIP	1K	5%	1/10W
R321	1-216-033-00	METAL CHIP	220	5%	1/10W
R322	1-216-033-00	METAL CHIP	220	5%	1/10W
R323	1-216-033-00	METAL CHIP	220	5%	1/10W
R324	1-216-049-00	METAL CHIP	1K	5%	1/10W
R325	1-216-049-00	METAL CHIP	1K	5%	1/10W
R326	1-216-033-00	METAL CHIP	220	5%	1/10W
R327	1-216-033-00	METAL CHIP	220	5%	1/10W
R328	1-216-033-00	METAL CHIP	220	5%	1/10W
R329	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
△R337	1-216-073-00	METAL CHIP	10K	5%	1/10W
△R338	1-216-049-00	METAL CHIP	1K	5%	1/10W
△R339	1-216-073-00	METAL CHIP	10K	5%	1/10W
R340	1-216-037-00	METAL CHIP	330	5%	1/10W
R341	1-216-037-00	METAL CHIP	330	5%	1/10W
R342	1-216-049-00	METAL CHIP	1K	5%	1/10W
R343	1-216-025-00	METAL CHIP	100	5%	1/10W
R345	1-249-417-00	CARBON	1K	5%	1/4W
R346	1-249-417-00	CARBON	1K	5%	1/4W
R347	1-216-295-00	METAL CHIP	0	5%	1/10W
R349	1-216-121-00	METAL CHIP	1M	5%	1/10W
< SWITCH >					
S301	1-692-440-11	SWITCH, PUSH (DOOR SWITCH)			
< VIBRATOR >					
X301	1-579-952-21	VIBRATOR, CERAMIC (8MHz)			

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The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

# MB-712

Ref. No.	Part No.	Description	Remark
*	A-6423-109-A	MB-712 BOARD, COMPLETE ***** (Ref. NO. 1000 Series)	
		< CAPACITOR >	
C002	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C003	1-126-154-11	ELECT 47uF	20% 6.3V
C004	1-124-465-00	ELECT 0.47uF	20% 50V
C005	1-163-125-00	CERAMIC CHIP 220PF	5% 50V
C006	1-163-125-00	CERAMIC CHIP 220PF	5% 50V
C007	1-163-251-11	CERAMIC CHIP 100PF	5% 50V
C008	1-163-239-11	CERAMIC CHIP 33PF	5% 50V
C009	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C010	1-137-370-11	FILM 0.01uF	5% 50V
C011	1-164-232-11	CERAMIC CHIP 0.01uF	50V
C012	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C013	1-126-947-11	ELECT 47uF	20% 10V
C014	1-164-182-11	CERAMIC CHIP 0.0033uF	10% 50V
C015	1-130-489-00	MYLAR 0.033uF	5% 50V
C016	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C017	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C018	1-126-947-11	ELECT 47uF	20% 10V
C019	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C020	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C021	1-126-947-11	ELECT 47uF	20% 10V
C022	1-163-019-00	CERAMIC CHIP 0.0068uF	10% 50V
C023	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C024	1-137-399-11	FILM 0.1uF	5% 50V
C025	1-163-227-11	CERAMIC CHIP 10PF	0.5PF 50V
C026	1-126-947-11	ELECT 47uF	20% 10V
C027	1-126-947-11	ELECT 47uF	20% 10V
C028	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C029	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C030	1-163-103-00	CERAMIC CHIP 27PF	5% 50V
C031	1-163-107-00	CERAMIC CHIP 39PF	5% 50V
C032	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C034	1-137-374-11	FILM 0.047uF	5% 50V
C035	1-130-489-00	MYLAR 0.033uF	5% 50V
C036	1-137-440-11	FILM 0.018uF	5% 50V
C037	1-130-489-00	MYLAR 0.033uF	5% 50V
C038	1-124-903-11	ELECT 1uF	20% 50V
C039	1-163-117-00	CERAMIC CHIP 100PF	5% 50V
C040	1-124-925-11	ELECT 2.2uF	20% 100V
C041	1-163-117-00	CERAMIC CHIP 100PF	5% 50V
C042	1-163-117-00	CERAMIC CHIP 100PF	5% 50V
C043	1-137-370-11	FILM 0.01uF	5% 50V
C044	1-126-947-11	ELECT 47uF	20% 10V
C045	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C046	1-126-947-11	ELECT 47uF	20% 10V

Ref. No.	Part No.	Description	Remark
C047	1-163-019-00	CERAMIC CHIP 0.0068uF	10% 50V
C048	1-137-370-11	FILM 0.01uF	5% 50V
C049	1-124-903-11	ELECT 1uF	20% 50V
C050	1-137-374-11	FILM 0.047uF	5% 50V
C051	1-124-903-11	ELECT 1uF	20% 50V
C052	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C053	1-163-117-00	CERAMIC CHIP 100PF	5% 50V
C054	1-126-947-11	ELECT 47uF	20% 10V
C055	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C056	1-126-947-11	ELECT 47uF	20% 10V
C057	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C058	1-126-947-11	ELECT 47uF	20% 10V
C059	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C060	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C061	1-126-947-11	ELECT 47uF	20% 10V
C063	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C064	1-163-139-00	CERAMIC CHIP 820PF	5% 50V
C065	1-137-374-11	FILM 0.047uF	5% 50V
C066	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C067	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C068	1-126-916-11	ELECT 1000uF	20% 6.3V
C069	1-163-253-11	CERAMIC CHIP 120PF	5% 50V
C070	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C071	1-126-947-11	ELECT 47uF	20% 10V
C072	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C073	1-163-253-11	CERAMIC CHIP 120PF	5% 50V
C074	1-124-903-11	ELECT 1uF	20% 50V
C075	1-163-227-11	CERAMIC CHIP 10PF	0.5PF 50V
C076	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C077	1-163-235-11	CERAMIC CHIP 22PF	5% 50V
C078	1-163-237-11	CERAMIC CHIP 27PF	5% 50V
C079	1-163-237-11	CERAMIC CHIP 27PF	5% 50V
C080	1-163-253-11	CERAMIC CHIP 120PF	5% 50V
C081	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C082	1-163-103-00	CERAMIC CHIP 27PF	5% 50V
C083	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C084	1-124-292-00	ELECT 33uF	20% 6.3V
C085	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C086	1-163-237-11	CERAMIC CHIP 27PF	5% 50V
C087	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C088	1-163-257-11	CERAMIC CHIP 180PF	5% 50V
C089	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C090	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C091	1-126-947-11	ELECT 47uF	20% 10V
C092	1-163-227-11	CERAMIC CHIP 10PF	0.5PF 50V
C093	1-163-257-11	CERAMIC CHIP 180PF	5% 50V
C094	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C095	1-163-038-00	CERAMIC CHIP 0.1uF	25V

Ref. No.	Part No.	Description	Remark
C096	1-163-235-11	CERAMIC CHIP 22PF	5% 50V
C097	1-163-099-00	CERAMIC CHIP 18PF	5% 50V
C098	1-126-947-11	ELECT 47uF	20% 10V
C099	1-163-235-11	CERAMIC CHIP 22PF	5% 50V
C100	1-124-903-11	ELECT 1uF	20% 50V
C101	1-137-372-11	FILM 0.022uF	5% 50V
C102	1-137-370-11	FILM 0.01uF	5% 50V
C103	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C104	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C105	1-131-347-00	TANTALUM 1uF	10% 35V
C106	1-124-903-11	ELECT 1uF	20% 50V
C107	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C108	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C109	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C110	1-126-947-11	ELECT 47uF	20% 10V
C111	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C112	1-163-235-11	CERAMIC CHIP 22PF	5% 50V
C113	1-124-925-11	ELECT 2.2uF	20% 100V
C114	1-135-181-21	TANTALUM CHIP 4.7uF	20% 6.3V
C115	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C116	1-163-109-00	CERAMIC CHIP 47PF	5% 50V
C117	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C118	1-163-109-00	CERAMIC CHIP 47PF	5% 50V
C119	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C120	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C121	1-124-925-11	ELECT 2.2uF	20% 100V
C122	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C123	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C124	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C125	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C126	1-126-947-11	ELECT 47uF	20% 10V
C127	1-126-947-11	ELECT 47uF	20% 10V
C128	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C129	1-163-121-00	CERAMIC CHIP 150PF	5% 50V
C130	1-163-097-00	CERAMIC CHIP 15PF	5% 50V
C131	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C132	1-163-243-11	CERAMIC CHIP 47PF	5% 50V
C133	1-163-133-00	CERAMIC CHIP 470PF	5% 50V
C134	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C136	1-163-116-00	CERAMIC CHIP 91PF	5% 50V
C138	1-124-915-11	ELECT 10uF	20% 63V
C139	1-124-915-11	ELECT 10uF	20% 63V
C140	1-163-235-11	CERAMIC CHIP 22PF	5% 50V
C141	1-126-947-11	ELECT 47uF	20% 10V
C142	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C143	1-126-947-11	ELECT 47uF	20% 10V
C144	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C145	1-126-947-11	ELECT 47uF	20% 10V

Ref. No.	Part No.	Description	Remark
C146	1-126-947-11	ELECT 47uF	20% 10V
C147	1-163-237-11	CERAMIC CHIP 27PF	5% 50V
C148	1-163-237-11	CERAMIC CHIP 27PF	5% 50V
C149	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C150	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C151	1-163-077-91	CERAMIC CHIP 0.1uF	50V
C152	1-126-947-11	ELECT 47uF	20% 10V
C153	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C154	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C155	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C156	1-126-947-11	ELECT 47uF	20% 10V
C157	1-124-925-11	ELECT 2.2uF	20% 100V
C158	1-124-925-11	ELECT 2.2uF	20% 100V
C159	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C160	1-126-947-11	ELECT 47uF	20% 10V
C161	1-126-947-11	ELECT 47uF	20% 10V
C162	1-126-947-11	ELECT 47uF	20% 10V
C163	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C164	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C165	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C166	1-163-097-00	CERAMIC CHIP 15PF	5% 50V
C167	1-163-249-11	CERAMIC CHIP 82PF	5% 50V
C168	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C169	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C170	1-126-947-11	ELECT 47uF	20% 10V
C171	1-126-947-11	ELECT 47uF	20% 10V
C172	1-126-947-11	ELECT 47uF	20% 10V
C173	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C174	1-163-129-00	CERAMIC CHIP 330PF	5% 50V
C201	1-126-947-11	ELECT 47uF	20% 10V
C203	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C204	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C205	1-126-947-11	ELECT 47uF	20% 10V
C206	1-124-927-11	ELECT 4.7uF	20% 100V
C207	1-163-125-00	CERAMIC CHIP 220PF	5% 50V
C208	1-124-915-11	ELECT 10uF	20% 63V
C211	1-163-251-11	CERAMIC CHIP 100PF	5% 50V
C212	1-163-251-11	CERAMIC CHIP 100PF	5% 50V
C213	1-126-947-11	ELECT 47uF	20% 10V
C214	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C215	1-137-368-11	FILM 0.0047uF	5% 50V
C216	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C218	1-126-947-11	ELECT 47uF	20% 10V
C219	1-124-927-11	ELECT 4.7uF	20% 100V
C220	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C221	1-126-947-11	ELECT 47uF	20% 10V
C222	1-137-433-11	FILM 0.0012uF	5% 50V
C225	1-126-947-11	ELECT 47uF	20% 10V
C226	1-137-433-11	FILM 0.0012uF	5% 50V

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Ref. No.	Part No.	Description	Remark
C227	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C228	1-124-927-11	ELECT 4.7uF	20% 100V
C229	1-163-251-11	CERAMIC CHIP 100PF	5% 50V
C230	1-126-947-11	ELECT 47uF	20% 10V
C231	1-126-947-11	ELECT 47uF	20% 10V
C232	1-124-927-11	ELECT 4.7uF	20% 100V
C234	1-124-927-11	ELECT 4.7uF	20% 100V
C236	1-124-927-11	ELECT 4.7uF	20% 100V
C237	1-137-368-11	FILM 0.0047uF	5% 50V
C238	1-126-947-11	ELECT 47uF	20% 10V
C239	1-164-232-11	CERAMIC CHIP 0.01uF	50V
C240	1-164-005-11	CERAMIC CHIP 0.47uF	25V
C241	1-163-251-11	CERAMIC CHIP 100PF	5% 50V
C243	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C244	1-163-125-00	CERAMIC CHIP 220PF	5% 50V
C245	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C246	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C248	1-163-235-11	CERAMIC CHIP 22PF	5% 50V
C249	1-163-128-00	CERAMIC CHIP 300PF	5% 50V
C251	1-124-287-00	ELECT 10uF	20% 10V
C252	1-163-243-11	CERAMIC CHIP 47PF	5% 50V
C253	1-163-243-11	CERAMIC CHIP 47PF	5% 50V
C254	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C255	1-124-499-11	ELECT, NONPOLAR 1uF	20% 50V
C257	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C258	1-163-809-11	CERAMIC CHIP 0.047uF	10% 25V
C259	1-163-011-11	CERAMIC CHIP 0.0015uF	10% 50V
C260	1-126-947-11	ELECT 47uF	20% 10V
C261	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C262	1-164-232-11	CERAMIC CHIP 0.01uF	50V
C263	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C264	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C265	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C266	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C268	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C269	1-126-947-11	ELECT 47uF	20% 10V
C271	1-124-287-00	ELECT 10uF	20% 10V
C272	1-163-009-11	CERAMIC CHIP 0.001uF	10% 50V
C273	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C274	1-137-368-11	FILM 0.0047uF	5% 50V
C275	1-163-017-00	CERAMIC CHIP 0.0047uF	5% 50V
C276	1-126-947-11	ELECT 47uF	20% 10V
C277	1-137-399-11	FILM 0.1uF	5% 50V
C278	1-163-037-11	CERAMIC CHIP 0.022uF	10% 25V
C279	1-137-442-11	FILM 0.039uF	5% 50V
C280	1-124-288-00	ELECT 22uF	20% 6.3V
C281	1-126-933-11	ELECT 100uF	20% 10V
C282	1-163-241-11	CERAMIC CHIP 39PF	5% 50V

Ref. No.	Part No.	Description	Remark
C283	1-164-232-11	CERAMIC CHIP 0.01uF	50V
C284	1-124-288-00	ELECT 22uF	20% 6.3V
C285	1-137-442-11	FILM 0.039uF	5% 50V
C286	1-124-902-00	ELECT 0.47uF	20% 50V
C287	1-163-037-11	CERAMIC CHIP 0.022uF	10% 25V
C288	1-163-017-00	CERAMIC CHIP 0.0047uF	5% 50V
C289	1-137-368-11	FILM 0.0047uF	5% 50V
C290	1-126-947-11	ELECT 47uF	20% 10V
C291	1-163-009-11	CERAMIC CHIP 0.001uF	10% 50V
C292	1-164-232-11	CERAMIC CHIP 0.01uF	50V
C293	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C294	1-163-119-00	CERAMIC CHIP 120PF	5% 50V
C297	1-163-005-11	CERAMIC CHIP 470PF	10% 50V
C298	1-163-005-11	CERAMIC CHIP 470PF	10% 50V
C299	1-163-005-11	CERAMIC CHIP 470PF	10% 50V
C300	1-163-005-11	CERAMIC CHIP 470PF	10% 50V
C301	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C399	1-216-295-00	METAL CHIP 0	5% 1/10W
C400	1-164-346-11	CERAMIC CHIP 1uF	16V
C401	1-163-121-00	CERAMIC CHIP 150PF	5% 50V
C402	1-164-005-11	CERAMIC CHIP 0.47uF	25V
C403	1-163-133-00	CERAMIC CHIP 470PF	5% 50V
C405	1-164-232-11	CERAMIC CHIP 0.01uF	50V
C406	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C407	1-124-277-11	ELECT 4.7uF	20% 35V
C408	1-163-022-00	CERAMIC CHIP 0.012uF	10% 50V
C409	1-163-024-00	CERAMIC CHIP 0.018uF	10% 50V
C410	1-164-489-11	CERAMIC CHIP 0.22uF	10% 16V
C411	1-163-037-11	CERAMIC CHIP 0.022uF	10% 25V
C413	1-163-809-11	CERAMIC CHIP 0.047uF	10% 25V
C414	1-124-767-00	ELECT 2.2uF	20% 50V
C415	1-163-014-00	CERAMIC CHIP 0.0027uF	5% 50V
C416	1-164-005-11	CERAMIC CHIP 0.47uF	25V
C417	1-164-232-11	CERAMIC CHIP 0.01uF	50V
C419	1-163-016-00	CERAMIC CHIP 0.0039uF	10% 50V
C421	1-124-499-11	ELECT, NONPOLAR 1uF	20% 50V
C422	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
C423	1-124-287-00	ELECT 10uF	20% 10V
C424	1-163-809-11	CERAMIC CHIP 0.047uF	10% 25V
C425	1-124-273-00	ELECT 3.3uF	20% 50V
C427	1-163-129-00	CERAMIC CHIP 330PF	5% 50V
C428	1-126-947-11	ELECT 47uF	20% 35V
C429	1-163-249-11	CERAMIC CHIP 82PF	5% 50V
C430	1-126-947-11	ELECT 47uF	20% 35V
C432	1-163-022-00	CERAMIC CHIP 0.012uF	10% 50V
C433	1-163-097-00	CERAMIC CHIP 15PF	5% 50V
C434	1-163-024-00	CERAMIC CHIP 0.018uF	10% 50V
C435	1-163-101-00	CERAMIC CHIP 22PF	5% 50V

Ref. No.	Part No.	Description	Remark		
C436	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C437	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C438	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C439	1-126-947-11	ELECT	47uF	20%	10V
C440	1-126-947-11	ELECT	47uF	20%	10V
C441	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C442	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C443	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C444	1-126-160-11	ELECT	1uF	20%	50V
C445	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C446	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C447	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C448	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C449	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C450	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C451	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C452	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C463	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C465	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C466	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C467	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C468	1-164-699-11	CERAMIC CHIP	0.0033uF	5%	50V
C469	1-163-088-00	CERAMIC CHIP	5PF		50V
C500	1-126-947-11	ELECT	47uF	20%	10V
C501	1-128-453-21	ELECT CHIP	47uF	20%	6.3V
C502	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C503	1-126-603-11	ELECT CHIP	4.7uF	20%	35V
C504	1-163-245-11	CERAMIC CHIP	56PF	5%	50V
C505	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C506	1-128-024-11	ELECT CHIP	4.7uF	0	10V
C507	1-126-947-11	ELECT	47uF	20%	35V
C508	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C509	1-128-021-11	ELECT CHIP	15uF	0	6.3V
C510	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C511	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C513	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C514	1-163-257-11	CERAMIC CHIP	180PF	5%	50V
C515	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C516	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C517	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C518	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C519	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C520	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C521	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C522	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C523	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C526	1-137-364-11	FILM	0.001uF	5%	50V
C527	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C529	1-137-366-11	FILM	0.0022uF	5%	50V

Ref. No.	Part No.	Description	Remark		
C530	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C531	1-124-925-11	ELECT	2.2uF	20%	100V
C533	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C590	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C801	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C802	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C950	1-124-915-11	ELECT	10uF	20%	63V
< FILTER >					
CF001	1-527-831-00	FILTER, CERAMIC			
< CONNECTOR >					
CN210	1-506-470-11	PIN, CONNECTOR 5P			
CN401	1-750-687-11	HOUSING, CONNECTOR (PC BOARD)			
* CN402	1-764-594-21	CONNECTOR, FPC 18P			
* CN403	1-764-595-21	CONNECTOR, FPC 14P			
CN501	1-506-468-11	PIN, CONNECTOR 3P			
CN502	1-506-469-11	PIN, CONNECTOR 4P			
CN503	1-506-472-11	PIN, CONNECTOR 7P			
CN504	1-506-473-11	PIN, CONNECTOR 8P			
* CN505	1-568-783-11	PIN, CONNECTOR 6P			
* CN701	1-560-896-00	PIN, CONNECTOR 8P			
< TRIMMER >					
CT001	1-141-442-91	TRIMMER, CERAMIC			
CT501	1-141-424-11	CAP, ADJ			
< DIODE >					
D001	8-719-105-52	DIODE RD3. 6M-B2			
D002	8-719-400-18	DIODE MA152WK			
D003	8-719-988-62	DIODE 1SS355			
D202	8-719-105-82	DIODE RD5. 1M-B2			
D203	8-719-032-05	DIODE KV1460TL00			
D205	8-719-400-18	DIODE MA152WK			
D208	8-719-400-18	DIODE MA152WK			
D251	8-719-800-76	DIODE 1SS226			
D253	8-719-800-76	DIODE 1SS226			
D401	8-719-800-76	DIODE 1SS226			
D402	8-719-800-76	DIODE 1SS226			
D403	8-719-800-76	DIODE 1SS226			
D405	8-719-988-62	DIODE 1SS355			
D502	8-719-402-34	DIODE MA3120-TX			
D503	8-719-988-62	DIODE 1SS355			
D504	8-719-400-75	DIODE MA3091-TX			
D506	8-719-104-34	DIODE 1S2836			
D507	8-719-988-62	DIODE 1SS355			
D508	8-719-988-62	DIODE 1SS355			

# MB-712

Ref. No.	Part No.	Description	Remark
< FILTER >			
FL001	1-424-031-11	FILTER, NOISE	
FL002	1-424-031-11	FILTER, NOISE	
FL003	1-235-901-11	FILTER, LOW PASS	
FL004	1-236-478-11	FILTER, LOW PASS	
FL005	1-239-823-11	FILTER, CHROMA TRAP	
FL006	1-236-843-11	FILTER, BAND PASS	
FL007	1-239-824-11	FILTER, LOW PASS	
FL008	1-424-031-11	FILTER, NOISE	
FL201	1-424-031-11	FILTER, NOISE	
FL202	1-424-031-11	FILTER, NOISE	
FL203	1-424-031-11	FILTER, NOISE	
FL204	1-236-744-21	FILTER, EMI	
FL205	1-760-185-11	FILTER, CERAMIC	
FL206	1-760-186-11	FILTER, CERAMIC	
FL207	1-236-744-21	FILTER, EMI	
FL401	1-235-922-11	FILTER, LOW PASS (1.7MHz)	
FL501	1-236-744-21	FILTER, EMI	
FL502	1-236-744-21	FILTER, EMI	
< IC >			
IC001	8-759-058-52 IC	XRA10324AF-E2	
IC002	8-759-058-52 IC	XRA10324AF-E2	
IC003	8-759-509-96 IC	XRA10339F-E2	
IC004	8-752-353-92 IC	CXL5005M-T4	
IC005	8-759-233-64 IC	TC74HCU04AF	
IC006	8-759-257-87 IC	MM1117XFBF	
IC007	8-752-055-37 IC	CXA1255Q	
IC008	8-759-502-69 IC	CXD1152-MS	
IC009	8-752-055-36 IC	CXA1254Q	
IC010	1-466-870-11 IC	FILTER BLOCK, COMB (HCF0200)	
IC011	8-759-098-80 IC	MB90085-123-EF	
IC201	8-759-093-98 IC	CXD8451M	
IC202	8-759-008-67 IC	MC14066BF	
IC203	8-752-352-93 IC	CXD2500BQ	
IC204	8-759-253-26 IC	CA0002AM-TP	
IC205	8-759-509-99 IC	XRA4558F-E2	
IC206	8-759-509-99 IC	XRA4558F-E2	
IC207	8-759-509-99 IC	XRA4558F-E2	
IC209	8-759-509-99 IC	XRA4558F-E2	
IC401	8-752-056-79 IC	CXA1632Q	
IC402	8-759-048-30 IC	LA6510L	
IC403	8-759-300-71 IC	HD14053BFP	
IC404	8-759-300-71 IC	HD14053BFP	
△IC405	8-759-058-52 IC	XRA10324AF-E2	
IC406	8-759-509-99 IC	XRA4558F-E2	
IC409	8-759-509-99 IC	XRA4558F-E2	
IC410	8-759-242-64 IC	TC4W53F	

Ref. No.	Part No.	Description	Remark
IC411	8-759-509-99 IC	XRA4558F-E2	
IC420	8-759-242-64 IC	TC4W53F	
IC500	8-759-509-96 IC	XRA10339F-E2	
IC501	8-759-249-27 IC	MB89094PF-G-113	
IC502	8-759-098-78 IC	MB606F06	
IC503	8-759-231-92 IC	TA7291P	
IC504	8-759-058-52 IC	XRA10324AF-E2	
IC505	8-759-009-06 IC	MC14052BF	
IC506	8-759-300-71 IC	HD14053BFP	
IC507	8-759-206-28 IC	MC74HC123AF	
< JACK >			
J001	1-764-591-11	CONNECTOR, ROUND TYPE (S LINE OUT)	
J201	1-764-592-11	JACK 3P (LINE OUT1)	
J202	1-764-593-11	JACK 2P (LINE OUT2)	
J501	1-507-678-00	JACK (CONTROL S IN)	
< JUMPER RESISTOR >			
JR201	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR202	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR203	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR205	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR207	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR280	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR285	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR401	1-216-296-00	METAL GLAZE 0 5% 1/8W	
< COIL >			
L001	1-408-609-41	INDUCTOR 33uH	
L002	1-408-609-41	INDUCTOR 33uH	
L003	1-408-419-00	INDUCTOR 68uH	
L004	1-408-609-41	INDUCTOR 33uH	
L006	1-408-609-41	INDUCTOR 33uH	
L007	1-408-409-00	INDUCTOR 10uH	
L008	1-410-657-21	INDUCTOR CHIP 180uH	
L009	1-408-609-41	INDUCTOR 33uH	
L010	1-408-609-41	INDUCTOR 33uH	
L011	1-408-422-00	INDUCTOR 120uH	
L013	1-408-609-41	INDUCTOR 33uH	
L014	1-408-609-41	INDUCTOR 33uH	
L015	1-408-413-00	INDUCTOR 22uH	
L016	1-408-609-41	INDUCTOR 33uH	
L017	1-408-773-31	INDUCTOR CHIP 4.7uH	
L201	1-408-421-00	INDUCTOR 100uH	
L202	1-408-418-00	INDUCTOR 56uH	
L210	1-408-417-00	INDUCTOR 47uH	
L401	1-408-409-00	INDUCTOR 10uH	
L402	1-408-409-00	INDUCTOR 10uH	

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
L403	1-408-409-00	INDUCTOR 10uH	
L404	1-408-409-00	INDUCTOR 10uH	
L405	1-408-609-41	INDUCTOR 33uH	
L501	1-410-381-11	INDUCTOR CHIP 10uH	
< TRANSISTOR >			
Q001	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q002	8-729-140-75	TRANSISTOR 2SD999-CLCK	
Q003	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q004	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q005	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q006	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q007	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q008	8-729-216-22	TRANSISTOR 2SA1162-G	
Q009	8-729-216-22	TRANSISTOR 2SA1162-G	
Q010	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q011	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q012	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q013	8-729-216-22	TRANSISTOR 2SA1162-G	
Q014	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q015	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q016	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q017	8-729-216-22	TRANSISTOR 2SA1162-G	
Q018	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q019	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q020	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q021	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q022	8-729-216-22	TRANSISTOR 2SA1162-G	
Q023	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q024	8-729-216-22	TRANSISTOR 2SA1162-G	
Q025	8-729-216-22	TRANSISTOR 2SA1162-G	
Q026	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q027	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q031	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q201	8-729-901-04	TRANSISTOR DTA114EK	
Q202	8-729-900-53	TRANSISTOR DTC114EK	
Q203	8-729-231-55	TRANSISTOR 2SC2878-AB	
Q206	8-729-900-53	TRANSISTOR DTC114EK	
Q207	8-729-231-55	TRANSISTOR 2SC2878-AB	
Q210	8-729-901-04	TRANSISTOR DTA114EK	
Q211	8-729-900-53	TRANSISTOR DTC114EK	
Q212	8-729-900-53	TRANSISTOR DTC114EK	
Q213	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q214	8-729-901-04	TRANSISTOR DTA114EK	
Q215	8-729-901-04	TRANSISTOR DTA114EK	
Q216	8-729-900-53	TRANSISTOR DTC114EK	
Q217	8-729-901-04	TRANSISTOR DTA114EK	
Q218	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q219	8-729-230-49	TRANSISTOR 2SC2712-YG	

Ref. No.	Part No.	Description	Remark
Q400	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q401	8-729-216-22	TRANSISTOR 2SA1162-G	
Q403	8-729-924-90	TRANSISTOR 2SB1370-EF	
Q404	8-729-209-15	TRANSISTOR 2SD2012	
Q405	8-729-209-15	TRANSISTOR 2SD2012	
Q406	8-729-924-90	TRANSISTOR 2SB1370-EF	
Q407	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q408	8-729-901-04	TRANSISTOR DTA114EK	
Q409	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q410	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q411	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q412	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q500	8-729-900-53	TRANSISTOR DTC114EK	
Q501	8-729-216-22	TRANSISTOR 2SA1162-G	
Q502	8-729-901-04	TRANSISTOR DTA114EK	
Q503	8-729-901-04	TRANSISTOR DTA114EK	
Q504	8-729-901-04	TRANSISTOR DTA114EK	
Q505	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q506	8-729-900-53	TRANSISTOR DTC114EK	
Q507	8-729-900-53	TRANSISTOR DTC114EK	
Q950	8-729-202-38	TRANSISTOR 2SC3326N	
Q951	8-729-901-04	TRANSISTOR DTA114EK	
< RESISTOR >			
R001	1-216-075-00	METAL CHIP 12K 5% 1/10W	
R002	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R003	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R004	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R005	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R006	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R007	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R008	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R009	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R010	1-216-679-11	METAL CHIP 15K 0.5% 1/10W	
R011	1-216-095-00	METAL CHIP 82K 5% 1/10W	
R012	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R013	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R014	1-216-679-11	METAL CHIP 15K 0.5% 1/10W	
R015	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R016	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R017	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R018	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R019	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R020	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R021	1-216-699-11	METAL CHIP 100K 0.5% 1/10W	
R022	1-216-699-11	METAL CHIP 100K 0.5% 1/10W	
R023	1-216-113-00	METAL CHIP 470K 5% 1/10W	
R024	1-216-699-11	METAL CHIP 100K 0.5% 1/10W	
R025	1-216-699-11	METAL CHIP 100K 0.5% 1/10W	

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Ref. No.	Part No.	Description	Remark
R026	1-216-063-00	METAL CHIP	3.9K 5% 1/10W
R027	1-216-057-00	METAL CHIP	2.2K 5% 1/10W
R028	1-216-113-00	METAL CHIP	470K 5% 1/10W
R029	1-216-675-11	METAL CHIP	10K 0.5% 1/10W
R030	1-216-673-11	METAL CHIP	8.2K 0.5% 1/10W
R031	1-216-675-11	METAL CHIP	10K 0.5% 1/10W
R032	1-216-669-11	METAL CHIP	5.6K 0.5% 1/10W
R033	1-216-079-00	METAL CHIP	18K 5% 1/10W
R034	1-216-089-91	METAL GLAZE	47K 5% 1/10W
R035	1-216-063-00	METAL CHIP	3.9K 5% 1/10W
R036	1-216-113-00	METAL CHIP	470K 5% 1/10W
R037	1-216-073-00	METAL CHIP	10K 5% 1/10W
R038	1-216-057-00	METAL CHIP	2.2K 5% 1/10W
R039	1-216-079-00	METAL CHIP	18K 5% 1/10W
R040	1-216-077-00	METAL CHIP	15K 5% 1/10W
R041	1-216-699-11	METAL CHIP	100K 0.5% 1/10W
R042	1-216-699-11	METAL CHIP	100K 0.5% 1/10W
R043	1-216-121-00	METAL CHIP	1M 5% 1/10W
R044	1-216-077-00	METAL CHIP	15K 5% 1/10W
R045	1-216-049-00	METAL CHIP	1K 5% 1/10W
R046	1-216-033-00	METAL CHIP	220 5% 1/10W
R047	1-216-041-00	METAL CHIP	470 5% 1/10W
R048	1-216-040-00	METAL GLAZE	430 5% 1/10W
R049	1-216-049-00	METAL CHIP	1K 5% 1/10W
R050	1-216-057-00	METAL CHIP	2.2K 5% 1/10W
R051	1-216-049-00	METAL CHIP	1K 5% 1/10W
R052	1-216-057-00	METAL CHIP	2.2K 5% 1/10W
R053	1-216-049-00	METAL CHIP	1K 5% 1/10W
R054	1-216-043-00	METAL CHIP	560 5% 1/10W
R055	1-216-091-00	METAL CHIP	56K 5% 1/10W
R056	1-216-077-00	METAL CHIP	15K 5% 1/10W
R057	1-216-041-00	METAL CHIP	470 5% 1/10W
R058	1-216-049-00	METAL CHIP	1K 5% 1/10W
R059	1-216-053-00	METAL CHIP	1.5K 5% 1/10W
R060	1-216-049-00	METAL CHIP	1K 5% 1/10W
R061	1-216-055-00	METAL CHIP	1.8K 5% 1/10W
R062	1-216-049-00	METAL CHIP	1K 5% 1/10W
R063	1-216-049-00	METAL CHIP	1K 5% 1/10W
R064	1-216-121-00	METAL CHIP	1M 5% 1/10W
R065	1-216-089-91	METAL GLAZE	47K 5% 1/10W
R066	1-216-295-00	METAL CHIP	0 5% 1/10W
R067	1-216-083-00	METAL CHIP	27K 5% 1/10W
R068	1-216-089-91	METAL GLAZE	47K 5% 1/10W
R069	1-216-097-00	METAL CHIP	100K 5% 1/10W
R070	1-216-077-00	METAL CHIP	15K 5% 1/10W
R071	1-216-113-00	METAL CHIP	470K 5% 1/10W
R072	1-216-083-00	METAL CHIP	27K 5% 1/10W
R073	1-216-097-00	METAL CHIP	100K 5% 1/10W
R074	1-216-097-00	METAL CHIP	100K 5% 1/10W

Ref. No.	Part No.	Description	Remark
R075	1-216-113-00	METAL CHIP	470K 5% 1/10W
R076	1-216-057-00	METAL CHIP	2.2K 5% 1/10W
R077	1-216-095-00	METAL CHIP	82K 5% 1/10W
R078	1-216-097-00	METAL CHIP	100K 5% 1/10W
R079	1-216-097-00	METAL CHIP	100K 5% 1/10W
R080	1-216-113-00	METAL CHIP	470K 5% 1/10W
R081	1-216-049-00	METAL CHIP	1K 5% 1/10W
R082	1-216-689-11	METAL CHIP	39K 0.5% 1/10W
R083	1-216-079-00	METAL CHIP	18K 5% 1/10W
R084	1-216-109-00	METAL CHIP	330K 5% 1/10W
R085	1-216-061-00	METAL CHIP	3.3K 5% 1/10W
R086	1-216-089-91	METAL GLAZE	47K 5% 1/10W
R087	1-216-109-00	METAL CHIP	330K 5% 1/10W
R088	1-216-121-00	METAL CHIP	1M 5% 1/10W
R089	1-216-121-00	METAL CHIP	1M 5% 1/10W
R090	1-216-059-00	METAL CHIP	2.7K 5% 1/10W
R091	1-216-077-00	METAL CHIP	15K 5% 1/10W
R092	1-216-689-11	METAL CHIP	39K 0.5% 1/10W
R093	1-216-075-00	METAL CHIP	12K 5% 1/10W
R094	1-216-043-00	METAL CHIP	560 5% 1/10W
R095	1-216-079-00	METAL CHIP	18K 5% 1/10W
R096	1-216-043-00	METAL CHIP	560 5% 1/10W
R097	1-216-059-00	METAL CHIP	2.7K 5% 1/10W
R098	1-216-063-00	METAL CHIP	3.9K 5% 1/10W
R099	1-216-057-00	METAL CHIP	2.2K 5% 1/10W
R100	1-216-073-00	METAL CHIP	10K 5% 1/10W
R101	1-216-009-00	METAL CHIP	22 5% 1/10W
R102	1-216-073-00	METAL CHIP	10K 5% 1/10W
R103	1-216-073-00	METAL CHIP	10K 5% 1/10W
R104	1-216-121-00	METAL CHIP	1M 5% 1/10W
R105	1-216-073-00	METAL CHIP	10K 5% 1/10W
R106	1-216-097-00	METAL CHIP	100K 5% 1/10W
R107	1-216-061-00	METAL CHIP	3.3K 5% 1/10W
R108	1-216-053-00	METAL CHIP	1.5K 5% 1/10W
R109	1-216-063-00	METAL CHIP	3.9K 5% 1/10W
R110	1-216-097-00	METAL CHIP	100K 5% 1/10W
R111	1-216-073-00	METAL CHIP	10K 5% 1/10W
R112	1-216-085-00	METAL CHIP	33K 5% 1/10W
R113	1-216-097-00	METAL CHIP	100K 5% 1/10W
R114	1-216-097-00	METAL CHIP	100K 5% 1/10W
R115	1-216-085-00	METAL CHIP	33K 5% 1/10W
R116	1-216-061-00	METAL CHIP	3.3K 5% 1/10W
R117	1-216-057-00	METAL CHIP	2.2K 5% 1/10W
R118	1-216-085-00	METAL CHIP	33K 5% 1/10W
R119	1-216-079-00	METAL CHIP	18K 5% 1/10W
R120	1-216-047-00	METAL CHIP	820 5% 1/10W
R121	1-216-085-00	METAL CHIP	33K 5% 1/10W
R122	1-216-057-00	METAL CHIP	2.2K 5% 1/10W



Ref. No.	Part No.	Description	Remark		
R123	1-216-037-00	METAL CHIP	330	5%	1/10W
R124	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R125	1-216-295-00	METAL CHIP	0	5%	1/10W
R126	1-216-081-00	METAL CHIP	22K	5%	1/10W
R127	1-216-033-00	METAL CHIP	220	5%	1/10W
R128	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R129	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R130	1-216-651-11	METAL CHIP	1K	0.5%	1/10W
R131	1-216-650-11	METAL CHIP	910	0.5%	1/10W
R132	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R133	1-216-081-00	METAL CHIP	22K	5%	1/10W
R134	1-216-081-00	METAL CHIP	22K	5%	1/10W
R135	1-216-295-00	METAL CHIP	0	5%	1/10W
R137	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R138	1-216-039-00	METAL CHIP	390	5%	1/10W
R139	1-216-091-00	METAL CHIP	56K	5%	1/10W
R140	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R141	1-216-041-00	METAL CHIP	470	5%	1/10W
R142	1-216-043-00	METAL CHIP	560	5%	1/10W
R143	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R144	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R145	1-216-049-00	METAL CHIP	1K	5%	1/10W
R146	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R147	1-216-045-00	METAL CHIP	680	5%	1/10W
R148	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R149	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R150	1-216-095-00	METAL CHIP	82K	5%	1/10W
R151	1-216-045-00	METAL CHIP	680	5%	1/10W
R152	1-216-033-00	METAL CHIP	220	5%	1/10W
R153	1-216-081-00	METAL CHIP	22K	5%	1/10W
R154	1-216-081-00	METAL CHIP	22K	5%	1/10W
R155	1-216-049-00	METAL CHIP	1K	5%	1/10W
R156	1-216-295-00	METAL CHIP	0	5%	1/10W
R157	1-216-295-00	METAL CHIP	0	5%	1/10W
R158	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R159	1-216-117-00	METAL CHIP	680K	5%	1/10W
R160	1-216-041-00	METAL CHIP	470	5%	1/10W
R161	1-216-295-00	METAL CHIP	0	5%	1/10W
R162	1-216-033-00	METAL CHIP	220	5%	1/10W
R163	1-216-097-00	METAL CHIP	100K	5%	1/10W
R164	1-216-049-00	METAL CHIP	1K	5%	1/10W
R165	1-216-295-00	METAL CHIP	0	5%	1/10W
R166	1-216-049-00	METAL CHIP	1K	5%	1/10W
R167	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R169	1-216-049-00	METAL CHIP	1K	5%	1/10W
R170	1-216-115-00	METAL CHIP	560K	5%	1/10W
R171	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R172	1-216-059-00	METAL CHIP	2.7K	5%	1/10W

Ref. No.	Part No.	Description	Remark		
R173	1-216-021-00	METAL CHIP	68	5%	1/10W
R174	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R175	1-216-021-00	METAL CHIP	68	5%	1/10W
R176	1-216-031-00	METAL CHIP	180	5%	1/10W
R177	1-216-021-00	METAL CHIP	68	5%	1/10W
R178	1-216-021-00	METAL CHIP	68	5%	1/10W
R179	1-216-031-00	METAL CHIP	180	5%	1/10W
R180	1-216-031-00	METAL CHIP	180	5%	1/10W
R181	1-216-021-00	METAL CHIP	68	5%	1/10W
R182	1-216-021-00	METAL CHIP	68	5%	1/10W
R183	1-216-081-00	METAL CHIP	22K	5%	1/10W
R184	1-216-081-00	METAL CHIP	22K	5%	1/10W
R185	1-216-049-00	METAL CHIP	1K	5%	1/10W
R186	1-216-049-00	METAL CHIP	1K	5%	1/10W
R187	1-216-041-00	METAL CHIP	470	5%	1/10W
R188	1-216-041-00	METAL CHIP	470	5%	1/10W
R189	1-216-041-00	METAL CHIP	470	5%	1/10W
R190	1-216-041-00	METAL CHIP	470	5%	1/10W
R191	1-216-041-00	METAL CHIP	470	5%	1/10W
R192	1-216-041-00	METAL CHIP	470	5%	1/10W
R193	1-216-081-00	METAL CHIP	22K	5%	1/10W
R194	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R195	1-216-081-00	METAL CHIP	22K	5%	1/10W
R196	1-216-073-00	METAL CHIP	10K	5%	1/10W
R197	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R198	1-216-095-00	METAL CHIP	82K	5%	1/10W
R199	1-216-095-00	METAL CHIP	82K	5%	1/10W
R200	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R201	1-216-073-00	METAL CHIP	10K	5%	1/10W
R202	1-216-049-00	METAL CHIP	1K	5%	1/10W
R203	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R204	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R205	1-216-651-11	METAL CHIP	1K	0.5%	1/10W
R206	1-216-676-11	METAL CHIP	11K	0.5%	1/10W
R207	1-216-672-11	METAL CHIP	7.5K	0.5%	1/10W
R208	1-216-635-11	METAL CHIP	220	0.5%	1/10W
R209	1-216-649-11	METAL CHIP	820	0.5%	1/10W
R210	1-216-049-00	METAL CHIP	1K	5%	1/10W
R211	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R212	1-218-760-11	METAL GLAZE	220K	2%	1/10W
R213	1-216-657-11	METAL CHIP	1.8K	0.5%	1/10W
R214	1-216-676-11	METAL CHIP	11K	0.5%	1/10W
R215	1-216-672-11	METAL CHIP	7.5K	0.5%	1/10W
R216	1-216-073-00	METAL CHIP	10K	5%	1/10W
R217	1-216-685-11	METAL CHIP	27K	0.5%	1/10W
R218	1-216-685-11	METAL CHIP	27K	0.5%	1/10W
R219	1-216-041-00	METAL CHIP	470	5%	1/10W
R220	1-216-295-00	METAL CHIP	0	5%	1/10W
R224	1-216-649-11	METAL CHIP	820	0.5%	1/10W

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Ref. No.	Part No.	Description	Remark		
R225	1-216-095-00	METAL CHIP	82K	5%	1/10W
R226	1-216-657-11	METAL CHIP	1.8K	0.5%	1/10W
R231	1-216-651-11	METAL CHIP	1K	0.5%	1/10W
R234	1-218-760-11	METAL GLAZE	220K	2%	1/10W
R235	1-216-049-00	METAL CHIP	1K	5%	1/10W
R236	1-216-295-00	METAL CHIP	0	5%	1/10W
R237	1-216-295-00	METAL CHIP	0	5%	1/10W
R238	1-216-651-11	METAL CHIP	1K	0.5%	1/10W
R239	1-216-635-11	METAL CHIP	220	0.5%	1/10W
R240	1-216-649-11	METAL CHIP	820	0.5%	1/10W
R241	1-218-760-11	METAL GLAZE	220K	2%	1/10W
R242	1-216-685-11	METAL CHIP	27K	0.5%	1/10W
R243	1-216-295-00	METAL CHIP	0	5%	1/10W
R244	1-218-760-11	METAL GLAZE	220K	2%	1/10W
R245	1-218-760-11	METAL GLAZE	220K	2%	1/10W
R247	1-216-073-00	METAL CHIP	10K	5%	1/10W
R248	1-216-651-11	METAL CHIP	1K	0.5%	1/10W
R251	1-216-657-11	METAL CHIP	1.8K	0.5%	1/10W
R252	1-218-760-11	METAL GLAZE	220K	2%	1/10W
R253	1-216-295-00	METAL CHIP	0	5%	1/10W
R255	1-218-760-11	METAL GLAZE	220K	2%	1/10W
R256	1-218-760-11	METAL GLAZE	220K	2%	1/10W
R257	1-216-295-00	METAL CHIP	0	5%	1/10W
R258	1-216-295-00	METAL CHIP	0	5%	1/10W
R262	1-216-649-11	METAL CHIP	820	0.5%	1/10W
R263	1-216-657-11	METAL CHIP	1.8K	0.5%	1/10W
R264	1-216-295-00	METAL CHIP	0	5%	1/10W
R266	1-216-676-11	METAL CHIP	11K	0.5%	1/10W
R267	1-216-672-11	METAL CHIP	7.5K	0.5%	1/10W
R268	1-216-685-11	METAL CHIP	27K	0.5%	1/10W
R269	1-218-760-11	METAL GLAZE	220K	2%	1/10W
R271	1-218-760-11	METAL GLAZE	220K	2%	1/10W
R274	1-216-074-00	METAL CHIP	11K	5%	1/10W
R275	1-216-097-00	METAL CHIP	100K	5%	1/10W
R276	1-216-676-11	METAL CHIP	11K	0.5%	1/10W
R277	1-216-672-11	METAL CHIP	7.5K	0.5%	1/10W
R278	1-216-121-00	METAL CHIP	1M	5%	1/10W
R279	1-216-095-00	METAL CHIP	82K	5%	1/10W
R282	1-216-049-00	METAL CHIP	1K	5%	1/10W
R283	1-216-121-00	METAL CHIP	1M	5%	1/10W
R284	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R285	1-216-049-00	METAL CHIP	1K	5%	1/10W
R286	1-218-760-11	METAL CHIP	220K	0.5%	1/10W
R287	1-216-667-11	METAL CHIP	4.7K	0.5%	1/10W
R289	1-216-698-11	METAL CHIP	91K	0.5%	1/10W
R290	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R291	1-216-693-11	METAL CHIP	56K	0.5%	1/10W
R292	1-216-097-00	METAL CHIP	100K	5%	1/10W

Ref. No.	Part No.	Description	Remark		
R293	1-216-097-00	METAL CHIP	100K	5%	1/10W
R295	1-216-073-00	METAL CHIP	10K	5%	1/10W
R298	1-216-073-00	METAL CHIP	10K	5%	1/10W
R299	1-216-097-00	METAL CHIP	100K	5%	1/10W
R300	1-216-693-11	METAL CHIP	56K	0.5%	1/10W
R301	1-216-295-00	METAL CHIP	0	5%	1/10W
R303	1-216-097-00	METAL CHIP	100K	5%	1/10W
R304	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R305	1-216-693-11	METAL CHIP	56K	0.5%	1/10W
R306	1-216-693-11	METAL CHIP	56K	0.5%	1/10W
R307	1-218-759-11	METAL CHIP	200K	0.5%	1/10W
R308	1-216-073-00	METAL CHIP	10K	5%	1/10W
R309	1-216-073-00	METAL CHIP	10K	5%	1/10W
R311	1-216-097-00	METAL CHIP	100K	5%	1/10W
R315	1-216-095-00	METAL CHIP	82K	5%	1/10W
R317	1-216-073-00	METAL CHIP	10K	5%	1/10W
R318	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R319	1-216-101-00	METAL CHIP	150K	5%	1/10W
R320	1-216-101-00	METAL CHIP	150K	5%	1/10W
R321	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R322	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R323	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R324	1-216-077-00	METAL CHIP	15K	5%	1/10W
R325	1-216-104-00	METAL CHIP	200K	5%	1/10W
R326	1-216-017-00	METAL CHIP	47	5%	1/10W
R327	1-216-049-00	METAL CHIP	1K	5%	1/10W
R328	1-216-049-00	METAL CHIP	1K	5%	1/10W
R329	1-216-049-00	METAL CHIP	1K	5%	1/10W
R330	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R331	1-216-041-00	METAL CHIP	470	5%	1/10W
R332	1-216-023-00	METAL CHIP	82	5%	1/10W
R333	1-216-077-00	METAL CHIP	15K	5%	1/10W
R334	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R335	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R336	1-216-073-00	METAL CHIP	10K	5%	1/10W
R340	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R341	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R400	1-216-097-00	METAL CHIP	100K	5%	1/10W
R401	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R402	1-216-045-00	METAL CHIP	680	5%	1/10W
R403	1-216-045-00	METAL CHIP	680	5%	1/10W
R404	1-216-093-00	METAL CHIP	68K	5%	1/10W
R405	1-216-107-00	METAL CHIP	270K	5%	1/10W
R406	1-216-099-00	METAL CHIP	120K	5%	1/10W
R407	1-216-075-00	METAL CHIP	12K	5%	1/10W
R408	1-216-083-00	METAL CHIP	27K	5%	1/10W
R409	1-216-049-00	METAL CHIP	1K	5%	1/10W
R410	1-216-101-00	METAL CHIP	150K	5%	1/10W

Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark		
R411	1-216-077-00	METAL CHIP	15K	5%	1/10W	R461	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R412	1-216-101-00	METAL CHIP	150K	5%	1/10W	R462	1-216-085-00	METAL CHIP	33K	5%	1/10W
R413	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	R463	1-216-077-00	METAL CHIP	15K	5%	1/10W
R414	1-216-075-00	METAL CHIP	12K	5%	1/10W	R464	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R415	1-216-085-00	METAL CHIP	33K	5%	1/10W	R465	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R416	1-216-103-91	METAL GLAZE	180K	5%	1/10W	R466	1-216-081-00	METAL CHIP	22K	5%	1/10W
R417	1-216-097-00	METAL CHIP	100K	5%	1/10W	R467	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R418	1-216-091-00	METAL CHIP	56K	5%	1/10W	R468	1-216-081-00	METAL CHIP	22K	5%	1/10W
R419	1-216-089-91	METAL GLAZE	47K	5%	1/10W	R469	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R420	1-216-085-00	METAL CHIP	33K	5%	1/10W	R470	1-216-075-00	METAL CHIP	12K	5%	1/10W
R421	1-216-097-00	METAL CHIP	100K	5%	1/10W	R471	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R422	1-216-109-00	METAL CHIP	330K	5%	1/10W	R472	1-216-017-00	METAL CHIP	47	5%	1/10W
R423	1-216-101-00	METAL CHIP	150K	5%	1/10W	R473	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R424	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	R474	1-216-003-11	METAL GLAZE	12	5%	1/10W
R425	1-216-089-91	METAL GLAZE	47K	5%	1/10W	R475	1-216-081-00	METAL CHIP	22K	5%	1/10W
R426	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	R476	1-216-146-00	METAL GLAZE	6.8	5%	1/8W
R427	1-216-099-00	METAL CHIP	120K	5%	1/10W	R477	1-216-079-00	METAL CHIP	18K	5%	1/10W
R428	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	R478	1-216-109-00	METAL CHIP	330K	5%	1/10W
R429	1-216-093-00	METAL CHIP	68K	5%	1/10W	R479	1-216-093-00	METAL CHIP	68K	5%	1/10W
R431	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	R480	1-216-095-00	METAL CHIP	82K	5%	1/10W
R432	1-216-082-00	METAL GLAZE	24K	5%	1/10W	R481	1-216-369-00	METAL OXIDE	1	5%	2W F
R433	1-216-100-00	METAL GLAZE	130K	5%	1/10W	R482	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R434	1-216-097-00	METAL CHIP	100K	5%	1/10W	R483	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R435	1-216-073-00	METAL CHIP	10K	5%	1/10W	R484	1-216-033-00	METAL CHIP	220	5%	1/10W
R436	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	R485	1-216-041-00	METAL CHIP	470	5%	1/10W
R437	1-216-077-00	METAL CHIP	15K	5%	1/10W	R486	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R438	1-216-085-00	METAL CHIP	33K	5%	1/10W	R487	1-216-039-00	METAL CHIP	390	5%	1/10W
R439	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	R488	1-216-047-00	METAL CHIP	820	5%	1/10W
R440	1-216-049-00	METAL CHIP	1K	5%	1/10W	R489	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R441	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	R490	1-216-037-00	METAL CHIP	330	5%	1/10W
R442	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	R491	1-216-146-00	METAL GLAZE	6.8	5%	1/8W
R443	1-216-085-00	METAL CHIP	33K	5%	1/10W	R492	1-216-073-00	METAL CHIP	10K	5%	1/10W
R444	1-216-033-00	METAL CHIP	220	5%	1/10W	R493	1-216-095-00	METAL CHIP	82K	5%	1/10W
R445	1-216-689-11	METAL CHIP	39K	0.5%	1/10W	R494	1-216-079-00	METAL CHIP	18K	5%	1/10W
R446	1-216-081-00	METAL CHIP	22K	5%	1/10W	R495	1-216-079-00	METAL CHIP	18K	5%	1/10W
R447	1-216-081-00	METAL CHIP	22K	5%	1/10W	R496	1-216-099-00	METAL CHIP	120K	5%	1/10W
R448	1-216-092-00	METAL GLAZE	62K	5%	1/10W	R497	1-216-099-00	METAL CHIP	120K	5%	1/10W
R449	1-216-113-00	METAL CHIP	470K	5%	1/10W	R498	1-216-077-00	METAL CHIP	15K	5%	1/10W
R450	1-216-073-00	METAL CHIP	10K	5%	1/10W	R499	1-216-099-00	METAL CHIP	120K	5%	1/10W
R451	1-216-089-91	METAL GLAZE	47K	5%	1/10W	R500	1-216-073-00	METAL CHIP	10K	5%	1/10W
R452	1-216-073-00	METAL CHIP	10K	5%	1/10W	R501	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R453	1-216-085-00	METAL CHIP	33K	5%	1/10W	R502	1-216-111-00	METAL CHIP	390K	5%	1/10W
R454	1-216-089-91	METAL GLAZE	47K	5%	1/10W	R503	1-216-113-00	METAL CHIP	470K	5%	1/10W
R455	1-216-097-00	METAL CHIP	100K	5%	1/10W	R504	1-216-677-11	METAL CHIP	12K	0.5%	1/10W
R456	1-216-689-11	METAL CHIP	39K	0.5%	1/10W	R505	1-216-035-00	METAL CHIP	270	5%	1/10W
R457	1-216-073-00	METAL CHIP	10K	5%	1/10W	R506	1-216-679-11	METAL CHIP	15K	0.5%	1/10W
R458	1-216-073-00	METAL CHIP	10K	5%	1/10W	R507	1-218-766-11	METAL CHIP	390K	0.50%	1/10W
R459	1-216-049-00	METAL CHIP	1K	5%	1/10W	R508	1-216-049-00	METAL CHIP	1K	5%	1/10W
R460	1-216-075-00	METAL CHIP	12K	5%	1/10W						

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Ref. No.	Part No.	Description	Remark		
R509	1-216-685-11	METAL CHIP	27K	0.5%	1/10W
R510	1-216-760-11	METAL CHIP	220K	0.50%	1/10W
R511	1-216-675-11	METAL CHIP	10K	0.5%	1/10W
R512	1-216-687-11	METAL CHIP	33K	0.5%	1/10W
R513	1-216-699-11	METAL CHIP	100K	0.5%	1/10W
R514	1-216-077-00	METAL CHIP	15K	5%	1/10W
R515	1-216-687-11	METAL CHIP	33K	0.5%	1/10W
R516	1-216-085-00	METAL CHIP	33K	5%	1/10W
R517	1-216-105-00	METAL CHIP	220K	5%	1/10W
R518	1-216-081-00	METAL CHIP	22K	5%	1/10W
R520	1-216-073-00	METAL CHIP	10K	5%	1/10W
R521	1-216-045-00	METAL CHIP	680	5%	1/10W
R522	1-216-105-00	METAL CHIP	220K	5%	1/10W
R523	1-216-033-00	METAL CHIP	220	5%	1/10W
R524	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R525	1-216-073-00	METAL CHIP	10K	5%	1/10W
R526	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R527	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R528	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R529	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R530	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R531	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R532	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
△R533	1-212-950-00	FUSIBLE	4.7	5%	1/2W F
R534	1-216-105-00	METAL CHIP	220K	5%	1/10W
R535	1-216-093-00	METAL CHIP	68K	5%	1/10W
R536	1-216-095-00	METAL CHIP	82K	5%	1/10W
R537	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R538	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R539	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R540	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R541	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R542	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R543	1-216-049-00	METAL CHIP	1K	5%	1/10W
R544	1-216-049-00	METAL CHIP	1K	5%	1/10W
R545	1-216-049-00	METAL CHIP	1K	5%	1/10W
R546	1-216-049-00	METAL CHIP	1K	5%	1/10W
R547	1-216-049-00	METAL CHIP	1K	5%	1/10W
R548	1-216-073-00	METAL CHIP	10K	5%	1/10W
R549	1-216-105-00	METAL CHIP	220K	5%	1/10W
R550	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R552	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R553	1-216-029-00	METAL CHIP	150	5%	1/10W
R554	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R556	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R557	1-216-081-00	METAL CHIP	22K	5%	1/10W
R558	1-216-021-00	METAL CHIP	68	5%	1/10W
R559	1-216-097-00	METAL CHIP	100K	5%	1/10W

Ref. No.	Part No.	Description	Remark		
R560	1-216-049-00	METAL CHIP	1K	5%	1/10W
R561	1-216-049-00	METAL CHIP	1K	5%	1/10W
R562	1-216-049-00	METAL CHIP	1K	5%	1/10W
R563	1-216-049-00	METAL CHIP	1K	5%	1/10W
R564	1-216-049-00	METAL CHIP	1K	5%	1/10W
R565	1-216-121-00	METAL CHIP	1M	5%	1/10W
R566	1-216-049-00	METAL CHIP	1K	5%	1/10W
R568	1-216-049-00	METAL CHIP	1K	5%	1/10W
R569	1-216-049-00	METAL CHIP	1K	5%	1/10W
R570	1-216-049-00	METAL CHIP	1K	5%	1/10W
R571	1-216-049-00	METAL CHIP	1K	5%	1/10W
R572	1-216-049-00	METAL CHIP	1K	5%	1/10W
R573	1-216-049-00	METAL CHIP	1K	5%	1/10W
R574	1-216-049-00	METAL CHIP	1K	5%	1/10W
R575	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R576	1-216-049-00	METAL CHIP	1K	5%	1/10W
R577	1-216-049-00	METAL CHIP	1K	5%	1/10W
R578	1-216-049-00	METAL CHIP	1K	5%	1/10W
R579	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R580	1-216-049-00	METAL CHIP	1K	5%	1/10W
R581	1-216-049-00	METAL CHIP	1K	5%	1/10W
R582	1-216-049-00	METAL CHIP	1K	5%	1/10W
R583	1-216-049-00	METAL CHIP	1K	5%	1/10W
R584	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R585	1-216-049-00	METAL CHIP	1K	5%	1/10W
R586	1-216-049-00	METAL CHIP	1K	5%	1/10W
R587	1-216-049-00	METAL CHIP	1K	5%	1/10W
R588	1-216-049-00	METAL CHIP	1K	5%	1/10W
R589	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R590	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R591	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R592	1-216-049-00	METAL CHIP	1K	5%	1/10W
R593	1-216-664-11	METAL CHIP	3.6K	0.5%	1/10W
R594	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R595	1-216-049-00	METAL CHIP	1K	5%	1/10W
R597	1-216-049-00	METAL CHIP	1K	5%	1/10W
R598	1-216-295-00	METAL CHIP	0	5%	1/10W
R604	1-216-049-00	METAL CHIP	1K	5%	1/10W
R605	1-216-295-00	METAL CHIP	0	5%	1/10W
R606	1-216-037-00	METAL CHIP	330	5%	1/10W
R608	1-216-049-00	METAL CHIP	1K	5%	1/10W
R609	1-216-049-00	METAL CHIP	1K	5%	1/10W
R610	1-216-049-00	METAL CHIP	1K	5%	1/10W
R611	1-216-049-00	METAL CHIP	1K	5%	1/10W
R612	1-216-295-00	METAL CHIP	0	5%	1/10W
R613	1-216-049-00	METAL CHIP	1K	5%	1/10W
R614	1-216-049-00	METAL CHIP	1K	5%	1/10W
R615	1-216-049-00	METAL CHIP	1K	5%	1/10W
R616	1-216-049-00	METAL CHIP	1K	5%	1/10W

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

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Ref. No.	Part No.	Description	Remark		
R617	1-216-049-00	METAL CHIP	1K	5%	1/10W
R618	1-216-049-00	METAL CHIP	1K	5%	1/10W
R619	1-216-073-00	METAL CHIP	10K	5%	1/10W
R620	1-216-049-00	METAL CHIP	1K	5%	1/10W
R621	1-216-049-00	METAL CHIP	1K	5%	1/10W
R622	1-216-049-00	METAL CHIP	1K	5%	1/10W
R623	1-216-049-00	METAL CHIP	1K	5%	1/10W
R624	1-216-049-00	METAL CHIP	1K	5%	1/10W
R625	1-216-049-00	METAL CHIP	1K	5%	1/10W
R626	1-216-073-00	METAL CHIP	10K	5%	1/10W
R628	1-216-041-00	METAL CHIP	470	5%	1/10W
R630	1-216-049-00	METAL CHIP	1K	5%	1/10W
R632	1-216-049-00	METAL CHIP	1K	5%	1/10W
R633	1-216-097-00	METAL CHIP	100K	5%	1/10W
R634	1-216-073-00	METAL CHIP	10K	5%	1/10W
R635	1-216-049-00	METAL CHIP	1K	5%	1/10W
R636	1-216-049-00	METAL CHIP	1K	5%	1/10W
R637	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R638	1-216-081-00	METAL CHIP	22K	5%	1/10W
R639	1-216-081-00	METAL CHIP	22K	5%	1/10W
R642	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R643	1-216-049-00	METAL CHIP	1K	5%	1/10W
R644	1-216-295-00	METAL CHIP	0	5%	1/10W
R645	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R646	1-216-073-00	METAL CHIP	10K	5%	1/10W
R647	1-216-073-00	METAL CHIP	10K	5%	1/10W
R648	1-216-073-00	METAL CHIP	10K	5%	1/10W
R649	1-216-025-00	METAL CHIP	100	5%	1/10W
R650	1-216-101-00	METAL CHIP	150K	5%	1/10W
R651	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R801	1-216-105-00	METAL CHIP	220K	5%	1/10W
R802	1-216-105-00	METAL CHIP	220K	5%	1/10W
R803	1-216-295-00	METAL CHIP	0	5%	1/10W
R804	1-216-097-00	METAL CHIP	100K	5%	1/10W
R805	1-216-117-00	METAL CHIP	680K	5%	1/10W
R806	1-216-085-00	METAL CHIP	33K	5%	1/10W
R807	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R808	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R809	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R810	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R812	1-216-295-00	METAL CHIP	0	5%	1/10W
R813	1-216-295-00	METAL CHIP	0	5%	1/10W
R814	1-216-295-00	METAL CHIP	0	5%	1/10W
R815	1-216-109-00	METAL CHIP	330K	5%	1/10W
R816	1-216-043-00	METAL CHIP	560	5%	1/10W
R850	1-216-077-00	METAL CHIP	15K	5%	1/10W
R900	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R901	1-216-675-11	METAL CHIP	10K	0.5%	1/10W

Ref. No.	Part No.	Description	Remark		
R902	1-216-677-11	METAL CHIP	12K	0.5%	1/10W
R903	1-216-021-00	METAL CHIP	68	5%	1/10W
R904	1-216-021-00	METAL CHIP	68	5%	1/10W
R905	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R906	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R907	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R912	1-216-095-00	METAL CHIP	82K	5%	1/10W
R913	1-216-083-00	METAL CHIP	27K	5%	1/10W
R914	1-216-049-00	METAL CHIP	1K	5%	1/10W
R915	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R916	1-216-077-00	METAL CHIP	15K	5%	1/10W
R917	1-216-047-00	METAL CHIP	820	5%	1/10W
R918	1-216-045-00	METAL CHIP	680	5%	1/10W
R950	1-216-049-00	METAL CHIP	1K	5%	1/10W
R951	1-216-097-00	METAL CHIP	100K	5%	1/10W

## &lt; VARIABLE RESISTOR &gt;

RV001	1-223-239-11	RES, ADJ, CARBON 10K
RV002	1-223-239-11	RES, ADJ, CARBON 10K
RV401	1-223-241-11	RES, ADJ, CARBON 47K
RV402	1-223-241-11	RES, ADJ, CARBON 47K
RV501	1-223-240-11	RES, ADJ, CARBON 22K

## &lt; THERMISTOR &gt;

TH001	1-800-199-00	THERMISTOR
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## &lt; VIBRATOR &gt;

X201	1-567-908-11	VIBRATOR, CRYSTAL (16.9344MHz)
X501	1-567-900-11	OSCILLATOR, CRYSTAL (14.31818MHz)

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\* A-6421-956-A MD-703 BOARD, COMPLETE

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(Ref. NO. 2000 Series)

3-953-262-01 HOLDER, LED

## &lt; CAPACITOR &gt;

C431	1-126-947-11	ELECT	47uF	20%	35V
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## &lt; CONNECTOR &gt;

* CN431	1-691-503-11	CONNECTOR, FPC 14P
CN432	1-506-470-11	PIN, CONNECTOR 5P
CN433	1-564-014-11	PIN, CONNECTOR 4P
CN434	1-506-468-11	PIN, CONNECTOR 3P

## &lt; DIODE &gt;

D431	8-719-912-39	LED SLR932A
D432	8-729-020-74	DIODE GP1S24

## MD-703

## MT-702

## PS-716

Ref. No.	Part No.	Description	Remark
D433	8-729-020-74	DIODE GP1S24	
D434	8-729-020-74	DIODE GP1S24	
< IC >			
IC431	8-759-927-46	IC SN74HC00ANS	
< JUMPER RESISTOR >			
JR413	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR414	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR431	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR432	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR433	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR435	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR437	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR438	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR439	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR440	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR441	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR442	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR443	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR444	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR445	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR446	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR447	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR448	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR449	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR450	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR451	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR452	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR453	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR454	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR455	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR456	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR457	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR458	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR460	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR461	1-216-296-00	METAL GLAZE 0 5% 1/8W	
< RESISTOR >			
R431	1-216-033-00	METAL CHIP 220 5% 1/10W	
R432	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R433	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R434	1-216-045-00	METAL CHIP 680 5% 1/10W	
R435	1-216-099-00	METAL CHIP 120K 5% 1/10W	
R436	1-216-039-00	METAL CHIP 390 5% 1/10W	
R437	1-216-099-00	METAL CHIP 120K 5% 1/10W	
R438	1-216-095-00	METAL CHIP 82K 5% 1/10W	
R439	1-216-095-00	METAL CHIP 82K 5% 1/10W	

Ref. No.	Part No.	Description	Remark
< SWITCH >			
S431	1-692-440-11	SWITCH, PUSH (TILT)	
*****			
*	A-6421-953-A	MT-702 BOARD, COMPLETE	
*****			
(Ref. NO. 4000 Series)			
< CAPACITOR >			
C471	1-161-063-00	CERAMIC 0.1uF 10% 50V	
< CONNECTOR >			
* CN471	1-695-105-11	PIN, CONNECTOR (PC BOARD) 3P	
*****			
*	A-6423-082-A	PS-716 BOARD, COMPLETE	
*****			
(Ref. NO. 6000 Series)			
△	1-533-189-11	HOLDER, FUSE	
	7-685-646-81	SCREW +BVTP 3X8 TYPE2	
< CAPACITOR >			
C031	1-126-948-11	ELECT 100uF 20% 35V	
C032	1-164-222-11	CERAMIC CHIP 0.22uF 25V	
C033	1-126-948-11	ELECT 100uF 20% 35V	
C034	1-164-222-11	CERAMIC CHIP 0.22uF 25V	
C035	1-126-941-11	ELECT 470uF 20% 25V	
C036	1-126-944-11	ELECT 3300uF 20% 25V	
C037	1-126-946-11	ELECT 6800uF 20% 25V	
C038	1-126-944-11	ELECT 3300uF 20% 25V	
C046	1-124-557-11	ELECT 1000uF 20% 25V	
C051	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C052	1-163-019-00	CERAMIC CHIP 0.0068uF 10% 50V	
C054	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C055	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C056	1-163-007-11	CERAMIC CHIP 680PF 10% 50V	
C058	1-163-035-00	CERAMIC CHIP 0.047uF 50V	
C059	1-163-017-00	CERAMIC CHIP 0.0047uF 5% 50V	
C060	1-163-007-11	CERAMIC CHIP 680PF 10% 50V	
C061	1-163-017-00	CERAMIC CHIP 0.0047uF 5% 50V	
C062	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C063	1-124-122-11	ELECT 100uF 20% 50V	
C064	1-163-035-00	CERAMIC CHIP 0.047uF 50V	
C701	1-126-916-11	ELECT 1000uF 20% 6.3V	
C702	1-126-916-11	ELECT 1000uF 20% 6.3V	
C703	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C704	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C706	1-163-011-11	CERAMIC CHIP 0.0015uF 10% 50V	

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Ref. No.	Part No.	Description	Remark
C707	1-124-915-11	ELECT 10uF	20% 63V
C708	1-163-037-11	CERAMIC CHIP 0.022uF	10% 25V
C709	1-163-139-00	CERAMIC CHIP 820PF	10% 50V
C710	1-124-927-11	ELECT 4.7uF	20% 100V
C711	1-126-916-11	ELECT 1000uF	20% 6.3V
C712	1-126-916-11	ELECT 1000uF	20% 6.3V
C713	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C714	1-126-966-11	ELECT 33uF	20% 16V
C718	1-126-948-11	ELECT 100uF	20% 35V

## &lt; CONNECTOR &gt;

* CN030	1-564-029-00	PIN, CONNECTOR 4P
CN031	1-506-483-21	PIN, CONNECTOR 4P
* CN051	1-564-033-00	PIN, CONNECTOR 8P
CN052	1-564-506-11	PLUG, CONNECTOR 3P
CN055	1-506-485-11	PIN, CONNECTOR 6P

## &lt; DIODE &gt;

△D031	8-719-200-82	DIODE 11ES2
△D032	8-719-200-82	DIODE 11ES2
D033	8-719-911-19	DIODE 1SS119
△D034	8-719-025-17	DIODE D3SBA10-4100
△D035	8-719-200-82	DIODE 11ES2
D051	8-719-980-78	DIODE ERA81-006
D052	8-719-980-78	DIODE ERA81-006
D053	8-719-200-82	DIODE 11ES2
D054	8-719-200-82	DIODE 11ES2
D055	8-719-911-19	DIODE 1SS119
D056	8-719-911-19	DIODE 1SS119
D057	8-719-911-19	DIODE 1SS119
D058	8-719-109-85	DIODE RD5.1ES-B2
D059	8-719-109-75	DIODE RD4.3ES-B2
D060	8-719-911-19	DIODE 1SS119
△D061	8-719-503-40	DIODE S3V40
D701	8-719-980-78	DIODE ERA81-006
D702	8-719-980-78	DIODE ERA81-006

## &lt; FUSE &gt;

△F031	1-532-747-11	FUSE, GLASS TUBE (5A 125V)
△F032	1-532-747-11	FUSE, GLASS TUBE (5A 125V)
△F053	1-532-780-21	FUSE, MICRO (SECONDARY)
△F054	1-532-780-21	FUSE, MICRO (SECONDARY)

## &lt; IC &gt;

△IC031	8-759-231-53	IC M5F7805
IC051	8-759-509-91	IC XRA10393F
IC052	8-759-100-96	IC uPC4558G2
△IC701	8-759-946-09	IC FA7611M

Ref. No.	Part No.	Description	Remark
< COIL >			
L051	1-424-219-11	COIL, CHOKE 300uH	
L701	1-424-219-11	COIL, CHOKE 300uH	
L702	1-412-525-21	INDUCTOR 10uH	
L703	1-412-537-31	INDUCTOR 100uH	
L704	1-424-219-11	COIL, CHOKE 300uH	
L705	1-412-525-21	INDUCTOR 10uH	

## &lt; IC LINK &gt;

△PS051	1-532-675-00	LINK, IC 1.5A
△PS052	1-532-675-00	LINK, IC 1.5A

## &lt; TRANSISTOR &gt;

Q031	8-729-141-75	TRANSISTOR 2SD596DV345
△Q051	8-729-117-11	TRANSISTOR 2SB1151
△Q052	8-729-019-31	TRANSISTOR 2SC4596E
△Q053	8-729-117-11	TRANSISTOR 2SB1151
△Q054	8-729-019-31	TRANSISTOR 2SC4596E
Q055	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q056	8-729-216-22	TRANSISTOR 2SA1162-G
Q058	8-729-230-49	TRANSISTOR 2SC2712-YG
Q059	8-729-216-22	TRANSISTOR 2SA1162-G
Q060	8-729-230-49	TRANSISTOR 2SC2712-YG
Q061	8-729-119-76	TRANSISTOR 2SA1175-HFE
△Q701	8-729-019-29	TRANSISTOR 2SB1009R
△Q702	8-729-019-29	TRANSISTOR 2SB1009R

## &lt; RESISTOR &gt;

△R031	1-212-867-00	FUSIBLE 27 5% 1/4W F
R032	1-216-057-00	METAL CHIP 2.2K 5% 1/10W
△R033	1-216-426-11	METAL OXIDE 82 5% 1W F
R034	1-216-049-00	METAL CHIP 1K 5% 1/10W
R035	1-216-061-00	METAL CHIP 3.3K 5% 1/10W
R051	1-216-081-00	METAL CHIP 22K 5% 1/10W
R052	1-216-075-00	METAL CHIP 12K 5% 1/10W
R053	1-216-093-00	METAL CHIP 68K 5% 1/10W
R054	1-216-081-00	METAL CHIP 22K 5% 1/10W
R055	1-216-091-00	METAL CHIP 56K 5% 1/10W
R056	1-216-097-00	METAL CHIP 100K 5% 1/10W
R057	1-216-073-00	METAL CHIP 10K 5% 1/10W
R061	1-216-089-00	METAL CHIP 47K 5% 1/10W
R062	1-216-065-00	METAL CHIP 4.7K 5% 1/10W
R063	1-216-049-00	METAL CHIP 1K 5% 1/10W
R064	1-247-750-11	CARBON 680 5% 1/2W
R065	1-247-750-11	CARBON 680 5% 1/2W
R066	1-216-049-00	METAL CHIP 1K 5% 1/10W
△R067	1-216-369-00	METAL OXIDE 1 5% 2W F
R068	1-216-690-11	METAL CHIP 43K 0.5% 1/10W

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## PS-716

## PW-709

## SW-719

## SW-727

Ref. No.	Part No.	Description	Remark		
R069	1-216-691-11	METAL CHIP	47K	0.5%	1/10W
R070	1-216-690-11	METAL CHIP	43K	0.5%	1/10W
R071	1-216-691-11	METAL CHIP	47K	0.5%	1/10W
R072	1-216-073-00	METAL CHIP	10K	5%	1/10W
R073	1-216-073-00	METAL CHIP	10K	5%	1/10W
△R074	1-215-866-11	METAL OXIDE	330	5%	1W F
R075	1-216-073-00	METAL CHIP	10K	5%	1/10W
R076	1-247-750-11	CARBON	680	5%	1/2W
R077	1-216-073-00	METAL CHIP	10K	5%	1/10W
R078	1-216-093-00	METAL CHIP	68K	5%	1/10W
R079	1-216-097-00	METAL CHIP	100K	5%	1/10W
R080	1-216-097-00	METAL CHIP	100K	5%	1/10W
R701	1-216-659-11	METAL CHIP	2.2K	0.5%	1/10W
R702	1-216-683-11	METAL CHIP	22K	0.5%	1/10W
R703	1-216-035-00	METAL CHIP	270	5%	1/10W
R704	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R705	1-216-043-00	METAL CHIP	560	5%	1/10W
R706	1-216-043-00	METAL CHIP	560	5%	1/10W
R707	1-216-691-11	METAL CHIP	47K	5%	1/10W
R708	1-216-109-00	METAL CHIP	330K	5%	1/10W
R709	1-216-119-00	METAL CHIP	820K	5%	1/10W
R710	1-216-043-00	METAL CHIP	560	5%	1/10W
R711	1-216-699-11	METAL CHIP	100K	0.5%	1/10W
R712	1-216-683-11	METAL CHIP	22K	0.5%	1/10W
R713	1-216-663-11	METAL CHIP	3.3K	0.5%	1/10W
R714	1-216-674-11	METAL CHIP	9.1K	0.5%	1/10W
R715	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R716	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R717	1-216-029-00	METAL CHIP	150	5%	1/10W

## &lt; RELAY &gt;

△RY031 1-515-833-11 RELAY

\*\*\*\*\*

\* A-6423-087-A PW-709 BOARD, COMPLETE

\*\*\*\*\*

(Ref. NO. 7000 Series)

## &lt; CAPACITOR &gt;

C201 1-164-232-11 CERAMIC CHIP 0.01uF 50V

## &lt; CONNECTOR &gt;

CN201 1-506-484-11 PIN, CONNECTOR 5P

## &lt; DIODE &gt;

D201 8-719-992-30 DIODE SLR-305MCA47

Ref. No. Part No. Description Remark

## &lt; IC &gt;

IC201 8-741-100-48 IC SBX1610-59

## &lt; RESISTOR &gt;

R201 1-216-063-00 METAL CHIP 3.9K 5% 1/10W  
 R202 1-216-059-00 METAL CHIP 2.7K 5% 1/10W  
 R203 1-216-295-00 METAL CHIP 0 5% 1/10W  
 R205 1-216-033-00 METAL CHIP 220 5% 1/10W

## &lt; SWITCH &gt;

S201 1-572-946-11 SWITCH, TACTIL (POWER)  
 S202 1-572-946-11 SWITCH, TACTIL (OPEN/CLOSE)  
 S203 1-572-946-11 SWITCH, TACTIL (DISPLAY)

\*\*\*\*\*

\* A-6421-954-A SW-719 BOARD, COMPLETE

\*\*\*\*\*

(Ref. NO. 4000 Series)

## &lt; CONNECTOR &gt;

\* CN481 1-566-779-11 PIN, CONNECTOR (PC BOARD) 4P

## &lt; SWITCH &gt;

S481 1-692-439-11 SWITCH, PUSH

\*\*\*\*\*

\* A-6423-085-A SW-727 BOARD, COMPLETE

\*\*\*\*\*

(Ref. NO. 7000 Series)

## &lt; CONNECTOR &gt;

\* CN101 1-564-014-51 PIN, CONNECTOR 4P

## &lt; DIODE &gt;

D103 8-719-992-30 LED SLR305MC3F (AUTO RESUME)  
 D104 8-719-992-30 LED SLR305MC3F (AUTO RESUME)

## &lt; TRANSISTOR &gt;

Q103 8-729-901-04 TRANSISTOR DTA114EK

## &lt; RESISTOR &gt;

R103 1-216-033-00 METAL CHIP 220 5% 1/10W  
 R104 1-216-033-00 METAL CHIP 220 5% 1/10W  
 R105 1-216-059-00 METAL CHIP 2.7K 5% 1/10W  
 R106 1-216-063-00 METAL CHIP 3.9K 5% 1/10W  
 R107 1-216-071-00 METAL CHIP 8.2K 5% 1/10W  
 R108 1-216-081-00 METAL CHIP 22K 5% 1/10W

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Ref. No.	Part No.	Description	Remark
		< SWITCH >	
	S101	1-572-946-11 SWITCH, TACTIL (SIDE B)	
	S102	1-572-946-11 SWITCH, TACTIL (▷)	
	S103	1-572-946-11 SWITCH, TACTIL (SIDE A)	
	S104	1-572-946-11 SWITCH, TACTIL (■)	
	S105	1-572-946-11 SWITCH, TACTIL (■)	
*****			
*	A-6423-083-A	TR-718 BOARD, COMPLETE	
		*****	
		(T001 IS NOT INCLUDED) (Ref. NO. 5000 Series)	
△	1-533-189-11	HOLDER, FUSE	
		< CAPACITOR >	
△C001	1-104-705-11	FILM 0.1uF 20% 250V	
C003	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C004	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
		< CONNECTOR >	
△CN001	1-564-419-11	HEADER, SPRING (POWER) 2P	
		< FUSE >	
△F001	1-532-742-11	FUSE, GLASS TUBE (1.6A 125V)	
		< TRANSFORMER >	
△T001	1-423-522-11	TRANSFORMER, POWER	
△T002	1-406-884-11	FILTER, LINE	
*****			
		MISCELLANEOUS	
		*****	
△208	8-848-286-11	DEVICE, OPTICAL KHS-150A (RP)	
211	1-751-083-11	CABLE, FLEXIBLE FLAT (18 CORE)	
221	1-751-084-11	CABLE, FLEXIBLE FLAT (14 CORE)	
△CP1	1-574-085-11	CORD, POWER	
M471	X-3942-963-1	MOTOR ASSY (LOADING)	
△M901	1-698-109-11	MOTOR, DD (SPINDLE)	
M903	X-3942-968-1	TILT MOTOR ASSY	
*****			
		ACCESSORIES & PACKING MATERIALS	
		*****	
		1-751-271-11 CORD, CONNECTION (A/V Cable, 1.5m)	
		3-757-581-21 MANUAL, INSTRUCTION (ENGLISH)	
		3-757-581-31 MANUAL, INSTRUCTION (FRENCH) (Canadian)	
*		3-795-581-21 SAFEGUARD (SONY), IMPORTANT (US)	
*		3-955-619-21 INDIVIDUAL CARTON	

Ref. No.	Part No.	Description	Remark
*	3-957-895-01	CUSHION (UPPER)	
*	3-957-896-01	CUSHION (LOWER)	
*****			
		HARDWARE LIST	
		*****	
#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#2	7-671-155-01	STEEL BALL 3.0	
#3	7-624-105-04	STOP RING 2.3, TYPE -E	
#4	7-685-144-11	SCREW +P 3X5 TYPE2 NON-SLIT	
#6	7-682-645-01	SCREW +PS 3X4	
#7	7-685-647-79	SCREW +BVTP 3X10 TYPE2	
#8	7-627-553-48	SCREW, PRECISION +P 2X4	
#9	7-628-253-05	SCREW +PS 2X4	
#10	7-621-759-35	+PSW, 2.6X5	
#11	7-684-220-02	NUT 3, HEXAGON CAP	
#12	7-624-190-81	STOP RING 2, TYPE-CS	
#13	7-682-946-01	SCREW +PSW 3X5	
#14	7-621-759-65	+PSW, 2.6X8	
#15	7-685-661-14	SCREW +BVTP 4X12 TYPE2 IT-3	
#16	7-624-102-04	STOP RING 1.5, TYPE -E	
#17	7-685-131-19	SCREW +P 2.6X4 TYPE2 NON-SLIT	
#18	7-685-646-81	SCREW +BVTP 3X8 TYPE2	
#19	7-685-158-19	SCREW +P 4X6 TYPE2 NON-SLIT	
#20	7-685-103-19	SCREW +P 2X5 TYPE2 SLIT	
#21	7-685-648-79	SCREW +BVTP 3X12 TYPE2	

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## IC PIN FUNCTION DESCRIPTION

7-1. SYSTEM CONTROL MICROPROCESSOR PIN FUNCTION  
(MB-712 BOARD IC501 MB89094)

PIN NO.	PIN NAME	I/O	FUNCTION
1	N/C		NOT USED. OPEN
2	CLK32	I	CRYSTAL OSCILLATOR (32 kHz) INPUT
3	GND	I	GND
4	GND	I	GND
5	2FSC	I	2 fsc (7.159 MHz) INPUT
6	N/C		NOT USED. OPEN
7	Vss	I	GND
8	MRST	I	RESET INPUT. TERMINAL (L: RESET)
9	FREQ	I	PHILLIPS CODE (FRAME NO.) READ OUT ENABLE INPUT
10	FOACK	I	PHILLIPS CODE. SUBQ (SUB CODE) DATA OUTPUT CONTROL (H: DATA OUTPUT)
11	FOSEL	I	PHILLIPS CODE. SUBQ (SUB CODE) DATA SELECT (L: SUBQ)
12	JPCTRL	O	I TRACK JUMP (ITJ) MULTI TRACK JUMP (MTJ) SELECT SIGNAL OUTPUT (H: ITJ)
13	SPLOCK	I	SPINDLE SERVO LOCK SIGNAL (H: DURING SPINDLE SERVO IS LOCKING)
14	TBCHOLDIN	O	CHROMA. TBC CONTROL. SIGNAL OUTPUT
15	SCOR	I	H WHEN SUB CODE SYNC IS DETECTED
16	PB V	I	PLAYBACK V SYNC SIGNAL INPUT
17	REF V	I	REFERENCE V SYNC SIGNAL
18	ALT	O	INTERNAL A REGISTER LATCH OF EXPANSION OUTPUT PORT IC (IC502 ON MB-712 BOARD) OUTPUT
19	BLT	O	INTERNAL B REGISTER LATCH OF EXPANSION OUTPUT PORT IC (IC502 ON MB-712 BOARD) OUTPUT
20	BUSY	I	COMMUNICATION ENABLE SIGNAL FROM MODE CONTROL MICROPROCESSOR (H: COMMUNICATION ENABLE)
21 - 24	N/C		NOT USED. OPEN
25	CLSCS	O	CHIP SELECT SIGNAL OUTPUT FOR CLS DT (PIN 20) SIGNAL
26	SPDPLTS	O	SPINDLE PULSE DRIVE SIGNAL OUTPUT (H: SPINDLE FREE-RUN)
27	TBRKMON	O	SERVO IC BRAKE MONITOR (H: BRAKE ON). NOT USED
28	PULL UP +5V		+5V
29	CLSDT	I	CLV SCAN V SYNC COUNTER SERIAL DATA FROM IC502 INPUT. NORMALLY L. WHEN CLS CS (PIN 20) IS H, DATA IS IN. CLOCK IS SET CK (PIN 20)
30	SETDT	O	SERIAL DATA OUTPUT TO DSP (DIGITAL SIGNAL PROCESSOR) IC (IC203 ON MB-712 BOARD) AND EXPANSION OUTPUT PORT IC
31	SETCK	O	SERIAL TRANSFERRING CLOCK TO DSP IC AND IC502
32	SPDLFGI	I	SPINDLE FG INPUT I (1 ROTATION: 12WAVES)
33	CG V	I	CGV SYNC SIGNAL
34	LD SEARCH	O	SPINDLE SERVO CONTROL OUTPUT (H: DURING LD SEARCHING)
35	SPDL FIR	O	SPINDLE ROTATING DIRECTION SIGNAL OUTPUT (H: FWD)
36	AUX SEL	O	H WHEN THERE IS AUXILIARY INPUT. NOT USED. FIXED TO L
37	JMP TRIG	O	TRACK JUMP TRIGGER PULSE OUTPUT
38	ANALOG	O	AUDIO ANALOGUE/DIGITAL SELECT (H: ANALOGUE, L: DIGITAL)
39	CDG	I	NOT USED. CONNECTED TO GND
40	CDG MUTE	O	NOT USED. OPEN
41	MTJ	I	TRACKING PULSE OUTPUT FOR MTJ. NORMALLY INPUT. OUTPUT DURING JUMPING TRACKS (L: FWD)
42	MTF ON/OFF	O	MTF CORRECTION ON/OFF SIGNAL (H: MTF ON)
43	TRK OFF	O	PUT OFF SERVO IC TRACKING CONTROL (L: TRACKING OFF)
44	N/C		NOT USED. OPEN
45	GMUTE	O	ON CLV SCAN. GRAY PICTURE MUTE CONTROL OUTPUT (L: PLAYBACK PICTURE) (H: GRAY PICTURE)
46	N/C		NOT USED. OPEN
47	CAV	O	H: CAV DISC. L: OTHERS OR UNIDENTIFIED
48	FOK	I	FOCUS LOCK SIGNAL INPUT (H: FOCUS LOCK)
49	Vcc	I	+5V POWER SUPPLY
50	BUSY	I	COMMUNICATION ENABLE SIGNAL FROM MODE CONTROL MICROPROCESSOR (H: COMMUNICATION ENABLE)
51	TV/DISC	O	RF TV/DISC SELECT (H: TV, L: DISC). NOT USED. OPEN
52	SLED FWD	O	SLED FWD FORCED MOVE SIGNAL OUTPUT FROM PORT (H: FWD MOVE)
53	SLED REV	O	SLED REV FORCED MOVE SIGNAL OUTPUT FROM PORT (H: REV MOVE)
54	MMICS	O	SERIAL COMMUNICATION CHIP SELECT SIGNAL OUTPUT TO MODE CONTROL MICROPROCESSOR
55	LOADING	O	TRAY LOADING DRIVE
56	UN LOADING	O	TRAY EJECT DRIVE
57	N/C		NOT USED. OPEN

PIN NO.	PIN NAME	I/O	FUNCTION
58	Vss	I	GND
59	LINE MUTE	O	AUDIO OUTPUT MUTE SIGNAL OUTPUT (H: MUTE)
60	SLED SPEED	O	SLED DRIVE SPEED CHANGE (L: SLOW)
61	SV DSP RST	O	RESET OUTPUT TO (L: RESET) SERVO IC (IC401 ON MB-712 BOARD), DSP IC AND DIA CONVERTER (IC201 ON MB-712 BOARD)
62	LD ON	O	LASER DIODE ON/OFF SIGNAL (H: ON EMITTING)
63	GD/LD CDV	O	L: PLAYING CD OR AUDIO PART OF CDV. H: OTHERS
64	SLED MODE	O	SLED CONTROL OUTPUT
65	SIDE A/B	O	TILT SERVO SIDE SELECT (A: H, B: L)
66	TH SV	O	TILT/HIGHT SELECT (L: TILT)
67	LCSW1	I	LOADING/CHUCKING POSITION SENSOR INPUT 1
68	LD LED	O	LED EMITTING SIGNAL FOR DISC DISCRIMINATION
69	LCSW3	I	LOADING/CHUCKING POSITION SENSOR INPUT 2
70	LCSW2	I	LOADING/CHUCKING POSITION SENSOR INPUT 3
71	SPDL FG2	I	SPINDLE FG INPUT 2
72	TILT LIMIT	I	TILT UP/DOWN LIMIT SW INPUT
73	TILT CTR	I	TILT CENTER POSITION SW INPUT
74	MECH SI	I	32 BYTE SERIAL TRANSFERRING DATA INPUT
75, 76	N/C		NOT USED. OPEN
77	MECH SI	I	32 BYTE SERIAL TRANSFERRING DATA OUTPUT. SERIAL DATA INPUT FROM MODE CONTROL MICROPROCESSOR
78	MECH SO	O	32 BYTE SERIAL TRANSFERRING DATA INPUT. SERIAL DATA OUTPUT TO MODE CONTROL MICROPROCESSOR
79	MECH CLK	O	32 BYTE SERIAL TRANSFERRING CLOCK
80	T CNT	I	JUMPING TRACKS COUNTING SIGNAL INPUT. NOT USED
81, 82	N/C		NOT USED. OPEN
83	A/Vss	I	GND
84	LDDET	I	A/D INPUT. THERE IS DISC OR NOT. 8/12 INCH DETECTION
85	CDV/RLMT	I	A/D INPUT. SLED POSITION INFORMATION (CDV)
86	CD ABLD	I	A/D INPUT. SLED POSITION INFORMATION (CD, ALD, BLD)
87	INLIMIT	I	A/D INPUT. SLED POSITION INFORMATION (INLIMIT)
88	DSPLT	O	LATCH SIGNAL FOR DSP IC OUTPUT
89	MUTG	O	DSP MUTE SIGNAL (H: MUTE)
90	LOCK	I	FRAME SYNC (EFM) LOCK SIGNAL (H: LOCK)
91	SENSE	I	VARIOUS SENSE INPUT SIGNAL FROM DSP
92	A/Vcc	I	+5V POWER SUPPLY
93	EMP ON	O	EMPHASIS SELECT SIGNAL OUTPUT (L: EMPHASIS ON)
94	N/C		NOT USED. OPEN
95	A MUTE 2	O	L CH AUDIO OUTPUT MODE SELECT *
96	A MUTE 1	O	R CH AUDIO OUTPUT MODE SELECT *
97	CX	O	CX ON/OFF CONTROL OUTPUT (L: CX ON)
98	N/C		NOT USED. OPEN
99	DSFSEL	O	SELECTS COMMUNICATION WITH DSP (L: CONNECT, H: SEPARATE)
100	Vcc	I	POWER SUPPLY TERMINAL (+5V)

## \* AUDIO OUTPUT MODE SELECT

A MUTE 1	L	L	L	H	H	H
A MUTE 2	L	L	H	L	L	H
MODE	STEREO	MONO (L)	MONO (R)	MUTE	MUTE	MUTE
AUDIO OUTPUT	L	L/CH1	R/CH2			
OUTPUT	R					

## 7-2. EXPANSION OUTPUT PORT IC PIN FUNCTION (MB-712 BOARD IC502 MB606F06)

PIN NO.	PIN NAME	I/O	FUNCTION
1	SP OFF	O	SPINDLE MOTOR ON/OFF SIGNAL OUTPUT (H: SPINDLE MOTOR ON)
2	V <sub>SS</sub>		GND
3	TBC MUT	O	TBC MUTE SIGNAL OUTPUT
4	TBC REPH	O	REFERENCE HORIZONTAL SYNC. SIGNAL FOR TBC OUTPUT
5	PBCS	I	PB COMPOSITE V, H SYNC. SIGNAL INPUT
6	SP RHO	O	REFERENCE H SYNC. SIGNAL FOR SPINDLE SERVO OUTPUT
7	SP RHI	I	REFERENCE H SYNC. SIGNAL FOR SPINDLE SERVO INPUT
8	CNT2	O	TBC CONTROL OUTPUT (H: LINE SYSTEM, L: BURST SYSTEM)
9	JUMP TOL	O	JUMP TOGGLE OUTPUT
10	SYEX	O	SYNC. SIGNAL FOR CHARACTER GENERATOR SELECT. NOT USED
11	CGV	O	V SYNC. GENERAL FOR CHARACTER GENERATOR OUTPUT. NOT USED
12	V <sub>SS</sub>		GND
13	SELH	O	H SYNC. SIGNAL FOR CHARACTER GENERATOR (IC011 ON MB-712 BOARD) OUTPUT
14	XPHS	O	PB H SYNC. SIGNAL OUTPUT. NOT USED
15	SP PBHO	O	PB H SYNC. SIGNAL FOR SPINDLE SERVO OUTPUT
16	SP PBHI	I	PB H SYNC. SIGNAL FOR SPINDLE SERVO INPUT
17	HS	O	CENTER OF ECCENTRICITY OUTPUT. NOT USED
18	MEM REPH	O	REF H OUTPUT FOR THE SET WITH MEMORY (NOT RESET). NOT USED
19	FSC	O	fsc (3.579545 MHz) OUTPUT
20	XOUT	O	4 fsc (14.31818 MHz) OUTPUT
21	XIN	I	4 fsc (14.31818 MHz) INPUT (CLOCK)
22	HD	I	H SYNC. SIGNAL FOR DIGITAL TBC INPUT
23	V <sub>SS</sub>		GND
24	V MUTE	O	VIDEO MUTE SIGNAL OUTPUT
25	V MUTE2	O	SIGNAL FOR ADDING REF. V SYNC. SIGNAL TO PLAYBACK VIDEO SIGNAL DURING CLV SCANNING
26	G BURST	O	BURST SIGNAL (3.58 MHz) FOR GRAY PICTURE GENERATION DURING CLV SCANNING
27	PC OUT1	O	SPINDLE SERVO FORCED ACCELERATION/DECELERATION SIGNAL OUTPUT. (H: ACCELERATION, L: DECELERATION, HIZ: OTHERS)
28	PC OUT2	O	SPINDLE SERVO H SERVO ERROR OUTPUT
29	TBC H	I	H SYNC. SIGNAL AFTER TBC CORRECTION FOR CHARACTER GENERATOR INPUT
30	DS GATE	O	GATE SIGNAL FOR READING OUT PHILLIPS CODE (FRAME NO.)
31	DATA	I	PHILLIPS CODE DATA INPUT
32	V MUTE1	O	BLANKING V SYNC. SIGNAL OF PLAYBACK VIDEO SIGNAL DURING CLV SCANNING
33	V <sub>DD</sub>		+5 V
34	DLRH	O	GRAY SIGNAL FOR GENERATING GRAY PICTURE DURING CLV SCANNING
35	GRH	O	H SYNC. SIGNAL FOR GENERATING GRAY PICTURE DURING CLV SCANNING
36	SP UNLOCK	O	SIGNAL FOR SETTING BY MECHANISM CONTROLLER OUTPUT WHEN SPINDLE IS UNLOCKED
37	8/12	O	LD DISC SIZE SET OUTPUT. (H: 8 INCHES, L: 12 INCHES) NOT USED
38	CD/LDCDV	O	DISC TYPE SET OUTPUT H: PLAYBACK CD OR AUDIO PART OF CDV L: PLAYBACK LD OR VIDEO PART OF CDV
39	CDV	O	SPINDLE SERVO MODE SET (H: VIDEO PART OF CDV)
40	FGMD	O	SPINDLE SERVO MODE SET (H: FG MODE (WHILE COUNTING SPINDLE FG, FORCING TO ACCELERATE/DECELERATE SPINDLE MOTOR))

PIN NO.	PIN NAME	I/O	FUNCTION
41	HP OUT	O	HOLD PULSE OUTPUT. NORMALLY OUT. PULSE OUTPUT DURING JUMPING TRACKS
42	V <sub>SS</sub>		GND
43	SV CLK	O	CLOCK FOR SERVO IC (IC401 ON MB-712 BOARD). 1/8 fsc (APPROX. 450 kHz)
44	JMP	I	TRACK JUMP CONTROL SIGNAL INPUT. (GATE FOR HP OUT)
45	SET CLK	I	INTERNAL A, B REGISTER CLOCK INPUT FROM SYSTEM CONTROL MICROPROCESSOR (IC501 ON MB-712 BOARD)
46	GVID	I	GRAY PICTURE CONTROL SIGNAL INPUT DURING CLV SCANNING (H: GRAY PICTURE, L: PLAYBACK PICTURE)
47	SET DT	I	INTERNAL A, B REGISTER SERIAL DATA INPUT FROM SYSTEM CONTROLLER
48	CLS DT	O	CLV SCAN V SYNC. COUNTER DATA OUTPUT TO SYSTEM CONTROLLER. NORMALLY L. DATA OUTPUT WHEN CLS CLK (PIN 48) IS H. CLOCK IS SET CLK (PIN 48)
49	CLS CLK	I	CLOCK FOR READING OUT CLV SCAN V SYNC COUNTER DATA CONTROL SIGNAL INPUT
50	B LD	I	INTERNAL B REGISTER LATCH INPUT
51	A LD	I	INTERNAL A REGISTER LATCH INPUT
52	V <sub>SS</sub>		GND
53	REF V	O	REFERENCE V SYNC. SIGNAL OUTPUT
54	PB V	O	PLAYBACK V SYNC. SIGNAL OUTPUT
55	TBC HOLD	I	CHROMA TBC CONTROL SIGNAL INPUT
56	SP LOCK	O	SPINDLE SERVO LOCK SIGNAL OUTPUT (H: DURING LOCKING). NOT USED
57	JP CTL	I	TRACK JUMP SELECT SIGNAL INPUT (H: 1 TRACK JUMP, L: MULTI TRACK JUMP)
58	FSSEL	I	PHILLIPS CODE/SUBQ (SUB CODE) SELECT SIGNAL INPUT (L: SUBQ)
59	FOACK	I	PHILLIPS CODE, SUBQ DATA OUTPUT CONTROL (H: DATA OUTPUT)
60	F REQ	O	PHILLIPS CODE READING OUT ENABLE SIGNAL OUTPUT
61	MRST	I	SYSTEM RESET INPUT (L: RESET)
62	FSC2	O	2 fsc (7.159 MHz) OUTPUT
63	V <sub>SS</sub>		GND
64	FH2	O	2 fh (3.15 kHz). CARRIER FOR SPINDLE MOTOR PWM DRIVE CIRCUIT
65	DSSEL	I	CLOCK CONTROL SIGNAL FOR DSP IC (IC203 ON MB-712 BOARD) (L: CONNECTED TO DSP)
66	FOCLK	I	CLOCK FOR READING OUT PHILLIPS CODE, SUBQ DATA INPUT
67	D OUT	O	PHILLIPS CODE, SUBQ CODE SERIAL DATA OUTPUT
68	SUBQ CLK	O	SUBQ TRANSFERRING CLOCK
69	SUBQ	I	SUBQ DATA INPUT
70	DSP CLK	O	CLOCK FOR DSP IC OUTPUT
71	DOCINH	O	DROP OUT CORRECTION INHIBITION OUTPUT. NOT USED
72	CLV1	O	SPINDLE SERVO GAIN MONITOR OUTPUT. NOT USED
73	V <sub>DD</sub>		+5 V
74	CLV2	O	SPINDLE SERVO GAIN MONITOR OUTPUT. NOT USED
75	REF HE	O	REF HE MONITOR OUTPUT. NOT USED
76	REF HC	O	REF HC MONITOR OUTPUT
77	HMSK	O	PHILLIPS CODE MASKING SIGNAL MONITOR OUTPUT
78	BQ6	O	B REGISTER D6 OUTPUT. NOT USED
79	BQ7	O	B REGISTER D7 OUTPUT. NOT USED
80	TEST	I	TEST MODE INPUT (H: TEST)

### 7-3. MODE CONTROL MICROPROCESSOR PIN FUNCTION (FP-731 BOARD IC301 MB89625)

PIN NO.	PIN NAME	I/O	FUNCTION
1	MECH CLK	O	SERIAL COMMUNICATION CLOCK OUTPUT TO SYSTEM CONTROL MICROPROCESSOR (IC501 ON MB-712 BOARD)
2	MECH SI	O	SERIAL DATA OUTPUT TO SYSTEM CONTROL MICROPROCESSOR
3	MECH SO	I	SERIAL DATA INPUT FROM SYSTEM CONTROL MICROPROCESSOR
4	-16 V MONITOR	I	-16 V MONITOR
5	REG MONITOR	I	REG +5 V MONITOR
6	AD1	I	KEY BUILT IN SET READING A/D INPUT 1 *
7	AD2	I	KEY BUILT IN SET READING A/D INPUT 2 *
8 - 11	N/C	(I)	NOT USED. CONNECTED TO GND
12	A <sub>VCC</sub>		A/D CONVERTER POWER SUPPLY. CONNECTED TO EVER +5 V
13	A <sub>V<sub>R</sub></sub>		A/D CONVERTER REFERENCE VOLTAGE. CONNECTED TO EVER +5 V
14	A <sub>V<sub>SS</sub></sub>		A/D CONVERTER GND
15, 16	N/C	(I)	NOT USED. CONNECTED TO GND
17	MMIT CS	I	SERIAL COMMUNICATION CHIP SELECT SIGNAL INPUT FROM SYSTEM CONTROL MICROPROCESSOR.
18	REF V	I	REFERENCE V SYNC. SIGNAL INPUT
19	N/C	(I)	NOT USED. CONNECTED TO EVER +5 V
20	RESET	I	RESET SIGNAL INPUT (L: RESET)
21	MOD0	I	NOT USED. CONNECTED TO GND
22	MOD1	I	NOT USED. CONNECTED TO GND
23	X0		8 MHz CRYSTAL OSCILLATING CIRCUIT
24	X1		
25	V <sub>SS</sub>		GND
26 - 30	N/C	(O)	NOT USED.
31	BUS <sub>Y</sub>	O	OPEN COMMUNICATION ENABLE SIGNAL TO SYSTEM CONTROL MICROPROCESSOR (L: COMMUNICATING)
32	MRST	O	RESET SIGNAL FOR SYSTEM CONTROL MICROPROCESSOR OUTPUT (L: RESET)
33	7CTL	O	7 SEGMENTS DIGIT CONTROL SIGNAL OUTPUT

PIN NO.	PIN NAME	I/O	FUNCTION
34	N/C	(I)	NOT USED. CONNECTED TO PIN 35
35	SEG D	O	<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> <math>\left. \begin{matrix} d \\ c \\ c \\ c \\ a \\ a \\ b \end{matrix} \right\}</math> </div>           OUTPUT (H: LIGHTING UP)         </div>
36	SEG E	O	
37	SEG C	O	
38	SEG G	O	
39	SEG A	O	
40	SEG F	O	
41	SEG B	O	
42 - 46	N/C	(I)	NOT USED. CONNECTED TO GND
47	LED B		SIDE B LED ON/OFF SIGNAL OUTPUT (L: LIGHTING UP)
48	LED A		
49	LED M PLAY		
50	V <sub>SS</sub>		GND
51	N/C	(I)	NOT USED. CONNECTED TO GND
52	CG CLK	O	SERIAL TRANSFERRING CLOCK OUTPUT TO CHARACTER GENERATOR IC (IC011 ON MB-712 BOARD)
53	CG SO	O	SERIAL DATA OUTPUT TO CHARACTER GENERATOR IC
54	CG CS	O	SERIAL TRANSFERRING CHIP SELECT SIGNAL OUTPUT TO CHARACTER GENERATOR IC (L: COMMUNICATING)
55	DOOR SW	I	DOOR SWITCH (S301 ON FP-731 BOARD) INFORMATION INPUT (H: OPEN)
56	SIRCS IN	I	SIRCS DATA (REMOTE COMMANDER, CONTROL S SIGNAL) INPUT
57	V <sub>CC</sub>		POWER SUPPLY. EVER +5 V
58	AU MUTE	O	AUDIO MUTE SIGNAL OUTPUT (H: MUTE)
59	P-CONT	O	POWER ON/OFF CONTROL FOR SET (H: POWER ON)
60, 61	N/C	(I)	NOT USED. CONNECTED TO GND
62	JPN	I	CHARACTER GENERATOR SELECT (H: JAPANESE, L: ENGLISH)
63, 64	N/C	(I)	NOT USED. CONNECTED TO GND

#### \* KEY BUILT IN SET READING A/D INPUT

INPUT VOLTAGE		0 V	1 V	2 V	3 V	4 V	5 V
INPUT TERMINAL	AD1	SIDE B (SW-727 S101)	PLAY (SW-727 S102)	SIDE A (SW-727 S103)	PAUSE (SW-727 S104)	STOP (SW-727 S105)	THERE IS NO KEY INPUT
	AD2	DISPLAY (PW-709 S203)	OPEN/CLOSE (PW-709 S202)	POWER (PW-709 S201)			THERE IS NO KEY INPUT

## SECTION 8

### ELECTRICAL ADJUSTMENTS

During the adjustment, see the parts arrangement diagram for adjustments on page from 112.

#### 8-1. LIST OF SERVICING JIGS

- Oscilloscope
- Color monitor TV
- Digital voltmeter
- Frequency counter
- Remote commander (RMT-M23A)
- LD alignment disc (NTSC) HLV-8 (8-797-008-00)  
(Ref. Disc 7 can also be used.)

#### 8-2. CAUTIONS ON ADJUSTMENT

- Disc load/unload operation must not be performed when servicing with the unit laying down sideways. (Never press the OPEN and CLOSE buttons.)
- When laying the unit down sideways, perform adjustment with the left side down and turn the power on.
- When adjusting the servo system, be sure to set up the unit horizontally.

#### 8-3. OPERATION OF THE MDP-500 WITH HIDDEN KEY FUNCTIONS

##### 1. Explanation of the hidden key functions

Special control functions to be used for the test or some other purposes of the MDP-500 are available by pressing simultaneously multiple function keys on the main unit. The control functions available in this way are called "special key functions". The special key functions can be used in either of the following modes.

- the service mode, or
- the normal operation mode.

##### 2. How to use "simultaneous main-unit-key-press functions"

The functions available by pressing simultaneously the multiple specific keys only on the main unit are called "simultaneous main-unit-key-press functions". These functions are to be used when a quick operation such as "forced power off" is required. The following table lists the currently available simultaneous main-unit-key-press functions.

Table 8-1. List of simultaneous main-unit-key-press functions

Keys to be pressed on the main unit	Functions
Pause key and power key	<p>(1) Forced power off This function turns off power forcibly. It is to be used if you want to turn off the power in the following cases.</p> <ul style="list-style-type: none"> <li>• Operation of the mechanisms is out of control.</li> <li>• Power cannot be turned off by pressing the power key.</li> </ul> <p>Note that this function should be used with care because it may turn off the power in a half way of the operation of the mechanisms.</p>
STOP key and power key	<p>(2) Forced reset This function carries out initialization of the mode controller in addition to the forced power off function. It is to be used if you want to reset the mode controller in the following case. Something is wrong with the mode controller such that it operates with incorrect display.</p>
B side key and power key (Only when the power is off.)	<p>(3) Lighting up all the 7 segments and LEDs on the main unit This function turns on all the 7 segments and LEDs after turning on the power automatically. Until you switched off the power, normal operation is possible while all the 7 segments and LEDs are lit.</p>

## 8-4. OPERATION OF THE MDP-500 IN THE SERVICE MODE

### 1. Explanation of the service mode

The functions for the use on reparation and maintenance (the service mode) are incorporated in the MDP-500. The mode in which those functions are available is called "the service mode". The following are the differences between the service mode and the normal operation mode.

- (1) Special operations such as focusing search and sledding can be carried out.
- (2) Power is not turned off automatically in an emergency condition of power off.

### 2. Entering the service mode

The following procedure shows how to enter the service mode.

- (1) While the power is turned off, connect the test pin (TP501 for service mode setting) on the MB board of the main unit, to the ground.
- (2) Turn on the power by pressing the power key of the main unit. Nothing is displayed on the screen at this moment.
- (3) Disconnect the test pin (the connection was performed in step (1) above) from the ground.  
The service mode can be started when the background color changes in violet. If the background color is blue or black, the service mode is not available yet. If so, restart the procedure from step (1) above. When the unit is in the service mode, it is also light up the 7 segments and A/B side LEDs on the main unit.

### 3. Quitting the service mode

To quit the service mode, press the power key and turn off the power. If you cannot turn off the power in this way (the operation of the mechanisms is not complete), carry out the forced power off function by pressing the pause key and the power key on the main unit at the same time.

### 4. Operating with the special key functions

The special key functions in the service mode are available only under NO DISC and STOP conditions, for safety purposes.

Check that the indication for those conditions is displayed without flashing on the screen. In order to carry out the special key functions listed in table 8-2, in the status above, press the desired key such as PLAY or PAUSE on the main unit.

The sledding motion with the SIDE A or SIDE B key is effective only while holding the key pressed. However, the operation started with the PLAY or PAUSE key continues, once it is pressed, until you press the STOP key. While the unit is carrying out the special key function, the LED of auto resume of the main unit is lit.

Note that multiple special key functions cannot be started even if you press multiple keys at the same time.

Table 8-2. List of the special key functions

Key	Special key functions
SIDE A	Sledding in reverse direction (downward)
SIDE B	Sledding in normal direction (upward)
PLAY	Focusing search
PAUSE	Tilt servo ON
STOP	Stop special operations

The following are the details of the special key functions available with the MDP-500.

#### (1) PLAY key for focusing search

Focusing search operation can be carried out repeatedly by holding down the PLAY key. There is no fault with the unit if the pick-up lens moves up and down.

Be sure to start the focusing search operation after checking the condition that the sled is placed in appropriate position (at around the center of side A). To stop the focusing search operation, press the STOP key.

#### (2) SIDE A key for sledding in reverse direction

The sled can be moved in reverse direction (center of side B, to edge of side B, to edge of side A, and then to center of side A) after completing initialization of the tilt (the tilt is placed in neutral position) by holding down the SIDE A key. To stop the sledding in reverse direction, release the SIDE A key.

#### (3) SIDE B key for sledding in normal direction

As contrary to item (2) above, the sled can be moved in normal direction (center of side A, to edge of side A, to edge of side B, and then to center of side B). This movement of the sled is desired when replacing the optical part. To stop the sledding in normal direction, release the SIDE B key.

#### (4) PAUSE key for tilt servo ON

The tilt servo is activated while holding down the PAUSE key. Move the sled to around the center of side A with the SIDE A and SIDE B keys, and put a CD or equivalent on the tray so that it screens the skew sensor. Then, if the tilt moves by pressing the PAUSE key, operation is normal.

The tilt can be placed back in neutral position by moving the sled with the SIDE A and SIDE B keys. To deactivate the tilt servo, press the STOP key.

### 8-5. POWER SUPPLY CHECK (PS-716 BOARD)

Mode	Stop
Measuring equipment	Digital voltmeter
UNREG +16 V check	
Measurement point	Pin ① of CN051 (Pin ②, GND)
Specified value	$15.5 \pm 1.0 \text{ V}$
UNREG -16 V check	
Measurement point	Pin ③ of CN051 (Pin ③, GND)
Specified value	$-16.5 \pm 1.0 \text{ V}$
REG +5 V check	
Measurement point	Pin ⑤ of CN051 (Pin ④, GND)
Specified value	$5.1 \pm 0.5 \text{ V}$
REG -5 V check	
Measurement point	Pin ⑦ of CN051 (Pin ④, GND)
Specified value	$-5.1 \pm 0.5 \text{ V}$
POWER MUTE check	
Measurement point	Pin ① of CN055 (Pin ② of CN051, GND)
Specified value	$15.7 \pm 1.0 \text{ V}$
EVER 5 V check	
Measurement point	Pin ④ of CN031 (Pin ②, GND)
Specified value	$5.0 \pm 0.3 \text{ V}$

- Confirm that the power supply voltages satisfy the respective specified values.

### 8-6. SYSTEM CONTROL SYSTEM ADJUSTMENT

#### 8-6-1. Master Clock Adjustment (MB-712 Board)

Mode	Stop
Measurement point	Pin ⑩ of IC502
Measuring equipment	Frequency counter
Adjusting Element	CT501
Specified value	$3,579,545 \pm 10 \text{ Hz}$

#### Adjustment method:

- Adjust CT501 to  $3,579,545 \pm 10 \text{ Hz}$ .

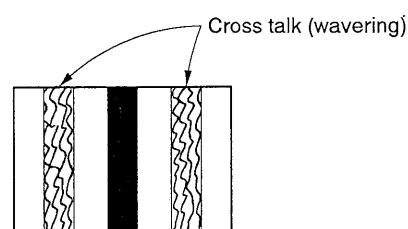
### 8-7. SERVO SYSTEM ADJUSTMENT

#### 8-7-1. Side A Tilt Balance Adjustment (MB-712 Board)

Mode	Pause (Side A)
Signal	Frame 770 (V BAR)
Measurement point	Monitor TV
Measuring equipment	Monitor TV
Adjustment element	RV401
Specified value	Cross talk (wavering) with minimum as well as the same level.

#### Adjustment method:

- Press PAUSE (II) button.
- Search the frame 770 and apply a vertical bar signal.
- Adjust RV401 so that the right and left cross talks (wavering) become minimum as well as the same level.



Adjust so that cross talks appeared on the both sides on the monitor display become minimum as well as the same level.

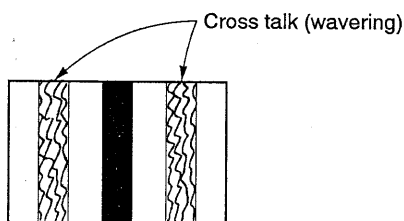
Fig. 8-1.

### 8-7-2. Side B Tilt Balance Adjustment (MB-712 Board)

Mode	Pause (Side B)
Signal	Frame 770 (V BAR)
Measurement point	Monitor TV
Measuring equipment	Monitor TV
Adjustment element	RV402
Specified value	Cross talk (wavering) with minimum as well as the same level.

#### Adjustment method:

- 1) Set the alignment disc CAV recorded side down.
- 2) Press PAUSE (II) button.
- 3) Search the frame 770 and apply a vertical bar signal.
- 4) Adjust RV402 to minimize the right and left cross talks (wavering) level.
- 5) Reset the alignment disc CAV recorded side up.



Adjust so that cross talks appeared on the both sides on the monitor display become minimum as well as the same level.

Fig. 8-2.

### 8-8. VIDEO SYSTEM ADJUSTMENT

#### 8-8-1. Burst Gate Position Adjustment (MB-712 Board)

Mode	Pause
Signal	Frame 4100 (Color bar)
Measurement point	Pin ②⑤ of IC007
Adjustment element	RV002
Specified value	$8.5 \pm 0.1 \mu\text{sec}$

#### Adjustment method:

- 1) Press PAUSE (II) button.
- 2) Search the frame 4100.
- 3) Adjust RV002 so that  $t_w$  is  $8.5 \pm 0.1 \mu\text{sec}$ .

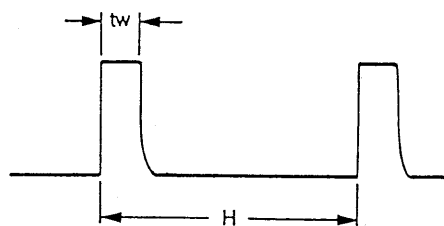


Fig. 8-3.

#### 8-8-2. REF H Adjustment (MB-712 Board)

Mode	Pause
Signal	Frame 4100 (Color bar)
Measurement point	CH1: Pin ②⑤ of IC008 CH2: Pin ② of IC008
Measuring instrument	Oscilloscope (DC range)
Adjustment element	RV501
Specified value	Potential difference: $4.2 \pm 0.1 \text{ Vdc}$

#### Adjustment method:

- 1) Press PAUSE (II) button.
- 2) Search the frame 4100.
- 3) Adjust RV501 so that the electric difference between the center value of the TBC voltage (Pin ②⑤ of IC008) and the VEE (Pin ② of IC008) is  $4.2 \pm 0.1 \text{ Vdc}$ .

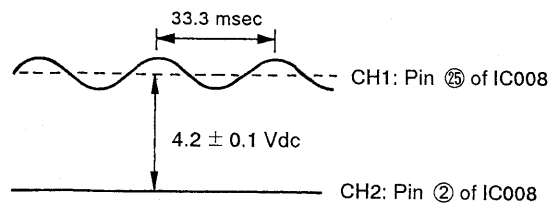


Fig. 8-4.



### 8-8-3. Color DOC Adjustment (MB-712 Board)

Mode	Pause
Signal	Frame 23500 (Yellow Green)
Measuring instrument	Monitor screen
Adjustment element	CT001
Specified value	Dropout section and surrounding section are of the same colors.

#### Preparations:

- 1) Paste a black tape onto the 1H interval of the outer most circumference of the LD reference disc CAV recording side (The side where the radial can be seen).  
(Length: Approx. 10 mm)

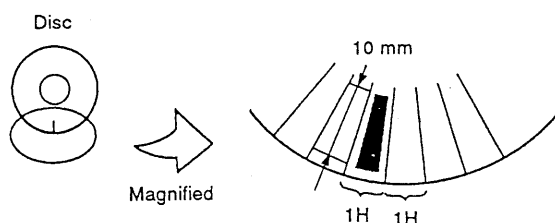


Fig. 8-5.

#### Adjustment method:

- 1) Press PAUSE (II) button.
- 2) Search the frame 23500.
- 3) Adjust the color of the dropout section of CT001 to that of the surrounding section.

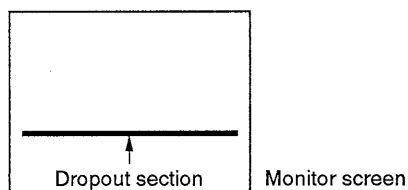


Fig. 8-6.

### 8-8-4. Video Output Level Adjustment (MB-712 Board)

Mode	Pause
Signal	Frame 4100 (Color bar)
Measurement point	J201(VIDEO OUT terminal) (Terminated to 75 $\Omega$ )
Measuring equipment	Oscilloscope
Adjustment element	RV001
Specified value	$1.00 \pm 0.03$ Vp-p

#### Adjustment method:

- 1) Press PAUSE (II) button.
- 2) Search the frame 4100 and apply a vertical bar signal.
- 3) Adjust RV001 for  $1.00 \pm 0.03$  Vp-p.

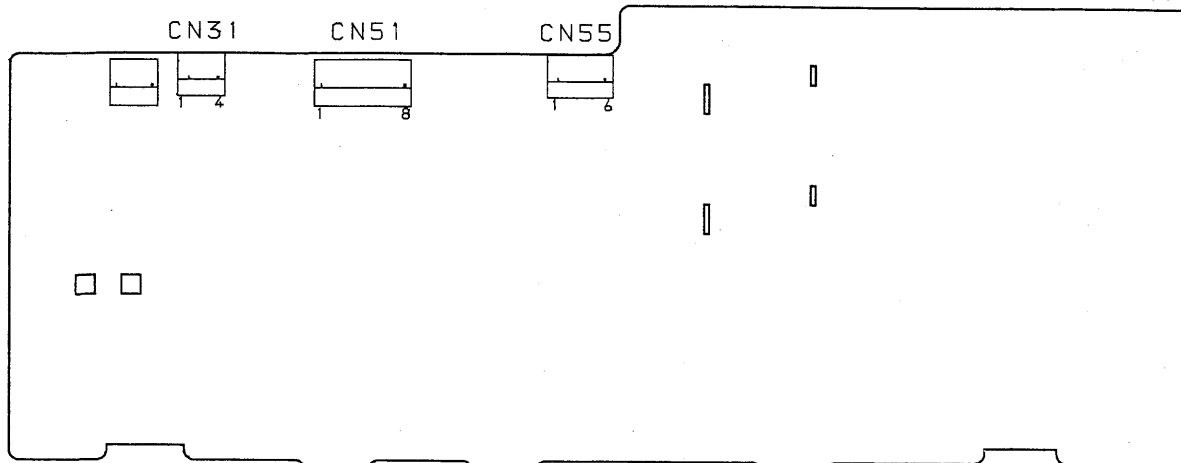


Fig. 8-7.

## 8-9. PARTS ARRANGEMENT DIAGRAM FOR ADJUSTMENT

PS-716 BOARD (CONDUCTOR SIDE)

NOTE: CN31/51/55 ARE MOUNTED COMPONENT SIDE.



MB-712 BOARD (COMPONENT SIDE)

