

MDP-A800K

RMT-M21A

SERVICE MANUAL

E Model
Tourist 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	

Video specifications
Horizontal video resolution 425 lines
Signal-to-noise ratio More than 50 dB

Input/output specifications
Video output 1, 2 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 1, 2 Luminance: 1 Vp-p, 75 ohms, unbalanced, sync negative
Chrominance: 0.286 Vp-p, 75 ohms, unbalanced
-18 dBm, wavelength 660 nm
Audio digital output (optical)
Headphone output 12 mW (8 ohms)
Impedance = 8 ohms
CONTROL S IN Mini jack
Mic jack 1, 2 Standard jack
1mV (Impedance below 1 kilohm)

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

— Continued on next page —

Digital audio specifications

Frequency response 4 Hz to 20kHz (±0.3 dB)
Signal-to-noise ratio More than 115 dB (EIAJ)*
Dynamic range More than 99 dB (EIAJ)
Wow and flutter Below measurement limit (±0.001% W.PEAK) (EIAJ)

CD VIDEO **CD/CDV/LD PLAYER**
SONY®

Power requirements

Power requirements	120/220/240 V AC adjustable, 50/60 Hz
Power consumption	45 W
Mass	10 kg
Dimensions	Approx. 430 × 120 × 437 mm (w/h/d)
Operating temperature	+5°C to +35 °C
Ambient humidity	5% to 90%

Remote Commander RMT-M21A

Principle of operation	Infrared pulse
Power requirements	3 V DC (2 size AA batteries)
Dimensions	Approx. 68 × 38 × 200 mm (w/h/d)
Mass	Approx. 175 g (including batteries)

Supplied accessories

Remote Commander RMT-M21A (1)
Size AA (R6) batteries (2)
Audio/Video cable (phono plug 3↔phono plug 3) (1)
AC plug adaptor (1)
Operating Instructions (1)
Quick Reference (To Play Karaoke) (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 PUBLISHED BY 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 B+ voltage to see it is at the values specified.

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Introduction

This introduction explains the organization of this manual and the principles of operation of the Multi Disc Player (MDP).

About These Instructions

Consumer electronics manuals have been notorious for being hard to comprehend. Having recognized this fact, we have made an attempt with this manual to avoid the usual pitfalls by trying to not pretend that the equipment being described is as simple as a bread toaster. Most likely this is your first Multi Disc Player and may be the only one you will own. With that in mind, we have striven to write the instructions in straight-forward English while trying to keep the procedures simple and systematic.

The MDP-A800K is a Multi Disc Player with Karaoke features. In this manual, you can read the Karaoke instructions first, then the instructions for each type of disc operation—playing laser discs (LDs), compact discs (CDs), compact disc videos (CDVs, VSDs).

The following summarizes what you'll find in this manual.

Karaoke Features

25 selection reservation on both LD sides

For non-stop karaoke entertainment, up to 25 selections on both LD sides can be reserved even while one is being played.

Digital key control

You can adjust the back-up key to your singing key.

Vocal and Vocal Support feature

The singer's voice can be output (Vocal) or set to come in when no one sings into the microphone (Vocal Support). This is convenient for correcting the words or melody you miss.
(For voices recorded on MULTI AUDIO or multiplex discs only.)

Karaoke Pon

You can also enjoy karaoke with non-karaoke discs, as Karaoke Pon removes vocals from stereo recorded discs or tapes.

Surround Effect

Three digitally enhanced surround effects (Simulated, Karaoke Bar, Movie) are available to produce the best acoustics.

AUX inputs

Other auxiliary equipment such as a tape deck can also be used to play karaoke.

MIC jacks on the front and rear panels

The MDP-A800K has two microphone jacks on both the front and rear panels. You can use the ones on the rear panel to connect the infrared cordless microphone system (not supplied).

To Play a Laser Disc (LD)

This section covers all functions associated with playing LDs (page 20). Unique to LD play are FRAME search, STILL/STEP play and MEMORY PLAY. The MDP-A800K allows you to playback both sides of an LD without turning it over.

To Play a Compact Disc (CD)

This section explains the operation of CDs and compares most closely to CDV audio operations (page 31).

To Play a Compact Disc Video (CDV)

This section covers procedures for CDV operation and shares many functions with CD play (page 38). There are no functions unique to CDV play on this Multi Disc Player.

To Play Any Disc (LD, CD, CDV)

The procedures in this section (page 40) are collected here because they are common to LD, CD and CDV play.

What to Do First

Once you have read through this page, read "Principles of Operation", then go ahead and connect up the Multi Disc Player to your television and/or stereo system using the connection diagrams on pages 10 and 11. After you have done this, you will be ready to play a disc. We suggest an LD or CD. Begin with the section, "How to Load and Play an LD (or a CD)".

The Principles of Operation

Beyond the playing of discs, the functions of the Multi Disc Player range from simple to advanced. Some functions vary depending on what type of disc (laser disc, compact disc, or compact disc video) you are playing. Nevertheless, keep in mind that the majority of the buttons have been designed to achieve a comparable effect for each type of disc you are playing. Therefore, the following paragraphs can briefly summarize what the basic Multi Disc Player functions allow you to do. (Control names that differ from the function name appear in uppercase letters.)

Primary Functions

are so-called because they entail the traditional functions of all disc players.

Karaoke Functions

provide karaoke entertainment using karaoke laser discs and compact discs, or by converting regular stereo recorded discs into karaoke discs. These functions can also be used with auxiliary equipment such as a tape deck.

Variable Speed Functions

group operations according to the fact that they let you vary play speed, therefore, easily locate ("search") scenes or tracks as you watch or listen.

Repeatable Functions

are memory functions that let you play selections repeatedly, according to a play list. Playback can be started from the point you stopped. Because the system finds and plays selections according to your request, some repeatable functions also serve as "search" functions.

Auxiliary Functions

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




Primary Functions	Karaoke Functions	Variable Speed Functions	Repeatable Functions	Auxiliary Functions
Power Open/Close Play Pause Stop Side A/B	Next Selection Reserve (PGM/RESERVE) Singing Key (KEY CONTROL) Voice Control (DIGITAL ECHO) Karaoke with Regular Discs (KARAOKE PON) Vocal Support Feature (VOCAL, VOCAL SUPPORT) Karaoke with Auxiliary Equipment (AUX) Atmosphere Control Feature (SURROUND) Karaoke with Multiplex discs (ONTA)	Speed Scan Still/Step Scan (STILL/STEP)	Pre-Programmed Play (PGM/RESERVE) Intro Scan (INTRO) Chapter/Track Search (ACS/AIMS) Frame/Time Search (FRAME/TIME) Memory Play (MEMORY PLAY) Auto Pause (AUTO PAUSE) Repeat Play (1/SIDE/ALL, REPEAT, REPEAT A↔B)	Sound Quality Functions: (AUDIO MONITOR, ANALOG/CX) On-Screen Display (DISPLAY) Audio/Video Time Counter (AV TIME)

Introduction to Your Player

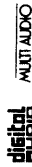
The MDP-A800K Multi Disc Player integrates the functions of three machines into one: laser disc, compact disc, and compact disc video player. The entertainment potential afforded by the combined capabilities of this multi-faceted machine amounts to some 40 to 45 functions. Below is an explanation of the kinds of discs the Multi Disc Player plays.

The MDP-A800K Plays Three Classes of Optical/Digital Discs*

The MDP-A800K Multi Disc Player plays 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	CAV 14 min CLV 20 min
		8-inch LD	8 in. (20 cm)	Double Side	CAV 28 min CLV 40 min
		12-inch LD	12 in. (30 cm)	Double Side	CAV 1 hr CLV 2 hr
Compact Discs For music		CD Single	3 in. (8 cm)	Single Side	20 min
		CD	5 in. (12 cm)	Single Side	74 min
Compact Disc Videos For music videos and educational material (Digital Audio)		CDV	5 in. (12 cm)	Single Side	Video+Audio 5 min Audio 20 min
		VSD	5 in. (12 cm)	Single Side	Video + Audio 5 min

Multi Audio Discs



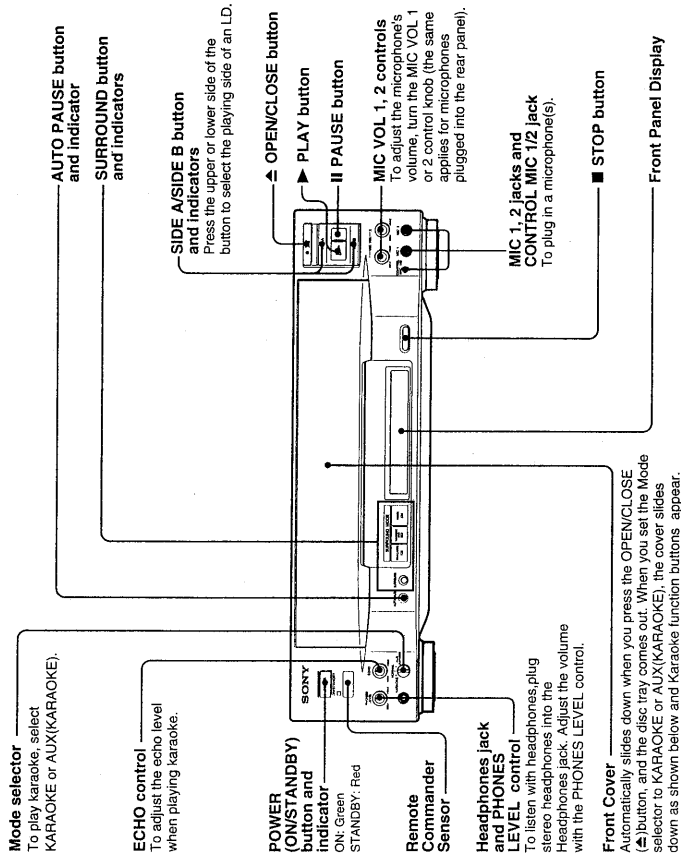
On laser discs bearing this logo, the analog tracks are recorded in multiplex, and the digital tracks are recorded in stereo.

* These apply only to those discs recorded in the NTSC standard. The MDP-A800K cannot play CED, VHD discs or PAL video discs, CD-ROM, CD-GRAPHICS, CD-I discs or aluminum-lined discs.

Installation and Connection

Front and Rear Panel Controls and Supplied Accessories

Front Panel



KEY CONTROL buttons

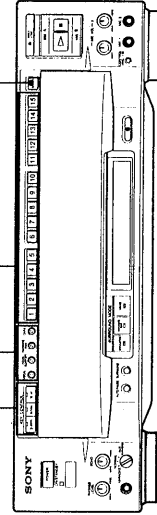
- ▶ UP button
- NATURAL button
- ◀ DOWN button

Karaoke function buttons and indicators

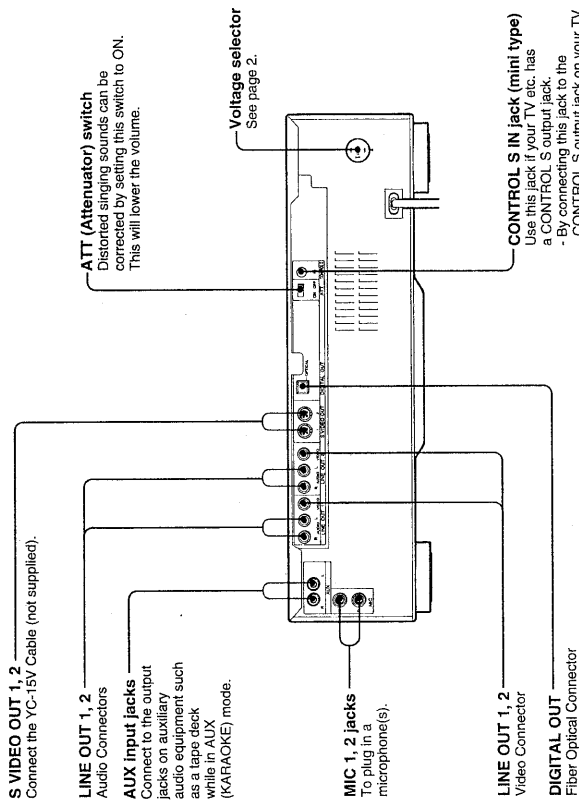
- VOCAL button and indicator
- VOCAL SUPPORT button and indicator
- KARAOKE PON button and indicator
- ONTA button and indicator

Number Keys

- RESERVE button

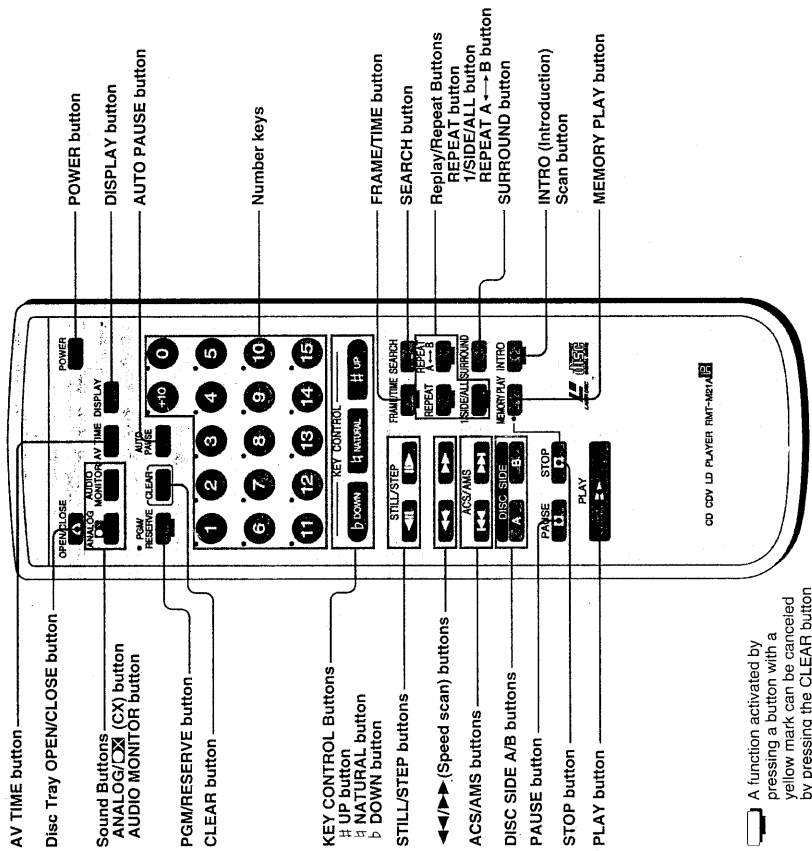


Rear Panel



Controls on the Remote Commander

You can use the Remote Commander (Remote) 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

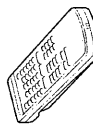
- Do not let sunlight or powerful artificial light fall directly on the Remote Commander sensor on the front panel (of the player) as it may interfere with Remote Commander operation.
- Use size AA (R6) batteries only.

Accessories

Make sure the shipping box contains the following accessories:

RMT-M21A Remote Commander

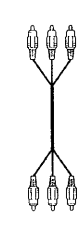
Two AA (R6) batteries



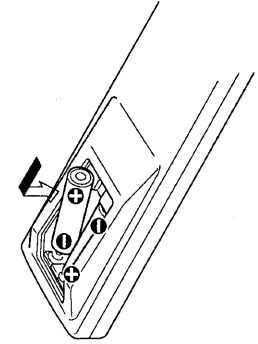
AC plug adaptor
(See page 2.)



Operating Instructions
(To Play Karaoke)



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

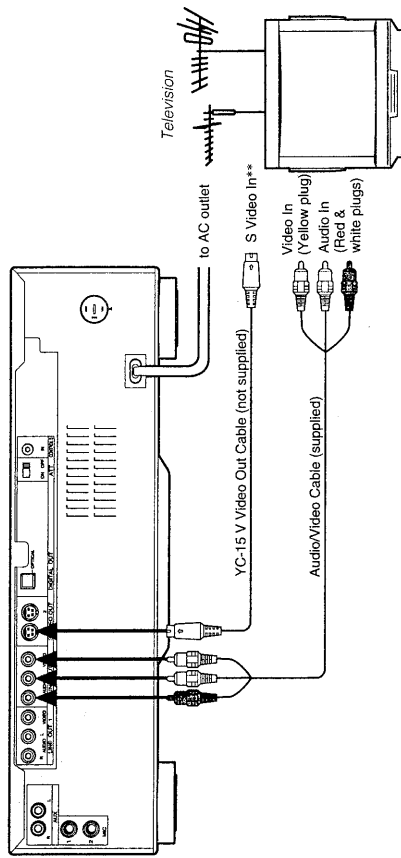


Insert two size AA (R6) batteries

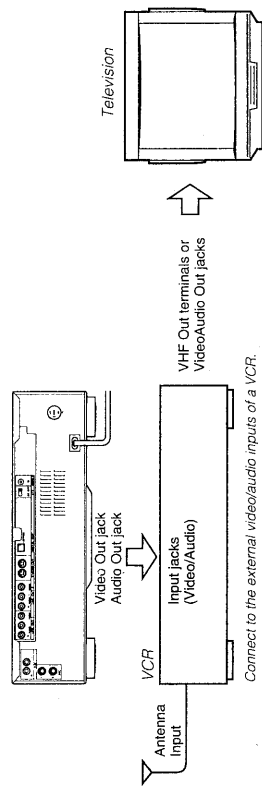
How to Connect the Television

To play LDs or CDs, 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 has only a monaural phono jack for audio input, use a VMC-910MS/915MS Connecting Cable (not supplied).
 ** If your TV has an S Video input jack, obtain a YC-15V S Video Connecting Cable, and use this instead of the supplied video cable to connect your television to the S VIDEO OUT connector on the Multi Disc Player.

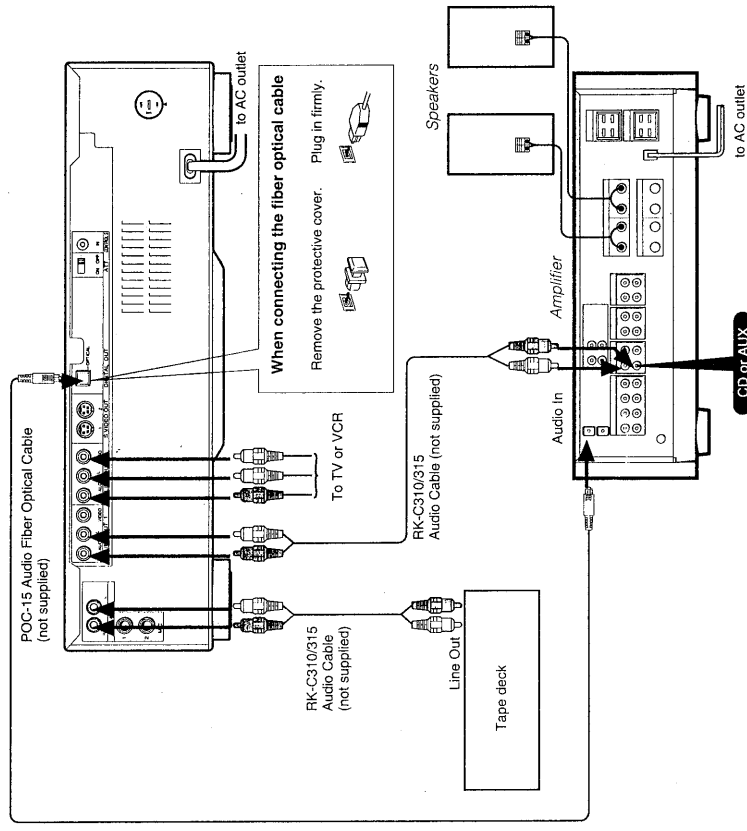
How to Connect Audio Equipment

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.

To Achieve Digital Sound

Digital sound recordings afford high quality sound reproduction, (see Glossary, page 44). If your amplifier also has a fiber optical connector, or if you have a D/A converter unit with optical input, according to the diagram below, connect the POC-15 Audio Fiber Optical Cable (not supplied) between the DIGITAL OUT connector on the Multi Disc Player and the amplifier or D/A converter. Note that digital signals are always output from the Multi Disc Player except when you play discs that are not digitally recorded. Such discs output analog sound from LINE OUT only. Sound from a microphone cannot be output from the DIGITAL OUT connector. To output sound from a microphone, connect the player to the amplifier with an Audio Cable (Red & White plugs).

Audio Equipment Hook-Up



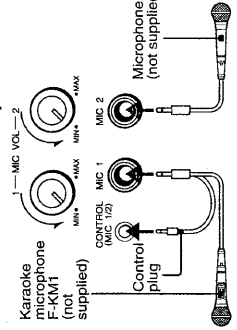
Connection Precautions

- 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 Karaoke

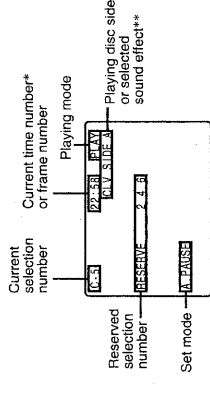
1 Connect the microphone.

- When connecting a microphone, turn the MIC VOL 1/2 control to MIN, then connect the microphone to the MIC 1 or MIC 2 jack.
- The Karaoke microphone (F-KM1) allows you to repeat singing and change the key to a song. When using two F-KM1's, connect the control plug of either microphone to the CONTROL (MIC 1/2) jack. Repeat singing and changing key are available on the microphone connected to the CONTROL (MIC1/2) jack.



On-Screen Information

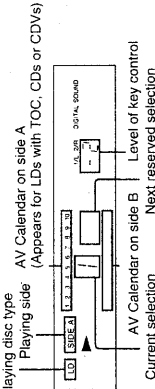
Press DISPLAY on the Remote Commander twice. Messages appear on the TV screen as shown below.



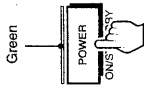
* Discs without time data to the second will be indicated as "22".
 ** Sound effects (see table below).
 Each message appears for about three seconds when you select the effect.

Display	Action
SIMULATED	
KARAOKE BAR	Press the SURROUND button
MOVIE	
SURROUND OFF	
KEY +1	Press the KEY CONTROL button
VOCAL	Press the VOCAL button
SUPPORT	Press the VOCAL SUPPORT button
KARAOKE PON	Press the KARAOKE PON button

Front panel display while karaoke playing



2 Turn on the player.



Press the POWER button.

3 Turn on the TV and stereo system.

TV:
Set to "Video".

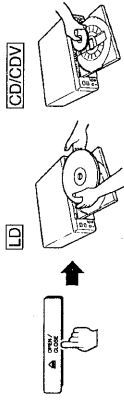
Stereo system:
Turn on the amplifier or receiver and select CD or AUX for audio output.

4 Set the mode selector to KARAOKE.



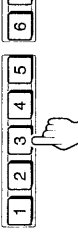
When using a tape deck or other auxiliary equipment, set to AUX (KARAOKE).

5 Open the disc tray and place the disc on the tray.



- Carefully center a single disc on the tray. The disc will not be played if it is not seated properly.
- Always place one disc at a time. Placing more than one disc may damage the player.

6 Choose a selection to play.



The disc tray closes automatically and the selection starts playing.

- Press PLAY (▶) or push the disc tray to playback from the beginning of the disc (side A of the LD).
- To choose a selection on side B of the LD, press (DISC) SIDE B, then press the number key.

Single steps in KARAOKE mode

In KARAOKE mode, the player automatically pauses every time a selection ends. (If another selection has been reserved, that selection will be played without pausing.) To play the next selection, press the PLAY (▶) or PAUSE (⏸) button, or make a direct selection with the number keys on the player or the Remote Commander.

To play the selections on a disc without pausing in KARAOKE mode, press the AUTO PAUSE button to turn the indicator off.

About the sound of karaoke discs

Karaoke discs can be recorded using one of three formats: MULTI AUDIO (MULTI AUDIO), multiplex and stereo. MULTI AUDIO and multiplex discs include vocals. Stereo discs do not. If the disc loaded is a MULTI AUDIO or multiplex LD, this Multi Disc Player detects that and automatically selects the sound mode to output only the back-up without vocals. At this time, the indicator on the ONTA button lights up. To enjoy karaoke by listening to the singer's voice recorded on the disc, press the VOCAL button (or use the AUDIO MONITOR or ANALOG/CA button on the Remote Commander to alternate the sound).

7 Adjust the microphone volume.

Adjust the volume for each respective microphone with the MIC VOL 1/2 control. Sound from a microphone cannot be output when the player is connected to the amplifier with a Fiber Optical Cable. To output sound from a microphone, use an Audio Cable (Red & White plugs) for connection.



8 Adjust the microphone echo.



Adjust the strength of the echo with the ECHO control. Echo will be applied to both MIC 1 and MIC 2.

When listening with headphones

Connect the headphones to the headphones jack and adjust the volume with the PHONES LEVEL control.

Note about disc sides

The player determines that the upper side of the disc is side "A", and the other side is "B", regardless of label "A" or "B" printed on the disc.

If the picture on the TV flickers

The picture on the TV screen may flicker when listening through your TV speakers and the MIC VOL control is set too high. Correct this by setting the ATT switch on the rear panel to ON, or lower the MIC VOL control.

To enjoy karaoke with the multiplex CDs, CDVs or VSDs

When playing a multiplex karaoke CD, CDV, or VSD disc including vocals, press the ONTA button* to light up the indicator. The back-up without vocals will be played.

Useful Features for Enjoying Karaoke


When you set the mode selector to KARAOKE, you can use many functions useful for enjoying karaoke. Reserve allows you to specify up to 25 selections on both sides of an LD in the order you want to play. Key Control allows you to adjust the back-up key to your singing key. The karaoke function buttons are convenient to practice singing a new song or to play karaoke with non-karaoke discs.

To Specify the Next Selection(s) [RESERVE]

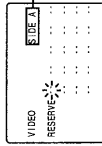
You can reserve selections either while playing a selection or in a stop mode.

- 3, 5 1, 7 2, 4

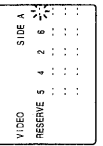
1 Press RESERVE on the player or PGM/RESERVE on the remote commander.



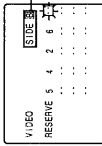
"RESERVE" appears on screen.
- 2 Select the disc side by pressing (DISC) SIDE A (or B).



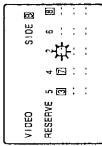
Selected disc side appears.
- 3 Press the number key(s) to specify selection(s) in the order you want to play.



If you enter a wrong number, press SEARCH repeatedly until the wrong number flashes, then enter the correct number.
- 4 Change the disc side by pressing (DISC) SIDE B (or A).



Changed disc side appears.
- 5 Press the number key(s) to specify selection(s) in the order you want to play.



6 Repeat steps 2 to 5 if necessary.

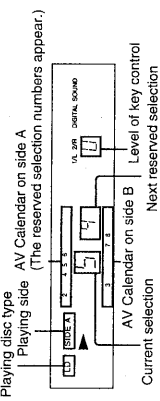
7 Press RESERVE or PGM/RESERVE again. On-screen message disappears.

When you have reserved selection(s) while playing a selection, the reserved selection(s) start playing without pausing after the current selection.

When you have pressed selection(s) while in stop mode, press ▶. The reserved selection(s) start playing.

The player stops playing when all the reserved selections are played.

Front panel display while karaoke playing



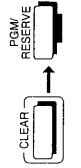
To Enter a Number Greater Than 15



Press +10 on the Remote Commander and one of the number keys.

For example: (+10) → 9 "19"
 (+10) → (+10) → 0 "20"

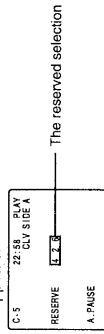
If you make a mistake pressing +10 key, press +10 repeatedly until "-" flashes, then enter the correct number.



Press CLEAR, then PGM/RESERVE on the Remote Commander. Enter the new selection numbers.

To Check the Reserved Selections

Press DISPLAY on the Remote Commander twice. The reserved numbers appear. Every time a reserved selection is played, its number disappears.



To Cancel the Reserve Function

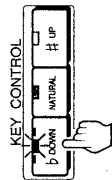
Press CLEAR on the Remote Commander. All the reserved selections are cleared.



To Control the Back-up Keys **Key Control**

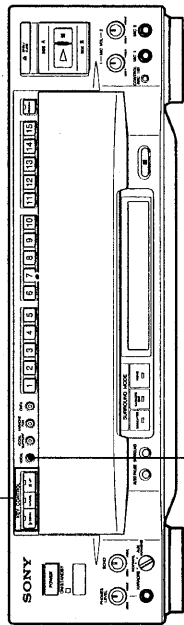
Available also with the Remote Commander or the karaoke microphone F-KM1 (not supplied).

Press the **b** DOWN button to lower the back-up key.
Press the **#** UP button to raise the back-up key.
Press the **NATURAL** button to return to the original key.
The indicator on each button lights up. (The indicator **NATURAL** is always lit in **KARAOKE** mode)



Press the button repeatedly to find the backup key that suits your signing.

- The key level indication appears on the front panel display and the TV screen. The one on the TV screen disappears after three seconds.
- Eight lower and eight higher keys can be attained. (Total: 17 steps)
- The key will return to the original level after the current selection is played unless it is played repeatedly.

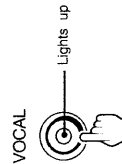


To Listen to the Original Vocals **Vocal**

Available only by **MULTI AUDIO** or multiplex discs.

By pressing the **VOCAL** button, you can listen to the singer's voice recorded on a **MULTI AUDIO** or multiplex disc. This is convenient for correcting the words or melody you miss.

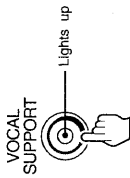
- To return to the back-up sound, press **VOCAL** to turn the indicator off.
- The **Vocal** feature is also available for multiplex CD/CDVs.



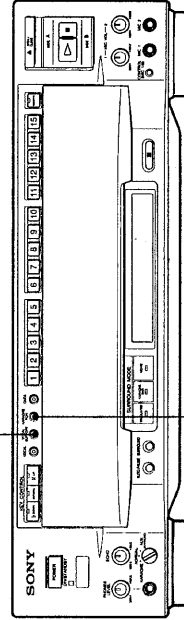
To Sing Along With the Original Vocals **Vocal Support**

Available only for **MULTI AUDIO** or multiplex discs.

To activate this function, press the **VOCAL SUPPORT** button to turn the indicator on. While you are singing into the microphone, the player outputs the back-up sound, but when you are not, it also outputs the original singer's voice to help you. Using this feature, you can sing a duet by yourself. You sing the male part (or female part) and the other part comes in for you.



- To deactivate the function, press **VOCAL SUPPORT** to turn the indicator off.

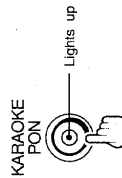


To Enjoy Karaoke With Regular Discs **Karaoke Pon**

You can enjoy karaoke with non-karaoke stereo discs containing vocals (LD, CD, CDV).

Press the **KARAOKE PON** button to turn on the indicator and play a non-karaoke stereo disc which you want to sing. The level of the singer's voice will be lowered.

- This feature is only available on stereo recorded discs. On monaural discs, both the vocal and the back-up level will be lowered.
- The vocal may not be erased completely for stereo discs with the following characteristics: tracks containing only few instruments, duet selections, selections with strong echo and chorus emphasis, and selections where the singer's voice deviates from the center.
- When using **KARAOKE PON**, the stereo effect is reduced.



To Use the Surround Effect

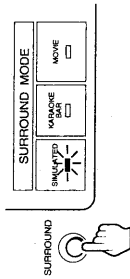
You can choose from three acoustic effects for enhanced listening quality. Available with the Remote Commander and also operated in NORMAL mode.

Each time you press the SURROUND button, the mode changes in the following order.

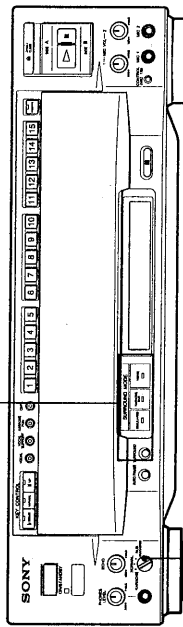


Each surround mode offers:

- SIMULATED** : Good for playing software recorded in monaural. Enhances the dynamic range for monaural programs like old movies and news programs.
- KARAOKE BAR** : Creates the effect of singing in a bar. Gives your song a rich carrying tone.
- MOVIE** : Suitable for movie software. Emphasizes the bass and extends the dynamic mid range.



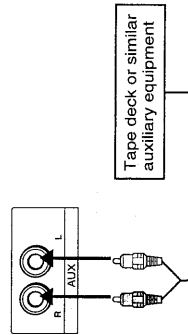
The selected mode indicator lights up. To cancel the surround effect, press SURROUND repeatedly until all the indicators go off.



To Enjoy Karaoke with Auxiliary Equipment

Other auxiliary equipment such as a tape deck can also be used to play karaoke. You can use the karaoke functions (Key Control, Karaoke Pen and Surround Effects) as you would with discs.

- 1 Connect the tape deck to the AUX jacks on the rear panel



- 2 Set the mode selector to AUX (KARAOKE).



To resume playing discs, set the selector to NORMAL or KARAOKE.

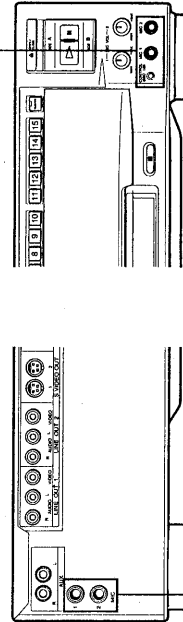
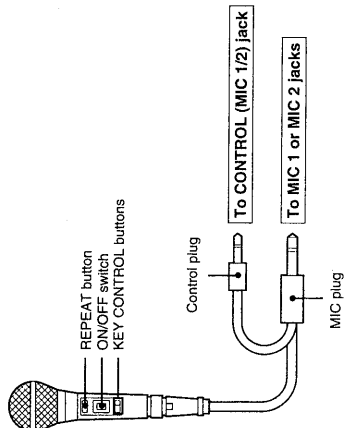
Using the Karaoke Microphone F-KM1 (not supplied)

Repeat singing

You can go back to any point of a selection using the REPEAT button on the Karaoke microphone F-KM1. Hold down the REPEAT button and release it at the desired point.

Key control

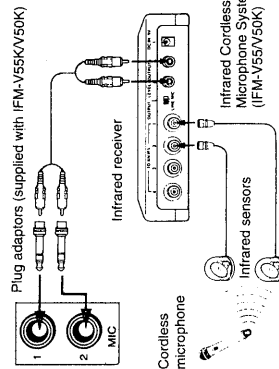
You can change the back-up key by pressing the KEY CONTROL buttons on the Karaoke microphone F-KM1. This is the same operation as KEY CONTROL on the player (page 16).



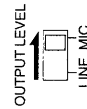
Using the Infrared Cordless Microphone System IFM-V55K/V50K (not supplied)

You can use the infrared cordless microphones by connecting the infrared receiver to the MIC jacks on the rear panel of the player.

- 1 Connect the infrared receiver to the MIC 1/2 jacks on the rear panel.



- 2 Set the OUTPUT LEVEL selector on the infrared receiver to MIC.



To Play a Laser Disc

This section shows you how to conduct all the procedures associated with playing LDs.

How to Load and Play an LD (Laser Disc)

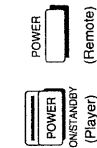
After you have connected the Multi Disc Player to the TV and/or stereo system, you can begin playing a laser disc. Locate the POWER, OPEN/CLOSE, and PLAY buttons on the Remote Commander or the front panel of the player.

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

- 1 Set the mode selector to **NORMAL**.



- 2 Turn on the multi disc player.

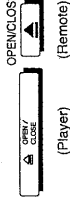


Press the **POWER** button on the player or Remote commander (Remote).

- 3 Turn on the TV and stereo system.

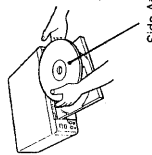
TV: Set the input selector on the TV to "Video".
Stereo System: Turn on the amplifier or receiver and select CD or AUX for audio output.

- 4 Open the disc tray.



Press the **OPEN/CLOSE** button. The front cover of the player slides down and the disc tray comes out.

- 5 Place a disc on the tray.

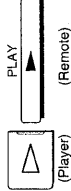


Carefully center a single disc on the tray. If you insert more than one disc, or if the disc is not seated properly, it may not play or damage the unit.

What is this indication?

NO DISC
This indication appears in the front panel display when the tray is empty.

- 6 Start playback.



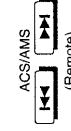
Press the **PLAY** button. The disc tray closes and the upper side of the disc starts playing.

- To Advance or Reverse



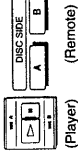
Hold down the left or right arrow button on the Remote.

- To Advance or Go Back One Chapter at a Time



Press the **ACS/AMS** button on the Remote.

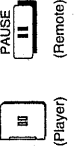
To Select the Disc Side



Press **(DISC) SIDE A** to play the upper side of the disc from the beginning.

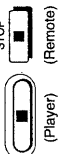
Press **(DISC) SIDE B** to play the other side of the disc from the beginning.*

To Interrupt Play



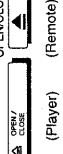
Press **PAUSE**. The sound mutes, and the picture freezes when playing a CAV disc.** To resume playback, press **PAUSE** or **PLAY**.

To Stop Playback



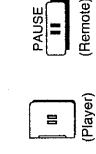
Press **STOP**. To play again from the beginning of the disc, press **PLAY**.

To Stop Play and Remove the Disc



Press **OPEN/CLOSE**. Remove the disc and press again to close the empty tray.

To Have the Player Pause Before Starting



Press **PAUSE** after doing step 5 on page 20. The tray closes and the player waits at the start of the disc until you press **PLAY** or **PAUSE**. If you want to play side B, press **(DISC) SIDE B**, then **PAUSE**.

To Play a Stereo LD or a Second Audio Program (SAP) LD



Press **PLAY**, then press the **AUDIO MONITOR** button on the Remote. 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. It always appears in the front panel display.

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)

* The player determines that the upper side of the disc 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 the disc (side A) ends, the other side (side B) starts playing automatically. If nothing is recorded on side B, playback stops.

To Switch from Digital to Analog Sound



Press the **ANALOG/CX** button on the Remote 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 the **ANALOG/CX** button on the Remote. "J" **ANALOG** appears on screen for three seconds. To return to digital sound, press the **ANALOG/CX** button until "J" **DIGITAL** appears on screen. With certain discs there may be a difference in volume.



Discs with a (CX) Label

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

How to Search for a Particular Scene

To find a scene, play the disc in reverse or forward at high speed.* The sound is automatically muted during a search play.** Locate the **◀◀▶▶** buttons on the Remote Commander.



To Advance a Scene



To Reverse a Scene



To Resume Normal Play

Hold down **▶▶**.

Hold down **◀◀**.

Release **◀◀▶▶** or **▶▶◀◀**.

Understanding Displays and Messages When Playing LDs

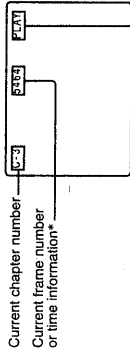
You can determine the player operating status or disc information in one of two ways: (1) by displaying the information on the TV screen, or (2) by looking at the front panel display. Locate the **DISPLAY** button on the Remote Commander.

To View On-Screen Information

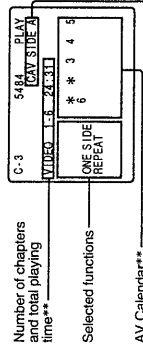


Press **DISPLAY** on the Remote. Each time you press **DISPLAY**, messages appear on the TV screen as shown below. The tables below are keys to the messages that appear on the right of the screen.

Press **DISPLAY** once.



Press **DISPLAY** twice.



Message 1 (Examples)

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
SEARCH	Speed scanning
	Searching

Message 2 (Examples)

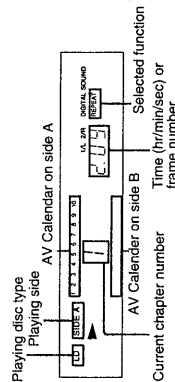
Screen Display	Currently Playing
CAV SIDE A	Standard-play disc side A
CAV SIDE B	Standard-play disc side B
CLV SIDE A	Extended-play disc side A
CLV SIDE B	Extended-play disc side B
1/L	First soundtrack/left channel
2/R	Second soundtrack/right channel
J DIGITAL	Digital sound
J ANALOG	Analog sound

To turn off the display, press **DISPLAY** again.

* Discs not indicating time data to the second indicate instead as two-digit numbers such as "22."
** Appears for an LD containing TOC (Table of Contents) data.

Reading the Front Panel Display

The illustration to the right is an example of what is displayed on the front panel of the player.



Finding Out Play Status (AV Calendar)

When playing an LD containing TOC (Table of Contents) data, the AV Calendar shows information on the total number of selections on the disc or those programmed to play. As selections are played, the corresponding numbers on the display disappear.

* A certain amount of visual noise and instability is inevitable with all variable speed operations.
** When scanning a CLV disc, frames are skipped and scanning speed varies as the laser beam moves away from the center of the disc.

How to Search by Chapter Numbers

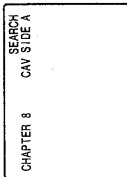
LDs are divided into sections called "chapters". Chapters are usually listed on the jacket or label of the disc. By entering the desired chapter number, you can have the player find the chapter and play it. Use ACS/AMS (◀▶) — Automatic Chapter Sensing/Automatic Music Sensing—to advance or reverse one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

To Locate a Particular Chapter (Chapter Search)

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

8

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.

+10 → X
+10 → 9
+10 → 0

Do this to make a numerical sum. For example, to enter 19, press +10 and 9; to enter 30, press +10, +10, +10 and 0.

If you make a mistake while entering, press CLEAR, then enter the correct numbers. The current chapter number appears in the front panel display.

To Check the Current Chapter Number



To Advance or Go Back One Chapter at a Time (Skip Search)



Press ACS/AMS (◀▶) once to return to the beginning of the current chapter.

Press ACS/AMS (▶▶) to advance to the beginning of the next chapter.

Press ACS/AMS (◀▶) twice before the picture reappears to return to the beginning of the previous chapter.

Hold down the ACS/AMS button for continuous skip search.

Release the ACS/AMS button. The player automatically resumes play from the beginning of the selected chapter.

To Resume Normal Play**

* Chapter Search does not function properly if the disc does not contain chapter numbers, or the chapter number entered does not exist.
** In addition to normal play mode, you can conduct Chapter Search and Skip Search while in Freeze-Frame, Repeat or Pause mode. When the specified chapter appears after the search, play continues in the same mode.

How to Search by Frame Number or Time—Frame/Time Search

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.

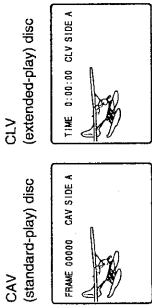
On CAV (standard-play) discs, enter a frame number. On CLV (extended-play) discs, enter the time.*

To Enter the Elapsed Frame or Time



1 Press FRAME/TIME on the Remote.

The screen displays "00000" (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 shown on the right:

1 → 2 → 3 → 4 → 0

Sample Entry for CLV Discs

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

1 → 2 → 0 → 5

If you pressed the wrong key, press FRAME/TIME again to return the display to "00000" or "0:00:00", then enter the correct number.

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



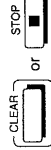
3 Press SEARCH on the Remote.

To Check the Frame/Time Numbers



The current frame or current time numbers appear on screen when you press DISPLAY. You can also find them on the front panel display.

To Cancel Frame/Time Search



Before pressing SEARCH, press CLEAR. If you have already pressed the SEARCH button, press STOP (■).

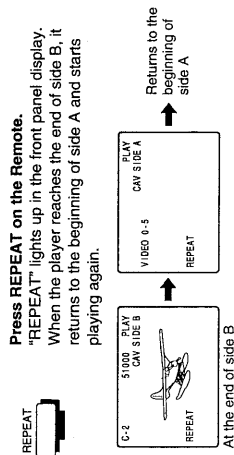
In addition to normal play mode, you can conduct Frame/Time Search while in Freeze-Frame, Repeat or Pause mode. When the specified frame or time appears after the search, play continues in the same mode.

* "CAV" or "CLV" should be noted somewhere on the disc jacket.

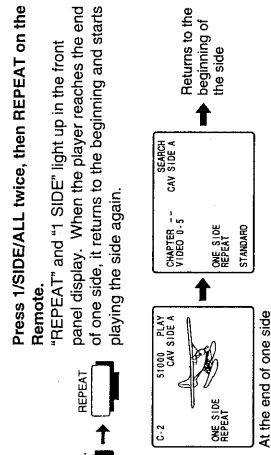
How to Replay the Same LD Selections

These instructions show you how to program the player to play the same scenes over and over until you signal the repetition to stop. You can replay both sides, a single side, a single chapter or a section between one pair of points on the disc. Locate the REPEAT, 1/SIDE/ALL, and the REPEAT A↔B buttons on the Remote Commander.

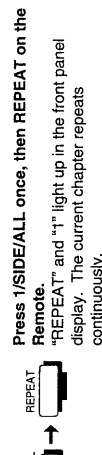
To Repeat Both Sides of the Disc



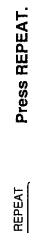
To Repeat the Current Side of the Disc (One Side Repeat)



To Repeat the Current Chapter (Single Repeat)



To Cancel Repeat Play



To Cancel One Side Repeat



To Cancel Single Repeat



To Repeat One Section of the Disc

- 1 Go back to the start of the scene you want to replay.
- 2 Press REPEAT A↔B on the Remote at the beginning of where you want replay to begin. This marks where replay is to begin. The "REPEAT" and "A-" light up, and "B" indication flashes.
- 3 Let the player run to the end of the scene you want to repeat.
- 4 Press REPEAT A↔B again. This marks where replay is to end.

"REPEAT" and "A-" light up in the front panel display. The player repeatedly plays the scene between the two points selected.

Press CLEAR.



To Cancel REPEAT A↔B

To Replay From a Specific Point on the Disc (Memory Search)

- 1 Go to the point from where you want to start playback.
- 2 Press REPEAT A↔B on the Remote to mark the starting point.
- 3 Press CLEAR to turn off the indication "A-B REPEAT". (Thus not setting an end point).
- 4 Press SEARCH on the Remote at any point you like on the disc.

The player goes to the point you marked and starts playing.*

* You can also cancel Repeat, One Side Repeat and Single Repeat by pressing CLEAR.

* The point marked "A" from where you can resume playback is cleared if you open the disc tray, turn off the player, carry out a Frame/Time Search or Chapter Search.

How to Play Only Certain Chapters—Programmed Play

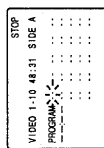
You can choose, in any order you like, the chapters the Multi Disc Player plays. This play list is stored in the player until you either remove the disc or turn off the power. After playing all the selections, the player stops and waits for your next command. You can program up to 25 chapters for sides A and B combined. Locate the number keys, DISC SIDE A/B, PGM/RESERVE and PLAY buttons on the Remote Commander.

For example, you want to play chapters 1, 2, 3 on side A, chapter 10 on side B, then stop playing momentarily. Continuing with chapter 4 on side B, then back to side A to play 7 (in that order).

- 1 Press PGM/RESERVE on the Remote.



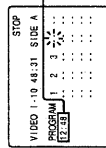
"PROGRAM --:--" appears on screen.
"PGM" flashes in the front panel display.



- 2 Press DISC SIDE A, then 1, 2 and 3.



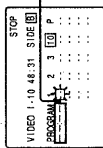
Total playing time
(Appears for LDs
containing TOC data*)



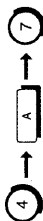
- 3 Press DISC SIDE B, then +10, 0, PAUSE (II).



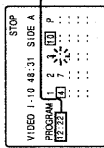
When you enter PAUSE (II), the display returns to "---:--" "P" indicates that a PAUSE (II) is entered.



- 4 Press 4, DISC SIDE A, then, 7.



The total playing time of the programmed chapters entered after the PAUSE (II).



- 5 Press PLAY (▶).



To Start Over



Press CLEAR, then PGM/RESERVE. Enter the new chapter numbers.

To Change an Entry



Press SEARCH to advance one entry. Enter the correct number.

To Enter a Number Greater Than 15



Press +10 and one of the number keys, following the same procedure as on page 24.

* If you enter a chapter number 51 or greater, or if total playing time exceeds 100 minutes, the total playing time turns to "---:--".

To Cancel Programmed Play



Press CLEAR.
The player resumes normal playback.

To Replay the Programmed Chapters



Press REPEAT.
"REPEAT" is displayed on the screen.

To Advance or Go Back One Chapter*



Press ACS/AMS (◀◀ or ▶▶).

To Check the Contents of the Program



Press DISPLAY twice.
The flashing number indicates the chapter now playing.

To Play a Compact Disc

This section explains how to perform procedures associated with playing CDs.

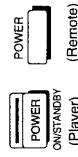
How to Load and Play a CD (Compact Disc)

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

- 1 Set the mode selector to **NORMAL**.



- 2 Turn on the multi disc player.



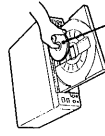
- 3 Turn on the stereo system.

Turn on the amplifier or receiver and select CD, AUX or other desired audio input.

- 4 Open the disc tray.



- 5 Place a disc on the tray.



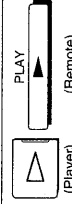
Carefully center a single CD on the tray. * If you insert more than one disc, or the disc is not seated properly, it may not play or damage the unit.

What is this indication?

NO DISC

This indication appears in the front panel display when the tray is empty.

- 6 Start playback.



To Advance or Reverse



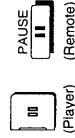
Hold down the left or right arrow button on the Remote.

To Advance or Go Back One Track at a Time



Press the ACS/AMS button on the Remote.

To Interrupt Play



Press PAUSE button on the Remote. To resume playback, press PAUSE button on the Remote.

* Do not use a CD stabilizer as it may cause damage to your disc or player.

** You can start playing by pressing (DISC) SIDE A instead of PLAY button.

How to Play Frame-by-Frame (for CAV discs)

Once you have found a particular scene, 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 PAUSE, and STILL/STEP buttons on the Remote Commander.

To Play One Frame at a Time (Step Play)

1 Press PAUSE button once.



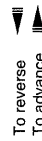
The frame freezes (Pause mode).

- 2 Press STILL/STEP on the Remote repeatedly.



Each press shifts the image one frame backward or forward.

For continuous frame-by-frame action press STILL/STEP once, then hold down STILL/STEP.



In addition to pause mode, you can achieve Step Play while the player is in play mode by pressing one of the STILL/STEP buttons while the disc is playing.

To Freeze the Action (Freeze Frame)



Press PAUSE button once.

To Resume Normal Play



Press PLAY button.

Extended-Play (CLV) Discs

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

How to Continue Play From the Point You Stopped at — Memory Play

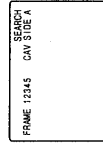
This function can only be used for LDs, and in continuous play mode. Even if you use the STOP button to stop, you can still continue play from the point you stopped at. Locate the MEMORY PLAY button on the Remote Commander.

To Play Again from the Point You Stopped at



Press MEMORY PLAY on the Remote while in stop mode.

The player starts searching for the point you stopped at.



Play starts from the point you stopped at.

The point at which you stopped playing is stored in the player's memory until you press STOP button again. It is retained even if you turn off the power. ** Press MEMORY PLAY. The player turns on and resumes playback from the point you stopped at.

* This function can only be performed on CAV discs.

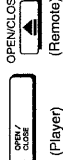
** If you press the STOP button, the memory is cleared and this function is canceled.

To Stop Playback



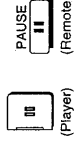
Press **STOP** (■).
To play again from the beginning, press **PLAY** (▶).

To Stop Play and Remove the Disc



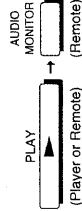
Press **OPEN/CLOSE** (▲) and press ▲ again to close the empty tray.

To Have the Player Pause Before Starting



Press **PAUSE** (||) after doing step 5 on page 31. The tray closes and the player waits at the start of the disc until you press **PLAY** (▶) or **PAUSE** (||).

To Play a Stereo CD or a Second Audio Program (SAP) CD



Press **PLAY** (▶), then press the **AUDIO MONITOR** button on the Remote.

The procedure below indicates how the output and the display change with each press. The active tracks appear for three seconds on the TV screen. It always appears in the front panel display.

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)

Understanding Displays and Messages When Playing CDs

You can determine the player operating status or disc information in one of two ways: (1) by displaying the information on the TV screen, or (2) by looking at the front panel display. Locate the **DISPLAY** button on the Remote Commander.

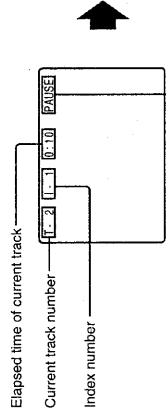
To View On-Screen Information



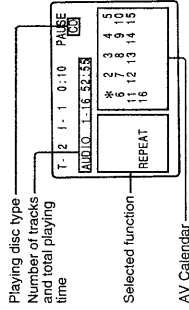
Turn on the television, and press **DISPLAY** on the Remote.

Each time you press **DISPLAY**, messages appear on the TV screen as shown below. The table is a key to the messages that appear on the right of the screen.

Press **DISPLAY** once.



Press **DISPLAY** twice.



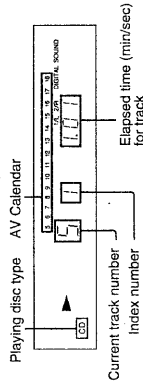
To turn off the display, press **DISPLAY** again.

Message (Examples)

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

Reading the Front Panel Display

The illustration to the right is an example of what is displayed on the front panel of the player.



Finding Out Play Status

When playing a CD, the AV Calendar shows information on the total number of tracks on the disc or those programmed to play. As tracks are played, the corresponding numbers in the calendar disappear. If the CD contains more than 20 tracks, "S" appears to the right of the calendar.

How to Locate a Certain Track

CDs are divided into sections called "tracks". To scan a disc and find a certain point, use the **◀◀◀▶▶▶** buttons. To find and play from the beginning of a certain track, use the number keys. In addition, use the **ACS/AMS (◀◀◀▶▶▶)** buttons to advance or reverse one track at a time. Locate the number keys, **◀◀◀▶▶▶** buttons, and **ACS/AMS (◀◀◀▶▶▶)** buttons on the Remote Commander.

To Find a Certain Point on the Disc

Hold down the **◀◀◀** or **▶▶▶** button.
To advance, **▶▶▶**.
To reverse, **◀◀◀**.
To resume normal play, release the **◀◀◀** or **▶▶▶** button.

To Locate a Particular Track (Track Search)

Press one of the number keys on the Remote to enter the track number you want played.

To Enter a Number Greater Than 15

Press +10 and one of the number keys.
..... "18"
..... "20"
Do this to make a numerical sum. For example, to enter 18, press +10 and 8; to enter 20, press +10, +10 and 0.

To Check the Current Track Number

If you make a mistake while entering press CLEAR, then enter the correct number.
See the front panel display (page 33).

To Advance or Go Back One Track at a Time (Skip Search)

Press **ACS/AMS (◀◀◀▶▶▶)** once to return to the beginning of the current track. Press it again before the selection starts to return to the beginning of the previous track.

Press **ACS/AMS (▶▶▶)** to advance to the beginning of the next track.

Hold down the **ACS/AMS** button for continuous skip search.

To Play a Single Track Once

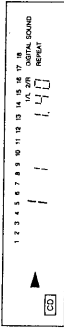
- 1 Press the **1/SIDE/ALL** button on the Remote.
 - 2 Enter the track number you want played.
- "1" is displayed on the front panel display.
When the track has been played, the player stops. To cancel the setting, press **1/SIDE/ALL** again or **CLEAR**.
If you press the wrong number keys, simply press the correct ones.

How to Repeat the Same CD Selections

You can program the player to play the same selections over and over until you signal the repetition to stop. You can replay the entire disc, a single track, or a section between one pair of points on the disc. Locate the **REPEAT**, **1/SIDE/ALL**, and the **REPEAT A↔B** buttons on the Remote Commander.

To Repeat the Entire Disc

Press **REPEAT** on the Remote.
"REPEAT" lights up in the front panel display. The player plays all tracks on the CD. When the player reaches the end of the disc, it plays the disc again.



To Repeat the Current Track (Single Repeat)

Press **1/SIDE/ALL**, then **REPEAT** on the Remote.
"REPEAT" and "1" light up in the front panel display. The current track repeats continuously.



To Cancel Repeat Play

Press **REPEAT**.
"REPEAT" disappears.*

To Cancel Single Repeat

Press **1/SIDE/ALL** and **REPEAT**.*

To Repeat One Section of the Disc

- 1 Go back to the start of the section you want to replay.
 - 2 Press **REPEAT A↔B** on the Remote to mark the beginning of the section.
 - 3 Let the player run to the end of the section you want to repeat.
 - 4 Press **REPEAT A↔B** again to mark the end of the section.
- The "REPEAT" and "A-B" light up, and the "B" indication begins flashing in the front panel display.


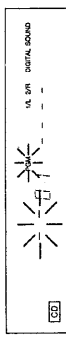

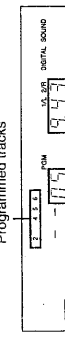
To Cancel REPEAT A↔B

Press **CLEAR**.





* You can also cancel Repeat and Single Repeat by pressing CLEAR.






How to Play Only Certain Tracks—Programmed Play





You can program, in any order you like, the tracks the Multi Disc Player plays. This play list is stored in the player until you either remove the disc or turn off the power. You can program up to 25 tracks. After playing all the selections, the player stops and waits for your next command. Locate the number keys, PGM/RESERVE, and PLAY buttons on the Remote Commander.

- 1 Press **PGM/RESERVE** on the Remote.  "PGM" flashes in the front panel display. 
- 2 Press one of the number keys.  The total playing time of the programmed tracks is displayed on the front panel display. 





- 3 Press **PLAY** ().

- To Start Over** Press **CLEAR** and **PGM/RESERVE**. Then, enter the correct track numbers. 
- To Change an Entry** Press **SEARCH** to advance one entry. Enter the new number. 
- To Enter a Number Greater Than 15** Press **+10** and one of the number keys following the same procedure as on page 34. 
- To Program a Pause** Press **PAUSE** at the point you want the program to stop playing. A **PAUSE** is counted as a selection. 

- To Cancel Programmed Play** Press **CLEAR**. The player resumes normal playback. 
- To Replay the Same Programmed Tracks** Press **REPEAT**. "REPEAT" is displayed in the front panel display. 
- To Advance or Go Back One Track*** Press **ACS/AMS** ( or ). The player moves to the preceding or following programmed tracks.
- To Check the Contents of the Program (TV screen)** Press **DISPLAY**. The programmed track numbers are displayed on the TV screen. The flashing number indicates the current track. Once a track has been played, that track number in the front panel display (AV Calendar) disappears. 


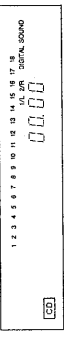
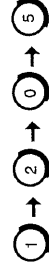

* The player does not go back to previous tracks if you press the  button, however, it does advance to forward tracks if you press the  button. To go back to preceding tracks, press the **ACS/AMS** ( or ) button repeatedly.



To Replay From a Specific Point on the Disc (Memory Search)

- 1 Go to the point from where you want to start playback. 
- 2 Press **REPEAT A-B** on the Remote to mark the starting point. 
- 3 Press **CLEAR** to turn off the indication "A-B REPEAT". (Thus not setting an end point.) 
- 4 Press **SEARCH** on the Remote at any point you like on the disc. 

How to Search by Elapsed Playing Time—Time Search

You can locate a particular point on a CD by specifying the elapsed playing time from the beginning of the disc. Locate the **FRAME/TIME**, **SEARCH/NEXT**, and number keys on the Remote Commander.

- 1 Press **FRAME/TIME** on the Remote.  "00:00" appears in the front panel display. 
- 2 Enter the desired multi-digit number corresponding to the time you want to find.*  Enter four digits.
 If you press the wrong key, press **FRAME/TIME** again to return the display to "00:00" or "0:00:00", then enter the correct number.
 Play starts from the time specified in step 2.
- 3 Press **SEARCH** on the Remote. 

- To Cancel Time Search** Before pressing **SEARCH**, press **CLEAR**. If you have already pressed the **SEARCH** button, press **STOP** () or **CLEAR** ().

In addition to normal play mode, you can conduct Time Search while in Repeat or Pause mode. When the specified time appears after the search, play continues in the same mode.

* The point marked "A" from where you can resume playback is cleared if you open the disc tray, turn off the player, carry out a **Frame/Time Search** or **Chapter Search**.
 ** If you enter a time number not contained on the disc, play stops.

To Play a Compact Disc Video

This section explains basic procedures for playing CDVs and VSDs. Since CDV and VSD play holds so many functions in common with CD and LD play, see other sections of this manual for details of applicable functions mentioned here.

How to Load and Play a CDV (Compact Disc Video) or VSD (Video Single Disc)

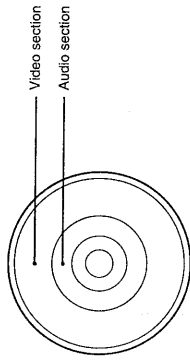
CDVs are divided into two sections: video and audio. The video section of the disc consists of 5 minutes of video play with digital audio output. The audio section consists of 20 minutes of solely digital audio output (playable on any CD player). Thus, the CDV has the function of both an LD and CD combined in one disc. The audio and the video sections of the CDV are assigned track numbers. The track on the video section corresponds to the chapter on the LD and the same on the CD. You can regard VSDs as CDVs that have no audio tracks.

1 Turn on the TV, stereo system (if connected), and Multi Disc Player.

2 Place the disc on the tray.

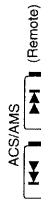
3 Press PLAY (▶).

Play begins from the video section. To start play from the audio section, using the number keys, enter the track number that starts the audio section.

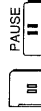


To Stop and Remove the Disc

To Advance or Go Back One Track at a Time



To Interrupt Play



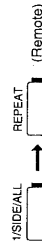
To Find a Certain Audio or Video Track



To Play Certain Video Tracks



To Repeat the Current Track



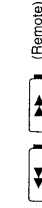
To Repeat All Selections



To Repeat a Section of the Disc



To Use Speed Scan (Audio and Video)



Understanding Displays and Messages When Playing CDVs or VSDs

You can determine the player operating status or CDV information in one of two ways: (1) by displaying the information on the TV screen, or (2) by looking at the front panel display. Locate the DISPLAY and AV TIME buttons on the Remote Commander.

To View On-Screen Information ...

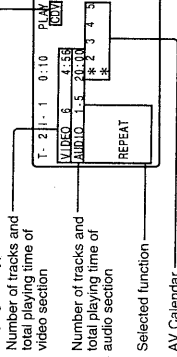


Press DISPLAY once.

Elapsed time of current track
Index number
Current track number

Press DISPLAY twice.

Playing disc type
Number of tracks and total playing time of video section
Number of tracks and total playing time of audio section
Selected function



Message (Examples)

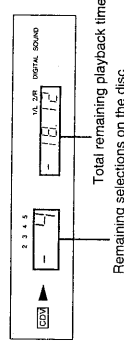
Screen Display	Current Status of the Player
OPEN	Disc tray open
CLOSE	Disc tray closed
PLAY	Playing CDV
STOP	Operation stopped
PAUSE	Operation momentarily stopped
SEARCH	Speed scanning

To turn off the display, press DISPLAY again.

To Display Remaining Playback Time



Press AV TIME on the Remote. See "How to Display the Elapsed Playing Time - Time Counter" on page 40.
Example. Press AV TIME three times.



Finding Out Play Status

When playing a CDV, the AV Calendar on the front panel display shows information on the total number of selections. As selections are played, the corresponding numbers in the calendar disappear.

To Play Any Disc (Advanced Functions for LD, CD, or CDV Play)

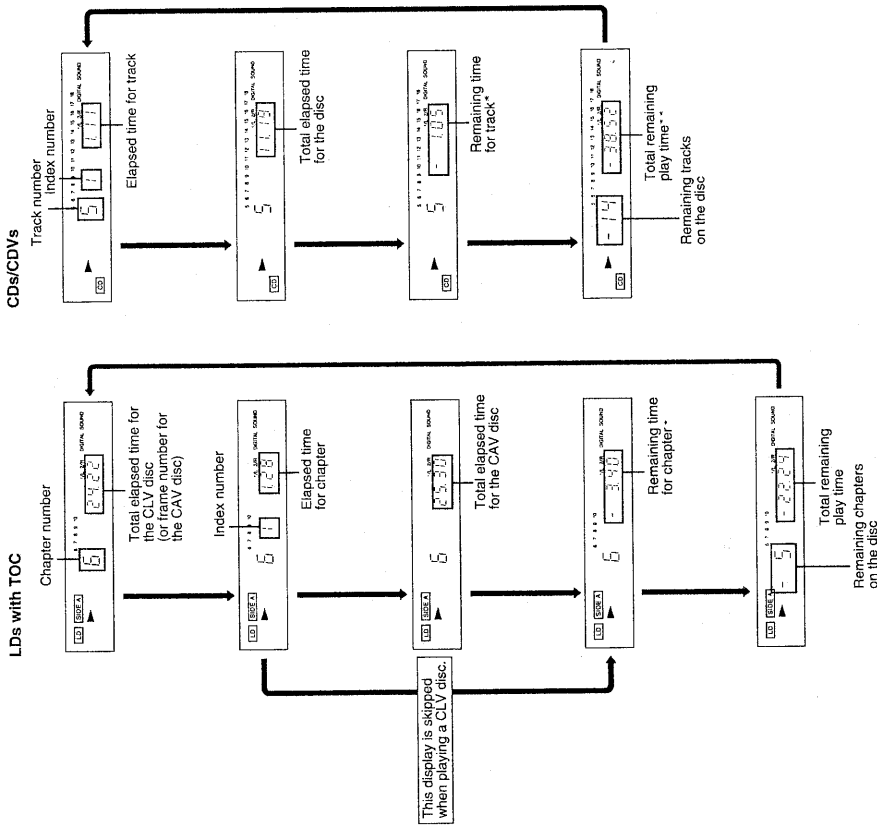
This section explains advanced functions which apply to any one of the three types of discs.

How to Have the Elapsed Playing Time – Time Counter

You can display elapsed time information on the front panel display or TV screen. How the information is displayed depends on the type of disc being played. Locate the AV TIME button on the Remote Commander.

To View the Elapsed or Remaining Time

Each time you press AV TIME on the Remote, the front panel display changes as follows.



* The display does not show remaining play time for chapters or tracks numbered 51 or greater.
 ** When playing CDVs, these figures refer only to the current section (audio or video) being played.

How to Program the Player to Pause or Scan Automatically

There are many functions you can program the Multi Disc Player to do automatically. Two of them are Auto Pause and Intro Scan. To make the player stop every time a selection ends, use Auto Pause. When you want to find a particular track, use the INTRO button to make the player play the first 8 seconds (approximately) of each chapter or track on the CD, LD, or CDV. Locate the AUTO PAUSE button on the Remote Commander or player, the INTRO button on the Remote Commander.

To Make the Player Stop Momentarily (Auto Pause)

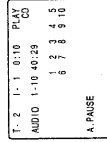


Press **AUTO PAUSE** on the Remote or player. The AUTO PAUSE indicator on the player lights up.

When the current selection ends, the player pauses.

To play the next selection, press **PLAY** (▶).*

To display "A. PAUSE" on the TV screen, press **DISPLAY** twice. If you have pressed **DISPLAY** once, "A. PAUSE" appears for three seconds, then disappears.



To Resume Normal Playback



Press **AUTO PAUSE** again.

To Scan the Beginning of Each Chapter/Track (Intro Scan)



Press **INTRO** on the Remote. The player plays only the first 8 seconds (introduction) of each chapter or track on the disc.** When playing an LD, the player pauses after introducing the last chapter on side B of the disc. If nothing is recorded on side B, the player stops at the end of side A. On CDVs, intro-scanning starts from the video section of the disc.

To Resume Normal Play



Press **CLEAR**. Play resumes from the selection just introduced.

To Stop Play



Press **STOP** (■).

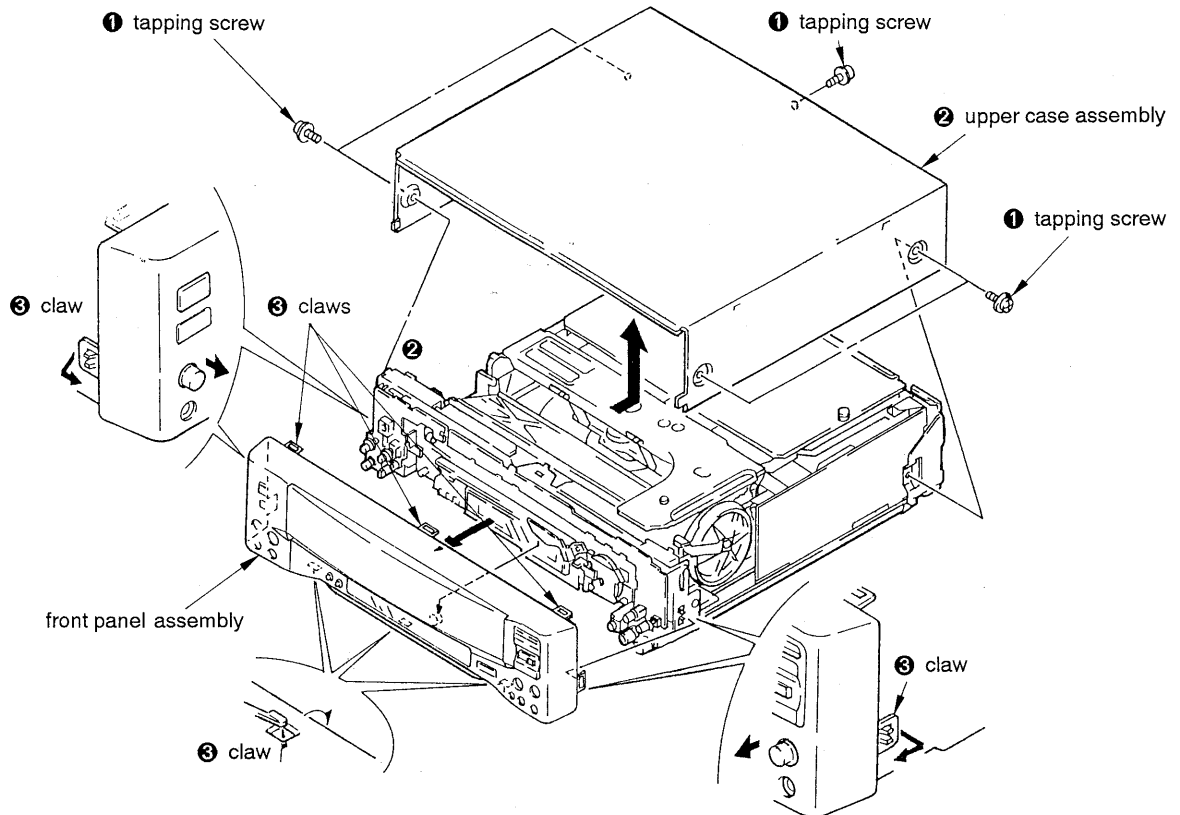
* In Single Repeat mode, the same selection starts playing again. In Repeat A-B mode, playback starts from the point marked "A".

** In stop mode, intro-scanning starts from the first chapter or track on the disc. If you press **INTRO** while playing a chapter or track, scanning starts from the next one. If you press **INTRO** while the player is introducing a chapter or track, the scanning skips to the next one.

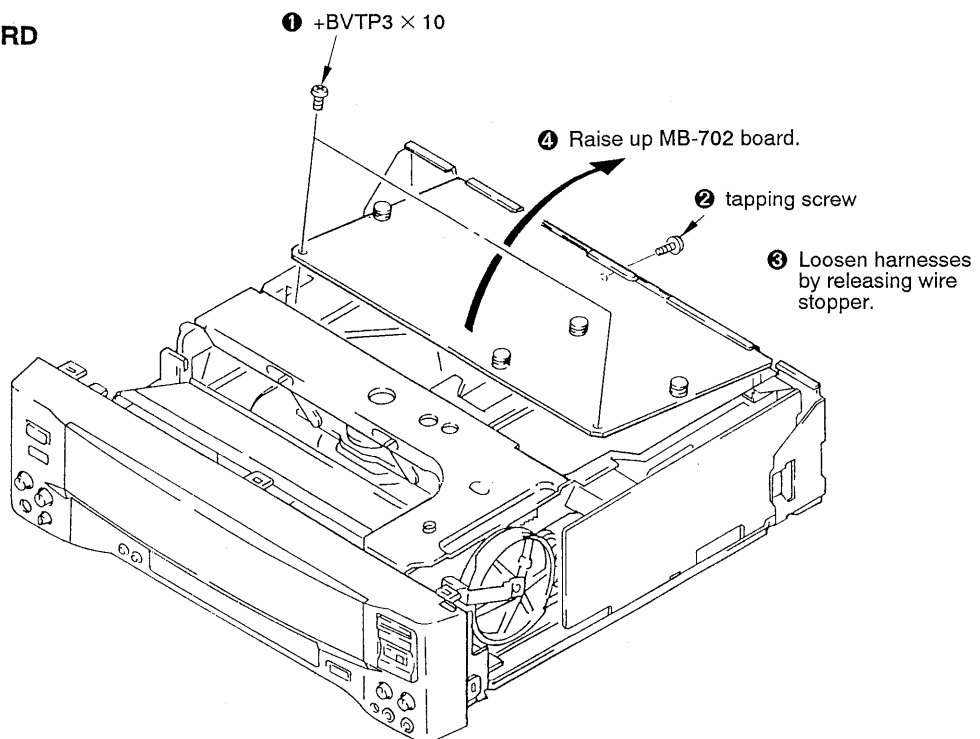
**SECTION 2
DISASSEMBLY**

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

2-1. UPPER CASE ASSEMBLY, FRONT PANEL ASSEMBLY

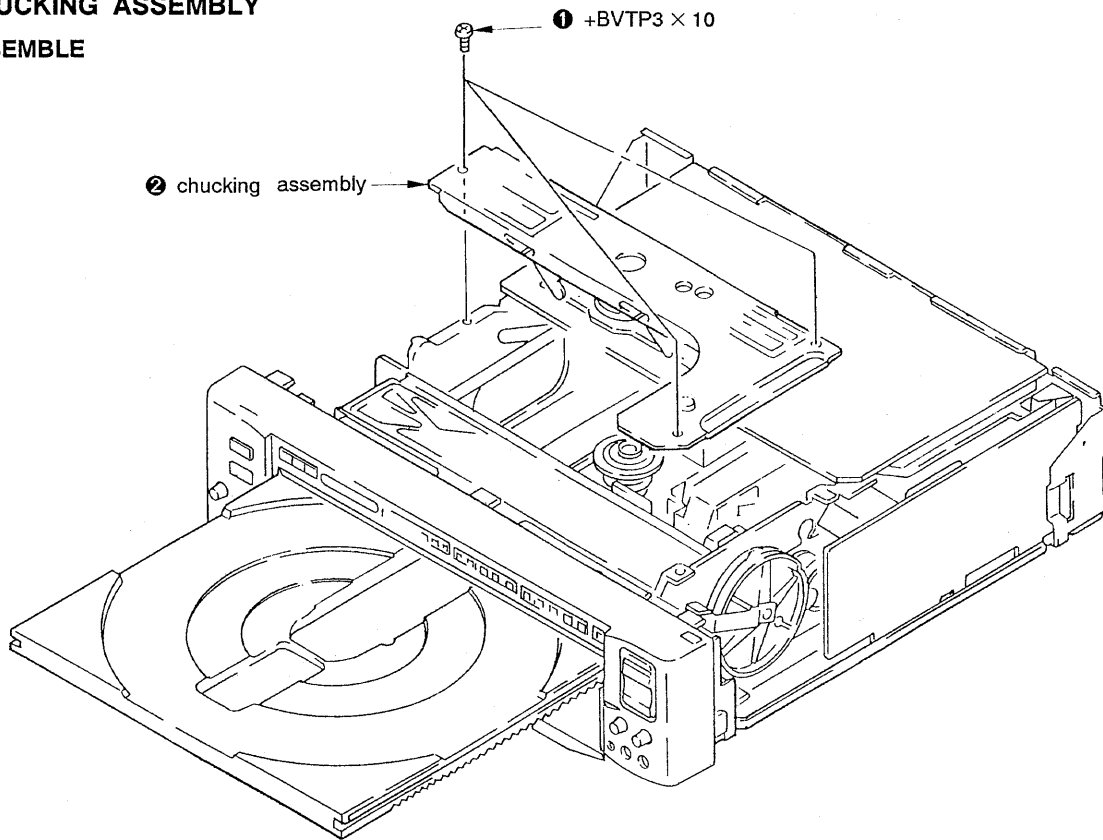


2-2. MB-702 BOARD

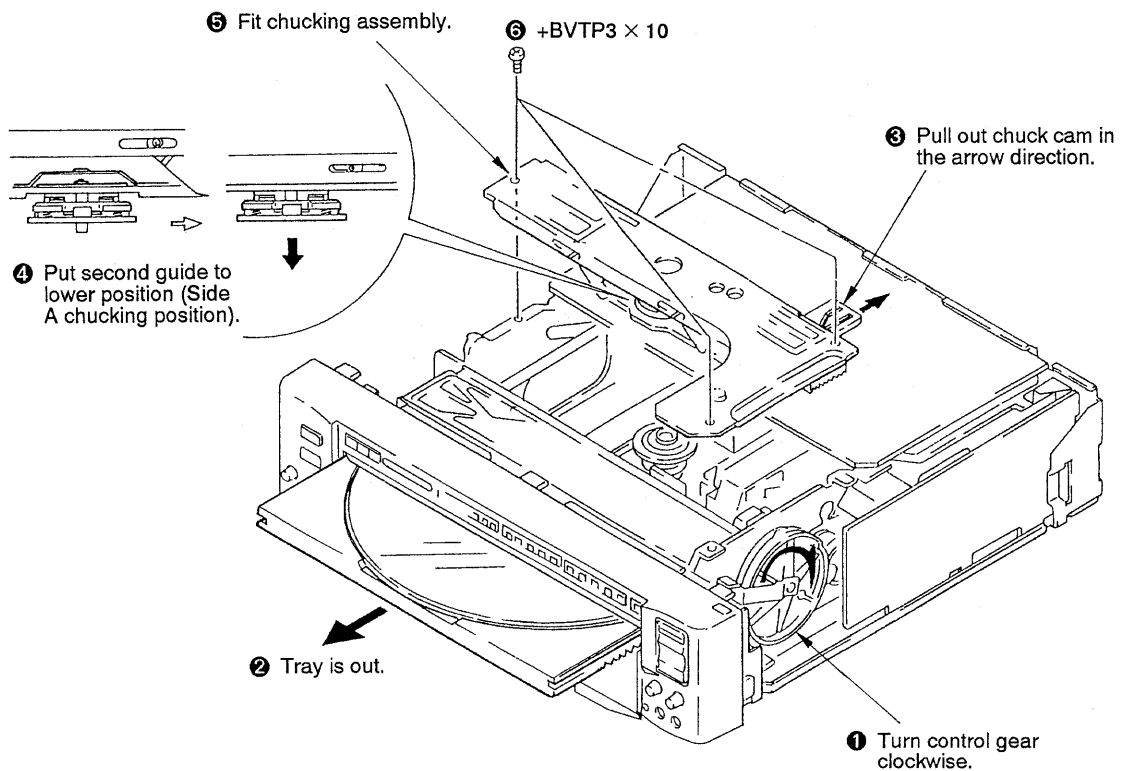


2-3. CHUCKING ASSEMBLY

• DISASSEMBLE

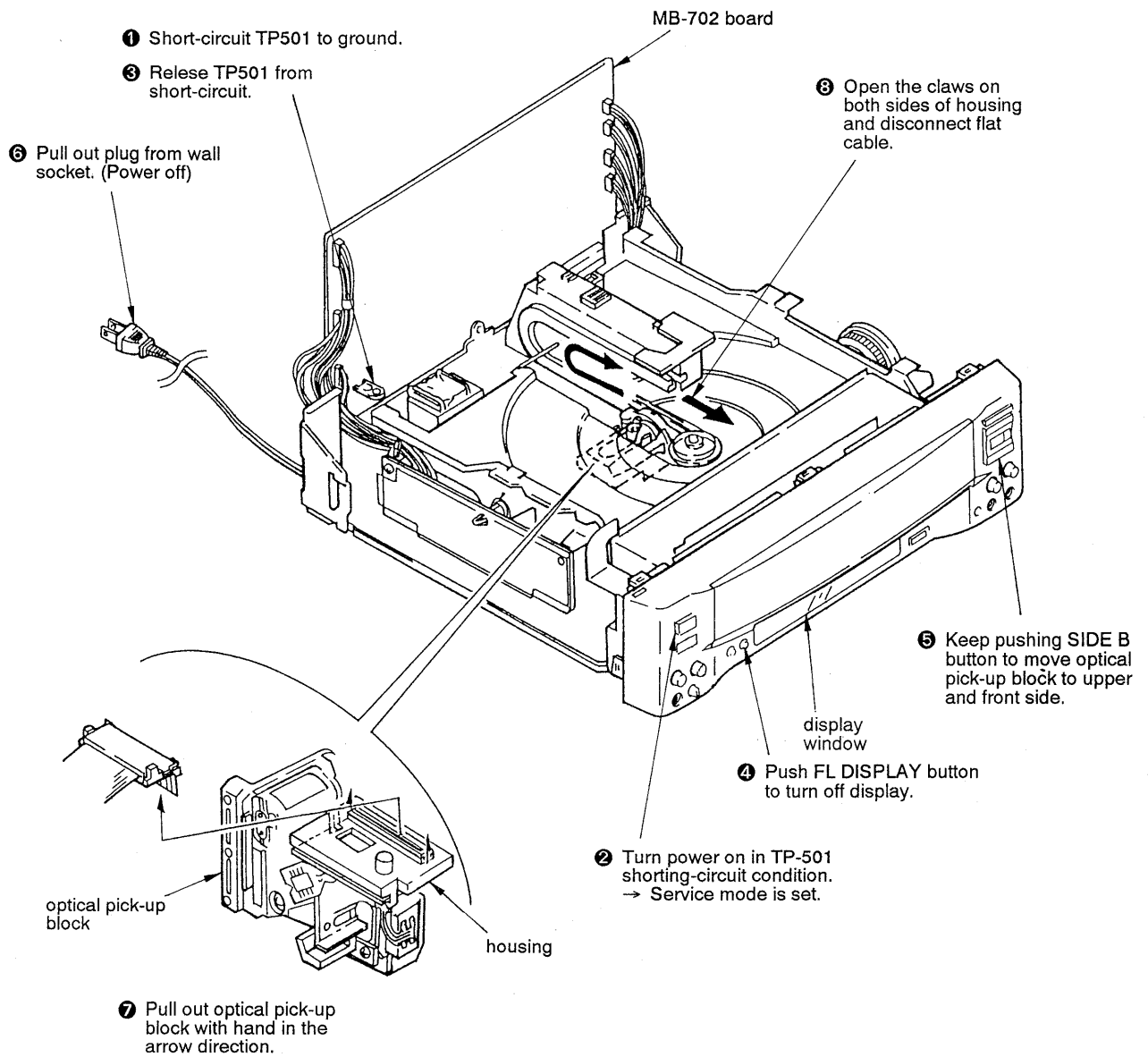


• ASSEMBLE

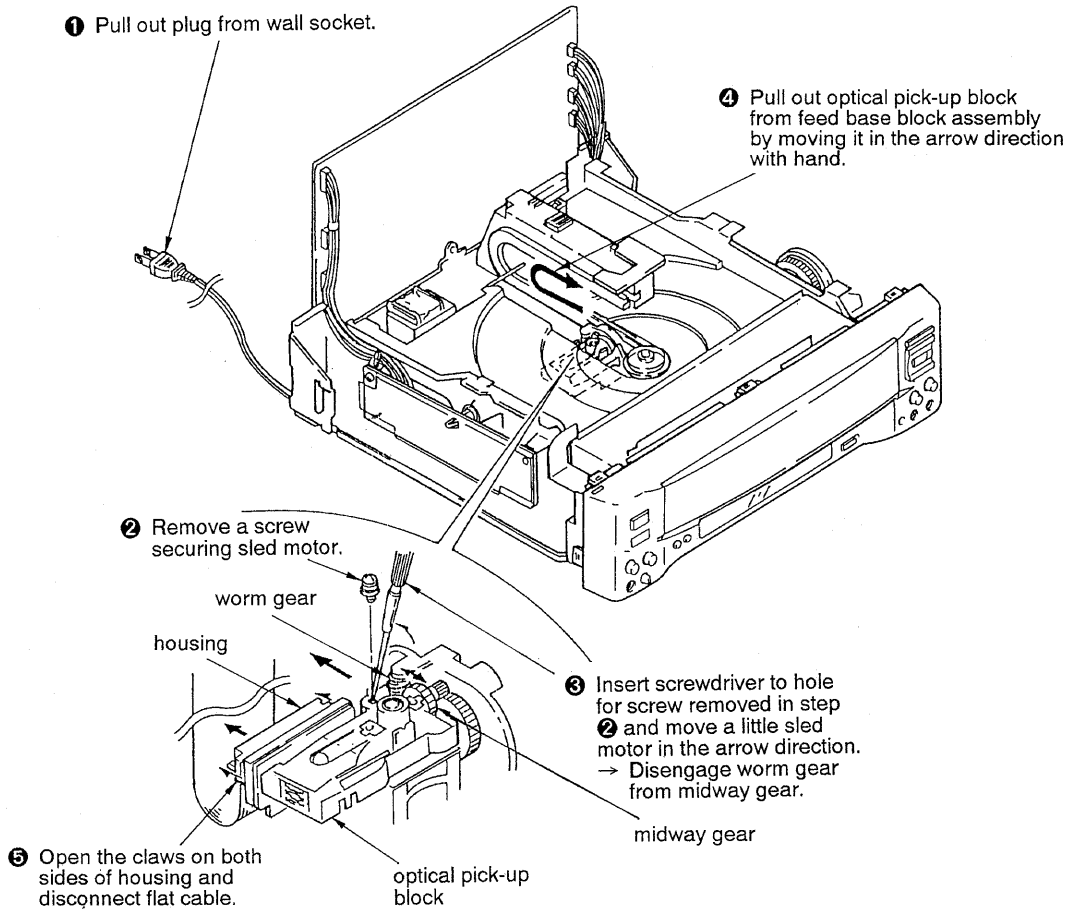


2-4. OPTICAL PICK-UP BLOCK

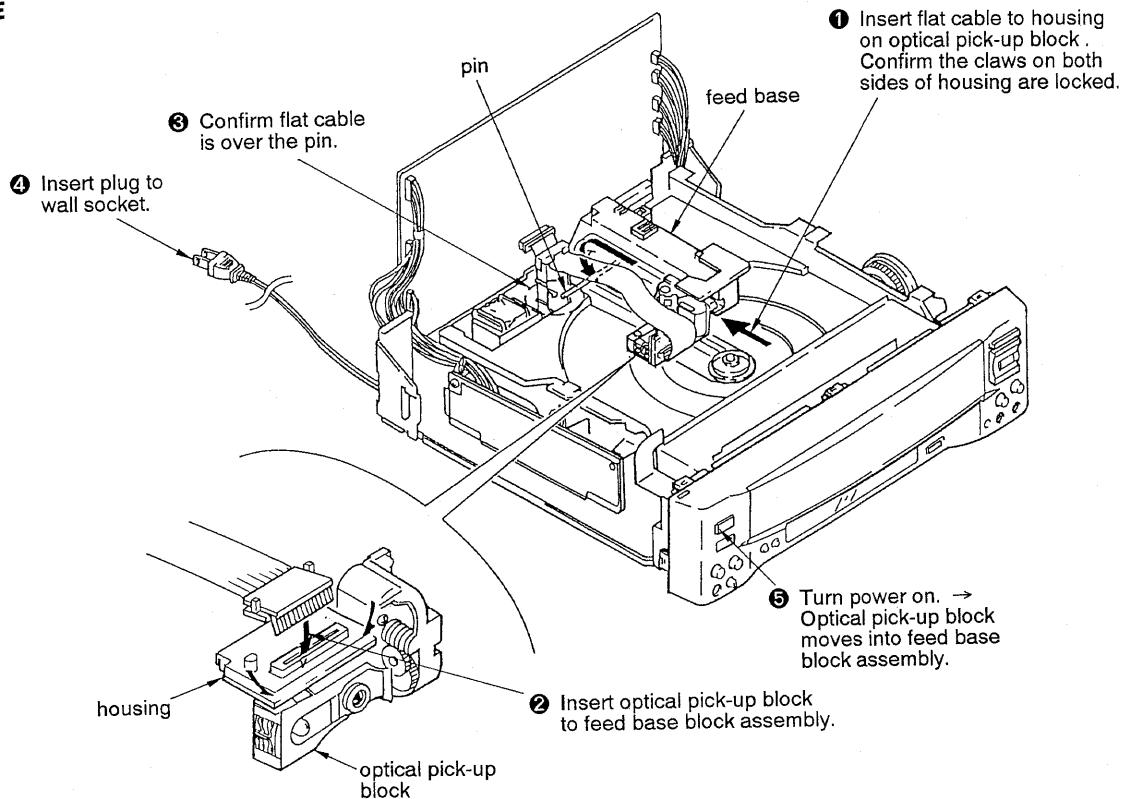
• DISASSEMBLE I (OPTICAL PICK-UP BLOCK MOTOR OPERATES)



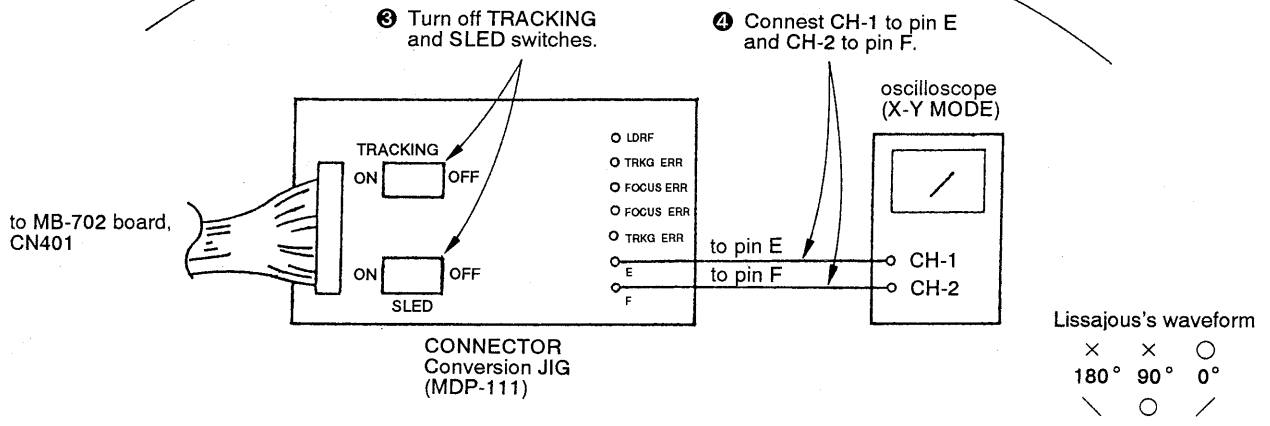
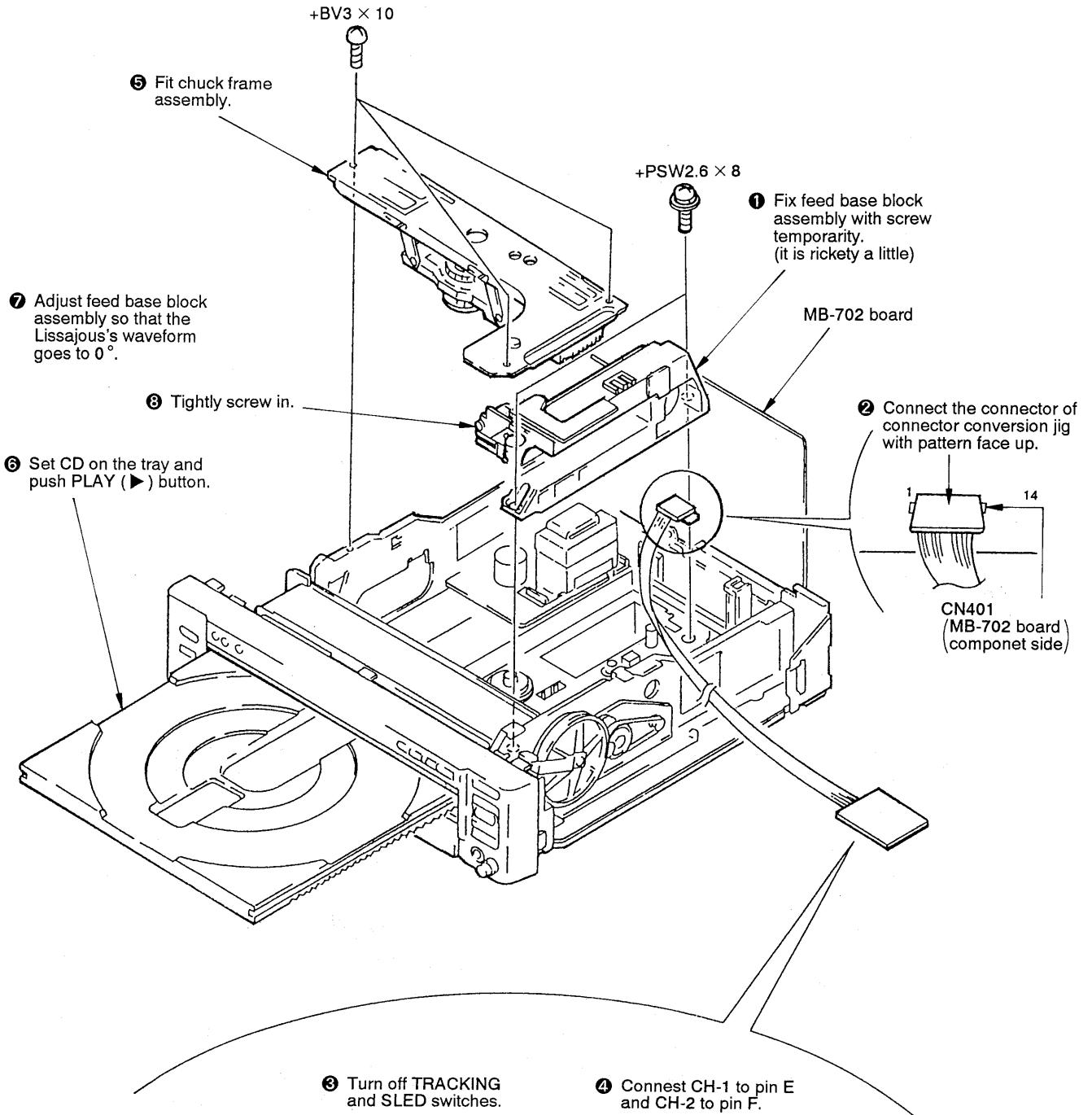
• **DISASSEMBLE II (OPTICAL PICK-UP BLOCK MOTOR DOESN'T OPERATE)**



• **ASSEMBLE**

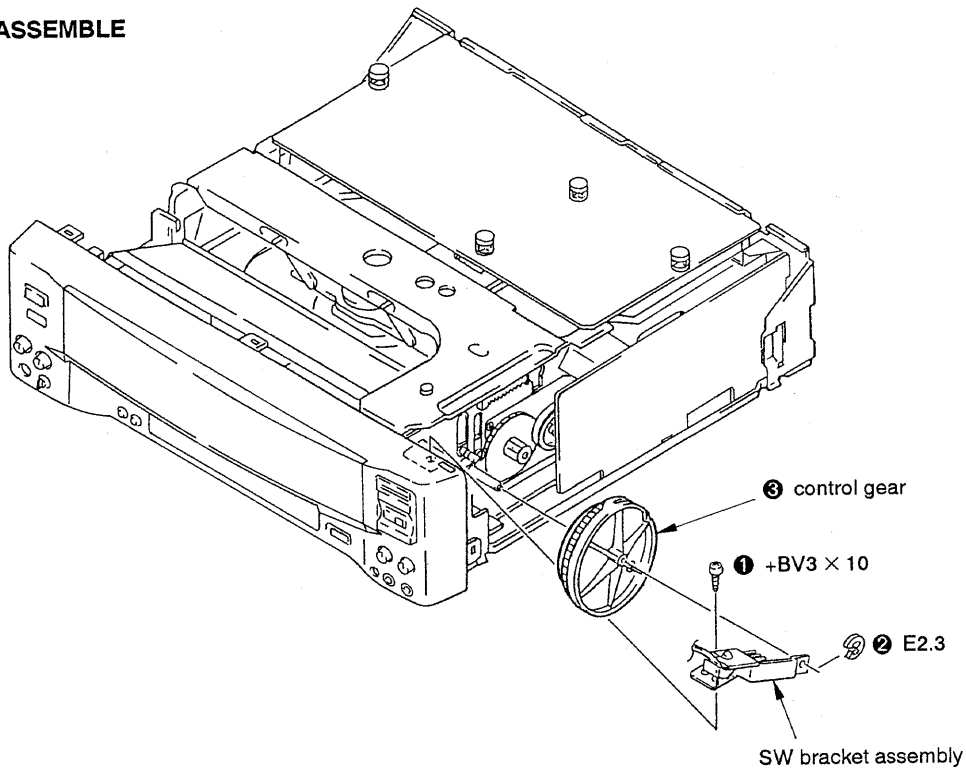


2-5. FEED BASE BLOCK ASSEMBLY INSTALLATION
 (Follow the disassembly procedure contrary to the numerical order given.)



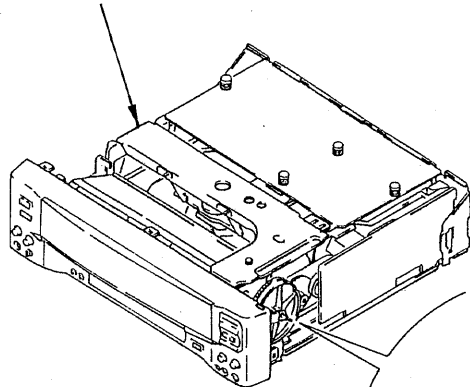
2-6. CONTROL GEAR

• DISASSEMBLE



• ASSEMBLE

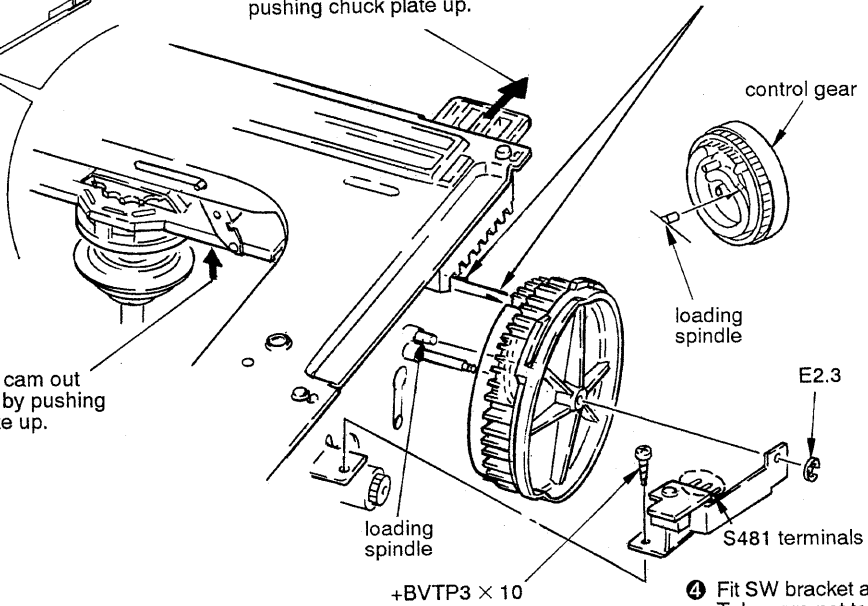
- 1 Make tray holding in the set.



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

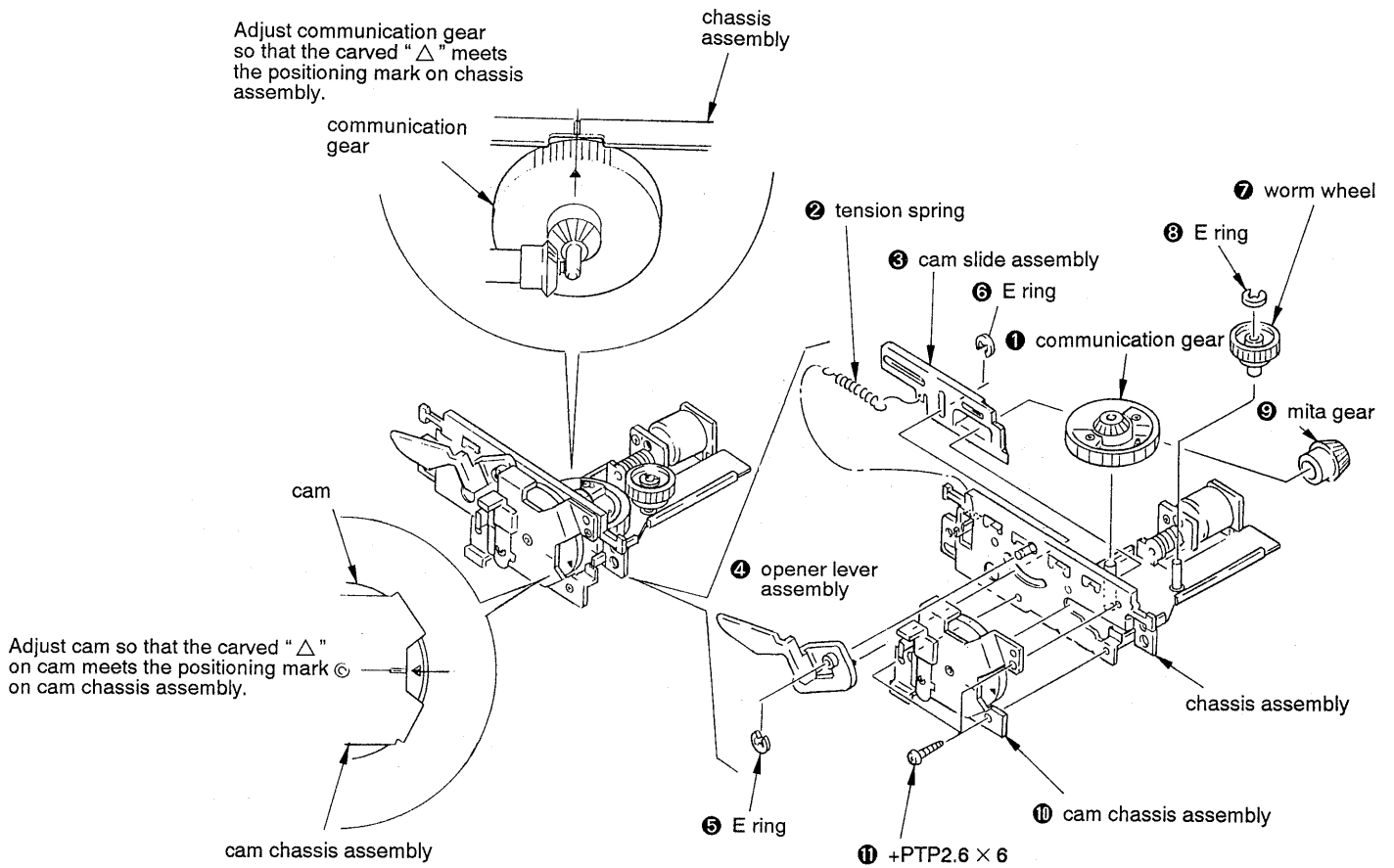
- 3 Fit control gear so that its left end tooth on inner side engages the left end groove on chuck plate gear. At this time, insert loading spindle to loading groove.

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



- 4 Fit SW bracket assembly. Take care not to damage the terminals of S481.

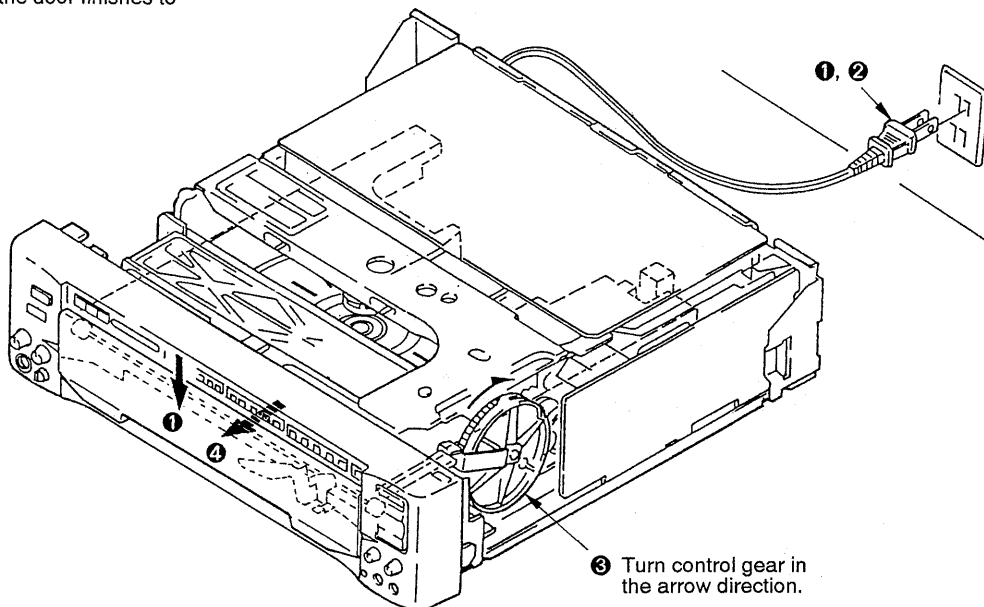
2-7. SWITCHING MECH BLOCK ASSEMBLY ASSEMBLING



2-8. PUTTING OUT DISC WHEN A TROUBLE HAS OCCURED WITH THE DISC LOADED

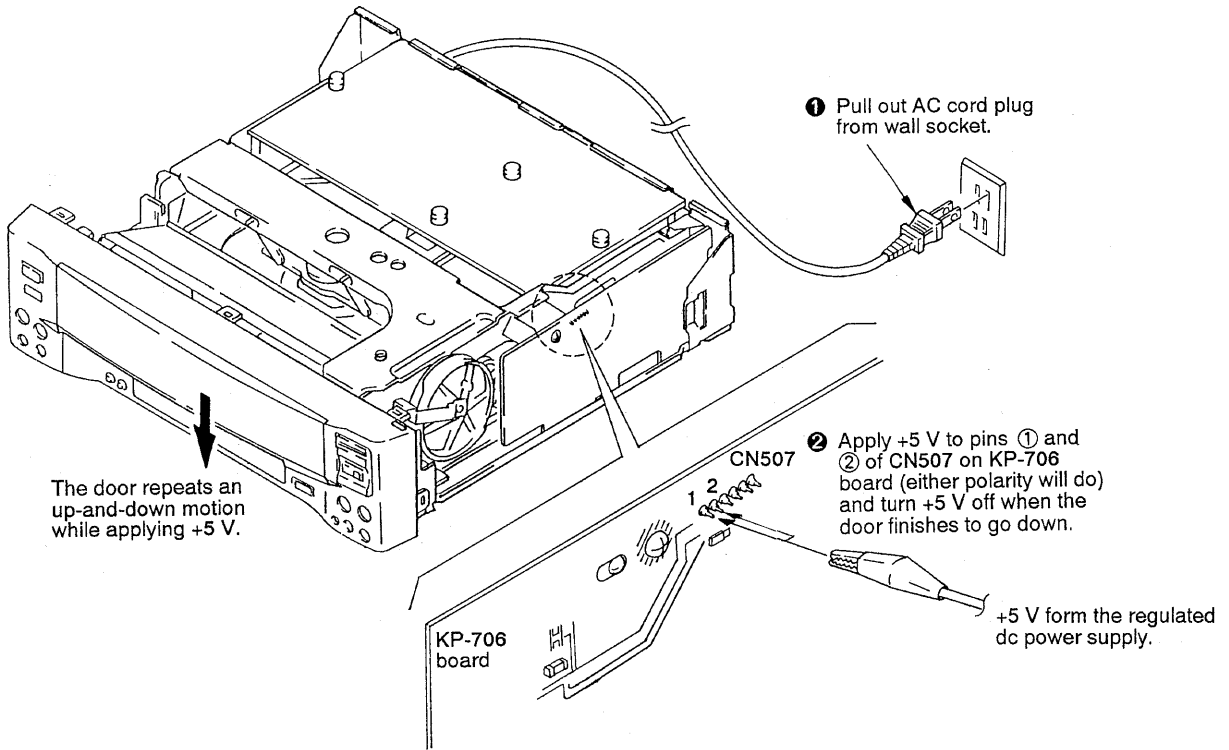
2-8-1. When the door goes down but the disc doesn't come out

- 1 Put down the door by turning power on.
- 2 Pull out AC cord plus from wall socket when the door finishes to go down.

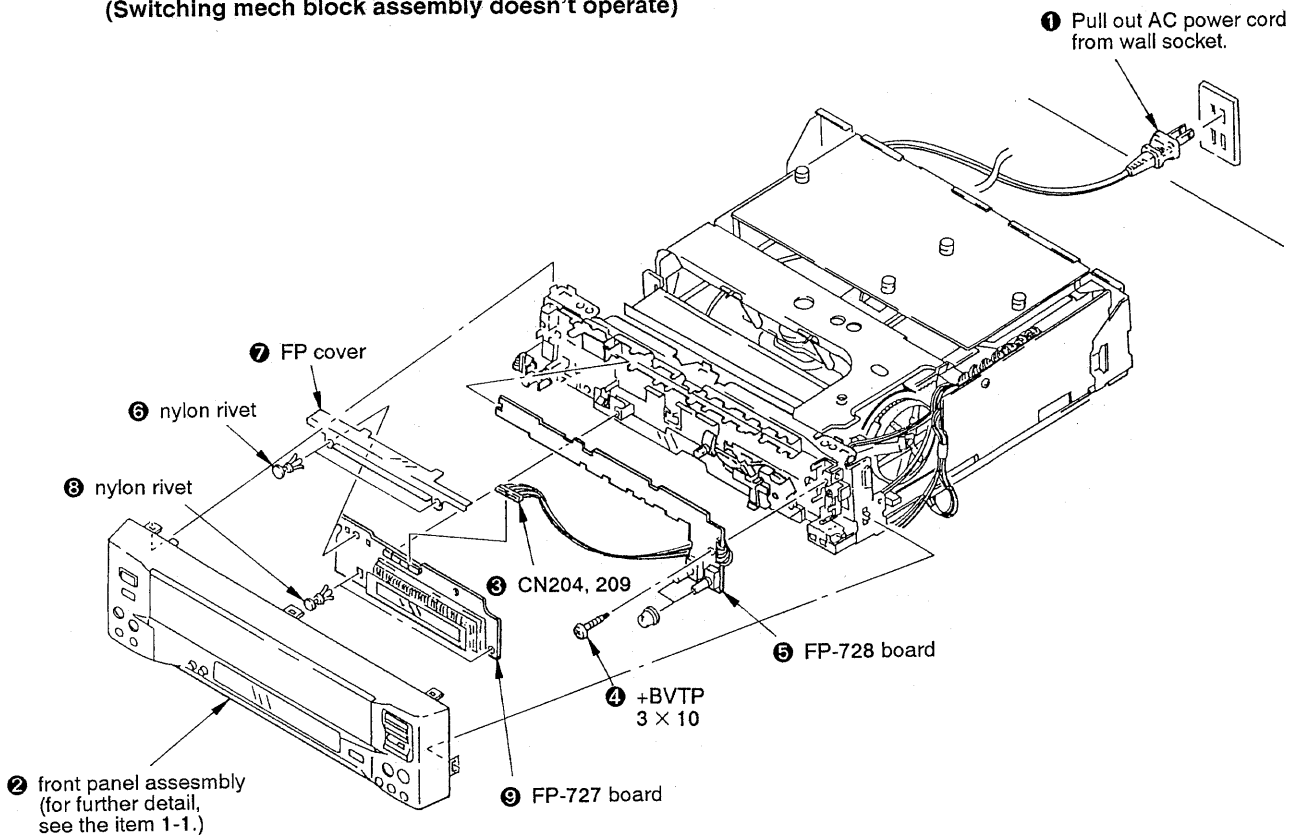


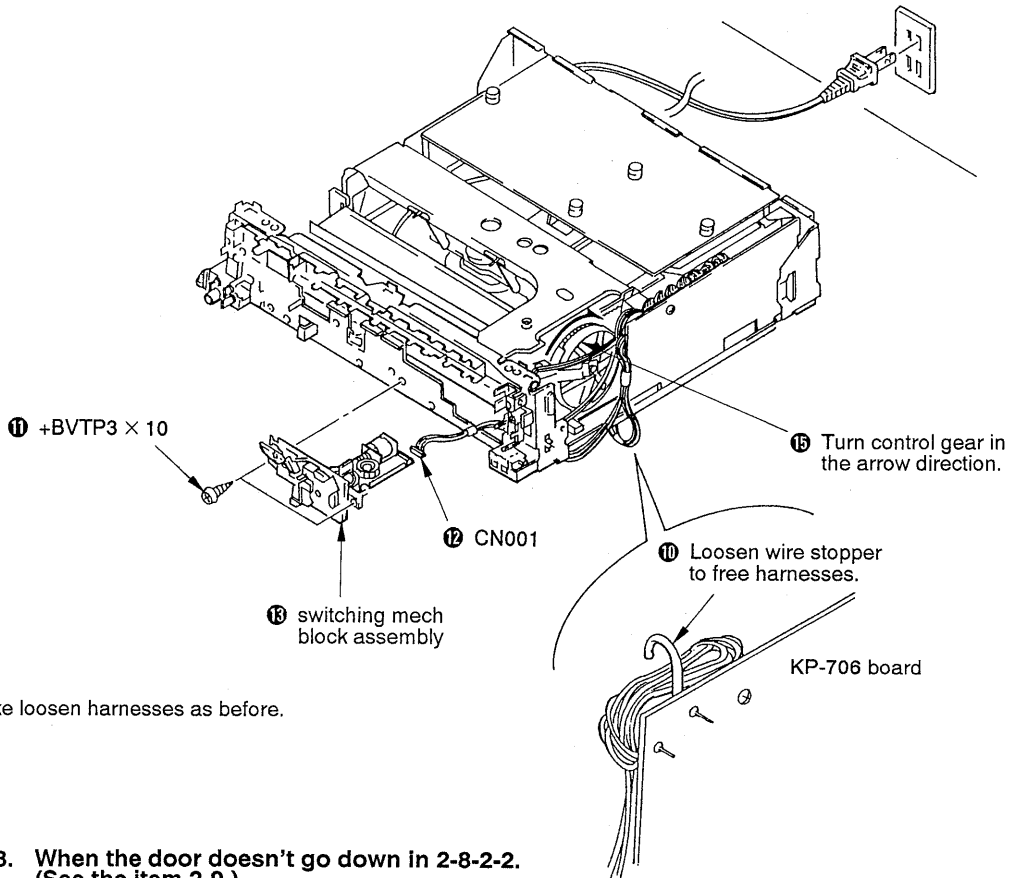
2-8-2. When the door doesn't go down

2-8-2-1. Using external power supply



2-8-2-2. When the door doesn't go down in 2-8-2-1. (Switching mech block assembly doesn't operate)

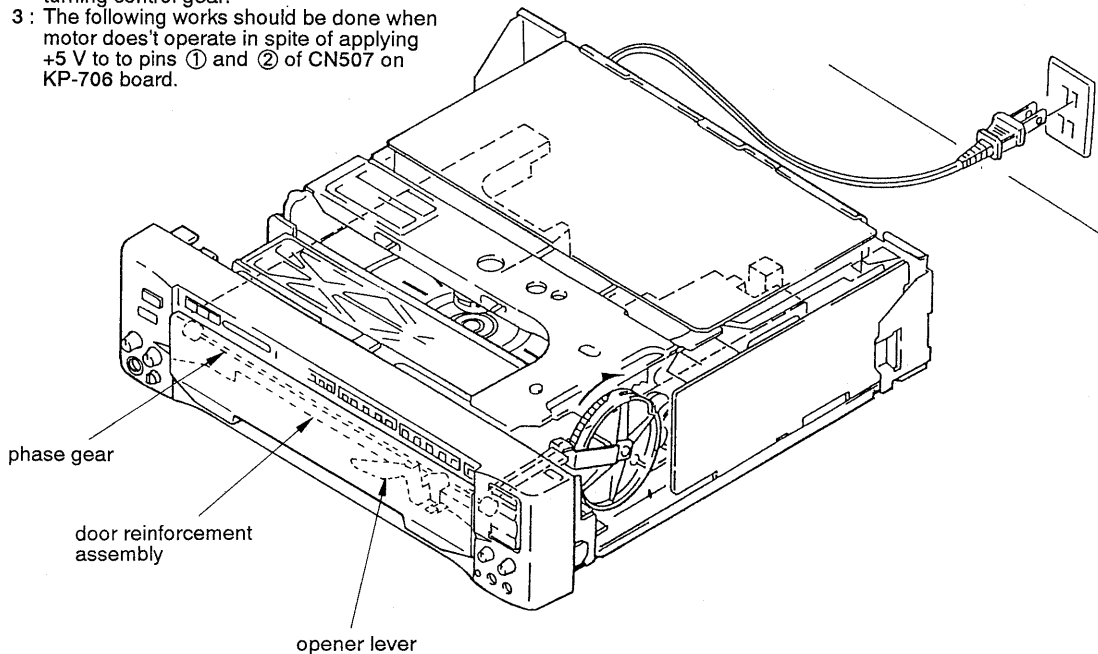


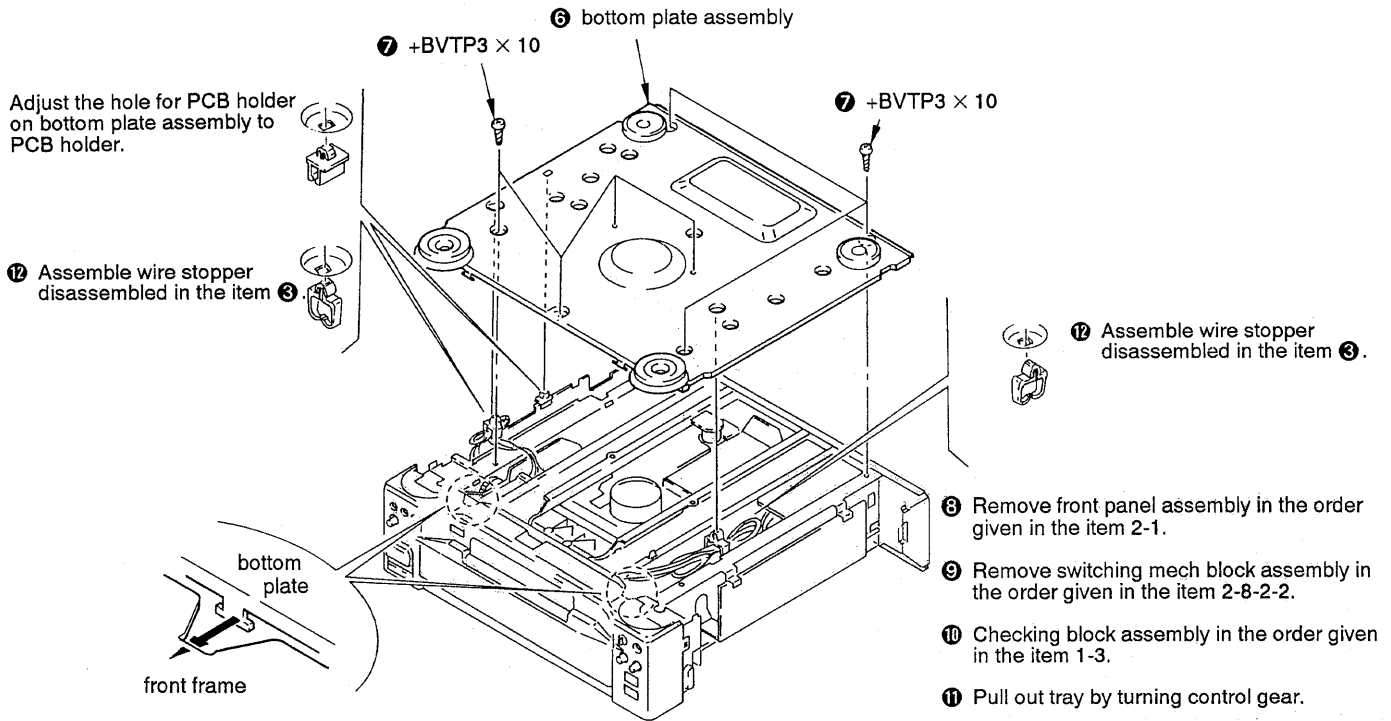


2-8-2-3. When the door doesn't go down in 2-8-2-2.
(See the item 2-9.)

**2-9. DISASSEMBLING WHEN A TROUBLE OCCURS WHILE DOOR IS GOING DOWN
(Mainly the troubles of motor or the like cause it.)**

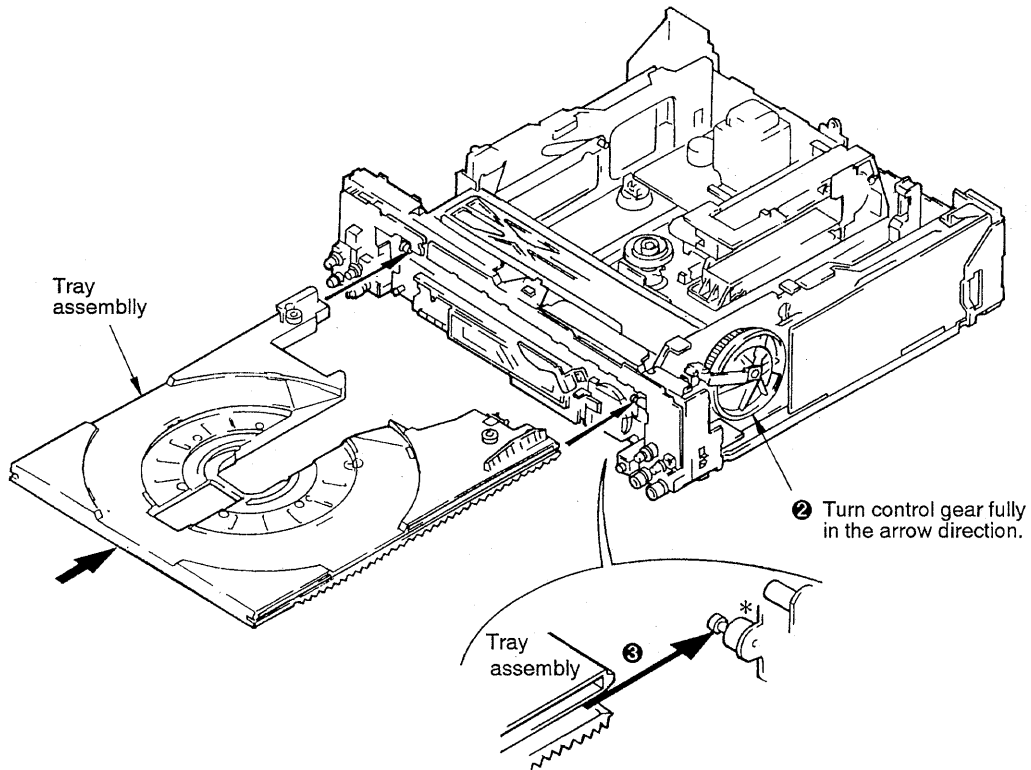
- Note 1 : Take care not to damage opener lever, front panel or the like.
- 2 : When a disc is in, the following works should be done after chucking disc by turning control gear.
- 3 : The following works should be done when motor doesn't operate in spite of applying +5 V to pins ① and ② of CN507 on KP-706 board.





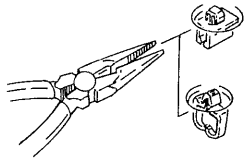
2-10. TRAY ASSEMBLY INSERTION

- ① Apply +5 V to pins ① and ② of CN507 on KP-706 board (either polarity will do) to put leven down. (See the item 2-8-2-1.)



1 Make the set up side down.

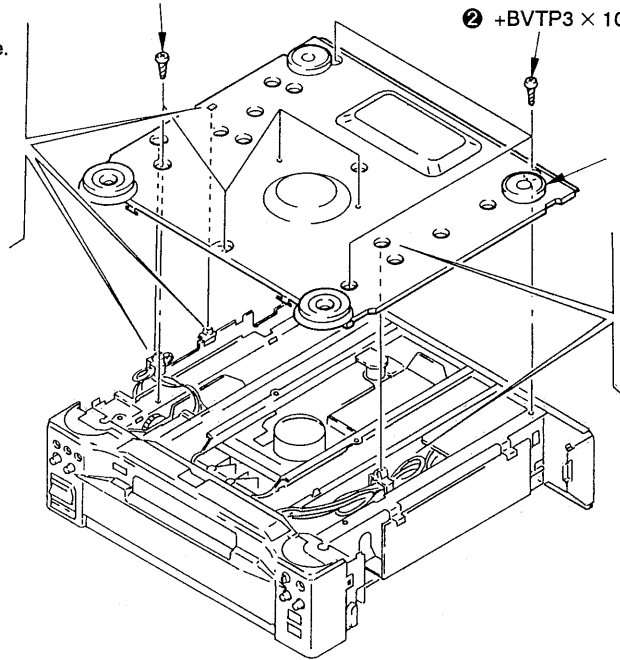
3 Push PCB holder and wire holdre inside.



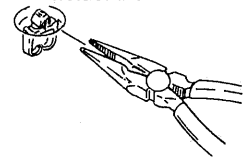
2 +BVTP3 × 10

2 +BVTP3 × 10

4 bottom plate assembly



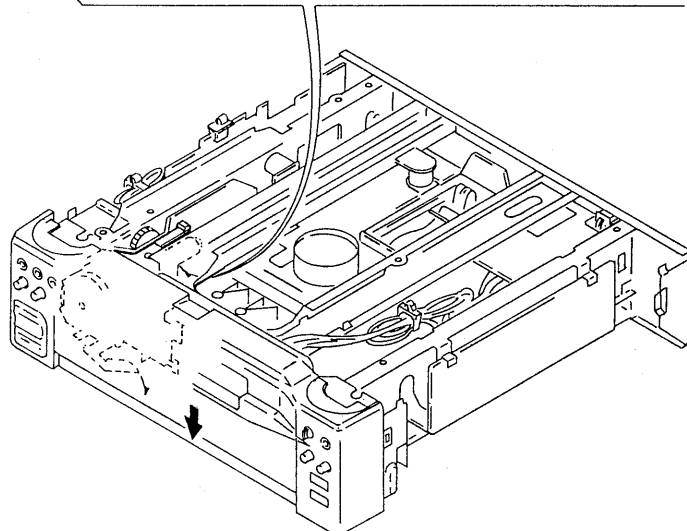
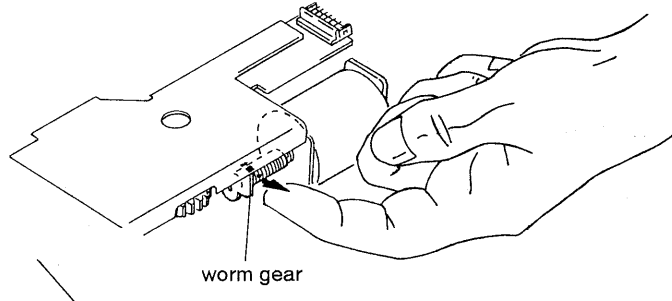
3 Push wire holder inside.



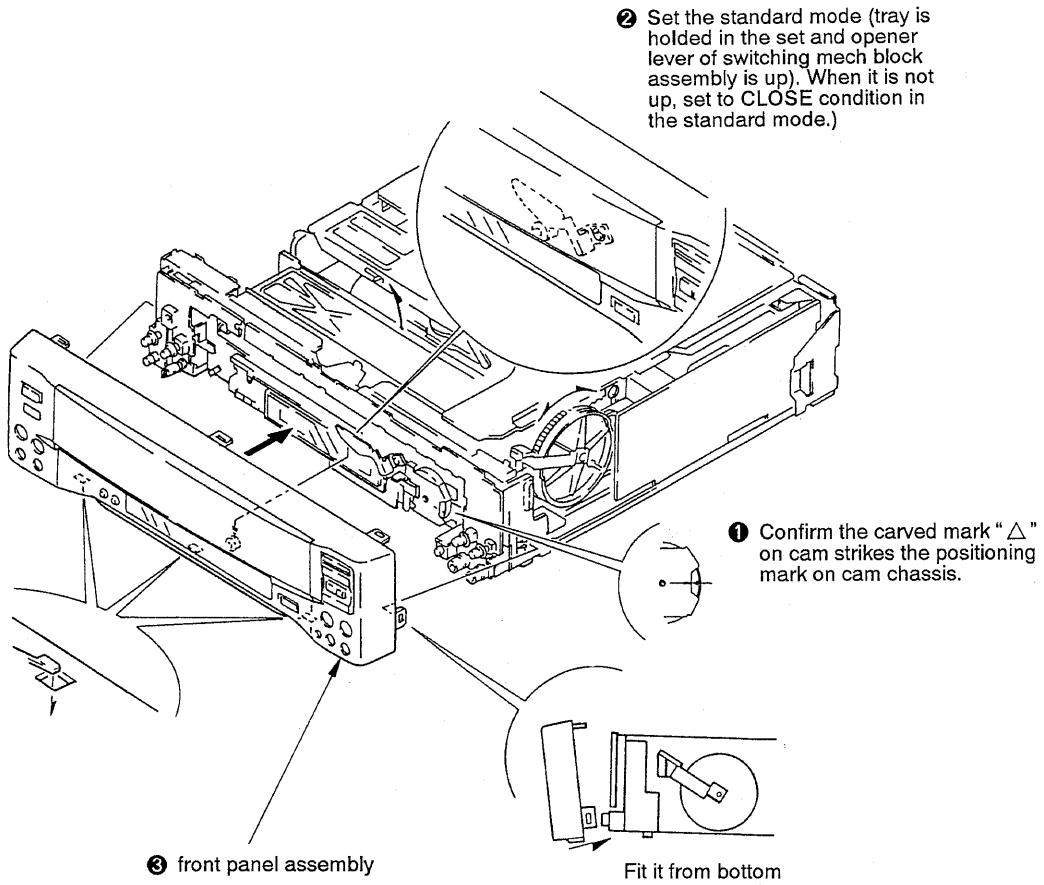
5 Turn the worm gear of switching mech block assembly (either direction) with hand inserted from the inside of main chassis in the arrow direction.
→ Opener lever moves.
Turn it so that the door finishes to go up.

Purpose : Release arm from front panel.

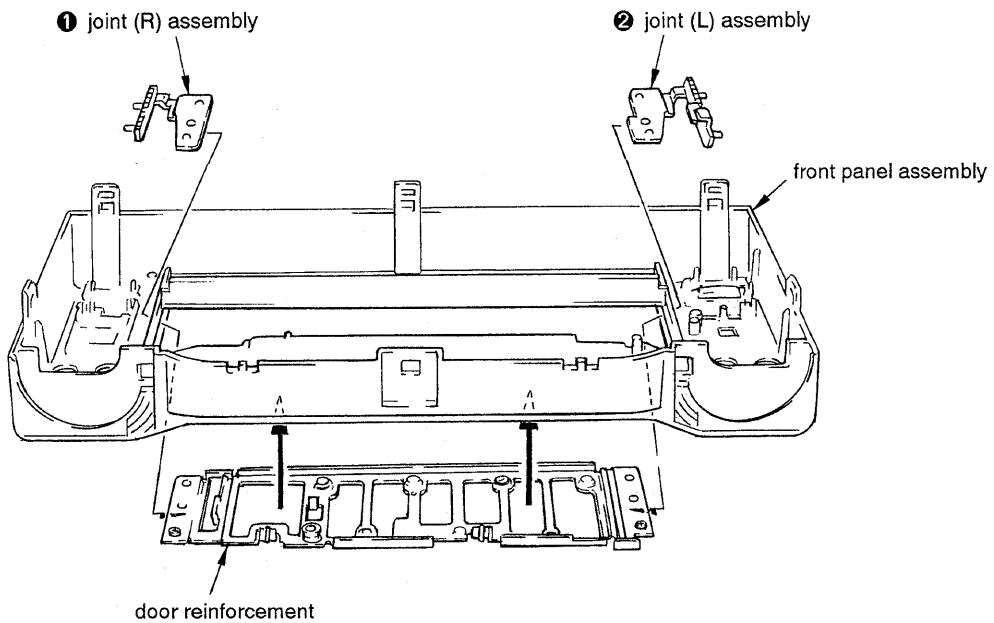
switching mech block assembly

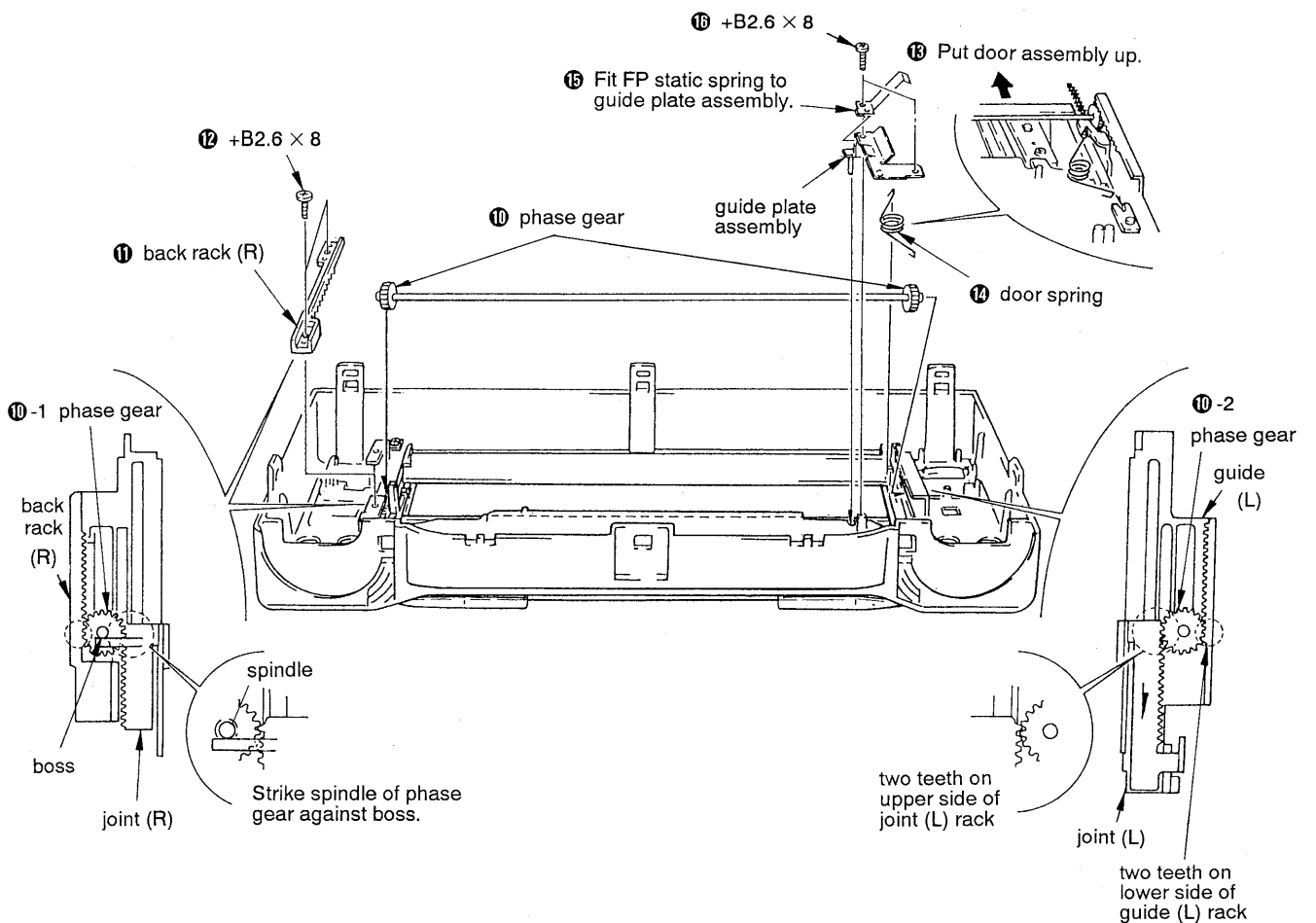
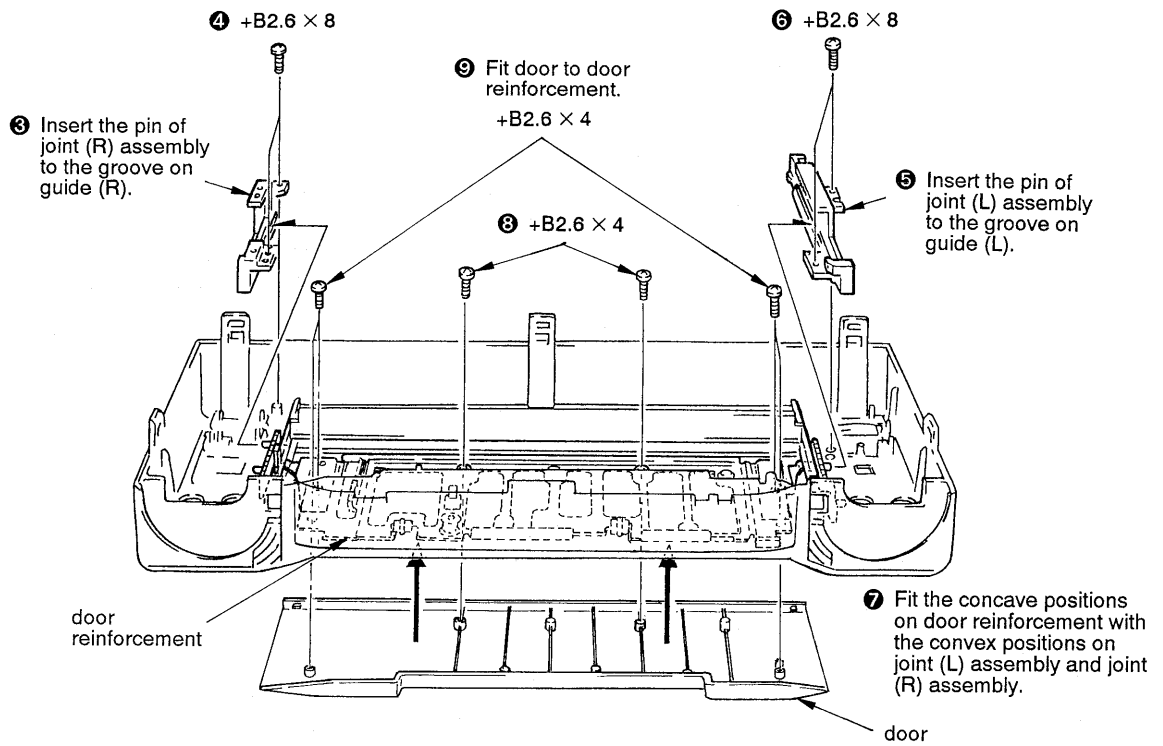


2-11. FRONT PANEL ASSEMBLY FITTING



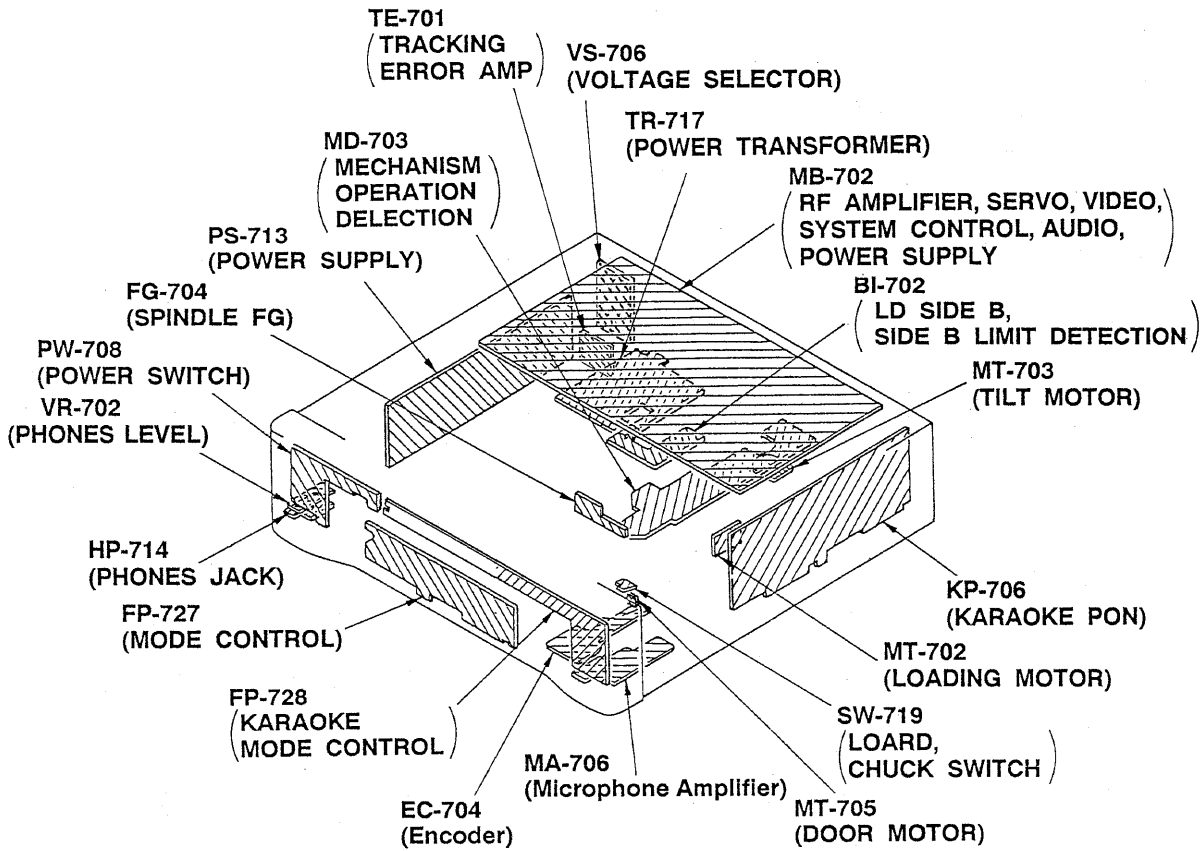
2-12. ASSEMBLING FRONT PANEL BLOCK ASSEMBLY



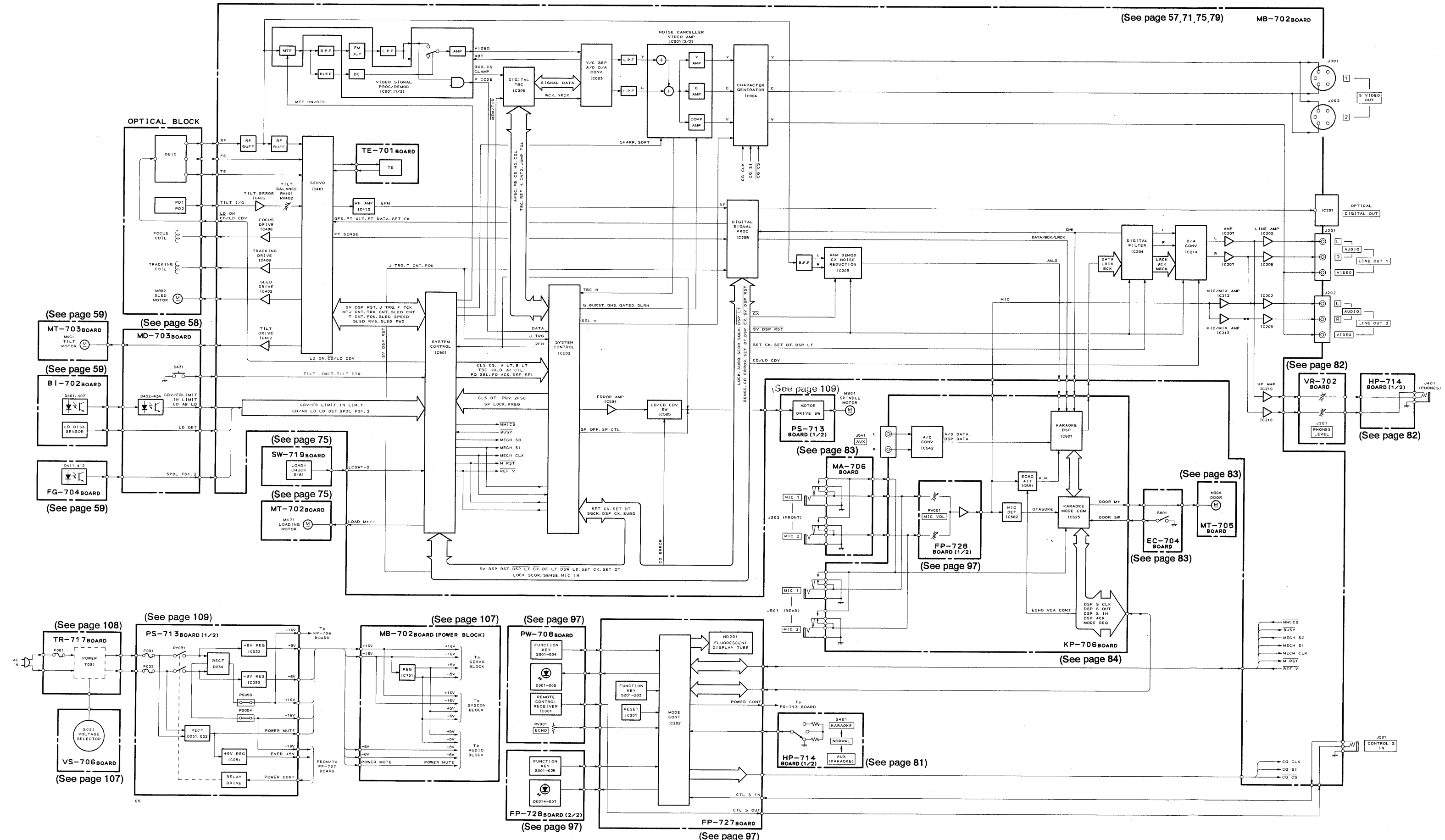


SECTION 3 DIAGRAMS

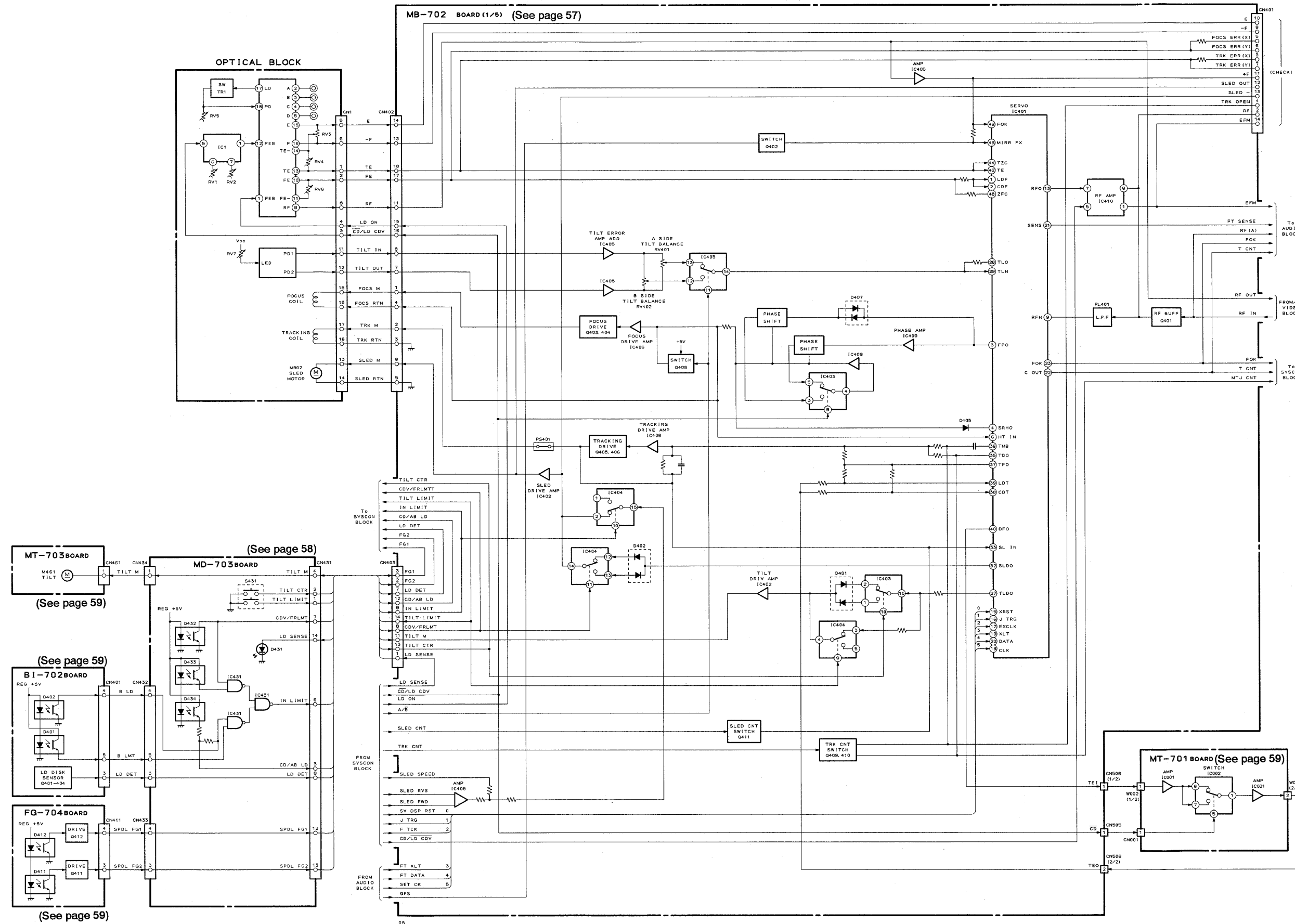
3-1. CIRCUIT BOARDS LOCATION



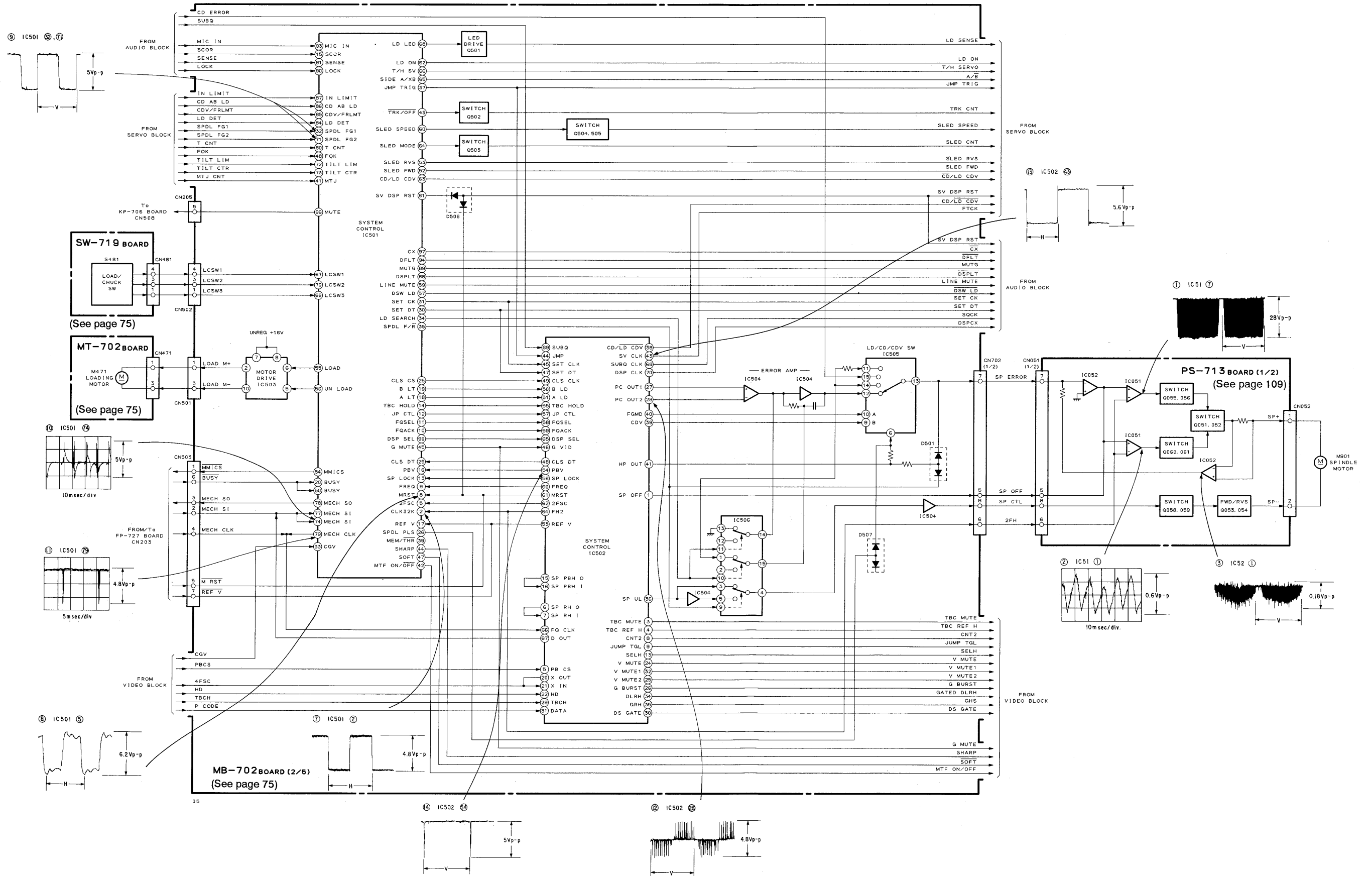
3-2. OVERALL BLOCK DIAGRAM



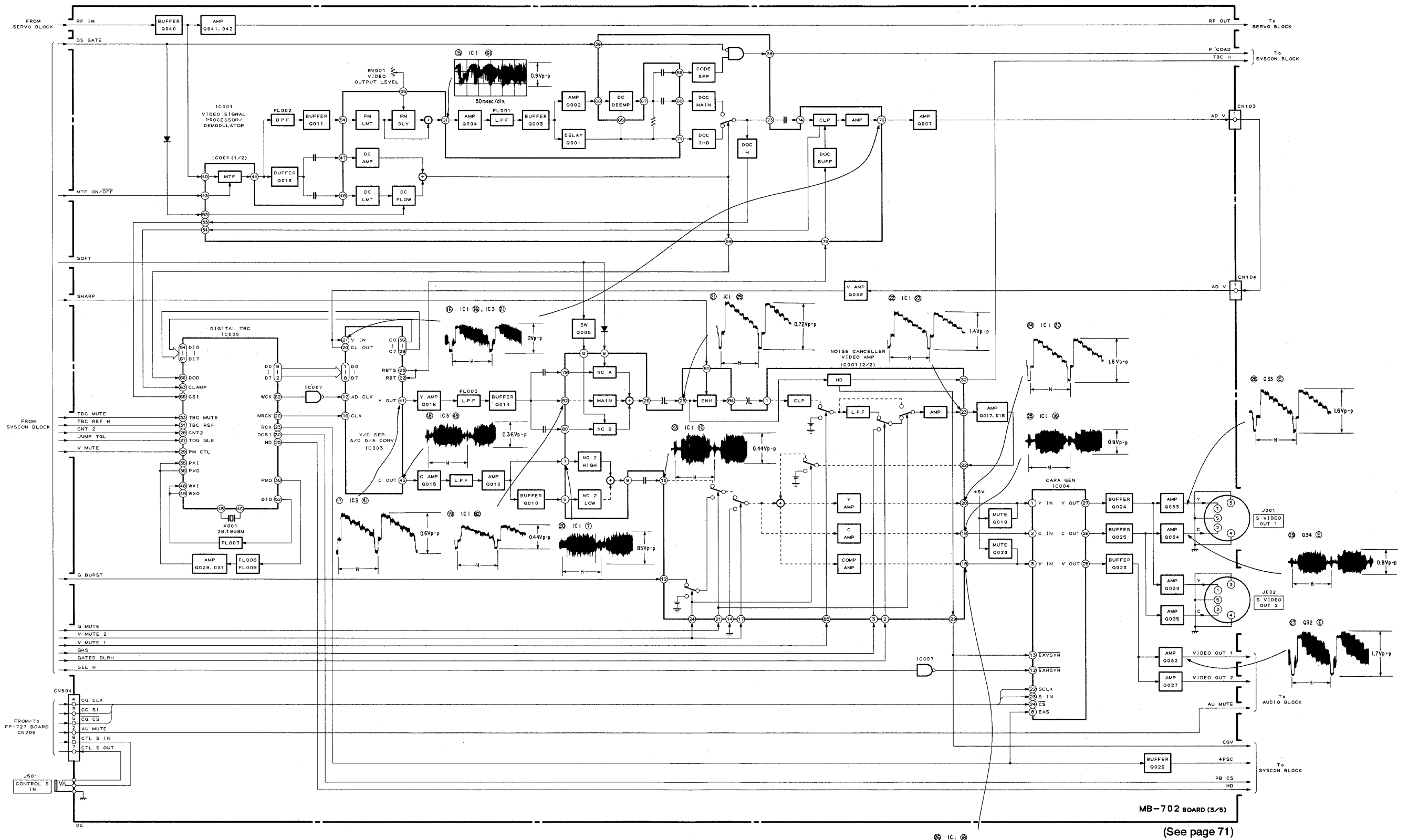
3-3. RF AMP, SERVO BLOCK DIAGRAM



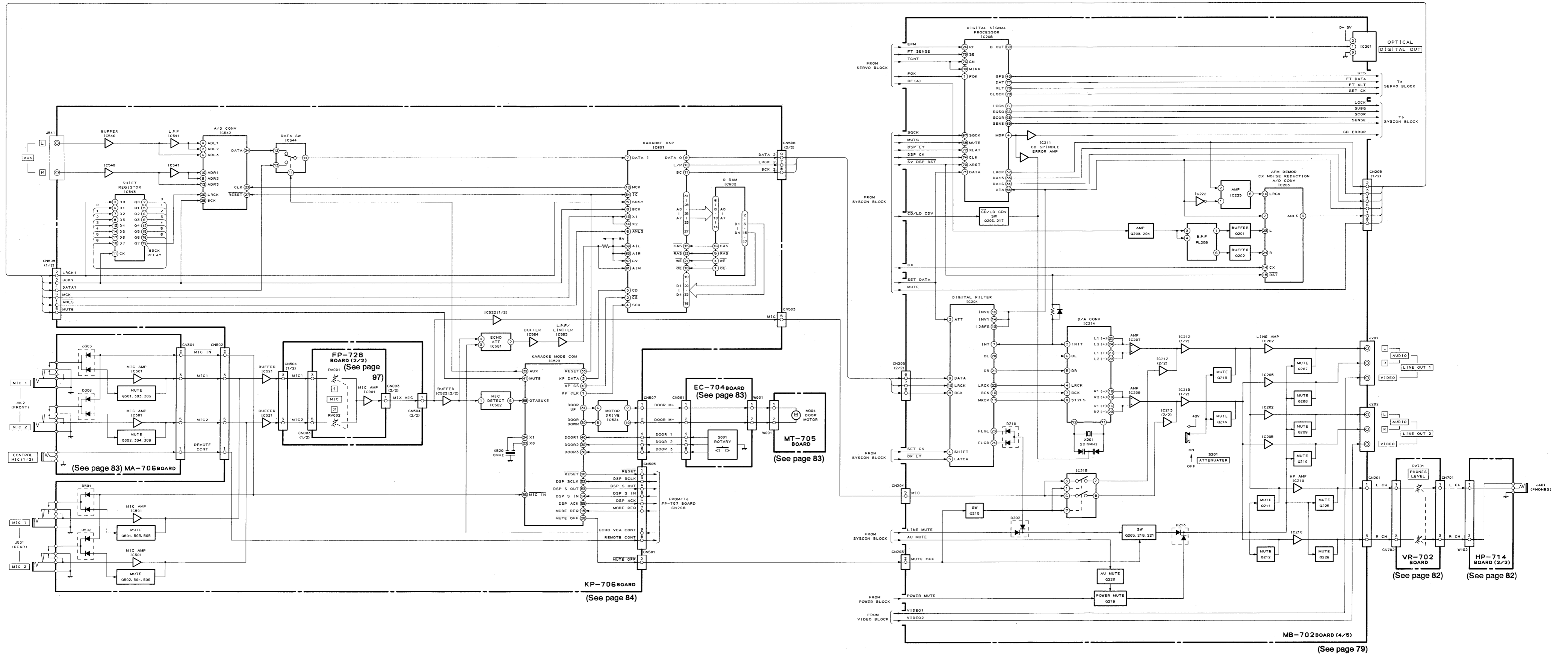
3-4. SYSTEM CONTROL BLOCK DIAGRAM



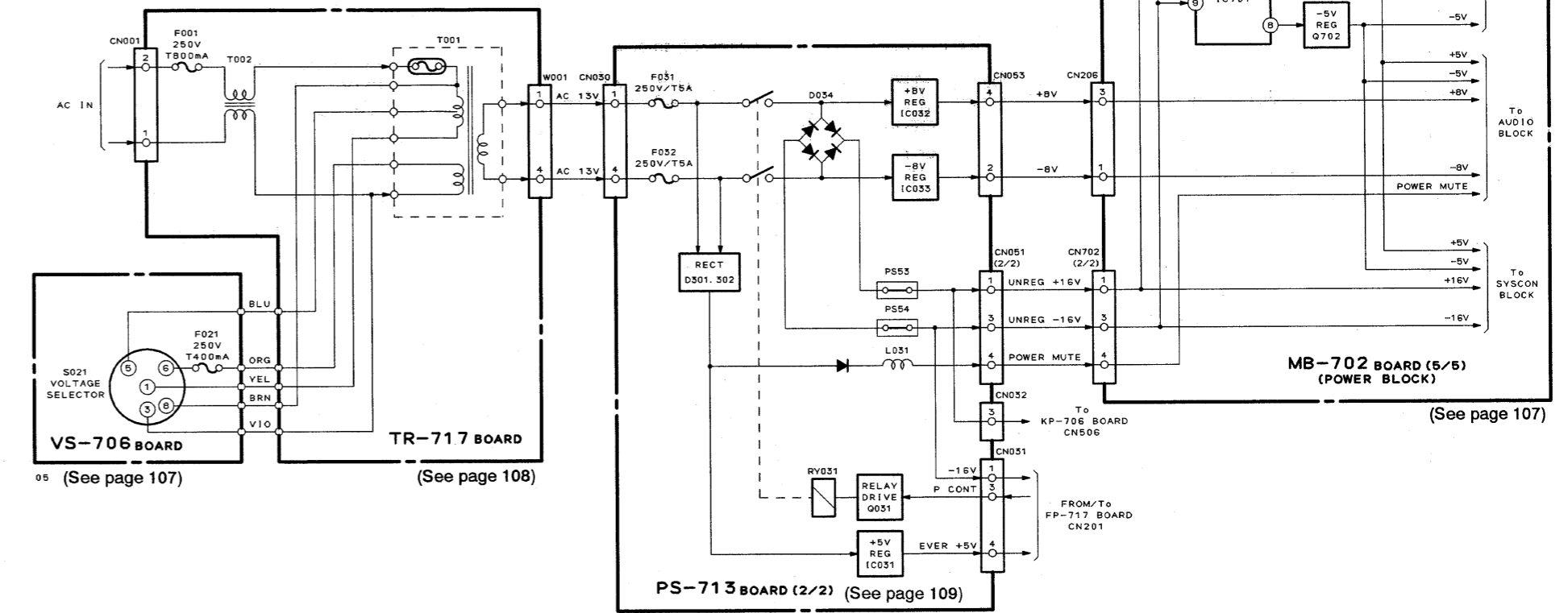
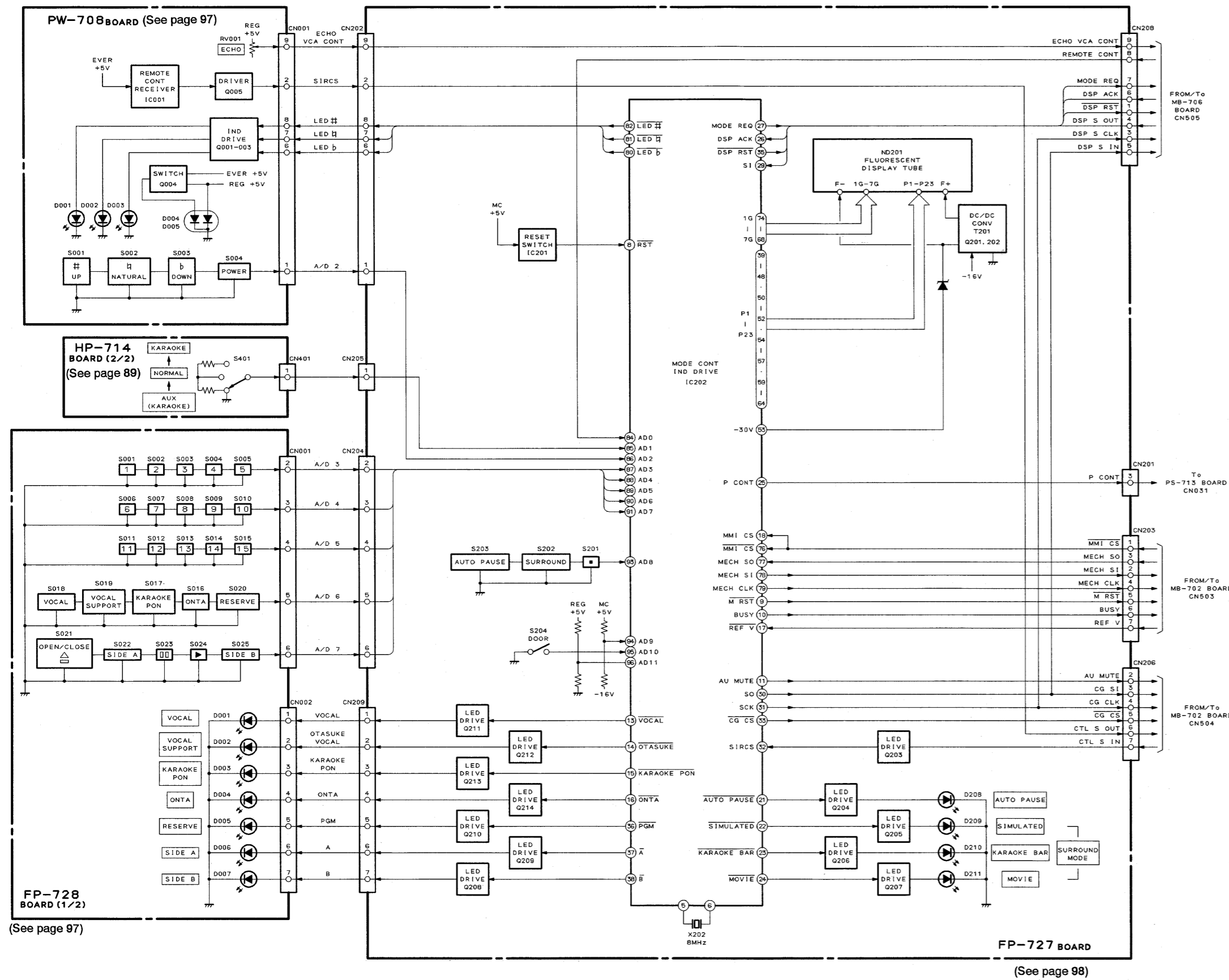
3-5. VIDEO BLOCK DIAGRAM



3-6. AUDIO BLOCK DIAGRAM

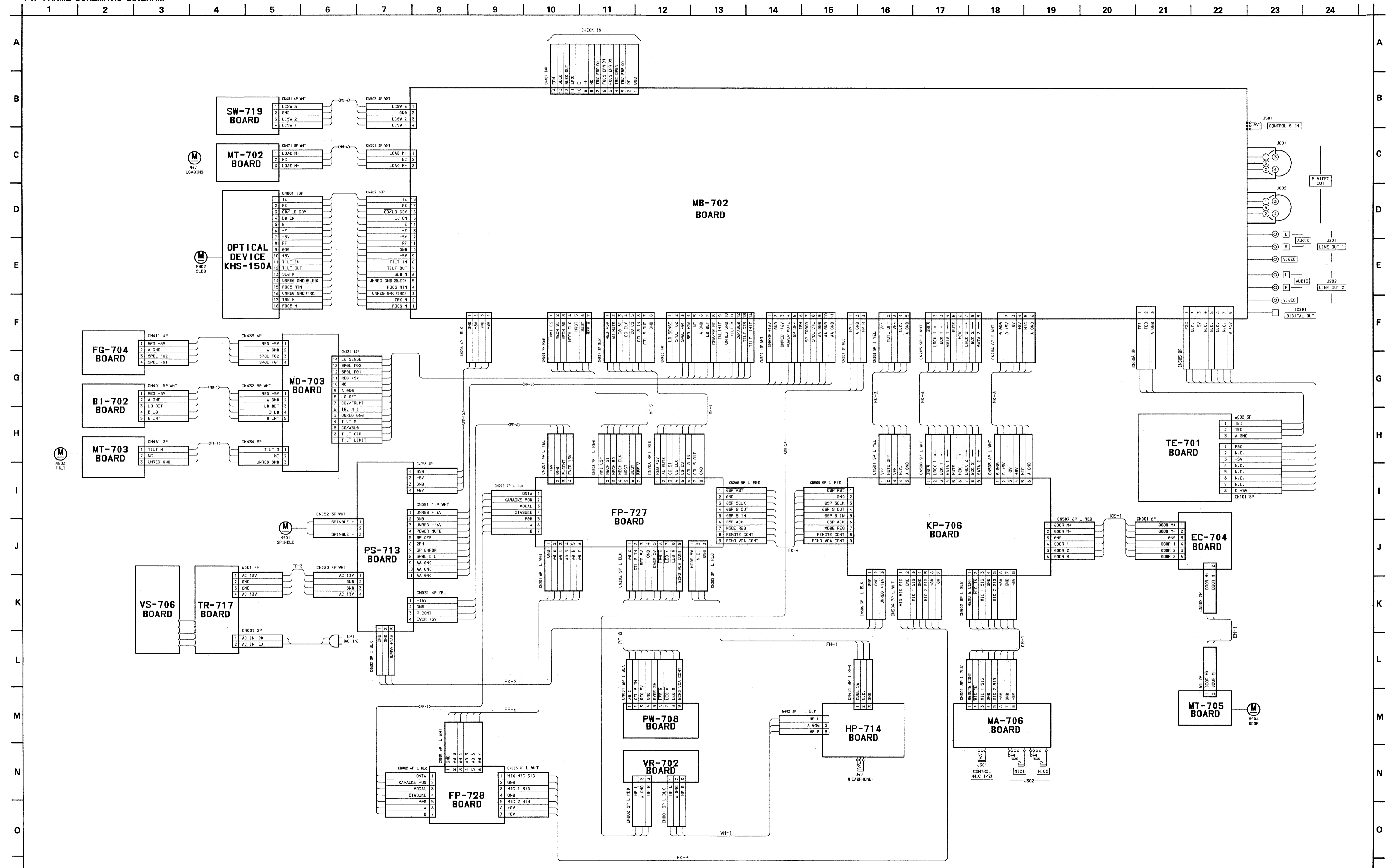


3-7. MODE CONTROL, POWER BLOCK DIAGRAMS



SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM

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:
- — indicates a lead wire mounted on the component side.
 - — indicates a lead wire mounted on the printed side.
 - — Through hole.
 - ▨ — Pattern from the side which enables seeing.
 - ▩ — Pattern of the rear side.*

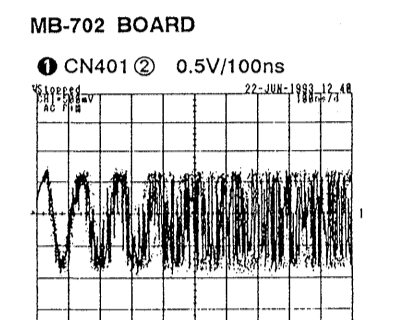
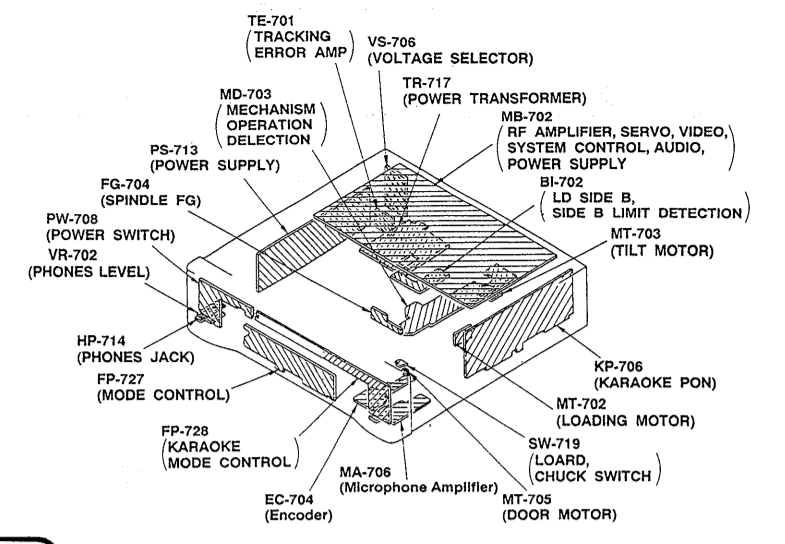
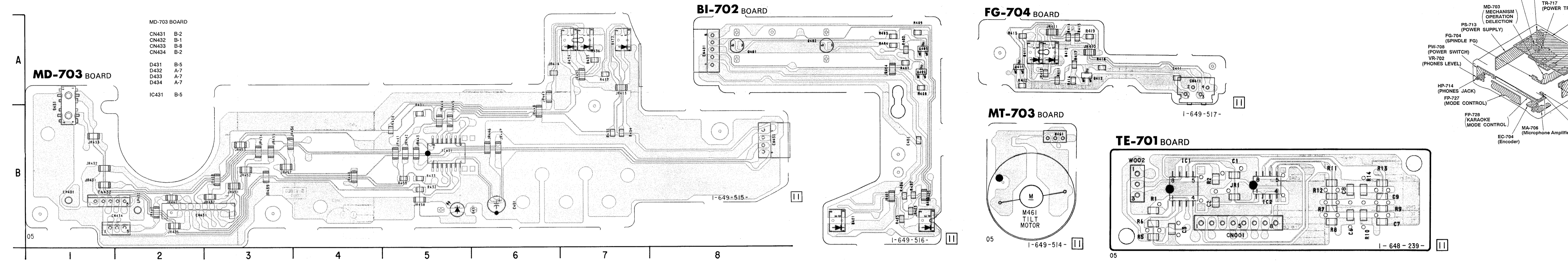
Caution:
 Pattern face side: Parts on the pattern face side seen from the (Conductor Side) pattern face are indicated.
 Parts face side: Parts on the parts face side seen from the (Component Side) parts face are indicated.

- 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/100, 50V or less are not indicated except for electrolytics and tantalums.
 - All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
 - \square : nonflammable resistor.
 - \square : fusible resistor.
 - \square : panel designation.
 - \triangle : internal component.
 - \square : adjustment for repair.*
 - —: B + Line.*
 - - - - : B - Line.*
 - Voltages are dc between measurement points and ground unless otherwise noted.*
 - Readings are taken with a color-bar signal playback.*
 - Readings are taken with a digital multimeter (DC10MΩ).*
 - Voltage variations may be noted due to normal production tolerances.
 - \Rightarrow : IN/OUT direction of B line (+, -,)*
 - \Rightarrow : Circled numbers refer to waveforms.*

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

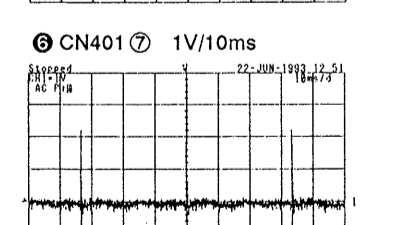
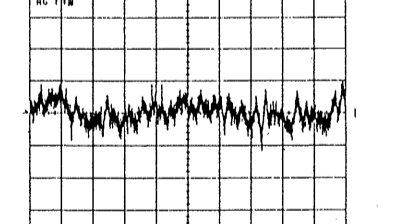
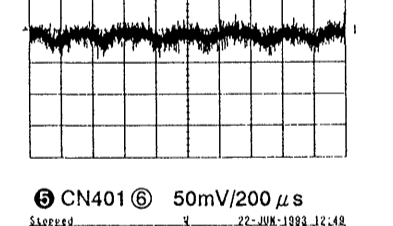
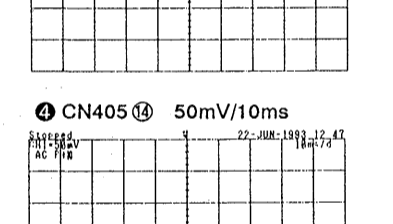
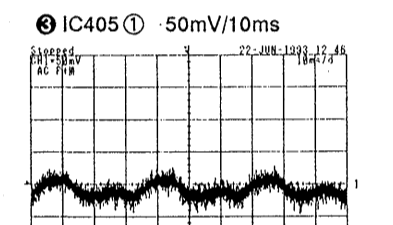
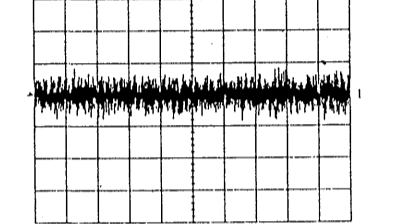
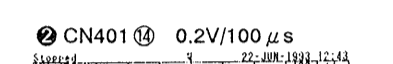
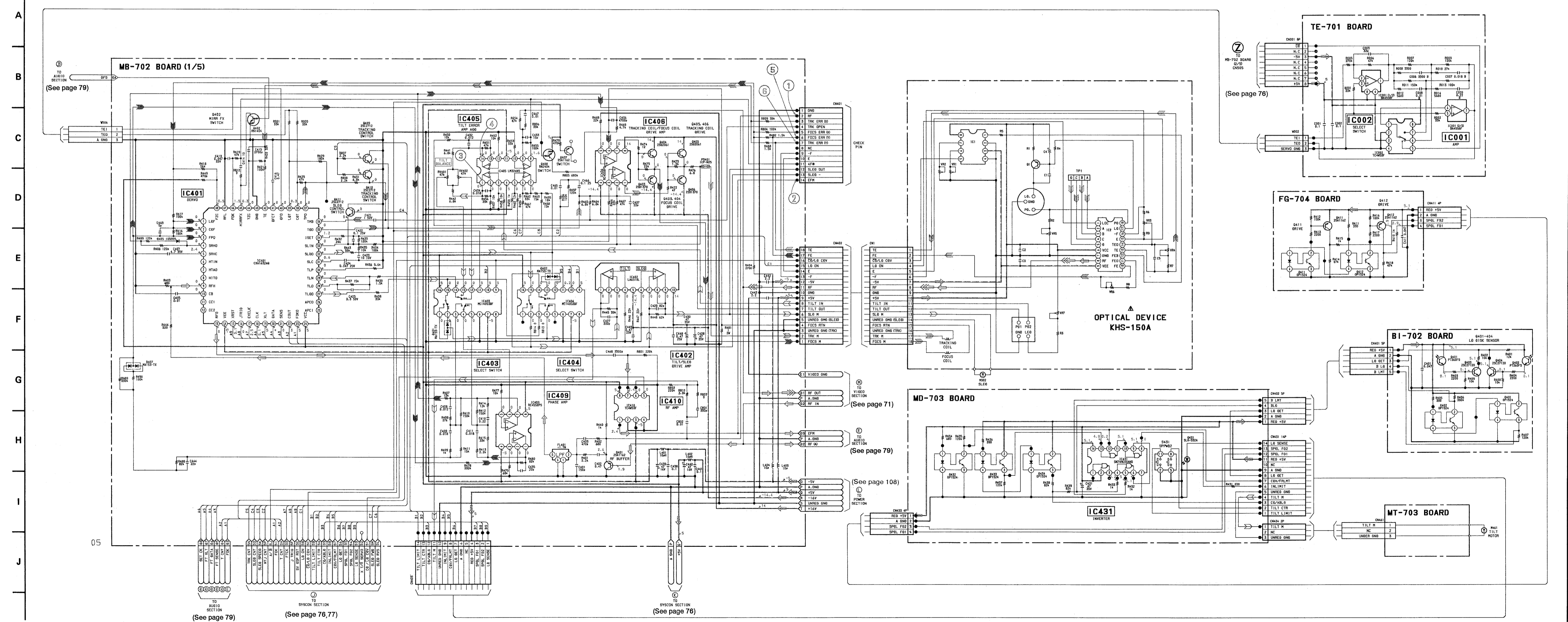
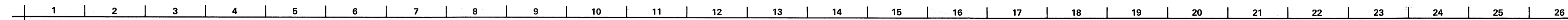
Note: The components identified by mark \triangle or dotted line with mark \triangle are critical for safety. Replace only with part number specified.

* : indicated by the color red.



MB-702 BOARD

CN103	D-16	IC505	G-8
CN104	F-16	IC506	F-20
CN201	B-27	IC701	G-16
CN203	C-27		
CN204	C-27	0001	C-16
CN205	C-27	0002	C-16
CN206	D-27	0003	D-16
CN401	B-21	0004	C-12
CN402	A-20	0005	B-17
CN403	B-24	0007	C-16
CN501	E-27	0010	B-15
CN502	D-27	0011	C-11
CN503	D-15	0012	B-15
CN504	B-15	0013	C-17
CN505	C-15	0014	C-15
CN506	C-15	0015	C-15
D002	B-16	0016	D-15
D003	A-16	0017	A-11
D004	C-18	0018	A-11
D201	F-24	0019	A-17
D202	F-24	0020	A-17
D203	E-25	0023	A-24
D205	A-25	0024	A-5
D206	A-28	0025	A-8
D207	E-25	0026	E-18
D208	D-24	0027	B-24
D209	E-17	0028	E-17
D210	F-1	0030	A-23
D213	D-4	0031	E-17
D401	C-23	0032	A-24
D402	C-23	0033	A-23
D405	B-7	0034	A-22
D407	E-8	0035	A-22
D501	F-8	0039	E-16
D502	A-19	0040	A-18
D503	G-21	0041	B-18
D504	A-18	0042	B-18
D506	D-7	0201	G-2
D507	F-21	0202	F-3
D703	G-17	0203	F-3
D704	G-17	0204	F-2
		0205	E-24
		0206	E-3
IC001	B-11	0208	E-3
IC003	E-13	0207	A-26
IC004	A-12	0209	A-26
IC005	E-11	0209	A-24
IC007	F-17	0210	A-25
IC201	A-21	0211	B-4
IC202	B-2	0212	C-4
IC203	G-24	0213	C-2
IC204	C-2	0214	C-3
IC205	B-3	0215	C-1
IC207	D-2	0217	C-3
IC208	E-4	0218	E-25
IC209	D-3	0219	D-4
IC210	B-24	0220	C-4
IC211	E-23	0221	E-3
IC212	C-2	0225	B-4
IC213	C-3	0226	B-4
IC214	E-2	0401	C-9
IC215	D-28	0403	A-19
IC220	E-27	0404	A-19
IC401	C-8	0407	C-8
IC402	B-22	0408	B-8
IC403	C-6	0409	D-7
IC404	C-23	0410	D-7
IC405	C-22	0411	C-20
IC406	B-8	0501	C-24
IC407	D-20	0502	E-7
IC409	C-22	0503	E-22
IC410	D-7	0504	D-6
IC501	E-6	0505	D-6
IC502	F-8	0701	F-17
IC503	A-19	0702	G-17
IC504	G-20		



	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB	↔	↔	↔	↔
SPINDLE PHASE SERVO				↔
SPINDLE SERVO (SPEED AND PHASE)				↔
TRACKING SERVO LD/CD/CDV				↔
SLIDE SERVO LD/CD				↔
FOCUS SERVO LD/CD				↔
SKREW SERVO LD TILT				↔

MB-702 BOARD (COMPONENT SIDE)



MB-702 BOARD (CONDUCTOR SIDE)



MB-702 (VIDEO AUDIO, SYSTEM CONTROL) PRINTED WIRING BOARD

— Ref. No.: MB-702 Board; 1,000 series —

MB-702 BOARD (COMPONENT SIDE)

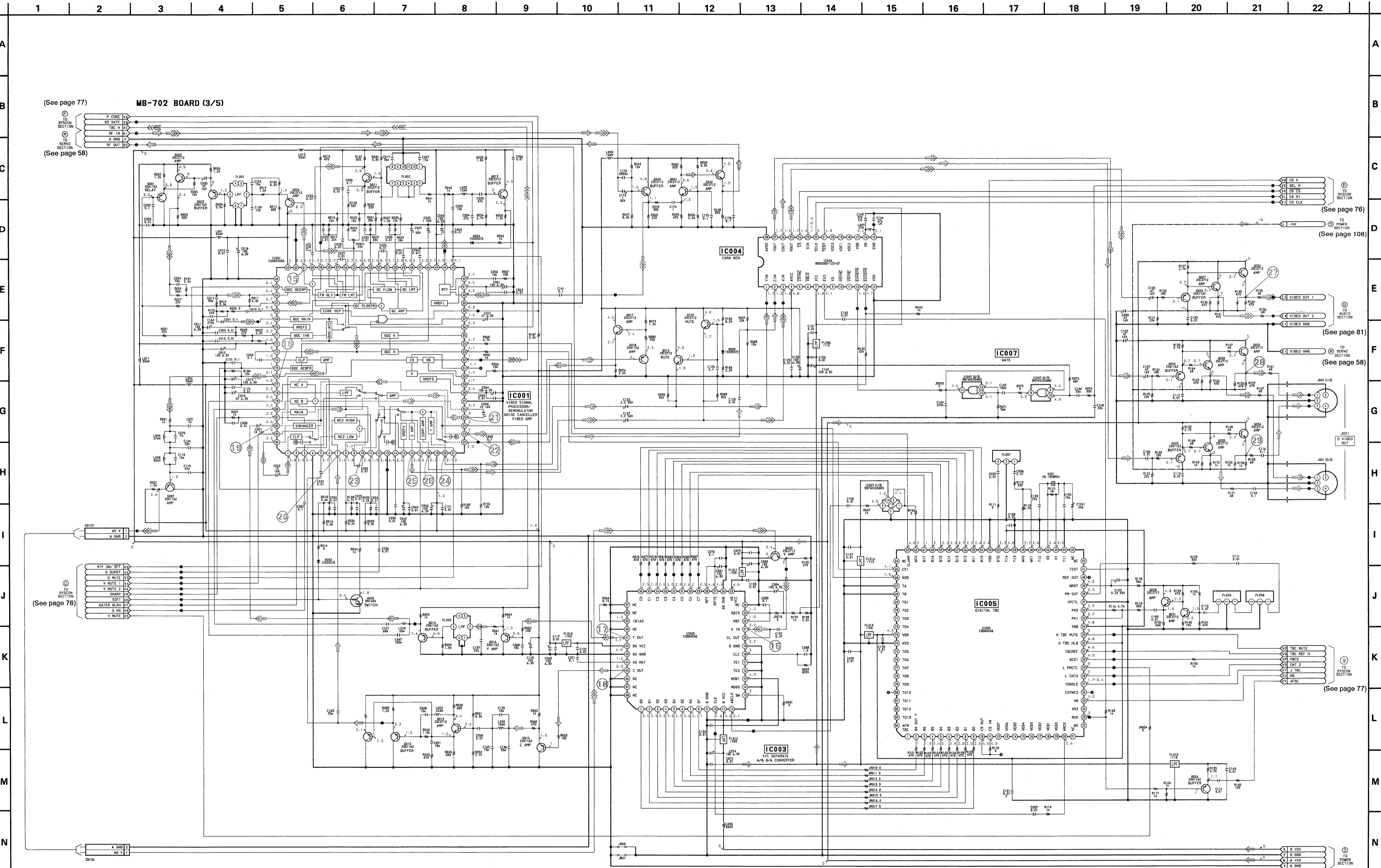


MB-702 BOARD (CONDUCTOR SIDE)



MB-702 (VIDEO) SCHEMATIC DIAGRAM

— Ref. No.: MB-702 Board; 1,000 series —



(See page 77) MB-702 BOARD (3/5)

(See page 58)

(See page 76)

(See page 78)

(See page 81)

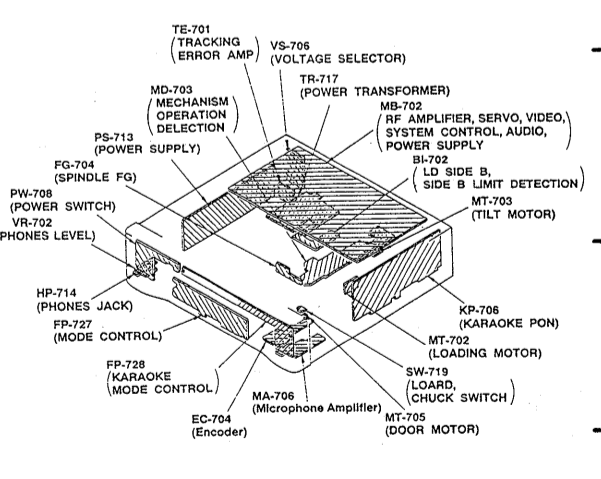
(See page 58)

(See page 77)

(See page 108)

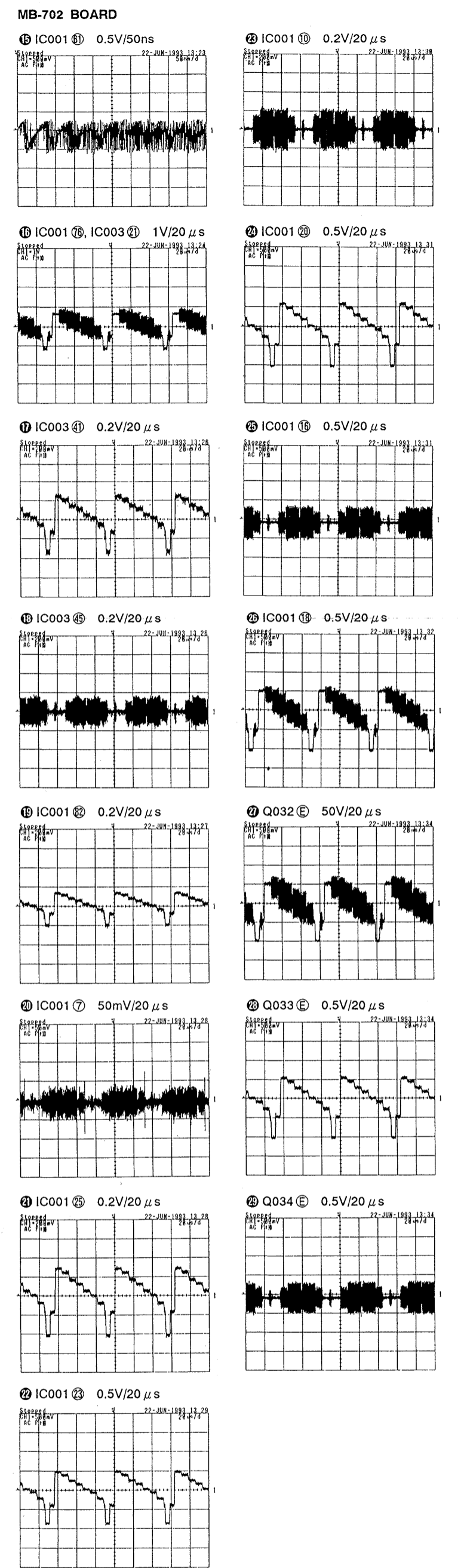
MB-702 BOARD

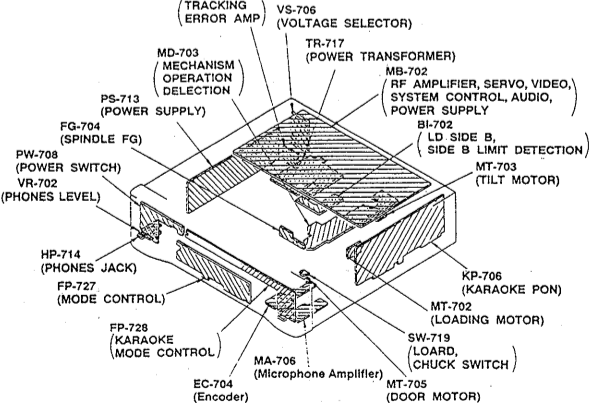
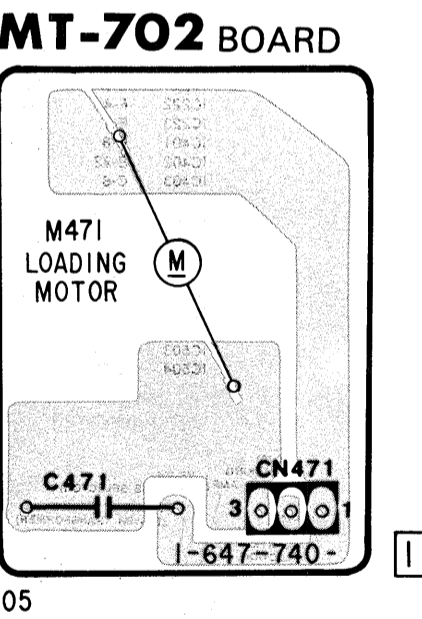
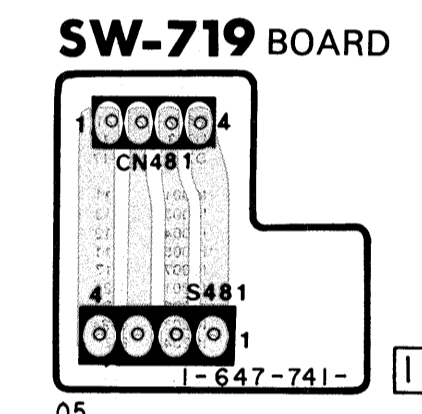
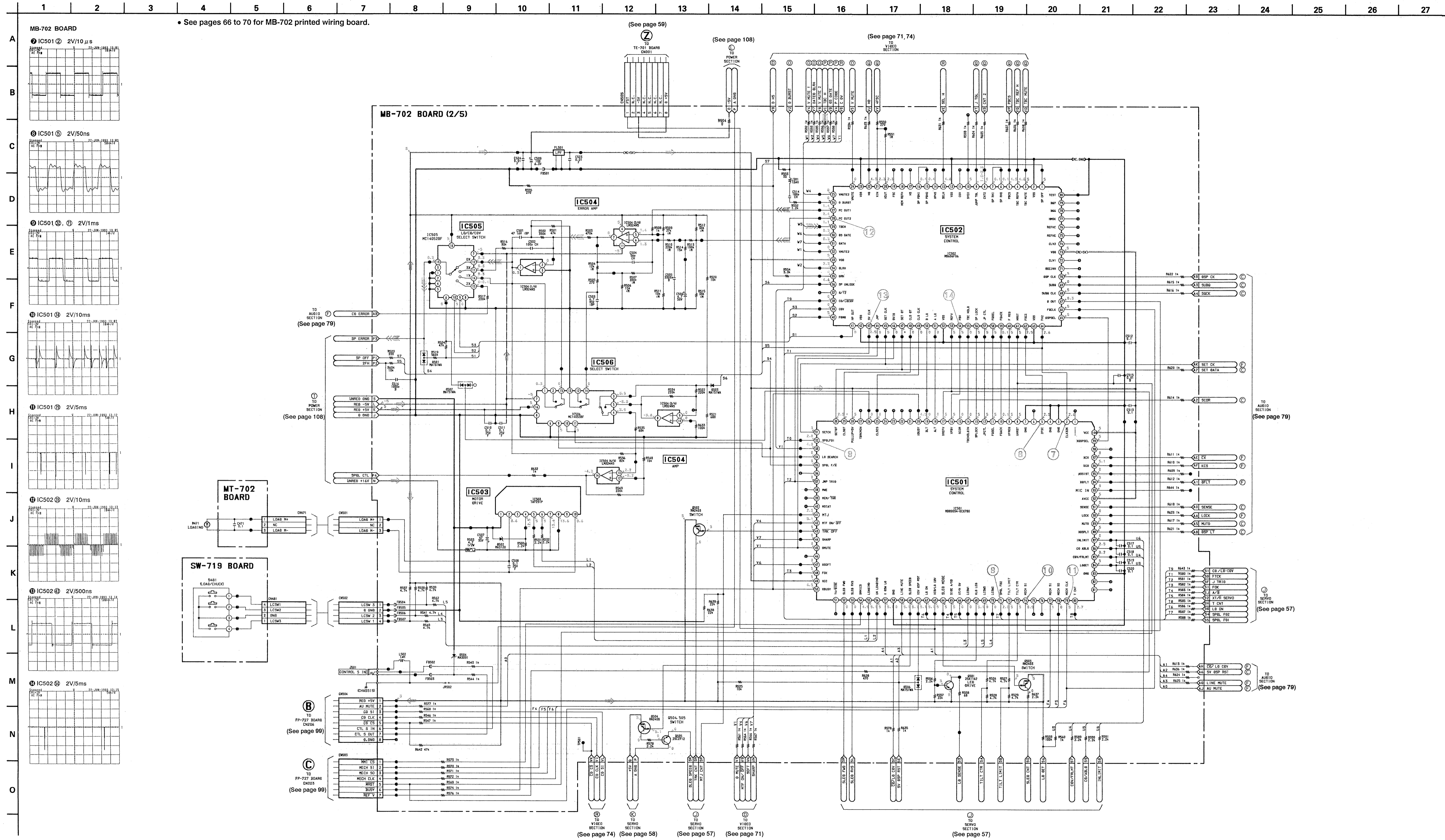
CN103	D-18	IC505	G-9
CN104	F-18	IC506	F-20
CN201	B-27	IC701	G-16
CN203	C-27	Q001	C-16
CN204	C-27	Q002	C-16
CN206	D-27	Q003	D-18
CN401	B-21	Q018	C-12
CN402	A-20	Q005	B-17
CN403	B-24	Q007	C-16
CN501	E-27	Q010	B-15
CN502	D-27	Q011	C-11
CN503	D-15	Q012	B-15
CN504	B-15	Q013	C-17
CN702	G-15	Q014	C-15
D002	B-16	Q015	C-15
D003	A-16	Q016	D-15
D004	C-18	Q018	A-11
D011	F-24	Q019	A-17
D022	E-24	Q020	A-17
D023	E-25	Q023	A-24
D027	E-25	Q026	E-18
D028	B-24	Q028	B-24
D029	D-24	Q028	E-17
D210	F-11	Q030	A-23
D213	D-4	Q031	E-17
D401	C-23	Q032	A-24
D402	C-23	Q033	A-23
D405	B-7	Q034	A-22
D407	E-8	Q035	A-22
D501	F-8	Q039	E-18
D502	A-19	Q040	A-18
D503	G-21	Q041	B-18
D504	A-18	Q042	B-18
D508	D-7	Q201	G-2
D507	F-21	Q202	F-3
D703	G-17	Q203	F-3
D704	G-17	Q204	F-2
IC001	B-11	Q205	E-24
IC003	E-13	Q207	A-28
IC004	A-12	Q208	A-26
IC005	E-11	Q209	A-24
IC007	F-17	Q210	A-25
IC201	A-21	Q211	B-4
IC203	B-2	Q212	C-2
IC204	F-2	Q214	C-3
IC205	B-3	Q215	C-1
IC207	D-2	Q217	E-3
IC208	E-4	Q218	E-25
IC209	D-3	Q219	D-4
IC210	B-24	Q220	C-4
IC211	E-23	Q221	E-3
IC212	C-2	Q225	B-4
IC213	C-3	Q226	B-4
IC214	E-2	Q401	C-9
IC215	D-26	Q403	A-19
IC220	D-27	Q404	A-19
IC222	F-4	Q405	B-19
IC223	F-4	Q406	A-19
IC401	C-8	Q407	C-8
IC402	B-22	Q408	B-8
IC403	C-6	Q409	D-7
IC404	C-23	Q410	C-24
IC405	C-22	Q411	C-20
IC406	B-8	Q501	C-24
IC407	D-20	Q502	E-27
IC409	C-22	Q503	E-22
IC410	D-7	Q504	D-6
IC501	E-6	Q505	D-6
IC502	F-6	Q701	F-17
IC503	A-19	Q702	G-17
IC504	G-20		



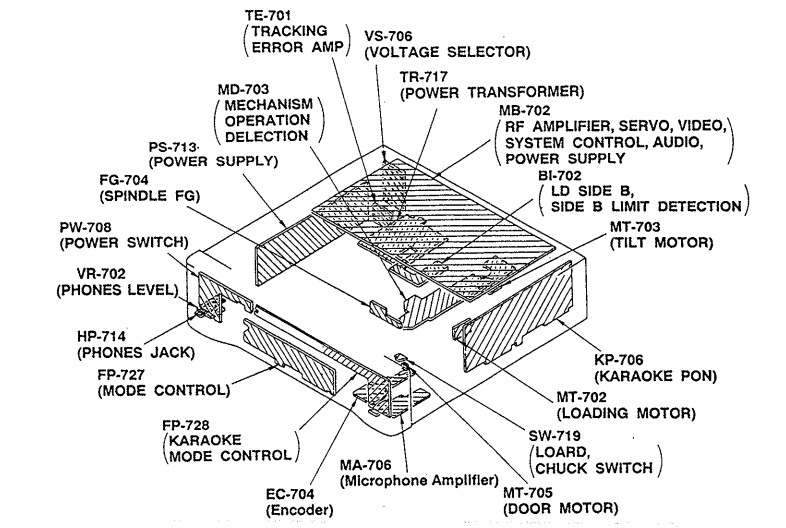
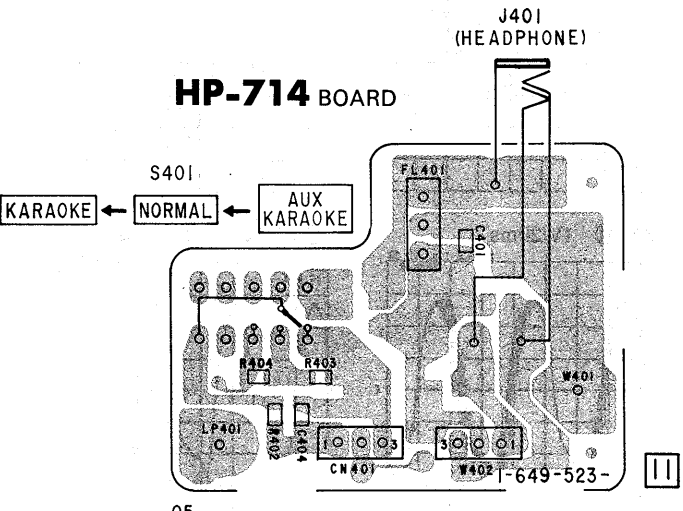
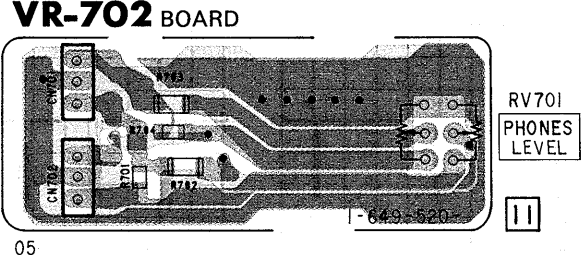
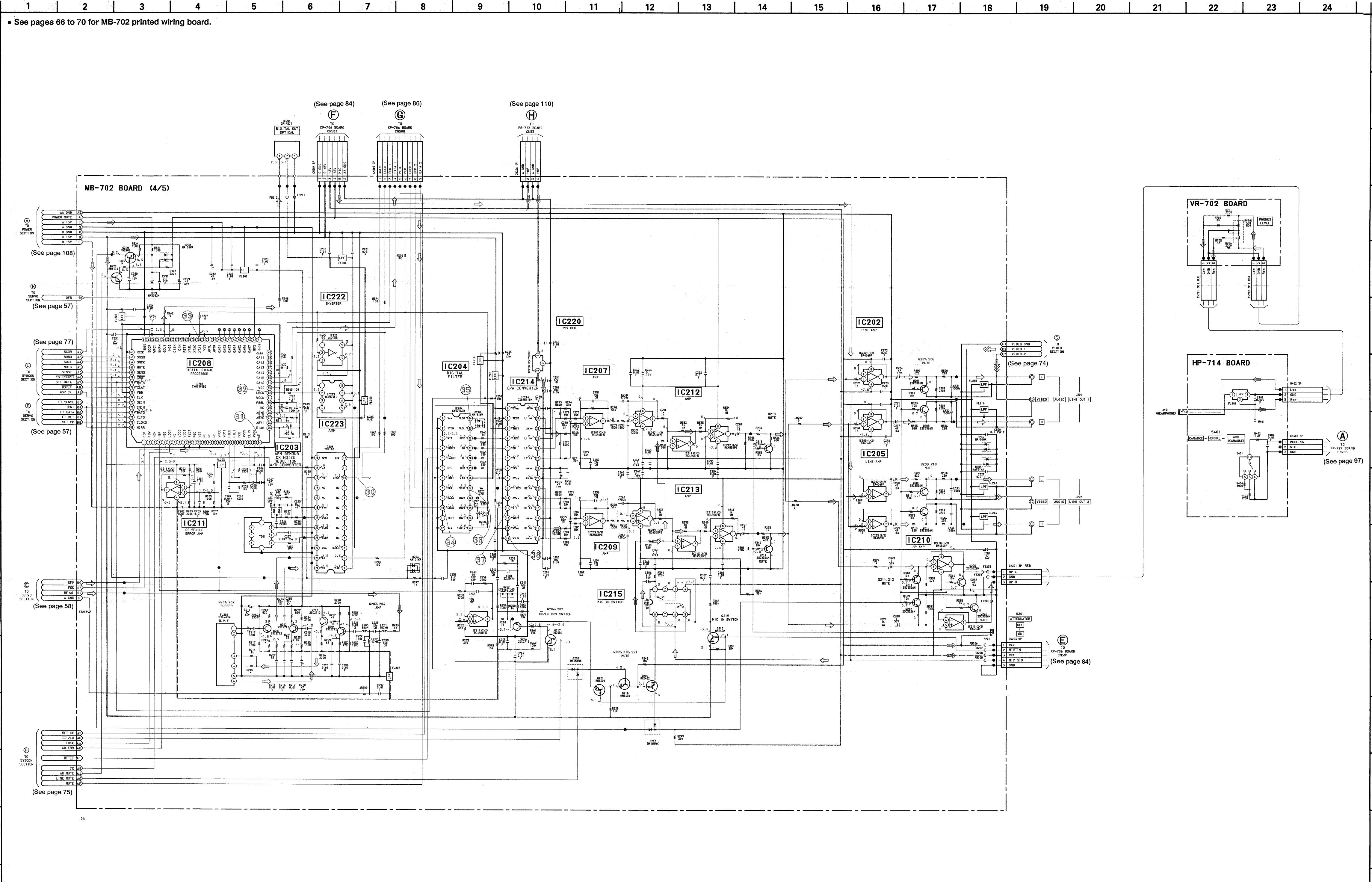
	VIDEO SIGNAL			AUDIO SIGNAL
PB	CHROMA	Y	Y/CHROMA	
	→	→	→	→

SPINDLE PHASE SERVO	→
SPINDLE SERVO (SPEED AND PHASE)	→
TRACKING SERVO LD/CD/CDV	→
SLIDE SERVO LD/CD	→
FOCUS SERVO LD/CD	→
SKREW SERVO LD TILT	→



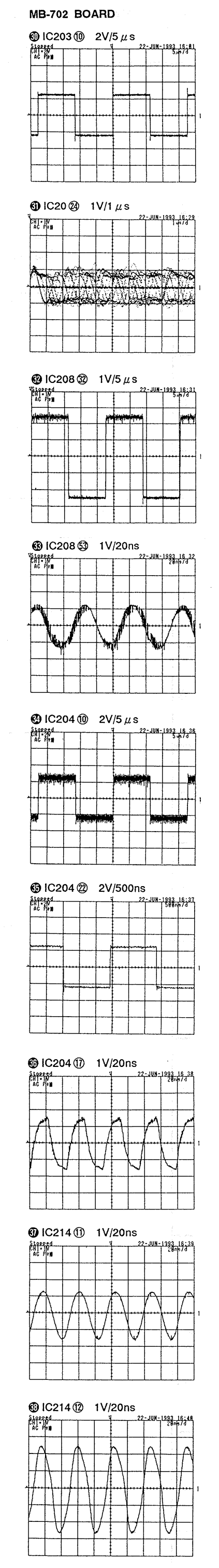


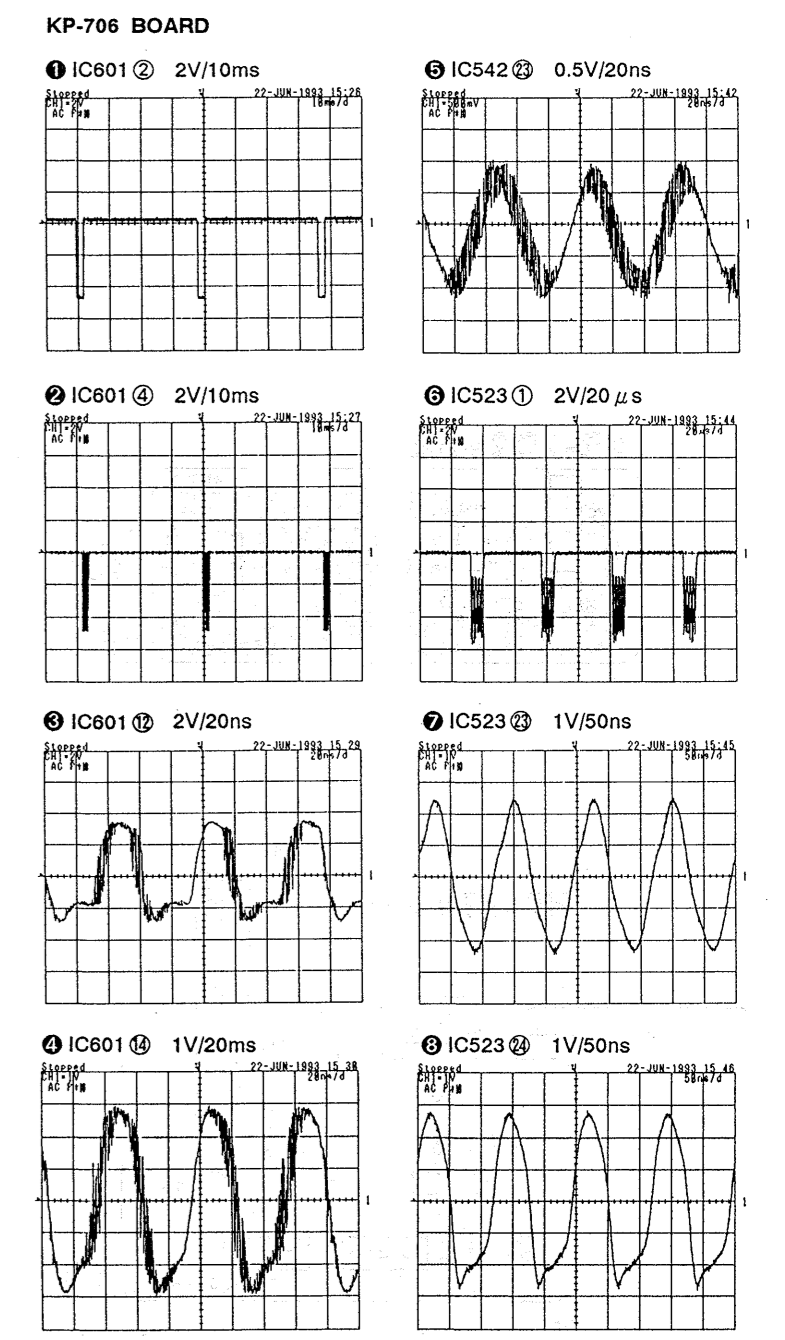
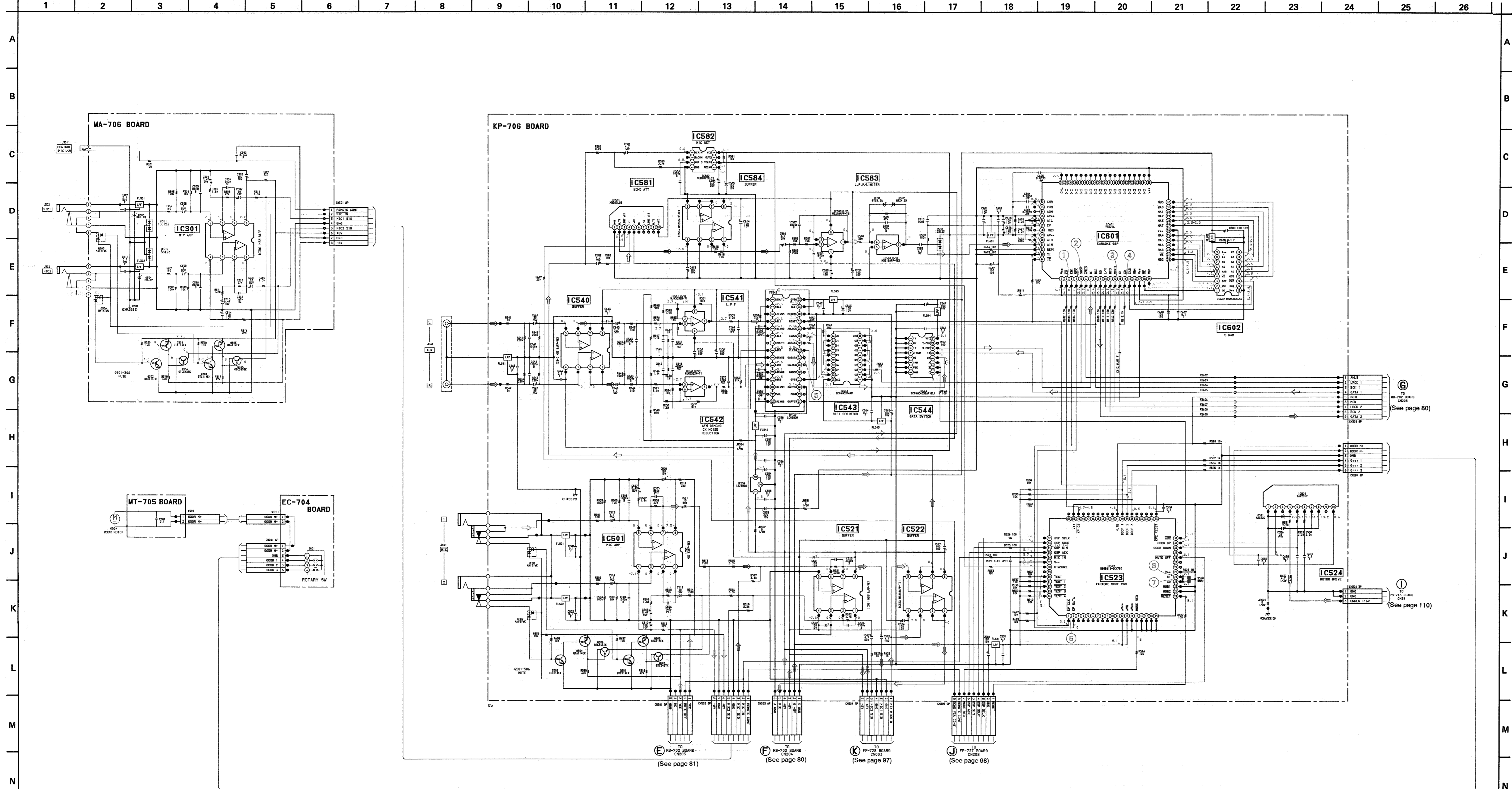
SPINDLE PHASE SERVO	➡➡➡
SPINDLE SERVO (SPEED AND PHASE)	➡➡➡
TRACKING SERVO LD/CD/CDV	➡➡➡
SLIDE SERVO LD/CD	➡➡
FOCUS SERVO LD/CD	➡➡
SKEW SERVO LD TILT	➡➡



PB	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
	⇨	⇨	⇨	⇨

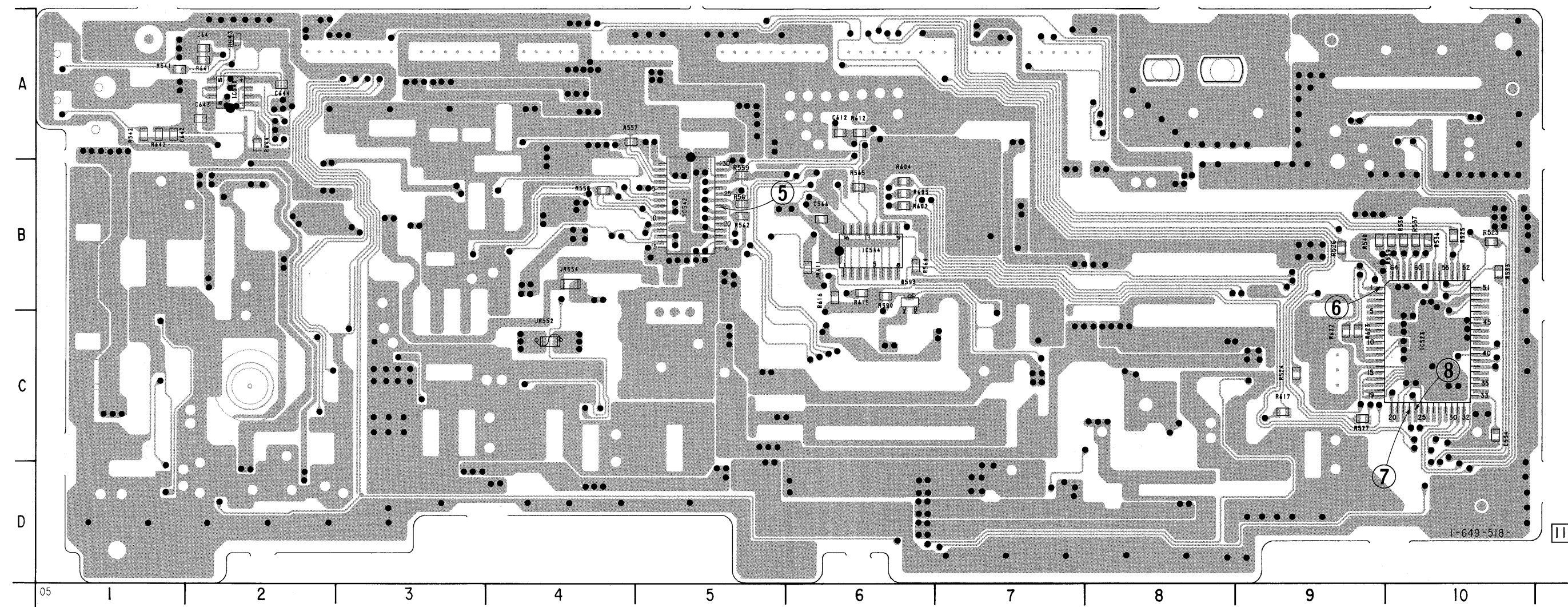
• See pages 66 to 70 for MB-702 printed wiring board.



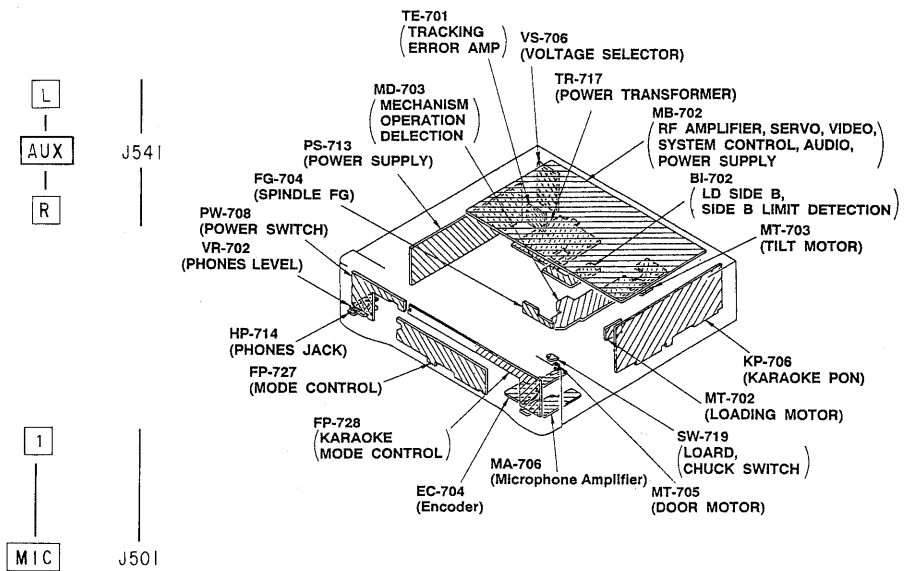
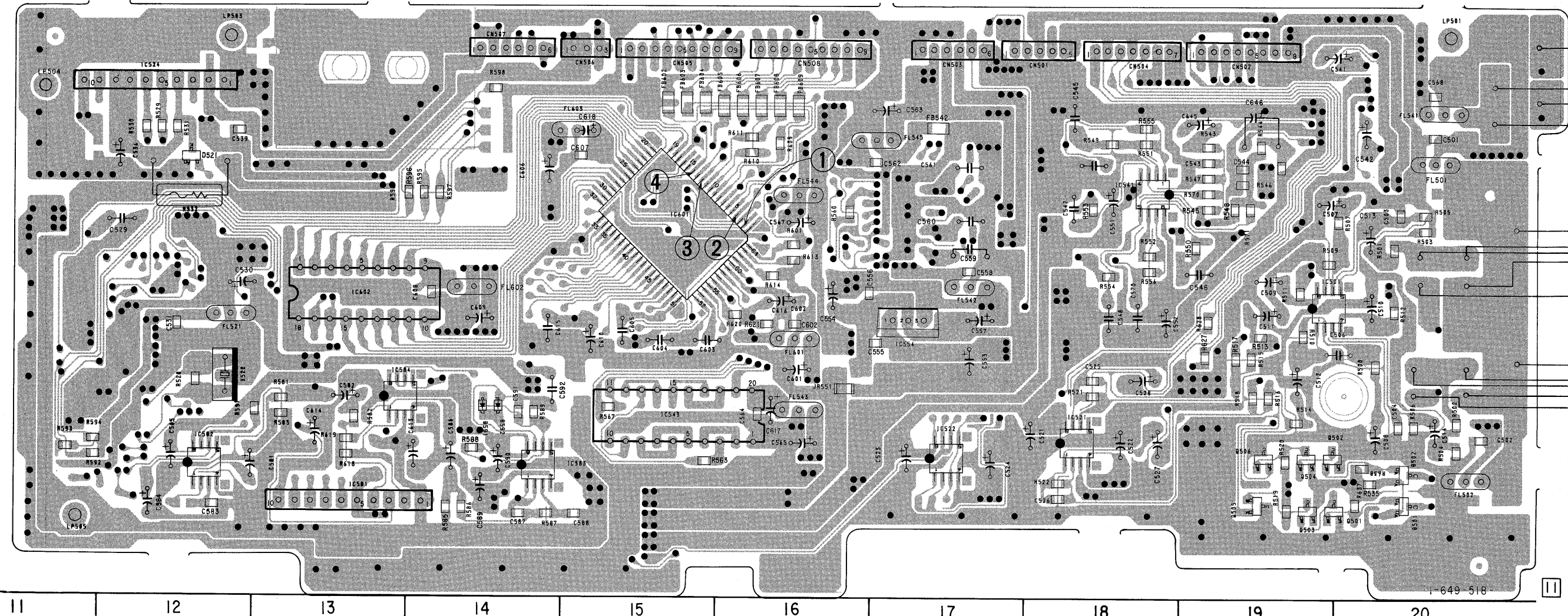


PB	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
	⇐	⇨	⇨⇨	⇨

KP-706 BOARD (COMPONENT SIDE)



KP-706 BOARD (CONDUCTOR SIDE)



KP-706 BOARD

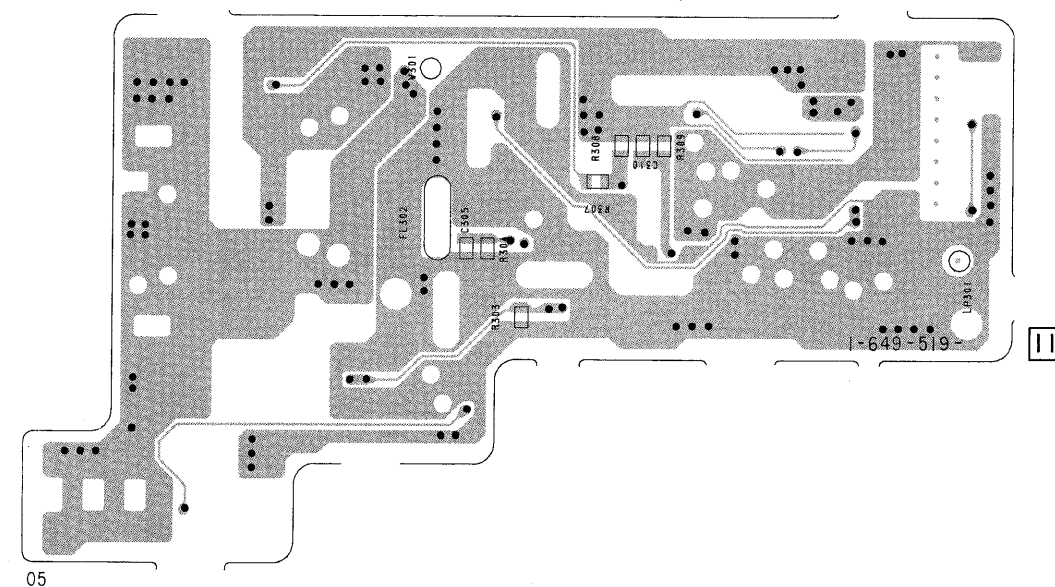
- CN501 A-18
- CN502 A-19
- CN503 A-17
- CN504 A-18
- CN505 A-18
- CN506 A-15
- CN507 A-14
- CN508 A-16

- D501 D-20
- D502 D-20
- D521 A-12
- D591 C-14
- D592 C-14
- D593 B-6

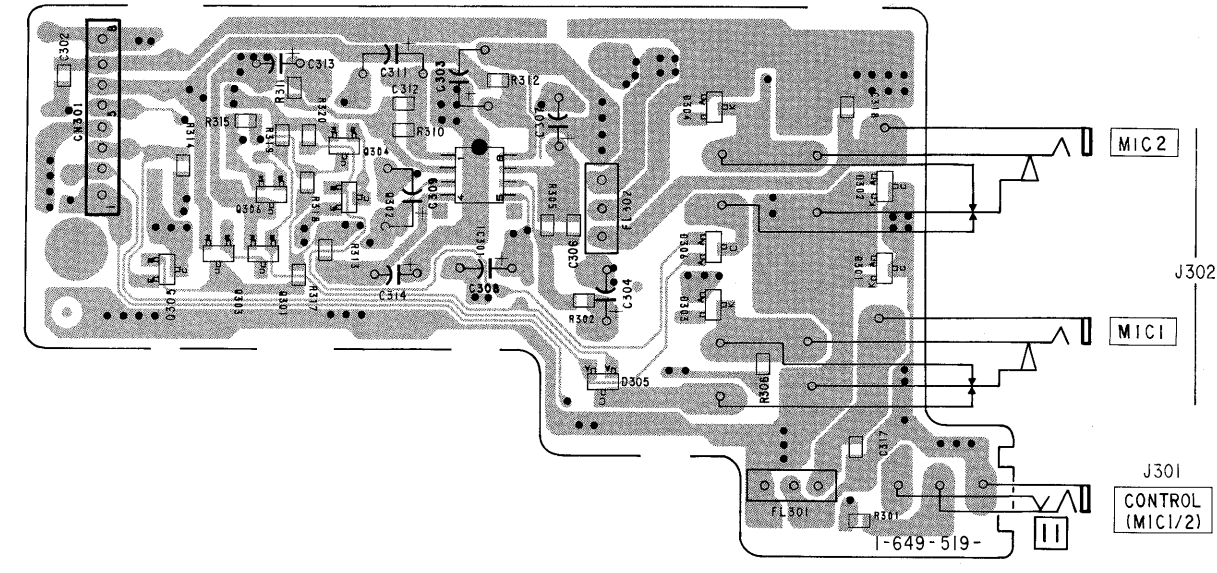
- IC501 B-19
- IC521 C-18
- IC522 C-17
- IC523 C-10
- IC524 A-12
- IC540 A-2
- IC541 B-18
- IC542 B-5
- IC543 C-15
- IC544 B-6
- IC554 C-17
- IC581 D-13
- IC582 C-12
- IC583 C-14
- IC584 C-13
- IC601 B-15
- IC602 B-13

- Q501 D-20
- Q502 C-20
- Q503 D-19
- Q504 C-19
- Q505 D-19
- Q506 C-19

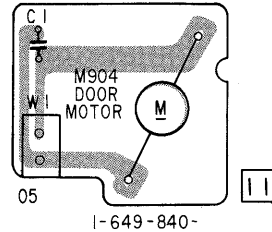
MA-706 BOARD (COMPONENT SIDE)



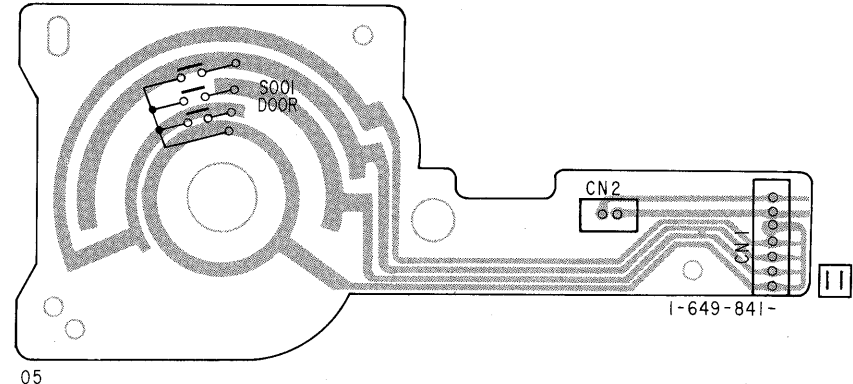
MA-706 BOARD (CONDUCTOR SIDE)

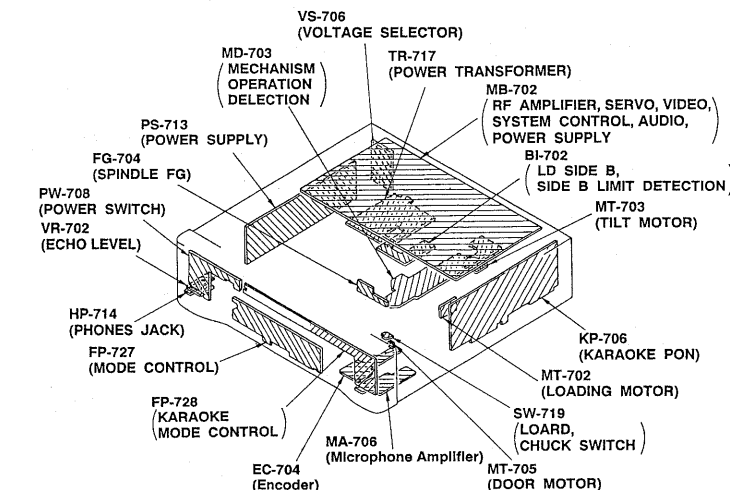


MT-705 BOARD

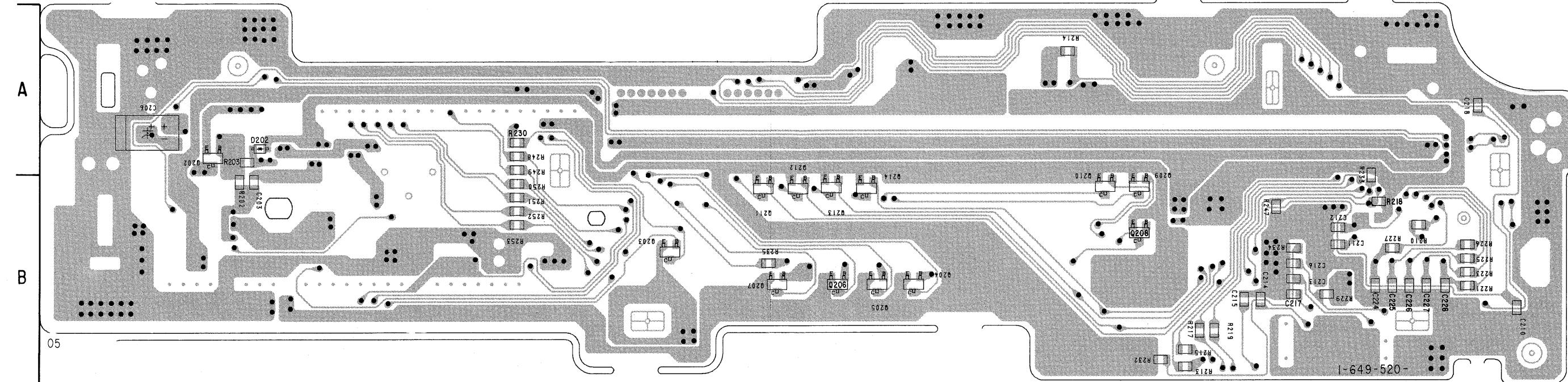


EC-704 BOARD

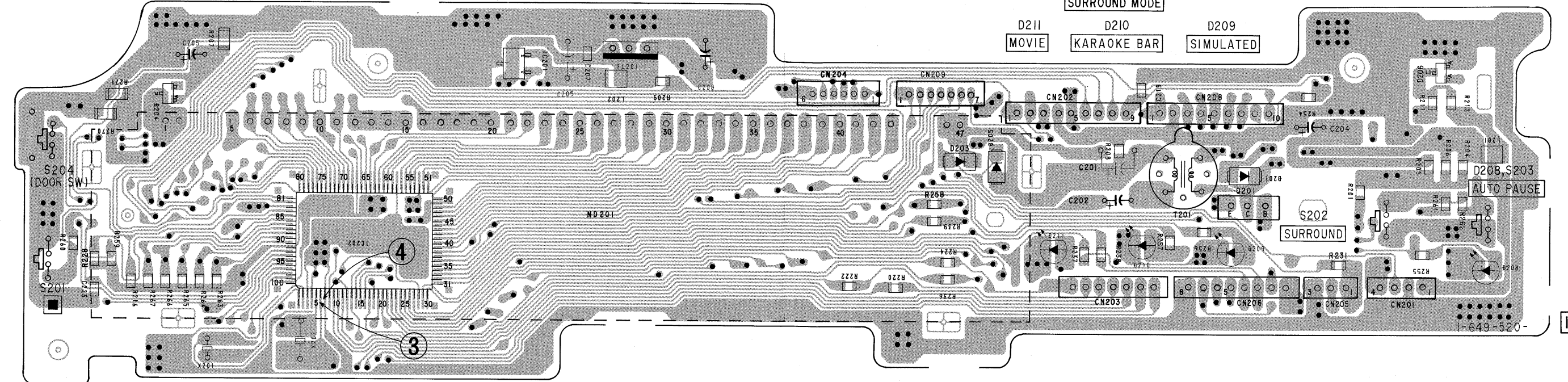




FP-727 BOARD (COMPONENT SIDE)



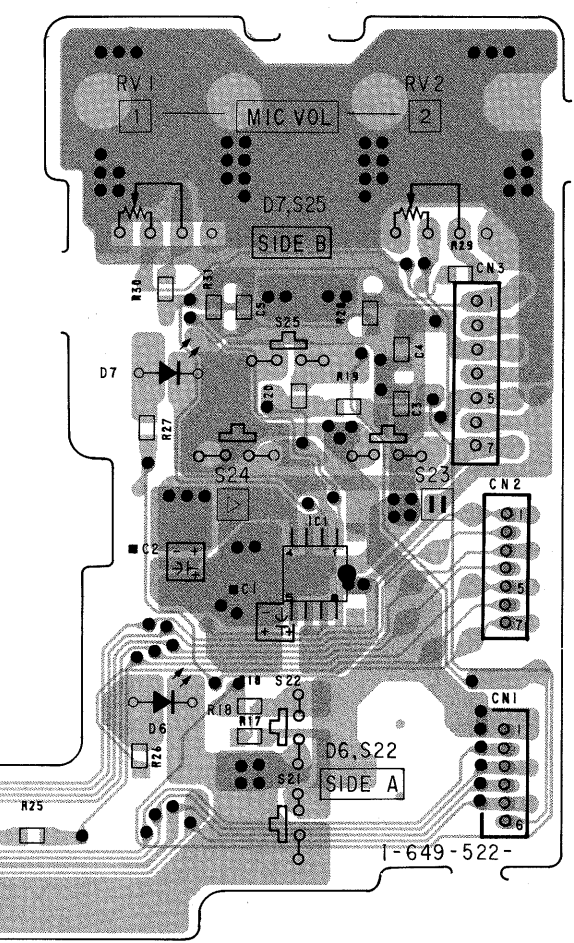
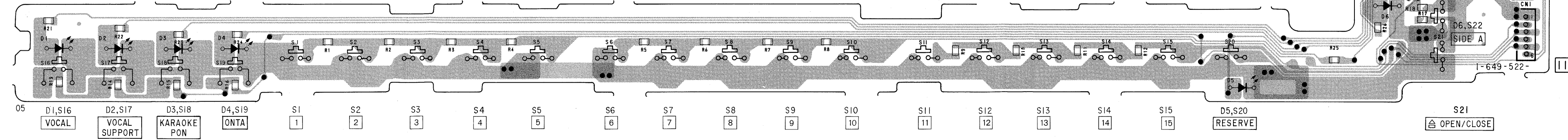
FP-727 BOARD (CONDUCTOR SIDE)



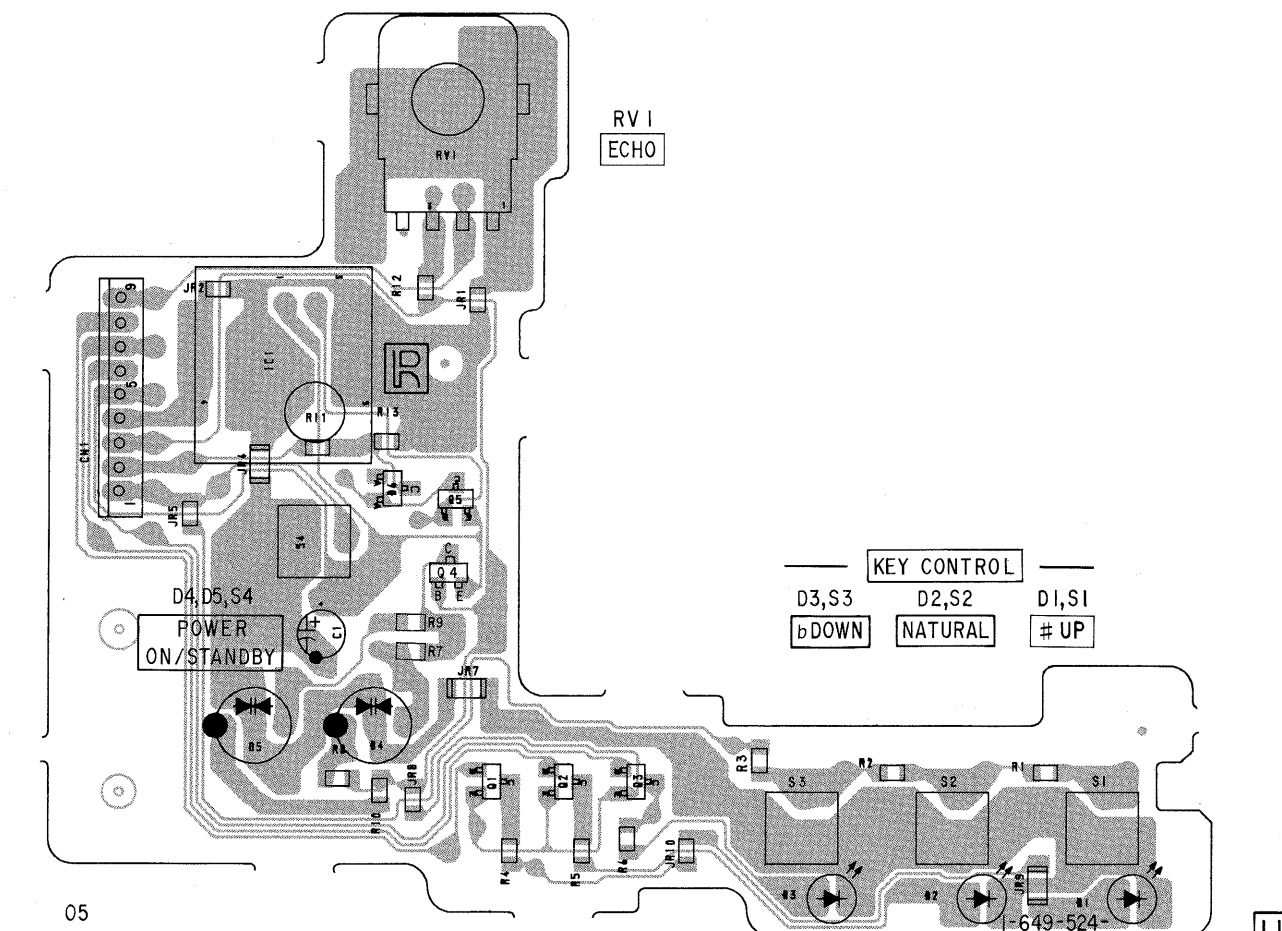
FP-727 BOARD

- CN201 B-18
- CN202 A-16
- CN203 B-17
- CN204 A-15
- CN205 B-18
- CN206 B-17
- CN208 A-17
- CN209 A-16
- D201 B-17
- D202 A-2
- D203 A-16
- D204 A-11
- D205 A-16
- D206 A-19
- D208 B-19
- D209 B-17
- D210 B-17
- D211 B-16
- IC201 A-13
- IC202 B-12
- Q201 B-17
- Q202 A-2
- Q203 B-4
- Q204 B-6
- Q205 B-5
- Q206 B-5
- Q207 B-5
- Q208 B-7
- Q209 B-7
- Q210 B-7
- Q211 B-5
- Q212 B-5
- Q213 B-5
- Q214 B-5

FP-728 BOARD

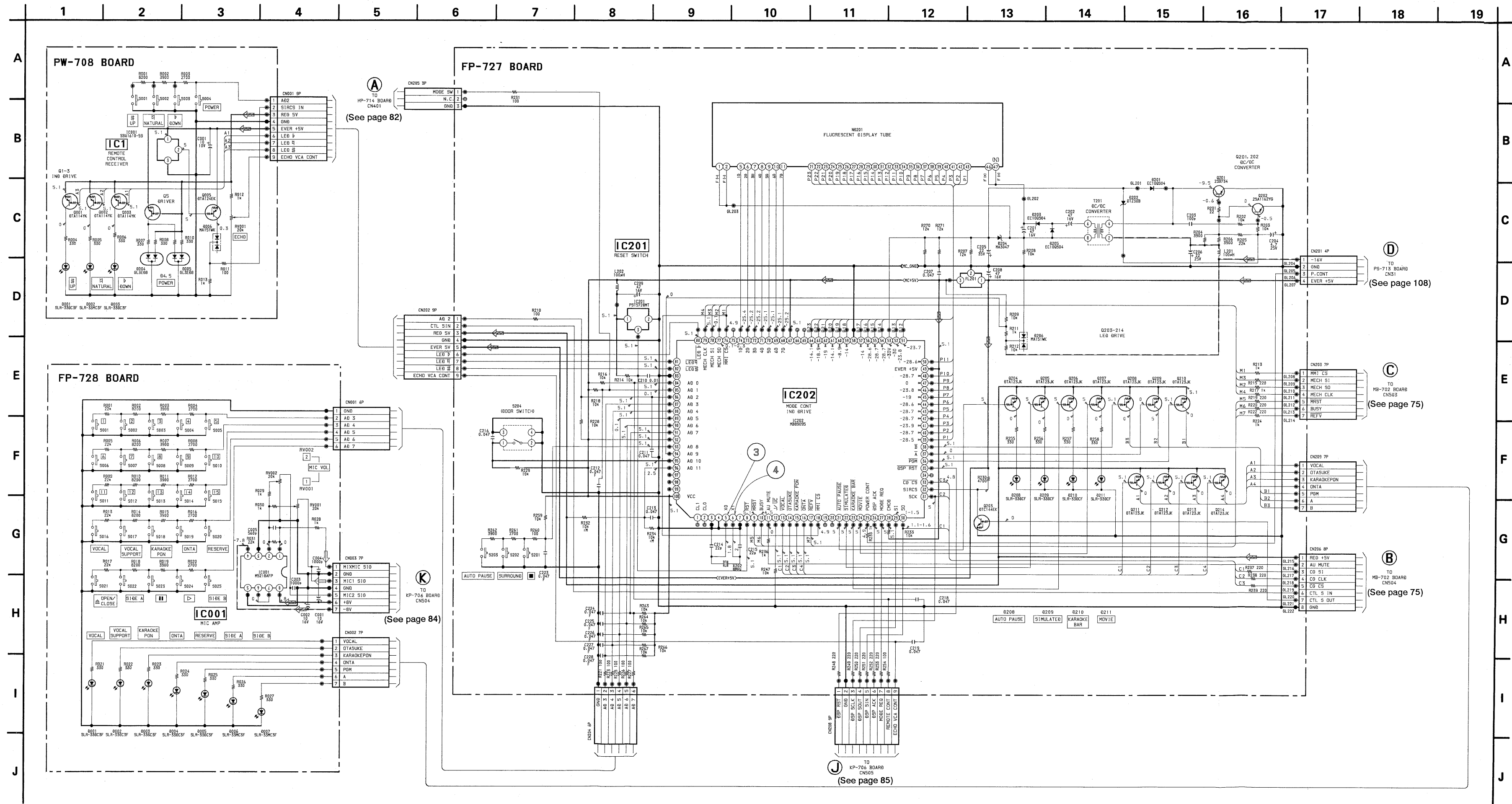


PW-708 BOARD

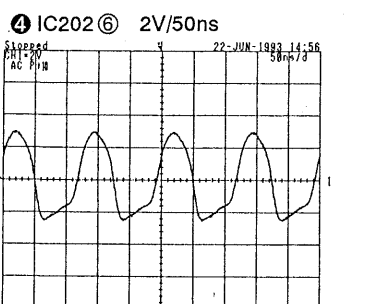
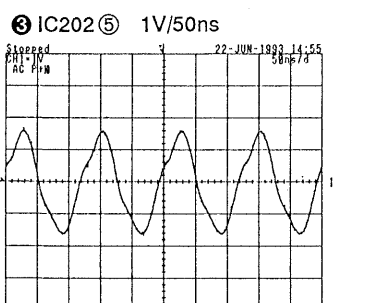
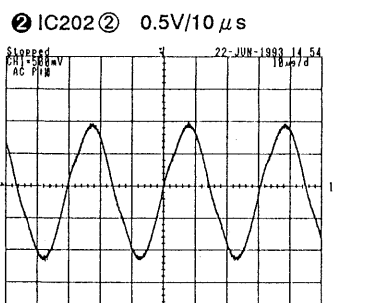
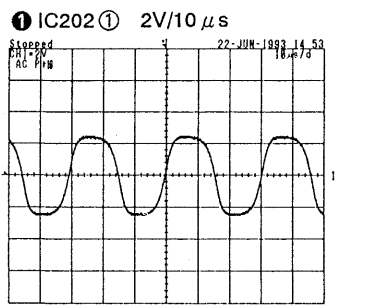


FP-727 (MODE CONTROL), FP-728 (KARAOKE MODE CONTROL), PW-708 (POWER SWITCH) SCHEMATIC DIAGRAM

— Ref. No.: FP-727 and FP-728 Boards; 3,000 series, PW-708 Boards; 4,000 series —



FP-727 BOARD

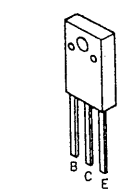


	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB	→	⇒	⇒⇒	⇨

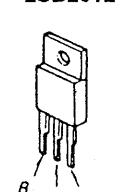
4-3. SEMICONDUCTORS

RN1404
RN2402
RN2403
RN2404
DTA114YK
DTA123JK
DTA124EK
DTC114EK
DTC144EK
DTC343TK
2SA1162
2SC2712-G
2SC3326N
2SD596DV345

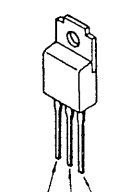
2SB1009R



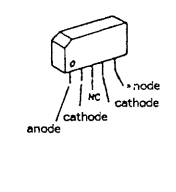
2SB1370
2SD2012



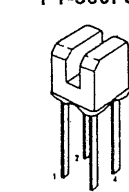
2SC4596



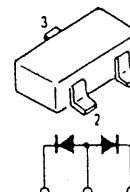
D3SBA10-4100



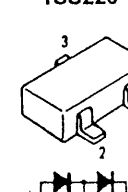
GP1S24
PT-360FS



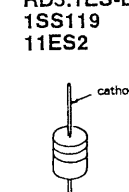
MA151WA



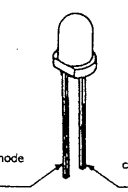
MA153
1SS226



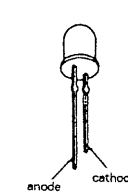
RD4.3ES-B2
RD5.1ES-B2
1SS119
11ES2



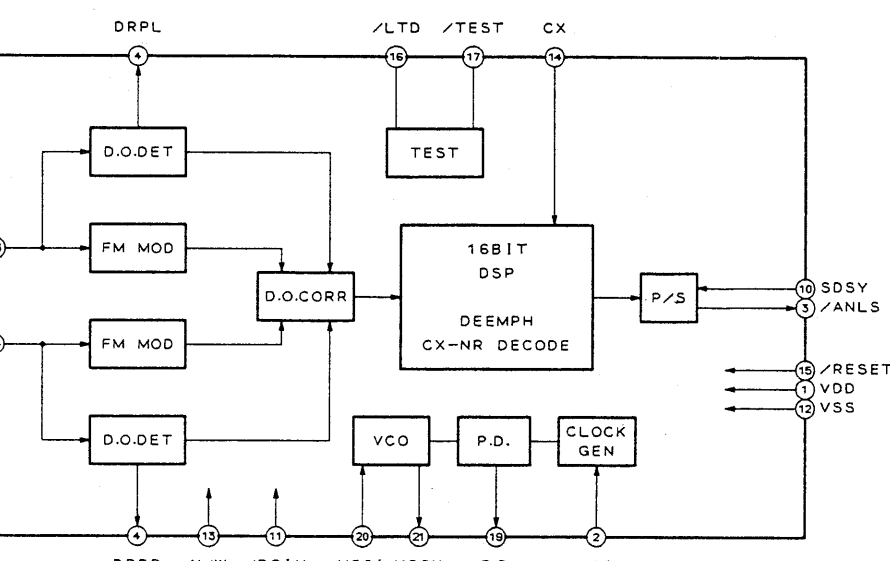
SLR33DC3F



SLR932A



IC203 YM7110 (MB-702 Board)

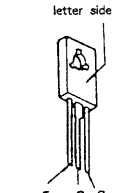


PS-713 BOARD	A-2
CN30	A-2
CN31	A-2
CN51	A-4
CN52	C-7
CN53	A-4
CN54	B-7
D31	C-2
D32	C-2
D33	B-2
D34	B-3
D35	B-3
D36	B-3
D37	C-3
D38	B-3
D39	C-3
D51	C-8
D52	C-9
D53	B-8
D54	B-7
D55	A-7
D56	A-7
D57	A-6
D58	A-8
D59	A-7
D60	A-7
D61	B-6
IC31	A-3
IC32	B-5
IC33	B-6
IC51	A-8
IC52	A-7
Q31	A-2
O51	C-9
O52	C-8
Q53	C-8
O54	C-8
O55	A-8
O56	A-8
Q58	B-8
O59	B-7
O60	B-9
O61	B-9

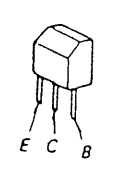
2SA1309A
2SC2785-HFE
2SC3311A



2SB1151



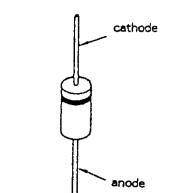
2SB734



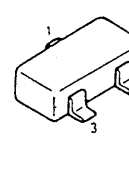
DTZ4.3A
DTZ30B
EC10QS-04
1SS355



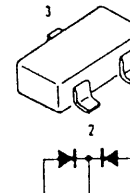
ERA81-004



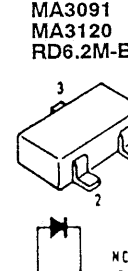
KV1460TL00



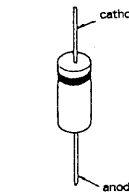
MA151WK



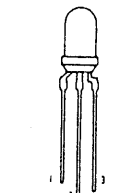
MA3047
MA3082
MA3091
MA3120
RD6.2M-B



S3V40

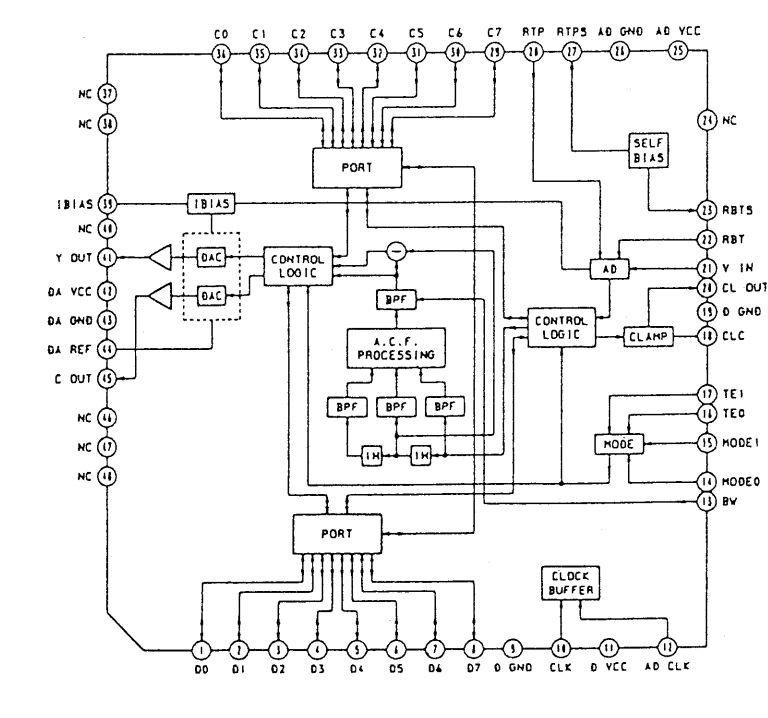


SLR-305MCA47

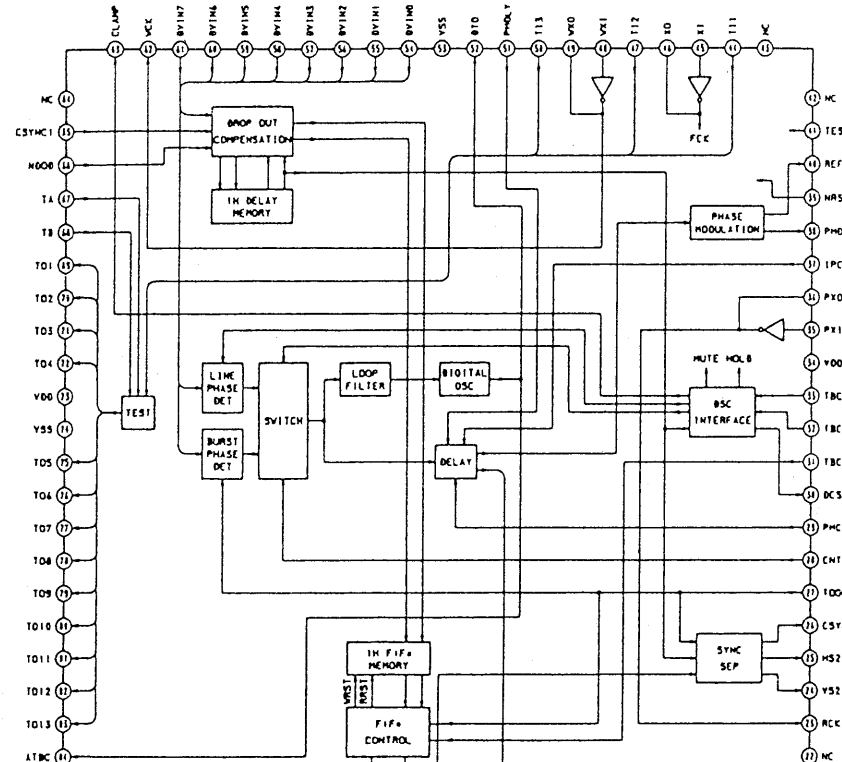


• IC Block Diagrams

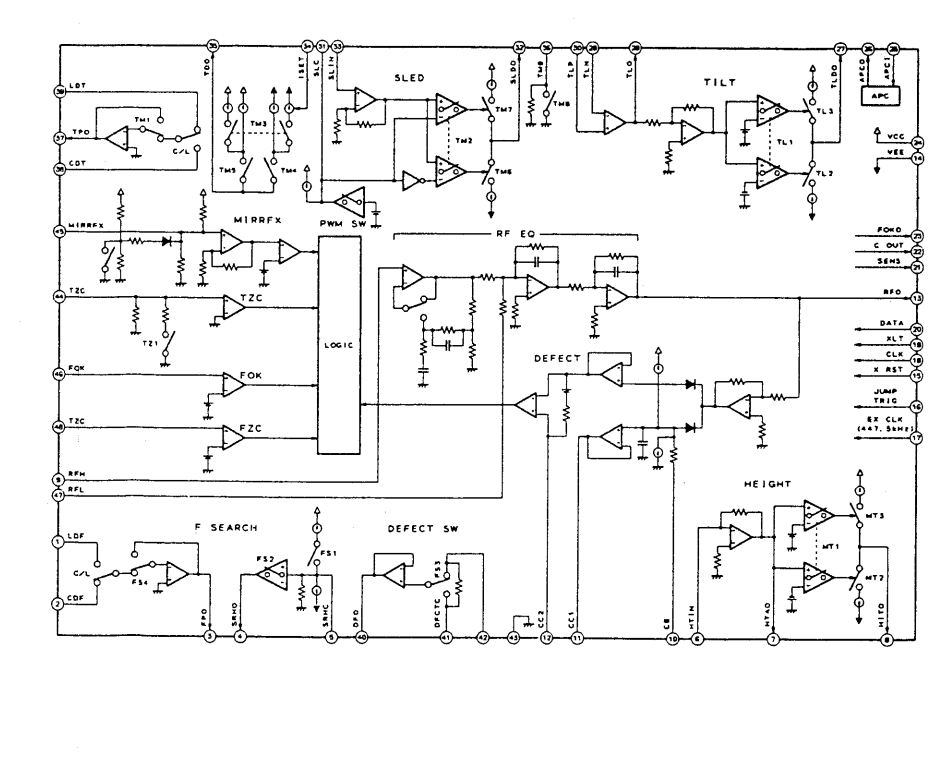
IC003 CXD8405Q (MB-702 Board)



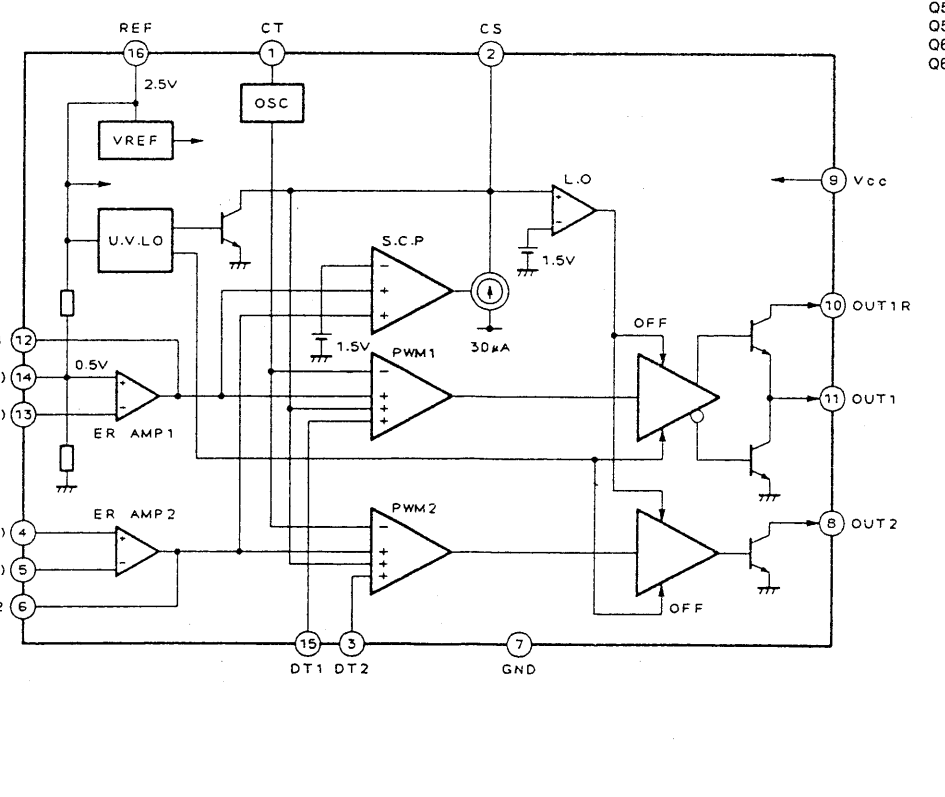
IC005 CXD8404Q (MB-702 Board)



IC401 CXA1632AQ (MB-702 Board)

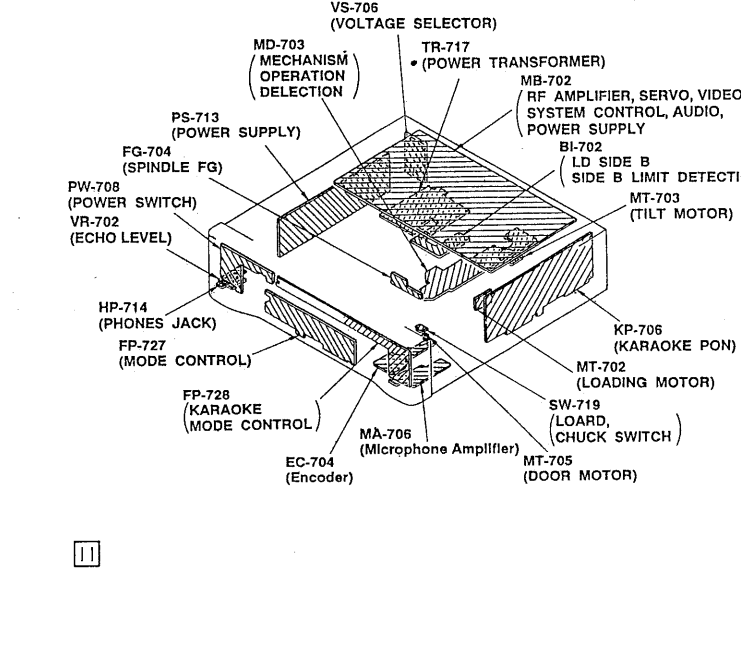
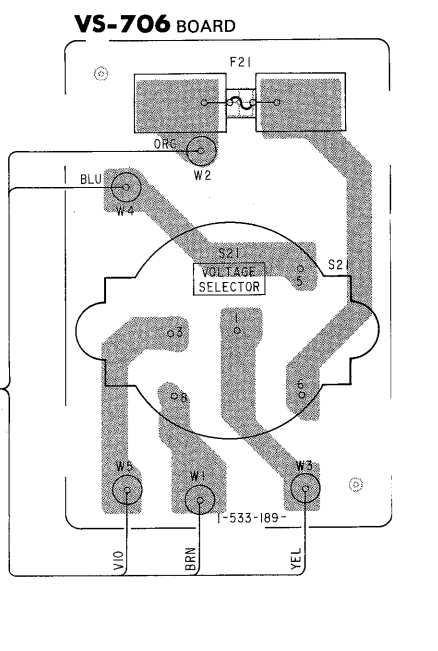
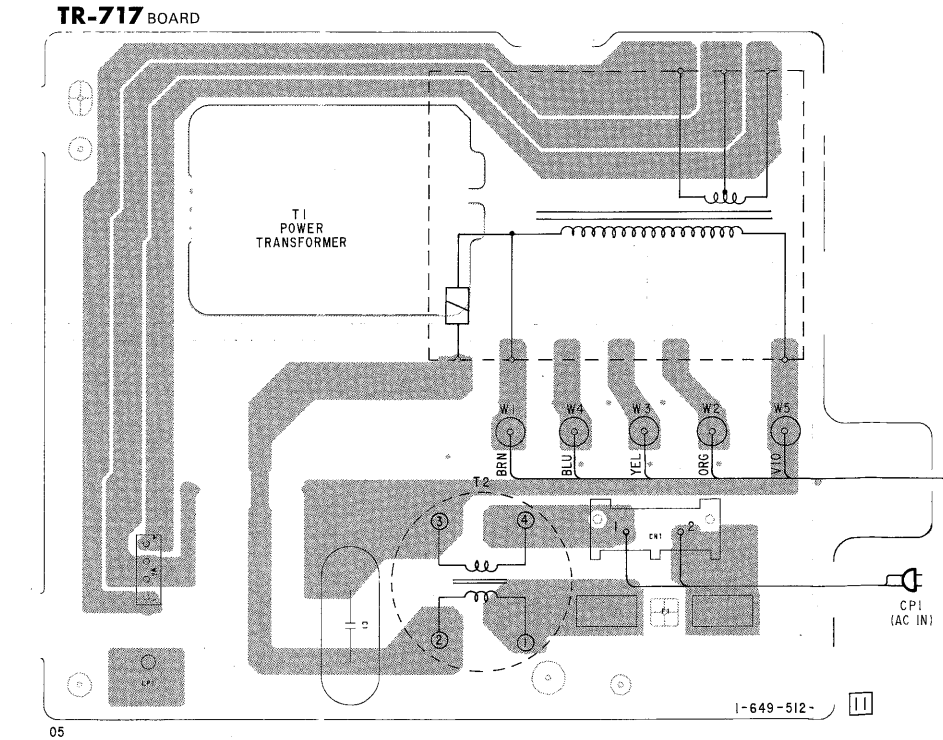
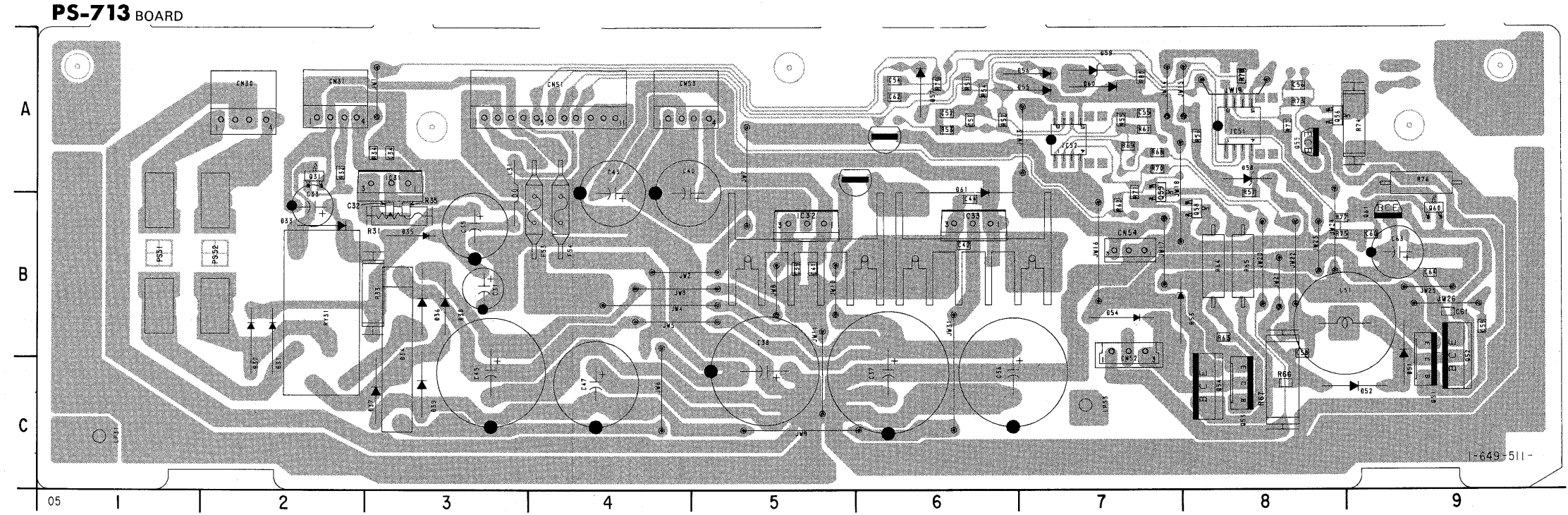


IC701 FA7611M (MB-702 Board)



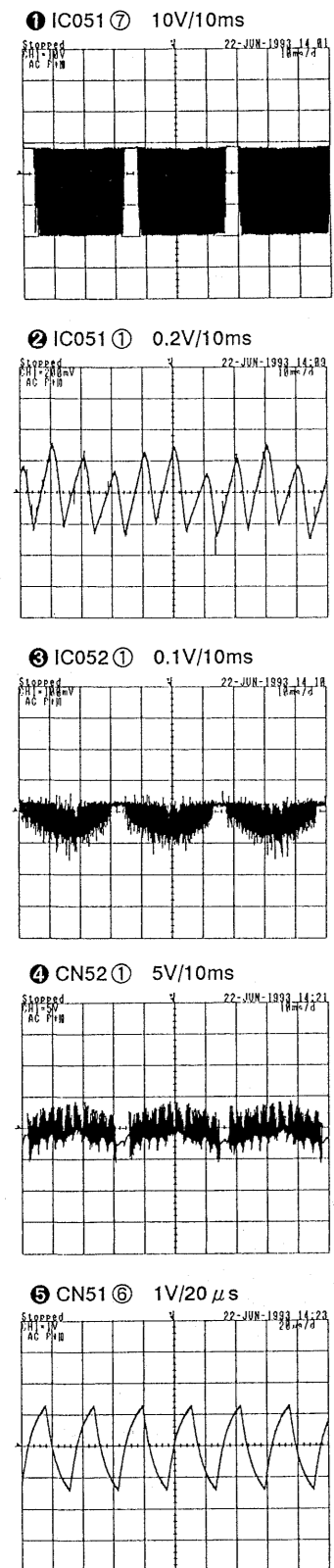
MB-702 (RF AMPLIFIER, SERVO), MD-703 (MECHANISM OPERATION DETECTION), BI-702 (LD SIDE B, LIMIT DETECTION), FG-704 (SPINDLE FG), MT-703 (TILT MOTOR)

SCHEMATIC DIAGRAM AND PRINTED WIRING BOARDS
- Ref. No.: MB-702 Board; 1,000 series, MD-703, BI-702, FG-704 and MT-703 Boards; 2,000 series -



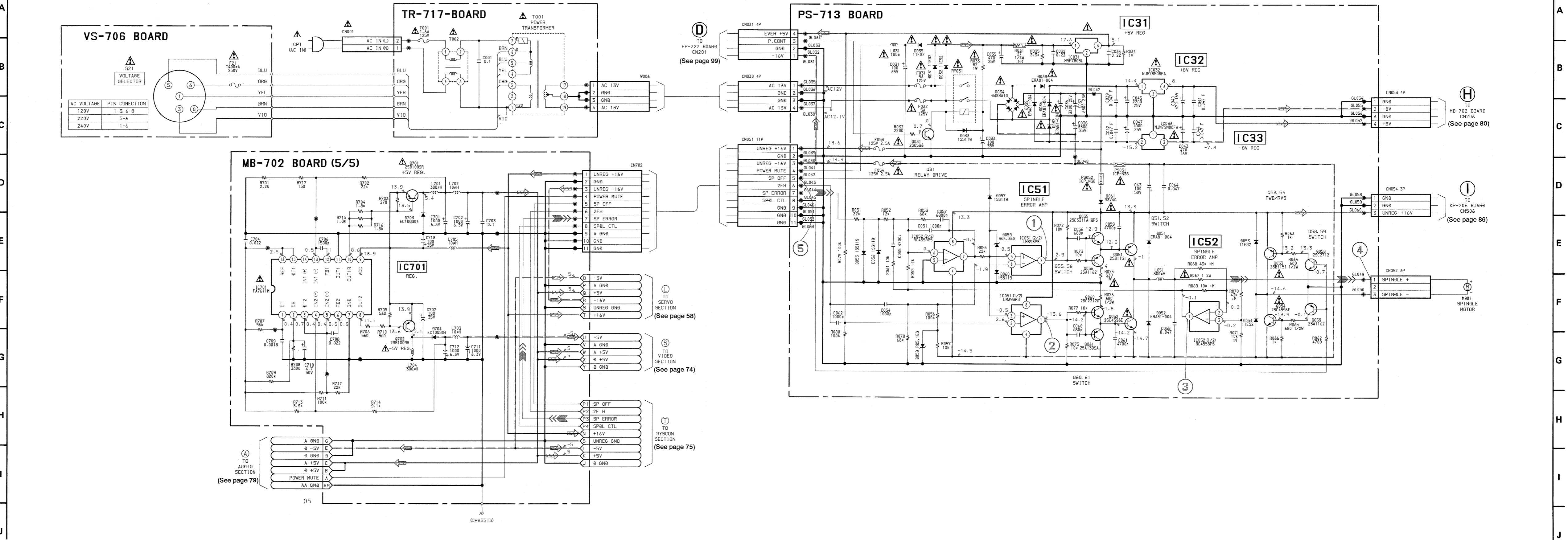
MB-702 (POWER SUPPLY), PS-713 (POWER SUPPLY), TR-717 (POWER TRANSFORMER), VS-706 (VOLTAGE SELECTOR) SCHEMATIC DIAGRAM AND PRINTED WIRING BOARDS
 - Ref. No.: MB-702 Board; 1,000 series, PS-713, TR-717 and VS-706 Boards; 6,000 series -

PS-713 BOARD



SPINDLE PHASE SERVO	➡➡➡
SPINDLE SERVO (SPEED AND PHASE)	➡➡➡
TRACKING SERVO LD/CD/CDV	➡➡➡
SLIDE SERVO LD/CD	➡➡➡
FOCUS SERVO LD/CD	➡➡➡
SKEW SERVO LD TILT	➡➡➡

• See pages 66 to 70 for MB-702 printed wiring board.



MDP-A800K

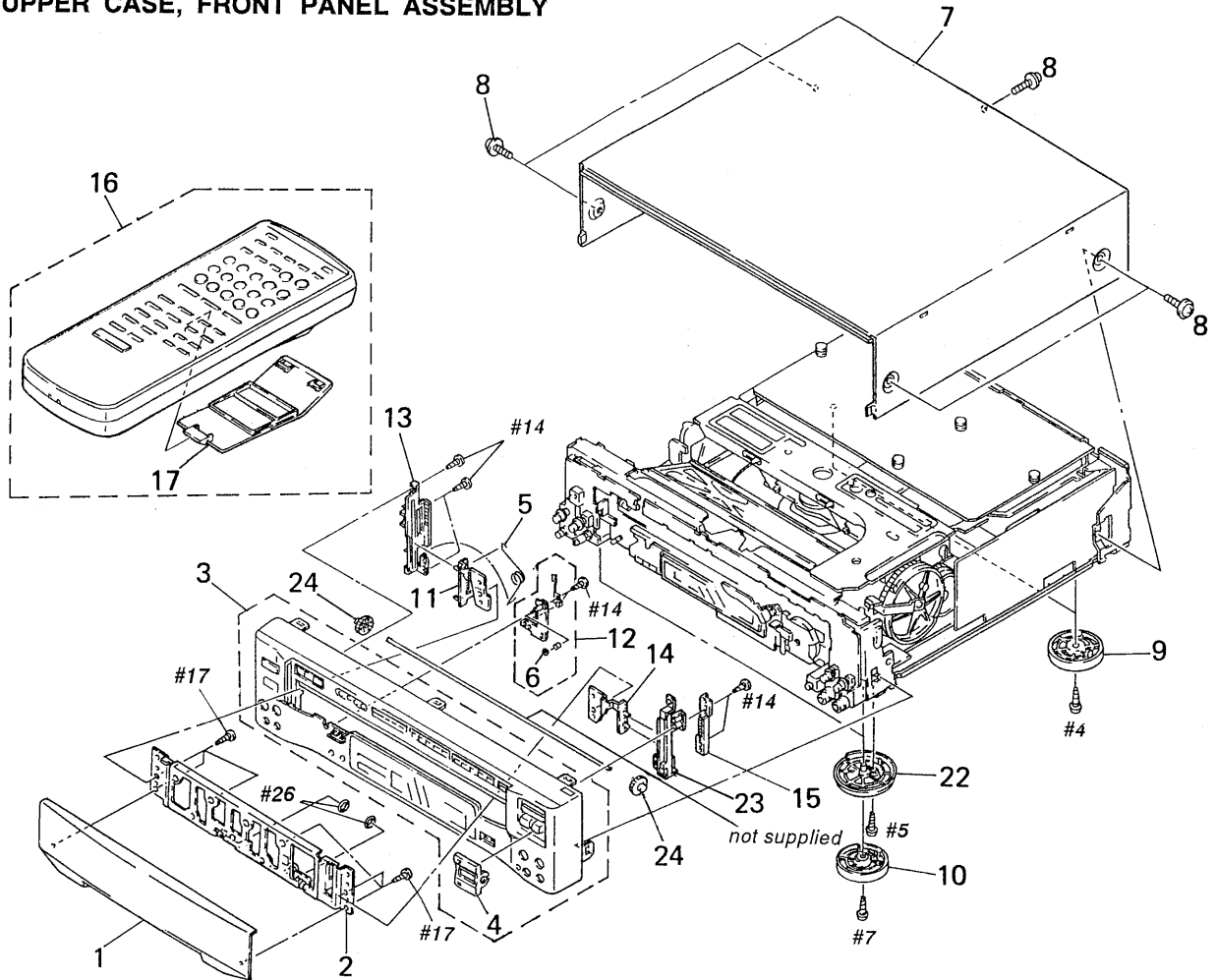
SECTION 5 EXPLODED VIEWS

NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
Example:
KNOB, BALANCE (WHITE) ... (RED)
 ↑ ↑
 Parts Color Cabinet's Color
- 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 or dotted line with mark are critical for safety. Replace only with part number specified.

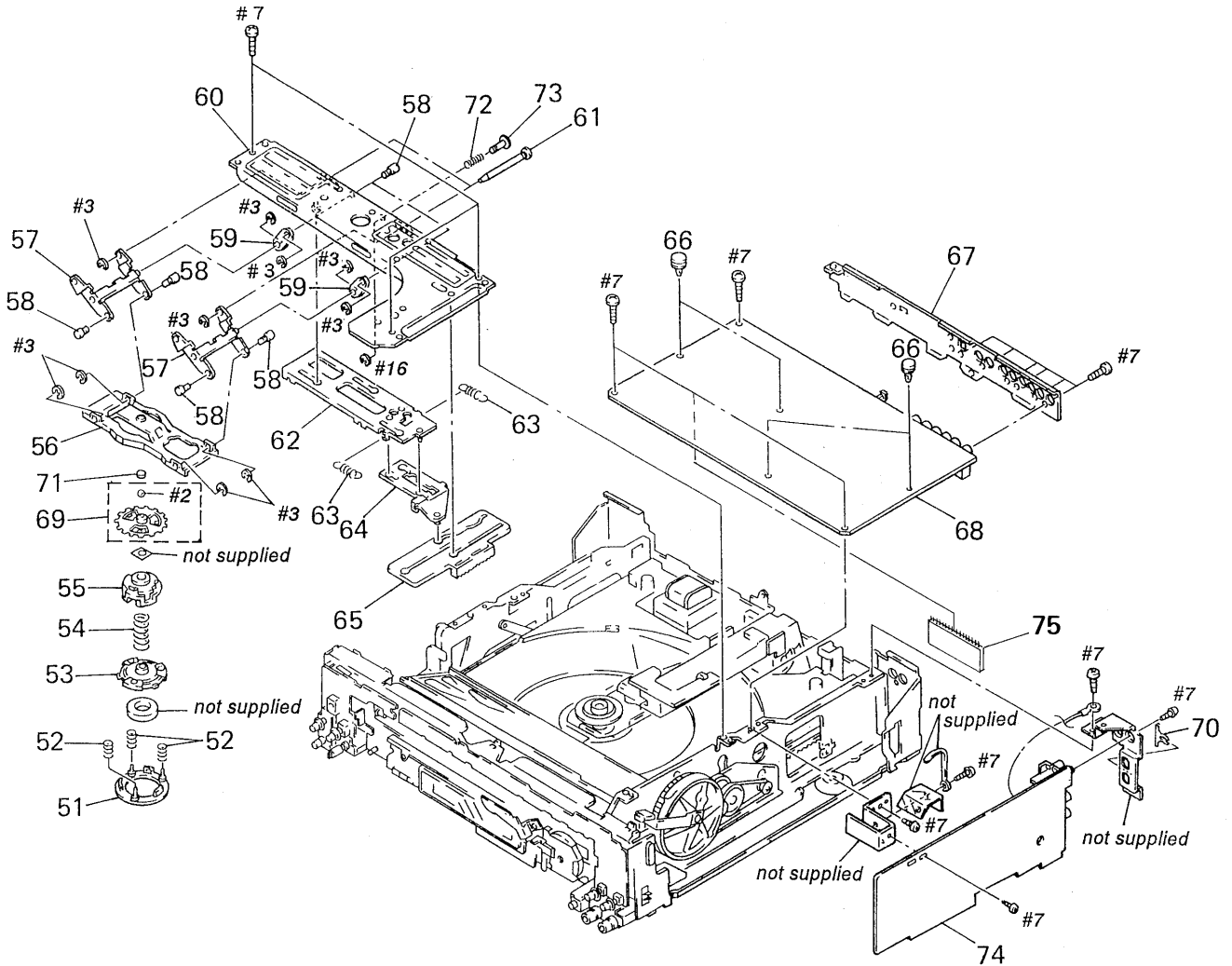
5-1. UPPER CASE, FRONT PANEL ASSEMBLY



Ref. No.	Part No.	Description	Remark
1	3-955-369-11	DOOR	
*	X-3943-266-1	REINFORCEMENT ASSY, DOOR	
3	X-3943-270-1	PANEL ASSY, FRONT	
4	X-3942-783-1	BUTTON ASSY, AB SELECTION	
5	3-955-422-01	SPRING, DOOR	
6	3-321-393-01	WASHER, STOPPER	
*	X-3942-908-1	CASE ASSY, UPPER	
8	3-710-901-41	SCREW, TAPPING	
9	X-3363-548-1	FOOT ASSY	
10	X-3942-810-1	FOOT ASSY	

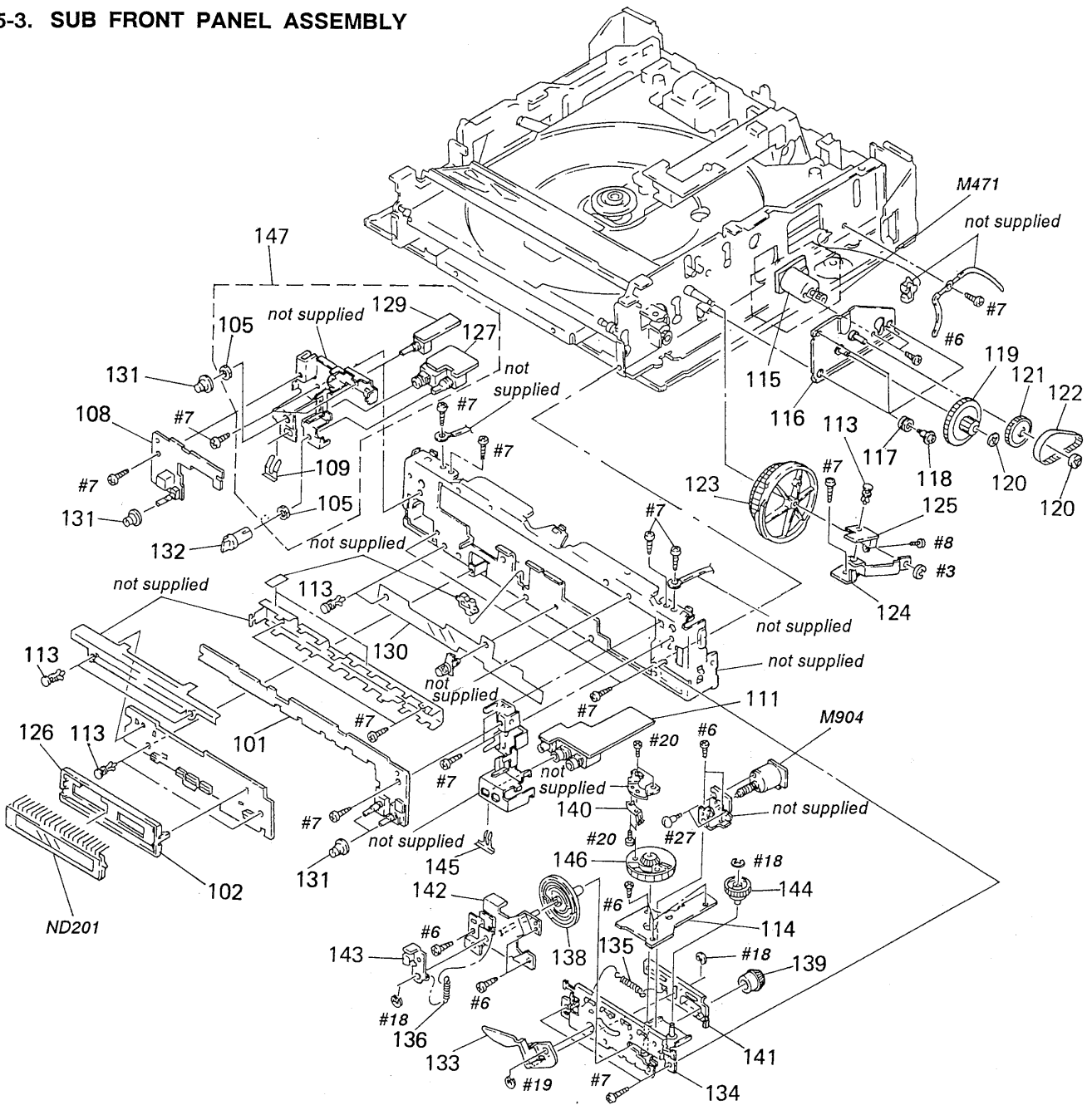
Ref. No.	Part No.	Description	Remark
11	X-3943-267-1	JOINT (L) ASSY	
*	X-3943-265-1	PLATE ASSY, GUIDE	
13	3-955-440-01	GUIDE (L)	
14	X-3943-268-1	JOINT (R) ASSY	
15	3-955-426-01	RACK (R), BACK	
16	1-693-174-61	REMOTE COMMANDER (RMT-M21A)	
17	3-943-535-01	LID, BATTERY CASE	
22	3-955-343-11	COVER, FOOT	
23	3-955-425-01	GUIDE (R)	
24	3-955-427-01	GEAR, PHASE	

5-2. CHUCK FRAME ASSEMBLY



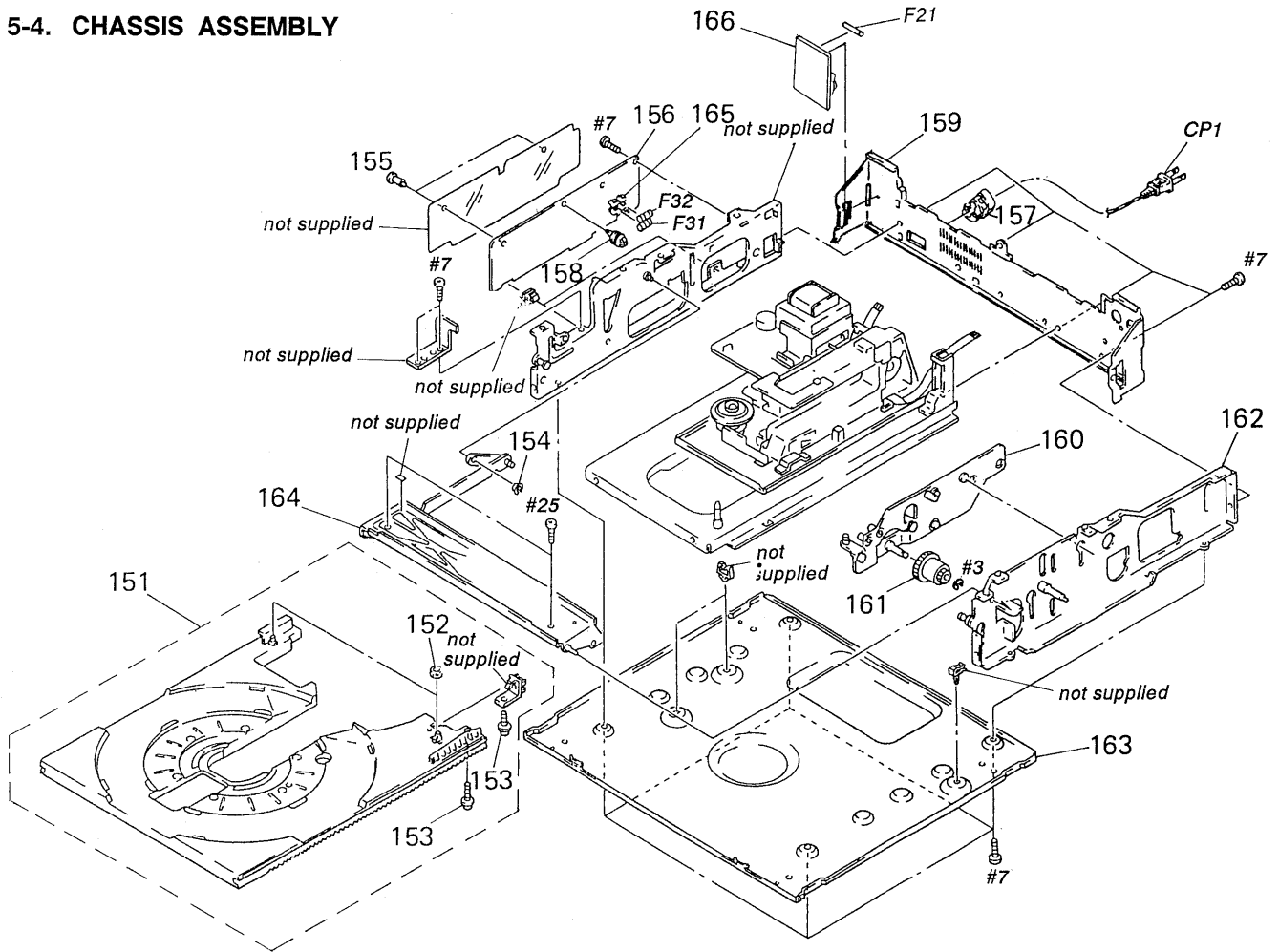
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	X-3943-043-2	GUIDE (B) ASSY, CENTER		* 64	X-3942-800-1	LIMITER ASSY	
52	3-953-290-01	SPRING (2), COMPRESSION		65	3-953-348-01	CAM, CHUCK	
53	X-3942-776-1	HOLDER ASSY, MAGNET		* 66	4-386-173-01	SPACER	
54	3-953-291-01	SPRING (1), COMPRESSION		* 67	3-953-380-11	PLATE, JACK	
55	3-953-288-01	PLATE, CHUCKING		* 68	A-6423-008-A	MB-702 (E78) BOARD, COMPLETE	
* 56	3-953-354-01	PLATE, CHUCK		69	X-3942-787-1	PLATE ASSY, TOP	
* 57	X-3942-801-1	ARM (L) ASSY		70	3-955-377-01	PLATE (2GANG), MOUNT	
* 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		* 74	A-6423-027-A	KP-706 (J78) BOARD, COMPLETE	
* 62	X-3942-799-1	PLATE ASSY, SLIDE		* 75	A-6421-984-A	TE-701 BOARD, COMPLETE	
63	3-486-135-XX	SPRING, TENSION					

5-3. SUB FRONT PANEL ASSEMBLY



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
* 101	A-6423-024-A	FP-728 (J78) BOARD, COMPLETE		* 129	A-6423-022-A	VR-702 (J78) BOARD, COMPLETE	
* 102	A-6423-012-A	FP-727 (E78) BOARD, COMPLETE		* 130	3-955-384-01	COVER, FF	
105	3-950-989-01	NUT (M7), HEXAGON		131	3-749-922-21	KNOB	
* 108	A-6423-013-A	PW-708 (E78) BOARD, COMPLETE		132	4-922-531-21	KNOB (A TYPE), LOV	
* 109	3-684-436-01	PLATE, MOUNT		* 133	X-3943-278-1	LEVER ASSY, OPENER	
* 111	A-6423-026-A	MA-706 (J78) BOARD, COMPLETE		* 134	X-3943-273-1	CHASSIS ASSY	
113	3-531-576-11	RIVET		135	3-532-725-00	SPRING, TENSION	
* 114	1-649-841-11	EC-704 BOARD		136	3-305-526-00	SPRING, TENSION	
* 115	A-6421-953-A	MT-702 BOARD, COMPLETE		138	3-955-408-01	CAM	
* 116	X-3942-805-1	BRACKET ASSY, GEAR		139	3-955-409-01	GEAR, MITA	
117	3-570-118-00	CUSHION, MOTOR		140	3-955-399-01	BRUSH	
118	3-570-027-00	SCREW, MOTOR		* 141	X-3943-275-1	SLIDE ASSY, CAM	
119	3-953-358-01	GEAR, MIDWAY		* 142	X-3943-276-1	CHASSIS ASSY, CAM	
120	3-669-595-00	WASHER (2), STOPPER		* 143	X-3943-277-1	STOPPER ASSY	
121	3-953-394-01	PULLEY (A)		144	3-955-396-01	WHEEL, WORM	
122	3-953-393-01	BELT, TIMING		145	3-955-377-01	PLATE (2GANG), MOUNT	
123	3-953-356-01	GEAR, CONTROL		146	3-955-397-01	GEAR, COMMUNICATION	
* 124	3-953-357-01	BRACKET, SW		* 147	A-6415-704-A	HP-714 (J78) BLOCK ASSY	
* 125	A-6421-954-A	SW-719 BOARD, COMPLETE		M471	X-3942-963-1	MOTOR ASSY (LOADING)	
126	3-953-317-01	HOLDER, TUBE, FL		M904	X-3943-274-1	MOTOR ASSY (DOOR)	
* 127	A-6423-021-A	HP-714 (J78) BOARD, COMPLETE		ND201	1-517-161-11	INDICATOR TUBE, FLUORESCENT	

5-4. CHASSIS ASSEMBLY

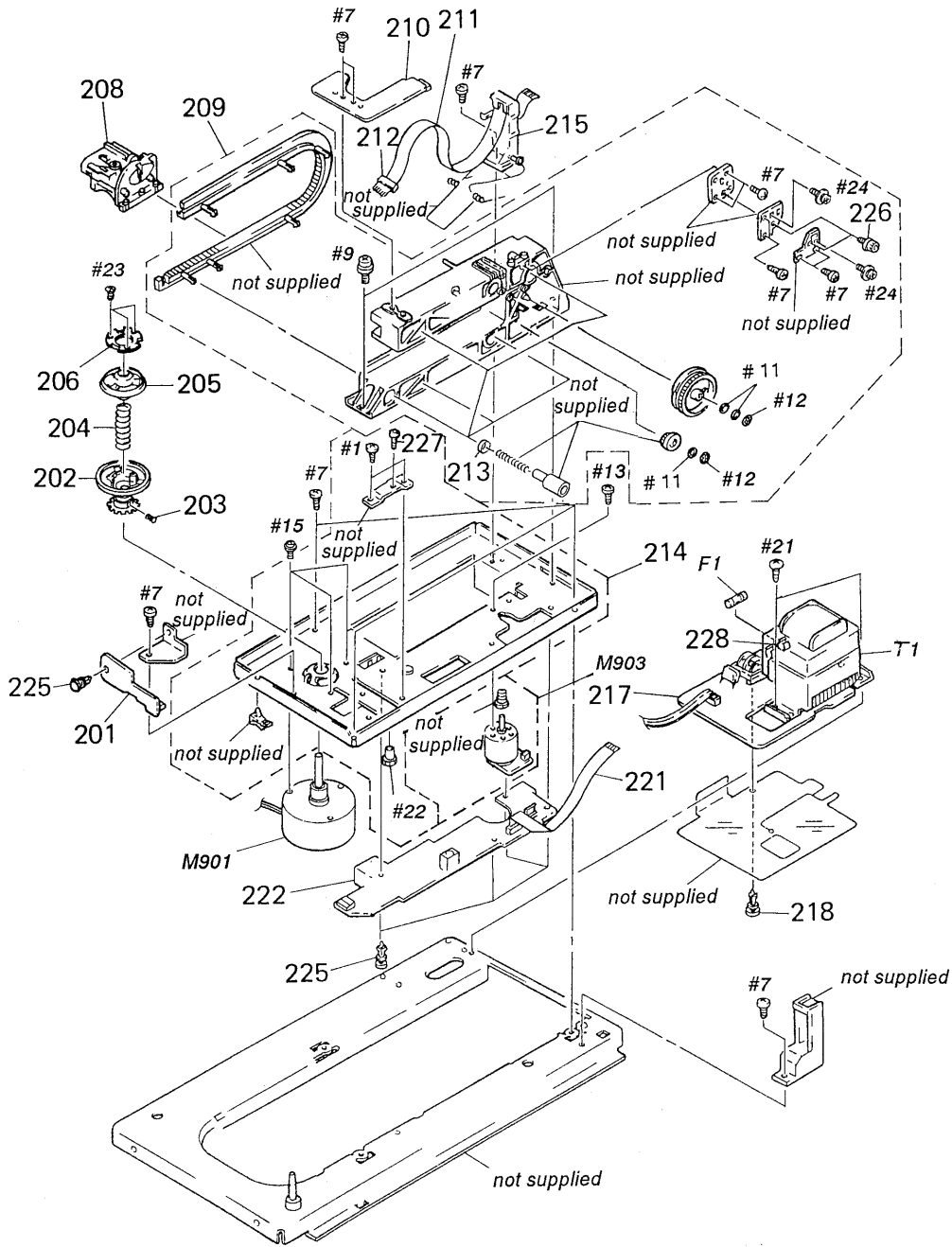


Ref. No.	Part No.	Description	Remark
151	X-3942-781-1	TRAY ASSY	
* 152	4-914-248-01	STOPPER, RUBBER	
153	3-710-901-11	SCREW, TAPPING	
154	3-703-074-01	CAP 3, SHAFT	
155	3-531-576-11	RIVET	
* 156	A-6423-009-A	PS-713 (E78) BOARD, COMPLETE	
△157	3-703-244-02	BUSHING (2104), CORD	
* 158	4-884-834-01	SUPPORT, PC	
* 159	3-953-382-61	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-3943-404-2	FRAME (R) ASSY (J78)	
* 163	3-955-544-01	PLATE, BOTTOM	
* 164	X-3942-796-1	FRAME ASSY, TRAY T	
△165	1-533-189-11	HOLDER, FUSE	
* 166	A-6423-011-A	VS-706 (E78) BOARD, COMPLETE	
△CP1	1-575-912-21	CORD, POWER	
△F21	1-532-066-00	FUSE, TIME-LAG (T400mA 250V)	
△F31	1-532-299-00	FUSE, TIME-LAG (T5A 250V)	
△F32	1-532-299-00	FUSE, TIME-LAG (T5A 250V)	

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

5-5. MD CHASSIS ASSEMBLY



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
201	A-6423-016-A	FG-704 (J78) BOARD, COMPLETE		215	A-6404-076-A	STAND ASSY, FLEXIBLE RETAINER	
202	X-3942-779-1	TURNABLE ASSY		* 217	A-6423-010-A	TR-717 (E78) BOARD, COMPLETE	
203	3-701-507-00	SET SCREW, DOUBLE POINT, (M3X5)		218	3-531-576-11	RIVET	
204	3-953-289-01	SPRING (3), COMPRESSION		221	1-751-084-11	CABLE, FLEXIBLE FLAT (14 CORE)	
205	3-953-292-01	GUIDE, CENTER		222	A-6423-015-A	MD-703 (J78) BOARD, COMPLETE	
206	3-953-293-01	PLATE (C), YOKE		225	3-703-356-00	RIVET, T TYPE	
△208	8-848-286-01	DEVICE, OPTICAL KHS-150A		226	3-899-249-01	BOLT, HEXAGON SOCKET	
209	A-6404-082-A	BASE BLOCK ASSY, FEED		227	3-953-829-01	BOLT	
210	A-6423-017-A	BI-702 (J78) BOARD, COMPLETE		△228	1-533-189-11	HOLDER, FUSE	
211	1-751-083-11	CABLE, FLEXIBLE FLAT (18 CORE)		△F1	1-532-215-00	FUSE, TIME-LAG (T800mA 250V)	
212	3-953-268-01	HOLDER (18P), FLEXIBLE		M901	1-698-109-11	MOTOR, DD (SPINDLE)	
213	3-953-830-01	WASHER, U		M903	X-3942-968-1	MOTOR, DC (TILT)	
* 214	A-6404-074-A	PLATE BLOCK ASSY, BASE		△T1	1-423-556-11	TRANSFORMER, POWER	

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

ELECTRICAL PARTS LIST

BI-702

EC-704

EG-704

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: μ , for example:
uA ..: μ A. uPA ..: μ PA.
uPB ..: μ PB. uPC ..: μ PC. uPD ..: μ PD.
- CAPACITORS
uF: μ F
- COILS
uH: μ H

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

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

Ref. No.	Part No.	Description	Remark
	A-6423-017-A	BI-702 (J78) BOARD, COMPLETE ***** (Ref. NO 2,000 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 CHIP 0 5% 1/8W	
JR403	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR404	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR405	1-216-296-00	METAL CHIP 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	1-216-057-91	METAL GLAZE 2.2K 5% 1/10W	
R404	1-216-057-91	METAL GLAZE 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
*	1-649-841-11	EC-704 BOARD (Ref. NO 7,000 Series) ***** < CONNECTOR >	
W001	1-506-481-11	PIN, CONNECTOR 2P	
CN001	1-506-485-11	PIN, CONNECTOR 6P *****	
	A-6423-016-A	FG-704 (J78) BOARD, COMPLETE ***** (Ref. NO 2,000 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 CHIP 0 5% 1/8W	
JR411	1-216-296-00	METAL CHIP 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	1-216-057-91	METAL GLAZE 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	1-216-057-91	METAL GLAZE 2.2K 5% 1/10W	

Ref. No.	Part No.	Description	Remark
R418	1-216-089-91	METAL GLAZE 47K 5%	1/10W
R419	1-216-049-00	METAL CHIP 1K 5%	1/10W

*	A-6423-012-A FP-727 (E78) BOARD, COMPLETE ***** (Ref. NO 3,000 Series)		
	3-953-317-01 HOLDER, TUBE, FL		
< CAPACITOR >			
C201	1-124-589-11	ELECT 47uF	20% 16V
C202	1-124-589-11	ELECT 47uF	20% 16V
C203	1-163-117-00	CERAMIC CHIP 100PF	5% 50V
C204	1-126-163-11	ELECT 4.7uF	20% 50V
C205	1-124-248-00	ELECT 22uF	20% 35V
C206	1-128-243-11	ELECT CHIP 22uF	0 25V
C207	1-163-035-00	CERAMIC CHIP 0.047uF	50V
C208	1-124-589-11	ELECT 47uF	20% 16V
C209	1-124-589-11	ELECT 47uF	20% 16V
C210	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C211	1-163-035-00	CERAMIC CHIP 0.047uF	50V
C212	1-163-035-00	CERAMIC CHIP 0.047uF	50V
△C213	1-163-035-00	CERAMIC CHIP 0.047uF	50V
C214	1-163-101-00	CERAMIC CHIP 22PF	5% 50V
C215	1-163-101-00	CERAMIC CHIP 22PF	5% 50V
C216	1-163-035-00	CERAMIC CHIP 0.047uF	50V
C217	1-163-093-00	CERAMIC CHIP 10PF	5% 50V
C218	1-163-035-00	CERAMIC CHIP 0.047uF	50V
C219	1-163-035-00	CERAMIC CHIP 0.047uF	50V
C223	1-163-035-00	CERAMIC CHIP 0.047uF	50V
C224	1-163-035-00	CERAMIC CHIP 0.047uF	50V
C225	1-163-035-00	CERAMIC CHIP 0.047uF	50V
C226	1-163-035-00	CERAMIC CHIP 0.047uF	50V
C227	1-163-035-00	CERAMIC CHIP 0.047uF	50V
C228	1-163-035-00	CERAMIC CHIP 0.047uF	50V
< CONNECTOR >			
CN201	1-506-483-21	PIN, CONNECTOR 4P	
CN202	1-506-488-11	PIN, CONNECTOR 9P	
CN203	1-506-486-11	PIN, CONNECTOR 7P	
* CN204	1-566-185-11	PIN, CONNECTOR (PC BOARD) 6P	
* CN205	1-564-013-11	PIN, CONNECTOR 3P	
CN206	1-506-487-11	PIN, CONNECTOR 8P	
* CN208	1-564-019-31	PIN, CONNECTOR 9P	
CN209	1-566-186-11	PIN, CONNECTOR (PC BOARD) 7P	
< DIODE >			
D201	8-719-210-39	DIODE EC10QS-04	
D202	8-719-978-93	DIODE DTZ30B-TT11	

Ref. No.	Part No.	Description	Remark
D203	8-719-210-39	DIODE EC10QS-04	
D204	8-719-105-73	DIODE RD4.7M-B2	
D205	8-719-210-39	DIODE EC10QS-04	
△D206	8-719-400-18	DIODE MA152WK	
D208	8-719-042-48	DIODE SLR-33DC3F (AUTO PAUSE)	
D209	8-719-042-48	DIODE SLR-33DC3F (SIMULATED)	
D210	8-719-042-48	DIODE SLR-33DC3F (KARAOKE BAR)	
D211	8-719-042-48	DIODE SLR-33DC3F (MOVIE)	
< FILTER >			
FL201	1-421-927-21	FILTER, NOISE	
< IC >			
IC201	8-759-074-40	IC PST572DMT-T1	
IC202	8-759-177-13	IC MB89095PF-G-139	
< COIL >			
L201	1-410-393-11	INDUCTOR CHIP 100uH	
L202	1-410-393-11	INDUCTOR CHIP 100uH	
< FLUORESCENT INDICATOR >			
ND201	1-517-161-11	INDICATOR TUBE, FLUORESCENT	
< TRANSISTOR >			
Q201	8-729-140-97	TRANSISTOR 2SB734-34	
Q202	8-729-216-22	TRANSISTOR 2SA1162-G	
Q203	8-729-901-01	TRANSISTOR DTC144EK	
Q204	8-729-923-62	TRANSISTOR DTA123JK	
Q205	8-729-923-62	TRANSISTOR DTA123JK	
Q206	8-729-923-62	TRANSISTOR DTA123JK	
Q207	8-729-923-62	TRANSISTOR DTA123JK	
Q208	8-729-923-62	TRANSISTOR DTA123JK	
Q209	8-729-923-62	TRANSISTOR DTA123JK	
Q210	8-729-923-62	TRANSISTOR DTA123JK	
Q211	8-729-923-62	TRANSISTOR DTA123JK	
Q212	8-729-923-62	TRANSISTOR DTA123JK	
Q213	8-729-923-62	TRANSISTOR DTA123JK	
Q214	8-729-923-62	TRANSISTOR DTA123JK	
< RESISTOR >			
R201	1-216-009-00	METAL CHIP 22 5%	1/10W
R202	1-216-073-00	METAL CHIP 10K 5%	1/10W
R203	1-216-073-00	METAL CHIP 10K 5%	1/10W
R204	1-216-063-00	METAL CHIP 3.9K 5%	1/10W
R205	1-216-081-00	METAL CHIP 22K 5%	1/10W
R206	1-216-063-00	METAL CHIP 3.9K 5%	1/10W
R207	1-216-224-91	METAL GLAZE 12K 5%	1/8W
R208	1-216-073-00	METAL CHIP 10K 5%	1/10W

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

Ref. No.	Part No.	Description			Remark
△R209	1-216-073-00	METAL CHIP	10K	5%	1/10W
R210	1-216-025-00	METAL CHIP	100	5%	1/10W
△R211	1-216-049-00	METAL CHIP	1K	5%	1/10W
△R212	1-216-073-00	METAL CHIP	10K	5%	1/10W
R213	1-216-049-00	METAL CHIP	1K	5%	1/10W
R214	1-216-073-00	METAL CHIP	10K	5%	1/10W
R215	1-216-033-00	METAL CHIP	220	5%	1/10W
R216	1-216-073-00	METAL CHIP	10K	5%	1/10W
R217	1-216-049-00	METAL CHIP	1K	5%	1/10W
R218	1-216-073-00	METAL CHIP	10K	5%	1/10W
R219	1-216-033-00	METAL CHIP	220	5%	1/10W
R220	1-216-033-00	METAL CHIP	220	5%	1/10W
R221	1-216-025-00	METAL CHIP	100	5%	1/10W
R222	1-216-033-00	METAL CHIP	220	5%	1/10W
R223	1-216-025-00	METAL CHIP	100	5%	1/10W
R224	1-216-049-00	METAL CHIP	1K	5%	1/10W
R225	1-216-025-00	METAL CHIP	100	5%	1/10W
R226	1-216-025-00	METAL CHIP	100	5%	1/10W
R227	1-216-025-00	METAL CHIP	100	5%	1/10W
R228	1-216-073-00	METAL CHIP	10K	5%	1/10W
R229	1-216-073-00	METAL CHIP	10K	5%	1/10W
R230	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R231	1-216-025-00	METAL CHIP	100	5%	1/10W
△R232	1-216-675-11	METAL CHIP	10K	0.5%	1/10W
R233	1-216-073-00	METAL CHIP	10K	5%	1/10W
△R234	1-216-675-11	METAL CHIP	10K	0.5%	1/10W
R235	1-216-049-00	METAL CHIP	1K	5%	1/10W
R236	1-216-049-00	METAL CHIP	1K	5%	1/10W
R237	1-216-033-00	METAL CHIP	220	5%	1/10W
R238	1-216-033-00	METAL CHIP	220	5%	1/10W
R239	1-216-033-00	METAL CHIP	220	5%	1/10W
R247	1-216-073-00	METAL CHIP	10K	5%	1/10W
R248	1-216-033-00	METAL CHIP	220	5%	1/10W
R249	1-216-033-00	METAL CHIP	220	5%	1/10W
R250	1-216-033-00	METAL CHIP	220	5%	1/10W
R251	1-216-033-00	METAL CHIP	220	5%	1/10W
R252	1-216-033-00	METAL CHIP	220	5%	1/10W
R253	1-216-033-00	METAL CHIP	220	5%	1/10W
R254	1-216-025-00	METAL CHIP	100	5%	1/10W
R255	1-216-037-00	METAL CHIP	330	5%	1/10W
R256	1-216-037-00	METAL CHIP	330	5%	1/10W
R257	1-216-037-00	METAL CHIP	330	5%	1/10W
R258	1-216-037-00	METAL CHIP	330	5%	1/10W
R259	1-216-073-00	METAL CHIP	10K	5%	1/10W
R260	1-216-025-00	METAL CHIP	100	5%	1/10W
R261	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R262	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R263	1-216-073-00	METAL CHIP	10K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R264	1-216-073-00	METAL CHIP	10K	5%	1/10W
R265	1-216-073-00	METAL CHIP	10K	5%	1/10W
R266	1-216-073-00	METAL CHIP	10K	5%	1/10W
R267	1-216-073-00	METAL CHIP	10K	5%	1/10W
R270	1-216-224-91	METAL GLAZE	12K	5%	1/8W
R271	1-216-224-91	METAL GLAZE	12K	5%	1/8W
< SWITCH >					
S201	1-571-977-11	SWITCH, TACTIL (■)			
S202	1-571-977-11	SWITCH, TACTIL (SURROUND)			
S203	1-571-977-11	SWITCH, TACTIL (AUTO PAUSE)			
S204	1-572-126-11	SWITCH, PUSH (1 KEY) (DOOR SW)			
< TRANSFORMER >					
T201	1-448-740-21	TRANSFORMER, DC-DC CONVERTER			
< VIBRATOR >					
X201	1-579-431-11	VIBLATOR, CRYSTAL (32KHz)			
X202	1-579-223-11	OSCILLATOR, CERAMIC (8MHz)			

* A-6423-024-A FP-728 (J78) BOARD, COMPLETE					

(Ref. NO 3,000 Series)					
< CAPACITOR >					
C001	1-128-031-11	ELECT CHIP	10uF	0	16V
C002	1-128-031-11	ELECT CHIP	10uF	0	16V
C003	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C004	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C005	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
< CONNECTOR >					
* CN001	1-566-185-11	PIN, CONNECTOR (PC BOARD)	6P		
CN002	1-566-186-11	PIN, CONNECTOR (PC BOARD)	7P		
CN003	1-506-486-11	PIN, CONNECTOR	7P		
< DIODE >					
D001	8-719-042-48	DIODE SLR-33DC3F (VOCAL)			
D002	8-719-042-48	DIODE SLR-33DC3F (VOCAL SUPPORT)			
D003	8-719-042-48	DIODE SLR-33DC3F (KARAOKE PON)			
D004	8-719-042-48	DIODE SLR-33DC3F (ONTA)			
D005	8-719-042-48	DIODE SLR-33DC3F (RESERVE)			
D006	8-719-042-50	DIODE SLR-33MC3F (SIDE A)			
D007	8-719-042-50	DIODE SLR-33MC3F (SIDE B)			
< IC >					
IC001	8-759-099-06	IC M5218AFP-TE1			

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

Ref. No.	Part No.	Description	Remark
< RESISTOR >			
R001	1-216-081-00	METAL CHIP 22K 5%	1/10W
R002	1-216-071-00	METAL CHIP 8.2K 5%	1/10W
R003	1-216-063-00	METAL CHIP 3.9K 5%	1/10W
R004	1-216-059-00	METAL CHIP 2.7K 5%	1/10W
R005	1-216-081-00	METAL CHIP 22K 5%	1/10W
R006	1-216-071-00	METAL CHIP 8.2K 5%	1/10W
R007	1-216-063-00	METAL CHIP 3.9K 5%	1/10W
R008	1-216-059-00	METAL CHIP 2.7K 5%	1/10W
R009	1-216-081-00	METAL CHIP 22K 5%	1/10W
R010	1-216-071-00	METAL CHIP 8.2K 5%	1/10W
R011	1-216-063-00	METAL CHIP 3.9K 5%	1/10W
R012	1-216-059-00	METAL CHIP 2.7K 5%	1/10W
R013	1-216-081-00	METAL CHIP 22K 5%	1/10W
R014	1-216-071-00	METAL CHIP 8.2K 5%	1/10W
R015	1-216-063-00	METAL CHIP 3.9K 5%	1/10W
R016	1-216-059-00	METAL CHIP 2.7K 5%	1/10W
R017	1-216-081-00	METAL CHIP 22K 5%	1/10W
R018	1-216-071-00	METAL CHIP 8.2K 5%	1/10W
R019	1-216-063-00	METAL CHIP 3.9K 5%	1/10W
R020	1-216-059-00	METAL CHIP 2.7K 5%	1/10W
R021	1-216-037-00	METAL CHIP 330 5%	1/10W
R022	1-216-037-00	METAL CHIP 330 5%	1/10W
R023	1-216-037-00	METAL CHIP 330 5%	1/10W
R024	1-216-037-00	METAL CHIP 330 5%	1/10W
R025	1-216-037-00	METAL CHIP 330 5%	1/10W
R026	1-216-037-00	METAL CHIP 330 5%	1/10W
R027	1-216-037-00	METAL CHIP 330 5%	1/10W
R028	1-216-049-00	METAL CHIP 1K 5%	1/10W
R029	1-216-049-00	METAL CHIP 1K 5%	1/10W
R030	1-216-049-00	METAL CHIP 1K 5%	1/10W
R031	1-216-081-00	METAL CHIP 22K 5%	1/10W
< VARIABLE RESISTOR >			
RV001	1-223-504-11	RES, VAR, CARBON 20K (MIC VOL 1)	
RV002	1-223-504-11	RES, VAR, CARBON 20K (MIC VOL 2)	
< SWITCH >			
S001	1-571-977-11	SWITCH, TACTIL (1)	
S002	1-571-977-11	SWITCH, TACTIL (2)	
S003	1-571-977-11	SWITCH, TACTIL (3)	
S004	1-571-977-11	SWITCH, TACTIL (4)	
S005	1-571-977-11	SWITCH, TACTIL (5)	
S006	1-571-977-11	SWITCH, TACTIL (6)	
S007	1-571-977-11	SWITCH, TACTIL (7)	
S008	1-571-977-11	SWITCH, TACTIL (8)	
S009	1-571-977-11	SWITCH, TACTIL (9)	
S010	1-571-977-11	SWITCH, TACTIL (10)	

Ref. No.	Part No.	Description	Remark
S011	1-571-977-11	SWITCH, TACTIL (11)	
S012	1-571-977-11	SWITCH, TACTIL (12)	
S013	1-571-977-11	SWITCH, TACTIL (13)	
S014	1-571-977-11	SWITCH, TACTIL (14)	
S015	1-571-977-11	SWITCH, TACTIL (15)	
S016	1-571-977-11	SWITCH, TACTIL (VOCAL)	
S017	1-571-977-11	SWITCH, TACTIL (VOCAL SUPPORT)	
S018	1-571-977-11	SWITCH, TACTIL (KARAOKE PON)	
S019	1-571-977-11	SWITCH, TACTIL (ONTA)	
S020	1-571-977-11	SWITCH, TACTIL (RESERVE)	
S021	1-571-977-11	SWITCH, TACTIL (△ OPEN/CLOSE)	
S022	1-571-977-11	SWITCH, TACTIL (SIDE A)	
S023	1-571-977-11	SWITCH, TACTIL (■)	
S024	1-571-977-11	SWITCH, TACTIL (▷)	
S025	1-571-977-11	SWITCH, TACTIL (SIDE B)	

*	A-6423-021-A	HP-714 (J78) BOARD, COMPLETE	

(Ref. NO 5,000 Series)			
< CAPACITOR >			
C401	1-163-033-00	CERAMIC CHIP 0.022uF	50V
C404	1-163-031-11	CERAMIC CHIP 0.01uF	50V
< CONNECTOR >			
CN401	1-506-468-11	PIN, CONNECTOR 3P	
< FILTER >			
FL401	1-236-071-21	ENCAPSULATED COMPONENT	
< JACK >			
J401	1-507-796-71	JACK (HEADPHONE)	
< RESISTOR >			
R402	1-216-025-00	METAL CHIP 100 5%	1/10W
R403	1-216-059-00	METAL CHIP 2.7K 5%	1/10W
R404	1-216-063-00	METAL CHIP 3.9K 5%	1/10W
< SWITCH >			
S401	1-692-189-11	SWITCH, ROTARY (KARAOKE/NORMAL/AUX/(KARAOKE))	

*	A-6423-027-A	KP-706 (J78) BOARD, COMPLETE	

(Ref. NO 7,000 Series)			

KP-706

Ref. No.	Part No.	Description	Remark		
< CAPACITOR >					
C501	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C502	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C503	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C504	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C505	1-130-468-00	MYLAR	560PF	5%	50V
C506	1-130-468-00	MYLAR	560PF	5%	50V
C507	1-124-902-00	ELECT	0.47uF	20%	50V
C508	1-124-902-00	ELECT	0.47uF	20%	50V
C510	1-124-584-00	ELECT	100uF	20%	10V
C511	1-124-915-11	ELECT	10uF	20%	63V
C512	1-124-915-11	ELECT	10uF	20%	63V
C513	1-126-163-11	ELECT	4.7uF	20%	50V
C514	1-126-163-11	ELECT	4.7uF	20%	50V
C525	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C526	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C527	1-124-927-11	ELECT	4.7uF	20%	100V
C528	1-124-927-11	ELECT	4.7uF	20%	100V
C529	1-130-483-00	MYLAR	0.01uF	5%	50V
C531	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C534	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C536	1-124-248-00	ELECT	22uF	20%	35V
C539	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C541	1-104-668-11	ELECT	33uF	20%	35V
C542	1-104-668-11	ELECT	33uF	20%	35V
C543	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C544	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C545	1-136-177-00	FILM	1uF	5%	50V
C546	1-136-177-00	FILM	1uF	5%	50V
C547	1-130-479-00	MYLAR	0.0047uF	5%	50V
C548	1-130-479-00	MYLAR	0.0047uF	5%	50V
C553	1-126-923-11	ELECT	220uF	20%	10V
C555	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C556	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C558	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C559	1-137-522-11	FILM	0.01uF	5%	50V
C560	1-137-522-11	FILM	0.01uF	5%	50V
C561	1-137-522-11	FILM	0.01uF	5%	50V
C562	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C564	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C566	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C568	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C569	1-130-467-00	MYLAR	470PF	5%	50V
C570	1-130-467-00	MYLAR	470PF	5%	50V
C581	1-124-927-11	ELECT	4.7uF	20%	100V
C582	1-126-163-11	ELECT	4.7uF	20%	50V
C583	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C584	1-124-927-11	ELECT	4.7uF	20%	100V

Ref. No.	Part No.	Description	Remark		
C586	1-124-927-11	ELECT	4.7uF	20%	100V
C587	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C588	1-163-012-00	CERAMIC CHIP	0.0018uF	10%	50V
C591	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C592	1-136-165-00	FILM	0.1uF	5%	50V
C602	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C603	1-130-477-00	MYLAR	0.0033uF	5%	50V
C604	1-130-477-00	MYLAR	0.0033uF	5%	50V
C605	1-130-477-00	MYLAR	0.0033uF	5%	50V
C607	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C608	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C610	1-126-101-11	ELECT	100uF	20%	16V
C612	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C615	1-137-522-11	FILM	0.01uF	5%	50V
C616	1-126-101-11	ELECT	100uF	20%	16V
C617	1-104-658-11	ELECT	100uF	20%	10V
C618	1-124-443-71	ELECT	100uF	20%	10V
C641	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C642	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C643	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C644	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C645	1-124-927-11	ELECT	4.7uF	20%	100V
C646	1-124-927-11	ELECT	4.7uF	20%	100V
< CONNECTOR >					
CN501	1-506-484-11	PIN, CONNECTOR	5P		
CN502	1-506-487-11	PIN, CONNECTOR	8P		
CN503	1-506-485-11	PIN, CONNECTOR	6P		
CN504	1-506-486-11	PIN, CONNECTOR	7P		
* CN505	1-564-019-31	PIN, CONNECTOR	9P		
CN506	1-564-013-21	PIN, CONNECTOR	3P		
CN507	1-506-485-11	PIN, CONNECTOR	6P		
CN508	1-506-488-11	PIN, CONNECTOR	9P		
< DIODE >					
D501	8-719-400-18	DIODE	MA152WK		
D502	8-719-400-18	DIODE	MA152WK		
D521	8-719-402-34	DIODE	MA3120-TX		
D591	8-719-976-91	DIODE	DTZ4.3B		
D592	8-719-976-91	DIODE	DTZ4.3B		
D593	8-719-800-76	DIODE	1SS226		
< FERRITE BEAD >					
FB542	1-543-813-21	FILTER, EMI			
FB602	1-543-813-21	FILTER, EMI			
FB603	1-543-813-21	FILTER, EMI			
FB604	1-543-813-21	FILTER, EMI			
FB605	1-543-813-21	FILTER, EMI			

Ref. No.	Part No.	Description	Remark
FB606	1-543-813-21	FILTER, EMI	
FB607	1-543-813-21	FILTER, EMI	
FB608	1-543-813-21	FILTER, EMI	
FB609	1-543-813-21	FILTER, EMI	
< FILTER >			
FL501	1-236-071-21	ENCAPSULATED COMPONENT	
FL502	1-236-071-21	ENCAPSULATED COMPONENT	
FL521	1-236-071-21	ENCAPSULATED COMPONENT	
FL541	1-236-071-21	ENCAPSULATED COMPONENT	
FL542	1-236-071-21	ENCAPSULATED COMPONENT	
FL543	1-236-071-21	ENCAPSULATED COMPONENT	
FL544	1-236-071-21	ENCAPSULATED COMPONENT	
FL545	1-236-071-21	ENCAPSULATED COMPONENT	
FL601	1-236-071-21	ENCAPSULATED COMPONENT	
FL602	1-236-071-21	ENCAPSULATED COMPONENT	
< IC >			
IC501	8-759-099-06	IC M5218AFP-TE1	
IC521	8-759-099-06	IC M5218AFP-TE1	
IC522	8-759-099-06	IC M5218AFP-TE1	
IC523	8-759-177-09	IC MB89613-DCX780	
IC524	8-759-231-92	IC TA7291P	
IC540	8-759-099-06	IC M5218AFP-TE1	
IC541	8-759-982-04	IC RC5532M	
IC542	8-759-177-64	IC LC8390M-T1	
IC543	8-759-233-17	IC TC74HC374AP	
IC544	8-759-011-65	IC MC74HC4053F	
△IC554	8-759-231-53	IC TA7805S	
IC581	8-759-634-96	IC M5207L05	
IC582	8-759-701-51	IC NJM2072M	
IC583	8-759-099-06	IC M5218AFP-TE1	
IC584	8-759-099-06	IC M5218AFP-TE1	
IC601	8-759-177-11	IC YSS216-F	
IC602	8-759-177-12	IC MSM51C464A	
< JACK >			
J501	1-507-797-21	JACK, LARGE TYPE (2 GANG) (MIC 1/2)	
J541	1-565-352-11	JACK, PIN 2P (AUX L/R)	
< JUMPER RESISTOR >			
JR522	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR551	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR552	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR554	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR611	1-216-295-00	METAL CHIP 0 5% 1/10W	
< TRANSISTOR >			
Q501	8-729-900-53	TRANSISTOR DTC114EK	

Ref. No.	Part No.	Description	Remark
Q502	8-729-900-53	TRANSISTOR DTC114EK	
Q503	8-729-901-04	TRANSISTOR DTA114EK	
Q504	8-729-901-04	TRANSISTOR DTA114EK	
Q505	8-729-920-31	TRANSISTOR DTC343TK	
Q506	8-729-920-31	TRANSISTOR DTC343TK	
< RESISTOR >			
R501	1-216-025-00	METAL CHIP 100 5% 1/10W	
R502	1-216-025-00	METAL CHIP 100 5% 1/10W	
R503	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R504	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R505	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R506	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R507	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R508	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R509	1-216-083-00	METAL CHIP 27K 5% 1/10W	
R510	1-216-083-00	METAL CHIP 27K 5% 1/10W	
R511	1-216-033-00	METAL CHIP 220 5% 1/10W	
R512	1-216-033-00	METAL CHIP 220 5% 1/10W	
R513	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R514	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R515	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R516	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R517	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R518	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R519	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R520	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R521	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R522	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R523	1-216-025-00	METAL CHIP 100 5% 1/10W	
R524	1-216-025-00	METAL CHIP 100 5% 1/10W	
R525	1-216-025-00	METAL CHIP 100 5% 1/10W	
R526	1-216-025-00	METAL CHIP 100 5% 1/10W	
R527	1-216-025-00	METAL CHIP 100 5% 1/10W	
R528	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R529	1-216-057-91	METAL GLAZE 2.2K 5% 1/10W	
R530	1-216-057-91	METAL GLAZE 2.2K 5% 1/10W	
R531	1-216-057-91	METAL GLAZE 2.2K 5% 1/10W	
△R532	1-212-950-00	FUSIBLE 4.7 5% 1/2W F	
R533	1-216-025-00	METAL CHIP 100 5% 1/10W	
R535	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R536	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R537	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R538	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R539	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R540	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R541	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R542	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.

KP-706**MA-706**

Ref. No.	Part No.	Description	Remark		
R543	1-216-650-11	METAL CHIP	910	0.5%	1/10W
R544	1-216-650-11	METAL CHIP	910	0.5%	1/10W
R545	1-216-650-11	METAL CHIP	910	0.5%	1/10W
R546	1-216-652-11	METAL CHIP	1.1K	0.5%	1/10W
R547	1-216-652-11	METAL CHIP	1.1K	0.5%	1/10W
R548	1-216-650-11	METAL CHIP	910	0.5%	1/10W
R549	1-216-655-11	METAL CHIP	1.5K	0.5%	1/10W
R550	1-216-655-11	METAL CHIP	1.5K	0.5%	1/10W
R551	1-216-698-11	METAL CHIP	91K	0.5%	1/10W
R552	1-216-698-11	METAL CHIP	91K	0.5%	1/10W
R553	1-216-676-11	METAL CHIP	11K	0.5%	1/10W
R554	1-216-676-11	METAL CHIP	11K	0.5%	1/10W
R555	1-218-753-11	METAL CHIP	110K	0.50%	1/10W
R556	1-218-753-11	METAL CHIP	110K	0.50%	1/10W
R557	1-216-698-11	METAL CHIP	91K	0.5%	1/10W
R558	1-216-698-11	METAL CHIP	91K	0.5%	1/10W
R559	1-216-025-00	METAL CHIP	100	5%	1/10W
R560	1-216-025-00	METAL CHIP	100	5%	1/10W
R561	1-216-295-00	METAL CHIP	0	5%	1/10W
R562	1-216-037-00	METAL CHIP	330	5%	1/10W
R563	1-216-025-00	METAL CHIP	100	5%	1/10W
R564	1-216-025-00	METAL CHIP	100	5%	1/10W
R565	1-216-025-00	METAL CHIP	100	5%	1/10W
R567	1-216-025-00	METAL CHIP	100	5%	1/10W
R570	1-216-665-11	METAL CHIP	3.9K	0.5%	1/10W
R571	1-216-665-11	METAL CHIP	3.9K	0.5%	1/10W
R581	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R582	1-216-073-00	METAL CHIP	10K	5%	1/10W
R583	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R585	1-216-105-00	METAL CHIP	220K	5%	1/10W
R586	1-216-073-00	METAL CHIP	10K	5%	1/10W
R587	1-216-073-00	METAL CHIP	10K	5%	1/10W
R588	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R589	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R590	1-216-097-00	METAL CHIP	100K	5%	1/10W
R591	1-216-073-00	METAL CHIP	10K	5%	1/10W
R592	1-216-073-00	METAL CHIP	10K	5%	1/10W
R593	1-216-073-00	METAL CHIP	10K	5%	1/10W
R594	1-216-073-00	METAL CHIP	10K	5%	1/10W
R595	1-216-049-00	METAL CHIP	1K	5%	1/10W
R596	1-216-049-00	METAL CHIP	1K	5%	1/10W
R597	1-216-049-00	METAL CHIP	1K	5%	1/10W
R598	1-216-073-00	METAL CHIP	10K	5%	1/10W
R601	1-216-025-00	METAL CHIP	100	5%	1/10W
R602	1-216-025-00	METAL CHIP	100	5%	1/10W
R603	1-216-025-00	METAL CHIP	100	5%	1/10W
R604	1-216-025-00	METAL CHIP	100	5%	1/10W
R609	1-216-025-00	METAL CHIP	100	5%	1/10W
R610	1-216-025-00	METAL CHIP	100	5%	1/10W

Ref. No.	Part No.	Description	Remark		
R611	1-216-025-00	METAL CHIP	100	5%	1/10W
R612	1-216-121-00	METAL CHIP	1M	5%	1/10W
R613	1-216-025-00	METAL CHIP	100	5%	1/10W
R614	1-216-025-00	METAL CHIP	100	5%	1/10W
R615	1-216-097-00	METAL CHIP	100K	5%	1/10W
R616	1-216-097-00	METAL CHIP	100K	5%	1/10W
R617	1-216-081-00	METAL CHIP	22K	5%	1/10W
R618	1-216-073-00	METAL CHIP	10K	5%	1/10W
R619	1-216-073-00	METAL CHIP	10K	5%	1/10W
R620	1-216-057-91	METAL GLAZE	2.2K	5%	1/10W
R621	1-216-057-91	METAL GLAZE	2.2K	5%	1/10W
R622	1-216-073-00	METAL CHIP	10K	5%	1/10W
R623	1-216-073-00	METAL CHIP	10K	5%	1/10W
R627	1-216-049-00	METAL CHIP	1K	5%	1/10W
R628	1-216-049-00	METAL CHIP	1K	5%	1/10W
R637	1-216-073-00	METAL CHIP	10K	5%	1/10W
R638	1-216-073-00	METAL CHIP	10K	5%	1/10W
R641	1-216-105-00	METAL CHIP	220K	5%	1/10W
R642	1-216-105-00	METAL CHIP	220K	5%	1/10W
R643	1-216-105-00	METAL CHIP	220K	5%	1/10W
R644	1-216-105-00	METAL CHIP	220K	5%	1/10W
R645	1-216-097-00	METAL CHIP	100K	5%	1/10W
R646	1-216-097-00	METAL CHIP	100K	5%	1/10W
R647	1-216-121-00	METAL CHIP	1M	5%	1/10W
R648	1-216-121-00	METAL CHIP	1M	5%	1/10W
< VIBRATOR >					
X520	1-579-952-21	VIBRATOR, CERAMIC (8MHz)			

*	A-6423-026-A	MA-706 (J78) BOARD, COMPLETE			

(Ref. NO 7,000 Series)					
< CAPACITOR >					
C302	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C303	1-124-584-00	ELECT	100uF	20%	10V
C304	1-124-465-00	ELECT	0.47uF	20%	50V
C305	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C306	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C307	1-124-261-00	ELECT	10uF	20%	50V
C308	1-126-160-11	ELECT	1uF	20%	50V
C309	1-126-160-11	ELECT	1uF	20%	50V
C310	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C311	1-124-261-00	ELECT	10uF	20%	50V
C312	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C313	1-124-465-00	ELECT	0.47uF	20%	50V
C314	1-124-584-00	ELECT	100uF	20%	10V
C317	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C318	1-165-319-11	CERAMIC CHIP	0.1uF		50V

Ref. No.	Part No.	Description	Remark
< CONNECTOR >			
CN301	1-506-487-11	PIN, CONNECTOR 8P	
< DIODE >			
D301	8-719-800-76	DIODE 1SS226	
D302	8-719-800-76	DIODE 1SS226	
D303	8-719-157-33	DIODE RD6. 2M-B	
D304	8-719-157-33	DIODE RD6. 2M-B	
D305	8-719-400-18	DIODE MA152WK	
D306	8-719-400-18	DIODE MA152WK	
< FILTER >			
FL301	1-236-071-21	ENCAPSULATED COMPONENT	
FL302	1-236-071-21	ENCAPSULATED COMPONENT	
< IC >			
IC301	8-759-099-06	IC M5218AFP-TE1	
< JACK >			
J301	1-507-678-00	JACK (CONTROL MIC 1/2)	
J302	1-750-990-11	JACK (LARGE TYPE) 2P (MIC1/MIC2)	
< TRANSISTOR >			
Q301	8-729-900-53	TRANSISTOR DTC114EK	
Q302	8-729-900-53	TRANSISTOR DTC114EK	
Q303	8-729-901-04	TRANSISTOR DTA114EK	
Q304	8-729-901-04	TRANSISTOR DTA114EK	
Q305	8-729-920-31	TRANSISTOR DTC343TK	
Q306	8-729-920-31	TRANSISTOR DTC343TK	
< RESISTOR >			
R301	1-216-025-00	METAL CHIP 100 5% 1/10W	
R302	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R303	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R304	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R305	1-216-083-00	METAL CHIP 27K 5% 1/10W	
R306	1-216-025-00	METAL CHIP 100 5% 1/10W	
R307	1-216-025-00	METAL CHIP 100 5% 1/10W	
R308	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R309	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R310	1-216-083-00	METAL CHIP 27K 5% 1/10W	
R311	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R312	1-216-033-00	METAL CHIP 220 5% 1/10W	
R313	1-216-033-00	METAL CHIP 220 5% 1/10W	
R314	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R315	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	

Ref. No.	Part No.	Description	Remark
R317	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R318	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R319	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R320	1-216-073-00	METAL CHIP 10K 5% 1/10W	

*	A-6423-008-A	MB-702 (E78) BOARD, COMPLETE	

(Ref. NO 1,000 Series)			
*	3-738-015-01	COVER, (DIA. 6) CARBON VR	
	3-954-678-01	SHIELD (UPPER), MB	
	9-911-839-XX	CUSHION	
< CAPACITOR >			
C001	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C002	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C003	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C004	1-163-239-11	CERAMIC CHIP 33PF 5% 50V	
C005	1-124-126-00	ELECT 47uF 20% 16V	
C006	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C007	1-163-097-00	CERAMIC CHIP 15PF 5% 50V	
C007	1-163-125-00	CERAMIC CHIP 220PF 5% 50V	
C008	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C009	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C010	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C011	1-126-177-11	ELECT 100uF 20% 10V	
C012	1-126-177-11	ELECT 100uF 20% 10V	
C013	1-126-177-11	ELECT 100uF 20% 10V	
C014	1-163-241-11	CERAMIC CHIP 39PF 5% 50V	
C015	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C016	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C017	1-163-229-11	CERAMIC CHIP 12PF 5% 50V	
C018	1-126-177-11	ELECT 100uF 20% 10V	
C019	1-126-154-11	ELECT 47uF 20% 6.3V	
C020	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C021	1-126-157-11	ELECT 10uF 20% 16V	
C022	1-126-157-11	ELECT 10uF 20% 16V	
C023	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C024	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C025	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C026	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C027	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C028	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C029	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C030	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C031	1-163-224-11	CERAMIC CHIP 7PF 0.25PF 50V	
C032	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C033	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C034	1-163-031-11	CERAMIC CHIP 0.01uF 50V	

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Ref. No.	Part No.	Description	Remark	
C035	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C036	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C037	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C038	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C039	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C040	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C041	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C042	1-126-177-11	ELECT	100uF	20% 10V
C043	1-124-903-11	ELECT	1uF	20% 50V
C044	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C045	1-124-903-11	ELECT	1uF	20% 50V
C046	1-126-177-11	ELECT	100uF	20% 10V
C047	1-163-257-11	CERAMIC CHIP	180PF	5% 50V
C048	1-163-096-00	CERAMIC CHIP	13PF	5% 50V
C049	1-126-177-11	ELECT	100uF	20% 10V
C051	1-163-099-00	CERAMIC CHIP	18PF	5% 50V
C052	1-163-097-00	CERAMIC CHIP	15PF	5% 50V
C053	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C054	1-163-237-11	CERAMIC CHIP	27PF	5% 50V
C055	1-163-243-11	CERAMIC CHIP	47PF	5% 50V
C056	1-163-224-11	CERAMIC CHIP	7PF	0.25PF 50V
C057	1-126-154-11	ELECT	47uF	20% 6.3V
C058	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C059	1-126-157-11	ELECT	10uF	20% 16V
C060	1-163-038-00	CERAMIC CHIP	0.1uF	25V
C061	1-126-177-11	ELECT	100uF	20% 10V
C062	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C064	1-126-177-11	ELECT	100uF	20% 10V
C065	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C066	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C068	1-163-099-00	CERAMIC CHIP	18PF	5% 50V
C069	1-126-177-11	ELECT	100uF	20% 10V
C070	1-163-224-11	CERAMIC CHIP	7PF	0.25PF 50V
C071	1-163-038-00	CERAMIC CHIP	0.1uF	25V
C072	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C073	1-163-239-11	CERAMIC CHIP	33PF	5% 50V
C074	1-126-177-11	ELECT	100uF	20% 10V
C075	1-163-113-00	CERAMIC CHIP	68PF	5% 50V
C076	1-163-038-00	CERAMIC CHIP	0.1uF	25V
C078	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C079	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C080	1-126-177-11	ELECT	100uF	20% 10V
C081	1-126-177-11	ELECT	100uF	20% 10V
C082	1-163-038-00	CERAMIC CHIP	0.1uF	25V
C083	1-163-038-00	CERAMIC CHIP	0.1uF	25V
C084	1-126-177-11	ELECT	100uF	20% 10V
C088	1-164-346-11	CERAMIC CHIP	1uF	16V
C095	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C096	1-163-031-11	CERAMIC CHIP	0.01uF	50V

Ref. No.	Part No.	Description	Remark	
C097	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C099	1-124-126-00	ELECT	47uF	20% 16V
C100	1-163-235-11	CERAMIC CHIP	22PF	5% 50V
C101	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C102	1-124-126-00	ELECT	47uF	20% 16V
C103	1-124-464-11	ELECT	0.22uF	20% 50V
C104	1-163-222-11	CERAMIC CHIP	5PF	0.25PF 50V
C105	1-124-589-11	ELECT	47uF	20% 16V
C106	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C107	1-124-126-00	ELECT	47uF	20% 16V
C108	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C109	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C110	1-163-229-11	CERAMIC CHIP	12PF	5% 50V
C111	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C112	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C113	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C114	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C115	1-164-005-11	CERAMIC CHIP	0.47uF	25V
C116	1-163-038-00	CERAMIC CHIP	0.1uF	25V
C117	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C118	1-126-177-11	ELECT	100uF	20% 10V
C119	1-163-239-11	CERAMIC CHIP	33PF	5% 50V
C120	1-163-227-11	CERAMIC CHIP	10PF	0.5PF 50V
C121	1-163-113-00	CERAMIC CHIP	68PF	5% 50V
C122	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C125	1-163-038-00	CERAMIC CHIP	0.1uF	25V
C126	1-124-257-00	ELECT	2.2uF	20% 50V
C127	1-124-257-00	ELECT	2.2uF	20% 50V
C128	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C129	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C130	1-126-177-11	ELECT	100uF	20% 10V
C131	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C133	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C134	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C135	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C136	1-163-239-11	CERAMIC CHIP	33PF	5% 50V
C137	1-163-235-11	CERAMIC CHIP	22PF	5% 50V
C138	1-163-229-11	CERAMIC CHIP	12PF	5% 50V
C139	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C140	1-163-038-00	CERAMIC CHIP	0.1uF	25V
C141	1-163-038-00	CERAMIC CHIP	0.1uF	25V
C142	1-126-177-11	ELECT	100uF	20% 10V
C143	1-163-237-11	CERAMIC CHIP	27PF	5% 50V
C144	1-163-237-11	CERAMIC CHIP	27PF	5% 50V
C145	1-163-251-11	CERAMIC CHIP	100PF	5% 50V
C146	1-163-241-11	CERAMIC CHIP	39PF	5% 50V
C147	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C148	1-163-239-11	CERAMIC CHIP	33PF	5% 50V

Ref. No.	Part No.	Description	Remark
C149	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C150	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C151	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C155	1-163-097-00	CERAMIC CHIP	15PF 5% 50V
C156	1-163-097-00	CERAMIC CHIP	15PF 5% 50V
C157	1-164-005-11	CERAMIC CHIP	0.47uF 25V
C158	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C160	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C162	1-163-127-00	CERAMIC CHIP	270PF 5% 50V
C163	1-163-241-11	CERAMIC CHIP	39PF 5% 50V
C164	1-163-125-00	CERAMIC CHIP	220PF 5% 50V
C165	1-163-097-00	CERAMIC CHIP	15PF 5% 50V
C170	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C171	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C172	1-163-019-00	CERAMIC CHIP	0.0068uF 10% 50V
C173	1-124-903-11	ELECT	1uF 20% 50V
C174	1-164-346-11	CERAMIC CHIP	1uF 16V
C175	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C176	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C201	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C202	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C203	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C204	1-163-809-11	CERAMIC CHIP	0.047uF 10% 25V
C205	1-163-011-11	CERAMIC CHIP	0.0015uF 10% 50V
C206	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C207	1-124-126-00	ELECT	47uF 20% 16V
C208	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C209	1-164-005-11	CERAMIC CHIP	0.47uF 25V
C210	1-163-235-11	CERAMIC CHIP	22PF 5% 50V
C211	1-124-126-00	ELECT	47uF 20% 16V
C212	1-163-133-00	CERAMIC CHIP	470PF 5% 50V
C213	1-163-241-11	CERAMIC CHIP	39PF 5% 50V
C214	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C215	1-163-241-11	CERAMIC CHIP	39PF 5% 50V
C216	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C217	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C218	1-124-126-00	ELECT	47uF 20% 16V
C219	1-163-133-00	CERAMIC CHIP	470PF 5% 50V
C220	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C221	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C222	1-163-121-00	CERAMIC CHIP	150PF 5% 50V
C223	1-163-241-11	CERAMIC CHIP	39PF 5% 50V
C224	1-126-177-11	ELECT	100uF 20% 10V
C225	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C226	1-164-695-11	CERAMIC CHIP	0.0022uF 5% 50V
C227	1-163-809-11	CERAMIC CHIP	0.047uF 10% 25V
C228	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C229	1-163-031-11	CERAMIC CHIP	0.01uF 50V

Ref. No.	Part No.	Description	Remark
C230	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C231	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C232	1-124-126-00	ELECT	47uF 20% 16V
C233	1-124-927-11	ELECT	4.7uF 20% 100V
C234	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C235	1-124-126-00	ELECT	47uF 20% 16V
C236	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C238	1-124-499-11	ELECT, NONPOLAR	1uF 20% 50V
C239	1-124-287-00	ELECT	10uF 20% 10V
C240	1-163-113-00	CERAMIC CHIP	68PF 5% 50V
C241	1-163-113-00	CERAMIC CHIP	68PF 5% 50V
C242	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C243	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C244	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C245	1-124-126-00	ELECT	47uF 20% 16V
C246	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C247	1-163-102-00	CERAMIC CHIP	24PF 5% 50V
C248	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C249	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C250	1-163-115-00	CERAMIC CHIP	82PF 5% 50V
C251	1-163-241-11	CERAMIC CHIP	39PF 5% 50V
C252	1-163-241-11	CERAMIC CHIP	39PF 5% 50V
C253	1-124-126-00	ELECT	47uF 20% 16V
C254	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C255	1-163-115-00	CERAMIC CHIP	82PF 5% 50V
C256	1-163-241-11	CERAMIC CHIP	39PF 5% 50V
C257	1-163-241-11	CERAMIC CHIP	39PF 5% 50V
C258	1-104-547-11	FILM CHIP	0.0047uF 5% 16V
C259	1-104-540-11	FILM CHIP	0.0012uF 5% 50V
C260	1-104-547-11	FILM CHIP	0.0047uF 5% 16V
C261	1-104-540-11	FILM CHIP	0.0012uF 5% 50V
C262	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C263	1-130-495-00	MYLAR	0.1uF 5% 50V
C264	1-130-495-00	MYLAR	0.1uF 5% 50V
C265	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C266	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C267	1-130-495-00	MYLAR	0.1uF 5% 50V
C268	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C269	1-130-495-00	MYLAR	0.1uF 5% 50V
C270	1-126-022-11	ELECT	47uF 20% 16V
C271	1-126-022-11	ELECT	47uF 20% 16V
C272	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C273	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C274	1-126-022-11	ELECT	47uF 20% 16V
C275	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C276	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C277	1-126-022-11	ELECT	47uF 20% 16V
C278	1-126-022-11	ELECT	47uF 20% 16V
C279	1-126-022-11	ELECT	47uF 20% 16V

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Ref. No.	Part No.	Description	Remark		
C280	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C281	1-124-126-00	ELECT	47uF	20%	16V
C282	1-124-126-00	ELECT	47uF	20%	16V
C283	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C289	1-124-925-11	ELECT	2.2uF	20%	100V
C290	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C291	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C292	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C293	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C294	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C295	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C296	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C297	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C298	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C299	1-124-925-11	ELECT	2.2uF	20%	100V
C300	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C302	1-126-177-11	ELECT	100uF	20%	10V
C303	1-126-177-11	ELECT	100uF	20%	10V
C307	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C308	1-124-927-11	ELECT	4.7uF	20%	100V
C327	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C329	1-124-903-11	ELECT	1uF	20%	50V
C330	1-124-903-11	ELECT	1uF	20%	50V
C331	1-104-541-11	FILM CHIP	0.0015uF	5%	50V
C332	1-104-541-11	FILM CHIP	0.0015uF	5%	50V
C333	1-104-541-11	FILM CHIP	0.0015uF	5%	50V
C334	1-104-541-11	FILM CHIP	0.0015uF	5%	50V
C335	1-124-997-11	ELECT	470uF	20%	10V
C399	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
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
C407	1-124-277-11	ELECT	4.7uF	20%	35V
C408	1-163-022-00	CERAMIC CHIP	0.012uF	10%	50V
C409	1-163-022-00	CERAMIC CHIP	0.012uF	10%	50V
C410	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C411	1-163-024-11	CERAMIC CHIP	0.018uF	10%	25V
C413	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C414	1-124-287-00	ELECT	10uF	20%	50V
C415	1-163-014-00	CERAMIC CHIP	0.0027uF	5%	50V
C416	1-164-005-11	CERAMIC CHIP	0.47uF		25V
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

Ref. No.	Part No.	Description	Remark		
C428	1-126-947-11	ELECT	47uF	20%	35V
C429	1-163-115-00	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	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
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	1-124-126-00	ELECT	47uF	20%	16V
C440	1-124-126-00	ELECT	47uF	20%	16V
C441	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C442	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C443	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C444	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C448	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C449	1-164-005-11	CERAMIC CHIP	0.47uF		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	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C469	1-163-222-11	CERAMIC CHIP	5PF		0.25PF 50V
C501	1-124-631-11	ELECT	47uF	20%	16V
C502	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C503	1-124-277-11	ELECT	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	1-124-927-11	ELECT	4.7uF	20%	100V
C507	1-126-947-11	ELECT	47uF	20%	35V
C508	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C509	1-126-177-11	ELECT	100uF	20%	10V
C510	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C511	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C512	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
C523	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C524	1-163-031-11	CERAMIC CHIP	0.01uF		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

Ref. No.	Part No.	Description	Remark		
C704	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C706	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C707	1-126-948-11	ELECT	100uF	20%	35V
C708	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C709	1-164-693-11	CERAMIC CHIP	0.0018uF	5%	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
C718	1-126-948-11	ELECT	100uF	20%	35V
C801	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C802	1-164-232-11	CERAMIC CHIP	0.01uF		50V
< CONNECTOR >					
CN103	1-506-467-11	PIN, CONNECTOR	2P		
CN104	1-506-467-11	PIN, CONNECTOR	2P		
CN201	1-506-468-11	PIN, CONNECTOR	3P		
CN203	1-506-470-11	PIN, CONNECTOR	5P		
CN204	1-506-471-11	PIN, CONNECTOR	6P		
CN205	1-506-474-11	PIN, CONNECTOR	9P		
CN206	1-506-469-11	PIN, CONNECTOR	4P		
CN401	1-750-687-11	HOUSING, CONNECTOR (PC BOARD)			
CN402	1-750-505-11	CONNECTOR, FPC	18P		
* CN403	1-691-503-11	CONNECTOR, FPC	14P		
CN501	1-506-468-11	PIN, CONNECTOR	3P		
CN502	1-506-469-11	PIN, CONNECTOR	4P		
CN503	1-564-006-71	PIN, CONNECTOR	7P		
CN504	1-506-473-11	PIN, CONNECTOR	8P		
CN702	1-506-476-11	PIN, CONNECTOR	11P		
W506	1-506-468-11	PIN, CONNECTOR	3P		
< TRIMMER >					
CT001	1-141-442-91	TRIMMER, CERAMIC			
< DIODE >					
D002	8-719-988-62	DIODE	1SS355		
D003	8-719-988-62	DIODE	1SS355		
D004	8-719-988-62	DIODE	1SS355		
D201	8-719-032-05	DIODE	KV1460TL00		
D202	8-719-400-18	DIODE	MA152WK		
D203	8-719-104-34	DIODE	1S2836		
D205	8-719-104-34	DIODE	1S2836		
D206	8-719-104-34	DIODE	1S2836		
D207	8-719-032-05	DIODE	KV1460TL00		
D208	8-719-104-34	DIODE	1S2836		
D209	8-719-401-92	DIODE	MA3082M-TX		
D210	8-719-104-34	DIODE	1S2836		
D213	8-719-400-18	DIODE	MA152WK		
D401	8-719-800-76	DIODE	1SS226		
D402	8-719-800-76	DIODE	1SS226		

Ref. No.	Part No.	Description	Remark		
D405	8-719-988-62	DIODE	1SS355		
D407	8-719-800-76	DIODE	1SS226		
D501	8-719-104-34	DIODE	1S2836		
D502	8-719-402-34	DIODE	MA3120-TX		
D503	8-719-104-34	DIODE	1S2836		
D504	8-719-400-75	DIODE	MA3091		
D506	8-719-104-34	DIODE	1S2836		
D507	8-719-104-34	DIODE	1S2836		
D703	8-719-210-39	DIODE	EC10QS-04		
D704	8-719-210-39	DIODE	EC10QS-04		
< FERRITE BEAD >					
FB203	1-412-390-21	INDUCTOR CHIP	0uH		
FB204	1-412-390-21	INDUCTOR CHIP	0uH		
FB205	1-412-390-21	INDUCTOR CHIP	0uH		
FB206	1-412-390-21	INDUCTOR CHIP	0uH		
FB207	1-412-390-21	INDUCTOR CHIP	0uH		
FB208	1-412-390-21	INDUCTOR CHIP	0uH		
FB209	1-412-390-21	INDUCTOR CHIP	0uH		
FB211	1-216-296-00	METAL CHIP	0	5%	1/8W
FB212	1-410-370-31	INDUCTOR CHIP	1.2uH		
FB213	1-216-296-00	METAL CHIP	0	5%	1/8W
FB501	1-543-775-11	FILTER, EMI			
FB502	1-543-775-11	FILTER, EMI			
FB503	1-543-775-11	FILTER, EMI			
FB504	1-412-390-21	INDUCTOR CHIP	0uH		
FB505	1-412-390-21	INDUCTOR CHIP	0uH		
FB506	1-412-390-21	INDUCTOR CHIP	0uH		
FB507	1-412-390-21	INDUCTOR CHIP	0uH		
FB508	1-543-775-11	FILTER, EMI			
< FILTER >					
FL001	1-239-319-11	FILTER, LOW PASS			
FL002	1-236-843-11	FILTER, BAND PASS			
FL005	1-239-557-11	LPF (5.5MHz)			
FL006	1-236-071-21	ENCAPSULATED COMPONENT			
FL007	1-577-543-11	FILTER, CERAMIC			
FL008	1-577-543-11	FILTER, CERAMIC			
FL009	1-577-543-11	FILTER, CERAMIC			
FL010	1-236-071-21	ENCAPSULATED COMPONENT			
FL011	1-236-071-21	ENCAPSULATED COMPONENT			
FL012	1-236-071-21	ENCAPSULATED COMPONENT			
FL013	1-236-071-21	ENCAPSULATED COMPONENT			
FL014	1-236-071-21	ENCAPSULATED COMPONENT			
FL015	1-236-071-21	ENCAPSULATED COMPONENT			
FL201	1-236-071-21	ENCAPSULATED COMPONENT			
FL202	1-236-071-21	ENCAPSULATED COMPONENT			
FL203	1-236-071-21	ENCAPSULATED COMPONENT			
FL204	1-236-071-21	ENCAPSULATED COMPONENT			

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Ref. No.	Part No.	Description	Remark
FL205	1-236-071-21	ENCAPSULATED COMPONENT	
FL207	1-236-071-21	ENCAPSULATED COMPONENT	
FL208	1-236-840-11	FILTER, BAND PASS	
FL209	1-236-071-21	ENCAPSULATED COMPONENT	
FL210	1-236-071-21	ENCAPSULATED COMPONENT	
FL213	1-236-744-21	FILTER, EMI	
FL214	1-236-744-21	FILTER, EMI	
FL215	1-236-744-21	FILTER, EMI	
FL216	1-236-744-21	FILTER, EMI	
FL401	1-235-922-11	FILTER, LOW PASS (1.7MHz)	
FL501	1-236-744-21	FILTER, EMI	
< IC >			
IC001	8-759-160-72 IC	CXA8020AQ	
IC003	8-759-063-26 IC	CXD8405Q	
IC004	8-759-098-80 IC	MB90085-123-EF	
IC005	8-759-063-27 IC	CXD8404Q	
IC007	8-759-927-46 IC	SN74HC00ANS	
IC201	8-749-921-12 IC	GP1F32T (DIGITAL OUT/OPTICAL)	
IC202	8-759-924-46 IC	BA4560F	
IC203	8-759-098-82 IC	YM7110	
IC204	8-752-342-65 IC	CXD2560M	
IC205	8-759-924-46 IC	BA4560F	
IC207	8-759-996-43 IC	RC4558PS	
IC208	8-752-352-93 IC	CXD2500BQ	
IC209	8-759-996-43 IC	RC4558PS	
IC210	8-759-924-46 IC	BA4560F	
IC211	8-759-996-43 IC	RC4558PS	
IC212	8-759-996-43 IC	RC4558PS	
IC213	8-759-996-43 IC	RC4558PS	
IC214	8-752-351-19 IC	CXD2561BM	
IC215	8-759-242-66 IC	TC4W66F	
IC220	8-759-604-35 IC	M5F78M05L	
IC222	8-759-031-84 IC	SC7S04F	
IC223	8-759-083-94 IC	TC7W74FU	
IC401	8-752-065-81 IC	CXA1632Q-T6	
△IC402	8-759-048-30 IC	LA6510L	
IC403	8-759-300-71 IC	HD14053BFP	
IC404	8-759-300-71 IC	HD14053BFP	
IC405	8-759-983-74 IC	LM324NS	
IC406	8-759-996-43 IC	RC4558PS	
IC409	8-759-996-43 IC	RC4558PS	
IC410	8-759-242-64 IC	TC4W53F	
IC501	8-759-177-19 IC	MB89094PF-G-107	
IC502	8-759-098-78 IC	MB606F06	
IC503	8-759-231-92 IC	TA7291P	
IC504	8-759-983-74 IC	LM324NS	
IC505	8-759-009-06 IC	MC14052BF	

Ref. No.	Part No.	Description	Remark
IC506	8-759-300-71 IC	HD14053BFP	
△IC701	8-759-946-09 IC	FA7611M	
< JACK >			
J001	1-750-503-11	CONNECTOR, ROUND TYPE (S VIDEO OUT 1/2)	
J201	1-565-351-91	JACK, PIN 3P (LINE OUT1)	
J202	1-565-351-91	JACK, PIN 3P (LINE OUT2)	
J501	1-507-678-00	JACK (CONTROL S IN)	
< JUMPER RESISTOR >			
JR003	1-216-295-00	METAL CHIP	0 5% 1/10W
JR004	1-216-295-00	METAL CHIP	0 5% 1/10W
JR010	1-216-295-00	METAL CHIP	0 5% 1/10W
JR011	1-216-295-00	METAL CHIP	0 5% 1/10W
JR012	1-216-295-00	METAL CHIP	0 5% 1/10W
JR013	1-216-295-00	METAL CHIP	0 5% 1/10W
JR014	1-216-295-00	METAL CHIP	0 5% 1/10W
JR015	1-216-295-00	METAL CHIP	0 5% 1/10W
JR016	1-216-295-00	METAL CHIP	0 5% 1/10W
JR017	1-216-295-00	METAL CHIP	0 5% 1/10W
JR018	1-216-295-00	METAL CHIP	0 5% 1/10W
JR200	1-216-296-00	METAL CHIP	0 5% 1/8W
JR203	1-216-295-00	METAL CHIP	0 5% 1/10W
JR207	1-216-295-00	METAL CHIP	0 5% 1/10W
JR208	1-216-295-00	METAL CHIP	0 5% 1/10W
JR502	1-216-295-00	METAL CHIP	0 5% 1/10W
< COIL >			
L001	1-414-186-31	INDUCTOR 33uH	
L002	1-414-185-41	INDUCTOR 22uH	
L003	1-414-184-41	INDUCTOR 15uH	
L004	1-408-414-00	INDUCTOR 27uH	
L005	1-414-186-31	INDUCTOR 33uH	
L006	1-414-186-31	INDUCTOR 33uH	
L007	1-410-423-11	INDUCTOR 22uH	
L008	1-414-186-31	INDUCTOR 33uH	
L009	1-410-381-11	INDUCTOR CHIP 10uH	
L010	1-410-381-11	INDUCTOR CHIP 10uH	
L011	1-414-186-31	INDUCTOR 33uH	
L013	1-414-186-31	INDUCTOR 33uH	
L018	1-410-391-11	INDUCTOR CHIP 68uH	
L020	1-408-412-00	INDUCTOR 18uH	
L201	1-414-189-31	INDUCTOR 100uH	
L202	1-414-187-11	INDUCTOR 47uH	
L203	1-408-418-00	INDUCTOR 56uH	
L204	1-414-180-11	INDUCTOR 3.3uH	
L401	1-414-183-41	INDUCTOR 10uH	
L402	1-414-183-41	INDUCTOR 10uH	

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

Ref. No.	Part No.	Description	Remark
L403	1-414-183-41	INDUCTOR 10uH	
L404	1-414-183-41	INDUCTOR 10uH	
L501	1-414-183-41	INDUCTOR 10uH	
L502	1-408-765-21	INDUCTOR CHIP 1uH	
L701	1-424-219-21	COIL, CHOKE 300uH	
L702	1-410-339-11	COIL, CHOKE 10uH	
L703	1-414-183-41	INDUCTOR 10uH	
L704	1-424-219-11	COIL, CHOKE 300uH	
L705	1-410-339-11	COIL, CHOKE 10uH	
< IC LINK >			
PS401	1-532-637-21	LINK, IC	
< TRANSISTOR >			
Q001	8-729-216-22	TRANSISTOR 2SA1162-G	
Q002	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q003	8-729-216-22	TRANSISTOR 2SA1162-G	
Q004	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q005	8-729-207-58	TRANSISTOR RN1404-TE85L	
Q007	8-729-216-22	TRANSISTOR 2SA1162-G	
Q009	8-729-216-22	TRANSISTOR 2SA1162-G	
Q010	8-729-216-22	TRANSISTOR 2SA1162-G	
Q011	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q012	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q013	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q014	8-729-216-22	TRANSISTOR 2SA1162-G	
Q015	8-729-216-22	TRANSISTOR 2SA1162-G	
Q016	8-729-216-22	TRANSISTOR 2SA1162-G	
Q017	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q018	8-729-216-22	TRANSISTOR 2SA1162-G	
Q019	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q020	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q023	8-729-216-22	TRANSISTOR 2SA1162-G	
Q024	8-729-216-22	TRANSISTOR 2SA1162-G	
Q025	8-729-216-22	TRANSISTOR 2SA1162-G	
Q026	8-729-216-22	TRANSISTOR 2SA1162-G	
Q027	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q028	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q030	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q031	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q032	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q033	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q034	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q035	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q039	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q040	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q041	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q042	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q201	8-729-230-49	TRANSISTOR 2SC2712-YG	

Ref. No.	Part No.	Description	Remark
Q202	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q203	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q204	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q205	8-729-207-68	TRANSISTOR RN2402	
Q206	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q207	8-729-202-38	TRANSISTOR 2SC3326N-A	
Q208	8-729-202-38	TRANSISTOR 2SC3326N-A	
Q209	8-729-202-38	TRANSISTOR 2SC3326N-A	
Q210	8-729-202-38	TRANSISTOR 2SC3326N-A	
Q211	8-729-202-38	TRANSISTOR 2SC3326N-A	
Q212	8-729-202-38	TRANSISTOR 2SC3326N-A	
Q213	8-729-202-38	TRANSISTOR 2SC3326N-A	
Q214	8-729-202-38	TRANSISTOR 2SC3326N-A	
Q215	8-729-207-68	TRANSISTOR RN2402	
Q217	8-729-207-68	TRANSISTOR RN2402	
Q218	8-729-207-58	TRANSISTOR RN1404-TE85L	
Q219	8-729-207-68	TRANSISTOR RN2402	
Q220	8-729-207-58	TRANSISTOR RN1404-TE85L	
Q221	8-729-207-58	TRANSISTOR RN1404-TE85L	
Q225	8-729-202-38	TRANSISTOR 2SC3326N-A	
Q226	8-729-202-38	TRANSISTOR 2SC3326N-A	
Q401	8-729-216-22	TRANSISTOR 2SA1162-G	
Q402	8-729-207-58	TRANSISTOR RN1404	
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	8-729-216-22	TRANSISTOR 2SA1162-G	
Q408	8-729-207-70	TRANSISTOR RN2404	
Q409	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q410	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q411	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q501	8-729-216-22	TRANSISTOR 2SA1162-YG	
Q502	8-729-207-69	TRANSISTOR RN2403-TE85L	
Q503	8-729-207-69	TRANSISTOR RN2403-TE85L	
Q504	8-729-207-69	TRANSISTOR RN2403-TE85L	
Q505	8-729-230-49	TRANSISTOR 2SC2712-YG	
△Q701	8-729-019-29	TRANSISTOR 2SB1009R	
△Q702	8-729-019-29	TRANSISTOR 2SB1009R	
< RESISTOR >			
R001	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R002	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
R003	1-216-047-00	METAL CHIP 820 5% 1/10W	
R004	1-216-043-00	METAL CHIP 560 5% 1/10W	
R005	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R006	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
R007	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R008	1-216-035-00	METAL CHIP 270 5% 1/10W	

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

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Ref. No.	Part No.	Description	Remark		
R009	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R010	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R011	1-216-064-00	METAL CHIP	4.3K	5%	1/10W
R012	1-216-045-00	METAL CHIP	680	5%	1/10W
R013	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R014	1-216-295-00	METAL CHIP	0	5%	1/10W
R015	1-216-041-00	METAL CHIP	470	5%	1/10W
R016	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R017	1-216-081-00	METAL CHIP	22K	5%	1/10W
R018	1-216-062-00	METAL CHIP	3.6K	5%	1/10W
R019	1-216-081-00	METAL CHIP	22K	5%	1/10W
R020	1-216-037-00	METAL CHIP	330	5%	1/10W
R021	1-216-049-00	METAL CHIP	1K	5%	1/10W
R022	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R023	1-216-057-91	METAL GLAZE	2.2K	5%	1/10W
R024	1-216-073-00	METAL CHIP	10K	5%	1/10W
R025	1-216-073-00	METAL CHIP	10K	5%	1/10W
R026	1-216-295-00	METAL CHIP	0	5%	1/10W
R027	1-216-081-00	METAL CHIP	22K	5%	1/10W
R028	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R029	1-216-085-00	METAL CHIP	33K	5%	1/10W
R030	1-216-057-91	METAL GLAZE	2.2K	5%	1/10W
R031	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R033	1-216-079-00	METAL CHIP	18K	5%	1/10W
R034	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R035	1-216-075-00	METAL CHIP	12K	5%	1/10W
R036	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R037	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R039	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R040	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R041	1-216-049-00	METAL CHIP	1K	5%	1/10W
R042	1-216-049-00	METAL CHIP	1K	5%	1/10W
R043	1-216-075-00	METAL CHIP	12K	5%	1/10W
R044	1-216-049-00	METAL CHIP	1K	5%	1/10W
R045	1-216-041-00	METAL CHIP	470	5%	1/10W
R046	1-216-049-00	METAL CHIP	1K	5%	1/10W
R047	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R048	1-216-045-00	METAL CHIP	680	5%	1/10W
R049	1-216-045-00	METAL CHIP	680	5%	1/10W
R050	1-216-049-00	METAL CHIP	1K	5%	1/10W
R051	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R052	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R053	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R054	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R055	1-216-049-00	METAL CHIP	1K	5%	1/10W
R056	1-216-073-00	METAL CHIP	10K	5%	1/10W
R057	1-216-045-00	METAL CHIP	680	5%	1/10W
R058	1-216-051-00	METAL CHIP	1.2K	5%	1/10W

Ref. No.	Part No.	Description	Remark		
R059	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R060	1-216-041-00	METAL CHIP	470	5%	1/10W
R061	1-216-049-00	METAL CHIP	1K	5%	1/10W
R062	1-216-049-00	METAL CHIP	1K	5%	1/10W
R063	1-216-031-00	METAL CHIP	180	5%	1/10W
R064	1-216-049-00	METAL CHIP	1K	5%	1/10W
R065	1-216-031-00	METAL CHIP	180	5%	1/10W
R066	1-216-674-11	METAL CHIP	9.1K	0.5%	1/10W
R067	1-216-049-00	METAL CHIP	1K	5%	1/10W
R068	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R069	1-216-033-00	METAL CHIP	220	5%	1/10W
R070	1-216-037-00	METAL CHIP	330	5%	1/10W
R071	1-216-693-11	METAL CHIP	56K	0.5%	1/10W
R072	1-216-295-00	METAL CHIP	0	5%	1/10W
R073	1-216-093-00	METAL CHIP	68K	5%	1/10W
R074	1-216-037-00	METAL CHIP	330	5%	1/10W
R075	1-216-041-00	METAL CHIP	470	5%	1/10W
R076	1-216-057-91	METAL GLAZE	2.2K	5%	1/10W
R077	1-216-041-00	METAL CHIP	470	5%	1/10W
R078	1-216-041-00	METAL CHIP	470	5%	1/10W
R079	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R080	1-216-046-00	METAL CHIP	750	5%	1/10W
R081	1-216-041-00	METAL CHIP	470	5%	1/10W
R082	1-216-047-00	METAL CHIP	820	5%	1/10W
R083	1-216-041-00	METAL CHIP	470	5%	1/10W
R084	1-216-041-00	METAL CHIP	470	5%	1/10W
R085	1-216-041-00	METAL CHIP	470	5%	1/10W
R087	1-216-041-00	METAL CHIP	470	5%	1/10W
R088	1-216-073-00	METAL CHIP	10K	5%	1/10W
R089	1-216-095-00	METAL CHIP	82K	5%	1/10W
R090	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R091	1-216-295-00	METAL CHIP	0	5%	1/10W
R093	1-216-119-00	METAL CHIP	820K	5%	1/10W
R095	1-216-041-00	METAL CHIP	470	5%	1/10W
R096	1-216-057-91	METAL GLAZE	2.2K	5%	1/10W
R097	1-216-081-00	METAL CHIP	22K	5%	1/10W
R098	1-216-095-00	METAL CHIP	82K	5%	1/10W
R100	1-216-039-00	METAL CHIP	390	5%	1/10W
R101	1-216-041-00	METAL CHIP	470	5%	1/10W
R102	1-216-041-00	METAL CHIP	470	5%	1/10W
R103	1-216-041-00	METAL CHIP	470	5%	1/10W
R104	1-216-041-00	METAL CHIP	470	5%	1/10W
R105	1-216-041-00	METAL CHIP	470	5%	1/10W
R106	1-216-041-00	METAL CHIP	470	5%	1/10W
R107	1-216-047-00	METAL CHIP	820	5%	1/10W
R108	1-216-041-00	METAL CHIP	470	5%	1/10W
R109	1-216-041-00	METAL CHIP	470	5%	1/10W
R110	1-216-295-00	METAL CHIP	0	5%	1/10W
R111	1-216-295-00	METAL CHIP	0	5%	1/10W

Ref. No.	Part No.	Description	Remark		
R112	1-216-037-00	METAL CHIP	330	5%	1/10W
R113	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R114	1-216-049-00	METAL CHIP	1K	5%	1/10W
R115	1-216-121-00	METAL CHIP	1M	5%	1/10W
R116	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R117	1-216-049-00	METAL CHIP	1K	5%	1/10W
R118	1-216-091-00	METAL CHIP	56K	5%	1/10W
R119	1-216-037-00	METAL CHIP	330	5%	1/10W
R120	1-216-031-00	METAL CHIP	180	5%	1/10W
R121	1-216-081-00	METAL CHIP	22K	5%	1/10W
R122	1-216-081-00	METAL CHIP	22K	5%	1/10W
R123	1-216-031-00	METAL CHIP	180	5%	1/10W
R124	1-216-031-00	METAL CHIP	180	5%	1/10W
R125	1-216-081-00	METAL CHIP	22K	5%	1/10W
R126	1-216-049-00	METAL CHIP	1K	5%	1/10W
R127	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R128	1-216-037-00	METAL CHIP	330	5%	1/10W
R129	1-216-043-00	METAL CHIP	560	5%	1/10W
R130	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R131	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R132	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R133	1-216-049-00	METAL CHIP	1K	5%	1/10W
R134	1-216-043-00	METAL CHIP	560	5%	1/10W
R135	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R136	1-216-041-00	METAL CHIP	470	5%	1/10W
R138	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R139	1-216-041-00	METAL CHIP	470	5%	1/10W
R140	1-216-029-00	METAL CHIP	150	5%	1/10W
R141	1-216-041-00	METAL CHIP	470	5%	1/10W
R142	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R145	1-216-025-00	METAL CHIP	100	5%	1/10W
R147	1-216-021-00	METAL CHIP	68	5%	1/10W
R148	1-216-021-00	METAL CHIP	68	5%	1/10W
R149	1-216-041-00	METAL CHIP	470	5%	1/10W
R150	1-216-049-00	METAL CHIP	1K	5%	1/10W
R151	1-216-041-00	METAL CHIP	470	5%	1/10W
R152	1-216-041-00	METAL CHIP	470	5%	1/10W
R153	1-216-049-00	METAL CHIP	1K	5%	1/10W
R154	1-216-041-00	METAL CHIP	470	5%	1/10W
R155	1-216-021-00	METAL CHIP	68	5%	1/10W
R156	1-216-021-00	METAL CHIP	68	5%	1/10W
R157	1-216-041-00	METAL CHIP	470	5%	1/10W
R158	1-216-021-00	METAL CHIP	68	5%	1/10W
R159	1-216-049-00	METAL CHIP	1K	5%	1/10W
R161	1-216-021-00	METAL CHIP	68	5%	1/10W
R163	1-216-049-00	METAL CHIP	1K	5%	1/10W
R164	1-216-021-00	METAL CHIP	68	5%	1/10W
R165	1-216-041-00	METAL CHIP	470	5%	1/10W
R166	1-216-041-00	METAL CHIP	470	5%	1/10W

Ref. No.	Part No.	Description	Remark		
R167	1-216-021-00	METAL CHIP	68	5%	1/10W
R168	1-216-021-00	METAL CHIP	68	5%	1/10W
R169	1-216-049-00	METAL CHIP	1K	5%	1/10W
R170	1-216-049-00	METAL CHIP	1K	5%	1/10W
R171	1-216-021-00	METAL CHIP	68	5%	1/10W
R172	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R176	1-216-041-00	METAL CHIP	470	5%	1/10W
R184	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R186	1-216-057-91	METAL GLAZE	2.2K	5%	1/10W
R187	1-216-057-91	METAL GLAZE	2.2K	5%	1/10W
R188	1-216-073-00	METAL CHIP	10K	5%	1/10W
R189	1-216-073-00	METAL CHIP	10K	5%	1/10W
R190	1-216-073-00	METAL CHIP	10K	5%	1/10W
R191	1-216-057-91	METAL GLAZE	2.2K	5%	1/10W
R192	1-216-081-00	METAL CHIP	22K	5%	1/10W
R194	1-216-295-00	METAL CHIP	0	5%	1/10W
R195	1-216-041-00	METAL CHIP	470	5%	1/10W
R196	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R197	1-216-049-00	METAL CHIP	1K	5%	1/10W
R198	1-216-057-91	METAL GLAZE	2.2K	5%	1/10W
R201	1-216-105-00	METAL CHIP	220K	5%	1/10W
R202	1-216-097-00	METAL CHIP	100K	5%	1/10W
R203	1-216-105-00	METAL CHIP	220K	5%	1/10W
R204	1-216-097-00	METAL CHIP	100K	5%	1/10W
R205	1-216-097-00	METAL CHIP	100K	5%	1/10W
R206	1-216-073-00	METAL CHIP	10K	5%	1/10W
R207	1-216-073-00	METAL CHIP	10K	5%	1/10W
R208	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R209	1-216-073-00	METAL CHIP	10K	5%	1/10W
R210	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R211	1-216-074-00	METAL CHIP	11K	5%	1/10W
R212	1-216-097-00	METAL CHIP	100K	5%	1/10W
R213	1-216-121-00	METAL CHIP	1M	5%	1/10W
R214	1-216-049-00	METAL CHIP	1K	5%	1/10W
R215	1-216-049-00	METAL CHIP	1K	5%	1/10W
R216	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R217	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R218	1-216-047-00	METAL CHIP	820	5%	1/10W
R219	1-216-049-00	METAL CHIP	1K	5%	1/10W
R220	1-216-013-00	METAL CHIP	33	5%	1/10W
R221	1-216-013-00	METAL CHIP	33	5%	1/10W
R222	1-216-047-00	METAL CHIP	820	5%	1/10W
R223	1-216-049-00	METAL CHIP	1K	5%	1/10W
R224	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R225	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R226	1-216-057-91	METAL GLAZE	2.2K	5%	1/10W
R227	1-216-017-00	METAL CHIP	47	5%	1/10W
R228	1-216-059-00	METAL CHIP	2.7K	5%	1/10W

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Ref. No.	Part No.	Description	Remark		
R229	1-216-021-00	METAL CHIP	68	5%	1/10W
R230	1-216-041-00	METAL CHIP	470	5%	1/10W
R231	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R232	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R233	1-216-049-00	METAL CHIP	1K	5%	1/10W
R235	1-216-049-00	METAL CHIP	1K	5%	1/10W
R236	1-216-041-00	METAL CHIP	470	5%	1/10W
R237	1-216-073-00	METAL CHIP	10K	5%	1/10W
R238	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R239	1-216-033-00	METAL CHIP	220	5%	1/10W
R240	1-216-025-00	METAL CHIP	100	5%	1/10W
R242	1-216-295-00	METAL CHIP	0	5%	1/10W
R246	1-216-037-00	METAL CHIP	330	5%	1/10W
R247	1-216-049-00	METAL CHIP	1K	5%	1/10W
R248	1-216-073-00	METAL CHIP	10K	5%	1/10W
R249	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R250	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R251	1-216-073-00	METAL CHIP	10K	5%	1/10W
R252	1-216-085-00	METAL CHIP	33K	5%	1/10W
R253	1-216-085-00	METAL CHIP	33K	5%	1/10W
R254	1-216-057-91	METAL GLAZE	2.2K	5%	1/10W
R256	1-216-121-00	METAL CHIP	1M	5%	1/10W
R257	1-216-097-00	METAL CHIP	100K	5%	1/10W
R258	1-216-049-00	METAL CHIP	1K	5%	1/10W
R259	1-216-097-00	METAL CHIP	100K	5%	1/10W
R260	1-216-049-00	METAL CHIP	1K	5%	1/10W
R261	1-216-073-00	METAL CHIP	10K	5%	1/10W
R262	1-216-097-00	METAL CHIP	100K	5%	1/10W
R263	1-216-049-00	METAL CHIP	1K	5%	1/10W
R264	1-216-037-00	METAL CHIP	330	5%	1/10W
R265	1-216-037-00	METAL CHIP	330	5%	1/10W
R266	1-216-037-00	METAL CHIP	330	5%	1/10W
R267	1-216-025-00	METAL CHIP	100	5%	1/10W
R268	1-216-049-00	METAL CHIP	1K	5%	1/10W
R269	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R270	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R271	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R272	1-216-077-00	METAL CHIP	15K	5%	1/10W
R273	1-216-077-00	METAL CHIP	15K	5%	1/10W
R274	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R275	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R276	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R277	1-216-091-00	METAL CHIP	56K	5%	1/10W
R278	1-216-091-00	METAL CHIP	56K	5%	1/10W
R279	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R280	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R281	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R282	1-216-077-00	METAL CHIP	15K	5%	1/10W

Ref. No.	Part No.	Description	Remark		
R283	1-216-077-00	METAL CHIP	15K	5%	1/10W
R284	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R285	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R286	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R287	1-216-091-00	METAL CHIP	56K	5%	1/10W
R288	1-216-091-00	METAL CHIP	56K	5%	1/10W
R289	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R290	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R291	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R292	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R293	1-216-105-00	METAL CHIP	220K	5%	1/10W
R294	1-216-049-00	METAL CHIP	1K	5%	1/10W
R295	1-216-049-00	METAL CHIP	1K	5%	1/10W
R296	1-216-105-00	METAL CHIP	220K	5%	1/10W
R297	1-216-049-00	METAL CHIP	1K	5%	1/10W
R298	1-216-049-00	METAL CHIP	1K	5%	1/10W
R299	1-216-047-00	METAL CHIP	820	5%	1/10W
R300	1-216-033-00	METAL CHIP	220	5%	1/10W
R301	1-216-073-00	METAL CHIP	10K	5%	1/10W
R302	1-216-105-00	METAL CHIP	220K	5%	1/10W
R303	1-216-073-00	METAL CHIP	10K	5%	1/10W
R304	1-216-105-00	METAL CHIP	220K	5%	1/10W
R305	1-216-047-00	METAL CHIP	820	5%	1/10W
R306	1-216-033-00	METAL CHIP	220	5%	1/10W
R307	1-216-049-00	METAL CHIP	1K	5%	1/10W
R308	1-216-049-00	METAL CHIP	1K	5%	1/10W
R309	1-216-047-00	METAL CHIP	820	5%	1/10W
R310	1-216-033-00	METAL CHIP	220	5%	1/10W
R311	1-216-073-00	METAL CHIP	10K	5%	1/10W
R312	1-216-105-00	METAL CHIP	220K	5%	1/10W
R313	1-216-073-00	METAL CHIP	10K	5%	1/10W
R314	1-216-105-00	METAL CHIP	220K	5%	1/10W
R315	1-216-047-00	METAL CHIP	820	5%	1/10W
R316	1-216-033-00	METAL CHIP	220	5%	1/10W
R317	1-216-049-00	METAL CHIP	1K	5%	1/10W
R318	1-216-073-00	METAL CHIP	10K	5%	1/10W
R319	1-216-073-00	METAL CHIP	10K	5%	1/10W
R320	1-216-049-00	METAL CHIP	1K	5%	1/10W
R321	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R322	1-216-049-00	METAL CHIP	1K	5%	1/10W
R323	1-216-105-00	METAL CHIP	220K	5%	1/10W
R324	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R325	1-216-033-00	METAL CHIP	220	5%	1/10W
R326	1-216-295-00	METAL CHIP	0	5%	1/10W
R329	1-216-073-00	METAL CHIP	10K	5%	1/10W
R330	1-216-651-11	METAL CHIP	1K	0.5%	1/10W
R331	1-216-043-00	METAL CHIP	560	5%	1/10W
R332	1-216-651-11	METAL CHIP	1K	0.5%	1/10W
R333	1-216-651-11	METAL CHIP	1K	0.5%	1/10W

Ref. No.	Part No.	Description	Remark		
R334	1-216-651-11	METAL CHIP	1K	0.5%	1/10W
R335	1-216-073-00	METAL CHIP	10K	5%	1/10W
R336	1-216-045-00	METAL CHIP	680	5%	1/10W
R337	1-216-651-11	METAL CHIP	1K	0.5%	1/10W
R338	1-216-043-00	METAL CHIP	560	5%	1/10W
R339	1-216-651-11	METAL CHIP	1K	0.5%	1/10W
R340	1-216-651-11	METAL CHIP	1K	0.5%	1/10W
R341	1-216-651-11	METAL CHIP	1K	0.5%	1/10W
R342	1-216-073-00	METAL CHIP	10K	5%	1/10W
R343	1-216-045-00	METAL CHIP	680	5%	1/10W
R344	1-216-105-00	METAL CHIP	220K	5%	1/10W
R345	1-216-097-00	METAL CHIP	100K	5%	1/10W
R346	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R355	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R358	1-216-295-00	METAL CHIP	0	5%	1/10W
R369	1-216-025-00	METAL CHIP	100	5%	1/10W
R370	1-216-025-00	METAL CHIP	100	5%	1/10W
R371	1-216-025-00	METAL CHIP	100	5%	1/10W
R372	1-216-025-00	METAL CHIP	100	5%	1/10W
R373	1-216-025-00	METAL CHIP	100	5%	1/10W
R374	1-216-025-00	METAL CHIP	100	5%	1/10W
R375	1-216-025-00	METAL CHIP	100	5%	1/10W
R376	1-216-025-00	METAL CHIP	100	5%	1/10W
R378	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R379	1-216-077-00	METAL CHIP	15K	5%	1/10W
R380	1-216-073-00	METAL CHIP	10K	5%	1/10W
R380	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R381	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R384	1-216-073-00	METAL CHIP	10K	5%	1/10W
R385	1-216-073-00	METAL CHIP	10K	5%	1/10W
R401	1-216-057-91	METAL GLAZE	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	1-216-107-00	METAL CHIP	270K	5%	1/10W
R406	1-216-094-00	METAL CHIP	75K	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
R411	1-216-077-00	METAL CHIP	15K	5%	1/10W
R412	1-216-101-00	METAL CHIP	150K	5%	1/10W
R413	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R414	1-216-075-00	METAL CHIP	12K	5%	1/10W
R415	1-216-083-00	METAL CHIP	27K	5%	1/10W
R416	1-216-103-00	METAL CHIP	180K	5%	1/10W
R417	1-216-097-00	METAL CHIP	100K	5%	1/10W
R418	1-216-089-91	METAL CHIP	47K	5%	1/10W
R419	1-216-089-91	METAL GLAZE	47K	5%	1/10W

Ref. No.	Part No.	Description	Remark		
R420	1-216-085-00	METAL CHIP	33K	5%	1/10W
R421	1-216-085-00	METAL CHIP	33K	5%	1/10W
R425	1-216-093-00	METAL GLAZE	68K	5%	1/10W
R429	1-216-093-00	METAL CHIP	68K	5%	1/10W
R431	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R432	1-216-082-00	METAL GLAZE	24K	5%	1/10W
R433	1-216-100-00	METAL GLAZE	130K	5%	1/10W
R434	1-216-097-00	METAL CHIP	100K	5%	1/10W
R435	1-216-073-00	METAL CHIP	10K	5%	1/10W
R436	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R437	1-216-077-00	METAL CHIP	15K	5%	1/10W
R438	1-216-085-00	METAL CHIP	33K	5%	1/10W
R439	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R440	1-216-049-00	METAL CHIP	1K	5%	1/10W
R441	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R442	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R443	1-216-085-00	METAL CHIP	33K	5%	1/10W
R444	1-216-033-00	METAL CHIP	220	5%	1/10W
R445	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R446	1-216-081-00	METAL CHIP	22K	5%	1/10W
R447	1-216-081-00	METAL CHIP	22K	5%	1/10W
R448	1-216-093-00	METAL GLAZE	68K	5%	1/10W
R449	1-216-113-00	METAL CHIP	470	5%	1/10W
R450	1-216-073-00	METAL CHIP	10K	5%	1/10W
R451	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R452	1-216-073-00	METAL CHIP	10K	5%	1/10W
R453	1-216-085-00	METAL CHIP	33K	5%	1/10W
R454	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R455	1-216-097-00	METAL CHIP	100K	5%	1/10W
R456	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R457	1-216-073-00	METAL CHIP	10K	5%	1/10W
R458	1-216-073-00	METAL CHIP	10K	5%	1/10W
R459	1-216-049-00	METAL CHIP	1K	5%	1/10W
R460	1-216-075-00	METAL CHIP	12K	5%	1/10W
R461	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R462	1-216-085-00	METAL CHIP	33K	5%	1/10W
R463	1-216-077-00	METAL CHIP	15K	5%	1/10W
R464	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R465	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R466	1-216-081-00	METAL CHIP	22K	5%	1/10W
R467	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R468	1-216-081-00	METAL CHIP	22K	5%	1/10W
R469	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R470	1-216-113-00	METAL CHIP	470K	5%	1/10W
R472	1-216-017-00	METAL CHIP	47	5%	1/10W
R473	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R474	1-216-003-11	METAL GLAZE	12	5%	1/10W
R475	1-216-081-00	METAL CHIP	22K	5%	1/10W
R476	1-219-113-11	FUSIBLE	6.8	5%	1/4W F

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Ref. No.	Part No.	Description	Remark		
R477	1-216-079-00	METAL CHIP	18K	5%	1/10W
R478	1-216-109-91	METAL GLAZE	330K	5%	1/10W
R479	1-216-093-00	METAL CHIP	68K	5%	1/10W
R480	1-216-095-00	METAL CHIP	82K	5%	1/10W
R481	1-216-369-00	METAL OXIDE	1	5%	2W F
R482	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R483	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R488	1-216-095-00	METAL CHIP	82K	5%	1/10W
R489	1-216-109-91	METAL GLAZE	330K	5%	1/10W
R490	1-216-097-00	METAL CHIP	100K	5%	1/10W
R494	1-216-079-00	METAL CHIP	18K	5%	1/10W
R495	1-216-079-00	METAL CHIP	18K	5%	1/10W
R496	1-216-099-00	METAL CHIP	120K	5%	1/10W
R497	1-216-099-00	METAL CHIP	120K	5%	1/10W
R498	1-216-077-00	METAL CHIP	15K	5%	1/10W
R499	1-216-099-00	METAL CHIP	120K	5%	1/10W
R501	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R502	1-216-111-00	METAL CHIP	390K	5%	1/10W
R503	1-216-113-00	METAL CHIP	470K	5%	1/10W
R504	1-216-677-11	METAL CHIP	12K	0.5%	1/10W
R505	1-216-035-00	METAL CHIP	270	5%	1/10W
R506	1-216-679-11	METAL CHIP	15K	0.5%	1/10W
R507	1-218-766-11	METAL CHIP	390K	0.50%	1/10W
R508	1-216-049-00	METAL CHIP	1K	5%	1/10W
R509	1-216-685-11	METAL CHIP	27K	0.5%	1/10W
R510	1-218-760-11	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	1-216-679-11	METAL CHIP	15K	0.5%	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
R519	1-216-115-00	METAL CHIP	560K	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	1-216-057-91	METAL GLAZE	2.2K	5%	1/10W
R531	1-216-057-91	METAL GLAZE	2.2K	5%	1/10W
R532	1-216-057-91	METAL GLAZE	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

Ref. No.	Part No.	Description	Remark		
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
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	1-216-035-00	METAL CHIP	270	5%	1/10W
R551	1-216-121-00	METAL CHIP	1M	5%	1/10W
R552	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R553	1-216-013-00	METAL CHIP	33	5%	1/10W
R554	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R555	1-216-035-00	METAL CHIP	270	5%	1/10W
R556	1-216-057-91	METAL GLAZE	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
R560	1-216-049-00	METAL CHIP	1K	5%	1/10W
R561	1-216-049-00	METAL CHIP	1K	5%	1/10W
R564	1-216-049-00	METAL CHIP	1K	5%	1/10W
R566	1-216-049-00	METAL CHIP	1K	5%	1/10W
R567	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
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	1-216-057-91	METAL GLAZE	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	1-216-049-00	METAL CHIP	1K	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

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

Ref. No.	Part No.	Description	Remark		
R588	1-216-049-00	METAL CHIP	1K	5%	1/10W
R589	1-216-057-91	METAL GLAZE	2.2K	5%	1/10W
R590	1-216-057-91	METAL GLAZE	2.2K	5%	1/10W
R591	1-216-057-91	METAL GLAZE	2.2K	5%	1/10W
R592	1-216-049-00	METAL CHIP	1K	5%	1/10W
R593	1-216-049-00	METAL CHIP	1K	5%	1/10W
R594	1-216-049-00	METAL CHIP	1K	5%	1/10W
R595	1-216-049-00	METAL CHIP	1K	5%	1/10W
R596	1-216-049-00	METAL CHIP	1K	5%	1/10W
R597	1-216-049-00	METAL CHIP	1K	5%	1/10W
R598	1-216-049-00	METAL CHIP	1K	5%	1/10W
R599	1-216-049-00	METAL CHIP	1K	5%	1/10W
R601	1-216-049-00	METAL CHIP	1K	5%	1/10W
R603	1-216-049-00	METAL CHIP	1K	5%	1/10W
R604	1-216-049-00	METAL CHIP	1K	5%	1/10W
R605	1-216-049-00	METAL CHIP	1K	5%	1/10W
R606	1-216-049-00	METAL CHIP	1K	5%	1/10W
R607	1-216-049-00	METAL CHIP	1K	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	1-216-049-00	METAL CHIP	1K	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
R617	1-216-049-00	METAL CHIP	1K	5%	1/10W
R618	1-216-049-00	METAL CHIP	1K	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
R628	1-216-041-00	METAL CHIP	470	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	1-216-057-91	METAL GLAZE	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	1-216-049-00	METAL CHIP	1K	5%	1/10W
R645	1-216-049-00	METAL CHIP	1K	5%	1/10W

Ref. No.	Part No.	Description	Remark		
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	1-216-091-00	METAL CHIP	56K	5%	1/10W
R708	1-216-109-91	METAL GLAZE	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
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	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R807	1-216-057-91	METAL GLAZE	2.2K	5%	1/10W
R808	1-216-057-91	METAL GLAZE	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
R900	1-216-687-11	METAL CHIP	33K	0.5%	1/10W
R901	1-216-687-11	METAL CHIP	33K	0.5%	1/10W
< VARIABLE RESISTOR >					
RV001	1-241-081-11	RES, ADJ, CARBON 22K			
RV401	1-241-083-11	RES, ADJ, CARBON 47K			
RV402	1-241-083-11	RES, ADJ, CARBON 47K			
< SWITCH >					
S201	1-553-725-21	SWITCH, SLIDE (ATTENUATOR ON/OFF)			
< TRANSFORMER >					
T201	1-406-647-11	COIL			
< VIBRATOR >					
X001	1-579-617-11	VIBRATOR, CRYSTAL (28.1958MHz)			
X201	1-579-618-11	VIBRATOR, CRYSTAL (22.5MHz)			

MD-703

MT-702

MT-705

PS-713

Ref. No.	Part No.	Description	Remark			
	A-6423-015-A	MD-703 (J78) BOARD, COMPLETE ***** (Ref. NO 2, 000 Series)				
	3-953-262-01	HOLDER, LED < CAPACITOR >				
C431	1-126-947-11	ELECT	47uF	20%	35V	
		< CONNECTOR >				
* 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				
		< DIODE >				
D431	8-719-912-39	LED SLR932A				
D432	8-729-020-74	DIODE GP1S24				
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 CHIP	0	5%	1/8W	
JR414	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR431	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR432	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR433	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR435	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR437	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR438	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR439	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR440	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR441	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR442	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR443	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR444	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR445	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR446	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR447	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR448	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR449	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR450	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR451	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR452	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR453	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR454	1-216-296-00	METAL CHIP	0	5%	1/8W	

Ref. No.	Part No.	Description	Remark			
JR455	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR456	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR457	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR458	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR460	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR461	1-216-296-00	METAL CHIP	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	
		< SWITCH >				
S431	1-692-440-11	SWITCH, PUSH (TILT)				

* A-6421-953-A	MT-702 BOARD, COMPLETE ***** (Ref. NO 3, 000 Series)					
		< CAPACITOR >				
C471	1-161-063-00	CERAMIC	0.1uF	10%	50V	
		< CONNECTOR >				
* CN471	1-695-105-11	PIN, CONNECTOR (PC BOARD) 3P				
		< MOTOR >				
M471	X-3942-963-1	MOTOR ASSY (LOADING)				

* 1-649-514-11	MT-705 BOARD (Ref. NO 7, 000 Series) *****					
		< CAPACITOR >				
C001	1-161-772-11	CERAMIC	0.1uF	10%	25V	

* A-6423-009-A	PS-713 (E78) BOARD, COMPLETE ***** (Ref. NO 6, 000 Series)					
△	1-533-189-11	HOLDER, FUSE				
	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3				

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

Ref. No.	Part No.	Description	Remark
< 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
C039	1-163-035-00	CERAMIC CHIP 0.047uF	50V
C040	1-126-103-11	ELECT 470uF	20% 16V
C041	1-163-035-00	CERAMIC CHIP 0.047uF	50V
C042	1-163-035-00	CERAMIC CHIP 0.047uF	50V
C043	1-126-103-11	ELECT 470uF	20% 16V
C044	1-163-035-00	CERAMIC CHIP 0.047uF	50V
C045	1-124-563-11	ELECT 2200uF	20% 25V
C047	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	1-163-017-00	CERAMIC CHIP 0.0047uF	5% 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
< CONNECTOR >			
* CN030	1-564-029-00	PIN, CONNECTOR 4P	
CN031	1-506-483-21	PIN, CONNECTOR 4P	
CN051	1-506-490-21	PIN, CONNECTOR 11P	
CN052	1-564-506-11	PLUG, CONNECTOR 3P	
CN053	1-506-483-21	PIN, CONNECTOR 4P	
CN054	1-506-468-11	PIN, CONNECTOR 3P	
< DIODE >			
△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	
△D036	8-719-980-78	DIODE ERA83-006	
△D037	8-719-980-78	DIODE ERA83-006	
△D038	8-719-980-78	DIODE ERA83-006	
△D039	8-719-980-78	DIODE ERA83-006	

Ref. No.	Part No.	Description	Remark
D051	8-719-980-78	DIODE ERA83-006	
D052	8-719-980-78	DIODE ERA83-006	
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	
< FUSE >			
△F031	1-532-299-00	FUSE, TIME-LAG (T5A 250V)	
△F032	1-532-299-00	FUSE, TIME-LAG (T5A 250V)	
< IC >			
△IC031	8-759-231-53	IC TA7805S	
△IC032	8-759-199-82	IC uPC24M08HF	
△IC033	8-759-701-67	IC NJM79M08FA	
IC051	8-759-100-93	IC uPC393G2	
IC052	8-759-996-43	IC RC4558PS	
< COIL >			
△L031	1-410-521-11	INDUCTOR 100uH	
L051	1-424-219-11	COIL, CHOKE 300uH	
< IC LINK >			
△PS051	1-532-675-00	LINK, IC 1.5A	
△PS052	1-532-675-00	LINK, IC 1.5A	
△PS053	1-532-843-21	LINK, IC	
△PS054	1-532-843-21	LINK, IC	
< TRANSISTOR >			
Q031	8-729-141-75	TRANSISTOR 2SD596DV345	
△Q051	8-729-117-11	TRANSISTOR 2SB1151-L	
△Q052	8-729-019-31	TRANSISTOR 2SC4596E	
△Q053	8-729-117-11	TRANSISTOR 2SB1151-L	
△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	
< RESISTOR >			
△R031	1-212-867-00	FUSIBLE 27 5% 1/4W F	

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PS-713

PW-708

SW-719

Ref. No.	Part No.	Description	Remark		
R032	1-216-057-91	METAL GLAZE	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	1-216-075-00	METAL CHIP	12K	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	1-216-073-00	METAL CHIP	10K	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
R069	1-216-675-11	METAL CHIP	10K	0.5%	1/10W
R070	1-216-690-11	METAL CHIP	43K	0.5%	1/10W
R071	1-216-675-11	METAL CHIP	10K	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
< RELAY >					
△RY031	1-515-833-11	RELAY			

*	A-6423-013-A	PW-708 (E78) BOARD, COMPLETE			

(Ref. NO 4,000 Series)					
< CAPACITOR >					
C001	1-126-157-11	ELECT	10uF	20%	16V
< CONNECTOR >					
CN001	1-506-474-11	PIN, CONNECTOR 9P			
< DIODE >					
D001	8-719-042-48	DIODE SLR-33DC3F (KEY CONTROL/# UP)			

Ref. No.	Part No.	Description	Remark		
D002	8-719-042-50	DIODE SLR-33MC3F (KEY CONTROL/	NATURAL)		
D003	8-719-042-48	DIODE SLR-33DC3F (KEY CONTROL/	DOWN)		
D004	8-719-981-49	DIODE GL3ED8 (POWER ON/STANDBY)			
D005	8-719-981-49	DIODE GL3ED8 (POWER ON/STANDBY)			
D006	8-719-400-18	DIODE MA152WK			
< IC >					
IC001	8-741-100-48	IC SBX1610-59			
< TRANSISTOR >					
Q001	8-729-901-46	TRANSISTOR DTA114YK			
Q002	8-729-901-46	TRANSISTOR DTA114YK			
Q003	8-729-901-46	TRANSISTOR DTA114YK			
Q004	8-729-901-05	TRANSISTOR DTA124EK			
Q005	8-729-901-05	TRANSISTOR DTA124EK			
< RESISTOR >					
R001	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R002	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R003	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R004	1-216-037-00	METAL CHIP	330	5%	1/10W
R005	1-216-037-00	METAL CHIP	330	5%	1/10W
R006	1-216-037-00	METAL CHIP	330	5%	1/10W
R007	1-216-037-00	METAL CHIP	330	5%	1/10W
R008	1-216-037-00	METAL CHIP	330	5%	1/10W
R009	1-216-037-00	METAL CHIP	330	5%	1/10W
R010	1-216-037-00	METAL CHIP	330	5%	1/10W
R011	1-216-025-00	METAL CHIP	100	5%	1/10W
R012	1-216-049-00	METAL CHIP	1K	5%	1/10W
R013	1-216-049-00	METAL CHIP	1K	5%	1/10W
< VARIABLE RESISTOR >					
RV001	1-223-504-21	RES, VAR, CARBON 20K (ECHO)			
< SWITCH >					
S001	1-571-977-11	SWITCH, TACTIL (KEY CONTROL/# UP)			
S002	1-571-977-11	SWITCH, TACTIL (KEY CONTROL/	NATURAL)		
S003	1-571-977-11	SWITCH, TACTIL (KEY CONTROL/	DOWN)		
S004	1-571-977-11	SWITCH, TACTIL (POWER ON/STANDBY)			

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

(Ref. NO 3,000 Series)					
< CONNECTOR >					
CN481	1-566-779-11	PIN, CONNECTOR (PC BOARD) 4P			

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

SW-719

TE-701

TR-717

VR-702

VS-706

Ref. No.	Part No.	Description	Remark
		< SWITCH >	
S481	1-692-439-11	SWITCH, PUSH (LOAD/CHUCK)	

*	A-6421-984-A	TE-701 BOARD, COMPLETE ***** (Ref. NO 2,000 Series)	
		< CAPACITOR >	
C001	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C002	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C003	1-163-239-11	CERAMIC CHIP 33PF	5% 50V
C006	1-163-016-00	CERAMIC CHIP 0.0039uF	10% 50V
C007	1-163-097-00	CERAMIC CHIP 15PFF	5% 50V
C008	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C009	1-164-489-11	CERAMIC CHIP 0.22uF	10% 16V
		< CONNECTOR >	
CN001	1-750-699-11	CONNECTOR, BOARD TO BOARD 8P	
		< IC >	
IC001	8-759-909-71	IC BA4558F	
IC002	8-759-242-94	IC TC4W53F	
		< RESISTOR >	
R001	1-216-085-00	METAL CHIP 33K 5%	1/10W
R002	1-216-085-00	METAL CHIP 33K 5%	1/10W
R005	1-216-103-00	METAL CHIP 180K 5%	1/10W
R006	1-216-089-00	METAL CHIP 47K 5%	1/10W
R007	1-216-689-11	METAL CHIP 39K 0.5%	1/10W
R008	1-216-061-00	METAL CHIP 3.3K 5%	1/10W
R009	1-216-101-00	METAL CHIP 150K 5%	1/10W
R010	1-216-083-00	METAL CHIP 27K 5%	1/10W
R011	1-216-089-00	METAL CHIP 47K 5%	1/10W
R012	1-216-067-00	METAL CHIP 5.6K 5%	1/10W
R013	1-216-097-00	METAL CHIP 100K 5%	1/10W
R014	1-216-067-00	METAL CHIP 5.6K 5%	1/10W

*	A-6423-010-A	TR-717 (E78) BOARD, COMPLETE ***** (Ref. NO 6,000 Series)	
△	1-533-189-11	HOLDER, FUSE	
		< CAPACITOR >	
△C001	1-104-705-11	FILM 0.1uF	20% 250V

Ref. No.	Part No.	Description	Remark
		< CONNECTOR >	
△CN001	1-564-419-11	HEADER, SPRING (POWER) 2P	
		< FUSE >	
△F001	1-532-215-00	FUSE, TIME LAG (T800mA 250V)	
		< TRANSFORMER >	
△T001	1-423-556-11	TRANSFORMER, POWER	
△T002	1-406-884-11	FILTER, LINE	

*	A-6423-022-A	VR-702 (J78) BOARD, COMPLETE ***** (Ref. NO 4,000 Series)	
		< CONNECTOR >	
CN701	1-564-013-21	PIN, CONNECTOR 3P	
CN702	1-564-013-31	PIN, CONNECTOR 3P	
		< RESISTOR >	
R701	1-216-057-91	METAL GLAZE 2.2K 5%	1/10W
R702	1-216-162-00	METAL GLAZE 33 5%	1/8W
R703	1-216-162-00	METAL GLAZE 33 5%	1/8W
R704	1-216-057-91	METAL GLAZE 2.2K 5%	1/10W
		< VARIABLE RESISTOR >	
RV701	1-241-139-11	RES, VAR, CARBON 500/500 (PHONES LEVEL)	

*	A-6423-011-A	VS-706 (E78) BOARD, COMPLETE ***** (Ref. NO 6,000 Series)	
△	1-533-189-11	HOLDER, FUSE	
		< FUSE >	
△F021	1-532-066-00	FUSE, TIME-LAG (T400mA 250V)	
		< SWITCH >	
△S021	1-570-615-11	SELECTOR, POWER VOLTAGE (VOLTAGE SELECTOR)	

		MISCELLANEOUS *****	
△208	8-848-286-01	DEVICE, OPTICAL KHS-150A	
211	1-751-083-11	CABLE, FLEXIBLE FLAT (18 CORE)	
221	1-751-084-11	CABLE, FLEXIBLE FLAT (14 CORE)	
△CP-1	1-575-912-21	CORD, POWER	
M901	1-698-109-11	MOTOR, DD (SPINDLE)	

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

Ref. No.	Part No.	Description	Remark
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ACCESSORIES & PACKING MATERIALS

△	1-569-008-11	ADAPTER, CONVERSION 2P	
	1-575-334-11	CORD, CONNECTION (AUDIO/VIDEO CABLE 1.5m)	
	1-693-174-61	REMOTE COMMANDER (RMT-M21A)	
	3-757-430-11	MANUAL, INSTRUCTION (ENGLISH, CHINESE)	
	3-757-558-11	CARD	

*	3-955-617-01	CUSHION (UPPER)	
*	3-955-618-01	CUSHION (LOWER)	
*	3-955-619-01	INDIVIDUAL CARTON	

HARDWARE LIST

#1	7-685-646-81	SCREW +BVTP 3X8 TYPE2	
#2	7-671-155-01	STEEL BALL 3.0	
#3	7-624-105-04	STOP RING 2.3, TYPE -E	
#4	7-685-158-19	SCREW +P 4X6 TYPE2 NON-SLIT	
#5	7-685-645-79	SCREW +BVTP 3X6 TYPE2 N-S	
#6	7-685-133-19	SCREW +P 2.6X6 TYPE2	
#7	7-685-647-79	SCREW +BVTP 3X10 TYPE2	
#8	7-682-645-01	SCREW +PS 3X4	
#9	7-621-759-65	+PSW, 2.6X8	
#10	7-627-553-48	SCREW, PRECISION +P 2X4	
#11	7-688-003-11	W3, MIDDLE	
#12	7-624-190-81	STOP RING 2, TYPE-CS	
#13	7-628-253-05	SCREW +PS 2X4	
#14	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S	
#15	7-682-947-01	SCREW +PSW 3X6	
#16	7-624-102-04	STOP RING 1.5, TYPE -E	
#17	7-685-534-14	SCREW +B 2.6X8 TYPE2 NON-SLIT	
#18	7-624-104-04	STOP RING 2.0, TYPE -E	
#19	7-624-106-04	STOP RING TYPE -E	
#20	7-685-102-19	SCREW +P 2X4 NON-SLIT TYPE 2	
#21	7-685-661-14	SCREW +BVTP 4X12 TYPE2 IT-3	
#22	7-684-220-02	NUT 3, HEXAGON CAP	
#23	7-685-103-19	SCREW +P 2X5 TYPE2 SLIT	
#24	7-621-759-35	+PSW, 2.6X5	
#25	7-685-648-79	SCREW +BVTP 3X12 TYPE2	
#26	7-624-209-00	ORING P5	
#27	7-682-645-01	+PS, 3X4	

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SECTION 7

MDP-A800K

IC PIN DESCRIPTION

7-1. MB-702 BOARD IC501 MB89094

Pin No.	Pin Name	I/O	Description
1	N/C		
2	CLK32	I	CRYSTAL OSCILLATOR (32 KHz) input
3	GND	I	
4	GND	I	
5	2F5C	I	CRYSTAL OSCILLATOR (2 Esc) input
6	N/C		
7	V _{ss}	I	GND
8	X _{RST}	I	RESET TERMINAL (L: RESET)
9	X _{RFQ}	I	PHIL CODE READ OUT ENABLE
10	F _{QACK}	O	DISC DATA READ IN
11	F _{QSEL}	O	PHILLIPS CODE/SUBQ DATA SELECT (L: SUBQ)
12	J _{PCTRL}	O	ITI/MTJ SELECT SIGNAL (H: ITI)
13	S _{PLOCK}	I	SPINDLE LOCK SIGNAL (H: DURING SPINDLE LOCKING)
14	T _{BCHOLDIN}	O	CHROMA TBC CONTROL
15	S _{COR}	I	H WHEN SUB CODE SYNC IS DETECTED
16	X _{PBV}	I	V SYNC SIGNAL
17	X _{REFV}	I	REFERENCE V SYNC SIGNAL
18	A _L T	O	A REGISTER LATCH
19	B _L T	O	B REGISTER LATCH
20	X _{BUSY}	I	COMMUNICATION ENABLE SIGNAL FROM MMI (H: COMMUNICATION ENABLE)
21	N/C		
24	N/C		
25	C _{LSCS}	O	CHIP SELECT FOR READING PHASE DIFFERENCE DATA
26	S _{PDLPLS}	O	SPINDLE PULSE DRIVE SIGNAL (H: spdl free run)
27	T _{BRKMON}	O	SERVO IC BRAKE MONITOR (H: BRAKE ON)
28	+5V	I	
29	C _{LSDT}	I	SERIAL INPUT DATA
30	S _{ETDT}	O	SERIAL OUTPUT DATA
31	S _{ETCK}	O	SERIAL TRANSFERRING CLOCK
32	S _{PDLFG1}	I	SPINDLE FG INPUT 1 (1 ROTATION: 12WAVES)
33	C _{GV_MUTE}	I	CGV MUTE SIGNAL (H, L OUTPUT) NORMALLY HIIMP
34	I _{DSEARCH}	O	FOR SPDL ER AMP C SHORT (H: DURING SEARCHING)
35	S _{PDL FR}	O	SPINDLE ROTATING DIRECTION SIGNAL (H: FWD)
36	N/C		
37	J _{MP TRIG}	O	TRACK JUMP TRIGGER PULSE OUTPUT
38	M _{WE}	O	NOT USED
39	M _{EM/THR}	O	NOT USED
40	M _{STAT}	O	NOT USED
41	M _{TJ}	I	TRACKING PULSE GENERATOR FOR MTJ NORMALLY INPUT, OUTPUT DURING ACTIVATE (L: FWD)
42	M _{TF ON/OFF}	O	MTF CORRECTION ON/OFF SIGNAL (H: MTF ON)
43	T _{RK OFF}	O	PUT OFF SERVO IC TRACKING CONTROL (L: TRACKING OFF)
44	S _{HARP}	O	PICTURE ENHANCE SHARP
45	G _{MUTE}	O	GRAY SCREEN ON/OFF SIGNAL ON CLS (ON: H)
46	N/C		
47	X _{SOFT}	O	PICTURE ENHANCE SOFT
48	F _{OK}	I	FOCUS LOCK SIGNAL (H: FOCUS LOCK)
49	V _{cc}	I	+5V POWER SUPPLY
50	X _{BUSY}	I	COMMUNICATION ENABLE SIGNAL FROM MMI (H: COMMUNICATION ENABLE)

Pin No.	Pin Name	I/O	Description
51	T _{V/DISC}	O	ANTENNA TV/DISC SELECT
52	S _{LED FWD}	O	SLED FWD FORCE MOVE FROM FORT
53	S _{LED REV}	O	SLED REV FORCE MOVE FROM FORT
54	X _{MIMCS}	O	COMMUNICATION CHIP SELECT TO MMI
55	L _{OADING}	O	TRAY LOADING DRIVE
56	U _{NLOADING}	O	TRAY EJECT DRIVE
57	X _{DSW LD}	O	YSD221 CHIP SELECT (L: COMMUNICATING)
58	V _{ss}	I	GND
59	L _{INEMUTE}	O	AUDIO OUTPUT MUTE SIGNAL (H: MUTE)
60	S _{LED SPEED}	O	SLED DRIVE SPEED CHANGE (L: SLOW)
61	X _{SV DSP RST}	O	SERVO DSP DF RESET (L: RESET)
62	L _{D ON}	O	OPT LIGHT EMITTING * TILT ON (H: EMITTING)
63	X _{CD/LD CDV}	O	CD / VDV: L DURING APART, OTHERS H
64	S _{LED MODE}	O	L: SLED IS IN PLAY MODE
65	S _{I D E A/B}	O	TILT SERVO SIDE SELECT (A: H: B: L)
66	X _{T/H SV}	O	TILT / HIGHT SELECT (L: TILT)
67	L _{CSW1}	I	LOADING / CHUCKING POSITION SENSOR INPUT 1
68	X _{L D LED}	O	LED EMITTING SIGNAL FOR DISC DISCRIMINATION
69	L _{CSW3}	I	LOADING / CHUCKING POSITION SENSOR INPUT 2
70	L _{CSW2}	I	LOADING / CHUCKING POSITION SENSOR INPUT 3
71	S _{PDL FG2}	I	SPINDLE FG INPUT 2
72	T _{ILT LIMIT}	I	TILT UP / DOWN LIMIT SW INPUT
73	T _{ILT CTR}	I	TILT CENTOR POSITION SW INPUT
74	M _{ECH SI}	I	32 BYTE SERIAL TRANSFERRING DATA INPUT
75	N/C		
76	N/C		
77	M _{ECH SO}	I	32 BYTE SERIAL TRANSFERRING DATA OUTPUT
78	M _{ECH SI}	O	32 BYTE SERIAL TRANSFERRING DATA INPUT
79	M _{ECH CLK}	O	32 BYTE SERIAL TRANSFERRING CLOCK
80	T _{CNT}	I	NOT USED
81	N/C		
82	N/C		
83	A _{V_{ss}}	I	GND
84	L _{DDET}	I	A / D INPUT THERE IS DISC OR NOT. 8/12 INCH DETECTION
85	C _{DV/FR/MT}	I	A / DINPUT SLED POSITION INFORMATION (CDV)
86	C _{D ABLD}	I	A / DINPUT SLED POSITION INFORMATION (CD, ALD, BLD)
87	I _{NLIMIT}	I	A / DINPUT SLED POSITION INFORMATION (INLIMIT)
88	X _{DSP/LT}	O	DSP LATCH SIGNAL
89	M _{UTG}	O	DSP MUTE SIGNAL (H: MUTE)
90	L _{OCK}	I	FRME SYNC (EFM) LOCK SIGNAL (H: LOCK)
91	S _{ENSE}	I	VARIOUS SENSE INPUT SIGNAL FROM DSP
92	A _{V_{cc}}	I	+5V POWER SUPPLY
93	M _{IC IN}	I	NOT USED
94	X _{DFLT}	O	DIGITAL FILTER LATCH SIGNAL
95	A _{SST}	O	NOT USED
96	K _{CS}	O	KARAOKE DSP ANALOGUE MUTE SIGNAL
97	C _X	O	CX ON / OFF (H: ON)
98	N/C		
99	X _{DSPSEL}	O	SELECTS COMMUNICATION WITH DSP (L: CONNECT, H: SEPARATE)
100	V _{cc}	I	POWER SUPPLY TERMINAL (+5V)

7-2. FP-727 BOARD IC202 MB89095

No.	Pin Name	Signal Name	I/O	Description
1	CL1	CLK32kHz	O	Clock 32 kHz
2	CL0		I	
3	MOD0	GND	I	GND
4	MOD1		I	
5	X0	CLK8MHz	I	Clock 8 MHz
6	X1		O	
7	Vss	Vss	I	GND
8	XRST	RST	I	Reset
9	P00/E120	MRST	O	Mechanism controller reset
10	P01/E121	BUSY	O	
11	P02/E122	AU MUTE	O	Audio mute
12	P03/E123	JUC	I	H: Japanese L: English
13	P04/E124	VOCAL	O	VOCAL
14	P05/E125	OTASUKE	O	OTASUKE VOCAL
15	P06/E126	KARAOKE PON	O	KARAOKE PON
16	P07/E127	ONTA	O	ONTA
17	P10/E110	REF V	I	REF V
18	P11/E111	MMICS	I	MMICS
19	P12/E112			
20	P13/E113			
21	P14	AUTO PAUSE	O	AUTO PAUSE
22	P15	SIMULATED	O	SIMULATED
23	P16	KARAOKE BAR	O	KARAOKE BAR
24	P17	MOVIE	O	MOVIE
25	P20	POWER CONT	O	Controller power on/off of the set (H: Power on)
26	P21	DSP ACK	I	Communication enable signal from Karaoke DSP controller
27	P22	MODE REQ	O	Communication request signal from Karaoke DSP controller
28	CMOD		I	+5V pull up
29	P24/S10	DSP SO	I	Receives data from Karaoke DSP controller
30	P25/S00	DSP SI	O	Transmits data to CG/Karaoke DSP controller
31	P26/SCKO	SCK	O	Clock for communication to CG/Karaoke DSP controller
32	P27/RMCI	SIRCS	I	SIRCS input
33	P30	CG CS	O	CG chip select
34	P31			
35	P32	DSP RST	O	Reset output to Karaoke DSP controller
36	P33/PWMO	PGM	O	PGM
37	P34/PPGO	A	O	LED output (L: Lighting up)
38	P35/PPGI	B	O	Side B
39 - 48	FS00 - FS09	P1 - P10	O	FL segment
49	Vcc	Vcc	I	Power supply +5V

No.	Pin Name	Signal Name	I/O	Description	
50 - 52	FS10 - 12	P11 - 13	O	FL segment	
53	VrDP	-30V	I	-30V	
54 - 57	FS13 - 16	P14 - 17	O	FL segment	
58	Vss	Vss	I	GND	
59 - 61	FS17 - 19	P18 - 20	O	FL segment	
62 - 64	FS11/FS20 - FC09/FS22	P21 - 23	O		
65	FC08/FS23				
66	FC07				
67	Vcc	EVER +5V	I	EVER +5V	
68 - 74	FC06 - FC00	70 - IG	O	FL grid	
75	P80/STB				
76	P81/XCS	MMICS	I	Chip select from mechanism controller	
77	P82/S11	MECH SO	I	Receives data from mechanism controller	
78	P83/S01	MECH SI	O	Transmits data from mechanism controller	
79	P84/SCK1	MECH CLK	O	Clock for communication to mechanism controller	
80	P85/ECK	LED 1	O	LED 1 (Key control DOWN)	
81	P86/T01	LED 1	O	LED 1 (Key control NORMAL)	
82	P87/T02	LED #	O	LED # (Key control UP)	
83	Vss(AVss)	Vss	I	GND	
84	P90/AN00	AD0	I	Mic remote in	
85	P91/AN01	AD1	I	Mode switch in	
86	P92/AN02	AD2	I	PW-708 key in	
87	P93/AN03	AD3	I	PP-728 key in	
88	P94/AN04	AD4	I		
89	P95/AN05	AD5	I		
90	P96/AN06	AD6	I		
91	P97/AN07	AD7	I		
92	Vcc(AVcc)	Vcc	I		Power supply +5V
93	PA0/AN08	AD8	I		PP-727 key in
94	PA1/AN09	AD9	I	-16V UNREG MONITOR	
95	PA2/AN10	AD10	I	DOOR SW(L: CLOSE H: OPEN)	
96	PA3/AN11	AD11	I	+5V REG MONITOR	
97	PA4/LSI				
98	PA5/LSO				
99	PA6/COU				
100	Vcc	Vcc		Power supply +5V	

• A/D PORT

PIN No.	10K	2700	3900	8200	22K	4V
AD No.	0V	1V	2V	3V	4V	
84			# UP	# DOWN	REPEAT	Mic remote control
AD0						
85	KARAOKE	NORMAL	AUX			MODE SW
AD1						
86	POWER ON/OFF	# DOWN	# NORMAL	# UP		PW-708 BOARD
AD2						
87	5	4	3	2	1	FP-728 BOARD
AD3						
88	10	9	8	7	6	
AD4						
89	15	14	13	12	11	
AD5						
90	PGM/RESERVE	ONTA	KARAOKE PON	OTASUKE VOCAL	VOCAL	
AD6						
91	SIDE B	▷	□	SIDE A	OPEN/CLOSE	
AD7						
93	STOP	SURROUND	AUTO PAUSE			FP-727 BOARD
AD8						
94						-16V UNREG MONITOR
AD9						
95	CLOSE DET					S204 (FP-727 BOARD) DOOR SW H: OPEN
AD10						
96						+5V REG MONITOR
AD11						

7-3. KP-706 BOARD IC523 MB89613

No.	Pin Name	Signal Name	Used	I/O	Description
1	P45, /SCK2	/KP CLK	○	O	KP2 communication clock (SIO function)
2	P46, SO2	KP DATA	○	O	KP2 communication data out (SIO function)
3	P47, SI2			O	
4	P50, AN0			O	
5	P51, AN1			O	
6	P52, AN2			O	
7	P52, AN3			O	
8	P54, AN4			O	
9	P55, AN5			O	
10	P56, AN6			O	
11	P57, AN7			O	
12	AVCC				A/D power supply
13	AVR				A/D reference power supply
14	AVSS				A/D ground (the same voltage as VSS)
15	P60, INT0	/MODE REQ.	○	I	Communication request from mode controller (INT0)
16	P61, INT1			I	
17	P62, INT2			I	
18	P63, INT3			I	
19	P64			I	
20	/RST				Reset in
21	MOD0				Mode set
22	MOD1				Mode set
23	X0				Clock
24	X1				Clock
25	VSS				GND
26	P27, ALE			O	
27	P26, /RD			O	
28	P25, /WR	/MUTE OFF	○	O	1: Normal 0: Release mute
29	P24, CLK			O	
30	P23, RDY	DOOR DOWN	○	O	1: Front door down
31	P22, HRQ	DOOR UP	○	O	1: Front door up
32	P21, /HAK	/AUX	○	O	1: AUX switch off 0: AUX switch on
33	P20, BUFC	/KP2 RST	○	O	KP2 reset out
34	P17, A15			O	
35	P16, A14			O	
36	P15, A13			O	
37	P14, A12			O	
38	P13, A11	DOOR2	○	I	Door position code 2
39	P12, A10	DOOR3	○	I	Door position code 3
40	P11, A09	DOOR1	○	I	Door position code 1

7-4. KP-706 BOARD IC542 LC8390M

Block	Pin No.	Pin Name	I/O	Description
AD section	5	ADLYDD	—	Analogue Lch A/D power supply
	3	ADLVSS	—	Analogue Lch A/D ground
	4	ADLI	I	Lch A/D audio signal input
	2	ADLZ	O	Lch A/D first stage $\Delta \Sigma$ output
	6	ADL3	O	Lch A/D second stage $\Delta \Sigma$ output
	11	ADRVDD	—	Analogue Rch A/D power supply
	9	ADRVSS	—	Analogue Rch A/D ground
	10	ADR1	I	Rch A/D audio signal input
	8	ADR2	O	Rch A/D first stage $\Delta \Sigma$ output
	12	ADR3	O	Rch A/D second stage $\Delta \Sigma$ output
	26	ADLRCK	I	A/D LR clock input
25	ADBACK	I	A/D bit clock input	
24	ADDATA	O	A/D data output	
1	DZOUTL	O	A/D for A/D dither output	
7	DZOUTR	O	A/D for A/D dither output	
15	DALYDD	—	Analogue Lch D/A power supply	
13	DALVSS	—	Analogue Lch D/A ground	
14	PWML	O	Lch D/A PWM output	
18	DARVDD	—	Analogue Rch D/A power supply	
16	DALVSS	—	Analogue Rch D/A ground	
17	PWMR	O	Analogue Rch PWM output	
21	DALRCK	I	D/A LR clock input	
20	DABCK	I	D/A bit clock input	
22	DADATA	I	D/A data input	
30	DYDD	—	Digital power supply	
19	DVSS	—	Digital ground	
23	CLKIN	I	Master clock input	
28	CLKCTL	I	Master clock select (H: 512FS/L: 384FS)	
27	RESET	I	Reset	
29	TEST	I	Test input (Be sure to connect to DVDD on communication)	

No.	Pin Name	Signal Name	Used	I/O	Description
41	P10, A08	AMUTE REQ	O	I	1: Analogue mute request from mechanism controller
42	P07, AD7			O	
43	P06, AD6			O	
44	P05, AD5			O	
45	P04, AD4			O	
46	P03, AD3			O	
47	P02, AD2			O	
48	P01, AD1			O	
49	P00, AD0	/KPZ CS	O	O	KPZ data transmit chip select
50	VSS				GND
51	P30, ADST			O	
52	P31, /SCK1	MODE CLK	O	I	Clock input for communication with mode controller (SIO function)
53	P32, S01	MODE SO	O	O	Data output for communication with mode controller (SIO function)
54	P33, S11	MODE SI	O	I	Data input for communication with mode controller (SIO function)
55	P34, EC	DSP ACK	O	O	1: Acknowledge to mode controller
56	P35, PWC	/MICIN	O	I	1: Microphone is connected 0: Microphone is not connected
57	VCC				Power supply +5V
58	V36, WT0	/OTASUKE	O	I	1: There is audio signal through microphone 0: There is not audio signal through microphone
59	V37, PTO			O	
60	P40	/TEST	O	I	1: Normal 0: Test mode starts
61	P41	/TEST1	O	I	Test mode pattern code 1
62	P42	/TEST2	O	I	Test mode pattern code 2
63	P43	/TEST3	O	I	Test mode pattern code 3
64	P44	/TEST4	O	I	Test mode pattern code 4

7-5. KP-706 BOARD IC601 YSS216

No.	Pin Name	I/O	Description
1	VDD	—	+5V power supply (Digital system)
2	/CS	I	μ -COM interface chip select
3	/CDI	I	μ -COM interface serial data
4	/SCK	I	μ -COM interface serial clock
5	SDSY	I+	Digital audio input word clock
6	/ANLS	I+	YM7110 data input
7	DI	I+	Digital audio input serial data
8	BCI	I+	Digital audio input bit clock
9	DO	O	Digital audio output serial data
10	L/R	O	Digital audio output word clock
11	BCO	O	Digital audio output bit clock
12	MCKO	O	Master clock (16.9344 MHz) output
13	XI	I	Connected to crystal oscillator or external clock input (16.9344 MHz)
14	XO	O	Connected to crystal oscillator
15	/CAS	O	External DRAM interface CAS
16	/MD4	I/O	External DRAM interface data
17	VSS	—	Ground (Digital system)
18	/OE	O	External DRAM interface OE
19	/MD1	I/O	External DRAM interface data
20	/MD2	I/O	External DRAM interface data
21	/WE	O	External DRAM interface WE
22	/RAS	O	External DRAM interface RAS
23	MA6	O	External DRAM interface address
24	MA5	O	External DRAM interface address
25	MA4	O	External DRAM interface address
26	VDD	—	+5V power supply (Digital system)
27	MA7	O	External DRAM interface address
28	MA3	O	External DRAM interface address
29	MA2	O	External DRAM interface address
30	MA1	O	External DRAM interface address
31	MA0	O	External DRAM interface address
32	MD3	I/O	External DRAM interface data
33	VSS	—	Ground (Digital system)
34	(NC)		
...			
50	(NC)		

No.	Pin Name	I/O	Description
51	CHL	— A	Connected to sample-and-hold capacitor for AIL input
52	CHR	— A	Connected to sample-and-hold capacitor for AIR input
53	CHM	— A	Connected to sample-and-hold capacitor for AIM input
54	AOM	OA	Analogue audio MIC channel DAC output
55	AVSS	— A	Ground
56	AIL	IA	Analogue audio Lch ADC input
57	CV	— A	Center voltage for ADC
58	(NC)		
59	AVDD	— A	+5V power supply
60	AIR	IA	Analogue audio Rch ADC input
61	AIM	IA	Analogue audio MIC channel ADC input
62	DEPI	I	Deemphasis processing control (H: On L: Off)
63	TI	I+	LSI test
64	/IC	I	Initial clear input (L: Active)

Note I+: Input terminal with pull-up resistor
A: Analogue terminal

SECTION 8 ELECTRICAL ADJUSTMENTS

During the adjustment, see the parts arrangement diagram for adjustments on page from 158.

8-1. LIST OF SERVICING JIGS

- Oscilloscope
- Color monitor TV
- Digital voltmeter
- Frequency counter
- Remote commander (RMT-M21A)
- LD alignment disc HVL-8 (8-797-008-00) NTSC Ref. Disc 8

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. OUTLINE OF OPERATION

1. Explanation of the debugging mode

The contents in the RAM of the microprocessor can be displayed on the screen for the repair and maintenance purposes. The status of the equipment in which this debugging function is available is called "the debugging mode".

The following are the differences between the debugging mode and the normal operation mode.

- (1) The background color of the screen changes in green when the FL display is turned off (with the background turned on).
- (2) Under the status described item (1) above, pressing the key on the remote control unit displays the history of emergency conditions or other debugging information. Only some keys function when the FL display is turned off.

2. Explanation of the service mode

The functions for the use on reparation and maintenance (the service mode) are incorporated in the equipment. 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.
- (3) The equipment is set in the debugging mode when it enters the service mode.

3. Explanation of the hidden key functions

Special control functions to be used for the test or some other purposes of the equipment are available by pressing at the same time and in specific order the multiple function keys on the main unit and/or on the remote control unit. The control functions

available in this way are called "the special key functions".

The special key functions can be used in either of the following modes.

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

The special key functions can be divided into two groups according to the key control operations as follows:

- "Simultaneous main-unit-key-press functions"
Some control functions can be used by pressing simultaneously multiple specific keys on the main unit.
- "Simultaneous main-and-remote-control-units-key-press functions"
Some other control functions can be used by pressing simultaneously two specific keys on the remote control unit while holding down a specific key on the main unit.

8-4. OPERATION OF THE EQUIPMENT IN THE DEBUGGING MODE

1. Entering the debugging mode

To enter the debugging mode from a normal operation mode (in a normal status of operation), turn on the equipment, press the **0** key and then the **STOP** key on the remote control unit while holding down the **KEY CONTROL NATURAL** key or the **SURROUND** key on the main unit.

When the following display appears on the screen, the equipment is in the debugging mode. This display shows the version No. of the microprocessor. For details, refer to (1) "**FRAME/TIME** key for displaying version No. of the microprocessor".

Use the **KEY CONTROL NATURAL** key or the **SURROUND** key to turn on (lit) or off (not lit) the FL display because either of them functions as the **DISPLAY** key in the debugging mode. When the FL display is turned off in the stop or some other modes, the background color changes in green. (Note that it is violet in the service mode.)

	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	
1st line																									STOP
2nd line	V	E	R																						
3rd line	M	M	I	-	7	8	0	A		1	2	/	2	5	A										
4th line																									
5th line	D	S	P	-		9	3	1	2		2	5	0	A											
6th line																									
7th line	M	C	M	-		0	7	8	0		9	3	1	2		2	5	0	A						
8th line																									
9th line																									
10th line																									

Fig. 8-1. Initial display in the debugging mode

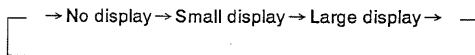
2. Quitting the debugging mode

To quit the debugging mode, press the **CLEAR** key on the remote control unit when the display in Figure 8-1 appears (the FL display is turned off and version No. of the microprocessor is displayed).

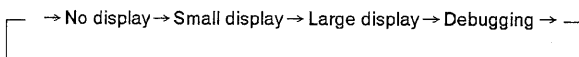
The same key operation as step (1) also sets the mode back in the normal operation mode. In the normal operation mode, the **KEY** **CONTROL NATURAL** key or the **SURROUND** key does not function as the **DISPLAY** key.

3. Changing the display on the screen

The display is set for “debugging display” immediately after entering the debugging mode. The display mode can be changed in the same manner as in the normal operation mode by pressing the **DISPLAY** key. In the debugging mode, however, “debugging display” mode can be selected as one of the display modes, in addition to “no display (displays nothing in most cases)”, “small display (displays only the 1st line in most cases)”, and “large display (always displays the previous screen)” modes. Pressing the **DISPLAY** key in the normal operation mode changes the display mode as follows:



Pressing the screen display key in the debugging mode changes the display mode as follows:



4. Explanation of the debugging display

In the debugging display mode, the information on the mode controller is displayed on the screen as a dump list. The title is displayed at the left on the 2nd line from the top. The data is displayed on the 3rd line through the 9th line.

The display of the data in one line consists of up to four sets (total of 8 bytes) of four character (2 bytes character each) sets in hexadecimal notation.

The information to be displayed can be selected in the debugging mode, by turning off the FL display and pressing the desired key (as listed below).

The following table lists the information which is currently available and which can be displayed.

Table 8-1. List of the keys to be used in the debugging mode and the corresponding information

Keys	Information to be displayed
FRAME/TIME	Version No. of the microprocessor
1	History of the function modes
2	History of the emergency occurrence
3	Information on normal service mode
4	Trap-flag
5	Key/remote control data
7	Information on communication with the mechanism controller
ANALOG/CX	Information on communication with the DSP controller

- (1) **FRAME/TIME** key for displaying version No. of the microprocessor

Pressing this key displays the version No. of the microprocessor. The version No. of the mode controller appears on the 3rd line, that of the DSP controller appears on the 5th line, and that of the mechanism controller appears on the 7th line. An example in Figure 8-2 shows that the version No. of the mode controller is “MMI-780A 12/25A”, that of the DSP controller is “DSP 93/12/25A”, and that of the mechanism controller is “MCM-700 92/12/25A”.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1st line																									STOP
2nd line	V	E	R																						
3rd line	M	M	I	-	7	0	0	D				1	2	/	2	5	A								
4th line																									
5th line	D	S	P	-					9	3	1	2				2	5	0	A						
6th line																									
7th line	M	C	M	-					0	7	8	0				9	3	1	2			2	5	0	A
8th line																									
9th line																									
10th line																									

Fig. 8-2. Version No. of the microprocessor

- (2) **1** key for displaying the history of the function modes

Pressing this key displays the history of the mode transitions, which is made of principal operation commands (which represent function modes such as STOP and PLAY) sent from the mode controller to the mechanism controller.

One byte data (2 digits in hexadecimal notation) is used for representing the history of one function mode. Up to 8 histories of the function modes can be displayed on a line. A total of 16 histories of the function modes are available using two lines. Unless the equipment is unplugged, the data are kept intact in memory even when the equipment is turned off. The data to be stored appears on the screen from left to right 1 byte by 1 byte, and “FF” appears to the right of the last data byte. The data byte continues from the right end on the 1st line to the left end on the 2nd line, and from the right end on the 2nd line to the left end on the 1st line. The last stored data of the function modes appears on the left of “FF”. That is, when “FF” appears at the left end on the 1st (or the 2nd) line, the last stored data appears at the right end on the 2nd (or the 1st respectively) line.

“FE” means there has been an emergency case at that data point. To check the type of the emergency case, refer to (3) **2** key for displaying the history of the emergency occurrence”.

	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	
1st line																									STOP
2nd line	F	M	H	I	S	T																			
3rd line					0	1	2	0		3	0	F	E		5	0	6	0		7	0	6	0		
4th line					2	0	F	F		0	0	0	0		0	0	0	0		0	0	0	0		
5th line																									
6th line																									
7th line																									
8th line																									
9th line																									
10th line																									

The example above shows that the function modes have changed as follows:

- 01 (Power on and start up)
- 20 (Stop)
- 30 (Start up of side A)
- FE (An emergency occurred.)
- 50 (Searching a chapter)
- 60 (Playback)
- 70 (Low speed scanning in normal direction)
- 60 (Playback)
- 20 (Stop) The function mode at present

Fig. 8-3. History of the function modes

Table 8-2. List of the function modes

No.	Status	Description	
00	Power off		
01	Power on and start up	Initializing operation at power on	
10	Opening of the tray	Opening the door and pushing out the tray	
20	Stop	Pulling in the tray and stopping the spindle	
30	Preparation for playback of side A	From stop etc. to immediately before searching of side A	
40	Preparation for playback of side B	From stop etc. to immediately before searching of side B	
50	Searching a chapter	Searching a chapter including the beginning of the disc	
51	Searching a frame/time	Searching a frame of a CAV disc/time search of others	
60	Playback	PLAY	
61	Pause	PAUSE	
70	Low speed scanning in normal direction	>>	
71	High speed scanning in normal direction	>>>	
72	Low speed scanning in reverse direction	<<	
73	High speed scanning in reverse direction	<<<	
80	Still playback in normal direction	STILL Frame by frame playback in normal direction	No. 80 (Still playback in normal direction) through No. 9C (10 times speed playback in reverse direction) are effective only with a CAV disc.
81	Step playback in normal direction		
82	1/90 times speed playback in normal direction		
83	1/30 times speed playback in normal direction		
84	1/16 times speed playback in normal direction		
85	1/8 times speed playback in normal direction		
86	1/4 times speed playback in normal direction		
87	1/2 times speed playback in normal direction		
88	Normal (1 time) speed playback in normal direction		
89	2 times speed playback in normal direction		
8A	3 times speed playback in normal direction	Frame by frame playback in reverse direction	
8B	5 times speed playback in normal direction		
8C	10 times speed playback in normal direction		
90	Still playback in reverse direction		
91	Step playback in reverse direction		
92	1/90 times speed playback in reverse direction		
93	1/30 times speed playback in reverse direction		
94	1/16 times speed playback in reverse direction		
95	1/8 times speed playback in reverse direction		
96	1/4 times speed playback in reverse direction		
97	1/2 times speed playback in reverse direction		
98	Normal (1 time) speed playback in reverse direction		
99	2 times speed playback in reverse direction		
9A	3 times speed playback in reverse direction		
9B	5 times speed playback in reverse direction		
9C	10 times speed playback in reverse direction		
FE	Appears for indicating an occurrence of emergency	Occurrence of an emergency case	
FF	Appears next to the last data.	The last data of the history.	

- (3) **2** key for displaying the history of the emergency occurrence

Pressing this key displays the history of the emergency occurrence with the emergency codes. Each emergency code is displayed as one byte data which is sent from the mechanism controller to the mode controller when a trouble occurs with the mechanism controller. However, some codes such as 64 (detection of minimum chapter) are used merely as status codes. Codes 80 and above are generated in the mode controller itself, and they are not the same those sent from the mechanism controller.

The data will be "00" if there has been no emergency case since when the equipment has been plugged in.

The display type is the same as that for the history of the function modes. However, up to 8 histories using only one line are available in this case. The emergency code which appears just before "FF" corresponds to the data of "FE" in the history of the function modes, which is the closest one to "FF".

	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4
1st line	STOP																							
2nd line	EMG HIST																							
3rd line	6 0 7 4 6 4 6 1 6 4 6 4 7 4 F F																							
4th line																								
5th line																								
6th line																								
7th line																								
8th line																								
9th line																								
10th line																								

Fig. 8-4. History of emergency

The example above shows that the emergency has occurred in the following order because the data next to "FF" is 60 at the left of the line.

- 60 (Detection of lead-in point)
- 74 (Focusing failed)
- 64 (Detection of minimum chapter)
- 61 (Detection of lead-out point)
- 64 (Detection of minimum chapter)
- 64 (Detection of minimum chapter)
- 74 (Focusing failed) [The last emergency]

Table 8-3. Lists the emergency codes.

No.	Status	Operation after emergency occurred
01	Requirement of forced power off	Power off
02	Requirement of forced ejection of the tray	Eject
03	Requirement of stop	Stop
04	Requirement of stop when opening the door	Stop
05	Requirement of forced playback	Play
06	Requirement of determination for mode change when power off	Fixed power off display
07	Requirement of power off after communication is terminated	Power off
08	No movement of the front door	Power off
10	Detection of movement for pushing in the tray	Play
11	11 Detection of no movement of the tray	Power off
20	20 Detection of no movement of the sled	Power off
30	30 Detection of no movement of the tilt	Power off
40	No detection of the spindle FG	Power off
41	No achievement of continuous servo lock from FG servo to H servo	Stop
42	Above the high rotation limit	Stop
43	Below the low rotation limit	Stop
44	No complete stop operation for the spindle movement	Power off
45	Time over error for the spindle control operation	Power off
50	Focusing failed	Stop
51	Focusing failed (with a disc loaded)	Stop
52	Detected as if the disc was an LD	Not specified
53	Focusing of LD8 failed	Stop
54	Reading of TOC failed on a disc of CD or CDV	Stop
60	Detection of the lead-in code	Play etc.
61	Detection of the lead-out code	Stop/pause etc.
62	Detection of the lead-out of part A on CDV	Stop/pause etc.
63	Detection of a picture stop	Still
64	Detection of the minimum chapter	Not specified
65	Reading on a disc of CD or CDV failed	Stop
66	Reading of Philips code of LD failed	Stop
70	Detection of over search	Play
71	Detection of under search	Play
72	Time over for the search operation	Play
74	Focusing failed during the search operation	Stop
	(The emergency codes below are generated in the mode controller.)	
80	Time out of emergency	Power off
81	Time out of searching	Play
82	Time out of communication with the mechanism controller	Power off
83	Time out of communication with the DSP controller	Power off

- (4) **3** key for displaying the information for repair service, sent from the mechanism controller

Pressing this key displays the information sent from the mechanism controller, which is necessary for repair service.

At present, the information listed in Table 8-4 is available. Data numbers in the table correspond to the numbers on the 3rd line through the 5th line in Figure 8-5.

Table 8-4. Information for repair service, sent form the mechanism controller

Data number	Data
(02)	Mode of mechanisms (internal mode of the mechanism controller) See the following section for details.

	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	1	2	3	4
1st line																								STOP
2nd line	S	E	R	V	I	C	E																	
3rd line		(00)	(01)	(02)	(03)	(04)	(05)	(06)	(07)															
4th line		(08)	(09)	(10)	(11)	(12)	(13)	(14)	(15)															
5th line		(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)															
6th line																								
7th line																								
8th line																								
9th line																								
10th line																								

Fig. 8-5. Information for repair service sent form the mechanism controller

- About the operation modes of the mechanisms
The modes of the mechanisms mean the principal operation modes of the mechanism controller. The mode codes of the mechanisms are almost the same as those available with the equipment as the function modes. But, there are several supplemental mode codes for the mechanisms.
The table below shows the mode codes of the mechanisms.

Table 8-5. Mode codes of the mechanisms

No.	Functions
00	Power off
01	Initialization of the mechanism controller (Without operating the mechanisms)
03	In the process from power on to power off
04	In the process from power off to power on
05	Initialization of the mechanisms and related ICs.
10	Ejected status of the tray
11	In the process of ejection of the tray
12	In the process of loading of the tray
20	In stop status with the disc chucking up
21	In the process of chucking up form chucking of side A
22	In the process of chucking of side A from chucking up
23	In chucking status of side A
30	Until focusing of side A has been achieved
31	From lock of focusing to start-up of 0 search
32	In operation from side A/B to stop
33	In process of reversing side B form side A
40	Until focusing of side B has been achieved
50	Chapter search
60	Frame/time search
61	Pause
70	Low speed scanning in normal direction
71	High speed scanning in normal direction
72	Low speed scanning in reverse direction
73	High speed scanning in reverse direction
74	In the process of scanning completion
80 to FF	(The same as those of the function mode)

- (5) **4** key for displaying the trap – flags
Pressing this key displays the data of the trap-flags. Trap-flags are the data of the causes of “an abnormal power off” of the mode controller (this excludes when it is turned off with the power key).
The one byte at the right (2 digits of hexadecimal notation) is the flag which has specific meaning. The bit which corresponds to the cause of the last abnormal power off is set 1. The one byte at the left is the flag for all (logic OR of) the causes of abnormal power off since when the equipment has been plugged in.
Both the flags can be cleared by turning off the FL display and then by pressing the clear key, when this screen is displayed.

	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	1	2	3	4
1st line																								STOP
2nd line	T	A	P	E	F	L	A	G																
3rd line					8	1	8	0																
4th line																								
5th line																								
6th line																								
7th line																								
8th line																								
9th line																								
10th line																								

Fig. 8-6. Trap-flag

The above example of the trap-flag shows that there have been two cases of abnormal power off; one by abnormal voltage level and the other by forced reset by the user. It also shows that the last abnormal power off has been caused by byte 80 in hexadecimal notation (power off caused by abnormal voltage level).

The table below shows the meaning of each flag bit.

Table 8-6. Trap-flag bits and the causes

Bit number (Pattern)	Causes
7 (80)	Power off caused by abnormal voltage level
6 (40)	Power off caused by abnormal communication with the mechanism controller
5 (20)	Power off caused by an occurrence of emergency
4 (10)	Forced power off by the user
3 (08)	Resetting by self-check of the mode controller
2 (04)	Resetting by self-check of the mode controller
1 (02)	Resetting by self-check of the mode controller
0 (01)	Resetting forcibly by the key operation

Notes: Resetting, which is indicated with bits 0 through 3 in the table, means that setting the status of the mode controller back to the same status as that when the equipment was plugged in, except for initialization of the trap-flag. It deletes the history of function modes and emergency cases.

“A” in the hexadecimal notation is (2 + 8) in decimal notation. In the same manner, B = 1 + 2 + 8, C = 4 + 8, D = 1 + 4 + 8, E = 2 + 4 + 8, and F = 1 + 2 + 4 + 8.

(6) **5** key for displaying the key/remote control data

Pressing this key displays the key input data of the main unit and the input data by the remote control unit, using SIRCS codes. Note that this operation is effective on the remote control unit for use with MDPs only.

The one byte (2 digits in hexadecimal notation) on the left of the 3rd line in Figure 8-7 is the SIRCS code of the key input data of the main unit, and that on the right is the SIRCS code of the input data by the remote control unit. When no key is pressed or there is no input, "FF" appears. When two keys are pressed almost at the same time, the SIRCS code of the input data by the first pressed key will appear.

The keys of the main unit to which SIRCS codes are not assigned (i.e. **KARAOKE PON** key) are defined as internal codes, using the data of 80 or higher in hexadecimal notation.

	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4
1st line	STOP																							
2nd line	KEY - RMC																							
3rd line	1 A F F																							
4th line																								
5th line																								
6th line																								
7th line																								
8th line																								
9th line																								
10th line																								

Fig. 8-7. Key and remote control data

The example above shows that the **PLAY** key (1A in hexadecimal notation) on the main unit is pressed but there is no input (FF in hexadecimal notation) from the remote control unit.

However, note that, in some cases, the remote control unit generates SIRCS codes momentarily only at the moment when the key is pressed.

The table below lists the SIRCS codes used for MDP-A800K.

Table 8-7. List of SIRCS codes for MDPs

00	Numeral 1	35	ACS in reverse direction
01	Numeral 2	38	A - B repeat
02	Numeral 3	39	Numeral + 10
03	Numeral 4	3A	Screen display
04	Numeral 5	40	Analog audio
05	Numeral 6	46	Automatic pause
06	Numeral 7	47	1 song/one side/double side
07	Numeral 8	5D	Side A
08	Numeral 9	5E	Side B
09	Numeral 0	60	Key control increase
0B	Search/sledding	61	Key control normal
0C	Frame/time	62	Key control decrease
0F	Clear	63	Surround
15	Power on/off	64	Numeral 10
16	Close/open of tray	65	Numeral 11
17	Audio monitoring	66	Numeral 12
18	Stop	67	Numeral 13
19	Pause	68	Intro-scanning
1A	Playback	77	Numeral 14
1E	Reverse direction scanning	79	Numeral 15
1F	Normal direction scanning		
25	Playback by memory		(The keys here and after are those of the main unit only.)
28	Time display	90	Vocal
29	Repeat	91	KARAOKE PON
2B	Step in normal direction	92	VOCAL SUPPORT
2C	Step in reverse direction	93	Multi-channel audio
30	Program		
34	ACS in normal direction	FF	Not pressed

(7) **7** key for displaying the information on communication with the mechanism controller

Pressing this key displays the communication data with the mechanism controller.

The data transmitted from the mode controller to the mechanism controller appears on the 3rd line through the 5th line. The data transmitted from the mechanism controller to the mode controller appears on the 7th line through the 9th line. The exclamation marks "!" at the left on the 8th and the 9th lines indicate that the communication is carried out successfully. Question mark "?" appears if communication stops. A bracket mark **■** appears if communication stops after carrying out once the communication on the purpose of servicing.

	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4
1st line	STOP																							
2nd line	MESS																							
3rd line	S	(00)	(01)	(02)	(03)	(04)	(05)	(06)	(07)															
4th line		(08)	(09)	(10)	(11)	(12)	(13)	(14)	(15)															
5th line		(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)															
6th line																								
7th line	R	(00)	(01)	(02)	(03)	(04)	(05)	(06)	(07)															
8th line	!	(08)	(09)	(10)	(11)	(12)	(13)	(14)	(15)															
9th line	!	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)															
10th line																								

*1. Data transmitted to the mechanism controller
 *2. Data received from the mechanism controller

Fig. 8-8. Information on communication with the mechanism controller

The tables below show some communication information.

Table 8-8. Data from the mode controller to the mechanism controller (Corresponds to the upper half of the display in Figure 8-8.)

No.	Description
(01)	The function mode at present (next)
(02)	The function mode of final purpose
(03-05)	Target address of search (time/frame)
(21)	Position of Karaoke door

Table 8-9. Data from the mechanism controller to the mode controller (Corresponds to the lower half of the display in Figure 8-8.)

No.	Description
(01)	The function mode at present (next)
(06)	The flag for completion of function mode change (LSB)
(13)	Chapter/track number at present
(14)	Index number at present
(15-17)	Address at present (time/frame)

- (8) **ANALOG/CX** key for displaying the information on communication with the DSP controller
 Pressing this key displays the communication data with the DSP controller.
 The DSP controller carries out the communication to the DSP and controls the Karaoke door at the front.
 The data transmitted from the mode controller to the DSP controller appears on the 3rd line. The data transmitted from the DSP controller to the mode controller appears on the 7th line.

	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	
1st line																									STOP
2nd line	D	S	P	M	E	S	S																		
3rd line	S				(00)	(01)	(02)	(03)	(04)	(05)															
4th line																									
5th line																									
6th line																									
7th line	!				(00)	(01)	(02)	(03)	(04)	(05)															
8th line																									
9th line																									
10th line																									

Fig. 8-9. Information on communication with the DSP controller

The tables below show some communication information.

Table 8-10. Data from the mode controller to the DSP controller (The 3rd line in Figure 8-9.)

No.	Description
(02)	(The 7th and the 6th bits) The list of the movement in position of the Karaoke door.

Table 8-11. Data from the DSP controller to the mode controller (The 7th line in Figure 8-9.)

No.	Description
(03)	Position of the Karaoke door

8-5. OPERATION OF THE EQUIPMENT IN THE SERVICE MODE

1. Entering the service mode

The following procedure shows how to enter the service mode.

- 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.
- Turn on the power by pressing the power key of the main unit. Nothing will be displayed on the screen at this moment.
- 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 changes in blue or black, the service mode is not available yet. If so, restart the procedure from step (1) above.

When the equipment is in the service mode, it is also put in the debugging mode. Therefore, the version No. of the microprocessor appears on the screen.

2. 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 at the same time the reverse direction scanning key and the power key on the main unit.

3. 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 or on the FL display. In order to carry out the special key functions listed in Table 8-12, in the status above, turn off the FL display, and then press the desired key such as **PLAY** or **PAUSE** on the main unit.

The sledding motion with the **DISC SIDE A** or **DISC 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 equipment is carrying out the special key function, the LED of side B 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.

When the FL display is turned off, some keys are deactivated. Be sure to turn on the FL display by pressing the **KEY CONTROL**, **NATURAL** key or the **SURROUND** key on the main unit if you don't carry out the special key functions.

Table 8-12. List of the special key functions

Key	Special key functions
DISC SIDE A	Sledding in reverse direction (downward)
DISC SIDE B	Sledding in normal direction (upward)
PLAY	Focusing search
PAUSE	Tilt servo on (activated)
STOP	Stop operation of the special key functions

The following are the details of the special key functions available with the equipment.

- (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 equipment 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) **DISC 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 **DISC SIDE A** key. To stop the sledding in reverse direction, release the **DISC SIDE A** key.
- (3) **DISC 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 **DISC 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 **DISC SIDE A** and **DISC 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 **DISC SIDE A** and **DISC SIDE B** keys. To deactivate the tilt servo, press the **STOP** key.

8-6. OPERATION OF THE EQUIPMENT WITH HIDDEN KEY FUNCTIONS

1. 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 8-13. List of simultaneous main-unit-key-press functions

Functions	Keys to be pressed on the main unit
(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. – Operation of the mechanisms is out of control. – Power cannot be turned off by pressing the power key. Note that this function should be used with care because it may turn off the power in the middle of the operation of the mechanisms.	<u>OPEN/CLOSE</u> + <u>POWER</u>
(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. Note that once this function has been carried out, all information, including the history of emergency case, other than the trap – flag information in the debugging mode, will be deleted.	<u>STOP</u> + <u>POWER</u>
(3) Lighting up all the FL display (all the segments of the FL tube) and LEDs on the main unit This function turns on all the FL tube segments and LEDs after turning on the power automatically. Until you switched off the power, normal operation is possible while all the FL tube segments and LEDs are lit.	<u>DISC SIDE B</u> + <u>RESERVE</u> + <u>POWER</u> (Only when power off)
(4) High speed scanning in reverse direction	<u>KEY CONTROL NATURAL</u> + <u>1</u>
(5) Low speed scanning in reverse direction	<u>KEY CONTROL NATURAL</u> + <u>2</u>
(6) Low speed scanning in normal direction	<u>KEY CONTROL NATURAL</u> + <u>3</u>
(7) High speed scanning in normal direction	<u>KEY CONTROL NATURAL</u> + <u>4</u>
(8) ACS in reverse direction	<u>KEY CONTROL NATURAL</u> + <u>5</u>
(9) ACS in normal direction	<u>KEY CONTROL NATURAL</u> + <u>6</u>
(10) Frame by frame playback in reverse direction	<u>KEY CONTROL NATURAL</u> + <u>7</u>
(11) Frame by frame play back in normal direction	<u>KEY CONTROL NATURAL</u> + <u>8</u>
(12) Normal (1 time) speed playback in reverse direction X1 speed is set in reverse direction during playback of a CAV disc.	<u>KEY CONTROL NATURAL</u> + <u>9</u>
(13) Normal (1 time) speed playback in normal direction X1 speed is set in normal direction during playback of a CAV disc.	<u>KEY CONTROL NATURAL</u> + <u>10</u>
(14) Variable speed playback in reverse direction (Multi-speed <)	<u>KEY CONTROL NATURAL</u> + <u>11</u>
(15) Variable speed playback in normal direction (Multi-speed >)	<u>KEY CONTROL NATURAL</u> + <u>12</u>
(16) Deceleration of variable speed playback (Speed set –)	<u>KEY CONTROL NATURAL</u> + <u>13</u>
(17) Acceleration of variable speed playback (Speed set +)	<u>KEY CONTROL NATURAL</u> + <u>14</u>
(18) <u>+10</u>	<u>KEY CONTROL NATURAL</u> + <u>15</u>
(19) <u>0</u>	<u>KEY CONTROL NATURAL</u> + <u>RESERVE</u>

2. How to use “simultaneous main - and - remote - control - units - key - press functions”

The functions available by pressing the two specific keys on the remote control unit while holding down the specific key on the main unit are called “simultaneous main - and - remote - control - units - key - press functions”. It is necessary to press two keys on the remote control unit within about one second. This prevents an accidental use of these functions by the user.

These functions are to be carried out by using the **KEY CONTROL NATURAL** or **SURROUND** key that is not directly related to operation of mechanisms, so that the operation of the mechanisms is not affected.

The following table lists the currently available simultaneous main-and-remote-control-units-key-press functions.

Table 8-14. List of simultaneous main-and-remote-control-units-key-press functions

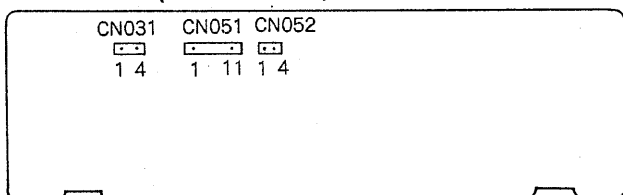
Functions	Step	Keys to be pressed on the main unit and on the remote control unit
(1) Debugging mode on/off This function puts the equipment in the debugging mode from another mode, or puts the equipment in the mode other than the debugging mode from the debugging mode.	1 2	KEY CONTROL NATURAL + 0 KEY CONTROL NATURAL + STOP
(2) Forced V muting on/off This function releases the equipment from the forced V muting condition if it is in the forced V muting condition, or puts the equipment in the forced V muting condition if it is not in the forced V muting condition. It can be used to obtain a blue background during playback, or removing the blue background while the equipment is in the stop mode.	1 2	KEY CONTROL NATURAL + 0 KEY CONTROL NATURAL + DISPLAY
(3) Resetting of V muting This function resets the equipment in the V muting condition to normal condition. That is, it releases the equipment from condition (5) above.	1 2	KEY CONTROL NATURAL + 0 KEY CONTROL NATURAL + CLEAR
(4) Making time out of the mechanism controller ineffective This function disables the power off function which is required when communication to the mechanism controller is not achieved successfully. It is used to operate the mode control function when the mechanism controller is seemed to be faulty.	1 2	KEY CONTROL NATURAL + 0 KEY CONTROL NATURAL + +10
(5) Making time out of the mechanism controller effective This function enables the power off function which is required when communication to the mechanism controller is not achieved successfully. It is used to release the equipment from the status (4) above.	1 2	KEY CONTROL NATURAL + 0 KEY CONTROL NATURAL + 0
(6) Turning on (lit) the FL display This function turns on the FL display.	1 2	KEY CONTROL NATURAL + 0 KEY CONTROL NATURAL + 9
(7) Turning off the FL display This function turns off the FL display.	1 2	KEY CONTROL NATURAL + 0 KEY CONTROL NATURAL + 8
(8) Making time out of the DSP controller ineffective This function disables the power off function which is required when communication to the DSP controller is not achieved successfully. It is used to operate the mode control function when the DSP controller is seemed to be faulty.	1 2	KEY CONTROL NATURAL + 0 KEY CONTROL NATURAL + KEY CONTROL UP
(9) Making time out of the DSP controller effective This function enables the power off function which is required when communication to the DSP controller is not achieved successfully. It is used to release the equipment from the status (8) above.	1 2	KEY CONTROL NATURAL + 0 KEY CONTROL NATURAL + KEY CONTROL DOWN

8-7. POWER SUPPLY CHECK (PS-713 BOARD)

Mode	Stop
Measuring equipment	Digital voltmeter
UNREG +16 V check	
Measurement point	Pin ① of CN051 (Pin ②, GND)
Specified value	16.0 ± 1.0 V
UNREG -16 V check	
Measurement point	Pin ③ of CN051 (Pin ③, GND)
Specified value	-16.0 ± 1.0 V
REG +8 V check	
Measurement point	Pin ③ of CN053 (Pin ②, GND)
Specified value	8.0 ± 0.5 V
REG -8 V check	
Measurement point	Pin ① of CN053 (Pin ③, GND)
Specified value	-8.0 ± 0.5 V
POWER MUTE check	
Measurement point	Pin ④ of CN051 (Pin ②, GND)
Specified value	17.0 ± 1.0 V
EVER 5 V check	
Measurement point	Pin ④ of CN031 (Pin ②, GND)
Specified value	5.0 ± 0.3 V

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

PS-713 Board (Conductor Side)



8-8. SYSTEM CONTROL SYSTEM ADJUSTMENT

8-8-1. Microprocessor Clock Adjustment (MB-702 Board)

Mode	Stop
Measurement point	Pin ① of CN102
Measuring equipment	Frequency counter
Adjusting Element	CT001
Specified value	14,318,180 ± 40 Hz

Adjustment method:

- 1) Adjust CT001 to 14,318,180 ± 40 Hz.

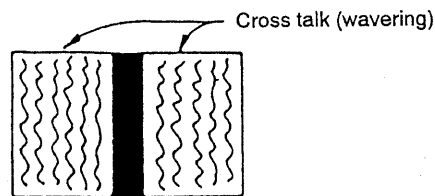
8-9. SERVO SYSTEM ADJUSTMENT

8-9-1. Side A Tilt Balance Adjustment (MB-702 Board)

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

Adjustment method:

- 1) Select STILL (▶◀) mode.
- 2) Search the frame 770 and apply a vertical bar signal.
- 3) Adjust RV401 so that the right and left cross talks (waving) 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.

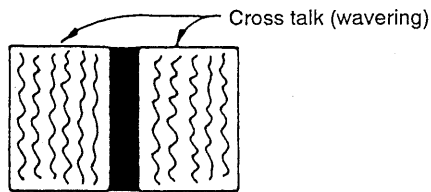
Fig. 8-10.

8-9-2. Side B Tilt Balance Adjustment (MB-702 Board)

Mode	Still
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) Select STILL (▶◀) mode.
- 2) Search the frame 770 and apply a vertical bar signal.
- 3) Adjust RV402 to minimize the right and left cross talks (wavering) level.



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

Fig. 8-11.

8-10. VIDEO SYSTEM ADJUSTMENT

8-10-1. Video Output Level Adjustment (MB-702 Board)

Mode	Still
Signal	Frame 4100 (Color bar)
Measurement point	J201(VIDEO OUT terminal) (Terminated to 75 Ω)
Measuring equipment	Oscilloscope
Adjustment element	RV001
Specified value	1.00 ± 0.02 Vp-p

Adjustment method:

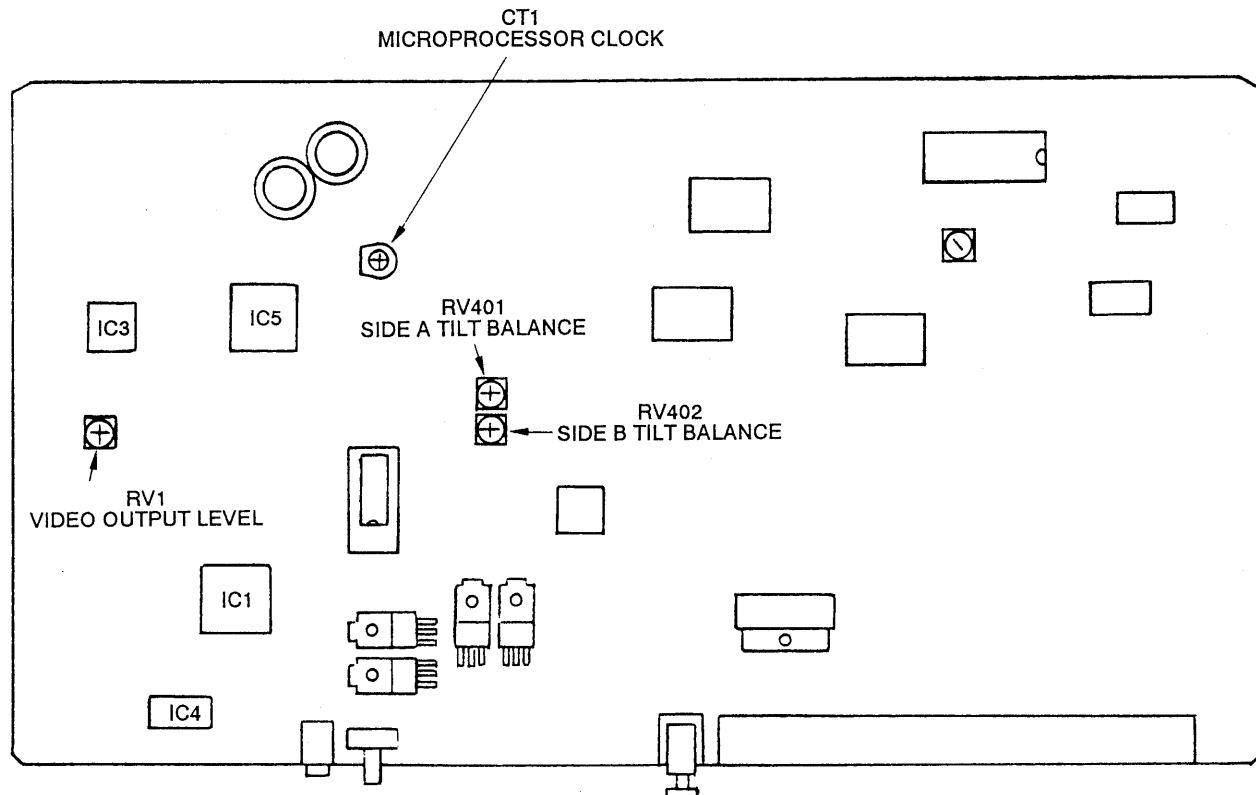
- 1) Select STILL (▶◀) mode.
- 2) Search the frame 4100 and apply a vertical bar signal.
- 3) Adjust RV001 for 1.00 ± 0.02 Vp-p.



Fig. 8-12.

8-11. PARTS ARRANGEMENT DIAGRAM FOR ADJUSTMENTS

MB-702 Board (Component Side)



MDP-A800K

9-973-431-11

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—162—

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