SLV-760HF/760HFPX/761HF/790HF/960HF/960HFCS/960HFMX/960HFPX/L5CS/L5MX/L5PA/L7HFCS/L7HFMX/L7HFPA

RMT-V158C/V161A/V181K/V184A/V186/V186A

SERVICE MANUAL

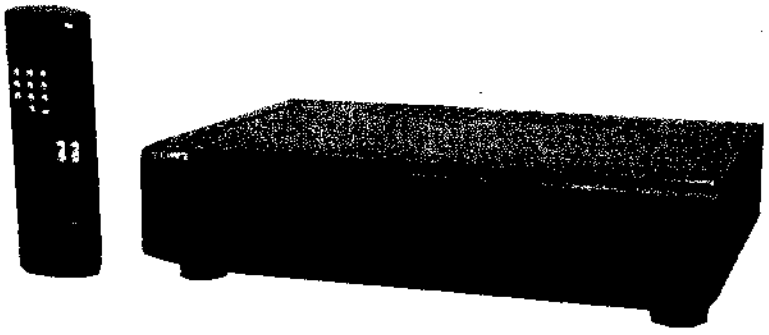


Photo: SLV-960HF

US Model
SLV-760HF/761HF/790HF/960HF

Canadian Model
SLV-760HF/790HF/960HF

PX Model
SLV-760HFPX, 960HFPX

Chielean Model
SLV-960HFCS/L5CS/L7HFCS

Mexican Model
SLV-960HFMX/L5MX/L7HFMX

Panamanian Model
SLV-L5PA/L7HFPX

H MECHANISM

- **Refer to the SERVICE MANUAL of VHS MECHANICAL ADJUSTMENTS IV for MECHANICAL ADJUSTMENTS. (9-973-623-11)**

* The abbreviations of 760, 761, 790, 960, L5 and L7 contained in this service manual are indicated when these models are common to all their corresponding models as given below.

Abbreviated model name	760	761	790	960	L5	L7
All model names SLV-	760HF (US) 760HF (Canadian) 760HFPX	761HF	790HF (US) 790HF (Canadian)	960HF (US) 960HF (Canadian) 960HFCS 960HFMX 960HFPX	L5CS L5MX L5PA	L7HFCS L7HFMX L7HFPA

SPECIFICATIONS

System
Format
VHS NTSC standard
Video recording system
Rotary head helical scanning FM system
Video heads
Double azimuth four heads
Video signal
NTSC color, EIA standards
Tape Speed
SP: 33.35 mm/s (1 3/8 inches/s)
EP: 11.11 mm/s (7/16 inches/s)
LP: 16.67 mm/s (11/16 inches/s), playback only
Maximum recording/playback time
8 hrs. in EP mode (with T-160 tape)
Fast-forword and rewind time
Approx. 3 min. (with T-120 tape)

Tuner section
Channel coverage
VHF 2 to 13
UHF 14 to 69
CATV A-8 to A-1, A to W, W+1 to W+84
Antenna
75-ohm antenna terminal for VHF/UHF

Inputs and outputs
LINE-1 IN and -2 IN (SLV-760/761/790/960)
VIDEO IN, phono jack (1 each)
Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
AUDIO IN, phono jack (2 each)
Input level: 327 mVrms
Input Impedance: more than 47 kilohms

LINE-1 IN (SLV-L5/L7)
VIDEO IN, phono jack (1)
Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
AUDIO IN, phono jack (1)
(SLV-L5)
Input level: 327 mVrms
Input impedance: more than 47 kilohms
AUDIO IN, phono jack (2 each) (SLV-L7)
Input level: 327 mVrms
Input impedance: more than 47 kilohms
LINE OUT (SLV-760/761/790/960/L5/L7)
VIDEO OUT, phono jack (1)
Output signal: 1 Vp-p, 75 ohms, unbalanced, sync negative

– Continued on next page –

MICROFILM

VHS Hi-Fi VIDEO CASSETTE RECORDER

VCR Plus+

SONY

AUDIO OUT, phonojack (2)
Standard output: 327 mVrms
Load impedance: 47 kilohms
Output impedance: less than 10 kilohms
SYSTEMLINK (CONTROL S IN) (SLV-790/960)
Mini jack (1)
CABLE BOX CONTROL (CONTROL S OUT) (SLV-790/960)
stereo mini jack (plug in power) (1)

Timer section

Clock
Quarts locked
Timer indication
12-hour cycle
Timer setting
8 programs per month (max.)
Power back-up
Built-in self-charging capacitor
Back-up duration: up to 3 hours at a time

General

Power requirements
120 V AC, 60 Hz (SLV-760HF/790/960HF/960HFMX/L5MX/L5PA/L7HFMX/L7HFPA)
110 V AC to 240 V AC, 50/60 Hz (SLV-760HFPX/960HFPX/960HFCS/L5CS/L7HFCS)
Power consumption
18 W (max.) (SLV-L5)
24 W (max.) (SLV-760HFPX/960HFCS/960HFMX/960HFPX/L7)
27 W (max.) (SLV-760HF/761HF/790/960HFMX)
Operating temperature
5 °C to 40 °C (41 °F to 104 °F)
Storage temperature
–20 °C to –60 °C (–4 °F to 140 °F)
Dimensions
Approx. (17×4³/₈×12¹/₈ inches) including projecting parts and controls
Approx. 430×109×310 mm (w/h/d) (SLV-760/761/L5/L7)
Approx. (17×4³/₈×12¹/₄ inches) including projecting parts and controls
Approx. 430×109×323 mm (w/h/d) (SLV-790/960)
Approx. (17×4³/₈×12³/₄ inches) including projecting parts and controls
Mass
Approx. 4.3 kg (9 lb 8 oz) (SLV-760/761/L5/L7)
Approx. 4.5 kg (9 lb oz) (SLV-790/960)

Supplied accessories

Remote commander (1)
Size AA (R6) batteries (2)
75-ohm coaxial cable with F-type connectors (1)
AC power cord (1)
Audio/video cable (3 phono, 1 mini to 3 phono, 1 mini) (1) (SLV-790/960)
Audio/video cable (3 phono to 3 phono) (1) (SLV-760/761/L7)
Cable Mouse (cable box controller) (1) (SLV-790/960)
Plug adaptor (1) (SLV-760HFPX/960HFPX/960HFCS/L5CS/L7HFCS)

Design and specifications are subject to change without notice.

• **Feature Difference**

SLV- / FEATURE	760, 761	790	960	L5	L7
AUDIO SYSTEM	HiFi	HiFi	HiFi	MONO	HiFi
OPERATING SWITCH BLOCK	×	O	O	×	×
FRONT LINE-2IN	O	O	O	×	×
CONTROL S IN/OUT	×	O	O	×	×
DUAL MODE SHUTTLE	O	O	O	O	O
REMOTE COMMANDER RMT-	V184A	V161A	V158C	V186A	V186

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.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

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

SAFETY CHECK-OUT

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

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

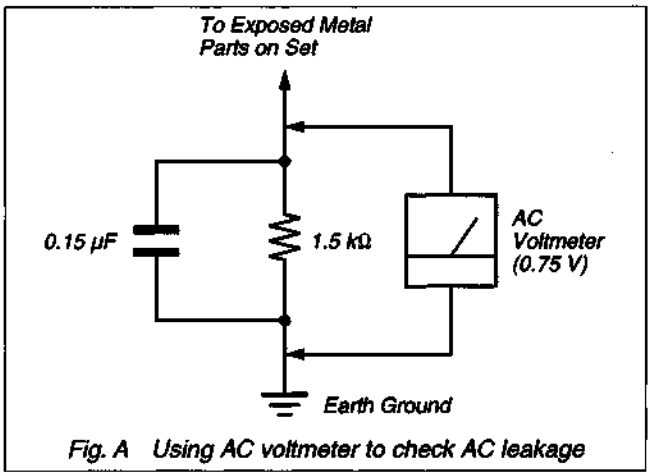


Fig. A Using AC voltmeter to check AC leakage

LEAKAGE TEST

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

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

TABLE OF CONTENTS

SERVICE NOTE

1. UPPER DRUM REPLACEMENT (EXCEPT L5)

1-1. Removal of Upper Drum

1) Remove the screw ① (BV3 × 8) and take out the ground shaft assembly ②. (See Fig. 1.)
2) Completely remove the rotary upper drum board and desolder the soldering indicated by the arrows.
3) Remove two screw ③ (PSW3 × 8) and take out the rotary upper drum in the arrow direction ❹. (See Fig. 2.)
   If it difficult, remove by shaking the rotary upper drum gradually.

Note: If the drum can not be removed, check whether the solders have been removed or not again.

Drum viewed from up

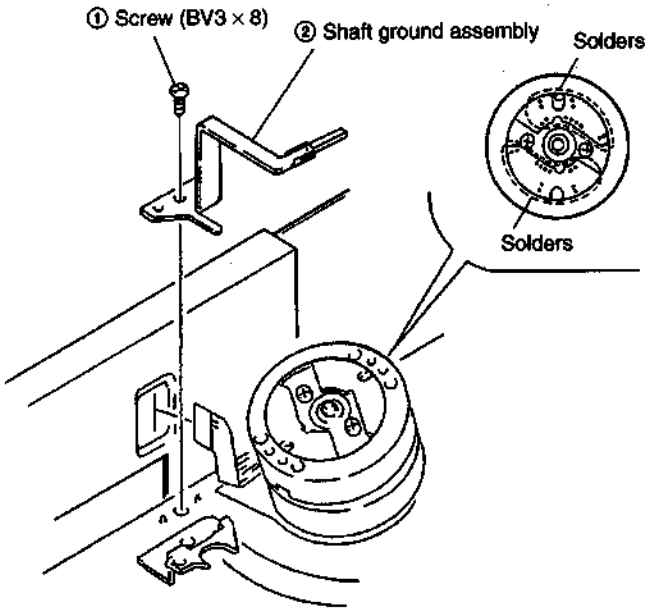


Fig. 1

1-2. Mounting Upper Drum

1) When inserting the rotary drum into the lower drum, be careful not to blur the contacting surface with fingerprint or the like.
2) Mount the rotary upper drum board so that the screw holes of both upper and lower drums match. (See Fig. 2.)
3) If it is difficult, mount the upper drum by shaking it gradually.
   Note: Be careful not to damage the head. Make sure that the upper drum is tightly inserted.
4) Tighten two screws ③ (PSW3 × 8). (See Fig. 2.)
   Note: Temporary tighten two screws. After making sure that upper drum is tightly inserted, tighten the screws.
5) Solder points on the board of the rotary upper drum.
6) Fix the ground shaft assembly ② using the screw ① (BV3 × 8) so that the protrusion of ground shaft assembly end contacts the center of the drum shaft.
   Note: When attaching the ground shaft assembly ②, be careful not to apply force to the spring section of it.

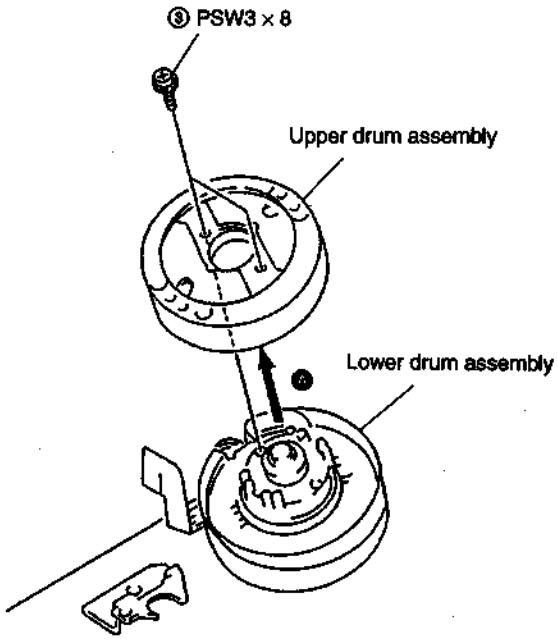


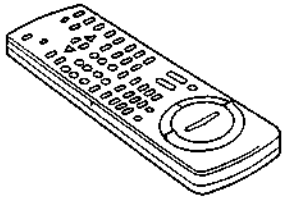
Fig. 2

Step 1

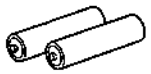
Unpacking

Check that you have received the following items with the VCR:

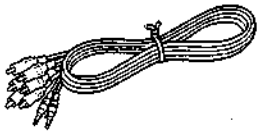
- Remote commander



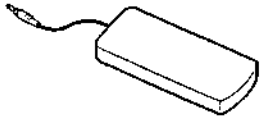
- Size AA (R6) batteries



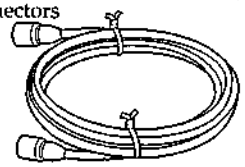
- Audio/video cable (3-phono, 1 mini to 3-phono, 1-mini)



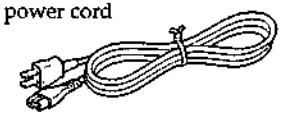
- Cable Mouse (cable box controller)



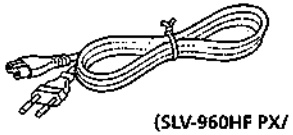
- 75-ohm coaxial cable with F-type connectors



- AC power cord

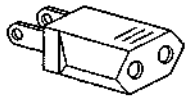


(SLV-960HF/960HF MX)



(SLV-960HF PX/ 960HF CS)

- Plug adaptor (SLV-960HF PX/960HF CS)

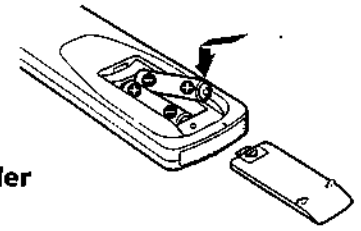


Step 2

Setting up the remote commander

Inserting the batteries

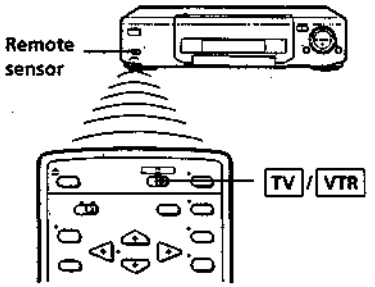
Insert two size AA (R6) batteries by matching the + and – on the batteries to the diagram inside the battery compartment.



Using the remote commander

You can use this remote commander to operate this VCR and a Sony TV. The POWER, VOL +/–, CH +/–, TV/VTR, channel number, ENTER, DISPLAY, and AUDIO MONITOR buttons on the remote commander can be used to operate your Sony TV.

To operate	Set TV/VTR to
the VCR	VTR and point at the remote sensor on the VCR
a Sony TV	TV and point at the remote sensor on the TV



Notes

- With normal use, the batteries should last for approximately three to six months.
- If you do not use the remote commander for an extended period of time, remove the batteries to avoid possible damage from battery leakage.
- Do not use a new battery with an old one.
- Do not use different types of batteries.

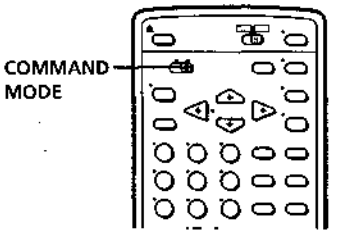
Setting the COMMAND MODE switch

To remotely control the VCR with the commander, set COMMAND MODE on the remote commander to the same position as that on the VCR. Usually set to VTR 3. Change the position as shown below to control other Sony VCRs:

VTR 1: For Sony Betamax format VCRs

VTR 2: For Sony 8mm format VCRs

VTR 3: For Sony VHS format VCRs



continued

This section is extracted from SLV-960HF/ 960HFCS, 960HFMX, 960HFPX instruction manual.

Controlling other TVs with the remote commander

The remote commander is preprogrammed to control non-Sony TVs. If your TV is listed in the table below, set the appropriate manufacturer's code number.

1 Set TV/VTR at the top of the remote commander to TV.

2 Hold down POWER, and enter your TV's code number(s) using the number buttons. Then release POWER.

Now you can use the POWER, VOL +/–, CH +/– and TV/VTR buttons to control your TV. You can also use the buttons marked with a dot (•) to control a Sony TV. To control the VCR, reset TV/VTR to VTR.

Code numbers of controllable TVs

If more than one code number is listed, try entering them one at a time until you find the one that works with your TV.

Manufacturer	Code number	Manufacturer	Code number	Manufacturer	Code number
Sony	01	KMC	03	RCA	04,10
Akai	04	Magnavox	03,08,12	Sampo	12
AOC	04	Marantz	04,13	Sanyo	11
Centurion	12	MGA/Mitsubishi	04,12,13,17	Scott	12
Coronado	03	NEC	04,12	Sears	07,10,11
Curis-Mathes	12	Panasonic	06,19	Sharp	03,05,18
Daytron	12	Philco	03,04	Sylvania	08,12
Fisher	11	Philips	08	Teknika	03,08,14
General Electric	06,10	Pioneer	16	Toshiba	07
Hitachi	02,03	Portland	03	Wards	03,04,12
J.C.Penny	04,12	Quasar	06,18	Yorx	12
JVC	09	Radio Shack	05,14	Zenith	15

Notes

- If the TV uses a different remote control system from the one programmed to work with the VCR, you cannot control your TV with the remote commander.
- If you enter a new code number, the code number previously entered will be erased.
- When you replace the batteries of the remote commander, the code number automatically resets to 1 (Sony). Reset the appropriate code number.

Step 3

Hookups

Selecting the best hookup option

There are many ways in which your VCR can be hooked up. To hook up your VCR so that it works best for you, first scan through the table below. Then use the accompanying diagrams and procedures on the following pages to set up your VCR.

If you have	Use	Refer to
TV that has audio/video inputs	**Audio/video (A/V) hookup**, then follow one of the hookups below.	**Pages 8 to 9**
Cable box that is compatible with the VCR's cable box control feature	**Hookup 1**	**Pages 10 to 12**
No cable box or incompatible cable box with only a few scrambled channels	**Hookup 2**	**Pages 13 to15**
Antenna only, no cable TV	**Hookup 3**	**Pages 16 to 18**
Incompatible cable box with many scrambled channels	**Hookup 4**	**Pages 19 to 21**
DSS* receiver	**Hookup 5**	**Pages 22 to 24**
Incompatible cable box with only a few scrambled channels, using an A/B switch	**Hookup 6**	**Pages 25 to 28**

After you've completed the connections, follow the instructions for setup. During setup, if you need more details on the procedure described, page numbers are provided where you can find complete, step-by-step instructions.

After you've completed the setup, you're ready to use your VCR. Procedures differ depending on the hookup you used. For an overview, refer to "Quick reference to using the VCR" on the back cover.

Before you get started

- Turn off the power to all equipment.
- Do not connect the AC power cords until all of the connections are completed.
- Be sure you make connections firmly. Loose connections may cause picture distortion.
- If your TV doesn't match any of the examples provided, see your nearest Sony dealer or qualified technician.

* DSS is a registered trademark of DIRECTV, Inc., a unit of Hughes Electronics Corporation.

continued

Audio/video (A/V) hookup

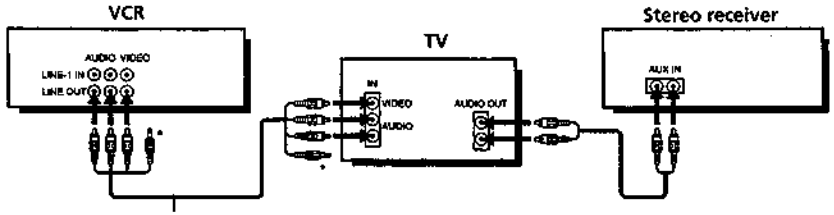
Pages 8 to 9

If your TV has audio/video (A/V) input jacks, you will get a better picture and sound if you hook up your VCR using these connections. In addition, for a true "home theater" experience, you should connect the audio outputs of your VCR or TV to your stereo system. If your TV doesn't have A/V inputs, see the following pages for antenna or cable hookups.

If your TV has the SystemLink (A/V bus control) function, hook up your VCR using the connection shown on page 9. Your TV will automatically switch to the A/V inputs for your VCR when you play back or operate menu on the VCR.

If you're not planning to use your VCR to record programs, you're finished setting up the VCR after you've made the connections shown on pages 8 and 9. If you want to record off-air or off your cable TV system, complete these connections first, and then go to the following pages for antenna or cable hookups.

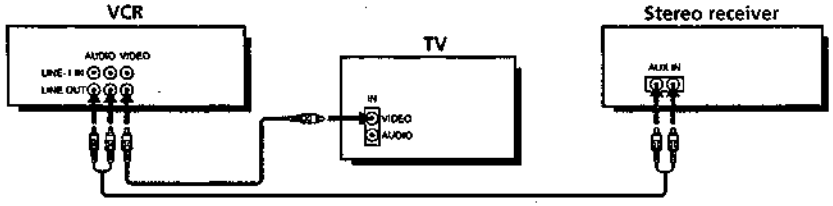
A Use this hookup if your TV has stereo jacks



Audio/video cable (supplied)

* Do not connect the miniplugs for this hookup.

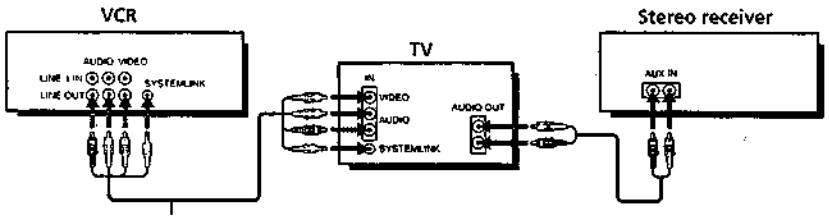
B Use this hookup if your TV doesn't have stereo jacks



Note

To play a tape in stereo, you must use the A/V connection.

C Use this hookup if your TV has the SystemLink function

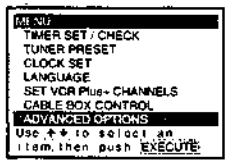


Audio/video cable (supplied)

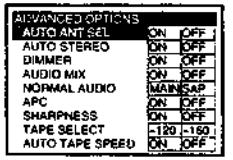
A/V hookup: VCR setup

After you've connected your TV and completed antenna or cable hookup, use the following procedure to set up the VCR.

Press MENU and select ADVANCED OPTIONS.



Set AUTO ANT SEL to OFF and press EXECUTE.



For details, see page 66.

Caution

Connections between the VCR's VHF/UHF connector and the antenna terminals of the TV receiver should be made only as shown in the following instructions. Failure to do so may result in operation that violates the regulations of the Federal Communications Commission regarding the use and operation of RF devices. Never connect the output of the VCR to an antenna or make simultaneous (parallel) antenna and VCR connections at the antenna terminals of your receiver.

Note to CATV system installer

This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

Hookup 1

Pages 10 to 12

Using cable box control

Recommended use

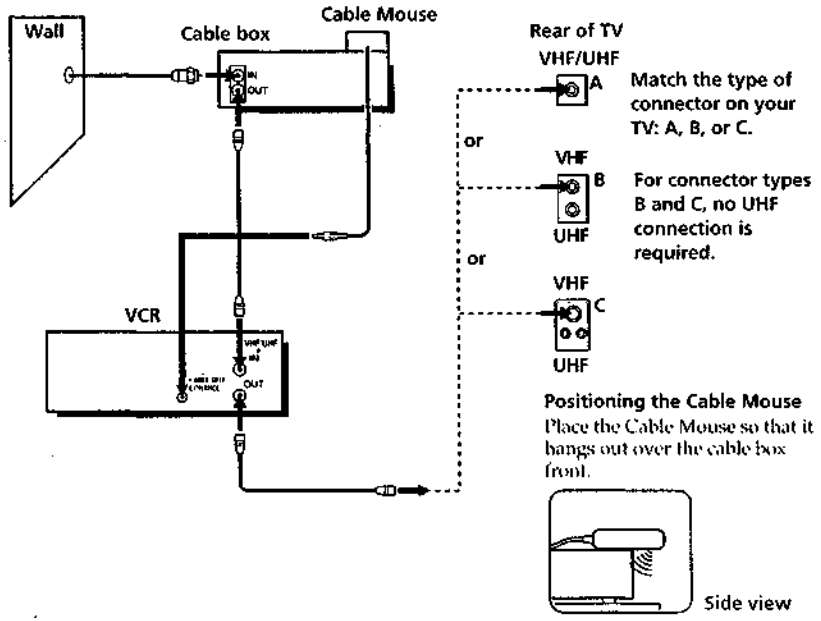
You should use this hookup if you have a cable box, especially if your cable system scrambles all or most channels. This hookup allows the VCR's cable box control feature to control the channel on the cable box, simplifying the recording process. A list of compatible cable boxes is on page 37.

What you can do with this hookup

- Record any channel using the VCR's cable box control feature to select channels on the cable box

What you can't do

- Record with the cable box turned off
- Record one channel while watching another channel



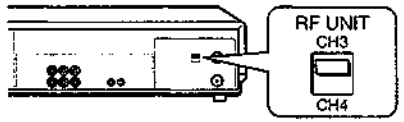
Positioning the Cable Mouse

Place the Cable Mouse so that it hangs out over the cable box front.

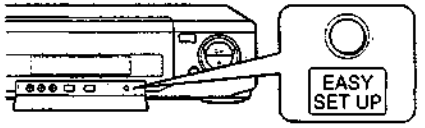
Side view

Hookup 1: VCR setup

1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.



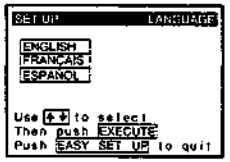
For details, see page 72. If you made A/V connections (from page 8), you can skip this step.



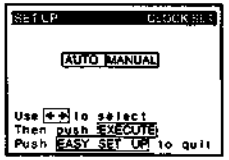
2 Turn on your cable box.

3 Press EASY SET UP on the VCR.

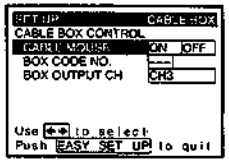
❶ The LANGUAGE menu appears. Change the on-screen display language to French (FRANÇAIS) or Spanish (ESPAÑOL) if desired, and press EXECUTE. For details, see page 29.



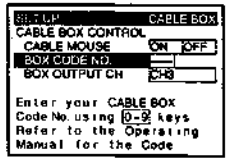
❷ The CLOCK SET menu appears. Select AUTO and press EXECUTE. For details, see page 30.



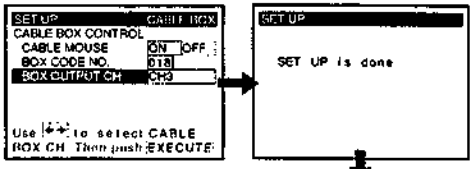
❸ The CABLE BOX CONTROL menu appears. Select ON. For details, see page 36.



❹ Enter your cable box code number and press CURSOR↓



❺ Select your cable box output channel and press EXECUTE.



Normal display

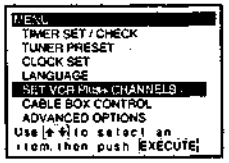
continued

Hookup 1: VCR Plus+ channel setup

1 Find the VCR Plus+ Channel Listing in your program guide. For details, see page 45.

2 If the channels in the program guide are different from the channels that you actually use on your TV, set the channels that are different as follows. For details, see page 46.

❶ Press MENU and select SET VCR Plus+ CHANNELS.



❷ Enter the program guide channel, then the channel you use on your TV.

❸ Press EXECUTE.

Program guide channel

Your actual TV channel

Automatic clock setting

Once you've set up the VCR, it automatically sets the clock the first time you turn off the VCR. After that, whenever you turn off the VCR, it checks the time and adjusts the clock, even for Daylight Saving Time. The VCR sets the clock by picking up a time signal provided by some TV channels.

If you want to use the timer to record right away, or if the channels in your area do not carry time signals, set the clock manually. For details, see pages 34–35.

Note

To use the automatic clock setting feature, leave the cable box on.

Hookup 2 Pages 13 to 15

No cable box, or incompatible cable box with only a few scrambled channels

Recommended use

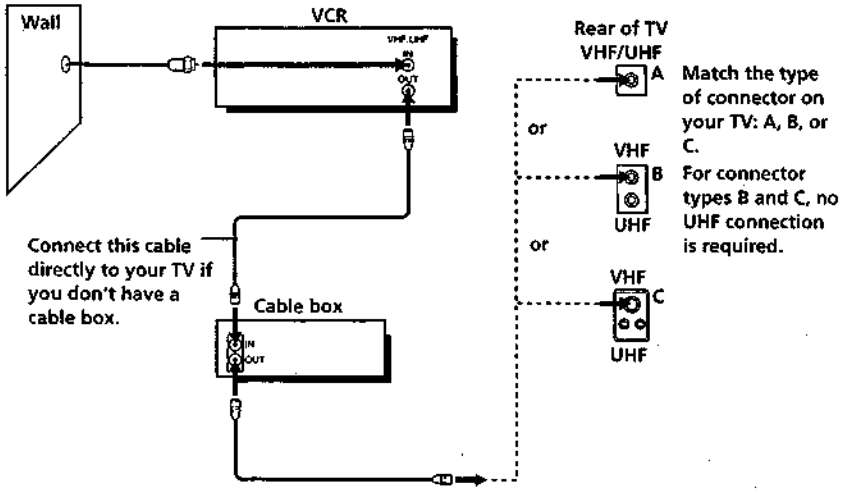
Use this hookup if you do not have a cable box. Also use this hookup if your cable company cannot supply a cable box that is compatible with the VCR's cable box control feature, and your cable system scrambles only a few channels.

What you can do with this hookup

- Record any unscrambled channel by selecting the channel on the VCR

What you can't do

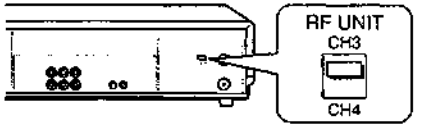
- Record scrambled channels that require a cable box



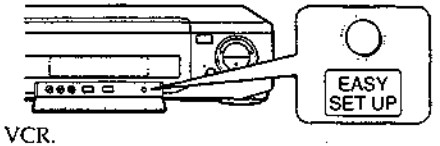
continued

Hookup 2: VCR setup

1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.



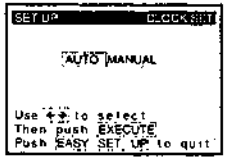
For details, see page 72.
If you made A/V connections (from page 8), you can skip this step.



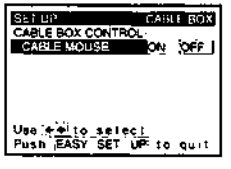
2 Press EASY SET UP on the VCR.

❶ The LANGUAGE menu appears. Change the on-screen display language to French (FRANÇAIS) or Spanish (ESPAÑOL) if desired, and press EXECUTE. For details, see page 29.

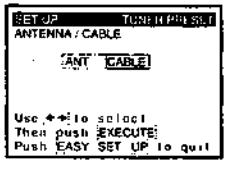
❷ The CLOCK SET menu appears. Select AUTO and press EXECUTE. For details, see page 30.



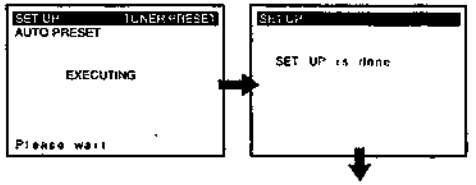
❸ The CABLE BOX CONTROL menu appears. Select OFF and press EXECUTE. For details, see page 36.



❹ The TUNER PRESET menu appears. Set ANTENNA/CABLE to CABLE and press EXECUTE. For details, see page 41.



❺ The AUTO PRESET starts.



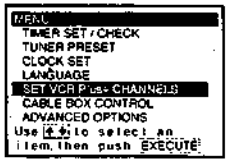
Normal display

Hookup 2: VCR Plus+ channel setup

1 Find the VCR Plus+ Channel Listing in your program guide. For details, see page 45.

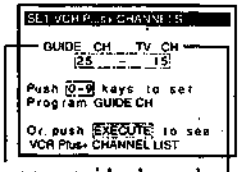
2 If the channels in the program guide are different from the channels that you actually use on your TV, set the channels that are different as follows. For details, see page 46.

❶ Press MENU and select SET VCR Plus+ CHANNELS.



❷ Enter the program guide channel, then the channel you use on your TV.

❸ Press EXECUTE.



Program guide channel

Your actual TV channel

Automatic clock setting

Once you've set up the VCR, it automatically sets the clock the first time you turn off the VCR. After that, whenever you turn off the VCR, it checks the time and adjusts the clock, even for Daylight Saving Time. The VCR sets the clock by picking up a time signal provided by some TV channels.

If you want to use the timer to record right away, or if the channels in your area do not carry time signals, set the clock manually. For details, see pages 34–35.

1-8

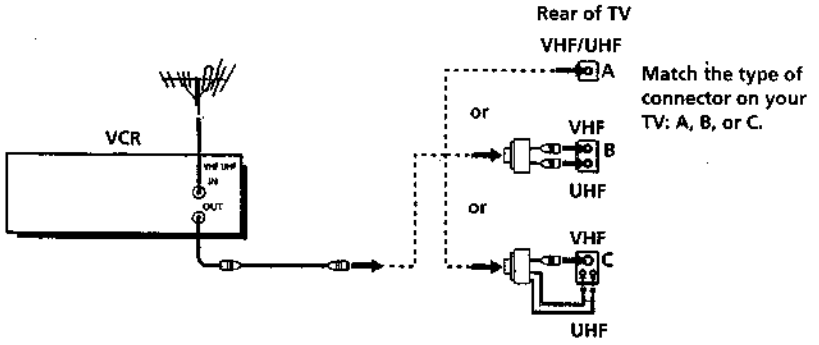
Hookup 3 Pages 16 to 18

Antenna hookup

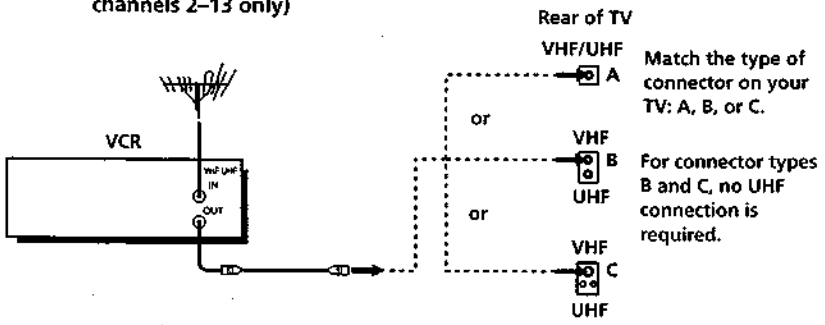
Make the following connections if you're using an antenna (if you don't have cable TV).

A Use this hookup if you're using:

- VHF/UHF antenna (you get channels 2–13 and channels 14 and higher)
- UHF-only antenna (you get channels 14 and higher)
- Separate VHF and UHF antennas



B Use this hookup if you're using a VHF-only antenna (you get channels 2–13 only)



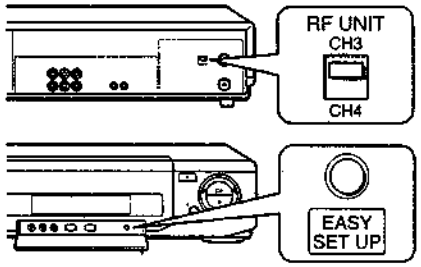
If you cannot connect your antenna cable to the VCR directly

If your antenna cable is a flat cable (300-ohm twin lead cable), attach an external antenna connector (not supplied) so you can connect the cable to the VHF/UHF IN connector. If you have separate cables for VHF and UHF antennas, you should use a U/V band mixer (not supplied). For details, see page 72.

Hookup 3: VCR setup

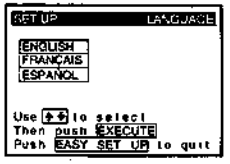
1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.

For details, see page 72. If you made A/V connections (from page 8), you can skip this step.

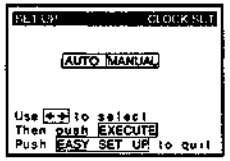


2 Press EASY SET UP on the VCR.

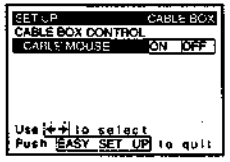
❶ The LANGUAGE menu appears. Change the on-screen display language to French (FRANÇAIS) or Spanish (ESPAÑOL) if desired, and press EXECUTE. For details, see page 29.



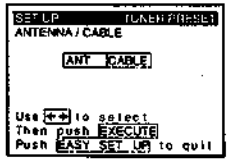
❷ The CLOCK SET menu appears. Select AUTO and press EXECUTE. For details, see page 30.



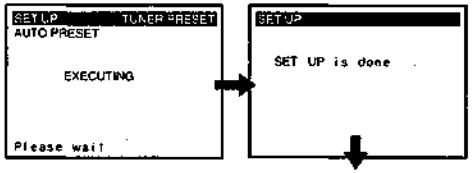
❸ The CABLE BOX CONTROL menu appears. Select OFF and press EXECUTE. For details, see page 36.



❹ The TUNER PRESET menu appears. Set ANTENNA/CABLE to ANT and press EXECUTE. For details, see page 41.



❺ The AUTO PRESET starts.



Normal display

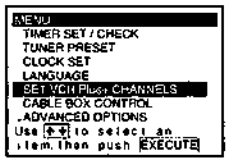
continued

Hookup 3: VCR Plus+ channel setup

1 Find the VCR Plus+ Channel Listing in your program guide. For details, see page 45.

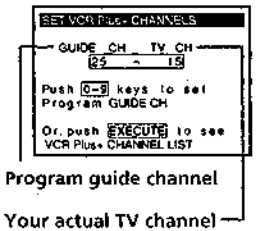
2 If the channels in the program guide are different from the channels that you actually use on your TV, set the channels that are different as follows. For details, see page 46.

❶ Press MENU and select SET VCR Plus+ CHANNELS.



❷ Enter the program guide channel, then the channel you use on your TV.

❸ Press EXECUTE.



Automatic clock setting

Once you've set up the VCR, it automatically sets the clock the first time you turn off the VCR. After that, whenever you turn off the VCR, it checks the time and adjusts the clock, even for Daylight Saving Time. The VCR sets the clock by picking up a time signal provided by some TV channels.

If you want to use the timer to record right away, or if the channels in your area do not carry time signals, set the clock manually. For details, see pages 34–35.

Hookup 4 Pages 19 to 21

Incompatible cable box with many scrambled channels

Recommended use

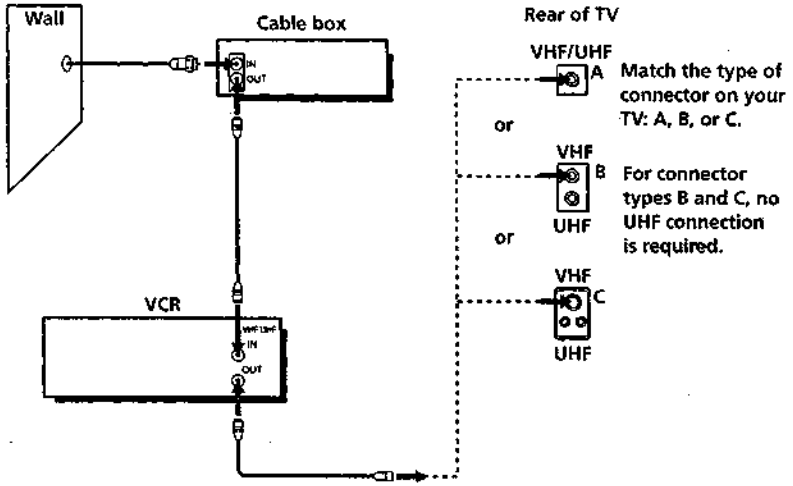
Use this hookup if your cable company cannot supply a cable box that is compatible with the VCR's cable box control feature, and your cable system scrambles all or most channels.

What you can do with this hookup

- Record any channel by selecting the channel on the cable box

What you can't do

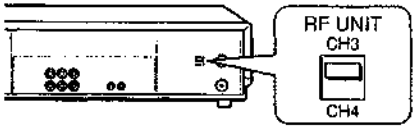
- Record with the cable box turned off
- Record one channel while watching another channel
- Select channels directly on the VCR



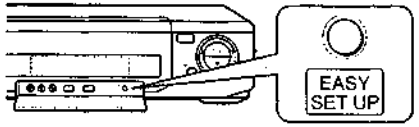
continued

Hookup 4: VCR setup

1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.



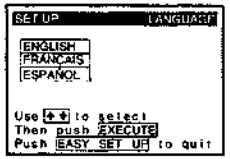
For details, see page 72. If you made A/V connections (from page 8), you can skip this step.



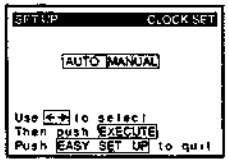
2 Turn on your cable box.

3 Press EASY SET UP on the VCR.

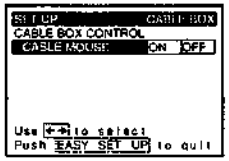
❶ The LANGUAGE menu appears. Change the on-screen display language to French (FRANÇAIS) or Spanish (ESPAÑOL) if desired, and press EXECUTE. For details, see page 29.



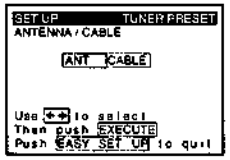
❷ The CLOCK SET menu appears. Select MANUAL and press EXECUTE. For details, see page 30.



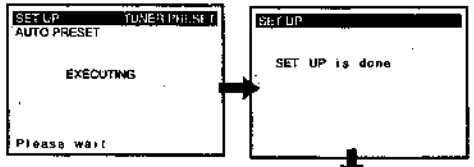
❸ The CABLE BOX CONTROL menu appears. Select OFF and press EXECUTE. For details, see page 36.



❹ The TUNER PRESET menu appears. Set ANTENNA/CABLE to ANT and press EXECUTE. For details, see page 41.



❺ The AUTO PRESET starts.



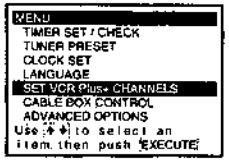
Normal display

Hookup 4: VCR Plus+ channel setup

1 Find the VCR Plus+ Channel Listing in your program guide. For details, see page 45.

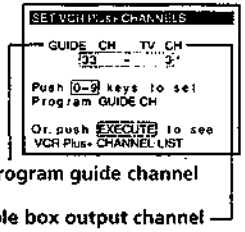
2 Enter all the channels you want to record and the cable box output channel (usually 2, 3, or 4). For details, see page 46.

❶ Press MENU and select SET VCR Plus+ CHANNELS.



❷ Enter the program guide channel, then the cable box output channel.

❸ Press EXECUTE.



Program guide channel

Cable box output channel

Automatic clock setting

To use the Auto Clock Set feature with this hookup, you need to manually select a channel that carries a time signal:

1 Tune the cable box to a channel that carries a time signal.

2 Select AUTO in the CLOCK SET menu to turn on the Auto Clock Set feature.

3 Turn off the VCR. It automatically sets the clock and adjusts for Daylight Saving Time by picking up the time signal.

If you want to use the timer to record right away, or if the channels in your area do not carry time signals, set the clock manually. For details, see pages 34–35.

Note

To use the automatic clock setting feature, leave the cable box on.

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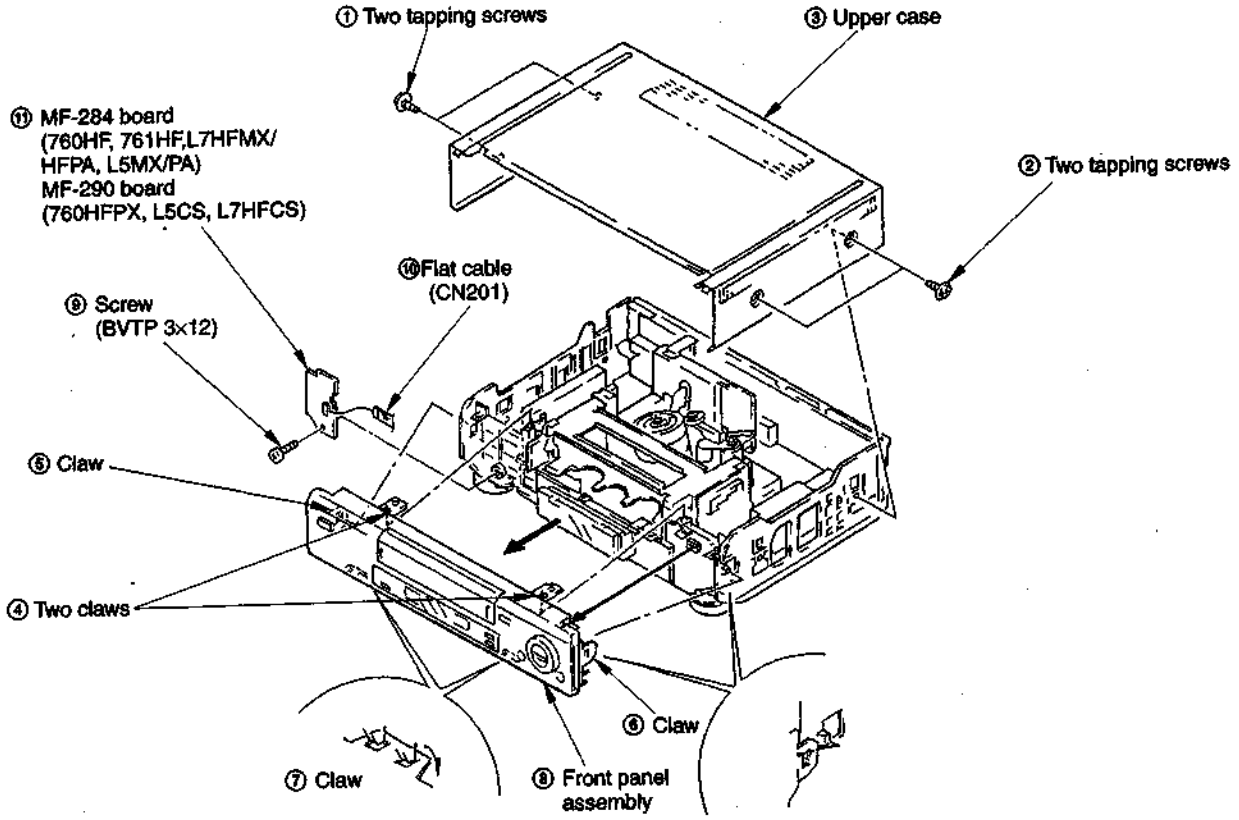
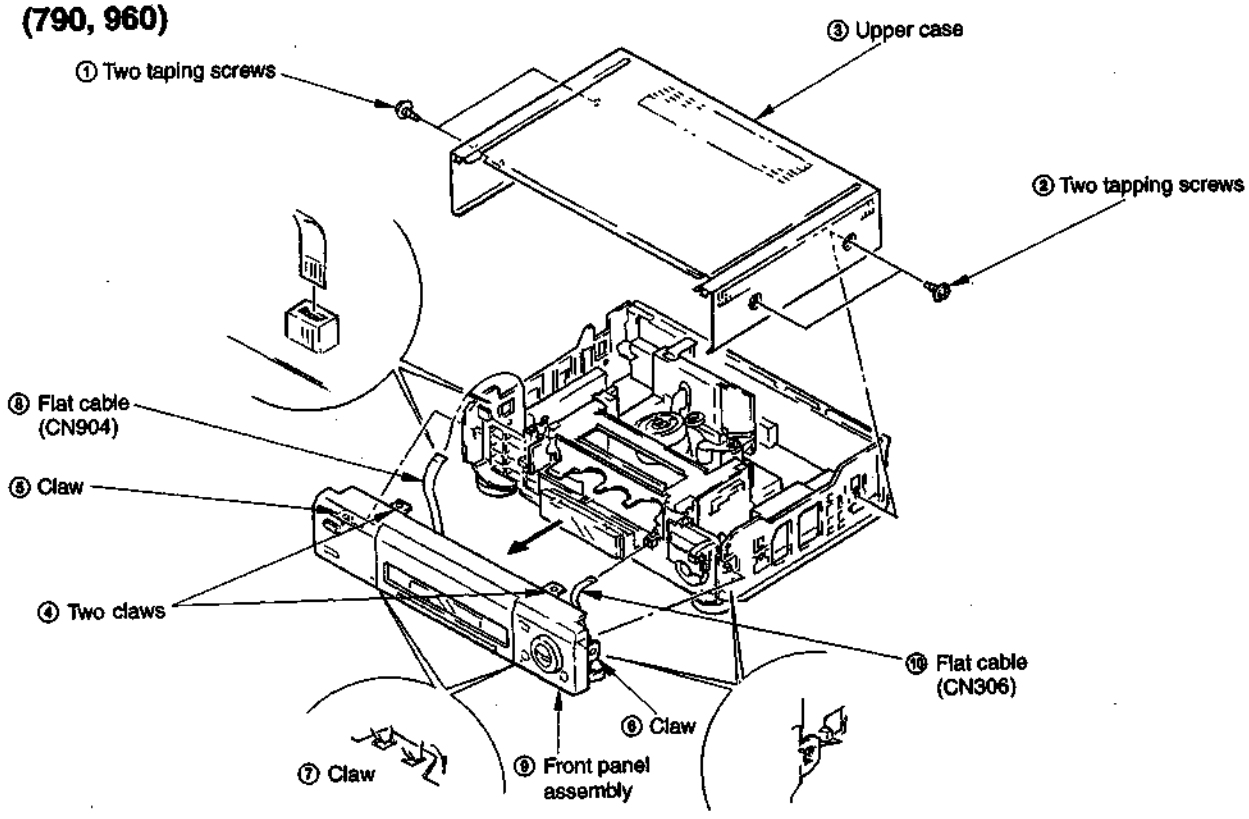
SECTION 2
DISASSEMBLY

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

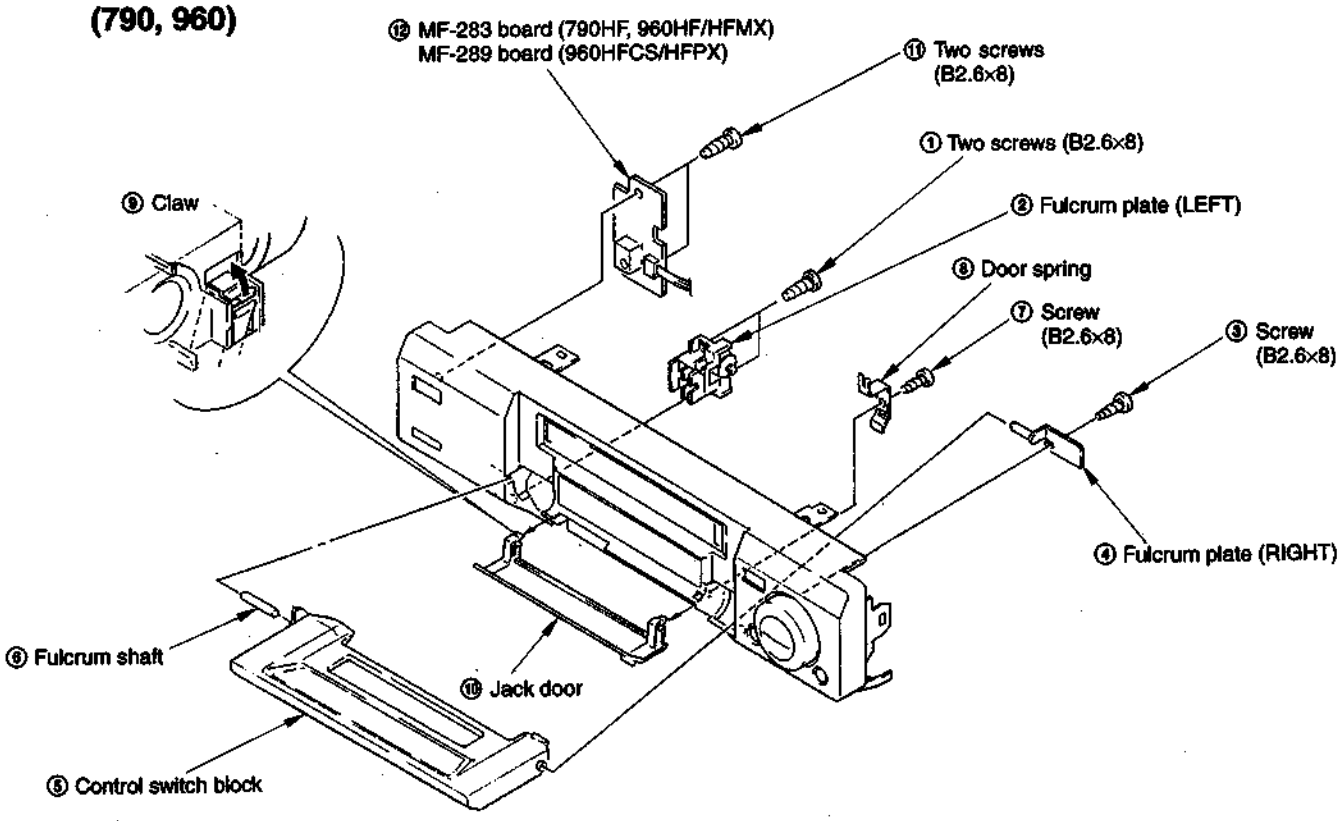
2-1. FRONT PANEL ASSEMBLY, CASE AND MF-284/290 BOARD (760, 761, L5, L7)



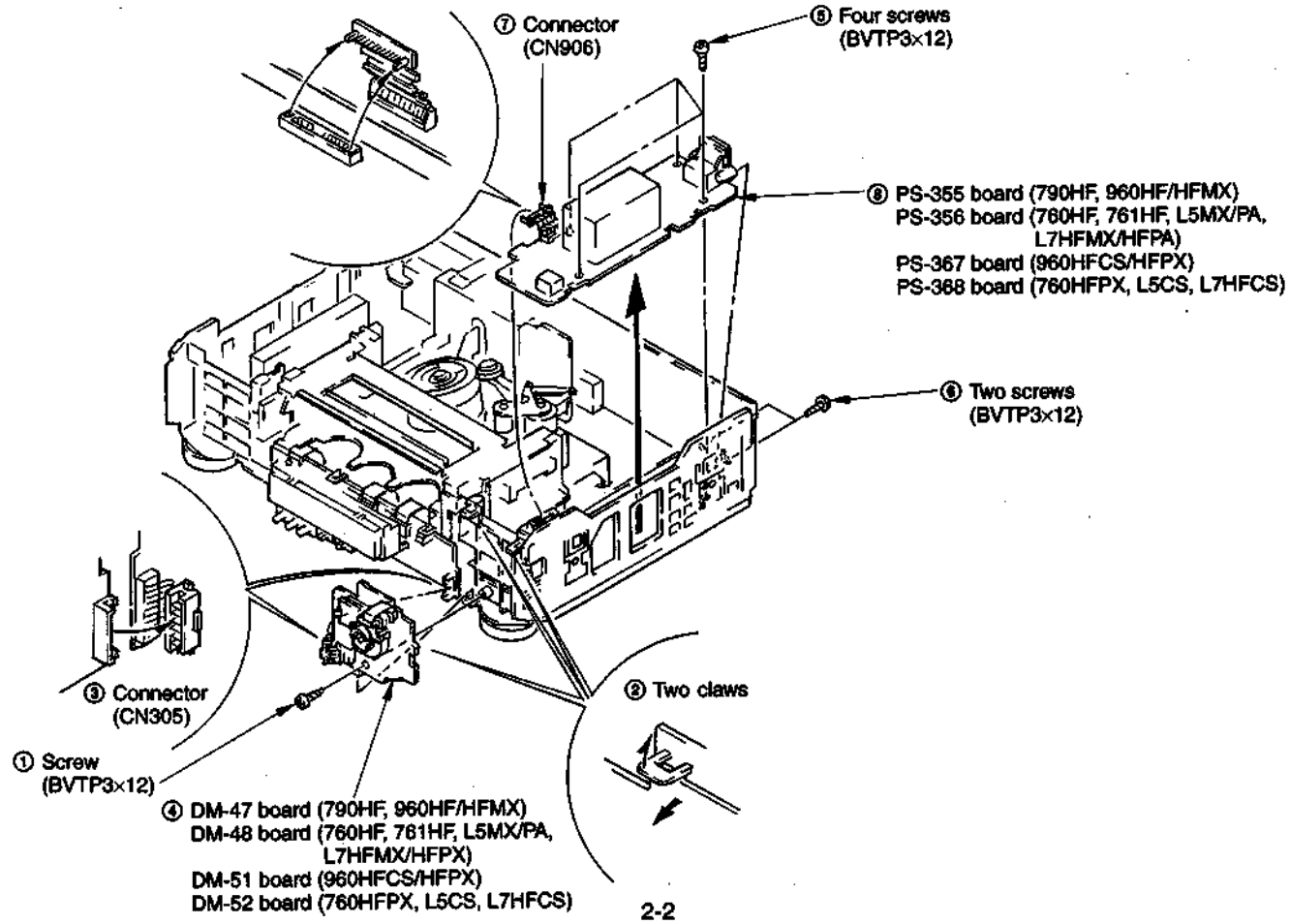
2-2. FRONT PANEL ASSEMBLY AND CASE (790, 960)



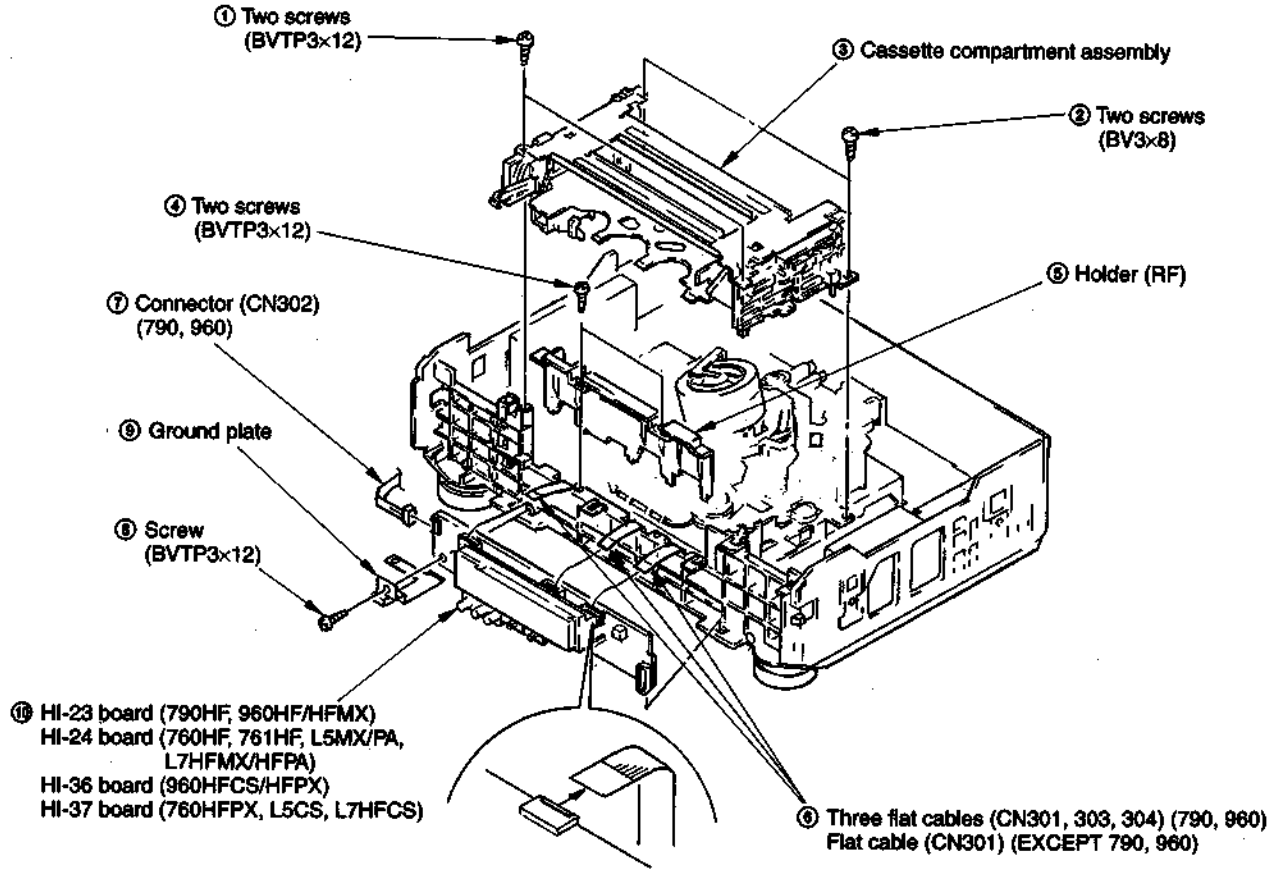
2-3. CONTROL SWITCH BLOCK AND MF-283/289 BOARD (790, 960)



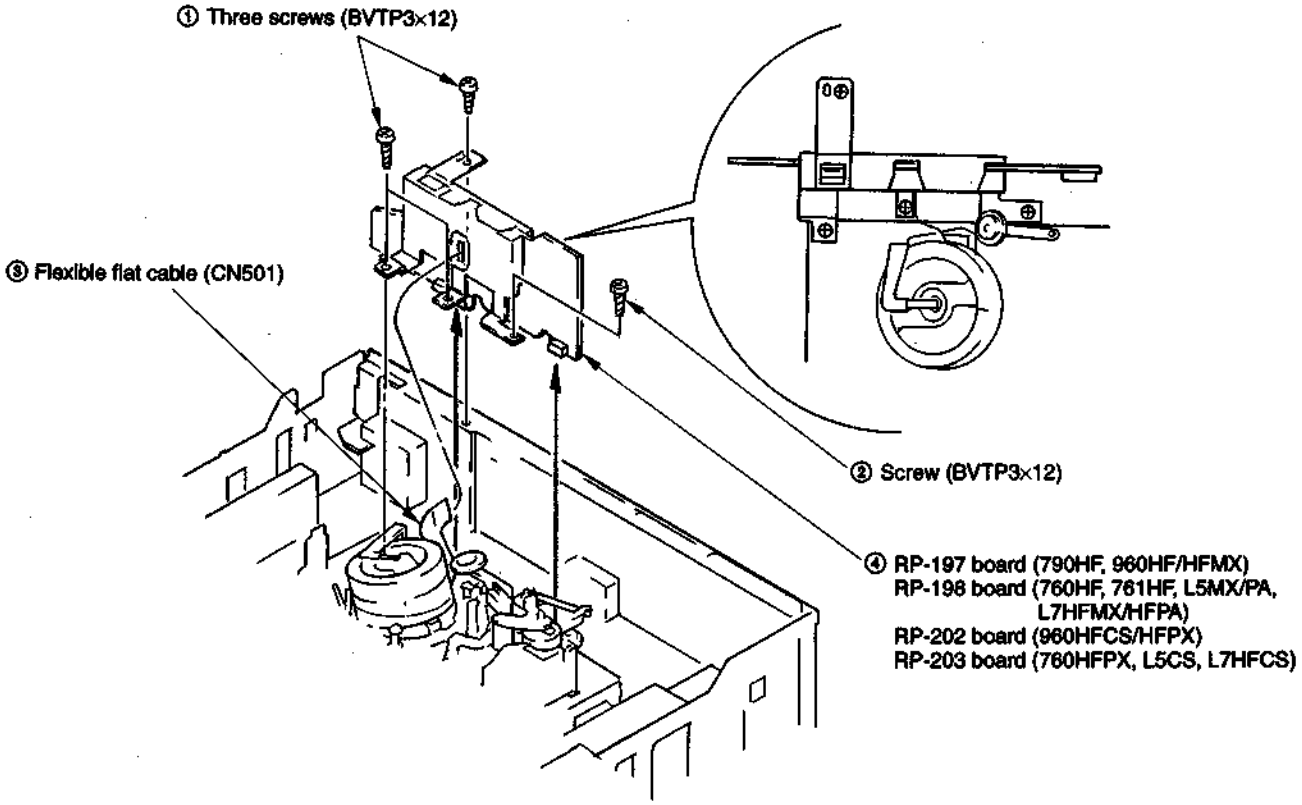
2-4. DM-47/48/51/52 BOARD AND PS-355, 356, 367, 368 BOARD



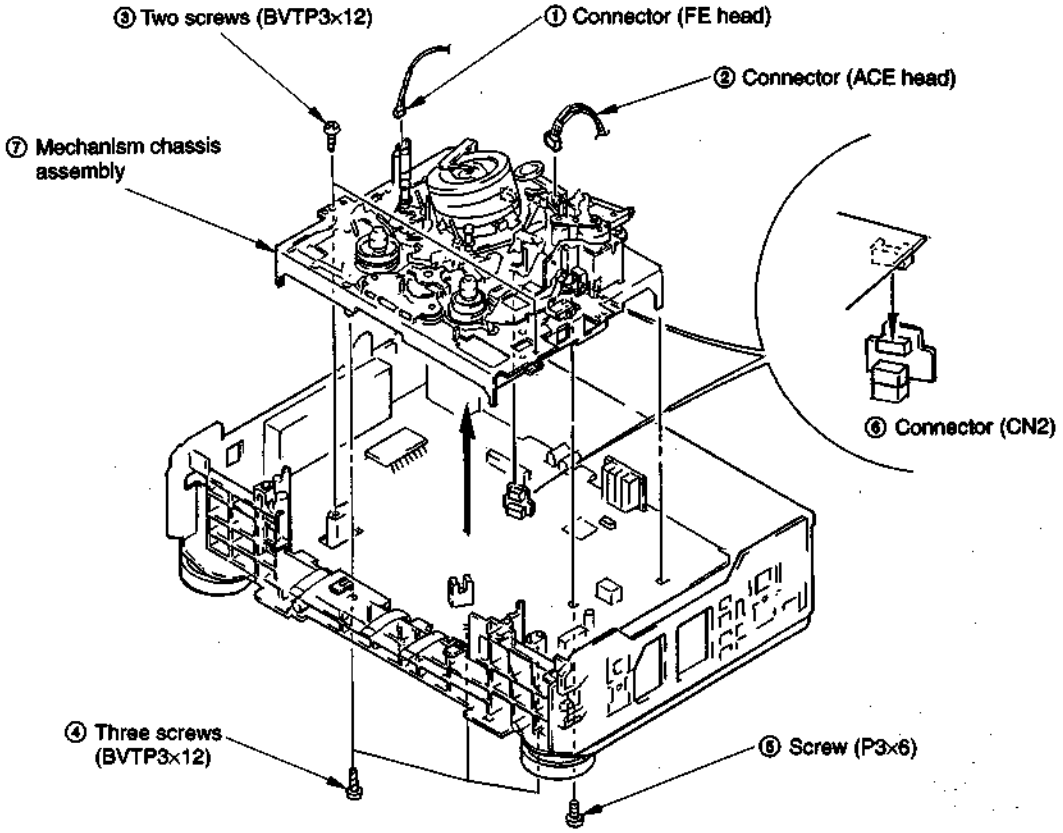
2-5. CASSETTE COMPARTMENT ASSEMBLY AND HI-23/24/36/37 BOARD



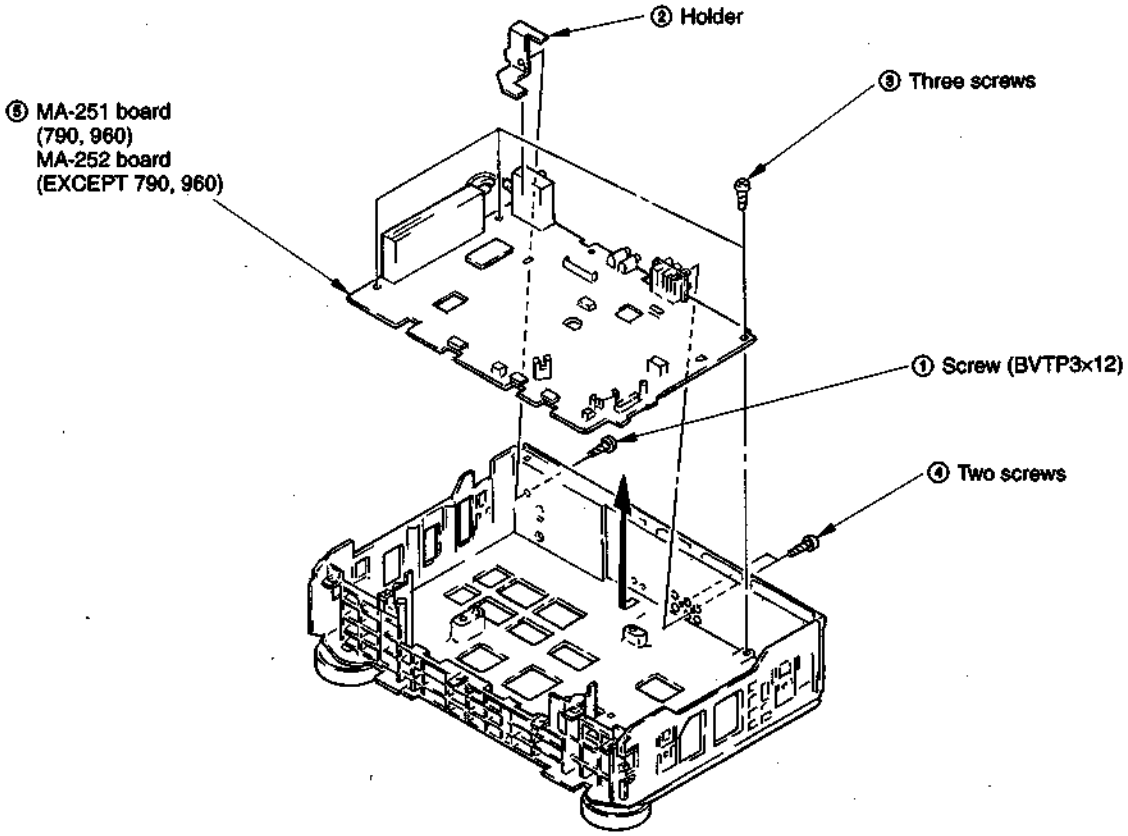
2-6. RP-197/198/202/203 BOARD



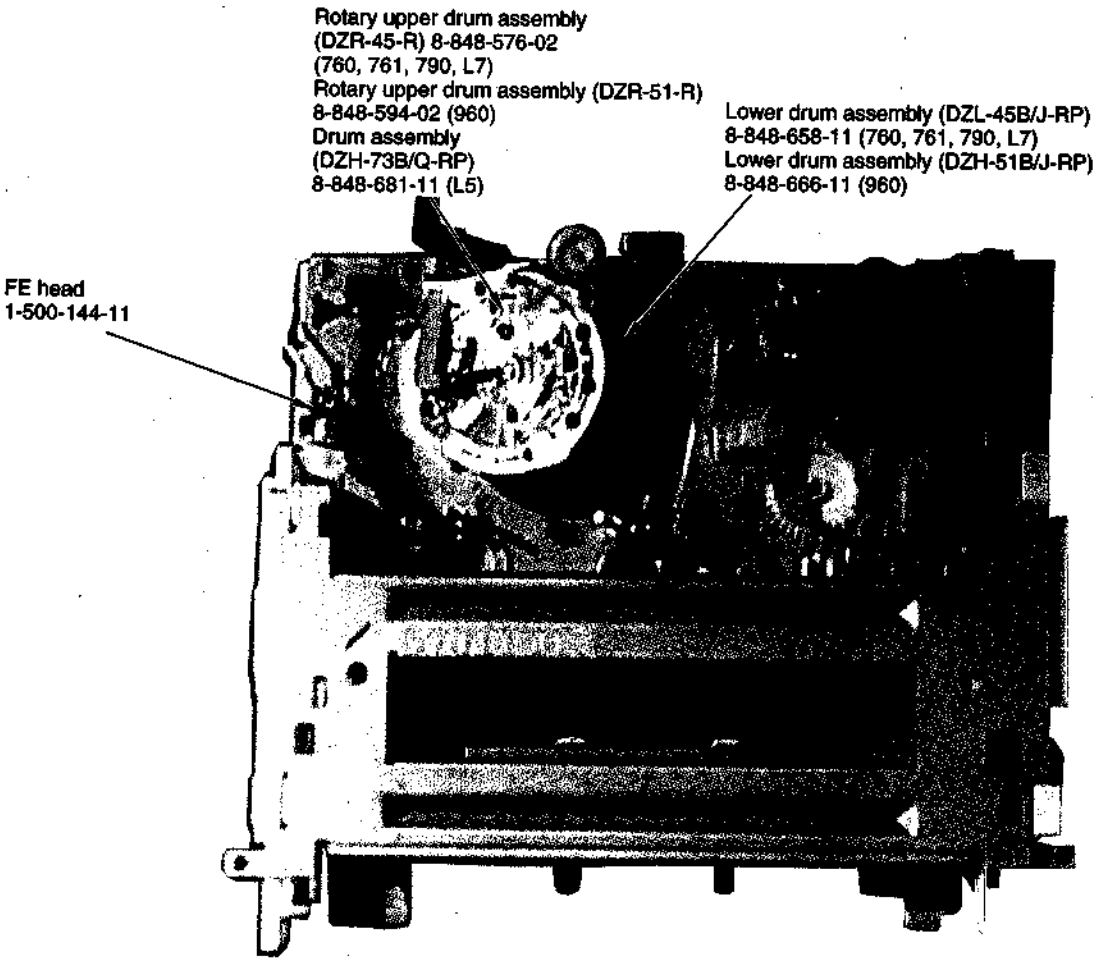
2-7. MECHANISM CHASSIS ASSEMBLY

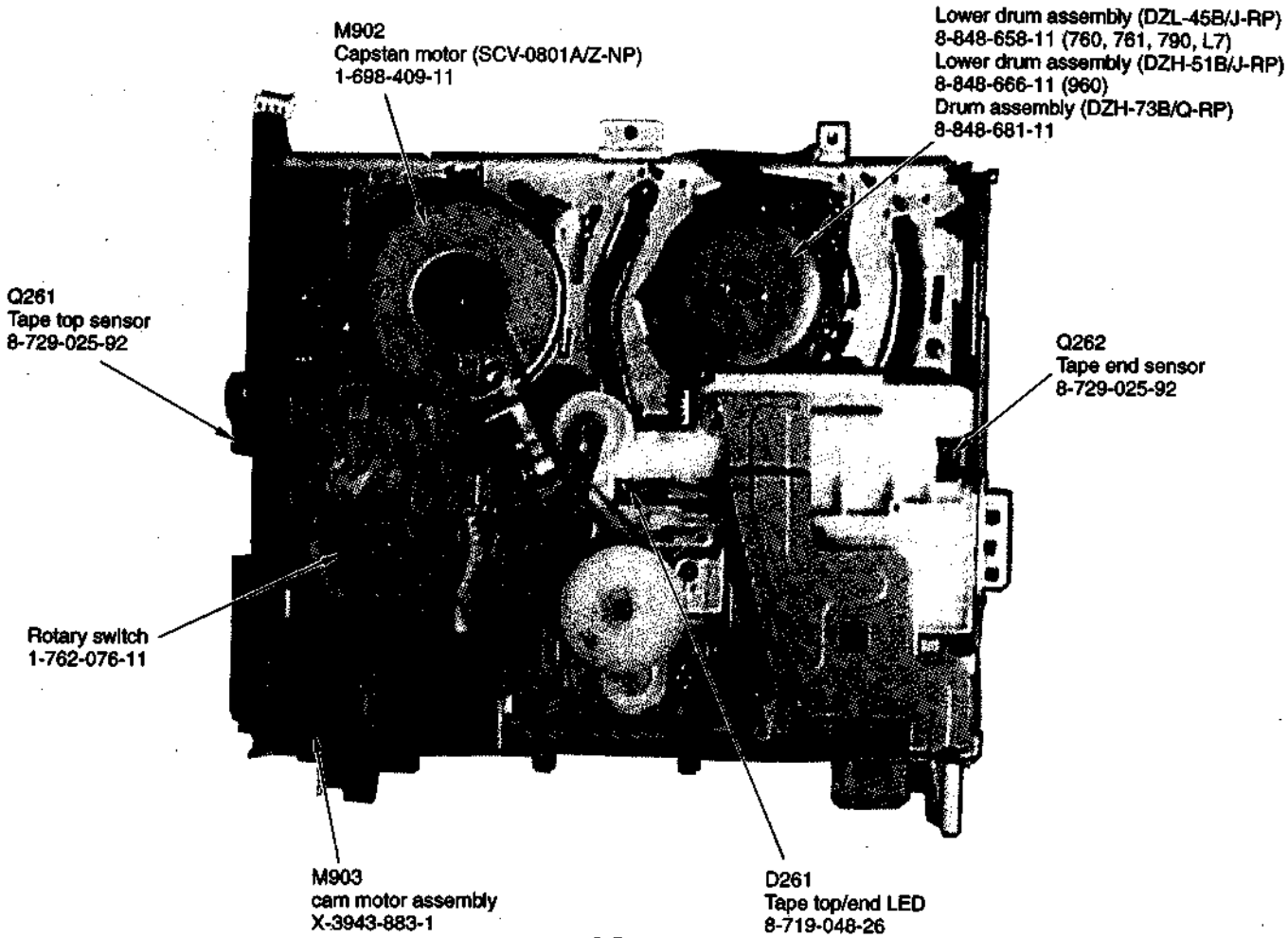


2-8. MA-251/252 BOARD

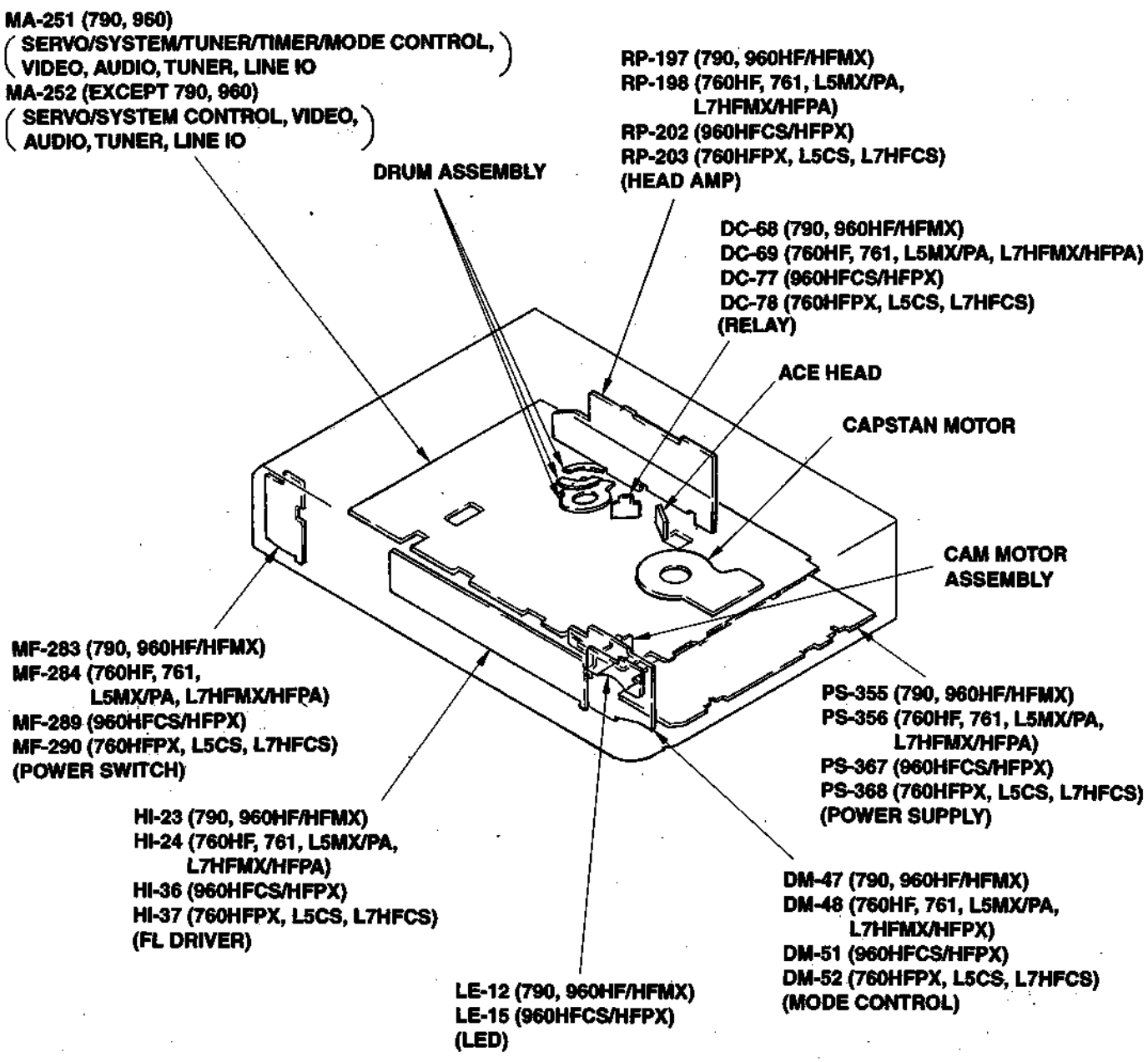


2-9. INTERNAL VIEWS



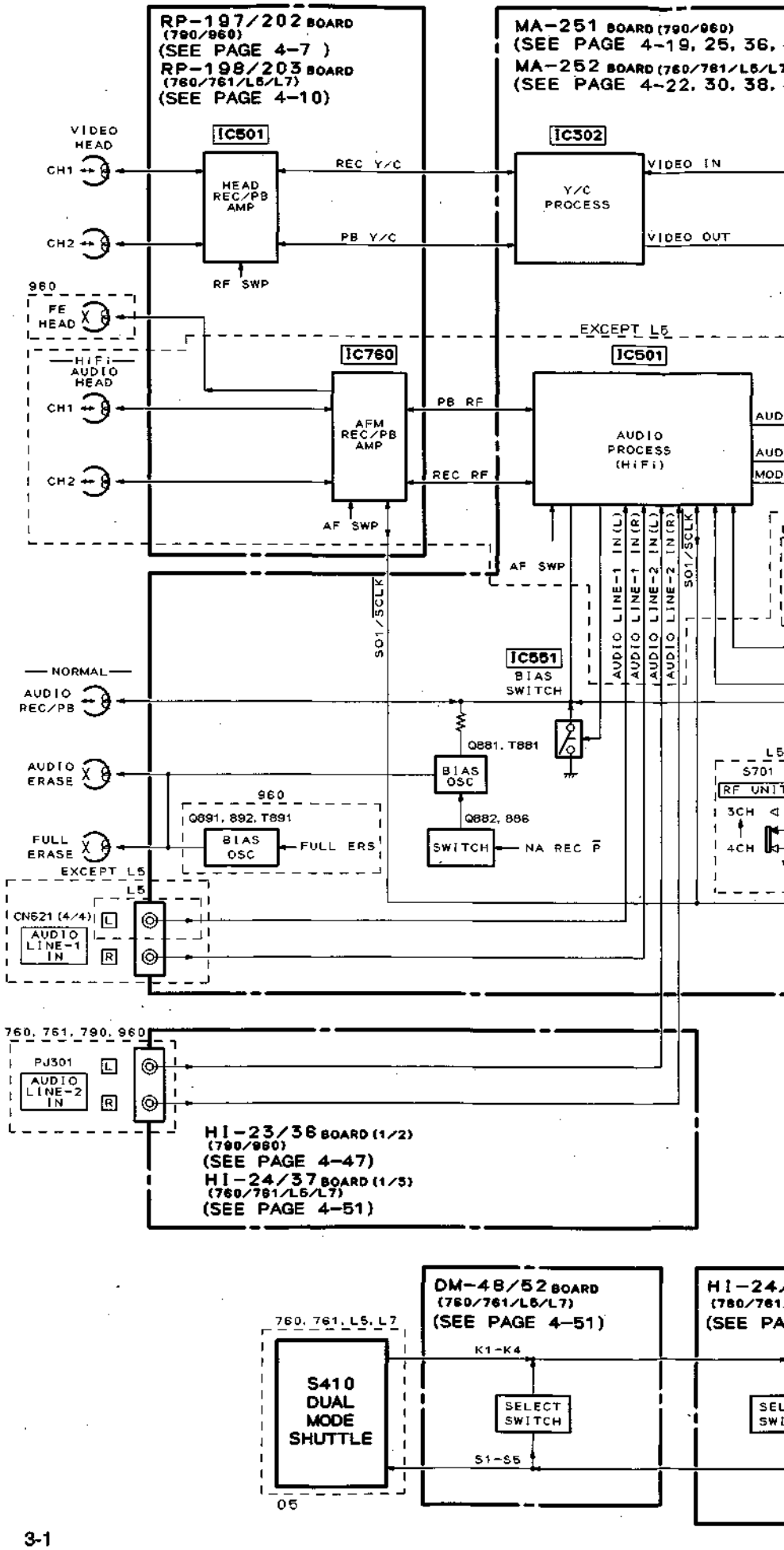


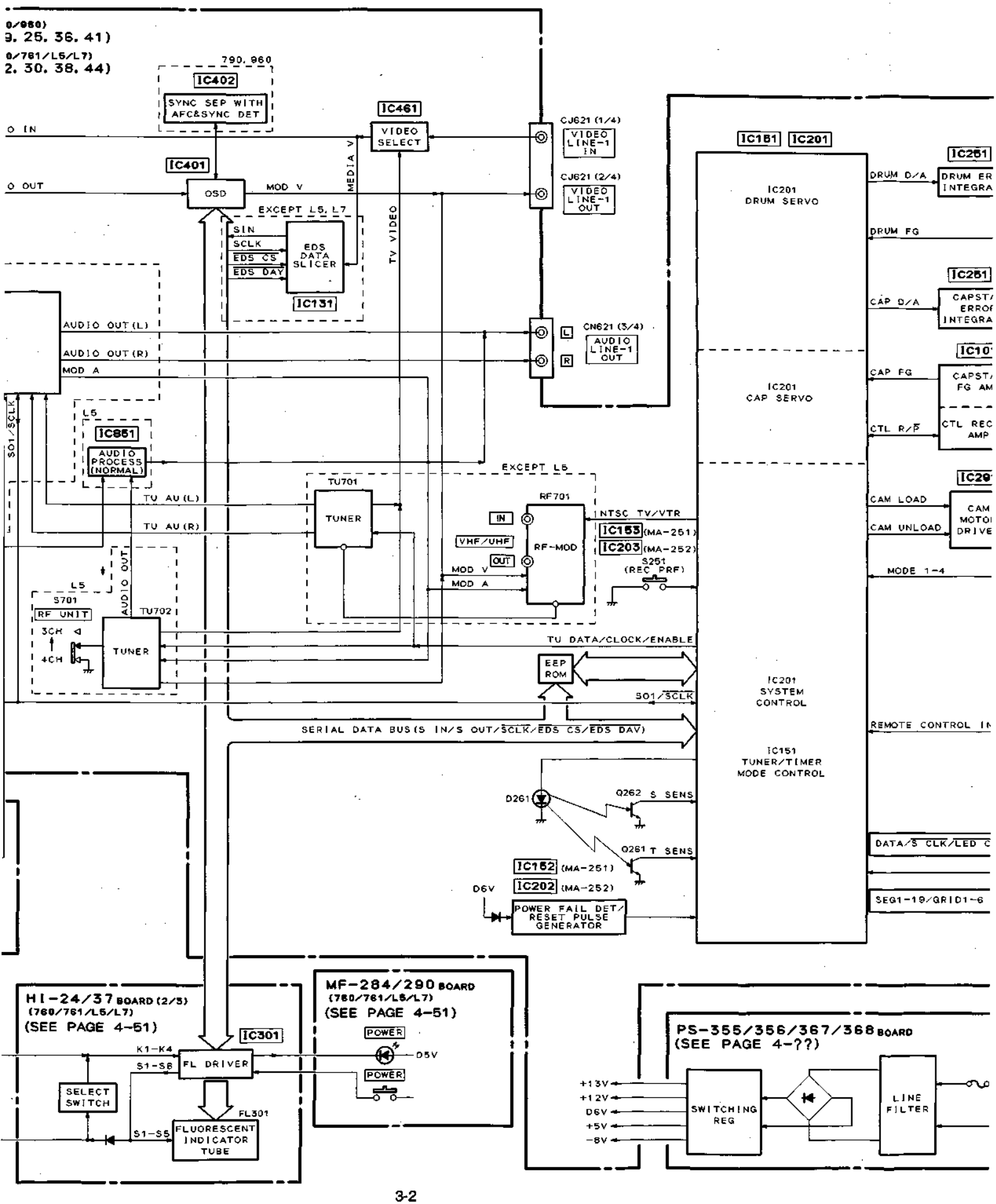
2-10. CIRCUIT BOARDS LOCATION

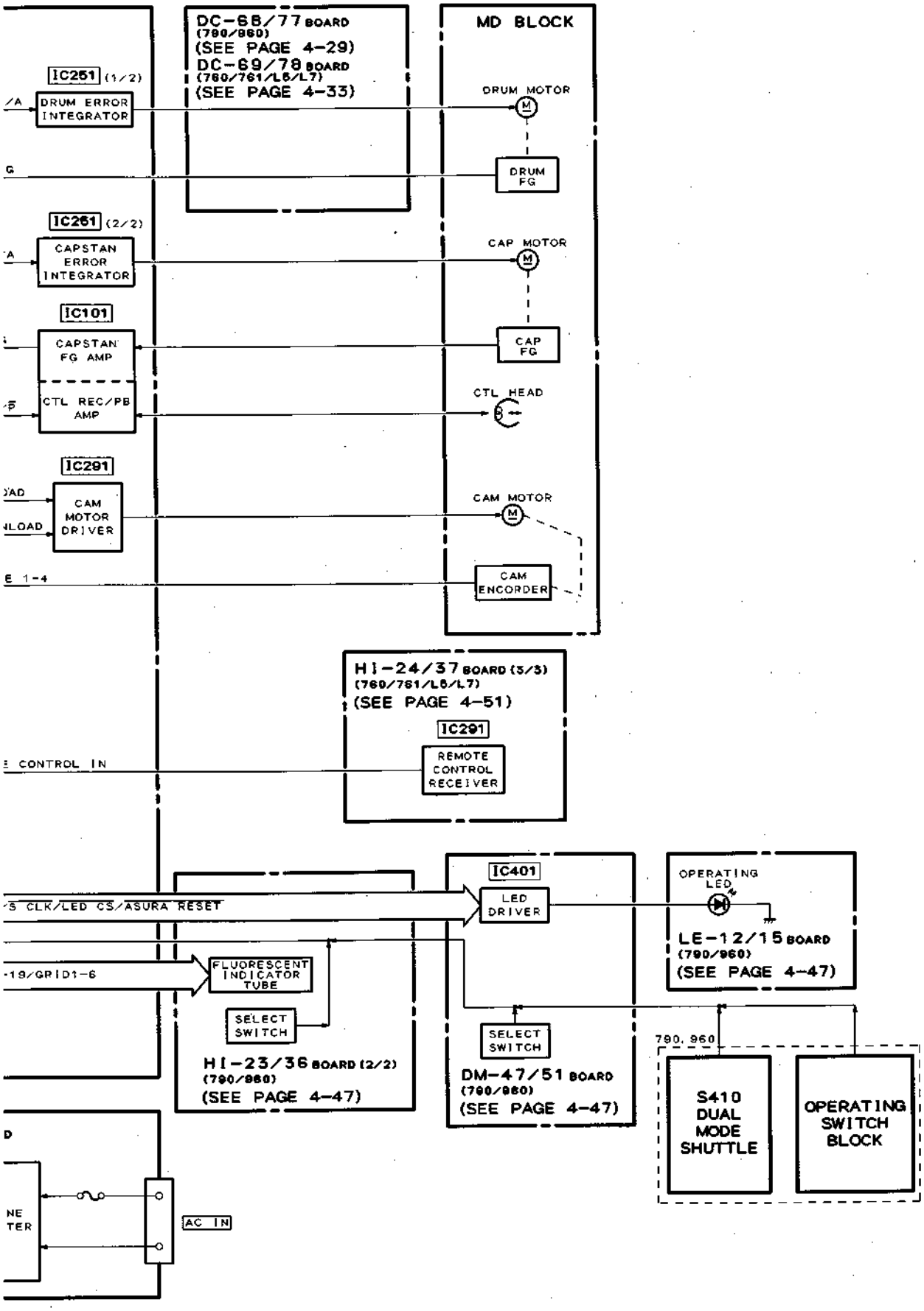


SECTION 3
BLOCK DIAGRAMS

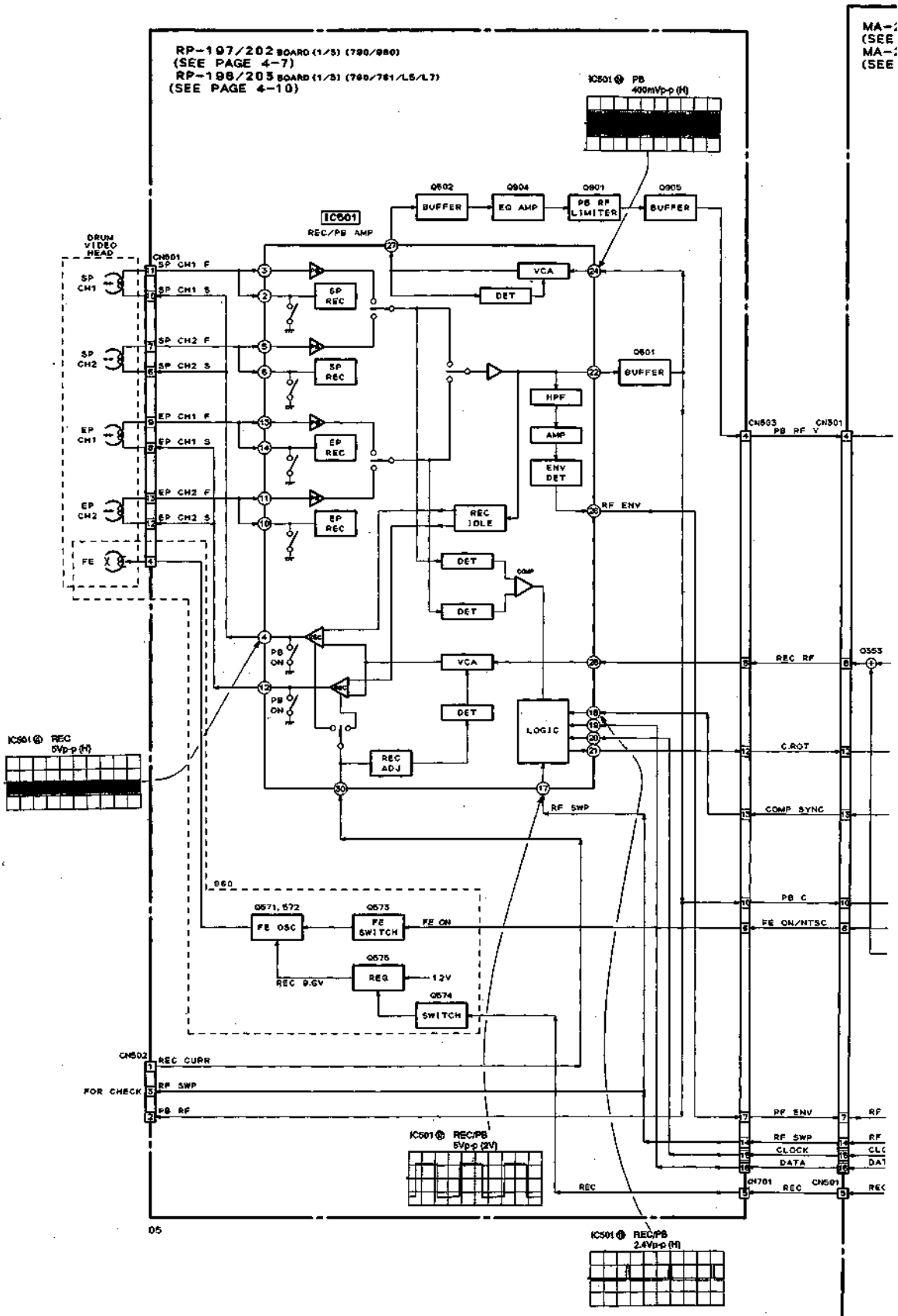
3-1. OVERALL BLOCK DIAGRAM



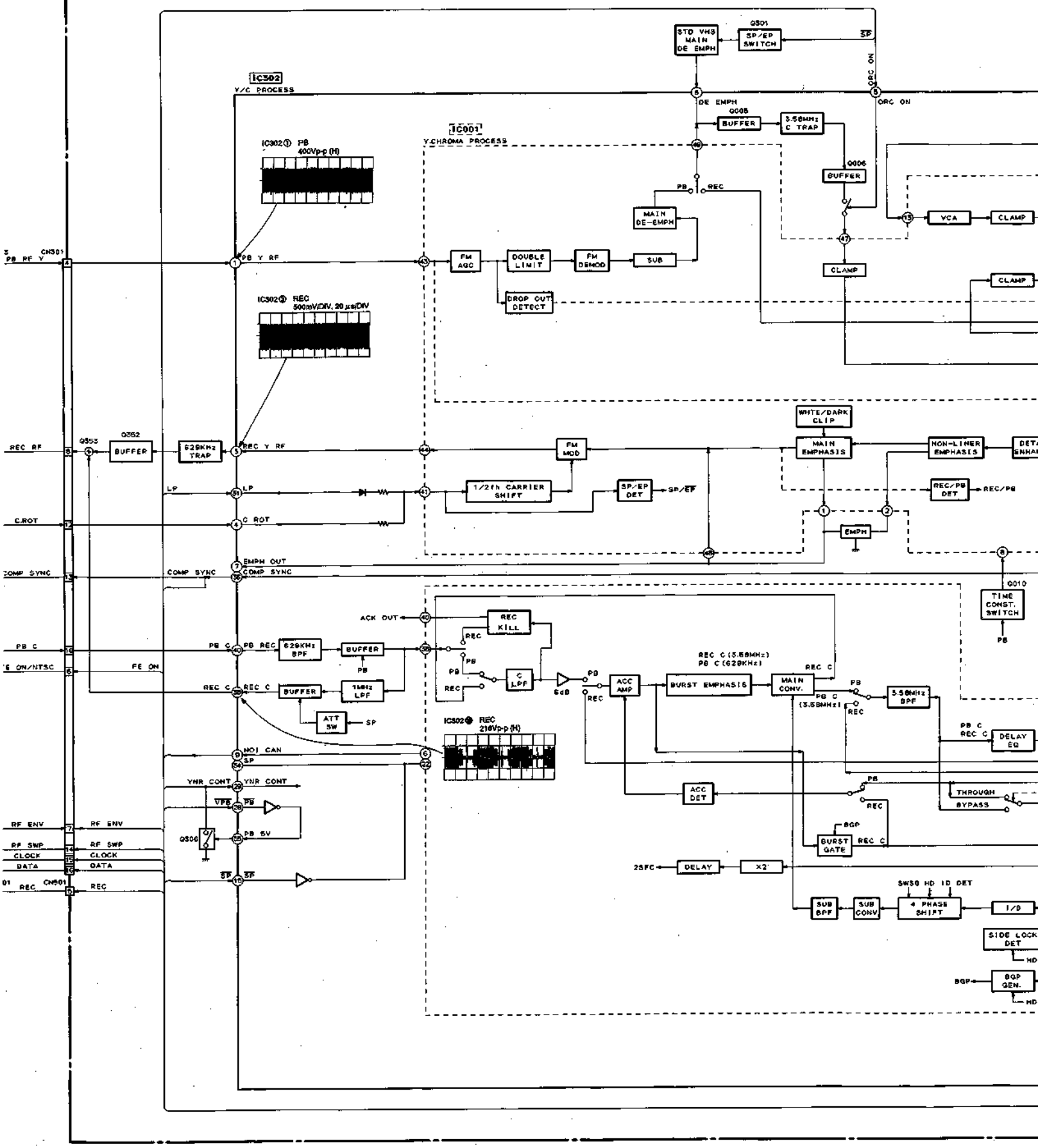

0/980)
9. 25. 36. 41)
0/761/L5/L7)
2. 30. 38. 44)
790. 960
IC402
SYNC SEP WITH AFC&SYNC DET
IC461
VIDEO SELECT
O IN
O OUT
IC401
OSD
MOD V
MEDIA V
TV VIDEO
EXCEPT L5, L7
SIN
SCLK
EDS CS
EDS DAY
EDS DATA SLICER
IC131
CJ621 (1/4)
VIDEO LINE-1 IN
CJ621 (2/4)
VIDEO LINE-1 OUT
CN621 (3/4)
L
R
AUDIO LINE-1 OUT
AUDIO OUT (L)
AUDIO OUT (R)
MOD A
L5
IC851
AUDIO PROCESS (NORMAL)
SO1/SCLK
EXCEPT L5
TU701
TUNER
TU AU (L)
TU AU (R)
RF701
IN
VHF/UHF
OUT
RF-MOD
MOD V
MOD A
NTSC TV/VTR
IC153 (MA-251)
IC203 (MA-252)
S251
(REC PRF)
L5
S701
RF UNIT
3CH
4CH
AUDIO OUT
TU702
TUNER
TU DATA/CLOCK/ENABLE
EEP ROM
SO1/SCLK
SERIAL DATA BUS (S IN/S OUT/SCLK/EDS CS/EDS DAV)
IC151 IC201
IC201 DRUM SERVO
IC201 CAP SERVO
IC201 SYSTEM CONTROL
IC151 TUNER/TIMER MODE CONTROL
IC251
DRUM D/A
DRUM ER INTEGRA
DRUM FG
IC251
CAP D/A
CAPST ERRO INTEGRA
IC10
CAP FG
CAPST FG AM
CTL R/P
CTL REC AMP
IC29
CAM LOAD
CAM UNLOAD
CAM MOTO DRIVE
MODE 1-4
REMOTE CONTROL IN
DATA/S CLK/LED C
SEG1-19/GRID1-6
D261
Q262 S SENS
Q261 T SENS
IC152 (MA-251)
IC202 (MA-252)
D6V
POWER FAIL DET/ RESET PULSE GENERATOR
HI-24/37 BOARD (2/5)
(760/761/L5/L7)
(SEE PAGE 4-51)
IC301
K1-K4
S1-S8
FL DRIVER
SELECT SWITCH
S1-S5
FL301
FLUORESCENT INDICATOR TUBE
MF-284/290 BOARD
(760/761/L5/L7)
(SEE PAGE 4-51)
POWER
D5V
POWER
PS-355/356/367/368 BOARD
(SEE PAGE 4-??)
+13V
+12V
D6V
+5V
-8V
SWITCHING REG
LINE FILTER

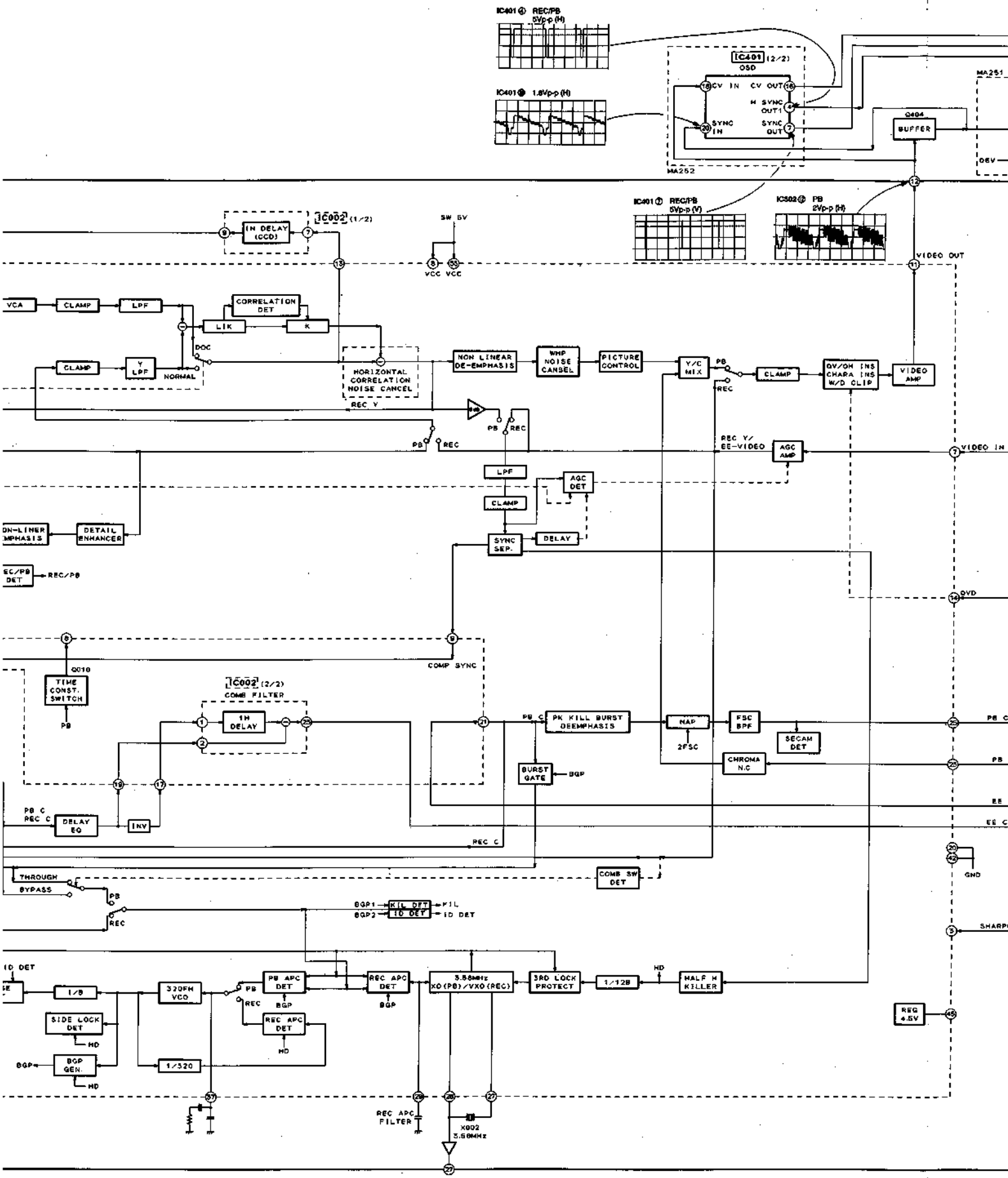

DC-68/77 BOARD
(790/960)
(SEE PAGE 4-29)
DC-69/78 BOARD
(760/761/L5/L7)
(SEE PAGE 4-33)
MD BLOCK
IC251 (1/2)
DRUM ERROR INTEGRATOR
DRUM MOTOR
DRUM FG
IC261 (2/2)
CAPSTAN ERROR INTEGRATOR
CAP MOTOR
IC101
CAPSTAN FG AMP
CAP FG
CTL REC/PB AMP
CTL HEAD
IC291
CAM MOTOR DRIVER
CAM MOTOR
CAM ENCORDER
HI-24/37 BOARD (3/3)
(760/761/L5/L7)
(SEE PAGE 4-51)
IC291
REMOTE CONTROL RECEIVER
CONTROL IN
IC401
LED DRIVER
OPERATING LED
LE-12/15 BOARD
(790/960)
(SEE PAGE 4-47)
S CLK/LED CS/ASURA RESET
19/GRID1-6
FLUORESCENT INDICATOR TUBE
SELECT SWITCH
HI-23/36 BOARD (2/2)
(790/960)
(SEE PAGE 4-47)
SELECT SWITCH
DM-47/51 BOARD
(790/960)
(SEE PAGE 4-47)
790, 960
S410 DUAL MODE SHUTTLE
OPERATING SWITCH BLOCK
AC IN

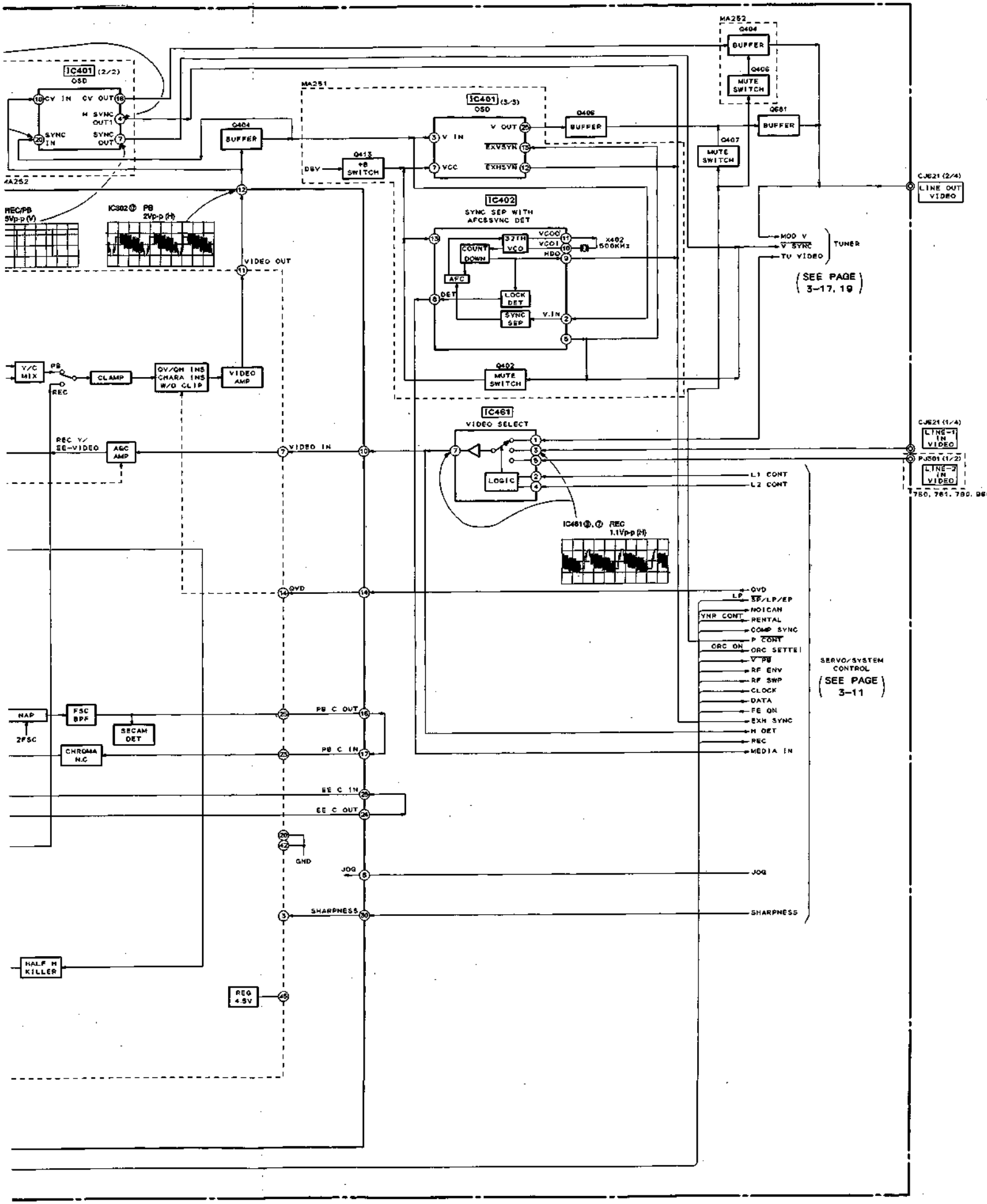
3-2. VIDEO BLOCK DIAGRAM



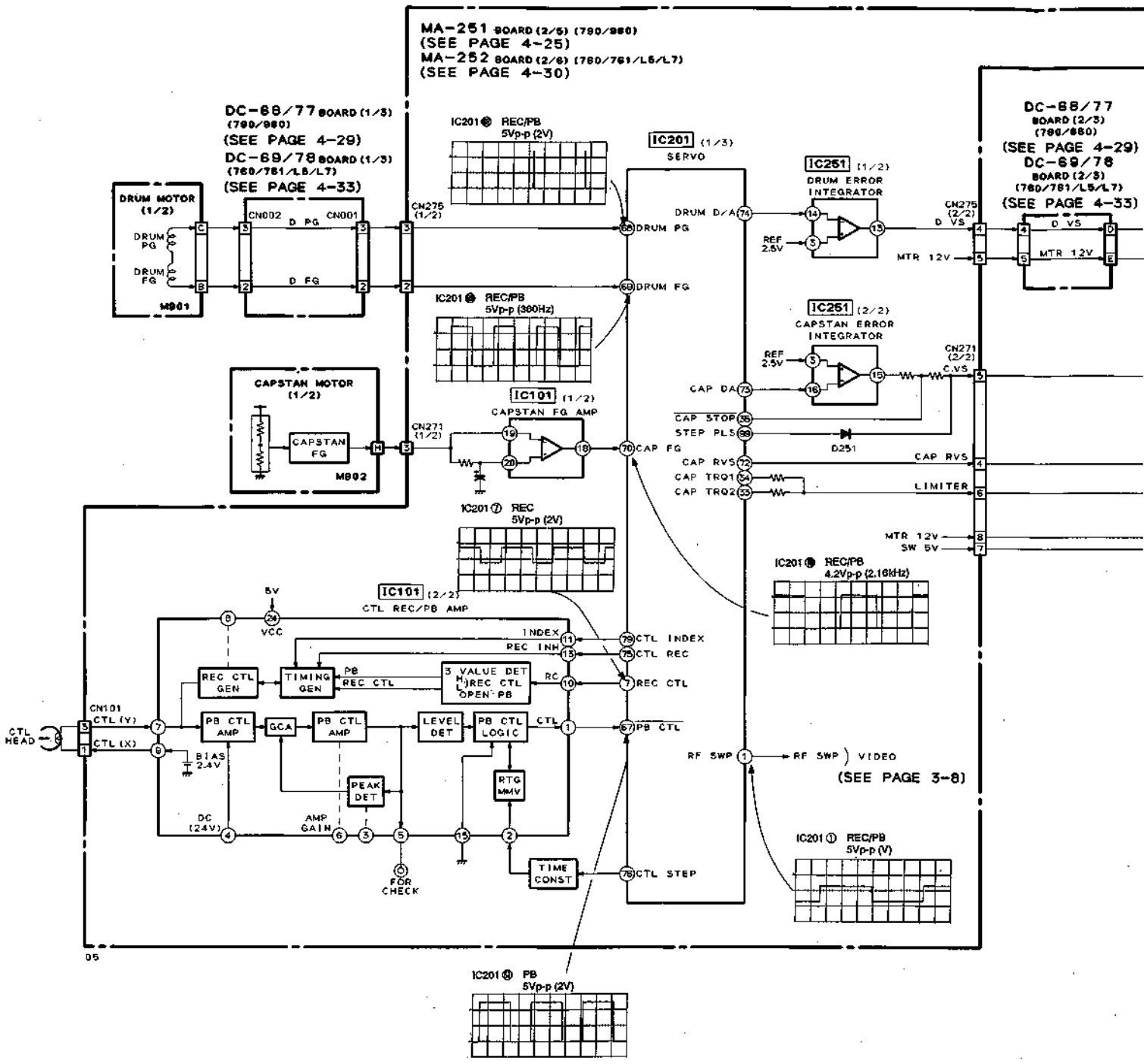
MA-251 BOARD (1/5) (790/860)
(SEE PAGE 4-19)
MA-252 BOARD (1/5) (760/761/L5/L7)
(SEE PAGE 4-22)




IC401 ④ REC/PB 5Vp-p (H)
IC401 ⑤ 1.8Vp-p (H)
IC401 (2/2) OSD
CV IN
CV OUT
H SYNC OUT1
SYNC IN
SYNC OUT
BUFFER
Q404
MA251
MA252
OSV
IC401 ⑦ REC/PB 5Vp-p (V)
IC302 ⑫ PB 2Vp-p (H)
VIDEO OUT
IC002 (1/2)
IN DELAY (CCD)
SW 5V
VCC VCC
VCA
CLAMP
LPF
CORRELATION DET
LIK
K
Y LPF
NORMAL
DOC
HORIZONTAL CORRELATION NOISE CANCEL
NON LINEAR DE-EMPHASIS
WHP NOISE CANSEL
PICTURE CONTROL
Y/C MIX
PB
REC
CLAMP
OV/OH INS CHARA INS W/D CLIP
VIDEO AMP
REC Y
REC Y/ EE-VIDEO
AGC AMP
VIDEO IN
LPF
AGC DET
CLAMP
SYNC SEP.
DELAY
DETAIL ENHANCER
REC/PB DET
REC/PB
OVD
COMP SYNC
Q010
TIME CONST. SWITCH
IC002 (2/2)
COMB FILTER
1H DELAY
PB C
PK KILL BURST DEEMPHASIS
NAP
2FSC
FSC BPF
SECAM DET
CHROMA N.C
BURST GATE
BGP
PB C
REC C
DELAY EQ
INV
EE
EE C
GND
THROUGH
BYPASS
PB
REC
COMB SW DET
BGP1
BGP2
KIL DET
ID DET
KIL
ID DET
SHARP
1/8
320FH VCO
PB APC DET
REC APC DET
BGP
3.58MHz XO(PB)/VXO(REC)
3RD LOCK PROTECT
1/128
HD
HALF H KILLER
REG 4.5V
SIDE LOCK DET
HD
BGP GEN.
1/320
REC APC FILTER
X002 3.58MHz


IC401 (2/2) OSD
CV IN
CV OUT
H SYNC OUT1
SYNC IN
SYNC OUT
MA252
Q404 BUFFER
Q406 MUTE SWITCH
Q405 BUFFER
Q407 MUTE SWITCH
MA251
IC401 (3/3) OSD
V OUT
V IN
EXVSYN
EXHSYN
VCC
DSV
Q413 +B SWITCH
Q406 BUFFER
Q404 BUFFER
IC402
SYNC SEP WITH AFC&SYNC DET
32TH VCO
VCOO
VCOI
HDO
X402 500KHz
COUNT DOWN
AFC
DET
LOCK DET
SYNC SEP
V.IN
Q402 MUTE SWITCH
REC/PB 5Vp-p (V)
IC302 PB 2Vp-p (H)
VIDEO OUT
Y/C MIX
PB
REC
CLAMP
OV/OH INS CHARA INS W/O CLIP
VIDEO AMP
REC Y/C-VIDEO
AGC AMP
VIDEO IN
IC461
VIDEO SELECT
LOGIC
L1 CONT
L2 CONT
IC461 REC 1.1Vp-p (H)
OVD
NAP
2FSC
FSC BPF
SECAM DET
CHROMA N.C
PB C OUT
PB C IN
EE C IN
EE C OUT
GND
JOG
SHARPNESS
HALF H KILLER
REG 4.5V
LP
SP/LP/EP
NOICAN
RENTAL
COMP SYNC
P CONT
ORC ON
ORC SETTE
V PB
RF ENV
RF SWP
CLOCK
DATA
FE ON
EXH SYNC
H DET
REC
MEDIA IN
SERVO/SYSTEM CONTROL
(SEE PAGE 3-11)
MOD V
V SYNC
TV VIDEO
TUNER
(SEE PAGE 3-17, 19)
CJ621 (2/4) LINE OUT VIDEO
CJ621 (1/4) LINE-1 IN VIDEO
PJ501 (1/2) LINE-2 IN VIDEO
750, 751, 780, 960

3-3. SERVO SYSTEM CONTROL BLOCK DIAGRAM



SECTIONN 4
PRINTED WIRNIG 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.
- ■ : Parts mounted on the conductor side.
- ▨ : Pattern from the side which enables seeing.
- ▨ : Pattern of the rear side.*
- Circled numbers refer to waveforms.

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

For schematic diagram:

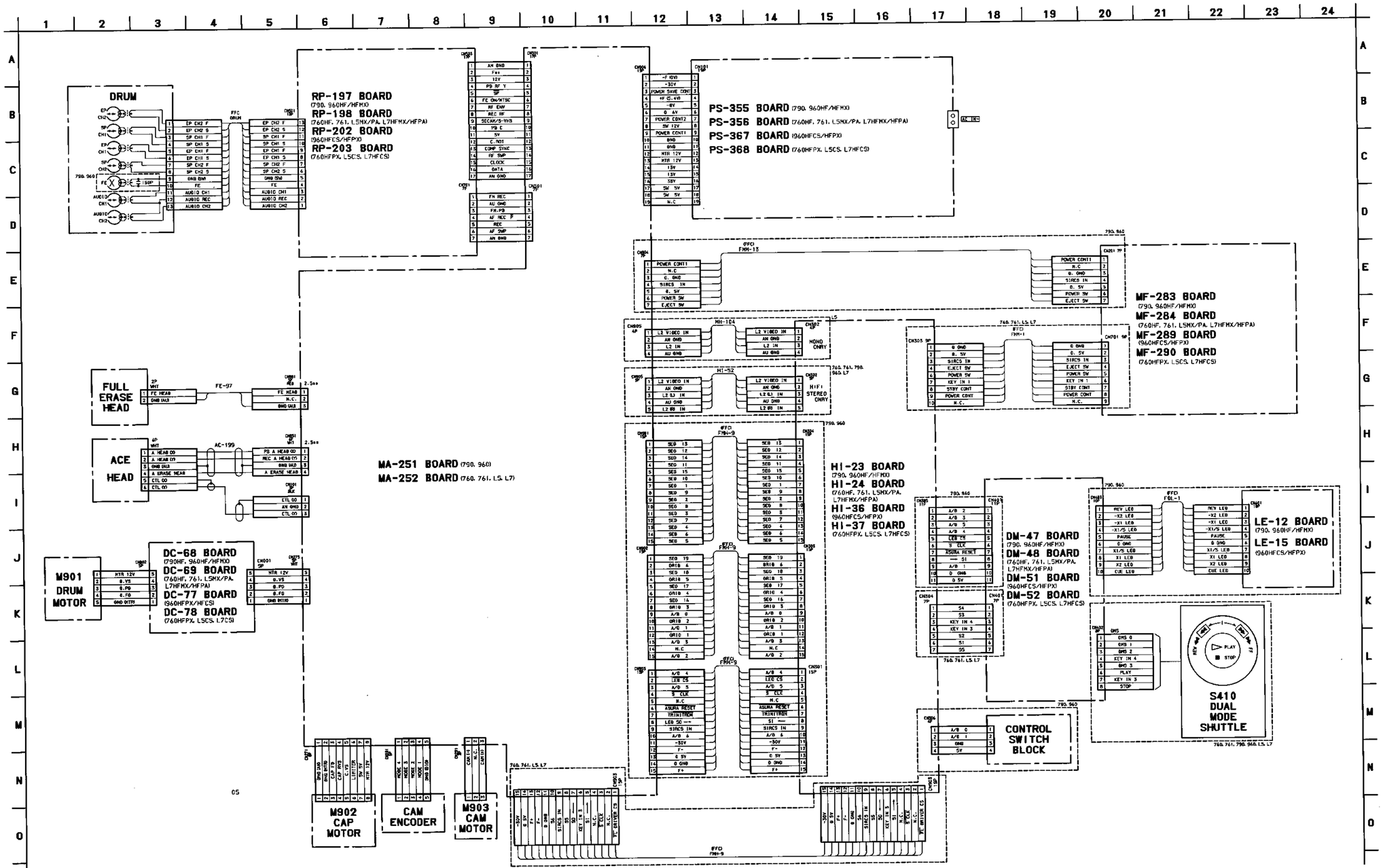
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W (Chip resistors: 1/10W) unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors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

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

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

- * : indicated by the color red.

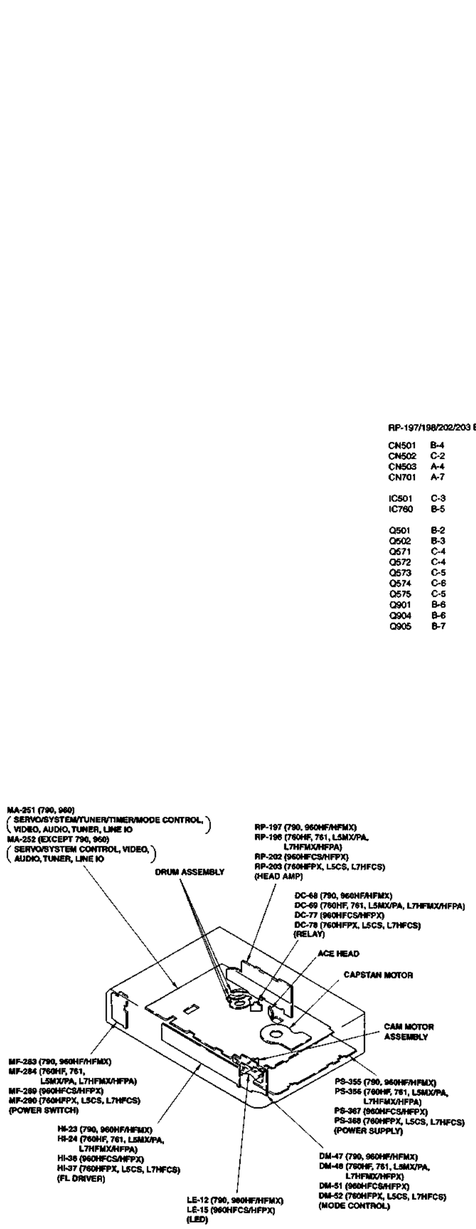
4-1. FRAME SCHEMATIC DIAGRAM



4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

There are cases that the part isn't mounted in this model is printed on this diagram.

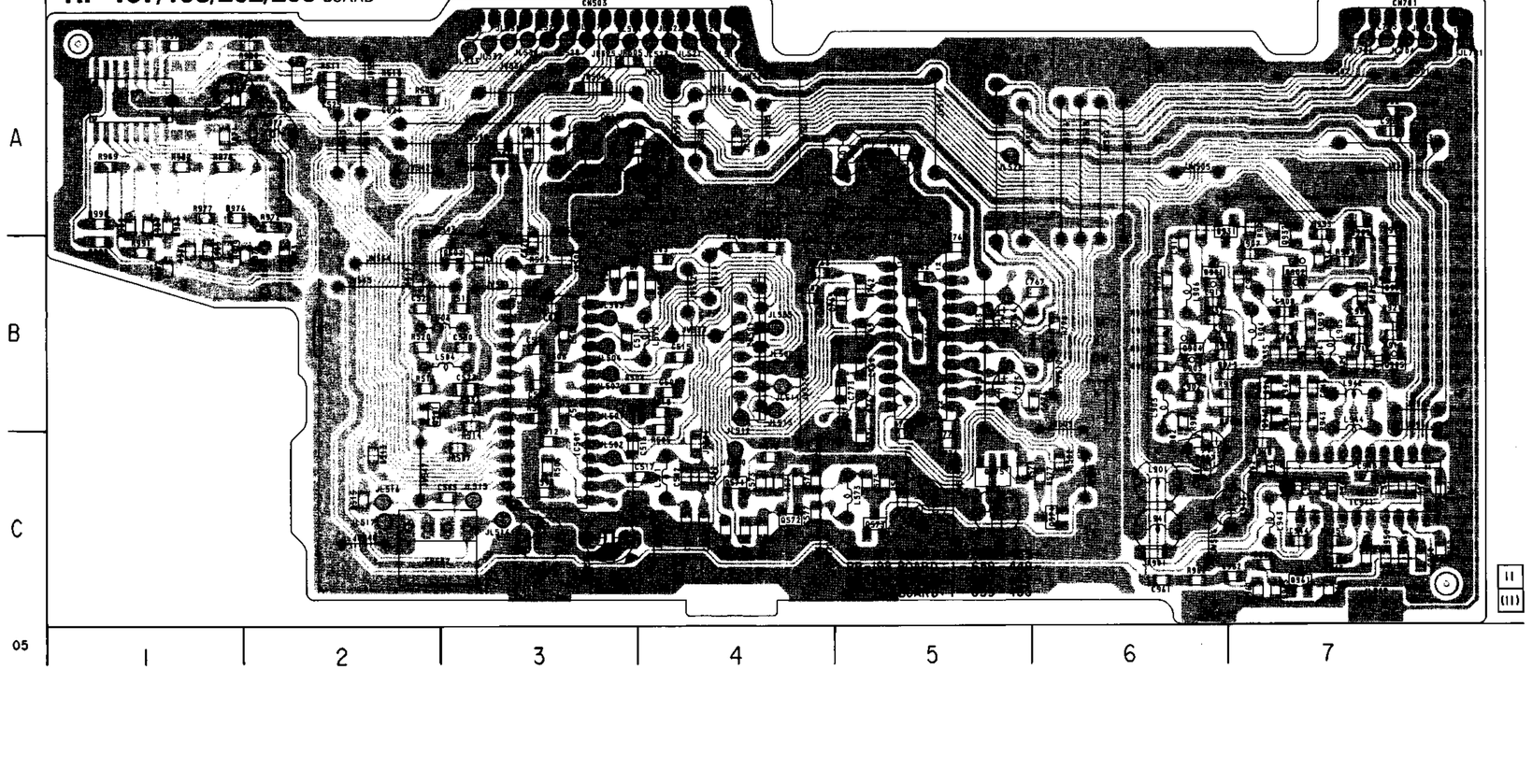
PR-197/198/202/203 (HEAD AMP) PRINTED WIRING BOARD
– Ref. No.: RP-197/202 Board; 1,000 series, RP-198/203 Board; 2,000 series –



RP-197/198/202/203 BOARD

CN501	B-4
CN502	C-2
CN503	A-4
CN701	A-7
IC501	C-3
IC760	B-5
Q501	B-2
Q502	B-3
Q571	C-4
Q572	C-4
Q573	C-5
Q574	C-6
Q575	C-5
Q901	B-6
Q904	B-6
Q905	B-7

RP-197/198/202/203 BOARD



• Signal path

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

• Signal path

	REC	REC/PB	PB
Ref. signal	➡	➡	⇨

• Waveforms

❶ IC501 ④ REC
5Vp-p (H)

❹ IC501 ⑰ PB
480mVp-p (H)

❺ IC501 ㉑ REC/PB
4.4Vp-p (2V)

❼ IC501 ⑰ REC/PB
5Vp-p (2V)

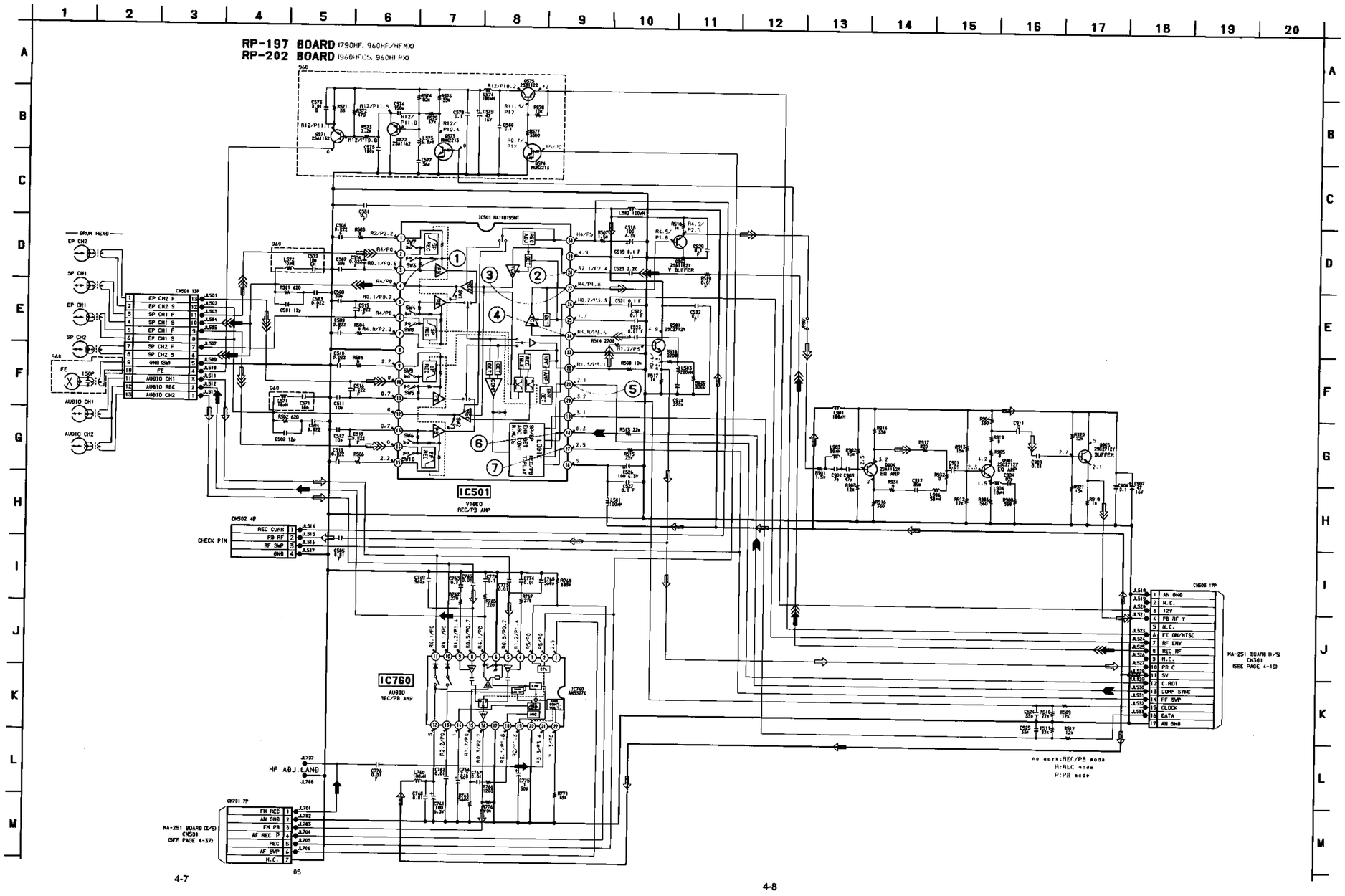
❷ IC501 ㉗ REC
360mV (H)

❸ IC501 ㉔ PB
400mVp-p (H)

❻ IC501 ⑱ REC/PB
2.4Vp-p (H)

PR-197/202 (HEAD AMP) (SLV-790/960) SCHEMATIC DIAGRAM

– Ref. No.: RP-197/202 Board; 1,000 series –



SECTION 5
REPAIR PARTS LIST

5-1. EXPLODED VIEWS

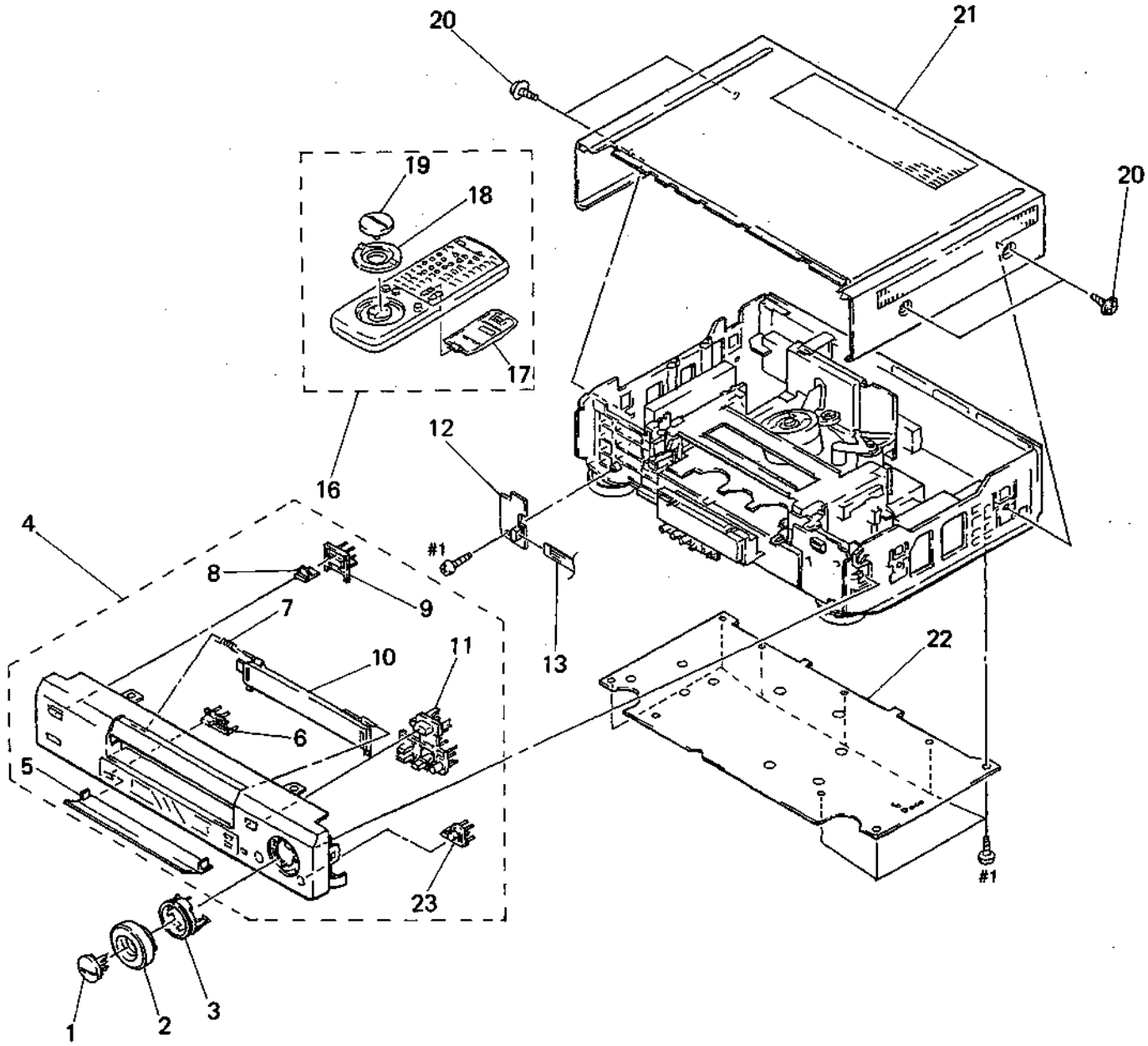
NOTE:
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Color Indication of Appearance Parts Example:

  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ Parts Color ↑ Cabinet's Color

- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of the electrical parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le neméro spécifié.

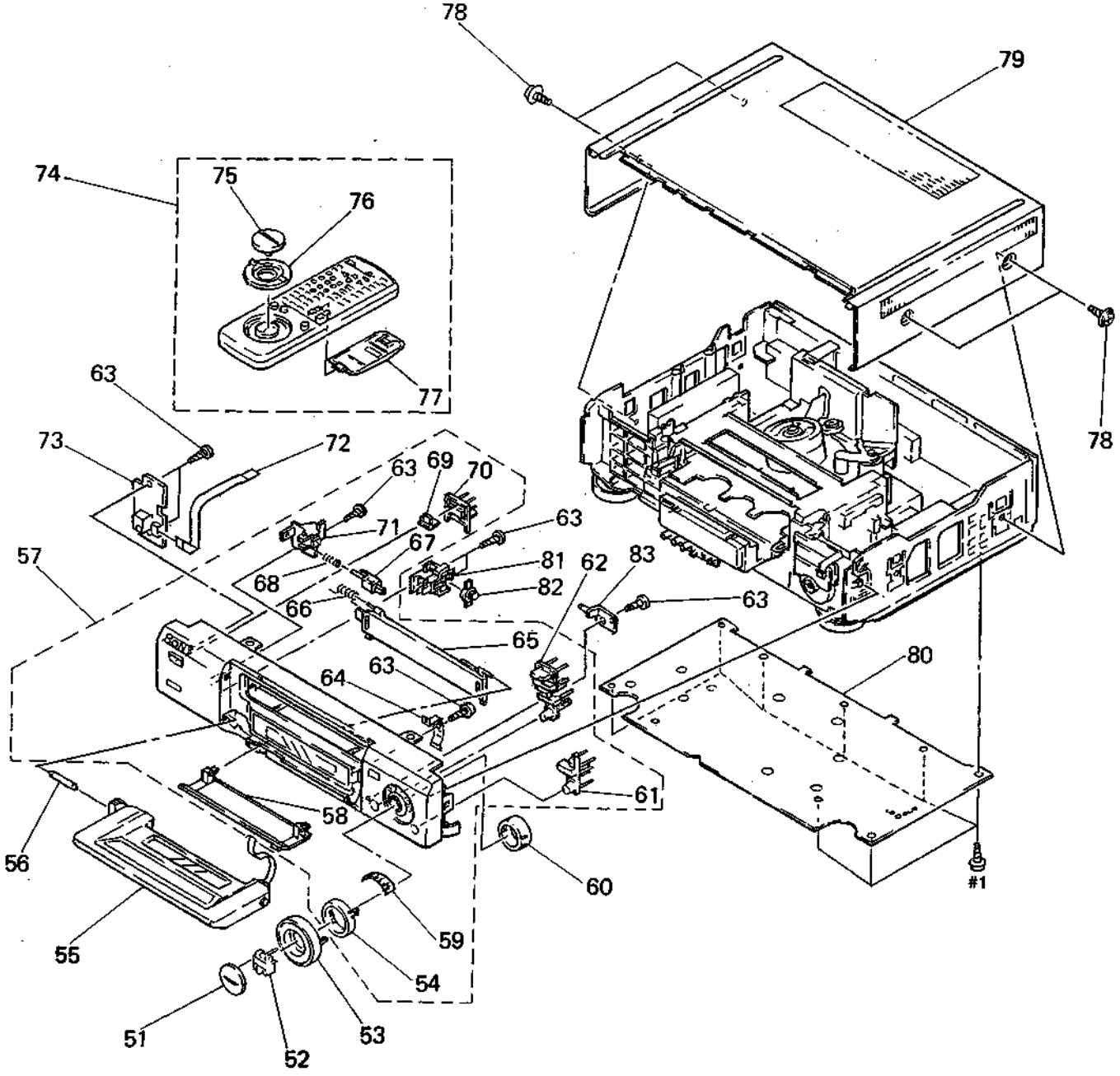
5-1-1. FRONT PANEL AND CABINET ASSEMBLIES (760, 761, L5, L7)



Ref. No.	Part No.	Description	Remark
1	X-3945-621-1	BUTTON ASSY, FUNCTION (TITANIUM) (761)	
1	X-3945-890-1	BUTTON ASSY, FUNCTION (760, L5, L7)	
2	3-966-886-01	RING, SHUTTLE (TITANIUM) (761)	
2	3-966-886-31	RING, SHUTTLE (EXCEPT 761)	
3	3-966-890-01	RING, MODE (760, 761)	
3	3-966-890-41	RING, MODE (L5, L7)	
4	X-3945-518-1	PANEL ASSY, FRONT (760)	
4	X-3945-689-1	PANEL ASSY, FRONT (TITANIUM) (761)	
4	X-3945-699-1	PANEL ASSY, FRONT (L5)	
4	X-3945-715-1	PANEL ASSY, FRONT (L7)	
5	3-966-214-01	DOOR (A), JACK (EXCEPT 761)	
5	3-966-214-11	DOOR (A), JACK (TITANIUM) (761)	
6	3-966-216-01	BUTTON, TV (EXCEPT 761)	
6	3-966-216-11	BUTTON, TV (TITANIUM) (761)	
7	3-953-432-01	SPRING (GE), FL	
8	3-946-611-01	TIP, POWER BUTTON	
9	3-966-213-01	BUTTON, POWER (EXCEPT 761)	
9	3-966-213-11	BUTTON, POWER (TITANIUM) (761)	
10	3-966-858-01	DOOR, CASSETTE (L5)	
10	3-966-858-11	DOOR, CASSETTE (760, L7)	
10	3-966-858-31	DOOR, CASSETTE (TITANIUM) (761)	

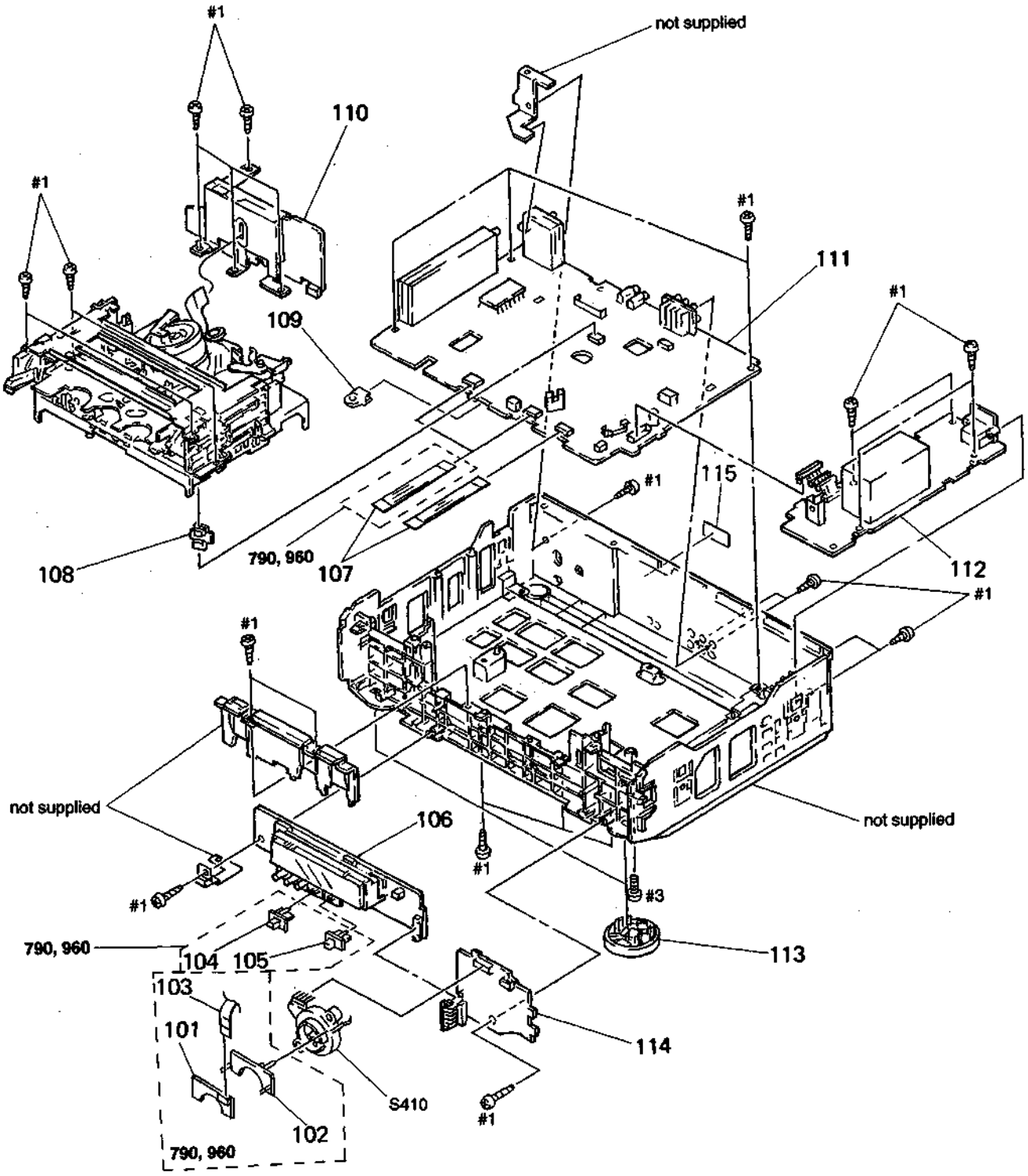
Ref. No.	Part No.	Description	Remark
11	3-966-217-01	BUTTON (A), EP (760)	
11	3-966-217-11	BUTTON (A), EP (L5, L7)	
11	3-966-217-21	BUTTON (A), EP (TITANIUM) (761)	
* 12	A-6782-794-A	MF-284 BOARD, COMPLETE (760HF, 761, L5MX/PA, L7HFMX/HFPA)	
* 12	A-6782-795-A	MF-290 BOARD, COMPLETE (760HFPX, L5CS, L7HFCS)	
13	1-776-226-11	CABLE, FLAT (FFM-1) 9P	
16	1-473-487-11	REMOTE COMMANDER (RMT-V186) (L7)	
16	1-473-487-21	REMOTE COMMANDER (RMT-V186) (L5)	
16	1-473-515-11	REMOTE COMMANDER (RMT-V184A) (760, 761)	
17	3-708-817-01	COVER, BATTERY (V184A, V186)	
18	3-957-513-11	RING, SHUTTLE (V184A, V186)	
19	X-3944-446-2	BUTTON ASSY (C) (V184A, V186)	
20	3-710-901-11	SCREW, TAPPING	
* 21	3-966-225-21	CASE, UPPER (760)	
* 21	3-966-225-31	CASE, UPPER (L5, L7)	
* 21	3-966-225-61	CASE, UPPER (TITANIUM) (761)	
* 22	3-966-226-02	PLATE, BOTTOM	
23	3-966-219-01	BUTTON (A), REC (EXCEPT 761)	
23	3-966-219-11	BUTTON (A), REC (TITANIUM) (761)	

5-1-2. FRONT PANEL AND CABINET ASSEMBLIES (790, 960)



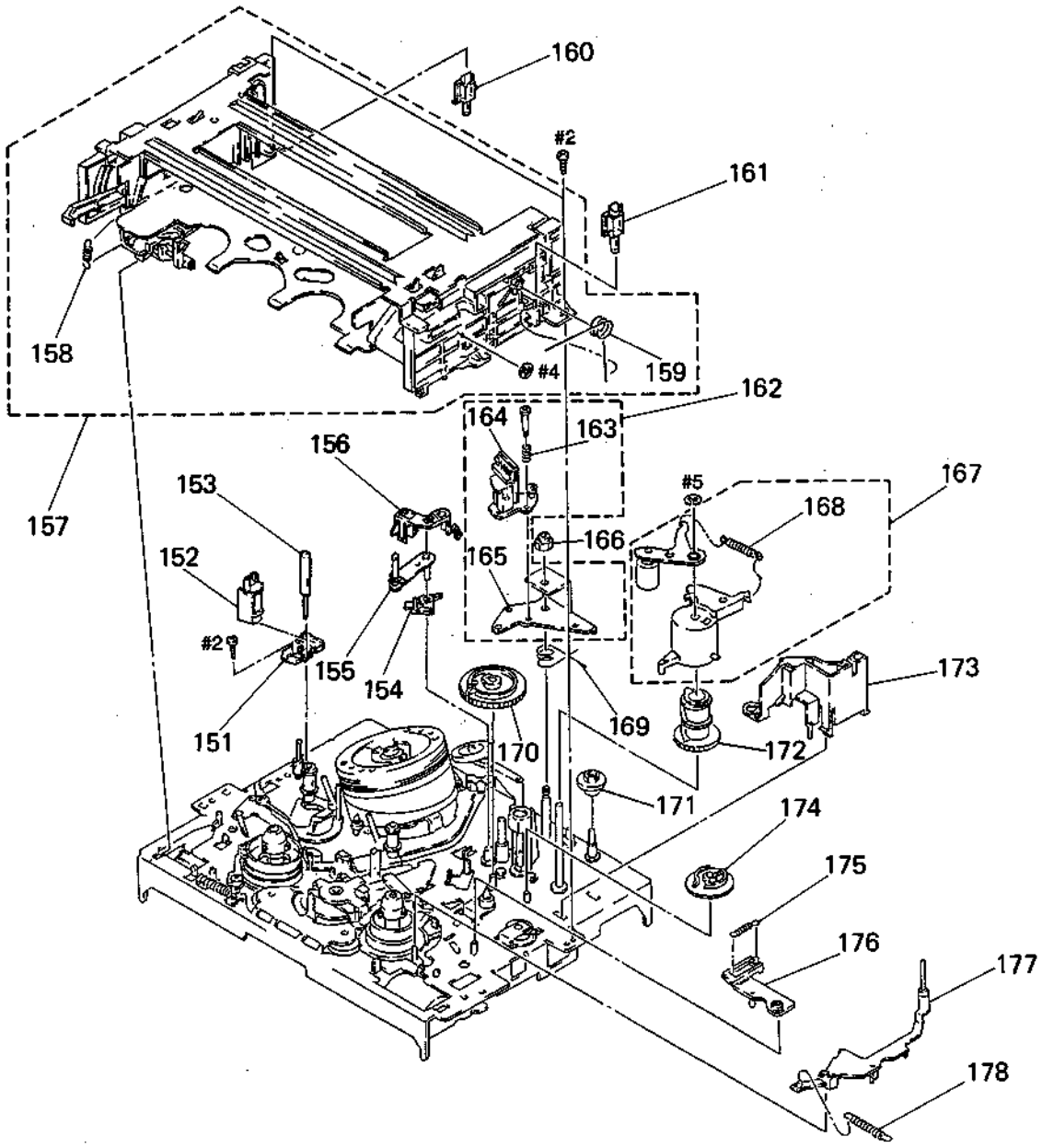
Ref. No.	Part No.	Description	Remark
51	3-966-252-01	BUTTON, PB/STOP	
52	3-966-251-01	BASE, BUTTON	
53	3-966-253-01	RING, SHUTTLE	
54	3-966-807-01	PLATE, INDICATION, SHUTTLE	
55	1-473-518-11	SWITCH BLOCK, CONTROL (790)	
55	1-473-518-21	SWITCH BLOCK, CONTROL (960)	
* 56	3-960-077-01	SHAFT (LEFT), FULCRUM	
57	X-3945-519-1	PANEL ASSY, FRONT (790)	
57	X-3945-717-1	PANEL ASSY, FRONT (960)	
58	3-966-244-01	DOOR (B), JACK (790)	
58	3-966-244-11	DOOR (B), JACK (960)	
59	3-966-241-01	PLATE, LIGHT GUIDE, SHUTTLE	
60	3-966-250-01	BASE, SHUTTLE RING	
61	3-966-242-01	BUTTON (B), REC	
62	3-966-245-01	BUTTON (B), EP	
63	4-921-277-41	SCREW (B2.6X8), TAPPING, BIND	
* 64	3-960-556-01	SPRING, DOOR LOCK	
65	3-960-094-01	DOOR, CASSETTE	
66	3-953-432-01	SPRING (GE), FL	
67	3-944-564-01	CLAW, LOCK	
68	3-957-388-01	SPRING, COMPRESSION	
69	3-946-611-01	TIP, POWER BUTTON	
70	3-966-213-01	BUTTON, POWER	
* 71	3-957-548-01	HOLDER, LOCK CLAW	
72	1-776-227-11	CABLE, FLAT (FMM-13) 7P	
* 73	A-6782-798-A	MF-283 BOARD, COMPLETE (790, 960HF/HFMX)	
* 73	A-6782-806-A	MF-289 BOARD, COMPLETE (960HFCS/HFPX)	
74	1-473-483-11	REMOTE COMMANDER (RMT-V158C) (960)	
74	1-473-483-21	REMOTE COMMANDER (RMT-V161A) (790)	
75	X-3944-446-2	BUTTON ASSY (C) (V158C, V161A)	
76	3-957-513-11	RING, SHUTTLE (V158C, V161A)	
77	3-708-817-01	COVER, BATTERY (V158C, V161A)	
78	3-710-901-11	SCREW, TAPPING	
79	3-966-255-21	CASE, UPPER	
* 80	3-966-226-02	PLATE, BOTTOM	
* 81	3-960-076-01	PLATE (LEFT), FULCRUM, DOOR	
82	3-961-745-01	DAMPER, OIL	
83	X-3944-447-1	PLATE (RIGHT) ASSY, FULCRUM, DOOR	

5-1-3. CHASSIS ASSEMBLY



Ref. No.	Part No.	Description	Remark
* 101	A-6794-139-A	LE-12 BOARD, COMPLETE (790, 960HF/HFMX)	
* 101	A-6794-141-A	LE-15 BOARD, COMPLETE (960HFCS/HFPX)	
* 102	3-966-254-01	HOLDER, LE PC BOARD (790, 960)	
103	1-776-228-11	CABLE, FLAT (FDL-1) 10P (790, 960)	
104	3-966-255-01	KNOB (3P), SLIDE (790, 960)	
105	3-966-256-01	KNOB (4P), SLIDE (790, 960)	
* 106	A-6782-790-A	HI-24 BOARD, COMPLETE (760HF, 761)	
* 106	A-6782-797-A	HI-37 BOARD, COMPLETE (L7HFCS)	
* 106	A-6782-801-A	HI-24 BOARD, COMPLETE (L5MX/PA)	
* 106	A-6782-805-A	HI-37 BOARD, COMPLETE (760HFPX)	
* 106	A-6782-807-A	HI-36 BOARD, COMPLETE (960HFCS/HFPX)	
* 106	A-6782-810-A	HI-23 BOARD, COMPLETE (960HF/HFMX)	
* 106	A-6782-813-A	HI-23 BOARD, COMPLETE (790)	
* 106	A-6782-816-A	HI-24 BOARD, COMPLETE (L7HFMX/HFPA)	
* 106	A-6782-822-A	HI-37 BOARD, COMPLETE (L5CS)	
107	1-776-225-11	CABLE, FLAT (FMH-9) 15P	
* 108	A-6794-137-A	DC-68 BOARD, COMPLETE (790, 960HF/HFMX)	
* 108	A-6794-137-A	DC-69 BOARD, COMPLETE (760HF, 761, L5MX/PA, L7HFMX/HFPA)	
* 108	A-6794-137-A	DC-77 BOARD, COMPLETE (960HFCS/HFPX))	
* 108	A-6794-137-A	DC-78 BOARD, COMPLETE (760HFPX, L5CS, L7HFCS)	
* 109	3-966-237-01	HOLDER (ST), MA	
* 110	A-6782-791-A	RP-198 BOARD, COMPLETE (760HF, 761, L7HFMX/HFPA)	
* 110	A-6782-796-A	RP-203 BOARD, COMPLETE (760HFPX, L7HFCS)	
* 110	A-6782-799-A	RP-197 BOARD, COMPLETE (790)	
* 110	A-6782-808-A	RP-202 BOARD, COMPLETE (960HFCS/HFPX)	
* 110	A-6782-811-A	RP-197 BOARD, COMPLETE (960HF/HFMX)	
* 110	A-6782-821-A	RP-203 BOARD, COMPLETE (L5CS)	
* 110	A-6782-832-A	RP-198 BOARD, COMPLETE (L5MX/PA)	
* 111	A-6782-792-A	MA-252 BOARD, COMPLETE (760, 761)	
* 111	A-6782-800-A	MA-251 BOARD, COMPLETE (790)	
* 111	A-6782-802-A	MA-252 BOARD, COMPLETE (L5)	
* 111	A-6782-815-A	MA-251 BOARD, COMPLETE (960)	
* 111	A-6782-817-A	MA-252 BOARD, COMPLETE (L7)	
* 112	A-6782-789-A	PS-356 BOARD, COMPLETE (760HF, 761, L7HFMX/HFPA)	
* 112	A-6782-804-A	PS-367 BOARD, COMPLETE (960HFCS/HFPX)	
* 112	A-6782-812-A	PS-355 BOARD, COMPLETE (790, 960HF/HFMX)	
* 112	A-6782-819-A	PS-368 BOARD, COMPLETE (760HFPX, L7HFCS)	
* 112	A-6782-820-A	PS-368 BOARD, COMPLETE (L5CS)	
* 112	A-6782-830-A	PS-356 BOARD, COMPLETE (L5MX/PA)	
113	3-966-229-01	INSULATOR (ST) (EXCEPT 761)	
113	3-966-229-31	INSULATOR (ST) (TITANIUM) (761)	
* 114	A-6782-788-A	DM-48 BOARD, COMPLETE (760HF, 761, L5MX/PA, L7HFMX/HFPA)	
* 114	A-6782-803-A	DM-51 BOARD, COMPLETE (960HFCS/HFPX)	
* 114	A-6782-809-A	DM-47 BOARD, COMPLETE (790HF, 960HF/HFMX)	
* 114	A-6782-818-A	DM-52 BOARD, COMPLETE (760HFPX, L5CS, L7HFCS)	
* 115	3-704-386-11	LABEL, TELESONIC (790, 960)	
S410	1-572-662-11	SWITCH, ROTARY (DUAL MODE SHUTTLE)	

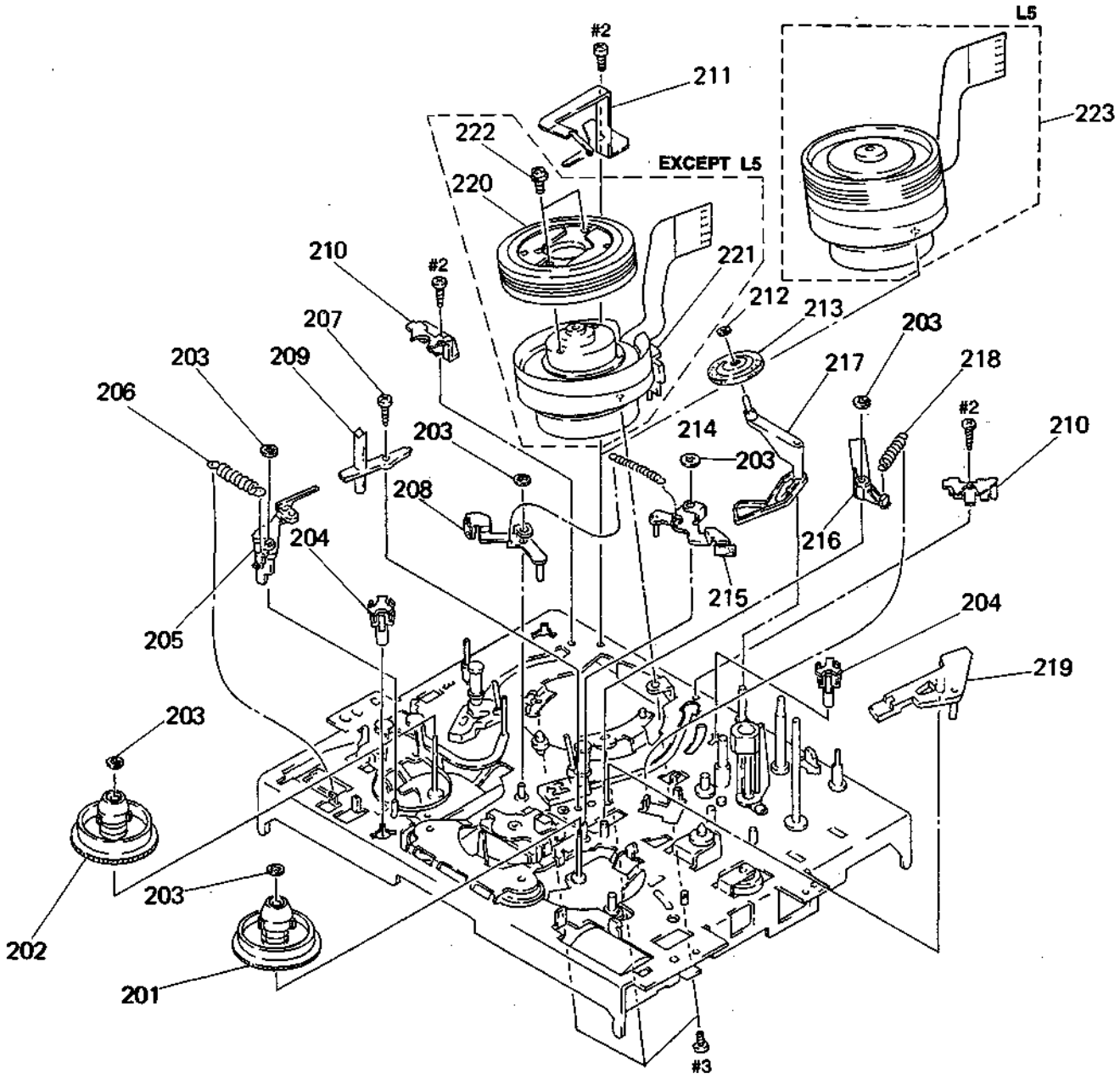
5-1-4. MECHANISM CHASSIS ASSEMBLY (1)



Ref. No.	Part No.	Description	Remark
151	X-3945-348-1	FEH ASSY	
152	1-500-144-11	HEAD, FE	
153	X-3944-460-1	ROLLER ASSY, TG2	
154	3-958-421-01	HOLDER, TG8	
155	X-3944-797-1	TG8 ASSY	
156	3-962-298-01	BRACKET, TG7 TAPE	
157	A-6751-496-C	FL BLOCK ASSY	
158	3-958-467-01	SPRING, TENSION COIL	
159	3-958-195-01	SPRING, TORSION	
160	3-960-215-01	PLATE, LIGHT GUIDE, END SENSOR	
161	3-960-216-01	PLATE, LIGHT GUIDE, TOP SENSOR	
162	A-6736-103-A	ACE BLOCK ASSY	
163	3-960-439-02	SPRING (ACE), COMPRESSION	
164	1-506-485-11	PIN, CONNECTOR 6P	

Ref. No.	Part No.	Description	Remark
165	3-958-491-01	BASE, ACE	
166	3-942-867-01	NUT, AC HEIGHT ADJUSTMENT	
167	A-6746-072-A	PRESS BLOCK ASSY, PINCH	
168	3-958-455-01	SPRING (PINCH), TENSION	
169	3-958-487-01	SPRING, (AEC) TORSION COIL	
170	3-958-152-01	GEAR, TG8	
171	3-958-501-01	SCREW, ACE ADJUSTMENT	
172	3-958-151-01	GEAR, ELEVATOR	
173	3-958-454-01	OPNER, LID	
174	3-958-153-01	GEAR, PRESS	
175	3-958-462-01	SPRING (RVS BRAKE), TENSION	
176	X-3943-885-1	ARM ASSY, RVS BRAKE	
177	X-3943-882-1	BRAKE (T) ASSY, SOFT	
178	3-958-505-01	SPRING (SOFT BRAKE T), TENSION	

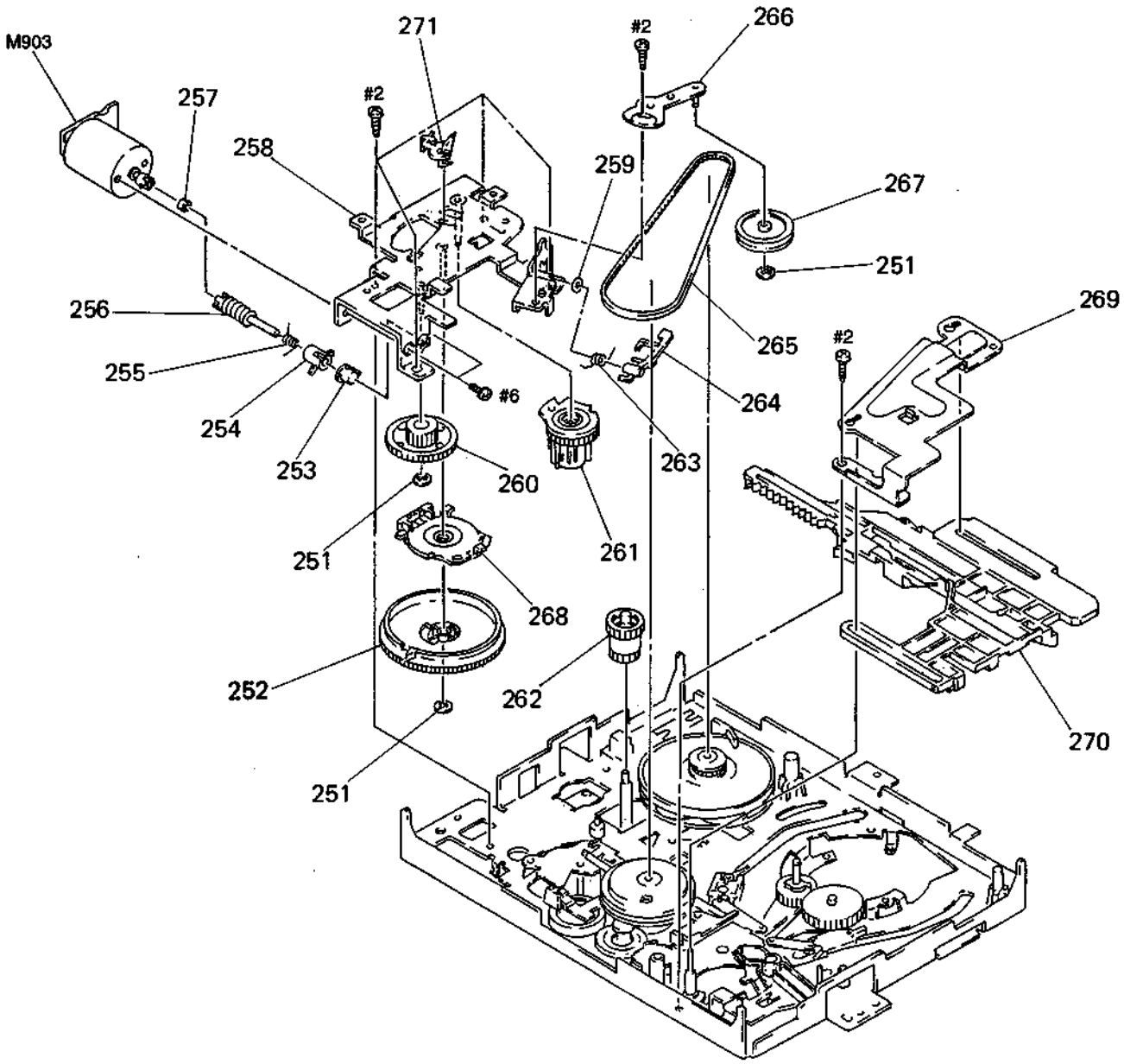
5-1-5. MECHANISM CHASSIS ASSEMBLY (2)



Ref. No.	Part No.	Description	Remark
201	X-3943-903-1	TABLE, REEL (T) ASSY	
202	X-3943-902-1	TABLE, REEL (S) ASSY	
203	3-669-595-00	WASHER (2), STOPPER	
204	3-958-390-01	SHAFT, PC BOARD	
205	3-958-450-01	BRAKE (S), SOFT	
206	3-958-443-01	SPRING, STRETCH COIL SPRING	
207	3-961-441-01	SCREW (3X8)	
208	X-3945-650-1	BRAKE (S) ASSY, MAIN	
209	3-958-391-01	PLATE, LIGHT GUIDE, LED	
210	3-958-389-01	CATCHER	
211	X-3943-899-5	GROUND ASSY, SHAFT	
212	3-321-393-01	WASHER, STOPPER	
213	X-3944-363-1	ROLLER ASSY, HC	
214	3-958-517-01	SPRING, TENSIONCOIL	

Ref. No.	Part No.	Description	Remark
215	X-3945-651-1	ARM (T) ASSY, MAIN BRAKE	
216	3-960-139-01	ARM, NEUTRALITY	
217	X-3943-896-1	ARM ASSY, HC	
218	3-958-535-01	SPRING, TENSION	
219	3-960-138-01	ARM, PENDULUM COMPULSION	
220	8-848-576-02	DRUM ASSY, ROTARY UPPER (DZR-45-R)	(760, 761, 790, L7)
220	8-848-594-02	DRUM ASSY, ROTARY UPPER (DZR-51-R)	(960)
221	8-848-658-11	DRUM ASSY, LOWER (DZL-45B/J-RP)	(760, 761, 790, L7)
221	8-848-666-11	DRUM ASSY, LOWER (DZH-51B/J-RP)	(960)
222	2-643-205-01	SCREW, +PW 3X8	
223	8-848-681-11	DRUM ASSY (DZH-73B/Q-RP)	(L5)

5-1-6. MECHANISM CHASSIS ASSEMBLY (3)



Ref. No.	Part No.	Description	Remark
251	3-669-595-00	WASHER (2), STOPPER	
252	3-958-161-04	GEAR, CAM	
253	3-958-155-01	BEARING, CAM MOTOR	
254	3-958-160-01	PROPELLOR	
255	3-958-460-01	SPRING, ONE-WAY	
256	3-958-159-01	WORM	
257	3-959-840-11	RUBBER, JOINT	
* 258	X-3943-884-1	CHASSIS ASSY, CAM MOTOR	
259	3-701-439-21	WASHER	
260	3-958-157-01	WHEEL, WORM	
261	3-958-156-02	GEAR, FL DRIVING	

Ref. No.	Part No.	Description	Remark
262	3-958-162-01	GEAR, UPPER/LOWER COMMUNICATION	
263	3-958-445-01	SPRING, TORSIONCOIL (CAP BRAKE)	
264	X-3943-888-1	BRAKE ASSY, CAP	
265	3-958-361-01	BELT, TIMING	
266	X-3943-889-1	ARM ASSY, TENSION VEHICLE	
267	3-958-448-01	WHEEL, TENSION	
268	1-762-076-11	SWITCH, ROTARY	
* 269	3-959-763-01	RETAINER	
270	3-958-163-04	SLIDER, MAIN	
271	3-965-977-01	RETAINER, CAM GEAR	
M903	X-3943-883-1	MOTOR ASSY, CAM	

6-1. SYSTEM CONTROL – VIDEO BLOCK INTERFACE (MA-251 BOARD IC201)

Signal	Pin No.	I/O	STOP FF/ REW	TAPE THREAD-ING	TAPE UNTHREAD-ING	PB	PB • PAUSE	SLOW	×2	CUE	REVIEW	REC	REC • PAUSE
$\overline{\text{V PB}}$	MA-251 IC201㉞	O	H	H	H	L	L	L	L	L	L	H	H
RF SWP (SW30)	MA-251 IC201①	O	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
QVD	MA-251 IC201②	O	L	L	L	*3	*4	*4	*4	*4	*4	L	L
$\overline{\text{SP}}$	MA-251 IC201㉝	O	*6	*6	*6	*7	*7	*7	*7	*7	*7	*6	*6
$\overline{\text{SP}}$/EP/EP: HI - IMP	MA-251 IC201⑫	O	*12	*12	*12	*7	*7	*7	*7	*7	*7	*12	*12
V SYNC	MA-251 IC201㉟	I	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8
CTL REC	MA-251 IC201⑲	O	L	L	L	L	L	L	L	L	L	H	L
LINE 1	MA-251 IC201⑥	O	L	L	L	L	L	L	L	L	L	L	L
JOG	MA-251 IC201㊲	O	L	L	L	L	H	H	H	H	H	L	L
ORC SETTEI	MA-251 IC201㉛	O	L	L	L	L	L	L	L	L	L	*13	*13

*1. Foward slow mode: "HI-Z (2.5 V)" in tape stop, "L" in tape running (approx. 40 msec.).
Foward slow mode: "HI-Z (2.5 V)" in tape stop, "H" in tape running SP mode (approx. 40 msec.).
"L" in tape running EP mode (approx. 40 msec.).
*2. Synchronized with drum rotation. 30 Hz 50% duty pulse.
*3. Normally "L". "H" when CTL signal is not generated.
*4. V period "H" pulse.
*5. "H" in SP mode. "L" in LP/EP mode.
*6. Selected by REC mode. SP mode: "L"
*7. Selected by tape recording mode.

Mode / Signal	SP	LP	EP
SP ㉑	L	H	H
$\overline{\text{LP}}$ ㉒	L	H	L

*8. Composite Sync signal (positive).
*9. "H" when menu screen or blue back screen.
*10. "HI-Z (2.5 V)" in LP/EP mode. "H" in SP mode.
*11. Selected by REC mode: "H" EP mode.
*12. Selected by REC mode: "H" LP mode.
*13. "H" during APC measurement.

6-2. SYSTEM CONTROL – SERVO PERIPHERAL CIRCUIT INTERFACE (MA-251 BOARD IC201)

Signal	Pin No.	I/O	STOP	FF	REW	TAPE THREAD -ING	TAPE UNTHREAD -ING	PB	PB • PAUSE	SLOW	CUE	× 2	REVIEW	REC	REC • PAUSE	PB INDEX WRT/ERS
REC CTL	MA-251 IC201⑦	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	
$\overline{\text{CAP STOP}}$	MA-251 IC201⑧	O (O.D)	L	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	L	*3	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	
STEP PLS	MA-251 IC201⑨	O	L	L	L	L	L	L	L	*2	L	L	L	L	L	
CTL REC	MA-251 IC201⑮	O	L	L	L	L	L	L	L	L	L	L	L	H	L	H
CTL-INDEX	MA-251 IC201⑯	O	L	L	L	L	L	L	L	L	L	L	L	L	L	H
$\overline{\text{PB CTL}}$	MA-251 IC201⑰	I	H	*6	*6			*1	H/L	*2	*6	*6	*6	*1	H	
DRM PG	MA-251 IC201⑱	I	*4	*7	*7	*5	*5	*7	*7	*7	*7	*7	*7	*7	*7	
DRM FG	MA-251 IC201⑲	I	*4	*8	*8	*5	*5	*8	*8	*8	*8	*8	*8	*8	*8	
CAP FG	MA-251 IC201⑳	I	H/L	*6	*6	*5	*5	*6	H/L	*9	*6	*6	*6	*6	H/L	
CAP DA	MA-251 IC201㉓	O	*10	*10	*10	*10	*10	*11	*10	*10	*11	*11	*11	*11	*10	
DRM DA	MA-251 IC201㉔	O	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	
CTL STEP	MA-251 IC201㉕	O	L	L	L	L	L	L	L	*13	L	L	L	L	L	

*1. 30 Hz or 25 Hz pulse.
*2. Pulse at tape running.
*3. Reverse logic pulse of STEP PLS.
*4. "L" when drum rotation stop.
*5. Unstable period pulse.
*6. Pulse of period in proportion to tape speed.
*7. 30 Hz or 25 Hz pulse.
*8. 360 Hz or 300 Hz or 180/150 Hz pulse.
*9. Pulse at tape running.
*10. Approx. 2 msec period "H" or "L" pulse.
*11. Approx. 1.5 msec period "H" or "L" pulse.
*12. Approx. 3 msec period "H" or "L" pulse.
*13. "H" when FWD direction STEP drive.

6-3. SYSTEM CONTROL – MECHANISM INTERFACE (MA-251 BOARD IC201)

Signal	Pin No.	I/O	EJECTED	CASSETTE LOADING	CASSETTE UNLOADING	TEPE THREAD-ING	TAPE UNTHREAD-ING	STOP	FF	REW	PB	PB • PAUSE	SLOW	×2	CUE	REVIEW	REC	REC • PAUSE
CAM LOAD	MA-251 IC201⑬	O	L	H	L	H	L	L	L	L	L	L	L	L	L	L	L	L
CAM UNLOAD	MA-251 IC201⑭	O	L	L	H	L	H	L	L	L	L	L	L	L	L	L	L	L
CAM 12V	MA-251 IC201⑮	O		H	L	H	L											
MODE 1	MA-251 IC201㉖	I	H	L	L	*8	*8	H	H	H	H	H	H	H	H	L	H	H
MODE 2	MA-251 IC201㉘	I	L	L	L	*8	*8	L	L	L	H	H	H	H	H	H	H	H
MODE 3	MA-251 IC201㉙	I	L	L	L	*8	*8	H	H	H	L	H	H	L	L	H	L	H
MODE 4	MA-251 IC201㉗	I	L	H	H	*8	*8	H	L	L	L	L	L	L	L	L	L	L
REC PRF	MA-251 IC201⑲	I	L	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
TREEL FG	MA-251 IC201㉔	I	H/L	H/L	H/L	H/L	H/L	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
SREEL FG	MA-251 IC201㉓	I	H/L	H/L	H/L	*3	*3	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
T/E LED	MA-251 IC201㉜	O (O.D)	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
CAP TRQ 1	MA-251 IC201㉞	O (O.D)											*8					
CAP TRQ 2	MA-251 IC201㉝	O (O.D)										L	*8					L
CAP TRQ 3	MA-251 IC201⑧	O (O.D)							H	H			*8		H	H		
$\overline{\text{CAP STOP}}$	MA-251 IC201㉟	O (O.D)	L	L	L	H	H	L	H	H	H	L	*5	H	H	H	H	L
CAP RVS	MA-251 IC201⑫	O	H			L	H	H/L	L	H	L	L	L/*5	L	L	H	L	L
CAP DA	MA-251 IC201⑰	O																
T SENS	MA-251 IC201㊵	I	*4	*4	*4	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
S SENS	MA-251 IC201㊳	I	*4	*4	*4	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7

*1. "H" when mechanism mode transition.
*2. "L" when erasing protection tab is bent, "H" when not bent.
*3. Pause of period in proportion to reel rotating speed.
*4. Approx. 2 msec period "H" pulse.
*5. Pulse at tape running.
*6. "L" when tape running and CAP RVS is "H".
*7. Normally "L". 2 msec period "H" pulse when tape top or tape end is detected.
*8. Uncertainty.

6-4. SYSTEM CONTROL – SYSTEM CONTROL PERIPHERAL CIRCUIT INTERFACE (MA-251 BOARD IC201)

Signal	Pin No.	I/O	I/O level
$\overline{\text{ASURA RESET}}$	MA-251 IC201㊸	I	Normally "H", "L" when service interruption is detected or restored.
$\overline{\text{ASURA CS}}$	MA-251 IC201㊹	I	Chip select signal from timer microprocessor. V period "L" pulse.
S IN 0	MA-251 IC201㊺	I	Serial communication data from timer microprocessor. V period "L" pulse.
S OUT 0	MA-251 IC201㊻	O	Serial communication data to timer microprocessor. V period "L" pulse.
$\overline{\text{S CLK}}$	MA-251 IC201㊼	I	Serial communication clock with timer microprocessor. V period "L" pulse.

6-5. SYSTEM CONTROL – AUDIO BLOCK INTERFACE (MA-251 BOARD IC201)

Signal	Pin No.	I/O	STOP/ FF/ REW	TAPE LOADING	TAPE UNLOADING	PB	PB • PAUSE	SLOW	×2	CUE	REVIEW	REC	REC • PAUSE
AF ENV	MA-251 IC201㊵	I	AF RF envelope signal input terminal for automatic tracking.										
A MUTE	MA-251 IC201⑰	O (O.D)	L	L	L	*1	H	H	H	H	H	L	L
NA REC $\overline{P}$	MA-251 IC201⑪	O	L	L	L	L	L	L	L	L	L	H	L
AF REC $\overline{P}$	MA-251 IC201④	O	L	L	L	L	L	L	L	L	L	H	L
AF SWP	MA-251 IC201⑱	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1
$\overline{\text{FULL ERS}}$	MA-251 IC201㊷	O (O.D)	H	H	H	H	H	H	H	H	H	L	H

*1. 30 Hz 50% duty pulse approx. 5 msec delayed from RF SW P.
*2. Selected by REC mode selector. SP mode: "L".
*3. Selected by tape recording mode. SP mode: "L".

6-6. SYSTEM CONTROL AND RF MODULATOR – INPUT SELECTION BLOCK INTERFACE

Signal	Pin No.	I/O	I/O level
LINE 1	MA-251 IC201㉓	O	*1. Input select control signal.
LINE 2	MA-251 IC201㉒	O	

*1.

Signal \ Input	Tuner	LINE 1	LINE 2
LINE 1 ㉓	L	H	L
LINE 2 ㉒	L	L	H

6-7. SERVO/SYSTEM CONTROL MICROPROCESSOR PIN FUNCTION (MA-251 BOARD IC201 CXP-87248A-008Q: SLV-790, 960)

Pin No.	Pin name	I/O	Function
1	RF SWP	O	RF switching pulse output
2	QVD	O	Quasi VD pulse output
3	QHD ENABLE	O	Quasi HD voltage level control
4	AF REC P	O	"H" output when hi-fi audio REC
5	NTSC	O	"H" PAL "L" when NTSC mode
6	FE ON	O	Flying erase ON/OFF
7	REC CTL	O	REC CTL signal output
8	CAP TRQ3	O	Capstan current control
9	APC2	I	APC control input terminal 2
10	APC1	I	APC control input terminal 1
11	NA REC P	I/O	Normal audio recording mode H: recording mode
12	SP/EP/LP	O	"L" when SP mode "H" when EP/LP mode
13	CAM LOAD	I	Loading motor rotating direction control
14	CAM UNLOAD	I	Loading motor rotating direction control
15	C IN (REC PRF)	I	Erasing protection tab, cassette IN detection input
16	RENTAL	I/O	YNR control
17	NC	O	Not used
18	NC	–	Not used
19	358 NTSC	I	Tuner audio selection signal H: 3.58 XTAL
20	NT JUDGE	I	4.43/3.58 judge input
21	BACK ON	O	Not used
22	PAL 60	O	NTSC PB control signal "H" when NTSC PB on pal TV
23	TV/VTR	O	"L" when VTR mode "H" when TV mode
24	AV CONT	O	ON/OFF control
25	MESECAM	I/O	"L" in NT mode
26	CBC ON	O	Cable box control on
27	MODE 4	I	Mechanism section CAM encoder input
28	MODE 3	I	Mechanism section CAM encoder input
29	MODE 2	I	Mechanism section CAM encoder input
30	MODE 1	I	Mechanism section CAM encoder input
31	CAM 12V	O	CAM motor reference voltage
32	T/E LED	O	T/E LED output
33	CAP TRQ2	O	Capstan current control signal 2 L: FF/REW to STOP
34	CAP TRQ1	O	Capstan current control signal 1 L: SLOW speed down
35	CAP STOP	O	Capstan STOP signal output
36	FULL ERS	O	Full erase control
37	NC	O	Not used
38	NC	O	Not used
39	MP	I	Fixed to L
40	ASURA RESET	I	System reset input
41	VSS	–	GND
42	XTAL	–	System clock 16 MHz
43	EXTAL	–	System clock 16 MHz
44	ASURA CS	I	S/S microcomputer chip select signal
45	S IN 0	I	Serial communication signal
46	S OUT 0	O	Serial communication signal
47	SCLK	O	Serial communication signal
48	NICOL ON	O	?
49	F MONO	O	Tuner Audio Select
50	EDIT	O	EDIT control

Pin No.	Pin name	I/O	Function
51	LINE 3 CONT	O	Input selection control signal 3
52	AVSS	–	UNSW GND
53	AVREF	–	AD port reference input UNSW 5V
54	AVDD	–	UNSW 5V
55	APC ERROR	I	APC error input
56	NTPB SW	I	NTSC PB switch
57	DEST2 DEW	I	DEW sensor input Not used
58	VA ADJ	I	ADJ mode 0V: SWP Adj 2.5V: HiFi Adj
59	AF ENV	I	Hi-Fi audio playback signal envelope
60	RF ENV	I	Video playback signal envelope
61	T SENS	I	Take up end sensor input
62	S SENS	I	Supply end sensor input
63	S REEL FG	I	S side reel FG input
64	T REEL FG	I	T side reel FG input
66	VDD	I	5V
66	V SYNC	I	Composite sync input
67	PB CTL	I	Playback CTL input
68	DRM PG	I	Drum PG input
69	DRM FG	I	Drum FG input
70	CAP FG	I	Capstan FG input
71	POWER SAVE CONT	O	Power save control signal output
72	CAP RVS	O	Capstan reverse control H when Reverse
73	CAP DA	O	Capstan error D/A output
74	DRUM DA	O	Drum PG input
75	CTL RED	O	"H" CTL write
76	CTL STEP	O	CTL amp, STEP operation control
77	VDD	I	5V
78	VDD	O	5V
79	CTL INDEX	O	CTL INDEX signal input
80	SO1	I/O	Signal for serial communication
81	SCLK1	I/O	Signal for serial communication
82	LINE 2 CONT	I	Input selection control signal 2
83	LINE 1 CONT	O	Input selection control signal
84	APC PWM	O	PWM output for APC
85	NC	I	Not used
86	NC	–	Not used
87	NC	–	Not used
88	VSS	–	GND
89	VDD	–	5V
90	NC		Not used
91	ORC SETTEI	O	H when ORC measurement
92	A MUTE	O	"H" when audio Mute
93	SP	O	Tape speed Select
94	POWER CONT 2	O	Power control signal 2
95	NA PB	O	Audio output control signal H when normal audio playback
96	AF REC	O	"H" output when hi-fi audio REC
97	JOG	O	"H" when trick play mode
98	V PB	O	Video system playback mode "L" when playback
99	STEP PLS	O	Step pulse H when Capstan step driving
100	AF SWP	O	AF switching pulse output

6-8. TUNER/TIMER MODE CONTROL PIN FUNCTION (MA-251 BOARD IC151 CXP82948-002Q)

Pin. No.	Pin Name	I/O	Function
1	EDS DAV	I	Line 21H output pulse. Pulse signal synchronized with line 21 of input video signal.
2	POWER FAIL	I	Power failure detect signal input.
3	H DET	I	Video signal detect signal input
4	SIRCS IN	I	SIRCS signal input
5	EEP BUSY	I	EEP Busy signal input
6	SIRCS OUT	O	SIRCS signal output
7	BUZZER	O	Buzzer output
8	STEREO	O	Tuner audio mode input (stereo)
9	EEP RST	O	EEP ROM reset signal output (stereo)
10	SCK0	O	Clock for serial communication
11	SI0	I	Serial data input
12	SO0	O	Serial data output
13	EEP CS	O	EEP ROM chip select signal output
14	LANC IN	I	LANC input
15	LANCE OUT	O	LANC output
16	A/D0	I	Key reading A/D input
17	A/D1	I	Key reading A/D input
18	A/D2	I	Key reading A/D input
19	A/D3	I	Key reading A/D input
20	A/D4	I	Key reading A/D input
21	A/D5	I	Key reading A/D input
22	A/D6	I	Key reading A/D input
23	AFT	I	Key reading A/D input
24	AVDD	–	UNSW 5V
25	AV REF	–	AD port reference input UNSW 5V
26	SCL0	O	I²C BUS (clock)
27	CG CS	O	Character generator chip select signal
28	SDA0	O	I²C BUS (data)
29	LED CS	O	LED driver chip select signal
30	AVSS	–	UNSW GND
31	EXTAL	–	System clock Not used
32	XTAL	–	
33	VSS	–	GND
34	RST	I	Reset signal in
35	PLL CLK	O	Tuner clock signal
36	PLL DATA	O	Tuner data signal
37	PLL ENABLE	O	Tuner enable signal
38	MAIN/SAP	O	Normal audio MAIN/SAP select control
39	SAP	I	MAIN/SAP jude input
40	EDS CS	O	EDS microcomputer chip select

Pin. No.	Pin Name	I/O	Function
41	TA MUTE	O	Tuner audio mute control signal
42	AUTO RESET	O	"H" during auto preset
43	VFDP	–	–30V
44-62	SEG 1-19	O	LCD segment output
63	N.C.	–	Not used
64	N.C.	–	Not used
65	N.C.	–	Not used
66-71	GRID 6-1	O	LCD grid output
72	VDD	–	UNSW 5V
73	TX	–	Connected to oscillator for clock
74	TEX	–	
75	NC/VPP	–	Connect to +5V
76	ASURA CS	O	S/S microcomputer chip select
77	SYS RESET	O	System reset signal output
78	POWER CONT 1	O	Power supply control signal output
79	POWER CONT 2	O	Power supply control signal output for EDS
80	CG V	I	Vertical sync. signal input

6-9. SYSTEM CONTROL – VIDEO BLOCK INTERFACE (MA-252 BOARD IC201)

Signal	Pin No.	I/O	STOP FF/ REW	TAPE THREAD-ING	TAPE UNTHREAD-ING	PB	PB • PAUSE	SLOW	×2	CUE	REVIEW	REC	REC • PAUSE
$\overline{\text{V PB}}$	MA-252 IC201㊽	O	H	H	H	L	L	L	L	L	L	H	H
RF SWP (SW30)	MA-252 IC201①	O	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
QVD	MA-252 IC201②	O	L	L	L	*3	*4	*4	*4	*4	*4	L	L
$\overline{\text{SP}}$	MA-252 IC201㊾	O	*6	*6	*6	*7	*7	*7	*7	*7	*7	*6	*6
$\overline{\text{SP/EP/EP}}$	MA-252 IC201⑫	O	*12	*12	*12	*7	*7	*7	*7	*7	*7	*12	*12
V SYNC	MA-252 IC201㊿	I	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8
CTL REC	MA-252 IC201㊸	O	L	L	L	L	L	L	L	L	L	H	L
LINE 1	MA-252 IC201⑧	O	L	L	L	L	L	L	L	L	L	L	L
JOG	MA-252 IC201㊼	O	L	L	L	L	H	H	H	H	H	L	L
ORC SETTEI	MA-252 IC201㊶	O	L	L	L	L	L	L	L	L	L	*13	*13

*1. Foward slow mode: "HI-Z (2.5 V)" in tape stop, "L" in tape running (approx. 40 msec.).
Foward slow mode: "HI-Z (2.5 V)" in tape stop, "H" in tape running SP mode (approx. 40 msec.).
"L" in tape running EP mode (approx. 40 msec.).
*2. Synchronized with drum rotation. 30 Hz 50% duty pulse.
*3. Normally "L". "H" when CTL signal is not generated.
*4. V period "H" pulse.
*5. "H" in SP mode. "L" in LP/EP mode.
*6. Selected by REC mode. SP mode: "L"
*7. Selected by tape recording mode.

Mode / Signal	SP	LP	EP
SP ㊶	L	H	H
$\overline{\text{LP}}$ ㊾	L	H	L

*8. Composite Sync signal (positive).
*9. "H" when menu screen or blue back screen.
*10. "HI-Z (2.5 V)" in LP/EP mode. "H" in SP mode.
*11. Selected by REC mode: "H" EP mode.
*12. Selected by REC mode: "H" LP mode.
*13. "H" during APC measurement.

6-10. SYSTEM CONTROL – SERVO PERIPHERAL CIRCUIT INTERFACE (MA-252 BOARD IC201)

Signal	Pin No.	I/O	STOP	FF	REW	TAPE THREAD -ING	TAPE UNTHREAD -ING	PB	PB • PAUSE	SLOW	CUE	×2	REVIEW	REC	REC • PAUSE	PB INDEX WRT/ERS
REC CTL	MA-252 IC201⑦	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	
$\overline{\text{CAP STOP}}$	MA-252 IC201⑧	O (O.D)	L	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	L	*3	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	
STEP PLS	MA-252 IC201⑨	O	L	L	L	L	L	L	L	*2	L	L	L	L	L	
CTL REC	MA-252 IC201⑩	O	L	L	L	L	L	L	L	L	L	L	L	H	L	H
CTL-INDEX	MA-252 IC201⑪	O	L	L	L	L	L	L	L	L	L	L	L	L	L	H
$\overline{\text{PB CTL}}$	MA-252 IC201⑫	I	H	*6	*6			*1	H/L	*2	*6	*6	*6	*1	H	
DRM PG	MA-252 IC201⑬	I	*4	*7	*7	*5	*5	*7	*7	*7	*7	*7	*7	*7	*7	
DRM FG	MA-252 IC201⑭	I	*4	*8	*8	*5	*5	*8	*8	*8	*8	*8	*8	*8	*8	
CAP FG	MA-252 IC201⑮	I	H/L	*6	*6	*5	*5	*6	H/L	*9	*6	*6	*6	*6	H/L	
CAP DA	MA-252 IC201⑯	O	*10	*10	*10	*10	*10	*11	*10	*10	*11	*11	*11	*11	*10	
DRM DA	MA-252 IC201⑰	O	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	
CTL STEP	MA-252 IC201⑱	O	L	L	L	L	L	L	L	*13	L	L	L	L	L	

*1. 30 Hz or 25 Hz pulse.
*2. Pulse at tape running.
*3. Reverse logic pulse of STEP PLS.
*4. "L" when drum rotation stop.
*5. Unstable period pulse.
*6. Pulse of period in proportion to tape speed.
*7. 30 Hz or 25 Hz pulse.
*8. 360 Hz or 300 Hz or 180/150 Hz pulse.
*9. Pulse at tape running.
*10. Approx. 2 msec period "H" or "L" pulse.
*11. Approx. 1.5 msec period "H" or "L" pulse.
*12. Approx. 3 msec period "H" or "L" pulse.
*13. "H" when FWD direction STEP drive.

6-11. SYSTEM CONTROL – MECHANISM INTERFACE (MA-252 BOARD IC201)

Signal	Pin No.	I/O	EJECTED	CASSETTE LOADING	CASSETTE UNLOADING	TEPE THREAD-ING	TAPE UNTHREAD-ING	STOP	FF	REW	PB	PB • PAUSE	SLOW	×2	CUE	REVIEW	REC	REC • PAUSE
CAM LOAD	MA-252 IC201⑬	O	L	H	L	H	L	L	L	L	L	L	L	L	L	L	L	L
CAM UNLOAD	MA-252 IC201⑭	O	L	L	H	L	H	L	L	L	L	L	L	L	L	L	L	L
CAM 12V	MA-252 IC201⑮	O		H	L	H	L											
MODE 1	MA-252 IC201㉖	I	H	L	L	*8	*8	H	H	H	H	H	H	H	H	L	H	H
MODE 2	MA-252 IC201㉕	I	L	L	L	*8	*8	L	L	L	H	H	H	H	H	H	H	H
MODE 3	MA-252 IC201㉔	I	L	L	L	*8	*8	H	H	H	L	H	H	L	L	H	L	H
MODE 4	MA-252 IC201㉗	I	L	H	H	*8	*8	H	L	L	L	L	L	L	L	L	L	L
C IN (REC PRF)	MA-252 IC201⑲	I	L	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
TREEL FG	MA-252 IC201㉑	I	H/L	H/L	H/L	H/L	H/L	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
SREEL FG	MA-252 IC201㉒	I	H/L	H/L	H/L	*3	*3	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
T/E LED	MA-252 IC201㉜	O (O.D)	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
CAP TRQ 1	MA-252 IC201㉞	O (O.D)											*8					
CAP TRQ 2	MA-252 IC201㉝	O (O.D)										L	*8					L
CAP TRQ 3	MA-252 IC201⑤	O (O.D)							H	H			*8		H	H		
$\overline{\text{CAP STOP}}$	MA-252 IC201㉘	O (O.D)	L	L	L	H	H	L	H	H	H	L	*5	H	H	H	H	L
CAP RVS	MA-252 IC201⑫	O	H			L	H	H/L	L	H	L	L	L/*5	L	L	H	L	L
CAP DA	MA-252 IC201⑰	O																
T SENS	MA-252 IC201㉛	I	*4	*4	*4	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
S SENS	MA-252 IC201㉒	I	*4	*4	*4	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7

*1. "H" when mechanism mode transition.
*2. "L" when erasing protection tab is bent, "H" when not bent.
*3. Pause of period in proportion to reel rotating speed.
*4. Approx. 2 msec period "H" pulse.
*5. Pulse at tape running.
*6. "L" when tape running and CAP RVS is "H".
*7. Normally "L". 2 msec period "H" pulse when tape top or tape end is detected.
*8. Uncertainty.

SECTION 7
ADJUSTMENTS

During the adjustment, see the Parts Arrangement Diagram for Adjustment on page 7-10.

7-1. MECHANICAL ADJUSTMENTS

Refer to the SERVICE MANUAL of VHS MECHANICAL ADJUSTMENT IV.

7-2. ELECTRICAL ADJUSTMENTS

2-1. PRE-ADJUSTMENT PREPARATIONS

Necessary items and indications for total adjustment of electric circuit of this machine will be described in this chapter.

2-1-1. Instruments to be Used.

1) Color TV
2) Oscilloscope 1or 2 phenomena, band more than 30 MHz, deley mode, as provided.
3) Frequency counter (min. 8 digits)
4) NTSC pattern generator
5) Digital voltmeter
6) Audio level meter
7) Audio generator
8) Modulation Analyzer
9) Distortion factor meter
10) Attenuator
11) Alignmeter tape
    Part Code: 8-192-605-32 (KRV-51N2)
13) Extension cable (13P)
    Part code: J-6090-054-A
    RP-197/198/202/203 (CN501) ↔ DRUM

2-1-2. Connection

Unless otherwise specified, connect and adjust the measuring instruments as shown in the following diagram.

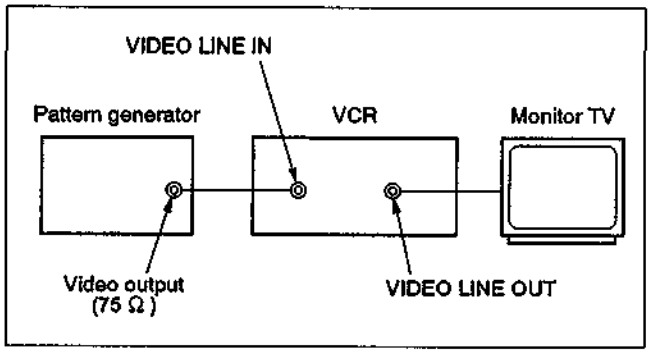


Fig. 7-2-1

2-1-3. Set-up of Adjutment

In this adjustment, NTSC pattern generator is connected with LINE input signal terminal. When check to tuner, connected AERIAL terminal. Check that the amplitudes of video signal NTSC signal, of picture portions, and of burst signals are flat at approximately 0.3, 0.7 and 0.3 V, respectively, and that the level ratio of the burst signal and "red" signal are 0.30: 0.66. Fig. 7-2-2. shows video signals (color bars) used in adjusting the video section.

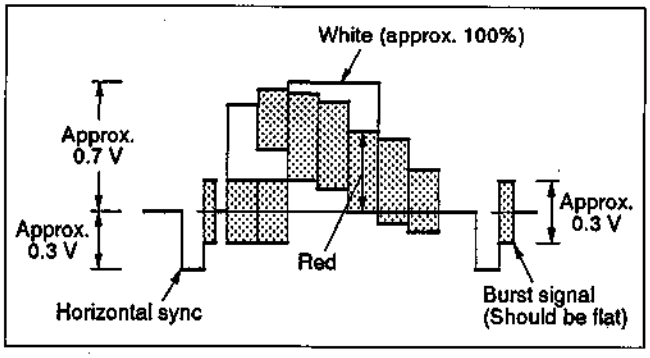


Fig. 7-2-2.

2-1-4. Alignment Tape
[Alignment Tape (KRV-51N2)]

	Mode	Time	Video signal	Audio signal (HiFi/Normal)
1	SP	Seven minutes	Color bar	400Hz
2		Three minutes	Monoscope	400Hz
3	EP	Seven minutes	Color bar	400Hz
4		Three minutes	Monoscope	—

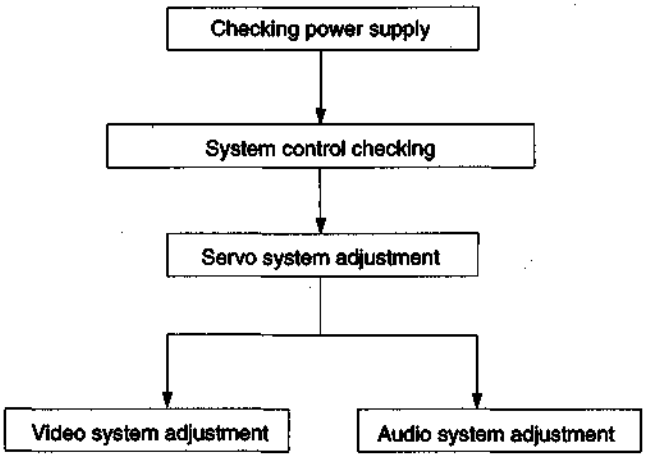
2-1-5. Specified I/O Level and Impedance

Input/output terminal

Video inputs	LINE IN : phono jack 1 Vp-p, 75Ω, unbalanced, sync negative
Audio inputs	LINE IN : phono jacks 47 kΩ, –7.5 dBs (0 dBs = 0.775 Vrms) More than 10 kΩ+, –4 dBs
Video outputs	LINE OUT : phono jack 1 Vp-p, 75Ω, unbalanced, sync negative
Audio outputs	LINE OUT : phono jacks –7.5 dBs at load impedance 47kΩ Output impedance : less than 10Ω

2-1-6. Adjusting Sequence

Make the electrical adjustment in the following sequence.



2-2. POWER SUPPLY CHECK (PS-355/356/367/368 BOARD)

Mode	E-E
Measuring Instrument	Digital voltmeter
+F, –F check	
Measurement Point	Pin ④ (+), ①(–) of CN101
Specified Value	4.3±1Vdc
–30V check	
Measurement Point	Pin ② of , CN101
Specified Value	-30±3Vdc
–8V check	
Measurement Point	Pin ⑤ of CN101
Specified Value	13.5±2Vdc
D6V check	
Measurement Point	Pin ⑥ of CN101
Specified Value	5.9±0.5V
SW12V	
Measurement Point	Pin ⑧ of CN101
Specified Value	12±1Vdc
MTR12V check	
Measurement Point	Pin ⑫ of CN101
Specified Value	12±0.5Vdc
13 V check	
Measurement Point	Pin ⑭ of CN101
Specified Value	13±1Vdc
+38V check	
Measurement Point	Pin ⑯ of CN101
Specified Value	38.0±3Vdc
SW5 V check	
Measurement Point	Pin ⑰ of CN101
Specified Value	5 ±0.5 Vdc

Checking Method:

1) Confirm that each voltage meets its specified value.

2-3. SYSTEM CONTROL CHECK

2-3-1. Clock Check (MA-251/252)

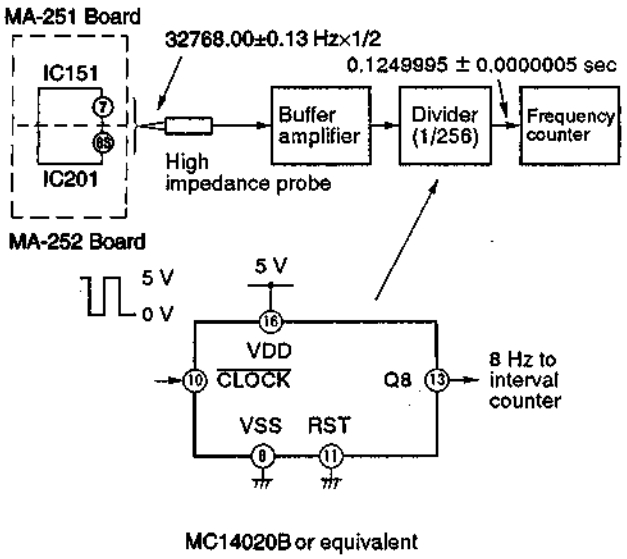
Purpose:

Adjust to improve the clock precision. When it is out of order, errors gradually increases.

Measurement point	Pin ⑦ of IC151 : MA-251 Board Pin ㊸ of IC201 : MA-252 Board
Measurement Equipment	Frequency counter (Interval counter mode)
Specified Value	0.1249995±0.0000005 sec

Confirmation Method:

1) Connect to the GND from IC151 pin ⑲ through a resistor 22kΩ (1-249-489-00): MA-251 board
2) Connect Pin ㊹ of IC401 to ground. (The set goes to adjusting mode.): MA-252 Board
3) Connect the frequency counter as shown below.
4) Confirm that the oscillation frequency is the specified value.



MC14020B or equivalent

Fig. 7-2-3.

2-4. SERVO SYSTEM Adjustment

2-4-1. Switching Position Adjustment (MA-251/252 Board)

Purpose:

Adjust the interval between A ch and B ch of tape playback output. Improve the interchangeability with other tapes and sets.
When it is out of order, the interval appears on the screen, the screen is disturbed.

Mode	PB
Signal	Alignment tape SP mode color bar
Measurement Point	CH1: VIDEO LINE OUT CH2: Pin ⑤ of CN502 (RP-197/198/202/203 board) (RF SWP)
Measuring Instrument	Oscilloscope
Specified Value	6.5±0.5H (410±32μsec)

Adjusting Method:

1) Connect IC201 pin ㊸ to the GND for about 1 second to activate the RF switching position adjustment mode.
2) Using the channel + and – buttons, adjust to 410±32μsec (6.5±0.5H).

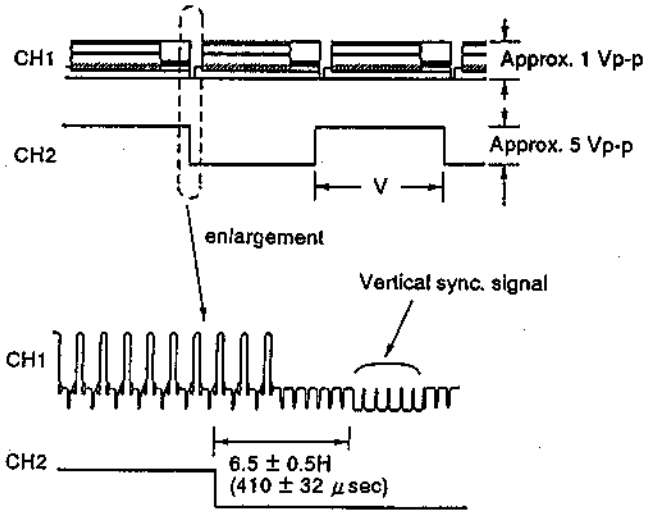


Fig. 7-2-4.

2-5. VIDEO SYSTEM ADJUSTMENT

Adjust the video system in the following sequence as a rule. The color video signal supplied from the pattern generator is used as a video input signal for video system adjustment in the recording mode. Make sure that sync. and color burst signals meet requirements specified at set up of adjustment shown in Fig. 7-2-1.

[Adjustment Sequence]

2-5-1. Recording Y Signal Level Check
2-5-2. White Clip, Dark Clip Check
2-5-3. Playback Y Signal Level Check
2-5-4. Recording Chroma Level Check
2-5-5. Sync. AGC Check
2-5-6. X'tal Oscillation Frequency Check
2-5-7. VCO Oscillation Frequency Adjustment

2-5-1. Recording Y Signal Level Check (MA-251/252 Board)

Purpose:

Check the brightness signal level after passing through the V/C separating circuit.

Mode	E-E
Signal	Color bar
Measurement point	Emitter of Q352
Measurement equipment	Oscilloscope
Specified value	950±100mVp-p

Confirmation Method:

1) Confirm that the record Y level is 950±100mVp-p.

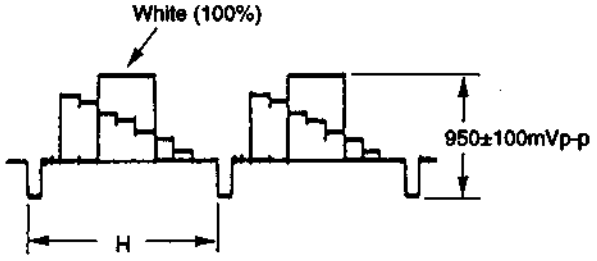


Fig. 7-2-5.

2-5-2. White Clip, Dark Clip Check (MA-251/252 Board)

Purpose:

Confirm that no overshoot is generated by the pre-emphasis circuit. If shifted, the signals are overmodulated, thus causing a noise in the images.

Mode	E-E
Signal	Color bar
Measurement point	Pin 7 of IC302
Measurement equipment	Oscilloscope
Specified value	White clip: 190±15% Dark clip: 52±10%

Confirmation Method:

1) Confirm that the white clip is 190±15%, on condition that the level between white and sync. is 100%.
2) Confirm that the dark clip is 52±10%, on condition that the level between white and sync. is 100%

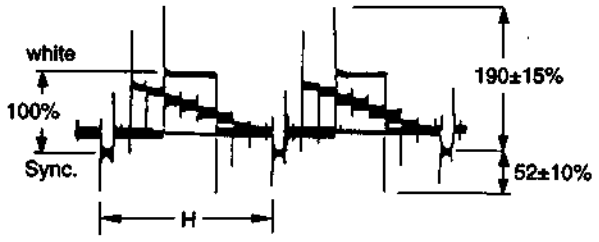


Fig. 7-2-6.

2-5-3. Playback Y Signal Level Check (MA-251/252 Board)

Purpose:

Confirm that the playback Y signal level is correct.

Mode	PB
Signal	Alignment tape SP color bar
Measurement point	VIDEO LINE OUT
Measurement equipment	Oscilloscope
Specified value	2.05±0.18Vp-p

Note: Make this adjustment with the EDIT switch turned off. (MA-251 Board)

Confirmation Method:

1) Confirm that the play Y level is 2.05±0.18Vp-p.

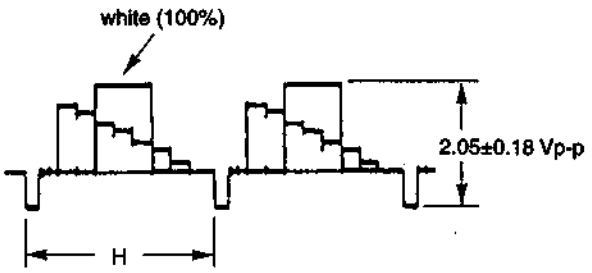


Fig. 7-2-7.

2-5-4. Recording Chroma Level Check (MA-251/252 Board)

Purpose:

Check the chroma signal level after passing through the Y/C separating circuit.

If shifted, the image is roughened and another color may appear on the edges.

Mode	E-E
Signal	Color bar
Measurement point	Pin ㊳ of IC302
Measurement equipment	Oscilloscope
Specified value	190±30mVp-p

Confirmation Method:

1) Confirm that the record chroma level is 190±30mVp-p.

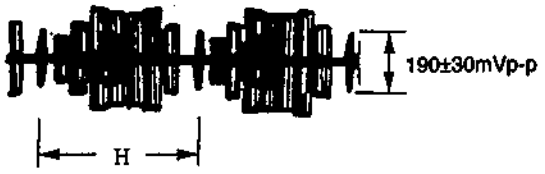


Fig. 7-2-8.

2-5-5. Sync. AGC Check (MA-251/252 Board)

Purpose:

Confirm that the video level is correct.

Mode	E-E
Signal	Color bar
Measurement point	VIDEO LINE OUT
Measurement equipment	Oscilloscope
Specified value	2.05±0.14Vp-p

Note: Video output terminal must be terminated at 75Ω.

Confirmation Method:

1) Confirm that the sync. AGC level is 2.05±0.14Vp-p.

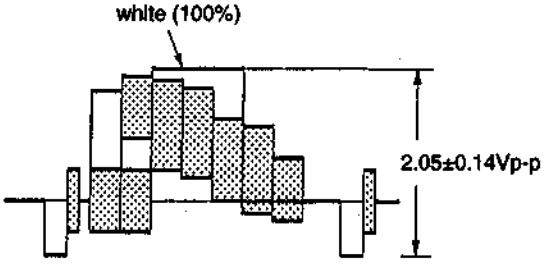


Fig. 7-2-9.

2-5-6. X'tal Oscillation Frequency Check (MA-251/252)

Purpose:

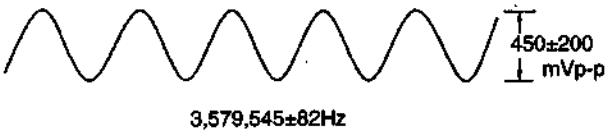
Confirm that the fsc is correct.

Mode	PB
Signal	Alignment tape SP color bar
Measurement point	Pin ㉗ of IC302
Measurement equipment	Frequency counter, Oscilloscope
Specified value	3,579,545±82Hz

Note: connect the frequency counter through a probe of high input impedance (about 10MΩ) and low capacity (10pF or less).

Confirmation Method:

1) Confirm that the frequency is 3,579,545±82Hz
2) Confirm that the amplitude is 450±200mVp-p.



3,579,545±82Hz

Fig. 7-2-10.

2-5-7. VCO Oscillation Frequency Adjustment (MA-252 Board)

Purpose:

Adjust to set the character position on the screen.

Mode	E-E
Signal	Color bar
Measurement point	Pin ㉕ of IC401
Measuring Instrument	Oscilloscope (DC mode)
Adjusting Element	CT401
Specified value	+2.75±0.05 V

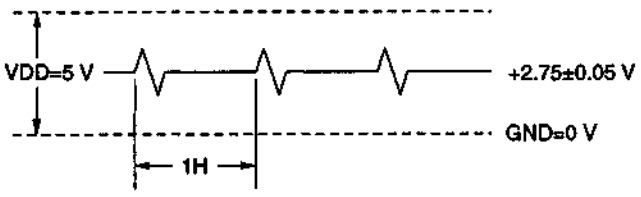


Fig. 7-2-11.

2-6. AUDIO SYSTEM ADJUSTMENTS

Adjust both Lch and Rch.

[Connection]

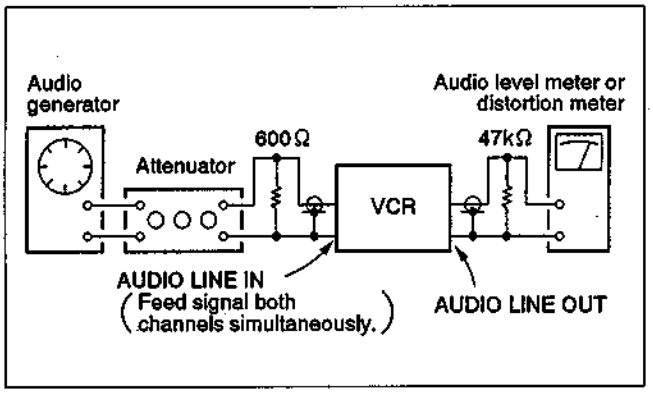


Fig. 7-2-12

2-6-1. Hi-Fi Audio System Adjustment

Set switches and knobs to the following positions to make adjustment unless otherwise specified.
INPUT SELECT switch ..... LINE
AUDIO MONITOR ..... STEREO

[Adjusting Sequence]

1. VCO fo adjustment
2. Deviation check
3. BPF fo adjustment
4. AF switching position

1. VCO fo Adjustment (MA-251/252 Board)

Purpose:

Adjust to have interchangeability in HiFi audio.
When it is out of order, the sound is distorted.

Mode	REC
Signal	No signal
Measuring Instrument	Frequency counter
1.3 MHz Adjustment	
Measurement Point	Pin ① of CN501 Auto tracking ON (Remote commander)
Adjusting Element	RV521 (R CH)
Specified Value	1.3 MHz ± 1 kHz
1.7 MHz Adjustment	
Measurement Point	Pin ① of CN501 Auto tracking OFF (Remote commander)
Adjusting Element	RV531 (R CH)
Specified Value	1.7 MHz±1kHz

Note: Connect the frequency counter through a probe of high input impedance (more than 1 MΩ) and low capacity (10 pF or less).

Connection:

Connect pin ② and ③ of CN881 with a jumper wire.

Adjusting Method:

1) Connect the frequency counter to pin ① of CN501.
2) Adjust each volume so that each frequency meets its specified value.

2. Deviation Check (MA-251/252 Board)

Purpose:

Set the HiFi audio signal level to specified value.
Adjust to have interchangeability with other tapes and sets.
When it is out of order, the volume of sound is different on playback.

Mode	REC
Signal	Pin ② (Lch), ① (Rch) of IC501 400Hz –7.5 dBs (920m Vp-p)
Measurement Point	pin ① of CN501 Lch: Auto tracking ON (Remote commander) Rch: Auto tracking OFF (Remote commander)
Measurement Equipment	Modulation analyzer
Specified Value	50±5kHz

Connection:

Connect pin ② and ③ of CN881 with a jumper wire.

3. BPF fo Adjustment (MA-251/252 Board)

Purpose:

Adjust to separate carrier component precisely and to operate normally the filter for cutting video signal.
When it is out of order, the sound is distorted.

Mode	PB
Signal	1.505 MHz Input 200 mVp-p: Pin ③ of CN501
Measurement point	Pin ① of CN501
Measuring Instrument	Oscilloscope
Adjusting Element	RV541

Note: Talk a trigger from AF SWP (Pin ⑥ of CN501).

Connection:

1) Feed 1.505 MHz, 200 mVp-p sine wave to Pin ③ of CN503.

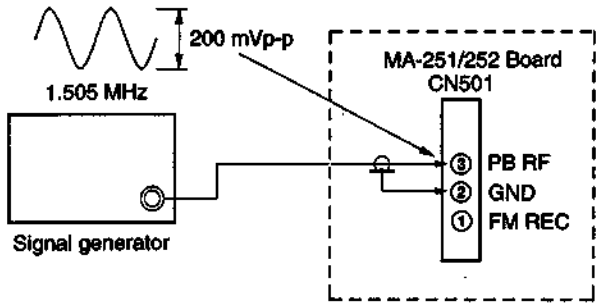


Fig. 7-2-13.

Adjusting method:

1) In the play mode, turn off the auto tracking from the remote controller.
2) Adjust RV541 so that the amplitudes of A and B are on the same level (±2mVp-p).

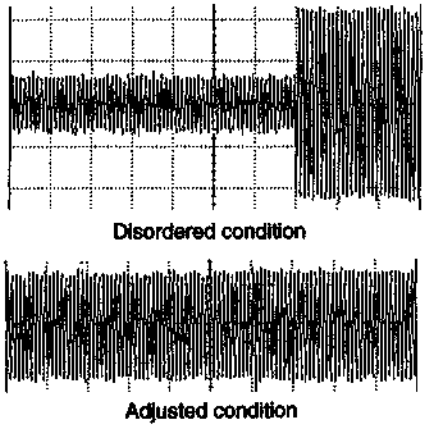


Fig. 7-2-14

4. AF Switching Position Adjustment (MA-251/252 Board)

Purpose:

Adjust the interval between A CH and B CH of tape playback output. Improve the interchangeability with other tapes and sets.
When it is out of order, noisy sound is increased and big noise is heard.

Mode	PB
Signal	Alignment tape SP mode color bar
Measurement point	CH1: Pin ③ of CN502 (RP-197/198/201/202 Board) CH2: Pin ① of CN707 (RP-197/198/201/202 Board)
Measuring Instrument	Oscilloscope
Specified Value	Fig. 7-2-15

Adjusting method:

1) Connect IC201 pin 58 to the GND for about 1 second to activate the RF switching position adjustment mode.
2) Press the record button to activate the AF switching position adjustment mode.
3) Using the channels + and – buttons, minimize a chipped portion. At this time, confirm that a noisy sound is not heard.

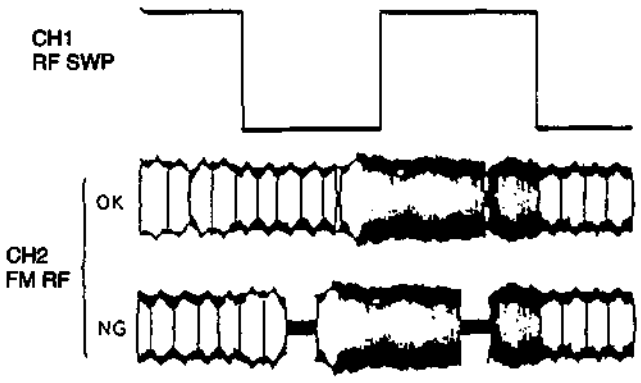


Fig. 7-2-15.

2-6-2. Normal Audio System Adjustment

- Make adjustment in the SP mode, unless otherwise specified. Use a normal VHS cassette for an adjustment tape.
- Set AUDIO MONITOR to normal.

[Adjustment Sequence]

1. **ACE Head Adjustment**
2. **E-E Output Level Check**
3. **Recording Bias Adjustment**
4. **Overall Level Characteristic and Distortion Factor Check**
5. **Overall S/N Check**

1. ACE Head Adjustment

Refer to the service manual of VHS MECHANICAL ADJUSTMENT IV.

2. E-E Output Level Check

Purpose:

Confirm that the output level against the reference input is within the specification.

Mode	E-E
Signal	L, R: 400Hz, –7.5 dBs
Measurement point	Audio output terminal
Measurement equipment	Audio level meter
Specified value	–7.5±2dBs

Confirmation Method:

1) Simultaneously input a signal of 400Hz, –7.5dBs to both L and R channels of Audio Line Input.
2) Confirm that the audio output level is –7.5±2dBs.

3. Recording Bias Check (MA-251/252 Board)

Purpose:

Confirm that the frequency characteristic is within the specification.

Mode	REC and PB (SP mode)
Signal	400Hz, –27.5 dBs 7kHz, –27.5 dBs
Measurement point	Audio output terminal
Measurement equipment	Audio level meter
Specified value	0±3dB

Note: Tape path adjustment must have been completed.

Confirmation Method:

1) Supply a signal of 400 Hz, -27.5 dBs to both L and R channels of Audio Line Input.
2) Connect the audio level meter to the Audio Line Output.
3) Adjust the attenuator so that the audio level meter will indicate –27.5 dBs.
4) Make recording in the SP mode.
5) Set an audio line input signal to 7 kHz and make recording.
6) Playback a recorded portion, and measure output levels at 400 Hz and 7 kHz.
7) Confirm that the 7 kHz playback output level within a range of the 400 Hz playback output level 0±1 dB.

4. Overall Level Characteristic and Distortion Factor Check

Purpose:

Check the record level, play level, and distortion factor against the reference input.

Mode	REC and PB (SP mode)
Signal	400Hz, –7.5 dBs
Measurement point	Audio output terminal
Measurement equipment	Audio level meter and distortion factor meter
Specified value	Playback level: –7.5±3dBs Distortion factor: 4% or less

Confirmation Method:

1) Supply an audio signal of 400Hz, –7.5 dBs simultaneously to both L and R channels of Audio Line Input.
2) Make recording
3) Play back a recorded portion.
4) Confirm that a playback level is –7.5±3dBs.
5) Confirm that a distortion factor is within 4%.

5. Overall S/N Check

Purpose:

Confirm that the S/N is within the specification.

Mode	REC and PB (SP mode)
Signal	No signal
Measurement point	Audio output terminal
Measurement equipment	Audio level meter
Specified value	–46dB or more

Confirmation Method:

1) Connect both L and R channels of audio line input to the GND.
2) Start recording.
3) Play the recorded part to confirm that the noise is below –46dB.

Hookup 5

Pages 22 to 24

DSS (Digital Satellite System) receiver

Recommended use

Use this hookup if you have a DSS receiver. It allows the VCR's cable box control feature to control the channel on the DSS receiver, simplifying the recording process. A list of compatible DSS receivers is on page 38.

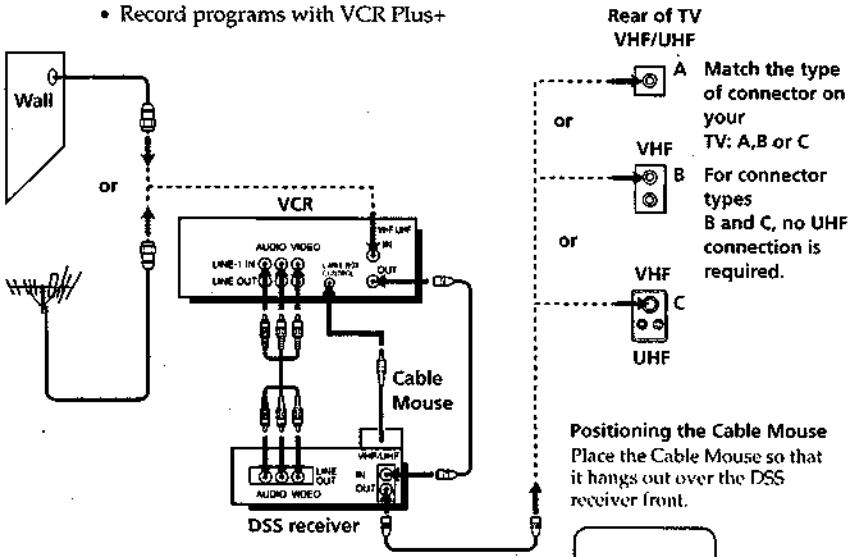
DSS (Digital Satellite System) is a satellite broadcast that provides superior digital-quality video and crisp digital-quality audio. A variety of program packages are available through your program providers. It also has program guides that are sorted by program categories.

What you can do with this hookup

- Record any channels using the VCR's cable box control feature to select channels on the DSS receiver.

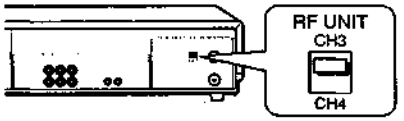
What you can't do

- Record with the DSS receiver turned off
- Record any channels from cable or an antenna
  (To record channels from cable or an antenna, turn off the cable box control feature.)
- Use a cable box
- Record programs with VCR Plus+

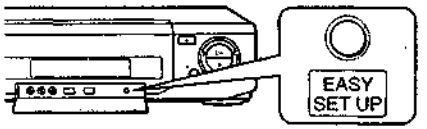


Hookup 5: VCR setup

1 Set the RF UNIT switch to CH 3 or CH4, whichever channel is not used in your area. If both are used, set the switch to either channel.



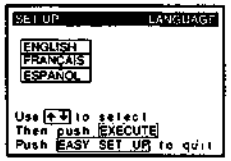
For details, see page 72. If you made A/V connections (from page 8), you can skip this step.



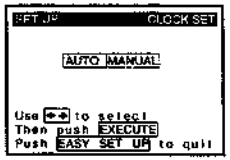
2 Turn on your DSS receiver.

3 Press EASY SET UP on the VCR.

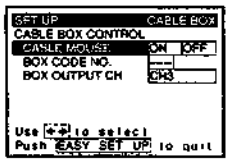
❶ The LANGUAGE menu appears. Change the on-screen display language to French (FRANÇAIS) or Spanish (ESPAÑOL) if desired, and press EXECUTE.
For details, see page 29.



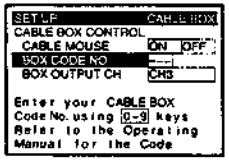
❷ The CLOCK SET menu appears. Select AUTO and press EXECUTE. For details, see page 30.



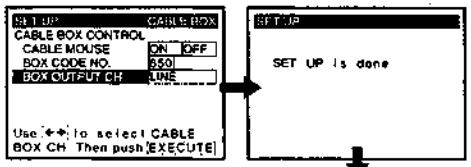
❸ The CABLE BOX CONTROL menu appears. Select ON. For details, see page 36.



❹ Enter your DSS receiver code number and press CURSOR↓.
For details, see page 36.



❺ Set your DSS receiver output channel (BOX OUTPUT CH) to LINE and press EXECUTE.



Normal display

Hookup 5: VCR setup

Automatic clock setting

Once you've set up the VCR, it automatically sets the clock the first time you turn off the VCR. After that, whenever you turn off the VCR, it checks the time and adjusts the clock, even for Daylight Saving Time. The VCR sets the clock by picking up a time signal provided by some TV channels.

If you want to use the timer to record right away, or if the channels in your area do not carry time signals, set the clock manually. For details, see pages 34-35.

Notes

To successfully record a program from the DSS receiver, proceed as follows:

- Leave the DSS receiver on all the time.
- Turn off the display (menu screen, channel number, etc.) of the DSS receiver.
- To record or receive locked channels, unlock the channel before the VCR starts recording.
- To set pay-per-view programs in the timer setting, order the pay-per-view program before the VCR starts recording.
- Some programs are copy protected. You cannot record these programs.

Hookup 6

Pages 25 to 28

Incompatible cable box with only a few scrambled channels, using an A/B switch

Recommended use

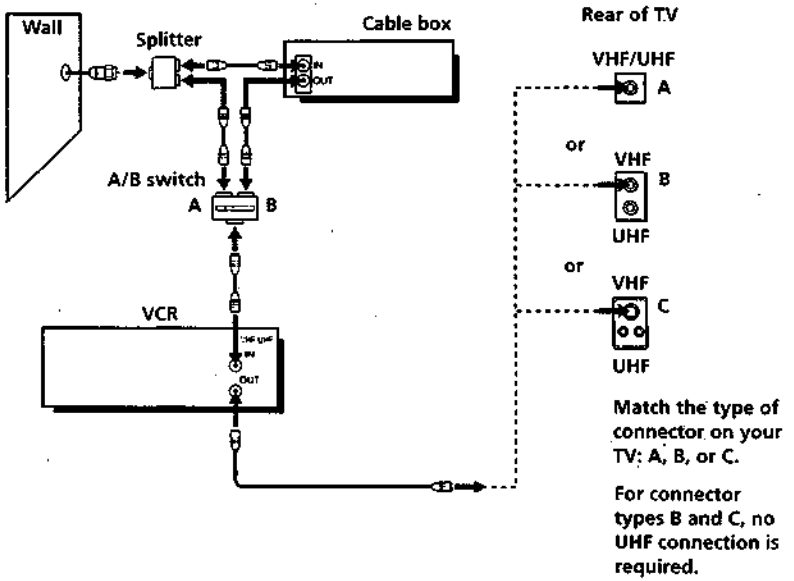
By using an A/B switch (not supplied), this hookup allows you to record both scrambled and unscrambled channels conveniently.

What you can do with this hookup

- Record any unscrambled channel by selecting the channel directly on the VCR (the A/B switch is set to A)
- Record any scrambled channel by selecting the channel on the cable box (the A/B switch is set to B)

What you can't do

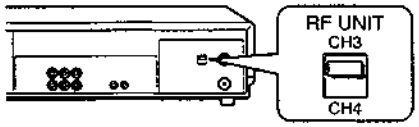
- Record one scrambled channel while watching another channel (the A/B switch is set to B)



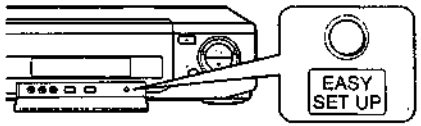
continued

Hookup 6: VCR setup

1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.



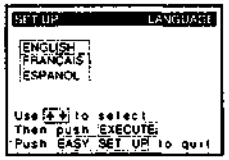
For details, see page 72. If you made A/V connections (from page 8), you can skip this step.



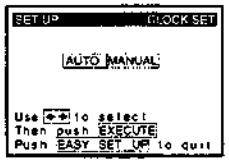
2 Set the A/B switch to "A."

3 Press EASY SET UP on the VCR.

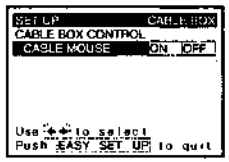
❶ The LANGUAGE menu appears. Change the on-screen display language to French (FRANÇAIS) or Spanish (ESPAÑOL) if desired, and press EXECUTE. For details, see page 29.



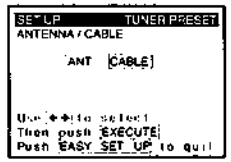
❷ The CLOCK SET menu appears. Select AUTO and press EXECUTE. For details, see page 30.



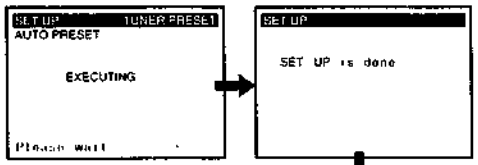
❸ The CABLE BOX CONTROL menu appears. Select OFF and press EXECUTE. For details, see page 36.



❹ The TUNER PRESET menu appears. Set ANTENNA/CABLE to CABLE and press EXECUTE. For details, see page 41.



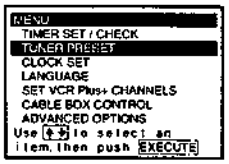
❺ The AUTO PRESET starts.



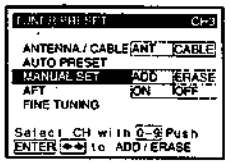
Normal display

4 Preset the cable box output channel (usually 2, 3 or 4). For details, see page 36.

❶ Press MENU and select TUNER PRESET.



❷ Enter the cable box output channel. Set MANUAL SET to ADD and press EXECUTE.



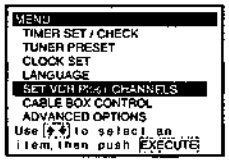
continued

Hookup 6: VCR Plus+ channel setup

1 Find the VCR Plus+ Channel Listing in your program guide. For details, see page 45.

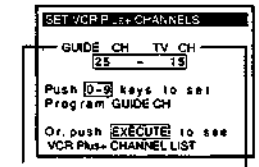
2 For unscrambled channels, if the channels in the program guide are different from the channels that you actually use on your TV, set the channels that are different as follows. For details, see page 46.

❶ Press MENU and select SET VCR Plus+ CHANNELS.



❷ Enter the program guide channel, then the channel you use on your TV.

❸ Press EXECUTE.

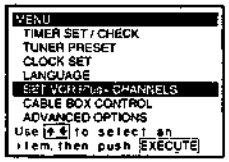


Program guide channel

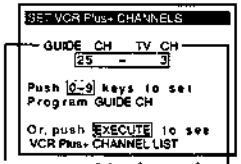
Your actual TV channel

3 For scrambled channels, enter all the scambled channels you want to record and the cable box output channel (usually 2, 3, or 4). For details, see page 46.

❶ Press MENU and select SET VCR Plus+ CHANNELS.



❷ Enter the program guide channel, then the cable box output channel.

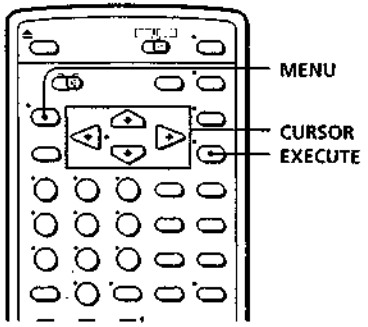


Program guide channel

Cable box output channel

Selecting a language

If you prefer French or Spanish to English, you can change the on-screen display language.

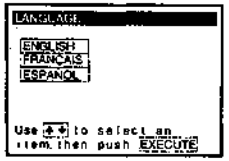


1 MENU

CURSOR

Press MENU, then press CURSOR ↑/↓ to move the cursor (▮) to LANGUAGE and press EXECUTE.

When using the EASY SET UP procedure, skip this step.



2 CURSOR

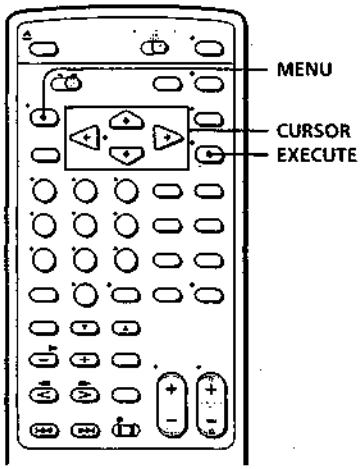
Press CURSOR ↑/↓ to select ENGLISH, FRANCAIS or ESPAÑOL, then press EXECUTE.

Setting the clock

Using the Auto Clock Set feature

Some TV and cable channels transmit time signals with their broadcasts. Your VCR can pick up this time signal to automatically set the clock.

The Auto Clock Set feature works only if a channel in your area is broadcasting a time signal. If broadcasters in your area are not yet sending time signals, set the time manually (page 34).

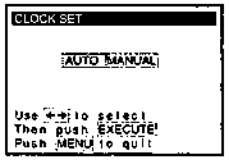


1 MENU

CURSOR

Press MENU, then press CURSOR ↑/↓ to move the cursor (▮) to CLOCK SET and press EXECUTE.

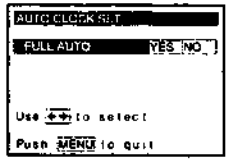
When using the EASY SET UP procedure, skip this step.



2 CURSOR

EXECUTE

Press CURSOR ←/→ to select AUTO, then press EXECUTE.



3 CURSOR

EXECUTE

Press CURSOR ←/→ to select YES, then press EXECUTE.

4

To activate the Auto Clock Set function, turn off the VCR.

The VCR automatically sets the clock by searching for a channel that carries a time signal and sets your time zone and Daylight Saving Time (if applicable).

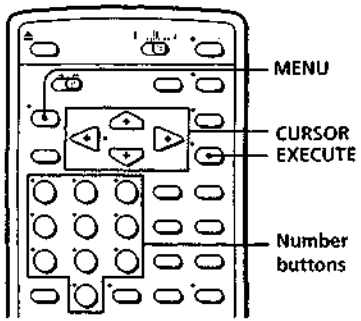
If your clock is set to the wrong time zone or Saylight Saving Time, you can adjust these settings without turning off the Auto Clock Set feature (page 32).

Notes

- The clock cannot be set automatically if you don't receive a channel that carries a time signal in your area. If so, set the clock manually.
- If there are only a few channels in your area that carry time signals, setting the clock automatically may take up to about 30 minutes. If nothing happens even after you wait about 30 minutes, set the clock manually.
- If you use Hookup 1 or Hookup 4, make sure you leave the cable box on.

continued

If the clock is not activated

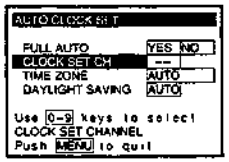


1 Follow steps 1 and 2 in "Using the Auto Clock Set feature."

The AUTO CLOCK SET menu is displayed.

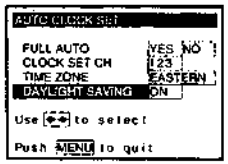
2 CURSOR ←/→

Press CURSOR ←/→ to select NO for FULL AUTO.



3 CURSOR ↑/↓/←/→

Press CURSOR ↑/↓ to highlight the item you want to set, then press CURSOR ←/→ to make the setting.



- For CLOCK SET CH

  Leave the setting to "– –" to have the VCR automatically search for a channel that carries a time signal.

  Press the number buttons to select a channel that carries a time signal.

  Use this option if you know of a channel that carries a time signal. Most PBS member stations broadcast a time signal. For the fastest response, select your local PBS station.

- For TIME ZONE

  Select the time zone of your area, or select AUTO to have the VCR automatically set your time zone.

  The options are: AUTO→ATLANTIC→EASTERN → CENTRAL → MOUNTAIN → PACIFIC → ALASKA→ HAWAII → AUTO.

- For DAYLIGHT SAVING

  Select ON or OFF (standard time), or AUTO to have the VCR automatically set the daylight saving time.

4 EXECUTE

Press EXECUTE that carries a time signal.

5 To activate the Auto Clock Set function, turn off the VCR.

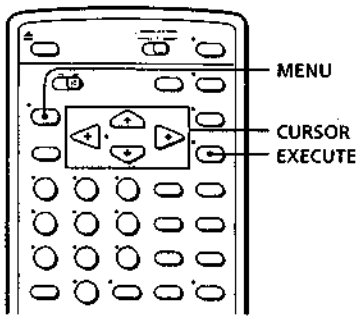
Note

- If you use both the cable box control feature and the Auto Clock Set feature, the VCR automatically changes channels on the cable box until a channel that carries a time signal is found, whenever you turn off the VCR.

  If you want to stop the search, change the channel on the cable box with the channel buttons either on the VCR or on the remote commander.

continued

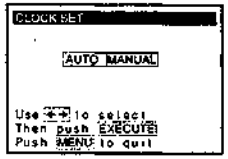
Using Manual Clock Set



1 MENU

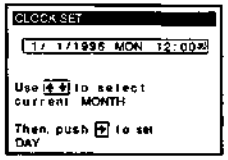
Press MENU, then press CURSOR ↑/↓ to move the cursor (▮) to CLOCK SET and press EXECUTE.

When using the EASY SET UP procedure, skip this step.



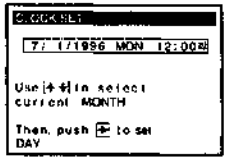
2 CURSOR

Press CURSOR ←/→ to select MANUAL, then press EXECUTE.



3 CURSOR

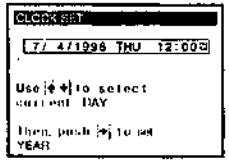
Press CURSOR ↑/↓ to set the month.



4 CURSOR

Press CURSOR → to highlight the day and press CURSOR ↑/↓ to set the day.

The day of the week is set automatically.



5 CURSOR

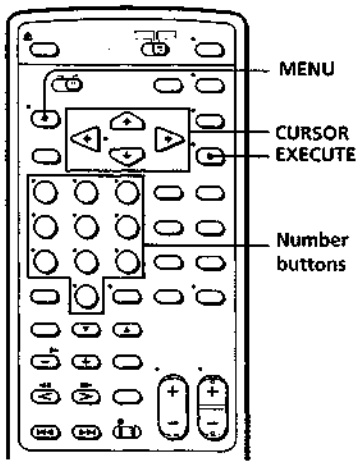
Set the year, hour and minutes in the same way as the day.

6 EXECUTE

Press EXECUTE to start the clock.

Setting up cable box control

(Skip this section if you are using Hookup 2, 3, 4 or 6.)



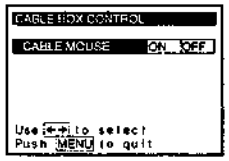
Your VCR includes a cable box control feature that allows the VCR to control most brands of cable boxes/DSS receivers via the Cable Mouse. With cable box control, the VCR controls channels on the cable box/DSS receiver for timer recording. You can also use the VCR's remote commander to change channels on the cable box/DSS receiver whenever the cable box/DSS receiver is turned on even if the VCR is turned off. To use cable box control, you need to connect the Cable Mouse (pages 10 and 22) and set the code number and output channel.

This VCR is programmed with codes necessary to control channel selection on most brands of cable boxes at the time this VCR was manufactured. It is possible that new cable boxes may be introduced that cannot be controlled with this VCR's Cable Mouse. If you have a cable box that is incompatible with this VCR, contact your cable operator — they may be able to provide you with a compatible cable box.

1 MENU

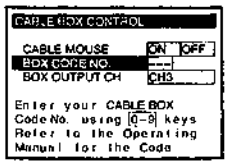
Press MENU, then press CURSOR ↑/↓ to move the cursor (▮) to CABLE BOX CONTROL and press EXECUTE.

When using the EASY SET UP procedure, skip this step.



2 CURSOR

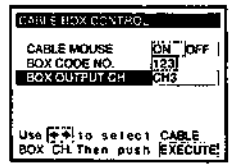
Press CURSOR ←/→ to select ON.



3 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ CURSOR

Press the number buttons to enter the cable box/DSS receiver code number, then press CURSOR ↓

Find your cable box/DSS receiver code number from the chart below.



4 CURSOR EXECUTE

If you want to control a cable box, press CURSOR ←/→ to select the output channel for the cable box, then press EXECUTE.

If you want to control a DSS receiver, select LINE, then press EXECUTE.

Cable box and DSS receiver brand and the corresponding code numbers

If more than one code number is listed, try entering them one by one, until you come to the correct code for your equipment.

Cable box brand	Code numbers
ABC	018, 022, 024, 028, 217
Antronix	218
Archer	033, 050, 164, 218
BBT	278
Cable Star	067
Cableteena	033
Cable time	172, 282, 388, 459
Century	164
Citizen	164, 326, 327
Clyde Cablevision	097
Colour Voice	036, 042
Comband	243, 244
Comtronics	051, 071
Decsat	434
Diamond	046
Eagle Comtronics	051

Cable box brand	Code numbers
Eastern	013, 285
Electricord	089
Electus	055
Filmnet	454
Focus	411
Garrard	164
GC Electronics	027, 067, 341
GE	243, 244
GEC	097
Gemini	026, 068, 081, 253
General Instrument	022, 287, 487
Hamlin	020, 031, 045, 270, 284
Hitachi	022
Jasco	164, 326
Jerrold	014, 022, 025, 026, 035, 037, 058, 109, 287, 487

continued

Setting up cable box control (continued)

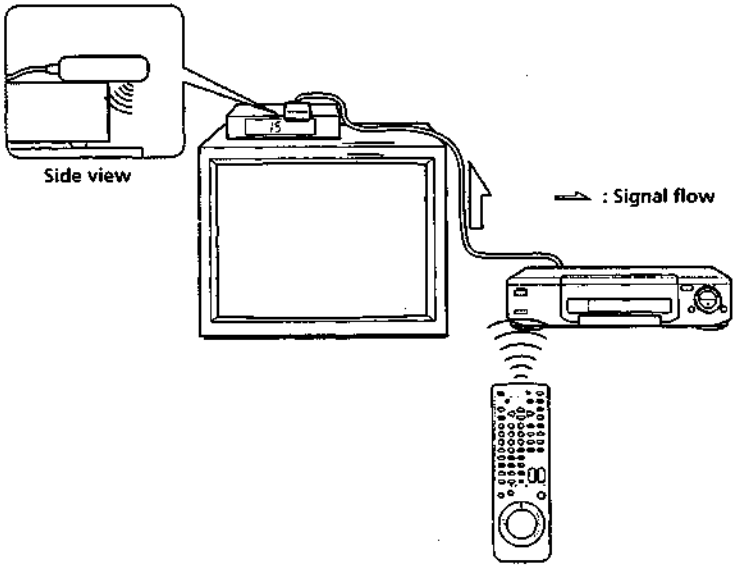
Cable box brand	Code numbers
Linsay	451
Macom	044
Magnavox	038, 043, 080, 345
Memorex	011
Movie Time	089, 167, 214
Northcoast	325
Novaplex	629
NSC	074, 081, 167, 214
Oak	018, 030, 259
Omniview	382
Panasonic	032, 118
Paragon	011
Philips	036, 038, 039, 040, 041, 042, 071, 301, 345
Philips ECG	253
Pioneer	034, 155, 271, 544
Popular Mechanics	411
Pulsar	011
RCA	032
Realistic	218
Recoton	411
Regal	031, 270, 284, 290
Regency	013
Rembrandt	081
RK	315, 317, 490
Samsung	051, 155
Satbox	386
Scientific Atlanta	017, 019, 028, 288, 338
Seam	521
Sharp	324
Signal	051
Signature	022
SL Marx	051
Spectravision	069
Sprucer	032, 318
Standard Components	107, 166
Starcom	014, 026, 058, 109

Cable box brand	Code numbers
Stargate	026, 051
STS	167
Sylvania	012
T-Cable Teletext	116
Tandy	269
Tatung	108
Teknica	157
Tele +1	454
TeleCaption	232
Teleservice	292
Texscan	012, 107
TFC	321
Timeless	429
Tocom	023, 024, 070
Toshiba	011
Tudi	297
TV86	074
TV COM	018, 030, 259
Uniden	236
Unika	033, 164, 218
United Artists	018
United Cable	014
Universal	033, 050, 067, 088, 089, 164, 202, 218, 333
Videoway	261
Vidtech	255
Viewstar	038, 071, 074, 122, 222, 269, 300
Westminster cable	116
Zenith	013, 065, 536
Zentek	411
Wave Master	576

DSS receiver brand	Code numbers
Sony	650
RCA	577

To ensure correct operation

- Place the Cable Mouse so that it hangs out over the cable box/DSS receiver front.
- Do not place the cable box/DSS receiver on top of the VCR.
- Position the cable box/DSS receiver away from the VCR.
- Point the remote commander at the VCR, not at the cable box/DSS receiver.



To check the cable box control setting

1 Press CH +/– on the remote commander. Does the channel indicator on the cable box/DSS receiver change? (Point the remote commander at the VCR, not at the cable box/DSS receiver.)

2 Press all 10 number buttons (0 to 9) on the remote commander. Does the channel indicator on the cable box/DSS receiver change?

If the answer to both 1 and 2 is "yes," you have made the correct setting.

continued

If you cannot get your VCR to control the cable box/DSS receiver

- Check that the Cable Mouse is connected to the CABLE BOX CONTROL jack on the VCR.
- Check the position of the Cable Mouse.
- Place the cable box/DSS receiver and VCR away from each other. Do not place the cable box/DSS receiver on top of the VCR.
- Try the setup again making sure to use the correct control code. If the cable box still does not respond, try the other codes that are listed.

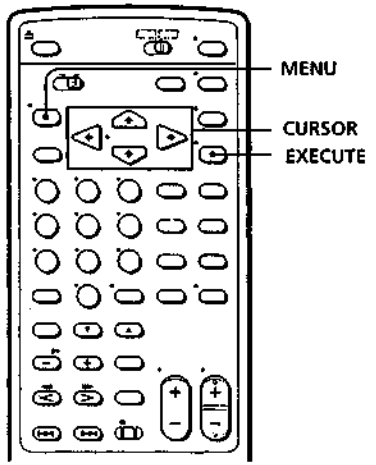
If your cable box still does not operate with the Cable Mouse, contact your cable company to see if they can provide you with a compatible cable box.

Note

- Make sure you turn off the VCR when you plug in or unplug the Cable Mouse. If you unplug the Cable Mouse and plug it in again, turn on the VCR before you use the cable box/DSS receiver control feature.

Presetting channels

(Skip this section if you are using cable box/DSS receiver control.)



This VCR is capable of receiving VHF channels 2 to 13, UHF channels 14 to 69 and unscrambled CATV channels 1 to 125. First, we recommend that you preset the receivable channels in your area using automatic presetting. Then, if there are any unwanted channels, disable them manually. If you have decided which channels you wish to preset, set them directly using manual presetting.

Before you start...

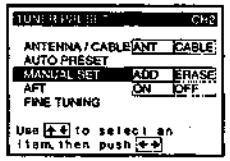
- Turn on the VCR and the TV.
- Set the TV to the VCR channel (channel 3 or 4). If your TV is connected to the VCR using A/V connections, set the TV to video input.
- Press TV/VTR to display the VTR indicator in the VCR's display window.
- Press INPUT SELECT so that a channel number appears in the VCR's display window.

Presetting all receivable channels automatically

1 MENU

Press MENU, then press CURSOR ↑/↓ to move the cursor (▮) to TUNER PRESET and press EXECUTE.

When using the EASY SET UP procedure, skip this step.



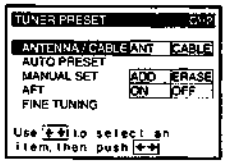
continued

2

CURSOR

• To preset cable TV channels:

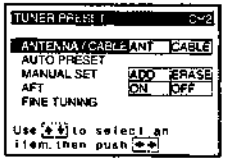
Press CURSOR ←/→ to set ANTENNA/CABLE to CABLE.



CURSOR

• To preset VHF and UHF channels:

Press CURSOR ←/→ to set ANTENNA/CABLE to ANT.



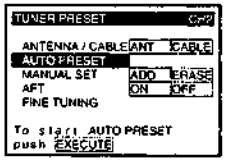
3

CURSOR

EXECUTE

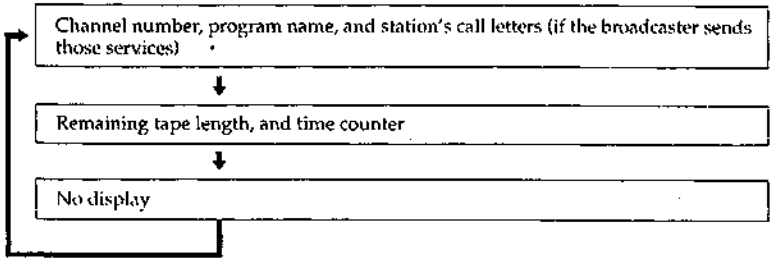
Press CURSOR ↑/↓ to select AUTO PRESET then press EXECUTE.

All receivable channels are preset in numerical sequence. When no more receivable channels can be found, presetting stops and the picture from the lowest numbered channel is displayed on the TV screen.

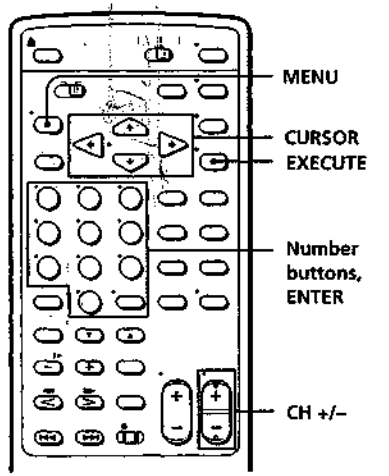


Tip

• When receiving a VHF, UHF or CATV channel, the display changes as follows each time you press the DISPLAY button.



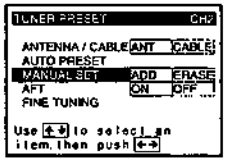
Presetting/disabling channels manually



1

MENU

Press MENU and select TUNER PRESET.



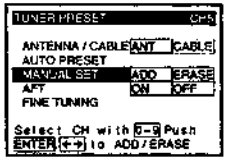
2

① ② ③
④ ⑤ ⑥
⑦ ⑧ ⑨
⑩

ENTER

•To preset a channel:

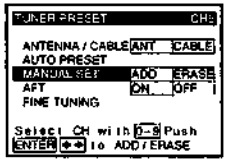
1 Press the number buttons to enter the channel number, then press ENTER.
2 Press CURSOR ←/→ to set MANUAL SET to ADD.



•CH

•To disable a channel:

1 Press CH +/– to select the channel number.
2 Press CURSOR ←/→ to set MANUAL SET to ERASE.



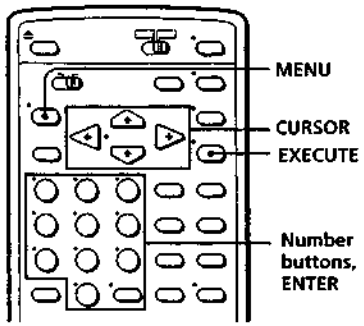
3

EXECUTE

Repeat step 2 to preset or disable channels as required, then press EXECUTE.

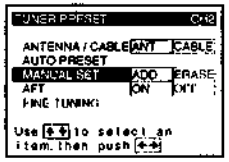
If the picture is not clear

Normally, the Auto Fine Tuning (AFT) function automatically tunes in channels clearly. If, however, the picture of a channel is not clear, you can also use the manual tuning function.



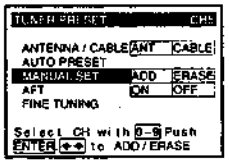
1 MENU

Press MENU and select TUNER PRESET.



2 ENTER

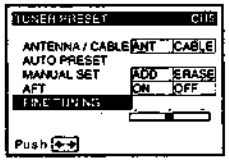
Press the number buttons to select the channel you want to fine-tune, then press ENTER.



3 CURSOR

Press CURSOR ↑/↓ to select FINE TUNING.

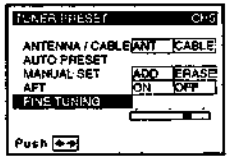
The fine tuning meter appears.



4 CURSOR

Press CURSOR ←/→ to adjust to a clearer picture.

Note that the AFT setting switches to OFF.



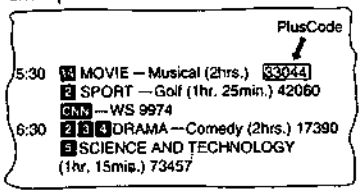
1-21

Setting up VCR Plus+

How VCR Plus+ works

Whenever you want to record a TV program, all you need to do is look up the program's "PlusCode," a number assigned to each program that's published in the TV section of most newspapers, cable TV listings, and even *TV GUIDE* magazine. Then, just enter the PlusCode of the program you want and the VCR is automatically programmed to record that show. It's that simple.

Example of "PlusCode"



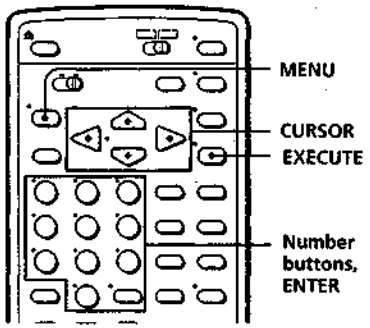
How to set up your VCR

Setting up your VCR involves coordinating the TV channel number (the number you turn to on your TV or VCR to watch a program) with the guide channel (the number that's assigned to that channel in your program guide). To get the guide channel numbers, find the "Channel Line-up Chart" in the program guide for your area that features VCR PlusCodes. It usually looks like the example to the right.

For each channel your VCR receives, use the Channel Line-up Chart to check that the channel numbers match. For example, if HBO is listed in the Channel Line-up Chart on channel 33, and your VCR receives HBO on channel 5, you need to coordinate these numbers using the following procedure. For channels in which the numbers are the same, you can skip this procedure.

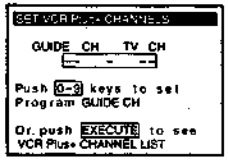
Example of "Channel Line-up Chart"

CABLE CH	CABLE TV	VCR Plus+ GUIDE CH
16	AMC American Movie Classics	35
17	BRV Bravo (program grid only)	54
20	CNN Cable News Network	42
21	CSP C-SPAN	28
22	DIS The Disney Channel	53
25	DSC The Discovery Channel	37
34	ESN ESPN	34
35	FAM The Family Channel	47
5	HBO Home Box Office	33
27	LIF Lifetime	46
29	MAX Cinemax	45
30	MTV Music Television	48
31	NIK Nickelodeon	38
38	SC Sports Channel	59
39	SCA Sports Channel America	70
45	SHO Showtime	41
17	TBS TBS SuperStation	43
44	TMC The Movie Channel	58
49	TNN The Nashville Network	49
50	TNT Turner Network Television	52
51	USA USA Network	44



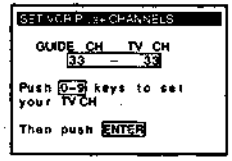
1 MENU, CURSOR

Press MENU, then press CURSOR ↑/↓ to move the cursor (▮) to SET VCR Plus+ CHANNELS and press EXECUTE.



2 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⓪, ENTER

Enter the channel number assigned in the program guide and press ENTER.



3 ENTER

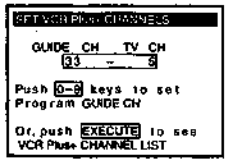
- If you made Hookup 1, 2 or 3: Enter the actual number on your TV (and VCR) and press ENTER.

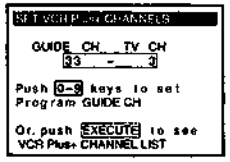
ENTER

- If you made Hookup 4: Enter the cable output channel (usually 2, 3 or 4) and press ENTER.

ENTER

- If you made Hookup 6: Enter the actual number on your TV (and VCR) for an unscrambled channel and press ENTER. For a scrambled channel, enter the cable box output channel (usually 2, 3 or 4) and press ENTER.



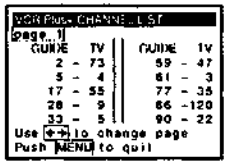


4

Repeat steps 2 and 3 for each channel whose numbers don't match.

5 EXECUTE

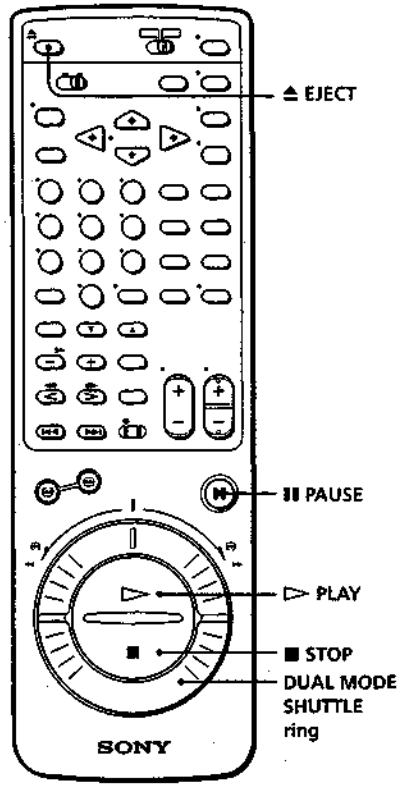
When you have set all channels, press EXECUTE to confirm your channel settings.



6 MENU

When you've finished, press MENU to exit.

Playing a tape



1 Turn on your TV and set it to the video channel.

2 Open the drop down panel and insert a tape.

The VCR turns on and starts playing automatically if you insert a tape with its safety tab removed.

3 

Press ▷ PLAY.

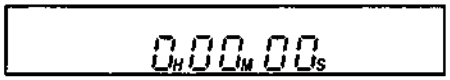
When the tape reaches the end, it will rewind automatically.

Additional tasks

To	Press
Stop play	■ STOP
Pause play	II PAUSE
Resume play after pause	II PAUSE or ▷ PLAY
Search forward	Turn the DUAL MODE SHUTTLE (DMS) ring to ⏩ during playback
Search backward	Turn the DMS ring to ⏪ during playback
Fast-forward the tape	Turn the DMS ring to ▶▶ FF during stop
Rewind the tape	Turn the DMS ring to ◀◀ REW during stop
Eject the tape	⏏ EJECT

To use the time counter

At the point on the tape that you want to find later, press COUNTER RESET. The counter in the display window resets to "0H00M00S." Search for the point afterwards by referring to the counter.

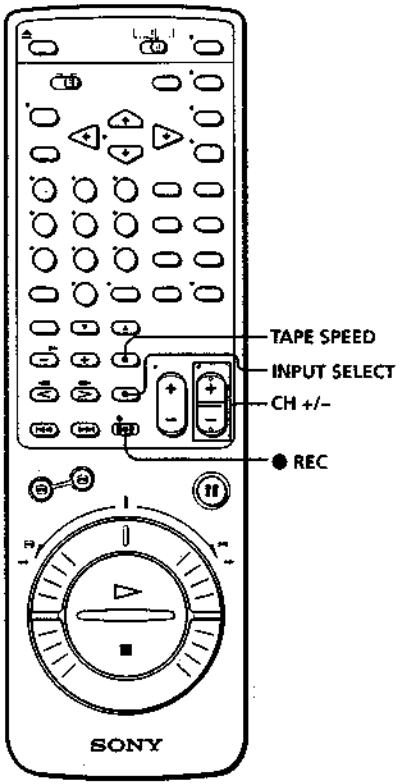


To display the counter on the TV screen, press DISPLAY.

Notes

- Tapes recorded in the LP mode on other VCRs can be played back on this VCR but the picture quality cannot be guaranteed.
- The counter resets to "0H00M00S" whenever a tape is reinserted.
- The counter stops counting when it comes to a portion with no recording.

Recording TV programs



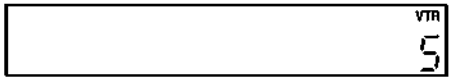
1 Turn on your TV and set it to the video channel.

To record from a cable box, turn it on.

2 Insert a tafty tab in place.

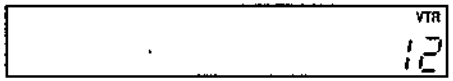
3 INPUT SELECT

Press INPUT SELECT until a channel number appears in the display window.



4 +CH

Press CH +/- to select the channel you want to record.



5 TAPE SPEED

Press TAPE SPEED to select the tape speed, SP or EP.

EP provides recording time three times as long as SP, however, SP produces better picture quality.

6 ●REC

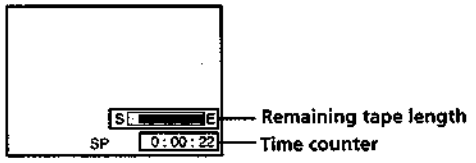
Press ●REC to start recording.

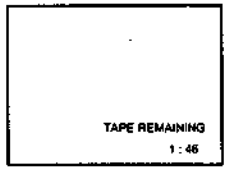
To stop recording

Press ■ STOP.

To check the remaining tape length

Press DISPLAY. The white bar indicates the approximate length of tape remaining. With the display on, press COUNTER/REMAIN to check the remaining time. Each time you press COUNTER/REMAIN, the time counter and the remaining time appear alternately. The remaining time also appears in the display window.





To check the remaining time of a tape more than two hours long, set TAPE SELECT in the ADVANCED OPTIONS menu to "–160." (For details, see page 66.)

To watch another TV program while recording

1. Press TV/VTR to turn off the VTR indicator in the display window.
2. If the TV is connected to the VCR's LINE OUT jacks, set the TV to TV input; if not, skip this step.
3. Select another channel on the TV.

To save a recording

To prevent accidental erasure, break off the safety tab as illustrated. To record on a tape again, cover the tab hole with adhesive tape.

continued

Tips

- To select a channel, you can use the number buttons on the remote commander. Enter the channel number, then press ENTER.
- The display appears on the TV screen indicating information about the tape, but the information won't be recorded on the tape.
- If you don't want to watch TV while recording, you can turn off the TV. When using a cable box, make sure to leave it on.

Notes

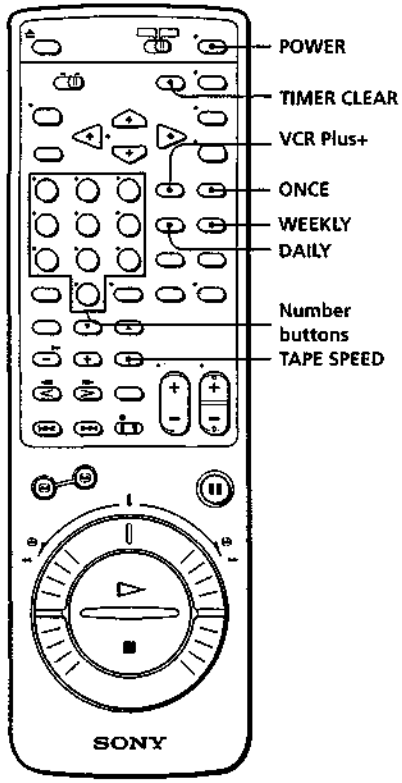
- The remaining time may not be indicated accurately for short tapes such as T-20 or T-30, or tapes recorded in the LP mode.
- The display does not appear during still mode or slow-motion playback.

Recording TV programs using VCR Plus+

Just enter the program's PlusCode listed in the TV program guide. The date, times and channel number of that program are set automatically. You can preset up to eight programs at a time.

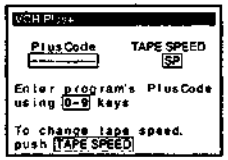
Before you start...

- Check that the VCR clock is set to the correct time.
- Turn on your TV and set it to the video channel. When using a cable box, turn it on.
- Insert a tape with its safety tab in place. Make sure the tape is longer than the total recording time.



1 VCR Plus+

Press VCR Plus+.



2 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⓪

Press the number buttons to enter the program's PlusCode.

If you make a mistake, press TIMER CLEAR and re-enter the correct number.

continued

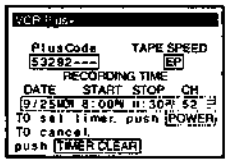
3 TAPE SPEED

Press TAPE SPEED to select SP or EP.

4 ONCE or DAILY or WEEKLY

Press ONCE, DAILY or WEEKLY:

To record	Press
Only once	ONCE
Everyday Monday to Friday	DAILY
Once a week	WEEKLY



The date, start and stop times, channel number and tape speed appear on the TV screen. If the information is not correct, press TIMER CLEAR to cancel the setting.

5

To enter another setting, repeat steps 1 to 4.

6 POWER

Press POWER to turn off the VCR.

The TIMER indicator on the VCR lights up and the VCR stands by for recording. When using a cable box, leave it on.

To stop recording

To stop the VCR while recording, press ■STOP.

To use the VCR after setting the timer

To use the VCR before a timer recording begins, just press POWER. The "TIMER" indicator turns off and the VCR switches on. Remember to press POWER to reset the VCR in timer recording standby after using the VCR.

You can also do the following tasks while the VCR is recording:

- Reset the counter.
- Display tape information on the TV screen.
- Check the timer settings.
- Watch another TV program.

To lock the VCR after setting the timer

Hold down POWER on the VCR until the VCR beeps. The VCR turns off and the "LOC" indicator appears on the display window. The VCR will not work except for timer recording.

To unlock the VCR, hold down POWER on the VCR until the VCR beeps.

Tips

- To cancel the procedure, press VCR Plus+ before pressing ONCE, DAILY or WEEKLY.
- When you are recording a program in the SP mode and the remaining tape becomes shorter than the recording time, the tape speed is automatically changed to the EP mode. Note that some noises will appear on the picture when the tape speed is changed. If you want to keep the tape speed, set AUTO TAPE SPEED to OFF in the ADVANCED OPTIONS menu (page 66).

Notes

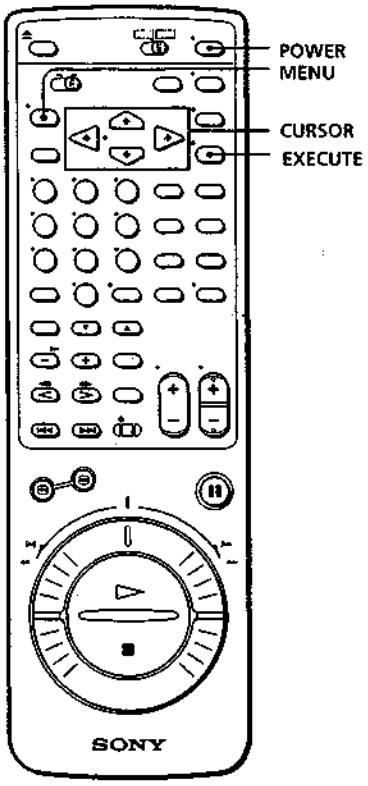
- If the VCR beeps, this means that:
  - The PlusCode is incorrect.
  - ONCE, DAILY or WEEKLY was selected incorrectly. You cannot select DAILY or WEEKLY for a program that airs more than seven days ahead.
- The VCR will be unlocked when:
  - you stop timer recording by pressing ■ STOP
  - you insert a tape
  - the AC power cord is disconnected or power supply stops

Setting the timer manually

If VCR Plus+ is not available in your area, follow the instructions below to set the timer to record programs.

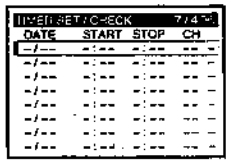
Before you start...

- Check that the VCR clock is set to the correct time.
- Turn on your TV and set it to the video channel. When using a cable box, turn it on.
- Insert a tape with its safety tab in place. Make sure the tape is longer than the total recording time.



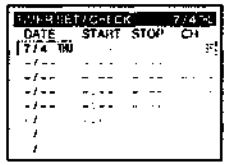
1 MENU

Press MENU and select TIMER SET/CHECK.



2 CURSOR

Set the date, start and stop times, channel number and tape speed:



1 Press CURSOR ➡ to highlight each item in turn.

2 Press CURSOR ⬇/⬆ to set each item.

To correct a setting, press CURSOR ⬅ to return to that setting and reset.

To record the same program every day or the same day every week, press CURSOR ⬇. For details, see "Daily/weekly recording" on page 55.

To record from a source connected to the LINE –1 IN or LINE –2 IN jacks, press INPUT SELECT to display "L1" or "L2" in the "CH" position.

3 CURSOR

Press CURSOR ➡ to confirm the setting.

The cursor (I) appears at the top of the line. To enter another setting, move the cursor to the next line and repeat step 2.

4 EXECUTE

Press EXECUTE.

5 POWER

Press POWER to turn off the VCR.

The TIMER indicator on the VCR lights up and the VCR stands by for recording.

When using a cable box, leave it on.

Daily/weekly recording

In step 2 above, press CURSOR ⬇ to select the recording pattern. Each time you press CURSOR ⬇, the indication changes as shown below. Press CURSOR ⬆ to change the indication in reverse order.

the current date → SUN-SAT → MON-SAT → MON-FRI → EVERY SAT ..... → EVERY MON → EVERY SUN → 1 month later →(cycles backward) → the current date

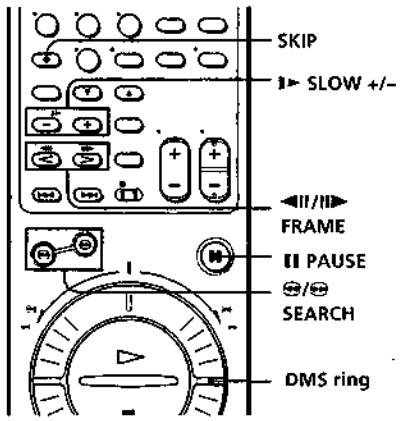
Tips

- To set the channel, you can also use the CH+/– or number buttons.
- To set the tape speed, you can also use TAPE SPEED.
- When you are recording a program in the SP mode and the remaining tape becomes shorter than the recording time, the tape speed is automatically changed to the EP mode. Note that some noises will appear on the picture when the tape speed is changed. If you want to keep the tape speed, set AUTO TAPE SPEED to OFF in the ADVANCED OPTIONS menu (page 66).
- To lock the VCR after setting the timer, see page 54.

Note

- If you are using cable box control, you cannot select "L1" or "L2."

Playing/searching at various speeds



Playback options	Operation
Play at various speeds	During playback, turn the DMS ring and hold at the speed you want.
Fast-forward/rewind	During stop, turn the DMS ring to ▶▶FF or ◀◀REW and release.
View the picture during fast-forward or rewind	During fast-forward, turn the DMS ring to ▶▶FF. During rewind, turn the DMS ring to ◀◀REW.
Play at twice the normal speed	During playback, turn the DMS ring to ×2.
Play at high speed	During playback or pause, press ⊜SEARCH or ⊜SEARCH. To change direction, press II▶FRAME or ◀IIFRAME.
Play in slow motion	During playback or pause, press I▶SLOW+/–. Press the +/– buttons to change the speed. To change direction, press II▶FRAME or ◀IIFRAME.
Play frame by frame	During pause, press II▶FRAME or ◀IIFRAME. Hold the button down to play one frame each second.
Play in reverse	During playback, press ◀IIFRAME.
Skip a scene	During playback, press SKIP. Pressing once skips about 30 seconds.
Rewind and start play	During stop, press ▷PLAY on the VCR while holding the DMS ring on the VCR at the ◀◀REW position.

1-28

To resume normal playback

Press ▷PLAY.

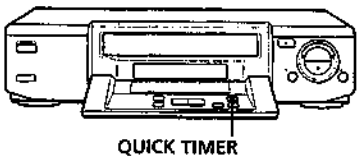
Tip

- Adjust the picture using the ▼/▲ TRACKING/STILL ADJUST buttons if:
  - Streaks appear while playing in slow motion.
  - Bands appear at the top or bottom while pausing.
  - The picture shakes while pausing.

Notes

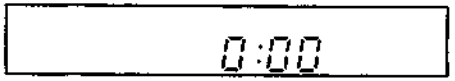
- The sound is muted during these operations.
- Tapes recorded in the LP mode on other VCRs can be played back on this VCR but the picture quality cannot be guaranteed.

Recording TV programs using the quick timer



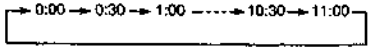
After starting recording in the normal way, you can have the VCR stop recording automatically after a specified duration.

1 While recording, press QUICK TIMER once.



2 Press QUICK TIMER repeatedly to set the duration.

Each press advances the time in increments of 30 minutes.



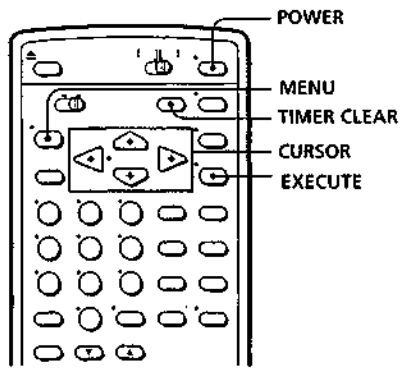
To check or extend the duration

Press QUICK TIMER once. The duration is displayed for 10 seconds. If you want to extend the time, press QUICK TIMER within 10 seconds to set to the new duration.

To stop while recording

Press ■STOP.

Checking/ changing/ cancelling timer settings



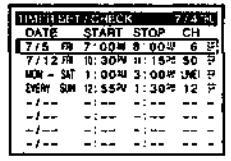
Before you start...

- Turn on your TV and set it to the video channel.

1 Press POWER to turn on the VCR.

2 Press MENU and select TIMER SET/CHECK:

- If you want to change a setting, go on to the next step.
- If you do not need to change the settings, press EXECUTE, then turn off the VCR to return to recording standby.



3 Press CURSOR ↓/↑ to select the setting you want to change:

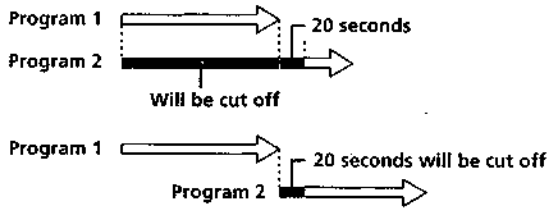
- To change the setting, press CURSOR ←/→ to highlight the item you want to change, and press CURSOR ↓/↑ to reset it. Then, press CURSOR→ repeatedly until the cursor (▮) appears at the top of the line.
- To cancel the setting, press TIMER CLEAR.

4 Press EXECUTE.

If any timer settings remain, turn off the VCR to return to recording standby.

When the timer settings overlap

The program that starts first has priority and the second program starts recording only after the first program has finished. If the programs start at the same time, the program listed first in the menu has priority.



Recording stereo and bilingual programs

Recording stereo programs

This VCR automatically receives and records stereo programs. When a stereo program is received, the STEREO indicator lights up. If there is noise in the stereo program, set AUTO STEREO in the ADVANCED OPTIONS menu to OFF. The sound will be recorded in monaural (on both hi-fi and normal audio tracks) but with less noise. For details, see page 66.

Recording bilingual programs

Normally, this VCR records only the main sound on both hi-fi and normal audio tracks. To record SAP (Second Audio Program) sound on the normal audio track, set NORMAL AUDIO in the ADVANCED OPTIONS menu to SAP (the SAP indicator lights up). For details, see page 66.

To select the bilingual sound while recording

Press AUDIO MONITOR to select the sound you want.

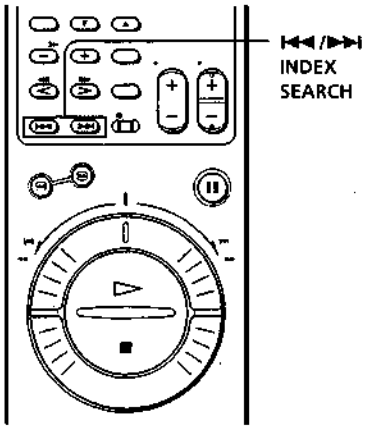
Selecting the sound during playback

Press AUDIO MONITOR to select the sound you want.

To listen to	On-screen display	Display window
Stereo/main (left and right channels)	STEREO	STEREO
Left channel only	LEFT CH	STEREO
Right channel only	RIGHT CH	STEREO
Monaural (SAP)	No indicator	No indicator

1-30

Searching using the index function



The VCR marks the tape with an index signal at the point where each recording begins. Use these signals as references to find a specific recording. The VCR can search up to 99 index signals ahead of or behind the current position.

1 Insert an indexed tape into the VCR.

2 Press ⏮/⏭INDEX SEARCH repeatedly to specify how many index signals ahead or behind you want to search:

- To search ahead, press ⏭INDEX SEARCH.
- To search backwards, press ⏮INDEX SEARCH.

The VCR starts searching and the index number on the TV screen counts down to zero. Playback starts automatically from that point.

To stop searching

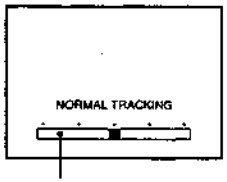
Press ■STOP.

Adjusting the picture

Adjusting the tracking

Although the VCR automatically adjusts the tracking when playing a tape (the AUTO TRACKING indicator flashes in the display window, then lights steadily), distortion may occur if the tape was recorded in poor condition. If so, manually adjust the tracking.

Press the ▼/▲TRACKING NORMAL/SLOW buttons to display the tracking meter. The distortion should disappear as you press one of the two buttons. If you cannot get a clear picture with manual adjustment, press TRACKING AUTO/MANUAL to return to automatic adjustment.



Tracking meter

About Adaptive Picture Control (APC)

Adaptive Picture Control (APC) automatically improves recording and playback quality by adjusting the VCR to the condition of the video heads and tape. To maintain better picture quality, we recommend that you set APC to ON in the ADVANCED OPTIONS menu (with the APC indicator in the display window lit).

APC playback

The APC function automatically works on all types of tapes, including rental tapes and tapes that were not recorded with APC.

APC recording

Whenever you insert a tape and first start recording, the VCR adjusts to the tape using the APC function (the APC indicator flashes rapidly). This adjustment is retained until the tape is ejected.

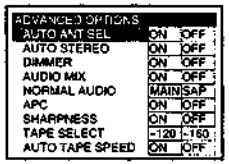
Notes

- Auto tracking adjustment cannot be used on tapes recorded in the LP mode on other VCRs.
- The APC function does not work if the tape speed is automatically changed from the SP to EP mode during a timer recording, unless the tape has been recorded in the EP mode with the APC function.
- There is a delay of a few seconds before the VCR actually starts recording while the VCR analyzes the tape. To avoid the delay, first set the VCR to recording pause (the APC indicator flashes slowly) and press ●REC to have the VCR analyze the tape (the APC indicator flashes rapidly). After the APC indicator stops flashing, press ❚❚PAUSE to start recording immediately.

  If you want to start recording quickly without using the APC function, first set the VCR to recording pause (the APC indicator flashes slowly) and press ❚❚PAUSE to start recording.

Changing menu options

1 Press MENU and select ADVANCED OPTIONS.



2 Press CURSOR ↑/↓ to select the option to change, then press CURSOR ←/→ to change the setting.

3 Press EXECUTE to return to the original screen.

Menu choices

Initial settings are indicated in bold print.

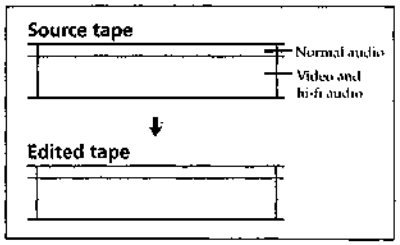
Menu option	Set this option to
AUTO ANT SEL	**ON** if your TV is connected only to VHF/UHF OUT on the VCR. To play a tape, set the TV to the VCR channel (channel 3 or 4). **OFF** if your TV is connected to both VHF/UHF OUT and LINE OUT on the VCR. To play a tape, set the TV to the VCR input.
AUTO STEREO	**ON** to receive stereo programs, OFF to reduce noise. The sound changes to monaural.
DIMMER	ON to make the display window dim, **OFF** to make it brighter.
AUDIO MIX	ON to listen to the sound recorded on hi-fi and normal audio tracks at the same time. The AUDIO MONITOR button will not function. **OFF** to listen to hi-fi and normal audio tracks separately. Select the sound using the AUDIO MONITOR button.
NORMAL AUDIO	**MAIN** to record the main sound on both hi-fi and normal audio tracks. SAP to record the SAP (Second Audio Program) sound on the normal audio track. The main sound is recorded on the hi-fi audio track.
APC	**ON** to switch on the APC (Adaptive Picture Control) function and improve picture quality, OFF to switch off APC.
SHARPNESS	ON to get a sharp picture, **OFF** to clear the sharpness control.
TAPE SELECT	**"~120"** or **"~160"** to select the tape length and display the remaining time correctly.
AUTO TAPE SPEED	**ON** to change the timer recording tape speed automatically to the EP mode when the remaining tape becomes shorter than the recording time, OFF to keep the tape speed.

Editing methods

This section introduces you to various ways to edit tape recordings.

Basic editing

You can make a copy of a tape.



Insert editing

You can replace an existing scene with material from another recording. There are three kinds of insert editing.

Video insert

Replaces the original video and hi-fi audio. The monaural sound on the normal audio track is retained.

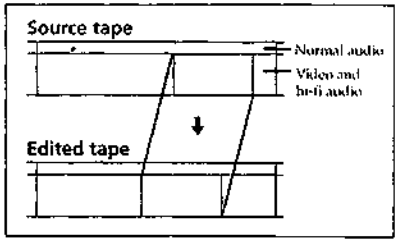
Audio insert

Replaces the original monaural sound on the normal audio track. The video and hi-fi sound are left intact. For example, you can use this feature to add commentary to a tape recorded on a camcorder.

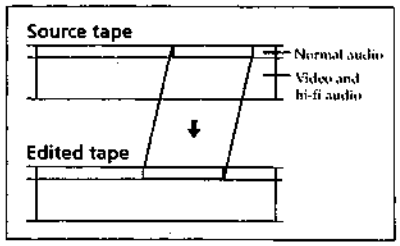
A/V insert

Replaces the original video and both hi-fi and monaural sound.

Video insert



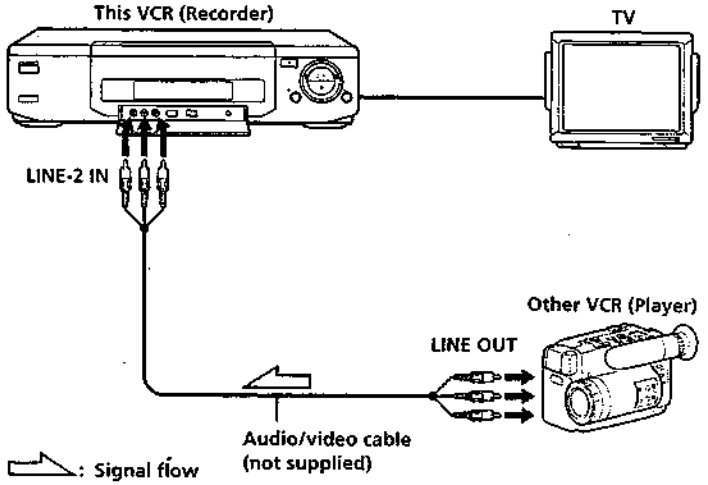
Audio insert



1-32

Hooking up to a VCR or stereo system

How to hook up to record on this VCR



If the other VCR has a CONTROL S OUT jack for synchronized editing

Hook up to record on the other VCR, then connect the VCRs via the CONTROL S jacks. The CONTROL S connection lets you control (pause and release pause) both VCRs from the recording VCR.

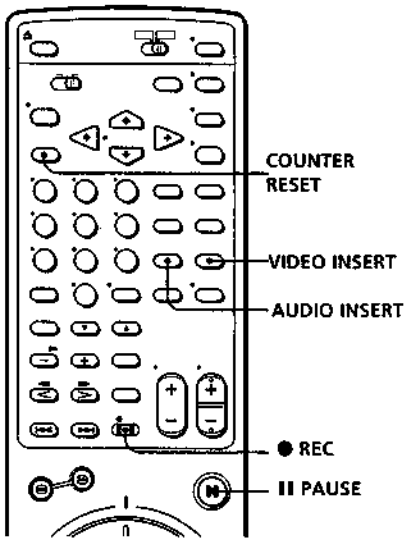
Notes

- Make sure you connect the plugs to jacks of the same color.
- If the other VCR is a monaural type, leave the red plugs unconnected.
- If you connected this VCR to both the LINE IN and LINE OUT jacks of the other VCR, select the input correctly to prevent a humming noise.
- If the CONTROL S IN jack is used for SystemLink (A/V bus control) with a TV, the CONTROL S connection cannot be used for editing.

How to hook up to a stereo system

Connect LINE-2 IN AUDIO on this VCR to the audio output jacks on the stereo system, using the RK-C510KS audio cable (not supplied).

Insert editing



Before you start editing

- Turn on your TV and set it to the video channel.
- Press INPUT SELECT to display "L2" in the display window.
- Press TAPE SPEED on the remote commander to select the tape speed, SP or EP.
- On this VCR, set the EDIT switch to ON. If the other VCR has a similar switch, set it to ON as well.

1 Insert a source tape into the playback VCR or the stereo system. Search for the point to start playback and set it to playback pause.

2 Insert a prerecorded tape into this (recording) VCR. Search for the end of the scene to be replaced and press ❚❚PAUSE.

3 Press COUNTER RESET on this VCR to reset the counter to "0H00M00S."

4 Rewind the prerecorded tape to the beginning of the scene to be replaced.

The VCR pauses.

5 Press the INSERT buttons:

To replace	Press
Picture and hi-fi sound	INSERT VIDEO "VID INS❚❚" appears on the TV screen and "V INSERT" appears in the display window.
Monaural sound only	INSERT AUDIO "A INSERT " appears in the display window.
Picture, hi-fi and monaural sound	INSERT AUDIO, then INSERT VIDEO "A/V INS❚❚" appears on the TV screen and "AV INSERT " appears in the display window.

6 To start editing, press the ❚❚PAUSE buttons on this VCR and the other VCR (or stereo system) at the same time.

To stop editing

Press the ■STOP buttons on this VCR and the other VCR (or stereo system).

To listen to both the hi-fi and normal audio

Set AUDIO MIX to ON in the ADVANCED OPTIONS menu (page 66). Use this feature to listen to inserted audio together with the original hi-fi audio. When AUDIO MIX is set to ON, the AUDIO MONITOR button does not function. Remember to reset AUDIO MIX to OFF after playing the tape.

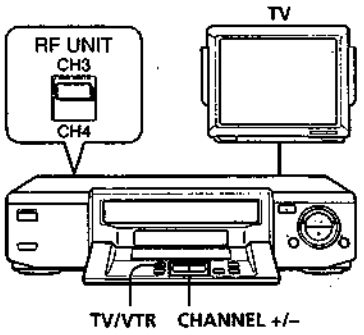
Note

- To use the INSERT function, this VCR must be set to playback pause, not recording pause.

General setup information

Setting the RF unit

When connecting the VCR to the TV using only the antenna cable, you must set the RF UNIT switch on the rear of the VCR so that the TV can receive the correct signal from the VCR.



1 Set the RF UNIT switch on the rear of the VCR to CH3 or CH4, whichever channel is not used in your area. If both are used, set the switch to either channel.

2 Press POWER to turn on the VCR.

3 Press TV/VTR to turn on the VTR indicator in the VCR's display window.

4 Press CHANNEL +/– to display a channel number in the display window. Select an active channel number in your area.

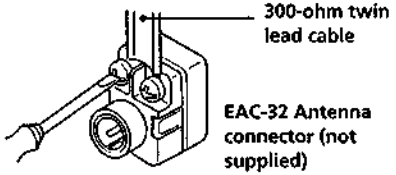
5 Turn on your TV and set it to the channel you selected in step 1 (channel 3 or 4).

The selected TV channel broadcast appears on the TV screen. If the channels change when you press CHANNEL +/– on the VTR, you have made the correct setting.

Whenever you use the VCR, set the TV to the channel selected in step 1.

Attaching the external antenna connector

When using a 300-ohm twin lead cable for VHF/UHF antenna, use the EAC-32 antenna connector (not supplied) to connect the antenna to the VCR.



1 Loosen the screws on the antenna connector.

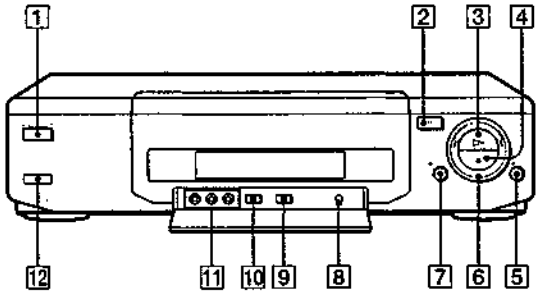
2 Wind the twin leads around the screws on the antenna connector.

3 Retighten the screws.

Index to parts and controls

Refer to the pages indicated in parentheses ( ) for details.

Front panel



1 POWER switch/indicator

2 ⏏ EJECT button (49)

3 ▷ PLAY button (49)

4 ■ STOP button (49)

5 ● REC button (50)

6 DUAL MODE SHUTTLE ring (49, 58)

7 ⏸ PAUSE button (49)

8 EASY SET UP button (11, 14, 17, 20, 23)

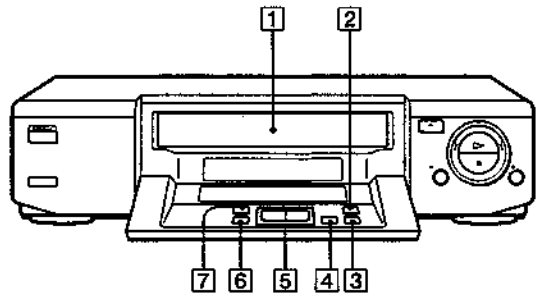
9 COMMAND MODE switch (5)

10 EDIT switch (69)

11 LINE-2 IN VIDEO/AUDIO L/R jacks (68)

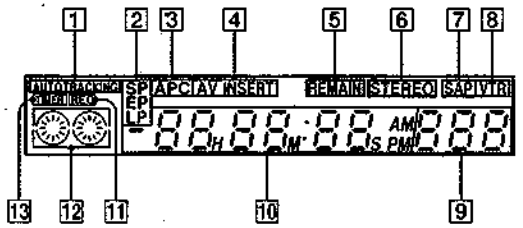
12 Remote sensor

Front panel, with cover opened



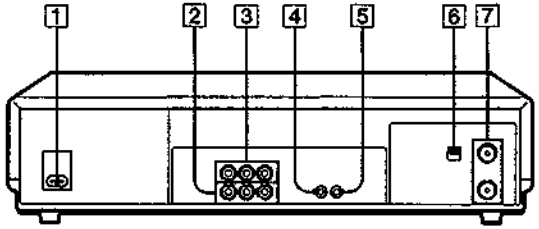
1 Tape compartment
2 QUICK TIMER button (60)
3 TAPE SPEED (SP/EP) button (51)
4 COUNTER RESET button (49)
5 CHANNEL +/– buttons (50)
6 INPUT SELECT button (50, 69)
7 TV/VTR button (51)

Display window



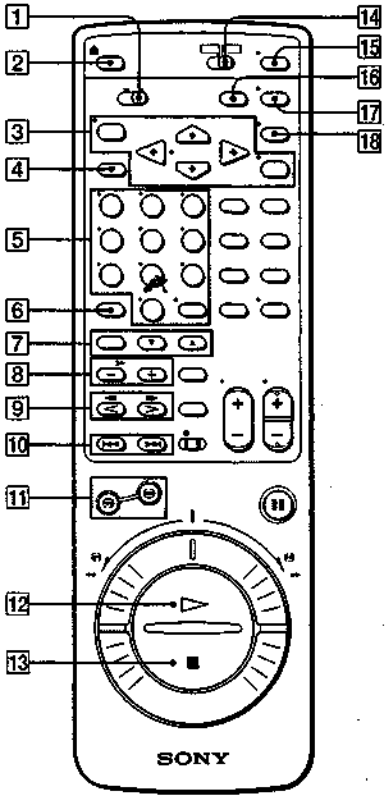
1 AUTO TRACKING indicator (65)
2 Tape speed indicator (51)
3 APC indicator (65)
4 AV INSERT indicator (70)
5 REMAIN indicator (51)
6 STEREO indicator (62)
7 SAP indicator (62)
8 VTR indicator (51)
9 Line/channel indicator (50, 69)
10 Time counter/remaining time counter/clock
11 REC indicator
12 Tape indicator
13 TIMER indicator

Rear panel



1 AC IN connector
2 LINE OUT AUDIO L/R/VIDEO jacks (8)
3 LINE-1 IN AUDIO L/R/VIDEO jacks (68)
4 SYSTEMLINK (CONTROL S IN) jack (9, 68)
5 CABLE BOX CONTROL (CONTROL S OUT) jack (10, 22)
6 RF UNIT switch (72)
7 VHF/UHF IN/OUT connectors (10, 13, 16, 19, 22, 25)

Remote commander



1 COMMAND MODE switch (5)

2 ⏏ EJECT button (49)

3 Menu operation buttons (29)

MENU button
CURSOR ↑/↓/←/→ buttons
EXECUTE button

4 COUNTER RESET button (49)

5 Channel number buttons and ENTER button (43, 46)

6 SKIP button (58)

7 TRACKING buttons (65)

▼/▲ NORMAL/SLOW (STILL ADJUST) buttons
AUTO/MANUAL button

8 ⏮ SLOW buttons (58)

9 ◀II/II▶ FRAME buttons (58)

10 ⏮/⏭ INDEX SEARCH buttons (64)

11 ⏪/⏩ SEARCH buttons (58)

12 ▷ PLAY button (58)

13 ■ STOP button (49)

14 TV/VTR remote control switch (5)

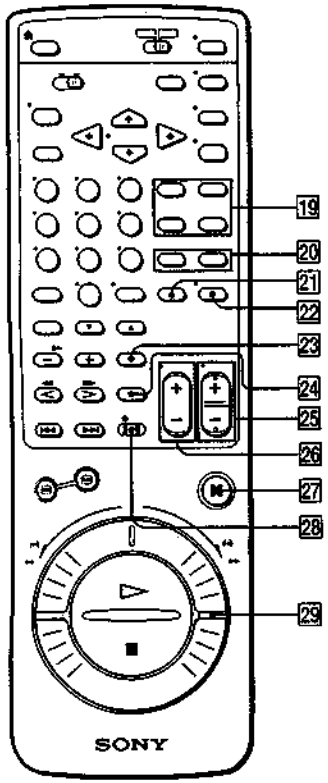
15 POWER button

16 TIMER CLEAR button (53)

17 TV/VTR button (51)

18 AUDIO MONITOR button (62)

continued



19 VCR Plus+ buttons (53)

VCR Plus+ button
ONCE button
DAILY button
WEEKLY button

20 AUDIO/VIDEO INSERT buttons (70)

21 COUNTER/REMAIN button (51)

22 DISPLAY button (51)

23 TAPE SPEED button (51)

24 INPUT SELECT button (50, 69)

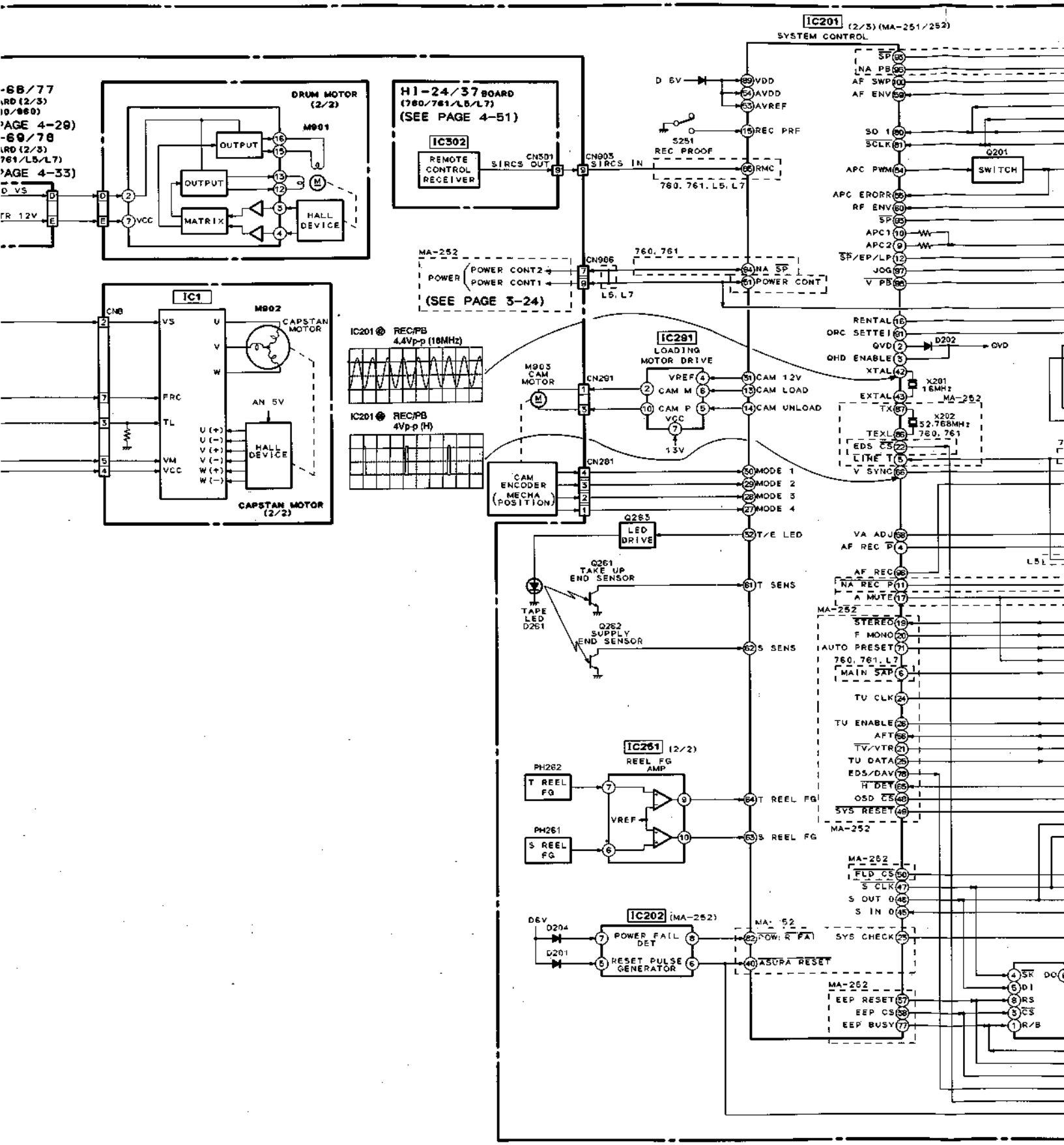
25 CH +/– buttons (50)

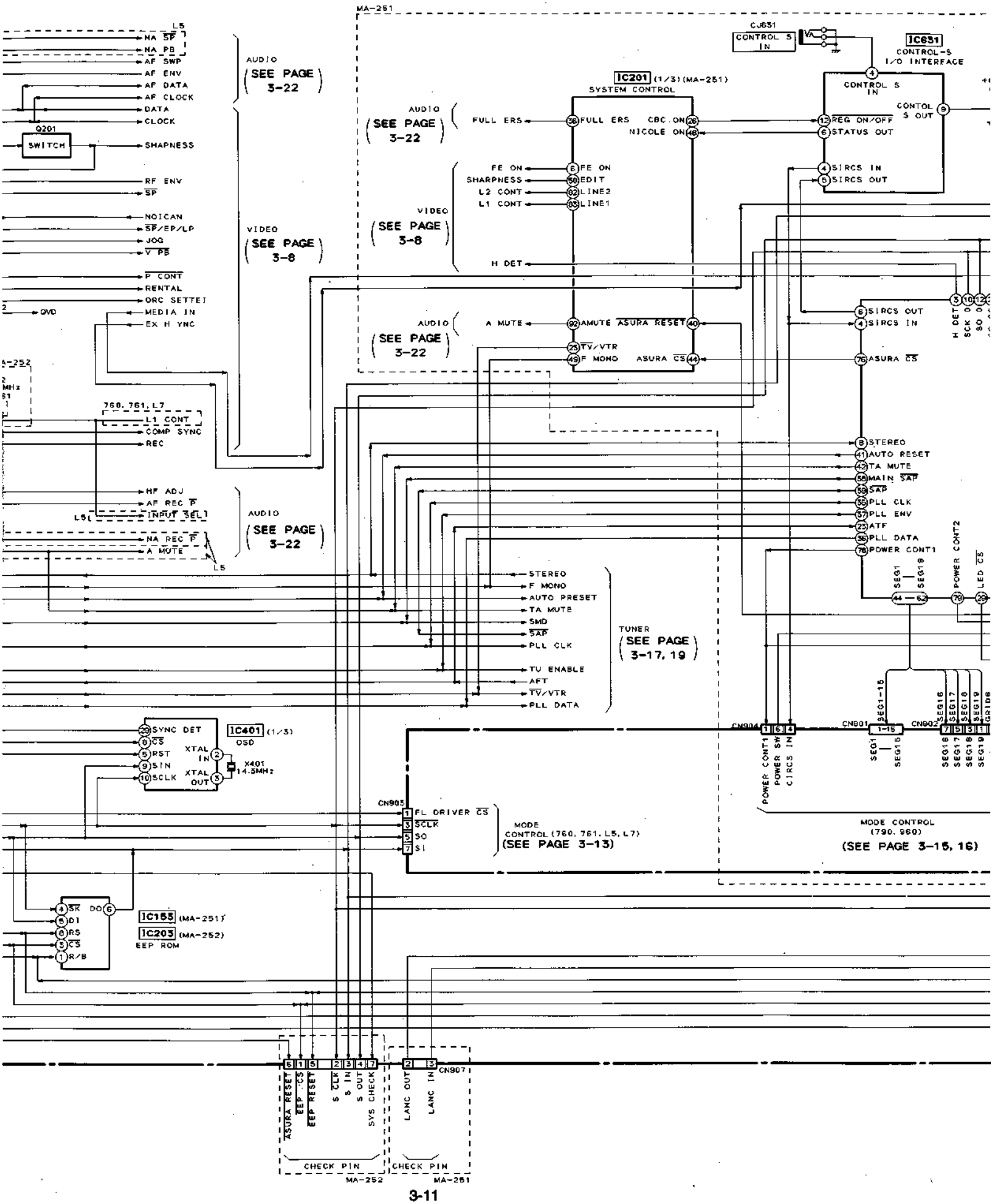
26 VOL +/– buttons (5)

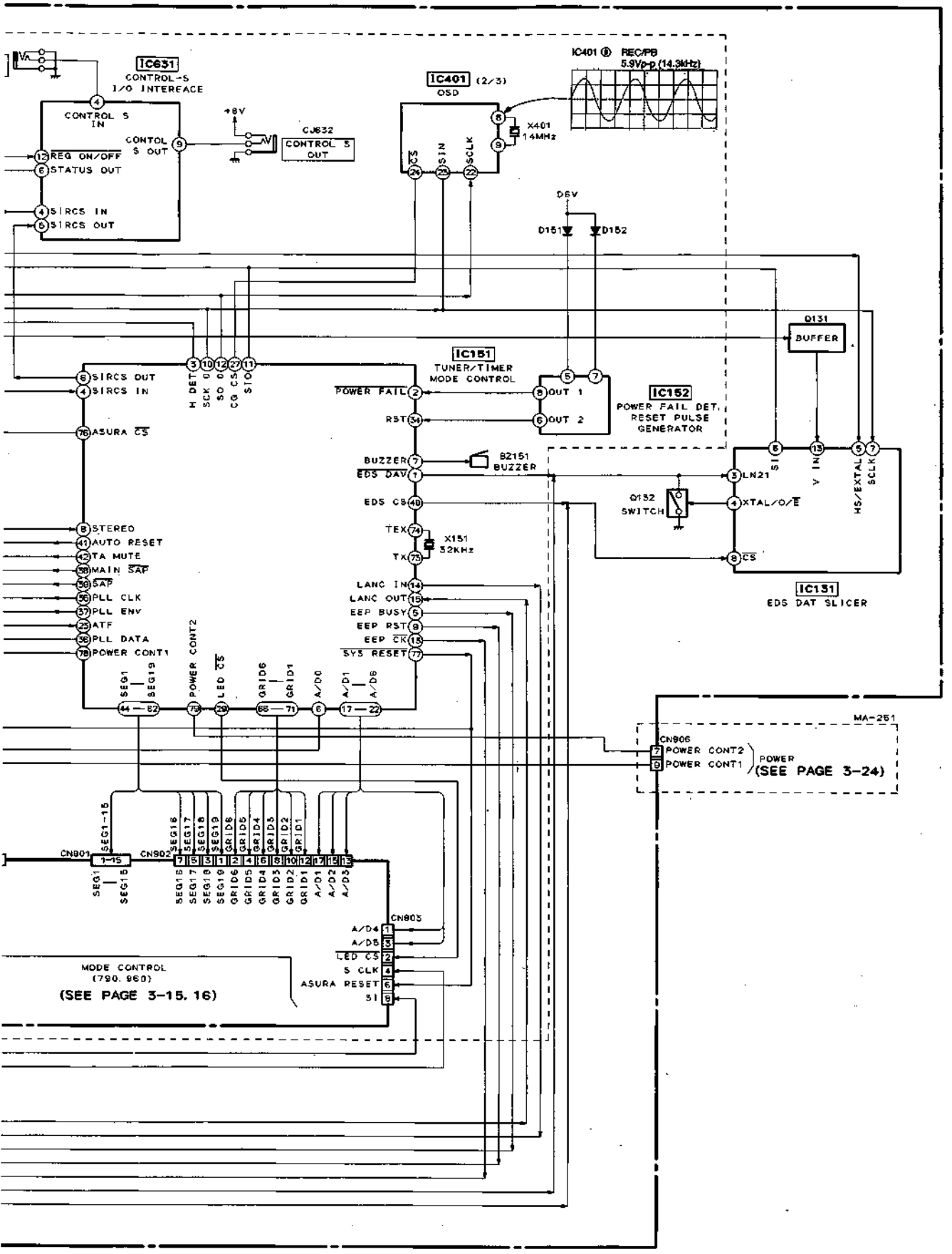
27 II PAUSE button (49)

28 ● REC button (50)

29 DUAL MODE SHUTTLE ring (49, 58)

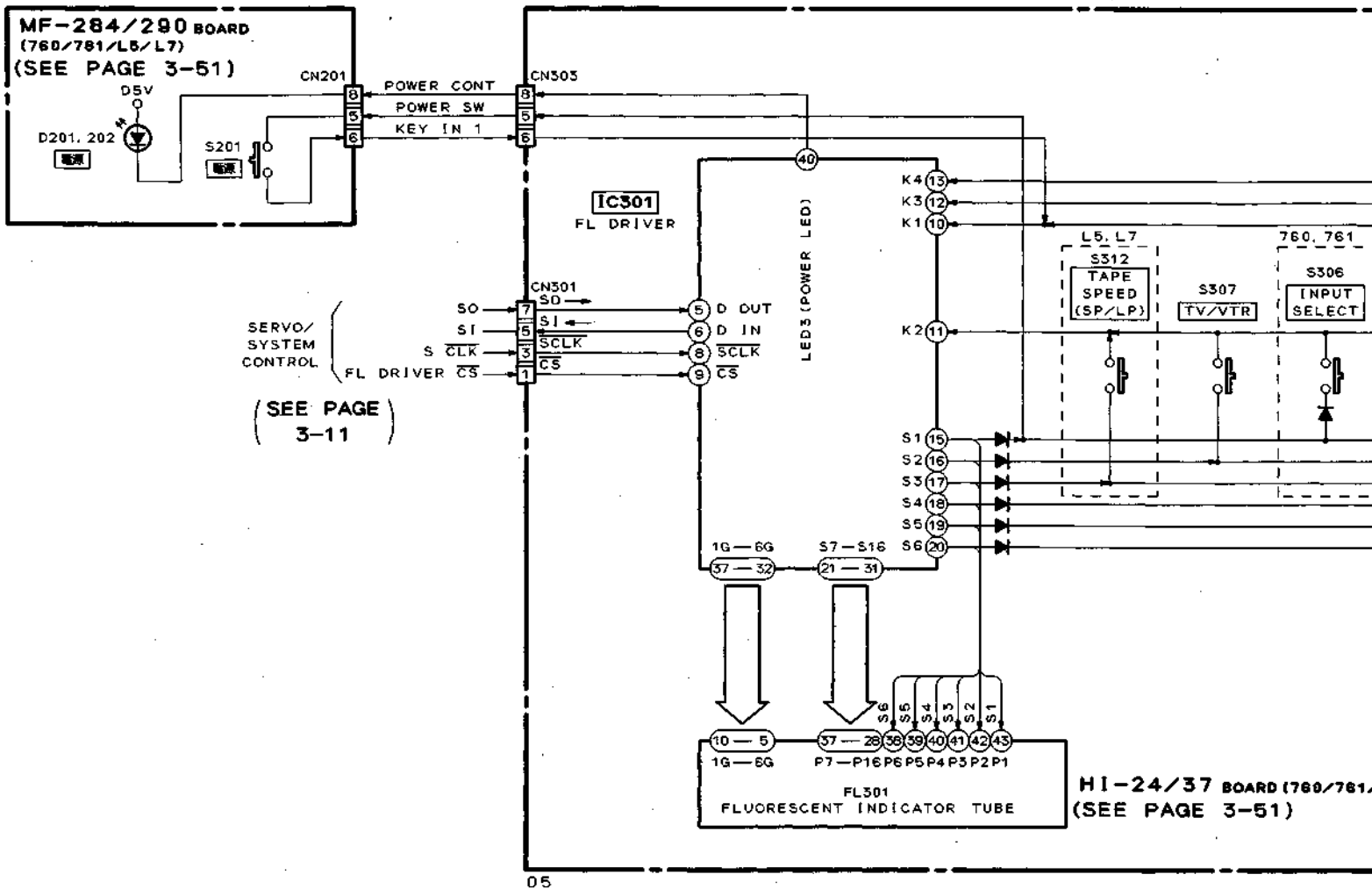

IC201 (2/3) (MA-251/252)
SYSTEM CONTROL
DRUM MOTOR (2/2)
M901
OUTPUT
OUTPUT
MATRIX
HALL DEVICE
VCC
HI-24/37 BOARD (760/761/L5/L7)
(SEE PAGE 4-51)
IC302
REMOTE CONTROL RECEIVER
SIRCS OUT
CN301
CN905
SIRCS IN
D 6V
VDD
AVDD
AVREF
REC PRF
S251
REC PROOF
RMC
760, 761, L5, L7
SP
NA PB
AF SWP
AF ENV
SD 1
SCLK
APC PWM
Q201
SWITCH
APC ERORR
RF ENV
SP
APC1
APC2
SP/EP/LP
JOG
V PB
MA-252
POWER
POWER CONT2
POWER CONT1
(SEE PAGE 3-24)
CN906
760, 761
L5, L7
NA SP
POWER CONT
IC1
CNB
M902
CAPSTAN MOTOR
VS
FRC
TL
VM
VCC
U
V
W
U (+)
U (-)
V (+)
V (-)
W (+)
W (-)
AN 5V
HALL DEVICE
CAPSTAN MOTOR (2/2)
IC201 REC/PB 4.4Vp-p (18MHz)
IC201 REC/PB 4Vp-p (H)
IC291
LOADING MOTOR DRIVE
M903 CAM MOTOR
CN291
VREF
CAM M
CAM P
VCC
13V
CAM 12V
CAM LOAD
CAM UNLOAD
CAM ENCODER (MECHA POSITION)
CN281
MODE 1
MODE 2
MODE 3
MODE 4
Q283
LED DRIVE
T/E LED
Q261
TAKE UP END SENSOR
T SENS
TAPE LED D261
Q262
SUPPLY END SENSOR
S SENS
IC261 (2/2)
REEL FG AMP
PH262
T REEL FG
PH261
S REEL FG
VREF
T REEL FG
S REEL FG
IC202 (MA-252)
D6V
D204
D201
POWER FAIL DET
RESET PULSE GENERATOR
POW. R FA
ASURA RESET
SYS CHECK
RENTAL
ORC SETTEI
QVD
D202
QHD ENABLE
XTAL
X201 16MHz
EXTAL
TX
X202 52.768MHz
760, 761
TEXL
EDS CS
LINE T
V SYNC
VA ADJ
AF REC P
AF REC
NA REC P
A MUTE
STEREO
F MONO
AUTO PRESET
760, 761, L7
MAIN SAP
TU CLK
TU ENABLE
AFT
TV/VTR
TU DATA
EDS/DAV
H DET
OSD CS
SYS RESET
FLD CS
S CLK
S OUT 0
S IN 0
EEP RESET
EEP CS
EEP BUSY

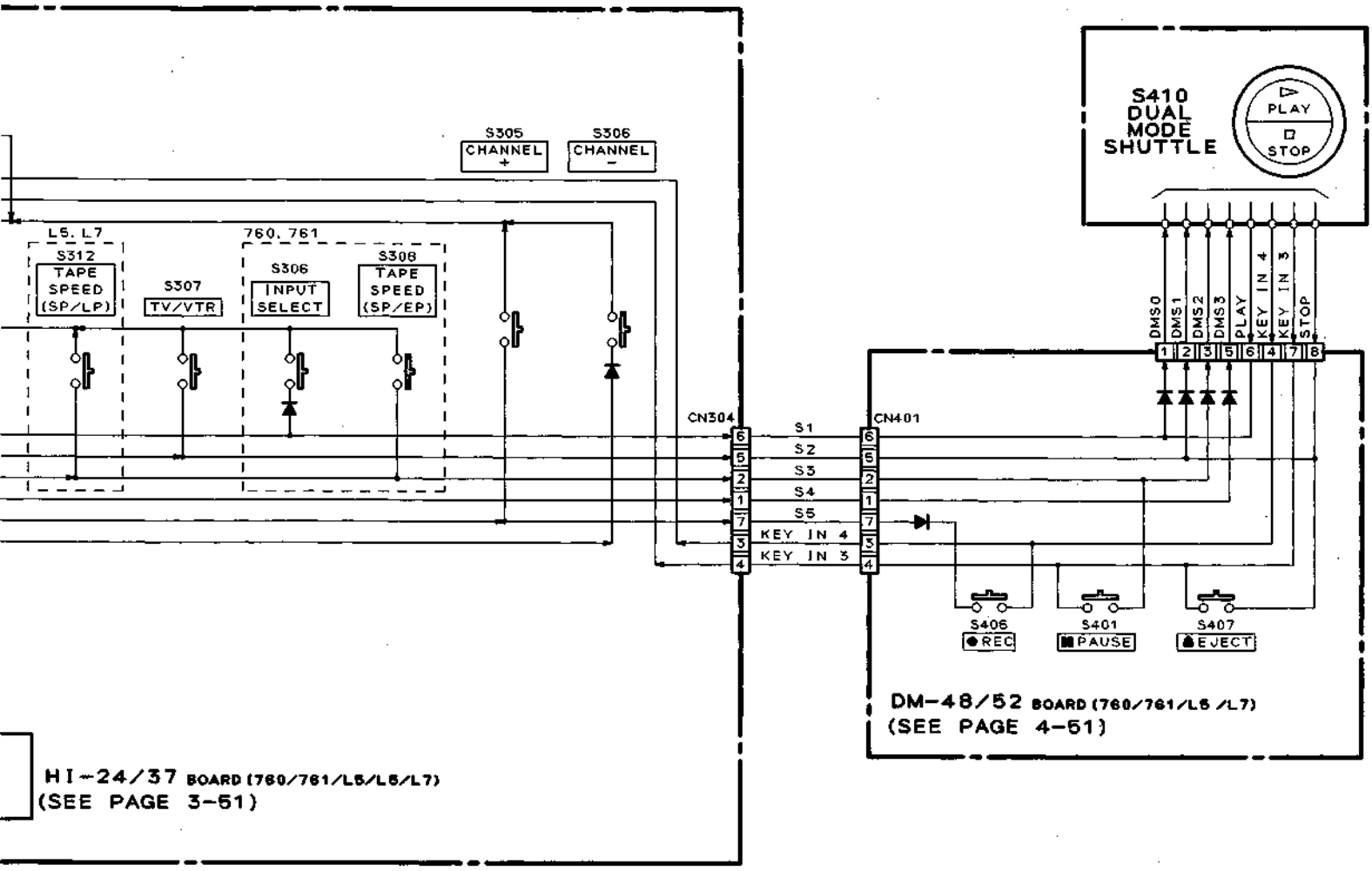

MA-251
IC201 (1/3) (MA-251)
SYSTEM CONTROL
IC631
CONTROL-S I/O INTERFACE
CONTROL S IN
CONTROL S OUT
REG ON/OFF
STATUS OUT
SIRCS IN
SIRCS OUT
FULL ERS
CBC ON
NICOLE ON
FE ON
EDIT
LINE2
LINE1
H DET
A MUTE
AMUTE
ASURA RESET
TV/VTR
F MONO
ASURA CS
STEREO
AUTO RESET
TA MUTE
MAIN SAP
SAP
PLL CLK
PLL ENV
ATF
PLL DATA
POWER CONT1
POWER CONT2
LED CS
AUDIO (SEE PAGE 3-22)
VIDEO (SEE PAGE 3-8)
TUNER (SEE PAGE 3-17, 19)
MODE CONTROL (760, 761, L5, L7) (SEE PAGE 3-13)
MODE CONTROL (790, 960) (SEE PAGE 3-15, 16)
IC401 (1/3) OSD
SYNC DET
XTAL IN
XTAL OUT
X401 14.5MHz
IC155 (MA-251)
IC203 (MA-252)
EEP ROM
CN903
CN904
CN901
CN902
CN907
FL DRIVER CS
SCLK
SO
SI
ASURA RESET
EEP CS
EEP RESET
S CLK
S IN
S OUT
SYS CHECK
LANC OUT
LANC IN
CHECK PIN
MA-252
MA-251

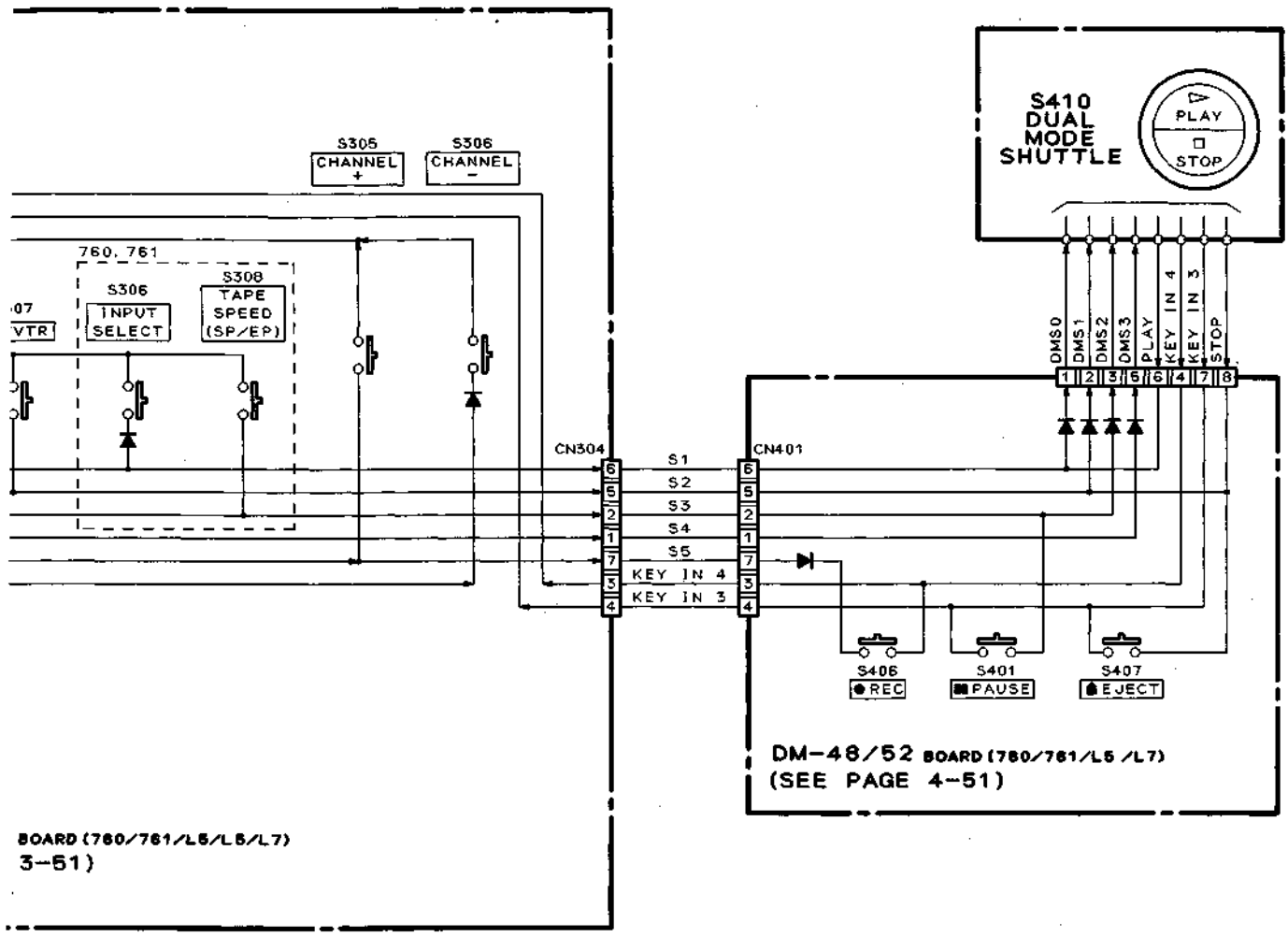

IC631
CONTROL-S I/O INTERFACE
CONTROL S IN
CONTOL S OUT
REG ON/OFF
STATUS OUT
SIRCS IN
SIRCS OUT
+8V
CJ632
CONTROL S OUT
IC401 (2/3)
OSD
X401 14MHz
IC401 ⑧ REC/PB 5.9Vp-p (14.3kHz)
D151
D152
Q131
BUFFER
IC151
TUNER/TIMER MODE CONTROL
POWER FAIL
RST
BUZZER
EDS DAV
EDS CS
TEX
TX
X151 32KHz
IC152
POWER FAIL DET, RESET PULSE GENERATOR
OUT 1
OUT 2
BZ151 BUZZER
Q132 SWITCH
LN21
XTAL/O/E
CS
IC131
EDS DAT SLICER
SI
V IN
HS/EXTAL
SCLK
ASURA CS
STEREO
AUTO RESET
TA MUTE
MAIN SAP
SAP
PLL CLK
PLL ENV
ATF
PLL DATA
POWER CONT1
LANC IN
LANC OUT
EEP BUSY
EEP RST
EEP CK
SYS RESET
SEG1 — SEG19
POWER CONT2
LED CS
GRID6 — GRID1
A/D0
A/D1 — A/D6
MA-251
CN906
POWER CONT2
POWER CONT1
POWER
(SEE PAGE 3-24)
CN901
CN902
CN903
A/D4
A/D5
LED CS
S CLK
ASURA RESET
SI
MODE CONTROL
(790, 960)
(SEE PAGE 3-15, 16)

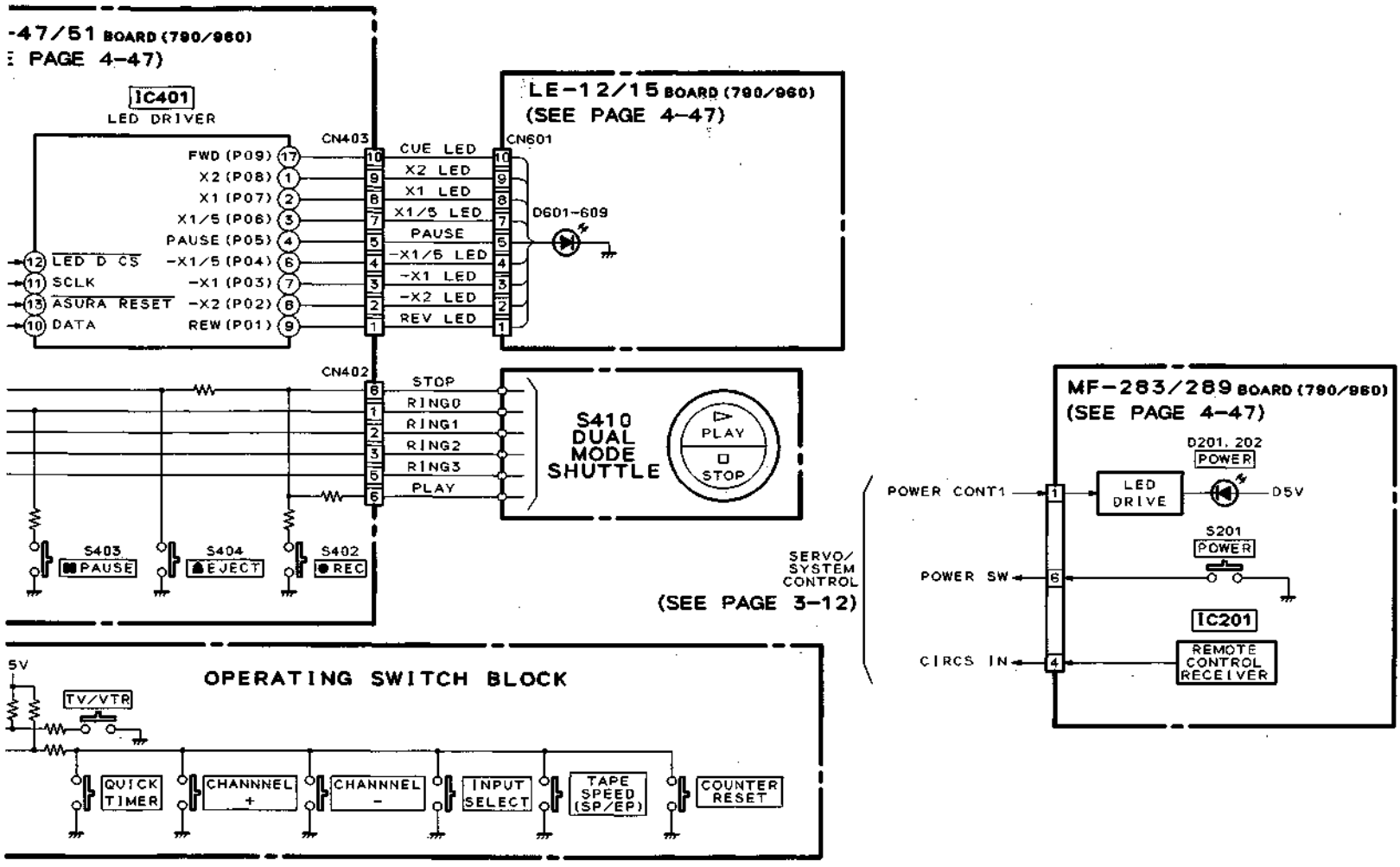
3-4. MODE CONTROL BLOCK DIAGRAM

—SLV-760/761/L5/L7—

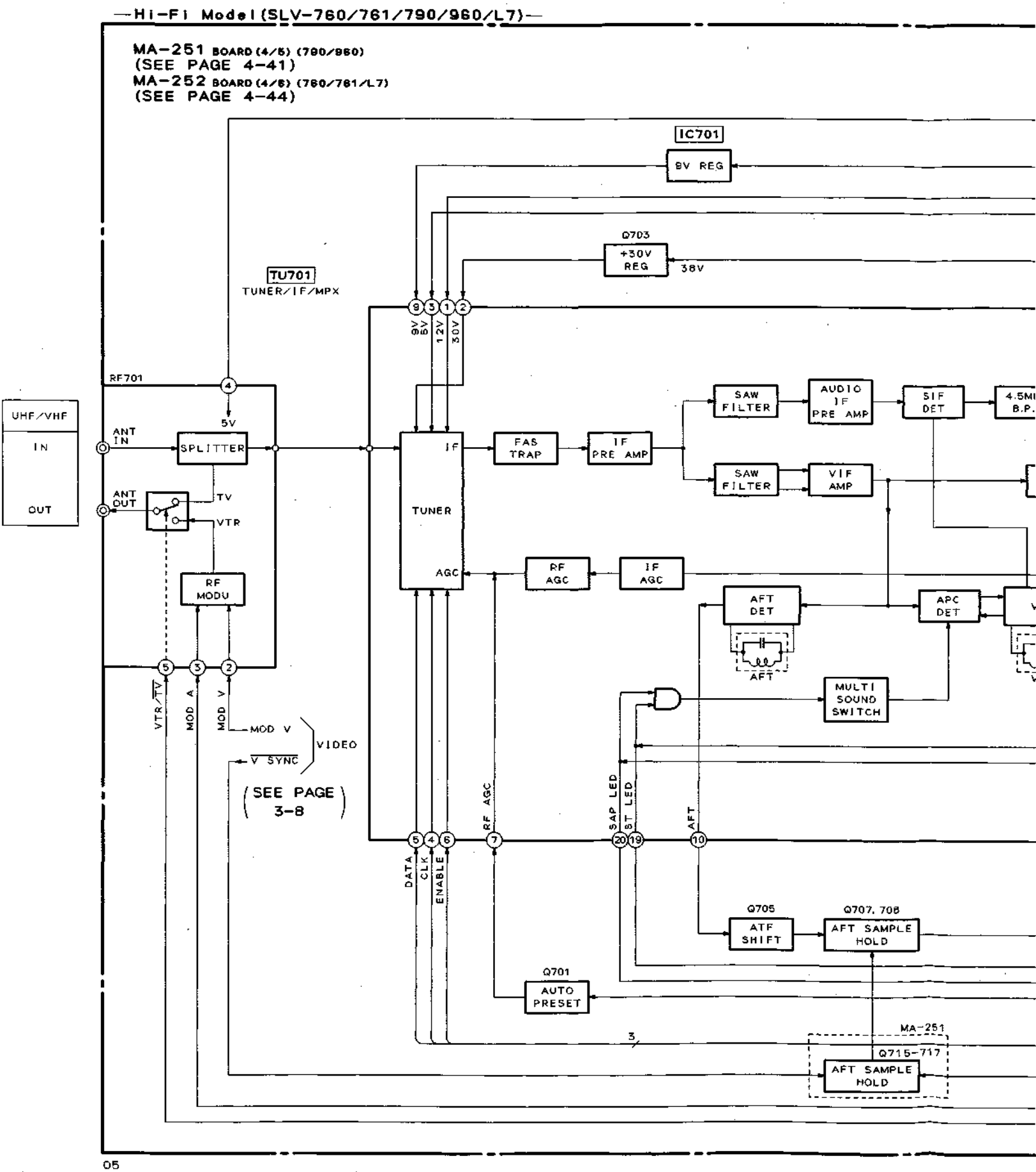


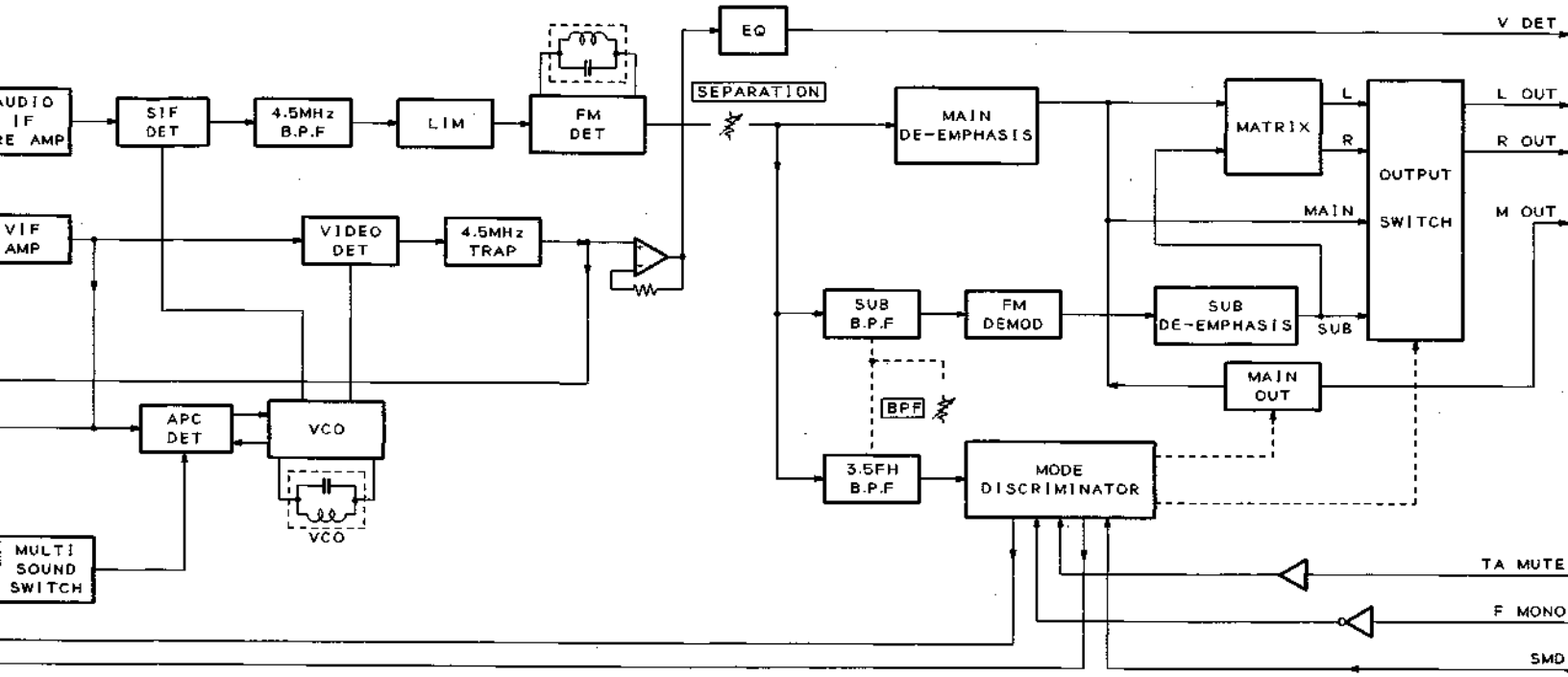

S305
CHANNEL
+
S306
CHANNEL
−
L5, L7
S312
TAPE
SPEED
(SP/LP)
S307
TV/VTR
760, 761
S306
INPUT
SELECT
S308
TAPE
SPEED
(SP/EP)
CN304
CN401
S1
S2
S3
S4
S5
KEY IN 4
KEY IN 3
S410
DUAL
MODE
SHUTTLE
PLAY
STOP
DMS0
DMS1
DMS2
DMS3
PLAY
KEY IN 4
KEY IN 3
STOP
S406
REC
S401
PAUSE
S407
EJECT
DM-48/52 BOARD (760/761/L5 /L7)
(SEE PAGE 4-51)
HI-24/37 BOARD (760/761/L5/L6/L7)
(SEE PAGE 3-51)

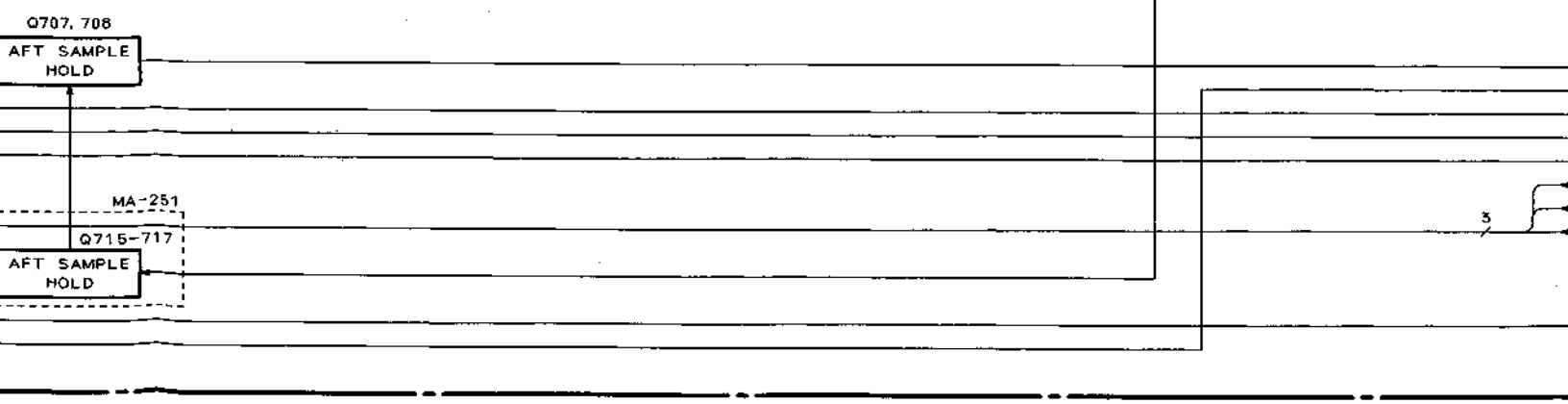

S305
CHANNEL
+
S306
CHANNEL
−
760, 761
S306
INPUT
SELECT
S308
TAPE
SPEED
(SP/EP)
VTR
CN304
CN401
S1
S2
S3
S4
S5
KEY IN 4
KEY IN 3
S410
DUAL
MODE
SHUTTLE
PLAY
STOP
DMS0
DMS1
DMS2
DMS3
PLAY
KEY IN 4
KEY IN 3
STOP
S406
REC
S401
PAUSE
S407
EJECT
DM-48/52 BOARD (760/761/L5 /L7)
(SEE PAGE 4-51)
BOARD (760/761/L5/L6/L7)
3-51)
HI-23/3
(SEE PAGE

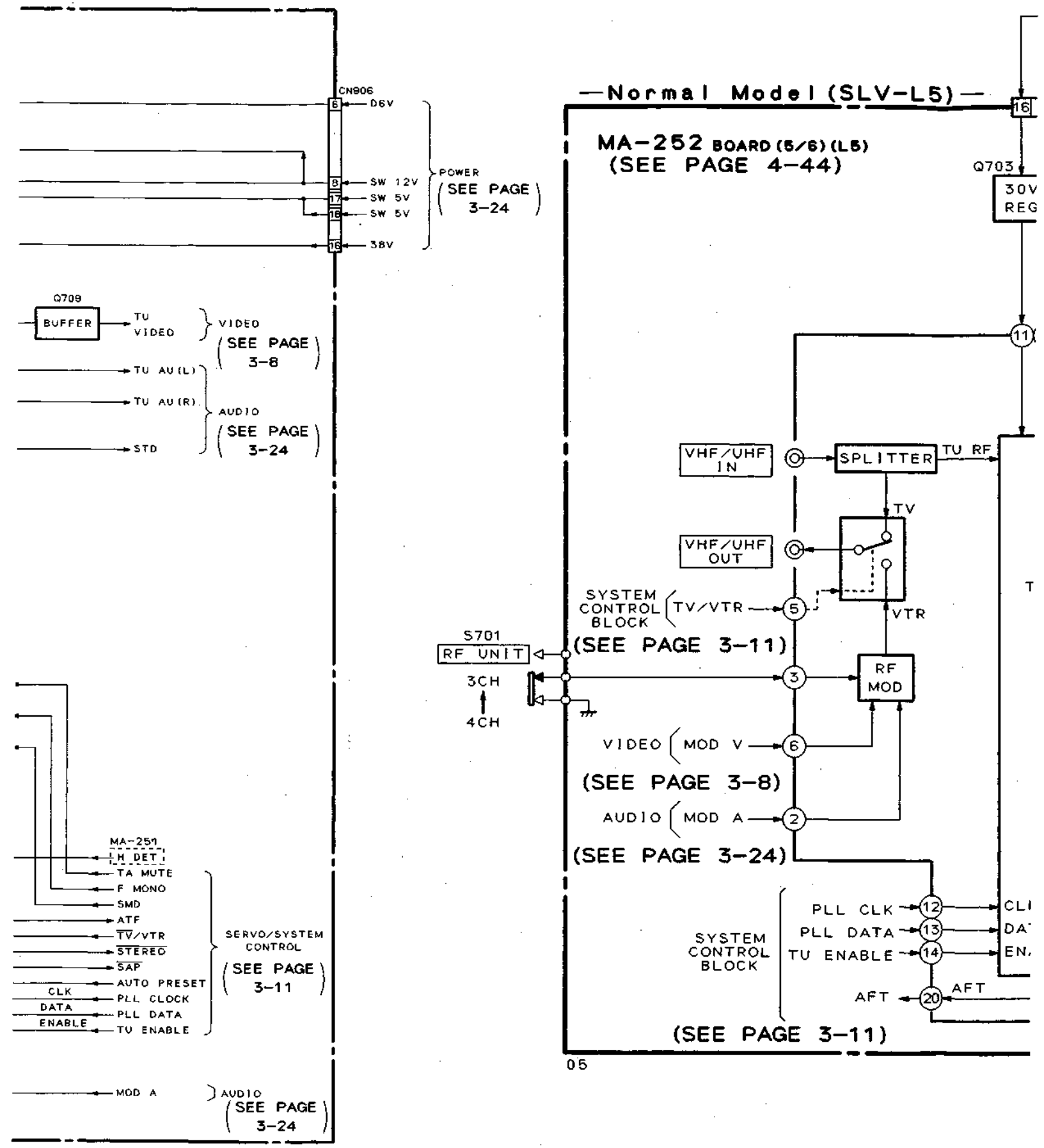

-47/51 BOARD (790/960)
E PAGE 4-47)
IC401
LED DRIVER
CN403
FWD (P09)
X2 (P08)
X1 (P07)
X1/5 (P06)
PAUSE (P05)
LED D CS
-X1/5 (P04)
SCLK
-X1 (P03)
ASURA RESET
-X2 (P02)
DATA
REW (P01)
CUE LED
X2 LED
X1 LED
X1/5 LED
PAUSE
-X1/5 LED
-X1 LED
-X2 LED
REV LED
LE-12/15 BOARD (790/960)
(SEE PAGE 4-47)
CN601
D601-609
CN402
STOP
RING0
RING1
RING2
RING3
PLAY
S410
DUAL
MODE
SHUTTLE
PLAY
STOP
S403
PAUSE
S404
EJECT
S402
REC
SERVO/
SYSTEM
CONTROL
(SEE PAGE 3-12)
MF-283/289 BOARD (790/960)
(SEE PAGE 4-47)
D201, 202
POWER
POWER CONT1
LED
DRIVE
D5V
S201
POWER
POWER SW
IC201
CIRCS IN
REMOTE
CONTROL
RECEIVER
5V
OPERATING SWITCH BLOCK
TV/VTR
QUICK
TIMER
CHANNNEL
+
CHANNNEL
-
INPUT
SELECT
TAPE
SPEED
(SP/EP)
COUNTER
RESET

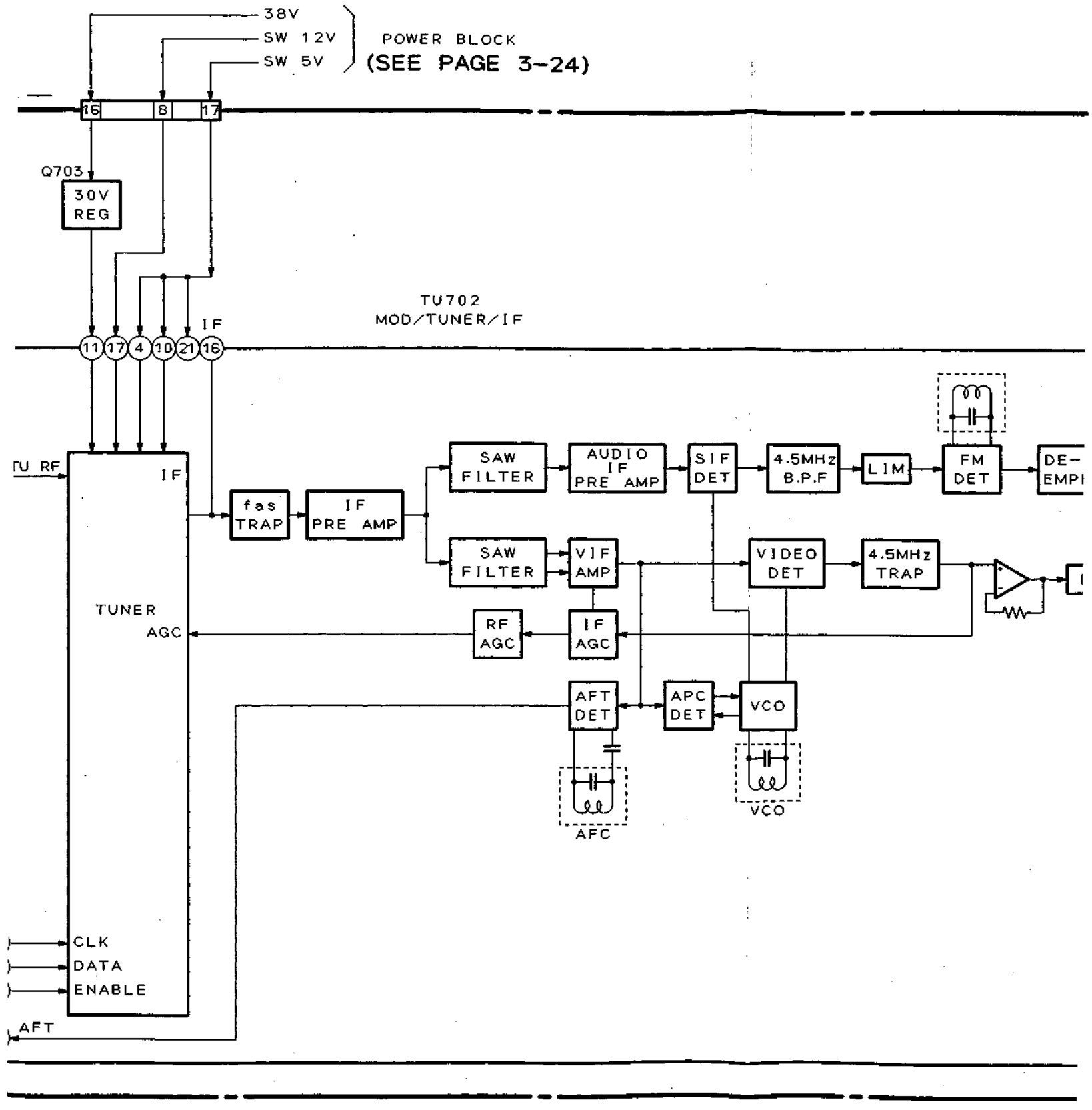
3-5. TUNER BLOCK DIAGRAM



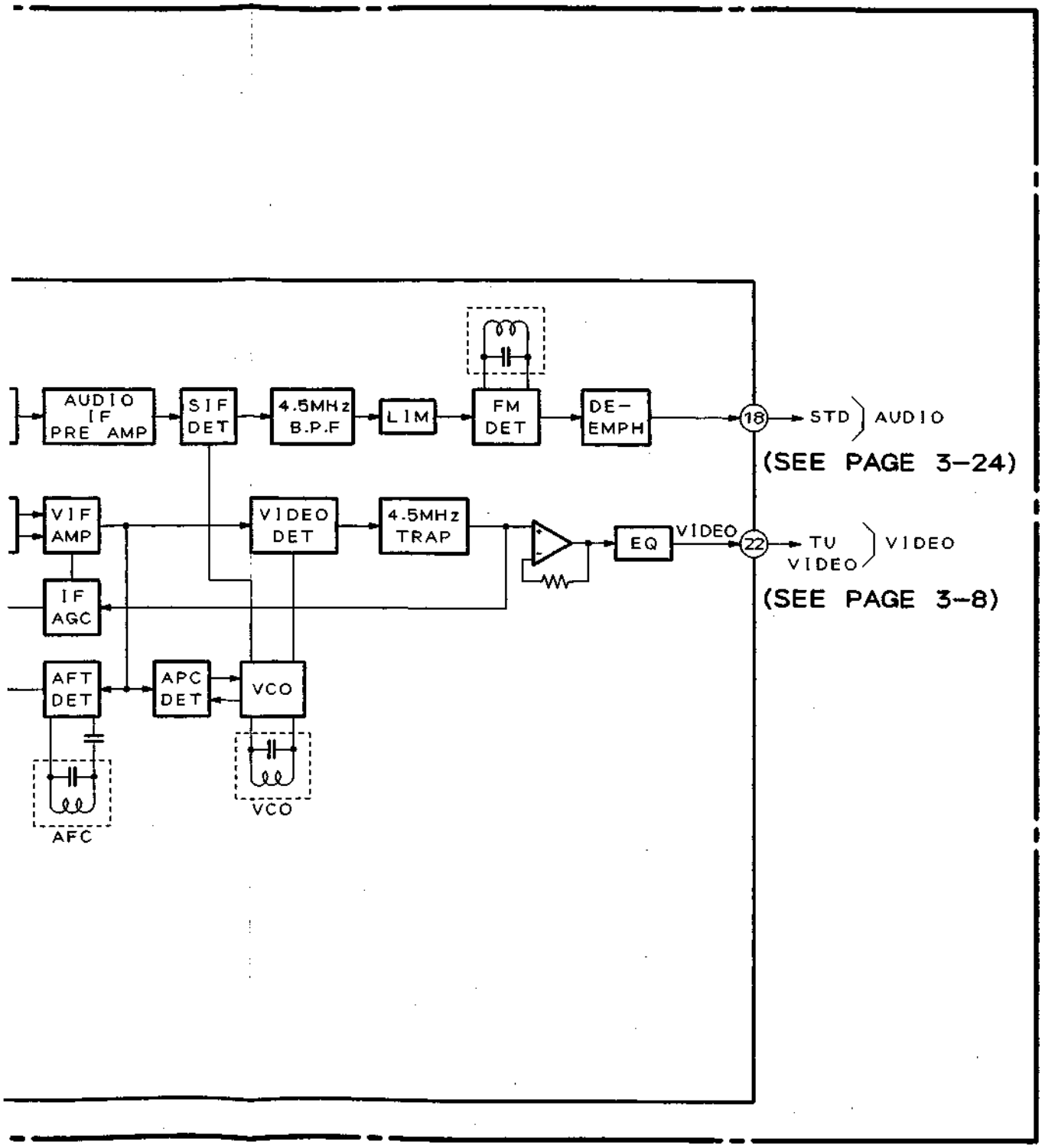

AUDIO IF RE AMP
SIF DET
4.5MHz B.P.F
LIM
FM DET
EQ
V DET
SEPARATION
MAIN DE-EMPHASIS
MATRIX
L
R
L OUT
R OUT
OUTPUT SWITCH
MAIN
M OUT
VIF AMP
VIDEO DET
4.5MHz TRAP
SUB B.P.F
FM DEMOD
SUB DE-EMPHASIS
SUB
MAIN OUT
BPF
APC DET
VCO
VCO
3.5FH B.P.F
MODE DISCRIMINATOR
MULTI SOUND SWITCH
TA MUTE
F MONO
SMD


Q707, 708
AFT SAMPLE HOLD
MA-251
Q715-717
AFT SAMPLE HOLD
3

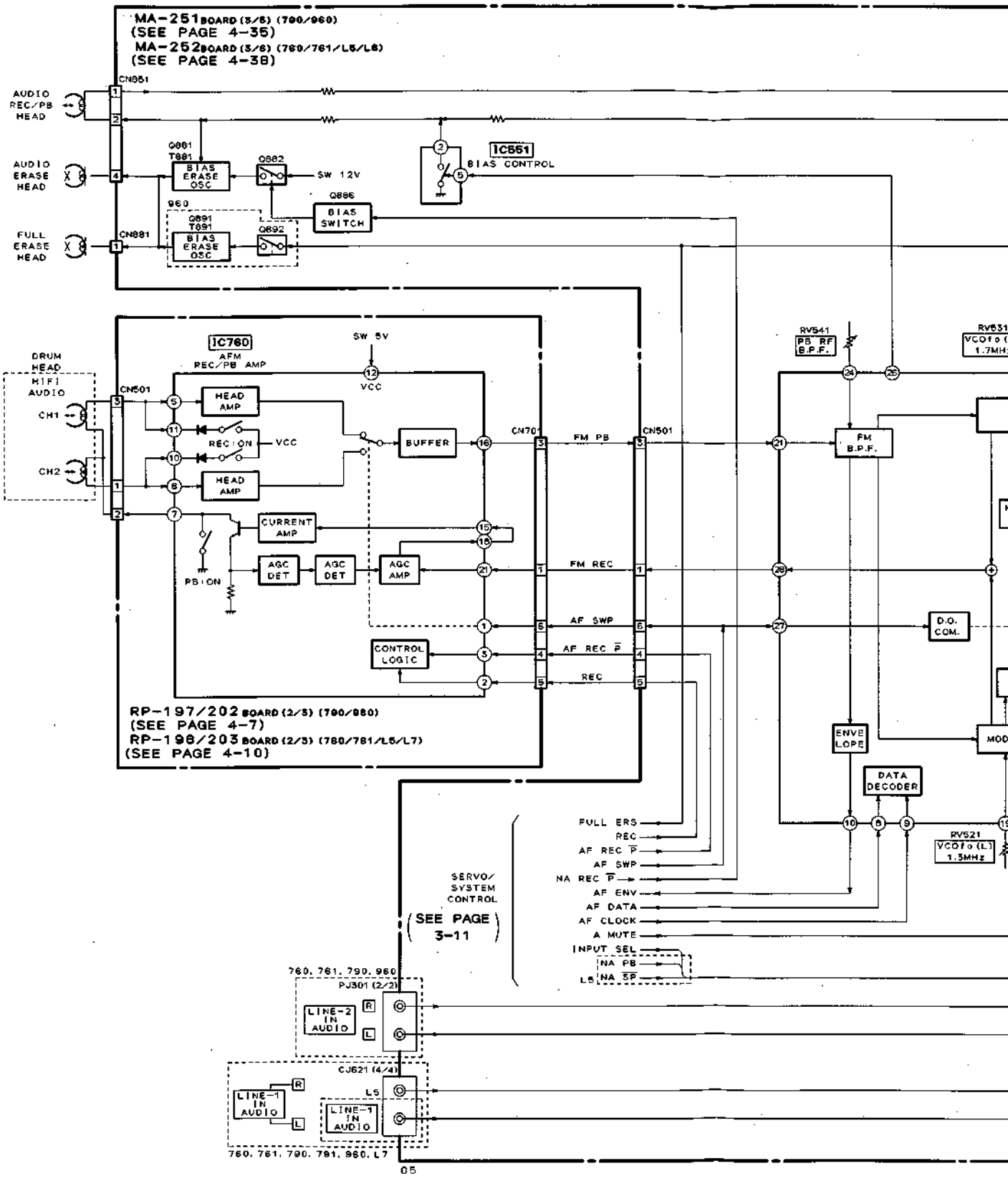

—Normal Model (SLV-L5)—
MA-252 BOARD (5/6) (L5)
(SEE PAGE 4-44)
CN906
6 D6V
8 SW 12V
17 SW 5V
18 SW 5V
16 38V
POWER
(SEE PAGE 3-24)
Q709
BUFFER
TU VIDEO
VIDEO
(SEE PAGE 3-8)
TU AU (L)
TU AU (R)
STD
AUDIO
(SEE PAGE 3-24)
MA-251
H DET
TA MUTE
F MONO
SMD
ATF
TV/VTR
STEREO
SAP
AUTO PRESET
CLK
PLL CLOCK
DATA
PLL DATA
ENABLE
TU ENABLE
SERVO/SYSTEM CONTROL
(SEE PAGE 3-11)
MOD A
AUDIO
(SEE PAGE 3-24)
Q703
30V REG
16
11
VHF/UHF IN
SPLITTER
TU RF
TV
VHF/UHF OUT
VTR
SYSTEM CONTROL BLOCK
TV/VTR
5
(SEE PAGE 3-11)
S701
RF UNIT
3CH
4CH
3
RF MOD
VIDEO
MOD V
6
(SEE PAGE 3-8)
AUDIO
MOD A
2
(SEE PAGE 3-24)
PLL CLK
12
PLL DATA
13
TU ENABLE
14
AFT
20
AFT
SYSTEM CONTROL BLOCK
(SEE PAGE 3-11)
05

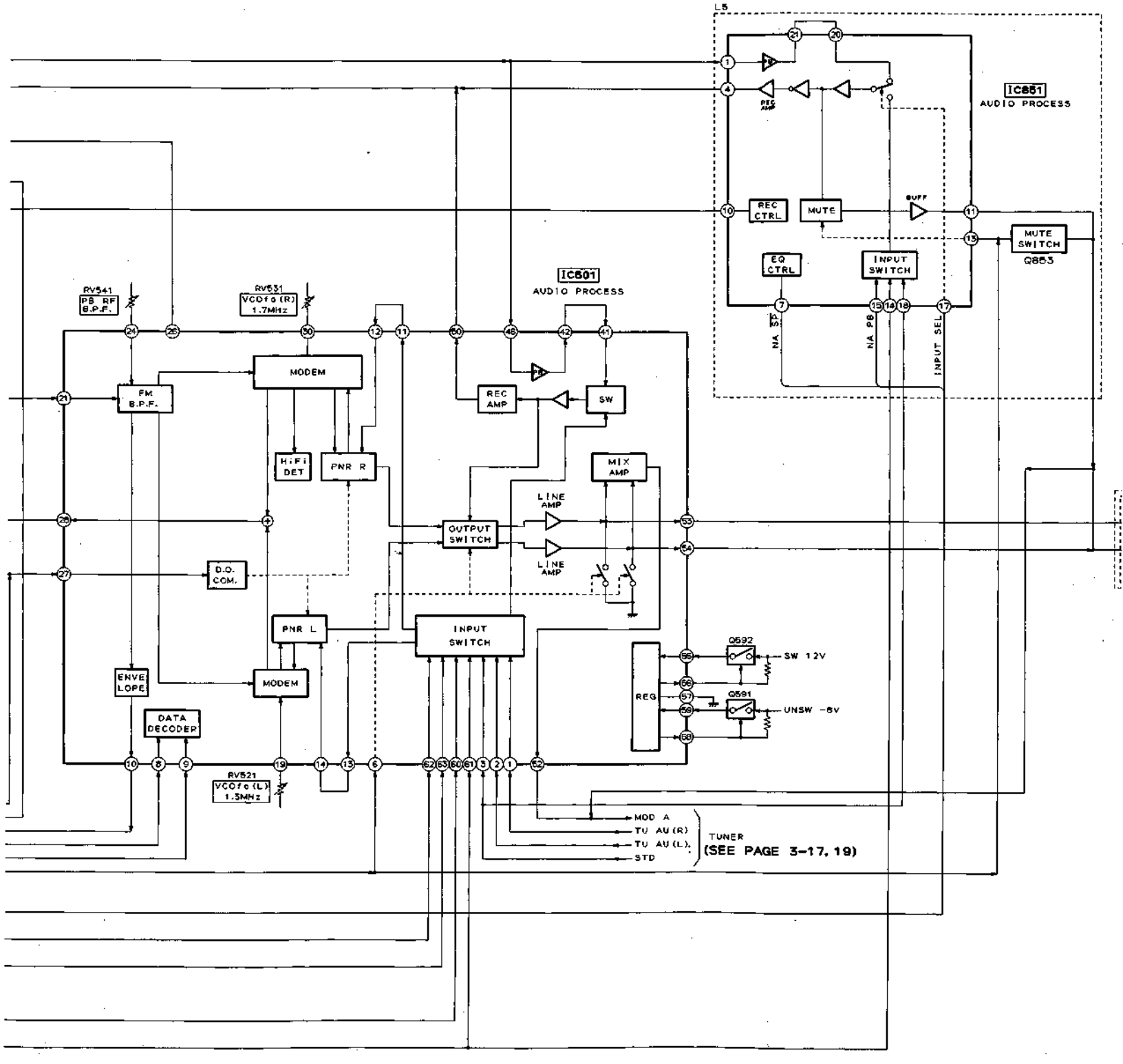

38V
SW 12V
SW 5V
POWER BLOCK
(SEE PAGE 3-24)
16
8
17
Q703
30V
REG
TU702
MOD/TUNER/IF
IF
11
17
4
10
21
16
TU RF
IF
TUNER
AGC
fas
TRAP
IF
PRE AMP
SAW
FILTER
AUDIO
IF
PRE AMP
SIF
DET
4.5MHz
B.P.F
LIM
FM
DET
DE-
EMPI
SAW
FILTER
VIF
AMP
VIDEO
DET
4.5MHz
TRAP
RF
AGC
IF
AGC
AFT
DET
APC
DET
VCO
AFC
VCO
CLK
DATA
ENABLE
AFT

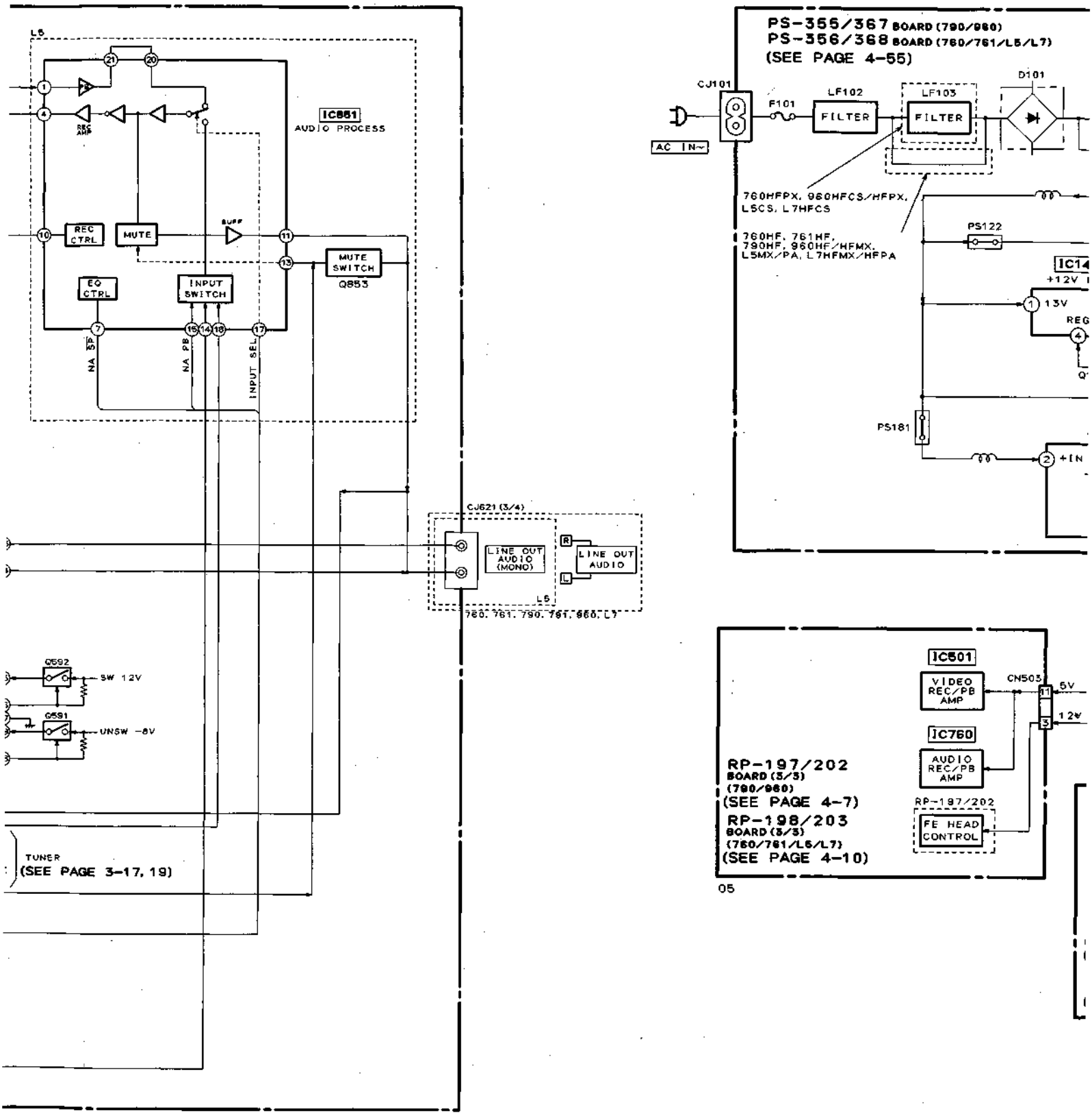
·24)


AUDIO IF PRE AMP
SIF DET
4.5MHz B.P.F
LIM
FM DET
DE-EMPH
18
STD
AUDIO
(SEE PAGE 3-24)
VIF AMP
VIDEO DET
4.5MHz TRAP
EQ
VIDEO
22
TU VIDEO
VIDEO
(SEE PAGE 3-8)
IF AGC
AFT DET
APC DET
VCO
AFC
VCO

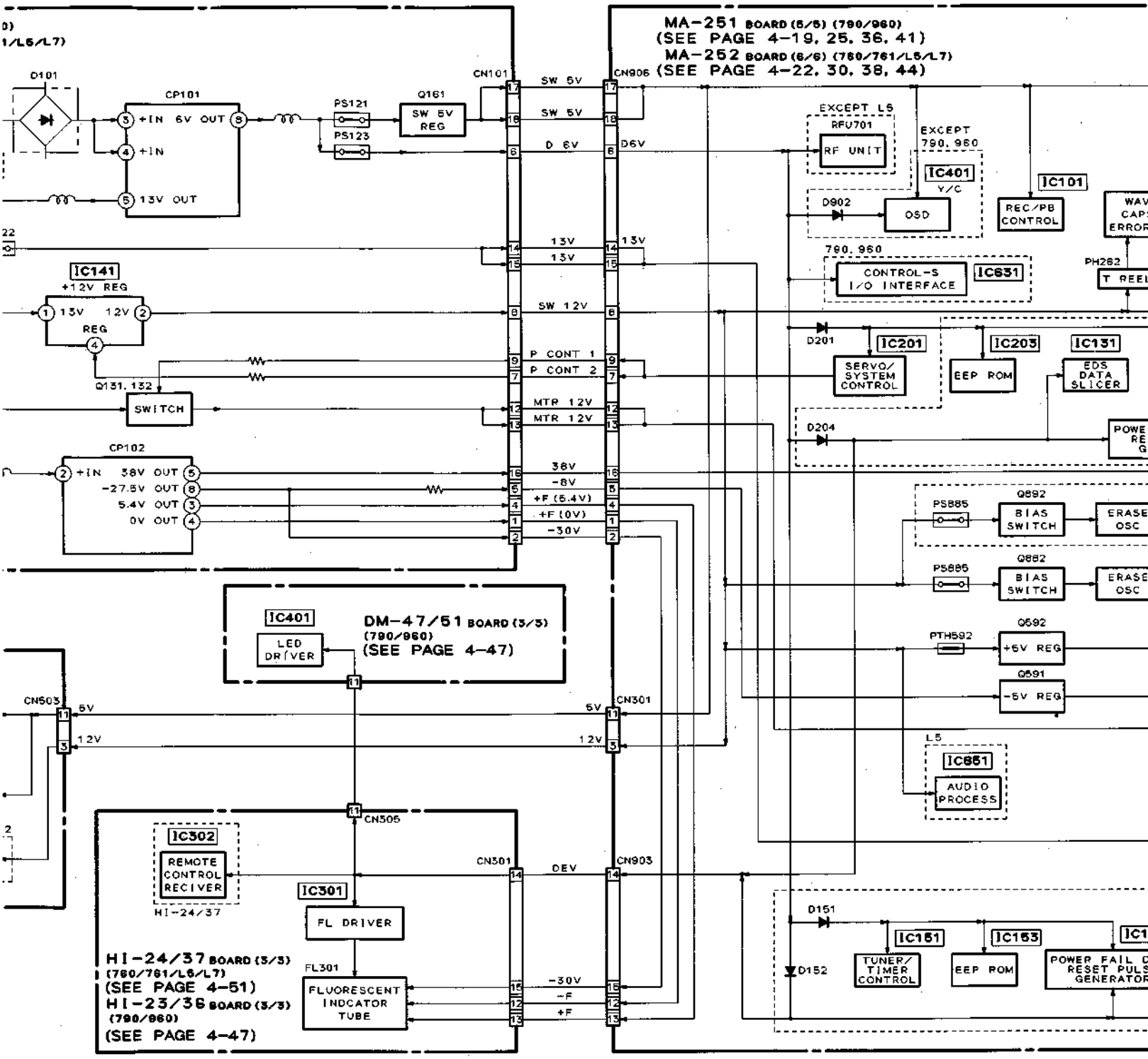
3-6. AUDIO/IO BLOCK DIAGRAM

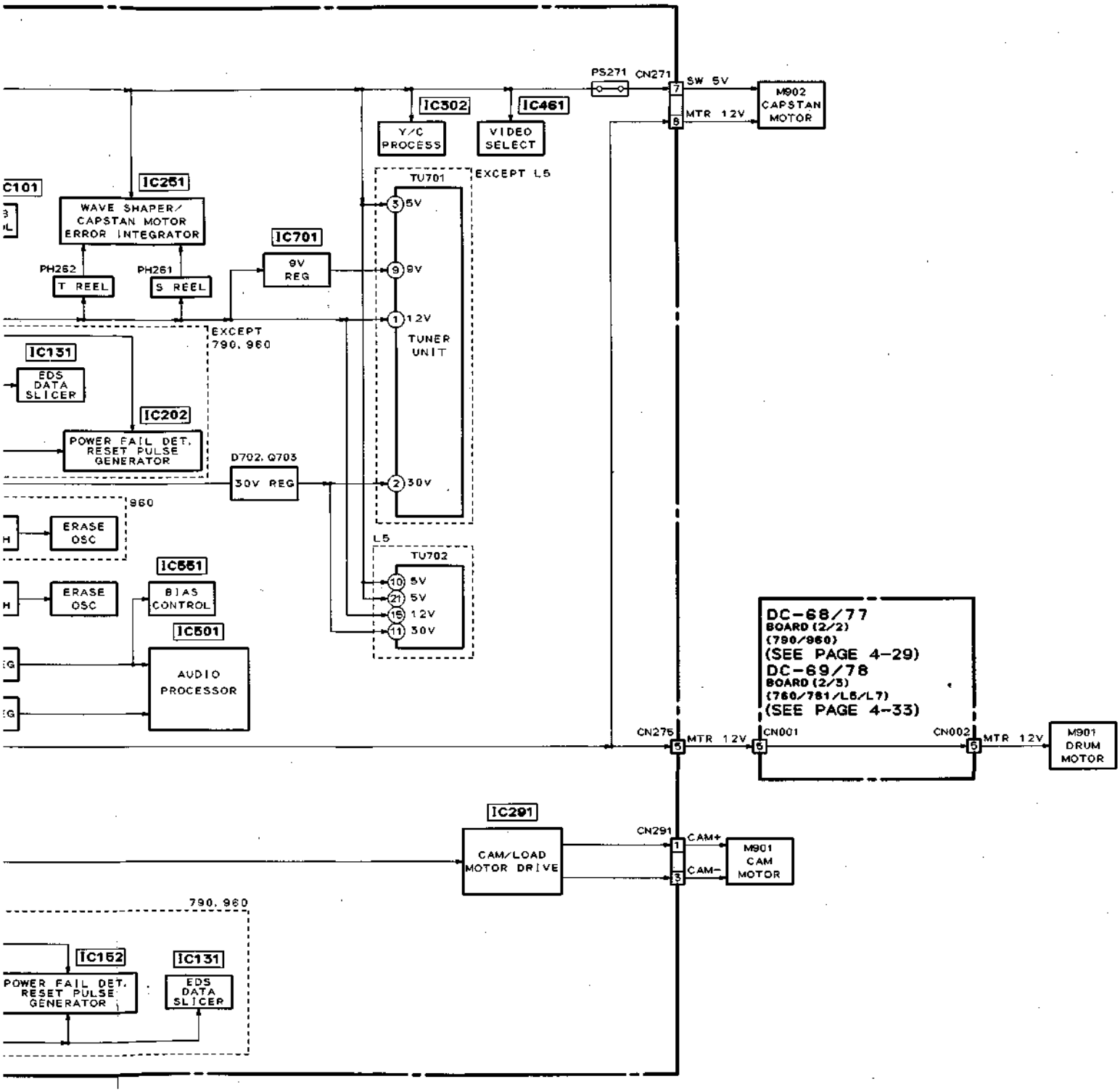



L5
IC851
AUDIO PROCESS
REC AMP
REC CTRL
MUTE
BUFF
MUTE SWITCH
Q853
EQ CTRL
INPUT SWITCH
NA SP
NA PB
INPUT SEL
IC801
AUDIO PROCESS
RV541
PB RF B.P.F.
RV531
VCOfo (R) 1.7MHz
MODEM
FM B.P.F.
REC AMP
SW
HiFi DET
PNR R
MIX AMP
LINE AMP
OUTPUT SWITCH
LINE AMP
D.O. COM.
PNR L
INPUT SWITCH
Q592
SW 12V
ENVE LOPE
MODEM
REG
Q591
UNSW -8V
DATA DECODER
RV521
VCOfo (L) 1.5MHz
MOD A
TU AU (R)
TU AU (L)
STD
TUNER
(SEE PAGE 3-17, 19)


L5
IC851
AUDIO PROCESS
REC AMP
REC CTRL
MUTE
BUFF
MUTE SWITCH
Q853
EQ CTRL
INPUT SWITCH
NA SP
NA PB
INPUT SEL
CJ621 (3/4)
LINE OUT AUDIO (MONO)
LINE OUT AUDIO
R
L
L5
760, 761, 790, 791, 960, L7
Q592
SW 12V
Q591
UNSW -8V
TUNER
(SEE PAGE 3-17, 19)
PS-355/367 BOARD (790/960)
PS-356/368 BOARD (760/761/L5/L7)
(SEE PAGE 4-55)
CJ101
F101
LF102
FILTER
LF103
FILTER
D101
AC IN~
760HFPX, 960HFCS/HFPX, L5CS, L7HFCS
760HF, 761HF, 790HF, 960HF/HFMX, L5MX/PA, L7HFMX/HFPA
PS122
+12V
13V
REG
PS181
+IN
IC501
VIDEO REC/PB AMP
CN503
5V
12V
IC760
AUDIO REC/PB AMP
RP-197/202
BOARD (3/3)
(790/960)
(SEE PAGE 4-7)
RP-198/203
BOARD (3/3)
(760/761/L5/L7)
(SEE PAGE 4-10)
RP-197/202
FE HEAD CONTROL
05

DIAGRAM


MA-251 BOARD (5/5) (790/960)
(SEE PAGE 4-19, 25, 36, 41)
MA-252 BOARD (6/6) (760/761/L5/L7)
(SEE PAGE 4-22, 30, 38, 44)
D101
CP101
+IN 6V OUT
+IN
13V OUT
PS121
PS123
Q161
SW 5V REG
CN101
CN906
SW 5V
SW 5V
D 6V
D6V
EXCEPT L5
RFU701
RF UNIT
EXCEPT 790, 960
IC401
Y/C
IC101
REC/PB CONTROL
D902
OSD
790, 960
CONTROL-S I/O INTERFACE
IC651
PH282
T REEL
13V
13V
13V
13V
IC141
+12V REG
13V 12V
REG
SW 12V
D201
IC201
SERVO/ SYSTEM CONTROL
IC203
EEP ROM
IC131
EDS DATA SLICER
P CONT 1
P CONT 2
Q131, 132
SWITCH
MTR 12V
MTR 12V
D204
CP102
+IN 38V OUT
-27.5V OUT
5.4V OUT
0V OUT
38V
-8V
+F (5.4V)
+F (0V)
-30V
PS885
Q892
BIAS SWITCH
ERASE OSC
PS885
Q882
BIAS SWITCH
ERASE OSC
IC401
LED DRIVER
DM-47/51 BOARD (3/3)
(790/960)
(SEE PAGE 4-47)
PTH592
Q592
+5V REG
Q591
-5V REG
CN503
5V
12V
5V
12V
CN301
L5
IC651
AUDIO PROCESS
CN505
IC302
REMOTE CONTROL RECIVER
HI-24/37
CN301
DEV
CN903
IC301
FL DRIVER
D151
IC151
IC153
D152
TUNER/ TIMER CONTROL
EEP ROM
HI-24/37 BOARD (3/3)
(760/761/L6/L7)
(SEE PAGE 4-51)
HI-23/36 BOARD (3/3)
(790/960)
(SEE PAGE 4-47)
FL301
FLUORESCENT INDICATOR TUBE
-30V
-F
+F


PS271
CN271
SW 5V
MTR 12V
M902 CAPSTAN MOTOR
IC302
Y/C PROCESS
IC461
VIDEO SELECT
TU701
EXCEPT L5
5V
9V
12V
TUNER UNIT
30V
IC101
IC251
WAVE SHAPER/ CAPSTAN MOTOR ERROR INTEGRATOR
IC701
9V REG
PH262
T REEL
PH261
S REEL
EXCEPT 790, 960
IC131
EDS DATA SLICER
IC202
POWER FAIL DET. RESET PULSE GENERATOR
D702, Q703
30V REG
960
ERASE OSC
L5
TU702
5V
5V
12V
30V
IC551
BIAS CONTROL
ERASE OSC
IC501
AUDIO PROCESSOR
DC-68/77
BOARD (2/2)
(790/960)
(SEE PAGE 4-29)
DC-69/78
BOARD (2/3)
(760/761/L6/L7)
(SEE PAGE 4-33)
CN276
MTR 12V
CN001
CN002
MTR 12V
M901 DRUM MOTOR
IC291
CAM/LOAD MOTOR DRIVE
CN291
CAM+
CAM-
M901 CAM MOTOR
790, 960
IC152
POWER FAIL DET. RESET PULSE GENERATOR
IC131
EDS DATA SLICER

• Signal path

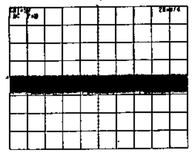
	VIDEO SIGNAL			AUDIO
	CHROMA	Y	Y/CHROMA	SIGNAL
REC	➡	➡	➡	➡
PB	⇨	⇨	⇨	⇨

• Signal path

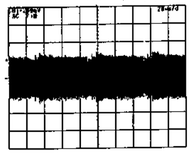
	REC	REC/PB	PB
Ref. signal	➡	➡	⇨

• Waveforms

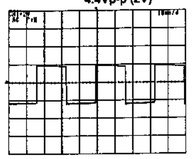
❶ IC501 ④ REC 5Vp-p (H)



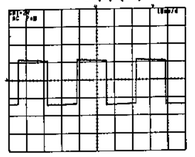
❺ IC501 ⑰ PB 480mVp-p (H)



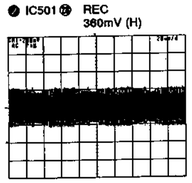
❻ IC501 ⑰ REC/PB 4.4Vp-p (2V)



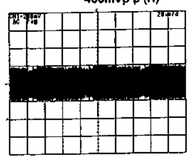
❼ IC501 ⑰ REC/PB 5Vp-p (2V)



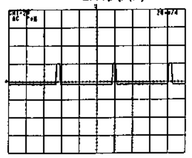
❷ IC501 ㉒ REC 380mV (H)



❹ IC501 ㉒ PB 400mVp-p (H)

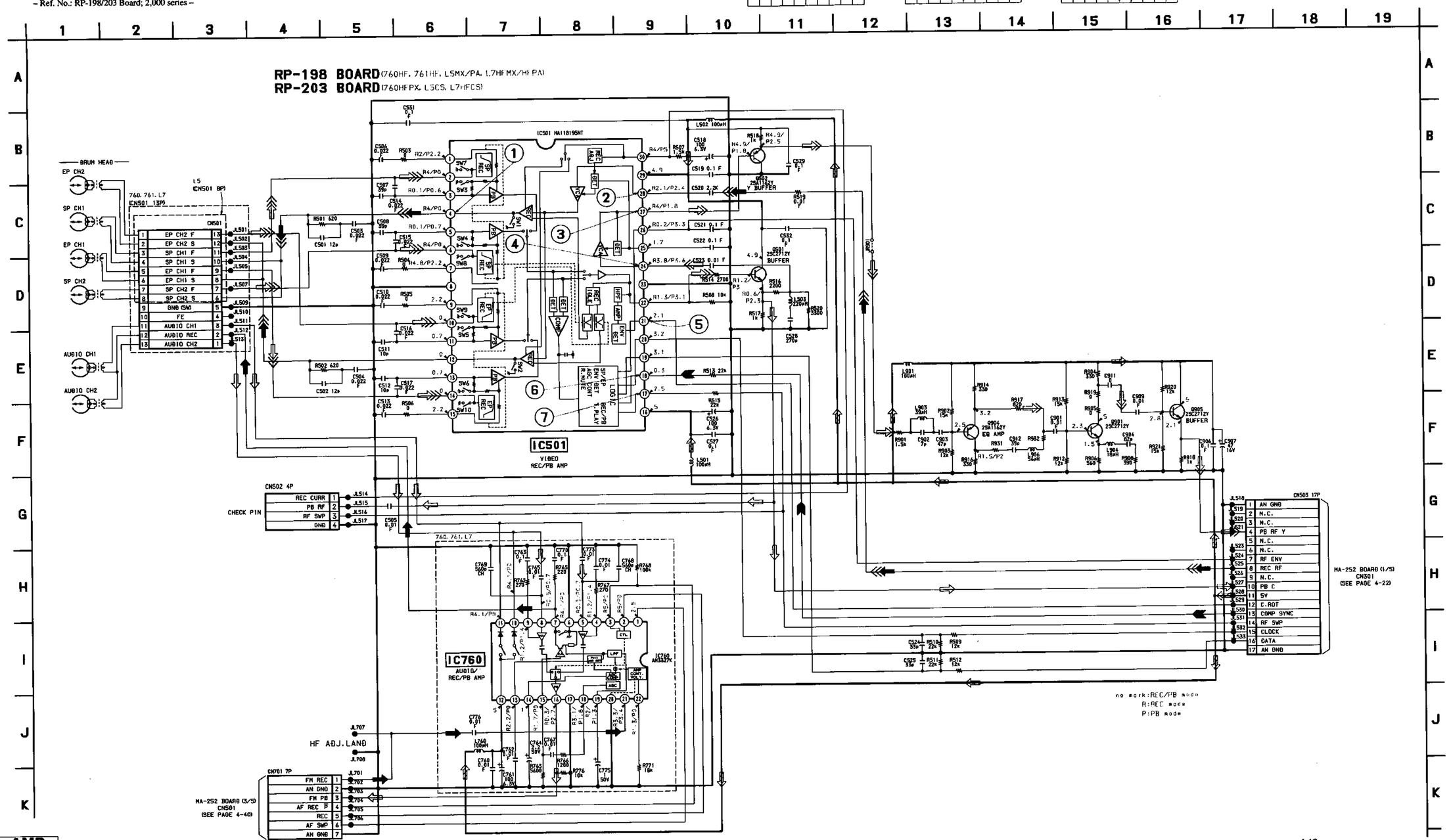


❽ IC501 ⑱ REC/PB 2.4Vp-p (H)



PR-198/203 (HEAD AMP) (SLV-760/761/L5/L7) SCHEMATIC DIAGRAM • See page 4-4 to 4-6 for printed wiring board.
– Ref. No.: RP-198/203 Board; 2,000 series –

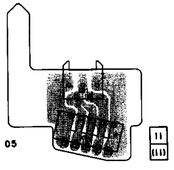
RP-198 BOARD (760HF, 761HF, L5MX/PA, L7HFMX/HFPA)
RP-203 BOARD (760HFPX, L5CS, L7HFCS)



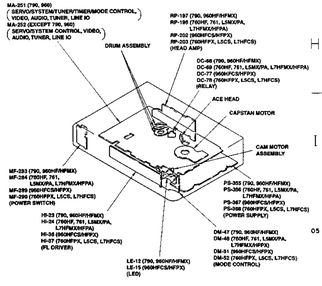
There are cases that the part isn't mounted in this model is printed on this diagram.

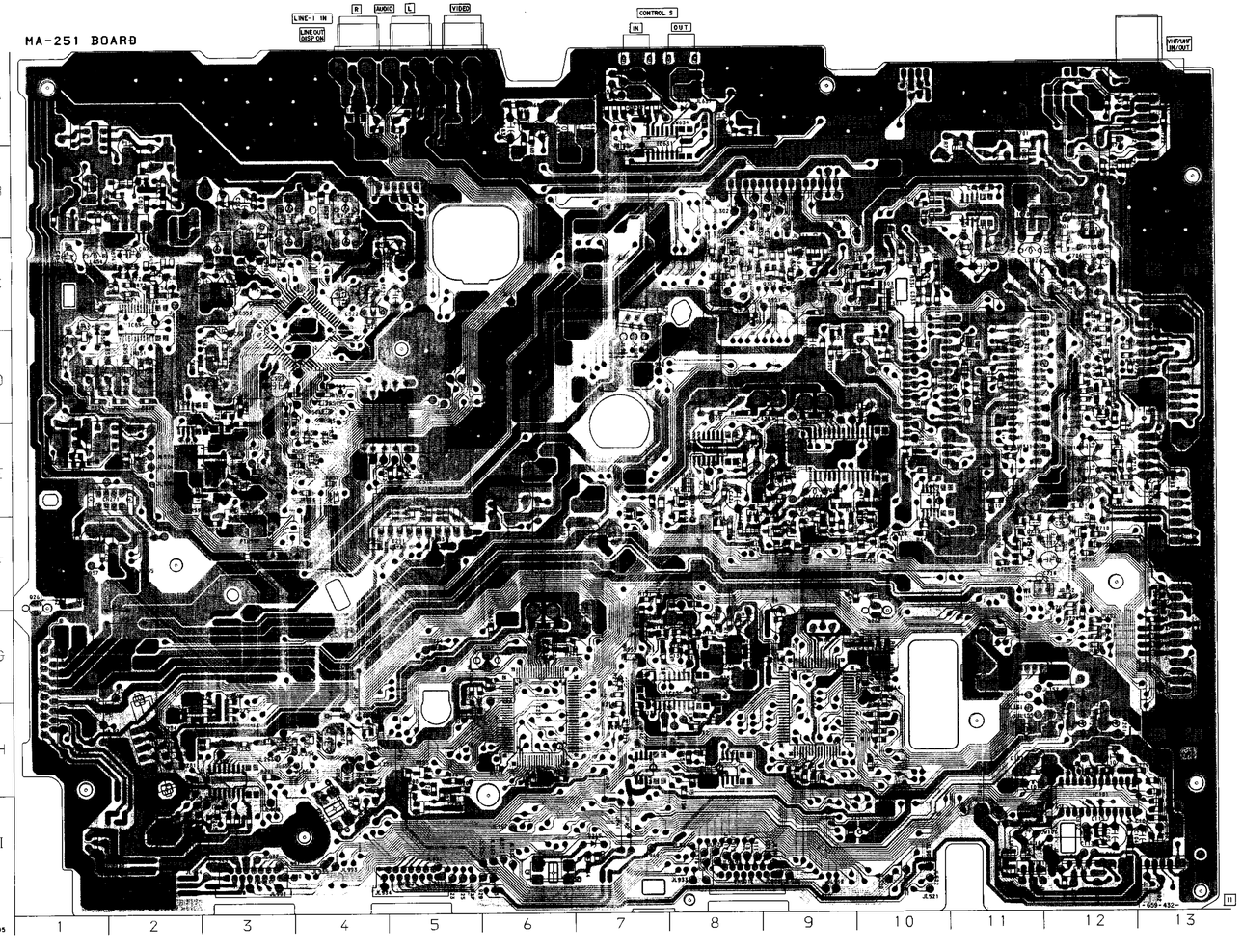
MA-251 (SERVO/SYSTEM/TUNER/TIMER/MODE CONTROL, VIDEO, AUDIO, IO, TUNER) (SLV-790/960), DC-68/77 (REALY) PRINTED WIRING BOARDS

– Ref. No.: MA-251 Board; 3,000 series, DC-68/77 Board; 1,000 series –

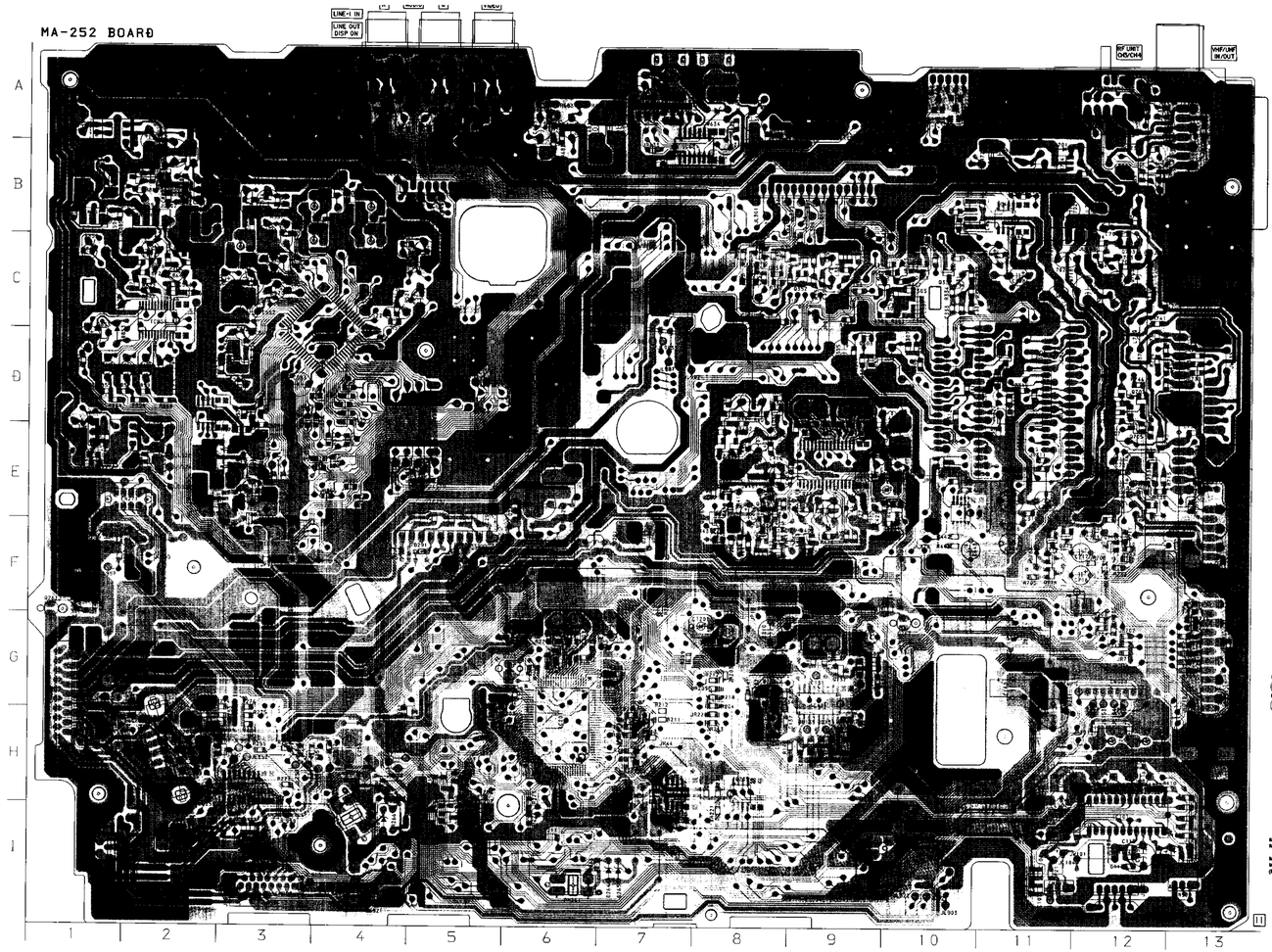


DC-68 BOARD: 1-659-441-
DC-69 BOARD: 1-659-454-
DC-77 BOARD: 1-659-448-
DC-78 BOARD: 1-659-460-





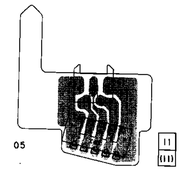
MA-252 BOARD



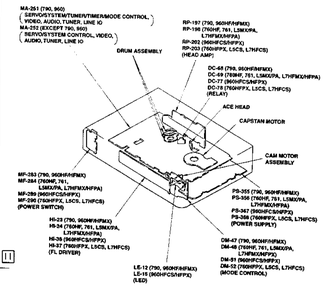
MA252 BOARD

CN101	I-11
CN271	E-2
CN275	C-7
CN281	H-2
CN291	I-1
CN301	B-9
CN501	B-5
CN851	B-2
CN861	B-1
CN903	I-3
CN905	I-12
CN906	G-1
CN908	G-12
D001	F-7
D002	H-7
D003	H-9
D004	F-7
D051	H-3
D091	G-5
D095	I-7
D097	I-4
D291	F-5
D403	E-10
D591	E-3
D610	A-5
D701	B-11
D702	C-13
D708	C-12
D706	F-11
D853	D-1
D902	H-4
IC101	I-12
IC131	G-9
IC201	H-6
IC202	H-7
IC203	H-8
IC291	H-2
IC391	E-5
IC408	D-11
IC401	E-9
IC461	B-11
IC501	D-4
IC551	D-2
IC701	B-11
IC851	C-2
Q131	G-8
Q132	G-9
Q201	I-5
Q202	H-5
Q261	F-1
Q262	G-10
Q263	E-6
Q301	C-9
Q306	D-11
Q352	C-9
Q353	C-8
Q404	E-8
Q405	F-9
Q406	E-8
Q591	E-3
Q592	E-2
Q851	A-2
Q701	B-12
Q703	C-12
Q705	B-12
Q707	D-12
Q708	D-12
Q709	E-12
Q710	F-12
Q711	F-11
Q714	F-11
Q853	D-1
Q881	B-2
Q882	B-2
Q886	B-2

DC-68/69/77/78 BOARD

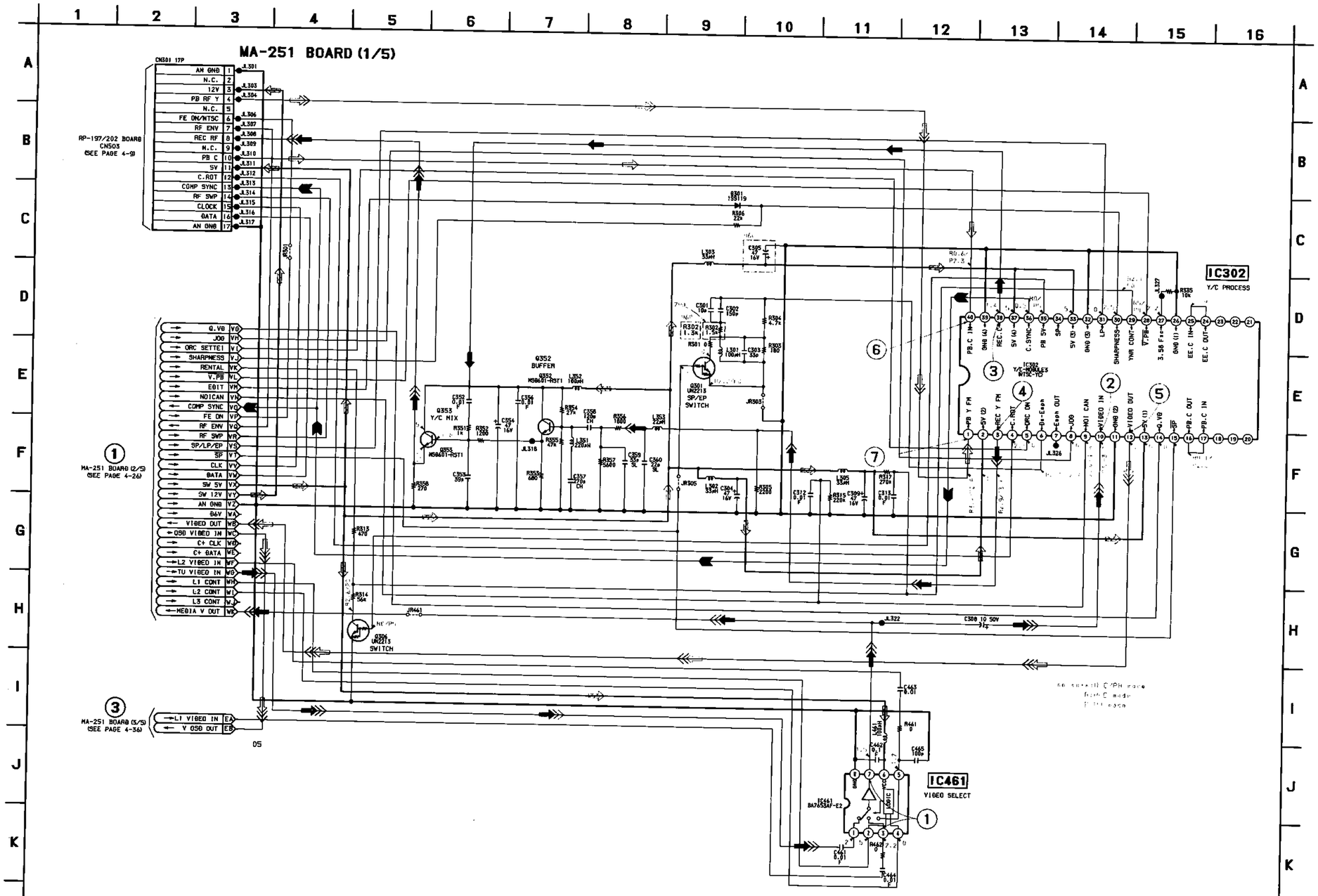


DC-68 BOARD: 1-659-441-
DC-69 BOARD: 1-659-454-
DC-77 BOARD: 1-659-448-
DC-78 BOARD: 1-659-460-



SERVO/SYSTEM CONTROL, VIDEO, AUDIO, IO, TUNER
MA-252, DC-69/78

MA-251 (VIDEO) (SLV-790/960) SCHEMATIC DIAGRAM • See page 4-13 to 4-15 for printed wiring board.
– Ref. No.: MA-251 Board; 3,000 series –

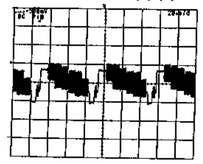


4-19

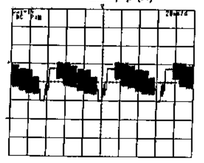
4-20

• Waveforms

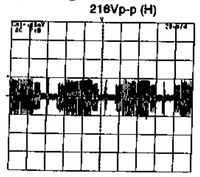
❶ IC461 ③, ⑦ REC
1.1Vp-p (H)



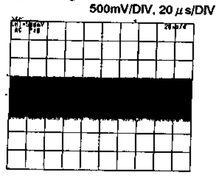
❷ IC302 ⑩ REC
2.2Vp-p (H)



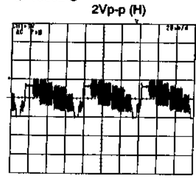
❸ IC302 ⑧ REC
216Vp-p (H)



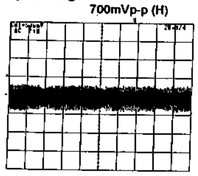
❹ IC302 ③ REC
500mV/DIV, 20 μs/DIV



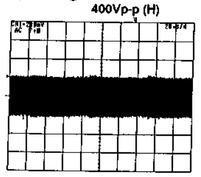
❺ IC302 ⑫ PB
2Vp-p (H)



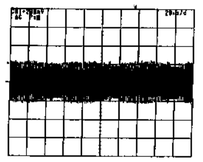
❻ IC302 ⑭ PB
700mVp-p (H)



❼ IC302 ① PB
400Vp-p (H)



❽ Q353 Ⓔ 460mVp-p (H)



• Signal path

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡	➡
PB	⇨	⇨	⇨

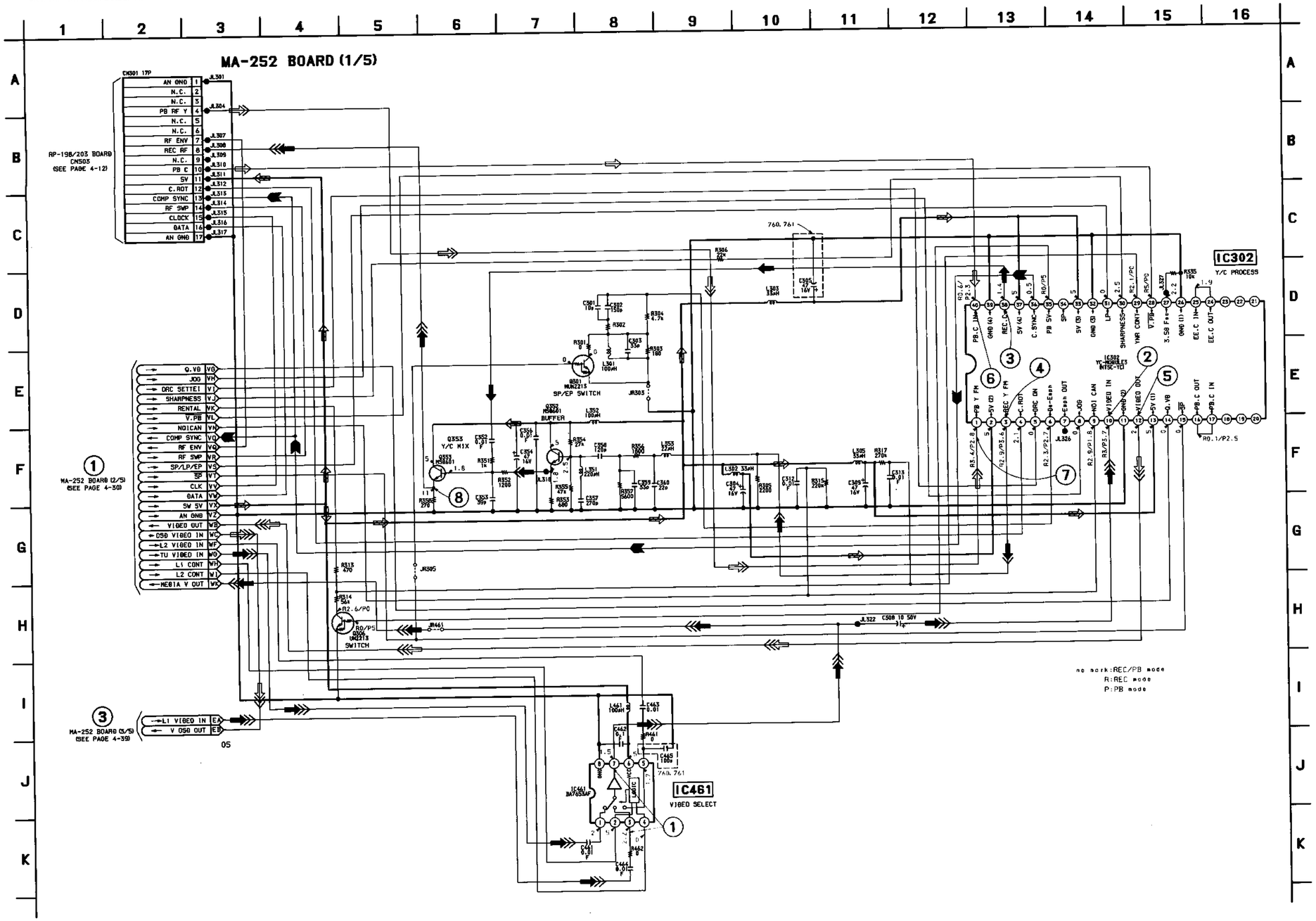
• Signal path

	REC	REC/PB	PB
Ref. signal	➡	➡	⇨

4-21

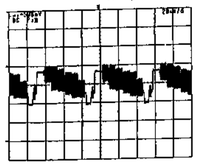
MA-252 (VIDEO) (SLV-760/761/L5/L7) SCHEMATIC DIAGRAM • See page 4-16 to 4-18 for printed wiring board.

– Ref. No.: MA-252 Board; 4,000 series –

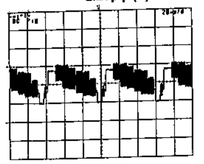


• Waveforms

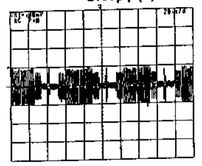
❶ IC461 ③, ⑦ REC
1.1Vp-p (H)



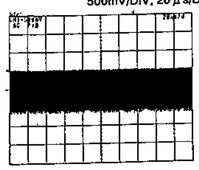
❷ IC302 ⑲ REC
2.2Vp-p (H)



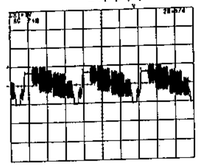
❸ IC302 ⑧ REC
216Vp-p (H)



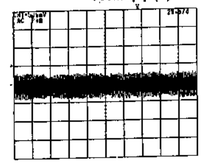
❹ IC302 ③ REC
500mV/DIV, 20 μs/DIV



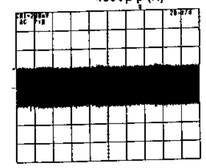
❺ IC302 ⑫ PB
2Vp-p (H)



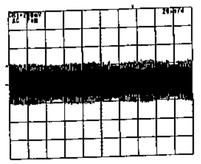
❻ IC302 ⑭ PB
700mVp-p (H)



❼ IC302 ① PB
400Vp-p (H)



❽ Q353 Ⓔ 460mVp-p (H)



• Signal path

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡	➡
PB	⇨	⇨	⇨

• Signal path

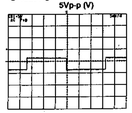
	REC	REC/PB	PB
Ref. signal	➡	➡	⇨

MA-251 (SERVO/SYSTEM/TUNER/TIMER/MODE CONTROL) (SLV-790/960), DC-68/77 (REALY) SCHEMATIC DIAGRAM • See page 4-13 to 4-15 for printed wiring board.

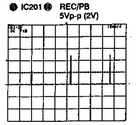
– Ref. No.: MA-251 Board; 3,000 series, DC-68/77 Board; 1,000 series –

• Waveforms

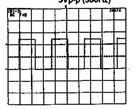
● IC201 ① REC/PB 5Vp-p (V)



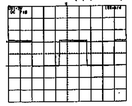
● IC201 ② REC/PB 5Vp-p (2V)



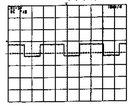
● IC201 ③ REC/PB 5Vp-p (360Hz)



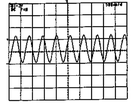
● IC201 ④ REC/PB 4.2Vp-p (2.16kHz)



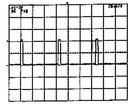
● IC201 ⑦ REC 5Vp-p (2V)



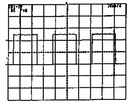
● IC201 ⑫ REC/PB 4.4Vp-p (16MHz)



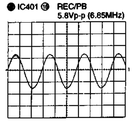
● IC201 ⑭ REC/PB 4Vp-p (H)



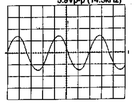
● IC201 ⑰ PB 5Vp-p (2V)



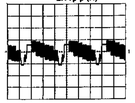
● IC401 ⑤ REC/PB 5.8Vp-p (6.85MHz)



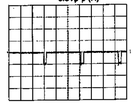
● IC401 ⑥ REC/PB 5.9Vp-p (14.3kHz)



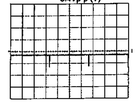
● IC401 ⑧ REC/PB 2.1Vp-p (H)



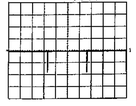
● C401 ⑨ REC/PB 6.8Vp-p (H)



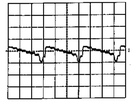
● IC401 ⑬ REC/PB 5.4Vp-p (V)



● IC401 ⑲ REC/PB 3.7Vp-p (H)



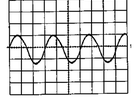
● IC402 ② REC/PB 1.3Vp-p (H)

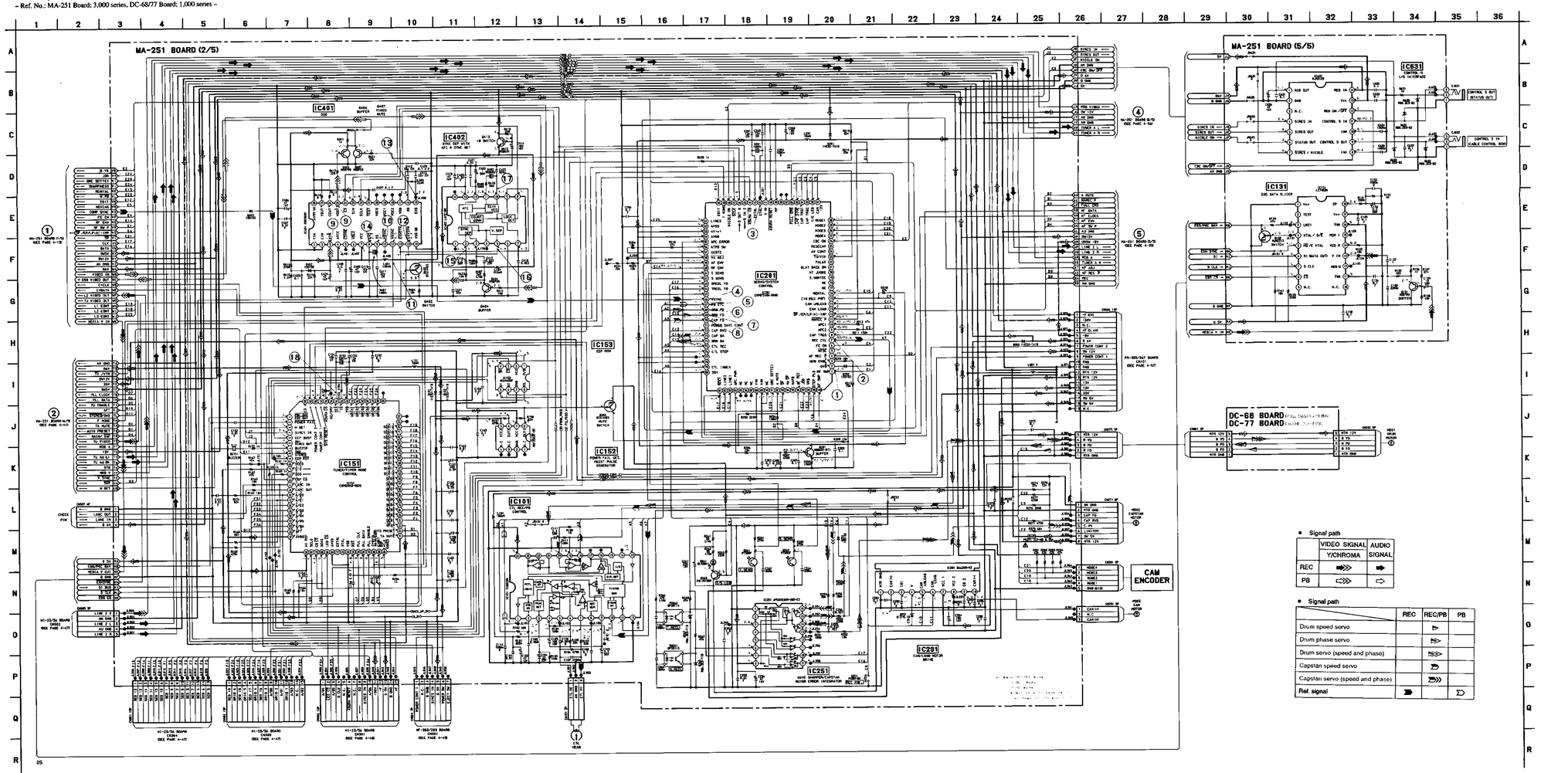


● IC402 ④ REC/PB 3.7Vp-p (V)

● IC402 ⑨ REC/PB 700mV (500kHz)

● IC151 ㉔ REC/PB 2.5Vp-p (32kHz)





• Signal path

	VIDEO SIGNAL Y/CHROMA	AUDIO SIGNAL
REC	⇒	➡
PB	⇨	⇨

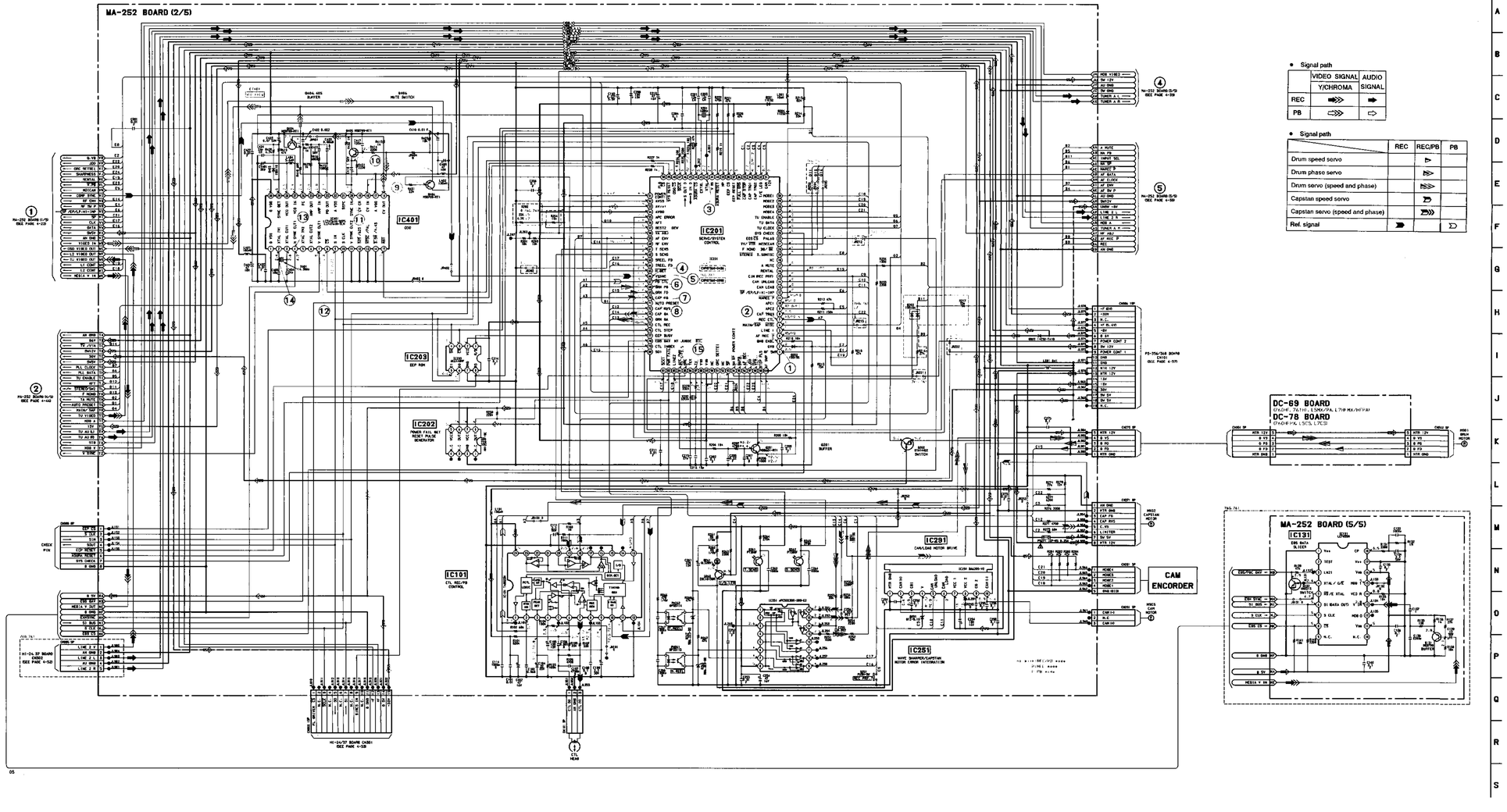
• Signal path

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷▷	
Drum servo (speed and phase)		▷▷▷	
Capstan speed servo		▷	
Capstan servo (speed and phase)		▷▷▷	
Ref. signal	▶		▷

MA-252 (SERVO/SYSTEM CONTROL) (SLV-760/761/L5/L7), DC-69/78 (REALY) SCHEMATIC DIAGRAM

– Ref. No.: MA-252 Board; 4,000 series, DC-69/78 Board; 1,000 series –

• See page 4-16 to 4-18 for printed wiring board.



• Signal path

	VIDEO SIGNAL Y/CHROMA	AUDIO SIGNAL
REC	⇒	➡
PB	⇨	⇨

• Signal path

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷▷	
Drum servo (speed and phase)		▷▷	
Capstan speed servo		▷	
Capstan servo (speed and phase)		▷▷	
Ref. signal	▶		Σ

• Waveforms

❶ IC201 ① REC/PB 5Vp-p (V)

❷ IC201 ⑦ REC 5Vp-p (2V)

❸ IC201 ⑫ REC/PB 4.4Vp-p (16MHz)

❹ IC201 ⑫ REC/PB 4Vp-p (H)

❺ IC201 ⑤ PB 5Vp-p (2V)

❻ IC201 ⑤ REC/PB 5Vp-p (2V)

❼ IC201 ⑥ REC/PB 5.3Vp-p (360Hz)

❽ IC201 ⑯ REC/PB 4.2Vp-p (2.16kHz)

❾, ❿ IC401 ⑨, ⑪ REC/PB 2Vp-p (H)

⓫ IC401 ⑨ 1.8Vp-p (H)

⓬ IC401 ⑦ REC/PB 5Vp-p (V)

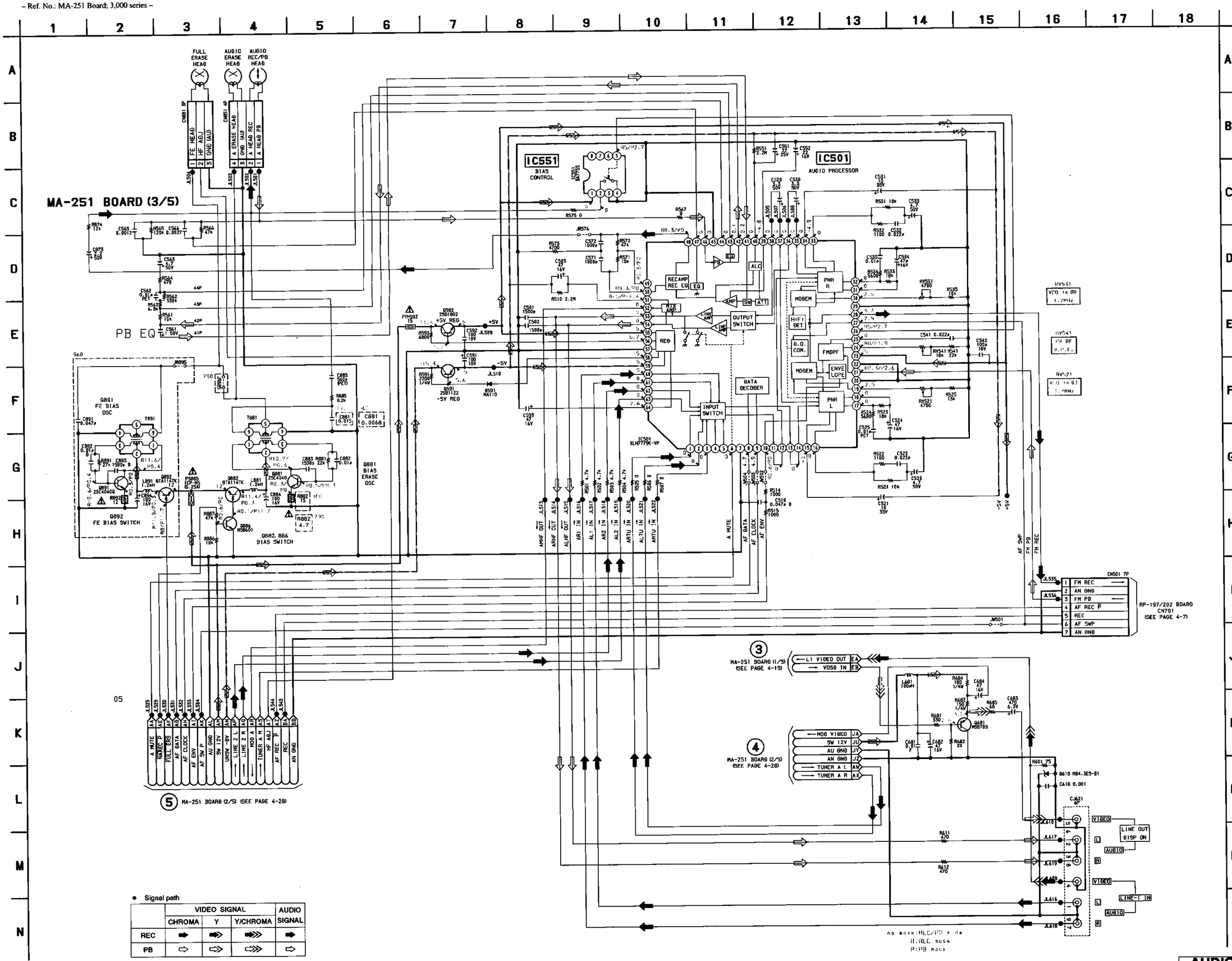
⓭ IC401 ④ REC/PB 5Vp-p (H)

⓮ IC401 ② REC/PB 2.6Vp-p (14.3MHz)

⓯ IC401 ⑥ REC/PB 5.3Vp-p (32kHz)

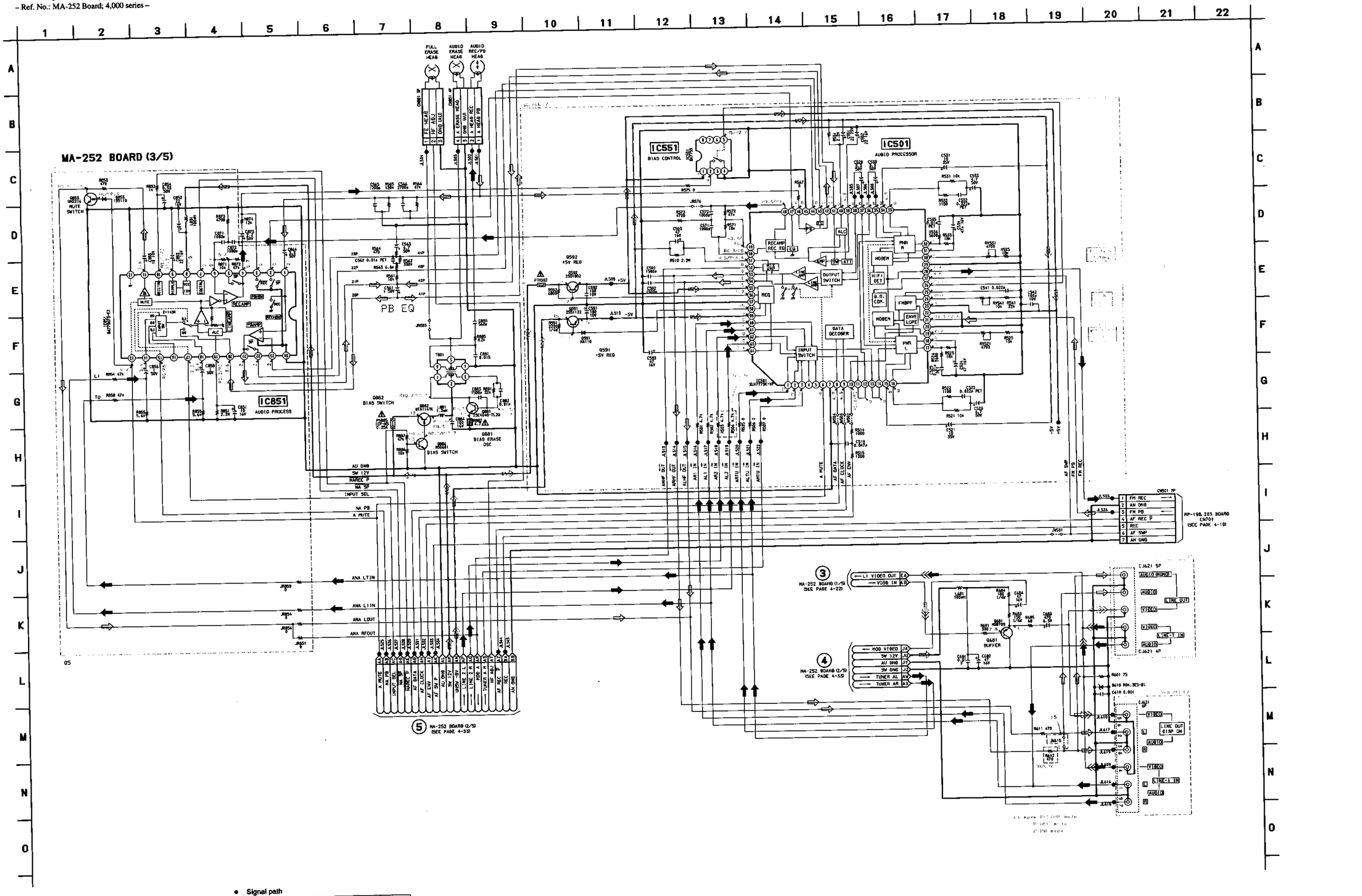
MA-251 (AUDIO, IO) (SLV-790/960) SCHEMATIC DIAGRAM • See page 4-13 to 4-15 for printed wiring board.

– Ref. No.: MA-251 Board; 3,000 series –



MA-252 (AUDIO, IO) (SLV-760/761/L5/L7) SCHEMATIC DIAGRAM • See page 4-16 to 4-18 for printed wiring board.

– Ref. No.: MA-252 Board; 4,000 series –

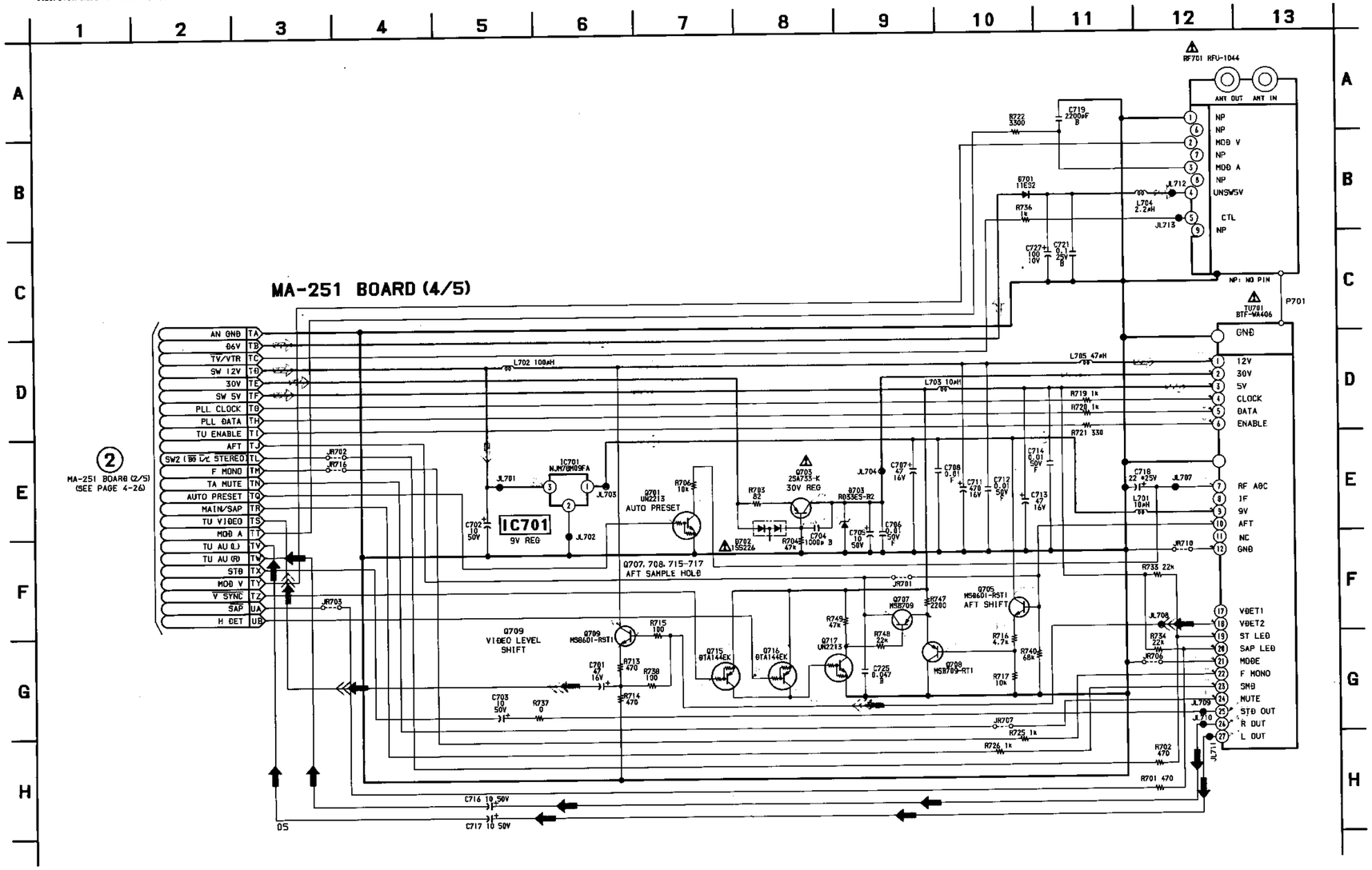


• Signal path

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

MA-251 (TUNER) (SLV-790/960) SCHEMATIC DIAGRAM • See page 4-13 to 4-15 for printed wiring board.

– Ref. No.: MA-251 Board; 3,000 series –



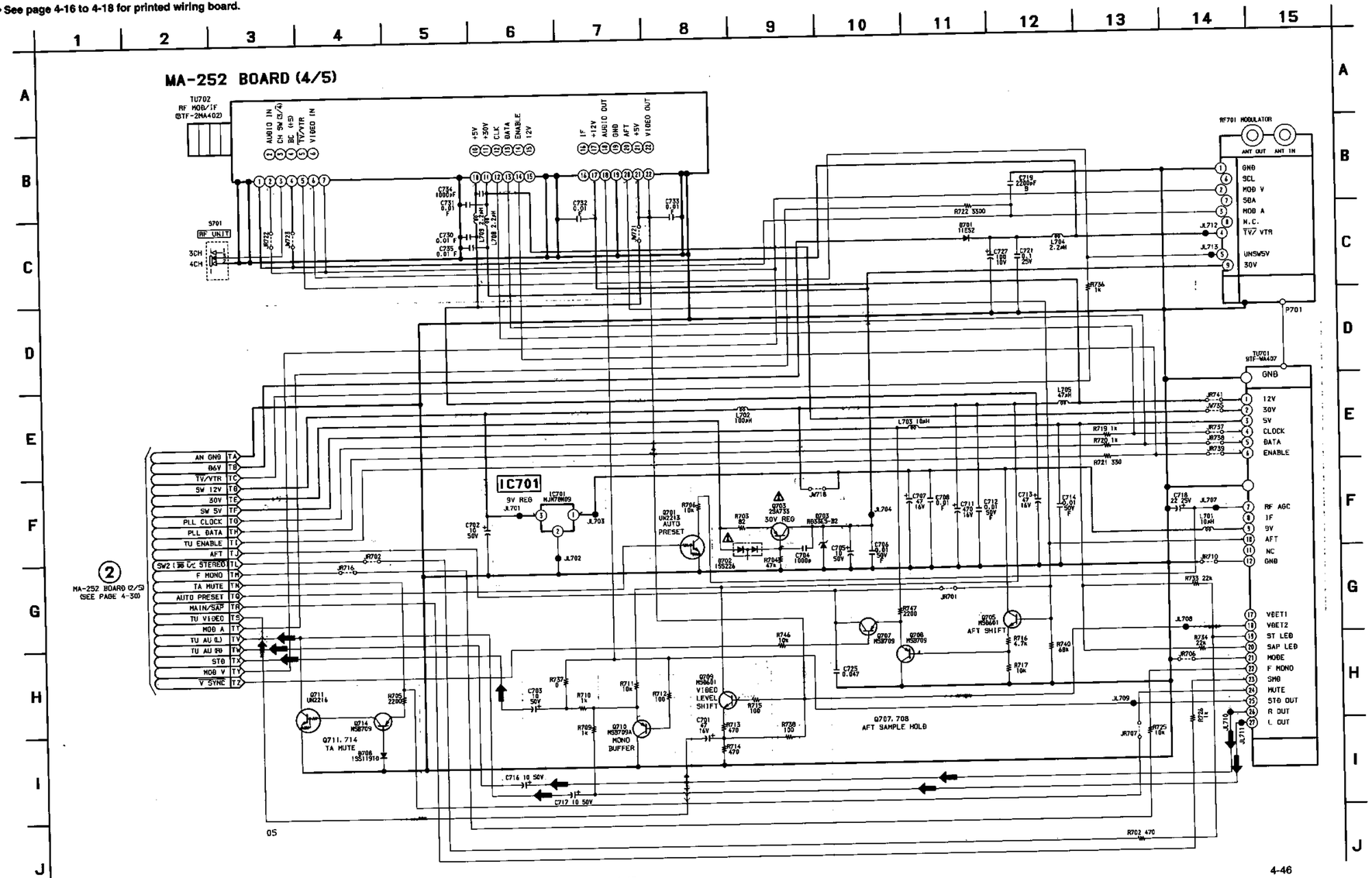
• Signal path

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	⇝	⇝	⇝	➡
PB	→	→	→	⇨

MA-252 (TUNER) (SLV-760/761/L5/L7) SCHEMATIC DIAGRAM

• See page 4-16 to 4-18 for printed wiring board.

– Ref. No.: MA-252 Board; 4,000 series –



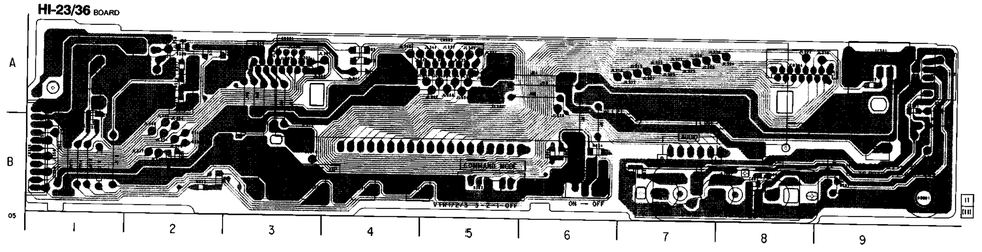
• Signal path

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

There are cases that the part isn't mounted in this model is printed on this diagram.

DM-47/51 (MODE CONTROL), HI-23/36 (FL DRIVER), MF-283/289 (POWER SWITCH), LE-12/15 (LED) (SLV-790/960) PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM
– Ref. No.: DM-47/51 Board, HI-23/36, MF-283/289 Board and LE-12/15 Board; 1,000 series –

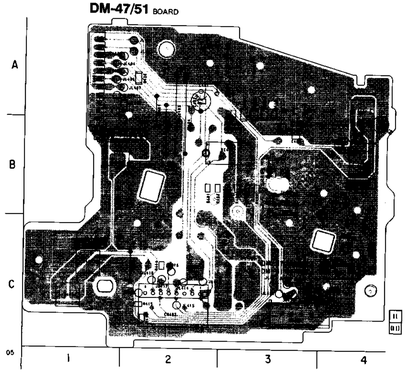
HI-23/36 BOARD



HI-23/36 BOARD

CN301	A-3
CN302	A-3
CN303	A-5
CN304	A-5
CN305	B-1
CN306	A-2
D301	B-9
D302	B-9
D303	A-9
D304	A-9
D305	A-4

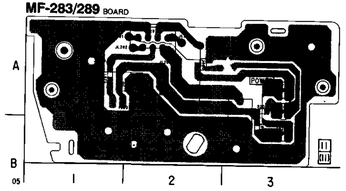
DM-47/51 BOARD



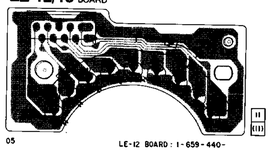
DM-47/51 BOARD

CN401	A-1
CN402	C-2
CN403	C-3
IC401	B-3

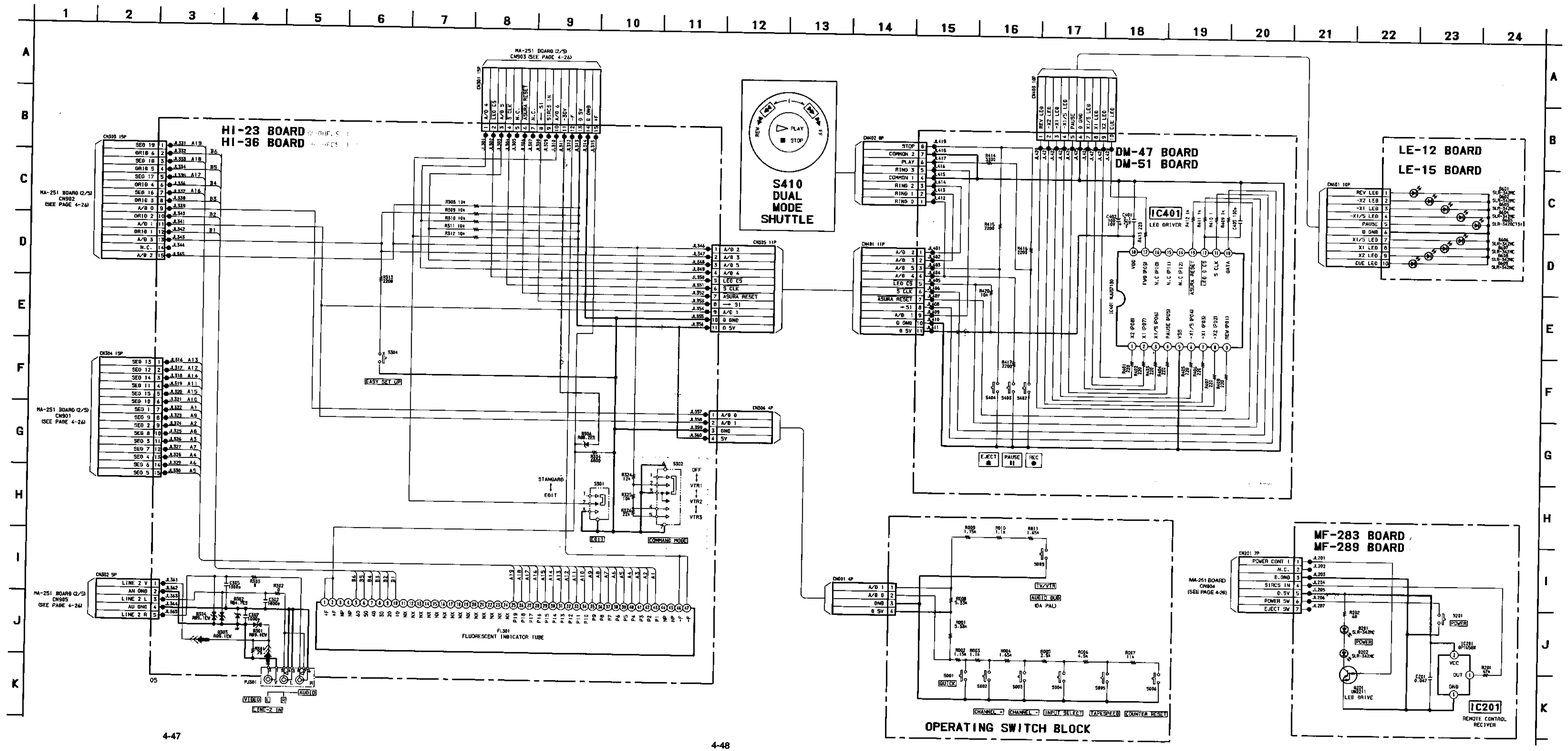
MF-283/289 BOARD



LE-12/15 BOARD



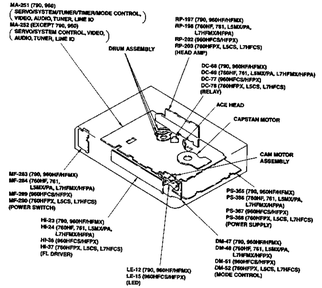
LE-12 BOARD : 1-659-440-
LE-15 BOARD : 1-659-447-



4-47 4-48 4-49

● Signal path

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



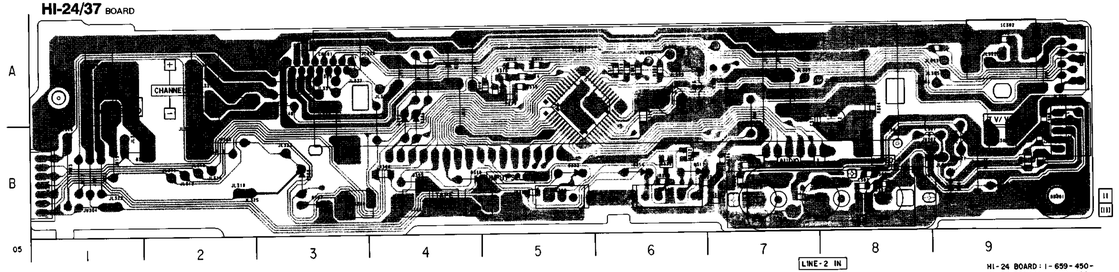
MODE CONTROL

There are cases that the part isn't mounted in this model is printed on this diagram.

DM-48/52 (MODE CONTROL), HI-24/37 (FL DRIVER), MF-284/290 (POWER SWITCH) (SLV-760/761/L5/L7) PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM

– Ref. No.: DM-48/52 Board, HI-24/37 Board and MF-284/290 Board; 2,000 series –

HI-24/37 BOARD

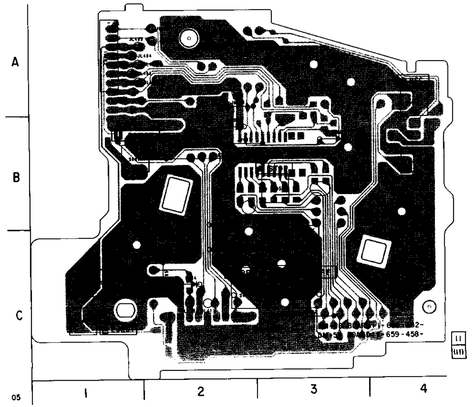


HI-24/37 BOARD

CN301	A-3
CN302	B-10
CN303	A-10
CN304	B-1
D301	B-9
D302	B-9
D303	B-9
D304	B-9
D305	A-4
D306	A-4
D307	B-3
D308	B-3
D309	B-4
D310	B-4
D320	B-1
D321	A-4
D324	A-2
IC301	A-5
IC302	A-9

HI-24 BOARD : 1-659-450-
HI-37 BOARD: 1-659-456-

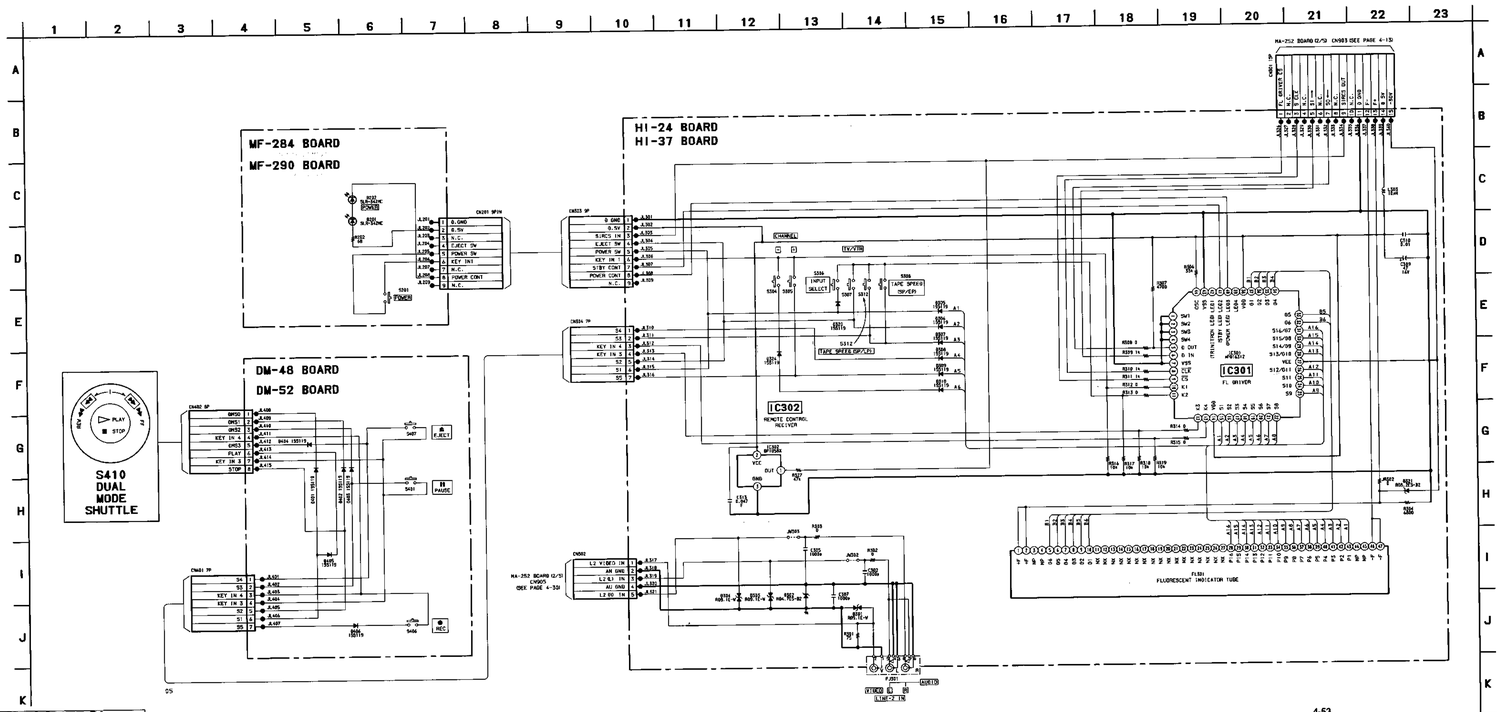
DM-48/52 BOARD



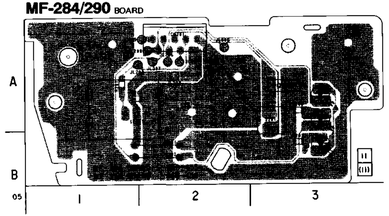
DM-48/52 BOARD

CN401	A-1
CN402	C-2
D401	C-2
D402	B-2
D403	C-3
D404	C-2
D405	B-2
D406	B-3

1-659-452-
1-659-458-

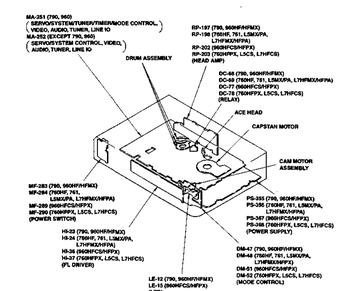


MF-284/290 BOARD



- Signal path

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



There are cases that the part isn't mounted in this model is printed on this diagram.

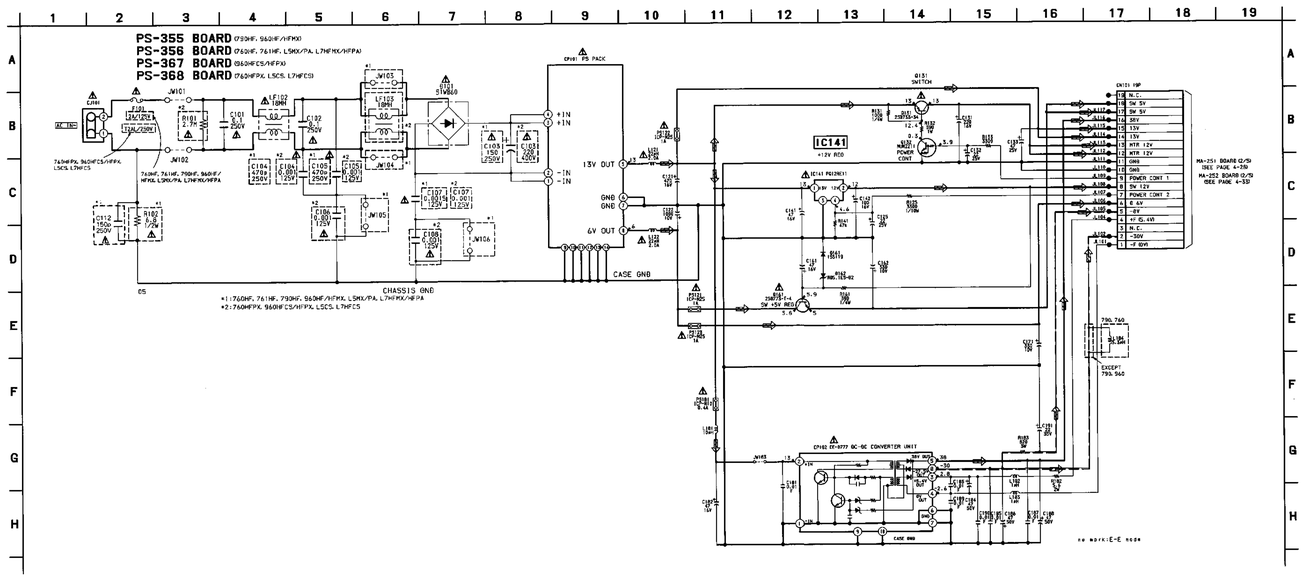
PS-355/356/367/368 (POWER SUPPLY) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

– Ref. No.: PS-355/356 Board; 1,000 series, PS-367/368 Board; 2,000 series. –

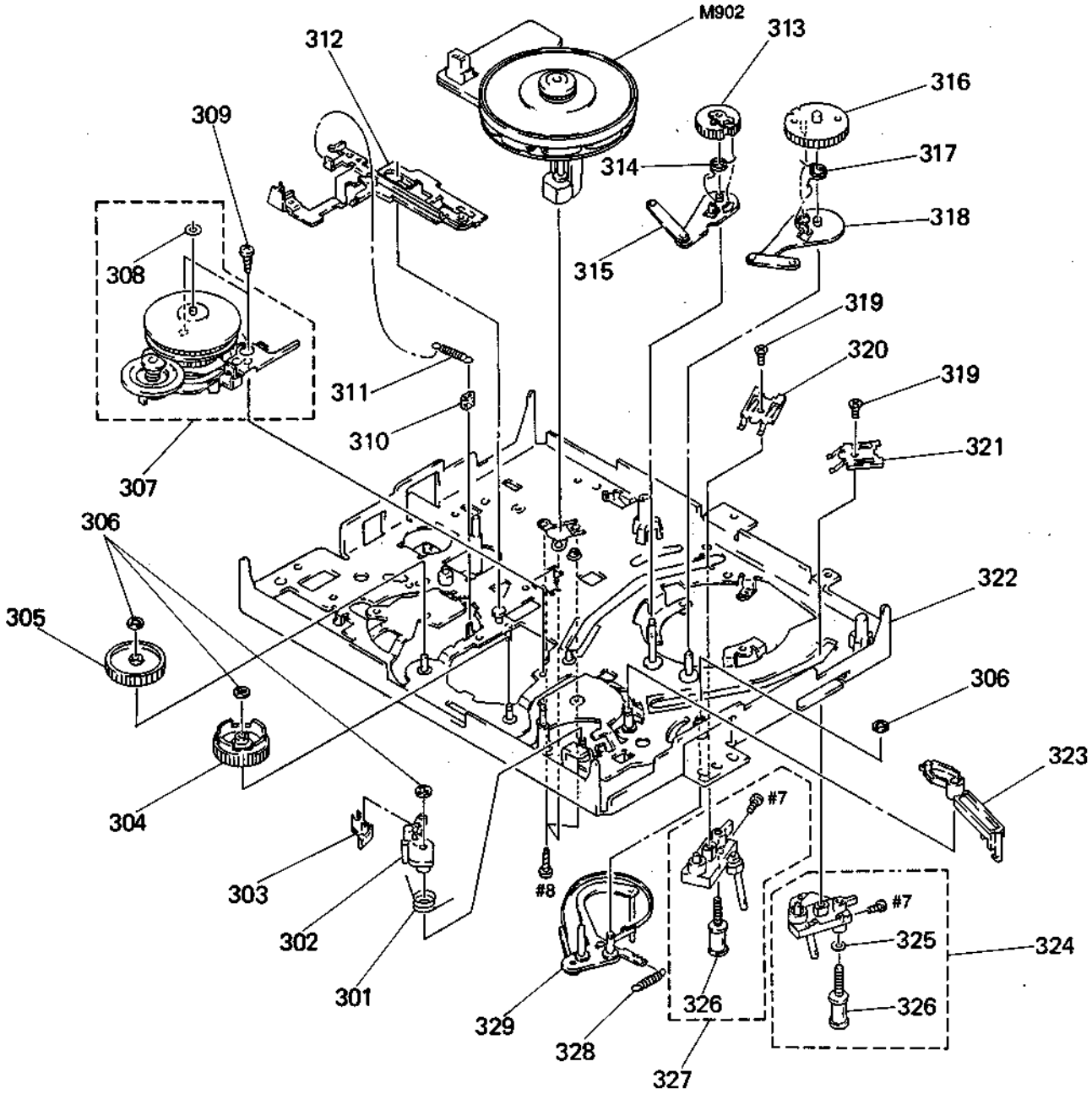
PS-355/356/367/368 BOARD

PS-355/356/367/368 BOARD

CN101	C-3
D101	C-7
D161	C-5
D162	C-4
IC141	B-2
Q131	B-2
Q132	B-3
Q161	C-5



5-1-7. MECHANISM CHASSIS ASSEMBLY (4)



Ref. No.	Part No.	Description	Remark
301	3-958-534-01	SPRING, TORSION	
302	3-958-532-01	ARM, S WINDING	
303	3-958-533-01	CLAW, S WINDING	
304	3-962-959-01	GEAR (S-K), IDLER	
305	3-962-960-01	GEAR (T-K), IDLER	
306	3-669-595-00	WASHER (2), STOPPER	
307	A-6739-102-A	RKB BLOCK ASSY	
308	3-966-092-01	RING, RETAINING, SLIT WASHER	
309	3-961-441-01	SCREW (3X8)	
310	3-959-840-11	RUBBER, JOINT	
311	3-958-529-01	SPRING (MOMENT), TENSION	
312	X-3943-897-1	LEVER ASSY, TRIGGER	
313	3-958-485-02	GEAR (T), LOADING	
314	3-960-449-01	SPRING (T), TORSION COIL	
315	X-3943-891-1	LEVER (T) ASSY, LOADING	
316	3-958-476-01	GEAR (S), LOADING	
317	3-960-448-01	SPRING (S), TORSION COIL	
318	X-3943-890-1	LEVER (S) ASSY, LOADING	
319	3-960-720-01	SCREW	
320	3-960-688-01	SPRING, LEAF (T), LOADING	
321	3-960-687-01	SPRING, LEAF (S), LOADING	
322	X-3945-485-1	CHASSIS ASSY, MECHANICAL	
323	3-958-504-01	ARM, FIXED RELEASE	
324	A-6750-316-A	SHUTTLE (S) BLOCK ASSY	
325	3-962-874-01	O-RING	
326	X-3944-378-1	ROLLER ASSY, GUIDE	
327	A-6750-314-A	T BLOCK ASSY, SHUTTLE	
328	3-958-492-01	SPRING (TG1), TENSION COIL	
329	X-3943-886-1	TG1 ASSY	
M902	1-698-409-11	MOTOR, DC SCV-0801A/Z-NP (CAPSTAN)	

5-2. ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL:Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u:μ, for example:
  uA..: μA.. uPA..: μPA.
  uPB..: μPB.. uPC..: μPC.. uPD..: μPD..
- CAPACITORS
  uF: μF
- COILS
  uH: μH

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

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

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

Ref.No.	Part No.	Description			Remark
	A-6794-137-A	DC-68 BOARD, COMPLETE (790,960HF/HFMX)			
*	A-6794-137-A	DC-69 BOARD, COMPLETE (760,761,L5MX/PA, L7HFMX/HFPA)			
	A-6794-137-A	DC-77 BOARD, COMPLETE (960HFCS/HFPX)			
	A-6794-137-A	DC-78 BOARD, COMPLETE(760HFPX,L5CS, L7HFCS)			
		**********			
		(Ref.No. 1,000 Series)			
		< CONNECTOR >			
* CN001	1-766-714-11	CONNECTOR, BOARD TO BOAR 5P			
* CN002	1-766-713-11	CONNECTOR, BOARD TO BOAR 5P			
*	A-6782-809-A	DM-47 BOARD, COMPLETE(790,960HF/HFMX)			
*	A-6782-803-A	DM-51 BOARD, COMPLETE (960HFCS/HFPX)			
		**********			
		(Ref.No. 1,000 Series)			
		< CAPACITOR >			
C401	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C402	1-126-933-11	ELECT	100uF	20%	10V
C405	1-163-181-00	CERAMIC CHIP	100PF	5%	50V
		< CONNECTOR >			
CN401	1-568-665-11	CONNECTOR, BOARD TO BOARD 11P			
CN402	1-580-850-11	CONNECTOR (DMS) 8P			
CN403	1-695-371-31	CONNECTOR, FFC/FPC 10P			
		< IC >			
IC401	8-759-366-45	IC NJU3713G(TE2)			
		< RESISTOR >			
R401	1-216-033-00	METAL CHIP	220	5%	1/10W
R402	1-216-033-00	METAL CHIP	220	5%	1/10W
R403	1-216-033-00	METAL CHIP	220	5%	1/10W
R404	1-216-033-00	METAL CHIP	220	5%	1/10W
R405	1-216-033-00	METAL CHIP	220	5%	1/10W
R406	1-216-033-00	METAL CHIP	220	5%	1/10W
R407	1-216-033-00	METAL CHIP	220	5%	1/10W
R408	1-216-033-00	METAL CHIP	220	5%	1/10W
R409	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R410	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R411	1-216-198-91	METAL GLAZE	1K	5%	1/8W
R412	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R413	1-247-815-91	CARBON	220	5%	1/4W
R414	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R415	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R416	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R417	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R420	1-216-222-00	METAL GLAZE	10K	5%	1/8W
		< SWITCH >			
S402	1-571-977-11	SWITCH, TACTIL (● REC)			
S403	1-571-977-11	SWITCH, TACTIL (▮▮ PAUSE)			
S404	1-571-977-11	SWITCH, TACTIL (⏏ EJECT)			
S410	1-572-662-11	SWITCH, ROTARY (DUAL MODE SHUTTLE)			
*	A-6782-788-A	DM-48 BOARD, COMPLETE (760,761,L5MX/PA,L7HFMX/HFPA)			
*	A-6782-818-A	DM-52 BOARD, COMPLETE(760HFPX,L5CS, L7HFCS)			
		**********			
		(Ref.No. 2,000 Series)			
		< CONNECTOR >			
CN401	1-770-031-11	CONNECTOR, BOARD TO BOARD 7P			
CN402	1-580-850-11	CONNECTOR (DMS) 8P			
		< DIODE >			
D401	8-719-911-19	DIODE 1SS119-25			
D402	8-719-911-19	DIODE 1SS119-25			
D403	8-719-911-19	DIODE 1SS119-25			
D404	8-719-911-19	DIODE 1SS119-25			
D405	8-719-911-19	DIODE 1SS119-25			
D406	8-719-911-19	DIODE 1SS119-25			

Ref.No.	Part No.	Description			Remark
		< SWITCH >			
S401	1-571-977-11	SWITCH, TACTIL (▮▮ PAUSE)			
S406	1-571-977-11	SWITCH, TACTIL (● REC)			
S407	1-571-977-11	SWITCH, TACTIL (⏏ EJECT)			
S410	1-572-662-11	SWITCH, ROTARY (DUAL MODE SHUTTLE)			
*	A-6782-813-A	HI-23 BOARD, COMPLETE (790)			
*	A-6782-810-A	HI-23 BOARD, COMPLETE (960HF/HFMX)			
*	A-6782-807-A	HI-36 BOARD, COMPLETE (960HFCS/HFPX)			
		**********			
		(Ref.No. 1,000 Series)			
		< CAPACITOR >			
C302	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C305	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C307	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
		< CONNECTOR >			
CN301	1-774-461-11	CONNECTOR, FFC/FPC 15P			
CN302	1-506-484-11	PIN, CONNECTOR 5P			
CN303	1-774-461-11	CONNECTOR, FFC/FPC 15P			
CN304	1-774-461-11	CONNECTOR, FFC/FPC 15P			
CN305	1-568-671-11	CONNECTOR, BOARD TO BOARD 11P			
CN306	1-691-036-21	PIN, CONNECTOR (PC BOARD) 4P			
		< DIODE >			
D301	8-719-108-12	DIODE	RD9.1E-W		
D302	8-719-109-81	DIODE	RD4.7ES-B2		
D303	8-719-108-12	DIODE	RD9.1E-W		
D304	8-719-108-12	DIODE	RD9.1E-W		
D306	8-719-110-08	DIODE	RD8.2ES-B2		
		< FLUORESCENT INDICATOR TUBE >			
FL301	1-517-477-11	TUBE, FLUORESCENT INDICATOR			
		< JUMPER RESISTOR >			
JR001	1-216-295-00	METAL CHIP	0	5%	1/10W
JR002	1-216-296-00	METAL CHIP	0	5%	1/8W
JR003	1-216-296-00	METAL CHIP	0	5%	1/8W
JR004	1-216-296-00	METAL CHIP	0	5%	1/8W
JR005	1-216-295-00	METAL CHIP	0	5%	1/10W
		< JACK >			
PJ301	1-766-861-11	JACK, PIN (3P) (LINE-2 IN)			
		< RESISTOR >			
R301	1-216-022-00	METAL CHIP	75	5%	1/10W
R302	1-216-295-00	METAL CHIP	0	5%	1/10W
R303	1-216-295-00	METAL CHIP	0	5%	1/10W
R304	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R308	1-216-073-00	METAL CHIP	10K	5%	1/10W
R309	1-216-073-00	METAL CHIP	10K	5%	1/10W
R310	1-249-429-11	CARBON	10K	5%	1/4W
R311	1-249-429-11	CARBON	10K	5%	1/4W
R312	1-216-073-00	METAL CHIP	10K	5%	1/10W
R313	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R324	1-216-224-91	METAL GLAZE	12K	5%	1/8W (960)
R325	1-216-073-00	METAL CHIP	10K	5%	1/10W (960)
R326	1-216-081-00	METAL CHIP	22K	5%	1/10W (960)
		< SWITCH >			
S301	1-572-908-11	SWITCH, SLIDE (EDIT)			(960)
S302	1-762-171-11	SWITCH, SLIDE (COMMAND MODE)			(960)
S304	1-571-977-11	SWITCH, TACTIL (EASY SET UP)			
*	A-6782-790-A	HI-24 BOARD, COMPLETE (760,761)			
*	A-6782-801-A	HI-24 BOARD, COMPLETE (L5MX/PA)			
*	A-6782-816-A	HI-24 BOARD, COMPLETE (L7HFMX/HFPA)			
*	A-6782-805-A	HI-37 BOARD, COMPLETE (760HFPX)			
*	A-6782-822-A	HI-37 BOARD, COMPLETE (L5CS)			
*	A-6782-797-A	HI-37 BOARD, COMPLETE (L7HFCS)			
		**********			
		(Ref.No. 2,000 Series)			
*	3-966-234-01	HOLDER (A), FL			
		< CAPACITOR >			
C302	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V (760,761)
C305	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V (760,761)
C307	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V (760,761)
C309	1-126-967-11	ELECT	47uF	20%	16V
C310	1-163-059-00	CERAMIC CHIP	0.01uF	10%	50V
C313	1-163-035-00	CERAMIC CHIP	0.047uF		50V
		< CONNECTOR >			
CN301	1-774-461-11	CONNECTOR, FFC/FPC 15P			
CN302	1-506-484-11	PIN, CONNECTOR 5P			(760,761)
CN303	1-691-068-21	HOUSING, CONNECTOR 9P			
* CN304	1-691-406-11	CONNECTOR, BOARD TO BOARD 7P			
		< DIODE >			
D301	8-719-108-12	DIODE	RD9.1E-W		(760,761)
D302	8-719-109-81	DIODE	RD4.7ES-B2		(760,761)
D303	8-719-108-12	DIODE	RD9.1E-W		(760,761)

Ref.No.	Part No.	Description			Remark
D304	8-719-108-12	DIODE RD9.1E-W			(760,761)
D305	8-719-911-19	DIODE 1SS119-25			
D306	8-719-911-19	DIODE 1SS119-25			
D307	8-719-911-19	DIODE 1SS119-25			
D308	8-719-911-19	DIODE 1SS119-25			
D309	8-719-911-19	DIODE 1SS119-25			
D310	8-719-911-19	DIODE 1SS119-25			
D320	8-719-911-19	DIODE 1SS119-25			
D321	8-719-110-08	DIODE RD8.2ES-B2			
D324	8-719-911-19	DIODE 1SS119			
		< FLUORESCENT INDICATOR TUBE >			
FL301	1-517-478-11	TUBE, FLUORESCENT INDICATOR			
		< IC >			
IC301	8-759-366-44	IC uPD16312GB-3B4			
IC302	1-466-833-11	IC RAY-CATCHER BLOCK, REMOCON			
		< JUMPER RESISTOR >			
JR001	1-216-295-00	METAL CHIP	0	5%	1/10W (760,761)
JR302	1-216-296-00	METAL CHIP	0	5%	1/10W
		< COIL >			
L303	1-410-509-11	INDUCTOR	10uH		
		< JACK >			
PJ301	1-774-509-11	JACK, PIN 3P (LINE-2 IN)			(760,761)
		< RESISTOR >			
R301	1-216-022-00	METAL CHIP	75	5%	1/10W (760,761)
R302	1-216-295-00	METAL CHIP	0	5%	1/10W (760,761)
R303	1-216-295-00	METAL CHIP	0	5%	1/10W (760,761)
R304	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R306	1-249-435-11	CARBON	33K	5%	1/4W
R307	1-249-425-11	CARBON	4.7K	5%	1/4W
R308	1-216-295-00	METAL CHIP	0	5%	1/10W
R309	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R310	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R311	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R312	1-216-295-00	METAL CHIP	0	5%	1/10W
R313	1-216-295-00	METAL CHIP	0	5%	1/10W
R314	1-216-295-00	METAL CHIP	0	5%	1/10W
R315	1-216-295-00	METAL CHIP	0	5%	1/10W
R316	1-216-073-00	METAL CHIP	10K	5%	1/10W
R317	1-216-073-00	METAL CHIP	10K	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
R327	1-216-089-91	METAL GLAZE	47K	5%	1/10W
		< SWITCH >			
S304	1-571-977-11	SWITCH, TACTIL (CHANNEL -)			
S305	1-571-977-11	SWITCH, TACTIL (CHANNEL +)			
S306	1-571-977-11	SWITCH, TACTIL (INPUT SELECT)			(760,761)
S307	1-571-977-11	SWITCH, TACTIL (TV/VTR)			
S308	1-571-977-11	SWITCH, TACTIL (TAPE SPEED)			(760,761)
S312	1-571-977-11	SWITCH, TACTIL (TAPE SPEED)			(L5,L7)
*	A-6794-139-A	LE-12 BOARD, COMPLETE (790,960HF/HFMX)			
*	A-6794-141-A	LE-15 BOARD, COMPLETE (960HFCS/HFPX)			
		********** (Ref.No. 1,000 Series)			
		< CONNECTOR >			
CN601	1-691-069-11	HOUSING, CONNECTOR 10P			
		< LED >			
D601	8-719-056-07	LED SLR-342MC3F			(REW)
D602	8-719-056-07	LED SLR-342MC3F			(REW)
D603	8-719-056-07	LED SLR-342MC3F			(REW)
D604	8-719-056-07	LED SLR-342MCF3F			(REW)
D605	8-719-056-06	LED SLR-342DCT31			(PLAY/FF/REW)
D606	8-719-056-07	LED SLR-342MC3F			(PLAY/FF)
D607	8-719-056-07	LED SLR-342MC3F			(PLAY/FF)
D608	8-719-056-07	LED SLR-342MC3F			(FF)
D609	8-719-056-07	LED SLR-342MC3F			(FF)
*	A-6782-800-A	MA-251 BOARD, COMPLETE (790)			
*	A-6782-815-A	MA-251 BOARD, COMPLETE (960)			
		********** (Ref.No. 3,000 Series)			
*	3-960-273-01	SPACER, TOP END			
*	3-960-274-01	SPACER, LED			
		< BUZZER >			
BZ151	1-529-104-11	BUZZER, PIEZOELECTRIC			
		< CAPACITOR >			
C101	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C102	1-126-967-11	ELECT	47uF	20%	16V
C103	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V

Ref. No.	Part No.	Description		Remark	
C104	1-124-248-00	ELECT	22uF	20%	35V
C105	1-124-584-00	ELECT	100uF	20%	10V
C106	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C107	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C108	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C109	1-124-257-00	ELECT	2.2uF	20%	50V
C111	1-124-257-00	ELECT	2.2uF	20%	50V
C114	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C133	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C134	1-124-257-00	ELECT	2.2uF	20%	50V
C135	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C136	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C137	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C138	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C139	1-126-964-11	ELECT	10uF	20%	50V
C140	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C151	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C152	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C153	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C154	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C155	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C156	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C157	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C158	1-128-057-11	ELECT	330uF	20%	6.3V
C159	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C160	1-125-507-11	CAPACITOR	0.22F		5.5V
C161	1-128-057-11	ELECT	330uF	20%	6.3V
C162	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C163	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C164	1-163-059-00	CERAMIC CHIP	0.01uF	10%	50V
C165	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C166	1-126-916-11	ELECT	1000uF	20%	6.3V
C201	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C202	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C203	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C204	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C205	1-163-081-00	CERAMIC CHIP	0.22uF		25V
C206	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C207	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C208	1-124-584-00	ELECT	100uF	20%	10V
C209	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C252	1-162-638-11	CERAMIC CHIP	1uF		16V
C253	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C254	1-124-589-11	ELECT	47uF	20%	16V
C255	1-137-372-11	FILM	0.022uF	5%	50V
C256	1-137-441-11	FILM	0.027uF	5%	50V
C261	1-126-176-11	ELECT	220uF	20%	10V
C262	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C264	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C266	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C267	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C273	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C275	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C291	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C292	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C294	1-124-455-00	ELECT	100uF	20%	16V
C295	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C296	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C298	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C301	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C302	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C303	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C304	1-124-589-11	ELECT	47uF	20%	16V
C305	1-124-589-11	ELECT	47uF	20%	16V(960)
C308	1-126-964-11	ELECT	10uF	20%	50V
C309	1-124-589-11	ELECT	47uF	20%	16V
C312	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C313	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C352	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C353	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C354	1-124-589-11	ELECT	47uF	20%	16V
C356	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C357	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C358	1-163-253-11	CERAMIC CHIP	120PF	5%	50V
C359	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C360	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C401	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C402	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C406	1-124-589-11	ELECT	47uF	20%	16V
C407	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C408	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C409	1-124-589-11	ELECT	47uF	20%	16V
C410	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C411	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C412	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C413	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C414	1-124-584-00	ELECT	100uF	20%	10V
C416	1-124-257-00	ELECT	2.2uF	20%	50V
C417	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C418	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C419	1-124-589-11	ELECT	47uF	20%	16V
C420	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C421	1-162-306-11	CERAMIC	0.01uF	20%	16V
C422	1-126-160-11	ELECT	1uF	20%	50V
C423	1-163-139-00	CERAMIC CHIP	820PF	5%	50V
C424	1-124-589-11	ELECT	47uF	20%	16V
C425	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V

Ref. No.	Part No.	Description			Remark
C427	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C428	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C461	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C462	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C463	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C464	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C465	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C501	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C502	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C503	1-124-589-11	ELECT	47uF	20%	16V
C510	1-104-760-11	CERAMIC CHIP	0.047uF	10%	50V
C520	1-126-162-11	ELECT	3.3uF	20%	50V
C521	1-126-096-11	ELECT	10uF	20%	35V
C522	1-137-372-11	FILM	0.022uF	5%	50V
C523	1-126-163-11	ELECT	4.7uF	20%	50V
C524	1-124-589-11	ELECT	47uF	20%	16V
C525	1-137-370-11	FILM	0.01uF	5%	50V
C530	1-126-162-11	ELECT	3.3uF	20%	50V
C531	1-126-096-11	ELECT	10uF	20%	35V
C532	1-137-372-11	FILM	0.022uF	5%	50V
C533	1-126-963-11	ELECT	4.7uF	20%	50V
C534	1-124-589-11	ELECT	47uF	20%	16V
C535	1-137-370-11	FILM	0.01uF	5%	50V
C541	1-137-372-11	FILM	0.022uF	5%	50V
C542	1-115-438-91	ELECT	100uF	20%	10V
C551	1-124-248-00	ELECT	22uF	20%	35V
C552	1-124-234-00	ELECT	22uF	20%	16V
C561	1-126-160-11	ELECT	1uF	20%	50V
C562	1-137-370-11	FILM	0.01uF	5%	50V
C563	1-126-163-11	ELECT	4.7uF	20%	50V
C565	1-163-143-00	CERAMIC CHIP	0.0012uF	5%	50V
C566	1-163-014-00	CERAMIC CHIP	0.0027uF	5%	50V
C571	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C572	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C591	1-124-584-00	ELECT	100uF	20%	10V
C592	1-115-438-91	ELECT	100uF	20%	10V
C593	1-124-589-11	ELECT	47uF	20%	16V
C610	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C631	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C632	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C633	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C634	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C635	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C636	1-126-967-11	ELECT	47uF	20%	16V
C637	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C681	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C682	1-126-967-11	ELECT	47uF	20%	16V
C683	1-126-935-11	ELECT	470uF	20%	6.3V
C684	1-126-967-11	ELECT	47uF	20%	16V

Ref. No.	Part No.	Description			Remark
C701	1-126-967-11	ELECT	47uF	20%	16V
C702	1-126-964-11	ELECT	10uF	20%	50V
C703	1-126-964-11	ELECT	10uF	20%	50V
C704	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C705	1-126-964-11	ELECT	10uF	20%	50V
C706	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C707	1-126-967-11	ELECT	47uF	20%	16V
C708	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C711	1-126-935-11	ELECT	470uF	20%	16V
C712	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C713	1-126-967-11	ELECT	47uF	20%	16V
C714	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C716	1-126-964-11	ELECT	10uF	20%	50V
C717	1-126-964-11	ELECT	10uF	20%	50V
C718	1-128-551-11	ELECT	22uF	20%	25V
C719	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C721	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C725	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C727	1-126-933-11	ELECT	100uF	20%	10V
C873	1-124-257-00	ELECT	2.2uF	20%	50V
C881	1-104-696-11	FILM	0.015uF	5%	100V(790)
C881	1-137-612-11	FILM	0.0068uF	5%	100V(960)
C882	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C883	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C884	1-126-933-11	ELECT	100uF	20%	16V
C885	1-137-431-11	FILM	560PF	5%	50V
C891	1-104-697-11	FILM	0.047uF	5%	100V(960)
C892	1-164-232-11	CERAMIC CHIP	0.01uF		50V(960)
C893	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V(960)
C894	1-124-455-00	ELECT	100uF	20%	16V(960)

< JACK >

CJ621	1-764-222-11	JACK, PIN 6P (LINE-1 IN/LINE OUT)	
CJ631	1-563-330-11	JACK (CONTROL S IN)	
CJ632	1-566-822-21	JACK (CONTROL S OUT)	

< CONNECTOR >

CN101	1-506-468-11	PIN, CONNECTOR 3P	
* CN271	1-766-538-11	CONNECTOR, BOARD TO BOARD 8P	
* CN275	1-766-717-11	CONNECTOR, BOARD TO BOARD 5P	
* CN281	1-766-537-11	CONNECTOR (HMD) 5P	
* CN291	1-766-716-11	CONNECTOR, BOARD TO BOARD 3P	
CN301	1-766-718-11	CONNECTOR, BOARD TO BOARD 17P	
* CN501	1-766-600-11	CONNECTOR, BOARD TO BOARD 7P	
* CN851	1-560-892-00	PIN, CONNECTOR 4P	
* CN881	1-560-891-00	PIN, CONNECTOR 3P	
CN901	1-774-461-11	CONNECTOR, FFC/FPC 15P	
CN902	1-774-461-11	CONNECTOR, FFC/FPC 15P	

Ref. No.	Part No.	Description	Remark
CN903	1-774-461-11	CONNECTOR, FFC/FPC 15P	
CN904	1-766-980-71	CONNECTOR, FFC/FPC 7P	
CN905	1-506-470-11	PIN, CONNECTOR 5P	
CN906	1-569-338-11	CONNECTOR, BOARD TO BOARD 19P	
CN907	1-506-469-11	PIN, CONNECTOR 4P	
		< DIODE >	
D151	8-719-200-82	DIODE 11ES2	
D152	8-719-200-82	DIODE 11ES2	
D201	8-719-200-82	DIODE 11ES2	
D202	8-719-801-48	DIODE 1SS193	
D251	8-719-801-48	DIODE 1SS193	
D261	8-719-048-26	LED GL528V1	
D265	8-719-109-93	DIODE RD6.2ES-B2	
D267	8-719-109-93	DIODE RD6.2ES-B2	
D291	8-719-977-24	DIODE DTZ9.1B	
D301	8-719-911-19	DIODE 1SS119-25	
D402	8-719-801-48	DIODE 1SS193	
D403	8-719-801-48	DIODE 1SS193	
D591	8-719-404-46	DIODE MA110	
D610	8-719-109-74	DIODE RD4.3ES-B1	
D631	8-719-110-08	DIODE RD8.2ES-B2	
D632	8-719-110-08	DIODE RD8.2ES-B2	
D633	8-719-110-08	DIODE RD8.2ES-B2	
D635	8-719-110-08	DIODE RD8.2ES-B2	
D701	8-719-200-82	DIODE 11ES2	
⚠D702	8-719-800-76	DIODE 1SS226	
D703	8-719-110-78	DIODE RD33ES-B2	
D902	8-719-200-82	DIODE 11ES2	
		< IC >	
IC101	8-759-246-14	IC TA8823N	
IC131	8-759-364-14	IC LC7455M-TLM	
IC151	8-752-868-41	IC CXP82948-002Q	
IC152	8-759-248-87	IC MM1256XF-BE	
IC153	8-759-278-56	IC AK6440HF-E2	
IC201	8-752-871-05	IC CXP87248A-008Q	
IC251	8-759-335-76	IC uPC5023GR-089-E2	
IC291	8-759-294-26	IC BA6209-V2	
IC302	1-801-097-11	IC YC MODULE 3 (NTSC-YC)	
IC401	8-759-288-96	IC MB90089PFG-118R	
IC402	8-759-164-09	IC LA7218M	
IC461	8-759-295-66	IC BA7653AF-E2	
IC501	8-759-365-32	IC XLH7779K-VP	
IC551	8-759-089-84	IC BA7755AF	
IC631	8-759-356-27	IC NJM2129M-TE2	
IC701	8-759-701-59	IC NJM78M09FA	

Ref. No.	Part No.	Description			Remark
		< JUMPER RESISTOR >			
JP1	1-216-296-00	METAL CHIP	0	5%	1/8W
JP14	1-216-296-00	METAL CHIP	0	5%	1/8W
JP17	1-216-296-00	METAL CHIP	0	5%	1/8W
JP31	1-216-296-00	METAL CHIP	0	5%	1/8W
JP43	1-216-296-00	METAL CHIP	0	5%	1/8W
JP45	1-216-296-00	METAL CHIP	0	5%	1/8W
JP53	1-216-296-00	METAL CHIP	0	5%	1/8W
JP54	1-216-296-00	METAL CHIP	0	5%	1/8W
JP56	1-216-296-00	METAL CHIP	0	5%	1/8W
JP77	1-216-296-00	METAL CHIP	0	5%	1/8W
JP78	1-216-296-00	METAL CHIP	0	5%	1/8W
JP81	1-216-296-00	METAL CHIP	0	5%	1/8W
JP82	1-216-296-00	METAL CHIP	0	5%	1/8W
JP90	1-216-296-00	METAL CHIP	0	5%	1/8W
JP049	1-216-295-00	METAL CHIP	0	5%	1/10W
JP083	1-216-295-00	METAL CHIP	0	5%	1/10W
		< JUMPER RESISTOR >			
JR101	1-216-295-00	METAL CHIP	0	5%	1/10W
JR131	1-216-295-00	METAL CHIP	0	5%	1/10W
JR132	1-216-295-00	METAL CHIP	0	5%	1/10W
JR151	1-216-295-00	METAL CHIP	0	5%	1/10W
JR152	1-216-295-00	METAL CHIP	0	5%	1/10W
JR252	1-216-295-00	METAL CHIP	0	5%	1/10W
JR253	1-216-295-00	METAL CHIP	0	5%	1/10W
JR301	1-216-295-00	METAL CHIP	0	5%	1/10W
JR303	1-216-295-00	METAL CHIP	0	5%	1/10W
JR305	1-216-295-00	METAL CHIP	0	5%	1/10W
JR404	1-216-295-00	METAL CHIP	0	5%	1/10W
JR461	1-216-295-00	METAL CHIP	0	5%	1/10W
JR576	1-216-295-00	METAL CHIP	0	5%	1/10W
JR631	1-216-295-00	METAL CHIP	0	5%	1/10W
JR633	1-216-295-00	METAL CHIP	0	5%	1/10W
JR635	1-216-295-00	METAL CHIP	0	5%	1/10W
JR702	1-216-295-00	METAL CHIP	0	5%	1/10W
JR703	1-216-295-00	METAL CHIP	0	5%	1/10W
JR706	1-216-295-00	METAL CHIP	0	5%	1/10W
JR707	1-216-295-00	METAL CHIP	0	5%	1/10W
JR710	1-216-295-00	METAL CHIP	0	5%	1/10W
JR716	1-216-295-00	METAL CHIP	0	5%	1/10W
JR885	1-216-295-00	METAL CHIP	0	5%	1/10W (790)
JR895	1-216-295-00	METAL CHIP	0	5%	1/10W (960)
		< COIL >			
L101	1-408-421-00	INDUCTOR 100uH			
L151	1-408-970-21	INDUCTOR 10uH			
L201	1-408-970-21	INDUCTOR 10uH			

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Ref. No.	Part No.	Description		Remark
L301	1-410-521-11	INDUCTOR	100uH	
L302	1-414-186-31	INDUCTOR	33uH	
L303	1-414-186-31	INDUCTOR	33uH	
L305	1-414-186-31	INDUCTOR	33uH	
L351	1-410-525-11	INDUCTOR	220uH	
L352	1-414-189-31	INDUCTOR	100uH	
L353	1-410-513-11	INDUCTOR	22uH	
L401	1-408-421-00	INDUCTOR	100uH	
L403	1-408-974-21	INDUCTOR	22uH	
L404	1-408-421-00	INDUCTOR	100uH	
L461	1-414-189-31	INDUCTOR	100uH	
L681	1-410-482-31	INDUCTOR	100uH	
L701	1-414-183-41	INDUCTOR	10uH	
L702	1-414-189-31	INDUCTOR	100uH	
L703	1-414-183-41	INDUCTOR	10uH	
L704	1-410-501-11	INDUCTOR	2.2uH	
L705	1-414-187-11	INDUCTOR	47uH	
L881	1-410-687-11	INDUCTOR	1.2mH	
L891	1-410-687-11	INDUCTOR	1.2mH	(960)
L901	1-412-364-11	INDUCTOR	0uH	
		< PIN CABLE >		
P701	1-555-110-00	CABLE, PIN		
		< PHOTO INTERRUPTER >		
PH261	8-749-010-19	PHOTO INTERRUPTER GP3S113		
PH262	8-749-010-20	PHOTO INTERRUPTER GP3S114		
		< IC LINK >		
⚠PS271	1-532-727-11	LINK, IC ICP-N5 (0.25A)		
⚠PS885	1-532-727-11	LINK, IC ICP-N5 (0.25A)		
		< THERMISTOR >		
⚠PTH592	1-202-855-00	THERMISTOR, POSITIVE		
		< TRANSISTOR >		
Q131	8-729-010-05	TRANSISTOR	MSB709-RT1	
Q132	8-729-421-19	TRANSISTOR	UN2213	
Q201	8-729-010-25	TRANSISTOR	MSD601-RT1	
Q202	8-729-901-06	TRANSISTOR	DTA144EK	
Q261	8-729-025-92	PHOTO TRANSISTOR PT380F		
Q262	8-729-025-92	PHOTO TRANSISTOR PT380F		
Q263	8-729-281-53	TRANSISTOR	2SC1815-GR	
Q301	8-729-421-19	TRANSISTOR	UN2213	
Q306	8-729-421-19	TRANSISTOR	UN2213	
Q352	8-729-010-29	TRANSISTOR	MSD601-RST1	
Q353	8-729-010-29	TRANSISTOR	MSD601-RST1	

Ref. No.	Part No.	Description		Remark
Q402	8-729-901-06	TRANSISTOR	DTA144EK	
Q404	8-729-010-05	TRANSISTOR	MSB709-RT1	
Q406	8-729-010-05	TRANSISTOR	MSB709-RT1	
Q407	8-729-010-05	TRANSISTOR	MSB709-RT1	
Q413	8-729-010-25	TRANSISTOR	MSD601-RT1	
Q591	8-729-804-41	TRANSISTOR	2SB1122-S	
Q592	8-729-820-68	TRANSISTOR	2SD1802FA-S	
Q681	8-729-010-05	TRANSISTOR	MSB709-RT1	
Q701	8-729-421-19	TRANSISTOR	UN2213	
⚠Q703	8-729-173-38	TRANSISTOR	2SA733-K	
Q705	8-729-010-29	TRANSISTOR	MSD601-RST1	
Q707	8-729-010-05	TRANSISTOR	MSB709-RT1	
Q708	8-729-010-05	TRANSISTOR	MSB709-RT1	
Q709	8-729-010-29	TRANSISTOR	MSD601-RST1	
Q715	8-729-901-06	TRANSISTOR	DTA144EK	
Q716	8-729-901-06	TRANSISTOR	DTA144EK	
Q717	8-729-421-19	TRANSISTOR	UN2213	
Q881	8-729-012-31	TRANSISTOR	2SC4040-TL2-Q	
Q882	8-729-900-51	TRANSISTOR	DTA114TK	
Q886	8-729-010-29	TRANSISTOR	MSD601-RST1	
Q891	8-729-012-31	TRANSISTOR	2SC4040-TL2-Q	(960)
Q892	8-729-900-51	TRANSISTOR	DTA114TK	(960)
		< RESISTOR >		
R101	1-216-119-00	METAL CHIP	820K 5%	1/10W
R102	1-216-093-00	METAL CHIP	68K 5%	1/10W
R103	1-216-097-91	METAL GLAZE	100K 5%	1/10W
R104	1-216-097-91	METAL GLAZE	100K 5%	1/10W
R105	1-216-085-00	METAL CHIP	33K 5%	1/10W
R106	1-216-065-00	METAL CHIP	4.7K 5%	1/10W
R107	1-216-186-00	METAL GLAZE	330 5%	1/8W
R108	1-216-121-91	METAL GLAZE	1M 5%	1/10W
R111	1-216-097-91	METAL GLAZE	100K 5%	1/10W
R131	1-216-061-00	METAL CHIP	3.3K 5%	1/10W
R132	1-216-121-91	METAL GLAZE	1M 5%	1/10W
R133	1-216-073-00	METAL CHIP	10K 5%	1/10W
R135	1-216-025-91	METAL GLAZE	100 5%	1/10W
R136	1-216-049-91	METAL GLAZE	1K 5%	1/10W
R137	1-216-083-00	METAL CHIP	27K 5%	1/10W
R138	1-216-079-00	METAL CHIP	18K 5%	1/10W
R139	1-216-089-91	METAL GLAZE	47K 5%	1/10W
R140	1-216-206-00	METAL GLAZE	2.2K 5%	1/8W
R141	1-216-222-00	METAL GLAZE	10K 5%	1/8W
R151	1-216-095-00	METAL CHIP	82K 5%	1/10W
R152	1-216-049-91	METAL GLAZE	1K 5%	1/10W
R153	1-216-113-00	METAL CHIP	470K 5%	1/10W
R154	1-216-049-91	METAL GLAZE	1K 5%	1/10W
R157	1-216-113-00	METAL CHIP	470K 5%	1/10W
R158	1-216-095-00	METAL CHIP	82K 5%	1/10W

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Ref. No.	Part No.	Description			Remark
R159	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R160	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R161	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R162	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R163	1-216-073-00	METAL CHIP	10K	5%	1/10W
R164	1-216-073-00	METAL CHIP	10K	5%	1/10W
R165	1-216-073-00	METAL CHIP	10K	5%	1/10W
R166	1-216-073-00	METAL CHIP	10K	5%	1/10W
R167	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R168	1-216-095-00	METAL CHIP	82K	5%	1/10W
R169	1-216-113-00	METAL CHIP	470K	5%	1/10W
R201	1-216-073-00	METAL CHIP	10K	5%	1/10W
R203	1-216-073-00	METAL CHIP	10K	5%	1/10W
R204	1-216-073-00	METAL CHIP	10K	5%	1/10W
R205	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R206	1-216-073-00	METAL CHIP	10K	5%	1/10W
R207	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R208	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R209	1-216-073-00	METAL CHIP	10K	5%	1/10W
R210	1-216-073-00	METAL CHIP	10K	5%	1/10W
R211	1-216-101-00	METAL CHIP	150K	5%	1/10W
R212	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R213	1-216-077-00	METAL CHIP	15K	5%	1/10W
R214	1-216-085-00	METAL CHIP	33K	5%	1/10W
R215	1-216-095-00	METAL CHIP	82K	5%	1/10W
R218	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R219	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R233	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R234	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R251	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R252	1-216-079-00	METAL CHIP	18K	5%	1/10W
R253	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R254	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R255	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R256	1-216-103-91	METAL GLAZE	180K	5%	1/10W
R261	1-249-400-11	CARBON	39	5%	1/4W
R262	1-249-400-11	CARBON	39	5%	1/4W
R263	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R264	1-216-107-00	METAL CHIP	270K	5%	1/10W
R265	1-216-107-00	METAL CHIP	270K	5%	1/10W
R266	1-249-413-11	CARBON	470	5%	1/4W
R267	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R268	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R271	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R274	1-216-083-00	METAL CHIP	27K	5%	1/10W
R275	1-216-093-00	METAL CHIP	68K	5%	1/10W
R276	1-216-056-00	METAL GLAZE	2K	5%	1/10W
R277	1-216-068-00	METAL CHIP	6.2K	5%	1/10W
R278	1-216-075-00	METAL CHIP	12K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R281	1-216-238-91	METAL GLAZE	47K	5%	1/8W
R282	1-216-238-91	METAL GLAZE	47K	5%	1/8W
R283	1-216-238-91	METAL GLAZE	47K	5%	1/8W
R284	1-216-238-91	METAL GLAZE	47K	5%	1/8W
R293	1-216-295-00	METAL CHIP	0	5%	1/10W
R301	1-216-295-00	METAL CHIP	0	5%	1/10W
R302	1-216-053-00	METAL CHIP	1.5K	5%	1/10W (790)
R302	1-216-052-00	METAL CHIP	1.3K	5%	1/10W (960)
R303	1-216-031-00	METAL CHIP	180	5%	1/10W
R304	1-208-798-11	METAL GLAZE	4.7K	0.50%	1/10W
R305	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R306	1-216-081-00	METAL CHIP	22K	5%	1/10W
R313	1-216-041-00	METAL CHIP	470	5%	1/10W
R314	1-216-240-00	METAL GLAZE	56K	5%	1/8W
R315	1-216-105-91	METAL GLAZE	220K	5%	1/10W
R317	1-216-107-00	METAL CHIP	270K	5%	1/10W
R335	1-216-073-00	METAL CHIP	10K	5%	1/10W
R351	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R352	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R353	1-216-045-00	METAL CHIP	680	5%	1/10W
R354	1-216-083-00	METAL CHIP	27K	5%	1/10W
R355	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R356	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R357	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R358	1-216-035-00	METAL CHIP	270	5%	1/10W
R401	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R404	1-216-073-00	METAL CHIP	10K	5%	1/10W
R407	1-249-414-11	CARBON	560	5%	1/4W
R408	1-216-101-00	METAL CHIP	150K	5%	1/10W
R409	1-216-063-91	METAL GLAZE	3.9K	5%	1/10W
R410	1-216-043-91	METAL GLAZE	560	5%	1/10W
R411	1-216-025-91	METAL GLAZE	100	5%	1/10W
R412	1-216-295-00	METAL CHIP	0	5%	1/10W
R413	1-216-295-00	METAL CHIP	0	5%	1/10W
R414	1-216-081-00	METAL CHIP	22K	5%	1/10W
R415	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R416	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R417	1-216-033-00	METAL CHIP	220	5%	1/10W
R418	1-216-033-00	METAL CHIP	220	5%	1/10W
R421	1-216-230-00	METAL GLAZE	22K	5%	1/8W
R423	1-216-073-00	METAL CHIP	10K	5%	1/10W
R461	1-216-295-00	METAL CHIP	0	5%	1/10W
R462	1-216-295-00	METAL CHIP	0	5%	1/10W
R501	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R502	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R503	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R504	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R505	1-216-295-00	METAL CHIP	0	5%	1/10W

Ref. No.	Part No.	Description			Remark
R506	1-216-295-00	METAL CHIP	0	5%	1/10W
R507	1-216-295-00	METAL CHIP	0	5%	1/10W
R510	1-216-129-00	METAL CHIP	2.2M	5%	1/10W
R514	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R515	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R521	1-216-073-00	METAL CHIP	10K	5%	1/10W
R522	1-216-050-00	METAL GLAZE	1.1K	5%	1/10W
R523	1-216-079-00	METAL CHIP	18K	5%	1/10W
R524	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R525	1-208-809-11	METAL GLAZE	13K	0.50%	1/10W
R531	1-216-073-00	METAL CHIP	10K	5%	1/10W
R532	1-216-050-00	METAL GLAZE	1.1K	5%	1/10W
R533	1-216-079-00	METAL CHIP	18K	5%	1/10W
R534	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R535	1-208-806-11	METAL GLAZE	10K	0.50%	1/10W
R541	1-216-081-00	METAL CHIP	22K	5%	1/10W
R551	1-216-129-00	METAL CHIP	2.2M	5%	1/10W
R561	1-216-073-00	METAL CHIP	10K	5%	1/10W
R562	1-216-109-00	METAL CHIP	330K	5%	1/10W
R563	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R564	1-216-041-00	METAL CHIP	470	5%	1/10W
R565	1-216-099-00	METAL CHIP	120K	5%	1/10W
R566	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R567	1-216-295-00	METAL CHIP	0	5%	1/10W
R571	1-216-073-00	METAL CHIP	10K	5%	1/10W
R572	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R573	1-216-214-00	METAL GLAZE	4.7K	5%	1/8W
R575	1-216-295-00	METAL CHIP	0	5%	1/10W
R591	1-249-421-11	CARBON	2.2K	5%	1/4W
R592	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R601	1-216-022-00	METAL CHIP	75	5%	1/10W
R611	1-216-041-00	METAL CHIP	470	5%	1/10W
R612	1-216-041-00	METAL CHIP	470	5%	1/10W
R631	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R681	1-216-037-00	METAL CHIP	330	5%	1/10W
R683	1-249-407-11	CARBON	150	5%	1/4W
R684	1-249-408-11	CARBON	180	5%	1/4W
R685	1-216-021-00	METAL CHIP	68	5%	1/10W
R701	1-216-041-00	METAL CHIP	470	5%	1/10W
R702	1-216-041-00	METAL CHIP	470	5%	1/10W
R703	1-249-404-00	CARBON	82	5%	1/4W
R704	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R706	1-216-073-00	METAL CHIP	10K	5%	1/10W
R713	1-216-041-00	METAL CHIP	470	5%	1/10W
R714	1-216-041-00	METAL CHIP	470	5%	1/10W
R715	1-216-025-91	METAL GLAZE	100	5%	1/10W
R716	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R717	1-216-073-00	METAL CHIP	10K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R719	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R720	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R721	1-216-037-00	METAL CHIP	330	5%	1/10W
R722	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R725	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R726	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R733	1-216-081-00	METAL CHIP	22K	5%	1/10W
R734	1-216-081-00	METAL CHIP	22K	5%	1/10W
R736	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R737	1-216-295-00	METAL CHIP	0	5%	1/10W
R740	1-216-093-00	METAL CHIP	68K	5%	1/10W
R747	1-249-421-11	CARBON	2.2K	5%	1/4W
R748	1-216-081-00	METAL CHIP	22K	5%	1/10W
R749	1-249-437-11	CARBON	47K	5%	1/4W
R874	1-216-075-00	METAL CHIP	12K	5%	1/10W
R881	1-216-081-00	METAL CHIP	22K	5%	1/10W
⚠R882	1-249-389-11	CARBON	4.7	5%	1/4W F (790)
⚠R882	1-249-395-11	CARBON	15	5%	1/4W F (960)
R885	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R886	1-216-073-00	METAL CHIP	10K	5%	1/10W
R887	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R891	1-216-083-00	METAL CHIP	27K	5%	1/10W (960)
⚠R892	1-249-394-11	CARBON	12	5%	1/4W F (960)

< RF MODULATOR >

⚠RF701	1-466-989-11	MODULATOR, RF

< VARIABLE RESISTOR >

RV521	1-241-763-11	RES, ADJ, CERMET 4.7K
RV531	1-241-763-11	RES, ADJ, CERMET 4.7K
RV541	1-241-764-11	RES, ADJ, CERMET 10K

< SWITCH >

S251	1-570-953-11	SWITCH, PUSH (1 KEY) (REC PRF)

< TRANSFORMER >

T881	1-423-414-11	TRANSFORMER, BIAS OSCILLATION	(790)
T881	1-423-413-11	TRANSFORMER, BIAS OSCILLATION	(960)
T891	1-423-415-11	TRANSFORMER, BIAS OSCILLATION	(960)

< TUNER >

⚠TU701	8-598-342-00	TUNER BTF-WA406

< VIBRATOR >

X151	1-579-463-11	VIBRATOR, CRYSTAL (32.768kHz)
X201	1-760-494-11	VIBRATOR, CRYSTAL (16MHz)
X401	1-577-381-11	VIBRATOR, CRYSTAL (14MHz)

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Ref. No.	Part No.	Description			Remark
X402	1-577-165-11	VIBLATOR, CERAMIC (500kHz)			
*	A-6782-792-A	MA-252 BOARD, COMPLETE (760, 761)			
*	A-6782-802-A	MA-252 BOARD, COMPLETE (L5)			
*	A-6782-817-A	MA-252 BOARD, COMPLETE (L7)			
		**********			
					(Ref. No. 4,000 Series)
*	3-960-273-01	SPACER, TOP END			
*	3-960-274-01	SPACER, LED			
		< CAPACITOR >			
C101	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C102	1-126-967-11	ELECT	47uF	20%	16V
C103	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V
C104	1-124-248-00	ELECT	22uF	20%	35V
C105	1-124-584-00	ELECT	100uF	20%	10V
C106	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C107	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C108	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C109	1-124-257-00	ELECT	2.2uF	20%	50V
C111	1-124-257-00	ELECT	2.2uF	20%	50V
C114	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C133	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V (760, 761)
C134	1-124-257-00	ELECT	2.2uF	20%	50V (760, 761)
C135	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V (760, 761)
C136	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V (760, 761)
C137	1-109-982-11	CERAMIC CHIP	1uF	10%	10V (760, 761)
C138	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V (760, 761)
C139	1-126-964-11	ELECT	10uF	20%	50V (760, 761)
C140	1-163-038-91	CERAMIC CHIP	0.1uF		25V (760, 761)
C160	1-125-507-11	CAPACITOR	0.22F		5.5V
C201	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C202	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C203	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C204	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C205	1-163-081-00	CERAMIC CHIP	0.22uF		25V
C206	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C207	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C208	1-124-584-00	ELECT	100uF	20%	10V
C209	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C210	1-124-589-11	ELECT	47uF	20%	16V
C211	1-163-059-00	CERAMIC CHIP	0.01uF	10%	50V
C214	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C215	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C216	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C252	1-162-638-11	CERAMIC CHIP	1uF		16V
C253	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C254	1-124-589-11	ELECT	47uF	20%	16V
C255	1-137-372-11	FILM	0.022uF	5%	50V
C256	1-137-441-11	FILM	0.027uF	5%	50V
C261	1-126-176-11	ELECT	220uF	20%	10V
C262	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C264	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C266	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C267	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C273	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C275	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C291	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C292	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C294	1-124-455-00	ELECT	100uF	20%	16V
C295	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C296	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C298	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C301	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C302	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C303	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C304	1-124-589-11	ELECT	47uF	20%	16V
C305	1-124-589-11	ELECT	47uF	20%	16V (760, 761)
C308	1-126-964-11	ELECT	10uF	20%	50V
C309	1-124-589-11	ELECT	47uF	20%	16V
C312	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C313	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C352	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C353	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C354	1-124-589-11	ELECT	47uF	20%	16V
C356	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C357	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C358	1-163-253-11	CERAMIC CHIP	120PF	5%	50V
C359	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C360	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C401	1-124-589-11	ELECT	47uF	20%	16V
C402	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C403	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C404	1-163-102-00	CERAMIC CHIP	24PF	5%	50V
C409	1-124-589-11	ELECT	47uF	20%	16V
C410	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C417	1-163-119-00	CERAMIC CHIP	120PF	5%	50V
C418	1-126-160-11	ELECT	1uF	20%	50V

Ref. No.	Part No.	Description		Remark
C420	1-130-481-00	MYLAR	0.0068uF	5% 50V
C421	1-124-499-11	ELECT, NONPOLAR	1uF	20% 50V
C422	1-130-487-00	MYLAR	0.022uF	5% 50V
C423	1-124-465-00	ELECT	0.47uF	20% 50V
C424	1-163-102-00	CERAMIC CHIP	24PF	5% 50V
C427	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C461	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C462	1-163-038-91	CERAMIC CHIP	0.1uF	25V
C463	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C464	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C465	1-163-251-11	CERAMIC CHIP	100PF	5% 50V (760, 761)
C501	1-163-011-11	CERAMIC CHIP	0.0015uF	10% 50V (760, 761, L7)
C502	1-163-011-11	CERAMIC CHIP	0.0015uF	10% 50V (760, 761, L7)
C503	1-124-589-11	ELECT	47uF	20% 16V (760, 761, L7)
C510	1-104-760-11	CERAMIC CHIP	0.047uF	10% 50V (760, 761, L5)
C520	1-126-162-11	ELECT	3.3uF	20% 50V (760, 761, L7)
C521	1-126-096-11	ELECT	10uF	20% 35V (760, 761, L7)
C522	1-137-372-11	FILM	0.022uF	5% 50V (760, 761, L7)
C523	1-126-163-11	ELECT	4.7uF	20% 50V (760, 761, L7)
C524	1-124-589-11	ELECT	47uF	20% 16V (760, 761, L7)
C525	1-137-370-11	FILM	0.01uF	5% 50V (760, 761, L7)
C530	1-126-162-11	ELECT	3.3uF	20% 50V (760, 761, L7)
C531	1-126-096-11	ELECT	10uF	20% 35V (760, 761, L7)
C532	1-137-372-11	FILM	0.022uF	5% 50V (760, 761, L7)
C533	1-126-963-11	ELECT	4.7uF	20% 50V (760, 761, L7)
C534	1-124-589-11	ELECT	47uF	20% 16V (760, 761, L7)
C535	1-137-370-11	FILM	0.01uF	5% 50V (760, 761, L7)
C541	1-137-372-11	FILM	0.022uF	5% 50V (760, 761, L7)
C542	1-115-438-91	ELECT	100uF	20% 10V (760, 761, L7)
C551	1-124-248-00	ELECT	22uF	20% 35V (760, 761, L7)
C552	1-124-234-00	ELECT	22uF	20% 16V (760, 761, L7)
C561	1-126-160-11	ELECT	1uF	20% 50V
C562	1-137-370-11	FILM	0.01uF	5% 50V
C563	1-126-163-11	ELECT	4.7uF	20% 50V
C565	1-163-143-00	CERAMIC CHIP	0.0012uF	5% 50V
C566	1-163-014-00	CERAMIC CHIP	0.0027uF	5% 50V
C571	1-163-141-00	CERAMIC CHIP	0.001uF	5% 50V (760, 761, L7)
C572	1-163-141-00	CERAMIC CHIP	0.001uF	5% 50V (760, 761, L7)
C591	1-124-584-00	ELECT	100uF	20% 10V (760, 761, L7)
C592	1-115-438-91	ELECT	100uF	20% 10V (760, 761, L7)
C593	1-124-589-11	ELECT	47uF	20% 16V (760, 761, L7)
C610	1-163-009-11	CERAMIC CHIP	0.001uF	10% 50V
C681	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C682	1-126-967-11	ELECT	47uF	20% 16V
C683	1-126-935-11	ELECT	470uF	20% 6.3V
C684	1-126-967-11	ELECT	47uF	20% 16V
C701	1-126-967-11	ELECT	47uF	20% 16V
C702	1-126-964-11	ELECT	10uF	20% 50V
C703	1-126-964-11	ELECT	10uF	20% 50V (760, 761, L7)
C704	1-163-009-11	CERAMIC CHIP	0.001uF	10% 50V
C705	1-126-964-11	ELECT	10uF	20% 50V
C706	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C707	1-126-967-11	ELECT	47uF	20% 16V
C708	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C711	1-126-935-11	ELECT	470uF	20% 16V
C712	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C713	1-126-967-11	ELECT	47uF	20% 16V
C714	1-163-031-11	CERAMIC CHIP	0.01uF	50V
C716	1-126-964-11	ELECT	10uF	20% 50V (760, 761, L7)
C717	1-126-964-11	ELECT	10uF	20% 50V
C718	1-128-551-11	ELECT	22uF	20% 25V (760, 761, L7)
C719	1-164-161-11	CERAMIC CHIP	0.0022uF	10% 100V
C721	1-164-004-11	CERAMIC CHIP	0.1uF	10% 25V
C725	1-163-809-11	CERAMIC CHIP	0.047uF	10% 25V (760, 761, L7)

Ref.No.	Part No.	Description			Remark
C727	1-126-933-11	ELECT	100uF	20%	10V
C730	1-163-031-11	CERAMIC CHIP	0.01uF		50V (L5)
C731	1-163-031-11	CERAMIC CHIP	0.01uF		50V (L5)
C732	1-163-031-11	CERAMIC CHIP	0.01uF		50V (L5)
C733	1-163-031-11	CERAMIC CHIP	0.01uF		50V (L5)
C734	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V (L5)
C735	1-163-031-11	CERAMIC CHIP	0.01uF		50V (L5)
C851	1-126-157-11	ELECT	10uF	20%	16V (L5)
C852	1-124-234-00	ELECT	22uF	20%	16V (L5)
C853	1-124-234-00	ELECT	22uF	20%	16V (L5)
C854	1-124-252-00	ELECT	0.33uF	20%	50V (L5)
C855	1-126-157-11	ELECT	10uF	20%	16V (L5)
C856	1-126-160-11	ELECT	1uF	20%	50V (L5)
C858	1-126-160-11	ELECT	1uF	20%	50V (L5)
C864	1-126-162-11	ELECT	3.3uF	20%	50V (L5)
C871	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V (L5)
C872	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V (L5)
C873	1-124-257-00	ELECT	2.2uF	20%	50V
C881	1-104-696-11	FILM	0.015uF	5%	100V
C882	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C883	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C884	1-126-933-11	ELECT	100uF	20%	16V
C885	1-137-431-11	FILM	560PF	5%	50V
		< JACK >			
CJ621	1-764-222-11	JACK, PIN 6P (LINE-1 IN/LINE OUT)			(760, 761, L7)
CJ621	1-764-801-11	JACK, PIN 5P (LINE-1 IN/LINE OUT)			(L5)

Ref.No.	Part No.	Description		Remark
		< CONNECTOR >		
CN101	1-506-468-11	PIN, CONNECTOR 3P		
* CN271	1-766-538-11	CONNECTOR, BOARD TO BOARD 8P		
* CN275	1-766-717-11	CONNECTOR, BOARD TO BOARD 5P		
* CN281	1-766-537-11	CONNECTOR (HMD) 5P		
* CN291	1-766-716-11	CONNECTOR, BOARD TO BOARD 3P		
CN301	1-766-718-11	CONNECTOR, BOARD TO BOARD 17P		
* CN501	1-766-600-11	CONNECTOR, BOARD TO BOARD 7P		
* CN851	1-560-892-00	PIN, CONNECTOR 4P		
* CN881	1-560-891-00	PIN, CONNECTOR 3P		
CN903	1-774-461-11	CONNECTOR, FFC/FPC 15P		
CN905	1-506-470-11	PIN, CONNECTOR 5P		(760, 761)
CN906	1-569-338-11	CONNECTOR, BOARD TO BOARD 19P		
CN908	1-506-473-11	PIN, CONNECTOR 8P		
		< TRIMMER >		
CT401	1-141-334-11	CAP, VAR, TRIMMER		
		< DIODE >		
D201	8-719-200-82	DIODE	11ES2	
D202	8-719-801-48	DIODE	1SS193	
D203	8-719-801-78	DIODE	1SS184	(L5)
D204	8-719-200-82	DIODE	11ES2	
D251	8-719-801-48	DIODE	1SS193	
D261	8-719-048-26	LED	GL528V1	
D265	8-719-109-93	DIODE	RD6.2ES-B2	
D267	8-719-109-93	DIODE	RD6.2ES-B2	
D291	8-719-977-24	DIODE	DTZ9.1B	
D403	8-719-801-48	DIODE	1SS193	
D591	8-719-404-46	DIODE	MA110	(760, 761, L7)
D610	8-719-109-74	DIODE	RD4.3ES-B1	
D701	8-719-200-82	DIODE	11ES2	
⚠D702	8-719-800-76	DIODE	1SS226	
D703	8-719-110-78	DIODE	RD33ES-B2	
D708	8-719-911-19	DIODE	1SS119-25	(L5)
D853	8-719-911-19	DIODE	1SS119-25	(L5)
D902	8-719-200-82	DIODE	11ES2	
		< IC >		
IC101	8-759-246-14	IC	TA8823N	
IC131	8-759-364-14	IC	LC7455M-TLM	(760, 761)
IC201	8-752-869-65	IC	CXP87360-040Q	(L5, L7)
IC201	8-752-869-64	IC	CXP87360-039Q	(760, 761)
IC202	8-759-248-87	IC	MM1256XF-BE	
IC203	8-759-278-56	IC	AK6440HF-E2	
IC251	8-759-335-76	IC	uPC5023GR-089-E2	
IC291	8-759-294-26	IC	BA6209-V2	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description				Remark
IC302	1-801-697-11	IC	YC MODULE 3 (NTSC-YC)			
IC401	8-759-289-30	IC	LC74761M-9075-TLM			
IC461	8-759-295-66	IC	BA7653AF-E2			
IC501	8-759-365-32	IC	XLH7779K-VP			(760, 761, L7)
IC551	8-759-089-84	IC	BA7755AF			(760, 761, L7)
IC701	8-759-701-59	IC	NJM78M09FA			(760, 761, L7)
IC851	8-759-268-02	IC	BA7796FS-E2			(L5)
		< JUMPER RESISTOR >				
JP21	1-216-295-00	METAL CHIP	0	5%	1/10W	(L5)
JP22	1-216-295-00	METAL CHIP	0	5%	1/10W	(L5)
JP95	1-216-295-00	METAL CHIP	0	5%	1/10W	(L5)
JP96	1-216-295-00	METAL CHIP	0	5%	1/10W	(L5)
JP001	1-216-296-00	METAL CHIP	0	5%	1/8W	
JP014	1-216-296-00	METAL CHIP	0	5%	1/8W	
JP017	1-216-296-00	METAL CHIP	0	5%	1/8W	
JP021	1-216-295-00	METAL CHIP	0	5%	1/10W	(760, 761, L7)
JP022	1-216-295-00	METAL CHIP	0	5%	1/10W	(760, 761, L7)
JP031	1-216-296-00	METAL CHIP	0	5%	1/8W	
JP045	1-216-296-00	METAL CHIP	0	5%	1/8W	
JP057	1-216-296-00	METAL CHIP	0	5%	1/8W	
		< JUMPER RESISTOR >				
JR101	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR131	1-216-295-00	METAL CHIP	0	5%	1/10W	(760, 761)
JR132	1-216-296-00	METAL CHIP	0	5%	1/8W	(760, 761)
JR202	1-216-295-00	METAL CHIP	0	5%	1/10W	(L5)
JR203	1-216-295-00	METAL CHIP	0	5%	1/10W	(760, 761, L7)
JR204	1-216-295-00	METAL CHIP	0	5%	1/10W	(760, 761, L7)
JR205	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR212	1-216-295-00	METAL CHIP	0	5%	1/10W	(760, 761)
JR213	1-216-295-00	METAL CHIP	0	5%	1/10W	(760, 761, L7)
JR221	1-216-295-00	METAL CHIP	0	5%	1/10W	(760, 761)
JR222	1-216-296-00	METAL CHIP	0	5%	1/8W	(L5, L7)
JR224	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR252	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR253	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR301	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR303	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR305	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR402	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR403	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR404	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR461	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR576	1-216-295-00	METAL CHIP	0	5%	1/10W	(760, 761, L7)
JR701	1-216-295-00	METAL CHIP	0	5%	1/10W	(L5)
JR702	1-216-295-00	METAL CHIP	0	5%	1/10W	(760, 761, L7)
JR706	1-216-295-00	METAL CHIP	0	5%	1/10W	(760, 761, L7)
JR707	1-216-295-00	METAL CHIP	0	5%	1/10W	(760, 761, L7)
JR710	1-216-295-00	METAL CHIP	0	5%	1/10W	(760, 761, L7)
JR716	1-216-295-00	METAL CHIP	0	5%	1/10W	(760, 761, L7)
JR722	1-216-295-00	METAL CHIP	0	5%	1/10W	(L5)
JR737	1-216-295-00	METAL CHIP	0	5%	1/10W	(760, 761, L7)
JR738	1-216-295-00	METAL CHIP	0	5%	1/10W	(760, 761, L7)
JR739	1-216-295-00	METAL CHIP	0	5%	1/10W	(760, 761, L7)
JR741	1-216-295-00	METAL CHIP	0	5%	1/10W	(760, 761, L7)
JR851	1-216-295-00	METAL CHIP	0	5%	1/10W	(L5)
JR854	1-216-295-00	METAL CHIP	0	5%	1/10W	(L5)
JR856	1-216-295-00	METAL CHIP	0	5%	1/10W	(L5)
JR859	1-216-295-00	METAL CHIP	0	5%	1/10W	(L5)
JR885	1-216-295-00	METAL CHIP	0	5%	1/10W	
		< COIL >				
L101	1-408-421-00	INDUCTOR	100uH			
L201	1-408-970-21	INDUCTOR	10uH			
L301	1-410-521-11	INDUCTOR	100uH			
L302	1-414-186-31	INDUCTOR	33uH			
L303	1-414-186-31	INDUCTOR	33uH			
L305	1-414-186-31	INDUCTOR	33uH			
L351	1-410-525-11	INDUCTOR	220uH			
L352	1-414-189-31	INDUCTOR	100uH			
L353	1-410-513-11	INDUCTOR	22uH			
L401	1-408-421-00	INDUCTOR	100uH			

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Ref. No.	Part No.	Description		Remark
L402	1-408-421-00	INDUCTOR	100uH	
L404	1-410-506-11	INDUCTOR	5.6uH	
L461	1-414-189-31	INDUCTOR	100uH	
L681	1-410-482-31	INDUCTOR	100uH	
L701	1-414-183-41	INDUCTOR	10uH	(760, 761, L7)
L702	1-414-189-31	INDUCTOR	100uH	
L703	1-414-183-41	INDUCTOR	10uH	
L704	1-410-501-11	INDUCTOR	2.2uH	
L705	1-414-187-11	INDUCTOR	47uH	
L708	1-410-501-11	INDUCTOR	2.2uH	(L5)
L709	1-410-501-11	INDUCTOR	2.2uH	(L5)
L851	1-410-482-31	INDUCTOR	100uH	(L5)
L881	1-410-687-11	INDUCTOR	1.2mH	
L901	1-412-364-11	INDUCTOR	0uH	
		< PIN CABLE >		
P701	1-555-110-00	CABLE, PIN	(760, 761, L7)	
		< PHOTO INTERRUPTER >		
PH261	8-749-010-19	PHOTO INTERRUPTER GP3S113		
PH262	8-749-010-20	PHOTO INTERRUPTER GP3S114		
		< IC LINK >		
⚠PS271	1-532-727-11	LINK, IC ICP-N5 (0.25A)		
⚠PS885	1-532-727-11	LINK, IC ICP-N5 (0.25A)		
		< THERMISTOR >		
⚠PTH592	1-202-855-00	THERMISTOR, POSITIVE		(760, 761, L7)
		< TRANSISTOR >		
Q131	8-729-010-05	TRANSISTOR	MSB709-RT1	(760, 761)
Q132	8-729-421-19	TRANSISTOR	UN2213	(760, 761)
Q201	8-729-010-25	TRANSISTOR	MSD601-RT1	
Q202	8-729-901-06	TRANSISTOR	DTA144EK	
Q261	8-729-025-92	PHOTO TRANSISTOR	PT380F	
Q262	8-729-025-92	PHOTO TRANSISTOR	PT380F	
Q263	8-729-281-53	TRANSISTOR	2SC1815-GR	
Q301	8-729-421-19	TRANSISTOR	UN2213	
Q306	8-729-421-19	TRANSISTOR	UN2213	
Q352	8-729-010-29	TRANSISTOR	MSD601-RST1	
Q353	8-729-010-29	TRANSISTOR	MSD601-RST1	
Q404	8-729-010-05	TRANSISTOR	MSB709-RT1	
Q405	8-729-010-05	TRANSISTOR	MSB709-RT1	
Q406	8-729-010-05	TRANSISTOR	MSB709-RT1	
Q591	8-729-804-41	TRANSISTOR	2SB1122-S	(760, 761, L7)
Q592	8-729-820-68	TRANSISTOR	2SD1802FA-S	(760, 761, L7)
Q681	8-729-010-05	TRANSISTOR	MSB709-RT1	
Q701	8-729-421-19	TRANSISTOR	UN2213	(760, 761, L7)

Ref. No.	Part No.	Description		Remark
⚠Q703	8-729-173-38	TRANSISTOR	2SA733-K	
Q705	8-729-010-29	TRANSISTOR	MSD601-RST1	(760, 761, L7)
Q707	8-729-010-05	TRANSISTOR	MSB709-RT1	(760, 761, L7)
Q708	8-729-010-05	TRANSISTOR	MSB709-RT1	(760, 761, L7)
Q709	8-729-010-29	TRANSISTOR	MSD601-RST1	(760, 761, L7)
Q710	8-729-010-05	TRANSISTOR	MSB709-RT1	(L5)
Q711	8-729-424-67	TRANSISTOR	UN2216	(L5)
Q714	8-729-010-05	TRANSISTOR	MSB709-RT1	(L5)
Q853	8-729-424-67	TRANSISTOR	UN2216	(L5)
Q881	8-729-012-31	TRANSISTOR	2SC4040-TL2-Q	
Q882	8-729-900-51	TRANSISTOR	DTA114TK	
Q886	8-729-010-29	TRANSISTOR	MSD601-RST1	
		< RESISTOR >		
R101	1-216-119-00	METAL CHIP	820K 5%	1/10W
R102	1-216-093-00	METAL CHIP	68K 5%	1/10W
R103	1-216-097-91	METAL GLAZE	100K 5%	1/10W
R104	1-216-097-91	METAL GLAZE	100K 5%	1/10W
R105	1-216-085-00	METAL CHIP	33K 5%	1/10W
R106	1-216-065-00	METAL CHIP	4.7K 5%	1/10W
R107	1-216-186-00	METAL GLAZE	330 5%	1/8W
R108	1-216-121-91	METAL GLAZE	1M 5%	1/10W
R111	1-216-097-91	METAL GLAZE	100K 5%	1/10W
R131	1-216-061-00	METAL CHIP	3.3K 5%	1/10W (760, 761)
R132	1-216-121-91	METAL GLAZE	1M 5%	1/10W (760, 761)
R133	1-216-222-00	METAL GLAZE	10K 5%	1/8W (760, 761)
R135	1-216-025-91	METAL GLAZE	100 5%	1/10W (760, 761)
R136	1-216-049-91	METAL GLAZE	1K 5%	1/10W (760, 761)
R137	1-216-083-00	METAL CHIP	27K 5%	1/10W (760, 761)
R138	1-216-079-00	METAL CHIP	18K 5%	1/10W (760, 761)
R139	1-216-238-91	METAL GLAZE	47K 5%	1/8W (760, 761)
R140	1-216-057-00	METAL CHIP	2.2K 5%	1/10W (760, 761)
R141	1-216-073-00	METAL CHIP	10K 5%	1/10W (760, 761)
R201	1-216-073-00	METAL CHIP	10K 5%	1/10W
R202	1-216-295-00	METAL CHIP	0 5%	1/10W (760, 761)
R202	1-216-081-00	METAL CHIP	22K 5%	1/10W (L5)
R202	1-216-065-00	METAL CHIP	4.7K 5%	1/10W (L7)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
R203	1-216-073-00	METAL CHIP	10K	5%	1/10W
R204	1-216-073-00	METAL CHIP	10K	5%	1/10W (L5, L7)
R206	1-216-073-00	METAL CHIP	10K	5%	1/10W
R207	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R208	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R209	1-216-073-00	METAL CHIP	10K	5%	1/10W
R210	1-216-073-00	METAL CHIP	10K	5%	1/10W
R211	1-216-101-00	METAL CHIP	150K	5%	1/10W
R212	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R213	1-216-077-00	METAL CHIP	15K	5%	1/10W
R214	1-216-085-00	METAL CHIP	33K	5%	1/10W
R215	1-216-095-00	METAL CHIP	82K	5%	1/10W
R216	1-216-083-00	METAL CHIP	27K	5%	1/10W (L5)
R217	1-216-085-00	METAL CHIP	33K	5%	1/10W (L5)
R218	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R219	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R220	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R221	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R222	1-216-113-00	METAL CHIP	470K	5%	1/10W
R223	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R224	1-216-025-91	METAL GLAZE	100	5%	1/10W
R225	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R226	1-216-025-91	METAL GLAZE	100	5%	1/10W
R227	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R228	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R229	1-216-109-00	METAL CHIP	330K	5%	1/10W
R230	1-216-105-91	METAL GLAZE	220K	5%	1/10W
R233	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R234	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R251	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R252	1-216-079-00	METAL CHIP	18K	5%	1/10W
R253	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R254	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R255	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R256	1-216-103-91	METAL GLAZE	180K	5%	1/10W
R261	1-249-400-11	CARBON	39	5%	1/4W
R262	1-249-400-11	CARBON	39	5%	1/4W
R263	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R264	1-216-107-00	METAL CHIP	270K	5%	1/10W
R265	1-216-107-00	METAL CHIP	270K	5%	1/10W
R266	1-249-413-11	CARBON	470	5%	1/4W
R267	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R268	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R271	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R274	1-216-083-00	METAL CHIP	27K	5%	1/10W
R275	1-216-093-00	METAL CHIP	68K	5%	1/10W
R276	1-216-056-00	METAL GLAZE	2K	5%	1/10W
R277	1-216-068-00	METAL CHIP	6.2K	5%	1/10W
R278	1-216-075-00	METAL CHIP	12K	5%	1/10W
R281	1-216-238-91	METAL GLAZE	47K	5%	1/8W
R282	1-216-238-91	METAL GLAZE	47K	5%	1/8W
R283	1-216-238-91	METAL GLAZE	47K	5%	1/8W
R284	1-216-238-91	METAL GLAZE	47K	5%	1/8W
R293	1-216-295-00	METAL CHIP	0	5%	1/10W
R301	1-216-295-00	METAL CHIP	0	5%	1/10W
R302	1-216-052-00	METAL CHIP	1.3K	5%	1/10W (L5)
R302	1-216-053-00	METAL CHIP	1.5K	5%	1/10W (760, 761, L7)
R303	1-216-031-00	METAL CHIP	180	5%	1/10W
R304	1-208-798-11	METAL GLAZE	4.7K	0.50%	1/10W
R305	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R306	1-216-081-00	METAL CHIP	22K	5%	1/10W
R313	1-216-041-00	METAL CHIP	470	5%	1/10W
R314	1-216-240-00	METAL GLAZE	56K	5%	1/8W
R315	1-216-105-91	METAL GLAZE	220K	5%	1/10W
R317	1-247-889-00	CARBON	270K	5%	1/4W
R335	1-216-073-00	METAL CHIP	10K	5%	1/10W
R351	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R352	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R353	1-216-045-00	METAL CHIP	680	5%	1/10W
R354	1-216-083-00	METAL CHIP	27K	5%	1/10W
R355	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R356	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R357	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R358	1-216-035-00	METAL CHIP	270	5%	1/10W
R413	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R414	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R415	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R416	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R417	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R418	1-216-045-00	METAL CHIP	680	5%	1/10W
R419	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R420	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R421	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R423	1-216-073-00	METAL CHIP	10K	5%	1/10W
R425	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R431	1-216-081-00	METAL CHIP	22K	5%	1/10W
R432	1-216-121-91	METAL GLAZE	1M	5%	1/10W
R461	1-216-295-00	METAL CHIP	0	5%	1/10W
R462	1-216-295-00	METAL CHIP	0	5%	1/10W
R501	1-216-065-00	METAL CHIP	4.7K	5%	1/10W (760, 761, L7)
R502	1-216-065-00	METAL CHIP	4.7K	5%	1/10W (760, 761, L7)

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Ref. No.	Part No.	Description			Remark
R505	1-216-295-00	METAL CHIP	0	5%	1/10W (760, 761, L7)
R506	1-216-295-00	METAL CHIP	0	5%	1/10W (760, 761, L7)
R507	1-216-295-00	METAL CHIP	0	5%	1/10W (760, 761, L7)
R510	1-216-129-00	METAL CHIP	2.2M	5%	1/10W (760, 761, L7)
R514	1-216-049-91	METAL GLAZE	1K	5%	1/10W (760, 761, L7)
R515	1-216-049-91	METAL GLAZE	1K	5%	1/10W (760, 761, L7)
R521	1-216-073-00	METAL CHIP	10K	5%	1/10W (760, 761, L7)
R522	1-216-050-00	METAL GLAZE	1.1K	5%	1/10W (760, 761, L7)
R523	1-216-079-00	METAL CHIP	18K	5%	1/10W (760, 761, L7)
R524	1-216-067-00	METAL CHIP	5.6K	5%	1/10W (760, 761, L7)
R525	1-208-809-11	METAL GLAZE	13K	0.50%	1/10W (760, 761, L7)
R531	1-216-073-00	METAL CHIP	10K	5%	1/10W (760, 761, L7)
R532	1-216-050-00	METAL GLAZE	1.1K	5%	1/10W (760, 761, L7)
R533	1-216-079-00	METAL CHIP	18K	5%	1/10W (760, 761, L7)
R534	1-216-067-00	METAL CHIP	5.6K	5%	1/10W (760, 761, L7)
R535	1-208-806-11	METAL GLAZE	10K	0.50%	1/10W (760, 761, L7)
R541	1-216-081-00	METAL CHIP	22K	5%	1/10W (760, 761, L7)
R551	1-216-129-00	METAL CHIP	2.2M	5%	1/10W (760, 761, L7)
R561	1-216-073-00	METAL CHIP	10K	5%	1/10W
R562	1-216-109-00	METAL CHIP	330K	5%	1/10W
R563	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R564	1-216-041-00	METAL CHIP	470	5%	1/10W
R565	1-216-099-00	METAL CHIP	120K	5%	1/10W
R566	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R567	1-216-295-00	METAL CHIP	0	5%	1/10W (760, 761, L7)
R571	1-216-073-00	METAL CHIP	10K	5%	1/10W (760, 761, L7)
R572	1-216-089-91	METAL GLAZE	47K	5%	1/10W (760, 761, L7)
R573	1-216-214-00	METAL GLAZE	4.7K	5%	1/8W (760, 761, L7)
R575	1-216-295-00	METAL CHIP	0	5%	1/10W (760, 761, L7)
R591	1-249-421-11	CARBON	2.2K	5%	1/4W (760, 761, L7)
R592	1-216-069-00	METAL CHIP	6.8K	5%	1/10W (760, 761, L7)
R601	1-216-022-00	METAL CHIP	75	5%	1/10W
R611	1-216-041-00	METAL CHIP	470	5%	1/10W
R612	1-216-041-00	METAL CHIP	470	5%	1/10W (760, 761, L7)
R681	1-216-037-00	METAL CHIP	330	5%	1/10W
R683	1-249-407-11	CARBON	150	5%	1/4W
R684	1-249-408-11	CARBON	180	5%	1/4W
R685	1-216-021-00	METAL CHIP	68	5%	1/10W
R702	1-216-041-00	METAL CHIP	470	5%	1/10W (760, 761, L7)
R703	1-249-404-00	CARBON	82	5%	1/4W
R704	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R705	1-216-057-00	METAL CHIP	2.2K	5%	1/10W (L5)
R706	1-216-073-00	METAL CHIP	10K	5%	1/10W (760, 761, L7)
R709	1-216-049-91	METAL GLAZE	1K	5%	1/10W (L5)
R711	1-216-073-00	METAL CHIP	10K	5%	1/10W (L5)
R712	1-216-025-91	METAL GLAZE	100	5%	1/10W (L5)
R713	1-216-041-00	METAL CHIP	470	5%	1/10W (760, 761, L7)
R714	1-216-041-00	METAL CHIP	470	5%	1/10W (760, 761, L7)
R715	1-216-025-91	METAL GLAZE	100	5%	1/10W (760, 761, L7)
R716	1-216-065-00	METAL CHIP	4.7K	5%	1/10W (760, 761, L7)
R717	1-216-073-00	METAL CHIP	10K	5%	1/10W (760, 761, L7)
R719	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R720	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R721	1-216-037-00	METAL CHIP	330	5%	1/10W
R722	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R725	1-216-049-91	METAL GLAZE	1K	5%	1/10W (760, 761, L7)

Ref.No.	Part No.	Description			Remark
R726	1-216-049-91	METAL GLAZE	1K	5%	1/10W (760,761,L7)
R733	1-216-081-00	METAL CHIP	22K	5%	1/10W (760,761,L7)
R734	1-216-081-00	METAL CHIP	22K	5%	1/10W (760,761,L7)
R736	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R737	1-216-295-00	METAL CHIP	0	5%	1/10W (760,761,L7)
R738	1-216-025-91	METAL GLAZE	100	5%	1/10W (L5)
R740	1-216-093-00	METAL CHIP	68K	5%	1/10W (760,761,L7)
R746	1-216-073-00	METAL CHIP	10K	5%	1/10W (760,761,L7)
R747	1-249-421-11	CARBON	2.2K	5%	1/4W F (760,761,L7)
R851	1-216-129-00	METAL CHIP	2.2M	5%	1/10W (L5)
R852	1-216-049-91	METAL GLAZE	1K	5%	1/10W (L5)
R853	1-216-041-00	METAL CHIP	470	5%	1/10W (L5)
R854	1-216-089-91	METAL GLAZE	47K	5%	1/10W (L5)
R855	1-216-067-00	METAL CHIP	5.6K	5%	1/10W (L5)
R858	1-216-089-91	METAL GLAZE	47K	5%	1/10W (L5)
R859	1-216-067-00	METAL CHIP	5.6K	5%	1/10W (L5)
R871	1-216-073-00	METAL CHIP	10K	5%	1/10W (L5)
R872	1-216-089-91	METAL GLAZE	47K	5%	1/10W (L5)
R873	1-216-065-00	METAL CHIP	4.7K	5%	1/10W (L5)
R874	1-216-075-00	METAL CHIP	12K	5%	1/10W
R881	1-216-081-00	METAL CHIP	22K	5%	1/10W
⚠R882	1-249-389-11	CARBON	4.7	5%	1/4W F
R885	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R886	1-216-073-00	METAL CHIP	10K	5%	1/10W
R887	1-216-089-91	METAL GLAZE	47K	5%	1/10W
		< RF MODULATOR >			
⚠RF701	1-466-989-11	MODULATOR, RF			(760,761,L7)
		< VARIABLE RESISTOR >			
RV521	1-241-763-11	RES, ADJ, CERMET	4.7K		(760,761,L7)
RV531	1-241-763-11	RES, ADJ, CERMET	4.7K		(760,761,L7)
RV541	1-241-764-11	RES, ADJ, CERMET	10K		(760,761,L7)
		< SWITCH >			
S251	1-570-953-11	SWITCH, PUSH (1 KEY) (REC PRF)			
S701	1-571-588-11	SWITCH, SLIDE (RF UNIT CH3/CH4)			(L5)

Ref.No.	Part No.	Description	Remark
		< TRANSFORMER >	
T881	1-423-414-11	TRANSFORMER, BIAS OSCILLATION	
		< TUNER >	
⚠TU701	8-598-345-00	TUNER, BTF-WA407	(760,761,L7)
⚠TU702	1-693-318-11	TUNER, RF MOD/IF (BTF-2MA402)	(L5)
		< VIBRATOR >	
X201	1-760-494-11	VIBRATOR, CRYSTAL (16MHz)	
X202	1-579-463-11	VIBRATOR, CRYSTAL (32.768kHz)	
X401	1-577-381-11	VIBRATOR, CRYSTAL (14MHz)	
*	A-6782-798-A	MF-283 BOARD, COMPLETE (790,960HF/HFMX)	
*	A-6782-806-A	MF-289 BOARD, COMPLETE (960HFCS/HFPX)	
		********** (Ref.No. 1,000 Series)	
		< CAPACITOR >	
C201	1-163-035-00	CERAMIC CHIP 0.047uF	50V
		< CONNECTOR >	
CN201	1-695-368-31	CONNECTOR, FFC/FPC 7P	
		< LED >	
D201	8-719-056-07	LED SLR-342MC3F	(POWER)
D202	8-719-056-07	LED SLR-342MC3F	(POWER)
		< IC >	
IC201	1-466-833-11	IC RAY-CATCHER BLOCK, REMOCON	
		< TRANSISTOR >	
Q201	8-729-421-22	TRANSISTOR UN2211	
		< RESISTOR >	
R201	1-216-089-91	METAL GLAZE 47K 5%	1/10W
R202	1-216-021-00	METAL CHIP 68 5%	1/10W
		< SWITCH >	
S201	1-571-977-11	SWITCH, TACTIL (POWER)	

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Ref. No.	Part No.	Description			Remark
*	A-6782-794-A	MF-284 BOARD, COMPLETE (760, 761, L5MX/PA, L7HFMX/HFPA)			
*	A-6782-795-A	MF-290 BOARD, COMPLETE (760HFPX, L5CS, L7HFCS)			
		********** (Ref. No. 2,000 Series)			
		< CONNECTOR >			
CN201	1-691-068-21	HOUSING, CONNECTOR 9P			
		< LED >			
D201	8-719-056-07	LED SLR-342MC3F			(POWER)
D202	8-719-056-07	LED SLR-342MC3F			(POWER)
		< RESISTOR >			
R202	1-216-021-00	METAL CHIP	68	5%	1/10W
		< SWITCH >			
S201	1-571-977-11	SWITCH, TACTIL (POWER)			
*	A-6782-812-A	PS-355 BOARD, COMPLETE (790HF, 960HF/HFMX)			
*	A-6782-830-A	PS-356 BOARD, COMPLETE (L5MX/PA)			
*	A-6782-789-A	PS-356 BOARD, COMPLETE (760, 761, L7HFMX/HFPA)			
		********** (Ref. No. 1,000 Series)			
	1-533-223-11	HOLDER, FUSE			
*	3-951-893-01	HEAT SINK			
	7-685-646-79	SCREW +BVTP	3X8	TYPE2 IT-3	
		< CAPACITOR >			
⚠C101	1-104-705-11	FILM	0.1uF	20%	250V
⚠C102	1-104-705-11	FILM	0.1uF	20%	250V
⚠C103	1-107-401-11	ELECT	150uF	20%	200V
⚠C104	1-113-900-11	ELECT	470PF	10%	250V
⚠C105	1-113-900-11	ELECT	470PF	10%	250V
⚠C107	1-113-919-11	ELECT	0.0015uF	99%	125V
C121	1-126-935-11	ELECT	470uF	20%	16V
C122	1-126-926-11	ELECT	1000uF	20%	10V
C125	1-128-551-11	ELECT	22uF	20%	25V
C131	1-128-499-11	ELECT	220uF	20%	16V
C132	1-128-551-11	ELECT	22uF	20%	25V
C133	1-104-664-11	ELECT	47uF	20%	25V
C141	1-126-967-11	ELECT	47uF	20%	16V
C142	1-126-933-11	ELECT	100uF	20%	16V
C161	1-126-967-11	ELECT	47uF	20%	16V
C162	1-126-924-11	ELECT	330uF	20%	10V
C171	1-126-924-11	ELECT	330uF	20%	10V
C181	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C182	1-126-967-11	ELECT	47uF	20%	16V
C183	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C184	1-126-967-11	ELECT	47uF	20%	50V
C185	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C186	1-126-967-11	ELECT	47uF	20%	50V
C187	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C188	1-126-967-11	ELECT	47uF	20%	50V
C189	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C190	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C191	1-124-248-00	ELECT	22uF	20%	35V
		< AC INLET >			
⚠CJ101	1-251-135-11	INLET, AC. (AC IN ~)			
		< CONNECTOR >			
CN101	1-569-341-11	CONNECTOR, BOARD TO BOARD 19P			
		< POWER BLOCK >			
⚠CP101	1-468-086-11	POWER BLOCK			
⚠CP102	1-467-811-12	UNIT, DC-DC CONVERTER			
		< DIODE >			
⚠D101	8-719-510-06	DIODE S1WB60			
D161	8-719-911-19	DIODE 1SS119-25			
D162	8-719-109-85	DIODE RD5.1ES-B2			
		< FUSE >			
⚠F101	1-532-743-11	FUSE, GLASS CYLINDRICAL (DIA. 5) (2A/125V)			
		< IC >			
⚠IC141	8-759-189-48	IC PQ12RE11			
		< COIL >			
⚠L121	1-403-588-11	COIL, CHOKE	22uH		
⚠L122	1-403-588-11	COIL, CHOKE	22uH		
L181	1-408-970-21	INDUCTOR	10uH		
L182	1-414-142-11	INDUCTOR	1uH		
L183	1-414-142-11	INDUCTOR	1uH		
L184	1-410-322-11	INDUCTOR	3.3UH (790, 960HF/HFMX)		
		< LINE FILTER >			
⚠LF102	1-424-117-11	FILTER, LINE 18mH			

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Ref. No.	Part No.	Description			Remark
		< IC LINK >			
⚠PS121	1-532-637-00	LINK, IC ICP-N25 (1.0A)			
⚠PS122	1-532-637-00	LINK, IC ICP-N25 (1.0A)			
⚠PS123	1-532-637-00	LINK, IC ICP-N25 (1.0A)			
⚠PS181	1-532-605-00	LINK, IC ICP-N10 (0.4A)			
		< TRANSISTOR >			
⚠Q131	8-729-140-93	TRANSISTOR 2SB733-34			
Q132	8-729-421-22	TRANSISTOR UN2211			
⚠Q161	8-729-140-98	TRANSISTOR 2SD773-34			
		< RESISTOR >			
⚠R102	1-202-729-00	SOLID	6.8M	20% 1/2W	
⚠R102	1-202-729-00	SOLID	6.8M	20% 1/2W	
⚠R102	1-202-729-00	SOLID	6.8M	20% 1/2W	
R102	1-202-729-00	SOLID	6.8M	20% 1/2W	
R125	1-216-061-00	METAL CHIP	3.3K	5% 1/10W	
R131	1-249-417-11	CARBON	1K	5% 1/4W	
R132	1-216-430-11	METAL OXIDE	390	5% 1W	
R133	1-216-061-00	METAL CHIP	3.3K	5% 1/10W	
R141	1-216-089-91	METAL GLAZE	47K	5% 1/10W	
R161	1-249-412-11	CARBON	390	5% 1/4W	
R182	1-216-378-11	METAL OXIDE	5.6	5% 2W	
R183	1-216-480-11	METAL OXIDE	820	5% 3W	
*	A-6782-804-A	PS-367 BOARD, COMPLETE (960HFCS/HFPX)			
*	A-6782-819-A	PS-368 BOARD, COMPLETE (760HFPX/HFCS)			
*	A-6782-820-A	PS-368 BOARD, COMPLETE (L5CS)			
		**********			
		(Ref.No. 2,000 Series)			
	1-533-223-11	HOLDER, FUSE			
*	3-951-893-01	HEAT SINK			
	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3			
		< CAPACITOR >			
⚠C101	1-104-705-11	FILM	0.1uF	20% 250V	
⚠C102	1-104-705-11	FILM	0.1uF	20% 250V	
⚠C103	1-107-414-11	ELECT	220uF	20% 400V	
⚠C104	1-113-935-11	ELECT	0.001uF	99% 125V	
⚠C105	1-113-935-11	ELECT	0.001uF	99% 125V	
⚠C106	1-113-935-11	ELECT	0.001uF	99% 125V	
⚠C107	1-113-935-11	ELECT	0.001uF	99% 125V	
⚠C108	1-113-935-11	ELECT	0.001uF	99% 125V	
⚠C112	1-113-895-11	CERAMIC	150PF	10% 250V	
C121	1-126-935-11	ELECT	470uF	20% 16V	
C122	1-126-926-11	ELECT	1000uF	20% 10V	
C125	1-128-551-11	ELECT	22uF	20% 25V	
C131	1-128-499-11	ELECT	220uF	20% 16V	
C132	1-128-551-11	ELECT	22uF	20% 25V	
C133	1-104-664-11	ELECT	47uF	20% 25V	
C141	1-126-967-11	ELECT	47uF	20% 16V	
C142	1-126-933-11	ELECT	100uF	20% 16V	
C161	1-126-967-11	ELECT	47uF	20% 16V	
C162	1-126-924-11	ELECT	330uF	20% 10V	
C171	1-126-924-11	ELECT	330uF	20% 10V	
C181	1-163-031-11	CERAMIC CHIP	0.01uF	50V	
C182	1-126-967-11	ELECT	47uF	20% 16V	
C183	1-163-031-11	CERAMIC CHIP	0.01uF	50V	
C184	1-126-967-11	ELECT	47uF	20% 50V	
C185	1-163-031-11	CERAMIC CHIP	0.01uF	50V	
C186	1-126-967-11	ELECT	47uF	20% 50V	
C187	1-163-031-11	CERAMIC CHIP	0.01uF	50V	
C188	1-126-967-11	ELECT	47uF	20% 50V	
C189	1-163-031-11	CERAMIC CHIP	0.01uF	50V	
C190	1-163-031-11	CERAMIC CHIP	0.01uF	50V	
C191	1-124-248-00	ELECT	22uF	20% 35V	
		< AC INLET >			
⚠CJ101	1-251-134-11	INLET, AC (NONPOLAR) (AC IN ~)			
		< CONNECTOR >			
CN101	1-569-341-11	CONNECTOR, BOARD TO BOARD 19P			
		< POWER BLOCK >			
⚠CP101	1-468-083-11	POWER BLOCK			
⚠CP101	1-468-083-11	POWER BLOCK			
CP102	1-467-811-12	UNIT, DC-DC CONVERTER			
		< DIODE >			
⚠D101	8-719-510-06	DIODE S1WB60			
D161	8-719-911-19	DIODE 1SS119-25			
D162	8-719-109-85	DIODE RD5.1ES-B2			
		< FUSE >			
⚠F101	1-532-203-00	FUSE (T2AL/250V)			
		< IC >			
⚠IC141	8-759-189-48	IC PQ12RE11			
		< COIL >			
⚠L121	1-403-588-11	CIL, CHOKE	22uH		
⚠L122	1-403-588-11	CIL, CHOKE	22uH		
L181	1-408-970-21	INDUCTOR	10uH		
L182	1-414-142-11	INDUCTOR	1uH		
L183	1-414-142-11	INDUCTOR	1uH		
L184	1-410-322-11	INDUCTOR	3.3UH (960HFCS/HFPX)		

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PS-367 **PS-368** **RP-197** **RP-202**

Ref. No.	Part No.	Description			Remark
		< LINE FILTER >			
⚠LF102	1-424-117-11	FILTER, LINE 18mH			
⚠LF103	1-424-117-11	FILTER, LINE 18mH			
		< IC LINK >			
⚠PS121	1-532-637-00	LINK, IC ICP-N25 (1.0A)			
⚠PS122	1-532-637-00	LINK, IC ICP-N25 (1.0A)			
⚠PS123	1-532-637-00	LINK, IC ICP-N25 (1.0A)			
⚠PS181	1-532-605-00	LINK, IC ICP-N10 (0.4A)			
		< TRANSISTOR >			
⚠Q131	8-729-140-93	TRANSISTOR 2SB733-34			
Q132	8-729-421-22	TRANSISTOR UN2211			
⚠Q161	8-729-140-98	TRANSISTOR 2SD773-34			
		< RESISTOR >			
⚠R101	1-214-947-00	METAL	2.7M	1%	1/2W
R125	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R131	1-249-417-11	CARBON	1K	5%	1/4W
R132	1-216-430-11	METAL OXIDE	390	5%	1W
R133	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R141	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R161	1-249-412-11	CARBON	390	5%	1/4W
R182	1-216-378-11	METAL OXIDE	5.6	5%	2W
R183	1-216-480-11	METAL OXIDE	820	5%	3W

* A-6782-799-A RP-197 BOARD, COMPLETE (790)
* A-6782-811-A RP-197 BOARD, COMPLETE (960HF/HFMX)
* A-6782-808-A RP-202 BOARD, COMPLETE (960HFCS/HFPX)

****

(Ref. No. 1,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description			Remark
C501	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C502	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C503	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C504	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C505	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C506	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C507	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C508	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C509	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C510	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C511	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C512	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C513	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C514	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C515	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C516	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C517	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C518	1-124-584-00	ELECT	100uF	20%	10V
C519	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C521	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C522	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C523	1-163-059-00	CERAMIC CHIP	0.01uF	10%	50V
C524	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C525	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C526	1-124-584-00	ELECT	100uF	20%	10V
C527	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C528	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C529	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C531	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C532	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C571	1-163-099-00	CERAMIC CHIP	18PF	5%	50V(960)
C572	1-163-099-00	CERAMIC CHIP	18PF	5%	50V(960)
C573	1-164-232-11	CERAMIC CHIP	0.01uF		50V(960)
C575	1-163-251-11	CERAMIC CHIP	100PF	5%	50V(960)
C576	1-163-121-00	CERAMIC CHIP	150PF	5%	50V(960)
C577	1-163-245-11	CERAMIC CHIP	56PF	5%	50V(960)
C578	1-163-038-91	CERAMIC CHIP	0.1uF		25V(960)
C579	1-124-589-11	ELECT	47uF	20%	16V(960)
C580	1-163-038-91	CERAMIC CHIP	0.1uF		25V(960)
C760	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C761	1-124-584-00	ELECT	100uF	20%	10V
C762	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C763	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C764	1-124-257-00	ELECT	2.2uF	20%	50V
C765	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C767	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C768	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C769	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C770	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C773	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C774	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C775	1-126-160-11	ELECT	1uF	20%	50V
C776	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C901	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C902	1-163-224-11	CERAMIC CHIP	7PF	0.25PF	50V
C903	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C904	1-163-249-11	CERAMIC CHIP	82PF	5%	50V
C906	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C907	1-126-967-11	ELECT	47uF	20%	16V
C909	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C912	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
R519	1-163-031-11	CERAMIC CHIP	0.01MF		50V

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Ref.No.	Part No.	Description				Remark
		< CONNECTOR >				
CN501	1-766-986-11	CONNECTOR, FFC/FPC 13P				
* CN502	1-564-029-00	PIN, CONNECTOR 4P				
CN503	1-766-720-11	CONNECTOR, BOARD TO BOARD 17P				
CN701	1-766-724-11	CONNECTOR, BOARD TO BOAR 7P				
		< IC >				
IC501	8-759-352-17	IC MA118195NT				
IC760	8-759-055-49	IC AN3327K				
		< JUMPER RESISTOR >				
JR502	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR503	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR504	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR505	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR506	1-216-296-00	METAL CHIP	0	5%	1/10W	
JR507	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR508	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR509	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR901	1-216-296-00	METAL CHIP	0	5%	1/10W	
		< COIL >				
L501	1-414-189-31	INDUCTOR	100uH			
L502	1-414-189-31	INDUCTOR	100uH			
L503	1-410-525-11	INDUCTOR	220uH			
L571	1-410-509-11	INDUCTOR	10uH			(960)
L572	1-410-509-11	INDUCTOR	10uH			(960)
L573	1-410-507-11	INDUCTOR	6.8uH			(960)
L574	1-414-189-31	INDUCTOR	100uH			(960)
L760	1-414-189-31	INDUCTOR	100uH			
L901	1-414-189-31	INDUCTOR	100uH			
L903	1-410-516-11	INDUCTOR	39uH			
L904	1-410-512-11	INDUCTOR	18uH			
L906	1-410-518-41	INDUCTOR	56uH			
		< TRANSISTOR >				
Q501	8-729-271-21	TRANSISTOR	2SC2712Y			
Q502	8-729-216-21	TRANSISTOR	2SA1162Y			
Q571	8-729-216-22	TRANSISTOR	2SA1162-G			(960)
Q572	8-729-216-22	TRANSISTOR	2SA1162-G			(960)
Q573	8-729-421-19	TRANSISTOR	UN2213			(960)
Q574	8-729-421-19	TRANSISTOR	UN2213			(960)
Q575	8-729-804-41	TRANSISTOR	2SB1122-S			(960)
Q901	8-729-271-21	TRANSISTOR	2SC2712Y			
Q904	8-729-216-21	TRANSISTOR	2SA1162Y			
Q905	8-729-271-21	TRANSISTOR	2SC2712Y			

Ref.No.	Part No.	Description				Remark
		< RESISTOR >				
C520	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
C911	1-216-295-00	METAL CHIP	0	5%	1/10W	
R501	1-216-044-00	METAL CHIP	620	5%	1/10W	
R502	1-216-044-00	METAL CHIP	620	5%	1/10W	
R503	1-216-295-00	METAL CHIP	0	5%	1/10W	
R504	1-216-295-00	METAL CHIP	0	5%	1/10W	
R505	1-216-295-00	METAL CHIP	0	5%	1/10W	
R506	1-216-295-00	METAL CHIP	0	5%	1/10W	
R507	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R508	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R509	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R510	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R511	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R512	1-216-224-91	METAL GLAZE	12K	5%	1/8W	
R513	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R514	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R515	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R516	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R517	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R518	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R520	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R571	1-216-013-00	METAL CHIP	33	5%	1/10W	(960)
R572	1-216-041-00	METAL CHIP	470	5%	1/10W	(960)
R573	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	(960)
R574	1-216-095-00	METAL CHIP	82K	5%	1/10W	(960)
R575	1-216-089-91	METAL GLAZE	47K	5%	1/10W	(960)
R576	1-216-689-11	METAL CHIP	39K	0.5%	1/10W	(960)
R577	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	(960)
R578	1-216-073-00	METAL CHIP	10K	5%	1/10W	(960)
R762	1-216-035-00	METAL CHIP	270	5%	1/10W	
R763	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R765	1-216-033-00	METAL CHIP	220	5%	1/10W	
R766	1-249-418-11	CARBON	1.2K	5%	1/4W	
R767	1-216-035-00	METAL CHIP	270	5%	1/10W	
R768	1-216-097-91	METAL GLAZE	100K	5%	1/10W	
R771	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R776	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R901	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R902	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R903	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R904	1-216-037-00	METAL CHIP	330	5%	1/10W	
R905	1-216-295-00	METAL CHIP	0	5%	1/10W	
R906	1-216-043-91	METAL GLAZE	560	5%	1/10W	
R908	1-216-039-00	METAL CHIP	390	5%	1/10W	
R912	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R913	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R914	1-216-037-00	METAL CHIP	330	5%	1/10W	

Ref. No.	Part No.	Description			Remark
R916	1-216-037-00	METAL CHIP	330	5%	1/10W
R917	1-216-047-91	METAL GLAZE	820	5%	1/10W
R918	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R919	1-216-295-00	METAL CHIP	0	5%	1/10W
R920	1-216-075-00	METAL CHIP	12K	5%	1/10W
R921	1-216-077-00	METAL CHIP	15K	5%	1/10W
R931	1-216-295-00	METAL CHIP	0	5%	1/10W
R932	1-216-295-00	METAL CHIP	0	5%	1/10W
*	A-6782-832-A	RP-198 BOARD, COMPLETE (L5MX/PA)			
*	A-6782-791-A	RP-198 BOARD, COMPLETE (760, 761, L7HFMX/HFPA)			
*	A-6782-796-A	RP-203 BOARD, COMPLETE (760HFPX, L7HFCS)			
*	A-6782-821-A	RP-203 BOARD, COMPLETE (L5CS)			
		**********			
		(Ref. No. 2,000 Series)			
		< CAPACITOR >			
C501	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C502	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C503	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C504	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C505	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C506	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C507	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C508	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C509	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C510	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C511	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C512	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C513	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C514	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C515	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C516	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C517	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C518	1-124-584-00	ELECT	100uF	20%	10V
C519	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C521	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C522	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C523	1-163-059-00	CERAMIC CHIP	0.01uF	10%	50V
C524	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C525	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C526	1-124-584-00	ELECT	100uF	20%	10V
C527	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C528	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C529	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C531	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C532	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C760	1-163-031-11	CERAMIC CHIP	0.01uF		50V (760, 761, L7)
C761	1-124-584-00	ELECT	100uF	20%	10V (760, 761, L7)
C762	1-163-031-11	CERAMIC CHIP	0.01uF		50V (760, 761, L7)
C763	1-163-038-91	CERAMIC CHIP	0.1uF		25V (760, 761, L7)
C764	1-124-257-00	ELECT	2.2uF	20%	50V (760, 761, L7)
C765	1-163-031-11	CERAMIC CHIP	0.01uF		50V (760, 761, L7)
C767	1-163-031-11	CERAMIC CHIP	0.01uF		50V (760, 761, L7)
C768	1-163-135-00	CERAMIC CHIP	560PF	5%	50V (760, 761, L7)
C769	1-163-135-00	CERAMIC CHIP	560PF	5%	50V (760, 761, L7)
C770	1-163-038-91	CERAMIC CHIP	0.1uF		25V (760, 761, L7)
C773	1-163-031-11	CERAMIC CHIP	0.01uF		50V (760, 761, L7)
C774	1-163-031-11	CERAMIC CHIP	0.01uF		50V (760, 761, L7)
C775	1-126-160-11	ELECT	1uF	20%	50V (760, 761, L7)
C776	1-163-031-11	CERAMIC CHIP	0.01uF		50V (760, 761, L7)
C901	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C902	1-163-224-11	CERAMIC CHIP	7PF	0.25PF	50V
C903	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C904	1-163-249-11	CERAMIC CHIP	82PF	5%	50V
C906	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C907	1-126-967-11	ELECT	47uF	20%	16V
C909	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C912	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
R519	1-163-031-11	CERAMIC CHIP	0.01MF		50V
		< CONNECTOR >			
CN501	1-563-585-11	CONNECTOR, FLEXIBLE 8P			(L5)
CN501	1-766-986-11	CONNECTOR, FFC/FPC 13P			(760, 761, L7)
* CN502	1-564-029-00	PIN, CONNECTOR 4P			
CN503	1-766-720-11	CONNECTOR, BOARD TO BOARD 17P			
CN701	1-766-724-11	CONNECTOR, BOARD TO BOAR 7P			
		< IC >			
IC501	8-759-352-17	IC HA118195NT			
IC760	8-759-055-49	IC AN3327K			(760, 761, L7)

Ref. No.	Part No.	Description			Remark
		< JUMPER RESISTOR >			
JR502	1-216-295-00	METAL CHIP	0	5%	1/10W
JR503	1-216-295-00	METAL CHIP	0	5%	1/10W
JR504	1-216-295-00	METAL CHIP	0	5%	1/10W
JR505	1-216-295-00	METAL CHIP	0	5%	1/10W
JR506	1-216-296-00	METAL CHIP	0	5%	1/8W
JR507	1-216-295-00	METAL CHIP	0	5%	1/10W
JR508	1-216-295-00	METAL CHIP	0	5%	1/10W
JR509	1-216-295-00	METAL CHIP	0	5%	1/10W
JR901	1-216-296-00	METAL CHIP	0	5%	1/8W
		< COIL >			
L501	1-414-189-31	INDUCTOR	100uH		
L502	1-414-189-31	INDUCTOR	100uH		
L503	1-410-525-11	INDUCTOR	220uH		
L760	1-414-189-31	INDUCTOR	100uH		(760, 761, L7)
L901	1-414-189-31	INDUCTOR	100uH		
L903	1-410-516-11	INDUCTOR	39uH		
L904	1-410-512-11	INDUCTOR	18uH		
L906	1-410-518-41	INDUCTOR	56uH		
		< TRANSISTOR >			
Q501	8-729-271-21	TRANSISTOR	2SC2712Y		
Q502	8-729-216-21	TRANSISTOR	2SA1162Y		
Q901	8-729-271-21	TRANSISTOR	2SC2712Y		
Q904	8-729-216-21	TRANSISTOR	2SA1162Y		
Q905	8-729-271-21	TRANSISTOR	2SC2712Y		
		< RESISTOR >			
C520	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
C911	1-216-295-00	METAL CHIP	0	5%	1/10W
R501	1-216-044-00	METAL CHIP	620	5%	1/10W
R502	1-216-044-00	METAL CHIP	620	5%	1/10W
R503	1-216-295-00	METAL CHIP	0	5%	1/10W
R504	1-216-295-00	METAL CHIP	0	5%	1/10W
R505	1-216-295-00	METAL CHIP	0	5%	1/10W
R506	1-216-295-00	METAL CHIP	0	5%	1/10W
R507	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R508	1-216-073-00	METAL CHIP	10K	5%	1/10W
R509	1-216-075-00	METAL CHIP	12K	5%	1/10W
R510	1-216-081-00	METAL CHIP	22K	5%	1/10W
R511	1-216-081-00	METAL CHIP	22K	5%	1/10W
R512	1-216-224-91	METAL GLAZE	12K	5%	1/8W
R513	1-216-081-00	METAL CHIP	22K	5%	1/10W
R514	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R515	1-216-081-00	METAL CHIP	22K	5%	1/10W
R516	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R517	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R518	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R520	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R762	1-216-035-00	METAL CHIP	270	5%	1/10W (760, 761, L7)
R763	1-216-067-00	METAL CHIP	5.6K	5%	1/10W (760, 761, L7)
R765	1-216-033-00	METAL CHIP	220	5%	1/10W (760, 761, L7)
R766	1-249-418-11	CARBON	1.2K	5%	1/4W F (760, 761, L7)
R767	1-216-035-00	METAL CHIP	270	5%	1/10W (760, 761, L7)
R768	1-216-097-91	METAL GLAZE	100K	5%	1/10W (760, 761, L7)
R771	1-216-079-00	METAL CHIP	18K	5%	1/10W (760, 761, L7)
R776	1-216-073-00	METAL CHIP	10K	5%	1/10W (760, 761, L7)
R901	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R902	1-216-077-00	METAL CHIP	15K	5%	1/10W
R903	1-216-075-00	METAL CHIP	12K	5%	1/10W
R904	1-216-037-00	METAL CHIP	330	5%	1/10W
R905	1-216-295-00	METAL CHIP	0	5%	1/10W
R906	1-216-043-91	METAL GLAZE	560	5%	1/10W
R908	1-216-039-00	METAL CHIP	390	5%	1/10W
R912	1-216-075-00	METAL CHIP	12K	5%	1/10W
R913	1-216-077-00	METAL CHIP	15K	5%	1/10W
R914	1-216-037-00	METAL CHIP	330	5%	1/10W
R916	1-216-037-00	METAL CHIP	330	5%	1/10W
R917	1-216-047-91	METAL GLAZE	820	5%	1/10W
R918	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R919	1-216-295-00	METAL CHIP	0	5%	1/10W
R920	1-216-075-00	METAL CHIP	12K	5%	1/10W
R921	1-216-077-00	METAL CHIP	15K	5%	1/10W
R931	1-216-295-00	METAL CHIP	0	5%	1/10W
R932	1-216-295-00	METAL CHIP	0	5%	1/10W
R933	1-216-295-00	METAL CHIP	0	5%	1/10W

MISCELLANEOUS

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13	1-776-226-11	CABLE, FLAT (FHM-1) 9P
55	1-473-518-11	SWITCH BLOCK, CONTROL (790)
55	1-473-518-21	SWITCH BLOCK, CONTROL (960)
72	1-776-227-11	CABLE, FLAT (FHM-13) 7P
103	1-776-228-11	CABLE, FLAT (FDL-1) 10P (790, 960)
107	1-776-225-11	CABLE, FLAT (FMH-9) 15P
152	1-500-144-11	HEAD, FE
162	A-6739-103-A	ACE BLOCK ASSY

Ref. No.	Part No.	Description	Remark
164	1-506-485-11	PIN, CONNECTOR 6P	
220	8-848-576-02	DRUM ASSY, ROTARY UPPER (DZR-45-R)	(760, 761, 790, L7)
220	8-848-594-02	DRUM ASSY, ROTARY UPPER (DZR-51-R)	(960)
221	8-848-658-11	DRUM ASSY, LOWER (DZL-45B/J-RP)	(760, 761, 790, L7)
221	8-848-666-11	DRUM ASSY, LOWER (DZL-51B/J-RP)	(960)
223	8-848-681-11	DRUM ASSY, (DZH-73B/Q-RP)	(L5)
M902	1-698-409-11	MOTOR, DC SCV-0801A/Z-NP (CAPSTAN)	
M903	X-3943-883-1	MOTOR ASSY, CAM	
S410	1-572-662-11	SWITCH, ROTARY (DUAL MODE SHUTTLE)	

ACCESSORIES & PACKING MATERIALS

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	1-473-483-11	REMOTE COMMANDER (RMT-V158C)	(960)
	1-473-483-21	REMOTE COMMANDER (RMT-V161A)	(790)
	1-473-487-11	REMOTE COMMANDER (RMT-V186)	(L7)
	1-473-487-21	REMOTE COMMANDER (RMT-V186A)	(L5)
	1-473-515-11	REMOTE COMMANDER (RMT-V184A)	(760, 761)
⚠	1-569-008-11	ADAPTER, CONVERSION 2P	(760HFPX, 960HFCS/HFPX, L5CS, L7HFCS)
⚠	1-575-131-11	CORD, POWER SUPPLY	(760HFPX, 960HFCS/HFPX, L5CS, L7HFCS)
	1-575-334-11	CORD, CONNECTION	(AUDIO, VIDEO) (760, 761, L7)
	1-696-592-11	CORD, CONNECTION (NTSC)	(ANT)
⚠	1-751-676-11	CORD, POWER	(EXCEPT 760HFPX, 960HFCS/HFPX, L5CS, L7HFCS)
	1-769-181-21	MOUSE, INTERIJENT CABLE	(790, 960)
	1-776-258-11	CORD, AVC CONNECTION	(790, 960)
	3-708-817-01	COVER, BATTERY	(V-158C, V161A, V184A, V186, V186A)
	3-800-533-11	MANUAL, INSTRUCTION (ENGLISH)	(960HFPX)
	3-800-552-11	MANUAL, INSTRUCTION (ENGLISH)	(760HF/HFPX, 761)
	3-800-552-21	MANUAL, INSTRUCTION (FRENCH)	(760HF)
	3-800-553-11	MANUAL, INSTRUCTION (ENGLISH)	(960HF)
	3-800-553-21	MANUAL, INSTRUCTION (FRENCH)	(960HF)
	3-800-553-31	MANUAL, INSTRUCTION (SPANISH)	(960HFCS/HFMX)
	3-810-205-11	MANUAL, INSTRUCTION (SPANISH)	(L7)
	3-810-206-11	MANUAL, INSTRUCTION (SPANISH)	(L5)
	3-810-321-11	MANUAL, INSTRUCTION (ENGLISH)	(790)
	3-810-321-21	MANUAL, INSTRUCTION (FRENCH)	(790)
	3-957-513-11	RING, SHUTTLE	(V-158C, V161A, V184A, V186, V186A)
*	3-966-238-01	INDIVIDUAL CARTON	(760)
*	3-966-238-21	INDIVIDUAL CARTON	(761)
*	3-966-258-01	INDIVIDUAL CARTON	(790)
*	3-966-258-11	INDIVIDUAL CARTON	(960HF/HFPX)
*	3-967-323-01	CUSHION	(790, 960)
*	3-967-324-01	CUSHION	(EXCEPT 790, 960)
*	3-967-421-01	INDIVIDUAL CARTON	(960HFCS/HFMX)
*	3-967-422-01	INDIVIDUAL CARTON	(L7)
*	3-967-422-11	INDIVIDUAL CARTON	(L5)
	X-3944-446-2	BUTTON ASSY (C)	(V-158C, V161A, V184A, V186, V186A)

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HARDWARE LIST

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#1	7-685-648-79	SCREW +BVTP 3X12 TYPE2 IT-3	
#2	7-685-646-79	SCREW (3X8)	
#3	7-682-547-04	SCREW +P 3X6	
#4	7-624-190-61	STOP RING 2.4, TYPE-CS	
#5	7-624-106-04	STOP RING 3.0, TYPE-E	
#6	7-682-645-01	SCREW +PS 3X4	
#7	7-621-772-08	SCREW +B 2X3	
#8	7-628-254-10	SCREW +PS 2.6X6	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

6-12. SYSTEM CONTROL – SYSTEM CONTROL PERIPHERAL CIRCUIT INTERFACE (MA-252 BOARD IC201)

Signal	Pin No.	I/O	I/O level
$\overline{\text{ASURA RESET}}$	MA-252 IC201㊾	I	Normally "H", "L" when service interruption is detected or restored.
$\overline{\text{ASURA CS}}$	MA-252 IC201㊽	I	Chip select signal from timer microprocessor. V period "L" pulse.
S IN 0	MA-252 IC201㊻	I	Serial communication data from timer microprocessor. V period "L" pulse.
S OUT 0	MA-252 IC201㊺	O	Serial communication data to timer microprocessor. V period "L" pulse.
$\overline{\text{S CLK}}$	MA-252 IC201㊼	I	Serial communication clock with timer microprocessor. V period "L" pulse.

6-13. SYSTEM CONTROL – Hi-Fi AUDIO BLOCK INTERFACE (MA-252 BOARD IC201)

Signal	Pin No.	I/O	STOP/ FF/ REW	TAPE LOADING	TAPE UNLOADING	PB	PB • PAUSE	SLOW	×2	CUE	REVIEW	REC	REC • PAUSE
AF ENV	MA-252 IC201㊾	I	AF RF envelope signal input terminal for automatic tracking.										
A MUTE	MA-252 IC201㊷	O (O.D)	L	L	L	*1	H	H	H	H	H	L	L
NA REC $\overline{\text{P}}$	MA-252 IC201⑪	O	L	L	L	L	L	L	L	L	L	H	L
AF REC $\overline{\text{P}}$	MA-252 IC201④	O	L	L	L	L	L	L	L	L	L	H	L
AF SWP	MA-252 IC201⑱	O	*1	L	L	*1	*1	*1	*1	*1	*1	*1	*1
FULL ERS	MA-252 IC201㊿	O (O.D)	H	H	H	H	H	H	H	H	H	L	H

*1. 30 Hz 50% duty pulse approx. 5 msec delayed from RF SW P.

6-14. SYSTEM CONTROL – NORMAL AUDIO BLOCK INTERFACE (MA-252 BOARD IC201)

Signal	Pin No.	I/O	STOP/ FF/ REW	TAPE LOADING	TAPE UNLOADING	PB	PB • PAUSE	SLOW	×2	CUE	REVIEW	REC	REC • PAUSE
AF ENV	MA-252 IC201㉜	I	AF RF envelope signal input terminal for automatic tracking.										
NA PB	MA-252 IC201㉛	O	L	L	L	H	H	H	H	H	H	L	L
A MUTE	MA-252 IC201⑰	O (O.D)	L	L	L	*1	H	H	H	H	H	L	L
$\overline{\text{NA SP}}$ POWER CONT2	MA-252 IC201㉙	O	*2	*2	*2	*3	*3	*3	*3	*3	*2	*2	*2
NA REC $\overline{P}$	MA-252 IC201⑪	O	L	L	L	L	L	L	L	L	L	H	L
AF REC $\overline{P}$	MA-252 IC201④	O	L	L	L	L	L	L	L	L	L	H	L
AF SWP	MA-252 IC201⑱	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1
FULL ERS	MA-252 IC201㉘	O (O.D)	H	H	H	H	H	H	H	H	H	L	H

*1. 30 Hz 50% duty pulse approx. 5 msec delayed from RF SW P.
*2. Selected by REC mode selector. SP mode: "L".
*3. Selected by tape recording mode. SP mode: "L".

6-15. SYSTEM CONTROL AND RF MODULATOR – INPUT SELECTION BLOCK INTERFACE

Signal	Pin No.	I/O	I/O level
LINE 1	MA-252 IC201⑤	O	*1. Input select control signal.
LINE 2	MA-252 IC201㉝	O	

*1.

Signal \ Input	Tuner	LINE 1	LINE 2
LINE 1 ⑤	L	H	L
LINE 2 ㉝	L	L	H

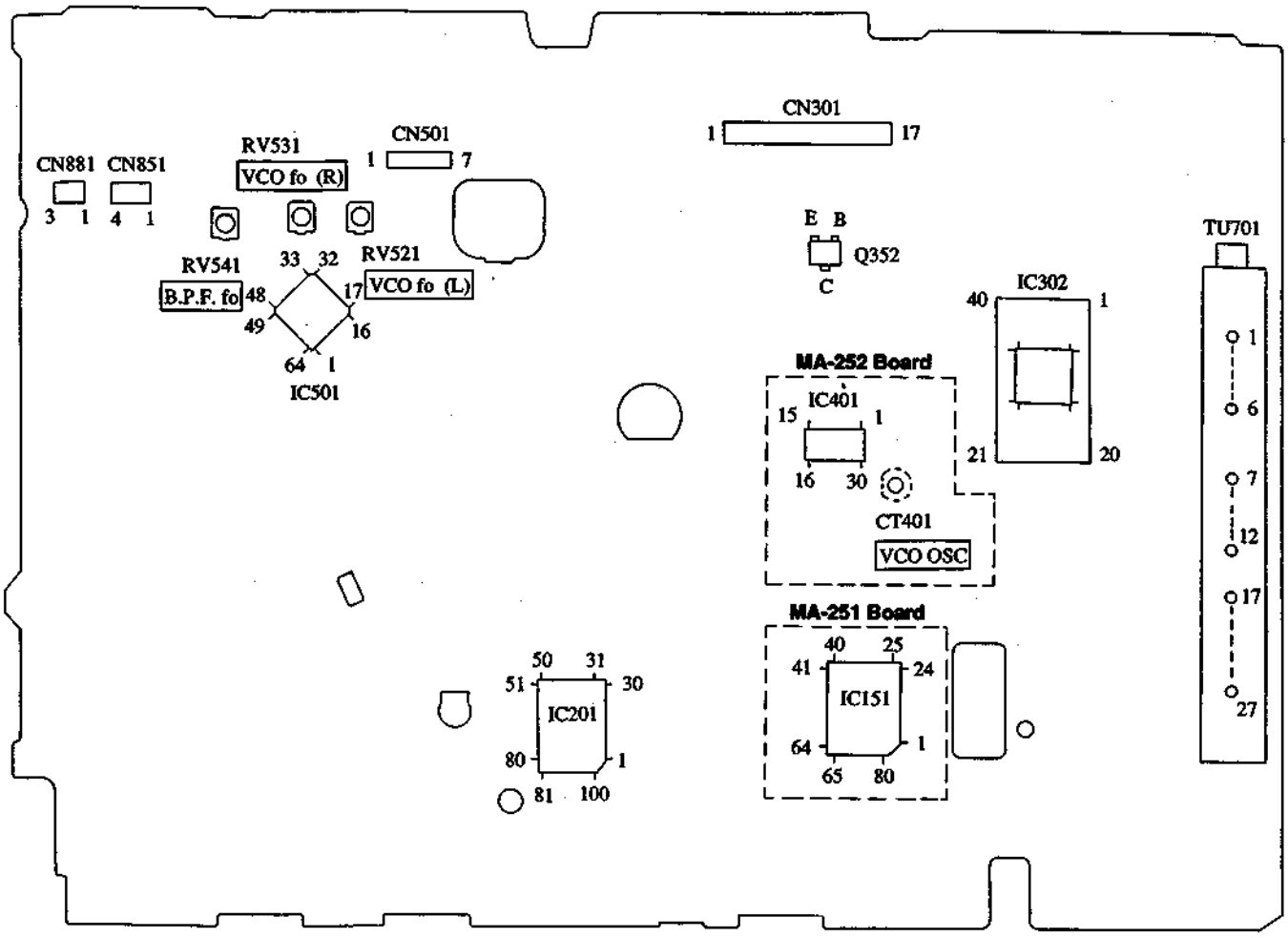
6-16. SERVO/SYSTEM CONTROL MICROPROCESSOR PIN FUNCTION (MA-252 BOARD IC201 CXP87360-040Q: SLV-L5, L7/CXP87360-039Q: SLV-760,761)

Pin No.	Pin name	I/O	Function
1	RF SWP	O	RF switching pulse output
2	QVD	O	Quasi VD pulse output
3	QHD ENABLE	O	Quasi HD voltage level control
4	AF REC P	O	"H" output when hi-fi audio REC
5	LINE 1	O	Input selection control signal
6	MAIN/SAP	O	MAIN/SAP judge signal output
7	REC CTL	O	REC CTL signal output
8	CAP TRQ3	O	Capstan current control
9	APC2	I	APC control input terminal 2
10	APC1	I	APC control input terminal 1
11	NA REC P	I/O	Normal audio recording mode H: recording mode
12	SP/EP/LP	O	"L" when SP mode "H" when EP/LP mode
13	CAM LOAD	I	Loading motor rotating direction control
14	CAM UNLOAD	I	Loading motor rotating direction control
15	C IN (REC PRF)	I	Erasing protection tab, cassette IN detection input
16	RENTAL	I/O	YNR control
17	A MUTE	O	"H" when audio mute
18	NC	–	Not used
19	STEREO	I	Tuner audio mode input (stereo)
20	F MONO	O	Tuner audio select signal
21	TV/VTR	O	"H" when TV mode "L" when VTR mode
22	EDS CS	O	EDS chip select signal
23	SYS CHECK	O	System check control signal
24	TU CLOCK	O	Tuner PLL clock
25	TU DATA	O	Tuner PLL data
26	TU ENABLE	O	Tuner chip select
27	MODE 4	I	Mechanism section CAM encoder input
28	MODE 3	I	Mechanism section CAM encoder input
29	MODE 2	I	Mechanism section CAM encoder input
30	MODE 1	I	Mechanism section CAM encoder input
31	CAM 12V	O	CAM motor reference voltage
32	T/E LED	O	T/E LED output
33	CAP TRQ2	O	Capstan current control signal 2 L: FF/REW to STOP
34	CAP TRQ1	O	Capstan current control signal 1 L: SLOW speed down
35	CAP STOP	O	Capstan STOP signal output
36	FULL ERS	O	Full erase control
37	EEP RESET	O	EEP ROM reset output
38	EEP CS	O	EEP ROM select
39	MP	I	Fixed to L
40	ASURA RESET	I	System reset input
41	VSS	–	GND
42	XTAL	–	System clock 16 MHz
43	EXTAL	–	System clock 16 MHz
44	ASURA CS	I	S/S microcomputer chip select signal
45	S IN 0	I	Serial communication signal
46	S OUT 0	O	Serial communication signal
47	SCLK	O	Serial communication signal
48	OSD CS	O	OSD chip select signal
49	SYS RESET	O	System reset output
50	FLD CS	O	FLD chip select signal

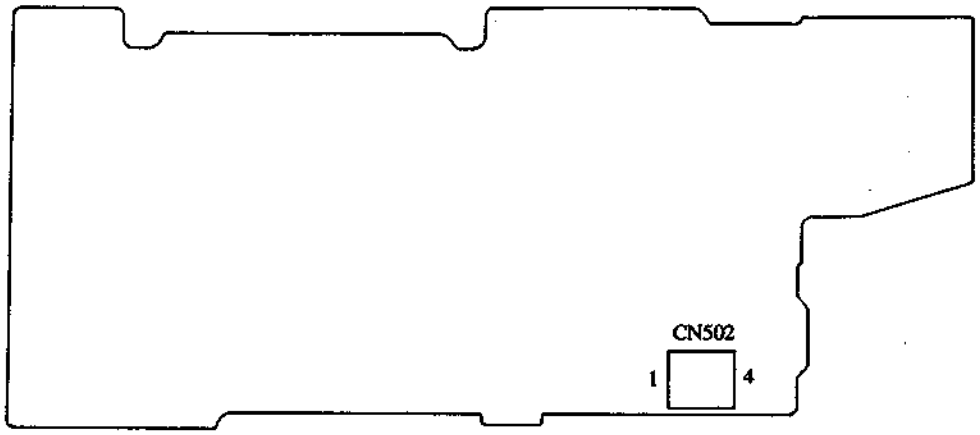
Pin No.	Pin name	I/O	Function
51	POWER CONT1	O	Power control signal 1
52	AVSS	–	UNSW GND
53	AVREF	–	AD port reference input UNSW 5V
54	AVDD	–	UNSW 5V
55	APC ERROR	I	APC error input
56	ATF	I	ATF signal input
57	DEST2 DEW	I	DEW sensor input Not used
58	VA ADJ	I	ADJ mode 0V: SWP Adj 2.5V: HiFi Adj
59	AF ENV	I	Hi-Fi audio playback signal envelope
60	RF ENV	I	Video playback signal envelope
61	T SENS	I	Take up end sensor input
62	S SENS	I	Supply end sensor input
63	S REEL FG	I	S side reel FG input
64	T REEL FG	I	T side reel FG input
65	H DET	I	H sync separation input
66	V SYNC	I	Composite sync input
67	PB CTL	I	Playback CTL input
68	DRM PG	I	Drum PG input
69	DRM FG	I	Drum FG input
70	CAP FG	I	Capstan FG input
71	AUTOPRESET	O	Autopreset on display
72	CAP RVS	O	Capstan reverse control H when Reverse
73	CAP DA	O	Capstan error D/A output
74	DRUM DA	O	Drum PG input
75	CTL RED	O	"H" CTL write
76	CTL STEP	O	CTL amp, STEP operation control
77	EEP BUSY	I	EEP ROM busy signal input
78	EDS DAV	O	Not used
79	CTL INDEX	O	CTL INDEX signal input
80	SO1	I/O	Signal for serial communication
81	SCLK1	I/O	Signal for serial communication
82	POWER FAIL	I	Power voltage drop detection terminal
83	LINE 2 CONT	O	Input selection control signal
84	APC PWM	O	PWM output for APC
85	RMC	I	Remote control signal input
86	TEX	–	Liquid crystal oscillation terminal (32kHz)
87	TX	–	Liquid crystal oscillation terminal (32kHz)
88	VSS	–	GND
89	VDD	–	5V
90	NC		Not used
91	ORC SETTEI	O	H when ORC measurement
92	NC	O	Not used
93	SP	O	Tape speed Select
94	POWER CONT 2	O	Power control signal 2
95	NA PB	O	Audio output control signal H when normal audio playback
96	AF REC	O	"H" output when hi-fi audio REC
97	JOG	O	"H" when trick play mode
98	V PB	O	Video system playback mode "L" when playback
99	STEP PLS	O	Step pulse H when Capstan step driving
100	AF SWP	O	AF switching pulse output

2-7. PARTS ARRANGEMENT DIAGRAM FOR ADJUSTMENTS

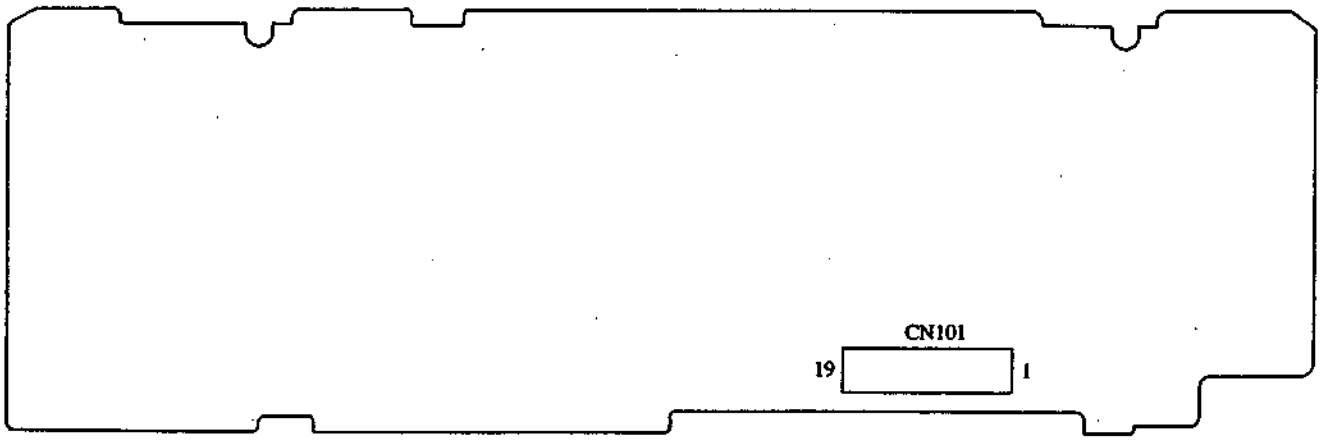
MA-251/252 BOARD (CONDUCTOR SIDE)



RP-197/198/202/203 BOARD (COMPONENT SIDE)



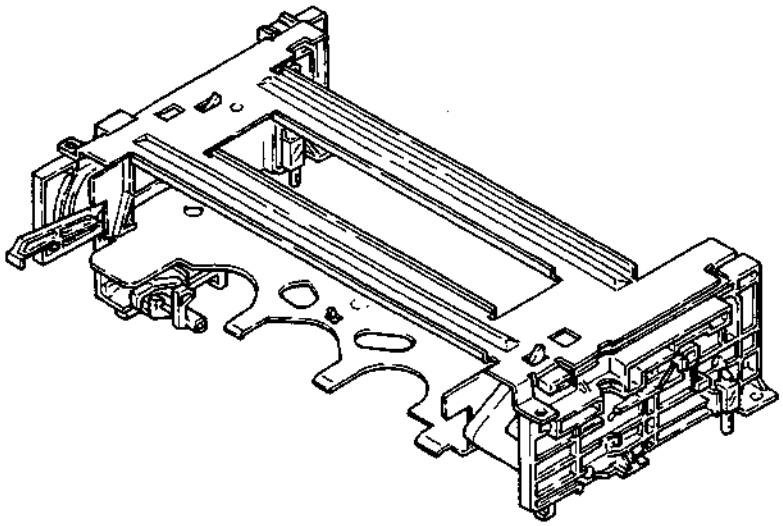
PS-355/356/367/368 BOARD (COMPONENT SIDE)

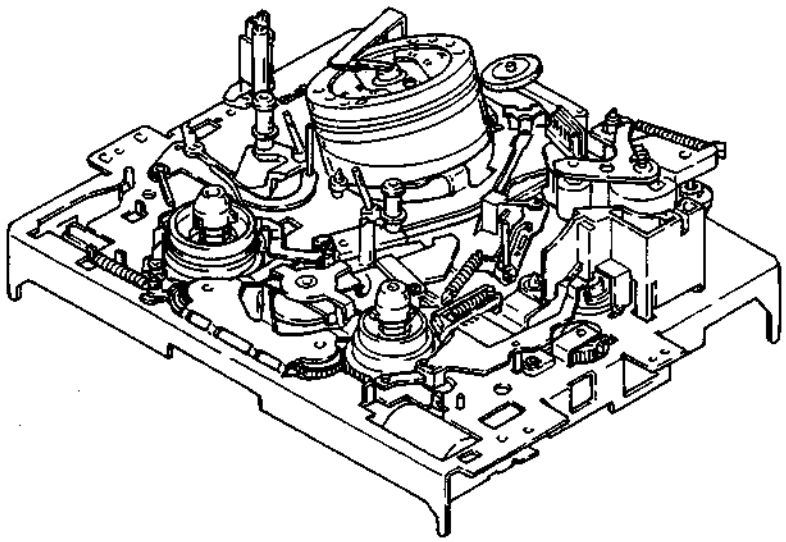


VHS MECHANICAL ADJUSTMENT MANUAL IV

H MECHANISM

Please use with the service manual.





MICROFILM

VHS VIDEO CASSETTE RECORDER

SONY®

TABLE OF CONTENTS

1. PREPARATION FOR MECHANISM CHECK ADJUSTMENT AND REPLACEMENT

Refer to the service manual, "DISASSEMBLY" for removal of the cabinet and boards.

1-1. LOADING AND THREADING PROCEDURE WHEN THE POWER TURNS OFF (Fig. 1-1)

1-1-1. LOADING AND THREADING PROCEDURE WITH HANDS

1) Turn cam motor in the arrow Ⓐ direction until loading and threading are end.

1-1-2. LOADING AND THREADING PROCEDURE WITH REGULATED DC POWER SUPPLY

1) Applying approx. +9 V (300 mA) to cam motor with regulated DC power supply makes it loading and threading.

Note: When loading and threading without cassette, claws are caught in four positions as following figure (in the order ① → ② → ③ → ④).
So release them with hands.

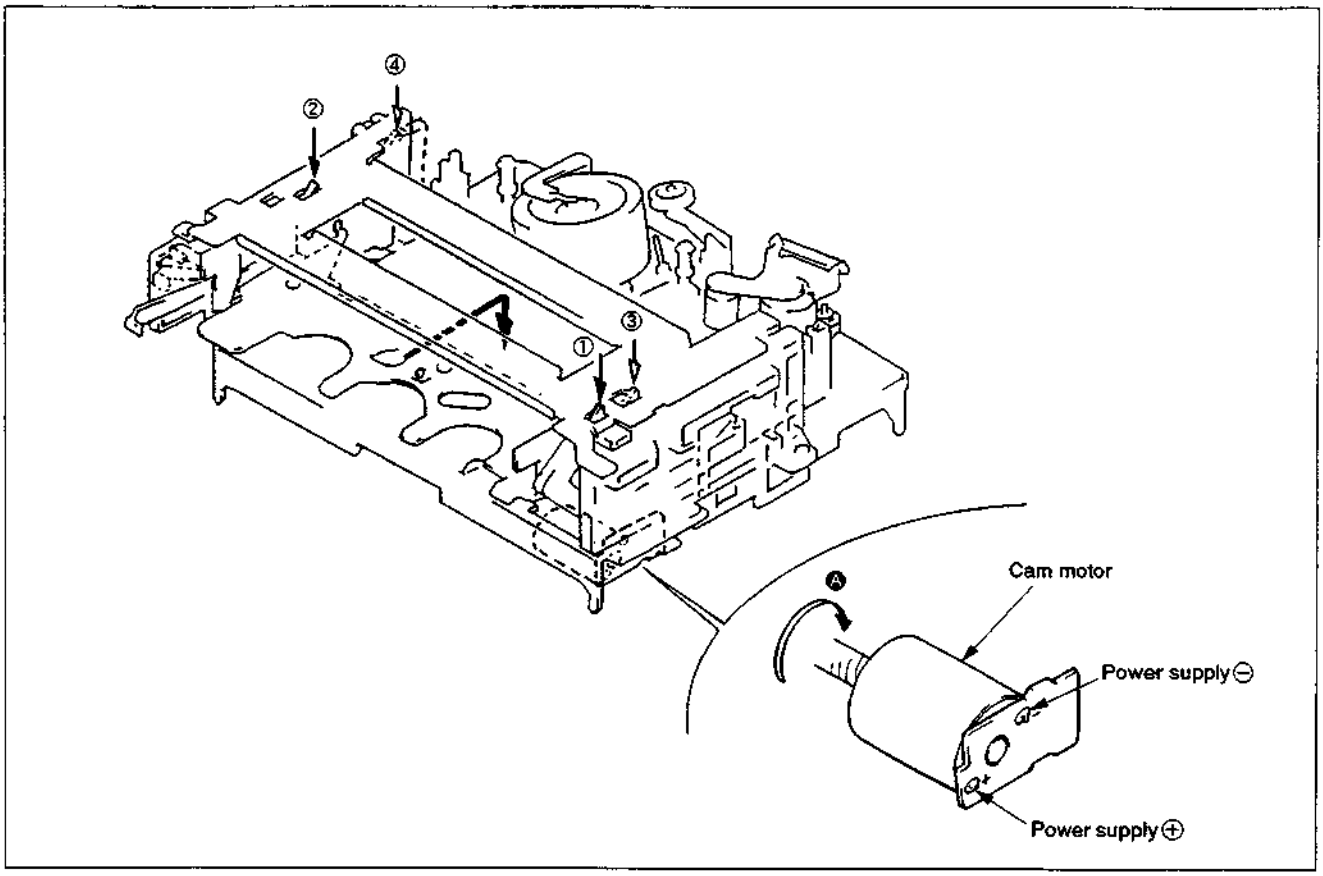


Fig. 1-1

1-2. UNLOADING AND UNTHREADING PROCEDURE WHEN THE POWER TURNS OFF (Figs. 1-2 and 1-3)

1-2-1. UNLOADING AND UNTHREADING PROCEDURE WITH HANDS

1) Turn cam motor in the arrow Ⓑ direction until unthreading is end.
2) Turn capstan motor in the arrow Ⓒ direction to take up tape in cassette.
3) Turn cam motor in the arrow Ⓑ direction until unloading is end.

1-2-2. UNLOADING AND UNTHREADING PROCEDURE WITH REGULATED DC POWER SUPPLY

1) Apply approx. +9 V (300 mA) to contrary polarities of cam motor.
2) Unthreading operation begins, tape guides return to their original positions (Unthreading operation is end but tape remains), then stop cam motor by turning power off.

Note: When unloading begins and cassette lid is closed, turn cam motor in the arrow Ⓐ direction to open tape guard.

3) Turn capstan motor in the arrow Ⓒ direction to take up tape in cassette.

Note: That tape is not caught at pinch roller. (Fig. 1-3)

4) Check that tape is not loosened completely, and apply approx. +9 V (300 mA) to contrary polarities of cam motor with regulated DC power supply. (Fig. 1-2)

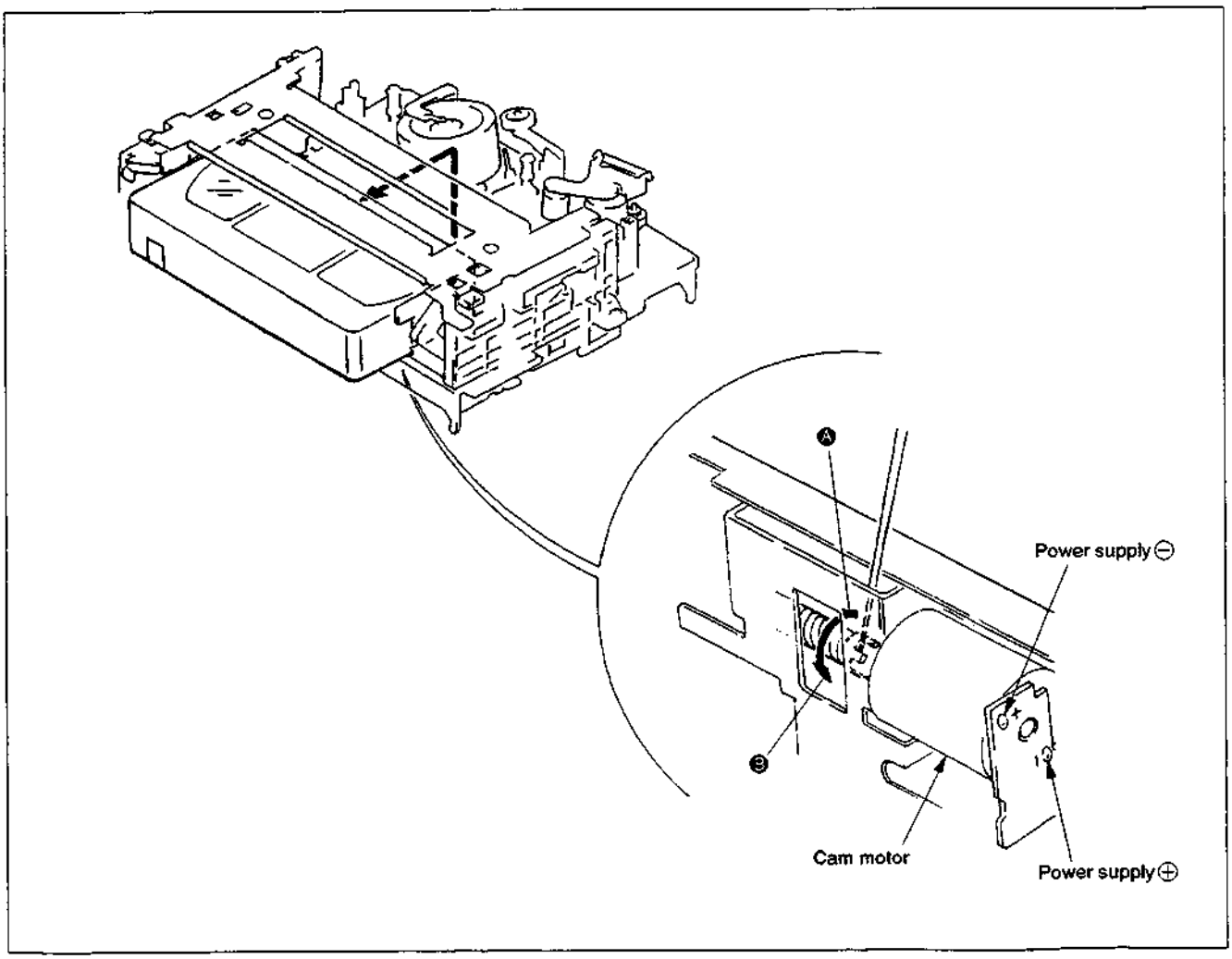


Fig. 1-2

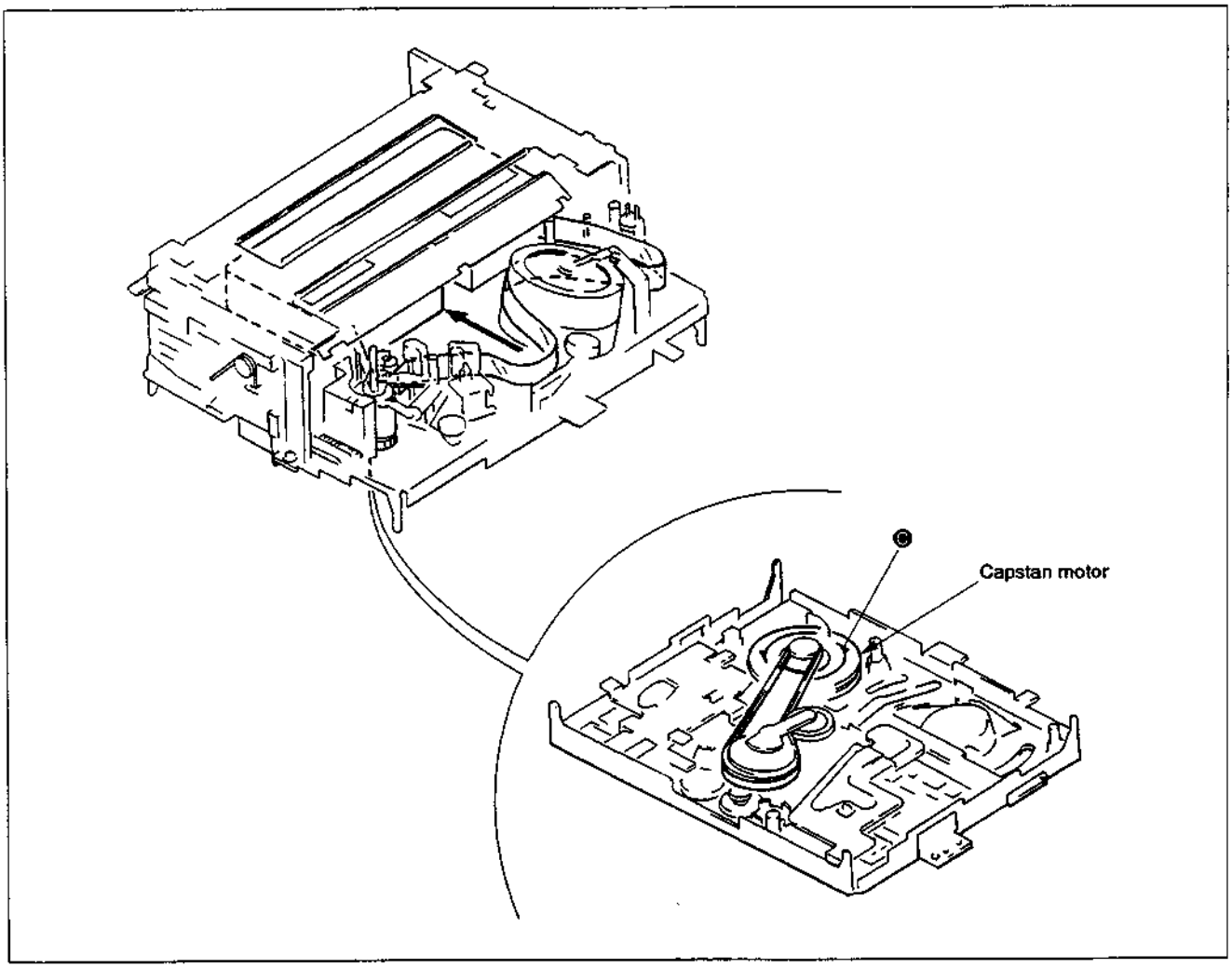


Fig. 1-3

1-3. HOW TO COMPLETE THREADING WITHOUT CASSETTE COMPARTMENT (Fig. 1-4)

Note 1: Put the FL block assembly removed the FL top plate on the bottom not to put dust or grease the top sensor and the end sensor luminous plates or not to scratch them. (Fig. A)

1) Pull out AC plug from wall outlet.
2) Shade near the end and top sensors with a black masking tape on the like.
3) Press cassette in/rec proof switch with a tip of screwdriver or the like.
4) Connect AC plug to wall outlet.
5) Release cassette in/rec proof switch by putting off a tip of screwdriver or the like.
   (At this time, power turns on, rewind operates for 10 seconds, after that power turns off.)

Note 2: In this condition, each mode can be set to video cassette recorder. (including recording mode)
However, fast forward should be done after rewinding for 15 seconds or more.

Note 3: After above mentioned operation, be sure to return the mode in the following order.

1) Remove the tape near the end and top sensors.
2) Pull out AC plug from wall outlet to reset the system control microcomputer.

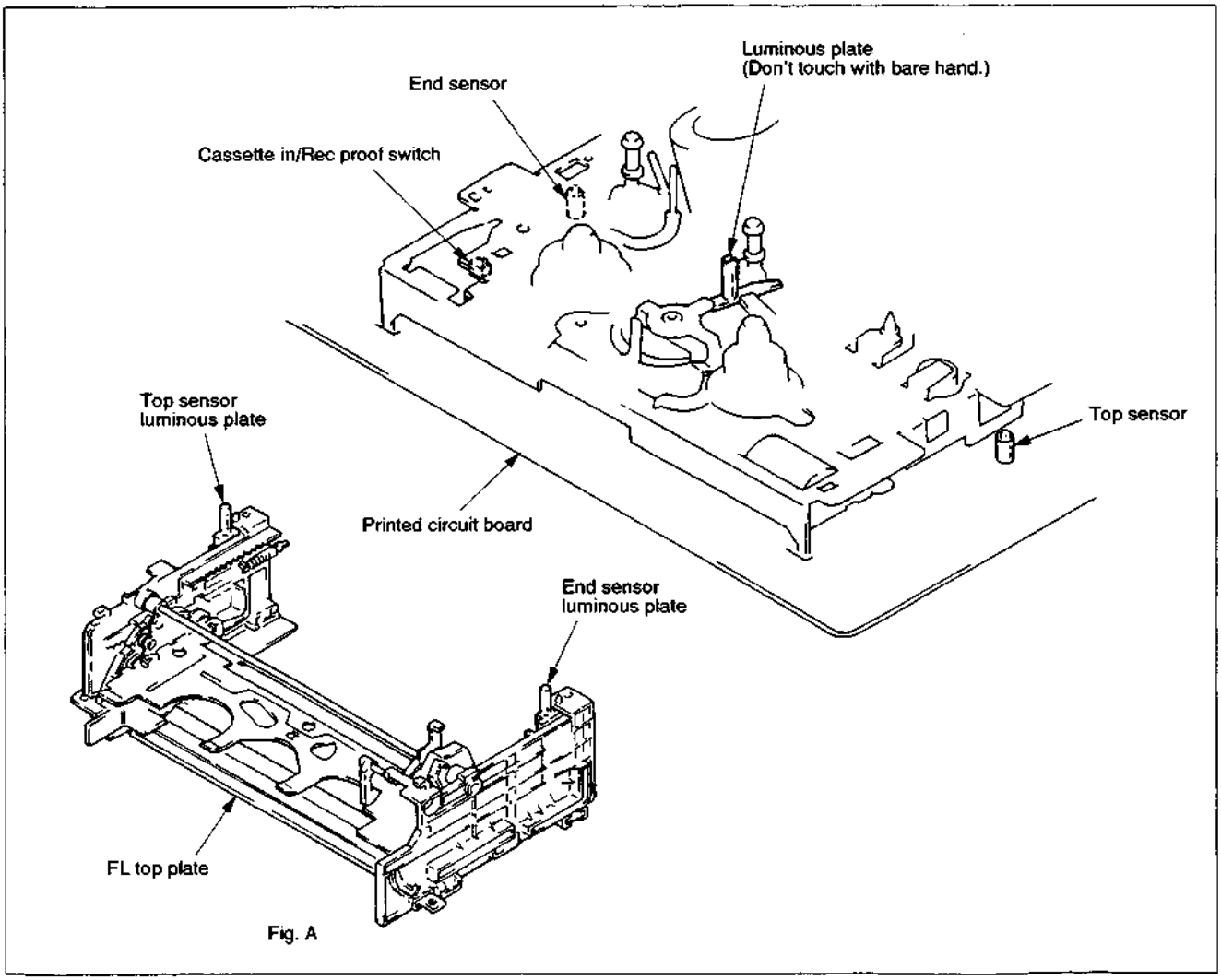


Fig. 1-4

2. PERIODIC CHECK AND REPLACEMENT

In order to obtain the best performance from this unit and make full use of its capabilities, and to extend the life of the unit and tapes, it is recommended that the following periodic checks and maintenance be performed.

* The following must be done after every repair regardless of how many hours the user has operated the machine.

2-1. CLEANING OF ROTATING HEAD DISK ASSEMBLY

1) Press a chamois cloth (Jig Ref. No. J-9) which has been dipped in cleaning fluid (Jig Ref. No. J-8) lightly against the rotating drum assembly, then do the cleaning by slowly rotating the rotating head disk by hand. (Never try to clean by using the motor to turn it.)
2) Never try to clean by moving the chamois cloth at a vertical angle to the head tip. There is a very great danger of damaging the head tip if this is done.

2-2. CLEANING OF THE TAPE MOVEMENT SYSTEM

1) Clean the surfaces which the tape contacts during its movement (tape guide, drum assembly surface, capstan, pinch roller, etc.) with a chamois cloth that has been dipped in cleaning fluid.

2-3. CLEANING THE DRIVE SYSTEM

1) Clean the driving parts with a cloth that been dipped in cleaning fluid.

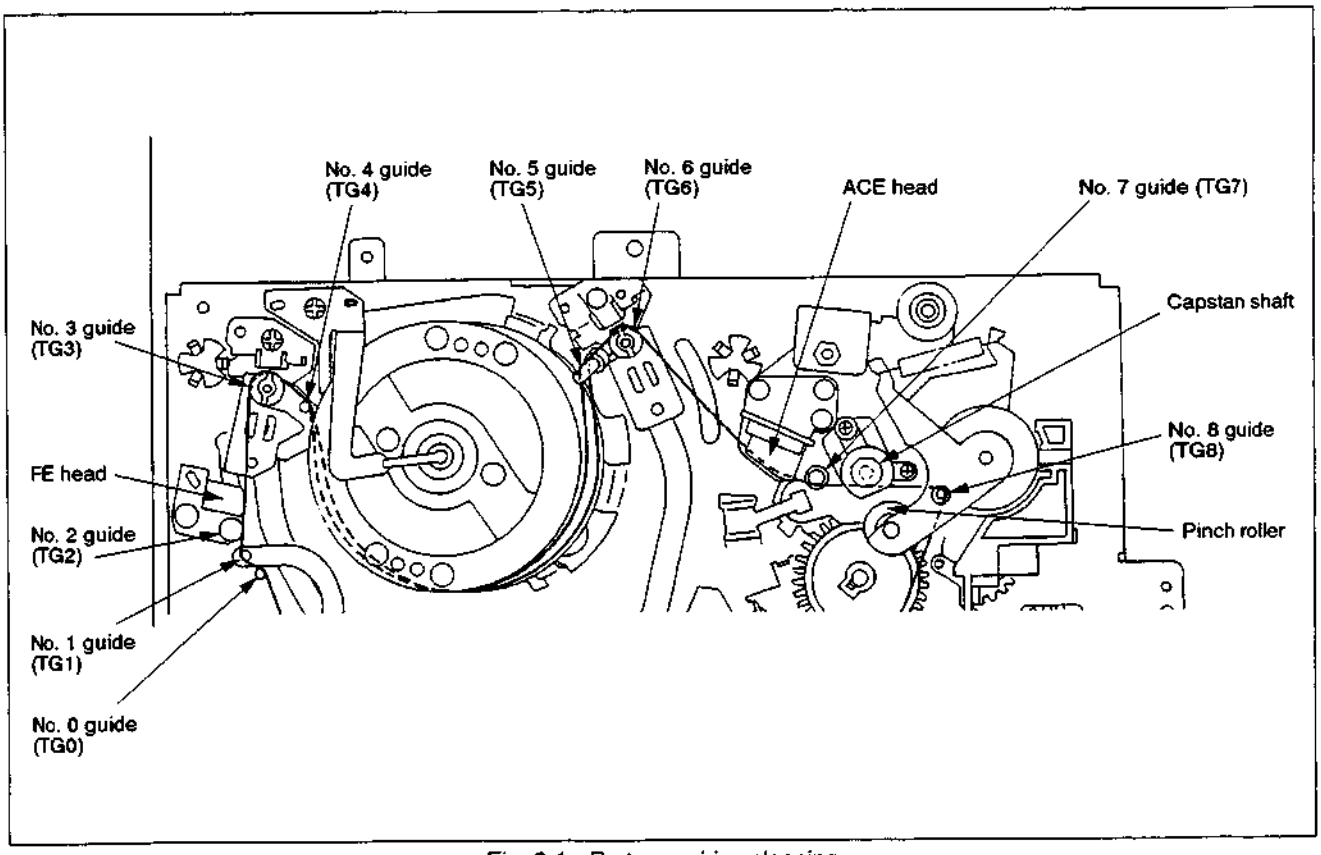


Fig. 2-1 Parts requiring cleaning

2-4. PERIODIC CHECK ITEMS

Perform the maintenance and check listed on the table below, according to users operating hours.

Maintenance & Check \ Operating Hours (H)		500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	Remarks
Tape Transportation System	Cleaning of tape transportation system	○	○	○	○	○	○	○	○	○	○	This cleaning must be done whenever a repair is made.
	Cleaning and degaussing of ACE assembly	○	○	○	○	○	○	○	○	○	○	
	Cleaning & degaussing of upper drum assembly	○	○	○	○	○	○	○	○	○	○	The life of the head varies, depending on operational conditions and method.
Performance Confirmation	Abnormal sound	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Adjust or replace the section which causes abnormal sound.
	Measurement of FWD back tension	–	☆	–	☆	–	☆	–	☆	–	☆	Confirmation must be made according to 4-1-1. Specified value: adjust to 36 to 44 g•cm (when measured with torque cassette tape)
	Confirmation of brake system	–	☆	–	☆	–	☆	–	☆	–	☆	Confirmation must be made according to section.
	Confirmation of record & playback functions	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Perform the confirmation whenever repair is made.
	Measurement of forward torque	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Adjust to 70 to 120 g•cm

○ Cleaning ☆ Confirmation

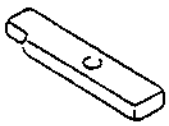
Note: On overhaul
When overhauling the unit, replace parts as indicated in the above table.

2-5. TOOLS AND FIXTURES REQUIRED FOR SERVICING

Ref No.	Name	Part No.	Carved Jig No.	Remarks
J-1	Master Plane	H-7099-279-H		Applicable to S-VHS
J-2	Reel Disk Height Jig	H-7099-038-H		
J-3	Torque Gauge Adaptor	H-7099-035-H		
J-4	0.93 mm Torque Gauge	H-7099-039-H		
J-5	Hex. Wrench	H-7099-202-H		
J-6	Torque Measurement Cassette VHT-063S	J-6082-011-A		For FWD & back tension torque measurement.
	Torque Measurement Cassette VHT-404S	J-6082-012-A		For CUE and review torque measurement.
J-7	Alignment Tape JVC-MH-1 (NTSC) 24HASF-2 (NTSC Hi-Fi) JVC-MH-2 (PAL) JVC-MH-4 (SECAM)	 H-7099-046-H H-7099-153-H H-7099-052-H H-7099-053-H		
J-8	Cleaning Fluid	Y-2031-001-0	———	
J-9	Chamois Leather	2-034-697-00	———	
J-10	Head Demagnetizer	Widely available	———	Demagnetize video heads and audio heads.
J-11	Dental Mirror (With handle) Dental Mirror (Mirror)	J-6080-029-A J-6080-030-1	SL-5052	Tape path and tape traveling adjustments or checks.
J-12	FLOIL SG-055G	7-651-000-09		
J-13	Diamond Oil NT-68	7-661-018-18		
J-14	Screw Lock G (1401B)	7-432-114-11		

J-1

J-2

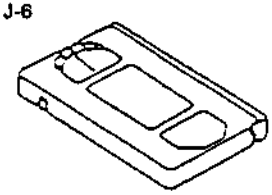


J-3

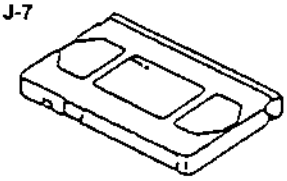
J-4

J-5

J-6

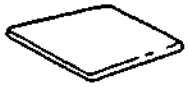


J-7



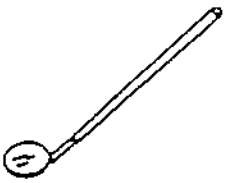
J-8

J-9



J-10

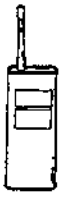
J-11



J-12

J-13

J-14



3. MAINLY MECHANICAL PARTS REPLACEMENT

Notes:

- Refer to the service manual, "DISASSEMBLY" for removal of the cabinet and boards.
- On mounting, while referring to notes on mounting perform reversely in the removal order.
- When replacing greased parts, grease them in the same way.
- Do not oil, grease or touch with bare hands the surfaces contacts tape of guides and brake shoes.
- Install gears to engage each other.
- Basically, disassembling and assembling should be done in the unthreading-end condition.

3-1. FL BLOCK ASSEMBLY (Fig. 3-1)

1) Remove screws ①.
2) Remove FL block assembly ② in the arrow Ⓐ direction.

Note: Be careful not to damage claws on the bottom and front.

[Note on Mounting]

- First insert claws on the bottom and front not to damage.
- Engage FL slide plate to FL driving gear with slightly sliding FL slide plate. (Fig. A)
- Keep clean top sensor and end sensor luminous plates. (Refer to 1-3.)

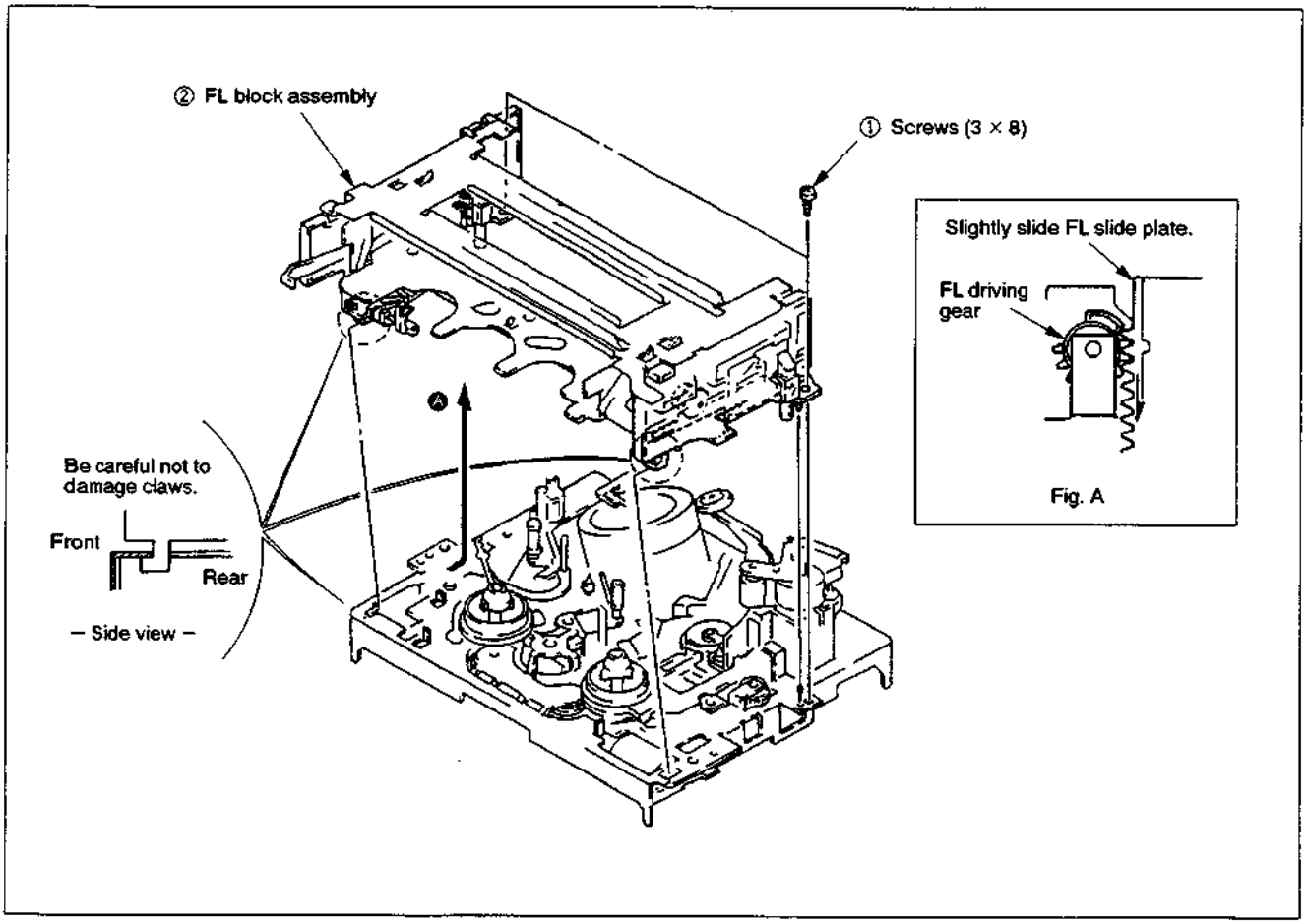


Fig. 3-1

3-2. DRUM ASSEMBLY (Fig. 3-2)

1) Remove screw ①.
2) Remove ground shaft assembly ② not to touch its tip with bare hand or tools.
3) Remove screws ③ to remove drum assembly ④.

[Note on Mounting]

- Don't touch head chips ⑤ and ground shaft assembly ④ with bare hand or tools.
- Keep clean the surface contacts tape of drum assembly ④.

[Adjustment after Mounting]

- 4-1. Tape path adjustment.

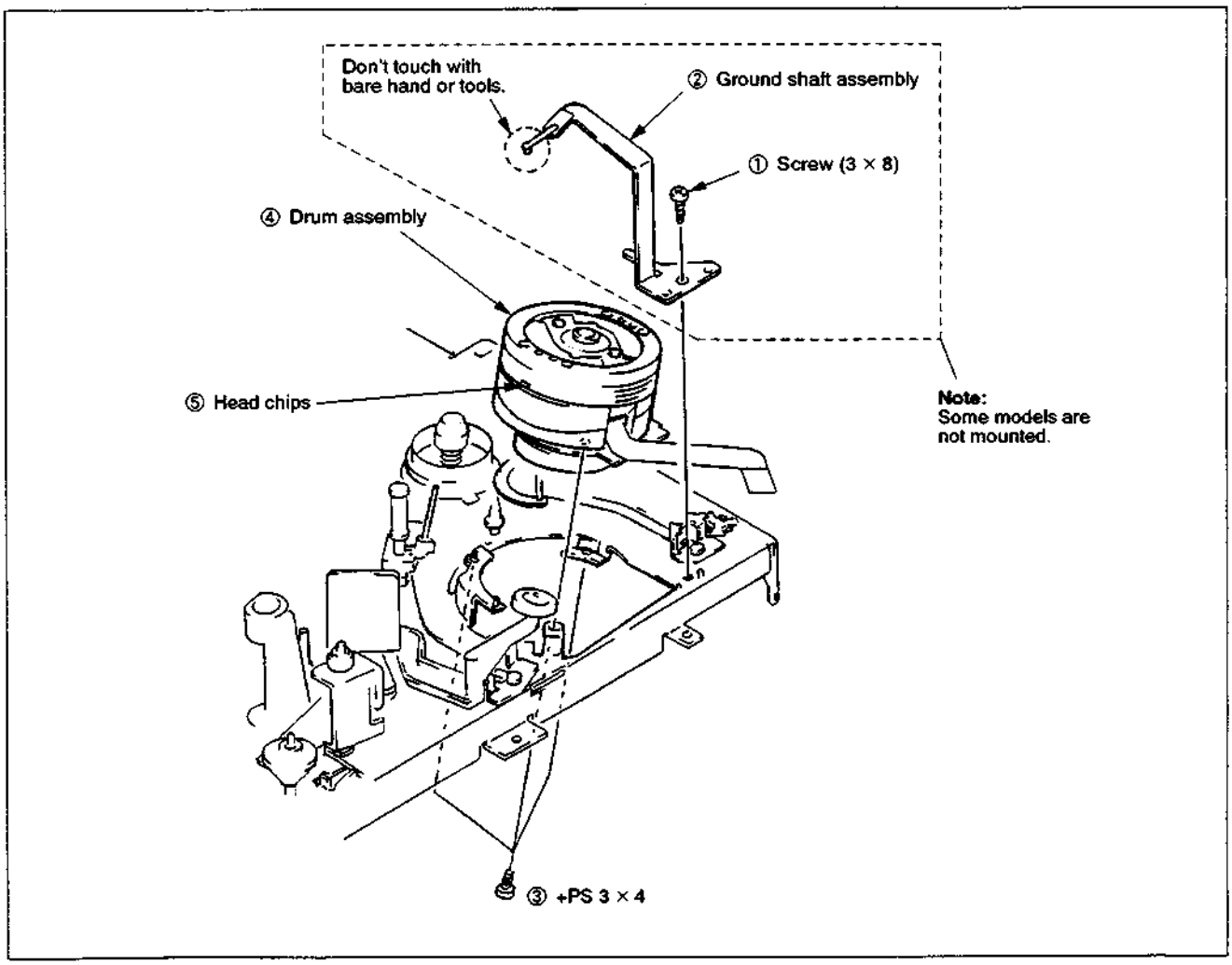


Fig. 3-2

3-3. TIMING BELT (Fig. 3-3)

1) Remove screw ① to remove tension vehicle arm assembly ②.
2) Remove timing belt ③.

[Note on Mounting]

- Tighten screw ① while pressing tension vehicle arm in the arrow Ⓐ direction.

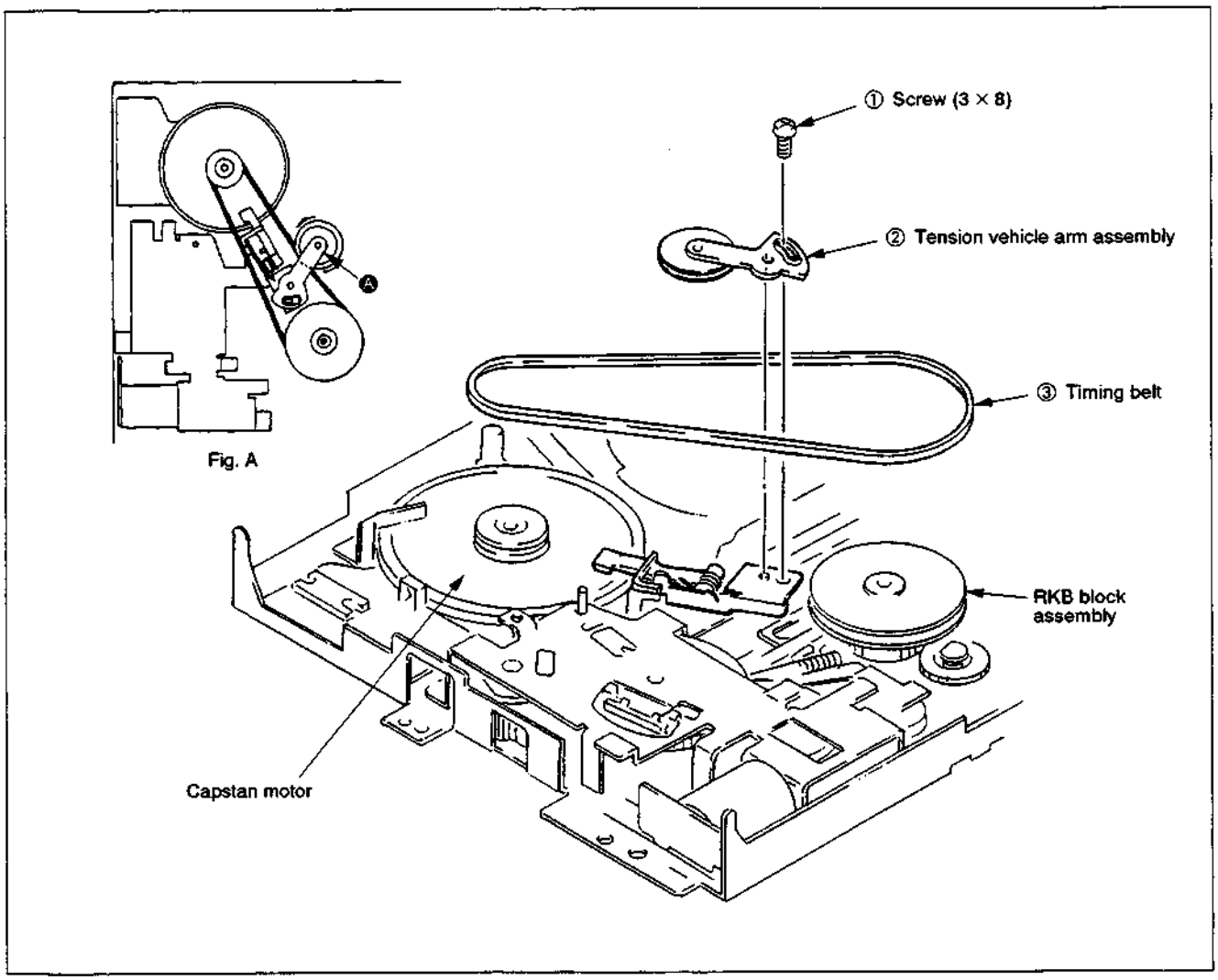


Fig. 3-3

3-4. CAP BRAKE ASSEMBLY (Fig. 3-4)

1) Remove tension vehicle arm assembly. (Refer to 3-3)
2) Remove torsion coil spring ① from portion Ⓐ to remove CAP brake assembly.

[Note on Mounting]

- Mount torsion coil spring ① to CAP brake assembly ② in the order Ⓐ and Ⓑ. (Fig. A)
- Put the fulcrum of CAP brake assembly ② to CAP brake shaft ③ and the tip of torsion coil spring to Ⓒ.
- Don't touch brake shoe Ⓓ with bare hand.

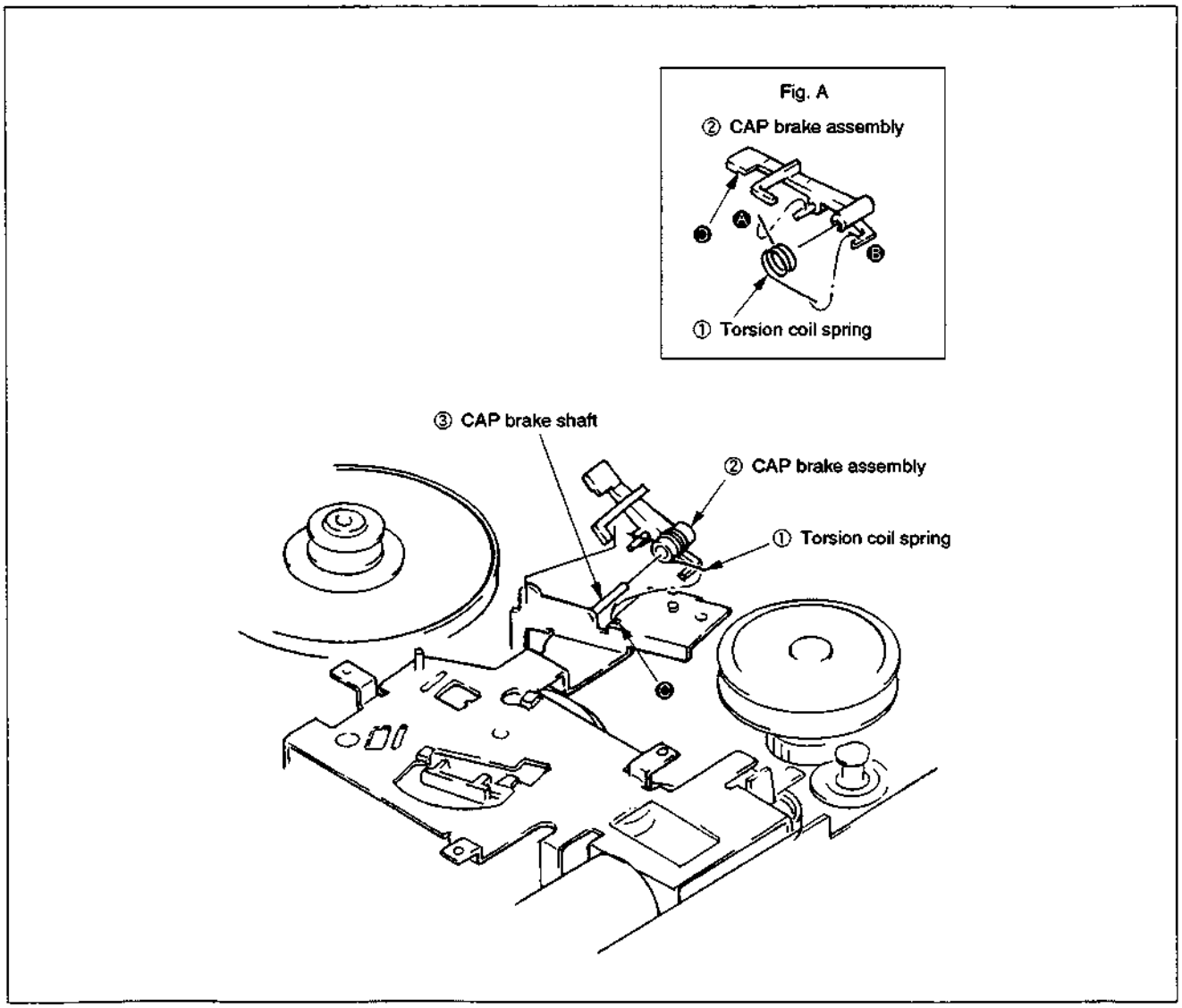


Fig. 3-4

3-5. TG2 ROLLER, FE HEAD ASSEMBLY (Fig. 3-5)

1) Remove claw Ⓐ to pull out TG2 roller ①.
2) Remove screw ② to pull out FE head assembly.

[Note on Mounting]

- Keep clean the surface contacts tape of TG2 roller ①.

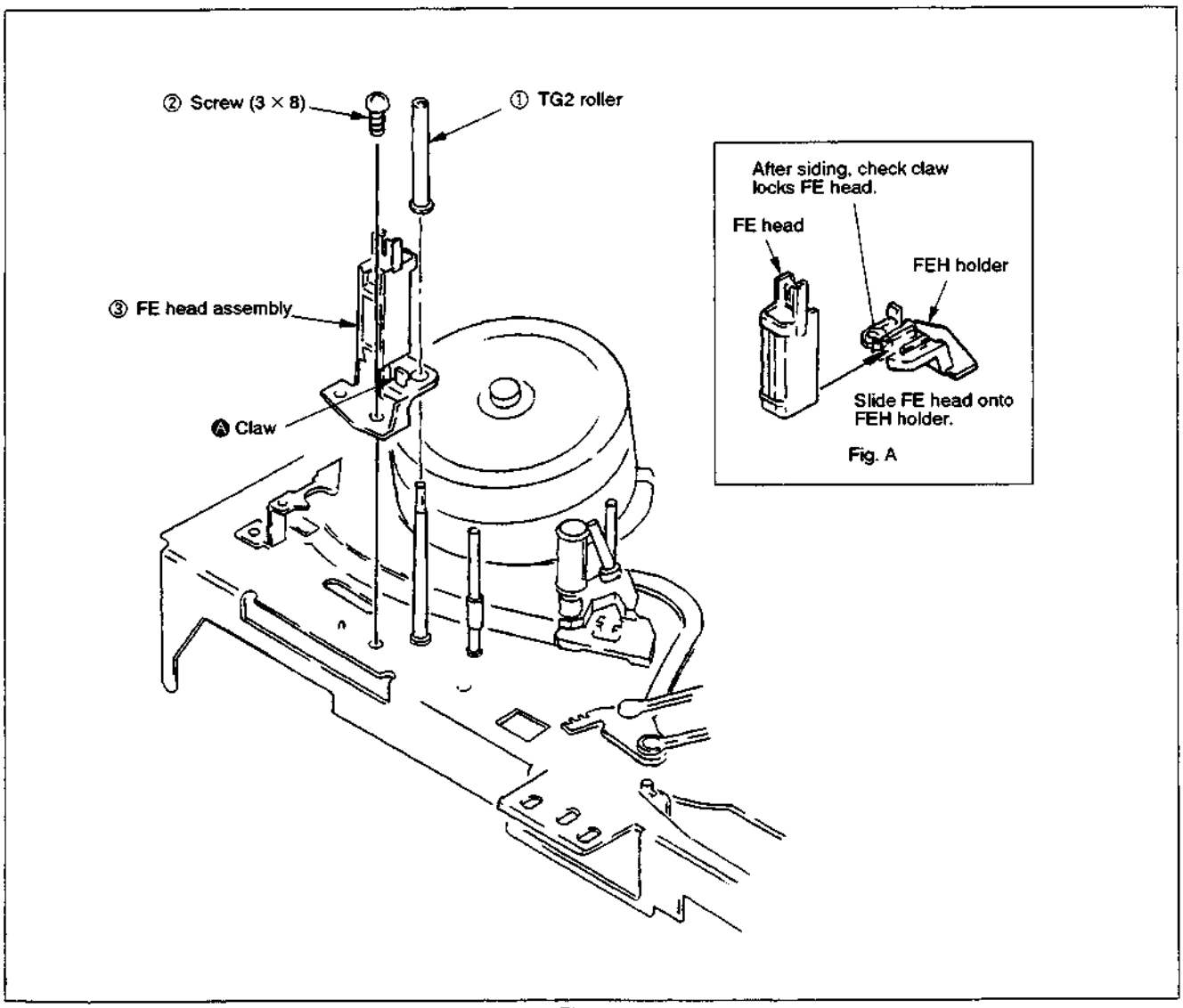


Fig. 3-5

3-6. PINCH PRESS BLOCK ASSEMBLY, ELEVATOR GEAR (Fig. 3-6)

1) Remove E ring ① to pull out pinch press block assembly ②.
2) Remove lid opener ③ by pressing claw Ⓐ in the arrow Ⓑ direction.
3) Pull out elevator gear ④.

[Note on Mounting]

- Apply grease FLOIL SG-055G (Jig Ref. No. J-12) to ☆ marked portions.
- Be sure to match the phase Ⓒ between elevator gear ④ and press gear ⑤ on mounting elevator gear ④.

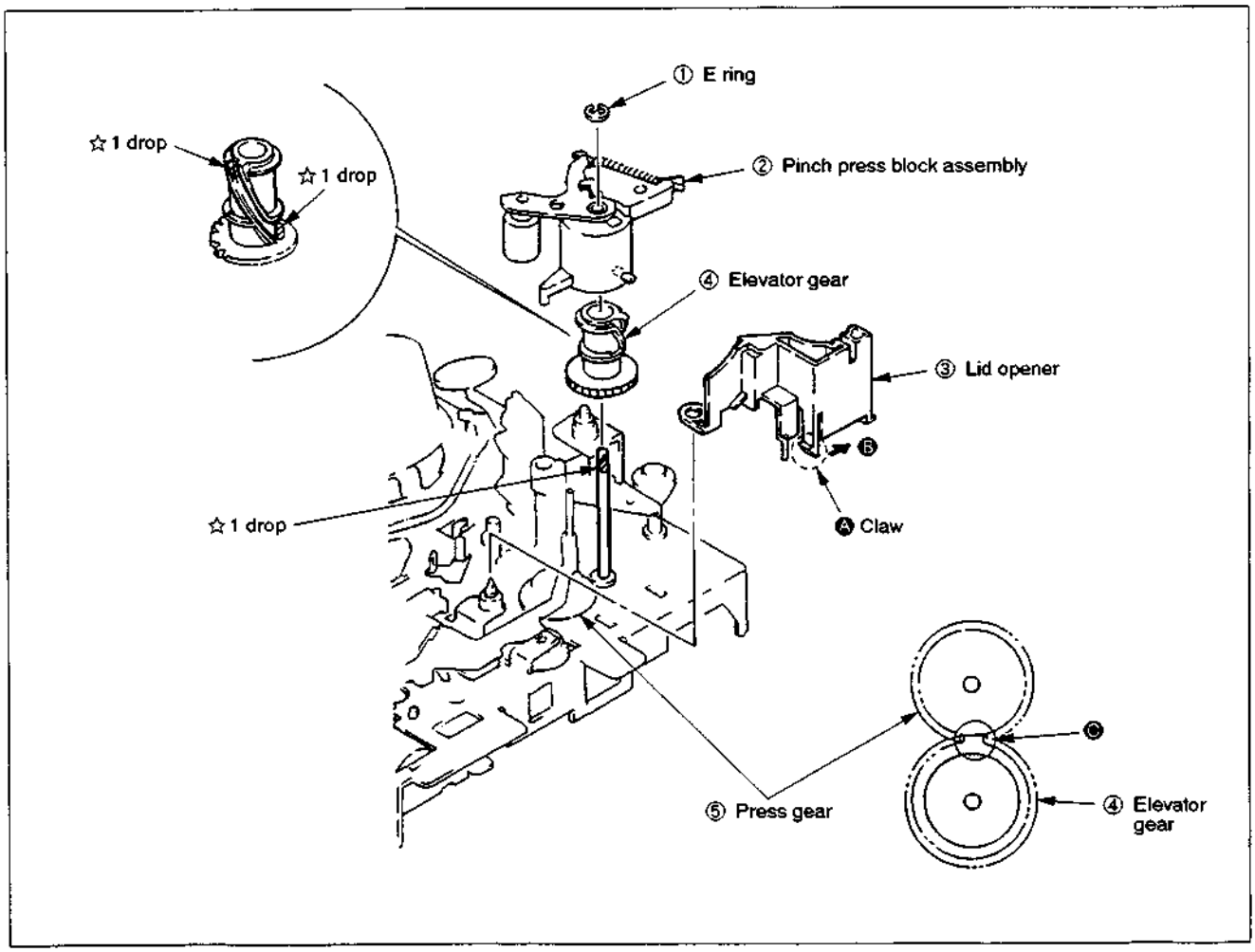


Fig. 3-6

3-7. ACE BLOCK ASSEMBLY (Fig. 3-7)

1) Move torsion coil spring (ACE) ① in the arrow Ⓐ direction.
2) Remove ACE adjustment screw ②.
3) Remove AC height adjustment nut ③ to pull out ACE block assembly ④.

[Note on Mounting]

- Keep clean the surface contacts tape of ACE block assembly ④.
- Be sure to hang torsion coil spring (ACE) ① in the arrow Ⓑ direction.
- Set ACE adjustment screw ② to the height as shown in Fig. A.

[Adjustment after Mounting]

- 4-1. Tape path adjustment.
- After adjustment apply Screw Lock G (1401B) (Jig Ref. No. J-14) at ☆ marked portion.

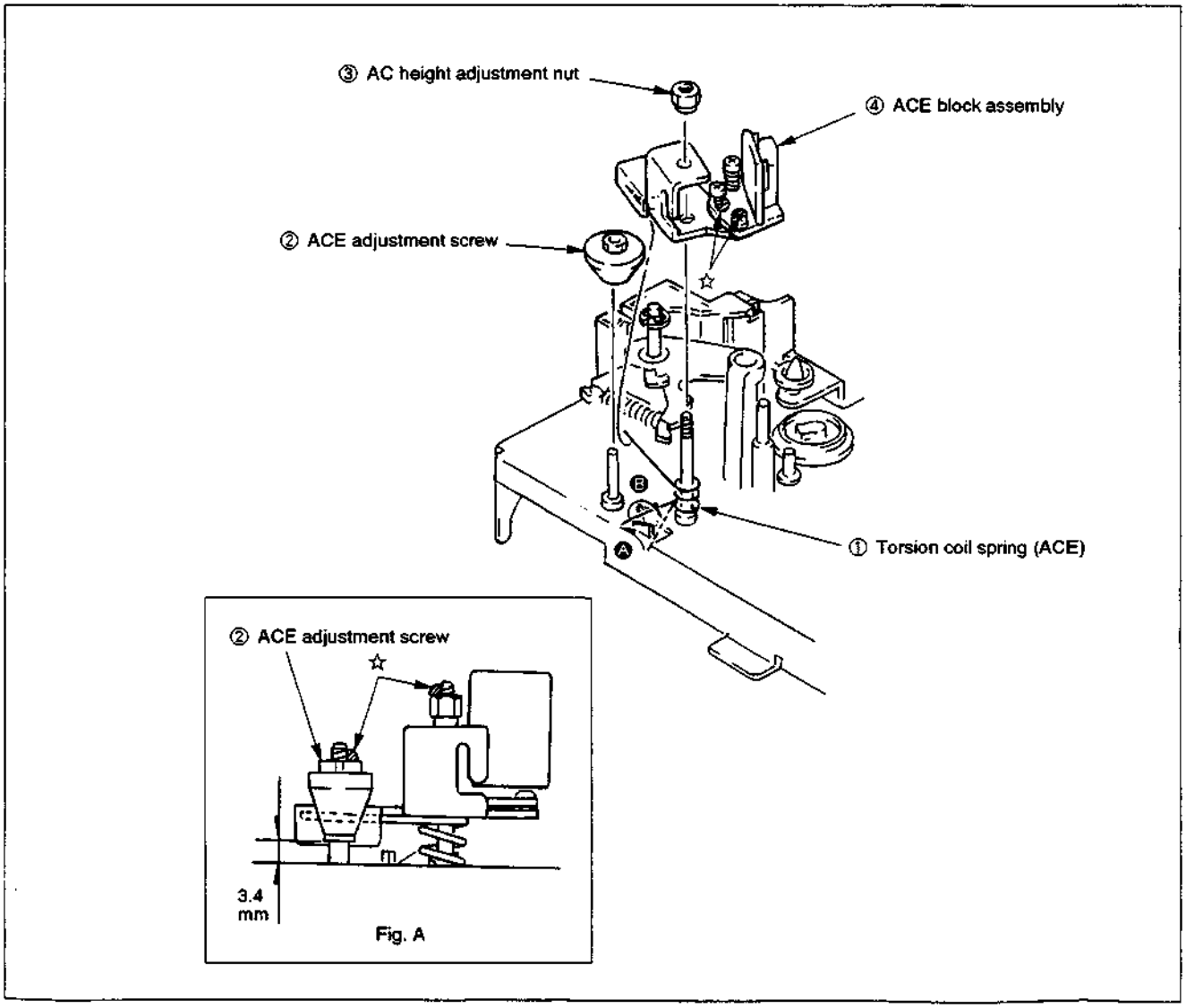


Fig. 3-7

3-8. TG3, TG6 GUIDE ROLLER ASSEMBLIES (Fig. 3-8)

1) Loosen screw ① and pull out. TG3 guide roller assembly ② by turning it in the arrow Ⓐ direction.
2) Loosen screw ③ and pull out TG6 guide roller assembly ④ by turning it in the arrow Ⓑ direction.

[Note on Mounting]

- Keep clean the surface contacts tape of TG3 and TG6 guide roller assemblies ②, ④.

[Adjustment after Mounting]

- 4-1. Tape path adjustment.

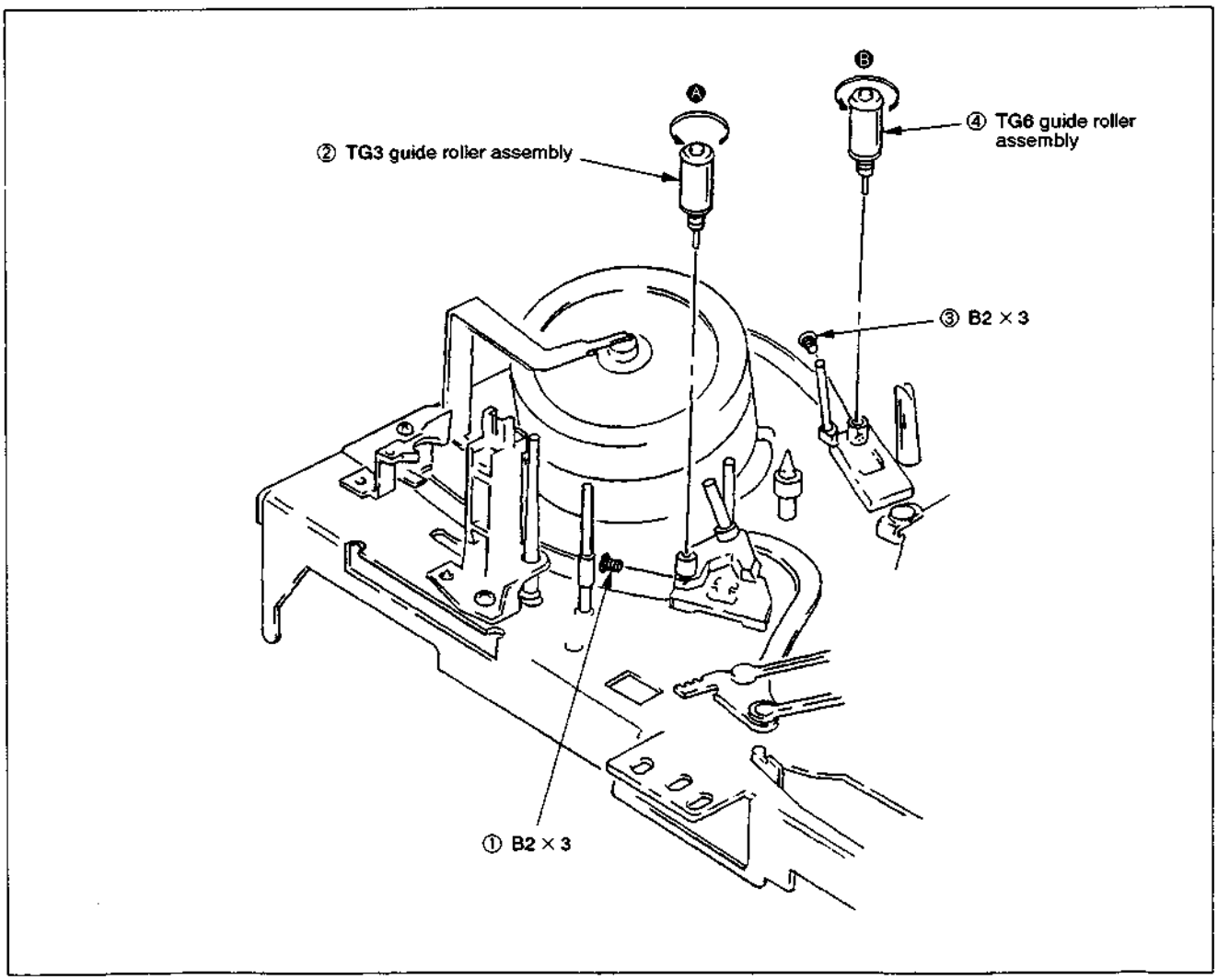


Fig. 3-8

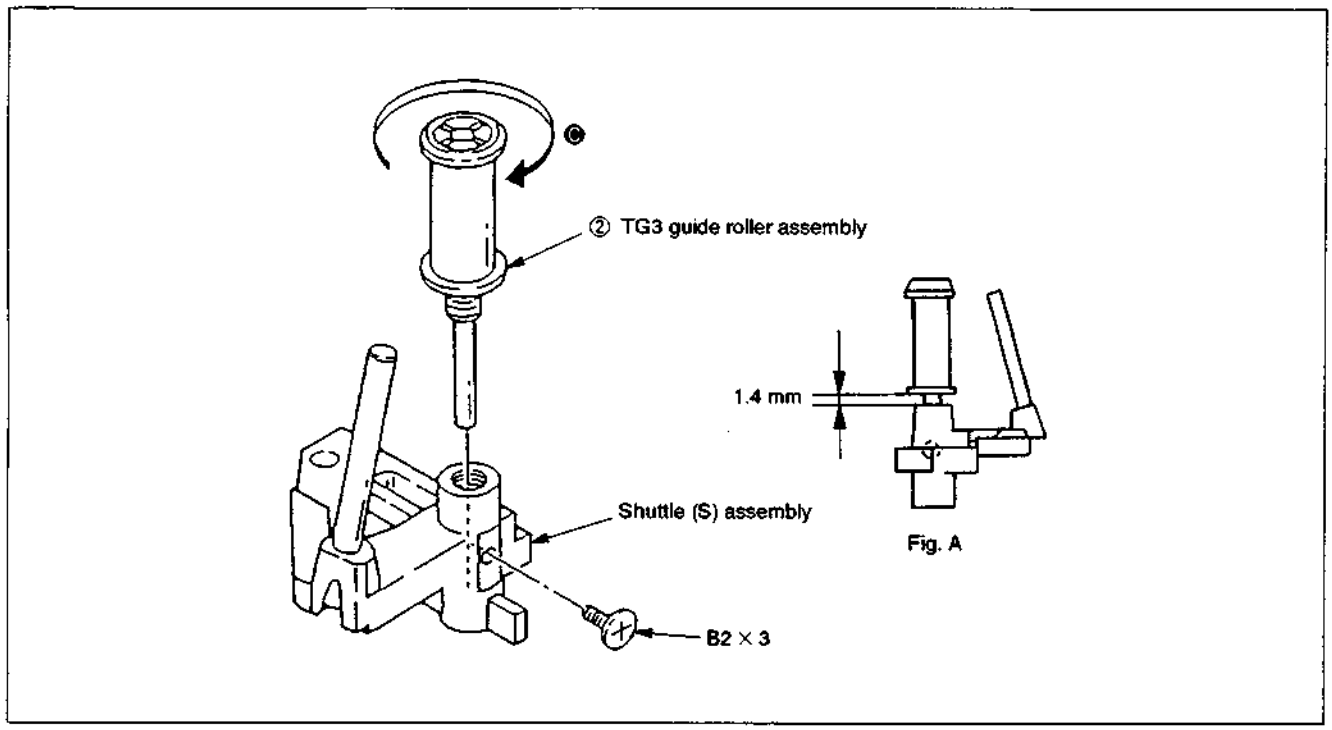


Fig. 3-9

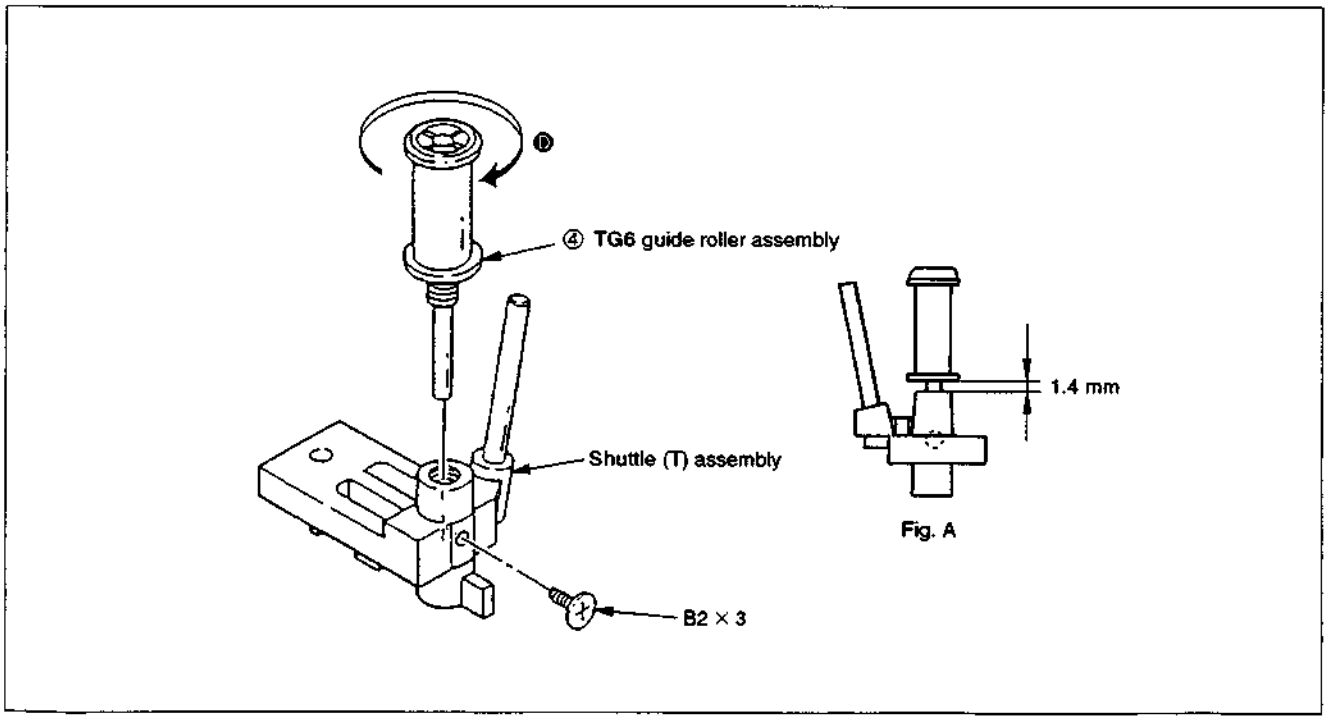


Fig. 3-10

3-9. CAPSTAN MOTOR (Fig. 3-11)

1) Remove timing belt. (Refer to 3-3.)
2) Remove CAP brake assembly. (Refer to 3-4.)
3) Remove screws ① to pull out capstan motor ②.

[Note on Mounting]

- Keep clean the surface contacts tape of capstan motor ②.
- On tightening screws ①, first tighten screw A temporarily, next tighten screws in the order B to C to A.

[Adjustment after Mounting]

- 4-1. Tape path adjustment.

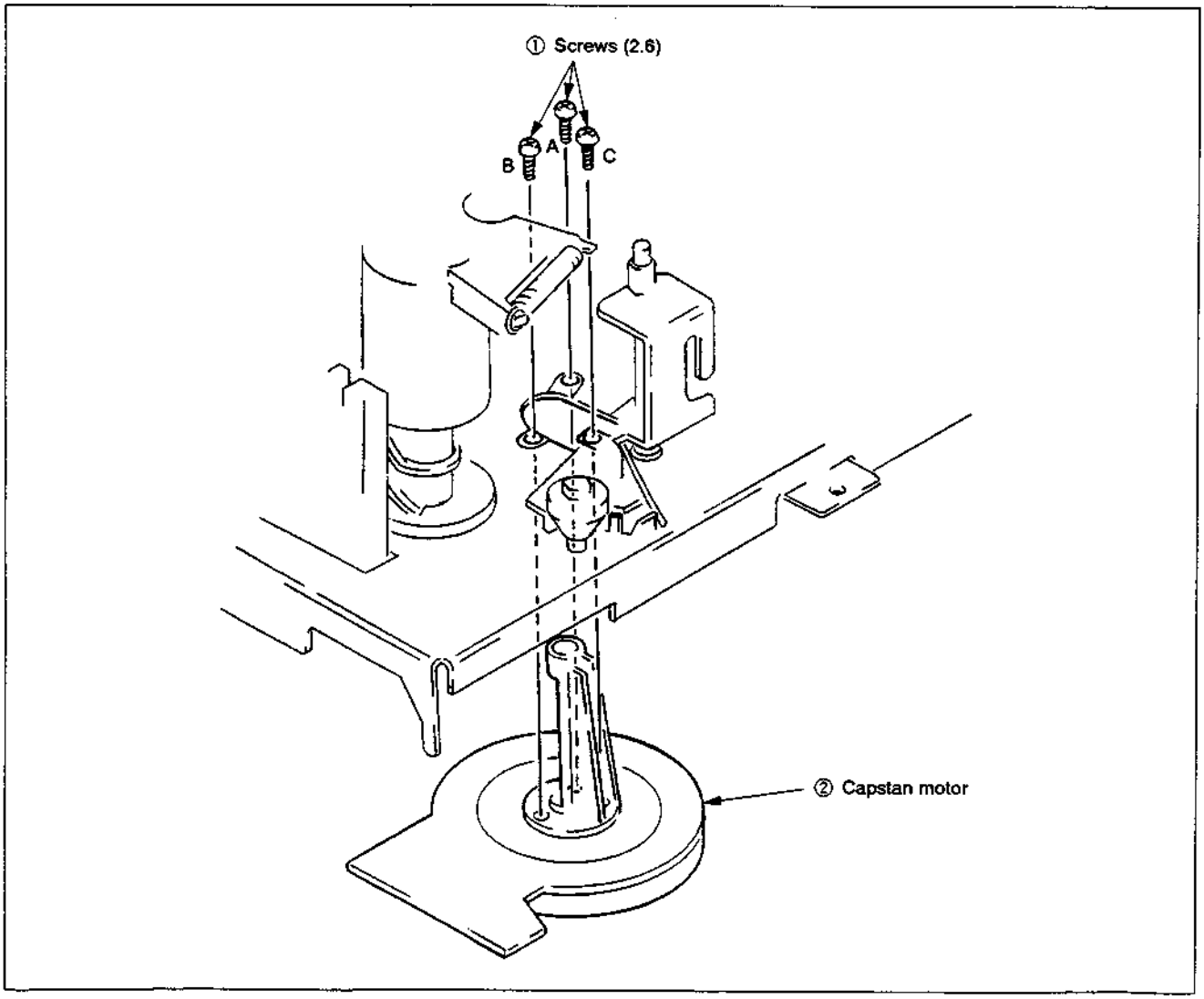


Fig. 3-11

3-10. MAIN BRAKE ASSEMBLIES S AND T (Fig. 3-12)

1) Remove tension spring ①.
2) Remove stopper washer (2) ② to remove neutrality arm ③.
3) Remove pendulum compulsion arm ④ and tension coil spring ⑤.
4) Remove stopper washer (2) ⑥ to remove main brake S assembly ⑦.
5) Remove stopper washer (2) ⑧ to remove main brake T assembly ⑨.

[Note on Mounting]

- Don't touch brake shoes Ⓐ and Ⓑ with bare hand.
- Apply FLOIL FG-055G (Jig Ref. No. J-12) to ☆ marked portions.

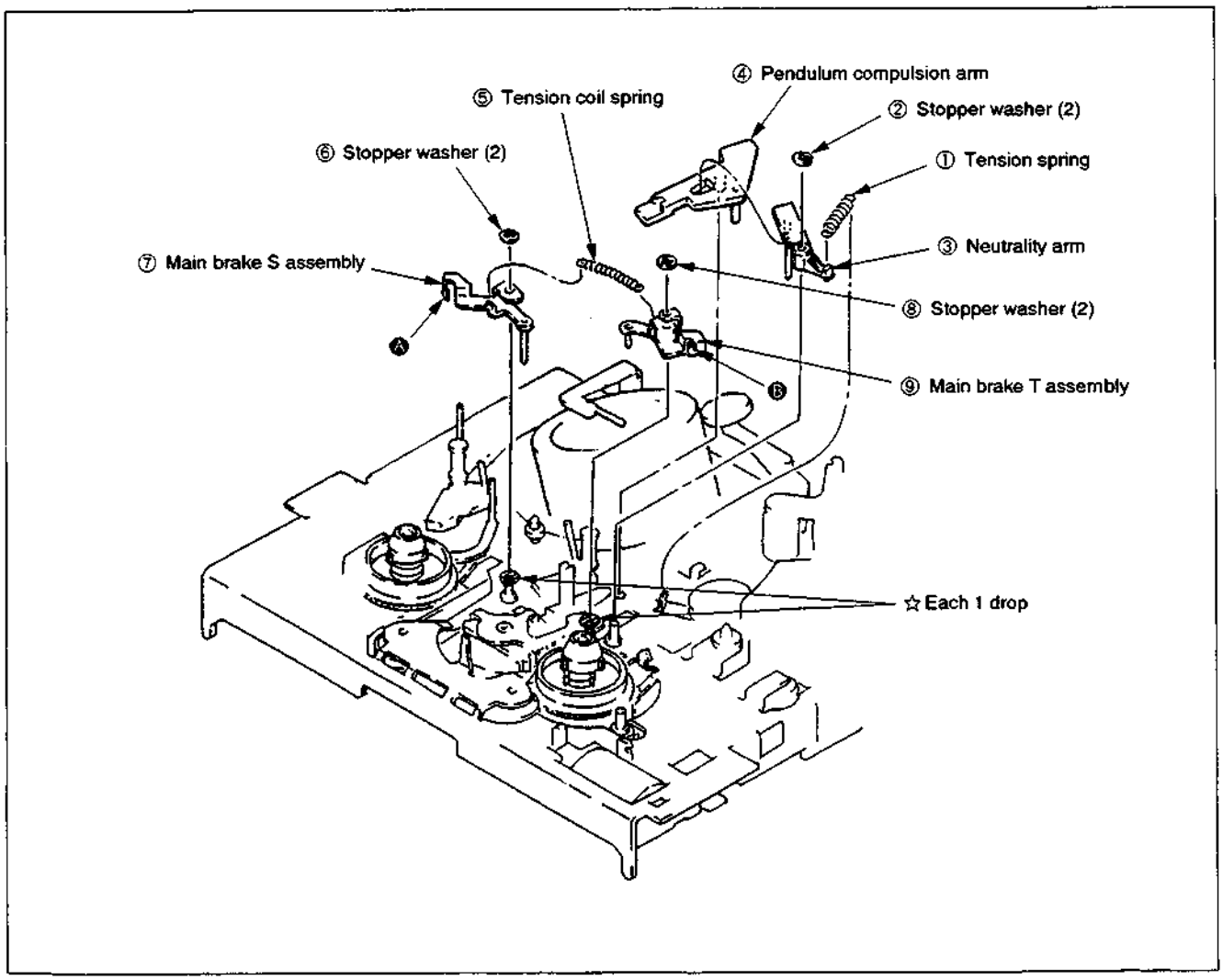


Fig. 3-12

3-11. SOFT BRAKE T ASSEMBLY (Fig. 3-13)

1) Remove pinch press block assembly. (Refer to 3-6.)
2) Remove lid opener ① carefully not to damage claw Ⓐ.
3) Remove tension spring ② from side Ⓑ to pull out soft brake T assembly ③.

[Note on Mounting]

- Don't touch brake shoes Ⓒ with bare hand.

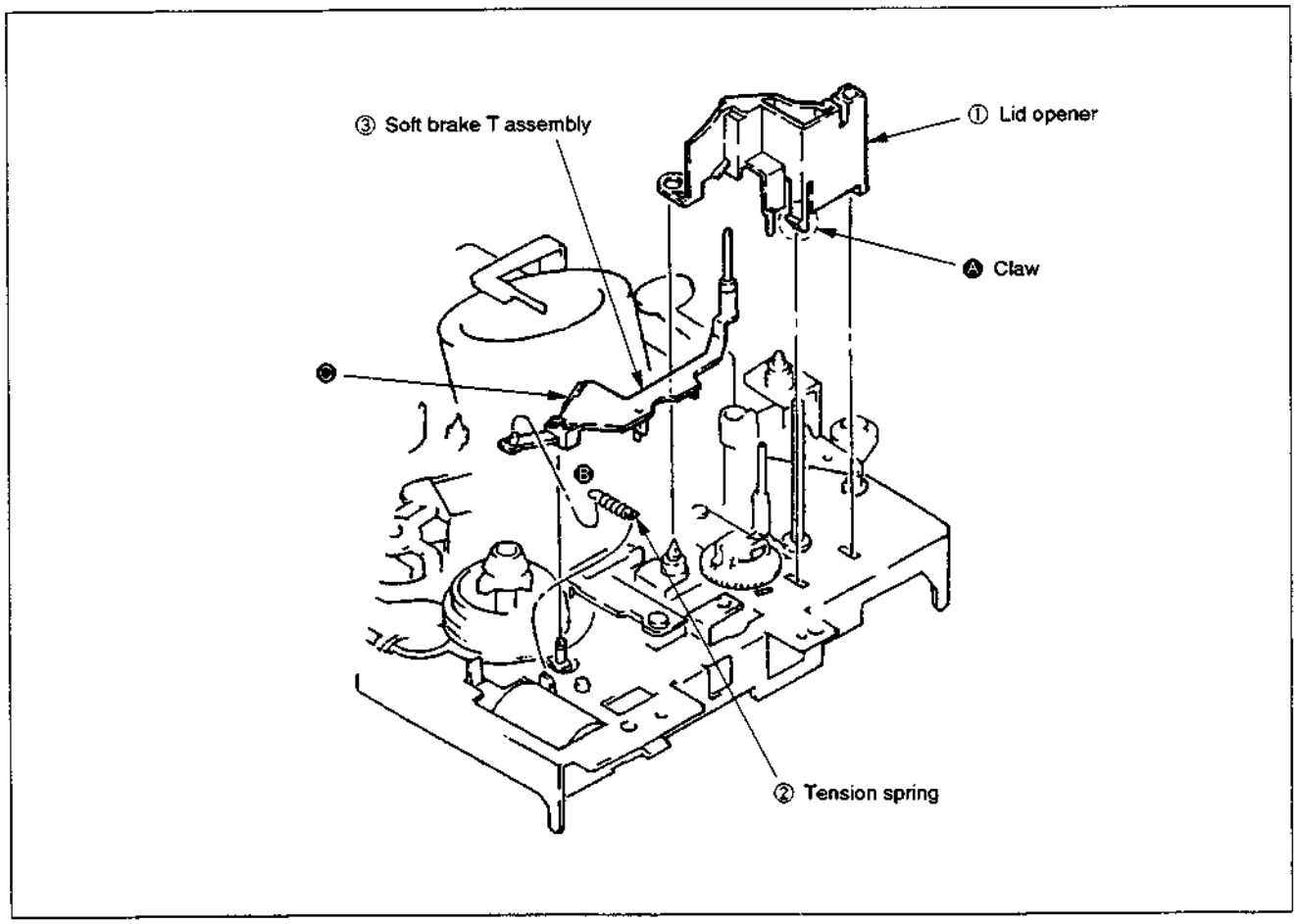


Fig. 3-13

3-12. RVS BRAKE ARM ASSEMBLY, REEL TABLE (T) ASSEMBLY (Fig. 3-14)

1) Remove main brake T assembly. (Refer to 3-10.)
2) Remove soft brake T assembly. (Refer to 3-11.)
3) Remove tension coil spring ① in the order Ⓐ to Ⓑ.
4) Remove RVS brake arm assembly ②.
5) Remove stopper washer (2) ③ to pull out reel table (T) assembly ④.

[Note on Mounting]

- Apply one drop of Diamond Oil NT-68 (Jig Ref. No. J-13) to ☆ marked portion before mounting reel table (T) assembly ④. (Fig. A)
- Don't touch the hatched portion on reel table (T) assembly ④ and brake shoe Ⓒ of RVS brake arm assembly ② with bare hand.

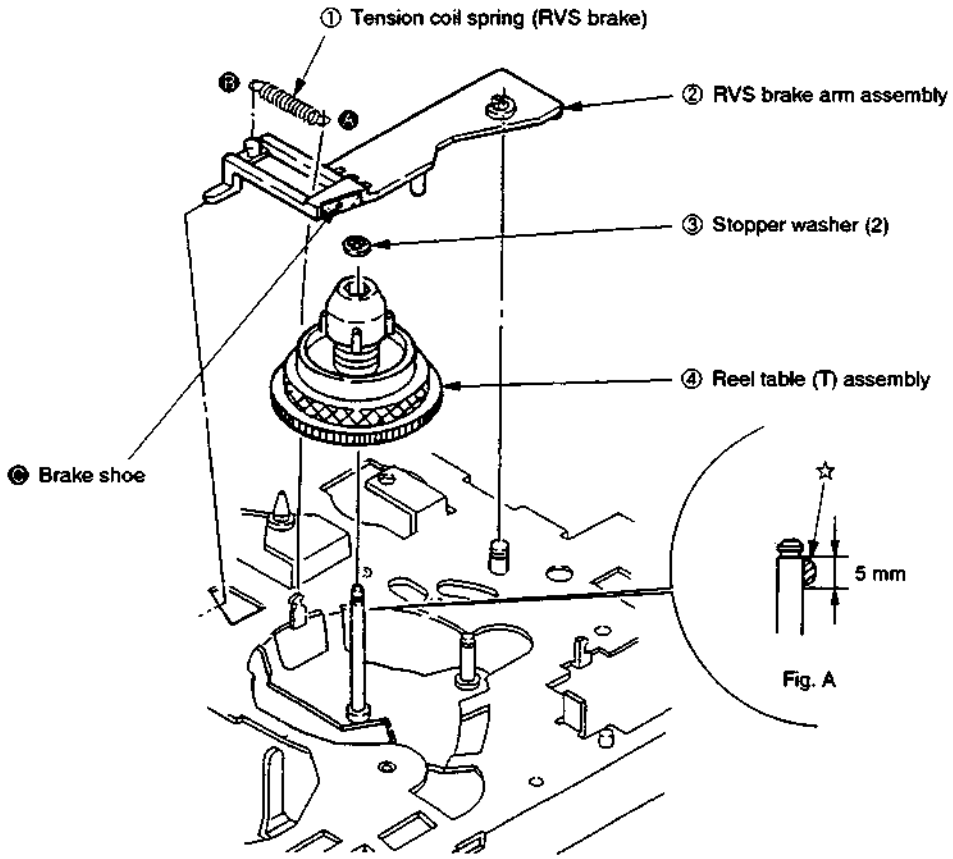


Fig. 3-14

3-13. TG8 ASSEMBLY (Fig. 3-15)

1) Remove TG8 retainer ① to pull out TG8 assembly ②.

[Note on Mounting]

- Apply FLOIL SG-055G (Jig Ref. No. J-12) to ☆ marked portion.
- Keep clean the surface contacts tape of TG8 assembly ②.
- Be careful not to change the shape of TG8 retainer ①.

[Adjustment after Mounting]

- 4-1. Tape path adjustment.

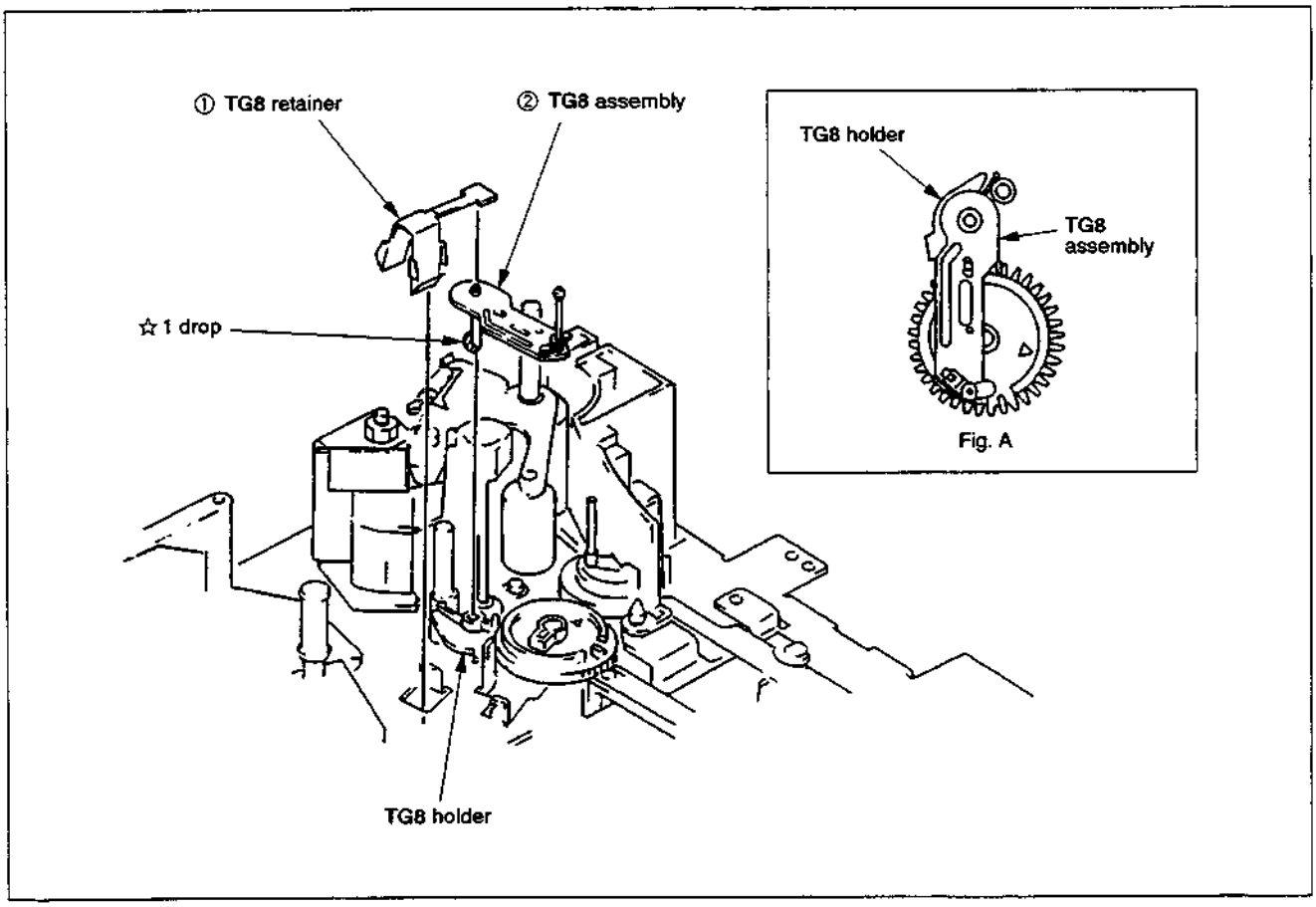


Fig. 3-15

3-14. TG8 HOLDER (Fig. 3-16)

1) Remove TG8 assembly. (Refer to 3-13)
2) Pull out TG8 holder ①.

[Note on Mounting]

• Be careful about the direction of TG8 holder ①. (Ⓐ of Fig. A)

[Adjustment after Mounting]

• 4-1. Tape path adjustment.

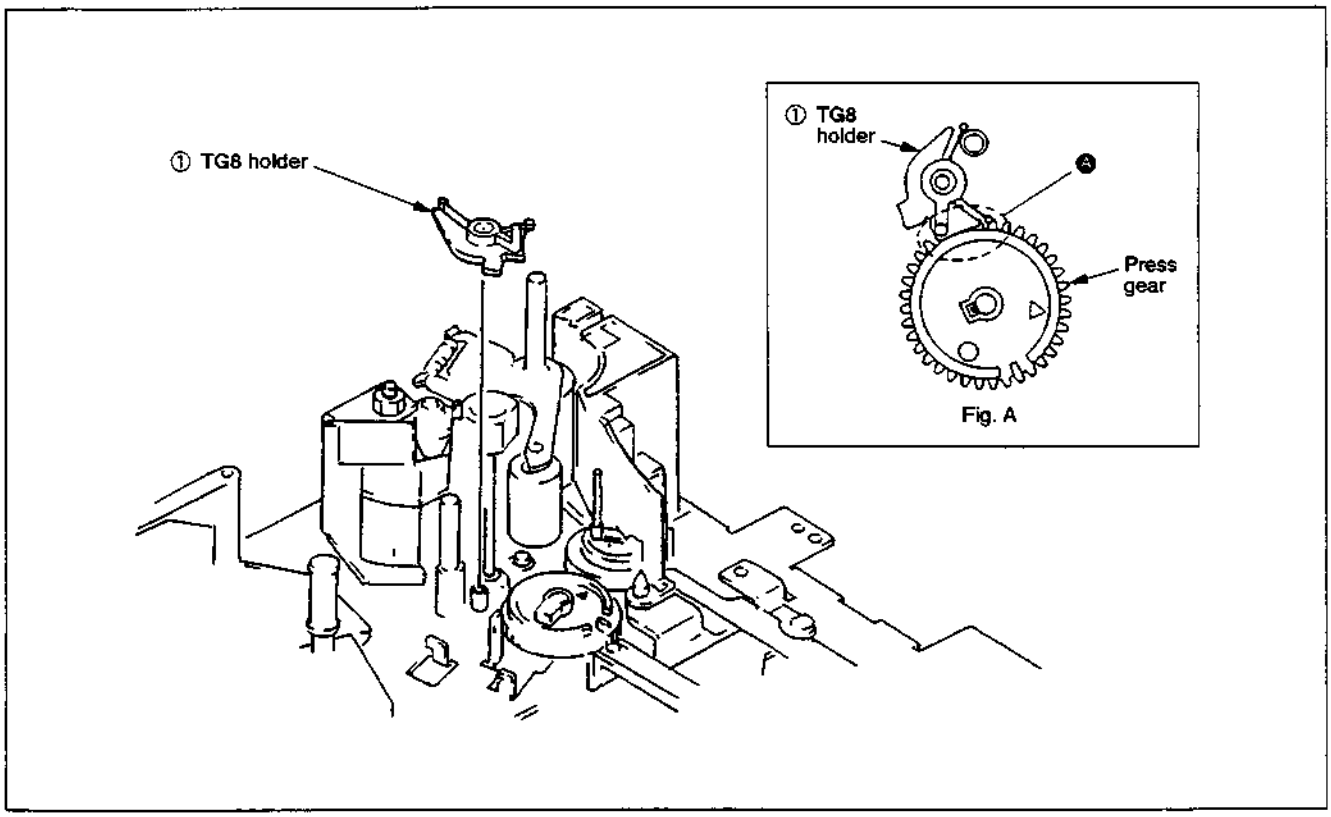


Fig. 3-16

3-15. TG8 AND PRESS GEARS (Fig. 3-17)

1) Remove pinch press block assembly. (Refer to 3-6.)
2) Remove soft brake T assembly. (Refer to 3-11.)
3) Remove TG8 assembly. (Refer to 3-13.)
4) Remove TG8 holder. (Refer to 3-14.)
5) Pull out TG8 gear ① or press gear ②.

[Note on Mounting]

- Adjust the holes on gears to the holes on chassis. (Fig. A)
- Adjust the arrows carved on gears each other. (Fig. A)

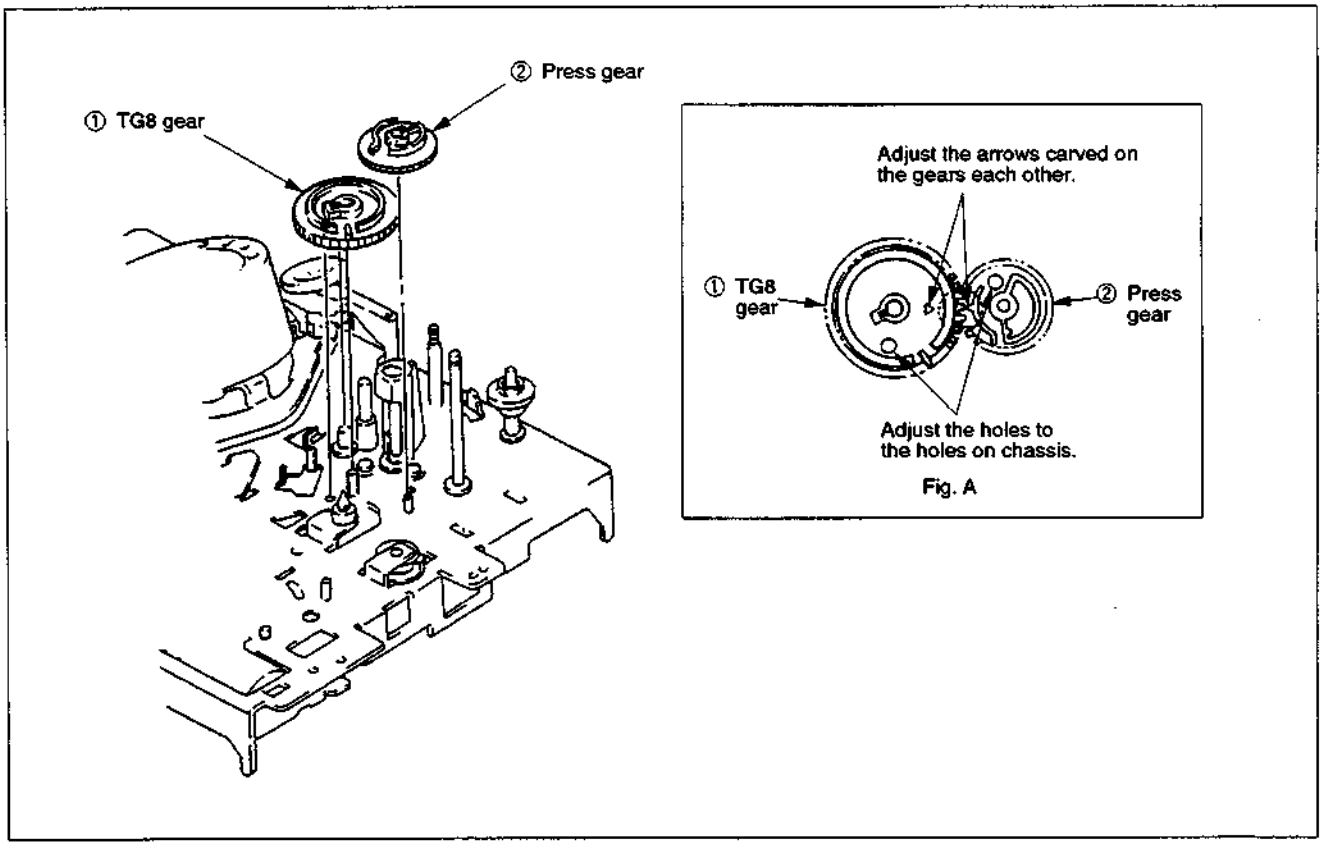


Fig. 3-17

3-16. CAM MOTOR CHASSIS BLOCK ASSEMBLY, UPPER/LOWER COMMUNICATION GEAR (Fig. 3-18)

1) Remove timing belt. (Refer to 3-3.)
2) Remove CAP brake assembly. (Refer to 3-4.)
3) Remove screws ① to remove cam motor chassis assembly ②.
4) Pull out upper/lower communication gear ③.

[Note on Mounting]

- First, check main slider ④ slides fully in the arrow Ⓔ direction.
- Set rotary encoder switch position to "E" seen from the window of cam motor chassis. (Fig. A)
- Tighten screws ① in the order Ⓐ to Ⓑ to Ⓒ to Ⓓ.

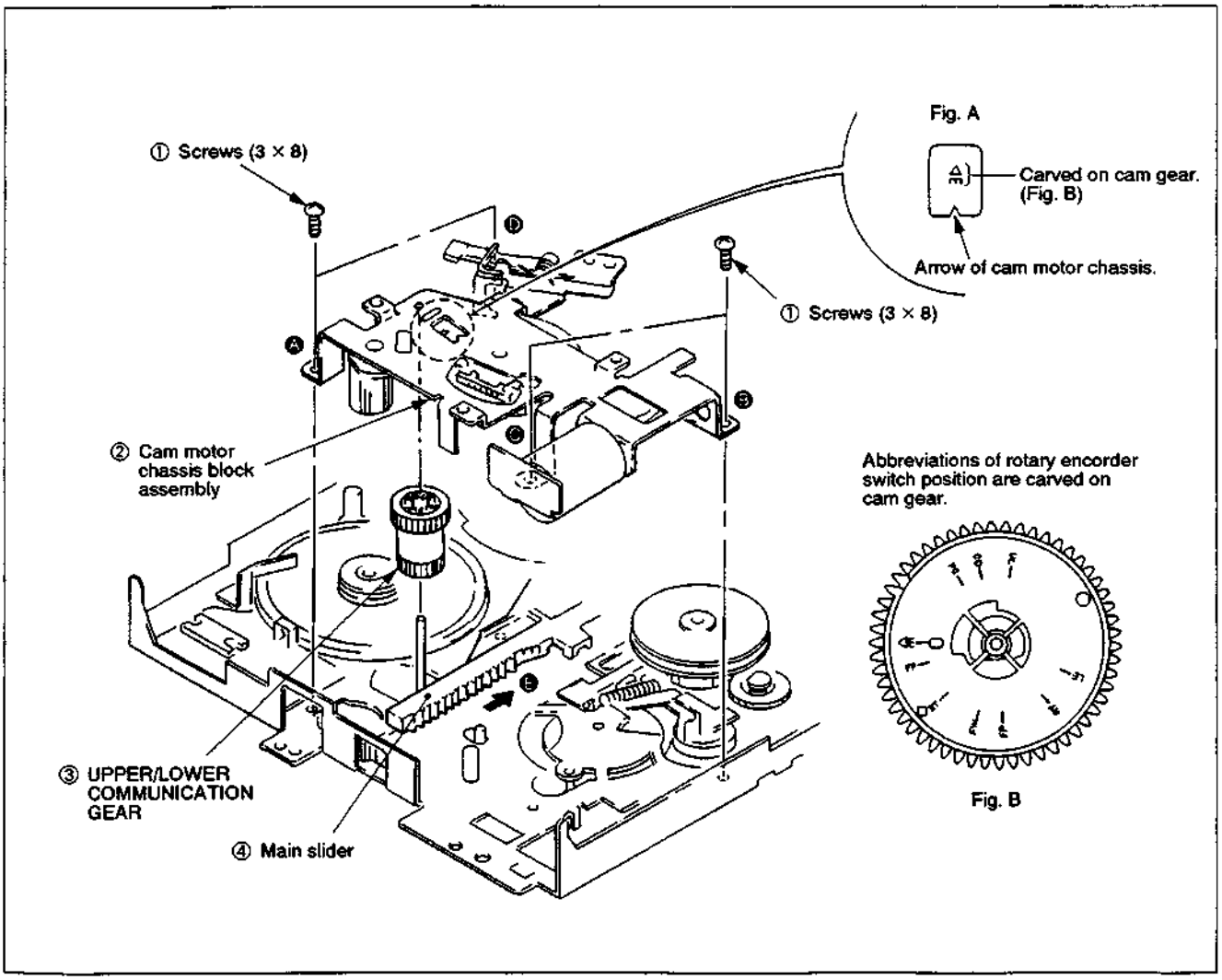


Fig. 3-18

3-17. ROTARY ENCODER SWITCH (Fig. 3-19)

1) Remove timing belt. (Refer to 3-3.)
2) Remove CAP brake assembly. (Refer to 3-4.)
3) Remove cam motor chassis block assembly (Refer to 3-15.) and turn upside on the bottom.
4) Remove stopper washer (2) ① to pull out worm wheel ②.
5) Remove stopper washer (2) ③ to pull out cam gear ④.
6) Pull out FL driving gear ⑤ and rotary encoder switch ⑥.

[Note on Mounting]

- Apply FLOIL SG-055G (Jig Ref. No. J-12) to ☆ marked portions. (Fig. 3-19, A)
- Adjust the hole Ⓐ to the hole on cam motor chassis. (Fig. B)
- Adjust the holes Ⓑ and Ⓒ to the hole on cam motor chassis. (Fig. C)

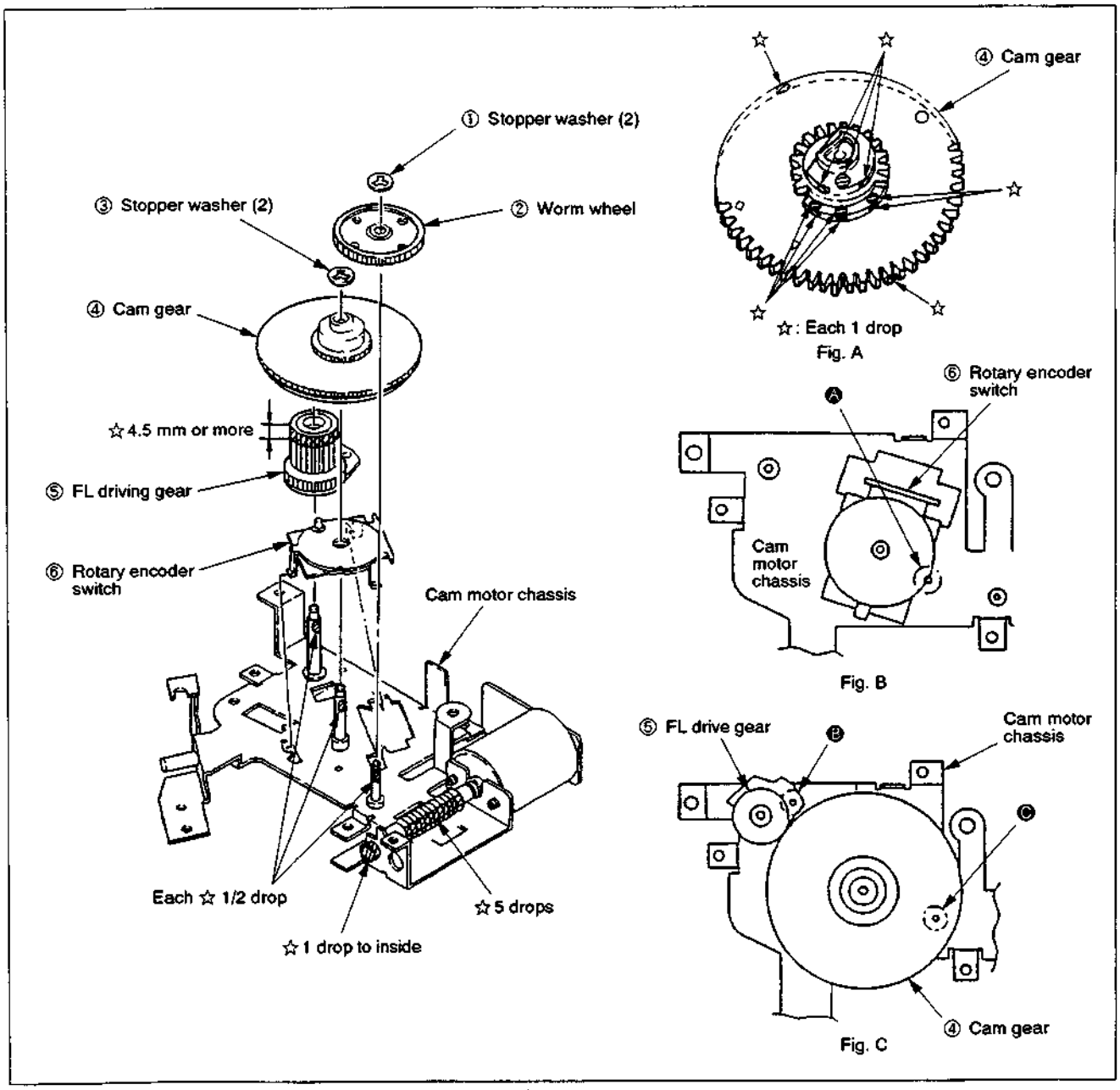


Fig. 3-19

3-18. MAIN SLIDER (Fig. 3-20)

1) Remove timing belt. (Refer to 3-3.)
2) Remove CAP brake assembly. (Refer to 3-4.)
3) Remove cam motor chassis block assembly. (Refer to 3-16.)
4) Remove screw ① to remove retainer ②.
5) Pull out main slider ③.

[Note on Mounting]

- Apply FLOIL SG-055G (Jig Ref. No. J-12) as shown in Fig. A.
- At the last, slide main slider fully in the arrow Ⓐ direction.

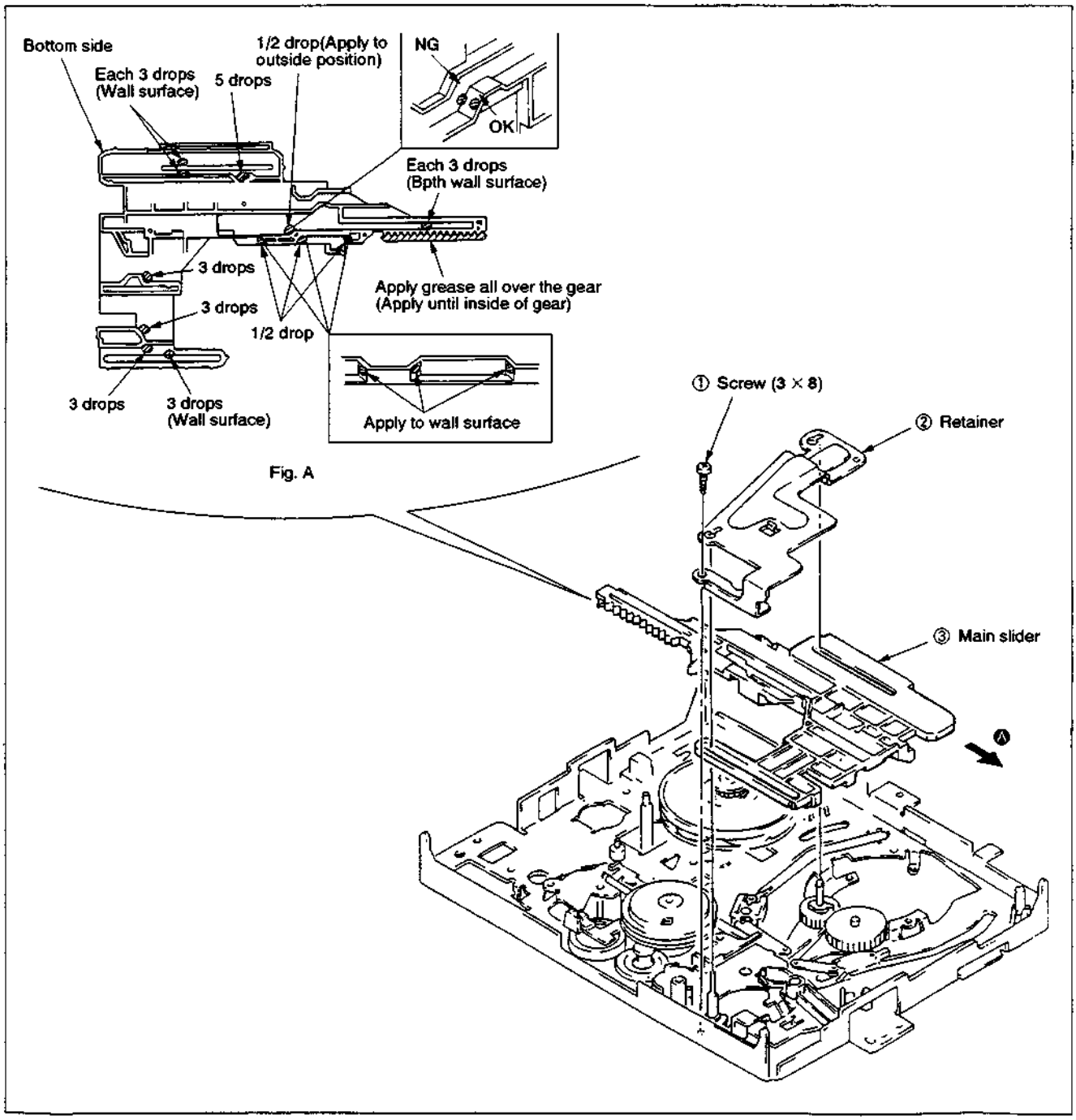


Fig. 3-20

3-19. SHUTTLE T BLOCK AND LOADING GEAR T BLOCK ASSEMBLIES (Fig. 3-21)

1) Remove timing belt. (Refer to 3-3.)
2) Remove CAP brake assembly. (Refer to 3-4.)
3) Remove cam motor chassis block assembly. (Refer to 3-16.)
4) Remove main slider. (Refer to 3-18.)
5) Remove screw ① to remove loading leaf (T) spring ② and shuttle T block assembly ③.
6) Pull out loading gear T block assembly ④.

[Note on Mounting]

- Adjust the phase Ⓐ between loading gear (T) and loading gear (S). (Fig. A)
- Keep clean the surface contacts tape of shuttle T block assembly ③.

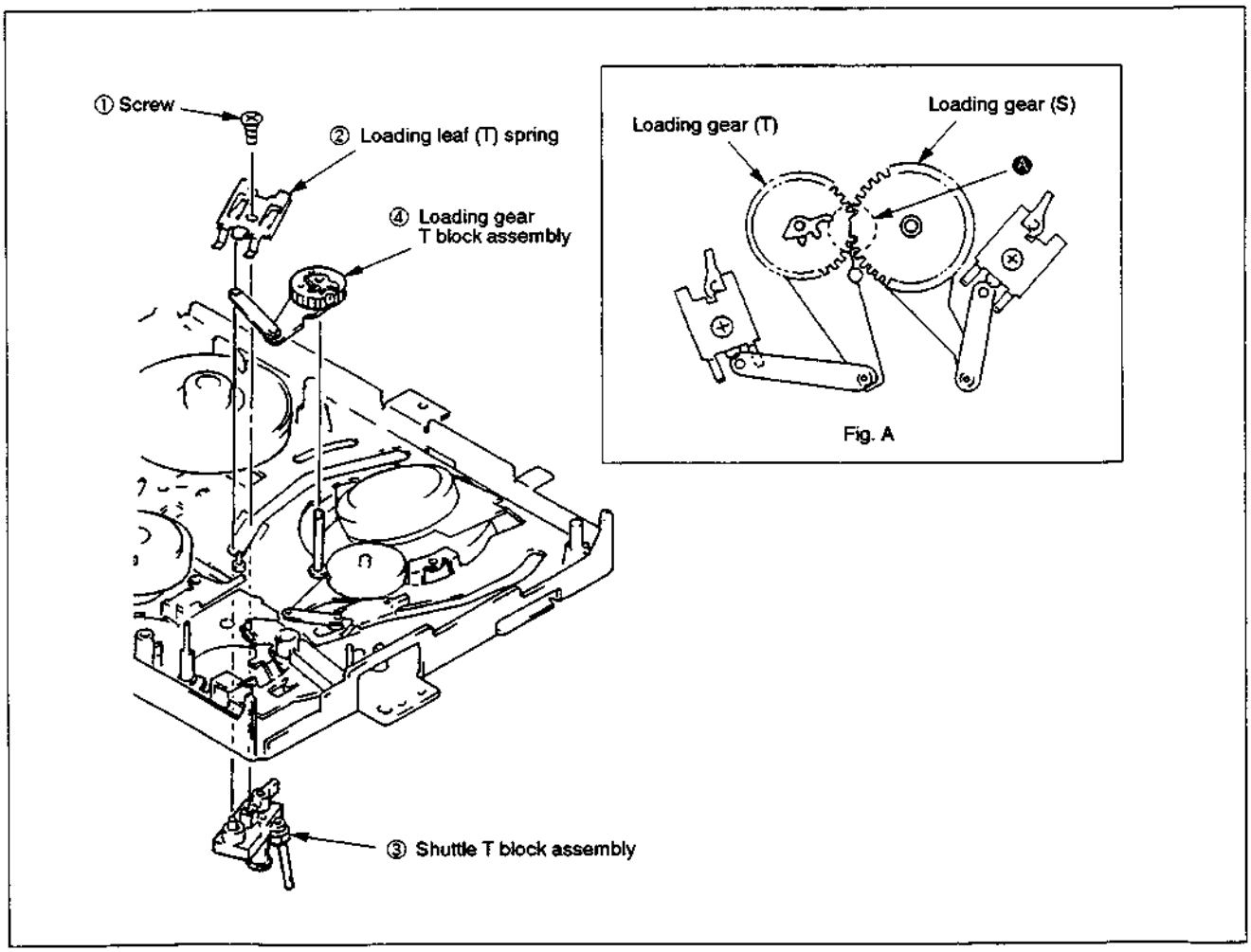


Fig. 3-21

3-20. SHUTTLE S BLOCK AND LOADING GEAR S BLOCK ASSEMBLIES (Fig. 3-22)

1) Remove timing belt. (Refer to 3-3.)
2) Remove CAP brake assembly. (Refer to 3-4.)
3) Remove cam motor chassis block assembly. (Refer to 3-16.)
4) Remove main slider. (Refer to 3-15.)
5) Remove screw ① to remove loading leaf (S) spring ② and shuttle S block assembly ③.
6) Pull out loading gear S block assembly ④.

[Note on Mounting]

- Adjust the phase Ⓐ between loading gear (S) and loading gear (S). (Fig. A)
- Keep clean the surface contacts tape of shuttle S block assembly ③.

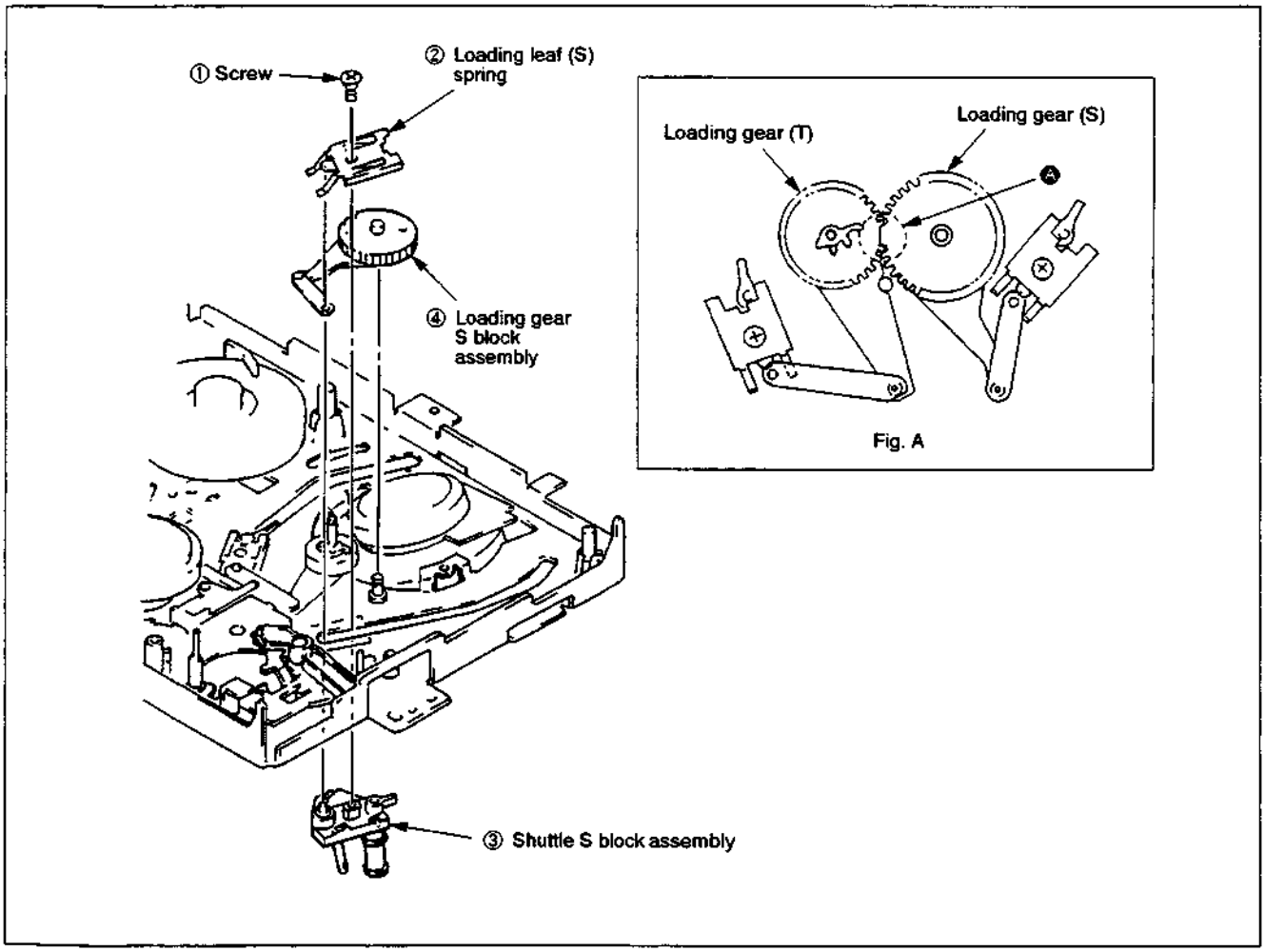


Fig. 3-22

3-21. REEL TABLE (S) ASSEMBLY (Fig. 3-23)

1) Remove tension spring ① from the chassis side.
2) Remove stopper washer (2) ② to pull out soft brake (S) ③.
3) Move TG1 band ④ over the reel table.
4) Remove stopper washer (2) ⑤.
5) While pressing main brake S assembly ⑥, pull out reel table (S) assembly ⑦.

[Note on Mounting]

- Apply one drop of Diamond Oil NT-68 (Jig Ref. No. J-13) to ☆ marked portion before mounting reel table (S) assembly ⑥. (Fig. A)
- Don't touch the hatched portion on reel table (S) assembly ⑥ with bare hand.

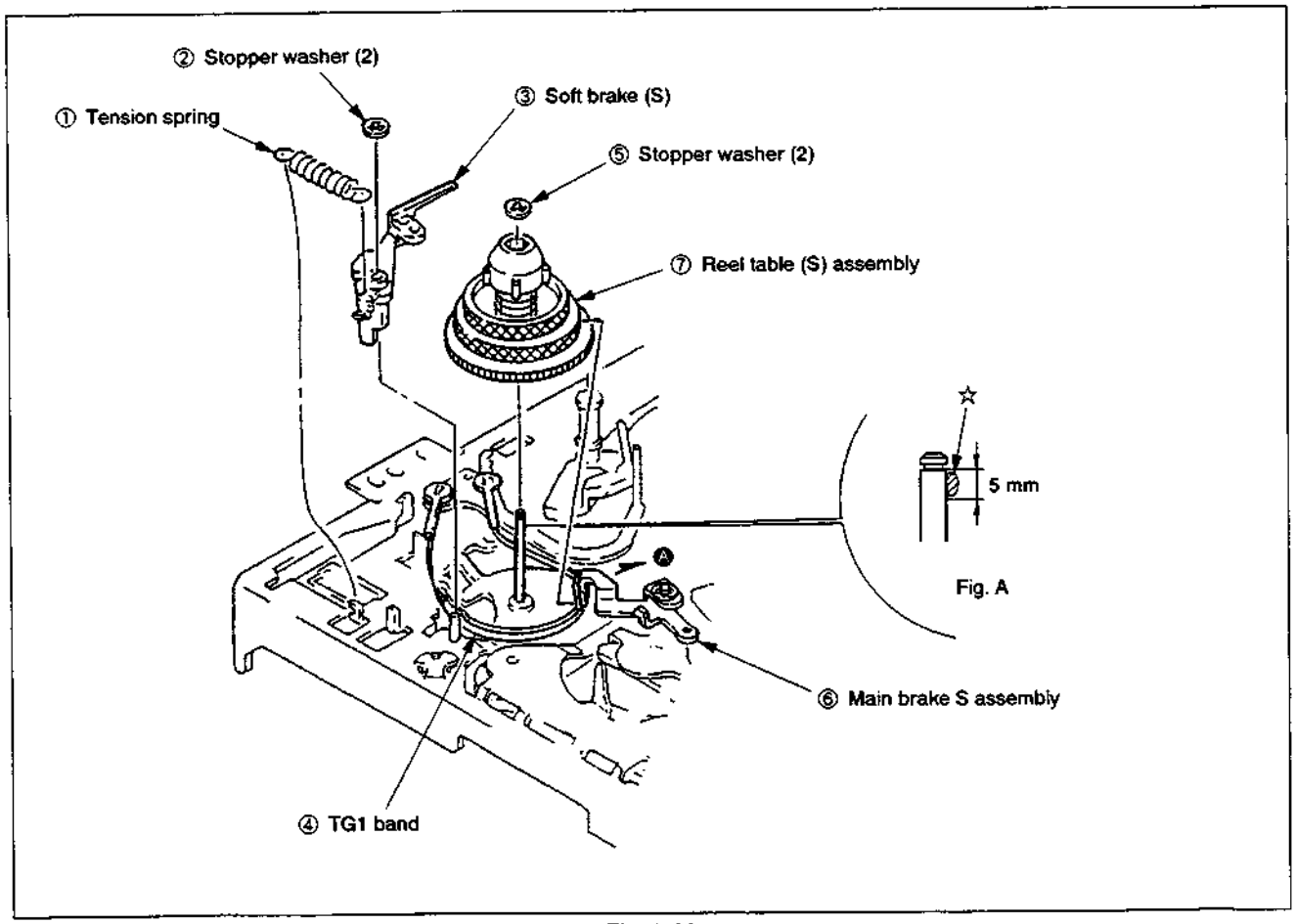


Fig. 3-23

3-22. TG1 ASSEMBLY (Fig. 3-24)

1) Set the mechanism to the loading-end condition referring to 1-1. (Cam gear indicates "LE". (Refer to Fig. A and B of Fig. 3-18.))
2) Remove tension spring ① in the order Ⓐ to Ⓑ.
3) Remove stopper washer (2) ② to pull out TG1 assembly ③.

[Note on Mounting]

- Apply one drop of Diamond Oil NT-68 (Jig Ref. No. J-13) to ☆ marked portion.
- Keep clean the felt side of TG1 assembly.

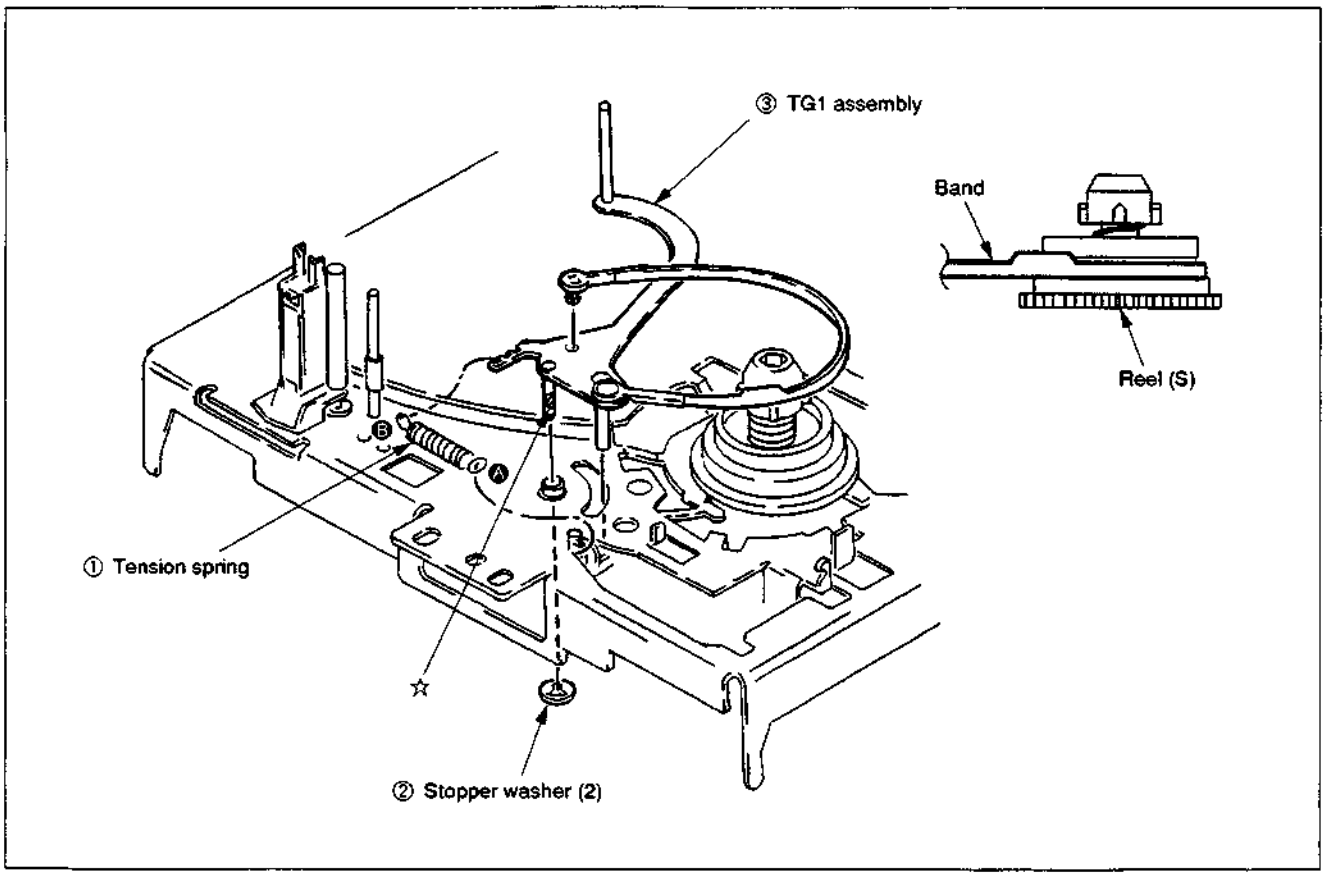


Fig. 3-24

3-23. S WINDING BLOCK ASSEMBLY (Fig. 3-25)

1) Remove timing belt. (Refer to 3-3.)
2) Remove CAP brake assembly. (Refer to 3-4.)
3) Remove cam motor chassis block assembly. (Refer to 3-16.)
4) Remove main slider. (Refer to 3-18.)
5) Remove stopper washer (2) ① to pull out S winding block assembly ②.
6) Remove torsion spring ③.

[Note on Mounting]

- At the last, hang torsion spring ② to the position Ⓐ.
- Apply FLOIL SG-055G (Jig Ref. No. J-12) to ☆ marked portions.

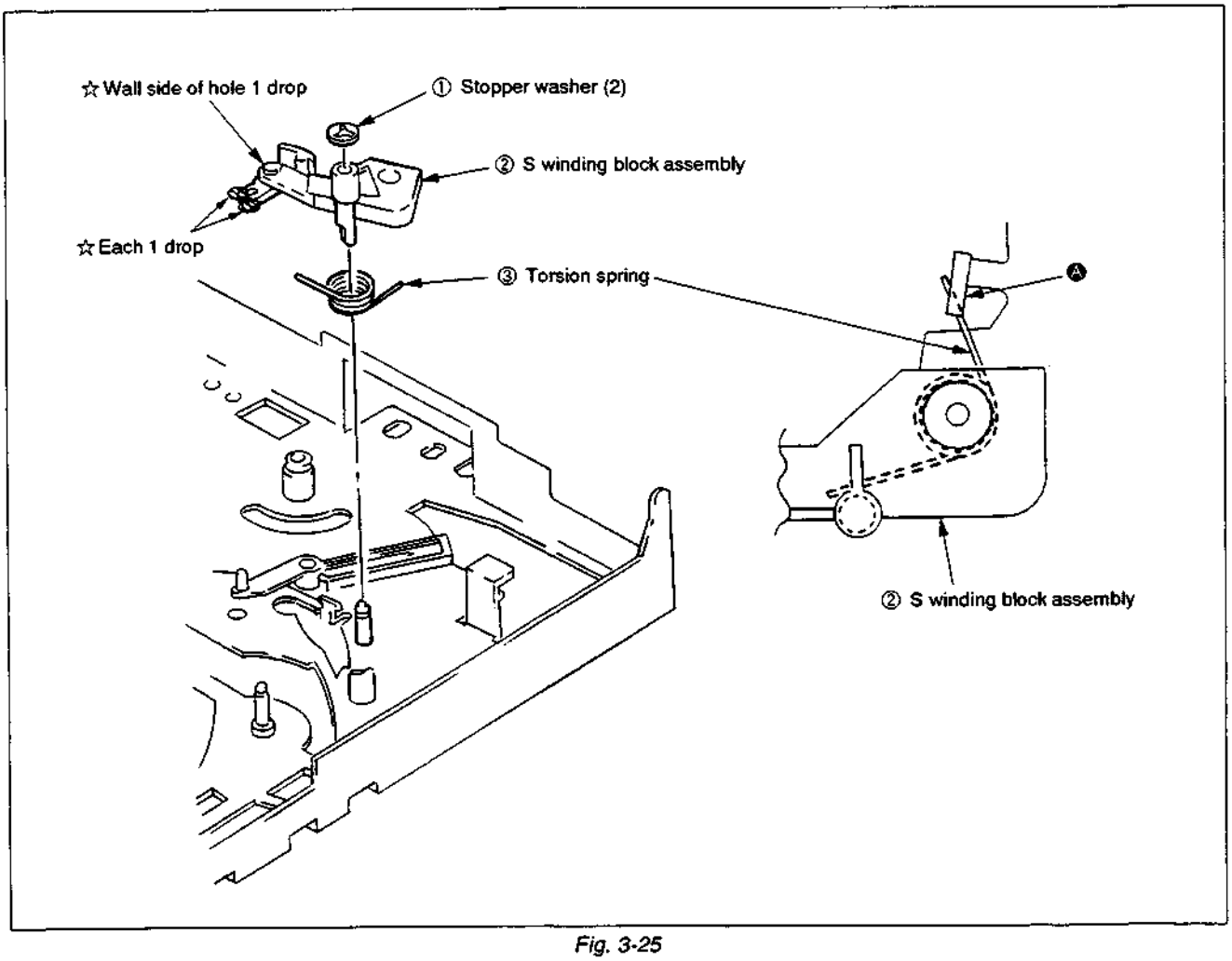


Fig. 3-25

3-24. TRIGGER LEVER AND RKB BLOCK ASSEMBLIES (Fig. 3-26)

1) Remove timing belt. (Refer to 3-3.)
2) Remove CAP brake assembly. (Refer to 3-4.)
3) Remove cam motor chassis block assembly. (Refer to 3-16.)
4) Remove main slider. (Refer to 3-18.)
5) Remove tension spring ① in the order Ⓐ to Ⓑ to remove trigger lever assembly ②.
6) Remove screws (3 × 8) ③ to remove RKB block assembly ④.

[Note on Mounting]

- Apply FLOIL SG-055G (Jig Ref. No. J-12) to ☆ marked portions on trigger lever assembly. (Fig. A)

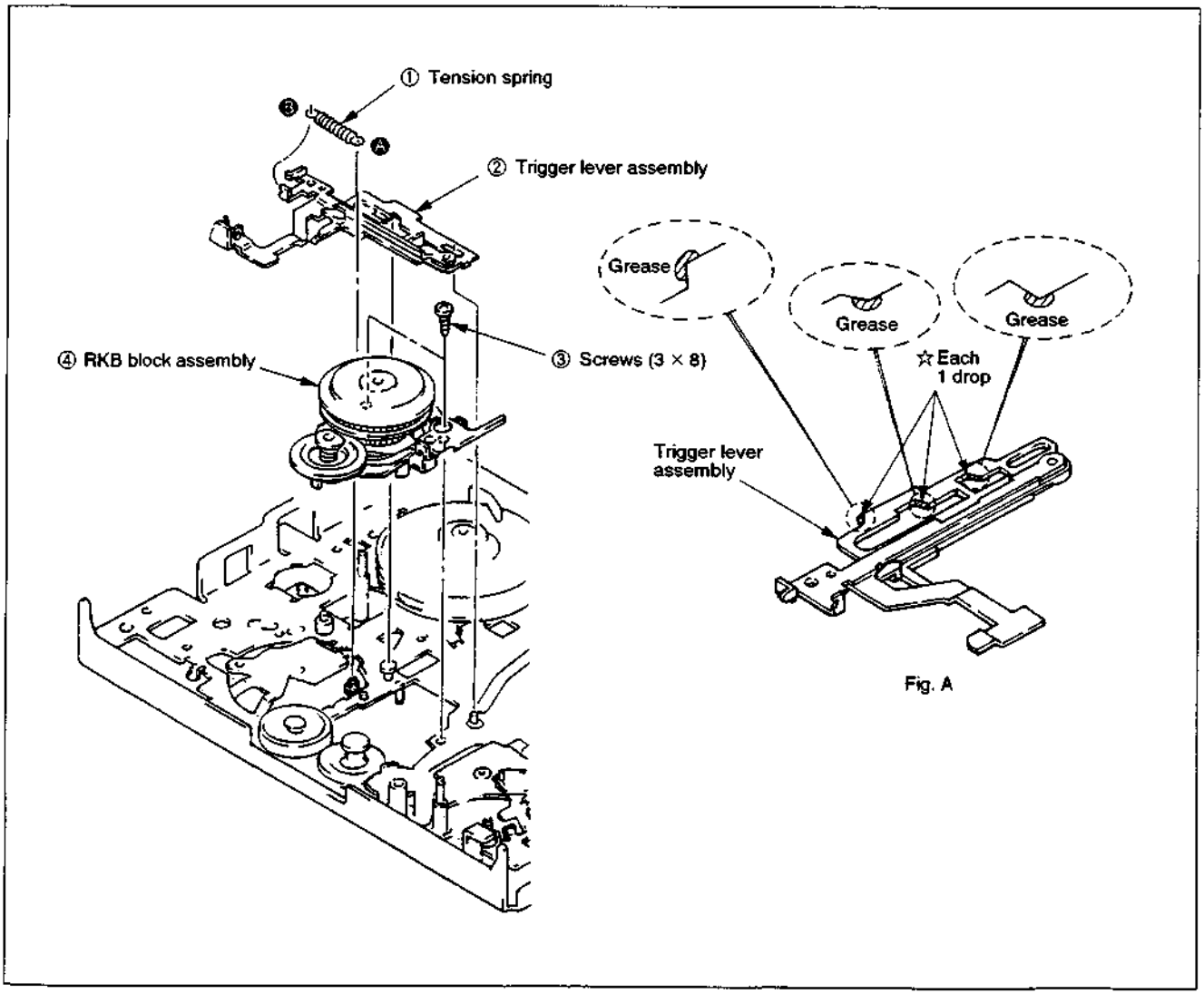


Fig. 3-26

4. ADJUSTMENT

4-1. TAPE PATH ADJUSTMENT

The "Tape path" refers to the route of the tape from the supply reel disk to the take-up reel disc via the video heads.
Each component part of the tape transport system particularly the surface of parts which make direct contact with the tape must always be kept clean, free of dust, oil, scratches and so forth.
The tape path system is factory preadjusted, when parts of the tape transport system are replaced, be sure to make the required adjustments as precisely as possible in order to ensure stable tape transport.

4-1-1. TENSION REGULATOR (TG1) POSITION/ TENSION ADJUSTMENT (Fig. 4-1)

Purpose: stabilizes contact of the video head and the tape to maintain the tension of the tape so that it feeds at a constant level.

• Position adjustment

Mode	Treading is completed without a cassette loaded
Adjustment locations	Eccentric pin of TG1 band assembly

[Adjustment Method]

1) Allow the unit to go through the threading procedure without a cassette loaded.
2) Set the unit to play back, then turn the eccentric pin so that the tip of tension arm goes to the left side line carved on the mechanical chassis. (Fig. A)
3) After adjustment, go through the loading procedure once more without a cassette loaded, then check the position of the tension arm.

• Tension adjustment

Mode	Playback
Measuring instrument/tool	Torque cassete
Adjustment locations	Position for hooking the tension spring
Specified value	36 to 44 g•cm

[Adjustment Method]

1) Playback the torque cassette.
2) Check that the center value deviation reading on the torque cassette meets with the standards.
3) When the reading is higher than the standards: Move the spring toward direction Ⓐ.
   When the reading is less than the standards: Move the spring toward direction Ⓑ.

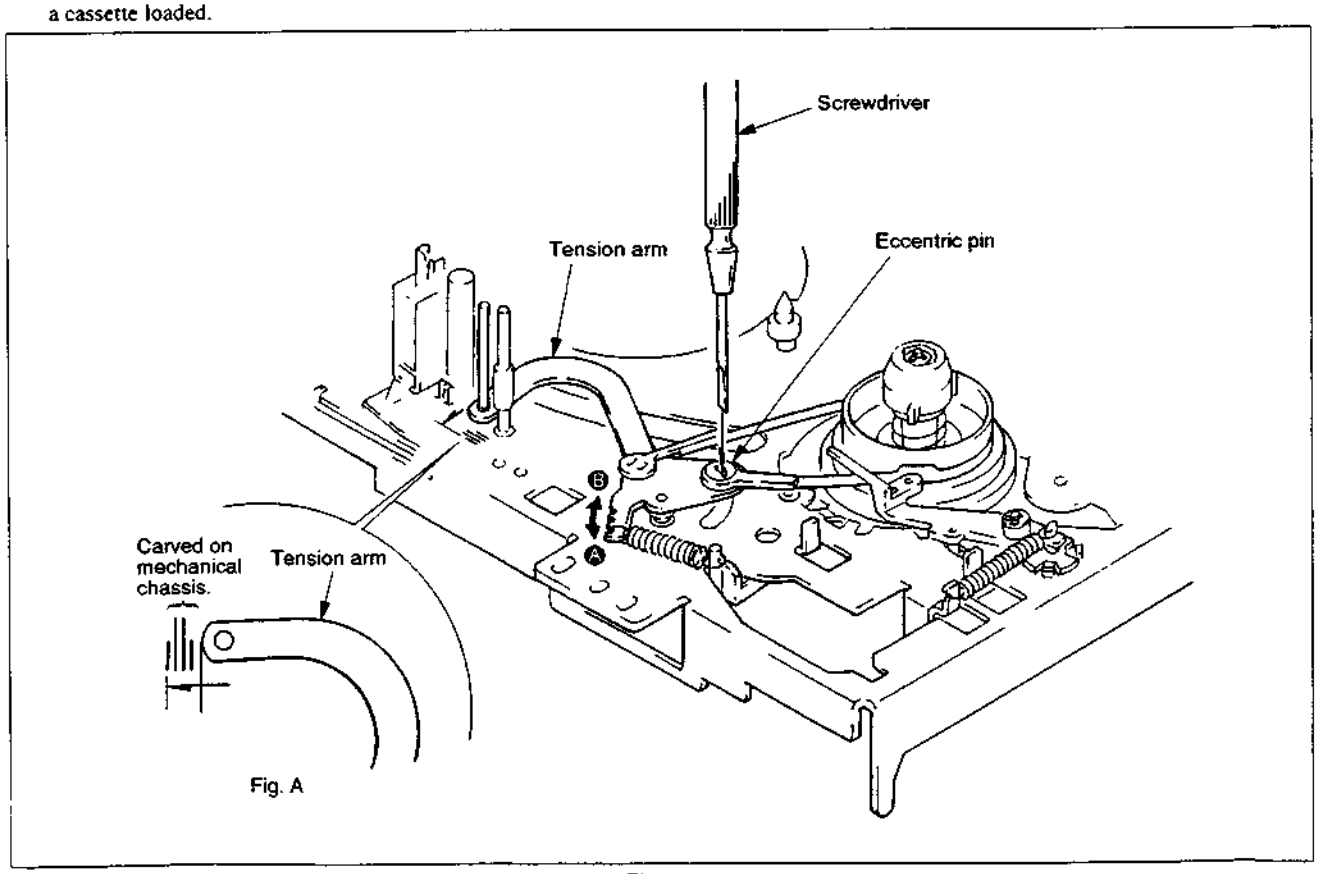


Fig. 4-1

4-1-2. TG8 GUIDE ROLLER HEIGHT ADJUSTMENT (Fig. 4-2)

Mode	Playback
Jig	Blank tape
Adjustment locations	Guide roller height adjustment screw
Specified value	0 to 0.1 mm

Procedure:

1) Set the tape, during CUE playing back, check the height from lower flange of TG7 to the running tape. (Fig. A)
2) During REV playing back, check the height from lower flange of TG7 to the running tape. (Fig. B)
3) When the difference between items 1) and 2) doesn't go to specified value, adjust by turning TG8 guide roller height adjustment screw.
4) Check the tape is creased or not between the capstan and TG8, adjust with TG8 guide roller height adjustment screw so that the tape is not creased during normal playback, CUE and REV.

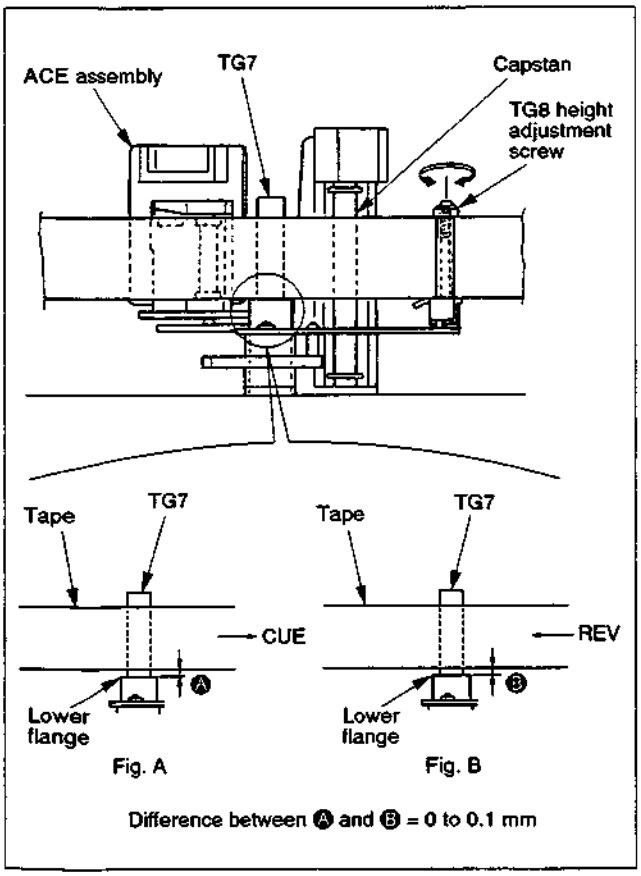


Fig. 4-2

4-1-3. HEIGHT ADJUSTMENT OF GUIDE ROLLERS NO. 3 AND NO. 6 (Fig. 4-3)

Mode	Playback
Signal	Alignment tape
Measuring instrument	Oscilloscope
Measuring point	CH-1: Connector PB RF pin for RF PC board check. CH-2: Connector RF SW P pin for RF PC board check.
Adjustment locations	Guide roller height adjuster screw

[Adjustment Method]

1) Tracking (playback): Turn off the auto tracking, then press the tracking buttons ▽ and △ simultaneously to set the tracking at the center position.
   (If adjustment is made after the drum is replaced, the tracking must be set at the max. RF output position.)
2) Height adjuster screw: Even out the RF output waveforms.
3) Press the tracking buttons (playback), ▽ and △ alternately.
4) Check that RF output drops the same amount at the front and rear edges.

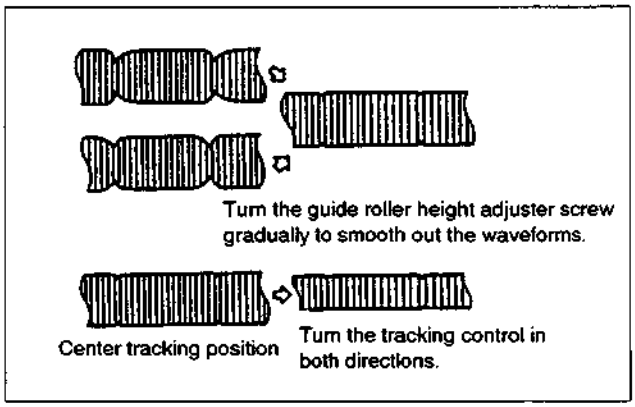


Fig. 4-3

4-1-4. ACE HEAD ASSEMBLY ADJUSTMENT (ROUGH ADJUSTMENT) (Figs. 4-4 and 4-5)

Purpose: Allows the tape to make even contact with the head for recording and playback of the specified track.

Mode	Playback
Tool	Blank tape
Adjustment locations	Height adjuster nut, Tilt adjuster screw

[Adjustment Method]

1) Mount the ACE head assembly. At this time, adjust the height so that the height of guide flange No. 7 matches the level of the lower edge of the control head.
2) Remove the adjustment tool and load a new tape, then set the unit for playback.
3) Check that the tape does not curl or rise up noticeably near the ACE head.
4) If the tape curls up or rises noticeably, readjust the tilt adjuster screw, the azimuth adjuster screw and the height adjuster nut.
   (The height of the ACE head should be adjusted so that the lower edge of the tape is approx. 0.1 to 0.15 mm from the control head.)
5) Perform precision adjustment.

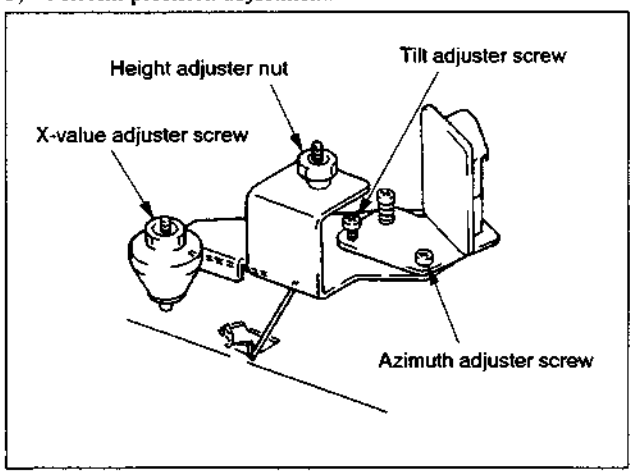


Fig. 4-4

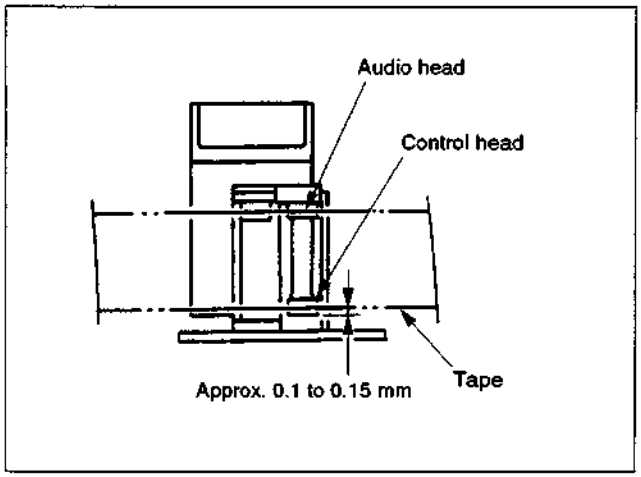


Fig. 4-5

4-1-5. ACE HEAD ASSEMBLY ADJUSTMENT (PRECISION ADJUSTMENT)

Mode	Playback
Signal	Alignment tape (1kHz track)
Measuring instrument	Oscilloscope
Measuring point	Audio output terminal
Adjustment locations	Azimuth adjuster screw, Height adjuster nut, Tilt adjuster screw

[Adjustment Method]

1) Adjust the tilt adjuster screw in the FWD or REV mode so that the lower flange of guide No. 7 does not curl up or rise.
2) Alternately adjust the azimuth adjuster screw, the height adjuster nut, and the tilt adjuster screw to maintain even audio output at maximum with minimum deviation.

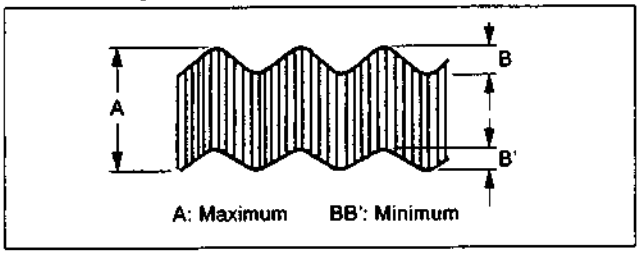


Fig. 4-6

4-1-6. X-VALUE ADJUSTMENT

Purpose: To obtain compatibility with other VTR

Precaution: Be sure to perform the preset tracking adjustment before perform this adjustment. (Refer to the Service Guide.)
Turn off the auto tracking and set the VTR for manual tracking mode.

Mode	Playback
Signal	Alignment tape
Measuring instrument	Oscilloscope
Measuring point	CH-1: Connector PB RF pin for RF PC board check. CH-2: Connector RF SW P pin for RF PC board check.
Adjustment locations	X-value adjuster screw

[Adjustment Method]

- **Adjustment by Hi-Fi alignment tape (NTSC only)**
  When the tracking is set at the center position (by pressing the ▽ and △ keys simultaneously), adjust the RF output to maximum.

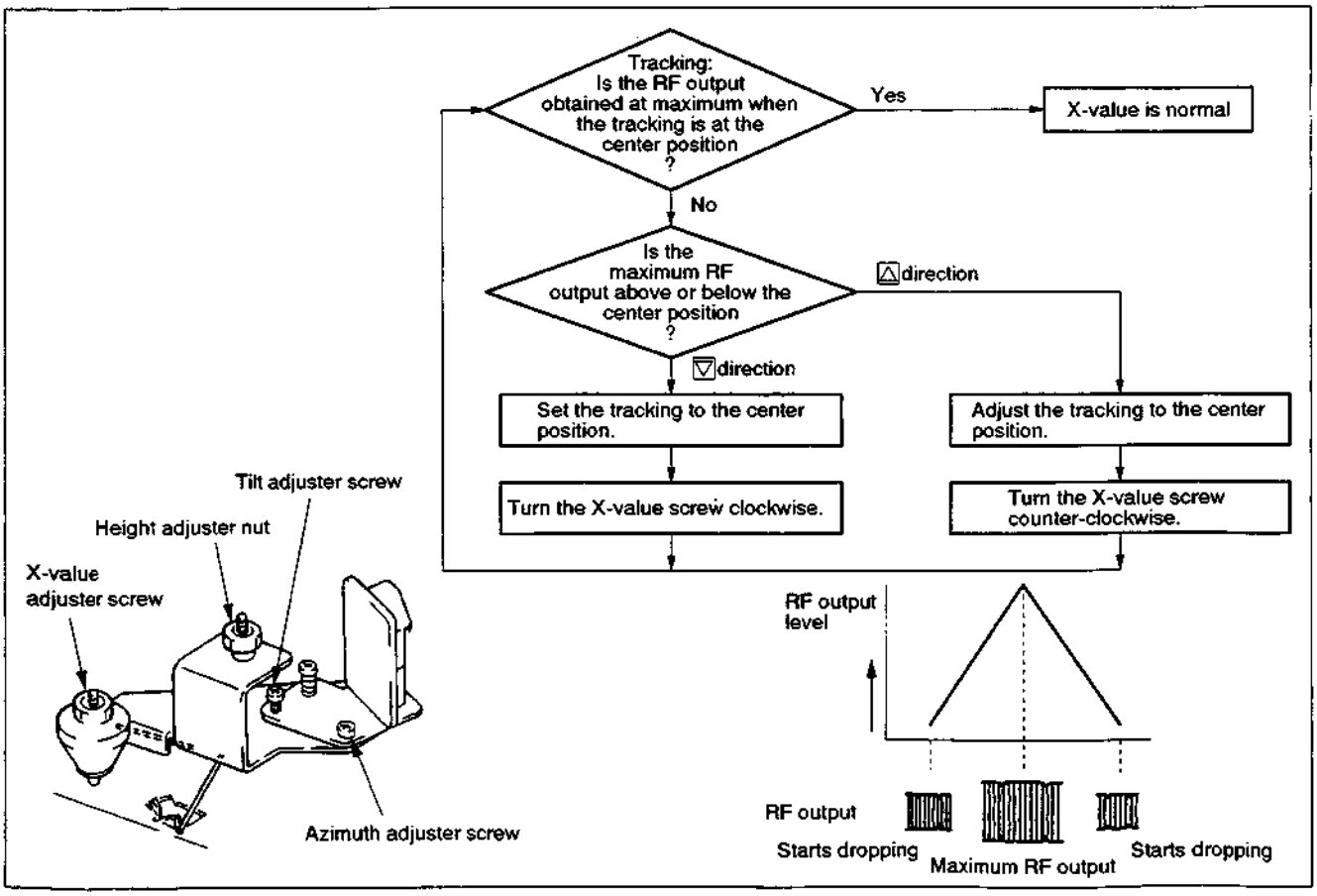


Fig. 4-7

- **Adjustment by alignment tape**

  Adjust the X-value adjuster screw so that maximum RF output is obtained and also that the RF output drops to the same position on pressing the respective ▽ and △ buttons while the tracking is set at the center position.

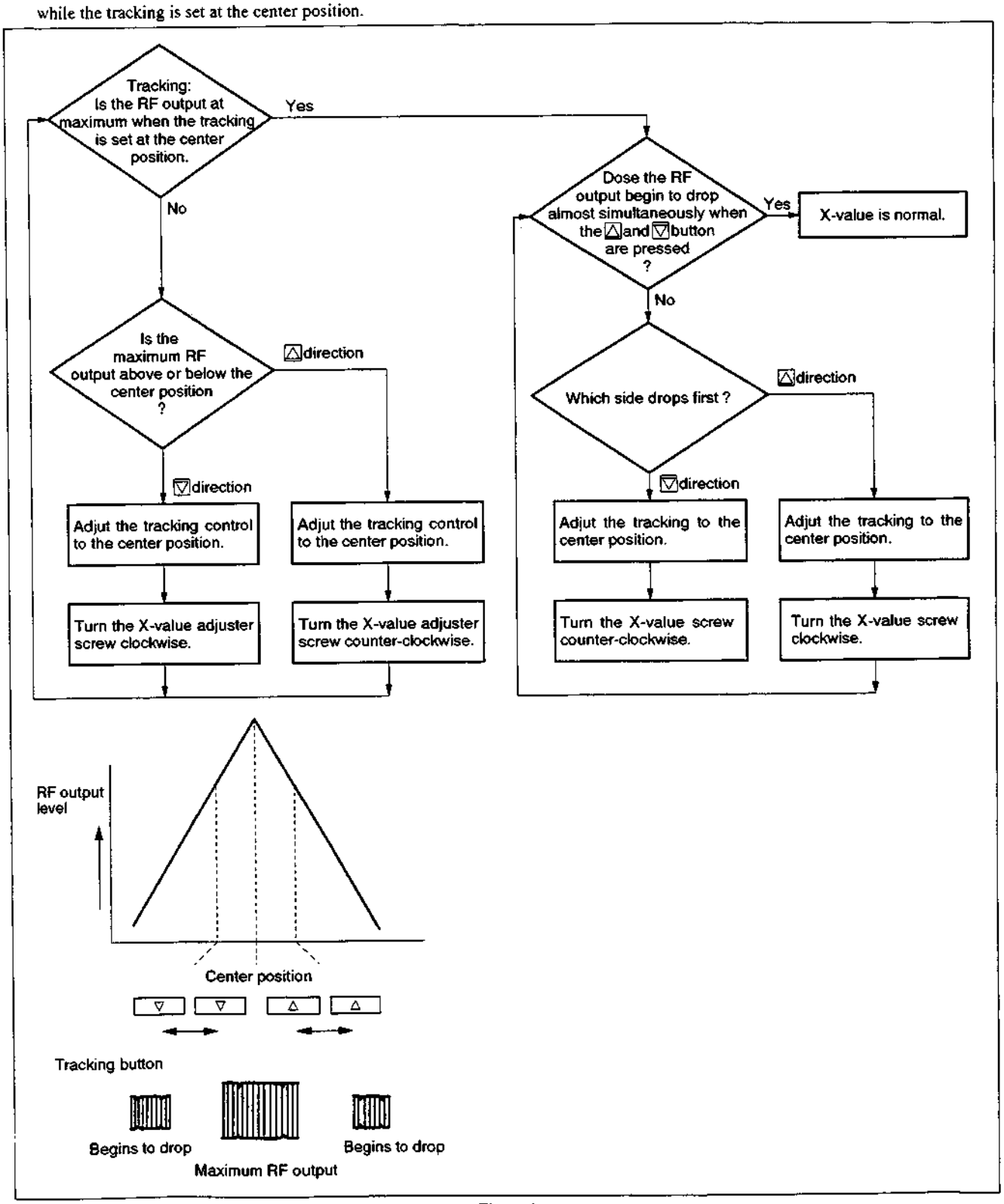


Fig. 4-8

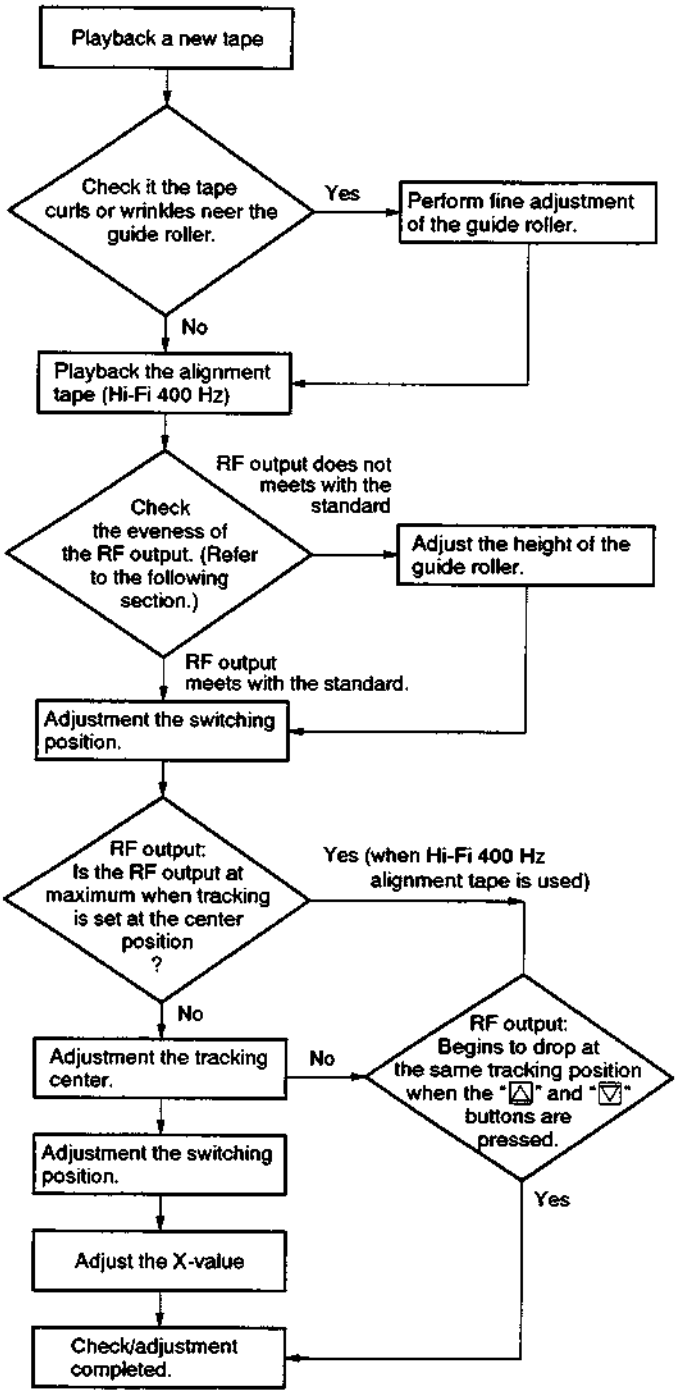
4-1-7. ADJUSTMENTS AFTER REPLACING THE DRUM (VIDEO HEAD)

Purpose: Co-relative height, X-value and other factors of the drum will deviate from those of the guide roller. If the drum is replaced properly, these deviations are extremely small.

Precaution: Turn off the auto tracking and set the manual tracking mode.

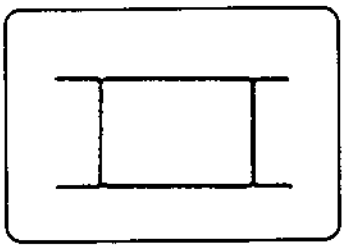
Mode	Playback
Signal	Alignment tape, blank tape
Measuring instrument	Oscilloscope
Measuring point	CH-1: Connector PB RF pin for RF PC board check. CH-2: Connector RF SW P pin for RF PC board check.
Adjustment locations	Guide roller (refer to 4-1-2, 4-1-3.) Switching position, Tracking preset, SP delay mono-multi (Refer to the Service Manual), X-value. (refer to 4-1-6.)

[Adjustment Method]

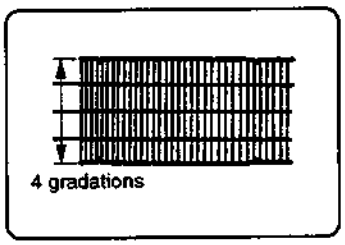


[Checking the evenness and fluctuation of the RF output]

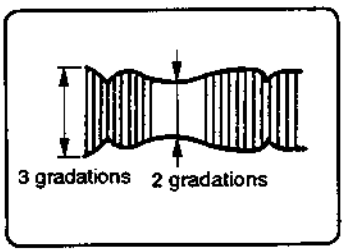
1) Set the RF output to the maximum level using the tracking buttons.



2) Perform fine adjustment of the voltage level range of the oscilloscope, then adjust the RF output deviation to within 4 gradations.



3) Press the tracking buttons and adjust the maximum amplitude of the RF output to within 3 gradations.
4) At this time, check if the minimum amplitude is more than 2 gradations.



5) Check that the RF output fluctuation between minimum and maximum levels is within 13%.

4-1-8. CHECKING THE TENSION AND TORQUE

Purpose: To check that the tension, torque and compression force of the tape take-up section and mobile sections to ensure smooth tape run and achieve standard VTR performance.

If the tape transport is not smooth or problems occur in relation to the tape transport speed, perform the following check.

Mode	Each operation mode without loading a cassette tape. (Refer to section 1-3.)
Measuring instrument	Torque gauge, Torque gauge adaptor

Item	VTR operation mode	Reel to be measured	Measurement value
Main brake torque	Stop	Supply and take-up reels	170 g•cm or more
Review torque	Review	Supply reel	180 ± 30 g•cm (using the torque cassette)
Take-up torque	Playback	Take-up reel	95 ± 25 g•cm (using the torque cassette)
Back tension torque	Playback	Take-up reel	33 to 44 g•cm (using the torque cassette)

[Check Method]

Measure the torque using the torque gauge and torque gauge adaptor with the torque gauge fixed.

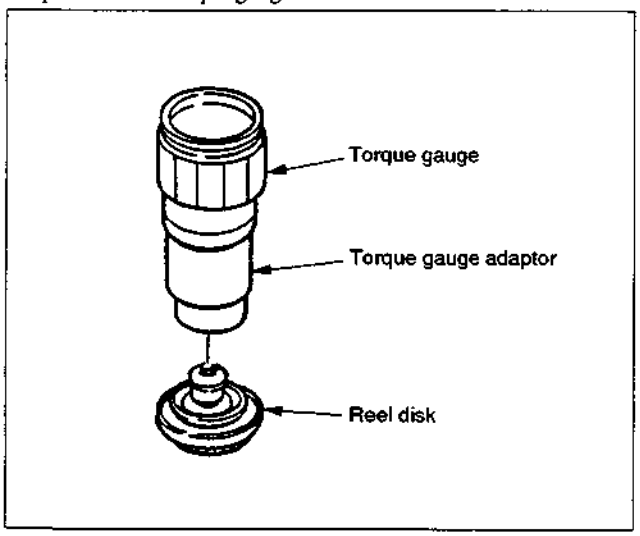


Fig. 4-9

V03056

VHS MECHANICAL ADJUSTMENT MANUAL IV

SONY
SERVICE MANUAL

H MECHANISM

SUPPLEMENT-1

1. How to Use the Mode Selector Ⅱ for Adjusting H Type Mechanism Assembly.
2. Adjusting Mechanism Using New Alignment Tape (KRV-52NE For NTSC).

File this supplement with the VHS mechanical adjustment Ⅳ.

TABLE OF CONTENTS

1. HOW TO USE THE MODE SELECTOR II FOR ADJUSTING H TYPE MECHANISM ASSEMBLY

1-1. OUTLINE

To activate the VHS system H type mechanism assembly using mode selector II (J-6082-282-A), use connector conversion jig (J-6090-052-A). By using the connector conversion jig, the following operations are possible.

- Loading and unloading action by the loading motor
- Reading of the current setting of the mode switch
- Normal and reverse rotation of the capstan motor

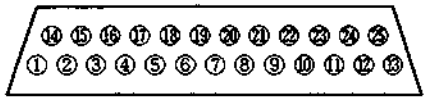
1-2. PREPARATION

1-2-1. ADDITION OF POWER SUPPLY CABLE (Already added Mode Selector II also available)

In order to drive the capstan motor, the power +5 V and +12 V are supplied from the Mode Selector II. Disassemble the D-SUB connector of the Mode Selector cable, then solder the following three places.

Supplied 3-pin cable	DSUB connector of the mode selector II	Voltage
Pin 1 (Red index)	Pin 20	+12 V
Pin 2	Pin 25	GND
Pin 3	Pin 24	+5 V

- Connector pin number assignment of the DSUB connector (From the soldering side)



- When connections are made, check that +5 V and +12 V are available at the 3-pin cable connector.

1-2-2. CHECKING THE SOFTWARE VERSION

Turn on the power of the mode selector II.

If the reading for the software version on the mode selector II is not 1.10 or higher, replace the New ROM (J-6082-314-A).

1-3. CONNECTION

1-3-1. CONNECTION BETWEEN THE CONNECTOR CONVERSION JIG AND THE MODE SELECTOR II (See Fig. 1-1)

Insert the connectors of the two 6-pin cables (one is white and the other is black) and the 3-pin cable from the mode selector II to the corresponding connectors on the connector conversion jig (J-6090-052-A).

1-3-2. CONNECTION BETWEEN THE CONNECTOR CONVERSION JIG AND THE H TYPE MECHANISM ASSEMBLY

With the power of the mode selector II turned off, insert the following three connectors to the corresponding connectors on the H type mechanism assembly.

- 3-pin connector for the loading motor
- 5-pin connector for the mode switch
- 8-pin connector for the capstan motor

Set the speed control for the minimum setting (fully counter-clockwise).

1-4. OPERATION

1-4-1. OPERATION OF THE LOADING MOTOR ON THE H TYPE MECHANISM ASSEMBLY

(1) Select the H type mechanism assembly setting on the mode selector II .

(2) After this, procedures are the same as those for the previous model types.
For the operating method, see pages 3 to 5 of "8 mm Video Mechanism Manual VI (TK Mechanism) Supplement-1".
For the loading method, see page 3 of "VHS Mechanical Adjustment Manual IV (H Mechanism)".

1-4-2. OPERATION OF THE CAPSTAN MOTOR ON THE H TYPE MECHANISM ASSEMBLY

(1) For the loading motor operation under Section 1-4-1, change the mode setting to the FF/REW mode with the mode switch.

(2) Turn the speed control gradually in clockwise direction, and the capstan motor starts rotating. To turn the capstan motor in desired rotating direction, change the FWD/RVS setting of the rotating direction switch.

1-5. PRECAUTIONS

- Turn the speed control only when necessary. Otherwise, hold the speed control turned at fully counterclockwise direction. If the power of the mode selector II is turned on with the speed control turned in clockwise direction, +12V power fails and the power of the mode selector II cannot be turned on.
- Although the connector conversion jig (J-6090-052-A) has rubber feet, do not make a short circuit on the bottom surface of the connector conversion jig via foreign conductive materials.

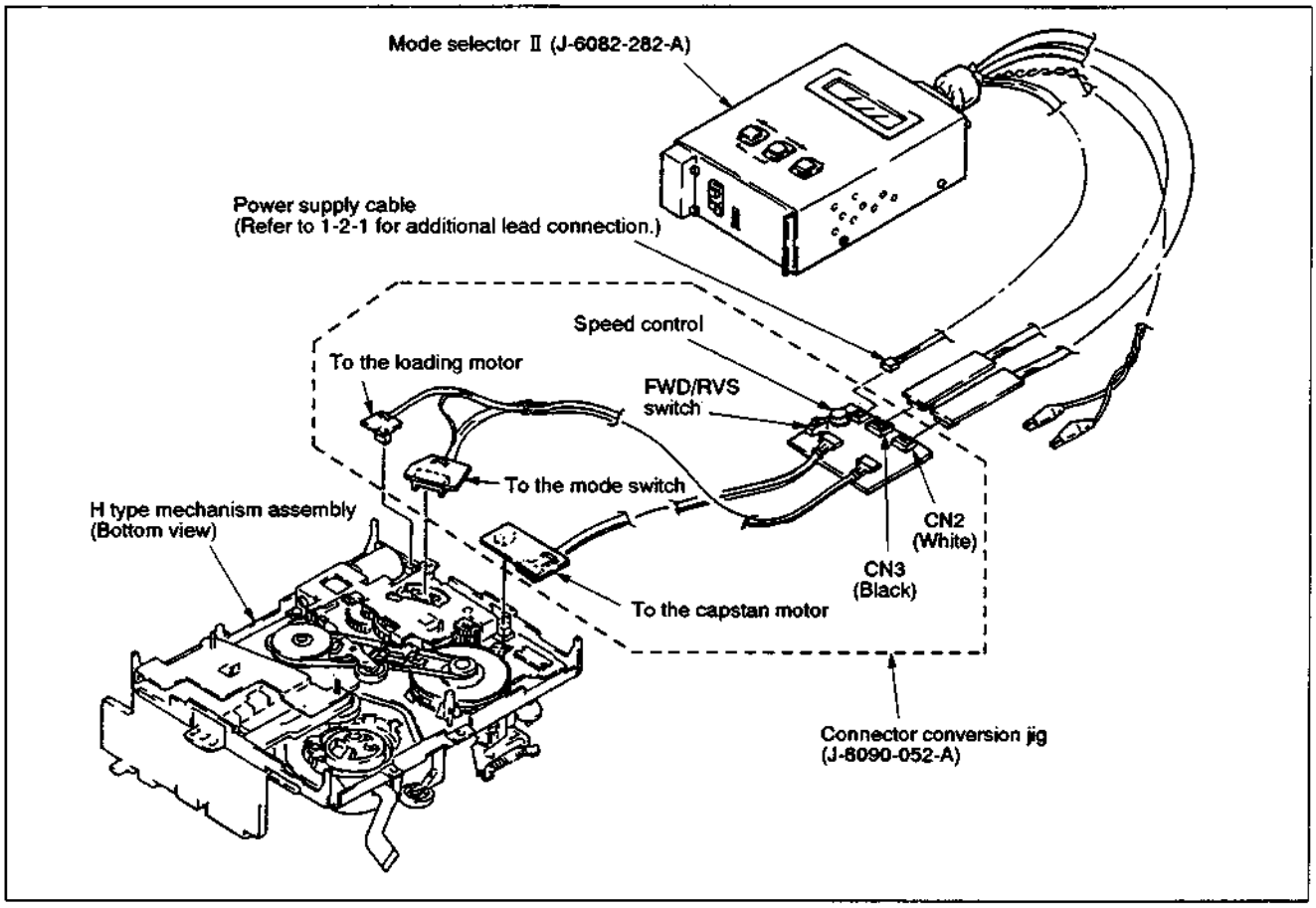

Mode selector II (J-6082-282-A)
Power supply cable
(Refer to 1-2-1 for additional lead connection.)
Speed control
To the loading motor
FWD/RVS
switch
To the mode switch
H type mechanism assembly
(Bottom view)
CN2
(White)
CN3
(Black)
To the capstan motor
Connector conversion jig
(J-6090-052-A)

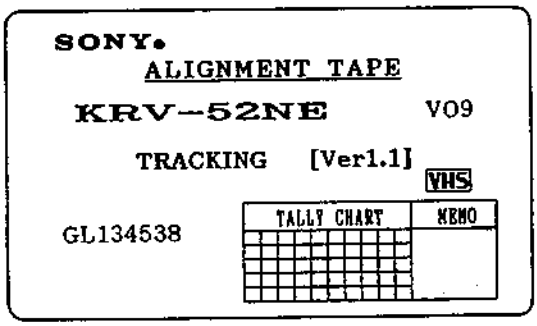
Fig. 1-1

2. ADJUSTING THE MECHANISM USING NEW ALIGNMENT TAPE (KRV-52NE for NTSC)

The conventional alignment tape (For NTSC) is now replaced with alignment tape KRV-52NE, and the following describes how to align the mechanism using the KRV-52NE. For details on the use of KRV-51N2 for each model, refer to the service manuals which will be issued in the future.

Name	Parts No.	Remarks
Alignment tape KRV-52NE for NTSC	8-192-605-41	For tape path, audio azimuth, and X-value adjustments
Alignment tape KRV-51N2 for NTSC	8-192-605-32	For electrical adjustments (RF, AF, and switching position) and operation check

Note: The KRV-52NE has or does not have Ver No. depending on new or old type as shown below. (New one has Ver No.)
Note that an adjusting method of X-value is different.



Contents:
KRV-52NE (NTSC)

Time	Video	Audio
20 min.	Recording only at 1 MHz, A-ch. EP mode RF skipping once per 5 frames	5 kHz full tracks

KRV-51N2 (NTSC)

Class	Mode	Time	Video	Audio (HIFi/Normal)
1	SP	7 min.	Color bar	400 Hz
2	SP	3 min.	Mono. scope	400 Hz
3	EP	7 min.	Color bar	400 Hz
4	EP	3 min.	Mono. scope	400 Hz

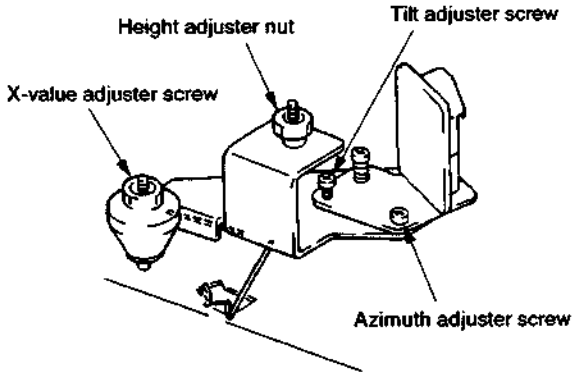
2-1. ADJUSTMENT USING ALIGNMENT TAPE (KRV-52NE for NTSC having no version No.)

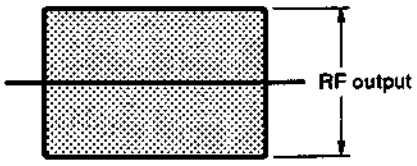
2-1-1. X-VALUE ADJUSTMENT (Using the tape having no version No.)

Purpose: To obtain compatibility with other VCRs.

Precaution: Before starting to adjust X-value, set the tracking control at the center position. To set the tracking control at the center position for the VCRs equipped with the ▲ and ▼ tracking control keys, press both the ▲ and ▼ tracking control keys at the same time. For the VCRs not equipped with the tracking control keys, deactivate the automatic tracking control by pressing the tracking AUTO/MANUAL key on the remote control unit during threading operation (after a tape is inserted but before the VCR starts playing back the tape).

Mode	Playback
Signal	Alignment tape KRV-52NE (For NTSC having no version No.)
Measuring instrument	Oscilloscope TIM/DIV: 2ms Trigger source: CH2 Trigger slope: +
Measuring point	CH-1: Connector PB RF pin for RF PC board check CH-2: Connector RF SWP pin for RF PC board check
Adjustment locations	X-value adjuster screw

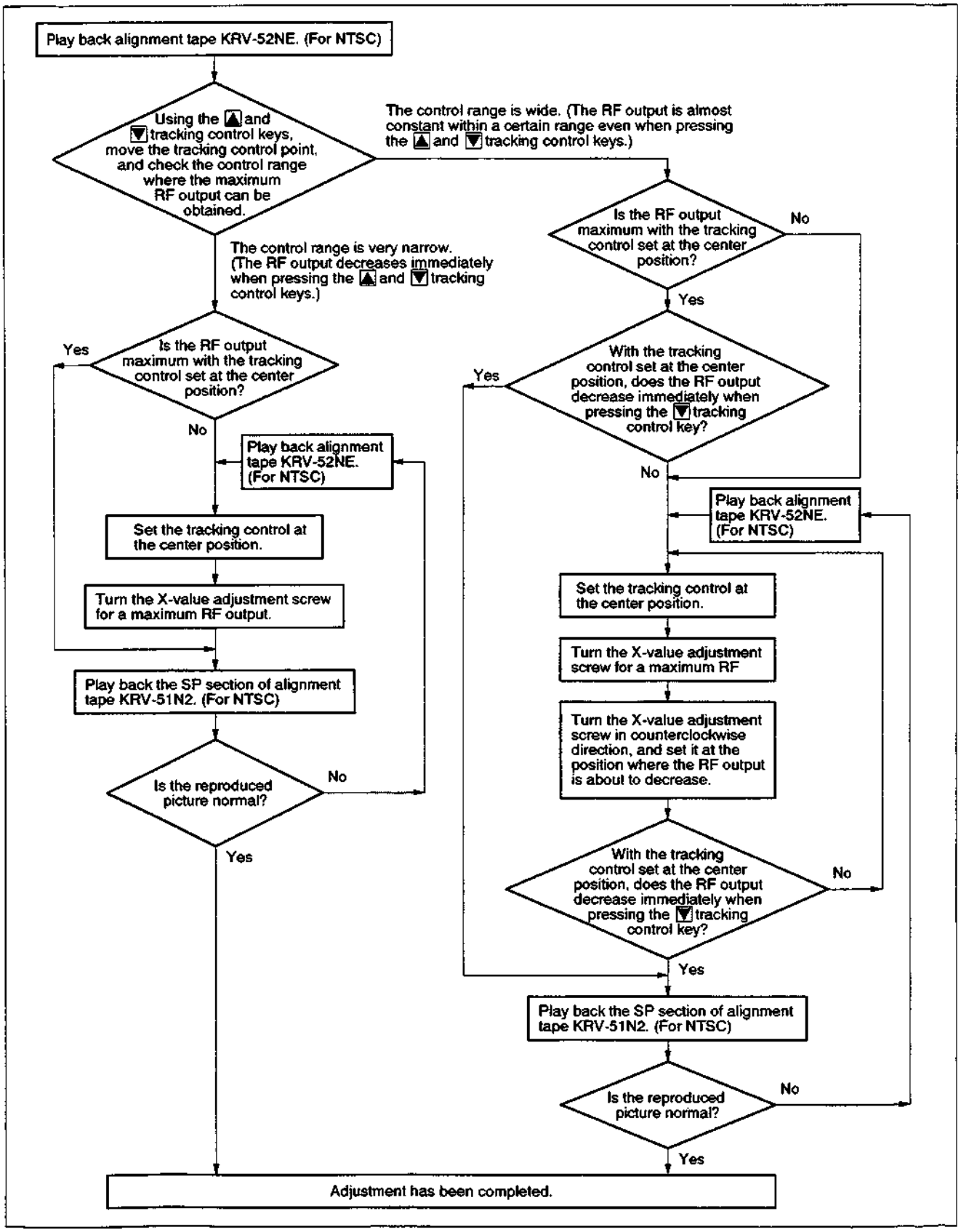




RF output shall be maximum at the center position of the tracking control.

[Adjustment Method]
Set the tracking control at the center position. For the VCRs equipped with narrow gap video heads, set the X-value adjustment screw where a maximum RF output is obtained. For the VCRs equipped with wide gap video heads, set the X-value adjustment screw both where a maximum RF output is obtained and where the RF output decreases immediately when the ▼ tracking control key is pressed.

X-VALUE ADJUSTMENT (Using the tape having no version No.)



When adjustment is complete, adjust the height of No. 3 and No. 6 guide rollers on page 10.

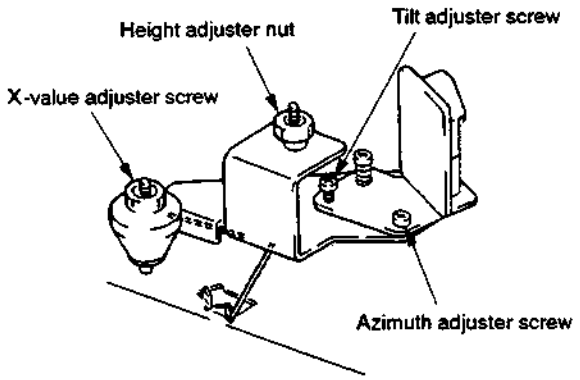
2-2. ADJUSTMENT USING ALIGNMENT TAPE (KRV-52NE for NTSC having the version No.)

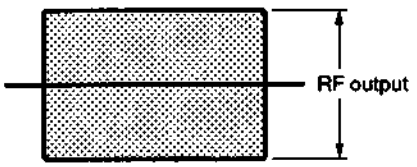
2-2-1. X-VALUE ADJUSTMENT (Using the tape having the version No.)

Purpose: To obtain compatibility with other VCRs.

Precaution: Before starting to adjust X-value, set the tracking control at the center position. To set the tracking control at the center position for the VCRs equipped with the ▲ and ▼ tracking control keys, press both the ▲ and ▼ tracking control keys at the same time. For the VCRs not equipped with the tracking control keys, deactivate the automatic tracking control by pressing the tracking AUTO/MANUAL key on the remote control unit during threading operation (after a tape is inserted but before the VCR starts playing back the tape).

Mode	Playback
Signal	Alignment tape KRV-52NE (For NTSC having the version No.)
Measuring instrument	Oscilloscope TIM/DIV: 2ms Trigger source: CH2 Trigger slope: +
Measuring point	CH-1: Connector PB RF pin for RF PC board check CH-2: Connector RF SWP pin for RF PC board check
Adjustment locations	X-value adjuster screw



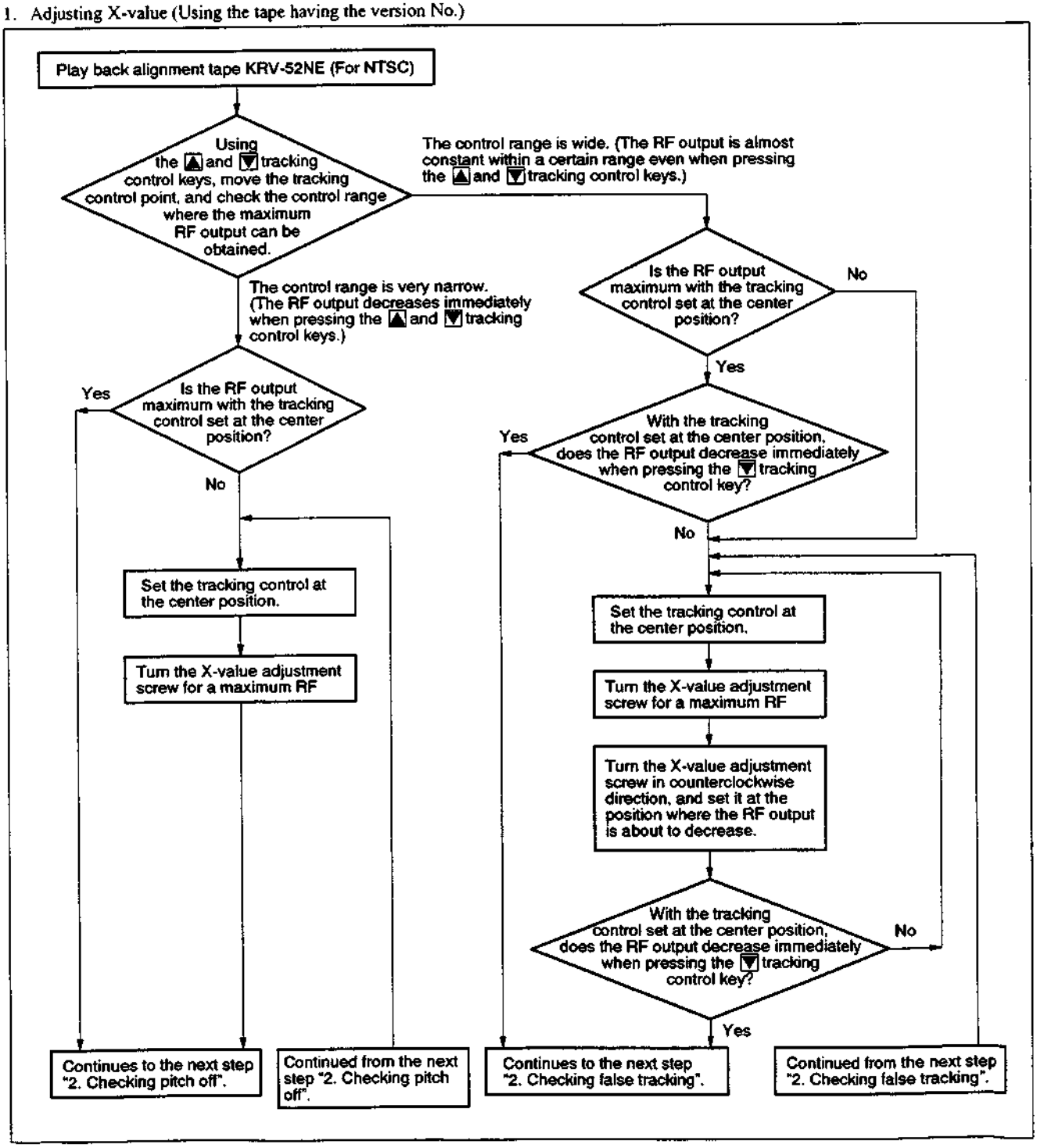


RF output shall be maximum at the center position of the tracking control.

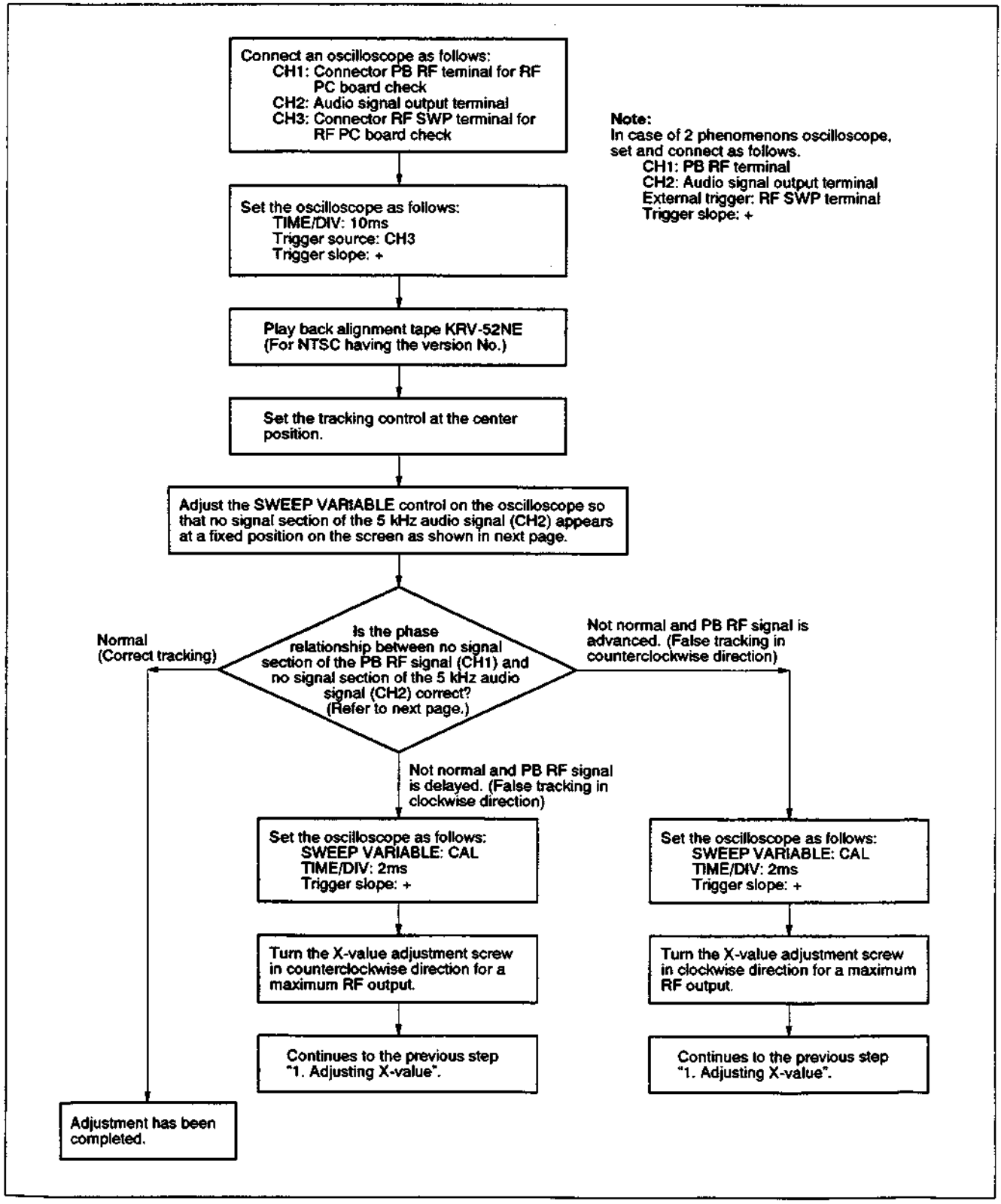
[Adjustment Method]

Set the tracking control at the center position. For the VCRs equipped with narrow gap video heads, set the X-value adjustment screw where a maximum RF output is obtained. For the VCRs equipped with wide gap video heads, set the X-value adjustment screw both where a maximum RF output is obtained and where the RF output decreases immediately when the ▼ tracking control key is pressed.

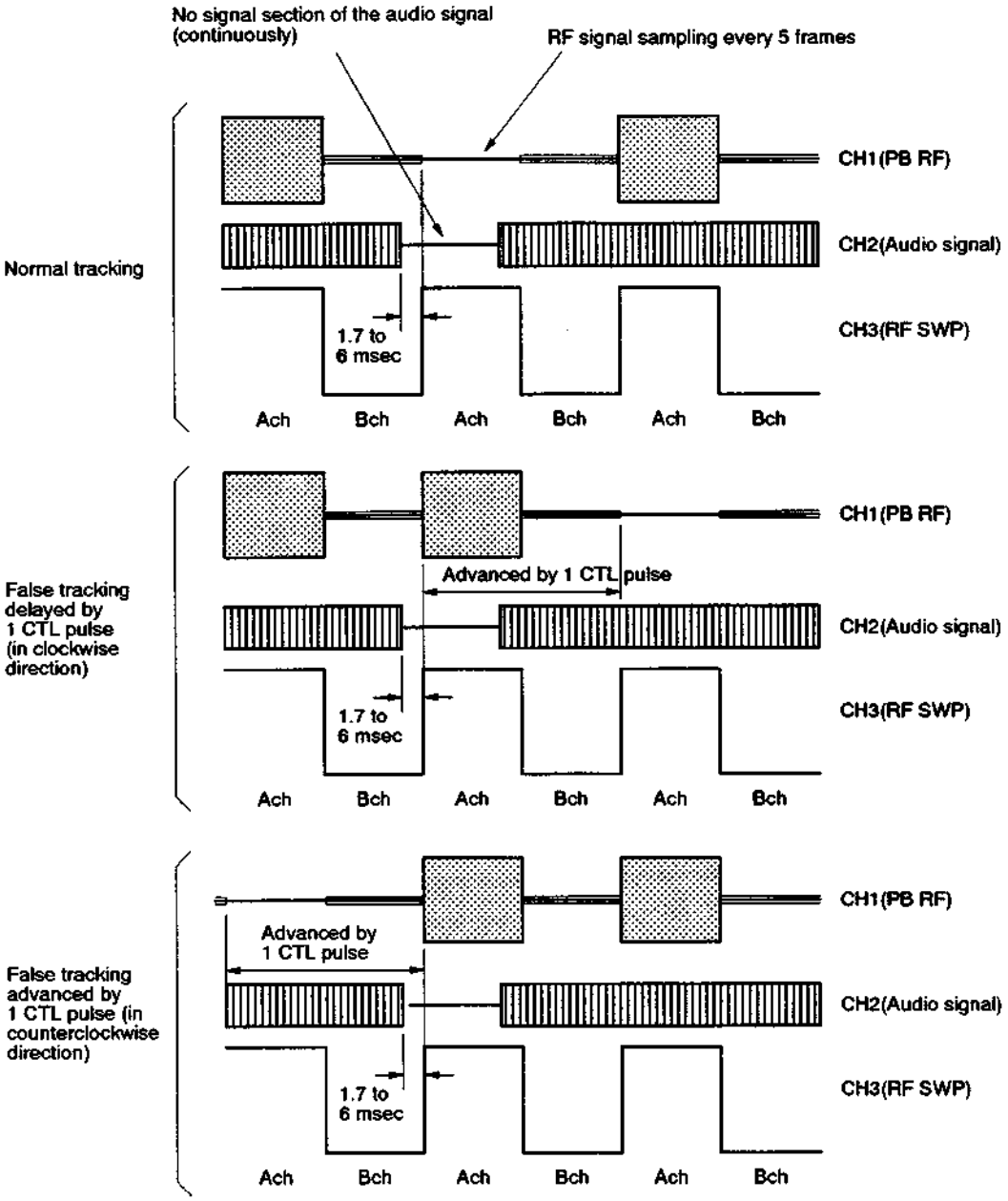
1. Adjusting X-value (Using the tape having the version No.)



2. Checking false tracking (Using the tape having the version No.)



Using the tape having the version No.



2-3. ADJUSTING THE MECHANISM USING ALIGNMENT TAPE (KRV-52NE for NTSC)

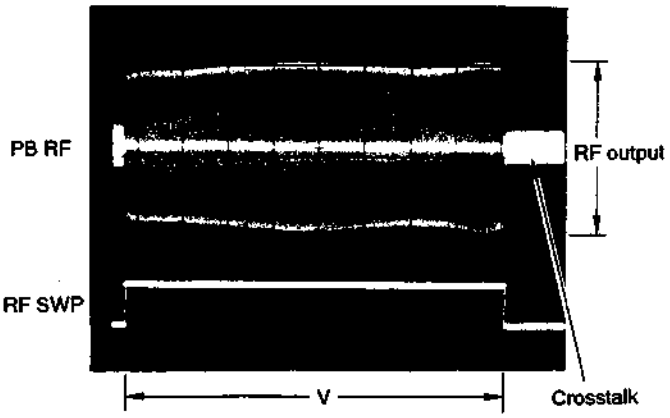
2-3-1. HEIGHT ADJUSTMENT OF GUIDE ROLLERS NO. 3 AND NO. 6

Mode	Playback
Signal	Alignment tape KRV-52NE (For NTSC)
Measuring instrument	Oscilloscope TIM/DIV: 2ms Trigger source: CH2 Trigger slope: +
Measuring point	CH-1: Connector PB RF pin for RF PC board check CH-2: Connector RF SWP pin for RF PC board check
Adjustment locations	Height adjustment screw for No.3 tape guide roller Height adjustment screw for No.6 tape guide roller

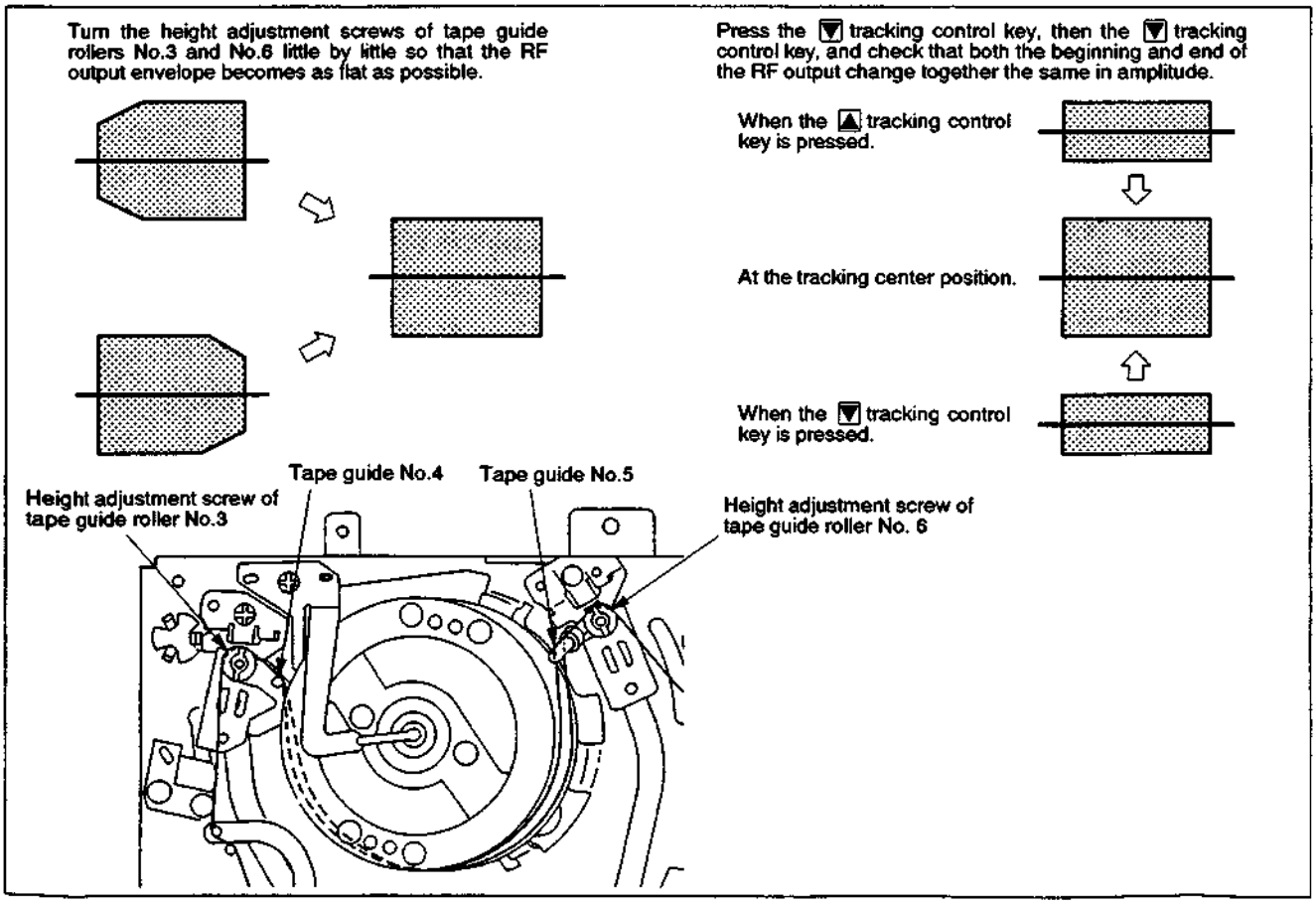
[Adjustment Method]

The following adjustment shall be carried out after completed Section 2-1-1 "X-value adjustment and check".

1) Deactivate the automatic tracking control, and set the tracking control at the center position. To set the tracking control at the center position for the VCRs equipped with the ▲ and ▼ tracking control keys, press both the ▲ and ▼ tracking control keys at the same time. For the VCRs not equipped with the tracking control keys, deactivate the automatic tracking control by pressing the tracking AUTO/MANUAL key on the remote control unit during threading operation (after a tape is inserted but before the VCR starts playing back the tape).
2) Check if the RF output changes in amplitude by pressing the tracking control key. The RF output should change periodically (changes from a minimum amplitude to a maximum amplitude, and to the minimum amplitude again).



3) Turn the height adjustment screws of tape guide rollers No.3 and No.6 so that the RF output envelope becomes as flat as possible.
4) Press the ▲ tracking control key, and check that both the beginning and end of the RF output change together the same in amplitude.
5) Press the ▼ tracking control key, and check that both the beginning and end of the RF output change together the same in amplitude.



2-3-2. ACE HEAD ASSEMBLY ADJUSTMENT (ROUGH ADJUSTMENT) (Figs. 2-1 and 2-2)

Purpose: Allows the tape to make even contact with the head for recording and playback of the specified track.

Mode	Playback
Jig	Blank tape
Adjustment locations	Height adjuster nut, Tilt adjuster screw

[Adjustment Method]

1) Mount the ACE head assembly. At this time, adjust the height so that the height of guide flange No. 7 matches the level of the lower edge of the control head.
2) Remove the adjustment tool and load a new tape, then set the unit for playback.
3) Check that the tape does not curl or rise up noticeably near the ACE head.
4) If the tape curls up or rises noticeably, readjust the tilt adjuster screw and the height adjuster nut.
   (The height of the ACE head should be adjusted so that the lower edge of the tape is approx. 0.1 to 0.15 mm from the control head.)
5) Perform precision adjustment.

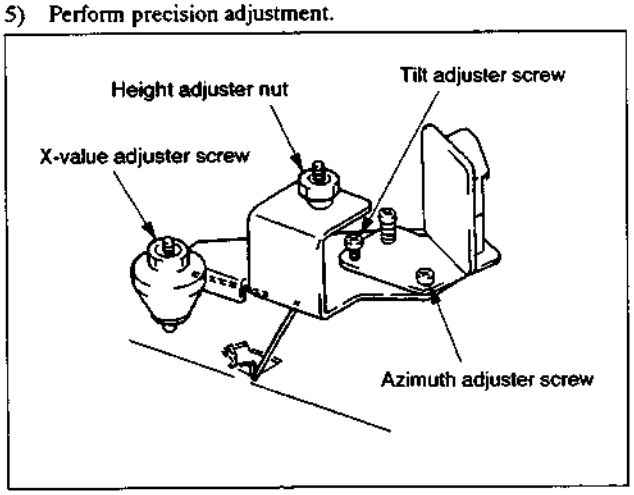


Fig. 2-1

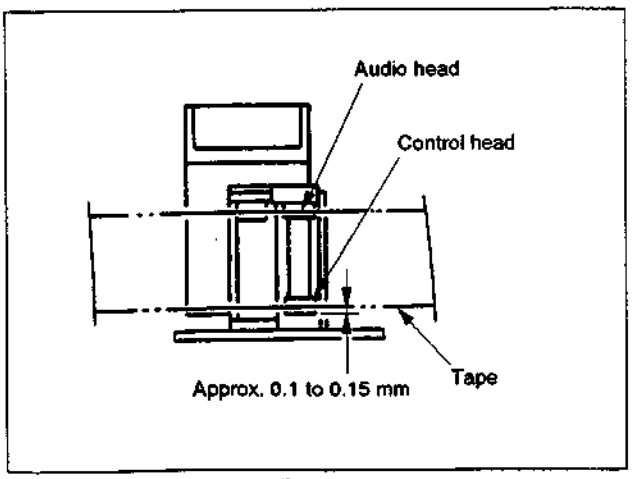


Fig. 2-2

2-3-3. ACE HEAD ASSEMBLY ADJUSTMENT (PRECISION ADJUSTMENT)

Mode	Playback
Signal	Alignment tape (KRV-52NE 5 kHz) (For NTSC)
Measuring instrument	Oscilloscope
Measuring point	Audio output terminal
Adjustment locations	Azimuth adjuster screw, Height adjuster nut, Tilt adjuster screw

[Adjustment Method]

1) Adjust the tilt adjuster screw in the FWD or REV mode so that the lower flange of guide No. 7 does not curl up or rise.
2) Alternately adjust the azimuth adjuster screw, the height adjuster nut, and the tilt adjuster screw to maintain even audio output at maximum with minimum deviation.

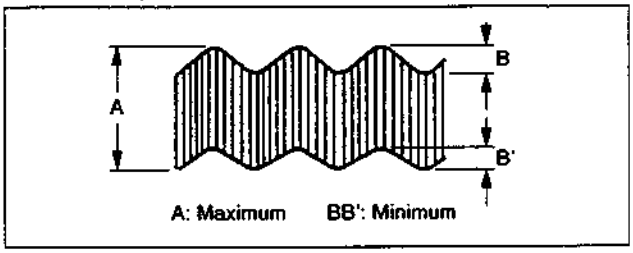


Fig. 2-3

2-3-4. ADJUSTMENTS AFTER REPLACING THE DRUM (VIDEO HEAD)

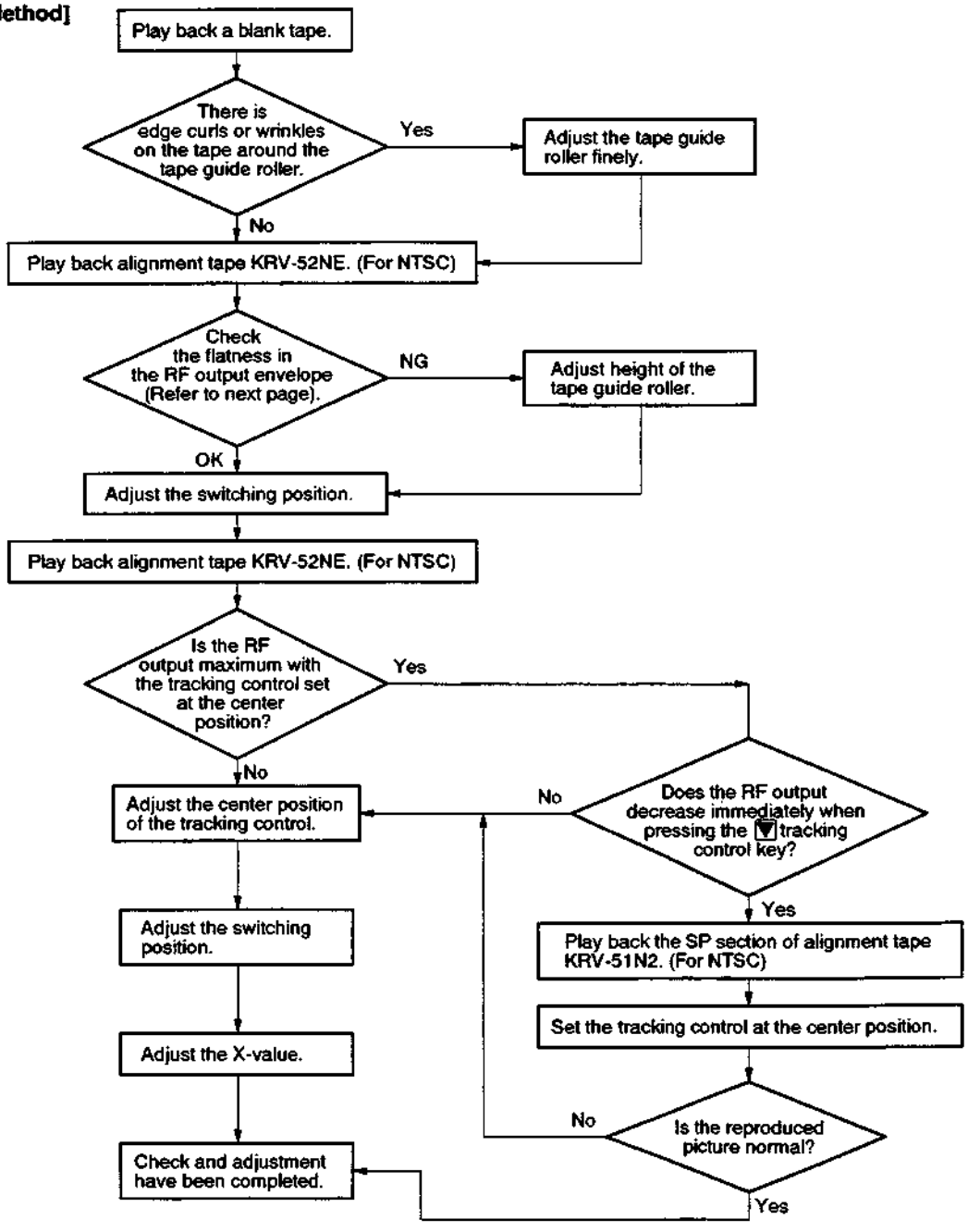
Purpose: Co-relative height, X-value and other factors of the drum will deviate from those of the guide roller. If the drum is replaced properly, these deviations are extremely small.

Note 1: Deactivate the automatic tracking control for setting the mechanism in manual tracking control mode.

Note 2: To set the tracking control at the center position, deactivate the automatic tracking control by pressing the tracking AUTO/MANUAL key on the remote control unit during threading operation (after a tape is inserted but before the VCR starts playing back the tape).

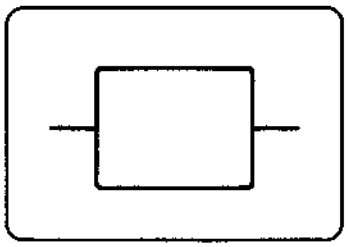
Mode	Playback
Signal	Alignment tape KRV-52NE (For NTSC), blank tape
Measuring instrument	Oscilloscope
Measuring point	CH-1: Connector PB RF pin for RF PC board check. CH-2: Connector RF SWP pin for RF PC board check.
Adjustment locations	Guide roller (Refer to 2-3-1.) Switching position (Refer to the Service Manual) X-value (Refer to 2-1-1, 2-1-2.)

[Adjustment Method]

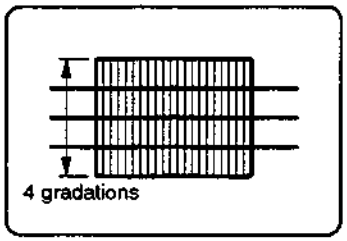


[Checking the evenness and fluctuation of the RF output]

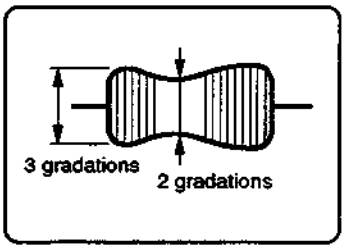
1) Set the RF output to the maximum level using the tracking buttons.



2) Perform fine adjustment of the voltage level range of the oscilloscope, then adjust the RF output deviation to within 4 gradations.



3) Press the tracking buttons and adjust the maximum amplitude of the RF output to within 3 gradations.
4) At this time, check if the minimum amplitude is more than 2 gradations.



5) Check that the RF output fluctuation between minimum and maximum levels is within 13%.

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VHS MECHANICAL ADJUSTMENT MANUAL IV

SONY
SERVICE MANUAL

H MECHANISM

SUPPLEMENT-2

File this supplement with the VHS mechanical adjustment IV and supplement-1.

TABLE OF CONTENTS

1. CORRECTION

In the VHS Mechanism Adjustment Manual IV (Supplement-1), an adjustment sequence was wrong, and it is corrected as follow;

1-1. Adjustment Sequence (VHS Mechanism Adjustment Manual IV (Supplement-1) Page 6 to 11)

(1) Adjustment of No. 3 and No. 6 guide roller height
Delete the "The following adjustment shall be carried out after completed Section 2-1-1 "X-value adjustment and check" under "Adjustment Method" on page 10.

(2) Adjustment of ACE head assembly

Note: In the adjustment of ACE head assembly (coarse adjustment and fine adjustment), if a azimuth, height and tilt were adjusted, again adjust the height of No. 3 and No. 6 guide rollers.

(3) Adjustment of X value

2. MODIFICATION

2-1. CHANGING THE RECORDED CONTENTS OF ALIGNMENT TAPE

KRV-52NE (NTSC) (Ver. 1.2)

Time	Video	Audio
20 min.	Recording only at 1 MHz, A-ch. EP mode RF skipping once per 5 frames	5 kHz → 4 kHz full tracks

2-2. TG2 ROLLER, FE HEAD ASSEMBLY (Refer to VHS Mechanical Adjustment Manual IV page14)

- The TG2 roller is provided with either of two types, fixed or straight. For the fixed type, section 3-5 is added.

3-5. TG2 ROLLER, FE HEAD ASSEMBLY (Fig. 3-5)

1) Remove screw ① to pull out FE head assembly ②.

[Note on Mounting]

- Keep clean the surface contacts tape of TG2 roller.

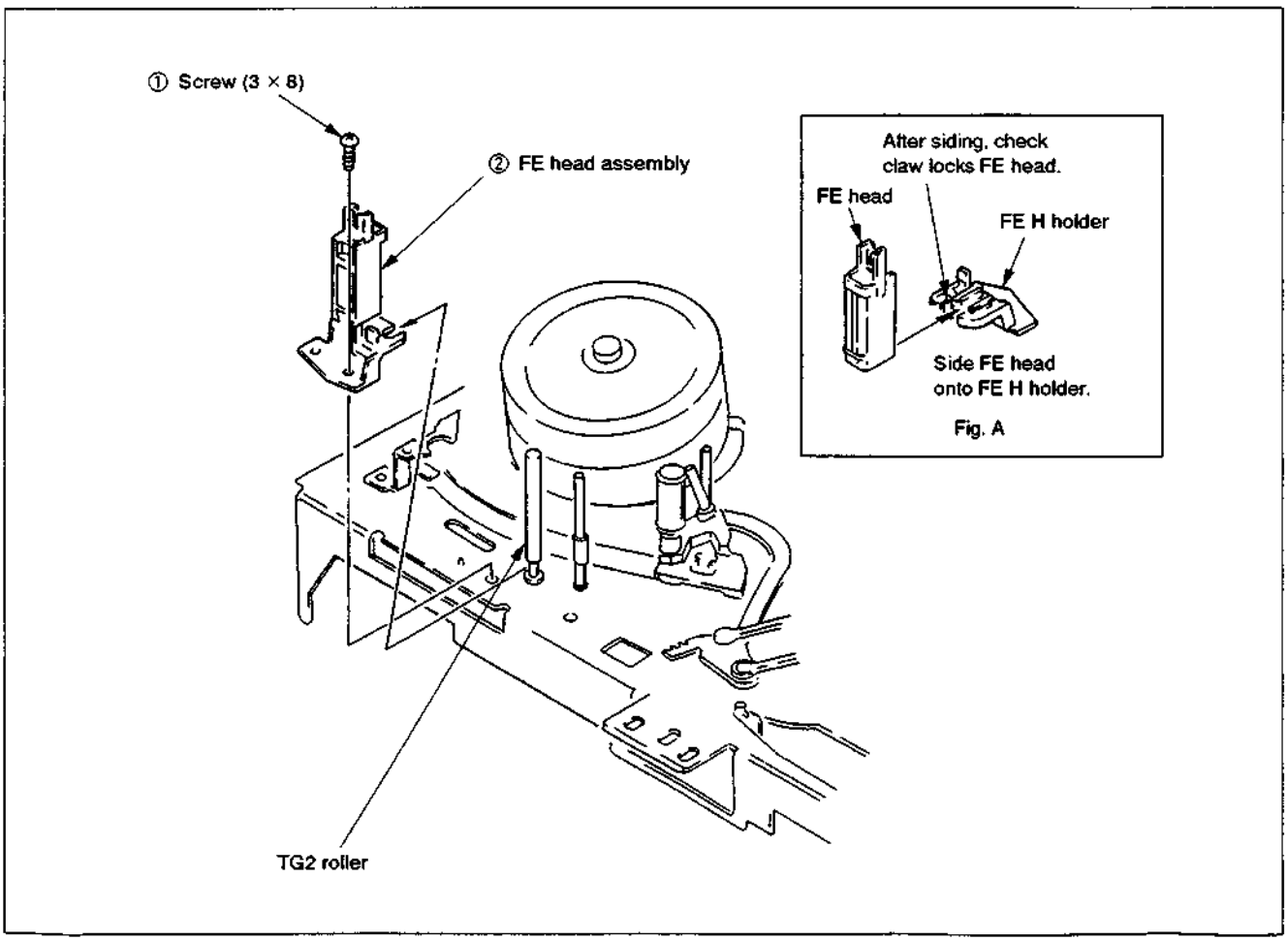

Fig. 3-5

2-3. TG3, TG6 GUIDE ROLLER ASSEMBLIES (Refer to VHS Mechanical Adjustment Manual Ⅳ page 17)

- There is another type in TG3 and TG6 guide roller assemblies, which is not attached with a screw (B2X3). For the screwless type, section 3-8 is added.

3-8. TG3, TG6 GUIDE ROLLER ASSEMBLIES (Fig. 3-8)

1) TG3 guide roller assembly ① by turning it in arrow Ⓐ direction.
2) Removal the spring ②.
3) TG6 guide roller assembly ③ by turning it in arrow Ⓑ direction.
4) Removal the spring ④.

[Note on Mounting]

- Keep clean the surface contacts tape of TG3 and TG6 guide roller assemblies ①, ③.

[Adjustment after Mounting]

- 4-1. Tape path adjustment.

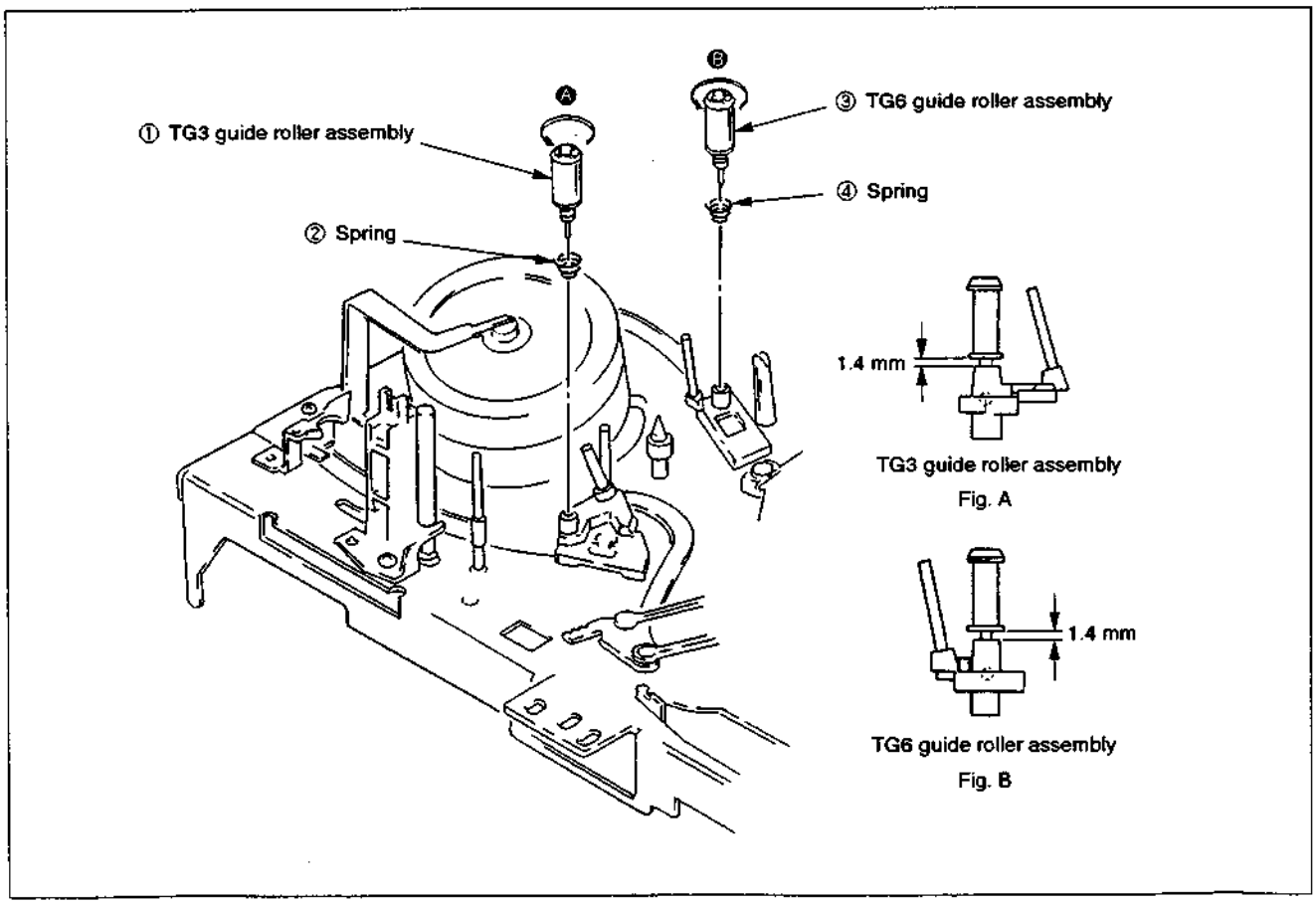

Fig. 3-8

2-4. TG8 ASSEMBLY (Refer to VHS Mechanical Adjustment Manual Ⅳ page 23)

- As the shape of TG8 assembly was changed, Section 3-13 is changed.

☛ : Chenged portion

3-13. TG8 ASSEMBLY (Fig. 3-15)

1) Remove TG7 tape retainer ① to pull out TG8 assembly ②.

[Note on Mounting]

- Apply FLOIL SG-055G (Jig Ref. No. J-12) to ☆ marked portion.
- Keep clean the surface contacts tape of TG8 assembly ②.
- Be careful not to change the shape of TG7 tape retainer ①.
- After attaching the TG7 tape retainer ①, check that side Ⓐ of ① is below side Ⓑ of the stepped-part of the TG7 shaft. (Fig. A)

[Adjustment after Mounting]

- 4-1. Tape path adjustment.

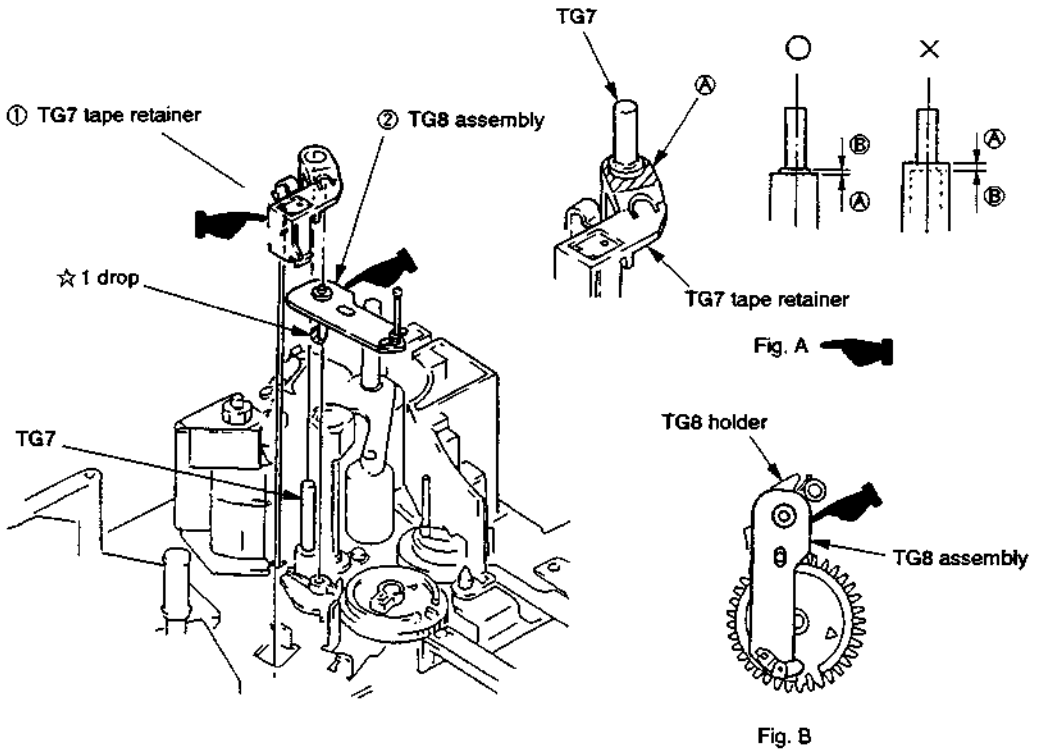

Fig. 3-15

2-5. TENSION REGULATOR (TG1) POSITION/ TENSION ADJUSTMENT (Refer to VHS Mechanical Adjustment Manual IV page 35)

- As the tension regulator position and tension adjustment were changed, the tension adjustment and Fig. 4-1 are changed.

☛ : Changed portion

• Tension adjustment

Mode	Playback
Measuring instrument/tool	Torque cassette
Adjustment locations	Position for hooking the tension spring
Specified value	34 ± 4 g•cm ☛

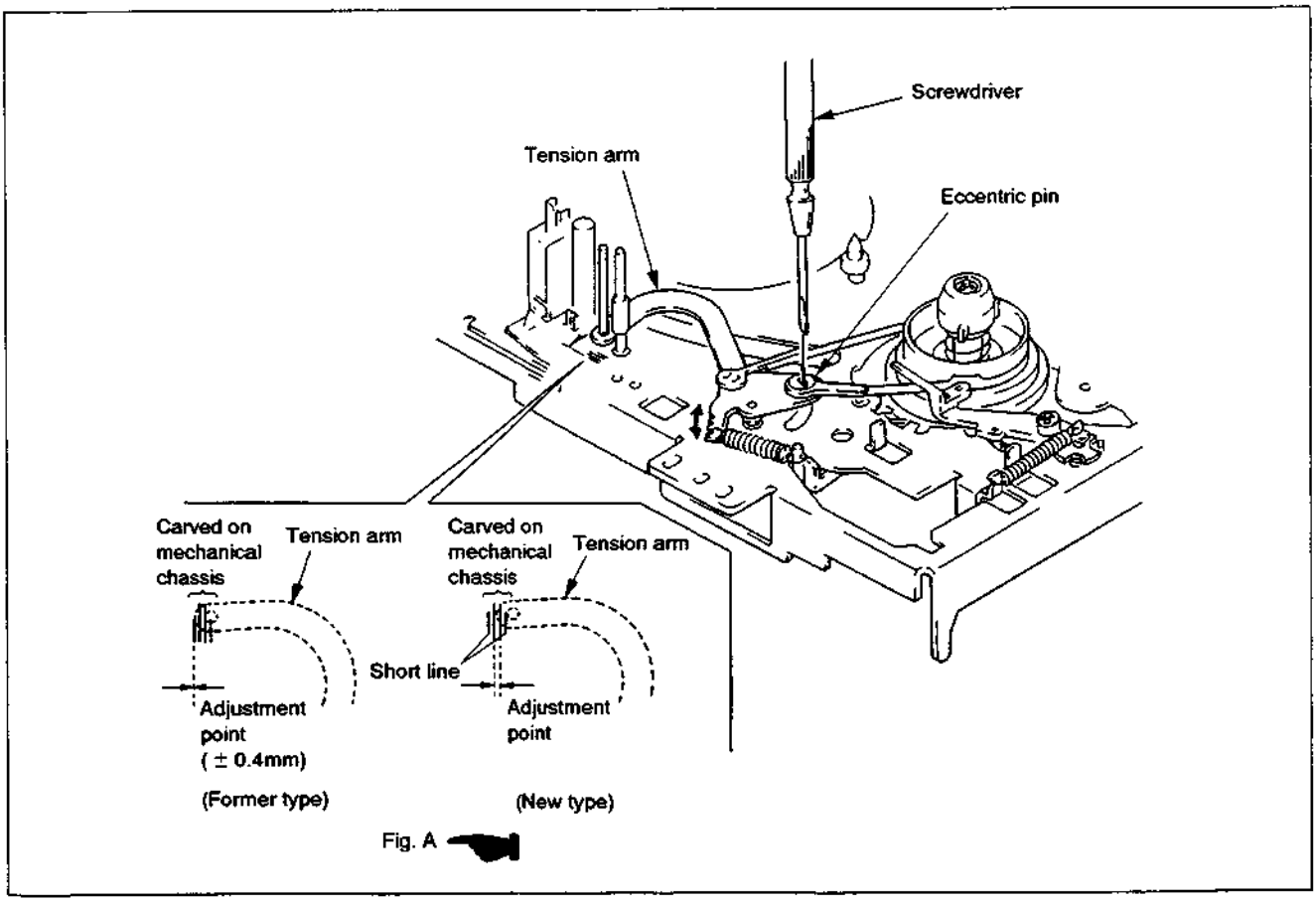

Fig. 4-1

2-6. TG8 GUIDE ROLLER HEIGHT ADJUSTMENT (Refer to VHS Mechanical Adjustment Manual IV page 36)

- As the use of TG8 height adjusting screw was cancelled, section 4-1-2 is changed.

4-1-2. TG7 TAPE PATH ADJUSTMENT (Fig. 4-2)

[Adjustment Method]

1) Load a tape, and playback the tape in the CUE mode, confirm the distance between lower flange of No. 7 guide roller and lower side of tape (Fig. A).
2) Then, feeding the tape in the REV mode, confirm the distance between lower flange of No. 7 guide roller and lower side of tape.
3) If the tape height in the REV feed is higher that in the CUE playback (Fig. B), rotate the ACE head flapping adjust screw in the direction Ⓐ so that a difference in tape height between CUE mode and REV mode becomes zero.
4) If the tape height in the REV feed is lower that in the CUE playback (Fig. C), rotate the ACE head flapping adjust screw in the direction Ⓑ so that a difference in tape height between CUE mode and REV mode becomes zero.

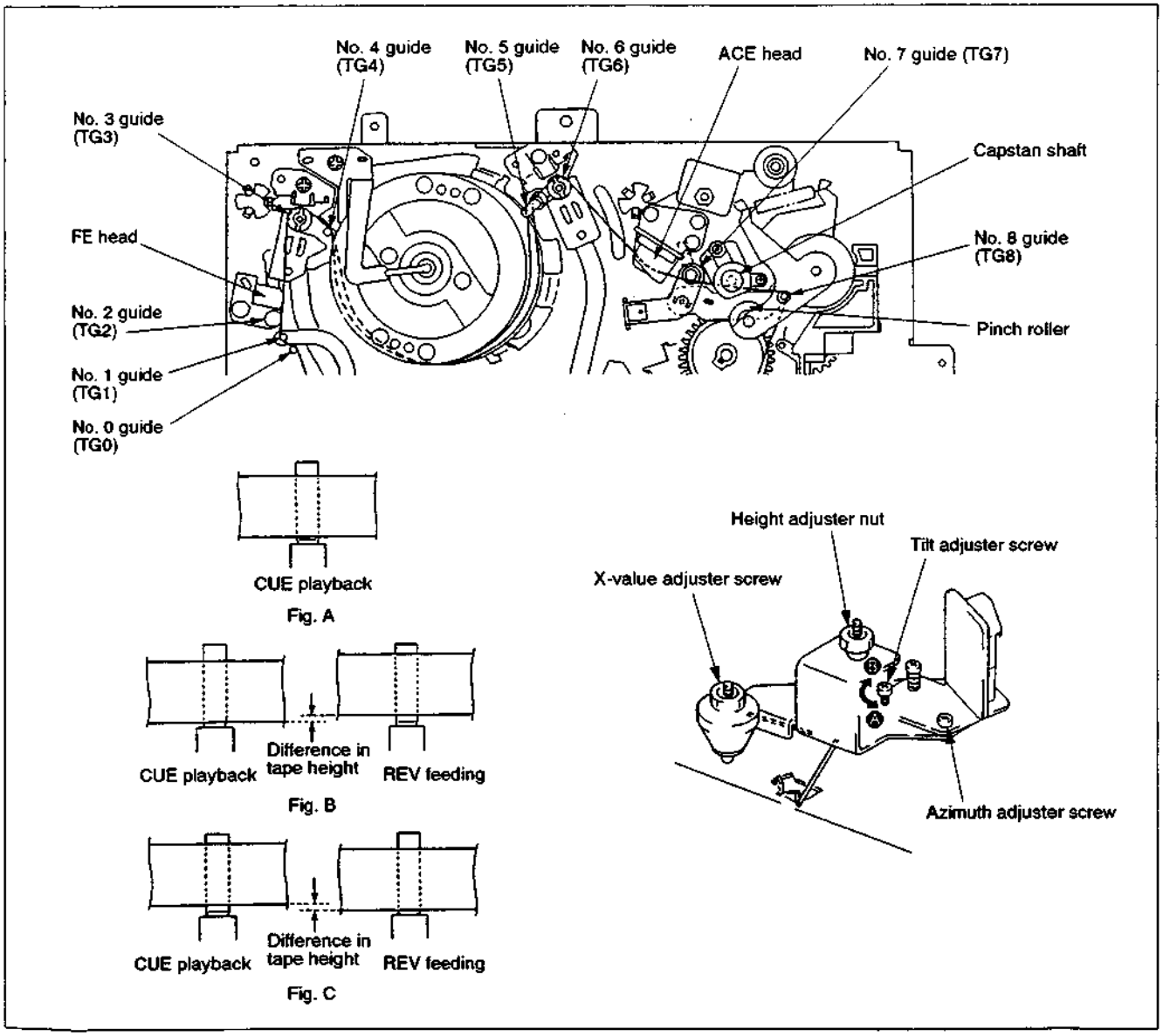

Fig. 4-2

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