SLV-495/495PX/675HF/675HFPX/676HF/685HF/695HF/L40CS/L40MX/L40PA/L50CS/L50MX/L50PA/L60HFCS/L60HFMX/L60HFPA/L70HFCS/L70HFMX/L70HFPA/X5MX/X6HFMX
RMT-V198C/V201A/V202A/V203/V203A/V203B

SERVICE MANUAL

Photo : SLV-675HF

VHS

H MECHANISM

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

US Model
SLV-495/675HF/676HF/685HF/695HF

Canadian Model
SLV-495/675HF/695HF

Mexican Model
SLV-L40MX/L50MX/L60HFMX/ L70HFMX/X5MX/X6HFMX

Panamanian Model
SLV-L40PA/L50PA/L60HFPA/L70HFPA

Chilean Model
SLV-L40CS/L50CS/L60HFCS/L70HFCS

PX Model
SLV-495PX/675HFPX

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-forward 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 IN
VIDEO IN, phono jack
Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
AUDIO IN, phono jack
Input level. 327 mVrms
Input impedance: more than 47 kilohms
LINE OUT
VIDEO OUT, phono jack
Output signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
AUDIO OUT, phono jack
Standard output: 327 mVrms
Load impedance: 47 kilohms
Output impedance. less than 10 kilohms

Timer section

Clock
Quartz 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 1 hour at a time

General

Power requirements
See next page.
Power consumption
See next page.
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. 355 × 102 × 280 mm (w/h/d)
(Approx. 14 × 4 $^{1}/_{8}$ × 11 $^{1}/_{8}$ inches) including projecting parts and controls
Mass
Approx. 4.0 kg (8 lb 13 oz)

Supplied accessories

Remote commander (1)
Size AA (R6) batteries (2)
75-ohm coaxial cable with F-type connectors (1)
Audio/video cable (3 phono to 3 phono) (1) (HiFi model)
Plug adaptor (1) (Chilean, PX models)

Design and specifications are subject to change without notice.

VIDEO CASSETTE RECORDER

MICROFILM

992162811

SONY

• **DIFFERENT SPECIFICATIONS LIST**

SPECIFICATION \ MODEL	SLV-495	SLV-495PX	SLV-675HF	SLV-676HF	SLV-675HFPX	SLV-685HF	SLV-695HF
AUDIO SYSTEM	MONAURAL		HiFi-STEREO			HiFi-STEREO	
TUNER AUDIO (STEREO) SYSTEM	—		SAP			SAP	
VCR+ SYSTEM	BUILT-IN		—			BUILT-IN	
LINE 2 INPUT	BUILT-IN		—			BUILT-IN	
BODY COLOR	BLACK		BLACK	GRAY	BLACK	BLACK	
DUAL MODE SHUTTLE	—		—			—	
POWER REQUIREMENTS	120V AC 60Hz	110-240V AC 50/60Hz	120V AC 60Hz		110-240V AC 50/60Hz	120V AC 60Hz	
POWER CONSUMPTION	23W		24W			24W	
REMOTE COMMANDER	RMT-V203A		RMT-V203			RMT-V203A	RMT-V202A

SPECIFICATION \ MODEL	SLV-L40CS	SLV-L40MX	SLV-L40PA	SLV-L50CS	SLV-L50MX	SLV-L50PA	SLV-X5MX
AUDIO SYSTEM	MONAURAL			MONAURAL			
TUNER AUDIO (STEREO) SYSTEM	—			—			
VCR+ SYSTEM	—			—			
LINE 2 INPUT	—			BUILT-IN			
BODY COLOR	BLACK			BLACK			GRAY
DUAL MODE SHUTTLE	—			BUILT-IN			
POWER REQUIREMENTS	110-240V AC 50/60Hz	120V AC 60Hz		110-240V AC 50/60Hz	120V AC 60Hz		
POWER CONSUMPTION	18W			18W			
REMOTE COMMANDER	RMT-V198C			RMT-V201A			

SPECIFICATION \ MODEL	SLV-L60HFCS	SLV-L60HFMX	SLV-L60HFPA	SLV-X6HFMX	SLV-L70HFCS	SLV-L70HFMX	SLV-L70HFPA
AUDIO SYSTEM	HiFi-STEREO				HiFi-STEREO		
TUNER AUDIO (STEREO) SYSTEM	SAP				SAP		
VCR+ SYSTEM	—				—		
LINE 2 INPUT	—				BUILT-IN		
BODY COLOR	BLACK			GRAY	BLACK		
DUAL MODE SHUTTLE	—				BUILT-IN		
POWER REQUIREMENTS	110-240V AC 50/60Hz	120V AC 60Hz			110-240V AC 50/60Hz	120V AC 60Hz	
POWER CONSUMPTION	19W				19W		
REMOTE COMMANDER	RMT-V203B				RMT-V201A		

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 IDENTIFÉS 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 PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS 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.

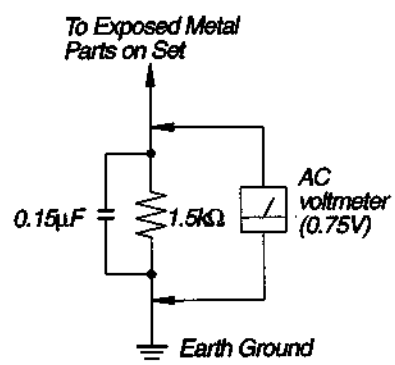


Fig. A. Using an AC voltmeter to check AC leakage.

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 0.5mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA TW-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. HOW TO RETURN THE PINCH ROLLER, GUIDE ROLLER AND ELEVATOR CAM TO STOP MODE

1) Remove the VHS MD assembly from the machine. (Refer to section 2-4. Removal.)
2) Rotate the worm gear-1 of the cam motor beneath the MD assembly in the direction arrow Ⓐ using a screw driver tip.

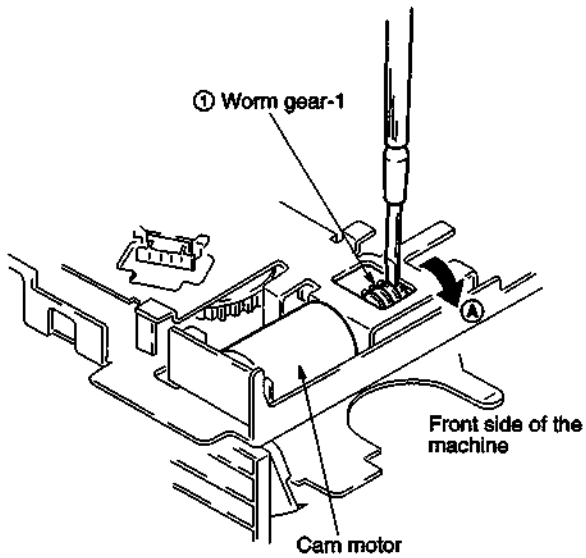


Fig. 1

2. HOW TO RETURN A TAPE INTO CASSETTE HALF

A tape can be rewound into a cassette half by rotating the flywheel-1 of the capstan motor in the direction of Ⓐ with hand.

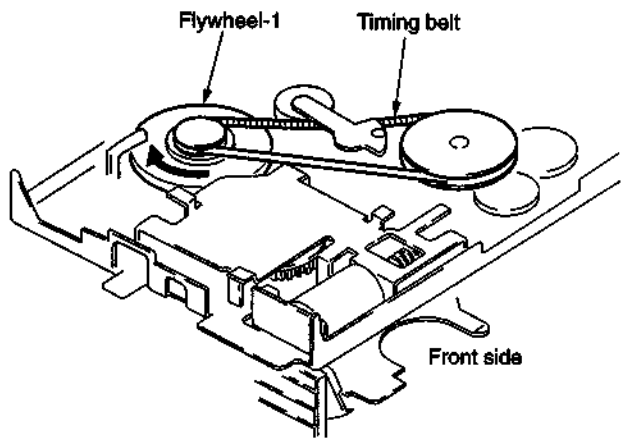


Fig. 2

3. HOW TO REMOVE A CASSETTE FROM A MACHINE IF A CASSETTE IS LEFT IN A MACHINE IN TROUBLE

Execute the section 2, and keep rotating the flywheel-1.

When executing section 1 to 3, take care that a tape slack should not be caught by a mechanism or a tape should not be damaged.

4. HOW TO REMOVE DRUM ASSEMBLY

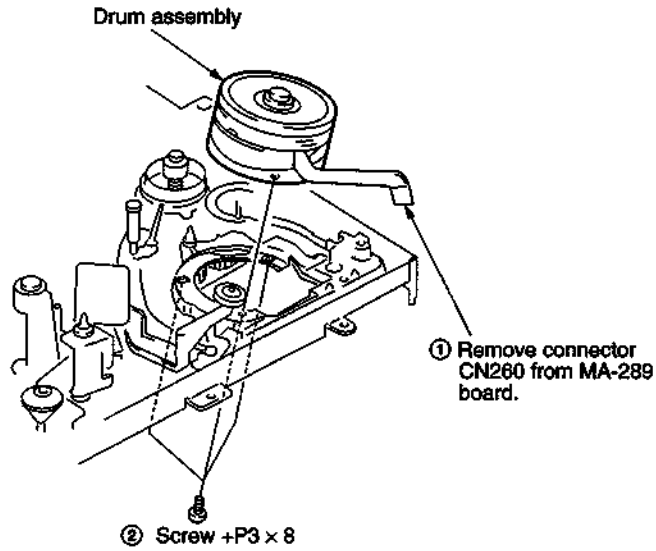


Illustration : SLV-675HF/676HF/675HFPX/685HF/695HF/
L60HFCS/L60HFMX/L60HFPA/X6HFMX/L70HFCS/
L70HFMX/L70HFPA

Fig. 3

5. HOW TO REPLACE A ROTARY UPPER DRUM (SLV-675HF/676HF/ 675HFPX/685HF/695HF/L60HFCS/ L60HFMX/L60HFPA/X6HFMX/ L70HFCS/L70HFMX/L70HFPA)

5-1. HOW TO REMOVE A ROTARY UPPER DRUM

1) Remove screw ① (+P3×8) and remove the ground shaft assembly ②. (Refer to Fig. 4.)
2) Remove soldering which is marked by arrow and remove the rotary upper drum board completely.
3) Remove two screws ③ (PSW3×8) and remove the rotary upper drum in the direction of Ⓐ. (Refer to Fig. 5.)
   If removal is difficult, remove it while rotating it slowly.

Note: If removal is difficult, check again if soldering is removed completely.

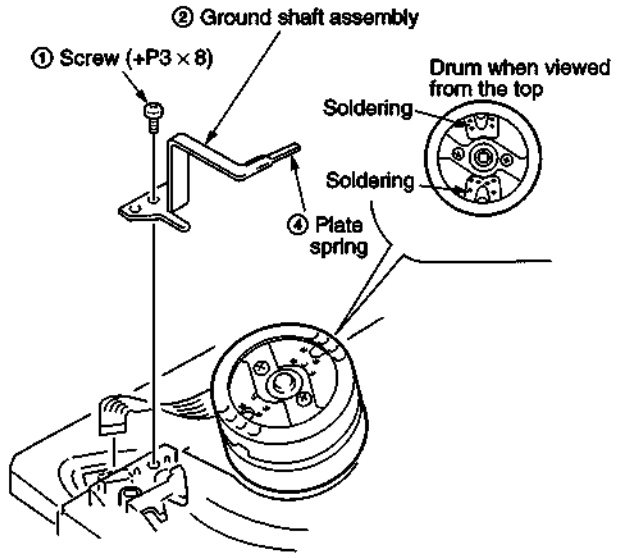


Fig. 4

5-2. HOW TO ATTACH A NEW ROTARY UPPER DRUM

1) Pay attention so that finger print or like must not be put when inserting a new upper drum into lower drum.
2) Align ➡ mark of the rotary upper drum board with the ⇒ mark of the rotary transformer board so that the screw hole on the upper drum and that on the lower drum are aligned. (Refer to Fig. 5.)
3) If attaching is difficult, attach a upper drum while rotating it slowly.

Note: Pay attention not to damage the video heads.
Confirm that the upper drum is inserted completely.

4) Tighten the two screws ③ (PSW3×8). (Refer to Fig. 5.)
5) Fix the earth shaft ② by tightening the screw ① (+P3×8) so that protrusion at the tip of the earth shaft contacts the center of the drum shaft.

Note: When attaching the ground shaft assembly ②, never give force to the plate spring ④.

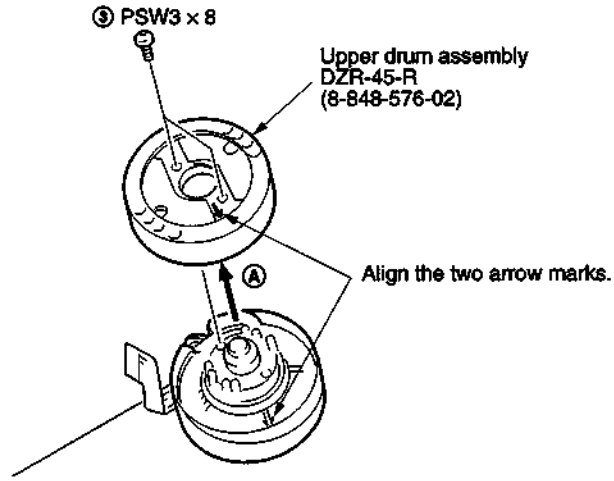


Fig. 5

9-921-628-11

Sony Corporation
Home A&V Products Company

97A1637-1
Printed in Japan
Published by Quality Engineering Dept.
(Osaki East)

SECTION 1
GENERAL

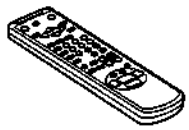
This section is extracted from the SLV-675HF/675HFPX/676HF instruction manual.

Step 1

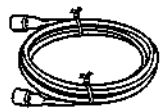
Unpacking

Check that you have received the following items with the VCR

- Remote commander

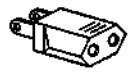


- 75-ohm coaxial cable with F-type connectors



- Size AA (R6) batteries

- Plug adaptor (SLV-675HF PX)



- Audio/video cable (3-phono to 3-phono)

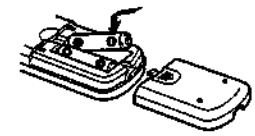
If the plug supplied with your VCR does not fit your power outlet, attach the supplied adaptor to the plug

Step 2

Setting up the remote commander

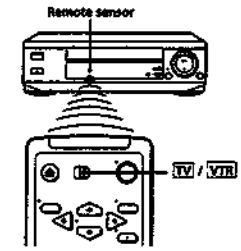
Inserting the batteries

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. Buttons on the remote commander marked with a dot (•) 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 about 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

continued

Step 2: Setting up the remote commander (continued)

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
Sony	01
Akai	04
AOC	04
Centurion	12
Coronado	03
Curtis-Mathes	12
Daytron	12
Emerson	03,04,14
Fisher	11
General Electric	06,10
Gold Star	03,04,17
Hitachi	02,03
J C Penny	04,12

Manufacturer	Code number
JVC	09
KMC	03
Magnavox	03,05,12
Marantz	04,13
MGA/Mitsubishi	04,12,13,17
NEC	04,12
Panasonic	06,19
Philco	03,04
Philips	05
Pioneer	16
Portland	03
Quasar	05,18
Radio Shack	05,14

Manufacturer	Code number
RCA	04,10
Sampo	12
Sanyo	13
Scott	12
Sears	07,10,11
Sharp	03,05,18
Sylvania	05,12
Teknika	03,05,14
Toshiba	07
Wards	03,04,12
Yorx	12
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 01 (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 input	Audio/video (A/V) hookup, then follow one of the hookups below.	Page 8
Antenna only, no cable TV	Hookup 1	Pages 9 and 10
Cable box with many scrambled channels	Hookup 2	Pages 11 and 12
No cable box or cable box with only a few scrambled channels	Hookup 3	Pages 13 and 14
Cable box with only a few scrambled channels, using an A/B switch	Hookup 4	Pages 15 and 16

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

Caution

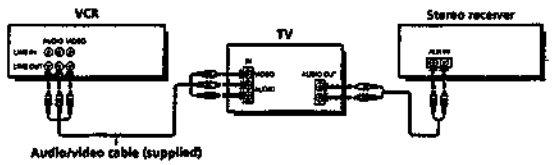
Connections between the VCR's VHF/UHF connector and the antenna terminals of the TV receiver should be made only as shown in the following instructions. Failure to do so may result in operation that violates the regulations of the Federal Communications Commission regarding the use and operation of RF 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

Audio/video (A/V) hookup Page 8

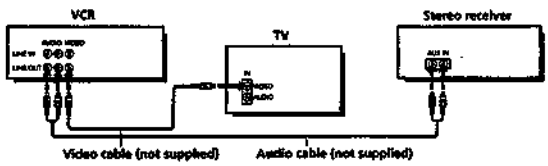
If your TV has audio/video (A/V) input jacks, you will get a better picture and sound if you hook up your VCR using these connections. In addition, for a true "home theater" experience, you should connect the audio outputs of your VCR or TV to your stereo system. If your TV doesn't have A/V inputs, see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

If 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 this page. 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



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.

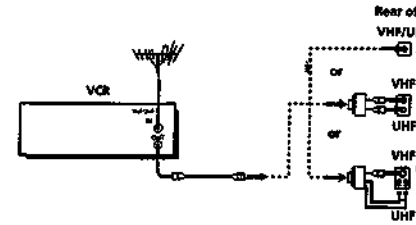
Note to CATV system installer (in USA)
This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as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

Hookup 1 Pages 9 and 10

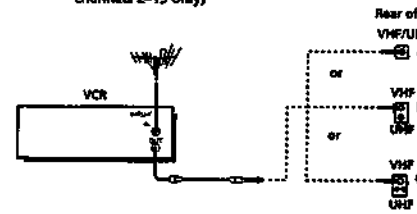
Antenna hookup

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)

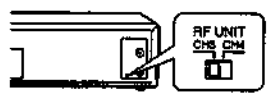


If you cannot connect your antenna cable to the VCR directly
If your antenna cable is a flat cable (300-ohm twin lead cable), attach an external antenna connector (not supplied) so you can connect the cable to the VHF/UHF IN connector. If you have separate cables for VHF and UHF antennas, you should use a U/V band mixer (not supplied). For details, see page 41.

Hookup 1: VCR setup

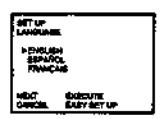
1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.

For details, see page 40. If you made A/V connections (page 8), you can skip this step.

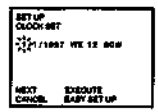


2 Press EASY SET UP on the VCR.

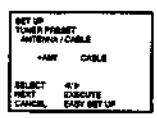
❶ The LANGUAGE menu appears. Change the on-screen display language to Spanish (ESPAÑOL) or French (FRANÇAIS) if desired, and press EXECUTE. For details, see page 17.



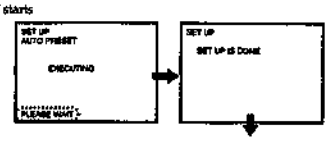
❷ The CLOCK SET menu appears. Set the clock and press EXECUTE. For details, see page 18.



❸ The TUNER PRESET menu appears. Set ANTENNA/CABLE to ANT and press EXECUTE. For details, see page 19.



❹ The AUTO PRESET starts.



Normal display

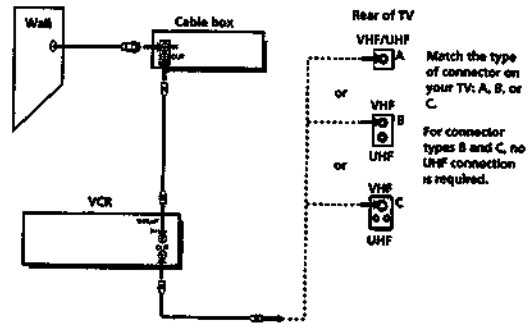
Hookup 2 Pages 11 and 12

Cable box with many scrambled channels

Recommended use
Use this hookup if your cable system scrambles all or most channels.

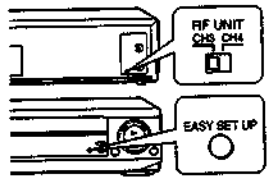
What you can do with this hookup
- Record any channel by selecting the channel on the cable box

What you can't do
- Record one channel while watching another channel



continued

Hookup 2: VCR setup



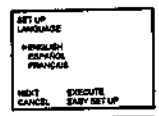
1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel

For details, see page 40. If you made A/V connections (page 8), you can skip this step.

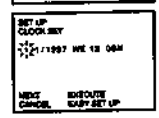
2 Turn on your cable box.

3 Press EASY SET UP on the VCR.

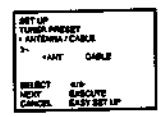
❶ The LANGUAGE menu appears. Change the on-screen display language to Spanish (ESPAÑOL) or French (FRANÇAIS) if desired, and press EXECUTE. For details, see page 17



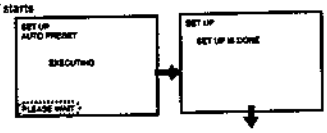
❷ The CLOCK SET menu appears. Set the clock and press EXECUTE. For details, see page 18



❸ The TUNER PRESET menu appears. Set ANTENNA/CABLE to ANT and press EXECUTE. For details, see page 19



❹ The AUTO PRESET starts



Normal display

Hookup 3 — Pages 13 and 14

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

Recommended use

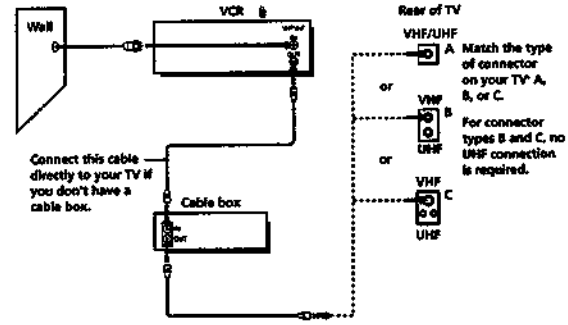
Use this hookup if you do not have a cable box. Also use this hookup if your cable system scrambles only a few channels.

What you can do with this hookup

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

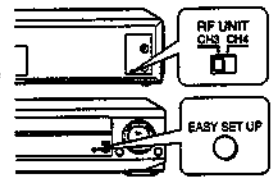
What you can't do

- Record scrambled channels that require a cable box



continued

Hookup 3: VCR setup



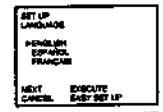
1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel

For details, see page 40. If you made A/V connections (page 8), you can skip this step.

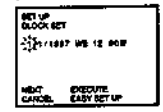
2 Turn on your cable box.

3 Press EASY SET UP on the VCR.

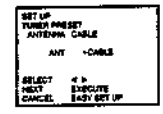
❶ The LANGUAGE menu appears. Change the on-screen display language to Spanish (ESPAÑOL) or French (FRANÇAIS) if desired, and press EXECUTE. For details, see page 17



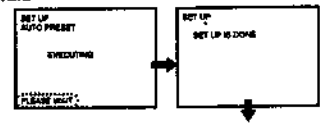
❷ The CLOCK SET menu appears. Set the clock and press EXECUTE. For details, see page 18



❸ The TUNER PRESET menu appears. Set ANTENNA/CABLE to CABLE and press EXECUTE. For details, see page 19



❹ The AUTO PRESET starts



Normal display

Hookup 4 — Pages 15 and 16

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

Recommended use

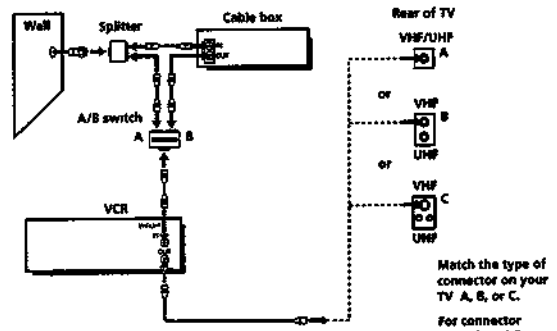
By using an A/B switch (not supplied), this hookup allows you to record both scrambled and unscrambled channels conveniently.

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

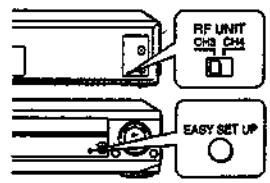
- Record one scrambled channel while watching another channel (the A/B switch is set to B)



continued

Step 3: Hookups (continued)

Hookup 4: VCR setup



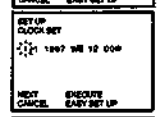
1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.

For details, see page 40. If you made A/V connections (page 8), you can skip this step.

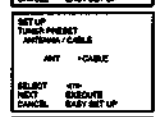
2 Set the A/B switch to "A".

3 Press EASY SET UP on the VCR.

❶ The LANGUAGE menu appears. Change the on-screen display language to Spanish (ESPAÑOL) or French (FRANÇAIS) if desired, and press EXECUTE. For details, see page 17.



❷ The CLOCK SET menu appears. Set the clock and press EXECUTE. For details, see page 18.



❸ The TUNER PRESET menu appears. Set ANTENNA/CABLE to CABLE and press EXECUTE. For details, see page 19.

❹ The AUTO PRESET starts.

Normal display

Cable box output channel

4 Preset the cable box output channel (usually 2, 3 or 4). For details, see page 21.

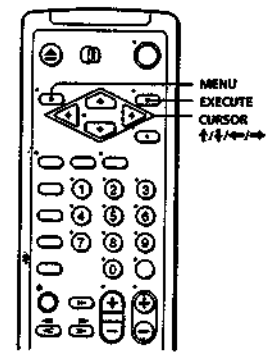
❶ Press MENU and select TUNER PRESET.

❷ Enter the cable box output channel.

❸ Set MANUAL SET to ADD and press EXECUTE.

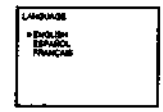
Selecting a language

You can change the on-screen display language.



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

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



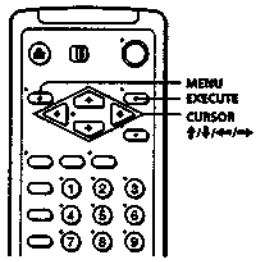
2 Press CURSOR ↑/↓ to select ENGLISH, ESPAÑOL, or FRANÇAIS, then press EXECUTE.

Setting the clock

Set the time and date to use the timer feature for recording programs.

Before you start...

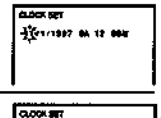
- Turn on the VCR and the TV.
- Set the TV to the VCR channel (channel 3 or 4). If your TV is connected to the VCR using A/V connections, set the TV to video input.
- Press TV/VTR to display the VTR indicator in the VCR's display window.



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

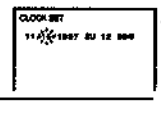
When using the EASY SET UP procedure, skip this step.

2 Press CURSOR ↑/↓ to set the month.



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

The day of the week is set automatically.

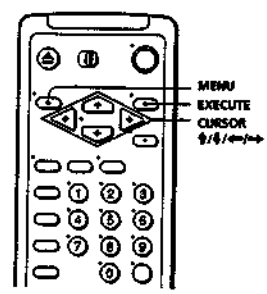


4 Set the year, hour and minutes in the same way as the day.

5 Press EXECUTE to start the clock.

Presetting channels

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.



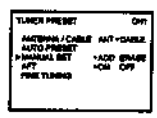
Before you start...

- 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.

Presetting all receivable channels automatically

1 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.



2 Press CURSOR ↑/↓ to select ANTENNA/CABLE.

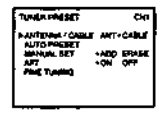
continued

Presetting channels (continued)

3 CURSOR

• To preset cable TV channels

Press CURSOR ⇐/⇒ to set ANTENNA/CABLE to CABLE



CURSOR

• To preset VHF and UHF channels

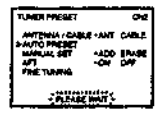
Press CURSOR ⇐/⇒ to set ANTENNA/CABLE to ANT

4 CURSOR

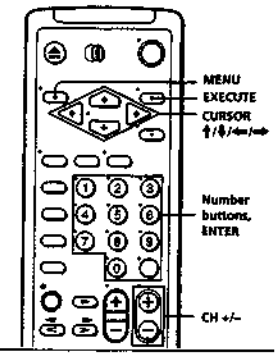
Press CURSOR ⇑/⇓ to select AUTO PRESET, then press EXECUTE

• 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

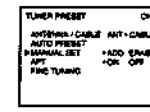


Presetting/disabling channels manually



1 • MENU • EXECUTE

Press MENU and select TUNER PRESET, then press EXECUTE



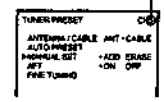
2

• 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

Channel to be preset



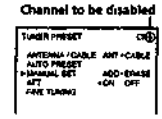
• CH

• To disable a channel

1 Press CH +/– to select the channel number

2 Press CURSOR ⇐/⇒ to set MANUAL SET to ERASE

Channel to be disabled



3 • EXECUTE

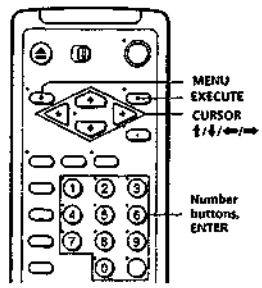
Repeat step 2 to preset or disable channels as required, then press EXECUTE

continued

Presetting channels (continued)

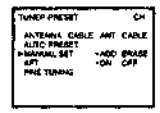
If the picture is not clear

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 • EXECUTE

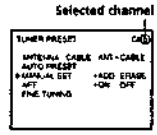
Press MENU and select TUNER PRESET, then press EXECUTE



2

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

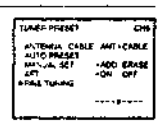
Selected channel



3 CURSOR

Press CURSOR ↑/↓ to select FINE TUNING

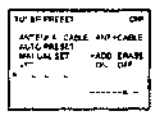
The fine tuning meter appears



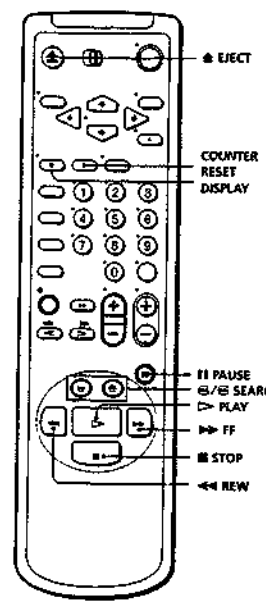
4 CURSOR • EXECUTE

Press CURSOR ⇐, ⇒ to adjust to a clearer picture, then press EXECUTE

Note that the AFT setting switches to OFF



Playing a tape



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

2 Insert a tape

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

continued

Playing the tape (continued)

3 PLAY ▷ Press ▷ PLAY

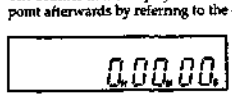
When the tape reaches the end, it will rewind automatically

Additional tasks

To	Press
Stop play	■ STOP
Pause play	❚❚ PAUSE
Resume play after pause	❚❚ PAUSE or ▷ PLAY
Search forward	▶▶ FF or 🔍 SEARCH during playback
Search backward	◀◀ REW or 🔍 SEARCH during playback
Fast-forward the tape	▶▶ FF during stop
Rewind the tape	◀◀ 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

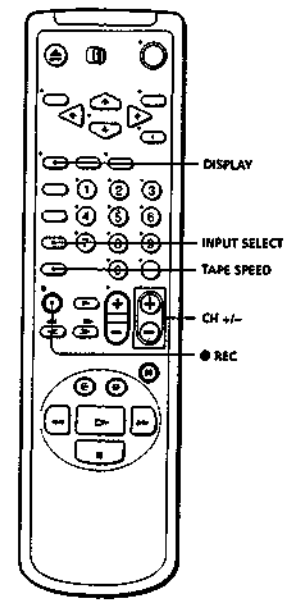


To display the counter on the TV screen, press DISPLAY

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

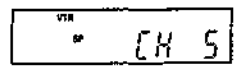
To record from a cable box, turn it on

2 Insert a tape with its safety tab in place

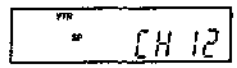
continued

Recording TV programs (continued)

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

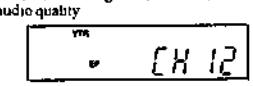


4 +CH Press CH +/– to select the channel you want to record



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 and audio quality



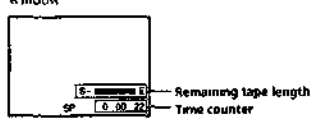
6 ●REC Press ● REC to start recording

To stop recording

Press ■ STOP

To check the remaining tape length

Press DISPLAY The white bar indicates the approximate length of tape remaining The remaining time indicator also appears in the display window



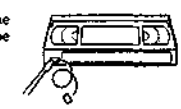
To check the remaining time of a T-140, T-180 or longer tape, set TAPE SELECT in the ADVANCED OPTIONS menu to "180" (For details, see page 37)

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



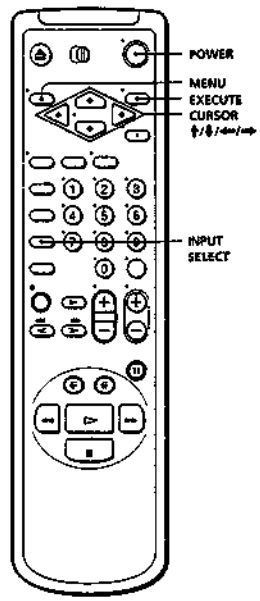
Tips

- To select a channel, you can use the number buttons on the remote commander Enter the channel number, then press ENTER
- You can select a video source from the *LINE IN* jacks using *INPUT SELECT*
- 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 tape length may not be indicated accurately for short tapes such as T-20 or T-30, or tapes recorded in the LP mode
- The display doesn't appear during still (pause) mode, search mode or slow-motion playback
- It may take up to one minute for the VCR to calculate and display the remaining tape length after you press DISPLAY

Recording TV programs using the timer



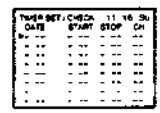
You can preset up to eight programs at a time

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 MENU, CURSOR, EXECUTE

Press MENU and select TIMER SET/CHECK, then press EXECUTE



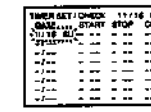
2 CURSOR

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

1 Press CURSOR ➡ to flash 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 ↓ while the date is flashing For details, see "Daily/weekly recording" on this page

To record from a source connected to the LINE IN jacks, press INPUT SELECT to display "L" in the "CH" position

3 CURSOR

Press CURSOR ➡ to confirm the setting

The cursor (▶) appears at the beginning 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

To stop recording

To stop the VCR while recording, press ■ STOP

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

the current date → SU-SA → MO-SA → MO-FR → EVERY SA → . → EVERY MO → EVERY SU → 1 month later → (dates count down) → 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

continued

Recording TV programs using the timer (continued)

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

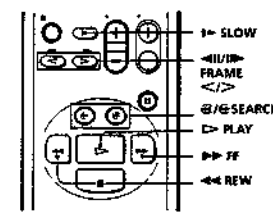
- Reset the counter
- Display tape information on the TV screen
- Check the timer settings
- Watch another TV program

To lock the VCR after setting the timer (Child Lock)

Hold down POWER on the VCR until the VCR beeps The VCR turns off and the 🔒 indicator appears in 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 The VCR turns on and the 🔒 indicator disappears from the display window

Playing/searching at various speeds



Playback options	Operation
Fast-forward/rewind	During stop, press ▶▶ FF or ◀◀ REW
View the picture during fast-forward or rewind	During fast-forward, keep pressing ▶▶ FF During rewind, keep pressing ◀◀ REW
Play at high speed	During playback or pause, press SEARCH or SEARCH To change direction, press > or <
Play in slow motion	During playback or pause, press SLOW To change direction, press > or <
Play frame by frame	During pause, press FRAME or FRAME Hold the button down to play one frame each second
Play in reverse	During playback, press <
Rewind and start play	During stop, press PLAY on the VCR while pressing ◀◀ REW on the VCR

To resume normal playback

Press ▷ PLAY

Tip

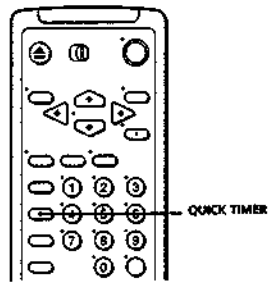
- Adjust the picture using the TRACKING +/– buttons on the VCR if
  - Streaks appear while playing in slow motion
  - The picture shakes while pausing

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
- The picture may have noise
  - when playing at high speed in reverse
  - when playing in reverse slow motion
  - when playing in reverse

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

0:00 → 0:30 → 1:00 ····· → 10:30 → 11:00

The duration decreases minute by minute to 0:00, then the VCR stops recording and turns off automatically

To extend the duration

Press QUICK TIMER repeatedly to set to the new duration

To stop the VCR while recording

Press ■ STOP

Using the quick timer during stop mode

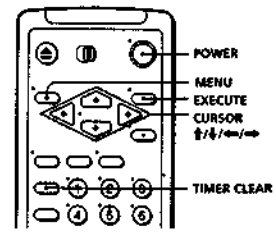
1 Press QUICK TIMER

2 Press CH +/– or INPUT SELECT to select the channel you want to record

3 Press QUICK TIMER repeatedly to set the recording duration

The recording starts

Checking/ changing/ canceling timer settings



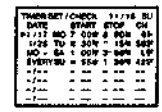
Before you start ..

- 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 or cancel

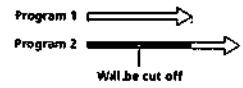
- To change the setting, press CURSOR ←/→ to flash the item you want to change, and press CURSOR ↑/↓ to reset it Then, press CURSOR → repeatedly until the cursor (►) appears at the beginning of the line
- To cancel the setting, press TIMER CLEAR

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 37

Recording bilingual programs

Normally, this VCR records only the main sound When a SAP (Second Audio Program) is received, the SAP indicator lights up To record only SAP sound, set TUNER AUDIO in the ADVANCED OPTIONS menu to SAP For details, see page 37

Selecting the sound while playing

Press AUDIO MONITOR to select the desired sound (The sound being recorded will not change)

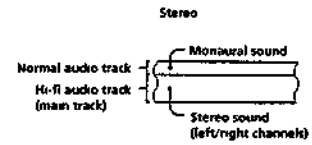
Stereo program

To listen to	Indicator on the TV screen
Stereo	STEREO
Left channel	L
Right channel	R
Monaural sound on the normal audio track*	No indicator appears

* Usually the mixed sound of left and right channels

How sound is recorded on a video tape

The VCR records sound onto two separate tracks Hi-fi audio is recorded onto the main track along with the picture Monaural sound is recorded onto the normal audio track along the edge of the tape



Notes

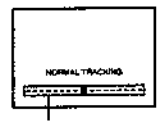
- To play a tape in stereo, you must use the A/V connections
- When you play a tape recorded in monaural, the sound is heard in monaural regardless of the AUDIO MONITOR setting

Adjusting the picture

Adjusting the tracking

Although the VCR automatically adjusts the tracking when playing a tape (the tracking indicator ▤ flashes in the display window, then goes off), distortion may occur if the tape was recorded in poor condition. In this case, manually adjust the tracking.

Press the TRACKING +/– buttons on the VCR to display the tracking meter. The distortion should disappear as you press one of the two buttons (the ▤ indicator lights up). To resume automatic tracking adjustment, eject the tape and reinsert it.



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

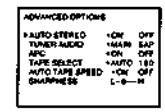
Whenever you insert a tape and first start recording, the VCR adjusts to the tape using the APC function (the APC indicator flashes rapidly). This adjustment is retained until the tape is ejected.

Notes

- The auto tracking adjustment cannot be used on tapes recorded in the LP mode on other VCRs.
- The APC function doesn't 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. After the APC indicator stops flashing, press ❚❚ PAUSE to start recording immediately. If you press ❚❚ PAUSE before the APC indicator stops flashing, the APC function is canceled.

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.

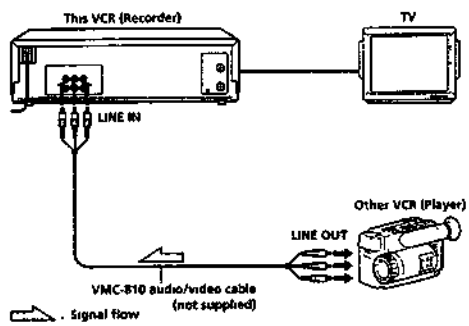
Menu choices

Initial settings are indicated in bold print.

Menu option	Set this option to
AUTO STEREO	**ON** to receive stereo programs. OFF to reduce noise, the sound changes to monaural.
TUNER AUDIO	**MAIN** to record the main sound, SAP to record the SAP (Second Audio Program) sound.
APC	**ON** to switch on the APC (Adaptive Picture Control) function and improve picture quality. OFF to switch off APC.
TAPE SELECT	**AUTO** or 180 (when using a T-140, T-180 or longer tape) 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 set tape speed.
SHARPNESS	L (Low) through H (High) to adjust the sharpness of the picture. L to turn off the sharpness control.

Editing with another VCR

How to hook up to record on this VCR



How to hook up to a stereo system

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

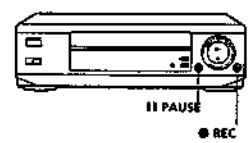
Notes

- Make sure you connect the plugs to jacks of the same color.
- If the other VCR is a monaural type, use a connecting cable such as Sony VMC-910MS.
- 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.

Operation (when recording on this VCR)

Before you start editing

- Turn on your TV and set it to the video channel.
- Press INPUT SELECT on the remote commander to display "L" in the display window.
- Press TAPE SPEED on the remote commander to select the tape speed, SP or EP.



1 Insert a source tape with its safety tab removed into the other (playback) VCR. Search for the point to start playback and set it to playback pause.

2 Insert a tape with its safety tab in place into this (recording) VCR. Search for the point to start recording and press ❚❚ PAUSE.

3 Press ● REC on this VCR and set it to recording pause.

4 To start editing, press the ❚❚ PAUSE buttons on both VCRs at the same time.

To stop editing

Press the ■ STOP buttons on both VCRs.

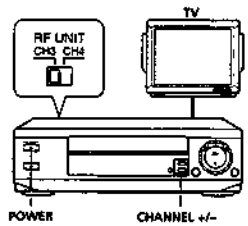
Note

- If you start recording following the procedure above, the VCR won't start recording with the APC function. To record a tape with the APC function, press ● REC again during recording pause in step 3 so that the VCR analyzes the tape. Then when you start recording in step 4, press ❚❚ PAUSE immediately after the APC indicator stops flashing. If you press ❚❚ PAUSE before the APC indicator stops flashing, the APC function is canceled.

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



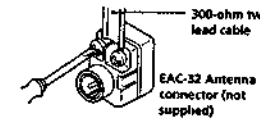
1 Set the RF UNIT switch on the rear of the VCR to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.
2 Press POWER to turn on the VCR.
3 Press TV/VTR on the remote commander to turn on the VTR indicator in the VCR's display window.
4 Press CHANNEL +/– 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 +/–, 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

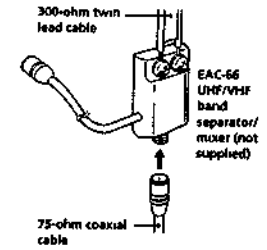
When using a 300-ohm twin lead cable for VHF/UHF antenna, use the EAC-32 antenna connector (not supplied) to connect the antenna to the VCR



1 Loosen the screws on the antenna connector.
2 Wind the twin leads around the screws on the antenna connector.
3 Retighten the screws.

Attaching a UHF/VHF band mixer

When using both 75-ohm coaxial cable and 300-ohm twin lead cable for VHF/UHF antenna, use the EAC-66 UHF/VHF band separator/mixer (not supplied) to connect the antenna to the VCR

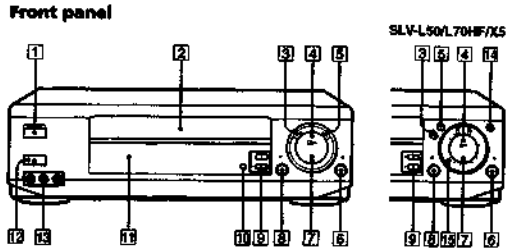


1 Loosen the screws on the mixer.
2 Wind the twin leads around the screws on the mixer.
3 Retighten the screws.
4 Connect the 75-ohm coaxial cable to the mixer.

Index to parts and controls

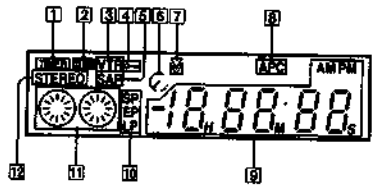
Refer to the pages indicated in parentheses ( ) for details.

Front panel



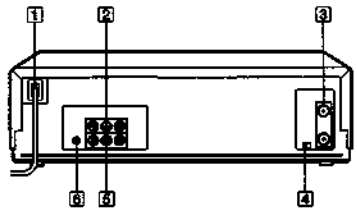
1 POWER switch/indicator
2 Tape compartment
3 ◀◀ REW button (23, 31)
4 ▷ PLAY button (23, 31)
5 ▶▶ FF button (23, 31)
6 ● REC button (26, 39)
7 ■ STOP button (23, 26)
8 ❚❚ PAUSE button (23, 39)
9 CHANNEL/TRACKING +/– buttons (26, 31, 36)
10 EASY SET UP button (10, 12, 14, 16)
11 Remote sensor (5)
12 ⏏ EJECT button (23)
13 LINE-2 IN AUDIO/VIDEO jacks (SLV-495/L50/X5)
LINE-2 IN AUDIO L/R/VIDEO jacks (SLV-685HF/695HF/L70HF)
14 JOG button (SLV-L50/L70HF/X5)
15 CLICK JOG SHUTTLE ring (SLV-L50/L70HF/X5)

Display window



1 TIMER indicator (29)
2 REC (recording) indicator
3 VTR indicator (27)
4 🔑 (Child Lock) indicator (30)
5 SAP indicator (34)
6 Remaining time indicator (26) (EXCEPT SLV-L40/L50/L60HF/ L70HF/X5/X6HF)
7 ▦ (tracking) indicator (36)
8 APC indicator (36)
9 Time counter/clock/line/channel indicator (24, 26)
10 Tape speed indicator (26)
11 Tape indicator
12 STEREO indicator (34)

Rear panel



1 AC power cord

2 LINE IN or LINE-1 IN AUDIO/VIDEO jacks (Mono model)
LINE IN or LINE-1 IN AUDIO L/R/VIDEO jacks (38) (HiFi model)

3 VHF/UHF IN/OUT connectors (9, 11, 13, 15)

4 RF UNIT switch (40)

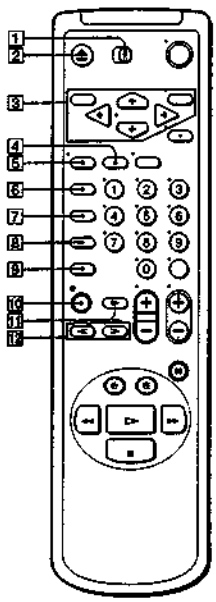
5 LINE OUT AUDIO L/R/VIDEO jacks (8)

6 CABLE BOX CONTROL CTRL S OUT jack (SLV-495/685HF/695HF)

continued

Index to parts and controls (continued)

Remote commander



1 TV / VTR remote control switch (5)

2 ⏏ EJECT button (23)

3 Menu operation buttons (17, 37)

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

4 COUNTER RESET button (24)

5 DISPLAY button (26)

6 TIMER CLEAR button (33)

7 QUICK TIMER button (32)

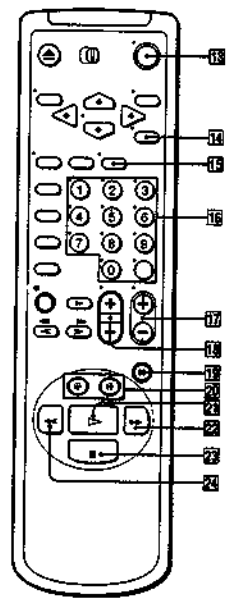
8 INPUT SELECT button (27, 29, 39)

9 TAPE SPEED button (26)

10 ● REC button (26, 39)

11 I► SLOW button (31)

12 ◄II/II►FRAME</> buttons (31)



13 POWER switch (29)

14 AUDIO MONITOR button (34)

15 TV/VTR button (27)

16 Channel number/ENTER buttons (21, 22)

17 CH +/– buttons (21, 26)

18 VOL +/– buttons

19 II PAUSE button (23)

20 ⊖/⊕ SEARCH buttons (23, 31)

21 ▷ PLAY button (23, 31)

22 ►► FF button (23, 31)

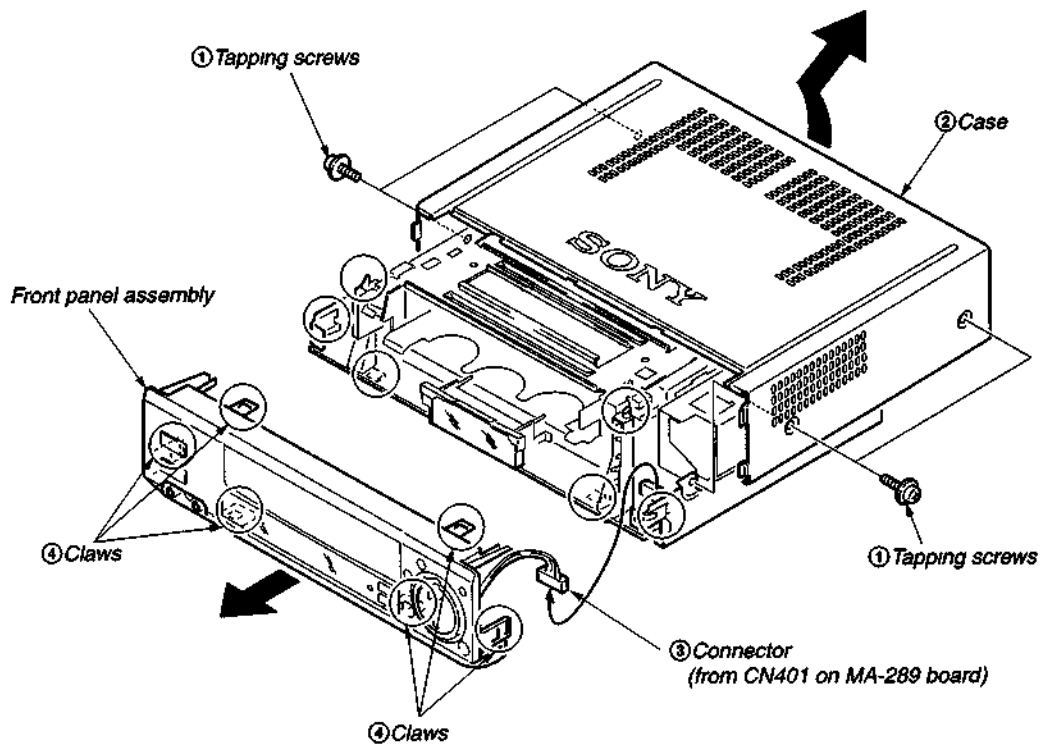
23 ■ STOP button (23, 26)

24 ◄◄ REW button (23, 31)

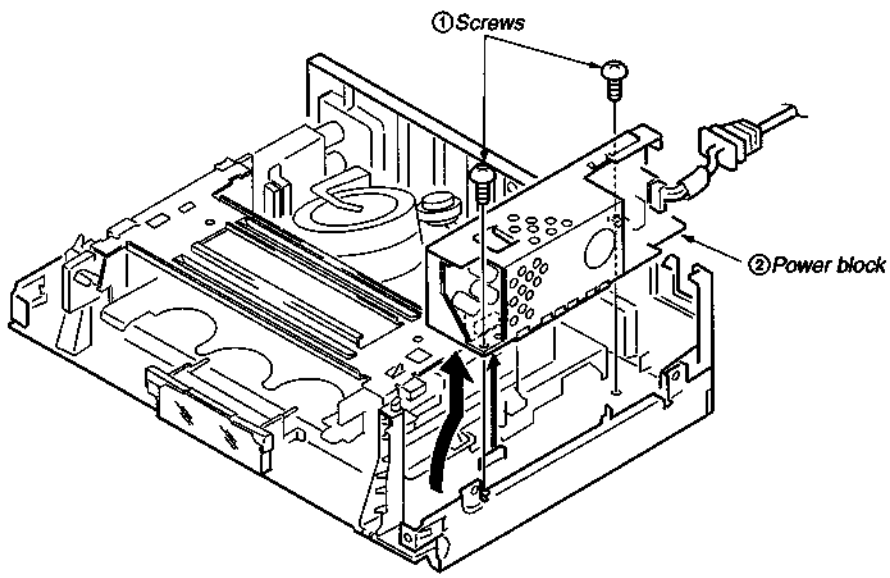
SECTION 2
DISASSEMBLY

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

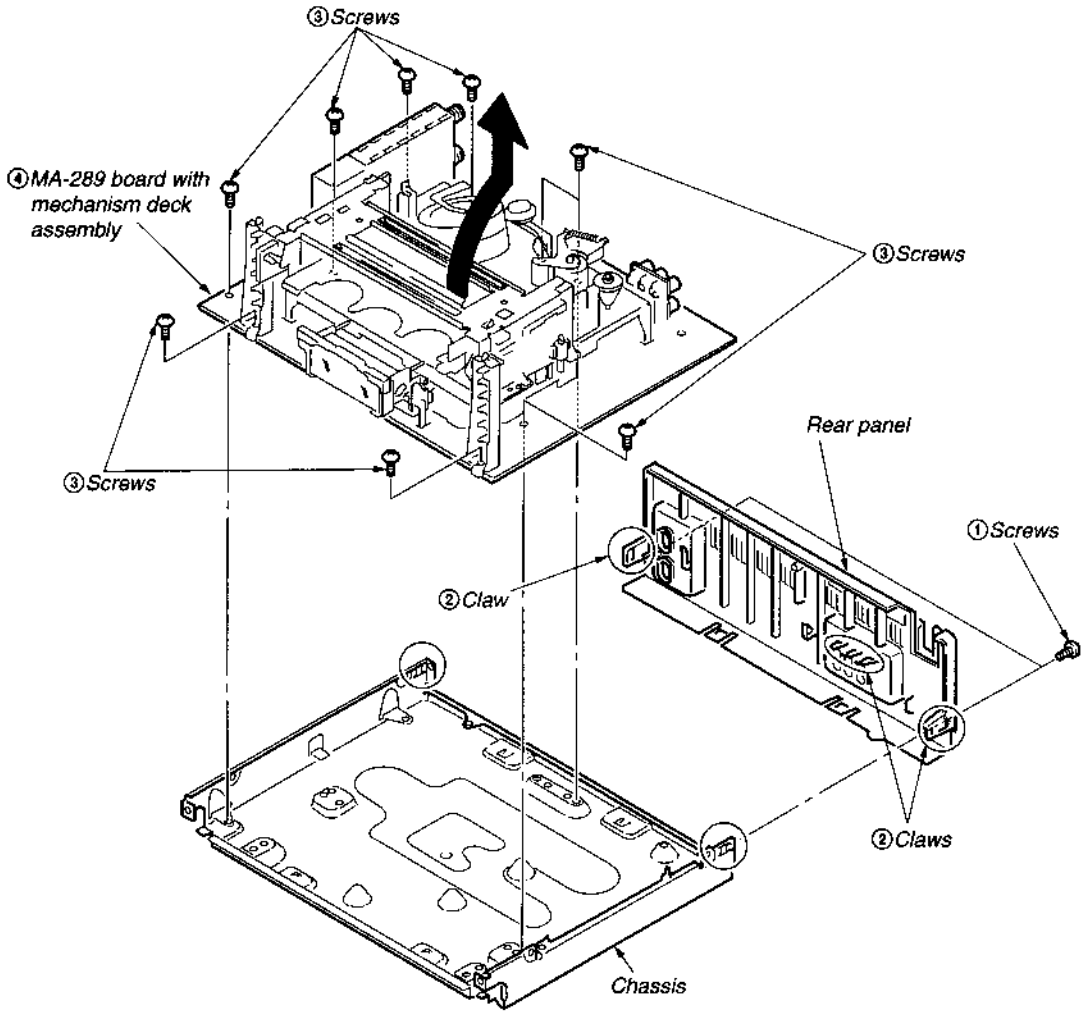
2-1. CASE AND FRONT PANEL ASSEMBLY



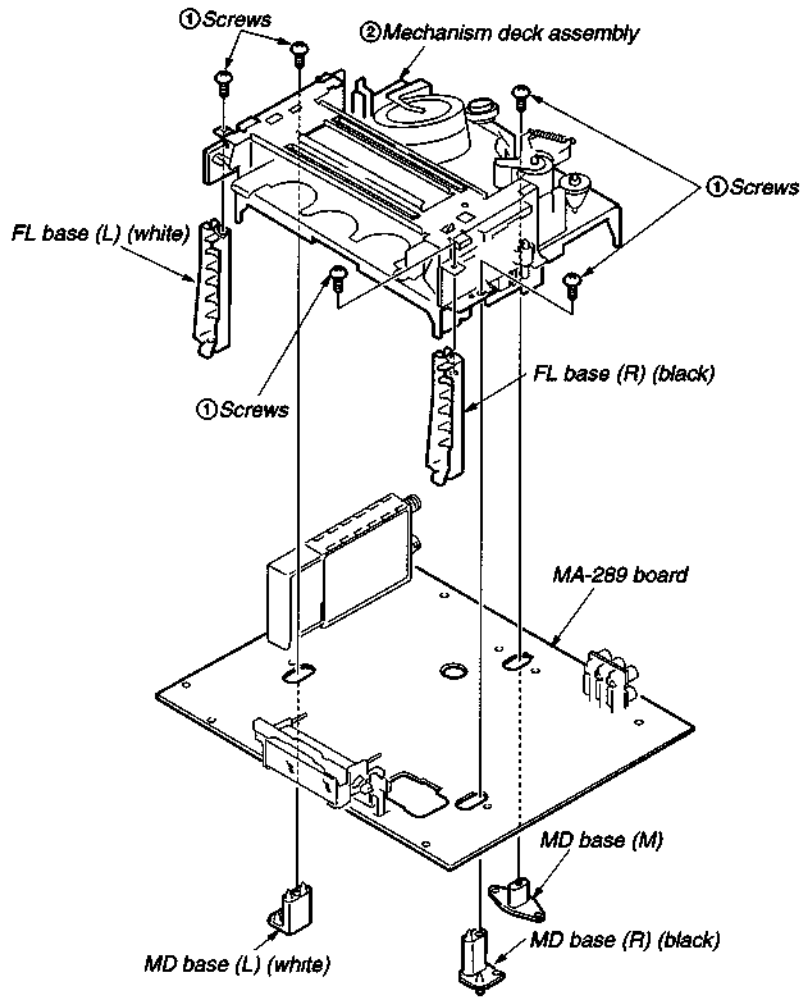
2-2. POWER BLOCK



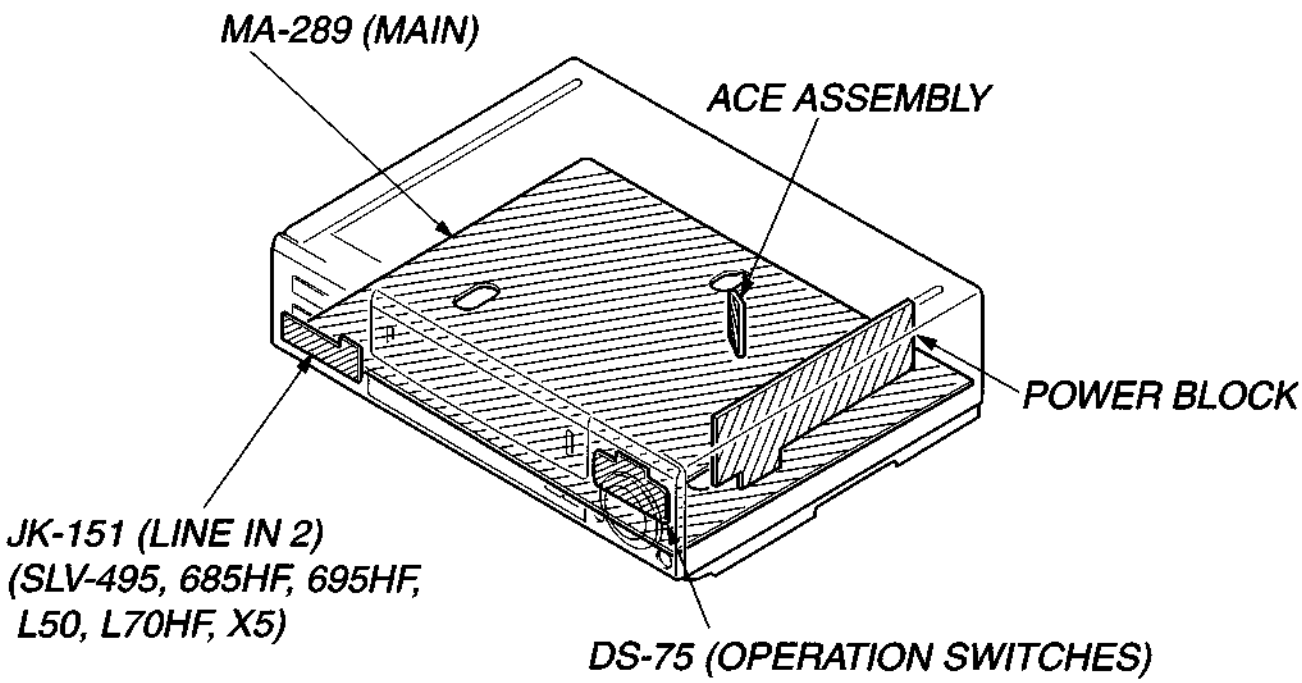
2-3. MA-289 BOARD WITH MECHANISM DECK ASSEMBLY



2-4. MECHANISM DECK ASSEMBLY

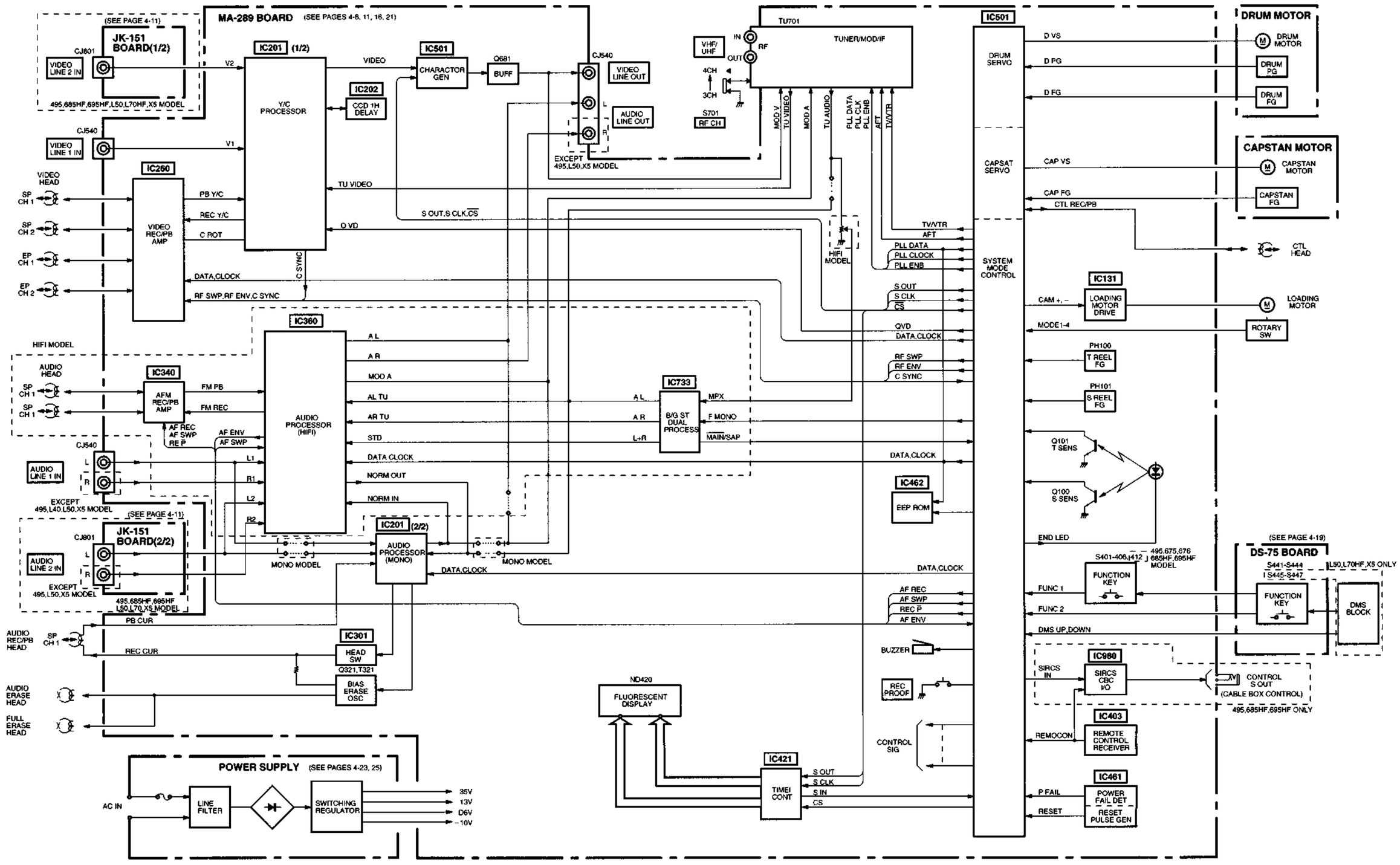


2-5. CIRCUIT BOARDS LOCATION

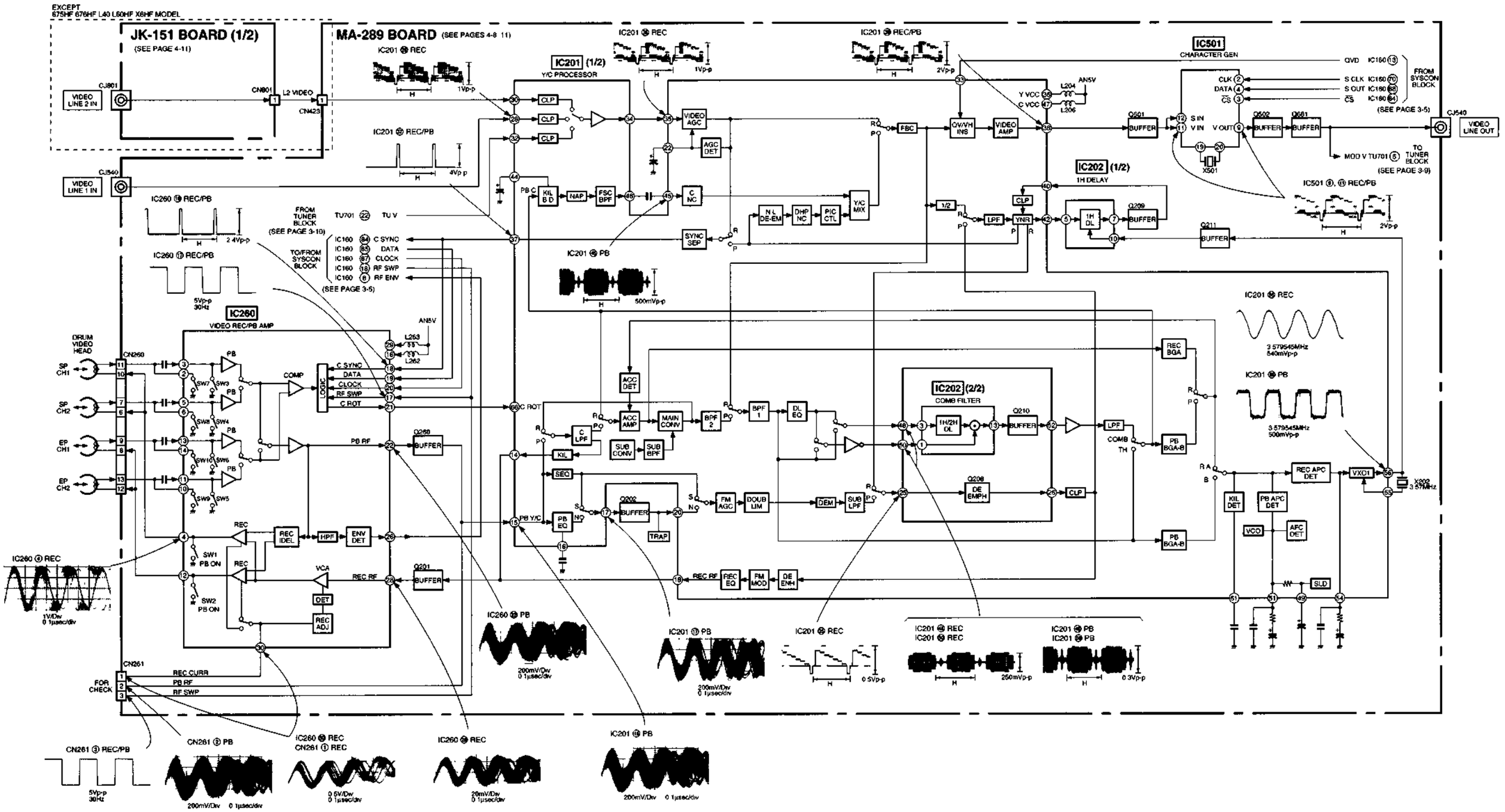


SECTION 3
BLOCK DIAGRAMS

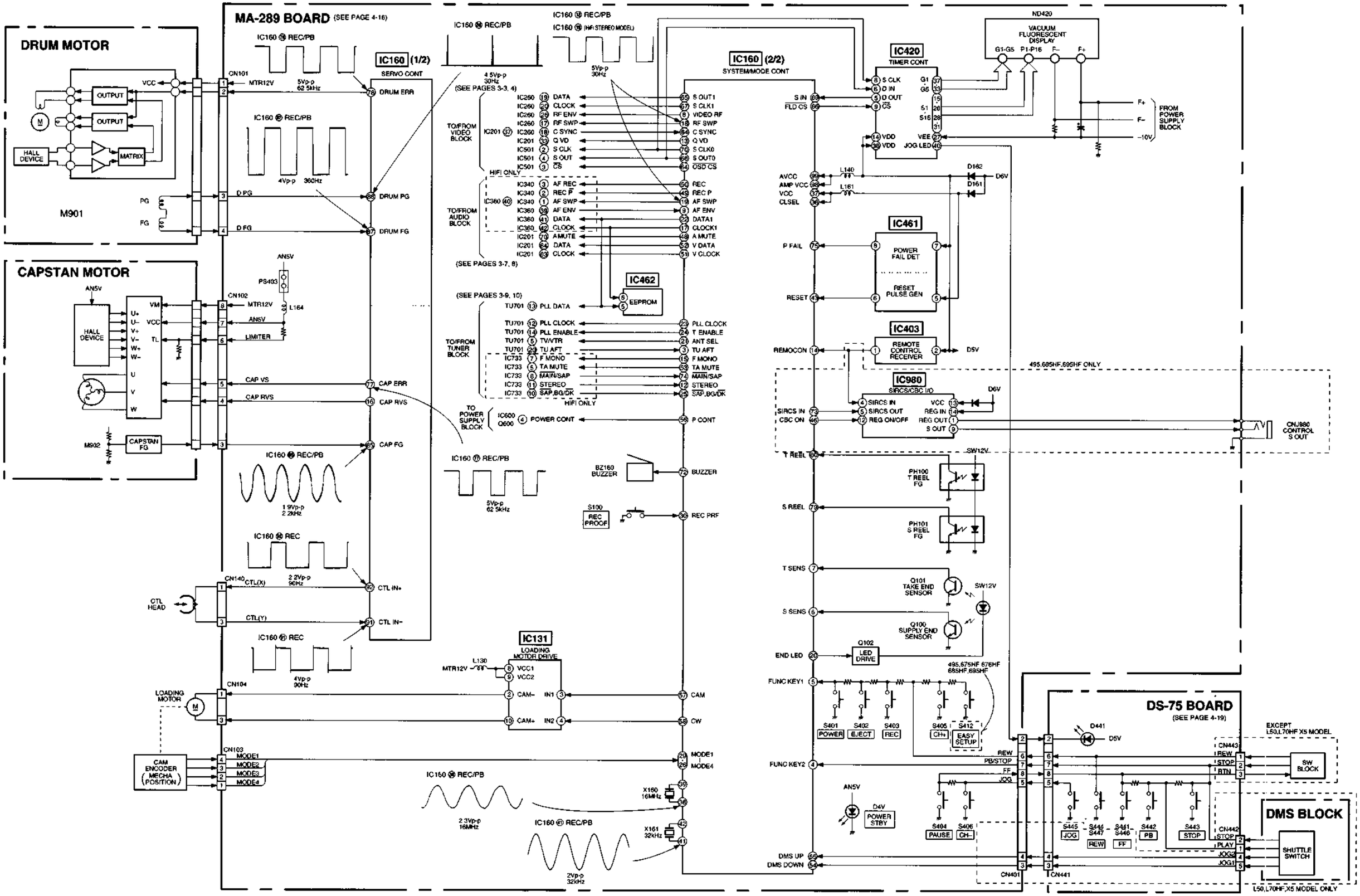
3-1. OVERALL BLOCK DIAGRAM



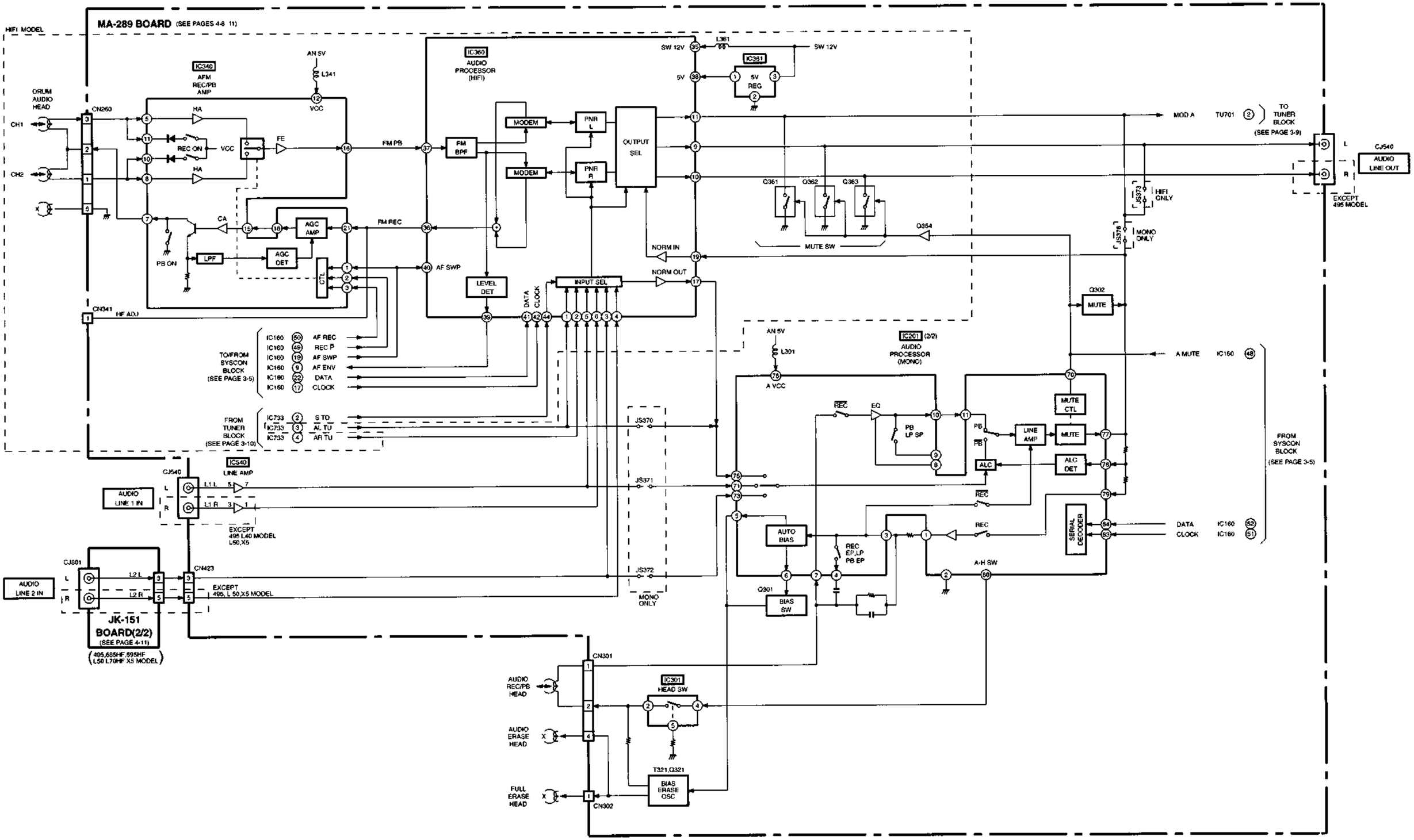
3-2. VIDEO BLOCK DIAGRAM



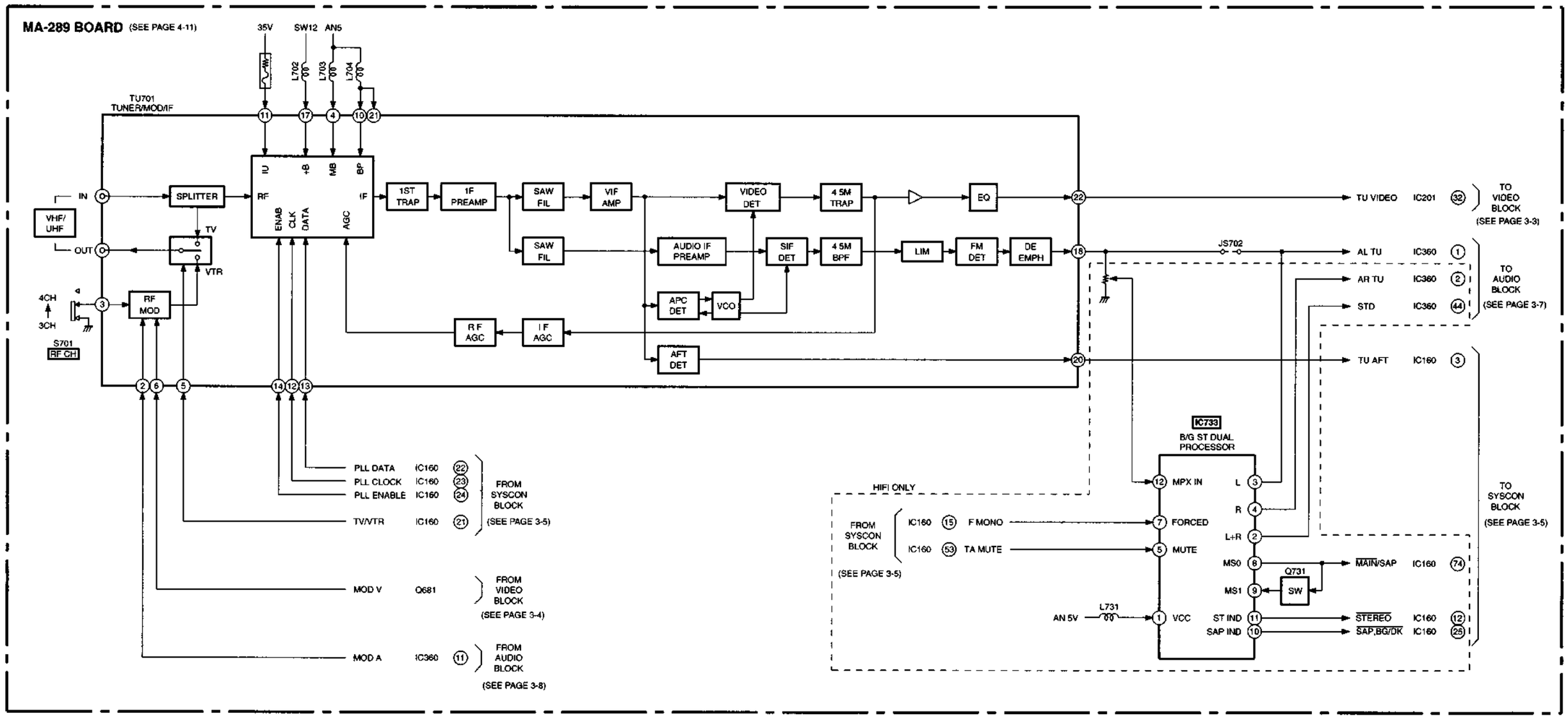
3-3. SERVO, SYSTEM CONTROL BLOCK DIAGRAM



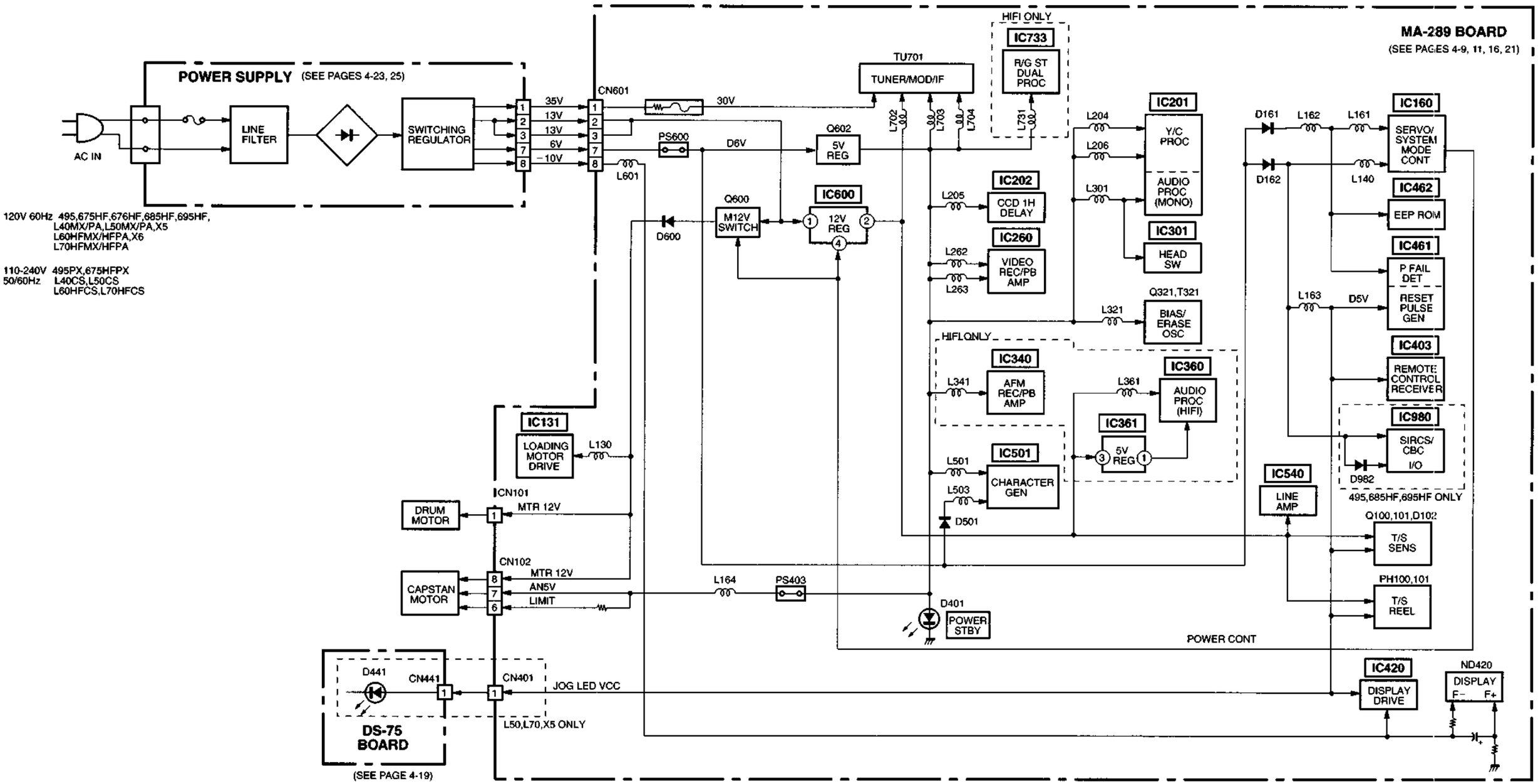
3-4. AUDIO BLOCK DIAGRAM



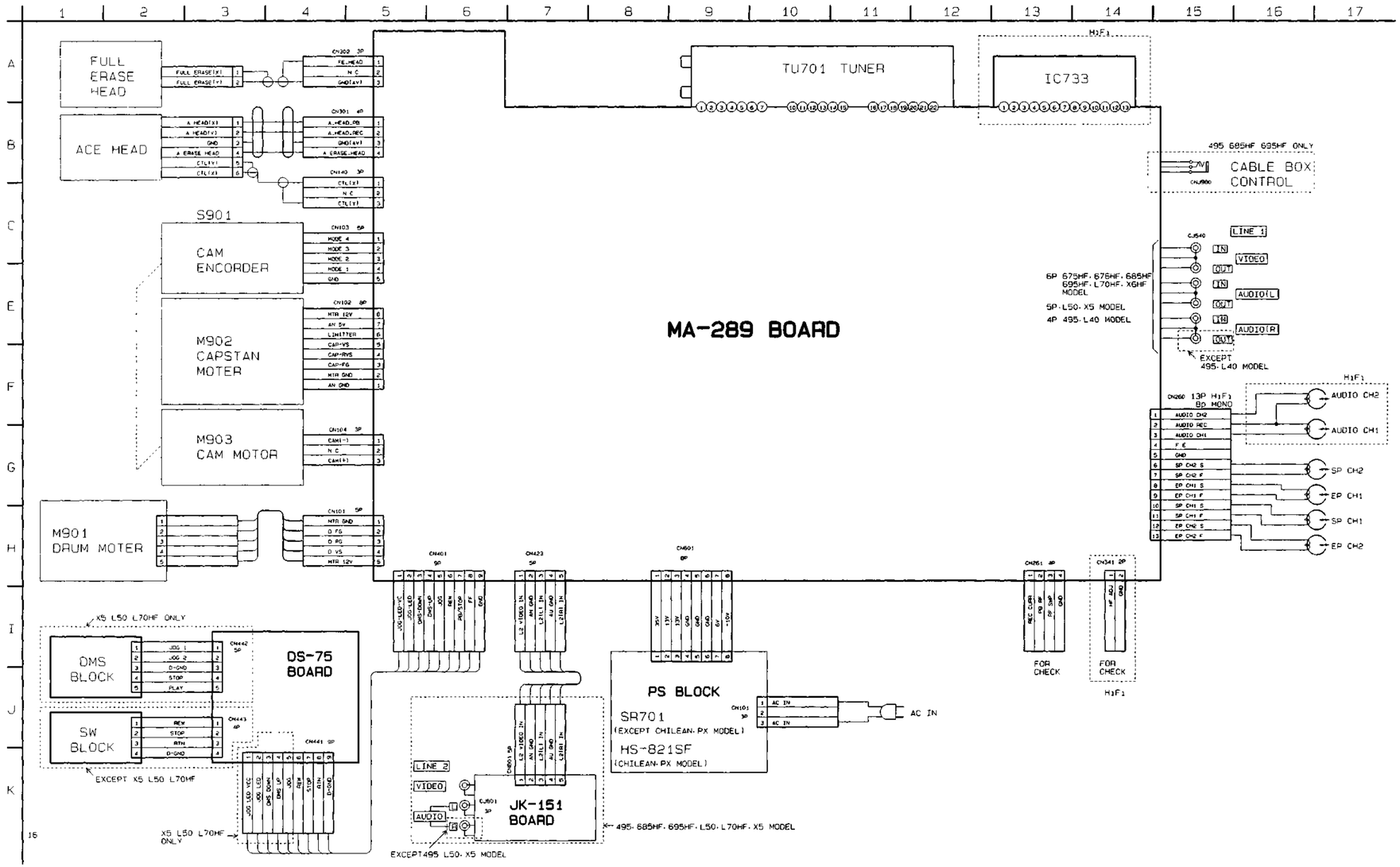
3-5. TUNER BLOCK DIAGRAM



3-6. POWER SUPPLY BLOCK DIAGRAM



SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS
4-1. FRAME SCHEMATIC DIAGRAM



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.**
- ——— : Pattern from the side which enables seeing.

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

- **For schematic diagrams.**
- 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 resistor are in ohms, 1/4W unless otherwise noted Chip resistor are 1/10W unless otherwise noted kΩ: 1000Ω, MΩ, · 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF · μ μF. 50V or less are not indicated except for electrolytics and tantalums.
- ▭ . panel designation
- △ internal component.
- ▬ · B+Line. *
- ▬▬ : B+Line *
- ▻ : IN/OUT direction of (+,–) B LINE *
- Circled numbers refer to waveforms. *
- Readings are taken with a color-bar signal input.
- Voltage are dc between ground and measurement points *
- Rradings are taken with a dijital multimeter (DC10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

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

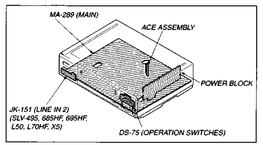
- * : indicated by the color red.

MA-289 (MAIN) PRINTED WIRING BOARD

— Ref. No. MA-289 Board, 1,000 Series —

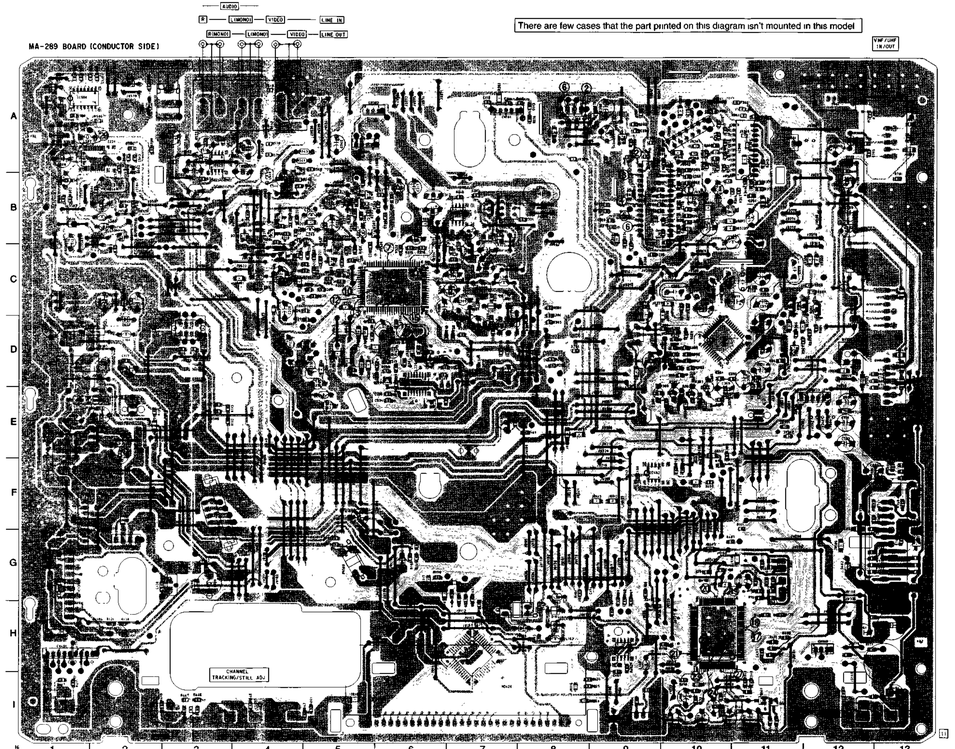
MA-289 BOARD

CJ540	A-4	IC403	I-9
CNJ680	A-3		
CN101	A-7	IC420	H-7
CN102	D-3	IC461	H-9
CN103	F-3	IC462	F-9
		IC501	A-2
CN104	G-3	IC540	A-3
CN140	H-12		
CN260	A-10	IC600	G-2
CN261	A-8	IC733	G-13
CN301	A-5	IC980	A-1
CN302	A-5		
CN341	A-11	PH100	G-5
CN401	H-1	PH101	H-8
CN423	F-12		
CN601	F-1		
		Q100	E-11
		Q101	E-2
D102	E-7	Q102	E-7
D161	H-8	Q201	B-5
D162	H-8	Q202	B-6
D301	C-7		
D302	D-8	Q208	C-5
		Q209	E-6
D361	D-11	Q210	D-6
D401	I-13	Q211	D-6
D501	B-1	Q260	A-9
D540	A-4		
D600	E-2	Q301	C-7
		Q302	C-7
D601	C-2	Q321	B-7
D602	D-2	Q361	C-12
D702	A-12	Q362	C-11
D980	A-2		
D981	A-2	Q363	C-12
		Q364	D-11
D982	A-1	Q501	B-2
		Q502	A-2
		Q600	E-2
IC131	G-1		
IC160	H-10	Q601	E-2
IC201	C-6	Q602	C-1
IC202	D-6	Q681	A-4
IC260	B-9	Q731	G-13
IC301	B-7		
IC340	A-11		
IC360	D-10		
IC361	D-9		



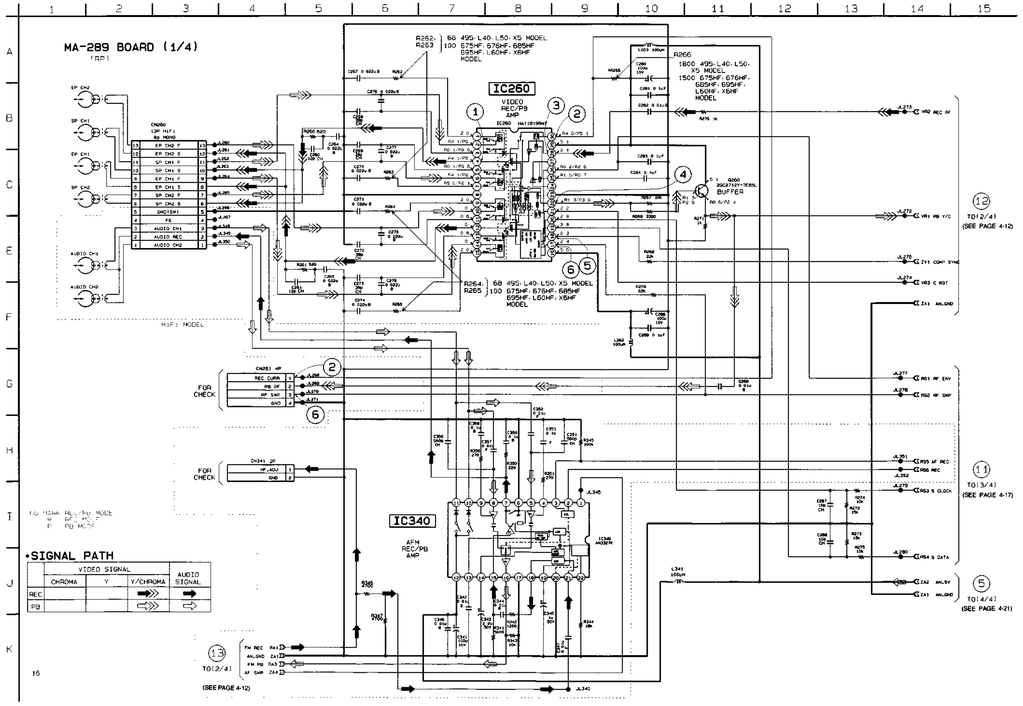
MA-289 BOARD (CONDUCTOR SIDE)

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

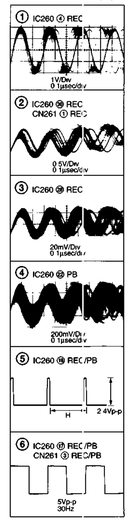


MA-289 (REC/PB AMP) SCHEMATIC DIAGRAM

— Ref. No. MA-289 Board, 1,000 Series —



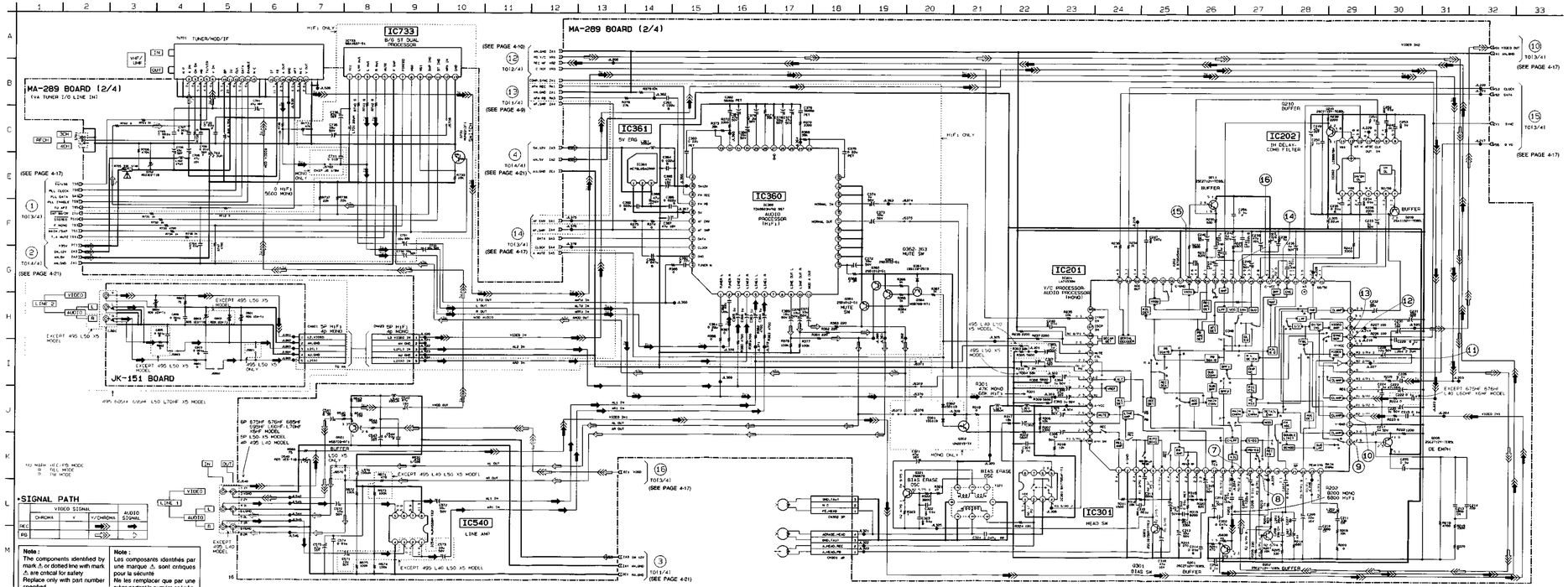
MA-289 BOARD (1/3)



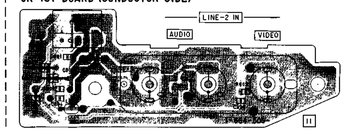
MA-289 (VIDEO, TUNER, AUDIO), JK-151(LINE IN 2) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

— Ref No MA-289 Board; 1,000 Series, JK-151 Board; 2,000 Series —

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

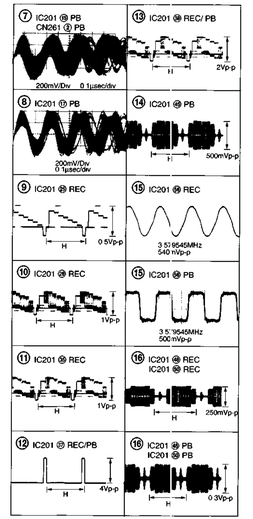


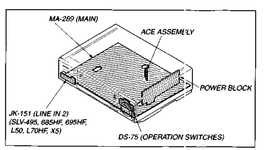
JK-151 BOARD (CONDUCTOR SIDE)



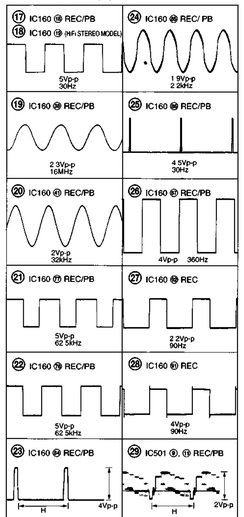
SLV-495/685HF/695HF/L50/L70HF/X5

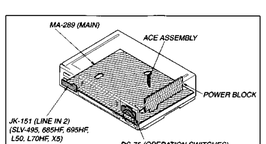
MA-289 BOARD (2/3)





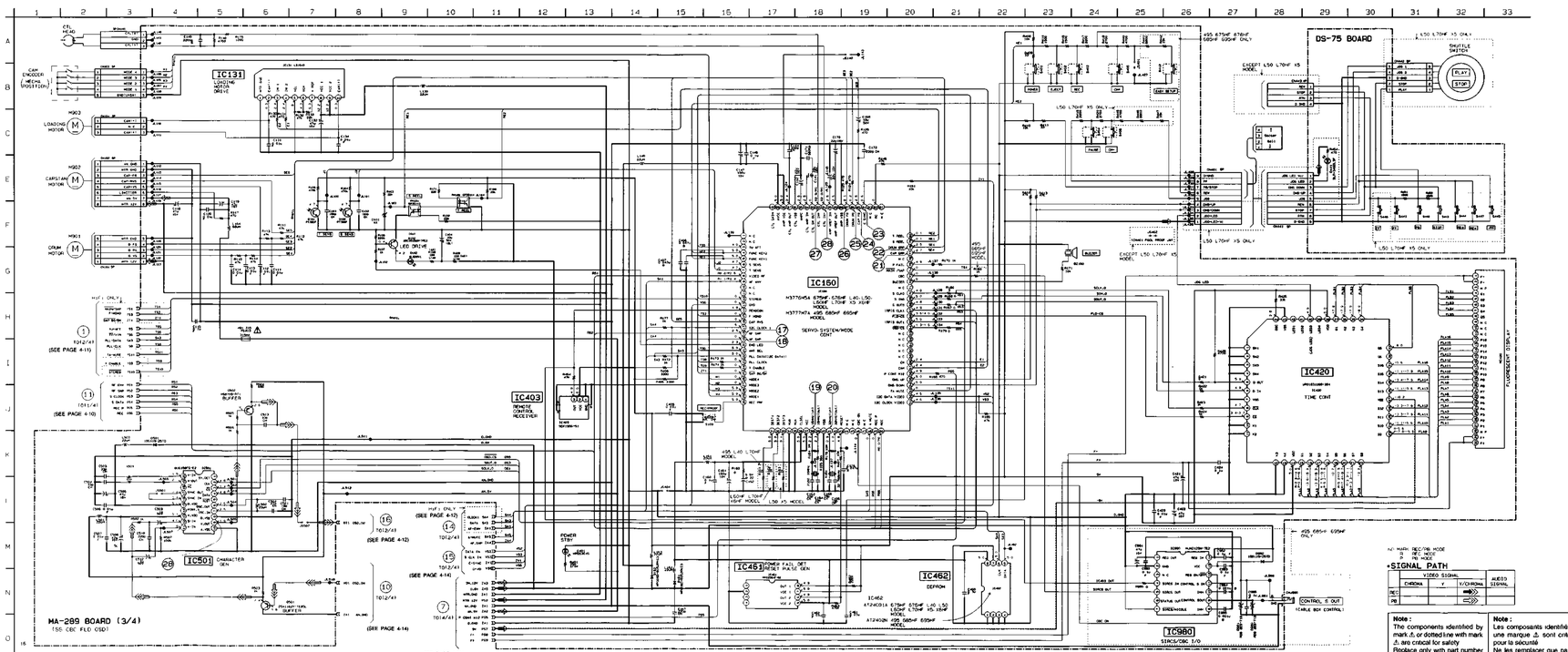
MA-289 BOARD (3/3)





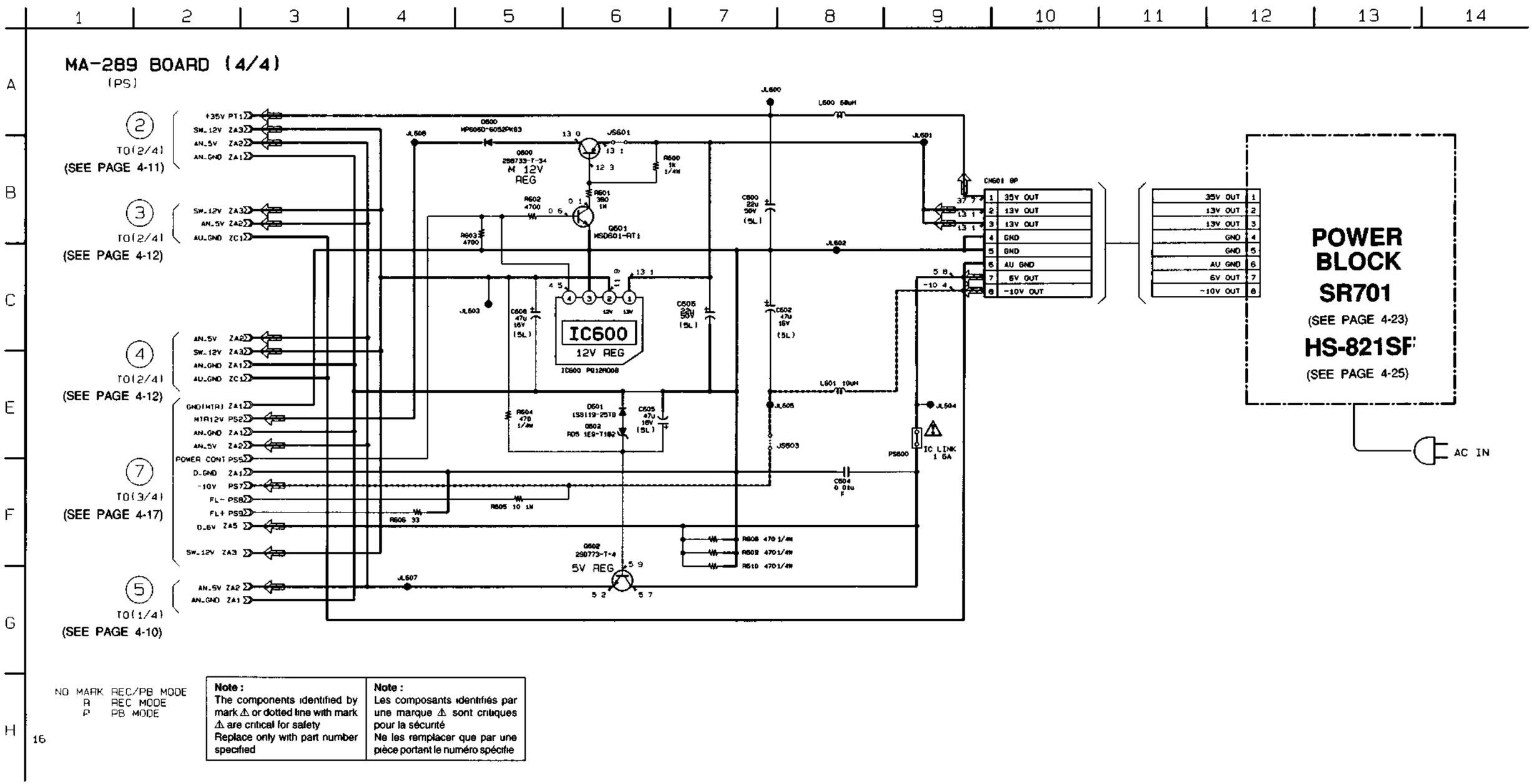
MA-289 (SERVO, SYSTEM CONTROL), DS-75 (OPERATON SWITCHES) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM
— Ref. No MA-289 Board, 1,000 Series, DS-75 Board; 1,000 Series —

• See page 4-6 for MA-289 pnnted wnng board.



MA-289 (POWER SUPPLY) SCHEMATIC DIAGRAM
— Ref No. MA-289 Board; 1,000 Series —

• See page 4-6 for MA-289 printed wiring board



NO MARK REC/PB MODE
R REC MODE
P PB MODE

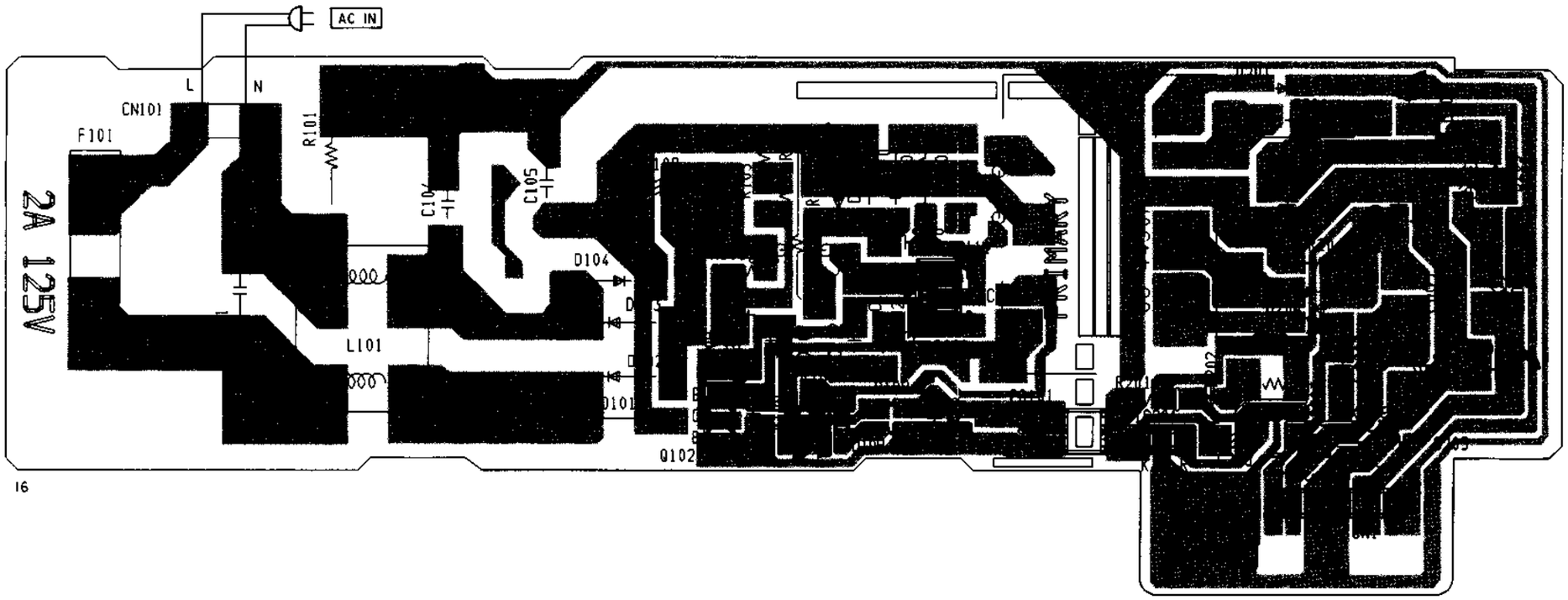
Note :	**Note :**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety Replace only with part number specified	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité Ne les remplacer que par une pièce portant le numéro spécifié

POWER BLOCK SR701 (SWITCHING REGULATOR) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

— Ref. No. SR701 Board; 5,000 Series —

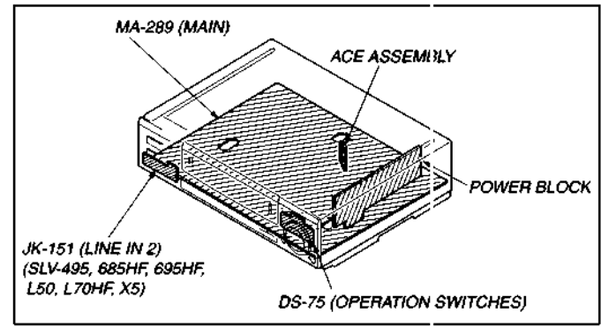
EXCEPT CHILEAN, PX MODELS

POWER BLOCK SR701 (EXCEPT CHILEAN, PX MODELS)



POWER BLOCK (SR701)
(EXCEPT CHILEAN, PX MODELS)

Symbol	min	typ	max
*R110	560	750	820
*R203	1 2K	1 5K	2 2K



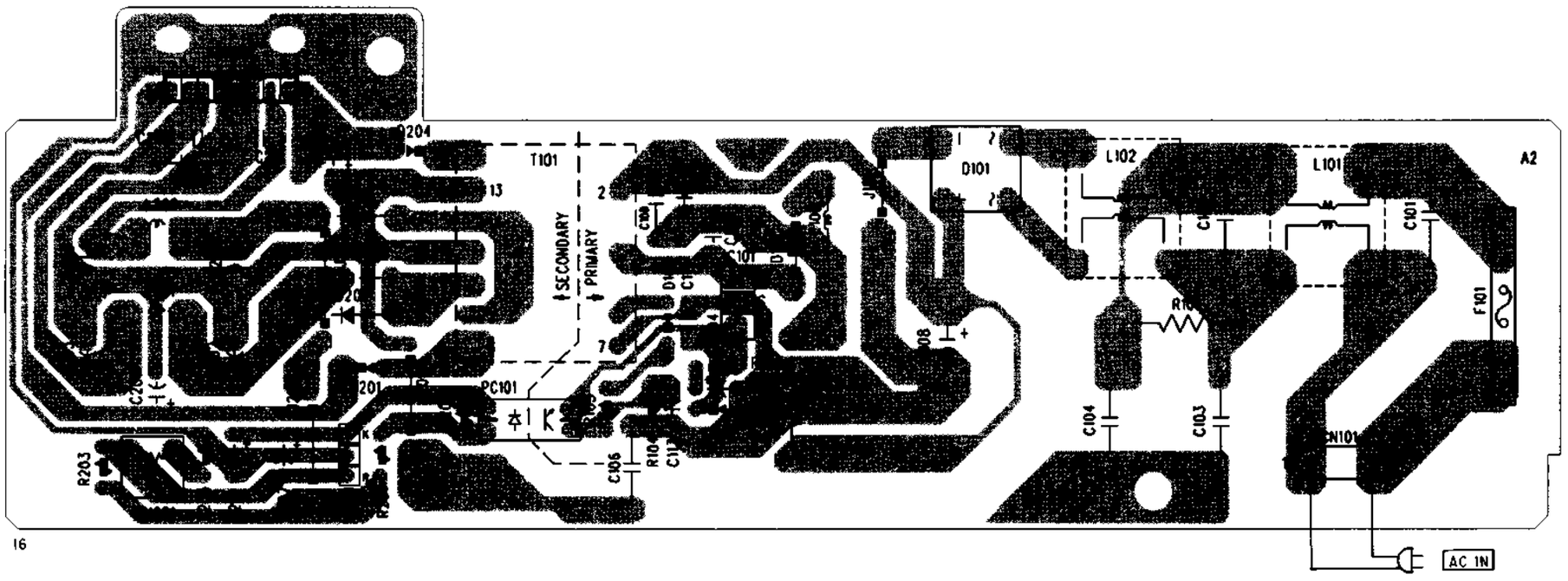
Note :	**Note :**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety Replace only with part number specified	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité Ne les remplacer que par une pièce portant le numéro spécifié

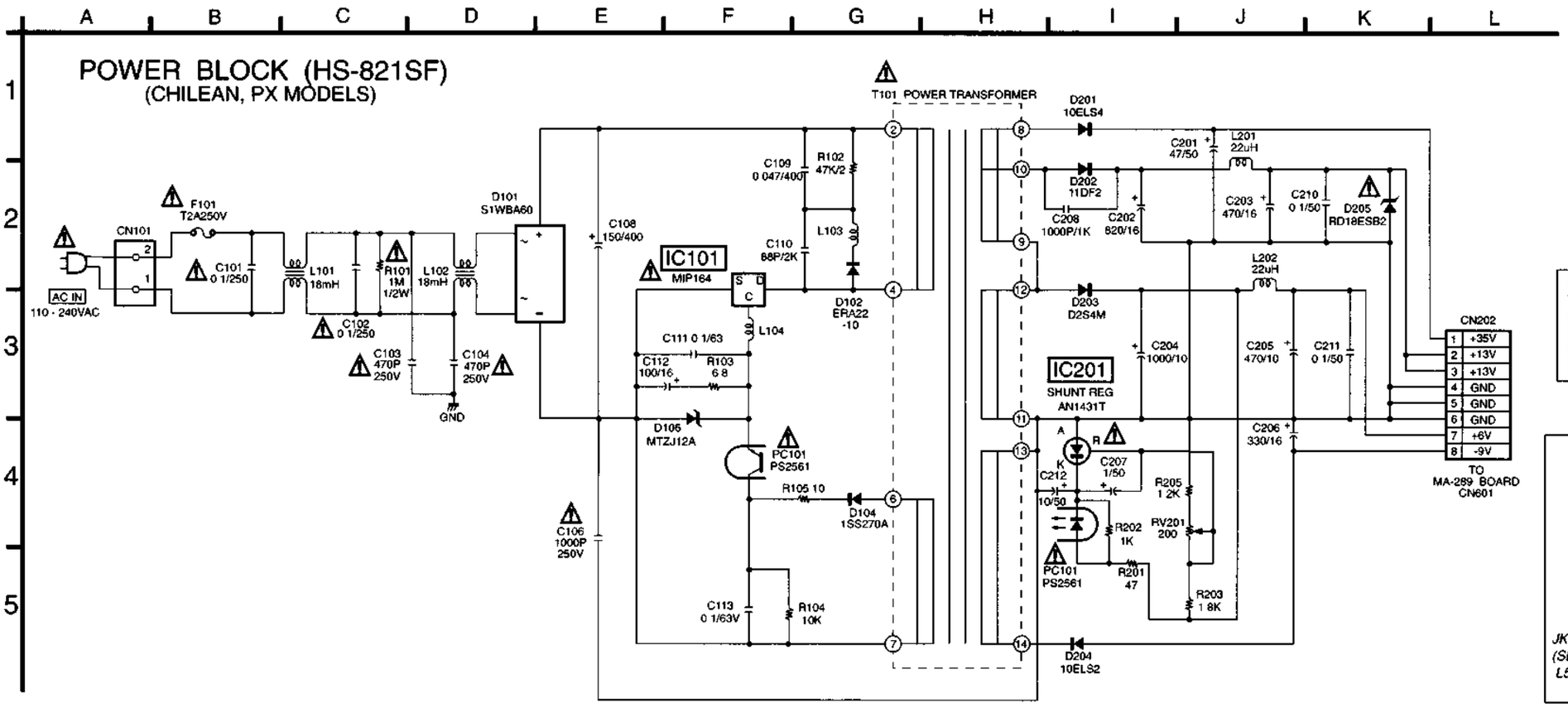
POWER BLOCK HS-821SF (SWITCHING REGULATOR) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

— Ref No HS-821SF Board, 6.000 Series —

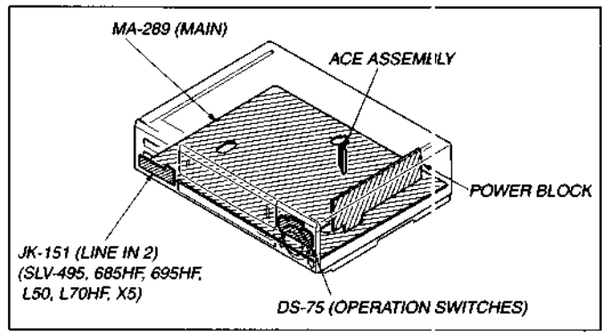
CHILEAN, PX MODELS

POWER BLOCK HS-821SF (CHILEAN, PX MODEL)





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



SECTION 5
REPAIR PARTS LIST

5-1. EXPLODED VIEWS

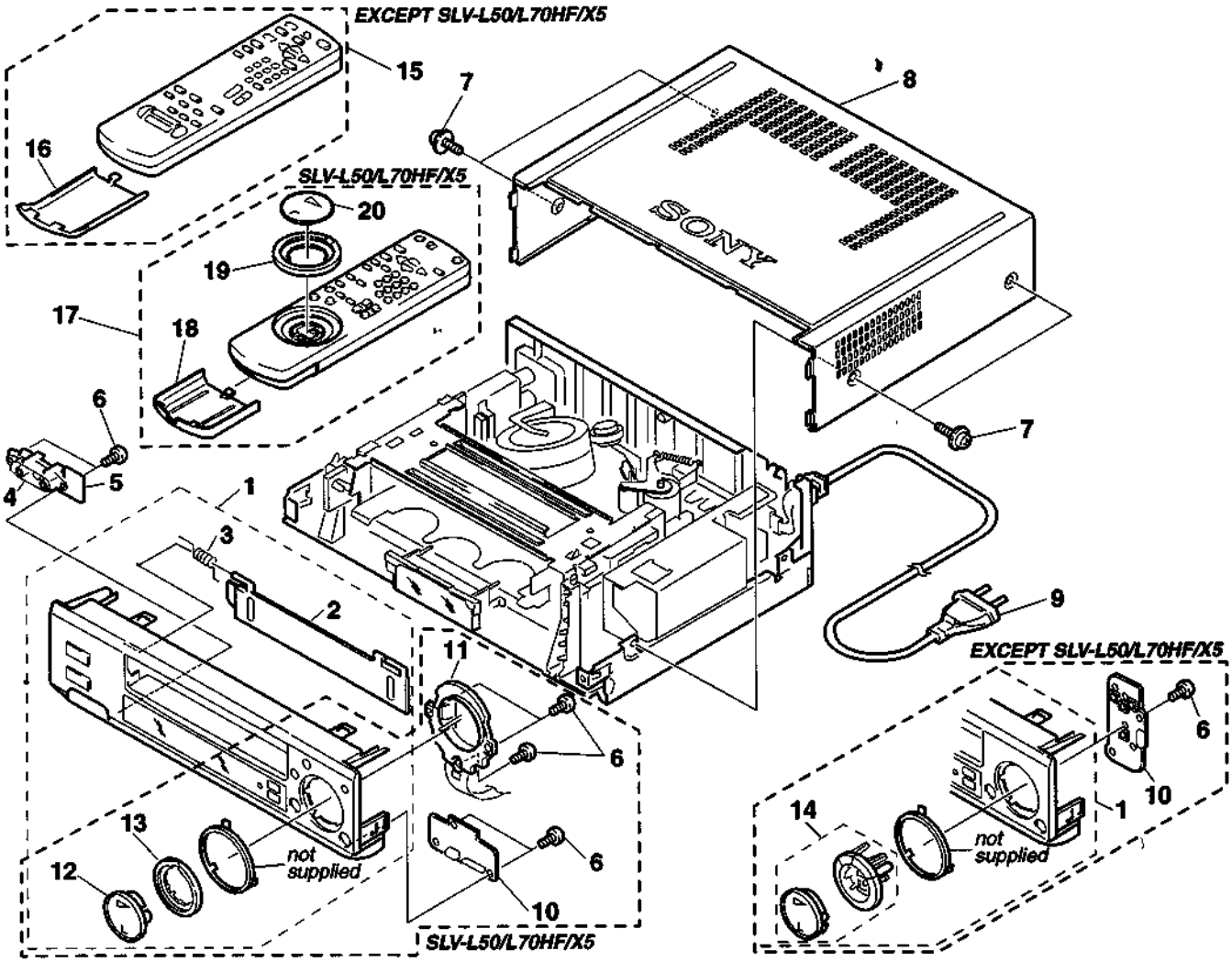
NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (#mark) list is given in the last of this parts list.

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

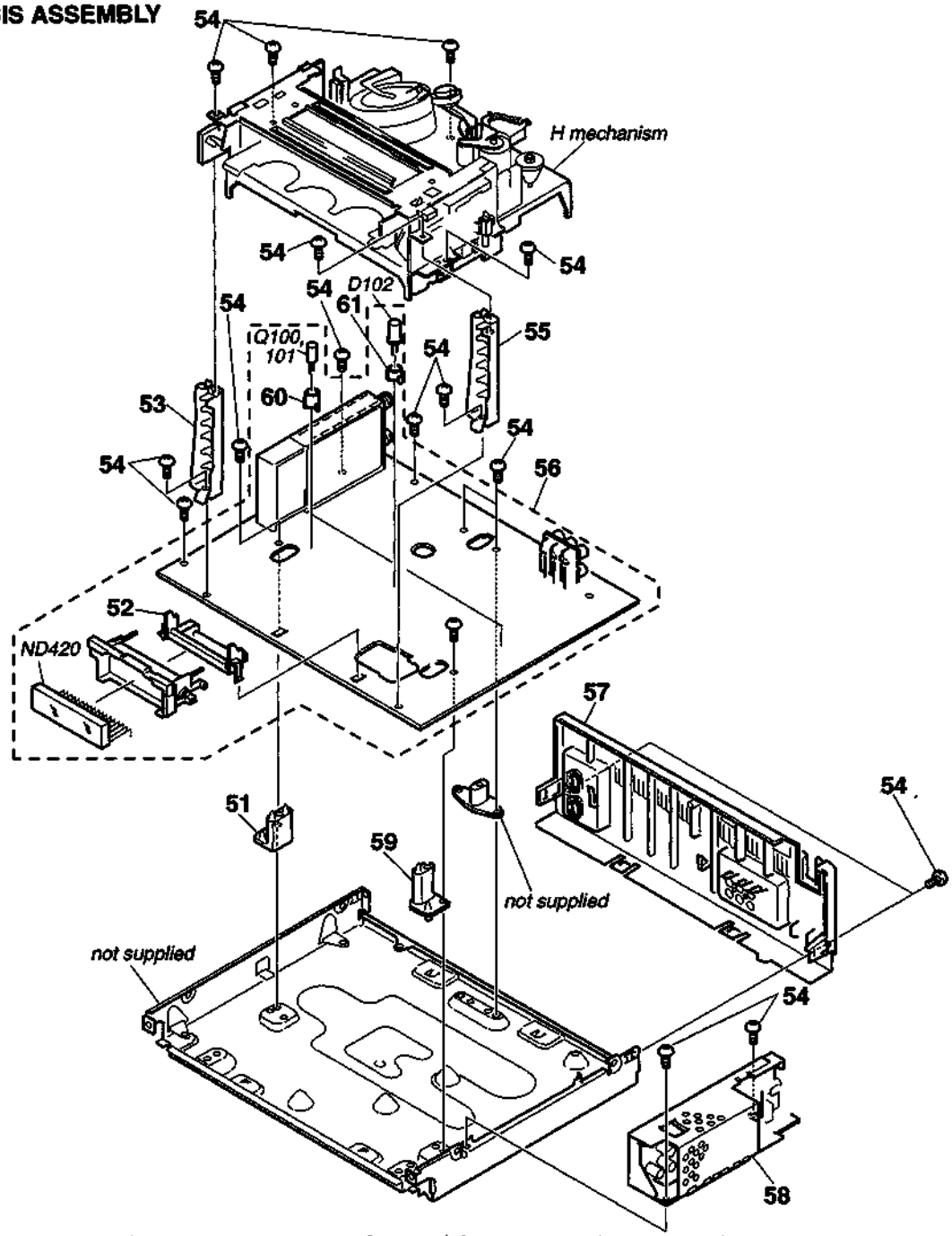
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié

5-1-1. FRONT PANEL ASSEMBLY AND CASE



Ref. No.	Part No.	Description	Remarks
1	X-3946-580-1	PANEL ASSY, FRONT (675HF)	
1	X-3946-596-1	PANEL ASSY, FRONT (L70HF)	
1	X-3946-748-1	PANEL ASSY, FRONT (695HF)	
1	X-3946-751-1	PANEL ASSY, FRONT (495)	
1	X-3946-754-1	PANEL ASSY, FRONT (L60HF)	
1	X-3946-756-1	PANEL ASSY, FRONT (L50)	
1	X-3946-758-1	PANEL ASSY, FRONT (L40)	
1	X-3947-032-1	PANEL ASSY, FRONT (676HF)	
1	X-3947-034-1	PANEL ASSY, FRONT (X5)	
1	X-3947-036-1	PANEL ASSY, FRONT (X6HF)	
1	X-3947-069-1	PANEL ASSY, FRONT (685HF)	
2	3-972-774-01	DOOR, CASSETTE (EXCEPT 676HF, X5, X6HF)	
2	3-972-774-21	DOOR, CASSETTE (676HF, X5, X6HF)	
3	3-953-432-01	SPRING (GE), FL	
* 4	3-972-521-01	JACK, COVER (685HF, 695HF, L70HF)	
* 4	3-972-521-11	JACK, COVER (495, L50, X5)	
* 5	1-664-505-11	JK-151 BOARD (495,685HF,695HF,L50,L70HF,X5)	
6	4-921-277-41	SCREW (B2 6X8), TAPPING, BIND	
7	3-710-901-11	SCREW, TAPPING	
* 8	3-972-502-01	CASE, UPPER BA (EXCEPT 676HF, X5, X6HF)	
* 8	3-972-502-31	CASE, UPPER BA (676HF, X5, X6HF)	
⚠9	1-777-851-21	CORD, POWER(US, Canadian)	
⚠9	1-777-854-21	CORD, POWER(Mexican, Panamanian)	
⚠9	1-777-857-21	CORD, POWER(Chilean, PX)	
* 10	1-664-504-11	DS-75 BOARD	
11	1-762-844-21	SWITCH, ROTARY (L50, L70HF, X5)	
12	3-972-782-01	BUTTON, CENTER (L50, L70HF)	
12	3-972-782-51	BUTTON, CENTER (X5)	
13	3-972-783-01	RING, JOG (L50, L70HF, X5)	
14	X-3946-598-1	BUTTON ASSY, FUNCTION (676HF, X6HF)	
15	1-475-026-11	REMOTE COMMANDER(RMT-V198C)(L40)	
15	1-475-027-21	REMOTE COMMANDER(RMT-V202A)(695HF)	
15	1-475-032-11	REMOTE COMMANDER(RMT-V203) (675HF, 676HF)	
15	1-475-032-21	REMOTE COMMANDER(RMT-V203A) (495, 685HF)	
15	1-475-032-31	REMOTE COMMANDER(RMT-V203B) (L60HF, X6HF)	
16	3-709-128-01	COVER, BATTERY (EXCEPT 695HF, L40, L50, L70HF, X5)	
16	3-709-129-01	COVER, BATTERY (695HF)	
16	3-709-133-01	COVER, BATTERY (L40)	
17	1-475-031-21	REMOTE COMMANDER (RMT-V201A) (L50, L70HF, X5)	
18	3-709-126-01	COVER, BATTERY (L50, L70HF, X5)	
19	3-972-783-21	RING, JOG (L50, L70HF, X5)	
20	3-972-850-01	BUTTON, FUNCTION (L50, L70HF, X5)	

5-1-2. CHASSIS ASSEMBLY

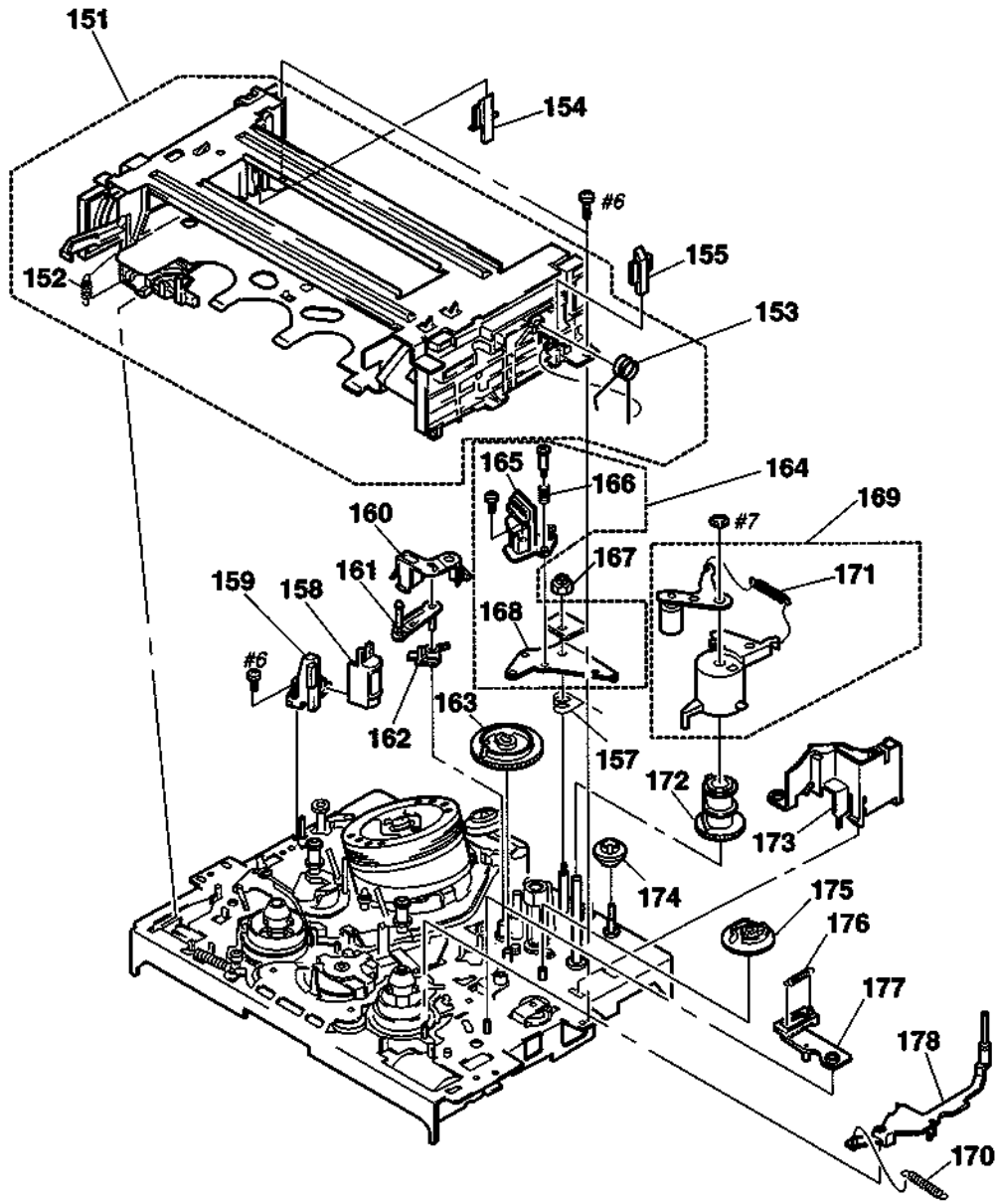


Ref. No.	Part No.	Description	Remarks
* 51	3-959-381-01	BASE (L), MD	
* 52	3-966-865-01	BASE, INDICATION TUBE	
* 53	3-959-388-01	BASE (L), FL	
54	3-970-608-21	SUMITITE (B3), +BV	
* 55	3-959-389-01	BASE (R), FL	
* 56	A-6791-105-A	MA-289B COMPLETE PCB BOARD, COMPLETE (675HF, 676HF)	
* 56	A-6791-110-A	MA-289A COMPLETE PCB BOARD, COMPLETE (685HF, 695HF)	
* 56	A-6791-124-A	MA-289C COMPLETE PCB BOARD, COMPLETE (495)	
* 56	A-6791-125-A	MA-289D COMPLETE PCB BOARD, COMPLETE (L70HF)	
* 56	A-6791-126-A	MA-289E COMPLETE PCB BOARD, COMPLETE (L60HF, X6HF)	
* 56	A-6791-127-A	MA-289F COMPLETE PCB BOARD, COMPLETE (L50, X5)	
* 56	A-6791-128-A	MA-289G COMPLETE PCB BOARD, COMPLETE (L40)	
* 57	3-972-504-01	PANEL, REAR (675HF, 676HF)	
* 57	3-972-504-11	PANEL, REAR (L40)	
* 57	3-972-504-21	PANEL, REAR (L50, X5HF)	
* 57	3-972-504-31	PANEL, REAR (L70HF)	
* 57	3-972-504-41	PANEL, REAR (L60HF, X6HF)	
* 57	3-972-504-71	PANEL, REAR (685HF, 695HF)	
* 57	3-972-504-81	PANEL, REAR (495)	
⚠58	1-468-168-11	POWER BLOCK SR701(EXCEPT Chilean, PX)	
⚠58	1-468-169-11	POWER BLOCK HS-821SF (Chilean, PX)	
* 59	3-959-383-01	BASE (R), MD	
* 60	3-960-273-01	SPACER, TOP END	
* 61	3-960-274-01	SPACER, LED	
D102	8-719-048-26	DIODE GL528V1	
ND420	1-517-595-11	TUBE, FLUORESCENT INDICATOR	
Q100	8-729-025-92	PHOTO TRANSISTOR PT380F	
Q101	8-729-025-92	PHOTO TRANSISTOR PT380F	

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

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

5-1-3. MECHANISM DECK ASSEMBLY-1



Ref. No.	Part No	Description	Remarks
151	A-6759-603-A	FL BLOCK ASSY	
152	3-958-467-01	SPRING, TENSION COIL	
153	3-970-471-01	SPRING, TORSION	
154	3-958-488-03	PLATE, LIGHT GUIDE, END SENSOR	
155	3-970-473-01	PLATE, LIGHT GUIDE, TOP SENSOR	
157	3-958-487-01	SPRING, (ACE) TORSION COIL	
158	1-500-144-11	HEAD, FE	
159	X-3945-348-2	FEH ASSY	
160	3-962-298-01	BRACKET, TG7 TAPE	
161	X-3944-797-1	TG8 ASSY	
162	3-958-421-01	HOLDER, TG8	
163	3-958-152-01	GEAR, TG8	
164	A-6736-103-A	ACE BLOCK ASSY	

Ref. No.	Part No.	Description	Remarks
165	1-506-485-11	PIN, CONNECTOR 6P	
166	3-960-439-02	SPRING (ACE), COMPRESSION	
167	3-942-867-01	NUT, AC HEIGHT ADJUSTMENT	
168	3-958-491-01	BASE, ACE	
169	A-6746-072-A	PRESS BLOCK ASSY, PINCH	
170	3-958-505-01	SPRING (SOFT BRAKE T), TENSION	
171	3-958-455-01	SPRING (PINCH), TENSION	
172	3-958-151-01	GEAR, ELEVATOR	
173	3-958-454-01	OPNER, LID	
174	3-958-501-01	SCREW, ACE ADJUSTMENT	
175	3-958-153-01	GEAR, PRESS	
176	3-958-462-01	SPRING (RVS BRAKE), TENSION	
177	X-3943-885-1	ARM ASSY, RVS BRAKE	
178	X-3943-882-1	BRAKE (T) ASSY, SOFT	

5-1-4. MECHANISM DECK ASSEMBLY-2

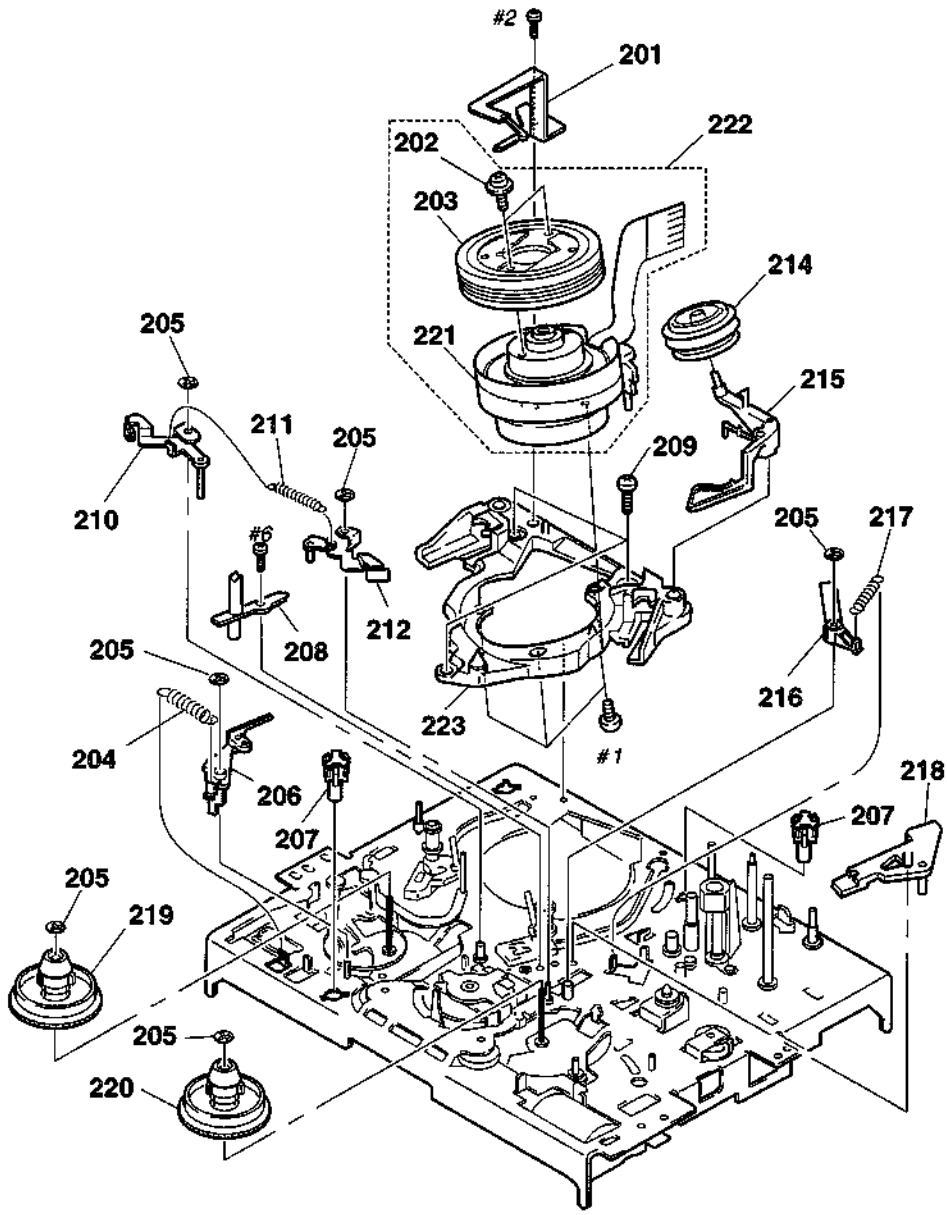
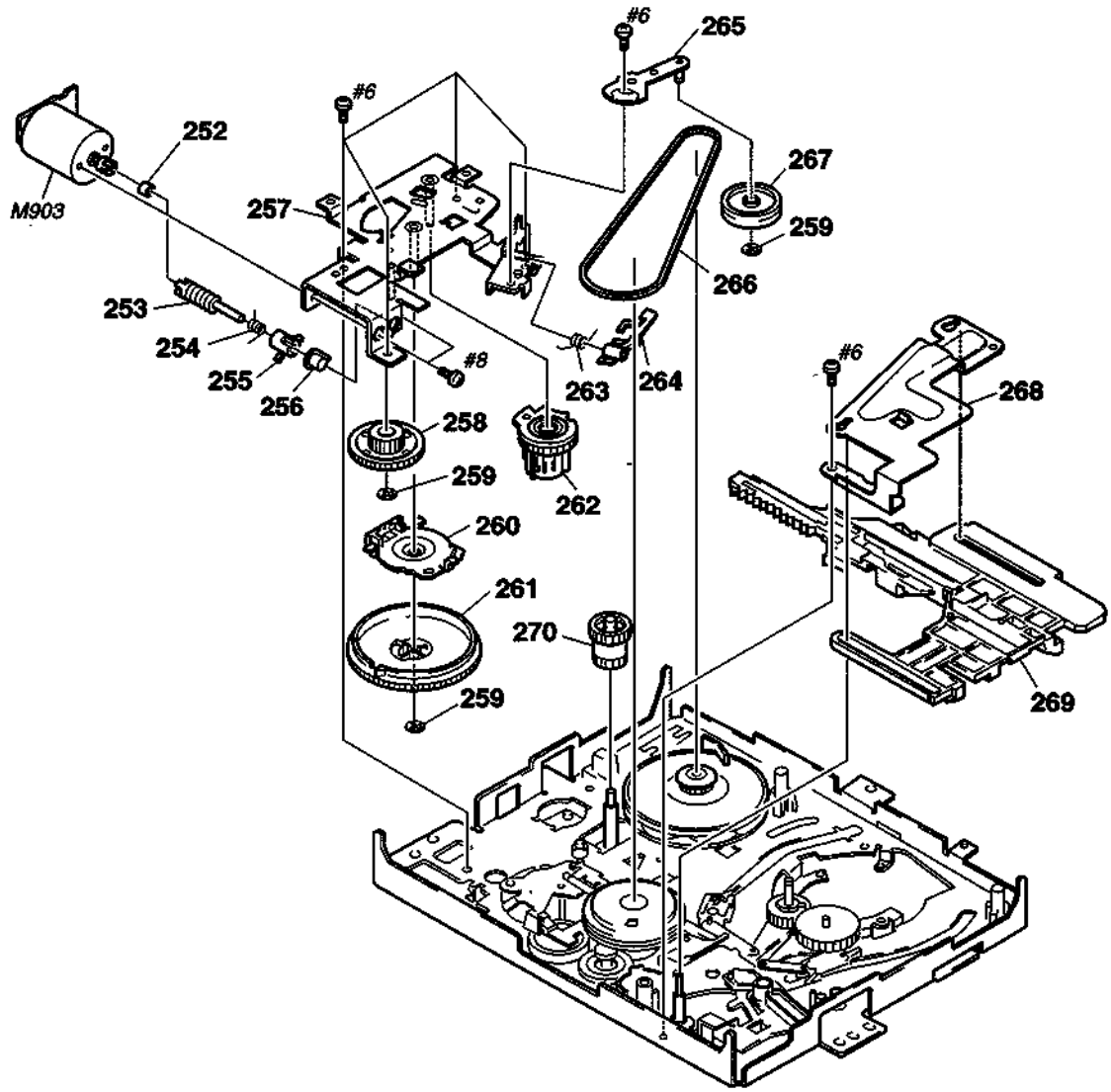


Illustration 675HF/676HF/685HF/695HF/L60HF/L70HF/X6HF

Ref. No.	Part No	Description	Remarks
201	X-3943-899-8	GROUND ASSY, SHAFT(EXCEPT L2)	
202	2-643-205-01	SCREW	
203	8-848-576-02	UPPER DRUM ASSY DZR-45-R (M901) (675HF/676HF/685HF/695HF/L60HF/L70HF/ X6HF)	
204	3-958-443-01	SPRING, STRETCH COIL SPRING	
205	3-669-595-00	WASHER (2), STOPPER	
206	3-958-450-01	BRAKE (S), SOFT	
207	3-958-390-01	SHAFT, PC BOARD	
208	3-958-391-01	PLATE, LIGHT GUIDE, LED	
209	3-961-441-01	SCREW (3x8)	
210	X-3945-443-1	BRAKE (S) ASSY, MAIN	
211	3-958-517-01	SPRING, TENSIONCOIL	

Ref. No.	Part No	Description	Remarks
212	X-3945-444-1	ARM (T) ASSY, MAIN BRAKE	
214	X-3947-255-1	ROLLER ASSY, HC	
215	3-975-724-01	ARM, HC	
216	3-960-139-01	ARM, NEUTRALITY	
217	3-958-535-01	SPRING, TENSION	
218	3-960-138-01	ARM, PENDULUM COMPULSION	
219	X-3943-902-1	TABLE, REEL (S) ASSY	
220	X-3943-903-1	TABLE, REEL (T) ASSY	
221	8-848-666-11	LOWER DRUM ASSY DZL-51B/J-RP (M901) (675HF/676HF/685HF/695HF/L60HF/L70HF/ X6HF)	
222	8-848-681-11	DRUM ASSY DZH-73B/Q-RP (M901) (495/L40/L50/X)	
223	3-969-629-01	DRUM BASE	

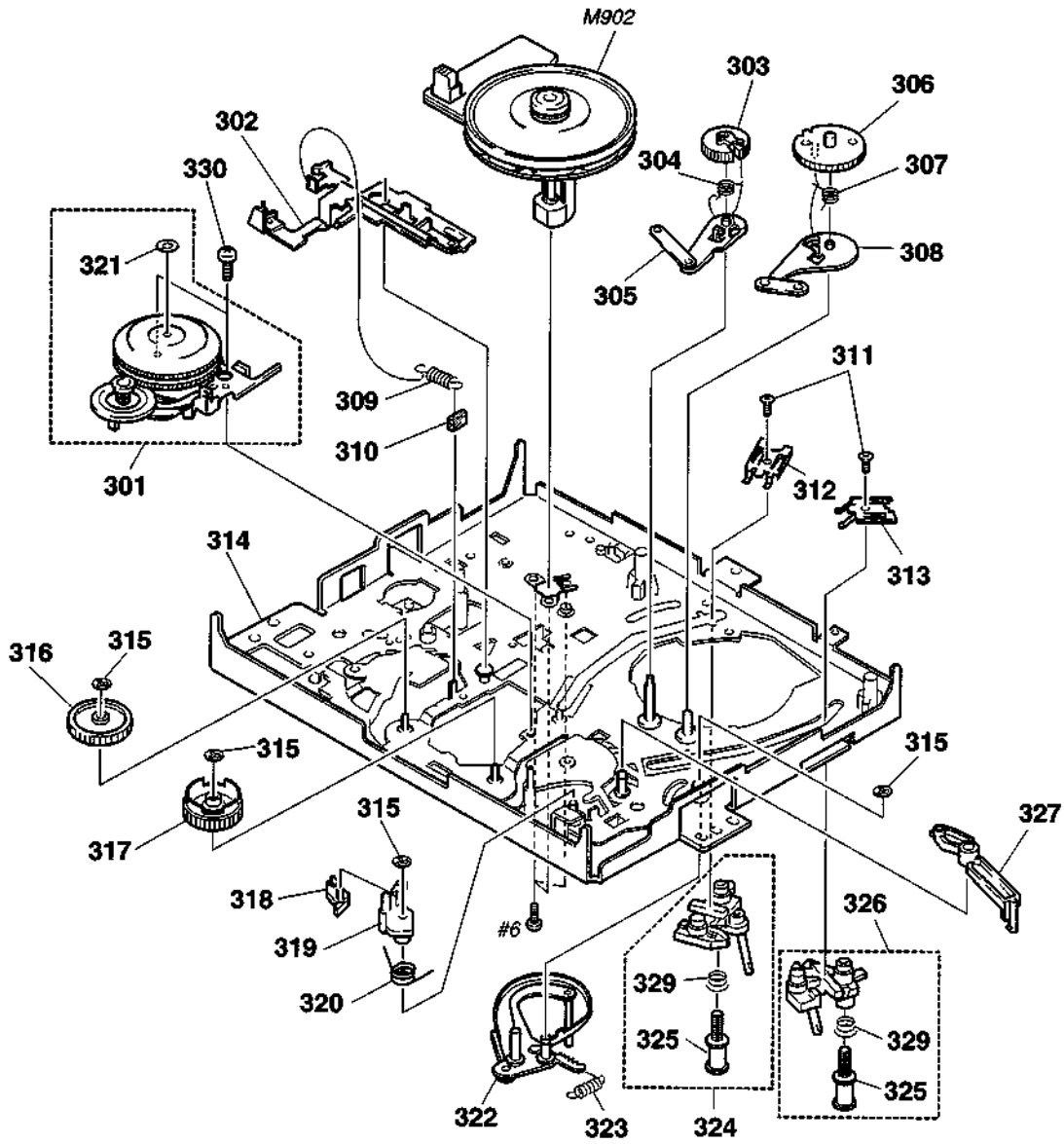
5-1-5. MECHANISM DECK ASSEMBLY-3



Ref. No.	Part No.	Description	Remarks
252	3-959-840-11	RUBBER, JOINT	
253	3-958-159-01	WORM	
254	3-958-460-01	SPRING, ONE-WAY	
255	3-958-160-01	PROPELLOR	
256	3-958-155-01	BEARING, CAM MOTOR	
* 257	X-3943-884-1	CHASSIS ASSY, CAM MOTOR	
258	3-958-157-02	WHEEL, WORM	
259	3-669-595-00	WASHER (2), STOPPER	
260	1-762-076-11	SWITCH, ROTARY	
261	3-958-161-07	GEAR, CAM	

Ref No.	Part No.	Description	Remarks
262	3-958-156-03	GEAR, FL DRIVING	
263	3-958-445-01	SPRING,TORSIONCOIL(CAP BRAKE)	
264	X-3943-888-1	BRAKE ASSY, CAP	
265	X-3943-889-1	ARM ASSY, TENSION VEHICLE	
266	3-958-361-01	BELT, TIMING	
267	3-958-448-01	WHEEL, TENSION	
* 268	3-959-763-01	RETAINER	
269	3-958-163-04	SLIDER, MAIN	
270	3-958-162-02	GEAR,UPPER/LOWER COMMUNICATION	
M903	X-3943-883-1	MOTOR ASSY, CAM	

5-1-6. MECHANISM DECK ASSEMBLY-4



Ref. No.	Part No	Description	Remarks
301	A-6739-102-A	RKB BLOCK ASSY	
302	X-3943-897-1	LEVER ASSY, TRIGGER	
303	3-958-485-02	GEAR (T), LOADING	
304	3-960-449-01	SPRING (T), TORSION COIL	
305	X-3943-891-3	LEVER (T) ASSY, LOADING	
306	3-958-476-01	GEAR (S), LOADING	
307	3-960-448-01	SPRING (S), TORSION COIL	
308	X-3943-890-2	LEVER (S) ASSY, LOADING	
309	3-958-529-01	SPRING (MOMENT), TENSION	
310	3-959-840-11	RUBBER, JOINT	
311	3-960-720-01	SCREW	
312	3-960-688-01	SPRING, LEAF (T), LOADING	
313	3-960-687-01	SPRING, LEAF (S), LOADING	
314	X-3945-485-4	CHASSIS ASSY, MECHANICAL	
315	3-669-595-00	WASHER (2), STOPPER	

Ref. No.	Part No	Description	Remarks
316	3-962-960-01	GEAR (T-K), IDLER	
317	3-962-959-01	GEAR (S-K), IDLER	
318	3-958-533-01	CLAW, S WINDING	
319	3-958-532-01	ARM, S WINDING	
320	3-958-534-01	SPRING, TORSION	
321	3-966-092-01	RING, RETAINING, SLIT WASHER	
322	X-3943-886-1	TG1 ASSY	
323	3-958-492-01	SPRING (TG1), TENSION COIL	
324	A-6750-325-A	T BLOCK ASSY, SHUTTLE	
325	X-3944-378-1	ROLLER ASSY, GUIDE	
326	A-6750-316-A	SHUTTLE (S) BLOCK ASSY	
327	3-958-504-01	ARM, FIXED RELEASE	
329	3-965-178-01	SPRING	
M902	1-698-409-14	MOTOR, DC (CAPSTAN)	

5-2. ELECTRICAL PARTS LIST

NOTE:

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

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 spécifie

- 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, -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.
- CAPACITORS: uF: µF
- RESISTORS All resistors are in ohms. METAL: metal-film resistor METAL OXIDE: Metal Oxide-film resistor F: nonflammable
- COILS uH: µH
- SEMICONDUCTORS In each case, u: µ, for example: uA...: µA... , uPA... , µPA... , uPB... , µPB... , uPC... , µPC.. , uPD..., µPD...

Ref. No.	Part No.	Description			Remarks
*	1-664-504-11	DS-75 BOARD (Ref.No.:1,000 Series)			
		**********			
		< CONNECTOR >			
CN442	1-774-471-41	CONNECTOR, FFC/FPC 5P (L50,L70HF,X5)			
		< DIODE >			
D441	8-719-056-06	DIODE SLR-342DC3F (L50,L70HF,X5)			
		< JUMPER RESISTOR >			
JR700	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JR701	1-216-295-91	CONDUCTOR, CHIP	(2012)		
JR702	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JR703	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JR704	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JR705	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JR706	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JR707	1-216-295-91	CONDUCTOR, CHIP	(2012)		
		< RESISTOR >			
R451	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R452	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R454	1-216-041-00	METAL CHIP	470	5%	1/10W (L50,L70HF,X5)
		< SWITCH >			
S441	1-571-977-11	SWITCH, TACTIL(FF) (495,675HF,676HF,685HF,695HF,L40,L60HF,X6HF)			
S442	1-571-977-11	SWITCH, TACTIL(PB) (495,675HF,676HF,685HF,695HF,L40,L60HF,X6HF)			
S443	1-571-977-11	SWITCH, TACTIL(STOP) (495,675HF,676HF,685HF,695HF,L40,L60HF,X6HF)			
S444	1-571-977-11	SWITCH, TACTIL(REW) (495,675HF,676HF,685HF,695HF,L40,L60HF,X6HF)			
S445	1-571-977-11	SWITCH, TACTIL (JOG) (L50,L70HF,X5)			
S446	1-571-977-11	SWITCH, TACTIL (FF) (L50,L70HF,X5)			
S447	1-571-977-11	SWITCH, TACTIL (REW) (L50,L70HF,X5)			
*	1-664-505-11	JK-151 BOARD (495,685HF,695HF,L50,L70HF,X5) (Ref.No.:2,000 Series)			
		**********			
		< CAPACITOR >			
C803	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C805	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V (685HF,695HF,L70HF)
C806	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V

Ref. No.	Part No.	Description			Remarks
		< JACK >			
CJ801	1-774-509-11	JACK, PIN 3P(LINE IN 2) (685HF,695HF,L70HF)			
CJ801	1-774-510-11	JACK, PIN 2P(LINE IN 2)(495,L50,X5)			
		< CONNECTOR >			
CN801	1-506-483-21	PIN, CONNECTOR 4P (495,L50,X5)			
CN801	1-506-484-11	PIN, CONNECTOR 5P (685H,695HF,L70HF)			
		< DIODE >			
D802	8-719-108-12	DIODE RD9.1E-W (685HF,695HF,L70HF)			
D801	8-719-108-12	DIODE RD9.1E-W			
D803	8-719-109-84	DIODE RD5.1ESB2			
D804	8-719-108-12	DIODE RD9 1E-W			
		< JUMPER RESISTOR >			
JS801	1-216-295-91	CONDUCTOR, CHIP (2012) (495,L50,X5)			
		< RESISTOR >			
R801	1-216-295-91	CONDUCTOR, CHIP(2012)			
R802	1-216-295-91	CONDUCTOR, CHIP(2012)(685HF,695HF,L70HF)			
R803	1-216-022-00	METAL CHIP	75	5%	1/10W
*	A-6791-105-A	MA-289B BOARD, COMPLETE (675HF,676HF)			
		**********			
*	A-6791-110-A	MA-289A BOARD, COMPLETE (685HF,695HF)			
		**********			
*	A-6791-124-A	MA-289C BOARD, COMPLETE (495)			
		**********			
*	A-6791-125-A	MA-289D BOARD, COMPLETE (L70HF)			
		**********			
*	A-6791-126-A	MA-289E BOARD, COMPLETE (L60HF,X6HF)			
		**********			
*	A-6791-127-A	MA-289F BOARD, COMPLETE (L50, X5)			
		**********			
*	A-6791-128-A	MA-289G BOARD, COMPLETE (L40)			
		**********			(Ref.No.:1,000 Series)
*	3-960-273-01	SPACER, TOP END			
*	3-960-274-01	SPACER, LED			
*	3-966-865-01	BASE, INDICATION TUBE			
		< BUZZER >			
BZ160	1-529-080-11	BUZZER, PIEZOELECTRIC			
		< CAPACITOR >			
C102	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C103	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C104	1-124-261-00	ELECT	10uF	20%	50V
C106	1-104-760-11	CERAMIC CHIP	0.047uF	10%	50V
C111	1-163-031-11	CERAMIC CHIP	0.01uF		50V

Ref No	Part No	Description			Remarks
C112	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C113	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C114	1-163-031-11	CERAMIC CHIP	0 01uF		50V
C115	1-163-038-00	CERAMIC CHIP	0 1uF		25V
C118	1-124-589-11	ELECT	47uF	20%	16V
C119	1-124-589-11	ELECT	47uF	20%	16V
C120	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C131	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C132	1-124-589-11	ELECT	47uF	20%	16V
C134	1-163-031-11	CERAMIC CHIP	0 01uF		50V
C140	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C141	1-124-234-00	ELECT	22uF	20%	16V
C142	1-124-234-00	ELECT	22uF	20%	16V
C144	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C146	1-124-234-00	ELECT	22uF	20%	16V
C147	1-124-584-00	ELECT	100uF	20%	10V
C148	1-163-038-00	CERAMIC CHIP	0 1uF		25V
C160	1-163-038-00	CERAMIC CHIP	0 1uF		25V
C161	1-124-584-00	ELECT	100uF	20%	10V
C162	1-104-905-11	CAPACITOR	0.22F		5 5V
C163	1-163-227-11	CERAMIC CHIP	10PF	0 5PF	50V
C164	1-163-227-11	CERAMIC CHIP	10PF	0 5PF	50V
C165	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C166	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C167	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C168	1-124-261-00	ELECT	10uF	20%	50V
C170	1-124-234-00	ELECT	22uF	20%	16V
C171	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C172	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C201	1-126-160-11	ELECT	1uF	20%	50V
C202	1-163-809-11	CERAMIC CHIP	0 047uF	10%	25V
C204	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C205	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C206	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C207	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C208	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C209	1-124-234-00	ELECT	22uF	20%	16V
C210	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C211	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C213	1-163-257-11	CERAMIC CHIP	180PF	5%	50V
C214	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C217	1-126-160-11	ELECT	1uF	20%	50V
C219	1-163-038-00	CERAMIC CHIP	0 1uF		25V
C220	1-126-160-11	ELECT	1uF	20%	50V
C222	1-163-038-00	CERAMIC CHIP	0.1uF		25V
			(495,L50,685HF,695HF,L70HF,X5)		
C223	1-124-589-11	ELECT	47uF	20%	16V
C224	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C226	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C227	1-163-091-00	CERAMIC CHIP	8PF		50V
C228	1-124-261-00	ELECT	10uF	20%	50V
C229	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C230	1-124-589-11	ELECT	47uF	20%	16V
C231	1-124-261-00	ELECT	10uF	20%	50V
C232	1-126-160-11	ELECT	1uF	20%	50V
C233	1-126-160-11	ELECT	1uF	20%	50V
C234	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C235	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C236	1-126-160-11	ELECT	1uF	20%	50V
C237	1-164-232-11	CERAMIC CHIP	0 01uF		50V
C238	1-163-038-00	CERAMIC CHIP	0 1uF		25V

Ref. No.	Part No.	Description			Remarks
C239	1-124-589-11	ELECT	47uF	20%	16V
C240	1-126-160-11	ELECT	1uF	20%	50V
C241	1-163-037-11	CERAMIC CHIP	0 022uF	10%	25V
C242	1-126-160-11	ELECT	1uF	20%	50V
C243	1-164-232-11	CERAMIC CHIP	0 01uF		50V
C244	1-164-004-11	CERAMIC CHIP	0 1uF	10%	25V
C245	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C246	1-126-160-11	ELECT	1uF	20%	50V
C247	1-163-809-11	CERAMIC CHIP	0 047uF	10%	25V
C248	1-164-232-11	CERAMIC CHIP	0 01uF		50V
C249	1-124-589-11	ELECT	47uF	20%	16V
C250	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C251	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C252	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C253	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C254	1-163-038-00	CERAMIC CHIP	0 1uF		25V
C255	1-163-038-00	CERAMIC CHIP	0 1uF		25V
C256	1-163-038-00	CERAMIC CHIP	0 1uF		25V
C260	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C261	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C264	1-163-037-11	CERAMIC CHIP	0 022uF	10%	25V
C265	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C266	1-164-232-11	CERAMIC CHIP	0 01uF		50V
C267	1-163-037-11	CERAMIC CHIP	0 022uF	10%	25V
C268	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C269	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C270	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C271	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C272	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C273	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C274	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C276	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C277	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C278	1-163-037-11	CERAMIC CHIP	0 022uF	10%	25V
C279	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C280	1-124-584-00	ELECT	100uF	20%	10V
C281	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C282	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C283	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C284	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C286	1-124-584-00	ELECT	100uF	20%	10V
C287	1-163-227-11	CERAMIC CHIP	10PF	0 5PF	50V
C288	1-163-227-11	CERAMIC CHIP	10PF	0 5PF	50V
C289	1-163-038-00	CERAMIC CHIP	0 1uF		25V
C301	1-163-038-00	CERAMIC CHIP	0 1uF		25V
C302	1-124-589-11	ELECT	47uF	20%	16V
C303	1-126-160-11	ELECT	1uF	20%	50V
					(495,L40,L50,X5)
C304	1-126-160-11	ELECT	1uF	20%	50V
					(495,L50,X5)
C305	1-126-160-11	ELECT	1uF	20%	50V
C306	1-126-160-11	ELECT	1uF	20%	50V
C307	1-124-261-00	ELECT	10uF	20%	50V
C308	1-124-589-11	ELECT	47uF	20%	16V
C309	1-126-963-11	ELECT	4 7uF	20%	50V
C310	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C311	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C312	1-137-370-11	FILM	0.01uF	5%	50V
C313	1-126-964-11	ELECT	10uF	20%	50V
C314	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C315	1-126-160-11	ELECT	1uF	20%	50V
C317	1-126-963-11	ELECT	4.7uF	20%	50V

Ref. No.	Part No.	Description			Remarks
C318	1-126-967-11	ELECT	47uF	20%	16V
C321	1-124-589-11	ELECT	47uF	20%	16V
C322	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C323	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C324	1-104-697-11	FILM	0.047uF	5%	100V
C341	1-124-584-00	ELECT	100uF	20%	10V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C342	1-164-232-11	CERAMIC CHIP	0.01uF		50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C343	1-124-257-00	ELECT	2.2uF	20%	50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C344	1-164-232-11	CERAMIC CHIP	0 01uF		50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C345	1-126-160-11	ELECT	1uF	20%	50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C346	1-164-232-11	CERAMIC CHIP	0 01uF		50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C347	1-163-031-11	CERAMIC CHIP	0.01uF		50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C350	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C351	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C352	1-163-031-11	CERAMIC CHIP	0.01uF		50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C353	1-163-038-00	CERAMIC CHIP	0.1uF		25V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C356	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C357	1-163-031-11	CERAMIC CHIP	0.01uF		50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C358	1-164-004-11	CERAMIC CHIP	0 1uF	10%	25V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C361	1-164-222-11	CERAMIC CHIP	0.22uF		25V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C362	1-164-222-11	CERAMIC CHIP	0.22uF		25V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C363	1-126-160-11	ELECT	1uF	20%	50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C364	1-126-160-11	ELECT	1uF	20%	50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C365	1-126-160-11	ELECT	1uF	20%	50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C366	1-126-160-11	ELECT	1uF	20%	50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C369	1-124-261-00	ELECT	10uF	20%	50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C370	1-124-261-00	ELECT	10uF	20%	50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C371	1-124-261-00	ELECT	10uF	20%	50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C372	1-124-261-00	ELECT	10uF	20%	50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C373	1-124-261-00	ELECT	10uF	20%	50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C374	1-126-160-11	ELECT	1uF	20%	50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C375	1-137-378-11	FILM	0.22uF	5%	50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C376	1-137-437-11	FILM	0.0056uF	5%	50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C377	1-126-967-11	ELECT	47uF	20%	50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C378	1-124-261-00	ELECT	10uF	20%	50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			

Ref. No.	Part No.	Description			Remarks
C379	1-124-257-00	ELECT	2.2uF	20%	50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C380	1-124-261-00	ELECT	10uF	20%	50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C381	1-126-967-11	ELECT	47uF	20%	50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C382	1-137-437-11	FILM	0.0056uF	5%	50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C383	1-137-378-11	FILM	0.22uF	5%	50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C384	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C385	1-124-589-11	ELECT	47uF	20%	16V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C386	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C387	1-124-589-11	ELECT	47uF	20%	16V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C388	1-124-589-11	ELECT	47uF	20%	16V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C389	1-104-760-11	CERAMIC CHIP	0.047uF	10%	50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C390	1-164-222-11	CERAMIC CHIP	0.22uF		25V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C391	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C392	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C405	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C406	1-104-760-11	CERAMIC CHIP	0.047uF	10%	50V
C407	1-104-760-11	CERAMIC CHIP	0.047uF	10%	50V
C421	1-124-589-11	ELECT	47uF	20%	16V
C422	1-124-589-11	ELECT	47uF	20%	16V
C423	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C424	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C460	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C461	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C462	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C501	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C502	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C503	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C504	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C505	1-124-589-11	ELECT	47uF	20%	16V
C506	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C507	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C508	1-124-589-11	ELECT	47uF	20%	16V
C509	1-126-160-11	ELECT	1uF	20%	50V
C510	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C512	1-126-160-11	ELECT	1uF	20%	50V
C513	1-163-227-11	CERAMIC CHIP	10PF	0 5PF	50V
C541	1-126-935-11	ELECT	470uF	20%	6.3V
C542	1-124-589-11	ELECT	47uF	20%	16V
C543	1-124-589-11	ELECT	47uF	20%	16V
C544	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C570	1-124-261-00	ELECT	10uF	20%	50V
C571	1-124-261-00	ELECT	10uF	20%	50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C572	1-124-261-00	ELECT	10uF	20%	50V
C573	1-124-261-00	ELECT	10uF	20%	50V
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
C574	1-163-031-11	CERAMIC CHIP	0.01uF		50V

Ref. No.	Part No.	Description			Remarks
C575	1-124-589-11	ELECT	47uF	20%	16V
C600	1-128-131-11	ELECT	22uF	20%	50V
C602	1-124-589-11	ELECT	47uF	20%	16V
C604	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C605	1-124-589-11	ELECT	47uF	20%	16V
C606	1-128-131-11	ELECT	22uF	20%	50V
C608	1-124-589-11	ELECT	47uF	20%	16V
C701	1-124-589-11	ELECT	47uF	20%	16V
C704	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C706	1-126-964-11	ELECT	10uF	20%	50V
C707	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C708	1-124-589-11	ELECT	47uF	20%	16V
C709	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C710	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C711	1-163-024-00	CERAMIC CHIP	0.018uF	10%	50V (495,L40,L50,X5)
C731	1-124-261-00	ELECT	10uF	20%	50V (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
C732	1-124-261-00	ELECT	10uF	20%	50V (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
C733	1-124-261-00	ELECT	10uF	20%	50V
C735	1-124-261-00	ELECT	10uF	20%	50V (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
C736	1-124-589-11	ELECT	47uF	20%	16V (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
C980	1-163-038-00	CERAMIC CHIP	0.1uF		25V (495,685HF,695HF)
C981	1-124-589-11	ELECT	47uF	20%	16V (495,685HF,695HF)
C982	1-163-038-00	CERAMIC CHIP	0.1uF		25V (495,685HF,695HF)
C983	1-163-038-00	CERAMIC CHIP	0.1uF		25V (495,685HF,695HF)
C984	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V (495,685HF,695HF)
C985	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V (495,685HF,695HF)
C986	1-163-038-00	CERAMIC CHIP	0.1uF		25V (495,685HF,695HF)
		< JACK >			
CJ540	1-779-010-11	JACK, PIN 4P (LINE IN/OUT)(495,L40)			
CJ540	1-779-011-11	JACK, PIN 6P (LINE IN/OUT) (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
CJ540	1-779-012-11	JACK, PIN 5P (LINE IN/OUT)(L50,X5)			
CNJ980	1-779-013-11	JACK, MINIATURE(CABLE BOX CONTROL) (495,685HF,695HF)			
		< CONNECTOR >			
CN101	1-506-470-11	PIN, CONNECTOR 5P			
* CN102	1-766-538-11	CONNECTOR, BOARD TO BOARD 8P			
* CN103	1-766-537-11	CONNECTOR (HMD) 5P			
* CN104	1-766-716-11	CONNECTOR, BOARD TO BOARD 3P			
CN140	1-506-468-11	PIN, CONNECTOR 3P			
CN260	1-563-585-11	CONNECTOR, FLEXIBLE 8P (495,L40,L50,X5)			
CN260	1-766-986-11	CONNECTOR, FFC/FPC 13P (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
* CN261	1-560-892-00	PIN, CONNECTOR 4P			
CN301	1-506-469-11	PIN, CONNECTOR 4P			
CN302	1-506-468-11	PIN, CONNECTOR 3P			

Ref. No.	Part No.	Description	Remarks
* CN341	1-560-890-00	PIN, CONNECTOR 2P (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)	
CN401	1-506-469-11	PIN, CONNECTOR 4P(EXCEPT L50,L70HF,X5)	
CN401	1-506-474-11	PIN, CONNECTOR 9P(L50,L70HF,X5)	
CN423	1-506-469-11	PIN, CONNECTOR 4P(495,L50,X5)	
CN423	1-506-470-11	PIN, CONNECTOR 5P(685HF,695HF,L70HF)	
CN601	1-569-667-11	CONNECTOR, BOARD TO BOARD 8P	
		< DIODE >	
D102	8-719-048-26	DIODE GL528V1	
D161	8-719-200-82	DIODE 11ES2	
D162	8-719-200-82	DIODE 11ES2	
D301	8-719-911-19	DIODE 1SS119 (495,L40,L50,X5)	
D302	8-719-911-19	DIODE 1SS119 (495,L40,L50,X5)	
D361	8-719-911-19	DIODE 1SS119 (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)	
D401	8-719-054-09	DIODE MPG5304S	
D501	8-719-911-19	DIODE 1SS119	
D540	8-719-109-84	DIODE RD5.1ES-B1	
D600	8-719-200-82	DIODE 11ES2	
D601	8-719-911-19	DIODE 1SS119	
D602	8-719-109-85	DIODE RD5.1ES-B2	
D702	8-719-110-78	DIODE RD33ES-B2	
D980	8-719-110-08	DIODE RD8.2ES-B2 (495,685HF,695HF)	
D981	8-719-110-08	DIODE RD8.2ES-B2 (495,685HF,695HF)	
D982	8-719-911-19	DIODE 1SS119 (495,685HF,695HF)	
		< IC >	
IC131	8-759-353-59	IC LB1643	
IC160	8-759-462-97	IC M37777M7A-VSX8521-2 (495,685HF,695HF)	
IC160	8-759-462-98	IC M37776M5A-VSX8513-2 (EXCEPT 495,685HF,695HF)	
IC201	8-759-439-49	IC LA71530M	
IC202	8-759-439-51	IC LC89978M-TE-L	
IC260	8-759-352-17	IC HA118195NT	
IC301	8-759-089-84	IC BA7755AF-T1	
IC340	8-759-055-49	IC AN3327K (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)	
IC360	8-759-445-22	IC TDA9603H/N2,557 (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)	
IC361	8-759-708-05	IC NJM78L05A (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)	
IC403	8-742-042-00	RE CEIVER HIC SBX1986-51	
IC420	8-759-366-44	IC uPD16312GB-3B4	
IC461	8-759-248-87	IC MM1256XF-BE	
IC462	8-759-433-52	IC AT24C01A-10SC-#B (EXCEPT 495,685HF,695HF)	
IC462	8-759-433-53	IC AT24C02N-10SC-#B (495,685HF,695HF)	
IC501	8-759-354-26	IC BU6188FS-E2	
IC540	8-759-100-96	IC uPC4558G2	
IC600	8-759-438-18	IC PQ12RD08	
IC733	8-742-037-00	IC SBX1837-51 (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)	
IC980	8-759-356-27	IC NJM2129M-TE2 (495,685HF,695HF)	
		< JUMPER RESISTOR >	
JR100	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR101	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR102	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR105	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR106	1-216-296-00	METAL CHIP 0 5% 1/8W	

Ref. No.	Part No.	Description			Remarks
JR107	1-216-296-00	METAL CHIP	0	5%	1/8W
JR108	1-216-296-00	METAL CHIP	0	5%	1/8W
JR111	1-216-296-00	METAL CHIP	0	5%	1/8W
JR112	1-216-296-00	METAL CHIP	0	5%	1/8W
JR113	1-216-296-00	METAL CHIP	0	5%	1/8W
JR114	1-216-296-00	METAL CHIP	0	5%	1/8W
JR115	1-216-295-00	METAL CHIP	0	5%	1/10W
JR116	1-216-295-00	METAL CHIP	0	5%	1/10W
JR117	1-216-295-00	METAL CHIP	0	5%	1/10W
JR119	1-216-296-00	METAL CHIP	0	5%	1/8W
JR120	1-216-296-00	METAL CHIP	0	5%	1/8W
JR221	1-216-296-00	METAL CHIP	0	5%	1/8W
JR222	1-216-296-00	METAL CHIP	0	5%	1/8W
JR250	1-216-296-00	METAL CHIP	0	5%	1/8W
JR251	1-216-296-00	METAL CHIP	0	5%	1/8W
JR253	1-216-296-00	METAL CHIP	0	5%	1/8W
JR257	1-216-296-00	METAL CHIP	0	5%	1/8W
JR258	1-216-295-00	METAL CHIP	0	5%	1/10W
JR259	1-216-296-00	METAL CHIP	0	5%	1/8W
JR260	1-216-295-00	METAL CHIP	0	5%	1/10W
JR301	1-216-295-00	METAL CHIP	0	5%	1/10W
JR302	1-216-296-00	METAL CHIP	0	5%	1/8W
JR303	1-216-295-00	METAL CHIP	0	5%	1/10W
JR304	1-216-296-00	METAL CHIP	0	5%	1/8W
JR305	1-216-295-00	METAL CHIP	0	5%	1/10W
JR306	1-216-295-00	METAL CHIP	0	5%	1/10W
JR307	1-216-295-00	METAL CHIP	0	5%	1/10W
JR308	1-216-295-00	METAL CHIP	0	5%	1/10W
JR309	1-216-295-00	METAL CHIP	0	5%	1/10W
JR310	1-216-296-00	METAL CHIP	0	5%	1/8W
JR311	1-216-295-00	METAL CHIP	0	5%	1/10W
JR312	1-216-296-00	METAL CHIP	0	5%	1/8W
JR313	1-216-296-00	METAL CHIP	0	5%	1/8W
JR314	1-216-296-00	METAL CHIP	0	5%	1/8W
JR316	1-216-296-00	METAL CHIP	0	5%	1/8W
JR317	1-216-295-00	METAL CHIP	0	5%	1/10W
JR318	1-216-296-00	METAL CHIP	0	5%	1/8W
JR319	1-216-295-00	METAL CHIP	0	5%	1/10W
JR320	1-216-295-00	METAL CHIP	0	5%	1/10W
JR321	1-216-295-00	METAL CHIP	0	5%	1/10W
JR323	1-216-296-00	METAL CHIP	0	5%	1/8W
JR324	1-216-296-00	METAL CHIP	0	5%	1/8W
JR325	1-216-296-00	METAL CHIP	0	5%	1/8W
JR326	1-216-296-00	METAL CHIP	0	5%	1/8W
JR327	1-216-296-00	METAL CHIP	0	5%	1/8W
JR329	1-216-296-00	METAL CHIP	0	5%	1/8W
JR330	1-216-296-00	METAL CHIP	0	5%	1/8W
JR331	1-216-296-00	METAL CHIP	0	5%	1/8W
JR332	1-216-295-00	METAL CHIP	0	5%	1/10W
JR333	1-216-296-00	METAL CHIP	0	5%	1/8W
JR334	1-216-295-00	METAL CHIP	0	5%	1/10W
JR335	1-216-296-00	METAL CHIP	0	5%	1/8W
JR336	1-216-295-00	METAL CHIP	0	5%	1/10W
JR337	1-216-295-00	METAL CHIP	0	5%	1/10W
JR338	1-216-296-00	METAL CHIP	0	5%	1/8W
JR339	1-216-296-00	METAL CHIP	0	5%	1/8W
JR340	1-216-296-00	METAL CHIP	0	5%	1/8W
JR341	1-216-296-00	METAL CHIP	0	5%	1/8W
JR342	1-216-295-00	METAL CHIP	0	5%	1/10W
JR345	1-216-296-00	METAL CHIP	0	5%	1/8W
JR346	1-216-296-00	METAL CHIP	0	5%	1/8W
JR347	1-216-295-00	METAL CHIP	0	5%	1/10W
JR350	1-216-296-00	METAL CHIP	0	5%	1/8W
JR351	1-216-296-00	METAL CHIP	0	5%	1/8W
JR352	1-216-296-00	METAL CHIP	0	5%	1/8W
JR354	1-216-296-00	METAL CHIP	0	5%	1/8W
JR355	1-216-296-00	METAL CHIP	0	5%	1/8W
JR402	1-216-296-00	METAL CHIP	0	5%	1/8W
JR403	1-216-296-00	METAL CHIP	0	5%	1/8W
JR405	1-216-295-00	METAL CHIP	0	5%	1/10W
JR500	1-216-296-00	METAL CHIP	0	5%	1/8W
JR501	1-216-296-00	METAL CHIP	0	5%	1/8W
JR502	1-216-296-00	METAL CHIP	0	5%	1/8W
JR503	1-216-296-00	METAL CHIP	0	5%	1/8W
JR505	1-216-296-00	METAL CHIP	0	5%	1/8W
JR506	1-216-295-00	METAL CHIP	0	5%	1/10W
JR507	1-216-296-00	METAL CHIP	0	5%	1/8W
JR508	1-216-296-00	METAL CHIP	0	5%	1/8W
JR509	1-216-296-00	METAL CHIP	0	5%	1/8W
JR510	1-216-296-00	METAL CHIP	0	5%	1/8W
JR511	1-216-296-00	METAL CHIP	0	5%	1/8W
JR512	1-216-295-00	METAL CHIP	0	5%	1/10W
JR513	1-216-295-00	METAL CHIP	0	5%	1/10W

< JUMPER RESISTOR >

JS702	1-216-296-00	METAL CHIP	0	5%	1/8W (495,L40,L50,X5)

< COIL >

L130	1-403-588-11	COIL, CHOKE	22uH
L140	1-410-513-11	INDUCTOR	22uH
L161	1-410-513-11	INDUCTOR	22uH
L162	1-410-513-11	INDUCTOR	22uH
L163	1-410-513-11	INDUCTOR	22uH
L164	1-410-519-11	INDUCTOR	68uH
L201	1-410-516-11	INDUCTOR	39uH
L202	1-410-521-11	INDUCTOR	100uH
L204	1-410-501-11	INDUCTOR	2.2uH
L205	1-410-513-11	INDUCTOR	22uH
L206	1-410-501-11	INDUCTOR	2.2uH
L207	1-410-518-41	INDUCTOR	56uH
L262	1-408-982-11	INDUCTOR	100uH
L263	1-408-982-11	INDUCTOR	100uH
L301	1-410-521-11	INDUCTOR	100uH
L321	1-408-982-11	INDUCTOR	100uH
L341	1-408-982-11	INDUCTOR	100uH
L361	1-408-982-11	INDUCTOR	100uH (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
L501	1-410-513-11	INDUCTOR	22uH
L502	1-412-470-21	INDUCTOR	22uH
L503	1-410-513-11	INDUCTOR	22uH
L540	1-408-982-11	INDUCTOR	100uH
L570	1-408-982-11	INDUCTOR	100uH
L600	1-410-519-11	INDUCTOR	68uH
L601	1-408-970-21	INDUCTOR	10uH
L702	1-408-978-21	INDUCTOR	47uH
L703	1-410-501-11	INDUCTOR	2.2uH
L704	1-410-501-11	INDUCTOR	2.2uH
L731	1-410-513-11	INDUCTOR	22uH (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)

MA-289

Ref. No.	Part No.	Description	Remarks
		< FLUORECENT INDICATOR >	
ND420	1-517-595-11	TUBE, FLUORESCENT INDICATOR	
		< PHOTO INTERRUPTER >	
PH100	8-749-010-20	PHOTO INTERRUPTER GP3S114	
PH101	8-749-010-19	PHOTO INTERRUPTER GP3S113	
		< IC LINK >	
⚠PS403	1-533-586-31	LINK, IC 315mA	
⚠PS600	1-532-841-21	LINK, IC 1 6A	
		< TRANSISTOR >	
Q100	8-729-025-92	PHOTO TRANSISTOR PT380F	
Q101	8-729-025-92	PHOTO TRANSISTOR PT380F	
Q102	8-729-281-53	TRANSISTOR 2SC1815-GR	
Q201	8-729-230-49	TRANSISTOR 2SC2712-G	
Q202	8-729-230-49	TRANSISTOR 2SC2712-G	
Q208	8-729-230-49	TRANSISTOR 2SC2712-G	
Q209	8-729-216-21	TRANSISTOR 2SA1162Y	
Q210	8-729-230-49	TRANSISTOR 2SC2712-G	
Q211	8-729-230-49	TRANSISTOR 2SC2712-G	
Q260	8-729-230-49	TRANSISTOR 2SC2712-G	
Q301	8-729-281-53	TRANSISTOR 2SC1815-GR	
Q302	8-729-424-67	TRANSISTOR UN2216 (495,L40,L50,X5)	
Q321	8-729-802-91	TRANSISTOR 2SD879	
Q361	8-729-102-14	TRANSISTOR 2SD1021-F (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)	
Q362	8-729-102-14	TRANSISTOR 2SD1021-F (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)	
Q363	8-729-102-14	TRANSISTOR 2SD1021-F (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)	
Q364	8-729-010-05	TRANSISTOR MSB709-RT1 (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)	
Q501	8-729-216-21	TRANSISTOR 2SA1162Y	
Q502	8-729-010-05	TRANSISTOR MSB709-RT1	
Q600	8-729-140-93	TRANSISTOR 2SB733-34	
Q601	8-729-010-25	TRANSISTOR MSD601-RT1	
Q602	8-729-140-98	TRANSISTOR 2SD773-34	
Q681	8-729-010-05	TRANSISTOR MSB709-RT1	
Q731	8-729-421-19	TRANSISTOR UN2213 (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)	
		< RESISTOR >	

Ref. No.	Part No.	Description			Remarks
R100	1-216-081-00	METAL CHIP	22K	5%	1/10W
R101	1-216-033-00	METAL CHIP	220	5%	1/10W
R102	1-216-033-00	METAL CHIP	220	5%	1/10W
R103	1-216-081-00	METAL CHIP	22K	5%	1/10W
R104	1-216-113-00	METAL CHIP	470K	5%	1/10W
R105	1-216-113-00	METAL CHIP	470K	5%	1/10W
R106	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R107	1-216-049-00	METAL CHIP	1K	5%	1/10W
R108	1-247-807-31	CARBON	100	5%	1/4W
R109	1-247-807-31	CARBON	100	5%	1/4W
R111	1-216-089-00	METAL CHIP	47K	5%	1/10W
R112	1-216-089-00	METAL CHIP	47K	5%	1/10W
R113	1-216-089-00	METAL CHIP	47K	5%	1/10W
R114	1-216-089-00	METAL CHIP	47K	5%	1/10W
R115	1-216-089-00	METAL CHIP	47K	5%	1/10W
R117	1-216-041-00	METAL CHIP	470	5%	1/10W
R124	1-216-041-00	METAL CHIP	470	5%	1/10W
R125	1-216-041-00	METAL CHIP	470	5%	1/10W
R126	1-216-041-00	METAL CHIP	470	5%	1/10W
R130	1-216-041-00	METAL CHIP	470	5%	1/10W
R131	1-216-041-00	METAL CHIP	470	5%	1/10W
R132	1-216-089-00	METAL CHIP	47K	5%	1/10W
R133	1-216-081-00	METAL CHIP	22K	5%	1/10W
R140	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R160	1-216-295-00	METAL CHIP	0	5%	1/10W
R161	1-216-049-00	METAL CHIP	1K	5%	1/10W (495,L40 L70HF)
R162	1-216-049-00	METAL CHIP	1K	5%	1/10W (L60HF,L70HF,X6HF)
R163	1-216-049-00	METAL CHIP	1K	5%	1/10W (L50,X5)
R164	1-216-121-91	METAL GLAZE	1M	5%	1/10W
R165	1-216-039-00	METAL CHIP	390	5%	1/10W
R166	1-216-041-00	METAL CHIP	470	5%	1/10W
R167	1-216-295-00	METAL CHIP	0	5%	1/10W
R168	1-216-295-00	METAL CHIP	0	5%	1/10W
R169	1-216-049-00	METAL CHIP	1K	5%	1/10W (495,685HF,695HF)
R170	1-216-049-00	METAL CHIP	1K	5%	1/10W
R171	1-216-073-00	METAL CHIP	10K	5%	1/10W
R172	1-216-049-00	METAL CHIP	1K	5%	1/10W
R173	1-216-049-00	METAL CHIP	1K	5%	1/10W
R174	1-216-049-00	METAL CHIP	1K	5%	1/10W
R175	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R176	1-218-179-11	METAL GLAZE	10M	5%	1/10W
R177	1-216-049-00	METAL CHIP	1K	5%	1/10W
R179	1-216-295-00	METAL CHIP	0	5%	1/10W
R180	1-216-295-00	METAL CHIP	0	5%	1/10W
R181	1-216-073-00	METAL CHIP	10K	5%	1/10W
R185	1-216-089-00	METAL CHIP	47K	5%	1/10W
R201	1-216-041-00	METAL CHIP	470	5%	1/10W
R202	1-216-069-00	METAL CHIP	6 8K	5%	1/10W
R203	1-216-049-00	METAL CHIP	1K	5%	1/10W
R204	1-216-047-91	METAL GLAZE	820	5%	1/10W
R205	1-216-037-00	METAL CHIP	330	5%	1/10W
R206	1-216-037-00	METAL CHIP	330	5%	1/10W
R207	1-216-073-00	METAL CHIP	10K	5%	1/10W
R208	1-216-073-00	METAL CHIP	10K	5%	1/10W
R209	1-216-295-00	METAL CHIP	0	5%	1/10W
R214	1-216-045-00	METAL CHIP	680	5%	1/10W
R218	1-208-798-11	METAL GLAZE	4 7K	0.50%	1/10W
R219	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R220	1-216-295-00	METAL CHIP	0	5%	1/10W
R222	1-216-051-00	METAL CHIP	1 2K	5%	1/10W
R223	1-216-295-00	METAL CHIP	0	5%	1/10W
R224	1-216-295-00	METAL CHIP	0	5%	1/10W (495,685HF,695HF,L50,L70HF,X5)
R225	1-216-295-00	METAL CHIP	0	5%	1/10W
R226	1-216-025-91	METAL GLAZE	100	5%	1/10W
R227	1-216-025-91	METAL GLAZE	100	5%	1/10W

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

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

Ref. No.	Part No.	Description			Remarks
R228	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R229	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R230	1-216-045-00	METAL CHIP	680	5%	1/10W
R231	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R232	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R234	1-216-049-00	METAL CHIP	1K	5%	1/10W
R235	1-216-073-00	METAL CHIP	10K	5%	1/10W
R236	1-216-049-00	METAL CHIP	1K	5%	1/10W
R237	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R238	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R239	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R240	1-216-049-00	METAL CHIP	1K	5%	1/10W
R243	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R260	1-216-044-00	METAL CHIP	620	5%	1/10W
R261	1-216-044-00	METAL CHIP	620	5%	1/10W
R262	1-216-021-00	METAL CHIP	68	5%	1/10W (495,L40,L50,X5)
R262	1-216-025-91	METAL GLAZE	100	5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
R263	1-216-021-00	METAL CHIP	68	5%	1/10W (495,L40,L50,X5)
R263	1-216-025-91	METAL GLAZE	100	5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
R264	1-216-021-00	METAL CHIP	68	5%	1/10W (495,L40,L50,X5)
R264	1-216-025-91	METAL GLAZE	100	5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
R265	1-216-021-00	METAL CHIP	68	5%	1/10W (495,L40,L50,X5)
R265	1-216-025-91	METAL GLAZE	100	5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
R266	1-216-053-00	METAL CHIP	1.5K	5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
R266	1-216-055-00	METAL CHIP	1.8K	5%	1/10W (495,L40,L50,X5)
R267	1-216-073-00	METAL CHIP	10K	5%	1/10W
R268	1-216-081-00	METAL CHIP	22K	5%	1/10W
R269	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R270	1-216-081-00	METAL CHIP	22K	5%	1/10W
R271	1-216-049-00	METAL CHIP	1K	5%	1/10W
R272	1-216-077-00	METAL CHIP	15K	5%	1/10W
R273	1-216-077-00	METAL CHIP	15K	5%	1/10W
R274	1-216-073-00	METAL CHIP	10K	5%	1/10W
R275	1-216-073-00	METAL CHIP	10K	5%	1/10W
R276	1-216-049-00	METAL CHIP	1K	5%	1/10W
R301	1-216-089-00	METAL CHIP	47K	5%	1/10W (495,L40,L50,X5)
R301	1-216-093-00	METAL CHIP	68K	5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
R302	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R303	1-216-093-00	METAL CHIP	68K	5%	1/10W (495,L40,L50,X5)
R304	1-216-093-00	METAL CHIP	68K	5%	1/10W (495,L50,X5)
R305	1-216-067-00	METAL CHIP	5.6K	5%	1/10W (495,L40,L50,X5)
R306	1-216-073-00	METAL CHIP	10K	5%	1/10W
R307	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R308	1-216-067-00	METAL CHIP	5.6K	5%	1/10W (495,L50,X5)
R309	1-216-067-00	METAL CHIP	5.6K	5%	1/10W

Ref No.	Part No.	Description			Remarks
R310	1-216-129-00	METAL CHIP	2.2M	5%	1/10W
R311	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R312	1-216-079-00	METAL CHIP	18K	5%	1/10W
R313	1-216-109-00	METAL CHIP	330K	5%	1/10W
R314	1-216-035-00	METAL CHIP	270	5%	1/10W
R315	1-216-073-00	METAL CHIP	10K	5%	1/10W
R316	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R317	1-216-079-00	METAL CHIP	18K	5%	1/10W
R318	1-216-075-00	METAL CHIP	12K	5%	1/10W
R319	1-216-043-91	METAL GLAZE	560	5%	1/10W (495,L40,L50,X5)
R319	1-216-295-00	METAL CHIP	0	5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
R320	1-216-047-91	METAL GLAZE	820	5%	1/10W
R321	1-216-017-91	METAL GLAZE	47	5%	1/10W
R322	1-216-063-91	METAL GLAZE	3.9K	5%	1/10W
R323	1-217-671-11	METAL CHIP	1	5%	1/10W
R324	1-216-031-00	METAL CHIP	180	5%	1/10W
R341	1-216-067-00	METAL CHIP	5.6K	5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
R342	1-216-051-00	METAL CHIP	1.2K	5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
R343	1-216-073-00	METAL CHIP	10K	5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
R344	1-216-079-00	METAL CHIP	18K	5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
R345	1-216-097-91	METAL GLAZE	100K	5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
R346	1-216-065-00	METAL CHIP	4.7K	5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
R347	1-216-065-00	METAL CHIP	4.7K	5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
R350	1-216-033-00	METAL CHIP	220	5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
R351	1-216-035-00	METAL CHIP	270	5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
R356	1-216-035-00	METAL CHIP	270	5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
R361	1-216-033-00	METAL CHIP	220	5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
R362	1-216-033-00	METAL CHIP	220	5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
R363	1-216-033-00	METAL CHIP	220	5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
R364	1-216-049-00	METAL CHIP	1K	5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
R365	1-216-049-00	METAL CHIP	1K	5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
R366	1-216-049-00	METAL CHIP	1K	5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
R367	1-216-049-00	METAL CHIP	1K	5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
R368	1-216-133-00	METAL CHIP	3.3M	5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
R369	1-216-689-11	METAL CHIP	39K	0.5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
R370	1-216-061-00	METAL CHIP	3.3K	5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
R371	1-216-689-11	METAL CHIP	39K	0.5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
R372	1-216-061-00	METAL CHIP	3.3K	5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
R373	1-216-689-11	METAL CHIP	39K	0.5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)
R374	1-216-295-00	METAL CHIP	0	5%	1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)

Ref. No.	Part No.	Description			Remarks
R375	1-216-049-00	METAL CHIP	1K	5%	1/10W
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
R376	1-216-097-91	METAL GLAZE	100K	5%	1/10W
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
R377	1-216-097-91	METAL GLAZE	100K	5%	1/10W
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
R378	1-216-083-00	METAL CHIP	27K	5%	1/10W
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
R379	1-216-073-00	METAL CHIP	10K	5%	1/10W
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
R380	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
R381	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
R382	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
R383	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
R386	1-216-295-00	METAL CHIP	0	5%	1/10W
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
R387	1-216-295-00	METAL CHIP	0	5%	1/10W
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
R388	1-216-295-00	METAL CHIP	0	5%	1/10W
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
R401	1-249-407-11	CARBON	150	5%	1/4W F
R405	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R406	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R407	1-216-073-00	METAL CHIP	10K	5%	1/10W
R408	1-216-073-00	METAL CHIP	10K	5%	1/10W
R409	1-216-013-00	METAL CHIP	33	5%	1/10W
R410	1-216-073-00	METAL CHIP	10K	5%	1/10W
R411	1-216-013-00	METAL CHIP	33	5%	1/10W
R412	1-216-089-00	METAL CHIP	47K	5%	1/10W
R413	1-216-089-00	METAL CHIP	47K	5%	1/10W
R414	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R415	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R417	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R418	1-216-057-00	METAL CHIP	2 2K	5%	1/10W
R419	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R420	1-216-059-00	METAL CHIP	2 7K	5%	1/10W
R421	1-216-295-00	METAL CHIP	0	5%	1/10W
R422	1-216-049-00	METAL CHIP	1K	5%	1/10W
R423	1-216-049-00	METAL CHIP	1K	5%	1/10W
R424	1-216-049-00	METAL CHIP	1K	5%	1/10W
R425	1-216-085-00	METAL CHIP	33K	5%	1/10W
R426	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R440	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R441	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
			(495 675HF,676HF,685HF,695HF)		
R442	1-216-077-00	METAL CHIP	15K	5%	1/10W
			(495 675HF,676HF,685HF,695HF)		
R445	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
					(L50,L70HF,X5)
R446	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
					(L50,L70HF,X5)
R447	1-216-077-00	METAL CHIP	15K	5%	1/10W
					(L50,L70HF,X5)
R448	1-216-089-00	METAL CHIP	47K	5%	1/10W
R462	1-216-105-91	METAL GLAZE	220K	5%	1/10W
R463	1-216-113-00	METAL CHIP	470K	5%	1/10W
R464	1-216-089-00	METAL CHIP	47K	5%	1/10W
R502	1-216-049-00	METAL CHIP	1K	5%	1/10W

Ref. No.	Part No.	Description			Remarks
R503	1-216-049-00	METAL CHIP	1K	5%	1/10W
R504	1-216-045-00	METAL CHIP	680	5%	1/10W
R505	1-216-049-00	METAL CHIP	1K	5%	1/10W
R506	1-216-049-00	METAL CHIP	1K	5%	1/10W
R507	1-216-097-91	METAL GLAZE	100K	5%	1/10W
R540	1-216-021-00	METAL CHIP	68	5%	1/10W
R541	1-249-407-11	CARBON	150	5%	1/4W F
R543	1-249-408-11	CARBON	180	5%	1/4W F
R544	1-216-025-91	METAL GLAZE	100	5%	1/10W
R560	1-216-022-00	METAL CHIP	75	5%	1/10W
R570	1-216-041-00	METAL CHIP	470	5%	1/10W
R571	1-216-041-00	METAL CHIP	470	5%	1/10W
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
R572	1-216-097-91	METAL GLAZE	100K	5%	1/10W
R573	1-216-097-91	METAL GLAZE	100K	5%	1/10W
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
R574	1-216-097-91	METAL GLAZE	100K	5%	1/10W
R575	1-216-097-91	METAL GLAZE	100K	5%	1/10W
R600	1-249-417-11	CARBON	1K	5%	1/4W F
R601	1-216-430-11	METAL OXIDE	390	5%	1W F
R602	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R603	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R604	1-249-413-11	CARBON	470	5%	1/4W F
R605	1-215-857-11	METAL OXIDE	10	5%	1W F
R606	1-215-908-00	METAL OXIDE	33	5%	3W F
R608	1-249-413-11	CARBON	470	5%	1/4W F
R609	1-249-413-11	CARBON	470	5%	1/4W F
R610	1-249-413-11	CARBON	470	5%	1/4W F
R701	1-216-049-00	METAL CHIP	1K	5%	1/10W
R702	1-216-295-00	METAL CHIP	0	5%	1/10W
⚠R705	1-212-893-00	FUSIBLE	330	5%	1/4W F
R706	1-216-113-00	METAL CHIP	470K	5%	1/10W
R708	1-216-295-00	METAL CHIP	0	5%	1/10W
R712	1-216-295-00	METAL CHIP	0	5%	1/10W
R731	1-216-049-00	METAL CHIP	1K	5%	1/10W
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
R732	1-216-049-00	METAL CHIP	1K	5%	1/10W
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
R733	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
R734	1-216-049-00	METAL CHIP	1K	5%	1/10W
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
R735	1-216-049-00	METAL CHIP	1K	5%	1/10W
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
R736	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
					(495,L40,L50,X5)
R736	1-216-295-00	METAL CHIP	0	5%	1/10W
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
R737	1-216-081-00	METAL CHIP	22K	5%	1/10W
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
R738	1-216-081-00	METAL CHIP	22K	5%	1/10W
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
R739	1-216-073-00	METAL CHIP	10K	5%	1/10W
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
R740	1-216-295-00	METAL CHIP	0	5%	1/10W
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
R741	1-216-295-00	METAL CHIP	0	5%	1/10W
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
R742	1-216-295-00	METAL CHIP	0	5%	1/10W
		(675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			

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

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

Ref. No.	Part No.	Description			Remarks
R747	1-216-065-00	METAL CHIP	4.7K	5% 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)	
R980	1-216-295-00	METAL CHIP	0	5% 1/10W (495,685HF,695HF)	
		< VARIABLE RESISTOR >			
RV731	1-241-766-11	RES, ADJ, CERMET 47K (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
		< SWITCH >			
S100	1-570-953-11	SWITCH, PUSH (1 KEY)(REC PROOF)			
S401	1-571-532-32	SWITCH, TACTIL (POWER)			
S402	1-571-532-32	SWITCH, TACTIL (EJECT)			
S403	1-571-532-32	SWITCH, TACTIL (REC)			
S404	1-571-532-32	SWITCH, TACTIL (PAUSE)			
S405	1-571-532-32	SWITCH, TACTIL (CH +)			
S406	1-571-532-32	SWITCH, TACTIL (CH -)			
S412	1-571-532-32	SWITCH, TACTIL (EASY SET UP) (495 675HF,676HF,685HF,695HF)			
S701	1-571-588-11	SWITCH, SLIDE (3CH/4CH)			
		< TRANSFORMER >			
T321	1-431-097-11	TRANSFORMER, BIAS OSCILLATION			
		< TUNER >			
TU701	1-693-353-11	TUNER, (IF) SOLID TYPE (495,L40,L50,X5)			
TU701	1-XXX-XXX-XX	TUNER, (IF) SOLID TYPE (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF)			
		< VIBRATOR >			
X160	1-760-494-11	VIBRATOR, CRYSTAL 16MHz			
X161	1-579-463-11	VIBRATOR, CRYSTAL 32.768kHz			
X202	1-577-380-11	VIBRATOR, CRYSTAL 3.579545MHz			
X501	1-567-307-11	OSCILLATOR, CRYSTAL			
⚠	1-468-168-11	POWER BLOCK SR701 (EXCEPT CHILEAN,PX) ********** (Ref.No.:5,000 Series)			
		< CAPACITOR >			
C101	9-902-834-01	METALIZED	0.1uF	250V	
C108	9-980-070-01	ELECT	120uF	200V	
C109	1-126-963-11	ELECT	4.7uF	50V	
C114	1-130-491-51	FILM	0.047uF	50V	
C202	1-126-967-11	ELECT	47uF	50V	
C203	1-126-183-11	ELECT	1000uF	16V	
C204	1-126-935-11	ELECT	470uF	16V	
C205	1-126-797-11	ELECT	1000uF	10V	
C206	1-126-935-11	ELECT	470uF	16V	
C207	1-126-933-11	ELECT	100uF	16V	
C208	1-126-960-11	ELECT	1uF	50V	
		< DIODE >			
D101	8-719-047-70	DIODE	1A4		
D102	8-719-047-70	DIODE	1A4		
D103	8-719-047-70	DIODE	1A4		
D104	8-719-047-70	DIODE	1A4		

Ref. No	Part No.	Description		Remarks
D105	8-719-054-32	DIODE	ERA15-06	
D106	8-719-058-91	DIODE	AG01A	
D107	8-719-920-32	DIODE	ERA15-02	
D108	8-719-911-19	DIODE	1SS119	
D109	8-719-109-61	DIODE	RD30ES	
D201	9-900-535-01	DIODE	AU02Z	
D202	8-719-052-52	DIODE	31DF2-FC5	
D203	8-719-018-83	DIODE	D2S4M	
D204	9-900-535-01	DIODE	AU02Z	
D205	8-719-160-62	DIODE	RD15FB2	
		< FUSE >		
⚠F101	1-533-296-11	FUSE,		
		< IC >		
⚠IC201	8-759-420-19	IC	AN1431T	
		< COIL >		
L101	1-403-598-11	LINE FILTER		
		< PHOTOCOUPLER >		
⚠PC101	8-719-018-29	PHOTOCOUPLER	ON3131	
		< TRANSISTOR >		
Q101	8-729-904-98	TRANSISTOR	2SC4054	
Q102	8-729-012-31	TRANSISTOR	2SC4040Q	
		< RESISTOR >		
R108	1-260-314-51	CARBON	68 1/2W	
R109	1-260-314-51	CARBON	68 1/2W	
R110	1-244-867-11	CARBON	560 1/4W	
R110	1-244-868-11	CARBON		
R110	1-244-869-11	CARBON		
R110	1-244-870-11	CARBON		
R110	1-244-871-11	CARBON		
⚠	1-468-169-11	POWER BLOCK HS-821SF (CHILEAN,PX) ********** (Ref.No.:6,000 Series)		
		< CAPACITOR >		
C108	9-980-072-01	ELECT	150uF	400V
C112	1-107-882-11	ELECT	100uF	16V
C201	1-126-967-11	ELECT	47uF	50V
C202	1-111-040-11	ELECT	820uF	16V
C203	1-126-936-11	ELECT	470uF	16V
C204	9-980-071-01	ELECT	1000uF	10V
C205	1-126-925-11	ELECT	470uF	10V
C206	1-104-661-11	ELECT	330uF	16V
C207	1-126-960-11	ELECT	1uF	50V
C212	1-126-964-11	ELECT	10uF	50V

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

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

POWER BLOCK

Ref. No.	Part No.	Description		Remarks
		< DIODE >		
D101	8-719-510-88	DIODE	S1WBA60	
D102	8-719-312-16	DIODE	EG01	
D104	9-980-073-01	DIODE	1SS270A	
D106	8-719-110-30	DIODE	RD12S	
D201	8-719-052-89	DIODE	D1NL40	
D202	8-719-018-25	DIODE	D2L20U	
D203	8-719-018-83	DIODE	D2S4M	
D204	8-719-026-52	DIODE	10ELS2	
⚠D205	8-719-160-68	DIODE	RD18FB	
		< FUSE >		
⚠F101	1-532-203-11	FUSE	2A 250V	
		< IC >		
⚠IC101	9-939-634-01	IC	MIP164	
⚠IC201	8-759-420-19	IC	AN1431T	
		< PHOTOCOUPLER >		
⚠PC101	8-749-924-84	PHOTOCOUPLER	PS2561	
		MISCELLANEOUS		
		**********		
⚠11	1-762-844-21	SWITCH, ROTARY (L50, L70HF, X5)		
⚠58	1-468-168-11	POWER BLOCK SR701(EXCEPT Chilean, PX)		
⚠58	1-468-169-11	POWER BLOCK HS-821SF (Chilean, PX)		
⚠9	1-777-851-21	CORD, POWER(US, Canadian)		
⚠9	1-777-854-21	CORD, POWER(Mexican, Panamanian)		
⚠9	1-777-857-21	CORD, POWER(Chilean, PX)		

Ref. No.	Part No	Description	Remarks
		ACCESSORIES & PACKING MATERIALS	
		**********	
	1-575-334-11	CORD, CONNECTION (FOR AUDIO/VIDEO)(1.5m)	
	1-696-592-11	CORD, CONNECTION (NTSC)(FOR RF)(1.5m)	
	1-769-181-41	MOUSE, INTERIJENT CABLE (495, 695HF)	
	3-856-995-11	MANUAL, INSTRUCTION (ENGLISH) (675HF,676HF)	
	3-856-995-21	MANUAL, INSTRUCTION (FRENCH) (675HF:Canadian)	
	3-858-077-11	MANUAL, INSTRUCTION (SPANISH) (L50, L70HF, X5)	
	3-858-382-11	MANUAL, INSTRUCTION (SPANISH)(L40)	
	3-858-384-11	MANUAL, INSTRUCTION (SPANISH) (L60HF, X6HF)	
	3-858-385-11	MANUAL, INSTRUCTION (ENGLISH)(495)	
	3-858-385-21	MANUAL, INSTRUCTION (FRENCH) (495:Canadian)	
	3-858-386-11	MANUAL, INSTRUCTION (ENGLISH)(695HF)	
	3-858-386-21	MANUAL, INSTRUCTION (FRENCH) (695HF Canadian)	
	3-859-040-11	MANUAL, INSTRUCTION (ENGLISH)(685HF)	
*	3-961-581-01	SHEET, PROTECTION	
*	3-972-522-01	INDIVIDUAL CARTON (675HF)	
*	3-972-522-11	INDIVIDUAL CARTON (695HF)	
*	3-972-522-21	INDIVIDUAL CARTON (495)	
*	3-972-522-31	INDIVIDUAL CARTON (676HF)	
*	3-972-522-41	INDIVIDUAL CARTON (685HF)	
*	3-972-523-01	CUSHION	
*	3-972-525-01	SPACER	
*	3-973-678-02	INDIVIDUAL CARTON (L40)	
*	3-973-678-12	INDIVIDUAL CARTON (L50)	
*	3-973-678-22	INDIVIDUAL CARTON (L70HF)	
*	3-973-678-32	INDIVIDUAL CARTON (L60HF)	
*	3-973-678-42	INDIVIDUAL CARTON (X6HF)	
*	3-973-678-52	INDIVIDUAL CARTON (X5)	
		**********	
		HARDWARE LIST	
		**********	
#1	7-682-547-04	SCREW +P 3X6	
#2	7-685-646-79	SCREW (3X8)	
#5	7-624-190-61	STOP RING 2.4, TYPE-CS	
#6	7-628-254-10	SCREW +PS2.6X6	
#7	7-624-106-04	STOP RING 3.0, TYPE-E	
#8	7-682-645-01	SCREW +PS3X4	

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.

SECTION 6
INTERFACE, IC PIN FUNCTION DESCRIPTION

6-1. SYSTEM CONTROL — MECHANISM BLOCK INTERFACE (MA-289 board IC160)

Signal	Pin No.	I/O	EJECTED	CASSETTE LOARDING	CASSETTE UNLOARDING	TAPE THREADING	TAPE UNTEREADING	STOP	FF	REW	PB	REC
CW	MA-289 Board IC160 ㊺	O	*5	H	L	H	L	*5	*5	*5	*5	*5
CAM	MA-289 Board IC160 ㊼	O	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5
MODE 1	MA-289 Board IC160 ㊽	I	—	—	—	—	—	H	H	H	H	H
MODE 2	MA-289 Board IC160 ㊾	I	—	—	—	—	—	L	L	L	H	H
MODE 3	MA-289 Board IC160 ㊼	I	—	—	—	—	—	H	H	H	L	L
MODE 4	MA-289 Board IC160 ㊿	I	—	—	—	—	—	H	L	L	L	L
REC PRF	MA-289 Board IC160 ㊿	I	L	*1	*1	*1	*1	*1	*1	*1	*1	*1
T REEL	MA-289 Board IC160 ㊾	I	H/L	H/L	H/L	H/L	H/L	H/L	*2	*2	*2	*2
S REEL	MA-289 Board IC160 ㊽	I	H/L	H/L	H/L	*2	*2	H/L	*2	*2	*2	*2
END LED	MA-289 Board IC160 ㊿	O	L	*3	*3	*3	*3	*3	*3	*3	*3	*3
T SENS	MA-289 Board IC160 ⑦	I	*3	*3	*3	*4	*4	*4	*4	*4	*4	*4
S SENS	MA-289 Board IC160 ⑥	I	*3	*3	*3	*4	*4	*4	*4	*4	*4	*4

*1. "L" When erasing protection tab is bent. "H" when not bent.
*2. Pulse of period in proportion to reel rotating speed.
*3. Approx. 2 msec period "H" pulse when tape top or end is detected.
*4. Normally "L". 2 msec period "H" pulse when tape top or end is detected.
*5. Hi-Z

6-2. SYSTEM CONTROL — SERVO PERIPHERAL CIRCUIT INTERFACE (MA-289 board IC160)

Signal	Pin No.	I/O	STOP	FF	REW	TAPE THREADING	TAPE UNTHREADING	PB	REC
CTL IN+	MA-289 Board IC160 ㊷	O	*7	*7	*7	*7	*7	*7	*1
DRUM PG	MA-289 Board IC160 ㊸	I	*3	*3	*3	*3	*3	*3	*3
DRUM FG	MA-289 Board IC160 ㊼	I	*4	*4	*4	*4	*4	*4	*4
CAP FG	MA-289 Board IC160 ㊾	I	H/L	*2	*2	*5	*5	*2	*2
CAP REV	MA-289 Board IC160 ㊾	O	H/L	L	H	L	H	L	L
CAP ERR	MA-289 Board IC160 ㊼	O	L	*6	*6	*6	*6	*6	*6
DRUM ERR	MA-289 Board IC160 ㊽	O	*6	*6	*6	*6	*6	*6	*6

*1. 30 Hz pulse
*2. Pulse of period in propotion to tape speed.
*3. 30 Hz "H" pulse.
*4. 720 Hz pulse.
*5. Unstable period pulse.
*6. DC voltage 1 ~ 5V.
*7. Hi-Z (2.5V).

6-3. SYSTEM CONTROL — SYSTEM CONTROL PERIPHERAL CIRCUIT INTERFACE (MA-289 board IC160)

Signal	Pin No.	I/O	I/O level
RESET	MA-289 Board IC160 ㊸	I	Normally "H". "L" when service interruption detected or restored.
12C DATA1	MA-289 Board IC160 ㉒	I/O	Serial communication data to audio microprocessor.
12C CLOCK1	MA-289 Board IC160 ⑰	O	Serial communication clock to audio microprocessor.
12C DATA VIDEO	MA-289 Board IC160 ㊷	I/O	Serial communication data to video microprocessor.
12C CLOCK VIDEO	MA-289 Board IC160 ㊶	O	Serial communication clock to video microprocessor.
(RP) S OUT1	MA-289 Board IC160 ㊺	I/O	Serial communication data to RP microprocessor
(RP) S CLK1	MA-289 Board IC160 ㊼	O	Serial communication clock to RP microprocessor.

6-4. SYSTEM CONTROL AND RF MODULATOR — INPUT SELECTION BLOCK INTERFACE (MA-289 board IC501)

Signal	Pin No.	I/O	I/O level
ANT SEL	MA-289 Board IC160 ㉑	O	"L" when RF modulator through.

6-5. SYSTEM CONTROL — VIDEO/RP BLOCK INTERFACE (MA-289 board IC160)

Signal	Pin No.	I/O	STOP/FF /REW	TAPE LOADING	TAPE UNLOADING	PB	REC	REC PAUSE
RF SWP	MA-289 Board IC160 ⑯	O	*1	*1	*1	*1	*1	*1
QVD	MA-289 Board IC160 ⑭	O	L	L	L	*2	L	L
REC P	MA-289 Board IC160 ㊽	O	L	L	L	L	L	H
C SYNC	MA-289 Board IC160 ㊹	I	*3	*3	*3	*3	*3	*3

*1. Synchronized with drum rocation. 30Hz 50% duty pulse.
*2. Normal "L". "H" when video signal is not rgenerated.
*3. Composite sync signal (positive).

6-6. SYSTEM CONTROL — AUDIO BLOCK INTERFACE (MA-289 board IC160)

Signal	Pin No.	I/O	STOP/FF /REW	TAPE LOADING	TAPE UNLOADING	PB	REC	REC PAUSE
A MUTE	MA-289 Board IC160 ㊽	O	L	L	L	L	L	H

6-7. SERVO/SYSTEM CONTROL MICROPROCESSOR (MA-289 BOARD IC160)

Pin.No.	Signal	I/O	Function
1	—	—	—
2	—	—	—
3	TU AFT	I	Tuner analog AFT input
4	FUNC KEY 2	I	9 key input
5	FUNC KEY 1	I	9 key input
6	SSENS	I	Tape end sensor
7	TSENS	I	Tape top sensor
8	VIDEO RF	I	Video RF input
9	AF ENV	I	HiFi envelope
10	—	—	—
11	—	—	—
12	STEREO	I	Tuner stereo detection input L: Stereo
13	QVD	O	Quasi VD
14	REMOCON	I	Infrared ray catcher
15	F MONO	O	Forced mono
16	CAP RVS	O	Capstan reverse
17	I2C CLOCK 1	O	I2C clock (EEPROM, HiFi, PLL MOD)
18	RF SWP	O	RF switching pulse
19	AF SWP	O	HiFi switching pulse
20	END LED	O	End sensor LED output
21	ANT SEL	O	TV/VTR RF modulator
22	PLL DATA	I/O	Tuner PLL data (TU)/I2C data (EEPROM, HiFi, PLL MOD)
23	PLL CLK	O	Tuner PLL clock
24	T ENABLE	O	Tuner enable
25	SAP	I	SAP discrimination
26	MODE 4	I	Cam encoding data 4
27	MODE 3	I	Cam encoding data 3
28	MODE 2	I	Cam encoding data 2
29	MODE 1	I	Cam encoding data 1
30	RECPRF	I	Mis-record prevention switch signal input
31	DEST1	I	Destination discrimination input 1
32	DEST2	I	Destination discrimination input 2
33	DEST3	I	Destination discrimination input 3
34	NUB	I	Ground
35	NUA	I	Ground
36	CLKSEL	I	5V
37	VCC	I	5V
38	XIN	I	16MHz
39	XOUT	O	16MHz
40	VSS	I	Ground
41	XCIN	I	32kHz
42	XCOUT	O	32kHz
43	RESET	I	Reset signal input
44	NT JUDGE	I	L: NTSC
45	—	—	—
46	CBC ON	O	Cable box control signal output
47	VMUTE	O	Video-mute for EDS
48	AMUTE	O	Audio mute
49	REC P	O	HiFi audio record control
50	VPB	O	Audio record control L: Playback

Pin.No.	Signal	I/O	Function
51	I2C CLOCK V1	O	I2C clock (Video)
52	I2C DATA V1	O	I2C data (Video)
53	TA MUTE	O	Tuner-audio mute
54	DMS UP	I	DMS control
55	DMS DOWN	I	DMS control
56	P CONT M12	O	Motor 12V control
57	CAM	I/O	Cam motor control 1
58	CW	I/O	Cam motor control 2
59	P CONT SW12	O	SW 12V control
60	—	—	—
61	—	—	—
62	—	—	—
63	—	—	—
64	OSD CS	O	OSD chip select
65	SOUT 1	O	Serial out Ch1 (RP)
66	FLD CS	O	Fluorescent display driver chip select
67	SCLK 1	O	Serial clock Ch1 (RP)
68	SOUT 0	O	Serial out Ch0 (FLD, OSD)
69	SIN 0	I	Serial in Ch0 (FLD, OSD)
70	SCLK 0	O	Serial clock Ch0 (FLD, OSD)
71	—	—	—
72	BUZZER	I/O	Buzzer
73	SIRCS OUT	O	Remote control signal output (CBC)
74	MAIN/SAP	O	MAIN/SAP select
75	PFAIL	I	Power fail detection input
76	T-OUT	O	Timing-out
77	CAP ERR	O	Capstan error output
78	DRUM ERR	O	Drum error output
79	SREEL	I	Supply reel sensor
80	TREEL	I	Take-up reel sensor
81	—	—	—
82	CHECK	I	Check input
83	—	—	—
84	CSYNC	I	Composite sync signal input
85	CAPPG	I	Capstan FG signal input
86	DRMPG	I	Drum PG signal input
87	DRMPG	I	Drum FG signal input
88	AMP VSS	I	CTL amp
89	AMP VREF OUT	O	CTL amp
90	AMP VREF IN	I	CTL amp
91	CTLIN-	I/O	CTL signal I/O
92	CTLIN+	I/O	CTL signal I/O
93	CTL SWOUT	O	CTL amp
94	CTL AMP IN	I	CTL amp
95	AMPC	I	CTL amp
96	CTL VSS	I	CTL amp
97	CTL AMP OUT	O	CTL amp
98	AMPVCC	I	CTL amp
99	AVCC	I	AN5V
100	CTL GAIN	O	CTL gain adjustment

SECTION 7
ADJUSTMENTS

7-1 MECHANICAL ADJUSTMENTS

For the mechanical adjustments, please refer to the "VHS MECHANICAL ADJUSTMENT MANUAL IV (H MECHANISM)" (9-973-623-11).

7-2. ELECTRICAL ADJUSTMENTS

See the adjusting part location diagram from on page 7-8 for the adjustment.

2-1. PREPARATION BEFORE ADJUSTMENT

2-1-1. Equipment Required

The measuring instruments used for this alignment include:

1) Monitor TV
2) Oscilloscope, dual-trace, bandwidth of 30MHz or more, with delay mode (A probe 10:1 should be used unless otherwise specified.)
3) Frequency counter
4) Pattern generator
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuator
10) Alignment tapes
    KRV-51N2 Part No. : 8-192-605-32

2-1-2. Equipment Connection

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

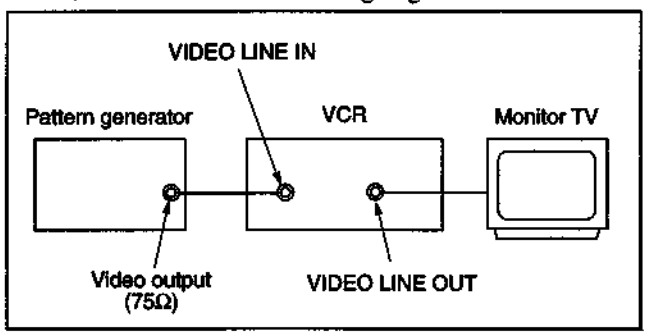


Fig. 7-2-1.

2-1-3. Input Signal Check

Video signal produced by a pattern generator is used as an adjustment signal to perform electrical alignment for this unit. This video signal must satisfy the specification.

Unless otherwise specified, place the switches and controls of this unit in the following positions:

- CHANNEL switch ..... LINE

Connect an oscilloscope to the Video Input terminal. Check that the synchronizing signal of the Y signal has an amplitude of approximately 0.7V and that the burst signal has an amplitude of approximately 0.3V and its waveform is flat. And check that the level ratio of burst signal to "red" signal is 0.30 : 0.66. The video signal (color bar) used for electrical aligning this unit is shown in Fig. 7-2-2.

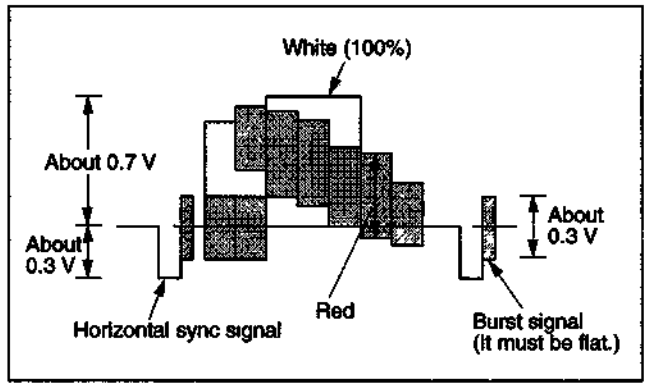


Fig. 7-2-2. Color Bar Signals of Pattern Generator

2-1-4. Alignment Tape

• Contents of KRV-51N2

	Mode	Period	Video signal	Audio signal	
				Hi-Fi	Normal
1	SP	7 minutes	Color bar	400Hz	400Hz
2		3 minutes	Monoscope		
3	EP	7 minutes	Color bar		
4		3 minutes	Monoscope		

2-1-5. Input/Output Levels and Impedance

Video input: LINE IN
(phone jack) (1)
Input signal: 1Vp-p, 75ohms, unbalanced, sync negative

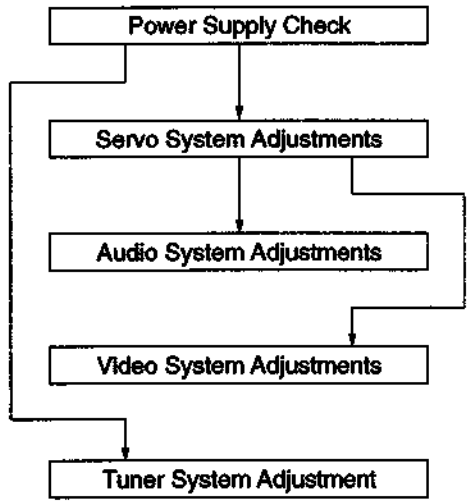
Video output: LINE OUT
(phone jack) (1)
Output signal: 1Vp-p, 75ohms, unbalanced, sync negative

Audio input: LINE IN
(phone jack) (1 : Monaural, 2 : Stereo)
Input level: –7.5 dBs
(0dBs= 0.775Vrms)
Input impedance: more than 47 kilohms

Audio output: LINE OUT
(phone jack) (1 : Monaural, 2 : Stereo)
Standard level: –7.5dBs at load impedance 47 kilohms
Output impedance: less than 10 kilohms

2-1-6. Adjustment Sequence

The adjustments should be performed in the following sequence.



2-2. POWER SUPPLY CHECK

2-2-1. Output Voltage Check (MA-289 Board)

Mode	E-E
Measuring Instrument	Digital voltmeter
SW 12V Check	
Measurement point	IC600 pin ②
Specified value	12.0 ± 0.3V
MTR12V Check	
Measurement point	D600 cathode
Specified value	12.4 ± 1.0V
SW5V Check	
Measurement point	Q602 emitter
Specified value	5.1 ± 0.2Vdc
D5V Check	
Measurement point	D161 cathode
Specified value	5.1 ± 0.3V

[Check Method]

1) Each of these supply voltages must meet its specified value.

2-3. SERVO SYSTEM CHECK

Unless otherwise specified, set the switches to the following positions.

- CHANNEL switch ..... LINE
- TAPE SPEED switch ..... SP

2-3-1. RF Switching Position Adjustment (MA-289 Board)

[Adjustment Purpose]

To adjust the link of the A-ch and B-ch of the tape playback outputs. To make the unit compatible with other tapes and units. If this specification is not satisfied, the link will appear on the screen and the screen will be disrupted, etc.

Mode	Playback
Signal	Alignment tape: SP color bar portion
Measurement point	CH1: Video LINE OUT terminal CH2: CN261 pin ③ (RF SWP)
Measuring instrument	Oscilloscope
Specified value	6.5 ± 0.5H (410 ± 32 µsec)

[Adjustment Method]

1) Short-circuit between JS401 and ground on MA-289 board for about 1 second to activate the RF switching position adjustment mode.
2) Check that "ADJ" is indicated on FL display.
3) Using the channel + and – buttons, adjust to 410 ± 32µsec (6.5 ± 0.5H).
4) Press the PAUSE button.
5) Press the EJECT button.

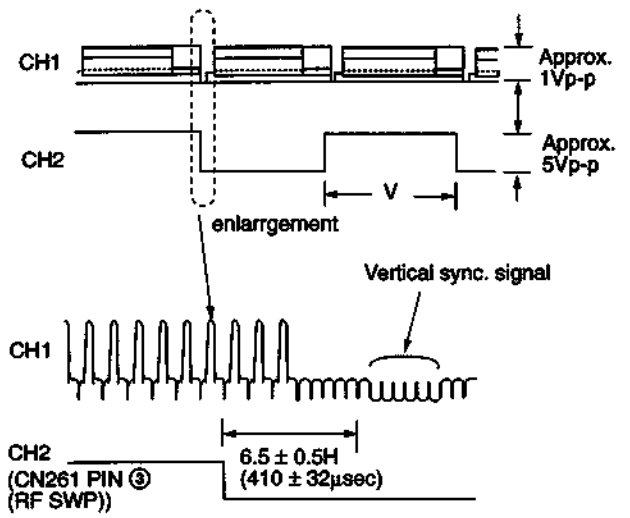


Fig. 7-2-3.

2-4. VIDEO SYSTEM CHECKS

For the video system checks, follow the checking procedures given below as a rule. The color bar video signal supplied from the pattern generator is used as the video input signal for the video system adjustment of the recording mode. Check that the signal satisfies the specified value designated in the "Check of input signal" (Fig. 7-2-2)

Unless otherwise specified, set the switches to the following positions.

- CHANNEL switch ..... LINE
- TAPE SPEED switch ..... SP

[Checking Sequence]

1) X'tal OSC Check
2) SYNC AGC Check
3) White clip/Dark clip Check
4) Recording Y Level Check
5) Recording Chroma Level Check
6) Playback Level Check

2-4-1. X'tal OSC Check (MA-289 Board)

Mode	Playback
Signal	Alignment tape: SP Color bar portion
Measurement point	IC201 pin ㊽
Measuring instrument	Oscilloscope and Frequency counter
Specified value	3,579,545 ± 70Hz

Note: A frequency counter should be connected through a buffer amplifier (oscilloscope, etc.) having a high impedance and a low capacitance.

[Check Method]

1) Check that the oscillation frequency satisfies the specified value and that the oscillation voltage is 450 ± 200mVp-p.

3,579,545 ± 70Hz

Fig. 7-2-4.

2-4-2. SYNC AGC Check (MA-289 Board)

Mode	E-E
Signal	Color bar
Measurement point	Video LINE OUT terminal
Measuring instrument	Oscilloscope
Specified value	A=1.00 ± 0.05Vp-p (75Ω terminated)

[Check Method]

1) Check that the Video signal level (A) satisfies the specified value.

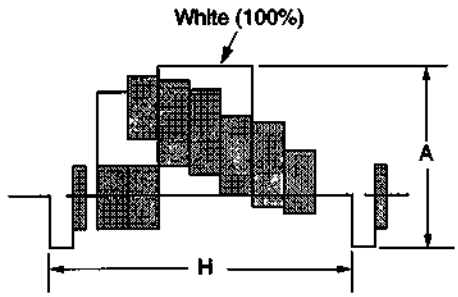


Fig. 7-2-5.

2-4-3. White Clip/Dark Clip Check (MA-289 Board)

Mode	E-E
Signal	Color bar
Measurement point	IC201 pin ㊲
Measuring instrument	Oscilloscope
Specified value	White clip: 190 ± 15% Dark clip: 50 ± 10%

[Check Method]

1) Check that the white clip level is 190 ± 15% to the white (100%) level.
2) Check that the dark chip level is 50 ± 10% to the white (100%) level.

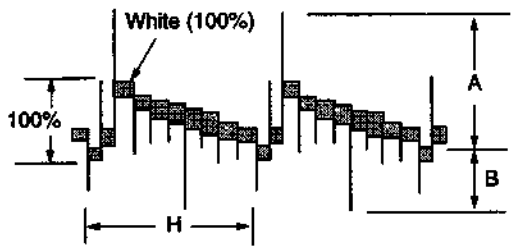


Fig. 7-2-6.

2-4-4. Recording Y Level Check (MA-289 Board)

Mode	E-E
Signal	No-signal
Measurement point	IC201 pin ⑯
Measuring instrument	Oscilloscope
Specified value	A=320mV

[Check Method]

1) Check that the recording RF signal satisfies the specified value.

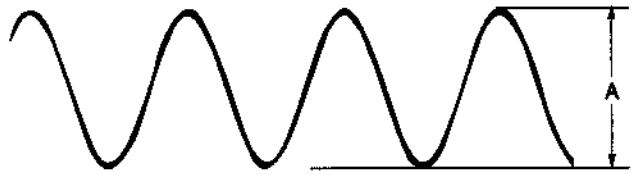


Fig. 7-2-7.

2-4-5. Recording Chroma Level Check (MA-289 Board)

Mode	Recording
Signal	Color bar
Measurement point	IC201 pin ⑭
Measuring instrument	Oscilloscope
Specified value	A=380 ± 40mV

[Check Method]

1) Confirm the amplitude of recording chroma level becomes the specified value.

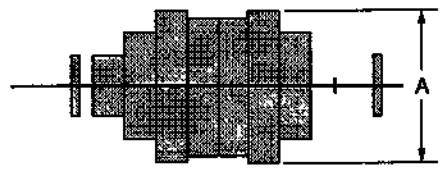


Fig. 7-2-8.

2-4-6. Playback Level Check (MA-289 Board)

Mode	Playback
Signal Alignment	Tape: SP mode color bar portion
Measurement point	Video LINE OUT terminal
Measuring instrument	Oscilloscope
Specified value	A=1.00 ± 0.02Vp-p (75Ω terminated)

[Check Method]

1) Check that the playback level satisfies the specified value.

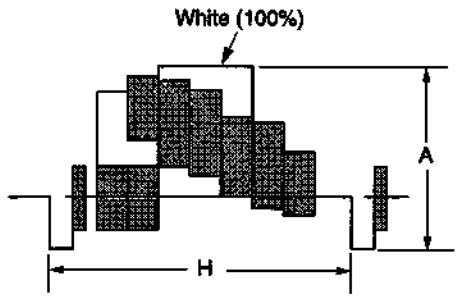


Fig. 7-2-9.

2-5. AUDIO SYSTEM ADJUSTMENT

- For the adjustment of the audio system, perform in the SP mode if there is no special notes. Use the alignment tape.
- Adjust both L-CH and R-CH (SLV-675HF/676HF/685HF/695HF/L60HF/L70HF/X6HF).

[Connecting Instruments]

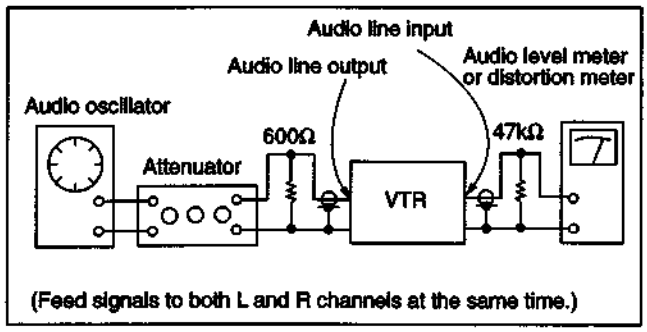


Fig. 7-2-10.

- Hi-Fi Audio System Adjustment (SLV-675HF/676HF/685HF/695HF/L60HF/L70HF/X6HF)

Perform the adjustment setting the switches and controls on the following positions if there is no special indications.

- CHANNEL switch ..... LINE
- CHANNEL switch ..... ON *1)
- TAPE SPEED switch ..... SP *1)

*1) Set by remote commander

2-5-1. AF Switching Position Adjustment (MA-289 Board)

[Adjustment purpose]

To adjust the link of the A-ch and B-ch of the tape playback outputs. If this specification is not satisfied, the noise will increase and cracking sounds will be produced.

Mode	Playback
Signal	Alignment tape: SP color bar portion
Measurement point	CH1: CN341 pin ① (AF ADJ) CH2: CN261 pin ③ (RF SWP)
Measuring instrument	Oscilloscope
Specified value	No dropouts in the RF signal

[Adjustment Method]

1) Short-circuit between JS401 and ground on MA-289 board for about 1 second to activate the RF switching position adjustment mode.
2) Check that "ADJ" is indicated on FL display.
3) Press the REC button to activate the AF switching position adjustment mode.
4) Using the channel + and – buttons, minimize a chipped portion. At this time, confirm that a noisy sound is not heard.
5) Press the PAUSE button.
6) Press the EJECT button TAPE SPEED

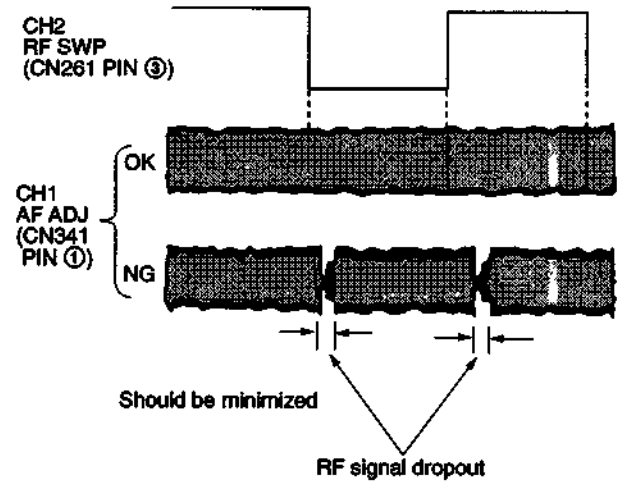


Fig. 6-2-11.

- Normal Audio System Adjustment
- Adjust in the SP mode if there is no special indications.
- Perform the adjustment setting the switch on the following positions.

- CHANNEL switch ..... LINE
- AUTO STEREO switch ..... OFF *1

*1) Set by remote commander. (SLV-675HF/676HF/685HF/695HF/L60HF/L70HF/X6HF)

[Adjustment Method]

1. ACE head adjustment.....Refer to the VHS mechanical adjustment manual Ⅳ.
2. E-E output level check
3. Overall Output level and distortion factor check
4. Overall noise level check.

2-5-2. ACE Head Adjustment

Refer to the "VHS mechanical adjustment manual Ⅳ" (9-973-623-11).

2-5-3. E-E Output Level Check

Mode	E-E
Signal	400Hz, –7.5dBs: Audio LINE IN
Measurement point	Audio LINE OUT terminal
Measuring instrument	Audio level meter
Specified value	–7.5 ± 2dBs

[Check Method]

1) Input signal of 400Hz and –7.5dBs to the audio input.
2) Check that the audio output level is –7.5 ± 2dBs.

2-5-4. Overall Output Level and Distortion Factor Check

Mode	Self-record playback
Signal	400Hz, –7.5dBs: Audio LINE IN
Measurement point	Audio LINE OUT terminal
Measuring instrument	Audio level meter and Distortion meter
Specified value	Playback Level: –7.5 ± 3dBs Distortion: 4.0% or less

[Check Method]

1) Input signal of 400Hz and –7.5dBs to the audio input.
2) Record signal.
3) Playback the recorded portion.
4) Check that the output level is –7.5 ± 3dBs.
5) Check that the distortion factor is 4.0% or less.

2-5-5. Overall Noise Level Check

Mode	Self-record playback
Signal	No signal (Insert a shorting plug into the Audio LINE IN terminal)
Measurement point	Audio LINE OUT terminal
Measuring instrument	Audio level meter (IHF-A weighing filter is used)
Specified value	– 46dBs or less

[Check Method]

1) Record.
2) Playback recorded portion.
3) Check that noise level is – 46dBs or less.

2-6. TUNER SYSTEM ADJUSTMENT

2-6-1. Separation Adjustment (MA-289 Board)

Mode	E-E
Signal	RF signal (Video : Color bar (100%) white modulation Audio : Mono 400Hz 100% modulation Electrical field: 60-80dBm/75Ω terminated)
Measuring instrument	Audio level meter
Measuring point	IC733 pin ⑫ (MPX IN)
Adjusting element	RV731
Specified value	– 9.9 ± 0.1dbm

[Adjustment Method]

1) Feed the RF signal from RF IN terminal.
2) Adjust with RV731 so that the output level satisfies the specified value.

2-7. ADJUSTMENT PARTS LOCATION DIAGRAM

MA-289 BOARD (CANDUCTOR SIDE)