LX40/LX50/LX60S/LX70S
RMT-V293A/V294A

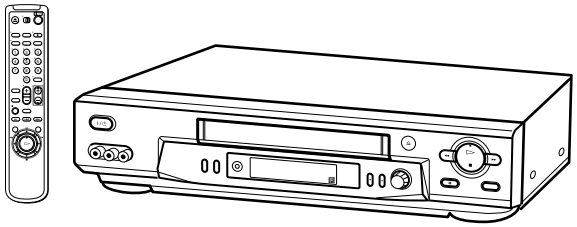
SERVICE MANUAL

Chilean Model
SLV-LX50CL/LX50CS/LX70SCL/LX70SCS

Mexican Model
SLV-LX40MX/LX50MX/LX60SMX/LX70SMX

Panama Model
Venezuelan Model
SLV-LX50PA/LX50PC/LX50VZ/LX70SPA/LX70SPC/LX70SVZ

S MECHANISM



SLV-LX70S

Refer to the SERVICE MANUAL of VHS MECHANICAL ADJUSTMENT Ⅵ for MECHANICAL ADJUSTMENTS. (9-921-748-11)

HiFi model : SLV-LX60S/LX70S
Mono model: SLV-LX40/LX50

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
EP: 11.11 mm/s
LP: 16.67 mm/s,
playback only
Maximum recording/playback time
9 hrs. in EP mode (with T-180 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

Input and outputs

LINE-1 IN and -2 IN
VIDEO IN, phono jack (1 each)
Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
AUDIO IN, phono jacks (1 each) (SLV-LX50 and LX40), (2 each) (SLV-LX70S and LX60S)
Input level: 327 mVrms
Input impedance: more than 47 kilohms

LINE OUT
VIDEO OUT, phono jack (1)
Output signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
AUDIO OUT, phono jacks (1 each) (SLV-LX50 and LX40), (2 each) (SLV-LX70S and LX60S)
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 (max.)
Power back-up
Built-in self-charging capacitor
Back-up duration: up to 8 hours at a time

General

Power requirements
110 V AC to 240 V AC, 50/60 Hz
(SLV-LX70S (CL/CS) and LX50 (CL/CS))
120 V AC, 60 Hz
(SLV-LX70S (MX/PA/PC/VZ), LX60S (MX), LX50 (MX/PA/PC/VZ), and LX40 (MX))
Power consumption
17 W
(SLV-LX70S (CL/CS/MX/PA/PC/VZ) and SLV-LX60S (MX))
16 W
(SLV-LX50 (CL/CS/MX/PA/PC/VZ) and SLV-LX40 (MX))
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 x 96 x 288.8 mm (w/h/d)
including projecting parts and controls
Mass
Approx. 3.6 kg

Supplied accessories

Remote commander (1)
Size AA (R6) batteries (2)
75-ohm coaxial cable with F-type connectors (1)
Audio/video cable (1) (3-phono to 3-phono) (SLV-LX70S and LX60S only)
Plug adaptor (1)
(SLV-LX70S (CL/CS) and LX50 (CL/CS) only)

Design and specifications are subject to change without notice

ENERGY STAR® is a U.S. registered mark.

As an ENERGY STAR® Partner, Sony Corporation has determined that this product meets the ENERGY STAR®

VHS VIDEO CASSETTE RECORDER

SONY®

SAFETY CHECK-OUT

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

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

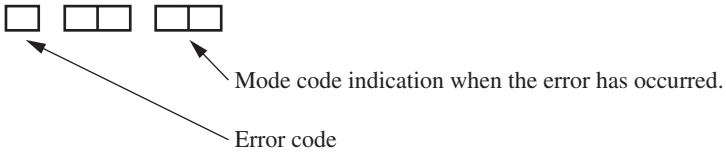
COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

TABLE OF CONTENTS

SERVICE NOTE

1. ERROR CODE INDICATION

- Error codes are indicated using the lower 5 digits in the fluorescent display tube.
  "At this time, Colon ":" between character is not indicated."



ERROR CODE

0	No error
1	Cam encoder error Loading direction
2	Cam encoder error Unloading direction
3	T reel error
4	S reel error
5	Capstan error
6	Drum error
7	Error on initializing
8	Cassette loading error
9	Reserve

MODE CODE

0	Power-on eject	10	FWD x1	20	REW play
1	Power-on initial	11	FWD x2	21	Cas. loading
2	Power-off eject	12	CUE	22	Tape loading
3	Power-off stop	13	PB-pause	23	Power-off loading
4	FF	14	RVS-pause	24	Mecha. error (Power on)
5	REW	15	RVS x1	25	Power-on eject initial
6	REC	16	RVS x2	26	Power-off eject initial
7	REC- pause	17	REV	27	APC REC
8	Power-on stop	18	Power-off initial	28	Cas. loading
9	PB	19	Mecha. error (Power off)		(No auto PB check)

SECTION 1 GENERAL

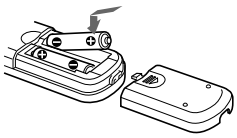
This section is a translated version of Instruction Manual SLV-LX70S model Part number: 3-065-284-12

Step 2 : Setting up the remote commander

Inserting the batteries

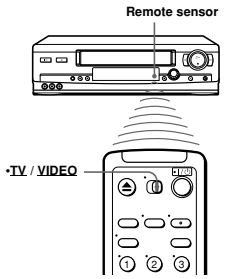
Insert two size AA (R6) batteries by matching the + and – on the batteries to the diagram inside the battery compartment.

Insert the negative (–) end first, then push in and down until the positive (+) end clicks into position.



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 / VIDEO to
the VCR	VIDEO and point at the remote sensor at the VCR
a Sony TV	•TV and point at the remote sensor at 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

Controlling other TVs with the remote commander (SLV-LX70S and LX60S only)

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

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

2 Hold down I/⏻, and enter your TV's code number using the number buttons. Then release I/⏻.

Now you can use the I/⏻, VOL +/–, CH +/–, and TV/VIDEO 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 / VIDEO to VIDEO.

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.

TV brand	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.Penney	04, 12

TV brand	Code number
JVC	09
KMC	03
Magnavox	03, 08, 12
Marantz	04, 13
MGA/Mitsubishi	04, 12, 13, 17
NEC	04, 12
Panasonic	06, 19
Philco	03, 04
Philips	08
Pioneer	16
Portland	03
Quasar	06, 18
Radio Shack	05, 14

TV brand	Code number
RCA	04, 10
Sampo	12
Sanyo	11
Scott	12
Sears	07, 10, 11
Sharp	03, 05, 18
Sylvania	08, 12
Teknika	03, 08, 14
Toshiba	07
Wards	03, 04, 12
Yorx	12
Zenith	15

Notes

- If you enter a new code number, the code number previously entered will be erased.
- 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.
- When you replace the batteries of the remote commander, the code number may change. Set the appropriate code number every time you replace the batteries.
- When you press the AUDIO MONITOR button, your TV's menu may appear on the TV screen. To exit the TV menu, press the MENU button on the TV remote commander or wait until the menu disappears automatically.

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 your TV has audio/video inputs, refer to pages 8 and 9 for audio/video (A/V) hookup. Then follow one of the hookups below. If your TV doesn't have A/V inputs, go directly to one of the hookups below.

If you have	Use	Refer to
Antenna only, no cable TV	**Hookup 1**	**Pages 10 to 11**
No cable box or cable box with only a few scrambled channels	**Hookup 2**	**Pages 12 to 14**
Cable box with many scrambled channels	**Hookup 3**	**Pages 15 to 17**

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 to 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.

Audio/video (A/V) hookup

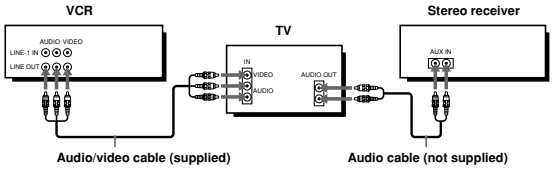
If your TV has audio/video (A/V) input jacks, you will get a better picture and sound if you hook up your VCR using these connections. If your TV doesn't have A/V inputs, see the following pages for antenna or cable hookups.

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 pages 8 and 9. If you want to record regular or cable TV programs, complete these connections first, and then go to the following pages for antenna or cable hookups.

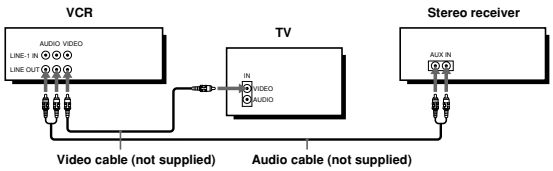
For SLV-LX70S and LX60S

For a true "home theater" experience, you should connect the audio outputs of your VCR or TV to your stereo system.

A Use this hookup if your TV has stereo jacks



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

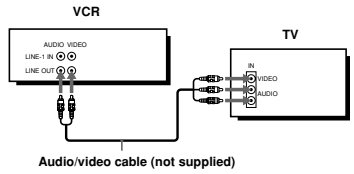


Notes

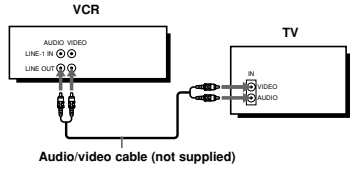
- If you don't have a stereo receiver, connect the white LINE OUT/AUDIO L jack to the AUDIO IN jack on your TV.
- To play a tape in stereo, you must use the A/V connection.
- If you use the Trinitron TV Synchro Play function (see page 34), the A/V connection is necessary. (If your TV has two or more inputs, connect the audio/video cable to the VIDEO IN 1 jacks.)

For SLV-LX50 and LX40

A Use this hookup if your TV has stereo jacks



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



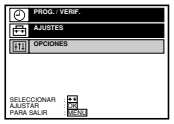
Note

- If you use the Trinitron TV Synchro Play function (see page 34), the A/V connection is necessary. (If your TV has two or more inputs, connect the audio/video cable to the VIDEO IN 1 jacks.)

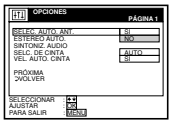
Completing A/V hookup

After you've connected your TV and completed antenna or cable hookup, return to this procedure to complete VCR set up. This will prevent unwanted noise in the RF channel.

Press MENU and select OPCIONES.



Set SELEC. AUTO. ANT. to NO and press OK.



For details, see page 62.

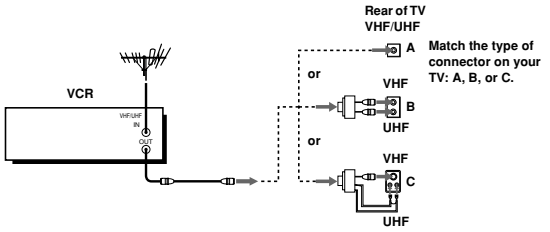
Hookup 1

Antenna hookup

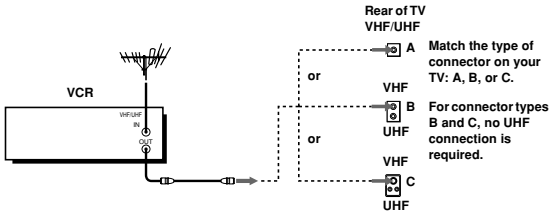
Make the following connections if you're using an antenna (if you don't have cable TV).

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

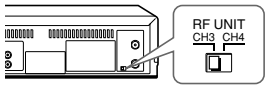
If your antenna cable is a flat cable (300-ohm twin lead cable), attach an external antenna connector (not supplied) so you can connect the cable to the VHF/UHF IN connector. If you have separate cables for VHF and UHF antennas, you should use a U/V band mixer (not supplied). For details, see page 68.

Hookup 1 : VCR setup

Before you start...

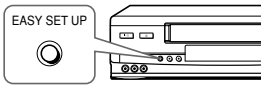
- Turn on the VCR and the TV.
- Press TV/VIDEO to display the VIDEO indicator in the VCR's display window.

1 Set the RF UNIT switch to CH3 or CH4, whichever channel is not used in your area. If both are used, set the switch to either channel. For details, see page 67. If you made A/V connections (from page 8), you do not need to adjust the RF UNIT switch.

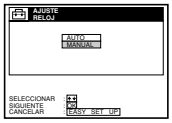


2 Change the on-screen display language to English, if desired. For details, see page 18.

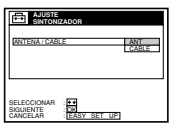
3 Press EASY SET UP on the VCR.



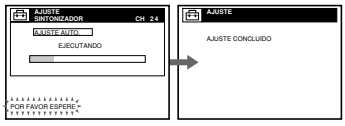
❶ The RELOJ menu appears. Select MANUAL and press OK. Then set the clock. For details, see page 24.



❷ The SINTONIZADOR menu appears. Set ANTENA/CABLE to ANT and press OK. For details, see page 26.



❸ The AJUSTE AUTO. starts.



You have now completed hookup.

Hookup 2

You have no cable box, or a cable box with only a few scrambled channels

Recommended use

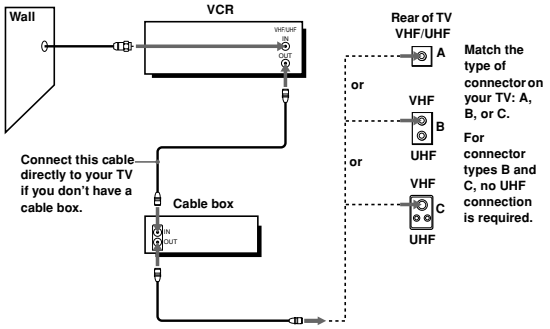
Use this hookup if you do not have a cable box. Also use this hookup if your cable system scrambles only a few channels.

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



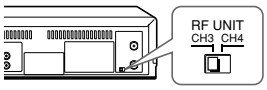
Hookup 2 : VCR setup

Before you start…

- Turn on the VCR and the TV.
- Press TV/VIDEO to display the VIDEO indicator in the VCR's display window.

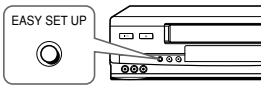
1 Set the RF UNIT switch to CH3 or CH4, whichever channel is not used in your area. If both are used, set the switch to either channel. For details, see page 67.

If you made A/V connections (from page 8), you do not need to adjust the RF UNIT switch.

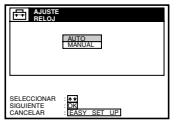


2 Change the on-screen display language to English, if desired. For details, see page 18.

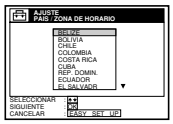
3 Press EASY SET UP on the VCR.



❶ The RELOJ menu appears. Select AUTO and press OK. For details, see page 20.

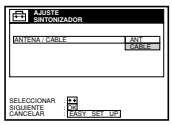


❷ The PAIS/ZONA DE HORARIO menu appears. Select the country you want to set and press OK. You can select the following countries:
BELIZE ⟷ BOLIVIA ⟷ CHILE ⟷ COLOMBIA ⟷ COSTA RICA ⟷ CUBA ⟷ REP. DOMIN. ⟷ ECUADOR ⟷ EL SALVADR ⟷ GUATEMALA ⟷ GUYANA ⟷ HONDURAS ⟷ JAMAICA ⟷ MEX-CENTRO ⟷ MEX-MONT. ⟷ MEX-PACIF. ⟷ MEX-S. ESTE ⟷ NICARAGUA ⟷ PANAMA ⟷ PERU ⟷ SURINAM ⟷ TRIN. & TOB. ⟷ VENEZUELA

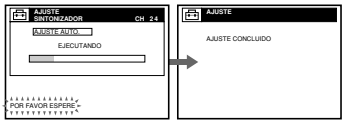


continued

❸ The SINTONIZADOR menu appears. Set ANTENA/CABLE to CABLE and press OK. For details, see page 26.



❹ The AJUSTE AUTO. starts.



You have now completed hookup.

Automatic clock setting

Once you've set up the VCR, it automatically sets the clock the first time you turn off the VCR. "ACS" (Auto Clock Set) will flash in the display window and search for a time signal provided by Sony Entertainment Television (SETV). After that, whenever you turn off the VCR, it checks the time and adjusts the clock, even for Daylight Saving Time.

If you want to use the timer to record right away, or if the cable TV station in your area does not broadcast SETV, or if SETV in your area does not carry time signals, set the clock manually. For details, see page 23.

Notes

- If the clock is not set, "ACS" will flash in the display window whenever the VCR is turned off. During this time, the VCR will search for a time signal.
- The Daylight Saving Time start and end days may differ depending on the year. To ensure correct switching, select SI or NO for the HORARIO VERANO setting (page 22).

Hookup 3

Connecting a cable box with many scrambled channels

Recommended use

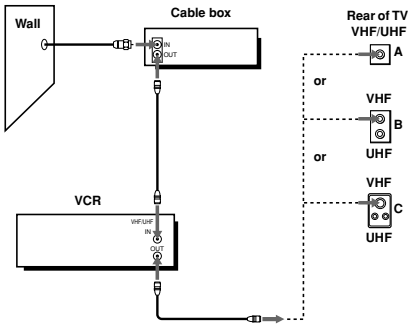
Use this hookup if your cable system scrambles all or most channels.

What you can do with this hookup

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

What you can't do

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



Match the type of connector on your TV: A, B, or C.

For connector types B and C, no UHF connection is required.

continued

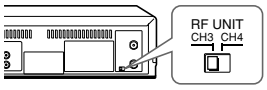
Hookup 3 : VCR setup

Before you start…

- Turn on the VCR and the TV.
- Press TV/VIDEO to display the VIDEO indicator in the VCR's display window.

1 Set the RF UNIT switch to CH3 or CH4, whichever channel is not used in your area. If both are used, set the switch to either channel. For details, see page 67.

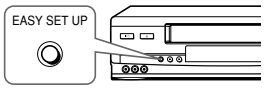
If you made A/V connections (from page 8), you do not need to adjust the RF UNIT switch.



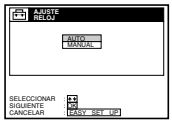
2 Turn on your cable box.

3 Change the on-screen display language to English, if desired. For details, see page 18.

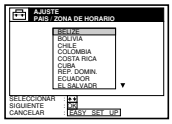
4 Press EASY SET UP on the VCR.



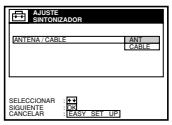
❶ The RELOJ menu appears. Select AUTO and press OK. For details, see page 20.



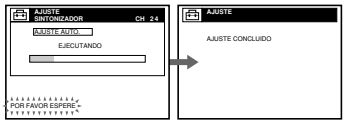
❷ The PAIS/ZONA DE HORARIO menu appears. Select the country you want to set and press OK. You can select the following countries:
BELIZE ⟷ BOLIVIA ⟷ CHILE ⟷ COLOMBIA ⟷ COSTA RICA ⟷ CUBA ⟷ REP. DOMIN. ⟷ ECUADOR ⟷ EL SALVADR ⟷ GUATEMALA ⟷ GUYANA ⟷ HONDURAS ⟷ JAMAICA ⟷ MEX-CENTRO ⟷ MEX-MONT. ⟷ MEX-PACIF. ⟷ MEX-S. ESTE ⟷ NICARAGUA ⟷ PANAMA ⟷ PERU ⟷ SURINAM ⟷ TRIN. & TOB. ⟷ VENEZUELA



❸ The SINTONIZADOR menu appears. Set ANTENA/CABLE to ANT and press OK. For details, see page 26.



❹ The AJUSTE AUTO. starts.



Automatic clock setting

Once you've set up the VCR, it automatically sets the clock the first time you turn off the VCR. "ACS" (Auto Clock Set) will flash in the display window and search for a time signal provided by Sony Entertainment Television (SETV). After that, whenever you turn off the VCR, it checks the time and adjusts the clock, even for Daylight Saving Time.

To use the Auto Clock Set feature with this hookup, you need to manually select SETV:

1 Tune the cable box to SETV.

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

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

You have now completed hookup

If you want to use the timer to record right away, or if the cable TV station in your area does not broadcast SETV, or if SETV in your area does not carry time signals, set the clock manually. For details, see page 23.

Notes

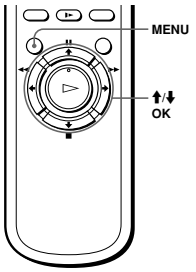
- To use the Auto Clock Set feature, leave the cable box on.
- If the clock is not set, "ACS" will flash in the display window whenever the VCR is turned off. During this time, the VCR will search for a time signal.
- The Daylight Saving Time start and end days may differ depending on the year. To ensure correct switching, select SI or NO for the HORARIO VERANO setting (page 22).

Selecting a language

You can change the on-screen display language.

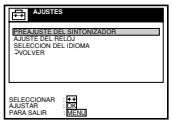
Before you start...

- 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/VIDEO to display the VIDEO indicator in the VCR's display window.



1 MENU

Press MENU, then press ↑/↓ to highlight AJUSTES and press OK.



2 Press ↑/↓ to highlight SELECCION DEL IDIOMA, then press OK.

3 Press ↑/↓ to highlight ENGLISH or ESPAÑOL, then press OK.

Tip

- If you want to return to the previous menu, highlight VOLVER and press OK.

Setting the clock

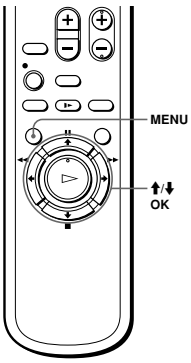
Using the Auto Clock Set feature

Sony Entertainment Television (SETV) transmits time signals with its broadcasts. If the cable TV station in your area broadcasts SETV and transmits these time signals, your VCR can pick up these time signals to automatically set the clock.

The Auto Clock Set feature works only if SETV in your area broadcasts time signals. If SETV in your area does not broadcast time signals or if you select Hookup 1 on page 10 set the time manually (page 23).

Before you start...

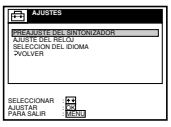
- Turn on the VCR and the TV.
- Set the TV to the VCR channel (channel 3 or 4). If your TV is connected to the VCR using A/V connections, set the TV to video input.
- Press TV/VIDEO to display the VIDEO indicator in the VCR's display window.



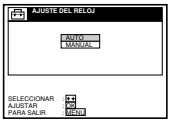
1 MENU

Press MENU, then press ↑/↓ to highlight AJUSTES and press OK.

When using the EASY SET UP procedure, skip steps 1 and 2.

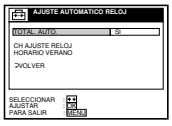


2 Press ↑/↓ to highlight AJUSTE DEL RELOJ, then press OK.



continued

3 Press ↑/↓ to highlight AUTO, then press OK.



4 Press ↑/↓ to highlight TOTAL AUTO., then press OK.

5 Press ↑/↓ to highlight SI, then press OK.

6 MENU

Press MENU to exit the menu.

7 To activate the Auto Clock Set function, turn off the VCR. "ACS" will flash in the display window.

The VCR automatically sets the clock by searching for the SETV broadcast that carries time signals and sets Daylight Saving Time (if applicable).

If your clock is incorrectly set to Daylight Saving Time, you can adjust these settings without turning off the Auto Clock Set feature (page 21).

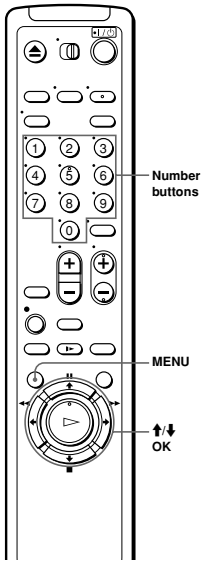
Tip

- If you want to return to the previous menu, highlight VOLVER and press OK.

Notes

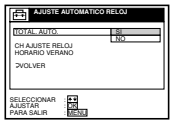
- The clock cannot be set automatically if you don't receive SETV broadcast that carries time signals in your area. If so, set the clock manually (page 23).
- Depending on the channels allotted to SETV in your area, setting the clock automatically may take up to about 30 minutes. If nothing happens even after you wait about 30 minutes after turning off the VCR, turn the VCR on and then off again. If the clock is not set even after about another 30 minutes, set the clock manually (page 23).
- If the clock is not set, "ACS" will flash in the display window whenever the VCR is turned off. During this time, the VCR will search for a time signal.

If the clock does not activate



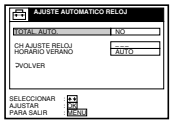
1 Follow steps 1 to 4 in "Using the Auto Clock Set feature."

The TOTAL. AUTO. menu is displayed.



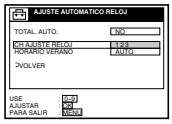
continued

2 Press ↑/↓ to highlight NO for TOTAL. AUTO. and press OK.

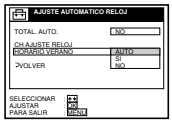


3 Press ↑/↓ to highlight the item you want to set and press OK. Then press ↑/↓ to make the setting and press OK.

- For CH AJUSTE RELOJ
  Leave the setting to "– – –" to have the VCR automatically search for the SETV broadcast.
  Or, press the number buttons to select the SETV channel if you know it.



- For HORARIO VERANO
  Select SI or NO (standard time), or AUTO to have the VCR automatically set the daylight saving time.



4 MENU

Press MENU to exit the menu.

5 To activate the Auto Clock Set function, turn off the VCR. "ACS" will flash in the display window.

Tip

- If you want to return to the previous menu, highlight VOLVER and press OK.

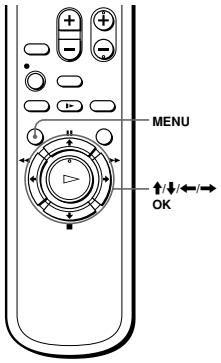
Notes

- The Daylight Saving Time start and end days may differ depending on the year. To ensure correct switching, select SI or NO for the HORARIO VERANO setting.
- If nothing happens even after you wait about 30 minutes after turning off the VCR, turn the VCR on and then off again. If the clock is not set even after about another 30 minutes, set the clock manually (page 23).
- Some cable TV stations broadcasting SETV do not transmit time signals. If so, set the clock manually (page 23).

Using Manual Clock Set

Before you start…

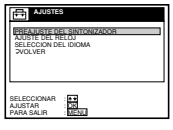
- Turn on the VCR and the TV.
- Set the TV to the VCR channel (channel 3 or 4). If your TV is connected to the VCR using A/V connections, set the TV to video input.
- Press TV/VIDEO to display the VIDEO indicator in the VCR's display window.



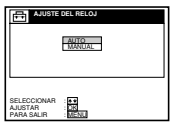
1 MENU

Press MENU, then press ↑/↓ to highlight AJUSTES and press OK.

When using the EASY SET UP procedure, skip steps 1 and 2.



2 Press ↑/↓ to highlight AJUSTE DEL RELOJ, then press OK.



continued

3 Press ↑/↓ to highlight MANUAL, then press OK.

4 Press ↑/↓ to set the day.

5 Press ➡ to highlight the month and press ↑/↓ to set the month.

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

The day of the week is set automatically.

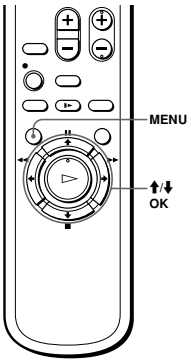
7 Press OK to start the clock.

Tip

- If you want to return to the previous menu, highlight VOLVER and press OK.

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 methods. Then, if there are any unwanted channels, disable them manually. If you have already decided which channels you wish to preset, set them directly using manual presetting methods.



Before you start…

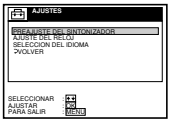
- Turn on the VCR and the TV.
- Set the TV to the VCR channel (channel 3 or 4). If your TV is connected to the VCR using A/V connections, set the TV to video input.
- Press TV/VIDEO to display the VIDEO indicator in the VCR's display window.

Presetting all receivable channels automatically

1 MENU

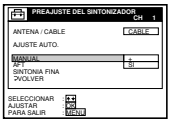
Press MENU, then press ↑/↓ to highlight AJUSTES and press OK.

When using the EASY SET UP procedure, skip steps 1 and 2.



2

Press ↑/↓ to highlight PREAJUSTE DEL SINTONIZADOR, then press OK.



continued

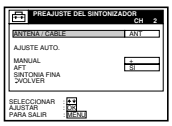
3

Press ↑/↓ to highlight ANTENA/CABLE, then press OK.

4

- To preset cable TV channels:
  Press ↑/↓ to set ANTENA/CABLE to CABLE, then press OK.

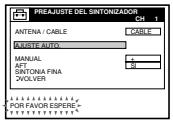
- To preset VHF and UHF channels:
  Press ↑/↓ to set ANTENA/CABLE to ANT, then press OK.



5

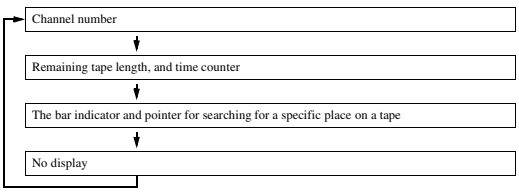
Press ↑/↓ to highlight AJUSTE AUTO., then press OK.

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.



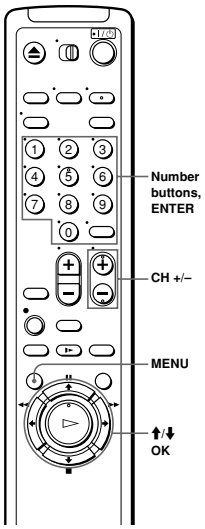
Tips

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



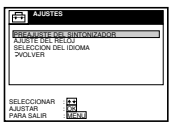
- If you want to return to the previous menu, highlight VOLVER and press OK.

Presetting/disabling channels manually



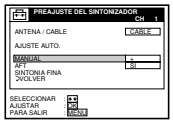
1 MENU

Press MENU, then press ↑/↓ to highlight AJUSTES and press OK.



continued

2 Press ↑/↓ to highlight PREAJUSTE DEL SINTONIZADOR, then press OK.

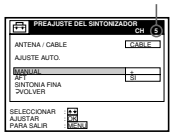


3

- To preset a channel:

1 Press the number buttons to enter the channel number, then press ENTER.
2 Press OK.
3 Press ↑/↓ to set MANUAL to +, then press OK.

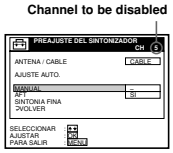
Channel to be preset



- To disable a channel:

1 Press CH +/– to select the channel number.
2 Press OK.
3 Press ↑/↓ to set MANUAL to –, then press OK.

Channel to be disabled



4 Repeat step 3 to preset or disable channels as required, then press MENU.

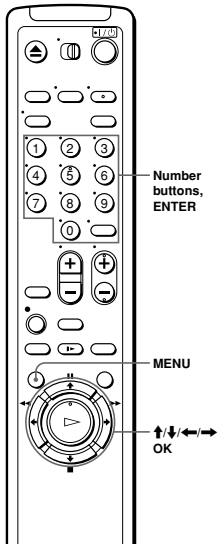
Tip

- If you want to return to the previous menu, highlight VOLVER and press OK.

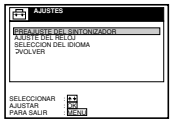
continued

If the picture is not clear

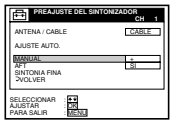
Normally, the Auto Fine Tuning (AFT) function automatically tunes in channels clearly. If, however, the picture of a channel is not clear, you can also use the manual tuning function.



1 Press MENU, then press ↑/↓ to highlight AJUSTES and press OK.

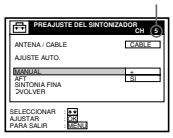


2 Press ↑/↓ to highlight PREAJUSTE DEL SINTONIZADOR, then press OK.



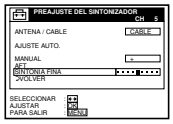
3 Press the number buttons to select the channel you want to fine-tune, then press ENTER.

Selected channel



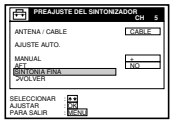
4 Press ↑/↓ to highlight SINTONIA FINA, then press OK.

The fine tuning meter appears.



5 Press ←/→ to adjust to a clearer picture, then press OK.

Note that the AFT setting switches to NO.



6 Press MENU to exit the menu.

Tips

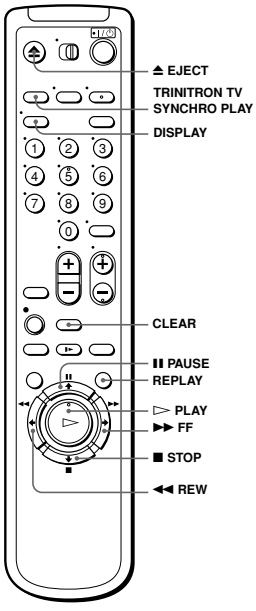
- To select the channel in step 3 above, you can also use the CH +/– buttons. In this case, you don't need to press ENTER.
- If you want to return to the previous menu, highlight VOLVER and press OK.

Note

- When adjusting SINTONIA FINA, the menu may become difficult to read due to interference from the picture being received.

Basic Operations

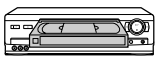
Playing a tape



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.



3 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
Fast-forward the tape	▶▶ FF during stop
Rewind the tape	◀◀ REW during stop
Eject the tape	⏏ EJECT

To play a recently watched scene

You can immediately rewind and playback the scene you want to watch again.

During playback, press REPLAY up to four times. The VCR rewinds the tape about ten seconds on the counter for each press of the button, and restarts playback.

To use the time counter

Press CLEAR at the point on the tape that you want to find later. The counter in the display window resets to "0:00:00." 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.
- While displaying a menu on the TV screen, you cannot use ▷ PLAY, ❚❚ PAUSE, ▶▶ FF, ◀◀ REW, or ■ STOP buttons.
- The counter resets to "0:00:00" whenever a tape is reinserted.
- The counter stops counting when it comes to a portion with no recording.

continued

Turning on the VCR and TV, and starting playback automatically (Trinitron TV Synchro Play)

You can only use this function if your TV is made by Sony (Trinitron TV).

How to connect to use this function

Connect the VCR and TV with the audio/video cable (see "Audio/video (A/V) hookup" on pages 8 and 9). Be sure to connect the audio/video cable to the VIDEO IN 1 jacks on the TV if the TV has two inputs or more. The TV must be placed where it will respond to the remote commander while you are pointing it at the VCR.

Operation

Make sure that the TV's power is in standby mode.

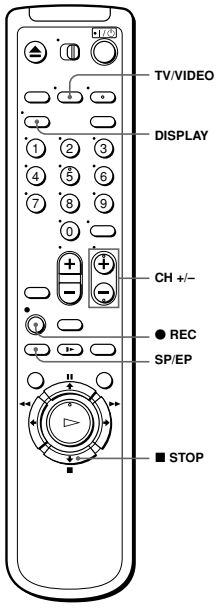
Press TRINITRON TV SYNCHRO PLAY and hold the remote commander in place for about two seconds.

The VCR and TV turn on, and the TV is set to the video channel. If there is a tape in the VCR, playback starts automatically.

Notes

- If the Trinitron TV Synchro Play function does not work properly:
  – Wait a few moments, and press the button again.
  – Replace both of the batteries with new ones, and press the button again.
  Note that this function may not operate some Sony TVs because of the remote commander's signal limitations.
- Do not press TRINITRON TV SYNCHRO PLAY during playback. If you do so, the TV's input source will momentarily switch to the TV's tuner.

Recording TV programs



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

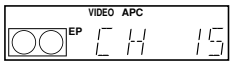
To record from a cable box, turn it on.

2 Insert a tape with its safety tab in place.

continued

3 • CH

Press CH +/– to select the channel or line input video source you want to record.



4 SP / EP

Press SP/EP to select the tape speed, SP or EP.

EP (Extended Play) provides recording time three times as long as SP (Standard Play). However, SP produces better picture and audio quality.

5 ●REC

Press ● REC to start recording.

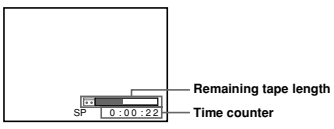
The recording indicator lights up red in the display window.

To stop recording

Press ■ STOP.

To check the remaining tape length

Press DISPLAY repeatedly until the remaining tape length and the time counter appear on the TV screen.



To check the remaining tape length of a T-140 or T-180 tape, set SELC. DE CINTA in the OPCIONES menu to 180. (For details, see page 62.)

To watch another TV program while recording

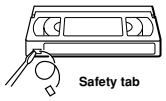
1 Press TV/VIDEO to turn off the VIDEO indicator in the display window.

2 If the TV is connected to the VCR's LINE OUT jacks, set the TV to the TV's antenna 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 the tape again, cover the tab hole with adhesive tape.



Tips

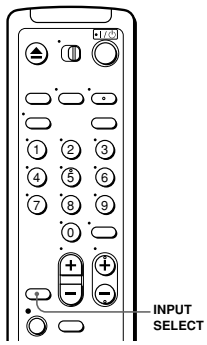
- To select a channel, you can use the number buttons on the remote commander. Enter the channel number, then press ENTER.
- You can select a video source from the LINE-1 IN or LINE-2 IN jacks using the INPUT SELECT button.
- The display appears on the TV screen indicating information about the tape, but the information won't be recorded on the tape.
- If you don't want to watch TV while recording, you can turn off theTV. 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 asT-20 or T-30, or tapes recorded in the LP mode.
- The display does not appear during still (pause) 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.

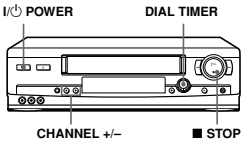
Recording TV programs using the Dial Timer

The Dial Timer function allows you to make timer recordings of programs without turning on your TV. Set the recording timer to record up to eight programs that will be broadcast within a month using the DIAL TIMER. The recording start time and recording stop time can be set at one minute intervals.



Before you start...

- 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.

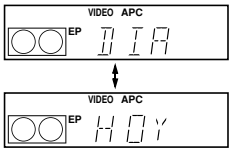


1 DIAL TIMER

Press DIAL TIMER.

"DIA" and "HOY" appear alternately in the display window.

If the date and time are not set, "DIA" flashes. See step 2 in the following section "To set the clock" to set the date and time.



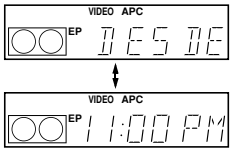
2 DIAL TIMER

Turn DIAL TIMER to set the recording date.

3 DIAL TIMER

Press DIAL TIMER.

"DESDE" and the current time appear alternately in the display window.



4 DIAL TIMER

Turn DIAL TIMER to set the recording start time.

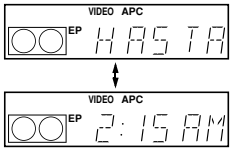
You can set the recording start time in 15 minute intervals or adjust the time in one minute intervals by pressing the CHANNEL +/– buttons.

– CHANNEL +

5 DIAL TIMER

Press DIAL TIMER.

"HASTA" and the recording stop time appear alternately in the display window.



6 DIAL TIMER

Turn DIAL TIMER to set the recording stop time.

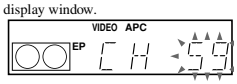
You can set the recording stop time in 15 minute intervals or adjust the time in one minute intervals by pressing the CHANNEL +/– buttons.

– CHANNEL +

7 DIAL TIMER

Press DIAL TIMER.

The channel number appears in the display window.



8 DIAL TIMER

Turn DIAL TIMER to set the channel number.

To record from a source connected to the LINE-1 IN or LINE-2 IN jacks, turn DIAL TIMER or press INPUT SELECT on the remote commander to display "L1" or "L2".

INPUT SELECT

9 DIAL TIMER

Press DIAL TIMER to complete the setting.

"OK" appears in the display window for about five seconds.

The ⏲ indicator appears in the display window and the VCR stands by for recording. When using a cable box, leave it on.

To return to the previous step

To return to the previous step, press the CHANNEL + and – buttons on the VCR at the same time during any of the Dial Timer settings.

To stop recording

To stop the VCR while recording, press ■ STOP.

continued

To use the VCR after setting the timer

To use the VCR before a timer recording begins, just press I/⏻. The ◴ indicator disappears from the display window and the VCR switches on. Remember to press I/⏻ to reset the VCR to the timer recording standby mode after using the VCR.

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

- Reset the counter (page 33).
- Display tape information on the TV screen (page 36).
- Check the timer settings (page 50).
- Watch another TV program (page 37).

To set the clock

1 Turn DIAL TIMER so that "RELOJ" appears in the display window.

2 Press DIAL TIMER.
"DIA" appears in the display window.

3 Turn DIAL TIMER to set the day.

4 Press DIAL TIMER.
"MES" appears in the display window.

5 Turn and press DIAL TIMER to set the month and then the year.
After you set the year, "RELOJ" appears in the display window again.

6 Turn and press DIAL TIMER to set the hour and minute.

7 When you have finished setting the time, press DIAL TIMER to start the clock.

Tips

- To cancel a Dial Timer setting, press ■ STOP on the VCR while you are making the setting.
- The program is recorded in the current tape speed. To change the tape speed, press SP/EP before you complete the setting in step 9 (page 40).
- When you are recording a program in the SP mode and the remaining tape becomes shorter than the recording time, the tape speed is automatically changed to the EP mode. Note that some noise will appear on the picture when the tape speed is changed. If you want to keep the tape speed, set VEL. AUTO. CINTA to NO in the OPCIONES menu (page 62).
- To check, change, or cancel the program setting, see "Checking/changing/canceling timer settings" (page 50).

continued

Notes

- If eight programs have already been set using the PROG./VERIF. menu, "LLENO" appears in the display window for about five seconds.
- If you set the clock using the Auto Clock Set function, the clock will adjust itself to the incoming time signal regardless of adjustments made with the Dial Timer. Be sure you have set ACS correctly.
- The ◴ indicator flashes in the display window when you complete the setting in step 9 (page 40) with no tape inserted.

About the Demonstration Mode

The Dial Timer function has a Demonstration Mode that allows the user, such as a salesperson, to enter more than eight examples of timer settings when demonstrating the use of the Dial Timer. It cancels the LLENO notice which appears if eight programs have already been set. Do not use the Demonstration Mode for making timer recordings. Doing so may cause the settings to be inaccurate.

To activate the Demonstration Mode

Press ❚❚ PAUSE on the VCR while turning the DIAL TIMER. "DEMO" appears in the display window for a few seconds.

To cancel the Demonstration Mode

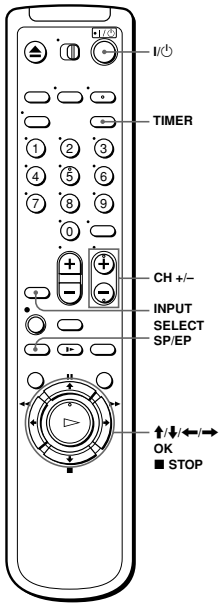
Turn the power off and unplug the AC power cord. Although the Demonstration Mode is canceled, the timer settings entered while using the Demonstration Mode will remain. Be sure to manually cancel the timer settings before you use the Dial Timer or any other timer method after reconnecting the AC power cord (see page 50).

Recording TV programs using the timer

You can preset up to eight programs together with the Dial Timer settings at a time.

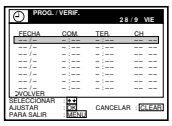
Before you start...

- 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 TIMER

Press TIMER to display PROG./VERIF.



continued

2 PLAY ▷ OK

Press ▲/▼ to highlight the line that is to be set, then press OK.

3 PLAY ▷ OK

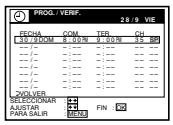
INPUT SELECT

• CH

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

1 Press ▲/▼ to set each item.

2 Press ➡ to highlight and set each item in turn.



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

To record the same program every day or the same day every week, press ▼ while the date is highlighted. For details, see "Daily/weekly recording" below.

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

4 PLAY ▷ OK

Press OK to confirm the setting.

To enter another setting, press ▲/▼ to highlight the next line and repeat step 3.

5 TIMER

Press TIMER.

6 •I/⏻

Press I/⏻ to turn off the VCR.

The ◴ indicator appears in the display window 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 3 above, press ▼ to select the recording pattern. Each time you press ▼, the indication changes as shown below. Press ▲ to change the indication in reverse order.

the current date → DOM-SAB → LUN-SAB → LUN-VIE → CADA SAB → ..... → CADA LUN → CADA DOM → 1 month later → (dates count down) → the current date

To use the VCR after setting the timer

To use the VCR before timer recording begins, just press I/⏻. The ⏲ indicator disappears from the display window and the VCR switches on. Remember to press I/⏻ to reset the VCR to the timer recording standby mode after using the VCR.

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

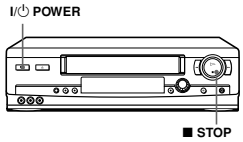
- Reset the counter (page 33).
- Display tape information on the TV screen (page 36).
- Check the timer settings (page 50).
- Watch another TV program (page 37).

Tips

- To set the channel, you can also use the CH+/– or number buttons.
- To show the PROG./VERIF. menu, you can also use the MENU button. Press MENU, then press ↑/↓ to highlight PROG./VERIF. and press OK.
- To set the tape speed, you can also use the SP/EP button.
- When you are recording a program in the SP mode and the remaining tape becomes shorter than the recording time, the tape speed is automatically changed to the EP mode. Note that some noise will appear on the picture when the tape speed is changed. If you want to keep the tape speed, set VEL. AUTO. CINTA to NO in the OPCIONES menu (page 62).
- To check, change or cancel the program setting, see "Checking/changing/canceling timer settings" (page 50).
- If you want to return to the previous menu and continue with other operations after setting the timer, press ↓ to highlight VOLVER, then press OK.
  The display returns to the MENU screen.
  If you are finished using the VCR, turn off the power before timer recording starts.

Locking the VCR (Child Lock)

After you have set the timer, you can lock all of the buttons on the VCR so that the settings are not canceled by mistake.



To lock the VCR

When the VCR is turned on, hold down I/⏻ POWER on the VCR until the 🔑 indicator appears in the display window. The VCR turns off and the 🔑 indicator remains lit. The VCR will not work except for timer recordings.

To unlock the VCR

Hold down I/⏻ POWER on the VCR until the 🔑 indicator disappears from the display window. The VCR is unlocked and turns on.

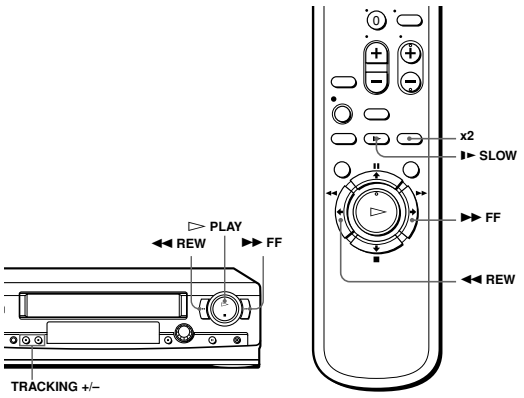
To stop timer recording while the VCR is locked, press ■ STOP. The recording stops and the VCR is unlocked.

Note

- The VCR will be unlocked when:
  – You stop timer recording by pressing ■ STOP.
  – You insert a tape.
  – The AC power cord is disconnected or power supply stops.

Additional Operations

Playing/searching at various speeds



Playback options	Operation
View the picture during fast-forward or rewind	During fast-forward, hold down ▶▶ FF. During rewind, hold down ◀◀ REW.
Play at high speed	• During playback, briefly press ▶▶ FF or ◀◀ REW on the remote commander. The tape continues to play at high speed. • During playback, hold down ▶▶ FF or ◀◀ REW. When you release the button, normal playback resumes.
Play at twice the normal speed	During playback, press ×2.
Play in slow motion	During playback or pause, press ▮► SLOW.
Play frame by frame	During pause, press ▶▶ FF or ◀◀ REW on the remote commander. Hold down the button to play one frame each second.
Rewind and start play	While the tape is stopped, hold down ◀◀ REW on the VCR and press ▷ PLAY on the VCR.

To resume normal playback

Press ▷ PLAY.

continued

Tip

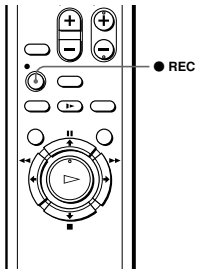
- Adjust the picture using the TRACKING +/– buttons if:
  – Streaks appear while playing in slow motion.
  – The picture shakes during pause.
  To set tracking to the center position, press both buttons (+/–) at the same time.

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 show noise when playing at high speed in reverse.

Setting the recording duration time

After you have started recording, you can have the VCR stop recording automatically after a specified duration.



1 While recording, press ● REC.

The ◴ indicator appears in the display window.

2 Press ● REC repeatedly to set the duration time.

Each press advances the time in increments of 30 minutes.

0:30 → 1:00 ----→ 5:30 → 6:00 → Normal recording

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

To extend the duration

Press ● REC repeatedly to set a new duration time.

To cancel the duration

Press ● REC repeatedly until the ◴ indicator disappears and the VCR returns to normal recording mode.

To stop while recording

Press ■ STOP.

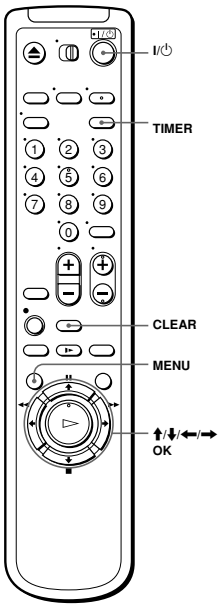
Note

- You cannot display the current tape time in the display window when setting the recording duration time.

Checking/changing/canceling timer settings

Before you start…

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



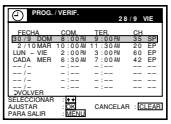
1 Press I/⏻ to turn on the VCR.

2 Press TIMER to display PROG./VERIF.

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

3 Press ↑/↓ to highlight the setting you want to change or cancel.

- To change the setting, press OK and press ←/→ to highlight the item you want to change, then press ↑/↓ to reset it.
- To cancel the setting, press CLEAR.



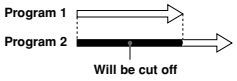
4 Press OK.

5 Press MENU to exit the menu.

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.



Tip

- To show the PROG./VERIF. menu, you can also use the MENU button. Press MENU, then press ↑/↓ to highlight PROG./VERIF. and press OK.

Recording stereo and bilingual programs (SLV-LX70S and LX60S only)

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 ESTEREO AUTO. in the OPCIONES menu to NO. The sound will be recorded in monaural (on both hi-fi and normal audio tracks) but with less noise. For details, see page 62.

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 SINTONIZ. AUDIO in the OPCIONES menu to SAP. For details, see page 62.

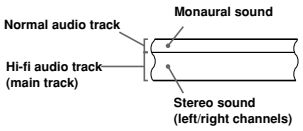
Selecting the sound during playback

Press AUDIO MONITOR to select the sound you want.

To listen to	On-screen display	Display window
Stereo	ESTEREO	STEREO
Left channel	L	STEREO
Right channel	R	STEREO
Monaural sound on the normal audio track	No indicator	No indicator

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.

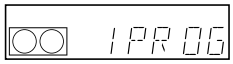


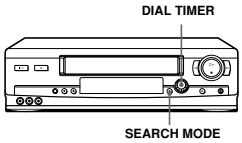
Notes

- 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.

Searching for the beginning of a timer recorded program

If you record a program using the timer function, you can easily find the beginning of the recording with this SEARCH MODE function. The SEARCH MODE button lights up when the VCR finishes a timer recording and the display window shows the following:





Press DIAL TIMER.

The VCR turns on, rewinds to the beginning of the most recently recorded program and starts playback automatically. The SEARCH MODE button turns off.

Tip

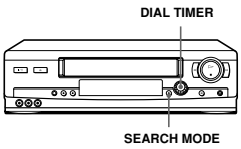
- To turn off the SEARCH MODE button, first turn the VCR on, then press the SEARCH MODE button. (Do not press any other button at this point, otherwise this SEARCH MODE function will be canceled.) To start the SEARCH MODE function, press the SEARCH MODE button once. If you press the SEARCH MODE button repeatedly, you can enter the index search or Time Search mode (for details, see page 55 and 56).

Notes

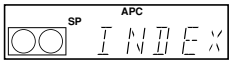
- This SEARCH MODE function will be canceled (the SEARCH MODE button turns off) if:
  - The VCR starts recording other programs.
  - You press ▷ PLAY, ▶▶ FF, ◀◀ REW, or ⏏ EJECT button while the VCR is on.
  - If there is a power failure.

Searching using the index function

The VCR marks the tape with an index signal at the point where each recording begins. Use these signals as references to find a specific recording. The VCR can search up to 9 index signals ahead of or behind the current position.

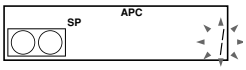


1 Press SEARCH MODE on the VCR repeatedly until "INDEX" appears in the display window (the SEARCH MODE button lights up).



2 Turn DIAL TIMER to specify how many index signals ahead or behind you want to search:

- To search ahead, turn DIAL TIMER clockwise.
- To search backwards, turn DIAL TIMER counterclockwise.



3 Press DIAL TIMER.

The VCR starts searching. The playback starts (the SEARCH MODE button turns off) from the point about five seconds ahead of the specified index mark.

To stop searching

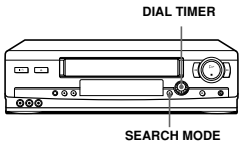
Press ■ STOP.

Note

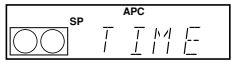
- No index signal will be added when recording starts from recording pause. However, an index signal will be marked if you change the channel during recording pause.

Searching using the Time Search function

You can easily find a specific point on a tape by using the Time Search function.
For example, you can find a recorded portion 15 minutes ahead of or behind the current position of a tape by using the Time Search function.



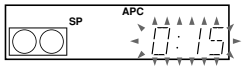
1 Press SEARCH MODE repeatedly until "TIME" appears in the display window (the SEARCH MODE button lights up).



2 Turn DIAL TIMER clockwise or counterclockwise to set the length of the time portion you want the VCR to fast-forward or rewind the tape. Each turn on the control increases or decreases the duration by 15 minutes.

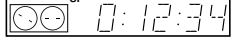
For example, if you want to watch a recorded portion 15 minutes ahead of the current position, turn DIAL TIMER once clockwise.

To change the time by one minute, press CHANNEL +/–.



3 Press DIAL TIMER.

The VCR starts searching and the tape counter starts counting until it reaches the specified point.



The VCR starts playback automatically when the tape counter reaches the specified point (the SEARCH MODE button turns off).

To stop searching

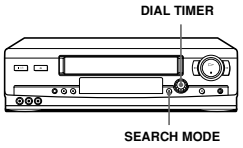
Press ■ STOP.

Tip

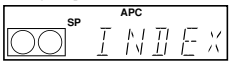
- The VCR can search up to six hours ahead of or behind the current position of a tape.

Searching using the index function

The VCR marks the tape with an index signal at the point where each recording begins. Use these signals as references to find a specific recording. The VCR can search up to 9 index signals ahead of or behind the current position.

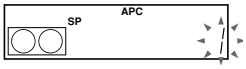


1 Press SEARCH MODE on the VCR repeatedly until "INDEX" appears in the display window (the SEARCH MODE button lights up).



2 Turn DIAL TIMER to specify how many index signals ahead or behind you want to search:

- To search ahead, turn DIAL TIMER clockwise.
- To search backwards, turn DIAL TIMER counterclockwise.



3 Press DIAL TIMER.

The VCR starts searching. The playback starts (the SEARCH MODE button turns off) from the point about five seconds ahead of the specified index mark.

To stop searching

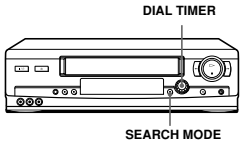
Press ■ STOP.

Note

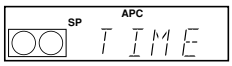
- No index signal will be added when recording starts from recording pause. However, an index signal will be marked if you change the channel during recording pause.

Searching using the Time Search function

You can easily find a specific point on a tape by using the Time Search function.
For example, you can find a recorded portion 15 minutes ahead of or behind the current position of a tape by using the Time Search function.



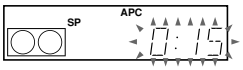
1 Press SEARCH MODE repeatedly until "TIME" appears in the display window (the SEARCH MODE button lights up).



2 Turn DIAL TIMER clockwise or counterclockwise to set the length of the time portion you want the VCR to fast-forward or rewind the tape. Each turn on the control increases or decreases the duration by 15 minutes.

For example, if you want to watch a recorded portion 15 minutes ahead of the current position, turn DIAL TIMER once clockwise.

To change the time by one minute, press CHANNEL +/–.



3 Press DIAL TIMER.

The VCR starts searching and the tape counter starts counting until it reaches the specified point.

The VCR starts playback automatically when the tape counter reaches the specified point (the SEARCH MODE button turns off).

To stop searching

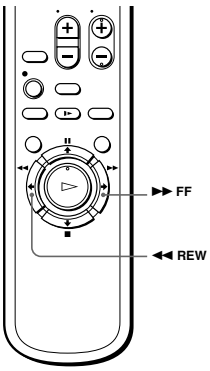
Press ■ STOP.

Tip

- The VCR can search up to six hours ahead of or behind the current position of a tape.

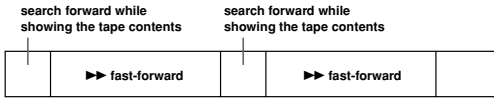
Skip-searching automatically (Quick View)

You can spot check an entire tape quickly using the Quick View function. At intervals, the VCR skips playback while searching forward or backward.



Hold down ▶▶ FF (or ◀◀ REW) more than two seconds during stop. "SKIP" indicator appears on the TV screen.

The VCR searches forward (or backward) for about two minutes on the counter while showing the contents of the tape. Then it fast-forwards (or rewinds) for about ten minutes on the counter. The VCR repeats this operation until it stops at the end (or beginning) of the tape.



To cancel skip-search

Press ▷ PLAY or ■ STOP.

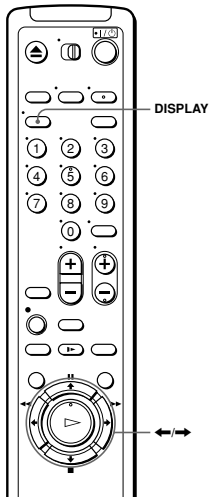
Note

- The VCR automatically fast-forwards (or rewinds) any portion with no recording.

Searching for a selected point on the tape

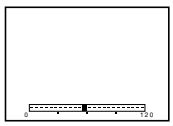
You can easily find a specific point by moving the pointer on the TV screen.

The VCR fast-forwards or rewinds to the point you indicate and starts playback automatically.



1 Press DISPLAY repeatedly until the bar indication appears on the TV screen.

A cursor (■) indicating the current position of the tape appears on the bar indication. If the cursor does not appear, play the tape a few moments (by pressing ▷ PLAY, ▶▶ FF, or ◀◀ REW) until the cursor appears.



2 Press ←/→ to move the pointer (▼) to the point where you want to start playback.

The VCR starts searching and the cursor (■) moves toward the pointer. When the VCR locates the marked point, playback starts.

To cancel searching

Press ▷ PLAY or ■ STOP.

To turn off the bar indication

Press DISPLAY again.

Notes

- The figure on the bar indication represents the total time length of the inserted tape as shown below.
  The total time length may not be displayed correctly for:
  – Tapes other than T-60, T-120, or T-160.
  – Tapes recorded in more than one tape speed mode.

Tape type	Total time length		
	SP	LP	EP
T-60 or shorter	60	120	180
from T-80 to T-140	120	240	360
T-160 or longer	160	320	480

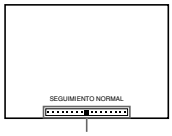
- If you move the pointer (▼) on the bar indication while searching, the VCR searches for the new reset point.
- With the bar indication on, the ▶▶ FF/ ➡ and ◀◀ REW/ ⬅ buttons on the remote commander work only for moving the pointer (▼) and are not used for normal tape operation. The ▶▶ FF and ◀◀ REW buttons on the VCR are used for normal tape operation. Note, however, if you press these buttons on the VCR, searching is canceled.

Adjusting the picture

Adjusting the tracking

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

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



Tracking meter

About the Reality Regenerator function

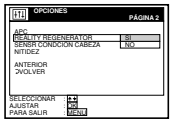
The Reality Regenerator function automatically restores the picture to its original quality during playback.

To use the Reality Regenerator function

1 Press MENU, then select OPCIONES and press OK.

2 Press ↑/↓ to highlight PRÓXIMA, then press OK.

3 Press ↑/↓ to highlight REALITY REGENERATOR on PÁGINA2 of the OPCIONES menu, then press OK.



4 Press ↑/↓ to set REALITY REGENERATOR to SI, then press OK.
The RR indicator lights up in the display window.

5 Press MENU to return to the original screen.

To turn it off, select NO in step 4. The RR indicator turns off in the display window.

About the Adaptive Picture Control (APC) function

The Adaptive Picture Control (APC) function 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 SI on PÁGINA2 of the OPCIONES menu (The APC indicator lights up in the display window). For details, see page 63.

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 guaranteed to work with tapes recorded in the LP mode on other VCRs.
- The APC function does not work if the tape speed is automatically changed from the SP to EP mode during a timer recording when VEL. AUTO. CINTA is set to SI in the OPCIONES menu, unless the tape has been recorded in the EP mode with the APC function.
- There is a delay of about ten seconds before the VCR actually starts recording while the VCR analyzes the tape. To avoid the delay, first set the VCR to recording pause (the APC indicator flashes slowly) and press ● REC to have the VCR analyze the tape (the APC indicator flashes rapidly) and return to recording pause. After the APC indicator stops flashing, press ❚❚ PAUSE to start recording immediately.
  If you want to start recording quickly without using the APC function, first set the VCR to recording pause (the APC indicator flashes slowly) and press ❚❚ PAUSE again to start recording.

Changing menu options

1 Press MENU, then select OPCIONES and press OK.

2 Press ↑/↓ to highlight the option to change, then press OK.
To go to PÁGINA2, highlight PRÓXIMA and press OK. To return to PÁGINA1, highlight ANTERIOR and press OK.

3 Press ↑/↓ to change the setting, then press OK.
To adjust the sharpness, press ⬅/➡ and press OK.

4 Press MENU to return to the original screen.

Menu choices

Initial settings are indicated in bold print.

PÁGINA1

Menu option	Set this option to
SELEC. AUTO. ANT.	• **SI** if your TV is connected only to VHF/UHF OUT on the VCR. To play a tape, set the TV to the VCR channel (channel 3 or 4). • NO if your TV is connected to both VHF/UHF OUT and LINE OUT on the VCR. To play a tape, set the TV to the VCR input.
ESTEREO AUTO. (SLV-LX70S and LX60S only)	• **SI** to receive stereo programs. • NO to reduce noise. The sound changes to monaural.
SINTONIZ. AUDIO (SLV-LX70S and LX60S only)	• **MAIN** to record the main sound on both hi-fi and normal audio tracks. • SAP to record the SAP (Second Audio Program) sound on both hi-fi and normal audio tracks.
SELC. DE CINTA	• **AUTO** when using a T-160 length tape or any tape shorter than a T-140 length tape. • 180 when using a T-140 or T-180 length tape. For details, see page 36.
VEL. AUTO. CINTA	• **SI** to change the timer recording tape speed automatically to the EP mode when the remaining tape length becomes shorter than the recording time. To operate VEL. AUTO. CINTA, set SELC. DE CINTA correctly. • NO to keep the same tape speed.

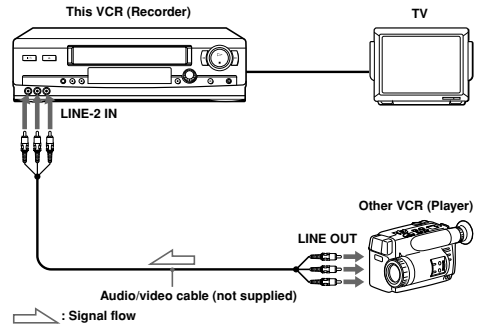
PÁGINA2

Menu option	Set this option to
APC	• **SI** to switch on the APC (Adaptive Picture Control) function and improve picture quality. • NO to switch off APC.
REALITY REGENERATOR	• **SI** to switch on the Reality Regenerator (Reality Regenerator) function and restore the picture to its original quality during playback. • NO to switch off Reality Regenerator.
SENSR CONDCIÓN CABEZA	• **SI** to allow the VCR to automatically check the condition of the video heads and inform you when they are dirty. • NO to turn off the sensor.
NITIDEZ	• B (Low) through A (High) to adjust the sharpness of the picture. Select B to turn off the sharpness control.

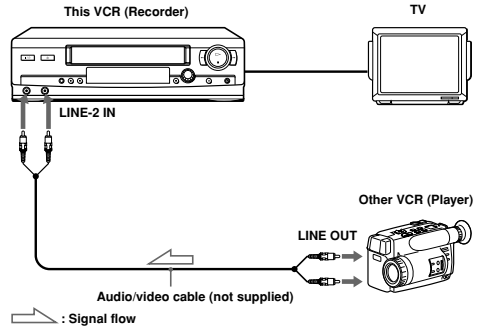
Editing with another VCR

How to connect to record on this VCR

SLV-LX70S and LX60S



SLV-LX50 and LX40



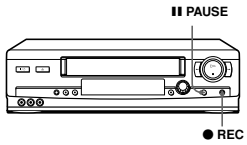
Notes

- Make sure you connect the plugs to jacks of the same color.
- 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.
- You can use the LINE-1 IN jacks for editing.
- If the other VCR is a monaural type and connected to this VCR's LINE-2 IN jacks, connect the audio plug to the AUDIO L (white) jack. The sound is recorded on both right and left channels. If you connect to the AUDIO R (red) jack, the sound is recorded only on the right channel. (SLV-LX70S and LX60S only)
- If the other VCR is a monaural type and connected to this VCR's LINE-1 IN jacks, the sound is recorded only on the channel whose jack is connected to the audio plug. To record on both right and left channels, connect the audio plugs to the AUDIO R/L jacks using a VMC-910HG audio/video cable (not supplied). (SLV-LX70S and LX60S only)

Operation (when recording on this VCR)

Before you start editing

- Turn on your TV and set it to the video channel.
- Press INPUT SELECT or CHANNEL +/– to display "L2" (or "L1") in the display window.
- Press SP/EP 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 into this (recording) VCR. Search for the point to start recording and press ❚❚ PAUSE.

3 Press ● REC on this VCR to 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.

Tip

- To cut out unwanted scenes while editing, press ❚❚ PAUSE on this VCR when an unwanted scene begins. When it ends, press ❚❚ PAUSE again to resume recording.

Note

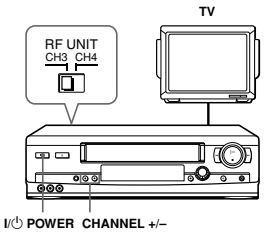
- If you start recording following the procedure above, the VCR won't start recording with the APC function. To record a tape with the APC function, press ● REC again during recording pause in step 3 so that the VCR analyzes the tape. Then, press ❚❚ PAUSE after the APC indicator stops flashing to start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

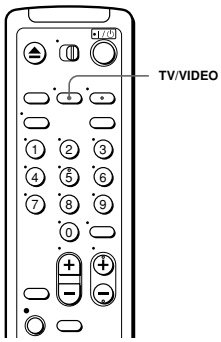
continued

General setup information

Setting the RF unit

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





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

2 Press **I/⏻** POWER to turn on the VCR.

3 Press TV/VIDEO to turn on the VIDEO 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).

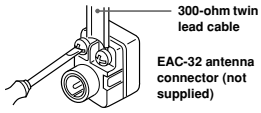
The channel you selected in step 4 appears on the TV screen. If the channels change when you press CHANNEL +/–, you have made the correct setting.

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

continued

Attaching the external antenna connector

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



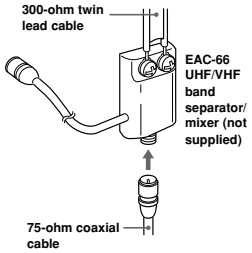
1 Loosen the screws on the antenna connector.

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



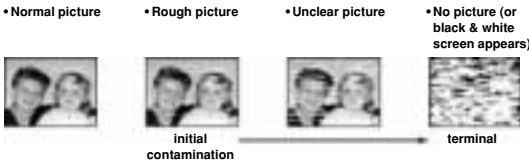
1 Loosen the screws on the mixer.

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.

Symptoms caused by contaminated video heads



Head Condition Sensor

The Head Condition Sensor checks the video heads' condition. If the heads are dirty, a message will instruct you to insert a video head cleaning cassette.

Be sure to use the Sony T-25CLD or T-25CLDR video head cleaning cassette. If these cleaning cassettes are not available in your area, have the heads cleaned at your nearest Sony service facility (a standard service charge will be required).

Note

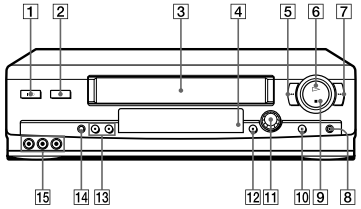
- SENSR CONDCIÓN CABEZA in OPCIONES must be set to SI for the Head Condition Sensor to operate.
- To turn off the head condition sensor message, set SENSR CONDCIÓN CABEZA to NO.

Index to parts and controls

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

Front panel

SLV-LX70S and LX60S



1 **I/⏻** POWER switch (44)

2 ⏏ EJECT button (33)

3 Tape compartment

4 Remote sensor (5)

5 ◀◀ REW (rewind) button (33) (47)

6 ▷ PLAY button (33) (47)

7 ▶▶ FF (fast-forward) button (33) (47)

8 ● REC (record) button (36) (49) (66)

9 ■ STOP button (33) (66)

10 ❚❚ PAUSE button (33) (66)

11 DIAL TIMER (38) (54) (55) (56)

12 SEARCH MODE button (54) (55) (56)

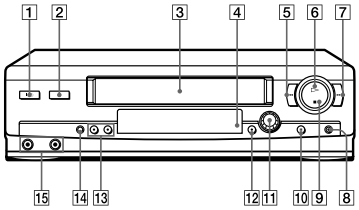
13 CHANNEL/TRACKING +/– buttons (36) (60)

14 EASY SET UP button (11) (13) (16)

15 LINE-2 IN VIDEO/AUDIO L/R jacks (64)

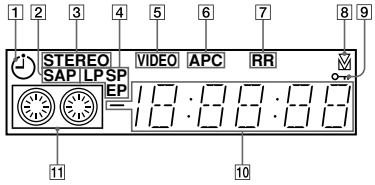
continued

SLV-LX50 and LX40



1 I/⏻ POWER switch (44)
2 ⏏ EJECT button (33)
3 Tape compartment
4 Remote sensor (5)
5 ◀◀ REW (rewind) button (33) (47)
6 ▷ PLAY button (33) (47)
7 ▶▶ FF (fast-forward) button (33) (47)
8 ● REC (record) button (36) (49) (66)
9 ■ STOP button (33) (66)
10 ❚❚ PAUSE button (33) (66)
11 DIAL TIMER (38) (54) (55) (56)
12 SEARCH MODE button (54) (55) (56)
13 CHANNEL/TRACKING +/– buttons (36) (60)
14 EASY SET UP button (11) (13) (16)
15 LINE-2 IN VIDEO/AUDIO jacks (64)

Display window

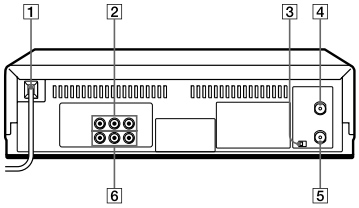


1 Timer indicator (40) (44)
2 SAP (Second Audio Program) indicator (52) (SLV-LX70S and LX60S only)
3 STEREO indicator (52) (SLV-LX70S and LX60S only)
4 Tape speed indicator (36)
5 VIDEO indicator (37) (67)
6 APC (Adaptive Picture Control) indicator (61)
7 RR (Reality Regenerator) indicator (60)
8 Tracking indicator (60)
9 Child lock indicator (46)
10 Time counter/clock/line/channel indicator (33) (36) (66)
11 Tape/recording indicator (36)

continued

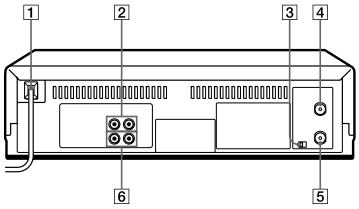
Rear panel

SLV-LX70S and LX60S



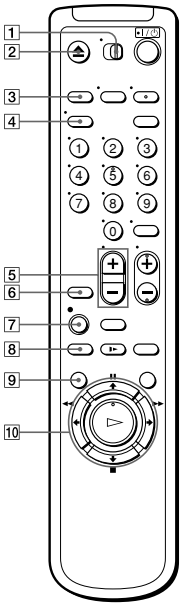
1 AC power cord (7)
2 LINE-1 IN AUDIO R/L/VIDEO jacks (65)
3 RF (Radio Frequency) UNIT switch (67)
4 VHF/UHF IN connector (10) (12) (15)
5 VHF/UHF OUT connector (10) (12) (15)
6 LINE OUT AUDIO R/L/VIDEO jacks (8)

SLV-LX50 and LX40



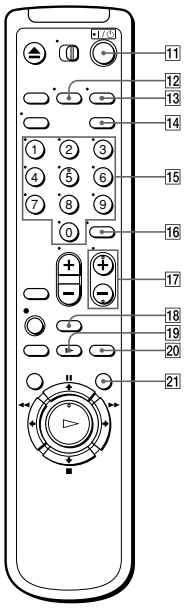
1 AC power cord (7)
2 LINE-1 IN AUDIO/VIDEO jacks (65)
3 RF (Radio Frequency) UNIT switch (67)
4 VHF/UHF IN connector (10) (12) (15)
5 VHF/UHF OUT connector (10) (12) (15)
6 LINE OUT AUDIO/VIDEO jacks (9)

Remote commander



1 •TV / VIDEO switch (5)
2 ⏏ EJECT button (33)
3 TRINITRON TV SYNCHRO PLAY button (34)
4 DISPLAY button (36) (58)
5 VOL (volume) +/– buttons (6)
6 INPUT SELECT button (37) (66)
7 ● REC (record) button (36) (49)
8 SP (Standard Play)/EP (Extended Play) button (36)
9 MENU button (18) (62)
10 ❚❚ PAUSE/↑ button (18) (33)
■ STOP/↓ button (18) (33)
◀◀ REW (rewind)/ ← button (33) (47)
▶▶ FF (fast-forward)/ → button (33) (47)
▷ PLAY/OK button (18) (33)

continued



11 I/⏻ (power) switch (6) (44)

12 TV/VIDEO button (6) (37)

13 AUDIO MONITOR button (52)
(SLV-LX70S and LX60S only)

14 TIMER button (43) (50)

15 Number buttons (31)

16 ENTER button (31)

17 CH (channel) +/– buttons (6) (36)

18 CLEAR button (33) (51)

19 ▮► SLOW button (47)

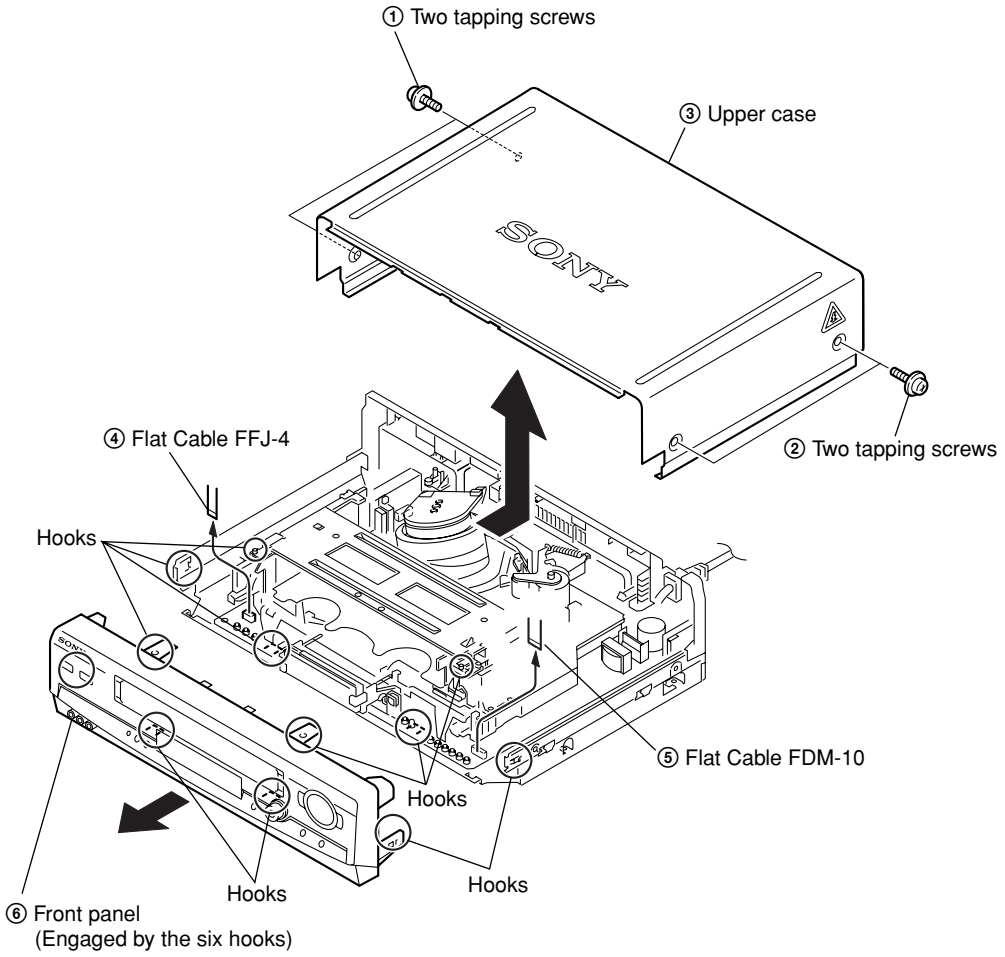
20 ×2 button (47)

21 REPLAY button (33)

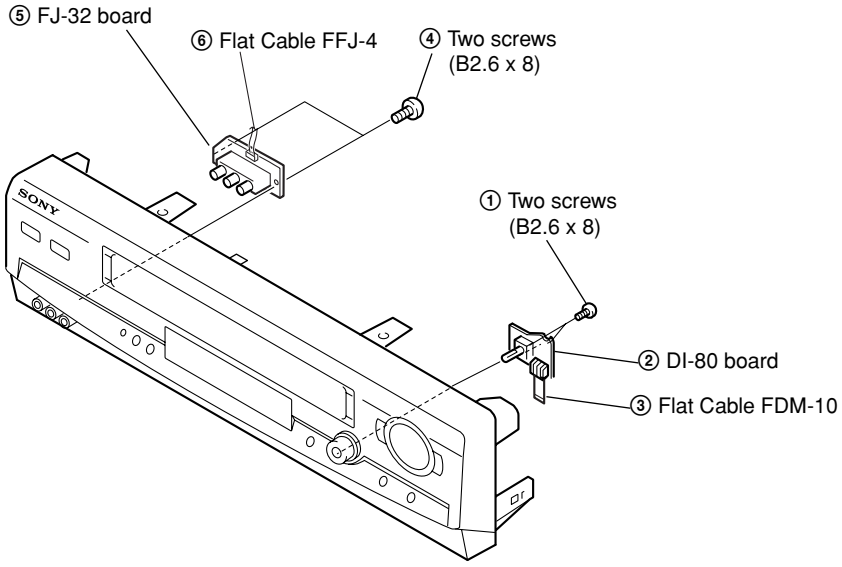
SECTION 2
DISASSEMBLY

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

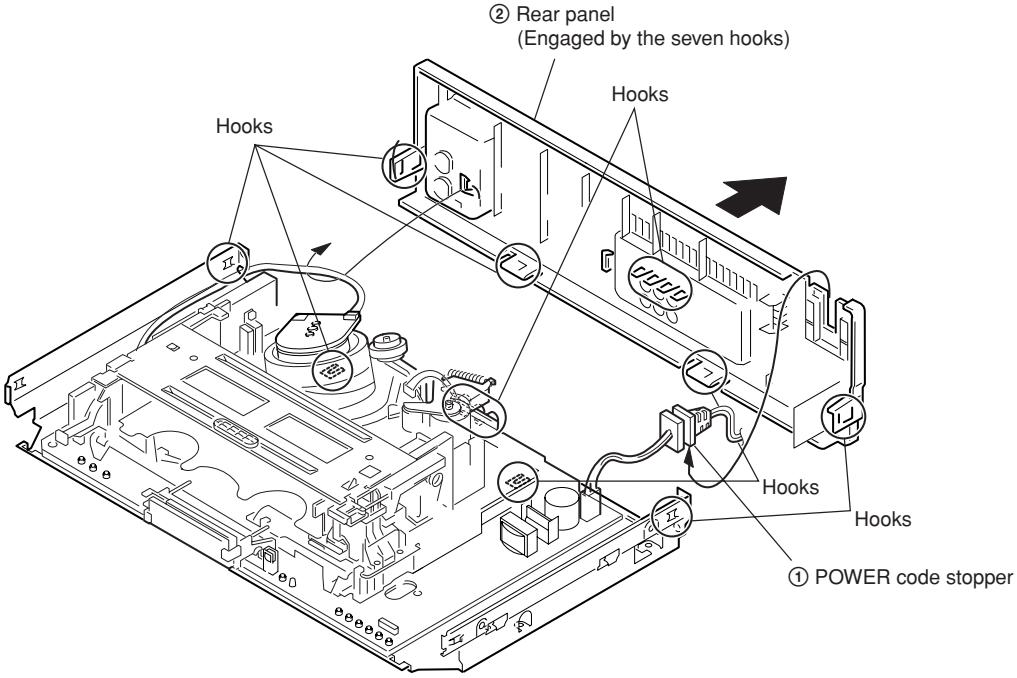
2-1. CASE, FRONT PANEL BLOCK ASSEMBLY



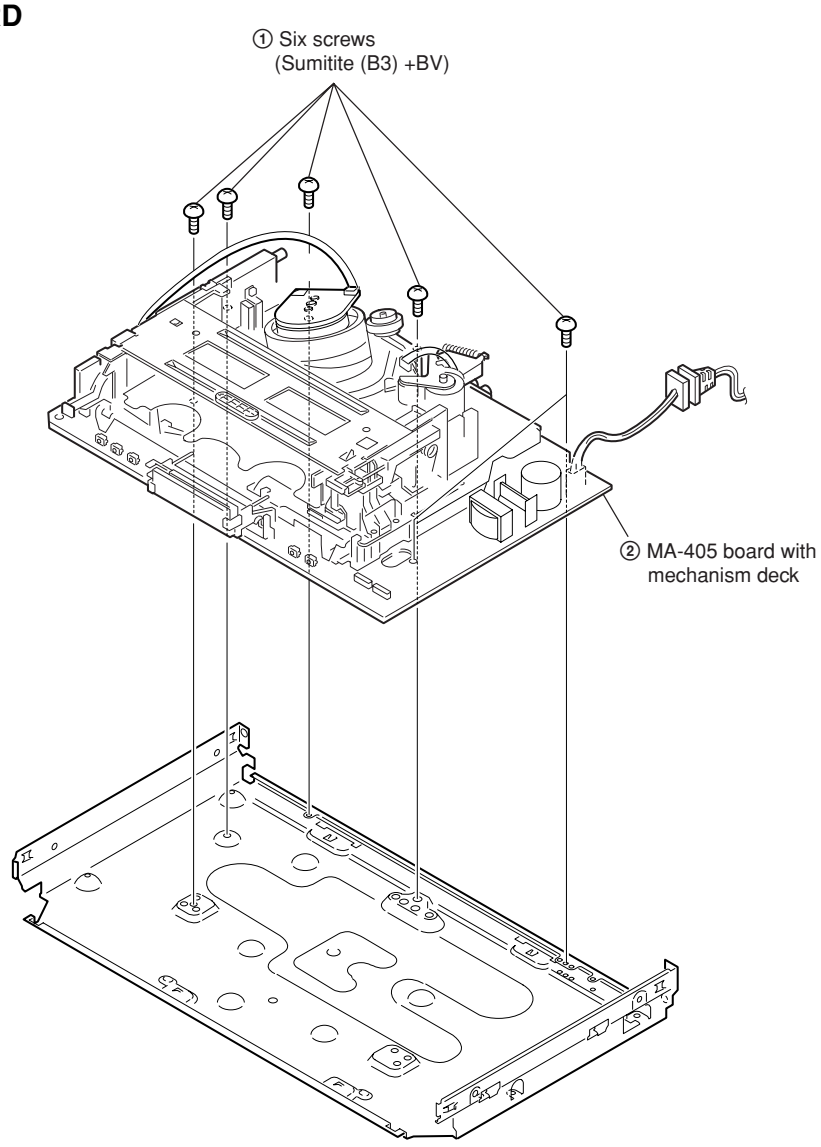
2-2. DI-80 BOARD, FJ-32 BOARD



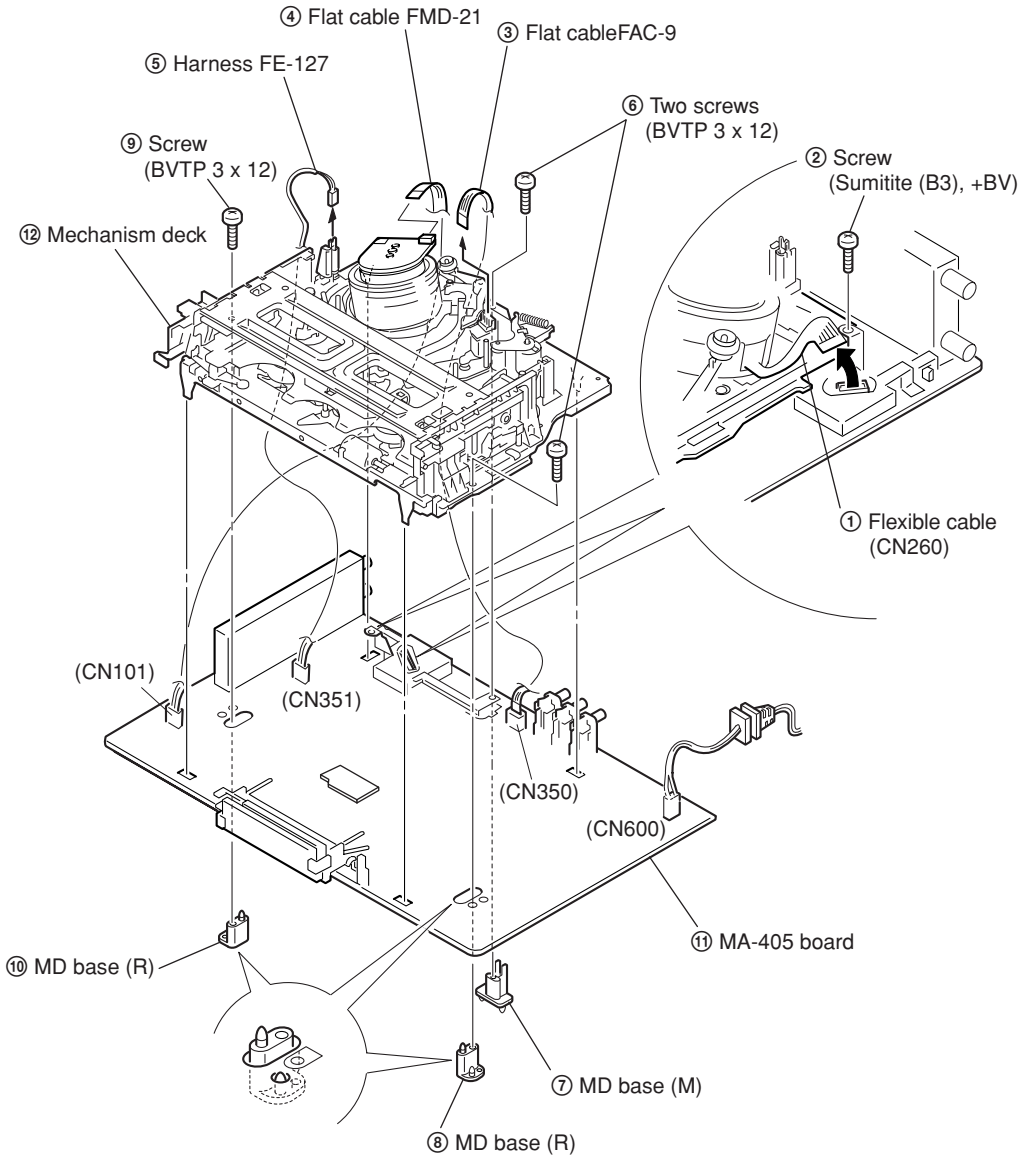
2-3. REAR PANEL



2-4. MA-405 BOARD

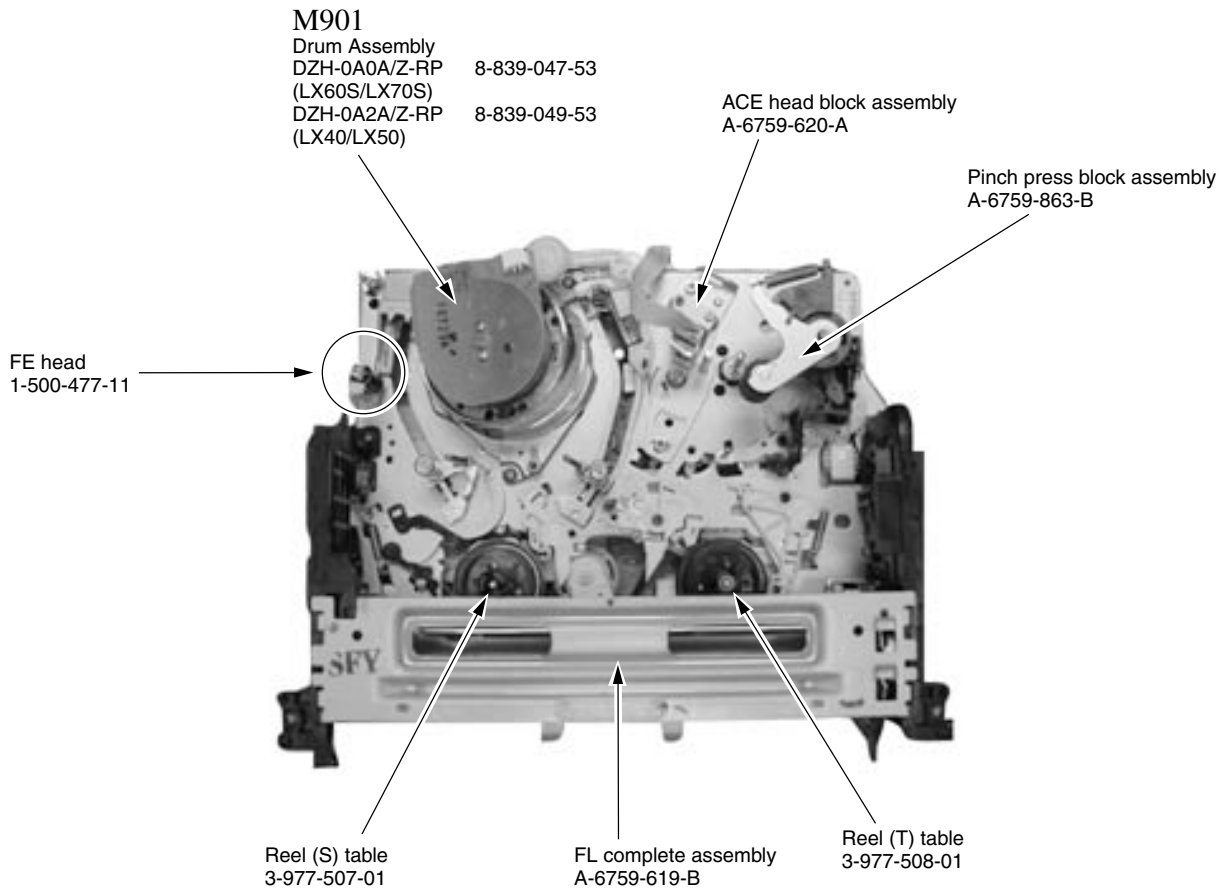


2-5. MECHANSIM DECK

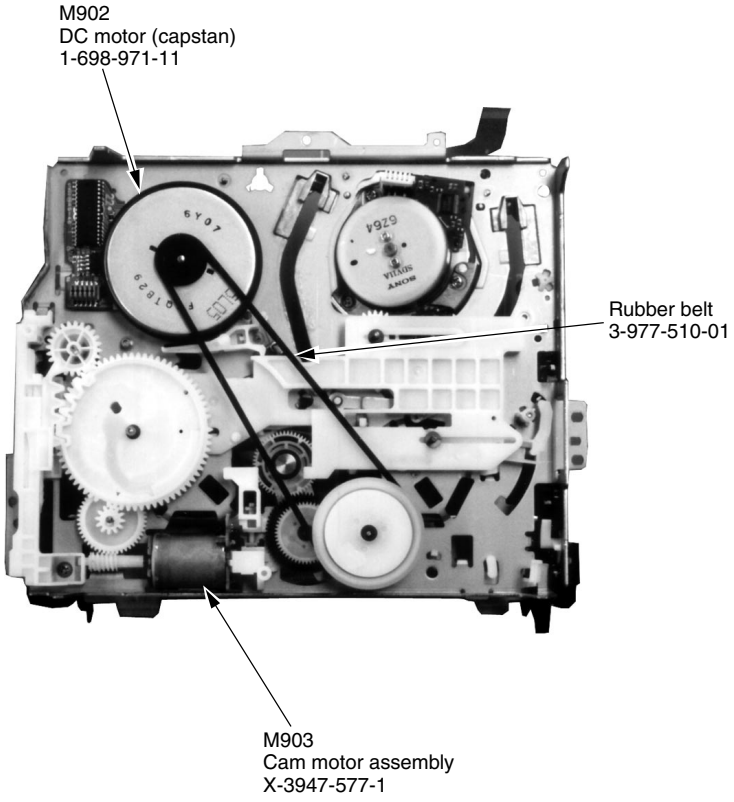


2-6. INTERNAL VIEWS

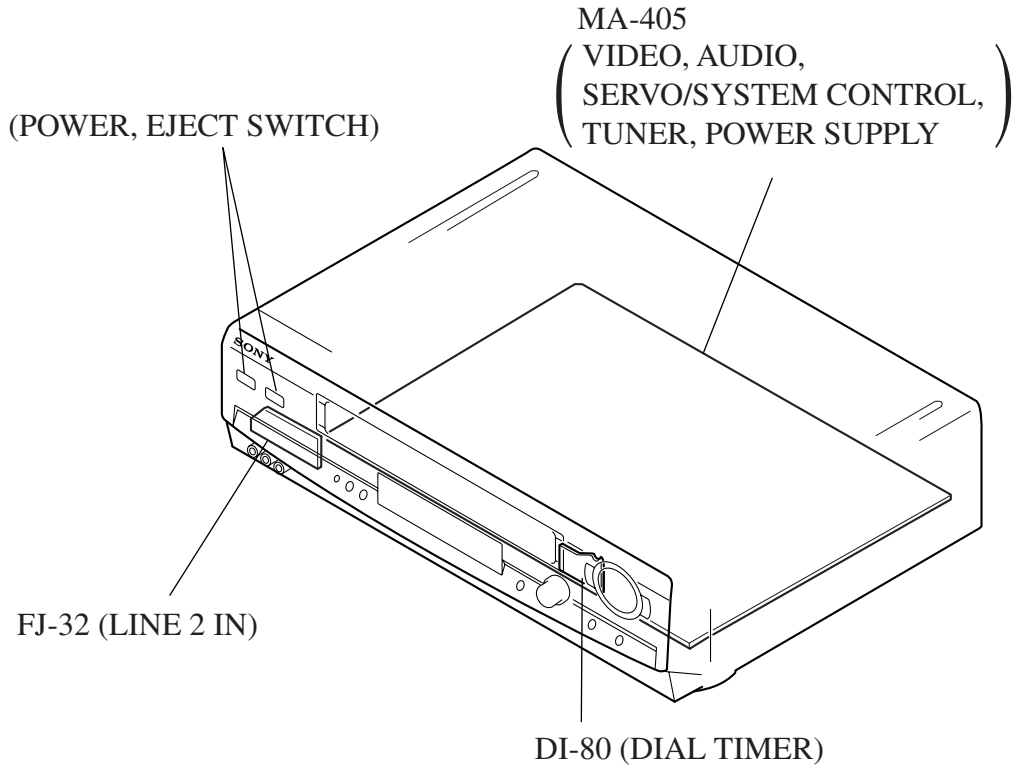
— Top View —



— Bottom View —

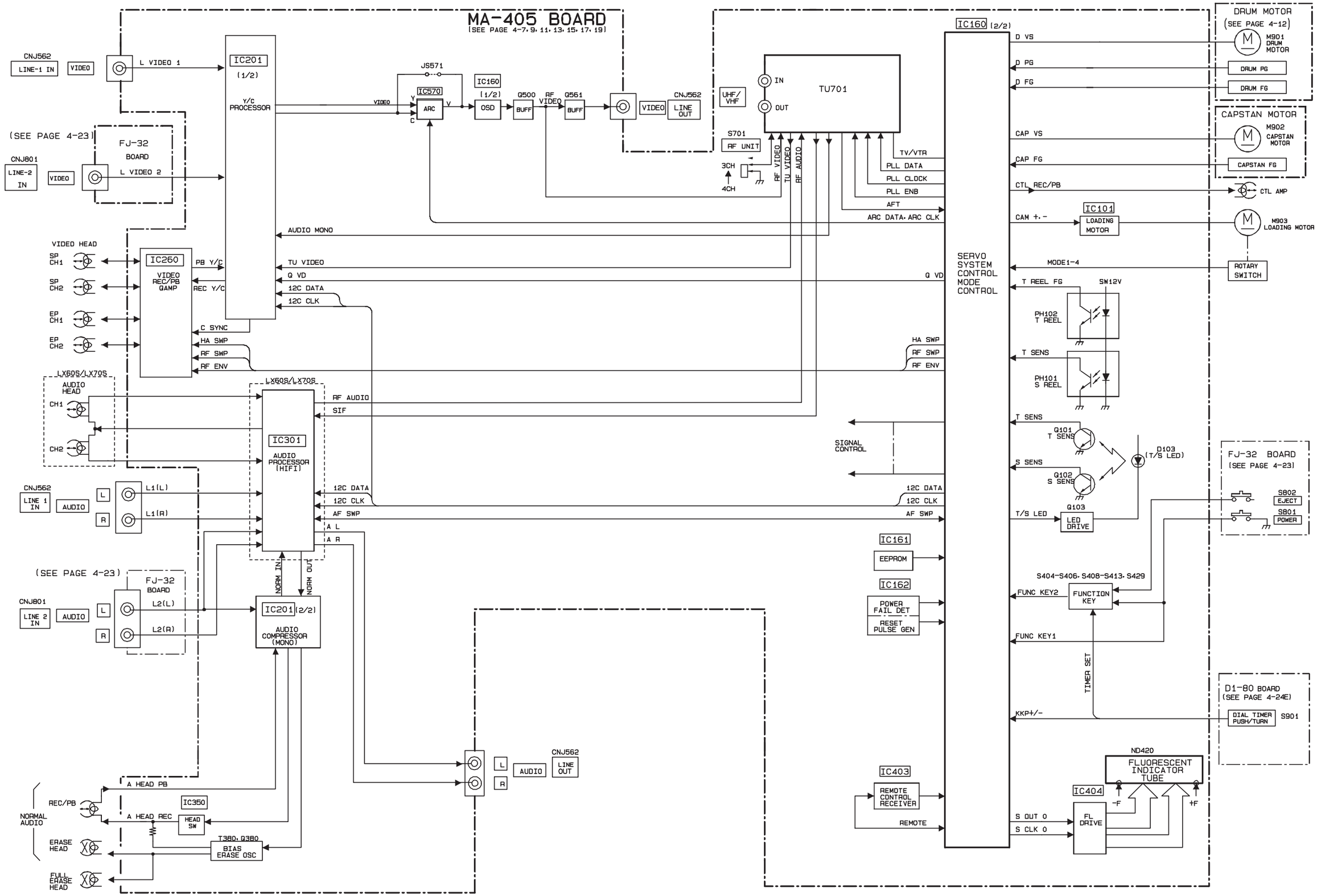


2-7. CIRCUIT BOARDS LOCATION

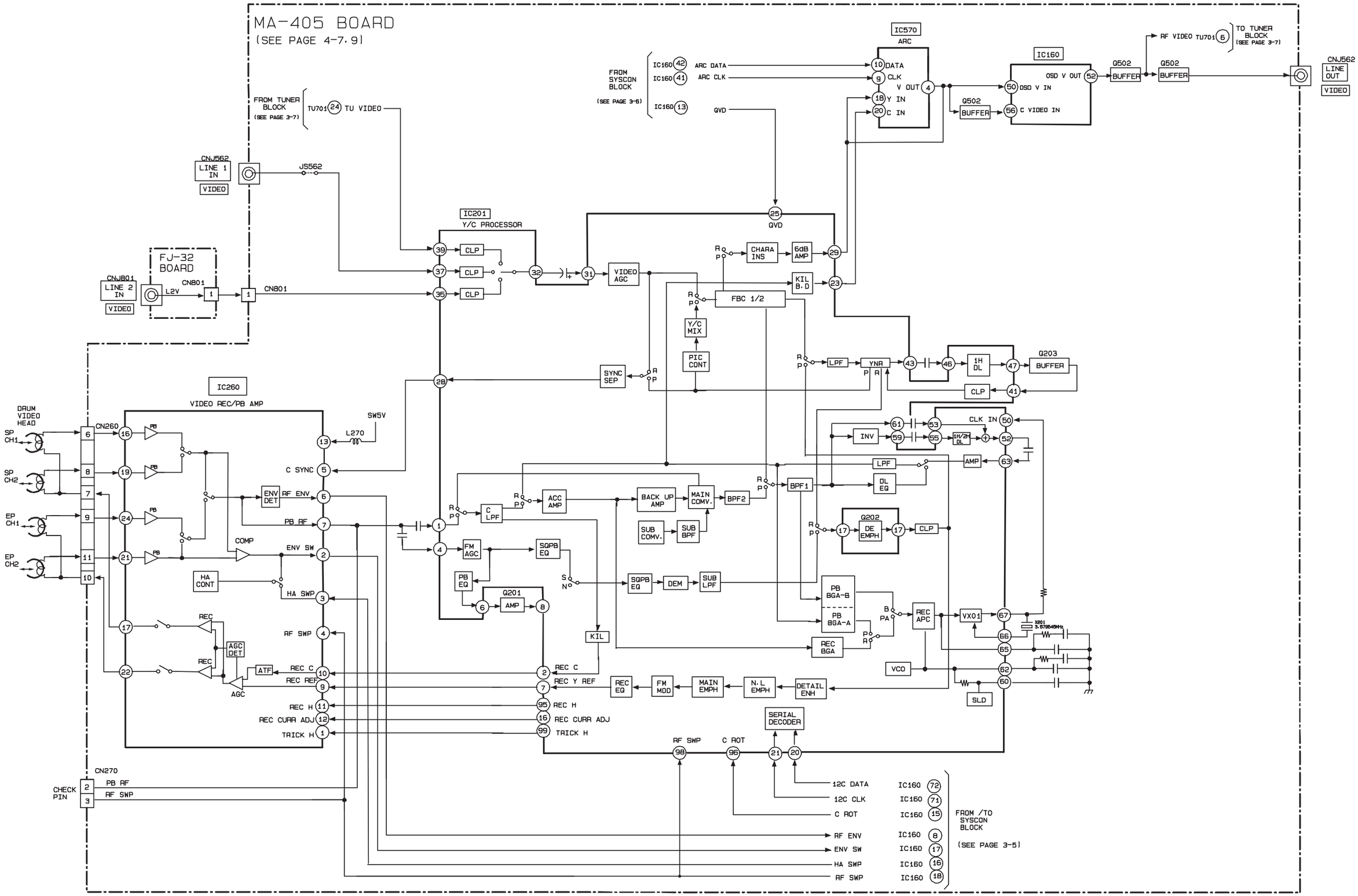


SECTION 3
BLOCK DIAGRAMS

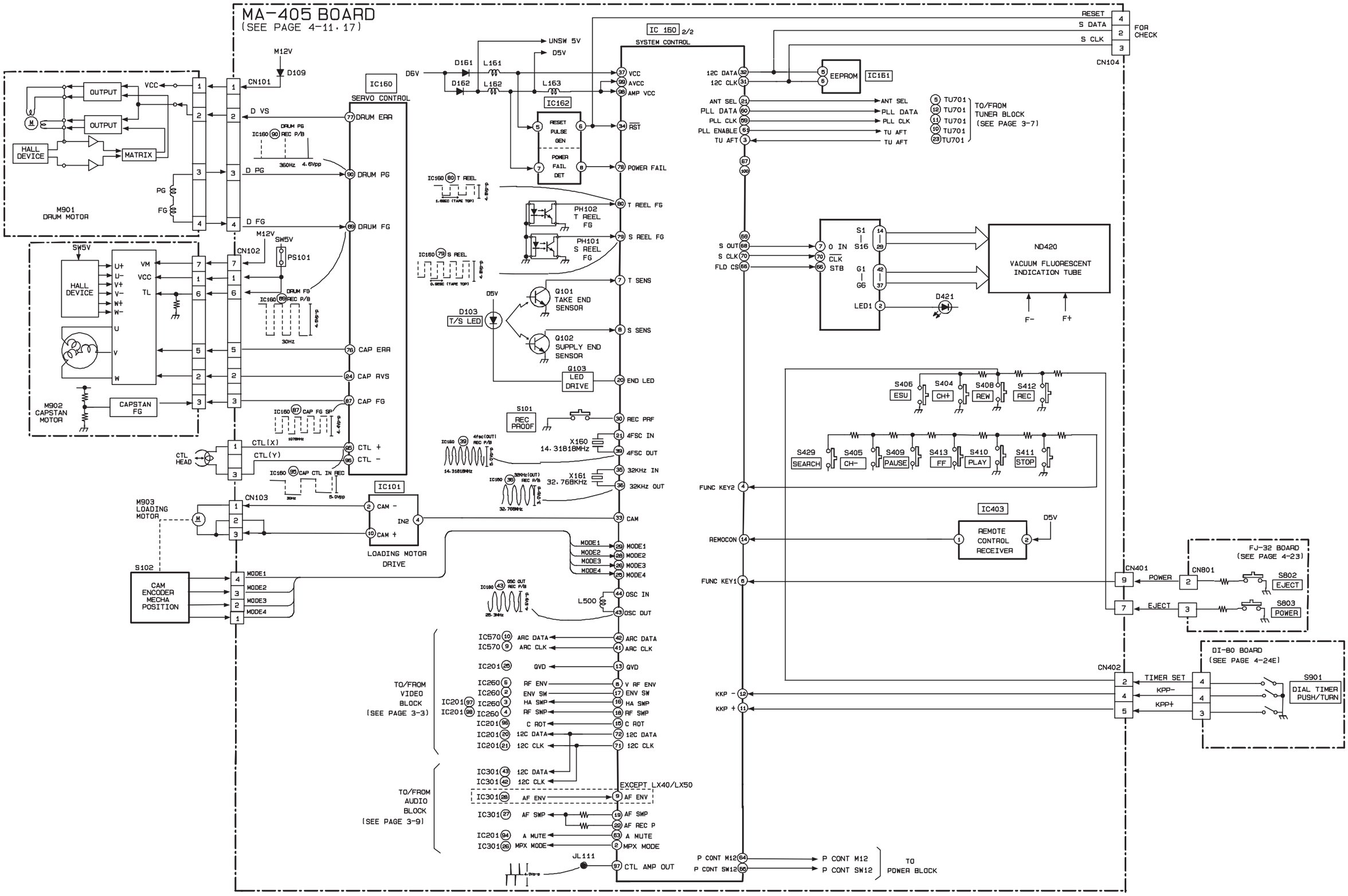
3-1. OVERALL BLOCK DIAGRAM



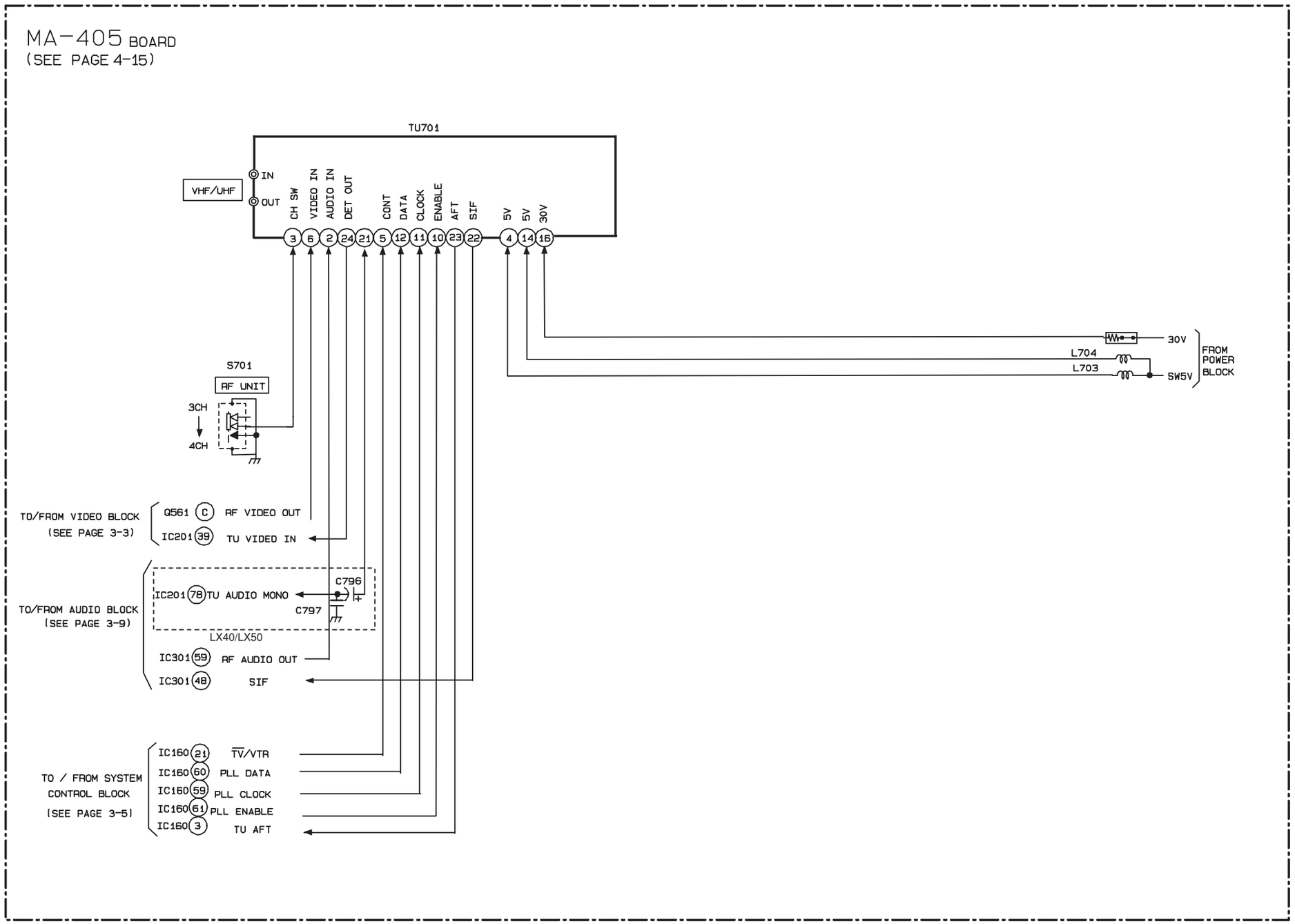
3-2. VIDEO BLOCK DIAGRAM



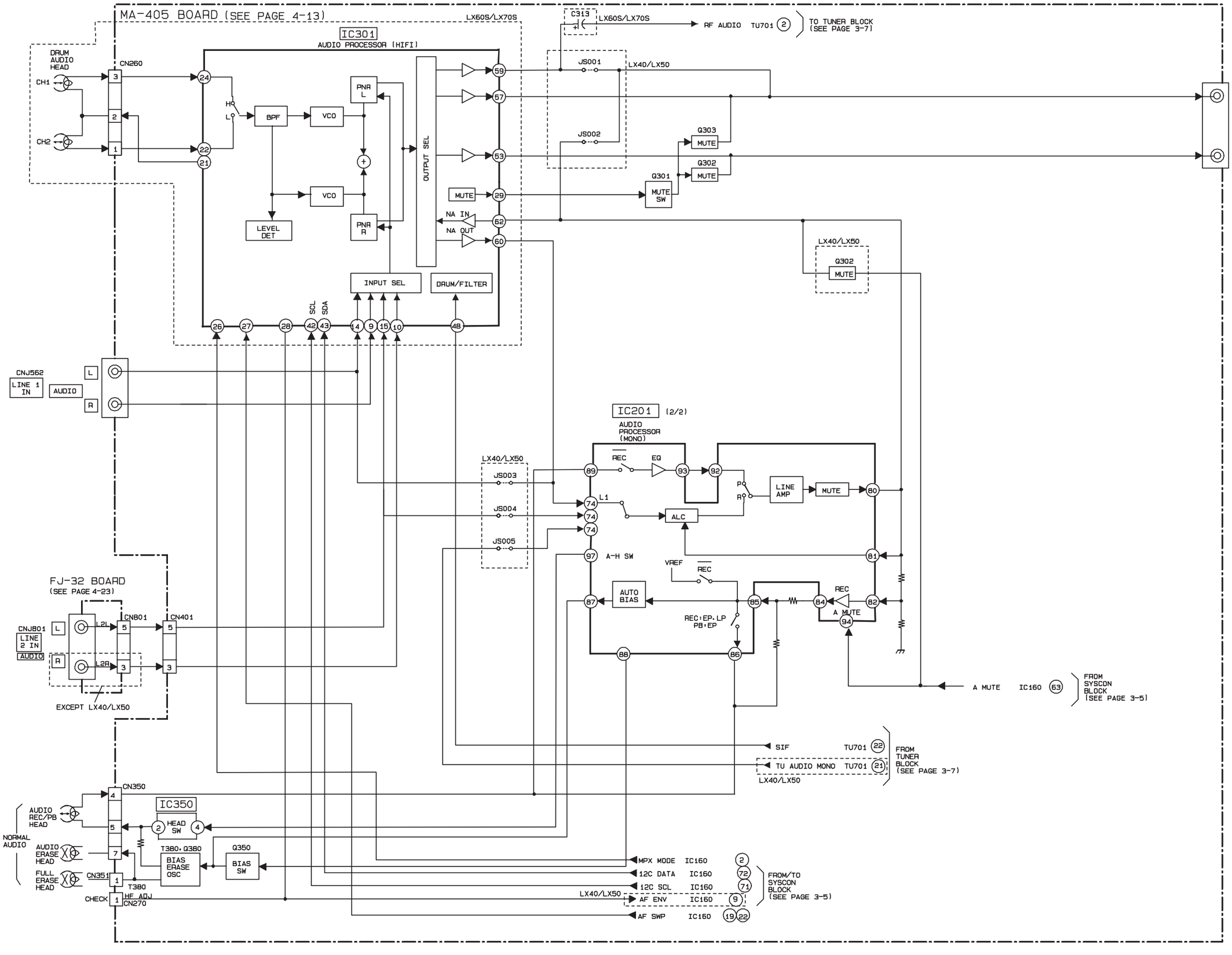
3-3. SERVO/SYSTEM CONTROL BLOCK DIAGRAM



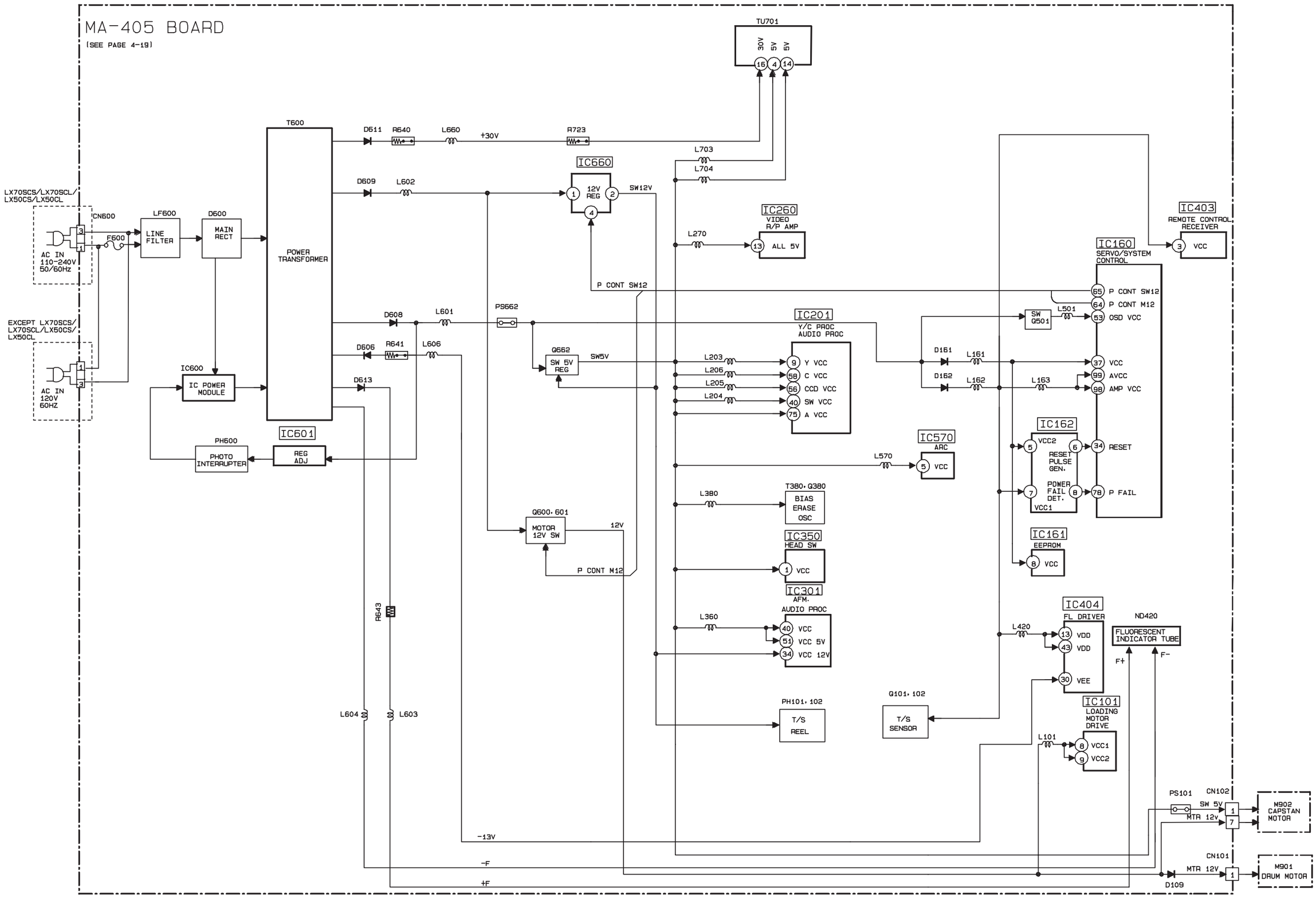
3-4. TUNER BLOCK DIAGRAM



3-5. AUDIO BLOCK DIAGRAM



3-6. POWER BLOCK DIAGRAM

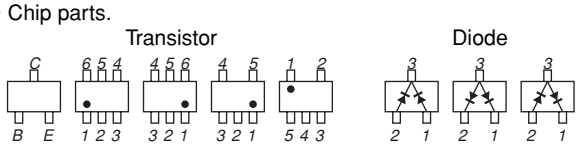


SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

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

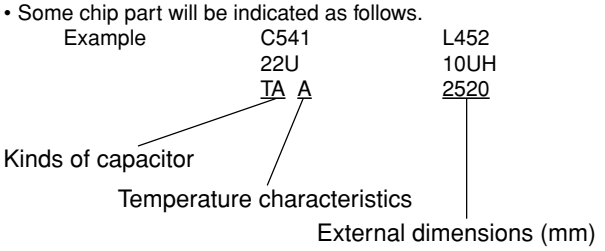
(For printed wiring boards)

- ▬ : Pattern from the side which enables seeing.
  (The other layers' patterns are not indicated.)
- Through hole is omitted.
- Circled numbers refer to waveforms.
- There are few cases that the part printed on diagram isn't mounted in this model.
- Chip parts.



(For schematic diagrams)

- All capacitors are in μF unless otherwise noted. pF : μμF. 50V or less are not indicated except for electrolytics and tantalums.
- Chip resistors are 1/10W unless otherwise noted.
  kΩ=1000Ω, MΩ=1000kΩ.
- 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.
- Some chip part will be indicated as follows.

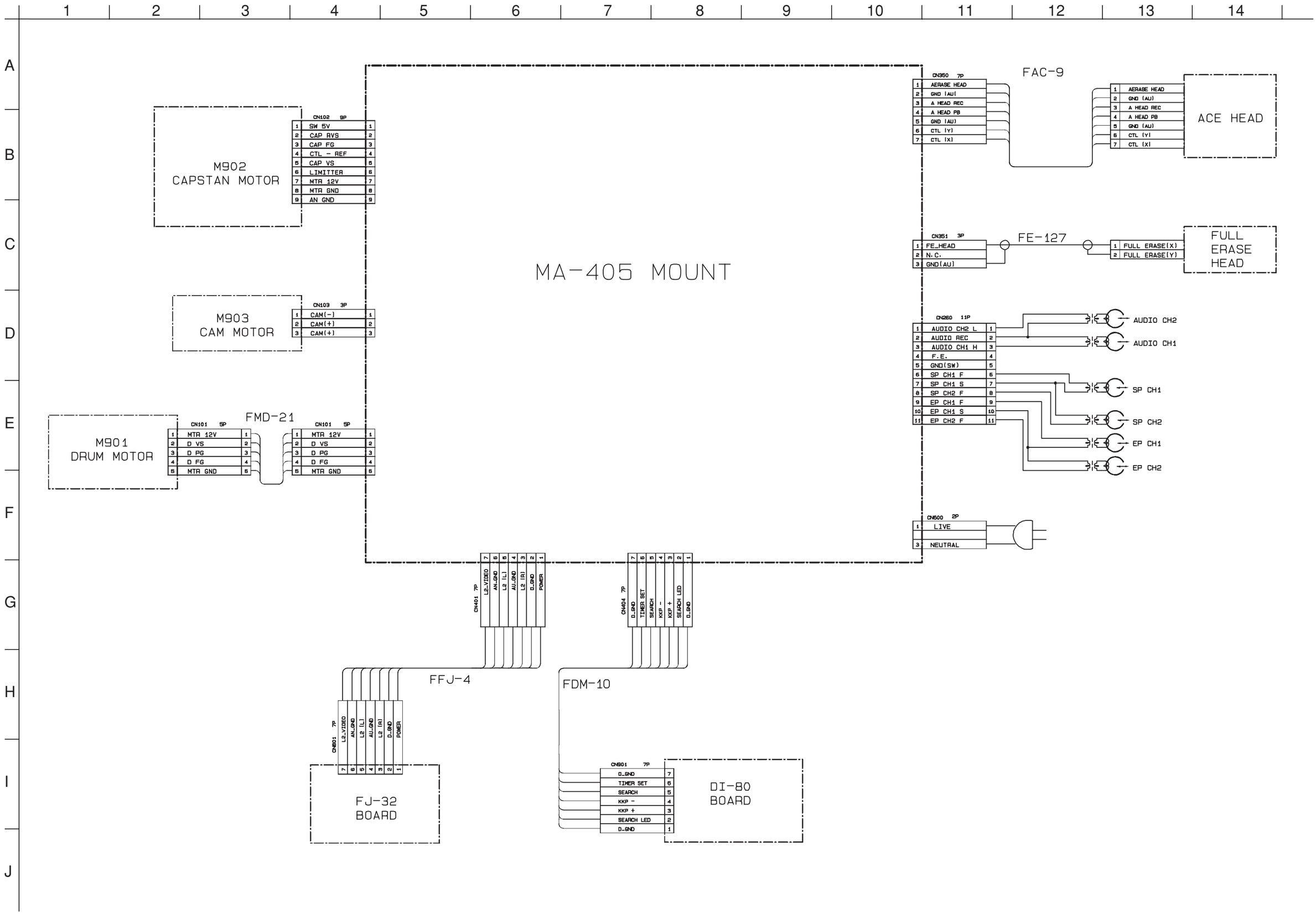


- Constants of resistors, capacitors, ICs and etc with XX indicate that they are not used.
  In such cases, the unused circuits may be indicated.
- Parts with ★ differ according to the model/destination.
  Refer to the mount table for each function.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Signal name
  XEDIT → $\overline{\text{EDIT}}$ PB/XREC → PB/$\overline{\text{REC}}$
- : non flammable resistor
- : fusible resistor
- : panel designation
- △ : internal component.
- B + : B+ Line.
- B – : B– Line.
- Circled numbers refer to waveforms.
- Readings are taken with a color-bar signal input.
- Voltage are dc between ground and measurement points.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.
- ▭ : adjustment for repair.
- Circled numbers refer to waveforms.

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

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

4-1. FRAME SCHEMATIC DIAGRAM



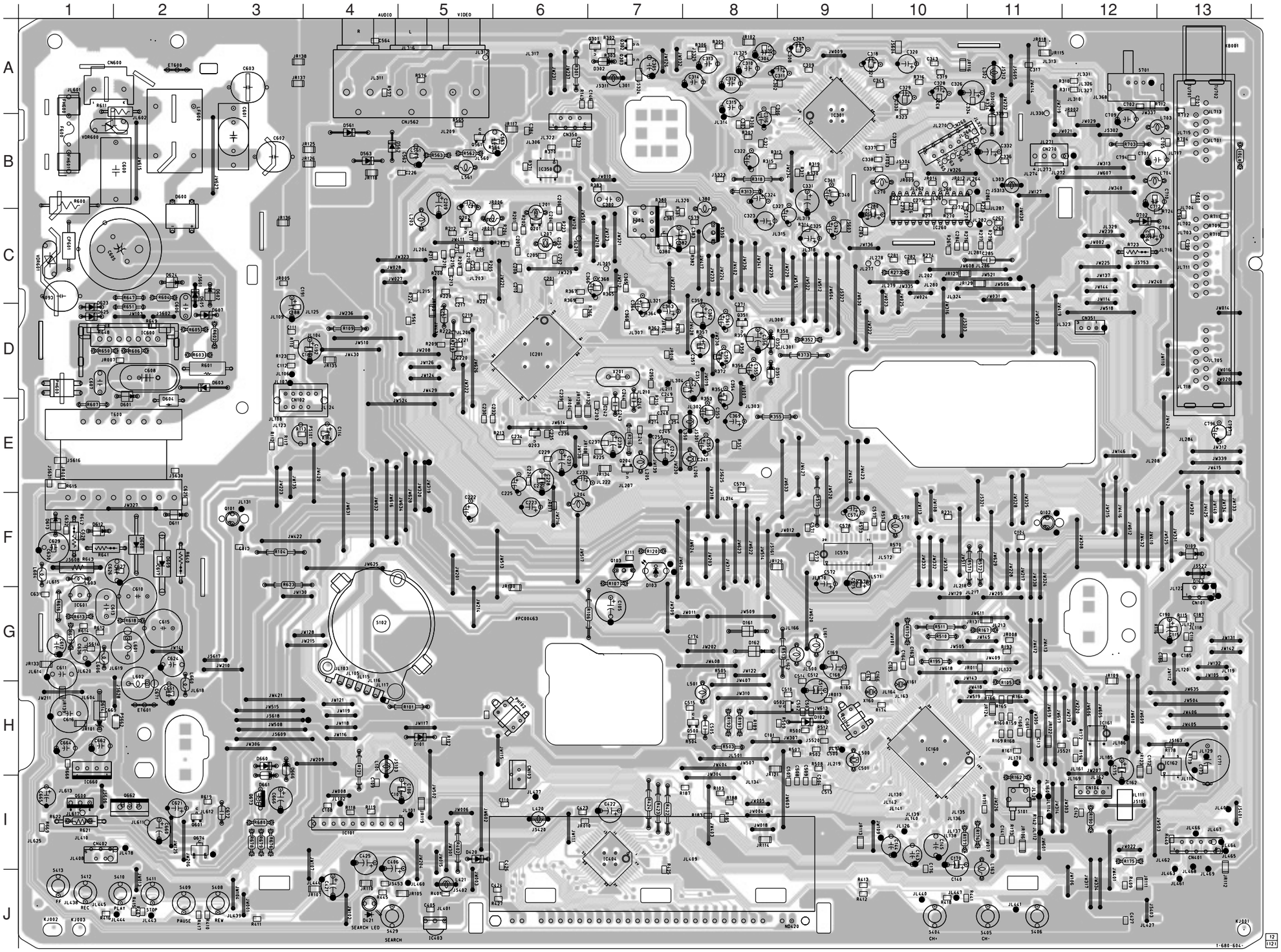
MA-405 (VIDEO, AUDIO, SERVO/SYSTEM CONTROL, TUNER, POWER) PRINTED WIRING BOARD
— Ref. No. MA-405 Board:1,000 Series —

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

MA-405 BOARD

D101	H5	IC260	C10
D102	H9	IC301	B9
D103	F7	IC350	B6
D161	G8	IC403	J5
D162	G8	IC404	I7
D163	F13	IC570	F9
D189	F13	IC600	D2
D301	A11	IC601	G1
D302	A7	IC660	I1
D351	D9		
D352	D9	Q101	F11
D420	I5	Q103	F7
D421	J4	Q181	F3
D561	B4	Q201	C6
D562	B4	Q202	C5
D563	B4	Q203	E6
D600	B2	Q204	E7
D601	E2	Q301	A7
D602	C3	Q302	A7
D603	D3	Q303	A7
D604	E2	Q350	C8
D605	C5	Q351	D8
D607	D3	Q380	C7
D608	F2	Q500	H8
D609	F2	Q600	I1
D611	F2	Q601	I2
D612	F1	Q662	I2
D613	F1	Q673	I3
D621	C2	Q674	I2
D623	C1		
D625	D1	CN101	G13
D660	H3	CN103	H6
D661	I3	CN104	I12
D666	H3	CN182	E3
D702	C12	CN260	B10
		CN270	B11
IC101	I4	CN351	D12
IC160	H10	CN358	B6
IC161	H12	CN402	I1
IC162	H13	CN600	A2
IC201	D6	CNJ562	B5

MA-405 BOARD (SIDE B)

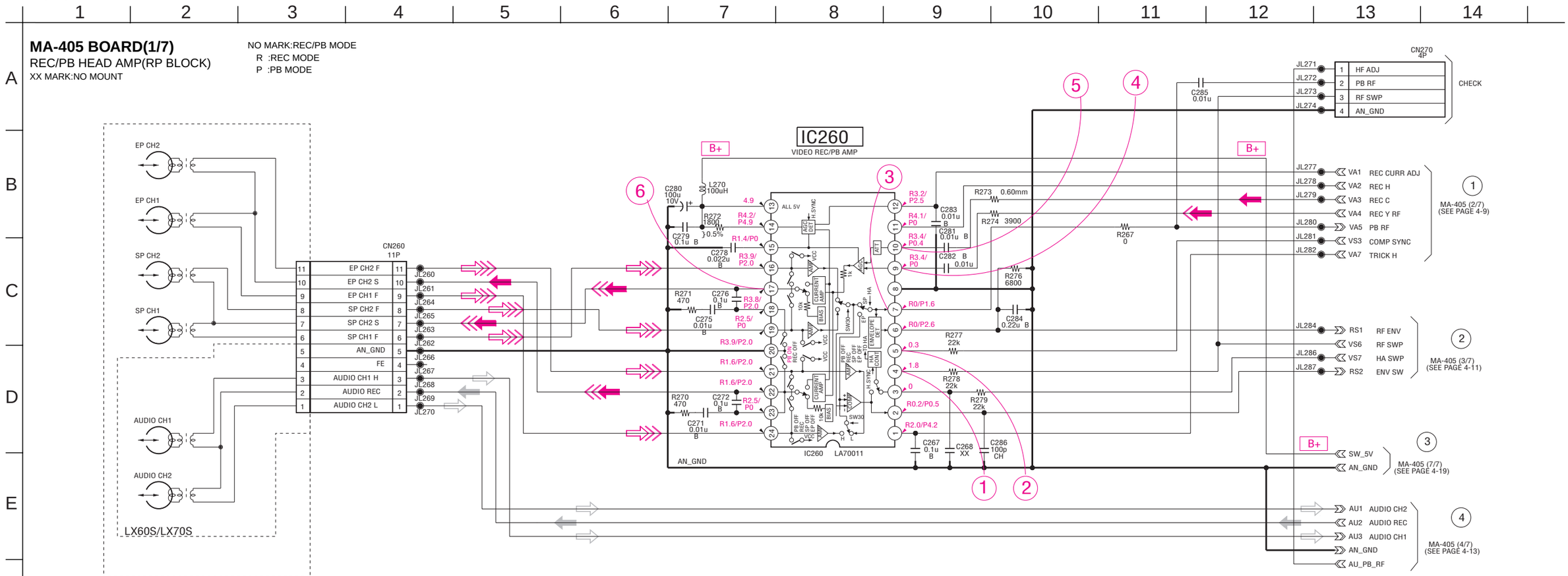


VIDEO, AUDIO, SERVO/SYSTEM CONTROL, TUNER, POWER
MA-405

MA-405 (REC/PB HEAD AMP) SCHEMATIC DIAGRAM

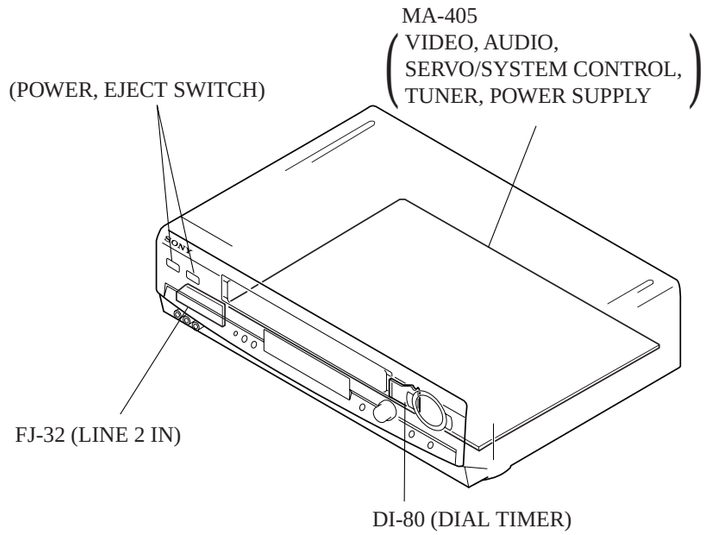
– Ref. No: MA-405 board; 1000 series –

• **See page 4-21 for waveforms.**



SIGNAL PATH

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



MA-405 (Y/C, AUDIO PROCESSOR) SCHEMATIC DIAGRAM

– Ref. No: MA-405 board; 1000 series –

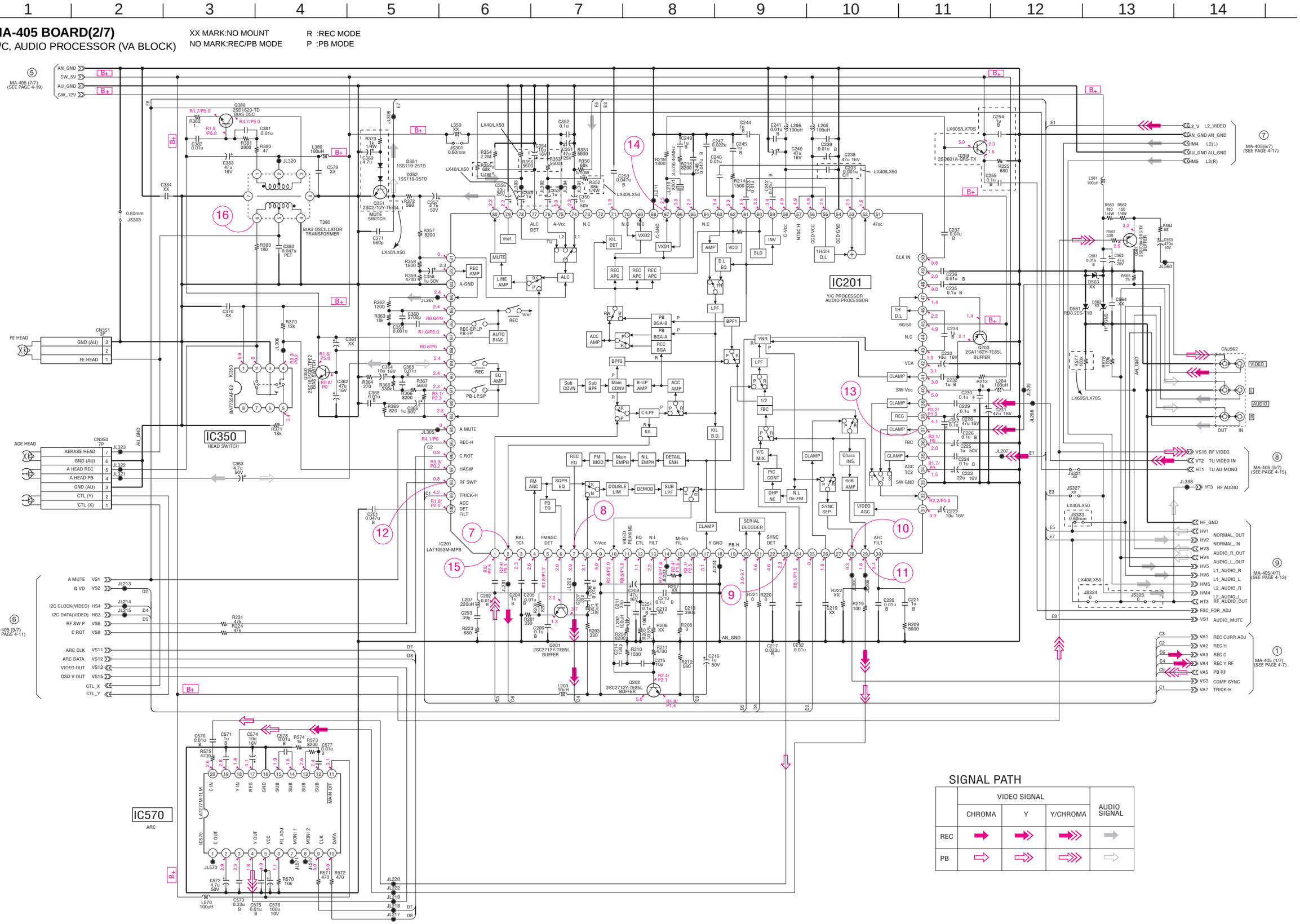
- **See page 4-5 for printed wiring board.**
- **See page 4-21 for waveforms.**

MA-405 BOARD(2/7)

Y/C, AUDIO PROCESSOR (VA BLOCK)

XX MARK:NO MOUNT
NO MARK:REC/PB MODE

R :REC MODE
P :PB MODE



SIGNAL PATH

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

MA-405 (SERVO/SYSTEM CONTROL) SCHEMATIC DIAGRAM

– Ref. No: MA-405 board; 1000 series –

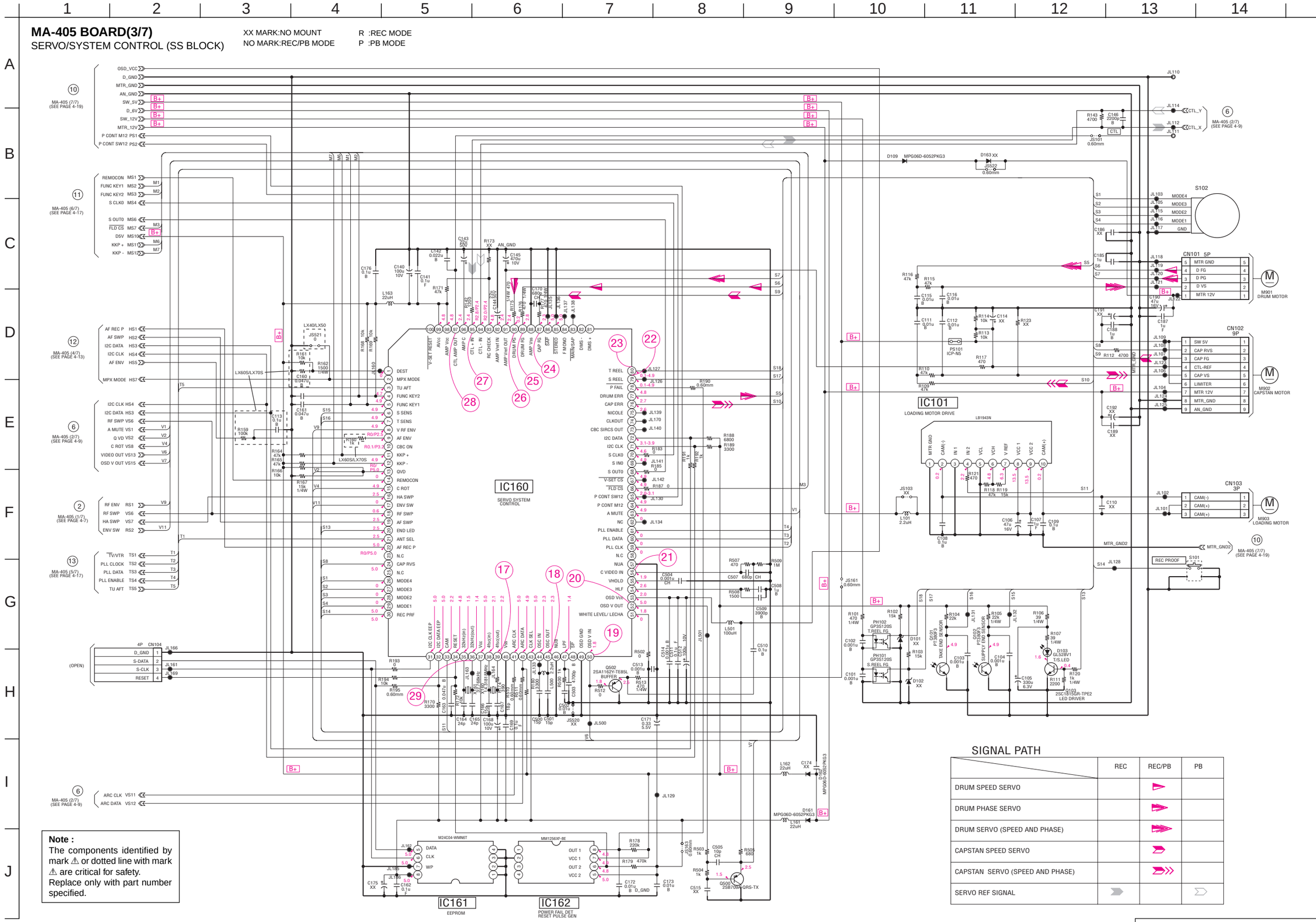
• See page 4-5 for printed wiring board.
• See page 4-21 for waveforms.

MA-405 BOARD(3/7)

SERVO/SYSTEM CONTROL (SS BLOCK)

XX MARK:NO MOUNT
NO MARK:REC/PB MODE

R :REC MODE
P :PB MODE



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

SIGNAL PATH

	REC	REC/PB	PB
DRUM SPEED SERVO		▷	
DRUM PHASE SERVO		▷	
DRUM SERVO (SPEED AND PHASE)		▷	
CAPSTAN SPEED SERVO		▷	
CAPSTAN SERVO (SPEED AND PHASE)		▷	
SERVO REF SIGNAL	▷		▷

SERVO/SYSTEM CONTROL
MA-405(3/7)

MA-405 (AUDIO PROCESS) SCHEMATIC DIAGRAM

– Ref. No: MA-405 board; 1000 series –

• See page 4-5 for printed wiring board.

MA-405 BOARD(4/7)

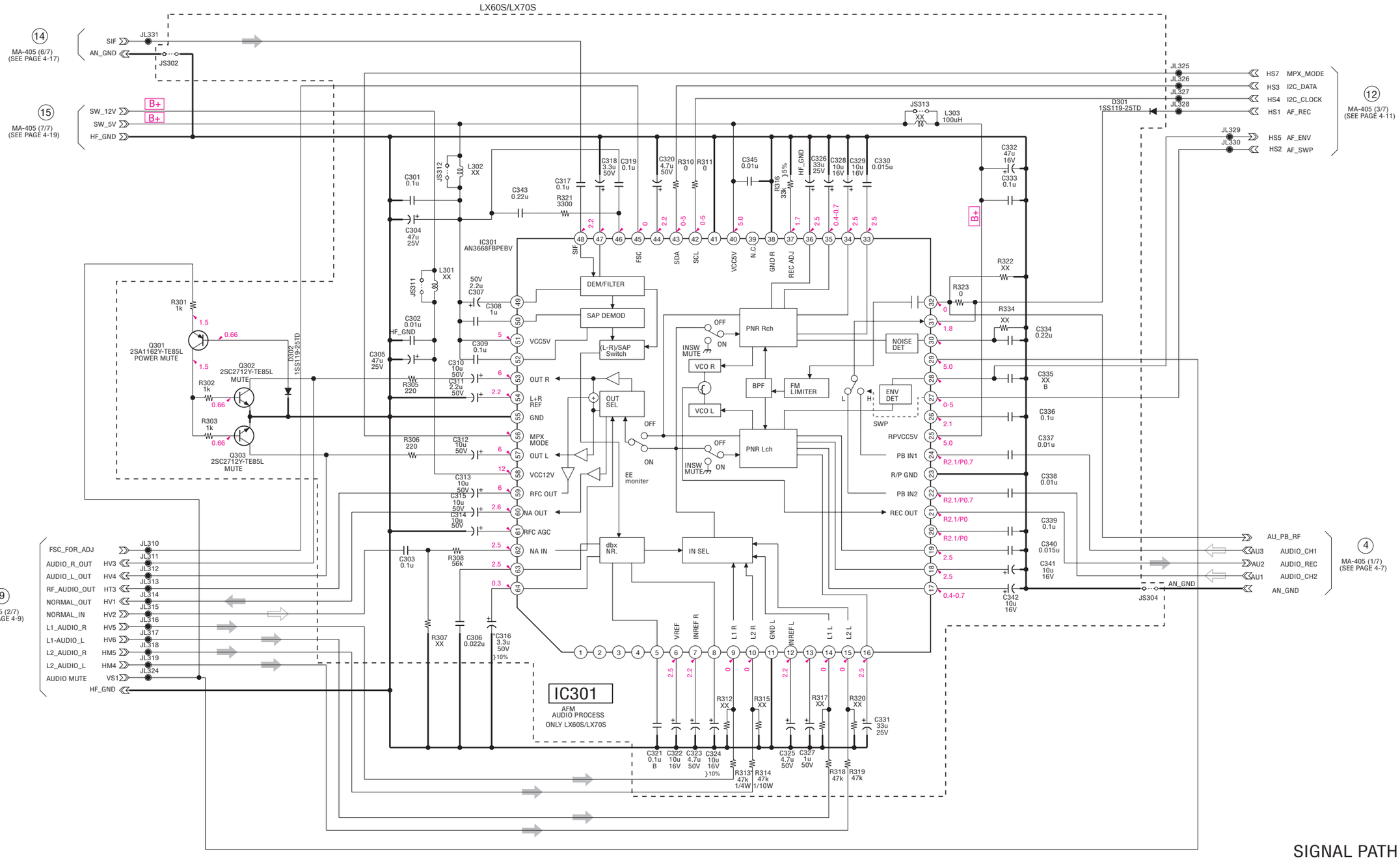
AUDIO PROCESS (AU BLOCK)

XX MARK:NO MOUNT

NO MARK:REC/PB MODE

R :REC MODE

P :PB MODE



MA-405 (TUNER) SCHEMATIC DIAGRAM

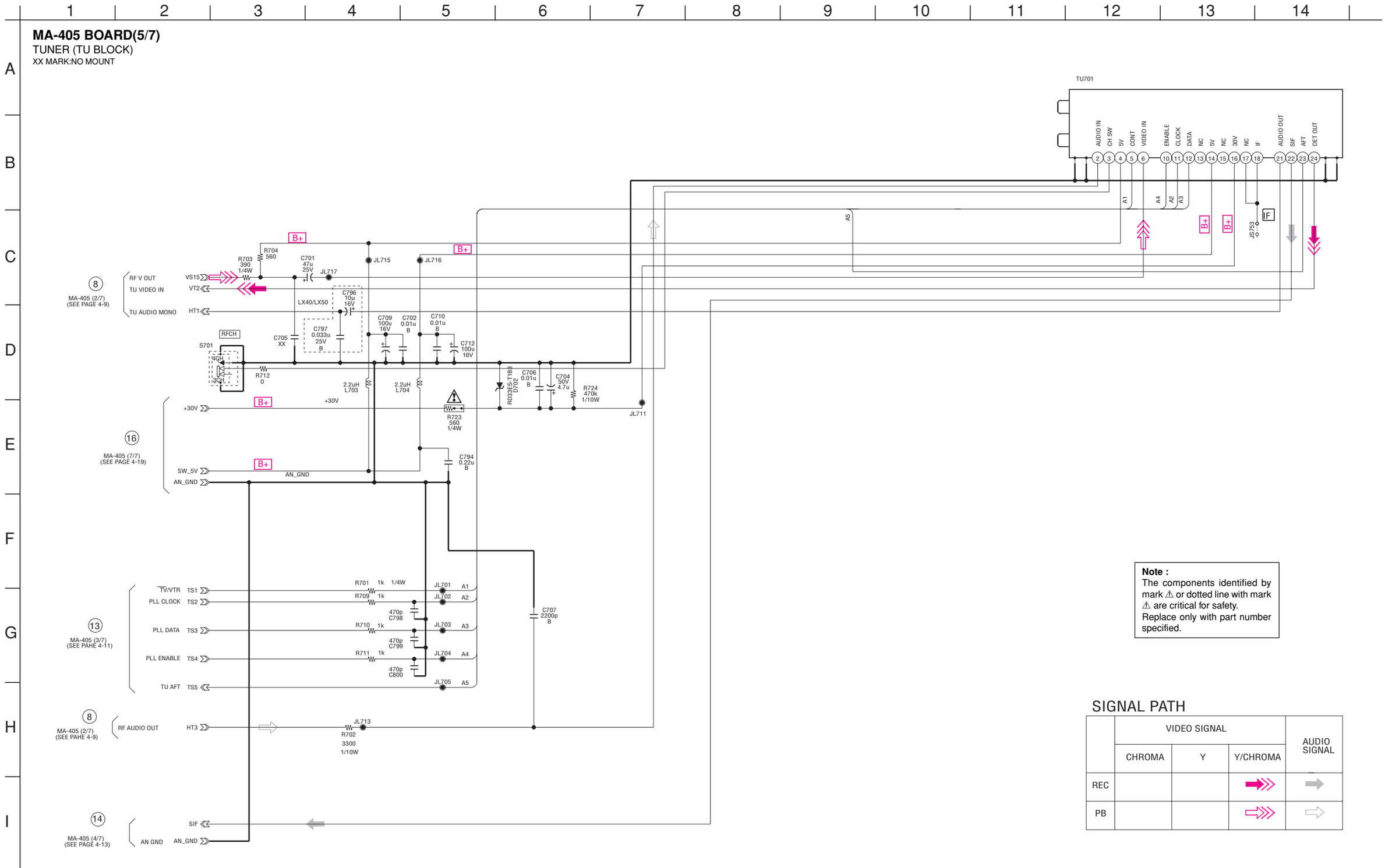
– Ref. No: MA-405 board; 1000 series –

• **See page 4-5 for printed wiring board.**

MA-405 BOARD(5/7)

TUNER (TU BLOCK)

XX MARK:NO MOUNT



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

SIGNAL PATH

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

MA-405 (DISPLAY CONTROL) SCHEMATIC DIAGRAM

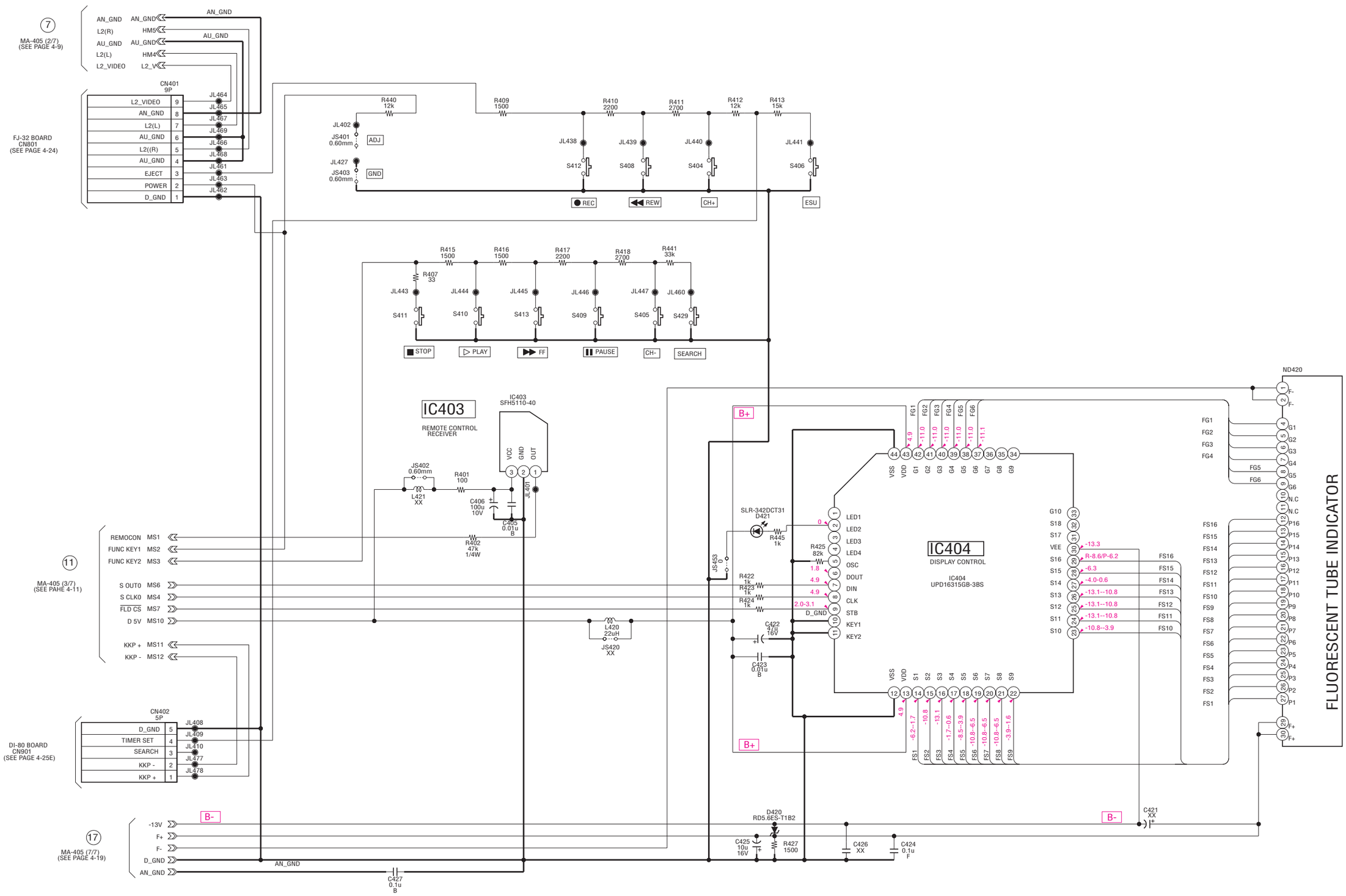
– Ref. No: MA-405 board; 1000 series –

• **See page 4-5 for printed wiring board.**

MA-405 BOARD(6/7)

DISPLAY CONTROL (FRONT BLOCK)

XX MARK:NO MOUNT



MA-405 (POWER SUPPLY) SCHEMATIC DIAGRAM

– Ref. No: MA-405 board; 1000 series –

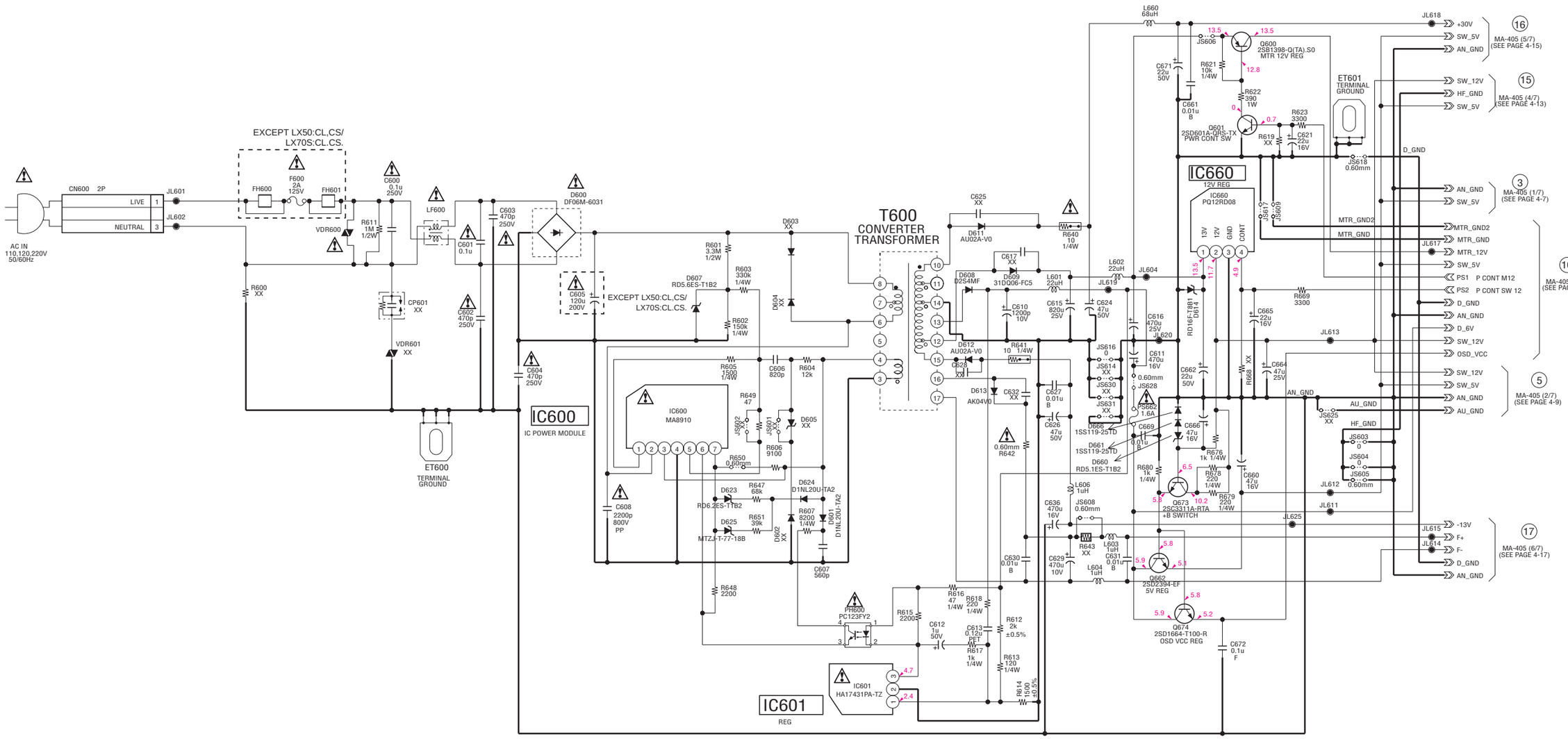
• See page 4-5 for printed wiring board.

MA-405 BOARD(7/7)

POWER SUPPLY (PS BLOCK)

XX MARK:NO MOUNT

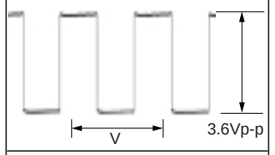
NO MARK:REC/PB MODE



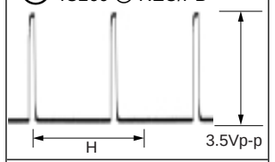
Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

MA-405 BOARD (1/7)
(R/P BLOCK)

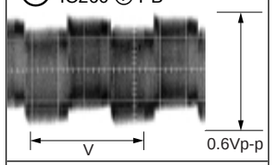
① IC260 ④ REC/PB



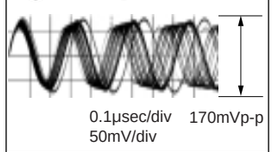
② IC260 ⑤ REC/PB



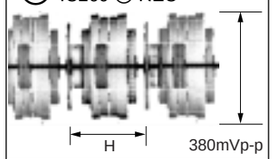
③ IC260 ⑦ PB



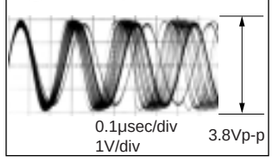
④ IC260 ⑨ REC



⑤ IC260 ⑩ REC

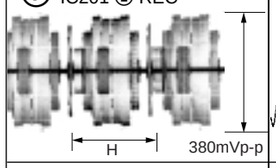


⑥ IC260 ⑰ REC

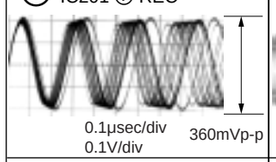


MA-405 BOARD (2/7)
(VA BLOCK)

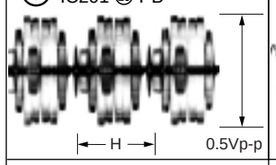
⑦ IC201 ② REC



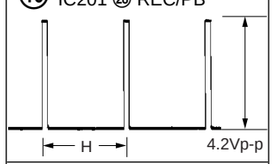
⑧ IC201 ⑦ REC



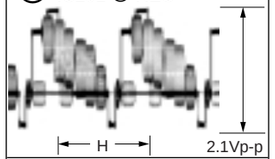
⑨ IC201 ㉓ PB



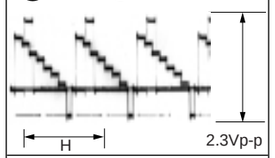
⑩ IC201 ㉘ REC/PB



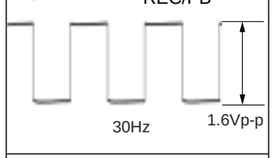
⑪ IC201 ㉙ REC



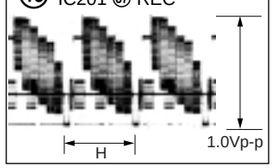
⑪ IC201 ㉙ PB



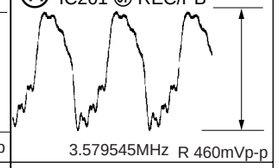
⑫ IC201 ㊽ RF SW P REC/PB



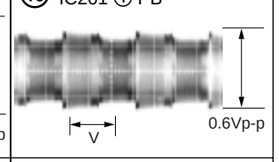
⑬ IC201 ㊲ REC



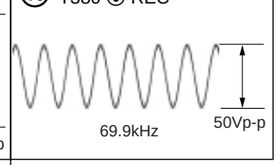
⑭ IC201 ㊼ REC/PB



⑮ IC201 ① PB

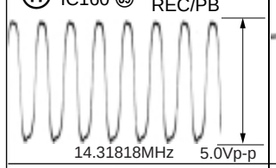


⑯ T380 ⑥ REC

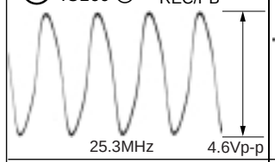


MA-405 BOARD (3/7)
(SS BLOCK)

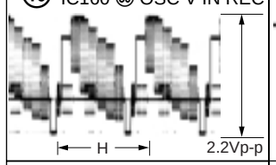
⑰ IC160 ㊴ 4fsc (OUT) REC/PB



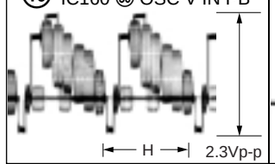
⑱ IC160 ㊺ OSC OUT REC/PB



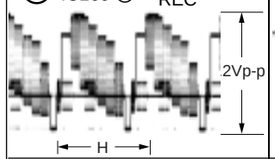
⑲ IC160 ㊿ OSC V IN REC



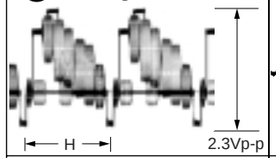
⑲ IC160 ㊿ OSC V IN PB



⑳ IC160 ㊷ OSD V OUT REC

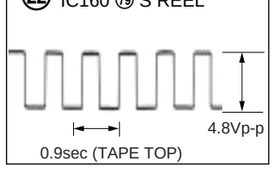


⑳ IC160 ㊷ OSD V OUT PB

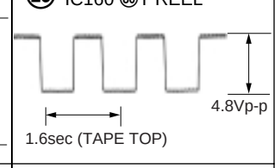


㉑ IC160 ㊻ C VIDEO IN REC/PB

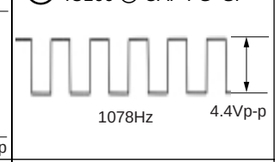
㉒ IC160 ㊾ S REEL



㉓ IC160 ㊿ T REEL

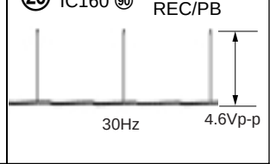


㉔ IC160 ㊼ CAP FG SP

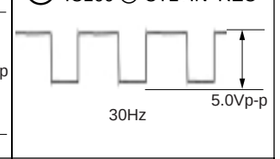


㉕ IC160 ㊾ DRUM FG REC/PB

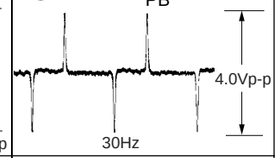
㉖ IC160 ㊿ DRUM PG REC/PB



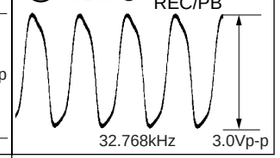
㉗ IC160 ㊺ CTL+IN REC



㉘ IC160 ㊼ CTL AMP OUT PB



㉙ IC160 ㊱ 32kHz (OUT) REC/PB

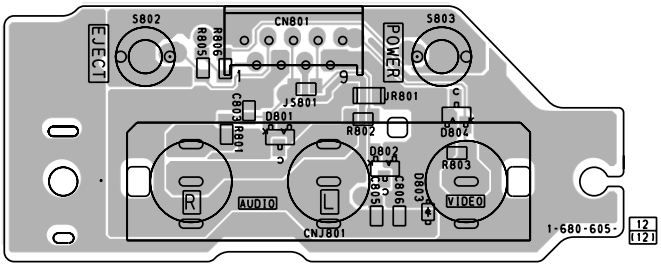


FJ-32 (LINE 2 IN) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

— Ref. No. FJ-32 Board: 1,000 Series —

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

FJ-32 BOARD



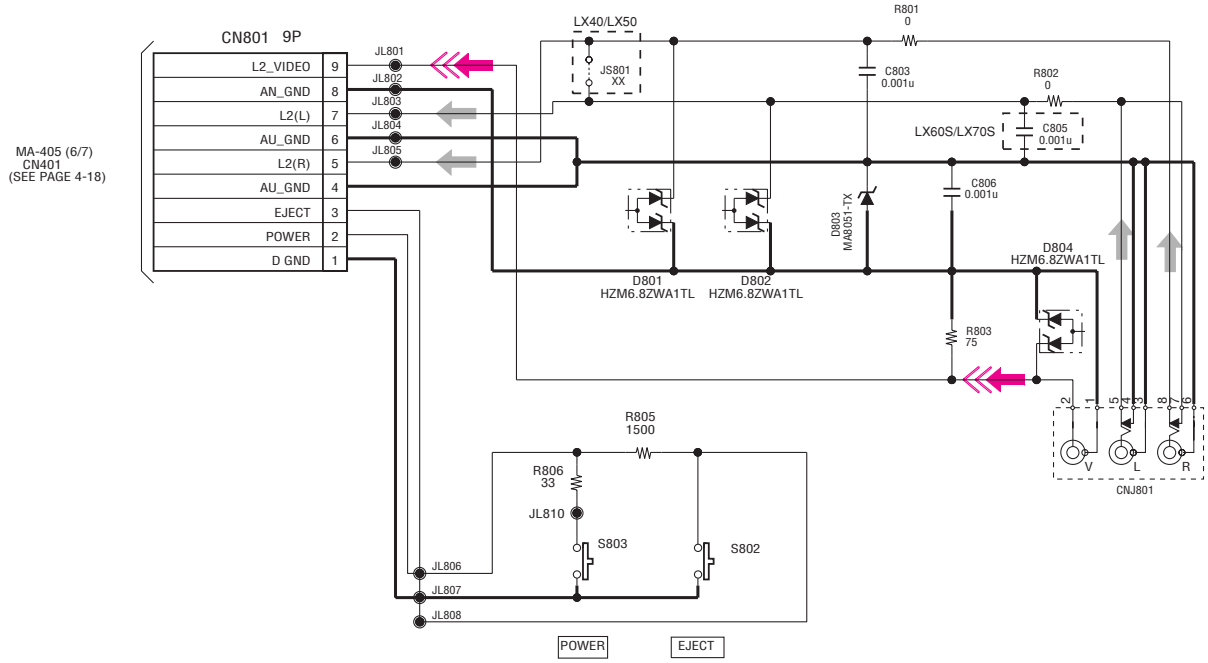
1 2 3 4 5 6 7

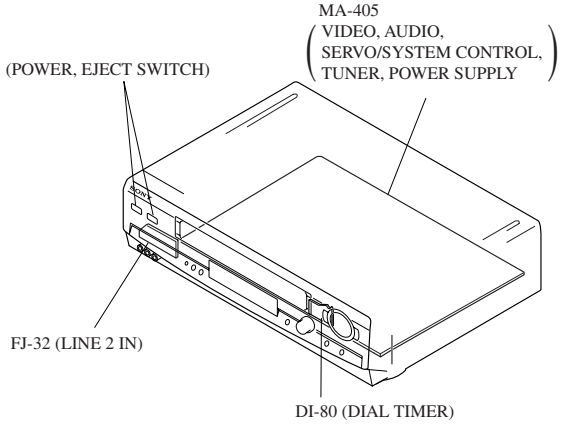
A B C D E F G H

FJ-32 BOARD

LINE 2 IN

•REF.NO.: 1,000 SERIES-





SIGNAL PATH

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

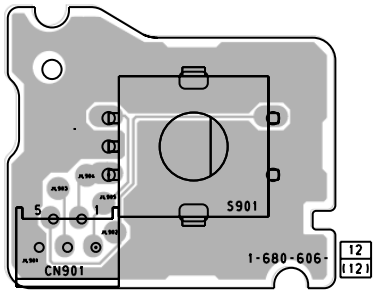
LINE 2 IN
FJ-32

DI-80 (DIAL TIMER) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

— Ref. No. DI-80 Board:1,000 Series —

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

DI-80 BOARD



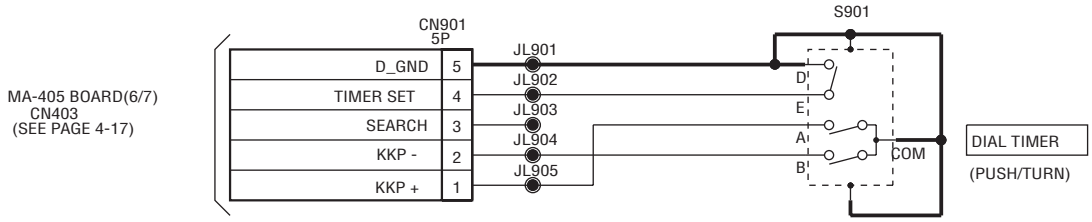
1 2 3 4 5 6 7

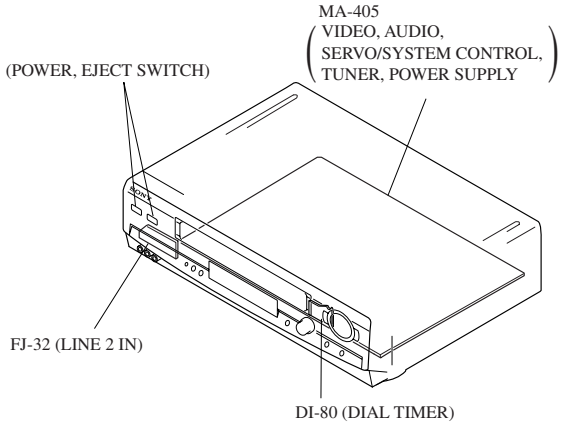
A B C D E F G

DI-80 BOARD

DIAL TIMER

•REF.NO.: 1,000 SERIES-





SECTION 5
INTERFACE, IC PIN FUNCTION DESCRIPTION

5-1. SYSTEM CONTROL — MECHANISM BLOCK INTERFACE (MA-405 BOARD IC160)

Signal	Pin No.	I/O	EJECTED	CASSETTE LOARDING	CASSETTE UNLOARDING	TAPE THREADING	TAPE UNTEREADING	STOP	FF	REW	PB	REC
CAM	MA-405 Board IC160 ㉝	O	*5	H	L	H	L	*5	*5	*5	*5	*5
MODE 1	MA-405 Board IC160 ㉙	I	—	—	—	—	—	H	H	H	H	H
MODE 2	MA-405 Board IC160 ㉘	I	—	—	—	—	—	L	L	L	H	H
MODE 3	MA-405 Board IC160 ㉗	I	—	—	—	—	—	H	H	H	L	L
MODE 4	MA-405 Board IC160 ㉖	I	—	—	—	—	—	H	L	L	L	L
REC PRF	MA-405 Board IC160 ㉚	I	L	*1	*1	*1	*1	*1	*1	*1	*1	*1
T REEL	MA-405 Board IC160 ⑧	I	H/L	H/L	H/L	H/L	H/L	H/L	*2	*2	*2	*2
S REEL	MA-405 Board IC160 ㊴	I	H/L	H/L	H/L	*2	*2	H/L	*2	*2	*2	*2
END LED	MA-405 Board IC160 ⑳	O	L	*3	*3	*3	*3	*3	*3	*3	*3	*3
T SENS	MA-405 Board IC160 ⑦	I	*3	*3	*3	*4	*4	*4	*4	*4	*4	*4
S SENS	MA-405 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" pluse when tape top or end is detected.
*4 Normally "L". 2 msec period "H" puise when tape top or end is detected.
*5 Hi-Z

5-2. SYSTEM CONTROL — SERVO PERIPHERAL CIRCUIT INTERFACE (MA-405 BOARD IC160)

Signal	Pin No.	I/O	STOP	FF	REW	TAPE THREADING	TAPE UNTEREADING	PB	REC
CTL IN+	MA-405 Board IC160 ㉟	O	*7	*7	*7	*7	*7	*7	*1
DRUM PG	MA-405 Board IC160 ㉚	I	*3	*3	*3	*3	*3	*3	*3
DRUM FG	MA-405 Board IC160 ㉙	I	*4	*4	*4	*4	*4	*4	*4
CAP FG	MA-405 Board IC160 ㉗	I	H/L	*2	*2	*5	*5	*2	*2
CAP RVS	MA-405 Board IC160 ㉔	O	H/L	L	H	L	H	L	L
CAP ERR	MA-405 Board IC160 ㊶	O	L	*6	*6	*6	*6	*6	*6
DRUM ERR	MA-405 Board IC160 ㊷	O	*6	*6	*6	*6	*6	*6	*6

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

5-3. SYSTEM CONTROL — SYSTEM CONTROL PERIPHERAL CIRCUIT INTERFACE (MA-405 BOARD IC160)

Signal	Pin No.	I/O	I/O level
RESET	MA-405 Board IC160 ㉞	I	Normally “H”, “L” when service interruption detected or restored.
I2C DATA 1	MA-405 Board IC160 ㉜	I/O	Serial communication data to EEPROM I2C161.
I2C CLOCK 1	MA-405 Board IC160 ㉛	O	Serial communication clock to EEPROM I2C161.
I2C DATA VIDEO	MA-405 Board IC160 ⑫	I/O	Serial communication data to video and audio microprocessor.
I2C CLOCK VIDEO	MA-405 Board IC160 ⑪	O	Serial communication clock to video and audio microprocessor.
(ARC) S OUT 1	MA-405 Board IC160 ㊷	I/O	Serial communication data to ARC microprocessor.
(ARC) CLK 1	MA-405 Board IC160 ㊶	O	Serial communication clock to ARC microprocessor.

5-4. SYSTEM CONTROL AND RF MODULATOR — INPUT SELECTION BLOCK INTERFACE (MA-405 BOARD IC160)

Signal	Pin No.	I/O	I/O level
ANT SEL	MA-405 Board IC160 ㉑	O	“H” when RF modulator through.

5-5. SYSTEM CONTROL — VIDEO/RP BLOCK INTERFACE (MA-405 BOARD IC160)

Signal	Pin No.	I/O	STOP/FF /REW	TAPE LOADING	TAPE UNLOADING	PB	REC	REC/ PAUSE
RF SWP	MA-405 Board IC160 ⑱	O	*1	*1	*1	*1	*1	*1
QVD	MA-405 Board IC160 ⑬	O	L	L	L	*2	L	L
C SYNC	MA-405 Board IC160 ㊽	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).

5-6. SYSTEM CONTROL — AUDIO BLOCK INTERFACE (MA-405 BOARD IC160)

Signal	Pin No.	I/O	STOP/FF /REW	TAPE LOADING	TAPE UNLOADING	PB	REC	REC/ PAUSE
A MUTE	MA-405 Board IC160 ㊸	O	L	L	L	L	L	L
AF REC P	MA-405 Board IC160 ㉒	O	L	L	L	L	H	L

5-7. SERVO/SYSTEM CONTROL MICROPROCESSOR PIN FUNCTIONS (MA-405 BOARD IC160)

Pin No.	Pin Name	I/O	Function
1	DEST	I	Destination control input
2	MPX MODE	I	STEREO/MONO/SAP DETECTION
3	TU AFT	I	Tuner analog AFT input
4	FUNC KEY2	I	Key input
5	FUNC KEY1	I	Key input
6	S SENS	I	Tape end sensor input
7	T SENS	I	Tape top sensor input
8	V RF ENV	I	Video playback signal envelope input
9	AF ANV	I	Hi-Fi audio playback signal envelope input
10	CBC ON	O	Cable box control signal output
11	KKP+	I	ETR pulese signal input
12	KKP–	I	ETR pulese signal input
13	QVD	O	Quasi VD pulese output
14	REMOCON	I	Remote sires signal input
15	C ROT	O	Head AZ signal output
16	HA SWP	O	SP/EP changed head signal
17	ENV SW	I	SP/EP head output lebel ditaction signal
18	RF SWP	O	VIDEO RF switching pulse output.
19	AF SWP	O	AF switching pulse output.
20	END LED	O	END sensor LED output
21	ANT SEL	O	TV/VTR RF modulator control output
22	AF REC P	O	Hi-Fi record control pulse output.
23	FE ON	—	NC
24	CAP RVS	O	Capstan reverse control
25	SUR ON	—	NC
26	MODE4	I	Mechanism section CAM encoder input (data4)
27	MODE3	I	Mechanism section CAM encoder input (data3)
28	MODE2	I	Mechanism section CAM encoder input (data2)
29	MODE1	I	Mechanism section CAM encoder input (data1)
30	REC PRF	I	Erasing protection tab, cassette IN detection input
31	I2C CLK EEP	I/O	HC CLOCK line (EEPROM)
32	I2C DATA EEP	I/O	HC DATA line (EEPROM)
33	CAM	O	Cam motor control signal output
34	RESET	I	System reset input
35	32kHz (in)	I	Sub clock 32MHz
36	32kHz (out)	O	Sub clock 32MHz
37	Vcc	I	5V
38	4fsc (in)	I	Main clock input
39	4fsc (out)	O	Main clock output
40	Vss	—	Ground
41	ARC CLK	O	Realityregenarator (ARC) control clock signal
42	ARC DATA	O	Realityregenarator (ARC) control data signal
43	CLK SEL	I	CLOCK seleal “L” Sub clock, “H” main and sub clock.
44	OSC IN	I	OSD clock input
45	OSC OUT	O	OSD clock output
46	NUB	—	Ground
47	LPF	I/O	fsc filter
48	$\overline{SP}$	O	“L” output when SP mode.
49	OSD GND	—	Ground
50	OSD V IN	I	OSD Video signal input.

Pin No.	Pin Name	I/O	Function
51	WHITE LEVEL	I	White level signal input
52	OSD V OUT	O	OSD Video signal output
53	OSD Vcc	—	SW 5V (OSD block)
54	HLF	I/O	External low-pass filter for slicer/AFC is connected to this terminal
55	V HOLD	I/O	External capacitor for slicer is connected to this terminal
56	C VIDEO IN	I	Control video signal input (osd, tuner, sorvo)
57	NUA	—	D Ground
58	C SYNC	I	NC
59	PLL CLK	O	Tuner PLL clock output
60	PLL DATA	O	Tuner PLL data output
61	PLL ENABLE	O	Tuner enable output
62	TA MUTE	O	NC
63	A MUTE	O	AUDIO mute output
64	P CONT M12	O	Motor 12V control output
65	P CONT SW12	O	SW 12V control output
66	$\overline{\text{FLD CS}}$	O	FLD drive chip select signal output
67	$\overline{\text{V-SET CS}}$	O	V-set micon chip select signal output
68	S OUT0	O	Serial communication signal (FLD, V-SET)
69	S IN 0	I	NC
70	S CLK 0	O	Serial communication signal (FLD, V-SET)
71	I2C CLK	I/O	IIC clock signal (VIDEO, HiFi)
72	I2C DATA	I/O	IIC data signal (VIDEO, HiFi)
73	CBC SIRCS OUT	O	Cable mouse sircs signal output
74	CLK OUT	—	NC
75	NICOLE	O	NC
76	CAP ERR	O	Capstan error D/A output
77	DRUM ERR	O	Drum error D/A output
78	P FAIL	I	Power fail detection input
79	S REEL	I	Supply reel sensor input
80	T REEL	I	Take up reel sensor input
81	DMS+	I	
82	DMS–	I	
83	$\overline{\text{MAIN}}$/SAP	O	
84	F MONO	O	
85	$\overline{\text{STEREO}}$	I	Ground
86	$\overline{\text{SAP}}$	I	Ground
87	CAP FG	I	Capstan FG signal input
88	AMP Vss	—	Ground
89	DRUM FG	I	Drum FG input.
90	DRUM PG	I	Drum PG input.
91	AMP Vref OUT	O	Analog AMP reference Vcc output
92	AMP Vref IN	I	Analog AMP reference Vcc input
93	RC CHECK	I	Check input
94	CTL–IN	I/O	Control signal IN/OUT
95	CTL+IN	I/O	Control signal IN/OUT
96	AMP C	I	Control signal AC conect
97	CTL AMP OUT	O	Control signal AMP output
98	AMP Vcc	—	D-5V
99	A Vcc	—	D-5V
100	$\overline{\text{V-SET RESET}}$	O	NC

SECTION 6
ADJUSTMENTS

6-1 MECHANICAL ADJUSTMENTS

For the mechanical adjustments, please refer to the "VHS MECHANICAL ADJUSTMENT MANUAL VI (S MECHANISM)" (9-921-647-11).

6-2. ELECTRICAL ADJUSTMENTS

See the adjusting part location diagram from on page 6-6 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 30 MHz or more, with delay mode (A probe 10:1 should be used unless otherwise specified.)
3) Frequency counter
4) NTSC Pattern generator
5) Remote commander
6) Digital voltmeter
7) Audio generator
8) Audio level meter
9) Audio attenuator
10) Alignment tapes
    KRV-51N2 (NTSC) 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.

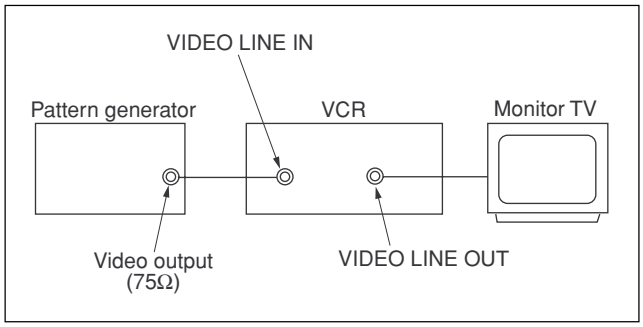


Fig. 6-2-1

2-1-3. Set-up of Adjustment

In this adjustment, NTSC pattern generator is connected with LINE input terminal. When check to tuner, connected AERIAL terminal. Check that the synchronizing signal of the Y signal has an amplitude of approximately 0.7 V and that the burst signal has an amplitude of approximately 0.3 V 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. 6-2-2.

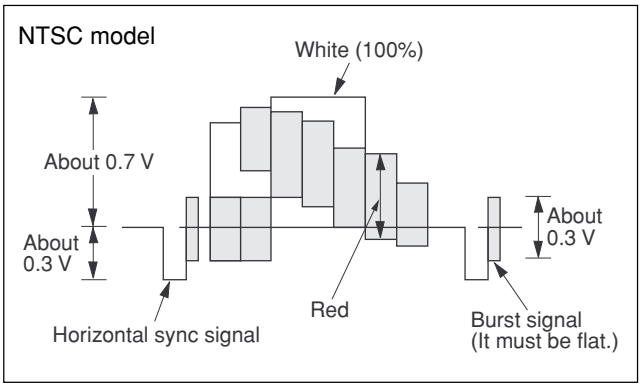


Fig. 6-2-2 Color Bar Signals of Pattern Generator

2-1-4. Alignment Tape

• Contents of KRV-51N2

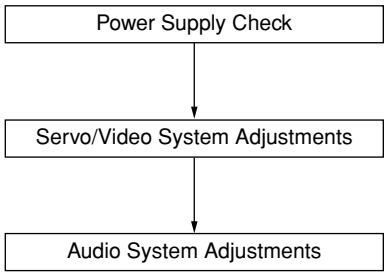
	Mode	Period	Video signal	Audio signal	
				Hi-Fi	Normal
1	SP	7 minutes	Color bar	400Hz (L/R)	400Hz
2		3 minutes	Monoscope		
3	LP	7 minutes	Color bar		
4		3 minutes	Monoscope		

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

Video input: LINE IN
Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
Video output: LINE OUT
Output signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
Audio input: LINE IN
Input level: –7.5 dBs
(0 dBs= 0.775 Vrms)
Input impedance: more than 47 kilohms
Audio output: LINE OUT
Standard level: –7.5 dBs 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-405 Board)

Mode	STANDBY
+30 V Check	
Measurement point	C671 ⊕
Specified value	31.0 to 39.0 V
–11 V Check	
Measurement point	Anode of D420
Specified value	–12.5 to – 9.5 V
D+6 V Check	
Measurement point	Collector of Q674
Specified value	5.56 to 6.25 V

Mode	E-E
Measuring Instrument	Digital voltmeter
SW+12 V Check	
Measurement point	IC660 pin ②
Specified value	11.7 to 12.3 V
SW+5 V Check	
Measurement point	Emitter of Q662
Specified value	4.8 to 5.4 V
MTR12 V Check	
Measurement point	Collector of Q600
Specified value	12.5 to 14.5 V
F Check	
Measurement point	ND420 ㉚ to ①
Specified value	2.0 to 5.0V

[Check Method]

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

2-3. SERVO SYSTEM CHECK

2-3-1. RF Switching Position Adjustment (MA-405 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: CN270 pin ② (PB RF) CH2: CN270 pin ③ (RF SWP)
Measuring instrument	Oscilloscope
Adjusting element	Remote Commander CH+/–
Specified value	A=minimize

[Adjustment Method]

1) Playback the alignment tape.
2) Short JS401 to Ground.
3) Check that "A P" is indicated on FL display.
4) Adjust so that part A becomes minimized at CH +/–.
5) Write data in EEPROM by pressing PAUSE button.

Monoral model:

6) The display "A P" disappears and then the Adjustment mode terminates.

Hi-Fi model:

6) The display changes to "A H" and the mode goes to the HiFi switching position Adjustment.(2-4-2.)

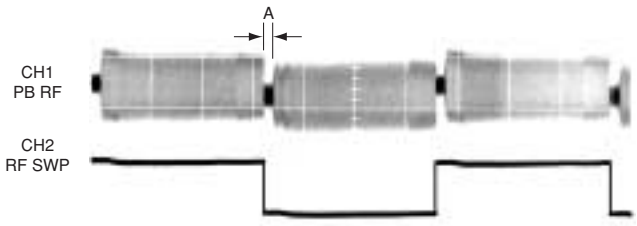


Fig. 6-2-3

2-4. AUDIO SYSTEM ADJUSTMENT

- Adjust both L ch and R ch.

[Connecting Instruments]

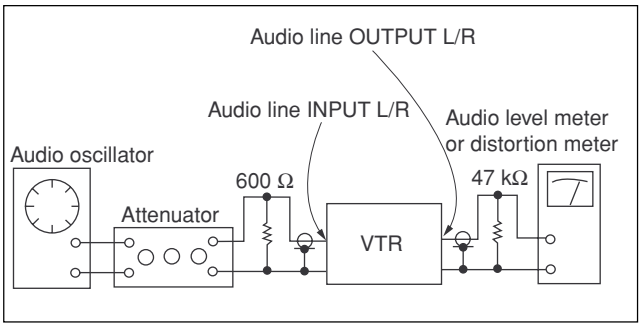


Fig. 6-2-4

2-4-1. Hi-Fi Audio System Adjustment (Hi-Fi model only)

- Perform the adjustment setting the switch on the following positions.
- AUDIO MONITOR STEREO

[Adjustment Method]

1. ACE head adjustment.....Refer to the VHS mechanical adjustment manual Ⅵ (S MECHANISM)(9-921-647-11).
2. E-E output level check
3. "Recording Bias Adjustment"

2-4-2. HiFi Switching Position Adjustment (MA-405 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: Pin ① of CN270 (HF ADJ) CH2: Pin ③ of CN270 (RF SWP)
Measuring instrument	Oscilloscope
Adjusting element	Remote Commander CH +/–
Specified value	B=minimize

[Adjustment Method]

1) Check that "A H" is indicated on FL display.
2) Adjust so that part B becomes minimized at CH +/–.
3) Write data EEPROM by pressing PAUSE button.
4) Check that "A H" indicator turns off.
5) If "A H" indicator is still on, restart RF switching position Adjustment from the beginning.

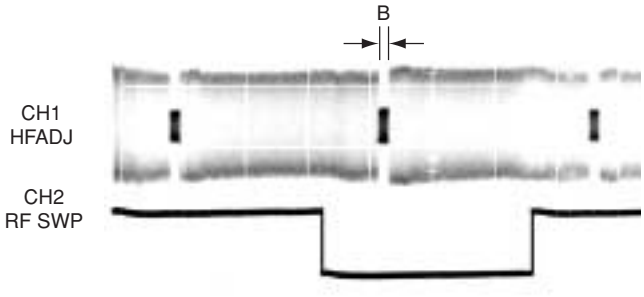


Fig. 6-2-5

2-4-3. Normal Audio System Adjustment

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

2-4-4. Audio Level and Distortion Check

[Adjustment purpose]

Confirm that the audio level and distortion is within the specification.

Mode	REC and PB (SP mode)
Signal	400 Hz, –7.5 dBs
Measurement point	Audio output terminal
Measuring instrument	Audio level meter and distortion meter
Specified value	PB level : –7.5±2dBs (HIFI) PB level : –7.5±3dBs (MONO) Distortion : less than 1% (HIFI) Distortion : less than 4% (MONO)

[Confirmation Method]

1) Supply a signal of 400 Hz, –7.5 dBs to both L and R channels of Audio Line Input.
2) Record the tape.
3) Playback a recorded portion of the tape.
4) Confirm that the playback output level of audio level meter is within of range –7.5±2dBs for HIFI and –7.5±3dBs for MONO.
5) Confirm that the output of distortion meter is less than 1% for HIFI and 4% for MONO.

2-4-5. Audio Noise Check

[Adjustment purpose]

Confirm that the noise level is within the specification.

Mode	REC and PB (SP mode)
Signal	No signal input
Measurement point	Audio output terminal
Measuring instrument	Audio level meter
Specified value	Less than –67,5dBs (HIFI) Less than –45.5dBs (MONO)

[Confirmation method]

1) Audio line input L and R channels are shorted to the ground.
2) Record the tape.
3) Playback a recorded portion of the tape.
4) Confirm that the output level is less than –67.5dBs for HIFI and –45.5dBs for MONO.

2-4-6. ACE Head Adjustment

Refer to the VHS mechanical adjustment manual Ⅵ (S MECHANISM) (9-921-647-11).

2-4-7. E-E Output Level Check

[Adjustment purpose]

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

Mode	E-E
Signal	400 Hz, –7.5 dBs
Measurement point	CNJ562 L/R
Measuring instrument	Audio level meter
Specified value	–7.5 ± 2 dBs

[Check Method]

1) Input signal of 400 Hz and –7.5 dBs to the CNJ562 L/R.
2) Check that the audio output level is –7.5 ± 2 dBs.

2-4-8. Frequency Response Check

[Adjustment purpose]

Confirm that the frequency characteristic is within the specification.

Mode	REC and PB (SP mode)
Signal	400 Hz, –17.5 dBs 7 kHz, –17.5 dBs
Measurement point	CNJ562 L/R
Measuring instrument	Audio level meter
Specified value	0 ± 3 dB

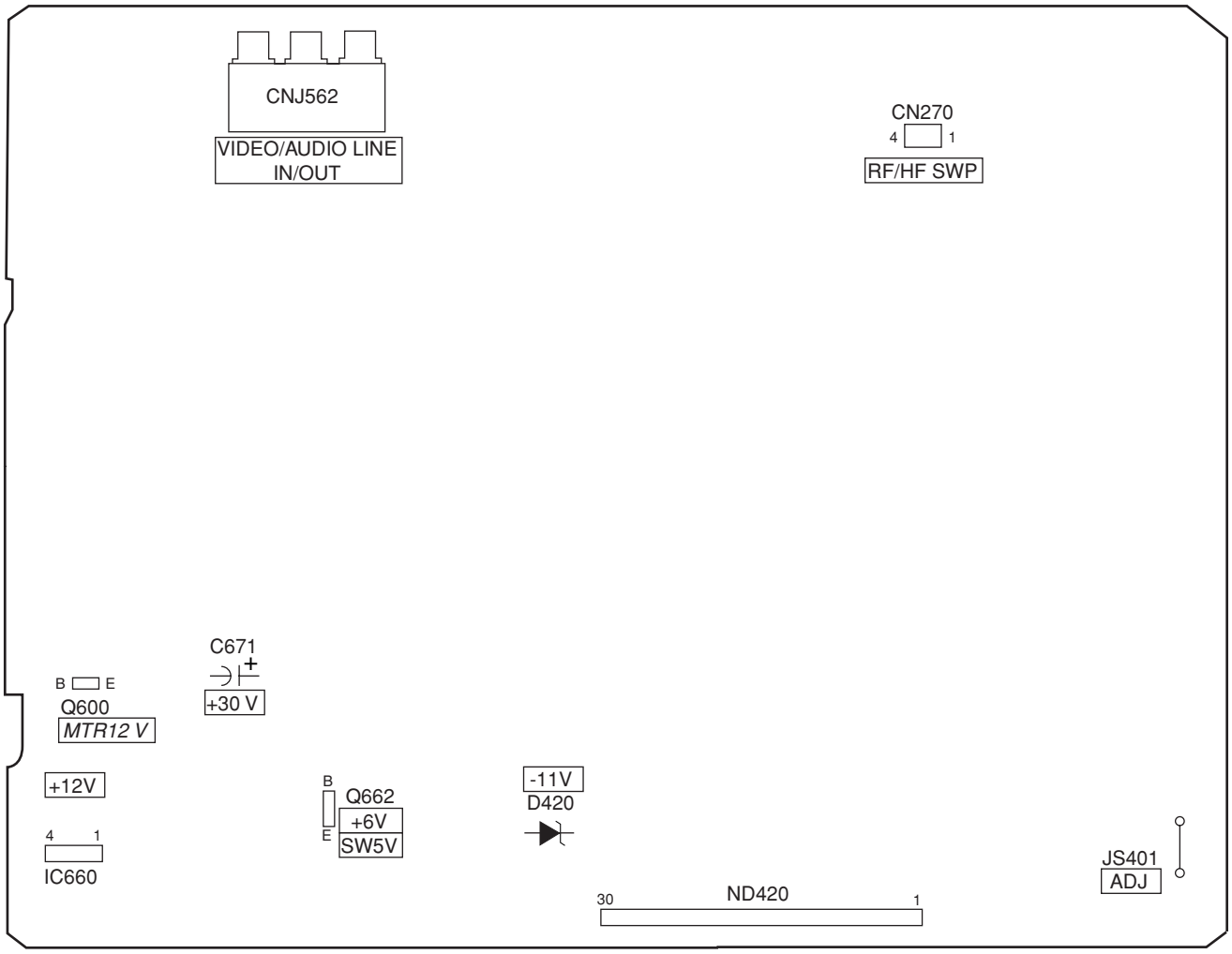
Note: Tape path adjustment must have been completed.

[Confirmation Method]

1) Supply a signal of 400 Hz, –17.5 dBs to CNJ562 L/R.
2) Connect the audio level meter to CNJ562 L/R.
3) Adjust the attenuator so that the audio level meter will indicate –17.5 dBs.
4) Make recording in the SP mode.
5) Set an audio line input signal to 7 kHz and make recording.
6) Playback a recorded portion, and measure output levels at 400 Hz and 7 kHz.
7) Confirm that the 7 kHz playback output level within a range of the 400 Hz playback output level 0 ± 3 dB.

2-5. ADJUSTING PARTS LOCATION DIAGRAM

MA-405 BOARD
(CONDUCTOR SIDE)



SECTION 7
REPAIR PARTS LIST

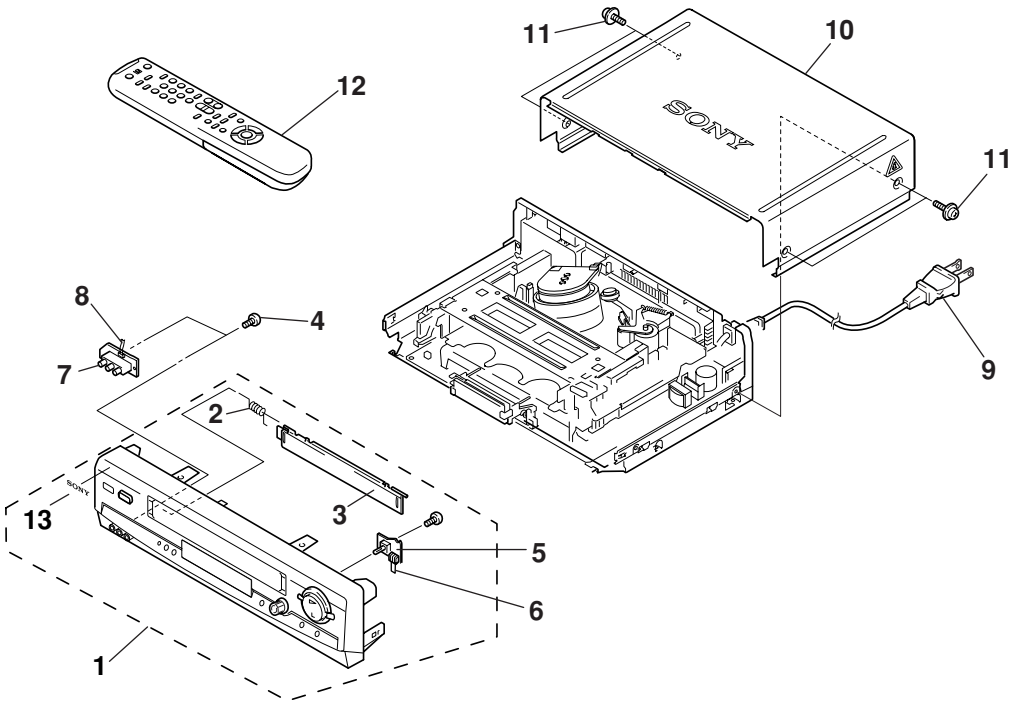
7-1. EXPLODED VIEWS

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.

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

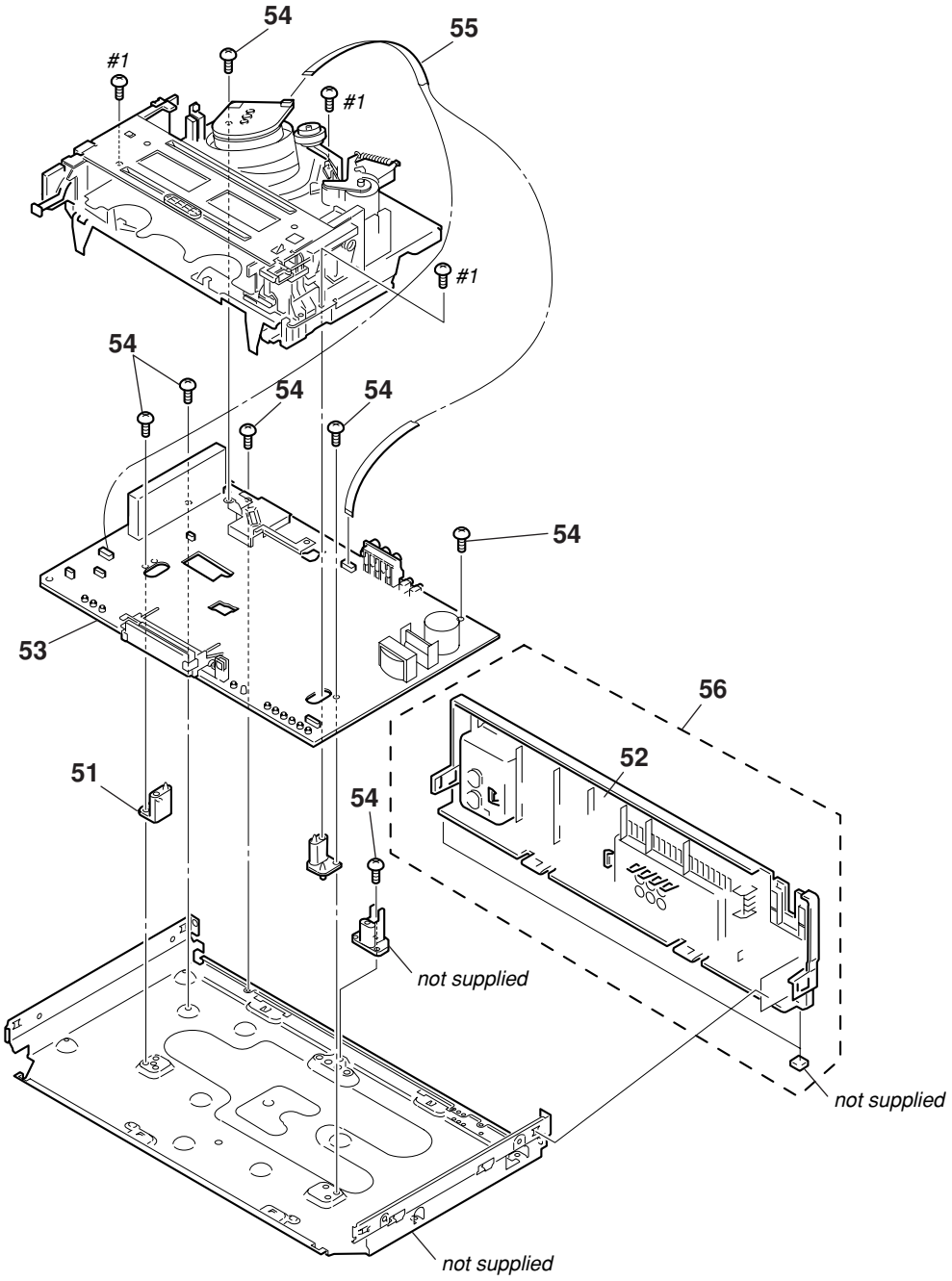
7-1-1. FRONT PANEL AND UPPER CASE SECTION



Ref. No.	Part No.	Description	Remarks
1	X-3951-118-1	PANEL ASSY, FRONT (LX40)	
1	X-3951-120-1	PANEL ASSY, FRONT (LX50)	
1	X-3951-119-1	PANEL ASSY, FRONT (LX60S)	
1	X-3951-121-1	PANEL ASSY, FRONT (LX70S)	
2	3-951-089-01	SPRING (GE), FL (LX40/LX50)	
2	3-951-089-01	SPRING (GE), FL (LX60S/LX70S)	
3	3-058-039-11	DOOR,CASSETTE	
4	4-921-277-41	SCREW(B2.6×8), TAPPING, BIND	
* 5	A-6794-813-A	DI-080 MOUNT	
6	1-757-552-12	CABLE, FLAT FDM-010	
* 7	A-6794-814-A	FJ-032 MOUNT (LX60S/LX70S)	
* 7	A-6794-815-A	FJ-032 MOUNT (LX40/LX50)	
8	1-757-556-11	CABLE, FLAT FFJ-004	

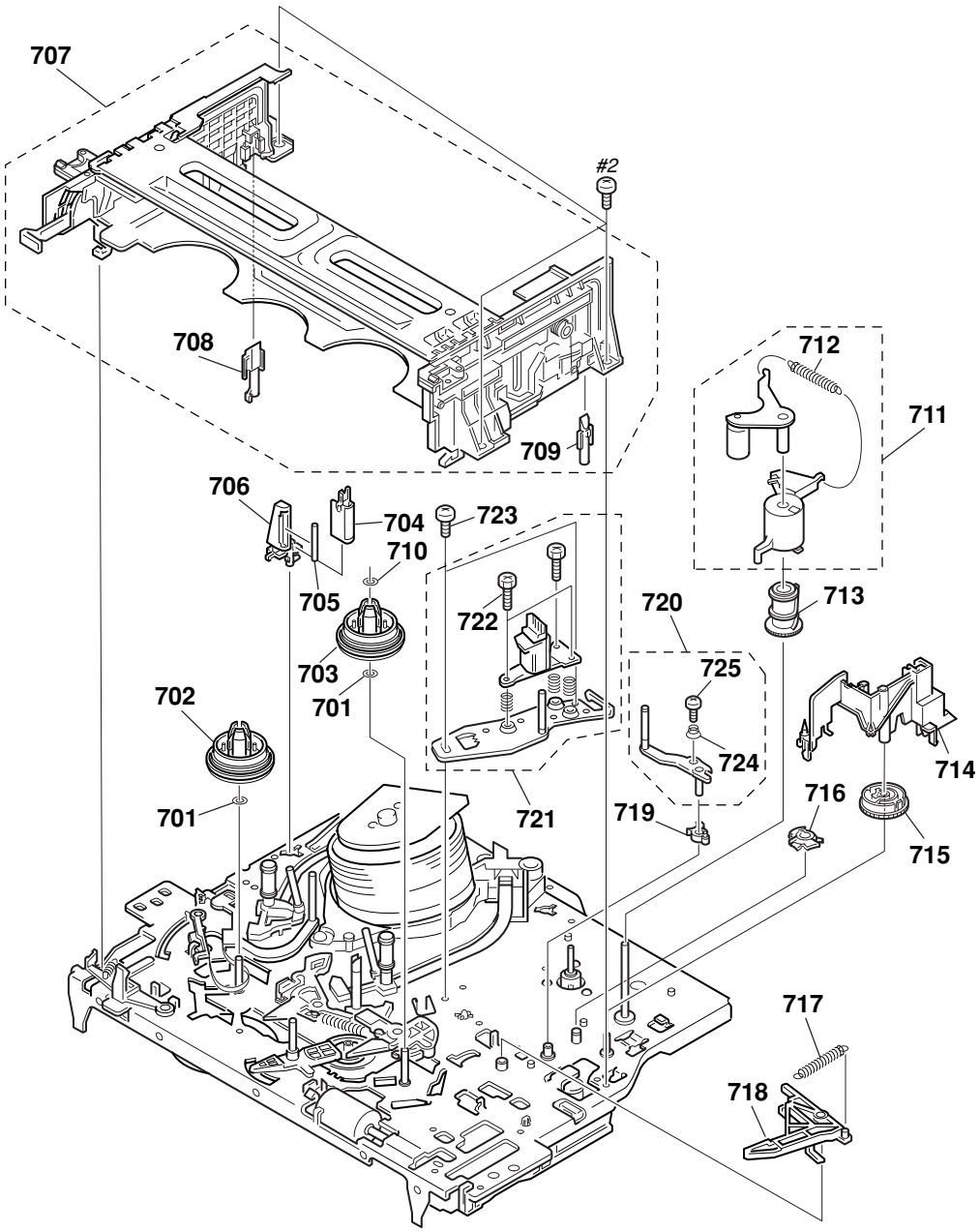
Ref. No.	Part No.	Description	Remarks
⚠ 9	1-777-852-12	CORD, POWER (LX40/LX50:MX,PA,PC,VZ/ LX60S/LX70S:MX,PA,PC,VZ)	
⚠ 9	1-782-000-33	CORD, POWER (LX50:CL,CS/LX70S:CL,CS)	
10	3-053-307-61	CASE, UPPER	
11	3-710-901-01	SCREW, TAPPING	
12	1-476-436-11	COMMANDER, STANDARD (RMT-V293A) (LX40/LX50)	
12	1-476-437-11	COMMANDER, STANDARD (RMT-V294A) (LX60S/LX70S)	
13	3-943-995-51	EMBLEM (NO.5), SONY	

7-1-2. CHASSIS SECTION



Ref. No.	Part No.	Description	Remarks
51	3-959-383-01	BASE (R), MD	
52	3-987-076-11	PANEL, REAR	
53	A-6713-826-A	MA-405 COMPLETE PC BOARD (LX50:CL,CS)	
* 53	A-6713-827-A	MA-405 COMPLETE PC BOARD (LX60S/LX70S:MX,PA,PC,VZ)	
* 53	A-6713-828-A	MA-405 COMPLETE PC BOARD (LX70S:CL,CS)	
* 53	A-6713-829-A	MA-405 COMPLETE PC BOARD (LX40/LX50:MX,PA,PC,VZ)	
54	3-970-608-21	SUMITITE (B3), +BV	
55	1-791-857-11	CABLE, FLAT (FMD-21)	
56	X-3950-107-1	PANEL ASSY, REAR	
#1	7-685-648-79	SCREW + BVTP 3 x 12 TYPE2 IT-3	

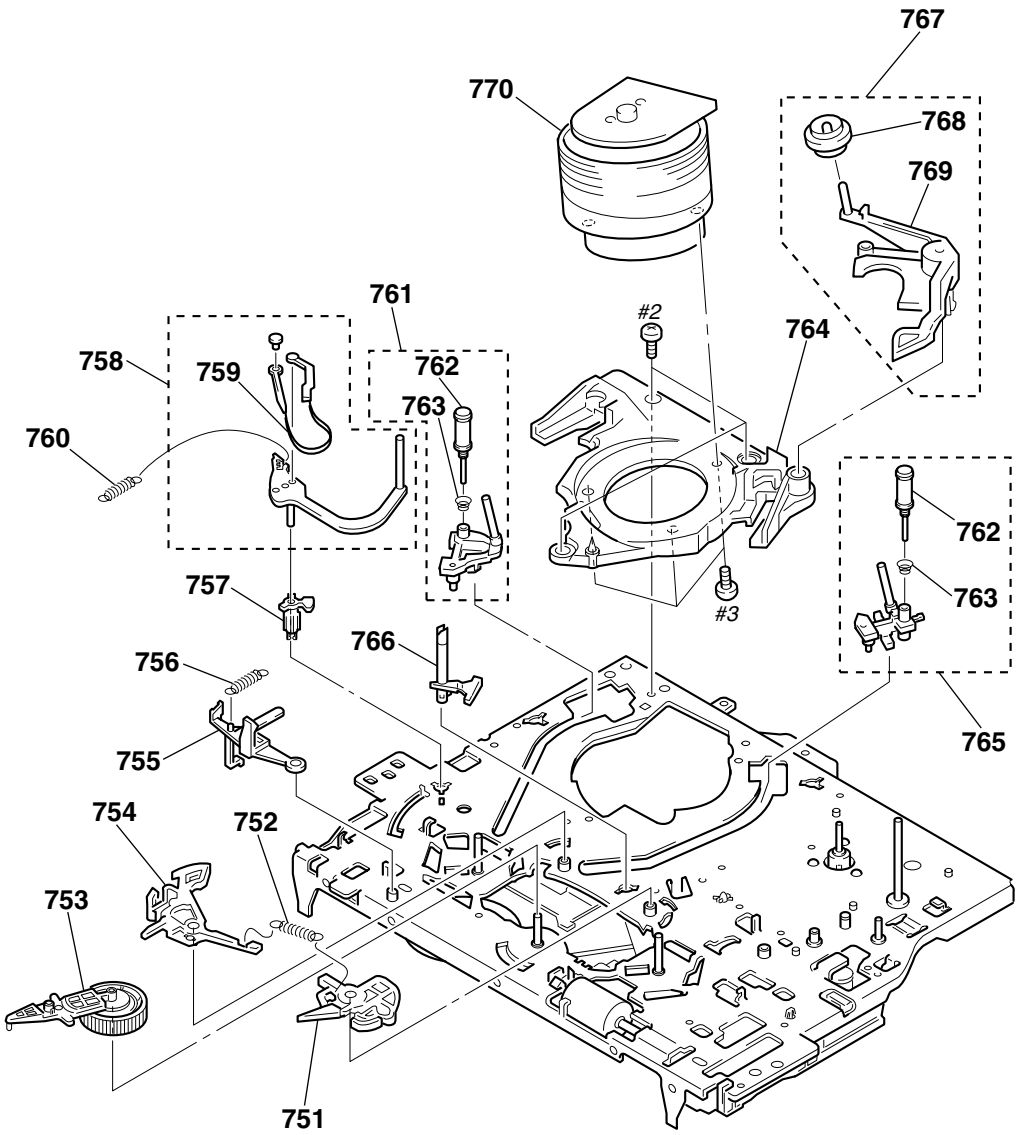
7-1-3. MECHANISM DECK SECTION-1



Ref. No.	Part No.	Description	Remarks
701	3-977-509-01	WASHER, THRUST	
702	3-977-507-01	TABLE, REEL (S) (GRAY)	
703	3-977-508-01	TABLE, REEL (T) (BLACK)	
704	1-500-144-11	HEAD, FE	
705	3-977-495-01	SHAFT, TG2	
706	3-977-494-01	HOLDER, FEH	
707	A-6759-619-B	FL COMPLETE ASSY BOARD, COMPLETE	
708	3-977-535-01	PLATE, LUMINOUS (END SENSOR)	
709	3-977-536-01	PLATE, LUMINOUS (TOP SENSOR)	
710	3-977-443-01	WASHER, STOPPER	
711	A-6759-863-B	PRESS BLOCK ASSY, PINCH	
712	3-958-455-01	SPRING (PINCH), TENSION	
713	3-977-447-01	GEAR, ELEVATOR	

Ref. No.	Part No.	Description	Remarks
714	3-977-514-01	OPENER, LID (SL)	
715	3-977-441-03	GEAR, PINCH PRESSING	
716	3-977-445-02	GEAR, TG8 ARM DRIVING	
717	3-977-465-01	SPRING, EXTENSION (RVS BRAKE)	
718	3-977-446-01	ARM ASSY, RVS BRAKE (SL)	
719	3-977-446-01	GEAR, TG8 ARM	
720	X-3947-590-1	TG8 ASSY	
721	A-6759-620-A	HEAD BLOCK ASSY, ACE	
722	3-974-556-11	+ HEXA TT 2.6 x 9 (TAPER)	
723	3-979-508-01	SCREW + HEXA TP SW 3 x 8	
724	3-059-958-01	SPRING, TG8	
725	3-051-300-03	LOCK ACE SCREW	
#2	7-685-646-79	SCREW + BVTP 3 x 8 TYPE2 IT-3	

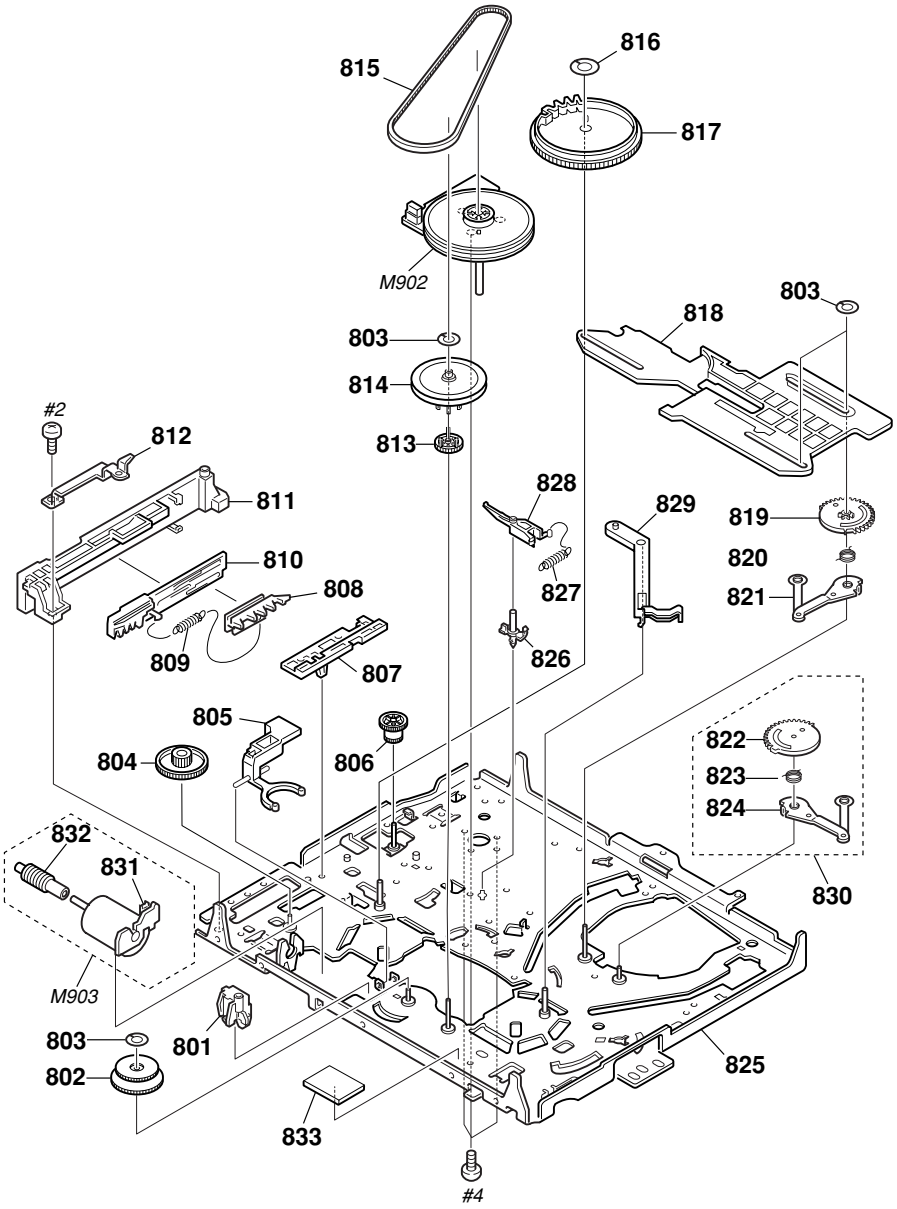
7-1-4. MECHANISM DECK SECTION-2



Ref. No.	Part No.	Description	Remarks
751	X-3947-581-4	BRAKE ASSY,MAIN(T)	
752	3-977-462-01	SPRING,EXTENTION. (MAIN BRAKE)	
753	X-3947-573-1	ARM ASSY, PENDULUM	
754	X-3947-580-5	BRAKE ASSY, MAIN(S)	
755	3-977-513-02	LEVER, REC PROOF	
756	3-976-767-01	SPRING, TENS. (REC. PROOF)	
757	3-977-487-01	BOSS, TG1 FULCRUM	
758	X-3947-587-1	TG1 ASSY	
759	X-3947-589-1	BAND ASSY, TG1	
760	3-977-488-01	SPRING (POWER TENSION)	
761	A-6750-324-A	SHUTTLE (S) BLOCK ASSY	

Ref. No.	Part No.	Description	Remarks
762	X-3944-378-1	ROLLER ASSY, GUIDE	
763	3-965-178-01	SPRING	
764	3-062-687-01	BASE, DRUM	
765	A-6750-328-G	SHUTTLE (T) BLOCK ASSY	
766	3-977-501-01	PLATE, LUMINOUS	
767	A-6746-074-G	ROLLER BLOCK ASSY, HC	
768	X-3947-255-1	ROLLER ASSY, HC	
769	3-975-724-07	ARM, HC	
770	8-839-047-53	DRUM ASSY, DZH-0A0A/Z-RP	(LX60S/LX70S)
770	8-839-049-53	DRUM ASSY, DZH-0A2A/Z-RP	(LX40/LX50)
#2	7-685-646-79	SCREW + BCTP 3 x 8 TYPE IT-3	
#3	7-682-647-09	SCREW + P3 x 6	

7-1-5. MECHANISM DECK SECTION-3



Ref. No.	Part No.	Description	Remarks
801	3-977-437-01	RETAINER,CAM MOTOR	
802	X-3947-584-1	ASSY, REEL DIRECT	
803	3-977-443-01	WASHER, STOPPER	
804	3-977-438-01	WORM - WHEEL	
805	3-977-506-01	ARM, LIMITTER SELECTION	
806	3-977-444-01	GEAR, PINCH TRANSMISSION	
807	3-977-515-01	GUIDE, FL SLIDER	
808	3-977-517-01	PLATE, SLIDE, FL	
809	3-977-519-01	SPRING, TENS. (LIMIT, FL)	
810	3-977-518-02	PLATE, LIMITTER, FL	
811	3-977-516-01	HOLDER, FL SLIDER	
812	3-977-877-01	PLATE, RETAINER	
813	3-977-504-01	GEAR, CLUTCH	
814	X-3947-585-1	GEAR ASSY, PULLEY	
815	3-977-510-01	BELT, RUBBER	
816	3-056-824-01	WASHER, STOPPER	
817	3-977-439-01	GEAR, CAM	
818	3-977-442-03	SLIDER	

Ref. No.	Part No.	Description	Remarks
819	3-977-455-01	GEAR, LOADING(T)	
820	3-977-456-03	SPRING, TORSION (LOAD T)	
821	X-3947-579-1	LEVER ASSY, LOADING(T)	
822	3-977-451-01	GEAR, LOADING(S)	
823	3-977-452-01	SPRING, TORSION (LOAD S)	
824	X-3947-578-1	LEVER ASSY, LOADING (S)	
825	X-3947-576-2	CHASSIS ASSY, MECHANICAL	
826	3-977-468-01	SHAFT, CAPSTAN BRAKE	
827	3-977-467-02	SPRING, CAP BRAKE	
828	X-3947-583-1	BRAKE ASSY, CAPSTAN	
829	3-977-489-01	ARM, TG1 DRIVING	
830	A-6759-616-A	GEAR BLOCK ASSY, LOADING (S)	
831	1-766-723-21	CONNECTOR, BOARD TO BOAR 3P	
832	3-977-436-01	WORM	
833	3-989-917-01	SPACER (REC PROOF)	
M902	1-698-971-11	MOTOR, DC (CAPSTAN)	
M903	X-3947-577-1	MOTOR ASSY, CAM (LOADING)	
#2	7-685-646-79	SCREW + BVTP 3 x 8 TYPE IT-3	
#4	7-685-133-19	SCREW + P2.6 x 6 TYPE2 NON-SLIT	

7-2. ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -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...

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

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

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

Ref. No.	Part No.	Description			Remarks
	A-6794-813-A	D1-080 BOARD MOUNT			
		**********			
CN901	1-770-514-31	CONNECTOR, FFC/FPC 5P			
		<SWITCH>			
S901	1-418-156-11	ENCODER, ROTARY			
	A-6794-814-A	FJ-032 BOARD MOUNT (LX60S/LX70S)			
	A-6794-815-A	FJ-032 BOARD MOUNT (LX40/LX50)			
		**********			
		<CAPACITOR>			
C803	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C805	1-163-009-11	CERAMIC CHIP (LX60S/LX70S ONLY)	0.001µF	10%	50V
C806	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
		<CONNECTOR>			
CN801	1-568-852-11	CONNECTOR, FFC/FPC 9P			
		<JACK>			
CNJ801	1-785-622-11	JACK, PIN 2P (LX40/LX50)			
CNJ801	1-770-021-11	JACK, PIN 3P (LX60S/LX70S)			
		<DIODE>			
D801	8-719-071-15	DIODE HZM6.8ZWA1TL			
D802	8-719-071-15	DIODE HZM6.8ZWA1TL			
D803	8-719-422-37	DIODE MA8051-TX			
D804	8-719-071-15	DIODE HZM6.8ZWA1TL			
		<CHIP CONDUCTOR>			
JR801	1-216-296-00	SHORT	0		
		<JUMPER SELECTOR>			
JS801	1-216-295-00	SHORT	0 (LX40/LX50)		

Ref. No.	Part No.	Description			Remarks
		<RESISTOR>			
R801	1-216-295-00	SHORT	0		
R802	1-216-295-00	SHORT	0 (LX60S/LX70S)		
R803	1-216-022-00	RES-CHIP	75	5%	1/10W
R805	1-216-053-00	RES-CHIP	1.5K	5%	1/10W
R806	1-216-013-00	RES-CHIP	33	5%	1/10W
		<SWITCH>			
S802	1-762-196-21	SWITCH, TACT			
S803	1-762-196-21	SWITCH, TACT			
	A-6713-829-A	MA-405 N3 BOARD COMPLETE (LX40/LX50:PA,PC,MX,VZ)			
	A-6712-826-A	MA-405 N3A BOARD COMPLETE (LX50:CL,CS)			
	A-6713-827-A	MA-405 N5 BOARD COMPLETE (LX-60S/LX70S:PA,PC,MX,VZ)			
	A-6713-828-A	MA-405 N5A BOARD COMPLETE (LX70S:CL,CS)			
		**********			
	3-065-135-01	HOLDER, FL			
	3-960-273-11	SPACER, TOP END			
	3-065-718-11	SINK, HEAT (LX50:CL,CS)			
C101	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C102	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C103	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C104	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C105	1-128-057-11	ELECT	330µF	20%	6.3V
C106	1-124-589-11	ELECT	47µF	20%	16V
C107	1-164-346-11	CERAMIC CHIP	1µF		16V
C108	1-164-004-11	CERAMIC CHIP	0.1µF	10%	25V
C109	1-164-004-11	CERAMIC CHIP	0.1µF	10%	25V
C111	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C112	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C113	1-164-004-11	CERAMIC CHIP (LX60S/LX70S)	0.1µF	10%	25V
C115	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C116	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C140	1-124-584-00	ELECT	100µF	20%	10V
C141	1-163-038-00	CERAMIC CHIP	0.1µF		25V
C142	1-163-037-11	CERAMIC CHIP	0.022µF	10%	50V

MA-405

Ref. No.	Part No.	Description			Remarks
C143	1-126-965-11	ELECT	22µF	20%	50V
C144	1-126-965-11	ELECT	22µF	20%	50V
C145	1-126-935-11	ELECT	470µF	20%	10V
C146	1-164-161-11	CERAMIC CHIP	0.0022µF	10%	50V
C160	1-163-809-11	CERAMIC CHIP	0.047µF	10%	25V
C161	1-163-809-11	CERAMIC CHIP	0.047µF	10%	25V
C162	1-163-038-00	CERAMIC CHIP	0.1µF		25V
C163	1-163-809-11	CERAMIC CHIP	0.047µF	10%	25V
C164	1-163-102-00	CERAMIC CHIP	24PF	5%	50V
C165	1-163-102-00	CERAMIC CHIP	24PF	5%	50V
C166	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C167	1-163-233-11	CERAMIC CHIP	18PF	5%	50V
C168	1-124-584-00	ELECT	100µF	20%	10V
C169	1-163-038-00	CERAMIC CHIP	0.1µF		25V
C170	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C171	1-127-737-11	DOUBLE LAYER	0.33F		5.5V
C172	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C173	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C176	1-164-004-11	CERAMIC CHIP	0.1µF	10%	25V
C185	1-109-982-11	CERAMIC CHIP	1µF	10%	10V
C187	1-164-346-11	CERAMIC CHIP	1µF		16V
C188	1-109-982-11	CERAMIC CHIP	1µF	10%	10V
C190	1-124-589-11	ELECT	47µF	20%	16V
C201	1-163-809-11	CERAMIC CHIP	0.047µF	10%	25V
C202	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C203	1-163-275-11	CERAMIC CHIP (LX40/LX50)	0.001µF	5%	50V
C204	1-109-982-11	CERAMIC CHIP	1µF	10%	10V
C205	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C206	1-164-004-11	CERAMIC CHIP	0.1µF	10%	25V
C207	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C208	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C209	1-124-589-11	ELECT	47µF	20%	16V
C210	1-164-004-11	CERAMIC CHIP	0.1µF	10%	25V
C211	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C213	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C214	1-163-257-11	CERAMIC CHIP	180PF	5%	50V
C215	1-163-227-11	CERAMIC CHIP	10PF	0.50PF	50V
C216	1-126-160-11	ELECT	1µF	20%	50V
C217	1-163-037-11	CERAMIC CHIP	0.022µF	10%	50V
C220	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C221	1-109-982-11	CERAMIC CHIP	1µF	10%	10V
C222	1-126-157-11	ELECT	10µF	20%	16V
C223	1-124-234-00	ELECT	22µF	20%	16V
C224	1-164-004-11	CERAMIC CHIP	0.1µF	10%	25V
C225	1-126-160-11	ELECT	1µF	20%	50V
C226	1-164-004-11	CERAMIC CHIP	0.1µF	10%	25V
C227	1-164-004-11	CERAMIC CHIP	0.1µF	10%	25V
C228	1-124-589-11	ELECT	47µF	20%	16V
C229	1-164-004-11	CERAMIC CHIP	0.1µF	10%	25V
C230	1-163-038-00	CERAMIC CHIP	0.1µF		25V
C231	1-124-589-11	ELECT	47µF	20%	16V
C232	1-109-982-11	CERAMIC CHIP	1µF	10%	10V
C233	1-126-157-11	ELECT	10µF	20%	16V
C234	1-109-982-11	CERAMIC CHIP	1µF	10%	10V
C235	1-164-004-11	CERAMIC CHIP	0.1µF	10%	25V
C236	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V

Ref. No.	Part No.	Description			Remarks
C237	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C238	1-124-589-11	ELECT	47µF	20%	16V
C239	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C240	1-124-589-11	ELECT	47µF	20%	16V
C241	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C242	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C243	1-162-306-11	CERAMIC	0.01µF	20%	16V
C244	1-109-982-11	CERAMIC CHIP	1µF	10%	10V
C245	1-109-982-11	CERAMIC CHIP	1µF	10%	10V
C246	1-162-306-11	CERAMIC	0.01µF	20%	16V
C247	1-163-037-11	CERAMIC CHIP	0.022µF	10%	50V
C248	1-163-809-11	CERAMIC CHIP	0.047µF	10%	25V
C249	1-109-982-11	CERAMIC CHIP	1µF	10%	10V
C250	1-163-809-11	CERAMIC CHIP	0.047µF	10%	25V
C251	1-164-004-11	CERAMIC CHIP	0.1µF	10%	25V
C252	1-162-306-11	CERAMIC	0.01µF	20%	16V
C253	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C254	1-109-982-11	CERAMIC CHIP (LX60S/LX70S)	1µF	10%	10V
C255	1-164-004-11	CERAMIC CHIP (LX60S/LX70S)	0.1µF	10%	25V
C267	1-164-004-11	CERAMIC CHIP	0.1µF	10%	25V
C271	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C272	1-164-004-11	CERAMIC CHIP	0.1µF	10%	25V
C275	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C276	1-164-004-11	CERAMIC CHIP	0.1µF	10%	25V
C278	1-163-037-11	CERAMIC CHIP	0.022µF	10%	50V
C279	1-164-004-11	CERAMIC CHIP	0.1µF	10%	25V
C280	1-124-584-00	ELECT	100µF	20%	10V
C281	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C282	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C283	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C284	1-164-489-11	CERAMIC CHIP	0.22µF	10%	16V
C285	1-162-306-11	CERAMIC	0.01µF	20%	16V
C286	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C301	1-164-004-11	CERAMIC CHIP	0.1µF	10%	25V
C302	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C303	1-164-004-11	CERAMIC CHIP	0.1µF	10%	25V
C304	1-104-664-11	ELECT	47µF	20%	25V
C305	1-104-664-11	ELECT	47µF	20%	25V
C306	1-163-037-11	CERAMIC CHIP	0.022µF	10%	50V
C307	1-124-257-00	ELECT	2.2µF	20%	50V
C308	1-164-346-11	CERAMIC CHIP	1µF		16V
C309	1-164-004-11	CERAMIC CHIP	0.1µF	10%	25V
C310	1-126-964-11	ELECT	10µF	20%	50V
C311	1-124-257-00	ELECT	2.2µF	20%	50V
C312	1-126-964-11	ELECT	10µF	20%	50V
C313	1-126-964-11	ELECT	10µF	20%	50V
C314	1-126-964-11	ELECT	10µF	20%	50V
C315	1-126-964-11	ELECT	10µF	20%	50V
C316	1-109-979-81	ELECT	3.3µF	10%	50V
C317	1-164-004-11	CERAMIC CHIP	0.1µF	10%	25V
C318	1-126-162-11	ELECT	3.3µF	20%	50V
C319	1-164-004-11	CERAMIC CHIP	0.1µF	10%	25V
C320	1-126-163-11	ELECT	4.7µF	20%	50V
C321	1-164-004-11	CERAMIC CHIP	0.1µF	10%	25V
C322	1-126-157-11	ELECT	10µF	20%	16V

Ref. No.	Part No.	Description			Remarks
C323	1-126-163-11	ELECT	4.7µF	20%	50V
C324	1-109-978-81	ELECT	10µF	10%	16V
C325	1-126-163-11	ELECT	4.7µF	20%	50V
C326	1-124-242-00	ELECT	33µF	20%	25V
C327	1-126-160-11	ELECT	1µF	20%	50V
C328	1-126-157-11	ELECT	10µF	20%	16V
C329	1-126-157-11	ELECT	10µF	20%	16V
C330	1-163-023-00	CERAMIC CHIP	0.015µF	10%	50V
C331	1-124-242-00	ELECT	33µF	20%	25V
C332	1-124-589-11	ELECT	47µF	20%	16V
C333	1-164-004-11	CERAMIC CHIP	0.1µF	10%	25V
C334	1-164-489-11	CERAMIC CHIP	0.22µF	10%	16V
C336	1-164-004-11	CERAMIC CHIP	0.1µF	10%	25V
C337	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C338	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C339	1-164-004-11	CERAMIC CHIP	0.1µF	10%	25V
C340	1-163-023-00	CERAMIC CHIP	0.015µF	10%	50V
C341	1-126-157-11	ELECT	10µF	20%	16V
C342	1-126-157-11	ELECT	10µF	20%	16V
C343	1-164-489-11	CERAMIC CHIP	0.22µF	10%	16V
C345	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C350	1-126-160-11	ELECT	1µF	20%	50V
C351	1-104-664-11	ELECT	47µF	20%	25V
C352	1-163-038-00	CERAMIC CHIP	0.1µF		25V
C353	1-126-160-11	ELECT (LX40/LX50)	1µF	20%	50V
C354	1-126-157-11	ELECT	10µF	20%	16V
C355	1-126-160-11	ELECT (LX40/LX50)	1µF	20%	50V
C356	1-124-242-00	ELECT	33µF	20%	25V
C357	1-126-163-11	ELECT	4.7µF	20%	50V
C358	1-126-160-11	ELECT	1µF	20%	50V
C359	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C360	1-163-014-00	CERAMIC CHIP	0.0027µF	10%	50V
C362	1-124-589-11	ELECT	47µF	20%	16V
C363	1-126-163-11	ELECT	4.7µF	20%	50V
C364	1-126-157-11	ELECT	10µF	20%	16V
C365	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C366	1-126-160-11	ELECT	1µF	20%	50V
C368	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C369	1-126-163-11	ELECT (LX40/LX50)	4.7µF	20%	50V
C371	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C380	1-137-374-11	MYLAR	0.047µF	5%	50V
C381	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C382	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C383	1-124-589-11	ELECT	47µF	20%	16V
C405	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C406	1-124-584-00	ELECT	100µF	20%	10V
C422	1-124-589-11	ELECT	47µF	20%	16V
C423	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C424	1-163-038-00	CERAMIC CHIP	0.1µF		25V
C425	1-126-157-11	ELECT	10µF	20%	16V
C427	1-164-004-11	CERAMIC CHIP	0.1µF	10%	25V
C500	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C501	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C502	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V

Ref. No.	Part No.	Description			Remarks
C503	1-163-017-00	CERAMIC CHIP	0.0047µF	10%	50V
C504	1-163-275-11	CERAMIC CHIP	0.001µF	5%	50V
C505	1-162-199-31	CERAMIC	10PF	5%	50V
C507	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C508	1-109-982-11	CERAMIC CHIP	1µF	10%	10V
C509	1-163-016-00	CERAMIC CHIP	0.0039µF	10%	50V
C510	1-164-004-11	CERAMIC CHIP	0.1µF	10%	25V
C511	1-163-038-00	CERAMIC CHIP	0.1µF		25V
C512	1-124-584-00	ELECT	100µF	20%	10V
C513	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C514	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C561	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C562	1-104-664-11	ELECT	47µF	20%	25V
C563	1-126-935-11	ELECT	470µF	20%	10V
C564	1-164-004-11	CERAMIC CHIP	0.1µF	10%	25V
C570	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C571	1-109-982-11	CERAMIC CHIP	1µF	10%	10V
C572	1-126-163-11	ELECT	4.7µF	20%	50V
C573	1-110-501-11	CERAMIC CHIP	0.33µF	10%	16V
C574	1-126-157-11	ELECT	10µF	20%	16V
C575	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C576	1-124-584-00	ELECT	100µF	20%	10V
C577	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C578	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
⚠C600	1-104-705-11	MYLAR	0.1µF	20%	250V
⚠C601	1-104-705-11	MYLAR	0.1µF	20%	250V
⚠C602	1-113-900-11	CERAMIC	470PF	10%	250V
⚠C603	1-113-900-11	CERAMIC	470PF	10%	250V
⚠C604	1-113-900-11	CERAMIC	470PF	10%	250V
⚠C605	1-127-932-41	ELECT (LX50:CL,CS/LX70S:CL,CS)	150µF	20%	400V
⚠C605	1-119-882-51	ELECT(BLOCK) (LX40/LX50:MX,PA,PC,VZ/ LX60S/LX70S:MX,PA,PC,VZ)	120µF	20%	200V
C606	1-130-470-00	MYLAR	820PF	5%	50V
C607	1-107-737-11	MYLAR	560PF	5%	50V
⚠C608	1-131-974-11	FILM	2200PF	5%	800V
C610	1-137-921-11	ELECT	1500µF	20%	10V
C611	1-126-935-11	ELECT	470µF	20%	16V
C612	1-126-160-11	ELECT	1µF	20%	50V
C613	1-130-496-00	MYLAR	0.12µF	5%	50V
C615	1-131-976-21	ELECT	820µF	20%	25V
C616	1-126-941-11	ELECT	470µF	20%	25V
C621	1-124-234-00	ELECT	22µF	20%	16V
C624	1-126-967-11	ELECT	47µF	20%	50V
C626	1-126-967-11	ELECT	47µF	20%	50V
C627	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C629	1-135-372-31	ELECT	470µF	20%	10V
C630	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C631	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C636	1-126-935-11	ELECT	470µF	20%	16V
C660	1-124-589-11	ELECT	47µF	20%	16V
C661	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C662	1-126-965-11	ELECT	22µF	20%	50V
C664	1-104-664-11	ELECT	47µF	20%	25V
C665	1-124-234-00	ELECT	22µF	20%	16V

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Ref. No.	Part No.	Description			Remarks
C666	1-124-589-11	ELECT	47µF	20%	16V
C669	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C671	1-126-965-11	ELECT	22µF	20%	50V
C672	1-164-159-21	CERAMIC	0.1µF		50V
C701	1-104-664-11	ELECT	47µF	20%	25V
C702	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C704	1-126-163-11	ELECT	4.7µF	20%	50V
C706	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C707	1-164-161-11	CERAMIC CHIP	0.0022µF	10%	50V
C709	1-126-933-11	ELECT	100µF	20%	16V
C710	1-164-232-11	CERAMIC CHIP	0.01µF	10%	50V
C712	1-126-933-11	ELECT	100µF	20%	16V
C794	1-164-489-11	CERAMIC CHIP	0.22µF	10%	16V
C798	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C799	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C800	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
		<CONNECTOR>			
CN101	1-766-978-31	CONNECTOR, FFC/FPC 5P			
CN101	1-784-484-11	CONNECTOR, FFC/FPC 5P			
CN102	1-779-723-11	CONNECTOR, BOARD TO BOARD 9P			
CN103	* 1-766-716-11	CONNECTOR, BOARD TO BOARD 3P			
CN104	1-506-469-11	PIN, CONNECTOR 4P			
CN260	1-766-984-41	CONNECTOR, FFC/FPC 11P (LX60S/LX70S)			
CN260	1-784-490-11	CONNECTOR, FFC/FPC 11P (LX60S/LX70S)			
CN260	1-691-038-31	HOUSING, CONNECTOR 6P (LX40/LX50)			
CN260	1-784-485-11	CONNECTOR, FFC/FPC 6P (LX40/LX50)			
CN270	* 1-560-892-00	PIN, CONNECTOR 4P			
CN350	1-766-980-71	CONNECTOR, FFC/FPC 7P			
CN350	1-784-486-11	CONNECTOR, FFC/FPC 7P			
CN351	1-506-468-11	PIN, CONNECTOR 3P			
CN401	1-784-488-11	CONNECTOR, FFC/FPC 9P			
CN402	1-766-978-31	CONNECTOR, FFC/FPC 5P			
CN402	1-784-484-11	CONNECTOR, FFC/FPC 5P			
⚠CN600	* 1-580-230-11	PIN, CONNECTOR (PC BOARD) 2P			
		<JACK>			
CNJ562	1-793-001-21	JACK, PIN (6P) (LX60S/LX70S)			
CNJ562	1-779-010-11	JACK, PIN 4P (LX40/LX50)			
		<DIODE>			
D103	8-719-048-26	DIODE GL528V1			
D109	8-719-200-82	DIODE MPG06D-6052PKG3			
D161	8-719-200-82	DIODE MPG06D-6052PKG3			
D162	8-719-200-82	DIODE MPG06D-6052PKG3			
D301	8-719-911-19	DIODE 1SS119-25TD			
D302	8-719-911-19	DIODE 1SS119-25TD			
D351	8-719-911-19	DIODE 1SS119-25TD (LX40/LX50)			
D352	8-719-911-19	DIODE 1SS119-25TD (LX40/LX50)			
D420	8-719-109-89	DIODE RD5.6ES-T1B2			
D421	8-719-056-06	DIODE SLR-342DCT31			
D561	8-719-110-08	DIODE RD8.2ES-T1B			
D600	8-719-051-93	DIODE DF06M-6031			
D601	8-719-063-70	DIODE D1NL20U-TA2			

Ref. No.	Part No.	Description	Remarks
D607	8-719-109-89	DIODE RD5.6ES-T1B2	
D608	8-719-022-97	DIODE D2S4MF	
D609	8-719-083-43	DIODE 31DQ06-FA7	
D611	8-719-313-17	DIODE AU02A-V0	
D612	8-719-313-17	DIODE AU02A-V0	
D613	8-719-043-76	DIODE AK04V0	
D614	8-719-160-64	DIODE RD16F-T8B1	
D623	8-719-109-93	DIODE RD6.2ES-T1B2	
D624	8-719-063-70	DIODE D1NL20U-TA2	
D625	8-719-110-49	DIODE MTZJ-T-77-18B	
D660	8-719-109-85	DIODE RD5.1ES-T1B2	
D661	8-719-911-19	DIODE 1SS119-25TD	
D666	8-719-911-19	DIODE 1SS119-25TD	
D702	8-719-150-92	DIODE RD33ES-T1B3	
		<TERMINAL>	
ET600	1-537-771-21	TERMINAL BOARD, GROUND	
ET601	1-537-771-21	TERMINAL BOARD, GROUND	
		<FUSE>	
⚠F600	1-532-203-00	FUSE 50CS-CL (LX50:CL,CS/LX70S:CL,CS)	
⚠F600	1-532-743-11	FUSE, GLASS CYLINDRICAL(DIA.5) (LX40/LX50:MX,PA,PC,VZ/ LX60S/LX70S:MX,PA,PC,VZ)	
		<FUSE HOLDER>	
FH600	1-533-217-31	HOLDER, FUSE	
FH601	1-533-217-31	HOLDER, FUSE	
		<IC>	
IC101	8-759-645-07	IC LB1943N	
IC160	6-800-024-01	IC M37760M8H119GP	
IC161	8-759-672-79	IC M24C02-WMN6T(A)	
IC162	8-759-248-87	IC MM1256XF-BE	
IC201	8-759-826-70	IC LA71053M-MPB	
IC260	8-759-564-36	IC LA70011	
IC301	8-759-696-38	IC AN3668FBPEBV	
IC301	8-759-696-39	IC AN3668FBP-V	
IC350	8-759-499-30	IC BA7755AF-E2	
IC403	8-749-015-48	IC RPM6940	
IC404	8-759-643-83	IC UPD16315GB-3BS	
IC570	8-759-566-07	IC LA7277M-TLM	
⚠IC600	8-749-018-38	IC MA8910	
⚠IC601	8-759-420-19	IC AN1431T-TA	
IC660	8-759-438-18	IC PQ12RD08	
		<CHIP CONDUCTOR>	
JR001	1-216-295-00	SHORT 0	
JR002	1-216-295-00	SHORT 0	
JR003	1-216-295-00	SHORT 0	
JR004	1-216-295-00	SHORT 0	
JR006	1-216-295-00	SHORT 0	

Note :
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Ref. No.	Part No.	Description		Remarks
JR007	1-216-295-00	SHORT	0	
JR008	1-216-295-00	SHORT	0	
JR009	1-216-295-00	SHORT	0	
JR010	1-216-295-00	SHORT	0	
JR011	1-216-295-00	SHORT	0	
JR012	1-216-295-00	SHORT	0	
JR013	1-216-295-00	SHORT	0	
JR014	1-216-295-00	SHORT	0	
JR015	1-216-295-00	SHORT	0	
JR016	1-216-295-00	SHORT	0	
JR017	1-216-295-00	SHORT	0	
JR018	1-216-295-00	SHORT	0	
JR101	1-216-296-00	SHORT	0	
JR102	1-216-296-00	SHORT	0	
JR103	1-216-296-00	SHORT	0	
JR104	1-216-296-00	SHORT	0	
JR105	1-216-296-00	SHORT	0	
JR106	1-216-296-00	SHORT	0	
JR107	1-216-296-00	SHORT	0	
JR108	1-216-296-00	SHORT	0	
JR109	1-216-296-00	SHORT	0	
JR110	1-216-296-00	SHORT	0	
JR111	1-216-296-00	SHORT	0	
JR112	1-216-296-00	SHORT	0	
JR113	1-216-296-00	SHORT	0	
JR114	1-216-296-00	SHORT	0	
JR115	1-216-296-00	SHORT	0	
JR116	1-216-296-00	SHORT	0	
JR117	1-216-296-00	SHORT	0	
JR118	1-216-296-00	SHORT	0	
JR119	1-216-296-00	SHORT	0	
JR120	1-216-296-00	SHORT	0	
JR121	1-216-296-00	SHORT	0	
JR122	1-216-296-00	SHORT	0	
JR123	1-216-296-00	SHORT	0	
JR124	1-216-296-00	SHORT	0	
JR125	1-216-296-00	SHORT	0	
JR126	1-216-296-00	SHORT	0	
JR127	1-216-296-00	SHORT	0	
JR128	1-216-296-00	SHORT	0	
JR129	1-216-296-00	SHORT	0	
JR130	1-216-296-00	SHORT	0	
JR131	1-216-296-00	SHORT	0	
JR132	1-216-296-00	SHORT	0	
JR133	1-216-296-00	SHORT	0	
JR134	1-216-296-00	SHORT	0	
JR135	1-216-296-00	SHORT	0	
JR136	1-216-296-00	SHORT	0	
JR137	1-216-296-00	SHORT	0	
JR138	1-216-296-00	SHORT	0	
JR139	1-216-296-00	SHORT	0	
		<JUMPER SELECTOR>		
JS304	1-216-295-00	SHORT	0	
JS323	1-216-295-00	SHORT	0 (LX40/LX50)	
JS324	1-216-296-00	SHORT	0 (LX40/LX50)	
JS325	1-216-295-00	SHORT	0 (LX40/LX50)	
JS453	1-216-295-00	SHORT	0	
JS521	1-216-295-00	SHORT	0 (LX40/LX50)	
JS603	1-216-296-00	SHORT	0	
JS604	1-216-296-00	SHORT	0	
JS616	1-216-296-00	SHORT	0	
		<COIL>		
L101	1-414-179-51	INDUCTOR	2.2µH	
L161	1-414-185-51	INDUCTOR	22µH	
L162	1-414-185-51	INDUCTOR	22µH	
L163	1-414-185-51	INDUCTOR	22µH	
L201	1-414-946-21	INDUCTOR	39µH	
L202	1-414-857-51	INDUCTOR	100µH	
L203	1-414-856-51	INDUCTOR	10µH	
L204	1-414-857-51	INDUCTOR	100µH	
L205	1-414-857-51	INDUCTOR	100µH	
L206	1-414-857-51	INDUCTOR	100µH	
L207	1-414-193-51	INDUCTOR	220µH	
L270	1-414-857-51	INDUCTOR	100µH	
L303	1-414-857-51	INDUCTOR	100µH	
L380	1-414-857-51	INDUCTOR	100µH	
L420	1-414-185-51	INDUCTOR	22µH	
L500	1-414-930-21	INDUCTOR	2.2µH	
L501	1-414-857-51	INDUCTOR	100µH	
L561	1-414-857-51	INDUCTOR	100µH	
L570	1-414-857-51	INDUCTOR	100µH	
L601	1-403-588-11	INDUCTOR	22µH	
L602	1-403-588-11	INDUCTOR	22µH	
L603	1-414-142-11	INDUCTOR	1µH	
L604	1-414-142-11	INDUCTOR	1µH	
L606	1-414-142-11	INDUCTOR	1µH	
L660	1-410-519-11	INDUCTOR	68µH	
L703	1-414-179-51	INDUCTOR	2.2µH	
L704	1-414-179-51	INDUCTOR	2.2µH	
		<FILTER>		
⚠LF600	1-416-929-11	FILTER, LINE		
		<FLUORESCENT INDICATOR TUBE>		
ND420	1-517-925-11	TUBE, FLUORESCENT INDICATOR		
		<PHOTO COUPLER>		
⚠PH101	8-749-015-86	PHOTO INTERRUPTER GP3S120S		
⚠PH102	8-749-015-86	PHOTO INTERRUPTER GP3S120S		
⚠PH600	8-749-010-64	PHOTO COUPLER PC123FY2		
		<IC LINK>		
⚠PS101	1-532-727-11	LINK, IC 0.25A/150V		
⚠PS662	1-533-710-11	FUSE (SMD)		

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Ref. No.	Part No.	Description			Remarks
		<TRANSISTOR>			
Q101	8-729-043-84	TRANSISTOR PT380F3			
Q102	8-729-043-84	TRANSISTOR PT380F3			
Q103	8-729-281-53	TRANSISTOR 2SC1815GR-TPE2			
Q201	8-729-230-49	TRANSISTOR 2SC2712Y-TE85L			
Q202	8-729-230-49	TRANSISTOR 2SC2712Y-TE85L			
Q203	8-729-216-21	TRANSISTOR 2SA1162Y-TE85L			
Q204	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX (LX60S/LX70S)			
Q301	8-729-216-21	TRANSISTOR 2SA1162Y-TE85L			
Q302	8-729-230-49	TRANSISTOR 2SC2712Y-TE85L			
Q303	8-729-230-49	TRANSISTOR 2SC2712Y-TE85L			
Q350	8-729-281-53	TRANSISTOR 2SC1815GR-TPE2			
Q351	8-729-230-49	TRANSISTOR 2SC2712Y-TE85L (LX40/LX50)			
Q380	8-729-821-15	TRANSISTOR 2SD1620-TD			
Q500	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX			
Q502	8-729-216-21	TRANSISTOR 2SA1162Y-TE85L			
Q561	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX			
Q600	8-729-047-92	TRANSISTOR 2SB1398-Q(TA).S0			
Q601	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX			
Q662	8-729-019-01	TRANSISTOR 2SD2394-EF			
Q673	8-729-119-78	TRANSISTOR 2SC3311A-RTA			
Q674	8-729-106-68	TRANSISTOR 2SD1664-T100-R			
		<RESISTOR>			
R101	1-249-413-11	CARBON	470	5%	1/4W
R102	1-216-077-91	RES-CHIP	15K	5%	1/10W
R103	1-216-077-91	RES-CHIP	15K	5%	1/10W
R104	1-249-433-11	CARBON	22K	5%	1/4W
R105	1-249-433-11	CARBON	22K	5%	1/4W
R106	1-249-400-11	CARBON	39	5%	1/4W
R107	1-249-400-11	CARBON	39	5%	1/4W
R109	1-249-437-11	CARBON	47K	5%	1/4W
R110	1-216-089-00	RES-CHIP	47K	5%	1/10W
R111	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R112	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R113	1-216-073-00	RES-CHIP	10K	5%	1/10W
R114	1-216-073-00	RES-CHIP	10K	5%	1/10W
R115	1-216-089-00	RES-CHIP	47K	5%	1/10W
R116	1-216-089-00	RES-CHIP	47K	5%	1/10W
R117	1-216-041-00	RES-CHIP	470	5%	1/10W
R118	1-216-089-00	RES-CHIP	47K	5%	1/10W
R119	1-216-077-91	RES-CHIP	15K	5%	1/10W
R120	1-249-417-11	CARBON	1K	5%	1/4W
R121	1-249-413-11	CARBON	470	5%	1/4W
R142	1-216-051-00	RES-CHIP	1.2K	5%	1/10W
R143	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R159	1-216-097-11	RES-CHIP (LX60S/LX70S)	100K	5%	1/10W
R160	1-216-049-00	RES-CHIP (LX60S/LX70S)	1K	5%	1/10W
R161	1-216-073-00	RES-CHIP (LX60S/LX70S)	10K	5%	1/10W
R162	1-249-419-11	CARBON (LX60S/LX70S)	1.5K	5%	1/4W
R164	1-216-089-00	RES-CHIP	47K	5%	1/10W
R165	1-216-089-00	RES-CHIP	47K	5%	1/10W
R166	1-216-073-00	RES-CHIP	10K	5%	1/10W
R167	1-249-431-11	CARBON	15K	5%	1/4W
R168	1-216-073-00	RES-CHIP	10K	5%	1/10W
R169	1-216-073-00	RES-CHIP	10K	5%	1/10W
R170	1-247-843-11	CARBON	3.3K	5%	1/4W
R171	1-216-089-00	RES-CHIP	47K	5%	1/10W
R172	1-216-073-00	RES-CHIP	10K	5%	1/10W
R174	1-216-039-00	RES-CHIP	390	5%	1/10W
R175	1-249-413-11	CARBON	470	5%	1/4W
R176	1-249-413-11	CARBON	470	5%	1/4W
R177	1-249-413-11	CARBON	470	5%	1/4W
R178	1-216-105-91	RES-CHIP	220K	5%	1/10W
R179	1-216-113-00	RES-CHIP	470K	5%	1/10W
R180	1-216-061-00	RES-CHIP	3.3K	5%	1/10W
R183	1-216-295-00	SHORT	0		
R185	1-216-295-00	SHORT	0		
R187	1-216-295-00	SHORT	0		
R188	1-216-069-00	RES-CHIP	6.8K	5%	1/10W
R189	1-216-061-00	RES-CHIP	3.3K	5%	1/10W
R191	1-249-417-11	CARBON	1K	5%	1/4W
R192	1-249-417-11	CARBON	1K	5%	1/4W
R193	1-216-295-00	SHORT	0		
R194	1-216-073-00	RES-CHIP	10K	5%	1/10W
R201	1-216-037-00	RES-CHIP	330	5%	1/10W
R202	1-216-047-91	RES-CHIP	820	5%	1/10W
R203	1-216-037-00	RES-CHIP	330	5%	1/10W
R204	1-216-071-00	RES-CHIP	8.2K	5%	1/10W
R205	1-208-830-11	METAL CHIP	100K	0.5%	1/10W
R208	1-216-295-00	SHORT	0		
R209	1-216-067-00	RES-CHIP	5.6K	5%	1/10W
R210	1-216-053-00	RES-CHIP	1.5K	5%	1/10W
R211	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R212	1-216-043-91	RES-CHIP	560	5%	1/10W
R213	1-216-049-00	RES-CHIP	1K	5%	1/10W
R214	1-216-053-00	RES-CHIP	1.5K	5%	1/10W
R215	1-216-071-00	RES-CHIP	8.2K	5%	1/10W
R216	1-249-420-11	CARBON	1.8K	5%	1/4W
R219	1-247-807-31	CARBON	100	5%	1/4W
R220	1-216-295-00	SHORT	0		
R221	1-216-295-00	SHORT	0		
R223	1-216-045-00	RES-CHIP	680	5%	1/10W
R224	1-216-089-00	RES-CHIP	47K	5%	1/10W
R225	1-216-045-00	RES-CHIP (LX60S/LX70S)	680	5%	1/10W
R231	1-216-089-00	RES-CHIP	47K	5%	1/10W
R267	1-216-295-00	SHORT	0		
R270	1-216-041-00	RES-CHIP	470	5%	1/10W
R271	1-216-041-00	RES-CHIP	470	5%	1/10W
R272	1-208-788-11	METAL CHIP	1.8K	0.5%	1/10W
R274	1-216-061-00	RES-CHIP	3.3K	5%	1/10W
R276	1-216-069-00	RES-CHIP	6.8K	5%	1/10W
R277	1-216-081-00	RES-CHIP	22K	5%	1/10W
R278	1-216-081-00	RES-CHIP	22K	5%	1/10W
R279	1-216-081-00	RES-CHIP	22K	5%	1/10W
R301	1-249-417-11	CARBON	1K	5%	1/4W
R302	1-216-049-00	RES-CHIP	1K	5%	1/10W
R303	1-216-049-00	RES-CHIP	1K	5%	1/10W
R305	1-216-033-00	RES-CHIP	220	5%	1/10W

Ref. No.	Part No.	Description			Remarks
R306	1-216-033-00	RES-CHIP	220	5%	1/10W
R308	1-216-091-00	RES-CHIP	56K	5%	1/10W
R310	1-216-295-00	SHORT	0		
R311	1-216-295-00	SHORT	0		
R313	1-249-437-11	CARBON	47K	5%	1/4W
R314	1-216-089-00	RES-CHIP	47K	5%	1/10W
R316	1-216-085-00	RES-CHIP	33K	5%	1/10W
R318	1-249-437-11	CARBON	47K	5%	1/4W
R319	1-216-089-00	RES-CHIP	47K	5%	1/10W
R321	1-216-061-00	RES-CHIP	3.3K	5%	1/10W
R323	1-216-295-00	SHORT	0		
R350	1-216-093-91	RES-CHIP	68K	5%	1/10W
R351	1-216-067-00	RES-CHIP	5.6K	5%	1/10W
R352	1-249-439-11	CARBON (LX40/LX50)	68K	5%	1/4W
R353	1-216-067-00	RES-CHIP (LX40/LX50)	5.6K	5%	1/10W
R354	1-216-129-00	RES-CHIP	2.2M	5%	1/10W
R355	1-249-439-11	CARBON (LX40/LX50)	68K	5%	1/4W
R356	1-216-067-00	RES-CHIP (LX40/LX50)	5.6K	5%	1/10W
R357	1-216-071-00	RES-CHIP	8.2K	5%	1/10W
R358	1-216-055-00	RES-CHIP	1.8K	5%	1/10W
R359	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R362	1-216-051-00	RES-CHIP	1.2K	5%	1/10W
R363	1-216-079-00	RES-CHIP	18K	5%	1/10W
R364	1-216-035-00	RES-CHIP	270	5%	1/10W
R365	1-216-109-00	RES-CHIP	330K	5%	1/10W
R366	1-216-071-00	RES-CHIP	8.2K	5%	1/10W
R367	1-216-067-00	RES-CHIP	5.6K	5%	1/10W
R369	1-216-047-91	RES-CHIP	820	5%	1/10W
R370	1-216-075-00	RES-CHIP	12K	5%	1/10W
R371	1-216-079-00	RES-CHIP	18K	5%	1/10W
R372	1-216-043-91	RES-CHIP	560	5%	1/10W
R373	1-249-417-11	CARBON (LX40/LX50)	1K	5%	1/4W
R380	1-216-017-91	RES-CHIP	47	5%	1/10W
R381	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R382	1-217-671-11	RES-CHIP	1	5%	1/10W
R383	1-216-031-00	RES-CHIP	180	5%	1/10W
R401	1-216-025-11	RES-CHIP	100	5%	1/10W
R402	1-249-437-11	CARBON	47K	5%	1/4W
R407	1-216-013-00	RES-CHIP	33	5%	1/10W
R409	1-216-053-00	RES-CHIP	1.5K	5%	1/10W
R410	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R411	1-216-059-00	RES-CHIP	2.7K	5%	1/10W
R412	1-216-075-00	RES-CHIP	12K	5%	1/10W
R413	1-216-077-91	RES-CHIP	15K	5%	1/10W
R415	1-216-053-00	RES-CHIP	1.5K	5%	1/10W
R416	1-216-053-00	RES-CHIP	1.5K	5%	1/10W
R417	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R418	1-216-059-00	RES-CHIP	2.7K	5%	1/10W
R422	1-249-417-11	CARBON	1K	5%	1/4W
R423	1-249-417-11	CARBON	1K	5%	1/4W
R424	1-249-417-11	CARBON	1K	5%	1/4W
R425	1-216-095-00	RES-CHIP	82K	5%	1/10W

Ref. No.	Part No.	Description			Remarks
R427	1-216-053-00	RES-CHIP	1.5K	5%	1/10W
R440	1-216-075-00	RES-CHIP	12K	5%	1/10W
R441	1-216-085-00	RES-CHIP	33K	5%	1/10W
R445	1-216-049-00	RES-CHIP	1K	5%	1/10W
R500	1-216-049-00	RES-CHIP	1K	5%	1/10W
R502	1-216-295-00	SHORT	0		
R503	1-249-417-11	CARBON	1K	5%	1/4W
R504	1-216-049-00	RES-CHIP	1K	5%	1/10W
R505	1-216-045-00	RES-CHIP	680	5%	1/10W
R507	1-216-041-00	RES-CHIP	470	5%	1/10W
R508	1-216-053-00	RES-CHIP	1.5K	5%	1/10W
R509	1-216-121-11	RES-CHIP	1M	5%	1/10W
R512	1-216-295-00	SHORT	0		
R513	1-249-413-11	CARBON	470	5%	1/4W
R561	1-216-037-00	RES-CHIP	330	5%	1/10W
R562	1-249-407-11	CARBON	150	5%	1/4W
R563	1-249-408-11	CARBON	180	5%	1/4W
R564	1-216-021-00	RES-CHIP	68	5%	1/10W
R565	1-216-022-00	RES-CHIP	75	5%	1/10W
R570	1-208-806-11	METAL CHIP	10K	0.5%	1/10W
R571	1-249-413-11	CARBON	470	5%	1/4W
R572	1-249-413-11	CARBON	470	5%	1/4W
R573	1-216-071-00	RES-CHIP	8.2K	5%	1/10W
R574	1-216-049-00	RES-CHIP	1K	5%	1/10W
R575	1-249-425-11	CARBON	4.7K	5%	1/4W
R576	1-216-097-11	RES-CHIP	100K	5%	1/10W
R577	1-216-097-11	RES-CHIP (LX60S/LX70S)	100K	5%	1/10W
R601	1-214-949-21	METAL	3.3M	1%	1/2W
R602	1-247-883-00	CARBON	150K	5%	1/4W
R603	1-247-891-00	CARBON	330K	5%	1/4W
R604	1-249-430-11	CARBON	12K	5%	1/4W
R605	1-249-419-11	CARBON	1.5K	5%	1/4W
R606	1-215-444-00	METAL	9.1K	1%	1/4W
R607	1-249-428-11	CARBON	8.2K	5%	1/4W
⚠R611	1-260-364-11	CARBON	1M	5%	1/2W
R612	1-208-789-11	METAL CHIP	2K	0.5%	1/10W
R613	1-249-406-11	CARBON	120	5%	1/4W
R614	1-216-655-11	METAL CHIP	1.5K	0.5%	1/10W
R615	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R616	1-249-401-11	CARBON	47	5%	1/4W
R617	1-249-417-11	CARBON	1K	5%	1/4W
R618	1-249-409-11	CARBON	220	5%	1/4W
R621	1-249-429-11	CARBON	10K	5%	1/4W
R622	1-216-430-11	METAL OXIDE	390	5%	1W
R623	1-247-843-11	CARBON	3.3K	5%	1/4W
⚠R640	1-219-153-11	FUSIBLE	10	5%	1/4W
⚠R641	1-219-153-11	FUSIBLE	10	5%	1/4W
R643	1-216-353-00	METAL OXIDE	2.2	5%	1W
R647	1-215-465-00	METAL	68K	1%	1/4W
R648	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R649	1-216-017-91	RES-CHIP	47	5%	1/10W
R651	1-215-459-00	METAL	39K	1%	1/4W
R669	1-216-061-00	RES-CHIP	3.3K	5%	1/10W
R676	1-249-417-11	CARBON	1K	5%	1/4W
R678	1-249-409-11	CARBON	220	5%	1/4W
R679	1-249-409-11	CARBON	220	5%	1/4W

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

Ref. No.	Part No.	Description			Remarks
R680	1-249-417-11	CARBON	1K	5%	1/4W
R701	1-249-417-11	CARBON	1K	5%	1/4W
R702	1-216-061-00	RES-CHIP	3.3K	5%	1/10W
R703	1-249-412-11	CARBON	390	5%	1/4W
R704	1-216-043-91	RES-CHIP	560	5%	1/10W
R709	1-216-049-00	RES-CHIP	1K	5%	1/10W
R710	1-216-049-00	RES-CHIP	1K	5%	1/10W
R711	1-216-049-00	RES-CHIP	1K	5%	1/10W
R712	1-216-295-00	SHORT	0		
⚠R723	1-240-307-81	FUSIBLE	560	5%	1/4W
R724	1-216-113-00	RES-CHIP	470K	5%	1/10W
		<SWITCH>			
S101	1-762-108-11	SWITCH, PUSH (1 KEY) REC PROOF			
S102	1-771-155-11	SWITCH, ROTARY MODE			
S404	1-762-196-21	SWITCH, TACT CHANNEL/TRACKING+			
S405	1-762-196-21	SWITCH, TACT CHANNEL/TRACKING-			
S406	1-762-196-21	SWITCH, TACT EASY SET-UP			
S408	1-762-196-21	SWITCH, TACT (◀◀ REW)			
S409	1-762-196-21	SWITCH, TACT (❚❚ PAUSE)			
S410	1-762-196-21	SWITCH, TACT (▷ PLAY)			
S411	1-762-196-21	SWITCH, TACT (■ STOP)			
S412	1-762-196-21	SWITCH, TACT (● REC)			
S413	1-762-196-21	SWITCH, TACT (▶▶ FF)			
S429	1-762-196-21	SWITCH, TACT (SEARCH)			
S701	1-571-588-11	SWITCH, SLIDE RF UNIT (CH3←→CH4)			
		<TRANSFORMER>			
T380	1-431-097-11	TRANSFORMER, BIAS OSCILLATION			
⚠T600	1-435-790-11	TRANSFORMER, CONVERTER			
		<TUNER>			
TU701	1-693-532-21	TUNER (BTF-3MA413)			
		<VARISTOR>			
⚠VDR600	1-801-267-31	VARISTOR TNR10V431K660 (LX50:CL,CS/LX70S:CL,CS)			
⚠VDR600	1-804-048-31	VARISTOR (240NS10D) (LX40/LX50:MX,PA,PC,VZ/ LX60S/LX70S:MX,PA,PC,VZ)			
		<VIBRATOR>			
X160	1-767-857-11	VIBRATOR, CRYSTAL	14.3181MHz		
X161	1-579-463-11	VIBRATOR, CRYSTAL	32.768KHz		
X201	1-577-380-11	VIBRATOR, CRYSTAL	3.579545MHz		

Ref. No.	Part No.	Description	Remarks
		MISCELLANEOUS	
		**********	
	1-777-852-12	CORD, POWER (LX40/LX50:MX,PA,PC,VZ/ LX60S/LX70S:MX,PA,PC,VZ)	
	1-777-854-22	CORD, POWER (LX50:CL,CS/LX70S:CL,CS)	
	1-757-552-12	FLAT CABLE FDM-010	
	1-757-556-11	FLAT CABLE FFJ-004	
	1-757-550-11	FLAT CABLE FMD-021	
	1-757-551-11	FLAT CABLE FAC-009	
	1-500-477-11	FLAT CABLE FE HEAD	
	4-6759-621-A	HEAD BLOCK ASSY, ACE	
	1-698-971-11	MOTOR DC	
	X-3947-577-1	MOTOR ASSY, CAM	
	8-839-049-53	DRUM ASSY,DZH-0A2A/Z-RP (LX40/LX50)	
	8-839-047-53	DRUM ASSY, DZH-0A0A/Z-RP (LX60S/LX70S)	
		ACCESSORIES	
		**********	
	1-569-008-21	ADAPTOR, CONVERSION 2P (LX50:CL,CS/LX70S:CL,CS)	
	1-575-795-61	CORD, CONNECTION (LX50/LX60S/LX70S)	
	1-696-592-41	CORD, CONNECTION (NTSC) (LX40/LX60S/LX70S)	
	1-476-436-11	COMMANDER, STANDARD(RMT-V293A) (LX40/LX50)	
	1-476-437-11	COMMANDER, STANDARD(RMT-V294A) (LX60S/LX70S)	
	3-709-432-11	COVER, REMOTE CONTROL BATTERY	
	3-065-284-12	MANUAL, INSTRUCTION	
		HARDWARE LIST	
		**********	
	3-710-901-01	SCREW, TAPPING	
	3-970-608-21	SUMITITE (B3), +BV	
	3-974-556-11	+HEXA TT2.6X9 (TAPER)	
	3-979-508-01	SCREW +HEXA TP SW3X8	
	4-921-277-41	SCREW (B2.6X8), TAPPING, BIND	
#1	7-685-648-79	SCREW +BVTP 3X12 TYPE2 IT-3	
#2	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3	
#3	7-682-647-09	SCREW +P3X6	
#4	7-685-133-19	SCREW +P2.6X6 TYPE2 NON-SLIT	

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

9-921-786-11

Sony Corporation
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