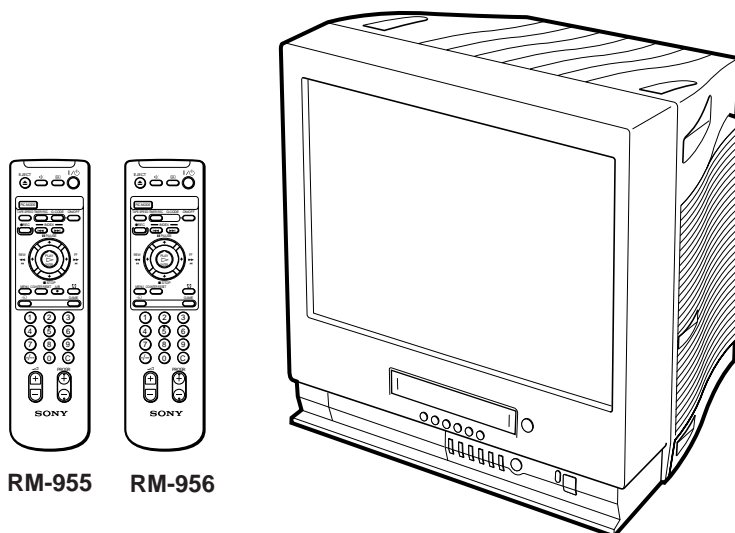


SERVICE MANUAL BC-4A CHASSIS

<u>MODEL</u>	<u>COMMANDER</u>	<u>DEST.</u>	<u>CHASSIS NO.</u>
KV-VF21M40	RM-956	E	SCC-P10A-A
KV-VF21M70	RM-956	ME	SCC-P11A-A
KV-VF21M70	RM-956	JE	SCC-P12A-A

<u>MODEL</u>	<u>COMMANDER</u>	<u>DEST.</u>	<u>CHASSIS NO.</u>
KV-VF21M70	RM-956	HK	SCC-P09B-A
KV-VF21M77	RM-955	HK	SCC-P09A-A



RM-955 RM-956



G-CODE® (VF21M77 ONLY)

TRINITRON® COLOR VIDEO TV
SONY®



* Please file according to model size.

SPECIFICATIONS





TV Section

Television system	B/G, I, D/K, M
Color system	PAL/SECAM and NTSC ^{3.58} /NTSC ^{4.43}
Bilingual system (VF21M77 ONLY)	NICAM bilingual I
Channel coverage	See "Receivable channels and channel display"
Picture tube	Trinitron 21 inches (approx. 50.7 cm measured diagonally)
Antenna in	75-ohm antenna socket for VHF/UHF

Video Section

Format	VHS standard
Video recording system	Rotary 2-head helical scanning system
Audio recording system	Monaural
Video signal	PAL/MESECAM/NTSC
Tape speed	PAL/MESECAM SP: 23.39 mm/sec. LP: 11.70 mm/sec. NTSC SP: 33.35 mm/sec. EP: 11.11 mm/sec.
Maximum recording time	PAL/MESECAM SP: 240 minutes with E-240 LP: 480 minutes with E-240 NTSC SP: 180 minutes with T-180 EP: 540 minutes with T-180

Inputs and Outputs

Inputs	 1,  2/GAME IN  (video): phono jack 1 Vp-p, 75 ohms, unbalanced, sync negative  (audio): phono jack Input level: 500 mVrms
Headphones jack	Minijack

General

Clock	Quartz locked
Power requirements	110-240 V AC, 50/60Hz
Power consumption	123 W
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	489 x 500 x 485 mm (19 ³ / ₈ x 19 ³ / ₄ x 19 ¹ / ₈ inches)
Mass	27.5 kg (60 lb 10 oz.)

Supplied accessories

Remote control
 Two R6 (size AA) batteries
 Stabilizer band
 Two clamps
 Two wood screws
 AC plug adaptor (E/ME/JE model)
 These operating instructions

Design and specifications are subject to change without notice.

Receivable channels and channel display

System	Area	Channel coverage	Channel display
B/G, H	Middle East/ Asia	E-2 to E-12 E-21 to E-69	C02 to C12 C21 to C69
	Indonesia	1A 2 to 11	C01 C03 to C12
	Morocco	M-4 to M-7 M-8 to M-10	C70 to C73 C08 to C10
	CATV	S-01 to S-05 S-1 to S-41	S42 to S46 S01 to S41
I	Hong Kong/ United Kingdom	B-21 to B-69	C21 to C69
	Ireland	A, B, C,...J	C01 to C10
	South Africa	4 to 13 21 to 68	C04 to C13 C21 to C68
	Angola	1 2 to 3	C00 C02 to C03
	CATV	S-01 to S-05 S-1 to S41	S42 to S46 S01 to S41
D/K, K1	East European countries	R-1 to R-12 R-21 to R-60	C01 to C12 C21 to C60
	China	C-1 C-2 C-3 C-4 C-5 C-6 C-7 to C-12 C-13 to C-24 C-25 to C-47 C-48 to C-57	C01 C02 C13 C03 C04 C14 C06 to C11 C21 to C32 C38 to C60 C61 to C70
	Ivory Coast	1 to 3	C71 to C73
	CATV	S-1 to S-39	S01 to S39
M	America	A-2 to A-13 A-14 to A-69	C02 to C13 C14 to C69
	CATV	A-8 A-7 A-6 A-5 to A-1 A to E F to W+28 W+29 to W+58	S01 S05 S06 S95 to S99 S14 to S18 S19 to S64 S65 to S94


TABLE OF CONTENTS

<u>Section</u>	<u>Title</u>	<u>Page</u>	<u>Section</u>	<u>Title</u>	<u>Page</u>
SELF DIAGNOSIS FUNCTION		5	5. CIRCUIT ADJUSTMENTS		
[TV SECTION]			5-1. Adjustments with Commander		73
1. GENERAL			5-2. Adjustment Method		74
1-1. KV-VF21M40/VF21M70		8	5-3. Service Data		75
1-2. KV-VF21M77		35	5-4. A Board Adjustment		77
2. DISASSEMBLY			6. DIAGRAMS		
2-1. Rear Cover Removal		65	6-1. Block Diagrams		79
2-2. Chassis Assy Removal		65	6-2. Circuit Boards Location		83
2-3. Service Position (A Board)		65	6-3. Printed Wiring Boards and Schematic Diagrams		83
2-4. A Board Removal		65	• A Board		84
2-5. Harnes Location		66	• CV, F Boards		91
2-6. Picture Tube Removal		67	6. EXPLODED VIEWS		
3. SET-UP ADJUSTMENTS			6-1. Picture Tube		124
3-1. Beam Landing		68	6-2. Chassis		125
3-2. Convergence		69	7. ELECTRICAL PARTS LIST		129
3-3. Focus Adjustment		70	[VIDEO SECTION]		
3-4. Screen (G2) Adjustment		70	1. GENERAL		96
3-5. White Barance Adjustment		71	2. DISASSEMBLY		97
3-6. Picture Distortion Adjustment		71	3. CIRCUIT ADJUSTMENTS		98
4. SAFETY RELATED ADJUSTMENT		72	4. INTERFACE, IC PIN FUNCTION		
			DESCRIPTION		101
			5. DIAGRAMS		105
			6. EXPLODED VIEWS		126
			7. ELECTRICAL PARTS LIST		135

CAUTION

SHORT CIRCUIT THE ANODE OF THE PICTURE TUBE AND THE ANODE CAP TO THE METAL CHASSIS, CRT SHIELD, OR CARBON PAINTED ON THE CRT, AFTER REMOVING THE ANODE.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK  ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL FOR SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL FOR SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

SELF DIAGNOSTIC FUNCTION

1. OUTLINE

- The units in this manual contain a self-diagnostic function.
- If an error occurs, the STANDBY lamp will automatically begin to flash.
The number of times the lamp flashes translates to a probable source of the problem. A definition of the STANDBY lamp flash indicators is listed in the instruction manual for the user's knowledge and reference.
- If an error symptom cannot be reproduced, the remote commander can be used to review the failure occurrence data stored in memory to reveal past problems and how often these problems occur.

2. DIAGNOSTIC TEST INDICATORS

- When an errors occurs, the STANDBY lamp will flash a set number of times to indicate the possible cause of the problem. If there is more than one error, the lamp will identify the first of the problem areas.
- Result for all of the following diagnostic items are displayed on screen. No error has occurred if the screen displays a "0".

Diagnostic Item Description	No. of times STANDBY lamp flashes	Self-diagnostic display/Diagnostic result	Probable Cause Location	Detected Symptoms
• Power does not turn on	Does not light	—	<ul style="list-style-type: none"> • Power cord is not plugged in. • Fuse is burned out F901 	<ul style="list-style-type: none"> • Power does not come on. • No power is supplied to the TV. • AC power supply is faulty.
• +B overcurrent (OCP) or overvoltage (OVP)	2 times	2 : 0 or 2 : 1 4 : 1 } at the same time (Note 1)	<ul style="list-style-type: none"> • FBT • Q802 (H OUT) shorted 	<ul style="list-style-type: none"> • On standby state. • Load on power line is shorted (at the same time 4 : 1 on display).
• Vertical deflection stopped	4 times	4 : 0 or 4 : 1	<ul style="list-style-type: none"> • IC501 • IC301 ⑭ pin • IC606 • Q802 (H OUT) shorted • Q803 • Q608 • R803 open 	<ul style="list-style-type: none"> • Has entered standby state after horizontal raster. • Vertical deflection pulse is stopped. • Horizontal deflection stopped. • Power line is shorted or power supply is stopped.
• White balance failure (no PICTURE)	5 times	5 : 0 or 5 : 1	<ul style="list-style-type: none"> • CRT • IC301 • IC701 - IC703, Q701 (CV board) • G2 is improperly adjusted. (Note 2) 	<ul style="list-style-type: none"> • No raster is generated. • CRT cathode current detection reference pulse output is small.

Note 1: If a + B overcurrent is detected, stoppage of the vertical deflection is detected simultaneously.

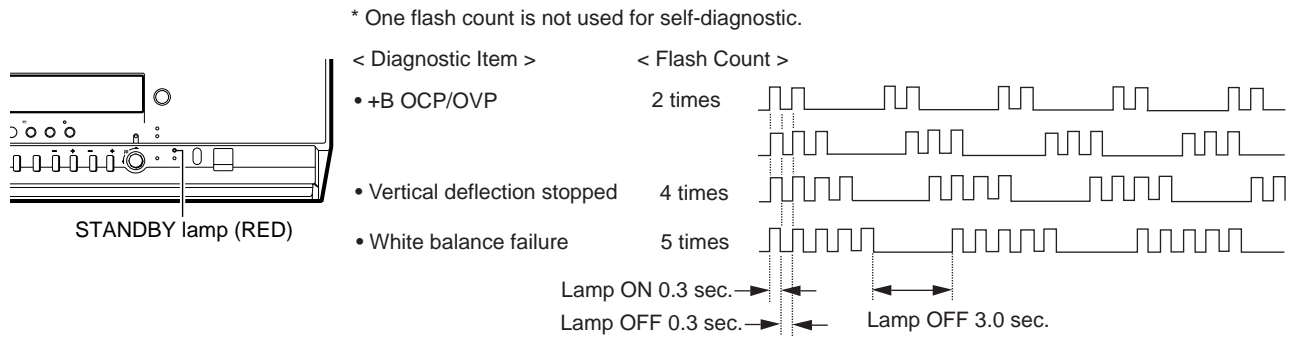
The symptom that is diagnosed first by the microcontroller is displayed on the screen.

Note 2: Refer to screen (G2) Adjustment in section 3-4 of this manual.

• VCR EMG code List

Code	Coutents	Code	Coutents
00h	NO EMG	30h	Capstan FG NG at initial
10h	CAM encode NG during unloading	31h	Capstan FG NG
11h	CAM encode NG during unloading	40h	Drum FG NG
12h	CAM encode NG at intial	41h	Drum FG NG at initial
20h	T reel NG during unloading	42h	Drum FG NG
21h	S reel FG NG	43h	Drum PG NG
22h	T reel FG NG	44h	Drum PG NG
23h	S reel FG NG	50h	DEW
24h	T reel FG NG at initial	60h	FL NG
25h	S reel FG NG at initial	70h	DEW eject NG

3. DISPLAY OF STANDBY LIGHT FLASH COUNT



STOPPING THE STANDBY FLASH

- Turn off the power switch on the TV main unit or unplug the power cord from the outlet to stop the STANDBY lamp from flashing.

4. SELF-DIAGNOSTIC SCREEN DISPLAY

- For errors with symptoms such as “power sometimes shuts off” or “screen sometimes goes out” that cannot be confirmed, it is possible to bring up past occurrences of failure for confirmation on the screen:

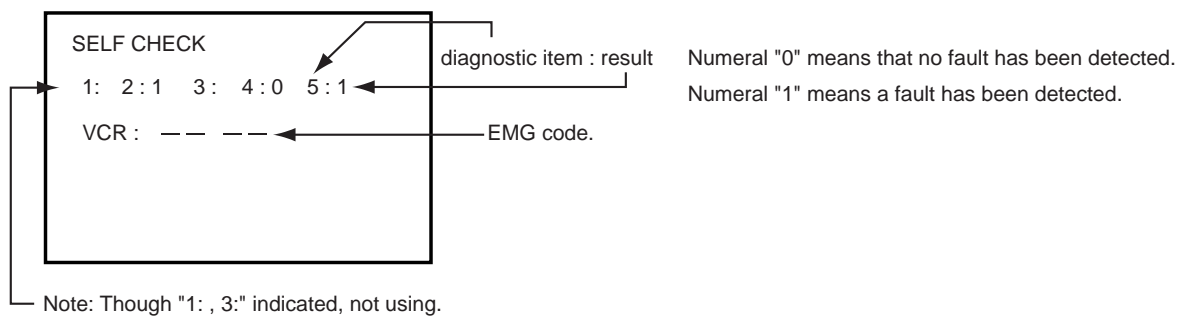
[To Bring Up Screen Test]

- In standby mode, press buttons on the remote commander sequentially in rapid succession as shown below:

Screen display → channel [5] → Sound volume [] → Power ON []

Note that this differs from entering the service mode (mode volume []).

Self-Diagnosis screen display



5. HANDLING OF SELF-DIAGNOSTIC SCREEN DISPLAY

- Since the diagnostic results displayed on the screen are not automatically cleared, always check the self-diagnostic screen during repairs. When you have completed the repairs, clear the result display to “0”.
- Unless the result display is cleared to “0”, the self-diagnostic function will not be able to detect subsequent faults after completion of the repairs.

[Clearing the result display]

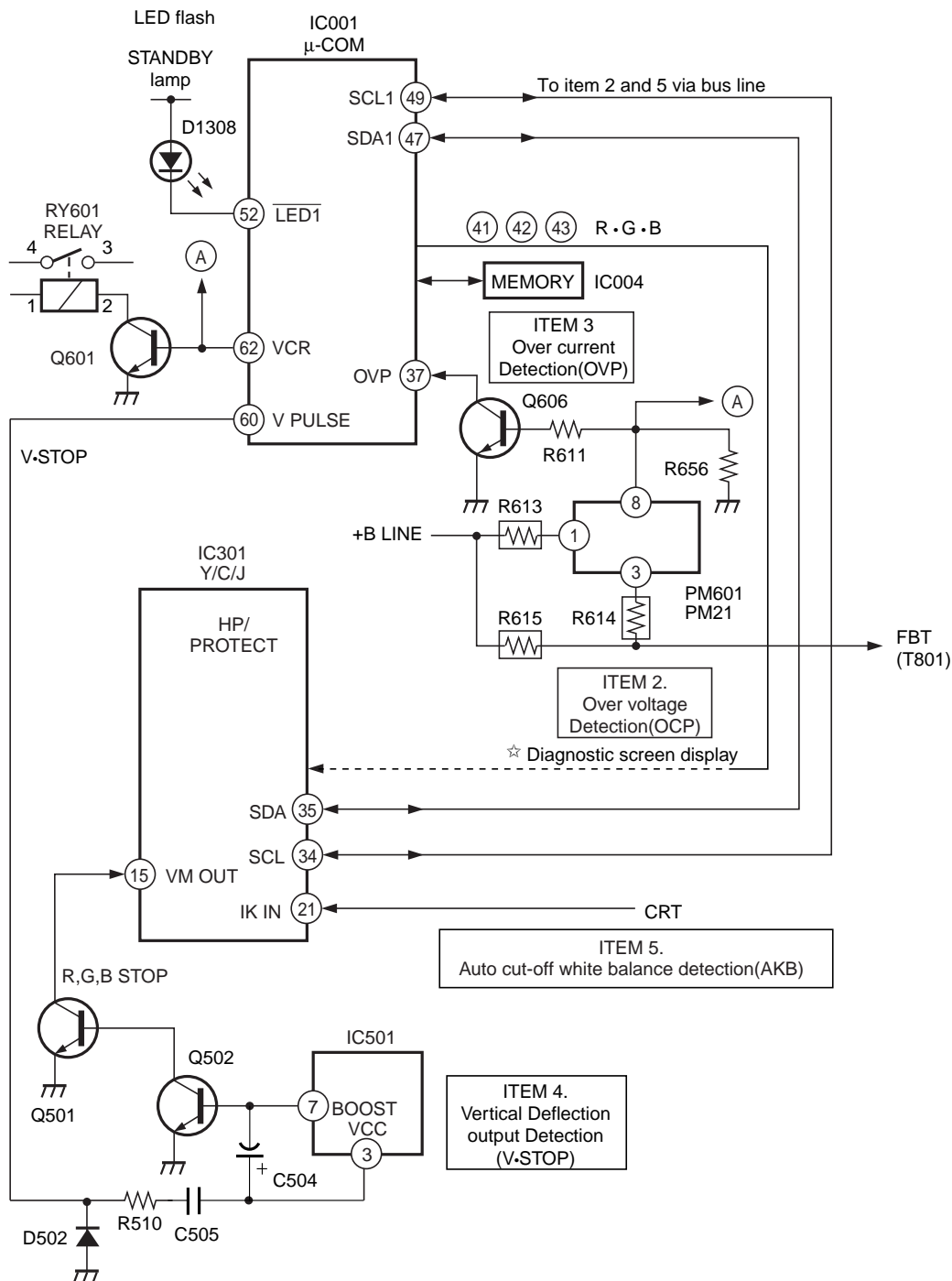
- To clear the result display to “0”, press buttons on the remote commander sequentially as shown below when the diagnostic screen is being displayed.
- Pay attention when perform by the service mode, other all electric adjustment data will be rewrite.

Channel [8] → [0]

[Quitting Self-diagnostic screen]

- To quit the entire self-diagnostic screen, turn off the power switch on the remote commander or the main unit.

6. SELF-DIAGNOSTIC CIRCUIT



+B overcurrent

Owing to current increase voltage of R615 decrease and that it make PM601 pin ⑧ to become LOW and OFF RY601.

+B over voltage

When +B voltage become more than 142.5V, PM601 ⑧ pin become LOW and RY601 OFF.

Vertical deflection stopped

Detect Vertical deflection Pulse lost by IC001 ⑩ pin of micro computer. Mute the picture at ⑪ pin of IC301 that performed by Y/C/J.

White balance

Detect when R.G.B. output wrong level balance of automatic white balance detecting standard pulse which detect cathode current, or which become low almost.

SECTION 1 GENERAL

The operating instructions mentioned here are partial abstracts from the Operating Instruction Manual. The page numbers of the Operating Instruction Manual remain as in the manual.

1-1. KV-VF21M40/VF21M70

Getting Started

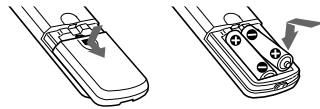
Step 1: Preparation

Check the supplied accessories

When you have taken everything out of the carton, check that you have these items:

- Remote control
- Two R6 (size AA) batteries
- Stabilizer band
- Two clamps
- Two wood screws
- AC plug adaptor
- These operating instructions

Insert the batteries into the remote control



Note

- Do not use old batteries or different types of batteries together.

Step 2: Installing the video TV

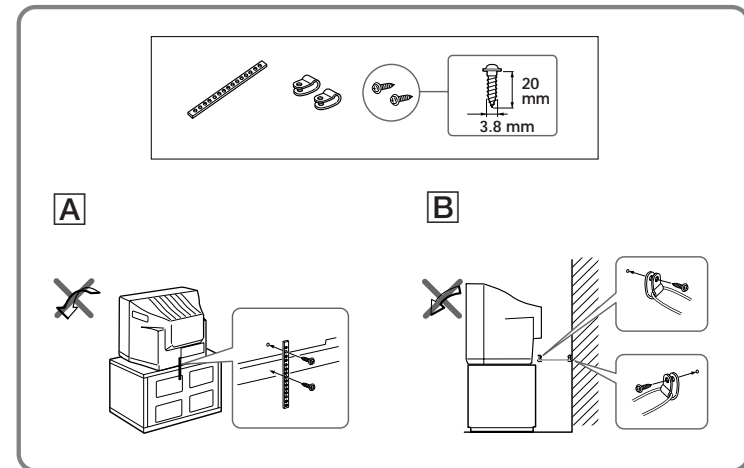
Secure the video TV

To prevent the video TV from falling, secure it using one of the following methods:

- A** With the supplied screws, attach the stabilizer band to the TV stand and to the rear of the video TV using the existing hole.

OR

- B** Pass a cord or chain through the clamps and secure them to the rear of the video TV and a wall or pillar.



Getting Started

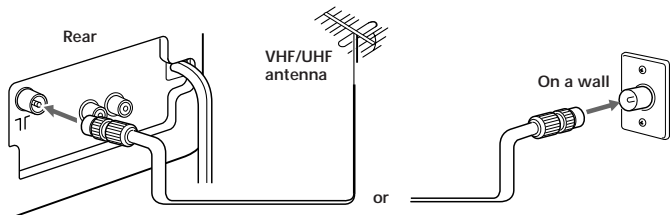
Step 3: Connecting the antenna

For better TV reception and clear recordings, connect an outdoor antenna to your video TV.

Connecting an outdoor antenna

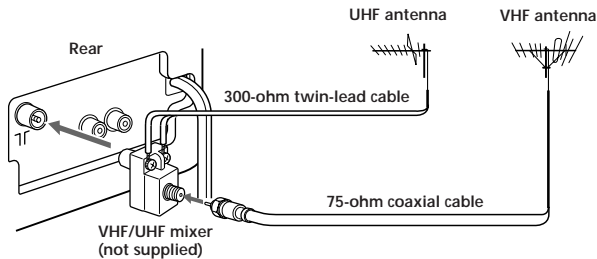
To connect a VHF antenna or a combination VHF/UHF antenna—75-ohm coaxial cable (round)

Attach an IEC antenna connector to the 75-ohm coaxial cable. Plug the connector into the 75 (antenna) socket of the video TV.



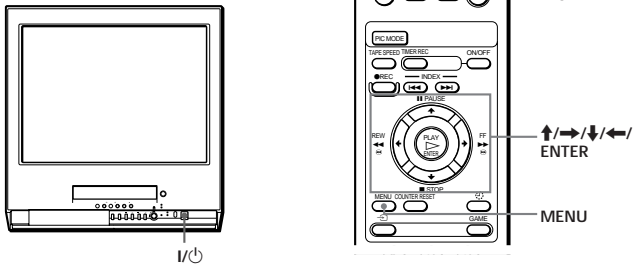
To connect both VHF and UHF antennas

Attach the antenna cable ends to the VHF/UHF mixer (not supplied). Plug the mixer into the 75 (antenna) socket of the video TV.



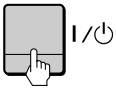
Step 4: Selecting the language

You can change the menu and on-screen information language to Chinese.

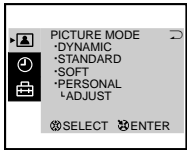
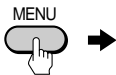


- 1 Press I/POWER to turn on the video TV.

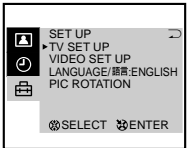
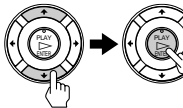
When the TV is in standby mode (the I/POWER indicator on the video TV is lit in red), press I/POWER, PROGR +/- or a number button on the remote control.



- 2 Press MENU.



- 3 Press UP or DOWN to select LANGUAGE/语言, then press ENTER.



continued

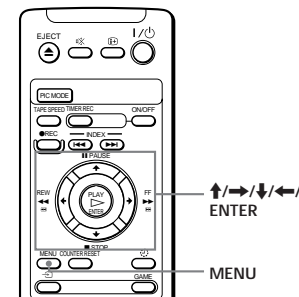
Step 4: Selecting the language (continued)

- 4** Press **↑** or **↓** to select LANGUAGE/ 語言, then press ENTER. The selected item turns red.
- 5** Press **↑** or **↓** to select 中文, then press ENTER. The menu language changes to Chinese.

To return to the normal screen
Press MENU.

Step 5: Setting the clock

You need to set the clock to use timer recording, Quick-Timer recording and on-timer functions.



- 1** Press MENU.
- 2** Press **↑** or **↓** to select **⌚**, then press ENTER.
- 3** Press **↑** or **↓** to select CLOCK SET, then press ENTER.
- 4** Press ENTER. The day section turns red.
- 5** Press **↑** or **↓** to set the day, then press **→**. The month section turns red.

continued

Step 5: Setting the clock (continued)

- 6** Press **↑**, **↓** or **→** to set the month, year, hour and minutes in the same way as in step 5, then press ENTER.
The clock starts working.

To return to the normal screen

Press MENU.

If you have made a mistake while setting the clock

Press **←** to go back to the item to be changed and set the correct digits using **↑** or **↓**, then press **→**.

Note

- If power is interrupted or you disconnect the AC power cord, you have to re-set the clock.

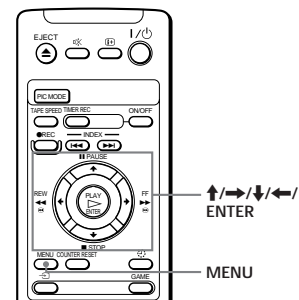
Step 6: Setting the channels

Presetting channels automatically

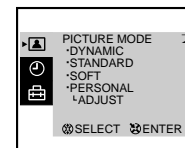
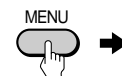
You can preset up to 100 channels.

Automatic presetting is the easiest way to setup your video TV if you want to preset all receivable channels at once.

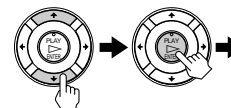
To preset the channels manually, see page 30.



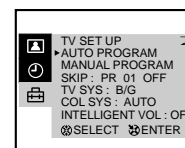
- 1** Press MENU.



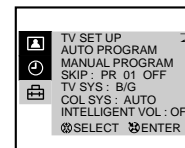
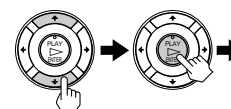
- 2** Press **↑** or **↓** to select **TV SET UP**, then press ENTER.



- 3** Make sure TV SET UP is selected, then press ENTER.



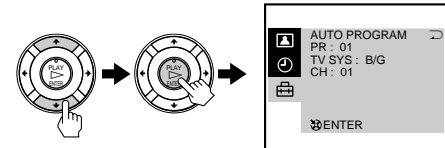
- 4** Press **↑** or **↓** to select TV SYS, then press ENTER.
The selected item turns red.
Press **↑** or **↓** to select the TV system (B/G, I, D/K or M) and press ENTER.



continued

Step 6: Setting the channels (continued)

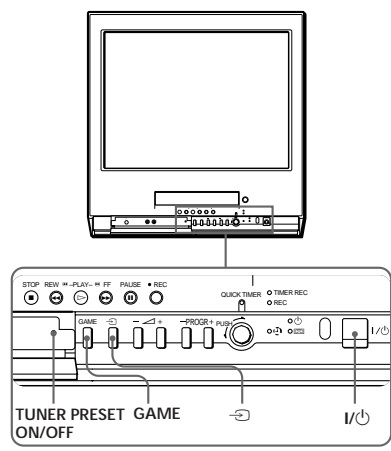
- 5 Press **↑** or **↓** to select AUTO PROGRAM, then press ENTER.



Presetting starts from program position 1. The preset program and channel numbers are displayed on the screen in sequence. When presetting is finished, program position 1 appears again. All available channels are now stored on successive number buttons.

Tip
• To stop automatic channel presetting, press MENU.

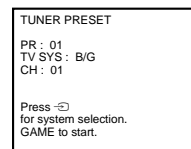
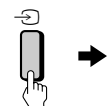
Presetting channels automatically using the TUNER PRESET ON/OFF button on the video TV



- 1 Press **I/ON** to turn on the video TV.
When the TV is in standby mode (the **I/ON** indicator on the video TV is lit in red), press **I/ON**, **PROGR +/-** or a number button on the remote control.

- 2 Press **TUNER PRESET ON/OFF** with a pointed object.
Do not use an item (such as a pencil) that might break off when inserted.

- 3 Press **↺** to select the TV system of the channels which you want to preset.



- 4 Press **GAME**.

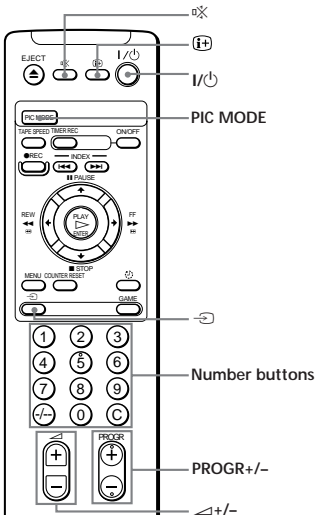
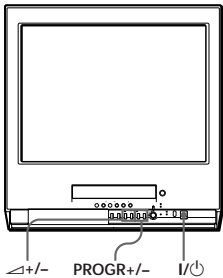


Presetting starts from program position 1. The preset program and channel numbers are displayed on the screen in sequence. When presetting is finished, program position 1 appears again. All available channels are now stored on successive number buttons.

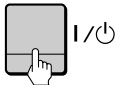
Basic Operations

Watching the TV

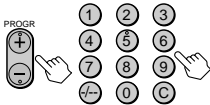
This section explains various functions used while watching the TV. Most operations can be done using the remote control.



- 1 Press I/⏻ to turn on the video TV.
- When the TV is in standby mode (the ⏻ indicator on the video TV is lit in red), press I/⏻ on the remote control.



- 2 Press PROGR +/- or the number buttons to select the TV channel.
- For double digit numbers, press +/-, then the numbers (e.g., for 25, press +/-, then 2 and 5).



Note

- You can also select the channel number directly with the number buttons. Press C (once for regular channels, twice for cable channels), the desired number buttons, then ENTER.

Additional tasks

To	Press
Turn off temporarily	I/⏻ on the remote control. The ⏻ indicator on the video TV lights up in red.
Turn off the main power	I/⏻ on the video TV. The ⏻ indicator on the video TV lights up in orange.
Adjust the volume	⏮ +/-
Mute the sound	⏸
Watch the video input (from a connected VCR, camcorder, etc.)	⏮ to select “-⏮1” or “-⏮2”(see page 48). To return to the TV screen, press ⏮ again.

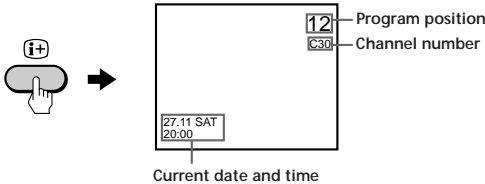
Selecting the picture mode

Press PIC MODE repeatedly until the desired picture mode is selected.

Select	To
DYNAMIC	receive high contrast pictures.
STANDARD	receive normal contrast pictures.
SOFT	receive low contrast pictures.
PERSONAL	receive the latest picture settings from the ADJUST option in the PICTURE MODE menu (see page 35).

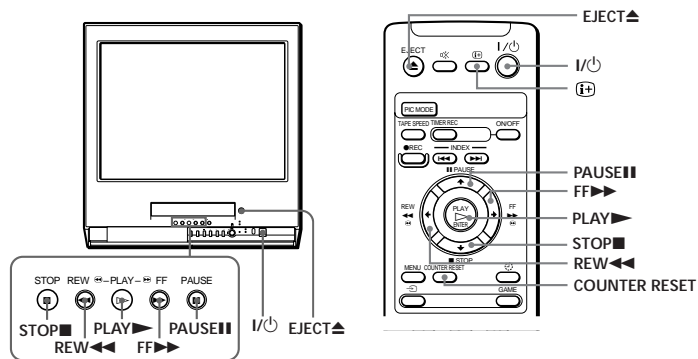
Displaying on-screen information

Press ⓘ to display the following on-screen information. To have the program number and channel number stay on the screen, press ⓘ again. To make the information disappear, press ⓘ until no information is displayed on the screen.



Playing a tape

This section shows you how to play a tape. Other convenient functions you can use while playing a tape are explained in “Additional Operations.”



- 1 Press I/Power to turn on the video TV.
When the TV is in standby mode (the Power indicator on the video TV is lit in red), skip this step.
- 2 Insert a cassette.
If you insert a cassette with its safety tab removed, playback starts automatically.
- 3 Press PLAY. Playback starts. On-screen information is displayed for a few seconds.



Note

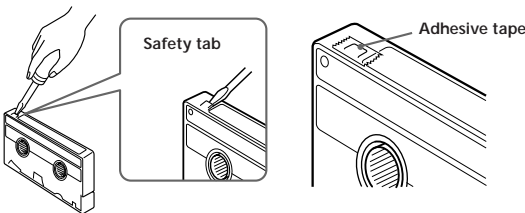
- The picture's color may be affected when playing a MESECAM-recorded tape in the LP mode.

Additional tasks

To	Press
stop playback	STOP ■. The video TV goes back to the normal TV picture.
stop playback for a moment	PAUSE . Press PAUSE again or press PLAY ► to resume playback. If you leave your video TV in pause mode, normal playback resumes after about 5 minutes to prevent tape damage.
search a tape at high speed	REW ◀◀ (rewind) or FF ▶▶ (fast-forward) during playback. To resume normal playback, press PLAY ►.
fast-forward the tape	STOP ■, then press FF ▶▶.
rewind the tape	STOP ■, then press REW ◀◀.
view the picture in fast-forward or rewind mode	and hold FF ▶▶ during fast-forward or REW ◀◀ during rewind. When you release the button, fast-forward or rewind mode is resumed.
eject a cassette	EJECT ▲. You can eject the cassette even if the power is off.

Protecting your cassette against accidental erasure

To prevent accidental erasure, break off the safety tab as illustrated. To record on a cassette without a safety tab, simply cover the tab hole with adhesive tape.

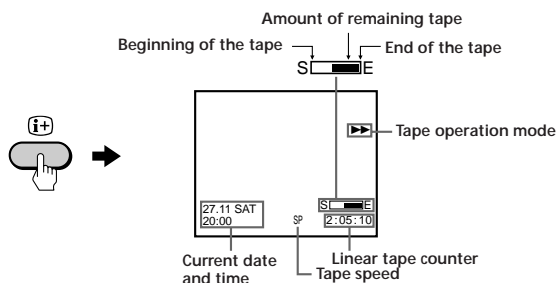


continued

Playing a tape (continued)

Displaying on-screen information

Press **i+** to display the following on-screen information. To show only the amount of remaining tape and the linear tape counter on the screen, press **i+** again. To make the information disappear, press **i+** until no information is displayed on the screen.

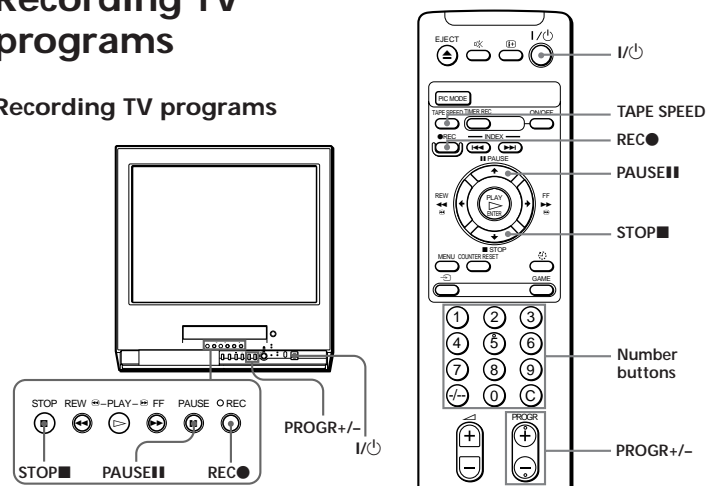


Resetting the tape counter

The tape counter helps you to locate a certain scene after playback. Press COUNTER RESET on the remote control to set the counter to "0:00:00" before playing a tape. The tape counter is automatically reset to zero whenever a cassette is inserted. The video TV keeps counting the length of the tape being played. Note, however, that the tape counter does not count the portions that do not contain any recordings.

Recording TV programs

Recording TV programs

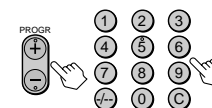


- 1 Press **I/POWER** to turn on the video TV.
If the TV is in standby mode (the **POWER** indicator on the video TV is lit in red), the video TV will turn on automatically when a cassette is inserted.

- 2 Insert a cassette with a safety tab.

- 3 Press **PROGR +/-** or the number buttons to select the program position.

For double digit numbers, press **-/-**, then press the numbers (e.g., for 25, press **-/-**, then 2 and 5).



- 4 Press **TAPE SPEED** to select the tape speed.

For details about the tape speed, see "Selecting the tape speed" on page 21.



continued

Recording TV programs (continued)

5 Press REC ●.

The REC indicator lights up and recording begins.



Note

- You can also select the channel number directly with the number buttons. Press C (once for regular channels, twice for cable channels), the desired number buttons, then ENTER.

To stop recording

Press STOP ■.

When the tape reaches the end, the video TV rewinds the tape automatically to the beginning, then stops. This function does not work when the power of the video TV is off.

To pause recording

You can cut out an unwanted scene during recording with this button.

- Press PAUSE ■■ when an unwanted scene appears on the screen. Recording pauses.
- Press PAUSE ■■ again to release the pause mode at the end of the unwanted scene. Recording resumes from the point set in step 1.

When the recording pause mode lasts for about 5 minutes, the video TV stops recording to prevent tape damage.

Recording with the TV off

Press I/⏻ on the video TV.

The video TV is turned off and the ⏻ indicator lights up. The video TV continues recording.

Selecting the tape speed

The chart below shows the recording/playback time available in each mode.

PAL, MESECAM

Cassette tape	Tape speed setting	
	SP mode	LP mode
E-30	30 min.	1 hr.
E-60	1 hr.	2 hrs.
E-90	1 hr 30 min.	3 hrs.
E-120	2 hrs.	4 hrs.
E-150	2 hrs 30 min.	5 hrs.
E-180	3 hrs.	6 hrs.
E-195	3 hrs 15 min.	6 hrs 30 min.
E-210	3 hrs 30 min.	7 hrs.
E-240	4 hrs.	8 hrs.

NTSC

Cassette tape	Tape speed setting	
	SP mode	EP mode
T-30	30 min.	1 hr 30 min.
T-60	1 hr.	3 hrs.
T-120	2 hrs.	6 hrs.
T-160	2 hrs 40 min.	8 hrs.
T-180	3 hrs.	9 hrs.

Notes

- In the SP mode, the tape runs twice as fast as the LP mode, and three times as fast as the EP mode.
- When a PAL format cassette is used with the NTSC system for recording, the actual recording time is shorter than the standard recording time stipulated on the cassette.

continued

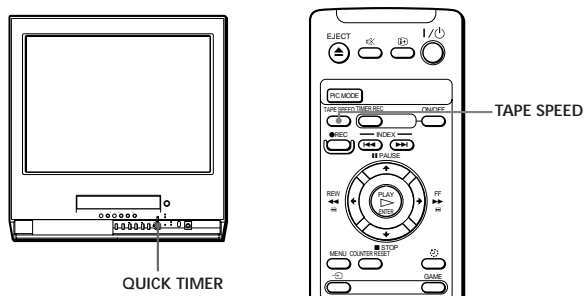
Recording TV programs (continued)


Recording using QUICK-TIMER

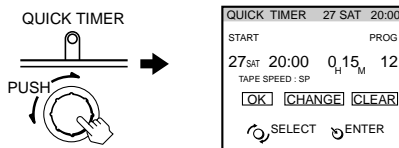
The Quick-Timer recording function allows you to preset your video TV to record one program within a 24-hour period. For setting the Quick-Timer, use QUICK TIMER on the video TV.

Before you begin

- Make sure that the clock is set correctly. If it is not, see "Setting the clock" on page 9.
- Make sure that the loaded cassette has its safety tab intact.
- Make sure that the video TV does not enter the timer recording standby mode (the TIMER REC indicator on the video TV should not be lit.)



- 1 Press QUICK TIMER.
When the TV is in standby mode (the  indicator on the video TV is lit in red), the power is turned on automatically.

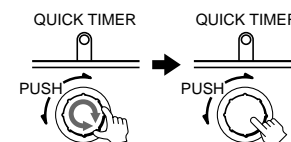


- 2 Press TAPE SPEED to select the tape speed, SP or LP. EP cannot be selected when making timer recordings.



- 3 Turn QUICK TIMER to set the hour of the start time, then press QUICK TIMER.

The hour is set and the minute of the start time turns red.

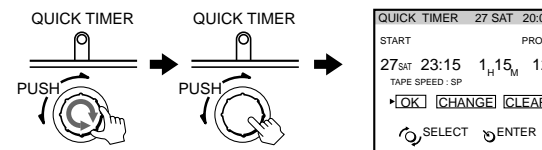


- 4 Turn QUICK TIMER to set the minute of the start time, then press QUICK TIMER.

- 5 Use the QUICK TIMER dial to set the recording time period and program position in the same way as in step 3.

- 6 Turn QUICK TIMER to move the cursor to OK, then press QUICK TIMER.

The Quick Timer indicator lights up and the video TV enters the timer recording standby mode.



continued

Recording TV programs (continued)

The QUICK TIMER button changes the following when turned clockwise or counterclockwise

- When setting the start time:
The hour increases or decreases by one hour.
The minutes increase or decrease by one minute.
- The recording time period:
Increases or decreases by 15 minutes.
- The program position changes as follows:
1... ↔ 8... ↔ 12... ↔ ⏮1 ↔ ⏮2 ↔ 0 ↔ 1

If the QUICK TIMER button is pressed

- When the Quick Timer is not set:
The display for setting the Quick Timer appears.
- When the Quick Timer is set:
The display for checking the Quick Timer appears.
- When the clock is not set:
The CLOCK SET display appears.

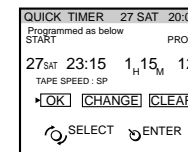
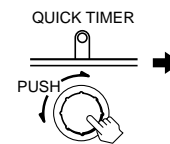
Note

- When you turn QUICK TIMER to move the cursor to OK and then press it, one of the following messages may appear depending on the cassette used. If a message appears, the recording is canceled.
 - Put in a tape. The program recording is canceled.
 - Put in a tape with safety tab. The program recording is canceled.
 - Tape ran out. The program recording is canceled.Insert a cassette for recording, rewind the tape and press QUICK TIMER again.

Changing or canceling the Quick Timer settings

1 Press QUICK TIMER.

The QUICK TIMER display appears.



2 Change the settings:

- (1) Turn QUICK TIMER to move the cursor to CHANGE, then press QUICK TIMER.
- (2) Change the settings according to steps 2 through 7 of "Recording using QUICK-TIMER" on pages 22 and 23.

To cancel the Quick Timer settings

Turn QUICK TIMER to move the cursor to CLEAR, then press QUICK TIMER.

Note

- You cannot cancel the Quick Timer settings with the remote control.


continued

Recording TV programs (continued)

Recording TV programs using the timer

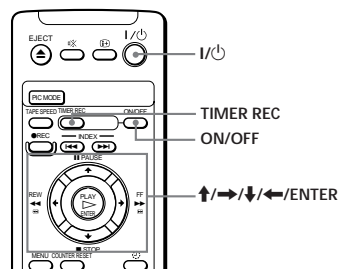
You can preset up to five programs within a one-month period.

Before you begin

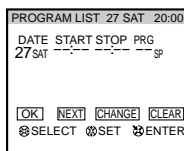
- When the TV is in standby mode (the  indicator on the video TV is lit in red), press I/⏻, PROGR +/- or a number button on the remote control.
- Make sure that the clock is set correctly. If it is not, see "Setting the clock" on page 9.
- Make sure that the loaded cassette has its safety tab intact.
- Make sure that the video TV does not enter the timer recording standby mode (the Quick Timer indicator on the video TV should not be lit.)




Setting the timer

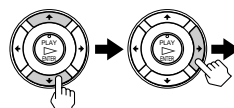
Example: How to record a program broadcast on program position 6 from 21:00 to 22:00 on Sunday, 28th November 1999.



- 1 Press TIMER REC.







- 2 Press  or  to set the date, then press .



- 3 Set the recording start time, recording stop time, program position/input (1 or 2) and tape speed in the same way as in step 2.


- 4 Press ENTER.
The cursor appears at OK.
For daily and weekly recording, see "Daily/weekly recording" below.




- 5 Press  or  to move the cursor to NEXT for other programs, then press ENTER. Repeat steps 2 through 4.
- 6 Press  or  to move the cursor to OK after setting your desired programs, then press ENTER.

The TIMER REC indicator lights up and the video TV enters timer recording standby mode.

If you have made a mistake during timer setting

Press  to go back to the previous position and correct the setting.

Daily/weekly recording

You can preset your video TV to record the same program every day of the week (daily recording) or the same program on the same day every week (weekly recording). Press  in step 2 until the desired setting appears in the "DATE" position. With each press, the setting changes as follows:

27 (today) → MON-SUN → MON-SAT → MON-FRI →
EVERY SAT → EVERY FRI → ... → EVERY SUN → 26 (next month)

To stop timer recording

Press ON/OFF.

Using the video TV before timer recording starts

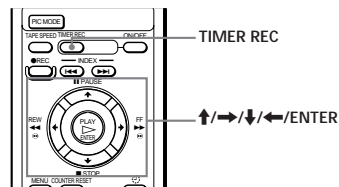
Press ON/OFF to turn off the TIMER REC indicator on the front of the video TV.

Remember to press ON/OFF again to make the TIMER REC indicator light up after setting the recording time.

continued

Recording TV programs (continued)

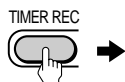
Checking/adding/ changing/canceling the timer settings



1 Press TIMER REC.

To exit the PROGRAM LIST after checking the settings, skip steps 2 and 3.

To add, change or clear the settings, follow steps 2 through 4.



PROGRAM LIST 27 SAT 20:00					
Programmed as below					
DATE	START	STOP	PRG		
28 SUN	21:00	22:00	6 SP		
29 MON	1:30	3:00	79 LP		
MON-SAT	18:50	19:00	02 SP		
EVERY TUE	21:00	23:30	01 LP		
[OK] [ADD] [CHANGE] [CLEAR] [SELECT] [SET] [ENTER]					

2 Press ← or → to move the cursor to ADD, CHANGE or CLEAR, then press ENTER.

3 To add new settings

Follow steps 2 through 4 of “Setting the timer” on page 26.

To change the settings

Press ↑ or ↓ to move the cursor to the setting you want to change, then press ENTER.

Follow steps 2 through 4 of “Setting the timer” on page 26.

To clear the settings

Press ↑ or ↓ to move the cursor to the setting you want to clear, then press ENTER.

The setting is cleared and “--” appears.

4 Press ← or → to move the cursor to OK, then press ENTER.

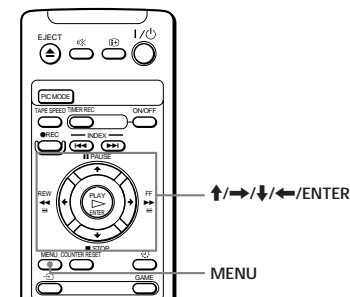
If there are other timer settings on the list, the video TV enters the timer recording standby mode and the TIMER REC indicator lights up. The PROGRAM LIST disappears.

When the timer settings overlap

The second program starts recording only after the first program has finished.

Additional Operations

Adjusting the TV



Adjusting the volume — INTELLIGENT VOL

Some programs are broadcast at different volume levels. By setting this function to ON, the volume level is stabilized and sudden changes in volume can be prevented.

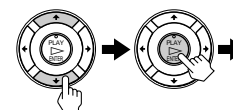
1 Press MENU.

2 Press ↑ or ↓ to select TV SET UP, then press ENTER.

3 Make sure TV SET UP is selected, then press ENTER.

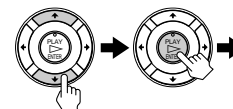
4 Press ↑ or ↓ to select INTELLIGENT VOL, then press ENTER.

The selected item turns red.



TV SET UP	
AUTO PROGRAM	
MANUAL PROGRAM	
SKIP: PR 01 OFF	
TV SYS: B/G	
COL SYS: AUTO	
INTELLIGENT VOL: OFF	
[SELECT] [ENTER]	

5 Press ↑ or ↓ to select ON, then press ENTER.



TV SET UP	
AUTO PROGRAM	
MANUAL PROGRAM	
SKIP: PR 01 OFF	
TV SYS: B/G	
COL SYS: AUTO	
INTELLIGENT VOL: ON	
[SELECT] [ENTER]	

To return to the normal screen


Press MENU.

continued

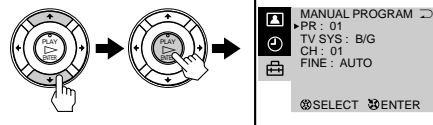
Adjusting the TV (continued)

Presetting channels manually

Preset the channels manually if you want to select channels that were not set automatically or if you want to allocate program numbers to channels one by one.

- 1 Press MENU.
- 2 Press \uparrow or \downarrow to select , then press ENTER.
- 3 Make sure TV SET UP is selected, then press ENTER.

- 4 Press \uparrow or \downarrow to select MANUAL PROGRAM, then press ENTER.



- 5 Select the program number to which you want to assign a channel number.
 - (1) Make sure PR is selected, then press ENTER.
 - (2) Press \uparrow or \downarrow until the program number you want to preset appears on the menu, then press ENTER.

You can also select the program number with the PROGR +/- or number buttons.

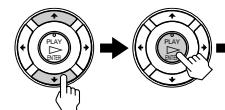
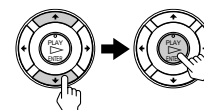
- 6 Select the desired channel.
 - (1) Press \uparrow or \downarrow to select CH, then press ENTER.
 - (2) Press \uparrow or \downarrow until the desired channel number appears on the menu, then press ENTER.

You can also select the channel number directly with the number buttons.

Press C (once for regular channels, twice for cable channels), the desired number buttons, then ENTER.

- 7 If the sound of the desired channel is abnormal, select the appropriate TV system.
 - (1) Press \uparrow or \downarrow to select TV SYS, then press ENTER.
 - (2) Press \uparrow or \downarrow until the sound becomes normal, then press ENTER.

- 8 If you are not satisfied with the picture and sound quality, you may be able to improve them by using the FINE tuning feature.
 - (1) Press \uparrow or \downarrow to select FINE, then press ENTER. The selected item turns red.
 - (2) Press \uparrow or \downarrow to select MANUAL, then press ENTER.
 - (3) Press \uparrow or \downarrow until the picture and sound quality are optimal, then press ENTER.



FINE tuning can be set between -15 and +15.

To return to the normal screen


Press MENU.

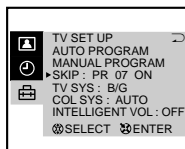
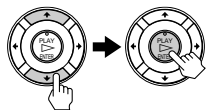
continued

Adjusting the TV (continued)

Skipping program positions

You can skip unused program positions when selecting a program with the PROGR +/- buttons. However, the skipped programs may still be called up when you select them with the number buttons.

- 1 Press MENU.
- 2 Press \uparrow or \downarrow to select , then press ENTER.
- 3 Make sure TV SET UP is selected, then press ENTER.
- 4 Press \uparrow or \downarrow to select SKIP, then press ENTER.
- 5 Press \uparrow or \downarrow until the program position which you want to skip appears on the menu, then press ENTER.
- 6 Press \uparrow or \downarrow to select ON, then press ENTER.




- 7 Press ENTER and repeat steps 5 and 6 to skip other program positions.

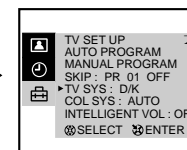
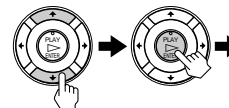
To return to the normal screen

Press MENU.

Adjusting the TV system

If the sound of some channels is abnormal, select the appropriate TV system for your area.

- 1 Press MENU.
- 2 Press \uparrow or \downarrow to select , then press ENTER.
- 3 Make sure TV SET UP is selected, then press ENTER.
- 4 Press \uparrow or \downarrow to select TV SYS, then press ENTER.
- 5 Press \uparrow or \downarrow until the appropriate TV system appears on the menu, then press ENTER.



To return to the normal screen


Press MENU.

continued

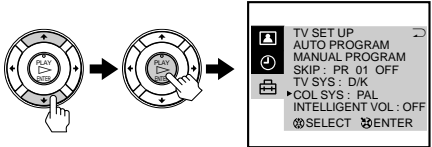
Adjusting the TV (continued)

Adjusting the color system

Normally set the color system to AUTO. However, when the picture has no color, manually select the appropriate color system for your area.

- 1 Press MENU.
- 2 Press ↑ or ↓ to select , then press ENTER.
- 3 Make sure TV SET UP is selected, then press ENTER.
- 4 Press ↑ or ↓ to select COL SYS, then press ENTER.


5 Press ↑ or ↓ until the appropriate color system appears, then press ENTER.

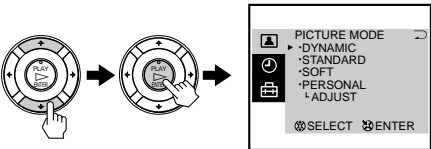


To return to the normal screen
Press MENU.

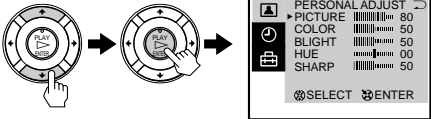
Changing the PICTURE MODE setting

The PICTURE MODE menu allows you to adjust the picture quality.

- 1 Press MENU.
- 2 Press ↑ or ↓ to select , then press ENTER.



- 3 Press ↑ or ↓ to select ADJUST, then press ENTER.



- 4 Press ↑ or ↓ to select the desired item, then press ENTER.
The adjustment bar for the selected item appears at the bottom of the screen.
- 5 Adjust the value according to the following table, then press ENTER.

For	Press ↓ to	Press ↑ to
PICTURE	decrease picture contrast	increase picture contrast
COLOR	decrease color intensity	increase color intensity
BRIGHT	darken the picture	brighten the picture
HUE*	increase red picture tones	increase green picture tones
SHARP	soften the picture	sharpen the picture

*You can adjust HUE for the NTSC color system only.

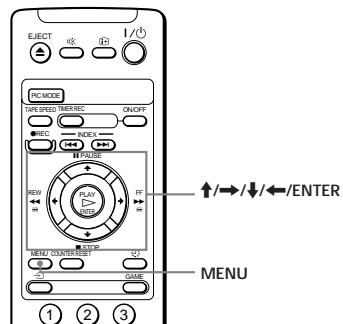
To return to the normal screen
Press MENU.


continued

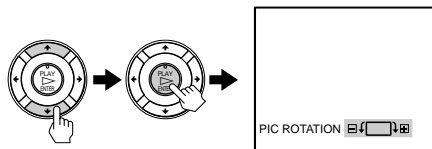
Adjusting the TV (continued)

Adjusting the alignment of the picture

The picture may be out of alignment due to influence from the earth's magnetic field in relation to the position of the TV. You can adjust the angle of the picture if it is not aligned to the TV screen.



- 1 Press MENU.
- 2 Press ↑ or ↓ to select , then press ENTER.
- 3 Press ↑ or ↓ to select PIC ROTATION, then press ENTER.
- 4 Press ↑ or ↓ to align the picture's position, then press ENTER.



Tape options


Adjusting the tracking

Adjusting the tracking automatically

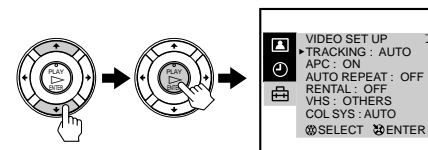
The tracking condition is automatically adjusted when this function is set to AUTO.

Adjusting the tracking manually

If streaks or snow noise appear during normal playback, adjust the tracking.

- 1 Press MENU in playback mode.
- 2 Press ↑ or ↓ to select , then press ENTER.

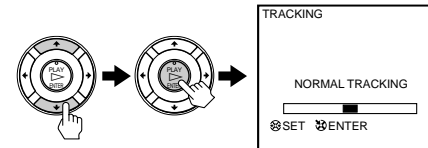
- 3 Press ↑ or ↓ to select VIDEO SET UP, then press ENTER.



- 4 Make sure TRACKING is selected, then press ENTER.

- 5 Press ↑ or ↓ to select MANUAL, then press ENTER.

The tracking meter appears on the screen.



- 6 Press ← or → to reduce picture noise, then press ENTER.

To return to the normal screen

Press MENU.


continued

Tape options (continued)

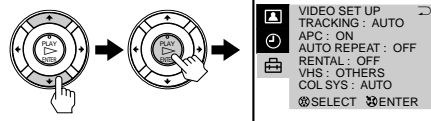
Adjusting with Adaptive Picture Control (APC)

This function allows you to improve playback and recording quality automatically according to the condition of the video tape. This function is set to ON at the factory. To maintain better picture quality, it is advisable to leave the function on. The APC function works on all types of tapes, even on rental tapes.

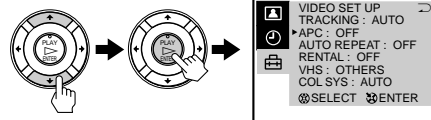
To change the setting

- 1 Press MENU.
- 2 Press \uparrow or \downarrow to select , then press ENTER.
- 3 Press \uparrow or \downarrow to select VIDEO SET UP, then press ENTER.

- 4 Press \uparrow or \downarrow to select APC, then press ENTER.
The selected item turns red.



- 5 Press \uparrow or \downarrow to select OFF, then press ENTER.




To return to the normal screen

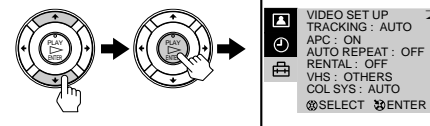
Press MENU.

Playing a tape repeatedly

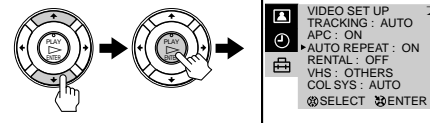
You can play the recorded portion of a tape repeatedly.

- 1 Press MENU.
- 2 Press \uparrow or \downarrow to select , then press ENTER.
- 3 Press \uparrow or \downarrow to select VIDEO SET UP, then press ENTER.

- 4 Press \uparrow or \downarrow to select AUTO REPEAT, then press ENTER.
The selected item turns red.



- 5 Press \uparrow or \downarrow to select ON, then press ENTER.



- 6 Press MENU to return to the normal screen.

- 7 Press PLAY .

Playback starts. When the tape reaches its end, the video TV rewinds the tape to the beginning, then plays it again.




continued

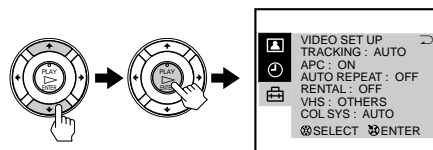
Tape options (continued)

Adjusting the picture for rental tapes

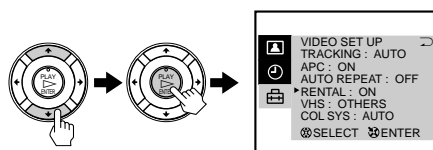
If you are not satisfied with the picture quality while playing a tape, even when APC is on, set RENTAL to ON. It is recommended to use this function when watching rental tapes.

- 1 Press MENU.
- 2 Press **↑** or **↓** to select , then press ENTER.
- 3 Press **↑** or **↓** to select VIDEO SET UP, then press ENTER.

- 4 Press **↑** or **↓** to select RENTAL, then press ENTER.
The selected item turns red.



- 5 Press **↑** or **↓** to select ON, then press ENTER.




To return to the normal screen

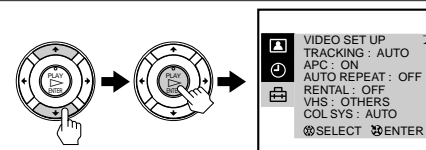
Press MENU.

When connecting to a Sony VCR

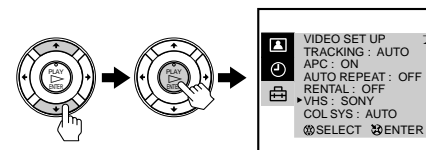
If you use this video TV with another Sony VCR, the remote control may accidentally operate both the video TV and VCR at the same time. To prevent this from happening, set VHS to SONY so that the remote control operates only this video TV.

- 1 Press MENU.
- 2 Press **↑** or **↓** to select , then press ENTER.
- 3 Press **↑** or **↓** to select VIDEO SET UP, then press ENTER.

- 4 Press **↑** or **↓** to select VHS, then press ENTER.
The selected item turns red.



- 5 Press **↑** or **↓** to select SONY, then press ENTER.



To return to the normal screen


Press MENU.

continued

Tape options (continued)

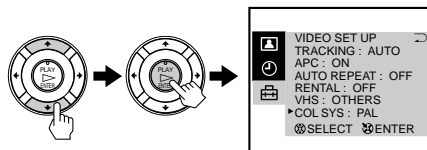
Setting the color system

Normally set COL SYS in the menu to AUTO. If streaks appear during playback, set COL SYS to correspond to the system that the tape was recorded in.

- 1 Press MENU.
- 2 Press \uparrow or \downarrow to select , then press ENTER.
- 3 Press \uparrow or \downarrow to select VIDEO SET UP, then press ENTER.
- 4 Press \uparrow or \downarrow to select COL SYS, then press ENTER.

- 5 Press \uparrow or \downarrow until the corresponding color system appears, then press ENTER.

Select the same color system that the tape was recorded in.

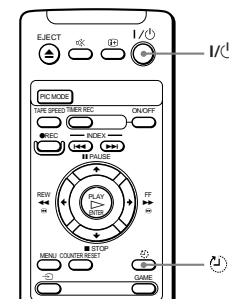


To return to the normal screen

Press MENU.

Switching off automatically —SLEEP

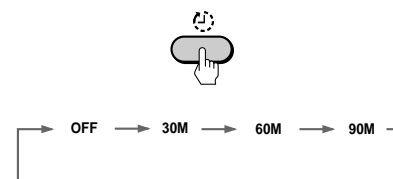
You can automatically switch the video TV into standby mode after a selected time period.



Press .

With each press, the time period (in minutes) changes as illustrated.

One minute before the TV switches into standby mode, the message "SLEEP TIMER: 1M" is displayed on the screen.

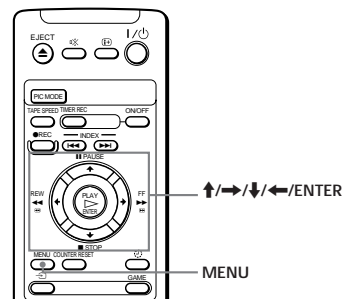



To cancel the timer

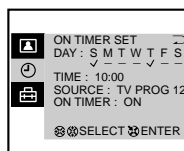
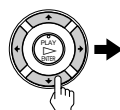
Press  to select OFF or press I/POWER to turn on the power.

Switching on automatically — ON TIMER

You can preset your video TV to automatically switch on at a desired time. You can select the TV program, video playback or input source to be switched on.



- 1 Press MENU.
- 2 Press ↑ or ↓ to select , then press ENTER.
- 3 Make sure ON TIMER SET is selected, then press ENTER.
- 4 Make sure that the cursor appears at DAY, then press ENTER.
The selected item turns red.
- 5 Press ↑, ↓, ← or → to set the timer on (✓) or off (–) for each day of the week.



- 6 Press ↑ or ↓ to select TIME, then press ENTER.
- 7 Press ↑ or ↓ to set the on-time hour and minute, then press ENTER.
- 8 Press ↑ or ↓ to select SOURCE, then press ENTER.

- 9 Press ↑ or ↓ to set the source to be switched on, then press ENTER.

The SOURCE changes as follows.

TV PROG → VCR ► (video playback)




If you select TV PROG, press ↑ or ↓ to change the channel numbers. Then press ENTER again.

- 10 Press ↑ or ↓ to select ON TIMER, then press ENTER.

- 11 Press ↑ or ↓ to set ON TIMER to ON, then press ENTER.

- 12 Press MENU to return to the normal screen.

The  indicator on the video TV lights up.

To cancel the on-timer function

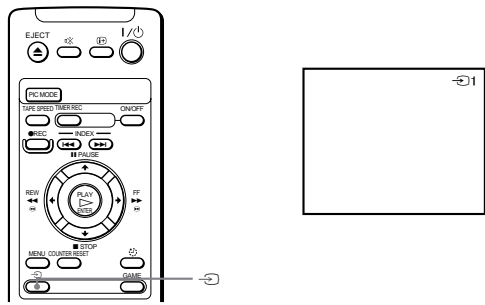
In step 11, press ↑ or ↓ to set ON TIMER to OFF, then press ENTER.

The  indicator on the video TV turns off.

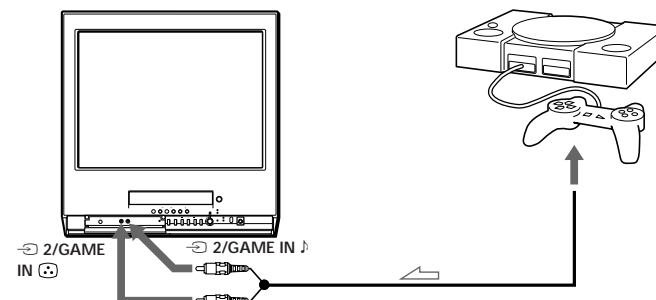
Connecting optional equipment (continued)

To watch the video input signal

Press **1** so that **1** or **2** appears on the screen.

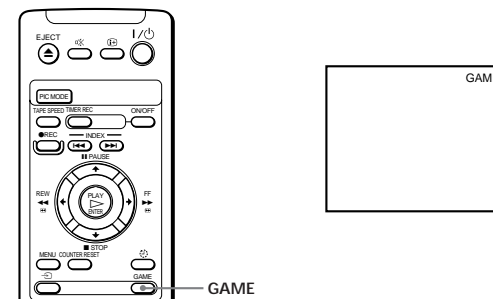


To connect a video game



To display the video game screen

Press **GAME** when the video TV is in standby mode.




To switch to a TV program

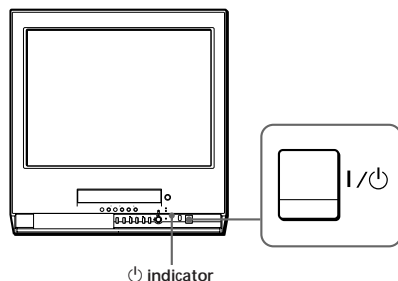
Press the number button on the remote control, **PROGR +/-** or **2** on the video TV or remote control.



To switch to the VCR

Press the **PLAY** button on the video TV or remote control when a cassette is in the video TV.

Self-diagnosis function

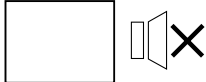









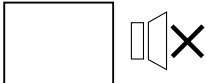



Your video TV is equipped with a self-diagnosis function. If there is a problem with your video TV, the  indicator flashes in red. The number of times the indicator flashes indicates the possible causes.



- 1** Check that the  indicator flashes red once or more in intervals of 3 seconds.
- 2** Count the number of times the indicator flashes.
- 3** Press  to turn off your video TV.
- 4** Inform your nearest Sony service facility about the number of times the indicator flashes.
Be sure to note the model name and serial number located on the rear of your video TV.





Troubleshooting


If you have any problems while viewing your video TV, please check the following troubleshooting guide. If the problem persists, contact your Sony dealer.

Symptom	Possible cause	Solutions
TV section		
No picture/No sound 	The power cord or antenna is not connected.	Check the AC power cord and the antenna connections.
	The video TV is not turned on.	Press  on the video TV. If the standby indicator () is lit in red, press  or a program number button on the remote control.
Good picture/No sound 	The volume level is too low.	Press  + to increase the volume level.
	The sound is muted.	Press  to cancel the muting.
	Headphones are connected to  (headphones) jack.	Disconnect the headphones.
No color or poor color 	The color level setting is too low.	Adjust PICTURE, COLOR and BRIGHT in the PERSONAL ADJUST menu. (page 35)
	The picture setting is inappropriate.	Press PIC MODE to switch the picture setting. (page 15)
	The color system setting is inappropriate.	Display the TV SET UP menu and check the color system (COL SYS) setting. (page 34)
	The antenna direction, position and angle need adjustment.	Adjust the antenna direction, position and angle. Contact a Sony dealer for advice.
Double images or "ghosts" 	Broadcast signals are reflected by nearby mountains or buildings.	Use a highly directional antenna.
	The antenna direction, position and angle need adjustment.	Adjust the antenna direction, position and angle. Contact a Sony dealer for advice.
No picture/No sound from video input sources 	The connecting cord between the video TV and the input sources is disconnected.	Check the connection between the video TV and the input sources.
	Input is not selected correctly.	Press  so that "  " or "  " appears. (page 48)

continued

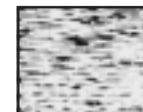
Troubleshooting (continued)

Symptom	Possible cause	Solutions
Good picture/ Abnormal sound 	The TV system setting is inappropriate.	<ul style="list-style-type: none"> If the sound of all the channels is abnormal, display the TV SET UP menu and select the appropriate TV system (TV SYS), then preset the channels again. (pages 11 and 12) If the sound of some channels is abnormal, display the MANUAL PROGRAM menu in the TV SET UP menu and select the appropriate TV system (TV SYS) (page 30).
Snowy picture/ Abnormal sound 	The connection is loose or the cable is damaged. The channel presetting is inappropriate or incomplete. The antenna type is inappropriate. The antenna direction, position and angle need adjustment.	Check the antenna cable and connection on the video TV and at the wall. Display the TV SET UP menu and select MANUAL PROGRAM to manually preset the channel again. Check the antenna type (VHF/ UHF). Contact a Sony dealer for advice. Adjust the antenna direction, position and angle. Contact a Sony dealer for advice.
Dotted lines or stripes 	There is local interference from cars, neon signs, hair dryers, power generators, etc.	<ul style="list-style-type: none"> Do not use a hair dryer or other equipment near the video TV. Adjust the antenna direction, position and angle for minimum interference. Contact a Sony dealer for advice.
Abnormal color patches 	There is magnetic disturbance from external speakers or other equipment.	Locate external speakers or other equipment away from the video TV. Press I/⏻ on the video TV to turn off the video TV for about five minutes, then turn on again.
Clock and timer section		
The clock has stopped and “--:--” is displayed.	The power has been interrupted or the AC power cord is disconnected.	Re-set the clock and timer settings. (page 9)

Symptom	Possible cause	Solutions
Playback section		
Power is on, but the tape does not run.	The safety device has been activated.	Switch off, disconnect the AC power cord, and leave the set for about one minute.
Poor playback picture 	The color system setting is inappropriate.	Display VIDEO SET UP and set the color system (COL SYS) to the setting corresponding to the color system that the tape is recorded in. (page 42)
	The tracking condition is inappropriate.	Adjust the tracking manually. (page 37)
	The video heads are dirty.	Clean the video heads using the Sony T-25CLD, T-25CLDR, or T-25CLW video head cleaning cassette (not supplied). If these cleaning cassettes are not available in your area, have the heads cleaned at your nearest Sony service facility (a standard service fee will be charged). Do not use any commercially available liquid type cleaning cassettes other than Sony's, as it may damage the video heads.
	The video heads may be worn out.	The video heads may have to be replaced. Contact a Sony dealer for advice.
	The tape is worn out.	Use a new tape.
The sound drops out.	The tape is defective.	Use a new tape.

Symptoms caused by contaminated video heads

- Normal picture
- Rough picture
- Unclear picture
- No picture (or black & white screen appears)



initial contamination → terminal

continued

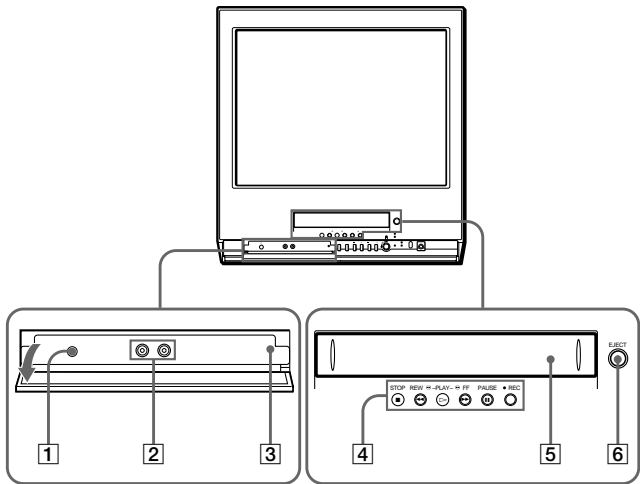
Troubleshooting (continued)

Symptom	Possible cause	Solutions
Recording section		
The cassette is ejected when you press REC ●.	The safety tab of the cassette has been removed.	Cover the safety tab hole with adhesive tape, or use another cassette with its safety tab intact.
Cannot record.	No cassette has been inserted.	Insert a cassette with its safety tab intact.
	The tape is at its end.	Rewind the tape.
Timer recording section		
Cannot program a recording using the timer.	The clock has not been set.	Set the current time and date. (page 9)
The cassette is ejected when you press ON/OFF.	The safety tab of the cassette has been removed.	Cover the tab hole with adhesive tape, or use another cassette with its safety tab in place.
The TIMER REC indicator does not light up even though you press ON/OFF.	No cassette has been inserted.	Insert a cassette with its safety tab intact.
	The tape is at its end.	Rewind the tape.
	No setting is made for timer recording.	Set the program for timer recording. (pages 26 through 27)
Timer recording was not made.	• You did not press ON/OFF. • There has been a power interruption.	—
Others		
A cassette cannot be inserted.	Another cassette is already inserted.	Press EJECT ▲ to eject the cassette.
The remote control does not work.	The batteries are low.	Replace the batteries. (page 4)
	The batteries are installed incorrectly.	Install the batteries with correct polarities. (page 4)
TV cabinet creaks.	Changes in room temperature sometimes make the TV cabinet expand or contract, causing a noise. This does not indicate a malfunction.	—
A small “boom” sound is heard when the video TV is turned on.	The video TV’s demagnetizing function is working. This does not indicate a malfunction.	—

Identifying parts and controls

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

Front panel



1 (headphones) jack

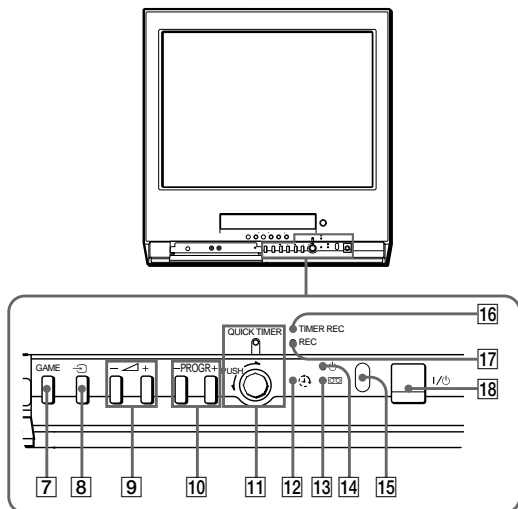
2 2/GAME IN jacks ((video) (audio)) (47, 48)

3 TUNER PRESET ON/OFF button (12, 13)

- 4 Tape transport buttons
STOP ■ button (17, 20)
REW ◀ button (17)
PLAY ▶ button (17)
FF ▶▶ button (17)
PAUSE || button (17, 20)
REC ● button (20)
- 5 Cassette compartment
- 6 EJECT ▲ button (17)

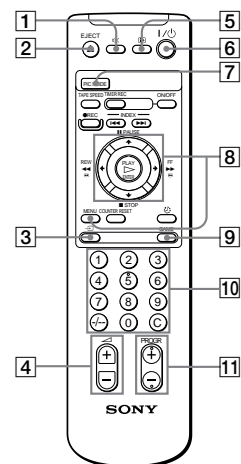
continued

Identifying parts and controls (continued)

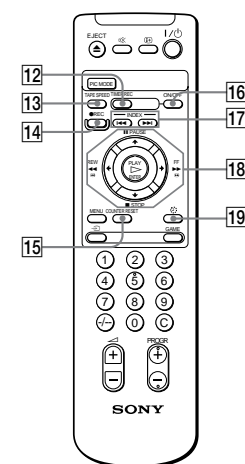


- 7 GAME button (13, 49)
- 8 (input select) button (48)
- 9 (volume) +/- buttons (15)
- 10 PROGR +/- buttons (14)
- 11 QUICK TIMER (22, 23) Indicator
- 12 (ON TIMER) indicator (44)
- 13 (VCR) indicator (20)
- 14 (standby) indicator (14)
- 15 Remote control sensor
- 16 TIMER REC (recording) indicator (27)
- 17 REC (recording) indicator (20)
- 18 (power/standby) switch (14)

Remote control



- 1 (muting) button (15)
- 2 EJECT button (17)
- 3 (input select) button (48)
- 4 (volume) +/- buttons (15)
- 5 (display) button (16, 18)
- 6 (power/standby) button (14)
- 7 PIC MODE (picture mode) button (15)
- 8 Menu operation buttons (26)
MENU button
 buttons
ENTER button
- 9 GAME button (49)
- 10 Number buttons (19)
- 11 PROGR +/- buttons (19)



- 12 TIMER REC (recording) button (26)
- 13 TAPE SPEED button (19)
- 14 REC (recording) button (20)
- 15 COUNTER RESET button (18)
- 16 ON/OFF button (for timer recording) (27)
- 17 INDEX button (46)
- 18 Tape transport buttons
PAUSE button (17, 20)
REW button (17)
STOP button (17, 20)
FF button (17)
PLAY button (17)
- 19 (SEEEP TIMER) button (43)

continued

Getting Started

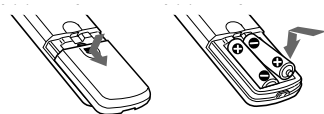
Step 1: Preparation

Check the supplied accessories

When you have taken everything out of the carton, check that you have these items:

- Remote control
- Two R6 (size AA) batteries
- Stabilizer band
- Two clamps
- Two wood screws
- These operating instructions

Insert the batteries into the remote control



Note

- Do not use old batteries or different types of batteries together.

Step 2: Installing the video TV

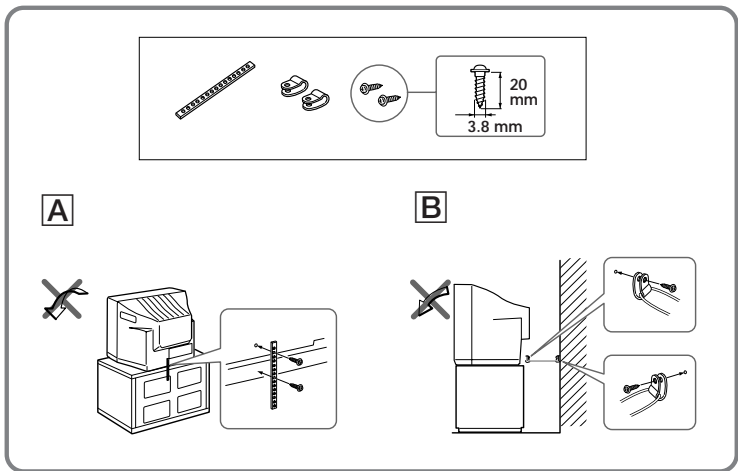
Secure the video TV

To prevent the video TV from falling, secure it using one of the following methods:

- A** With the supplied screws, attach the stabilizer band to the TV stand and to the rear of the video TV using the existing hole.

OR

- B** Pass a cord or chain through the clamps and secure them to the rear of the video TV and a wall or pillar.



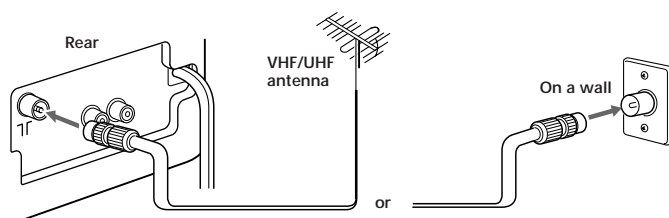
Step 3: Connecting the antenna

For better TV reception and clear recordings, connect an outdoor antenna to your video TV.

Connecting an outdoor antenna

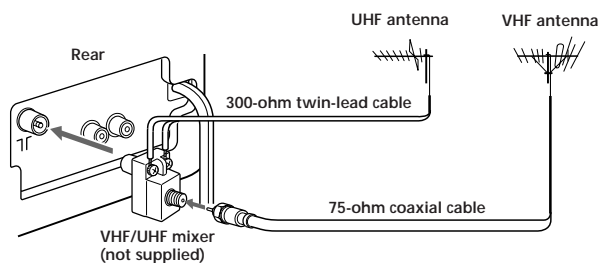
To connect a VHF antenna or a combination VHF/UHF antenna—75-ohm coaxial cable (round)

Attach an IEC antenna connector to the 75-ohm coaxial cable. Plug the connector into the 75 (antenna) socket of the video TV.



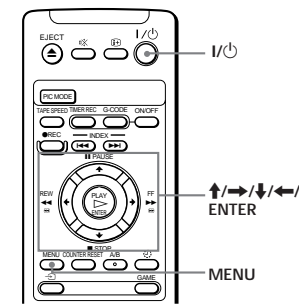
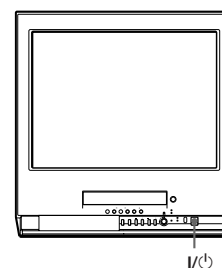
To connect both VHF and UHF antennas

Attach the antenna cable ends to the VHF/UHF mixer (not supplied). Plug the mixer into the 75 (antenna) socket of the video TV.



Step 4: Selecting the language

You can change the menu and on-screen information language to Chinese.

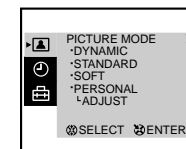
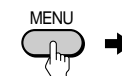


- 1 Press I/⏻ to turn on the video TV.

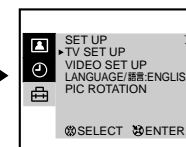
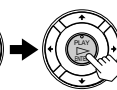
When the TV is in standby mode (the I/⏻ indicator on the video TV is lit in red), press I/⏻, PROGR +/- or a number button on the remote control.



- 2 Press MENU.



- 3 Press ↑ or ↓ to select , then press ENTER.



continued

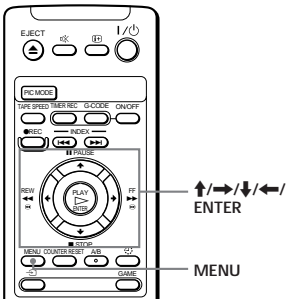
Step 4: Selecting the language (continued)

- 4 Press **↑** or **↓** to select LANGUAGE/ 語言, then press ENTER. The selected item turns red.
- 5 Press **↑** or **↓** to select 中文, then press ENTER. The menu language changes to Chinese.

To return to the normal screen
Press MENU.

Step 5: Setting the clock

You need to set the clock to use timer recording, Quick-Timer recording and on-timer functions.



- 1 Press MENU.
- 2 Press **↑** or **↓** to select **⌚**, then press ENTER.
- 3 Press **↑** or **↓** to select CLOCK SET, then press ENTER.
- 4 Press ENTER. The day section turns red.
- 5 Press **↑** or **↓** to set the day, then press **→**. The month section turns red.

continued

Step 5: Setting the clock (continued)

- 6 Press **↑**, **↓** or **→** to set the month, year, hour and minutes in the same way as in step 5, then press ENTER.
The clock starts working.

To return to the normal screen
Press MENU.

If you have made a mistake while setting the clock

Press **←** to go back to the item to be changed and set the correct digits using **↑** or **↓**, then press **→**.

Note

- If power is interrupted or you disconnect the AC power cord, you have to re-set the clock.

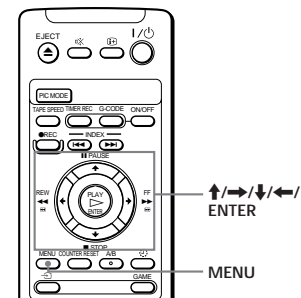
Step 6: Setting the channels

Presetting channels automatically

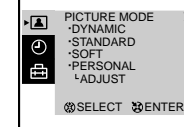
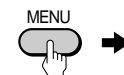
You can preset up to 100 channels.

Automatic presetting is the easiest way to setup your video TV if you want to preset all receivable channels at once.

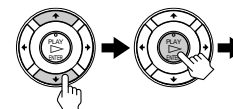
To preset the channels manually, see page 34.



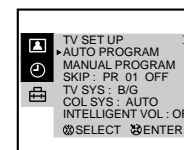
- 1 Press MENU.



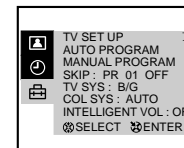
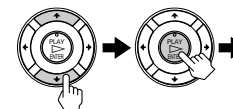
- 2 Press **↑** or **↓** to select **SET UP**, then press ENTER.



- 3 Make sure TV SET UP is selected, then press ENTER.



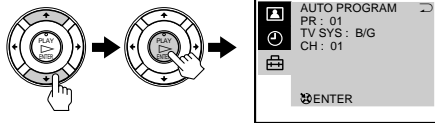
- 4 Press **↑** or **↓** to select TV SYS, then press ENTER.
The selected item turns red.
Press **↑** or **↓** to select the TV system (B/G, I, D/K or M) and press ENTER.



continued

Step 6: Setting the channels (continued)

- 5 Press **↑** or **↓** to select AUTO PROGRAM, then press ENTER.

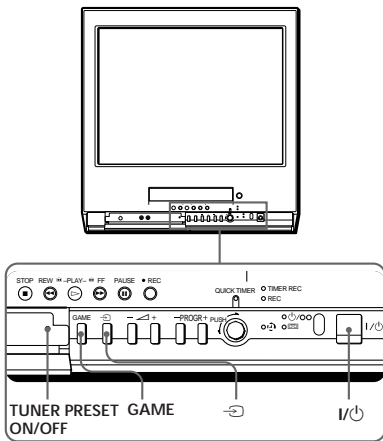


Presetting starts from program position 1. The preset program and channel numbers are displayed on the screen in sequence. When presetting is finished, program position 1 appears again. All available channels are now stored on successive number buttons.

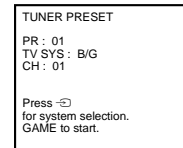
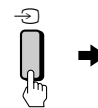
Tip

- To stop automatic channel presetting, press MENU.

Presetting channels automatically using the TUNER PRESET ON/OFF button on the video TV



- 1 Press **I/ON** to turn on the video TV.
When the TV is in standby mode (the **⏻** indicator on the video TV is lit in red), press **I/ON**, **PROGR +/-** or a number button on the remote control.
- 2 Press **TUNER PRESET ON/OFF** with a pointed object.
Do not use an item (such as a pencil) that might break off when inserted.
- 3 Press **⏻** to select the TV system of the channels which you want to preset.



- 4 Press **GAME**.

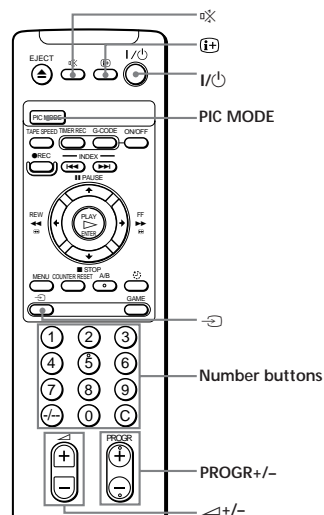
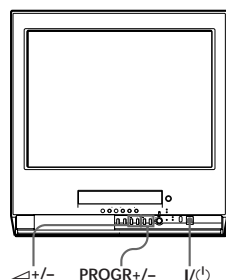


Presetting starts from program position 1. The preset program and channel numbers are displayed on the screen in sequence.

When presetting is finished, program position 1 appears again. All available channels are now stored on successive number buttons.

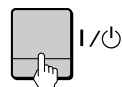
Watching the TV

This section explains various functions used while watching the TV. Most operations can be done using the remote control.



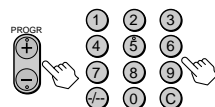
- 1 Press I/⏻ to turn on the video TV.

When the TV is in standby mode (the ⏻ indicator on the video TV is lit in red), press I/⏻ on the remote control.



- 2 Press PROGR +/- or the number buttons to select the TV channel.

For double digit numbers, press +/-, then the numbers (e.g., for 25, press +/-, then 2 and 5).



Note

- You can also select the channel number directly with the number buttons. Press C (once for regular channels, twice for cable channels), the desired number buttons, then ENTER.

Additional tasks

To	Press
Turn off temporarily	I/⏻ on the remote control. The ⏻ indicator on the video TV lights up in red.
Turn off the main power	I/⏻ on the video TV. The ⏻ indicator on the video TV lights up in orange.
Adjust the volume	Δ / -.
Mute the sound	⊗.
Watch the video input (from a connected VCR, camcorder, etc.)	-⏮ to select "-⏮1" or "-⏮2" (see page 53). To return to the TV screen, press -⏮ again.

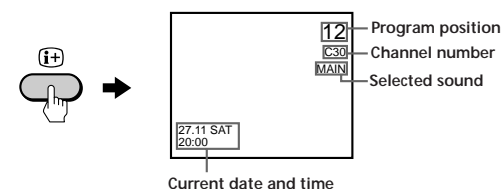
Selecting the picture mode

Press PIC MODE repeatedly until the desired picture mode is selected.

Select	To
DYNAMIC	receive high contrast pictures.
STANDARD	receive normal contrast pictures.
SOFT	receive low contrast pictures.
PERSONAL	receive the latest picture settings from the ADJUST option in the PICTURE MODE menu (see page 39).

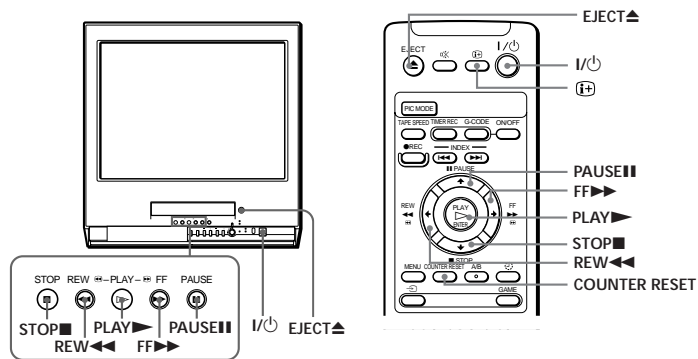
Displaying on-screen information

Press ⓘ to display the following on-screen information. To have the program number and channel number stay on the screen, press ⓘ again. To make the information disappear, press ⓘ until no information is displayed on the screen.



Playing a tape

This section shows you how to play a tape. Other convenient functions you can use while playing a tape are explained in “Additional Operations.”



- 1 Press I/O to turn on the video TV.
When the TV is in standby mode (the I/O indicator on the video TV is lit in red), skip this step.
- 2 Insert a cassette.
If you insert a cassette with its safety tab removed, playback starts automatically.
- 3 Press PLAY ►.
Playback starts. On-screen information is displayed for a few seconds.

Note

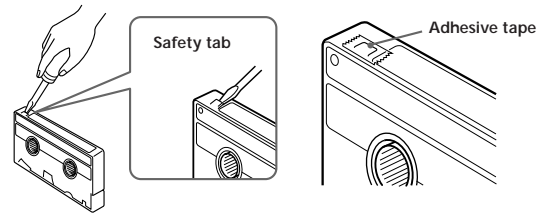
- The picture’s color may be affected when playing a MESECAM-recorded tape in the LP mode.

Additional tasks

To	Press
stop playback	STOP ■. The video TV goes back to the normal TV picture.
stop playback for a moment	PAUSE ■■. Press PAUSE ■■ again or press PLAY ► to resume playback. If you leave your video TV in pause mode, normal playback resumes after about 5 minutes to prevent tape damage.
search a tape at high speed	REW ◀◀ (rewind) or FF ▶▶ (fast-forward) during playback. To resume normal playback, press PLAY ►.
fast-forward the tape	STOP ■, then press FF ▶▶.
rewind the tape	STOP ■, then press REW ◀◀.
view the picture in fast-forward or rewind mode	and hold FF ▶▶ during fast-forward or REW ◀◀ during rewind. When you release the button, fast-forward or rewind mode is resumed.
eject a cassette	EJECT ▲. You can eject the cassette even if the power is off.

Protecting your cassette against accidental erasure

To prevent accidental erasure, break off the safety tab as illustrated. To record on a cassette without a safety tab, simply cover the tab hole with adhesive tape.

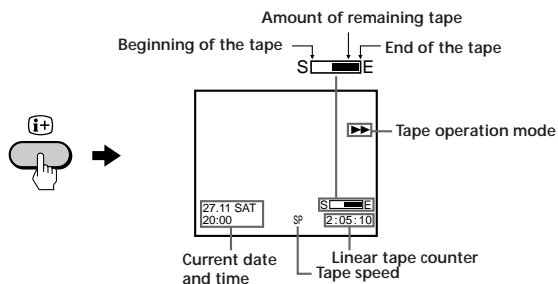


continued

Playing a tape (continued)

Displaying on-screen information

Press **i+** to display the following on-screen information. To show only the amount of remaining tape and the linear tape counter on the screen, press **i+** again. To make the information disappear, press **i+** until no information is displayed on the screen.

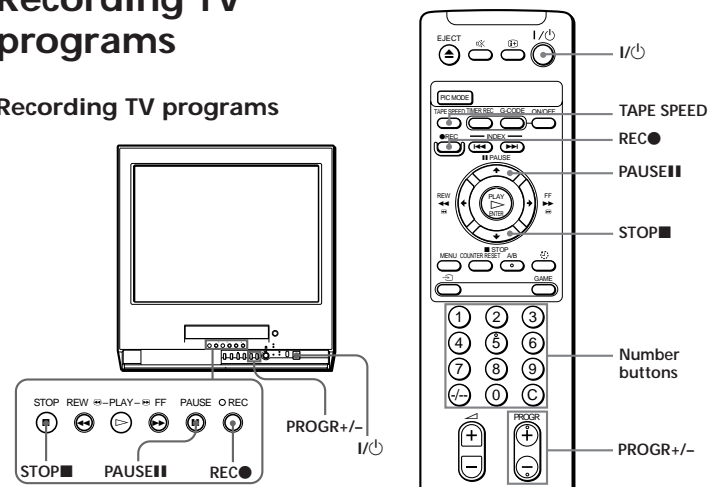


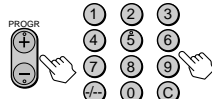

Resetting the tape counter

The tape counter helps you to locate a certain scene after playback. Press COUNTER RESET on the remote control to set the counter to "0:00:00" before playing a tape. The tape counter is automatically reset to zero whenever a cassette is inserted. The video TV keeps counting the length of the tape being played. Note, however, that the tape counter does not count the portions that do not contain any recordings.

Recording TV programs

Recording TV programs



- 1 Press **I/⏻** to turn on the video TV.
If the TV is in standby mode (the **⏻** indicator on the video TV is lit in red), the video TV will turn on automatically when a cassette is inserted.
- 2 Insert a cassette with a safety tab.
- 3 Press **PROGR+/-** or the number buttons to select the program position.
For double digit numbers, press **-/-**, then press the numbers (e.g., for 25, press **-/-**, then 2 and 5).
 
- 4 Press **TAPE SPEED** to select the tape speed.
For details about the tape speed, see "Selecting the tape speed" on page 21.
 

continued

Recording TV programs (continued)

- 5** Press REC ●.
The REC indicator lights up and recording begins.



Note

- You can also select the channel number directly with the number buttons. Press C (once for regular channels, twice for cable channels), the desired number buttons, then ENTER.

To stop recording

Press STOP ■.
When the tape reaches the end, the video TV rewinds the tape automatically to the beginning, then stops. This function does not work when the power of the video TV is off.

To pause recording

You can cut out an unwanted scene during recording with this button.

- Press PAUSE ■■ when an unwanted scene appears on the screen. Recording pauses.
- Press PAUSE ■■ again to release the pause mode at the end of the unwanted scene. Recording resumes from the point set in step 1.

When the recording pause mode lasts for about 5 minutes, the video TV stops recording to prevent tape damage.

Recording with the TV off

Press I/⏻ on the video TV.
The video TV is turned off and the ⏻ indicator lights up.
The video TV continues recording.

Selecting the tape speed

The chart below shows the recording/playback time available in each mode.

PAL, MESECAM

Cassette tape	Tape speed setting	
	SP mode	LP mode
E-30	30 min.	1 hr.
E-60	1 hr.	2 hrs.
E-90	1 hr 30 min.	3 hrs.
E-120	2 hrs.	4 hrs.
E-150	2 hrs 30 min.	5 hrs.
E-180	3 hrs.	6 hrs.
E-195	3 hrs 15 min.	6 hrs 30 min.
E-210	3 hrs 30 min.	7 hrs.
E-240	4 hrs.	8 hrs.

NTSC

Cassette tape	Tape speed setting	
	SP mode	EP mode
T-30	30 min.	1 hr 30 min.
T-60	1 hr.	3 hrs.
T-120	2 hrs.	6 hrs.
T-160	2 hrs 40 min.	8 hrs.
T-180	3 hrs.	9 hrs.

Notes

- In the SP mode, the tape runs twice as fast as the LP mode, and three times as fast as the EP mode.
- When a PAL format cassette is used with the NTSC system for recording, the actual recording time is shorter than the standard recording time stipulated on the cassette.

continued

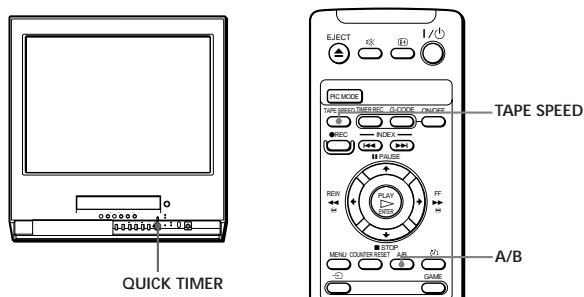
Recording TV programs (continued)

Recording using QUICK-TIMER


The Quick-Timer recording function allows you to preset your video TV to record one program within a 24-hour period. For setting the Quick-Timer, use QUICK TIMER on the video TV.

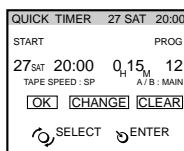
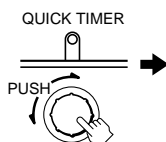
Before you begin

- Make sure that the clock is set correctly. If it is not, see "Setting the clock" on page 9.
- Make sure that the loaded cassette has its safety tab intact.
- Make sure that the video TV does not enter the timer recording standby mode (the TIMER REC indicator on the video TV should not be lit.)



1 Press QUICK TIMER.

When the TV is in standby mode (the  indicator on the video TV is lit in red), the power is turned on automatically.

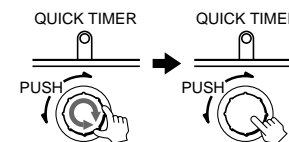


2 Press TAPE SPEED to select the tape speed, SP or LP. EP cannot be selected when making timer recordings.



3 Turn QUICK TIMER to set the hour of the start time, then press QUICK TIMER.

The hour is set and the minute of the start time turns red.



4 Turn QUICK TIMER to set the minute of the start time, then press QUICK TIMER.

5 Use the QUICK TIMER dial to set the recording time period and program position in the same way as in step 3.

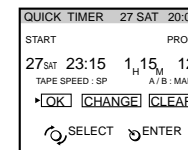
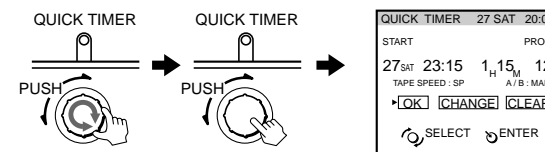
6 Press A/B to select the sound mode MAIN or SUB.

For details on the sound mode, see "Selecting a bilingual program" on page 47.



7 Turn QUICK TIMER to move the cursor to OK, then press QUICK TIMER.

The Quick Timer indicator lights up and the video TV enters the timer recording standby mode.



continued

Recording TV programs (continued)

The QUICK TIMER button changes the following when turned clockwise or counterclockwise

- When setting the start time:
The hour increases or decreases by one hour.
The minutes increase or decrease by one minute.
- The recording time period:
Increases or decreases by 15 minutes.
- The program position changes as follows:
1... ↔ 8... ↔ 12... ↔ -1 ↔ -2 ↔ 0 ↔ 1

If the QUICK TIMER button is pressed

- When the Quick Timer is not set:
The display for setting the Quick Timer appears.
- When the Quick Timer is set:
The display for checking the Quick Timer appears.
- When the clock is not set:
The CLOCK SET display appears.

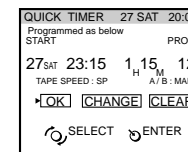
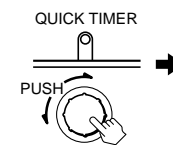
Note

- When you turn QUICK TIMER to move the cursor to OK and then press it, one of the following messages may appear depending on the cassette used. If a message appears, the recording is canceled.
 - Put in a tape. The program recording is canceled.
 - Put in a tape with safety tab. The program recording is canceled.
 - Tape ran out. The program recording is canceled.
- Insert a cassette for recording, rewind the tape and press QUICK TIMER again.

Changing or canceling the Quick Timer settings

1 Press QUICK TIMER.

The QUICK TIMER display appears.



2 Change the settings:

- (1) Turn QUICK TIMER to move the cursor to CHANGE, then press QUICK TIMER.
- (2) Change the settings according to steps 2 through 7 of "Recording using QUICK-TIMER" on pages 22 and 23.

To cancel the Quick Timer settings

Turn QUICK TIMER to move the cursor to CLEAR, then press QUICK TIMER.

Note

- You cannot cancel the Quick Timer settings with the remote control.

continued

Recording TV programs (continued)


Recording TV programs using the G-CODE system

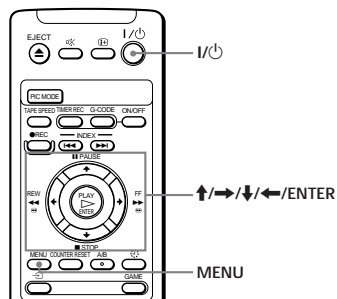
The G-CODE system allows you to simplify the task of programming your video TV to make recordings with the timer. Whenever you want to record a TV program, all you need to do is look up the program's G-CODE number, a number assigned to each program published in the TV section of most newspapers and cable TV listings. Then, just enter the tape speed, sound mode, and the G-CODE number of the program that you want and the video TV is automatically programmed to record that show.

Setting up the G-CODE system

Setting up your video TV involves coordinating the program number (the number you turn to on your video TV to watch a program) with the guide channel number (the number that's assigned to that channel in your program guide). For a listing of the guide channel numbers, look in a program guide for your area that features G-CODE numbers.

Before you begin



- When the TV is in standby mode (the  indicator on the video TV is lit in red), press I/⏻, PROG +/– or a number button on the remote control.

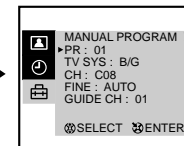
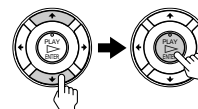


1 Press MENU.



2 Press  or  to select , then press ENTER.

3 Make sure TV SET UP is selected, then press ENTER.



4 Press  or  to select MANUAL PROGRAM, then press ENTER.

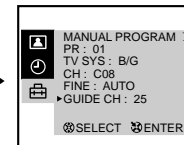
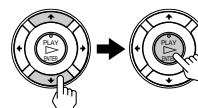




5 Make sure PR is selected, then press ENTER.

6 Press  or  to display the program number to which you want to assign a guide channel number, then press ENTER.

7 Press  or  to select GUIDE CH, then press ENTER.

8 Press  or  to select the guide channel number listed in a program guide for your area, then press ENTER.



9 Press  or  to select PR, then press ENTER and repeat steps 6 through 8 to set the guide channel number of other channels.

To return to the normal screen

Press MENU.

Note


- Do not change the CH (channel) settings here. If you want to reassign the channel settings to the program numbers, see "Presetting channels manually" on page 34.

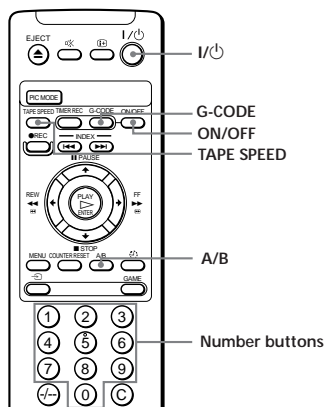
continued

Recording TV programs (continued)

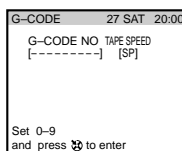
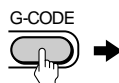
Recording TV programs using the G-CODE system

Before you begin

- When the TV is in standby mode (the  indicator on the video TV is lit in red), press I/⏻, PROGR +/- or a number button on the remote control.
- Make sure that the clock is set correctly. If it is not, see "Setting the clock" on page 9.
- Make sure that the loaded cassette has its safety tab intact.
- Make sure that the video TV does not enter the timer recording standby mode (the QUICK TIMER indicator on the video TV should not be lit.)

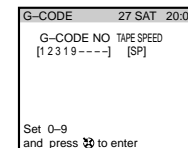
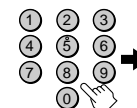


- 1 Press the G-CODE button.



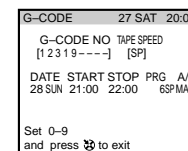
- 2 Press TAPE SPEED to select the tape speed, SP or LP. EP cannot be selected when making timer recordings.

- 3 Press the number buttons to enter the program's G-CODE number.



- 4 Press ENTER.

The date, start and stop times, program position, tape speed and sound mode appears on the TV screen.



If you want to change the sound mode, press A/B to select MAIN or SUB.

- 5 Repeat steps 2 through 4 to enter other settings.

You can set up to five programs in a one month period using both the G-CODE setting and the timer setting.

- 6 Press ENTER.

The TIMER REC indicator on the front of the video TV lights up and the video TV enters timer recording standby mode.



To stop timer recording

Press ON/OFF.

If you make a mistake entering the G-CODE number

Press  and re-enter the correct number.

To use the video TV before timer recording starts

See page 31.

To check/add/change/cancel the timer settings

See page 32.


continued

Recording TV programs (continued)

Recording TV programs using the timer

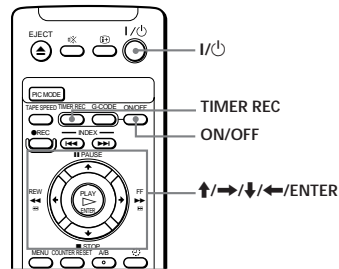
You can preset up to five programs within a one-month period using both the G-CODE setting and the timer setting.

Before you begin

- When the TV is in standby mode (the  indicator on the video TV is lit in red), press I/⏻, PROGR +/- or a number button on the remote control.
- Make sure that the clock is set correctly. If it is not, see "Setting the clock" on page 9.
- Make sure that the loaded cassette has its safety tab intact.
- Make sure that the video TV does not enter the timer recording standby mode (the Quick Timer indicator on the video TV should not be lit.)

Setting the timer




Example: How to record a program broadcast on program position 6 from 21:00 to 22:00 on Sunday, 28th November 1999.

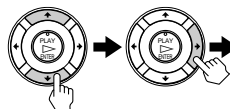


- 1 Press TIMER REC.



PROGRAM LIST 27 SAT 20:00					
DATE	START	STOP	PRG	A/B	
27 SAT	---	---	---	SP	MAIN
[OK] [NEXT] [CHANGE] [CLEAR]					
[SELECT] [SET] [ENTER]					

- 2 Press  or  to set the date, then press .





PROGRAM LIST 27 SAT 20:00					
DATE	START	STOP	PRG	A/B	
28 SUN	---	---	---	SP	MAIN
[OK] [NEXT] [CHANGE] [CLEAR]					
[SELECT] [SET] [ENTER]					



- 3 Set the recording start time, recording stop time, program position/input (1 or 2), tape speed and sound mode in the same way as in step 2.

- 4 Press ENTER.
The cursor appears at OK.
For daily and weekly recording, see "Daily/weekly recording" below.



PROGRAM LIST 27 SAT 20:00					
DATE	START	STOP	PRG	A/B	
28 SUN	21:00	22:00	6SP	MAIN	
[OK] [NEXT] [CHANGE] [CLEAR]					
[SELECT] [SET] [ENTER]					


- 5 Press  or  to move the cursor to NEXT for other programs, then press ENTER. Repeat steps 2 through 4.

- 6 Press  or  to move the cursor to OK after setting your desired programs, then press ENTER.
The TIMER REC indicator lights up and the video TV enters timer recording standby mode.

If you have made a mistake during timer setting

Press  to go back to the previous position and correct the setting.

Daily/weekly recording

You can preset your video TV to record the same program every day of the week (daily recording) or the same program on the same day every week (weekly recording). Press  in step 2 until the desired setting appears in the "DATE" position. With each press, the setting changes as follows:

27 (today) → MON-SUN → MON-SAT → MON-FRI →
EVERY SAT → EVERY FRI → ... → EVERY SUN → 26 (next month)

To stop timer recording

Press ON/OFF.

Using the video TV before timer recording starts

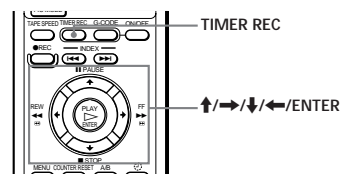
Press ON/OFF to turn off the TIMER REC indicator on the front of the video TV.

Remember to press ON/OFF again to make the TIMER REC indicator light up after setting the recording time.

continued

Recording TV programs (continued)

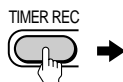
Checking/adding/ changing/canceling the timer or G-CODE settings



1 Press TIMER REC.

To exit the PROGRAM LIST after checking the settings, skip steps 2 and 3.

To add, change or clear the settings, follow steps 2 through 4.



PROGRAM LIST 27 SAT 20:00					
Programmed as below					
DATE	START	STOP	PRG	A/B	
28 SUN	21:00	22:00	6SPMAIN		
29 MON	1:30	3:00	79LP SUB		
MON/SAT	18:50	19:00	02SPMAIN		
EVERY TUE	21:00	23:30	01LP SUB		
[OK] [ADD] [CHANGE] [CLEAR] [SELECT] [SET] [ENTER]					

2 Press ← or → to move the cursor to ADD, CHANGE or CLEAR, then press ENTER.

3 To add new settings Follow steps 2 through 4 of "Setting the timer" on page 30.

To change the settings

Press ↑ or ↓ to move the cursor to the setting you want to change, then press ENTER.

Follow steps 2 through 4 of "Setting the timer" on page 30.

To clear the settings

Press ↑ or ↓ to move the cursor to the setting you want to clear, then press ENTER.

The setting is cleared and "--" appears.

4 Press ← or → to move the cursor to OK, then press ENTER.

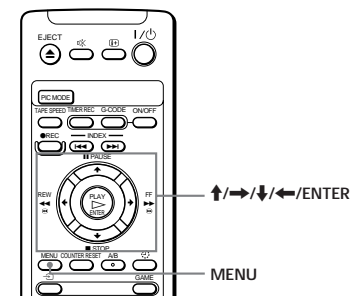
If there are other timer settings on the list, the video TV enters the timer recording standby mode and the TIMER REC indicator lights up. The PROGRAM LIST disappears.

When the timer settings overlap

The second program starts recording only after the first program has finished.

Additional Operations

Adjusting the TV



Adjusting the volume — INTELLIGENT VOL

Some programs are broadcast at different volume levels. By setting this function to ON, the volume level is stabilized and sudden changes in volume can be prevented.

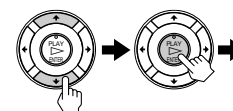
1 Press MENU.

2 Press ↑ or ↓ to select , then press ENTER.

3 Make sure TV SET UP is selected, then press ENTER.

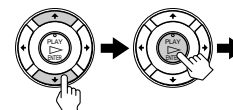
4 Press ↑ or ↓ to select INTELLIGENT VOL, then press ENTER.

The selected item turns red.



TV SET UP	
AUTO PROGRAM	
MANUAL PROGRAM	
SKIP : PR 01 OFF	
TV SYS : B/G	
COL SYS : AUTO	
INTELLIGENT VOL : OFF	
[SELECT] [ENTER]	

5 Press ↑ or ↓ to select ON, then press ENTER.



TV SET UP	
AUTO PROGRAM	
MANUAL PROGRAM	
SKIP : PR 01 OFF	
TV SYS : B/G	
COL SYS : AUTO	
INTELLIGENT VOL : ON	
[SELECT] [ENTER]	

To return to the normal screen


Press MENU.

continued

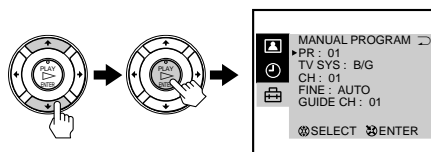
Adjusting the TV (continued)

Presetting channels manually

Preset the channels manually if you want to select channels that were not set automatically or if you want to allocate program numbers to channels one by one.

- 1 Press MENU.
- 2 Press \uparrow or \downarrow to select , then press ENTER.
- 3 Make sure TV SET UP is selected, then press ENTER.

- 4 Press \uparrow or \downarrow to select MANUAL PROGRAM, then press ENTER.



- 5 Select the program number to which you want to assign a channel number.
 - (1) Make sure PR is selected, then press ENTER.
 - (2) Press \uparrow or \downarrow until the program number you want to preset appears on the menu, then press ENTER.

You can also select the program number with the PROGR +/- or number buttons.

- 6 Select the desired channel.
 - (1) Press \uparrow or \downarrow to select CH, then press ENTER.
 - (2) Press \uparrow or \downarrow until the desired channel number appears on the menu, then press ENTER.

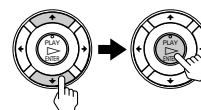
You can also select the channel number directly with the number buttons.

Press C (once for regular channels, twice for cable channels), the desired number buttons, then ENTER.

- 7 If the sound of the desired channel is abnormal, select the appropriate TV system.
 - (1) Press \uparrow or \downarrow to select TV SYS, then press ENTER.
 - (2) Press \uparrow or \downarrow until the sound becomes normal, then press ENTER.

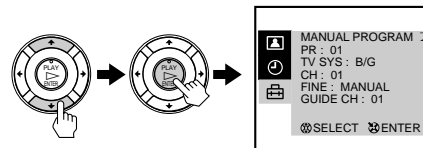
- 8 If you are not satisfied with the picture and sound quality, you may be able to improve them by using the FINE tuning feature.

- (1) Press \uparrow or \downarrow to select FINE, then press ENTER. The selected item turns red.
- (2) Press \uparrow or \downarrow to select MANUAL, then press ENTER.



- (3) Press \uparrow or \downarrow until the picture and sound quality are optimal, then press ENTER.

FINE tuning can be set between -15 and +15.



- 9 If the program position is not matched with its correct G-CODE guide channel, set the guide channel.

For a listing of the guide channel numbers, look in a program guide for your area that features G-CODE numbers.

- (1) Press \uparrow or \downarrow to select GUIDE CH, then press ENTER.
- (2) Press \uparrow or \downarrow until the appropriate guide channel appears, then press ENTER.

To return to the normal screen


Press MENU.

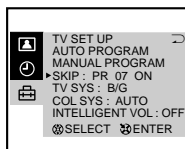
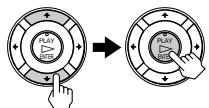
continued

Adjusting the TV (continued)

Skipping program positions

You can skip unused program positions when selecting a program with the PROGR +/- buttons. However, the skipped programs may still be called up when you select them with the number buttons.

- 1 Press MENU.
- 2 Press \uparrow or \downarrow to select , then press ENTER.
- 3 Make sure TV SET UP is selected, then press ENTER.
- 4 Press \uparrow or \downarrow to select SKIP, then press ENTER.
- 5 Press \uparrow or \downarrow until the program position which you want to skip appears on the menu, then press ENTER.
- 6 Press \uparrow or \downarrow to select ON, then press ENTER.
- 7 Press ENTER and repeat steps 5 and 6 to skip other program positions.




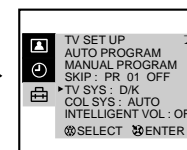
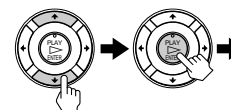
To return to the normal screen

Press MENU.

Adjusting the TV system

If the sound of some channels is abnormal, select the appropriate TV system for your area.

- 1 Press MENU.
- 2 Press \uparrow or \downarrow to select , then press ENTER.
- 3 Make sure TV SET UP is selected, then press ENTER.
- 4 Press \uparrow or \downarrow to select TV SYS, then press ENTER.
- 5 Press \uparrow or \downarrow until the appropriate TV system appears on the menu, then press ENTER.



To return to the normal screen


Press MENU.

continued

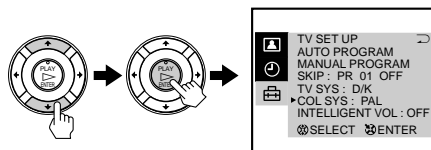
Adjusting the TV (continued)

Adjusting the color system

Normally set the color system to AUTO. However, when the picture has no color, manually select the appropriate color system for your area.

- 1 Press MENU.
- 2 Press \uparrow or \downarrow to select , then press ENTER.
- 3 Make sure TV SET UP is selected, then press ENTER.
- 4 Press \uparrow or \downarrow to select COL SYS, then press ENTER.

- 5 Press \uparrow or \downarrow until the appropriate color system appears, then press ENTER.




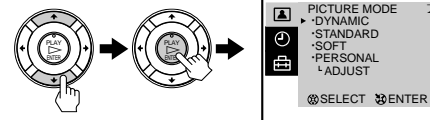
To return to the normal screen

Press MENU.

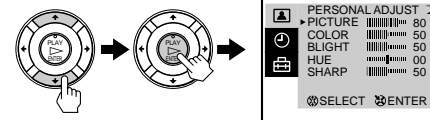
Changing the PICTURE MODE setting

The PICTURE MODE menu allows you to adjust the picture quality.

- 1 Press MENU.
- 2 Press \uparrow or \downarrow to select , then press ENTER.



- 3 Press \uparrow or \downarrow to select ADJUST, then press ENTER.



- 4 Press \uparrow or \downarrow to select the desired item, then press ENTER.
The adjustment bar for the selected item appears at the bottom of the screen.

- 5 Adjust the value according to the following table, then press ENTER.

For	Press \downarrow to	Press \uparrow to
PICTURE	decrease picture contrast	increase picture contrast
COLOR	decrease color intensity	increase color intensity
BRIGHT	darken the picture	brighten the picture
HUE*	increase red picture tones	increase green picture tones
SHARP	soften the picture	sharpen the picture

*You can adjust HUE for the NTSC color system only.

To return to the normal screen

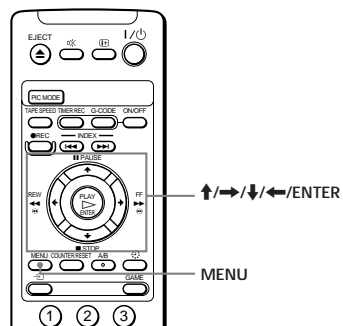
Press MENU.


continued

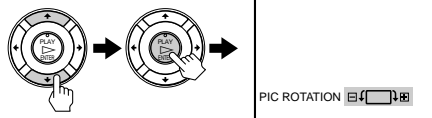
Adjusting the TV (continued)

Adjusting the alignment of the picture

The picture may be out of alignment due to influence from the earth's magnetic field in relation to the position of the TV. You can adjust the angle of the picture if it is not aligned to the TV screen.



- 1 Press MENU.
- 2 Press ↑ or ↓ to select , then press ENTER.
- 3 Press ↑ or ↓ to select PIC ROTATION, then press ENTER.
- 4 Press ↑ or ↓ to align the picture's position, then press ENTER.



Tape options


Adjusting the tracking

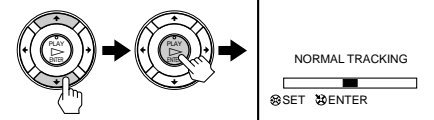
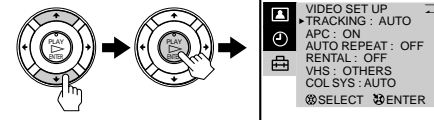
Adjusting the tracking automatically

The tracking condition is automatically adjusted when this function is set to AUTO.

Adjusting the tracking manually

If streaks or snow noise appear during normal playback, adjust the tracking.

- 1 Press MENU in playback mode.
- 2 Press ↑ or ↓ to select , then press ENTER.
- 3 Press ↑ or ↓ to select VIDEO SET UP, then press ENTER.
- 4 Make sure TRACKING is selected, then press ENTER.
- 5 Press ↑ or ↓ to select MANUAL, then press ENTER.
The tracking meter appears on the screen.
- 6 Press ← or → to reduce picture noise, then press ENTER.



To return to the normal screen

Press MENU.


continued

Tape options (continued)

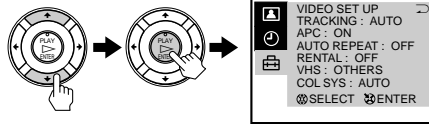
Adjusting with Adaptive Picture Control (APC)

This function allows you to improve playback and recording quality automatically according to the condition of the video tape. This function is set to ON at the factory. To maintain better picture quality, it is advisable to leave the function on. The APC function works on all types of tapes, even on rental tapes.

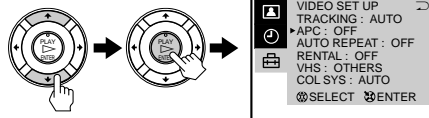
To change the setting

- 1 Press MENU.
- 2 Press \uparrow or \downarrow to select , then press ENTER.
- 3 Press \uparrow or \downarrow to select VIDEO SET UP, then press ENTER.

- 4 Press \uparrow or \downarrow to select APC, then press ENTER.
The selected item turns red.



- 5 Press \uparrow or \downarrow to select OFF, then press ENTER.




To return to the normal screen

Press MENU.

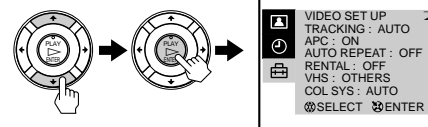
Playing a tape repeatedly

You can play the recorded portion of a tape repeatedly.

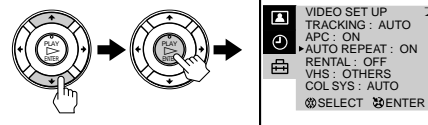
- 1 Press MENU.
- 2 Press \uparrow or \downarrow to select , then press ENTER.
- 3 Press \uparrow or \downarrow to select VIDEO SET UP, then press ENTER.

- 4 Press \uparrow or \downarrow to select AUTO REPEAT, then press ENTER.

The selected item turns red.



- 5 Press \uparrow or \downarrow to select ON, then press ENTER.



- 6 Press MENU to return to the normal screen.

- 7 Press PLAY .

Playback starts. When the tape reaches its end, the video TV rewinds the tape to the beginning, then plays it again.




continued

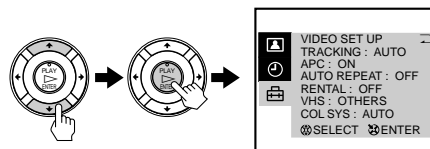
Tape options (continued)

Adjusting the picture for rental tapes

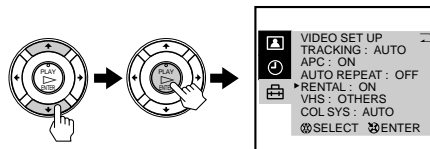
If you are not satisfied with the picture quality while playing a tape, even when APC is on, set RENTAL to ON. It is recommended to use this function when watching rental tapes.

- 1 Press MENU.
- 2 Press \uparrow or \downarrow to select , then press ENTER.
- 3 Press \uparrow or \downarrow to select VIDEO SET UP, then press ENTER.

- 4 Press \uparrow or \downarrow to select RENTAL, then press ENTER.
The selected item turns red.



- 5 Press \uparrow or \downarrow to select ON, then press ENTER.




To return to the normal screen

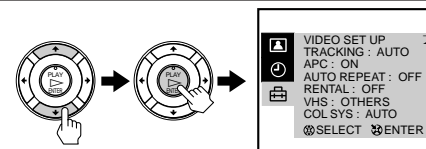
Press MENU.

When connecting to a Sony VCR

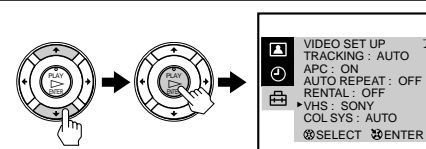
If you use this video TV with another Sony VCR, the remote control may accidentally operate both the video TV and VCR at the same time. To prevent this from happening, set VHS to SONY so that the remote control operates only this video TV.

- 1 Press MENU.
- 2 Press \uparrow or \downarrow to select , then press ENTER.
- 3 Press \uparrow or \downarrow to select VIDEO SET UP, then press ENTER.

- 4 Press \uparrow or \downarrow to select VHS, then press ENTER.
The selected item turns red.



- 5 Press \uparrow or \downarrow to select SONY, then press ENTER.



To return to the normal screen


Press MENU.

continued

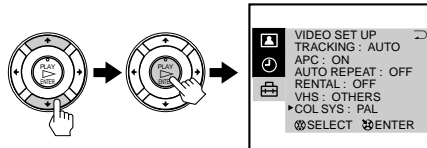
Tape options (continued)

Setting the color system

Normally set COL SYS in the menu to AUTO. If streaks appear during playback, set COL SYS to correspond to the system that the tape was recorded in.

- 1 Press MENU.
- 2 Press \uparrow or \downarrow to select , then press ENTER.
- 3 Press \uparrow or \downarrow to select VIDEO SET UP, then press ENTER.
- 4 Press \uparrow or \downarrow to select COL SYS, then press ENTER.
- 5 Press \uparrow or \downarrow until the corresponding color system appears, then press ENTER.

Select the same color system that the tape was recorded in.




To return to the normal screen

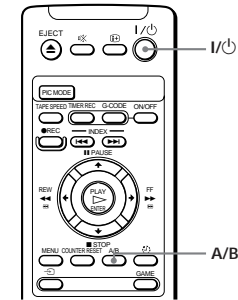
Press MENU.

Selecting a bilingual program

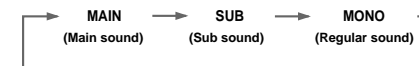
You can listen to the sub-channel of NICAM bilingual I system programs.

Press A/B repeatedly until you receive the sound mode you want.

The on-screen display changes to show the selected sound mode and the  indicator on the video TV lights up in red.



Broadcasting	On-screen display (Selected sound)
NICAM bilingual I	

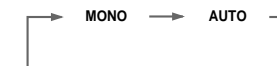


Notes

- Bilingual broadcasts can be received only in the NICAM bilingual I television system.
- Only the selected sound can be recorded.

If the sound is distorted or noisy when receiving a monaural program through the (antenna) terminal

Press A/B repeatedly until "MONO" appears on the screen. To cancel the monaural sound setting, press A/B again until "AUTO" appears on the screen.

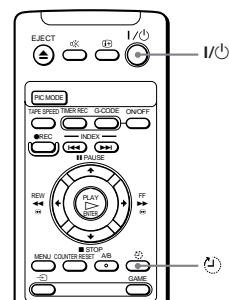


Note

- The "MONO" or "AUTO" setting is memorized for each program position.

Switching off automatically —SLEEP

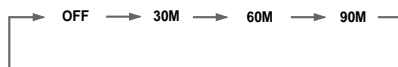
You can automatically switch the video TV into standby mode after a selected time period.



Press .

With each press, the time period (in minutes) changes as illustrated.

One minute before the TV switches into standby mode, the message "SLEEP TIMER: 1M" is displayed on the screen.

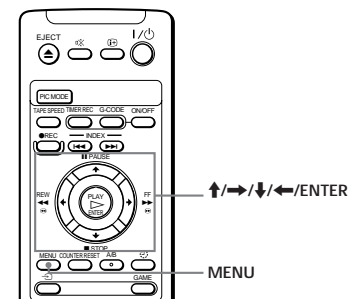















To cancel the timer

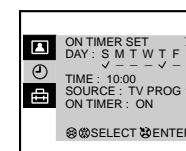
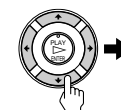
Press  to select OFF or press I/⏻ to turn on the power.

Switching on automatically — ON TIMER

You can preset your video TV to automatically switch on at a desired time. You can select the TV program, video playback or input source to be switched on.



- 1 Press MENU.
- 2 Press  or  to select , then press ENTER.
- 3 Make sure ON TIMER SET is selected, then press ENTER.
- 4 Make sure that the cursor appears at DAY, then press ENTER. The selected item turns red.
- 5 Press , ,  or  to set the timer on (✓) or off (–) for each day of the week.
- 6 Press  or  to select TIME, then press ENTER.
- 7 Press  or  to set the on-time hour and minute, then press ENTER.
- 8 Press  or  to select SOURCE, then press ENTER.



continued

Switching on automatically - ON TIMER (continued)

- 9 Press **↑** or **↓** to set the source to be switched on, then press ENTER.

The SOURCE changes as follows.

TV PROG → VCR ► (video playback)



If you select TV PROG, press **↑** or **↓** to change the channel numbers. Then press ENTER again.

- 10 Press **↑** or **↓** to select ON TIMER, then press ENTER.


- 11 Press **↑** or **↓** to set ON TIMER to ON, then press ENTER.

- 12 Press MENU to return to the normal screen.

The  indicator on the video TV lights up.

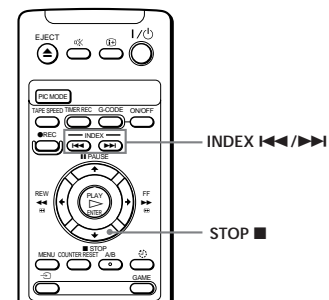
To cancel the on-timer function

In step 11, press **↑** or **↓** to set ON TIMER to OFF, then press ENTER.

The  indicator on the video TV turns off.

Searching using the index function

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



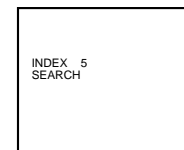
- 1 Insert an indexed tape.

- 2 Press INDEX **I<<>/>>I** repeatedly to specify how many index signals ahead or behind you want to search.

To search ahead, press INDEX **>>>I**.

To search backwards, press INDEX **I<<<**.

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



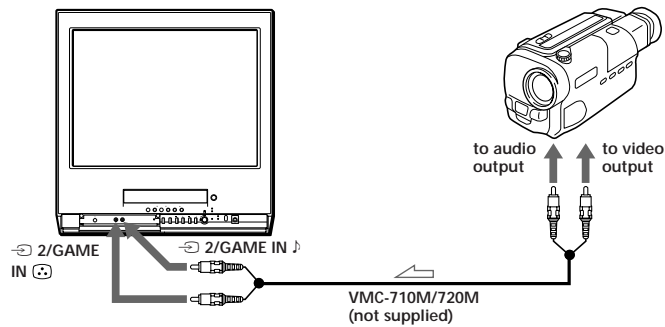
To stop searching

Press STOP **■**.

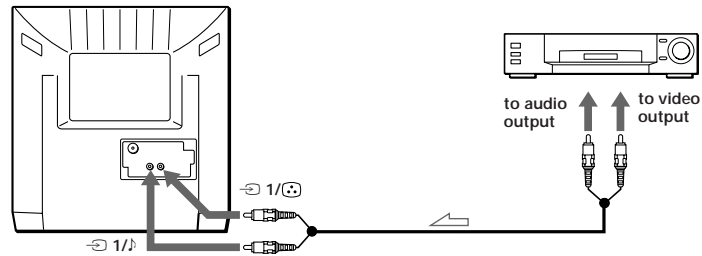
Connecting optional equipment

Watching and recording the picture input from optional equipment

To connect a video camera

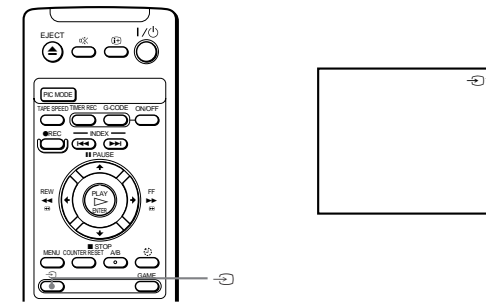


To connect a VCR



To watch the video input signal

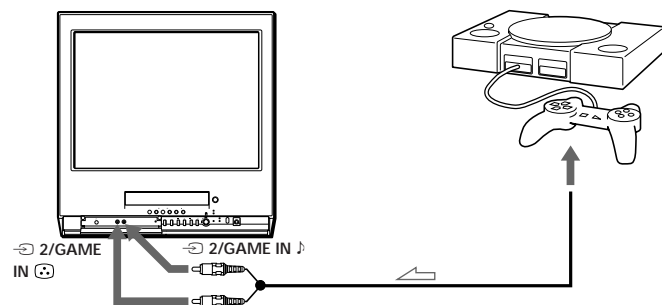
Press so that 1 or 2 appears on the screen.



continued

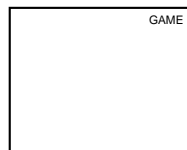
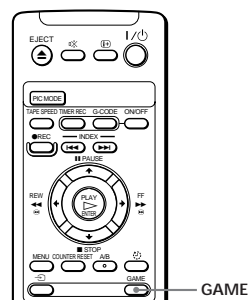
Connecting optional equipment (continued)

To connect a video game



To display the video game screen

Press GAME when the video TV is in standby mode.



To switch to a TV program

Press the number button on the remote control, PROGR +/- or on the video TV or remote control.

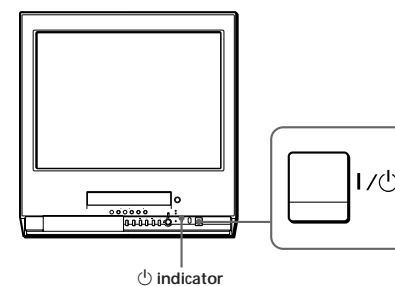
To switch to the VCR

Press the PLAY button on the video TV or remote control when a cassette is in the video TV.

Additional Information

Self-diagnosis function

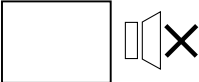
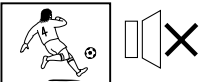


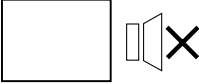
Your video TV is equipped with a self-diagnosis function. If there is a problem with your video TV, the indicator flashes in red. The number of times the indicator flashes indicates the possible causes.







- 1 Check that the indicator flashes red once or more in intervals of 3 seconds.
- 2 Count the number of times the indicator flashes.
- 3 Press to turn off your video TV.
- 4 Inform your nearest Sony service facility about the number of times the indicator flashes.
Be sure to note the model name and serial number located on the rear of your video TV.

Troubleshooting


If you have any problems while viewing your video TV, please check the following troubleshooting guide. If the problem persists, contact your Sony dealer.

Symptom	Possible cause	Solutions
TV section		
No picture/No sound 	The power cord or antenna is not connected.	Check the AC power cord and the antenna connections.
	The video TV is not turned on.	Press I/⏻ on the video TV. If the standby indicator (⏻) is lit in red, press I/⏻ or a program number button on the remote control.
Good picture/No sound 	The volume level is too low.	Press ◀ + to increase the volume level.
	The sound is muted.	Press ⏻ to cancel the muting.
	Headphones are connected to ⏻ (headphones) jack.	Disconnect the headphones.
No color or poor color 	The color level setting is too low.	Adjust PICTURE, COLOR and BRIGHT in the PERSONAL ADJUST menu. (page 39)
	The picture setting is inappropriate.	Press PIC MODE to switch the picture setting. (page 15)
	The color system setting is inappropriate.	Display the TV SET UP menu and check the color system (COL SYS) setting. (page 38)
	The antenna direction, position and angle need adjustment.	Adjust the antenna direction, position and angle. Contact a Sony dealer for advice.
Double images or "ghosts" 	Broadcast signals are reflected by nearby mountains or buildings.	Use a highly directional antenna.
	The antenna direction, position and angle need adjustment.	Adjust the antenna direction, position and angle. Contact a Sony dealer for advice.
No picture/No sound from video input sources 	The connecting cord between the video TV and the input sources is disconnected.	Check the connection between the video TV and the input sources.
	Input is not selected correctly.	Press ⏻ so that "1" or "2" appears. (page 53)

Symptom	Possible cause	Solutions
Good picture/Abnormal sound 	The TV system setting is inappropriate.	<ul style="list-style-type: none"> If the sound of all the channels is abnormal, display the TV SET UP menu and select the appropriate TV system (TV SYS), then preset the channels again. (pages 11 and 12) If the sound of some channels is abnormal, display the MANUAL PROGRAM menu in the TV SET UP menu and select the appropriate TV system (TV SYS) (page 34).
Snowy picture/Abnormal sound 	The connection is loose or the cable is damaged.	Check the antenna cable and connection on the video TV and at the wall.
	The channel presetting is inappropriate or incomplete.	Display the TV SET UP menu and select MANUAL PROGRAM to manually preset the channel again.
	The antenna type is inappropriate.	Check the antenna type (VHF/UHF). Contact a Sony dealer for advice.
	The antenna direction, position and angle need adjustment.	Adjust the antenna direction, position and angle. Contact a Sony dealer for advice.
Dotted lines or stripes 	There is local interference from cars, neon signs, hair dryers, power generators, etc.	<ul style="list-style-type: none"> Do not use a hair dryer or other equipment near the video TV. Adjust the antenna direction, position and angle for minimum interference. Contact a Sony dealer for advice.
Abnormal color patches 	There is magnetic disturbance from external speakers or other equipment.	Locate external speakers or other equipment away from the video TV. Press I/⏻ on the video TV to turn off the video TV for about five minutes, then turn on again.
Clock and timer section		
The clock has stopped and "12:00" is displayed.	The power has been interrupted or the AC power cord is disconnected.	Re-set the clock and timer settings. (page 9)

continued

Troubleshooting (continued)

Symptom	Possible cause	Solutions
Playback section		
Power is on, but the tape does not run.	The safety device has been activated.	Switch off, disconnect the AC power cord, and leave the set for about one minute.
Poor playback picture 	The color system setting is inappropriate.	Display VIDEO SET UP and set the color system (COL SYS) to the setting corresponding to the color system that the tape is recorded in. (page 46)
	The tracking condition is inappropriate.	Adjust the tracking manually. (page 41)
	The video heads are dirty.	Clean the video heads using the Sony T-25CLD, T-25CLDR, or T-25CLW video head cleaning cassette (not supplied). If these cleaning cassettes are not available in your area, have the heads cleaned at your nearest Sony service facility (a standard service fee will be charged). Do not use any commercially available liquid type cleaning cassettes other than Sony's, as it may damage the video heads.
	The video heads may be worn out.	The video heads may have to be replaced. Contact a Sony dealer for advice.
	The tape is worn out.	Use a new tape.
The sound drops out.	The tape is defective.	Use a new tape.

Symptoms caused by contaminated video heads

- Normal picture
- Rough picture
- Unclear picture
- No picture (or black & white screen appears)



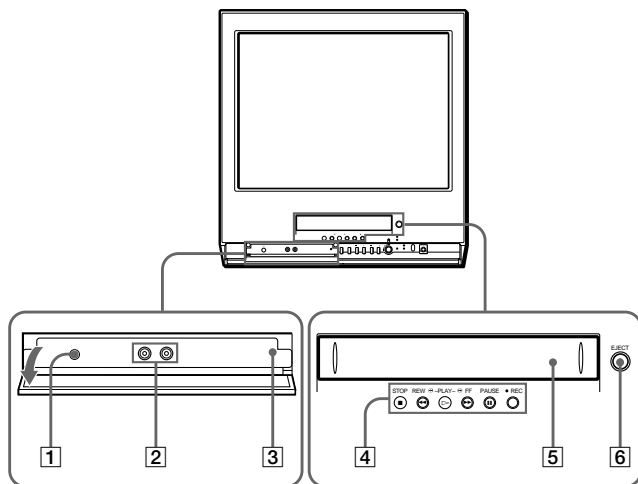
initial contamination → terminal

Symptom	Possible cause	Solutions
Recording section		
The cassette is ejected when you press REC ●.	The safety tab of the cassette has been removed.	Cover the safety tab hole with adhesive tape, or use another cassette with its safety tab intact.
Cannot record.	No cassette has been inserted.	Insert a cassette with its safety tab intact.
	The tape is at its end.	Rewind the tape.
Timer recording section		
Cannot program a recording using the timer.	The clock has not been set.	Set the current time and date. (page 9)
The cassette is ejected when you press ON/OFF.	The safety tab of the cassette has been removed.	Cover the tab hole with adhesive tape, or use another cassette with its safety tab in place.
The TIMER REC indicator does not light up even though you press ON/OFF.	No cassette has been inserted.	Insert a cassette with its safety tab intact.
	The tape is at its end.	Rewind the tape.
	No setting is made for timer recording.	Set the program for timer recording. (pages 30 through 31)
Timer recording was not made.	<ul style="list-style-type: none"> • You did not press ON/OFF. • There has been a power interruption. 	—
Others		
A cassette cannot be inserted.	Another cassette is already inserted.	Press EJECT ▲ to eject the cassette.
The remote control does not work.	The batteries are low.	Replace the batteries. (page 4)
	The batteries are installed incorrectly.	Install the batteries with correct polarities. (page 4)
TV cabinet creaks.	Changes in room temperature sometimes make the TV cabinet expand or contract, causing a noise. This does not indicate a malfunction.	—
A small "boom" sound is heard when the video TV is turned on.	The video TV's demagnetizing function is working. This does not indicate a malfunction.	—

Identifying parts and controls

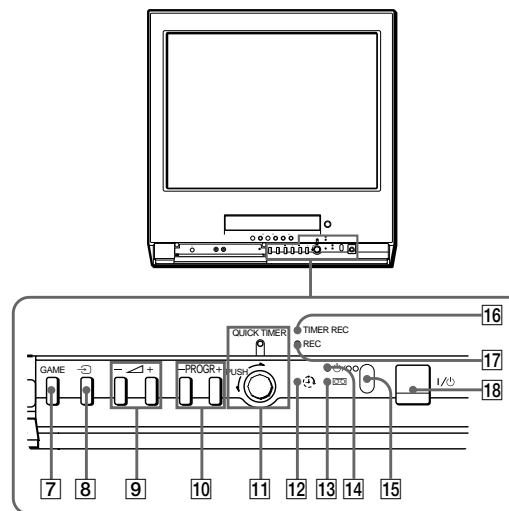
Refer to the pages indicated in parentheses () for details.

Front panel



- 1 (headphones) jack
- 2 2/GAME IN jacks (video/audio) (52, 53)
- 3 TUNER PRESET ON/OFF button (12, 13)

- 4 Tape transport buttons
STOP ■ button (17, 20)
REW ◀ button (17)
PLAY ▶ button (17)
FF ▶▶ button (17)
PAUSE || button (17, 20)
REC ● button (20)
- 5 Cassette compartment
- 6 EJECT ▲ button (17)



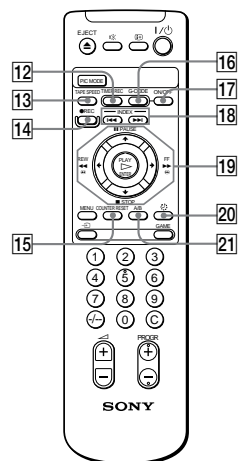
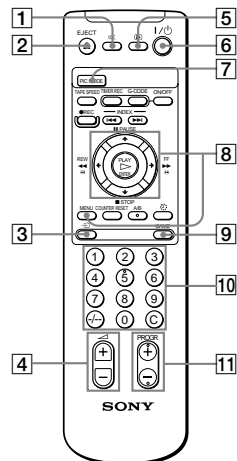
- 7 GAME button (13, 54)
- 8 (input select) button (53)
- 9 (volume) +/- buttons (15)
- 10 PROGR +/- buttons (14)
- 11 QUICK TIMER (22, 23)
Indicator
Rotary button
- 12 (ON TIMER) indicator (49)
- 13 (VCR) indicator (20)

- 14 (standby/bilingual) indicator (14)
- 15 Remote control sensor
- 16 TIMER REC (recording) indicator (31)
- 17 REC (recording) indicator (20)
- 18 (power/standby) switch (14)

continued

Identifying parts and controls (continued)

Remote control

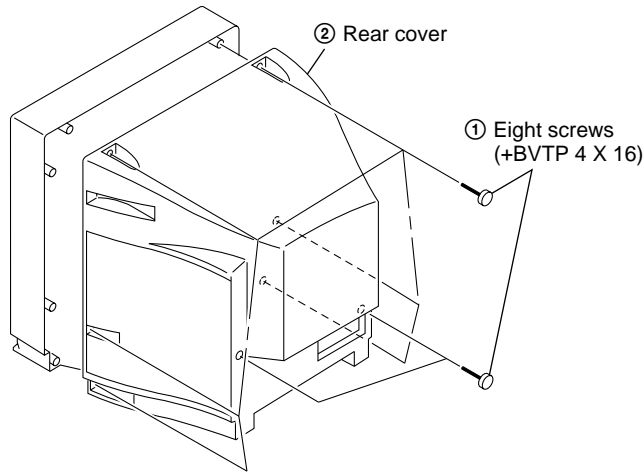


- 1 ✖ (muting) button (15)
- 2 EJECT ▲ button (17)
- 3 ⇄ (input select) button (53)
- 4 ▲ ▼ (volume) +/- buttons (15)
- 5 [] (display) button (16, 18)
- 6 I/O (power/standby) button (14)
- 7 PIC MODE (picture mode) button (15)
- 8 Menu operation buttons (26)
 - MENU button
 - ◀/▶/⏮/⏭ buttons
 - ENTER button
- 9 GAME button (54)
- 10 Number buttons (19)
- 11 PROGR +/- buttons (19)

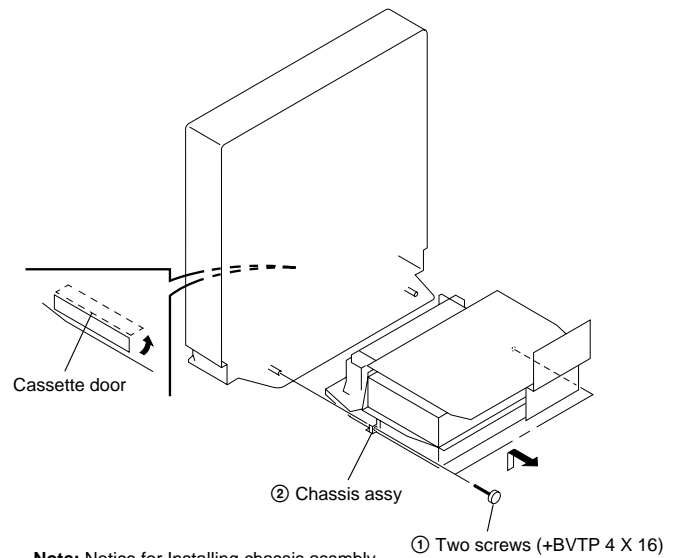
- 12 TIMER REC (recording) button (30)
- 13 TAPE SPEED button (19)
- 14 REC ● (recording) button (20)
- 15 COUNTER RESET button (18)
- 16 G-CODE button (26)
- 17 ON/OFF button (for timer recording) (31)
- 18 INDEX ◀◀/▶▶ button (51)
- 19 Tape transport buttons
 - PAUSE || button (17, 20)
 - REW ◀◀/⏮ button (17)
 - STOP ■ button (17, 20)
 - FF ▶▶/⏭ button (17)
 - PLAY ▶ button (17)
- 20 ⌚ (SLEEP TIMER) button (48)
- 21 A/B (bilingual) button (47)

SECTION 2 DISASSEMBLY

2-1. REAR COVER REMOVAL

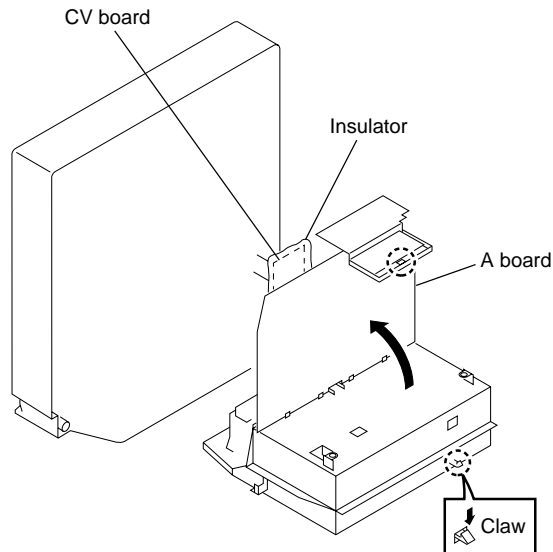


2-2. CHASSIS ASSY REMOVAL



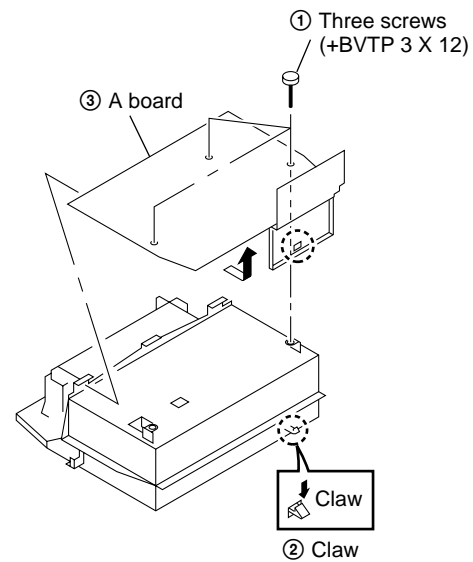
Note: Notice for Installing chassis assembly
Install chassis assembly when keep
the cassette door open state.

2-3. SERVICE POSITION (A BOARD)

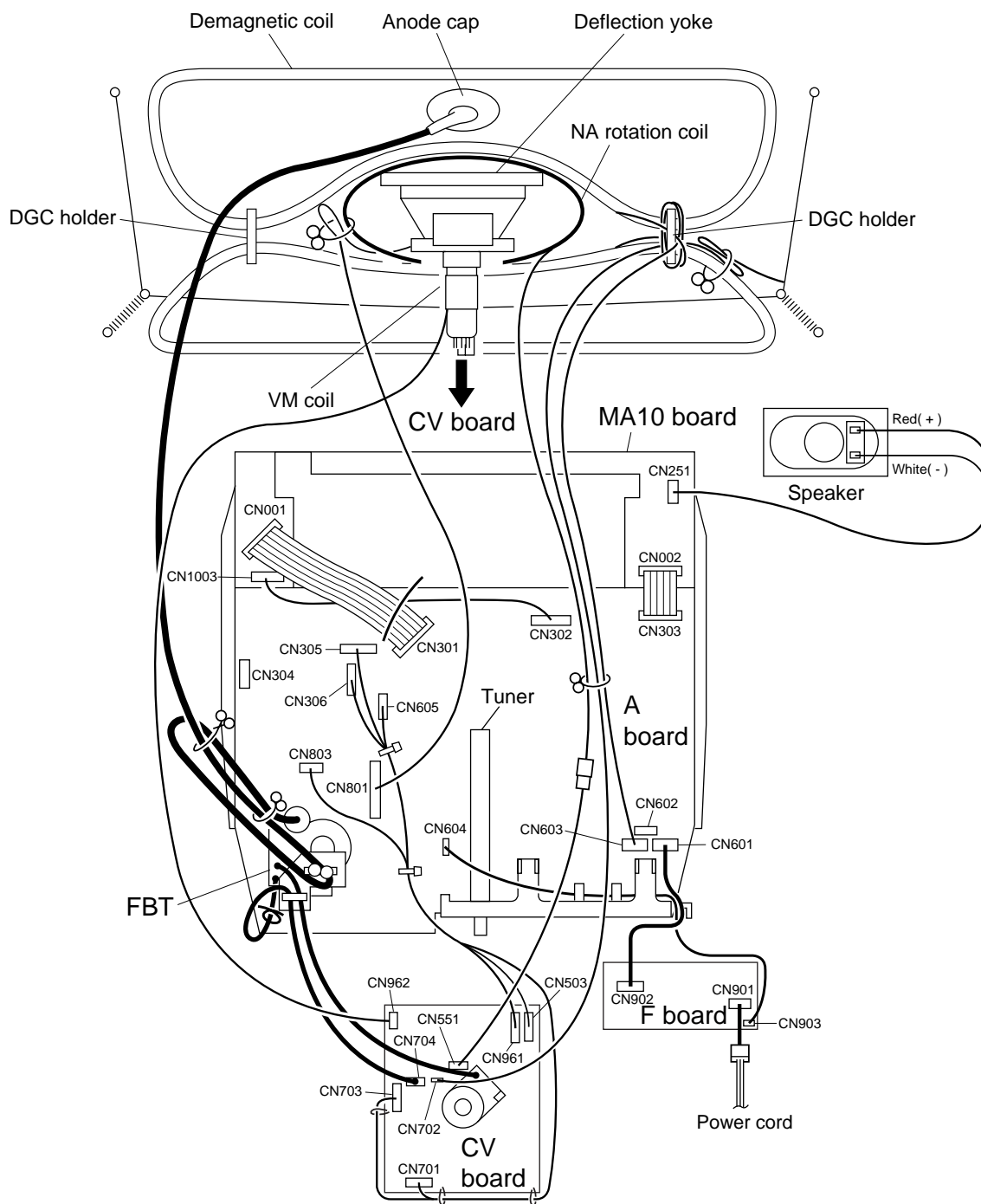


Note: Open the A board after move the claw

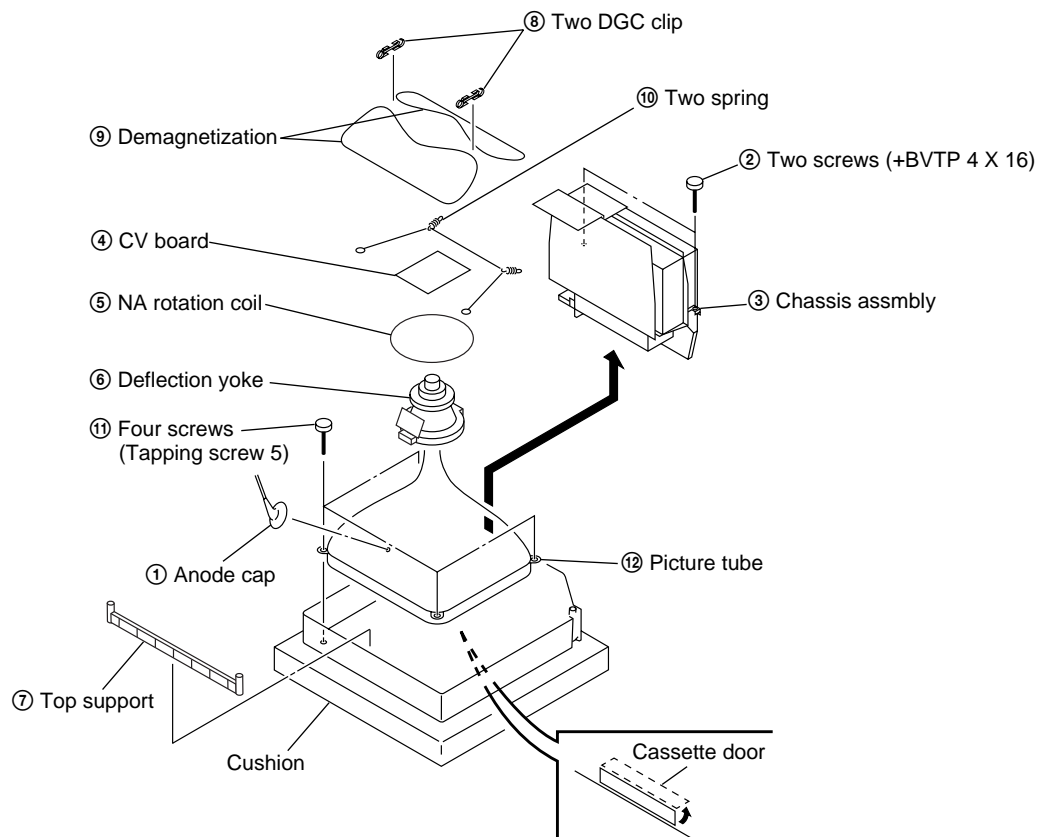
2-4. A BOARD REMOVAL



2-5. HARNESS LOCATION



2-6. PICTURE TUBE REMOVAL



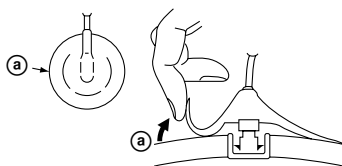
Note: Notice for Installing chassis assembly
Install chassis assembly when keep the cassette door open state.

• Removal of anode-cap

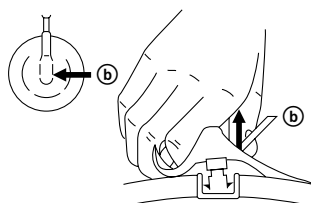
NOTE : Short circuit the anode of the picture tube and the anode cap to the metal chassis, CRT shield or carbon paint on the CRT, after removing the anode.

• removing procedures

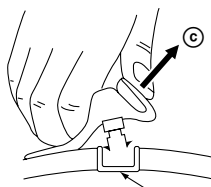
- ① Turn up one side of the rubber cap in the direction indicated by the arrow ①a.



- ② Using a thumb pull up the rubber cap firmly in the direction indicated by the arrow ②b.

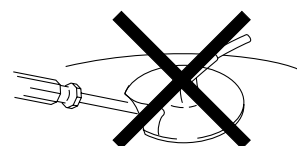
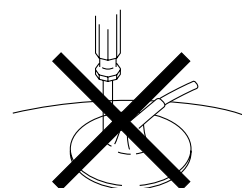


- ③ When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling it up in the direction of the arrow ③c.



• how to handle an anode-cap

- ① Don't hurt the surface of anode-caps with shaped objects!
- ② Don't press the rubber too hard so as not to hurt inside of anode-caps!
A metal fitting called the shatter-hook terminal is built into the rubber.
- ③ Don't turn the foot of rubber over too hard!
The shatter-hook terminal will stick out of damage the rubber.



SECTION 3

SET-UP ADJUSTMENTS

- The following adjustments should be made when a complete realignment is required or a new picture tube is installed.
- These adjustments should be performed with the rated power supply voltage, unless otherwise noted.

The PICTURE and Brightness controls should be set as follows unless otherwise noted:

PICTURE control standard

BRIGHTNESS control standard

Perform the adjustments in the following order:

1. Beam Landing
2. Convergence
3. Focus
4. Screen (G2)
5. White Balance
6. Picture Distortion

Note: Test Equipment Required.

1. Color bar/Pattern Generator
2. Degausser
3. Oscilloscope

Preparation:

- In order to reduce the influence of external magnetic forces on the picture tube, face the TV set in an easterly or westerly direction.
- Turn the power switch for the unit ON and erase the magnetic force using a degausser.

3-1. BEAM LANDING

1. Receive PAL MONOSCO signal, make [picture] to maximum.
2. Set service mode to VP38 (RON) = "00", VP39 (GON) = "01", VP40 (BON) = "00" and make all green pattern.
3. Shift the DY Assy to full of front side and rotate purity magnet and make green to center. (Fig.3-1 to 3-3)
4. Rotate DY Assy to right and the left and screen align to horizontal.
5. Shift slowly the DY Assy to back side and set raster to get full green. (Fig.3-3)
6. Fix roughly the DY Assy by the stopper.
7. When the landing at the corners is not correct, adjust by using disk magnets. (Fig.3-4)
8. Set service mode to VP38 (RON) = "01", VP39 (GON) = "01", VP40 (BON) = "01".

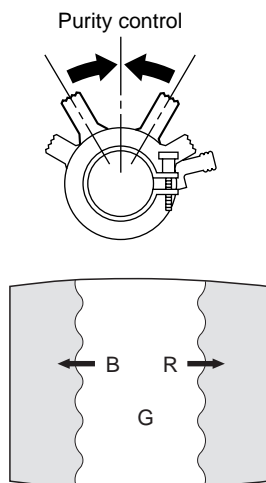


Fig.3-1

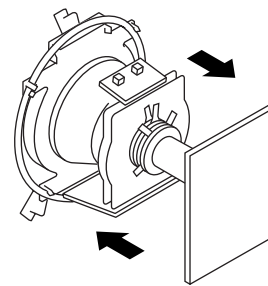


Fig.3-3

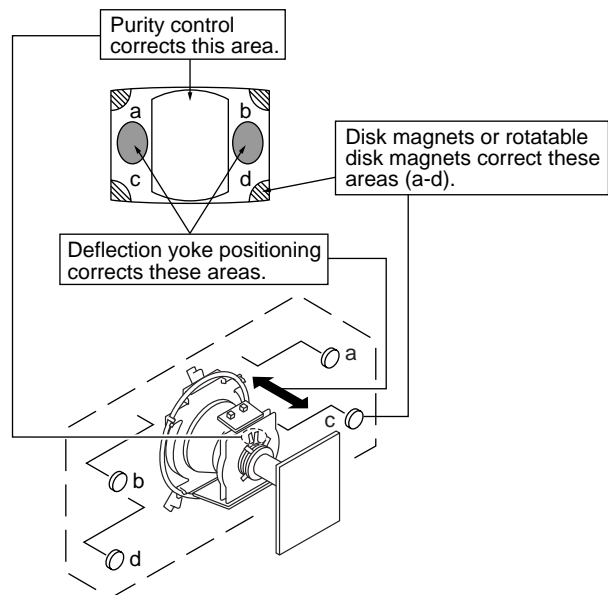
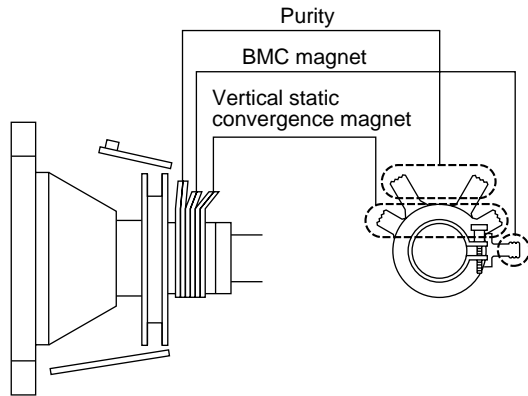


Fig.3-4

3-2. CONVERGENCE



(1) Horizontal and Vertical Static Convergence

1. Receive DOT HATCH signal adjust [BRT], [PIX] to look easily.
2. Set V. STAT Mg, BMC Mg to standard condition.
3. Correct V. STAT Mg.
(Correct vertical lag of R, B-DOT around the center of CRT.)
(Fig.3-5)
4. Adjust BMC Mg.
(Make evenly horizontal lag of R, B-DOT toward G-DOT around the center of CRT.)
5. Adjust H. STAT VR. (RV701)
(Adjust horizontal lag of R, B-DOT around the center of CRT.)
(Fig.3-5)
6. Have to tracking adjust V. STAT Mg, BMC Mg because DOT moves influence each other.
(Correct vertical lag of R.G.B.-DOT.)

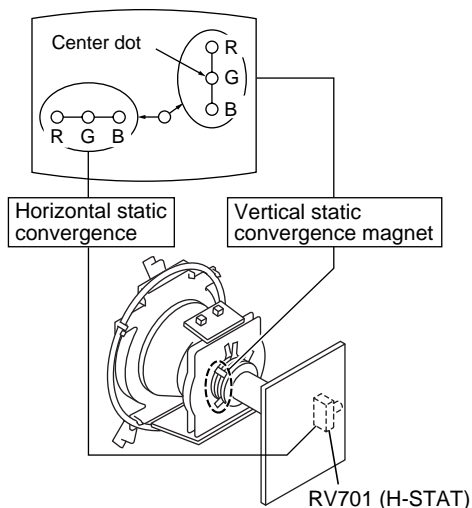
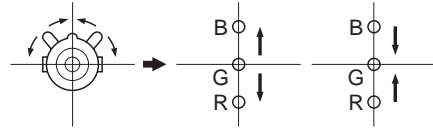


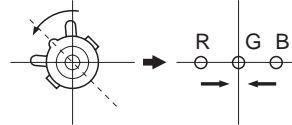
Fig.3-5

- Movement of red, green and blue dots by V. STAT tilting and opening or closing.

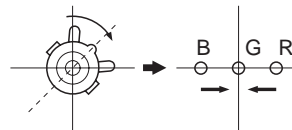
- ① Movement of opening or closing the V. STAT convergence magnet.



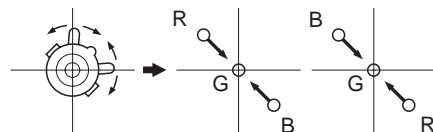
- ② Movement of tilting the V. STAT convergence magnet counterclockwise.



- ③ Movement of tilting the V. STAT convergence magnet clockwise.

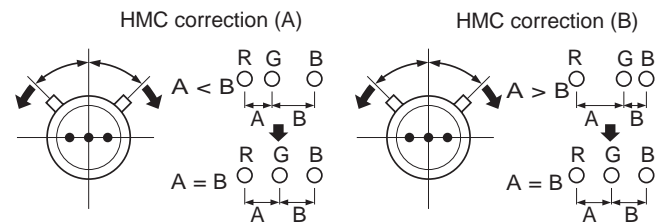


- ④ Movement of tilting and opening or closing the V. STAT convergence magnet.

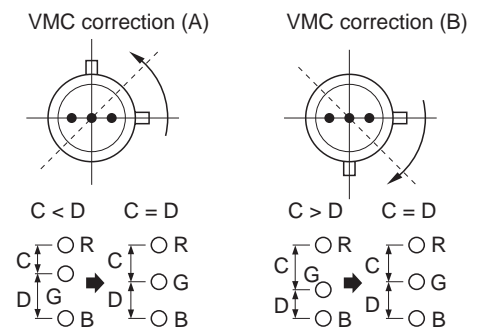


- If the blue dot did not harmonize with red and green, then use the BMC magnet to adjust.

- 1)HMC (Horizontal mis-convergence) correction



- 2)VMC (Vertical mis-convergence) correction.



- **Adjust TLH. (TLH CORRECTION PIECE : 4-057-714-01)**

Correct horizontal mis-convergence of X axis' right and left red and blue. When red is outside and view from DY neck side, insert TLH correction piece to rightside (TLH+) and when blue is outside and also view from DY neck side, insert TLH correction piece to left (TLH-).

- **Adjust YCH. (YCH)**

Adjust the horizontal convergence of red and blue of Y axis' up and down part.

(Adjust with tracking)

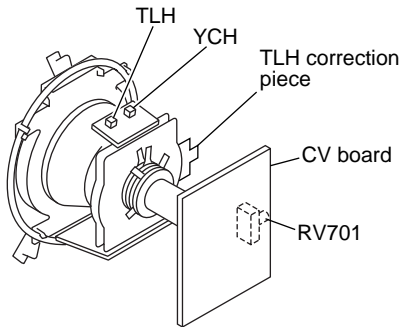


Fig.3-6

(2) Convergence adjustment of screen surroundings.

(Dynamic convergence)

1. Adjust by the deflection yoke (swivel) to screen both sides cross mis-convergence become finest whole screen. (Fig.3-7)
2. Fix the deflection yoke to insert the wedge to the picture tube funnel and the deflection yoke. (Fig.3-8)

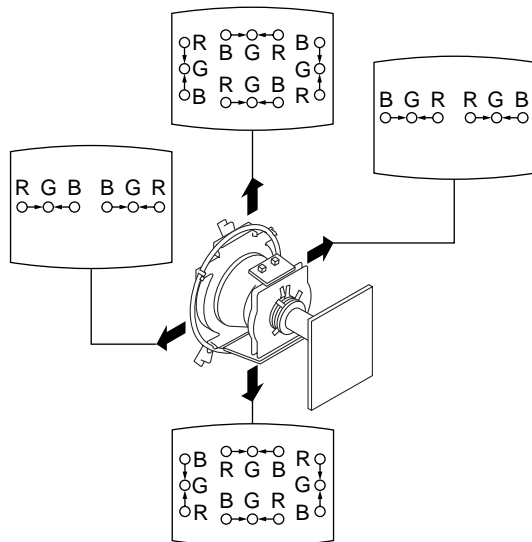


Fig.3-7

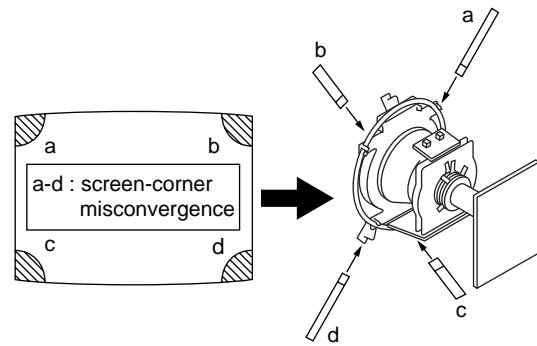


Fig.3-8

3-3. FOCUS ADJUSTMENT

1. Receive PAL MONOSCO signal, with standard condition.
2. Focus adjustment should be balanced whole picture area (not detail), and adjust focus by [FOCUS] VR of FBT. (Fig.3-9)
3. Receive ALL WHITE signal.
4. Magenta ring should be within limit sample. (Fig.3-9)

<If out of limit>

Tracking adjust magnetaring and the focus by [FOCUS] VR of FBT.

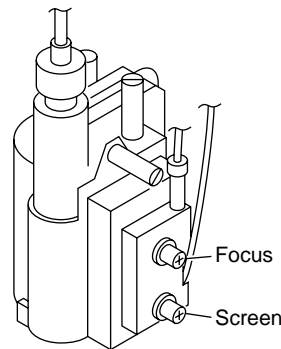


Fig.3-9

3-4. SCREEN (G2) ADJUSTMENT

1. Receive white signal and make standard condition.
2. Set service data to VP38 (RON), VP39 (GON), VP40 (BON) = "00" and take care that the screen become pitch-dark.
3. Add $175 \pm 1.0\text{VDC}$ external voltage to cathodes of red, green, blue.
4. Adjust to obtain just before retrace line goes out (The point where the retrace line is going to appears). (Fig.3-9)
5. Set service data to VP38 (RON), VP39 (GON), VP40 (BON) = "01".

3-5. WHITE BALANCE ADJUSTMENT

1. Receive color-bar signal and set menu picture quality to minimum picture and standard brightness.
2. Set to service mode and adjust CUT-OFF (VP25-green, VP26-blue) and DRIVE (22-green, VP23-blue) of center.
3. Switch to all white signal.
4. Repeat CUT-OFF adjustment to become finest white balance between minimum picture and maximum picture.
5. Receive PAL MONOSCO signal.
6. Adjust sub-bright (VP29-SBRT) to become gleaming.
7. Subtract 1 step from below adjusted data.

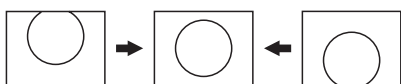


Fig.3-10

3-6. PICTURE DISTORTION ADJUSTMENT

- When performing these adjustment, do receive monoscope signal.

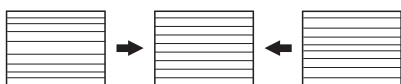
VP1 (VPOS)



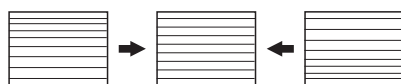
VP2 (VSIZ)



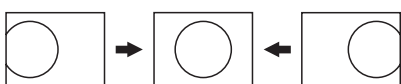
VP3 (SCOR)



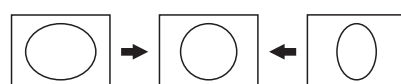
VP4 (VLIN)



VP5 (HPOS)



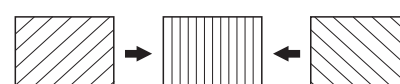
VP6 (HSIZ)



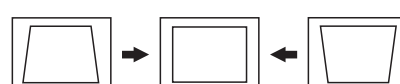
VP7 (AFBW)



VP8 (AFAG)



VP9 (TRAP)



VP10 (PAMP)



VP11 (UCPN)





VP12 (LCPN)



SECTION 4

CONFIRMATION OF HOLD-DOWN

When the parts with a ,  mark on the circuit diagram shown below are replaced, confirm the matters described in items 1. and 2. shown below.

☒: PM601, R614, C614, IC607, R638

1. CONFIRMATION OF +B LINE (A BOARD)

- 1) Input 110 \pm ₋₀⁺²V AC.
- 2) Receive DOT HATCH signal and adjust PIX, BRT to minimum.
- 3) Connect the digital multimeter to \oplus line of C632.
(Fig.4-2)
- 4) Confirm the voltage value of +B line corresponds like below.

Less than 137.5V DC

2. CONFIRMATION OF HOLD-DOWN (A BOARD)

- 1) Receive monoscope signal and adjust PIX, BRT, VOL to standard.
 - 2) Input the undermentioned voltage to between C632 + side and GND, then check the protector function to works.
- (Fig.4-1)

Less than 142.5V DC

A BOARD – COMPONENT SIDE –

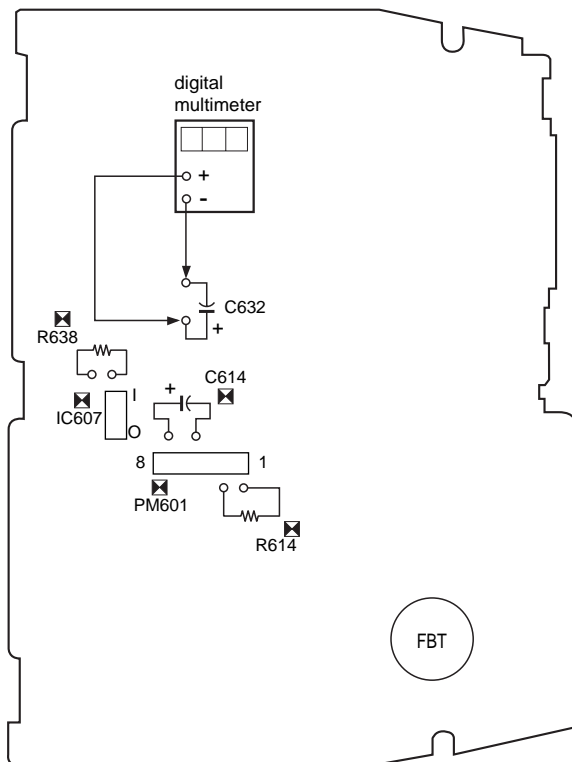


Fig.4-2

3. CONFIRMATION AFTER EXCHANGED IC607 AND R638

Confirm the voltage value of +B line voltage satisfying with standard value when exchanged IC607 and R638.

4. CONFIRMATION AFTER EXCHANGED PM601, R614 AND C614

Confirm the protection circuit satisfying with standard value.

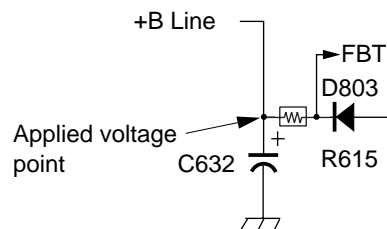


Fig.4-1

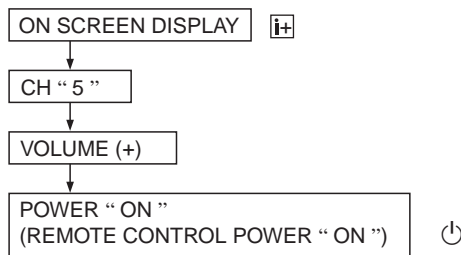
SECTION 5

CIRCUIT ADJUSTMENT

5-1. ADJUSTMENTS WITH COMMANDER

1. ENTERING SERVICE MODE

- 1) Turn on the main power of the set and enter into stand-by mode.
- 2) Press the following sequence of buttons on the Remote Control Commander.



2. TO READ THE MEMORY

- 1) Set to service mode.
- 2) When push these buttons [7] → [0] on the remote commander, it would read all item's adjustment value and switch set-up value which written in the memory.

Note: Do not read before "standard value" writing when exchange the MEMORY IC002.

3. PICTURE ADJUSTMENT

- 1) Select adjustment item number of service mode by [1] and [4] buttons on the remote commander.
- 2) Adjust [3] and [6] buttons to satisfy set-up value and picture condition of the screen.

4. WRITE TO THE MEMORY

- After adjusted, write to the MEMORY by [MUTE] and [0] buttons and push [0] button while green "light" word indicated on the picture display (about 3 seconds). It takes about 1 second to complete the writing to the MEMORY. When red "light" displayed turns to "G" and that makes writing completely finish.

Color of the screen displayed light word.

[MUTE] button on Green word

[0] button on Red word

5. RELEASE THE SERVICE MODE

- Turn off TV set and turn on again or turn off by the remote commander, and turn off by the remote commander again by stand-by state to disappear service display and set to normal TV mode.

6. WRITING "STANDARD VALUE"

- 1) Set to service mode.
- 2) When push [5] button on the remote commander green colored "INITIAL write" indicates on the screen right above. Continuing to press [0] button while words are displaying (about 3 seconds). Display turns to red colored "INITIAL write" then the screen become pitch-dark and select 1ch about 5 seconds after. Then it turns green colored "G" display.

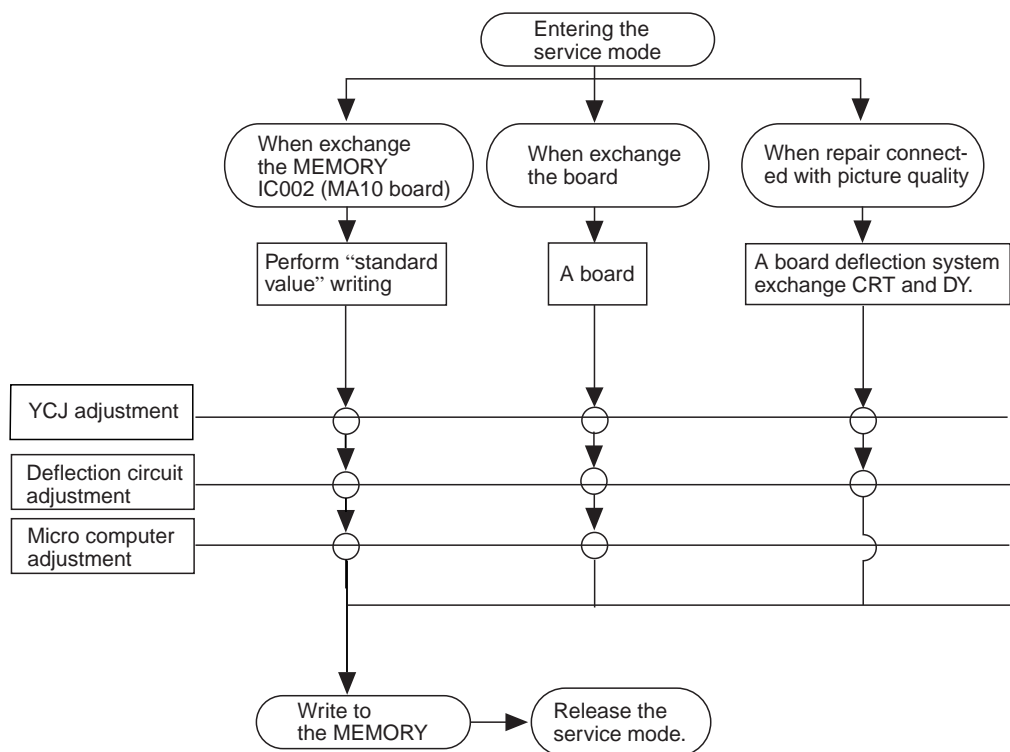
Perform writing "standard value" standard data in micro computer will write to the MEMORY and set to initialization state all.

Note: When exchange only MEMORY IC002, perform "standard value" writing in the beginning.

5-2. ADJUSTMENT METHOD

Service adjustment to this model can be performed with the supplied Remote Control Commander RM-955, 956.

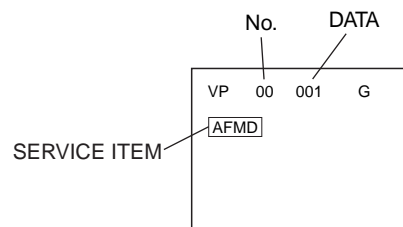
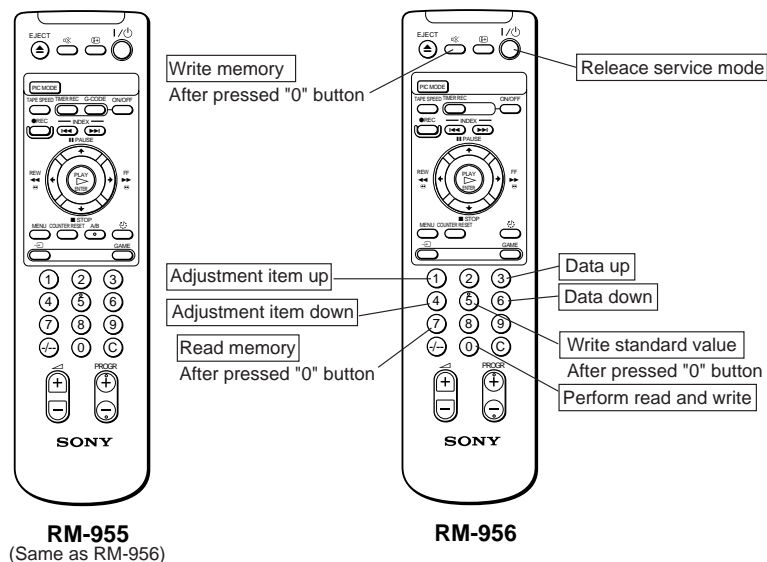
• HOW TO ENTER INTO SERVICE MODE



Note : • Write to the MEMORY every performing one item adjustment.
• Before writing to the MEMORY adjusted data would not memorize when turn off.

• REMOTE COMMANDER'S FUNCTION IN SERVICE MODE

• SERVICE MODE DISPLAY



5-3. SERVICE DATA

No.	DISP	DATA RANGE	STANDARD DATA	ITEM	DEVICE
VP0	AFC	00-03	00	AFC LOOP GAIN SWITCHING	CXA2130S (Y/C/J)
VP1	VPOS	00-3F	21	V POSITION	
VP2	VSIZ	00-3F	21	V SIZE	
VP3	SCOR	00-0F	07	S CORRECTION	
VP4	VLIN	00-0F	07	V LINIARITY	
VP5	HPOS	00-3F	1E	HORIZONTAL POSITION	
VP6	HSIZ	00-3F	21	H SIZE	
VP7	AFBW	00-0F	07	AFC BOW	
VP8	AFAG	00-0F	07	AFC ANGLE	
VP9	TRAP	00-0F	07	TRAPEZIUM	
VP10	PAMP	00-3F	0B	PIN AMPLITUDE	
VP11	UCPN	00-3F	1F	UPPERSIDE CORNER PIN	
VP12	LCPN	00-3F	1F	LOWERSIDE CORNER PIN	
VP13	HBLK	00-01	00	H BLANKING	
VP14	LBLK	00-0F	07	LEFT H BLANKING	
VP15	RBLK	00-0F	07	RIGHT H BLANKING	
VP16	VUND	00-01	00	V UNDER SCAN	
VP17	EHT	00-0F	07	EHT COMP	
VP18	HSS	00-01	00	SLICE LEVEL OF H SYNC SEPARATION	
VP19	VSS	00-01	00	SLICE LEVEL OF V SYNC SEPARATION	
VP20	HMSK	00-01	01	H MASK	
VP21	RAMP	00-3F	20	R DRIVE	
VP22	GAMP	00-3F	1F	G DRIVE	
VP23	BAMP	00-3F	*1F	B DRIVE	
VP24	RCUT	00-0F	09	R CUTOFF	
VP25	GCUT	00-0F	07	G CUTOFF	
VP26	BCUT	00-0F	07	B CUTOFF	
VP27	SCOL	00-3F	19	SUB COLOR	
VP28	SHUE	00-1F	07	SUB HUE FOR RF INPUT	
VP29	SBRT	00-3F	1F	SUB BRIGHT	
VP30	SSHP	00-0F	07	SUB SHARPNESS	
VP31	SHPF	00-01	00	SHARPNESS F0 SWITCHING	
VP32	PREL	00-01	00	PRE/OVER-SHOOT RATIO SWITCHING	
VP33	GAMM	00-03	02	GAMMA CORRECTION	
VP34	ABLM	00-01	*01	ABL MODE	
VP35	VTH	00-01	01	ABL VTH	
VP36	DYCL	00-01	01	DYNAMIC COLOR	
VP37	YDC	00-01	01	DC TRAN	
VP38	RON	00-01	01	R ON	
VP39	GON	00-01	01	G ON	
VP40	BON	00-01	01	B ON	
VP41	CDMD	00-03	00	COUNT DOWN MODE	
VP42	HOSC	00-0F	07	H VCO'S OSCILLATION	
VP43	VMSW	00-01	00	VM SW(0:ON,1:OFF)	
VP44	YDE	00-0F	08	Y DELAY	
VP45	PAF	00-03	00	PB AFC	
VP46	IDS	00-03	01	ID START	
VP47	IDP	00-03	01	ID STOP	
VP48	IDL	00-03	02	ID LEVEL	
VP49	BELL	00-3F	22	BELL F0	
VP50	VSHU	00-0F	06	SUB HUE FOR LINE INPUT,PB	

No.	DISP	DATA RANGE	STANDARD DATA	ITEM	DEVICE
MS0	NDL	00-FF	52	NICAM SEARTH DELAY	
MS1	AGC	00-01	01	AGC SWITCH	
MS2	REL	00-3F	28	AGC GAIN	
MS3	CRM	00-01	00	CARRIER MUTING	
MS4	ACO	00-01	01	AUDIO CLOCK OUT	
MS5	FP	00-7F	1B		
MS6	FPM	00-7F	32		
MS7	FH	00-7F	2D		
MS8	FHM	00-7F	65		
MS9	NIP	00-7F	6D	NICAM PRESCALE	
MS10	ERR	00-FF	50	AUTO-FM SWITCH THRESHOLD	
MS11	VOL	00-FF	6D	INTELLIGENT VOLUME	

No.	DISP	DATA RANGE	STANDARD DATA	ITEM	DEVICE
OP0	OSDH	00-3F	06	OSD HORIZONTAL POSITION	CXP85460 (μ-COM)
OP1	NS	00-01	01	MENU FOR NS(0:OFF,1:ON)	
OP2	ODL	00-FF	08	ON DELAY TIMER	
OP3	HDCG	00-03	01	HEADCLOG DETECT(0:OFF,1:ON)	
OP4	APC	00-01	00	PLL-switch	
OP5	ID0	00-01	00		
OP6	ID1	00-01	00		
OP7	ID2	00-01	01		
OP8	ID3	00-01	00		

5-4. A BOARD ADJUSTMENT

1. H OSC ADJUSTMENT

- 1) Input select should be selected LINE input (no signal).
- 2) Connect a frequency counter to TP801 (A board).
- 3) Adjust service data "VP42" (HOSC) to become 15.690kHz ± 25 Hz.

2. PICTURE QUALITY ADJUSTMENT

2-1. SUB HUE, SUB COLOR adjustment. (For RF input)

- 1) Receive RF NTSC COLOR BAR signal (B OUT signal).
 - 2) Color Condition
 - Color 50%
 - HUE center 50%
 - Picture 80%
- * H white condition is "OFF" (VP36 : DYCL "= 00")
- 3) Adjust service data (VP28 : SHUE) for CN308 ⑥ pin B OUT waveform shown $V_{B2} = V_{B3}$ (SUB HUE).
 - 4) Adjust service data (VP27 : SCOL) for CN308 ⑥ pin B out waveform shown $V_{B1} = V_{B4}$ (SUB COLOR).

Note : Repeat the above steps 2) and 3) untill an optimum value is obtained.

- 5) Add the figure of each step of SUB HUE and SUB COLOR shown below to the above adjustment data.

2-2. SUB HUE adjustment (For LINE input)

- 1) Input the NTSC COLOR BAR Signal to LINE INPUT.
- 2) Color Condition
 - Color 50%
 - HUE center 50%
 - Picture 80%

* H white condition is "OFF" (VP36 : DYCL = "00")

- 3) Adjust service data (VP50 : VSHU)for CN308 ⑥ pin B OUT waveform shown $V_{B2} = V_{B3}$.
- 4) Write SUB HUE (for LINE INPUT)

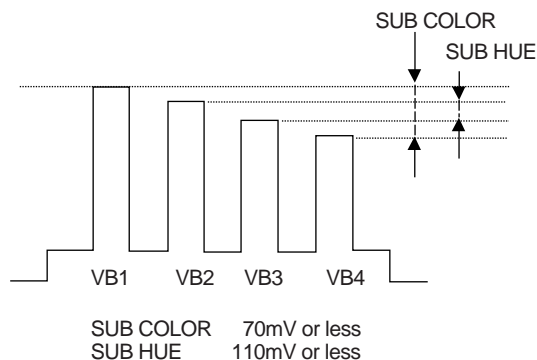
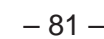


Fig.5-1

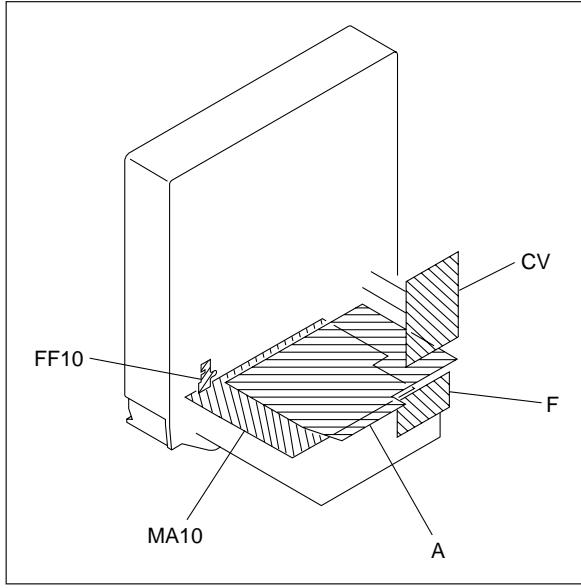
- SUB HUE : From just flat VP28 : SHUE (TV) 0 STEP
 - SUB COLOR : From just flat VP27 : SCOL 0 STEP
- 6) Write SUB HUE, SUB COLOR for "VIDEO" the values which are same as 4).

6-1. BLOCK DIAGRAMS

H/V DEFLECTION)



6-2. CIRCUIT BOARDS LOCATION



6-3. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

- Note:
- All capacitors are in μF unless otherwise noted. pF : μpF
 - Capacitors without voltage indication are all 50V.
 - All resistors are in ohms.
 - $\text{k}\Omega = 1000\Omega$, $\text{M}\Omega = 1000\text{k}\Omega$
 - Indication of resistance, which does not have one for rating electrical power, is as follows.

Pitch: 5 mm
Rating electrical power: 1/4W(CHIP:1/10W)

- : nonflammable resistor.
- : fusible resistor.
- : internal component.
- : panel designation and adjustment for repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : earth-chassis.
- The components identified by C in this basic schematic diagram have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation.
- Should replacement be required, replace only with the value originally used. (Refer to PM601,R614,C614,IC607 and R638 adjustment on Page 70.)
- When replacing the part in below table, be sure to perform the related adjustment.

Adjustment (C)	
PM601,R614,C614,IC607, R638	A Board

- Readings are taken with a color-bar signal input.
- Readings are taken with a 10M Ω digital multimeter.
- Voltage variations may be noted due to normal production tolerances.
- All voltages are in V.
- Circled numbers are waveform reference.
- : B + line
- : B - line.
- : signal path.

Reference information

- RESISTOR : RN METAL FILM
: RC SOLID
: FPRD NONFRAMMABLE CARBON
: FUSE NONFRAMMABLE FUSIBLE
: RW NONFRAMMABLE WIREWOUND
: RS NONFRAMMABLE METAL OXIDE
: RB NONFRAMMABLE CEMENT
: ADJUSTMENT RESISTOR
COIL : LF-8L MICRO INDUCTOR
CAPACITOR : TA TANTALUM
: PS STYROL
: PP POLYPROPYLENE
: PT MYLAR
: MPS METALIZED POLYESTER
: MPP METALIZED POLYPROPYLENE
: ALB BIPOLAR
: ALT HIGH TEMPERATURE
: ALR HIGH RIPPLE

Terminal name of semiconductors in silk screen printed circuit (※)

Device	Printed symbol	Terminal name	Circuit
① Transistor		Collector	
		Base	
		Emitter	
② Transistor		Collector	
		Base	
		Emitter	
③ Diode		Cathode	
		Anode	
		Anode (NC)	
④ Diode		Cathode	
		Anode (NC)	
		Anode (NC)	
⑤ Diode		Common	
		Anode	
		Cathode	
⑥ Diode		Common	
		Anode	
		Cathode	
⑦ Diode		Common	
		Anode	
		Cathode	
⑧ Diode		Common	
		Anode	
		Anode	
⑨ Diode		Common	
		Cathode	
		Cathode	
⑩ Diode		Common	
		Cathode	
		Cathode	
⑪ Diode		Common	
		Cathode	
		Cathode	
⑫ Diode		Common	
		Cathode	
		Cathode	

(Chip semiconductors that are not actually used are included.)

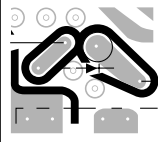
Note: The components identified by shading and mark B are critical for safety. Replace only with part number specified.

A

[TUNER, Y/C/J, HV DEFLECTION, POWER SUPPLY]

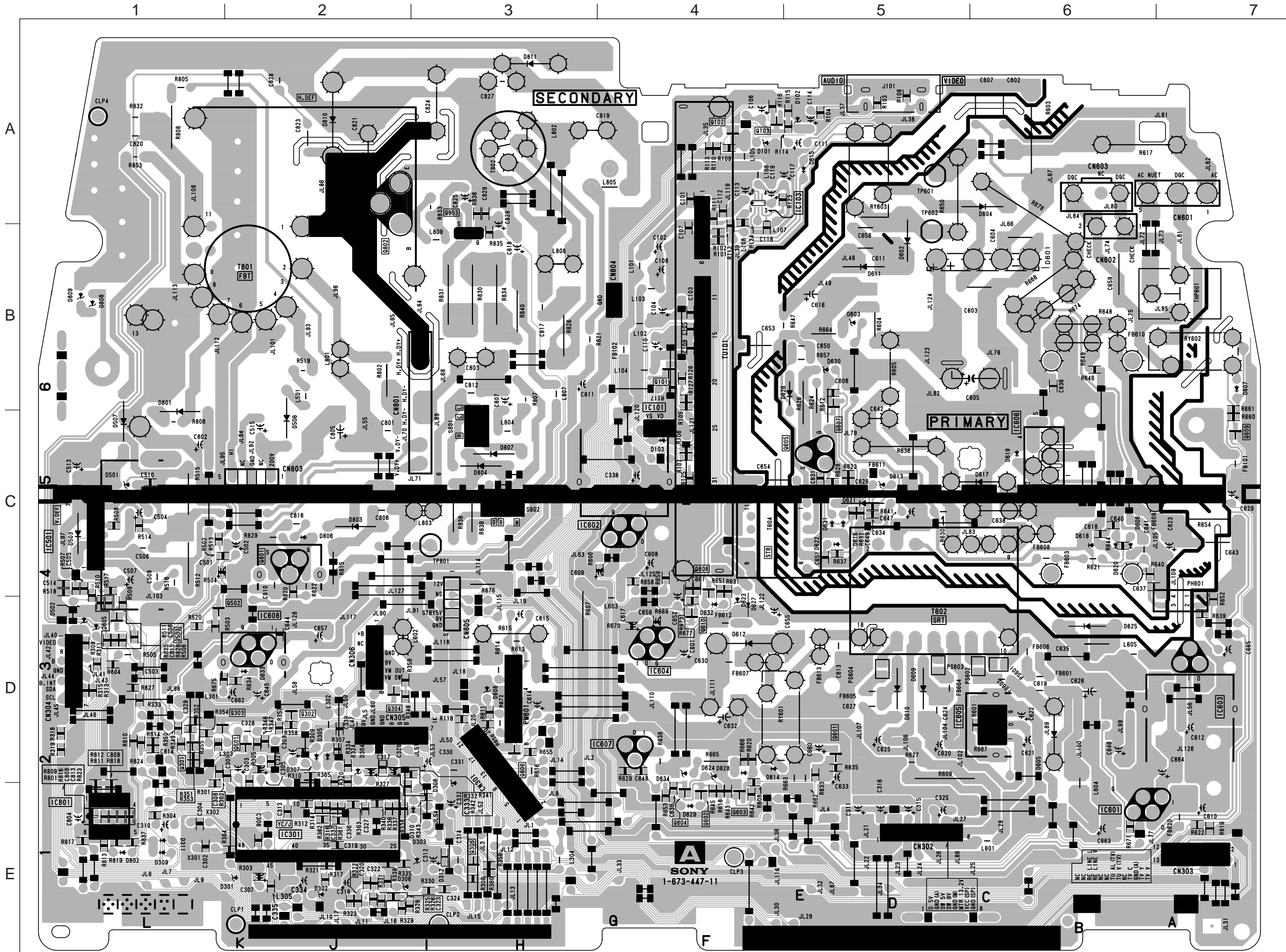
A BOARD

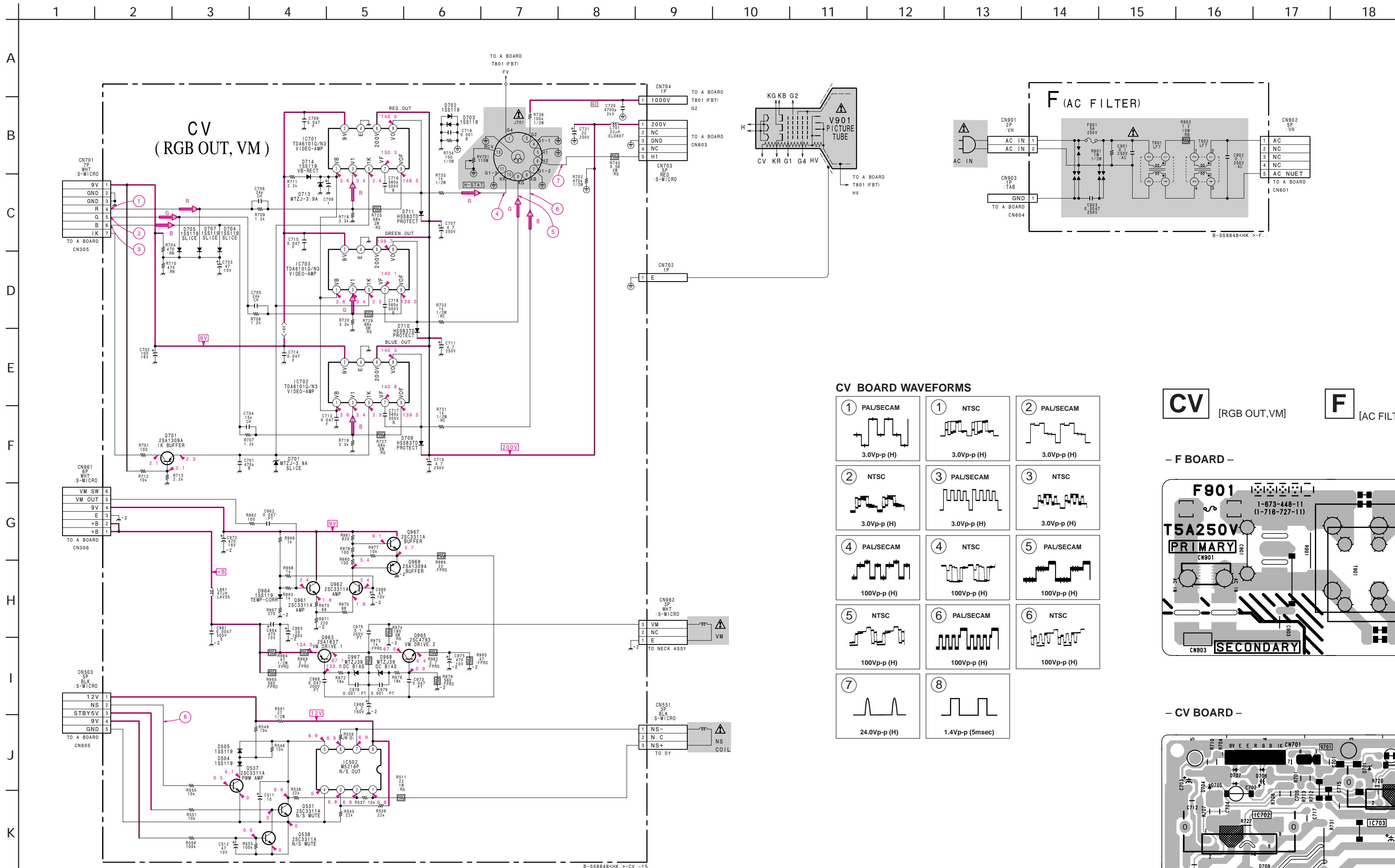
IC		D	
IC101	C-4	D305	D-2
IC103	A-4	D307	D-2
IC301	E-2	D308	E-3
IC501	C-1	D501	C-1
IC601	E-7	D502	D-1
IC602	C-4	D503	C-1
IC603	D-7	D506	C-2
IC604	D-4	D507	C-1
IC605	D-6	D601	B-6
IC606	C-6	D602	B-5
IC607	D-4	D603	B-5
IC608	D-2	D604	B-6
IC801	E-1	D605	D-6
TRANSISTOR		D606	C-6
		D607	C-7
		D608	D-3
		D609	D-5
		D610	D-5
		D611	B-5
		D612	D-4
		D613	C-5
		D614	D-4
		D615	A-5
		D616	C-5
		D617	C-6
		D618	C-6
		D619	C-6
		D620	C-6
		D621	C-5
		D622	C-5
		D623	D-4
		D624	E-4
		D625	D-6
		D626	E-4
		D627	D-4
		D628	C-5
		D629	E-4
		D630	B-5
		D631	C-5
		D632	D-4
		D633	D-2
		D634	D-4
		D801	C-1
		D802	A-1
		D803	C-2
		D804	A-3
		D805	D-1
		D806	C-2
		D807	A-3
		D810	A-2
		D811	A-3
DIODE		*	
		D101	A-4
		D102	A-5
		D103	C-4
		D301	E-2
		D302	E-2
		D304	E-2



Note: The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.

- A BOARD -





VIDEO section

TABLE OF CONTENTS

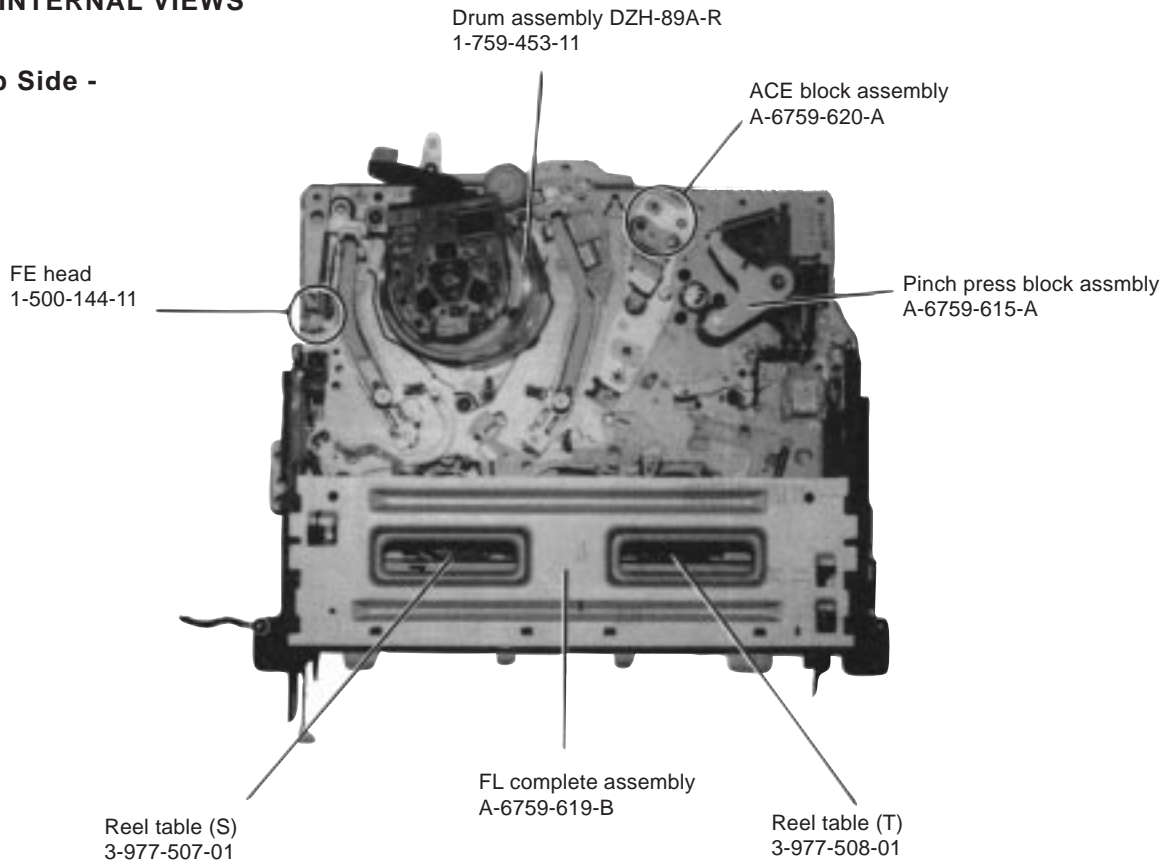
<u>Section</u>	<u>Title</u>	<u>Page</u>	<u>Section</u>	<u>Title</u>	<u>Page</u>
[VIDEO SECTION]			5. DIAGRAMS		
1. GENERAL			5-1.	Block Diagrams	105
1-1.	INTERNAL VIEWS	96	5-2.	Circuit Boards Location	107
2. DISASSEMBLY			5-3.	Printed Wiring Boards and Schematic Diagrams	108
2-1.	Top Cover Removal	97	•	MA10 (1/3) Board	111
2-2.	VCR Block Assy Removal	97	•	MA10 (2/3) Board	115
2-3.	FF10 Board Removal	97	•	MA10 (3/3) Board	119
2-4.	MA10 Board Removal	97	•	FF10 Board	121
2-5.	Service Position (MA10 Board)	97	5-4.	Semiconductors	122
3. CIRCUIT ADJUSTMENTS		98	6. EXPLODED VIEWS		
4. INTERFACE, IC PIN FUNCTION DESCRIPTION			6-3.	Mechanism Deck Assembly (1)	126
4-1.	μ-COM Poart Function Description (MA10 Board IC001)	101	6-4.	Mechanism Deck Assembly (2)	127
4-2.	System Control-Video Block Interface (MA10 Board IC402)	102	6-5.	Mechanism Deck Assembly (3)	128
4-3.	System Control-Servo Peripheral Circuit Interface (MA10 Board IC402)	102	7. ELECTRICAL PARTS LIST		135
4-4.	System Control-Mechanism Block Interface (MA10 Board IC402)	103			
4-5.	System Control-System Control Peripheral Circuit Interface (MA10 Board IC402)	103			
4-6.	System Control-Audio Block Interface (MA10 Board IC402)	103			
4-7.	Servo/System Control Port Function Description (MA10 Board IC402)	104			

SECTION 1

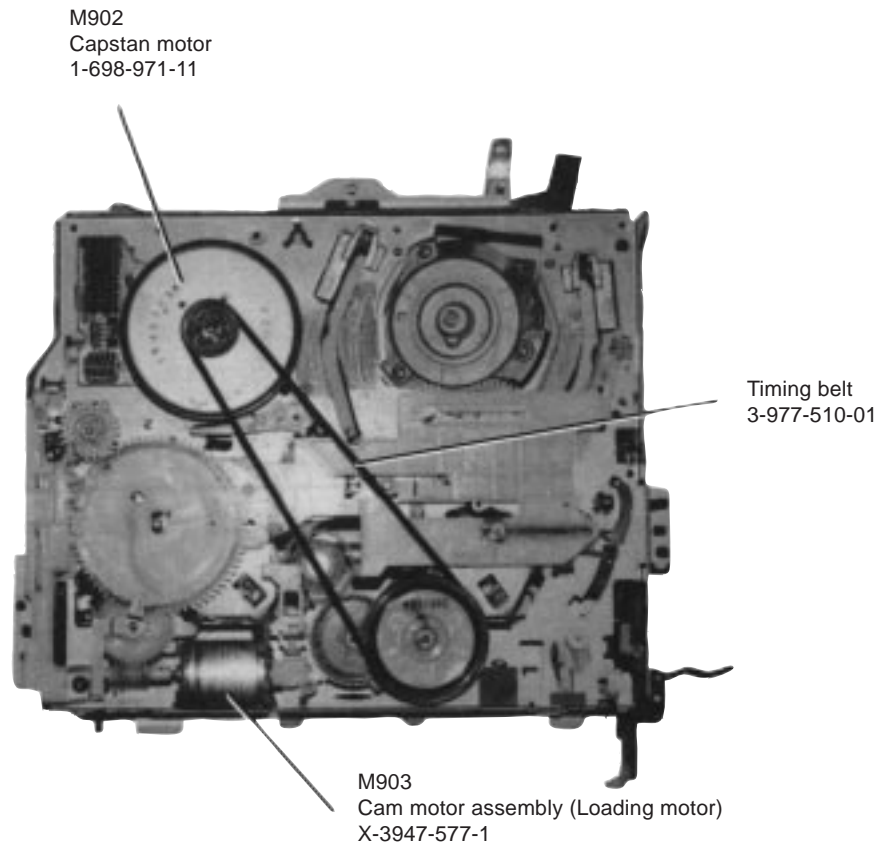
GENERAL

1-1. INTERNAL VIEWS

- Top Side -

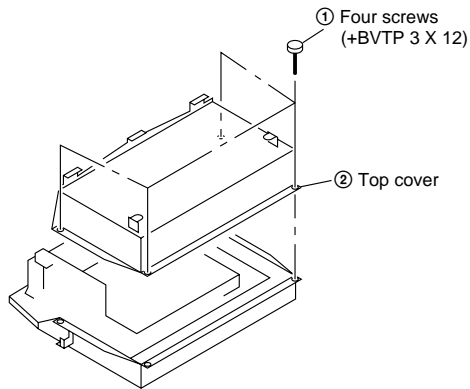


- Bottom Side -

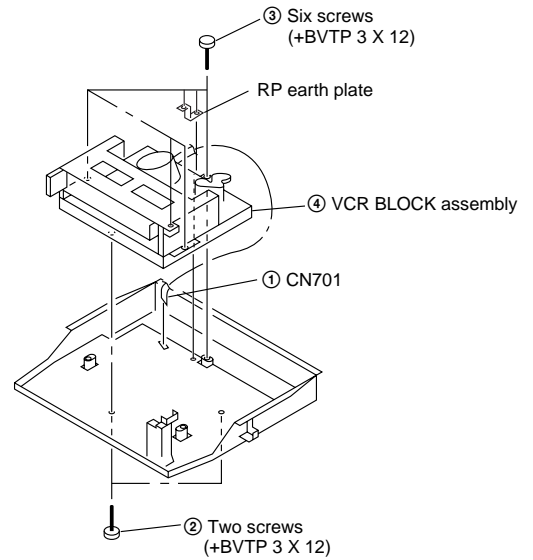


SECTION 2 DISASSEMBLY

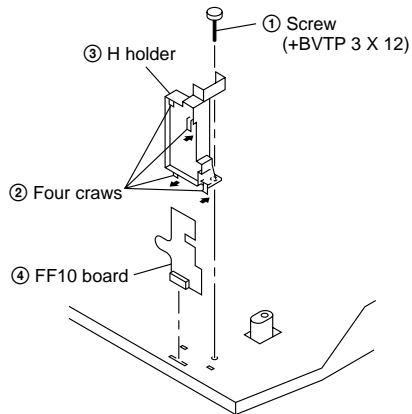
2-1. TOP COVER REMOVAL



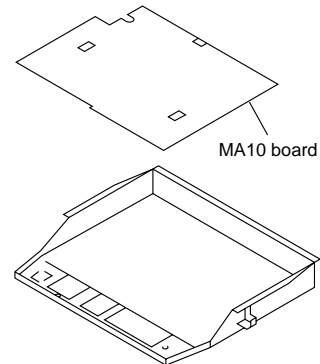
2-2. VCR BLOCK ASSY REMOVAL



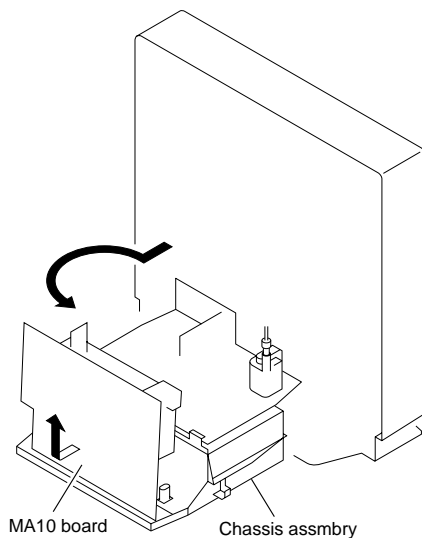
2-3. FF10 BOARD REMOVAL



2-4. MA10 BOARD REMOVAL



2-5. SERVICE POSITION (MA10 BOARD)



SECTION 3

CIRCUIT ADJUSTMENTS

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

[INSTRUMENTS TO BE USED]

- 1) Color TV
- 2) Signal or dual trace type oscilloscope, band more than 30 MHz, delay, as provided.
- 3) Frequency counter (4 digits or more)
- 4) PAL pattern generator
- 5) Digital voltmeter
- 6) Audio level meter
- 7) Audio generator
- 8) Attenuator
- 9) Distortion meter
- 10) Alignment tape

Part code : H7099052H (MH-2)

[CONNECTION]

Unless otherwise specified, connect and adjust the measurement equipment as follows.

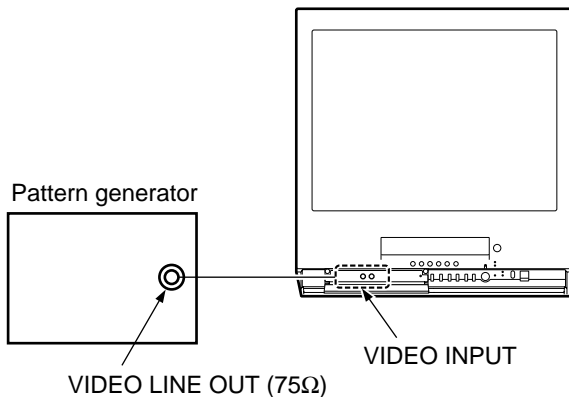


Fig.3-1

[SET-UP FOR ADJUSTMENT]

The video signal from the pattern generator is used as adjustment signal for electrical adjustment. This video signal should meet the requirement. Connect the oscilloscope to the video input terminal on the MF 1 board and make sure that the amplitudes of sync signal of video signal, video portion and burst signal are flat at approximately 0.3, 0.7 and 0.3 V, respectively, and that the level ratio of the burst signal and “red signal” are 0.30 : 0.66, Fig.3-2 shows video signals (color bars) used in adjusting the electrical adjustment.

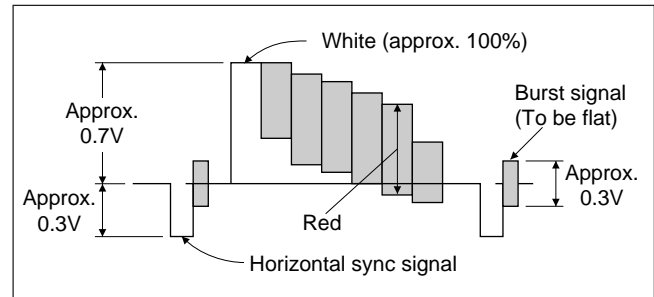


Fig.3-2

Alignment Tape (MH-2)

	Time	Video signal	Audio signal
1	10 minutes	Starir-step	6kHz
2	5 minutes	-	3kHz
3	10 minutes	Color bar	1kHz
4	3 minutes	RF sweep	-

[SPECIFIED INPUT/OUTPUT LEVEL IMPEDANCE]

Input/Output terminal

Video input	Pin jack Input signal : 1Vp-p, 75Ω, unbalanced Sync negative
AUDIO LINE IN	Pin jack Input level : -7.5dBs (0dBs=0.775Vrms) Input impedance : More than 47kΩ

X'tal OSC CHECK

Mode	PB
Signal	Alignment tape, Stair step
Measurement Point	MA10 board Q823 emitter(NTSC) IC802 ②9pin(PAL)
Measurement Equipment	Oscilloscope
Specified Value	500±200mVp-p

Check: 1)Confirm the frequency is 3.579545MHz±82Hz(NTSC), and 4.433619MHz±100Hz(PAL).
2)Confirm the waveform amplitude is 500±200mVp-p.

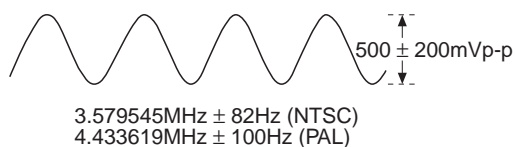


Fig.3-3

CARRIER DEVIATION CHECK

Mode	E-E
Signal	Color bar
Measurement Point	MA10 board IC802 ①8pin
Measurement Equipment	Spectrum Analyzer
Specified Value	$f_2 - f_1 = 1.00 \pm 0.08\text{MHz}$

Check: Confirm $f_2 - f_1 = 1.00 \pm 0.08\text{MHz}$
Confirm $f_1 = 3.40 \pm 0.13\text{MHz}$ (NTSC), and $3.80 \pm 0.13\text{MHz}$ (PAL)

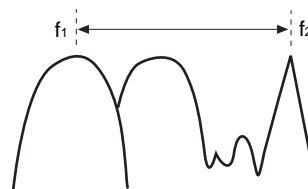


Fig.3-5

SYNC AGC CHECK

Mode	E-E
Signal	Color bar
Measurement Point	MA10 board Q830 emitter
Measurement Equipment	Oscilloscope
Specified Value	1.0±0.1Vp-p

Check: Confirm the waveform amplitude is 1.0±0.1Vp-p.

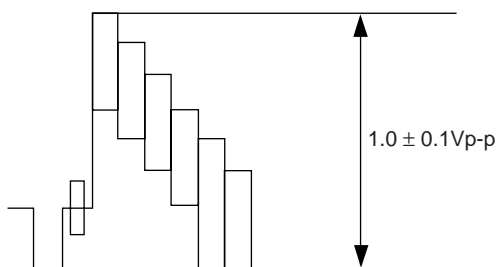


Fig.3-4

WHITE/DARK CLIP CHECK

Mode	E-E
Signal	Color bar
Measurement Point	MA10 board IC802 ③7pin
Measurement Equipment	Oscilloscope
Specified Value	190±20% (White), 55±20% (Dark)

Preparation: Add 3.3kΩ resistor between IC802 ④2pin and GND.

Check: Taking the height from sync to white level as 100%, check white clip and dark clip.

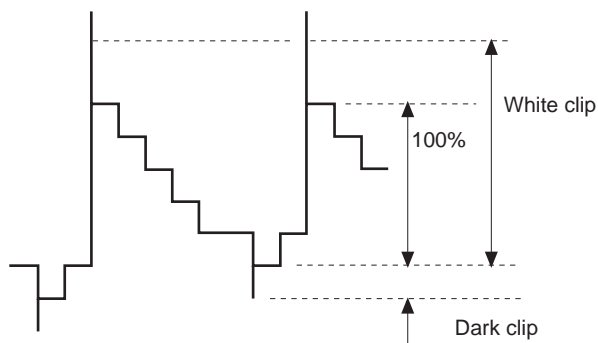


Fig.3-6

REC Y LEVEL CHECK

Mode	E-E(SP)
Signal	No signal
Measurement Point	MA10 board IC802 ⑱pin
Measurement Equipment	Oscilloscope
Specified Value	$240 \pm 70 \text{mVp-p (NTSC)}$ $260 \pm 70 \text{mVp-p (PAL)}$

Check: Confirm the Vp-p of the waveform is $220 \pm 70 \text{mVp-p}$.

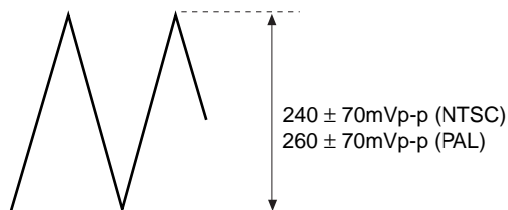


Fig.3-7

PB Y LEVEL CHECK

Mode	PB
Signal	Color bar
Measurement Point	MA10 board Q830 emitter
Measurement Equipment	Oscilloscope
Specified Value	$1.0 \pm 0.1 \text{Vp-p}$

Check: Confirm the Vp-p of the waveform is $1.0 \pm 0.1 \text{Vp-p}$.

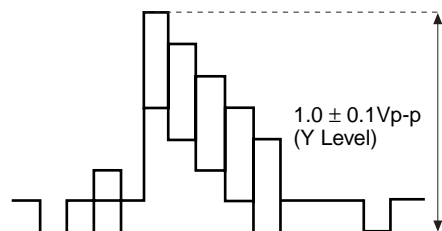


Fig.3-9

REC CHROMA CHECK

Mode	REC(SP)
Signal	Color bar
Measurement Point	MA10 board IC802 ⑭pin
Measurement Equipment	Oscilloscope
Specified Value	$350 \pm 60 \text{mVp-p}$

Check: Confirm the Vp-p of the waveform is $350 \pm 60 \text{mVp-p}$.

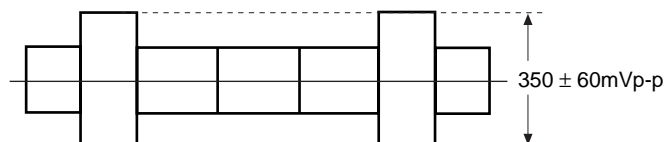


Fig.3-8

SWITCHING LOCATION ADJUSTMENT WHEN CHANGE DRUM

1.VIDEO SWITCHING LOCATION ADJUSTMENT

- 1) Connect between CN1004 pin ② and pin ⑥ on MA10 board.
- 2) Insert switching over up tape(KRV-23PS) and push the play back key.
- 3) Push the channel + and-keys simultaneously.
- 4) Short instant between CN1004 pin ① and pin ⑥.(LED goes on and off)

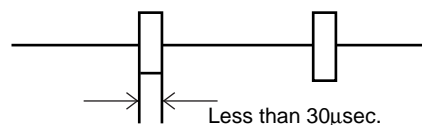


Fig.3-10

- 5) Adjust the channel+/- keys of the set so that waveform width of CN702 pin ② become minimum.(less than $30 \mu\text{sec.}$)
- 6) Push the pause key of the set.(LED wink disappear)
- 7) Remove the connection between CN1004 pin ② and pin ⑥.

SECTION 4

INTERFACE, IC PIN FUNCTION DESCRIPTION

4-1. μ -COM PORT FUNCTION DESCRIPTION (MA10 BOARD IC001)

Pin No.	Signal	I/O	Function
1	S SEL F	I	S-INPUT SELECT (FRONT)
2	S SEL R	I	S-INPUT SELECT (REAR)
3	ST	I	TU STEREO MODE
4	BIL	I	TU BILINGUAL MODE
5	DGC SW	–	DGC ON/OFF CONTROL
6	ST/ MONO	I	SET MODE STEREO/MONO
7	–	–	
8	MAIN/SUB	O	TU MAIN/SUB CONTROL
9	F MONO	O	TU FOCE MONO CONTROL
10	VM SW	O	VM ON/OFF CONTROL
11	GP A	I	"REC PON" SW A
12	GP B	I	"REC PON" SW B
13	GP C	I	"REC PON" SW C
14	ASURA CS	O	CHIP SELECT FOR ASURA
15	SLAVE RESE	O	RESET FOR ASURA
16	J CLK	O	JUST CLOCK DISABLE ("H" : DISAB)
17	FACT	I	FACTORY MODE
18	1TU /2TU	I	SET MODE 1TU/2TU
19	JUST CLOCK	I	JUST CLOCK DET INPUT
20	SIRCS	I	REMOCON SIGNAL IN
21	HSYNC 1	I	H SYNC DET INPUT (REC)
22	HSYNC 0	I	H SYNC DET INPUT (TV)
23	SI	I	SIGNAL DATA INPUT
24	SO	O	SIGNAL DATA OUTPUT
25	SCK	O	SIGNAL CLOCK OUTPUT
26	Vss	–	
27	B INT	I	BUS INT
28	X TAL	–	
29	EXTAL	–	
30	RESET	–	
31	A MUTE	O	AUDIO MUTE
32	CLK OS	O	CHIP SELECT FOR RT CLOCK
33	KEY2	I	KEY SCAN 2
34	KEY1	I	KEY SCAN 1
35	AFT1	I	AFT DET 1
36	AFT0	I	AFT DET 0
37	OVP	I	OVP DET
38	G SW	I	"REC PON" SW
39	XLC	–	
40	EXLC	–	
41	OSD R	–	
42	OSD G	–	
43	OSD B	–	
44	I	–	
45	YS	–	
46	YM	–	
47	SDA1	O	1 ² C BUS DATA FOR YCJ etc
48	SDA0	O	1 ² C BUS DATA FOR NVM
49	SCL1	O	1 ² C BUS CHECK FOR YCJ etc
50	SCL0	O	1 ² C BUS CHECK FOR NVM
51	LED2	O	POWER LED
52	LED1	O	STBY LED
53	NS	O	NS COIL CONTROL (PWM)
54	VOL	O	VOLUME CONTROL (PWM)
55	MP	–	
56	NC	–	
57	Vdd	–	
58	Vss	–	
59	HPULSE	I	
60	VPULSE	I	
61	CRTPOW	O	CRT POWER ON
62	VCRPOW	O	VCR POWER ON
63	M SW	I	MAIN SW
64	SP MUTE	O	SPEAKER MUTE

4-2. SYSTEM CONTROL-VIDEO BLOCK INTERFACE (MA10 BOARD IC402)

Signal	Pin No.	I/O	STOP	FF	REW	TAPE THREADING	TAPE UNTHREADING	PB	PB · PAUSE	SLOW	X2	PICTURE SEARCH		REC	REC · PAUSE
												CUE	REVIEW		
RF SW P (SW30)	IC402 ①	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1
Q VD	IC402 ④	O	L	L	L	L	L	*2	*3	*3	*3	*3	*3	L	L
V SYNC	IC402 ⑥⑥	I	*4	*4	*4	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5

*1. 30Hz 50% duty pulse synchronizing with drum rotation.

*2. Normally “L” . “H” when the video signal is not detected.

*3. V period “H” pulse.

*4. “H” in the LP mode. Selected according to the recording mode.

*5. Selected according to the tape recording mode.

4-3. SYSTEM CONTROL-SERVO PERIPHERAL CIRCUIT INTERFACE (MA10 BOARD IC402)

Signal	Pin No.	I/O	STOP	FF	REW	TAPE THREADING	TAPE UNTHREADING	PB	PB · PAUSE	SLOW	X2	PICTURE SEARCH		REC	REC · PAUSE
												CUE	REVIEW		
REC CTL	IC402 ⑦	O	HI-Z	HI-Z	HI-Z	HI-Z	HI-Z	HI-Z	HI-Z	HI-Z	HI-Z	HI-Z	HI-Z	*1	HI-Z
CAP STOP	IC402 ③④	O (O.D)	L	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	L	*3	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)
STEP PLS	IC402 ⑨⑨	O	L	L	L	L	L	L	L	*2	L	L	L	L	L
PB CTL	IC402 ⑥⑦	I	H	*6	*6			*1	H/L	*2	*6	*6	*6	*1	H
DRUM PG	IC402 ⑥⑧	I	*4	*1	*1	*5	*5	*1	*1	*1	*1	*1	*1	*1	*1
DRUM FG	IC402 ⑥⑨	I	*4	*7	*7	*5	*5	*7	*7	*7	*7	*7	*7	*7	*7
CAP FG	IC402 ⑦⑩	I	H/L	*6	*6	*5	*5	*6	H/L	*2	*6	*6	*6	*6	H/L
CAP DA	IC402 ⑦③	O	*8	*8	*8	*8	*8	*9	*8	*8	*9	*9	*9	*9	*8
DRUM DA	IC402 ⑦④	O	*10	*10	*10	*10	*10	*10	*10	*10	*10	*10	*10	*10	*10
CTL RESET	IC402 ⑩⑩	I/O	HI-Z	HI-Z	HI-Z	HI-Z	HI-Z	HI-Z	HI-Z	*11	HI-Z	HI-Z	HI-Z	HI-Z	HI-Z

*1. 30Hz 50% pulse.

*2. Pulse in tape running.

*3. Reverse logic pulse of STEP PLS.

*4. “L” when drum rotation stops.

*5. Unstable period pulse.

*6. Pulse of Period proportionate to tape speed.

*7. 360Hz pulse.

*8. Pulse in tape running.

*9. Approx. 2 msec. period “H” or “L” pulse.

*10. Approx. 1.5 msec. period “H” or “L” pulse.

4-4. SYSTEM CONTROL-MECHANISM BLOCK INTERFACE (MA10 BOARD IC402)

Signal	Pin No.	I/O	EJECTED	CASSETTE	CASSETTE	TAPE	TAPE	STOP	FF	REW	PB	PB · PAUSE	SLOW	X2	PICTURE SEARCH		REC	REC · PAUSE
				LOADING	UNLOADING	THREADING	UNTHREADING								CUE	REVIEW		
CAM UN LOAD	IC402 ⑨	O	HI-Z	H	L	H	L	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
CAM LOAD	IC402 ⑧	O	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
MODE 1	IC402 ②②	I	H	L	L	*1	*1	H	H	H	H	H	H	H	H	L	H	H
MODE 2	IC402 ②①	I	H	L	L	*1	*1	H	H	H	L	L	L	L	L	L	L	L
MODE 3	IC402 ②⑩	I	L	L	L	*1	*1	H	L	L	L	L	L	L	L	H	L	L
MODE 4	IC402 ①⑨	I	L	H	H	*1	*1	L	H	H	L	L	L	L	L	L	L	L
C IN REC PRF	IC402 ①⑦	I	L	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
T REEL FG	IC402 ⑥④	I	H/L	H/L	H/L	H/L	H/L	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
S REEL FG	IC402 ⑥③	I	H/L	H/L	H/L	*3	*3	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
T/S LED	IC402 ③⑤	O (O.D.)	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
CAP STOP	IC402 ③④	O (O.D.)	L	L	L	H	H	L	H	H	H	L	*5	H	H	H	H	L
CAP RVS	IC402 ②②	O	L			H	L	H/L	H	L	H	H	H/*5	H	H	L	H	H
T SENS	IC402 ⑥①	I	*4	*4	*4	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6
S SENS	IC402 ⑥②	I	*4	*4	*4	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6

*1. Uncertainty.

*2. "L" when the erasing protection tab is bent, "H" when not bent.

*3. Pulse of period proportionate to reel rotation speed.

*4. Apporx. 2 msec. period "H" pulse.

*5. Pulse in tape running.

*6. Normally "L". 2 msec. period "H" pulse when tape top or tape end is detected.

*7. "L" when unloading to switchover. "H" when loading. "HI-Z" when CAM motor is stop.

4-5. SYSTEM CONTROL-SYSTEM CONTROL PERIPHERAL CIRCUIT INTERFACE (MA10 BOARD IC402)

Signal	Pin No.	I/O	Function
ASURA RESET	IC402 ④⑩	I	Normally "H". "L" when service interruption is detected or restored.
ASURA CS	IC402 ④④	I	Chip select signal from the timer microprocessor. V period "L" pulse.
S IN 0	IC402 ④⑤	I	Serial communication data from the timer microprocessor. V period "L" pulse.
S OUT 0	IC402 ④⑥	O	Serial communication data to the timer microprocessor. V period "L" pulse.
S CLK	IC402 ④⑦	I	Serial communication clock with the timer microprocessor. V period "L" pulse.

4-6. SYSTEM CONTROL-AUDIO BLOCK INTERFACE (MA10 BOARD IC402)

Signal	Pin No.	I/O	STOP	FF	REW	TAPE	TAPE	PB	PB · PAUSE	SLOW	X2	PICTURE SEARCH		REC	REC · PAUSE
						LOADING	UNLOADING					CUE	REVIEW		
A MUTE	IC402 ④⑨	O (O.D.)	L	L	L	L	L	*1	H	H	H	H	H	L	L

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

4-7. SERVO/SYSTEM CONTROL PORT FUNCTION DESCRIPTION (MA10 BOARD IC402)

Pin No.	Signal	I/O	Function
1	RF SWP	O	RF SWITCHING PULSE
2	–	–	
3	–	–	
4	QVD	O	QUASI VD
5	CTLHYS HIGH	O	CTL CONTROL
6	–	–	
7	REC CTL	O	REC CTL SIGNAL
8	CAM LOAD	O	CAM LOADING
9	CAM UNLOAD	O	CAM UNLOADING
10	CTL RESET	O	CTL CONTROL
11	–	–	
12	–	–	
13	–	–	
14	–	–	
15	–	–	
16	–	–	
17	C IN	I	CASSETTE IN
18	–	–	
19	MODE4	I	MD MODE DET
20	MODE3	I	MD MODE DET
21	MODE2	I	MD MODE DET
22	MODE1	I	MD MODE DET
23	LED6	O	REC PON LED
24	LED5	O	ON TIMER LED
25	LED4	O	REC LED
26	LED3	O	TIMER REC LED
27	–	–	
28	SDA	I/O	I ² C BUS DATA FOR VIDEO/HIFI
29	–	–	
30	SCL	O	I ² C BUS CLOCK FOR VIDEO/HIFI
31	–	–	
32	–	–	
33	GND	O	
34	CAP STOP	O	
35	T/S LED	O	T/S LED CONTROL
36	GND	O	
37	GND	O	
38	GND	O	
39	MP	–	
40	ASURA RESET	–	
41	Vss	–	
42	XTAL	–	
43	EXTAL	–	
44	ASURA CS	I	ASURA u-COM CHIP SELECT
45	S IN 0	I	SERIAL DATA IN
46	S OUT 0	O	SERIAL DATA OUT
47	S CLK	I	SERIAL CLOCK
48	GND	O	
49	MUTE	O	AUDIO MUTE
50	POS	I	SWITCHING POSITION ADJ MODE

Pin No.	Signal	I/O	Function
51	GND	O	
52	AVss	–	
53	AV ref	–	
54	AVdd	–	
55	SECAM/SVHS	I	SVHS DET IN
56	GND	O	
57	DEW	I	DEW SENSOR
58	GND	O	
59	–	–	
60	RF ENV	I	VIDEO RF ENVELOPE DET
61	T SENS	I	TAPE TOP SENSOR
62	S SENS	I	TAPE END SENSOR
63	SREEL FG	I	S-REEL FG
64	TREEL FG	I	T-REEL FG
65	GND	O	
66	VSYNC	I	V SYNC SIGNAL IN
67	PB CTL	I	PB CTL SIGNAL
68	DRM PG	I	DRUM PG
69	DRM FG	I	DRUM FG
70	CAP FG	I	CAPSTAN FG
71	–	–	
72	CAP RVS	O	CAPSTAN REVERSE
73	CAP DA	O	CAPSTAN D/A OUTPUT
74	DRM DA	O	DRUM D/A OUTPUT
75	JOG	O	JOG CONTROL
76	S VHS	O	S VHS DET OUT
77	REC COUNT	I	REC CTL COUNT
78	–	–	
79	–	–	
80	SO 1	O	SERIAL DATA OUTPUT FOR RP AMP
81	SCK1	O	SERIAL CLOCK FOR RP AMP
82	GND	O	
83	V PB	O	VIDEO PB MODE
84	CAP PWM	O	CAPSTAN
85	–	–	
86	–	–	
87	–	–	
88	Vss	–	
89	Vdd	–	
90	–	–	
91	–	–	
92	–	–	
93	–	–	
94	–	–	
95	–	–	
96	–	–	
97	–	–	
98	–	–	
99	STEP PLS	O	
100	–	–	






5-3. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

Note:

- All capacitors are in μF unless otherwise noted. pF : μF
Capacitors without voltage indication are all 50V.
- All resistors are in ohms.
 $\text{k}\Omega = 1000\Omega$, $\text{M}\Omega = 1000\text{k}\Omega$
- Indication of resistance, which does not have one for rating electrical power, is as follows.




Pitch: 5 mm

Rating electrical power: 1/4W(CHIP:1/10W)


-  : nonflammable resistor.
-  : fusible resistor.
-  : internal component.
-  : panel designation and adjustment for repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
-  : earth-chassis.

- Readings are taken with a color-bar signal input.
- Readings are taken with a 10M Ω digital multimeter.
- Voltage variations may be noted due to normal production tolerances.
- All voltages are in V.
no mark : REC/PB
() : REC
< > : PB


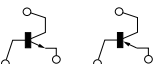


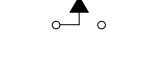





- Circled numbers are waveform reference.

-  : B + line
-  : B - line.
-  : signal path.

Reference information

RESISTOR	: RN	METAL FILM	CAPACITOR	: TA	TANTALUM
	: RC	SOLID		: PS	STYROL
	: FPRD	NONFRAMMABLE CARBON		: PP	POLYPROPYLENE
	: FUSE	NONFRAMMABLE FUSIBLE		: PT	MYLAR
	: RW	NONFRAMMABLE WIREWOUND		: MPS	METALIZED POLYESTER
	: RS	NONFRAMMABLE METAL OXIDE		: MPP	METALIZED POLYPROPYLENE
COIL	: RB	NONFRAMMABLE CEMENT		: ALB	BIPOLAR
		ADJUSTMENT RESISTOR		: ALT	HIGH TEMPERATURE
	: LF-8L	MICRO INDUCTOR		: ALR	HIGH RIPPLE

Terminal name of semiconductors in silk screen printed circuit (※)

	Device	Printed symbol	Terminal name	Circuit
①	Transistor		Collector Base Emitter	
②	Transistor		Collector Base Emitter	
③	Diode		Cathode Anode	
④	Diode		Cathode Anode (NC)	
⑤	Diode		Cathode Anode (NC)	
⑥	Diode		Common Anode Cathode	
⑦	Diode		Common Anode Cathode	

(Chip semiconductors that are not actually used are included.)

Ver.1.6

MA10 (1/3)

[SYSTEM CONTROL, MAIN MICON]
[VCR SERVO, AUDIO OUT]

MA10 (2/3)

[Y/C PROCESS]

MA10 (3/3)

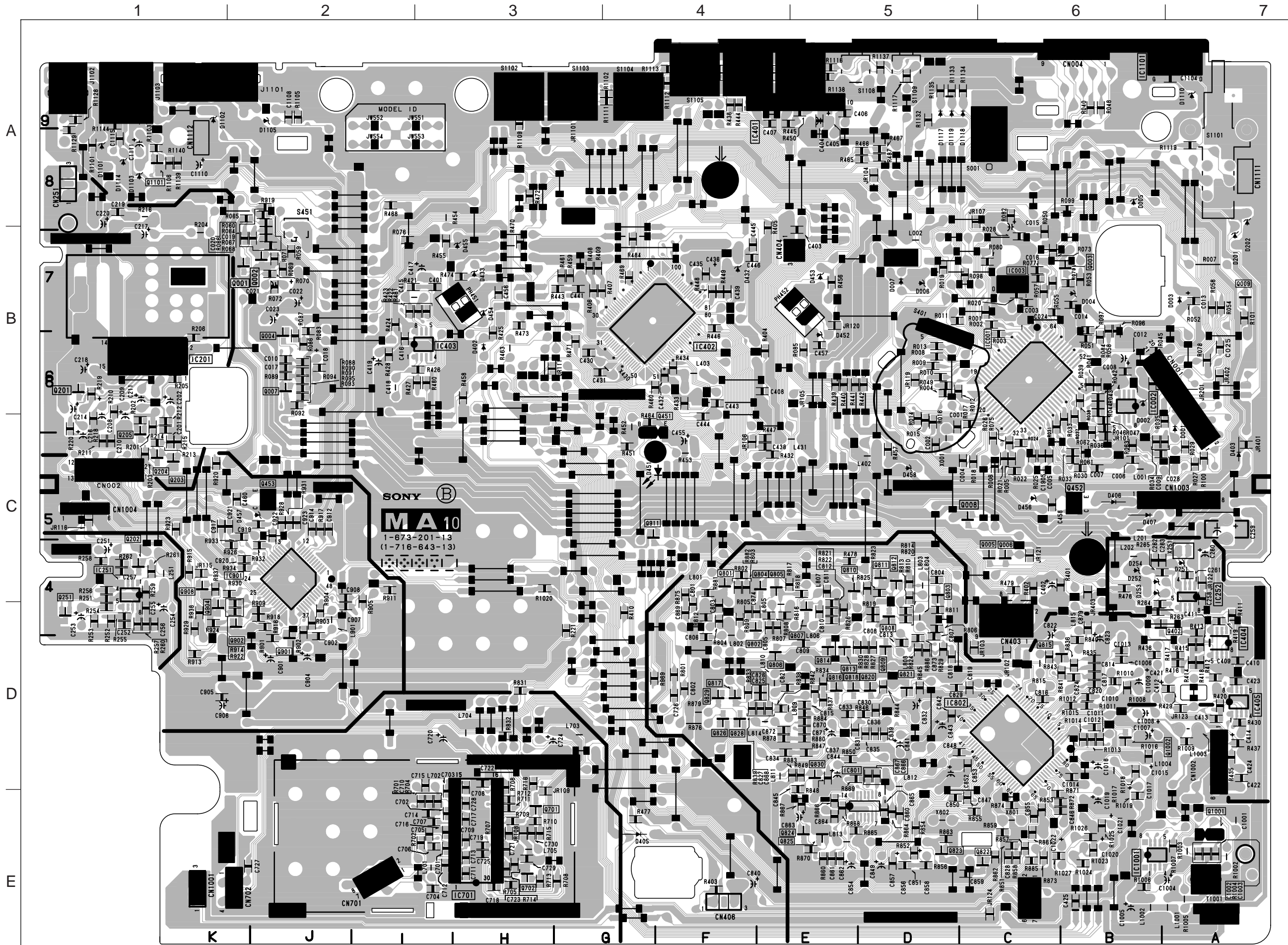
[VIDEO REC/PB AMP]

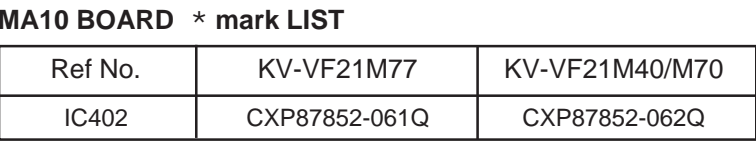
MA10 BOARD

IC					
IC001	B-6	Q821	D-5	①	
IC002	C-6	Q823	E-5	①	
IC003	B-6	Q824	E-5	①	
IC201	B-1	Q825	E-5	①	
IC401	A-4	Q830	D-5	①	
IC402	B-4	Q901	D-2	①	
IC403	B-3	Q1001	E-7	①	
IC404	D-7	Q1002	D-6	①	
IC405	D-7	Q1101	A-1	①	
IC701	E-3				
IC801	E-5				
IC802	D-6				
IC901	C-2				
IC1001	E-6				
IC1101	A-7				
TRANSISTOR					
Q001	B-2	* ①			
Q002	B-2	①			
Q003	B-6	①			
Q009	B-7	①			
Q201	B-1	①			
Q402	D-7	①			
Q451	C-4	-			
Q452	C-6	-			
Q453	C-2	-			
Q701	E-3	①			
Q801	C-4	①			
Q803	D-5	①			
Q808	D-5	①			
Q809	D-5	①			
Q812	D-5	①			
Q815	D-6	①			
DIODE					
D001	C-7	*			
D002	C-7				
D004	B-6				
D005	A-6				
D006	B-5				
D007	B-5				
D201	B-7				
D202	B-7				
D251	C-7				
D252	D-7				
D253	D-7				
D254	C-6				
D402	B-3				
D403	C-7				
D405	E-4				
D406	C-6				
D451	C-4				
D1101	A-1				
D1103	A-1				
D1105	A-2				
D1110	A-7				
D1117	A-5				
D1118	A-5				
D1119	A-5				

Note: The components identified by shading and mark B are critical for safety. Replace only with part number specified.

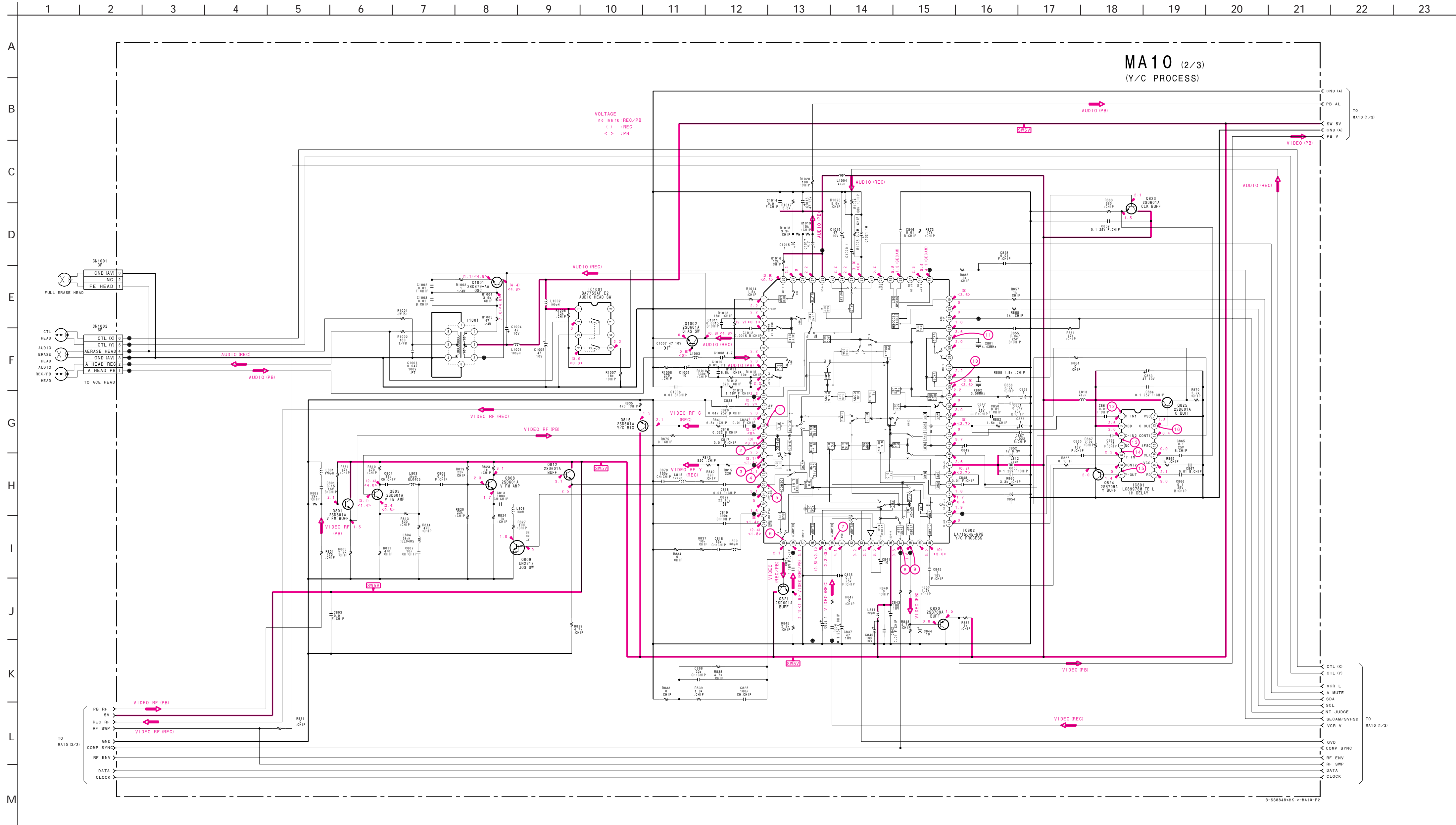
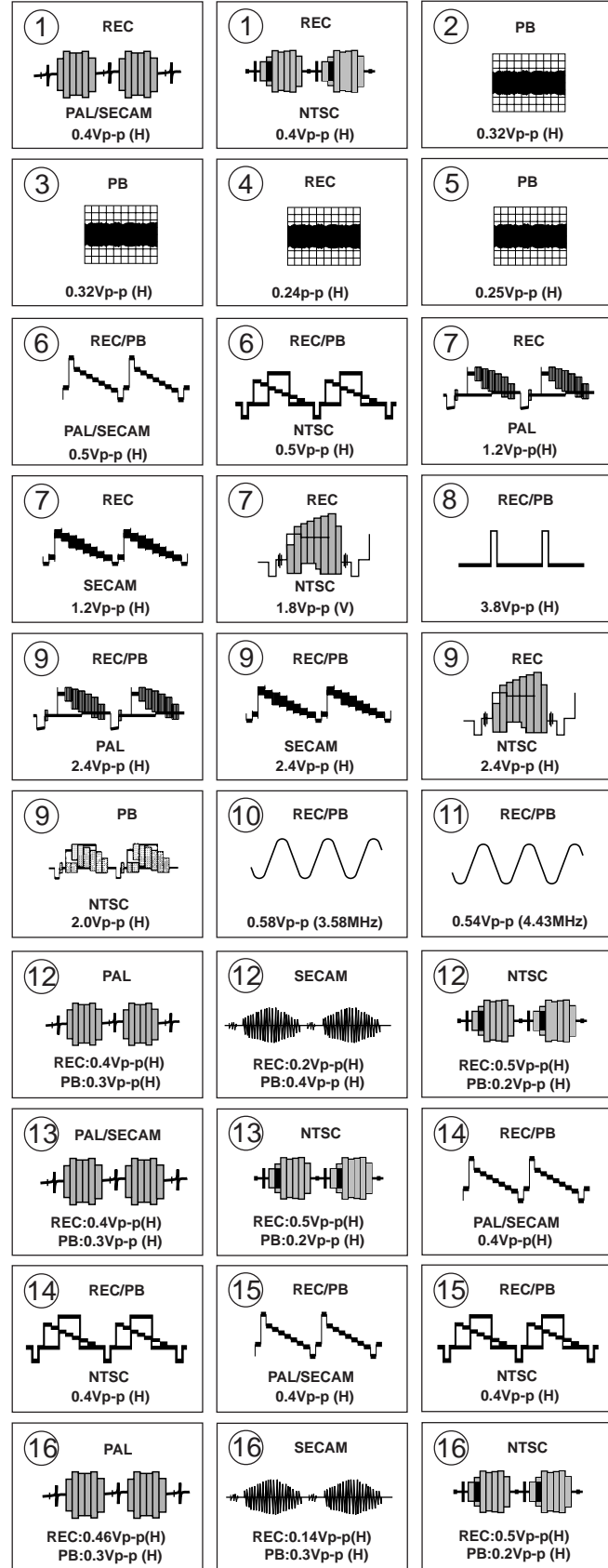
— MA10 BOARD —

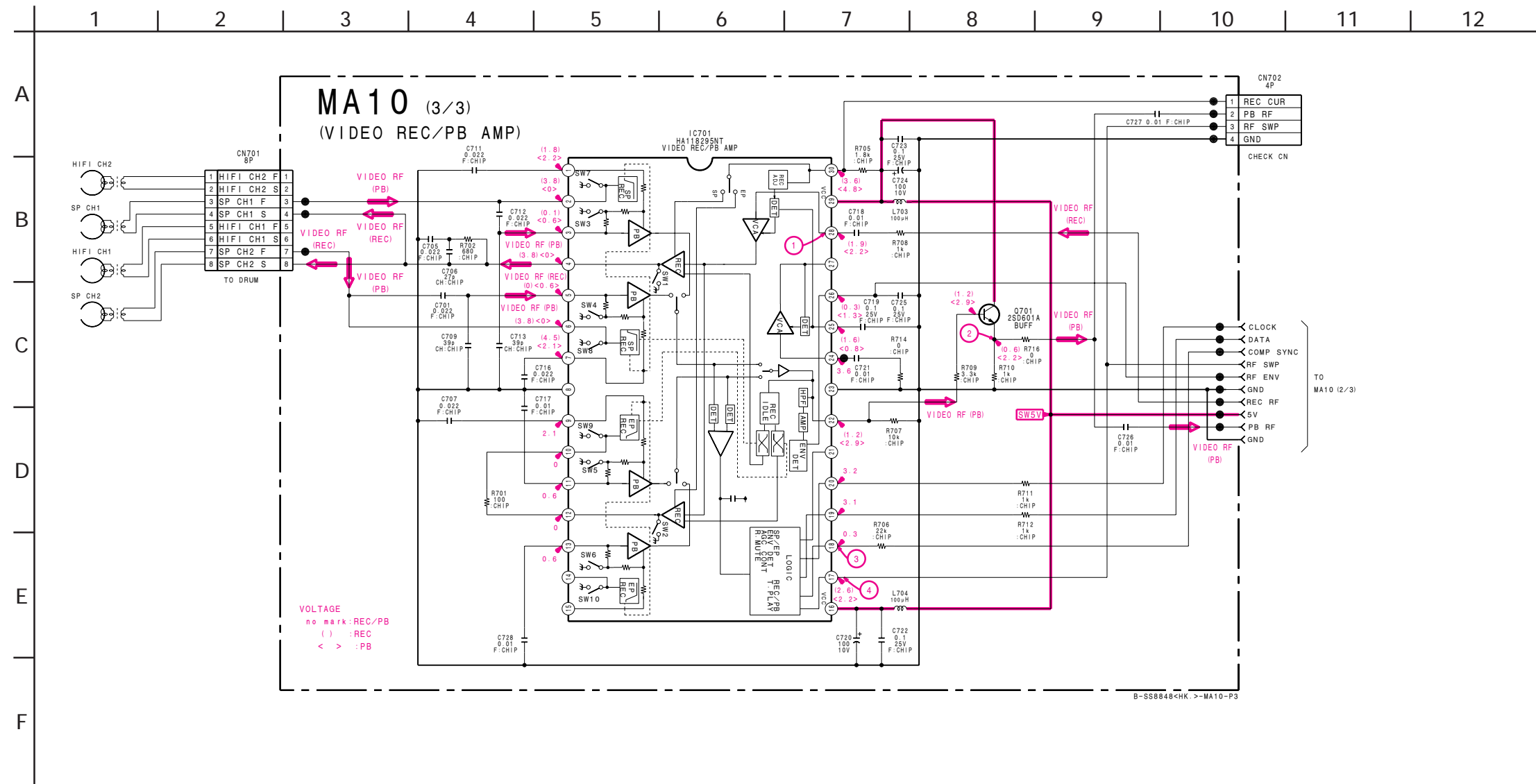




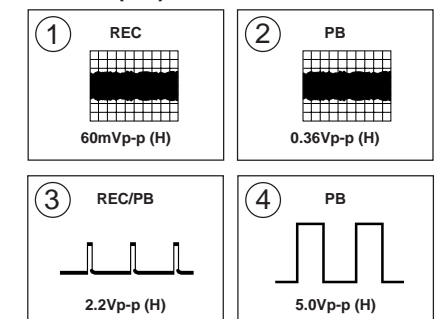
<p>① REC/PB</p> <p>5.0Vp-p (V)</p>	<p>② REC</p> <p>4.0Vp-p (V)</p>	<p>③ REC/PB</p> <p>5.0Vp-p (16MHz)</p>
<p>④ REC/PB</p> <p>3.7Vp-p (V)</p>	<p>⑤ REC/PB</p> <p>PAL/SECAM:5.0Vp-p (20msec) NTSC:5.0Vp-p (34msec)</p>	<p>⑥ REC/PB</p> <p>PAL/SECAM:4.0Vp-p (1.6msec) NTSC:4.0Vp-p (1.4msec)</p>
<p>⑦ REC/PB</p> <p>PAL/SECAM:4.8Vp-p (1.3msec) NTSC:4.8Vp-p (0.34msec)</p>	<p>⑧ REC/PB</p> <p>5.0Vp-p (H)</p>	<p>⑨ REC/PB</p> <p>5.0Vp-p(38MHz)</p>
<p>⑩ REC/PB</p> <p>5.0Vp-p (H)</p>	<p>⑪ REC/PB</p> <p>5.0Vp-p (V)</p>	<p>⑫ REC/PB</p> <p>PAL 1.0Vp-p (H)</p>
<p>⑫ REC/PB</p> <p>SECAM 1.0Vp-p (H)</p>	<p>⑫ REC/PB</p> <p>NTSC 1.6Vp-p (H)</p>	<p>⑬ REC/PB</p> <p>PAL 2.2Vp-p (H)</p>
<p>⑬ REC/PB</p> <p>SECAM 2.2Vp-p (H)</p>	<p>⑬ REC</p> <p>NTSC 3.0Vp-p (H)</p>	<p>⑬ PB</p> <p>NTSC 2.0Vp-p (H)</p>
<p>⑭ REC/PB</p> <p>PAL 1.0Vp-p (H)</p>	<p>⑭ REC/PB</p> <p>SECAM 1.0Vp-p (H)</p>	<p>⑭ REC</p> <p>NTSC 1.0Vp-p (H)</p>
<p>⑭ PB</p> <p>NTSC 1.0Vp-p (H)1.0</p>		

MA10(2/3) BOARD WAVEFORMS





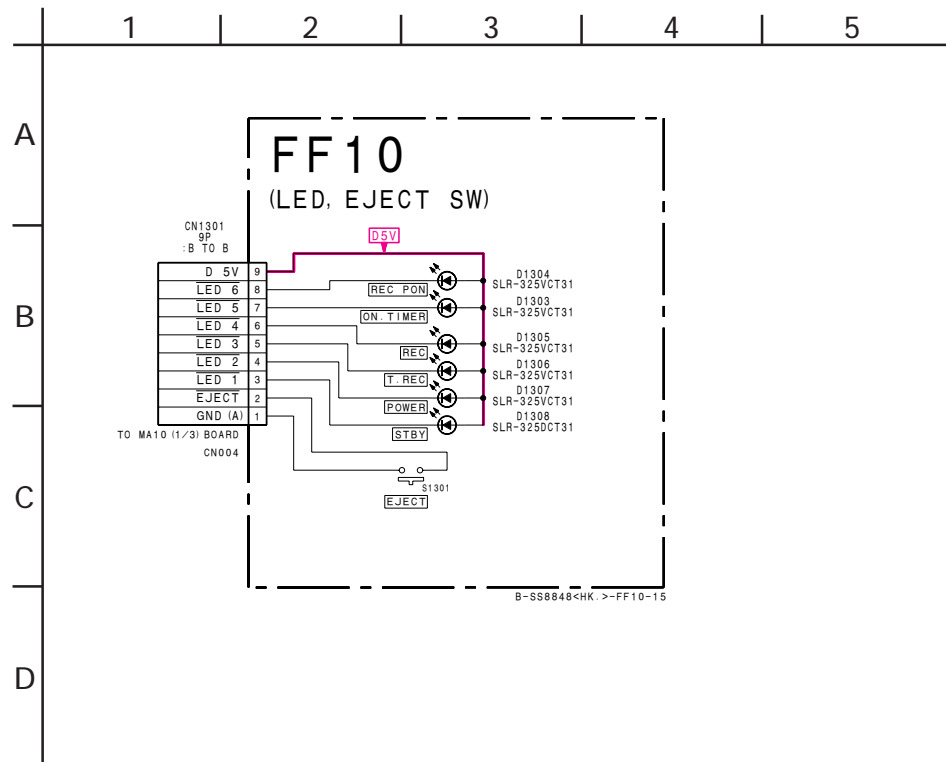
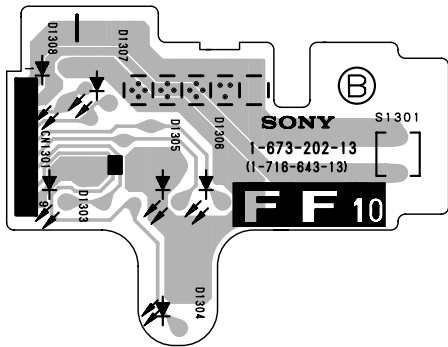
• MA10 (3/3) BOARD WAVEFORMS



FF10

[LED, EJECT SW]

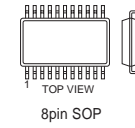
— FF10 BOARD —



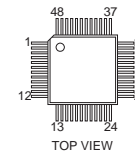
5-4.SEMICONDUCTORS

IC

BA10393F-E2
BA6305F-E2
BA7755AF-E2
M24C16-MN6T
NJM062M



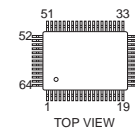
CXA2089Q



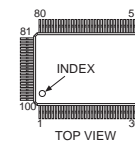
CXA2130S



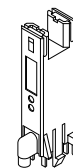
CXP85460



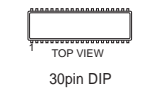
CXP87852



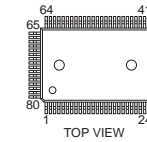
GP3S120



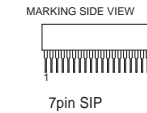
HA118295NT



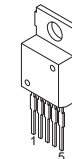
LA71504M-MPB



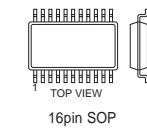
LA7840L



LB1643



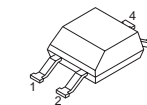
LC89978M-TE-L



LM393N
M5216P



PC123F2
PC123FY2



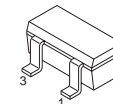
PQ05RD11
-PQ09RD11



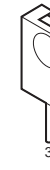
PQ30RV11



PST572C



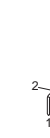
SBX1981



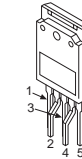
SE-135N



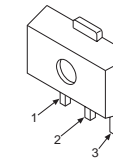
SI-3120C
SI-3120CA



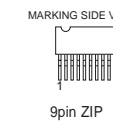
STR-F6656



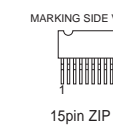
S-80743AL-A7



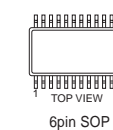
TDA6101Q/N3



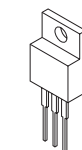
TDA7494



TK11819MTL

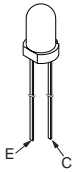


μPC2406AHF

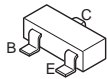


TRANSISTOR

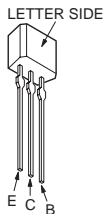
RPT-37PBT32
RPT-37PB3F



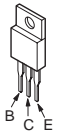
UN2113
UN2211
UN2213
2SA1162-G
2SB709A-QRS-TX
2SC1623-L5L6
2SC2412K-T-146-QR
2SD601A-Q
2SD601A-QRS-TX



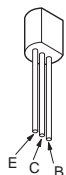
2SA1175-HFE
2SA1309A-QRSTA
2SC2785-HFE
2SC3311A-QRSTA



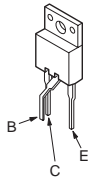
2SA1837
2SC4793



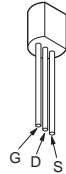
2SC1815-GR
2SD879



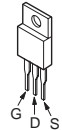
2SC5388



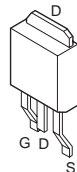
2SK1482-T



2SK2251-01

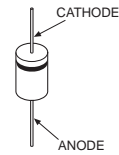


2SK2845-LB102

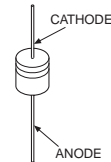


DIODE

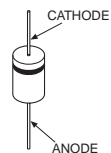
D1N120U



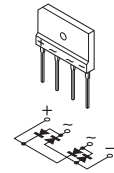
D1NS4
D1N20R
MTZJ-T-77-3.9B
MTZJ-3.3
MTZJ-5.1C
MTZJ-6.2B
RD10ESB2
RD18ES-B2
RD3.9ES-B1
RD3.9ES-B2
RD39ES-B2
RD5.1ES-B1
RD5.6ESB2
RD6.8ES-B2
1SS119-25
11ES2



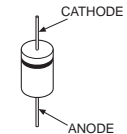
D1NS4-TR
D1NS6-TA2
D2L20U
EL1Z
EGP20G
EGP30DL-6085
ERA22-08
GP08D
GP08DPKG23
HSS83TD
MTZJ-T-77-10
MTZJ-T-77-18B
MTZJ-T-77-3.3
MTZJ-T-77-3.9A
MTZJ-T-77-39
MTZJ-T-77-5.1
MTZJ-T-77-5.1C
MTZJ-T-77-5.6
MTZJ-T-77-6.2
MTZJ-T-77-6.8A
MTZJ-T-77-9.1
MTZJ-T-77-9.1A
RGP10GPKG23
RGP15GPKG23



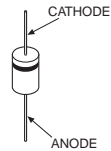
D6SB60LF



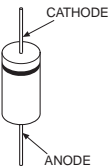
EGP30D



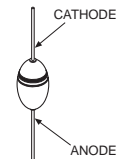
ERC04-06S
ERC06-15S
RU-1P



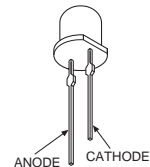
RU-4AM-T3



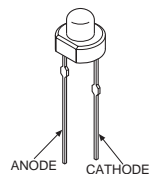
U05G



GL528V1



SLR-325DCT31
SLR-325VCT31



SECTION 6

EXPLODED VIEWS

NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.

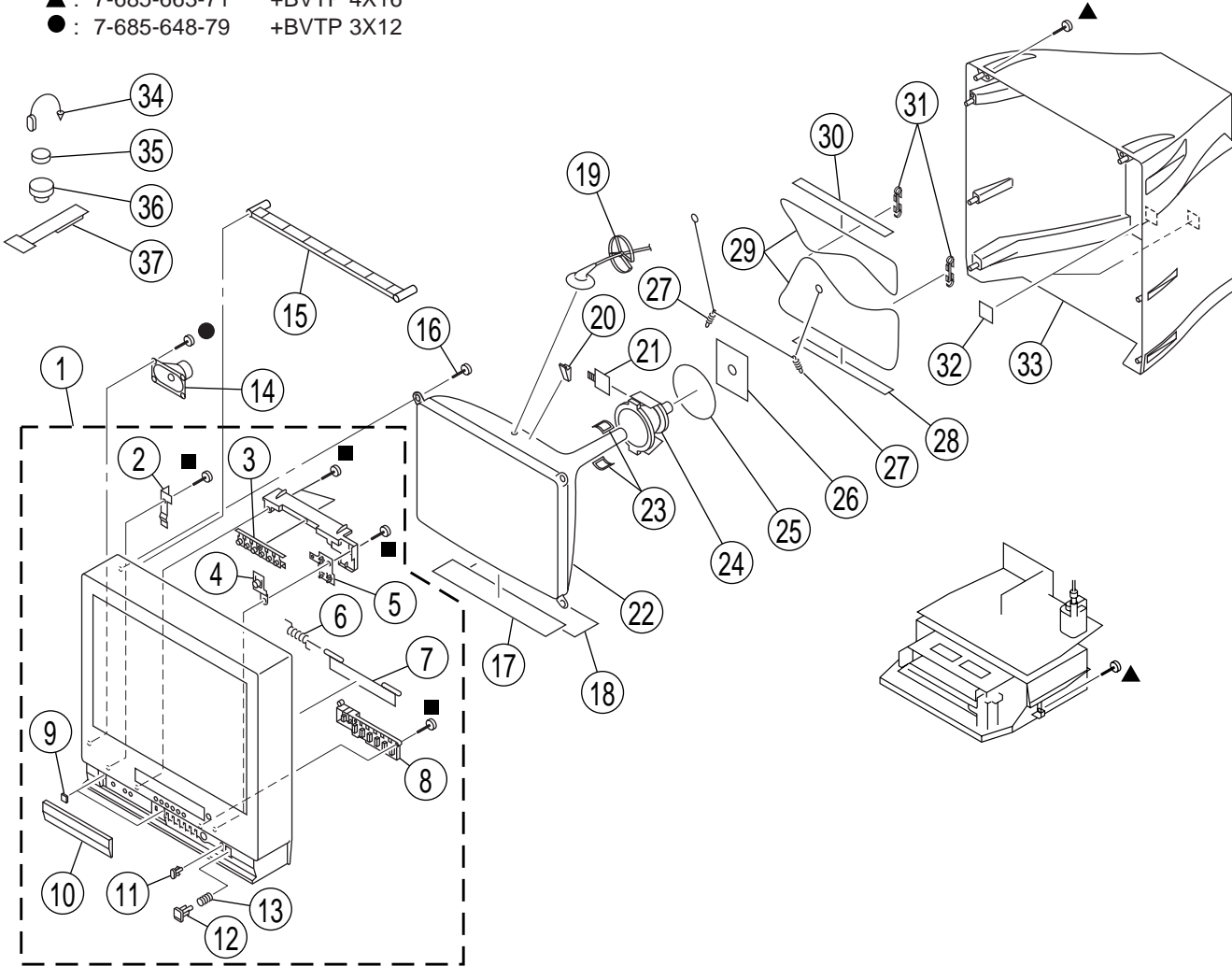
- The construction parts of an assembled part are indicated with a collation number in the remark column.

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

The components identified by shading and mark \triangle are critical for safety. Replace only with part number specified.

6-1. PICTURE TUBE

- : 7-685-134-19 +PTP 2.6X8
 ▲ : 7-685-663-71 +BVTP 4X16
 ● : 7-685-648-79 +BVTP 3X12

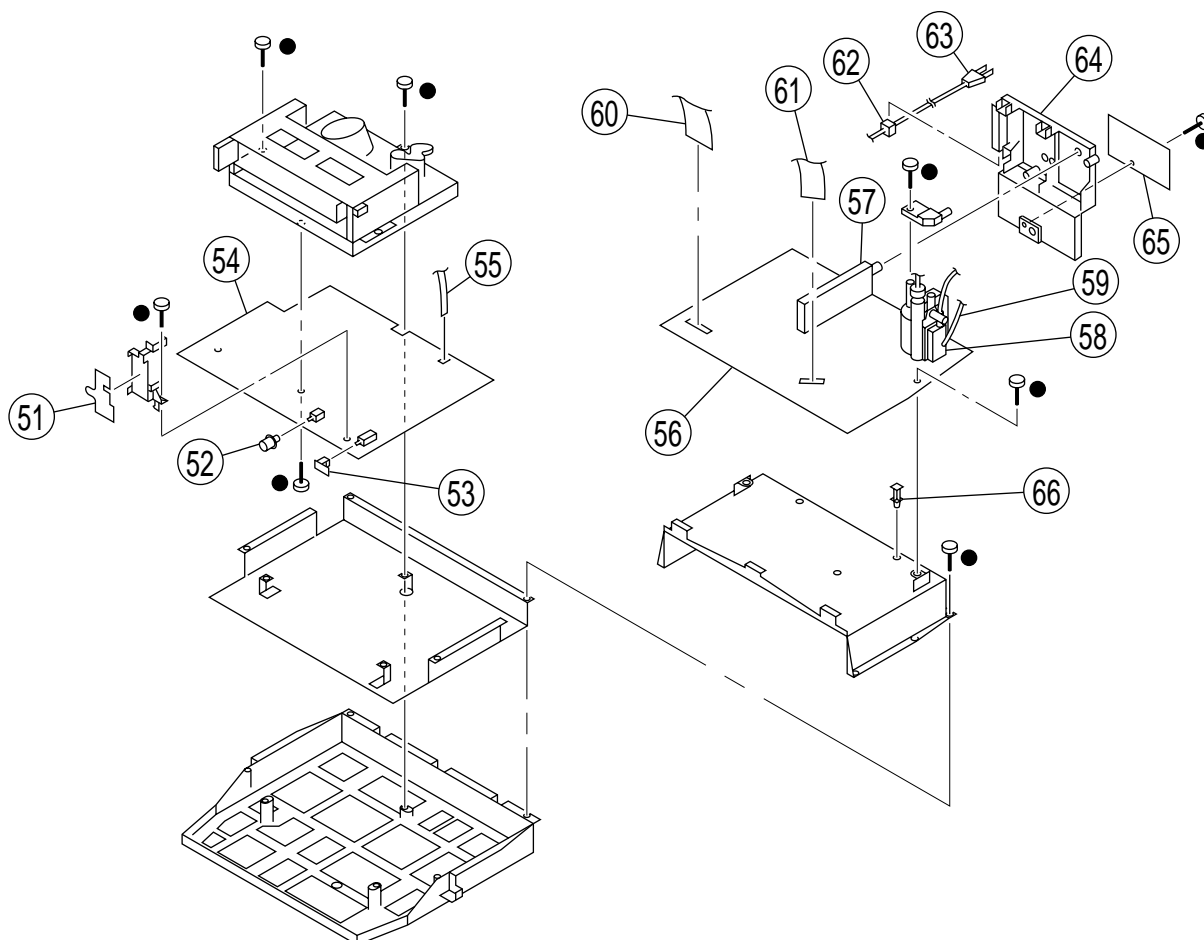


REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
1	X-4036-324-1	BEZNET ASSY (VF21M77)	2-13	19	* 3-704-372-11	HOLDER, HV CABLE	
1	X-4036-487-1	BEZNET ASSY (VF21M40/M70)	2-13	20	4-046-600-11	SPACER, DY	
2	4-066-501-11	SPRING, DOOR		21	4-057-714-01	PIECE ASSY, TLH CORRECTION	
3	4-066-493-11	BUTTON (A), FUNCTION		22	\triangle 8-738-809-05	PICTURE TUBE (A51LPT70X) (VF21M70/M77)	
4	4-066-626-11	BUTTON, EJECT		22	\triangle 8-738-812-05	PICTURE TUBE (A51LPT70X) (VF21M40)	
5	4-066-495-11	GUIDE, LIGHT		23	\triangle 1-416-864-11	COIL, VM	
6	3-953-432-01	SPRING (GE), FL		24	\triangle 8-451-505-11	DEFLECTION YOKE (Y21RSA-S)	
7	4-069-445-01	DOOR, CASSETTE (VF21M77)		25	\triangle 1-452-728-21	COIL, NA ROTATION (RT-154)	
7	4-069-445-11	DOOR, CASSETTE (VF21M40/M70)		26	* A-1331-925-A	CV MOUNT	
8	4-066-494-11	BUTTON (B), FUNCTION		27	4-369-318-61	SPRING, TENSION	
9	4-068-502-11	CUSHION, DOOR		28	4-069-071-01	CUSHION (21), DGC	
10	X-4036-327-1	DOOR ASSY, CONTROL		29	\triangle 1-416-946-11	COIL, DEMAGNETIC	
11	4-066-496-11	FILTER, REMOTE		30	4-069-468-01	CUSHION (UPPER), DGC	
12	4-066-497-11	BUTTON, POWER		31	4-064-883-11	HOLDER, DGC	
13	4-042-593-21	SPRING, COMPRESSION		32	4-049-416-01	SHEET, BLIND	
14	1-529-394-11	SPEAKER (5X9CM)		33	4-066-491-11	COVER, REAR	
15	4-070-212-01	SUPPORT, TOP		34	4-308-870-00	CLIP, LEAD WIRE	
16	4-365-808-01	SCREW (5), TAPPING		35	1-452-032-00	MAGNET, DISK ; 10mm ϕ	
17	4-069-350-11	SHEET (B), BLOTING		36	1-452-094-00	MAGNET, ROTATABLE DISK ; 15mm ϕ	
18	4-069-452-11	SHEET (C), BLOTING		37	4-051-736-21	PIECE A(90), CONV. CORRECT	

6-2. CHASSIS

● : 7-685-648-79 +BVTP 3X12

The components identified by shading and mark \triangle are critical for safety.
Replace only with part number specified.

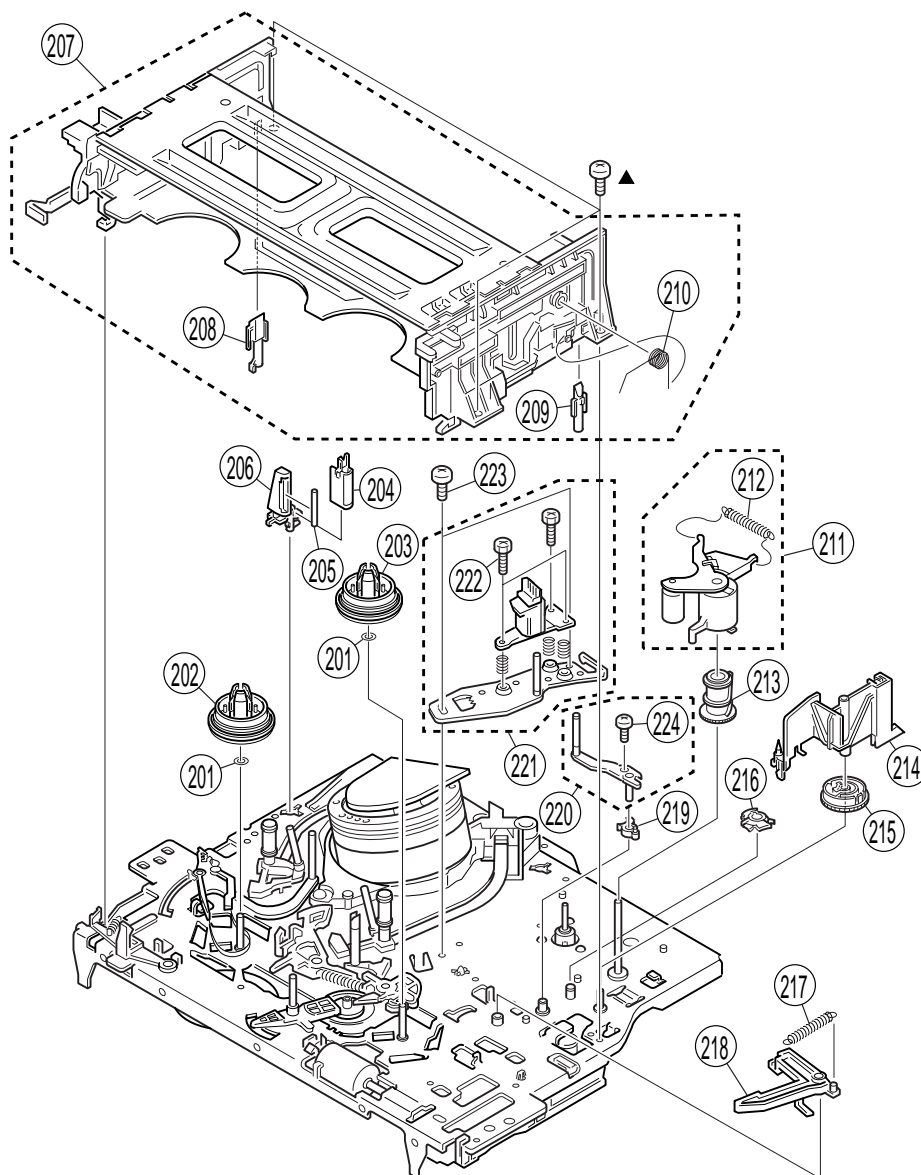


REF. NO.	PART NO.	DESCRIPTION	REMARK
51	* A-1241-368-A	FF10 MOUNT	
52	4-066-498-11	BUTTON, RECORDING	
53	4-394-972-01	CAP, POWER	
54	* A-1306-569-A	MA10 COMPL	
55	1-900-234-88	CONNECTOR ASSY 7P	
56	* A-1298-844-A	A COMPL	57,58
57	8-598-449-01	TUNER, FSS BTF-LG443 (VF21M40/M70)	
57	8-598-451-10	TUNER, FSS BTF-WG441 (VF21M77)	
58	\triangle 1-453-296-11	FBT ASSY (NX-4001/M3B4)	
59	1-900-226-67	LEAD ASSY, G2	

REF. NO.	PART NO.	DESCRIPTION	REMARK
60	1-900-244-71	CONNECTOR ASSY, FLAT 13P	
61	1-900-244-04	CONNECTOR ASSY, FLAT 21P	
62	4-022-115-00	HOLDER, AC CORD	
63	\triangle 1-574-062-22	CORD, POWER (WITH CONNECTOR)	(E/ME/JE model)
63	\triangle 1-769-609-21	CORD, POWER (WITH CONNECTOR)	(HK model)
64	4-069-720-01	TERMINAL PLATE (GA)	
65	* A-1241-367-A	F MOUNT	
66	* 4-046-677-11	HOLDER (B), PWB	

6-3. MECHANISM DECK ASSEMBLY (1)

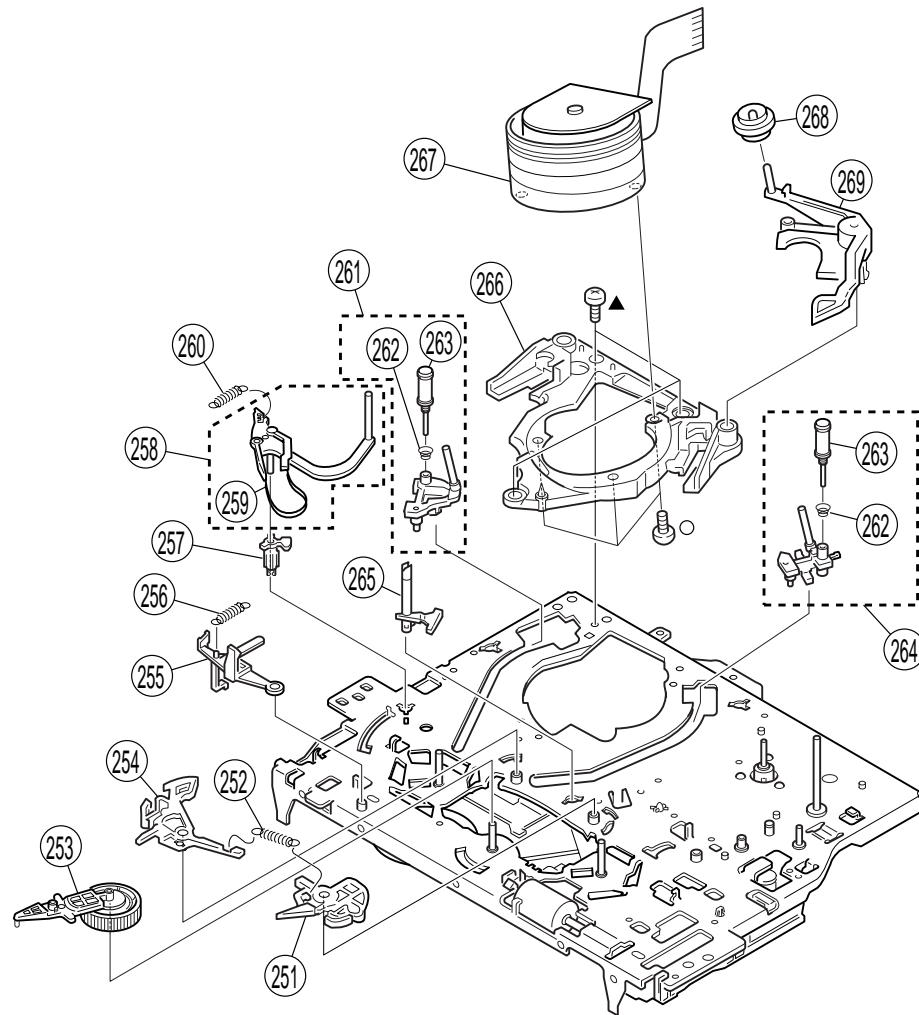
▲ : 7-685-646-79 +BVTP 3X8



REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
201	3-977-509-01	WASHER, THRUST		213	3-977-447-01	GEAR, ELEVATOR	
202	3-977-507-01	TABLE, REEL (S)		214	3-977-514-01	OPENER, LID	
203	3-977-508-01	TABLE, REEL (T)		215	3-977-441-01	GEAR, PINCH PRESSING	
204	1-500-471-11	HEAD, FE		216	3-977-445-01	GEAR, TG8 ARM DRIVING	
205	3-977-495-01	SHAFT TG2		217	3-977-465-01	SPRING, EXTENSION (RVS BRAKE)	
206	3-977-494-01	HOLDER, FEH		218	X-3947-582-1	ARM ASSY, RVS BRAKE	
207	A-6759-619-B	FL COMPLETE ASSY	208-210	219	3-977-446-01	GEAR, TG8 ARM	
208	3-977-535-01	PLATE, LUMINOUS (END SENSOR)		220	X-3947-590-1	TG8 ASSY	224
209	3-977-536-01	PLATE, LUMINOUS (TOP SENSOR)		221	A-6759-620-A	HEAD BLOCK ASSY, ACE (TDK)	222
210	3-970-471-01	SPRING (DECK OPEN), TORSION		222	3-974-556-11	+ HEXA TT 2.6X9 (TAPER)	
211	A-6759-615-A	PRESS BLOCK ASSY, PINCH	212	223	3-979-508-01	SCREW +HEXA TP SW 3X8	
212	3-958-455-01	SPRING (PINCH), TENSION		224	3-719-381-01	SCREW (M2X4)	

6-4. MECHANISM DECK ASSEMBLY (2)

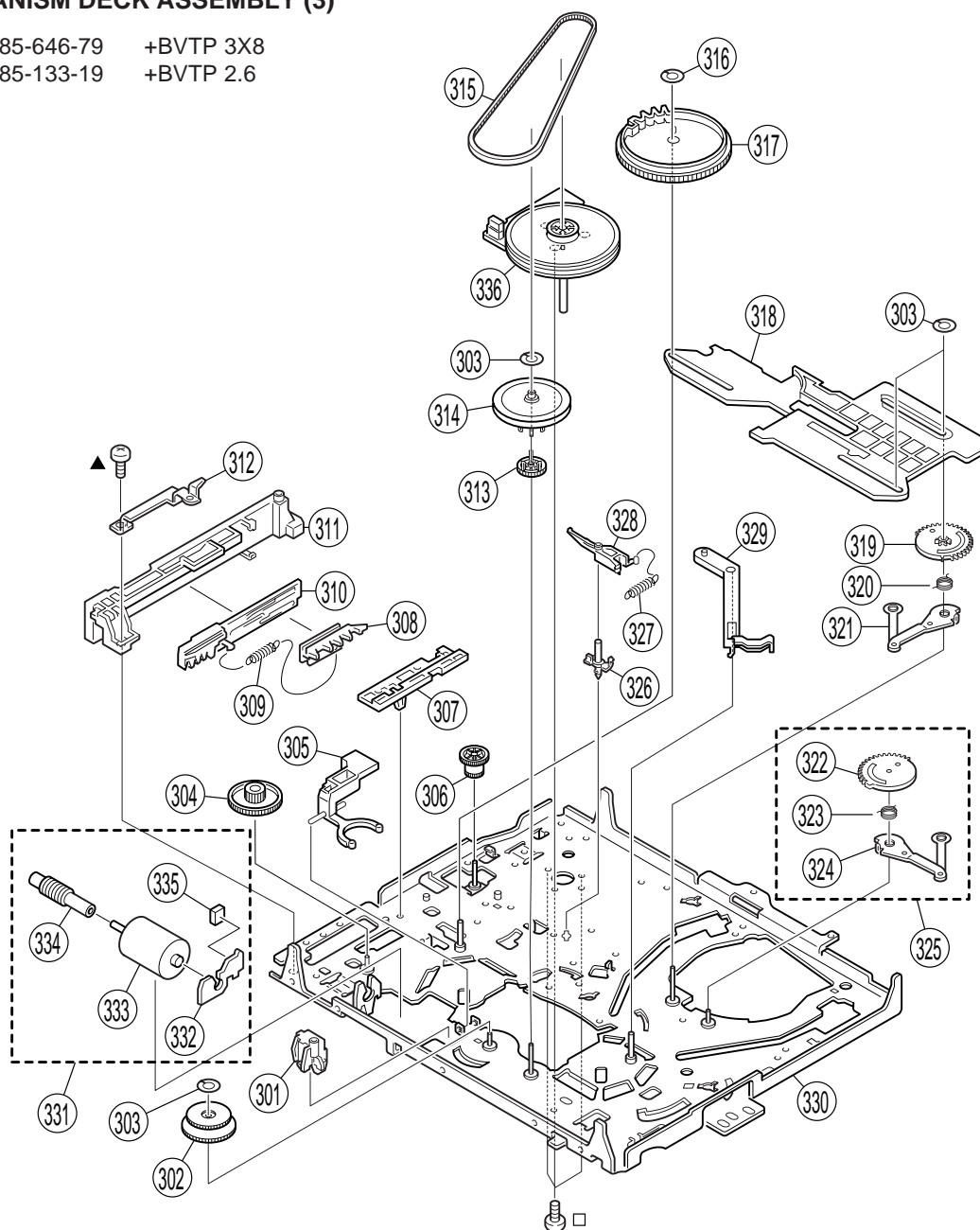
▲ : 7-685-646-79 +BVTP 3X8
 ○ : 7-682-547-04 +P 3X6



REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
251	X-3947-581-4	BRAKE ASSY.MAIN(T)		261	A-6750-324-A	SHUTTLE (S) BLOCK ASSY	262,263
252	3-977-462-01	SPRING,EXTENTION. (MAIN BRAKE)		262	3-965-178-01	SPRING	
253	X-3947-573-1	ARM ASSY, PENDULUM		263	X-3944-378-1	ROLLER ASSY, GUIDE	
254	X-3947-580-5	BRAKE ASSY, MAIN(S)		264	A-6750-328-E	SHUTTLE (T) BLOCK ASSY	262,263
255	3-977-513-02	LEVER, REC. PROOF		265	3-977-501-01	PLATE, LUMINOUS	
256	3-976-767-01	SPRING, TENS. (REC. PROOF)		266	3-969-632-04	BASE, DRUM	
257	3-977-487-01	BOSS, TG1 FULCRUM		267	1-759-453-11	DRUM ASSY (DZH-89A-R)	
258	X-3947-587-1	TG1 ASSY	259	268	X-3947-255-1	ROLLER ASSY, HC	
259	X-3947-589-1	BAND ASSY, TG1		269	3-975-724-07	ARM, HC	
260	3-977-488-01	SPRING (POWER TENSION)					

6-5. MECHANISM DECK ASSEMBLY (3)

▲ : 7-685-646-79 +BVTP 3X8
□ : 7-685-133-19 +BVTP 2.6



REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
301	3-977-437-01	RETAINER,CAM MOTOR		319	3-977-455-01	GEAR, LOADING(T)	
302	X-3947-584-1	ASSY, REEL DIRECT		320	3-977-456-03	SPRING, TORSION (LOAD T)	
303	3-977-443-01	WASHER, STOPPER					
304	3-977-438-01	WORM - WHEEL		321	X-3947-579-1	LEVER ASSY, LOADING(T)	
305	3-977-506-01	ARM, LIMITTER SELECTION		322	3-977-451-01	GEAR, LOADING(S)	
				323	3-977-452-01	SPRING, TORSION (LOAD S)	
306	3-977-444-01	GEAR, PINCH TRANSMISSION		324	X-3947-578-1	LEVER ASSY, LOADING(S)	
307	3-977-515-01	GUIDE, FL SLIDER		325	A-6759-616-A	GEAR BLOCK ASSY, LOADING(S)	322-324
308	3-977-517-01	PLATE, SLIDE, FL					
309	3-977-519-01	SPRING, TENS. (LIMIT, FL)		326	3-977-468-01	SHAFT, CAPSTAN BRAKE	
310	3-977-518-02	PLATE, LIMITTER, FL		327	3-977-467-02	SPRING, CAP BRAKE	
				328	X-3947-583-1	BRAKE ASSY, CAPSTAN	
311	3-977-516-01	HOLDER, FL SLIDER		329	3-977-489-01	ARM, TG1 DRIVING	
312	3-977-877-01	PLATE, RETAINER		330	X-3947-576-2	CHASSIS ASSY, MECHANICAL	
313	3-977-504-01	GEAR, CLUTCH					
314	X-3947-585-1	GEAR ASSY, PULLEY		331	X-3947-577-1	MOTOR ASSY, CAM	332-335
315	3-977-510-01	BELT, RUBBER		332	1-666-524-11	PWB, CA-55	
				333	1-541-309-11	MOTOR, L (RF-370C)	
316	3-977-440-01	WASHER, STOPPER		334	3-977-436-01	WORM	
317	3-977-439-01	GEAR, CAM		335	1-766-723-21	CONNECTOR, BOARD TO BOAR 3P	
318	3-977-442-01	SLIDER					
				336	1-698-971-11	MOTOR, DC	

SECTION 7

ELECTRICAL PARTS LIST

F A

NOTE:

The components identified by shading and mark Δ are critical for safety.
Replace only with part number specified.

• The components identified by \boxtimes in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

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

• All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS

- All resistors are in ohms
- F : nonflammable


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


• CAPACITORS
PF : $\mu\mu$ F







• There are some cases the reference number on one board overlaps on the other board. Therefore, when ordering parts by the reference number, please include the board name.

TV BLOCK

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
	* A-1241-367-A	F MOUNT *****		C119	1-126-964-11	ELECT 10MF	20% 50V
		<CAPACITOR>		C301	1-126-963-11	ELECT 4.7MF	20% 50V
C901	Δ 1-104-705-51	FILM 0.1MF	20% 250V	C302	1-163-233-11	CERAMIC CHIP 18PF	5% 50V
C902	Δ 1-104-705-51	FILM 0.1MF	20% 250V	C304	1-163-233-11	CERAMIC CHIP 18PF	5% 50V
C903	Δ 1-113-924-91	CERAMIC 0.0047MF	20% 250V	C306	1-163-259-91	CERAMIC CHIP 220PF	5% 50V
		<CONNECTOR>		C307	1-126-957-11	ELECT 0.22MF	20% 50V
CN901	* 1-580-843-11	PIN, CONNECTOR (POWER)		C308	1-107-823-11	CERAMIC CHIP 0.47MF	10% 16V
CN902	* 1-691-291-11	PIN, CONNECTOR (PC BOARD) 5P		C309	1-126-162-11	ELECT 3.3MF	20% 50V
CN903	1-695-915-11	TAB (CONTACT)		C310	1-126-964-11	ELECT 10MF	20% 50V
		<FUSE>		C311	1-104-664-11	ELECT 47MF	20% 25V
F901	Δ 1-532-299-00	FUSE, TIME-LAG 5A/250V		C312	1-126-963-11	ELECT 4.7MF	20% 50V
	1-533-223-11	CLIP, FUSE ; F901		C313	1-115-339-11	CERAMIC CHIP 0.1MF	10% 50V
		<RESISTOR>		C314	1-107-714-11	ELECT 10MF	20% 16V
R901	Δ 1-202-885-51	SOLID 1M	20% 1/2W	C315	1-104-664-11	ELECT 47MF	20% 25V
R902	Δ 1-202-968-11	CEMENTED 1.2	5% 10W	C316	1-104-664-11	ELECT 47MF	20% 25V
		<TRANSFORMER>		C317	1-126-964-11	ELECT 10MF	20% 50V
T901	Δ 1-424-461-11	TRANSFORMER, LINE FILTER		C318	1-104-665-11	ELECT 100MF	20% 25V
T902	Δ 1-424-461-11	TRANSFORMER, LINE FILTER		C319	1-163-038-91	CERAMIC CHIP 0.1MF	25V
		*****		C320	1-163-031-11	CERAMIC CHIP 0.01MF	50V
				C321	1-163-038-91	CERAMIC CHIP 0.1MF	25V
				C322	1-163-031-11	CERAMIC CHIP 0.01MF	50V
				C323	1-163-031-11	CERAMIC CHIP 0.01MF	50V
				C325	1-104-664-11	ELECT 47MF	20% 25V
				C326	1-126-960-11	ELECT 1MF	20% 50V
				C327	1-163-017-00	CERAMIC CHIP 0.0047MF	10% 50V
				C328	1-107-714-11	ELECT 10MF	20% 16V
				C329	1-163-113-00	CERAMIC CHIP 68PF	5% 50V
				C330	1-104-665-11	ELECT 100MF	20% 25V
				C331	1-102-114-00	CERAMIC 470PF	10% 50V
				C338	1-104-665-11	ELECT 100MF	20% 25V
				C339	1-163-038-91	CERAMIC CHIP 0.1MF	25V
				C501	1-126-934-11	ELECT 220MF	20% 16V
				C502	1-126-960-11	ELECT 1MF	20% 50V
				C503	1-163-021-91	CERAMIC CHIP 0.01MF	10% 50V
				C504	1-107-910-11	ELECT 100MF	20% 50V
				C505	1-115-339-11	CERAMIC CHIP 0.1MF	10% 50V
				C507	1-107-910-11	ELECT 100MF	20% 50V
				C508	1-106-220-00	MYLAR 0.1MF	10% 100V
				C509	1-137-194-81	FILM 0.47MF	5% 50V
				C510	1-163-031-11	CERAMIC CHIP 0.01MF	50V
				C513	1-126-941-11	ELECT 470MF	20% 25V
				C514	1-163-031-11	CERAMIC CHIP 0.01MF	50V
				C515	1-107-652-11	ELECT 10MF	20% 250V
				C601	1-104-664-11	ELECT 47MF	20% 25V
				C602	Δ 1-113-903-11	CERAMIC 0.001MF	20% 250V
C102	1-126-933-11	ELECT 100MF	20% 16V	C603	Δ 1-113-903-11	CERAMIC 0.001MF	20% 250V
C104	1-126-933-11	ELECT 100MF	20% 16V	C604	Δ 1-113-903-11	CERAMIC 0.001MF	20% 250V
C106	1-126-933-11	ELECT 100MF	20% 16V	C605	1-125-906-11	ELECT 560MF	20% 450V
C108	1-104-664-11	ELECT 47MF	20% 25V	C606	1-104-760-11	CERAMIC CHIP 0.047MF	10% 50V
C110	1-104-664-11	ELECT 47MF	20% 25V	C607	Δ 1-113-903-11	CERAMIC 0.001MF	20% 250V
C111	1-124-234-00	ELECT 22MF	20% 16V	C608	1-126-942-61	ELECT 1000MF	20% 25V
C113	1-126-964-11	ELECT 10MF	20% 50V	C609	1-104-664-11	ELECT 47MF	20% 25V
C114	1-124-234-00	ELECT 22MF	20% 16V	C610	1-104-664-11	ELECT 47MF	20% 25V
C117	1-104-664-11	ELECT 47MF	20% 25V	C611	1-104-331-11	CERAMIC 0.0022MF	10% 1KV
C118	1-163-038-91	CERAMIC CHIP 0.1MF	25V				

• The components identified by  in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

The components identified by shading and mark  are critical for safety. Replace only with part number specified.

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
C612	1-126-943-11	ELECT	2200MF 20% 25V	<CONNECTOR>			
 C614	 1-126-964-11	ELECT	10MF 20% 50V	CN301	1-569-937-11	SOCKET, CONNECTOR 21P	
C615	1-126-960-11	ELECT	1MF 20% 50V	CN302	* 1-564-511-11	PLUG, CONNECTOR 8P	
C616	1-107-680-91	ELECT	22MF 20% 450V	CN303	* 1-569-930-11	SOCKET, CONNECTOR 13P	
C617	1-104-664-11	ELECT	47MF 20% 25V	CN304	* 1-560-127-00	PLUG, CONNECTOR (2.5MM) 7P	
C618	1-163-007-11	CERAMIC CHIP	680PF 10% 50V	CN305	* 1-564-510-11	PLUG, CONNECTOR 7P	
C619	1-162-318-11	CERAMIC	0.001MF 10% 500V	CN306	* 1-564-509-11	PLUG, CONNECTOR 6P	
C620	1-126-941-11	ELECT	470MF 20% 25V	CN601	* 1-691-291-11	PIN, CONNECTOR (PC BOARD) 5P	
C621	1-104-664-11	ELECT	47MF 20% 25V	CN602	* 1-508-786-00	PIN, CONNECTOR (5mm PITCH) 2P	
C622	1-104-664-11	ELECT	47MF 20% 25V	CN603	* 1-573-963-11	PIN, CONNECTOR (PC BOARD) 3P	
C623	1-126-969-11	ELECT	220MF 20% 50V	CN604	1-695-915-11	TAB (CONTACT)	
C624	1-162-318-11	CERAMIC	0.001MF 10% 500V	CN605	* 1-564-508-11	PLUG, CONNECTOR 5P	
C625	1-126-972-11	ELECT	1000MF 20% 50V	CN801	* 1-580-798-11	CONNECTOR PIN (DY) 6P	
C626	1-126-944-21	ELECT	3300MF 20% 25V	CN803	* 1-564-508-11	PLUG, CONNECTOR 5P	
C627	1-162-318-11	CERAMIC	0.001MF 10% 500V	<DIODE>			
C628	1-163-133-00	CERAMIC CHIP	470PF 5% 50V	D101	8-719-923-60	DIODE MTZJ-T-77-9.1A	
C630	1-125-978-91	CERAMIC	2200PF 10% 1KV	D102	8-719-923-60	DIODE MTZJ-T-77-9.1A	
C631	1-163-275-11	CERAMIC CHIP	0.001MF 5% 50V	D103	8-719-911-19	DIODE ISS119-25 (VF21M77)	
C632	1-124-347-00	ELECT	100MF 20% 160V	D301	8-719-109-89	DIODE RD5.6ESB2	
C634	1-163-009-11	CERAMIC CHIP	0.001MF 10% 50V	D302	8-719-109-89	DIODE RD5.6ESB2	
C635	1-102-050-00	CERAMIC	0.01MF 500V	D304	8-719-923-60	DIODE MTZJ-T-77-9.1A	
C636	1-163-005-11	CERAMIC CHIP	470PF 10% 50V	D305	8-719-911-19	DIODE ISS119-25	
C638	1-109-880-11	FILM	0.0015MF 3% 2KV	D307	8-719-911-19	DIODE ISS119-25	
C639	1-163-017-00	CERAMIC CHIP	0.0047MF 10% 50V	D308	8-719-109-72	DIODE RD3.9ESB2	
C640	1-163-001-11	CERAMIC CHIP	220PF 10% 50V	D501	8-719-110-49	DIODE RD18ESB2	
C641	1-102-114-00	CERAMIC	470PF 10% 50V	D502	8-719-109-89	DIODE RD5.6ESB2	
C642	1-136-601-11	FILM	0.01MF 5% 630V	D503	8-719-908-03	DIODE GP08D	
C643	1-113-903-11	CERAMIC	0.001MF 20% 250V	D506	8-719-302-43	DIODE EL1Z	
C644	1-163-005-11	CERAMIC CHIP	470PF 10% 50V	D507	8-719-302-43	DIODE EL1Z	
C645	1-104-664-11	ELECT	47MF 20% 25V	D601	 8-719-018-79	DIODE D6SB60LF	
C646	1-126-943-11	ELECT	2200MF 20% 25V	D602	8-719-911-55	DIODE U05G	
C647	1-126-965-11	ELECT	22MF 20% 50V	D603	8-719-109-97	DIODE RD6.8ESB2	
C648	1-164-004-11	CERAMIC CHIP	0.1MF 10% 25V	D604	8-719-911-55	DIODE U05G	
C650	1-137-605-11	FILM	0.01MF 10% 250V	D605	8-719-979-50	DIODE EGP30D	
C651	1-163-275-11	CERAMIC CHIP	0.001MF 5% 50V	D606	8-719-063-73	DIODE D1NL20U-TR	
C655	1-126-941-11	ELECT	470MF 20% 25V	D607	8-719-911-19	DIODE ISS119-25	
C657	1-104-664-11	ELECT	47MF 20% 25V	D608	8-719-110-49	DIODE RD18ESB2	
C658	1-104-331-11	CERAMIC	0.0022MF 10% 1KV	D609	8-719-028-45	DIODE D2L20U	
C659	1-104-705-11	FILM	0.1MF 20% 250V	D610	8-719-028-45	DIODE D2L20U	
C660	1-104-666-11	ELECT	220MF 20% 25V	D611	8-719-911-55	DIODE U05G	
C661	1-163-275-11	CERAMIC CHIP	0.001MF 5% 50V	D612	8-719-312-10	DIODE RU4AM-T3	
C662	1-104-665-11	ELECT	100MF 20% 25V	D613	8-719-109-97	DIODE RD6.8ESB2	
C663	1-104-665-11	ELECT	100MF 20% 25V	D614	8-719-911-19	DIODE ISS119-25	
C664	1-104-665-11	ELECT	100MF 20% 25V	D615	8-719-911-19	DIODE ISS119-25	
C665	1-104-665-11	ELECT	100MF 20% 25V	D616	8-719-911-19	DIODE ISS119-25	
C801	1-137-417-11	MYLAR	0.0047MF 10% 200V	D617	8-719-311-31	DIODE RU-1P	
C802	1-126-941-11	ELECT	470MF 20% 25V	D618	8-719-063-73	DIODE D1NL20U-TR	
C803	1-117-669-71	FILM	0.68MF 5% 250V	D619	8-719-510-02	DIODE D1NS4	
C804	1-104-664-11	ELECT	47MF 20% 25V	D620	8-719-063-73	DIODE D1NL20U-TR	
C805	1-123-024-21	ELECT	33MF 160V	D621	8-719-510-48	DIODE D1N20R	
C806	1-102-228-00	CERAMIC	470PF 10% 500V	D622	8-719-911-19	DIODE ISS119-25	
C807	1-107-957-11	ELECT	1MF 20% 250V	D623	8-719-110-17	DIODE RD10ESB2	
C808	1-163-275-11	CERAMIC CHIP	0.001MF 5% 50V	D624	8-719-109-97	DIODE RD6.8ESB2	
C809	1-163-038-91	CERAMIC CHIP	0.1MF 25V	D625	8-719-510-73	DIODE S3L20UF4	
C810	1-161-830-00	CERAMIC	0.0047MF 500V	D626	8-719-948-45	DIODE ERA22-08	
C812	1-107-366-11	FILM	0.022MF 10% 200V	D627	8-719-032-12	DIODE D1NS6	
C813	1-163-031-11	CERAMIC CHIP	0.01MF 50V	D628	8-719-911-19	DIODE ISS119-25	
C814	1-163-021-91	CERAMIC CHIP	0.01MF 10% 50V	D629	8-719-911-19	DIODE ISS119-25	
C816	1-102-114-00	CERAMIC	470PF 10% 50V	D630	8-719-110-53	DIODE RD20ESB2	
C818	1-104-664-11	ELECT	47MF 20% 25V	D631	8-719-911-19	DIODE ISS119-25	
C819	1-115-521-11	FILM	0.82MF 5% 250V	D632	8-719-911-19	DIODE ISS119-25	
C820	1-106-383-00	MYLAR	0.047MF 10% 200V	D633	8-719-911-19	DIODE ISS119-25	
C821	 1-162-135-11	CERAMIC	560PF 10% 2KV	D634	8-719-110-88	DIODE RD39ESB2	
C823	1-162-131-11	CERAMIC	220PF 10% 2KV	D801	8-719-302-43	DIODE EL1Z	
C824	 1-117-644-21	FILM	0.01MF 3% 1.2KV	D802	8-719-911-19	DIODE ISS119-25	
C825	1-107-492-11	ELECT	47MF 20% 160V	D803	8-719-302-43	DIODE EL1Z	
C826	1-137-417-11	MYLAR	0.0047MF 10% 200V	D804	8-719-908-03	DIODE GP08D	
C827	 1-129-722-00	FILM	0.047MF 5% 630V				
C828	1-126-960-11	ELECT	1MF 20% 50V				


The components identified by shading and mark ▲ are critical for safety.
Replace only with part number specified.


• The components identified by ■ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.









A

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
D805	8-719-921-44	DIODE MTZJ-5.1C				<MODULE>	
D806	8-719-911-19	DIODE 1SS119-25					
D807	8-719-908-03	DIODE GP08D		■PM601	▲ 1-809-054-71	MODULE, PROTECTOR PM-21	
D810	8-719-945-80	DIODE ERC06-15S				<IC LINK>	
D811	8-719-979-85	DIODE EGP20G		PS601	▲ 1-532-686-21	LINK, IC 2.7A/150V	
		<FERRITE BEAD>		PS602	▲ 1-532-686-21	LINK, IC 2.7A/150V	
FB101	1-410-397-21	FERRITE 1.1UH		PS603	▲ 1-532-686-21	LINK, IC 2.7A/150V	
FB102	1-410-397-21	FERRITE 1.1UH		PS604	▲ 1-532-686-21	LINK, IC 2.7A/150V	
FB601	1-410-397-21	FERRITE 1.1UH				<TRANSISTOR>	
FB602	1-410-397-21	FERRITE 1.1UH		Q101	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
FB603	1-410-397-21	FERRITE 1.1UH		Q102	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
FB606	1-410-397-21	FERRITE 1.1UH		Q103	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
FB608	1-410-397-21	FERRITE 1.1UH		Q301	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
FB609	1-410-397-21	FERRITE 1.1UH		Q302	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
FB610	1-410-397-21	FERRITE 1.1UH		Q303	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
FB612	1-412-911-11	FERRITE 0UH		Q304	8-729-422-27	TRANSISTOR 2SD601A-Q	
FB620	1-410-397-21	FERRITE 1.1UH		Q305	8-729-216-22	TRANSISTOR 2SA1162-G	
		<IC>		Q501	8-729-421-22	TRANSISTOR UN2211	
IC101	8-759-042-02	IC S-80743AL-A7-S (VF21M77)		Q502	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
IC103	8-749-925-00	IC TK11819MTL		Q503	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
IC301	8-752-088-39	IC CXA2130S		Q601	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
IC501	8-759-444-83	IC LA7840L		Q602	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
IC601	8-759-471-81	IC PQ05RD11		Q604	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
IC602	8-759-459-99	IC PQ09RD11		Q605	8-729-044-30	TRANSISTOR 2SK2845-LB102	
IC603	8-759-390-48	IC uPC2406AHF		Q606	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
IC604	8-759-098-24	IC PQ30RV11		Q607	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
IC605	8-749-921-21	IC SI-3120C		Q608	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
IC606	▲ 8-749-014-48	IC STR-F6656		Q609	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
■IC607	▲ 8-749-920-61	IC SE-135N		Q610	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
IC608	8-759-459-99	IC PQ09RD11		Q801	8-729-038-82	TRANSISTOR 2SK2251-01	
IC801	8-759-729-03	IC NJM2903D		Q802	8-729-047-13	TRANSISTOR 2SC5388	
		<JACK>		Q803	8-729-040-55	TRANSISTOR 2SK1482-T	
J101	1-779-204-11	JACK, PIN 2P (GAME/INPUT)				<RESISTOR>	
		<COIL>		R101	1-216-025-91	RES,CHIP 100 5% 1/10W	
L101	1-414-856-11	INDUCTOR 10UH		R102	1-216-025-91	RES,CHIP 100 5% 1/10W	
L102	1-414-856-11	INDUCTOR 10UH		R103	1-216-121-91	RES,CHIP 1M 5% 1/10W	
L103	1-414-856-11	INDUCTOR 10UH		R104	1-216-025-91	RES,CHIP 100 5% 1/10W	
L104	1-414-856-11	INDUCTOR 10UH		R105	1-216-025-91	RES,CHIP 100 5% 1/10W	
L105	1-414-856-11	INDUCTOR 10UH		R106	1-216-025-91	RES,CHIP 100 5% 1/10W	
L106	1-414-856-11	INDUCTOR 10UH		R107	1-216-025-91	RES,CHIP 100 5% 1/10W	
L107	1-410-444-11	INDUCTOR 1.2mH		R108	1-216-022-00	RES,CHIP 75 5% 1/10W	
L108	1-414-856-11	INDUCTOR 10UH		R109	1-216-081-00	RES,CHIP 22K 5% 1/10W	
L302	1-414-856-11	INDUCTOR 10UH		R110	1-216-081-00	RES,CHIP 22K 5% 1/10W	
L303	1-414-856-11	INDUCTOR 10UH		R111	1-216-295-91	SHORT 0	
L501	1-412-533-21	INDUCTOR 47UH		R112	1-216-057-00	RES,CHIP 2.2K 5% 1/10W	
L601	1-412-525-31	INDUCTOR 10UH		R113	1-216-049-91	RES,CHIP 1K 5% 1/10W	
L602	1-412-533-21	INDUCTOR 47UH		R114	1-216-089-91	RES,CHIP 47K 5% 1/10W	
L603	1-412-541-41	INDUCTOR 220UH		R115	1-216-093-91	RES,CHIP 68K 5% 1/10W	
L604	1-406-983-11	INDUCTOR 1mH		R116	1-216-065-91	RES,CHIP 4.7K 5% 1/10W	
L605	1-412-534-31	INDUCTOR 56UH		R117	1-216-065-91	RES,CHIP 4.7K 5% 1/10W	
L801	1-412-527-11	INDUCTOR 15UH		R118	1-216-295-91	SHORT 0 (VF21M40/M70)	
L803	1-406-677-11	INDUCTOR 10mH		R123	1-216-049-91	RES,CHIP 1K 5% 1/10W	
L804	1-414-493-41	INDUCTOR 4.7mH		R124	1-216-097-91	RES,CHIP 100K 5% 1/10W	
L805	1-459-111-00	INDUCTOR 10mH		R125	1-216-295-91	SHORT 0 (VF21M77)	
L807	1-414-187-11	INDUCTOR 47UH		R126	1-216-051-00	RES,CHIP 1.2K 5% 1/10W	
L808	1-406-981-21	INDUCTOR 470UH		R127	1-216-049-91	RES,CHIP 1K 5% 1/10W	
L809	1-469-013-31	INDUCTOR 18UH		R301	1-216-057-00	RES,CHIP 2.2K 5% 1/10W	
		<PHOTO COUPLER>		R303	1-216-073-00	RES,CHIP 10K 5% 1/10W	
PH601	▲ 8-749-010-64	PHOTO COUPLER PC123FY2		R304	1-216-025-91	RES,CHIP 100 5% 1/10W	
				R306	1-216-025-91	RES,CHIP 100 5% 1/10W	
				R307	1-216-121-91	RES,CHIP 1M 5% 1/10W	
				R308	1-216-025-91	RES,CHIP 100 5% 1/10W	
				R309	1-216-081-00	RES,CHIP 22K 5% 1/10W	
				R311	1-216-025-91	RES,CHIP 100 5% 1/10W	

A

• The components identified by  in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

The components identified by shading and mark  are critical for safety. Replace only with part number specified.

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
R312	1-216-675-11	METAL CHIP	10K 0.50% 1/10W	R608	1-216-077-00	RES,CHIP	15K 5% 1/10W
R313	1-216-025-91	RES,CHIP	100 5% 1/10W	R609	1-215-917-11	METAL OXIDE	1K 5% 3W F
R314	1-216-025-91	RES,CHIP	100 5% 1/10W	R611	1-216-077-00	RES,CHIP	15K 5% 1/10W
R315	1-216-025-91	RES,CHIP	100 5% 1/10W	R612	1-249-482-11	CARBON	4.7 5% 1/2W F
R316	1-216-025-91	RES,CHIP	100 5% 1/10W	R613	1-249-418-11	CARBON	1.2K 5% 1/4W F
R317	1-216-025-91	RES,CHIP	100 5% 1/10W	 R614		CARBON	5% 1/4W F
R318	1-216-025-91	RES,CHIP	100 5% 1/10W	R615	1-216-366-00	METAL OXIDE	0.56 5% 2W F
R319	1-216-025-91	RES,CHIP	100 5% 1/10W	R616	1-249-417-11	CARBON	1K 5% 1/4W
R320	1-216-049-91	RES,CHIP	1K 5% 1/10W	R617	 1-202-968-11	CEMENTED	1.2 5% 10W
R321	1-216-025-91	RES,CHIP	100 5% 1/10W	R618	1-216-073-00	RES,CHIP	10K 5% 1/10W
R322	1-216-051-00	RES,CHIP	1.2K 5% 1/10W	R619	1-216-073-00	RES,CHIP	10K 5% 1/10W
R323	1-216-043-91	RES,CHIP	560 5% 1/10W	R620	1-216-077-00	RES,CHIP	15K 5% 1/10W
R324	1-216-025-91	RES,CHIP	100 5% 1/10W	R621	1-249-393-11	CARBON	10 5% 1/4W
R325	1-216-051-00	RES,CHIP	1.2K 5% 1/10W	R622	1-216-073-00	RES,CHIP	10K 5% 1/10W
R326	1-216-043-91	RES,CHIP	560 5% 1/10W	R623	1-216-045-00	RES,CHIP	680 5% 1/10W
R327	1-216-041-00	RES,CHIP	470 5% 1/10W	R624	1-260-079-11	CARBON	22 5% 1/2W
R328	1-216-051-00	RES,CHIP	1.2K 5% 1/10W	R626	1-240-205-91	CARBON	22M 5% 1/2W
R329	1-216-043-91	RES,CHIP	560 5% 1/10W	R627	1-249-377-11	CARBON	0.47 5% 1/4W F
R330	1-216-295-91	SHORT	0	R628	1-216-049-91	RES,CHIP	1K 5% 1/10W
R331	1-216-065-91	RES,CHIP	4.7K 5% 1/10W	R629	1-216-049-91	RES,CHIP	1K 5% 1/10W
R332	1-216-081-00	RES,CHIP	22K 5% 1/10W	R630	1-247-903-00	CARBON	1M 5% 1/4W
R333	1-216-129-00	RES,CHIP	2.2M 5% 1/10W	R631	1-216-013-00	RES,CHIP	33 5% 1/10W
R334	1-216-057-00	RES,CHIP	2.2K 5% 1/10W	R632	1-216-073-00	RES,CHIP	10K 5% 1/10W
R336	1-216-057-00	RES,CHIP	2.2K 5% 1/10W	R633	1-216-077-00	RES,CHIP	15K 5% 1/10W
R337	1-216-057-00	RES,CHIP	2.2K 5% 1/10W	R634	1-216-049-91	RES,CHIP	1K 5% 1/10W
R338	1-216-057-00	RES,CHIP	2.2K 5% 1/10W	R635	1-216-077-00	RES,CHIP	15K 5% 1/10W
R340	1-216-049-91	RES,CHIP	1K 5% 1/10W	R636	1-215-927-00	METAL OXIDE	47K 5% 3W F
R341	1-216-025-91	RES,CHIP	100 5% 1/10W	R637	1-216-093-91	RES,CHIP	68K 5% 1/10W
R342	1-216-025-91	RES,CHIP	100 5% 1/10W	 R638		CARBON	5% 1/4W F
R343	1-216-025-91	RES,CHIP	100 5% 1/10W	R639	1-216-055-00	RES,CHIP	1.8K 5% 1/10W
R346	1-216-073-00	RES,CHIP	10K 5% 1/10W	R640	1-216-061-00	RES,CHIP	3.3K 5% 1/10W
R347	1-216-049-91	RES,CHIP	1K 5% 1/10W	R641	1-216-041-00	RES,CHIP	470 5% 1/10W
R349	1-216-295-91	SHORT	0	R644	1-216-055-00	RES,CHIP	1.8K 5% 1/10W
R350	1-216-079-00	RES,CHIP	18K 5% 1/10W	R645	1-216-669-11	METAL CHIP	5.6K 0.50% 1/10W
R351	1-216-073-00	RES,CHIP	10K 5% 1/10W	R646	1-216-045-00	RES,CHIP	680 5% 1/10W
R352	1-216-041-00	RES,CHIP	470 5% 1/10W	R647	1-249-389-11	CARBON	4.7 5% 1/4W F
R353	1-216-041-00	RES,CHIP	470 5% 1/10W	R648	1-216-361-00	METAL OXIDE	0.22 5% 2W F
R354	1-216-041-00	RES,CHIP	470 5% 1/10W	R649	1-216-361-00	METAL OXIDE	0.22 5% 2W F
R355	1-216-041-00	RES,CHIP	470 5% 1/10W	R650	 1-202-998-11	CEMENTED	1 5% 10W
R356	1-216-049-91	RES,CHIP	1K 5% 1/10W	R651	1-216-013-00	RES,CHIP	33 5% 1/10W
R357	1-216-057-00	RES,CHIP	2.2K 5% 1/10W	R652	1-216-045-00	RES,CHIP	680 5% 1/10W
R358	1-216-059-00	RES,CHIP	2.7K 5% 1/10W	R653	1-216-669-11	METAL CHIP	5.6K 0.50% 1/10W
R359	1-216-073-00	RES,CHIP	10K 5% 1/10W	R655	1-216-073-00	RES,CHIP	10K 5% 1/10W
R360	1-216-049-91	RES,CHIP	1K 5% 1/10W	R656	1-216-077-00	RES,CHIP	15K 5% 1/10W
R364	1-216-045-00	RES,CHIP	680 5% 1/10W	R657	1-215-485-00	METAL	470K 1% 1/4W
R502	1-216-089-91	RES,CHIP	47K 5% 1/10W	R658	1-216-073-00	RES,CHIP	10K 5% 1/10W
R503	1-216-081-00	RES,CHIP	22K 5% 1/10W	R659	1-216-077-00	RES,CHIP	15K 5% 1/10W
R504	1-216-097-91	RES,CHIP	100K 5% 1/10W	R660	1-216-033-00	RES,CHIP	220 5% 1/10W
R505	1-247-843-11	CARBON	3.3K 5% 1/4W	R661	1-216-033-00	RES,CHIP	220 5% 1/10W
R506	1-216-097-91	RES,CHIP	100K 5% 1/10W	R662	1-247-815-91	CARBON	220 5% 1/4W
R507	1-216-049-91	RES,CHIP	1K 5% 1/10W	R663	1-247-815-91	CARBON	220 5% 1/4W
R508	1-216-049-91	RES,CHIP	1K 5% 1/10W	R664	1-260-117-11	CARBON	33K 5% 1/2W
R509	1-216-073-00	RES,CHIP	10K 5% 1/10W	R665	1-260-123-11	CARBON	100K 5% 1/2W
R510	1-216-097-91	RES,CHIP	100K 5% 1/10W	R666	1-216-057-00	RES,CHIP	2.2K 5% 1/10W
R512	1-215-888-00	METAL OXIDE	220 5% 2W F	R667	1-216-051-00	RES,CHIP	1.2K 5% 1/10W
R513	1-216-065-91	RES,CHIP	4.7K 5% 1/10W	R668	1-216-485-11	METAL OXIDE	5.6K 5% 3W F
R514	1-216-073-00	RES,CHIP	10K 5% 1/10W	R669	1-216-639-11	METAL CHIP	330 0.50% 1/10W
R515	1-216-377-11	METAL OXIDE	4.7 5% 2W F	R670	1-216-653-11	METAL CHIP	1.2K 0.50% 1/10W
R516	1-249-385-11	CARBON	2.2 5% 1/4W F	R671	1-216-033-00	RES,CHIP	220 5% 1/10W
R517	1-216-065-91	RES,CHIP	4.7K 5% 1/10W	R673	1-216-033-00	RES,CHIP	220 5% 1/10W
R518	1-216-073-00	RES,CHIP	10K 5% 1/10W	R674	1-216-485-11	METAL OXIDE	5.6K 5% 3W F
R519	1-249-443-11	CARBON	0.47 5% 1/4W F	R675	1-216-049-91	RES,CHIP	1K 5% 1/10W
R520	1-216-089-91	RES,CHIP	47K 5% 1/10W	R677	1-216-025-91	RES,CHIP	100 5% 1/10W
R601	1-216-033-00	RES,CHIP	220 5% 1/10W	R678	1-216-510-11	METAL OXIDE	8.2K 5% 5W F
R603	 1-218-265-11	METAL	8.2M 5% 1W	R801	1-218-762-11	METAL CHIP	270K 0.50% 1/10W
R604	1-260-133-11	CARBON	680K 5% 1/2W	R802	1-215-857-11	METAL OXIDE	10 5% 1W F
R605	 1-202-933-61	FUSIBLE	0.1 10% 1/2W F	R803	1-260-290-71	CARBON	0.68 5% 1/2W
R606	1-216-033-00	RES,CHIP	220 5% 1/10W	R805	1-215-449-00	METAL	15K 1% 1/4W
R607	1-216-389-11	METAL OXIDE	1 5% 3W F	R806	1-260-290-71	CARBON	0.68 5% 1/2W

The components identified by shading and mark Δ are critical for safety.
Replace only with part number specified.

A CV

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
R807	1-260-316-51	CARBON 100	5% 1/2W	* A-1331-925-A	CV MOUNT	*****	
R808	1-214-907-00	METAL 56K	1% 1/2W	4-352-844-01	PIN, LEAD, COATING		
R809	1-216-085-00	RES,CHIP 33K	5% 1/10W	4-382-854-01	SCREW (M3X8), P, SW (+)		
R811	1-216-057-00	RES,CHIP 2.2K	5% 1/10W				
R812	1-216-687-11	METAL CHIP 33K	0.50% 1/10W				
R814	1-218-756-11	METAL CHIP 150K	0.50% 1/10W				
R816	1-216-685-11	METAL CHIP 27K	0.50% 1/10W				
R817	1-216-057-00	RES,CHIP 2.2K	5% 1/10W				
R818	1-216-681-11	METAL CHIP 18K	0.50% 1/10W				
R819	1-216-077-00	RES,CHIP 15K	5% 1/10W				
R821	1-249-391-11	CARBON 6.8	5% 1/4W F				
R822	1-249-411-11	CARBON 330	5% 1/4W F				
R823	1-216-073-00	RES,CHIP 10K	5% 1/10W				
R824	1-216-687-11	METAL CHIP 33K	0.50% 1/10W				
R825	1-216-073-00	RES,CHIP 10K	5% 1/10W				
R826	1-215-892-11	METAL OXIDE 1K	5% 2W F				
R827	1-216-073-00	RES,CHIP 10K	5% 1/10W				
R828	1-216-097-91	RES,CHIP 100K	5% 1/10W				
R829	1-249-425-11	CARBON 4.7K	5% 1/4W				
R830	1-216-470-00	METAL OXIDE 18	5% 3W F				
R831	1-216-470-00	METAL OXIDE 18	5% 3W F				
R832	1-249-422-11	CARBON 2.7K	5% 1/4W F				
R833	1-249-381-11	CARBON 1	5% 1/4W F				
R834	1-216-470-00	METAL OXIDE 18	5% 3W F				
R835	1-216-069-00	RES,CHIP 6.8K	5% 1/10W				
R836	1-216-073-00	RES,CHIP 10K	5% 1/10W				
R837	1-216-065-91	RES,CHIP 4.7K	5% 1/10W				
R840	1-216-445-11	METAL OXIDE 12	5% 2W F				
<RELAY>							
RY601	1-755-198-11	RELAY, AC POWER					
RY602	1-755-198-11	RELAY, AC POWER					
RY603	Δ 1-755-245-11	RELAY, AC POWER					
<SWITCH>							
S801	1-572-707-11	SWITCH, LEVER (H-CENT)					
<TRANSFORMER>							
T602	Δ 1-433-897-11	TRANSFORMER, CONVERTER (SRT)					
T604	Δ 1-433-540-11	TRANSFORMER, CONVERTER (SBT)					
T801	Δ 1-453-296-11	FBT ASSY(NX-4001//M3B4)					
T802	Δ 1-433-660-11	TRANSFORMER, HORIZONTAL LINEAR					
<THERMISTOR>							
THP601	Δ 1-810-961-11	THERMISTOR, POSITIVE					
<TEST PIN>							
TP601	* 1-508-784-21	PIN, CONNECTOR (5mm PITCH) 1P					
TP602	* 1-508-784-21	PIN, CONNECTOR (5mm PITCH) 1P					
TP801	* 1-508-784-21	PIN, CONNECTOR (5mm PITCH) 1P					
<TUNER>							
TU101	8-598-449-01	TUNER, FSS BTF-LG433 (VF21M40/M70)					
TU101	8-598-451-10	TUNER, FSS BTF-WG441 (VF21M77)					
<CRYSTAL>							
X301	1-567-504-11	OSCILLATOR, CRYSTAL					
X302	1-567-505-11	OSCILLATOR, CRYSTAL					
<CAPACITOR>							
C511	1-126-964-11	ELECT 10MF	20% 50V				
C512	1-104-664-11	ELECT 47MF	20% 10V				
C701	1-102-114-00	CERAMIC 470PF	10% 50V				
C702	1-126-933-11	ELECT 100MF	20% 16V				
C703	1-104-664-11	ELECT 47MF	20% 10V				
C704	1-102-951-00	CERAMIC 15PF	5% 50V				
C705	1-102-960-00	CERAMIC 24PF	5% 50V				
C706	1-102-960-00	CERAMIC 24PF	5% 50V				
C707	1-107-651-11	ELECT 4.7MF	20% 250V				
C708	1-126-960-11	ELECT 1MF	20% 50V				
C709	1-101-006-00	CERAMIC 0.047MF	50V				
C710	1-107-651-11	ELECT 4.7MF	20% 250V				
C711	1-107-651-11	ELECT 4.7MF	20% 250V				
C712	1-101-006-00	CERAMIC 0.047MF	50V				
C714	1-101-006-00	CERAMIC 0.047MF	50V				
C715	1-101-006-00	CERAMIC 0.047MF	50V				
C716	1-102-157-00	CERAMIC 560PF	10% 500V				
C717	1-102-157-00	CERAMIC 560PF	10% 500V				
C718	1-102-157-00	CERAMIC 560PF	10% 500V				
C719	1-102-074-00	CERAMIC 0.001MF	10% 50V				
C720	1-162-114-00	CERAMIC 0.0047MF	2KV				
C721	1-107-662-11	ELECT 22MF	20% 250V				
C961	1-161-830-00	CERAMIC 0.0047MF	500V				
C962	1-130-491-00	MYLAR 0.047MF	5% 50V				
C963	1-107-638-11	ELECT 33MF	20% 160V				
C964	1-126-925-11	ELECT 470MF	20% 10V				
C968	1-106-383-00	MYLAR 0.047MF	10% 200V				
C969	1-107-949-11	ELECT 2.2MF	20% 160V				
C970	1-104-999-11	MYLAR 0.1MF	10% 200V				
C972	1-126-935-11	ELECT 470MF	20% 16V				
C973	1-130-491-00	MYLAR 0.047MF	5% 50V				
C975	1-126-925-11	ELECT 470MF	20% 10V				
C978	1-130-471-00	MYLAR 0.001MF	5% 50V				
C979	1-130-471-00	MYLAR 0.001MF	5% 50V				
C980	1-104-664-11	ELECT 47MF	20% 10V				
<CONNECTOR>							
CN503	* 1-564-508-11	PLUG, CONNECTOR 5P					
CN551	* 1-564-506-11	PLUG, CONNECTOR 3P					
CN701	* 1-564-510-11	PLUG, CONNECTOR 7P					
CN702	1-695-915-11	TAB (CONTACT)					
CN703	* 1-564-508-11	PLUG, CONNECTOR 5P					
CN704	1-695-915-11	TAB (CONTACT)					
CN961	* 1-564-509-11	PLUG, CONNECTOR 6P					
CN962	* 1-564-506-11	PLUG, CONNECTOR 3P					
<DIODE>							
D504	8-719-911-19	DIODE ISS119-25					
D505	8-719-911-19	DIODE ISS119-25					
D701	8-719-109-71	DIODE RD3.9ESB1					
D702	8-719-911-19	DIODE ISS119-25					
D703	8-719-911-19	DIODE ISS119-25					
D704	8-719-911-19	DIODE ISS119-25					
D705	8-719-911-19	DIODE ISS119-25					
D707	8-719-911-19	DIODE ISS119-25					
D709	8-719-051-85	DIODE HSS83TD					
D710	8-719-051-85	DIODE HSS83TD					
D711	8-719-051-85	DIODE HSS83TD					
D713	8-719-109-71	DIODE RD3.9ESB1					
D714	8-719-911-19	DIODE ISS119-25					

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
D964	8-719-911-19	DIODE 1SS119-25		R962	1-247-807-31	CARBON 100 5%	1/4W
D967	8-719-110-88	DIODE RD39ESB2		R963	1-249-417-11	CARBON 1K 5%	1/4W
D968	8-719-110-88	DIODE RD39ESB2		R964	1-260-312-11	CARBON 47 5%	1/2W
				R965	1-249-414-11	CARBON 560 5%	1/4W F
		<IC>		R966	1-249-417-11	CARBON 1K 5%	1/4W
				R967	1-249-410-11	CARBON 270 5%	1/4W
IC502	8-759-603-37	IC M5216P		R968	1-249-417-11	CARBON 1K 5%	1/4W
IC701	8-759-346-42	IC TDA6101Q/N3		R969	1-249-386-11	CARBON 2.7 5%	1/4W F
IC702	8-759-346-42	IC TDA6101Q/N3		R970	1-249-403-11	CARBON 68 5%	1/4W
IC703	8-759-346-42	IC TDA6101Q/N3		R971	1-247-815-91	CARBON 220 5%	1/4W
				R972	1-249-432-11	CARBON 18K 5%	1/4W
		<JACK>		R973	1-249-403-11	CARBON 68 5%	1/4W
J701	\triangle 1-451-470-21	SOCKET, PICTURE TUBE		R974	1-216-476-11	METAL OXIDE 180 5%	3W F
				R975	1-249-417-11	CARBON 1K 5%	1/4W F
		<COIL>		R976	1-249-432-11	CARBON 18K 5%	1/4W
				R977	1-249-429-11	CARBON 10K 5%	1/4W
L701	1-410-667-31	INDUCTOR 22UH		R978	1-247-807-31	CARBON 100 5%	1/4W
L961	1-414-187-11	INDUCTOR 47UH		R979	1-249-414-11	CARBON 560 5%	1/4W F
				R980	1-247-807-31	CARBON 100 5%	1/4W
		<TRANSISTOR>		R981	1-249-416-11	CARBON 820 5%	1/4W
				R982	1-249-386-11	CARBON 2.7 5%	1/4W F
Q531	8-729-119-78	TRANSISTOR 2SC2785-HFE		R985	1-249-401-11	CARBON 47 5%	1/4W F
Q537	8-729-119-78	TRANSISTOR 2SC2785-HFE		R986	1-249-397-11	CARBON 22 5%	1/4W F
Q538	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q701	8-729-119-76	TRANSISTOR 2SA1175-HFE					
Q961	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q962	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q963	8-729-017-05	TRANSISTOR 2SA1837					
Q965	8-729-017-06	TRANSISTOR 2SC4793					
Q967	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q968	8-729-119-76	TRANSISTOR 2SA1175-HFE					
		<RESISTOR>					
R501	1-260-080-11	CARBON 27 5%	1/2W				
R511	1-215-859-00	METAL OXIDE 22 5%	1W F				
R537	1-249-429-11	CARBON 10K 5%	1/4W				
R538	1-247-863-91	CARBON 22K 5%	1/4W				
R539	1-247-863-91	CARBON 22K 5%	1/4W				
R545	1-247-863-91	CARBON 22K 5%	1/4W				
R546	1-249-429-11	CARBON 10K 5%	1/4W				
R549	1-249-429-11	CARBON 10K 5%	1/4W				
R550	1-249-429-11	CARBON 10K 5%	1/4W				
R551	1-249-429-11	CARBON 10K 5%	1/4W				
R555	1-249-441-11	CARBON 100K 5%	1/4W				
R556	1-249-441-11	CARBON 100K 5%	1/4W				
R701	1-247-807-31	CARBON 100 5%	1/4W				
R702	1-219-510-11	CARBON 470K 5%	1/2W				
R704	1-215-413-00	METAL 470 1%	1/4W				
R707	1-249-418-11	CARBON 1.2K 5%	1/4W				
R708	1-249-418-11	CARBON 1.2K 5%	1/4W				
R709	1-249-418-11	CARBON 1.2K 5%	1/4W				
R710	1-215-413-00	METAL 470 1%	1/4W				
R711	1-249-421-11	CARBON 2.2K 5%	1/4W				
R712	1-249-429-11	CARBON 10K 5%	1/4W				
R713	1-249-421-11	CARBON 2.2K 5%	1/4W				
R718	1-247-843-11	CARBON 3.3K 5%	1/4W				
R719	1-247-843-11	CARBON 3.3K 5%	1/4W				
R720	1-247-843-11	CARBON 3.3K 5%	1/4W				
R725	1-215-903-11	METAL OXIDE 68K 5%	2W F				
R727	1-215-928-11	METAL OXIDE 68K 5%	3W F				
R729	1-215-928-11	METAL OXIDE 68K 5%	3W F				
R731	1-219-746-11	CARBON 1K 5%	1/2W				
R732	1-219-746-11	CARBON 1K 5%	1/2W				
R733	1-219-746-11	CARBON 1K 5%	1/2W				
R734	1-219-743-51	CARBON 100 5%	1/2W				
R738	1-219-752-11	CARBON 100K 5%	1/2W				
R740	1-216-366-00	METAL OXIDE 0.56 5%	2W F				

<VARIABLE RESISTOR>

RV701 \triangle 1-241-714-21 RES, ADJ, METAL FILM 110M (H-STAT)

VIDEO BLOCK

FF10 MA10

REF. NO.	PART NO.	DESCRIPTION	REMARK
	* A-1241-368-A	FF10 MOUNT *****	
		<CONNECTOR>	
CN1301	1-784-041-41	CONNECTOR, BOARD TO BOARD 9P	
		<DIODE>	
D1303	8-719-053-43	DIODE SLR-325VCT31	
D1304	8-719-053-43	DIODE SLR-325VCT31	
D1305	8-719-053-43	DIODE SLR-325VCT31	
D1306	8-719-053-43	DIODE SLR-325VCT31	
D1307	8-719-053-43	DIODE SLR-325VCT31	
D1308	8-719-061-96	DIODE SLR-325DCT31	
		<SWITCH>	
S1301	1-572-200-11	SWITCH, KEYBOARD (EJECT)	

	* A-1306-569-A	MA10 COMPL (VF21M77) *****	
	* A-1306-570-A	MA10 COMPL (VF21M40/M70) *****	
	* 3-960-273-01	SPACER, TOP END	
	* 3-960-274-01	SPACER, LED	
	4-382-854-01	SCREW (M3X8), P, SW (+)	
		<CAPACITOR>	
C001	1-163-104-00	CERAMIC CHIP 30PF	5% 50V
C002	1-163-235-11	CERAMIC CHIP 22PF	5% 50V
C004	1-163-038-91	CERAMIC CHIP 0.1MF	25V
C006	1-163-241-11	CERAMIC CHIP 39PF	5% 50V
C007	1-163-241-11	CERAMIC CHIP 39PF	5% 50V
C008	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C013	1-126-964-11	ELECT 10MF	20% 50V
C014	1-163-038-91	CERAMIC CHIP 0.1MF	25V
C015	1-104-665-11	ELECT 100MF	20% 10V
C019	1-163-001-11	CERAMIC CHIP 220PF	10% 50V
C020	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V
C022	1-124-589-11	ELECT 47MF	20% 16V
C024	1-163-259-91	CERAMIC CHIP 220PF	5% 50V
C028	1-163-227-11	CERAMIC CHIP 10PF	5% 50V
C202	1-126-960-11	ELECT 1MF	20% 50V
C208	1-126-963-11	ELECT 4.7MF	20% 50V
C209	1-124-252-00	ELECT 0.33MF	20% 50V
C210	1-163-009-11	CERAMIC CHIP 0.001MF	10% 50V
C211	1-119-821-11	ELECT MELF 2.2MF	20% 50V
C214	1-104-666-11	ELECT 220MF	20% 25V
C216	1-124-261-00	ELECT 10MF	20% 50V
C217	1-126-960-11	ELECT 1MF	20% 50V
C218	1-107-914-31	ELECT 1000MF	20% 50V
C219	1-163-038-91	CERAMIC CHIP 0.1MF	25V
C220	1-126-942-61	ELECT 1000MF	20% 25V
C401	1-163-035-00	CERAMIC CHIP 0.047MF	50V
C402	1-124-589-11	ELECT 47MF	20% 6.3V
C405	1-104-664-11	ELECT 47MF	20% 16V
C406	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C407	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C408	1-164-004-11	CERAMIC CHIP 0.1MF	10% 25V
C409	1-124-589-11	ELECT 47MF	20% 6.3V
C410	1-163-035-00	CERAMIC CHIP 0.047MF	50V
C412	1-126-160-11	ELECT 1MF	20% 50V
C413	1-163-263-11	CERAMIC CHIP 330PF	5% 50V

REF. NO.	PART NO.	DESCRIPTION	REMARK
C414	1-124-589-11	ELECT 47MF	20% 6.3V
C415	1-130-487-00	MYLAR 0.022MF	5% 50V
C416	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C417	1-124-248-00	ELECT 22MF	20% 25V
C418	1-130-488-00	MYLAR 0.027MF	5% 50V
C419	1-124-257-00	ELECT 2.2MF	20% 50V
C421	1-104-665-11	ELECT 100MF	20% 10V
C422	1-163-018-00	CERAMIC CHIP 0.0056MF	10% 50V
C424	1-126-160-11	ELECT 1MF	20% 50V
C425	1-163-038-91	CERAMIC CHIP 0.1MF	25V
C430	1-163-227-11	CERAMIC CHIP 10PF	0.5PF 50V
C431	1-163-231-11	CERAMIC CHIP 15PF	5% 50V
C432	1-163-038-91	CERAMIC CHIP 0.1MF	25V
C435	1-163-038-91	CERAMIC CHIP 0.1MF	25V
C436	1-104-665-11	ELECT 100MF	20% 10V
C441	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C455	1-126-924-11	ELECT 330MF	20% 6.3V
C456	1-163-009-11	CERAMIC CHIP 0.001MF	10% 50V
C457	1-163-009-11	CERAMIC CHIP 0.001MF	10% 50V
C458	1-163-009-11	CERAMIC CHIP 0.001MF	10% 50V
C460	1-163-009-11	CERAMIC CHIP 0.001MF	10% 50V
C701	1-163-033-91	CERAMIC CHIP 0.022MF	50V
C705	1-163-033-91	CERAMIC CHIP 0.022MF	50V
C706	1-163-237-11	CERAMIC CHIP 27PF	5% 50V
C707	1-163-033-91	CERAMIC CHIP 0.022MF	50V
C709	1-163-241-11	CERAMIC CHIP 39PF	5% 50V
C711	1-163-033-91	CERAMIC CHIP 0.022MF	50V
C712	1-163-033-91	CERAMIC CHIP 0.022MF	50V
C713	1-163-241-11	CERAMIC CHIP 39PF	5% 50V
C716	1-163-033-91	CERAMIC CHIP 0.022MF	50V
C717	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C718	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C719	1-163-038-91	CERAMIC CHIP 0.1MF	25V
C720	1-104-665-11	ELECT 100MF	20% 10V
C721	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C722	1-163-038-91	CERAMIC CHIP 0.1MF	25V
C723	1-163-038-91	CERAMIC CHIP 0.1MF	25V
C724	1-104-665-11	ELECT 100MF	20% 10V
C725	1-163-038-91	CERAMIC CHIP 0.1MF	25V
C726	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C727	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C728	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C801	1-164-492-11	CERAMIC CHIP 0.15MF	10% 16V
C803	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C804	1-163-241-11	CERAMIC CHIP 39PF	5% 50V
C807	1-163-227-11	CERAMIC CHIP 10PF	0.5PF 50V
C808	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C813	1-163-251-11	CERAMIC CHIP 100PF	5% 50V
C815	1-163-239-11	CERAMIC CHIP 33PF	5% 50V
C816	1-163-037-11	CERAMIC CHIP 0.022MF	10% 50V
C817	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C818	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C819	1-163-131-00	CERAMIC CHIP 390PF	5% 50V
C820	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V
C822	1-124-248-00	ELECT 22MF	20% 25V
C823	1-126-960-11	ELECT 1MF	20% 50V
C824	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C825	1-163-257-11	CERAMIC CHIP 180PF	5% 50V
C828	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C829	1-164-346-11	CERAMIC CHIP 1MF	16V
C832	1-115-871-11	ELECT 1MF	20% 50V
C834	1-163-038-91	CERAMIC CHIP 0.1MF	25V
C835	1-163-038-91	CERAMIC CHIP 0.1MF	25V
C837	1-104-664-11	ELECT 47MF	20% 10V
C840	1-104-665-11	ELECT 100MF	20% 10V
C841	1-126-795-11	ELECT 10MF	20% 50V
C842	1-163-031-11	CERAMIC CHIP 0.01MF	50V
C843	1-104-665-11	ELECT 100MF	20% 10V
C844	1-126-795-11	ELECT 10MF	20% 50V


REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
C845	1-164-346-11	CERAMIC CHIP 1MF	16V	CN403	1-779-723-11	CONNECTOR, BOARD TO BOARD 9P	
C846	1-163-021-91	CERAMIC CHIP 0.01MF	10%	CN404	* 1-766-716-11	CONNECTOR, BOARD TO BOARD 3P	
C847	1-163-038-91	CERAMIC CHIP 0.1MF	25V	CN701	* 1-695-331-31	PIN, CONNECTOR (PC BOARD) 8P	
C848	1-163-031-11	CERAMIC CHIP 0.01MF	50V	CN702	* 1-560-892-00	PIN, CONNECTOR 4P	
C849	1-126-960-11	ELECT 1MF	20%	CN1001	* 1-564-506-11	PLUG, CONNECTOR 3P	
C850	1-163-031-11	CERAMIC CHIP 0.01MF	50V	CN1002	* 1-564-509-11	PLUG, CONNECTOR 6P	
C851	1-163-809-11	CERAMIC CHIP 0.047MF	10%	CN1003	* 1-564-511-11	PLUG, CONNECTOR 8P	
C852	1-124-589-11	ELECT 47MF	20%	CN1004	1-778-226-21	CONNECTOR, BOARD TO BOARD 6P	
C853	1-163-038-91	CERAMIC CHIP 0.1MF	25V			<DIODE>	
C854	1-126-960-11	ELECT 1MF	20%	D001	8-719-911-19	DIODE 1SS119-25	
C855	1-163-809-11	CERAMIC CHIP 0.047MF	10%	D002	8-719-921-54	DIODE MTZJ-6.2B	
C856	1-126-960-11	ELECT 1MF	20%	D004	8-719-921-54	DIODE MTZJ-6.2B	
C857	1-163-037-11	CERAMIC CHIP 0.022MF	10%	D005	8-719-981-99	DIODE MTZJ-3.3	
C858	1-126-960-11	ELECT 1MF	20%	D006	8-719-109-84	DIODE RD5.1ESB1	
C859	1-163-038-91	CERAMIC CHIP 0.1MF	25V	D007	8-719-911-19	DIODE 1SS119-25	
C860	1-164-346-11	CERAMIC CHIP 1MF	16V	D201	8-719-921-54	DIODE MTZJ-6.2B	
C861	1-163-031-11	CERAMIC CHIP 0.01MF	50V	D202	8-719-921-54	DIODE MTZJ-6.2B	
C862	1-163-031-11	CERAMIC CHIP 0.01MF	50V	D251	8-719-921-54	DIODE MTZJ-6.2B	
C863	1-124-589-11	ELECT 47MF	20%	D252	8-719-921-54	DIODE MTZJ-6.2B	
C864	1-163-038-91	CERAMIC CHIP 0.1MF	25V	D253	8-719-921-54	DIODE MTZJ-6.2B	
C865	1-164-004-11	CERAMIC CHIP 0.1MF	10%	D254	8-719-921-54	DIODE MTZJ-6.2B	
C866	1-164-004-11	CERAMIC CHIP 0.1MF	10%	D402	8-719-911-19	DIODE 1SS119-25	
C867	1-163-021-91	CERAMIC CHIP 0.01MF	10%	D403	8-719-200-82	DIODE 11ES2	
C868	1-163-235-11	CERAMIC CHIP 22PF	5%	D405	8-719-200-82	DIODE 11ES2	
C879	1-163-121-00	CERAMIC CHIP 150PF	5%	D406	8-719-200-82	DIODE 11ES2	
C901	1-126-157-11	ELECT 10MF	20%	D451	8-719-048-26	DIODE GL528V1	
C904	1-126-964-11	ELECT 10MF	20%	D1101	8-719-921-54	DIODE MTZJ-6.2B	
C905	1-164-004-11	CERAMIC CHIP 0.1MF	10%	D1103	8-719-921-54	DIODE MTZJ-6.2B	
C906	1-127-720-91	ELECT MELF 470MF	20%	D1105	8-719-923-60	DIODE MTZJ-T-77-9.1A	
C907	1-164-346-11	CERAMIC CHIP 1MF	16V	D1110	8-719-921-54	DIODE MTZJ-6.2B	
C908	1-164-346-11	CERAMIC CHIP 1MF	16V	D1117	8-719-911-19	DIODE 1SS119-25	
C912	1-164-346-11	CERAMIC CHIP 1MF	16V	D1118	8-719-911-19	DIODE 1SS119-25	
C917	1-164-346-11	CERAMIC CHIP 1MF	16V	D1119	8-719-911-19	DIODE 1SS119-25	
C919	1-164-346-11	CERAMIC CHIP 1MF	16V			<IC>	
C920	1-164-346-11	CERAMIC CHIP 1MF	16V	IC001	8-752-906-46	IC CXP85460-220Q	
C923	1-164-346-11	CERAMIC CHIP 1MF	16V	IC002	8-759-527-77	IC M24C16-MN6T	
C1001	1-137-397-11	FILM 0.047MF	5%	IC003	8-759-510-43	IC PST572C	
C1002	1-163-031-11	CERAMIC CHIP 0.01MF	50V	IC201	8-759-442-73	IC TDA7494	
C1003	1-163-021-91	CERAMIC CHIP 0.01MF	10%	IC401	8-759-353-59	IC LB1643	
C1004	1-104-664-11	ELECT 47MF	20%	IC402	8-752-906-47	IC CXP87852-061Q (VF21M77)	
C1005	1-104-664-11	ELECT 47MF	20%	IC402	8-752-906-48	IC CXP87852-062Q (VF21M40/M70)	
C1006	1-163-021-91	CERAMIC CHIP 0.01MF	10%	IC403	8-759-702-02	IC NJM062M	
C1007	1-104-664-11	ELECT 47MF	20%	IC404	8-759-510-73	IC BA10393F-E2	
C1008	1-126-963-11	ELECT 4.7MF	20%	IC405	8-759-438-83	IC BA6305F-E2	
C1009	1-126-964-11	ELECT 10MF	20%	IC701	8-759-357-84	IC HA118295NT	
C1010	1-137-370-11	FILM 0.01MF	5%	IC801	8-759-439-51	IC LC89978M-TE-L	
C1011	1-163-011-11	CERAMIC CHIP 0.0015MF	10%	IC802	8-759-492-90	IC LA71504M-MPB	
C1012	1-163-011-11	CERAMIC CHIP 0.0015MF	10%	IC901	8-752-081-33	IC CXA2089Q	
C1013	1-164-346-11	CERAMIC CHIP 1MF	16V	IC1001	8-759-499-30	IC BA7755AF-E2	
C1014	1-163-031-11	CERAMIC CHIP 0.01MF	50V	IC1101	8-742-041-12	HYB IC SBX1981-11	
C1015	1-126-960-11	ELECT 1MF	20%			<JACK>	
C1016	1-104-664-11	ELECT 47MF	20%	J1101	1-779-205-11	JACK, PIN 2P (GAME/INPUT (REAR))	
C1017	1-126-963-11	ELECT 4.7MF	20%	J1102	1-568-267-21	JACK (HEADPHONE)	
C1019	1-104-664-11	ELECT 47MF	20%			<CHIP CONDUCTOR>	
C1020	1-126-960-11	ELECT 1MF	20%	JR101	1-216-295-91	SHORT	0
C1021	1-126-964-11	ELECT 10MF	20%	JR102	1-216-295-91	SHORT	0
C1104	1-163-038-91	CERAMIC CHIP 0.1MF	25V	JR103	1-216-295-91	SHORT	0
C1108	1-164-346-11	CERAMIC CHIP 1MF	16V	JR104	1-216-295-91	SHORT	0
C1110	1-128-551-11	ELECT 22MF	20%	JR105	1-216-295-91	SHORT	0
C1111	1-128-551-11	ELECT 22MF	20%	JR106	1-216-295-91	SHORT	0
		<CONNECTOR>		JR107	1-216-295-91	SHORT	0
CN001	1-569-937-11	SOCKET, CONNECTOR 21P					
CN002	* 1-569-930-11	SOCKET, CONNECTOR 13P					
CN004	1-784-038-11	CONNECTOR, BOARD TO BOARD 9P					
CN251	* 1-564-506-11	PLUG, CONNECTOR 3P					
CN401	* 1-569-926-11	SOCKET, CONNECTOR 7P					






REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
JR108	1-216-295-91	SHORT	0	Q1002	8-729-422-27	TRANSISTOR 2SD601A-Q	
JR109	1-216-295-91	SHORT	0	Q1101	8-729-422-27	TRANSISTOR 2SD601A-Q	
JR111	1-216-295-91	SHORT	0				
JR115	1-216-295-91	SHORT	0			<RESISTOR>	
JR116	1-216-295-91	SHORT	0	R003	1-216-049-91	RES,CHIP	1K 5% 1/10W
JR119	1-216-295-91	SHORT	0	R005	1-216-089-91	RES,CHIP	47K 5% 1/10W
JR120	1-216-295-91	SHORT	0	R007	1-249-421-11	CARBON	2.2K 5% 1/4W
JR121	1-216-295-91	SHORT	0	R008	1-216-049-91	RES,CHIP	1K 5% 1/10W
				R009	1-216-049-91	RES,CHIP	1K 5% 1/10W
JR122	1-216-295-91	SHORT	0	R010	1-216-049-91	RES,CHIP	1K 5% 1/10W
JR123	1-216-295-91	SHORT	0	R011	1-216-049-91	RES,CHIP	1K 5% 1/10W
JR124	1-216-295-91	SHORT	0	R012	1-216-025-91	RES,CHIP	100 5% 1/10W
JR402	1-216-295-91	SHORT	0	R013	1-216-049-91	RES,CHIP	1K 5% 1/10W
JR403	1-216-295-91	SHORT	0	R014	1-216-049-91	RES,CHIP	1K 5% 1/10W
		<COIL>		R015	1-216-049-91	RES,CHIP	1K 5% 1/10W
L001	1-469-013-31	INDUCTOR 18UH		R016	1-216-049-91	RES,CHIP	1K 5% 1/10W
L002	1-410-509-11	INDUCTOR 10UH		R017	1-216-025-91	RES,CHIP	100 5% 1/10W
L004	1-414-856-11	INDUCTOR 10UH		R018	1-216-049-91	RES,CHIP	1K 5% 1/10W
L402	1-410-509-11	INDUCTOR 10UH		R020	1-216-067-00	RES,CHIP	5.6K 5% 1/10W
L403	1-414-856-11	INDUCTOR 10UH		R021	1-216-065-91	RES,CHIP	4.7K 5% 1/10W
L431	1-410-509-11	INDUCTOR 10UH		R022	1-216-065-91	RES,CHIP	4.7K 5% 1/10W
L703	1-414-857-11	INDUCTOR 100UH		R024	1-216-073-00	RES,CHIP	10K 5% 1/10W
L704	1-414-857-11	INDUCTOR 100UH		R025	1-216-073-00	RES,CHIP	10K 5% 1/10W
L801	1-410-439-11	INDUCTOR 470UH		R027	1-216-049-91	RES,CHIP	1K 5% 1/10W
L803	1-408-977-21	INDUCTOR 39UH		R028	1-216-295-91	SHORT	0
L804	1-408-977-21	INDUCTOR 39UH		R029	1-216-049-91	RES,CHIP	1K 5% 1/10W
L808	1-414-184-41	INDUCTOR 15UH		R030	1-216-033-00	RES,CHIP	220 5% 1/10W
L809	1-414-857-11	INDUCTOR 100UH		R031	1-216-055-00	RES,CHIP	1.8K 5% 1/10W
L811	1-414-185-41	INDUCTOR 22UH		R032	1-216-055-00	RES,CHIP	1.8K 5% 1/10W
L812	1-414-185-41	INDUCTOR 22UH		R033	1-216-055-00	RES,CHIP	1.8K 5% 1/10W
L813	1-414-187-11	INDUCTOR 47UH		R034	1-216-041-00	RES,CHIP	470 5% 1/10W
L815	1-414-190-31	INDUCTOR 120UH		R035	1-216-049-91	RES,CHIP	1K 5% 1/10W
L1001	1-414-857-11	INDUCTOR 100UH		R036	1-216-025-91	RES,CHIP	100 5% 1/10W
L1002	1-414-857-11	INDUCTOR 100UH		R037	1-216-025-91	RES,CHIP	100 5% 1/10W
L1003	1-420-872-00	COIL, AIR CORE		R038	1-216-025-91	RES,CHIP	100 5% 1/10W
L1004	1-414-187-11	INDUCTOR 47UH		R039	1-216-025-91	RES,CHIP	100 5% 1/10W
		<PHOTO COUPLER>		R040	1-216-045-00	RES,CHIP	680 5% 1/10W
PH451	8-749-013-23	PHOTO INTERRUPTER GP3S120		R041	1-216-065-91	RES,CHIP	4.7K 5% 1/10W
PH452	8-749-013-23	PHOTO INTERRUPTER GP3S120		R042	1-216-065-91	RES,CHIP	4.7K 5% 1/10W
		<TRANSISTOR>		R043	1-216-065-91	RES,CHIP	4.7K 5% 1/10W
Q001	8-729-216-22	TRANSISTOR 2SA1162-G		R044	1-216-065-91	RES,CHIP	4.7K 5% 1/10W
Q002	8-729-422-27	TRANSISTOR 2SD601A-Q		R045	1-216-295-91	SHORT	0
Q003	8-729-421-22	TRANSISTOR UN2211		R046	1-216-025-91	RES,CHIP	100 5% 1/10W
Q009	8-729-422-27	TRANSISTOR 2SD601A-Q		R047	1-216-025-91	RES,CHIP	100 5% 1/10W
Q201	8-729-422-27	TRANSISTOR 2SD601A-Q		R048	1-216-041-00	RES,CHIP	470 5% 1/10W
Q402	8-729-424-18	TRANSISTOR UN2113		R051	1-216-065-91	RES,CHIP	4.7K 5% 1/10W
Q451	8-729-281-53	TRANSISTOR 2SC1815-GR		R052	1-216-073-00	RES,CHIP	10K 5% 1/10W
Q452	8-729-042-88	TRANSISTOR RPT-37PB3F		R053	1-216-057-00	RES,CHIP	2.2K 5% 1/10W
Q453	8-729-042-88	TRANSISTOR RPT-37PB3F		R054	1-216-049-91	RES,CHIP	1K 5% 1/10W
Q701	8-729-422-27	TRANSISTOR 2SD601A-Q		R055	1-216-033-00	RES,CHIP	220 5% 1/10W
Q801	8-729-422-27	TRANSISTOR 2SD601A-Q		R056	1-216-033-00	RES,CHIP	220 5% 1/10W
Q803	8-729-422-27	TRANSISTOR 2SD601A-Q		R057	1-216-049-91	RES,CHIP	1K 5% 1/10W
Q808	8-729-422-27	TRANSISTOR 2SD601A-Q		R058	1-216-039-00	RES,CHIP	390 5% 1/10W
Q809	8-729-421-19	TRANSISTOR UN2213		R059	1-216-075-00	RES,CHIP	12K 5% 1/10W
Q812	8-729-422-27	TRANSISTOR 2SD601A-Q		R060	1-216-073-00	RES,CHIP	10K 5% 1/10W
Q815	8-729-422-27	TRANSISTOR 2SD601A-Q		R061	1-216-055-00	RES,CHIP	1.8K 5% 1/10W
Q821	8-729-422-27	TRANSISTOR 2SD601A-Q		R062	1-216-055-00	RES,CHIP	1.8K 5% 1/10W
Q823	8-729-422-27	TRANSISTOR 2SD601A-Q		R063	1-216-055-00	RES,CHIP	1.8K 5% 1/10W
Q824	8-729-216-22	TRANSISTOR 2SA1162-G		R064	1-216-121-91	RES,CHIP	1M 5% 1/10W
Q825	8-729-422-27	TRANSISTOR 2SD601A-Q		R065	1-216-097-91	RES,CHIP	100K 5% 1/10W
Q830	8-729-216-22	TRANSISTOR 2SA1162-G		R066	1-216-045-00	RES,CHIP	680 5% 1/10W
Q901	8-729-216-22	TRANSISTOR 2SA1162-G		R067	1-216-041-00	RES,CHIP	470 5% 1/10W
Q902	8-729-216-22	TRANSISTOR 2SA1162-G		R068	1-216-041-00	RES,CHIP	470 5% 1/10W
Q1001	8-729-802-91	TRANSISTOR 2SD879		R070	1-216-033-00	RES,CHIP	220 5% 1/10W
				R073	1-216-073-00	RES,CHIP	10K 5% 1/10W
				R075	1-216-049-91	RES,CHIP	1K 5% 1/10W
				R076	1-216-065-91	RES,CHIP	4.7K 5% 1/10W
				R077	1-216-089-91	RES,CHIP	47K 5% 1/10W

MA10

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
R078	1-216-073-00	RES,CHIP	10K 5% 1/10W	R454	1-249-411-11	CARBON	330 5% 1/4W
R084	1-216-033-00	RES,CHIP	220 5% 1/10W	R455	1-216-089-91	RES,CHIP	47K 5% 1/10W
R085	1-216-049-91	RES,CHIP	1K 5% 1/10W	R456	1-216-089-91	RES,CHIP	47K 5% 1/10W
R096	1-216-069-00	RES,CHIP	6.8K 5% 1/10W	R457	1-216-085-00	RES,CHIP	33K 5% 1/10W
R097	1-216-073-00	RES,CHIP	10K 5% 1/10W	R458	1-216-085-00	RES,CHIP	33K 5% 1/10W
R098	1-216-049-91	RES,CHIP	1K 5% 1/10W	R459	1-216-085-00	RES,CHIP	33K 5% 1/10W
R099	1-216-049-91	RES,CHIP	1K 5% 1/10W	R460	1-216-057-00	RES,CHIP	2.2K 5% 1/10W
R101	1-216-073-00	RES,CHIP	10K 5% 1/10W	R461	1-216-085-00	RES,CHIP	33K 5% 1/10W
R204	1-249-429-11	CARBON	10K 5% 1/4W	R465	1-216-045-00	RES,CHIP	680 5% 1/10W
R205	1-216-049-91	RES,CHIP	1K 5% 1/10W	R466	1-216-045-00	RES,CHIP	680 5% 1/10W
R206	1-216-109-00	RES,CHIP	330K 5% 1/10W	R467	1-216-045-00	RES,CHIP	680 5% 1/10W
R210	1-216-057-00	RES,CHIP	2.2K 5% 1/10W	R468	1-216-089-91	RES,CHIP	47K 5% 1/10W
R211	1-216-073-00	RES,CHIP	10K 5% 1/10W	R469	1-216-049-91	RES,CHIP	1K 5% 1/10W
R212	1-216-047-91	RES,CHIP	820 5% 1/10W	R470	1-216-041-00	RES,CHIP	470 5% 1/10W
R215	1-216-295-91	SHORT	0	R471	1-216-041-00	RES,CHIP	470 5% 1/10W
R216	1-249-385-11	CARBON	2.2 5% 1/4W F	R472	1-216-041-00	RES,CHIP	470 5% 1/10W
R218	1-216-105-91	RES,CHIP	220K 5% 1/10W	R473	1-216-041-00	RES,CHIP	470 5% 1/10W
R219	1-216-033-00	RES,CHIP	220 5% 1/10W	R474	1-216-073-00	RES,CHIP	10K 5% 1/10W
R220	1-216-065-91	RES,CHIP	4.7K 5% 1/10W	R476	1-216-049-91	RES,CHIP	1K 5% 1/10W
R401	1-216-073-00	RES,CHIP	10K 5% 1/10W	R477	1-216-049-91	RES,CHIP	1K 5% 1/10W
R402	1-216-073-00	RES,CHIP	10K 5% 1/10W	R478	1-216-049-91	RES,CHIP	1K 5% 1/10W
R403	1-216-049-91	RES,CHIP	1K 5% 1/10W	R479	1-216-065-91	RES,CHIP	4.7K 5% 1/10W
R404	1-216-073-00	RES,CHIP	10K 5% 1/10W	R480	1-216-049-91	RES,CHIP	1K 5% 1/10W
R405	1-216-073-00	RES,CHIP	10K 5% 1/10W	R481	1-216-049-91	RES,CHIP	1K 5% 1/10W
R406	1-216-053-00	RES,CHIP	1.5K 5% 1/10W	R484	1-216-049-91	RES,CHIP	1K 5% 1/10W
R407	1-216-053-00	RES,CHIP	1.5K 5% 1/10W	R487	1-216-045-00	RES,CHIP	680 5% 1/10W
R408	1-216-073-00	RES,CHIP	10K 5% 1/10W	R701	1-216-025-91	RES,CHIP	100 5% 1/10W
R409	1-216-073-00	RES,CHIP	10K 5% 1/10W	R702	1-216-045-00	RES,CHIP	680 5% 1/10W
R410	1-216-049-91	RES,CHIP	1K 5% 1/10W	R705	1-216-055-00	RES,CHIP	1.8K 5% 1/10W
R411	1-216-065-91	RES,CHIP	4.7K 5% 1/10W	R706	1-216-081-00	RES,CHIP	22K 5% 1/10W
R412	1-216-057-00	RES,CHIP	2.2K 5% 1/10W	R707	1-216-073-00	RES,CHIP	10K 5% 1/10W
R414	1-216-097-91	RES,CHIP	100K 5% 1/10W	R708	1-216-049-91	RES,CHIP	1K 5% 1/10W
R415	1-216-097-91	RES,CHIP	100K 5% 1/10W	R709	1-216-061-00	RES,CHIP	3.3K 5% 1/10W
R416	1-216-105-91	RES,CHIP	220K 5% 1/10W	R710	1-216-049-91	RES,CHIP	1K 5% 1/10W
R417	1-216-111-00	RES,CHIP	390K 5% 1/10W	R711	1-216-049-91	RES,CHIP	1K 5% 1/10W
R418	1-216-097-91	RES,CHIP	100K 5% 1/10W	R712	1-216-049-91	RES,CHIP	1K 5% 1/10W
R419	1-216-097-91	RES,CHIP	100K 5% 1/10W	R714	1-216-295-91	SHORT	0
R420	1-216-117-00	RES,CHIP	680K 5% 1/10W	R716	1-216-295-91	SHORT	0
R421	1-216-079-00	RES,CHIP	18K 5% 1/10W	R801	1-216-041-00	RES,CHIP	470 5% 1/10W
R422	1-216-689-11	RES,CHIP	39K 5% 1/10W	R803	1-216-057-00	RES,CHIP	2.2K 5% 1/10W
R423	1-216-049-91	RES,CHIP	1K 5% 1/10W	R810	1-216-041-00	RES,CHIP	470 5% 1/10W
R424	1-216-675-11	METAL CHIP	10K 0.50% 1/10W	R811	1-216-041-00	RES,CHIP	470 5% 1/10W
R425	1-216-057-00	RES,CHIP	2.2K 5% 1/10W	R813	1-216-047-91	RES,CHIP	820 5% 1/10W
R426	1-216-057-00	RES,CHIP	2.2K 5% 1/10W	R814	1-216-041-00	RES,CHIP	470 5% 1/10W
R427	1-216-103-00	RES,CHIP	180K 5% 1/10W	R815	1-247-815-91	CARBON	220 5% 1/4W
R428	1-216-675-11	METAL CHIP	10K 0.50% 1/10W	R819	1-216-081-00	RES,CHIP	22K 5% 1/10W
R429	1-216-065-91	RES,CHIP	4.7K 5% 1/10W	R820	1-216-081-00	RES,CHIP	22K 5% 1/10W
R430	1-216-037-00	RES,CHIP	330 5% 1/10W	R823	1-216-049-91	RES,CHIP	1K 5% 1/10W
R432	1-216-073-00	RES,CHIP	10K 5% 1/10W	R824	1-216-049-91	RES,CHIP	1K 5% 1/10W
R433	1-216-073-00	RES,CHIP	10K 5% 1/10W	R827	1-216-025-91	RES,CHIP	100 5% 1/10W
R435	1-216-049-91	RES,CHIP	1K 5% 1/10W	R829	1-216-065-91	RES,CHIP	4.7K 5% 1/10W
R436	1-216-043-91	RES,CHIP	560 5% 1/10W	R831	1-216-295-91	SHORT	0
R437	1-216-065-91	RES,CHIP	4.7K 5% 1/10W	R833	1-216-295-91	SHORT	0
R438	1-216-295-91	SHORT	0	R834	1-216-295-91	SHORT	0
R439	1-216-089-91	RES,CHIP	47K 5% 1/10W	R835	1-216-041-00	RES,CHIP	470 5% 1/10W
R440	1-216-089-91	RES,CHIP	47K 5% 1/10W	R837	1-216-073-00	RES,CHIP	10K 5% 1/10W
R441	1-216-089-91	RES,CHIP	47K 5% 1/10W	R838	1-216-065-91	RES,CHIP	4.7K 5% 1/10W
R442	1-216-089-91	RES,CHIP	47K 5% 1/10W	R839	1-216-055-00	RES,CHIP	1.8K 5% 1/10W
R443	1-216-049-91	RES,CHIP	1K 5% 1/10W	R840	1-216-033-00	RES,CHIP	220 5% 1/10W
R444	1-216-295-91	SHORT	0	R841	1-216-069-00	RES,CHIP	6.8K 5% 1/10W
R445	1-216-089-91	RES,CHIP	47K 5% 1/10W	R843	1-216-047-91	RES,CHIP	820 5% 1/10W
R446	1-216-075-00	RES,CHIP	12K 5% 1/10W	R845	1-216-057-00	RES,CHIP	2.2K 5% 1/10W
R447	1-216-081-00	RES,CHIP	22K 5% 1/10W	R847	1-216-295-91	SHORT	0
R448	1-216-075-00	RES,CHIP	12K 5% 1/10W	R848	1-216-065-91	RES,CHIP	4.7K 5% 1/10W
R449	1-216-081-00	RES,CHIP	22K 5% 1/10W	R849	1-216-295-91	SHORT	0
R450	1-216-077-00	RES,CHIP	15K 5% 1/10W	R850	1-216-065-91	RES,CHIP	4.7K 5% 1/10W
R451	1-216-057-00	RES,CHIP	2.2K 5% 1/10W	R852	1-216-053-00	RES,CHIP	1.5K 5% 1/10W
R452	1-249-400-11	CARBON	39 5% 1/4W	R855	1-216-055-00	RES,CHIP	1.8K 5% 1/10W
R453	1-249-400-11	CARBON	39 5% 1/4W	R856	1-216-071-00	RES,CHIP	8.2K 5% 1/10W

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
R857	1-216-049-91	RES,CHIP	1K 5%	1/10W	R1129	1-216-037-00	RES,CHIP 330 5% 1/10W
R858	1-216-049-91	RES,CHIP	1K 5%	1/10W	R1132	1-216-073-00	RES,CHIP 10K 5% 1/10W
R860	1-216-061-00	RES,CHIP	3.3K 5%	1/10W	R1133	1-216-065-91	RES,CHIP 4.7K 5% 1/10W
R861	1-216-089-91	RES,CHIP	47K 5%	1/10W	R1134	1-216-065-91	RES,CHIP 4.7K 5% 1/10W
R863	1-216-045-00	RES,CHIP	680 5%	1/10W	R1135	1-216-065-91	RES,CHIP 4.7K 5% 1/10W
R864	1-216-295-91	SHORT	0		R1136	1-216-051-00	RES,CHIP 1.2K 5% 1/10W
R865	1-216-295-91	SHORT	0		R1137	1-216-045-00	RES,CHIP 680 5% 1/10W
R867	1-216-057-00	RES,CHIP	2.2K 5%	1/10W	R1138	1-216-047-91	RES,CHIP 820 5% 1/10W
R869	1-216-049-91	RES,CHIP	1K 5%	1/10W	R1139	1-216-093-91	RES,CHIP 68K 5% 1/10W
R870	1-216-057-00	RES,CHIP	2.2K 5%	1/10W	R1140	1-216-049-91	RES,CHIP 1K 5% 1/10W
R873	1-216-049-91	RES,CHIP	1K 5%	1/10W			<SWITCH>
R875	1-216-295-91	SHORT	0		S001	1-473-555-11	ENCODER, ROTARY (QUICK TIMER)
R881	1-216-089-91	RES,CHIP	47K 5%	1/10W	S401	1-771-155-11	SWITCH, ROTARY (MODE)
R882	1-216-689-11	RES,CHIP	39K 5%	1/10W	S451	1-762-108-11	SWITCH, PUSH (1 KEY) (REC/PROF)
R883	1-216-049-91	RES,CHIP	1K 5%	1/10W	S1101	1-571-032-11	SWITCH, PUSH (1 KEY) (POWER)
R885	1-216-049-91	RES,CHIP	1K 5%	1/10W	S1102	1-570-577-11	SWITCH, PUSH (STOP)
R901	1-216-065-91	RES,CHIP	4.7K 5%	1/10W	S1103	1-570-577-11	SWITCH, PUSH (REW)
R902	1-216-057-00	RES,CHIP	2.2K 5%	1/10W	S1104	1-570-577-11	SWITCH, PUSH (PLAY/GAME)
R903	1-216-057-00	RES,CHIP	2.2K 5%	1/10W	S1105	1-570-577-11	SWITCH, PUSH (FF/INPUT SELECT)
R905	1-216-025-91	RES,CHIP	100 5%	1/10W	S1106	1-570-577-11	SWITCH, PUSH (PAUSE/VOL -)
R909	1-216-057-00	RES,CHIP	2.2K 5%	1/10W	S1107	1-570-577-11	SWITCH, PUSH (REC/VOL +)
R911	1-216-097-91	RES,CHIP	100K 5%	1/10W	S1108	1-571-532-21	SWITCH, TACTIL (PROG -)
R913	1-216-295-91	SHORT	0		S1109	1-571-532-21	SWITCH, TACTIL (PROG +)
R914	1-216-025-91	RES,CHIP	100 5%	1/10W			<TRANSFORMER>
R916	1-216-057-00	RES,CHIP	2.2K 5%	1/10W	T1001	1-431-097-11	TRANSFORMER, BIAS OSCILLATION
R917	1-216-025-91	RES,CHIP	100 5%	1/10W			<CRYSTAL>
R918	1-216-065-91	RES,CHIP	4.7K 5%	1/10W	X001	1-767-755-11	VIBRATOR, CRYSTAL
R919	1-216-025-91	RES,CHIP	100 5%	1/10W	X430	1-760-494-11	VIBRATOR, CRYSTAL
R920	1-216-025-91	RES,CHIP	100 5%	1/10W	X801	1-579-608-11	VIBRATOR, CRYSTAL
R926	1-216-025-91	RES,CHIP	100 5%	1/10W	X802	1-577-380-11	VIBRATOR, CRYSTAL
R928	1-216-025-91	RES,CHIP	100 5%	1/10W			MISCELLANEOUS
R931	1-216-025-91	RES,CHIP	100 5%	1/10W			*****
R934	1-216-025-91	RES,CHIP	100 5%	1/10W			△ 1-416-864-11 COIL, VM
R1002	1-249-408-11	CARBON	180 5%	1/4W			△ 1-416-946-11 COIL, DEMAGNETIC
R1003	1-249-381-11	CARBON	1 5%	1/4W			1-452-032-00 MAGNET, DISC ; 10mmø
R1004	1-216-063-91	RES,CHIP	3.9K 5%	1/10W			1-452-094-00 MAGNET, ROTATABLE DISC ; 15mmø
R1005	1-249-401-11	CARBON	47 5%	1/4W			△ 1-452-728-21 COIL, NA ROTATION (RT-154)
R1006	1-216-075-00	RES,CHIP	12K 5%	1/10W			1-529-394-11 SPEAKER (5X9CM)
R1007	1-216-079-00	RES,CHIP	18K 5%	1/10W			
R1008	1-216-035-00	RES,CHIP	270 5%	1/10W			
R1010	1-216-109-00	RES,CHIP	330K 5%	1/10W			
R1011	1-216-069-00	RES,CHIP	6.8K 5%	1/10W			
R1012	1-216-047-91	RES,CHIP	820 5%	1/10W			
R1013	1-216-079-00	RES,CHIP	18K 5%	1/10W			
R1014	1-216-053-00	RES,CHIP	1.5K 5%	1/10W			
R1015	1-216-073-00	RES,CHIP	10K 5%	1/10W			
R1016	1-216-075-00	RES,CHIP	12K 5%	1/10W			
R1017	1-249-426-11	CARBON	5.6K 5%	1/4W			
R1018	1-216-061-00	RES,CHIP	3.3K 5%	1/10W			
R1019	1-216-073-00	RES,CHIP	10K 5%	1/10W			
R1020	1-216-025-91	RES,CHIP	100 5%	1/10W			
R1023	1-216-067-00	RES,CHIP	5.6K 5%	1/10W			
R1024	1-216-093-91	RES,CHIP	68K 5%	1/10W			
R1025	1-216-129-00	RES,CHIP	2.2M 5%	1/10W			
R1101	1-216-295-91	SHORT	0				
R1102	1-216-067-00	RES,CHIP	5.6K 5%	1/10W			
R1103	1-216-022-00	RES,CHIP	75 5%	1/10W			
R1106	1-216-089-91	RES,CHIP	47K 5%	1/10W			
R1107	1-216-055-00	RES,CHIP	1.8K 5%	1/10W			
R1109	1-216-079-00	RES,CHIP	18K 5%	1/10W			
R1111	1-216-067-00	RES,CHIP	5.6K 5%	1/10W			
R1112	1-216-061-00	RES,CHIP	3.3K 5%	1/10W			
R1113	1-216-061-00	RES,CHIP	3.3K 5%	1/10W			
R1114	1-216-051-00	RES,CHIP	1.2K 5%	1/10W			
R1115	1-216-055-00	RES,CHIP	1.8K 5%	1/10W			
R1116	1-216-047-91	RES,CHIP	820 5%	1/10W			
R1117	1-216-045-00	RES,CHIP	680 5%	1/10W			
R1119	1-216-295-91	SHORT	0				
R1128	1-216-037-00	RES,CHIP	330 5%	1/10W			

The components identified by shading and mark  are critical for safety. Replace only with part number specified.

REF. NO.	PART NO.	DESCRIPTION	REMARK
	 1-574-062-22	CORD, POWER (WITH CONNECTOR) (E/ME/JE model)	
	 1-769-609-21	CORD, POWER (WITH CONNECTOR) (HK model)	
	1-900-226-67	LEAD ASSY, G2	
	1-900-234-88	CONNECTOR ASSY 7P	
	1-900-244-04	CONNECTOR ASSY , FLAT 21P	
	1-900-244-71	CONNECTOR ASSY, FLAT 13P	
	 8-451-505-11	DEFLECTION YOKE (Y21RSA-S)	
V901	 8-738-809-05	PICTURE TUBE (A51LPT70X) (VF21M70/M77)	
V901	 8-738-812-05	PICTURE TUBE (A51LPT70X) (VF21M40)	

ACCESSORIES AND PACKING MATERIALS

- 1-569-008-21 ADAPTOR, CONVERSION 2P
(E/ME/JE model)
- 3-701-910-00 SCREW, SPECIAL (DIA. 3.8X20)
- 3-866-053-11 MANUAL, INSTRUCTION (HK model)
- 3-866-053-21 MANUAL, INSTRUCTION (E/JE model)
- 3-866-053-31 MANUAL, INSTRUCTION (ME model)
- * 4-069-447-01 INDIVIDUAL CARTON (VF21M40/M70)
- * 4-070-013-01 INDIVIDUAL CARTON (VF21M77)
- * 4-070-014-01 CUSHION,(UPPER) (ASSY)
- * 4-070-015-01 CUSHION,(LOWER) (ASSY)
- 4-392-003-11 BAND, HOLD
- 4-392-004-11 CLIP
- * 4-392-859-11 BAG, PROTECTION

REMOTE COMMANDER

- 1-418-447-11 REMOTE COMMANDER (RM-955)
(VF21M77)
- 1-418-448-11 REMOTE COMMANDER (RM-956)
(VF21M40/M70)
- 9-882-043-01 COVER, BATTERY (FOR RM-955/956)