

JVC

SERVICE MANUAL

REAR PROJECTION TELEVISION

HD-52G456, HD-55G456, HD-55G466, HD-61Z456

BASIC CHASSIS

RP3



[HD-52G456]

HD-ILATM
Powered by DILA

D.I.S.T.
Digital Image Scaling Technology

HDTV

HDMITM
HIGH-DEFINITION MULTIMEDIA INTERFACE

DCR **DOLBY**
DIGITAL

TABLE OF CONTENTS

1	PRECAUTION.....	1-3
2	SPECIFIC SERVICE INSTRUCTIONS.....	1-7
3	DISASSEMBLY	1-11
4	ADJUSTMENT	1-26
5	TROUBLESHOOTING	1-36

SPECIFICATION

Items		Contents		
		HD-52G456	HD-55G456 HD-55G466	HD-61Z456
Dimensions (W × H × D)		122.9 cm × 91.1 cm × 41.5 cm (48-1/2" × 35-7/8" × 16-3/8")	131.8 cm × 96.8 cm × 43.9 cm (52" × 38-1/8" × 17-3/8")	145.6 cm × 104.2 cm × 47.0 cm (57-3/8" × 41-1/8" × 18-5/8")
Mass		39 kg (86 lbs)	42 kg (92 lbs)	46.5 kg (103 lbs)
TV RF System (Analog / Digital)	Analog	CCIR (M)		
	Digital	ATSC terrestrial / Digital cable		
Color System (Analog)		NTSC		
Stereo System (Analog)		BTSC (Multi Channel Sound)		
Teletext System (Analog)		Closed caption (T1-T4 / CC1-CC4)		
TV Receiving Channels and Frequency (Analog)	VHF Low	02ch - 06ch : 54MHz - 88MHz		
	VHF High	07ch - 13ch : 174MHz - 216MHz		
	UHF	14ch - 69ch : 470MHz - 806MHz		
	CATV	54MHz - 804MHz		
		Low Band : 02 - 06		
		High Band : 07 - 13		
		Mid Band : 14 - 22		
		Super Band : 23 - 36		
		Hyper Band : 37 - 64		
		Ultra Band : 65 - 94, 100 - 135		
		Sub Mid Band : 01, 96 - 99		
TV / CATV Total Channel		191 Channels		
Intermediate Frequency (Analog)	Video IF	45.75 MHz		
	Sound IF	41.25 MHz (4.5MHz)		
Color Sub Carrier Frequency (Analog)		3.58 MHz		
Power Input		AC120 V, 60 Hz		
Power Consumption		210 W		
Projection Source		110 W High-pressure mercury lamp		
Projection Device		D-ILA device (Reflection active matrix type LCD) × 3(R / G / B)		
Resolution		Total=H:1312 × V:800 [Effective =H:1280 × V:720]		
Screen		Transparent screen (unitized fresnel lens / lenticular lens), aspect ratio 16 : 9		
Screen Size		52" (132 cm) Measured diagonally H: 115.1 cm × V: 64.8 cm	55" (139.7 cm) Measured diagonally H: 121.8 cm × V: 68.5 cm	61" (154.9 cm) Measured diagonally H: 135.0 cm × V: 76.0 cm
Audio Power Output		10 W + 10 W		
Speaker		10 cm round type × 2 (Oblique corn)		
Antenna Terminal (VHF/UHF,ATSC/DIGITAL CABLE IN)		F-type connector, 75 Ω unbalanced, coaxial × 2		
Video / Audio Input [INPUT-1/2/3/4]	Component Video [INPUT-1/2]	RCA pin jack × 6		
	1125i / 750p	Y : 1V (p-p) (Sync signal: 0.35V(p-p), 3-value sync.), 75 Ω Pb/Pr : ±0.35V(p-p), 75 Ω		
	525p / 525i	Y : 1V (p-p), positive (Negative sync provided), 75 Ω Pb/Pr : 0.7V(p-p), 75 Ω		
	S-Video [INPUT-1/3/4]	Mini-DIN 4 pin × 3 Y: 1V (p-p), positive (Negative sync provided), 75 Ω C: 0.286V (p-p) (Burst signal), 75 Ω		
	Video	1V (p-p), positive (Negative sync provided), 75 Ω, RCA pin jack × 4		
	Audio	500mV (rms), high impedance, RCA pin jack × 8		
Digital Input	Video	HDMI 2-row 19pin connector × 1 (Digital-input terminal is not compatible with picture signals of personal computer)		
	Audio	Digital: HDMI 2-row 19pin connector × 1 Analog: 500mV(rms) (-4dBs), high impedance, RCA pin jack × 2		
Audio Output		500mV(rms) (-4dBs), low impedance (1000Hz when modulated 100%), RCA pin jack × 2		
Digital Audio Optical Output		Digital SPDIF × 1		
Remote Control Unit		RM-C18G (AA/R6 / UM-3 battery × 2)		

Design & specifications are subject to change without notice.

SECTION 1

PRECAUTION

1.1 SAFETY PRECAUTIONS

- (1) The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
- (2) Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
- (3) Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (Δ) on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual may cause shock, fire, or other hazards.
- (4) **Don't short between the LIVE side ground and ISOLATED (NEUTRAL) side ground or EARTH side ground when repairing.**
Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (\perp) side GND, the ISOLATED (NEUTRAL) : (\equiv) side GND and EARTH : (\oplus) side GND.
Don't short between the LIVE side GND and ISOLATED (NEUTRAL) side GND or EARTH side GND and never measure the LIVE side GND and ISOLATED (NEUTRAL) side GND or EARTH side GND at the same time with a measuring apparatus (oscilloscope etc.). If above note will not be kept, a fuse or any parts will be broken.
- (5) When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.

(6) Isolation Check (Safety for Electrical Shock Hazard)

After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs, metal cabinet, screw heads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

a) Dielectric Strength Test

The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 3000V AC (r.m.s.) for a period of one second. (. . . Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.) This method of test requires a test equipment not generally found in the service trade.

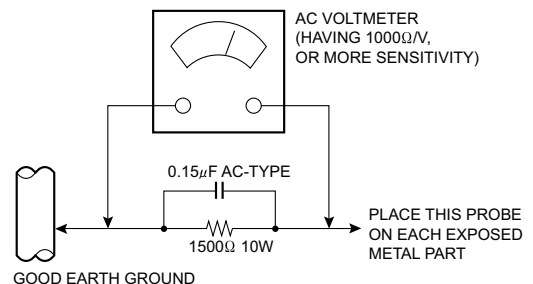
b) Leakage Current Check

Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.). However, in tropical area, this must not exceed 0.2mA AC (r.m.s.).

Alternate Check Method

Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1000 Ω per volt or more sensitivity in the following manner. Connect a 1500 Ω 10W resistor paralleled by a 0.15 μ F AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).

However, in tropical area, this must not exceed 0.3V AC (r.m.s.). This corresponds to 0.2mA AC (r.m.s.).



1.2 INSTALLATION

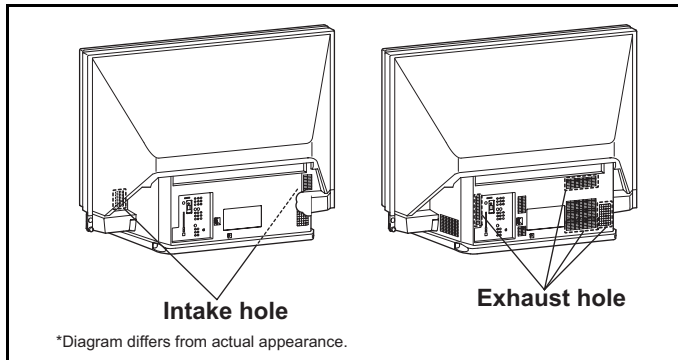
1.2.1 HEAT DISSIPATION

If the heat dissipation vent behind this unit is blocked, cooling efficiency may deteriorate and temperature inside the unit will rise. The temperature sensor that protects the unit will be activated when internal temperature exceeds the predetermined level and power will be turned off automatically.

Therefore, please make sure pay attention not to block the heat dissipation vent as well as the ventilation outlet behind the unit and ensure that there is room for ventilation around it.

Do not put foreign objects near the ventilation holes as this can result in fire or electrical hazards.

Do not block the ventilation holes as this may cause the internal temperature to rise and possibly result fire.



1.2.2 INSTALLATION REQUIREMENTS

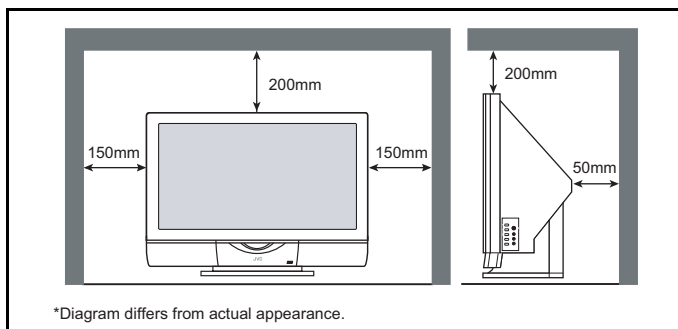
Ensure that the minimal distance is maintained, as specified figure, between the unit with and the surrounding walls, as well as the floor etc.

Install the unit on stable flooring.

Take precautionary measures to prevent the unit from tipping in order to protect against accidents and earthquakes.

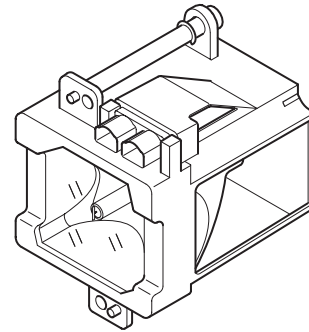
CAUTION FOR INSTALLATION

- Do not tilt the TV towards the left or right, or toward the back.
- Install the TV in a corner on the floor so as to keep cords out of the way.
- The TV will generate a slight amount of heat during operation. Ensure that sufficient space is available around the TV to allow satisfactory cooling.



1.3 LAMP UNIT HANDLING CAUTION

LAMP UNIT : TS-CL110UAA



1.3.1 PRECAUTION FOR LAMP UNIT

The lamp emits high intensity white, ultraviolet and infrared light. Do not look directly at the light during service.

Also, do not touch the lamp directly as it presents a burn hazard.

Handle with extra care. This lamp emits high heat and contains high-pressure during use.

Do not give any impact as this may cause the broken lamp.

1.3.2 HOW TO CONFIRM LAMP OPERATING TIME

- MAXIMUM COUNT TIME= 65535 hours

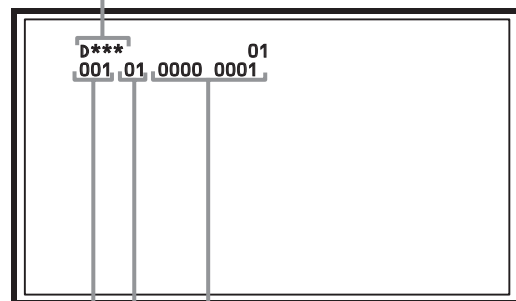
- (1) Set to "0 minutes" using the [SLEEP TIMER] key.
- (2) Press the [VIDEO STATUS] key and [DISPLAY] key simultaneously, then enter the SERVICE MODE.
- (3) When the Main Menu is displayed, press [4] key to enter the setting display for designing.
- (4) Press [CH+] / [CH-] key to select the addresses (items).

NOTE:

- Confirmation of the information can be done by selecting addresses (items) below.

Display position is in the far right side in the 2nd row from the top, as displayed below.

D070 : Lamp operating time high byte
D071 : Lamp operating time low byte



Operating time in binary number notation

Operating time in hexadecimal number notation

Operating time in decimal number notation (Max. 255)

< Calculation example >

D070 (decimal number notation) = 003

D071 (decimal number notation) = 232

→ (3 x 256) + 232 = 1000 hours

1.3.3 LAMP UNIT REPLACEMENT

- (1) The lamp replacement message will appear when need to change the lamp. After replace the lamp, need to reset the timer which is built into TV.
- (2) Life of the lamp unit is about **5000 hours** over. Lamp use time can be check at the lamp message MENU.
- (3) If Fig.1 message appears when turn the TV on, need to replace the lamp.
- (4) Use the lamp timer reset only after replacing the lamp.

NOTE:

- This message will appear every time turn on the TV, when the lamp needs to be replaced. Press the **[OK]** key to make the message disappear, or replace the lamp.

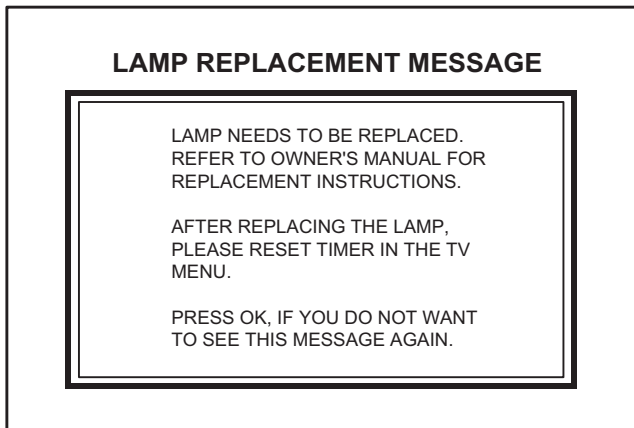


Fig.1

1.3.4 HOW TO REPLACE THE LAMP UNIT

- Refer to the "USERS GUIDE" for a detailed operating description.
 - (1) Turn off the TV power.
 - (2) After the LAMP LED light has stopped blinking, disconnect the power cord from the AC outlet.
 - (3) Loosen 1 screw then take out the lamp cover below the left side of the TV.
 - (4) Loosen 2 screws then take out the lamp unit.
 - (5) Install the new lamp unit.
 - (6) Re-install the lamp cover.

NOTE:

- After installing the new lamp unit, do not forget to reset the lamp timer.

1.3.5 HOW TO RESET THE LAMP TIMER

- Refer to the "USERS GUIDE" for a detailed operating description.
 - (1) Press the **[MENU]** key to select CLOCK / TIMERS.
 - (2) Select the <LAMP TIMER RESET> with **[▲]** / **[▼]** keys.
 - (3) Enter the <LAMP TIMER RESET> mode the message will appear.
 - (4) Press the **[OK]** key while the above message appears on the screen.
 - (5) Turn off the power, then turn on the power.
 - (6) The lamp timer has now been reset, as before the HOW TO CONFIRM LAMP OPERATING TIME.

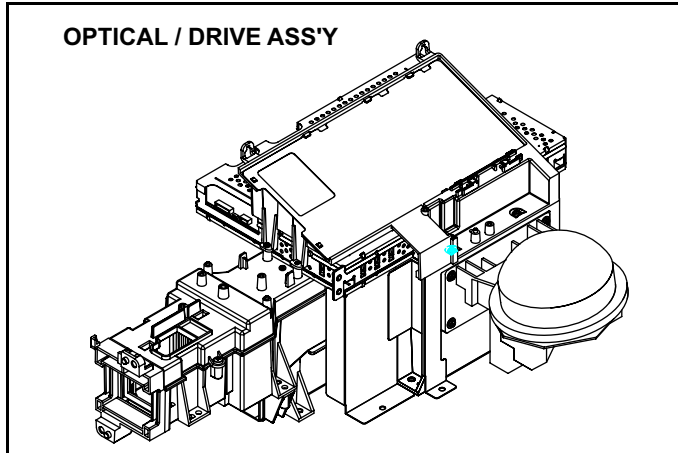
1.3.6 PRECAUTION FOR REPLACEMENT

- Do not replace the LAMP UNIT immediately after the projector has been used.
- The temperature of the LAMP UNIT is still high and could cause a burn.
- Allow a cooling period of 1 hour or more before performing replacement.
- Before starting LAMP UNIT replacement work, turn off the MAIN POWER switch, and disconnect the AC power cord plug from the wall outlet.
- If touched, the lamp glass surface may rupture and burns may result. Do not touch the glass portion or metal portion. Handle only plastic handle.
- The replaced old lamp can be discarded in the same manner as a fluorescent lamp. Check local ordinances and dispose of the used lamp as prescribed.

1.4 SERVICE PARTS KIT INSTRUCTIONS

Due to the character of this product, these **OPTICAL /DRIVE ASS'Y** are prepared.

Please note these **OPTICAL/DRIVE ASS'Y** when replacing or ordering the parts.



1.4.1 PART NUMBER AND CONSTRUCTION

Kit parts number	Kit part name
TS-COP7B-SAA	OPTICAL / DRIVE ASS'Y

1.4.2 OPTICAL / DRIVE ASS'Y CONSTRUCTION

- (1) OPTICAL BLOCK
(Included D-ILA DEVICE, PROJECTION LENS)
- (2) OPTICAL BASE
- (3) MAIN DRIVE PWB ASS'Y
This PWB is mounted with 2 memory ICs saved with adjustment, setting data of the drive circuit.
- (4) SHIELD COVER
*The following parts without the kits part.
 - REMOTE SENSOR PWB ASS'Y
 - FAN CONTROL PWB ASS'Y
 - LAMP UNIT
 - LAMP FAN DUCT
 - THERMOSTAT

1.4.3 PRECAUTION FOR USING

- (1) In the case of the following defects/problems, replace this kit (OPTICAL/DRIVE ASS'Y)
 - a) Picture defect caused by optical system/D-ILA device related parts.
 - b) Picture defect caused by drive circuit.
- (2) The MAIN DRIVE PWB ASS'Y is mounted with a memory IC [\[IC3741/IC3742\]](#) saved with adjustment/setting data (GAMMA, SHADING, etc.) of the drive circuit.
The data of this memory IC is in the optimal state according to individual D-ILA devices and each section of the OPTICAL BLOCK.
- (3) When replace the MAIN DRIVE PWB ASS'Y, take off the 2 memory ICs from the original board and replace with new one. When replace the MAIN DRIVE PWB ASS'Y, do same manner. Replace 2 memory ICs.
- (4) After the replacement of the OPTICAL BLOCK, projection lens focus adjustment and drive convergence / projection adjustment are required.

1.5 SCREEN HANDLING CAUTIONS

1.5.1 SCREEN STORAGE

Store the SCREEN ASS'Y in a standing position in order to avoid deformation. If the screen is stored horizontally, there is risk of deforming the screen face.

When necessary to place the SCREEN ASS'Y horizontally, position the screen side upwards and sure to place spacers between the screen and resting site (floor or stand etc.) to prevent the screen from sagging.

1.5.2 SCREEN SURFACE

Since the screen surface is easily scratched or soiled, use ample care when handling.

1.5.3 PRECAUTIONS FOR CLEANING AND REPLACEMENT

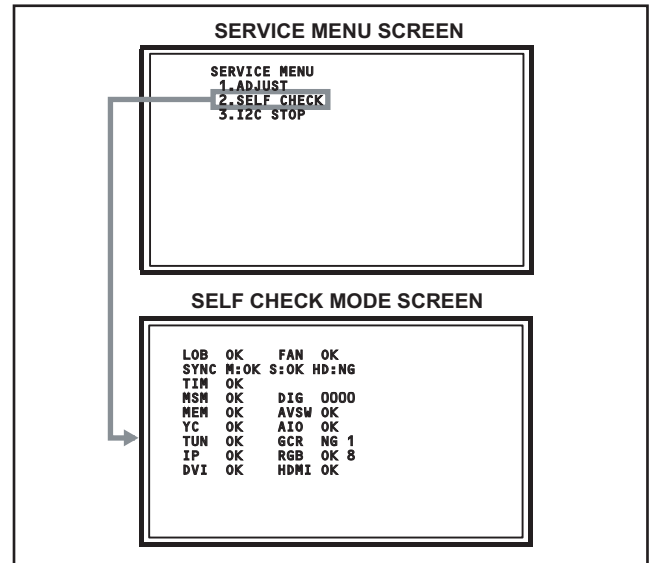
- The SCREEN ASS'Y is made from the lenticular lens and fresnel lens. The anti static proceeding and the surface of the lenticular lens. Rubbing the surface with something hard, the coating may peel off.
- When the screen is dirty, gently wipe it with a soft cloth.
If the screen is very dirty, wipe it down with a cloth dipped in a diluted kitchen cleaner (neutrality detergent) and thoroughly wrung-out. Then wipe immediately after with clean, dry cloth.
Never use the organic solvent such as the alcohol or benzene.
- The SCREEN ASS'Y replacement is required if the coating was peel off. Alkaline detergent or acidity detergent can not be used.
- The notched side of the lenticular lens and the fresnel lens are faced each other.
- Do not rub the screen when cleaning it or replacing it.
Rubbing the screen may cause of the scratch of the screen by its notch.

SECTION 2 SPECIFIC SERVICE INSTRUCTIONS

2.1 SYSTEM SETTING

Be sure to carry out the following operation at the end of the procedure.

- (1) Set to "**0 minutes**" using the **[SLEEP TIMER]** key.
- (2) Press the **[VIDEO STATUS]** key and **[DISPLAY]** key simultaneously, then enter the SERVICE MODE.
- (3) When the Main Menu is displayed, press **[2]** key to enter the self check mode.
- (4) Turn off the power by pressing the **[POWER]** key on the remote control unit.



2.2 FEATURES

Built in ATSC (Advanced Television Systems Committee) TUNER

This TV can receive both Digital broadcasting (ATSC) and Analogue broadcasting.

D.I.S.T. (Digital Image Scaling Technology)

This system uses line interpolation to double the number of scanning lines and achieve high resolution, flicker-free picture.

SMART CAPTION

Smart caption will appear when you press the MUTING button, only on channels where the broadcast contains CLOSED CAPTION information.

VIDEO STATUS

Expression of a favorite screen can be chosen by the VIDEO STATUS function.

DIGITAL INPUT

Digital-in will display when any picture signal in Digital-in is displayed.

V-CHIP

Since the V-CHIP is built in, it can choose, view and listen to a healthy program.

MTS STEREO

The voice multiplex function of the MTS system is built in. (MTS = Multi channel Television Sound system)

NATURAL CINEMA

Watching the movie or animation, press the Natural Cinema to adjust the out line of the images to make them more sharp.

VIDEO INPUT LABEL

This function is used to label video input connections for the onscreen displays.

2.3 MAIN DIFFERENCE LIST

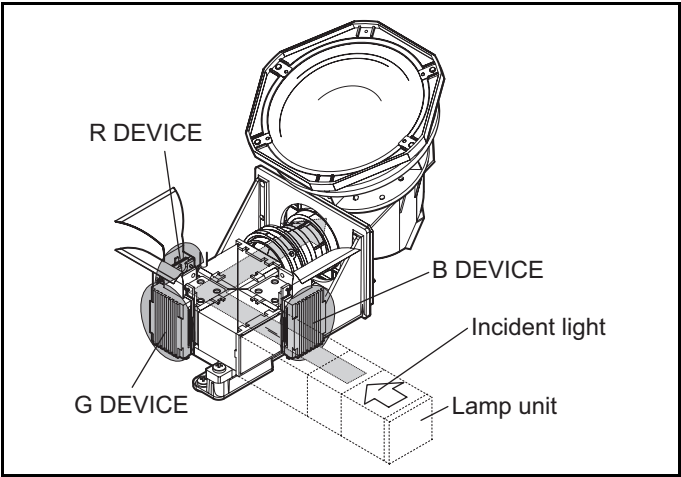
Item	HD-52G456	HD-55G456	HD-55G466	HD-61Z456
CABINET COLOR	SILVER	SILVER	BLACK	SILVER
DIGITAL SIGNAL PWB	SRP0D034A-M2	SRP0D033A-M2	SRP0D045A-M2	SRP0D032A-M2

2.4 TECHNICAL INFORMATION

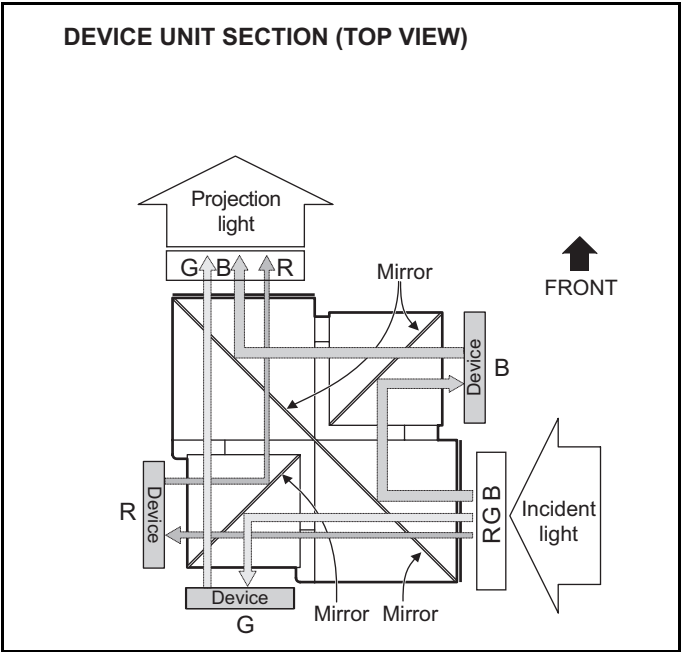
2.4.1 D-ILA DEVICE SPECIFICATION

Item	Content
Resolution	H:1312 × V:800
Pixel number	about 1050000
Pixel size	H :12.0μm × V :12.0μm
Aspect ratio	16:9
Contrast ratio	1000:1
Aperture ratio	93% or more
Effective pixel measurement	0.7 inch

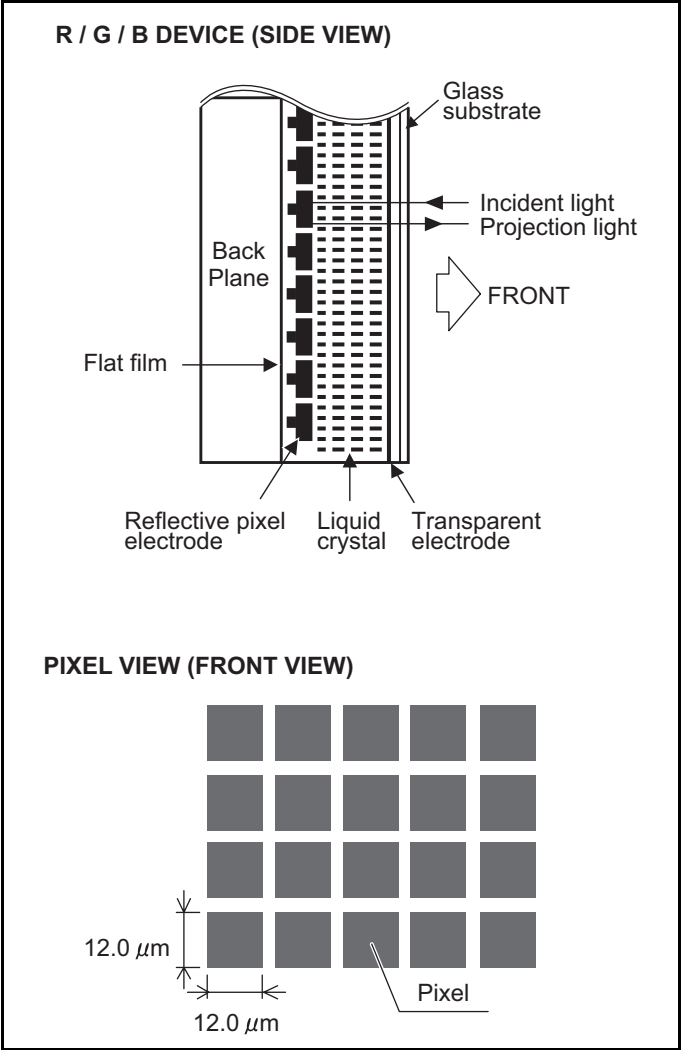
2.4.2 PROJECTION UNIT



2.4.3 IMAGE LIGHT FLOW



2.4.4 D-ILA DEVICE STRUCTURE



2.4.5 MAIN CPU PIN FUNCTION [IC7601 : DIGITAL SIGNAL PWB ASS'Y]

Pin	Pin name	I/O	Function	Pin	Pin name	I/O	Function
1	VHOLD1	I	Data slice for main screen closed caption	51	NC	O	Not used
2	HFLT1	I/O	LPF for main screen closed caption video input	52	NC	O	Not used
3	NC	O	Not used	53	NC	O	Not used
4	NC	O	Not used	54	NC	O	Not used
5	DIGR0	O	R [0] for OSD	55	NC	O	Not used
6	TB1in	I	AC power for timer clock	56	NC	O	Not used
7	REMO	I	Remote control	57	NC	O	Not used
8	BYTE	I	Data bus width select [L = 16bit (fixed)]	58	NC	O	Not used
9	CNVss	I	CPU programming mode select [Normal = L]	59	NC	O	Not used
10	DIGG0	O	G [0] for OSD	60	NC	O	Not used
11	DIGB0	O	B [0] for OSD	61	NC	O	Not used
12	RESET	I	Reset for main CPU [Reset = L]	62	HSYNC	I	H. sync for OSD
13	Xout	O	System clock oscillation (crystal) : 16MHz	63	NC	O	Not used
14	Vss	-	GND	64	VSYNC	I	V. sync for OSD
15	Xin	I	System clock oscillation (crystal) : 16MHz	65	NC	O	Not used
16	Vcci	I	3.3V stand-by power supply	66	NC	O	Not used
17	OSC1	I	Clock for OSD	67	NC	O	Not used
18	OSC2	O	Not used : Clock for OSD	68	NC	O	Not used
19	INT1	I	AV COMPULINK control	69	NC	O	Not used
20	INT0	I	Request for sub(chassis) CPU communication (serial data)	70	NC	O	Not used
21	OUT1	O	Ys (blanking) for OSD	71	NC	O	Not used
22	OUT2	O	YM (transparence) for OSD	72	NC	O	Not used
23	NC	O	Not used	73	NC	O	Not used
24	NC	O	Not used	74	NC	O	Not used
25	NC	O	Not used	75	NC	O	Not used
26	NC	O	Not used	76	NC	O	Not used
27	CTA2/RTS2	O	Not used	77	NC	O	Not used
28	CLK2	O	Not used	78	NC	O	Not used
29	RxD2	I	Digital tuner control	79	NC	O	Not used
30	TxD2	O	Digital tuner control	80	NC	O	Not used
31	SDA2	I/O	Not used	81	NC	O	Not used
32	DIGR1	O	R [1] for OSD	82	NC	O	Not used
33	DIGG1	O	G [1] for OSD	83	NC	O	Not used
34	DIGB1	O	B [1] for OSD	84	WAKE	O	Reset for sub(chassis) CPU
35	TxD0	I	Data receive (serial) for external programming	85	CARD_DET	I	Card detection for ATSC digital tuner
36	RxD0	O	Data transmission (serial) for external programming	86	POWER_SW	I	Power switch (mechanical) detection
37	CLK0	I	Clock for external programming	87	P0.1	I/O	Data for Inter IC (serial) bus control : memory
38	RTS0	O	Busy for external programming [Operation = H]	88	P0.0	O	Clock for Inter IC (serial) bus control : memory
39	P5.7	I	Not used	89	DIGR2	O	R [2] for OSD
40	P5.6	O	Not used	90	DIGG2	O	G [2] for OSD
41	HOLD	I	CPU programming mode select [Normal = H]	91	DIGB2	O	B [2] for OSD
42	P5.4	O	Not used	92	NC	O	Not used
43	P5.3	O	Not used	93	KEY2	I	Key scan data for front control button (MENU/CH+/CH-) KEY2
44	P5.2	O	Not used	94	KEY1	I	Key scan data for front control button (VOL+/VOL-) KEY1
45	P5.1	O	Not used	95	VHOLD2	I	Data slice for sub screen closed caption
46	WR	O	CPU programming mode select [Normal = L]	96	HLF2	I/O	LPF for sub screen closed caption video input
47	P4.7	O	Data transmission for sub(chassis) CPU communication (serial)	97	CVIN2	I	Video(Y) for sub screen closed caption
48	P4.6	I	Data receive for sub(chassis) CPU communication (serial)	98	TVSETB	I	Test terminal [L Fixed]
49	P4.5	I	Clock for sub(chassis) CPU communication (serial)	99	VCCE	I	5V stand-by power supply
50	P4.4	O	Not used	100	CVIN1	I	Video(Y) for main screen closed caption

2.4.6 SUB (CHASSIS) CPU PIN FUNCTION [IC7001 : DIGITAL SIGNAL PWB ASS'Y]

Pin	Pin name	I/O	Function	Pin	Pin name	I/O	Function
1	LED_PRO	O	Not used	51	BS_TXD	O	Not used : Data transmission for digital tuner communication
2	P_MU	O	Picture muting [Muting = H]	52	BS_RXD	I	Not used : Data receive for digital tuner communication
3	JP_CSB	O	Not used (NC)	53	CD_INT	O	Not used : Data transmission for CARD data
4	A_MUTE	O	Audio muting [Muting = H]	54	VREF+	I	3.3V power supply
5	M_MUTE	O	Audio muting (for AUDIO OUT) [Muting = H]	55	PDP_TX	O	Data transmission for SUB (DRIVE) CPU communication
6	PC_SEL	O	RGB(PC) INPUT select	56	PDP_RX	I	Data receive for SUB (DRIVE) CPU communication
7	ON_TIMER	O	POWER INDICATOR (LED) brightness [LOW = L]	57	SDA0	I/O	Data for Inter IC (serial) bus : EEP-ROM (IC7002)
8	ILA0	O	Not used : LCD back light lighting	58	SCL0	O	Clock for Inter IC (serial) bus : EEP-ROM (IC7002)
9	ILA1	O	Not used : LCD panel overshoot refresh timing	59	SDA_DVI	I/O	Not used : Data for Inter IC (serial) bus for panel communication
10	ILA2	O	Not used	60	SCL_DVI	O	Not used : Clock for Inter IC (serial) bus for panel communication
11	POW_LED	O	POWER LED lighting [ON = L]	61	AVSS	-	GND
12	WORD	O	Not used	62	DIGI_PHO	I	Photo sensor for DIGITAL-IN illegal copy protection
13	MI_CK	I	Clock for SUB (OSD) CPU communication	63	AGC	I	Not used
14	MI_TX	I	Data receive for SUB (OSD) CPU communication	64	EXT_YS1	I	Not used
15	MI_RX	O	Data transmission for SUB (OSD) CPU communication	65	EXT_YS2	I	Not used
16	MI_REQ	O	Data request for SUB (OSD) CPU communication [Request = L]	66	VDD	I	3.3V power supply
17	VDD	I	3.3V power supply	67	DIGI_PHOT	O	for DIGITAL-IN (HDMI)
18	FOSC	O	Not used (NC)	68	GR_RST	O	Not used (NC)
19	VSS	-	GND	69	GRON	O	Not used (NC)
20	X1	I	Not used : Low speed oscillator	70	SYNC_SEL	O	Not used : Sync select for digital tuner
21	X0	O	Not used : Low speed oscillator	71	CD_SCL	O	Not used : Clock for Inter IC (serial) bus for CARD communication
22	VDD	I	3.3V power supply	72	CD_SDA	O	Not used : Data for Inter IC (serial) bus for CARD communication
23	OSC1	I	System clock oscillation (crystal) : 16MHz	73	SBD5	I/O	Data for writing on board (connect CN01P : for Frash ROM type)
24	OSC0	O	System clock oscillation (crystal) : 16MHz	74	SBT5/RT5	I	Clock for writing on board (connect CN01P : for Frash ROM type)
25	MODE	I	Single chip mode [H = Fixed]	75	NMI	I	3.3V power supply
26	BS1.5CTL	O	Not used : Digital tuner power / reset control	76	TVLINK	I	Not used : AV COMPULINK III control
27	A92RES	O	Reset for IC1001(3D YC SEP / COLOR DEMODULAT) [Reset = H]	77	REMO	I	Remote control
28	BS_RST	O	Reset for Digital tuner power / reset control [Reset = L]	78	MICON_V	I	V. sync pulse
29	LIP_RST	O	Not used: Reset for Sound delay (Lip sync)	79	WAKE	I	Reset for sub(chassis) CPU from MAIN CPU [Reset = L]
30	SOFT_OFF	O	Not used	80	POWERGOOD	I	Power error detection [NG = H]
31	VMUTE	I	Interrupt detection [Detect = H]	81	REC_LED	O	Not used (NC)
32	VOUTENB	O	Video cutoff for digital tuner [OFF = L]	82	RESET	I	Reset for sub(chassis) CPU [Reset = L]
33	MDR_CON	I	Not used : System cable connection monitor for PDP	83	VDD	I	3.3V power supply
34	AVDD	I	3.3V power supply	84	SCL3A	O	Clock for Inter IC (serial) bus control
35	PFC_POWE	O	Not used : Digital tuner power control	85	SDA3A	I/O	Data for Inter IC (serial) bus control
36	DsyncSW2	O	Sync select for DIGITAL-IN [Cotrolled with 99-pin]	86	SCL3B	O	Clock for Inter IC (serial) bus control
37	LB_POWE	O	Not used : Power control for low bias line	87	SDA3B	I/O	Data for Inter IC (serial) bus control
38	NC	O	Not used (NC)	88	DIN_SEL	O	Not used
39	HOTPLUG	I	Not used : Video communication monitor for receiver unit (PDP)	89	LR_SW	O	For DIGITAL-IN (HDMI)
40	MECA_SW	I	Not used : Mechanical monitor for POWER switch	90	HDMI_HP	I	Reset for HDMI process [Reset = L]
41	MAIN_PW	O	Main power control [ON = L]	91	DVI_RST	O	Not used : Reset for DVI format conversion
42	MSP_RST	O	AUDIO OUT output mode select [VARIABLE = L]	92	VSS	-	GND
43	VREF-	I	Not used	93	SCL5055	O	Clock for Inter IC (serial) bus : JCC5055 (DIST process)
44	AFT2	I	Not used : AFT voltage for sub tuner	94	VFORMSEL	O	Not used : Digital tuner clock control
45	AFT1	I	AFT voltage for VHF/UHF tuner	95	SDA5055	I/O	Data for Inter IC (serial) bus : JCC5055 (DIST process)
46	KEY2	I	Not used	96	OSD_SEL	O	Not used : OSD mode select
47	KEY1	I	Not used	97	NC	O	Not used (NC)
48	NC	O	Not used (NC)	98	MCmp/OTH	O	Main video select [Fixed H]
49	REC_RSV_LED	O	Not used (NC)	99	DsyncSW1	O	Sync select for DIGITAL-IN [Cotrolled with 36-pin]
50	AC_IN	I	Not used	100	57 BUSY	I	Busy monitor for JCC5057 (New DIST process)

SECTION 3 DISASSEMBLY

3.1 DISASSEMBLY PROCEDURE

CAUTION AT DISASSEMBLY:

- **Be sure to perform the SYSTEM SETTING, at the end of the procedure.**
- Make sure that the power cord is disconnected from the outlet.
- Pay special attention not to break or damage the parts.
- When removing each board, remove the connectors as required. Taking notes of the connecting points (connector numbers) makes service procedure manageable.
- Make sure that there is no bent or stain on the connectors before inserting, and firmly insert the connectors.
- Wait until the LAMP UNIT has cool down is completely.
- While not in repair service, place the chassis back its original position.

3.1.1 FRONT SIDE DISASSEMBLY [HD-52G456 / HD-55G456 / HD-55G466]

3.1.1.1 REMOVING THE SPEAKER GRILL (Fig.1)

- (1) Remove the 2 screws [A].
- (2) Remove the SPEAKER GRILL.

3.1.1.2 REMOVING THE FRONT LED PWB (Fig.1)

- Remove the SPEAKER GRILL.
 - (1) Remove the 1 screw [B].
 - (2) Remove the FRONT LED PWB.

3.1.1.3 REMOVING THE CENTER PANEL (Fig.1)

- Remove the SPEAKER GRILL.
 - (1) Remove the 2 screws [C].
 - (2) Remove the CENTER PANEL.

3.1.1.4 REMOVING THE FRONT PANEL (Fig.1)

- Remove the SPEAKER GRILL.
 - (1) Remove the 10 screws [D] and the 12 screws [E].
 - (2) Remove the FRONT PANEL with the SPEAKERS.

3.1.1.5 REMOVING THE SPEAKER (Fig.1)

- Remove the SPEAKER GRILL.
 - (1) Remove the 4 screws [F].
 - (2) Remove the SPEAKER.

3.1.1.6 REMOVING THE SCREEN BLOCK (Fig.1)

- Remove the SPEAKER GRILL.
- Remove the FRONT PANEL.
 - (1) Remove the 6 screws [G].
 - (2) Remove the 2 screws [H] [HD-52G456].
 - (3) Remove the 2 screws [J] [HD-55G456 / HD-55G466].
 - (4) Remove the SCREEN BLOCK.

CAUTION :

- Place the SCREEN BLOCK on a flat table without fail.
- Because of the large size, at least 2 persons are recommended for removal and reassemble.
- Use care not to scratch the screen during work.
- During assembly, be sure to engage the left and right tabs with the cabinet mounting positions.
- When supporting the SCREEN BLOCK, avoid grasping the top of the screen panel, instead grasp the left and right areas.
- Do not leave the SCREEN BLOCK removed for long time to prevent soiling from dust.

3.1.1.7 REMOVING THE SCREEN ASS'Y (Fig.1)

- Remove the SPEAKER GRILL.
- Remove the FRONT PANEL.
- Remove the SCREEN BLOCK.
 - (1) Remove the 12 screws [K], then remove the SCREEN BRACKET.
 - (2) Remove the SCREEN ASS'Y.

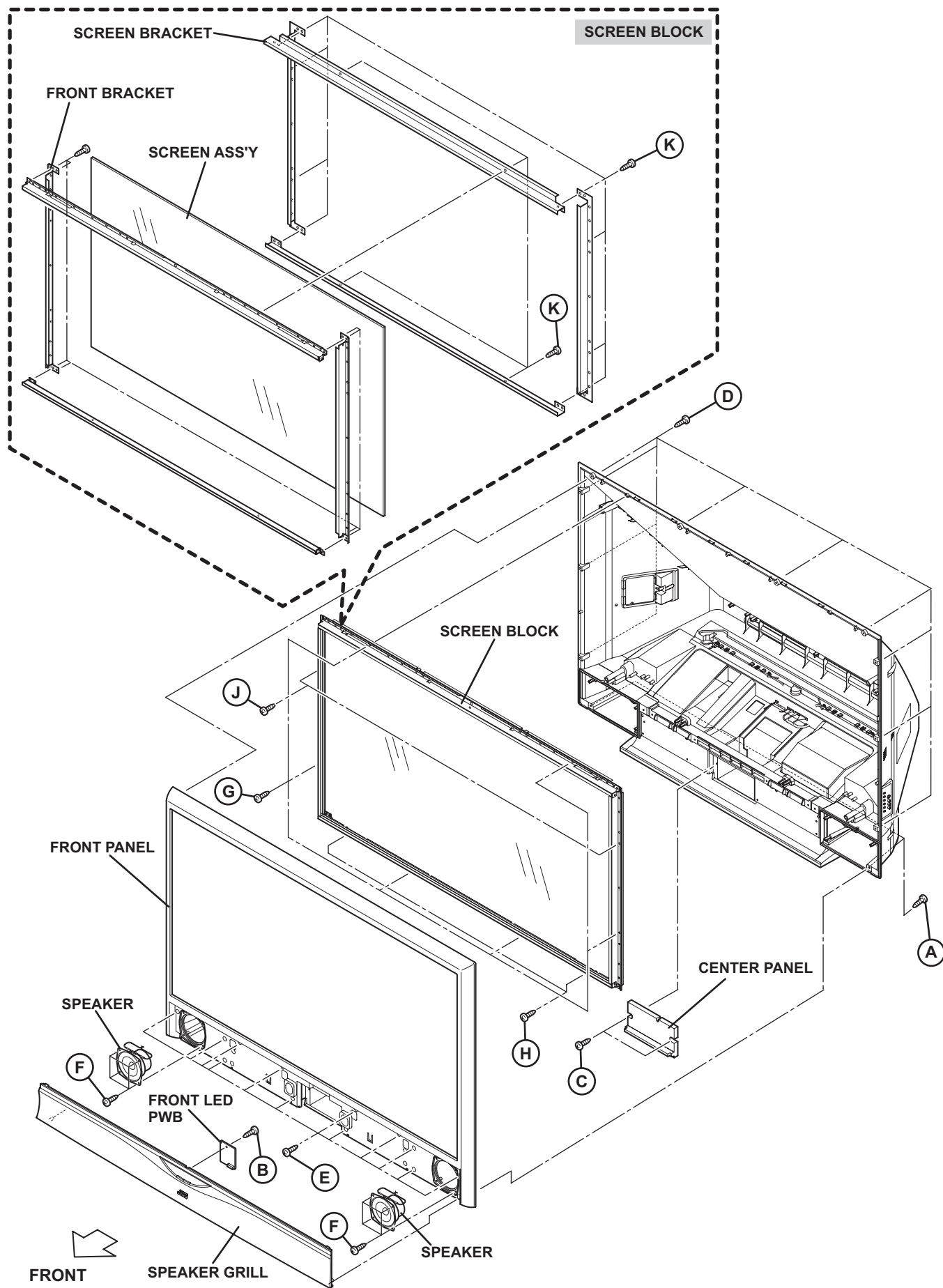


Fig.1

3.1.1.8 REMOVING THE MIRROR (Fig.2)

- Remove the SPEAKER GRILL.
- Remove the FRONT PANEL.
- Remove the SCREEN BLOCK.
 - (1) Remove the 4 screws **[A]** attaching the MIRROR HOLDER of the upper side.
 - (2) Remove the 6 screws **[B]** attaching the MIRROR HOLDER of left and right side.
 - (3) Raise slightly to disengage of the MIRROR from the bottom holder.
 - (4) Remove the MIRROR.

NOTE :

- Do not touch the front of the MIRROR.
- Do not shock the the MIRROR.
- Because of the large size, at least 2 persons are recommended for removal and reassemble.

3.1.1.9 REMOVING THE SIDE CONTROL PWB (Fig.2)

- Remove the SPEAKER GRILL.
- Remove the FRONT PANEL.
- Remove the SCREEN BLOCK.
 - (1) Remove the 2 screws **[C]**.
 - (2) Remove the SIDE CONTROL BASE.
 - (3) Remove the 2 screws **[D]**.
 - (4) Remove the SIDE CONTROL PWB.

3.1.1.10 REMOVING THE SUPPORT HOLDER (Fig.2)

- Remove the SPEAKER GRILL.
- Remove the FRONT PANEL.
- Remove the SCREEN BLOCK.
 - (1) Remove the 2 screws **[E]**.
 - (2) Remove the SUPPORT HOLDER.

3.1.1.11 REMOVING THE BACK COVER (Fig.2)

- Remove the SPEAKER GRILL.
- Remove the FRONT PANEL.
- Remove the SCREEN BLOCK.
- Remove the SUPPORT HOLDER.
 - (1) Remove the 6 screws **[F]**, the 2 screws **[G]** and the 2 screws **[H]**.
 - (2) Remove the BACK COVER.

CAUTION :

- Because of the large size, at least 2 persons are recommended for removal and reassemble.

3.1.1.12 REMOVING THE SPEAKER BOX (Fig.2)

- Remove the SPEAKER GRILL.
- Remove the FRONT PANEL.
- Remove the SCREEN BLOCK.
- Remove the SUPPORT HOLDER.
- Remove the BACK COVER.
 - (1) Remove the 2 screws **[J]**.
 - (2) Remove the SPEAKER BOX(L /R).

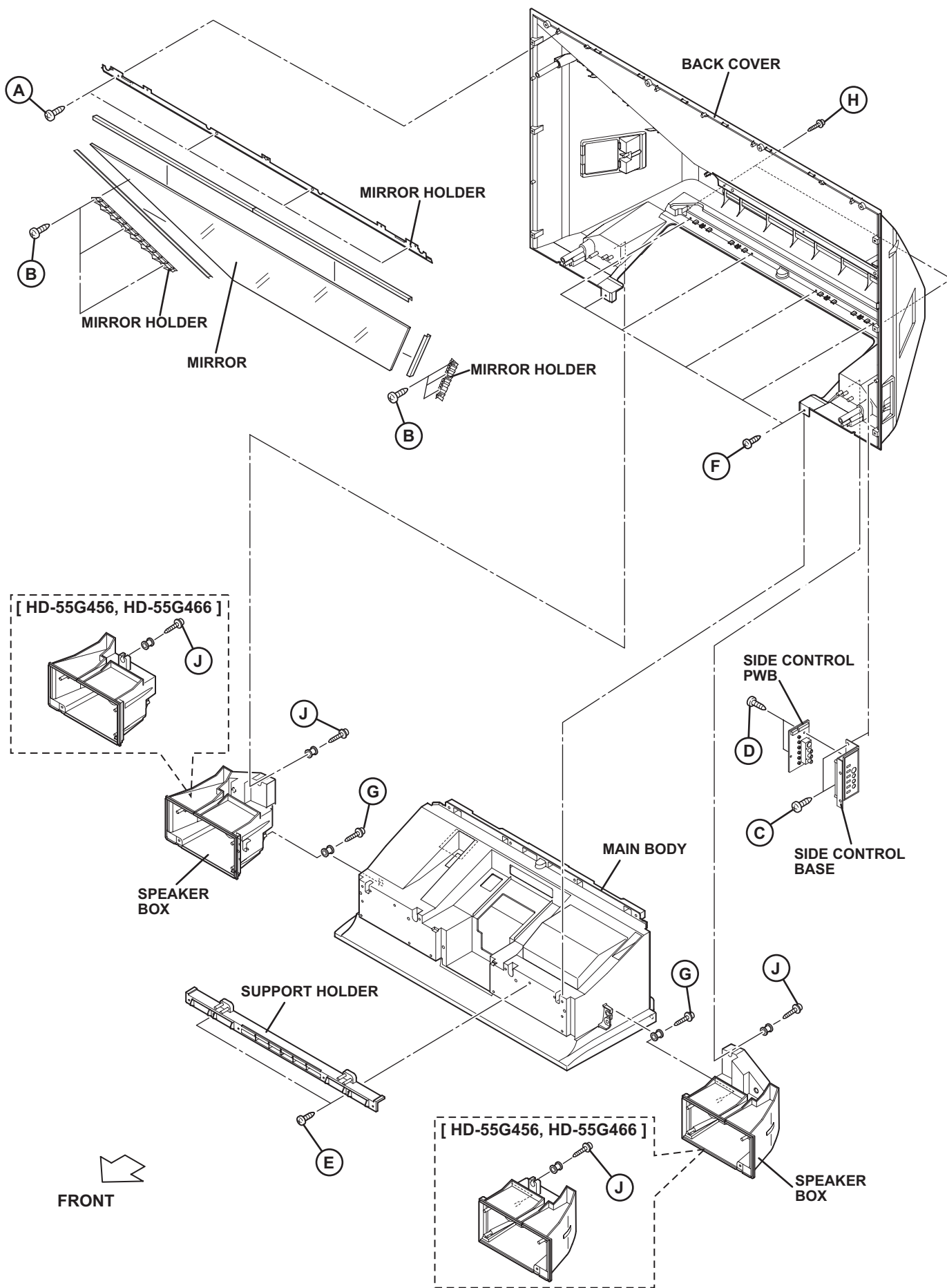


Fig.2

3.1.2 FRONT SIDE DISASSEMBLY [HD-61Z456]

3.1.2.1 REMOVING THE SPEAKER (Fig.3)

- (1) Remove the 1 screw [A]
- (2) Remove the SPEAKER GRILL(R).
- (3) Remove the 1 screw [B].
- (4) Remove the SPEAKER GRILL(L).
- (5) Remove the 4 screws [C].
- (6) Remove the SPEAKER.

3.1.2.2 REMOVING THE FRONT LED PWB (Fig.3)

- Remove the SPEAKER GRILL.
 - (1) Remove the 4 screws [F]
 - (2) Remove the FRONT PANEL.
 - (3) Remove the 1 screw [G].
 - (4) Remove the FRONT LED PWB.

3.1.2.3 REMOVING THE CENTER PANEL (Fig.3)

- Remove the SPEAKER.
- Remove the FRONT PANEL.
 - (1) Remove the 2 screws [H].
 - (2) Remove the CENTER PANEL.

3.1.2.4 REMOVING THE SCREEN BLOCK (Fig.3)

- Remove the SPEAKER GRILL.
- Remove the FRONT PANEL.
 - (1) Remove the 4 screws [J] and the 10 screws [K].
 - (2) Remove the SCREEN BLOCK.

CAUTION :

- Place the SCREEN BLOCK on a flat table without fail.
- Because of the large size, at least 2 persons are recommended for removal and reassemble.
- Use care not to scratch the screen during work.
- During assembly, be sure to engage the left and right tabs with the cabinet mounting positions.
- When supporting the SCREEN BLOCK, avoid grasping the top of the screen panel, instead grasp the left and right areas.
- Do not leave the SCREEN BLOCK removed for long time to prevent soiling from dust.

3.1.2.5 REMOVING THE SCREEN ASS'Y (Fig.3)

- Remove the SPEAKER GRILL.
- Remove the FRONT PANEL.
- Remove the SCREEN BLOCK.
 - (1) Remove the 24 screws [L].
 - (2) Remove the SCREEN BRACKET.
 - (3) Remove the SCREEN ASSY.

3.1.2.6 REMOVING THE FRONT FRAME (Fig.3)

- Remove the SPEAKER GRILL.
- Remove the FRONT PANEL.
- Remove the SCREEN BLOCK.
 - (1) Remove the 20 screws [M].
 - (2) Remove the FRONT FRAME.

3.1.2.7 REMOVING THE MIRROR (Fig.3)

- Remove the SPEAKER GRILL.
- Remove the FRONT PANEL.
- Remove the SCREEN BLOCK.
 - (1) Remove the 12 screws [N] attaching the MIRROR HOLDER of the upper, left and right side.
 - (2) Raise slightly to disengage of the MIRROR from the bottom holder.
 - (3) Remove the MIRROR.

NOTE :

- Do not touch the front of the MIRROR.
- Do not shock the MIRROR.
- Because of the large size, at least 2 persons are recommended for removal and reassemble.

3.1.2.8 REMOVING THE SIDE CONTROL PWB (Fig.3)

- Remove the SPEAKER GRILL.
- Remove the FRONT PANEL.
- Remove the SCREEN BLOCK.
 - (1) Remove the 4 screws [P].
 - (2) Remove the SIDE CONTROL BASE with wire clamp.
 - (3) Remove the 3 screws [Q].
 - (4) Remove the SIDE CONTROL PWB.

3.1.2.9 REMOVING THE MAIN BODY (Fig.3)

- Remove the SPEAKER GRILL.
- Remove the FRONT PANEL.
- Remove the SCREEN BLOCK.
 - (1) Remove the 2 screws [R] and the 12 screws [S].
 - (2) Remove the MAIN BODY.

CAUTION:

- Because of the large size, at least 2 persons are recommended for removal and reassemble.

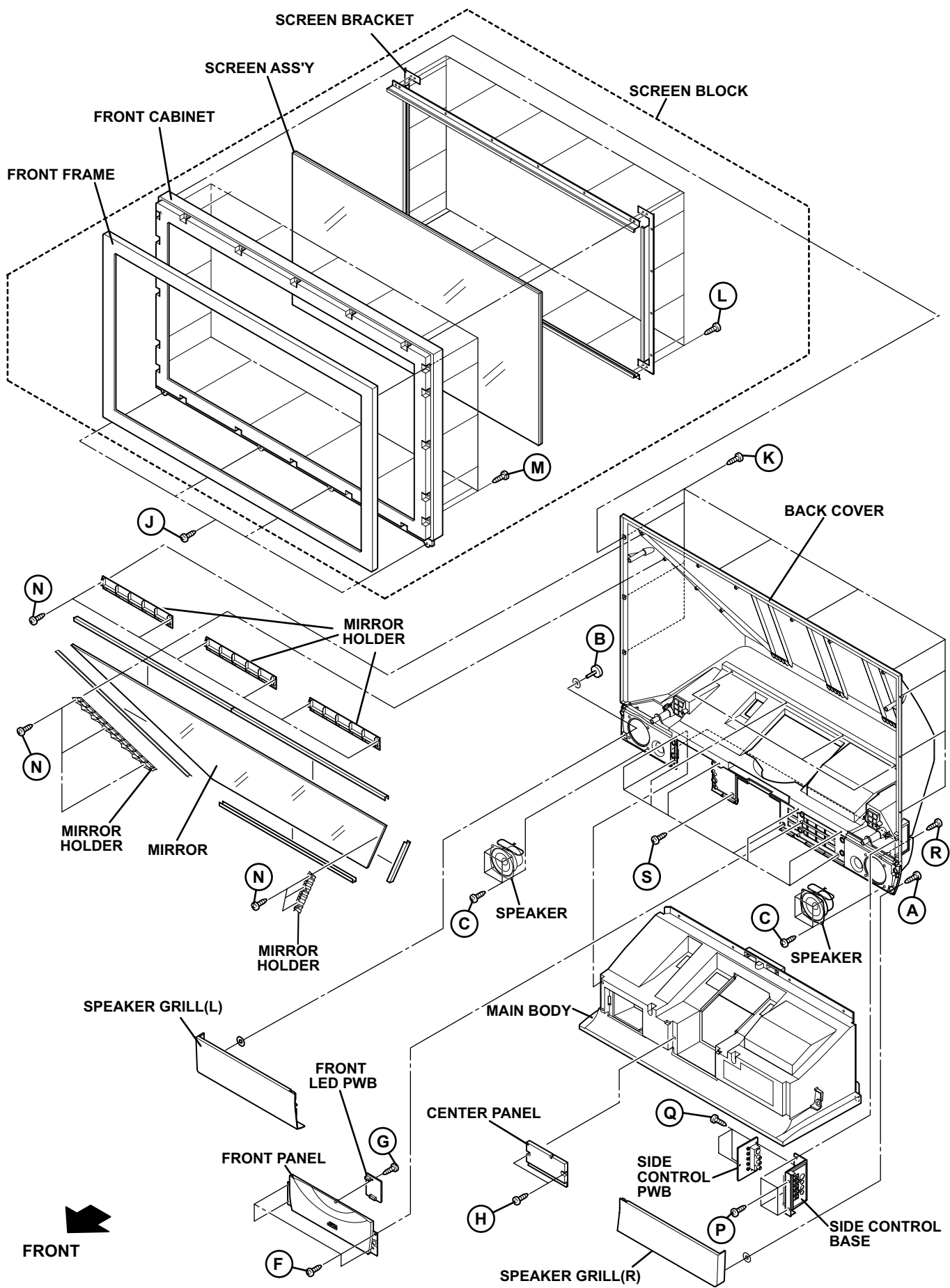


Fig.3

3.1.3 REAR SIDE DISASSEMBLY

3.1.3.1 REMOVING THE LAMP UNIT (Fig.4)

- (1) Remove the 1 screw [A], then remove the LAMP COVER.
- (2) Remove the 2 screws [B], then pull out the LAMP UNIT.

NOTE :

- Do not leave the LAMP COVER removed for long time to prevent dirt and dust from covering the lens.
- Make sure that the LAMP COVER is completely installed.

3.1.3.2 REMOVING THE BODY COVER (Fig.4)

- (1) Remove the 9 screws [C] [HD-61Z456].
- (2) Remove the 2 screws [D] [HD-52G456 / HD-55G456 / HD-55G466].
- (3) Remove the 5 screws [E].
- (4) Remove the BODY COVER.

CAUTION :

In case of HD-61Z456, the 2 screws [D] are not used, and do not install screws in these screw holes by force.

NOTE:

Do not leave the BODY COVER removed for long time to prevent soiling from dust.

3.1.3.3 REMOVING THE MAIN UNIT (Fig.4)

- Remove the LAMP COVER.
- Remove the BODY COVER.
 - (1) Remove the 4 screws [F].
 - (2) Remove the BODY BRACKET.
 - (3) Remove the 2 screws [G].
 - (4) The MAIN UNIT is pulled out to the back side.

CAUTION :

- Except for confirmation of projection images on the screen and audio output through the speakers, the removed MAIN UNIT is still workable in the same state as if it is still built-in the TV set. Therefore, the MAIN UNIT can be removed, if necessary, for board diagnosis, electric testing, etc. apart from confirmation of screen images and audio output. Do not leave the MAIN UNIT removed for long time to prevent soiling from dust.
- Because of the large size, at least 2 persons are recommended for removal and reassemble.
- When carrying the MAIN UNIT, use care not to drop, shock or shake it.
- Do not stain or damage the projection lens.
- Do not look directly at the light during service.
- Do not touch the lamp directly as it presents a burn hazard.

NOTE :

- When not performing repair work, attach the cap on the lens to preventing dust from covering.
- When mounting to the set, make sure the front of the lens is in contact with the cushion on the set (body) side.
- Make sure that FRONT LED PWB connector is completely connect to the RECEIVER PWB connector.
- When wire clamps are removed during work, use care to restore them precisely to their original positions. Performance can be affected if these are not returned to the original positions.

3.1.3.4 REMOVING THE POWER PWB (Fig.4)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
 - (1) Remove the POWER CORD.
 - (2) Remove the 5 screws [H].
 - (3) Remove the POWER PWB.

3.1.3.5 REMOVING THE AV TERMINAL BOARD (Fig.4)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
 - (1) Remove the POWER CORD.
 - (2) Remove the 3 screws [J] and the 5 screws [K].
 - (3) Remove the 5 screws [L] and the nut attaching the ANTENNA TERMINAL.
 - (4) Remove the AV TERMINAL BOARD.

3.1.3.6 REMOVING THE REAR JACK PWB (Fig.4)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
- Remove the AV TERMINAL BOARD.
 - (1) Remove the 2 screws [M].
 - (2) Remove the REAR JACK PWB.

3.1.3.7 REMOVING THE RECEIVER PWB (Fig.4)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
- Remove the AV TERMINAL BOARD.
 - (1) Remove the 4 screws [N].
 - (2) Remove the PWB HOLDER.
 - (3) Remove the 1 screw [P].
 - (4) Remove the ANALOG PWB BRACKET with PWB.
 - (5) Remove the 4 screws [Q].
 - (6) Remove the RECEIVER PWB.

3.1.3.8 REMOVING THE ANALOG SIGNAL PWB (Fig.4)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
- Remove the AV TERMINAL BOARD.
- Remove the PWB HOLDER.
- Remove the RECEIVER PWB.
 - (1) Remove the 2 screws [R].
 - (2) Remove the ANALOG SIGNAL PWB.

3.1.3.9 REMOVING THE REGULATOR PWB (Fig.4)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
- Remove the AV TERMINAL BOARD.
- Remove the PWB HOLDER.
- Remove the RECEIVER PWB.
 - (1) Remove the 4 screws **[S]**.
 - (2) Remove the REGULATOR PWB.

3.1.3.10 REMOVING THE DIGITAL SIGNAL PWB (Fig.4)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
- Remove the AV TERMINAL BOARD.
- Remove the PWB HOLDER.
 - (1) Remove the 1 screw **[T]**.
 - (2) Remove the EARTH WIRE.
 - (3) Remove the 1 screw **[U]**.
 - (4) Remove the HANGER BRACKET with PWB.
 - (5) Remove the 4 screws **[V]**.
 - (6) Remove the DIGITAL SIGNAL PWB.

CAUTION :

Make sure to perform the "SYSTEM SETTING" according to before page, when DIGITAL SIGNAL PWB is replaced.

3.1.3.11 REMOVING THE ATSC TUNER MODULE PWB (Fig.4)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
- Remove the AV TERMINAL BOARD.
- Remove the PWB HOLDER.
- Remove the HANGER BRACKET.
 - (1) Remove the 2 screws **[W]**.
 - (2) Remove the SHIELD COVER.
 - (3) Remove the 3 screws **[X]**.
 - (4) Remove the ATSC TUNER MODULE PWB.

3.1.3.12 REMOVING THE SD CARD PWB (Fig.4)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
- Remove the AV TERMINAL BOARD.
- Remove the PWB HOLDER.
- Remove the HANGER BRACKET.
- Remove the SHIELD COVER.
 - (1) Remove the 3 screws **[Y]**.
 - (2) Remove the SD CARD PWB.

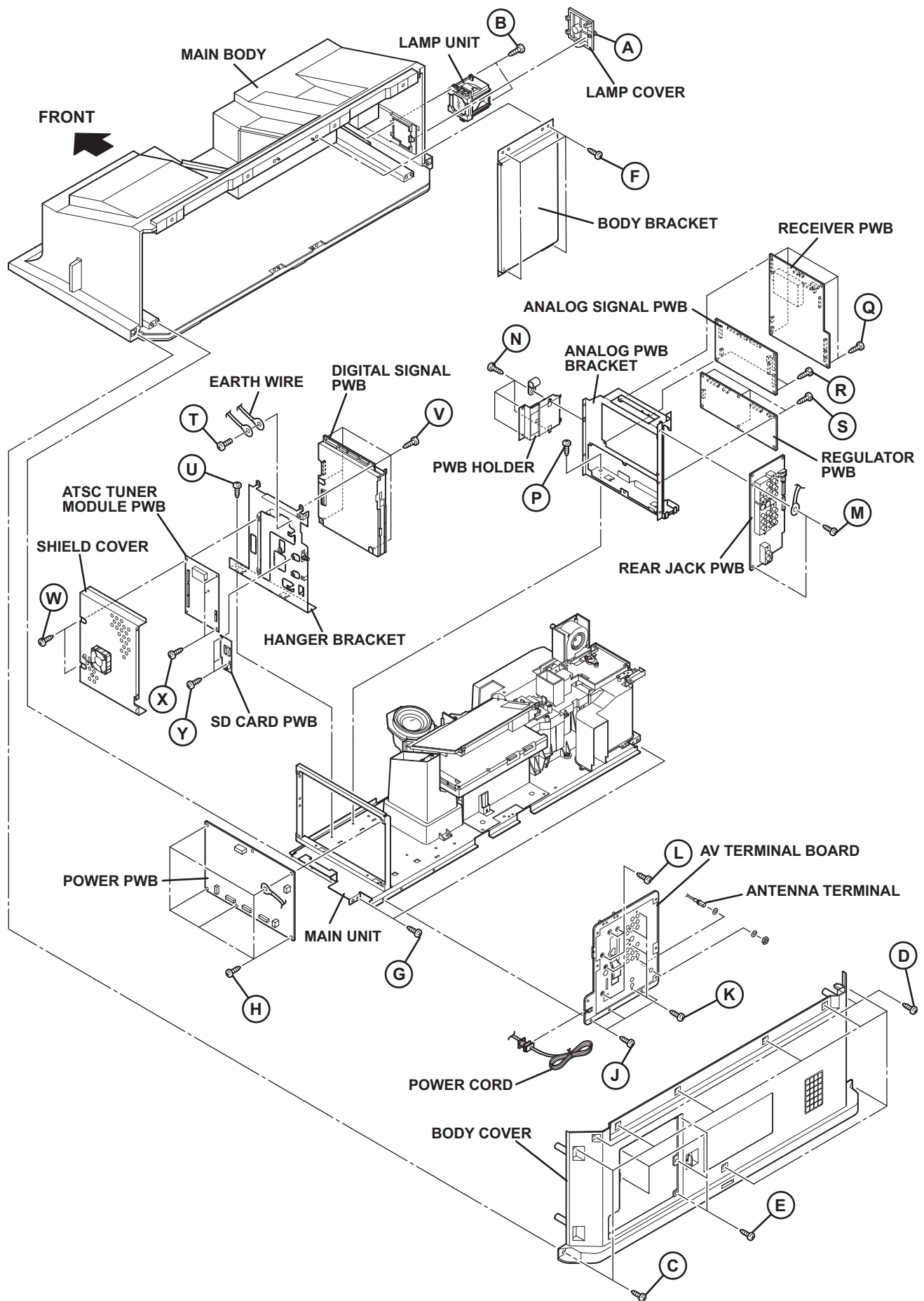


Fig.4

3.1.3.13 REMOVING THE LAMP COVER SW PWB (Fig.5)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
 - (1) Remove the 2 screws [A].
 - (2) Remove the LAMP COVER SW BRACKET with PWB.
 - (3) Remove the 1 screw [B].
 - (4) Remove the LAMP COVER SW PWB.

3.1.3.14 REMOVING THE FAN CONTROL PWB (Fig.5)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
 - (1) Remove the 1 screw [C].
 - (2) Remove the FAN CONTROL PWB.

3.1.3.15 REMOVING THE THERMOSTAT (Fig.5)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
 - (1) Remove the 2 screws [D].
 - (2) Remove the THERMOSTAT.

3.1.3.16 REMOVING THE LAMP COOLING FAN-1 (Fig.5)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
 - (1) Remove the 2 screws [F].
 - (2) Remove the COOLING FAN BRACKET by pulling transversally.
 - (3) Remove the 2 screws [G].
 - (4) Remove the LAMP COOLING FAN-1.

3.1.3.17 REMOVING THE LAMP COOLING FAN-2 (Fig.5)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
- Remove the COOLING FAN BRACKET.
 - (1) Remove the 2 screws [H].
 - (2) Remove the LAMP COOLING FAN-2.

3.1.3.18 REMOVING THE LAMP BALLAST BLOCK (Fig.5)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
 - (1) Remove the 1 screw [J].
 - (2) Remove the LAMP BALLAST BLOCK.
 - (3) Remove the 2 screws [K].
 - (4) Remove the LAMP BALLAST DUCT.
 - (5) Remove the 2 screws [L].
 - (6) Remove the LAMP BALLAST UNIT.

3.1.3.19 REMOVING THE OPTICAL / DRIVE ASS'Y (Fig.5)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
- Remove the FAN CONTROL PWB.
 - (1) Remove the 5 screws [E].
 - (2) Remove the LAMP FAN DUCT.
 - (3) Remove the 5 screws [M], 6 screws [N] and the 1 screw [P].
 - (4) Remove the OPTICAL / DRIVE ASS'Y.

NOTE:

- The OPTICAL / DRIVE ASS'Y contains precision optical components.
Handle carefully and avoid imparting strong shock.
- OPTICAL / DRIVE ASS'Y construction
 - (1) Optical block:
(D-ILA device, PBS, Field lens, Integrater, Mirror etc.)
 - (2) Projection lens
 - (3) Optical base
 - (4) MAIN DRIVE PWB
 - (5) Top duct
 - (6) Shield cover
- When not performing repair work, attach the cap on the lens to preventing dust from covering.
- When mounting to the set, make sure the front of the lens side is in contact with the cushion on the body side.
- Do not leave the OPTICAL / DRIVE ASS'Y removed for long time to prevent soiling from dust.

3.1.3.20 REMOVING THE MAIN DRIVE PWB (Fig.5)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
 - (1) Slide the TOP DUCT PLATE and remove it.
 - (2) Remove the 1 screw [Q] and the 1 screw [R].
 - (3) Remove the TOP DUCT.
 - (4) Remove the SHIELD TOP CASE.
 - (5) Remove the 2 screws [S].
 - (6) Remove the DEVICE SHIELD.
 - (7) Remove the 3 screws [T] and the 1 screw [U].
 - (8) Remove the MAIN DRIVE PWB.

3.1.3.21 REMOVING THE PROJECTION LENS (Fig.5)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
 - (1) Remove the 4 screws [V].
 - (2) Remove the PROJECTION LENS.

3.1.3.22 REMOVING THE OPTICAL BLOCK COOLING FAN (Fig.5)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
- Remove the FAN CONTROL PWB.
- Remove the LAMP FAN DUCT.
- Remove the OPTICAL / DRIVE ASS'Y.
 - (1) Remove the 2 screws [W].
 - (2) Remove the SIROCCO TOP CASE.
 - (3) Remove the 2 screws [X].
 - (4) Remove the OPTICAL BLOCK COOLING FAN.

3.1.3.23 REMOVING THE REMOTE SENSOR PWB (Fig.5)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
 - (1) Remove the 1 screw [Y].
 - (2) Remove the REMOTE SENSOR PWB.

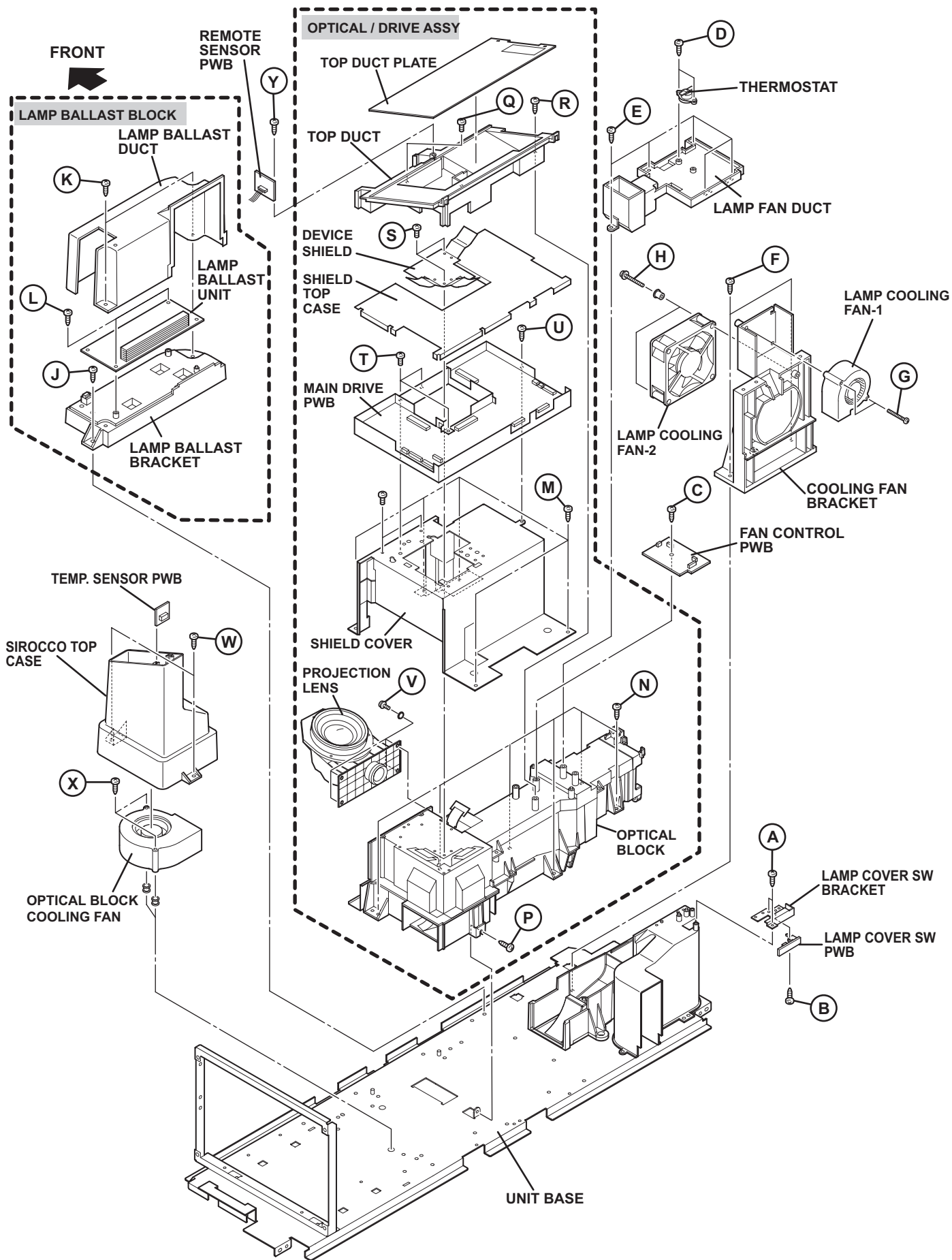


Fig.5

3.2 MEMORY IC REPLACEMENT

- This model uses the memory IC.
- This memory IC stores data for proper operation of the video and drive circuits.
- When replacing, be sure to use an IC containing this (initial value) data.

3.2.1 MEMORY IC LIST

Symbol	Number of pins	Mounting PWB	Main content of data
IC4003	32-pin	DIGITAL SIGNAL PWB	Program (Video process) of IC4001 (DIST) is memorized.
IC4004	8-pin	DIGITAL SIGNAL PWB	Setting value of IC4001 (DIST) is memorized.
IC7002	8-pin	DIGITAL SIGNAL PWB	Setting value of IC7001 (SUB [CHASSIS] CPU) is memorized.
IC7602	8-pin	DIGITAL SIGNAL PWB	Setting value of IC7601 (MAIN CPU) is memorized.

3.2.2 MEMORY IC REPLACEMENT PROCEDURE

1. Power off

Switch off the power and disconnect the power plug from the AC outlet.

2. Replace the memory IC

Be sure to use the memory IC written with the initial setting values.

3. Power on

Connect the power plug to the AC outlet and switch on the power.

4. Receiving channel setting

Refer to the OPERATING INSTRUCTIONS and set the receive channels (Channels Preset) as described.

5. User setting

Check the user setting items according to the given in page later. Where these do not agree, refer to the OPERATING INSTRUCTIONS and set the items as described.

6. SERVICE MODE setting

Verify what to set in the SERVICE MODE, and set whatever is necessary (Fig.1). Refer to the SERVICE ADJUSTMENT for setting.

3.2.3 SERVICE MODE SETTING

■SERVICE MODE SCREEN

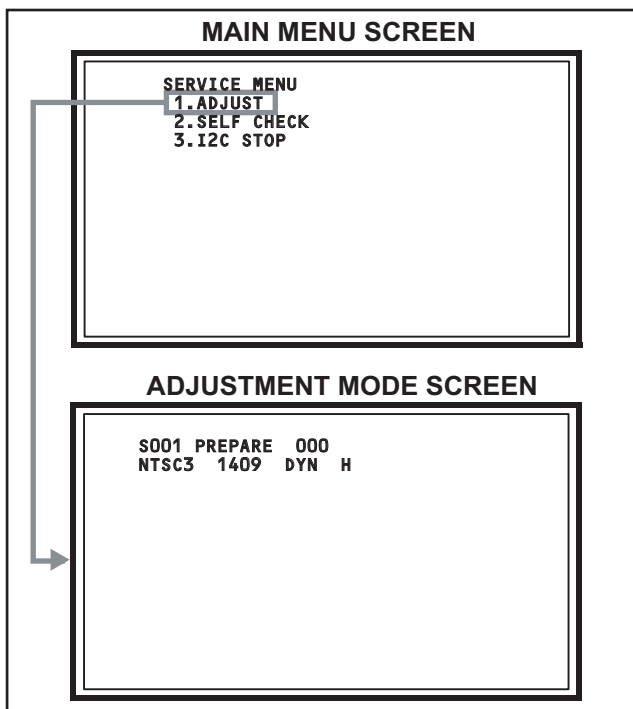


Fig.1

■SETTING ITEM

Setting items	Settings	Item No.
Video system setting	Adjust	S001 - S039
Audio system setting	Adjust	T001 - T010
Panel control system setting	Fixed	P001 - P010
Drive system setting	Fixed	D001 - D187
Main CPU system setting	Fixed	Z001 - Z010

3.2.4 SETTINGS OF FACTORY SHIPMENT

3.2.4.1 BUTTON OPERATION

Setting item	Setting position
POWER	Off
CHANNEL	CABLE-02
VOLUME	10
INPUT	TV

3.2.4.2 REMOTE CONTROL DIRECT OPERATION

Setting item	Setting position
INPUT	TV
CHANNEL	CABLE-02
VOLUME	10
MUTING	OFF
DISPLAY	OFF
ASPECT	NTSC
	HD
	PANORAMA
	FULL
SLEEP TIMER	OFF
THEATER PRO	OFF
VIDEO STATUS	DYNAMIC
NATURAL CINEMA	AUTO
C.C.	OFF
MTS	STEREO
TWIN SOURCE	LEFT SIDE
	RIGHT SIDE
	CABLE-02
	INPUT-1
SOUND	HYPER SURROUND
	OFF

3.2.4.3 REMOTE CONTROL MENU OPERATION

■ PICTURE ADJUST

Customers can adjust the picture setting of menu screen as their own like but the picture standard value during factory shipment is as below.

[NTSC MODE]

Setting item	DYNAMIC	STANDARD	GAME	THEATER
PICTURE	+10	00	-10	00
BRIGHT	00	00	00	00
COLOR	00	00	00	00
TINT	00	00	00	00
DETAIL	+05	00	00	00
COLOR TEMPERATURE	LOW	LOW	HIGH	HIGH
DIG. NOISE CLEAR	AUTO	AUTO	AUTO	AUTO
COLOR MANAGEMENT	ON	ON	ON	ON
DYNAMIC GAMMA	ON	ON	ON	ON
SMART PICTURE	OFF	ON	ON	ON

[HD MODE]

Setting item	DYNAMIC	STANDARD	GAME	THEATER
PICTURE	+10	00	-10	00
BRIGHT	00	00	00	00
COLOR	00	00	00	00
TINT	00	00	00	00
DETAIL	+05	00	00	00
COLOR TEMPERATURE	LOW	LOW	HIGH	LOW
DIG. NOISE CLEAR	OFF	OFF	OFF	OFF
COLOR MANAGEMENT	ON	ON	ON	ON
DYNAMIC GAMMA	ON	ON	ON	ON
SMART PICTURE	OFF	ON	ON	ON

■ SOUND ADJUST

Setting item	Setting position
BASS	00
TREBLE	00
BALANCE	00

■ CLOCK / TIMERS

Setting item	Setting position
ON / OFF TIMER	NO

■ INITIAL SETUP

Setting item	Setting position
DIGITAL-IN	AUTO
DIGITAL-IN AUDIO	AUTO
NOISE MUTING	ON
FRONT PANEL LOCK	OFF
VIDEO INPUT LABEL	All blank
POSITION ADJUSTMENT	Center
POWER INDICATOR	HIGH
LANGUAGE	ENG.
CLOSED CAPTION	OFF
AUTO SHUT OFF	OFF
XDS ID	ON
V-CHIP	OFF
AUTO DEMO	OFF

3.3 REPLACEMENT OF CHIP COMPONENT

3.3.1 CAUTIONS

- (1) Avoid heating for more than 3 seconds.
- (2) Do not rub the electrodes and the resist parts of the pattern.
- (3) When removing a chip part, melt the solder adequately.
- (4) Do not reuse a chip part after removing it.

3.3.2 SOLDERING IRON

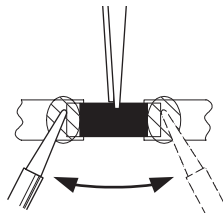
- (1) Use a high insulation soldering iron with a thin pointed end of it.
- (2) A 30w soldering iron is recommended for easily removing parts.

3.3.3 REPLACEMENT STEPS

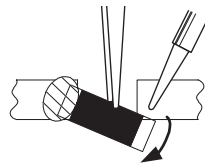
1. How to remove Chip parts

[Resistors, capacitors, etc.]

- (1) As shown in the figure, push the part with tweezers and alternately melt the solder at each end.



- (2) Shift with the tweezers and remove the chip part.

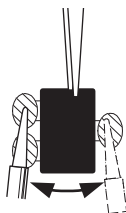


[Transistors, diodes, variable resistors, etc.]

- (1) Apply extra solder to each lead.



- (2) As shown in the figure, push the part with tweezers and alternately melt the solder at each lead. Shift and remove the chip part.



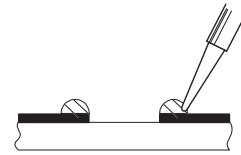
NOTE :

After removing the part, remove remaining solder from the pattern.

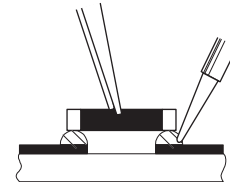
2. How to install Chip parts

[Resistors, capacitors, etc.]

- (1) Apply solder to the pattern as indicated in the figure.

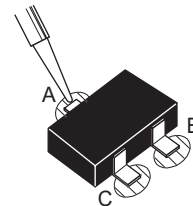


- (2) Grasp the chip part with tweezers and place it on the solder. Then heat and melt the solder at both ends of the chip part.

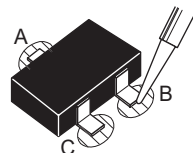


[Transistors, diodes, variable resistors, etc.]

- (1) Apply solder to the pattern as indicated in the figure.
- (2) Grasp the chip part with tweezers and place it on the solder.
- (3) First solder lead **A** as indicated in the figure.



- (4) Then solder leads **B** and **C**.



SECTION 4 ADJUSTMENT

4.1 ADJUSTMENT PREPARATION

- (1) There are 2 ways of adjusting this TV : One is with the **REMOTE CONTROL UNIT** and the other is the conventional method using adjustment parts and components.
- (2) The adjustment using the **REMOTE CONTROL UNIT** is made on the basis of the initial setting values. The setting values which adjust the screen to the optimum condition can be different from the initial setting values.
- (3) Make sure that connection is correctly made AC to AC power source.
- (4) Turn on the power of the TV and measuring instruments for warning up for at least 30 minutes before starting adjustments.
- (5) If the receive or input signal is not specified, use the most appropriate signal for adjustment.
- (6) Never touch the parts (such as variable resistors, transformers and condensers) not shown in the adjustment items of this service adjustment.

4.2 PRESET SETTING BEFORE ADJUSTMENTS

Unless otherwise specified in the adjustment items, preset the following functions with the **REMOTE CONTROL UNIT**.

Setting item	Settings
VIDEO STATUS	STANDARD
Picture adjustments	00
COLOR TEMPERATURE	LOW
DIG. NOISE CLEAR	OFF
COLOR MANAGEMENT	ON
DYNAMIC GAMMA	ON
NATURAL CINEMA	AUTO
Sound adjustments	00
HYPER SURROUND	OFF
ASPECT	FULL

4.3 MEASURING INSTRUMENT AND FIXTURES

- Oscilloscope
- Signal generator (Pattern generator)
[NTSC / 525i / 525p / 750p / 1125i]
- Hexagon wrench
- TV audio multiplex signal generator
- Remote control unit

4.4 ADJUSTMENT ITEMS

■ FOCUS

- LENS FOCUS adjustment

■ DRIVE CIRCUIT

- DRIVE CONVERGENCE adjustment
- DRIVE CENTER POSITION adjustment

■ VIDEO CIRCUIT

- 525i A-D OFFSET adjustment
- 1125i BRIGHTNESS adjustment
- 1125i A-D OFFSET adjustment
- SUB SCREEN A-D OFFSET adjustment
- WHITE BALANCE (HIGHLIGHT) adjustment

■ MTS CIRCUIT

- MTS INPUT LEVEL adjustment
- MTS SEPARATION adjustment

4.5 BASIC OPERATION OF SERVICE MODE

4.5.1 HOW TO ENTER THE SERVICE MODE

- (1) Set to 0 minutes using the **[SLEEP TIMER]** key.
- (2) Press the **[VIDEO STATUS]** key and **[DISPLAY]** key simultaneously, then enter the SERVICE MODE (Fig.1)

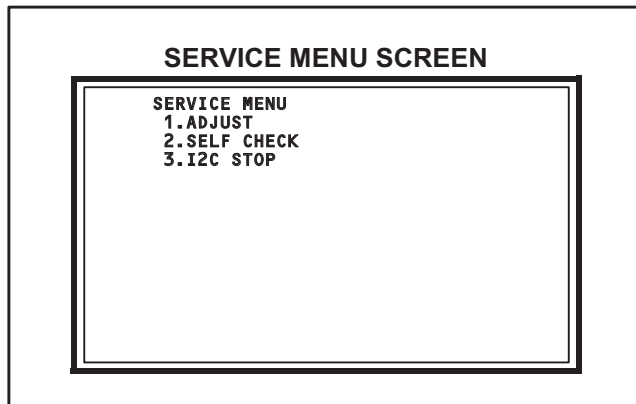


Fig.1

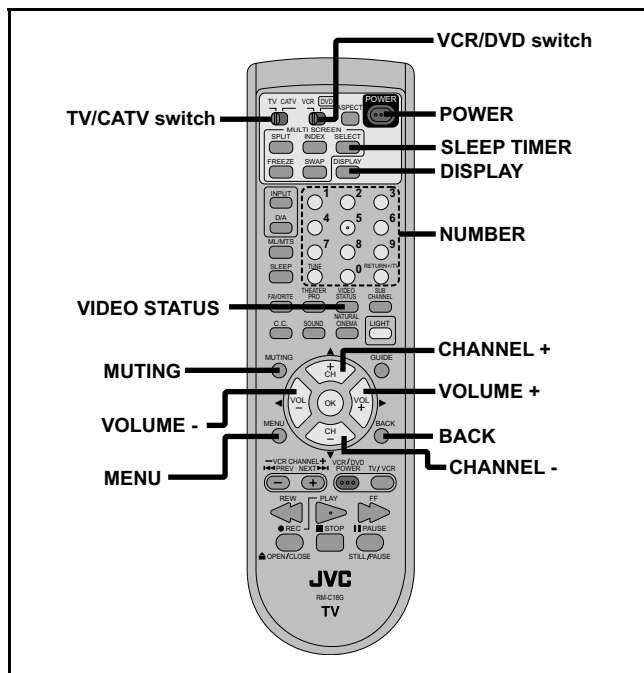
NOTE:

- Before entering the SERVICE MODE, confirm that the setting of **TV/CATV** switch of the REMOTE CONTROL UNIT is at the "TV" side and the setting of **VCR/DVD** switch is at the "VCR" side. If the switches have not been properly set, you cannot enter the SERVICE MODE.
- When a number key other than the **[1]** or **[9]** keys is pressed in the SERVICE MENU SCREEN, the other relevant screen may be displayed.
This is not used in the adjustment procedure. Press the **[MENU]** key to return to the SERVICE MENU SCREEN.

4.5.2 HOW TO EXIT THE SERVICE MODE

Press the **[BACK]** key to exit the Service mode.

4.5.3 SERVICE MODE SELECT KEY LOCATION



4.5.4 ADJUSTMENT MODE

This mode is used to adjust the VIDEO CIRCUIT and the MTS CIRCUIT.

4.5.4.1 HOW TO ENTER THE ADJUSTMENT MODE

When the SERVICE MENU SCREEN of SERVICE MODE is displayed, press **[1]** key to enter the **ADJUSTMENT MODE** (Fig.2).

4.5.4.2 DESCRIPTION OF STATUS DISPLAY OF ADJUSTMENT MODE

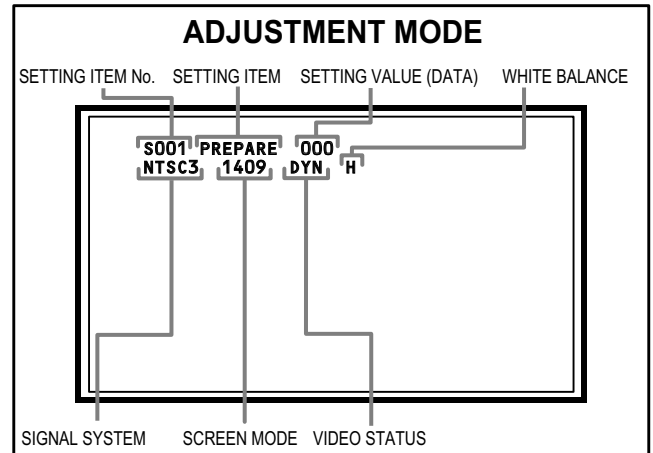


Fig.2

(1) SIGNAL SYSTEM

The signal displayed on the screen is displayed.

NTSC3	: 525i (Composite / S-video input)
525I	: 525i (Component input)
525P	: 525p
1125I6	: 1125i
750P	: 750p
H525I	: HDMI 525i
H525P	: HDMI 525p
H125I6	: HDMI 1125i
H750P	: HDMI 750p
D525I	: ATSC 525i
D525P	: ATSC 525p
D125I6	: ATSC 1125i

(2) SCREEN MODE

State of the SCREEN SIZE or MULTI PICTURE is displayed.

SINGLE SCREEN

FULL	: FULL
1609	: CINEMA, CINEMA ZOOM
PANO	: PANORAMA, HD PANORAMA
REGU	: REGULAR

MULTI SCREEN

M2	: TWIN, FREEZE screen
M12	: INDEX screen

(3) VIDEO STATUS

STD : STANDARD
DYN : DYNAMIC
TH : THEATER
GAME : GAME

(4) WHITE BALANCE

H : HIGH
L : LOW

(5) SETTING ITEM NAME

Setting item name are displayed. The setting item numbers to be displayed are listed below.

Item No.	Setting item
S001 - S039	Video system setting
T001 - T010	Audio system setting
P001 - P010	Panel control system setting
D001 - D187	Drive system setting
Z001 - Z010	Main CPU system setting

(6) SETTING ITEM NO.

Setting item numbers are displayed. For the setting item names to be displayed, refer to "Initial setting value of adjustment mode".

(7) SETTING VALUE (DATA)

The SETTING VALUE is displayed.

4.5.4.3 CHANGE AND MEMORY OF SETTING VALUE

■SELECTION OF SETTING ITEM

- **[CH+] / [CH-]** key.
Change the setting items up/ down.

S001... ↔ T001... ↔ P001... ↔ D001... ↔ Z001...

- **[SLEEP TIMER]** key.
Switches to the next items.

S001 → T001 → P001 → D001 → Z001

■CHANGE OF SETTING VALUE (DATA)

- **[VOL+] / [VOL-]** key.
Change the setting values up/down.

■MEMORY OF SETTING VALUE (DATA)

Changed setting value is memorized by pressing **[MUTING]** key.

4.5.5 RGB BOX PATTERN MODE

This mode is used to adjust the DRIVE CIRCUIT.

4.5.5.1 HOW TO ENTER THE RGB BOX PATTERN MODE

When the SERVICE MENU SCREEN of SERVICE MODE is displayed, press **[9]** key to enter the **RGB BOX PATTERN MODE** (Fig3).

4.5.5.2 DESCRIPTION OF STATUS DISPLAY OF RGB BOX PATTERN MODE

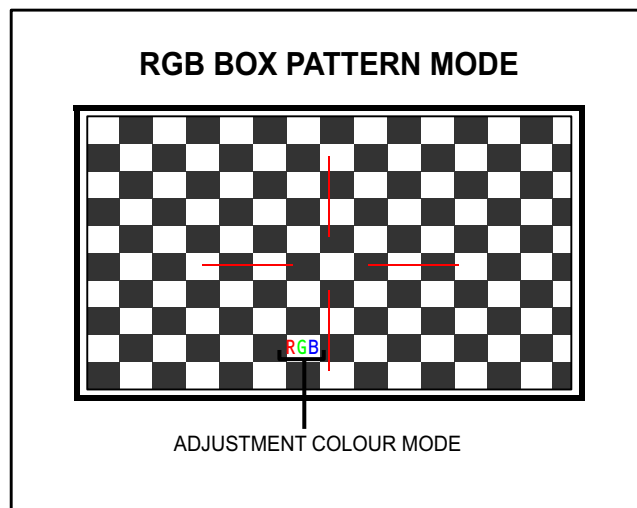


Fig.3

(1) ADJUSTMENT COLOR MODE

Presently selected ADJUSTMENT COLOR MODE is displayed.

■SELECTION OF SETTING ITEM

- **[CH+] / [CH-]** key.
Move the selected RGB BOX PATTERN up/ down pixel by pixel.
- **[VOL+] / [VOL-]** key.
Move the selected RGB BOX PATTERN left/ right pixel by pixel.
- **[SLEEP TIMER]** key.
Adjusts the data reset.
- **[DISPLAY]** key.
Adjusts the selected RGB BOX PATTERN.

R → B → RGB

- **[BACK]** key.
Returns to the SERVICE MENU SCREEN from the RGB BOX PATTERN MODE.

■MEMORY OF SETTING VALUE (DATA)

With the RGB BOX PATTERN MODE, the changed date is written in the MEMORY instantly.

4.6 INITIAL SETTING VALUES IN THE SERVICE MODE

- Perform fine-tuning based on the "initial values" using the remote control when in the Service mode.
- The "initial values" serve only as an indication rough standard and therefore the values with which optimal display can be achieved may be different from the default values. But, don't change the values that are not written in "ADJUSTMENT PROCEDURE". They are fixed values.

4.6.1 VIDEO SYSTEM SETTING

Item No.	Item	Variable range	Setting value
S001	PREPARE	000 - 031	000
S002	NTSC BL	000 - 015	001
S003	NTSC CNT	000 - 255	045
S004	NT CR OF	000 - 015	006
S005	NT CB OF	000 - 015	005
S006	525i BL	000 - 015	001
S007	525i CNT	000 - 255	045
S008	5i CB OF	000 - 015	015
S009	5i CR OF	000 - 015	015
S010	5i CR GN	000 - 015	006
S011	5i CB GN	000 - 015	005
S012	HD BL	000 - 063	054
S013	HD CB OF	000 - 063	053
S014	HD CR OF	000 - 063	058
S015	RT CONT	000 - 015	008
S016	RT CB OF	000 - 015	002
S017	RT CR OF	000 - 015	005
S018	RT CL GA	000 - 015	008
S019	PC CL MB	000 - 007	000
S020	PC CL LB	000 - 031	000
S021	PC CL MR	000 - 007	000
S022	PC CL LR	000 - 031	000
S023	(Not display)	000 - 255	000
S024	(Not display)	000 - 255	000
S025	(Not display)	000 - 255	000
S026	(Not display)	000 - 255	000
S027	(Not display)	000 - 255	000
S028	(Not display)	000 - 255	000
S029	(Not display)	000 - 255	000
S030	R DRIVE	000 - 255	128
S031	G DRIVE	000 - 255	128
S032	B DRIVE	000 - 255	128
S033	(Not display)	000 - 255	000
S034	(Not display)	000 - 255	000
S035	(Not display)	000 - 255	000
S036	(Not display)	000 - 255	000
S037	(Not display)	000 - 255	000
S038	(Not display)	000 - 255	000
S039	ILA COM	000 - 001	000

4.6.2 AUDIO SYSTEM SETTING

Item No.	Item	Variable range	Setting value
T001	IN LEVEL	000 - 015	008
T002	LOW SEP	000 - 063	034
T003	HIGH SEP	000 - 063	023
T004	AFC	000 - 255	000
T005	(Not display)	000 - 255	000
T006	ATT V ON	000 - 001	000
T007	ATT U ON	000 - 001	000
T008	ATT C ON	000 - 001	000
T009	(Not display)	000 - 255	000
T010	(Not display)	000 - 255	000

4.6.3 PANEL CONTROL SYSTEM SETTING (Fixed values)

Item No.	Item	Variable range	Setting value
P001	TM HOR H	00 - FF	00
P002	TM HOR L	00 - FF	00
P003	TM MIN	00 - FF	00
P004	TEMP	000 - 255	000
P005	(Not display)	000 - 255	000
P006	(Not display)	000 - 255	000
P007	(Not display)	000 - 255	000
P008	(Not display)	000 - 255	000
P009	(Not display)	000 - 255	000
P010	(Not display)	000 - 255	000

4.6.4 DRIVE SYSTEM SETTING (Fixed values)

Item No.	Item	Variable range	Setting value
D001	SLV GN	00 - 3F	11
D002	SLVH GN	00 - 3F	1E
D003	SLH GN	00 - 3F	1E
D004	SLV Pf	00 - 03	01
D005	SLH Pf H	00 - 01	01
D006	SLH Pf L	00 - 03	01
D007	SL EGCON	00 - 3F	06
D008	SL EGONF	00 - 01	01
D009	SL CRGON	00 - 3F	0A
D010	SL CRGON	00 - 01	01
D011	SL ON OF	00 - 01	01
D012	SV GN	00 - 3F	0E
D013	SVH GN	00 - 3F	14
D014	SH GN	00 - 3F	16
D015	SV Pf	00 - 03	02
D016	SV PfH	00 - 01	01
D017	SV PfL	00 - 03	02
D018	SYL CON	00 - 3F	30
D019	SYL CONF	00 - 01	01

Item No.	Item	Variable range	Setting value
D020	SYH CON	00 - 3F	30
D021	SYH CONF	00 - 01	01
D022	SC CON	00 - 3F	26
D023	SC CNONF	00 - 01	01
D024	SPM BLC	00 - 3F	00
D025	SPM BLCO	00 - 01	01
D026	SLIM	00 - 3F	30
D027	SLIMONF	00 - 01	01
D028	SCRG	00 - 3F	02
D029	SRGONF	00 - 01	01
D030	S ONF	00 - 01	01
D031	pb GN	00 - 3F	12
D032	pb PfH	00 - 01	00
D033	pb PfL	00 - 03	03
D034	pb CRG	00 - 3F	16
D035	pb CRGON	00 - 01	01
D036	pb ONF	00 - 01	01
D037	pr GN	00 - 3F	12
D038	pr PfH	00 - 01	00
D039	pr PfL	00 - 03	03
D040	pr CRG	00 - 3F	12
D041	pr CRGON	00 - 01	01
D042	pr ONF	00 - 01	01
D043	ENH ONF	00 - 01	01
D044	(Not display)	00 - FF	00
D045	(Not display)	00 - FF	00
D046	(Not display)	00 - FF	00
D047	(Not display)	00 - FF	00
D048	(Not display)	00 - FF	00
D049	(Not display)	00 - FF	00
D050	(Not display)	00 - FF	00
D051	(Not display)	00 - FF	00
D052	(Not display)	00 - FF	00
D053	(Not display)	00 - FF	00
D054	(Not display)	00 - FF	00
D055	(Not display)	00 - FF	00
D056	(Not display)	00 - FF	00
D057	(Not display)	00 - FF	00
D058	(Not display)	00 - FF	00
D059	(Not display)	00 - FF	00
D060	(Not display)	00 - FF	00
D061	(Not display)	00 - FF	00
D062	(Not display)	00 - FF	00
D063	(Not display)	00 - FF	00
D064	(Not display)	00 - FF	00
D065	(Not display)	00 - FF	00
D066	(Not display)	00 - FF	00
D067	(Not display)	00 - FF	00
D068	(Not display)	00 - FF	00
D069	(Not display)	00 - FF	00

Item No.	Item	Variable range	Setting value
D070	(Not display)	00 - FF	00
D071	(Not display)	00 - FF	00
D072	(Not display)	00 - FF	00
D073	(Not display)	00 - FF	00
D074	(Not display)	00 - FF	00
D075	(Not display)	00 - FF	00
D076	(Not display)	00 - FF	00
D077	(Not display)	00 - FF	00
D078	(Not display)	00 - FF	00
D079	(Not display)	00 - FF	00
D080	(Not display)	00 - FF	00
D081	(Not display)	00 - FF	00
D082	(Not display)	00 - FF	00
D083	(Not display)	00 - FF	00
D084	(Not display)	00 - FF	00
D085	(Not display)	00 - FF	00
D086	(Not display)	00 - FF	00
D087	(Not display)	00 - FF	00
D088	(Not display)	00 - FF	00
D089	(Not display)	00 - FF	00
D090	(Not display)	00 - FF	00
D091	(Not display)	00 - FF	00
D092	(Not display)	00 - FF	00
D093	(Not display)	00 - FF	00
D094	(Not display)	00 - FF	00
D095	(Not display)	00 - FF	00
D096	(Not display)	00 - FF	00
D097	(Not display)	00 - FF	00
D098	(Not display)	00 - FF	00
D099	(Not display)	00 - FF	00
D100	(Not display)	00 - FF	00
D101	(Not display)	00 - FF	00
D102	(Not display)	00 - FF	00
D103	(Not display)	00 - FF	00
D104	(Not display)	00 - FF	00
D105	(Not display)	00 - FF	00
D106	(Not display)	00 - FF	00
D107	(Not display)	00 - FF	00
D108	(Not display)	00 - FF	00
D109	(Not display)	00 - FF	00
D110	(Not display)	00 - FF	00
D111	(Not display)	00 - FF	00
D112	(Not display)	00 - FF	00
D113	(Not display)	00 - FF	00
D114	(Not display)	00 - FF	00
D115	(Not display)	00 - FF	00
D116	(Not display)	00 - FF	00
D117	(Not display)	00 - FF	00
D118	(Not display)	00 - FF	00
D119	(Not display)	00 - FF	00

Item No.	Item	Variable range	Setting value
D120	(Not display)	00 - FF	00
D121	(Not display)	00 - FF	00
D122	(Not display)	00 - FF	00
D123	(Not display)	00 - FF	00
D124	(Not display)	00 - FF	00
D125	(Not display)	00 - FF	00
D126	(Not display)	00 - FF	00
D127	(Not display)	00 - FF	00
D128	(Not display)	00 - FF	00
D129	(Not display)	00 - FF	00
D130	(Not display)	00 - FF	00
D131	(Not display)	00 - FF	00
D132	(Not display)	00 - FF	00
D133	(Not display)	00 - FF	00
D134	(Not display)	00 - FF	00
D135	(Not display)	00 - FF	00
D136	(Not display)	00 - FF	00
D137	(Not display)	00 - FF	00
D138	(Not display)	00 - FF	00
D139	(Not display)	00 - FF	00
D140	(Not display)	00 - FF	00
D141	(Not display)	00 - FF	00
D142	(Not display)	00 - FF	00
D143	(Not display)	00 - FF	00
D144	(Not display)	00 - FF	00
D145	(Not display)	00 - FF	00
D146	(Not display)	00 - FF	00
D147	(Not display)	00 - FF	00
D148	(Not display)	00 - FF	00
D149	(Not display)	00 - FF	00
D150	(Not display)	00 - FF	00
D151	(Not display)	00 - FF	00
D152	(Not display)	00 - FF	00
D153	(Not display)	00 - FF	00
D154	(Not display)	00 - FF	00
D155	(Not display)	00 - FF	00
D156	(Not display)	00 - FF	00
D157	(Not display)	00 - FF	00
D158	(Not display)	00 - FF	00
D159	(Not display)	00 - FF	00
D160	(Not display)	00 - FF	00
D161	(Not display)	00 - FF	00
D162	(Not display)	00 - FF	00
D163	(Not display)	00 - FF	00
D164	(Not display)	00 - FF	00
D165	(Not display)	00 - FF	00
D166	(Not display)	00 - FF	00
D167	(Not display)	00 - FF	00
D168	(Not display)	00 - FF	00
D169	(Not display)	00 - FF	00

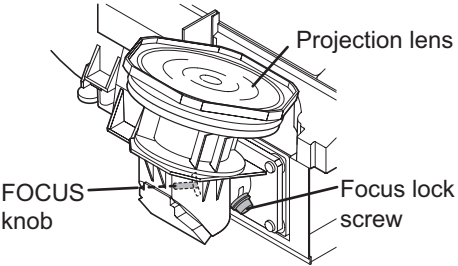
Item No.	Item	Variable range	Setting value
D170	(Not display)	00 - FF	00
D171	(Not display)	00 - FF	00
D172	(Not display)	00 - FF	00
D173	(Not display)	00 - FF	00
D174	(Not display)	00 - FF	00
D175	(Not display)	00 - FF	00
D176	(Not display)	00 - FF	00
D177	(Not display)	00 - FF	00
D178	(Not display)	00 - FF	00
D179	(Not display)	00 - FF	00
D180	(Not display)	00 - FF	00
D181	(Not display)	00 - FF	00
D182	(Not display)	00 - FF	00
D183	(Not display)	00 - FF	00
D184	(Not display)	00 - FF	00
D185	(Not display)	00 - FF	00
D186	(Not display)	00 - FF	00
D187	(Not display)	00 - FF	00

4.6.5 MAIN CPU SYSTEM SETTING (Fixed values)

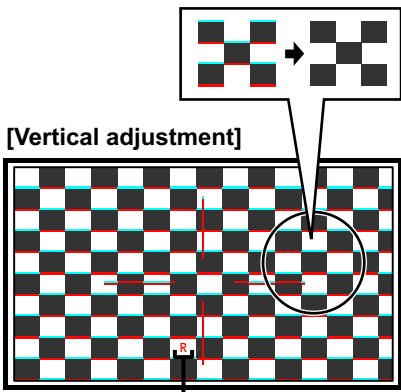
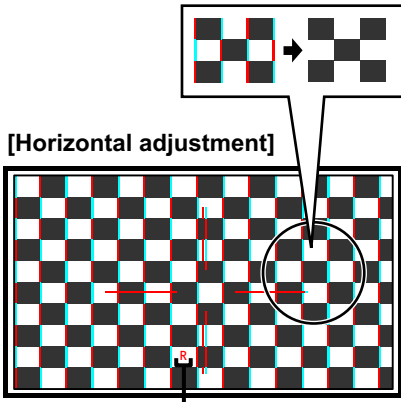
Item No.	Item	Variable range	Setting value
Z001	(Not display)	00 - FF	00
Z002	(Not display)	00 - FF	00
Z003	(Not display)	00 - FF	00
Z004	(Not display)	00 - FF	00
Z005	(Not display)	00 - FF	00
Z006	(Not display)	00 - FF	00
Z007	(Not display)	00 - FF	00
Z008	(Not display)	00 - FF	00
Z009	(Not display)	00 - FF	00
Z010	(Not display)	00 - FF	00

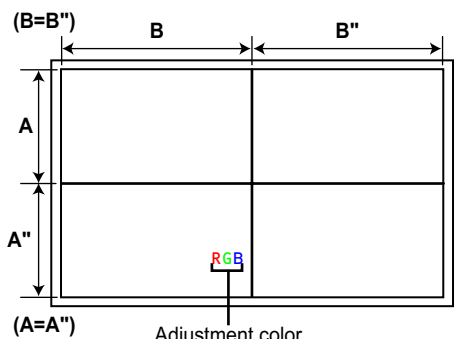
4.7 ADJUSTMENT PROCEDURE

4.7.1 FOCUS

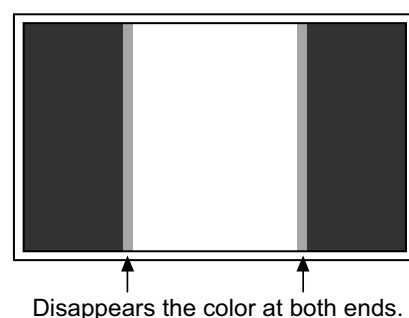
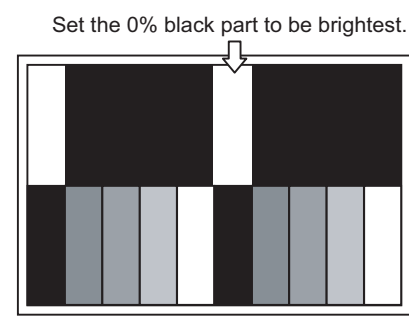
Item	Measuring instrument	Test point	Adjustment part	Description
LENS FOCUS	Hexagon wrench		FOCUS knob [PROJECTION LENS]	<ol style="list-style-type: none"> (1) Remove the SPEAKER GRILL and CENTER PANEL. (2) Display the MENU screen. (3) Loosen the focus lock screw. (4) Adjust the FOCUS knob so that the center screen may become the best focus. (5) Fix the focus lock screw by using the Hexagon wrench. <ul style="list-style-type: none"> • On this occasion, hold the FOCUS knob with your left hand. (6) Confirm the whole focus of the best screen. (7) Install the CENTER PANEL and SPEAKER GRILL.
				

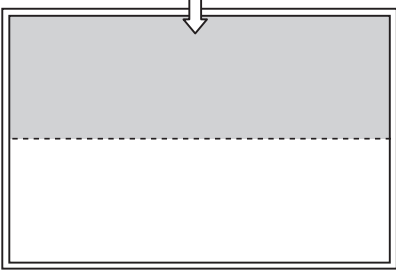
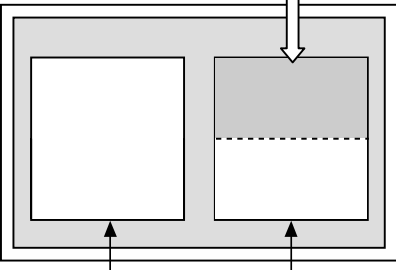
4.7.2 DRIVE CIRCUIT

Item	Measuring instrument	Test point	Adjustment part	Description
DRIVE CONVERGENCE	Remote control unit		[9.RGB BOX PATTERN]	<ol style="list-style-type: none"> (1) Set to "0 minutes" using the [SLEEP TIMER] key. (2) Press the [VIDEO STATUS] key and [DISPLAY] key simultaneously, to enter the SERVICE MODE. (3) Press the [9] key, to select "RGB BOX PATTERN MODE" from the SERVICE MODE. (4) Set the adjustment color mode to "R" to set the red color adjustment mode. (5) Adjust to minimize the vertical color drift of RGB box pattern. (6) Adjust to minimize the horizontal color drift of RGB box pattern. (7) Set the adjustment color mode to "B" to set the blue color adjustment mode. (8) Repeat the step 5. to 6. as above. <p>NOTE:</p> <ul style="list-style-type: none"> • Green is fixed. (It can not be removed.) • With this adjustment mode, the changed data is written in the MEMORY instantly.
 <p>[Vertical adjustment]</p> <p>Adjustment color</p>				
 <p>[Horizontal adjustment]</p> <p>Adjustment color</p>				

Item	Measuring instrument	Test point	Adjustment part	Description
DRIVE CENTER POSITION	Remote control unit Signal generator		[9.RGB BOX PATTERN]	<ol style="list-style-type: none"> (1) Receive a center cross (or crosshatch) pattern. (2) Set to "0 minutes" using the [SLEEP TIMER] key. (3) Press the [VIDEO STATUS] key and [DISPLAY] key simultaneously, to enter the SERVICE MODE. (4) Press the [9] key, to select "RGB BOX PATTERN MODE" from the SERVICE MODE. (5) Set the adjustment color mode to "RGB" to set the display position adjustment mode. (6) Adjust the top and the bottom width to make A and A'' even. (7) Adjust the left and the right width to make B and B'' even. <p>NOTE:</p> <ul style="list-style-type: none"> • With this adjustment mode, the changed data is written in the MEMORY instantly.
 <p>(B=B'') B B'' A A'' (A=A'') Adjustment color</p>				

4.7.3 VIDEO CIRCUIT

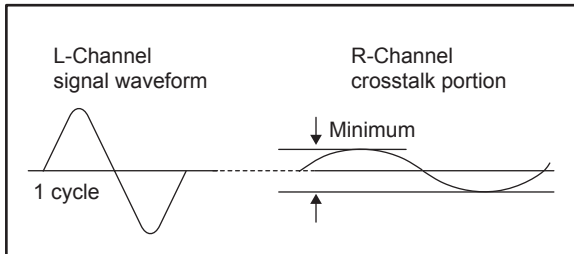
Item	Measuring instrument	Test point	Adjustment part	Description
525i A-D OFFSET	Remote control unit Signal generator		[1.ADJUST] S001: PREPARE (Adjustment setting mode change) S008: 5i CB OF(525i Cb offset) S009: 5i CR OF(525i Cr offset) S030: R DRIVE(Red drive) S031: G DRIVE(Green drive) S032: B DRIVE(Blue drive)	<ol style="list-style-type: none"> (1) Receive a 525i component ramp pattern. (2) Set "VIDEO STATUS" to "STANDARD". (3) Set "ASPECT" to "FULL". (4) Set "COLOR TEMPERATURE" to "LOW". (5) Select "1.ADJUST" from the SERVICE MODE. (6) Set < S030 > (R DRIVE), < S031> (G DRIVE) and < S032 > (B DRIVE) to "128". (7) Set < S001 > (adjustment setting mode change) to set "008" and it change to the 525i A-D offset adjustment setting mode. (8) Adjust < S008 > (525i Cb offset) and < S009 > (525i Cr offset) to lose the gap (red line, green line and blue line) which appears at both ends of a white part at the center of the screen. (9) Set < S001 > to set "000" and it change to the normal mode. (10) Press the [MUTING] key to memoirize the set value.
 <p>Disappears the color at both ends.</p>				
1125i BRIGHTNESS	Remote control unit Signal generator		[1.ADJUST] S001: PREPARE (Adjustment setting mode change) S012: HD BL(1125i brightness) S030: R DRIVE(Red drive) S031: G DRIVE(Green drive) S032: B DRIVE(Blue drive)	<ol style="list-style-type: none"> (1) Receive a 1125i gray scale pattern. (2) Set "VIDEO STATUS" to "STANDARD". (3) Set "ASPECT" to "FULL". (4) Set "COLOR TEMPERATURE" to "LOW". (5) Select "1.ADJUST" from the SERVICE MODE. (6) Set < S030 > (R DRIVE), < S031> (G DRIVE) and < S032 > (B DRIVE) to "128". (7) Set < S001 > (adjustment setting mode change) to set the values "012" and it change to the 1125i black level adjustment setting mode. (8) Adjust < S012 > (1125i brightness) to set the 0% black part in the upper half of the screen to be brightest. (9) Set < S001 > to set "000" and it change to the normal mode. (10) Press the [MUTING] key to memoirize the set value.
 <p>Set the 0% black part to be brightest.</p>				

Item	Measuring instrument	Test point	Adjustment part	Description
1125i A-D OFFSET Remote control unit Signal generator Minimize the red and blue noises in the upper half of the screen. 			[1.ADJUST] S001: PREPARE (Adjustment setting mode change) S013: HD CB OF(1125i Cb offset) S014: HD CR OF(1125i Cr offset) S030: R DRIVE(Red drive) S031: G DRIVE(Green drive) S032: B DRIVE(Blue drive)	(1) Receive a 1125i 30% all white pattern. (2) Set "VIDEO STATUS" to "STANDARD" . (3) Set "ASPECT" to "FULL" . (4) Set "COLOR TEMPERATURE" to "LOW" . (5) Select "1.ADJUST" from the SERVICE MODE. (6) Set < S030 > (R DRIVE), < S031 > (G DRIVE) and < S032 > (B DRIVE) to "128" . (7) Set < S001 > (adjustment setting mode change) to set "013" and it change to the 1125i A-D offset adjustment setting mode. (8) Adjust < S013 > (1125i Cb offset) to minimize the blue noise in the upper half of the screen. (9) Adjust < S014 > (1125i Cr offset) to minimize the red noise in the upper half of the screen. (10) Set < S001 > to set "000" and it change to the normal mode. (11) Press the [MUTING] key to memoirize the set value.
SUB SCREEN A-D OFFSET Remote control unit Signal generator Set the 0% block part to be brightest. 			[1.ADJUST] S001: PREPARE (Adjustment setting mode change) S016: RT CB OF (Sub screen Cb offset) S017: RT CR OF (Sub screen Cr offset) S030: R DRIVE(Red drive) S031: G DRIVE(Green drive) S032: B DRIVE(Blue drive)	(1) Set "VIDEO STATUS" to "STANDARD" . (2) Set "ASPECT" to "FULL" . (3) Set "COLOR TEMPERATURE" to "LOW" . (4) Set "MULTI SCREEN" to "TWIN" . (5) Receive a NTSC 30% all white pattern on the right screen. At the same time, set the left screen in INPUT-1 mode (No signal). (6) Select "1.ADJUST" from the SERVICE MODE. (7) Set < S030 > (R DRIVE), < S031 > (G DRIVE) and < S032 > (B DRIVE) to "128" . (8) Set < S001 > (adjustment setting mode change) to set "016" and it change to the sub screen A-D offset adjustment setting mode. (9) Adjust < S016 > (Sub screen Cb offset) to minimize the blue noise in the upper half of the right screen. If you select an adjustment item < S016 >, then the screen automatically turn to twin pictures mode. (10) Adjust < S017 > (Sub screen Cr offset) to minimize the red noise in the upper half of the right screen. (11) Readjust < S016 > and < S017 > to set the upper half of the screen to be the blackest. (12) Set < S001 > to set "000" and it change to the normal mode. (13) Press the [MUTING] key to memoirize the set value.

Item	Measuring instrument	Test point	Adjustment part	Description
WHITE BALANCE (HIGHLIGHT)	Remote control unit Signal generator		[1.ADJUST] S030: R DRIVE (Red drive) S031: G DRIVE (Green drive) S032: B DRIVE (Blue drive)	<p>(1) Receive a NTSC 75% all white pattern. (2) Set "VIDEO STATUS" to "STANDARD". (3) Set "ASPECT" to "FULL". (4) Select "COLOR TEMPERATURE" to "LOW". (5) Select "1.ADJUST" from the SERVICE MODE. (6) Adjust to keep one of < S030 > (Red drive), < S031 > (Green drive) or < S032 > (Blue drive) unchanged, then lower the other two so that the all-white screen is equally white throughout.</p> <p>NOTE: Set one or more of < S030 >, < S031 >, and < S032 > to "128". (7) Check that white balance is properly tracked from low light to high light. If the white balance tracking is deviated, adjust to correct it. (8) Press the [MUTING] key to memoirize the set value.</p>

4.7.4 MTS CIRCUIT

Item	Measuring instrument	Test point	Adjustment part	Description
MTS INPUT LEVEL	Remote control unit		[1.ADJUST] T001: IN LEVEL	<p>(1) Receive the any broadcast. (2) Select "1.ADJUST" from the SERVICE MODE. (3) Verify that the < T001 > (IN LEVEL) is set at its initial setting value. (4) Press the [MUTING] key to memorize the set value.</p>
MTS SEPARATION	TV audio multiplex signal generator Oscilloscope Remote control unit	L OUT R OUT	[1.ADJUST] T002: LOW SEP T003: HI SEP	<p>(1) Input the stereo L signal (300Hz) from the TV audio multiplex signal generator to the antenna terminal. (2) Connect an oscilloscope to L OUT pin of the AUDIO OUT, and display one cycle portion of the 300Hz signal. (3) Change the connection of the oscilloscope to R OUT pin of the AUDIO OUT, and enlarge the voltage axis. (4) Select "1.ADJUST" from the SERVICE MODE. (5) Set the initial setting value of the < T002 > (LOW SEP). (6) Adjust the < T002 > so that the stroke element of the 300Hz signal will become minimum. (7) Change the signal to 3kHz, and similarly adjust the < T003 > (HI SEP). (8) Press the [MUTING] key to memorize the set value.</p>



SECTION 5 TROUBLESHOOTING

5.1 SELF CHECK FEATURE

5.1.1 OUTLINE

This unit comes with the "Self check" feature, which checks the operational state of the circuit and displays/saves it during failure. Diagnosis is performed when power is turned on, and information input to the main microcomputer is monitored at all time. Diagnosis is displayed in 2 ways via screen display and LED flashes. Failure detection is based on input state of I²C bus and the various control lines connected to the main microcomputer.

5.1.2 HOW TO ENTER THE SELF CHECK MODE

Before entering the Self check Display mode, confirm that the setting of **TV/CATV** SW of the REMOTE CONTROL UNIT is at the **"TV"** side and the setting of **VCR/DVD** SW is at the **"VCR"** side. If the switches have not been properly set, you cannot enter the Self check Display mode.

- (1) Set to **"0 minutes"** using the **[SLEEP TIMER]** key.
 - (2) Press the **[VIDEO STATUS]** key and **[DISPLAY]** key simultaneously, then enter the service mode.
 - (3) Press the **[2]** key (SELF CHECK) before the service mode screen disappears.
 - (4) Press the **[SLEEP TIMER]** key to enter Page 2 of the SELF CHECK MODE.
- When the **[RETURN+]** key pressed, the first page change screen.

NOTE:

When a number key other than the **[2]** key is pressed in the SERVICE MENU SCREEN, the other relevant screen may be displayed.

This is not used in the SELF CHECK. Press the **[MENU]** key to return to the SERVICE MENU SCREEN.

5.1.3 HOW TO EXIT THE SELF CHECK MODE

TO SAVE FAILURE HISTORY:

Turn off the power by unplugging the AC power cord plug when in the Self check display mode.

TO CLEAR (RESET) FAILURE HISTORY:

Turn off the power by pressing the **[POWER]** key on the remote control unit when in the Self check display mode.

5.1.4 FAILURE HISTORY

Failure history can be counted up to 9 times for each item. When the number exceeds 9, display will remain as 9. Failure history will be stored in the memory unless it has been deleted.

NOTE:

Only SYNC (with/without sync signals) will be neither counted nor stored.

5.1.5 POINTS TO NOTE WHEN USING THE SELF CHECK FEATURE

In addition to circuit failures (abnormal operation), the following cases may also be ignored as "Abnormal" and displayed and counted as "NG".

- (1) Temporary defective transmissions across circuits due to pulse interruptions
- (2) Misalignment in the on/off timing of power for I²C bus (VCC) when turning on/off the main power.

Diagnosis may be impeded if a large number of items are displayed as "NG". As such, start Self check check only after 3 seconds in the case of receivers and 5 seconds in the case of panels upon turning on the power. If recurrences are expected, ensure to clear (reset) the failure history and record the new diagnosis results.

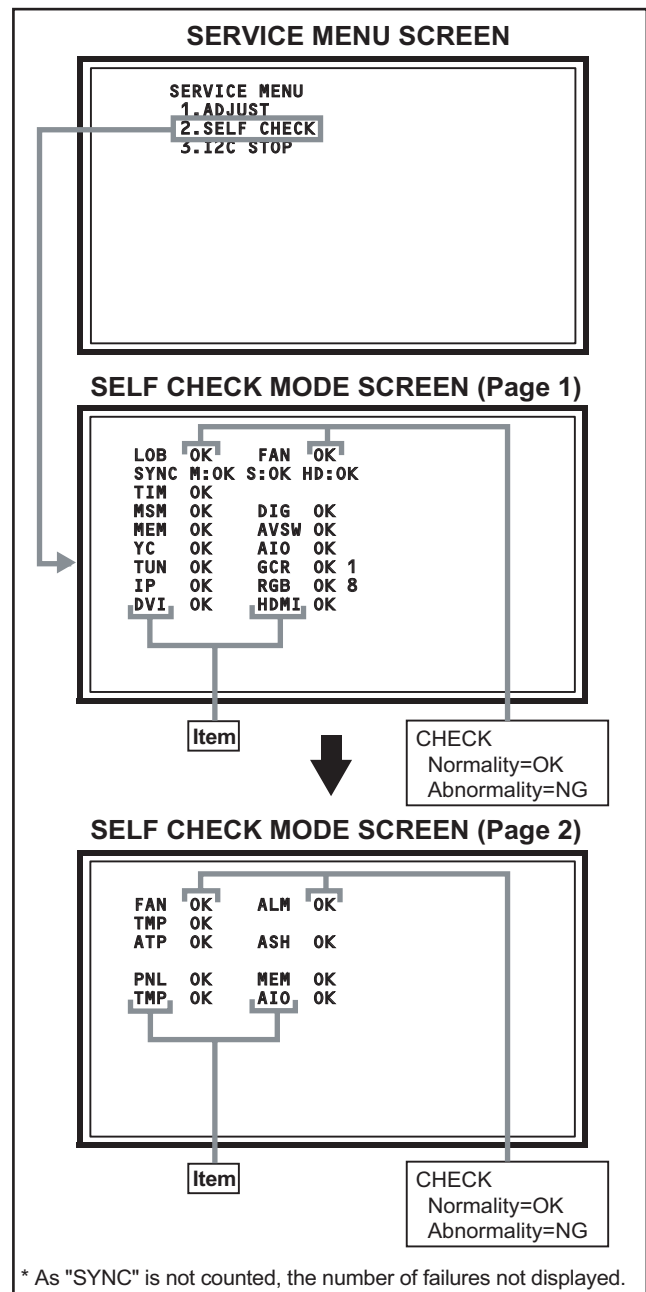


Fig.1

5.1.6 DETAILS

Self check is performed for the following items:

< Page 1 of screen >

Detection item	Display	Detection content	Diagnosis signal (line)	Detection timing
Low bias line short protection	LOB	Confirm the operation of the low bias (5V / 9V) protection circuit. Q2801 , Q2802 [REGULATOR PWB]	LB_PRO	Detection starts 3 seconds after the power is turned on. If error continues between 400ms the power is turned off.
Fan lock	FAN	Confirm the operation of the cooling fan. IC8005 [FAN CONTROL PWB]	FAN_LOCK	Detection starts 3 seconds after the power is turned on. If error continues between 250ms the power is turned off.
Presence of sync signal	SYNC	Confirmation of presence of video sync signal. M : Main sync signal S : Sub sync signal HD : Component sync signal IC201 [ANALOG SIGNAL PWB]	SDA	Confirmation of presence of sync signal in video signal.
AC power input	TIM	Not used.	---	---
Main CPU communication	MSM	Confirmation of ACK (response) signal which uses sync communications with Chassis CPU. IC7601 [DIGITAL SIGNAL PWB]	WAKE	If it checks whenever sync communication with SHM performed and no reply of ACK signal an error will be counted.
Digital tuner	DIG	Not used.	---	---
Main memory	MEM	Confirmation of reply of ACK signal which uses I ² C communication. IC7602 [DIGITAL SIGNAL PWB]	SDA	If it checks whenever I ² C communication is performed and no reply of ACK signal an error will be counted.
AV select switch	AVSW	Same as above. IC301 , IC501 [ANALOG SIGNAL PWB]	SDA	Same as above.
3 dimensions YC separator	YC	Same as above. IC1001 [DIGITAL SIGNAL PWB]	SDA	Same as above.
Multi sound process	AIO	Same as above. IC1140 [RECEIVER PWB]	SDA	Same as above.
RF tuner	TUN	Same as above. TU1101 [RECEIVER PWB]	SDA	Same as above.
Ghost reduction	GCR	Not used.	---	---
DIST process	IP	Confirmation of reply of ACK signal which uses I ² C communication. IC3001 [DIGITAL SIGNAL PWB]	SDA	If it checks whenever I ² C communication is performed and no reply of ACK signal an error will be counted.
RGB process	RGB	Same as above. IC4001 [DIGITAL SIGNAL PWB]	SDA	Same as above.
DVI (Digital communication)	DVI	Not used.	---	---
Digital input	HDMI	Confirmation of reply of ACK signal which uses I ² C communication.	SDA	If it checks whenever I ² C communication is performed and no reply of ACK signal an error will be counted.

Detection item	Display	Detection content	Diagnosis signal (line)	Detection timing
Fan lock	FAN	Not used.	---	---
Abnormal of operation of PANEL	ALM	Not used.	---	---
Abnormal rise of temperature in PANEL	TMP	Not used.	---	---
Abnormal rise of temperature in AUDIO PWB	ATP	Not used.	---	---
Short circuit detection of AUDIO PWB	ASH	Not used.	---	---
Panel communication	PNL	Not used.	---	---
Sub memory	MEM	Not used.	---	---
Temp. sensor	TMP	Not used.	---	---
Audio control	AIO	Not used.	---	---

5.1.7 DISPLAY METHOD WHEN RASTER IS NOT AVAILABLE

In a state where a display screen does not appear due to the failure of this unit, the POWER LED (blue) and LAMP LED (orange) can light up and display a trouble mode.

The factors in case the power is forcibly shut down at the time of failure are memorized and those are displayed.

Check item	Contents	Classifications	LED flash cycle	
			POWER LED	LAMP LED
Lamp does not light up	Detection of lamp return (LAMP_RTN) signals output depending on the status of the lamp supply electric current monitored constantly within the lamp ballast unit. (H = Off) CN311 [MAIN DRIVE PWB]	3	0.1 sec interval Simultaneously	
Lamp goes out	Detection of lamp return (LAMP_RTN) signals output depending on the status of the lamp supply electric current monitored constantly within the lamp ballast unit. (H = Off) CN311 [MAIN DRIVE PWB]	3	0.1 sec interval Simultaneously	
Lamp cover open	Detection of the interlock switch status for the lamp cover. (H = Abnormal) S0201 [LAMP COVER SW PWB]	3	0.1 sec interval Simultaneously	
Abnormal DD CPU circuit	Detection of serial communication error between MAIN DRIVE PWB and RECEIVER PWB. IC3701 [MAIN DRIVE PWB]	2	-----	0.5 sec interval
Fan lock (stop)	Detection of LOCK signals outputting the operation (circuit) status of the cooling fan. (H=Abnormal) IC8005 [FAN CONTROL PWB]	1	0.5 sec interval Alternately	
Abnormal D-ILA DEVICE temperature	Detection of abnormal inner cabinet temperature. (53°C) IC2001 [TEMP. SENSOR PWB]	1	0.5 sec interval Alternately	

EXPLANATION ON ACTION

If NG is detected on an item being diagnosed, turn off the power on this unit. As soon as the power goes off, turn on and off POWER LED and LAMP LED immediately. After the power is shut down, it becomes impossible to turn on the power until the power cable is either plugged in or unplugged from the AC outlet.

- When [1] and [3] take place at the same time, give priority to [1], and [2] will not take place simultaneously with [1] and [3].



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