HITACHI

PA No. 0178

50V500/LC37
60V500A/LC37F

NTSC

LC37 Chassis
LC37F Chassis

R/C: CLU-5729TSI

TO GO TO A CHAPTER, CLICK ON ITS HEADING BELOW

CAUTION: Before servicing this chassis, it is important that the service technician read the "Product Safety Notices" in this service manual.

SAFETY NOTICE

USE ISOLATION TRANSFORMER WHEN SERVICING

Components having special safety characteristics are identified by a ⚠ on the parts list in this Service Data and its supplements and bulletins. Before servicing the chassis, it is important that the service technician read and follow the "Safety Precautions" and "Product Safety Notices" in this Service Manual.

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

LCD REAR PROJECTION TELEVISION

JUNE 2003 **HHEA-MANUFACTURING DIVISION**

SAFETY PRECAUTIONS

NOTICE: Comply with all cautions and safety-related notes located on or inside the cabinet and on the chassis or optic unit.

WARNING: Since the chassis of this receiver is connected to one side of the AC power supply during operation, whenever the receiver is plugged in service should not be attempted by anyone unfamiliar with the precautions necessary when working on this type of receiver.

The following precautions should be observed:

1. Do not install, remove, or handle the optic unit in any manner unless shatterproof goggles are worn. People not so equipped should be kept away from the optic unit while handling.

2. When service is required, an isolation transformer should be inserted between power line and the receiver before any service is performed on a “HOT” chassis receiver.

3. When replacing a chassis in the receiver, all the protective devices must be put back in place, such as barriers, nonmetallic knobs, adjustment and compartment cover-shields, isolation resistors, capacitors, etc.

4. When service is required, observe the original lead dress.

5. Always use the manufacturer’s replacement components. Critical components as indicated on the circuit diagram should not be replaced by another manufacturer’s. Furthermore, where a short circuit has occurred, replace those components that indicate evidence of overheating.

6. Before returning a serviced receiver to the customer, the service technician must thoroughly test the unit to be certain that it is completely safe to operate without danger of electrical shock, and be sure that no protective device built into the receiver by the manufacturer has become defective, or inadvertently defeated during servicing.

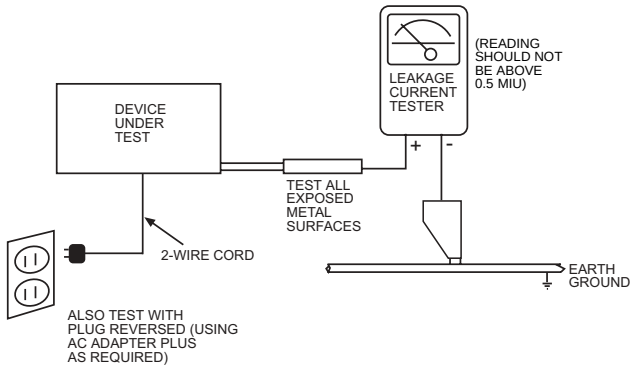
Therefore, the following checks should be performed for the continued protection of the customer and service technician.

Leakage Current Cold Check

With the AC plug removed from the 120V AC 60Hz source, place a jumper across the two plug prongs. Using an insulation tester (DC500V), connect one lead to the jumpered AC plug and touch the other lead to each exposed metal part (antennas, screwheads, metal overlays, control shafts, etc.), particularly any exposed metal part having a return path to the chassis should have a minimum resistor reading of 2.4MΩ and a maximum resistor reading of 5.2MΩ. Any resistance value below or above this range indicates an abnormality which requires corrective action. An exposed metal part having a return path to the chassis will indicate an open circuit.

Leakage Current Hot Check

Plug the AC line cord directly into a 120V AC 60Hz outlet (do not use an isolated transformer for this check). Turn the AC power ON. Using a Leakage Current Tester (Simpson’s Model 228 or equivalent), measure for current from all exposed metal parts of the cabinet (antennas, screwheads, overlays, control shafts, etc.) particularly any exposed metal part having a return path to the chassis or to a known earth ground (water pipe, conduit, etc.). Any current measured must not exceed 0.5 MIU.



AC LEAKAGE TEST

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE RECEIVER TO THE CUSTOMER.

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in HITACHI television receivers have special safety-related characteristics. These 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 this Service Manual.

Electrical components having such features are identified with an ⚠ mark in the schematics and parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the HITACHI-recommended replacement component, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Production safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current HITACHI Service Manual. A subscription to, or additional copies of HITACHI Service Manuals may be obtained at a nominal charge from HITACHI Sales Corporation.

Ultraviolet Radiation

OPTIC UNIT: The primary source of Ultraviolet Radiation in this receiver is the optic unit. The optic unit utilized in this chassis is specially constructed to limit Ultraviolet Radiation emissions. For continued Ultraviolet Radiation protection, the replacement optic unit must be the same type as the original HITACHI-approved type.

Service Personnel - WARNING
Eye damage may result from directly viewing the light produced by the lamp used in this product. Always turn off lamp before opening optic unit. Ultraviolet radiation eye protection required during servicing.

When troubleshooting and making test measurements in a receiver with an excessive high voltage problem, avoid being unnecessarily close to the optic unit and the high voltage component.

Do not operate the chassis longer than is necessary to locate the cause of excessive voltage.

This Service Manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual. Improperly performed repairs can adversely affect the safety and reliability of the product and may void warranty. Consumers should not risk trying to do the necessary repairs and should refer to a qualified service technician.

WARNING
Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health and Safety Code, Section 25249.5).

When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with solder. Also, when soldering do not inhale any smoke or fumes produced.

SAFETY NOTICE
USE ISOLATION TRANSFORMER
WHEN SERVICING

Components having special safety characteristics identified by ⚠ on the parts list in this service manual and its supplements and bulletins. Before servicing this product, it is important that the service technician read and follow the “Safety Precautions” and the “Product Safety Notices” in this Service Manual.

For continued ultraviolet protection, replace optic unit with original type or HITACHI equivalent type.

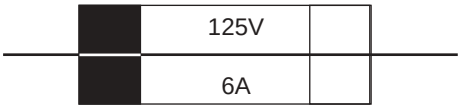
POWER SOURCE

This television receiver is designed to operate on 120 Volts/60Hz, AC house current. Insert the power cord into a 120 Volts/60Hz outlet.

NEVER CONNECT THE TV TO OTHER THAN THE SPECIFIED VOLTAGE OR TO DIRECT CURRENT.

CAUTION!
The following symbol near the fuse indicates fast operating fuse (to be replaced). Fuse ratings appear within the symbol.

Example:



F901

The rating of fuse F901 is 6.0A-125V.
Replace with the same type of fuse for continued protection against fire.

NOTE: The lamp in this product contains Mercury. Dispose of properly in accordance with applicable environmental laws. For Recycling and Disposal information, contact your respective governmental agencies or the Electronic Industries Alliance at www.eiae.org (in the U.S.) or Electronic Product Stewardship Canada at www.epsc.ca (in Canada).

SERVICING PRECAUTIONS

CAUTION: Before servicing instruments covered by this service data and its supplements and addenda, read and follow the SAFETY PRECAUTIONS on page 2 of this publication.
NOTE: If unforseen circumstances create conflict between the following SERVICING PRECAUTIONS and any of the SAFETY PRECAUTIONS on page 2 of this publication, always follow the SAFETY PRECAUTIONS.
Remember: Safety First.

General Servicing Guidelines

1. Always unplug the instrument AC power cord from the AC power source before:
   a. Removing or reinstalling any component, circuit board, module, or any other instrument assembly.

   b. Disconnecting or reconnecting any instrument electrical plug or other electrical connection.

   c. Connecting a test substitute in parallel with an electrolytic capacitor in the instrument.
      CAUTION: A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.

2. Do not spray chemicals on or near this instrument or any of its assemblies.

3. Unless specified otherwise in these service data, clean electrical contacts by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable nonabrasive applicator: 10% (by volume) Acetone and 90% (by volume) ispropyle alchohol (90%-99% strength).
   CAUTION: This is a flammable mixture. Unless specified otherwise in these service data, lubrication of contacts is not required.

4. Do not defeat any plug/socket B+ voltage interlocks with which instruments covered by this service data might be equipped.

5. Do not apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heat-sinks are correctly installed.

6. Always connect the test instrument ground lead to the appropriate instrument chassis ground before connecting the test instrument positive lead. Always remove the test instrument ground lead last.

7. Use with this instrument only the test fixtures specified in this service data.
   CAUTION: Do not connect the test fixture ground strap to any heatsink in this instrument.

Electrostatically Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor “chip” components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.

2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge build-up or exposure of the assembly.

3. Use only a grounded-tip soldering iron to solder or desolder ES devices.

4. Use only an anti-static type solder removal device. Some solder removal devices not classified as “anti-static” can generate electrical charges sufficient to damage ES device.

5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.

6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material.)

7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
   CAUTION: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

General Soldering Guidelines

1. Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape that will maintain tip temperature within the range 500°F to 600°F.

2. Use an appropriate gauge of resin-core solder composed of 60 parts tin/40 parts lead.

3. Keep the soldering iron tip clean and well-tinned.

4. Thoroughly clean the surfaces to be soldered. Use a small wire-bristle (0.5 inch or 1.25 cm) brush with a metal handle. Do not use freon-propelled spray-on cleaners.

5. Use the following desoldering technique.
   a. Allow the soldering iron tip to reach normal temperature (500°F to 600°F).

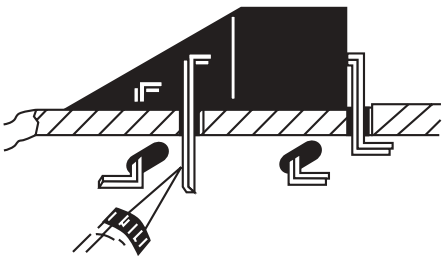
   b. Heat the component lead until the solder melts. Quickly draw away the melted solder with an anti-static, suction-type solder removal device or with solder braid.
   CAUTION: Work quickly to avoid overheating the circuit board printed foil.

6. Use the following soldering technique.
   a. Allow the sodering iron tip to reach normal temperature (500°F to 600°F).

   b. First, hold the soldering iron tip and solder strand against the component lead until the solder melts.

   c. Quickly move the soldering iron tip to the junction of the component lead and the printed circuit foil, and hold it there only until the solder flows onto and around both the component lead and the foil.
   CAUTION: Work quickly to avoid overheating the circuit board printed foil or components.

   d. Closely inspect the solder area and remove any excess or splashed solder with a small wire-bristle brush.



Use Soldering Iron to Pry Leads

IC Removal/Replacement

Some Hitachi unitized chassis circuit boards have slotted holes (oblong) through which the IC leads are inserted and then bent flat against the circuit foil. When holes are the slotted type, the following technique should be used to remove and replace the IC. When working with boards using the familiar round hole, use the standard technique as outlined in paragraphs 5 and 6 above.

Removal

1. Desolder and straighten each IC lead in one operation by gently prying up on the lead with the soldering iron tip as the solder melts.

2. Draw away the melted solder with an anti-static suction-type sol der removal device (or with solder braid) before removing the IC.

Replacement

1. Carefully insert the replacement IC in the circuit board.

2. Carefully bend each IC lead against the circuit foil pad and solder it.

3. Clean the soldered areas with a small wire-bristle brush. (It is not necessary to reapply acrylic coating to areas.)

“Small-signal” Discrete Transistor Removal/Replacement

1. Remove the defective transistor by clipping its leads as close as possible to the component body.

2. Bend into a “U” shape the end of each of three leads remaining on the circuit board.

3. Bend into a “U” shape the replacement transistor leads.

4. Connect to replacement transistor leads to the corresponding leads extending from the circuit board and crimp the “U” with long nose pliers to insure metal to metal contact, then solder each connection.

Power Output Transistor Devices Removal/Replacement

1. Heat and remove all solder from around the transistor leads.

2. Remove the heatsink mounting screw (if so equipped).

3. Carefully remove the transistor from the circuit board.

4. Insert new transistor in circuit board.

5. Solder each transistor lead, and clip off excess lead.

6. Replace heatsink.

Diode Removal/Replacement

1. Remove defective diode by clipping its leads as close as possilbe to diode body.

2. Bend the two remaining leads perpendicularly to the circuit board.

3. Observing diode polarity, wrap each lead of the new diode around the corresponding lead on the circuit board.

4. Securely crimp each connection and solder it.

5. Inspect (on the circuit board copper side) the solder joints of the two “original leads”. If they are not shiny, reheat them and, if necessary, apply additional solder.

Fuses and conventional Resistor Removal/Replacement

1. Clip each fuse or resistor lead at top of circuit board hollow stake.

2. Securely crimp leads of replacement component around stake 1/8 inch from top.

3. Solder the connections.
   CAUTION: Maintain original spacing between the replaced component and adjacent components and the circuit board, to prevent excessive component temperatures.

Circuit Board Foil Repair

Excessive heat applied to the copper foil of any printed circuit board will weaken the adhesive that bonds the foil to the circuit board, causing the foil to separate from, or "lift-off" the board. The following guidelines and procedures should be followed whenever this condition is encountered.

In Critical Copper Pattern Areas

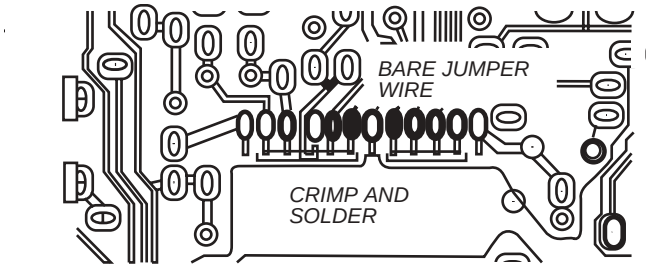
High component/copper pattern density and/or special voltage/current characteristics make the spacing and integrity of copper pattern in some circuit board areas more critical than in others. The circuit foil in these area is designated as Critical Copper Pattern. Because Critical Copper Pattern requires special soldering techniques to ensure the maintenance of reliability and safety standards, contact your Hitachi personnel.

At IC Connections

To repair defective copper pattern at IC connections, use the following procedure to install a jumper wire on the copper pattern side of the circuit board. (Use this technique only on IC connections.)

1. Carefully remove the damaged copper pattern with a sharp knife. (Remove only as much copper as absolutely necessary.)

2. Carefully scratch away the solder resist and acrylic coating (if used) from the end of the remaining copper pattern.



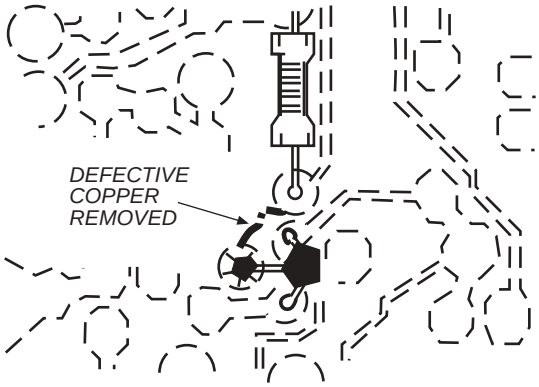
Install Jumper Wire and Solder

3. Bend a small "U" in one end of a small-gauge jumper wire and carefully crimp it around the IC pin. Solder the IC connection.

4. Route the jumper wire along the path of the cut-away copper pattern and let it overlap the previously scraped end of the good copper pattern. Solder the overlapped area, and clip off any excess jumper wire.

At Other Connections

Use the following technique to repair defective copper pattern at connections other than IC Pins. This technique involves the installation of a jumper wire on the component side of the circuit board.



Insulated Jumper Wire

1. Remove the defective copper pattern with a sharp knife. Remove at least 1/4 inch of copper, to ensure hazardous condition will not exist if the jumper wire opens.

2. Trace along the copper pattern from both wire sides of the pattern break and locate the nearest component directly connected to the affected copper pattern.

3. Connect insulated 20-gauge jumper wire from the nearest component on one side of the pattern break to the lead of the nearest component on the other side. Carefully crimp and solder the connections.
   CAUTION: Be sure the insulated jumper wire is dressed so that it does not touch components or sharp edges.

Frequency Synthesis (FS) Tuning Systems

1. Always unplug the instrument AC power cord before disconnecting or reconnecting FS tuning system cables and before removing or inserting FS tuning system modules.

2. The FS tuner must never be disconnected from the FS tuning control module while the power is applied to the instrument.

3. When troubleshooting intermittent problems that might be caused by defective cable connection(s) to the FS tuning system, remove the instrument AC power as soon as the defective connector is found and finish confirming the bad connection with a continuity test. This procedure will reduce the probability of electrical overstress of the FS system semi-conductor components.

NOTE: ***These components are affixed with glue. Be careful not to break or damage any foil under the component or at the pins of the ICs when removing. Usually applying heat to the component for a short time while twisting with tweezers will break the component loose.***

Leadless Chip Components (surface mount)

Chip components must be replaced with identical chips due to critical foil track spacing. There are no holes in the board to mount standard transistors or diodes. Some chip capacitor or resistor board solder pads may have holes through the board, however the hole diameter limits standard resistor replacement to 1/8 watt. Standard capacitors may also be limited for the same reason. It is recommended that identical chip components be used. .

Chip resistors have a three digit numerical resistance code -1st and 2nd significant digits and a multiplier. Example: 162 = 1600 or 1.6KΩ resistor, 0 = 0Ω (jumper).

Chip capacitors generally do not have the value indicated on the capacitor. The color of the component indicates the general range of the capacitance.

Chip transistors are identified by a two letter code. The first letter indicates the type and the second letter, the grade of transistor.

Chip diodes have a two letter identification code as per the code chart and are a dual diode pack with either common anode or common cathode. Check the parts list for correct diode number.

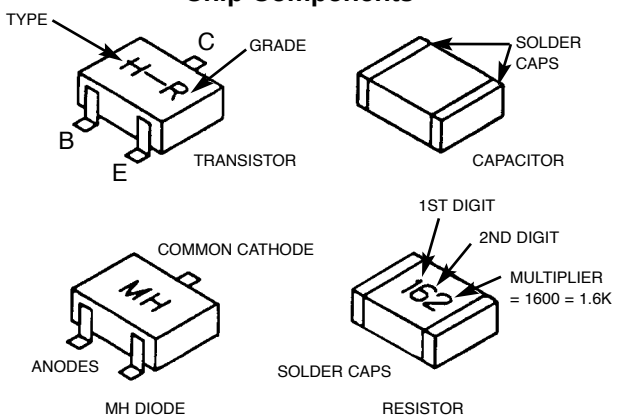
Component Removal

1. Use solder wick to remove solder from component end caps or terminals.
2. Without pulling up, carefully twist the component with tweezers to break the adhesive.
3. Do not reuse removed leadless or chip components since they are subject to stress fracture during removal.

Chip Component Installation

1. Put a small amount of solder on the board soldering pads.
2. Hold the chip component against the soldering pads with tweezers or with a miniature alligator clip and apply heat to the pad area with a 30 watt iron until solder flows. Do not apply heat for more than 3 seconds

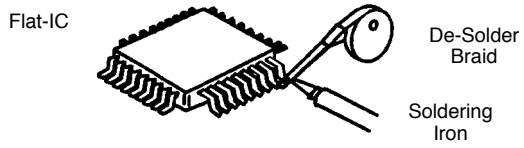
Chip Components



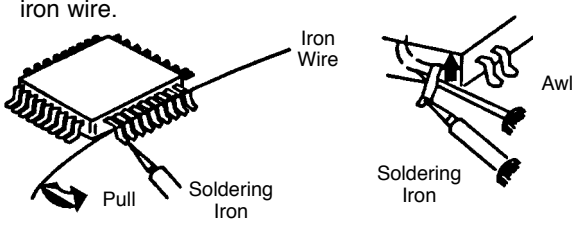
How to Replace Flat-IC —Required Tools—

- Soldering iron
- iron wire or small awl
- De-solder braids
- Magnifier

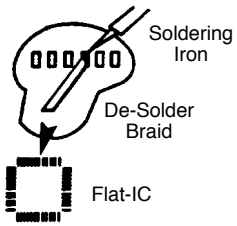
1. Remove the solder from all of the pins of a Flat-IC by using a de-solder braid.



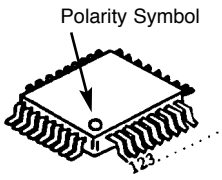
2. Put the iron wire under the pins of the Flat-IC and pull it in the direction indicated while heating the pins using a soldering iron. A small awl can be used instead of the iron wire.



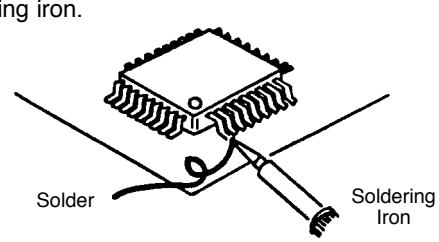
3. Remove the solder from all of the pads of the Flat-IC by using a de-solder braid.



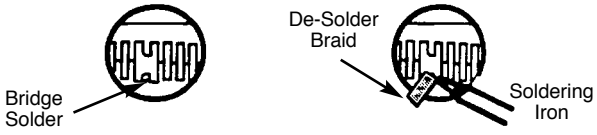
4. Position the new Flat-IC in place (apply the pins of the Flat-IC to the soldering pads where the pins need to be soldered). Properly determine the positions of the soldering pads and pins by correctly aligning the polarity symbol.



5. Solder all pins to the soldering pads using a fine tipped soldering iron.



6. Check with a magnifier for solder bridge between the pins or for dry joint between pins and soldering pads. To remove a solder bridge, use a de-solder braid as shown in the figure below.



USEFUL INFO

AGENCY REGULATORY INFORMATION

Modifications

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Hitachi Home Electronics (America), Inc. may void the user's warranty.

Cables

Any cables that are supplied with the system must be replaced with identical cables in order to assure compliance with FCC rules. Order Hitachi spares as replacement cables.

Declaration of Conformity

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

Cable Compatible Television Apparatus- Tèlèvision câblocompatible, Canada.

Notes on Closed Caption:
This television receiver will display television closed captioning, (CC or), in accordance with paragraph 15.119 of the FCC rules.

For questions regarding this declaration, contact:
Hitachi America, LTD.
Home Electronics Division
900 Hitachi Way
Chula Vista, CA 91914
Tel. 1-800-448-2244 (1-800-HITACHI)
ATTN: CUSTOMER RELATIONS

TO GO TO AN ADJUSTMENT, CLICK ON ITS HEADING BELOW

TABLE OF CONTENTS

I. SPECIFICATION

1.0 Features:

- Superfine Picture Quality
  1280 Line Horizontal Resolution
- Remote (Controls many VCR brands, cable boxes, satellite boxes, and other audio equipment.)
- New Easy-to-Use (3-Language) On-Screen Menu
- New AV Network Infra-Red (IR) System
  Control up to 4 components with one remote. (2 IR Mouse cables included.)
- Full Set of Input Jacks, including S-VIDEO
- COMPONENT VIDEO: Y-P_B/P_R
- Six Aspect Modes
- Closed Caption Decoder
- 2-Tuner Picture in Picture
- Dual Antenna Inputs
- Video Input Sensor
- 3 Dimensional Y/C Comb Filter
- Full 1080i HDTV capable.
- DVI with HDCP (High bandwidth Digital Content Protection V1.0 compatible).
- Photo MC (View digital still pictures from a memory card)
- BBE Technology.
- SRS Technology.

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Inputs:

- Power Input . . . . . .AC 120V, 60Hz
- Stand-by Power 0.6W
- Power Consumption
  -Pmax 172W
  -Pave 158W
- Antenna input impedance . . . . . .75 Ohm
- Channel coverage . . . . . .181ch.
  VHF-Band . . . . . .2 ~ 13
  UHF-Band . . . . . .14 ~ 69
  CATV Mid Band . . . . . .A-5 ~ A-1
  . . . . . .A-I
  Super Band . . . . . .J-W
  Hyper Band . . . . . .W+1 - W+28
  Ultra Band . . . . . .W+29 - W+84
- Video . . . . . .1.0Vp-p, 75 Ohm
- S-Video
  Luminance (Y) . . . . . .1.0Vp-p, 75 Ohm
  Chrominance (C) . . . . . .0.286Vp-p, 75 Ohm
- Component Video
  Luminance (Y) . . . . . .1.0Vp-p, 75 Ohm
  Chrominance (P_B/P_R) . . . . . .0.7Vp-p, 75 Ohm
- Audio input Impedance . . . . . .47k Ohm
- Average input level 470mVrms
- DVI - HDTV . . . . . .DVI 25pin

Outputs:

- Video . . . . . .1.0Vp-p. 75 Ohm
- Audio (Fixed) . . . . . .470mVrms, 1k Ohm
- S-Video
  Luminance (Y) . . . . . .1.0Vp-p, 75 Ohm
  Chrominance (C) . . . . . .0.286Vp-p, 75 Ohm

Dimensions:

	50V500	60V500A
• Height (in.)	35 1/2	40 1/4
(mm)	901	1,025
• Width (in.)	54 5/8	63 3/8
(mm)	1,387	1,609
• Depth (in.)	16 3/8	20 1/2
(mm)	415	520
• Weight (lbs.)	119	139
(kg)	54.2	63

NOTE: Due to improvements, specifications in this service manual are subject to change without notice.

BACK TO ADJUSTMENTS

I. SPECIFICATION

2.0 MAIN PARTS AND A/V TERMINALS.

2.1 MAIN PARTS

(1) LCD panel

LC3x occupy 3 LCD panels (for Red, Green and Blue color).

No.	Item	Description
1	Product name	Blue: LCX043ANB-6 / LCX043APB-6 Red: LCX043ANB-7 / LCX043APB-7 Green: LCX043ANB-8 / LCX043APB-8
2	System type	TFT Active matrix
3	Pixels	1386 (H) x 788 (V)
4	Panel size	0.87"
5	Dot pitch	14 µm
6	Life	More than 15,000h (@Ta ≤25°C, worst UV filter combination)

(2) Lamp

No.	Item	Description
1	Input electricity	100W
2	Type	UHP lamp
3	Arc length	1mm

2.2 AV TERMINALS

No.	MODEL NAME	REAR								FRONT		
		A/V In	S-video In	YP_BP_R In	DVI In	TV as Center	Monitor Out	S-video Out	Audio to Hi-Fi	A/V In	S-video In	Memory Card In
1	50V500	3	2	2	1	1	1	1	1	1	1	1
2	60V500	3	2	2	1	1	1	1	1	1	1	1
3												
4												
5												
6												
7												
8												
9												
10												

BACK TO ADJUSTMENTS

I. SPECIFICATION

3. White Balance

HIGH: 14,700K+23MPCD (X=0.260±0.01, Y=0.280±0.01)
MEDIUM: 7500K+0MPCD (X=0.301±0.02, Y=0.311±0.02)
STANDARD: 6500K+0MPCD (X=0.313±0.02, Y=0.329±0.02)
Black/White: 5400K+0MPCD (X=0.334±0.02, Y=0.343±0.02)
at screen center

4 Performance specifications

ITEM			SPECIFICATIONS		REMARK CONDITION
Chassis			LC37	LC37F	
Screen size			50"	60"	
P# of optical engine assy.			UE22331	UE22334	
White balance for TV mode at screen center	HIGH		14700K+23MPCD (0.260±0.01, 0.280±0.01)		
	MEDIUM		7500K+0MPCD (0.301±0.02, 0.311±0.02)		
	STANDARD		6500K+0MPCD (0.313±0.02, 0.329±0.02)		
	Black/White		5400K+0MPCD (0.335±0.02, 0.343±0.02)		
Color purity	ΔX		Center ± 0.05		
	ΔY		Center ± 0.05		
Color band	Vertical		Not inferior to limit sample		
	Horizontal		Not inferior to limit sample		
Brightness	Center	TYP	370 cd/m²	257 cd/m²	
		MIN	240 cd/m²	166 cd/m²	
	Image Corner / Image Center		30%min		
Contrast ratio	Normally white / 0% Black		400		
Raster location	Overscan (V)		+4%		
	Overscan (H)		+4%		
	TILT		MAX ±3mm	MAX ±4mm	
Dust spot and Shadow	Red		Less than 6 pixels size		
	Green		Less than 4 pixels size		
	Blue		Less than 8 pixels size		
	Other		< φ3.0		
Lamp flicker			No		

BACK TO ADJUSTMENTS

I. SPECIFICATION

5.0 Terminals and other functions

5.1 Available signal format and frequency

(1) Amplitude

Item		In/Out	Impedance	Amplitude
Composite video		Input	Termination: 75ohm±5%	1.0±0.2Vp-p
		Output	Output Impedance:75ohm±5%	
S video	Y	Input	Termination: 75ohm±5%	1.0±0.2Vp-p
		Output	Output Impedance:75ohm±5%	
	C	Input	Termination: 75ohm±5%	0.286±0.1Vp-p
		Output	Output Impedance:75ohm±5%	
Component	Y	Input	Termination: 75ohm±5%	1.0±0.2Vp-p
	Cb/Cr	Input	Termination: 75ohm±5%	0.7±0.2Vp-p
	Pb/Pr	Input	Termination: 75ohm±5%	0.7±0.2Vp-p
Audio		Input	Termination: 47k-ohm±5%	Mean input level: 470mVrms Max input level: 2.0Vrms
		Output	Output Impedance: less than1k-ohm	470mVrms

Sync. signal polarity: Negative P-P value of the reference white level and the top of the sync. Signal

(2) Frequency

Item	System	fh	fv
Composite video, S video	NTSC	15.734±0.3 kHz	60±3 Hz
Component video	480i	15.734±0.3 kHz	60±3 Hz
	480p	31.5±0.3 kHz	60±3 Hz
	720p	45.0±0.3 kHz	60±3 Hz
	1080i	33.75±0.3 kHz	60±3 Hz

5.2 Terminal shape

Item		In/Out	Terminal shape
Composite video		Input	US pin
		Output	US pin
S video	Y	Input	US pin
		Output	US pin
	C	Input	US pin
		Output	US pin
Component	Y	Input	US pin
	Cb/Cr	Input	US pin
	Pb/Pr	Input	US pin
Audio		Input	US pin
		Output	US pin

BACK TO ADJUSTMENTS

I. SPECIFICATION

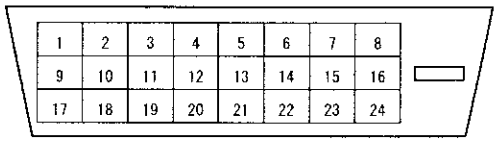
5.3 DVI Specification

5.3.1 General Specification

No.	Item	Specification	Condition
1	Input impedance	100Ω ± 20Ω	
2	Minimum Differential Sensitivity	150mVp-p	
3	Receptacle	DVI-D	
4	Standard	DVI V1.0	
5	EDID	V1.3	
6	TMDS	Single Link	
7	Timings	480p/720p/1080i/480i	
8	HDCP	V1.0	

5.3.2 DVI Connector Specification

Pin	Signal Name
1	T.M.D.S. Data2-
2	T.M.D.S. Data2+
3	T.M.D.S. Data2/4 Shield
4	T.M.D.S. Data4-
5	T.M.D.S. Data4+
6	DDC Clock
7	DDC Data
8	No Connect
9	T.M.D.S. Data1-
10	T.M.D.S. Data1+
11	T.M.D.S. Data1/3 Shield
12	T.M.D.S. Data3-
13	T.M.D.S. Data3+
14	+5V Power
15	Ground (for+5V)
16	Hot Plug Detect
17	T.M.D.S. Data0-
18	T.M.D.S. Data0+
19	T.M.D.S. Data0/5 Shield
20	T.M.D.S. Data5-
21	T.M.D.S. Data5+
22	T.M.D.S. Clock Shield
23	T.M.D.S. Clock+
24	T.M.D.S. Clock-
Frame	G N D



Front View

BACK TO ADJUSTMENTS

I. SPECIFICATION

6.0 Aspect specification for each Input Source

Aspect, Virtual HD, Black Side Panel, Vertical Position, PIP Mode, Color System

6.1 Aspect mode

6.1.1 Aspect mode

(1) Auto Aspect: OFF

Input Signal					Aspect Mode					
		Format	Aspect	Video ID	16:9 Standard	16:9 Zoom	4:3 Standard	4:3 Expanded	4:3 Zoom 1	4:3 Zoom 2
ANT A/B	Video	NTSC	4x3	–	✔	✔	✔	✔	✔	✔
Input 1	YP_BP_R	480i	–	No Video ID	✔	✔	✔	✔	✔	✔
			4x3	4x3						
			Letter	Letter						
			16x9	16x9						
		480p	4x3/16x9	–						
		720p	16x9	–	✔	✔	–	–	–	–
		1080i	16x9	–						
	DVI	480i	4x3/16x9	–	✔	✔	✔	✔	✔	✔
		480p	4x3/16x9	–						
		VGA								
		720p	16x9	–	✔	✔	–	–	–	–
		1080i	16x9	–						
Input 2	YP_BP_R	480i	–	No Video ID	✔	✔	✔	✔	✔	✔
			4x3	4x3						
			Letter	Letter						
			16x9	16x9						
		480p	4x3/16x9	–						
		720p	16x9	–	✔	✔	–	–	–	–
		1080i	16x9	–						
	Video	NTSC	–	No Video ID	✔	✔	✔	✔	✔	✔
			4x3	4x3						
			Letter	Letter						
			16x9	16x9						
Input 3	Video S-Video	NTSC	–	No Video ID	✔	✔	✔	✔	✔	✔
			4x3	4x3						
			Letter	Letter						
			16x9	16x9						
Input 4	Video S-Video	NTSC	–	No Video ID	✔	✔	✔	✔	✔	✔
			4x3	4x3						
			Letter	Letter						
			16x9	16x9						
Input 5	Video S-Video	NTSC	–	No Video ID	✔	✔	✔	✔	✔	✔
			4x3	4x3						
			Letter	Letter						
			16x9	16x9						
Photo MC	YP_BP_R	–	16x9	–	✔	–	–	–	–	–
Horizontal Expansion					100%	133%	75%	100%	100%	133%
Vertical Expansion					100%	133%	100%	110%	133%	176%

BACK TO ADJUSTMENTS

I. SPECIFICATION

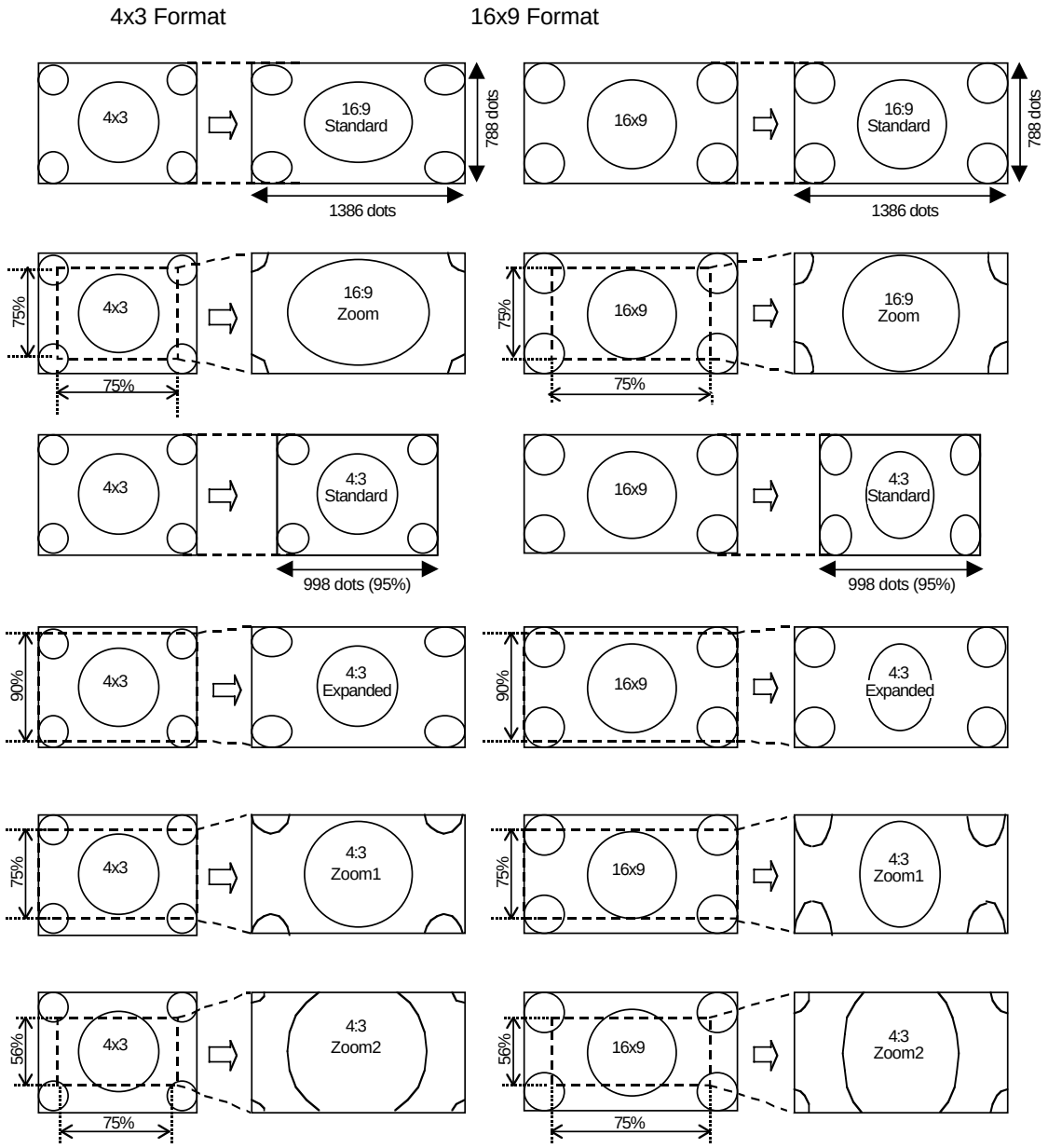
6.1.2 Auto Aspect: ON

Input Signal					Aspect					
		Format	Aspect	Video ID	16:9 Standard	16:9 Zoom	4:3 Standard	4:3 Expanded	4:3 Zoom 1	4:3 Zoom 2
ANT A/B	Video	NTSC	4x3	–	✔	✔	✔	✔	✔	✔
Input 1	YP_BP_R	480i	–	No Video ID	✔	✔	✔	✔	✔	✔
			4x3	4x3	–	–	✔	✔	✔	✔
			Letter	Letter						
			16x9	16x9	✔	✔	–	–	–	–
		480p	4x3/16x9	–	✔	✔	✔	✔	✔	✔
		720p	16x9	–	✔	✔	–	–	–	–
		1080i	16x9	–						
	DVI	480i	4x3/16x9	–	✔	✔	✔	✔	✔	✔
		480p	4x3/16x9	–						
		VGA								
		720p	16x9	–	✔	✔	–	–	–	–
		1080i	16x9	–						
Input 2	YP_BP_R	480i	–	No Video ID	✔	✔	✔	✔	✔	✔
			4x3	4x3	–	–	✔	✔	✔	✔
			Letter	Letter						
			16x9	16x9	✔	✔	–	–	–	–
		480p	4x3/16x9	–	✔	✔	✔	✔	✔	✔
		720p	16x9	–	✔	✔	–	–	–	–
		1080i	16x9	–						
	Video	NTSC	–	No Video ID	✔	✔	✔	✔	✔	✔
			4x3	4x3	–	–	✔	✔	✔	✔
			Letter	Letter						
			16x9	16x9	✔	✔	–	–	–	–
Input 3	Video S-Video	NTSC	–	No Video ID	✔	✔	✔	✔	✔	✔
			4x3	4x3	–	–	✔	✔	✔	✔
			Letter	Letter						
			16x9	16x9	✔	✔	–	–	–	–
Input 4	Video S-Video	NTSC	–	No Video ID	✔	✔	✔	✔	✔	✔
			4x3	4x3	–	–	✔	✔	✔	✔
			Letter	Letter						
			16x9	16x9	✔	✔	–	–	–	–
Input 5	Video S-Video	NTSC	–	No Video ID	✔	✔	✔	✔	✔	✔
			4x3	4x3	–	–	✔	✔	✔	✔
			Letter	Letter						
			16x9	16x9	✔	✔	–	–	–	–
Photo MC	YP_BP_R	540p	16x9	–	✔	–	–	–	–	–
Horizontal Expansion					100%	133%	75%	100%	100%	133%
Vertical Expansion					100%	133%	100%	110%	133%	176%

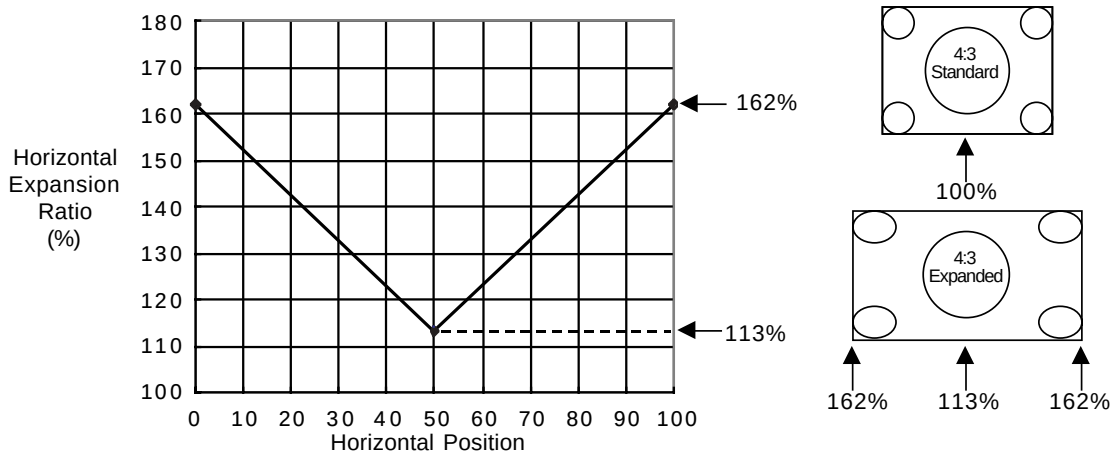
BACK TO ADJUSTMENTS

I. SPECIFICATION

6.1.3 Aspect Mode Resolution



4:3 Expanded Mode

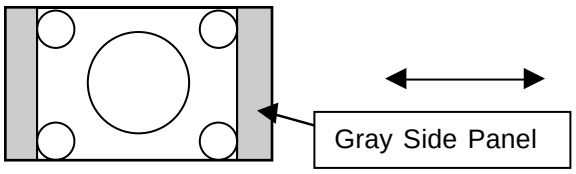


BACK TO ADJUSTMENTS

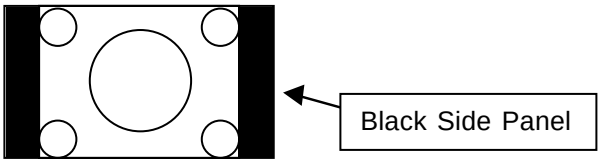
I. SPECIFICATION

6.1.4 Black Side Panel Operation

Menu Black Side Panel: OFF



Menu Black Side Panel: ON



6.1.5 Vertical Position Operation

Input				Vertical Position					
				16:9 Standard	16:9 Zoom	4:3 Standard	4:3 Expanded	4:3 Zoom1	4:3 Zoom2
ANT A/B	Video	NTSC	4x3	±0	±10 Step	±0	±10 Step	±10 Step	±10 Step
Video 1	YP_BP_R	480i	4x3 16x9	±0	±10 Step	±0	±10 Step	±10 Step	±10 Step
		480p							
		720p	16x9	±0	±10 Step	–	–	–	–
		1080i							
	DVI	480i	4x3 16x9	±0	±10 Step	±0	±10 Step	±10 Step	±10 Step
		480p							
		720p	16x9	±0	±10 Step	–	–	–	–
		1080i							
Video 2	YP_BP_R	480i	4x3 16x9	±0	±10 Step	±0	±10 Step	±10 Step	±10 Step
		480p							
		720p	16x9	±0	±10 Step	–	–	–	–
		1080i							
	Video	NTSC	4x3 16x9	±0	±10 Step	±0	±10 Step	±10 Step	±10 Step
Video 3	Video S-Video	NTSC	4x3 16x9	±0	±10 Step	±0	±10 Step	±10 Step	±10 Step
Video 4	Video S-Video	NTSC	4x3 16x9	±0	±10 Step	±0	±10 Step	±10 Step	±10 Step
Video 5	Video S-Video	NTSC	4x3 16x9	±0	±10 Step	±0	±10 Step	±10 Step	±10 Step
PIP Mode	POP/PIP/SPLIT SURF12/STROBE			±0					

BACK TO ADJUSTMENTS

I. SPECIFICATION

6.2 PIP MODE

6.2.1 Available Mode

Model	Chassis	Job	PIP Mode									
			POP	PIP 4x3	PIP 16x9	SPLIT	SURF 12	SURF 3	POP/PIP Main Freeze	POP/PIP Sub Freeze	SPLIT Sub Freeze	STROBE 3
50V500	LC37		✔	✔	✔	✔	✔ ANT A/B	–	✔	✔	✔	✔
60V500	LC37B											

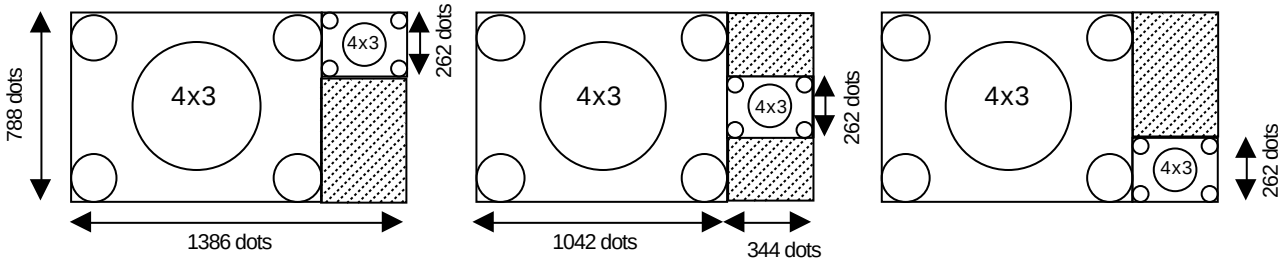
PIP Mode	Sub / Main	Aspect	ANT A/B Video/S-Video 480i	Video/S-Video 480i	480p	720p	1080i
			4x3	16x9	4x3/16x9	16x9	16x9
POP	ANT A/B Video/S-Video	4x3/16x9	✔	✔	–	–	✔
	480i	4x3/16x9	✔	✔	–	–	✔
PIP 4x3	1080i	16x9	✔	–	–	–	–
PIP 16x9	1080i	16x9	–	✔	–	–	✔
SPLIT	ANT A/B Video/S-Video 480i	4x3/16x9	✔	✔	✔	✔	✔
	480p	4x3/16x9	✔	✔	✔	✔	✔
	720p	16x9	✔	✔	✔	✔	✔
	1080i	16x9	✔	✔	✔	✔	✔
STROBE	ANT A/B Video/S-Video 480i	4x3/16x9	✔	✔	–	–	–
SURF12	–	–	✔ ANT A/B	–	–	–	–

BACK TO ADJUSTMENTS

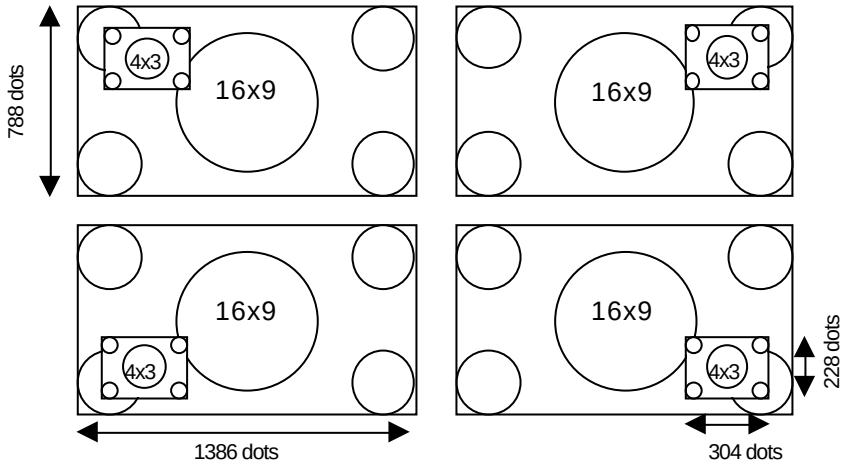
I. SPECIFICATION

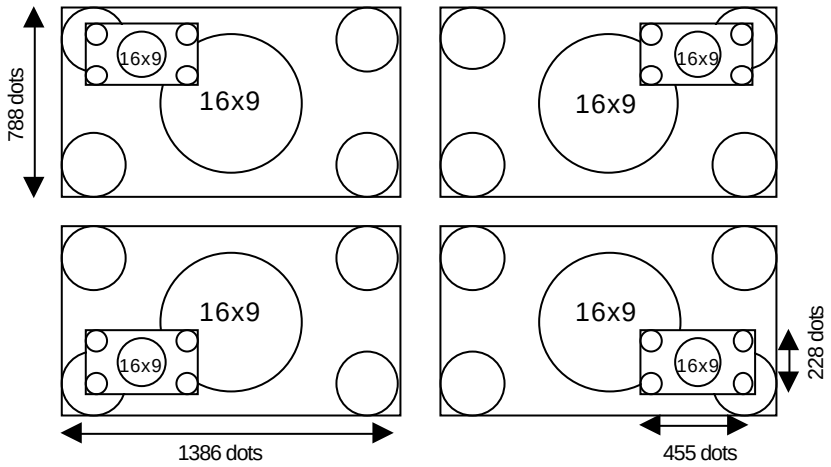
6.2.2 PIP Mode Resolution

POP Mode

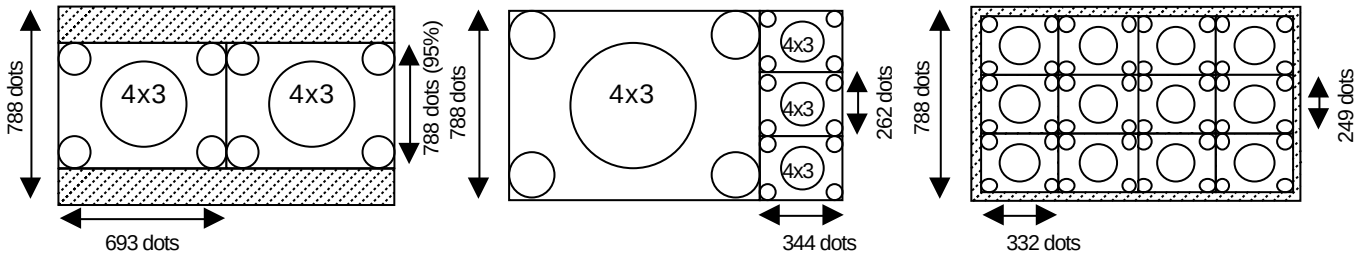


PIP Mode



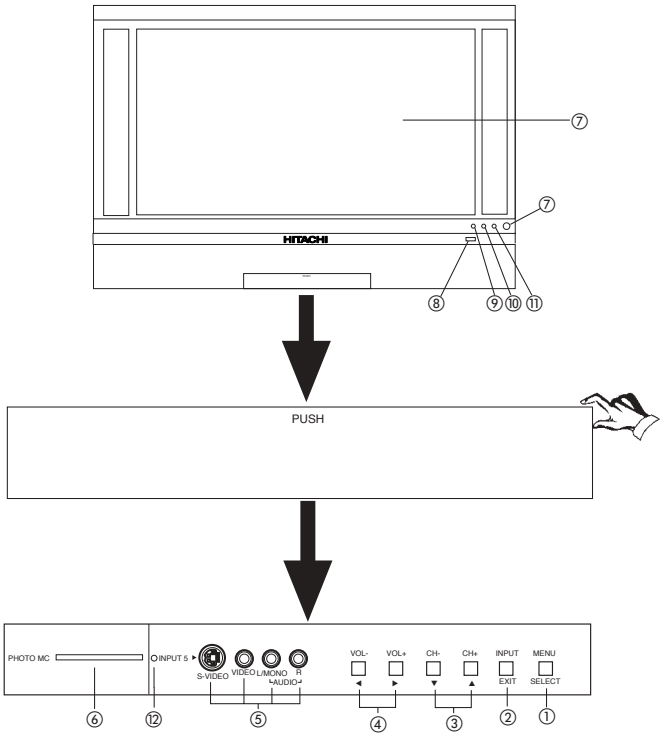


SPLIT Mode STROBE Mode SURF12 Mode



BACK TO ADJUSTMENTS

II. FEATURES AND FUNCTIONS
1.0 FRONT PANEL CONTROLS



① MENU/SELECT button

This button allows you to enter the MENU, making it possible to set TV features to your preference without using the remote. This button also serves as the SELECT button when in MENU mode.

② INPUT/EXIT button

Press this button to select the current antenna source, VIDEO: 1, 2, 3, 4, 5 or alternate antenna source. Your selection is shown in the top right corner of the screen. This button also serves as the EXIT button when in MENU mode.

NOTES: Your remote control does not have an INPUT button. To change to video inputs, press VID1~VID5 buttons depending on your choice. To change antenna source, press the ANT button on your remote control.

③ CHANNEL selector

Press these buttons until the desired channel appears in the top right corner of the TV screen. These buttons also serve as the cursor down (▼) and up (▲) buttons when in MENU mode.

④ VOLUME level

Press these buttons for your desired sound level. The volume level will be displayed on the TV screen. These buttons also serve as the cursor left (◄) and right (►) buttons when in MENU mode. When the TV power is turned OFF at a volume level 31 or greater, the volume level will default to 30 when the TV is turned ON. However, if it is set to a level 30 or less, the volume level will be at the level it was set when the TV is turned ON.

⑤ FRONT INPUT JACKS (INPUT 5)

Use these audio/video jacks for a quick hook-up from a camcorder or VCR to instantly view your favorite show or new recording. Press the INPUT/EXIT button on the front control panel until VIDEO: 5 appears in the top right corner of the TV screen. If you have mono sound, insert the audio cable into the left audio jack.

⑥ PHOTO MC

Insert a PC card adapter with your Photo memory card to view the digital still pictures (see page 44).

To view your digital pictures, an adapter is required. Below are adapters that are tested with your television. Please find out which memory card you have and acquire it from your local source.

Memory Card	Tested Samples
1. Secure Digital (SD) 3. Memory Stick (MS) 4. Smart Media (SM)	Dazzle 4 in 1 (DM-9400) or SanDisk 4 in 1 (SDDR-6507)
5. Compact Flash I (CF I) 6. Compact Flash II (CF II)	Dazzle (DM-9000) or SanDisk (SDCF-38)
7. xD Picture Card	Olympus (MACF-10)

Notes: Adapter is subject to change for improvement.
Some terms used herein are trademarks of various companies.

BACK TO ADJUSTMENTS

II. FEATURES AND FUNCTIONS
1.0 FRONT PANEL CONTROLS (CONT.)

⑦ **IR RECEIVER/LEARNING AV NET sensor**
The screen area acts as the IR receiver (remote sensor) and the LEARNING AV NET sensor of the TV. When using the remote control, point it towards the screen for best response.

⑧ **POWER button**
Press this button to turn the TV on or off.

⑨ **POWER light**
This light is on during normal operation.
Light Blinking Slowly (2 seconds): television lamp is cooling down. It takes 12-15 seconds to warm up and about 2 minutes to cool down.

⑩ **TEMP indicator**
This light is off during normal operation.
If this indicator is lit, the optic unit is too hot. If this indicator is blinking, the cooling fan has stopped. Please call service.

⑪ **LAMP indicator -** NORMAL OPERATION INDICATOR IS OFF
If light is lit, the lamp has failed. See page 29-32 for lamp replacement procedure. Consult your Hitachi dealer for proper part.
If light is blinking, lamp cover is not assembled securely after replacement.

NOTES:

1.

INDICATOR	INDICATION	MEANING	ACTION
LAMP LED	LIGHT ON	NO LAMP LIGHT or BROKEN LAMP	Need to replace if LAMP still does not light by "Power On" again. Check assembly condition of LAMP UNIT
	BLINKING	WRONG LAMP UNIT ASSEMBLY / LAMP DOOR OPEN	
TEMP LED	LIGHT ON	Too hot inside the OPTIC unit	
	BLINKING	COOLING FAN STOPPED	
POWER	LIGHT ON	NORMAL OPERATION	
	SLOWLY BLINKING	COOL DOWN	

2. If the LAMP, TEMP, and POWER LED are blinking in the order below, the television is warming up.

POWER → TEMP → LAMP

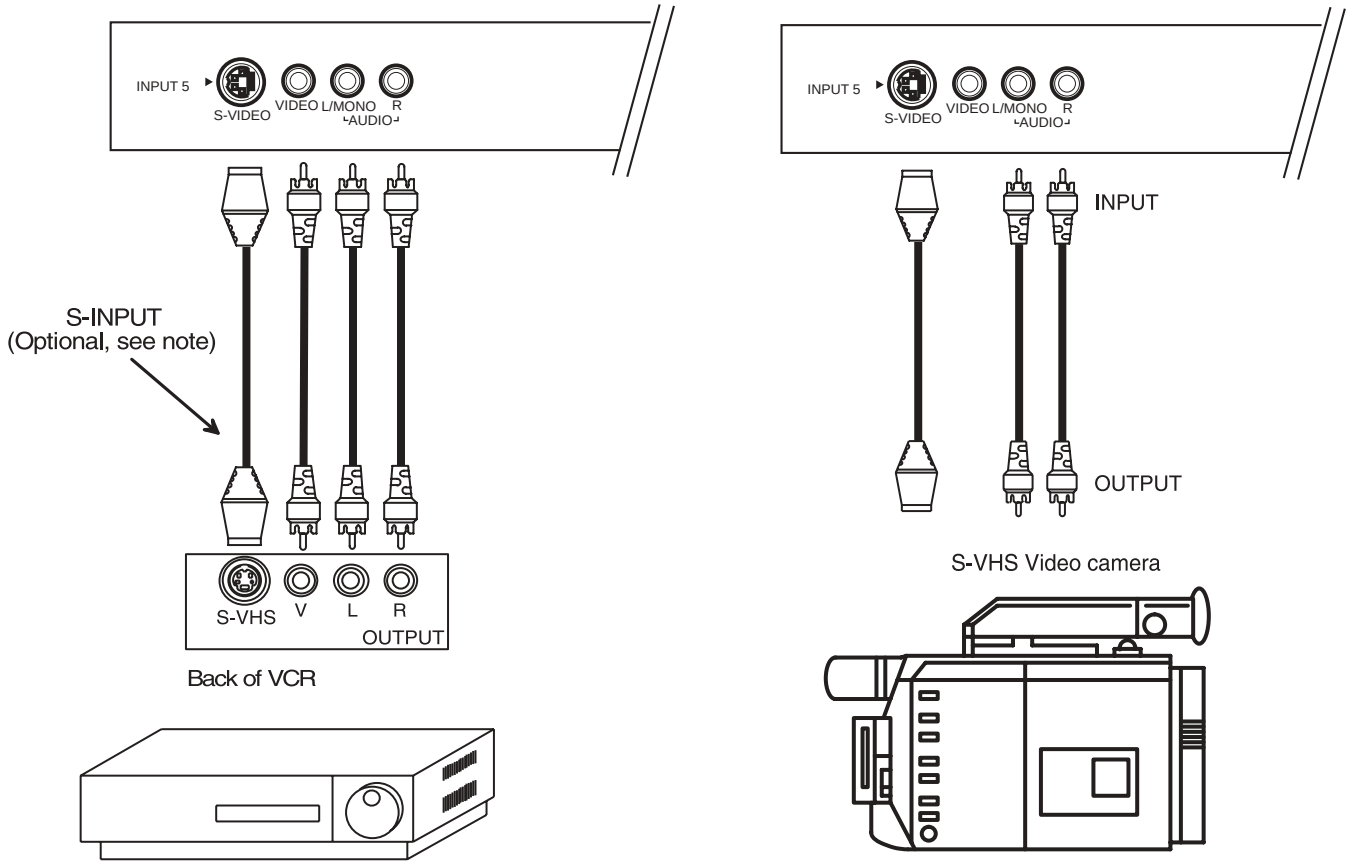
⑫ **PHOTO MC LED LIGHT INDICATOR**
Shows the status of the memory card.

IMPORTANT NOTES:
1. A small number of missing, discolored, or lit all the time dots or pixels is characteristic of TFT LCD technology due to manufacturing process for such technology irrespective of manufacturer. If your LCD has defective pixels, it should not be considered defective.
2. Since LCD Rear PTV incorporates a high pressure lamp to display an image, it may take about one minute for the picture to become stable, after the power has been turned on. After extended use, the picture may darken, the color may look unusual, or the lamp "goes out," (burns out). You may hear a "pop" sound when the lamp "goes out." These are common characteristics of the lamp, and should not be considered defective.
3. LCD Rear PTV incorporates an advanced cooling fan system to prevent from overheating. If you hear the cooling fan, it should not be considered defective.
4. If you hear a "cracking" sound from the TV cabinet, it is due to the TV's cabinet expanding and contracting due to room temperature changes. It has no effect on the TV's functions.

II. FEATURES AND FUNCTIONS

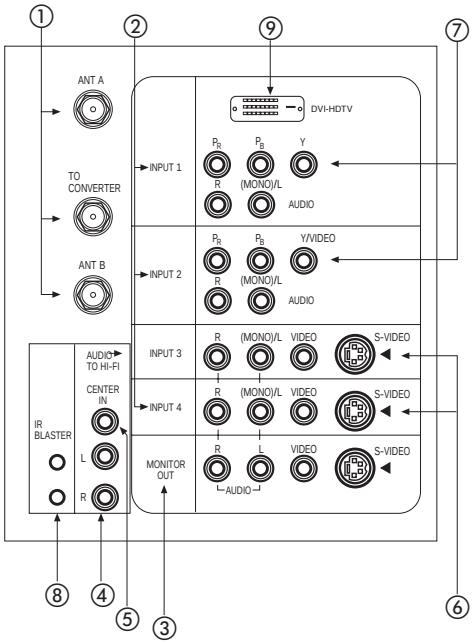
1.0 FRONT PANEL CONTROLS (CONT.)

The front panel jacks are provided as a convenience to allow you to easily connect a camcorder or VCR as shown in the following examples:



NOTE:	1. Completely insert connection cord plugs when connecting to front panel jacks. If you do not, the played back picture may be abnormal. 2. If you have a S-VHS VCR, use the S-INPUT cable in place of the standard video cable. 3. If you have a mono VCR, insert the audio cable into the left audio jack of your TV.

II. FEATURES AND FUNCTIONS
2.0 REAR PANEL JACKS



① **Antenna Input/Output**

ANT A- A 75-Ohm RF antenna or CATV (Cable TV) input. ANT A can be displayed as a main picture or sub-picture.

ANT B- A 75-Ohm RF antenna or CATV (Cable TV) input. ANT B can only be displayed as a main picture. ANT B cannot be displayed as a sub-picture.

TO CONVERTER- This antenna output allows the ANT A connection to pass directly to a different source, such as a cable box, only when ANT B is displayed as a main picture.

② **Audio/Video Inputs 1, 2, 3 and 4**

The VID1~VID4 buttons will select each video source each time they are pressed. Use the audio and video inputs to connect external devices, such as VCRs, camcorders, laserdisc players, DVD players etc. (If you have mono sound, insert the audio cable into the left audio jack.)

NOTE:	You may use VIDEO or S-VIDEO inputs to connect to INPUT 3 and 4, but only one of these inputs may be used at a time.

③ **MONITOR OUT**

These jacks provide fixed audio and video signals which are used for recording. Use the S-VIDEO Output for high quality video output.

NOTE:	S-VIDEO output may be used for recording only when the input is of S-VIDEO type.

④ **AUDIO TO HI-FI Output**

These jacks provide variable audio output to a separate stereo amplifier. With this connection, the audio to the stereo can be controlled by the television's main volume.

⑤ **CENTER IN (Input)**

This jack is for stereo amplifiers with center signal capability. This feature allows the TV speakers to be used as a center speaker. The TV must be set as a center channel by selecting "TV as Center" on the Internal Speakers Settings of the Audio Menu.

⑥ **S-VIDEO Inputs 3 and 4**

Inputs 3 and 4 provide S-VIDEO (Super Video) jacks for connecting equipment with S-VIDEO output capability.

II. FEATURES AND FUNCTIONS
2.0 REAR PANEL JACKS (CONT.)

⑦ **Component: Y-P_BP_R Inputs**

Inputs 1 and 2 provide Y-P_BP_R jacks for connecting equipment with this capability, such as a DVD player or Set Top Box. You may use composite video signal for INPUT:2.

NOTES:
1. Do not connect composite VIDEO and S-VIDEO to Input 3, 4 or 5 at the same time. S-VIDEO has priority over VIDEO input.
2. Your component outputs may be labeled Y, B-Y, and R-Y. In this case, connect the components B-Y output to the TV's P_B input and the components R-Y output to the TV's P_R input.
3. Your component outputs may be labeled Y-C_BC_R. In this case, connect the component C_B output to the TV's P_B input and the component C_R output to the TV's P_R input.
4. It may be necessary to adjust TINT to obtain optimum picture quality when using the Y-P_BP_R inputs.
5. To ensure no copyright infringement, the MONITOR OUT output will be abnormal, when using the Y-P_BP_R jacks.
6. Input 2 (Y/VIDEO) can be used for composite video and component video input.

⑧ **IR Blaster**

This jack provides IR output to your external components (VCR, Cable box, DVD player, etc.). With this connection, your external components can automatically be controlled by the AV Net feature. This connection will allow you to control the external components with your television's remote control (see page 40).

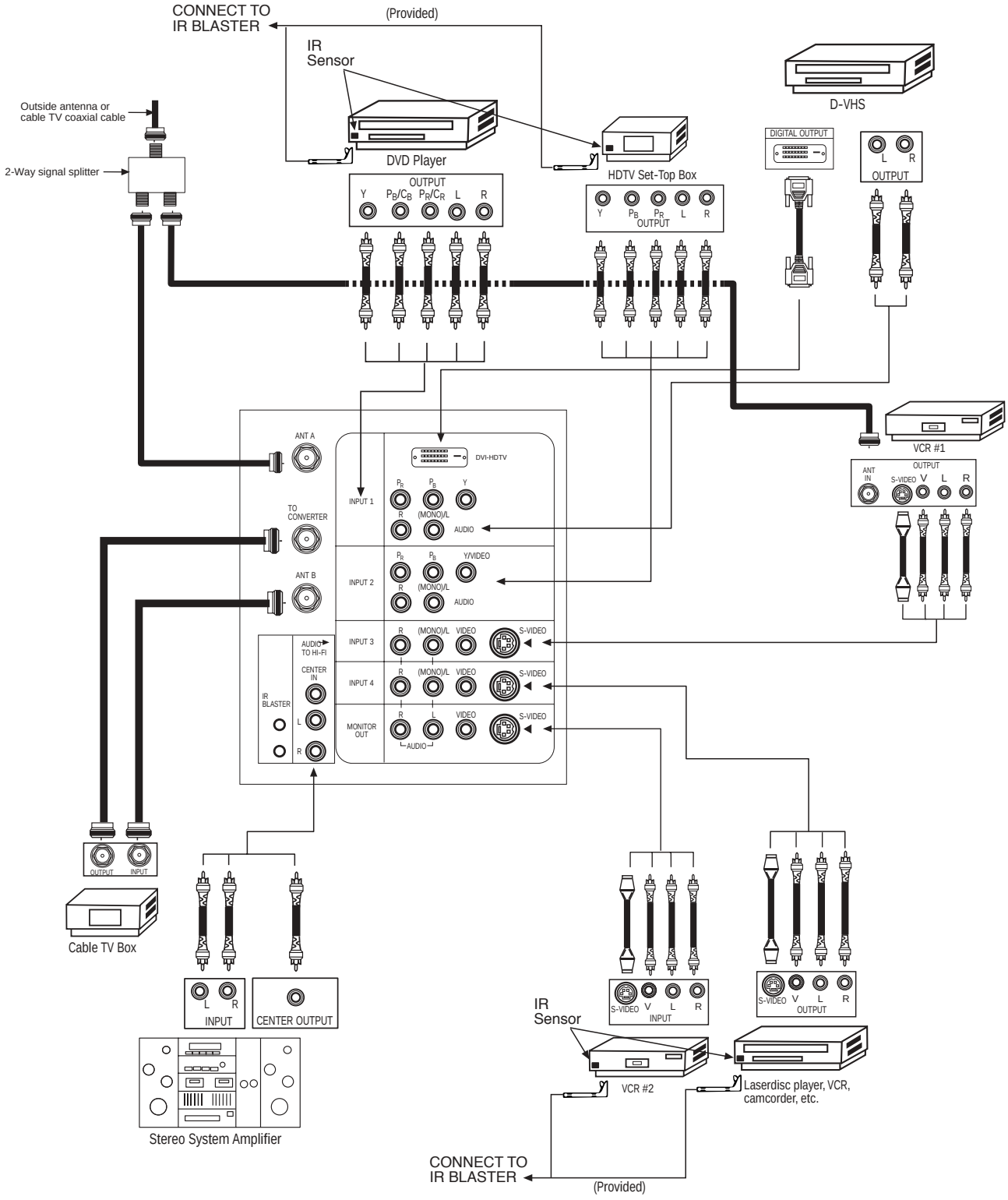
⑨ **DVI-HDTV Input (Input 1)**

Use this DVI-HDTV Input for your external devices with DVI-HDTV output such as a Set-Top-Box, high-band DTV decoders, DVD players with Digital Content Protection.

NOTES:
1. Only DTV format such as 1080i, 720p, 480i and 480p are available for DVI-HDTV input.
2. The DVI-HDTV input is NOT compatible when used with a DVD player from a personal computer.
3. When connecting a Set-Top-Box with a copy-protect digital out terminal, a high definition picture can be displayed on the screen in its digital form.

II. FEATURES AND FUNCTIONS
2.0 REAR PANEL JACKS (CONT.)

TYPICAL FULL-FEATURE SETUP



NOTES:
1. Connect only 1 component to each input jack.
2. Follow connections that pertain to your personal entertainment system.
3. Composite video signal can be input to Input2~Input5.
4. Cables are not included with the purchase of this TV, except when noted as “provided”.

II. FEATURES AND FUNCTIONS
2.0 REAR PANEL JACKS (CONT.)

- S-VIDEO connections are provided for high performance laserdisc players, VCRs etc. that have this feature. Use these connections in place of the standard video connection if your device has this feature.
- If your device has only one audio output (mono sound), connect it to the left audio jack on the television.
- Refer to the operating guide of your other electronic equipment for additional information on connecting your hook-up cables.
- A single VCR can be used for VCR #1 and VCR #2, but note that a VCR cannot record its own video or line output (INPUT: 3 in the example on page 27). Refer to your VCR operating guide for more information on line input-output connections.
- You may use VIDEO or S-VIDEO inputs to connect to Input 3, Input 4 or Input 5, but only one of these may be used at a time.
- Connect only 1 component (VCR, DVD player, camcorder, etc.) to each input jack.
- COMPONENT: Y-P_BP_R (Input 1 &2) connections are provided for high performance components, such as DVD players and set-top-boxes. Use these connections in place of the standard video connection if your device has this feature. Input 2 accepts both composite and component video signals.
- Your component outputs may be labeled Y, B-Y, and R-Y. In this case, connect the components B-Y output to the TV's P_B input and the components R-Y output to the TV's P_R input.
- Your component outputs may be labeled Y-C_BC_R. In this case, connect the components C_B output to the TV's P_B input and the components C_R output to the TV's P_R input.
- You may use composite video signal for Input 2~Input 5.
- It may be necessary to adjust TINT in the Video menu to obtain optimum picture quality when using the Y-P_BP_R inputs.
- To ensure no copyright infringement, the MONITOR OUT output may be abnormal, when using the ^{Y}-P_BP_R or DVI jacks.
- When using DVI input from a Set-Top-Box, it is recommended to use a 1080i or 720p input signal.

II. FEATURES AND FUNCTIONS
3.0 LAMP REPLACEMENT

Lamp Life

The lamp life may vary based on usage of the LCD Rear PTV. Turning on and off frequently may shorten the life of the lamp.

Lamp Replacement

After extended use, if the TV picture turns dark, the color looks unusual or LAMP INDICATOR light turns on, then it is time to replace the lamp with a new lamp.

WARNING:

The lamp gets very hot! The lamp may explode if improperly handled. To avoid injury, please observe the following precautions.

- Do not open lamp compartment or attempt to remove lamp assembly unless the lamp assembly is being replaced.
- Unplug the product's power cord from the AC outlet before attempting to replace the lamp assembly.
- If the lamp is in use when failure occurs or if the lamp has exploded, wait at least 30-45 minutes for the lamp to cool before opening the lamp compartment or touching the lamp assembly or any broken pieces.
- Broken lamp pieces can cause injury. Handle with gloves to avoid cuts.
- Do not place any foreign objects inside the lamp compartment.
- When installing a new lamp, follow handling instruction included with the new lamp. Do not touch glass surface of new lamp.
- The lamp in this product contains Mercury. Dispose of properly in accordance with applicable environmental laws. For Recycling and Disposal information, contact your respective governmental agencies or the Electronic Industries Alliance at www.eiae.org (in the U.S.) or Electronic Product Stewardship Canada at www.epsc.ca (in Canada).

CAUTION!

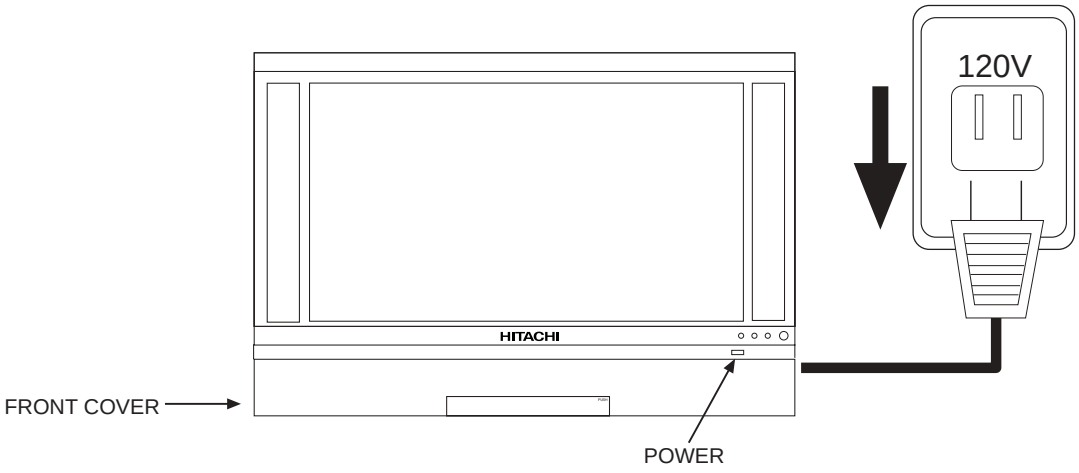
A "LAMP" indicator will light when lamp becomes hot. Unplug product's power cord from the AC outlet and allow lamp to cool for at least 30-45 minutes. If "LAMP" indicator is still lit, check the lamp unit assembly.

NOTES:

- Contact your Hitachi dealer for a new lamp unit. Using other lamps may cause damage to the TV Set.
  TYPE NAME: LC37 LAMP ASSEMBLY
  PART NUMBER: UX21511
- When replacing the lamp, let it cool down completely, for approximately 30 to 45 minutes after the power has been switched off and A.C. cord has been unplugged.
- Do not touch the glass of the new lamp or make it dirty which can shorten the life of the lamp and reduce the picture quality.
- Keep the lamp out of the reach of children and away from flammable materials.
- Do not pour water onto the removed lamp or put any object inside the lamp.
- Once the lamp is removed, do not put flammable materials and metal objects inside the lamp receptacle on the TV set. Do not touch the receptacle.
- Install the new lamp securely, otherwise the picture may become dark or it may cause severe overheating.
- Install the lamp cover correctly, otherwise power will not come on.
- The lamp in this product contains Mercury. Dispose of properly in accordance with applicable environmental laws. For Recycling and Disposal information, contact your respective governmental agencies or the Electronic Industries Alliance at www.eiae.org (in the U.S.) or Electronic Product Stewardship Canada at www.epsc.ca (in Canada).

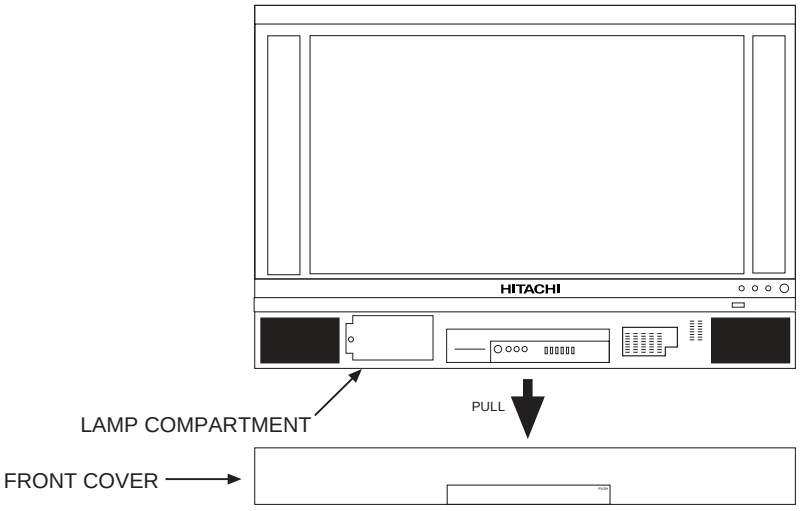
II. FEATURES AND FUNCTIONS
3.0 LAMP REPLACEMENT (CONT.)

1. Turn off the main power switch and unplug the power cord. Wait at least 30 minutes to allow the lamp to cool down before replacing it.



NOTE: THE LAMP IS VERY HOT AND MAY CAUSE FIRE OR SEVERE BURNS. WAIT AT LEAST 30~45 MINUTES TO ALLOW THE LAMP TO COOL BEFORE PROCEEDING WITH LAMP REMOVAL.

2. Remove the front cover from the TV set. This is held by a snap on. Pull the front cover outwards until the quick snap on disengages.



NOTE: The lamp in this product contains Mercury. Dispose of properly in accordance with applicable environmental laws. For Recycling and Disposal information, contact your respective governmental agencies or the Electronic Industries Alliance at www.eiae.org (in the U.S.) or Electronic Product Stewardship Canada at www.epsc.ca (in Canada).