OLYMPUS

# INSTRUCTIONS

VISERA

VISERA VIDEO SYSTEM

VISERA VIDEO SYSTEM CENTER

## OTV-S7V

**USA: CAUTION:** Federal law restricts this device to sale by or on the order of a physician.
(For NTSC type equipment)

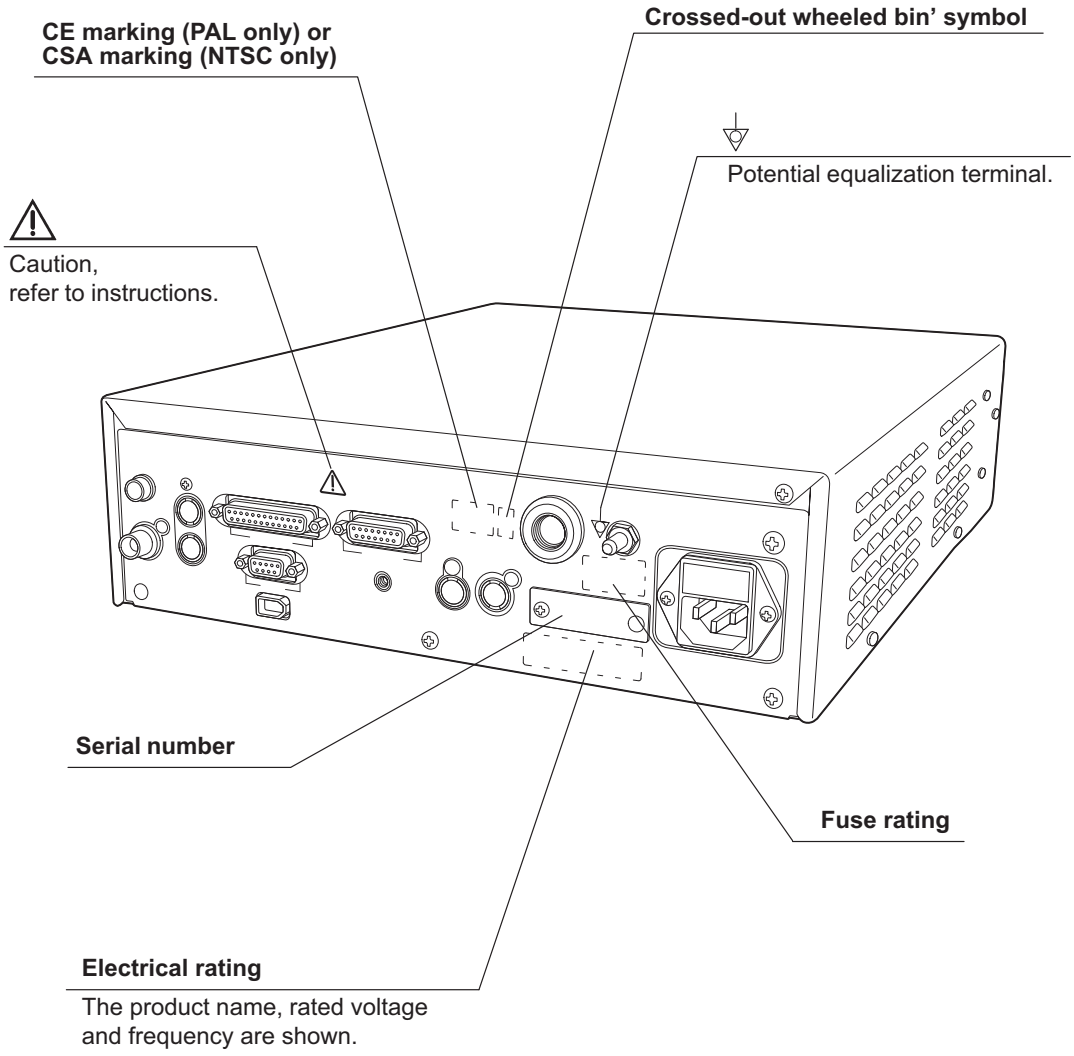
CE
(For PAL type equipment)

# Contents

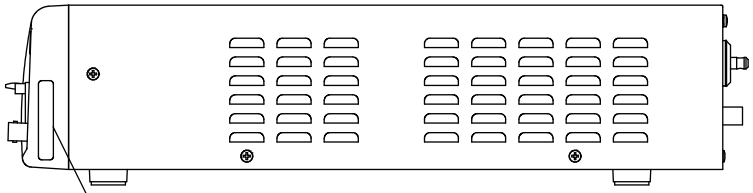
# Labels and Symbols

Safety-related labels and symbols are attached to the instrument at the locations shown below. If labels or symbols are missing or illegible, contact Olympus.

## ❍ Rear side

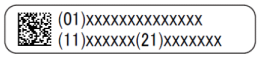


## ❍ Right side view



**UDI label**

The UDI label is required by some countries' regulations regarding the identification of a medical device also known as Unique Device Identification (UDI).




**Electrical rating**

**NTSC**

VISERA VIDEO SYSTEM CENTER

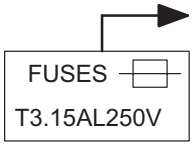
| | |
|---|---|
| MODEL | OTV-S7V |
| INPUT | 100-240V∼ 70VA |
| | 50/60Hz |
| TV TYPE | NTSC |

**PAL**

VISERA VIDEO SYSTEM CENTER

| | |
|---|---|
| MODEL | OTV-S7V |
| INPUT | 100-240V∼ 70VA |
| | 50/60Hz |
| TV TYPE | PAL |

**Fuse rating**



## Back cover of this instruction manual

Manufacturer


Authorized representative in the European Community

# Important Information — Please Read Before Use

## Intended use

This instrument has been designed to be used with an Olympus camera head, videoscope, rigid endoscope or fiberscope with a rigid endoscope eyepiece, light source, video monitor, endo-therapy accessories and other ancillary equipment for endoscopic observation, diagnosis and treatment.
Do not use this instrument for any purpose other than its intended use.

## Instruction manual

This instruction manual contains essential information on using this instrument safely and effectively. Before use, thoroughly review this manual and the manuals of all equipment which will be used during the procedure and use the instruments as instructed.
Keep this and all related instruction manuals in a safe, accessible location.
If you have any questions or comments about any information in this manual, please contact Olympus.

### ❍ Terms used in this manual

**Wall mains outlet:**
Outlets with protective grounding, that are installed in a fixed wiring system in a building.

**Isolation transformer:**
The isolation transformer is a safety device that is used to isolate non-insulated, equipment with potentially high leakage currents to decrease the possibility of electric shock.

**Image sensor (CCD):**
Image sensor (CCD) is the device that converts light into electrical signals.

**Light source:**
The light source provides light and electrical signals to the endoscope. It also provides electrical signals to the OTV-S7V.

**Color adjustment:**
Color adjustment adjusts the color balance on the video monitor.

**Automatic brightness control:**

The automatic brightness control automatically adjusts the intensity of the light emitted from the light source so that the endoscopic image will be maintained at constant brightness even if the distance between the distal end of the endoscope and the subject changes.

**Wash out:**

Wash out is the inability to see details in the endoscopic image due to excessive brightness.

**Halation:**

When light stronger than necessary is received by an image sensor, the recognition level of the image sensor is exceeded and part of the image on the monitor becomes white and bright.

**Image enhancement:**

Image enhancement is the image processing technique that electronically sharpens the edges of an image.

**Shutter:**

Shutter is the device that changes the exposure time of the image sensor so that the brightness of an image is maintained on the video monitor.

**B.O.D. (Build on demand):**

B.O.D. (Build on demand) is a printed circuit board that can extend the functionality of the OTV-S7V when installed.

**Memory Card:**

Memory Card is a digital medium used by the PC card unit for the OTV-S7. With this instrument, SmartMedia and xD-Picture Card specified by Olympus can be used as Memory Card.

# *User qualifications*

The operator of this instrument must be a physician or medical personnel under the supervision of a physician and must have received sufficient training in clinical endoscopic technique. This manual, therefore, does not explain or discuss clinical endoscopic procedures.

# *Instrument compatibility*

Refer to the “System chart” in the Appendix to confirm that this instrument is compatible with the ancillary equipment being used. Using incompatible equipment can result in patient injury and/or equipment damage.

# *Repair and modification*

This instrument does not contain any user-serviceable parts. Do not disassemble, modify or attempt to repair it; patient or user injury and/or equipment damage can result.
Some problems that appear to be malfunctions may be correctable by referring to Chapter 7, “Troubleshooting”. If the problem cannot be resolved using the information in Chapter 7, contact Olympus.

# *Signal words*

The following signal words are used throughout this manual:

**DANGER**

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

**WARNING**

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

**CAUTION**

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices or potential equipment damage.

NOTE

Indicates additional helpful information.

# *Dangers, warnings and notes*

Follow the dangers, warnings and notes given below when handling this instrument. This information is to be supplemented by the dangers, warnings and cautions given in each chapter.

**DANGER**

- Strictly adhere to the following precautions. Failure to do so may place the patient and medical personnel in danger of electric shock.
  - When this equipment is used to examine a patient, do not allow the metal parts of the endoscope or its accessories to touch metal parts of other system components. This instrument is electrically connected to the metal parts of other system components and such contact may cause unintended current flow to the patient.
  - Keep liquids away from all electrical equipment. If liquid enters the unit, stop the operation of the equipment at once and contact Olympus.
  - Do not prepare, inspect or use this equipment with wet hands.
- Never install and/or operate the OTV-S7V in locations where:
  - The concentration of oxygen is high.
  - Oxidizing agents such as nitrous oxide ($N_2O$) are present in the atmosphere.
  - Flammable anesthetics are present in the atmosphere.

  Otherwise, explosion and/or fire can result.

**WARNING**

- Be sure to prepare another video system center to avoid that the examination must be interrupted due to equipment failure or malfunction.
- Although the illumination light emitted from the endoscope's distal end is required for endoscopic observation and treatment, it may also cause alteration of living tissues such as protein denaturation of liver tissue and perforation of the intestines by inappropriate using.
  Observe the following warnings on the illumination.

- Always set the minimum required brightness.
  The brightness of the image on a video monitor may differ from actual brightness at the distal end of endoscope. Especially, operating the electrical shutter function of this instrument, pay attention to the brightness level setting of the light source. When this instrument is used with a light source with the automatic brightness control function, be sure to use the function of the light source. The automatic brightness control function can keep the illumination light properly. Refer to the instruction manual of the light source for details.
- Do not continue observation in proximity to tissue or keep the distal end of the endoscope in contact with a living tissue for a long time.
- When discontinuing the use of the endoscope, be sure to turn the light source OFF or activate the light shield function (standby mode etc.) so that the endoscope does not irradiate unnecessary light.

• This product may interfere with other medical electronic equipment used in combination with it. Before use, fully confirm the compatibility of this instrument with all equipment to be used with it.

• Do not use this product in any place where it may be subject to strong electromagnetic radiation (for example, in the vicinity of a microwave therapeutic device, MRI, wireless set, short-wave therapeutic device, cellular/portable phone, etc.). This may impair the performance of the product.

• If the endoscopic image dims during use, this may be a sign that blood or mucus is adhering to the light guide on the distal end of the endoscope. Carefully withdraw the endoscope from patient and remove the blood or mucus in order to obtain optimum illumination and to ensure the safety of the examination. If you continue to use the endoscope in such a condition, the distal end temperature may rise and cause mucosal burns. It may also cause patient and/or operator injury.

NOTE

SmartMedia is a trademark of TOSHIBA Corporation.

# *Security*

Considering the possibility of data theft, corruption, and falsification, check that the PC card is not infected with a computer virus and then make connections.
Use the device constituting “OTV-S7V” in an appropriate connection configuration as well as an operating environment. Use of “OTV-S7V” in an inappropriate connection configuration as well as in an inappropriate use environment may lead to malfunction and/or data loss.
Install the device following the installation instruction and installation environment recommended by the manufacturer of the device.
Otherwise, it may cause damage or malfunction of the device.
As for the storage management for the product, follow the facility’s security policy, considering the possibility of leakage of personal information by unauthorized access and data falsification by third parties.

# *Cardiac applications*

**DANGER**

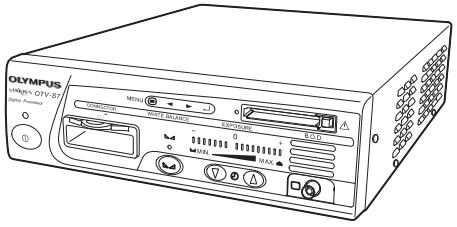
- Use only the devices listed in the “System chart” for endoscopic observation or treatment of the heart or areas near the heart. Other combinations of equipment may cause ventricular fibrillation or seriously affect the cardiac function of the patient.
- For cardiac applications, never support the endoscope with a metal surgical arm which is not electrically isolated from the ground. If not isolated, the endoscope will be connected to the ground through the surgical arm and bed, and will conduct unexpected leakage current which may seriously affect the cardiac function of the patient.
- The use of medical devices not specifically designed for cardiac applications may cause ventricular fibrillation or seriously affect the cardiac function of the patient. As specified by international standard IEC 60601-1, any “Applied Part” used for observation or treatment of the heart or areas near the heart must meet “TYPE CF APPLIED PART” requirements for low electrical leakage current. When using metal endoscopes for endoscopic cardiac applications, the “Applied Part” requirements include all devices directly connected to the endoscope, such as the light guide (LG) cable, camera head and telescope holder. Each of these devices must individually meet the “TYPE CF APPLIED PART” requirements for leakage current limits if they are to be used for cardiac applications.

NOTE

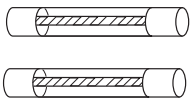
- The OLYMPUS LG cables and camera heads listed in the “System chart” (TYPE CF APPLIED PART) which are suitable for cardiac applications bear a ♥ mark.
- The OLYMPUS surgical holder for telescope (SH-1) has an electrically isolated arm structure which isolates the endoscope from the ground. This design makes the SH-1 suitable for cardiac applications.

# Chapter 1 Checking the Package Contents

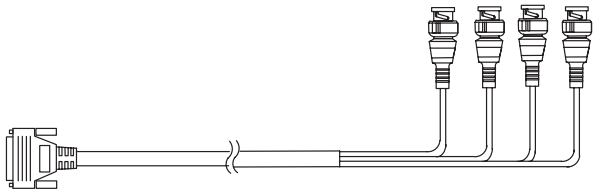
Match all items in the package with the components shown below. Inspect each item for damage. If the instrument is damaged, a component is missing or you have any questions, do not use the instrument; immediately contact Olympus.



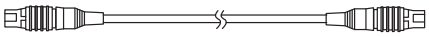
**VISERA video system center (OTV-S7V)**



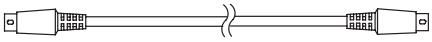
**Spare fuse (MAJ-890, 2 pcs)**



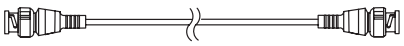
**RGB cable (MH-984)**



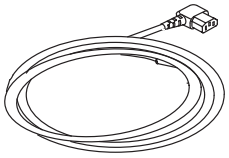
**Light control cable (MAJ-944)**



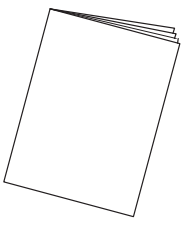
**Y/C cable (MH-985)**



**BNC cable (MB-677)**



**Power cord**



**Instruction manual**

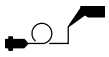
# Chapter 2 Nomenclature and Functions

## 2.1 Symbols and descriptions

### Power switch


Power ON/OFF

### Front panel


Video connector


Forward


Backward


Exposure


Menu


TV in (type C only; see Section 2.5)


Caution,
refer to instructions.


Mode setting


Maximum


Minimum


White balance


Up


Down

### Rear panel


Caution,
refer to instructions.


Fuse


Alternating current


Equipotential terminal

Serial number

## Keyboard for OTV-S7V


Menu


White balance


Patient ID


Release or digital capture

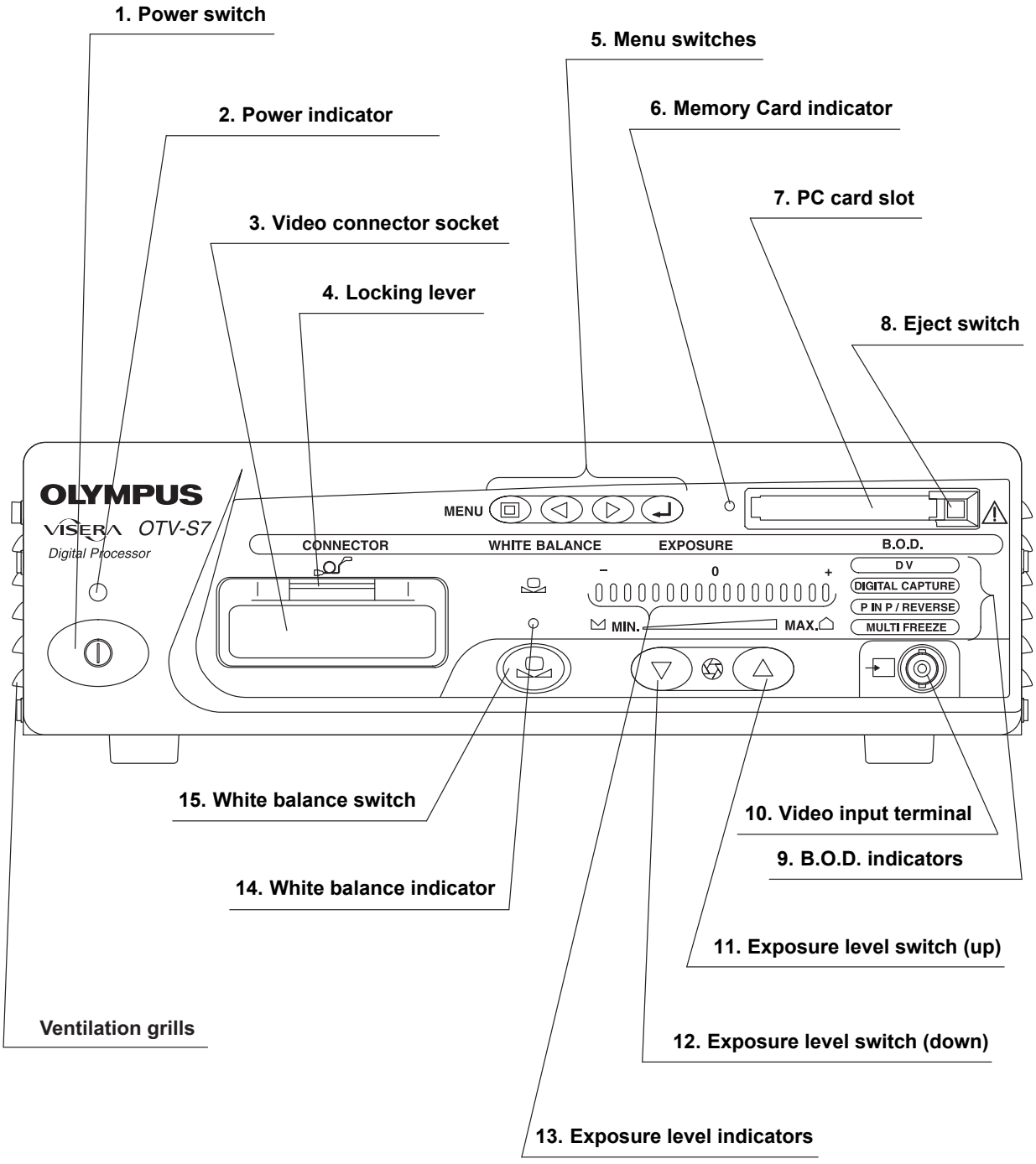

VTR or DV


Image enhancement


Electrical zoom


Preset

# 2.2 Front panel



1. **Power switch**
   This switch is pressed to turn the OTV-S7V ON or OFF.
2. **Power indicator**
   The indicator lights up when the power is ON.
3. **Video connector socket**
   The video plug of the camera head or videoscope is connected to this socket.
4. **Locking lever**
   This lever is pushed down to disconnect the video plug of the camera head or videoscope.
5. **Menu switches**
   The following functions are available using the menu switches.

   ▣ : When this switch is depressed, the menu is displayed. If this switch is depressed briefly while the menu is displayed, the menu goes to a previous menu. Depress this switch for approximately 1 second to exit the menu.

   ◀ or ▶ : If this switch is depressed, the arrow or the cursor can be moved, or the setting can be changed.

   ↵ : If this switch is depressed, the selected menu can be set, the color of characters can be changed from black to white or the settings can be entered.
6. **Memory Card indicator**
   When a PC card adapter and Memory Card are inserted into the PC card slot, this indicator is on. The indicator blinks while an image is being recorded to Memory Card.
7. **PC card slot (types B, C, F only; see Section 2.5)**
   A PC card adapter is inserted into this slot.
8. **Eject switch (types B, C, F only; see Section 2.5)**
   The eject switch is pressed to eject the PC card adapter.

***9.*** **B.O.D. indicators**

These indicate installed B.O.D. devices.

| | | |
|---|---|---|
| DV | : | Recording digital images (IEEE1394 – 1995). |
| DIGITAL CAPTURE | : | Capturing digital images on and playing back from Memory Card. |
| P IN P/REVERSE | : | Displaying the normal, rotated, mirrored or sub-image. |
| MULTI FREEZE | : | Multi freezing images for moving object. |
| ORIENTATION | : | Displaying the normal and rotated image. |

NOTE

Depending upon the type of OTV-S7V being operated, the B.O.D. indicators may be different from those shown in the figure on page 16. For details of B.O.D. indicators, refer to Section 2.5, “B.O.D. (Build on demand)”.

***10.*** **Video input terminal (type C only; see Section 2.5)**

The BNC cable is connected here to receive the video signal.

***11.*** **Exposure level switch (up)**

This switch is pressed to brighten the endoscopic image on the video monitor.

***12.*** **Exposure level switch (down)**

This switch is pressed to darken the endoscopic image on the video monitor.

***13.*** **Exposure level indicators**

The lit LED moves to the right/left as the exposure level is increased/decreased.

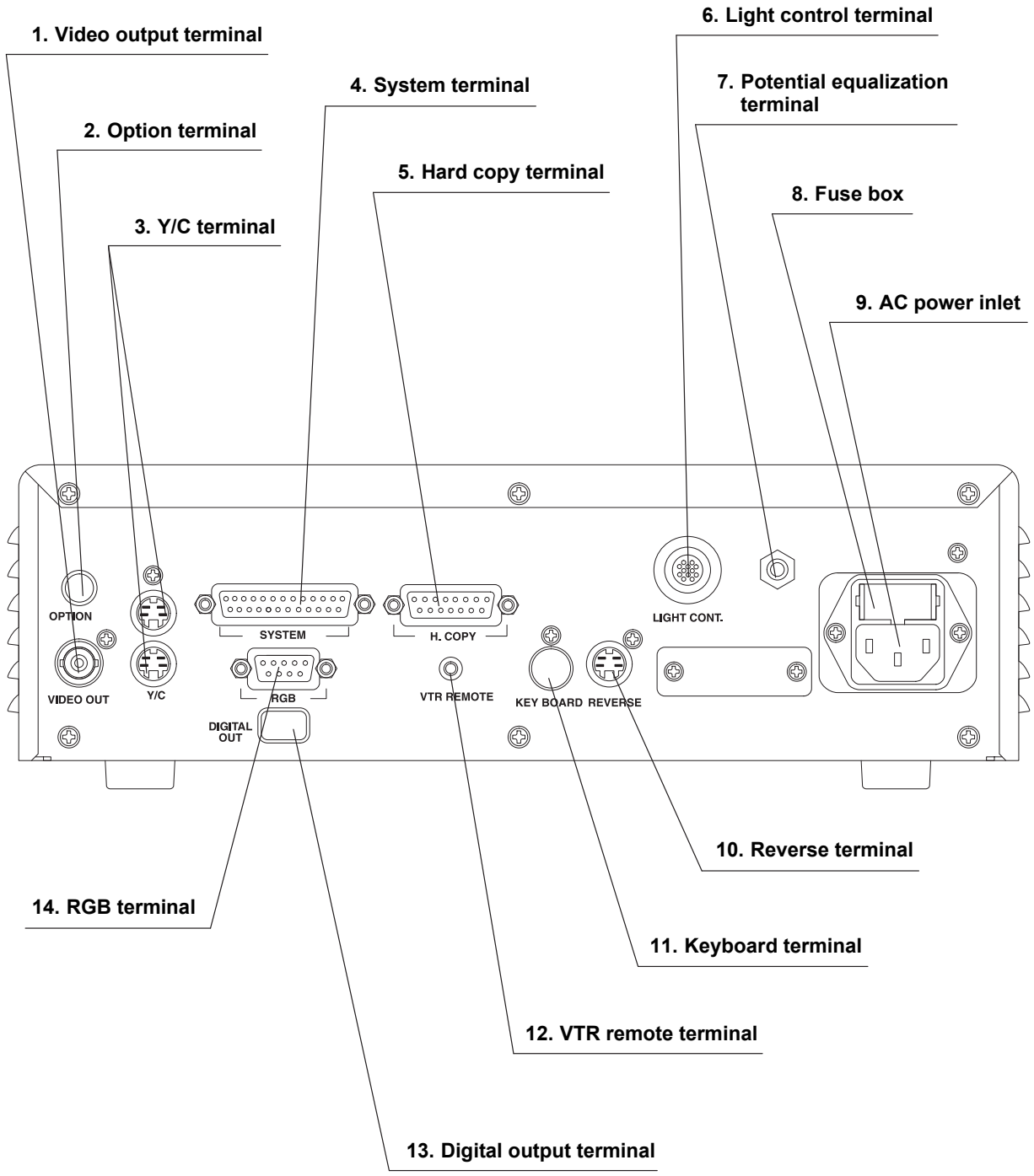
***14.*** **White balance indicator**

This indicator lights up for 4 seconds when white balance is performed.

***15.*** **White balance switch**

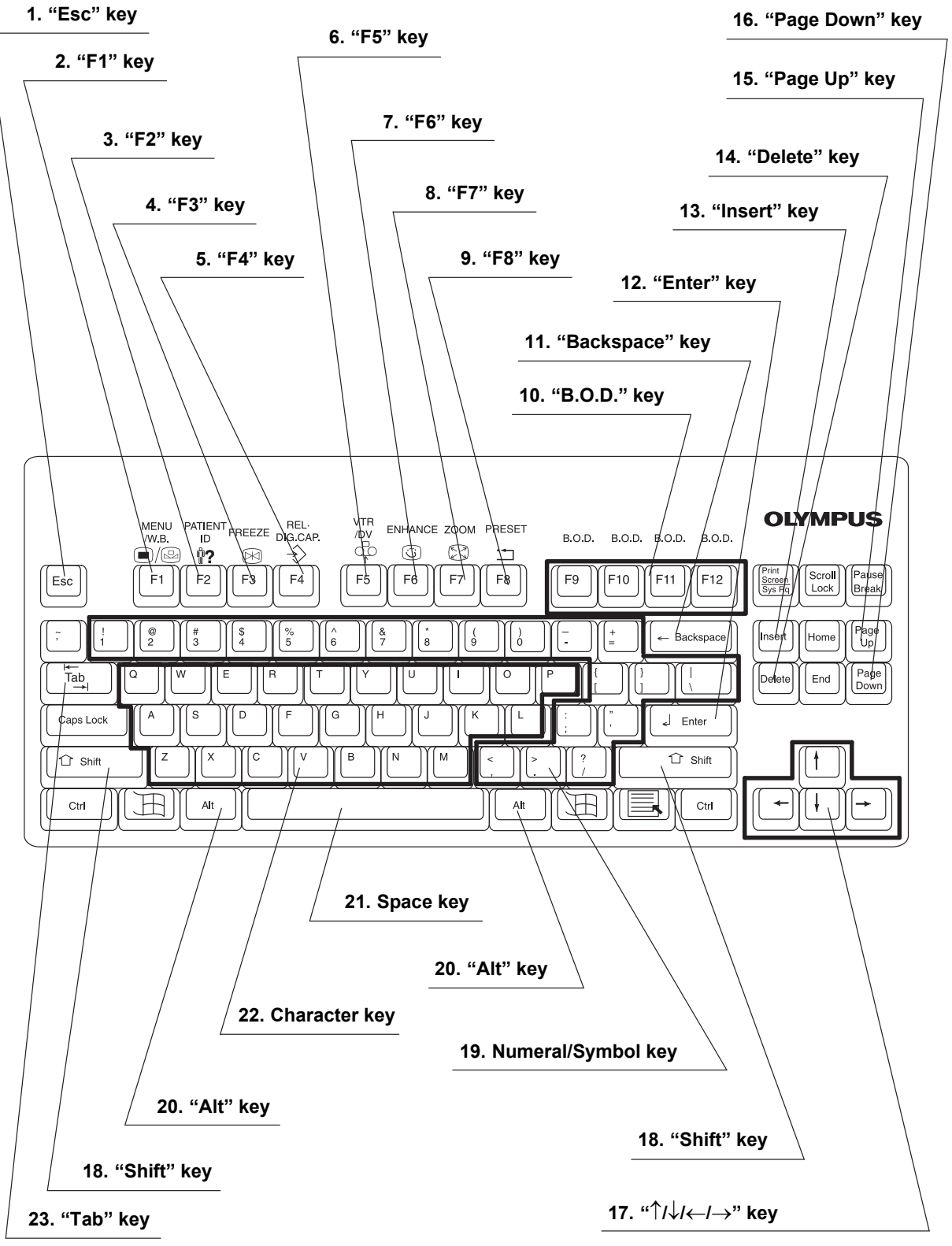
This switch is pressed to automatically adjust the white balance.

# 2.3 Rear panel



1. **Video output terminal**
   The composite video signal is transmitted via this terminal.
2. **Option terminal**
   This terminal is prepared for system expansion.
3. **Y/C terminal**
   Y/C video signal is transmitted via this terminal.
4. **System terminal**
   This terminal accepts a connection from an external unit.
5. **Hard copy terminal**
   Communication signals for EVIS monitor photo unit (SCV-3: not available in some countries) or color video printer (OEP-3/OEP) are transmitted via this terminal. It is not possible to control the SCV-3 and OEP-3/OEP at the same time.
6. **Light control terminal**
   The signal used for automatic light adjustment is transmitted via this terminal.
7. **Potential equalization terminal**
   For safety purposes, this terminal is connected to a potential equalization busbar of the electrical installation.
8. **Fuse box**
   The fuse box protects the OTV-S7V from electrical surges.
9. **AC power inlet**
   AC power is provided via this inlet.
10. **Reverse terminal (type C only; see Section 2.5)**
    Y/C video signal of a normal, rotated or mirrored images is transmitted via this terminal.
11. **Keyboard terminal**
    Data from the keyboard are transmitted via this terminal.
12. **VTR remote terminal**
    The communication signals for the VTR are transmitted via this terminal.
13. **Digital output terminal (types B, C, D, F only; see Section 2.5)**
    Digital video signal is transmitted via this terminal.
14. **RGB terminal**
    RGB video signal is transmitted via this terminal.

# 2.4 Keyboard for OTV-S7V (MAJ-1124, optional)



1. **"Esc" key**
   This key is pressed to exit the menu.
2. **"F1" key**
   This key is pressed to display the menu or to go to a previous menu. Press this key and the "Shift" key simultaneously to adjust the white balance.
3. **"F2" key**
   This key is pressed to display the patient data. Press this key and the "Shift" key simultaneously to display the menu for inputting the patient data.
4. **"F3" key**
   This key is pressed to toggle the freeze function on and off. Press this key and the "Shift" key simultaneously to display the menu for setting the freeze mode.
5. **"F4" key**
   This key is pressed to release the SCV-3, OEP or OEP-3 and capture an image to Memory Card Press this key and the "Alt" key simultaneously to display the menu to set the equipment that is controlled by pressing the "F4" key.
6. **"F5" key**
   This key is pressed to toggle between record and pause on the VTR or digital video recorder. Press this key and the "Alt" key simultaneously to display the menu to set the equipment that is controlled by pressing the "F5" key.
7. **"F6" key**
   This key is pressed to cycle the image enhancement level through OFF, LOW, MEDIUM and HIGH.
8. **"F7" key**
   This key is pressed to electrically magnify the image.
9. **"F8" key**
   This key is pressed to save or load user and default settings.
10. **"B.O.D." key**
    This key is pressed to perform the B.O.D. function. Press this key and the "Alt" key simultaneously to display the menu to set the B.O.D. Press this key and the "Shift" key simultaneously to display the menu to set the B.O.D function that is controlled by pressing the "B.O.D." key.
11. **"Backspace" key**
    This key is pressed to delete the character one space to the left of the cursor position. Press this key and the "Shift" key simultaneously to delete the patient data that are displayed on the monitor.

***12.*** **"Enter" key**
This key is pressed to set the selected menu, to change the color of character from black to white or to enter the settings.

***13.*** **"Insert" key**
This key is pressed to toggle between insert and overwrite text modes.

***14.*** **"Delete" key**
This key is pressed to delete the character at the cursor position or to delete an image recorded on Memory Card.

***15.*** **"Page Up" key**
When the image search mode for playing back Memory Card is displayed on the monitor, this key is pressed to display the previous page.

***16.*** **"Page Down" key**
When the image search mode for playing back Memory Card is displayed on the monitor, this key is pressed to display the next page.

***17.*** **"↑/↓/←/→" key**
This key is pressed to move the arrow or to adjust the setting. Press this key and the "Shift" key simultaneously to increase/decrease brightness.

***18.*** **"Shift" key**
This key is used in combination with an "F*" key, "Numeral/symbol" key or "Character" key.

***19.*** **Numeral/Symbol key**
This key is pressed to enter the numeral or symbol that is written in lower left corner. Press this key and the "Shift" key simultaneously to enter the numeral or symbol that is written in the upper left corner.

***20.*** **"Alt" key**
This key is used in combination with an "F*" key.

***21.*** **Space key**
This key is pressed to insert a space.

***22.*** **Character key**
This key is pressed to enter the character with a capital letter. Press this key and the "Shift" key simultaneously to enter the character with a small letter.

***23.*** **"Tab" key**
This key is used to play back 2 images from Memory Card at the same time on the video monitor.

# 2.5 B.O.D. (Build on demand)

Five types of OTV-S7V are available (see Table 2.1). Confirm your type by observing the B.O.D. indicators (see Table 2.2).

If you want to add to or modify the B.O.D., please contact Olympus.

○: Installed, –: Not installed

| B.O.D. | B.O.D. indicator | Type A | Type B | Type C | Type D | Type F (NTSC only) |
|---|---|---|---|---|---|---|
| **DV unit for OTV-S7 (OTV-S7BOD-DV)** | DV | – | ○ | ○ | ○ | ○ |
| **PC card unit for OTV-S7 (OTV-S7BOD-PC)** | DIGITAL CAPTURE | – | ○ | ○ | – | ○ |
| **P IN P unit for OTV-S7 (OTV-S7BOD-PP)** | P IN P/REVERSE | – | – | ○ | – | – |
| **Multi freeze unit for OTV-S7 (OTV-S7BOD-MF)** | MULTI FREEZE | – | – | – | – | – |
| **Orientation unit for OTV-S7 (OTV-S7BOD-RT)** | ORIENTATION | – | – | – | – | ○ |

Table 2.1

| | Type A | Type B | Type C | Type D | Type F (NTSC only) |
|---|---|---|---|---|---|
| **B.O.D. indicators** | | DV | DV | DV | DV |
| | | DIGITAL CAPTURE | DIGITAL CAPTURE | | DIGITAL CAPTURE |
| | | | P IN P/REVERSE | | ORIENTATION |
| | | | | | |

Table 2.2

NOTE

- None of the OTV-S7V types are shipped with the multi freeze unit, and type F include the orientation unit is not shipped to PAL area; they may only be installed by Olympus personnel. If you wish to add the multi freeze unit and/or orientation unit to the OTV-S7V, please contact Olympus.
- Type A does not have a B.O.D. installed.

# Chapter 3 Installation and Connection

**WARNING**

- When non-medical electrical ancillary equipment is being used, connect the power cords via an isolation transformer prior to connecting the signal cables. Failure to do this can cause electric shock, burns and/or fire.
- Take care not to exceed the rating of the isolation transformer. Otherwise, the equipment may not work correctly.
- If the equipment is provided with a ground wire, securely connect it to an existing GND terminal. Failure to do this can cause electric shock.
- Never connect the GND wire to a gas pipe; explosion can result.

**CAUTION**

- When plugging connectors into terminals, hold the connector plug horizontal to the terminal and push it in completely without applying excessive force. If the connector is held at an angle, or excessive force is used to connect it, the connector pins may be deformed.
- After plugging the connector into the terminal, do not subject the cable to excessive force. Cable damage can result.
- Confirm that the power cords are securely attached so they will not accidentally be disconnected during operation. Otherwise, images could disappear during the procedure.
- Never apply excessive force to bend, pull or twist the power cords. Power cord damage can result.
- Never pull connectors or cables with undue force. Connector or cable damage can result.

Prepare this instrument, the compatible ancillary equipment (shown in the “System chart” in the Appendix) and other equipment to be used with this instrument for the particular case. Also refer to the instruction manual for each piece of equipment.

# 3.1 Installation

**CAUTION**

- Do not obstruct the ventilation grills with ancillary equipment, etc. If the OTV-S7V is not cooled properly, it may be damaged.
- Do not place any equipment other than the VISERA BF processor MAJ-1236 on top of the OTV-S7V; equipment damage can result.
- Place the OTV-S7V on a stable, level surface. Failure to do so may cause the equipment to fall.

# 3.2 Connection to a light source

Connect the OTV-S7V to a light source as shown in Figure 3.1 using light control cable MAJ-944.

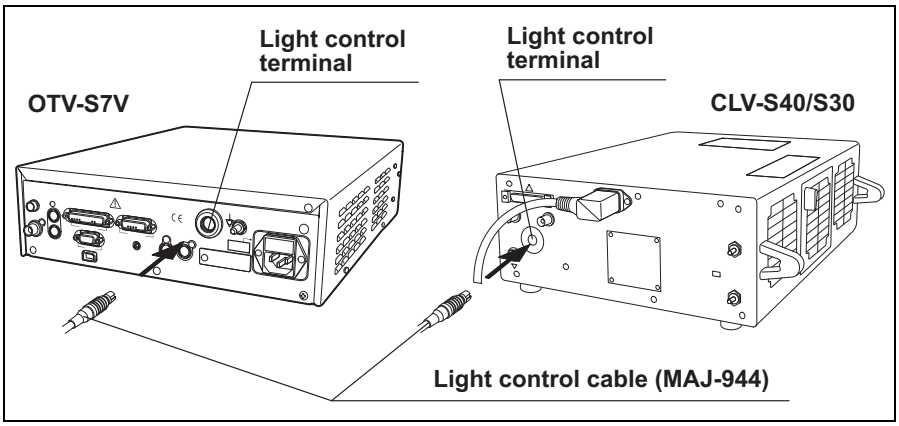



Figure 3.1

NOTE

- Use light control cable MAJ-944 which is a standard accessory of the OTV-S7V. Other cables cannot ensure optimum performance of the automatic brightness control function.
- An isolation transformer is not required for the light source's power supply. If a light source is connected to an isolation transformer, the demand may exceed the capacity of the transformer.
- When using light sources with filters in combination with rigid endoscopes, refer to the light source's instruction manual.

- Light sources other than CLV-S40/S30 may be connected to the OTV-S7V differently than shown in Figure 3.1. When using other light sources, refer to the respective instruction manuals, and confirm the location of the light control terminal.
- For a listing of light sources with an automatic brightness control function, refer to Section 5.7, “Brightness adjustment”.
- Light sources using halogen lamps do not have automatic brightness control functions. Moreover, these light sources produce less light and have a shorter viewing distance than light sources using xenon lamps.

# 3.3 Connection to a video monitor

## Display a normal image on the video monitor

1. Turn both the OTV-S7V and the video monitor OFF.
2. When using the OEV143/203 or OEV142/202, connect the Y/C cable, BNC cable or RGB cable to the video monitor as shown in Figure 3.2.
3. When using the OEV141/201, connect the Y/C cable, BNC cable or RGB cable to the video monitor as shown in Figure 3.3.

NOTE

- Incorrect cable connection may result in inadequate image display or no image on the video monitor.
- Non-medical grade video monitors must be connected via an isolation transformer.
- When displaying rotated images by the orientation function (type F and installed in OTV-S7BOD-RT type only), connect the video monitor as shown in Figure 3.2 or 3.3.

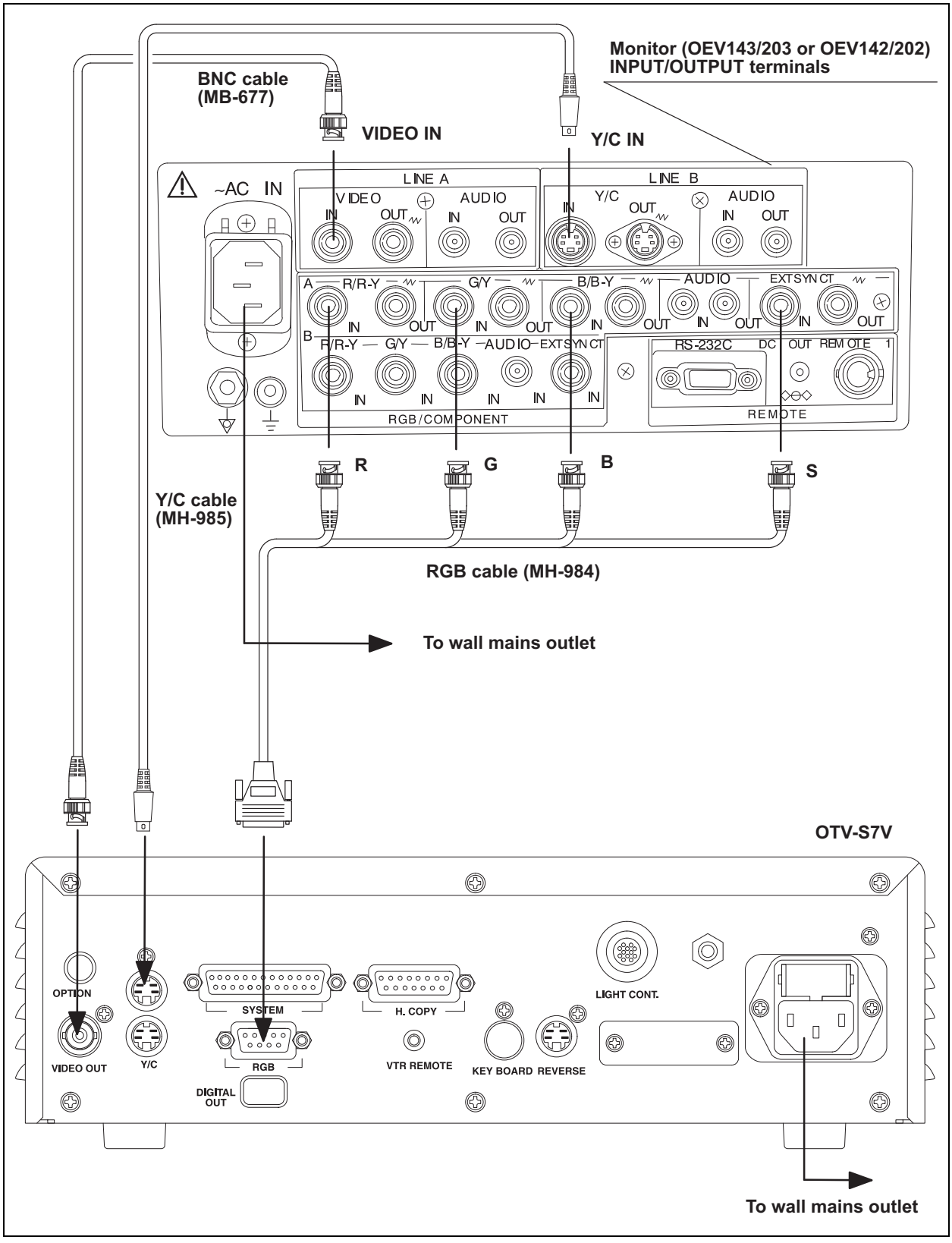

Monitor (OEV143/203 or OEV142/202)
INPUT/OUTPUT terminals
BNC cable
(MB-677)
VIDEO IN
Y/C IN
~AC IN
LINE A
VIDEO
AUDIO
IN
OUT
LINE B
Y/C
A
R/R-Y
G/Y
B/B-Y
AUDIO
EXT SYNCT
B
RS-232C
DC OUT
REMOTE
RGB/COMPONENT
R
G
B
S
Y/C cable
(MH-985)
RGB cable (MH-984)
To wall mains outlet
OTV-S7V
OPTION
VIDEO OUT
Y/C
SYSTEM
RGB
DIGITAL OUT
H. COPY
VTR REMOTE
KEY BOARD
REVERSE
LIGHT CONT.
To wall mains outlet

Figure 3.2

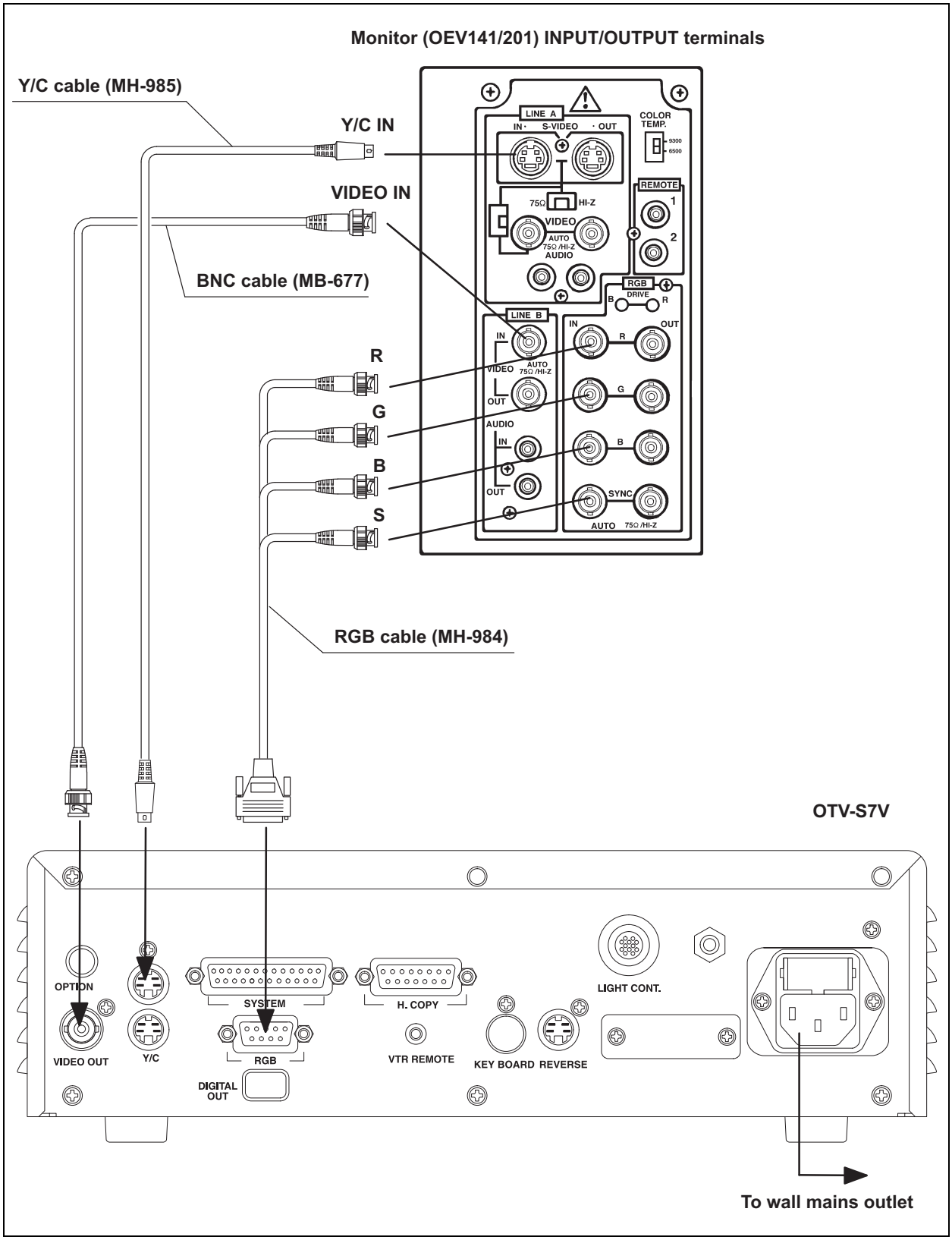

Monitor (OEV141/201) INPUT/OUTPUT terminals
Y/C cable (MH-985)
Y/C IN
VIDEO IN
BNC cable (MB-677)
R
G
B
S
RGB cable (MH-984)
OTV-S7V
LINE A
IN · S-VIDEO · OUT
COLOR TEMP.
9300
6500
REMOTE
1
2
75Ω HI-Z
VIDEO
AUTO 75Ω /HI-Z
AUDIO
RGB DRIVE
B
R
LINE B
IN
OUT
VIDEO
AUDIO
G
SYNC
AUTO 75Ω /HI-Z
OPTION
VIDEO OUT
Y/C
SYSTEM
RGB
DIGITAL OUT
H. COPY
VTR REMOTE
KEY BOARD
REVERSE
LIGHT CONT.
To wall mains outlet

Figure 3.3

## *To display rotated and mirror images on the video monitor (type C only; see Section 2.5)*

1. Turn both the OTV-S7V and video monitor OFF.
2. When using the OEV143/203 or OEV142/202, connect the Y/C cable to the video monitor as shown in Figure 3.4.
3. When using the OEV141/201, connect the Y/C cable to the video monitor as shown in Figure 3.5.

NOTE

- Incorrect cable connection may result in inadequate image display or no image on the video monitor.
- Non-medical grade video monitors must be connected via an isolation transformer.
- When displaying rotated images by the orientation function (type F and installed in OTV-S7BOD-RT type only), connect the video monitor as shown in Figure 3.2 or 3.3.

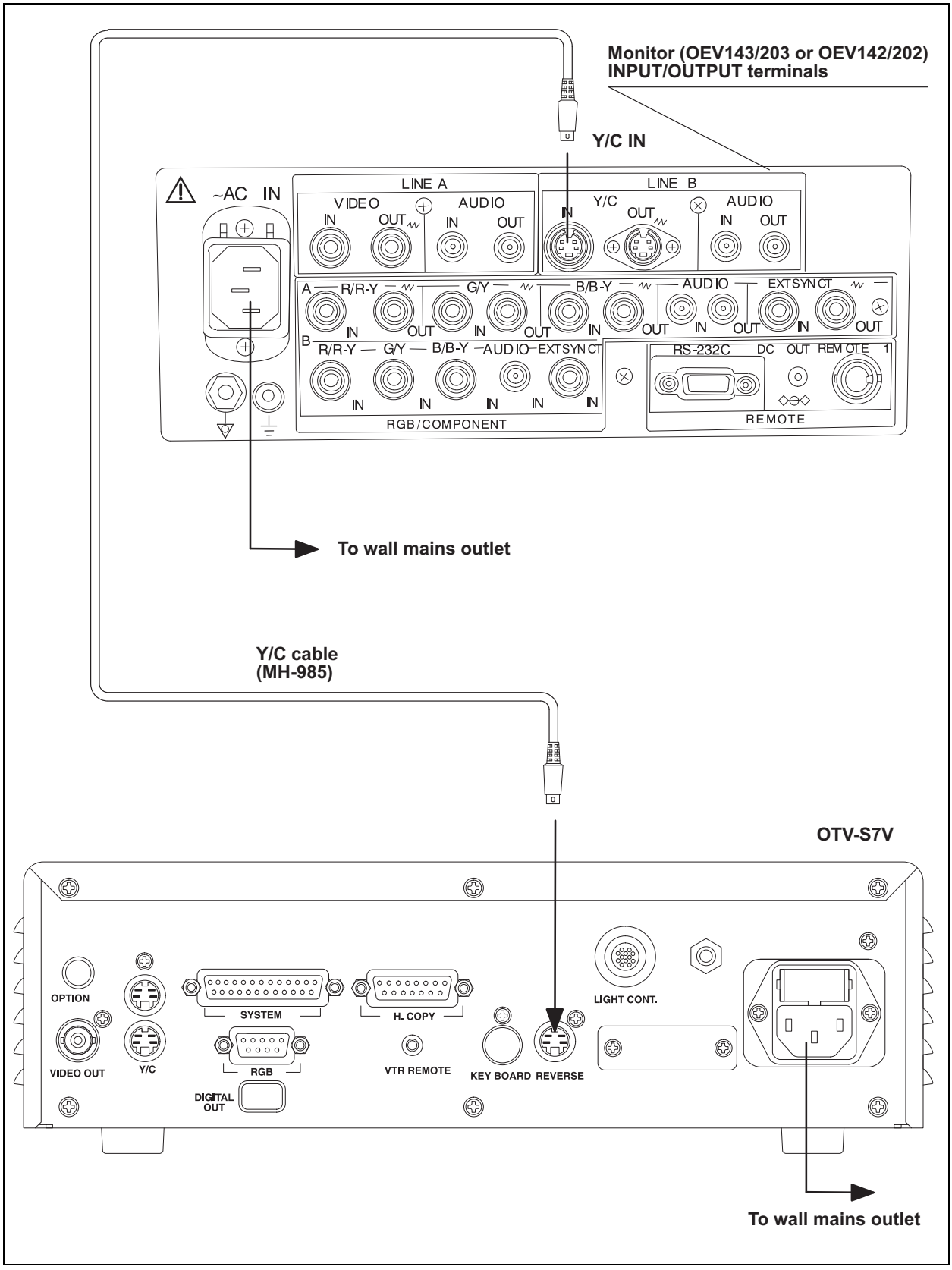

Monitor (OEV143/203 or OEV142/202)
INPUT/OUTPUT terminals
Y/C IN
~AC IN
LINE A
VIDEO
AUDIO
IN
OUT
LINE B
Y/C
A
R/R-Y
G/Y
B/B-Y
AUDIO
EXT SYNCT
B
RGB/COMPONENT
RS-232C
DC OUT
REMOTE 1
REMOTE
To wall mains outlet
Y/C cable
(MH-985)
OTV-S7V
OPTION
VIDEO OUT
Y/C
SYSTEM
RGB
DIGITAL OUT
H. COPY
VTR REMOTE
KEY BOARD
REVERSE
LIGHT CONT.
To wall mains outlet

Figure 3.4

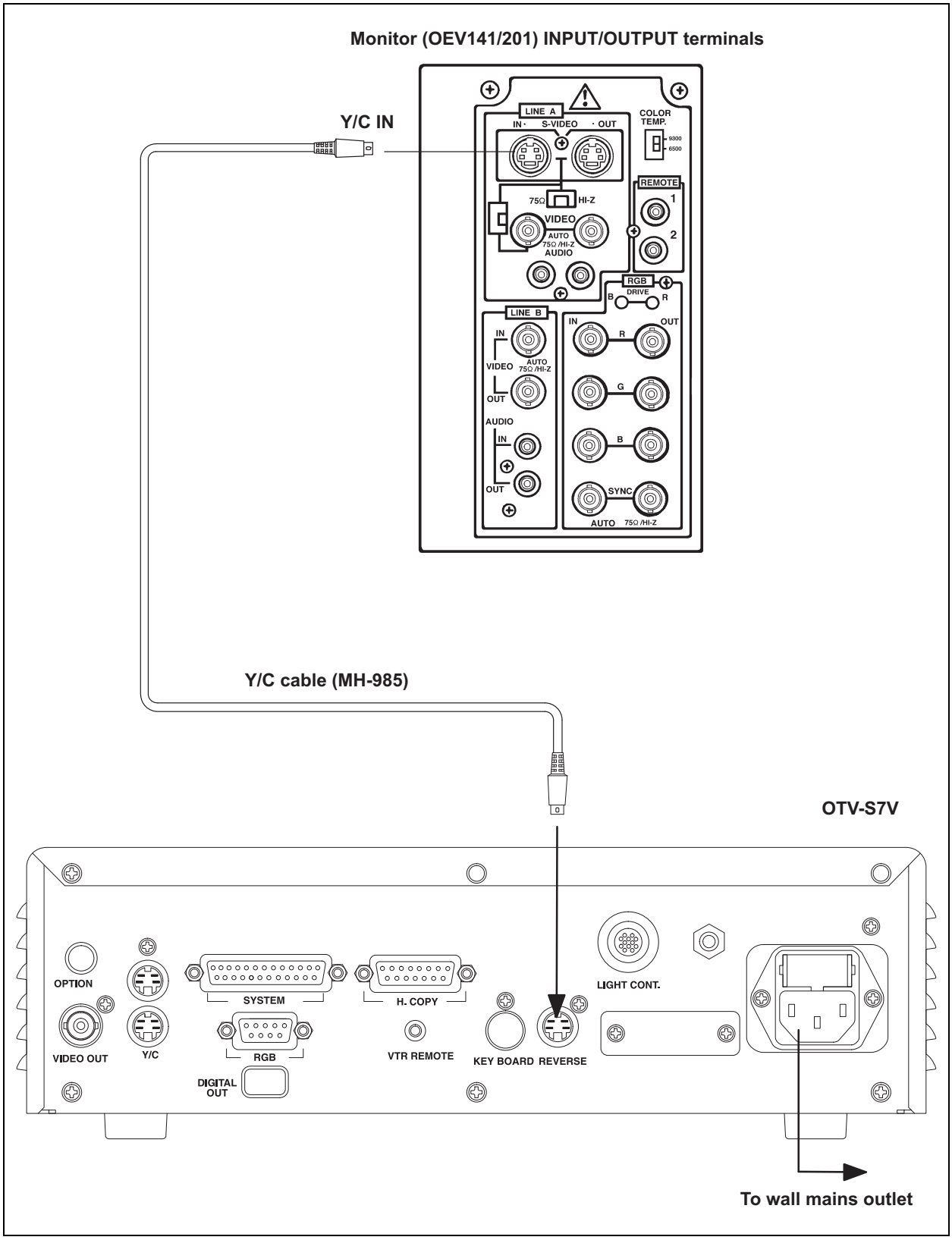

Monitor (OEV141/201) INPUT/OUTPUT terminals
Y/C IN
LINE A
IN
S-VIDEO
OUT
COLOR TEMP.
9300
6500
REMOTE
1
2
75Ω
HI-Z
VIDEO
AUTO
75Ω /HI-Z
AUDIO
RGB
DRIVE
B
R
LINE B
IN
VIDEO
OUT
AUDIO
IN
OUT
R
G
B
SYNC
AUTO 75Ω /HI-Z
Y/C cable (MH-985)
OTV-S7V
OPTION
VIDEO OUT
Y/C
SYSTEM
RGB
DIGITAL OUT
H. COPY
VTR REMOTE
KEY BOARD
REVERSE
LIGHT CONT.
To wall mains outlet

Figure 3.5

# 3.4 Connection to a video tape recorder

**CAUTION**

Turn the OTV-S7V and VTR OFF before attaching the VTR remote control cable. Failure to do so, equipment damage can cause.

1. Turn the OTV-S7V and VTR OFF.
2. Connect the VTR power cord to the isolation transformer.
3. Connect the isolation transformer's power cord to a wall mains outlet.
4. When using the OEV143/203 with the SVO-9500MD/9500MDP, connect the VTR as shown in Figure 3.6.

NOTE

- The VTR remote control function is only available when using the SVO-9500MD (NTSC) or SVO-9500MDP (PAL).
- For details of connecting the video monitor and the OTV-S7V, refer to Section 3.3, "Connection to a video monitor".

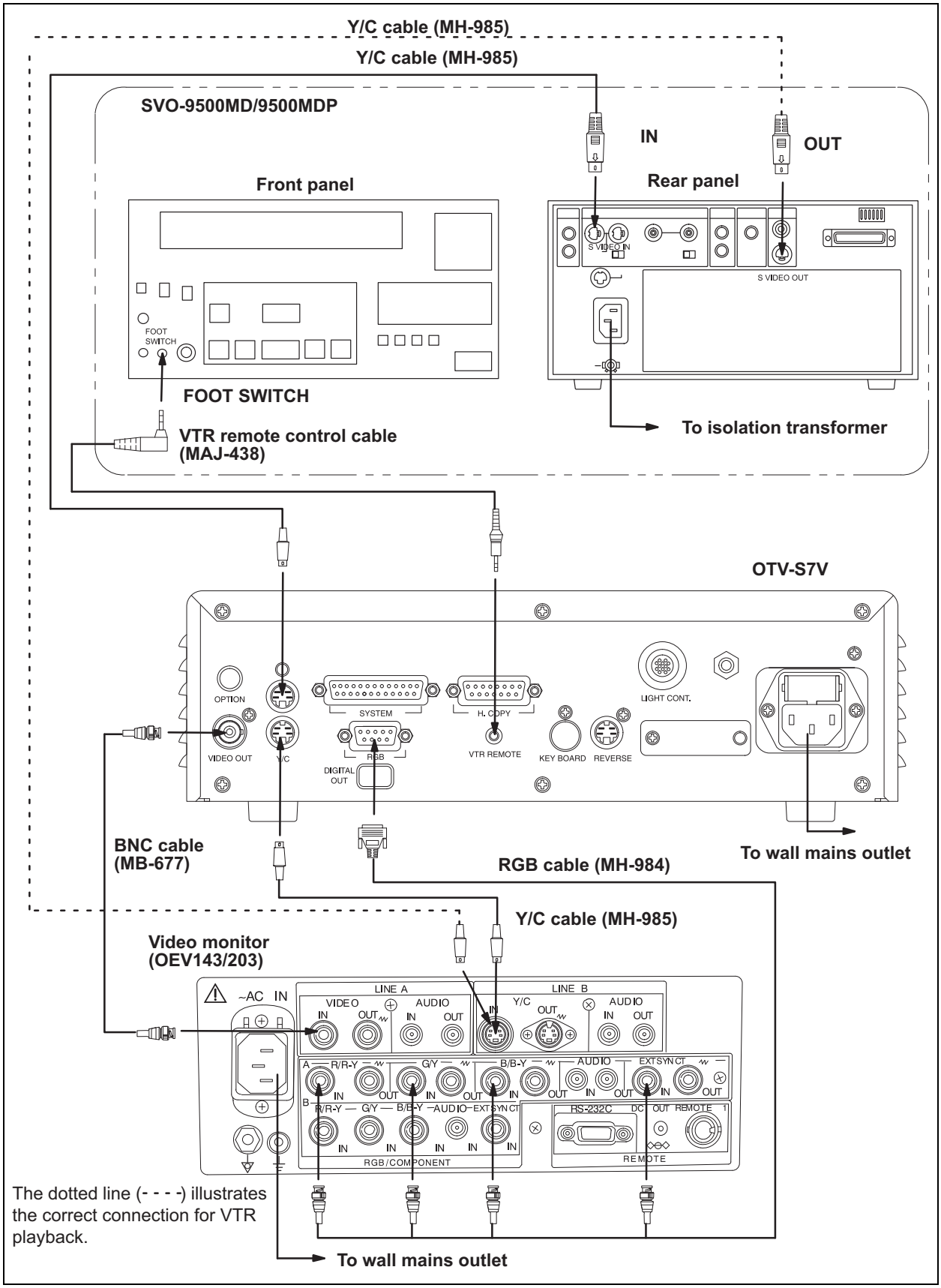

Y/C cable (MH-985)
Y/C cable (MH-985)
SVO-9500MD/9500MDP
IN
OUT
Front panel
Rear panel
S VIDEO IN
S VIDEO OUT
FOOT SWITCH
FOOT SWITCH
To isolation transformer
VTR remote control cable (MAJ-438)
OTV-S7V
OPTION
VIDEO OUT
Y/C
SYSTEM
RGB
DIGITAL OUT
H. COPY
VTR REMOTE
KEY BOARD
REVERSE
LIGHT CONT.
BNC cable (MB-677)
To wall mains outlet
RGB cable (MH-984)
Y/C cable (MH-985)
Video monitor (OEV143/203)
~AC IN
LINE A
LINE B
VIDEO
AUDIO
Y/C
R/R-Y
G/Y
B/B-Y
EXT SYNCT
RS-232C
REMOTE
RGB/COMPONENT
The dotted line (- - - -) illustrates the correct connection for VTR playback.
To wall mains outlet

Figure 3.6

# 3.5 Connection to a digital video recorder (types B, C, D, F only; see Section 2.5)

1. Turn the OTV-S7V and digital video recorder OFF.
2. Connect the digital video recorder's power cord to the isolation transformer.
3. Connect the isolation transformer's power cord to a wall mains outlet.
4. Connect the digital video recorder as shown in Figure 3.7.

NOTE

- The following digital video recorders are compatible with the OTV-S7V.
  DSR-20MD (NTSC), DSR-20MDP (PAL)
- For details of connecting the video monitor and the OTV-S7V, refer to Section 3.3, "Connection to a video monitor".

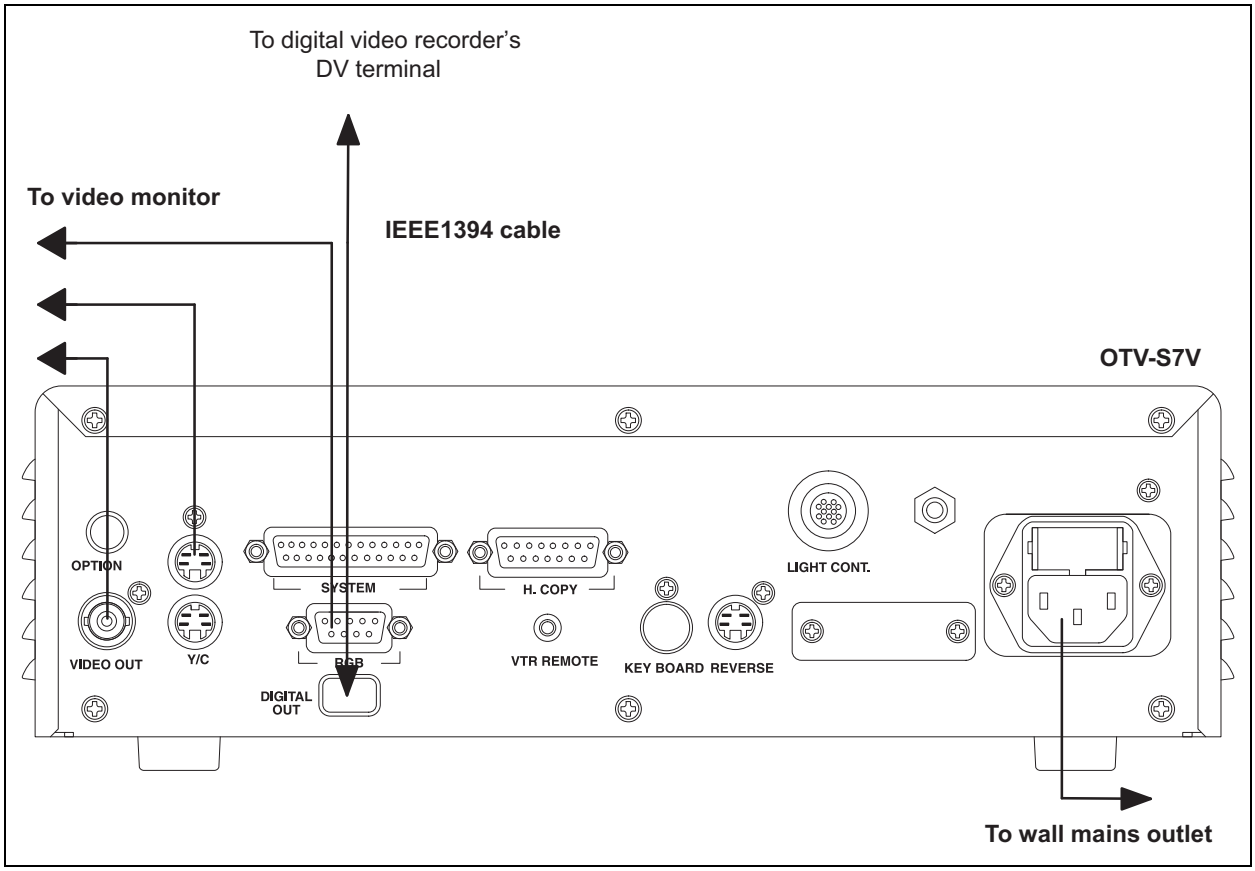



Figure 3.7

# 3.6 Connection to EVIS monitor photo unit SCV-3 (not available in some countries)

1. Turn the OTV-S7V and SCV-3 OFF.
2. Connect the SCV cable and Y/C cable, BNC cable or RGB cable to the SCV-3 as shown in Figure 3.8.

NOTE

For details of connecting the video monitor and the OTV-S7V, refer to Section 3.3, “Connection to a video monitor”.

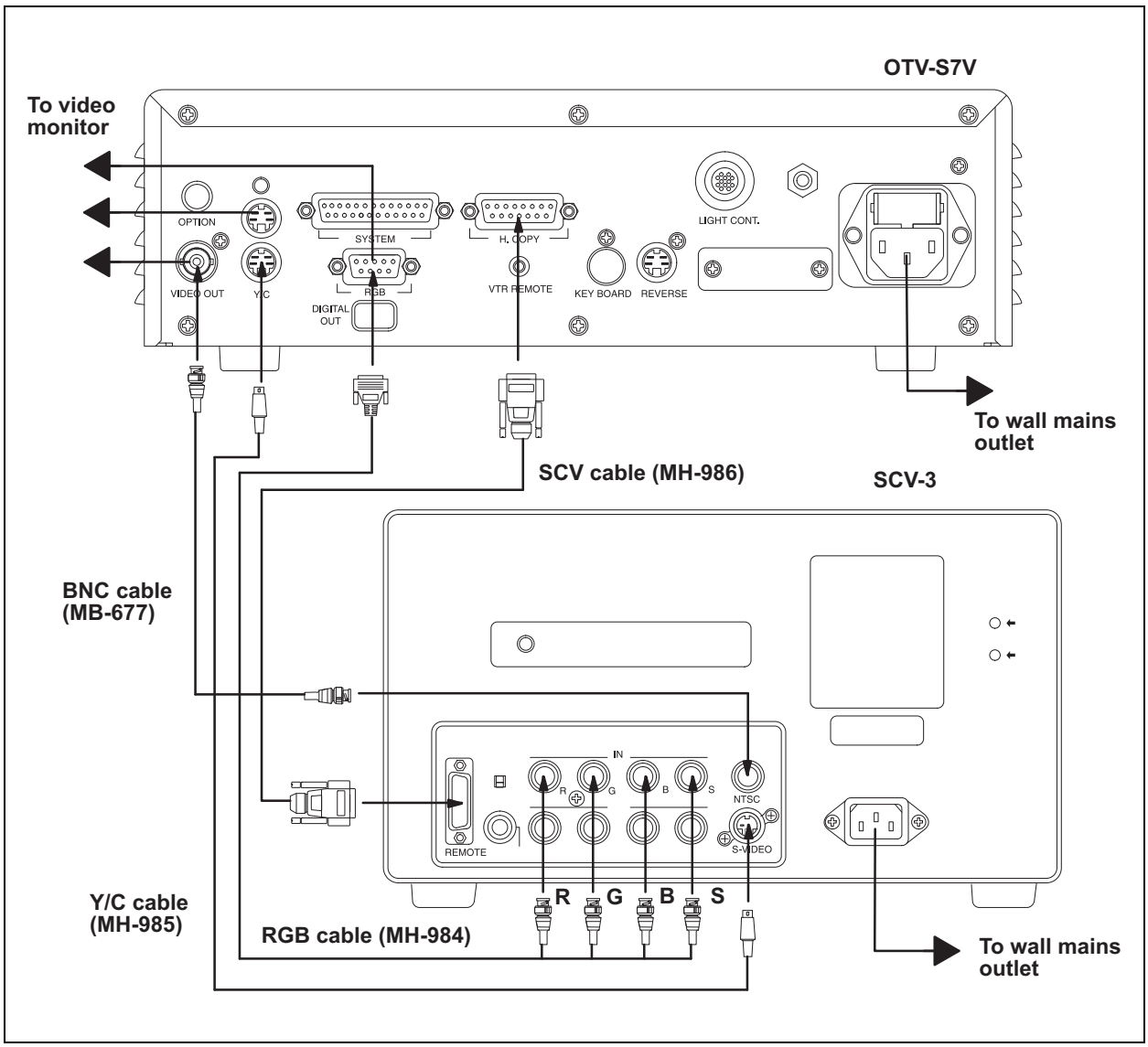



Figure 3.8

# 3.7 Connection to color video printer OEP-3/OEP (not available in some countries)

1. Turn the OTV-S7V and OEP-3/OEP OFF.
2. Connect the OEP cable and Y/C cable, BNC cable or RGB cable to the OEP-3/OEP as shown in Figure 3.9 or 3.10.

NOTE

For details of connecting the video monitor and the OTV-S7V, refer to Section 3.3, “Connection to a video monitor”.

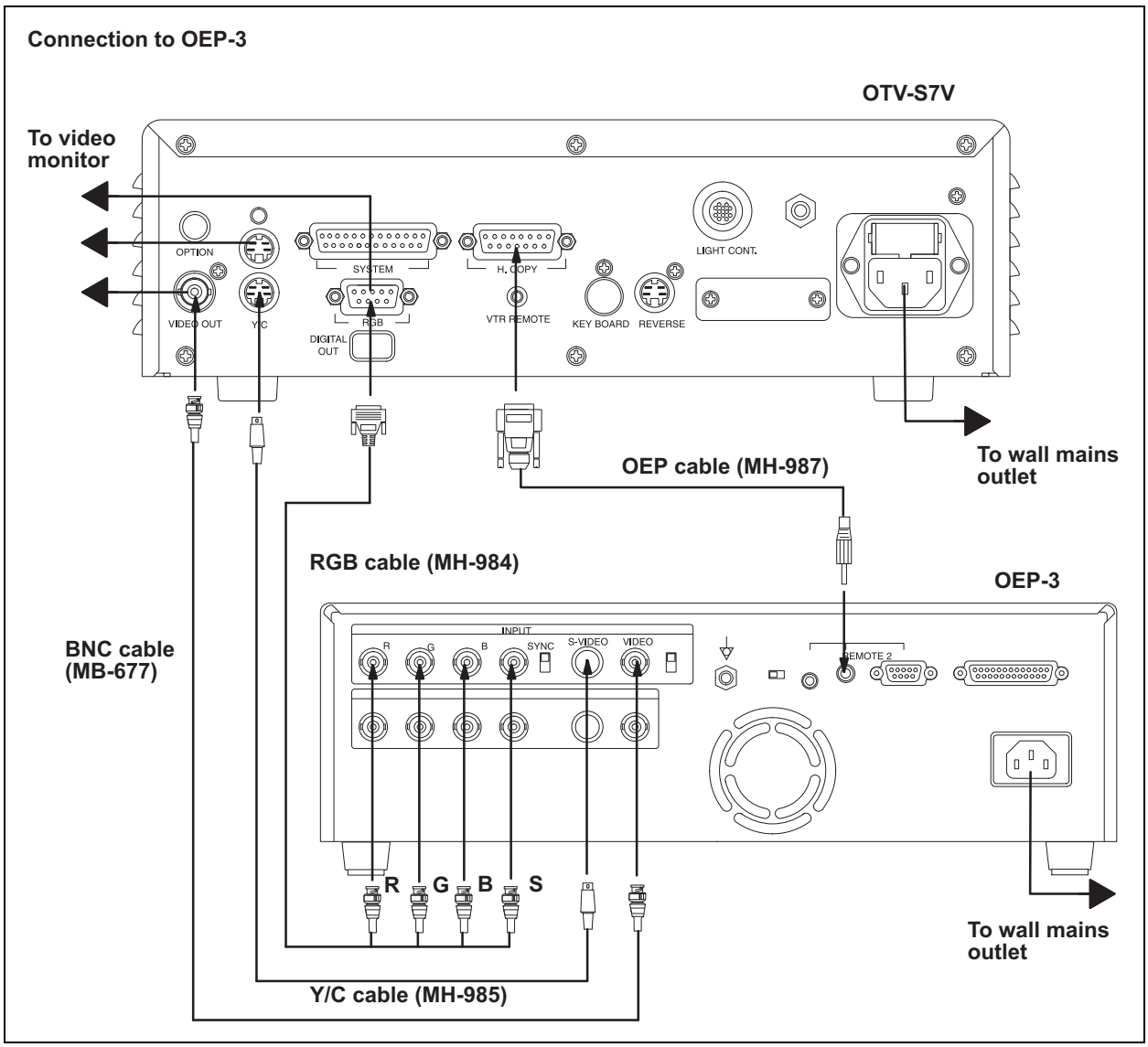



Figure 3.9

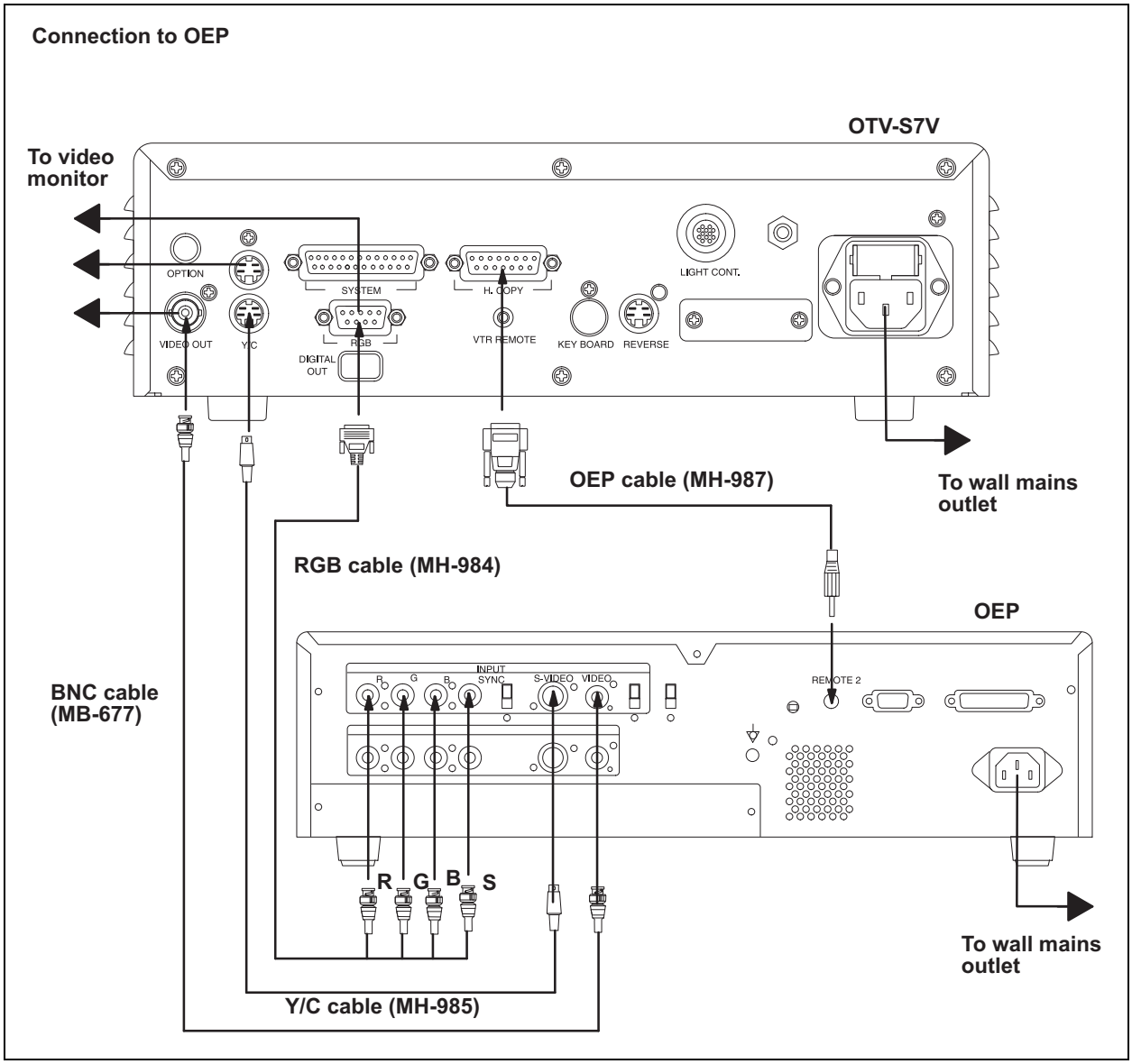

Connection to OEP
OTV-S7V
To video monitor
OPTION
VIDEO OUT
Y/C
SYSTEM
RGB
DIGITAL OUT
H. COPY
VTR REMOTE
KEY BOARD
REVERSE
LIGHT CONT.
OEP cable (MH-987)
To wall mains outlet
RGB cable (MH-984)
OEP
BNC cable (MB-677)
INPUT SYNC
S-VIDEO
VIDEO
REMOTE 2
R G B S
To wall mains outlet
Y/C cable (MH-985)

Figure 3.10

# 3.8 Connection to image mixer unit UIM

1. Turn the OTV-S7V and UIM OFF.
2. Connect the UIM to the OTV-S7V and SCV-3 or OEP-3/OEP as shown in Figure 3.11 or 3.12.

NOTE

- If the UIM is not being used in conjunction with the SCV-3 or OEP-3/OEP, there is no need to connect the OEP and RGB cables as shown in Figure 3.11 and 3.12.
- For details of connecting the video monitor and the OTV-S7V, refer to Section 3.3, “Connection to a video monitor”.

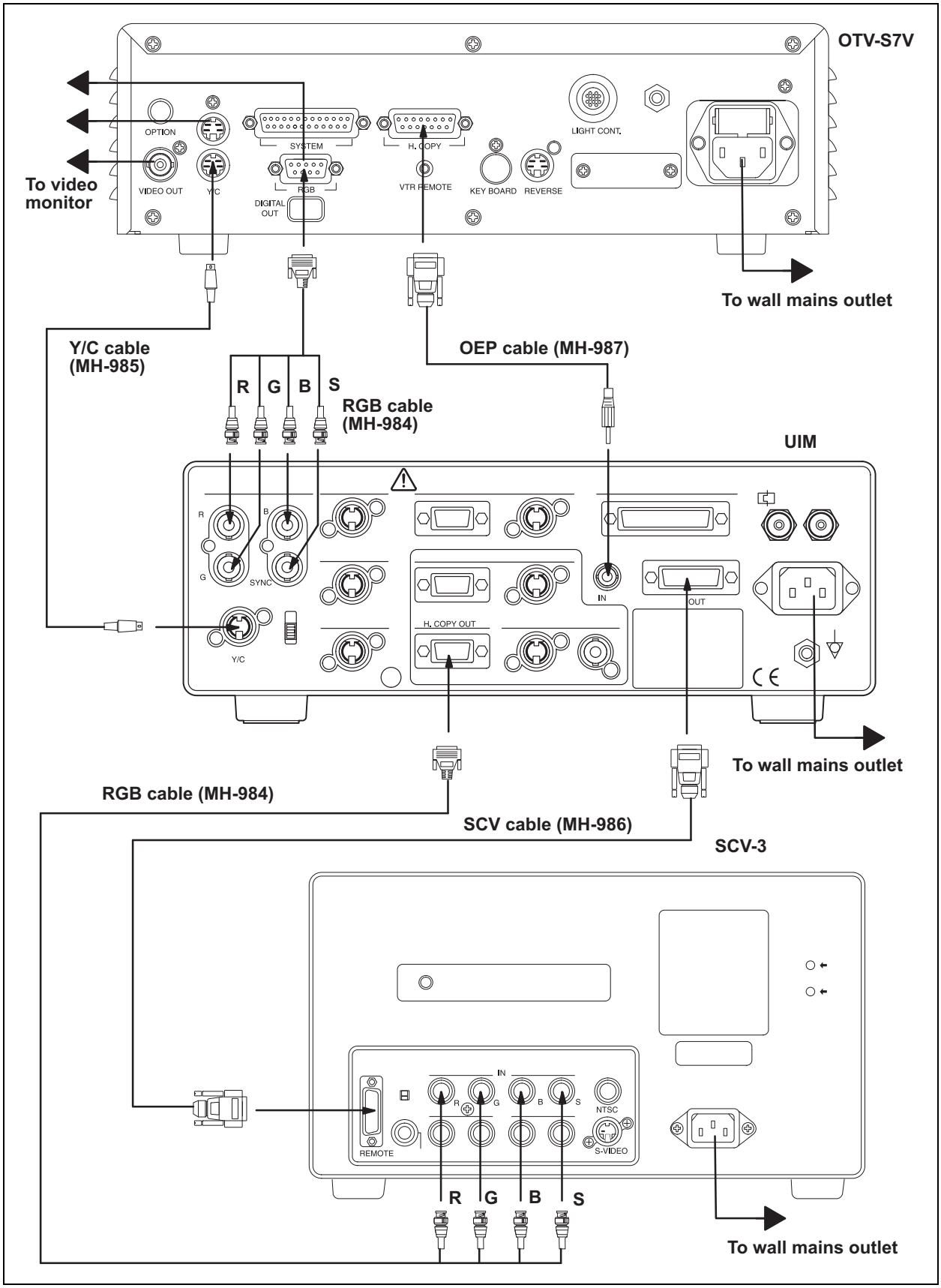

OTV-S7V
OPTION
VIDEO OUT
Y/C
SYSTEM
RGB
DIGITAL OUT
H. COPY
VTR REMOTE
KEY BOARD
REVERSE
LIGHT CONT.
To video monitor
To wall mains outlet
Y/C cable (MH-985)
OEP cable (MH-987)
R G B S
RGB cable (MH-984)
UIM
R
G
B
SYNC
Y/C
IN
OUT
H. COPY OUT
To wall mains outlet
RGB cable (MH-984)
SCV cable (MH-986)
SCV-3
IN
R
G
B
S
NTSC
S-VIDEO
REMOTE
R G B S
To wall mains outlet

Figure 3.11

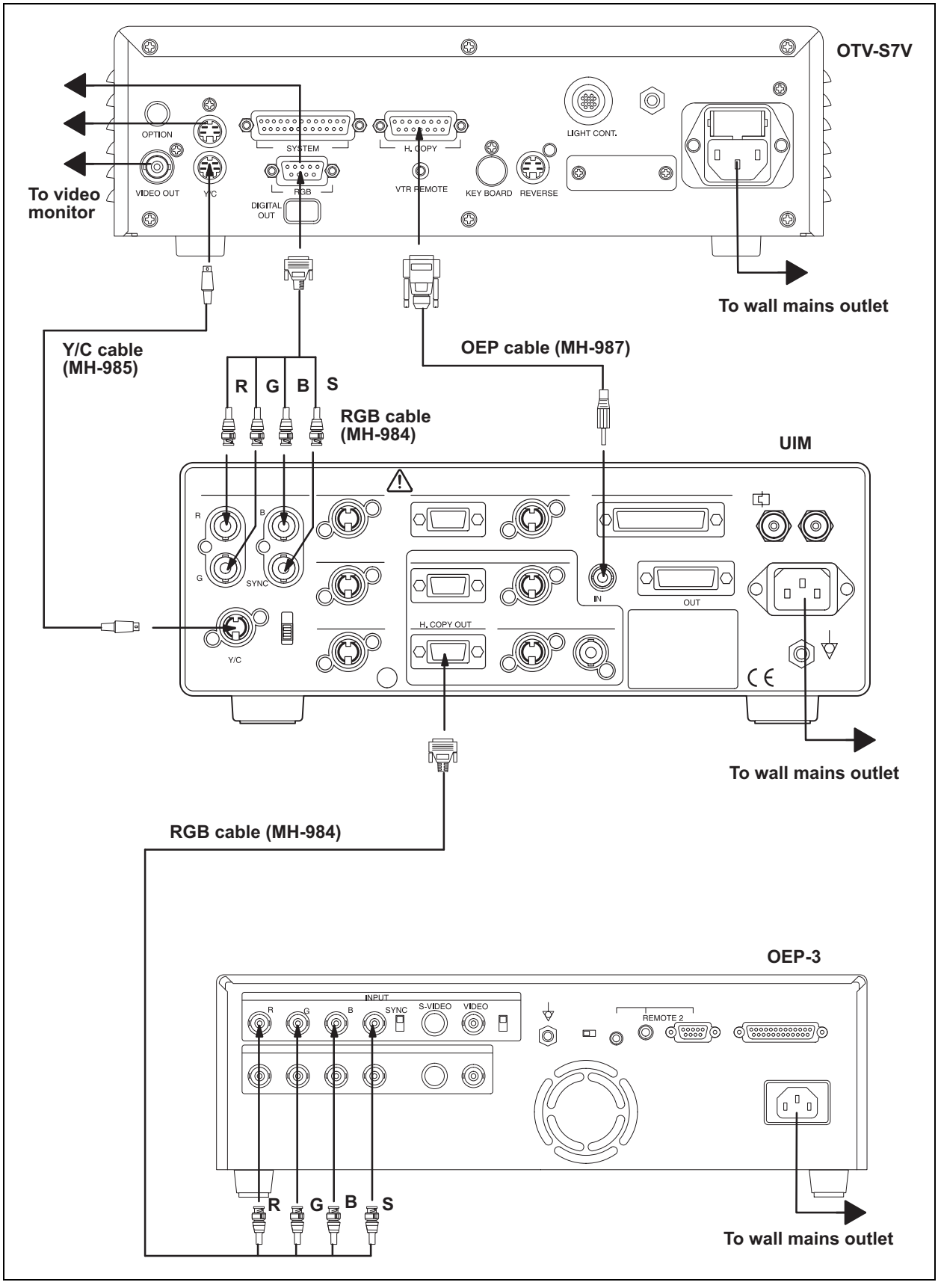

OTV-S7V
OPTION
VIDEO OUT
Y/C
SYSTEM
RGB
DIGITAL OUT
H. COPY
VTR REMOTE
KEY BOARD
REVERSE
LIGHT CONT.
To video monitor
To wall mains outlet
Y/C cable (MH-985)
OEP cable (MH-987)
R G B S
RGB cable (MH-984)
UIM
SYNC
IN
OUT
H. COPY OUT
Y/C
To wall mains outlet
RGB cable (MH-984)
OEP-3
INPUT
SYNC
S-VIDEO
VIDEO
REMOTE 2
R G B S
To wall mains outlet

Figure 3.12

# 3.9 Connection to a camera head or videoscope

**WARNING**

- Never excessively bend, pull, twist, coil, squeeze or apply a crushing force to the camera cable. The camera cable could become damaged.
- Make sure that the video plug and its electrical contacts are completely dry before connecting the plug to the OTV-S7V. Wet equipment could cause the image to flicker or disappear.

**CAUTION**

Do not connect or disconnect the video plug while the OTV-S7V is ON. Doing so may damage the electrical circuits inside the camera head or cause this equipment damage and/or malfunction.

## ❍ Connecting

1. Confirm that the video plug and its electrical contacts are dry (see Figure 3.13). If the equipment is wet, wipe it dry with a clean, lint-free cloth.

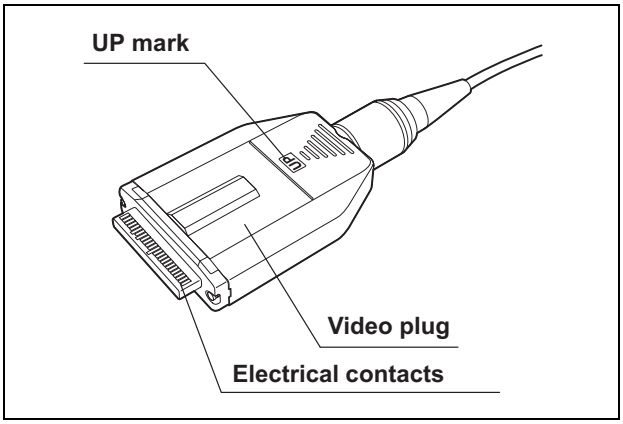



Figure 3.13

2. Turn the OTV-S7V OFF.
3. Hold the video plug so that the UP mark is facing upward (see Figures 3.13 and 3.14).
4. Hold the OTV-S7V stationary with one hand. With the other hand, push the video plug into the video connector socket until it clicks (see Figure 3.14).

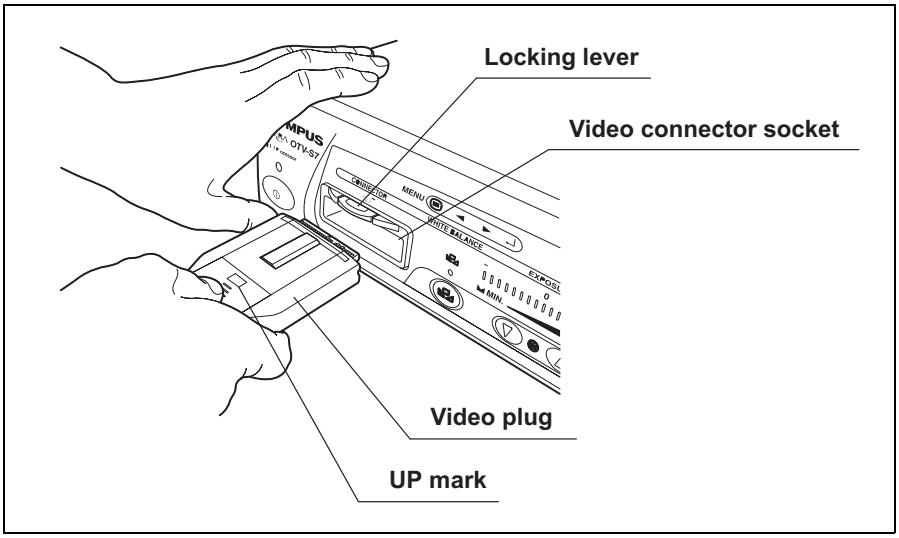



Figure 3.14

## Disconnecting

1. Turn the OTV-S7V OFF.
2. Hold the OTV-S7V stationary with one hand. With the other hand, press the video connector socket's locking lever and pull the video plug straight out (see Figure 3.15).

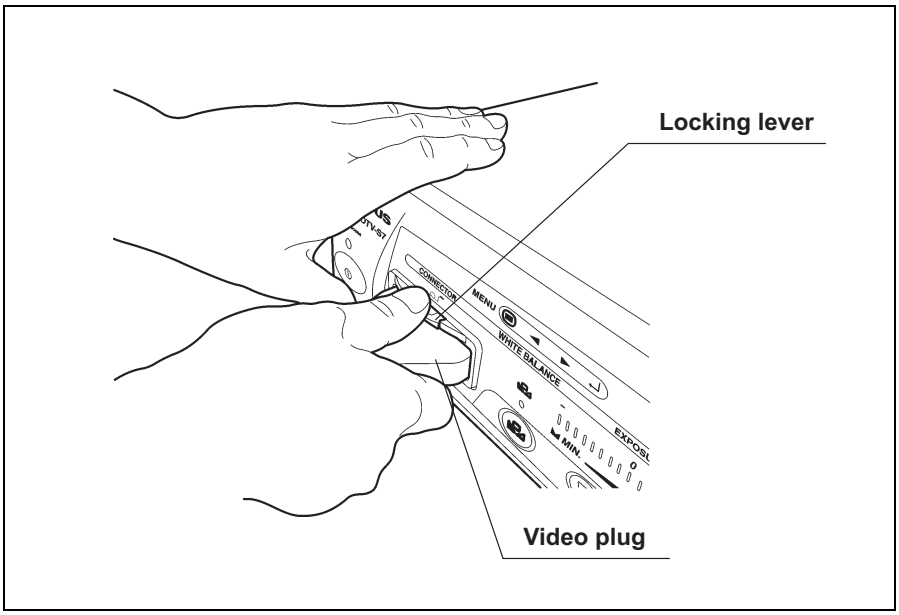



Figure 3.15

# 3.10 Connection to the keyboard for OTV-S7V MAJ-1124 (optional)

**CAUTION**

- Always turn OFF the OTV-S7V when connecting or disconnecting the keyboard to or from the OTV-S7V. Otherwise, the OTV-S7V will not receive input from the keyboard.
- Keep the HF equipment and ancillary cords as far away as possible from the keyboard. If placed too close, the OTV-S7V will not receive input from the keyboard.

1. Turn the OTV-S7V OFF.
2. Connect the keyboard as shown in Figure 3.16.

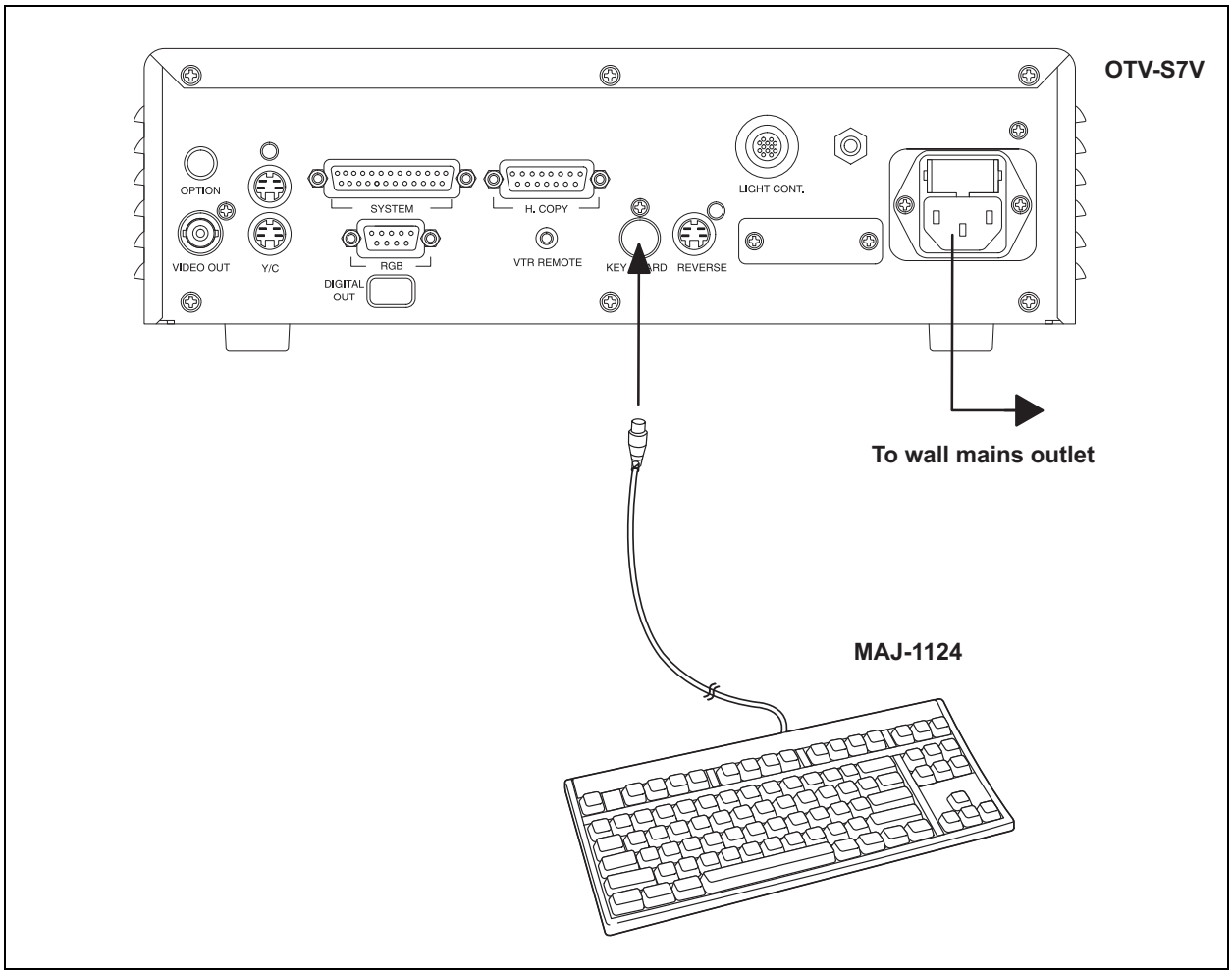



Figure 3.16

# 3.11 Inserting the PC card adapter and Memory Card (types B, C, F only; see Section 2.5)

**CAUTION**

- Before recording the images to Memory Card firstly, refer to “When all images are deleted” on page 157 and carry out “DELETE ALL”. Otherwise, neither the record nor the replay might be correctly done.
- Use only the PC card adapter (MA-2E, MAPC-10) SmartMedia (M-8PIE/16PIE/32PIE/64PIE/128PIE, M-8PIU/16PIU/32PIU/64PIU/128PIU) and xD-Picture Card (M-XD16P/32P/64P/128P/256P/512P) specified by Olympus. Other PC card adapters or Memory Card may not be capable of recording images.
- The PC card adapter and Memory Card are precision instruments. Handle them with care and avoid subjecting them to a sudden or severe impact. This may damage the PC card adapter and/or Memory Card.
- Avoid using the PC card adapter and Memory Card in an environment exposed to strong static, electric or magnetic noise. This may damage the PC card adapter and/or Memory Card.
- Avoid using the PC card adapter and Memory Card at high temperature or humidity or in a corrosive environment. This may damage the PC card adapter and/or Memory Card.
- Prevent foreign matter from getting into the OTV-S7V through the PC card slot. Otherwise, the OTV-S7V may be damaged.
- Usually push the eject switch into the OTV-S7V until it stops (see Figure 3.17). Otherwise, the eject switch may be damaged.

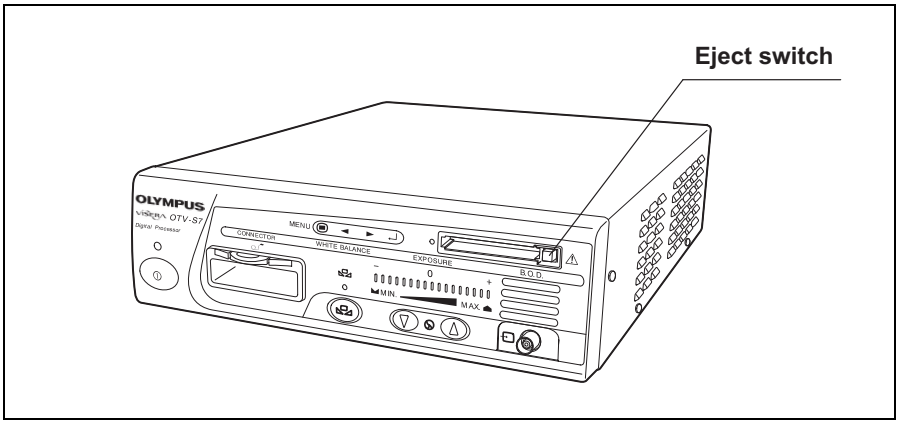



Figure 3.17

NOTE

Prepare a second Memory Card in the case the primary Memory Card becomes full.

## ❍ Connecting

*1.* Insert Memory Card (SmartMedia, xD-Picture Card) into the PC card adapter (MA-2E, MAPC-10) (see Figure 3.18).

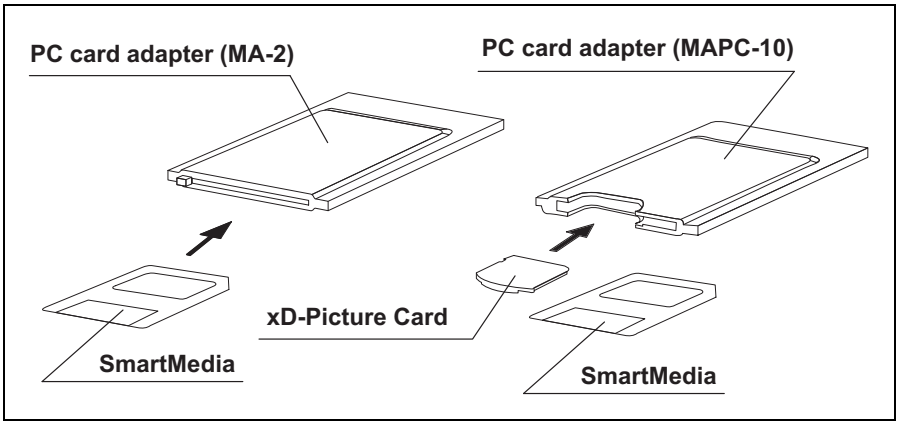



Figure 3.18

2. Insert the PC card adapter (MA-2E, MAPC-10) into the OTV-S7V's PC card slot until it stops (see Figure 3.19).

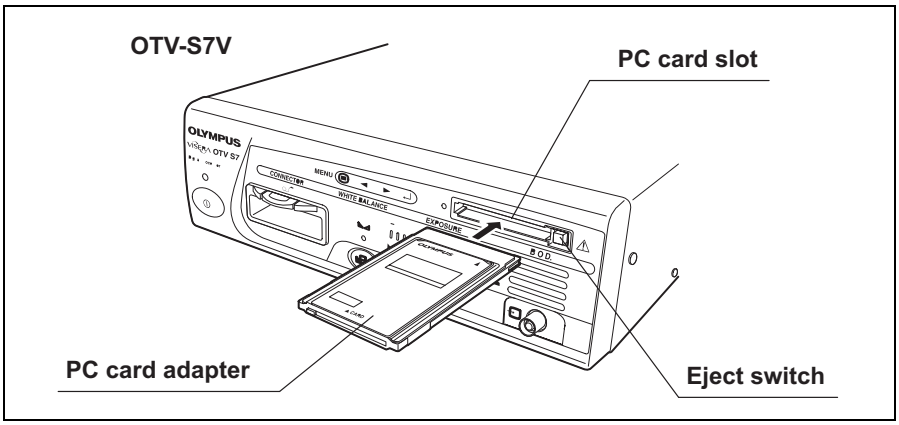



Figure 3.19

NOTE

- If the PC card adapter and Memory Card are ejected or inserted with the power ON, Memory Card may not be recognized by this instrument. In this case, please reattach the PC card adapter. When it is not still recognized, please turn the OTV-S7V OFF and then ON again with the PC card adapter and Memory Card inserted.
- Please use so as not to fill the capacity of Memory Card. The image of SmartMedia is recommended to be moved to PC etc., regulaly.

## ❍ Disconnecting

1. Hold the OTV-S7V stationary with one hand and push the eject switch. Then, the eject switch is poped up (see Figure 3.20).

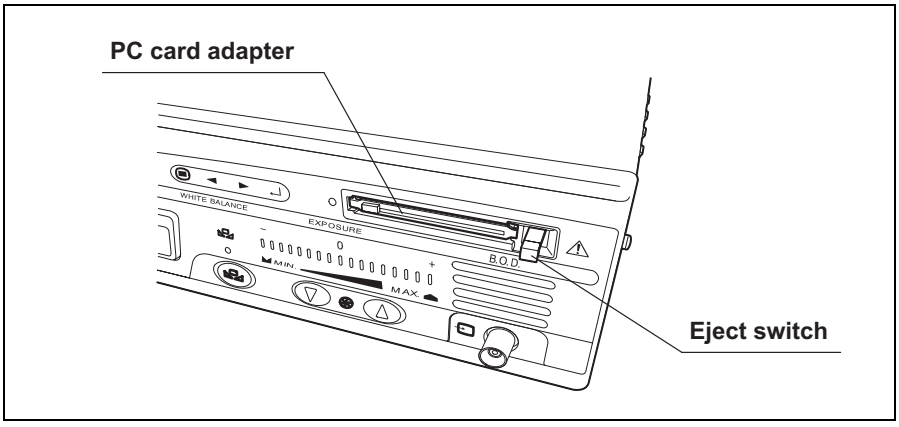



Figure 3.20

*2.* Hold the OTV-S7V stationary with one hand and push the eject switch again. Then, the PC card adapter is poped up (see Figure 3.21).

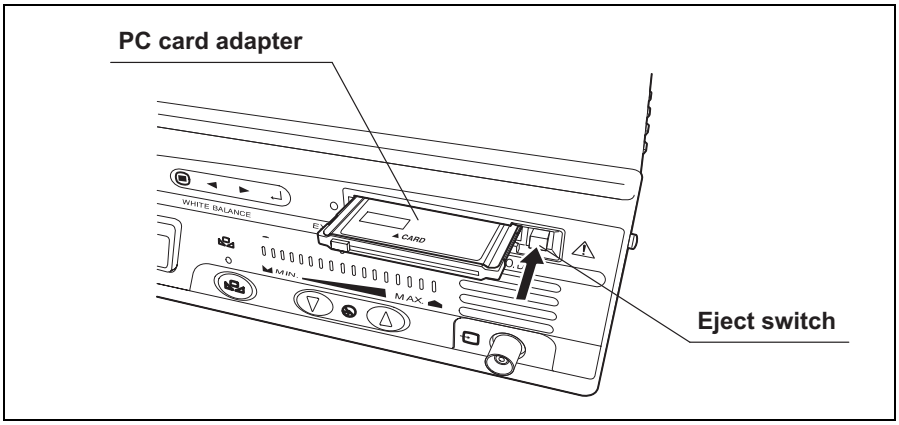



Figure 3.21

*3.* Pull the PC card adapter straight out (see Figure 3.22).

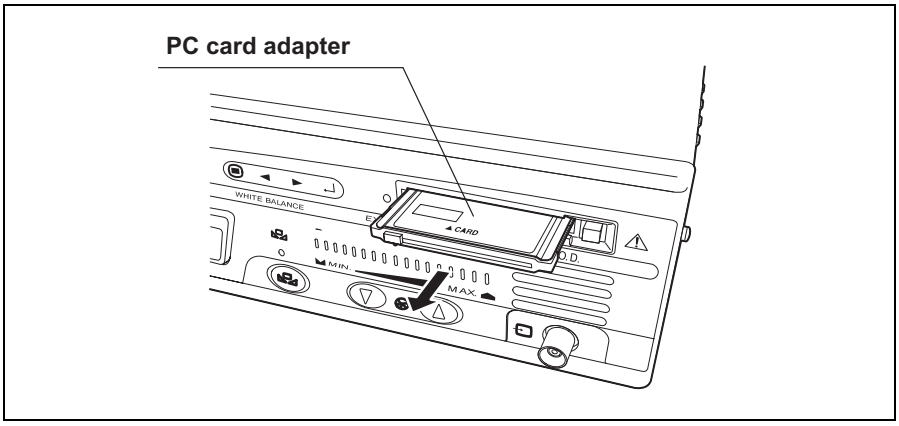



Figure 3.22

# 3.12 Connection to other imaging equipment (type C only; see Section 2.5)

Connect other imaging equipment as shown in Figure 3.23.

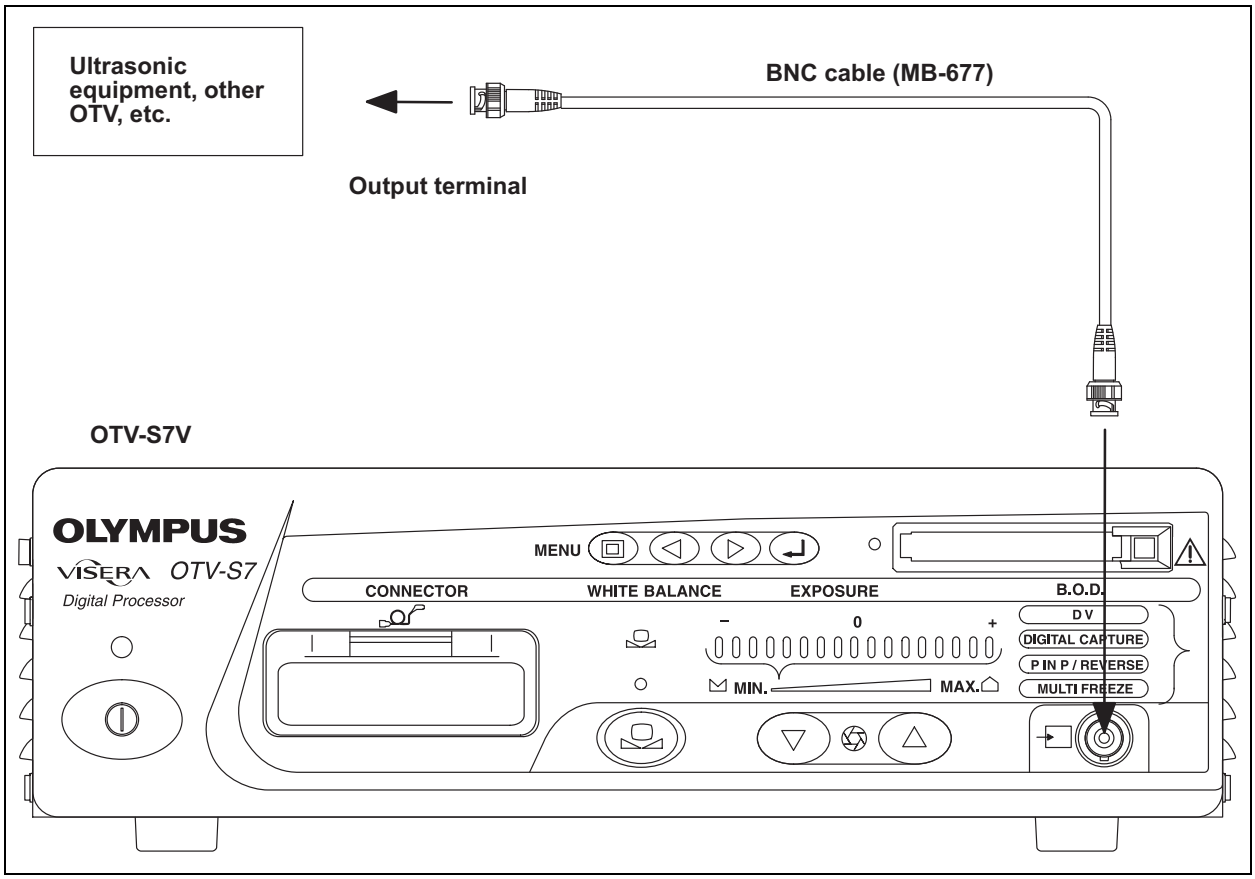



Figure 3.23

# 3.13 Connection to a wall mains outlet

**DANGER**

Only connect the OTV-S7V to a wall mains outlet. Failure to do so may cause electric shock or fire.

**WARNING**

- Secure the power cord so that it will not be accidentally disconnected during the procedure. The endoscopic image will disappear if the power cord is disconnected during use.
- Do not allow the power cord to become wet. A wet power cord may cause electric shocks.

- Make sure that the wall mains outlet and isolation transformer have adequate electrical capacities. Otherwise, fire or power fluctuations can occur.
- Do not bend, pull or twist the power cord. Electric shock, equipment damage or fire can result.
- When using non-medical ancillary electrical equipment, always connect the equipment to a wall mains outlet via an isolation transformer. Otherwise, electric shock can result.
- Do not put the isolation transfomer on a floor. It can cause an electric shock, when water is spilt to the floor.
- Do not connect two or more isolation transfomer in series. It exceeds the rating of the isolation transfomer. Otherwise, the equipment may not work correctly.
- Never use a 3-pin converter plug to connect to a 2-pin wall mains outlet, as this will prevent proper grounding and electric shock can result.
- Never use a table tap. Always connect the power cord directly to a wall mains outlet. Connecting to a table tap can result in fire.

1. Connect one end of the power cord to the OTV-S7V's AC power inlet, and the other end to a wall mains outlet.
2. The following ancillary equipment can be connected directly to a wall mains outlet:

| | |
|---|---|
| Light source | CLV-S20, CLV-S30, CLV-S40, CLD-S, CLV-U20, CLV-U40, CLH-250 |
| Video monitor | OEV 141, OEV 201, OEV 142, OEV 202, OEV 143, OEV 203 |
| EVIS monitor photo unit | SCV-3 |
| Color video printer | OEP, OEP-3 |
| Image mixer unit | UIM |

3. The following ancillary equipment must be connected via an isolation transformer.

| | |
|---|---|
| VTR | SVO-9500MD, SVO-9500MDP |
| Video printers other than OEP-3/OEP | |
| Video monitors other than OEV | |
| Digital video recorder | |

# Chapter 4 Inspection

**WARNING**

Before each case, inspect this instrument as instructed below. Inspect other equipment used with this instrument as instructed in their respective instruction manuals. Should the slightest irregularity be suspected, do not use the instrument and see Chapter 7, “Troubleshooting”. If the irregularity is still suspected after consulting Chapter 7, contact Olympus. Damage or irregularity may compromise patient or user safety and may result in more severe equipment damage.

Prepare this instrument and other compatible equipment used with this instrument before each use (shown in the “System chart” in the Appendix) for the particular case. Refer to the respective instruction manual for each piece of equipment.

## 4.1 Inspection with the power ON

Press the power switch to turn ON the OTV-S7V and confirm that power is being supplied. The power indicator will illuminate and the indicators on the front panel will light up.

### ❍ Inspection if power fails to come on

If the power fails to come on, inspect the system as follows:

1. Confirm that the power cord is connected securely to a wall mains outlet and the AC power inlet on the OTV-S7V.
2. Confirm that the fuses have not blown. If the fuses have blown, replace them with new ones according to the following procedures.
   If both of fuses are not blown, immediately turn the OTV-S7V OFF. Remove the power cord from the wall mains outlet and contact Olympus.

**WARNING**

- Turn the OTV-S7V OFF and remove the power cord from the AC power inlet on the OTV-S7V before replacing the fuses with new ones. Otherwise, electric shock may result.
- Only use the fuses listed below. Otherwise, fire or equipment damage can result.

| | |
|---|---|
| Olympus | MAJ-890 |
| Littel | 2183.15 |

- If the power fails to come on after replacing the fuses with new ones, immediately turn the OTV-S7V OFF. Remove the power cord from the wall mains outlet and contact Olympus. Equipment damage or malfunction may have occurred and fire or electric shock can result.

3. Turn the OTV-S7V OFF and disconnect the power cord from the wall mains outlet.

4. Remove the fuse box from the OTV-S7V by squeezing the tabs on the sides of the fuse box and pulling it straight out (see Figure 4.1).

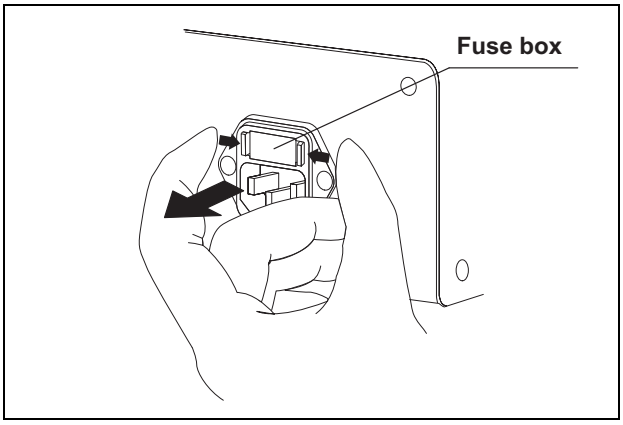



Figure 4.1

5. Inspect the fuses. Even if only one fuse has blown, always replace both of them (see Figure 4.2).

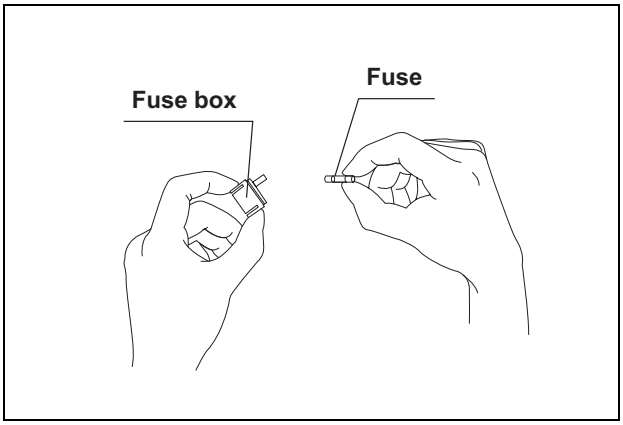



Figure 4.2

6. Insert the fuse box into the OTV-S7V until it clicks into position.

7. Reconnect the power cord and press the power switch. Confirm that the power indicator is lit.

## 4.2 Illumination inspection

**WARNING**

Do not look directly into the distal end of the endoscope or the output connector of the light source while they are emitting light. Eye damage may result.

Operate the light source according to the directions in the light source's instruction manual and confirm that light is emitted from the distal end of the endoscope.

## 4.3 Video monitor display inspection

Operate the video monitor according to the directions given in the video monitor's instruction manual and confirm that the endoscopic image is displayed properly.

### ❍ Inspection of the endoscopic image

1. Turn ON the power switch for the video monitor, the OTV-S7V and the light source.
2. Place your hand over the distal end of the endoscope. Confirm that the illumination light is emitted and that the image is free from noise, blur, fog or other irregularities.
3. Joggle the camera cable and confirm that the endoscopic image is free from irregularities such as momentary disappearing or flickering.

NOTE

Video monitor output inspection can be performed without connecting the camera head or videoscope to the OTV-S7V. Turn the OTV-S7V ON and confirm that a color bar is displayed on the video monitor.

# 4.4 Brightness adjustment inspection

## Inspecting the automatic brightness control function

**WARNING**

Do not look directly into the distal end of the endoscope or the output connector of the light source while they are emitting light. Eye damage may result.

1. Confirm that the OTV-S7V is connected to a light source by light control cable MAJ-944.

NOTE

Use light control cable MAJ-944, which is a standard accessory of the OTV-S7V. Other cables cannot ensure optimum performance of the automatic brightness control function.

2. Operate the light source according to the directions given in the light source's instruction manual. Confirm that the light source's AUTO/MANUAL brightness selector is AUTO and the brightness level is "3".

NOTE

When using the CLV-S40, its brightness level "0" is equal to the brightness level "3".

3. Move the distal end of the endoscope between 1 and 3 cm from your palm. Confirm that the brightness of the image on the video monitor remains constant while the light emitted from the distal end of the endoscope changes in your palm.

When using the ENF-V, CYF-V/VA or HYF-V, inspect the OTV-S7V as follows:

4. Hold the distal end of the endoscope 3 cm from your palm. Use a piece of gauze, etc. to prevent the endoscope's distal end and your palm from being exposed to extraneous light. View the image on the video monitor.
5. Confirm that the image on the video monitor brightens or darkens when the light source's brightness level is changed.

NOTE

- In combination with some endoscope models, the space between the distal end of the endoscope and your palm in which the automatic brightness control function is available will be smaller than 1 – 3 cm.
- When using the ENF-V, CYF-V/VA or HYF-V, the exposure level indicator on the OTV-S7V goes out. Brightness control is available from the light source.

## *Inspecting the shutter function (camera head, LTF-V3 or A500**A series)*

1. According to the distance between the distal end of the endoscope and the object, depress the exposure level switch to select an appropriate exposure level.

2. View your palm through the endoscope. Use a cloth, etc. to prevent the endoscope's distal end and your palm from being exposed to extraneous light.
3. Keep the distal end of the endoscope 1 to 3 cm from your palm. Confirm that the brightness of the image on the video monitor is consistent.
4. Hold the distal end of the endoscope 3 cm from your palm. Use a piece of gauze, etc. to prevent the endoscope's distal end and your palm from being exposed to extraneous light. View the image on the video monitor.
5. Confirm that the image on the video monitor brightens when the exposure level switch (up) is pressed, and darkens when the exposure level switch (down) is pressed.

NOTE

- The following videoscopes do not have a shutter function. The brightness control is available from the light source:
  - ENF-V
  - CYF-V/VA
  - HYF-V
- Depending upon the distance between the distal end of the endoscope and the object, halation will result. In this case, operate the light source and set the light intensity manually.

## 4.5 Recording system inspection

Refer to the instruction manual of the recording system being used. Confirm that the images from the OTV-S7V are recorded properly.

NOTE

Refer to Sections 5.20, 5.21, 5.22, 5.23 and/or 5.24 for more recording instructions.

## 4.6 Inspection of mirror and rotated images display (type C only; see Section 2.5)

Refer to Section 5.25, "Mirror and rotated images". Confirm that normal, mirror or rotated images are displayed properly on the video monitor.

## 4.7 Picture in picture image inspection (type C only; see Section 2.5)

Refer to Section 5.26, “Picture in picture”. Confirm that images from the video input terminal are inserted into the endoscopic image on the video monitor.

## 4.8 Multi freeze image inspection (installed in OTV-S7BOD-MF type only)

Refer to Section 5.27, “Multi freeze”. Confirm that multi freeze images are displayed on the video monitor.

## 4.9 Image orientation inspection (type F and installed in OTV-S7BOD-RT type only)

Refer to Section 5.28, “Orientation”. Confirm that normal or rotated images are displayed properly on the video monitor.

# Chapter 5 Operation

The operator of this instrument must be a physician or medical personnel under the supervision of a physician and must have received sufficient training in clinical endoscopic technique. This manual, therefore, does not explain or discuss clinical endoscopic procedures. It only describes basic operation and precautions related to the operation of this instrument.

**WARNING**

- Should any irregularity be suspected in the instrument's performance (e.g., unidentifiable noises, smells, etc.), or if fluid enters the unit, immediately stop use.
- Anytime you suspect an abnormality in a video system center function, stop using the equipment immediately and take action according to the following procedures. Using a defective video system center may cause damage to the patient's health. In addition, be sure to prepare another video system center to avoid that the examination must be interrupted due to instrument failure or malfunction.
  - If the endoscopic image disappears or the image freezes and cannot be restored:
    Turn the OTV-S7V OFF. Then turn it back ON again. For ancillary equipment used in conjunction with the OTV-S7V, also turn the power OFF and then ON again as directed in their respective instruction manuals. If this fails to correct the problem, immediately stop using the equipment and slowly remove the endoscope from the patient as described in the camera head's or endoscope's instruction manual.
  - If any other abnormality occurs or is suspected:
    Immediately stop using the equipment and gently remove the endoscope from the patient as described in the camera head's or endoscope's instruction manual.
- Wear personal protective equipment to guard against dangerous chemicals and potentially infectious material. During operation, wear appropriate personal protective equipment, such as eye wear, a face mask, moisture-resistant clothing and chemical-resistant gloves that fit properly and are long enough so that your skin is not exposed.

# 5.1 Turning the power ON

## Ancillary equipment power ON

Refer to the instruction manuals for each piece of ancillary equipment being used. Turn the power on for each piece of equipment as described in their instruction manuals.

## OTV-S7V power ON

Push the OTV-S7V's power switch to turn it ON (see Figure 5.1). The power indicator will illuminate.

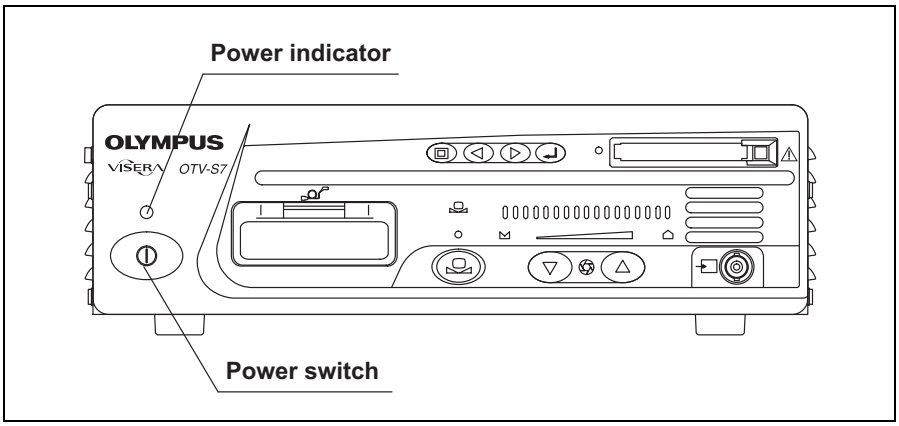



Figure 5.1

After the power is turned ON, the video monitor displays the menu (see Figure 5.2). If a camera head or videoscope is not connected to the OTV-S7V, a color bar is displayed after the menu is displayed.

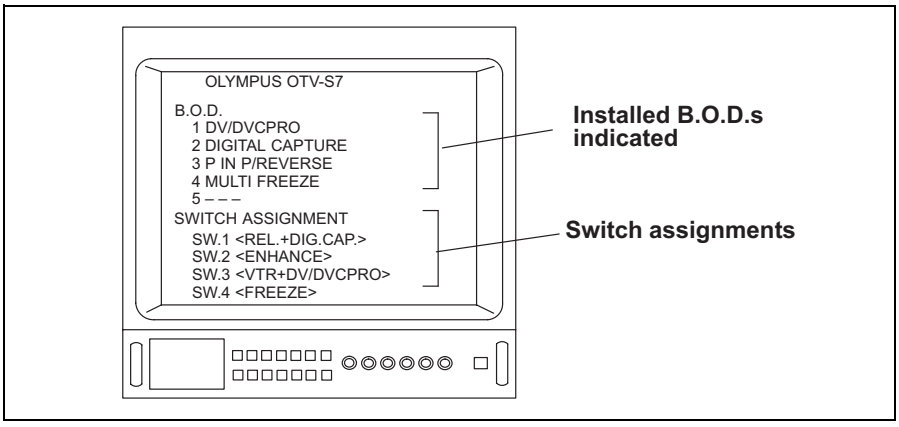



Figure 5.2

NOTE

- The “B.O.D.” menu displayed (see Figure 5.2) depends upon the installed B.O.D.s. For example, when using a type B OTV-S7V, only “DV/DVCPRO” and “DIGITAL CAPTURE” are displayed on the video monitor.
- The number of “SWITCH ASSIGNMENT” displayed (see Figure 5.2) depends upon the number of remote control switches on the camera head or videoscope. For example, when the OTV-S7H-N is connected, only “SW.1” and “SW.2” are displayed on the video monitor.

## 5.2 Basic menu operation

Various functions can be set up or adjusted by controlling the menu switches (see Figure 5.3) or keyboard (optional).

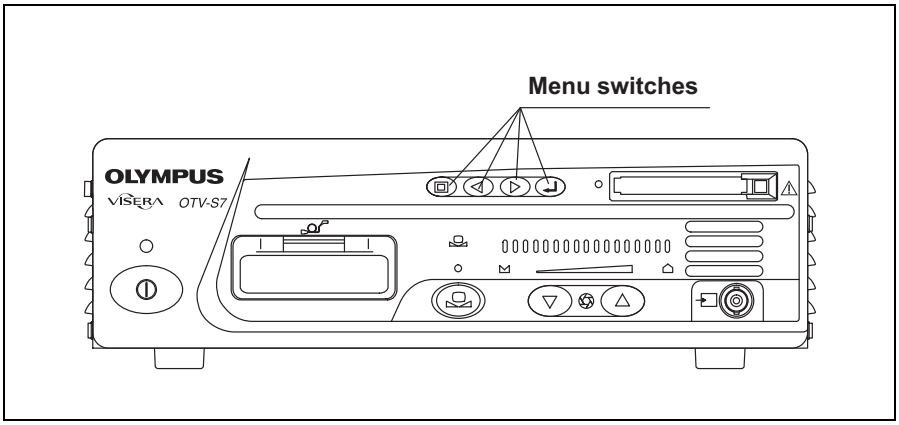



Figure 5.3

- Depress the menu switch "▬" for approximately 1 second or the "F1" key on the keyboard to display the menu (see Figure 5.4).

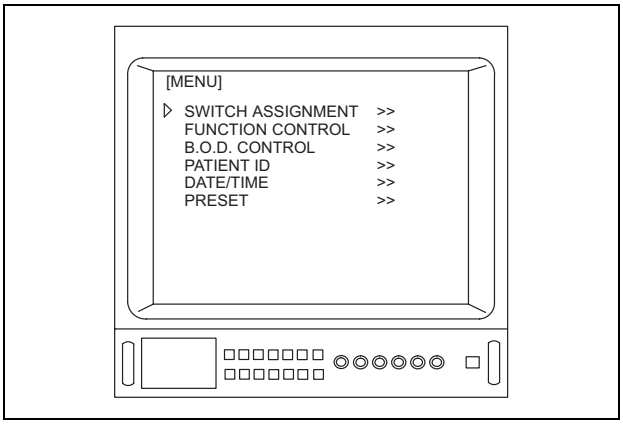



Figure 5.4

NOTE

- When using a type A OTV-S7V, "B.O.D. CONTROL" (see Figure 5.4) is not displayed.
- When the OTV-S7H-1D-F08E/L08E/D-L08E is connected to the OTV-S7V, "SWITCH ASSIGNMENT" (see Figure 5.4) is not displayed.

- Depress the menu switches "◀" or "▶",or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" on the video monitor.
- Move the arrow "▷" to the function that you would like to set up, then depress the menu switch "↵" or the "Enter" key on the keyboard to go to the respective menu. (For example, depress the the menu switch "↵" or the "Enter" key on the keyboard when the menu shown in Figure 5.4 is displayed to go to the menu shown in Figure 5.5.)

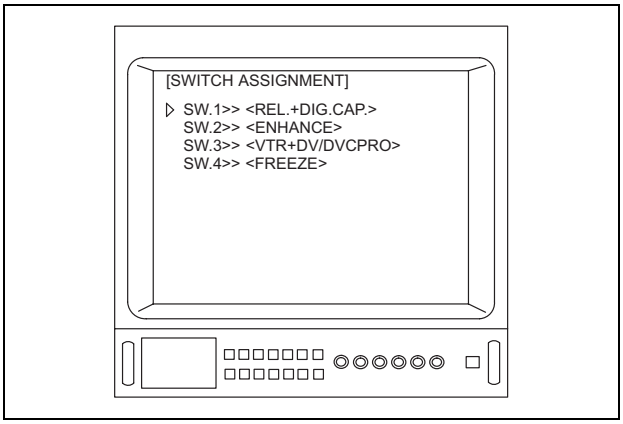



Figure 5.5

NOTE

- The number of “SWITCH ASSIGNMENT” displayed (see Figure 5.5) depends upon the number of remote control switches on the camera head or videoscope.
- Depending upon the OTV-S7V’s settings, the menu shown in Figure 5.5 may appear different from that displayed on the video monitor.

- Press the menu switch “▬” or the “F1” key on the keyboard quickly to go to the previous menu. (For example, press the menu switch “▬” or the “F1” key on the keyboard quickly when the menu shown in Figure 5.5 is displayed to go the menu shown in Figure 5.4.)
- Depress the menu switch “▬” for approximately 1 second or the “Esc” key on the keyboard while the menu is displayed to enter all settings and exit the menu.
- When the menu switch “↵” or the “Enter” key on the keyboard is pressed, the characters of the function to the right of the arrow “▷” change from black to white. (For example, press the menu switch “↵” or the “Enter” key on the keyboard when the menu shown in Figure 5.6 is displayed, the menu appears as shown in Figure 5.7.)

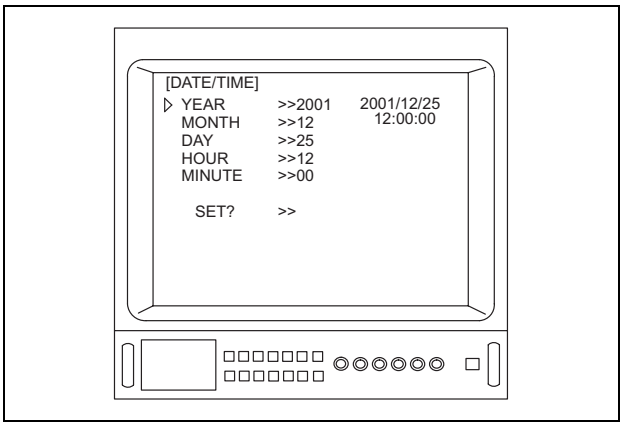



Figure 5.6

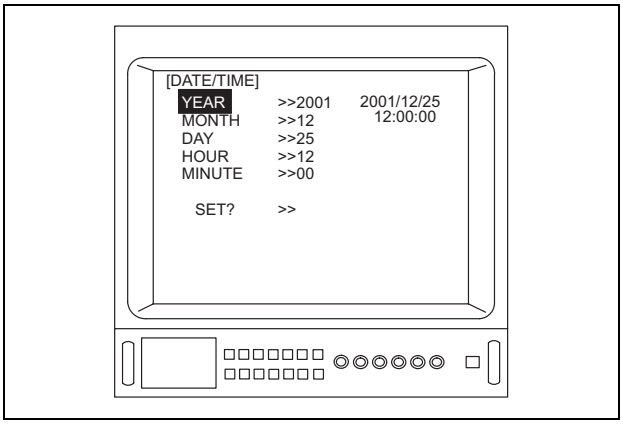



Figure 5.7

NOTE

Depending upon the OTV-S7V's settings, the menus shown in Figures 5.6 and/or 5.7 may appear different from those displayed on the video monitor.

- When function's characters change from black to white, depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to set up the function. (For example, when the menu shown in Figure 5.7 is displayed, press the menu switch "◀", or the "↓/←" key on the keyboard to change the year to "2000", and press the menu switch "▶", or the "↑/→" key on the keyboard to change the year to "2002".)
- When function's characters change from black to white, depress the menu switch "↵" or the "Enter" key on the keyboard to decide the setting and to go to previous menu. (For example, depress the menu switch "↵" or the "Enter" key on the keyboard when the menu shown in Figure 5.7 is displayed to decide the setting and to go to the menu shown in Figure 5.6.)

# 5.3 Clock adjustment

Time and date can be adjusted by controlling the menu switches or keyboard (optional).

1. Depress the menu switch "▣" for approximately 1 second or the "F1" key on the keyboard to display the menu.
2. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "DATE/TIME" (see Figure 5.8).

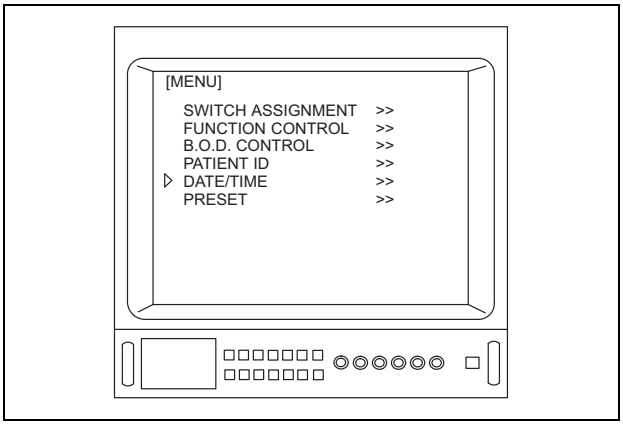



Figure 5.8

NOTE

- When using a type A OTV-S7V, "B.O.D. CONTROL" (see Figure 5.8) is not displayed.
- When the OTV-S7H-1D-F08E/L08E/D-L08E is connected to the OTV-S7V, "SWITCH ASSIGNMENT" (see Figure 5.8) is not displayed.

3. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.

4. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to an item that you would like to set up (for example, "MONTH") (see Figure 5.9).

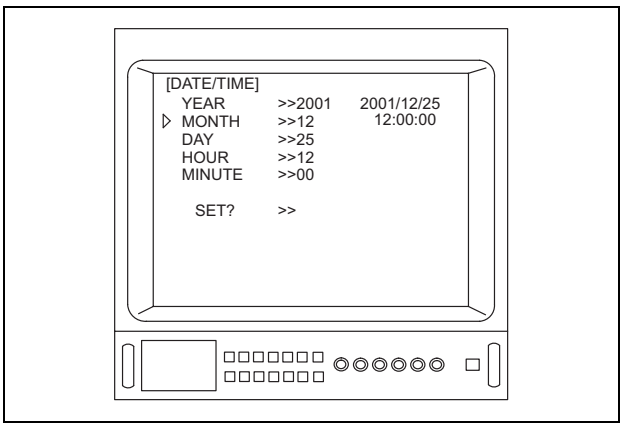



Figure 5.9

NOTE

Depending upon the OTV-S7V's settings, the menus shown in Figures 5.9, 5.10, 5.11, 5.12 and/or 5.13 may appear different from those displayed on the video monitor.

5. Depress the menu switch "↵" or the "Enter" key on the keyboard to adjust the month (see Figure 5.10).

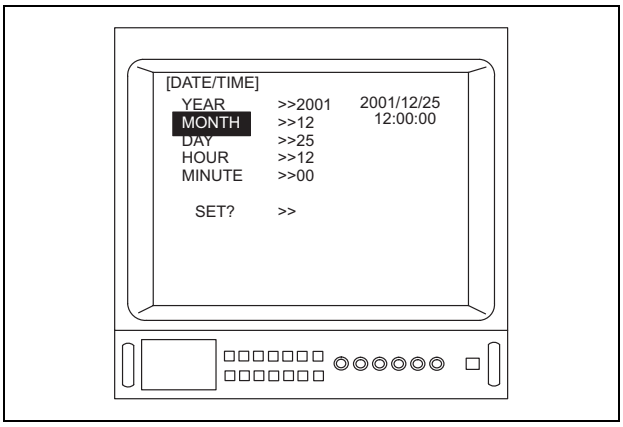



Figure 5.10

6. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to change the number.

7. Depress the menu switch "■" or "↵", or the "F1" key or "Enter" key on the keyboard quickly to enter the setting. Then, the menu shown in Figure 5.9 is displayed.

*8.* When steps 4. to 7. have been repeated and all settings have been made, depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "SET?" (see Figure 5.11).

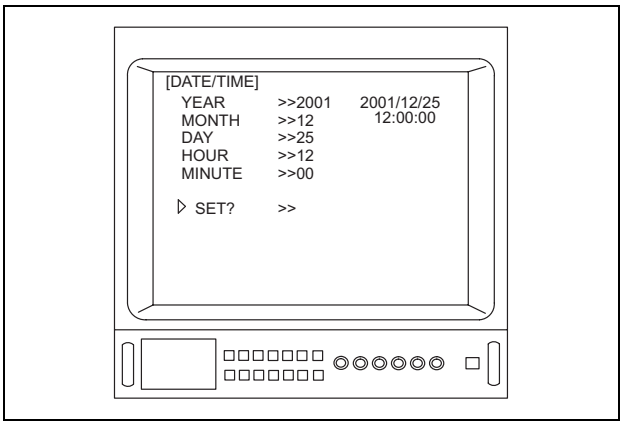



Figure 5.11

*9.* Depress the menu switch "↵" or the "Enter" key on the keyboard to adjust the clock (see Figure 5.12).

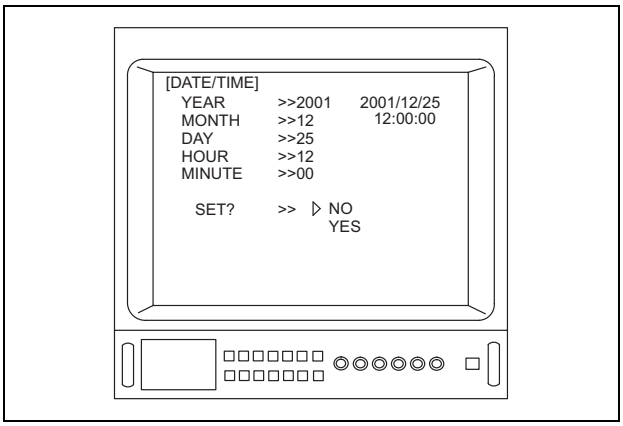



Figure 5.12

*10.* Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "YES".

*11.* Depress the menu switch "↵" or the "Enter" key on the keyboard to set the clock. Then, the menu shown in Figure 5.13 is displayed.

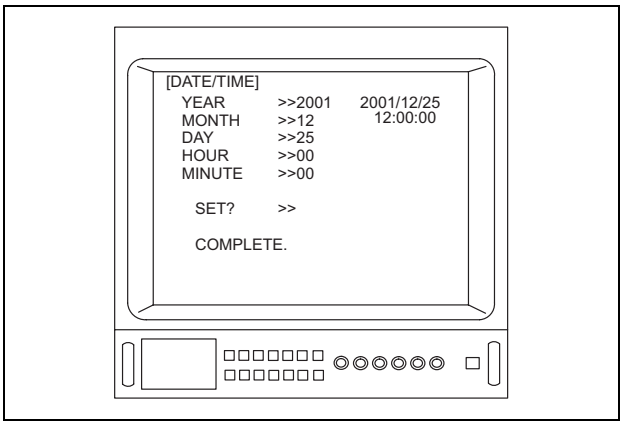



Figure 5.13

*12.* Depress the menu switch "■" for approximately 1 second or the "Esc" key on the keyboard to enter all settings.

NOTE

- The clock adjustment is retained when the power is turned OFF and the power cord is disconnected.
- The built-in clock may gain or lose time after long hours of use. In this case, adjust the correct time using this function.

# 5.4 Adjusting the video monitor

The color bar is displayed and entered by controlling the menu switches or keyboard (optional).

NOTE

- Color adjustment can not be performed when RGB input is used. When the color tone of the video monitor is adjusted, use Y/C input or VBS composite input.
- The color bar can be displayed if a camera head or videoscope is not connected to the OTV-S7V.

1. Depress the menu switch "▬" for approximately 1 second or the "F1" key on the keyboard to display the menu.
2. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "FUNCTION CONTROL" (see Figure 5.14).

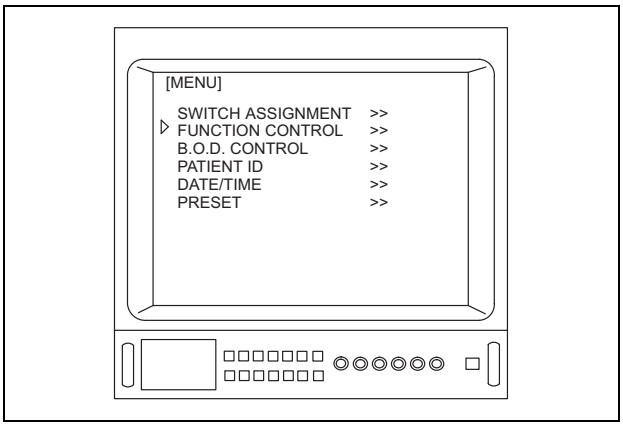



Figure 5.14

NOTE

- When using a type A OTV-S7V, "B.O.D. CONTROL" (see Figure 5.14) is not displayed.
- When the OTV-S7H-1D-F08E/L08E/D-L08E is connected to the OTV-S7V, "SWITCH ASSIGNMENT" (see Figure 5.14) is not displayed.

3. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.

4. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "COLOR BAR" (see Figure 5.15).

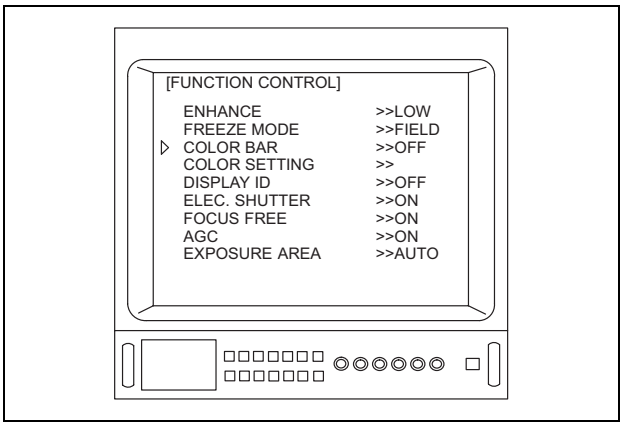



Figure 5.15

NOTE

- When the OTV-S7V is connected to the ENF-V, CYF-V/VA or HYF-V, "ELEC. SHUTTER" and "EXPOSURE AREA" shown in Figures 5.15, 5.16 and/or 5.17 are not displayed.
- When the OTV-S7V is connected to the LTF-V3 or A500**A series, "EXPOSURE AREA" shown in Figures 5.15, 5.16 and/or 5.17 is not displayed.
- When the OTV-S7V is connected to a camera head without the focus free function, or to a videoscope, "FOCUS FREE" shown in Figures 5.15, 5.16 and/or 5.17 is not displayed.
- Depending upon the OTV-S7V's settings, the menus shown in Figures 5.15, 5.16 and/or 5.17 may appear different from those displayed on the video monitor.

5. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the color bar (see Figure 5.16).

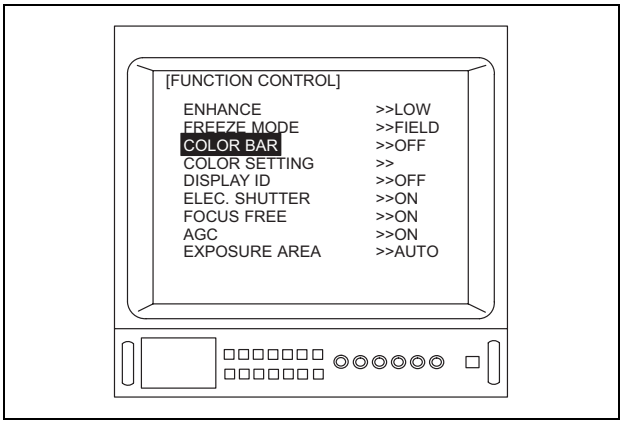



Figure 5.16

*6.* Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to change to "ON" (see Figure 5.17).

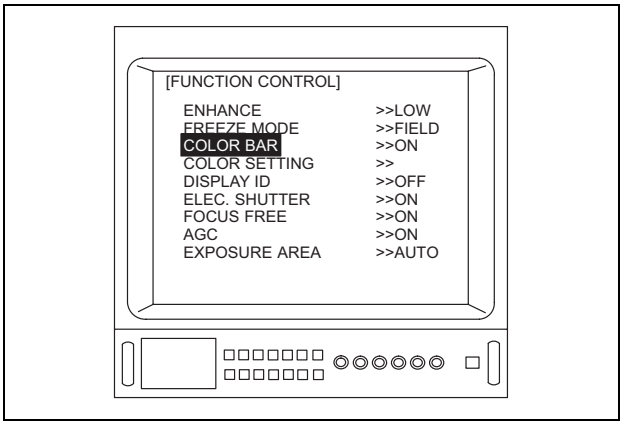



Figure 5.17

NOTE

At first, the color bar is displayed behind a menu, and the menu disappear automatically after 4 seconds.

*7.* Refer to the instruction manual of the video monitor. Adjust the color bar until it appears as shown in Figure 5.18.

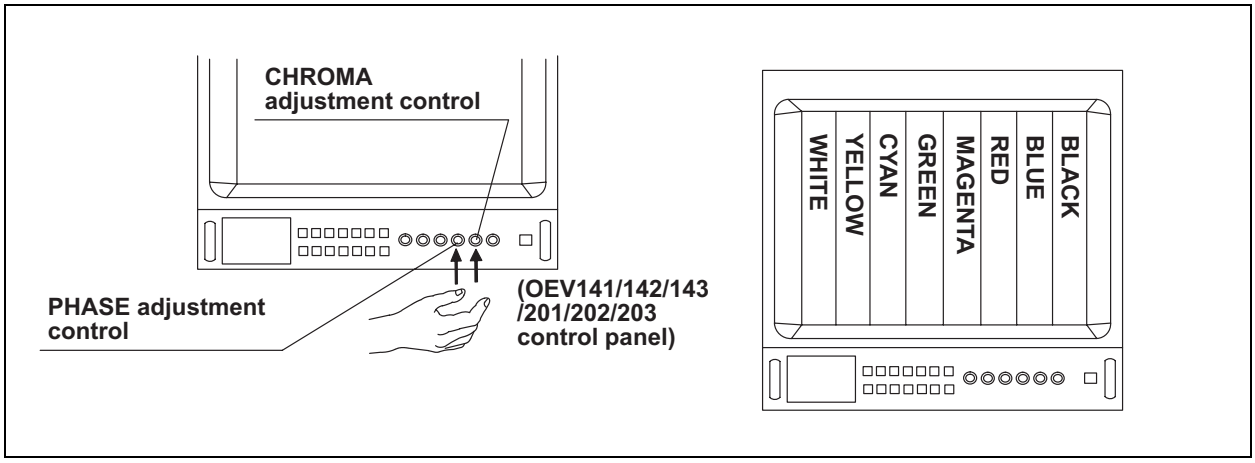



Figure 5.18

8. Depress any switch on the OTV-S7V or the “Esc” key, “F1” key, “F3” key, “F5” key, “F6” key, “F7” key, “F8” key or “B.O.D.” key on the keyboard to remove the color bar.

# 5.5 Color adjustment

## Color adjustment with auto white balance

The white balance function automatically adjusts the OTV-S7V to the camera head or videoscope being used.

1. Point the endoscope at a clean, white surface (gauze, etc.) and press the white balance switch until the white balance indicator lights (see Figure 5.19).

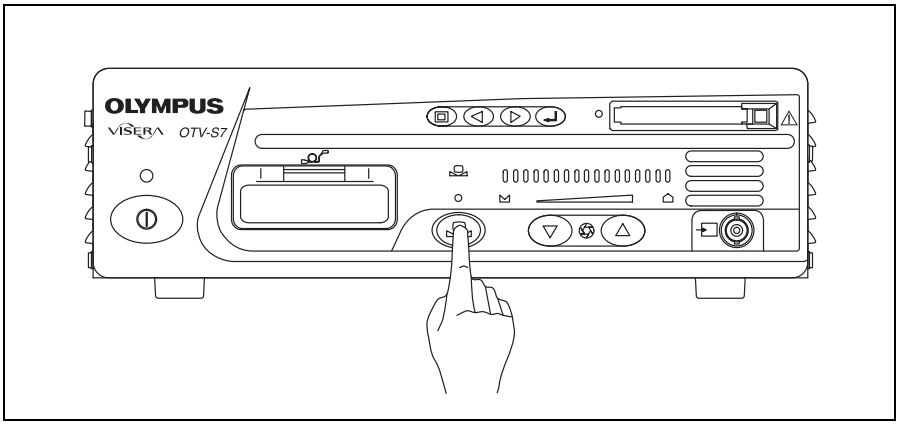



Figure 5.19

2. When the white balance indicator lights (after approximately 4 seconds), white balance adjustment has been completed. If the indicator blinks once and then goes out, the color or brightness of the image was not sufficient. Color adjustment can also be confirmed by viewing the image on the video monitor. If color adjustment has been successfully performed, “W/B OK” will be displayed on the video monitor. If readjustment is required, “W/B INCOMPLETE MANUALLY ADJUST” will be displayed (see Figure 5.20).

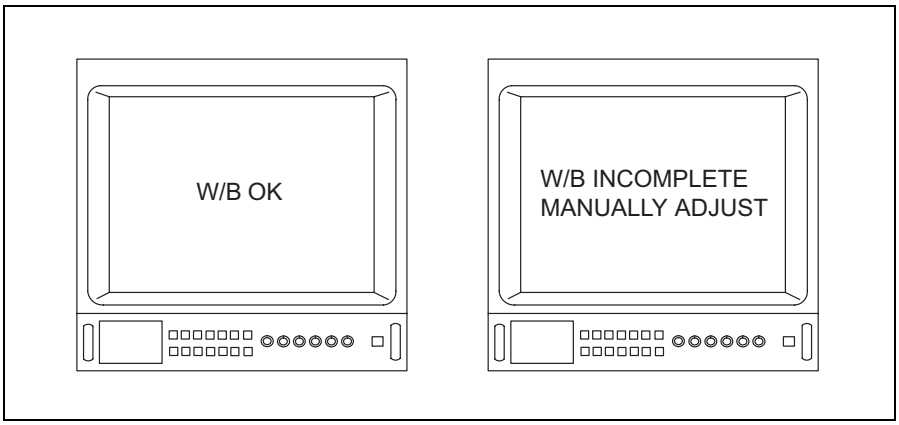



Figure 5.20

3. If the color is not satisfactory after performing the white balance, refer to “Color tone level (red/blue) adjustment” on page 75 to adjust the color manually.

NOTE

- The color settings should be set at their center positions. Otherwise, a pure white will not be displayed on the video monitor even if white balance is performed correctly.
- Always adjust the white balance each time an endoscope is connected. Otherwise, correct color reproduction cannot be obtained.
- Ensure that extraneous light does not reach the distal end of the endoscope’s insertion tube while adjusting the white balance. Extraneous light could impair white balance adjustment.
- Adjust the distance to the object to ensure that the image fits on the entire screen.

- If the object is too close, wash out may result, rendering the white balance adjustment ineffective. Adjust the distance to the object to display a medium level of brightness on the video monitor.
- A variety of factors, such as the color adjustment of the bulb in the light source, the size of the color image rendered by the endoscope or the combination of ancillary equipment may affect the auto white balance function. If further adjustment is needed, refer to “Color tone level (red/blue) adjustment” on page 75.
- When using the CLE-10 or CLE-F10 light source, set the brightness to maximum to maintain the color tone balance.
- When using the CLD-S light source, wait at regular intervals until the light is stable to adjust the white balance.
- When using the CLD-S light sources, refer to Section 5.6, “Setting color mode” and set the color mode on the OTV-S7V to “<4: METAL HALIDE>”.
- If the color on the video monitor is not adjusted properly, white will not appear on the video monitor, even if white balance is performed. Adjust the PHASE and CHROMA knobs on the video monitor and refer to Section 5.4, “Adjusting the video monitor”.
- Refer to Section 5.12, “Remote control switches” for instructions on setting auto white balance using the remote control switches on the camera head or videoscope.
- For more information on the remote control switch functions, refer to Table 5.3 on page 111 – 113.

## *Color tone level (red/blue) adjustment*

Color tone level can be adjusted by controlling the menu switches or keyboard (optional).

1. Depress the menu switch "▣" for approximately 1 second or the "F1" key on the keyboard to display the menu.
2. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "FUNCTION CONTROL" (see Figure 5.14).
3. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.
4. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard move the arrow "▷" to "COLOR SETTING" (see Figure 5.21).

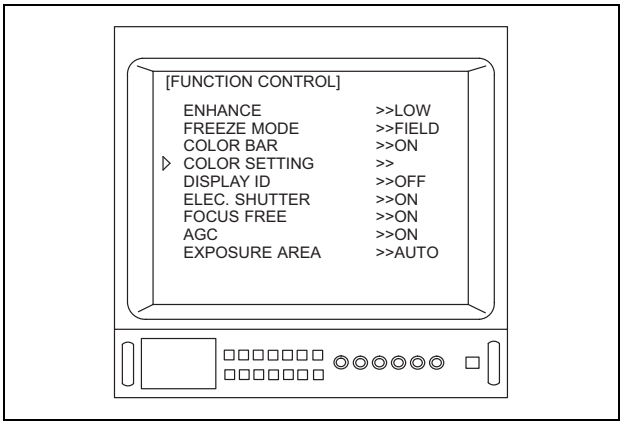



Figure 5.21

NOTE

- When the OTV-S7V is connected to the ENF-V, CYF-V/VA or HYF-V, "ELEC. SHUTTER" and "EXPOSURE AREA" shown in Figure 5.21 are not displayed.
- When the OTV-S7V is connected to the LTF-V3 or A500**A series, "EXPOSURE AREA" shown in Figure 5.21 is not displayed.
- When the OTV-S7V is connected to a camera head without the focus free function, or to a videoscope, "FOCUS FREE" shown in Figure 5.21 is not displayed.
- Depending upon the OTV-S7V's settings, the menus shown in Figures 5.21, 5.22, 5.23 and/or 5.24 may appear different from those displayed on the video monitor.

5. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.

6. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to the color that you would like to adjust (for example, "RED" shown in Figure 5.22).

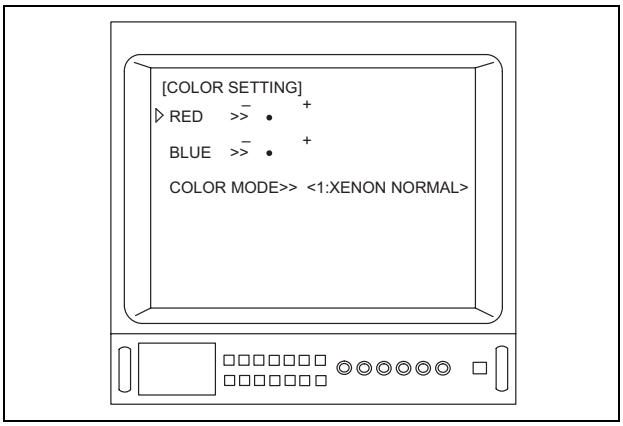



Figure 5.22

7. Depress the menu switch "↵" or the "Enter" key on the keyboard to adjust the color tone (see Figure 5.24).

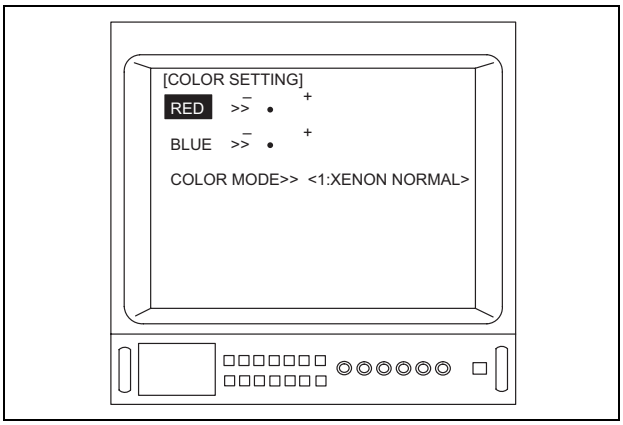



Figure 5.23

8. Depress the menu switch "◀" or the "↓/←" key on the keyboard to decrease red and the menu switch "▶" or the "↑/→" key on the keyboard to increase red.

NOTE

If the color tone is increased above the midpoint, the menu is displayed shown in Figure 5.24 and ">>>" flashes.

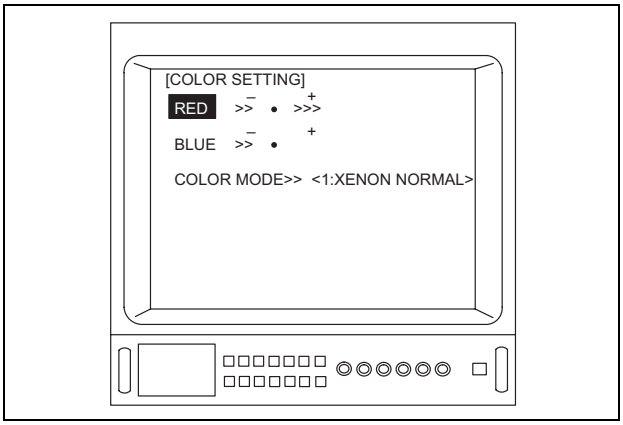



Figure 5.24

9. Depress the menu switch "▬" for approximately 1 second or the "Esc" key on the keyboard to enter all settings.

NOTE

- For optimum performance, set the color tone level at or near its mid-level.
- The color tone level can be adjusted ±8 steps from the midpoint.
- When the color tone level is at a maximum/minimum level, ">>>"/"<<<" is lit (see Figure 5.24).
- The adjusted color tone level is retained when the power is turned OFF and the power cord is disconnected.

# 5.6 Setting color mode

The color mode may be selected from among the 5 modes listed in Table 5.1 by controlling the menu switches or keyboard (optional).

| Color mode | Description |
|---|---|
| <1: XENON NORMAL> | Standard color mode |
| <2: XENON LESS REDDISH> | The color mode that contains less red than the standard color mode. |
| <3: XENON YELLOWISH> | The color mode that contains more yellow than the standard color mode. |
| <4: METAL HALIDE> | The color mode that is suitable in combination with metal halide light sources. |
| <5: OTHERS> | When the ENF-V, HYF-V or CYF-V/VA is connected to the OTV-S7V, if you are not pleased with the above-mentioned color mode, set to this mode. |
| | The color mode that is suitable in combination with halogen light sources. When a camera head or videoscope other than above-mentioned videoscopes is connected to the OTV-S7V. |

Table 5.1

### ❍ Change the color mode quickly (keyboard only)

| Color mode | Operation |
|---|---|
| <1: XENON NORMAL> | Press the “Shift” key, “Alt” key and “1” key at the same time. |
| <2: XENON LESS REDDISH> | Press the “Shift” key, “Alt” key and “2” key at the same time. |
| <3: XENON YELLOWISH> | Press the “Shift” key, “Alt” key and “3” key at the same time. |
| <4: METAL HALIDE> | Press the “Shift” key, “Alt” key and “4” key at the same time. |
| <5: OTHERS> | Press the “Shift” key, “Alt” key and “5” key at the same time. |

Press the “Shift” key, “Alt” key and numeral key at the same time (for example when the “Shift” key, “Alt” key and “5” key are pressed at the same time, the menu shown in Figure 5.25 is displayed on the video monitor.).

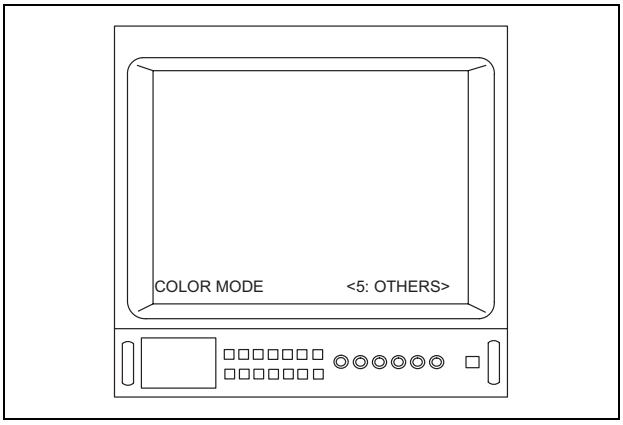



Figure 5.25

NOTE

Depending upon the numeral that is pressed, the menu shown in Figure 5.25 may appear different from that displayed on the video monitor.

### ❍ Change the color mode by operating the menu

1. Depress the menu switch "■" for approximately 1 second or the "F1" key on the keyboard to display the menu.
2. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "FUNCTION CONTROL" (see Figure 5.14).
3. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.
4. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "COLOR SETTING" (see Figure 5.21).
5. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.

6. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "COLOR MODE" (see Figure 5.26).

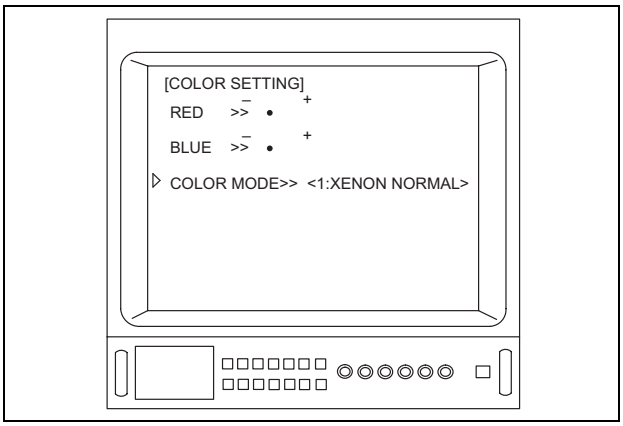



Figure 5.26

NOTE

Depending upon the OTV-S7V's settings, the menus shown in Figures 5.26 and/or 5.27 may appear different from those displayed on the video monitor.

7. Depress the menu switch "↵" or the "Enter" key on the keyboard to adjust the color mode (see Figure 5.27).

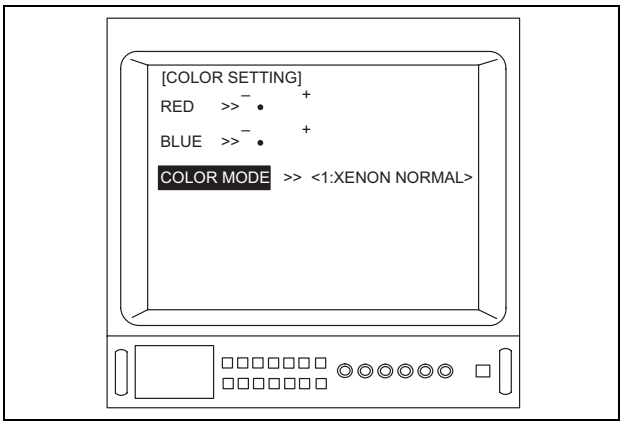



Figure 5.27

8. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to change the color mode.

9. Depress the menu switch "▣" for approximately 1 second or the "Esc" key on the keyboard to enter all settings.

NOTE

The color mode setting is retained when the power is turned OFF and the power cord is disconnected.

## 5.7 Brightness adjustment

**WARNING**

- If the shutter and focus free functions are used while the brightness is set to maximum and observation takes place for a prolonged period of time, patient injury may occur. Always use the minimum level of illumination necessary for adequate viewing. Whenever possible, avoid close, stationary viewing and do not leave the distal end of the endoscope close to mucous membranes for a long time. Intense endoscopic illumination may cause mucosal burns.
- Do not touch the metal plug of the light guide or the distal end of the endoscope immediately after use because they will be extremely hot.
- Follow the instructions below before disconnecting the camera head or videoscope. Disconnecting the camera head or videoscope while the brightness is set to maximum could result in burns or damage the operator's eyesight.
  - When using the CLV-S40, set the light source to stand-by mode or set the AUTO/MANUAL brightness selector to MANUAL and reduce the light intensity or turn the light source OFF.
  - When using the CLD-S, set the AUTO/MANUAL brightness selector to MANUAL function and reduce the light intensity. If the light source is turned OFF, it takes a while to reignite.
  - When using a light source other than the CLV-S40 or CLD-S, set the AUTO/MANUAL brightness selector to MANUAL function and reduce the light intensity or turn the light source OFF.

NOTE

According to the distance between the distal end of the endoscope and the object, halation will result even if the following functions (“Automatic brightness control”, “Exposure level”) are performed. Operate the light source according to the directions in the light source’s instruction manual and set the light intensity manually.

## *ENF-V, CYF-V/VA, HYF-V*

### ❍ Automatic brightness control (CLV-S40/S30/S20 or CLV-U40/U20 only)

When this instrument is used in combination with a light source which has an automatic brightness control function, the brightness is adjusted automatically.

1. Press the light source’s AUTO/MANUAL brightness selector and select AUTO.
2. Press the brightness control switches on the light source and set the brightness level to “3”.

NOTE

- When the OTV-S7V is connected to the ENF-V, CYF-V/VA or HYF-V, the exposure level indicators on the OTV-S7V will go out. Adjust the brightness using the light source.
- Refer to Section 5.12, “Remote control switches” for instructions on adjusting automatic brightness control using the remote control switches on the videoscope.
- If the brightness level on the light source is not set to “3”, optimum performance will not be obtained.
- Set the light intensity manually when a light source with an automatic brightness control function is not being used.
- When using the CLV-S40, its brightness level “0” is equal to the brightness level “3”.

## *Camera head, LTF-V3, A500**A series*

### ❍ Automatic brightness control (CLV-S40/S30/S20, CLD-S only)

When this instrument is used in combination with a light source which has an automatic brightness control function, the brightness is adjusted automatically.

1. Press the light source's AUTO/MANUAL brightness selector and select AUTO.
2. Press the brightness control switches on the light source and set the brightness level to "3".

NOTE

When using the CLV-S40, its brightness level "0" is equal to the brightness level "3".

3. To adjust the brightness of the endoscopic images, refer to "Exposure level" on page 84.

NOTE

- The brightness of the endoscopic images does not depend on the brightness level on the light source.
- When connecting the camera head, LTF-V3 or A500**A series, the brightness indicators on the CLV-S40 go out.
- If the brightness level on the light source is not set to "3", optimum performance will not be obtained.
- Set the light intensity manually when a light source with an automatic brightness control function is not being used.

## Exposure level

The shutter function automatically adjusts the brightness of the video image electrically.

1. Depress one of the exposure level switches (see Figure 5.28) or press the "Shift" key and "↑/↓/←/→" key on the keyboard at the same time.
   The selected exposure level is displayed on the video monitor screen for several seconds as shown in Figure 5.29.

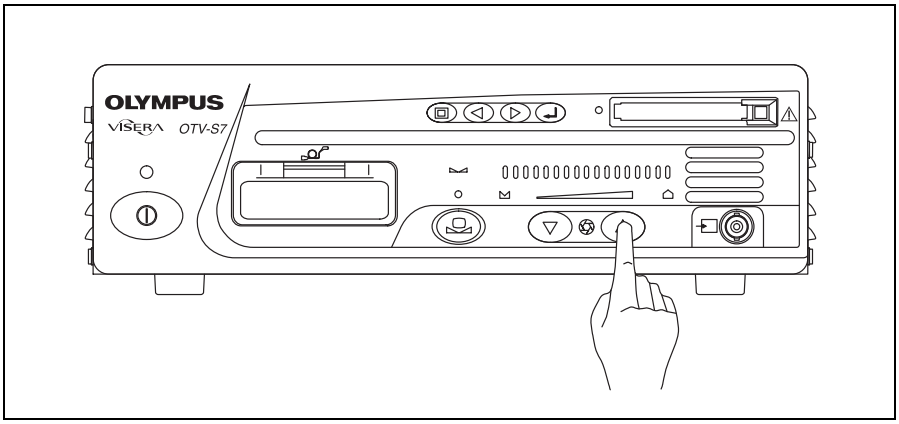



Figure 5.28

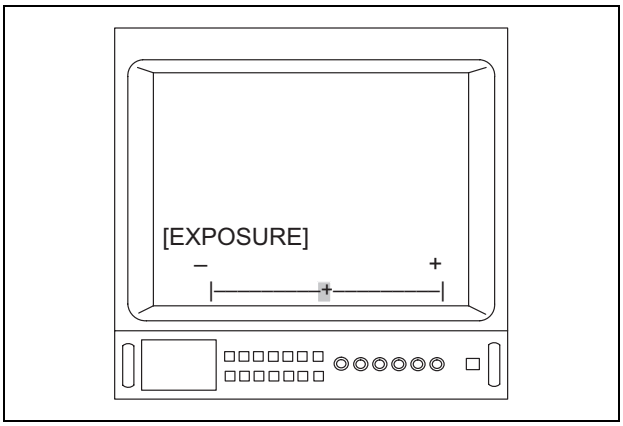



Figure 5.29

NOTE

Depending upon the exposure level, the menu shown in Figure 5.29 may appear different from that displayed on the video monitor.

2. To increase brightness, press the exposure level switch (up) or the “Shift” key and “↑/→” key on the keyboard at the same time. Each time the switch is pressed, the exposure level indicators on the front panel and the video monitor move to the right, and the brightness of the endoscopic image is increased one level. When the switch or keys are continuously pressed, brightness is continuously increased.

3. To decrease brightness, depress the exposure level switch (down) or the “Shift” key and “↓/←” key on the keyboard at the same time. Each time the switch is depressed, the exposure level indicators on the front panel and the video monitor move to the left, and the brightness of the endoscopic image decreases one level. When the switch or keys are continuously depressed, brightness is continuously decreased.

NOTE

- The exposure level setting is retained when the power is turned OFF and the power cord is disconnected.
- Refer to Section 5.12, “Remote control switches” for instructions on adjusting the exposure level using the remote control switches on the camera head or videoscope.
- After setting the exposure level, the exposure level display on the video monitor disappears.

### ❍ Manual brightness control

The shutter can be turned OFF using the menu switches or keyboard (optional), in which case manual brightness control will be available.

1. Depress the menu switch “▣” for approximately 1 second or the “F1” key on the keyboard to display the menu.
2. Depress the menu switches “◀” or “▶”, or the “↑/↓/←/→” key on the keyboard to move the arrow “▷” to “FUNCTION CONTROL” (see Figure 5.14).
3. Depress the menu switch “↵” or the “Enter” key on the keyboard to display the next menu.
4. Depress the menu switches “◀” or “▶”, or the “↑/↓/←/→” key on the keyboard to move the arrow “▷” to “ELEC. SHUTTER” (see Figure 5.30).

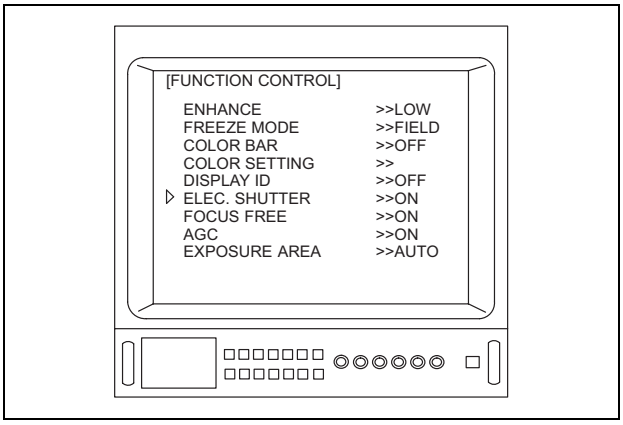



Figure 5.30

NOTE

- When the OTV-S7V is connected to the ENF-V, CYF-V/VA or HYF-V, “ELEC. SHUTTER” and “EXPOSURE AREA” shown in Figures 5.30 and/or 5.31 are not displayed.
- When the OTV-S7V is connected to the LTF-V3 or A500**A series, “EXPOSURE AREA” shown in Figures 5.30 and/or 5.31 is not displayed.
- When the OTV-S7V is connected to a camera head without the focus free function, or to a videoscope, “FOCUS FREE” shown in Figures 5.30 and/or 5.31 is not displayed.
- Depending upon the OTV-S7V’s settings, the menus shown in Figures 5.30 and/or 5.31 may appear different from those displayed on the video monitor.

*5.* Depress the menu switch “↵” or the “Enter” key on the keyboard to adjust “ELEC. SHUTTER” (see Figure 5.31).

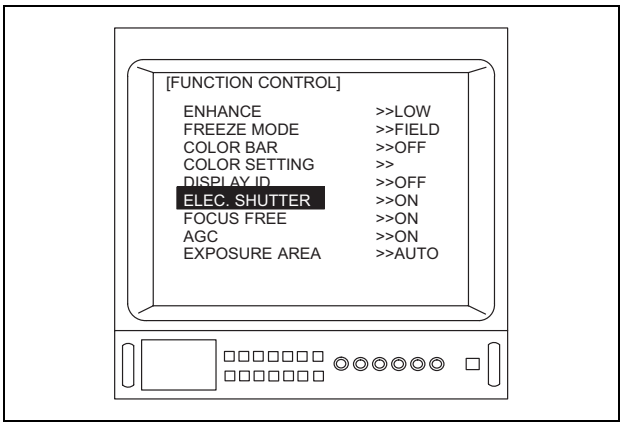



Figure 5.31

6. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to set "ELEC. SHUTTER" to "OFF".
7. Depress the menu switch "■" for approximately 1 second or the "Esc" key on the keyboard to enter all settings.
8. Press the light source's AUTO/MANUAL brightness selector and select MANUAL.
9. Press the brightness control switch on the light source to adjust the brightness accordingly.

NOTE

- If the shutter is turned ON, "ON" appears next to "ELEC. SHUTTER" in the menu shown in Figure 5.31.
- The "ELEC. SHUTTER" setting is retained when the power is turned OFF and the power cord is disconnected.

## *Auto gain control (AGC)*

If the distance between the endoscope's distal end the target is too great, the brightness of the image may not be sufficient. Use the auto gain control (AGC) function to compensate for inadequate illumination.

1. Depress the menu switch "■" for approximately 1 second or the "F1" key on the keyboard to display the menu.
2. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "FUNCTION CONTROL" (see Figure 5.14).
3. Depress the menu switch "↵" or the "Enter" key on the keyboard to displayed the next menu.

4. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "AGC" (see Figure 5.32).

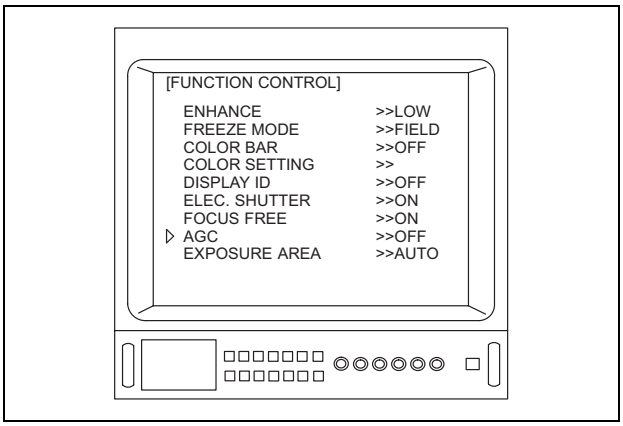



Figure 5.32

NOTE

- When the OTV-S7V is connected to the ENF-V, CYF-V/VA or HYF-V, "ELEC.SHUTTER" and "EXPOSURE AREA" shown in Figures 5.32 and/or 5.33 are not displayed.
- When the OTV-S7V is connected to the LTF-V3 or A500**A series, "EXPOSURE AREA" shown in Figures 5.32 and/or 5.33 is not displayed.
- When the OTV-S7V is connected to a camera head without the focus free function, or to a videoscope, "FOCUS FREE" shown in Figures 5.32 and/or 5.33 is not displayed.
- Depending upon the OTV-S7V's settings, the menus shown in Figures 5.32 and/or 5.33 may appear different from those displayed on the video monitor.

5. Depress the menu switch "↵" or the "Enter" key on the keyboard to adjust "AGC" (see Figure 5.33).

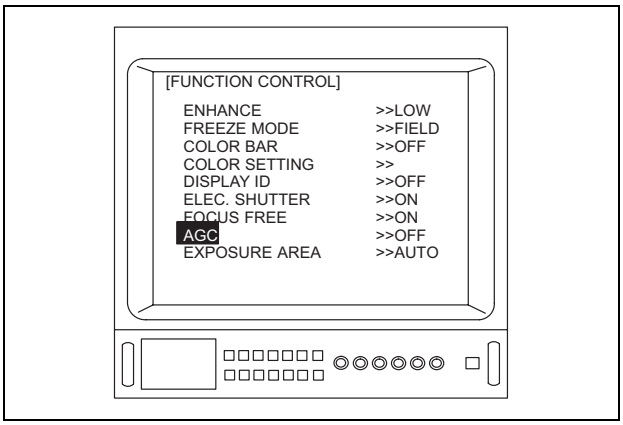



Figure 5.33

6. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to set AGC to "ON".

7. Depress the menu switch "▣" for approximately 1 second or the "Esc" key on the keyboard to enter all settings.

NOTE

- The AGC function setting is retained when the power is turned OFF and the power cord is disconnect.
- If the AGC is turned OFF, "OFF" appears next to "AGC" in the menu shown in Figure 5.33.
- When the AGC is activated, noise in the image will increase.

## *Iris (camera head only)*

3 modes are available by controlling the menu switches or keyboard (optional).

- AUTO : The exposure area is automatically set according to the object so that the endoscopic image will be maintained at the optimum brightness. However, with some objects, halation or darkness may occur in the observing region. If those happen, select “CENTER” or “FULL”.
- CENTER : This mode is set to center-weighted metering mode.
- FULL : The exposure area is set to full screen of the video monitor.

1. Depress the menu switch “▬” for approximately 1 second or the “F1” key on the keyboard to display the menu.
2. Depress the menu switches “◀” or “▶”, or the “↑/↓/←/→” key on the keyboard to move the arrow “▷” to “FUNCTION CONTROL” (see Figure 5.14).
3. Depress the menu switch “↵” or the “Enter” key on the keyboard to displayed the next menu.
4. Depress the menu switches “◀” or “▶”, or the “↑/↓/←/→” key on the keyboard to move the arrow “▷” to “EXPOSURE AREA” (see Figure 5.34).

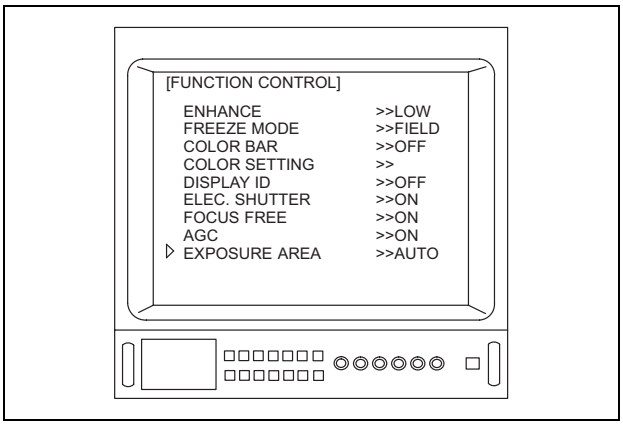



Figure 5.34

NOTE

- When the OTV-S7V is connected to the ENF-V, CYF-V/VA or HYF-V, “ELEC.SHUTTER” and “EXPOSURE AREA” shown in Figures 5.34 and/or 5.35 are not displayed.
- When the OTV-S7V is connected to the LTF-V3 or A500**A series, “EXPOSURE AREA” shown in Figures 5.34 and/or 5.35 is not displayed.
- When the OTV-S7V is connected to a camera head without the focus free function, or to a videoscope, “FOCUS FREE” shown in Figures 5.34 and/or 5.35 is not displayed.
- Depending upon the OTV-S7V’s settings, the menus shown in Figures 5.34 and/or 5.35 may appear different from those displayed on the video monitor.

5. Depress the menu switch “↵” or the “Enter” key on the keyboard to adjust “EXPOSURE AREA” (see Figure 5.35).

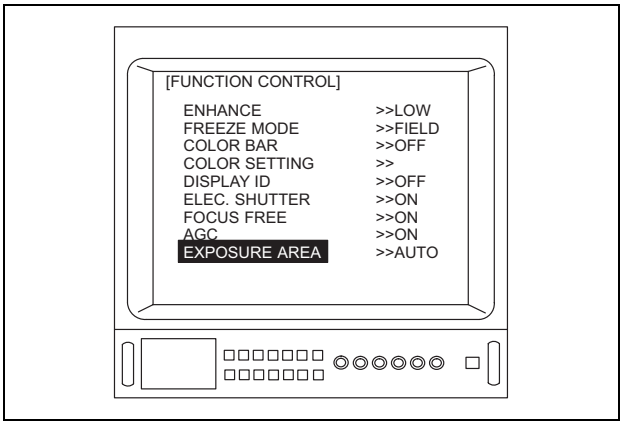



Figure 5.35

6. Depress the menu switches “◀” or “▶”, or the “↑/↓/←/→” key on the keyboard to change the iris mode.
7. Depress the menu switch “■” for approximately 1 second or the “Esc” key on the keyboard to enter all settings.

NOTE

The iris function setting is retained when the power is turned OFF and the power cord is disconnect.

# 5.8 Focus free mode

The focus free function can only be used when a camera head with a built-in focus free function is connected. Refer to the camera head's instruction manual for instructions on attaching the camera head. When using this instrument with a rigid endoscope (e.g., a laparo-thoraco scope), the depth of field is automatically adjusted to maintain a focused image on the video monitor. In this case, focusing will not be necessary during use.

**WARNING**

If the focus free function is not operating correctly and the endoscopic image on the video monitor disappears during an examination, turn the focus free function OFF. If the image does not appear after turning the focus free function OFF, replace the camera head with a spare one.

### ❍ Change the focus free mode quickly (keyboard only)

Press the "Shift" key, "Alt" key and an "F" key at the same time. Pressing these keys toggles between focus free ON and OFF. Then, the menu shown in Figure 5.36 is displayed on the video monitor.

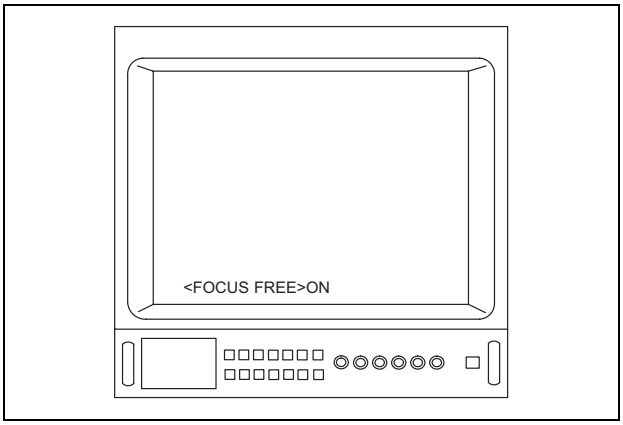



Figure 5.36

NOTE

The menu shown in Figure 5.36 appears when the focus free function is ON. If the function is OFF, the display reads "<FOCUS FREE>OFF".

## ❍ Change the focus free mode by operating the menu

1. When used in combination with the automatic brightness control function, set the light source to AUTO and the brightness level to “3”.

NOTE

When using the CLV-S40, this procedure is not necessary.

2. Depress the menu switch “▣” for approximately 1 second or the “F1” key on the keyboard to display the menu.
3. Depress the menu switches “◀” or “▶”, or the “↑/↓/←/→” key on the keyboard to move the arrow “▷” to “FUNCTION CONTROL” (see Figure 5.14).
4. Depress the menu switch “↵” or the “Enter” key on the keyboard to display the next menu.
5. Depress the menu switches “◀” or “▶”, or the “↑/↓/←/→” key on the keyboard to move the arrow “▷” to “FOCUS FREE” (see Figure 5.37).

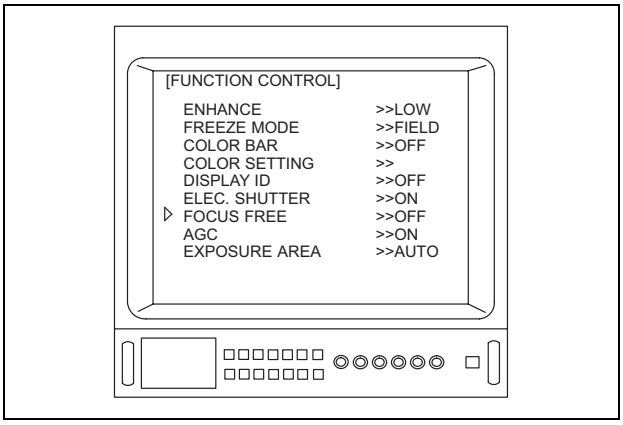



Figure 5.37

NOTE

- When the OTV-S7V is connected to the ENF-V, CYF-V/VA or HYF-V, “ELEC. SHUTTER” and “EXPOSURE AREA” shown in Figures 5.37 and/or 5.38 are not displayed.
- When the OTV-S7V is connected to the LTF-V3 or A500**A series, “EXPOSURE AREA” shown in Figures 5.37 and/or 5.38 is not displayed.
- When the OTV-S7V is connected to a camera head without the focus free function, or to a videoscope, “FOCUS FREE” shown in Figures 5.37 and/or 5.38 is not displayed.

- Depending upon the OTV-S7V's settings, the menus shown in Figures 5.37 and/or 5.38 may appear different from those displayed on the video monitor.

6. Depress the menu switch "↵" or the "Enter" key on the keyboard to adjust "FOCUS FREE" (see Figure 5.38).

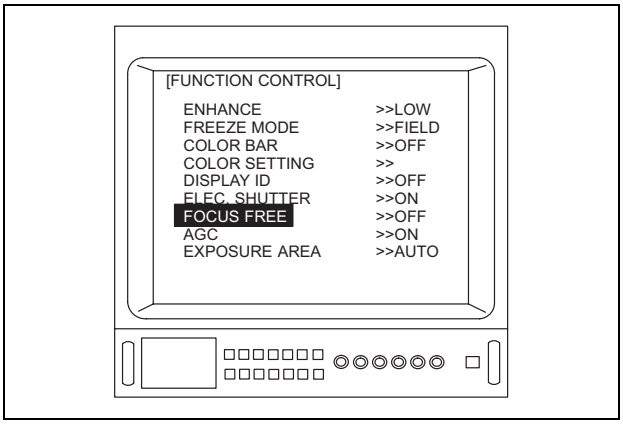



Figure 5.38

7. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to set "FOCUS FREE" to "ON".

8. Depress the menu switch "▣" for approximately 1 second or the "Esc" key on the keyboard to enter all settings.

NOTE

- The focus free function can only be used when a camera head with a built-in focus free function is connected.
- The focus free function is not available when using halogen light sources or light sources with insufficient brightness.
- When the focus free function is turned ON, it will take a few seconds before the image has an increased depth of focus.
- When using a fiberscope or a thin endoscope (4 mm or less in diameter), turn the focus free function OFF.
- The focus free function setting is retained when the power is turned OFF and the power cord is disconnected.
- If the focus free function is turned OFF, "OFF" appears next to "FOCUS FREE" in the menu shown in Figure 5.38.

# 5.9 Image enhancement

Contours in the endoscopic image are electrically enhanced to obtain clearer images. Image enhancement can be set to, “OFF”, “LOW”, “MEDIUM” or “HIGH”.

### ❍ Change the image enhancement level quickly (keyboard only)

Press the “F6” key. Each time the “F6” key is pressed, the mode cycles through “OFF”, “LOW”, “MEDIUM” and “HIGH”. Then, the menu shown in Figure 5.39 is displayed on the video monitor.

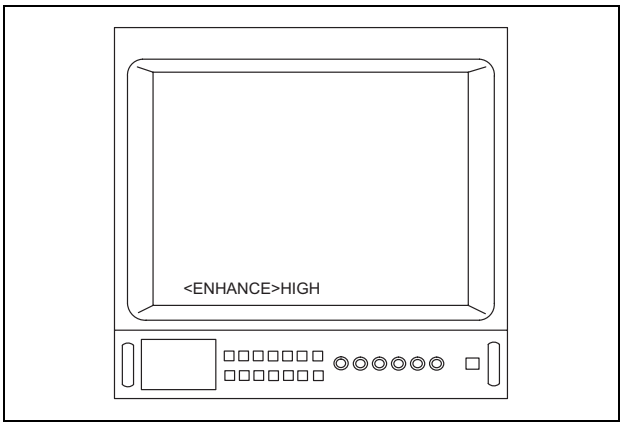



Figure 5.39

NOTE

The menu shown in Figure 5.39 is displayed when the image enhancement level is “HIGH”. Depending upon the image enhancement level, the menu shown in Figure 5.39 may appear different from that displayed on the video monitor.

### ❍ Change the image enhancement level by operating the menu

1. Depress the menu switch “▣” for approximately 1 second or the “F1” key on the keyboard to display the menu.
2. Depress the menu switches “◀” or “▶”, or the “↑/↓/←/→” key on the keyboard to move the arrow “▷” to “FUNCTION CONTROL” (see Figure 5.14).
3. Depress the menu switch “↵” or the “Enter” key on the keyboard to display the next menu.

4. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "ENHANCE" (see Figure 5.40).

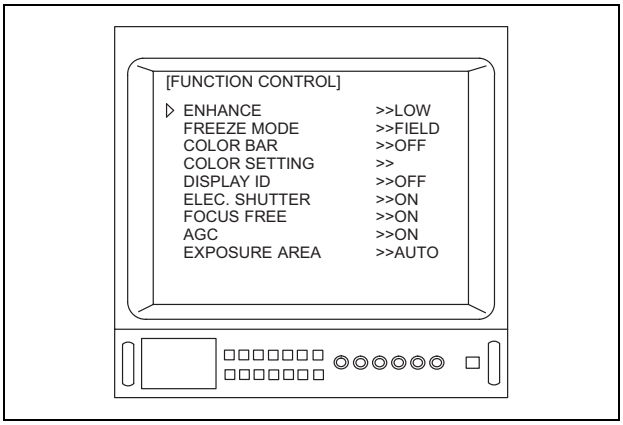



Figure 5.40

NOTE

- When the OTV-S7V is connected to the ENF-V, CYF-V/VA or HYF-V, "ELEC. SHUTTER" and "EXPOSURE AREA" shown in Figures 5.40 and/or 5.41 are not displayed.
- When the OTV-S7V is connected to the LTF-V3 or A500**A series, "EXPOSURE AREA" shown in Figures 5.40 and/or 5.41 is not displayed.
- When the OTV-S7V is connected to a camera head without the focus free function, or to a videoscope, "FOCUS FREE" shown in Figures 5.40 and/or 5.41 is not displayed.
- Depending upon the OTV-S7V's settings, the menus shown in Figures 5.40 and/or 5.41 may appear different from those displayed on the video monitor.

5. Depress the menu switch "◄┘" or the "Enter" key on the keyboard to adjust the image enhancement level (see Figure 5.41).

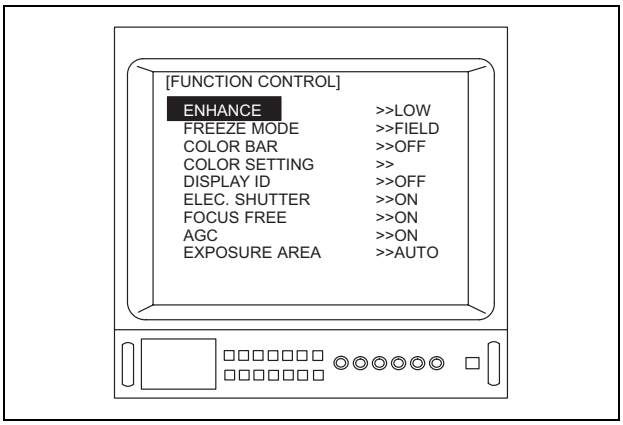



Figure 5.41

6. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to set the image enhancement level.

7. Depress the menu switch "▣" for approximately 1 second or the "Esc" key on the keyboard to enter all settings.

NOTE

- When the image enhancement is set to "HIGH", noise in the images may increase.
- The image enhancement level is retained when the power is turned OFF and the power cord is disconnected.
- Refer to Section 5.12, "Remote control switches" for instructions on setting the image enhancement using the remote control switches on the camera head or videoscope.
- When setting the image enhancement using the remote control switches, the menu shown in Figure 5.39 is displayed on the video monitor.
- When using fiberscopes, turning the OTV-S7V's ENHANCE function to "OFF" is recommended for reducing moiré patterns.

# 5.10 Patient data entry/deletion

Patient data can be entered or deleted by controlling the menu switches or keyboard (optional).

## Patient data entry

1. Depress the menu switch "▬" for approximately 1 second or the "F1" key on the keyboard to display the menu.

NOTE

By pressing the "Shift" key and "F2" key on the keyboard at the same time, you can jump to step 4.

2. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "PATIENT ID" (see Figure 5.42).

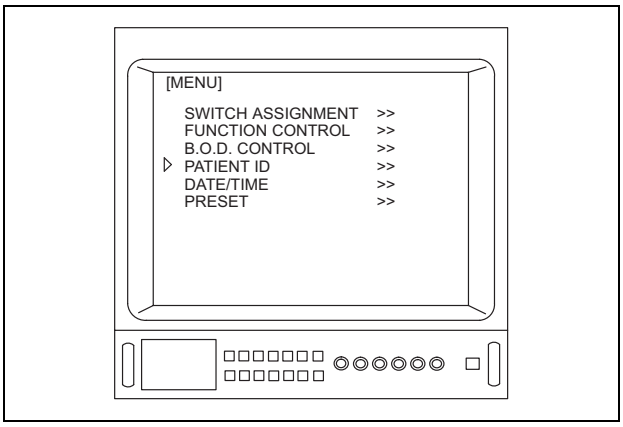



Figure 5.42

NOTE

- When using a type A OTV-S7V, "B.O.D. CONTROL" (see Figure 5.42) is not displayed.
- When the OTV-S7H-1D-F08E/L08E/D-L08E is connected to the OTV-S7V, "SWITCH ASSIGNMENT" (see Figure 5.42) is not displayed.

3. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.

4. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to the number that you would like to enter (for example, "1") (see Figure 5.43).

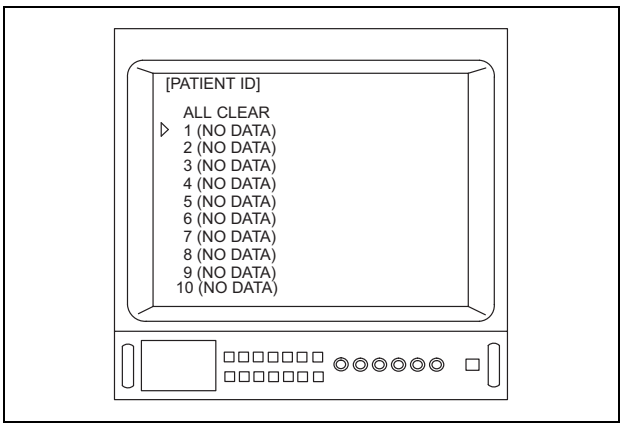



Figure 5.43

NOTE

Depending upon the OTV-S7V's settings, the menus shown in Figures 5.43, 5.44, 5.45, 5.46, 5.47 and/or 5.48 may appear different from those displayed on the video monitor.

5. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.

6. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to the next item that you would like to enter (for example, "NAME") (see Figure 5.44).

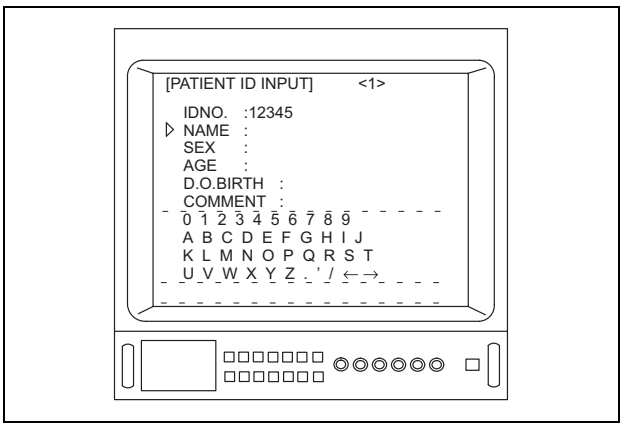



Figure 5.44

7. Depress the menu switch "↵" or the "Enter" key on the keyboard to enter the patient's name (see Figure 5.45).

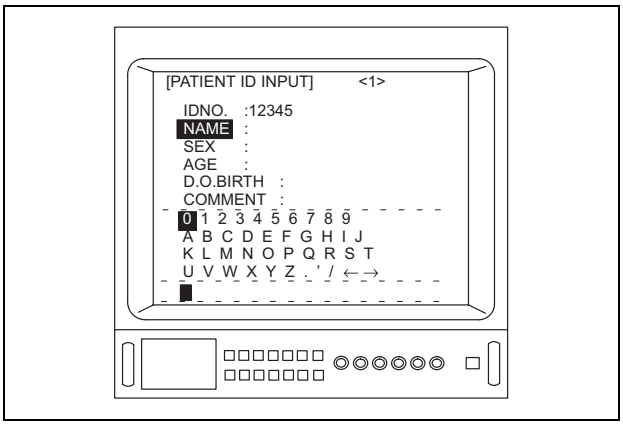



Figure 5.45

8. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the cursor.

NOTE

- Instead of steps 8. and 9., characters or numerals can be entered directly using the "Character" key or "Numeral/Symbol" key on the keyboard.
- When characters are input by the small letters, the keyboard is used.

9. Depress the menu switch "↵" or the "Enter" key on the keyboard to enter the character under the cursor (for example, "O") (see Figure 5.46).

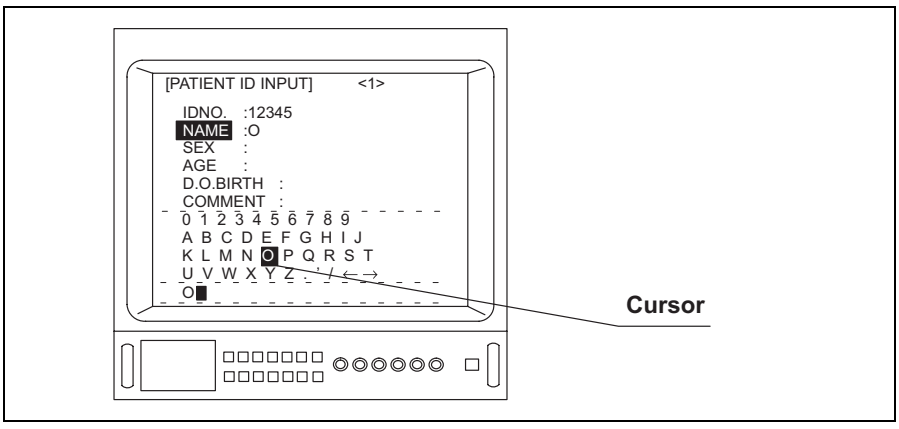



Figure 5.46

10. Repeat steps 8. and 9. to input the patient's name (for example, "OLYMPUS") (see Figure 5.47).

NOTE

- Instead of steps 8. and 9., characters or numerals can be entered directly using the “Character” key or “Numeral/Symbol” key on the keyboard.
- When characters are input by the small letters, the keyboard is used.

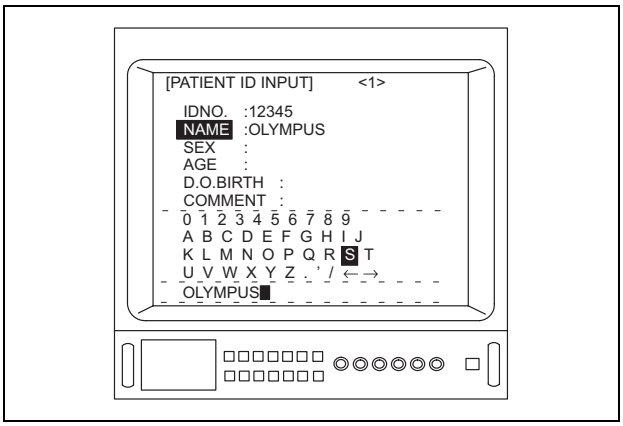



Figure 5.47

*11.* Depress the menu switch “■” or the “F1” key on the keyboard quickly to finish entering the patient’s name (see Figure 5.48).

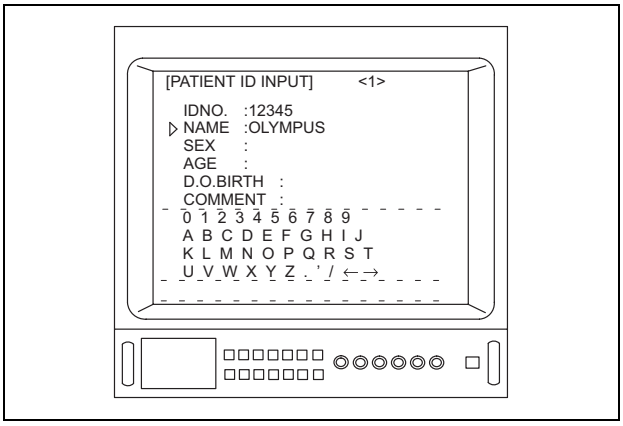



Figure 5.48

*12.* Repeat steps 4. to 11. to input any other patient data that you would like to enter.

*13.* Depress the menu switch “■” for approximately 1 second or the “Esc” key on the keyboard to enter all settings.

NOTE

- Data for up to 10 patients can be registered.
- The number of characters which can be entered is below:
  - IDNO: 15 characters
  - NAME: 20 characters
  - SEX: 1 character
  - AGE: 3 characters
  - D. O. BIRTH: 10 characters
  - COMMENT: 31 characters
- Patient data is retained when the power is turned OFF and the power cord is disconnected.

## *Patient data deletion*

1. Depress the menu switch "▣" for approximately 1 second or the "F1" key on the keyboard to display the menu.

NOTE

By pressing the "Shift" key and "F2" key on the keyboard at the same time, you can jump to step 4.

2. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "PATIENT ID" (see Figure 5.42).
3. Depress the menu switch "↵" or the "Enter" key on the keyboard to displayed the next menu.
4. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "ALL CLEAR" (see Figure 5.49).

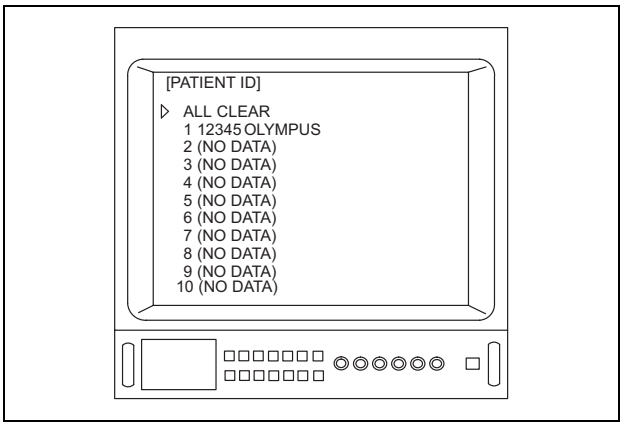



Figure 5.49

NOTE

Depending upon the OTV-S7V's settings, the menus shown in Figures 5.49, 5.50 and/or 5.51 may appear different from those displayed on the video monitor.

5. Depress the menu switch "↵" or the "Enter" key on the keyboard. Then, the menu shown in Figure 5.50 is displayed on the video monitor.

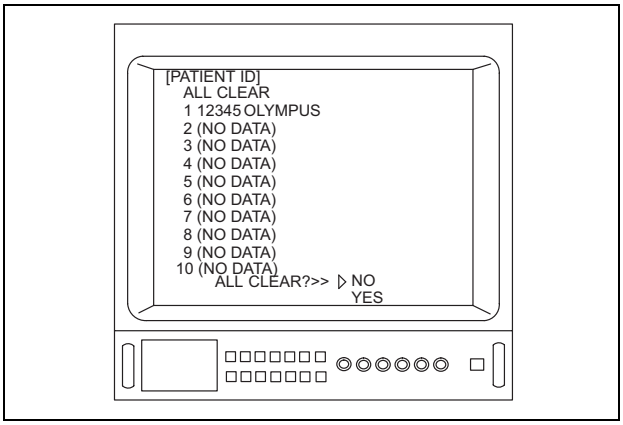



Figure 5.50

6. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to choose "YES".

7. Depress the menu switch "↵" or the "Enter" key on the keyboard. The patient data are deleted and the menu shown in Figure 5.51 is displayed on the video monitor.

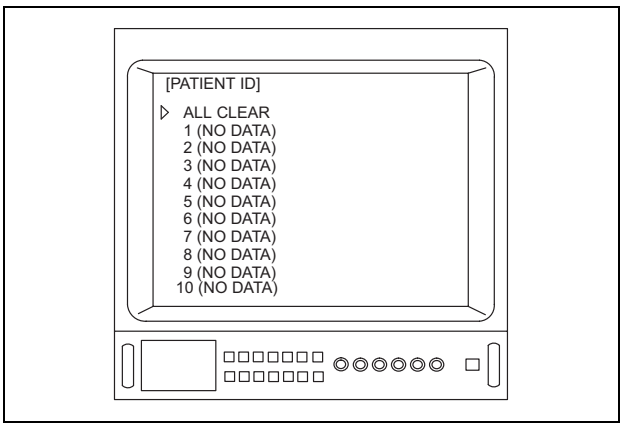



Figure 5.51

8. Depress the menu switch "▣" for approximately 1 second or the "Esc" key on the keyboard to enter all settings.

NOTE

Deleted patient data cannot be restored.

# 5.11 Patient data display, input and deletion

## Selecting patient data to be displayed

Displayed patient data can be selected by controlling the menu switches or the keyboard (optional).

1. Depress the menu switch "▬" for approximately 1 second or the "F1" key on the keyboard to display the menu.

NOTE

By pressing the "Shift" key and "F2" key on the keyboard at the same time, you can jump to step 4.

2. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "PATIENT ID" (see Figure 5.42).
3. Depress the menu switch "↵" or the "Enter" key on the keyboard to displayed the next menu.
4. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to the patient number that you would like to display (for example, "2") (see Figure 5.52).

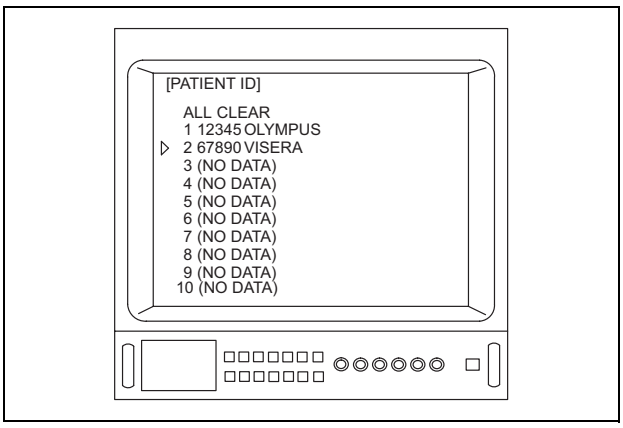



Figure 5.52

5. Depress the menu switch "▬" for approximately 1 second or the "Esc" key on the keyboard to enter all settings.

## *Patient data display*

Patent data can be displayed by controlling the menu switches or keyboard (optional).

### ❍ Display patient data quickly (keyboard only)

Press the “F2” key. Pressing this key toggles between display on and off. Then the patient data that is selected in “Selecting patient data to be displayed” on page 104 is displayed on the video monitor (see Figure 5.53).

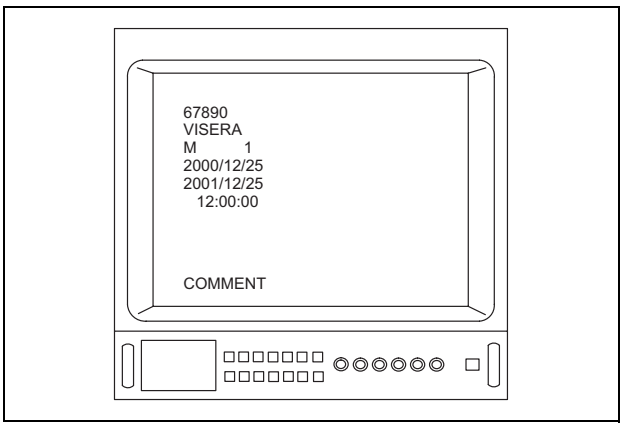



Figure 5.53

NOTE

Depending upon the OTV-S7V’s settings, the menu shown in Figure 5.53 may appear different from that displayed on the video monitor.

### ❍ Display patient data by operating the menu

1. Depress the menu switch “▣” for approximately 1 second or the “F1” key on the keyboard to display the menu.
2. Depress the menu switches “◀” or “▶”, or the “↑/↓/←/→” key on the keyboard to move the arrow “▷” to “FUNCTION CONTROL” (see Figure 5.14).
3. Depress the menu switch “↵” or the “Enter” key on the keyboard to displayed the next menu.
4. Depress the menu switches “◀” or “▶”, or the “↑/↓/←/→” key on the keyboard to move the arrow “▷” to “DISPLAY ID” (see Figure 5.54).

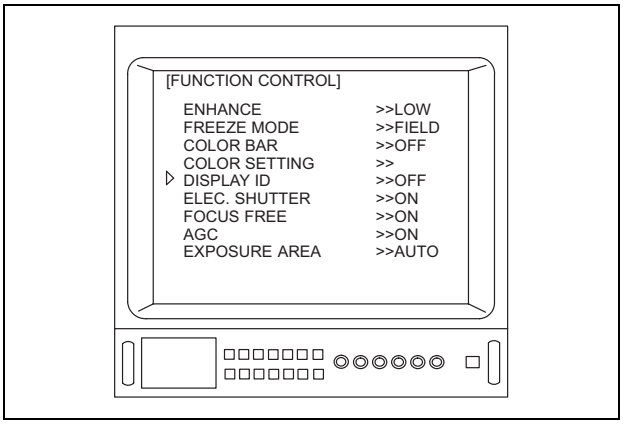



Figure 5.54

NOTE

- When the OTV-S7V is connected to the ENF-V, CYF-V/VA or HYF-V, “ELEC. SHUTTER” and “EXPOSURE AREA” shown in Figures 5.54 and/or 5.55 are not displayed.
- When the OTV-S7V is connected to the LTF-V3 or A500**A series, “EXPOSURE AREA” shown in Figures 5.54 and/or 5.55 is not displayed.
- When the OTV-S7V is connected to a camera head without the focus free function, or to a videoscope, “FOCUS FREE” shown in Figures 5.54 and/or 5.55 is not displayed.
- Depending upon the OTV-S7V’s settings, the menus shown in Figures 5.54 and/or 5.55 may appear different from those displayed on the video monitor.

*5.* Depress the menu switch “↵” or the “Enter” key on the keyboard to adjust “DISPLAY ID” (see Figure 5.55).

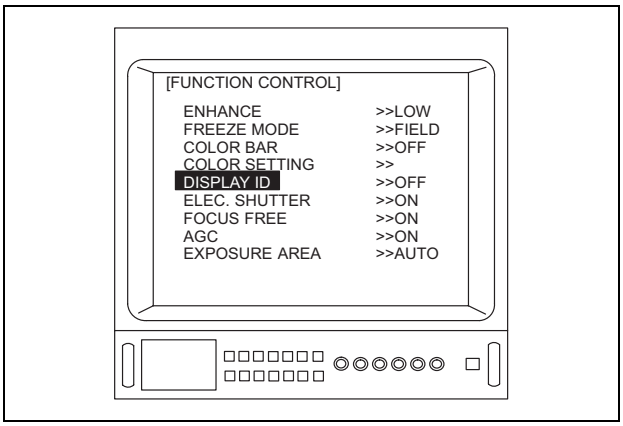



Figure 5.55

6. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to set "DISPLAY ID" to "ON".
7. Depress the menu switch "(■)" or the "Enter" key on the keyboard to enter all settings. Then the patient data that is selected in "Selecting patient data to be displayed" on page 104 is displayed (see Figure 5.53).

NOTE

- Refer to Section 5.12, "Remote control switches" for instructions on adjusting the "Patient data display" using the remote control switches on the camera head or videoscope.
- The "Display ID" setting is retained when the power is turned OFF and the power cord is disconnected.

## *Input patient data (keyboard only)*

Patent data can be input directly from the keyboard (optional).

1. Refer to "Patient data display" on page 105 to display the patient data.
2. Depress the "↑/↓/←/→" key on the keyboard to move the cursor to the next item that you would like to enter (see Figure 5.56).

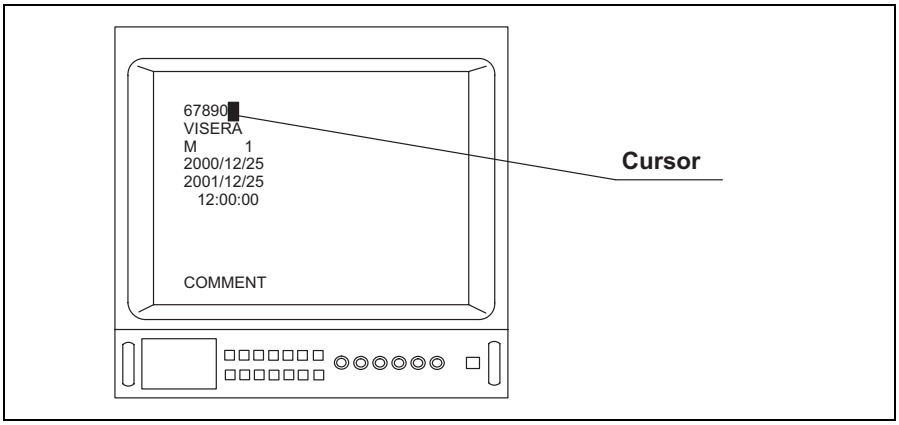



Figure 5.56

NOTE

Depending upon the OTV-S7V's settings, the menu shown in Figure 5.56 may appear different from that displayed on the video monitor.

3. Depress the "Character" and "Numeral/Symbol" keys to enter the patient data.

NOTE

The patient data is retained when the power is turned OFF and the power cord is disconnected.

## *Delete patient data (keyboard only)*

Patent data can be deleted using the keyboard (optional).
When the patient data is displayed on the video monitor, depress the “Shift” key and “Delete” or “Backspace” key on the keyboard at the same time to delete them. Then, the menu shown in Figure 5.57 is displayed on the video monitor.

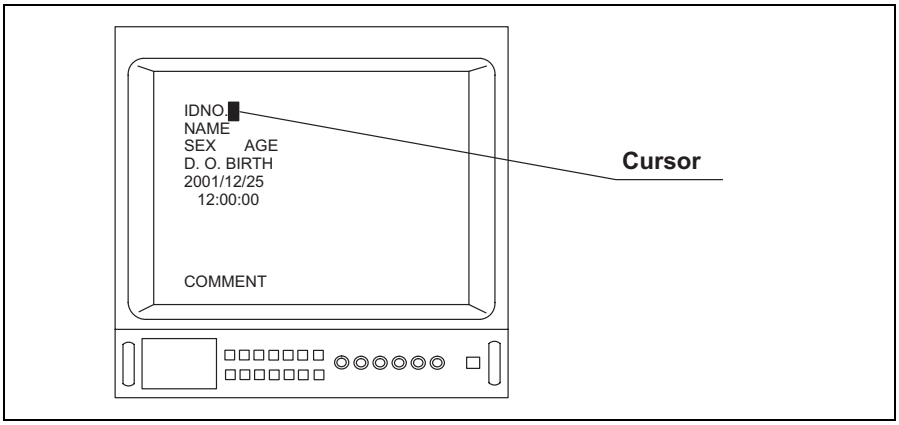



Figure 5.57

NOTE

- Deleted patient data cannot be restored.
- Depending upon the OTV-S7V’s settings, the menus shown in Figure 5.57 may appear different from those displayed on the video monitor.

# 5.12 Remote control switches

The OTV-S7V's functions can be controlled by the remote control switches on the camera head or videoscope. The number of remote control switches available depend on the camera head or videoscope being used (see Table 5.2).

| The number of remote control switches | Camera head/videoscope models |
|---|---|
| 0 | OTV-S7H-1D-F08E, OTV-S7H-1D-L08E, OTV-S7H-D-L08E |
| 2 | OTV-S7H-N, OTV-S7H-1N, OTV-S7H-1D, OTV-S7H-NA, OTV-S7H-1NA, A500**A series |
| 3 | OTV-S7H-NA-10E, OTV-S7H-1NA-10E, OTV-S7H-NA-12E, OTV-S7H-1NA-12E, OTV-S7H-NA-10Q, OTV-S7H-NA-12Q, OTV-S7H-1NA-12Q, LTF-V3 |
| 4 | ENF-V, CYF-V, CYF-VA, HYF-V |

Table 5.2

Remote control switches can be set by controlling the menu switches or keyboard (optional).

1. Depress the menu switch "(■)" for approximately 1 second or the "F1" key on the keyboard to display the menu.
2. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "SWITCH ASSIGNMENT" (see Figure 5.58).

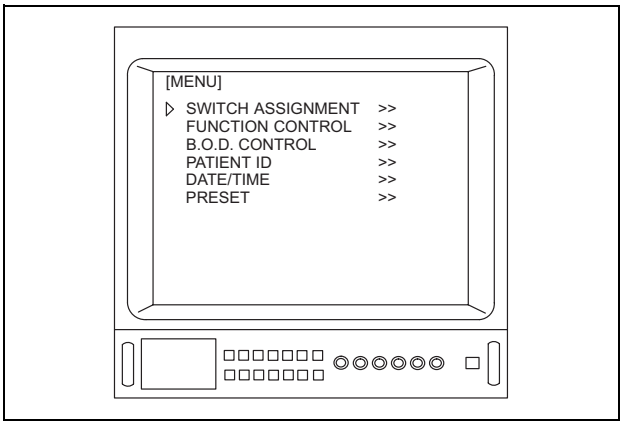



Figure 5.58

NOTE

- When using a type A OTV-S7V, “B.O.D. CONTROL” (see Figure 5.58) is not displayed.
- When the OTV-S7H-1D-F08E/L08E/D-L08E is connected to the OTV-S7V, “SWITCH ASSIGNMENT” (see Figure 5.58) is not displayed.

3. Depress the menu switch “↵” or the “Enter” key on the keyboard to display the next menu.

4. Depress the menu switches “◀” or “▶”, or the “↑/↓/←/→” key on the keyboard to move the arrow “▷” to the switch number that you would like to set (for example, “SW1”) (see Figure 5.59).

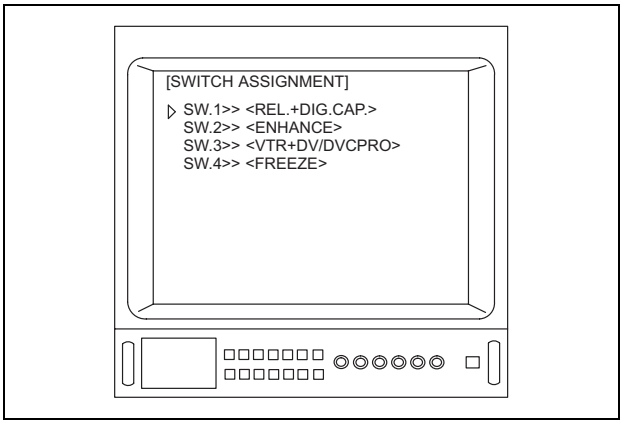



Figure 5.59

NOTE

- The number of switches displayed (see Figure 5.59) depends upon the number of the remote control switches on the camera head or videoscope.
- Depending upon the number and settings of the remote control switches, the menu shown in Figure 5.59 may appear different from that displayed on the video monitor.

5. Depress the menu switch “↵” or the “Enter” key on the keyboard to display the next menu.

6. Depress the menu switches “◀” or “▶”, or the “↑/↓/←/→” key on the keyboard to move the arrow “▷” to the next function that you would like to set (for example, “EXPOSURE ↑”) (see Figure 5.60).

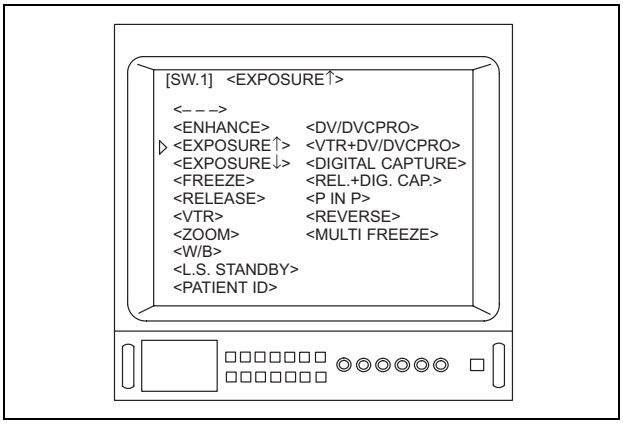



Figure 5.60

NOTE

Depending upon the installed B.O.D.s in the OTV-S7V, the menu shown in Figure 5.60 may appear different from that displayed on the video monitor.

7. Depress the menu switch "(■)" for approximately 1 second or the "Esc" key on the keyboard to enter all settings.

NOTE

- The remote control switch functions are retained when the power is turned OFF and the power cord is disconnected.
- Each menu item's corresponding functions and operational references are shown in Table 5.3.

| Menu item | Function | Operation from the remote control switches | Reference |
|---|---|---|---|
| – – – | Switches are inactive. | – | – |
| ENHANCE | Image enhancement (Selected from 4 modes) | Each time the switch is depressed, the mode cycles through OFF, LOW, MEDIUM and HIGH. | Section 5.9, "Image enhancement" |
| EXPOSURE ↑ | Brightness adjustment | Depress the switch to increase brightness (When the ENF-V, CYF-V/VA or HYF-V is not used in combination with the CLV-S40/S30/S20 or CLV-U40/U20, this function is inactive.). | Section 5.7, "Brightness adjustment" |

| | | | |
|---|---|---|---|
| EXPOSURE ↓ | Brightness adjustment | Depress the switch to decrease brightness (When the ENF-V, CYF-V/VA or HYF-V is not used in combination with the CLV-S40/S30/S20 or CLV-U40/U20, this function is inactive.). | Section 5.7, “Brightness adjustment” |
| FREEZE | Freeze | Pressing the switch toggles the freeze function on and off. | Section 5.14, “Freeze” |
| RELEASE | Release | Depress the switch to release the SCV-3, OEP-3 or OEP. | Section 5.20, “EVIS monitor photo unit SCV-3” or 5.21, “Photography and display with color video printer OEP-3/OEP” |
| VTR | Recording image with a VTR | Pressing the switch toggles between record and pause. | Section 5.22, “Recording with the VTR” |
| ZOOM | Zoom | • Pressing the switch toggles between 1.0 × and 1.2 × magnification. (ENF-V, CYF-V/VA or HYF-V only)<br>• Each time the switch is depressed, the zoom cycles through 1.0 × , 1.2 × , 1.5 × and 2 ×. (except when using the above videoscopes) | Section 5.15, “Zoom” |
| W/B | Automatic white balance | Each time the switch is depressed for more than 1 second, the color tone is adjusted by white balance. | “Color adjustment with auto white balance” on page 72 |
| L.S. STANDBY | Light source standby function | Pressing the switch toggles between turning the standby function on and off. (CLV-S40 only) | Section 5.16, “Controlling the CLV-S40’s standby function” |
| PATIENT ID | Patient data display | Pressing the switch toggles between patient data display on and off. | Section 5.11, “Patient data display, input and deletion” |
| DV/DVCPRO | Recording image with a digital video recorder. | Pressing the switch toggles between record and pause. (Types B, C, D or F only) | Section 5.23, “Recording with the digital video recorder in digital to digital format” |
| VTR+DV/DVCPRO | Recording image with a VTR and a digital video recorder. | Pressing the switch toggles between record and pause. (Types B, C, D or F only) | Section 5.22, “Recording with the VTR” and 5.23, “Recording with the digital video recorder in digital to digital format” |
| DIGITAL CAPTURE | Capture | Depress the switch to capture an image to Memory Card. (Types B, C or F only) | Section 5.24, “Recording and playback with Memory Card” |

| | | | |
|---|---|---|---|
| REL.+DIG. CAP. | Release and capture | Depress the switch to release the SCV-3, OEP-3 or OEP and capture an image to Memory Card. (Types B, C or F only) | Section 5.20, “EVIS monitor photo unit SCV-3”, Section 5.21, “Photography and display with color video printer OEP-3/OEP” and Section 5.24, “Recording and playback with Memory Card” |
| P IN P | Picture in picture | • Pressing the switch toggles between picture in picture on and off. (Type C only)<br>• Pressing the switch toggles between turning the picture in picture mode OTV+ext. and EXT.+otv. (Type C only) | Section 5.26, “Picture in picture” |
| REVERSE | Mirror and rotated image | Each time the switch is depressed, the image cycles through mirror, rotated and normal. (Type C only) | Section 5.25, “Mirror and rotated images” |
| MULTI FREEZE | Multi freeze | Pressing the switch toggles between multi freeze on and off. (Installed in OTV-S7BOD-MF type only) | Section 5.27, “Multi freeze” |

Table 5.3

# 5.13 Setting a function to the keyboard

The “F4” key, “F5” key and “B.O.D.” key can be set to activate a function by controlling the menu switches or keyboard (optional).

## Setting the “F4” key

The functions that can be set to be activated by the “F4” key are shown in Table 5.4.

| Menu item | Operation from the “F4” key | Reference |
|---|---|---|
| RELEASE | Depress this key to release the SCV-3, OEP-3 or OEP. | Section 5.20, “EVIS monitor photo unit SCV-3” |
| DIGITAL CAPTURE | Depress this key to capture an image to Memory Card (Types B, C or F only). | Section 5.24, “Recording and playback with Memory Card” |
| REL.+DIG. CAP. | Depress this key to release the SCV-3, OEP-3 or OEP and capture an image to Memory Card (Types B, C or F only). | Section 5.20, “EVIS monitor photo unit SCV-3” and Section 5.24, “Recording and playback with Memory Card” |

Table 5.4

1. Depress the “Alt” key and “F4” key on the keyboard at the same time to display the menu (see Figure 5.61).

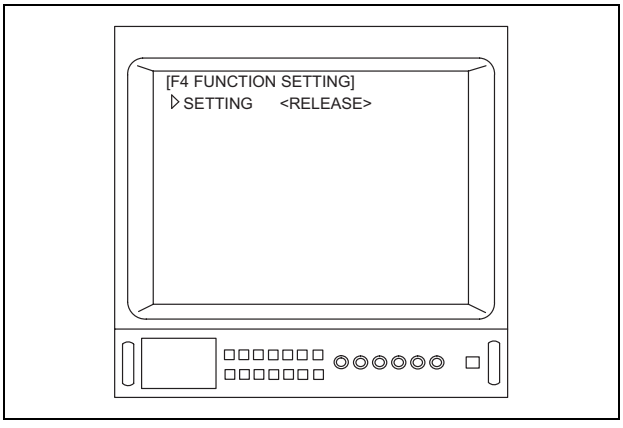



Figure 5.61

NOTE

Depending upon the OTV-S7V’s settings, the menus shown in Figures 5.61 and/or 5.62 may appear different from those displayed on the video monitor.

2. Depress the menu switch "↵" or the "Enter" key on the keyboard to adjust the "SETTING" (see Figure 5.62).

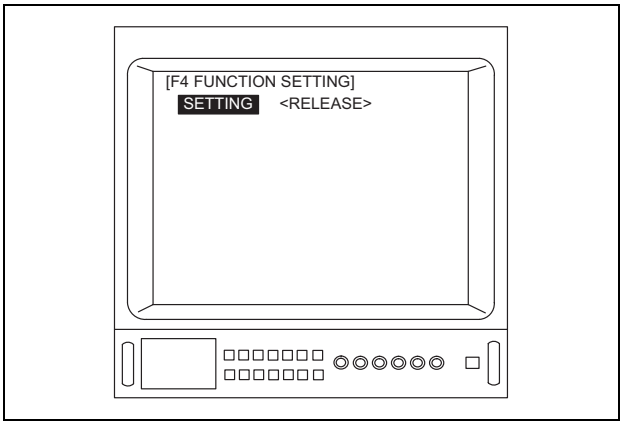



Figure 5.62

3. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to set the function.

4. Depress the menu switch "■" for approximately 1 second or the "Esc" key on the keyboard to enter the setting.

NOTE

The "F4" key setting is retained when the power is turned OFF and the power cord is disconnected.

## *Setting the "F5" key*

The functions that can be set to be activated by the "F5" key are shown in Table 5.5.

| Menu item | Operation from the "F5" key | Reference |
|---|---|---|
| VTR | Pressing this key toggles between record and pause on the VTR. | Section 5.22, "Recording with the VTR" |
| DV/DVCPRO | Pressing this key toggles between record and pause on the digital video recorder (Types B, C, D and F only). | Section 5.23, "Recording with the digital video recorder in digital to digital format" |
| VTR+DV/DVCPRO | Pressing this key toggles between record and pause on the VTR and digital video recorder (Types B, C, D and F only). | Section 5.22, "Recording with the VTR" and Section 5.23, "Recording with the digital video recorder in digital to digital format" |

Table 5.5

1. Depress the "Alt" key and "F5" key on the keyboard at the same time to display the menu (see Figure 5.63).

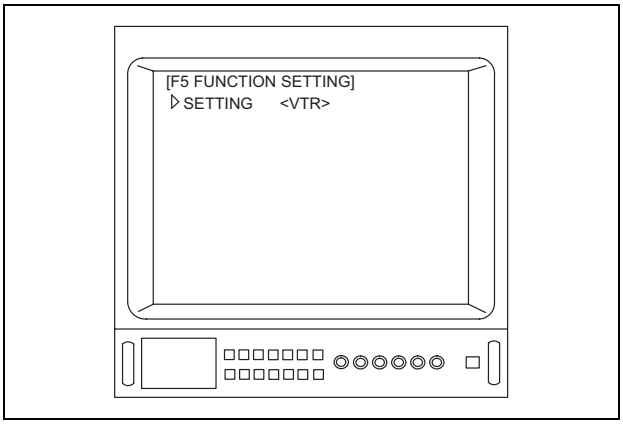



Figure 5.63

NOTE

Depending upon the OTV-S7V's settings, the menus shown in Figures 5.63 and/or 5.64 may appear different from those displayed on the video monitor.

2. Depress the menu switch "↵" or the "Enter" key on the keyboard to adjust the "SETTING" (see Figure 5.64).

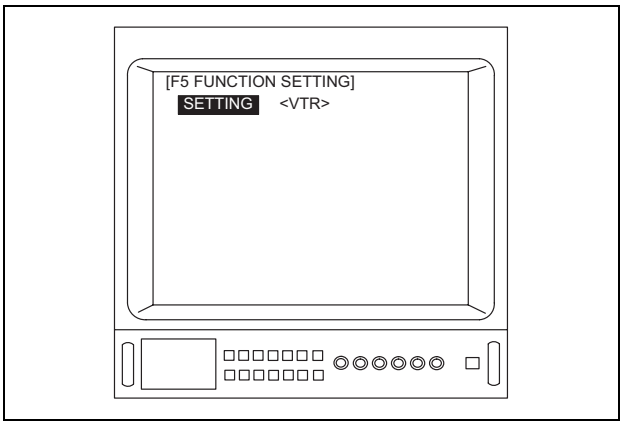



Figure 5.64

3. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to set the function.

4. Depress the menu switch "▣" for approximately 1 second or the "Esc" key on the keyboard to enter the setting.

NOTE

The "F5" key setting is retained when the power is turned OFF and the power cord is disconnected.

## Setting the "B.O.D." key

The functions that can be set to be activated by the "B.O.D." key are shown in Table 5.6. Depending upon the OTV-S7V's type, the functions that can be set are different (see Table 5.7).

| Menu item | Operation from the "B.O.D." key | Reference |
|---|---|---|
| DV/DVCPRO | Pressing this key toggles between record and pause. | Section 5.23, "Recording with the digital video recorder in digital to digital format" |
| DIGITAL CAPTURE | Pressing this key to capture an image to Memory Card. | Section 5.24, "Recording and playback with Memory Card" |
| P IN P | • Pressing this key toggles between picture in picture on and off.<br>• Pressing the switch toggles between turning the picture in picture mode OTV+ext. and EXT.+otv. | Section 5.26, "Picture in picture" |
| REVERSE | Each time this key is pressed, the image cycles through mirror, rotated and normal. | Section 5.25, "Mirror and rotated images" |
| MULTI FREEZE | Pressing this key toggles between multi freeze on and off. | Section 5.27, "Multi freeze" |
| ORIENTATION | Pressing the key toggles between rotated and normal images. | Section 5.28, "Orientation" |
| NONE | This key is inactive. | – |

Table 5.6

possible to set: ○ impossible to set: –

| Menu item | Type A | Type B | Type C | Type D | Type F (NTSC only) |
|---|---|---|---|---|---|
| DV/DVCPRO | – | ○ | ○ | ○ | ○ |
| DIGITAL CAPTURE | – | ○ | ○ | – | ○ |
| P IN P | – | – | ○ | – | – |
| REVERSE | – | – | ○ | – | – |
| MULTI FREEZE | – | – | – | – | – |
| ORIENTATION | – | – | – | – | ○ |
| NONE | ○ | ○ | ○ | ○ | ○ |

Table 5.7

NOTE

- None of the OTV-S7V types include the multi freeze unit, so if you want to add to the multi freeze unit for OTV-S7, please contact Olympus. It is available, but only if installed by Olympus personnel.
- Type A does not have a B.O.D. installed.

1. Depress the “Alt” key and “B.O.D.” key on the keyboard at the same time to display the menu (see Figure 5.65).

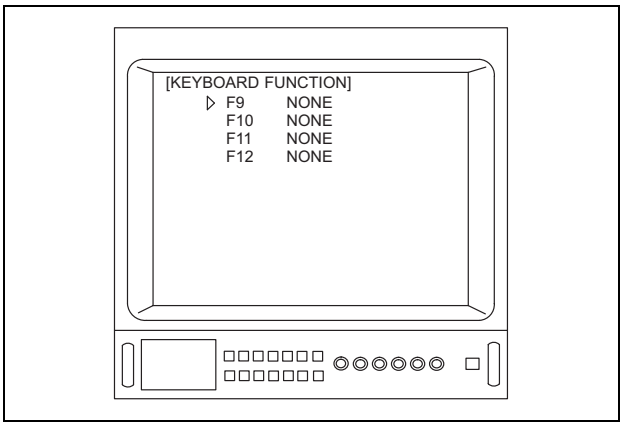



Figure 5.65

NOTE

Depending upon the OTV-S7V’s settings, the menus shown in Figures 5.65 and/or 5.66 may appear different from those displayed on the video monitor.

2. Depress the menu switch "↵" or the "Enter" key on the keyboard to adjust the "SETTING" (see Figure 5.66).

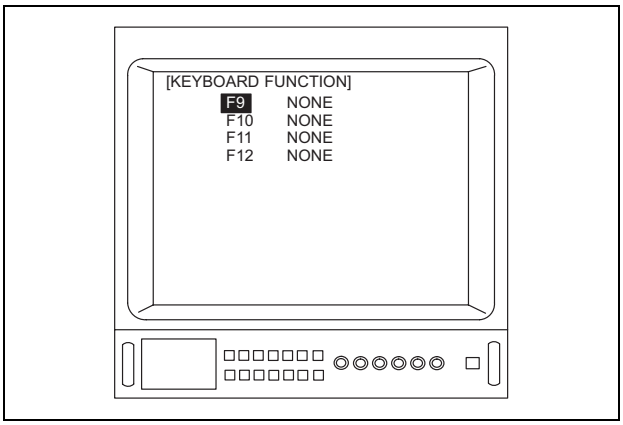



Figure 5.66

3. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to set the function.

4. Depress the menu switch "■" for approximately 1 second or the "Esc" key on the keyboard to enter the setting.

NOTE

The "B.O.D." key setting is retained when the power is turned OFF and the power cord is disconnected.

# 5.14 Freeze

## Freeze mode setting

The freeze mode (FIELD or FRAME) can be set by controlling the menu switches or keyboard (optional).

- FIELD : This should be the freeze mode setting in the majority of cases.
- FRAME : If the endoscopic image is relatively stable, an image frozen in the "FRAME" mode will be clear than one frozen in the "FIELD" mode. If the endoscopic image is unstable, an image frozen in the "FRAME" mode will be blurry.

1. Depress the menu switch "■" for approximately 1 second or the "F1" key on the keyboard to display the menu.

2. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "FUNCTION CONTROL" (see Figure 5.14).
3. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.
4. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "FREEZE MODE" (see Figure 5.67).

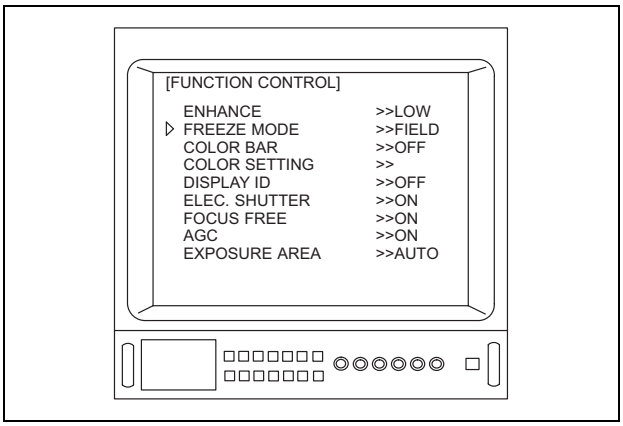



Figure 5.67

NOTE

- When the OTV-S7V is connected to the ENF-V, CYF-V/VA or HYF-V, "ELEC. SHUTTER" and "EXPOSURE AREA" shown in Figures 5.67 and/or 5.68 are not displayed.
- When the OTV-S7V is connected to the LTF-V3 or A500**A series, "EXPOSURE AREA" shown in Figures 5.67 and/or 5.68 is not displayed.
- When the OTV-S7V is connected to a camera head without the focus free function, or to a videoscope, "FOCUS FREE" shown in Figures 5.67 and/or 5.68 is not displayed.
- Depending upon the OTV-S7V's settings, the menus shown in Figures 5.67 and/or 5.68 may appear different from those displayed on the video monitor.

5. Depress the menu switch "↵" or the "Enter" key on the keyboard to adjust the "FREEZE MODE" (see Figure 5.68).

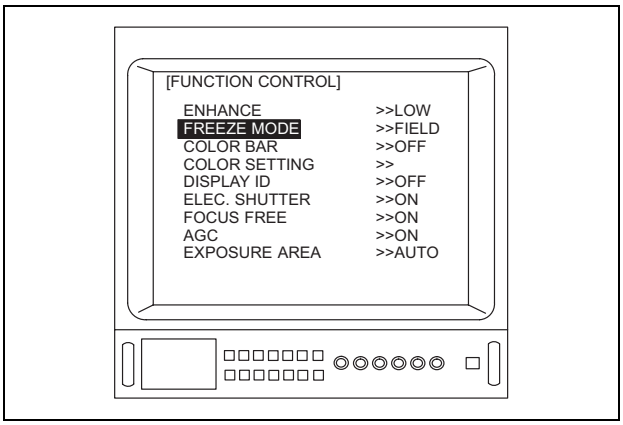



Figure 5.68

6. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to set the freeze mode.
7. Depress the menu switch "■" for approximately 1 second or the "Esc" key on the keyboard to enter all settings.

NOTE

The "FREEZE MODE" setting is retained when the power is turned OFF and the power cord is disconnected.

## *Freeze ON and OFF*

The image can be frozen on the monitor by pressing a remote control switch or a key on the keyboard (optional).

### ❍ Freeze the image by pressing a remote control switch

1. Refer to Section 5.12, "Remote control switches", and set the "FREEZE" function to a remote control switch on the camera head or videoscope.
2. Pressing the switch toggles the freeze function on and off.

### ❍ Freeze the image by pressing a key on the keyboard

Press the "F3" key. Pressing this key toggles the freeze function on and off.

# 5.15 Zoom

An electrically magnified (zoom) image can be displayed on the monitor by pressing a remote control switch or a key on the keyboard (optional).

### ❍ Display an electrically magnified image by pressing a remote control switch

1. Refer to Section 5.12, “Remote control switches”, and set the “ZOOM” function to a remote control switch on the camera head or videoscope.
2. Pressing the switch toggles between 1.0 × magnification and 1.2 × when using the ENF-V, CYF-V/VA or HYF-V (see Figure 5.69).

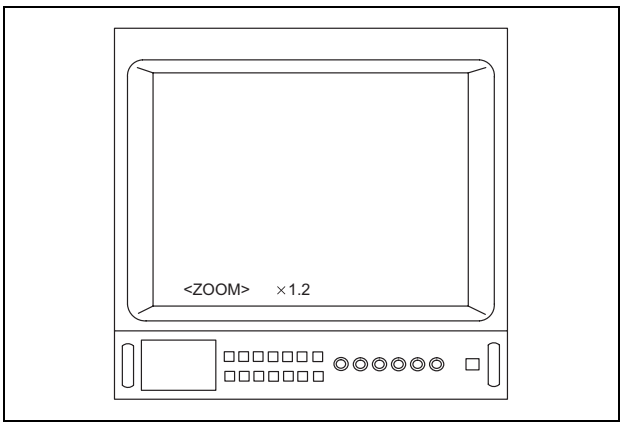



Figure 5.69

NOTE

The menu shown in Figure 5.69 appears when the electrical magnification is 1.2 ×. Depending upon an electrical magnification, the menu shown in Figure 5.69 may appear different from that displayed on the video monitor.

3. Each time the switch is depressed, the zoom cycles through 1.0 × magnification, 1.2 ×, 1.5 × and 2 × when using a camera head or videoscope other than those described in step 2. (see Figure 5.69).

### ❍ Display an electrically magnified image by pressing a key on the keyboard

1. Press the “F7” key. Pressing this key toggles between 1.0 × magnification and 1.2 × when using the ENF-V, CYF-V/VA or HYF-V (see Figure 5.69).
2. Each time this key is depressed, the zoom cycles through 1.0 × magnification, 1.2 ×, 1.5 × and 2 × when using a camera head or videoscope other than those described in step 1. (see Figure 5.69).

NOTE

The zoom setting is not retained when the power is turned OFF and the power cord is disconnected. However, when the OTV-S7V is connected to the ENF-V, CYF-V/VA or HYF-V, the zoom setting is retained even so.

## 5.16 Controlling the CLV-S40’s standby function

The CLV-S40’s standby function can be controlled by pressing a remote control switch.

1. Refer to Section 5.12, “Remote control switches”, and set the “L.S. STANDBY” function to a remote control switch on the camera head or videoscope.
2. Pressing the switch toggles between turning the standby function on and off.

NOTE

For further details on the standby function, refer to the CLV-S40’s instruction manual.

# 5.17 Saving and deleting user settings

## Save the user settings

On the OTV-S7V, settings for up to 7 user can be saved by controlling the menu switches or keyboard (optional).

1. Depress the menu switch "■" for approximately 1 second or the "F1" key on the keyboard to display the menu.

NOTE

By pressing the "F8" key on the keyboard, you can jump to step 4.

2. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "PRESET" (see Figure 5.70).

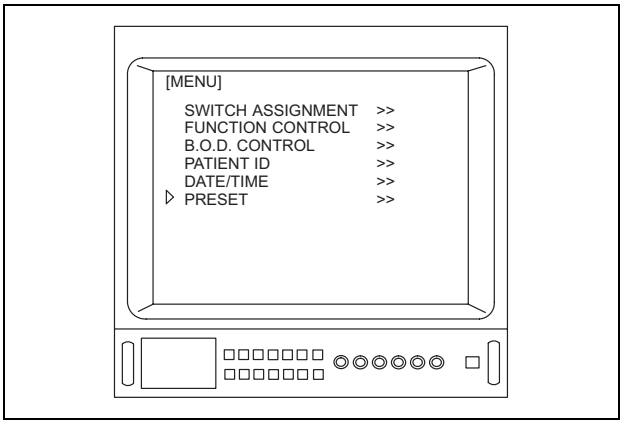



Figure 5.70

NOTE

- When using a type A OTV-S7V, "B.O.D. CONTROL" (see Figure 5.70) is not displayed.
- When the OTV-S7H-1D-F08E/L08E/D-L08E is connected to the OTV-S7V, "SWITCH ASSIGNMENT" (see Figure 5.70) is not displayed.

3. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.

4. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "SAVE" (see Figure 5.71).

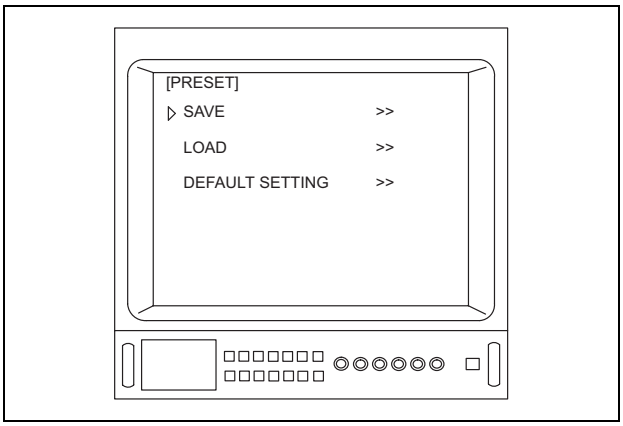



Figure 5.71

5. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.

6. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to the number that you would like to enter (for example, "<1>") (see Figure 5.72).

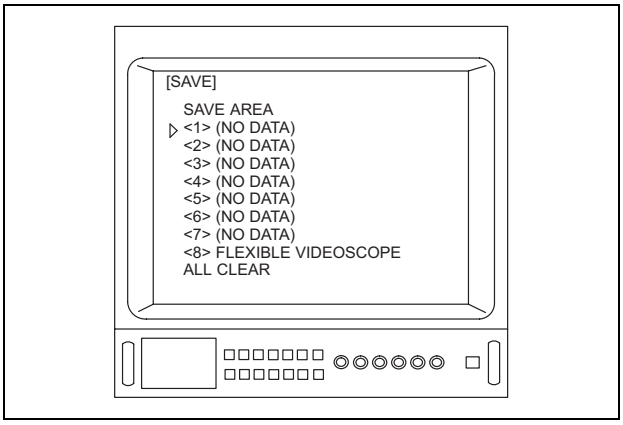



Figure 5.72

NOTE

- Depending upon the OTV-S7V's settings, the menus shown in Figures 5.72, 5.73, 5.74, 5.75 and/or 5.76 may appear different from those displayed on the video monitor.
- The user settings cannot be saved to "<8>".

7. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.

*8.* Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the cursor.

NOTE

- Instead of steps 8. and 9., characters or numerals can be entered directly by using "Character" key or "Numeral/Symbol" key on the keyboard.
- When characters are input by the small letters, the keyboard is used.

*9.* Depress the menu switch "↵" or the "Enter" key on the keyboard to enter the character under the cursor (for example, "T") (see Figure 5.73).

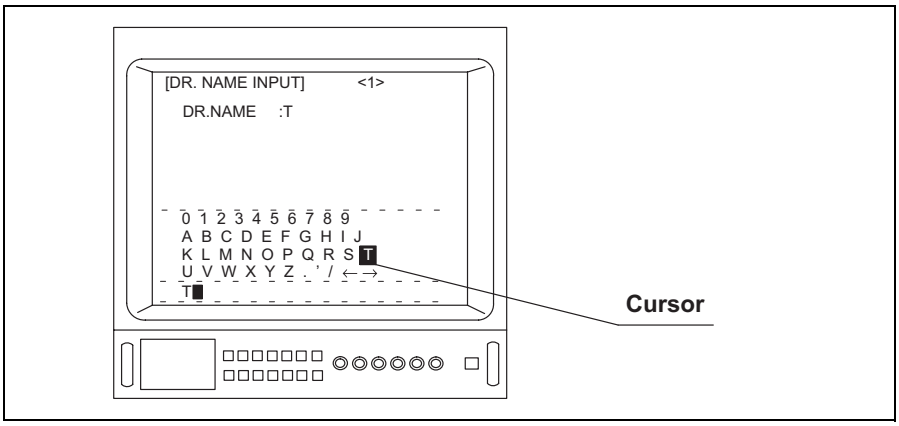



Figure 5.73

*10.* Repeat steps 8. and 9. to enter the user's name (for example, "TOKYO") (see Figure 5.74).

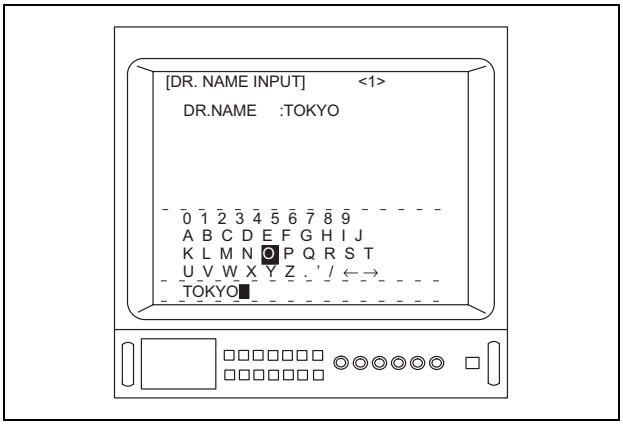



Figure 5.74

NOTE

- Instead of steps 8. and 9., characters or numerals can be entered directly by using the “Character” key or “Numeral/Symbol” key on the keyboard.
- When characters are input by the small letters, the keyboard is used.

*11.* Depress the menu switches “■” or the “F1” key on the keyboard to finish inputting the user’s name.

*12.* Depress the menu switches “◀” or “▶”, or the “↑/↓/←/→” key on the keyboard to move the arrow “▷” to “YES” (see Figure 5.75).

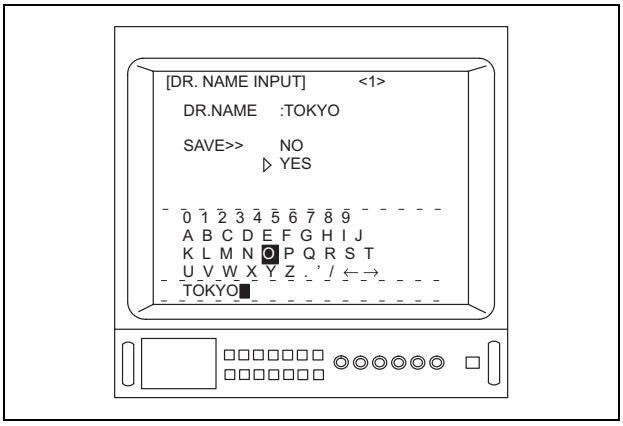



Figure 5.75

*13.* Depress the menu switch “↵” or the “Enter” key on the keyboard to enter the user’s name. The menu shown in Figure 5.76 is displayed.

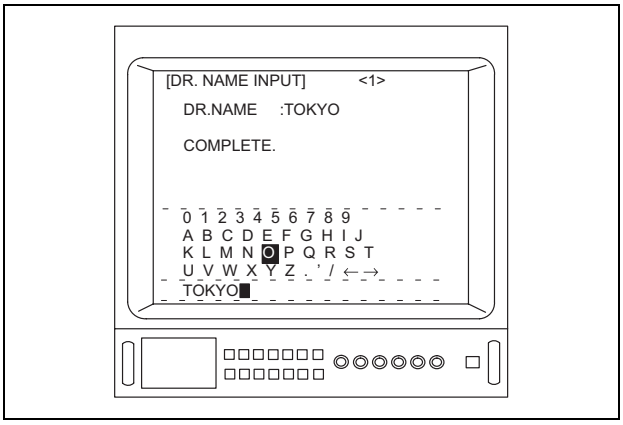



Figure 5.76

*14.* Depress the menu switch “■” for approximately 1 second or the “Esc” key on the keyboard to save the OTV-S7V’s settings.

NOTE

Saved the user settings are retained when the power is turned OFF and the power cord is disconnected.

## *Delete the user settings*

User settings can be deleted by controlling the menu switches or keyboard (optional).

1. Depress the menu switch "▣" for approximately 1 second or the "F1" key on the keyboard to display the menu.

NOTE

By pressing the "F8" key on the keyboard, you can jump to step 4.

2. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "PRESET" (see Figure 5.70).
3. Depress the menu switch "↵" or the "Enter" key on the keyboard to displayed the next menu.
4. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "SAVE" (see Figure 5.71).
5. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.
6. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "ALL CLEAR" (see Figure 5.77).

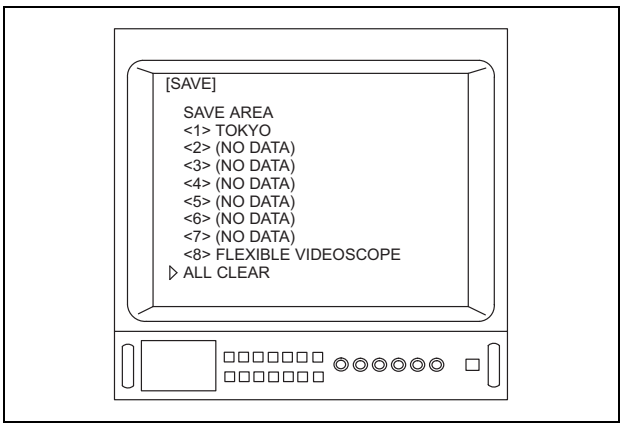



Figure 5.77

NOTE

- Depending upon the OTV-S7V's settings, the menus shown in Figures 5.77, 5.78 and/or 5.79 may appear different from those displayed on the video monitor.
- The "<8>" settings cannot be deleted.

7. Depress the menu switch "↵" or the "Enter" key on the keyboard to displayed the next menu.

8. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to choose "YES" (see Figure 5.78).

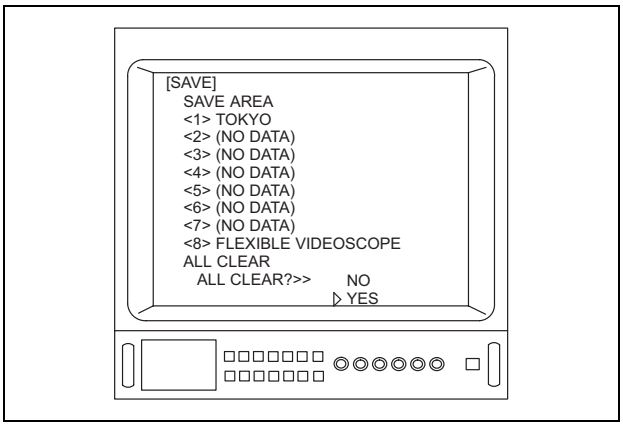



Figure 5.78

9. Depress the menu switch "↵" or the "Enter" key on the keyboard. Then user settings are deleted and the menu shown in Figure 5.79 is displayed on the video monitor.

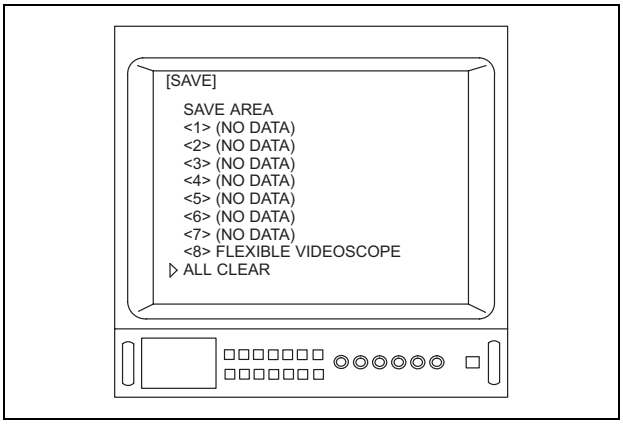



Figure 5.79

10. Depress the menu switch "▣" for approximately 1 second or the "Esc" key on the keyboard to enter all settings.

NOTE

Deleted user setting cannot be restored.

## 5.18 Load user settings

User settings can be loaded by controlling the menu switches or the keyboard (optional).

NOTE

When using the ENF-V, CYF-V/VA or HYF-V, loading the "<8>" settings is recommended. The "<8>" settings are given in Table 5.8 below.

| Function | Setting | |
|---|---|---|
| Remote control switches | SW1: FREEZE | |
| | SW2: ENHANCE | |
| | SW3: ZOOM | |
| | SW4: RELEASE | When using a type A or D OTV-S7V |
| | REL.+DIG. CAP. | When using a type B, C or F OTV-S7V |
| Other functions | Default OTV-S7V settings | |

Table 5.8

1. Depress the menu switch "■" for approximately 1 second or the "F1" key on the keyboard to display the menu.

NOTE

By pressing the "F8" key on the keyboard, you can jump to step 4.

2. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "PRESET" (see Figure 5.70).
3. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.
4. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "LOAD".(see Figure 5.80).

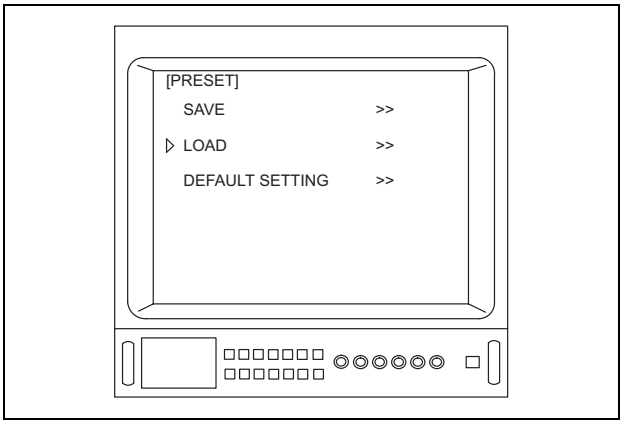



Figure 5.80

5. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.

6. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to the number that you would like to load (for example, "<1>") (see Figure 5.81).

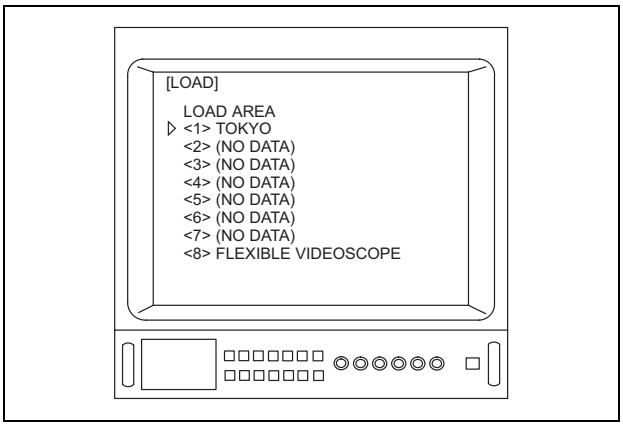



Figure 5.81

NOTE

Depending upon the OTV-S7V's settings, the menus shown in Figures 5.81, 5.82 and/or 5.83 may appear different from those displayed on the video monitor.

7. Depress the menu switch "↵" or the "Enter" key on the keyboard to load the settings for that user.

8. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "YES" (see Figure 5.82).

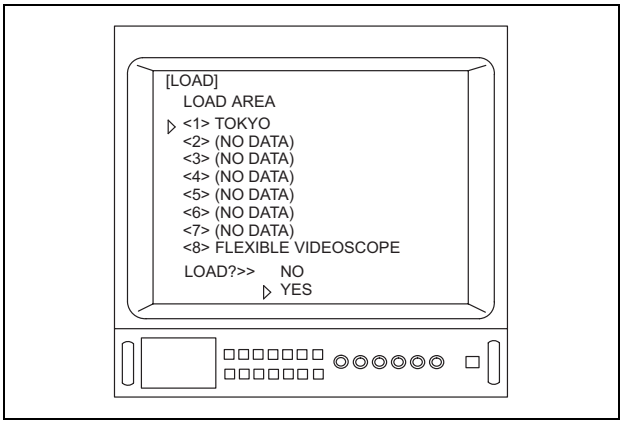



Figure 5.82

*9.* Depress the menu switch "↵" or the "Enter" key on the keyboard to load the settings. Then the menu shown in Figure 5.83 is displayed.

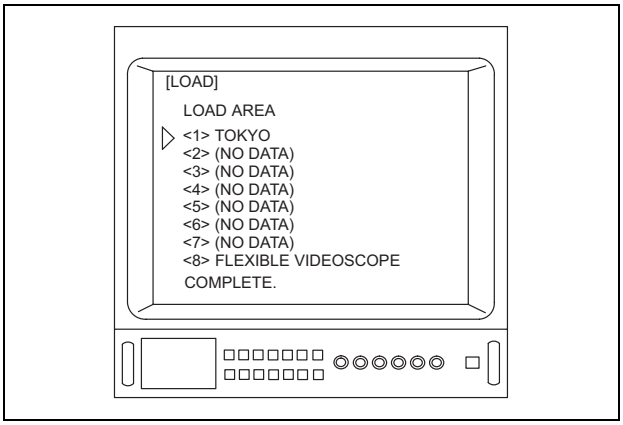



Figure 5.83

*10.* Depress the menu switch "■" for approximately 1 second or the "Esc" key on the keyboard to load the OTV-S7V's settings.

NOTE

The loaded user settings are retained when the power is turned OFF and the power cord is disconnected.

# 5.19 Default settings

Users may restore default settings on the OTV-S7V (settings when the equipment is sent out from the plant). The default settings are given in Tables 5.9, 5.10 and 5.11 below.

## ❍ Default OTV-S7V functions

| Function | Default setting | | |
|---|---|---|---|
| Exposure | Center (±0) | | |
| Focus free | ON | When a camera head with the focus free function is connected to the OTV-S7V. | |
| Image enhancement | LOW | | |
| Color bar | OFF | | |
| Remote control switches | SW1: RELEASE | | When using a type A or D OTV-S7V |
| | | REL.+DIG.CAP. | When using a type B, C or F OTV-S7V |
| | SW2: ENHANCE | | |
| | SW3: VTR | | When using a type A OTV-S7V |
| | | VTR+DV/DVCPRO | When using a type B, C, D or F OTV-S7V |
| | SW4: FREEZE | | |
| Color tone level | Red: Center (±0)<br>Blue: Center (±0) | | |
| Color mode | 1: XENON NORMAL | | |
| Shutter | ON | When a camera head, LTF-V3 or A500**A series is connected to the OTV-S7V. | |
| Zoom | × 1.0 | | |
| Freeze mode | FIELD | | |
| Patient data display (display ID) | ON | When the ENF-V, CYF-V/VA or HYF-V is connected to the OTV-S7V. | |
| | OFF | When a camera head or videoscope other than above videoscopes is connected to the OTV-S7V. | |
| Auto gain control (AGC) | ON | | |
| Iris (exposure area) | AUTO | When a camera head is connected to the OTV-S7V. | |

Table 5.9

## B.O.D. functions

| Function | Default setting |
|---|---|
| Auto P in P | OFF |
| P in P mode | OTV |
| P in P size | 1/4 |
| P in P position (location) | 2 (The lower left corner) |
| P in P switch mode | MODE – CHANGE |
| Reverse mode | 180DEG. ROTATION |
| DV format | DV |
| Multi freeze divide number | 9 |
| Multi freeze motion frequency | 1.5 Hz |
| PC card definition | HQ |
| Orientation mode | NORMAL |

Table 5.10

## Keyboard functions

| Key | Default setting | |
|---|---|---|
| F4 | RELEASE | When using a type A or D OTV-S7V |
| | REL.+DIG. CAP. | When using a type B, C or F OTV-S7V |
| F5 | VTR | When using a type A OTV-S7V |
| | VTR+DV/DVCPRO | When using a type B, C, D or F OTV-S7V |
| F9 | NONE (This key is inactive.) | |
| F10 | NONE (This key is inactive.) | |
| F11 | NONE (This key is inactive.) | |
| F12 | NONE (This key is inactive.) | |

Table 5.11

1. Connect the camera head or videoscope and depress the menu switch "▬" for approximately 1 second or the "F1" key on the keyboard to display the menu.

NOTE

By pressing the "F8" key on the keyboard, you can jump to step 4.

2. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "PRESET" (see Figure 5.70).
3. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.
4. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "DEFAULT SETTING" (see Figure 5.84).

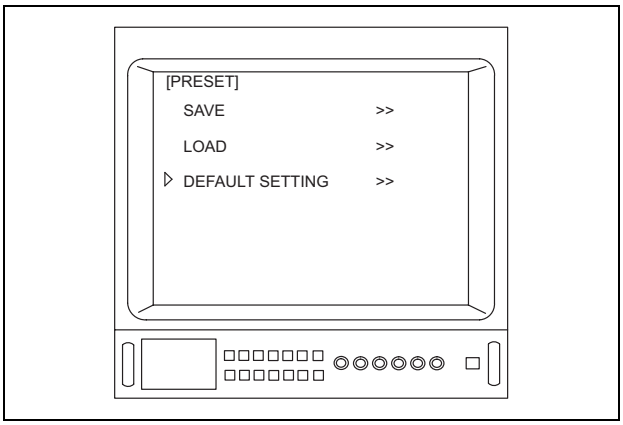



Figure 5.84

5. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.
6. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "YES" (see Figure 5.85).

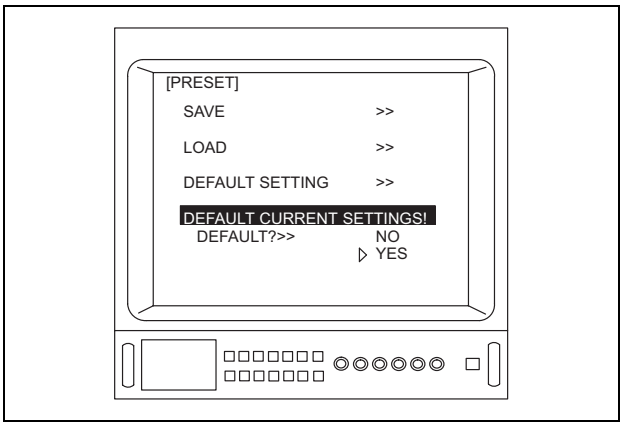



Figure 5.85

7. Depress the menu switch "↵" or the "Enter" key on the keyboard to restore the default settings. The menu shown in Figure 5.86 is displayed.

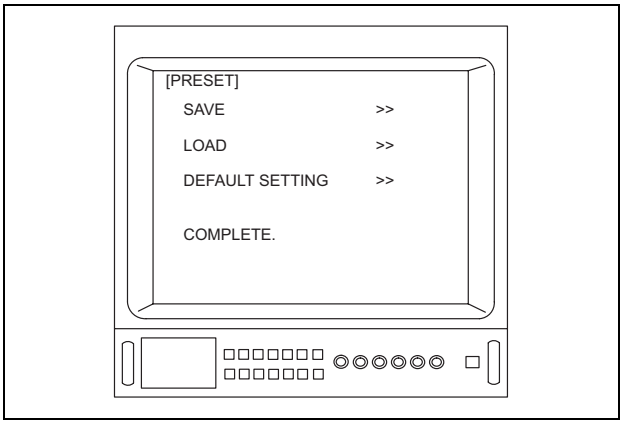



Figure 5.86

8. Depress the menu switch "(■)" for approximately 1 second or the "Esc" key on the keyboard to restore the default settings.

NOTE

Restored default settings are retained when the power is turned OFF and the power cord is disconnected.

## 5.20 EVIS monitor photo unit SCV-3 (not available in some countries)

The image can be released by pressing a remote control switch or a key on the keyboard (optional).

NOTE

- When controlling the image directly from the SCV-3, refer to the SCV-3's instruction manual.
- To obtain sharp photographs without blurring, keep the endoscope stationary when pressing the remote control switch.
- To ensure consistent exposure, wait one second in between photographs before pressing the remote control switches again.
- When you would like to have remote control over the SCV-3 and Memory Card (types B, C and F only) at the same time, set the remote control switch or "F4" key on the keyboard to "REL.+DIG. CAP.".

- Refer to Section 3.8, “Connection to image mixer unit UIM” to connect the OTV-S7V, SCV-3 and UIM. Press a remote control switch or “F4” key on the keyboard once to freeze the image, and press it a second time to release the image.

### ❍ Release the image by pressing a remote control switch

1. Refer to Section 5.12, “Remote control switches” and set a remote control switch to “RELEASE”.
2. Refer to the SCV-3’s instruction manual for photography instructions.
3. Press the remote control switch once to expose one frame. The frame count displayed on the SCV-3 increases.

### ❍ Release the image by pressing a key on the keyboard

1. Refer to Section 5.13, “Setting a function to the keyboard” and set the “F4” key to “RELEASE”.
2. Refer to the SCV-3’s instruction manual for photography instructions.
3. Press the “F4” key once to expose one frame. The frame count displayed on the SCV-3 increases.

## 5.21 Photography and display with color video printer OEP-3/OEP (not available in some countries)

The image can be released by pressing a remote control switch or a key on the keyboard (optional).

NOTE

- When controlling the image directly from the OEP-3/OEP, refer to the appropriate instruction manual.
- To obtain sharp photographs without blurring, keep the endoscope stationary when pressing the remote control switch.
- When you would like to have remote control over the OEP-3/OEP and Memory Card (types B, C and F only) at the same time, set the remote control switch or “F4” key on the keyboard to “REL.+DIG. CAP.”.

### ❍ Release the image by pressing a remote control switch

1. Refer to Section 5.12, “Remote control switches” and set a remote control switch to “RELEASE”.
2. Press the OEP’s MENU button and use the “←” and “→” buttons to select “FUNCTION-SETUP”.
3. Set REMOTE 2 to “C&PRINT mode” and the timer to ON.
4. When the remote control switch on the camera head or videoscope is pressed, the image will be stored in the OEP’s or OEP-3’s memory. The image will print when the OEP’s or OEP-3’s memory page is filled.

### ❍ Release the image by pressing a key on the keyboard

1. Refer to Section 5.13, “Setting a function to the keyboard” and set the “F4” key to “RELEASE”.
2. Press the OEP’s MENU button and use the “←” and “→” buttons to select “FUNCTION-SETUP”.
3. Set REMOTE 2 to “C&PRINT mode” and the timer to ON.
4. When the “F4” key is pressed, the image will be stored in the OEP’s or OEP-3’s memory. The image will print when the OEP’s or OEP-3’s memory page is filled.

# 5.22 Recording with the VTR

The image can be recorded by pressing a remote control switch or a key on the keyboard (optional).

**CAUTION**

Do not connect or disconnect the VTR remote control cable while the VTR is in the rec/pause mode. An unexpected action of VTR will result.

NOTE

- When controlling directly from the VTR, refer to the VTR's instruction manual.
- The VTR playback function is not available when using the remote control switches on the camera head or videoscope.
- When you would like to have remote control over the VTR and digital video recorder (types B, C, D and F only) at the same time, set the remote control switch or the "F5" key on the keyboard to "VTR+DV/DVCPRO".

### ❍ Record the image by pressing a remote control switch

1. Refer to Section 5.12, "Remote control switches" and set a remote control switch to "VTR".
2. To begin VTR recording, press the remote control switch on the camera head or videoscope. The menu shown in Figure 5.87 is displayed on the video monitor.

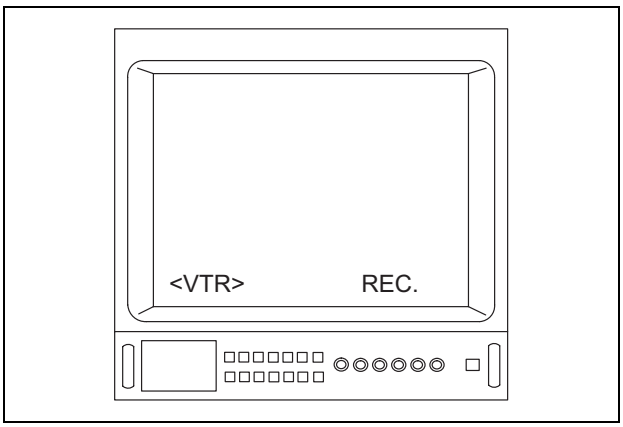



Figure 5.87

3. To pause while recording, press the remote control switch on the camera head or videoscope again. The menu shown in Figure 5.88 is displayed on the video monitor.

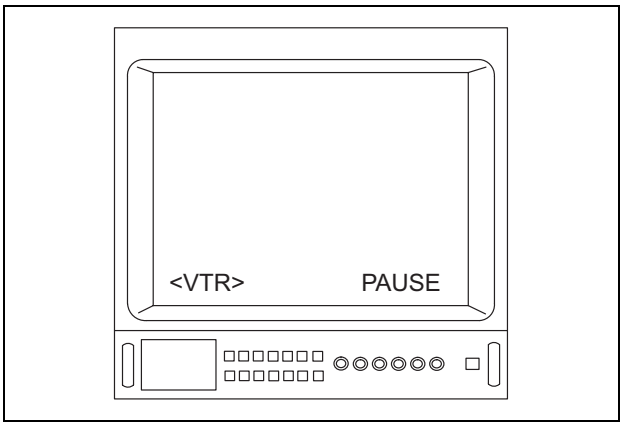



Figure 5.88

4. The rec/pause mode changes every time the remote control switch is pressed.

### ❍ Record the image by pressing a key on the keyboard

1. Refer to Section 5.13, “Setting a function to the keyboard” and set the “F5” key to “VTR”.
2. To begin VTR recording, press the “F5” key. The menu shown in Figure 5.87 is displayed on the video monitor.
3. To pause while recording, press the “F5” key again. The menu shown in Figure 5.88 is displayed on the video monitor.
4. The rec/pause mode changes every time the “F5” key is pressed.

# 5.23 Recording with the digital video recorder in digital to digital format (types B, C, D and F only; see Section 2.5)

## DV format setting

The DV format can be selected by controlling the menu switches or the keyboard (optional).

**CAUTION**

Select the DV format before a digital video recorder is turned ON. If a digital video recorder is turned ON, you cannot select the DV format.

1. Depress the menu switch "▣" for approximately 1 second or the "F1" key on the keyboard to display the menu.

NOTE

By simultaneously pressing the keyboard's "Shift" key and "B.O.D." key that is set to "DV/DVCPRO", you can jump to step 7. For instructions on setting the "B.O.D." key for the "DV/DVCPRO" function, refer to Section 5.13, "Setting a function to the keyboard".

2. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "B.O.D. CONTROL" (see Figure 5.89).

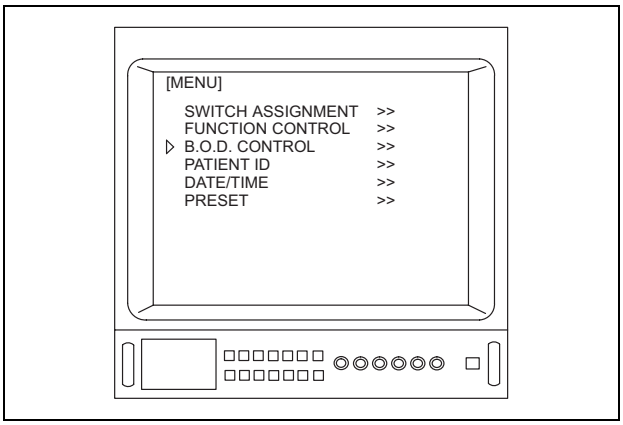



Figure 5.89

NOTE

- When using a type A OTV-S7V, “B.O.D. CONTROL” (see Figure 5.89) is not displayed.
- When the OTV-S7H-1D-F08E/L08E/D-L08E is connected to the OTV-S7V, “SWITCH ASSIGNMENT” (see Figure 5.89) is not displayed.

*3.* Depress the menu switch “↵” or the “Enter” key on the keyboard to display the next menu.

*4.* Depress the menu switches “◀” or “▶”, or the “↑/↓/←/→” key on the keyboard to move the arrow “▷” to “DV/DVCPRO” (see Figure 5.90).

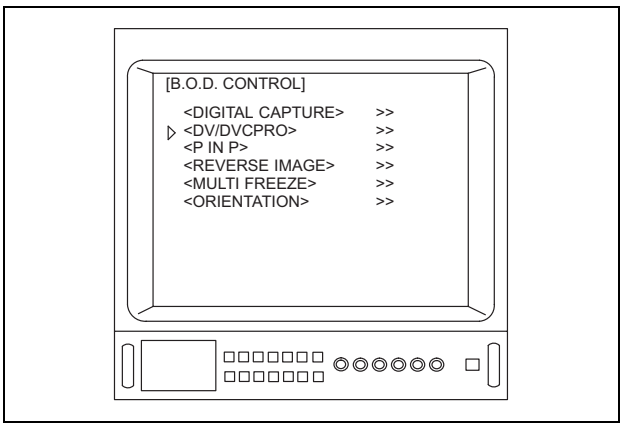



Figure 5.90

NOTE

Depending upon B.O.D.s which are installed in the OTV-S7V, the menu shown in Figure 5.90 may appear different from that displayed on the video monitor.

*5.* Depress the menu switch “↵” or the “Enter” key on the keyboard to display the next menu.

*6.* Depress the menu switch “↵” or the “Enter” key on the keyboard to adjust “DV FORMAT” (see Figure 5.91).

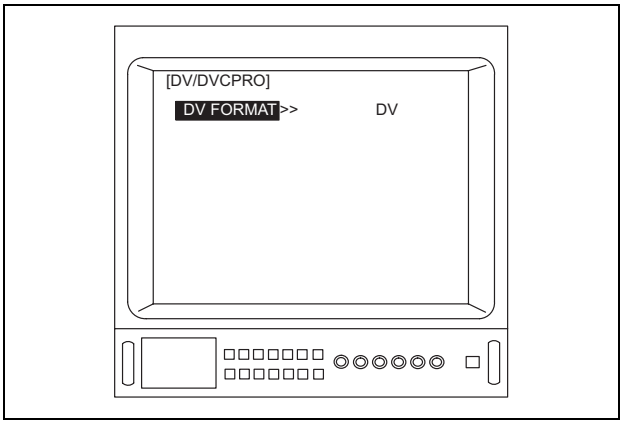



Figure 5.91

NOTE

- Depending upon the OTV-S7V's settings, the menu shown in Figure 5.91 may appear different from that displayed on the video monitor.
- Set to "DV" when using the DSR-20MD/DSR-20MDP (see Figure 5.91).

7. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to set the DV format.
8. Depress the menu switch "▣" for approximately 1 second or the "Esc" key on the keyboard to enter all settings.

NOTE

The DV format setting is retained when the power is turned OFF and the power cord is disconnected.

## *Recording the image*

The image can be recorded by pressing a remote control switch or a key on the keyboard (optional).

**CAUTION**

Do not connect two or more digital video recorders. Image may not be recorded to them.

NOTE

- When the DSR-20MD/DSR-20MDP is used, a mini-DV cassette can be used. However, the available recording time will be less than that indicated on the cassette's label. For further details, refer to the instruction manual of the digital video recorder.
- When you would like to have remote control over the digital video recorder and the VTR (types B, C, D and F only) at the same time, set the remote control switch or "F5" key on the keyboard to "VTR+DV/DVCPRO".

## ❍ Recording the image by pressing a remote control switch

1. Refer to Section 5.12, “Remote control switches” and set a remote control switch to “VTR”.
2. To begin recording, press the remote control switch on the camera head or videoscope. The menu shown in Figure 5.92 is displayed.

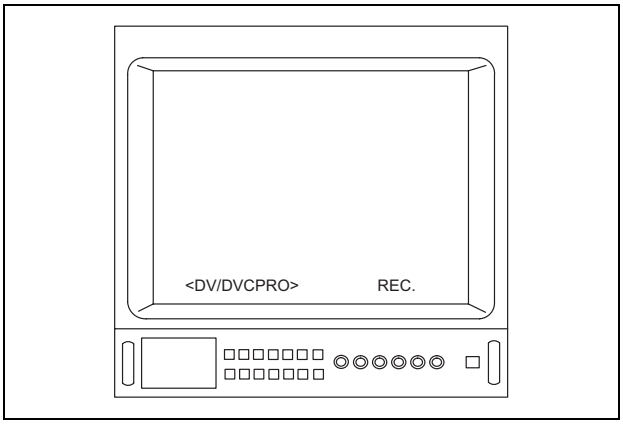



Figure 5.92

3. To pause while recording, press the remote switch on the camera head or videoscope again. The menu shown in Figure 5.93 is displayed.

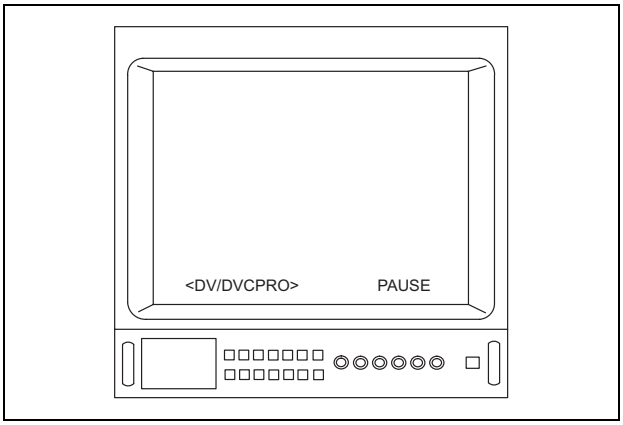



Figure 5.93

4. The Rec/Pause mode changes every time the remote control switch is pressed.

### ❍ Recording the image by pressing a key on the keyboard

1. Refer to Section 5.13, “Setting a function to the keyboard” and set the “F5” key to “DV/DVCPRO”.
2. To begin recording, press the “F5” key. The menu shown in Figure 5.92 is displayed.
3. To pause while recording, press the “F5” key again. The menu shown in Figure 5.93 is displayed.
4. The Rec/Pause mode changes every time the “F5” key is pressed.

## 5.24 Recording and playback with Memory Card (types B, C and F only; see Section 2.5)

**CAUTION**

- Before recording the images to SmartMedia firstly, refer to “When all images are deleted” on page 157 and carry out “DELETE ALL”. Otherwise, neither the record nor the replay might be correctly done.
- With this instrument, only SmartMedia and xD-Picture Card specified by Olympus can be used. More over MA-2E and MAPC-10 can be used as PC card adapter.
- If the PC card adapter and Memory Card are ejected or inserted with the power ON, Memory Card may not be recognized by this instrument. In this case, please reattach the PC card adapter. When it is not still recognized, please turn the OTV-S7V OFF and then ON again with the PC card adapter and Memory Card inserted.

## *Image compression ratio setting*

Image compression ratio can be selected by controlling the menu switches or keyboard (optional). 3 compression ratios are available;

- TIFF: no compression
- SHQ: compresses images to approximately 1/5 of their original size
- HQ: compresses images to approximately 1/10 of their original size

SHQ/HQ images are recorded in JPEG format.

1. Depress the menu switch "▣" for approximately 1 second or the "F1" key on the keyboard to display the menu.

NOTE

By simultaneously pressing the keyboard's "Shift" key and "B.O.D." key that is set to "DIGITAL CAPTURE", you can jump to step 6. For instructions on setting the "B.O.D." key for the "DIGITAL CAPTURE" function, refer to Section 5.13, "Setting a function to the keyboard".

2. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "B.O.D. CONTROL" (see Figure 5.89).
3. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.
4. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "DIGITAL CAPTURE" (see Figure 5.94).

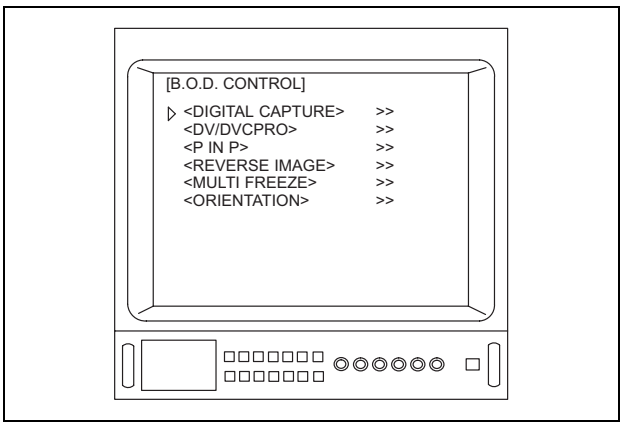



Figure 5.94

NOTE

Depending upon which B.O.D.s are installed in the OTV-S7V, the menu shown in Figure 5.94 may appear different from that displayed on the video monitor.

5. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.

6. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "COMPRESSION MODE" (see Figure 5.95).

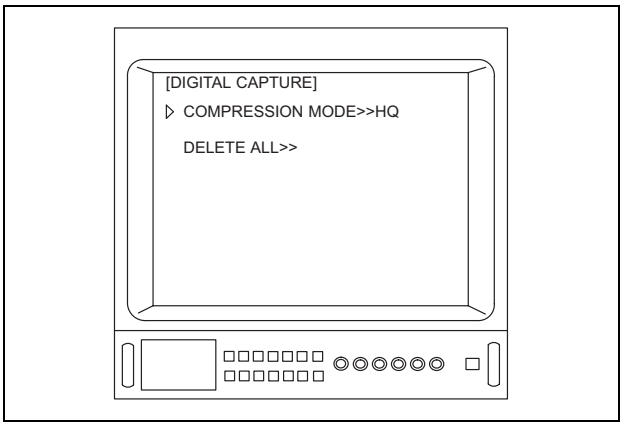



Figure 5.95

NOTE

Depending upon the OTV-S7V's settings, the menus shown in Figures 5.95 and/or 5.96 may appear different from those displayed on the video monitor.

7. Depress the menu switch "↵" or the "Enter" key on the keyboard to allow adjustment of the image compression mode (see Figure 5.96).

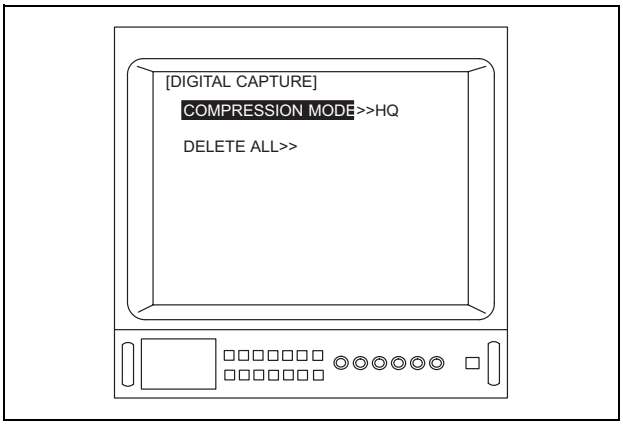



Figure 5.96

8. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to change the image compression ratio.
9. Depress the menu switch "(■)" for approximately 1 second or the "Esc" key on the keyboard to enter all settings.

NOTE

The image compression ratio setting is retained when the power is turned OFF and the power cord is disconnected.

## *Folder name setting*

The folders can be named in 2 ways:

- The first 8 characters of the patient's name
- Date

### ❍ When the first 8 characters of the patient's name is the folder name

1. Refer to "Patient data display" on page 105 to display the patient data.
2. Refer to "Input patient data (keyboard only)" on page 107 and input the patient name to the "NAME" field.

NOTE

- Olympus recommends displaying the patient's name as described in Section 5.11, "Patient data display, input and deletion" over the procedure given in step 2.
- Patient data is recorded with the endoscopic image. If you do not wish to record patient data on the endoscopic image, refer to "Patient data display" on page 105 for instructions on turning off the data display.
- When the first 8 characters of the patient's name is the folder name, the characters and symbols of the patient's name are converted below (see Table 5.12).

| Characters and symbols of the patient's name | Folder name |
|---|---|
| "Capital letters", "Numeral" or "–" | not converted |
| "Small letters" | "Capital letters" |
| "." | "–" |
| "Space" and "Symbols" other than above symbols | "_" |

Table 5.12

### When date is set the folder name

1. Refer to “Patient data display” on page 105 to display the patient data.
2. Refer to “Delete patient data (keyboard only)” on page 108 and delete the patient data.

NOTE

- Olympus recommends displaying the patient’s name as described in Section 5.11, “Patient data display, input and deletion” over the procedure displayed in step 2.
- Patient data is recorded with the endoscopic image. If you do not wish to record patient data on the endoscopic image, refer to “Patient data display” on page 105 for instructions on turning off the data display.

### Recording to Memory Card

The image can be captured by pressing a remote control switch or a key on the keyboard (optional).

NOTE

- Please prepare additional Memory Card in case the primary one becomes full.
- If the PC card adapter or Memory Card is not inserted, the message shown in Figure 5.97 is displayed on the video monitor.

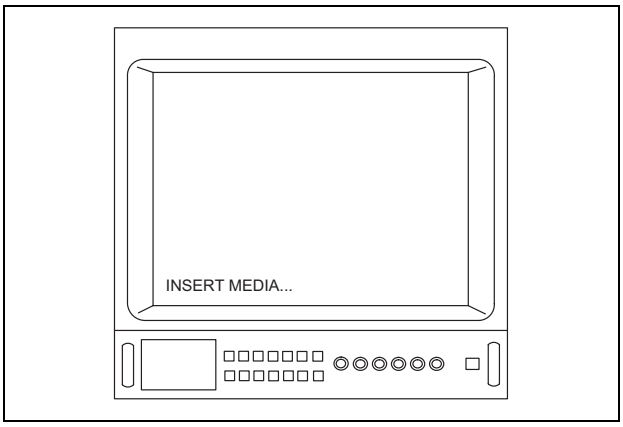



Figure 5.97

- During image capture, do not eject the PC card adapter or Memory Card, and do not turn the OTV-S7V OFF. Otherwise, images may not be stored correctly to Memory Card.
- To release a frozen image, first press the switch that is set to “FREEZE” or the “F3” key on the keyboard, then press the switch that is set to “DIGITAL CAPTURE” or the “F4” key that is set to “DIGITAL CAPTURE”.
- When you would like to operate Memory Card and the SCV-3/OEP/OEP-3 remotely at the same time, set the remote control switch to “REL.+DIG. CAP.”.
- Capturing a quick-moving image may cause the image to be blurry.
- If the amount of free memory on Memory Card is insufficient, the display is as shown on the video monitor in Figure 5.98. In this case, pull out the PC card adapter from this instrument and exchange a Memory Card with an empty card and choose “Retry”. When it is not recorded, please reattach the PC card adapter. Please use so as not to fill the capacity of Memory Card. The image of SmartMedia is recommended to be backed up to PC etc., regularly.

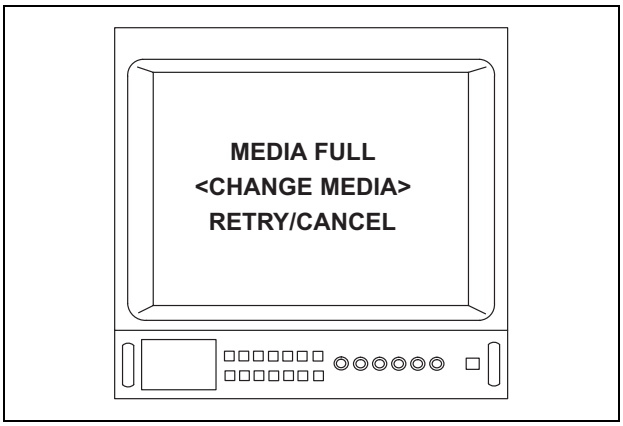



Figure 5.98

### ❍ Capturing the image by pressing a remote control switch

1. Refer to Section 5.12, “Remote control switches” and set a remote control switch to “DIGITAL CAPTURE”.
2. Refer to “Folder name setting” on page 150 and set the folder name.

3. Press the camera head's or videoscope's remote control switch. The frozen image is displayed on the video monitor while the image is being captured. During image capture, Memory Card indicator blinks on and off, and the menu shown in Figure 5.99 is displayed on the video monitor.

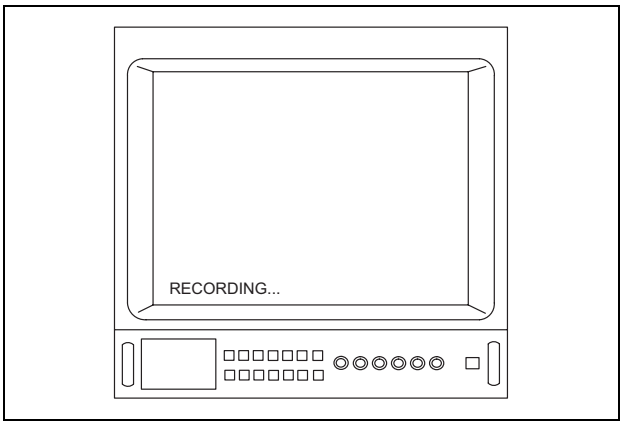



Figure 5.99

### ❍ Capturing the image by pressing a key on the keyboard

1. Refer to Section 5.13, "Setting a function to the keyboard" and set the "F4" key to "DIGITAL CAPTURE".
2. Refer to "Folder name setting" on page 150 and set the folder name.
3. Press the "F4" key. The frozen image is displayed on the video monitor while the image is being captured. During image capture, Memory Card indicator blinks on and off, and the menu shown in Figure 5.99 is displayed on the video monitor.

## *Playback from Memory Card*

The recording images can be played back by controlling the menu switches or keyboard (optional). And 2 images can be played back at the same time by controlling the keyboard.

NOTE

- The images stored by other equipment cannot be played back.
- Some images edited by a PC or another instrument may be played back on the monitor.

- During “LOADING...” is displayed on the video monitor, if press the menu switches “▣”, “◀” or “▶”, or the “Esc” key, “F2” key, “F3” key, “F4 key”, “F5” key, “F6” key, “F7” key, “F8” key, “B.O.D.” key, “↑/↓/←/→” key, “Page Up” key or “Page Down” key on the keyboard, the endoscopic image can be displayed on the video monitor.

## When 1 recording image is played back

1. Depress the menu switch “↵” for approximately 1 second or the “B.O.D.” key that is set to “DIGITAL CAPTURE” to display the folder search mode shown in Figure 5.100. If no folders have been set up on Memory Card, the message “FOLDER NOT FOUND” is displayed on the video monitor.

NOTE

Refer to Section 5.13, “Setting a function to the keyboard” and set “DIGITAL CAPTURE” to the “B.O.D.” key on the keyboard.

2. Depress the menu switches “◀” or “▶”, or the “↑/↓/←/→” key on the keyboard quickly to move the cursor to the desired folder (for example, “OLYMPUS”) (see Figure 5.100).

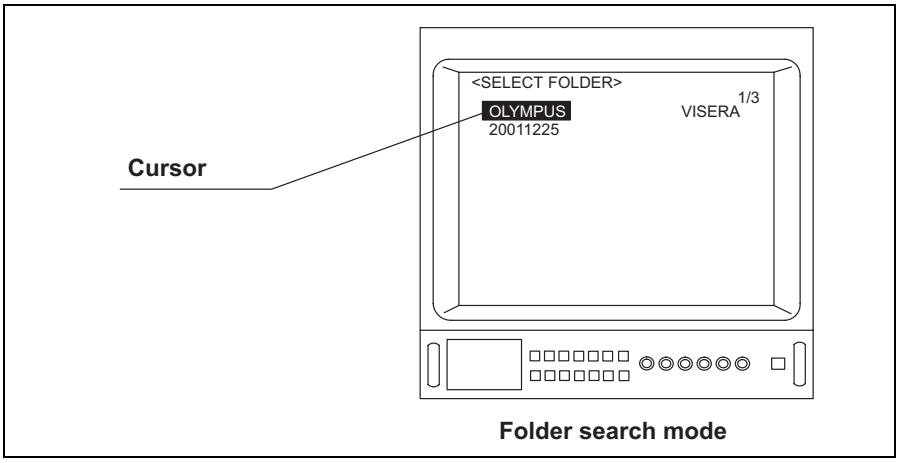



Figure 5.100

NOTE

- Depending upon the OTV-S7V’s settings, the menus shown in Figures 5.100 and/or 5.101 may appear different from those displayed on the video monitor.

- In the folder search mode or image search mode, press the menu switch "◀" for approximately 1 second or the "Page Up" key on the keyboard to move the cursor or frame box to the previous page and press the menu switch "▶" for approximately 1 second or the "Page Down" key on the keyboard to move the cursor or frame box to move the next page.

3. Depress the menu switch "↵" or the "Enter" key on the keyboard quickly to display the image search mode.
4. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard quickly to move the frame box to the desired image (see Figure 5.101).

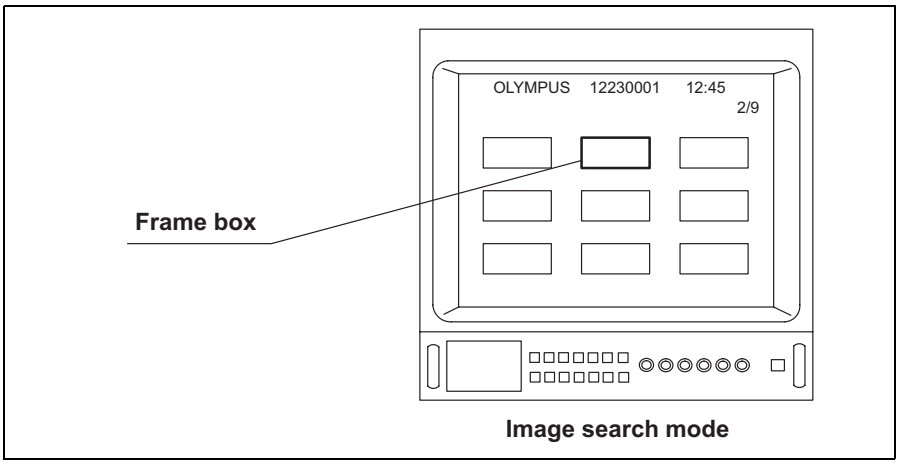



Figure 5.101

5. Depress the menu switch "↵" or the "Enter" key on the keyboard quickly to retrieve the selected image.
6. Depress the menu switch "▶" or the "↓/→" key or "Page Down" key on the keyboard quickly to retrieve the next image. Depress the menu switch "◀" or the "↑/←" key or "Page Up" key on the keyboard quickly to retrieve the previous image.
7. Depress the menu switch "▣" or the "Esc" key on the keyboard quickly to display the previous menu. Depress the menu switch "↵" for approximately 1 second or the "F2" key, "F3" key, "F4" key, "F5" key, "F6" key, "F7" key, "F8" key or "B.O.D." key on the keyboard to exit playback.

### When 2 recording images are played back

NOTE

Only the images that are recorded in the same folder can be played back at the same time.

1. Depress the menu switch "↵" for approximately 1 second or the "B.O.D." key that is set to "DIGITAL CAPTURE" to display the folder search mode shown in Figure 5.100. If no folders have been set up on Memory Card, the message "FOLDER NOT FOUND" is displayed on the video monitor.

NOTE

Refer to Section 5.13, "Setting a function to the keyboard" and set to "DIGITAL CAPTURE" to the "B.O.D." key on the keyboard.

2. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard quickly to move the cursor to the desired folder (for example, "OLYMPUS") (see Figure 5.100).
3. Depress the menu switch "↵" or the "Enter" key on the keyboard quickly to display the image search mode.
4. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard quickly to move the frame box to the desired image (see Figure 5.101).
5. Depress the "Tab" key on the keyboard. Then, the frame box of selected image is turned light blue (see Figure 5.102).

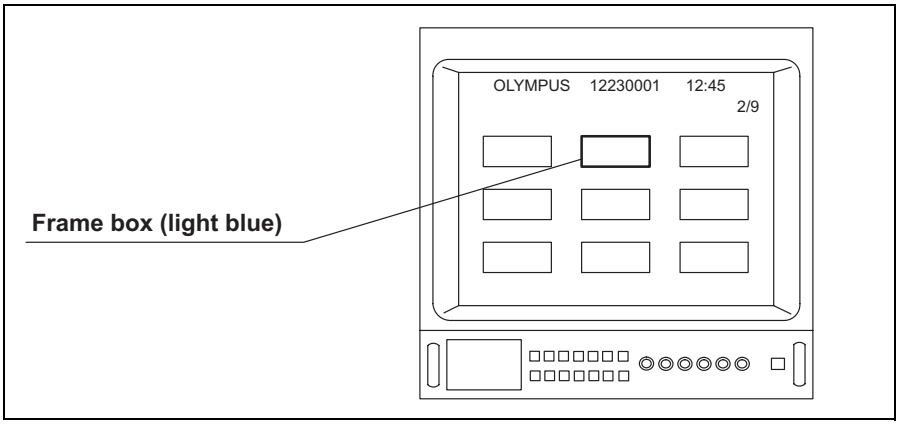



Figure 5.102

NOTE

Depending upon the images recorded on Memory Card, the menus shown in Figures 5.102 and/or 5.103 may appear different from those displayed on the video monitor.

6. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard quickly to move the 2nd frame box (white) to the desired image (see Figure 5.103).

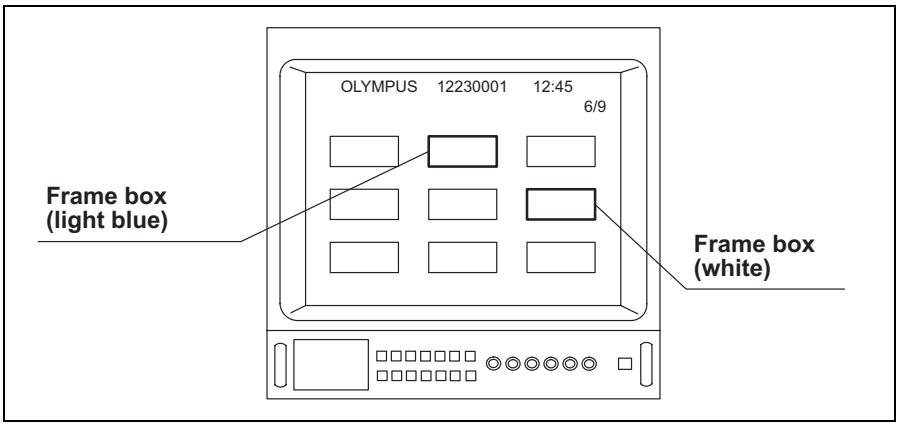



Figure 5.103

7. Depress the menu switch "↵" or the "Enter" key on the keyboard quickly to retrieve the selected images.

8. Depress the menu switch "■" or the "Esc" key on the keyboard quickly to display the previous menu. Depress the menu switch "↵" for approximately 1 second or the "F2" key, "F3" key, "F4" key, "F5" key, "F6" key, "F7" key, "F8" key or "B.O.D." key on the keyboard to exit playback.

## *Delete the recorded images from Memory Card*

The recorded images to Memory Card can be deleted by controlling the menu switches or keyboard (optional). Deleting all images or one image can be selected.

### ❍ When all images are deleted

1. Depress the menu switch "■" for approximately 1 second or the "F1" key on the keyboard to display the menu.

NOTE

By simultaneously pressing the keyboard's "Shift" key and "B.O.D." key that is set to "DIGITAL CAPTURE", you can jump to step 6. For instructions on setting the "B.O.D." key for the "DV/DVCPRO" function, refer to Section 5.13, "Setting a function to the keyboard".

2. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "B.O.D. CONTROL" (see Figure 5.89).
3. Depress the menu switch "↵" or the "Enter" key on the keyboard to displayed the next menu.
4. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "DIGITAL CAPTURE" (see Figure 5.94).
5. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.
6. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "DELETE ALL" (see Figure 5.104).

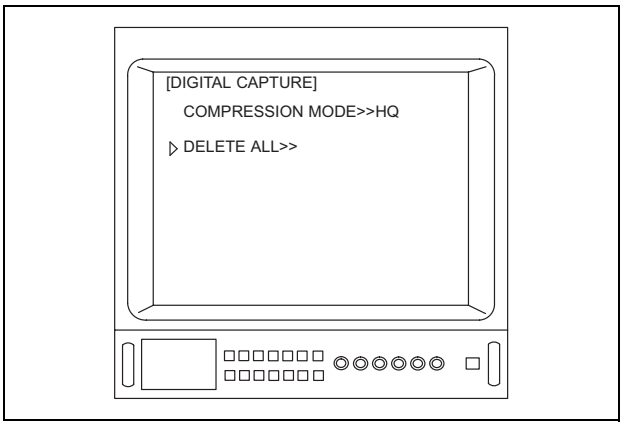



Figure 5.104

NOTE

Depending upon the OTV-S7V's settings, the menus shown in Figures 5.104, 5.105, 5.105 and/or 5.106 may appear different from those displayed on the video monitor.

7. Depress the menu switch "↵" or the "Enter" key on the keyboard to displayed the next menu. The menu shown in Figure 5.105 is displayed on the video monitor.

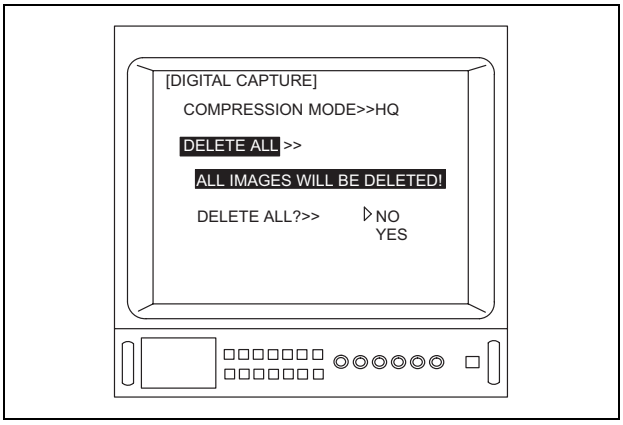



Figure 5.105

8. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to choose "YES" (see Figure 5.106).

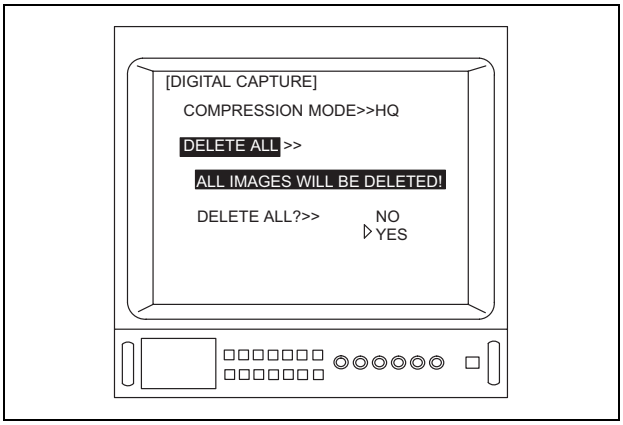



Figure 5.106

9. Depress the menu switch "↵" or the "Enter" key on the keyboard. Then all images are deleted and the menu shown in Figure 5.107 is displayed on the video monitor.

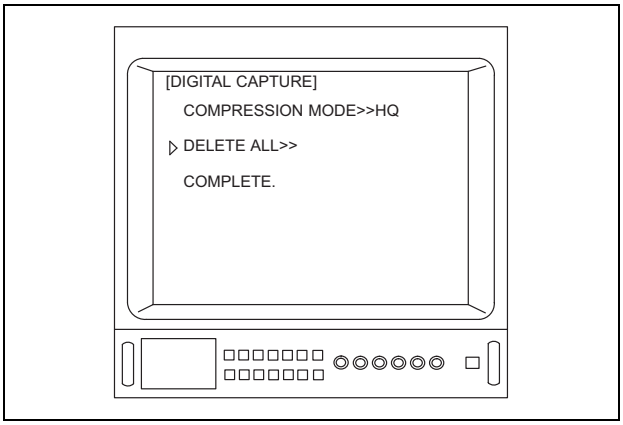



Figure 5.107

NOTE

- If the PC card adapter or Memory Card is not inserted, “INSERT MEDIA” is displayed in the menu shown in Figure 5.107.
- If the deletion is required again, “DELETE INCOMPLETE” will be displayed in the menu shown in Figure 5.107.

10. Depress the menu switch “▣” for approximately 1 second or the “Esc” key on the keyboard to exit image deletion.

### When an image is deleted

1. Refer to “When 1 recording image is played back” on page 154 and display the image search mode.
2. Depress the menu switches “◀” or “▶”, or the “↑/↓/←/→” key on the keyboard quickly to move the frame box to a image that you would like to delete (see Figure 5.108).

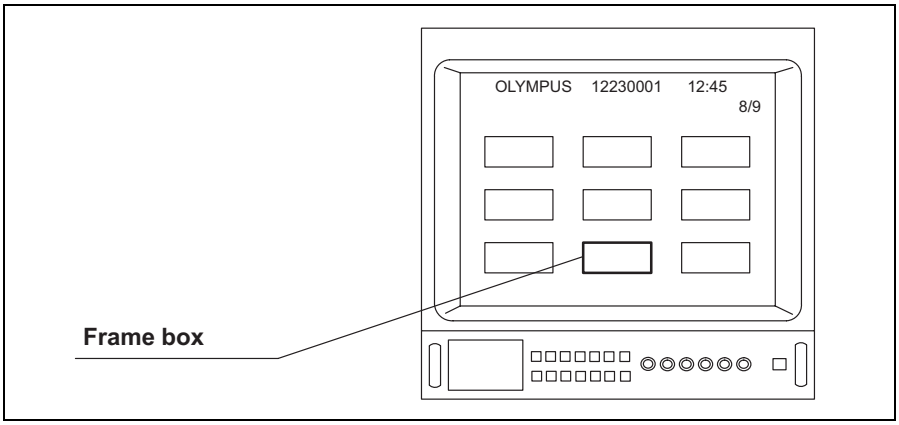



Figure 5.108

NOTE

Depending upon the images recorded on Memory Card, the menus shown in Figures 5.108, 5.109 and/or 5.110 may appear different from those displayed on the video monitor.

3. Depress the menu switch “▣” for approximately 1 second or the “Delete” key on the keyboard. The menu shown in Figure 5.109 is display on the video monitor.

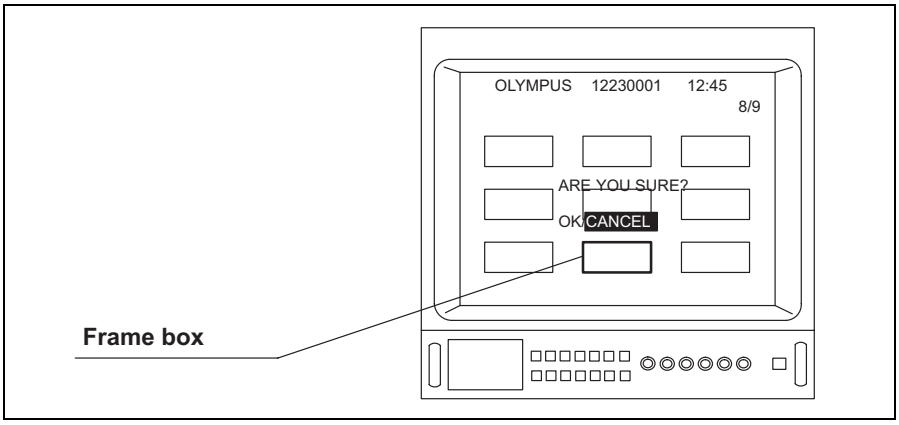



Figure 5.109

4. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard quickly to change from black to white the characters that is "OK" (see Figure 5.110).

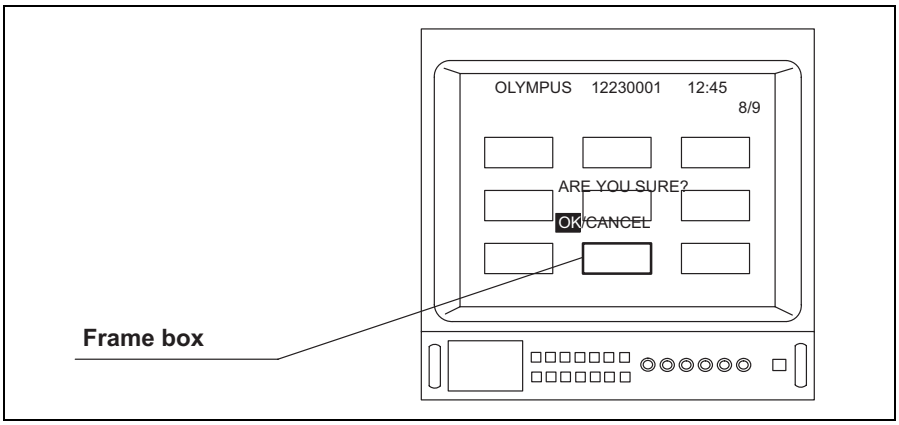



Figure 5.110

5. Depress the menu switch "↵" or the "Enter" key on the keyboard quickly to delete the selected image. Then the deleted image is turned green.

6. Depress the menu switch "▣" or the "Esc" key on the keyboard quickly to display the previous menu. Depress the menu switch "↵" for approximately 1 second or the "F2" key, "F3" key, "F4" key, "F5" key, "F6" key, "F7" key, "F8" key or "B.O.D." key on the keyboard to exit image deletion.

# 5.25 Mirror and rotated images (type C only; see Section 2.5)

The image displayed on the video monitor can be rotated 180° and mirrored around its vertical axis by controlling the menu switches or keyboard (optional).

- 180 DEG. ROTATION : display a rotated 180° image
- MIRROR : display a mirrored around its vertical image
- NORMAL : display a normal image

NOTE

The menu and patient data are not displayed on the images that is transmitted via the reverse terminal.

### ❍ Change the image quickly (keyboard only)

1. Refer to Section 5.13, “Setting a function to the keyboard” and set “REVERSE” to the “B.O.D.” key.
2. Press the “B.O.D.” key that is set to “REVERSE”. Each time this switch is depressed, the image cycles through “180 DEG. ROTATION”, “MIRROR” and “NORMAL”.

### ❍ Change the image by operating the menu

1. Depress the menu switch “▣” for approximately 1 second or the “F1” key on the keyboard to display the menu.

NOTE

By simultaneously pressing the keyboard’s “Shift” key and “B.O.D.” key that is set to “REVERSE”, you can jump to step 7. For instructions on setting the “B.O.D.” key to “REVERSE”, refer to Section 5.13, “Setting a function to the keyboard”.

2. Depress the menu switches “◀” or “▶”, or the “↑/↓/←/→” key on the keyboard to move the arrow “▷” to “B.O.D. CONTROL” (see Figure 5.89).
3. Depress the menu switch “↵” or the “Enter” key on the keyboard to display the next menu.
4. Depress the menu switches “◀” or “▶”, or the “↑/↓/←/→” key on the keyboard to move the arrow “▷” to “REVERSE IMAGE” (see Figure 5.111).

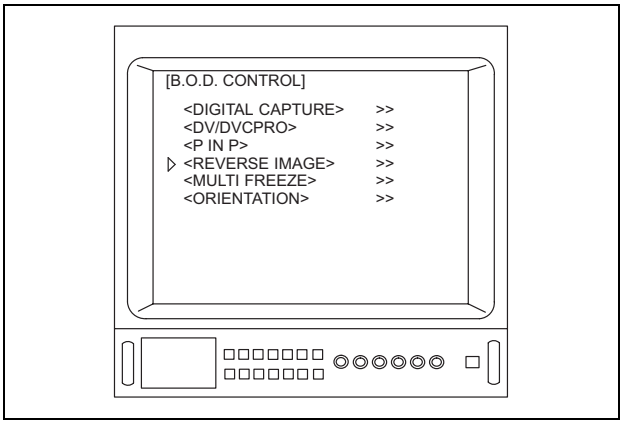



Figure 5.111

NOTE

Depending upon which B.O.D.s are installed in the OTV-S7V, the menu shown in Figure 5.111 may appear different from that displayed on the video monitor.

5. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.

6. Depress the menu switch "↵" or the "Enter" key on the keyboard to adjust "REVERSE MODE" (see Figure 5.112).

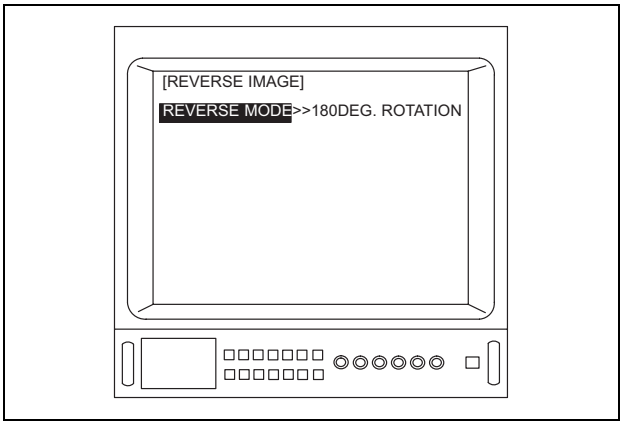



Figure 5.112

NOTE

Depending upon the OTV-S7V's settings, the menu shown in Figure 5.112 may appear different from that displayed on the video monitor.

7. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to set the reverse mode.

8. Depress the menu switch "▣" for approximately 1 second or the "Esc" key on the keyboard to enter settings.

NOTE

- Refer to Section 5.12, "Remote control switches" for instructions on changing the image using the remote control switches on the camera head or videoscope.
- The reverse mode setting is retained when the power is turned OFF and the power cord is disconnected.

# 5.26 Picture in picture (type C only; see Section 2.5)

Images from other devices (For example, ultrasonic probes) can be shown on the video monitor as main- or sub-images by controlling the menu switches or keyboard (optional). The sub-image can be displayed in 2 different sizes and at 4 different positions on the video monitor.

## Auto picture in picture

When inputting an image from another device to the OTV-S7V via the video input terminal, both images can be shown on the video monitor by setting the OTV-S7V as instructed below:

1. Depress the menu switch "▣" for approximately 1 second or the "F1" key on the keyboard to display the menu.

NOTE

By simultaneously pressing the keyboard's "Shift" key and "B.O.D." key that is set to "P IN P", you can jump to step 6. For instructions on setting the "B.O.D." key to "P IN P", refer to Section 5.13, "Setting a function to the keyboard".

2. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "B.O.D. CONTROL" (see Figure 5.89).
3. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.
4. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "P IN P" (see Figure 5.113).

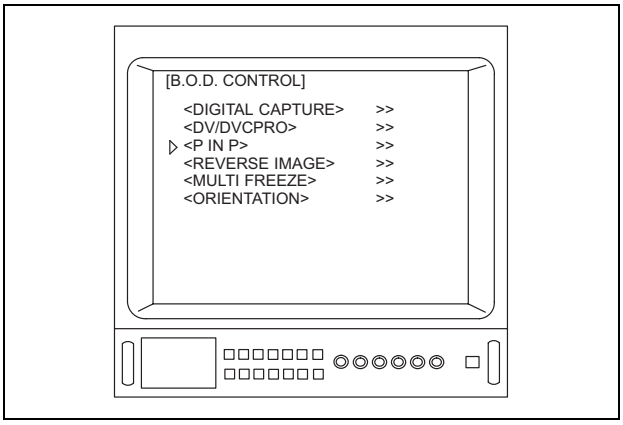



Figure 5.113

NOTE

Depending upon B.O.D.s which are installed in the OTV-S7V, the menu shown in Figure 5.113 may appear different from that displayed on the video monitor.

5. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.

6. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "AUTO P IN P" (see Figure 5.114).

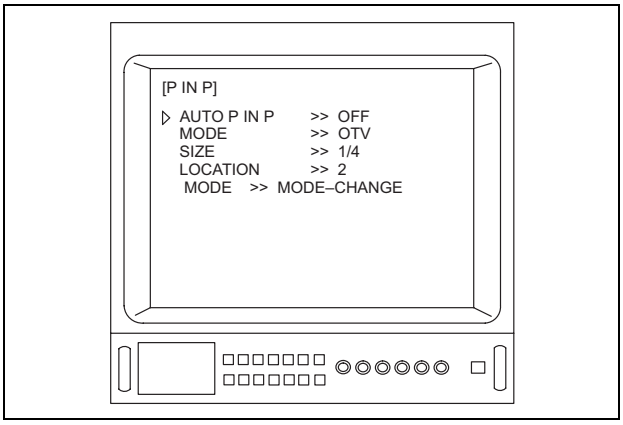



Figure 5.114

NOTE

Depending upon the OTV-S7V's settings, the menus shown in Figures 5.114 and/or 5.115 may appear different from those displayed on the video monitor.

7. Depress the menu switch "↵" or the "Enter" key on the keyboard to adjust the "AUTO P IN P".

8. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to select "ON" (see Figure 5.115).

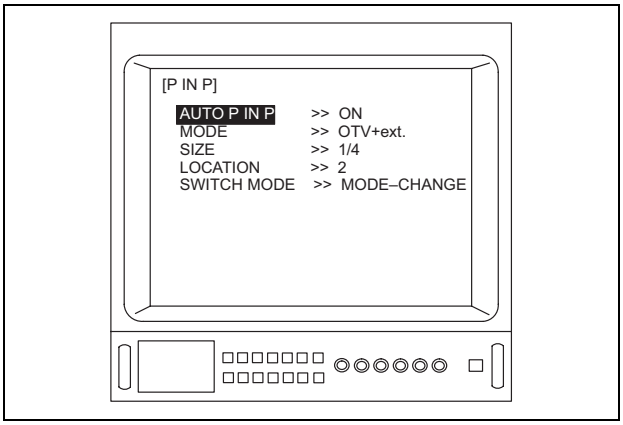



Figure 5.115

NOTE

When "AUTO P IN P" is set to "ON", "MODE" which can be selected are only "OTV+ext." and "EXT.+otv".

9. Depress the menu switch "▣" for approximately 1 second or the "Esc" key on the keyboard to enter all settings.

NOTE

- When controlling the picture in picture on and off, or changing the display mode using the remote control switch or the "B.O.D." key on the keyboard, set "AUTO P IN P" to "OFF" in Figure 5.115.
- The auto picture in picture setting is retained when the power is turned OFF and the power cord is disconnected.

## *Switch mode*

The following 2 functions can be set using the remote control switches or keyboard (optional):

- Sub-image on and off (displayed as “ON-OFF” in the menu)
- Change the display mode (displayed as “MODE-CHANGE” in the menu)

1. Depress the menu switch “▣” for approximately 1 second or the “F1” key on the keyboard to display the menu.

NOTE

By simultaneously pressing the keyboard’s “Shift” key and “B.O.D.” key that is set to “P IN P”, you can jump to step 6. For instructions on setting the “B.O.D.” key to “P IN P”, refer to Section 5.13, “Setting a function to the keyboard”.

2. Depress the menu switches “◀” or “▶”, or the “↑/↓/←/→” key on the keyboard to move the arrow “▷” to “B.O.D. CONTROL” (see Figure 5.89).
3. Depress the menu switch “↵” or the “Enter” key on the keyboard to display the next menu.
4. Depress the menu switches “◀” or “▶”, or the “↑/↓/←/→” key on the keyboard to move the arrow “▷” to “P IN P” (see Figure 5.113).
5. Depress the menu switch “↵” or the “Enter” key on the keyboard to display the next menu.
6. Depress the menu switches “◀” or “▶”, or the “↑/↓/←/→” key on the keyboard to move the arrow “▷” to “SWITCH MODE” (see Figure 5.116).

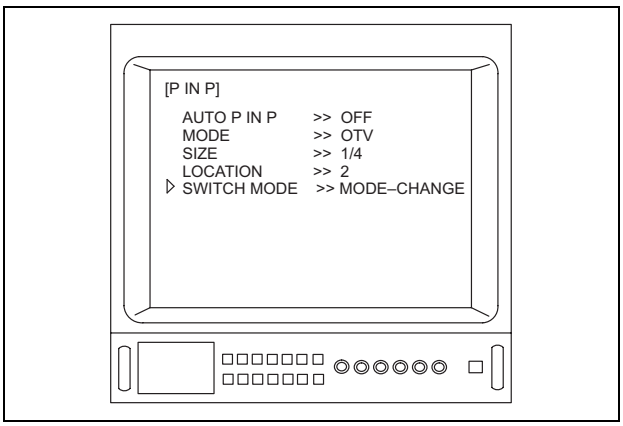



Figure 5.116

NOTE

Depending upon the OTV-S7V's settings, the menus shown in Figures 5.116 and/or 5.117 may appear different from those displayed on the video monitor.

7. Depress the menu switch "↵" or the "Enter" key on the keyboard to adjust the "SWITCH MODE" (see Figure 5.117).

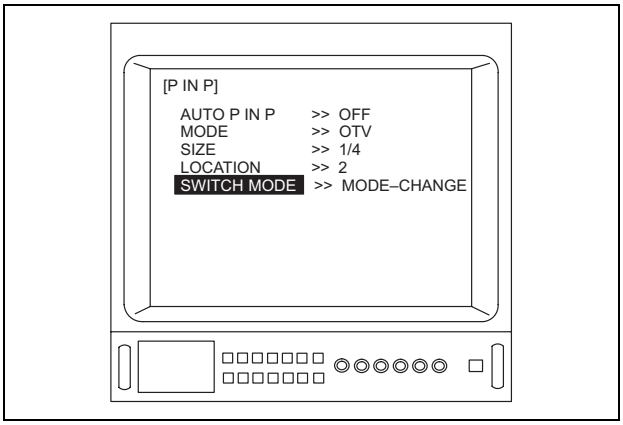



Figure 5.117

8. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to change the mode.

9. Depress the menu switch "▣" for approximately 1 second or the "Esc" key of keyboard to enter all settings.

NOTE

The switch mode setting is retained when the power is turned OFF and the power cord is disconnected.

## *Turning the picture in picture on and off*

The picture in picture on and off is turned on and off by controlling the menu switches or keyboard (optional).

### ❍ Turning the picture in picture on and off by pressing a remote control switch

1. Refer to “Auto picture in picture” on page 164 and set “AUTO P IN P” to “OFF”.
2. Refer to “Switch mode” on page 167 and set “SWITCH MODE” to “ON–OFF”.
3. Refer to Section 5.12, “Remote control switches” and set the “P IN P” function to a remote control switch on the camera head or videoscope.
4. Pressing the remote control switch toggles between picture in picture on and off.

NOTE

When “AUTO P IN P” is set to “ON”, if press the remote control switch that is set to the “P IN P” function, the display on the video monitor is shown in Figure 5.118.

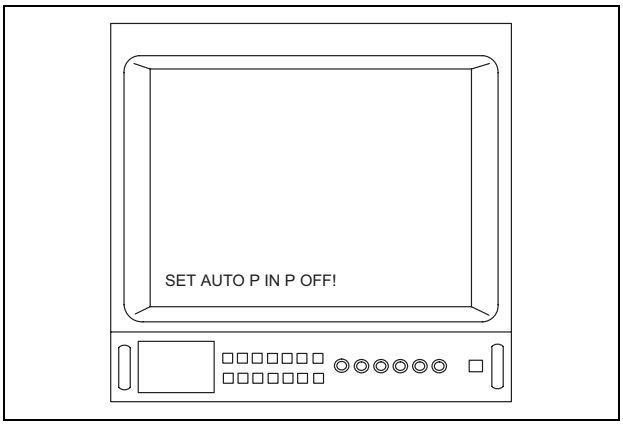



Figure 5.118

### ❍ Turning the picture in picture on and off by pressing a key on the keyboard

1. Refer to “Auto picture in picture” on page 164 and set “AUTO P IN P” to “OFF”.
2. Refer to “Switch mode” on page 167 and set “SWITCH MODE” to “ON–OFF”.

3. Refer to Section 5.13, “Setting a function to the keyboard” and set the “P IN P” function to the “B.O.D.” key on the keyboard.
4. Pressing the “B.O.D.” key that is set to the “P IN P” function toggles between picture in picture on and off.

NOTE

When “AUTO P IN P” is set to “ON”, if press the “B.O.D.” key that is set to the “P IN P” function, the display on the video monitor is shown in Figure 5.118.

## *Display mode*

4 display modes are available by controlling the menu switches, keyboard (optional) or remote control switch.

- OTV image only (displayed as “OTV” in the menu)
- Main-image: OTV, sub-image: other device (displayed as “OTV+ext.” in the menu)
- Main-image: other device, sub-image: OTV (displayed as “EXT.+otv” in the menu)
- Other image only (displayed as “EXT.” in the menu)

NOTE

When “AUTO P IN P” is set to “ON”, “MODE” which can be selected are only “OTV+ext.” and “EXT.+otv”.

### ❍ Change the display mode by pressing a remote control switch

1. Refer to “Auto picture in picture” on page 164 and set “AUTO P IN P” to “OFF”.
2. Refer to “Switch mode” on page 167 and set “SWITCH MODE” to “MODE–CHANGE”.
3. Refer to Section 5.12, “Remote control switches” and set the “P IN P” function to a remote control switch on the camera head or videoscope.
4. Pressing the remote control switch toggles between “OTV+ext.” and “EXT.+otv”.

NOTE

When “AUTO P IN P” is set to “ON”, if press the remote control switch that is set to the “P IN P” function, the display on the video monitor is shown in Figure 5.118.

### ❍ Change the display mode quickly by pressing a key on the keyboard

1. Refer to “Auto picture in picture” on page 164 and set “AUTO P IN P” to “OFF”.
2. Refer to “Switch mode” on page 167 and set “SWITCH MODE” to “MODE–CHANGE”.
3. Refer to Section 5.13, “Setting a function to the keyboard” and set the “P IN P” function to the “B.O.D.” key on the keyboard.
4. Pressing the “B.O.D.” key that is set to the “P IN P” function toggles between “OTV+ext.” and “EXT.+otv”.

NOTE

When “AUTO P IN P” is set to “ON”, if press the “B.O.D.” key that is set to the “P IN P” function, the display on the video monitor is shown in Figure 5.118.

### ❍ Change the display mode by operating the menu

1. Refer to “Auto picture in picture” on page 164 and set “AUTO P IN P” to “OFF”.
2. Depress the menu switch “▣” for approximately 1 second or the “F1” key on the keyboard to display the menu.

NOTE

By simultaneously pressing the keyboard’s “Shift” key and “B.O.D.” key that is set to “P IN P”, you can jump to step 7. For instructions on setting the “B.O.D.” key to “P IN P”, refer to Section 5.13, “Setting a function to the keyboard”.

3. Depress the menu switches “◀” or “▶”, or the “↑/↓/←/→” key on the keyboard to move the arrow “▷” to “B.O.D. CONTROL” (see Figure 5.89).
4. Depress the menu switch “↵” or the “Enter” key on the keyboard to display the next menu.
5. Depress the menu switches “◀” or “▶”, or the “↑/↓/←/→” key on the keyboard to move the arrow “▷” to “P IN P” (see Figure 5.113).
6. Depress the menu switch “↵” or the “Enter” key on the keyboard to display the next menu.

7. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "MODE" (see Figure 5.119).

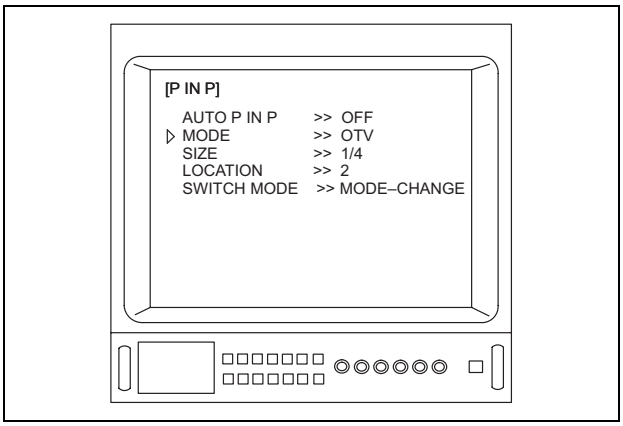



Figure 5.119

NOTE

Depending upon the OTV-S7V's settings, the menus shown in Figures 5.119 and/or 5.120 may appear different from those displayed on the video monitor.

8. Depress the menu switch "↵" or the "Enter" key on the keyboard to adjust the "MODE" (see Figure 5.120).

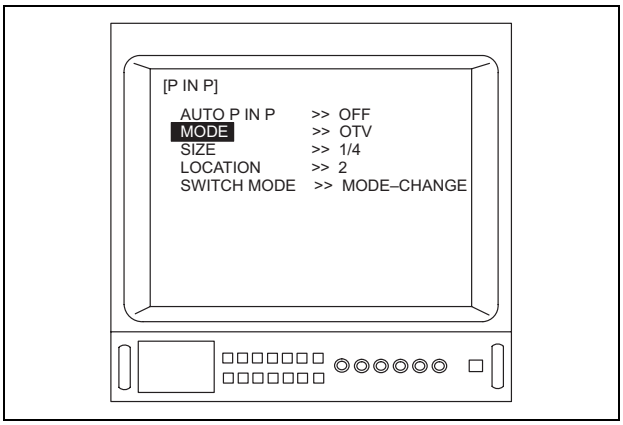



Figure 5.120

9. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to change the mode.

10. Depress the menu switch "▣" for approximately 1 second or the "Esc" key on the keyboard to enter all settings.

NOTE

The display mode setting is retained when the power is turned OFF and the power cord is disconnected.

## *The sub-image size*

The sub-image can be displayed in 2 different sizes by controlling the menu switches or keyboard (optional) (see Figure 5.121).

- 1/4 screen size
- 1/9 screen size

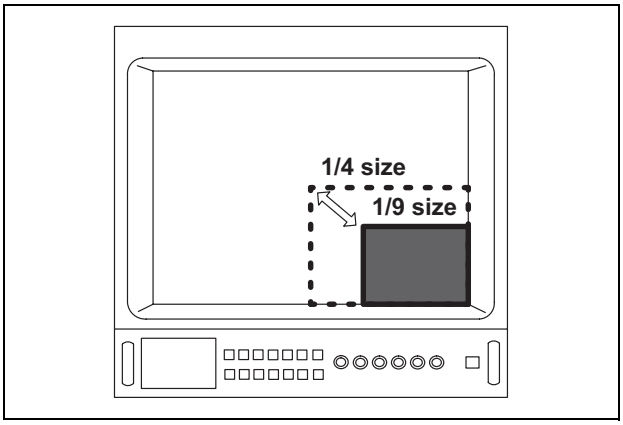



Figure 5.121

1. Depress the menu switch "■" for approximately 1 second or the "F1" key on the keyboard to display the menu.

NOTE

By simultaneously pressing the keyboard's "Shift" key and "B.O.D." key that is set to "P IN P", you can jump to step 6. For instructions on setting the "B.O.D." key to "P IN P", refer to Section 5.13, "Setting a function to the keyboard".

2. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "B.O.D. CONTROL" (see Figure 5.89).
3. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.
4. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "P IN P" (see Figure 5.113).
5. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.

6. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "SIZE" (see Figure 5.122).

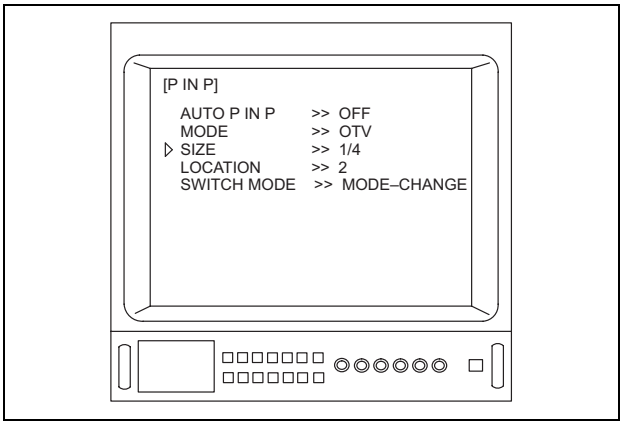



Figure 5.122

NOTE

Depending upon the OTV-S7V's settings, the menus shown in Figures 5.122 and/or 5.123 may appear different from those displayed on the video monitor.

7. Depress the menu switch "↵" or the "Enter" key on the keyboard to adjust the "SIZE" (see Figure 5.123).

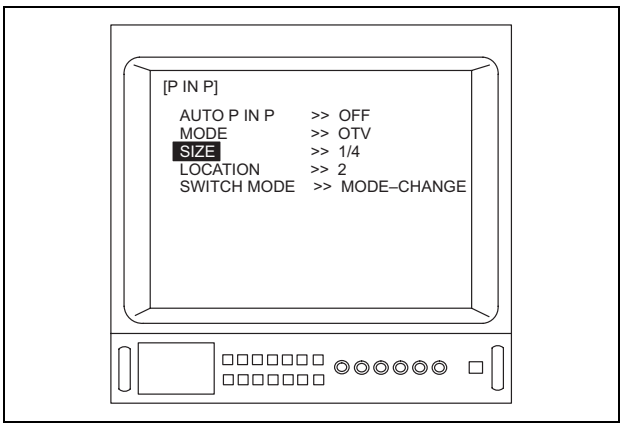



Figure 5.123

8. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to change the size.

9. Depress the menu switch "▣" for approximately 1 second or the "Esc" key on the keyboard to enter all settings.

NOTE

The sub-image size setting is retained when the power is turned OFF and the power cord is disconnected.

## The sub-image position

The sub-image can be displayed at one of 4 different positions on the video monitor by controlling the menu switches or keyboard (optional) (see Figure 5.124).

- The upper left corner (displayed as “1” in Figure 5.124)
- The lower left corner (displayed as “2” in Figure 5.124)
- The lower right corner (displayed as “3” in Figure 5.124)
- The upper right corner (displayed as “4” in Figure 5.124)

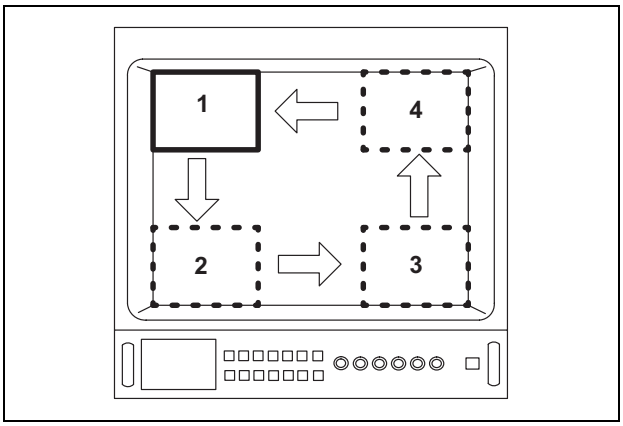



Figure 5.124

1. Depress the menu switch “▣” for approximately 1 second or the “F1” key on the keyboard to display the menu.

NOTE

By simultaneously pressing the keyboard’s “Shift” key and “B.O.D.” key that is set to “P IN P”, you can jump to step 6. For instructions on setting the “B.O.D.” key to “P IN P”, refer to Section 5.13, “Setting a function to the keyboard”.

2. Depress the menu switches “◀” or “▶”, or the “↑/↓/←/→” key on the keyboard to move the arrow “▷” to “B.O.D. CONTROL” (see Figure 5.89).
3. Depress the menu switch “↵” or the “Enter” key on the keyboard to display the next menu.
4. Depress the menu switches “◀” or “▶”, or the “↑/↓/←/→” key on the keyboard to move the arrow “▷” to “P IN P” (see Figure 5.113).

5. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.

6. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "LOCATION" (see Figure 5.125).

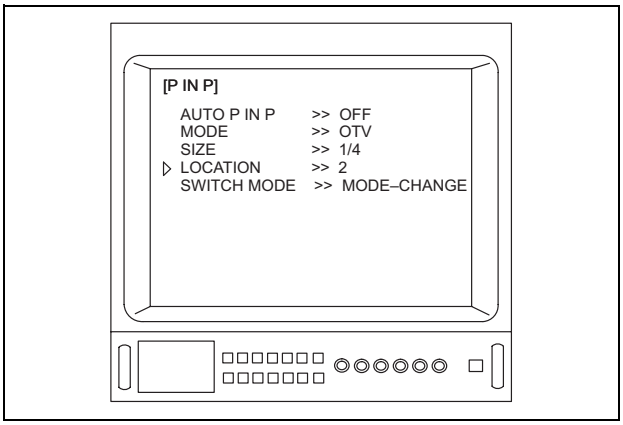



Figure 5.125

NOTE

Depending upon the OTV-S7V's settings, the menus shown in Figures 5.125 and/or 5.126 may appear different from those displayed on the video monitor.

7. Depress the menu switch "↵" or the "Enter" key on the keyboard to adjust the "LOCATION" (see Figure 5.126).

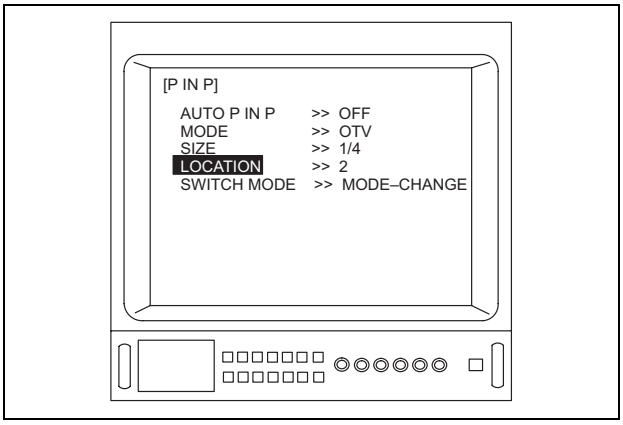



Figure 5.126

8. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to change the location.

9. Depress the menu switch "▣" for approximately 1 second or the "Esc" key on the keyboard to enter all settings.

NOTE

The sub-image position setting is retained when the power is turned OFF and the power cord is disconnected.

# 5.27 Multi freeze (installed in OTV-S7BOD-MF type only)

The multi freezing images for moving object (e.g. vocal cord) can be displayed on the video monitor.

## Division number setting

The number of images can be set to 4 or to 9 by controlling the menu switches or keyboard (optional).

1. Depress the menu switch "(■)" for approximately 1 second or the "F1" key on the keyboard to display the menu

NOTE

By simultaneously pressing the keyboard's "Shift" key and "B.O.D." key that is set "MULTI FREEZE", you can jump to step 6. For instructions on setting the "B.O.D." key to "MULTI FREEZE", refer to Section 5.13, "Setting a function to the keyboard".

2. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "B.O.D. CONTROL" (see Figure 5.89).
3. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.
4. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "MULTI FREEZE" (see Figure 5.127).

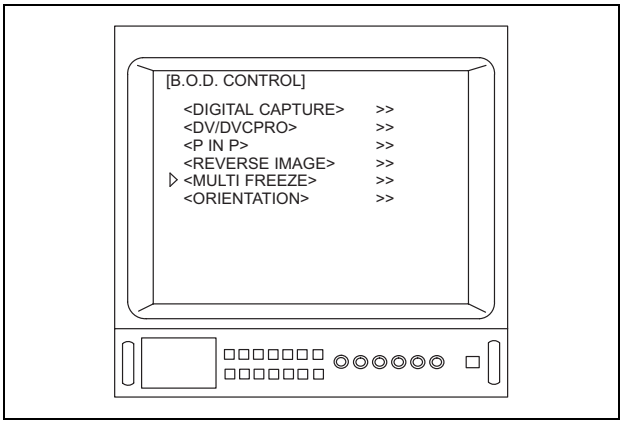



Figure 5.127

NOTE

Depending upon which B.O.D.s are installed in the OTV-S7V, the menu shown in Figure 5.127 may appear different from that displayed on the video monitor.

5. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.

6. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "DIVIDE NUMBER" (see Figure 5.128).

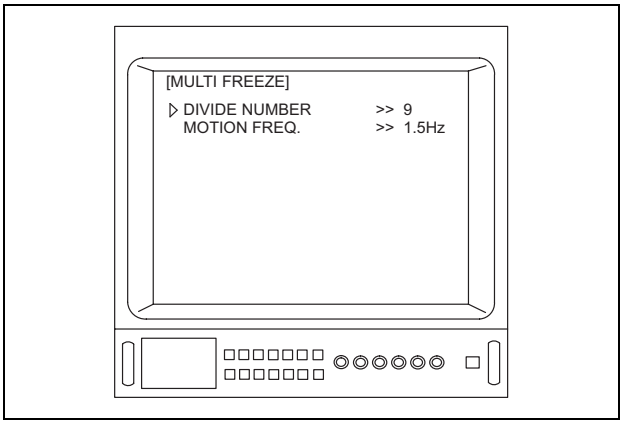



Figure 5.128

NOTE

Depending upon the OTV-S7V's settings, the menus shown in Figures 5.128 and/or 5.129 may appear different from those displayed on the video monitor.

7. Depress the menu switch "↵" or the "Enter" key on the keyboard to adjust the "DIVIDE NUMBER" (see Figure 5.129).

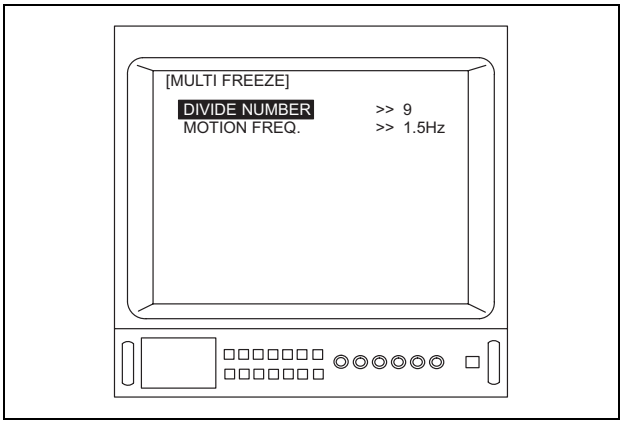



Figure 5.129

8. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to change the number.

9. Depress the menu switch "(■)" for approximately 1 second or the "Esc" key on the keyboard to enter all settings.

NOTE

The division number setting is retained when the power is turned OFF and the power cord is disconnected.

## *Motion frequency setting*

Motion frequency can be adjusted in 0.1 Hz increments within a range from 0.5 Hz to 2 Hz by controlling the menu switches or keyboard (optional). Set the motion frequency to equal the "slow motion frequency" of the strobe light source.

1. Depress the menu switch "(■)" for approximately 1 second or the "F1" key on the keyboard to display the menu.

NOTE

By simultaneously pressing the keyboard's "Shift" key and "B.O.D." key that is set to "MULTI FREEZE", you can jump to step 6. For instructions on setting the "B.O.D." key to "MULTI FREEZE", refer to Section 5.13, "Setting a function to the keyboard".

2. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "B.O.D. CONTROL" (see Figure 5.89).

3. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.

4. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "MULTI FREEZE" (see Figure 5.127).
5. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.
6. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "MOTION FREQ." (see Figure 5.130).

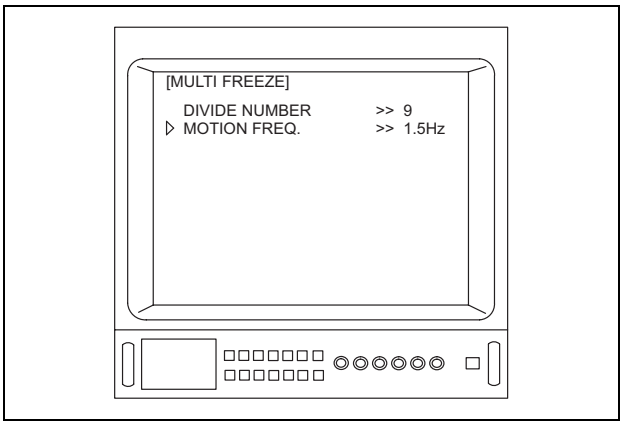



Figure 5.130

NOTE

Depending upon the OTV-S7V's settings, the menus shown in Figures 5.130 and/or 5.131 may appear different from those displayed on the video monitor.

7. Depress the menu switch "↵" or the "Enter" key on the keyboard to adjust the "MOTION FREQ." (see Figure 5.131).

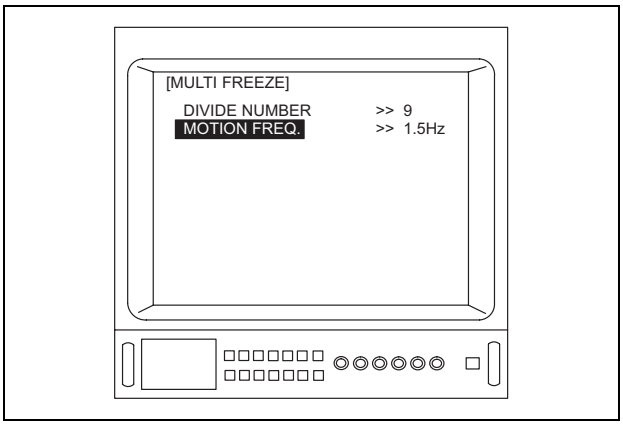



Figure 5.131

8. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to set the number to "slow motion frequency" of the strobe light source.

9. Depress the menu switch "(■)" for approximately 1 second or the "Esc" key on the keyboard to enter all settings.

NOTE

The motion frequency setting is retained when the power is turned OFF and the power cord is disconnected.

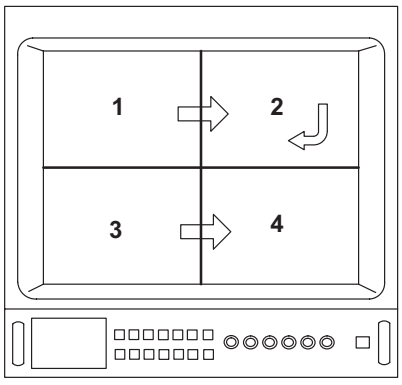
## *Displaying the strobe images*

The strobe images can be displayed by controlling the menu switches or keyboard (optional).

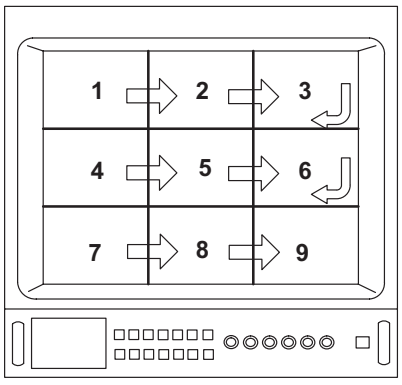
### ❍ Display the strobe images by pressing a remote control switch

1. Refer to Section 5.12, "Remote control switches" and set the "MULTI FREEZE" function to a remote control switch on the camera head or videoscope.

2. Pressing the remote control switch toggles between turning the strobe images on and off (see Figure 5.132).




When the "DIVISION NUMBER" is "4"




When the "DIVISION NUMBER" is "9"

Figure 5.132

NOTE

Strobe images are displayed in the order No.1 to No.4 (When the "DIVISION NUMBER" is "4") or No.1 to No.9 (When the "DIVISION NUMBER" is "9") shown in Figure 5.132.

### ❍ Display the strobe images by pressing a key on the keyboard

1. Refer to Section 5.13, “Setting a function to the keyboard” and set the “MULTI FREEZE” function to the “B.O.D.” key on the keyboard.
2. Pressing the “B.O.D.” key toggles between turning the strobe images on and off (see Figure 5.132).

## 5.28 Image orientation (type F and installed in OTV-S7BOD-RT type only; see Section 2.5)

The image displayed on the video monitor can be rotated 180° by controlling the menu switches or keyboard (optional).

- 180 DEG. ROTATION : display a rotated 180° image
- NORMAL : display a normal image

NOTE

This rotated 180° image differs from one in section 5.25, “Mirror and rotated images”, the menu and patient data are displayed on the image.

### ❍ Change the image quickly (keyboard only)

1. Refer to Section 5.13, “Setting a function to the keyboard” and set “ORIENTATION” to the “B.O.D.” key.
2. Press the “B.O.D.” key that is set to “ORIENTATION”. Each time this switch is depressed, the image cycles through “180 DEG. ROTATION” and “NORMAL”.

### ❍ Change the image by operating the menu

1. Depress the menu switch “▣” for approximately 1 second or the “F1” key on the keyboard to display the menu.

NOTE

By simultaneously pressing the keyboard’s “Shift” key and “B.O.D.” key that is set to “ORIENTATION”, you can jump to step 7. For instructions on setting the “B.O.D.” key to “ORIENTATION”, refer to Section 5.13, “Setting a function to the keyboard”.

2. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "B.O.D. CONTROL" (see Figure 5.89).
3. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.
4. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to move the arrow "▷" to "ORIENTATION" (see Figure 5.133).

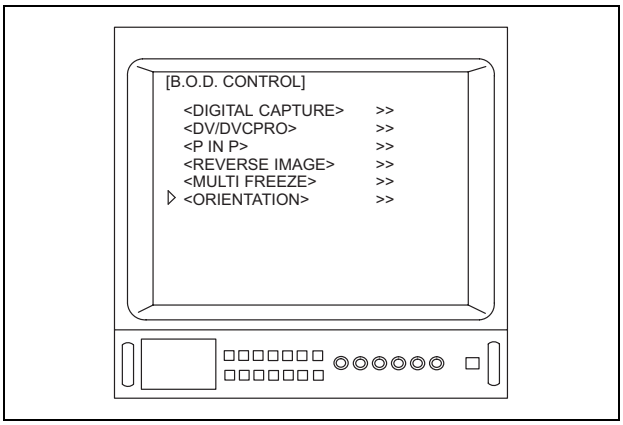



Figure 5.133

NOTE

Depending upon which B.O.D.s are installed in the OTV-S7V, the menu shown in Figure 5.133 may appear different from that displayed on the video monitor.

5. Depress the menu switch "↵" or the "Enter" key on the keyboard to display the next menu.
6. Depress the menu switch "↵" or the "Enter" key on the keyboard to adjust "ORIENTATION" (see Figure 5.134).

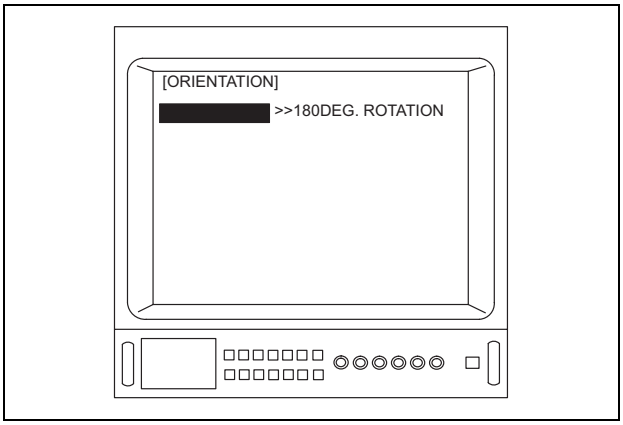



Figure 5.134

NOTE

Depending upon the OTV-S7V's settings, the menu shown in Figure 5.134 may appear different from that displayed on the video monitor.

7. Depress the menu switches "◀" or "▶", or the "↑/↓/←/→" key on the keyboard to set the reverse mode.
8. Depress the menu switch "▣" for approximately 1 second or the "Esc" key on the keyboard to enter settings.

NOTE

The orientation mode setting is retained when the power is turned OFF and the power cord is disconnected.

## 5.29 After use

**CAUTION**

- Turn the OTV-S7V OFF before connecting or disconnecting the camera head or videoscope. Connecting or disconnecting the camera head or videoscope when the OTV-S7V is ON can damage the camera head's or videoscope's electrical circuits.
- If the OTV-S7V is not going to be used for a long period of time, disconnect the power cord and isolation transformer from the wall mains outlet.

1. Turn the OTV-S7V OFF.
2. If any ancillary equipment was used, turn their power switches off according to their respective instruction manuals.

# Chapter 6 Care, Storage and Disposal

## 6.1 Care

**WARNING**

- Use only dry gauze to clean the power switch. Do not moisten the gauze, as the switch could fail or cause electric shock.
- After cleaning the OTV-S7V, dry it thoroughly before use. If it is used while wet, there is a risk of electric shock.

**CAUTION**

- Do not clean the video connector socket on the front panel, or the terminals or AC power inlet on the rear panel. Cleaning them can deform or corrode the contacts and cause equipment damage.
- Do not autoclave or gas sterilize the OTV-S7V. Equipment damage will occur.
- Do not wipe the OTV-S7V's surface with an abrasive material. The OTV-S7V's surface will be scratched.

If the equipment is soiled, perform the following cleaning procedures immediately after use. If cleaning is delayed, organic debris will solidify and it may be difficult to effectively clean the OTV-S7V. The equipment should also be cleaned routinely.

1. Turn the OTV-S7V OFF and disconnect the power cord.
2. Should the equipment become soiled with blood or other potentially infectious materials, first wipe off all gross debris using a soft, lint-free cloth moistened with detergent solution. Then, wipe the OTV-S7V with a clean, lint-free cloth moistened with 70% ethyl or isopropyl alcohol.
3. Wipe the OTV-S7V's surface using a soft, lint-free cloth moistened with 70% ethyl or isopropyl alcohol to remove dust, dirt, etc.
4. Dry the OTV-S7V with a clean, lint-free cloth.

## 6.2 Storage

**CAUTION**

- Do not store the OTV-S7V in a location exposed to direct sunlight, X-rays, radioactivity or strong electromagnetic radiation (e.g. near microwave medical treatment equipment, short-wave medical treatment equipment, MRI equipment, radio equipment or mobile phones). Damage may result.
- Store the equipment as described below; storing in the shipping box could present an infection control risk.

1. Before storage, turn the OTV-S7V OFF and disconnect the power cord.
2. Place the OTV-S7V in a horizontal position on a clean, dry, stable surface.
3. Store the equipment at room temperature in a well ventilated environment.

## 6.3 Disposal

When disposing of this product, or any of its components, follow all applicable national and local laws and guidelines.

# Chapter 7 Troubleshooting

If the OTV-S7V is visibly damaged, does not function as expected or is found to have other irregularities during the inspection described in Chapter 3, “Installation and Connection” and Chapter 4, “Inspection”, do not use the OTV-S7V. Contact Olympus.
Some problems that appear to be malfunctions may be correctable by referring to Section 7.1, “Troubleshooting guide”.
If the problem cannot be resolved by the described remedial action, stop using the instrument and send it to Olympus for repair.
Olympus does not repair accessory parts. If an accessory part becomes damaged, contact Olympus to purchase a replacement.

**DANGER**

Never use the instrument if an abnormality is suspected.
Fatal or serious injury can occur.

## 7.1 Troubleshooting guide

| Irregularity description | Possible cause | Solution |
|---|---|---|
| Power does not come on. | Power cord not securely plugged into the OTV-S7V or the wall mains outlet. | Connect power cord correctly. |
| | A fuse has blown. | Replace both fuses. |
| | Wall mains outlet is not active. | Turn ON the mains supply for the wall mains outlet. |

| | | | |
|---|---|---|---|
| Image does not appear. | The OTV-S7V is not connected to the wall mains outlet. | | Connect correctly. |
| | A fuse has blown. | | Replace both fuses. |
| | The wall mains outlet is not supplied with power. | | Turn ON the mains supply for the wall mains outlet. |
| | The video plug of the camera head or videoscope is not connected. | | Connect correctly. |
| | The video cable is not connected. | | Connect correctly. |
| | The light guide cable is not connected to the endoscope. | | Connect correctly. |
| | The endoscope is not connected to the camera head. | | Connect correctly. |
| | There is a problem with the light source. | Power switch is not ON. | Turn the light source ON. |
| | | Light guide cable is not connected. | Connect correctly. |
| | | The lamp is not installed correctly. | Install the lamp correctly. |
| | | The light source's lamp has burned out. | Replace the lamp. |
| | There is a problem with the video monitor. | Power switch is not ON. | Turn the video monitor ON. |
| | | Incorrect setting of the monitor input selector switch. | Set correctly. |
| | | Insufficient brightness setting. | Adjust brightness. |
| | | Incorrect video cable connection. | Connect correctly. |
| Excessively bright image. | Improper exposure level setting. | | Adjust as necessary. |
| | Improper light source filter selection. | | Adjust as necessary. |
| | Improper auto light adjustment setting. | | Set to an appropriate setting. |
| | Improper brightness setting on the light source. | | Adjust as necessary. |
| | Improper brightness setting on the video monitor. | | Adjust as necessary. |
| | Improper contrast setting on the video monitor. | | Adjust as necessary. |
| | Improper setting of the OEP-3/OEP | | Adjust as necessary. |

| | | | |
|---|---|---|---|
| Excessively dark image. | Incorrect exposure level setting. | | Adjust as necessary. |
| | Light guide cable is not connected to the endoscope. | | Connect correctly. |
| | Endoscope is not connected to the camera head. | | Connect correctly. |
| | There is a problem with the light source. | Power switch is not ON. | Turn the light source ON. |
| | | Light guide cable is not connected. | Connect correctly. |
| | | Lamp is not installed correctly. | Install the lamp correctly. |
| | | Lamp is old. | Replace the lamp with a new one. |
| | | Emergency lamp is being used. | Replace and/or use the main lamp. |
| | | Improper auto light adjustment setting. | Set to an appropriate setting. |
| | | Improper filter selection. | Adjust as necessary. |
| | Improper brightness setting on the video monitor. | | Adjust as necessary. |
| | Improper contrast setting on the video monitor. | | Adjust as necessary. |
| | Improper setting of the OEP-3/OEP | | Adjust as necessary. |
| Abnormal color | Improper color adjustment. | | Adjust as necessary. |
| | Improper white balance. | | Adjust as necessary. |
| | RGB cable is not connected correctly. | | Connect correctly. |
| | There is a problem with the video monitor. | Improper PHASE setting | Adjust as necessary. |
| | | Improper CHROMA setting | Adjust as necessary. |
| | | Improper brightness setting | Adjust as necessary. |
| | Improper color setting of the OEP-3/OEP | | Adjust as necessary. |
| Image is drifting. | RGB cable is not connected correctly. | | Connect correctly. |
| Image is vibrating. | Something near the video monitor is generating a strong magnetic field. | | Remove the video monitor from the source of the strong magnetic field. |

| | | | |
|---|---|---|---|
| Automatic brightness control does not function. | Light control cable is not connected. | | Connect correctly. |
| | AUTO/MANUAL brightness selector on the light source has not been set. | | Set correctly. |
| | A light source without an automatic brightness control function is being used. | | Use a light source with automatic brightness control. |
| Photographing the image on EVIS monitor photo unit SCV-3 is not possible. | A one second pause is not being taken after the switch is pressed. | | Press the switch at one second (or longer) intervals. |
| | SCV cable is not connected to the OTV-S7V. | | Connect correctly. |
| | There is a problem with the SCV-3. | Power switch is not ON. | Turn the SCV-3 ON. |
| | | No film is loaded. | Load film. |
| | | The video cable is not connected. | Connect correctly. |
| Printing with color video printer OEP-3/OEP is not possible. | The OEP-3/OEP cable is not connected to the OTV-S7V. | | Connect correctly. |
| | There is a problem with the OEP-3/OEP. | Power switch is not ON. | Turn the OEP-3/OEP ON. |
| | | No paper in the OEP-3/OEP. | Load paper. |
| | | Improper settings. | Adjust as necessary. |
| | | The video cable is not connected. | Connect correctly. |
| VTR recording is not possible. | Remote control cable is not connected to OTV-S7V. | | Connect correctly. |
| | The VTR is not set to record mode. | | Set the VTR to record mode. |
| | The video cable is not connected. | | Connect correctly. |
| Digital video recorder recording is not possible. | IEEE1394 cable is not connected. | | Connect correctly. |
| | Improper DV format setting. | | Set correctly. |
| DV format setting is not possible. | Digital video recorder is turned ON. | | Set the DV format with the digital video recorder turned OFF. |

| | | |
|---|---|---|
| Image cannot be captured to Memory Card. | The PC card adapter is not inserted correctly into the PC card slot of the OTV-S7V. | Insert the PC card adapter correctly. |
| | Memory Card is not inserted correctly into the PC card adapter. | Insert Memory Card correctly. |
| | Memory Card has run out of memory. | Delete images or use new Memory Card. |
| | SmartMedia is not writeable (silver seal is pasted). | Use writeable SmartMedia. |
| Image cannot be played back. | The PC card adapter is not inserted correctly into the PC card slot of the OTV-S7V. | Insert the PC card adapter correctly. |
| | Memory Card is not inserted correctly into the PC card adapter. | Insert Memory Card correctly. |
| | The image has been edited on the PC or an other instrument. | The image before edition cannot be retrieved. |
| Remote control switch does not functioned. | Improper a remote control switch setting. | Adjust as necessary |
| The image is not rotated or mirrored. | Video cable is not correctly connected. | Connect the video cable correctly. |
| | Incorrect settings of the input signal selector switch on the monitor. | Set correctly. |
| The sub-image cannot be displayed. | Video cable is not correctly connected. | Connect the video cable correctly. |
| The character cannot be input from the keyboard. | The keyboard has been connected with the OTV-S7V turned ON. | Turn the OTV-S7V OFF and connect correctly. |
| | A strong noise such as static electricity was received from the outside, and the communication error occurred between the OTV-S7V and the keyboard. | Turn the OTV-S7V OFF. After that, turn the OTV-S7V ON. |

# 7.2 Messages that is displayed on the video monitor

| Message | Possible cause | Solution |
|---|---|---|
| MEDIA FULL<br><CHANGE MEDIA><br>RETRY/CANCEL | Memory Card has run out of memory. | 1. Exchange Memory Card.<br>2. Select “RETRY”. Then, write the captured image on new Memory Card. |
| | | 1. Select “CANCEL”. Then, the captured images are canceled.<br>2. Delete or move the images from Memory Card. |
| MEDIA WRITE ERROR!<br><RETRY OR CHANGE MEDIA><br>RETRY/CANCEL | The image cannot be written to Memory Card. | 1. Select “RETRY”.<br>2. If it fails, exchange Memory Card and select “RETRY”. Then, re-write.<br>3. If the “CANCEL” is selected, the captured images are canceled. |
| INSERT MEDIA... | The PC card adapter and/or Memory Card are not inserted into the PC card slot of the OTV-S7V. | Insert the PC card adapter and Memory Card correctly. |
| MEDIA ACCESS ERROR!<br>RETRY/CANCEL | The image file cannot be read from Memory Card. | 1. Select “RETRY”.<br>2. If it fails, select “CANCEL”, and change Memory Card. |
| FOLDER NOT FOUND | There is no folder in Memory Card. | Exchange Memory Card. |
| FILE NOT FOUND | There is no file in the folder. | Search another folder. |
| BUFFER FULL<br>WAIT A MOMENT | Buffer memory is full. | Wait a moment until buffer memory is free. |
| SET AUTO P IN P OFF! | The “AUTO P IN P” function is set to “ON”. | The “AUTO P IN P” function is set to “OFF”. |
| INPUT P IN P EXT. SIGNAL! | When “MODE” for picture in picture is set to “EXT.”, the image from another device is not inputted to the OTV-S7V. | 1. Change “MODE” to “OTV”, “OTV + ext.” or “EXT. + otv”.<br>2. The image from another device is inputted to the OTV-S7V. |

| | | |
|---|---|---|
| PUSH L.S. SWITCH! | When the “ELEC. SHUTTER” function is set to “OFF”, press the exposure level switches, the remote control switch that is set to “EXPOSURE↑” or “EXPOSURE↓”, or the “Shift” key and “↑/↓/←/→” key on the keyboard at the same time. (when using the camera head, LTF-V3 or A500**A series) | 1. The “ELEC. SHUTTER” function is set to “ON”.<br>2. Adjust the brightness using the light source. |
| | Press the exposure level switches, the remote control switch that is set to “EXPOSURE↑” or “EXPOSURE↓”, or the “Shift” key and “↑/↓/←/→” key on the keyboard at the same time. (when using the ENF-V, CYF-V/VA or HYF-V) | Adjust the brightness using the light source. |

## 7.3 Returning the instrument for repair

**CAUTION**

Olympus is not liable for any injury or damage which occurs as a result of repairs attempted by non-Olympus personnel.

Before returning the instrument for repair, contact Olympus. With the instrument include a description of the instrument malfunction or damage, and the name and telephone number of the individual at your location who is most familiar with the problem. Also include a repair purchase order.

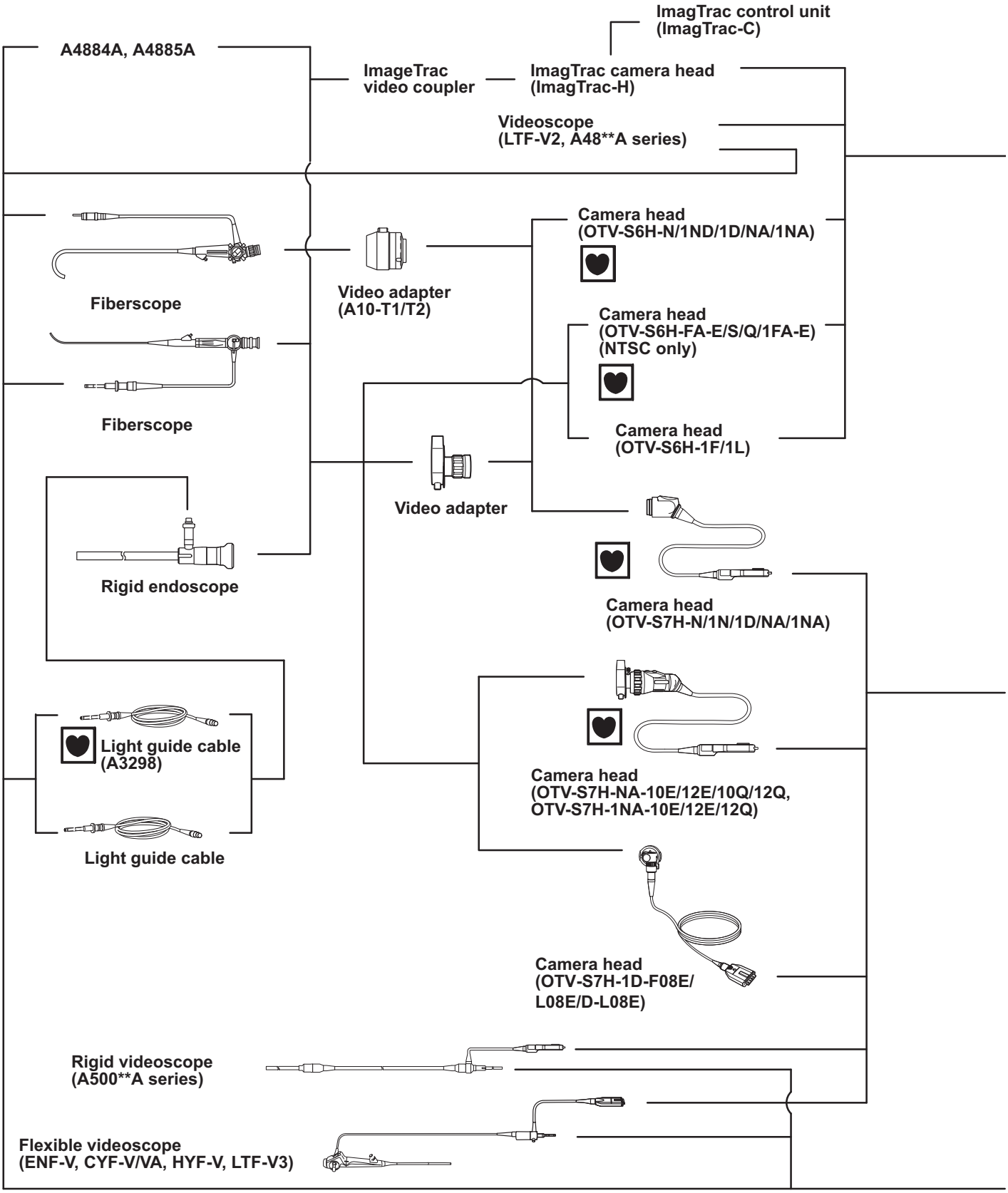
# Appendix

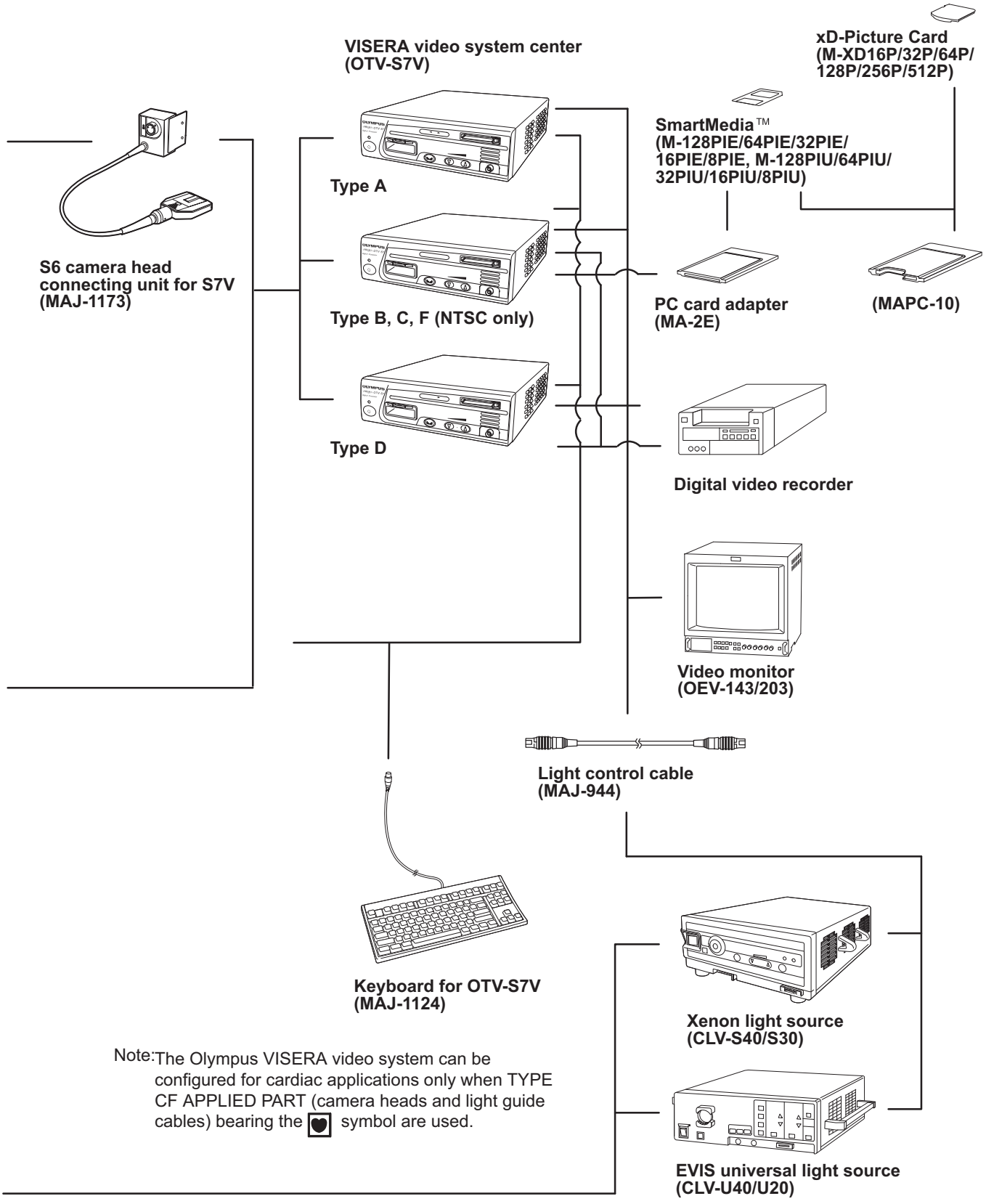
## System chart

The recommended combinations of equipment and accessories that can be used with this instrument are listed on the next page. New products released after the introduction of this instrument may also be compatible for use in combination with this instrument. For further details, contact Olympus.

**WARNING**

If combinations of equipment other than those shown are used, the full responsibility is assumed by the medical treatment facility.


ImagTrac control unit
(ImagTrac-C)
A4884A, A4885A
ImageTrac
video coupler
ImagTrac camera head
(ImagTrac-H)
Videoscope
(LTF-V2, A48**A series)
Camera head
(OTV-S6H-N/1ND/1D/NA/1NA)
Fiberscope
Video adapter
(A10-T1/T2)
Camera head
(OTV-S6H-FA-E/S/Q/1FA-E)
(NTSC only)
Fiberscope
Camera head
(OTV-S6H-1F/1L)
Video adapter
Rigid endoscope
Camera head
(OTV-S7H-N/1N/1D/NA/1NA)
Light guide cable
(A3298)
Camera head
(OTV-S7H-NA-10E/12E/10Q/12Q,
OTV-S7H-1NA-10E/12E/12Q)
Light guide cable
Camera head
(OTV-S7H-1D-F08E/
L08E/D-L08E)
Rigid videoscope
(A500**A series)
Flexible videoscope
(ENF-V, CYF-V/VA, HYF-V, LTF-V3)




Note: The Olympus VISERA video system can be configured for cardiac applications only when TYPE CF APPLIED PART (camera heads and light guide cables) bearing the ♥ symbol are used.

# Operating environment

| | | |
|---|---|---|
| **Operating environment** | **Ambient temperature** | 10 – 40°C (50 – 104°F) |
| | **Relative humidity** | 30 – 85% |
| | **Air pressure** | 700 – 1060 hPa<br>(0.7 – 1.1 kgf/cm²)<br>(10.2 – 15.4 psia) |

# Transportation and storage environment

| | | |
|---|---|---|
| **Transportation and storage environment** | **Ambient temperature** | –25 to +70°C |
| | **Relative humidity** | 10 – 90% |
| | **Atmospheric pressure** | 700 – 1060 hPa |

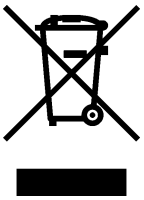
# Specifications (when all B.O.D.s are installed in the OTV-S7V)

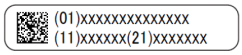
| | | |
|---|---|---|
| **Power supply** | **Voltage** | 100 – 240 V AC<br>(When using NTSC type with a voltage which exceeds 120V AC, use a power cord adapting to each power supply voltage.) |
| | **Voltage fluctuation** | Within ± 10% |
| | **Frequency** | 50/60 Hz |
| | **Frequency fluctuation** | Within ± 1 Hz |
| | **Consumption electric power** | 70 VA |
| | **Fuse rating** | 3.15 A, 250 V |
| | **Fuse size** | ø 5 × 20 mm |
| **Size** | **Dimensions** | 298 (W) × 87 (H) × 390 (D) mm |
| | **Dimensions (maximum)** | 301 (W) × 95 (H) × 394 (D) mm |
| | **Weight** | Type A: 6.1 kg<br>Type B: 6.5 kg<br>Type C: 6.6 kg<br>Type D: 6.3 kg<br>Type F: 6.6 kg |

| | | | |
|---|---|---|---|
| **Classification (electro-medical equipment)** | **Type of protection against electric shock** | | Class I |
| | **Degree of protection against electric shock of applied part** | | Depend on an applied part. See an applied part (Camera head or videoscope). |
| | **Degree of protection against explosion** | | The VISERA video system center OTV-S7V should be kept away from flammable gases. |
| **Observation** | **Television system** | | NTSC<br>PAL |
| | **Video signal output** | VBS | (1.0 $V_{p-p}$ 75 Ω): 1 |
| | | Y/C | (Y: 1.0 $V_{p-p}$ 75 Ω,<br>C: 0.28 $V_{p-p}$ 75 Ω): 3 |
| | | RGB | (R.G.B: 1.0 $V_{p-p}$ 75 Ω,<br>SYNC: 4.0 $V_{p-p}$ 75 Ω): 1 |
| | | DV | (IEEE1394 digital video output signal): 1 |
| | **Video signal input** | VBS | (2.0 $V_{p-p}$): 1 |
| | **Auto white balance** | | Automatically adjusted with the white balance switch |
| | **Brightness adjustment** | **Light source intensity adjustment** | Light reflected from the subject is measured by the camera head or videoscope in combination with the specified Olympus light source. |
| | | **Exposure level** | The exposure level switch adjusts brightness ± 8 levels. |
| | **Menu** | **Focus free** | Focus free is possible only when a camera head with a built-in focus free function is connected. |
| | | **Image enhancement** | An imaging process which electrically intensifies the boundary of an image. |
| | | **AGC** | The image can be electrically amplified when the light is inadequate because the distal end of the endoscope is too far from the subject. |
| | | **Iris** | Exposure area can be selected. |
| | | **Freeze** | Image can be frozen on the video monitor. |

| | | | |
|---|---|---|---|
| **Observation** | **Menu** | **Patient data input** | Patient data can be entered. |
| | | **Patient data display** | Patient data display is set to ON/OFF. |
| | | **Shutter** | Shutter is set to ON/OFF. |
| | | **PC card** | Frozen image can be recorded to or played back from Memory Card. |
| | | **Picture in picture** | The external image from the video input terminal can be shown on the same video monitor as main- or sub-images. |
| | | **Reverse image** | Mirrored or rotated (180°) images can be displayed on the video monitor. |
| | | **Multi freeze** | Multi freeze image can be displayed on the video monitor. |
| | | **Orientation** | Rotated (180°) images can be displayed on the video monitor. |
| | | **Preset** | OTV-S7V's setting can be saved or loaded for 7 users. |
| | | **Clock** | Time and date can be adjusted. |
| | | **Remote switch setting** | The OTV-S7V's function can be operated by remote switches on the camera head or videoscope. |
| | | **Color mode setting** | Color mode is selected from among 5 modes. |
| | | **Red color adjustment** | ± 8 levels |
| | | **Blue color adjustment** | ± 8 levels |
| | | **Color bar output** | Full-field color bar |

| | | |
|---|---|---|
| **Recording** | **VTR remote control** | Remote control of VTR recording possible by connecting the optional VTR remote control cable MAJ-438. |
| | **SCV-3 remote control** | Remote control of EVIS monitor photo unit SCV-3 (not available in some countries) possible by connecting the optional SCV cable MH-986. |
| | **OEP/OEP-3 remote control** | Remote control of color video printer OEP-3/OEP possible by connecting the optional OEP cable MH-987. |
| | **DV remote control** | Remote control of DV recording possible by connecting the optional IEEE1394 cable. |
| | **Memory Card** | SmartMedia (128/64/32/16/8 MB) and xD-Picture Card (512/256/128/64/32/16 MB) are specified by Olympus. MA-2E and MAPC-10 can be used as PC card adapter.<br>Compression ratio<br>• TIFF no compression (approx. 17 images: 16 MB … NTSC) (approx. 14 images: 16 MB … PAL)<br>• SHQ approx. 1/5 compression (approx. 80 images: 16 MB … NTSC) (approx. 60 images: 16 MB … PAL)<br>• HQ approx. 1/10 compression (approx. 200 images: 16 MB … NTSC) (approx. 150 images: 16 MB … PAL) |

| | | |
|---|---|---|
| **Medical Devices Directive** | CE | This device complies with the requirements of Directive 93/42/EEC concerning medical devices.<br>Classification: Class I<br><br>This device complies with the EMC requirements of EN 60601-1-2:2001 when used in combination with devices bearing CE marking either on the products or in its instructions for use.<br>Emission: Class B of EN 55011 |
| **WEEE Directive** |  | In accordance with European Directive 2002/96/EC on Waste Electrical and Electronic Equipment, this symbol indicates that the product must not be disposed of as unsorted municipal waste, but should be collected separately.<br><br>Refer to your local Olympus distributor for return and/or collection systems available in your country. |
| **EMC** | **Applied standard; IEC 60601-1-2: 2001 (For PAL type equipment)** | This instrument complies with the standards listed in the left column.<br><br>CISPR 11 of emission:<br><br>Group 1, Class B<br><br>This instrument complies with the EMC standard for medical electrical equipment; edition 2 (IEC 60601-1-2: 2001). However, when connecting to an instrument that complies with the EMC standard for medical electrical equipment; edition 1 (IEC 60601-1-2: 1993), the whole system complies with edition 1. |
| **Year of manufacture** | **7312345** | The last digit of the year of manufacture is the second digit of the serial number. |

| UDI label | Indication | |
|---|---|---|
| |  | The UDI label is required by some countries' regulations regarding the identification of a medical device also known as Unique Device Identification (UDI).<br>The following information is being coded in the 2-dimensional barcode (GS1 Data Matrix):<br>- (01) 14-digit GS1 Global Trade Item Number;<br>- (11) 6-digit date of manufacture;<br>- (21) 7-digit serial number. |

# EMC information

This model is intended for use in the electromagnetic environments specified below. The user and the medical staff should ensure that it is used only in these environments.

## ❍ Magnetic emission compliance information and recommended electromagnetic environments

| Emission standard | Compliance | Guidance |
|---|---|---|
| RF emissions<br>CISPR 11 | Group 1 | This instrument uses RF (Radio Frequency) energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment. |
| Radiated emissions<br>CISPR 11 | Class B | This instrument's RF emissions are very low and are not likely to cause any interference in nearby electronic equipment. |
| Main terminal conducted emissions<br>CISPR 11 | | |
| Harmonic emissions<br>IEC 61000-3-2 | Class A | This instrument's harmonic emissions are low and are not likely to cause any problem in the typical commercial power supply connected to this instrument. |
| Voltage fluctuations/flicker emissions<br>IEC 61000-3-3 | Complies | This instrument stabilizes its own radio variability and has no affect such as flicker in lighting apparatus. |

## ❍ Electromagnetic immunity compliance information and recommended electromagnetic environments

| Immunity test | IEC 60601-1-2 test level | Compliance level | Guidance |
|---|---|---|---|
| Electrostatic discharge (ESD)<br>IEC 61000-4-2 | Contact:<br>±2, ±4, ±6 kV<br>Air:<br>±2, ±4, ±8 kV | Same as left | Floors should by be made of wood, concrete, or ceramic tile that hardly produces static. If floors are covered with synthetic material that tends to produce static, the relative humidity should be at least 30%. |
| Electrical fast transient/burst<br>IEC 61000-4-4 | ±2 kV<br>for power supply lines<br>±1 kV<br>for input/output lines | Same as left | Mains power quality should be that of a typical commercial (original condition feeding the facilities) or hospital environment. |
| Surge<br>IEC 61000-4-5 | Differential mode:<br>±0.5, ±1 kV<br>Common mode:<br>±0.5, ±1, ±2 kV | Same as left | Mains power quality should be that of a typical commercial or hospital environment. |
| Voltage dips, short interruptions and voltage variations on power supply input lines<br>IEC 61000-4-11 | < 5% $U_T$<br>(> 95% dip in $U_T$)<br>for 0.5 cycle | Same as left | Mains power quality should be that of a typical commercial or hospital environment. If the user of this instrument requires continued operation during power mains interruptions, it is recommended that this instrument be powered from an uninterruptible power supply or a battery. |
| | 40% $U_T$<br>(60% dip in $U_T$)<br>for 5 cycle | | |
| | 70% $U_T$<br>(30% dip in $U_T$)<br>for 25 cycle | | |
| | < 5% $U_T$<br>(> 95% dip in $U_T$)<br>for 5 seconds | | |
| Power frequency (50/60 Hz) magnetic field<br>IEC 61000-4-8 | 3 A/m | Same as left | It is recommended to use this instrument by maintaining enough distance from any equipment that operates with high current. |

NOTE

$U_T$ is the AC mains power supply prior to application of the test level.

## ❍ Cautions and recommended electromagnetic environment regarding portable and mobile RF communications equipment such as cellular phones

| Immunity test | IEC 60601-1-2 test level | Compliance level | Guidance |
|---|---|---|---|
| | | | Formula for recommended separation distance ($V_1$=$E_1$=3 according to the compliance level) |
| Conducted RF<br>IEC 61000-4-6 | 3 Vrms<br>(150 kHz – 80 MHz) | 3 V ($V_1$) | $d = \left[\frac{3,5}{V_1}\right]\sqrt{P}$ |
| Radiated RF<br>IEC 61000-4-3 | 3 V/m<br>(80 MHz – 2.5 GHz) | 3 V/m ($E_1$) | $d = \left[\frac{3,5}{E_1}\right]\sqrt{P}$ 80 MHz – 800 MHz<br>$d = \left[\frac{7}{E_1}\right]\sqrt{P}$ 800 MHz – 2.5 GHz |

NOTE

- Where “P” is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and “d” is the recommended separation distance in meters (m).
- This instrument complies with the requirements of IEC 60601-1-2: 2001. However, under electromagnetic environment that exceeds its noise level, electromagnetic interference may occur on this instrument.
- Electromagnetic interference may occur on this instrument near a high-frequency electrosurgical equipment and/or other equipment marked with the following symbol:

## ❍ Recommended separation distance between portable and mobile RF communications equipment and this instrument

| Rated maximum output power of transmitter P (W) | Separation distance according to frequency of transmitter (m) (calculated as $V_1$=3 and $E_1$=3) | | |
|---|---|---|---|
| | 150 kHz – 80 MHz | 80 MHz – 800 MHz | 800 MHz – 2.5 GHz |
| | $d = 1{,}2\sqrt{P}$ | $d = 1{,}2\sqrt{P}$ | $d = 2{,}3\sqrt{P}$ |
| 0.01 | 0.12 | 0.12 | 0.23 |
| 0.1 | 0.38 | 0.38 | 0.73 |
| 1 | 1.2 | 1.2 | 2.3 |
| 10 | 3.8 | 3.8 | 7.3 |
| 100 | 12 | 12 | 23 |

NOTE

The guidance may not apply in some situations.
Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.
Portable and mobile RF communications equipment such as cellular phones should be used no closer to any part of this instrument, including cables than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.

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