

DRAFT

INSTRUCTIONS  
ENDOSCOPE POSITION DETECTING UNIT  
UPD-3

USA: CAUTION: Federal law restricts this device to sale by or on the order of a physician.



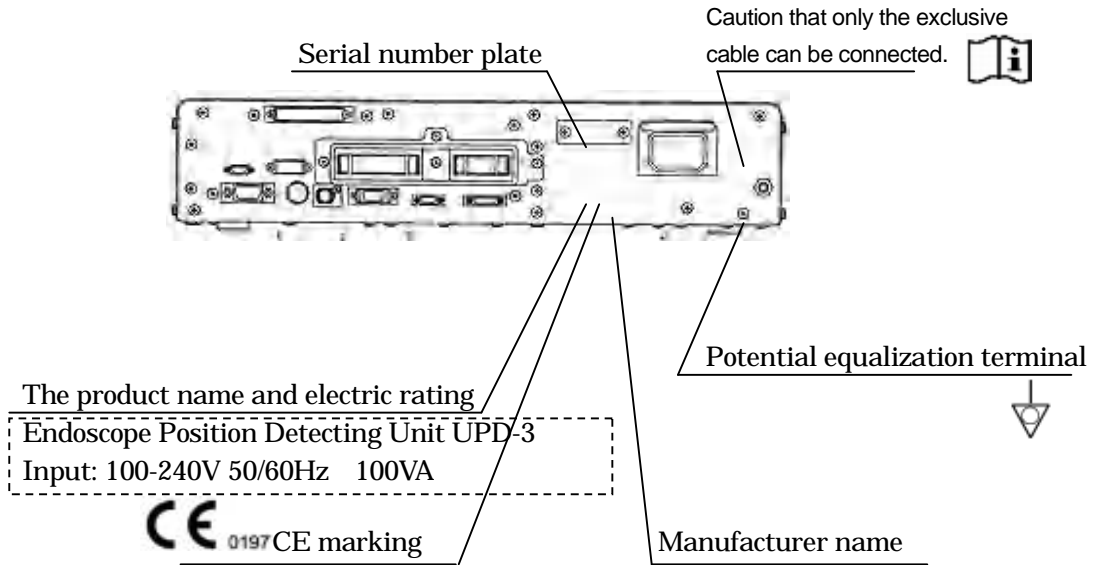
(For 220 – 240V type equipment)

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## Labels and Symbols

Safety-related labels and symbols are attached on the locations shown below. If labels or symbols are missing or illegible, contact OLYMPUS.



○ 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 Olympus endoscopes system for detection and displaying the shape of inserted endoscope.

### *Instruction manual*

This instruction manual contains essential information on using this endoscope position detecting unit 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 equipment 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:**

The wall mains outlet is a wall AC mains power outlet socket having the exclusive terminal for grounding

**Isolation transformer:**

The isolation transformer is a safety device that is used to isolate noninsulated equipment with potentially high leakage currents to decrease the possibility of electric shock.

**Scope model:**

The scope model is a computer graphic image that models the shape of the endoscope insertion tube.

### *User qualifications*

If there is an official standard on user qualifications to perform endoscopy and endoscopic treatment that is defined by the medical administration or other official institutions, such as academic societies on endoscopy, follow that standard. If there is no official qualification standard, the operator of this instrument must be a physician approved by the medical safety manager of the hospital or person in charge of the department (department of internal medicine, etc.).

The physician should be capable of safely performing the planned endoscopy and endoscopic treatment following guidelines set by the academic societies on endoscopy, etc., and considering the difficulty of endoscopy and endoscopic treatment. This manual does not explain or discuss endoscopic procedures.

### *Instrument compatibility*

Refer to the "System chart" in the Appendix to confirm that this balloon control unit is compatible with the ancillary equipment being used. Using incompatible equipment can result in patient injury and/or equipment damage. Also review the manuals of all equipment that will be used during the procedure and use the equipment as instructed.

This instrument complies with EMC standard for medical electrical equipment; edition 2 (IEC 60601-1-2: 2001) and edition 3 (IEC 60601-1-2: 2007). However, when connected with an instrument that complies with EMC standard for medical electrical equipment; edition 1 (IEC 60601-1-2: 1993), the whole system complies with edition 1.

### *Repair and modification*

This endoscope position detecting unit does not contain any user-serviceable parts. Do not disassemble, modify or attempt to repair it; patient or operator injury, equipment damage and/or the impossibility to obtain the expected functionality can result. Some problems that appear to be malfunctions may be correctable by referring to Chapter 9, "Troubleshooting". If the problem cannot be resolved using the information in Chapter 9, contact Olympus. This instrument is to be repaired by Olympus technicians only.

### *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 cautions*

Follow the dangers and cautions given below when handling this endoscope position detecting unit. This information is to be supplemented by the dangers and cautions given in each chapter.

[DANGER]

- As a TYPE BF applied part, the endoscope connected to this instrument must never be applied directly to the heart. Leakage current from the TYPE BF applied part may be dangerous and cause ventricular fibrillation or otherwise seriously affect the cardiac function of the patient. Accordingly, always adhere to the following:

- Never apply the endoscope connected to this instrument to the heart or any area near the heart.

- Never allow an EndoTherapy accessory or another endoscope applied to or near the heart to come in contact with the endoscope connected to this instrument.

- Strictly observe the following precautions. Failure to do so may place the patient and medical personnel in danger of electric shock.

- When this endoscope position detecting unit is used to examine a patient, do not allow metal parts of the endoscope or its accessories to touch metal parts of other system components. Such contact may cause unintended current flow to the patient.

- Keep fluids away from all electrical equipment. If fluids are spilled on or into the unit, stop operation of the endoscope position detecting unit immediately and contact Olympus.

- Do not prepare, inspect or use this endoscope position detecting unit with wet hands.
- Never install and operate the endoscope position detecting unit in locations where:
  - the concentration of oxygen is high;
  - oxidizing agents (such as nitrous oxide (N<sub>2</sub>O)) are present in the atmosphere;
  - flammable gases are present in the atmosphere;
  - flammable liquids are near.

Otherwise, explosion or fire may result because this endoscope position detecting unit is not explosion-proof.

- This instrument generates AC magnetic fields. To prevent critical effects on patients, be sure to adhere to the following:
  - Never use the instrument on a patient with a pacemaker. The AC magnetic fields generated by the instrument may cause malfunction or damage to the pacemaker, exerting critical effects to the cardiac function of the patient.
  - Never use the instrument on pregnant women and women suspected of being pregnant. The effects of the AC magnetic field generated by the instrument on the unborn baby have not yet been determined.



## [WARNING]

- Never insert anything into the ventilation grills of the endoscope position detecting unit. It can cause an electric shock and/or fire.
- This product may interfere with other medical electronic equipment used in combination with it. Before use, refer to the Appendix to confirm the compatibility of this instrument with all equipment to be used.
- 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.




## [CAUTION]

- Do not touch the electrical contacts inside the instrument's connectors. Otherwise, equipment damage and/or malfunction can occur.
- Do not use a pointed or hard object to press the buttons on the front panel and/or keyboard. This may damage the buttons.
- Do not apply excessive force to the connectors. Otherwise, a failure of an electrical contact may result in a malfunction.
- This instrument emits RF (Radio Frequency) energy to supply data by radio communication. Therefore, it may cause electromagnetic interference in nearby electronic equipment, and is labeled with the following symbol. If electromagnetic interference occurs, mitigation measures may be necessary, such as moving the electronic equipment away, reorienting or relocating this instrument, or shielding the location.



## [NOTE]

- As defined by the international safety standard (IEC 60601-1), medical electrical equipment is classified into the following types: TYPE CF applied part (the instrument can safely be applied to any part of the body, including the heart), and TYPE B/BF applied part (the instrument can safely be applied to any organ except the heart). The part of the body that an endoscope or electrosurgical accessory can safely be applied to depends on the classification of the equipment to which the instruments are connected. Before beginning the procedure, check the current leakage classification type of each instrument to be used for the procedure. Classification types are clearly specified in the instruments' instruction manuals.

Symbol	Classification
	TYPE CF applied part
	TYPE BF applied part
	TYPE B applied part

- When endoscopes are used with endoscope accessories connected with other medical electronic equipment, the leakage currents may increase.

## *Summary of Equipment Functions*

This instrument is equipment that detects and displays the spatial image of an endoscope. Some of the functions of this instrument described below are enabled only when the required equipment are connected to this instrument. For more details, refer to the instruction manuals for this instrument and the other instruments connected.

### *Displaying the spatial image of the endoscope*

The spatial image of the endoscope is displayed on the monitor in real time.

### *Zooming in or out and rotating the scope model*

The scope model displayed on the monitor can be zoomed in or out and rotated.

### *Splitting the screen*

The scope model can be displayed on two screens by splitting the screen.

### *Saving and selecting the screen display*

Up to 20 presets of the display can be saved, and one of them can be selected to use.

### *Hand coil*

The relative position between the hand coil (MAJ-1859, optional) and endoscope can be detected.

### *View tracking*

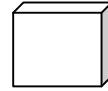
The orientation of the patient's body can be detected by attaching the reference plate (MAJ-1860, optional) to the patient's body, and the scope model can be displayed in fixed direction.

## Chapter 1 Checking the Package Contents

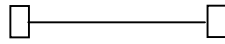
Match all items in the package with the components shown below. Inspect each item for damage. If the instrument is damaged, a component is missing or you have any questions, do not use the instrument; immediately contact Olympus.



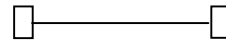
ENDOSCOPE POSITION DETECTING UNIT  
(UPD-3)



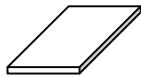
RECEIVER DISH  
(MAJ-1868)



RECEIVER DISH CABLE (MAJ-1875)



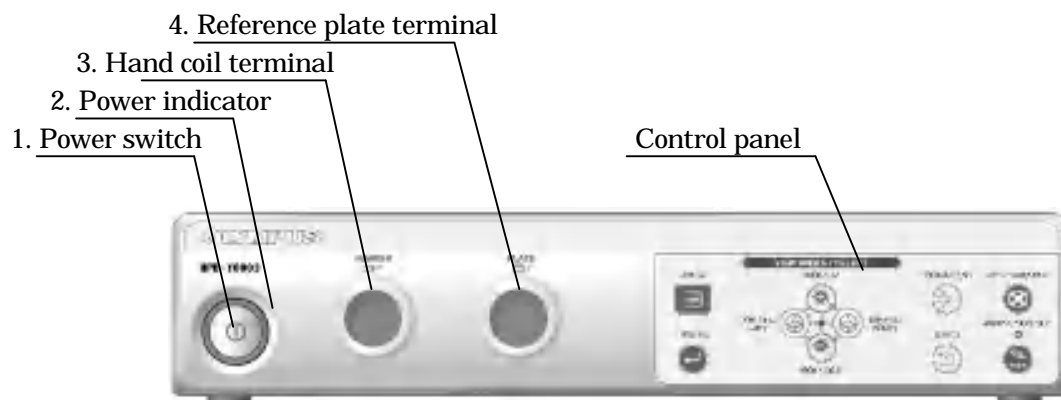
UPD CABLE(MAJ-1881)



Instruction manual

## Chapter 2 Nomenclature and Functions

### 2.1 Front panel



1. Power switch

Press to turn the endoscope position detecting unit ON or OFF.

2. Power indicator

This indicator lights up when the main unit is ON.

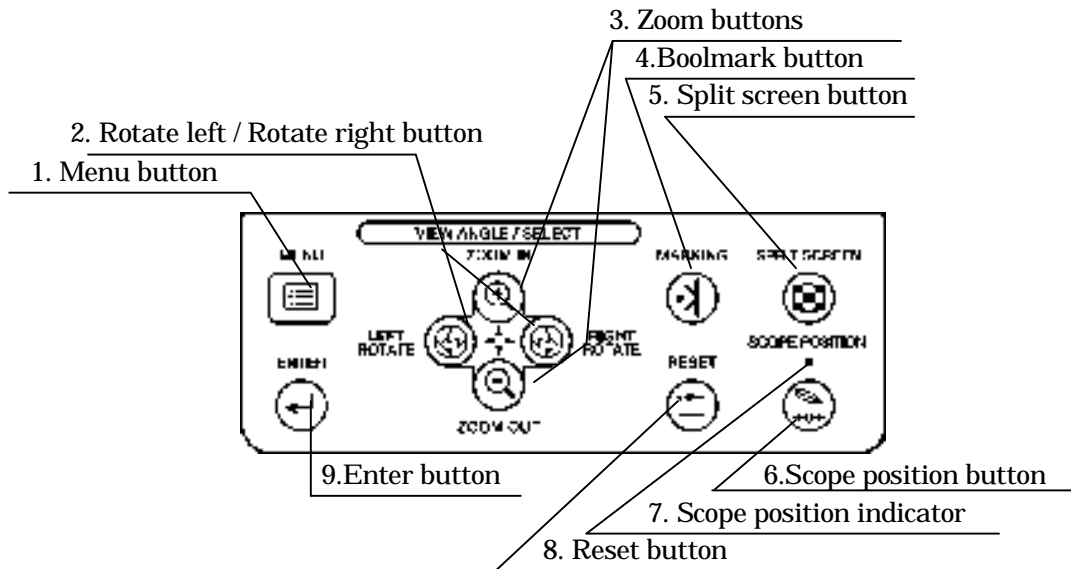
3. Hand coil terminal

The hand coil (MAJ-1859) is connected to this terminal.

4. Reference plate terminal

The reference plate (MAJ-1860) is connected to this terminal.

## 2.2 Control panel



### 1. Menu button

This button is pressed to display or exit from the menu list.

### 2. Rotate left / Rotate right button

When the scope model display is active, these buttons are pressed to rotate the scope model or to change the posture of the figure image. When the menu list is active, these buttons are pressed to select a menu.

### 3. Zoom buttons

These buttons are pressed to zoom the scope model display in or out (i.e., magnify or reduce it). When the menu list is active, these buttons are pressed to select a menu.

### 4. Bookmark button

This button is pressed to mark on the display length.

### 5. Split screen button

This button is pressed to change between split-screen and single-screen display alternately.

### 6. Scope position button

This button is pressed to set or release the start position of the scope model.

### 7. Scope position indicator

This indicator lights up when the start position of the scope model has been set.

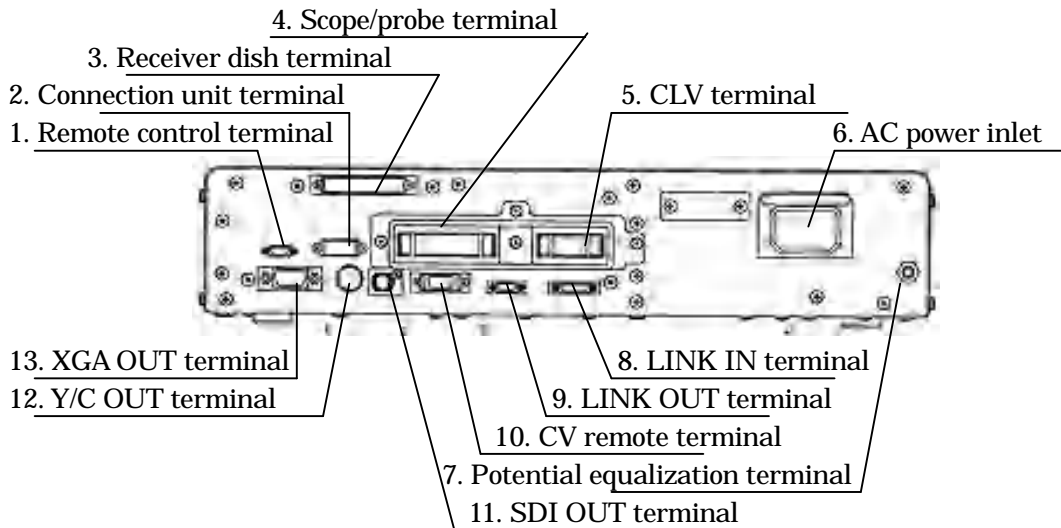
### 8. Reset button

This button is pressed to initialize the scope model display, and the posture of the figure image.

9. Enter button

This button is pressed to determine the category in the menu list.

## 2.3 Rear panel



### 1. Remote control terminal

This terminal is the receptacle for the remote control cable to connect the endoscope position detecting unit to the remote control.

### 2. Connection unit terminal

The MP extension cable (MAJ-Y0062) is connected to this terminal.

### 3. Receiver dish terminal

The receiver dish cable (MAJ-1875) is connected to this terminal.

### 4. Scope/probe terminal

The UPD cable (MAJ-1881) is connected to this terminal.

### 5. CLV terminal

This terminal is provided for the connection to the future Olympus light source and cannot be used for the present.

### 6. AC power inlet

Connect the provided power cord to supply AC power via this inlet.

### 7. Potential equalization terminal

For safety purposes, this terminal is connected to a potential equalization busbar of the electrical installation.

### 8. LINK IN terminal

This terminal is provided for the connection to the future Olympus equipment and cannot



be used for the present.

9. LINK OUT terminal

This terminal is provided for the connection to the future Olympus equipment and cannot be used for the present.

10. CV remote terminal

The patient data signal from the video system center is input via this terminal. The UPD data transfer cable (MAJ-604) or the data transfer cable (MAJ-1260)\* is connected to this terminal.

11. SDI OUT terminal

The video signal (serial digital interface / SDI signal) is output via this terminal.

12. Y/C OUT terminal

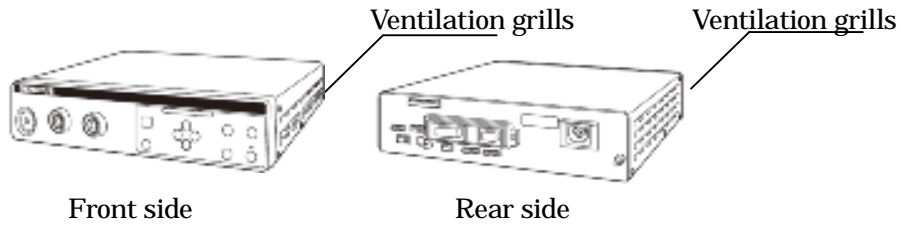
The video signal (Y/C signal) is output via this terminal.

13. XGA OUT terminal

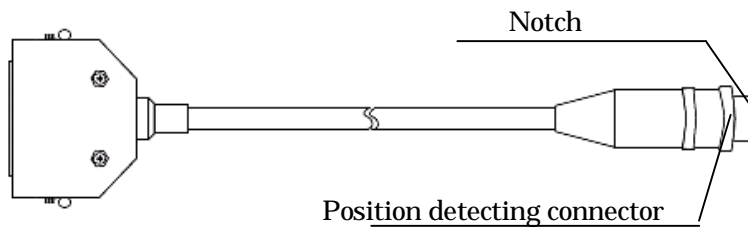
The video signal (XGA signal) is output via this terminal.

\* This product may not be available in some areas.

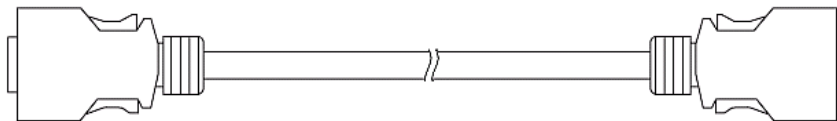
*2.4 Side panels*



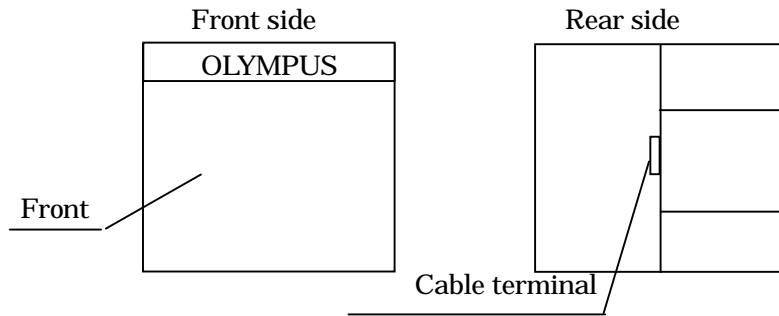
*2.5 UPD cable (MAJ-1881)*



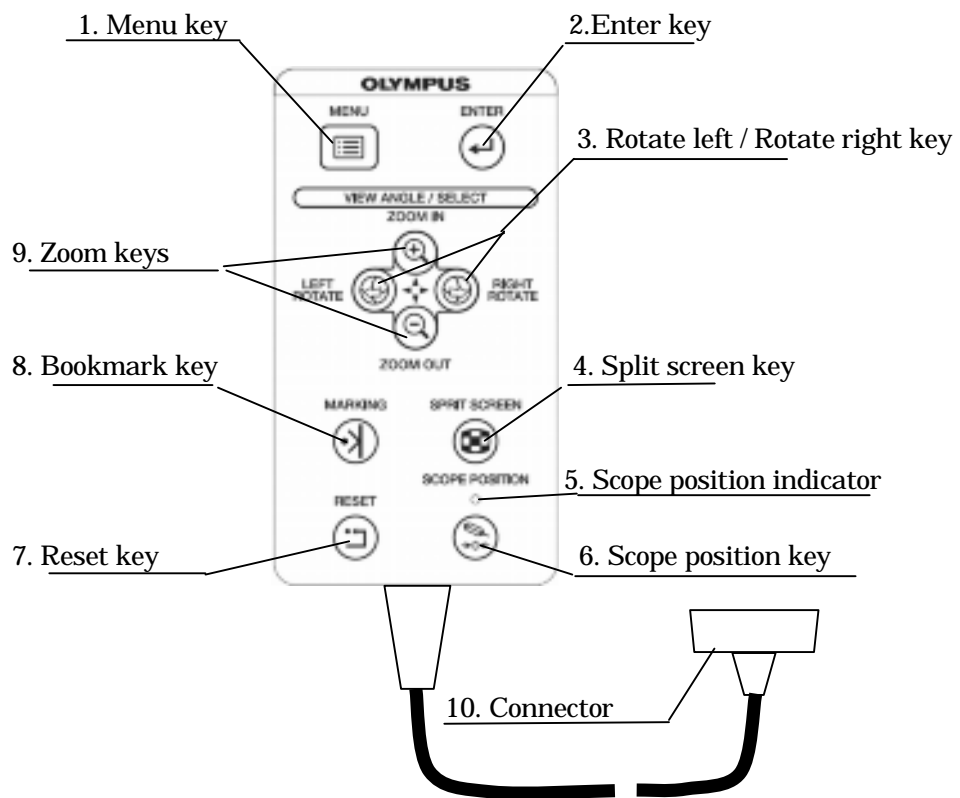
*2.6 Receiver dish cable (MAJ-1875)*



## 2.7 Receiver dish (MAJ-1868)



## 2.8 Remote control (MAJ-1890 Option)



1. Menu key

This key is pressed to display or exit from the menu list.

2. Enter key

This button is pressed to determine the category in the menu list.

3. Rotate left / Rotate right key

When the scope model display is active, these keys are pressed to rotate the scope model or to change the posture of the figure image. When the menu list is active, these keys are pressed to select a menu.

4. Split screen key

This key is pressed to change between split-screen and single-screen display alternately.

5. Scope position indicator

This indicator lights up when the start position of the scope model has been set.

6. Scope position key

This key is pressed to set or release the start position of the scope model.

7. Reset key

This key is pressed to initialize the scope model display, and the posture of the figure image.

8. Bookmark key

This button is pressed to mark on the display length.

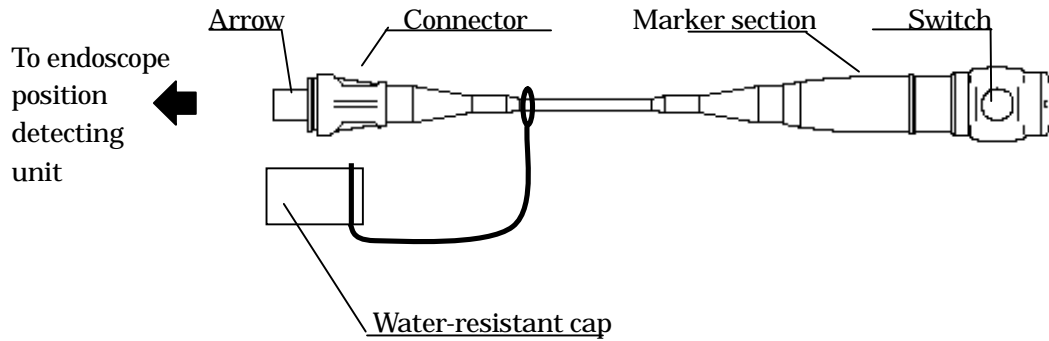
9. Zoom keys

These keys are pressed to zoom the scope model display in or out (i.e., magnify or reduce it). When the menu list is active, these keys are pressed to select a menu.

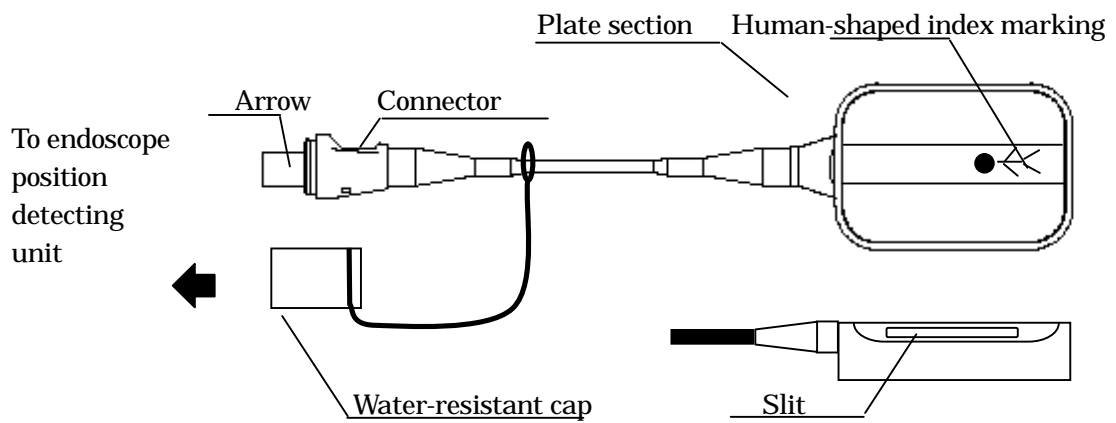
10. Connector

This connector connects the endoscope position detecting unit.

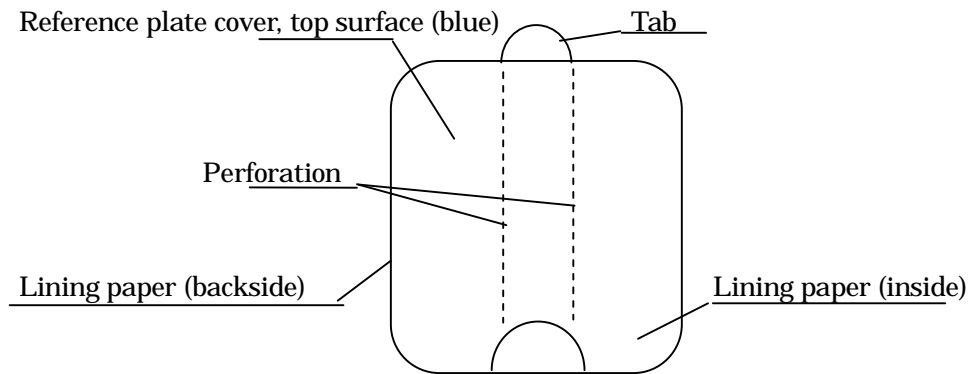
*2.9 Hand coil (MAJ-1859) (Option)*



*2.10 Reference plate (MAJ-1860) (Option)*

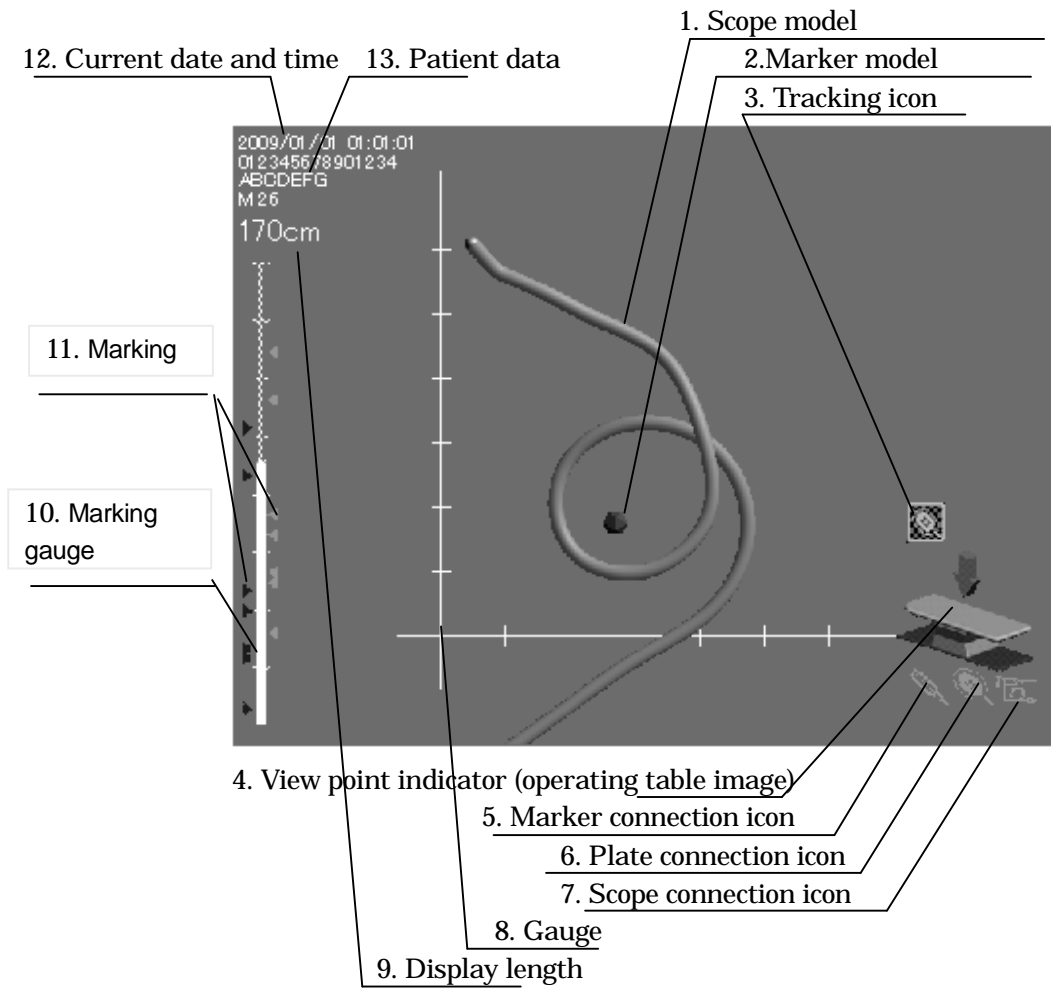


### *2.11 Reference plate cover (MAJ-1880) (Option)*



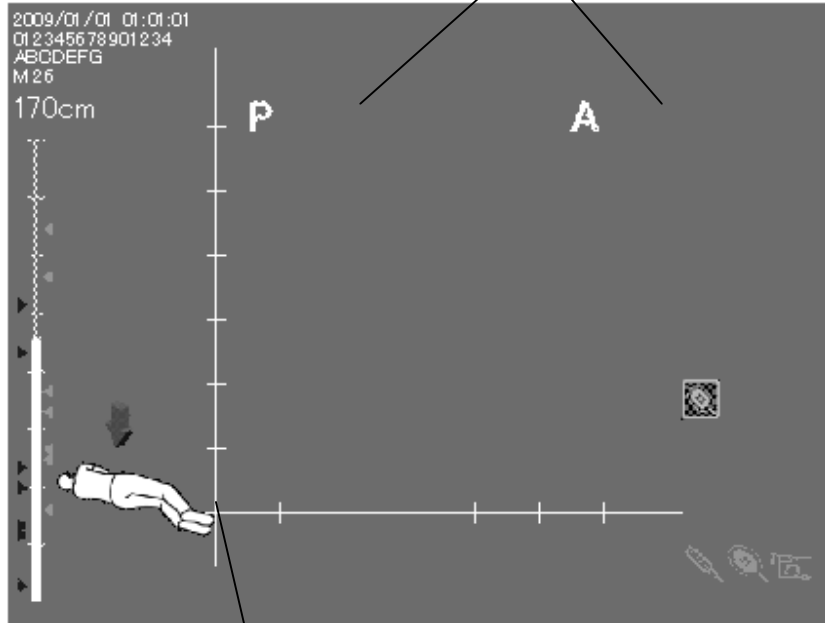
## 2.12 Screen display

○For the operating table image



○For the figure image

14. A-P indicator



15. Viewpoint indicator (figure model)



#### 1. Scope model

The shape of the endoscope's insertion tube will be displayed when the endoscope's insertion tube is moved in front of the coil unit.

#### 2. Marker model

The position of the hand coil (MAJ-1859) will be displayed when the hand coil is connected and moved in front of the coil unit.

#### 3. Tracking icon

The indicator will be displayed in the tracking display mode (see Section 5.9, "View tracking").

#### 4. Viewpoint indicator (Operating table image)

The arrow indicator and operating table image show the angle in which the scope model on the screen is viewed. This indicator appears when "Operating table image" is selected from "Setting the viewing image" in the setup menu (see "User preset").

#### 5. Marker connection icon

The indicator will be displayed when the hand coil is connected. The color represents the connection and detection status (see Section 5.5, "Connection indicators").

#### 6. Plate connection icon

The indicator will be displayed when the reference plate is connected. The color represents the connection and detection status (see Section 5.5, "Connection indicators").

#### 7. Scope connection icon

The indicator will be displayed when an applicable endoscope or position detecting probe is connected to the endoscope position detecting unit. The color represents the connection and detection status (see Section 5.5, "Connection indicators").

#### 8. Gauge

The gauge is used as a reference for identifying the size of the displayed scope model. It will be displayed when "Enable information display" is set (see Section 8.3, "User preset").

#### 9. Display length

The display length shows an actual length of the scope model displayed on the screen. (For the display range, see Section 4.2, "Scope model display range".) It will be displayed when "Enable information display" is set (see Section 8.3, "User preset"). The display length does not show the actual length of the endoscope inserted in the patient's body.

#### 10. Marking gauge

The display length is shown with the vertical axis. It will be displayed when "Enable information display" is set (see Section 5.6, "Bookmark").

#### 11. Marking

Markings can be put beside the marking gauge according to the points where you want to mark while inserting the endoscope into the patient. It will be displayed when “Enable information display” is set (see Section 5.6, “Bookmark”).

#### 12. Current date and time

Current date and time of the day will be displayed when “Enable information display” is set (see Section 8.3, “User preset”).

#### 13. Patient data

The data will be displayed when the video system center is connected and when “Enable information display” is set (see Section 8.3, “User preset”).

#### 14. A-P indicator

The indicator is displayed when “Figure image” is selected from “Setting the viewing image” in the setup menu. The indicator shows the anterior and posterior sides of the figure image.

#### 15. Viewpoint indicator (Figure image)

The arrow indicator and figure image show the angle in which the scope model on the screen is viewed. This indicator appears when “Figure image” is selected from “Setting the viewing image” in the setup menu (see Section 8.3, “User preset”).

##### ○ Figure image

The figure image is displayed when “Figure image” is selected from “Setting the viewing image” in the setup menu. The viewpoint indicator is displayed with a relative angle against the figure image on the screen. The posture of the figure image can be changed as the patient’s posture changes.

#### [NOTE]

The viewpoint indicator arrow shows the angle in which the scope model on the screen is viewed regardless of the posture of the figure image. The view angle is indicated against the receiver dish.

## Chapter 3 Inspection

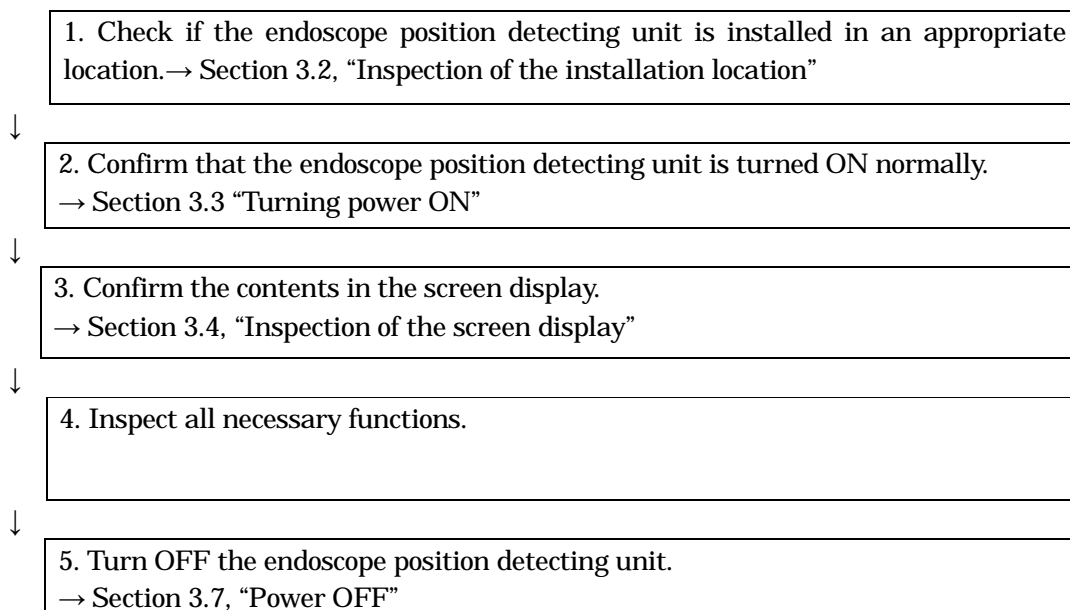
### [WARNING]

Before each case, inspect this endoscope position detecting unit as instructed below. Inspect other equipment to be used with this endoscope position detecting unit as instructed in their respective instruction manuals. Should any irregularity be observed, do not use the endoscope position detecting unit and see Chapter 9, "Troubleshooting". If the irregularity is still observed after consulting Chapter 9, contact Olympus. Damage or irregularities may compromise patient or user safety and may result in more severe equipment damage.

Prepare the endoscope position detecting unit and other ancillary equipment before each particular case. Refer to the respective instruction manual for each piece of equipment.

### 3.1 Inspection work flow

Please see the inspection work flow in Figure 3.1 below. Follow each step of the work flow for inspection of the light source before use.



### *3.2 Inspection of the installation location*

Check if the endoscope position detecting unit (UPD-3) is installed in an appropriate location.

1. Confirm that no video monitor or PC monitor is near the endoscope position detecting unit. Keep a distance of at least 30 cm between the video monitor or the PC monitor and the endoscope position detecting unit.

[CAUTION]

If a video monitor or PC monitor is located near the endoscope position detecting unit, the scope model display may be distorted or deformed due to the strong magnetic fields produced by the monitor.

Keep the endoscope or the position detecting probe, the reference plate, and/or the hand coil connected with the main unit away from another main unit at least 2 m when two or more endoscope position detecting units are used. Otherwise, the scope model display may be extremely distorted or deformed due to the strong magnetic fields produced by one another. If the distance between the two endoscope position detecting units is less than 2 m, changing the frequencies used for position detection may allow the use of two or more endoscope position detecting units. When two or more endoscope position detecting units are used with a distance of less than 2 m, contact Olympus.

2. Confirm that no large metallic object is near the coil unit of the endoscope position detecting unit. Keep a distance of at least 30 cm between the large metallic object and the endoscope position detecting unit.

[CAUTION]

If a metallic object is located near the endoscope position detecting unit, the scope model display may also be distorted or deformed.

### *3.3 Turning power ON*

[WARNING]

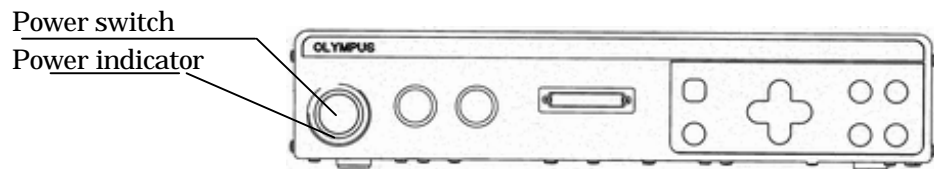
- Keep the endoscope or the position detecting probe, the reference plate, and/or the hand coil connected with the main unit away from another main unit at least 2 m when two or more endoscope position detecting units are used. Otherwise, the scope model display may be extremely distorted or deformed.
- When two or more endoscope position detecting units are used, do not turn the main units ON at the same time. Otherwise, the scope model display may be extremely distorted or deformed.

1. Confirm that the ventilation grills on the right side and left side panels of the endoscope or the endoscope position detecting unit are not covered with dust or other materials.
2. Confirm that the endoscope or the position detecting probe is connected to the main unit.

[NOTE]

For connecting the endoscope or the position detecting probe to the main unit, refer to Section 4.4, "Connection of the endoscope or the position detecting probe".

3. Press the power switch of the instrument. The power indicator lights up (see Figure).



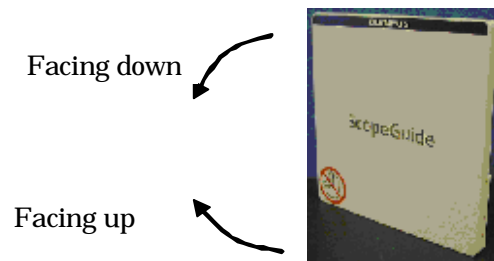
- If the power fails to come ON

If the power fails to come ON, turn the endoscope position detecting unit OFF. Then, confirm that the power cord is connected firmly. Then, turn the endoscope position detecting unit ON again. If the power still fails to come ON, contact Olympus.

### 3.4 Inspection of the screen display

1. Confirm that the LCD monitor shows the endoscope position display as shown in Figure. The screen display varies depending on the setup of the main unit or connection status of equipment. For details, see Section 2.12, "Screen display".

2. Change the shape of the endoscope's insertion tube or the position detecting probe's insertion tube into a circular or straight shape in front of the coil unit of the endoscope position detecting unit. Then confirm that the shape of the scope model is the same as the shape of the endoscope's insertion tube. Also, confirm that the angle of the viewpoint indicator is the same as the angle in which the scope model on the screen is viewed. Confirm that the shape of the scope model is the same as the shape of the endoscope's insertion tube even when the receiver dish is facing down or up.

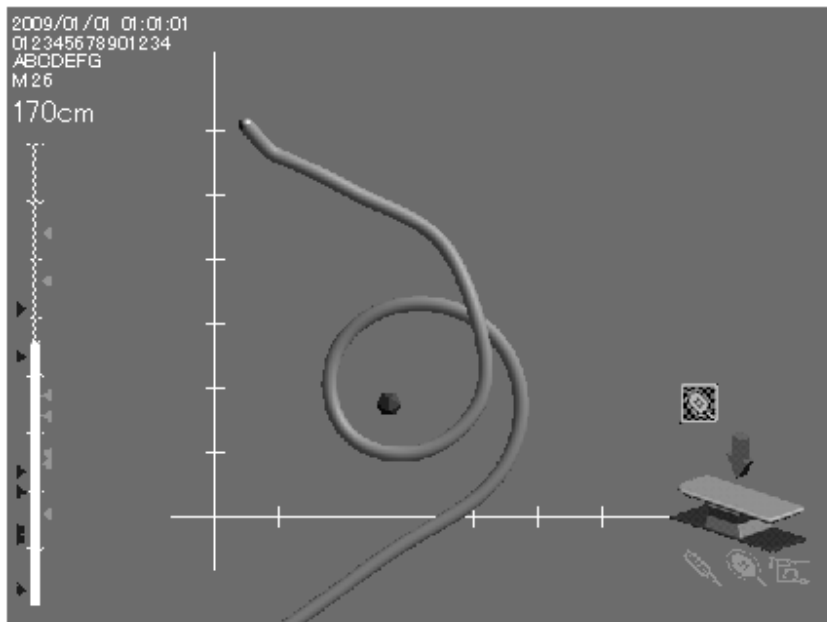


3. Confirm that the displayed date and time are correct. If correction is required, follow the procedure in "Setting the date and time"

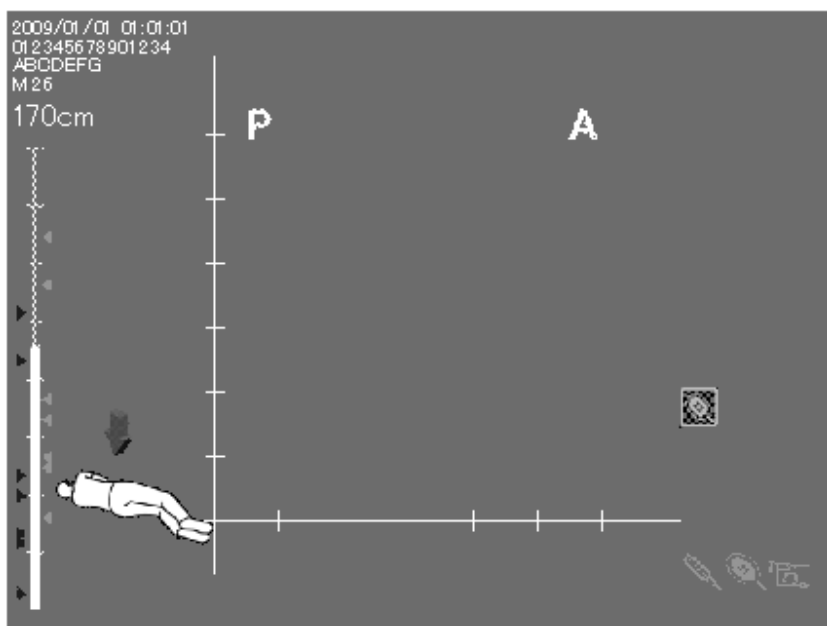
#### [CAUTION]

The posture of the figure image on the screen must always be set to be equal to the actual posture of the patient. If the posture of the figure image on the screen is not equal to the posture of the patient, the scope model display may be incorrectly orientated.

For the operating table image



For the figure image



### *3.5 Inspection of the hand coil (MAJ-1859)*

1. Confirm that there is no noticeable deformation, scratch, or crack on the marker section.
2. Confirm that there is no noticeable deformation, scratch, or crack on the hand coil cover (MAJ-1879).

### *3.6 Inspection of the reference plate (MAJ-1860)*

1. Confirm that there is no noticeable deformation, scratch, or crack on the plate section.
2. Confirm that there is no scratch, break, or fissure on the reference plate belt

### *3.7 Power OFF*

Press the power switch of the instrument (see Figure) to turn the instrument OFF. The indicator above the switch goes off.



## Chapter 4 Operation

This chapter explains the work flow of endoscopic observation using the endoscope position detecting unit. For information on how to use the functions that are not explained in this chapter, refer to chapter 5, “Functions”.

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

### [DANGER]

The endoscope position detecting unit is designed only to assist the insertion of an endoscope. Never insert the endoscope into the patient's body by observing only the endoscope position display of the endoscope position detecting unit. Be sure to observe the endoscopic image and insert the endoscope while confirming safety. If the endoscope is inserted without observing the endoscopic image, patient injury could result.

### [WARNING]

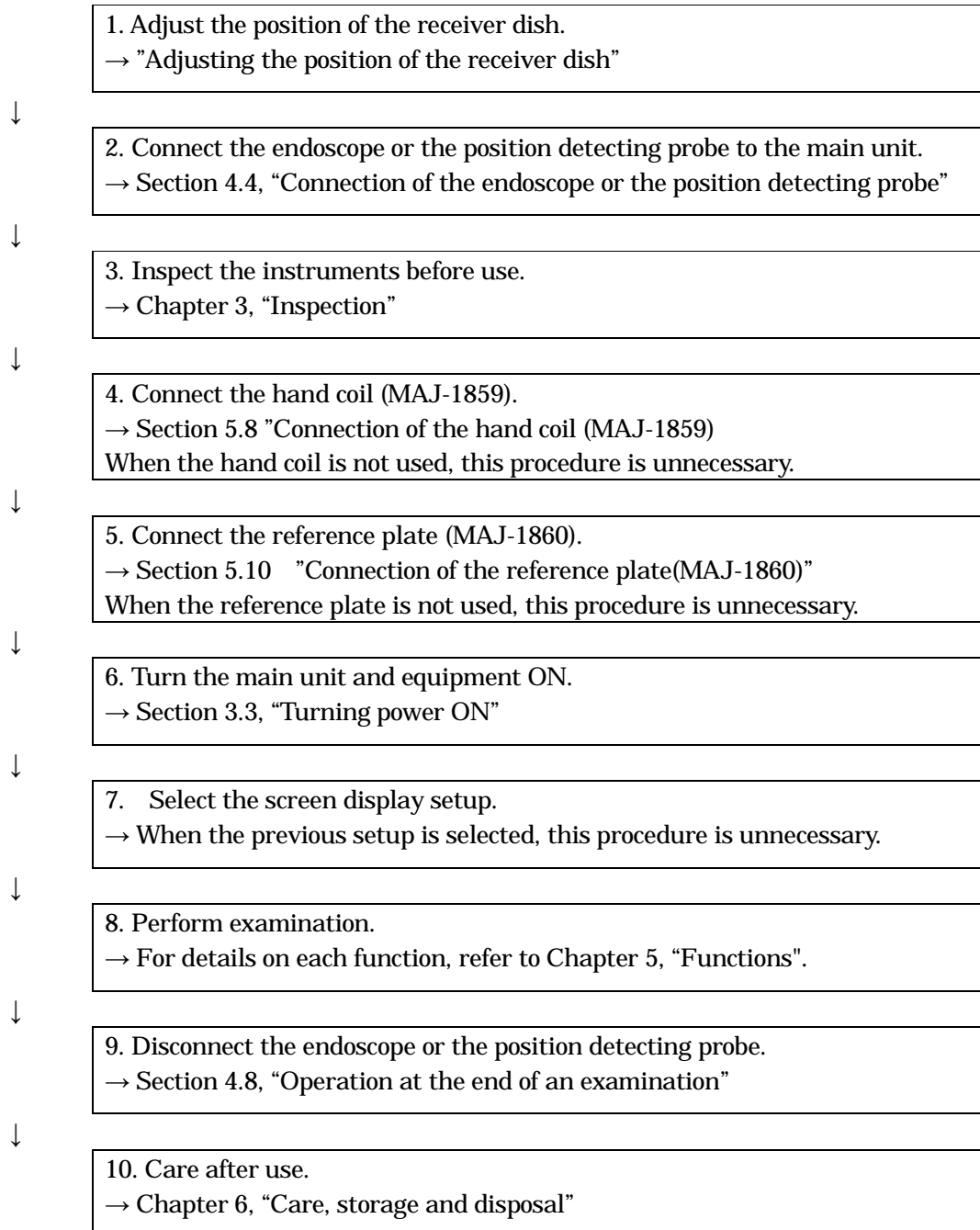
- Be sure to wear protective equipment such as eye wear, face mask, moisture-resistant clothing and chemical-resistant gloves that fit properly and are long enough so that your skin is not exposed. Otherwise, dangerous chemicals and/or potentially infectious material such as blood and/or mucus of the patient may cause an infection.
- Anytime you observe an irregularity in this endoscope position detecting unit, stop using it immediately, turn it OFF, and solve the problem according to Chapter 9, “Troubleshooting”. If the problems cannot be resolved by the described remedial action, do not use this endoscope position detecting unit again and immediately contact Olympus. Using a defective endoscope position detecting unit may cause patient injury.
- When the monitor display freezes, such as when the displayed time will not change or if the scope model will not move when the endoscope's insertion tube is moved, or when the switches on the control panel are not accepted, turn the endoscope position detecting unit OFF and ON again. If the problem still occurs, contact Olympus.
- When using spray-type medical agents such as lubricant, anesthetic, or alcohol, use them away from the endoscope position detecting unit so that the medical agents do not contact the endoscope position detecting unit. Medical agents might enter the endoscope position detecting unit through the ventilation grills and cause the failure.
- Do not use a humidifier near the endoscope position detecting unit as dew condensation possibly might occur and it may cause the failure.
- Use only Olympus high-frequency electrosurgical equipment with this unit. Non-Olympus equipment can cause interference on the monitor display or a loss of the scope model.

[CAUTION]

- Do not use this endoscope position detecting unit in locations exposed to strong electromagnetic radiation (e.g., in the vicinity of microwave therapeutic equipment, MRI, short-wave therapeutic equipment, radio equipment, or cellular/portable phone). Damage to the endoscope position detecting unit may result. Electromagnetic radiation can interfere with the monitor display.
- When the endoscope position detecting unit is used on a patient with an artificial material implant, the displayed scope model shape may differ from its actual shape.
- Do not approach the following equipment with a magnetic storage medium (magnetic card, floppy disk, etc.): the endoscope, the position detecting probe, the reference plate (MAJ-1859), or the hand coil (MAJ-1860) connected to the endoscope position detecting unit. Otherwise, the data stored on the magnetic storage medium may be destroyed or lost due to the AC magnetic fields generated by these devices.

## 4.1 Operation flow

Please see the operation work flow in Figure below. Follow each step of the work flow for using the endoscope position detecting unit.



## 4.2 Scope model display range

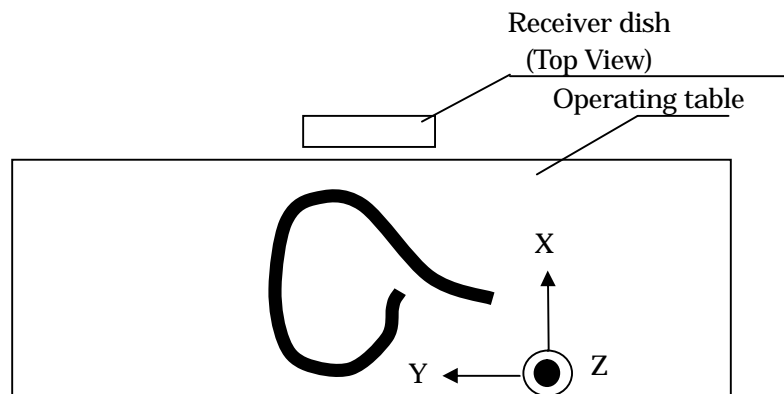
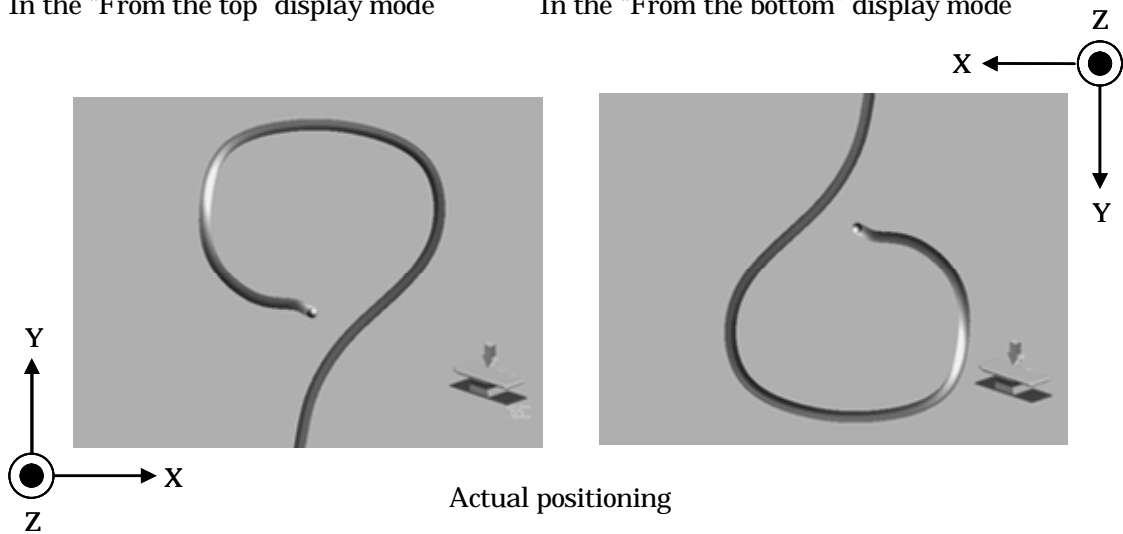
### Scope model and actual positioning

The relationship between the monitor screen display and the actual positioning of the endoscope position detecting unit (UPD-3) during the initial setup shown in Figure

Monitor screen

In the "From the top" display mode

In the "From the bottom" display mode



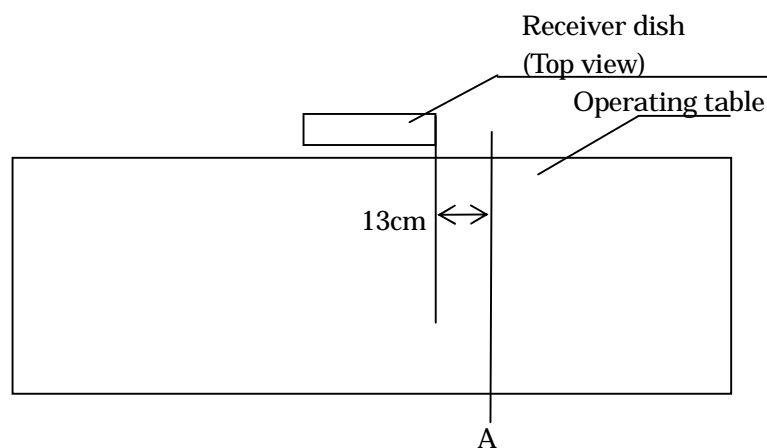
For the display modes, see "Setting the display mode"

### *The start position of scope model and actual positioning*

The position where the scope model display starts on the monitor screen is variable depending on whether the reference plate (MAJ-1860) is connected and/or the scope model display range is set.

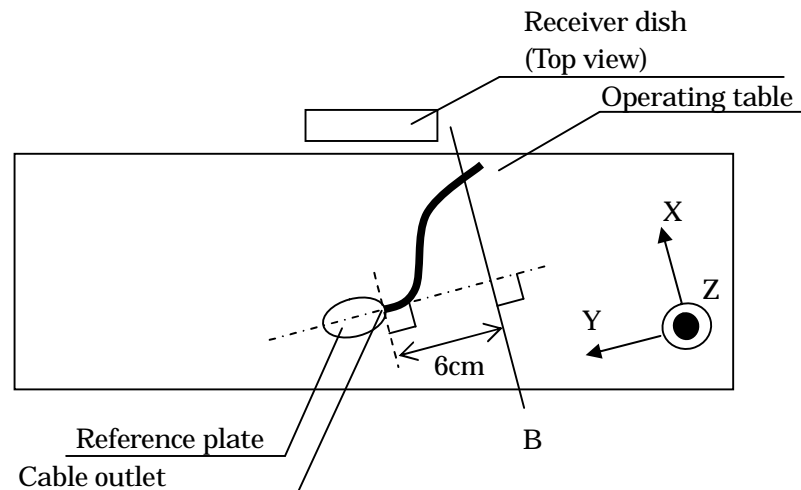
For setting the scope model display range, see Section 5.7, "Setting the scope model display range"

*oWhen the reference plate is not connected and the scope model display range is not set*



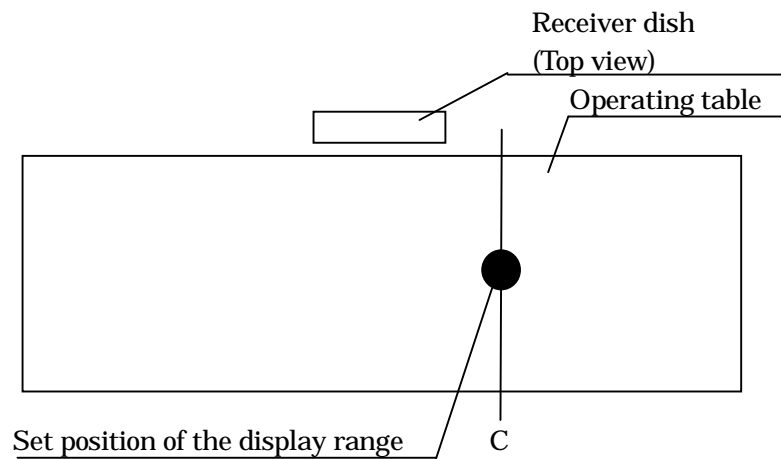
When the receiver dish is viewed from the front, the position A located at about 13 cm to the right from its right end (see Figure) corresponds to the start position of the scope model on the screen. However, the scope model will not be displayed when the distal end of the endoscope is located to the right of line A. The center of the bottom of the monitor display corresponds to the start position of the scope model.

○ *When the reference plate is connected and the scope model display range is not set*



When the endoscope position detecting unit is viewed from the front, the position B located at 6 cm toward the reference plate from its cable outlet (see Figure) corresponds to the start position of the scope model on the screen. The part of the endoscope located to the left of line B facing the endoscope position detecting unit will be displayed as the scope model. However, the scope model will not be displayed when the distal end of the endoscope is located to the right of line B. The center of the bottom of the monitor display corresponds to the start position of the scope model. The coordinate axis on the screen corresponds to the coordinate axis as shown in Figure.

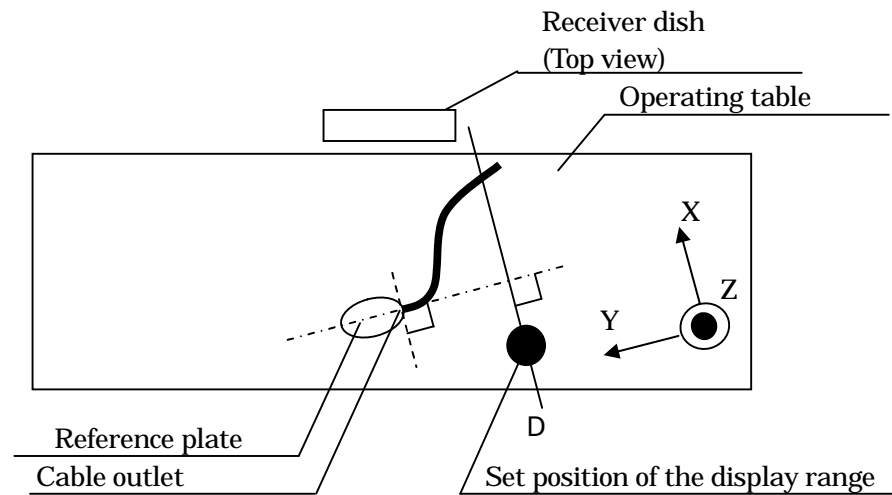
*oWhen the reference plate is not connected and the scope model display range is set*



When the display range is set, the set position C (see Figure) becomes the start position of the scope model, and the part of the endoscope located to the left of line C facing the endoscope position detecting unit will be displayed as the scope model. However, the scope model will not be displayed when the distal end of the endoscope is located to the right of line C. The center of the bottom of the monitor display corresponds to the start position of the scope model. If the display range is not set, the start position of the scope model becomes identical to “When the reference plate is not connected and the scope model display range is not set”

For setting the display range, refer to Section 5.7, “Setting the scope model display range”

○ *When the reference plate is connected and the scope model display range is set*



When the display range is set, the set position D (see Figure) becomes the start position of the scope model, and the part of the endoscope located to the left of line D facing the endoscope position detecting unit will be displayed as the scope model. However, the scope model will not be displayed when the distal end of the endoscope is located to the right of line D. The center of the bottom of the monitor display corresponds to the start position of the scope model. The coordinate axis on the screen corresponds to the coordinate axis as shown in Figure. If the display range is not set, the start position of the scope model becomes identical to “When the reference plate is connected and the scope model display range is not set”



### *4.3 Adjusting the position of the receiver dish*

[WARNING]

•When adjusting the height of the receiver dish, or when adjusting the height of the operating table if it is adjustable, be careful not to have your hand, foot, or the patient's body caught between the receiver dish and the operating table. Otherwise, operator and/or patient injury may result.

Be careful not to have your fingers caught between the arms when they are closed. Operator and patient injury may result.

Do not allow the patient to hold the receiver dish or receiver dish stand. Otherwise, the stand may be toppled, and patient injury may result.

[CAUTION]

Keep the receiver dish at the same height as the patient's body. If the distance between the patient's body and the receiver dish is too large, the scope model may be displayed incorrectly.

1. Adjust the position of the receiver dish.

## 4.4 Connection of the endoscope or the position detecting probe

Connect the endoscope to the endoscope position detecting unit (UPD-3) by using the UPD cable (MAJ-1881).

### [WARNING]

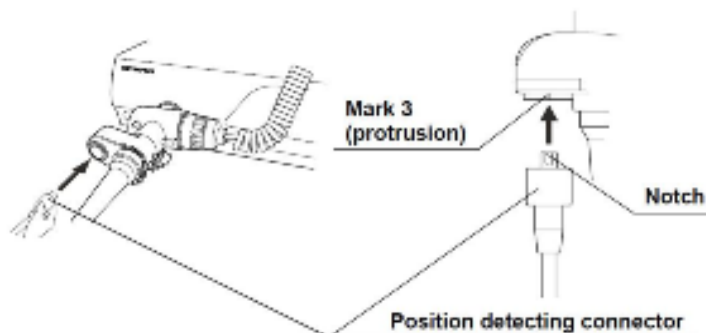
Do not place the UPD cable on the operating table. This could result in an infection when the patient contacts the UPD cable. Also, the scope model display may become distorted or deformed.

### [CAUTION]

- Always turn the endoscope position detecting unit OFF before connecting or disconnecting the UPD cable. Otherwise, equipment damage or malfunction may result.
- Do not apply excessive force to the UPD cable; it may cause equipment damage.
- Do not immerse the UPD cable in liquids or allow it to become wet; it may cause equipment damage or malfunction.
- Do not touch the electrical contacts inside the endoscope position detecting unit's connectors;

### ○Connecting the UPD cable to the endoscope

Align the notch on the endoscope plug of the UPD cable with mark 3 on the UPD scope connector of the endoscope and push the endoscope plug into the UPD scope connector until it stops (see Figure).

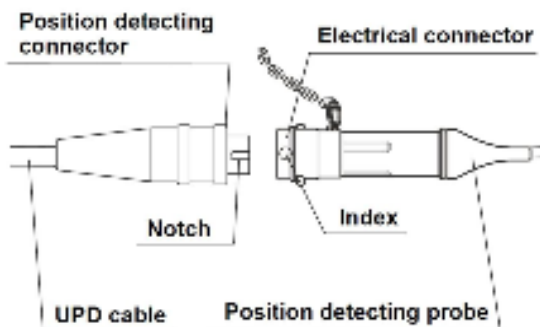


### [NOTE]

If force is used on the UPD cable, the endoscope is designed to detach at the endoscope plug, not at the endoscope connector.

### *oConnecting the UPD cable to the position detecting probe*

1. Holding the electrical connector of the position detecting probe and the connector of the UPD cable connected to the endoscope position detecting unit, align the index on the position detecting probe's electrical connector with the notch on the UPD cable's position detecting connector, and connect them (see Figure)..

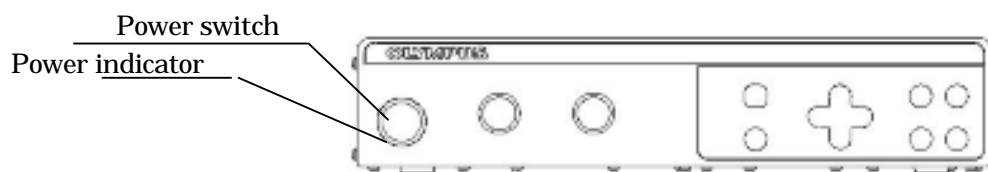


## *4.5 Turning power ON*

[WARNING]

When two or more endoscope position detecting units are used, do not turn the main units ON at the same time. Otherwise, the scope model.

Press the power switch to turn ON the endoscope position detecting unit, confirm that the power indicator on the main unit is lit (see Figure).



## *4.6 Starting the endoscopic examination*

1. Confirm the direction in which the endoscope is pointing by checking the viewpoint indicator arrow. When the viewpoint indicator arrow is selected not to be displayed, press the "Enter" button to display it.

[NOTE]

For setting the viewpoint indicator arrow, refer to “○Viewpoint indicator arrow”

2. Start the endoscopic examination as indicated in the instruction manual for the endoscope in use.

[NOTE]

For the start position of the scope model, refer to Section 4.2, “Scope model display range”

## 4.7 Displaying the scope model

The scope model is displayed as described below.

- Gray scale: The shape of the endoscope is represented as a gray cylinder. The areas near the viewpoint are displayed in bright gray and those apart from the viewpoint are displayed in dark gray.
- Distal end display: The section corresponding to the distal end of the endoscope is represented by a yellow sphere.

### • Colors

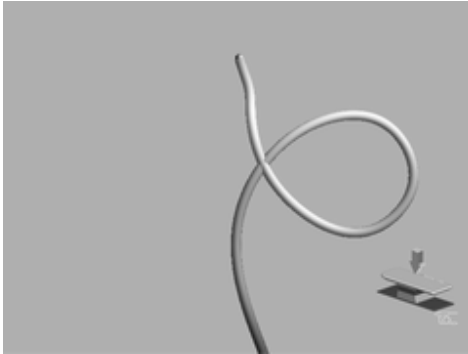
Color	Function
Gray	Stable section
Yellow	<ul style="list-style-type: none"> <li>• Parts of the endoscope that are located outside of the detection area.</li> <li>• Section where the shape of the scope model is not accurate.</li> <li>• Section where a stable shape of the scope model cannot be displayed.</li> </ul>
Red	Parts of the endoscope, parts of the position detecting probe, or the UPD cable (MAJ-1881) broke down.
Translucent	The area from the proximal end of the insertion tube to the start position of the scope model where the whole insertion tube of the endoscope is within the left side from the start position of the scope model.
Not displayed	<ul style="list-style-type: none"> <li>• Because the insertion tube of the endoscope is too close or too far from the coil unit, the coil unit is unable to detect the endoscope.</li> <li>• The distal end of the endoscope is outside the detection range.</li> </ul>

[NOTE]

- The areas displayed in yellow, red, and/or translucent should be regarded as incorrect because their accuracy is low.
- If the endoscope, the position detecting probe, or UPD cable (MAJ-1881) fails in the middle of the examination, the scope display area corresponding to the failed section is displayed in red. When the endoscope position detecting unit is turned OFF and then ON again, the error message will appear.

- Wavering: The scope model display may waver sometimes. This is not a malfunction.

- Fusion: When different sections of the insertion tube of the endoscope come close to each other, the overlapped areas in the scope model display may be shown as if they are fused (see Figure).



- Overlapping of intersected sections:  
When different sections of the insertion tube of the endoscope become close to each other, the intersected areas in the scope model display may be shown upside down or in an inaccurate shape.

[WARNING]

If the insertion tube of the endoscope forms a loop during an examination, and the overlapped areas in the scope model display may be shown as if they are fused, the intersected areas may be shown upside down or in an inaccurate shape. In such a case, dissolve the fusion in the display by moving the endoscope slightly while observing the scope model display to undo the loop of the insertion tube. It is also possible to correct the way the overlapped areas of the insertion tube are displayed and then undo the loop if the current status requires it. If you attempt to undo the loop of the insertion tube by observing the scope model display while the overlapped areas in it are shown as fused or in an inaccurate shape, patient injury could result.

#### Influence of electromagnetic radiation

This instrument which utilizes weak AC magnetic fields is subject to electromagnetic radiation (noise). To reduce the influence of electromagnetic radiation, this instrument performs the following:

- Selection of frequencies for use

This instrument automatically selects frequencies of AC magnetic fields for use. After measuring the noise levels at predetermined three frequencies, this instrument selects a frequency generating the lowest noise level at powering ON this instrument.

[NOTE]

Fixing the frequency to use is also possible. See Section 8.2 “System setup”.

○Selection of display speed

Under the environment with high level noise, the scope model will be displayed at lower speed so that this instrument can get enough signals. After measuring the noise levels, this instrument selects speed to display the scope model at powering ON.

[NOTE]

- If the scope model display wavers significantly or becomes unstable when operating the endoscope position detecting unit, the cause may be increased external noise. In that case, bring the receiver dish to the patient as close as possible. If no improvement is observed, turn the endoscope position detecting unit OFF and turn it ON again.

- Fixing the display speed is also possible. See Section 8.2 “System setup”.

## *4.8 Operation at the end of an examination*

1. Turn the endoscope position detecting unit and ancillary equipment OFF.
2. Disconnect the UPD cable (MAJ-1881) from the endoscope.
3. Disconnect the hand coil (MAJ-1859) and reference plate (MAJ-1860) from the endoscope position detecting unit.

[CAUTION]

Be sure to turn the endoscope position detecting unit OFF before connecting or disconnecting the UPD cable, reference plate, and hand coil to or from the endoscope position detecting unit. Otherwise, the endoscope, endoscope position detecting unit, reference plate, and/or hand coil may be damaged.

4. Remove the reference plate cover (MAJ-1880) from the reference plate.

## Chapter 5 Functions

This chapter describes functions of the buttons of main unit and usage of the hand coil and the reference plate. Before use, refer to the “Function setup” for functions that need to be set in “System setup” and “User preset”.

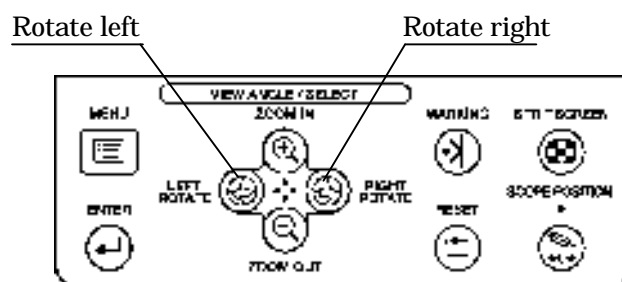
### 5.1 Rotating the scope model

The scope model can be rotated as required.

#### [WARNING]

Make sure to match the posture of the figure image with that of the patient. Improper operation due to a mismatch between the posture of the patient, the actual endoscope position in the patient cavity, and the position displayed on the UPD screen may result in patient injury and/or perforation.

Press the “Rotate left” or “Rotate right” button on the control panel (see Figure). The scope model will be rotated as shown in Figure.



#### [NOTE]

- After the settings are completed, the setup is held in memory even after the endoscope position detecting unit is turned OFF. The previous setup will be recalled the next time the unit is turned ON.
- The rotation angle of the scope model can be saved and recalled as described in “User preset”
- The viewpoint indicator arrow on the screen shows the direction in which the scope model is viewed. For showing the arrow, refer to “○Viewpoint indicator arrow”
- Pressing the reset switch recalls the rotation angle that has been saved in the previous “Saving and recalling the display setup” operation.
- By rotating the scope model, there may be space between the start position of the scope model and the bottom of the screen.

- By rotating the scope model, the scope model may be out of the screen. For redisplaying the scope model, press the reset switch.

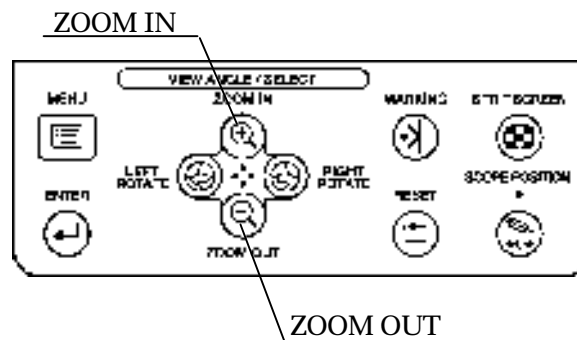
## 5.2 Varying the size of the scope model

The size of the scope model as well as the sizes of the marker and gauge can be varied as described below.

[NOTE]

- With the initial setup, the zooming ratio is set to the middle ratio.
- After this setup is completed, the settings are held in memory even after the endoscope position detecting unit is turned OFF. The previous setup will be recalled the next time the unit is turned ON.
- The zooming ratio of the scope model can be saved and recalled as described in Section 8.3 “User preset.”
- By zooming in the scope model, the scope model may be hidden from view. For redisplaying the scope model, press the reset switch.
- Pressing the reset switch recalls the zooming ratio that has been saved in the previous “ ” operation.

Press the “ZOOM IN” or “ZOOM OUT” button on the control panel (see Figure). The scope model will be zoomed in or out (i.e., magnified or reduced) as shown in Figure.





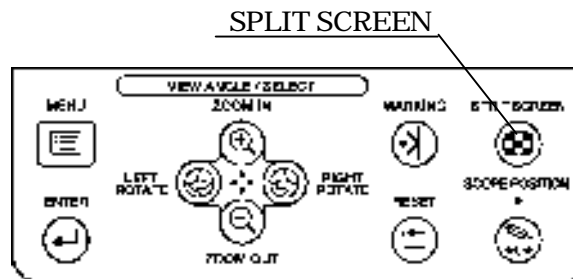
## 5.3 Splitting the screen

The scope model can be displayed on two screens by splitting the screen.

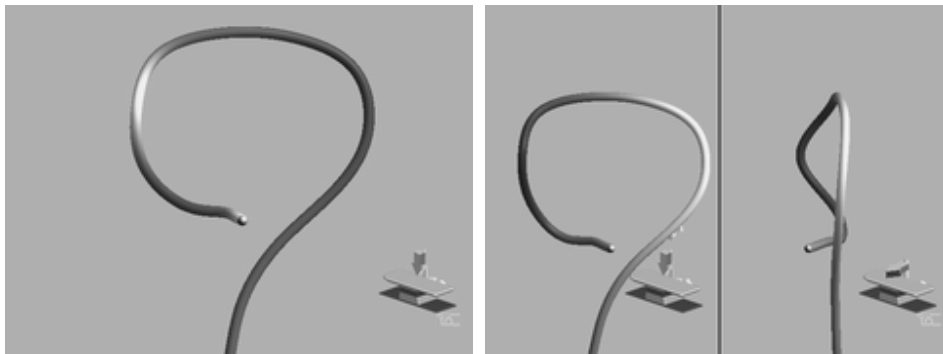
[NOTE]

After this setup is completed, the settings are held in memory even after the endoscope position detecting unit is turned OFF. The previous setup will be recalled the next time the unit is turned ON.

Each press of the split screen button on the control panel changes the split-screen display and single-screen display alternately (see Figure).



Splitting the screen for the operating table image



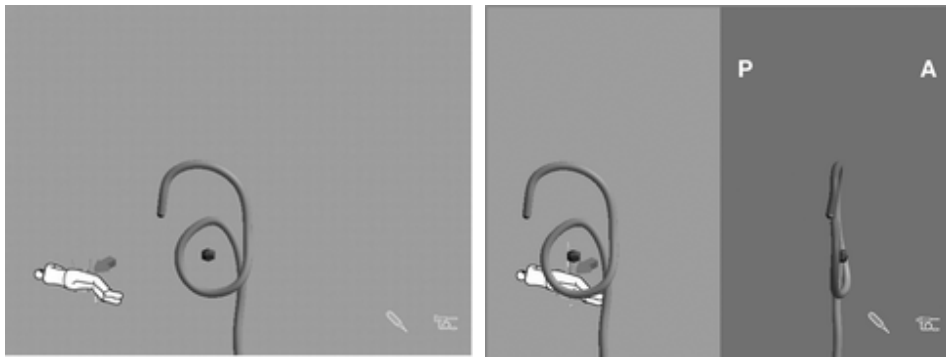
Single-screen display

Split-screen display

[NOTE]

- One screen shows the single screen display and the other shows the single screen view as well as the 90° rotated view in the split screen.
- The view angles in the right and left sides of the split screen are indicated by the viewpoint indicator of the operating table image in each screen.
- By pressing the split screen switch, the scope model is redisplayed so that the center of the top or bottom of the split screen corresponds with the start position of the scope model.

### Splitting the screen for the figure image



Single-screen display

Split-screen display

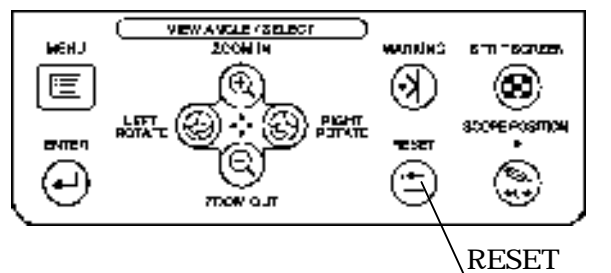
#### [NOTE]

- The screen with the view angle selected from the menu is displayed.
- The view angles on the right and left sides of the split screen are indicated by the A-P indicator and the figure image respectively.
- By pressing the split screen switch, the scope model is redisplayed so that the center of the top or bottom of the split screen corresponds

## 5.4 Resetting the setup

Pressing the reset switch resets the settings made in the previous “User preset” operation. When no operations are made in the Section 8.3 “User preset”, the factory default settings are recalled.

1. Press the reset button (see Figure).



2. The following settings are reset to the settings made in the previous “User preset” operation.

- Viewing image selection
- Figure image and view angle (for the figure image selection)
- View indicator arrow (for the figure image selection)
- A-P indicator selection (for the figure image selection)
- Display mode selection
- Scope model thickness setup
- Information display selection
- Rotation angle of scope model (for the operating table image selection) or posture of the figure image (for the figure image selection)
- Zooming ratio of scope model

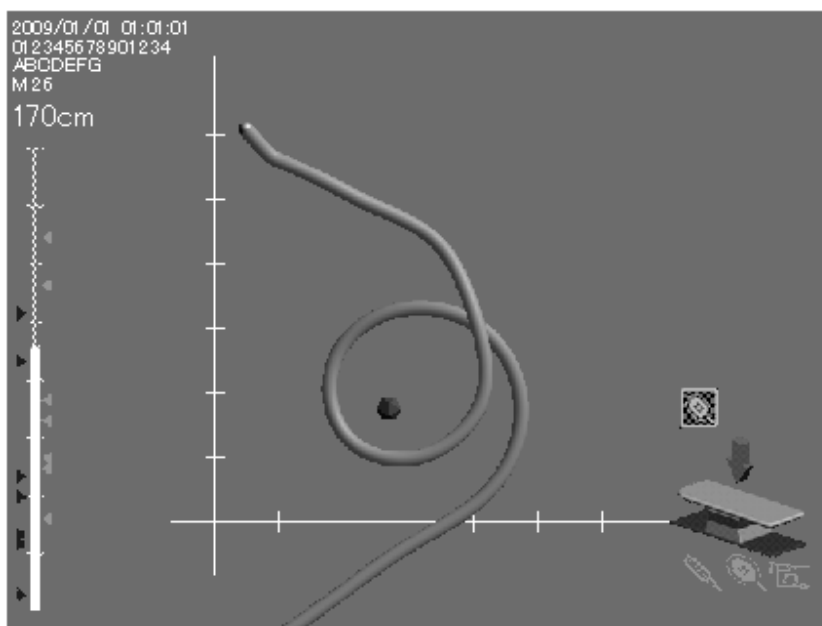
[NOTE]

- By pressing the reset switch, the scope model is redisplayed so that the center of the bottom of the screen corresponds with the start position of the scope model.

## 5.5 Connection indicators

When the endoscope or the position detecting probe, reference plate (MAJ-1860), and/or hand coil (MAJ-1859) are connected, the corresponding connection indicators are displayed. The color of each connection indicator varies depending on the connection and detection status.

The endoscope position display shows the scope connection indicator, probe connection indicator, plate connection indicator, and marker connection indicator in the colors listed in Table (see Figure).



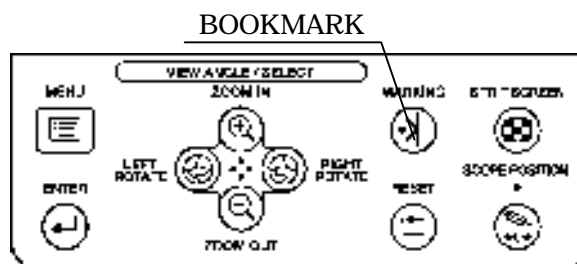
Item	Display	Description
Connection status color	Green	Normal
	Yellow	Out of detection area, no accuracy and/or unstable
	Red	Abnormal or failure

## 5.6 Bookmark

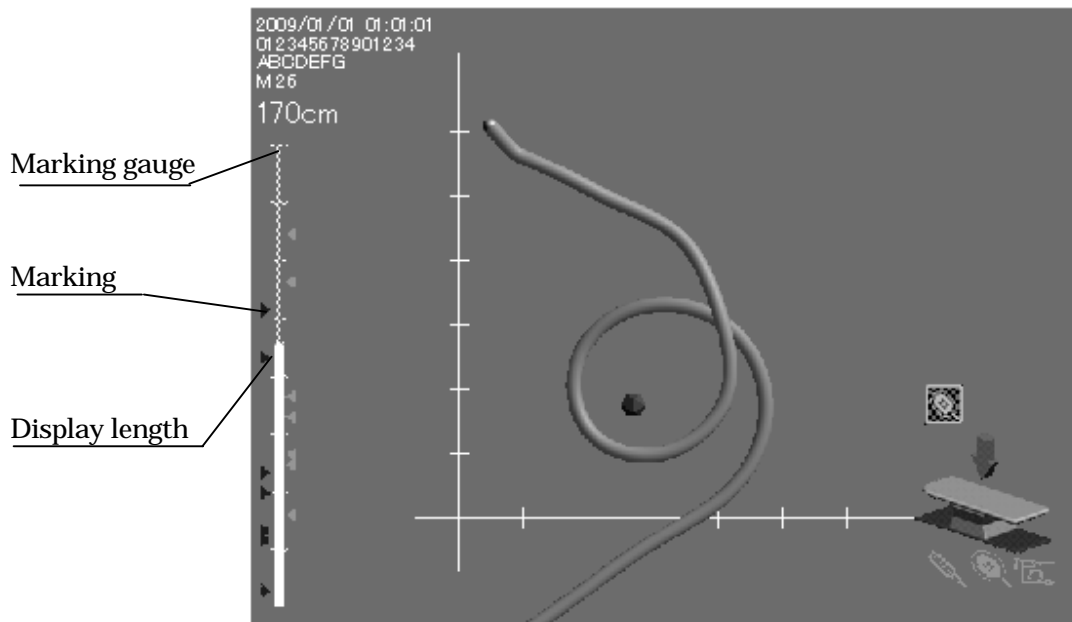
Markings are put beside the marking gauge according to the points where you want to mark.

### o Marking

1. Press the “BOOKMARK” button on the control panel when a desired marking point is found (see Figure).



2. A Marking is put beside the marking gauge according to the point where you want to mark (see Figure).



### o Deleting the markings

1. Press the “BOOKMARK” button on the control panel awhile (see Figure).
2. All markings are deleted.

[NOTE]

- The markings are shown based on the display length. They may not correspond to the position in the actual intestinal tract.
- Markings can be put every 1 cm.
- Close markings may be shown as one.
- The same position cannot be marked.
- Up to 50 markings can be put beside the marking gauge. The error message will be displayed when more than 50 markings are marked.
- All markings are deleted automatically under the following cases.
  - When the main unit is turned OFF.
  - When the UPD cable (MAJ-1881) is disconnected from the endoscope or the position detecting probe.

## *5.7 Setting the scope model display range*

When the scope model display range is set, the scope model display outside the range will be erased.

[NOTE]

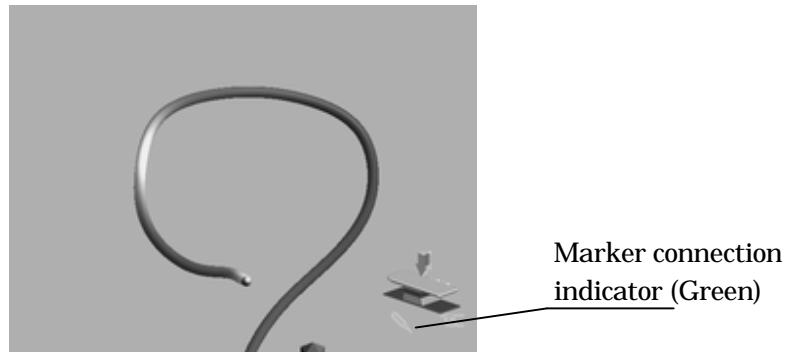
- After this setup is completed, the settings are held in memory even after the endoscope position detecting unit is turned OFF. The previous setup will be recalled if the hand coil is connected the next time the unit is turned ON.
- Even when the unit is turned OFF while the display range is set, the display range setup is canceled if the hand coil is not connected the next time the unit is turned ON.
- The scope model is redisplayed so that the center of the bottom of the screen corresponds with the start position of the scope model.
- When the tracking indicator disappears even if the reference plate is connected, the scope model display range cannot be set.
- The setup of the scope model display range is canceled by disconnecting the hand coil when the scope model display range is set.

### *o When using the hand coil (MAJ-1859)*

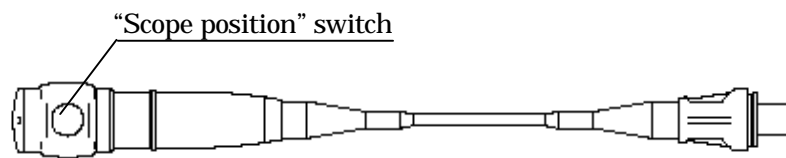
[NOTE]

- When the marker connection indicator is yellow, the scope position switch does not work. For connecting the hand coil, refer to “Connection of the hand coil (MAJ-1859) .

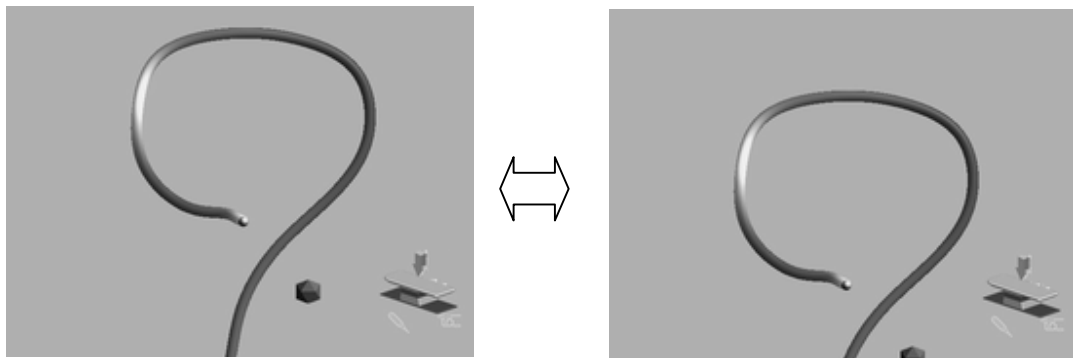
1. Confirm that the marker connection indicator is green, indicating that the hand coil is available (see Figure).



2. Place the hand coil to the position where you want to start the scope model, and then press the scope position switch on the hand coil (see Figure).



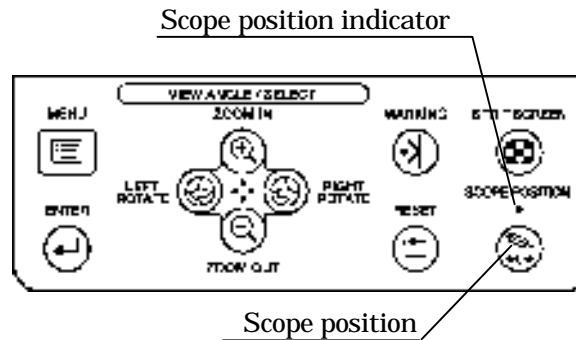
3. The scope model outside the start position is erased the start position is located at the edge of the screen, and the scope position indicator lights up.



4. Press the scope position switch again or press the scope position button on the control panel to cancel the setup of the start position of the scope model. The scope position indicator will be turned off.

*o When using the endoscope or the position detecting probe*

1. Place the distal end of the endoscope or the position detecting probe to the position where you want to start displaying the scope model, and then press the "SCOPE POSITION" button on the control panel (see Figure).



2. The scope model outside the start position is erased, the start position is located at the edge of the screen, and the scope position indicator lights up.
3. Press the scope position button again to cancel the setup of the start position of the scope model. The scope position indicator will be turned off.

[NOTE]

For the start position of the scope model, refer to Section 4.2, "Scope model display range".

## 5.8 Connection of the hand coil (MAJ-1859)

Connect the hand coil when it will be used.

[WARNING]

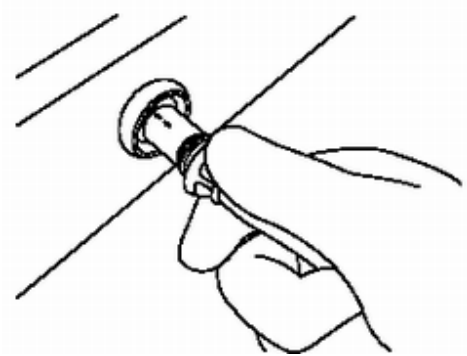
- Avoid bringing the hand coil or hand coil cover in contact with the skin of the operator and/or patient. Otherwise, infection of the patient and/or operator may result.

[CAUTION]

- Connect the hand coil to either the main unit or the connection unit (MAJ-Y0093). Otherwise, it does not operate.

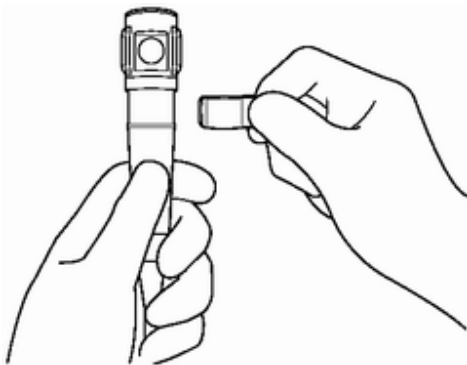
1. Contact the hand coil with its arrow mark on the plug facing upwards with the hand coil terminal on the main unit (see Figure).



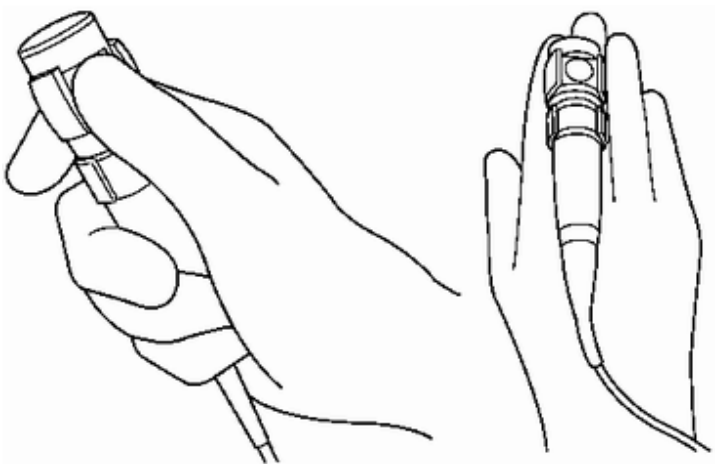


2. Hold the plug and insert it straight to the hand coil terminal until it clicks

3. Fit the hand coil cover around the hand coil (see Figure).



4. When the hand coil becomes necessary during examination, the operator should hold it in his or her hand (see Figure).

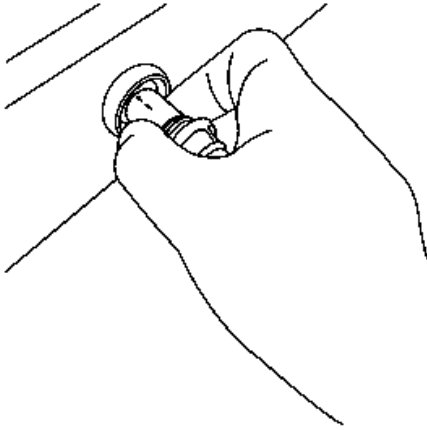


[NOTE]

For details on the hand coil function, refer to Section 4.2 “Scope model display range” and

“Setting the scope model display range”.

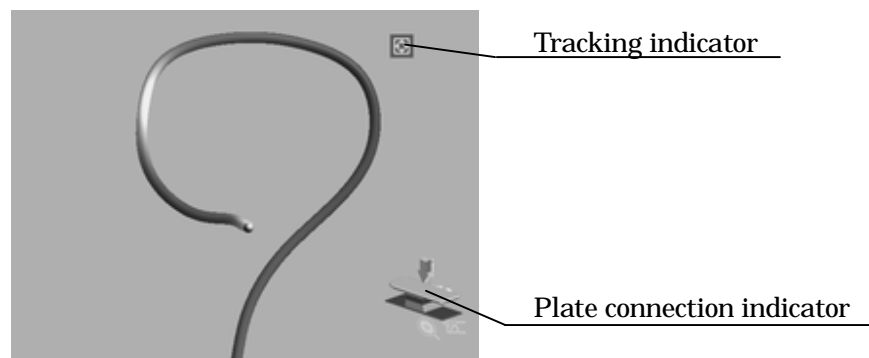
5. To disconnect the hand coil, hold the connecting section of the connector and pull it straight out (see Figure).



## 5.9 View tracking

When the reference plate (MAJ-1860) is used, the rotation of the scope model is controlled by the reference plate. When the reference plate is attached to the patient's body, any rotation of the patient will accordingly cause a rotation of the scope model (view tracking).

Confirm that the reference plate connection indicator is green. In this condition, the scope model display changes to the tracking display and the tracking.



[NOTE]

- When the tracking indicator disappears while attaching the reference plate to the patient, the scope model cannot be tracked. In this case, move the patient near the coil unit to display the tracking indicator.
- For usage of the reference plate, refer to “Connection of the reference plate (MAJ-1860)

and “Attaching the reference plate (MAJ-1860) to the patient’s body”.

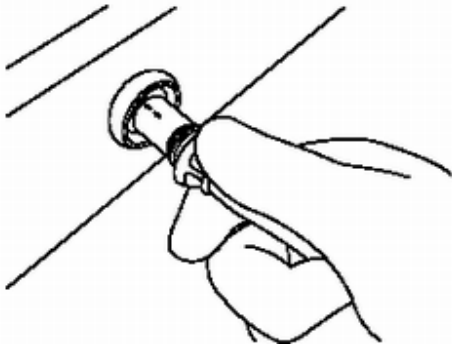
### *5.10 Connection of the reference plate (MAJ-1860)*

Connect the reference plate when the tracking function is required (see Section 5.9, “View tracking”). Disconnect the reference plate when the tracking function is not required.

[CAUTION]

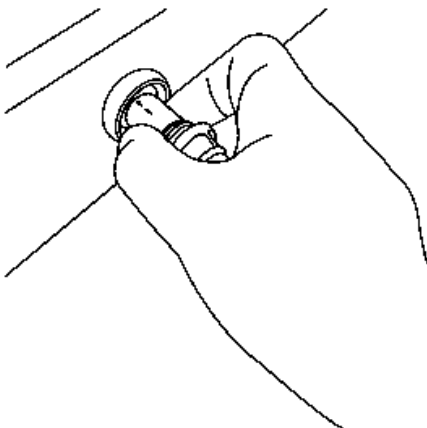
• Connect the reference plate to either the main unit or the connection unit (MAJ-1928). Otherwise, it does not operate.

1. Insert the reference plate with its arrow on the connector facing upwards to the reference plate connector on the main unit (see Figure).



2. Hold the connector and insert it straight to the reference plate connector until it clicks.

3. To disconnect the reference plate, hold the connecting section of the connector and pull it straight out (see Figure).



## *5.11 Attaching the reference plate (MAJ-1860) to the patient's body*

### [WARNING]

- Avoid bringing the reference plate, reference plate cover, and reference plate belt (MAJ-1029) in contact with the skin of the operator and/or patient. Otherwise, an infection may result.

### [CAUTION]

- Attach the reference plate parallel to the back of the patient and fit the central axis of the reference plate to the patient's central axis. Otherwise, the scope model may disappear during the examination, may not be displayed, or may be incorrectly displayed.
- Attach the reference plate properly to the patient's body. Otherwise, the scope model will not be displayed correctly.
  - If the reference plate is attached in a manner that the slit contacts the patient's abdomen, the scope model display will reverse the left and right.
  - If the reference plate is attached so that the cable comes on the side of the patient's feet, the scope model display may be shown upside down, or may not be shown at all.

### [NOTE]

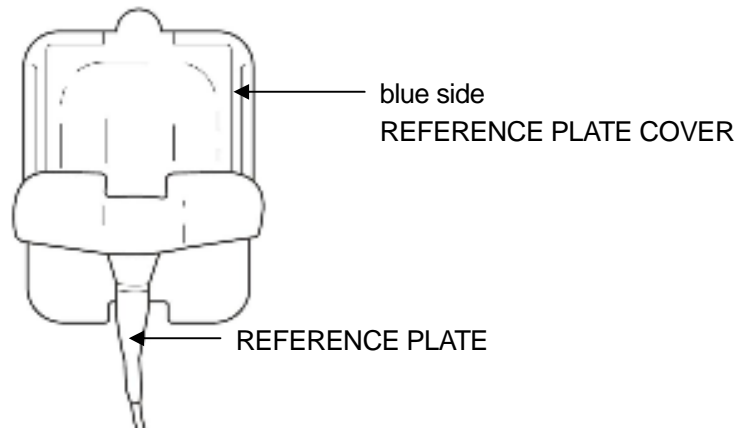
For details on the reference plate function, refer to the "View tracking".

## *○ When the reference plate cover (MAJ-1880) is used*

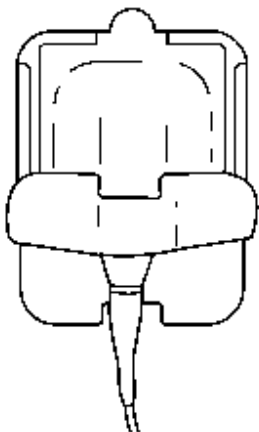
### [CAUTION]

- Patients with allergies may experience reddening or irritation of the skin caused by the adhesive on the antenna lead covers.
- Use a reference plate cover before expiration date. Otherwise, the reference plate may not be securely adhered to the patient's body. The expiration date of the reference plate cover is shown on the package.

1. Insert the reference plate into the reference plate cover so that the human-shaped index marking on the reference plate is on the same side as the blue surface of the reference plate cover (see Figure).



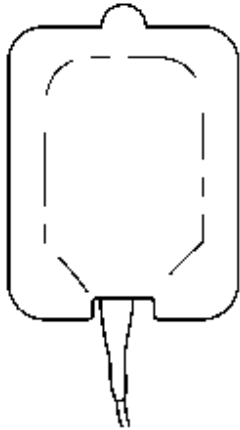
2. Peel off the lining paper from the inside of the reference plate cover (on the blue side), and adhere the reference plate securely to the reference plate cover (see Figure).



3. Dry the patient's body by wiping with a dry piece of gauze. If there is too much hair in a particular location to securely adhere the reference plate cover, shave as necessary.

4. Place the contact surface of the reference plate on the patient's abdomen so that the cable comes on the side of the patient's legs.

5. Remove the lining paper on the back of the reference plate cover by peeling from the point indicated by the arrow (see Figure), and then press down firmly on the reference plate to attach it to the patient.

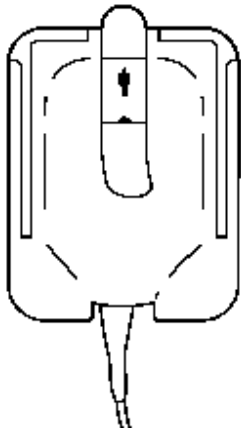


[CAUTION]

The reference plate cover used before has lost its adhesiveness. When reattaching the reference plate, replace the cover with a new one.

*oRemoving the reference plate cover from the reference plate*

1. Remove the reference plate from the reference plate covers. The reference plate cover can be easily removed by holding the tab and tearing the center section



2. Carefully remove the reference plate cover from the patient.

[CAUTION]

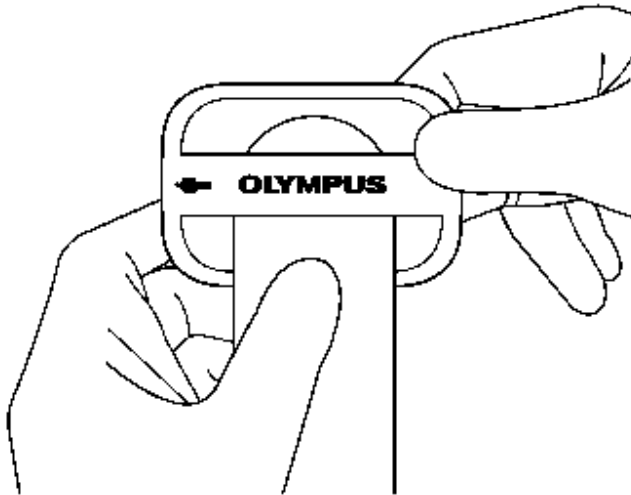
Do not fold or crease the reference plate when removing it from the reference plate cover. Otherwise, the reference plate may be damaged.

[NOTE]

The reference plate covers are single-use only.

*o When the reference plate cover (MAJ-1880) is not used*

1. Pass the reference plate belt through the slit (see Figure).



2. Place the contact surface of the reference plate on the patient's abdomen and align the orientation of the patient's body with that of the human-shaped index marking of the reference plate so that the cable comes on the side of the patient's foot.
3. Wrap the reference plate belt around the patient's body and fasten the reference plate using the surface fastener on the reference plate belt.

[CAUTION]

- Do not tighten the reference plate belt too much. Excessive tightening can cause patient pain.
- Attach the reference plate belt firmly around the patient's body so that the reference plate will not move. Otherwise, the scope model display will be unstable.

## *5.12 Operation using the remote control*

The remote control (MAJ-1890) can operate the same function as the control panel does.

[CAUTION]

- Do not use a pointed or hard object to press the keys on the remote control. This may damage the keys.
- Properly install the remote control. If it is not properly installed, the remote control may be damaged. Install the remote control on a stable, level surface so that the cable between the endoscope position detecting unit and remote control is not stretched.
- When operating the remote control, hold the control not the cable. Otherwise, the cable may break.
- Do not fix the cable using surgical clamps, such as Pean, because the cable may break.

For displaying the scope model, refer to the “Setting the scope model display range”.

[NOTE]

For connecting the remote control, refer to Section 7.7, “Remote control.”.



## *Chapter 6 Care, Storage, and Disposal*

### *6.1 Care*

If the endoscope position detecting unit and accessories are soiled, perform the following cleaning procedure immediately after use. If cleaning is delayed, residual organic debris will begin to solidify, and it may be difficult to effectively clean the endoscope position detecting unit. The endoscope position detecting unit should also be cleaned routinely.

[WARNING]

After cleaning the main unit and accessories, dry them thoroughly before use. If they are used while still wet, there is the risk of electric shock.

[CAUTION]

- Do not clean the output connector, the terminals, or the AC power mains inlet. Cleaning them can deform or corrode the contacts, which could damage the endoscope position detecting unit.
- Do not autoclave or gas sterilize the endoscope position detecting unit. These methods will damage it.
- The UPD cable is not waterproof and should not be cleaned together with the endoscope. Otherwise, the equipment will malfunction.
- Do not wipe the external surface with hard or abrasive material. The surface will be scratched.
- Alcohol is flammable. Handle with care.

*oCompatible reprocessing methods and chemical agents*

*Compatibility summary*

The instruments shown below are compatible with several methods of reprocessing. For appropriate reprocessing methods, refer to Table below, the recommendations of your infection control committee, and all national and local hospital guidelines and policies.

	70% ethyl or isopropyl alcohol	
	Detergent solution	
Hand coil (MAJ-1859) Hand coil cover (MAJ-1879) Reference plate (MAJ-1860)		



compatible



not compatible

[WARNING]

Alcohol is not a sterilant or high-level disinfectant.

*oDetergent solution*

Use a medical-grade, low-foaming, neutral pH detergent, or enzymatic detergent and follow the manufacturer’s dilution and temperature recommendations. Contact Olympus for the names of specific brands that have been tested for compatibility with these instruments. Do not reuse detergent solutions.

[WARNING]

Excessive detergent foaming can prevent fluid from adequately contacting components.

*oCare of the hand coil (MAJ-1859), hand coil cover (MAJ-1879), and reference plate (MAJ-1860)*

1. Turn the endoscope position detecting unit OFF and disconnect the power cord.
2. To remove dust and dirt on the respective accessories, wipe them using a lint-free cloth moistened with neutral detergent.
3. If the accessories are soiled with patient blood or debris, wipe off all gross debris using neutral detergent and then decontaminate their surfaces using a lint-free cloth moistened

with 70% ethyl or isopropyl alcohol or follow the instructions described in Section 6.2 “Cleaning procedures for accessories.

4. Make sure that the accessories are completely dry after wiping.

*○Care of the main unit and accessories other than the hand coil (MAJ-1859), hand coil cover (MAJ-1879), and reference plate (MAJ-1860)*

1. Turn the endoscope position detecting unit OFF and disconnect the power cord.
2. To remove dust and dirt on the main unit and accessories, wipe them using a lint-free cloth moistened with neutral detergent.
3. If the accessories are soiled with patient blood or debris, wipe off all gross debris using neutral detergent and then decontaminate their surfaces using a lint-free cloth moistened with 70% ethyl or isopropyl alcohol.
4. Make sure that the accessories are completely dry after wiping.

## *6.2 Cleaning procedures for accessories*

This section includes the cleaning procedures for the accessories and reprocessing equipment listed below.

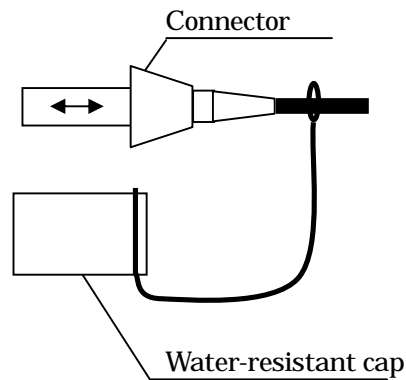
- Hand coil (MAJ-1859)
- Hand coil cover (MAJ-1879)
- Reference plate (MAJ-1860)

*○Attaching the water-resistant cap (MAJ-1899)*

[CAUTION]

- The electrical connector of the hand coil or reference plate is not waterproof. Before immersing the endoscope, always attach the water-resistant cap. Otherwise, equipment damage may result.
- Always use a dry water-resistant cap. Any water remaining on the water-resistant cap may cause damage to the equipment.

1. Confirm that the inside of the water-resistant cap is dry and free from debris. If the inside of the water-resistant cap is wet or there is debris present, wipe with a dry, lint-free clean cloth.



2. Put the water-resistant cap on the connector and turn it clockwise to close.

### *oManual cleaning*

#### [CAUTION]

Make sure that the items immersed in detergent solution do not contact one another.

1. Fill a basin with detergent solution at the temperature and concentration recommended by the detergent manufacturer. Use a basin that is deep enough to allow all equipment to be completely immersed.
2. Immerse all equipment in the detergent solution. Using a clean, soft brush or lint-free cloth, meticulously clean all external surfaces in detergent solution.
3. Soak all equipment for the amount of time and at the temperature recommended by the detergent manufacturer.
4. Remove all equipment from the detergent solution and place it in clean water.
5. Remove all equipment from the clean water.
6. Using a clean, lint-free cloth, thoroughly wipe and dry the external surfaces of all equipment.
7. Thoroughly wipe all external surfaces using a lint-free cloth moistened with 70% ethyl or isopropyl alcohol.
8. Make sure that the accessories are completely dry after wiping.

## *6.3 Storage*

[CAUTION]

Do not store the endoscope position detecting unit in locations exposed to direct sunlight, X-rays, radioactivity, or strong electromagnetic radiation (e.g., in the vicinity of microwave therapeutic equipment, MRI, short-wave therapeutic equipment, radio equipment, or cellular/portable phone).

Damage to the endoscope position detecting unit may result.

1. Turn the endoscope position detecting unit OFF and disconnect the power cord.
2. Disconnect all ancillary equipment connected to the endoscope position detecting unit.
3. Store the equipment at room temperature in the horizontal position in a clean, dry, and stable location.

## *Chapter 7 Installation and Connection*

### [WARNING]

- Review this chapter thoroughly, and prepare the instruments properly before use. If the equipment is not properly prepared before each use, equipment damage, patient and operator injury and/or fire can occur.
- When non-medical electrical ancillary equipment is used, connect its power cord via an isolation transformer prior to connecting it to this endoscope position detecting unit.

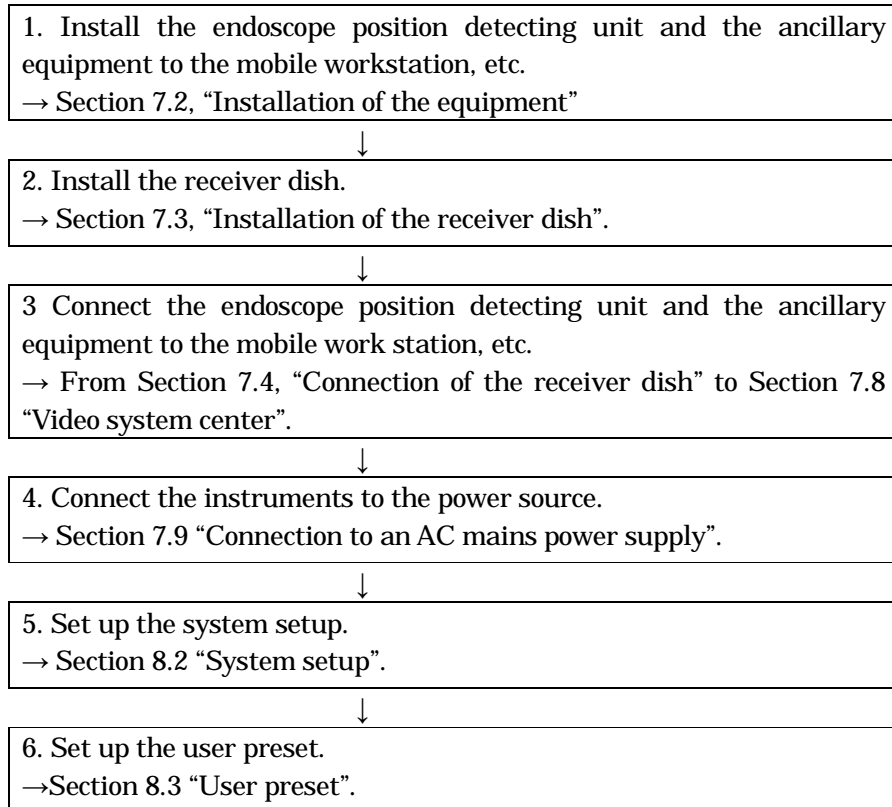
### [CAUTION]

- Turn OFF all instruments before connecting them. Otherwise, equipment damage or malfunction may result.
- Use appropriate cables only. Otherwise, equipment damage or malfunction can result.
- Properly and securely connect all cables. Otherwise, equipment damage or malfunction can result.
- The cables should not be sharply bent, pulled, twisted or crushed. Cable damage can result.
- Never apply excessive force to connectors. This could damage the connectors.
- Use this instrument only under the conditions described in “Transportation, storage, and operation environment” and “Specifications” in the Appendix. Otherwise, improper performance, compromised safety and/or equipment damage may result.
- When moving the receiver dish stand from one location to another, firmly hold the handle with one hand and the pole with the other. Otherwise, the stand may topple, which may result in operator injury or damage of the endoscope position detecting unit.

Prepare this endoscope position detecting unit and compatible equipment (shown in the “System chart” in the Appendix) before each use. Referring to the instruction manuals of each system component, install and connect the equipment according to the procedure described in this chapter.

## 7.1 Installation work flow

Please see the installation work flow in Figure below. Follow each step of the work flow before using the endoscope position detecting unit and the ancillary equipment.



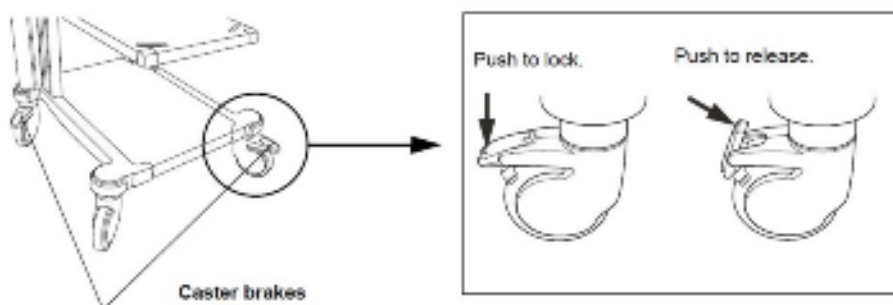
## 7.2 Installation of the equipment

### [WARNING]

- Keep the ventilation grills of the endoscope position detecting unit clear. The ventilation grills are located on the side panels. Blockage can cause overheating and equipment damage.
  - Clean and vacuum dust the ventilation grills using a vacuum cleaner. Otherwise, the endoscope position detecting unit may break down from over heating.
  - Place the endoscope position detecting unit on a stable, level surface. Otherwise, the endoscope position detecting unit may topple down or drop, and user or patient injury may occur, or equipment damage can result.
  - If a trolley other than the mobile workstation (WM-NP1 or WM-WP1) is used, confirm that the trolley can withstand the weight of the equipment installed on it.
  - Do not install the endoscope position detecting unit near a source of strong magnetic wave (microwave treatment device, short wave treatment device, MRI, radio equipment, etc.). Otherwise, the endoscope position detecting unit may malfunction.
- 
- Do not fix the cable using surgical clamps, such as Pean, because the cable may break.
  - Do not allow the cables to catch operator's legs. Otherwise, the operator and equipment may be toppled.
  - Connect the cables securely and lock the connectors if they have locks. Otherwise, the equipment may not operate correctly.

### ○ Installation on the mobile workstation (WM-NP1, WM-WP1)

1. Place the mobile workstation on a level and flat floor. Lock the caster brakes by pushing them down (see Figure).



2. Install the mobile shelf of the mobile workstation according to the configuration of the equipment installed on it as described in the mobile workstation's instruction manual.
3. Place the endoscope position detecting unit on the mobile shelf of the mobile workstation.



○ *Installation in another location*

When the equipment is installed in the location other than in the mobile workstation, put it in the level position.

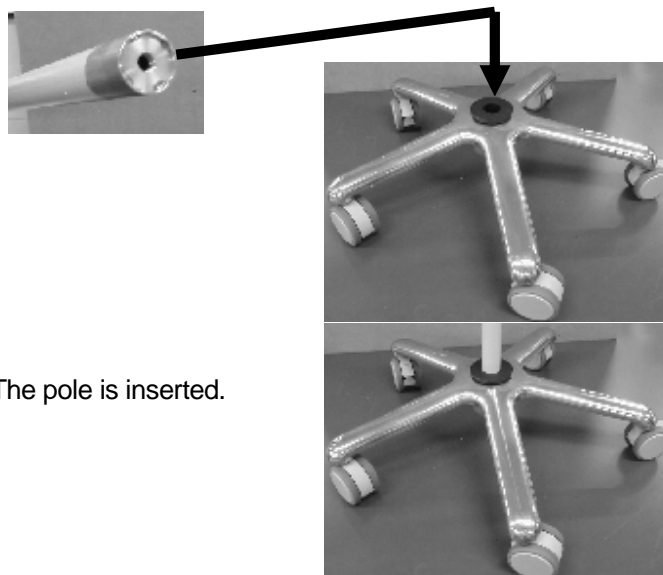
### *7.3 Installation of the receiver dish*

○ How to assemble the receiver dish stand

[CAUTION]

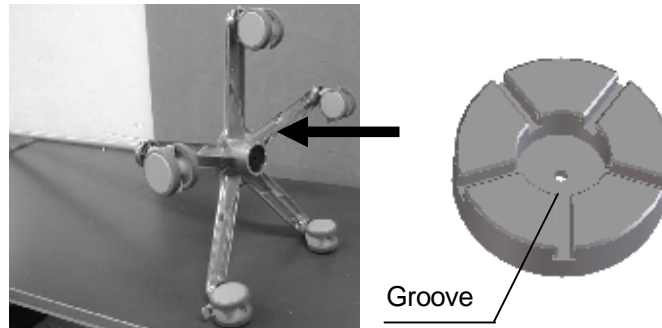
- The weight is very heavy. Be careful not to drop it while assembling the stand. Otherwise, user injury may result.
- Assemble the receiver dish stand on a level and flat floor. Otherwise, the receiver dish stand may topple, which may result in user injury or damage of the stand.

1. Insert the end of the pole with a screw hole into the hole of the base (see Figure).



The pole is inserted.

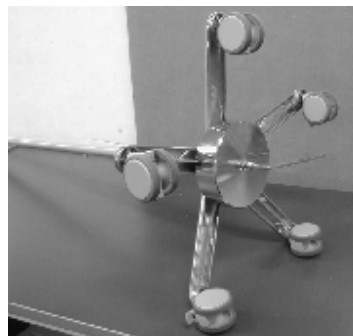
2. Lay down the assembled pole and the base gently on the floor. Attach the weight to the base so that the grooves of the weight fit the base (see Figure)



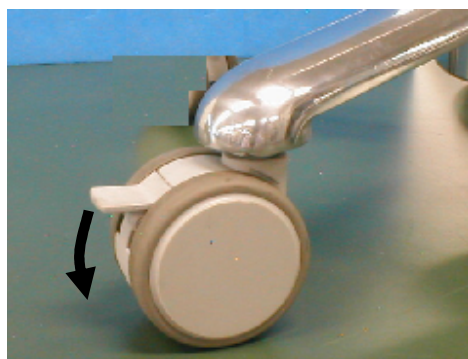
[CAUTION]

- Be sure to attach the weight to the base. Otherwise, the stand may topple.

3. Tighten the weight, the base, and the pole together with an M8 x 50 screw. The screw must be tightened firmly so that the pole and the base do not wobble (see Figure).



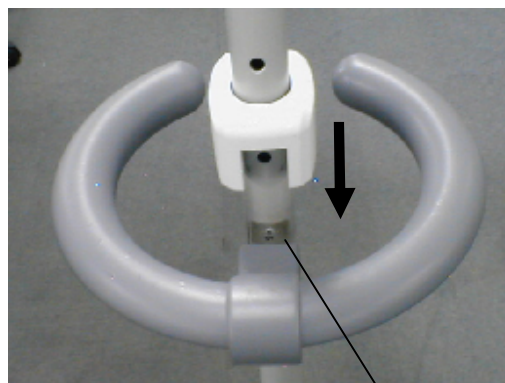
4. Lift up the pole and the base and lock the casters. Two casters have locking mechanism (see Figure).



5. Attach the handle to the pole with an M5×40 screw. There are two holes on the pole. Use the hole on the side where the protrusions for the cable pocket are located (see Figure).



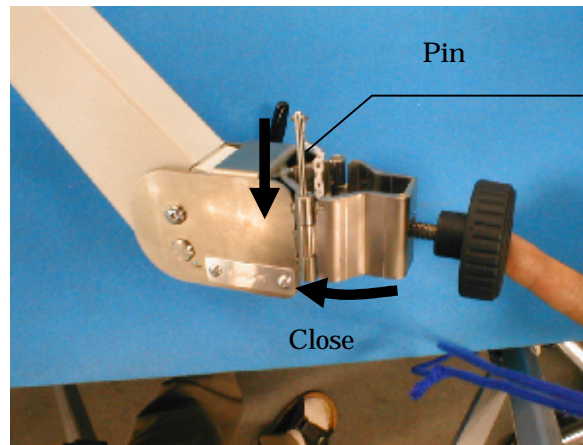
6. Put the handle cover on the top end of the pole and slide it down to the handle so as to cover the mounting part of the handle to the pole (see Figure).



Mounting part of the handle to the pole

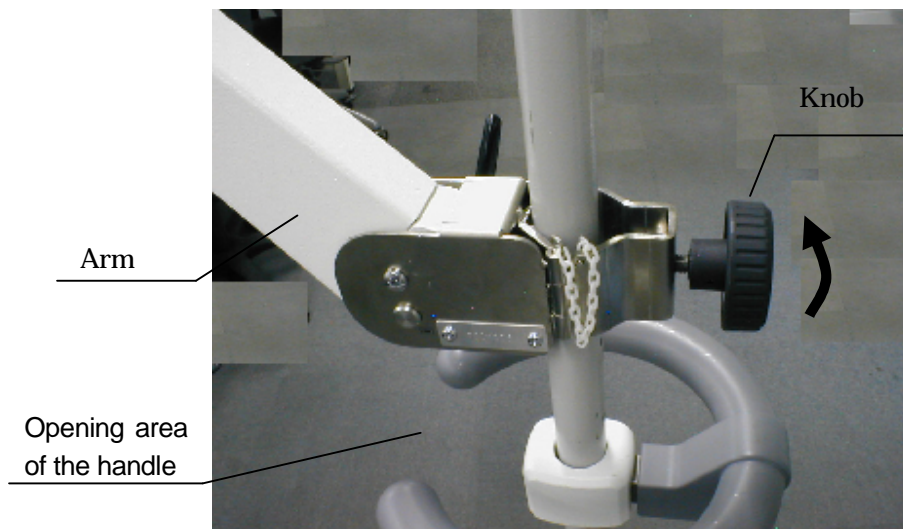


7. Close the hinge of the arm and insert a pin into a hole of the hinge (see Figure).

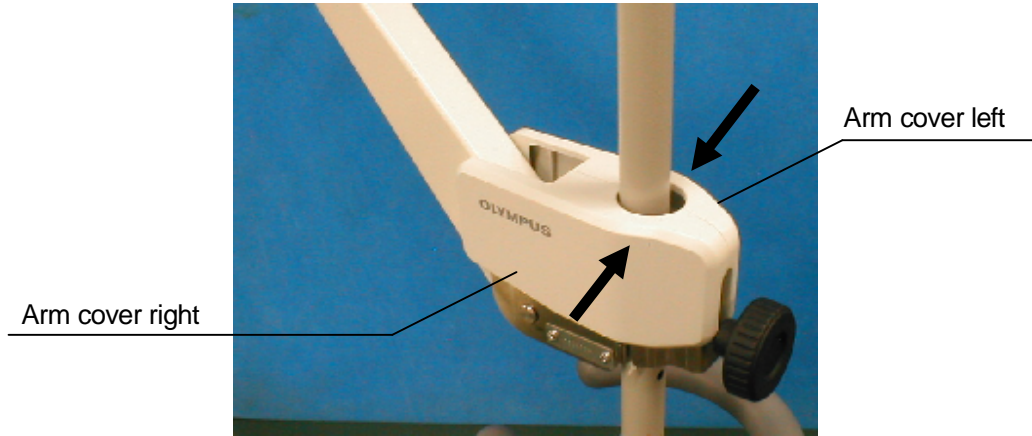


8. Put the mounting part of the arm on the top end of the pole and slide it down to any appropriate position. Turn the knob to fix the arm after setting the arm so that the arm will stay within the range of the opening area of the handle.

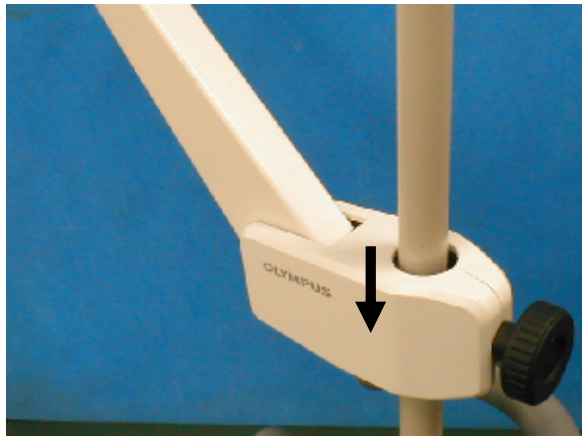
Loosening the knob completely causes the knob to be detached from the arm and the internal part of the knob to drop off. Tighten the knob to the necessary extent (see Figure).



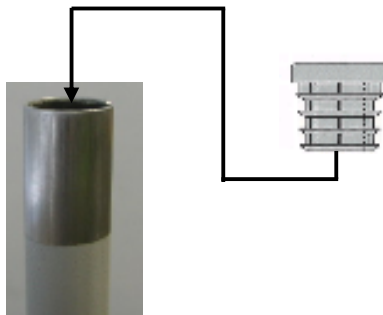
9. Sandwich the pole with the arm covers right and left. The grooves on the inner faces of the arm covers right and left must be engaged (see Figure).



10. Push down the arm cover to a position at which the arm cover completely covers the mounting part of the hinge (see Figure).



11. Place a cap in the hole of the top end of the pole (see Figure).

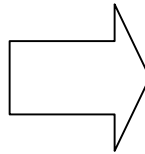


12. Attach two cable holders to two locations on the pole shown with the red arrows in the Figure (see Figure).

Cable holder (Two)



Attach to the pole in the direction shown with the arrow.



Attach the cable holder here

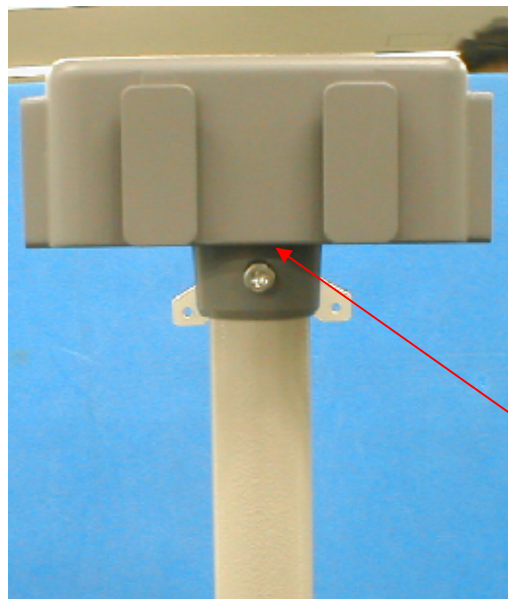
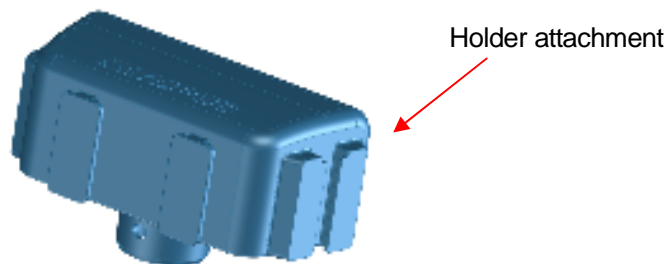
Attach the cable holder here

○ Installation of the holder for hc-rp and the remote control holder onto the receiver dish stand  
The holder for hc-rp can hold the hand coil (MAJ-1859) and the reference plate (MAJ-1860). The remote control holder can hold the remote control (NAJ-1890). The holder hc-rp and the remote control holder are included in the receiver dish stand supplementary set (MAJ-1978).

[NOTE]

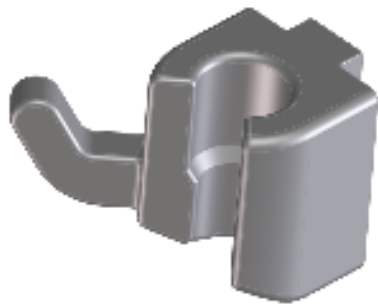
The holder for hc-rp and the remote control holder are optional.

1. Install the holder attachment onto the top of the pole (see Figure). If the cap is attached to the top of the pole, remove it before installing the holder for hc-rp.

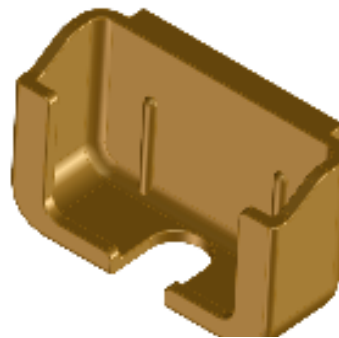




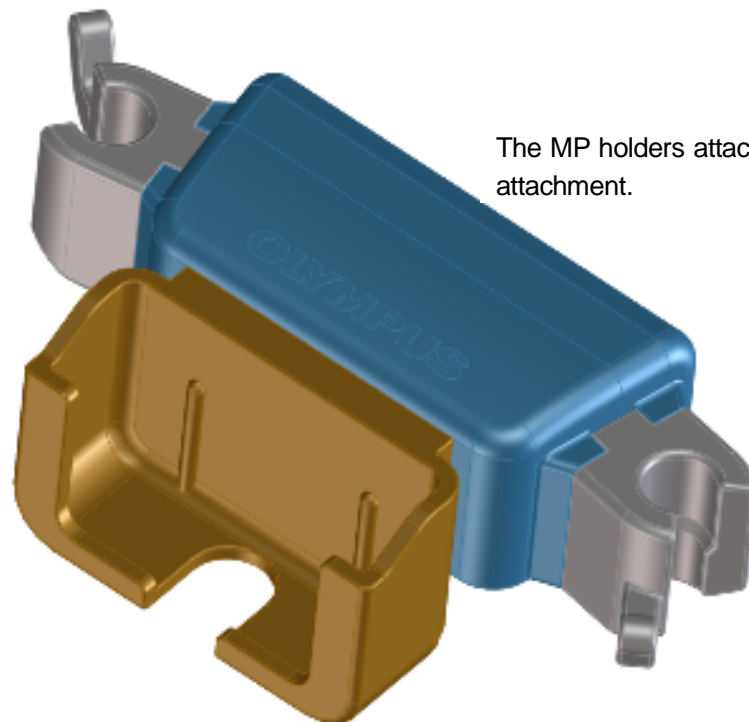
2. Attach the remote control holder and two MP holders to the holder mount (see Figure).



MP Holders (two)



Remote control holder



The MP holders attached to the holder attachment.

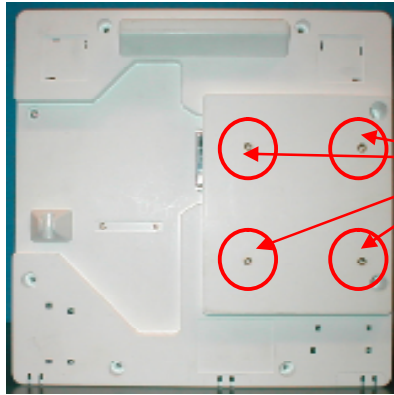
○ Installation of the receiver dish (MAJ-1868)

Install the receiver dish (MAJ-1868) to the receiver dish stand (MAJ-1907). For installation of the receiver dish to any other stand, contact Olympus.

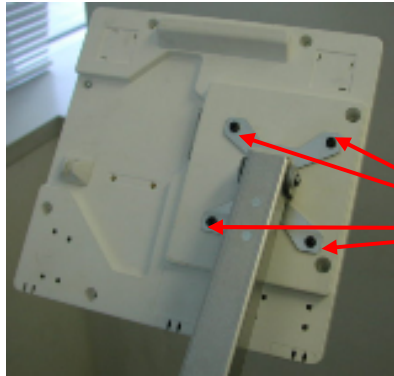
1. Install the receiver dish to the receiver dish stand using the four screw holes on the back of the receiver dish as shown in the Figure.



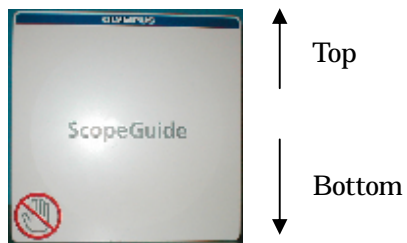
Install the receiver dish so that the blue line is on the top.



Four screw holes on the back of the receiver dish



Four screws  
Use the screws packaged with the receiver dish arm.



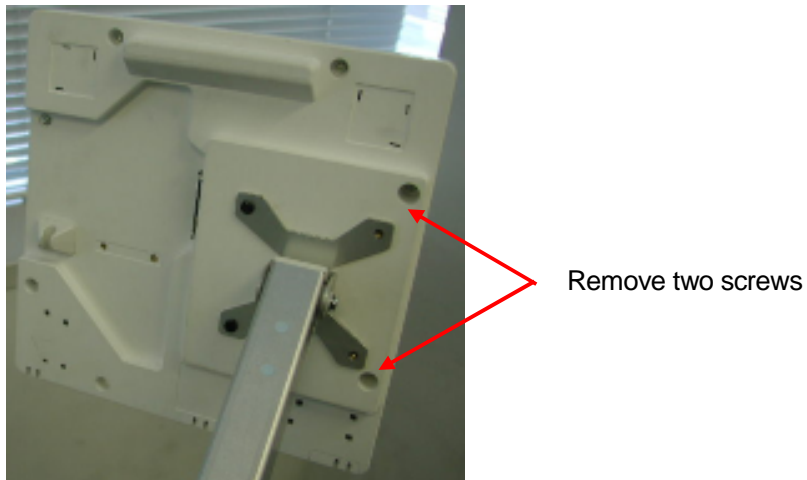
- Installation of the holder to the receiver dish

The holder can hold the hand coil (MAJ-1859). The holder and the M plate are included in the receiver dish stand supplementary set (MAJ-1978).

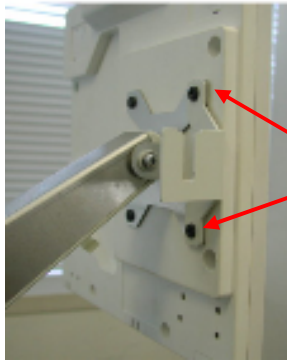
[NOTE]

The holder and the M plate are optional.

1. Remove the two screws out of the four which are fixing the receiver dish (MAJ-1868) as shown in Figure (see Figure).



2. Install the M plate as shown in the figure. Then attach the holder to the M plate (see Figure).



The M plate is installed.

Tighten the  
screws again



MP holder

The MP holder is attached

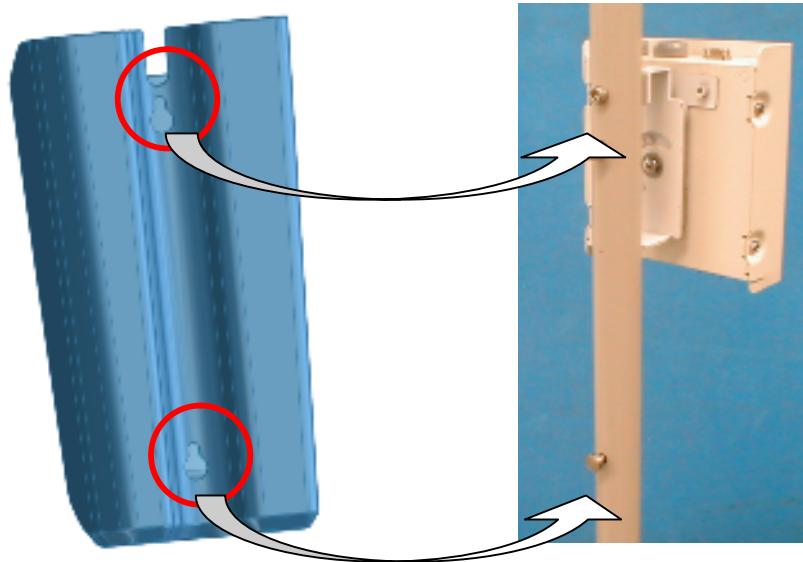
○Installation of the cable pocket

The cable pocket is included in the receiver dish stand supplementary set (MAJ-1978).

[NOTE]

The cable pocket is optional.

1. Attach the cable pocket to the pole of the receiver dish stand so that the two projections on the pole stay in the two holes of the cable pocket.



○ Installation of the holder for hc-rp (MAJ-1938) to the mobile workstation

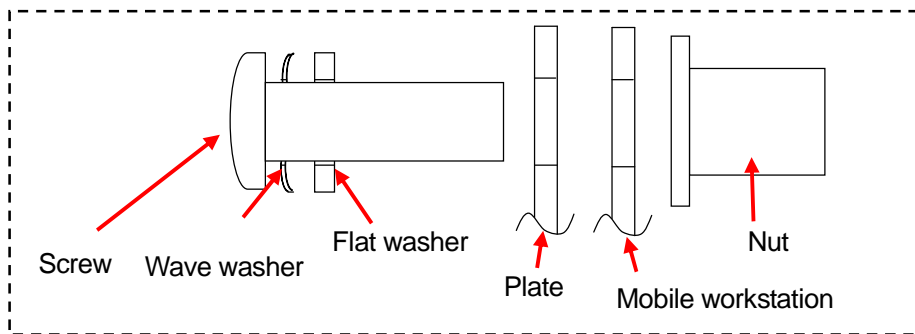
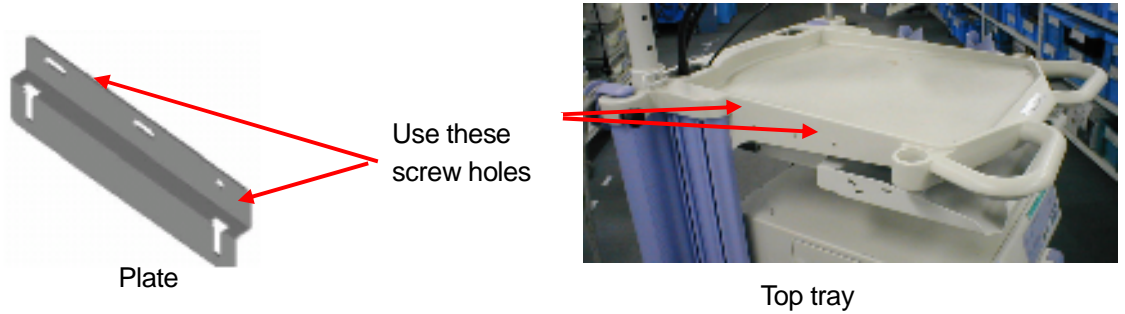
The holder for hc-rp can hold the hand coil (MAJ-1859) or the reference plate (MAJ-1860).  
The holder for hc-rp can be installed to the following mobile workstations  
WM-P1 and WM-260\* series

[NOTE]

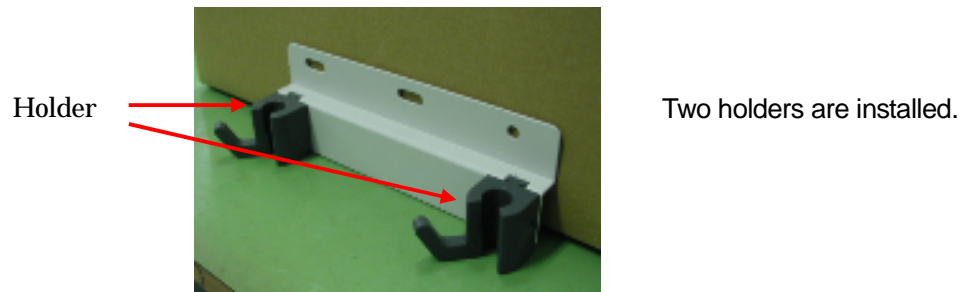
The holder for hc-rp (MAJ-1938) is optional.

\* This product may not be available in some areas.

1. Install the plate to the top tray of the mobile workstation. Install the screw, washers and nut in the order shown in Figure.



1. Install two holders onto the plate (see Figure).



### 7.4 Connection of the receiver dish

1. Check that no video monitor, PC monitor, or a large metallic object is near the receiver dish. Keep a distance of at least 30 cm between the video monitor, PC monitor, or metallic object and the receiver dish.

[CAUTION]

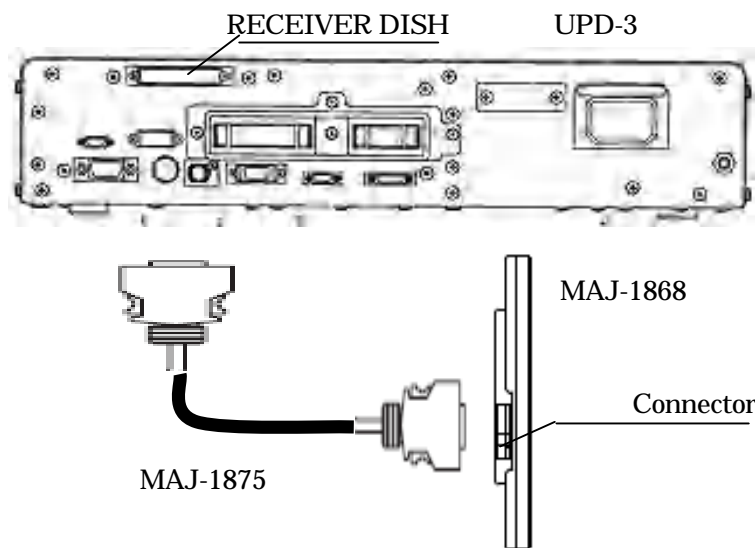
- If a video monitor or PC monitor is located near the coil unit of the endoscope position detecting unit, the scope model display may be distorted or deformed due to strong magnetic fields produced by the monitor.
- If a metallic object is located near the coil unit of the endoscope position detecting unit, the scope model display may also be distorted or deformed.
- In some cases, the material and/or structure of the operating table may cause distortion or deformation of the scope model display.

[NOTE]

If you have any questions or problems with the installation location of the endoscope positioning detecting unit or the material and/or structure of the operating table in use, contact Olympus.

2. For connecting the receiver dish to the endoscope position detecting unit, use the cable listed below.

Model	Product name	Note
MAJ-1875	Receiver dish cable	7m



## 7.5 Video equipment

[NOTE]

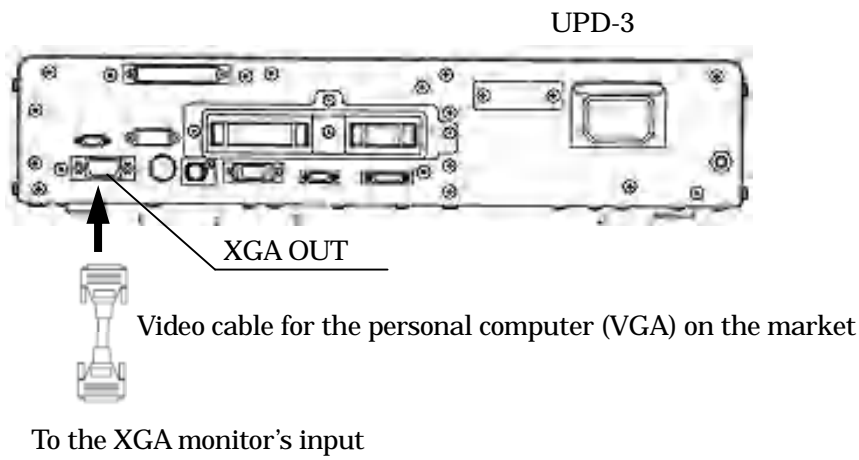
See the instruction manual for the video equipment to be used.

*○When the XGA monitor is used*

The recommended XGA monitor is shown in the Table

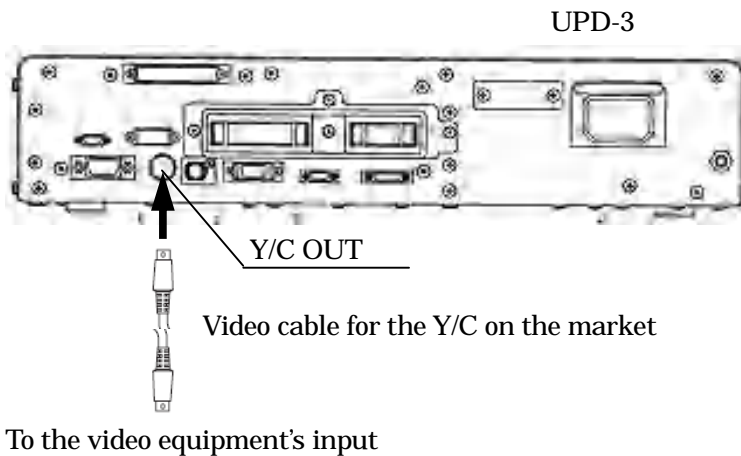
Model	Product name
ET1528L-7CWM-1-BG-G	touch monitor
PLT210-W0X	LCD monitor

The video cable for the personal computer (VGA) on the market is used.



*○When the video equipment with Y/C input is used*

The video cable for the Y/C on the market is used.

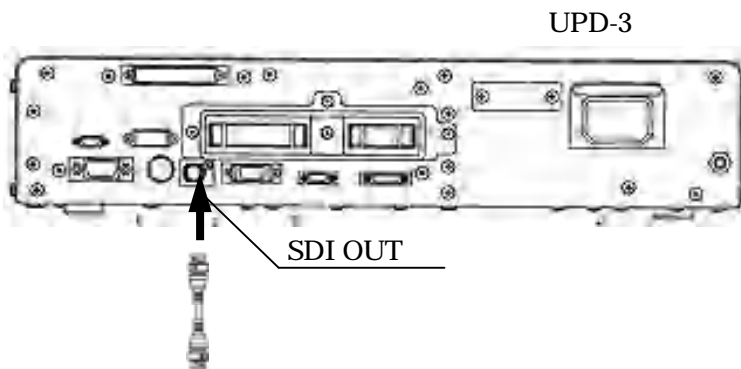


○ *When the video equipment with SDI input is used*

For connecting the SDI video equipment to the endoscope position detecting unit, use the cable listed below.

Table

Model	Product name	Note
MAJ-1464	SDI cable	22m



## 7.6 UPD cable

[WARNING]

Do not place the UPD cable on the operating table. This could result in an infection when the patient contacts the UPD cable. Also, the scope model display may become distorted or deformed.

[CAUTION]

- Always turn the endoscope position detecting unit OFF before connecting or disconnecting the UPD cable. Otherwise, equipment damage or malfunction may result.
- Do not apply excessive force to the UPD cable; it may cause equipment damage.
- Do not immerse the UPD cable in liquids or allow it to become wet; it may cause equipment damage or malfunction.
- Do not touch the electrical contacts inside the endoscope position detecting unit's connectors; it may cause equipment damage or malfunction.

Use the cable shown in Table

Table

Model	Product name	Note
MAJ-1881	UPD cable	



## 7.7 Remote control

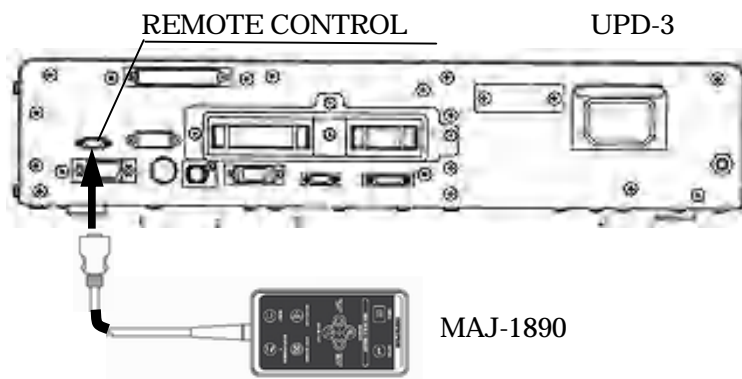
[WARNING]

• Install the remote control on a stable, level surface so that the cable between the endoscope position detecting unit and remote control is not stretched. Otherwise, the remote control may slip or fall and result in patient/operator injury or damage to the equipment.

The following remote control shown in Table is available.

Table

Model	Product name	Note
MAJ-1890	Remote control	



## 7.8 Video system center

[NOTE]

See the instruction manual for the video system center.

When connecting the video system center to the position detecting unit, the following patient data displayed on the video system center can be output to the position detecting unit.

- ID number
- Patient's name
- Sex and Age
- Date of birth

○ For CV-180

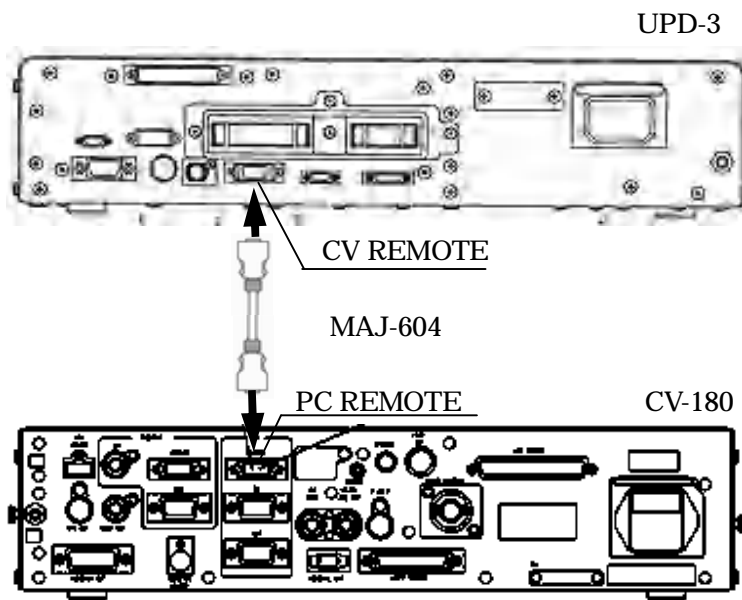
[CAUTION]

When displaying the image of the position detecting unit (UPD-3) using the PinP function of the CV-180, use the high definition LCD monitor. Otherwise, the scope model may not be displayed clearly

For connecting the video system center to the endoscope position detecting unit, use the cable listed below.

Table

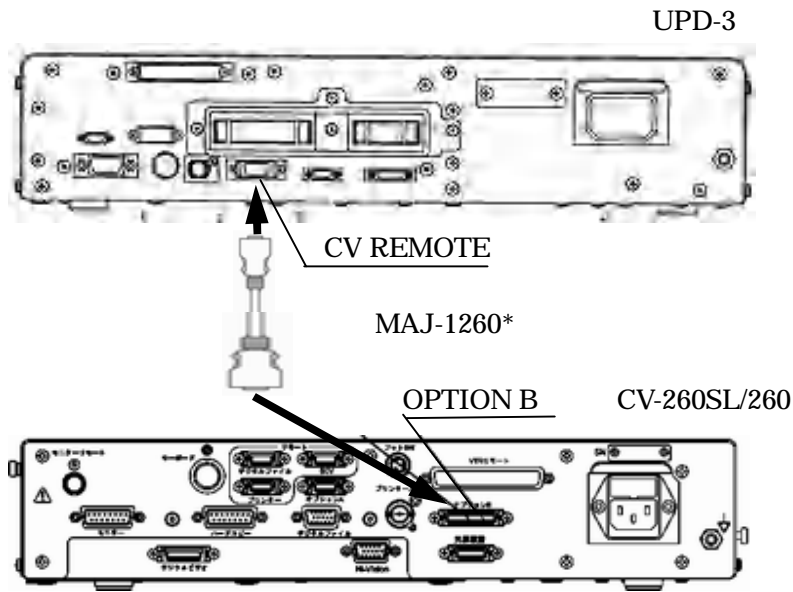
Model	Product name	Note
MAJ-604	Data transfer cable	



○ For CV-260SL/260 \*

For connecting the video system center to the endoscope position detecting unit, use the cable listed below.

Model	Product name	Note
MAJ-1260*	Data transfer cable	

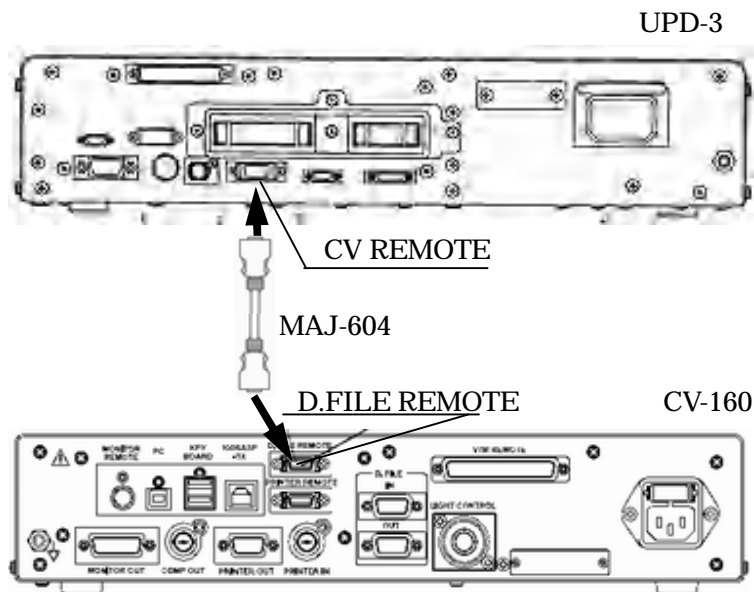


\* These Products may not be available in some areas.

o For CV-160

For connecting the video system center to the endoscope position detecting unit, use the cable listed below.

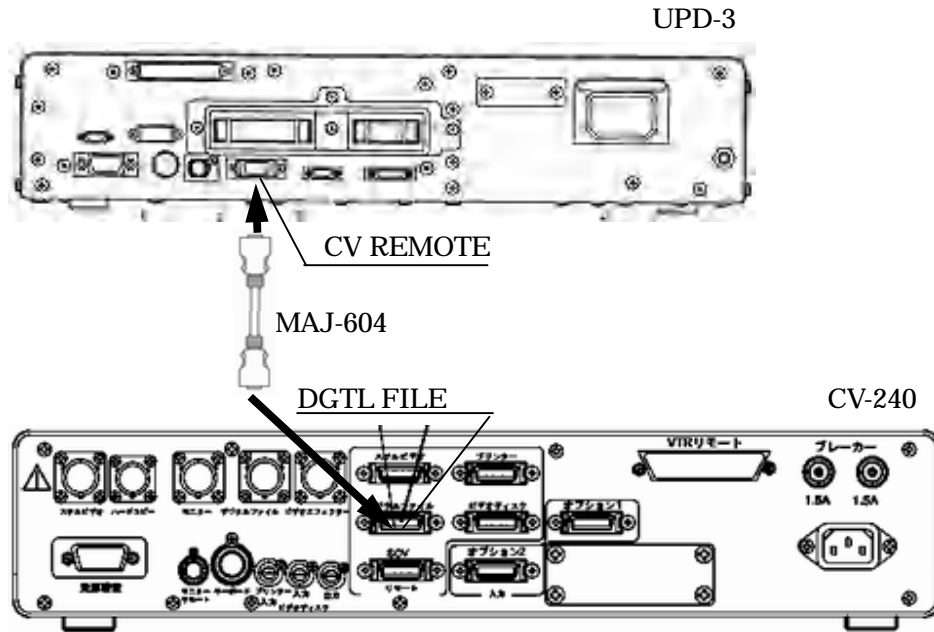
Model	Product name	Note
MAJ-604	Data transfer cable	



For connecting the video system center to the endoscope position detecting unit, use the

cable listed below.

Model	Product name	Note
MAJ-604	Data transfer cable	



\* This product may not be available in some areas.

## 7.9 Connection to an AC mains power supply

### [DANGER]

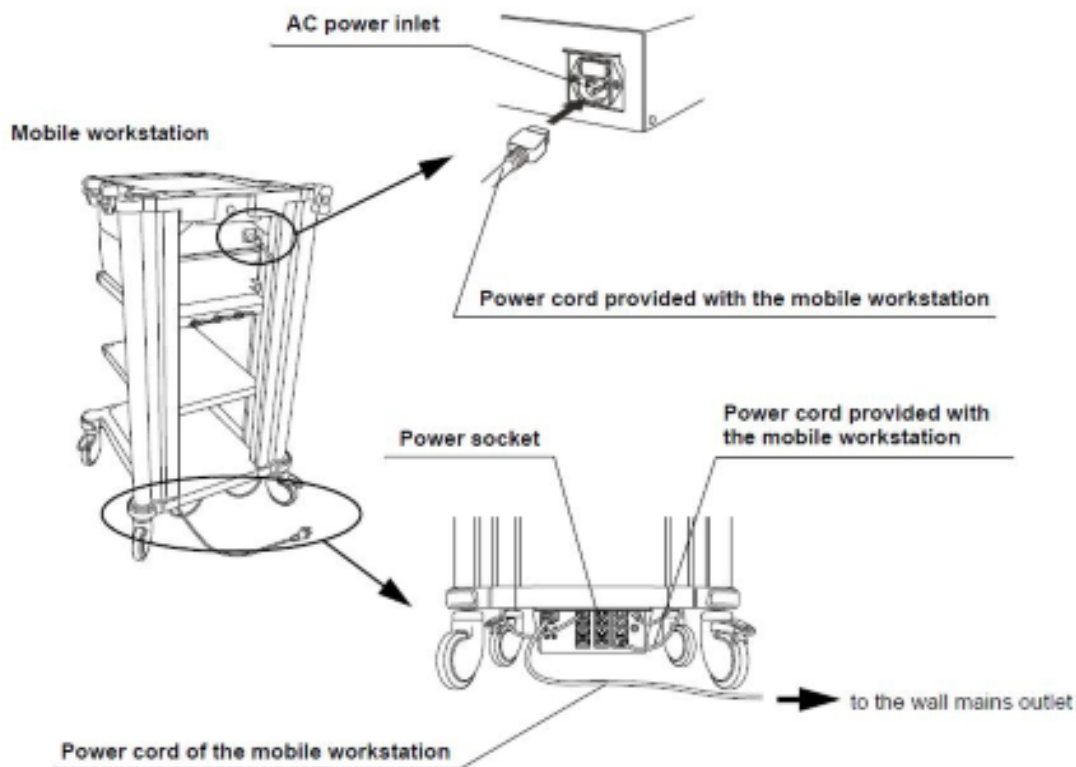
- Be sure to connect the power plug of the power cord directly to a grounded wall mains outlet. If the endoscope position detecting unit is not grounded properly, it can cause an electric shock and/or fire.
- Do not connect the power plug to the 2-pole power circuit with a 3-pole to 2-pole adapter. It can prevent proper grounding and cause an electric shock.

### [WARNING]

- Always keep the power plug dry. A wet power plug may cause electric shocks.
- Confirm that the hospital-grade wall mains outlet to which this instrument is connected has adequate electrical capacity that is larger than the total power consumption of all connected equipment. If the capacity is insufficient, fire can result or circuit breaker may trip and turn OFF this instrument and all other equipment connected to the same power circuit.
- When using the mobile workstation (WM-NP1, WM-WP1), confirm that the mobile workstation has adequate electrical capacity that is larger than the total power consumption of all connected equipment. If the capacity is insufficient, drop in the supply voltage can result or the electric protective device may trip and turn OFF all the equipment connected to the mobile workstation.
- When non-medical ancillary electrical equipment is used, always connect the equipment to a wall mains outlet via an isolation transformer. Otherwise, electric shock can result.
- The total power consumption of all connected equipment to the isolation transformer should not exceed the rating of the isolation transformer. If it exceeds, add another isolation transformer. Otherwise, the equipment may not work correctly.
- Do not bend, pull or twist the power cord. Equipment damage including separation of the power plug and disconnection of the cord wire as well as fire or electric shock can result.
- Be sure to connect the power plug securely to prevent erroneous unplugging during use. Otherwise, the equipment will not function.
- Do not extend a single wall mains outlet into multiple outlets for connecting the power cords of both the electrosurgical unit and light source. Otherwise, malfunction of the equipment may result.

### ○ *When the mobile workstation (WM-NP1, WM-WP1) is used*

1. Confirm that the endoscope position detecting unit is OFF.
2. Connect the power cord provided with the mobile workstation to the AC power inlet of the endoscope position detecting unit and the AC mains outlet of the mobile workstation (see Figure)



3. Connect the power cords provided with the mobile workstation to the AC power inlets of the ancillary equipment and the AC mains outlets of the mobile workstation.
4. Connect the power cord of the mobile workstation to the wall mains outlet.

*○When a mobile workstation other than the WM-NP1 and WM-WP1 is used or when no mobile workstation is used*

1. Confirm that the endoscope position detecting unit is OFF.
2. Connect the power cord provided with the endoscope position detecting unit first to its AC power inlet, then to the wall mains outlet.
3. Connect the instruments listed in the following table to the wall mains outlet.
4. Connect the instruments listed in the following table to the isolation transformer.
5. Connect the power cord of the isolation transformer to the wall mains outlet.

*○When the mobile workstation (WM-NP1, WM-WP1) is not used*

The devices to be connected directly to the wall mains outlet

Model	Product name
OEV monitors	Monitor

(OEV143, OEV203, OEV181H, OEV191, OEV191H, OEV261H)  
OEP printers      Video printer

The devices to be connected to the isolation transformer

Model	Product name
VTR	VTR
Other than OEV video monitors	Video monitor
Other than OEP video printers	Video printer

## Chapter 8 Function setup

The following settings are set to use the position detecting unit and equipment connected to the position detecting unit properly.

Setting menu	Description
System setup	Sets the basic functions of the position detecting unit. For details on the functions, refer to “system setup”.
User preset	Sets the functions used during the examination. For details on the functions, refer to “User preset”.
Adjustment	Adjusts the scope display. For details, refer to “ ”.

[NOTE]

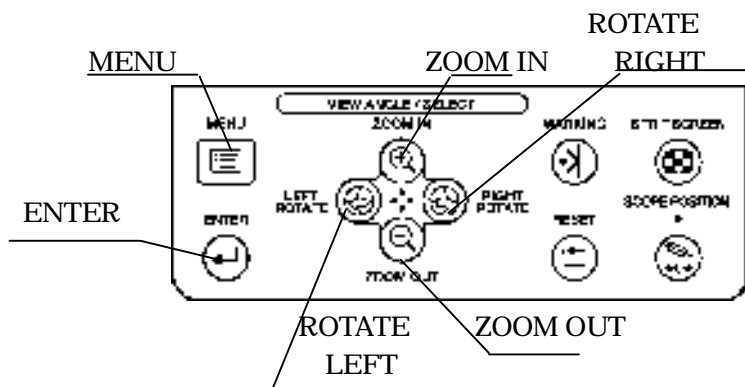
The functions can be set even if the endoscope or the position detecting probe is not connected to the position detecting unit.

### 8.1 Basic operation of the menu

#### Buttons in the menu

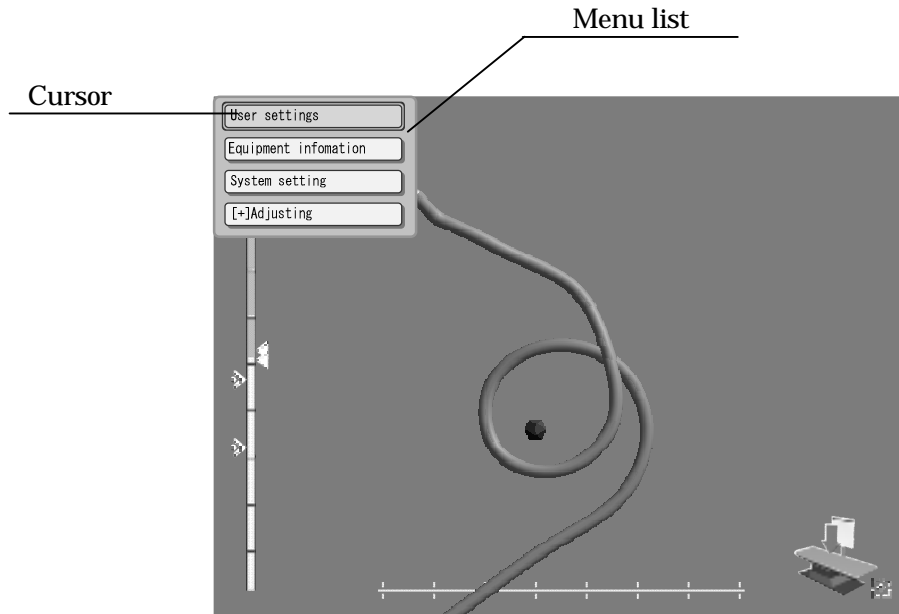
For the buttons and their functions, see Table below.

Button	Function
ROTATE LEFT	Moves the cursor to the left.
ROTATE RIGHT	Moves the cursor to the right.
ZOOM IN	Moves the cursor up.
ZOOM OUT	Moves the cursor down.
ENTER	Determines the category selected by the cursor.
MENU	Displays or closes the window.

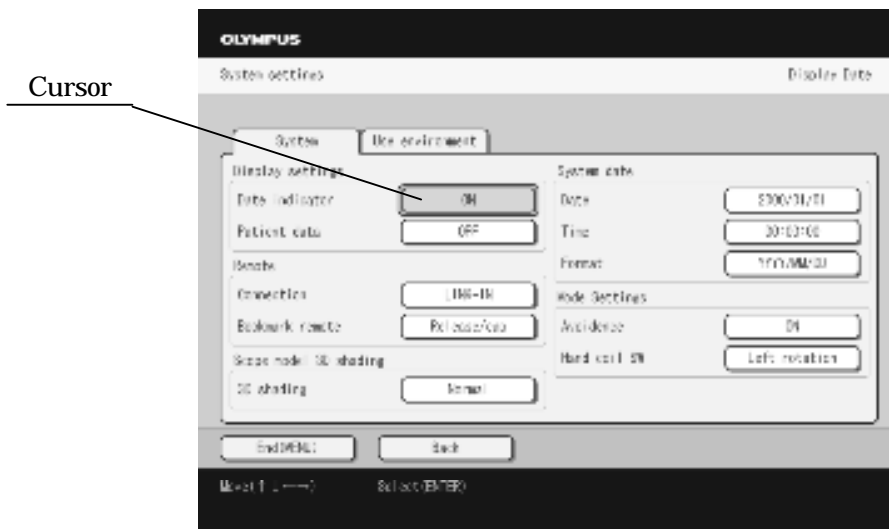




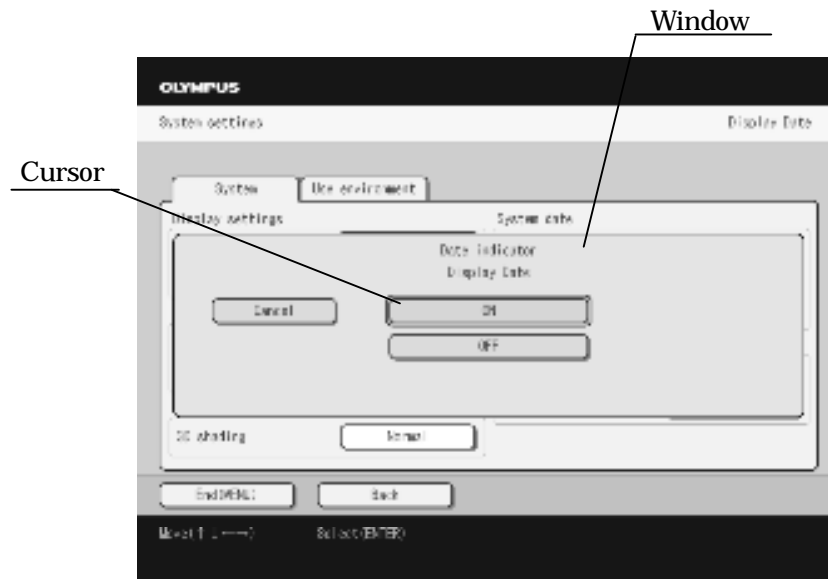
1. Press the “MENU” button on the control panel to display the menu list on the scope model display (see Figure).



2. Move the cursor on the setting item and press the “ENTER” button to display the setting window (see Figure).



3. Move the cursor on the setting item in the setting window and press the “ENTER” button to display the window of the selected setting item (see Figure).

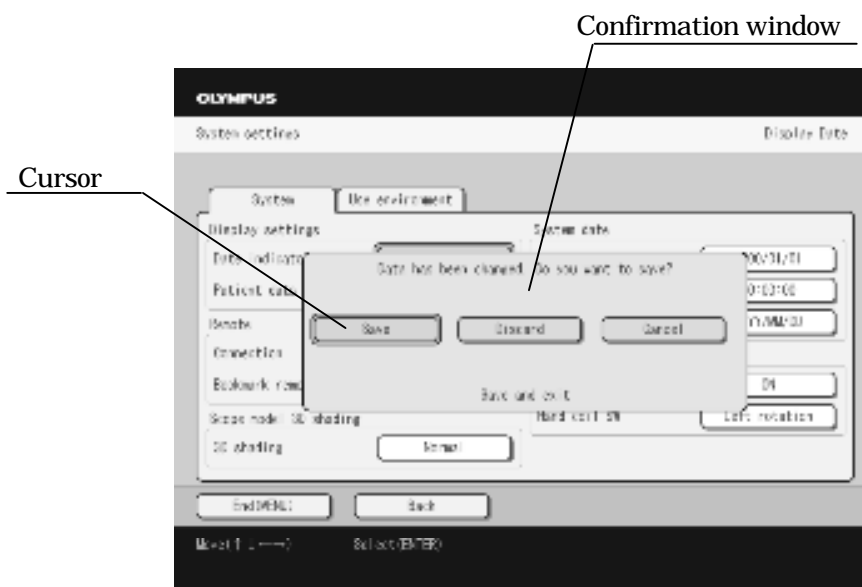


4. Move the cursor to select the setting.

5. Press the “ENTER” button to change the setting, and the window exits; select the “CANCEL” button and press the “ENTER” button to keep the setting, and the window exits.

6. Select the “Back” button and press the “Enter” button to return to the upper level.

7. After all settings are completed, select the “Exit” and press the “ENTER” button. When any settings are changed, the confirmation window is displayed. For details on operations here, refer to Table.



Selection	Description
Yes	Changes settings and exits from the menu.
No	Not change settings and exits from the menu.
Cancel	Returns the menu window to continue to change the settings.

## *8.2 System setup*

Set various settings, such as the display setting and system date.

### *Settings of the display*

#### *oDate and time display*

1. Set the display of date and time in the scope model display.

Setting value	Description
ON	Displays the current date and time in the scope model display.
OFF	Not display the current date and time in the scope model display.

#### *oPatient data display*

1. Set the display of patient data in the scope model display.

Setting value	Description
ON	Displays the patient data in the scope model display.
OFF	Not display the patient data in the scope model display.

[NOTE]

The patient data is displayed when the video system center is connected to the position detecting unit.

### *Settings of the miscellanea*

#### *oFrequency of transmitting*

1. Set the frequency for detecting the scope model.

Setting value	Description
Automatic	Automatically selects the frequency for detecting the scope model from "f1" to "f4".
f1	Use the frequency set in the "f1".
f2	Use the frequency set in the "f2".
f3	Use the frequency set in the "f3".
f4	Use the frequency set in the "f4".

[CAUTION]

Do not change this setting in ordinary cases. Otherwise, the scope model display may be distorted or deformed.

### *oFusion avoidance function*

1. Set the fusion avoidance function.

Setting value	Description
ON	Activate the fusion avoidance function.
OFF	Inactivate the fusion avoidance function.

[CAUTION]

Do not change this setting in ordinary cases. Otherwise, the scope model display may be distorted or deformed.

### *oMarking remote*

This function is the future extension; it is not used currently.

### *oModel shading*

1. Enhance the contrast of the shading of the scope model

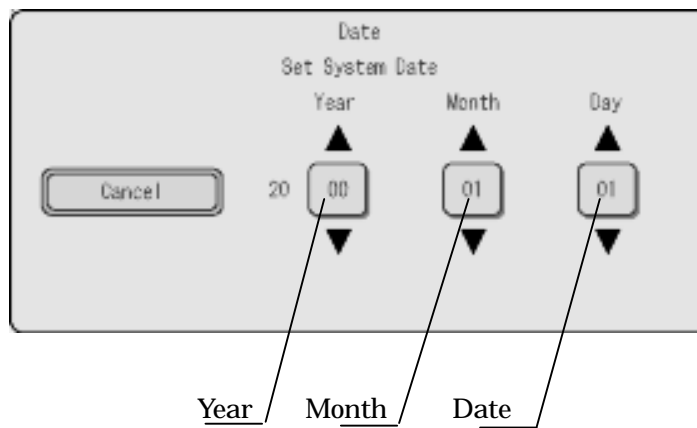
Setting value	Description
Standard	No enhancement is made to the shading contrast of the scope model
Enhancement	Enhances the shading contrast of the scope model

## *Date and time of the system*

### *oDate*

Set the current date.

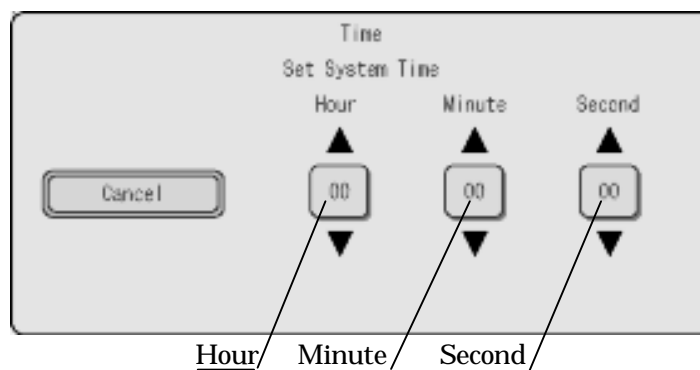
1. Move the cursor on the year, month, or date and press the “ZOOM IN” or “ZOOM OUT” button to change the numerical value (see Figure).



### *oTime*

Set the current time.

1. Move the cursor on the hour, minute, or second and press the “ZOOM IN” or “ZOOM OUT” button to change the numerical value (see Figure).



### ○ *Display format*

1. Set the date display format.

Date display format	Description
<ul style="list-style-type: none"> <li>• MM/DD/YYYY • MM-DD-YYYY • MM.DD.YYYY</li> <li>• MM DD YYYY • DD/MM/YYYY • DD-MM-YYYY</li> <li>• DD.MM.YYYY • DD MM YYYY • YYYY/MM/DD</li> <li>• YYYY-MM-DD • YYYY.MM.DD • YYYY MM DD</li> </ul>	YYYY:Year MM:Month DD:Date

### ○ *Hand coil switch*

1. Set the functions to be assigned to the remote switch of the hand coil.

Setting value	Description
Scope position	Sets the scope position
ROTATE LEFT	Rotates the scope model in the left direction
Split screen	Changes the screen between the split-screen and the single-screen

### ○ *Display speed*

1. Set the display speed of the scope model.

Setting value	Description
Automatic	Displays the scope model at high or medium speed depending on the external noise of this instrument
Low	Displays the scope model at low speed
Medium	Displays the scope model at medium speed
High	Displays the scope model at high speed

#### [CAUTION]

Do not change this setting in ordinary cases. Otherwise, the scope model display may be unstable.

#### [NOTE]

- When the Automatic is selected, the Medium speed mode to display the scope model is

disabled.

- For details of the automatic change of the display speed, see Section 4.7 “Displaying the scope model”.

### *Connection of the video system center*

#### *oConnecting terminal*

1. Set the communication mode with the video system center.

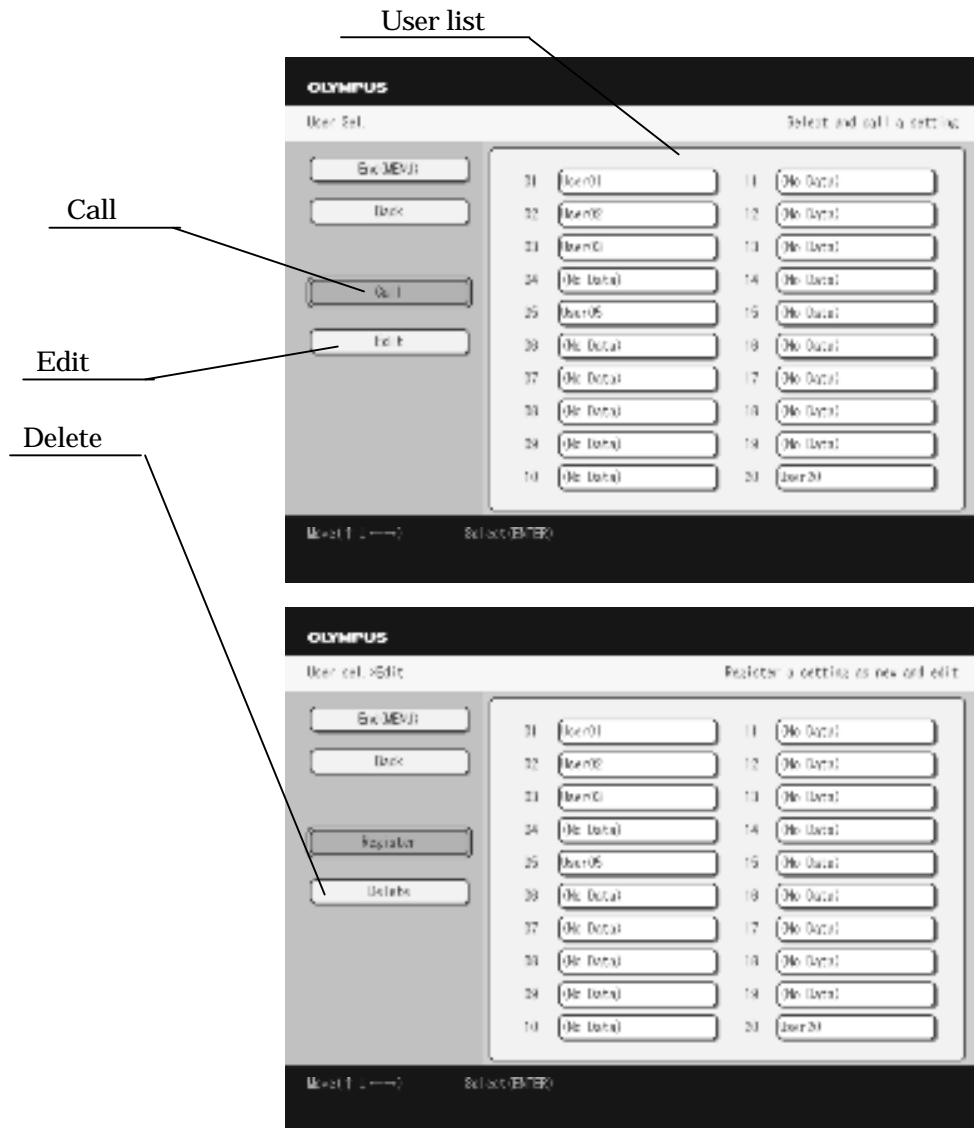
Setting value	Description
Communication A	A communication mode using the “LINK IN” connector. This is a future extension.
Communication B	A communication mode using the “CV REMOTE” connector.

## *8.3 User preset*

Each function can be set by user or endoscope. Up to 20 presets of the display can be saved.

#### *oBasic operation of the user preset*

1. Display the “User preset” window, move the cursor on the “Call” or “Edit” in the window, and press the “ENTER” button on the control panel.



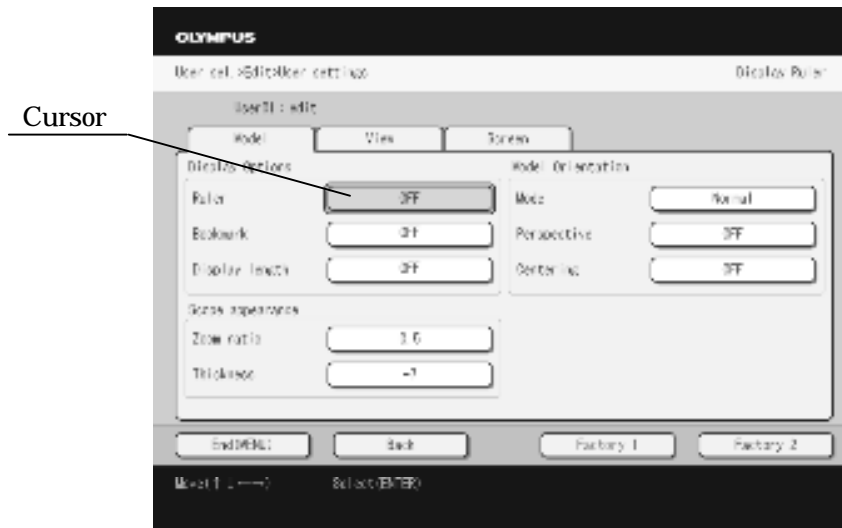
Operation	Function
Select	Recalls the desired setup to set each function.
Edit	Edit the desired user preset data.
Delete	Deletes the data of selected user.
Edit	Sets the new user preset, and edits and/or deletes the data of the selected user.

2. When selecting the "Edit" button and pressing the "Enter" button, "Register" button and "Delete" button will be displayed.

*oSetting the new user preset*



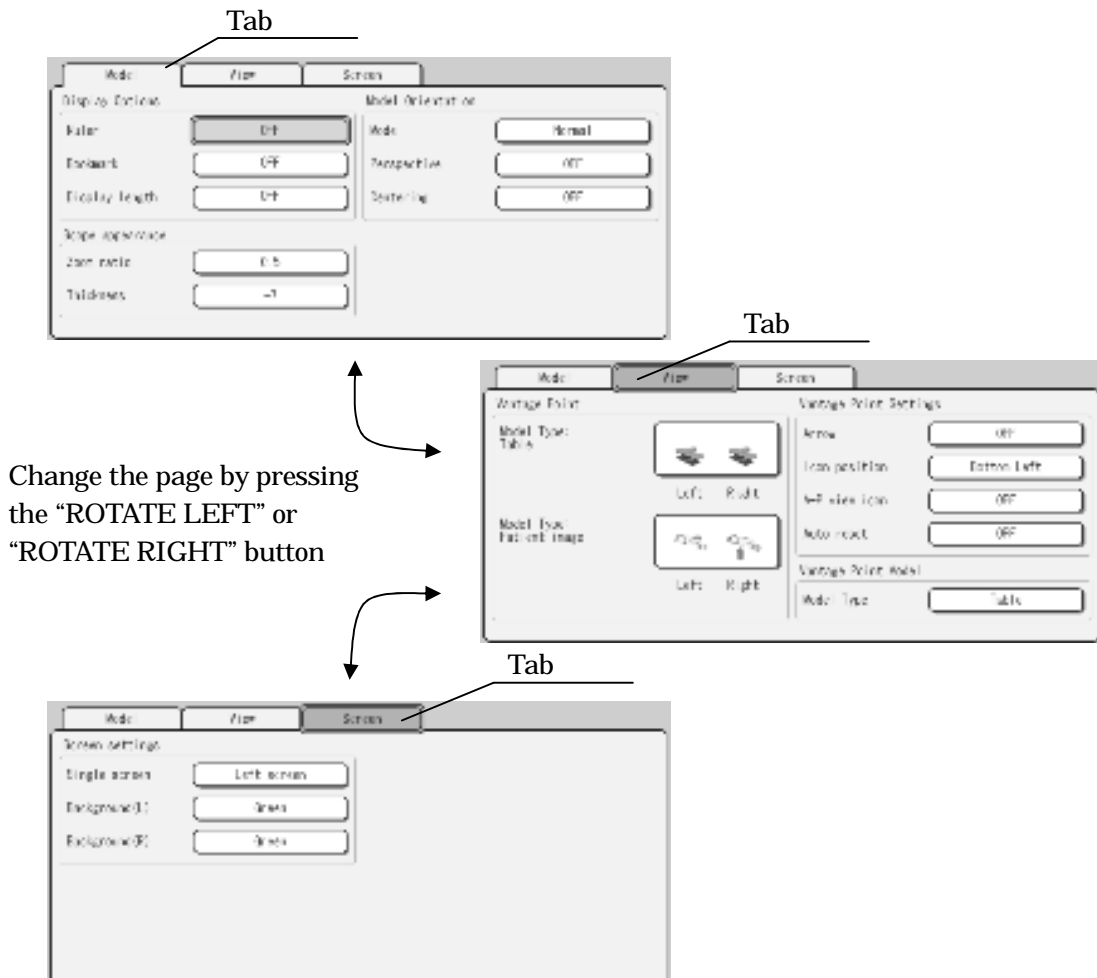
1. Move the cursor on the “New” in the User preset window and press the “ENTER” button on the control panel.
2. The setting window for setting each category is displayed (see Figure). For each setting, refer to the following instructions.



[NOTE]

- Each preset data is saved in the user list in order (from No.1 to No.20). The number is suffixed on each user's name.
- When the user list is full, a new preset data cannot be saved. Delete the unnecessary data to save the new data.

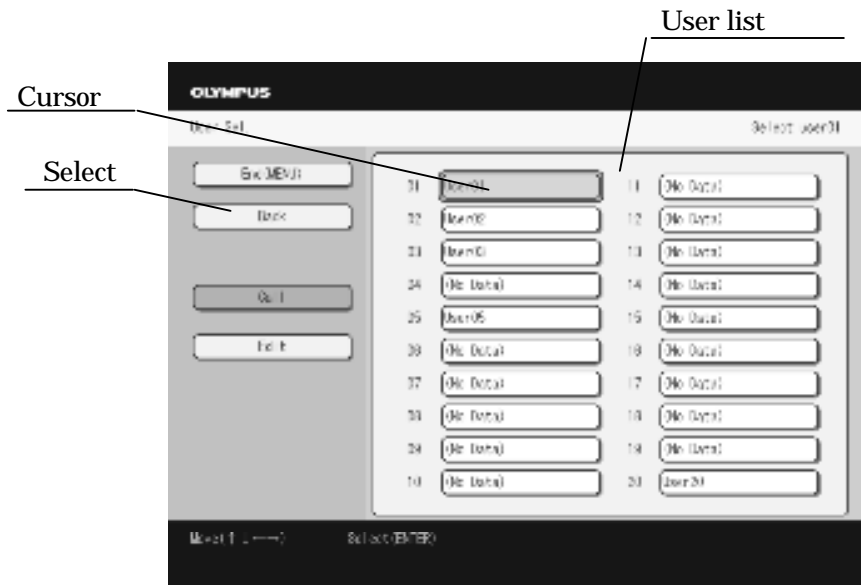
3. Move the cursor on the “Tab” and press the “ROTATE LEFT” or “ROTATE RIGHT” button to change the setting page.



### *o*Selecting the user preset

1. Move the cursor on the “Select” in the user preset window and press the “ENTER” button on the control panel.

2. Move the cursor on a desired user's name to recall and press the "ENTER" button on the control panel (see Figure).



3. The selected preset is called, and the scope model display is returned.

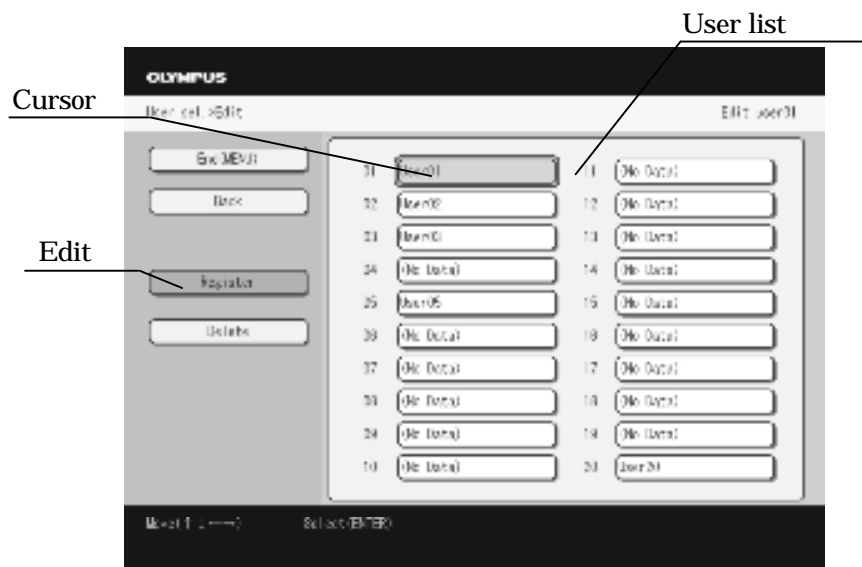
[NOTE]

The list of the user preset currently called is displayed in violet.

*oEditing the user preset*

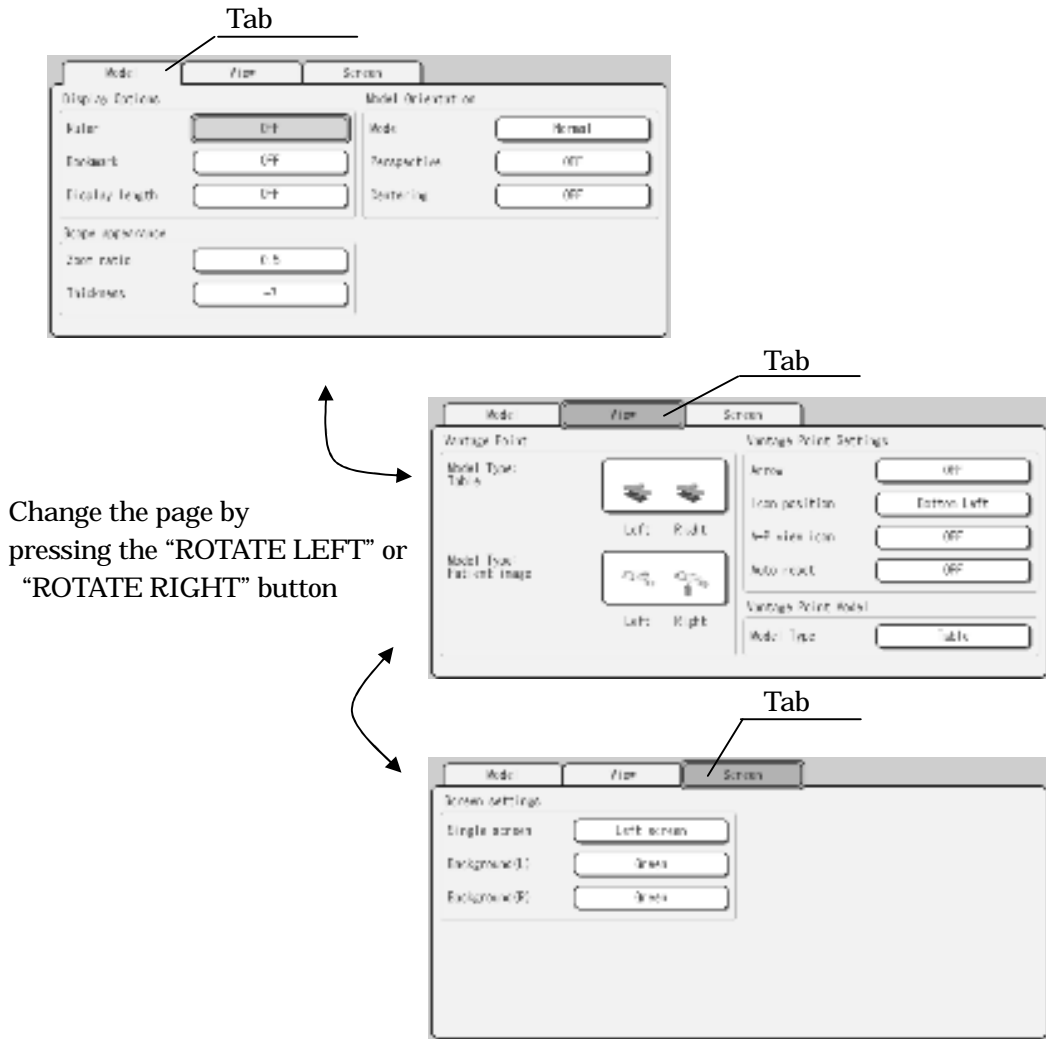
1. Move the cursor on the "Edit" in the user preset window and press the "ENTER" button.

2. Move the cursor on the desired user's name to edit and press the "ENTER" button (see Figure).



3. The setting window for setting each category is displayed. For each setting, refer to the following instructions.

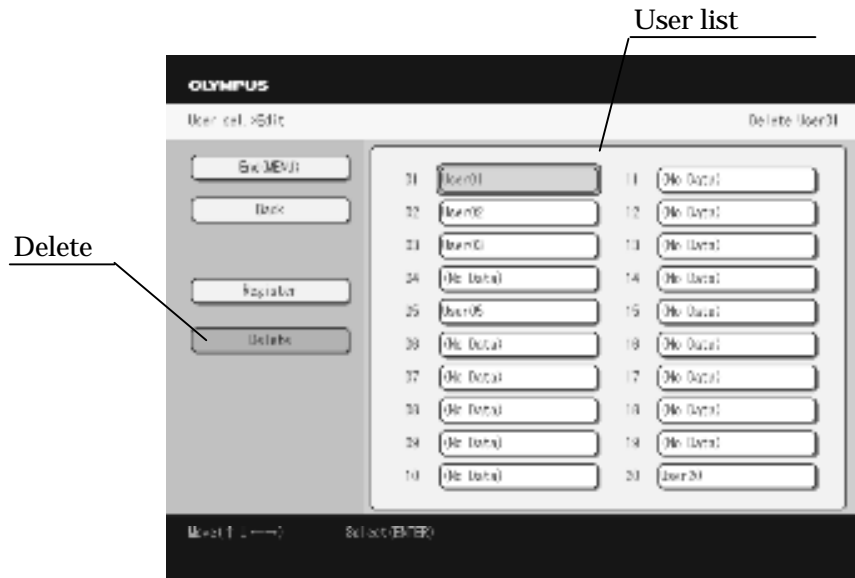
4. Move the cursor on the “Tab” and press the “ROTATE LEFT” or “ROTATE RIGHT” button to change the setting page (see Figure).



*oDeleting the user preset*

1. Move the cursor on the “Delete” in the user preset window and press the “ENTER” button.

2. Move the cursor on the desired user's name to delete and press the "ENTER" button (see Figure).



3. The confirmation window is displays (see Figure). When deleting the preset, move the cursor on the "Yes" and press the "ENTER" button.



### *Information display*

#### *oDisplaying the gauge*

1. Set the display of gauge in the scope model display.

Setting value	Description
ON	Displays the gauge in the scope model display.
OFF	Not display the gauge in the scope model display.

### *oDisplaying the marking*

1. Set the display of marking in the scope model display.

Setting value	Description
ON	Displays the marking in the scope model display.
OFF	Not display the marking in the scope model display.

### *oDisplaying the display length*

1. Set the display of the display length in the scope model display

Setting Value	Description
ON	Displays the display length in the scope model display.
OFF	Not display the display length in the scope model display.

## *Scope model*

### *oZooming ratio*

1. Set the zooming ratio of the scope model. The ratio can be changed from 0.5 to 3.0 times in steps of 0.1 times.

[NOTE]

- For zooming in or out the scope model, refer to Section 5.2, "Varying the size of the scope model".
- Pressing the "Reset" button or selecting the desired user preset recalls the zooming ratio that has been saved in the user preset operation.

### *oScope model thickness*

1. Adjust the scope model thickness from -7 to +7.

## *Display mode*

### ○ *Changing the display mode*

1. Set the viewing direction of the scope model.

Setting value	Description
From the top	Displays the scope model from the top to the bottom in the screen.
From the bottom	Displays the scope model from the bottom to the top in the screen.

[NOTE]

For displaying the scope model and its actual position, refer to the Section 4.2, “Scope model display range”.

### ○ *Changing the perspective*

1. Set the perspective of the scope model.

Setting value	Description
ON	The perspective of the scope model is enabled.
OFF	The perspective of the scope model is disabled.



Perspective OFF



Perspective ON

### ○ *Start position of the scope model*

1. Set the start position of the scope model.

Setting value	Description
ON	The center of the bottom of the monitor display corresponds to the start position of the scope model. When the display mode is set to “From the top”, the center of the top of the

monitor display corresponds to the start position of the scope model.  
 OFF The scope model moves according to the actual endoscope's movement.

Figure When the start position of the scope model is set to "ON"

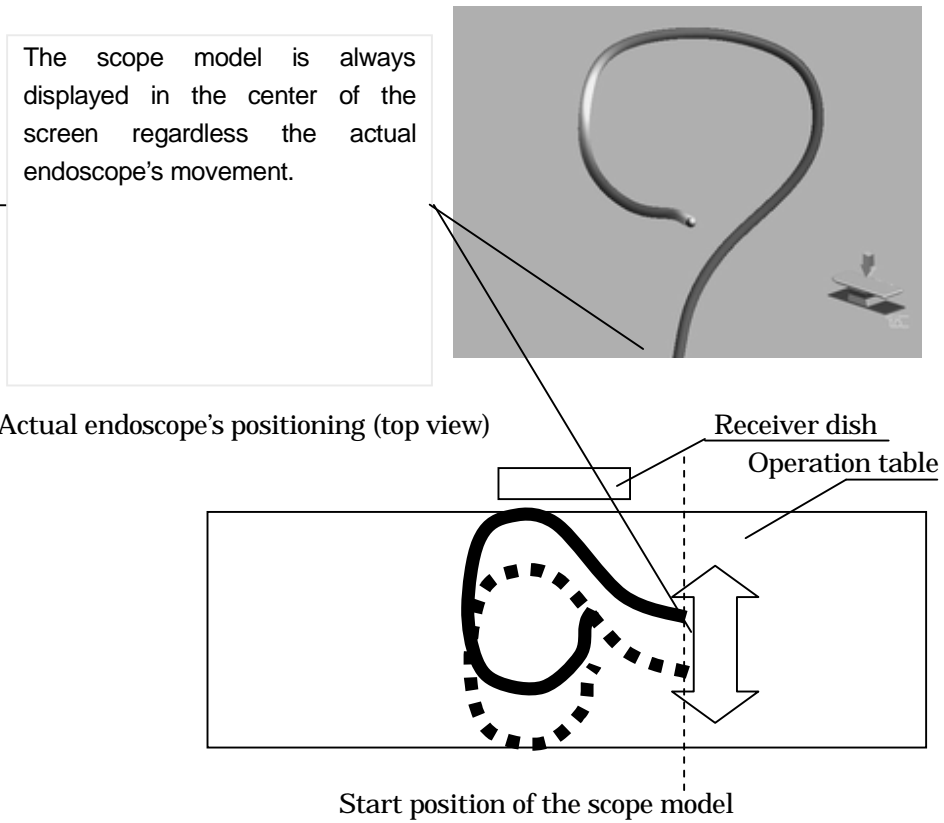
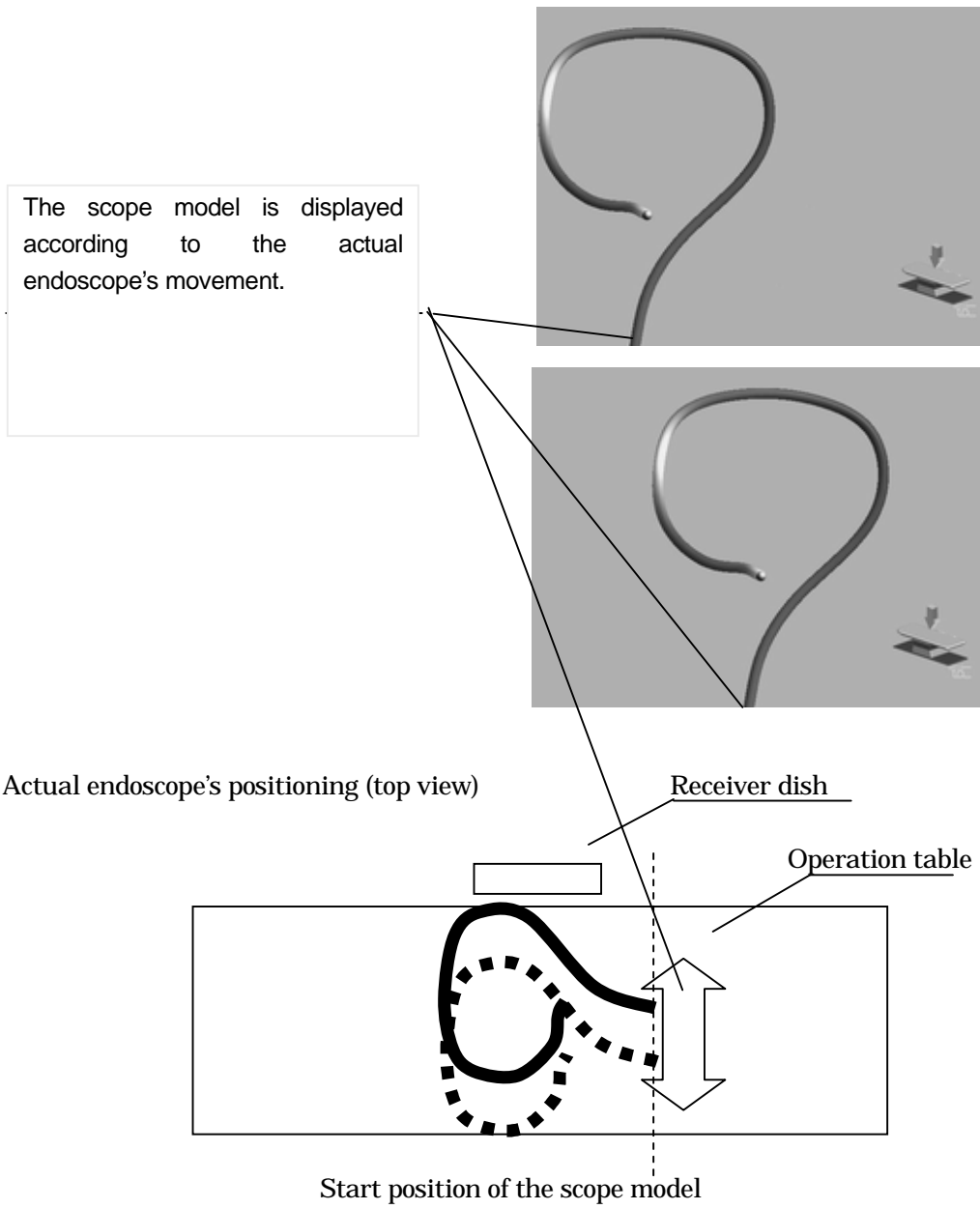




Figure When the start position of the scope model is set to "ON"



*oChanging the viewing image*

1. Select the viewing image.

Setting value	Description
Operating table image	Displays the operating table image.
Figure image	Displays the figure image.



Operating table image

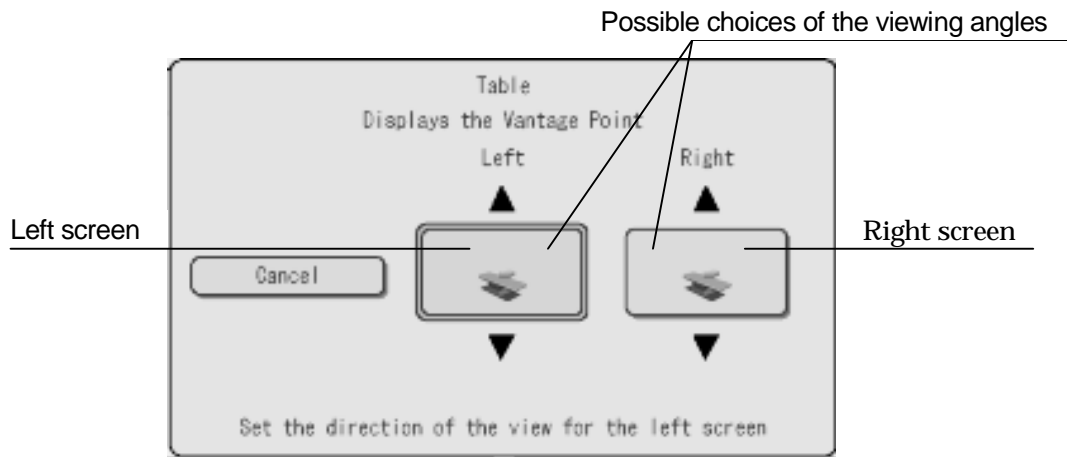


Figure image

*oFor operating table image*

Set the view angle of the operating table image in respective left and right sides of the split screen.

1. Move the cursor on the "Left screen" and press the "ENTER" button on the control panel.
2. Press the Zoom in or Zoom out button to select the view(ing) angle in the left screen.

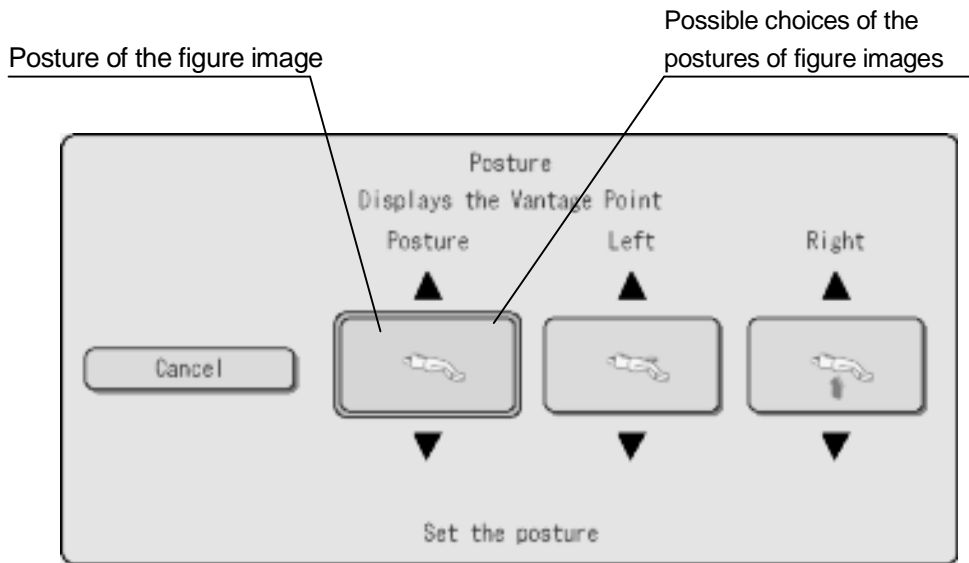


3. Move the cursor on the "Right screen" and press the "ENTER" button on the control panel.
4. Press the Zoom in or Zoom out button to select the view(ing) angle in the right screen.
5. Press the "MENU" button to close the window.

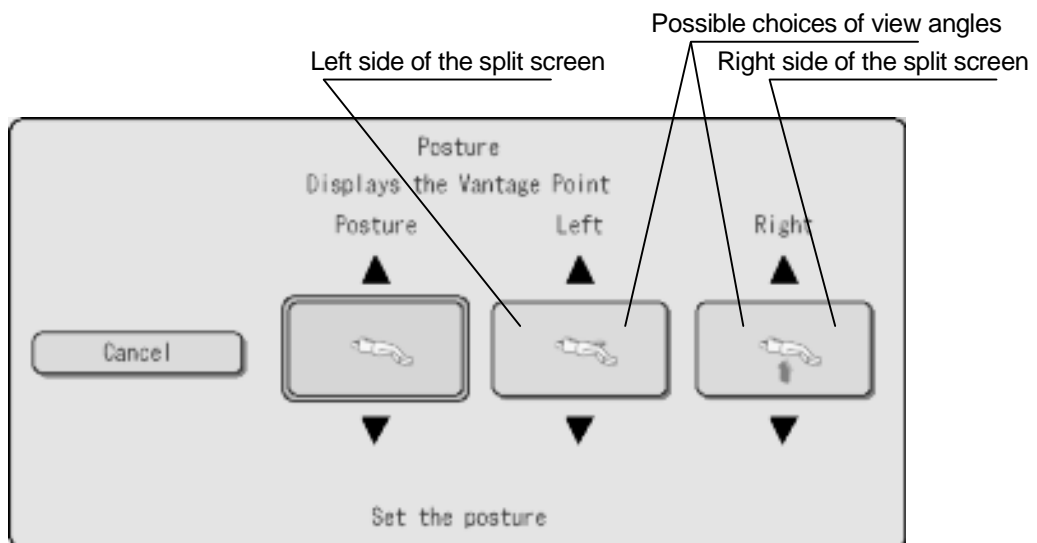
*oFor figure image*

Set the view angle of the figure image in respective left and right sides of the split screen.

1. Move the cursor on the "Posture" and press the "ENTER" button on the control panel.
2. Press the Zoom in or Zoom out button to select the posture of the figure image.



3. Move the cursor on the "Left screen" and press the "ENTER" button on the control panel.
4. Press the Zoom in or Zoom out button to select the view(ing) angle in the left screen.



5. Move the cursor on the “Right screen” and press the “ENTER” button on the control panel.
6. Press the Zoom in or Zoom out button to select the view(ing) angle in the right screen.

[NOTE]

- The view angle against the figure image can be selected from four angles: anterior, posterior, right lateral, or left lateral. Other angles cannot be selected.
- The view angle in the left side of the split screen can be selected as either anterior or posterior. The view angle in the right side of the split screen can be selected as either right lateral or left lateral.
- The view angle in the single screen is the same as selected for the front/back view or lateral view. Other angles cannot be selected.

○ *Displaying the viewpoint indicator arrow*

1. Set the display of the viewpoint indicator arrow for the figure image.

Setting value	Description
ON	Displays the viewpoint indicator arrow for the figure image.
OFF	Not display the viewpoint indicator arrow for the figure image.

○ *Displaying position of the figure image*

1. Set the displaying position of the figure image

Setting value	Description
Lower left	Displays the figure image at the lower left part of the screen.
Upper right	Displays the figure image at the upper right part of the screen.

○ *Displaying the AP symbol*

1. Set the display of the AP icon in the left screen in the split-screen display mode.

Setting value	Description
ON	Displays the AP symbol in the left screen.
OFF	Not display the AP symbol in the left screen.

○ *Automatic resetting of the posture of the figure image*

1. Set automatic resetting of the viewing angle and the posture of the figure image at completion of the examination.

Setting value	Description
ON	Resets the viewing angle automatically at completion of the examination.
OFF	Not reset the viewing angle automatically at completion of the examination.

[NOTE]

For the method to change the viewing angle, see Section 5.1 “Rotating the scope model”.

○ *Single screen*

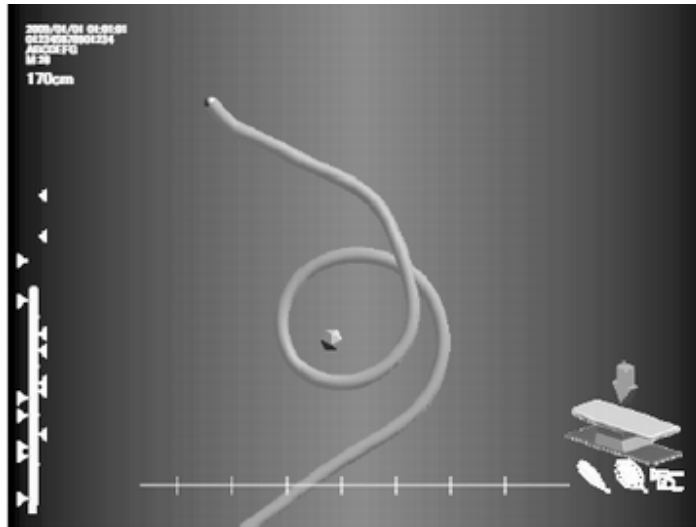
1. Set the view angle in the single screen.

Setting value	View angle in the single screen
Left side	The view angle in the left side of the split screen.
Right side	The view angle in the right side of the split screen.

○ *Setting the background color in right and left sides of the split screen*

1. The background color of the respective right and left sides of the split screens can be selected.

Setting value  
 Black  
 Green  
 Blue



Bluish violet gradation

### *Resetting*

1. Select whether the view angle is reset automatically at the end of the examination.

Setting value	Description
ON	Resets the view angle automatically at the end of the examination.
OFF	Not reset the view angle automatically at the end of the examination.

#### [NOTE]

For changing the view angle, refer to Section 5.1, “Rotating the scope model”.

### *Displaying the viewpoint indicator arrow*

1. Select whether the viewpoint indicator arrow for the figure image is displayed.

Setting value	Description
ON	Displays the viewpoint indicator arrow for the figure image.
OFF	Not display the viewpoint indicator arrow for the figure image.

## 8.4 Adjustment

### oSubmenu of adjustment

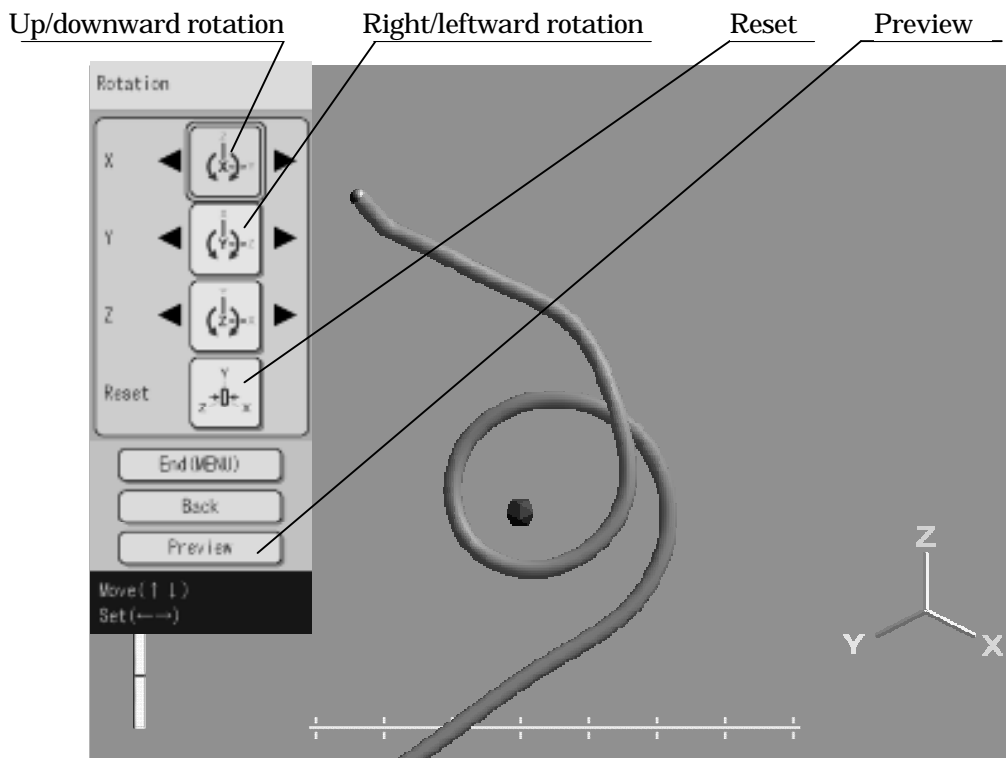
1. Move the cursor on the “Adjustment” in the submenu list and press the “ENTER” button on the control panel to display the window for adjustment.
2. Move the cursor on the category to be adjusted and press the “ENTER” button on the control panel.

### oFine correction for rotation

The view angle can be corrected.

1. Move the cursor on the “X axis” and press the “ROTATE LEFT” or “ROTATE RIGHT” button on the control panel to rotate the scope model.

Button	Rotation of the scope model
ROTATE LEFT	Rotates 2.5 degrees in an upward direction.
ROTATE RIGHT	Rotates 2.5 degrees in a downward direction.



2. Move the cursor on the “Right/leftward rotation” and press the “ROTATE LEFT” or “ROTATE RIGHT” button on the control panel to rotate the scope model. The followings are the buttons and their rotation directions and angles.

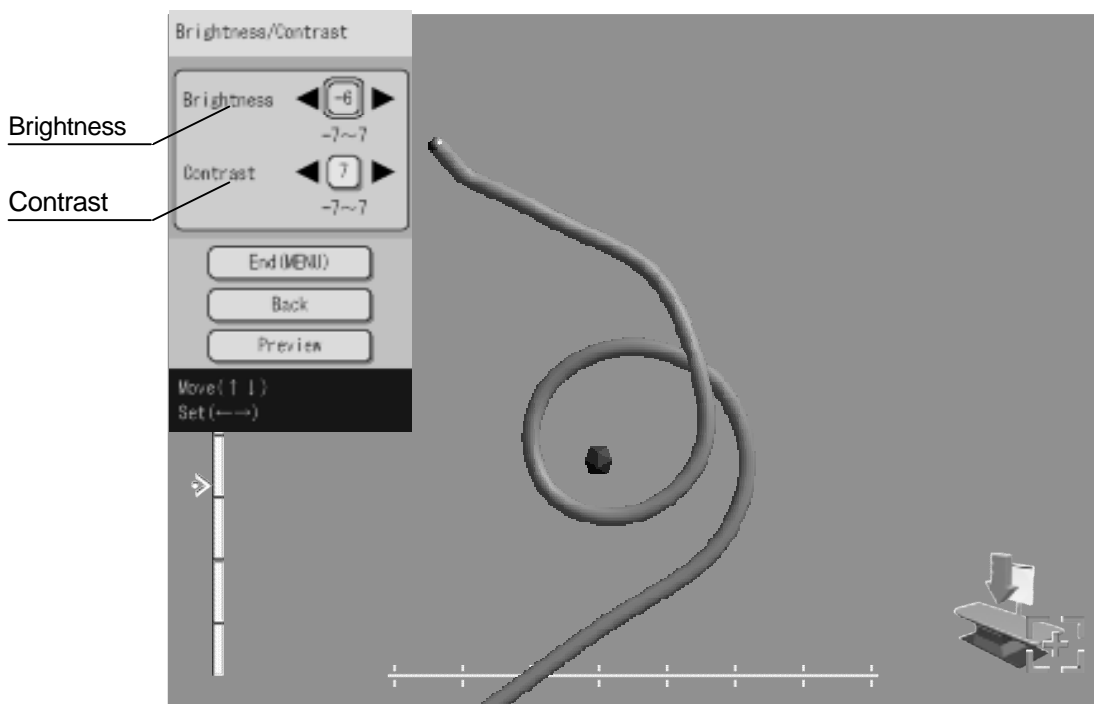
Button	Rotation of the scope model
ROTATE LEFT	Rotates 2.5 degrees in a leftward direction.
ROTATE RIGHT	Rotates 2.5 degrees in a rightward direction.

3. Move the cursor on the “Preview” button and press the “ENTER” button to reduce the size of menu list. Press the “ENTER” button again return the small size of menu list to its original size.

4. After the setup is completed, press the “MENU” button on the control panel.

### ○ *Brightness and contrast adjustment*

1. Move the cursor on the “Brightness” button and press the “ROTATE RIGHT” or “ROTATE LEFT” button to adjust the brightness.



2. Move the cursor on the “Contrast” button and press the “ROTATE RIGHT” or “ROTATE LEFT” button to adjust the brightness.

3. Move the cursor on the “Preview” button and press the “ENTER” button to reduce the size of menu list. Press the “ENTER” button again return the small size of menu list to its original size.



4. After the setup is completed, press the “MENU” button on the control panel.

## Chapter 9 Troubleshooting

If the endoscope position detecting unit is visibly damaged, does not function as expected, or is found to have irregularities during the inspection described in Chapter 3, “Inspection” and Chapter 7, “Installation and Connection”, or the use described in Chapter 4, “Operation”, do not use the endoscope position detecting unit and contact Olympus. Some problems that appear to be malfunctions may be correctable by referring to Section 9.1, “Troubleshooting guide”. If the problem cannot be resolved by the described remedial action, stop using the endoscope position detecting unit and contact Olympus.

[DANGER]

Never use the endoscope position detecting unit if an abnormality is suspected. Damage or irregularity in the instrument may compromise patient or user safety and may result in more severe equipment damage.

### 9.1 Troubleshooting guide

The following table shows the possible causes of and countermeasures against troubles that may occur due to equipment setting errors or deterioration of consumable.

Troubles or failures other than those listed in the following table need repair. As repair performed by persons who are not qualified by Olympus could cause patient or user injury and/or equipment damage, be sure to contact Olympus for repair.

Irregularity description	Possible cause	Solution
The endoscope position detecting unit cannot be turned on.	The endoscope position detecting unit is not connected to a hospital-grade power outlet.	Connect the endoscope position detecting unit to the power outlet using the power cord.
	Power is not supplied to the hospital-grade power outlet.	Supply power properly to the power outlet.
The scope model is not displayed on the monitor.	The setup menu is being displayed.	Display the scope model as described in “Saving and recalling the display setup”.
	The UPD cable is not connected.	Connect the UPD cable.

	The UPD cable is not connected to the endoscope.	Connect the UPD cable to the endoscope.
	The monitor cable is not connected.	Connect the monitor cable.
	The monitor cable failure.	Replace the monitor cable.
	The reference plate (MAJ-1860) is attached improperly to the patient's body.	Attach the reference plate properly to the patient's body as described in "Attaching the reference plate (MAJ-1860) to the patient's body".
	The scope model zooming ratio is improper.	Set an optimum zooming ratio.
		Press the reset switch to initialize the zooming ratio.
	The scope model rotation angle is improper.	Set an optimum rotation angle.
		Press the reset switch to initialize the rotation angle.
The monitor display is disturbed.	The monitor cable failure.	Replace the monitor cable.
The scope model display is unstable.	A strong magnetic field source is near the endoscope position detecting unit.	Move the endoscope position detecting unit away from the strong magnetic field source. Decrease the display speed of the scope model. See Section 8.2 "System setup".
	There is a large metallic object near the endoscope position detecting unit.	Move the endoscope position detecting unit away from the large metallic object.

	The reference plate (MAJ-1860) is attached improperly to the patient's body.	Attach the reference plate properly to the patient's body as described in "Attaching the reference plate (MAJ-1860) to the patient's body".
The scope model display is distorted.	A strong magnetic field source is near the endoscope position detecting unit.	Move the endoscope position detecting unit away from the strong magnetic field source. Decrease the display speed of the scope model. See Section 8.2 "System setup".
	There is a large metallic object near the endoscope position detecting unit.	Move the endoscope position detecting unit away from the large metallic object.
	The material and/or structure of the operating table causes distortion of the scope model.	Contact Olympus.
Patient data is not displayed.	The video system center is not connected.	Connect the video system center as described in "Connection to the video system center".

○ Error messages

Message	Possible cause	Solution
The scope shape can not be displayed. CLV-UPD cable is not connected, or there is malfunction in endoscope, CLV-UPD cable or CLV. When the problem is not solved even if the CLV-UPD cable is reconnected, please contact the Olympus service center.		
The scope shape cannot be displayed. The scope connection may be wet. Check the connection and re-insert the scope again. If the error continues, please contact the Olympus service center.		
The scope shape can not be displayed. There is malfunction in endoscope or UPD cable. Please contact the Olympus service center.	The endoscope or connection cable can be malfunctioning.	<ul style="list-style-type: none"> <li>• Contact Olympus.</li> <li>• If another endoscope functions normally, the endoscope has been used can be malfunctioning.</li> </ul>
The receiver dish or receiver dish cable is not connected. Please connect the receiver dish or receiver dish cable.	The receiver dish cable is connected incorrectly.	For connecting the receiver dish cable, refer to Section 7.3, "Installation of the receiver dish".
There is malfunction in UPD-3. Please contact the Olympus service center.		
The date/time internal battery has expired. As a result, the date/time may be inaccurate. Please contact the Olympus service center.	The internal battery for saving the date and time data is dead.	<ul style="list-style-type: none"> <li>• Contact Olympus.</li> </ul>
The previously used settings could not be restored. All settings will be restored to factory settings. Please apply custom settings afterwards as needed.	Saving the previous settings has failed.	All settings return to the factory default settings. Reset the all settings.
The scope position could not	When the display range	Move the reference plate to a

be set. The reference plate is out of the setting range for scope position. Change the reference plate to tracking mode, then set the scope position again.	of the scope model is set, the reference plate was located outside of the detection area of the receiver dish.	location within the detection area of the receiver dish and perform the setting again. See Section 5.7 "Setting the scope model display range".
The scope position settings could not be set. There is malfunction in the hand coil. Please contact the Olympus service center.	The hand coil may be malfunctioning.	Contact Olympus.
The scope position could not be set. The scope or probe is not connected. Please connect the scope or probe and set the scope position again.	Setting the scope model display range was performed without connecting the endoscope or the position detecting probe to the endoscope position detecting unit.	Connect the endoscope or the position detecting probe to the endoscope position detecting unit.
The bookmark was not saved. Bookmarks cannot exceed 50 per case. Please delete an existing bookmark before saving a new one.	More than 50 markings attempt to be put.	Delete the all markings and put new markings again. See Section 5.6, "Marking".
The hand coils can not be used because two hand coils are connected at the same time. Please do not connect the hand coil which will not be used.	The hand coils were connected to both the main unit and the connection unit.	Disconnect either of the hand coils connected to the main unit and the connection unit.
The reference plate can not be used because two reference plates are connected at the same time. Please do not connect the reference plate which will not be used.	The reference plates were connected to both the main unit and the connection unit.	Disconnect either of the reference plates connected to the main unit and the connection unit
The scope shape can not be displayed because the connection with the video system center was lost. Please check the video system center connection.		
Remote connection settings		

with the video system center are not correct. Please change the remote connection settings to LINK-IN.		
There is an error in date input field. Are you sure you want to exit without saving?		
The hand coil switch is depressed. Please check the switch.		
The front panel or remote controller button is depressed. Please check the buttons.		
Writing settings from the maintenance computer. Please do not turn off the power to the UPD-3 until the writing process is complete.		
The settings cannot be restored because no backup data exists.		
This will restore the factory settings and delete all data. Are you sure you want to proceed?		

## *9.2 Returning the endoscope position detecting unit for repair*

[CAUTION]

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

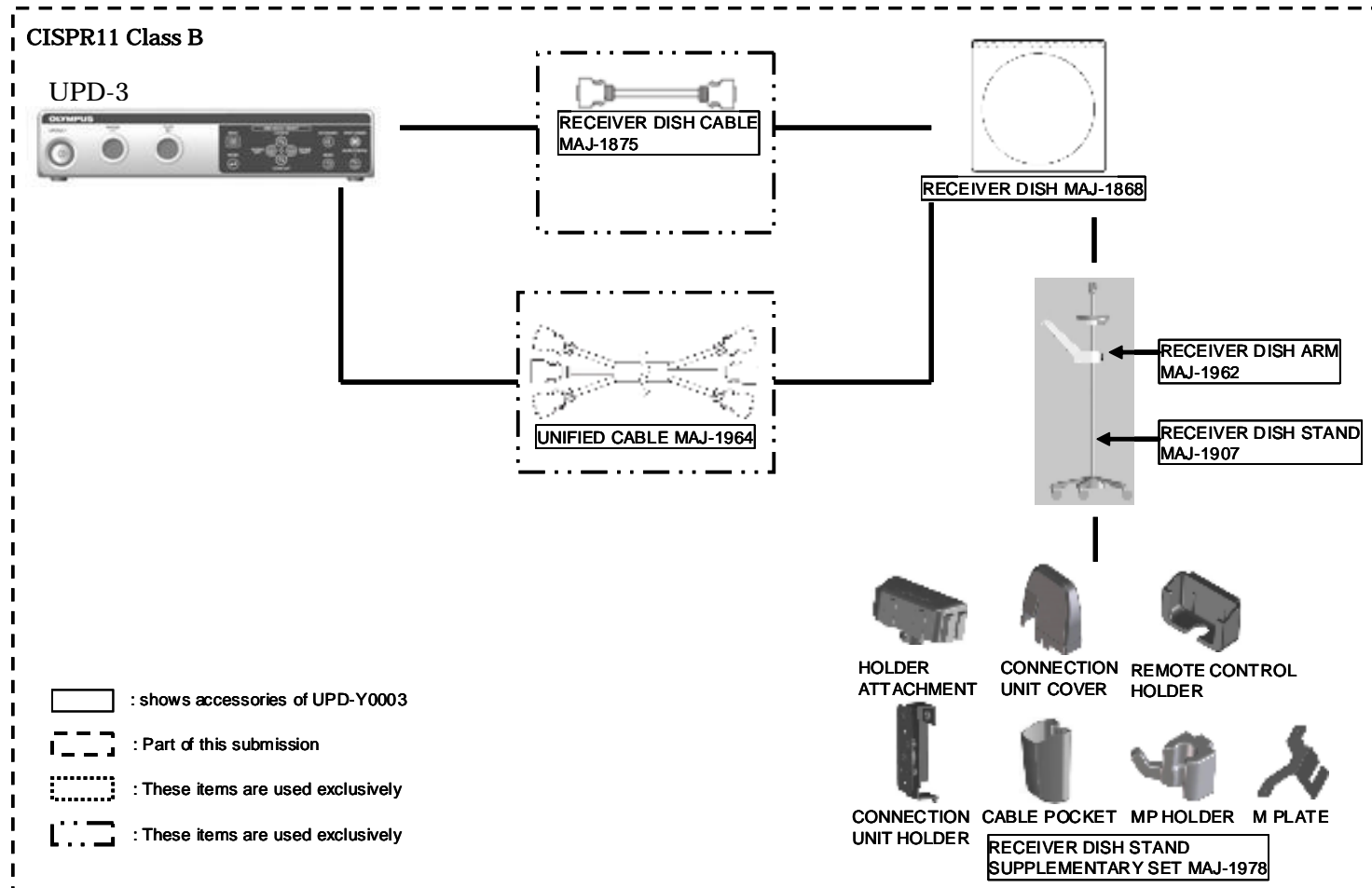
When returning the video system center for repair, contact Olympus. With the video system center, include a description of the malfunction or damage and the name and telephone number of the individual at your location who is most familiar with the problem. Include a repair purchase order.

[NOTE]

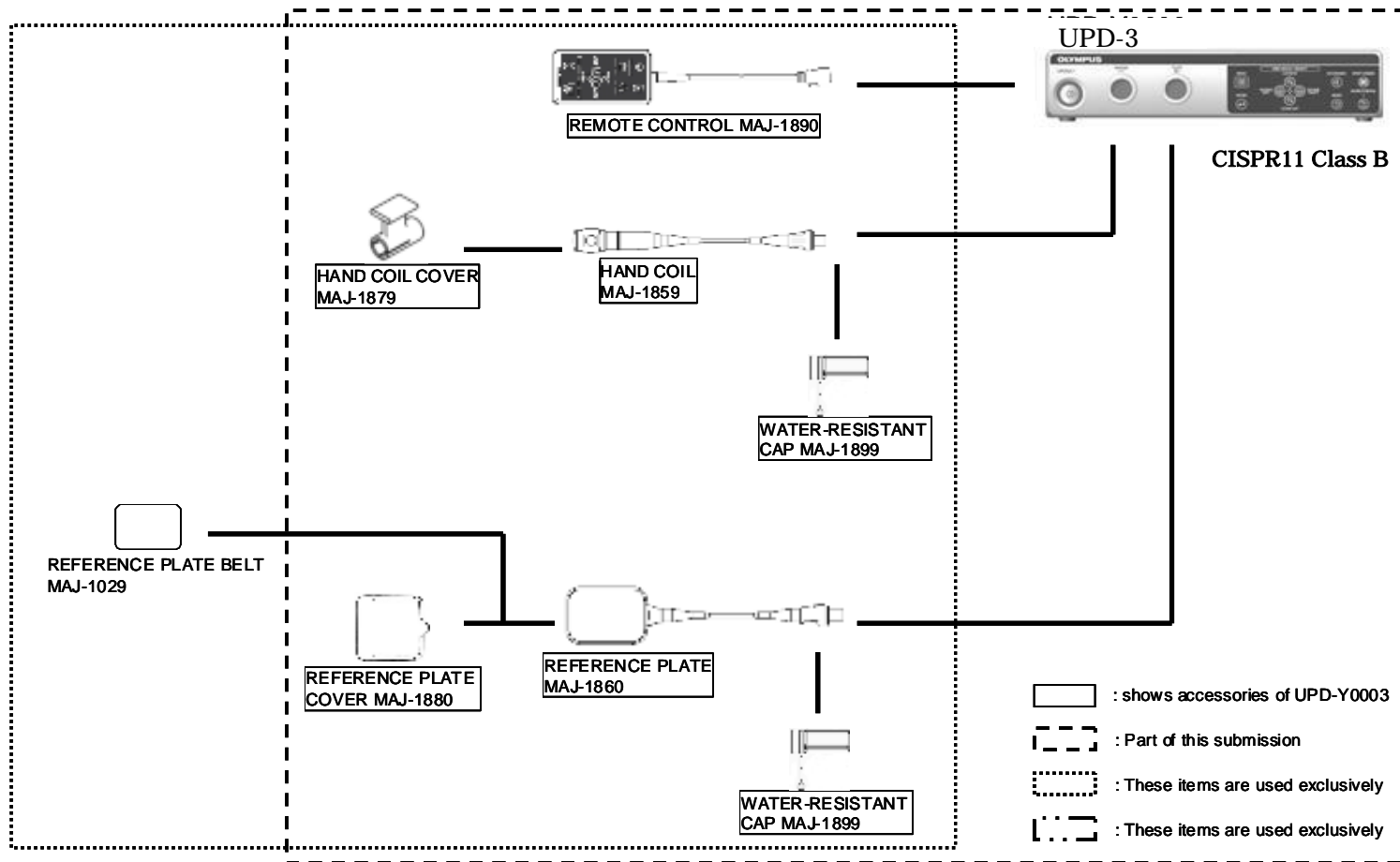
When the accessories of the position detecting unit, contact Olympus to purchase a replacement.



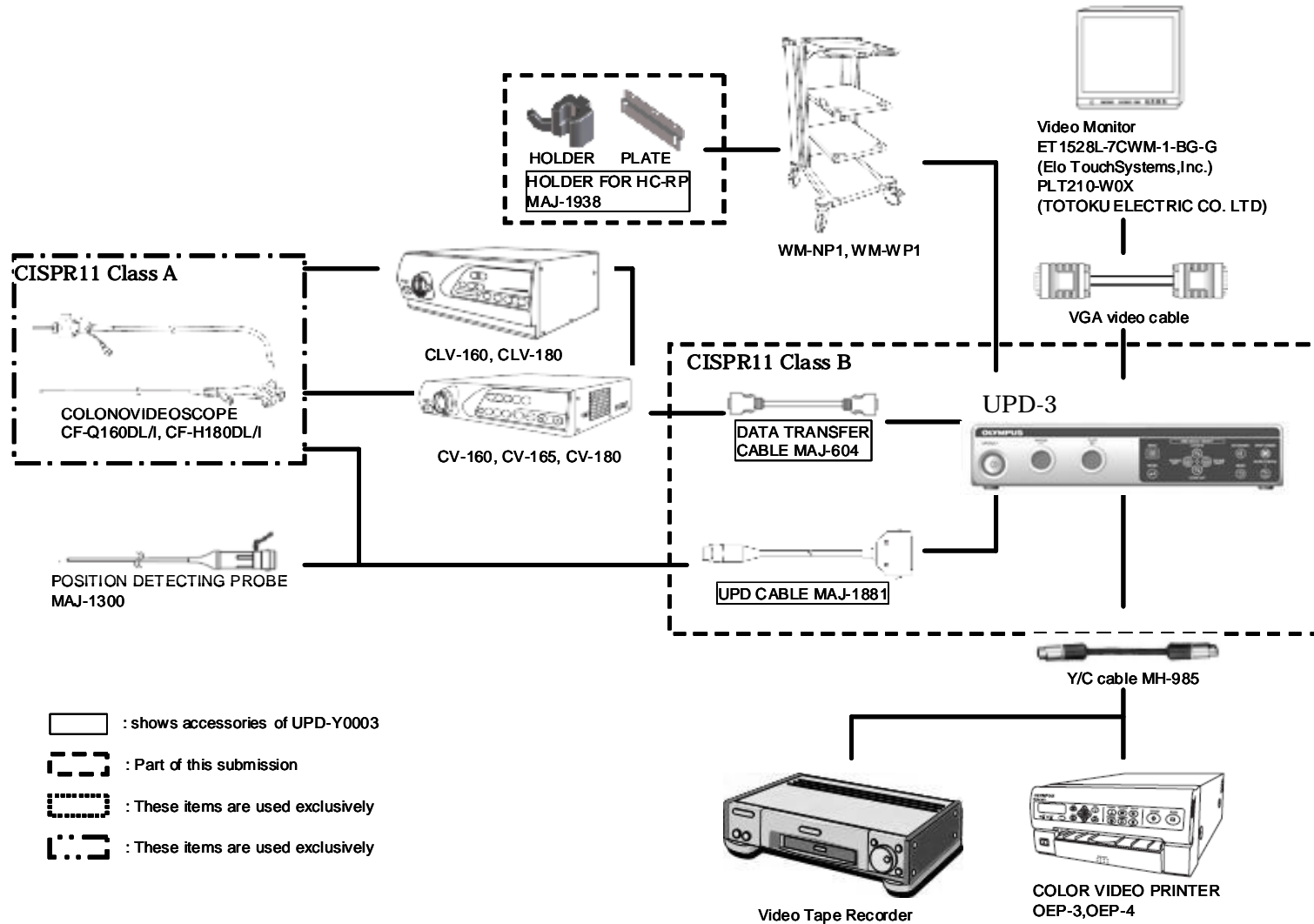
*Appendix*  
*System chart (1/3)*



*System chart (2/3)*



System chart (3/3)





### *Transportation, storage, and operation environment*

Transportation and storage environment	Ambient temperature	-25 to +70°C (-13 to +158°F) Relative
	humidity	10 - 95%
	Atmospheric pressure	700 - 1060 hPa
Operation environment	Ambient temperature	10 - 40°C (50 - 104°F)
	Relative humidity	30 - 85% (without condensation)
	Atmospheric pressure	700 - 1060 hPa (0.7 - 1.1 kgf/cm <sup>2</sup> ) (10.2 - 15.4 psia)

### *Specifications*

	Item	Specifications
Power supply	Voltage	100 – 120 VAC 220 – 240 VAC (see the electrical rating label on the rear panel)
	fluctuation	±10%
	Frequency	50/60 Hz
	Frequency Fluctuation	±1 Hz
	Input current	100VA (at 100 – 240 VAC)
Size	Dimensions	370 (W) × 80.7 (H) × 482 (D) mm
	Weight	9 kg
Classification (medical electrical equipment)	Type of protection against electric shock	Class I
	Degree of protection against electric shock of applied part	TYPE BF applied part Where no classification mark appears, the equipment is a TYPE BF applied part.

	Item	Specifications
	Explosion proofing degree	Use in a flammable atmosphere is prohibited
Video signal outputs	XGA	1024×768 Horizontal frequency 48.5kHz Vertical frequency 60Hz
	Y/C	NTSC, PAL
	SD-SDI	SMPTE259M

	Item	Specifications
<p>Medical Device Directive (For 220 – 240 V type equipment)</p>		<p>This device complies with the requirements of Directive 93/42/EEC concerning medical devices.                      Classification: Class II a                      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.                      Emission: Class A of EN 55011</p>
<p>WEEE Directive (For 220 – 240 V type equipment)</p>		<p>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.                      Refer to your local Olympus distributor for return and/or collection systems available in your country.</p>
<p>EMC</p>	<p>Applied standard; IEC 60601-1-2: 2007</p>	<p>This instrument complies with the standards listed in the left column.                      CISPR 11 of emission:                      Group 1, Class B                      This instrument complies with the EMC standard for medical electrical equipment; edition 3 (IEC 60601-1-2: 2007). 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.</p>

	Item	Specifications
Year of manufacture	7001234 ↑ The last digit of the year of manufacture is the second digit of the serial number.	The last digit of the year of manufacture
Degree of protection against electric shock	Reference plate Hand TYPE BF applied part coil	

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Specification of radio transmitter

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Center frequency: 9.888Hz, 10.712Hz, 11.536Hz

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Bandwidth: ±20Hz

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Modulation No modulation

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RF (Radio Frequency) output power: 70dB $\mu$ V/m or less (at a distance of 3 meters)

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## 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.

### oMagnetic emission compliance information and recommended electromagnetic environments

<b>Emission standard</b>	<b>Compliance</b>	<b>Guidance</b>
RF emissions 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.
RF emissions 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 CISPR 11		
Harmonic emissions 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 IEC 61000-3-3	Complies	This instrument stabilizes own radio variability and has no affect such as flicker of a lighting apparatus.



○ Electromagnetic immunity compliance information and recommended electromagnetic environments

Immunity test	IEC 60601-1-2 test level	Compliance level	Guidance
Electrostatic discharge (ESD) IEC 61000-4-2	Contact: $\pm 2, \pm 4, \pm 6$ kV  Air: $\pm 2, \pm 4, \pm 8$ kV	Same as left	Floors should 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 IEC 61000-4-4	$\pm 2$ kV for power supply lines  $\pm 1$ kV 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 IEC 61000-4-5	Differential mode: $\pm 0.5, \pm 1$ kV  Common mode: $\pm 0.5, \pm 1, \pm 2$ 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 IEC 61000-4-11	$< 5\% U_T$ ( $>95\%$ dip in $U_T$ ) for 0.5 cycle <hr/> $40\% U_T$ ( $60\%$ dip in $U_T$ ) for 5 cycles <hr/> $70\% U_T$ ( $30\%$ dip in $U_T$ ) for 25 cycles <hr/> $< 5\% U_T$ ( $>95\%$ dip in $U_T$ ) for 5 seconds	Same as left	Mains power quality should be that of a typical commercial or hospital environment. If the user of this instrument required continued operation during power mains interruptions, it is recommended that this instrument be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field 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]

UT is the a.c. mains power supply prior to application of the test level.

- Cautions and recommended electromagnetic environment regarding portable and mobile RF communications equipment such as a cellular phones.

Immunity test	IEC 60601-1-2 test level	Compliance level	Guidance
Conducted RF IEC 61000-4-6	3 V <sub>rms</sub> (150 kHz - 80 MHz)	3 V (V <sub>1</sub> )	Formula for recommended separation distance (V <sub>1</sub> =3 according to the compliance level)  $d = \left[ \frac{3.5}{V_1} \right] \sqrt{P}$
Radiated RF IEC 61000-4-3	3 V/m (80 MHz - 2.5 GHz)	3 V/m (E <sub>1</sub> )	Formula for recommended separation distance (E <sub>1</sub> =3 according to the compliance level)  $d = \left[ \frac{3.5}{E_1} \right] \sqrt{P}$ 80 MHz to 800 MHz  $d = \left[ \frac{7}{E_1} \right] \sqrt{P}$ 800 MHz to 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.

FCC information	
	This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. <b>FCC ID:S8QUPD-3</b>
IC information	
	This equipment complies with the IC RSS210. <b>IC: 4763B-UPD3</b>
FCC warnings	
	Change or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. All interface cables used to connect peripherals must be shielded in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.
IC note	
	Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

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Manufactured by

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