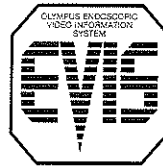


INSTRUCTIONS

OLYMPUS CLV-U20

EVIS UNIVERSAL LIGHT SOURCE



XENON Lamp →

PART NO. 8310054

WARNING

The user of this equipment should be thoroughly trained in the applicable procedure. Furthermore, failure to read and thoroughly understand the contents of this instruction manual may result in serious injury to the patient and/or user. It is essential to follow the instructions contained in this and other manuals which pertain to any equipment and accessories used in conjunction with this equipment. Possible injuries related to endoscopic procedures may include electric shock, explosion, burns, perforation, hemorrhage, etc. Failure to follow these instructions may also result in damage to and/or malfunction of this equipment.

CAUTION

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

OLYMPUS®

IMPORTANT

The Olympus CLV-U20 has been designed for endoscopic diagnosis, treatment and photo documentation in conjunction with Olympus endoscopes, accessories and other ancillary equipments. Do not use the instrument for any purpose other than its intended application.

Please read this entire manual carefully before using the instrument. It contains pertinent information on the proper care and handling of your videoscope. Although videoscopes by nature are delicate instruments, proper handling and cleaning, as described in this manual, will greatly reduce the need for costly repair and maximize the life of your new instrument.

This manual describes the recommended procedures for preparing and inspecting the equipment prior to use. It does not describe how an actual procedure is to be performed in detail. Nor does it attempt to acquaint a beginner with endoscopic technique and the medical aspects of endoscopy. This instrument should be used only by physicians who have received thorough previous training in the art of endoscopy.

The safety and performance of an endoscopic system depends not only on the endoscope but also on any ancillary equipment used with it. Safety precautions must be exercised when handling electrical equipment to prevent operator/patient shock.

If you have any questions concerning the material contained in this manual or concerning the operation or safety of the equipment, please contact your Olympus representative or the nearest Olympus office.

SAFETY SYMBOLS



Replace the Lamp and Filter-2 following the instructions (Section 9-1 Replacement of Lamps; 9-2 Replacement of Filter-2).



The lamp and heat sinks are extremely hot immediately after use. Allow sufficient time for them to be cooled before lamp replacement.

CONTENTS

1	FEATURES AND MAIN SPECIFICATIONS	1	1
1-1	Features	1	
1-2	Main Specifications	2	
1-3	Safety Precaution	4	
2	DESCRIPTION OF CONTROLS	6	2
3	CONSTRUCTION	9	3
4	STANDARD SET	10	4
5	PREPARATION FOR USE	11	5
5-1	Installation of the Light Source	11	
5-2	Connection to AC Mains Supply	12	
5-3	Preparation of the Videoscope	13	
5-4	Preparation for Air Feeding/Water Feeding and Suction	13	
5-5	Connecting the Endoscope to the Light Source	14	
5-6	Preparation for Still Photography	15	
5-7	Preparation for Cinematography, CCTV and Polaroid Photography	15	
6	INSPECTION OF ENDOSCOPIC SYSTEM	16	6
7	OPERATING THE LIGHT SOURCE	24	7
7-1	Use in Combination with the Videoscope	24	
7-2	With Fiberscope	25	
7-3	With Rigid Scopes	26	
7-4	Cinematography and CCTV	27	
7-5	After Use	27	
8	CARE AND STORAGE	28	8
8-1	Care after Use	28	
8-2	Storage	28	
9	MAINTENANCE	29	9
9-1	Replacement of Lamps	29	
9-2	Replacement of Filter-2	31	
9-3	Resetting the Circuit Breaker	31	
9-4	Cleaning the Ventilation Grills	32	
9-5	Periodic Inspection	32	
10	TROUBLESHOOTING GUIDE	33	10
11	ENDOSCOPIC SYSTEM CHART (EVIS/OES SYSTEMS)	35	11
11-1	OES System Chart	35	
11-2	EVIS Endoscopic Video Information System	37	

1 FEATURES AND MAIN SPECIFICATIONS

1-1 Features

1. By use of the mode selector, the instrument serves as a possible and universal light source for OES-fiberscopes, Olympus rigid scopes for EVIS 100 System (instantaneous single-plate color chip system), and for EVIS 200 System (sequencing system).
2. By use of OES system, EVIS 100 system and EVIS 200 system, the insertion position of the scope point can be checked by the transillumination function.
3. When using EVIS 100 or EVIS 200 system, by use of the Foot Switch, the ancillary equipments can be released.
4. Combined with OES fiberscope, SC16-10 and rigid scope and SC16-10R, the following advantages can be offered.
 - Photographs under stable exposure can be taken in short distances.
 - Date is visible in the viewfinder and imprinted on film.
 - Remote shutter release using a foot switch frees the endoscopist from finger-tip shutter operation.
 - Indicators in the camera's viewfinder predict exposure level before taking photographs and the exposure level is given when taking photographs.
5. 1.5 times the flash output of the maximum illumination intensity of the light source is available.
6. Flat switches and display panel can be easily wiped clean.
7. An emergency lamp turns on instantly if the Xenon lamp burns out, to provide illumination bright enough for endoscope withdrawal. A light on the front panel indicates at a glance if the emergency lamp is not installed, is installed improperly or is burned out, or is lighting instead of the Xenon lamp.
8. Air feeding pressure can be adjusted in three levels.
9. With no scope and even when Xenon lamp illuminates, illumination light automatically dims to prevent dazzling and the air feeding pump simultaneously stops.
10. Combined with function expansion devices (under development), light source can be more functionated.

1-2 Main Specifications

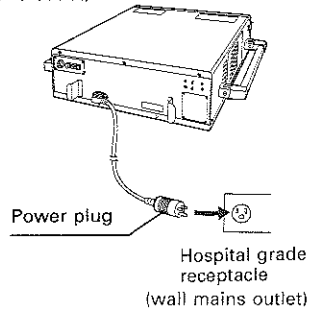
Illumination	Lamp	Xenon short-arc lamp (ozone-free) 300W
	Lamp life	Approx. 300 hours on continuous use.* (over 20,000 flashes)
	Ignition	Switching regulator
	Light output adjustment	Light-path diaphragm control
	Cooling	Forced-air cooling
	Color conversion	Filter-2 is replaceable.
	Emergency lamp	Halogen lamp (without mirror) 24V 150W
	Emergency lamp life	Approx. 500 hours.
Visual observation • Videoscope • Cine • TV	Adjustment method (Automatic)	Servodiaphragm method
	Auto exposure sensitivity Setting (Auto)	17 steps: 1 step 1/4 EV (F; full admission) Exposure decreases from INDEX NUMBER "Full" to "5".
Still Photography	Exposure control	Auto/Manual; time control by light source shutter
	Exposure light amount	Flash output (approx. 1.5 times visual light output)
	Shutter speed	1/4 to 1/100 sec.
	Shortest recycling time	1 sec.
	Auto exposure sensitivity setting	9 steps: 1 step = 1/2 EV. Exposure decreases from INDEX "1" to "5" (or from "+2" to "-2") with 1/2 EV per step.
	Manual exposure sensitivity setting	10 steps: 1 step = 1/2 EV, except for 1 EV between "F" (Full) and "1".
Air Feeding	Pump pressure (at output socket)	Linear type pump High: less than 0.5 kgf/cm ² (at flow rate 0) Medium: more than 1.6 l/min. (at 0.09 kgf/cm ²) Low: 0.075 – 0.15 kgf/cm ² (at flow rate 0) At "HIGH" the pressure is equivalent to that available by the other light source than OES/EVIS.

*On intermittent use, the lamp life may differ slightly.

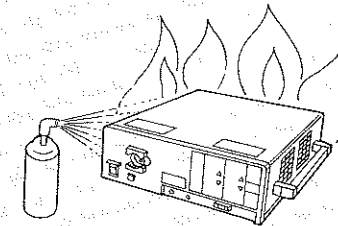
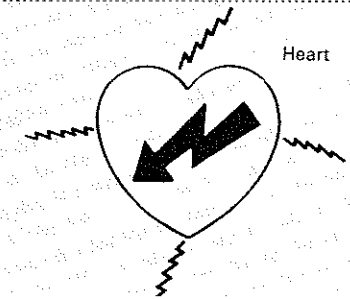
Water Feeding (for lens wash)	Method	Air pressurization of water container (detachable)				
	Water container	Capacity 250 cc. use of 2/3 full or less.				
Front Panel	Emergency lamp	Indication of Absent lamp, Burn-out or In operation				
	Filters	Setting of filter 1 and 2				
	Memorization of selected setting	Selected setting are retained even when the light source is switched off, by internal battery.				
Compatible Endoscopes	Available types	Videoscope (EVIS 100/200) OES fiberscope, Rigid scopes OES Ultra thin fiberscopes with rigid scope type eyepiece or fiberscopes for ultrasonic survey (GF-UM3, GF-UM20, JF-UM3, CF-UM3), OSF, OGF				
Compatible Cameras	Available types	Olympus medical camera SC16 series (SC16-10, -4, -3R, -3R2, -10R), SCP-10, OM-1N/SC35				
Classification (Electro-medical equipment)	Type of protection against electric shock	Class I (3-pin cord)				
	Degree of protection against electric shock	Type BF (Body Floating). Incorporates insulated patient attachment (endoscope). Application to the heart directly should not be attempted.				
	Degree of protection against explosion	The light source should be kept away from the zone of risk of flammable gases.				
Operating Environments	Power requirements	Voltage (AC)	110V	120V	220V	240V
		Frequency	50/60Hz			
		Input: at observation at flash	6A 8A	5A 7A	3A 4A	
		Voltage fluctuation	Within ±10%			
	Ambient temperature	10 — 40°C (50 — 104°F)				
Relative humidity	30 — 85%					
Atmospheric pressure	70 — 106 kPa (700 — 1060 mbar)					
Dimensions & Weight	587 (W) X 165 (H) X 537 (D) mm (max.), 20 kg (44 lb)					

1-3 Safety Precautions

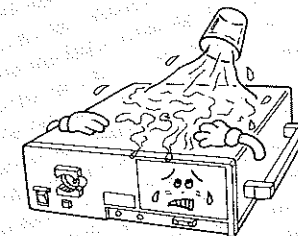
Be sure to connect the power plug to a hospital grade receptacle (a wall mains outlet).



- ① The CLV-U20 light source should be used only in a medical facility under the supervision of a trained physician.
- ② The light source is designed (floating) to function integrally with insulated patient attachment (endoscopes) to prevent operator/patient shock. Endoscopes and cameras to be used with it should not be grounded in order to prevent shocks which may be caused by leakage current from other electrical apparatus applied to the patient. The endoscopist should wear rubber gloves as an added precaution.
- ③ The housing of the light source must be grounded securely and effectively. Do not defect the line cord ground connection.
- ④ The light source/endoscope combination should never be applied to the heart directly.
- ⑤ Never install and operate the light source where there is the risk of flammable gases.
- ⑥ Keep liquids away from all electrical equipment to prevent operator shock and instrument damage. Do not use the light source if spilled fluids have entered the unit.

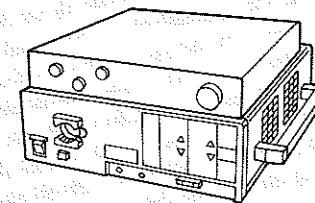


Flammable gases

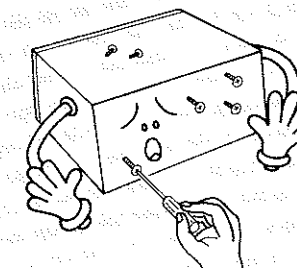
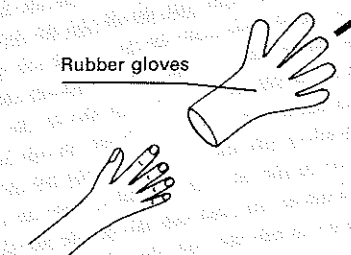


Spillable liquids

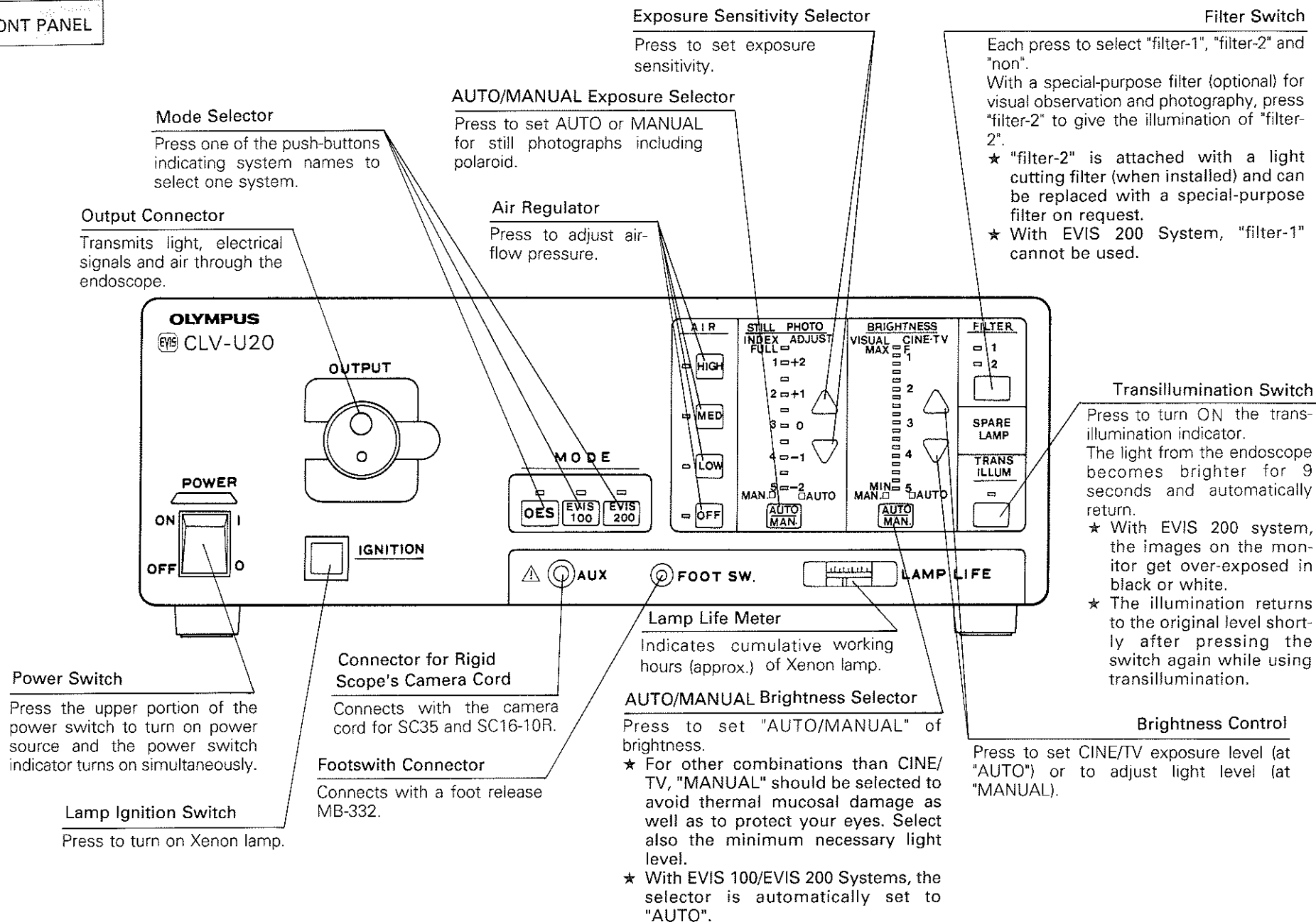
- ⑦ The light source/endoscope combination should not be used in conjunction with:
 1. Electrical apparatus whose safety against leakage current is not guaranteed.
 2. Electrosurgical equipment whose safety in linked usage is not guaranteed.
- ⑧ The light source should be used in accordance with the operating conditions described in this manual; otherwise, improper performance, compromised safety, or instrument damage may result.
- ⑨ Repairs should be carried out only by Olympus service personnel.



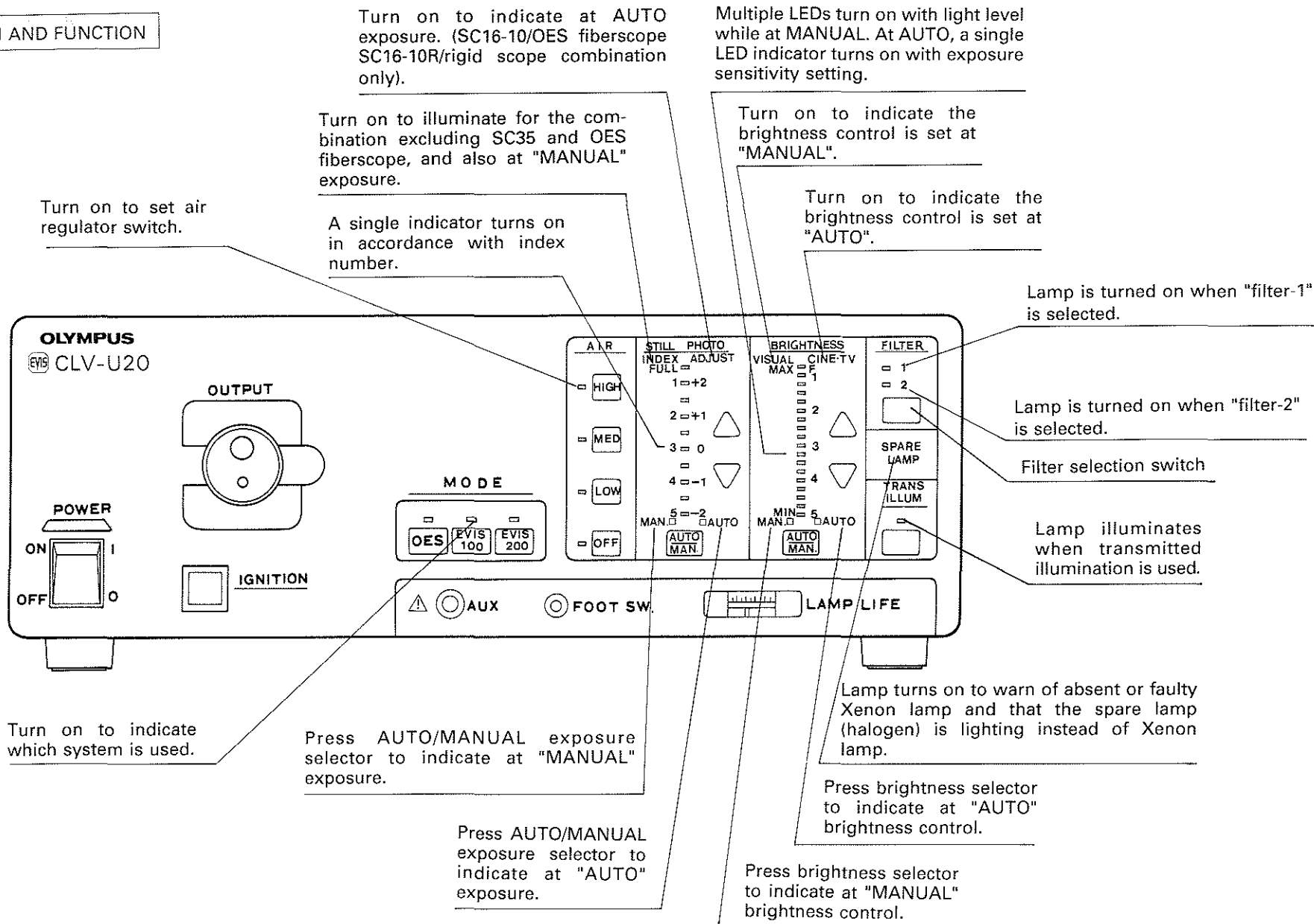
Combined use with equipment whose electrical safety is not guaranteed.



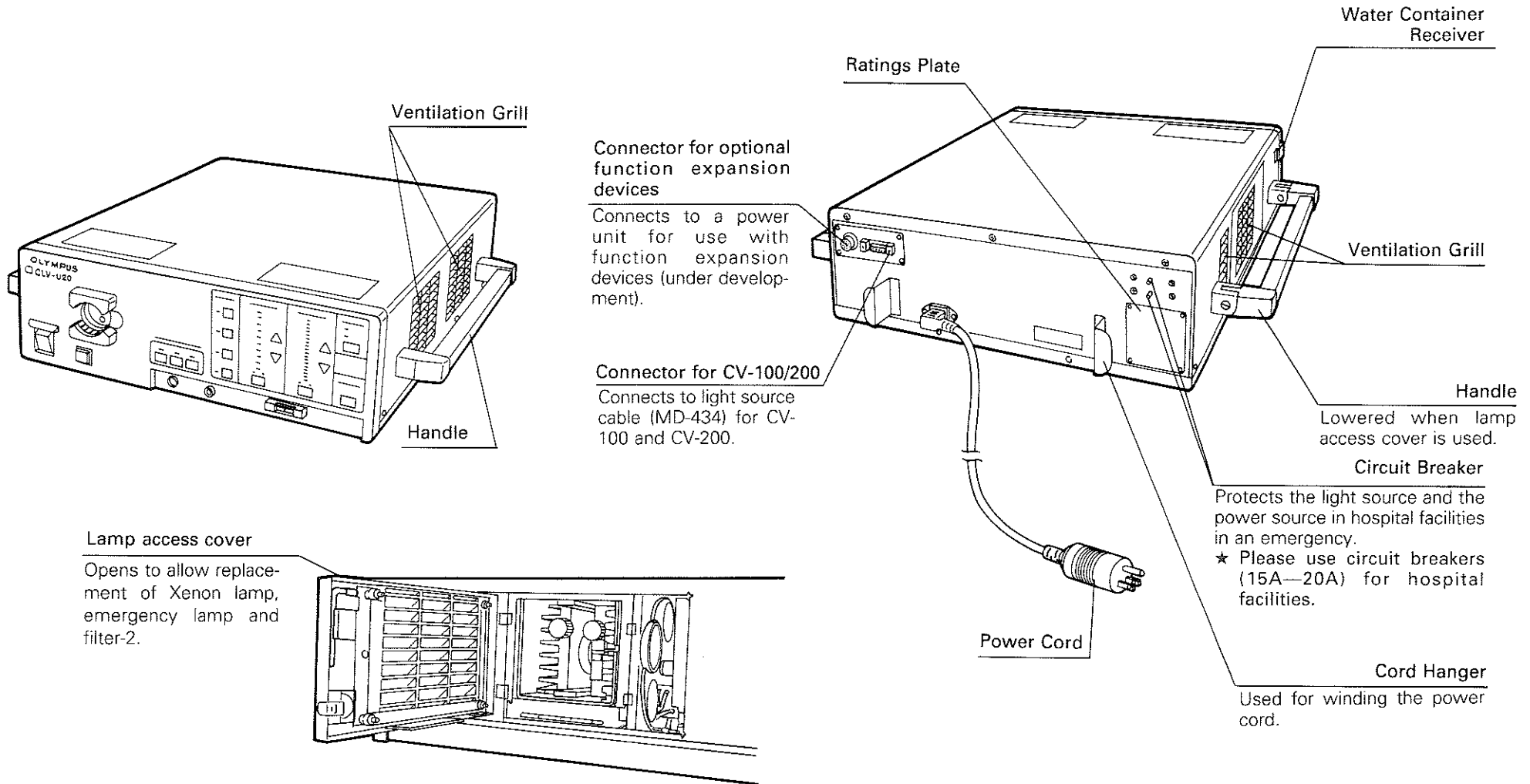
FRONT PANEL



DESIGNATION AND FUNCTION

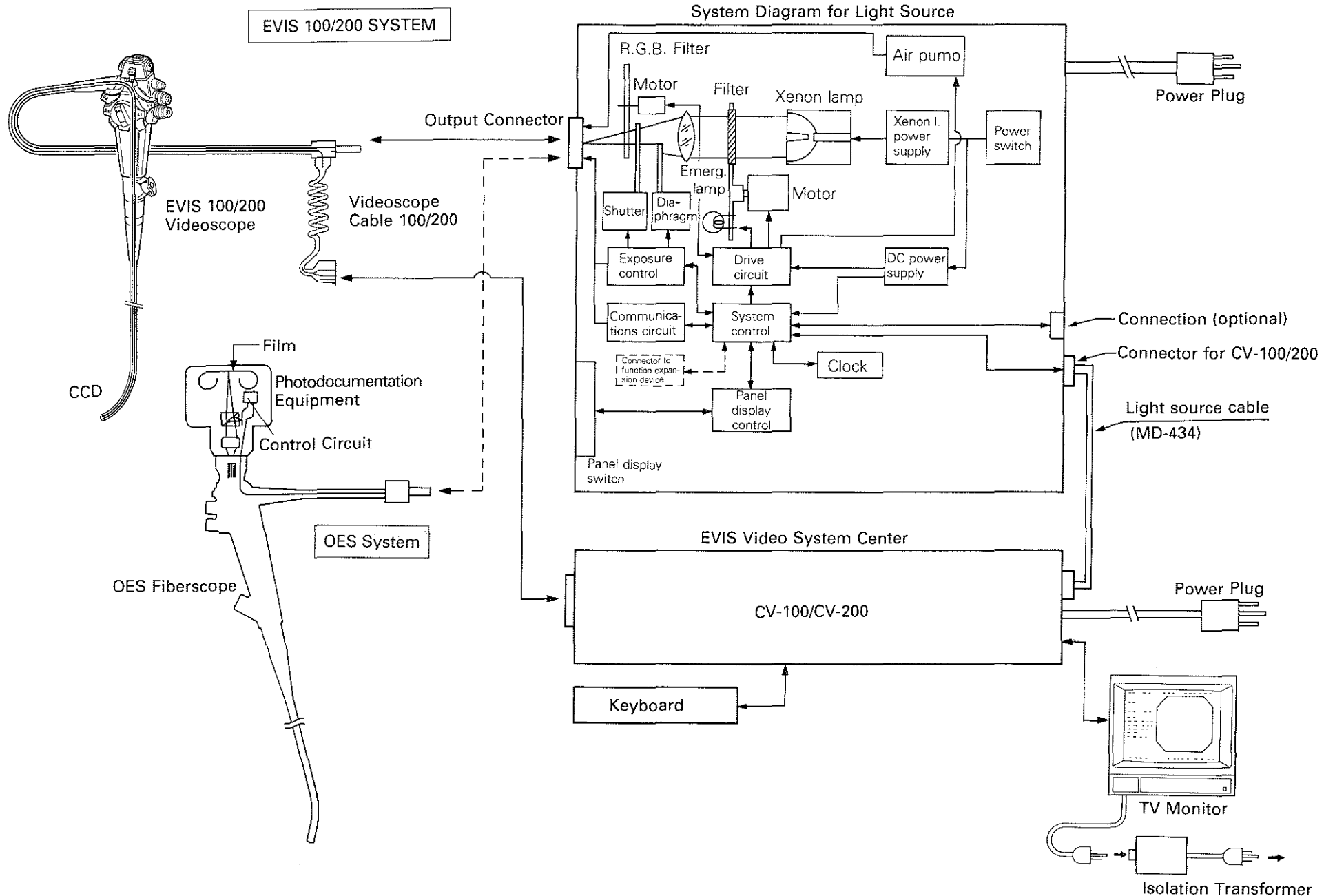


MAIN BODY



3 CONSTRUCTION

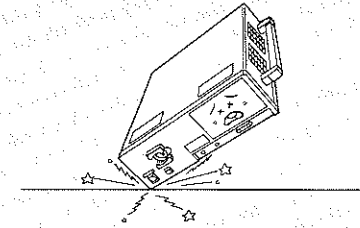
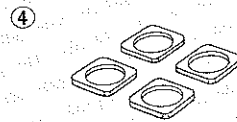
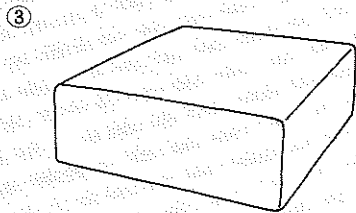
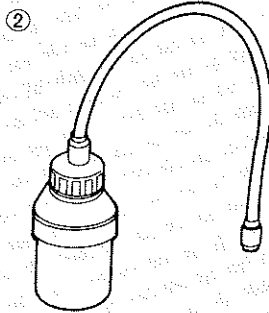
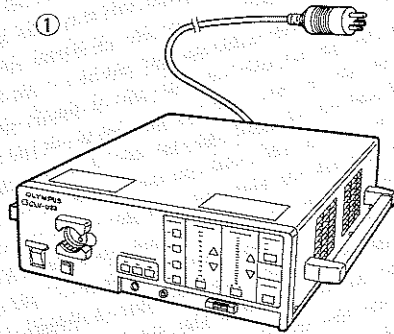
CONSTRUCTION 3



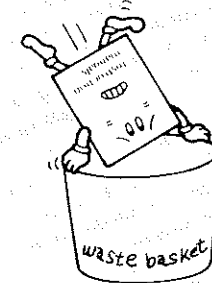
4

STANDARD SET

- | | |
|--|-------------------------------------|
| ① Main Body (CLV-U20) 1
(including Xenon lamp and emergency lamp) | ③ Vinyl Dust Cover (MD-448) 1 |
| ② Water Container (MD-431) 1 | ④ Foot Holder (MD-512) 1 set |



Do not handle roughly.



Place for easy use at any time.

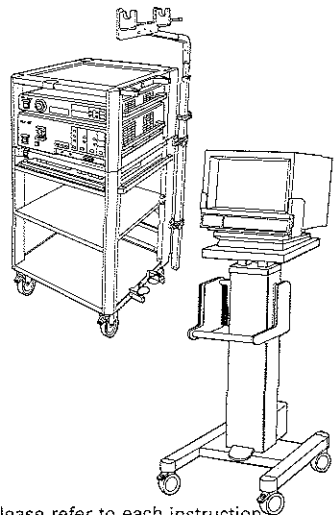
★ Store the instruction manual in the vinyl bag and retain for easy use at any time.

5 PREPARATION FOR USE

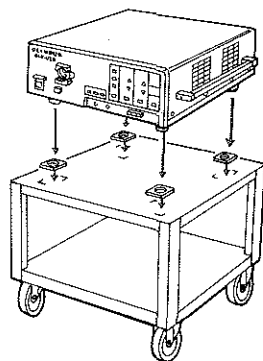
Refer also to the instruction manuals supplied with the endoscope and photographic attachments.

5-1 Installation of the Light Source

EVIS 100/200 System

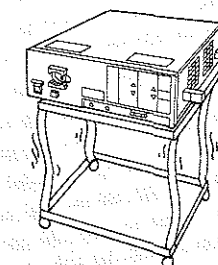


Please refer to each instruction manual for products.



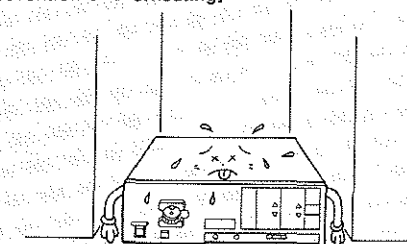
Use the foot holders for stable placement of the light source.

- ① Ensure the safety precautions in 1-3, page 4 are met.
- ② Place the light source on a stable surface in a horizontal position.
 - ★ Ventilation must not be blocked.
 - ★ Ensure the stability of the cart when the light source is placed on it.
 - ★ Do not use the side handle of the light source as a foot support.
 - ★ Please refer also to the instruction manuals for TC-V1, CV-100 and CV-200 when setting to TC-V1 (Compact Video Trolley).
 - ★ When combined with CV-100/200 and always set the light source below the video processor.
- ③ Always set the light source using the attached foot holder (MD-512) when placed on sliding surface or in case the light source moves while in use.

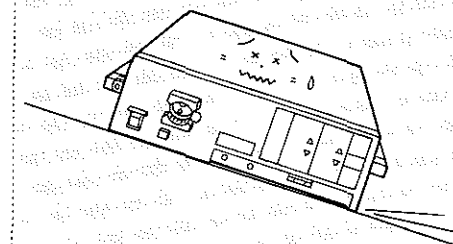


Place the light source on a stable base.

[Prevention of overheating]

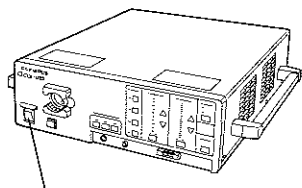


Ventilation must not be blocked.



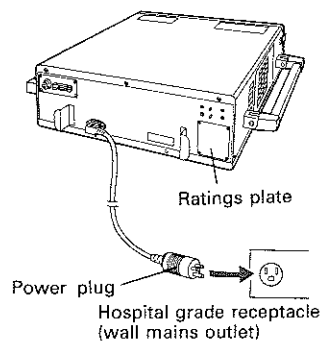
Place the light source in a horizontal position.

5-2 Connection to AC Mains Supply



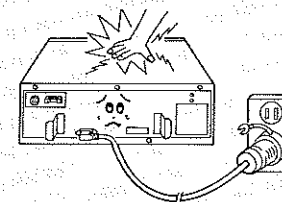
Power switch should be in the "OFF" position.

Always connect the power cord properly to the "HOSPITAL GRADE" receptacle or the wall mains outlet.

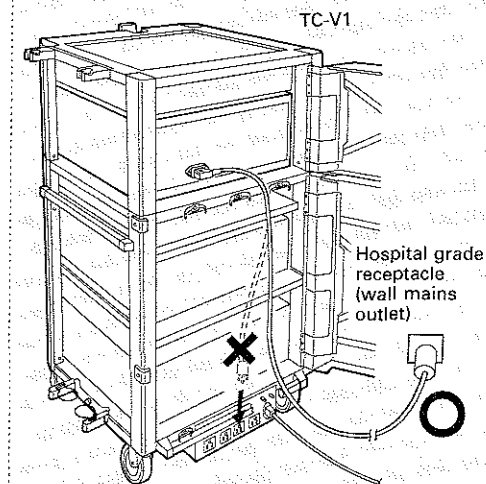


[Shock prevention]

- ① Make sure the power switch is in the off position.
- ② Connect the power cord properly to the "HOSPITAL GRADE" receptacle or the wall mains outlet that meets the input requirements indicated on the ratings plate on the rear panel of the light source.
 - ★ Do not use converter adapter from three pin power plug to two pin power plug for safety precautions.
 - ★ Connect the light source directly to hospital grade receptable or wall mains outlet without connecting to table tap for safety.
 - ★ Firmly set power cord during inspection. Do not apply excess force to power cord by bending, pulling, twisting and pressing.
 - ★ When combined with TC-V1 (compact video trolley), do not connect the power cord of light source to the secondary outlet of TC-V1 to prevent malfunction due to the subsequent power voltage lowering. Be sure to connect the power cord directly to hospital grade receptacle.
 - ★ Refer also to the instruction manuals for combined instruments being used.
- ③ The power-cord plug must be connected to a grounded hospital grade outlet or a wall mains outlet (3-cord outlet).

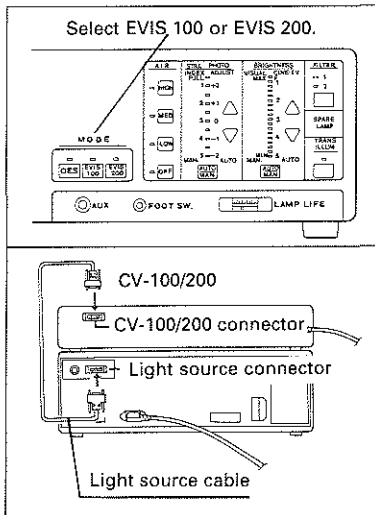


The converter adapter from three pin plug to two pin plug cannot be safely grounded and electrical shock accidents may cause.





Do not connect the power cord for the light source to the outlet for TC-V1.

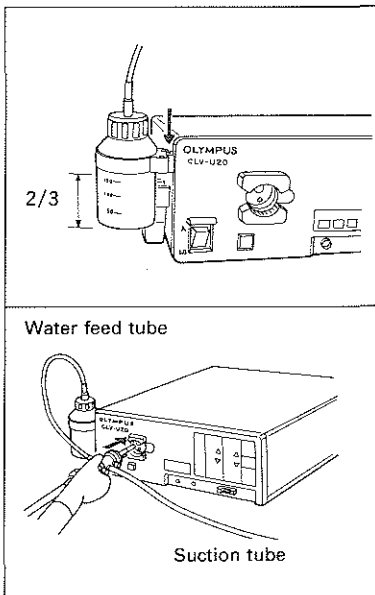
5-3 Preparation of the Videoscope



Refer to the instruction manuals of the Videoscope, Compact Video Trolley, and EVIS Video System Center (CV-100/CV-200) in use.

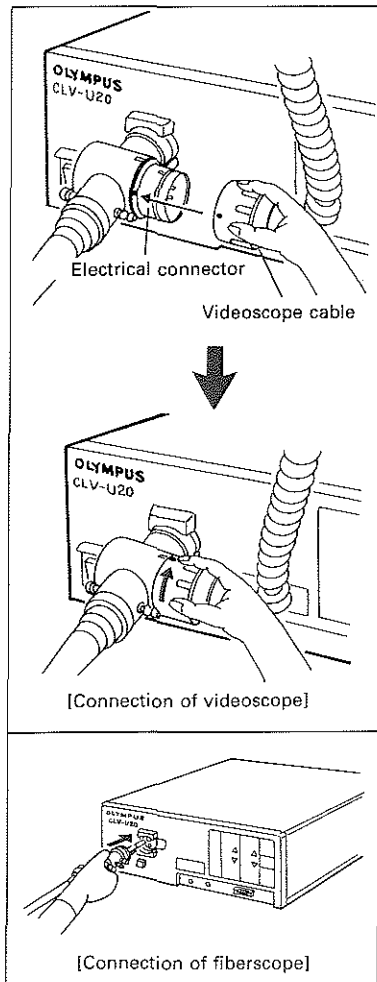
- ① Prepare the EVIS Video System following the instructions found in the manuals of the EVIS Videoscope, Compact Video Trolley, and EVIS Video System Center CV-100/CV-200.
 - ② Ensure that the power switch is 'OFF' and then connect the light source cable (MD-434) between the 'light source' connector on the back of the CV-100/200, and the 'CV-100/200' connector on the back of the light source.
 - ③ Use the mode switch and select the EVIS Video System to be used:
 - When using the EVIS 100, select .
 - When using the EVIS 200, select .
- ★ When EVIS 100 or 200 is selected, photo sensitivity will not be indicated.

5-4 Preparation for Air Feeding/Water Feeding and Suction



- ① When water feeding is needed, fill the container approximately 2/3 full with clean water. Tighten the cap securely and then hand the container on the container receiver.
 - ★ Change the water daily.
 - ★ Use only clean water (distilled or sterile) to prevent clogging of the water channel.
 - ★ If a poor connection with the scope has caused water to spill onto the equipment, wipe it completely dry with a soft cloth, etc.
- ② Connect the feed tube of the water container to the connector on the scope.
- ③ If suction is needed, connect the tube from the suction pump with the scope suction connector.
 - ★ Check the suction pump carefully for leakage and electrical safety.
 - ★ Use only electrically insulated suction tube.

5-5 Connecting the Endoscope to the Light Source



1 Videoscope Connection

- ① Turn OFF the light source.
- ② Turn OFF the EVIS Video System Center (CV-100/200).
- ③ Push the scope into the scope socket until a click is felt.
- ④ Attach the videoscope cable to the electrical connector.
 1. Align the dots on the cable and the scope, and push together firmly.
 2. Rotate the ring of the videoscope cable while pushing the cable and the scope together until a click is felt.
 - ★ Be sure that the power switch of the EVIS Video System Center remains 'OFF' when attaching or removing the videoscope cable. The CCD may be destroyed if power is left 'ON' during attachment.
 - ★ To avoid damage to the CCD, do not touch the electrical contacts inside the electrical connector.

2 Connection of OES Fiberscope

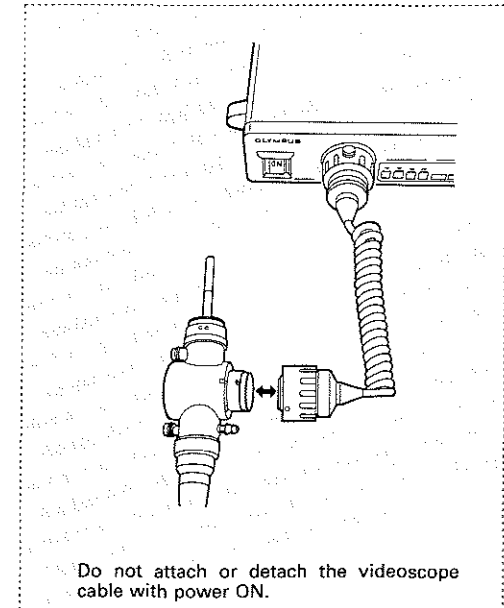
- ① Securely connect the scope into the scope socket until a click is felt.

3 Connection of OES Ultra thin Fiberscope with rigid scope type eyepiece or fiberscope for ultrasonic survey (GF-UM3, JF-UM3, CF-UM3)

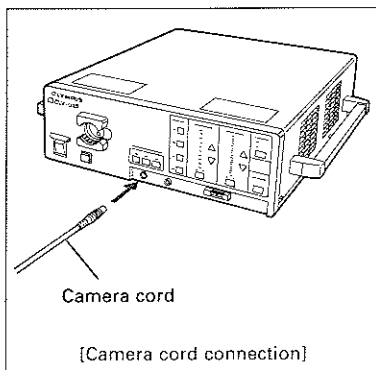
- ① Securely connect the scope into the scope socket until a click is felt.

4 Connection of Rigid Scopes

- ① Securely connect the light guide of the rigid scope into the scope socket.



5-6 Preparation for Still Photography



Refer also to the instruction manuals for endoscopes and photodocumentation equipment to be used with the light source.

① Refer to the following table.

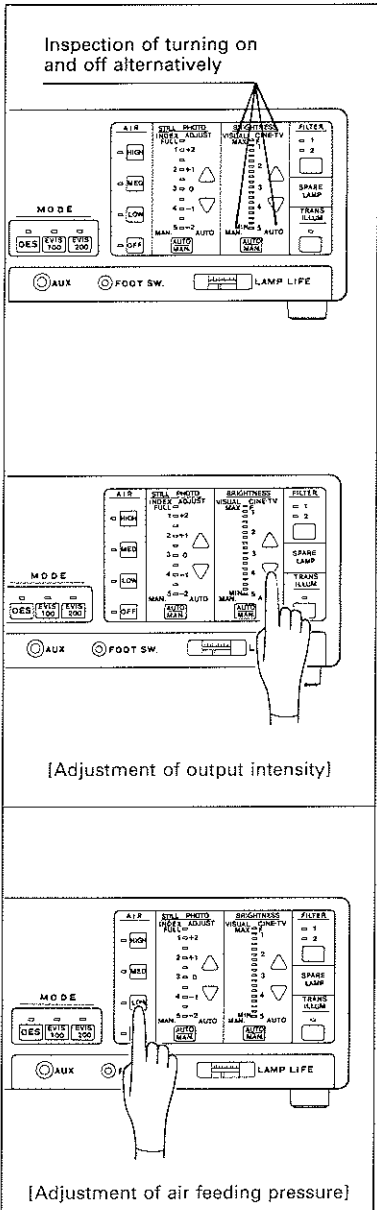
Endoscope	Camera	X • FP contact	Shutter speed	Film	Filter switch
Fiberscope	SC16-10	—	—	No. 1610-D	OFF (Filter-1/2 indicator is not lighted.)
	SC16-4	—	—	No. 1604-D	
	OM-1N SC35	X	1/4 sec.	Ektachrom (ISO/ASA 200)	
Rigid Scope	SC16-10R	—	—	No. 1610-D	
	SC16-3R SC16-RR2	X	—	No. 1604-D	
	OM-1N SC35	X	1/4 sec.	Ektachrom (ISO/ASA 400)	

- ① For rigid scope, camera cord (EC-26, 27 or 28) is plugged into rigid scope's camera connector of light source.
- ② Foot release is plugged into the connector for foot release when necessary.
- ★ This application is only possible for the combination of OES fiberscope/SC16-10 and rigid scope/SC16-10R.

5-7 Preparation for Cinematography, CCTV and Polaroid® Photography

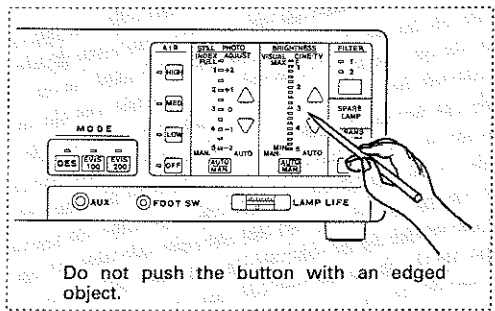
Refer also to the instruction manuals for endoscopes, photography devices and OES TV system (OTV-F2/S2) to be used with the light source.

- ① For cinematography, refer to the endoscope instruction manual.
- ② For cinematography, prepare cine camera with a C-mount adapter (e.g. Baulieu 16R) and daylight type film (ISO/ASA 160).
- ③ For CCTV, refer to the OES TV System instruction manual.
- ④ For polaroid® photography, refer to the instruction manuals for photography instruments. SCP-10 film is a high speed color film (TYPE 779 ISO/ASA 640).



3 Inspection of Illumination Light

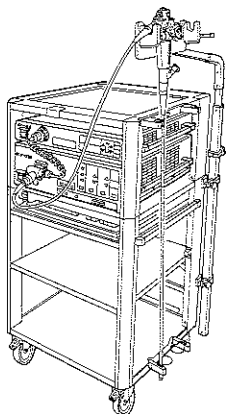
- ① EVIS 100/200 System is automatically set to "AUTO". Check the CINE •TV and the AUTO indicators being lit.
- ② For OES System, press the AUTO/MANUAL Brightness Selector. At each pressing, a peep sounds and AUTO/MANUAL is switched alternately. Check the CINE •TV indicator at AUTO and the Illumination Light at MANUAL being illuminated and then is set to MANUAL.
 - ★ If the CINE •TV switch is pressed without connecting to TV camera, AUTO/MANUAL Brightness Selector can function and the illumination light output may be minimized.
- ③ Press the Brightness Control switch ∇ (\blacktriangle). At each pressing, a peep sounds and the LED light goes up (down) one step with increased (decreased) illumination light output. Keep the switch depressed: the peep sounds continuously, and the LED light goes up (down) sequentially with increasing (decreasing) light output until "MAX" ("MIN") is reached.
 - ★ Once "MAX" ("MIN") has been reached, pressing the switch ∇ (\blacktriangle) dose not cause any further change.
 - ★ If the endoscope is disconnected, the LED indicator light will still change as described above, but the actual output brightness remains at a low level until the endoscope is connected.
 - ★ The switch should not be pressed with a pointed or hard object since this will damage the rubber covering.



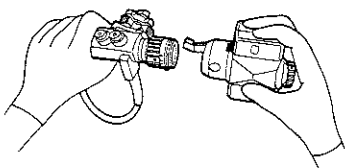
4 Inspection of Air/Water Feeding

- ① Dip the fiberscope distal end in clean water.
- ② Press the air Regulator switch: A peep sounds, and the LED indicators turn on sequentially. Air flow rate (identifiable by bubble amounts when the air/water valve on the fiberscope is occluded, or by pump noise) varies with each setting.
 - ★ The air pump does not operate when the endoscope is disconnected.
- ③ Set the pressure level to "HIGH" by pressing the switch. Make sure the water is emitted through the distal end nozzle.

EVIS Video System

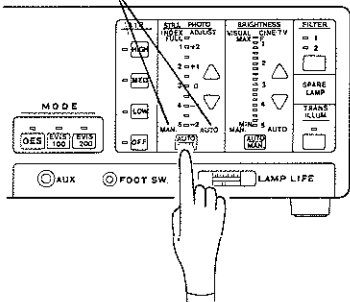


OES System



[Mounting the camera]

Check the indicator being illuminated alternately.



5 Videoscope Observation (EVIS 100/200 System)

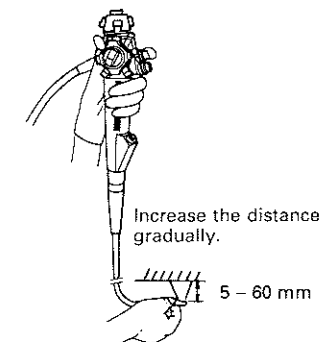
- ① Connect the videoscope and the EVIS Video System Center by following their respective instruction manuals.
- ② Use the mode selector to select the EVIS Video System to be used with.
- ③ The light control will display 'AUTO' automatically.
- ④ Test to see if the light coming from the light guide fiber at the distal end of the scope becomes stronger, in relation to the distance between the scope and a viewed object. Also check to see that the light from the fiber varies when the CINE/TV value is adjusted between 1 and 5 (with the distance to the viewed object held constant).

6 Inspection of Transillumination Function

- ① Connect the videoscope and turn on the lamp.
- ② Press the Transillumination Switch, and confirm that the light becomes brighter, and then returns to the original level approximately nine seconds later.
 - ★ With EVIS 200 system, monitor images will become over-exposed in black and white.
 - ★ When pressing the Transillumination Switch under transillumination, the light returns to the original level.

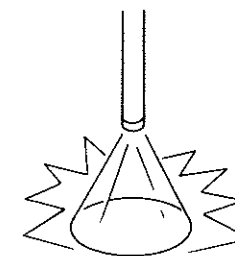
7 Inspection of Photography Functions (OES System)

- ① Attach an unloaded camera to the scope eyepiece by following the instruction with the scope and camera.
- ② Test the operation of the AUTO MAN exposure control switch (a 'peep' should be heard), and then set it to 'AUTO'.
 - ★ When the mode switch is set to EVIS 100 or EVIS 200, a flashing will be seen in the SC16-10/10R camera viewfinder, and photography will be impossible. When using a camera, the mode switch must be set to OES.

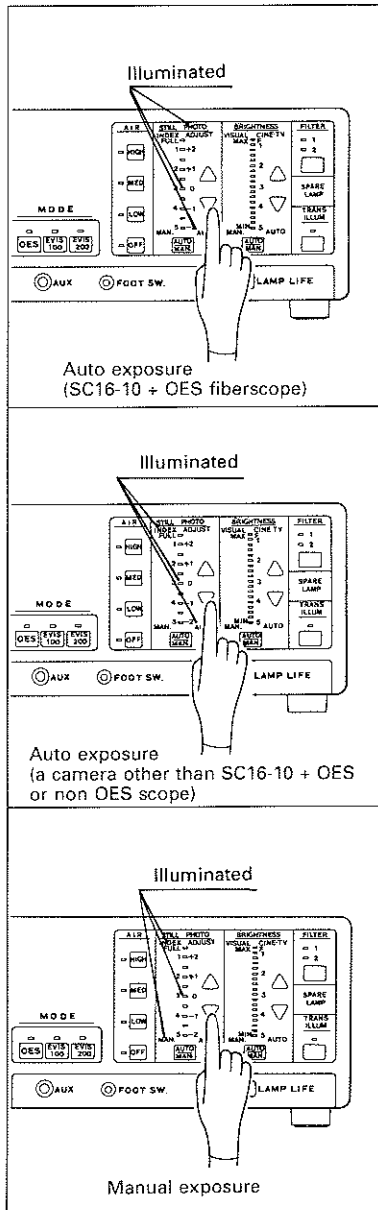


[Inspection of the brightness]

The illumination light gets brighter and is automatically reset.



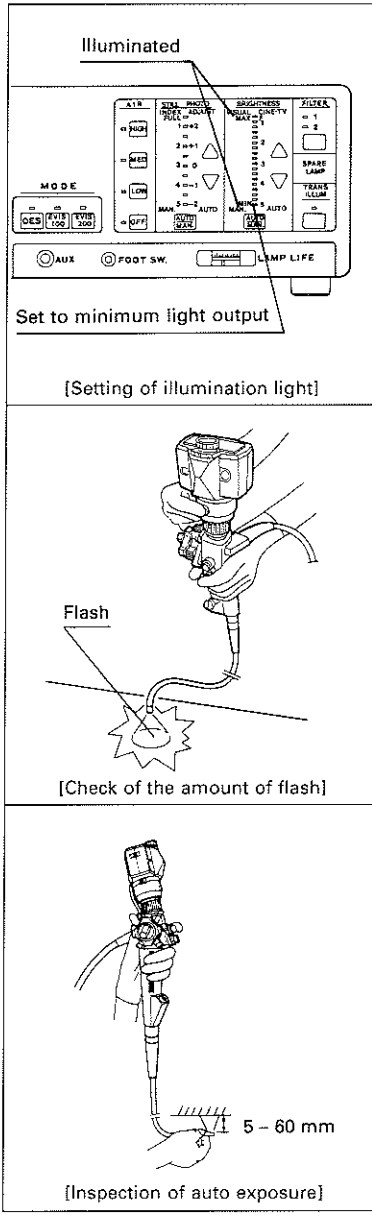
[Transmitted illumination]



③ Selection of the photo sensitivity is made by referring to the endoscope and camera combinations listed in the following table.

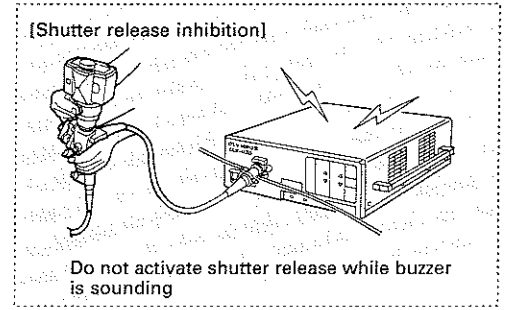
Endoscope		Camera	Inspection (Setting)
OES	Rigid scope		
○		SC16-10	A U T O Repeat pressing exposure sensitivity selector: ADJUST (compensation) LEDs turn on sequentially. (Set the value desired; normally to "0".) ★ Shortly after pressing the selector, the exposure sensitivity index will be illuminated. This is a normal phenomenon. ★ When set to "+" indices, the exposure light intensity becomes increased. When set to "-" indices, the intensity becomes decreased.
	○	SC16-10R	
○		SC16-4 SCP-10 OM-1N SC35	M A N U A L Repeat pressing exposure sensitivity selector: INDEX LEDs turn on sequentially. (Set the value desired.) ★ The smaller the index number, the greater the amount of flash.
	○	SC16-3R SC16-3R2 OM-1N SC35	
○	○		Repeat pressing exposure sensitivity selector: INDEX LED2 turn on sequentially. ★ F = maximum exposure For each step increase of the index number, exposure decreases 50% of the previous step.

- ★ When the camera is not mounted on the endoscope, the "INDEX" indicators always turn on.
- ★ With the SC16-10/OES fiberscope combination: the "INDEX" indicators turn on momentarily, before the ADJUST indicators turn on: this is a normal phenomenon. If the "INDEX" indicators turn on (instead of the ADJUST indicators) in the middle of the procedure, check the individual components for correct connection.



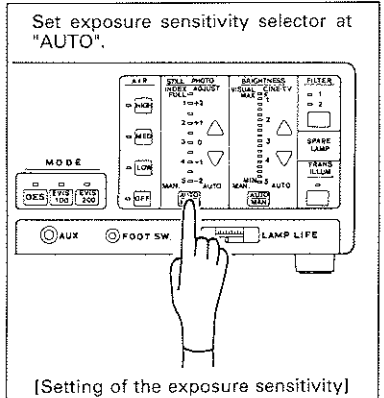
8 Inspection of Camera Release and Foot Switch

- ① Set the light level control switch to 'MANUAL', and adjust the light level to the minimum position (dark).
- ② Place the distal end of the scope near to a suitable object, and press the camera shutter or foot switch release. The illumination should become strong for a moment, and then return to the original state. A buzzer should also sound.
 - ★ Do not press the shutter release while the buzzer is sounding, as uneven or no exposure may result.
 - ★ If nothing happens when the shutter release is pressed, disconnect all the connections, and re-connect them securely.



9 Inspection of the Automatic Exposure

- ① Verify that the length of the intensification of the illumination when the camera shutter release is pressed varies with the distance, by testing with the distal end held at varying distances (between 5 and 60 mm) from the view object.
- ② Ensure that the length of the light emitting time becomes shorter when the sensitivity switch is altered from +2 to -2 (or 1 to 5), and the distance is held constant.
 - ★ If using combinations other than the OES fiberscopes and SC16-10, and rigid scopes and the SC16-10R, images taken at short distances may be overexposed. If this occurs, turn the filter switch 1 'ON'.

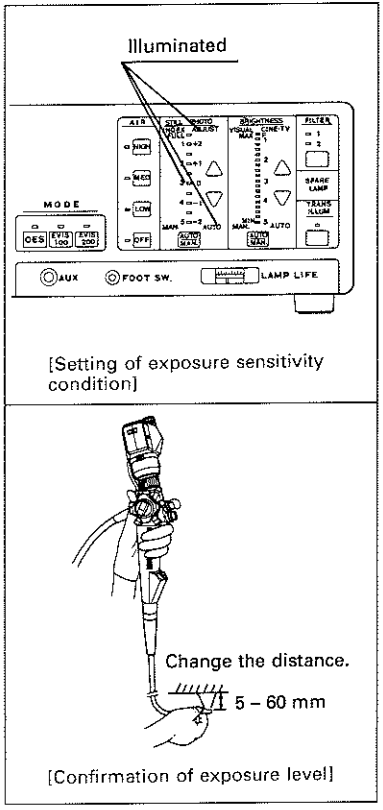


③ If auto exposure is desired, set the exposure control switches to 'AUTO' and use the settings listed here.

Endoscope		Camera					
		SC16-10	SC16-4	OM-1N/SC35	SCP-10	SC16-10R	SC16-3R/3R2
OES scope	All types	ADJUST 0	INDEX 3	INDEX* 3	INDEX 3	—	—
Rigid Scope		—	—	INDEX 3	—	ADJUST 0	INDEX** 3

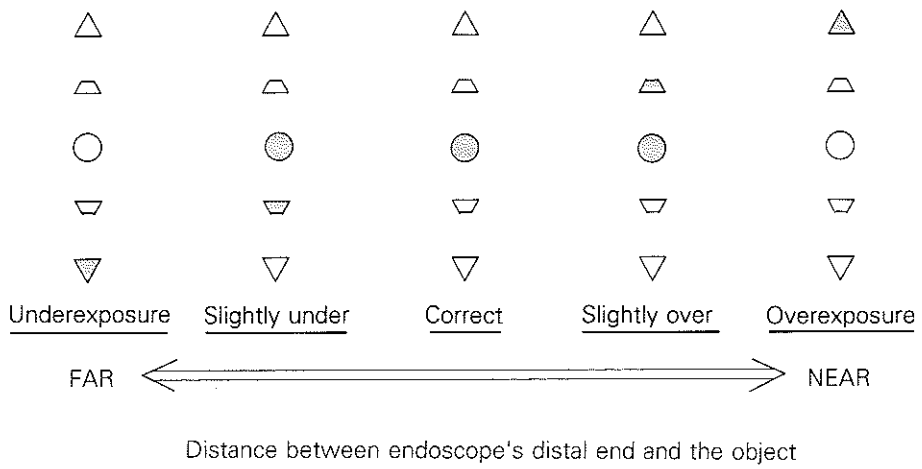
*OM-1N/SC35: Set sync contact to X and 1/4 sec.
 **SC16-3R/3R2: Set sync contact to X.

- ★ The OM-1N/SC35 settings refer to use with the A10-M2 (OES scope) only.
 - ★ The above table gives average values, but if the pictures are overexposed, correct to the minus side (sensitivity: larger number). Underexposures must be corrected on the plus side (sensitivity: smaller number).
- ④ If manual exposures are desired, set the exposure control switch to 'MANAL', and set the sensitivity constant as needed.

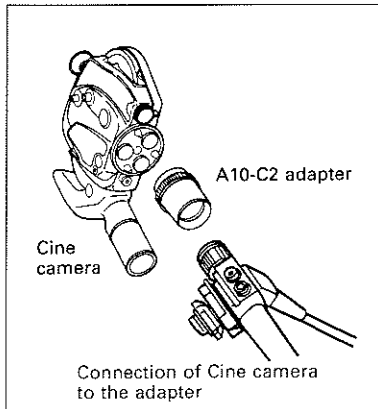


10 Inspection of the Automatic Exposure
 (SC16-10/OES fiberscope combination and SC16-10R/rigid endoscope combination)

- Set ADJUST (compensation) display to "0" by pressing the Exposure Sensitivity Selector.
- Change the distance between the fiberscope's or the rigid scope's distal tip and a white piece of paper. Make sure the display on the front panel as well as in the camera's viewfinder changes as illustrated below.

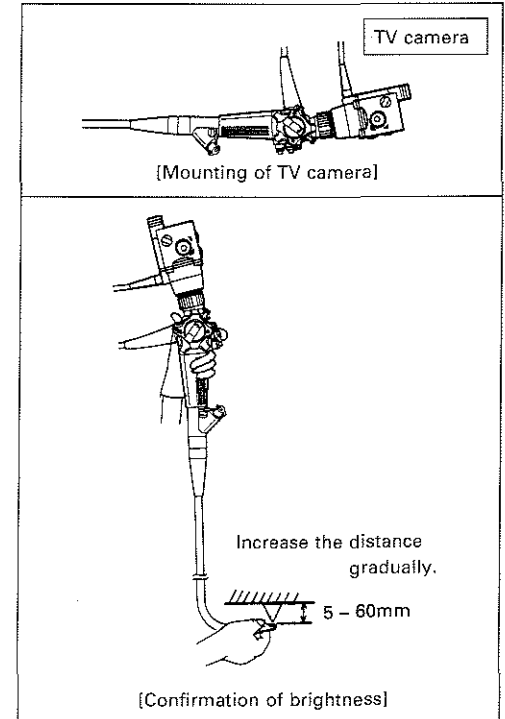


- ★ With dark objects or small-calibre (low flash level) fiberscope, ▲ indicator may sometimes not turn on. Conversely, in a bright endoscopy room, ▼ indicator may fail to turn on.
- ★ In case the compensation value other than "0", the compensation signal (orange) will be illuminated with camera's viewfinder.
- ★ Above displays represent only the exposure levels at ADJUST "0" (no compensation) setting, and are not applicable when compensation has been made (in which case the compensation signal blinks in the camera's viewfinder).



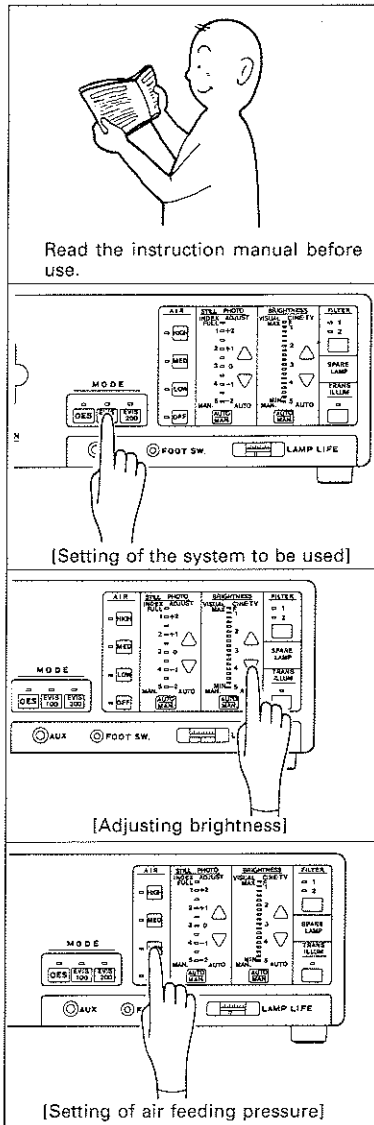
11 Cinematography and CCTV

- ① Mount the cine camera or TV camera onto the endoscope eyepiece section.
- ② Using the AUTO/MANUAL Brightness Selector, set the light source to AUTO: CINE•TV LEDs turn on.
 - ★ On MANUAL mode, the light output intensity is kept constant and does not change automatically responding to the changes in the object distance.
- ③ Move the endoscope distal end away from the object. Make sure that the farther away the distal end from the object, the stronger the light transmitted through the distal end becomes. Next, keeping the object distance constant, change the exposure level sequentially from "1" to "5": the light intensity should decrease.
 - ★ In electrosurgery, incorrect exposure may sometimes result due to high frequency noise. For taking photographs, set several Cine and TV indices to take photographs.



This section outlines a general procedure for endoscopy. The endoscopist should carefully evaluate the clinical factors involved and decide the technical details of the procedure.

7-1 Use in Combination with the Videoscope



1 Observation Condition

Set the mode selector to **EVIS 100** or **EVIS 200**. The light level control becomes "AUTO". Set the desired brightness level with the light level adjustment switches.

2 Light Level Adjustment (Observation Light)

The CINE-TV setting on the light source is the standard level. Adjust as necessary. If the image is too dark, use a smaller number setting. If too bright, use a larger number.

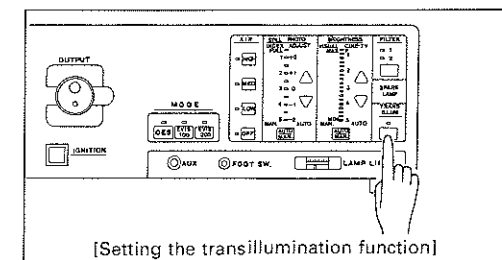
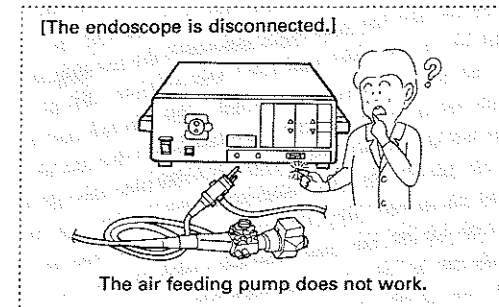
Video System	Fiberscope	Index
EVIS 100	All types	3
EVIS 200	All types	3

3 Air/Water Feeding

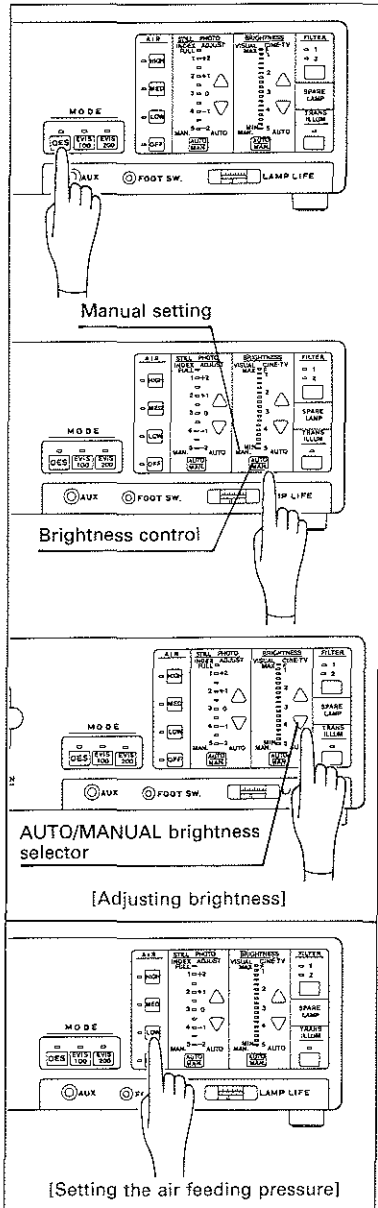
- Set air flow as desired with the AIR Regulator switch. (Normally to "HIGH")
 - ★ The air pressure can be adjusted in three levels, depending on patient condition.
- Feed air and water by operating the air/water valve on the videoscope.
 - ★ The built-in air pump will not operate unless a videoscope is connected to the light source.
 - ★ At "MED" or "LOW", water feeding (lens wash) becomes less effective.

4 Transillumination

- When using the transillumination function to verify the insertion location of the distal end of the scope, the illumination becomes temporarily brighter, but with EVIS 200 system the monitor image becomes overexposed in black and white.
- The illumination returns to the original level nine seconds after pressing the switch.
 - ★ Depending on the observation location and techniques in use, the insertion location may not be verified.
 - ★ Illumination level control is designated automatically to be changed to 'MAX' in MAN. mode.
 - ★ To prevent thermal injury, use this function as little as possible.



7-2 With Fiberscopes



1 Selection of Observation Mode

Set the mode selector to **OES**.

2 Adjusting Brightness (VISUAL)

Set the AUTO/MANUAL Brightness Selector to MANUAL and adjust light output to the illumination level suitable for visual observation using the Brightness Control.

- ★ Always use the minimum necessary light level to avoid thermal mucosal damage as well as to protect your eyes. Set the AUTO/MANUAL Brightness Selector to MANUAL except for Cinematary and TV visual observation.

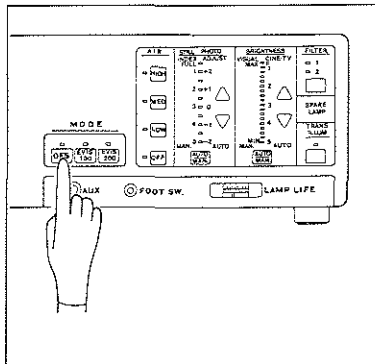
3 Air/Water Feeding

- ① Set air flow as desired with the AIR Regulator switch. (Normally to "HIGH")
 - ★ The air pressure can be adjusted in three levels, depending on patient condition.
- ② Feed air and water by operating the air/water valve on the fiberscope.
 - ★ The built-in air pump will not operate unless a fiberscope is connected to the light source.
 - ★ At "MED" or "LOW", water feeding (lens wash) becomes less effective.

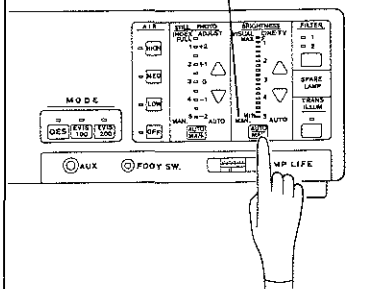
4 Still Photography (including Polaroid®)

- ① Set conditions based on the instruction manual for photo documentation equipment to be used.
- ② Mount a film-loaded camera onto the endoscope eyepiece section and press the release button to take photographs.
 - ★ Disconnect the rigid scope's camera connector from the camera cord (EC-26, 27 or 28). Otherwise, the underexposure may result.
 - ★ Still photography cannot be taken with OSF and OGF Fiberscopes.

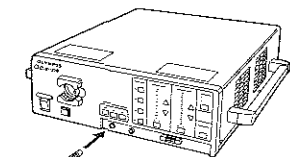
7-3 With Rigid Scopes



Setting to MANUAL



[MANUAL setting for visual observation]



Camera cord

[Connecting the camera cord]

1 Selection of Observation Mode

For observation, set the Mode selector to **OES**.

2 Adjusting Brightness (VISUAL)

- ① Set the AUTO/MANUAL Brightness Selector to MANUAL.
- ② Adjust light output to a comfortable level of illumination using the Brightness Control switch.
 - ★ Always use the minimum necessary light level to avoid thermal mucosal damage as well as to protect your eyes.

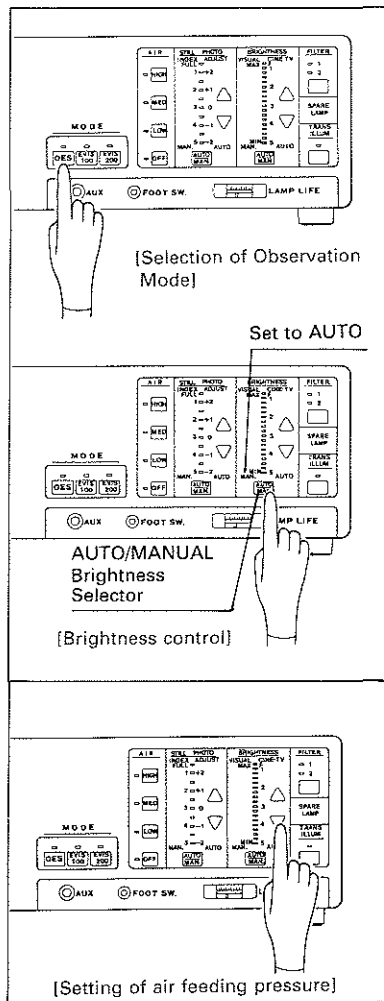
3 Still Photography

- ① Connect one end of the camera cord (EC-26, 27 or 28) to the camera connector for the rigid scope and connect another end of the cord to the photographic equipment for the rigid scope.
- ② For automatic exposure, set the light source to AUTO using the AUTO/MANUAL Exposure Selector and set the Exposure Sensitivity Selector to the INDEX as tabulated:

Camera	Film			X • FP contact	Shutter speed
	No. 1640-D	No. 1610-D	EL-135		
SC16-3R/3R2	INDEX 3	—	—	X	—
SC16-10R	—	Compensation 0	—	—	—
SC35/OM-1N +SM-ER2/3	—	—	INDEX 3	X	1/4 sec.

- ★ Index "3" or compensation "0" are the standard setting. Adjust index depending on conditions.
 - ★ With the 35 mm film, use "2" for ISO/ASA 200 film speed.
 - ★ With the SM-R adapter, the OM-1N cannot make auto exposure and picture must be taken by manual exposure. As the camera cord, use the EC-27.
- ③ For manual exposure, set the light source to MANUAL and set the exposure index as desired.

7-4 Cinematography and CCTV



1 Selection of Observation Mode

For visual observation, set the Mode Selector to **OES**.

2 Adjusting Brightness (CINE AND TV)

Set the AUTO/MANUAL Brightness Selector to **AUTO**.

3 Still Photography

[Cinematography]

Fiberscope	Adapter	Light source CINE • TV Index	Development	Filming speed	Film
OES	A10-C1 A10-C2 A10-C3	3	Standard	24 fps	Daylight ISO/ASA 160
Rigid scope	OES type MC-R44 MC-R58	—	Standard	24 fps	Daylight ISO/ASA 160

- ★ When using MC-R44 or MC-R58, set brightness control switch to "Manual" to adjust it to appropriate brightness level.
- ★ The index numbers are standard setting. Adjust index depending on conditions.

[CCTV]

Camera	Fiberscope	Adapter	Index
OTV-F2	OES Fiberscope	/	3
OTV-S2	Rigid scope	AR-T2 AR-TF2	3

- ★ To prevent thermal mucosal damage as well as to protect your eyes, set the AUTO/MANUAL Brightness Selector to **MANUAL** before disconnecting the cine camera or TV camera from the fiberscope, because the light path shutter fully opens (providing maximum brightness) as soon as the camera is disconnected.
- ★ Always connect the light control cable (MB-608), when using the OTV-S2. When using OTV-F or OTV-S, refer to their instruction manuals before operation.

7-5 After Use

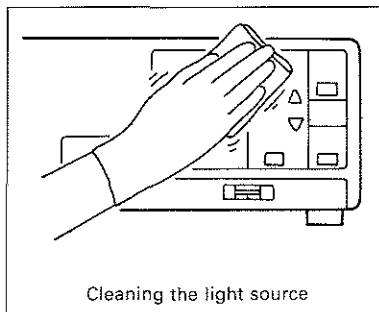
Turn off the Power Switch.

- ★ Disconnect the power cord from the AC wall outlet if the light source is not going to be used for a long period.

8

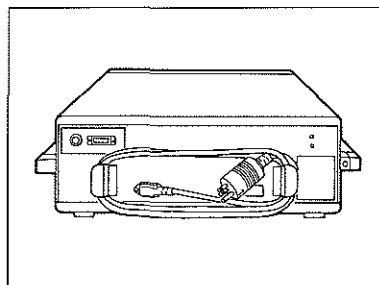
CARE AND STORAGE

8-1 Care after Use

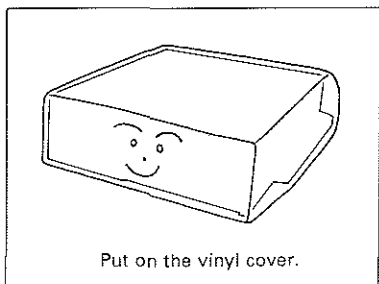


- ① Disconnect the endoscope and water container from the light source. Unplug the power cord from the hospital grade receptacle (wall mains outlet).
 - ★ Do not apply excess force when disconnecting the light guide connector from the output socket.
- ② Lightly wipe all surfaces using a soft cloth or gauze sponge. If dirt persists, moisten the gauze with disinfectant ethanol and wipe again. The front panel can be also disinfected.
- ③ For disinfection, wipe with a gauze sponge moistened with disinfectant ethanol or 2% glutaraldehyde solution.
 - ★ Avoid touching the electrical contacts and connectors: poor contact will result.
 - ★ To prevent scratches, do not use hard or abrasive wiping material.
 - ★ If a glutaraldehyde solution is used, wipe again with disinfectant ethanol to remove all residue.
 - ★ Surfaces must be thorough dry before use.

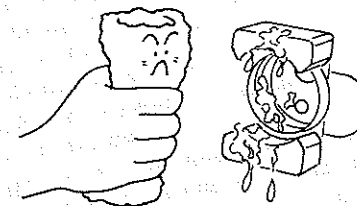
8-2 Storage



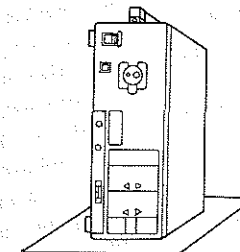
- ① Wind the power cord around the hangers on the rear of the light source.
- ② Place the light source on a stable surface in the horizontal position.
 - ★ Do not store in the upright position, as it may topple.
- ③ Put on the vinyl dust cover.
 - ★ Storage area must be maintained at normal temperature and humidity, and away from water splashes.
 - ★ Do not apply excessive force to each cord by bending, pulling, twisting and pressing irrationally.
 - ★ Do not give heavy blows and impacts.



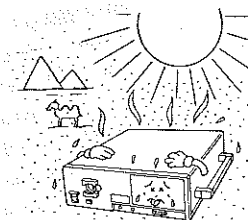
[Not good for connector parts]



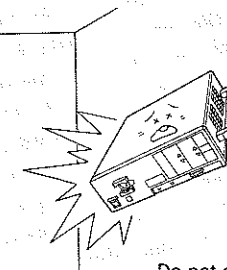
Do not wet the output socket.



Do not put in the upright position.

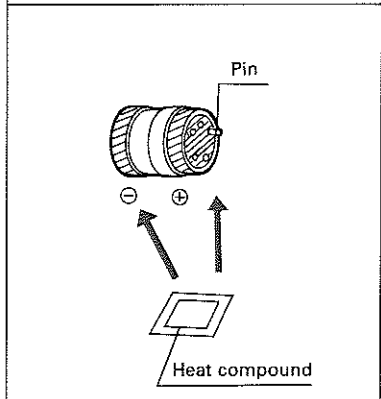
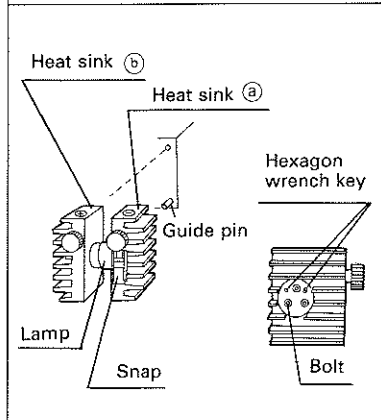
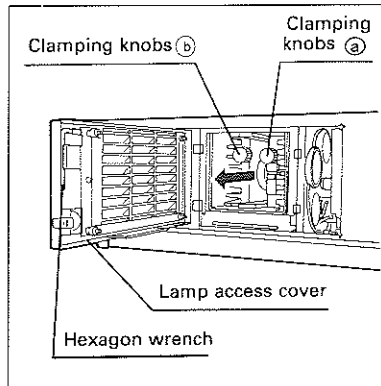


Avoid high temperature, high humidity and direct sunlight.



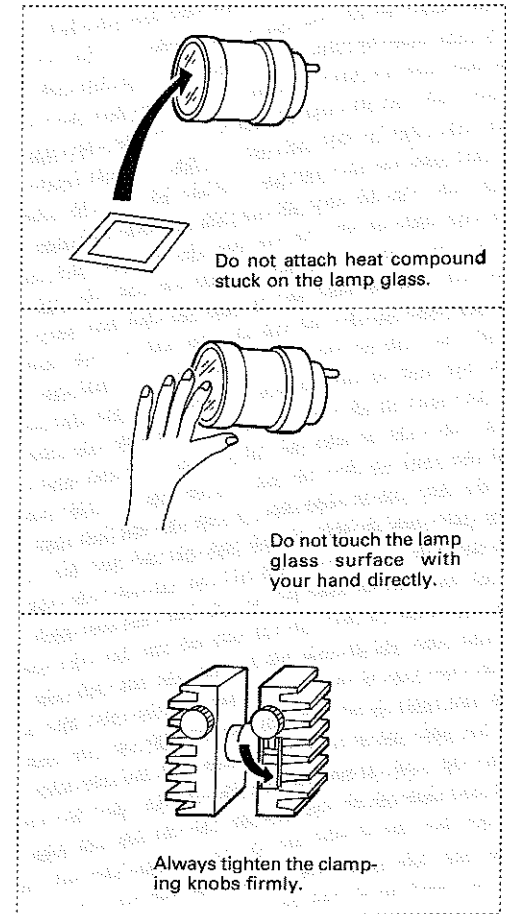
Do not strike or drop.

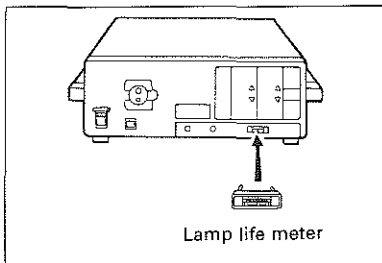
9-1 Replacement of Lamps

**1 Replacement of Xenon Lamp**

- Approved lamp: Optionally available from Olympus service center.
- Refer to the lamp replacement manual attached to spare lamps.
- Approved lamp is MD-631 (Y1064(S)).

- ① Turn OFF the power switch.
 - ★ Be certain to unplug the power cord from the AC wall outlet.
- ② Open the lamp access cover. Take out the hexagon wrench.
- ③ After allowing sufficient time for the lamp and heat sinks to be cooled, loosen clamping knobs (a) and (b) (front panel side, 2 pcs.) by turning counterclockwise, and then clamping knobs (b) (2 pcs.)
- ④ Take out the lamp, with heat sinks (a) and (b) attached.
- ⑤ Loosen bolts (lamp's + side or heat sink (b) side, 3 pcs.) and remove heat sink (b).
- ⑥ Loosen snap at heat sink (a) and pull out the lamp.
- ⑦ Take the new lamp out of its container.
- ⑧ Using your finger, apply supplied heat compound (for better heat conduction) evenly and thickly over the entire circumference of the left-hand flange (see lamp sketch: indicated by hatched lines, - side or exit light side). Then, insert the lamp (- side) into heat sink as far as it will go.
 - ★ Wipe off heat compound stuck and apply a new heat compound.
 - ★ Be careful to the lamp handling in order to avoid the danger of lamp explosion.
- ⑨ Apply heat compound to the right-hand endface of the lamp (hatched area, + side) in the same manner as above. Then, fit heat sink (b) over the lamp (+ side). Tighten bolts firmly with the wrench.
 - ★ Be certain not to smear the lamp's glass surface. Wipe off heat compound stuck, on the lamp surface or extruding from the lamp with a clean, soft cloth or similar material. Unremoved finger marks or heat compound may cause peeling of the coating or explosion of the lamp.
 - ★ Do not touch the lamp's glass surface. Finger marks may cause explosion of the lamp.
- ⑩ Holding the surfaces of heat sinks (a) and (b), make sure that they are parallel and then close the snap at heat sink (a). Insert lamp with attached heat sinks into lamp house with the guide pin fitting into the guide pin hole of heat sink (b) and tighten clamping knobs (a) and (b) firmly.
 - ★ Be certain to place the exit light side facing toward the front panel.
 - ★ Be sure to tighten the clamping knobs and the snap. Unless the clamping knobs was tightened, the lamp does not turn on well, may have short life and may have its explosion.

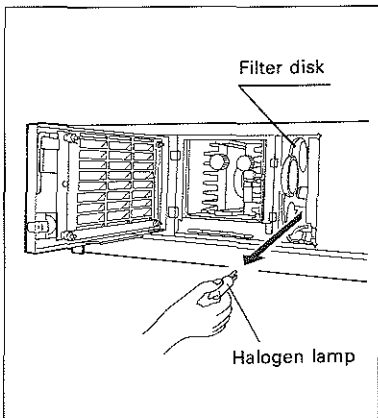




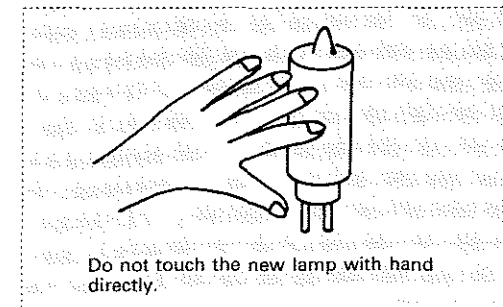
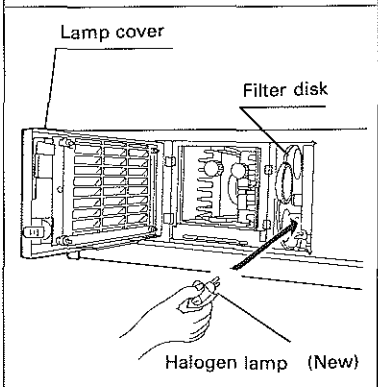
- ① Put the wrench back into the lamp house. Close the lamp cover, and reposition the light source with the top surface facing upward.
 - ★ The light source does not function unless the cover is closed tightly.
- ② Replace the lamp life meter. Pull out the old one from the light source, and push in the new one.

2 Replacement of Halogen (Emergency) Lamp

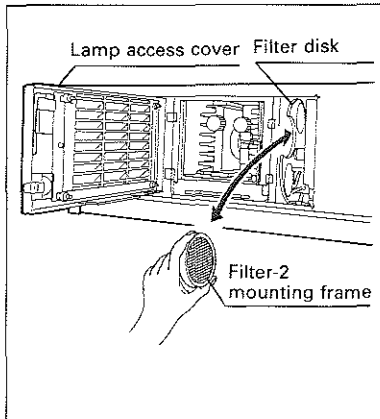
- Approved lamp: Ushio JX24-150/OL or Philips® Type 7158 (24V 150W)



- ① Turn ON the power switch.
 - ② Press the filter switch to indicate "FILTER 2" illuminated up.
 - ★ Make sure the filter-2 indicator is illuminated on the front panel.
 - ★ The emergency lamp cannot be replaced when turning off the filter-2 indicators.
 - ★ The lamp lights on and get very hot. Handle the lamp after allowing sufficient time for it to be cooled down.
 - ③ Turn OFF the power switch.
 - ★ Be sure to unplug the power cord from the socket.
 - ④ Open the lamp access cover. After allowing sufficient time for the halogen lamp to be cooled, pull out the lamp from the socket.
 - ★ Do not touch the mirror attached to the filter disk.
 - ⑤ Insert the new lamp fully into the socket.
 - ★ The lamp must not be inclined; otherwise maximum light output is not available.
 - ★ Do not touch the lamp surface. Unremoved finger marks may cause damage to the lamp.
 - ★ During replacement the filter disk may rotate when touched by fingers, which does not cause any malfunction.
 - ⑥ Close the lamp access cover.
 - ★ The light source does not function unless the cover is closed tightly.
- As all is done, turn on the power switch and select the next filter to be planned. Otherwise, the filter may be set to the filter-2 automatically.



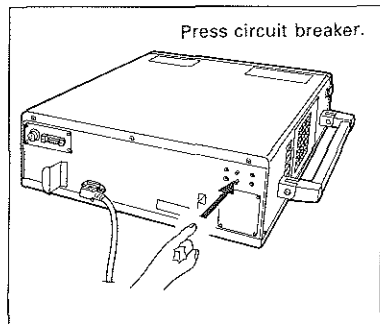
9-2 Replacement of Filter-2



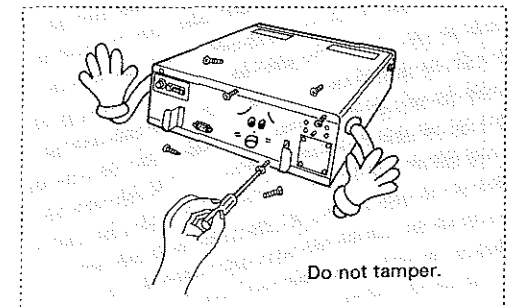
★ Consult your Olympus representative as to the filter required.

- ① Turn ON the power switch and set the Mode Selector to **OES** or **EVIS 100**.
- ② Make sure neither the filter-1 nor filter-2 indicator is illuminated.
★ If either one is illuminated, put it off by pressing the corresponding filter switch.
- ③ Turn OFF the power switch.
- ④ Open the lamp access cover.
★ Always unplug the power cord from the socket.
- ⑤ Pull out the filter-2 mount frame from the filter disk.
- ⑥ Fit in and push the new filter-2 mount frame against the filter disk until it is held in place.
★ During filter replacement the filter disk may rotate when touched by fingers, which does not cause any malfunction.
- ⑦ Close the lamp access cover tightly.
★ The light source does not function unless the lamp access cover is closed tightly.

9-3 Resetting the Circuit Breaker



- ① If the light source fails to operate upon turning the power switch to the ON position, turn it to the OFF position. Ensure the power cord is plugged in the hospital grade receptacle. Then check the Circuit Breaker on the rear panel of the light source. If it is popped up (tripped), depress until it stops with a click.
- ② Turn ON the power switch. If the light source still does not operate, immediately turn off the power switch and contact your Olympus representative or nearest Olympus office.



9-4 Cleaning the Ventilation Grills

If dust and dirt have collected on the ventilation grills, clean using a vacuum cleaner.

9-5 Periodic Inspection

Periodically inspect the light source following the procedure in Section 6 INSPECTION.

- ★ If any irregularity or abnormality is suspected, contact your Olympus representative.
- ★ Repair must be made by an authorized Olympus service center, and should not be attempted by non-Olympus service personnel.

	Symptom	Possible Problem	Remedy
General	Power is switched ON, but light source is not working.	Power cord is not connected.	Connect power cord.
		Power switch is not switched.	Switch ON.
		Open circuit breaker.	Reset circuit breaker.
		Lamp access cover is not tightly closed.	Gently close cover until it locks in place.
	No light output	Light source lamp is not lit.	Press lamp ignition switch. Check lamp; reinstall correctly if incorrectly installed; replace with a new lamp if too old or lamp is broken.
		Lamp access cover is not tightly closed.	Gently depress cover until it locks in place.
	Field of view is too dark or too bright.	Light level adjusted incorrectly.	Adjust as required.
		Sensitivity control is not set to "AUTO".	Set to "AUTO".
		Mode selector is not set correctly.	Select required mode.
		Lamp is installed incorrectly.	Reinstall lamp.
Lamp is too old.		Replace with a new one.	
Endoscope cannot be connected to light source.	It is not an OES scope.	Connect OES scope.	
Emergency lamp indicator is illuminated.	Emergency lamp is not installed, installed improperly, or burned out.	Replace or install correctly.	
Front Panel Display	Exposure level indicators are not lighted.	Units other than SC35 and OES fiberscope are used.	Use SC35/OES scope.
		SC35 camera is defective.	Send camera for repair.
		Light source is not set to AUTO.	Set AUTO/MANUAL selector to AUTO.
		Dirty contacts	Clean contacts with cotton swab moistened with alcohol.
		Right scope camera cord previously used is left connected to light source.	Disconnect camera cord.

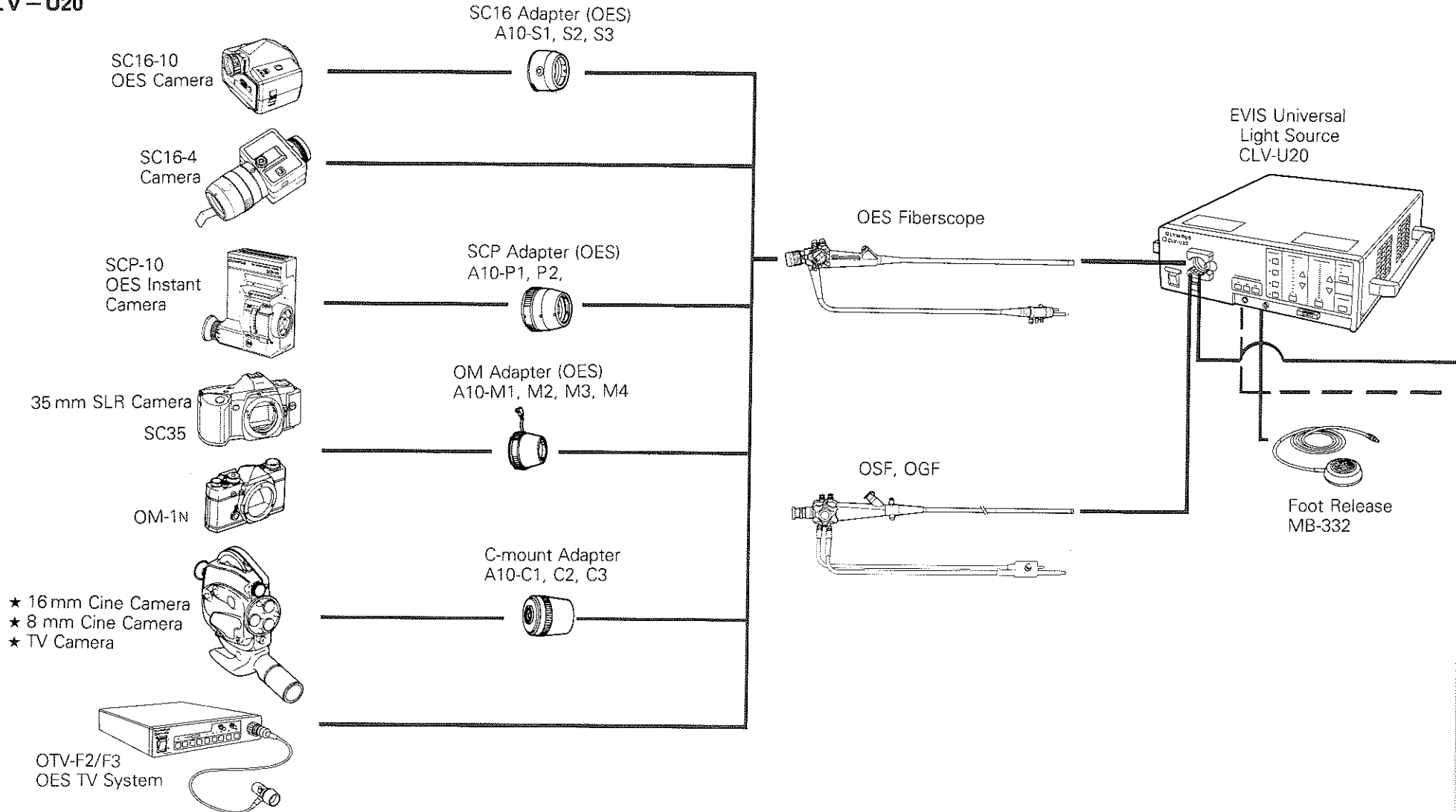
	Symptom	Possible Problem	Remedy
Videoscope	Image is not correct with CV-200 combination.	Filter-2 switch is turned ON.	Press switch again to turn it OFF.
		Incorrect mode selected.	Select as required.
	No flash output with CV-100 combination.	Incorrect mode selected or light source cable is not connected.	Select as required and check connection.
	Synchronization failed with CV-200 combination.	Incorrect mode selected or light source cable is not connected.	Select as required and check connections.
	Light level control is not activated.	Incorrect mode selector	Select as required.
		Light source cable is not connected.	Check connection.
Rigid scope camera cord connected.		Remove rigid scope camera cord.	
Air/Water	Absent or insufficient air or water feeding.	Air pump is turned OFF.	Press air switch.
		Endoscope air/water channel is faulty.	Check endoscope for clogged nozzle and dirty air/water valves. Also check water container.
Photography	Camera does not operate.	Faulty connection	Check connection between units.
		Dirty contacts	Clean contacts with cotton swab moistened with alcohol.
	Poor coloration	Flash light not matching the film.	Select film depending upon lamp type.
		Incorrect filter is selected.	Select filter depending upon scope type.
		Incorrect installation of lamp	Reinstall.
Lamp is too old.	Replace with a new one.		

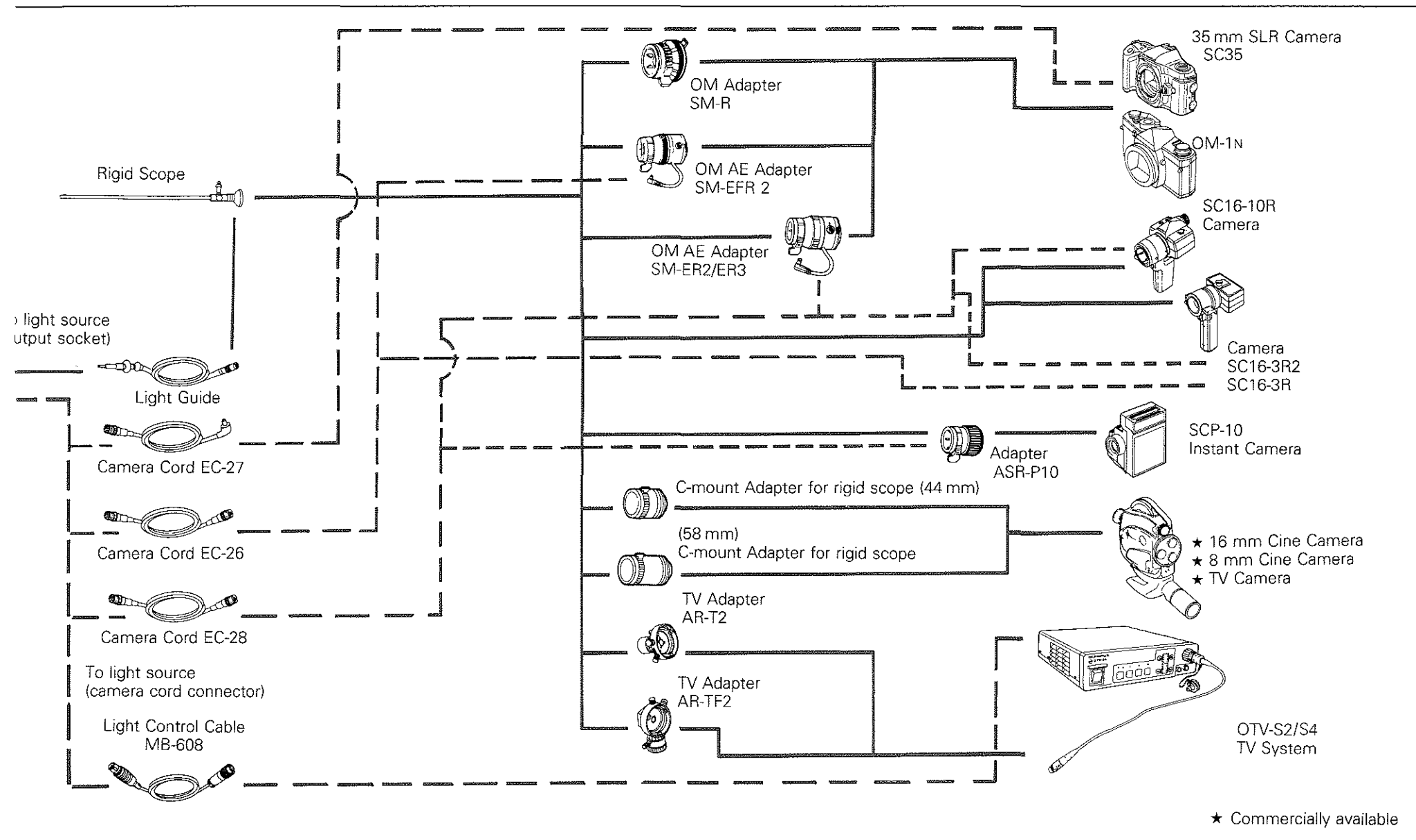
11

ENDOSCOPIC SYSTEM CHART

11-1 OES System Chart

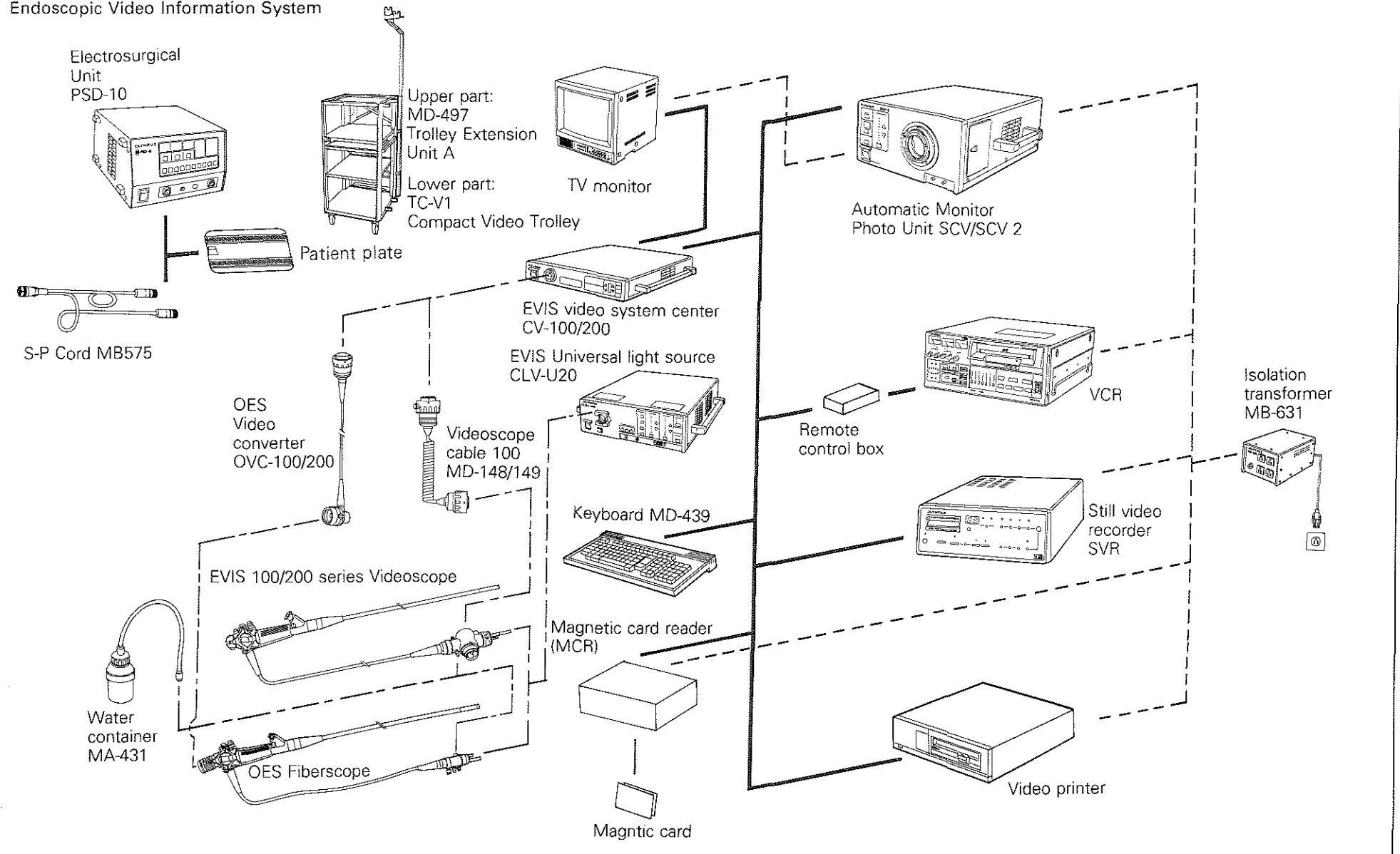
CLV-U20





11-2 EVIS Endoscope Video Information System

Endoscopic Video Information System



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The design of the product is under constant review and whilst every effort is made to keep this manual up to date, the right is reserved to change specifications and equipment at any time without prior notice.

