

INSTRUCTIONS

OLYMPUS GIF TYPE XP10

OES GASTROINTESTINAL FIBERSCOPE



OLYMPUS ENDOSCOPY SYSTEM

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 the procedures. Possible injuries related to endoscopic procedures may include perforation, electrical burns and shock, hemorrhage, infection, explosion, etc. Failure to follow these instructions may also result in damage to and/or malfunction of the instrument.

OLYMPUS

IMPORTANT

The Olympus GIF-XP10 has been designed for endoscopic diagnosis and treatment within the upper digestive tract including esophagus, stomach and duodenum. Do not use the instrument for any purpose other than its intended application.

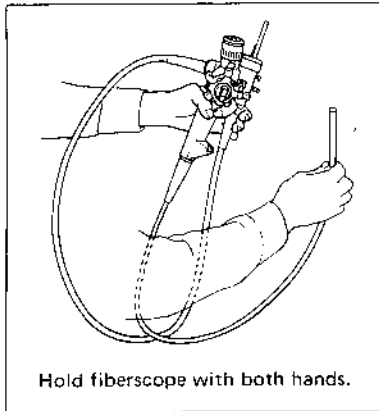
Please read this entire manual carefully before using the instrument. It contains pertinent information on the proper care and handling of your new fiberscope. Although fiberscopes by nature are delicate instruments, proper handling and cleaning, as described in this manual, will greatly reduce the need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

This manual describes the recommended procedure 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 gastroenterological endoscopy. This instrument should be used only by physicians who have received thorough previous training in the art of flexible endoscopy.

The safety and performance of an endoscopic system depends not only on the fiberscope but also on any ancillary equipment used with it. To insure compatibility, it is recommended that you use only Olympus accessories with this fiberscope.

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

UPON RECEIVING THE EQUIPMENT



Please check each item in the set against the list of standard components found in Section 3. Contact Olympus if there are any missing or defective parts. Refer to the following sections on MAIN SPECIFICATIONS AND NOMENCLATURE to become acquainted with the name and function of each part of the instrument. Review the instrument preparation, inspection and cleaning/disinfecting procedures carefully. The fiberoscope should be disinfected prior to its initial use.

The fiberoscope and accessories should be removed from the carrying case and stored as described in Section 6-4 Storage. The carrying case is not intended to be used for storage of the equipment. Retain the carrying case only for shipping or transporting the instrument.

★ Remove the ETO cap (venting cap) from the fiberoscope and store in an appropriate place.

PRIOR TO USE

In addition to thoroughly reading this manual, refer also to the instruction manuals supplied with your light source, electrosurgical unit, accessories and other ancillary equipment.

CAUTION:

The GIF-XP10 is a precision instrument. Its design incorporates many features to insure patient safety. In particular, the angulation system is constructed to provide smooth response and maximal angulation of the distal tip when normal force is applied to the angulation control knobs. Excessive pressure applied to the angulation control knobs will result in damage to the fiberoscope and may cause patient injury.

Before introducing the instrument into the patient be certain that the angulation control locks are in the "Free" ("F") position and that the distal tip moves without resistance. If abnormal resistance is encountered when introducing the instrument or when operating the angulation mechanism, DO NOT USE THE INSTRUMENT. Contact your Olympus representative or the nearest Olympus office.

CONTENTS

1.	FEATURES · MAIN SPECIFICATIONS	1
1-1	Features	1
1-2	Main Specifications	1
2.	NOMENCLATURE	2
3.	STANDARD SET	4
4.	PREPARATION · INSPECTION	5
4-1	Preparation of Fiberscope	5
4-2	Preparation and Inspection of Light Source	5
4-3	Preparation and Inspection of Suction Device	6
4-4	Preparation and Inspection of Biopsy Forceps	6
4-5	Inspection of the Fiberscope	7
4-6	Inspection of the Endoscopic System	8
5.	OPERATING THE FIBERSCOPE	10
5-1	Preparation for Use	10
5-2	Insertion and Observation	11
5-3	Biopsy	13
5-4	Withdrawing the Fiberscope	13
6.	MAINTENANCE	14
6-1	Cleaning, Disinfection, Sterilization	14
6-2	Cautions	15
6-3	Cleaning, Disinfection and Sterilization Procedures	17
6-4	Storage	26
7.	ELECTROSURGERY	27
8.	ENDOSCOPIC PHOTODOCUMENTATION	28
8-1	Still Photography	28
8-2	CCTV	29
8-3	Cinematography	30
9.	TROUBLESHOOTING GUIDE	31
10.	ENDOSCOPIC SYSTEM CHART	34

FEATURES • MAIN SPECIFICATIONS

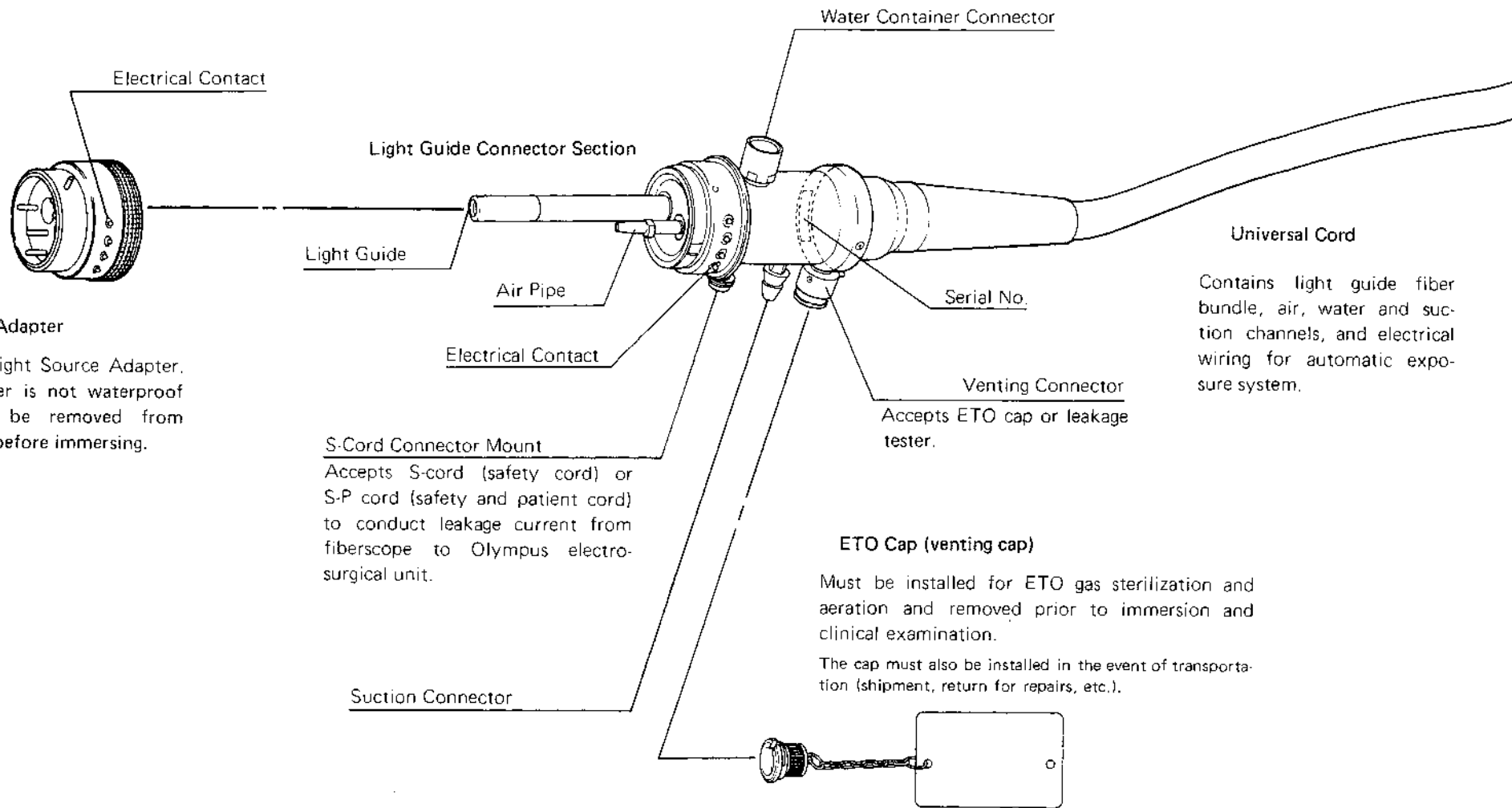
1-1 Features

The GIF-XP10 is a forward viewing upper G.I. fiberscope featuring high-resolution optics with a wide-angle lens system. As one of the waterproof OES series fiberscopes it can be completely immersed allowing total cleaning and disinfection. Its 7.9 mm insertion tube incorporates a 2 mm instrument channel for maximum versatility and performance.

1-2 Main Specifications

Optical System	Field of view Direction of view Depth of field	100° 0° (Forward viewing) 3 ~ 100 mm
Distal End	Outer diameter	7.9 mm
Bending Section	Range of tip bending Maximum deflection	Up 210°, Down 90° Right 100°, Left 100° 240°
Insertion Tube	Outer diameter	7.9 mm
Working Length		1,025 mm
Total Length		1,345 mm
Instrument Channel	Inner diameter	2 mm
Biopsy Forceps	Minimum visible distance	3 mm from distal end
Photo Documentation	Still CCTV Cine	Olympus SC16-4, OM-1N (with adapter) Olympus OTV-E C-mount adapters available

2 NOMENCLATURE



Fiberscope Adapter

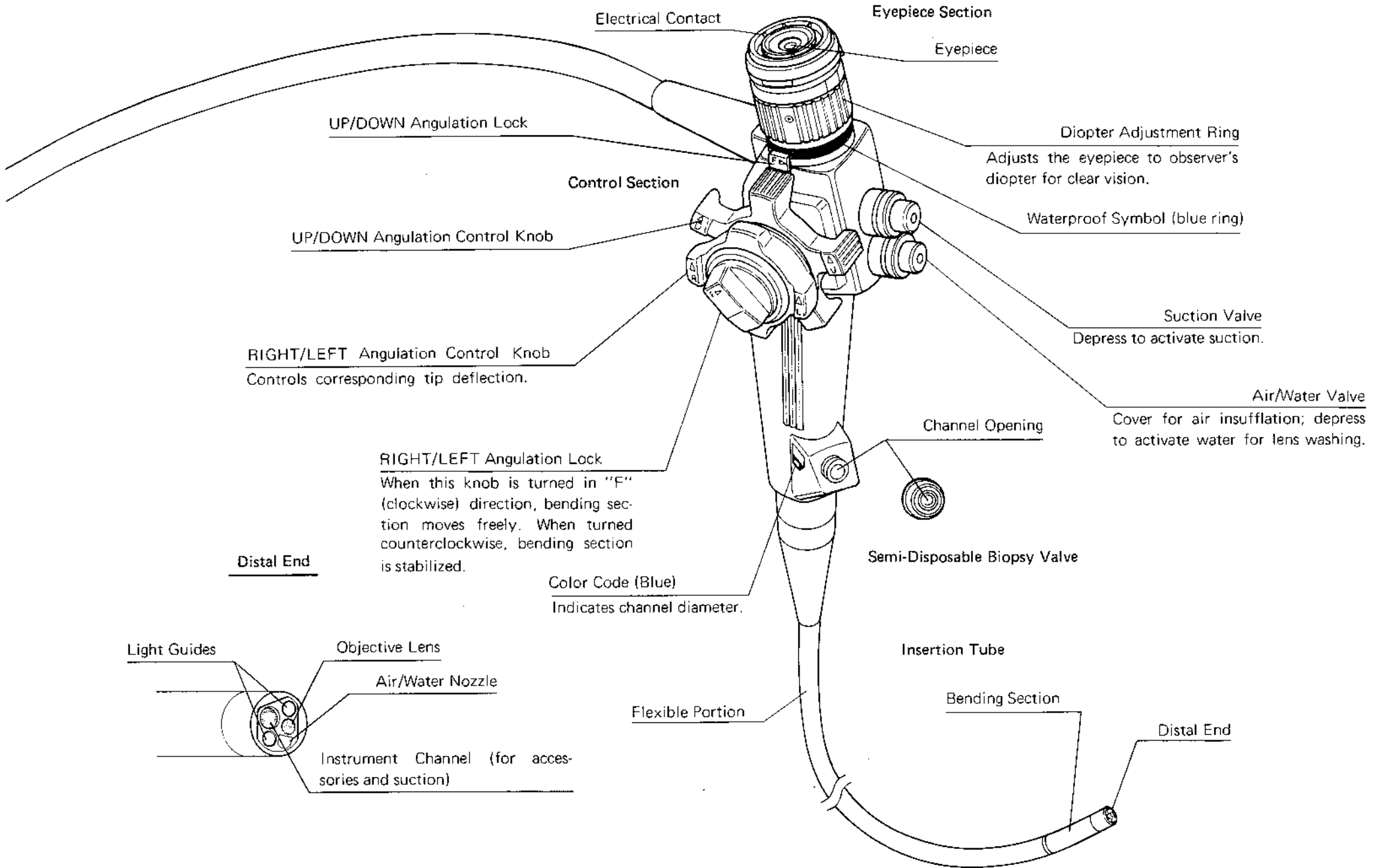
Mates with Light Source Adapter.
 ★ This adapter is not waterproof and must be removed from fiberoptic before immersing.

S-Cord Connector Mount

Accepts S-cord (safety cord) or S-P cord (safety and patient cord) to conduct leakage current from fiberoptic to Olympus electro-surgical unit.

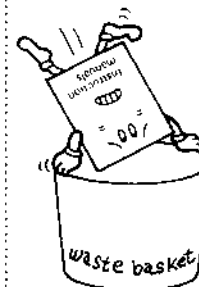
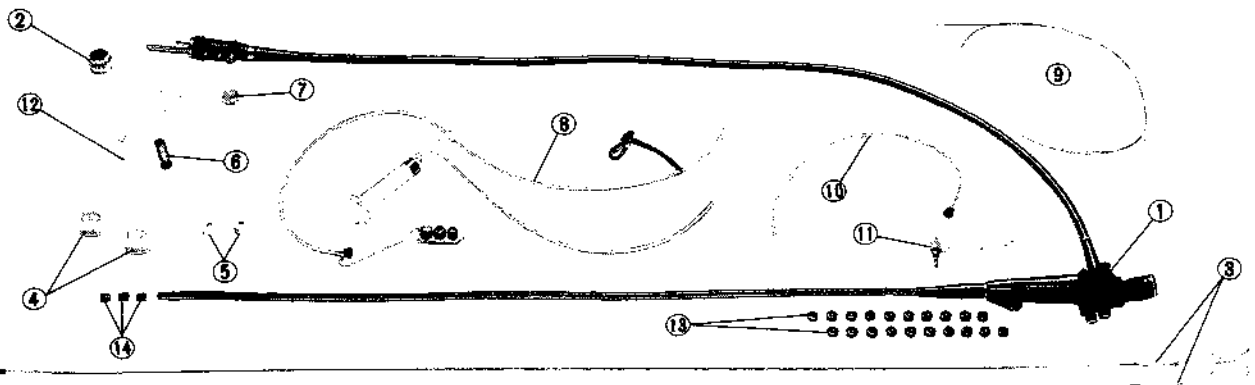
Accepts ETO cap or leakage tester.

Contains light guide fiber bundle, air, water and suction channels, and electrical wiring for automatic exposure system.

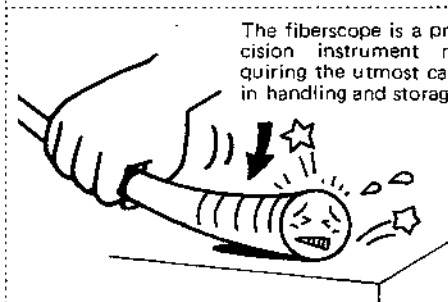


3 STANDARD SET

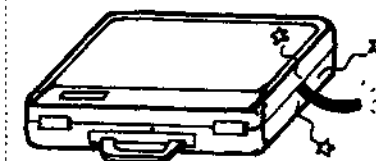
① Fiberscope	1	⑨ Channel Cleaning Brush (BW-9T)	1
② Fiberscope Adapter (AC10-S)	1	⑩ Channel Cleaning Adapter (MB-19)	1
③ Biopsy Forceps (FB-21K)	2	⑪ AW (Air/Water) Channel Cleaning Adapter (MB-107)	1
④ Mouthpiece (Bite guard)(MB-142)	2	⑫ Lubricant (Silicone oil)(MB-146)	1
⑤ Mouthpiece for Child (MA-474)	2	⑬ Semi-Disposable Biopsy Valve (spare) (MA-922)	20
⑥ Lens Cleaner (MA-2)	1	⑭ Distal Hood (MB-214)	3
⑦ ETO Cap (Venting cap) (MB-156)	1		
⑧ All-Channel Irrigator (CW-1) w/30cc syringe	1		



Instruction manuals are invaluable for staff training and should be retained for future reference.



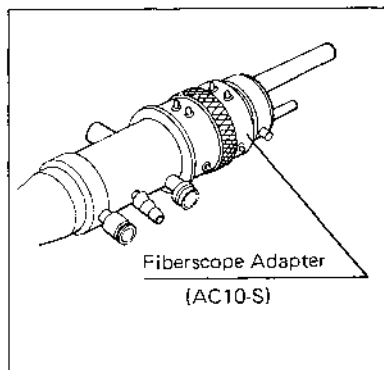
The fiberscope is a precision instrument requiring the utmost care in handling and storage.



Accidentally closing the fiberscope in the carrying case will severely damage the instrument, necessitating an expensive repair.

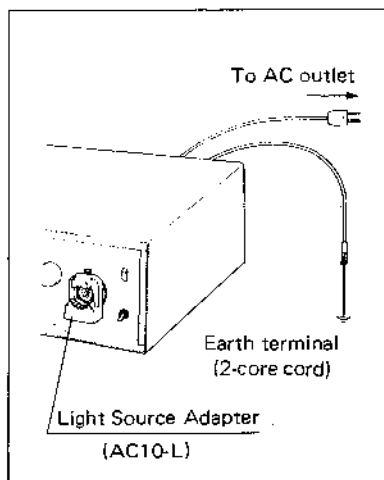
4 PREPARATION · INSPECTION

4-1 Preparation of Fiberscope



Remove fiberscope from storage area. Remove protective caps from the eyepiece and light guide. Attach the fiberscope adapter (AC10-S) to the light guide connector section.

4-2 Preparation and Inspection of Light Source

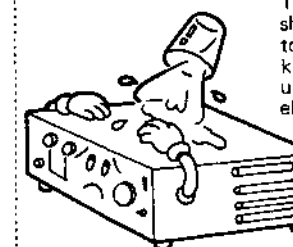
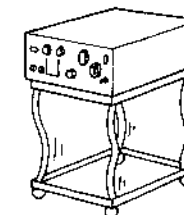
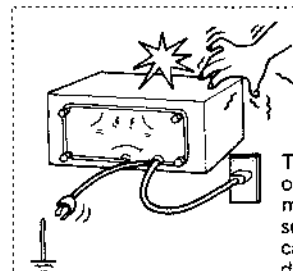


1 Preparation

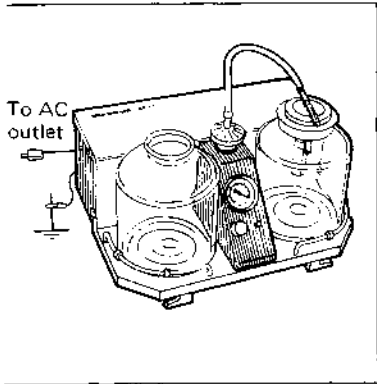
- ① Plug the power cord (3-core cord) into a properly grounded hospital grade AC outlet.
★ When using a power cord with a 2-core cord, securely connect the ground wire to an earth terminal. Do not connect to a gas pipe or it may cause explosion.
- ② Make sure the Light Source Adapter (AC10-L) has been attached to the output socket of the light source.
★ Adapters AC10-S and AC10-L must always be used with OES fiberscopes.
- ③ Fill water container approximately 2/3 full using distilled water. Tighten cap securely and attach to hanger on side of light source.
★ Empty water container and dry thoroughly after the last examination of the day.
- ④ Check proper exposure settings for photography.

2 Inspection

Inspect the light source according to its instruction manual.



4-3 Preparation and Inspection of Suction Device



- ① Connect the power cord of suction device to the AC mains (and the ground wire to the earth terminal — see page 5) following its operating manual.
 - ★ The suction device must be in safe and proper working condition.
- ② Inspect the suction device following its operating manual.
- ③ Connect the suction tube to the suction device and to the suction connector on the light guide section of the fiberscope.
- ④ Turn on suction device. Suction is controlled by the fiberscope's suction valve.

4-4 Preparation and Inspection of Biopsy Forceps

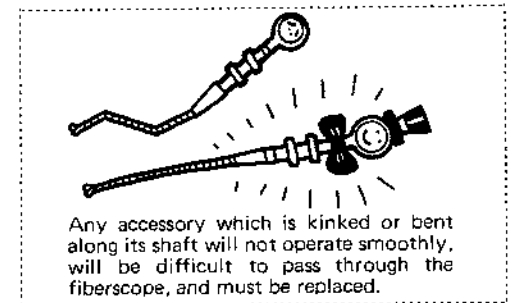
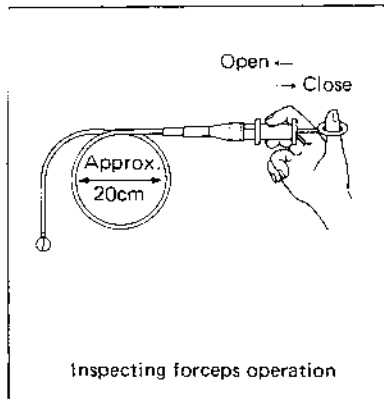
1 Preparation

Select proper biopsy forceps for fiberscope being used. (Refer to the System Chart, page 35.)
★ Always have spare forceps available.

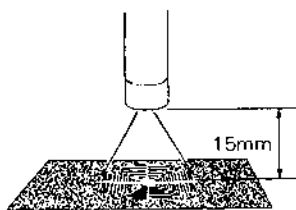
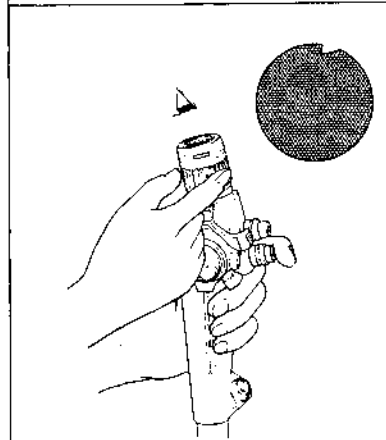
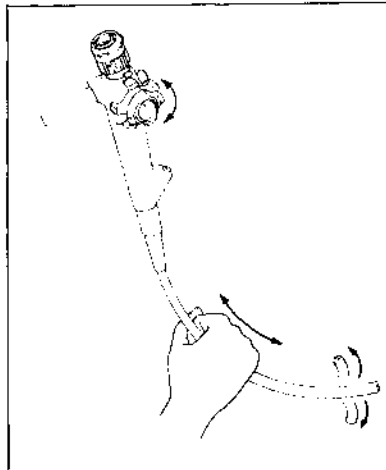
2 Inspection

Biopsy forceps should be inspected before each use!

- ① Form a loop in the biopsy forceps approximately 20 cm in diameter. Make sure that the forceps cups open and close smoothly when the handle is lightly operated.
- ② Inspect snares, etc., following individual instruction manuals.
- ③ If there is any irregularity in the operation or external appearance of a forceps, snare, etc., the item should be replaced with a new one.
 - ★ Replace bent or kinked accessories.
 - ★ All Olympus accessories have been designed and manufactured with utmost care. Due to the delicate nature of the small precision parts involved, it is considered neither safe nor economical to repair endoscopic accessories. In the interest of patient safety, Olympus' policy is to replace rather than repair these items. Repair by unauthorized individuals should not be attempted.



4-5 Inspection of the Fiberscope



Inspecting optical system

Before each use, the instrument should be inspected according to the following procedure. Should the slightest irregularity or abnormality be suspected, do not use the fiberscope but contact the nearest Olympus authorized service center.

1 Inspection of the Insertion Tube

- ① Inspect the surface of the insertion tube visually for any dents, bulges, or other irregularities.
 - ② Run your finger tips over the whole length of the insertion tube checking for any protruding objects, internal looseness, or other irregularities.
- ★ Do not squeeze the bending section forcefully.

2 Inspection of the Bending Mechanism

- ① Operate the angulation control knobs slowly and to the limit in each direction. Make sure the bending section bends smoothly and correctly and that maximum deflection can be achieved. Simultaneously inspect the outer surface of the bending section visually for any irregularity.
 - ② Operate the angulation locks and check that the bending section is stabilized when the locks are engaged. Also check that the knobs rotate freely when the locks are released ('F' Position).
 - ③ Inspect the rubber covering of the bending section for small holes, breaks, or other irregularities.
- ★ Do not bend or twist the bending section by hand.

3 Inspection of the Optical System

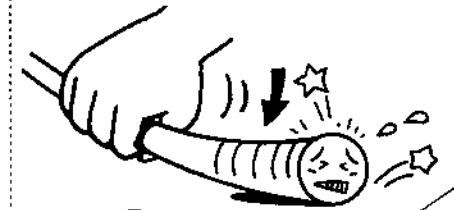
- ① Using clean gauze lightly moistened with 70% alcohol wipe all electrical contacts and lens surfaces.
 - ② Plug the light guide connector into the AC10-L Light Source Adapter mounted on the light source. Turn on light source and adjust light level.
 - ③ Turn the diopter adjustment ring until the fiber pattern is clearly focused. Check to see if an object approximately 15 mm away from the objective lens can be visualized clearly.
- ★ Do not use abrasive cleaners on lens surfaces or lenses will be scratched.

4 Inspection of the Instrument Channel

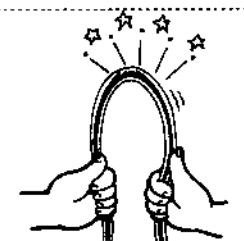
Pass the biopsy forceps through the channel to confirm smooth passage.

5 Inspection of Other Parts

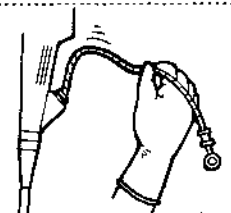
Check universal cord for any damage (i.e. breaks, cracks, twisted or crushed area) and the light guide connector, eyepiece and control section for loose connections.



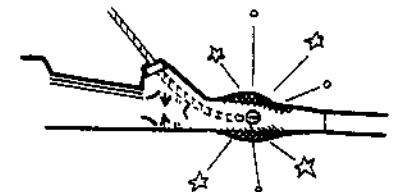
Do not let distal end strike a hard surface as this may crack the objective lens.



Do not bend insertion tube in a tight radius as this will damage delicate fiber bundles.

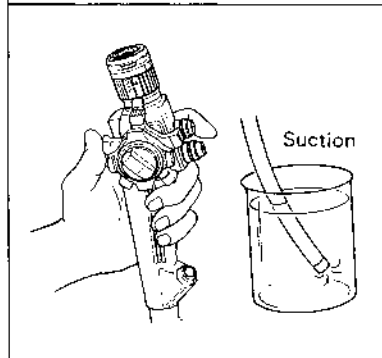
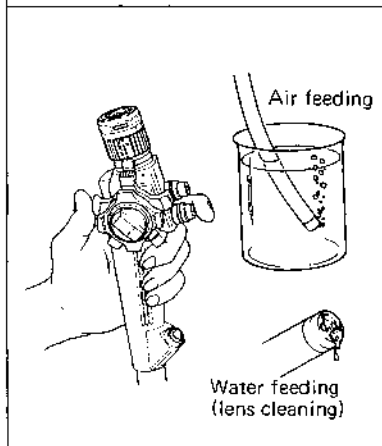
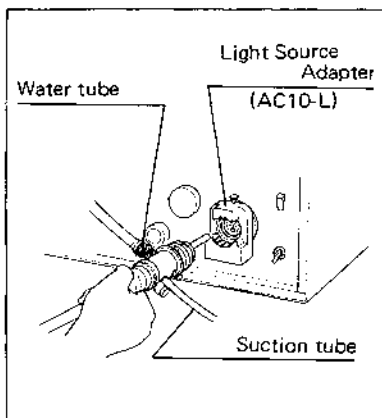


To prevent bending or kinking forceps shaft, hold forceps close to biopsy valve and advance using repeated, short strokes.



If forceps do not pass smoothly, do not force! Damage will occur to both biopsy forceps and instrument channel.

4-6 Inspection of the Endoscopic System



1 Preparation

- ① Connect the water container and suction line to the fiberscope.
- ② Plug the light guide connector into the output socket.
- ③ Switch on the light source and suction device.

2 Inspection of the Air Feeding Mechanism

- ① Place distal end of fiberscope in water to a depth of 10 cm. Cover the air/water valve hole with finger tip and confirm that air is emitted from the air/water nozzle.
- ② Remove finger from valve and confirm that no air is emitted from air/water nozzle. At a depth of less than 10 cm beneath the water's surface a small amount of air may be emitted. However, this does not indicate a malfunction.

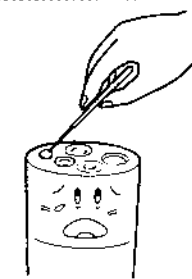
3 Inspection of the Water Feeding (Lens Cleaning) Mechanism

- ① Depress the air/water valve completely and confirm that water is emitted through the air/water nozzle. Release the valve and make sure water feeding ceases.
 - ★ At the first depression it will take a few seconds before water is emitted.
- ② To clear the field of view following lens washing, feed air.

4 Inspection of Suction Mechanism

Dip the distal end in tap water and depress the suction valve. Make sure water is aspirated. Release the valve and make sure the valve returns to its original position and that aspiration ceases.

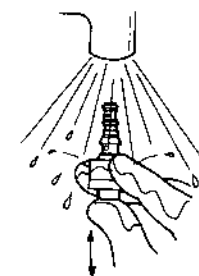
- ★ Ensure that the suction device to be used is in safe and proper working condition.
- ★ If the air/water or suction valves fail to function smoothly, clean as illustrated at right.



Do not use a needle or other sharp object to remove debris from air/water nozzle. The nozzle may be deformed or pryed loose.

Cleaning the air/water valve and suction valve

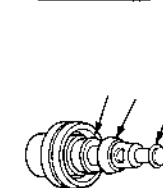
① Washing



Thoroughly wash under an open faucet while moving piston.

② Drying

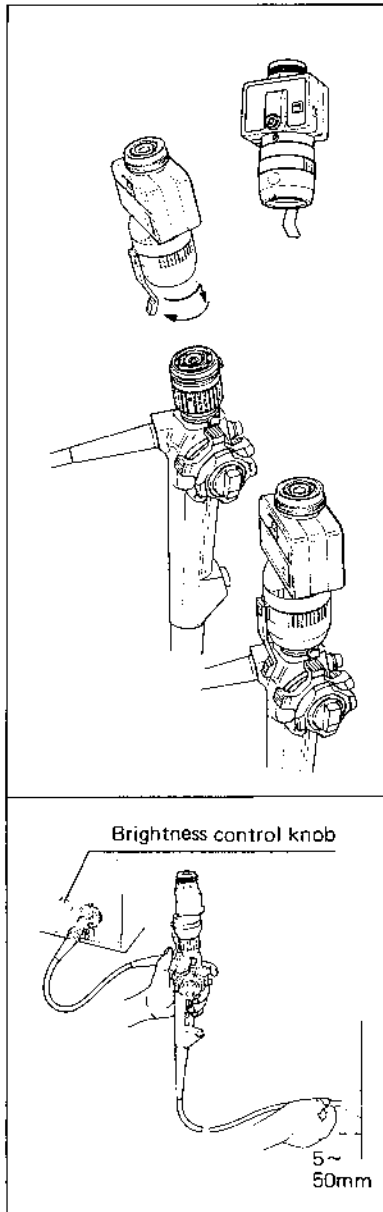
③ Lubrication



Gauze (moistened with silicone oil)

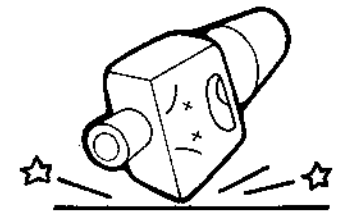


Apply a small amount of lubricant

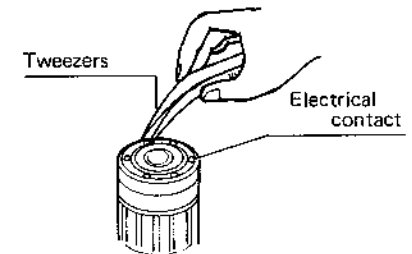


5 Inspection of the Automatic Exposure System

- ① Mount camera on fiberscope in the following manner:
 - Roughly align the yellow dots on camera and instrument eyepiece.
 - Rotate camera slightly until it seats.
 - Continue rotating clockwise (approximately 1/8 turn) until camera locks into place.
- ② Manually adjust light source brightness to minimum light output.
- ③ Hold the distal end of the fiberscope to within 1 cm of a white piece of paper and depress the camera's shutter release. A momentary increase in light intensity should be noted.
- ④ Repeat the above procedure, holding the distal end of the fiberscope at 2 cm and 5 cm from paper. Flash duration should increase with distance.
 - ★ If the automatic exposure system fails to function as described, refer to Section 9, "TROUBLESHOOTING GUIDE".
- ⑤ Remove camera by rotating counterclockwise.
- ⑥ Disconnect the light guide connector from the light source.
 - If the light guide connector is simply pulled from the output socket, AC10-S fiberscope adapter will remain in the AC10-L light source adapter.
 - If the light guide connector is pulled from the output socket while depressing release knob on top of the AC10-L adapter, both the fiberscope and fiberscope adapter will be released.
 - ★ Electrical contacts may be cleaned using a cotton-tipped applicator moistened with alcohol. Be sure to turn off light source before cleaning the electrical contacts on the AC10-L adapter.



Take care not to drop or knock.



5 OPERATING THE FIBERSCOPE

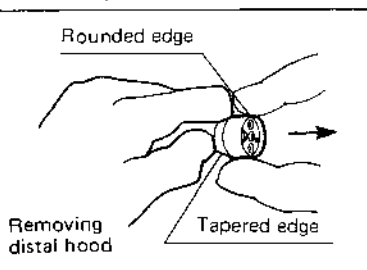
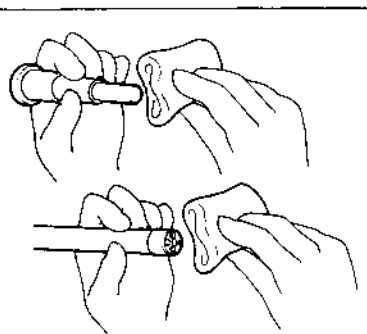
This section describes the basic operation of the fiberscope and outlines a general procedure for endoscopy. The endoscopist should carefully evaluate the clinical factors involved and decide on the technical details of the procedure.

SPECIAL NOTE

To become more thoroughly acquainted with some of the potential hazards associated with flexible endoscopy, the following are examples of possible complications resulting from improper technique.

Improper Technique	Possible Complication
1. Use of faulty fiberscope and/or accessory	Mucosal trauma, Perforation, Laceration, Electrical shock, etc.
2. Forceful insertion without clear view of the lumen	Perforation, etc.
3. Prolonged suction with distal tip in contact with mucosal surface	Bleeding, Suction artifact, etc.
4. Prolonged close-up observation with intense illumination	Thermal injury to mucosa, etc.
5. Overinsufflation	Pain, Rupture, etc.
6. Retroflexion of the fiberscope within the esophagus or duodenal bulb	Instrument impacted and cannot be withdrawn
7. Blind or abrupt protrusion of accessory from distal tip	Perforation, etc.
8. Electrosurgery without clear view	Mucosal burns, Perforation, etc.
9. Withdrawal of fiberscope with angulation controls in locked position	Trauma, Perforation, Laceration, etc.
10. Blind withdrawal of fiberscope	Trauma, Perforation, Laceration, etc.
11. Improperly cleaned/disinfected instruments	Cross-contamination, Infection, etc.

5-1 Preparation for Use



1 Disinfection/Sterilization of Instruments

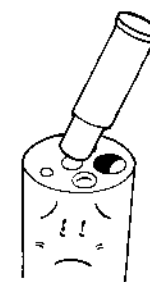
Disinfect or sterilize the fiberscope and accessories as described in Section 6.

2 Application of Lens Cleaner (Anti-Fogging Agent)

- ① Wipe moisture from objective lens.
- ② Apply lens cleaner to a piece of clean gauze and lightly wipe the objective lens. Remove excess.
 - ★ When cleaning the objective lens, always wipe in a direction away from the air/water nozzle.

3 Attaching the Distal Hood (if required)

- ① Attach the distal hood, with rounded edge facing outward, while holding the distal end of the fiberscope firmly between finger tips. Gently press on hood.
- ② To remove, hold the distal end of the fiberscope firmly. Using finger tips, grasp the edge of the hood and gently pull off.
 - ★ To prevent accidental dislodgement of the hood, make sure mating surfaces of the hood and distal end are clean and dry before attaching.
 - ★ If hood appears cracked or worn, do not use. Replace with a new one.



Do not occlude air/water nozzle when applying lens cleaner.



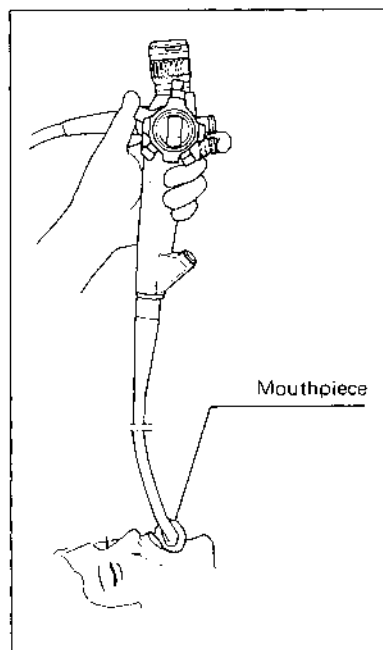
To prevent damage to bending section, grasp insertion tube near the distal end when installing hood.

4 Diopter Adjustment

Turn the diopter adjustment ring until the fiber pattern is clearly focused.

★ Four color-coded index lines serve as a reference for repeated setting.

5-2 Insertion and Observation



1 Preparation for Insertion

- ① Always use a mouthpiece (bite guard) to prevent the instrument from being bitten.
- ② Lubricate the insertion tube with a water soluble medical grade lubricant, taking care to avoid the distal tip.

2 Holding the Fiberscope

The control section of the instrument is designed to be held in the left hand. The air/water and suction valves are activated by the index finger. The up/down angulation control knob is operated by the thumb. The right hand is free to manipulate the insertion tube and the left/right angulation control knob.

3 Adjusting Brightness

Adjust the brightness control knob on the light source to a comfortable level of illumination.

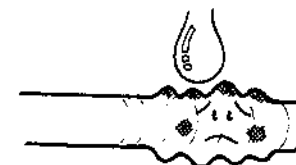
★ Always use the minimum necessary light level to avoid thermal mucosal damage as well as to protect your eye.

4 Tip Deflection

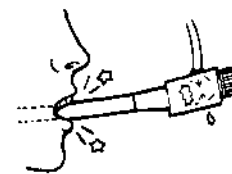
Operate the angulation control knobs as necessary to guide the distal end for insertion and observation.

★ If the angle control mechanism ceases to function, or if any other irregularity is noticed in the operation of the fiberscope, stop the examination immediately; free the angulation locks and return the angulation control knobs to their neutral position. Carefully withdraw the fiberscope while observing through it.

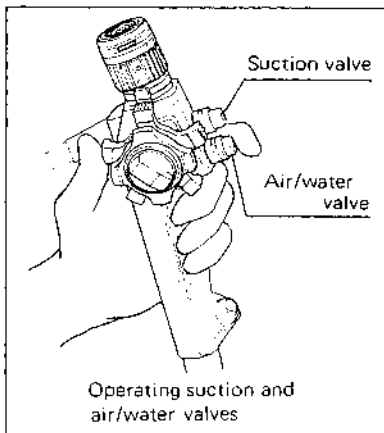
★ Always operate the angulation control knobs slowly.



Petroleum based lubricants will cause stretching and deterioration of bending section rubber.



Always use a mouthpiece to prevent damage to the insertion tube.



5 Aspiration

Fluid or foreign matter obscuring the visual field may be aspirated by depressing the suction valve. Aspiration is also useful for removing excess air.

6 Cleaning the Objective Lens

- ① Secretions and foreign matter adhering to the objective lens may be removed by simultaneously depressing the air/water and suction valves.
- ② Water drops remaining on the lens may be removed by feeding air.

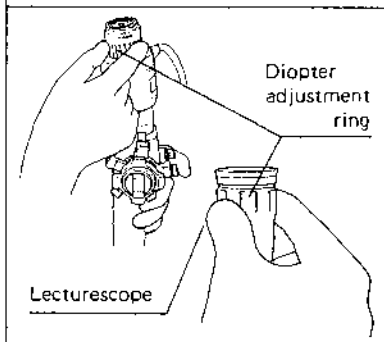
7 Adjusting Lumen Insufflation

Maintain the proper level of lumen insufflation for observation by feeding and aspirating air as necessary.

★ Overinsufflation may cause excessive patient discomfort and possible injury.

8 Using the Lecturescope (Teaching Attachment)

- ① Either the LS-10 lecturescope or LS-2 lecturescope (with A10-L2 adapter) may be used with the fiberscope.
- ② If desired a camera may be attached to the primary eyepiece of the LS-10 lecturescope.



WARNING

THERE IS A RISK OF THERMAL INJURY TO TISSUE FROM PROLONGED EXPOSURE TO THE INTENSE ILLUMINATION TRANSMITTED THROUGH A FIBERSCOPE. Because of the increased light carrying capabilities of OES endoscopes combined with the high output of high-intensity (Xenon) light sources, it is possible to convey a large amount of light energy and to concentrate this energy in a very small area (for example, when the fiberscope tip comes in close contact with the mucosa, thermal injury to the tissue may result). Because this fiberscope does not contain a photocell for automatic brightness control, the level of illumination will become very great under close-viewing conditions unless manually reduced.

The risk of injury is increased under the following conditions:

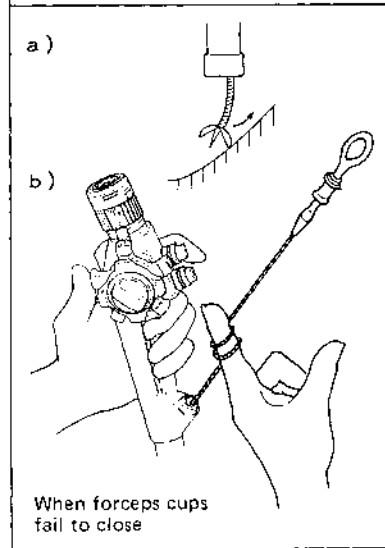
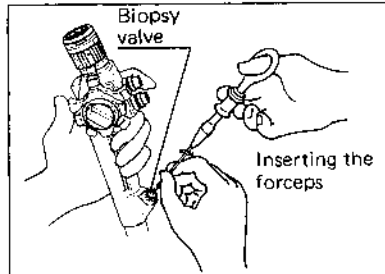
- 1) Prolonged close contact or close stationary viewing of the mucosa.
- 2) Advancing the fiberscope through a narrow lumen (e.g. esophagus, pharynx, etc.).
- 3) Using a high-intensity light source (e.g., CLV, CLX, CLX-F).

The following recommendations will reduce the risk of thermal injury:

- 1) Use the minimum level of illumination necessary for adequate visualization. The filter (BorC) built into high-intensity (Xenon) light sources may be used for this purpose.
- 2) When possible, avoid close stationary viewing.

To prevent accidents, do not leave the fiberscope plugged into the light source with the lamp on when not in use.

5-3 Biopsy

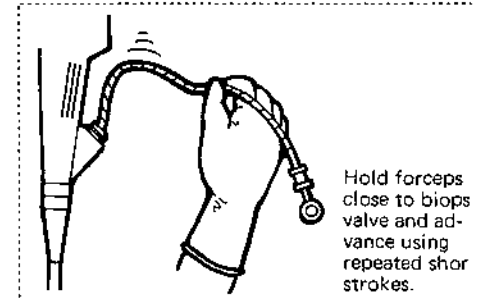


1 Inserting Biopsy Forceps

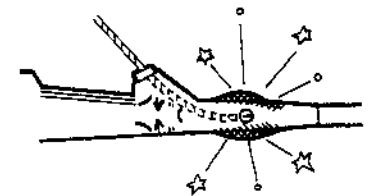
- ① While visualizing the area of interest, insert biopsy forceps into the instrument channel with its cups closed.
 - ★ If the forceps encounters resistance to passage through the bending section, decrease tip angulation until smooth passage is possible. Application of a medical grade lubricant to the forceps prior insertion into the fiberoptic will enhance passage.
- ② Slowly advance the forceps using repeated short strokes, grasping the forceps approximately 3 cm from the biopsy valve. When the tip protrudes approximately 3 mm from the distal end, the forceps will come into view.
 - ★ If the biopsy valve leaks fluid or air, replace with a new one.

2 Biopsy Procedure

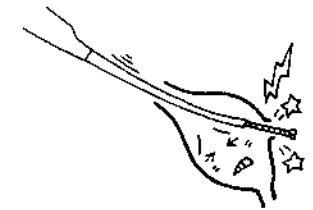
- Tissue samples are obtained by grasping the mucosa in the biopsy cups and then gently pulling the forceps back until the specimen is removed.
- ★ Do not attempt to cut through the tissue by applying excessive force.
 - Withdraw forceps slowly with cups in a closed position.
 - ★ In the event the cups of forceps fail to close when the slider is operated making it impossible to withdraw the forceps, close the cups by winding proximal portion of the shaft several times around your finger. If this fails to close the cups, withdraw the forceps as far as possible into channel opening. While viewing through the fiberoptic, carefully withdraw both fiberoptic and forceps.



Hold forceps close to biopsy valve and advance using repeated short strokes.

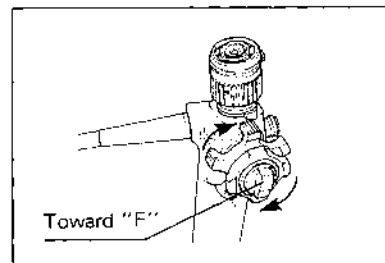


If resistance is encountered when passing biopsy forceps. DO NOT FORCE. Extensive damage to both forceps and fiberoptic may result.

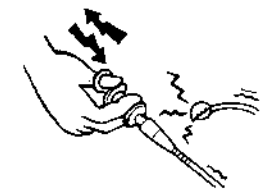


Advance forceps slowly. To prevent injury or perforation, always view through fiberoptic when advancing forceps.

5-4 Withdrawing the Fiberscope



- ① Before withdrawing the fiberoptic, aspirate accumulated air and be sure that up/down and right/left angulation locks are in the "Free" (F) position.
- ② Always view through the fiberoptic when withdrawing the instrument.
 - ★ The fiberoptic must be cleaned immediately after withdrawal from the patient. (Refer to pp. 19 ~ 21.)



Do not apply excessive force when opening and closing biopsy forceps.

6 MAINTENANCE

6-1 Cleaning, Disinfection, Sterilization

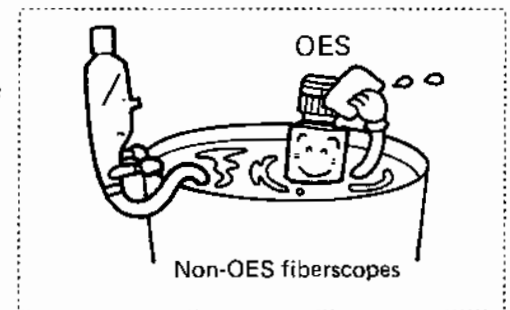
Endoscopic instruments must be meticulously cleaned prior to disinfection or sterilization. The methods employed to achieve these conditions are left to the discretion of the endoscopist, hospital infection control committee, etc.

Olympus instruments are made of materials and constructed in a manner which may not tolerate certain methods of cleaning, disinfection or sterilization. Those procedures, as described on pages 17 ~ 25 of this manual, have been thoroughly tested and found to have no adverse effects. Strict adherence to these procedures is highly recommended.

Instruments		Fiberscopes	Accessories, Water Container, Mouthpiece, Anticon- tamination Cover	Cameras	Adapters (A10, AC10-S, etc.)	Lecturescope (LS-10)	All-Channel Irrigator, AW Channel Clean- ing Adapter, Channel Clean- ing Brush & Adapter	Small Items (distal hood, biopsy valve, air/water and suction valves)
Cleaning	Ultrasonic		Applicable					
	Solutions	Applicable	Applicable					
Disinfectant	70% alcohol (wiping)		Applicable					
	Solutions (immersion)	Applicable	Applicable					
Gas	Formalin		Applicable					
	Ethylene Oxide Gas	Applicable	Applicable					
Heat	Boiling		Applicable					
	Autoclave		Applicable					

 Applicable
  Not applicable

- ★ Only those fiberscopes identified by a Blue Ring on the Eyepiece may be totally immersed.
- ★ Only those accessories identified by a Green Color or marked "AUTOCLAVE" may be autoclaved.



6-2 Cautions

1 General Precaution

- Before using any disinfectant solution not mentioned below, check with Olympus.
- Removable parts (e.g. distal hood, biopsy valve, air/water and suction valves), as well as the areas on which these parts are mounted, should be thoroughly cleaned and disinfected (sterilized).
- The water container should be emptied, cleaned, and disinfected at the end of each day's procedures.

2 Disinfectant Solution

- Reference herein to solutions for disinfection is not an endorsement of their germicidal effectiveness. Qualified persons from the disinfectant manufacturer should be consulted if any questions exist on this subject.
- When the disinfectant solution has been in contact with the instrument for the recommended time, remove the instrument from the disinfectant and rinse thoroughly to remove all toxic residue and to prevent instrument deterioration. The recommended dilution percentage and contact time listed below should not be exceeded.
- Rubber gloves should be worn for protection against skin irritation, infection, etc.

	MATERIAL	BRAND NAME	DISTRIBUTED BY	CONDITIONS
Disinfectant Solution	Alcohol 70% (Disinfectant Ethanol)			Wipe using alcohol dampened gauze
	Surgical scrub soap solution			Maximum Immersion: 30 Minutes
	Iodophor	Wescodyne (1.6%)	West Chemical Products (USA)	Dilution: 100X (0.016%) Max. Immersion: 20 Min.
	Glutaraldehyde	Cidex (2%) Sonacide (2%) Glutarex (2%) Sporicidin	Surgikos (USA) Ayerst Labs (USA) 3-M Medical Products Sporicidin Co. (USA)	Follow Manufacturer's Instructions
		Alhydex Plus (2.2%)	Surgikos (West Europe)	
		Aldehyde 28 (2%)	Antiseptics Consultant Service (Australia)	

3 Ethylene Oxide Gas Sterilization

- Prior to sterilizing the fiberscope, the ETO Cap (venting cap) must be attached. OES fiberscopes are completely sealed to make them watertight. Failure to attach the ETO cap will prevent the air sealed inside the fiberscope from escaping as a vacuum is created within the sterilization chamber. This will cause the rubber covering the bending section to rupture. After the ETO procedure is completed, the ETO Cap must be removed in order to reseal the fiberscope and insure watertightness.
- Before sterilization, the instrument must be thoroughly cleaned and dried as described in pages 19 ~ 21 of the manual. Failure to do so will inhibit sterilization.
- The instrument must be properly aerated after ETO sterilization to remove all residual toxic gas.
- Always use a biological indicator and follow the manufacturer's instructions for the particular gas sterilizer being used.

Gas	Formaldehyde	Formalin gas (Formaldehyde 14%)		To be kept in sealed condition for 24 hours max.
	Ethylene Oxide Gas	Anprolene	H.W. Andersen Products (USA)	Follow Manufacturer's Instructions
		Gas sterilizer		Temperature 55°C (131°F) Pressure 1.7kg/cm ² (24 psi) Humidity 50% Gas Concentration 10% Time 4 Hours Aeration Time: 7 days at room temperature or 12 hours in an aeration chamber between 50°C (122°F) and 57°C (135°F)

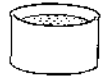
4 Autoclave

- Only those accessories identified by a Green Color or marked "AUTOCLAVE" may be autoclaved.
- Meticulous mechanical cleaning followed by 5 minutes of ultrasonic cleaning (at 40 kHz or higher) is mandatory prior to autoclaving. (Refer to Autoclavable Accessory Instruction Manual for details.)
- Standard autoclave cycles, including "flash" may be used provided the temperature does not exceed 132°C.

Heat	Boiling Water	Maximum Immersion: 30 Minutes
	Autoclave	2 atmospheres of air pressure (132°C or 270°F) for 5 minutes or 1 atmosphere (121°C or 250°F) for 20 minutes

6-3 Cleaning, Disinfection and Sterilization Procedures

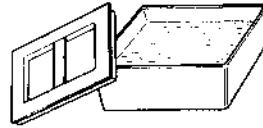
1 Supplies Needed



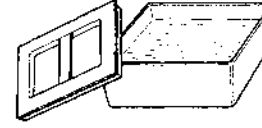
Cleaning solution



Disinfectant solution



Large basin for water



Large basin for disinfectant solution



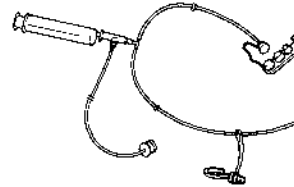
Rubber gloves



ETO cap (venting cap)
(MB-156)



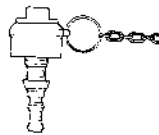
Semi-disposable
biopsy valve
(MA-922)



All-channel irrigator (CW-1)
with 30cc syringe



Scrub brush (soft)



Air/water channel cleaning adapter
(MB-107)



Channel cleaning adapter
(MB-19)



Gauze pads



Channel cleaning brush (BW-9T)



Leakage Tester (optional)

- To avoid extensive damage and costly repair, it is recommended that OES fiberscopes be tested for water leakage prior to immersion in cleaning solutions.
- To facilitate leak testing and cleaning procedures, the use of a leakage tester, maintenance unit (MU-1) or endoscope washer (EW-10) is recommended (optional items).
Refer to the operating manuals provided with these units.

CLEAN IMMEDIATELY AFTER PROCEDURE

1. Wipe insertion tube with gauze.
2. Turn off air pump. Remove AIR/WATER VALVE by slowly pulling out and place in cleaning solution.
3. Insert AIR/WATER CHANNEL CLEANING ADAPTER (blue collar). Turn on air pump.
4. Alternately feed water and air for 10 seconds each. Turn off light source.
5. Place distal tip in water and suction for approximately 10 seconds. Then alternate suctioning of water and air several times. Turn off suction device.
6. Remove AIR/WATER CHANNEL CLEANING ADAPTER, SUCTION VALVE and BIOPSY VALVE. Place in cleaning solution.
7. PERFORM LEAK TEST PROCEDURE.
8. Immerse insertion tube in cleaning solution.
9. Insert channel cleaning brush through insertion tube, universal cord and channel opening to brush the entire suction line.
10. Turn off suction device and remove suction line and channel cleaning adapter.
11. Immerse entire instrument in cleaning solution. Scrub all external surfaces. Remove instrument, place in clean water and rinse.
12. Using a soft brush, gently wash and rinse all valves.
13. Install AW CHANNEL CLEANING ADAPTER and SUCTION VALVE, and attach CHANNEL CLEANING ADAPTER.
14. Connect suction tube to suction connector on the instrument. While holding the control section out of water, turn on suction device, making certain free end of the channel cleaning adapter remains in water. Aspirate water for approximately 10 seconds.
15. Remove entire instrument from water. Continue to aspirate air for approximately 30 seconds. Turn off suction device, and disconnect suction line.
16. Dry all external surfaces of the instrument.
17. Turn off light source.

DISINFECTION

1. Connect All-Channel Irrigator (CW-1) to fiberscope.
2. Immerse fiberscope and All-Channel Irrigator into disinfectant solution.
3. Pump disinfectant solution through all channels.
4. Disconnect All-Channel Irrigator (CW-1) and allow instrument to remain in disinfectant solution for Recommended Period of Time.
5. Following disinfection, remove the instrument from disinfectant solution and place in clean water.
6. Reattach All-Channel Irrigator. Place weighted end of blue intake tube in water.
7. Flush all channels with clean water until thoroughly rinsed. Remove weighted end of blue intake tube from water and repeat flushing process, forcing air through channels to expel water.
8. Rinse the outside of the fiberscope under a running faucet. Remove All-Channel Irrigator from the fiberscope while rinsing.
9. Plug LG connector into light source and force air through all channels until moisture has been expelled and channels are dry.
10. Wipe dry outside surface of the instrument.

DISINFECTION COMPLETED

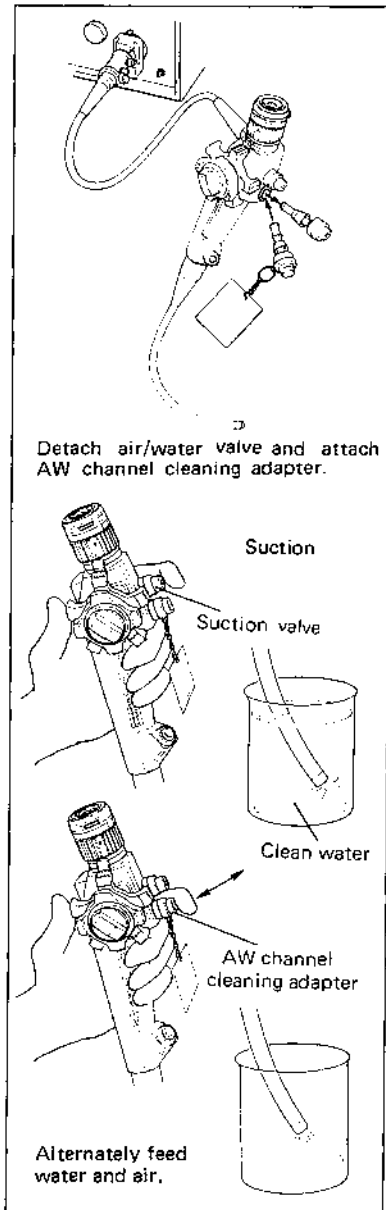
ETO GAS STERILIZATION

1. Attach ETO Cap.
- Gas Sterilization Cycle
- Aeration
2. Remove ETO Cap.
 3. Install AIR/WATER VALVE, SUCTION VALVE and BIOPSY VALVE which have been sterilized and dried.

STERILIZATION COMPLETED

BEDSIDE

CLEANING AREA



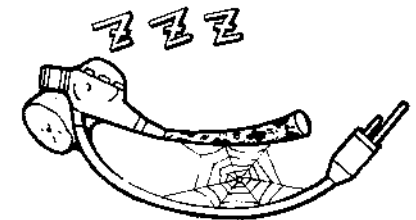
2 Cleaning/Disinfecting/Sterilizing the Fiberscope

CLEAN IMMEDIATELY AFTER PROCEDURE

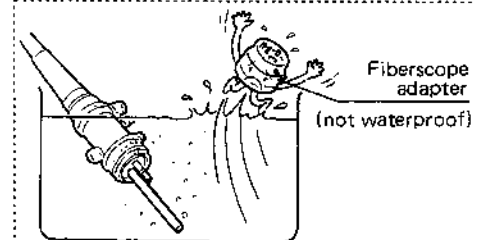
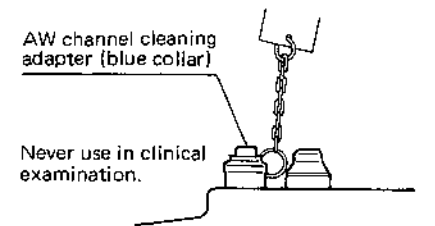
Initiate the following cleaning procedure immediately after each examination. Failure to do so may result in a malfunction of the instrument.

★ The light guide plug (chrome shaft extending from the light guide connector) may be extremely hot immediately after removal from the light source.
DO NOT TOUCH!

1. Wipe insertion tube with gauze.
★ Do not squeeze the bending section forcefully.
2. Turn off air pump.
Remove AIR/WATER VALVE by slowly pulling out and place in cleaning solution.
3. Insert AIR/WATER CHANNEL CLEANING ADAPTER (blue collar).
Turn on air pump.
4. Alternately feed water and air for 10 seconds each.
Turn off light source.
★ The Air/Water Channel Cleaning Adapter will feed water through both the air channel and water channel when depressed. It feeds air through both channels automatically when the valve is released.
5. Place distal tip in water and suction for approximately 10 seconds. Then alternate suctioning of water and air several times.
Turn off suction device.
★ Alternately insert and remove distal end of the instrument.
6. Remove AIR/WATER CHANNEL CLEANING ADAPTER, SUCTION VALVE and BIOPSY VALVE.
Place in cleaning solution.



Clean fiberscope immediately after each examination.



Remove fiberscope adapter before cleaning/disinfecting procedure.

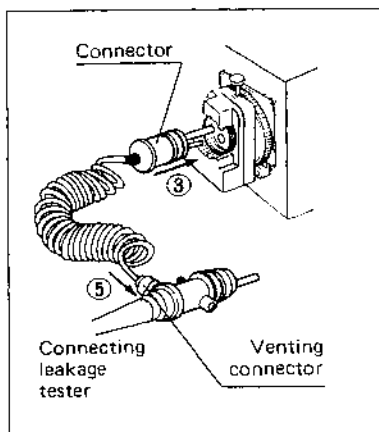
7. Perform Leak Test Procedure.

- ① Remove fiberscope from light source by simply pulling outward.
 - ★ DO NOT DEPRESS Silver Button on top of the light source adapter (AC10-L).
 - ★ Be sure fiberscope adapter (AC10-S) remains in the light source adapter.
- ② Detach water container and suction line from the light guide connector.
- ③ Insert black end of the leakage tester into output socket on the light source.
- ④ Turn on the light source.
 - ★ Be sure air pump is also "ON". To ensure that air is being emitted from the leakage tester, lightly depress the pin inside the connector cap.
- ⑤ Attach leakage tester to venting connector on the light guide connector.
 - ★ Place the connector cap over the venting connector, aligning the pin on the connector with the keyway on the cap. Depress and rotate cap clockwise (approximately 90°) until no further rotation is possible.
 - ★ At this point, note expansion of the rubber covering of the bending section due to increased internal pressure.
- ⑥ Immerse entire instrument in water.

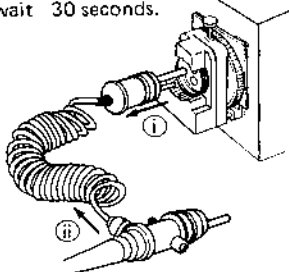
Observe the instrument carefully for about 30 seconds.

If no bubbling is observed from the instrument, the instrument is watertight. Proceed to Step ⑦.

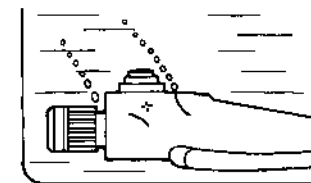
 - ★ Some initial bubbles may be observed due to air trapped in crevices on the fiberscope's outer surface. This is normal.



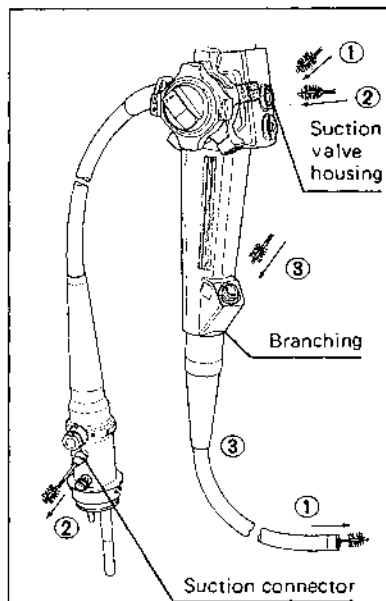
⑦ Disconnect from light source first and wait 30 seconds.



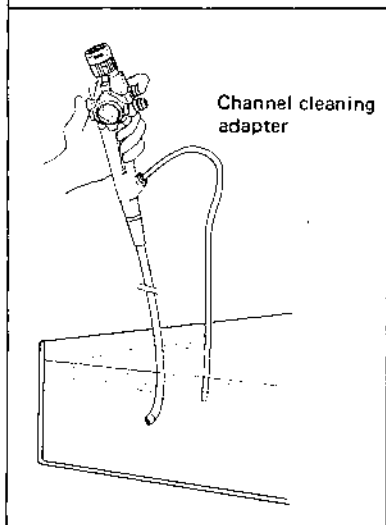
- ⑦ Remove the entire instrument from the water and turn off the light source.
 - Disconnect the leakage tester from the light source.
 - Wait approximately 30 seconds (or until the rubber which covers the bending section returns to its normal shape).
 - Disconnect the leakage tester from the venting connector on the light guide connector by depressing and rotating counterclockwise.
 - ★ Do not detach the leakage tester before the fiberscope has been removed from water.
 - ★ When detaching the leakage tester, always disconnect from the light source first. Failure to follow this exact procedure will not allow the instrument to depressurize and damage will result.
 - ★ Thoroughly dry the leakage tester.
8. Immerse insertion tube in cleaning solution.



If continuous bubbling is observed from a given area, this indicates a leak.



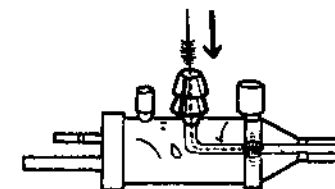
Brushing the suction line



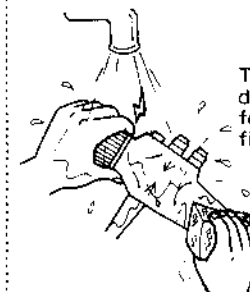
9. Insert channel cleaning brush through insertion tube, universal cord and channel opening to brush the entire suction line.
 - ① Pass channel cleaning brush through suction valve housing at an angle of approximately 45° until the brush extends from the distal end of the instrument. Brush channel several times.
 - ② Pass the channel cleaning brush directly into the suction valve housing (approximately 90°) brushing the entire length of the universal cord until the brush extends from the suction connector. Brush several times.
 - ③ Insert channel cleaning brush into channel opening approximately 10 cm. Brush several times.

★ Use only the channel cleaning brush (BW-9T) supplied with the instrument.

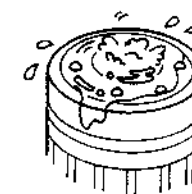
 - ④ Attach the suction line to the suction connector on the light guide. Attach channel cleaning adapter to channel opening and place the free end in cleaning solution. Turn on suction device and cover suction valve housing with finger for approximately 10 seconds.
10. Turn off suction device and remove suction line and channel cleaning adapter.
 11. Immerse entire instrument in cleaning solution. Scrub all external surfaces. Remove instrument, place in clean water and rinse.
 12. Using a soft brush, gently wash and rinse all valves.
 13. Install AW channel cleaning adapter and suction valve, and attach channel cleaning adapter.
 14. Connect suction tube to the suction connector on the instrument. While holding the control section out of water, turn on suction device, making certain free end of the channel cleaning adapter remains in water. Aspirate water for approximately 10 seconds.
 15. Remove entire instrument from water. Continue to aspirate air for approximately 30 seconds. Turn off suction device, and disconnect suction line.
 16. Dry all external surfaces of the instrument, especially the electrical contacts.
 - Reconnect instrument to the light source.
 - Turn on light source and air pump.
 - Cover water container connector with finger and depress AW channel cleaning adapter for 10 seconds to dry air and water channels. Then replace AW channel cleaning adapter with Air/Water valve.
 17. Turn off light source.
 - Disconnect instrument from light source.
 - Remove all valves and channel cleaning adapter.
 - Using a cotton-tipped applicator, dry air/water valve housing, suction valve housing, biopsy valve housing, distal end and eyepiece.
 - Dry, lubricate and reattach all valves.
 - Wash, Rinse and Dry all cleaning equipment.



Do not attempt to pass channel cleaning brush in reverse direction: it may get caught, making retrieval impossible.



To prevent water leak do not apply excessive force when washing fiberoptic.



Wet electrical contacts cause faulty exposure.



Feed air until no water comes out of nozzle.

DISINFECTION

OES fiberscopes (identified by a blue ring around the eyepiece) have been designed to withstand complete immersion in disinfectant solutions. Prior to immersion, the following points must be noted:

- The fiberscope must be physically clean as outlined in steps 1–17 of the Cleaning Procedure.
- The disinfectant solutions listed on page 15 of this manual have been tested by Olympus and found to have no adverse effects on the instrument when used in accordance with the disinfectant manufacturer's label instructions.
- Remove all valves and place in disinfectant solution.

1. Connect All-Channel Irrigator (CW-1) to fiberscope.

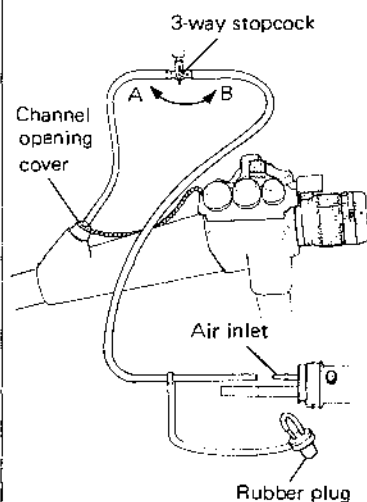
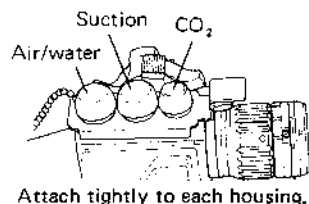
- First, wet the valve housing cover. Then, with the metal tab pointing toward the eyepiece, attach to the suction valve and air/water valve housings respectively. (The CO₂ cover is used only with CO₂ equipped instruments.)
- Attach channel opening cover to channel opening.
- Attach the opposite end of the tubing to the air inlet on the light guide connector.
- Insert rubber plug into water container connector.
- Insert white plastic male connector into hole beside the rubber plug.
- Insert connector on blue intake tube into 3-way stopcock.
- Insert 30 cc syringe into the top of the connector.

★ Replace 3-way stopcock when it develops cracks or other defect.

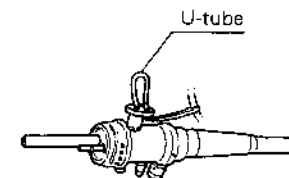
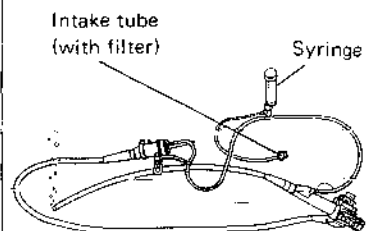
2. Immerse fiberscope and All-Channel Irrigator into disinfectant solution.

3. Pump disinfectant solution through all channels.

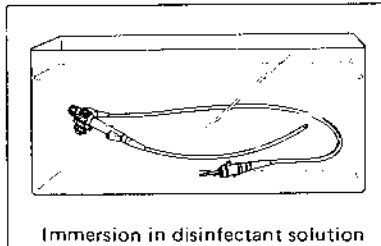
- Be certain weighted end of blue intake tube is in solution.
- Turn the handle on the 3-way stopcock to position "A".
- Withdraw the plunger until syringe fills with disinfectant solution.
- Depress plunger forcing solution through the air and water channels until air has been expelled and solution comes out of the air/water nozzle at the distal end of the insertion tube. Repeat several times.
- Turn the handle on the 3-way stopcock to position "B".
- Repeat the above procedure, forcing solution through the entire suction channel. Fluid will exit through the channel opening at the distal end of the insertion tube and through the suction connector on the universal cord.



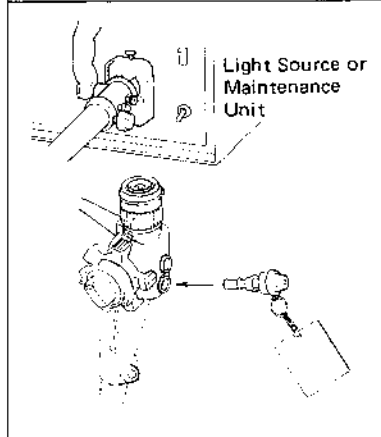
Be sure to rotate stopcock to both positions "A" and "B" while in use.



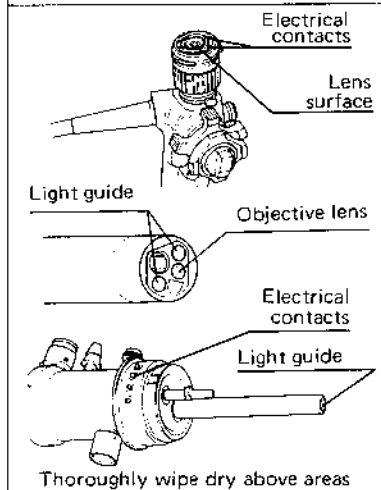
Attach U-tube tightly to rubber plug.



Immersion in disinfectant solution



Drying the air/water channel



Thoroughly wipe dry above areas

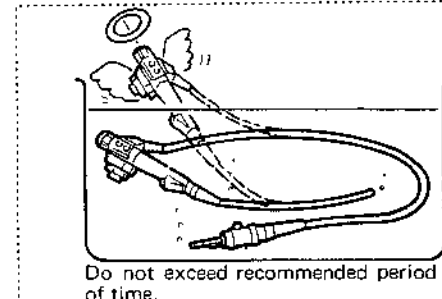
4. Disconnect All-Channel Irrigator and allow instrument to remain in disinfectant solution for Recommended Period of Time.
5. Following disinfection, remove the instrument from disinfectant solution and place in clean water.
6. Reattach All-Channel Irrigator. Place weighted end of blue intake tube in water.
7. Flush all channels with clean water until thoroughly rinsed. Remove weighted end of blue intake tube from water and repeat flushing process, forcing air through channels to expel water.
8. Rinse the outside of the fiberscope under a running faucet. Remove All-Channel Irrigator from the fiberscope while rinsing.
9. Plug LG connector into light source and force air through all channels until moisture has been expelled and channels are dry.
 - ① Install Air/Water Channel Cleaning Adapter to air/water valve housing. Closing water container connector, depress Air/Water Channel Cleaning Adapter for approximately 30 seconds to force water through air/water channel. Release Adapter and allow air/water channel to be thoroughly dried.
 - ② Install biopsy valve to channel opening. Connect suction line and turn on suction device. Close suction valve housing with a fingertip and air-dry suction channel.
10. Wipe dry outside surface of the instrument.
 - Using a cotton-tipped applicator, dry the distal tip, eyepiece and valve housings.
 - Replace air/water valve and suction valve which have been previously disinfected, rinsed, dried and lubricated.

Cold sterilization

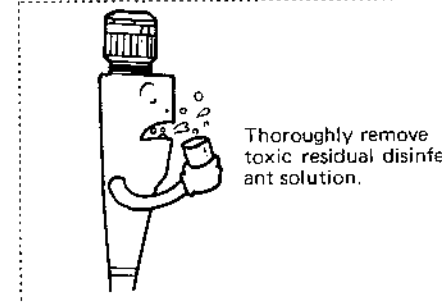
If absolutely necessary, the fiberscope may be left in glutaraldehyde solution for a maximum of 10 hours to achieve "Cold Sterilization". NEVER EXCEED THE 10 HOURS MAXIMUM. After four (4) such extended immersions, the instrument MUST be aerated to reduce the level of internal humidity. (ETO cap must be attached during aeration.)

Aeration conditions:

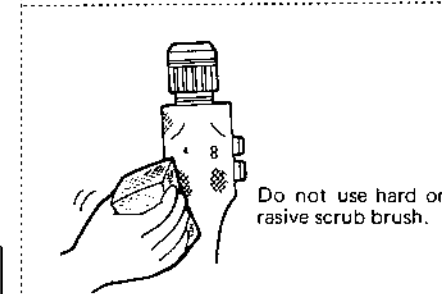
Temperature	50°C (122°F)
Time	15 hours



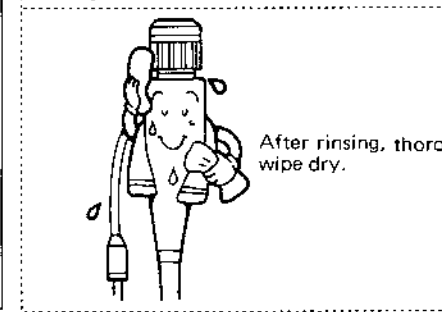
Do not exceed recommended period of time.



Thoroughly remove toxic residual disinfectant solution.

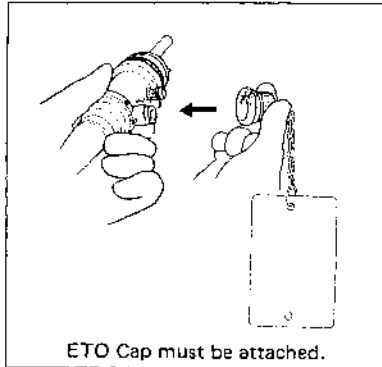


Do not use hard or rasive scrub brush.



After rinsing, thoroughly wipe dry.

ETO GAS STERILIZATION

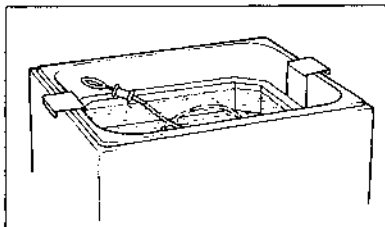


OES fiberscopes have been designed to withstand Ethylene Oxide Gas Sterilization provided the following conditions are met prior to sterilization:

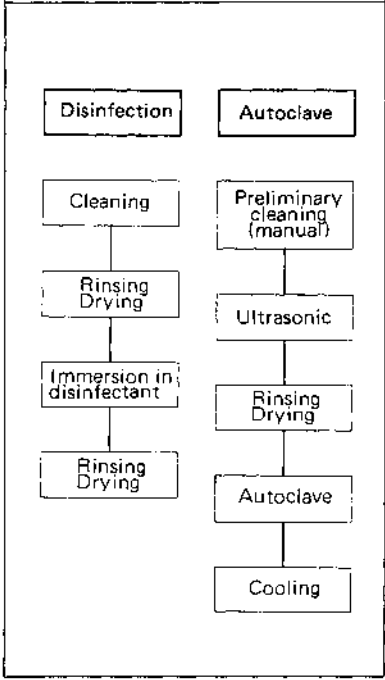
- The fiberscope must be physically clean and thoroughly dried as outlined in steps 1–17 in the Cleaning Procedure.
- Air/Water, Suction and Biopsy Valves (as well as distal hood if used) must be removed from the fiberscope prior to sterilization.
- ETO Cap **MUST** be securely attached to the venting connector on the light guide connector and must remain in place throughout the sterilization and aeration process. To attach the ETO Cap; place cap over the connector, aligning the pin on the connector with the keyway on the cap, depress and rotate cap clockwise (approximately 90°) until no further rotation is possible. To remove, depress cap and rotate counterclockwise.

Sterilization and aeration must be performed under the conditions described in Section 6-2, **3** of this manual.

To insure that sterilization has been accomplished, always use a biological indicator and follow the manufacturer's instructions for the particular gas sterilizer being used.



Ultrasonic cleaning (over 40kHz, 5 minutes min.)



3 Cleaning/Disinfecting/Sterilizing the Biopsy Forceps

① Manual Cleaning

Thoroughly wash the biopsy forceps in cleaning solution using a soft brush to remove all debris. Particular care should be taken to remove all blood, stool and secretions from difficult to clean areas such as the biopsy cups. After a thorough rinsing, wipe off all moisture.

★ Do not kink the forceps shaft.

② Ultrasonic Cleaning

The use of an ultrasonic cleaner is desirable to aid in the removal of particulate matter. Ultrasonic cleaning is mandatory if the biopsy forceps are to be autoclaved.

- Clean the biopsy forceps immediately after use.
- Immerse in an ultrasonic cleaner with 40 kHz or higher output for a minimum of 5 minutes.
- Use only tap water in the ultrasonic cleaner. Some surfactants and other agents may cause the forceps to operate sluggishly.

③ Disinfection

- Prior to disinfection or sterilization, the biopsy forceps must be meticulously cleaned.
- Immerse in disinfectant solution for recommended time.
- Rinse thoroughly and dry.
- Lubricate cups with a medical grade silicone lubricant.

④ ETO Gas Sterilization

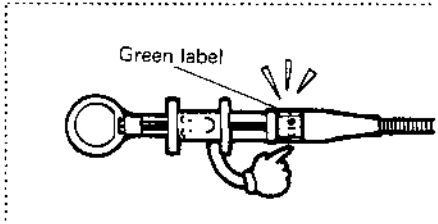
- Prior to ETO gas sterilization, the forceps must be meticulously cleaned and thoroughly dried. Accessories with plastic parts must be aerated following ETO gas sterilization.
- Lubricate forceps cups with a medical grade silicone lubricant.
- ★ Always use a biological indicator and follow the manufacturer's instructions for the particular gas sterilizer being used.

⑤ Autoclave

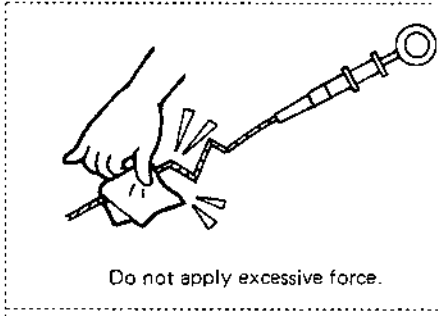
- Prior to steam autoclaving, the biopsy forceps must be mechanically cleaned and have undergone a minimum of 5 minutes of ultrasonic cleaning.
- Autoclave under the following conditions:

Temperature: 132°C (270°F)	or	Temperature: 121°C (250°F)
Pressure: 2 atmospheres		Pressure: 1 atmosphere
Time: 5 minutes		Time: 20 minutes

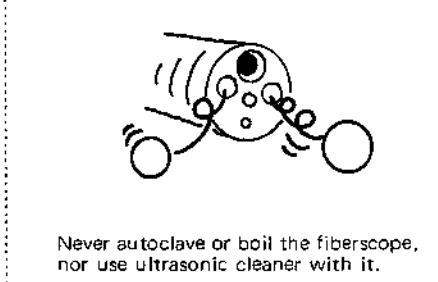
- Lubricate forceps cups with a medical grade silicone lubricant.
- ★ Only those accessories identified by a green color or marked "AUTOCLAVE" may be autoclaved.



Only those accessories identified by a green color or marked "AUTOCLAVE" may be autoclaved.

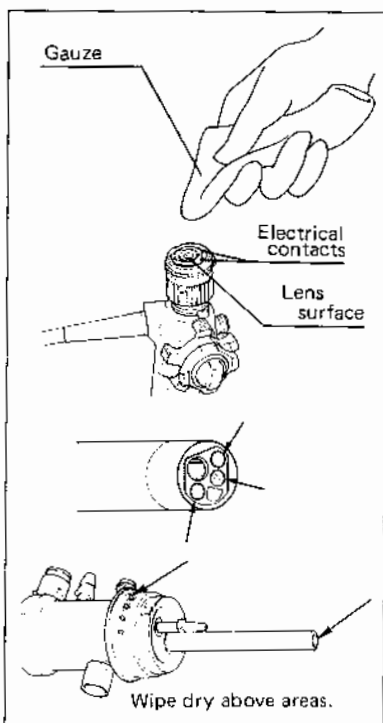


Do not apply excessive force.



Never autoclave or boil the fiberscope, nor use ultrasonic cleaner with it.

6-4 Storage



1 Care for Storage

- ① The fiberoptic instrument must be dried thoroughly prior to storing. Take special care to dry the distal tip, all lenses, and electrical contacts.
- ② The storage location must be clean, dry, well ventilated and maintained at a normal temperature. Avoid direct sunlight, high temperature, high humidity and X-ray exposure.
- ③ The fiberoptic instrument should be stored with the insertion tube as straight as possible. Release all angulation control locks. If it must be coiled for storage, do not coil insertion tube tighter than its condition when in the instrument carrying case.
- ④ Do not use the carrying case for storage. The carrying case is designed for shipping purpose only. Routine storage of the fiberoptic instrument in a humid, dark, non-ventilated environment, such as the carrying case, may cause problem with infection control. Accessories (e.g. biopsy forceps) must also be dried thoroughly before storage. Do not coil tightly.

2 Fiberscope Repair

- ① Should the fiberoptic instrument require repair, it should be shipped to the nearest Olympus service center in its original carrying case, along with a description of the instrument malfunction or damage. Include the name and telephone number of the individual most familiar with the instrument problem and a repair purchase order.

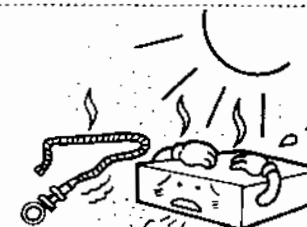
★ Attach the ETO cap (venting cap) to the venting connector.

- ② Minor problem with the operation of the fiberoptic instrument may be correctable by the endoscopist or assistant. Refer to Section 9 TROUBLESHOOTING GUIDE.

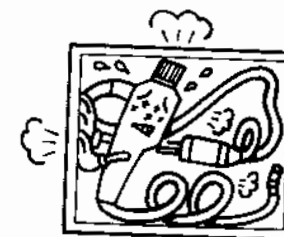
All other repair should be made only by an authorized Olympus service center. In no event will Olympus be liable for any injury or damage due to repairs performed by non-Olympus personnel.



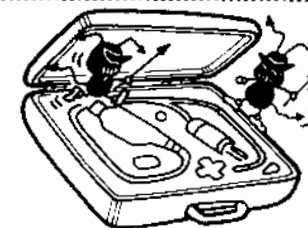
Do not scratch electrical contacts with sharp tools.



Direct sunlight, dust, high humidity and high temperature will damage instruments.



Do not sharply bend.



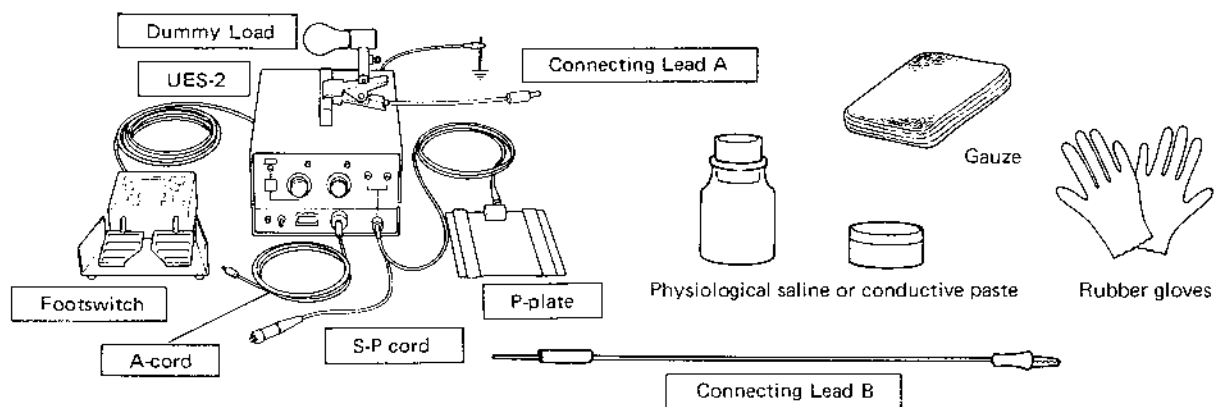
Do not store in the carrying case.

7 ELECTROSURGERY

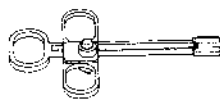
Extensive training and experience in Endoscopic Electrosurgery is necessary before attempting electrosurgical procedures through the fiberscope. The endoscopist must determine the technical, as well as clinical details of the procedure from a professional medical viewpoint. Improper technique, faulty equipment and the use of improper or incompatible ancillary equipment can all result in electrosurgical accidents. Refer to the instruction manual pertaining to each piece of equipment used.

The following Olympus equipment is safe and compatible with this fiberscope:

- Olympus electrosurgical accessories
- Olympus Electrosurgical Units (PSD, PSD-2, PSD-3, UES, UES-2)



Electrosurgical Accessories



SD-7P



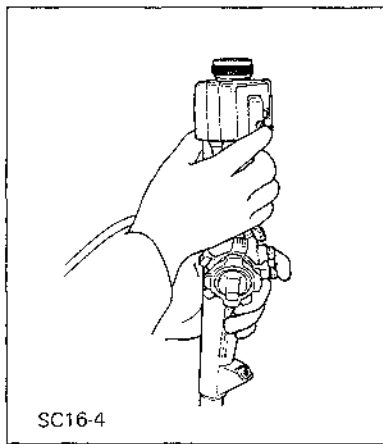
SD-8P



CD-5P

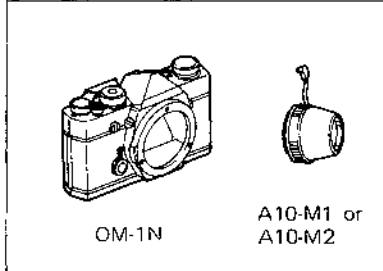
ENDOSCOPIC PHOTODOCUMENTATION

8-1 Still Photography



1 SC16-4 Camera

- ① Refer to SC16-4 instruction manual for instructions on loading film and operating the camera.
- ② Attach camera to fiberscope eyepiece as explained in Section 4-6, 5-①, page 9.

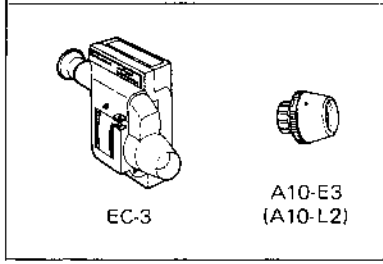


2 OM-1N Camera

- ① Place 1-9 endoscopic focusing screen in camera viewfinder.
- ② Set shutter speed at 1/4 second ("4").
- ③ Set shutter speed sync switch to "X" (use "FP" with CLE-F light source).
- ④ Set meter switch to "OFF".
- ⑤ Attach proper OM adapter and connect sync cord to camera body:

Light Source	Adapter
CLE, CLE-3, CLE-4U, CLE-5	A10-M1
CLV, CLS, CLS-F, CLX	A10-M2 (standard image)
CLX-F, CLE-F	A10-M1 (reduced image)

- ★ Refer to camera instruction manual for instructions on loading film and operating camera.
- ★ Attach camera to fiberscope eyepiece as explained in Section 4-6, 5-①, page 9.
- ★ Confirm that the LED indicator light is illuminated. If not, clean electrical contacts in eyepiece, camera and light guide connector.



3 EC-3 Polaroid Camera

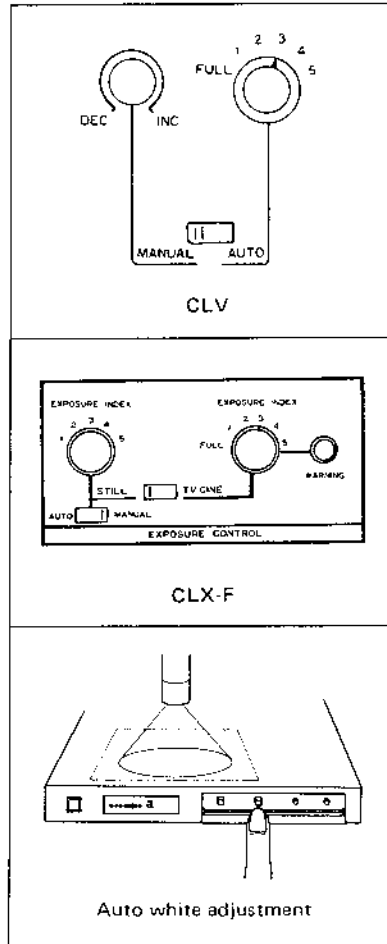
- ① Refer to EC-3 instruction manual for instructions on loading film and operating camera.
- ② Use A10-E3 adapter to connect EC-3 camera to fiberscope eyepiece. (To remove A10-E3 adapter from EC-3 camera, depress release button while rotating counterclockwise.)
- ③ Set shutter speed at 1/4 second ("4").

4 Light Source Setting

Camera	Exposure Index	Film
SC16-4	3	1604-D
	4	1604-T
OM-1N	3	ISO/ASA 200 Daylight
	4	ISO/ASA 160 Tungsten
EC-3	1	Polaroid 779

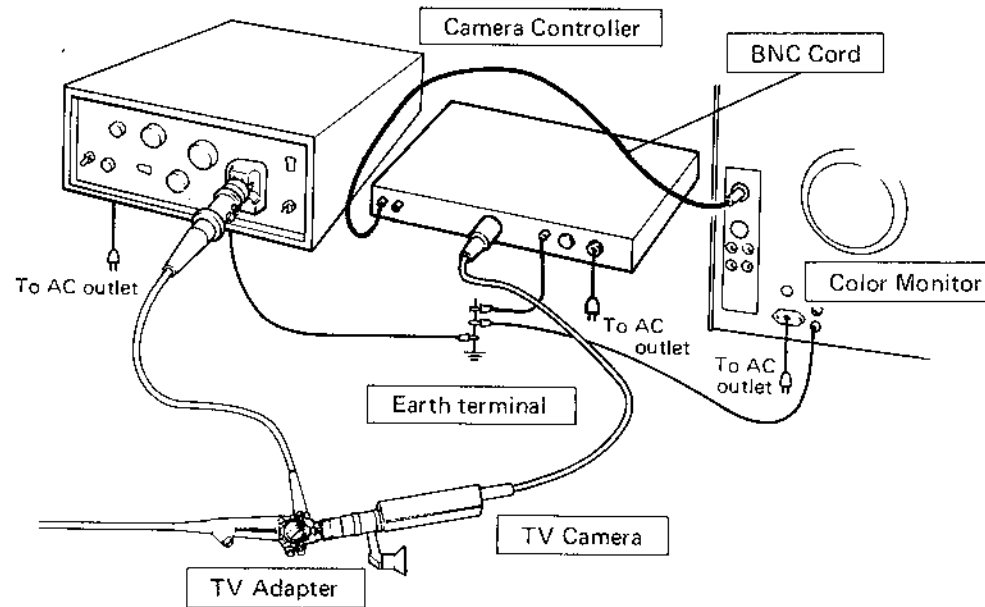
NOTE: Photographs may also be taken by attaching camera to the primary eyepiece of the LS-10 Lecturescope. Refer to the LS-10 instruction manual for details. The A10-L2 lecturescope adapter can also be used for manual exposure with EC-3.

8-2 CCTV



Refer to the instruction manuals provided with light source and OTV-E Medical TV System.

1 Connections

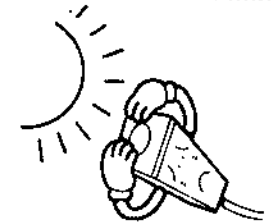


2 Light Source Setting

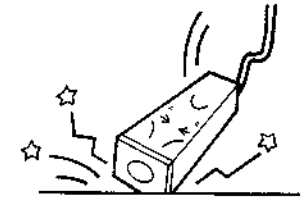
Camera	Adapter	Light Source		
		CLV	CLX-F, CLX	Exp. Index
OTV-E	A10-TV	Switch: AUTO	Switch: TV-CINE	3
	AS-TV04 + A10-E3			4 or 5
	A10-C2			3 or 4
C-Mount TV camera	A10-C2	Contact camera manufacturer for instructions.		

* Exposure index numbers are the standard setting. Adjust index depending on conditions.

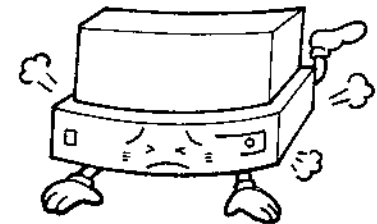
* Do not allow direct intense light to enter the TV Camera when it is not connected to fiberoptic; camera may be damaged.



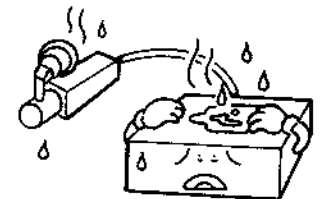
Do not let direct intense light into camera.



Do not knock or drop.



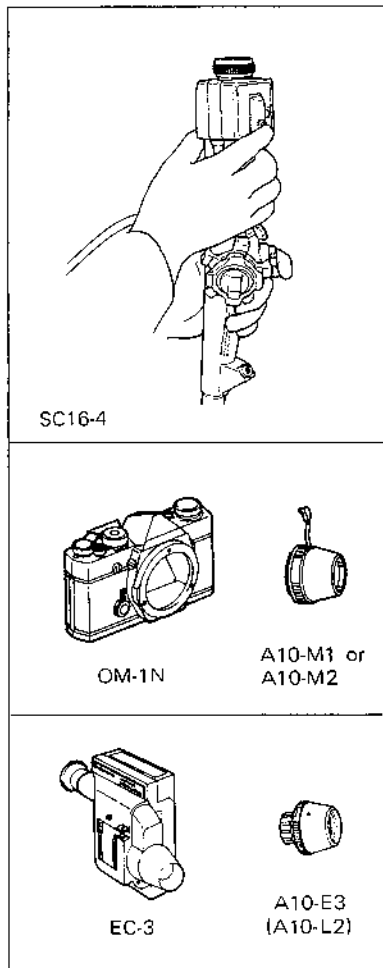
Do not put heavy objects.



TV system is not waterproof. Do not wet.

ENDOSCOPIC PHOTODOCUMENTATION

8-1 Still Photography



1 SC16-4 Camera

- ① Refer to SC16-4 instruction manual for instructions on loading film and operating the camera.
- ② Attach camera to fiberscope eyepiece as explained in Section 4-6, [5]-①, page 9.

2 OM-1N Camera

- ① Place 1-9 endoscopic focusing screen in camera viewfinder.
- ② Set shutter speed at 1/4 second ("4").
- ③ Set shutter speed sync switch to "X" (use "FP" with CLE-F light source).
- ④ Set meter switch to "OFF".
- ⑤ Attach proper OM adapter and connect sync cord to camera body:

Light Source	Adapter
CLE, CLE-3, CLE-4U, CLE-5	A10-M1
CLV, CLS, CLS-F, CLX CLX-F, CLE-F	A10-M2 (standard image) A10-M1 (reduced image)

- ★ Refer to camera instruction manual for instructions on loading film and operating camera.
- ★ Attach camera to fiberscope eyepiece as explained in Section 4-6, [5]-①, page 9.
- ★ Confirm that the LED indicator light is illuminated. If not, clean electrical contacts in eyepiece, camera and light guide connector.

3 EC-3 Polaroid Camera

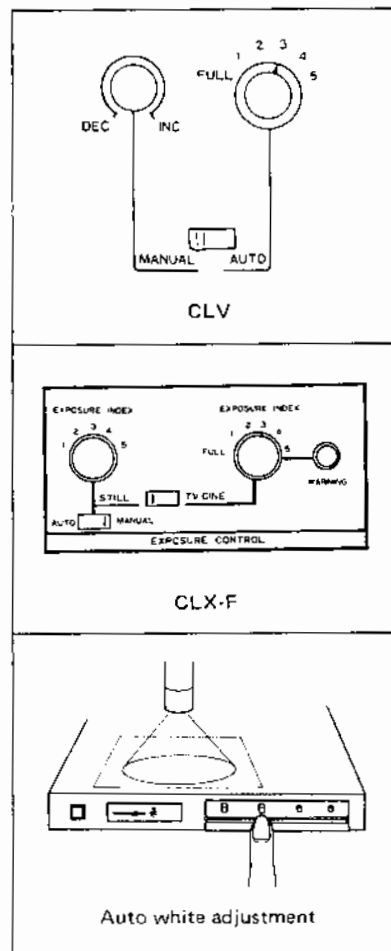
- ① Refer to EC-3 instruction manual for instructions on loading film and operating camera.
- ② Use A10-E3 adapter to connect EC-3 camera to fiberscope eyepiece. (To remove A10-E3 adapter from EC-3 camera, depress release button while rotating counterclockwise.)
- ③ Set shutter speed at 1/4 second ("4").

4 Light Source Setting

Camera	Exposure Index	Film
SC16-4	3	1604-D
	4	1604-T
OM-1N	3	ISO/ASA 200 Daylight
	4	ISO/ASA 160 Tungsten
EC-3	1	Polaroid 779

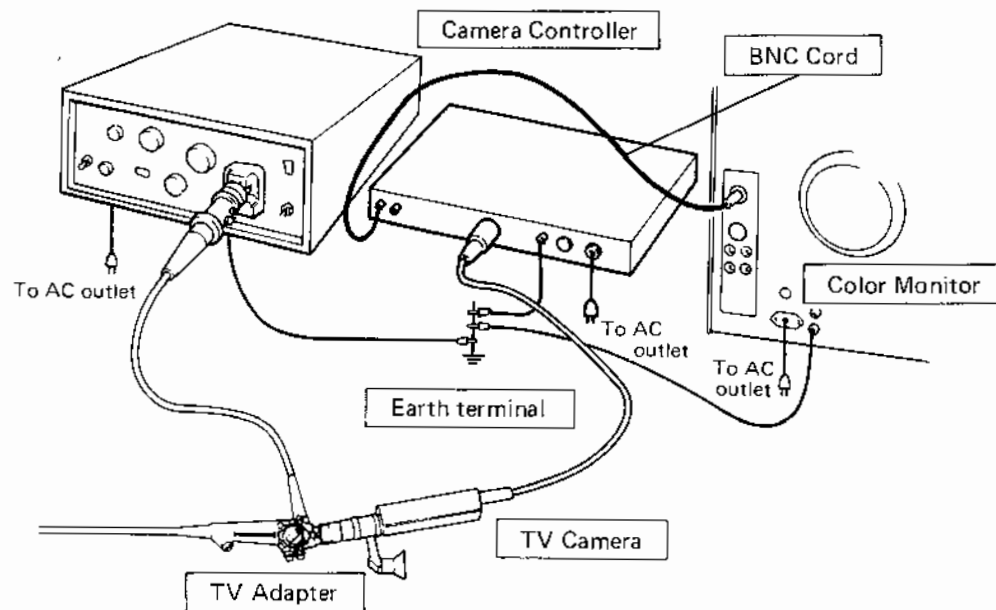
NOTE: Photographs may also be taken by attaching camera to the primary eyepiece of the LS-10 Lecturescope. Refer to the LS-10 instruction manual for details. The A10-L2 lecturescope adapter can also be used for manual exposure with EC-3.

8-2 CCTV



Refer to the instruction manuals provided with light source and OTV-E Medical TV System.

1 Connections

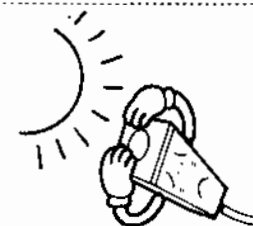


2 Light Source Setting

Camera	Adapter	Light Source		
		CLV	CLX-F, CLX	Exp. Index
OTV-E	A10-TV	Switch: AUTO	Switch: TV·CINE	3
	AS-TV04 + A10-E3			4 or 5
	A10-C2			3 or 4
C-Mount TV camera	A10-C2	Contact camera manufacturer for instructions.		

* Exposure index numbers are the standard setting. Adjust index depending on conditions.

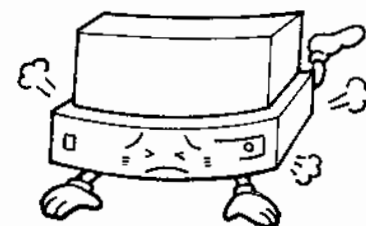
* Do not allow direct intense light to enter the TV Camera when it is not connected to fiberoptic; camera may be damaged.



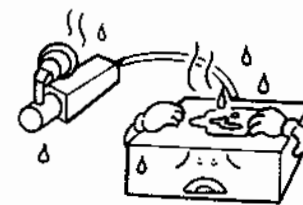
Do not let direct intense light into camera.



Do not knock or drop.

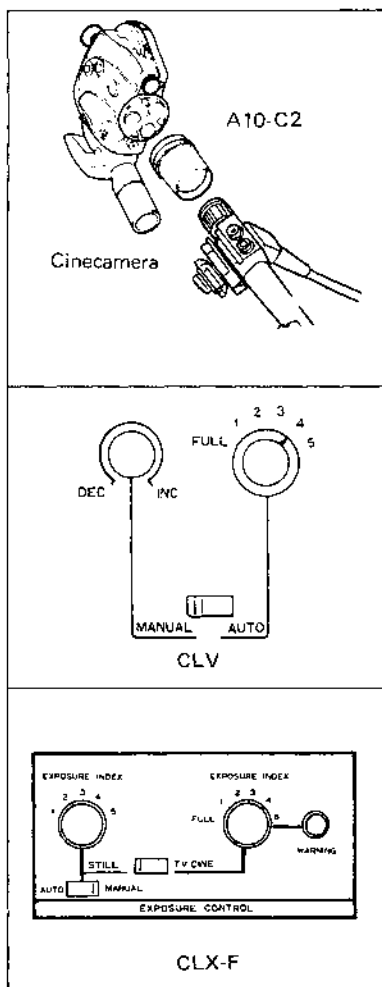


Do not put heavy objects.



TV system is not waterproof. Do not wet.

8-3 Cinematography



Refer to the instruction manuals provided with your light source and cinecamera.

Camera	Adapter	Light Source		Filming speed	Film
		CLV	CLX-F, CLX		
C-mount type	A10-C2	Switch: AUTO Exposure Index: 4	Switch: TV-Cine Exposure Index: 4	24 fps	Daylight ISO/ASA 160 Development: 2X push

* Index "4" is standard setting. Adjust index depending on conditions.

* Make sure A10-C2 adapter is securely mounted to the camera.



Cinecamera and adapter are not water-proof. Do not wet.



Hold cinecamera steady with your hand and body, and shoot.

9

TROUBLESHOOTING GUIDE

	Symptom	Possible Problem	Remedy
Connection to Light Source	Fiberscope cannot be connected to light source.	AC10-S fiberscope adapter is missing. AC10-S fiberscope adapter is defective. AC10-L light source adapter installed incorrectly.	Install AC10-S adapter on fiberscope light guide connector. Check for bent electrical terminals. Replace if necessary. Reinstall adapter.
	AC10-S fiberscope adapter cannot be removed from output socket.	Failure to release latch.	Depress release button on top of AC10-L adapter.
Image Quality or Brightness	Image is not clear.	Dirty objective lens. Dirty eyepiece lens. Optics not adjusted to operator's eyesight. Dirty camera or adapter lens. Internal fluid damage.	Feed water to remove mucus, etc. from objective lens. Clean with cotton swab moistened with alcohol. Rotate diopter adjustment ring until fiber pattern is clear. (Applies to fiberscope eyepiece, lecture scope and SC-16 camera.) Carefully clean with cotton swab moistened with alcohol. Moisture within the instrument will permanently cloud the lenses in the distal end and/or eyepiece. Send the instrument for repair.
	Image is too dark or too bright.	Dirty light guide. Improper light source settings. Old or improperly installed light source lamp.	Clean light guide connector and distal tip with gauze moistened with alcohol. Adjust brightness control knob. Check filter. Properly install lamp. Replace old lamp.
Air/Water	Absent or insufficient air or water feeding.	Air/water nozzle is clogged. Air/water nozzle missing or deformed. Air/water valve is dirty.	Soak distal end in warm soapy water. Use all-channel irrigator (CW-1) and a small syringe to flush debris from the air/water nozzle. Routine use of the air/water channel cleaning adapter will eliminate this problem. Send instrument for repair. Remove valve. Clean and lubricate with silicone oil.

	Symptom	Possible Problem	Remedy
Air/Water	Absent or insufficient air or water feeding.	Air pump not operating. Water container cap is loose.	Turn on switch on light source. Tighten cap.
	No water feeding.	Water container either empty or too full.	Fill 2/3 full.
	Sticky air/water valve.	Valve is dirty.	Remove valve. Clean and lubricate with silicone oil.
	Constant air feeding.	Air/water valve is dirty.	Remove valve. Clean, lubricate with silicone oil and replace.
Suction	Absent or insufficient suction.	Suction channel obstructed.	Remove suction valve and pass cleaning brush through suction channels in both insertion tube and universal cord.
		Dirty suction valve.	Remove valve. Clean and lubricate with silicone oil.
		Biopsy valve leaks or is improperly attached. Suction pump is off or not connected.	Check and replace with new valve if necessary. Turn on pump and check suction tube connections.
Sticky suction valve.	Valve is dirty.	Remove valve. Clean and lubricate with silicone oil.	
Angulation	Resistance when rotating angulation control knobs.	Angulation locks engaged. Internal problem.	Place locks in "Free" position. Send instrument for repair.
	Tip deflection is not normal.	Amount of tip deflection is less than specifications.	Send instrument for repair.
Illumination	No light output.	Light source not operating.	Turn on power switch. Check fuses and circuit breakers. Depress ignition switch (if applicable). Replace burned out lamp.
Accessory	Accessory does not pass through channel smoothly.	Forceps shaft is bent or kinked.	Discard and replace with new forceps. When inserting accessories, use repeated short strokes, grasping accessory close to biopsy valve.
		Instrument channel is obstructed.	Pass cleaning brush through instrument channel. If unable, send instrument for repair.
	Accessory cannot be inserted.	Accessory is too large for instrument channel.	Check accessory chart. Use only recommended accessories.

	Symptom	Possible Problem	Remedy
Accessory	Forceps do not operate smoothly.	Forceps shaft is bent or kinked. Forceps cups are dirty.	Discard and replace with new forceps. Soak in hot soapy water or hydrogen peroxide and brush to remove debris. The routine use of an ultrasonic cleaner to aid in cleaning the small cup hinges is recommended if problem persists. Lubricate forceps with silicone oil.
	Camera cannot be attached to fiberscope.	Auto focus pin on fiberscope eyepiece is out of proper position.	Use a pencil eraser or similar object to move pin fully counterclockwise, aligning the mark on the pin with the yellow dot on the eyepiece.
Photography	LED indicator on camera adapter fails to light.	Dirty or bent electrical contacts on camera adapter, eyepiece and light source connector.	Clean all contacts with cotton swab moistened with alcohol.
	Camera fails to activate light source.	Dirty or bent electrical contacts in adapter, eyepiece, and light guide connector.	Clean all contacts with cotton swab moistened with alcohol.
	SC-16 camera fails to operate.	Dirty contacts. Open circuit breaker.	(See above.) Reset circuit breaker on rear panel of light source. (Refer to light source instruction manual.)
	Improper exposure.	Dirty contacts.	Clean all contacts with cotton swab moistened with alcohol.
		Improper exposure index setting. Improper filter setting. "Still/TV-Cine" switch not set for still photography.	Refer to page 28 for proper light source setting. Adjust filter. "Still/TV-Cine" switch (on CLX, CLX-F light sources) must be in "STILL" position for photography.
	Blurred image.	Dirty lenses.	Clean objective lens, eyepiece lens and adapter lens with cotton swab moistened with alcohol.
Water drops on objective lens.		Feed air to remove water drops.	
Improper color	Improper film.	Use daylight balanced film with Xenon light sources. Use tungsten balanced film with Halogen light sources.	
	Outdated film.	Always use fresh film.	

10 ENDOSCOPIC SYSTEM CHART

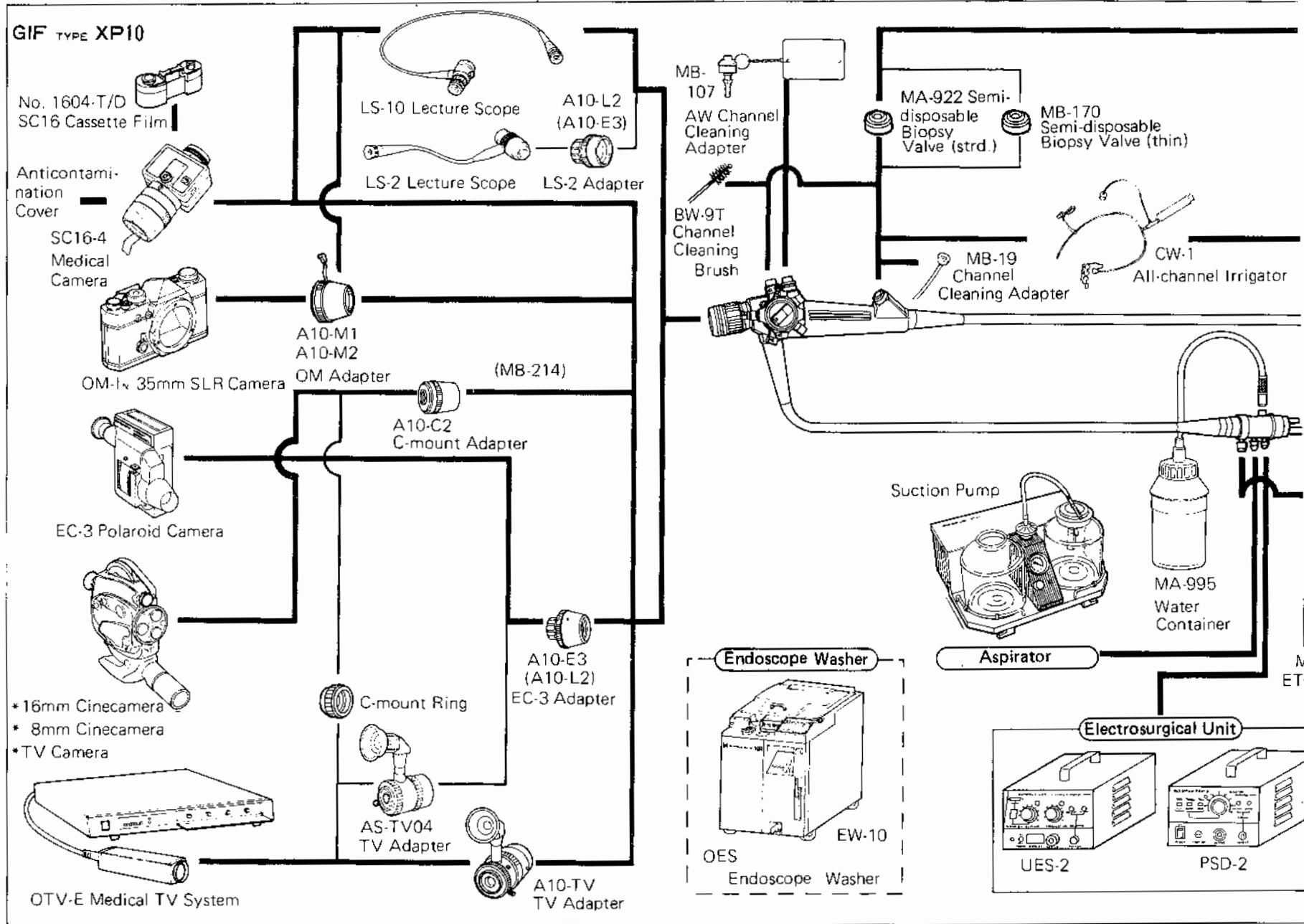
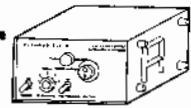
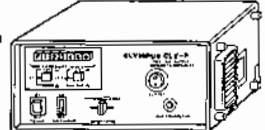
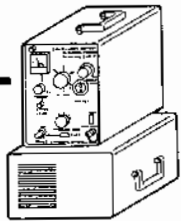
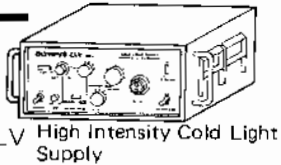
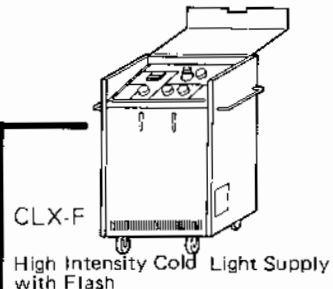
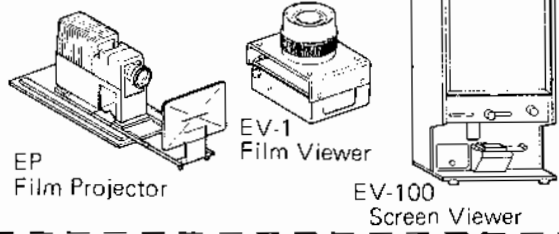


Chart below indicates ancillary equipment compatible with the GIF-XP10. Use of other equipment is not recommended.

Projector/Viewer



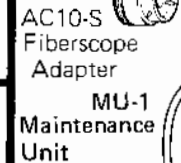
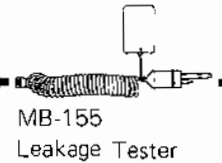
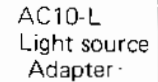
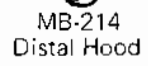
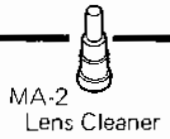
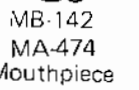
Light Source

Forceps, Brush, etc.

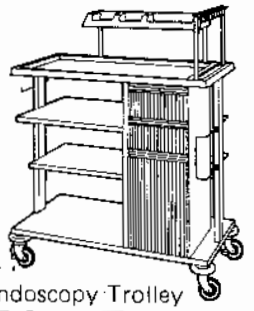
BIOPSY FORCEPS		CYTOLOGY BRUSH		GRASPING FORCEPS	
Fenestrated type	Alligator jaws	Standard type	With Sheath	Forked jaws	Flat tooth
FB-21K FB-19K	FB-15K	BC-1J	BC-5K	FG-4L	FG-14P
GRASPING FORCEPS		MAGNETIC EXTRACTOR	WASHING PIPE		INJECTOR
Basket type	Rubber tip		Standard type	Spray type	
FG-17K	FG-20P	IE-2P	PW-2L	PW-6P	NM-3K

Diathermic Accessory

DIATHERMIC SNARE		COAGULATION ELECTRODE
Crescent	Hexagonal	Ball point
SD-7P	SD-8P	CD-5P



Endoscopy Trolley



Ultrasonic Cleaner



* Commercially available