



FUJINON

ELECTRONIC VIDEO ENDOSCOPES FOR THE UPPER G.I. TRACT

EG-410HR
EG-410FP

OPERATION MANUAL

Before using the scope read this manual thoroughly.
Doing so will prevent accidents from occurring and allow you to derive the best performance from your equipment.

INTRODUCTION

Indications for Use:

The role of endoscopy has evolved over the last three decades and has become a routine procedure for properly trained physician endoscopists.

Video Endoscopy has been shown to be an effective alternative to fiberoptic visualization in the Gastrointestinal tract of humans. The primary source of difference between Video Endoscope and Fiberoptic Endoscope is the transmission of the image, all of the indications for use for fiber endoscope apply to Video Endoscope.

Intended Use:

Gastroscope : The flexible video gastroscope, EG-410HR and EG-410FP is designed to complete diagnostic exams and therapeutic procedures of the upper G.I. tract.

Contraindication:

Contraindications for the Fujinon Video Endoscopes will be the same as that for the similar fiberoptic endoscopes since the only substantial difference between the video endoscope and the fiber endoscope is the mode of image transfer.

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1. COMPOSITION (Refer to the Composition Diagram on next page.)

- | | Quantity |
|-----------------------------------------------------------------------|---------------|
| ◇ Components Related to Scope Proper (Scope and Standard Accessories) | |
| ○ Videoendoscope | 1 |
| ○ Biopsy Forceps | 2 |
| ○ Channel Cleaning Brush | 1 |
| ○ Forceps Channel Valve Rubber (FOV-DV1) | 1pack(10pcs.) |
| ○ Forceps Channel Valve Rubber (FOV-DV2) | 1pack(5pcs.) |
| ○ Washing Adapter (CA-300) | 1 set |
| ○ Mouthpiece (MPC-ST) | 2 |
| ○ Silicone Oil (SLC-2000) | 1 |
| ○ Lens Cleaner (SLC-1) | 1 |
| ○ S Connector Cap (CAP-E) | 1 |
| ○ Ventilation Adapter (AD-7) | 1 |
| ○ Carrying Case | 1 |
|
 | |
| ◇ Processor | |
| ○ EPX-401 | |
| Light source unit XL-401 | |
| Image processing unit VP-401 | |
|
 | |
| ◇ Monitor | |
| ○ PVM-1343MD | |
|
 | |
| ◇ Auxiliary | |
| ○ Water Tank (WT-2) | |

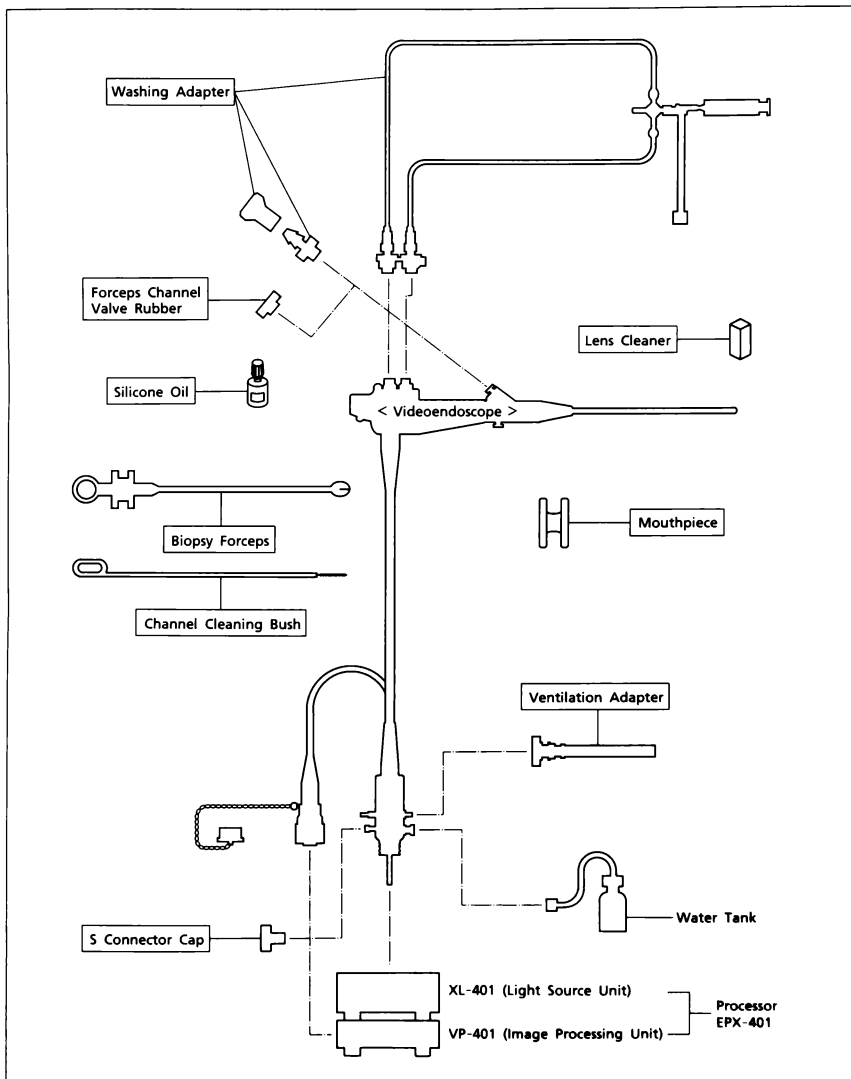
- ◇ Optional Accessory
- Diathermic Set and Accessories
 - Airtight Tester (LT-7)

2. SPECIFICATIONS

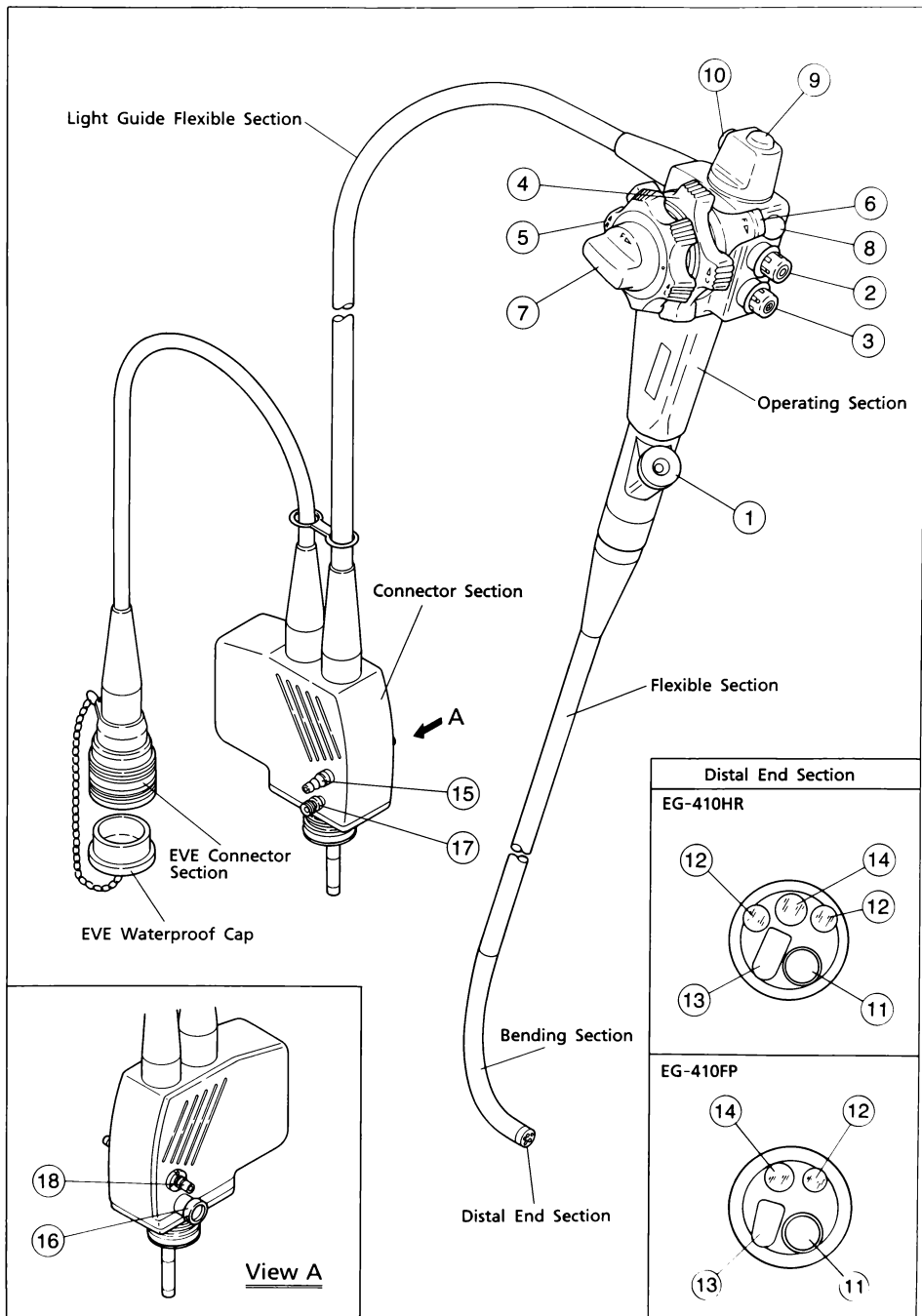
	EG-410HR (Super Image)	EG-410FP
Viewing Direction	Forward	Forward
Field of View	120 °	120 °
Observation Range	8 ~ 100 mm	5 ~ 100 mm
Distal End Diameter	φ 10.5 mm	φ 9.9 mm
Flexible Section Diameter	φ 10.3 mm	φ 9.8 mm
Bending Capability	U/D L/R	
	190 ° / 90 ° 100 ° / 100 °	210 ° / 90 ° 100 ° / 100 °
Forceps Channel Diameter	φ 2.8 mm	φ 2.8 mm
Working Length	1100 mm	1100 mm
Total Length	1400 mm	1400 mm
VCR Remote	Micro Switch	Micro Switch
Freeze/Hardcopy Remote	Micro Switch	Micro Switch
Zooming Remote	Micro Switch	Micro Switch

※ COMPOSITION DIAGRAM

(The item enclosed in are standard accessories)



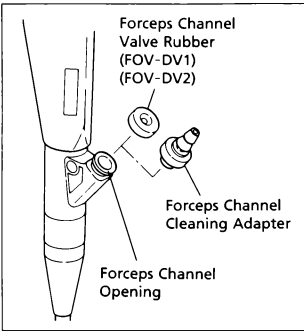
3. NAMES AND FUNCTIONS



3-1 Operation Section

① Channel Opening :

This is an opening for insertion of the forceps, or other accessories into the scope.



(1) Forceps Channel Valve Rubber

Attach the forceps channel valve rubber on the channel opening.

Caution :

When snare and forceps are inserted into forceps channel, forceps channel valve rubber prevents counter flow automatically.

Forceps channel valve rubber is disposable. When it is damaged, replace with new one (FOV-DV1) or (FOV-DV2).

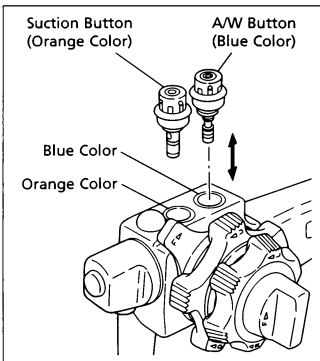
(2) Channel Cleaning Adapter

This adapter is used for channel washing.

② Suction Button :

Suction is activated by depressing this button fully.

③ Air/Water Button :



To airfeed : Cover the hold on this button slightly.

To waterfeed : Depress the button fully while covering the hole on this button.

HOW TO REMOVE BUTTON

Suction button (Orange color)

Just pull the button up.

Air/Water button (Blue color)

Just pull the button up.

HOW TO ATTACH BUTTON

Suction button

Just push the button in.

Air/Water button

Just push the button in.

④ Up-Down Angulation Control Knob.

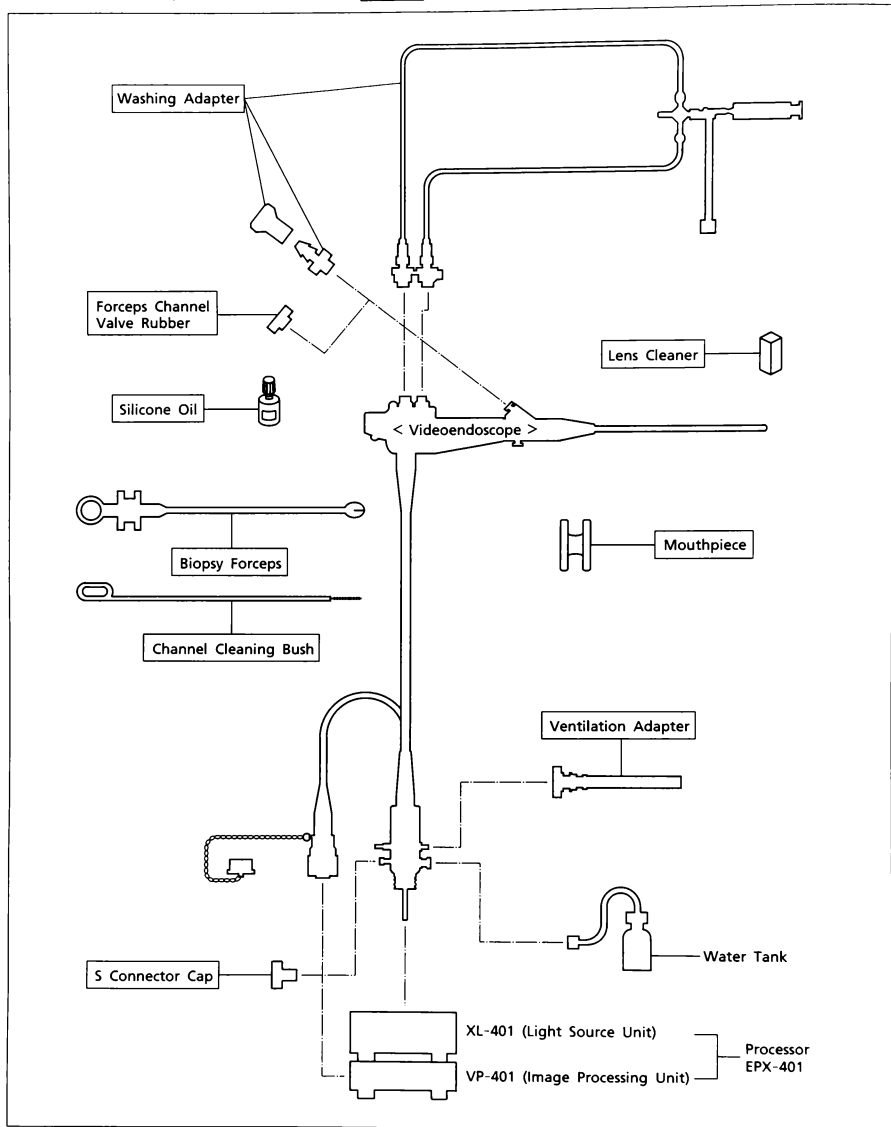
⑤ Left-Right Angulation Control Knob.

[Note]

Turn the knobs slowly.

※ COMPOSITION DIAGRAM

(The item enclosed in are standard accessories)



⑥ Up/Down Angle Lock Lever

⑦ Left/Right Angle Lock Lever :

Rotate the angle lock lever in a counterclockwise direction to lock it any desired position. Rotate the lever in the direction of F ► until it stops to release the lock.

[Note] Safety Precaution

Even while the angle lock is set, the bending section will bend if relatively excessive force is applied to the distal end. Before extracting the scope from the patient, be sure to set the scope angle lock to the free position.

⑧ Freeze/Hardcopy Remote Switch :

When the freeze switch is pressed, the image is immediately frozen and keeps frozen as long as the switch is pressed. If it is desired to make a hardcopy picture, momentarily release the switch and press again (within 1 second) to automatically activate the Hardcopy Machine. After the freeze switch is released, the live image will reappear in approximately 2 seconds.

⑨ VCR Remote Switch :

The VCR is activated for recording by pressing this switch. To pause the VCR, press the switch again. While the VCR is activated, a green square is displayed on the monitor.

[Note]

A dedicated cable to connect the processor to the VCR unit is required.

⑩ Zooming Remote Switch :

When the zooming remote switch is pressed, the image is electrically magnifying ($\times 1.5$). To return the original size image, press the switch again.

3-2 Flexible Section

The flexible section consists of a flexible tube and connects the bending section and the operating section.

3-3 Bending Section

The bending section can be bent up-down and left-right by turning the angle knobs on the operating section.

[Warning]

Do not bend or twist the bending section with your hand.

3-4 Distal End Section

The round tip is provided to prevent damage to the mucous membrane and to facilitate easier insertion.

⑪ Forceps/Suction Cannal : Used for passing forceps, cannulas and other accessories, as well as for suction.

⑫ Light Guide : Allows light from the light source to pass through to the distal end.

⑬ Air and Waterfeed Nozzle : Used to spray air/water against the image window.

⑭ Image Window : Used to protect the object lens.

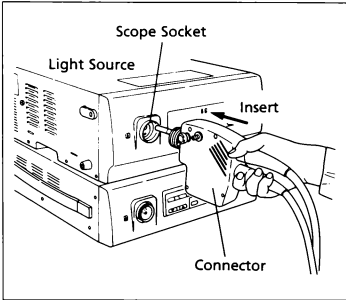
3-5 L.G. Flexible Section

This section contains special tubes for the light guides, airfeed, waterfeed, forceps/suction channel and electric wires.

3-6 Connector Section

The scope connector is connected to the scope socket of the EVE processor.

The tube from the suction pump and from the water tank are connected the both side of the connector.



(1) Installation and Removal

To install, insert the connector to the scope socket of the light source XL-401.

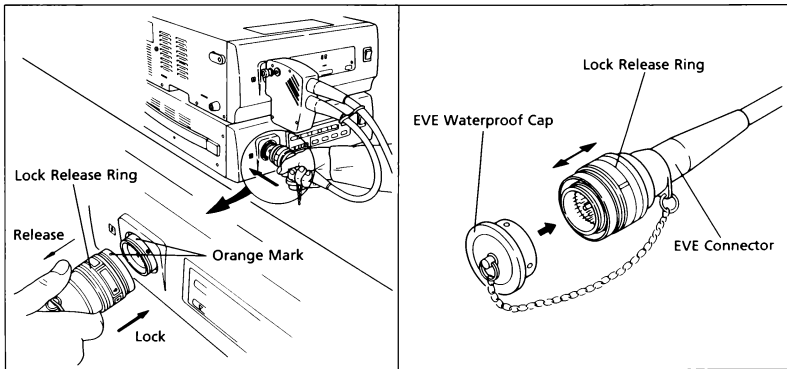
To remove, pull out the connector from the scope socket.

- ⑮ Suction Connector : Connects the tube from the suction pump
Adjust suction pressure to 300-400mmHg.
- ⑯ Waterproof Connector : Connects the tube from the water tank.
- ⑰ S Connector : Connects the S code from an electrosurgical unit.

3-7 EVE Connector Section

This is connected to the EVE connector section of the image processing unit VP-401.

[Caution] Always turn off the power before plugging in, or unplugging connector.



(1) Connection

Plug the EVE connector into the connector on the processor with matching the orange marks of the scope and the processor until click the lock release ring.

(2) Removal

Pull the lock release ring and remove the EVE connector.

[Caution]

EVE connector section is waterproof, it can be immersed, but attach the Waterproof Connector Cap to prevent fluid from being pushed into the processor.

If the electrical contacts of the EVE connector are splashed with water, wipe off immediately with dry gauze.

⑧ Ventilation Connector

The airtight tester (LT-7) and the ventilation adapter (AD-7) are attached to the connector while conducting an airtight test and during aeration.

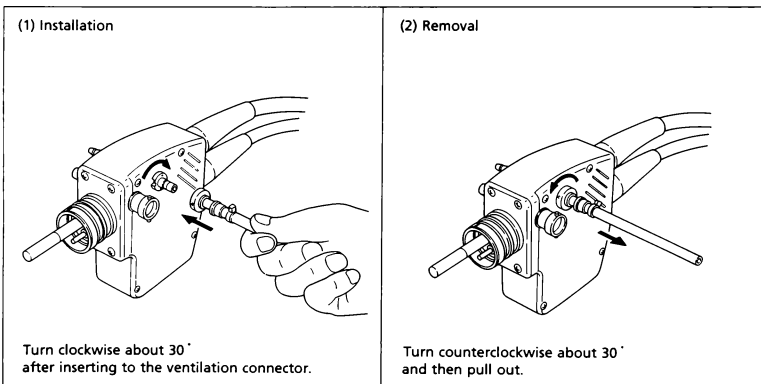
The connector is closed normally (watertight condition) and attachment of the adapter opens it to ventilate the scope.

[Caution]

Never immerse the scope while the adapter is attached.

Be sure to remove the adapter from the scope after testing.

Do not insert anything else other than the airtight tester into this connector.



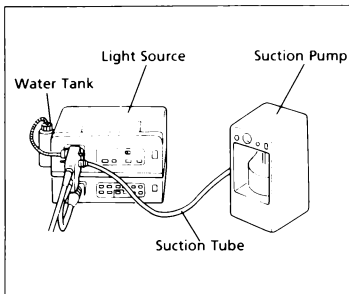
4. PREPARATION AND INSPECTION

4-1 Connection of EVE-scope

[Note] Make sure processor power switch is OFF.

Plug the EVE-scope into the FUJINON connector module and the EVE connector into the processor.

4-2 Connection of Water Tank and Suction Tube



(1) Connection of water tank

Use only FUJINON's dedicated water tank (WT-2).

Fill water in the water tank to 70% or 80%, and cap it tightly before it is mounted on the water tank hanger on the side of the side of the processor.

Attach the waterfeed connector on the water tank tube to the waterfeed connector on the scope's L.G. connector section by turning clockwise and pushing together.

[Note]

1. If the cap is not tight, insufficient airfeeding or water-feeding may result.
2. In accordance with professional practice standard, use disinfected or sterile water and replace daily in a disinfected or sterilized water supply bottle.

(2) Attach the suction tube from the suction unit to the suction connector of the scope.

[Note] Adjust suction pressure to 300 ~ 400mmHg.

4-3 Preparation and Inspection of Videoendoscope

(1) Hold the scope by lightly gripping the operating section.

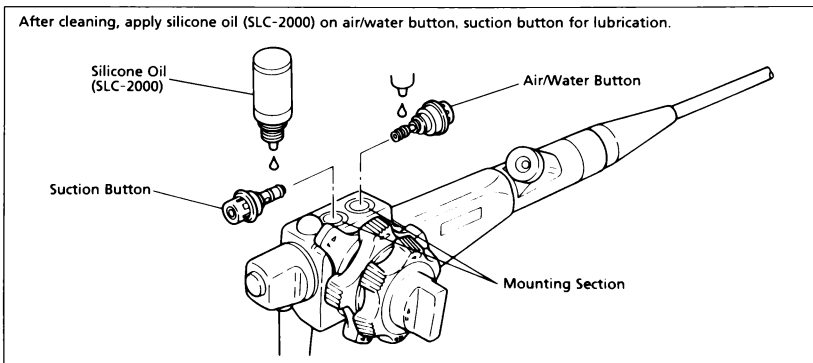
Check whether or not the forceps can be inserted smoothly all the way through the channel.

(2) Be sure that the bending section can be angulated normally.

(3) Before inserting the forceps, be sure that they can be opened and closed smoothly.

(4) Be sure that the cannula can be inserted smoothly.

(5) Operate the forceps elevation lever to be sure that a cannula can be elevated smoothly.



4-4 Preparation for Photography

All necessary data such as patient's name, date, and No. etc. can be input through the EVE processor from the keyboard or data system (EDS).

4-5 Preparation for Biopsy

- (1) Prepare the biopsy forceps.
- (2) Prepare formalin to place specimens in. Also prepare needles, tweezers and filter paper.
- (3) For biopsy, refer to Section 6 "Biopsy".

4-6 Inspection

4-6-1 Preventive Maintenance Checks of Suction, Airfeed and Waterfeed

- (1) Power "ON" the light source and the suction pump.
- (2) Hold the scope, and depress the suction button with finger to see whether or not water can be sucked up through the distal end of the scope.
- (3) Cover the air/water button hole with finger and confirm that air is emitted from the air/water nozzle.
- (4) Depress the air/water button fully and confirm that water is emitted from air/water nozzle.

[Note]

If air leaks slightly from air/water nozzle when inserted into water less than 10cm deep, this is acceptable and not a malfunction.

4-6-2 Inspection of Scope

- (1) Hold the scope by lightly gripping the operation section.
Check whether or not the forceps can be delivered smoothly.
- (2) Be sure that the bending section can be angulated normally.
- (3) Before inserting the forceps, be sure that they can be opened and closed smoothly.

5. INSERTION AND OBSERVATION

5-1 Preparation before Insertion

- (1) Confirm that all connections are made properly (See diagrams in para. 3-6, 3-7 and 4-2).
- (2) Prepare the mouthpiece, lens cleaner, alcohol-moistened cotton, gauze, biopsy forceps, formalin, filter paper, etc.
- (3) Wipe the flexible section, bending section, and distal end clean with cotton or gauze moistened with alcohol.
- (4) Apply one drop of lens cleaner to the image window, and gently clean the window with gauze.
- (5) Apply lubricant to the flexible section and bending section, when necessary.
(Lubricant must not adhere to the distal end or image window.)

5-2 Insertion and Observation

- The pre-procedure and insertion vary depending on each doctor. Be sure to use a mouthpiece on insertion. It can prevent from damage of the scope due to biting by the patient.
- This scope employs retroviewing to facilitate the frontal view of papilla, providing the smooth insertion of a cannula and the smooth motion of an elevation lever for easier catheterization. In addition, the high bending capability and smaller outside diameter enhance the mobility and maneuverability.

- (1) Turn on the POWER switches(XL-401,VP-401) and the lamp switch on the light source XL-401.
- (2) Adjust the illumination level switches of the processor to appropriate illumination level.

[Caution]

When using the endoscope for a long time, the illuminating light may cause thermal injury if the distal end is too close to the mucosa. Make observation with a minimum intensity while keeping a certain distance between the distal end and the organism.

- (3) For improved observation, cover the air/water button hole with finger to supply air to insufflate the area to be observed.
- (4) Control the angulation knobs while inserting, and during observation, when necessary.

[Caution]

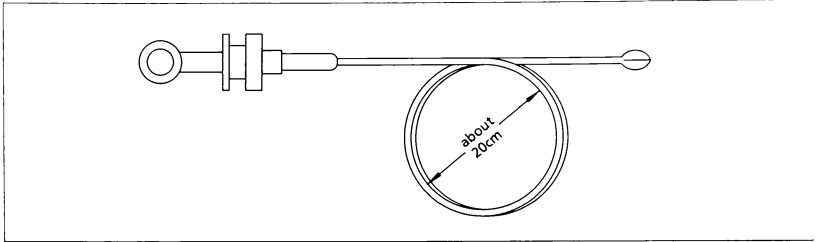
Angulation of the scope should be done slowly.

If angulation can't be controlled, or if any abnormal resistance is felt on the angulation knob, stop operation, be sure both locks are in the "FREE" position and carefully withdraw the scope.

- (5) If the picture becomes foggy with mucous, etc., activate the waterfeed by depressing the air/water button completely to clean the lens. After washing the lens, residual water remaining on the lens may be removed by airfeed and suction.

6. BIOPSY

- (1) Prepare forceps and other items according to Section 4-5.
- (2) Make sure that the cups of the forceps open and close properly. This can be done by making a double loop about 20 cm in diameter as shown in the figure.



[Caution]

Using a smaller bending radius than 20 cm may remarkably deteriorate durability of forceps. No small bending radius is necessary to check the forceps function.

- (3) Confirm the area for biopsy and insert the forceps through the channel port.

[Note]

Be sure to insert with the forceps cups closed. If forceps will not pass due to severe angulation of the bending section, straighten the angle slightly to allow the forceps to pass, then return to the initial angle.

- (4) When the forceps come out of the distal end with the forceps elevation lever up, they will come into view.

[Note]

After inserting so that the forceps come out of the distal end, slowly push them further to the length required keeping the forceps in the field of view. Do not push the forceps any further than necessary as this may damage the intestinal wall.

- (5) Extend the forceps cups to the area of interest. Press the forceps cups against the object to be biopsied with the forceps cups opened, then close the forceps cups to cut the tissue.

[Note]

Try to place the area of interest as close as possible to the center of the field of view.

- (6) Withdraw the forceps from the scope, and open the forceps cups to recover the tissue. Place the tissue on filter paper then place it in formalin, or directly place in formalin, for preservation.

[Note]

- (a) Pull out the forceps from the scope slowly. Pulling it fast may damage the scope.
- (b) Always insert and extract the forceps with the forceps elevation stand Down; otherwise, the forceps cannot be inserted and extracted smoothly and the scope may be damaged.
- (c) The forceps wear with use, and should be replaced if any defect is found (i.e. bent jaws or needle, kinked flexible section, or any other damage).

7. ELECTRIC CAUTERIZATION

Before operation, the user should be familiar with electric cauterization and keep in mind the importance of safety in electric cauterization. Be familiar with the operation of the electro-surgical unit and diathermic set, since they are more critical to safety than the scope.

7-1 Check before Cauterization

- (1) Pre-procedure checks should be conducted much more carefully than a normal endoscopy.
- (2) Do not use any other electrical equipment at the same time, because of the danger of burning at the electrodes.

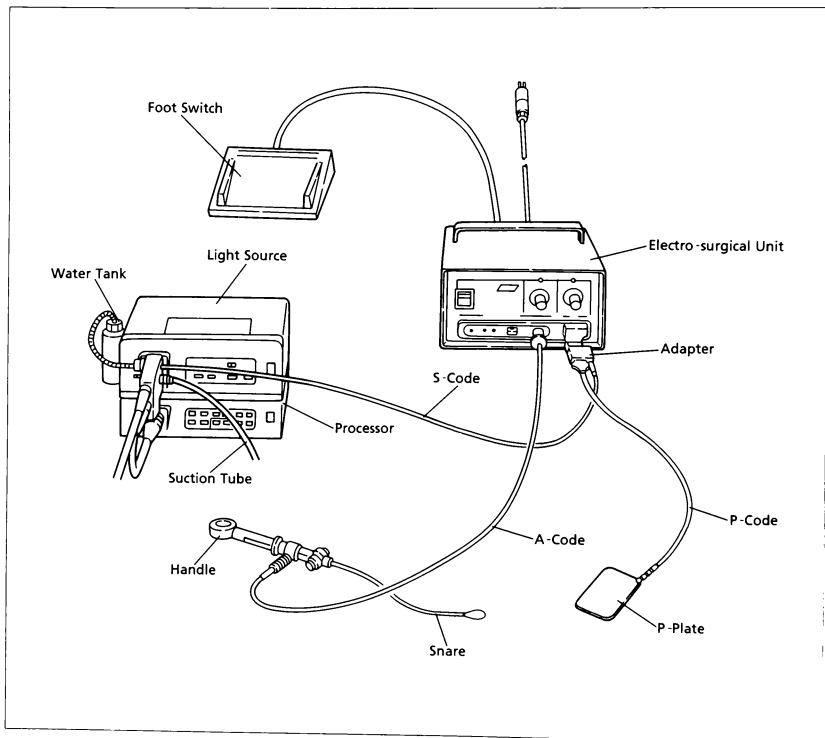
[Warning]

Never use electrocautery on a patient who has a pacemaker.

- (3) Affix the patient plate (P-plate) firmly to the patient's body.
The P-plate position is optional.
Insufficient contact with the P-plate can cause a burn.
- (4) Reconfirm that all connections are firmly secured.
- (5) Check all functions of the electro-surgical unit and diathermic set.
- (6) Be sure to wear rubber gloves.
Stop immediately if anything unusual occurs.
Be sure to prepare for emergency cases in which operation and/or admission might be required.

7-2 Preparation for Cauterization

- (1) Cauterization should not be attempted without conducting in-vitro experimentations for sufficient understanding of the cauterization equipment.
- (2) Hook up
Connection to an electro-surgical unit varies with the type of the unit to be used. Please refer to the operation manual for the FUJINON diathermic set (optional accessory) and electro-surgical unit.
- (3) Only the safety cord (S-cord) is connected to the scope.



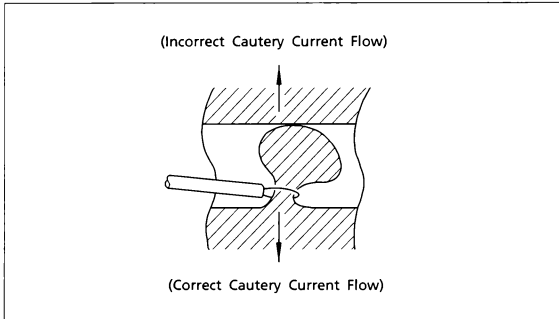
Example of Connection of Electro-surgical Unit

7-3 Polypectomy

- (1) Insert the snare into the forceps channel port. If difficulty is experienced at the bending section of the scope, reduce the angle to pass the snare through and then increase the angle.
- (2) Snare the polyp with the snare wire.
- (3) Check the position of the snare and condition of the mucosa.

[Note]

Confirm that there is no contact between the distal end metal part of the scope and the snare wire. Confirm that there is no mucus surrounding the snare and scope. Confirm that the snare and polyp itself do not touch any other bowel wall or mucosa not to be treated.



- (4) Confirm that the electro-surgical unit dial is in the correct position and then switch on.

[Note]

The shape and kind of snare, type of current used, power setting, and time of coagulation may all vary depending on the size and shape of the polyp. Care and practice are necessary. It is dangerous to use high power settings to overcome difficulties in polypectomy. Check the system again.

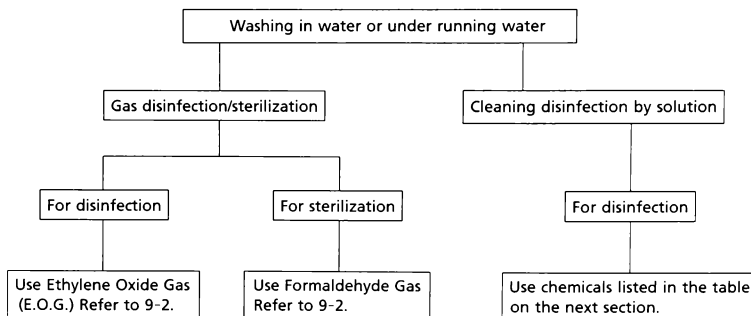
- (5) After polypectomy, check the polyp stalk for bleeding.
Withdrawal of the polyp is done either by suction or by a retrieval grasper as the doctor prefers.

8. EXTRACTION OF SCOPE

Pull out the scope slowly after releasing the angulation locks and checking to be sure the bending section is straight.

9. CLEANING AND DISINFECTION/STERILIZATION

9-1 Basics



- ※ When soaking the scope in water or a disinfect solution, airtight testing of the scope prior to soaking is necessary.
To check for leakage of the scope, use airtight tester (LT-7) and follow procedure described in LT-7 operation manual.

9-2 Disinfectants and Their Use

Consult the manufacturer about the effect of your disinfectant. The equipment has been checked for resistance to most common brands. If you use a new type disinfectant, consult the manufacturer about its disinfection properties and instructions for its use.

[Note]

Consult your FUJINON agent about any new disinfectant not listed. Both gas and solution sterilization should be done after cleaning the instrument.

Solution disinfection

Chemical name	Trade name and manufacturer		Procedures
Glutaraldehyde	Cidex (2.25%) Glutarex (2%) Totacide 28 Sekuset (1.5%) Gigasept (5%) Sterihyde (2%)	Surgikos (USA) 3M Medial (USA) Tenneco Organics Ltd. (UK) Henkel GV (Germany) Sterling Industrial (UK) Maruishi Pharmaceutical (Japan)	Follow manufacturer's instructions
Reversed soap	Hyamine-T Othvan Detergicide	Sankyo CO. (Japan) Takeda Chemical (Japan) USCI. a Div. of C.R. Bard Inc. (USA)	Max. immersion 30 min.
Ethyl alcohol	Ethanol for Disinfection (70%)		Wiping only

[Note]

Use water for dilution of above listed chemicals (if necessary).

Gas disinfection and sterilization

			Procedures			
			Temperature	Humidity	Pressure	Time
Formaldehyde gas	Formalin gas	(Formaldehyde 14%)	Room temperature	Regular humidity	Atmospheric pressure	24 hours
Ethylene oxide gas	Gas sterilizer	Gas concentration 10%	55 °C	Regular humidity	Atmospheric pressure	4 hours
			Aeration time: 7 days at room temperature or 12 hours in an aeration chamber 45 °C (113 °F)			
	Anprolene (Ampule type)	H.W. Andersen products (USA)	Follow manufacturer's instructions			

9-3 Suggestions for Cleaning and Disinfection/Sterilization

9-3-1 General

Perform disinfection and sterilization after cleaning an endoscope with water.

Dry it well after washing.

Remove forceps cap, airfeed/waterfeed button, and suction button for best cleaning.

Do not boil or autoclave the scope.

Keep within the limits specified on the table in section 9-2 to avoid equipment problems.

Replace the water in the water tank and disinfect the inside of the tank after each procedure.

Replace the suction tube periodically.

The water tank (WT-2) may be autoclaved.

- See later sections for cleaning and disinfection procedures. Consult your FUJINON agent before using any new type of disinfectant, using different procedures, or anything unclear to you about cleaning and disinfection.

9-3-2 Solution Disinfection

- (1) Rinse away disinfection solution from the equipment with clean water. Pay special attention not to allow any residual disinfectant to remain on/in the scope. This could cause cross-contamination and damage the equipment.
- (2) Consult the manufacturer of the disinfectant about its effect on flexible instruments.
- (3) Alcohol may be used for wiping only, but not for immersion.
- (4) **Before soaking the scope (other than its flexible insertion section), airtight testing of the scope is necessary. Consult your FUJINON agent for details.**
- (5) It is recommended that rubber gloves be worn when using disinfection solutions.

9-3-3 Gas Disinfection and Sterilization

- (1) Dry the equipment completely after washing, then proceed with gas sterilization.
- (2) Keep within the limits specified on the table in paragraph 9-4-4 for gas sterilization. Pay particular attention to the pressure to be applied or you may damage the airtightness of scope.
- (3) Consult the gas manufacturer about effects of the gas concerned.
- (4) Remove residual gas completely by aeration after performing gas sterilization. Residual gas is harmful to human tissue and equipment.
- (5) **When using aeration equipment, use the ventilation adapter (AD-7) which equalizes the internal and external pressure of the scope. Use of this adapter prevents the angulation rubber from possibly being damaged due to excessive air expansion inside the scope.**

9-4 Cleaning the Scope

[Note]

Prior to the immersion of any video endoscope a air-leak test must be performed to assess the air tightness of the scope and protect the scope from flooding.

[WARNING]

PAY PARTICULAR ATTENTION TO THE RUBBER COVER OF THE BENDING SECTION IN CHECKING THE EXTERIOR CONDITION OF THE ENDOSCOPE. IF THE RUBBER COVER OF THE BENDING SECTION APPEARS TO BE SCRATCHED, EXCESSIVELY WORN, OR OTHERWISE DAMAGED, THE ENDOSCOPE SHOULD NOT BE USED. CONTACT AUTHORIZED FUJINON AGENTS FOR REPAIR OR REPLACEMENT.

Clean the scope immediately after the examination. Mucous stuck on the distal end or inside any of each channels hardens quickly and this may result in failure of scope, especially clogging.

9-4-1 Endoscope air leak testing procedure

- (1) The purpose of the leakage tester is to detect holes, tears, and leaks in the endoscope in order to avoid a major repair from fluid damage. Using the system saves money. The most common area of detection is on the bending section of the scope.
- (2) Air leak testing (Airtight Testing) of the endoscope is critical to the care and maintenance of your endoscope. Prior to contact with fluids, ie., soaking, washing, etc., a proper test of airtightness must be performed.
- (3) Air leak testing is performed without the Waterproof Connector Cap.
- (4) Connect the leaktester to the Ventilation Connector at the Light Guide Connector Section.
- (5) Increase the air pressure until the pointer of the Airleak Tester enters the specified dark zone on the indicator.
- (6) The needle should not fall out of the zone. If the needle falls out of the zone, the scope should be further tested to assure that no leakage is occurring. If this happens, please call your Fujinon Sales or Service Representative before allowing the scope to come in contact with fluid.
- (7) After completion of airleak test, fully open the airleak tester using the pressure release knob until the pressure is completely released from the scope.

9-4-2 Washing with Water

- (1) Wipe off any dirt stuck to the insertion section with gauze or cotton. Wipe off the scope in one direction from operating section towards distal end section.
- (2) Repeat airfeeding and waterfeeding alternately for about 5 seconds each, to remove mucous left inside the airfeed/waterfeed channel.
- (3) Repeat drawing water and air alternately for about 5 seconds respectively to clean the inside of the suction channel.
- (4) Immerse the distal end in water, operate the forceps elevation lever several times, and clean the forceps elevation stand.
- (5) Remove the washing adapter to the forceps channel and the suction button, and brush the inside of the channel with cleaning brush.
- (6) The Fujinon cleaning brush supplied with the endoscope is a reusable device. After use of this cleaning brush disinfect or sterilize this brush according to professional practice standards. Remove air/water button, suction button, and washing adapter. Clean each with a gauze pad or a cotton swab.
- (7) Clean air/water button, suction button, and washing adapter.
- (8) Wash the scope under running water using gauze or a soft sponge.

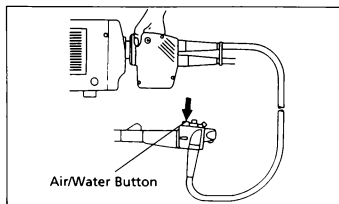
[Note]

The EVE connector section is waterproof, but attach the waterproof connector cap to the EVE connector.

EVE connector section has electrical contacts which may cause poor contact and malfunction if disinfection solutions or moisture remain on them. To protect these contacts, use the waterproof connector cap to prevent solution or water from getting onto the contacts. (Refer to 3-7 EVE Connector Section.)

To disinfect by solution, refer to 9-4-3.

- (9) After Washing, dry the scope surfaces, each button, and each section with gauze.
- (10) Remove the waterproof connector cap attached to the EVE connector and clean the EVE connector section with dry cloth.
- (11) Attach the scope connector to the processor and turn on the power switch. Repeat airfeeding and suction to remove residual water from the inside of each channel of the scope.



★ Dry the channel well.

- (a) Remove the water tank connector, and cover the waterfeed connector on the scope side with a thumb.
 - (b) Depress the Air/Water button, and air will be fed into the waterfeed channel; the air pressure will force the water out of the distal end.
 - (c) Confirm that all the water is expelled. Continue injecting air until water ceases to come out of the distal end.
- (12) Dry the air/water button, suction button, forceps channel valve, and washing adapter with gauze.
 - (13) If solution and/or gas disinfection will follow, refer to paragraphs concerned. If they are not to be performed, store the scope with air/water button and suction button attached.
 - (14) The scope should be hung not stored in the carrying case.

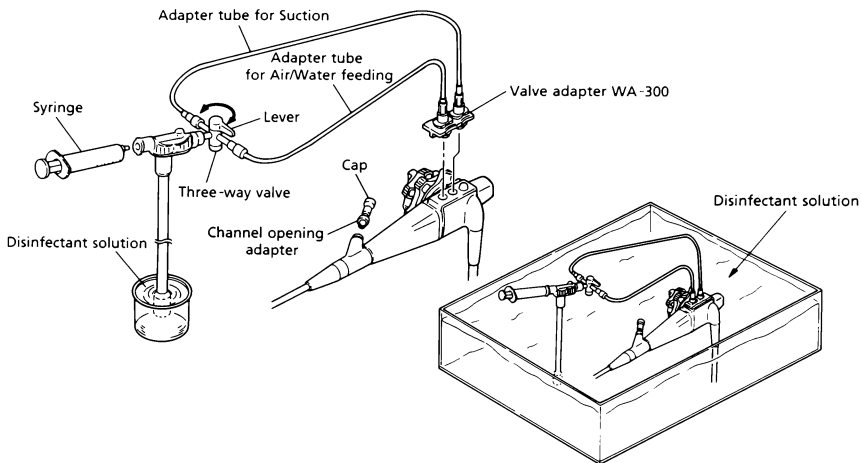
9-4-3 Solution Disinfection

It is necessary to conduct an airtight check on the scope before soaking it in any chemical solution. To perform an airtight test, please use optional airtight tester(LT-7). Soaking without an airtight test may damage the scope.

Here is a generally acceptable disinfection procedure.

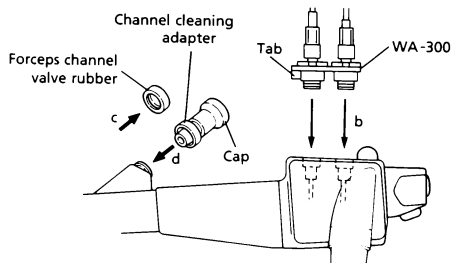
- (1) Attach watertight caps to the EVE connector section which has been washed and dried.
- (2) Attach washing adapter CA-300 and soak the scope in the disinfection solution as follows.

WASHING ADAPTER CA-300



HOW TO USE WASHING ADAPTER CA-300

- Attach the valve adapter WA-300 on the air/water and suction valve of the scope as shown in the drawing.
- The side of the WA-300 with a tab should be attached on the air/water valve (blue color) of the scope.
- Remove the forceps channel valve rubber from the channel opening.
- Attach the channel opening adapter with cap as shown in the drawing.
- Turn the three-way valve lever as needed to allow the disinfectant solution to enter the air/water tube from the syringe.

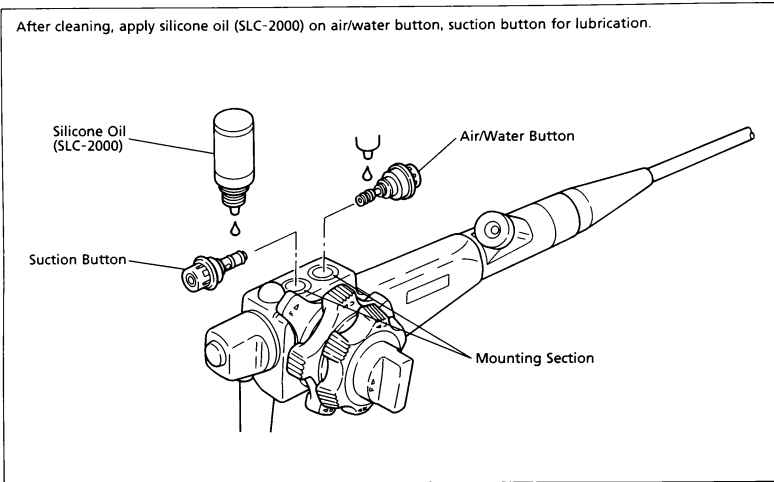


Repeat this procedure several times until the air/water tube is completely filled with the solution.

- Turn the position of three-way valve to the suction side and inject the disinfectant solution as same as in "e".
- Keep the scope in the disinfectant solution for the time specified by the disinfectant manufacturer. (Each channel must be filled with the solution during the disinfection.)

[Caution] Soaking times depend on disinfection solution. See instructions from individual manufacturer.

- (3) After disinfection, rinse residual solution away from the scope, especially from air/water and suction channel with sufficient water. Washing adapter should be cleaned with water.
- (4) After rinsing, prior to storage, all channels (air/water, suction) should be flushed with 70% alcohol rinse followed by forced air according to professional standards.
- (5) Re-attach each button and forceps channel valve after drying.



9-4-4 Gas Disinfection and Sterilization

There are two ways depending on the type of gas to be used: one is for using E.O.G. (Ethylene Oxide Gas) and the other is for using Formaldehyde Gas.

The formaldehyde gas method can be applied by just putting the formalin in the container.

To using E.O.G.

- (1) Wipe off the scope which has been water-washed and dried, checking for any residual water.
- (2) **Attach the ventilation adapter (AD-7).**
- (3) Put the scope, each button, and forceps channel valve into the E.O.G. sterilization container to sterilize.
- (4) After sterilization by E.O.G. perform aeration to remove residual E.O.G.
When using aeration equipment. You must use the ventilation adapter which equalizes the internal and external pressure of the scope. Use of this adapter prevents the angulation rubber from possible damage due to excessive air expansion inside the scope.
- (5) **Be sure to remove the ventilation adapter after finishing aeration. If the adapter remains attached, moisture or water may invade the scope and cause damage.**

9-5 Cleaning of Related Equipment

9-5-1 Processor, VCR, Hardcopy and Keyboard

- (1) Wipe any dirt off with a dry cloth after use.
- (2) If it dirty, use ethyl-alcohol-dampened gauze to wipe it off.
- (3) Do not let dust accumulate, this can cause thermal failures.
- (4) Please refer to each operation manual for details.

9-5-2 Accessories

[Note]

Biopsy forceps or any through the channel devices should be used, cleaned, disinfected and/or sterilized according to professional practice standards.

- (1) Clean as soon as possible after use.
Blood and mucus stuck on the forceps will harden quickly and this may cause defective forceps operation.
 - (2) Clean dirt off with a soft brush while opening and closing the cups at the distal section of the forceps.
 - (3) Use the same disinfection solutions for cleaning as those used for scope cleaning.
Rinse solution away with sufficient fresh water after cleaning.
 - (4) Wipe residual water off after washing.
Do not bend the forceps sharply.
Do not apply excessive force to the distal end section because of its delicate nature.
The needle part in the needle-forceps should not be bent.
- ※ **Forceps are consumables. Replace with a spare at earliest convenience to prevent scope damage.**

10. POINTS TO REMEMBER

- (1) Be sure to use the light source grounding line in order to prevent an unforeseen electric shock.
 - (2) Operate the angulation controls slowly.
 - (3) When inserting the scope into the patient or when withdrawing it, be sure to release all angulation locks.
 - (4) Do not bend the bending section by hand.
 - (5) Clean all parts of the scope well.
 - (6) Attach the waterproof connector cap to the EVE connector section before immersion.
 - (7) For safe electro-surgery, fully understand the operation manual for the electro-surgical unit and the diathermic set.
 - (8) Pay attention to the following points regarding storage:
It is advised that the disinfected scope be stored in a well ventilated storage case, with its flexible and bending section hung vertically in accordance with professional practice standards.
 - (a) Store the scope in a dedicated storage cabinet in order to avoid permanent bending of the scope.
 - (b) Store the scope where it won't be splashed with any liquid.
 - (c) Store the scope where it won't be affected by such environmental conditions as abnormal humidity and temperature, atmospheric pressure, wind, sunshine, dust, salinity or sulphur.
 - (d) Protect the scope against vibration and shock (even during transportation).
 - (e) Do not store the scope where chemicals are stored or gas is generated.
 - (9) Do not store the scope in carrying case because infection and cross-contamination is possible.
 - (10) In case of any malfunctioning of the scope, leave the repair work to an expert.
 - (11) Do not attempt to remodel the scope.
 - (12) Maintenance and inspection
 - (a) Periodically inspect the equipment and spare parts.
 - (b) When the scope is to be used after being in storage for a long time, check it beforehand to be sure that it is operating normally and safely.
- ※ If any trouble is noticed, be sure to contact your FUJINON agent.
※ Never conduct repair or remodeling by yourself. This will void the warranty. Ask an expert on maintenance.

11. WARRANTY

- (1) An inspection certificate is attached to each product.
When asking for repair, customer is requested to inform the service center the MODEL and the BODY NUMBER written on the certificate of the product, or on the equipment itself.
- (2) Customer can request repair of the product free of charge if the defect results from manufacturer's responsibility and the term of the warranty is valid.
If the repair is due to customer damage or fault the customer is responsible for all repair expenses.
In either case, the customer is responsible for all transportation charges.

※ Due to the constant efforts being made for product improvement, the product you have purchased may vary somewhat from the information, specifications, and illustrations in this manual.



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