

**MODEL XS-20**

**FIBERSCOPE**

# **OPERATION MANUAL**

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## **PREFACE**

### **WARNING:**

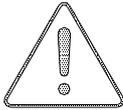
Prior to operation of this fiberscope, the user should be thoroughly trained in the applicable procedure. Furthermore, failure to read and thoroughly understand the contents of this instruction manual may result in serious injury to the patient and/or user. It is essential to follow the instructions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

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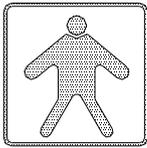
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## Symbols:

The meanings of the symbols shown on the package and/or this instrument are as follows:



Refer to instructions



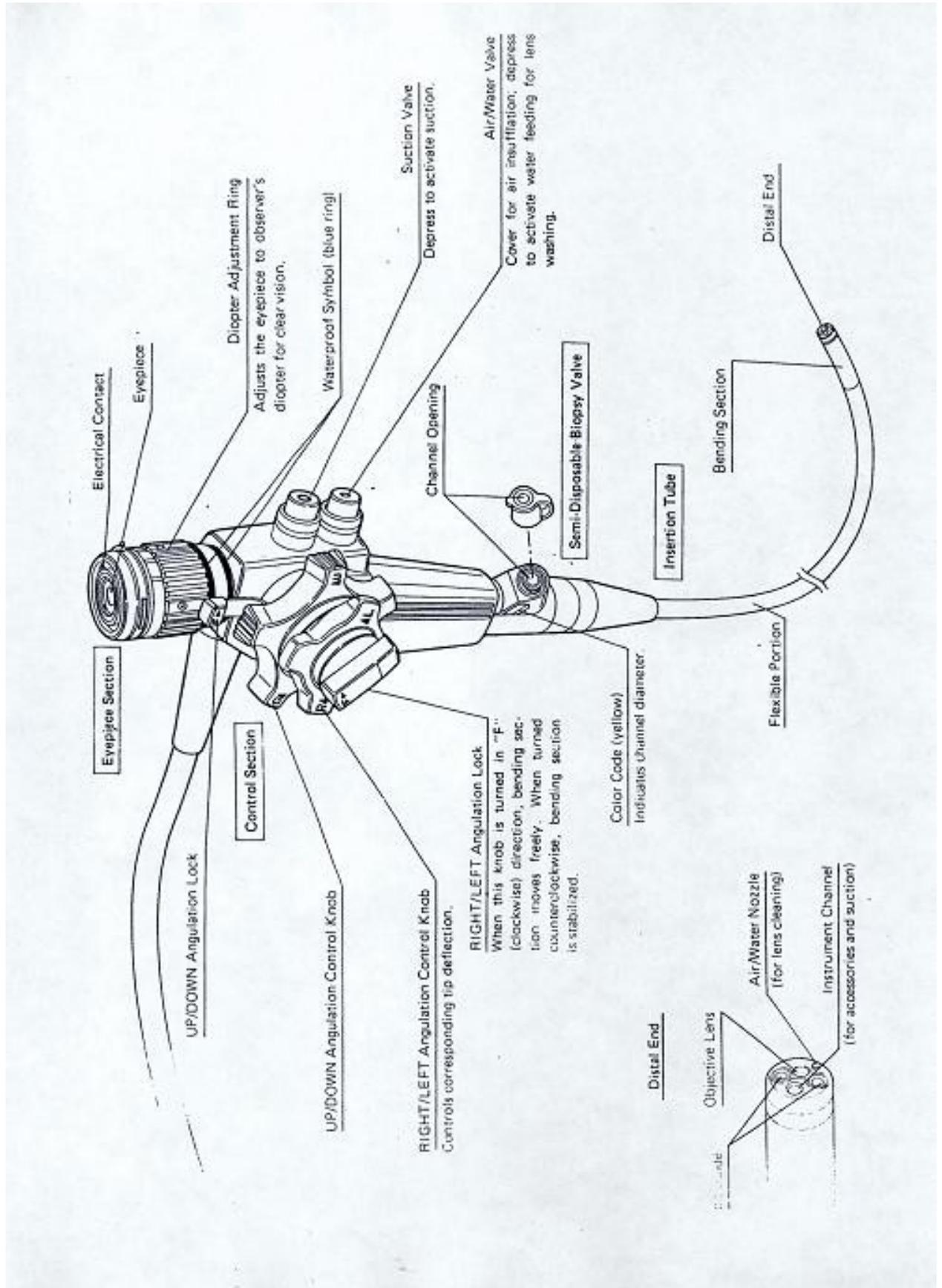
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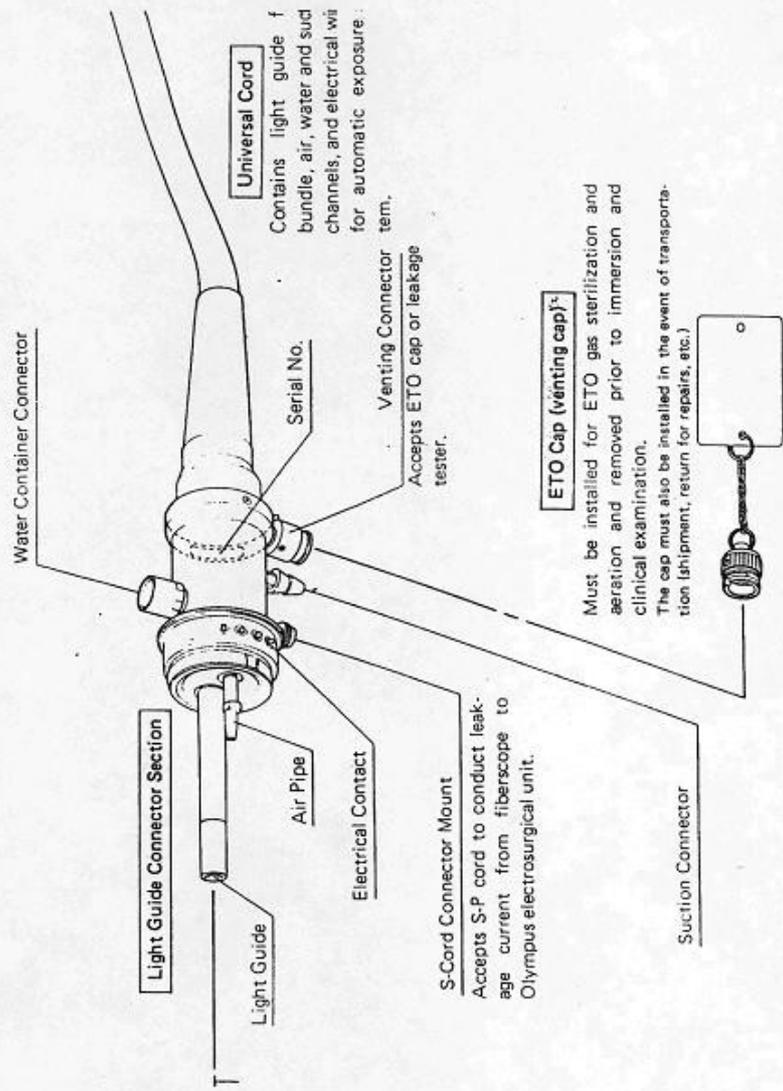


Grounding is necessary

**WARNING:** Indicates a potentially dangerous situation, which could result patients death or serious injury.

**CAUTION:** Indicates a potentially dangerous situation, which may result in minor or moderate injury. It may also result in equipments damage.





## IMPORTANCE

XS-20 Fiberscope is designed for endoscopic diagnosis and treatment within the upper digestive tract (esophagus, stomach, duodenal bulb and the proximal duodenum). Do not use this Fiberscope for any purpose other than its intended use.

**WARNING:** Misusing this equipment can present significant risks for accidents, and cause equipment damage or reduce performance.

XS-20 fiberscope fits underland BF classification of medical electric equipment. Please read this entire manual carefully before using the fiberscope. It contains pertinent information on proper maintenance and handling of your new Fiberscope.

Fiberscopes by nature are delicate instruments, proper handling and cleaning, as described in this manual, will greatly reduce the need for costly repairs and maximize the life of your fiberscope.

This instruction manual describes the recommended procedures for preparing and inspecting the equipment prior to use. It does not describe how an actual endoscopic procedure should be performed. Nor does it attempt to acquaint a beginner with endoscopic techniques and the medical aspects of upper gastrointestinal videoscopy. This fiberscope should only be used by trained physicians who have received previous thorough training in the art and science of flexible endoscopy.

The safety and performance of an endoscopic system depends not only on the endoscope but also on the accessories used in conjunction with it. To ensure compatibility, please use authorized Eickemeyer accessories.

Owing to the continuous improvements and modifications, the XS-20 is subject to change in appearance and specification without notice.

### CAUTION

Thermal injury is a serious risk associated with endoscopy. The operator must pay attention to the following points:

- 1、 Manually adjust the light intensity to the lowest illumination that allows proper observation.
- 2、 Do not allow the distal end of the endoscope to come in contact with the observed tissue, as it will cause thermal injury to patients.
- 3、 Whilst not in use, do not leave the fiberscope connected to the circuit and plugged into the Light Source.

## Fiberscope XS-20

Thank you for purchasing Eickemeyer fiberscope model XS-20. Please read this manual thoroughly and apply instructions here-in diligently, to ensure correct operation and storage methods are performed, in order to prolong the life of your Fiberscope.

Owing to the continuous improvements, the product of this factory manufactured is subject to change in appearance and specification without notice, the contents of the instruction manual might be somewhat different.

### 1、 Environmental Specifications

1-1 Ambient Temperature: 10~40°C

1-2 Relative Humidity: 30%~85%

1-3 Atmospheric Pressure: 700~1060hPa

1-4 For the water between the surface and inner channel, the lasting leakage current and patient current equal to the range of Table A1 and A2 sheets referring to p14 can be used all kinds of high-frequency electronics with energy. If either of them is outside the range of Table A1 or A2, do not use any high-frequency electronics.

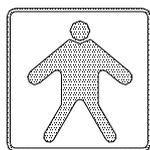
#### 1-2 Applications

The Eickemeyer Fiberscope (XS-20) is used for endoscopic diagnosis of pathological changes in the esophagus, stomach, duodenal bulb and proximal duodenum. The biopsy mechanism enables the practitioner, to excise a sample of suspect tissue for microscopic examination. This procedure may be vital in the treatment of early stage cancer. XS-20 is suitable for post-operative procedures and investigative procedures for suspect pathology.

### 2、 Specifications And Standard set

#### 2-1 Characteristics

2-1-1 Classification: I and BF



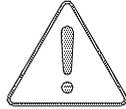
2-1-2 NO Waterproof

2-1-3 Product Name: Fiberscope Model: XS-20

#### 2-1-4 Ground Mark:



#### 2-1-5 Reference to Manual



### 2-2 Technical Specifications:

<b>Optical System:</b>	Field of View	:100°
	Direction of View	:0°
<b>Length:</b>	Depth of field	:3—100mm
	Total length	:1850mm
	Working length	:1500mm

#### **Outer Diameter:**

Distal End Outer Diameter	:Φ8mm
Insertion Tube Outer Diameter	:Φ8mm

**Inner Diameter of Instrument Channel** :Φ2.0mm

**Bending section: range of tip bending(4-way):** 180°Up,90°Down,  
100°Right and Left both

### 2-3 Standard Inclusions of XS-20:

(1) Fiberscope (XS-20)	1pc
(2)Accessories:	
Biopsy Forceps	2pcs
Cytological Brush	1pc
Cleaning Brush	1pc
Mouth Piece	2pcs
Valve	2Pc
Seal Rings	4pc
Metal case	1pc
Operation Manual	1pc

## 3. Performance and features

3-1 We adopt the optic fiber of hexagonal honeycomb array for the image guide of this fiberscope. Flexibility of the optic fibers for light and image transmission facilitated insertion into the body cavity and minimizes suffering to the patient.

3-2 One of the features is that the outside diameter of the flexible tube is only Φ8mm, much smaller than that of the same of Gastroscope.

3-3 In addition, the bending section permits deflection of 180°up and 90°down,

which combined with right and left deflection, amounts to a maximum angulation of 210°.

3-4 As the radius of curvature is only with 20mm, even in case of 210° angulation, the biopsy forceps can still pass through smoothly. This serves also to reduce considerably blind areas, and increase rate of accurate diagnosis.

3-5 It is not required to regulate focal distance of objective lens prior to observation, just regulate the bending angle and turn round the scope body visualize lesions in various parts of upper GI tract.

3-6 Air/water feeding can be accomplished with the left hand. Manipulation for biopsy is also greatly simplified by the easy approach of inserting the forceps with your right hand.

3-7 Feeding air into the upper GI tract is an indispensable item of work in the course of examination. As cold light supply is equipped with an air pump on the inside, at the time of ventilation, just turn on the pump switch and feed air at will in conformity with the requirements of the medical personnel.

3-8 In case it is discovered that the surface is covered with mucus or the stomach contains too much secretion retention, which said that fiberscope was equipped with biopsy mechanism that case be inserted through the fiberscope into the esophagus, stomach, and the build of deodeum.

3-9 When physicians discover questionable seats, he can take out bits of tissues with the biopsy forceps controlled from outside.

#### 4、Preparation & Inspection:

##### 4-1 Preparation of Suction Machine

4-1-1 For operating the suction machine, please refer to the manufacturer's operating manual



4-1-2 Connect the suction tube from the machine to the suction connector on the Fiberscope.

**CAUTION: Set the Suction Pressure on 40~50Pa.**

##### 4-2 Preparation of Light Source

4-2-1 See the operation manual for the light source



4-2-2 Fill 80% clear water in the water Tank, screw tight the cap, and place it in the prescribed position.

4.2.3 Connect the plug of the light guide to the socket on the light source.

4.2.4 Insert the joint of water feeding container into the water feeding joint to the light guide.

4.2.5 Connect the liquid—sucking piping of the aspirator to the sucking joint of the light guide.

4.2.6 Insert one end of the earth wire into the “earth” socket on light guide, and

connect the other end to the high frequency generator.

4.2.7 In case no terminal of earth wire is available, the earth wire can also be connected to a metal water pipe.

#### 4-3 Preparation of the accessories

4-3-1 Refer to Biopsy Forceps details.

4-3-2 Do not use defective Biopsy forceps.

4-3-3 Never force the Biopsy Forceps through the Biopsy Channel.

#### 4-4 Preparation of the High-Frequency Cauterization (HFC)

**WARNING:** The cauterizing tip may cause burns when used in conjunction with electrocardiograph.

**CAUTION:** To avoid unnecessary patient injury, operation should be performed by trained and qualified Medical personnel only.

4-4-1 Refer to instructions on HFC endoscopic procedures prior to operating.

4-4-2 Avoid operating in conjunction with other electronic equipment.

4-4-3 Always confirm the HFC circuit is properly connected.

**WARNING:** Severe injuries can result from improper connection.

4-4-4 Operator and assistant shall wear the protective gloves. Stop operation immediately in case of any abnormalities.

4-4-5 Confirm the power frequency is less than 100W.

#### 4-5、Preparation and Inspection of the endoscope:

**CAUTION:** Fiberscope surfaces and accessories must be checked for defects prior to use.

**CAUTION:** Products deemed defective should never be used. Immediately arrange for repairs with Eickemeyer Service Centre.

##### 4-5-1 Inspection of Insertion Tube:

4-5-1-1 Visually inspect the surface of Insertion Tube for dents, bulges, swelling or other irregularities.

4.5.1.2 Carefully run your fingertips over the entire length of the Insertion Tube for any protruding objects or other irregularities.

##### 4-5-2 Inspection of Bending Section of Insertion Tube:

4-5-2-1 Turn the Up/Down, Right/Left Angulations Control Knobs slowly to each Maximum position to confirm that the bending section is operating satisfactorily.

4-5-2-2 Visually inspect the surface of the Bending Section for swelling, cuts, holes or other irregularities.

#### 4-5-3 Inspection of Bending Section Mechanisms:

4-5-3-1 Confirm that the Bending Section angle is fixed, when the Angulations Lock is turned anti-clock wise, in the direction of the “L” mark.

4-5-3-2 Confirm that the Bending Section angle is not fixed when the Angulations Lock is turned clockwise, in the direction of the “F” mark.

4-5-3-3 confirm that the Bending Section angle, returns to the default straight position after unlocking the knob.

#### 4-5-4 Inspection of the Air/Water and Suction Feeding

4-5-4-1 Connect the Water Container and then switch on the Air Pump of the Processor.

4-5-4-2 Immerse the endoscope into the water container with clean/sterile water. Using your finger, block the hole of Air/Water Valve and confirm that the water is ejecting satisfactorily from the Air/Water Nozzle.

4-5-4-3 Depress the Air/Water Valve and confirm that the water is ejecting through Air/Water Nozzle. The valve should return to default position when finished.

**CAUTION:** Water will take approx two minutes to fill the air/water channel and eject from the distal end.

4-5-4-4 Repeat feeding air to dry the Objective Lenses.

#### 4-5-5 Inspection of Suction Machine

4-5-5-1 Confirm the suction setting is at the correct negative Pressure, and connect the rubber connector of the suction machine to the suction channel of the Light Guide .

4-5-5-2 Immerse the endoscope into the water container with clean/sterile water, and confirm suction when depressing the suction valve.

4-5-5-3 Suction is stopped immediately when releasing the suction valve and back to the default position.

**CAUTION:** Confirm the seal valve of the Biopsy Forceps is closed.

#### 4-5-6 Inspection of other parts of the endoscope

4-5-6-1 Inspect the surface of the Light Guide for dents, bulges, swelling and other irregularities.

4-5-6-2 Confirm that Light Guide is firmly attached to the light source and the endoscope

4-5-6-3 Before operating, make sure that light and suction are operating within the endoscope.

## 5、 Manipulation of Fiberscope

### 5-1、 Prior To Use

5-1-1 For cleaning and disinfection of the unit, refer to section 6 labeled “Maintenance” and section 7 labeled “Disinfection”.

5-1-2 Clean objective lens and illuminative lens by using lens-paper with a drop of silicon.

5-1-3 Before insertion, smear lubricant along the insertion tube to ensure smooth insertion. Make sure the lubricant does not cover the lens, as it will reduce the quality of image

**CAUTION:** Use only non greasy water-based lubricants as it will cause the outer layer of the tube to deteriorate.

5-1-4 Prepare the patient for the procedure by providing adequate education and explanations of what to expect. Ensure the patient is appropriately dressed for the procedure.

## 5-2、 Biopsy Procedures:

5-2-1 Prior to Use

5-2-2 Leave a small bowl at the post of closure

5-2-3 Remove the Instrumental Valve of the Control Section of Endoscope

5-2-4 Close the port of biopsy forceps and insert it into biopsy channel from the instrumental port to the distal end slowly.

5-2-5 Open the port of forceps, and excise a sample of suspect tissue.

5-2-6 Close forceps and withdraw sample through the biopsy channel.

5-2-7 Do not force a large sample through the channel. In the case of large samples, withdraw the whole endoscope with Forceps and large sample from the mouth of patient.

5-2-8 Withdraw the forceps from the Instrumental Channel.

5-2-9 Open the port of forceps to throw the samples into the bowl.

5-2-10 Close the Instrumental Vales on the port of forceps.

**WARNING:** Do not leave forceps open when inserting or withdrawing, as it will damage the biopsy channel.

5-3 HFC Operations: (refer to the manual of HFC apparatus and procedures).



5-3-1 To ensure the safety of high frequency electrosurgical operation, the insertion tube must be insulated, and the ocular section must be isolated from the body of the endoscope by air.

5-3-2 The operator and assistant must wear protective gloves.

5-3-3 The power of HFC must be less than 100W. (The peak of output voltage should be less than 1800V.)

5-3-4 The outer diameter of the endoscopic HFC instrument should be less than  $\phi 2.4\text{mm}$ ,

5-3-5 Eliminate all flammable gases *In Situ* before commencing HFC procedures, by repeatedly suctioning and insufflating air.

**CAUTION:** It may be necessary to increase the leak current of the patient when using electrical energy accessories with the endoscope. Please operate with strict adherence to the appropriate Operators Manual (refer to manual of HFC ).



5-5-6 If using other medical instruments with the endoscope. Please refer to the manual of relative medical instruments and follow the conditions of Tables A1 and A2 to avoid potential dangers.

Table A1 Continuous leak current and patient assistant current mA

Current	Natural state	Single failure state
Ground Leak current	0.5	1
Patient leak current	0.1	0.5

Table A2 Inspecting place & test voltage of electrolytical intensity

Symbol	Inspecting place	test voltage
A-a1	Between high frequency pole and power supply of cold light source	1500V
B-a	Between the surface of insertion section and high frequency pole	4000V
B-d	Between the surface of insertion section and high frequency feedback/the end of protect grounding	1500V

5-5-7 The plastic assembly of the endoscope, ensures no electrical interference or leakage between the HFC applicator and the metal construction.

5-5-7-1 To adjust the output power according to different types of focus cauterized , (eg : polyps size, hemorrhage size, then choose apparatus based on table A3.

Table A3 Inspecting place & test voltage of the high frequency electrolytical intensity

Mode	Range of frequency	test voltage (repeat peak)	Inspecting section
Cutting	F=400KHZ±100KHZ	a.150%	Between high frequency pole and the surface of insertion section
Heat Injury	F=400KHZ±100KHZ	b.150%	
Cruor	T=1.25μS±25% F=400KHZ±10KHZ	c.150%	

5-5-7-2 Please ensure everything is in good working order prior to commencing HFC procedures.

5-6 Withdrawal of endoscope:

5-6-1 Turn the angulations lock knob to (F) position, and withdraw slowly with

care.

5-7 To avoid potential burns, do not contact the end of light Guide for two minutes after the end of the procedure.

## **6、 Maintenance:**

6-1 Use (Glutaraldehyde solution, 333) to soak the flexible section of endoscope. Clean the outer surface with gauze, then rinse with distilled water.

6-2 Cleaning the biopsy channel: load washing-fluid into syringe and inject throughout the channel. Rinse repeatedly with distilled water, then suction to dry the channel.

6-3 Push water and air repeatedly through the air/water valve to clean it.

6-4 when all is done, wipe the outer surface of the endoscope by gauze with alcohol.

6-5 Washing biopsy forceps:

6-5-1 Soak forceps in washing solution, clean it with gauze, then rinse with distilled water. Wipe the biopsy forceps with alcoholic gauze and carefully wipe the port, and finally coat with silicone oil to extend forceps life.

## **7. Cleaning, Disinfection and Sterilization**

### **CAUTION:**

★To avoid any incidents of patient cross contamination, endoscope and its accessories should be disinfected and sterilized thoroughly before and after each examination.

★Endoscope and accessories must be cleaned thoroughly before disinfection and sterilization because microorganisms or organic minerals on the surface of the endoscope or accessories can impair the efficacy of disinfection or sterilization.

★Please follow the instructions for cleaning and disinfection as described and never use other methods not cleared here-in.

★Do not sterilize endoscope by ultrasonic or steam methods.

★Ultrasonic sterilization is allowed for accessories.

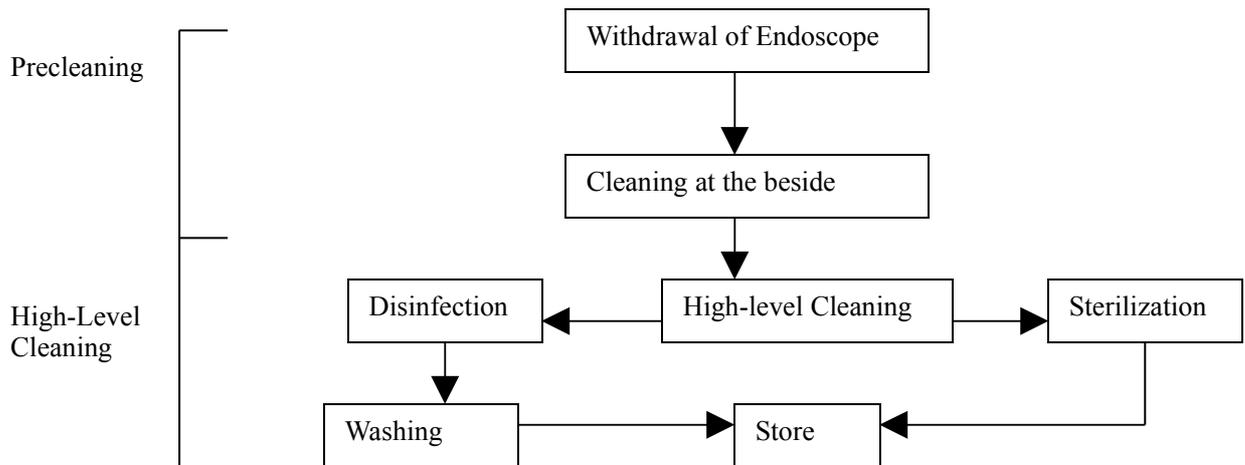
★All removable parts must be cleaned and sterilized thoroughly.

★Water container must be cleaned with sterile water every day.

★The electronic connector should be covered by water-resistant cap when immersing endoscope in water for cleaning.

★ Do not immerse the endoscope unless water-resistant cap it is attached to it.

### 7-1 Cleaning, Disinfection and Sterilization Procedures Graph



### 7-2 The methods of cleaning of the endoscope:

	Solution Cleaning	Ultrasonic Cleaning
Endoscope	○	—
A/W Valve	○	○
Suction Valve	○	○
Biopsy Forceps	○	○
Water Container	○	○
Mouth Piece	○	○

**Note :** '○' stands for applicable; '—' stands for not applicable.

### 7-3 Cleaning Requirements:

7-3-1 Cleaning the endoscope and accessories should be done with distilled water.

### 7-4 Required equipment for Cleaning, Disinfection and Sterilization

- ◇ Cleaning Brush
- ◇ Cleaning Connector:
  - A/W Channel
  - Suction Channel
  - Syringe
  - Syringe Adaptor
  - Semi-disposable Biopsy Valve
- ◇ Detergent Solution、Disinfectant solution
- ◇ Basins for Detergent and Disinfectant solution
- ◇ Protective Glove
- ◇ Lint-free Cloth

### 7-5 Pre-cleaning

Endoscope must be cleaned immediately after withdrawal.

**CAUTION:** Cleaning equipment must be in good working order, otherwise

cleaning and sterilization will be compromised

7-5-1 Wipe the Insertion Tube of the endoscope entirely with a lint-free cloth soaked in detergent solution.

7-5-2 Remove bodily secretions from the A/W Nozzle.

7-5-2-1 Feed air for 10 seconds by pressing the A/W Valve.

7.5.2.2 Feed water for 10 seconds by pressing the A/W Valve.

7.5.2.3 Detach the Water Container; cover the Water Inlet of the endoscope by finger.

7.5.2.4 Depress the A/W valve to push the residual water from the A/W channel.

7.5.3 Cleaning the Suction Channel

7.5.3.1 Immerse the Distal End into the disinfectant solution, and press the suction Valve, to draw solution into the channel.

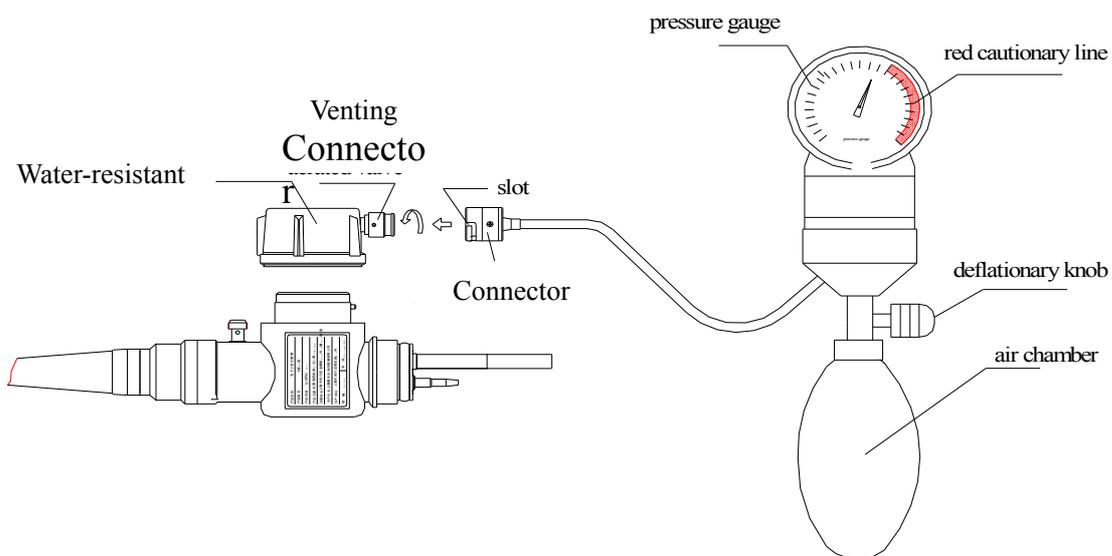
7.5.3.2 Remove the distal end from solution and continue suction. To expel solution from the channel

7.5.3.3 Repeat steps 1) and 2)

7.5.3.4 Run suction for a few seconds to ensure no solution is still present in the channel.

7.6 Leakage Testing

**CAUTION:** inspect the air seal before cleaning.



- 7.6.1 Switch off Image Control System, Air Pump and Suction Pump.
- 7.6.2 Detach the power cable and Suction Cleaning Adapter.
- 7.6.3 Detach the Light Source from the Endoscope. (Do not touch the Light cable Connector immediately)
- 7.6.4 Connect the Leakage Tester to the electrical Connector of the Endoscope.
- 7.6.5 Feed air or water until the Indicator on the Leakage Tester points to 150mmHg (20Kpa).
- 7.6.6 Leave it for 30 seconds, and make sure that the Indicator does not slide down.

**CAUTION:** a deviation of  $\pm 2$  mmHg from 150 mmHg is permissible. If more, stop disinfection or sterilization immediately and arrange for its repair.

- 7.6.7 Loosen the valve of the Leakage Tester for venting air in the channel.

**CAUTION:** Proceeding to disinfection or sterilization with residual air left in the channel, will damage the endoscope.

- 7.6.8 Detach the Leakage Tester from the endoscope.

## 7.7 High Level Cleaning

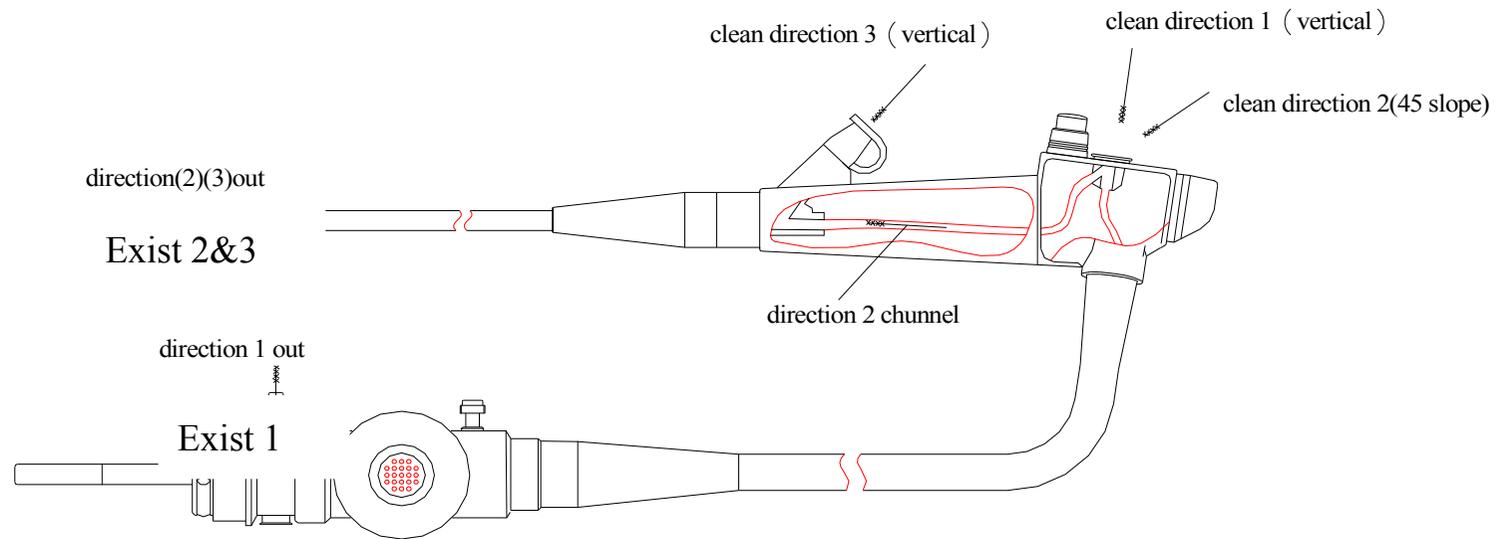
**CAUTION:** Electrical Connector of the endoscope is not waterproof. Please always attach the Water-resistant Cap before immersing.

- 7.7.1 Detach the A/W Valve, Suction Valve and Semi-disposable Biopsy Valve from the endoscope, and put them into the detergent solution. Clean it with brush first, and then flush them with tap water while operating them.
- 7.7.2 Wash endoscope with cloth when immersing into the detergent solution.
- 7.7.3 Use the Cleaning Brush as followed:
  - 7.7.3.1 To clean the inside of the Instrument Channel from the Instrument Channel Port to the outlet of the Distal End.
  - 7.7.3.2 To clean the inside of the Suction Channel from the Suction Channel Port to the outlet of the Distal End.
  - 7.7.3.3 To clean the other side of Suction Channel from the Suction Channel Port to the Suction Pump Port.

### **CAUTION:**

- ★ Repeat it at least 3 times for a complete and thorough cleaning.
- ★ The Cleaning Brush should be inserted from the directions as above. Do not undertake opposite ways. Besides, never withdraw the brush on the way. Except the channel was jammed.

7.7.4 The Cleaning method Diagram:



7.7.5 Feed the Detergent Solution into A/W Channel by syringe. Repeat it until there are no air bubbles overflowed from the Nozzles of the Distal End.

7.7.6 Feed the Detergent Solution into the Suction Channel by syringe. Repeat it until there are no air bubbles overflowed from the Nozzles of the Distal End.

7.7.7 Put the Endoscope after each examination into the rinse water to clean Repeat ⑤⑥ steps for flushing Detergent Solution from the Channel.

Caution: Residual Detergent Solution will compromise the efficacy of disinfection or sterilization.

7.7.8 Withdraw the endoscope from the rinsing water

Repeat ⑤⑥ steps, aspirate air for expelling the liquid from the channels until no air bubbles escape from the Distal End.

7.7.9 Wipe off the drips of the surface of the endoscope by cloth.

## 7.8 Disinfection

7-8-1 The Disinfectant solution recommended by Eickemeyer as following table has been anti-causticity to the endoscope and accessories.

7-8-2 If trying to use any other Disinfectant solution, please contact Eickemeyer to confirm before using.

Name	Manufacturer	Commodity	Using Methods	
			Concentration	Working Time
Glutaraldehyde	Johnson	CIDEX 2.25W/V%	Original Solution	Max: 40mins Min: 30mins
		CIDEX Plus 28 3.5W/V%	Original Solution	Max: 30mins Min: 20mins

7-8-3 Disinfection procedures:

7-8-3-1 use the water-resistant cap to cover the Electrical Connector.

7-8-3-2 Immerse the Endoscope into the Disinfectant solution.

7-8-3-3 Feed Disinfectant solution into A/W Channel and Suction Channel.

7-8-3-4 Detach the Cleaning Connector from the endoscope.

7-8-3-5 Please refer to manufacturers instructions, for the correct soaking time for different disinfectants.

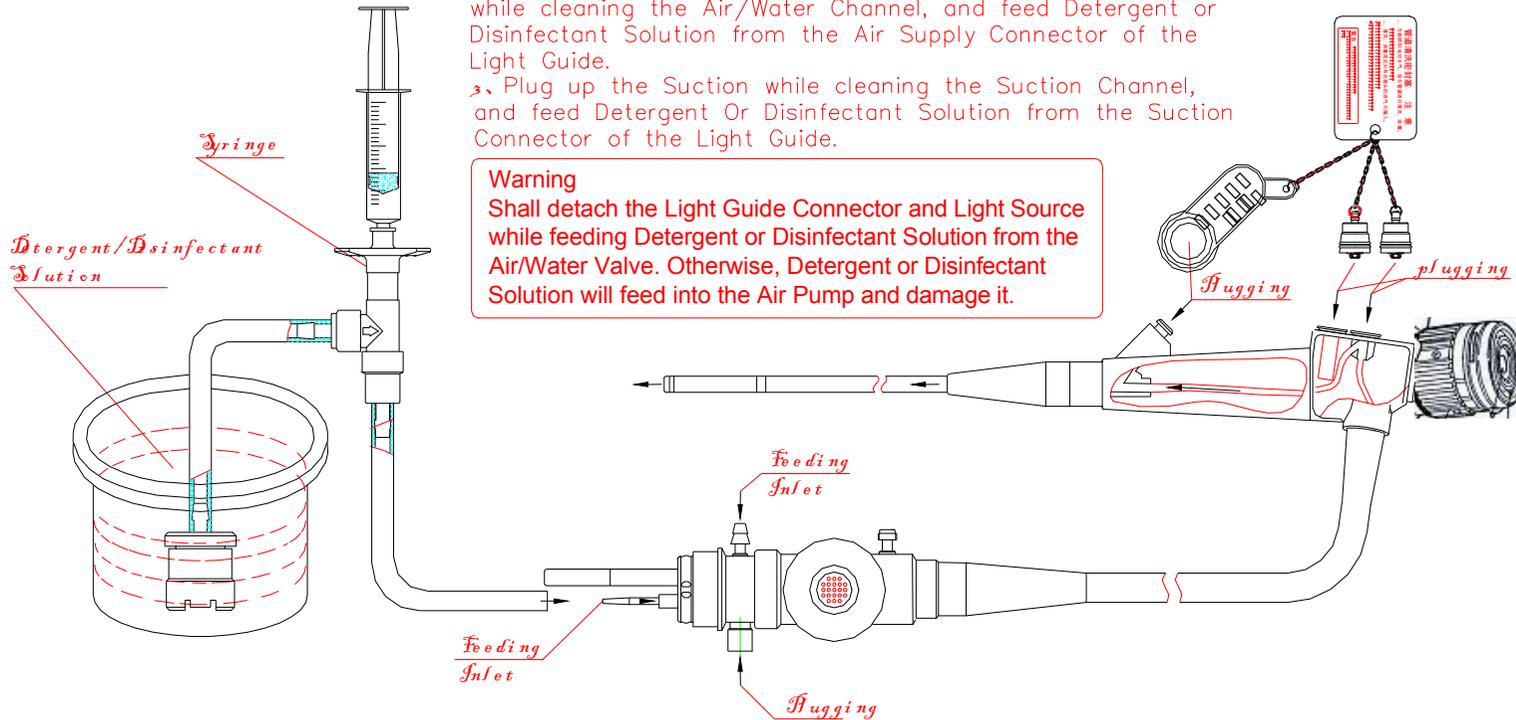


Note: Follow this diagram for the disinfectant Method:

Cautions For cleaning the inside channel of endoscope

1. Detach the Light Guide Connector of Endoscope and Light source before cleaning the Air/Water Channel.
2. Plug up Air/Water Valve and Port of Water Container while cleaning the Air/Water Channel, and feed Detergent or Disinfectant Solution from the Air Supply Connector of the Light Guide.
3. Plug up the Suction while cleaning the Suction Channel, and feed Detergent Or Disinfectant Solution from the Suction Connector of the Light Guide.

**Warning**  
Shall detach the Light Guide Connector and Light Source while feeding Detergent or Disinfectant Solution from the Air/Water Valve. Otherwise, Detergent or Disinfectant Solution will feed into the Air Pump and damage it.



## 7.9 Rinse the endoscope with distilled Water

**CAUTION:** wear protective gloves when withdrawal of endoscope.

★ to wash the endoscope and its accessories, use distilled water and 70% alcohol solution.

★ The Cleaning Connector should be rinsed with distilled water after extraction from Disinfectant solution.

**WARNING:**

◆ Make sure that the disinfectant is fully washed off before the next operation. The solution can be very toxic and lead to serious patient injury.

◆ Connect Cleaning Connector on the endoscope.

◆ Feed Sterilized Water into A/W and Suction Channels by syringe in order to expel Disinfectant solution from the endoscope. Repeat it until there is no residual Solution.

◆ The method of expelling the water inside of the channel is the same as the ones of Cleaning Connector and Washing by syringe.

◆ Detach the Cleaning Connector from the endoscope.

◆ Wash endoscope with Sterilized Water thoroughly.

◆ Wipe the surface of the endoscope with lint-free cloth.

◆ apply silicon oil on the seal ring of the A/W Valve and Suction Valve and reinstall them on the endoscope.

◆ Remove the Water-resistant Cap from the Light cable Connector Section, and then clean it with another cleaning cloth.

◆ Plug the Light cable into the Light Source, and turn on the Air Pump.

◆ Aspirate air into A/W Channel while covering the Water Container connector Port by finger. Repeat depressing the button to dry liquid in the internal lumens.

◆ Connect the Suction Channel with Suction Port of the endoscope and switch on the suction pump. Repeat depressing the button in order to drying liquid inside of the endoscope.

## 7.10 Storing and Preservation:

**CAUTION:**

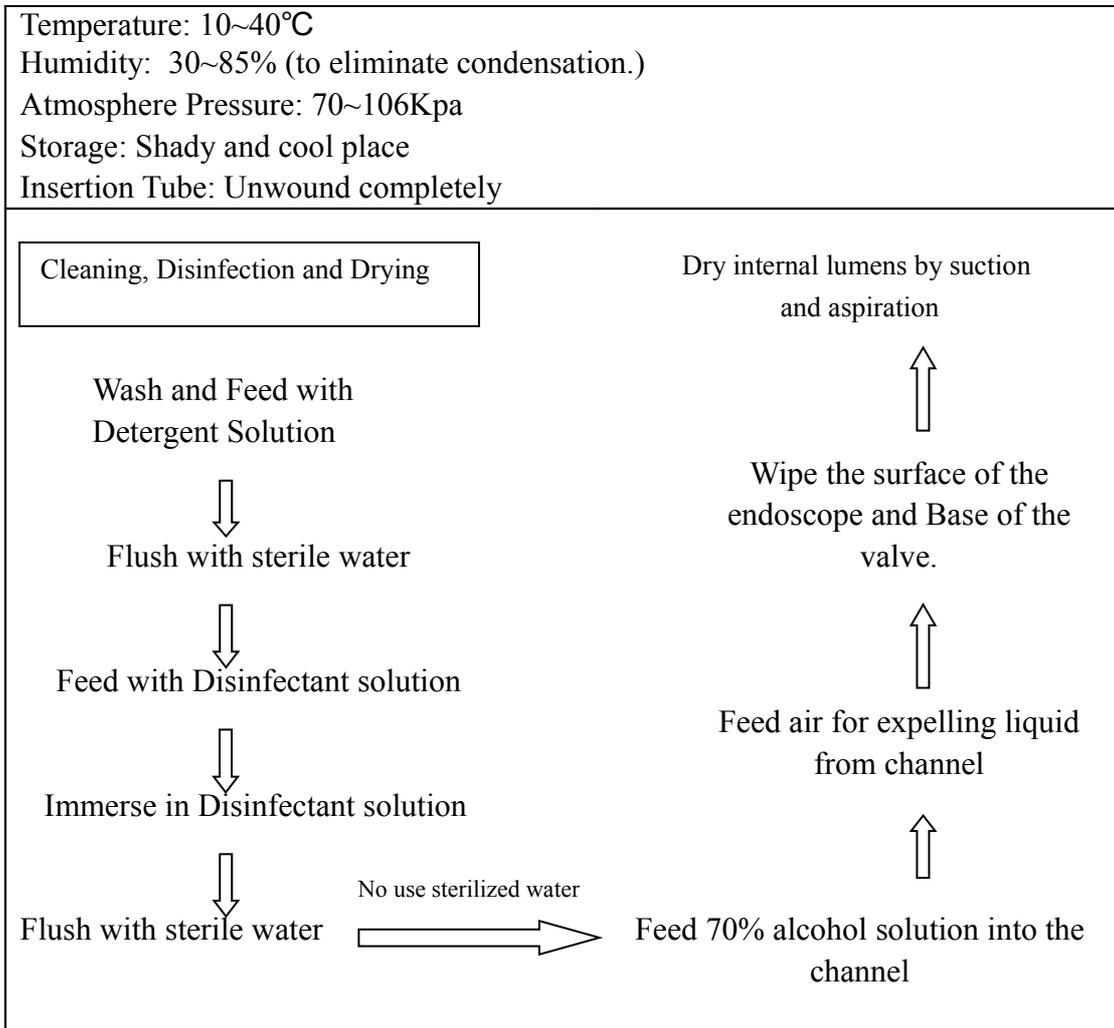
★ Endoscope and accessories should be dried thoroughly before storage.

★ The storage facility must be clean, dry, well ventilated and within the right temperature range.

★ Hang the endoscope vertically, with the Insertion Tube hanging freely.

★ Make sure the endoscope's Angulations Lock on the loose.

7.11 Requirements for Storing and preservation:



7-12 Clean, Disinfection and Sterilization of accessories

7-12-1 Clean, Disinfection and Sterilization of the A/W valve, Suction Valve.

7-12-1-1 Clean it by cloth in the detergent solution while operating valve.

7-12-1-2 Wash it by cloth within the rinse water while operating valve.

7-12-1-3 Immerse it into disinfectant solution. The time this takes varies based on the disinfectant solution selected.

7.12.1.4 Take out of the valve and flush it by rinse water.

7.12.1.5 Swab it with cloth for dryness.

7.12.1.6 Apply silicon oil on the seal rings of valves before storing.

7.12.1.7 When sterilization, refer to the steps of sterilization manual.

7.12.2 Clean, Sterilization of Endo-Therapy Accessories

**CAUTION:** do not steam sterilize forceps, as they might get damaged

7.12.2.1 Use a cloth to clean the surface in the detergent solution.

7.12.2.2 Put all Endo-Therapy Accessories into the detergent solution.

- 7.12.2.3 Use the operating controls to open and close the forceps for cleaning.
- 7.12.2.4 Extract forceps from the detergent solution and rinse it with distilled water.
- 7.12.2.5 wipe the forceps with a cloth to dry them.

**CAUTION:** When cleaning Endo-Therapy Accessories, it will be better to combine manual cleaning with ultrasonic cleaning.

- 7.12.2.6 If sterilizing with ETO gas, refer to the steps of ETO gas sterilization.
- 7.12.2.7 If undertaking disinfection with solution, refer to the method of disinfection of endoscope.

7.13 ETO gas sterilization:

**CAUTION: ★** Dry endoscope and accessories thoroughly before undertaking ETO gas sterilization.

★After sterilization, ETO gas left in the internal lumens of the endoscope will cause patient injury. Therefore, the endoscope must be aspirated thoroughly to expel all remaining ETO gas prior to next scheduled use

★Do not sterilize endoscope with high steam sterilization.

7-13-1 Endoscope and accessories must be thoroughly cleaned before ETO gas sterilization.

- 7.13.1.1 Remove the Water-resistant Cap from the Electrical Connector.
- 7.13.1.2 Put endoscope, A/W Valve, Suction Valve and Endo-Therapy Accessories into the sterilizing container.
- 7.13.1.3 Follow ETO gas sterilization instructions carefully.
- 7.13.1.4 ETO gas Ventilation must be undertaken in accordance with this manual instructions.
- 7.13.1.5 Place the Water-resistant Cap on the Connector of Ligth Guide of Endoscope.

7-13-2 Requirements of ETO gas sterilization container

ETO gas concentration	Temperature	Humidity	Atmosphere Pressure	Working Time	Venting
20V/V%	55°C	Ambient Temperature	167Kpa (1.7Kg/cm <sup>2</sup> )	4hrs	Atmosphere Pressure

7-13-3 Methods of ETO gas sterilization

Endoscope and accessories	Methods of Sterilization	
	Autoclave	ETO gas
Endoscope	×	○(※1)
A/W Valve	○	○
Suction Valve	○	○
Endo-Therapy Accessories	○(※2)	○
Water Container	○	○
Mouthpiece	○	○

**Note :** ‘○’ stands for applicable; ‘—’ stands for not applicable.

‘※1’ means whether it can be sterilized or not based on the requirements of sterilization.

‘※2’ means whether they can be sterilized or not only based on the requirements of sterilization but also based on if accessories have carrying capacity reference to the manual of relative accessories.

#### 8、 Troubleshooting Guides:

In case of difficulties, follow the following troubleshooting guide. Failure to resolve problems or if product failures are suspected the unit must be returned and inspected by the manufacturer.

Symptoms	Corrective Resolution
Image blurred or interference experienced	check voltage to keep stable
Water drop or stripe observed	Contact Eickemeyer
No or dark illumination	Check light source
Inadequate deflection of tip end	Contact Eickemeyer
Angulations Control Knobs not working properly.	Contact Eickemeyer
Accessory cannot be inserted	Check Channel with block
Absent or insufficient air/water feeding	Check connecting tight among Light Source, water container and Light Guide Section
Absent or insufficient suction	Check suction pump, suction tube and interface
The surface of insertion tube is not smooth	Contact Eickemeyer
Slits with objective lens	Contact Eickemeyer

#### 9、 Attention Items:

9-1 Endoscopy carries a real risk of thermal injury. The operator must pay attention to the following points:

9-1-1 Manual adjust the light intensity to the lowest illumination that allows proper observation.

9-1-2 Do not allow the distal end of the endoscope to come in contact with the observed tissue, as it will cause thermal injury to patients.

9-1-3 Whilst not in use, do not leave the fiberscope connected to Light Source.

9-2 Prior to use, confirm that the endoscope is in proper and safe working condition.

9-3 Before insertion or withdrawal of the fiberscope, be certain that the angulations lock knob is in the “F” position.

9-4 This fiberscope is a delicate instrument. Do not apply excessive force to bend, fold and or twist.

9-5 Store away from direct sunlight, high humidity and high temperature.

9-6 If the Fiberscope proves to be faulty, stop using immediately. Contact your Eickemeyer service center.

9-7 Misuse of the instrument, accidental or otherwise, is not covered by warranty. Any attempt by the user or unauthorized personnel to dismantle and/or repair the instrument will void the warranty immediately.

9-8 Within one year warranty from the date of purchasing. Carry out base on the invoice and maintenance form.

9-9 To avoid electric shocks to patients and practitioners, **3-PIN power plugs must**

**be used with** the light source, suction pump and HFC.

9-10 In the period of operation, the best way is connected with automatic stabilizer which is over 1000w.