OLYMPUS®

REPROCESSING MANUAL

# INSTRUCTIONS

EVIS EXERA

EVIS EXERA GASTROINTESTINAL VIDEOSCOPE

**OLYMPUS GIF** TYPE **XP160**
**OLYMPUS GIF** TYPE **160**
**OLYMPUS GIF** TYPE **Q160**
**OLYMPUS GIF** TYPE **Q160Z**
**OLYMPUS GIF** TYPE **1TQ160**
**OLYMPUS GIF** TYPE **XTQ160**

EVIS EXERA COLONOVIDEOSCOPE

**OLYMPUS CF** TYPE **Q160L/I**
**OLYMPUS CF** TYPE **Q160AL/I**
**OLYMPUS CF** TYPE **Q160ZL/I**
**OLYMPUS CF** TYPE **Q160DL/I**
**OLYMPUS PCF** TYPE **160AL/I**

EVIS EXERA SIGMOIDOVIDEOSCOPE

**OLYMPUS CF** TYPE **Q160S**

Refer to the endoscope's companion manual, the "OPERATION MANUAL" whose cover lists the model of your endoscope, for operation information.

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

# Contents

# Symbols

The meaning(s) of the symbol(s) shown on the back cover of this instruction manual are as follows:

Manufacturer


Authorized representative in the European Community

# Chapter 1 General Policy

## 1.1 Instructions

- Chapters 1, “General Policy” through 4, “Cleaning and Disinfection Equipment” describe recommended procedures and equipment for cleaning and disinfecting or sterilizing this instrument.
- Thoroughly review the manuals of all equipment which will be used with this instrument, and use the equipment as instructed.
- If you have any questions or comments about any information in this manual, or if a problem that cannot be solved occurs while reprocessing, contact Olympus.
- The medical literature reports incidents of patient cross contamination resulting from improper cleaning, disinfection or sterilization. It is strongly recommended that reprocessing personnel have a thorough understanding of and follow all national and local hospital guidelines and policies.
- A specific individual or individuals in the endoscopy unit should be responsible for reprocessing endoscopic equipment. It is highly desirable that a trained backup be available should the primary reprocessing individual(s) be absent.
- All individuals responsible for reprocessing should thoroughly understand:
  - occupational health and safety regulations
  - all national and local hospital guidelines and policies
  - the instructions in this manual
  - the mechanical aspects of endoscopic equipment
  - pertinent germicide labeling

## 1.2 Signal words

The following signal words are used throughout this manual:

**WARNING**

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

**CAUTION**

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices or potential equipment damage.

NOTE

Indicates additional helpful information.

## 1.3 Precautions

**WARNING**

- Failure to properly clean and high-level disinfect or sterilize endoscopic equipment after each examination can compromise patient safety. To minimize the risk of transmitting diseases from one patient to another, after each examination the endoscope must undergo thorough manual cleaning followed by high-level disinfection or sterilization.
- ALL channels of the endoscope, including auxiliary water channel where fitted, MUST be cleaned and high-level disinfected or sterilized during EVERY reprocessing cycle, even if the channels were not used during the previous patient procedure. Otherwise, insufficient cleaning and disinfection or sterilization of the endoscope may pose an infection control risk to the patient and/or operators performing the next procedure with the endoscope.
- If the endoscope is not cleaned meticulously, effective disinfection or sterilization may not be possible. Clean the endoscope and accessories thoroughly before disinfection or sterilization to remove microorganisms or organic material that could reduce the efficacy of disinfection or sterilization.

- Olympus confirms validation of the endoscope reprocessors recommended by Olympus only. If using endoscope reprocessor that are not recommended by Olympus, the endoscope reprocessor manufacturers are responsible for validation of the endoscope reprocessor with the endoscope models listed in its intended use statement. If using an endoscope reprocessor, confirm that it is capable of reprocessing endoscope including all channels. If there are channels and/or other parts which cannot be cleaned and high-level disinfected by the endoscope reprocessor, have to undergo manual cleaning and high-level disinfection or sterilization as described in Chapter 3, “Cleaning, Disinfection and Sterilization Procedures” after using the endoscope reprocessor. Otherwise, insufficient cleaning and disinfection or sterilization of the endoscope may pose an infection control risk to the patient and/or operators performing the next procedure with the endoscope. If you are uncertain as to the ability of your endoscope reprocessor to clean and high-level disinfect endoscope including all channels, contact the endoscope reprocessor supplier for specific instructions and/or connectors.
- Patient debris and reprocessing chemicals are hazardous. Wear personal protective equipment to guard against dangerous chemicals and potentially infectious material. During cleaning and disinfection or sterilization, wear appropriate personal protective equipment, such as eye wear, face mask, moisture-resistant clothing and chemical-resistant gloves that fit properly and are long enough so that your skin is not exposed. Always remove contaminated personal protective equipment before leaving the reprocessing area.
- Thoroughly rinse off the disinfectant solution. Rinse the external surfaces of the endoscope, all channels and cleaning equipment thoroughly with clean water to remove any disinfectant solution residue.
- The disinfection/sterilization room must be adequately ventilated. Adequate ventilation protects against the buildup of toxic chemical fumes.
- Store alcohol in an air-tight container. Alcohol stored in an open container is a fire hazard and will lose its efficacy due to evaporation.

- With the cleaning, disinfection and sterilization methods stated in this instruction manual, prions, which are considered to be the pathogenic substance of the Creutzfeldt-Jakob disease (CJD) cannot be destroyed or inactivated. When using this instrument on a patient with CJD or variant Creutzfeldt-Jakob disease (vCJD), be sure to use this product for such patient only and/or immediately dispose of this product after use in an appropriate manner. For methods to handle CJD, please follow the respective guidelines in your country.
- This instrument is not durable, or does not have sufficient durability against the respective methods stated in the guidelines of each country for destroying or inactivating prions. For information on the durability against each method, please contact Olympus. If cleaning, disinfection and sterilization methods not stated in this instruction manual are performed, Olympus cannot guarantee the effectiveness, safety and durability of this instrument. Make sure to confirm that there is no abnormality before use, and use under responsibility of a physician. Do not use if any abnormality is found.

**CAUTION**

- When aerating or irrigating the endoscope channels, the air or water pressure must not exceed 0.5 MPa (5 kgf/cm$^2$, 71 psig).
- When reprocessing EVIS videoscope models, confirm that the water-resistant cap (MH-553) is securely attached to the endoscope connector before immersion in reprocessing fluids.
- When reprocessing the CF-Q160ZL/I, confirm that the water-resistant cap (MAJ-583) is securely attached to the zoom connector before immersion in reprocessing fluids.
- When reprocessing the CF-Q160DL/I, confirm that the water-resistant cap (MAJ-942) is securely attached to the UPD scope connector before immersion in reprocessing fluids.

- When reprocessing an endoscope that has the flexibility adjustment mechanism, make sure that the insertion tube is set to the softest condition (indicated by the "●" mark on the flexibility adjustment ring) before immersing the endoscope in cleaning/disinfectant solution.
  If the endoscope is cleaned and disinfected or sterilized while the insertion tube is stiff, the endoscope may be damaged.

| Endoscope models | Water-resistant cap |
|---|---|
| **CF-Q160ZL/I** | MH-553, MAJ-583 |
| **CF-Q160DL/I** | MH-553, MAJ-942 |
| **Other** | MH-553 |

Table 1.1

# Chapter 2 Compatible Reprocessing Methods and Chemical Agents

## 2.1 Compatibility summary

Olympus endoscopic equipment is compatible with several methods of reprocessing. Certain components and accessories, however, are not compatible with some methods, which can cause equipment damage. For appropriate reprocessing methods, refer to Table 2.1 below, the recommendations of your infection control committee and all national and local hospital guidelines and policies.

| | Steam sterilization (autoclaving) | ETO gas sterilization | 2 – 3.5% glutaraldehyde | 70% ethyl or isopropyl alcohol | Detergent solution | Ultrasonic cleaning |
|---|---|---|---|---|---|---|
| **Endoscope** | | ■ | ■ | ■ | ■ | |
| **Water-resistant cap (MH-553)** | | ■ | ■ | ■ | ■ | |
| **Water-resistant cap (MAJ-583)**<br>**Water-resistant cap (MAJ-942)** | | ■ | ■ | ■ | ■ | |
| **Forceps suction plug (T-plug) (MH-405)** | ■ | ■ | ■ | ■ | ■ | |
| **Channel cleaning brush (BW-17K, BW-20T)**<br>**Channel-opening cleaning brush (MH-507)** | ■ | ■ | ■ | ■ | | ■ |
| **Air/water valve (MH-438)**<br>**Suction valve (MH-443)**<br>**Channel plug (MH-944)**<br>**Injection tube (MH-946)**<br>**Suction cleaning adapter (MH-856)**<br>**AW channel cleaning adapter (MH-948)**<br>**Mouthpiece (MB-142, MA-474)**<br>**Biopsy valve (MB-358)**<br>**Auxiliary water tube (MAJ-855)** | ■ | ■ | ■ | ■ | ■ | ■ |

■ **applicable** □ **not applicable**

Table 2.1

NOTE

Endo-therapy accessories which are marked by the words “AUTOCLAVE” or “AUTOCLAVABLE”, or accessories with a green model reference label, are compatible with autoclaving.

## 2.2 Detergent solution

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

**WARNING**

Excessive detergent foaming can prevent fluid from adequately contacting internal lumens (e.g. channels).

## 2.3 Disinfectant solution

In the U.S., agents used to achieve high-level disinfection are defined as liquid chemical germicides registered with the U.S. Food and Drug Administration as “sterilant/disinfectants” which are used according to the time, temperature and dilution recommended by the disinfectant manufacturer for achieving high-level disinfection. These conditions usually coincide with those recommended by the disinfectant manufacturer for 100% kill of mycobacterium tuberculosis.

In general, 2.0 – 3.5% glutaraldehyde solutions, when used according to the manufacturer’s instructions for achieving high-level disinfection, are compatible with Olympus endoscopes. Contact Olympus for the names of specific brands that have been tested for compatibility with the endoscope.

If the disinfectant solution is reused, routinely check its efficacy with a test strip recommended by the manufacturer. Do not use solutions beyond their expiration date.

**WARNING**

Alcohol is not a sterilant or high-level disinfectant.

## 2.4 Rinsing water

Once removed from disinfectant solution, the instrument must be thoroughly rinsed with sterile water to remove any disinfectant residue. If sterile water is not available, clean potable tap water or water which has been processed (e.g. filtered) to improve its microbiological quality may be used.

When non-sterile water is used after disinfection, wipe the endoscope and flush the channels with 70% ethyl or isopropyl alcohol, then air-dry all internal channels to inhibit the growth of residual bacteria. Do not reuse rinsing water.

## 2.5 ETO gas sterilization

This instrument and other accessories listed as compatible with ethylene oxide (ETO) gas sterilization in Table 2.1 can be sterilized by ETO gas and aerated within the parameters given in Table 2.2. When performing sterilization, follow the hospital's protocol and the sterilization equipment manufacturer's instructions.

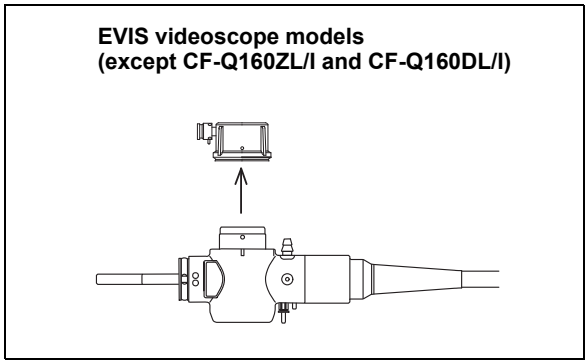



Figure 2.1

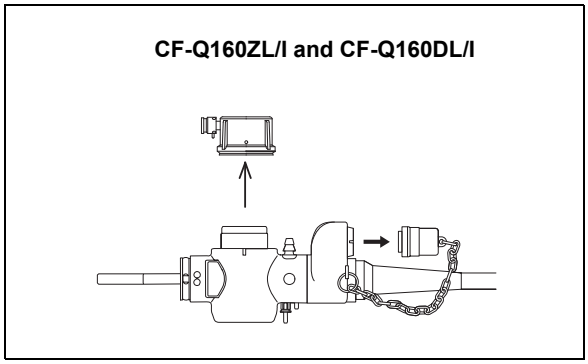



Figure 2.2

**WARNING**

- Before sterilization, the instrument must be thoroughly cleaned and dried. Residual moisture inhibits sterilization.
- The results of sterilization depend on various factors such as how the sterilized instrument was packed or the positioning, method of placing and loading of the instrument in the sterilization device. Please verify the sterilization effects by using biological or chemical indicators. Also follow the guidelines for sterilization issued by medical administrative authorities, public organizations or the infection management sections at each medical facility, as well as the instruction manual of the sterilization device.
- All instruments must be properly aerated following ETO gas sterilization to remove toxic ethylene oxide residuals.
- Exceeding the recommended parameters may cause equipment damage.

**CAUTION**

- When reprocessing EVIS videoscope models, remove the water-resistant cap before ETO gas sterilization (see Figures 2.1 and 2.2).
- Repeated ETO gas sterilization procedures will gradually deteriorate the instrument. Do not perform ETO gas sterilization to the instrument unnecessarily.

## ❍ ETO gas exposure parameters

| Process | | Parameters |
|---|---|---|
| **ETO gas sterilization** | **Temperature** | 57°C (135°F) |
| | **Pressure** | 0.1 – 0.17 MPa<br>(1 – 1.7 kgf/cm$^2$)<br>(16 – 24 psig) |
| | **Humidity** | 55% |
| | **Exposure time** | 1.75 hours |
| | **ETO gas concentration** | 0.6 – 0.7 mg/cm$^3$<br>(600 – 700 mg/l) |
| **Aeration** | **Minimum aeration parameters** | 12 hours in an aeration chamber at 50 – 57°C (122 – 135°F) or 7 days at room temperature |

Table 2.2

### ❍ Gas mixture

For the USA

12% ETO/88% CFC

For countries other than the USA

20% ETO/80% $CO_2$

## 2.6 Steam sterilization (autoclaving) of accessories

The accessories listed as compatible with steam sterilization (autoclaving) in Table 2.1 can be sterilized by steam within the parameters given in Table 2.3. When steam sterilizing, follow the hospital's protocol and the sterilization equipment manufacturer's instructions.

**WARNING**

- The results of sterilization depend on various factors such as how the sterilized instrument was packed or the positioning, method of placing and loading of the instrument in the sterilization device. Please verify the sterilization effects by using biological or chemical indicators. Also follow the guidelines for sterilization issued by medical administrative authorities, public organizations or the infection management sections at each medical facility, as well as the instruction manual of the sterilization device.
- Exceeding the recommended parameters may cause equipment damage.

**CAUTION**

- Do not steam sterilize the endoscope. Steam sterilization (autoclaving) will severely damage the endoscope.
- Effective sterilization will not be possible if items are packed tightly together in the autoclave; always pack items loosely.
- Inspect each instrument package for openings, tears or other damage. If an instrument package is opened or damaged, seal the components in a new package and sterilize again.

- Allow the packages to dry within the autoclave, using the autoclave's drying cycle (if available) or by opening the door of the autoclave and allowing the packages to air-dry. Handling a wet package can compromise its sterility.

| Process | Parameters | |
|---|---|---|
| **Prevacuum** | **Temperature** | 132 – 134°C<br>(270 – 274°F) |
| | **Exposure time** | 5 minutes |

Table 2.3 Steam sterilization (autoclaving) exposure parameters

# Chapter 3 Cleaning, Disinfection and Sterilization Procedures

**WARNING**

ALL channels of the endoscope, including auxiliary water channel where fitted, MUST be cleaned and high-level disinfected or sterilized during EVERY reprocessing cycle, even if the channels were not used during the previous patient procedure. Otherwise, insufficient cleaning and disinfection or sterilization of the endoscope may pose an infection control risk to the patient and/or operators performing the next procedure with the endoscope.

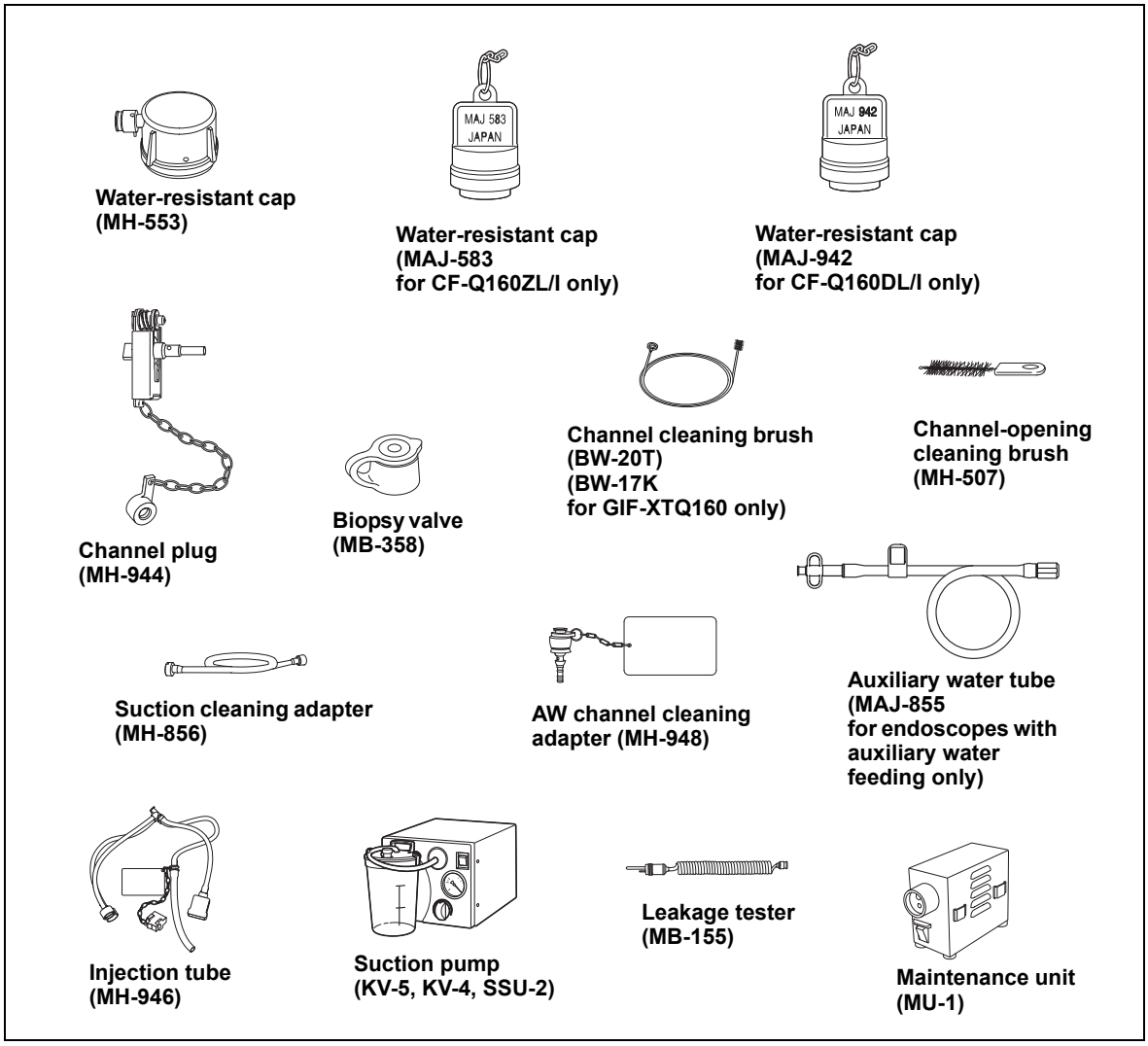
## 3.1 Required reprocessing equipment

### Preparation of the equipment

Prior to cleaning, disinfection or sterilization, prepare the equipment shown in Figure 3.1.

**CAUTION**

- Use basins which are at least 40 cm by 40 cm (16” by 16”) in size and deep enough to allow the endoscope to be completely immersed.
- For proper reprocessing results, do not coil the insertion tube or the universal cord with a diameter of less than 40 cm.
- Do not coil the endoscope’s insertion tube or universal cord with a diameter of less than 12 cm. The endoscope can be damaged if coiled too tightly.




| | | |
|---|---|---|
| • Detergent solution | • Large basins for rinsing and leakage testing | • Sterile, lint-free cloths |
| • Clean water | • 30 $cm^3$ (30 ml) syringe | • Sterile cotton swabs |
| • Sterile water | • Soft brush | • Small containers |
| • 70% ethyl or isopropyl alcohol | • Personal protective equipment | • Small basin |
| • Disinfectant solution | | |
| • Large basins with tight fitting lids for detergent and disinfectant solution | • Clean, lint-free cloths | • 500 $cm^3$ (500 ml) container |

Figure 3.1

## *Reprocessing equipment parts and functions*

For inspection of other equipment than that mentioned below, refer to the instruction manual for the equipment being used.

### ❍ Water-resistant cap (MH-553)

The water-resistant cap is attached to the electrical connector on the endoscope to protect the connector from water penetration during reprocessing. For leakage testing, the venting connector on the water-resistant cap must be connected to the leakage tester (see Figure 3.2).

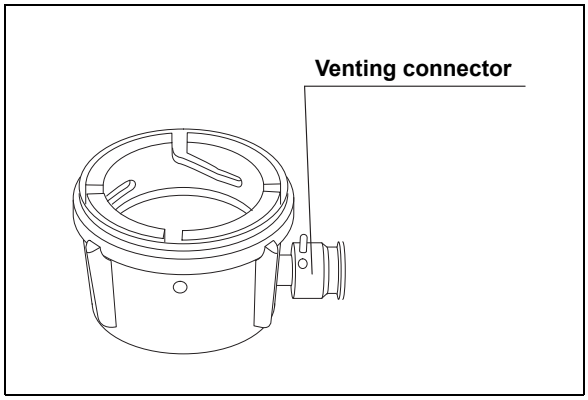



Figure 3.2

### ❍ Water-resistant cap (MAJ-583 for CF-Q160ZL/I only)

The water-resistant cap (MAJ-583) is attached to the zoom connector on the endoscope to protect the connector from water penetration during reprocessing. The water-resistant cap is connected to the endoscope by a chain (see Figure 3.3).

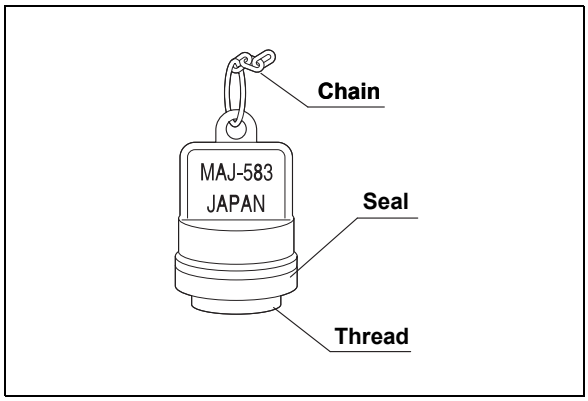



Figure 3.3

## ❍ Water-resistant cap (MAJ-942 for CF-Q160DL/I only)

The water-resistant cap (MAJ-942) is attached to the UPD scope connector on the endoscope to protect the connector from water penetration during reprocessing. The water-resistant cap is connected to the endoscope by a chain (see Figure 3.4).

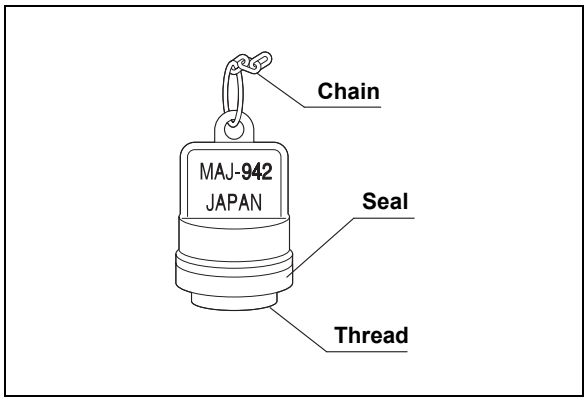



Figure 3.4

## ❍ Channel plug (MH-944)

The channel plug is used to plug the openings of the instrument channel port, air/water and suction cylinders during cleaning (see Figure 3.5).

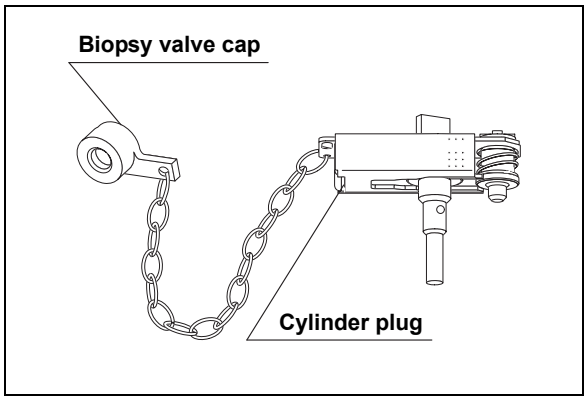



Figure 3.5

## ❍ Injection tube (MH-946)

The injection tube is used to inject detergent solution, disinfectant solution, water and alcohol into the air/water and suction channels and to flush air through the channels to expel fluids (see Figure 3.6).

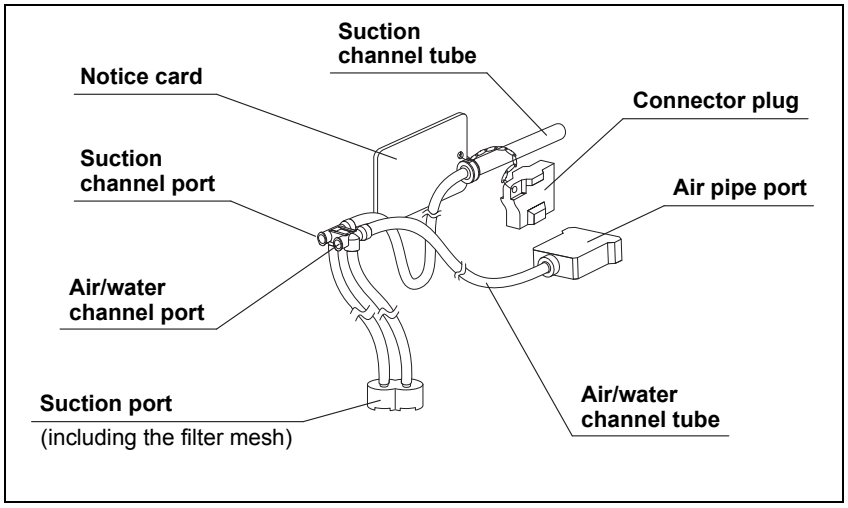



Figure 3.6

## ❍ Auxiliary water tube (MAJ-855 for endoscopes with auxiliary water feeding only)

The auxiliary water tube is used to inject detergent solution, disinfectant solution, water and alcohol into the auxiliary water channel and to flush air through the channel to expel fluids (see Figure 3.7).

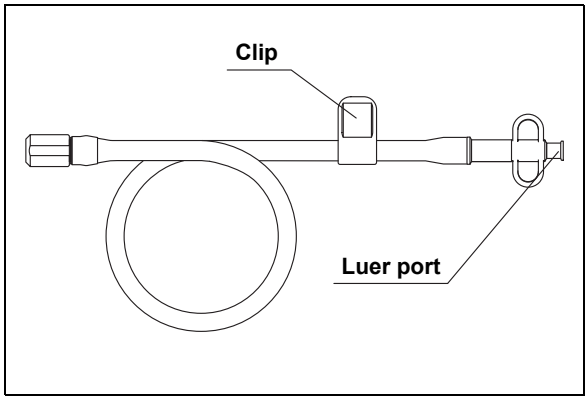



Figure 3.7

## ❍ Channel cleaning brush (BW-17K, BW-20T)

The channel cleaning brush is used to brush the inside of the instrument/suction channels and the holes in the air/water and suction valves (see Figure 3.8).

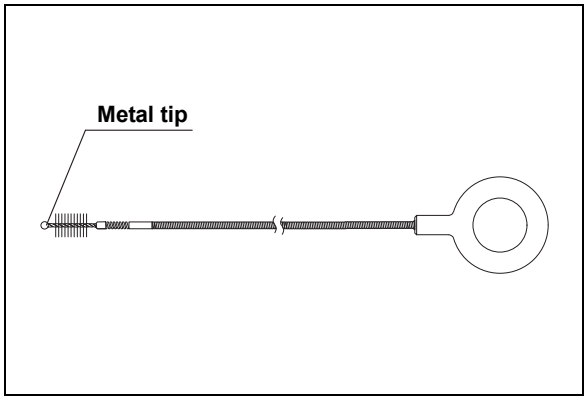



Figure 3.8

## ❍ Channel-opening cleaning brush (MH-507)

The channel-opening cleaning brush is used to brush the external surface of the distal end of the endoscope, the suction cylinder and the instrument channel port (see Figure 3.9).

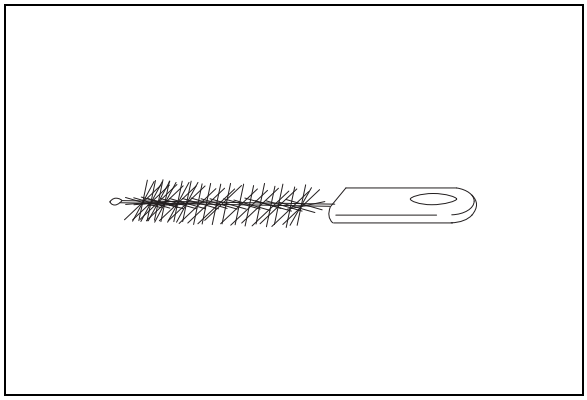


Figure 3.9

## ❍ Suction cleaning adapter (MH-856)

The suction cleaning adapter is used to aspirate reprocessing fluids from the distal end of the endoscope through the instrument channel (see Figure 3.10).

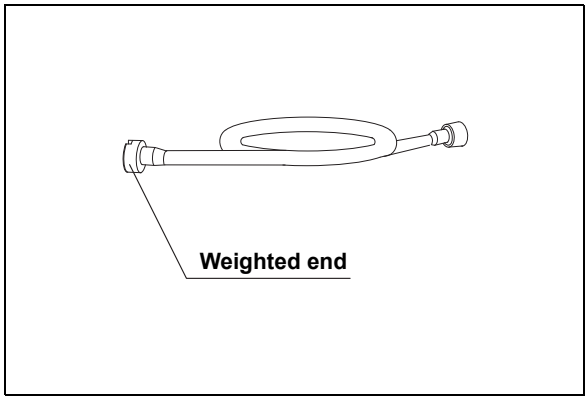



Figure 3.10

## ❍ AW channel cleaning adapter (MH-948)

During precleaning, the AW channel cleaning adapter is connected to the air/water cylinder. When the adapter is depressed, water is fed through the air/water nozzle. Air is continuously fed when the adapter is not depressed (see Figure 3.11).

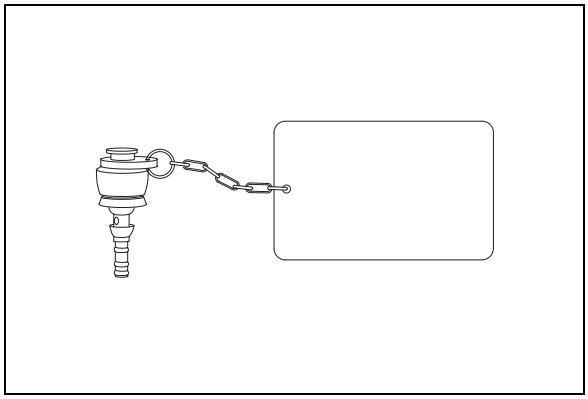


Figure 3.11

## *Inspection of the equipment*

For inspection of other equipment than that mentioned below, refer to the instruction manual for the equipment being used.

**CAUTION**

The cleaning brushes are consumable items. Should the slightest irregularity be suspected, use a spare instead. Using a defective brush may cause equipment damage.

### ❍ Inspection of the water-resistant cap (MH-553)

1. Confirm that the inside of the water-resistant cap is dry and free from debris (see Figure 3.2).
2. Confirm that the seal inside the water-resistant cap is free from scratches, flaws and debris.
3. Check the venting connector for looseness.

### ❍ Inspection of the water-resistant cap (MAJ-583 for CF-Q160ZL/I only)

1. Confirm that the inside of the water-resistant cap is dry and free from debris (see Figure 3.3).
2. Confirm that the seal of the water-resistant cap is free from scratches, flaws and debris.
3. Confirm that the thread of the water-resistant cap is free from deformation and other flaws.

### ❍ Inspection of the water-resistant cap (MAJ-942 for CF-Q160DL/I only)

1. Confirm that the inside of the water-resistant cap is dry and free from debris (see Figure 3.4).
2. Confirm that the seal of the water-resistant cap is free from scratches, flaws and debris.
3. Confirm that the thread of the water-resistant cap is free from deformation and other flaws.

### ❍ Inspection of the channel plug

Confirm that the cylinder plug and biopsy valve cap are free from cracks, scratches, flaws and debris (see Figure 3.5).

### ❍ Inspection of the injection tube

1. Confirm that all components of the injection tube are free from cracks, scratches, flaws and debris (see Figure 3.6).
2. Confirm that the filter mesh is in the suction port.
3. Attach the 30 $cm^3$ (30 ml) syringe to the air/water channel port. With the filter mesh immersed in rinsing water, withdraw the syringe plunger and confirm that rinsing water is drawn into the syringe. Depress the plunger and confirm that rinsing water is emitted from the air pipe port. Confirm that water is not emitted from the suction port.
4. Attach the 30 $cm^3$ (30 ml) syringe to the suction channel port. With the filter mesh immersed in rinsing water, withdraw the syringe plunger and confirm that rinsing water is drawn into the syringe. Depress the plunger and confirm that rinsing water is emitted from the distal end of the suction channel tube. Confirm that water is not emitted from the suction port.

### ❍ Inspection of the auxiliary water tube (for endoscopes with auxiliary water feeding only)

Check for cracks, scratches, flaws, debris and other damage (see Figure 3.7).

### ❍ Inspection of the channel cleaning brush

1. Confirm that the brush section and the metal tip at the distal end are securely in place. Check for loose or missing bristles (see Figure 3.8).
2. Check for bends, scratches and other damage to the shaft.
3. Check for debris on the shaft and/or in the bristles of the brush.

### ❍ Inspection of the channel-opening cleaning brush

1. Check for loose or missing bristles (see Figure 3.9).
2. Check for debris on the shaft and/or in the bristles of the brush.

### ❍ Inspection of the suction cleaning adapter

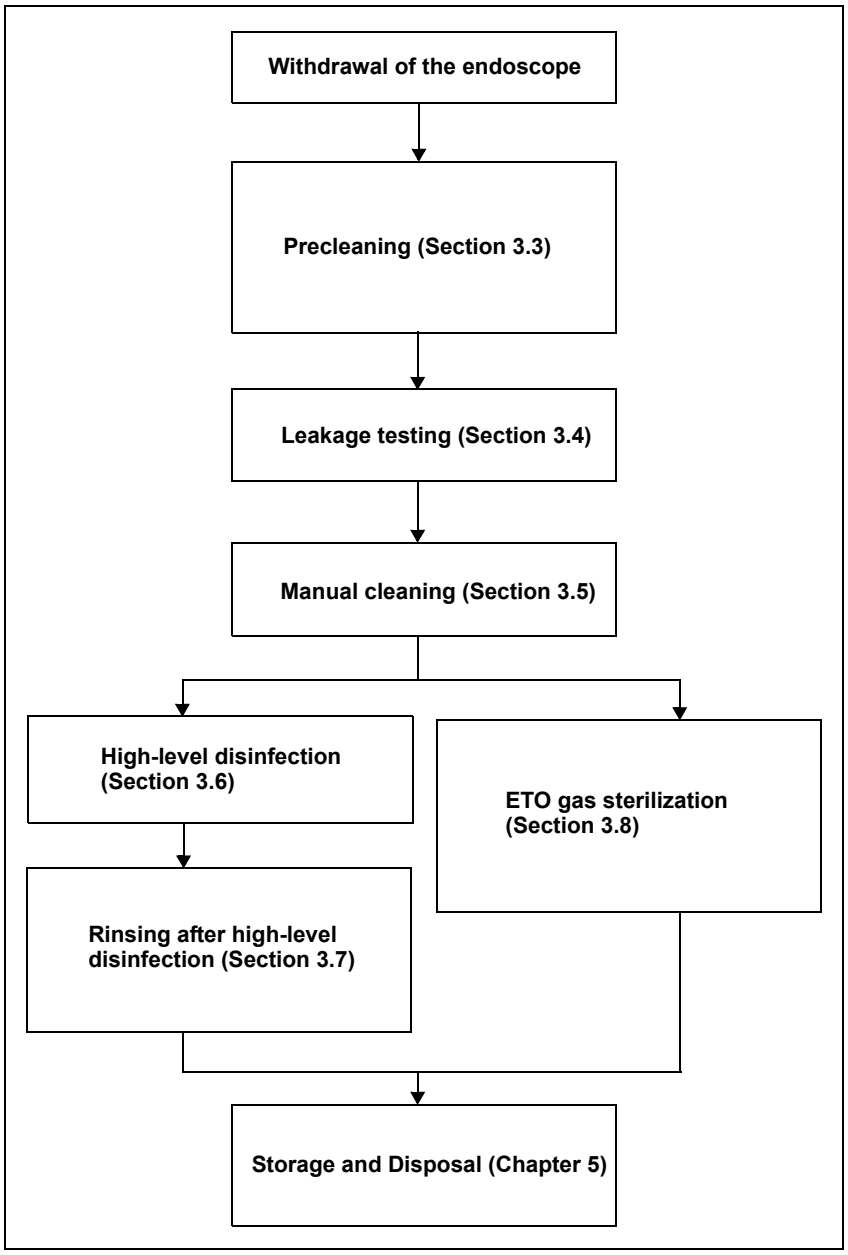
Check for cracks, scratches, flaws, debris and other damage (see Figure 3.10).

### ❍ Inspection of the AW channel cleaning adapter

Check for cracks, scratches, flaws, debris and other damage (see Figure 3.11).

# 3.2 Cleaning, disinfection and sterilization procedures

## Endoscope reprocessing summary chart



**WARNING**

ALL channels of the endoscope, including auxiliary water channel where fitted, MUST be cleaned and high-level disinfected or sterilized during EVERY reprocessing cycle, even if the channels were not used during the previous patient procedure. Otherwise, insufficient cleaning and disinfection or sterilization of the endoscope may pose an infection control risk to the patient and/or operators performing the next procedure with the endoscope.

## 3.3 Precleaning

**WARNING**

- If the endoscope is not immediately precleaned, residual organic debris will begin to solidify and it may be difficult to effectively reprocess the endoscope.
- Turn the endoscope's illumination OFF immediately after the examination. The temperature at the distal end of an illuminated endoscope may exceed 41°C (106°F) and reach 50°C (122°F) due to intense endoscopic illumination. Surface temperature above 41°C (106°F) may cause burns.

Preclean the endoscope at the bedside in the procedure room immediately after the procedure.

### Equipment needed

Prepare the following equipment:

- Personal protective equipment
- Clean, lint-free cloths
- 500 $cm^3$ (500 ml) container (except for GIF-XTQ160)
- 1000 $cm^3$ (1000 ml) container (for GIF-XTQ160 only)
- Detergent solution
- Clean water
- 30 $cm^3$ (30 ml) syringe
- AW channel cleaning adapter (MH-948)
- Auxiliary water tube (MAJ-855)

## Wipe down the insertion tube

**CAUTION**

Handle the insertion tube carefully. Tightly gripping or sharply bending the insertion tube or bending section can stretch or severely damage the insertion tube and the covering of the bending section.

1. Prepare detergent solution in a 500 $cm^3$ (500 ml) container (except for GIF-XTQ160).
2. Prepare detergent solution in a 1000 $cm^3$ (1000 ml) container (for GIF-XTQ160 only).
3. Wipe the entire insertion tube with a clean, lint-free cloth soaked in detergent solution. Wipe from the boot at the control section toward the distal end.

## Aspirate detergent solution

**CAUTION**

Monitor the suction bottle on the suction pump carefully to ensure that it does not overflow. Otherwise, suction pump damage could result.

1. Turn the suction pump and the light source ON.
2. Immerse the distal end of the insertion tube in detergent solution. Depress the suction valve and aspirate detergent solution into the instrument channel for 30 seconds (see Figure 3.12).
3. Remove the distal end of the insertion tube from the detergent solution. Depress the suction valve and aspirate air for 10 seconds.
4. Turn the suction pump OFF.

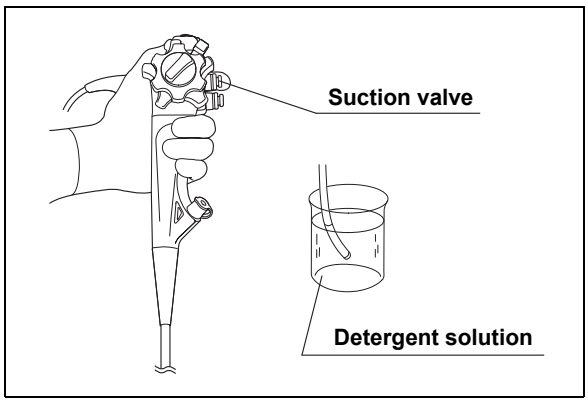



Figure 3.12

## Flush water and air into the air/water channel

**WARNING**

Do not use the AW channel cleaning adapter for patient examinations. It will cause continuous insufflation and could result in patient injury.

**CAUTION**

- To prevent clogging of the air/water nozzle, always use the AW channel cleaning adapter to clean the air/water channel after each use.
- Do not apply lubricants to the AW channel cleaning adapter. Lubricants may cause malfunction of the AW channel cleaning adapter.

1. Prepare clean water in a 500 $cm^3$ (500 ml) container (except for GIF-XTQ160).
2. Prepare clean water in a 1000 $cm^3$ (1000 ml) container (for GIF-XTQ160 only).
3. Switch “OFF” the airflow regulator on the light source.
4. Remove the air/water valve from the endoscope and place it in a container of detergent solution (see Figure 3.13).

NOTE

Water may drip from the air/water cylinder when the air/water valve is detached. The water dripping from the air/water cylinder is clean (i.e., sterile water in the water container). If water is dripping from the air/water cylinder, hold the control section higher than the water container.

5. Attach the AW channel cleaning adapter to the air/water cylinder of the endoscope (see Figure 3.13).

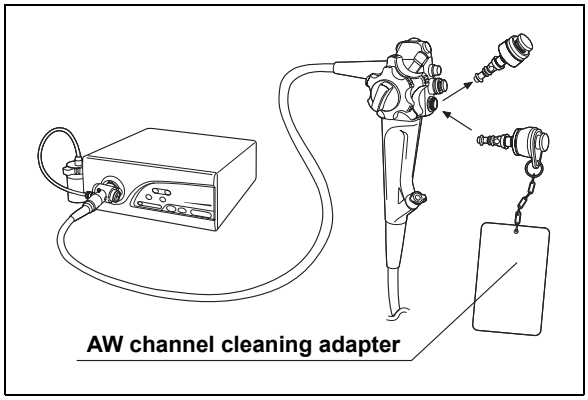



Figure 3.13

6. Switch the airflow regulator to maximum output (“HIGH” or “3”).
7. Immerse the distal end of the insertion tube in the water (see Figure 3.14).
8. Depress the AW channel cleaning adapter to feed water through the channels for 30 seconds. Release the valve to feed air through the channels for 10 seconds or more (see Figure 3.14).

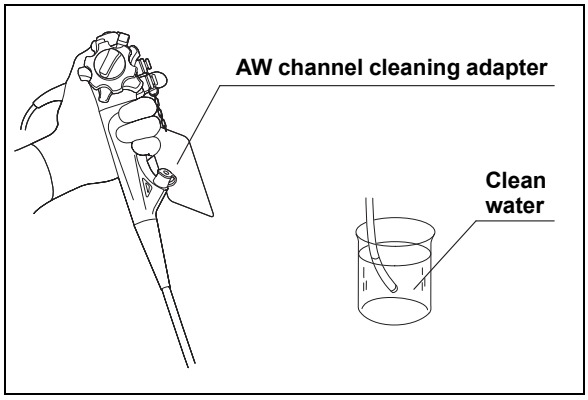



Figure 3.14

9. Turn the light source and EVIS video system center OFF.

## *Flush detergent solution and air into the auxiliary water channel (for endoscopes with auxiliary water feeding only)*

**CAUTION**

- Do not cap the auxiliary water inlet during reprocessing.
- If the auxiliary water tube is not connected to the auxiliary water inlet, uncap the auxiliary water inlet and connect the auxiliary water tube (see Figure 3.15).

NOTE

Prior to reprocessing endoscopes equipped with auxiliary water feeding, attach the auxiliary water inlet cap to the auxiliary water inlet and open the cap (see Figure 3.15).

1. Immerse the distal end of the insertion tube in the water.
2. Using the 30 $cm^3$ (30 ml) syringe, slowly flush detergent solution through the auxiliary water channel several times until no bubbles exit the distal end.
3. Using the 30 $cm^3$ (30 ml) syringe, slowly flush water through the auxiliary water channel several times.
4. Using the 30 $cm^3$ (30 ml) syringe, slowly flush air through the auxiliary water channel several times until a steady stream of bubbles exits the distal end.

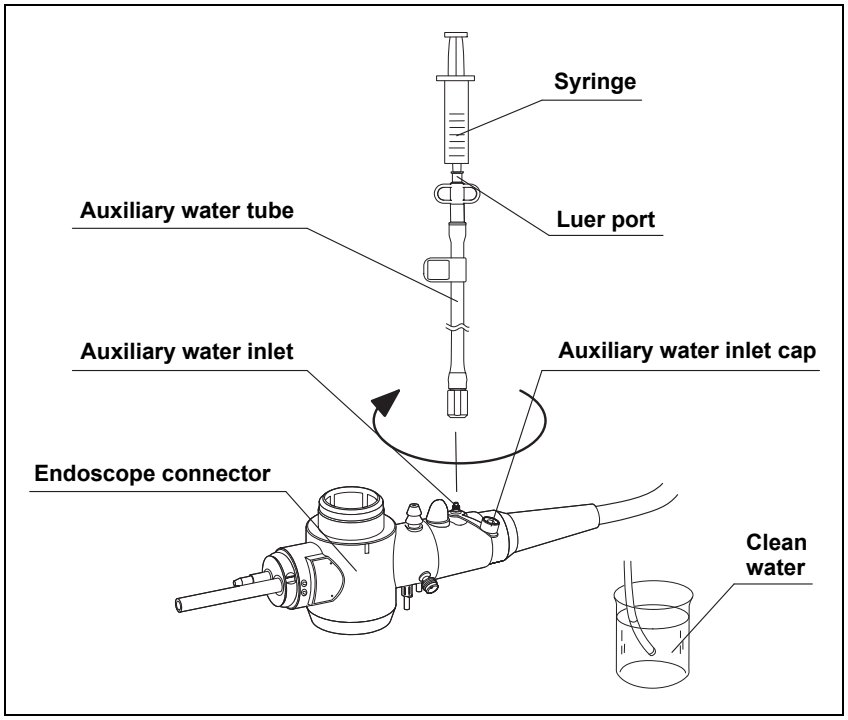



Figure 3.15

## Disconnect the endoscope, reusable parts and cleaning equipment

1. Disconnect the AW channel cleaning adapter, suction valve and biopsy valve from the endoscope and place them in a container of detergent solution. Clean, disinfect and sterilize the items according to the instructions given in Section 3.9, “Cleaning, disinfection and sterilization procedures for reusable parts and reprocessing equipment”.
2. Disconnect the auxiliary water tube from the endoscope and place it in a container of detergent solution. Clean, disinfect and sterilize the items according to the instructions given in Section 3.9, “Cleaning, disinfection and sterilization procedures for reusable parts and reprocessing equipment” (for endoscopes with auxiliary water feeding only).
3. Disconnect the water container’s water supply tube from the air/water supply connector of the endoscope connector.
4. Disconnect the suction tube from the suction connector of the endoscope connector.
5. Disconnect the magnification controller cable from the zoom connector of the endoscope connector (for CF-Q160ZL/I only).
6. While holding the endoscope connector, disconnect the UPD cable from the UPD scope connector of the endoscope connector (for CF-Q160DL/I only).
7. Disconnect the videoscope cable from the endoscope’s electrical connector.
8. Disconnect the endoscope connector from the light source.

**WARNING**

Do not touch the light guide of the endoscope connector immediately after removing it from the light source because it is extremely hot. Operator or patient injury may result.

9. Transport the endoscope and the container holding the other items to the reprocessing area.

# 3.4 Leakage testing

After precleaning, perform leakage testing on the endoscope to ensure that it is waterproof.

## Equipment needed

Prepare the following equipment:

- Personal protective equipment
- Large basin
- Clean water
- Maintenance unit or light source (MU-1 or CLV-160)
- Leakage tester (MB-155)
- Water-resistant cap (see Table 1.1)

## Attach the water-resistant cap (MH-553)

**CAUTION**

- The electrical connector of the endoscope is not waterproof. Before immersing or leakage testing the endoscope, always attach the water-resistant cap.
- If the exterior of the electrical connector is scratched, the connector may no longer be waterproof and the seal inside the water-resistant cap may be scratched. If the electrical connector is scratched, send it immediately to Olympus for repairs.
- Never immerse the water-resistant cap unless it is attached to the endoscope. Water remaining inside the water-resistant cap can be transferred to and damage the electrical connector.

1. Align the OER/ETD/EW character (see Figure 3.16 a), the EW character or KC/TD character (see Figure 3.16 b) on the water-resistant cap with mark 2 on the electrical connector housing.
2. Align the pin on the electrical connector with the groove on the water-resistant cap.
3. Push the water-resistant cap into position and rotate it clockwise until it stops (approximately 45°).

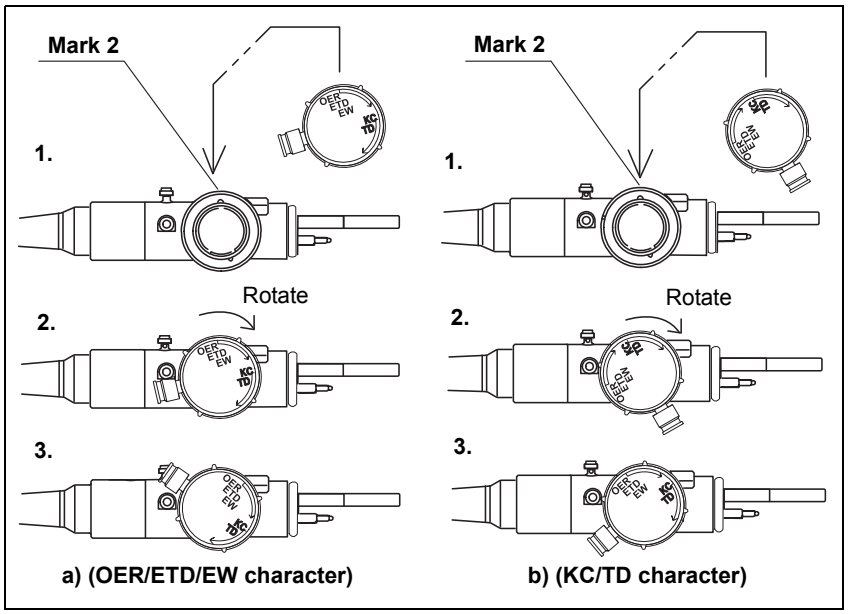



Figure 3.16

## Attach the water-resistant cap (MAJ-583 for CF-Q160ZL/I only)

**CAUTION**

- The zoom connector of the endoscope is not waterproof. Before immersing the endoscope, always attach the water-resistant cap.
- If the seal ring on the zoom connector is scratched, the zoom connector may no longer be waterproof. Send the endoscope immediately to Olympus for repairs.
- Never immerse the water-resistant cap unless it is attached to the endoscope. Water remaining inside the water-resistant cap can be transferred to and damage the zoom connector.

1. Confirm that the seal ring on the zoom connector is not scratched (see Figure 3.17).
2. Push the water-resistant cap straight onto the zoom connector and turn it clockwise (see Figure 3.18 (1) and (2)).
3. Confirm that there is no gap between the zoom connector and the water-resistant cap (see Figure 3.18 (3)).

## Attach the water-resistant cap (MAJ-942 for CF-Q160DL/I only)

**CAUTION**

- The UPD scope connector of the endoscope is not waterproof. Before immersing the endoscope, always attach the water-resistant cap.
- If the seal ring on the UPD scope connector is scratched, the UPD scope connector may no longer be waterproof. Send the endoscope immediately to Olympus for repairs.
- Never immerse the water-resistant cap unless it is attached to the endoscope. Water remaining inside the water-resistant cap can be transferred to and damage the UPD scope connector.

1. Confirm that the seal ring on the UPD scope connector is not scratched (see Figure 3.17).
2. Push the water-resistant cap straight onto the UPD scope connector and turn it clockwise (see Figure 3.18 (1) and (2)).
3. Confirm that there is no gap between the UPD scope connector and the water-resistant cap (see Figure 3.18 (3)).

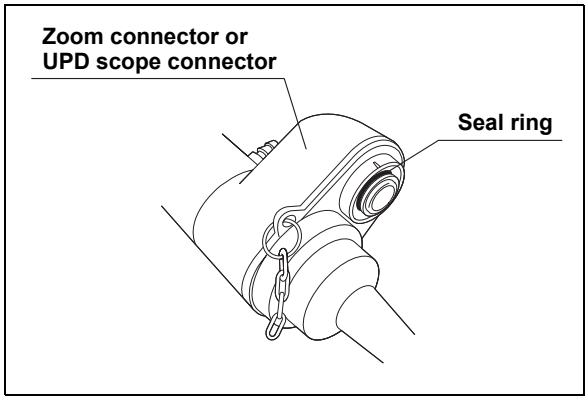



Figure 3.17

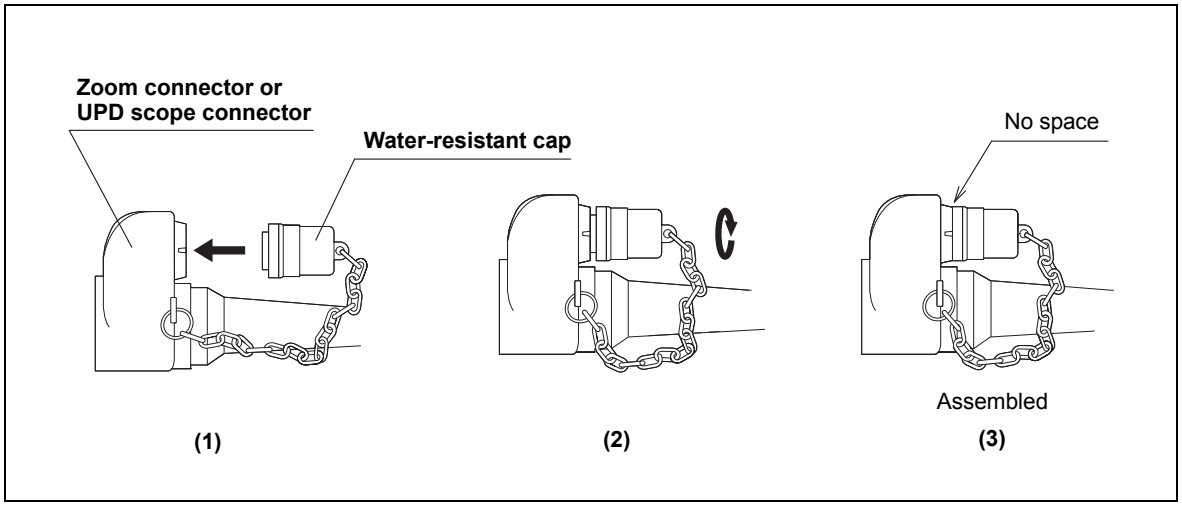



Figure 3.18

## Performing the leakage test

**CAUTION**

- During leakage testing, a continuous series of bubbles emerging from a location on the endoscope indicates a leak at that location. This means that water will be able to penetrate the inside of the endoscope. If you locate a leak, remove the endoscope from the water and contact Olympus.
- Never connect or disconnect the water-resistant cap(s) or the leakage tester's connector cap while immersed. Doing so could allow water to enter the endoscope and equipment damage can result.
- Rotate the leakage tester's connector cap until it stops. If it is not fully and properly attached, the endoscope's interior will not be pressurized and accurate leakage testing will be impossible.
- When attaching the leakage tester's connector cap to the water-resistant cap's venting connector, make sure that the inside of the leakage tester's connector cap and the outside of the water-resistant cap's venting connector are thoroughly dry. Water remaining on either component may penetrate the inside of the water-resistant cap (MH-553) and could cause endoscope malfunction.
- Detaching the leakage tester's connector cap from the venting connector while the leakage tester is still connected to the light source will not allow the endoscope to depressurize properly. This may damage the endoscope.

NOTE

When the leakage tester connector is in place, the covering of the bending section will expand as the air pressure inside the endoscope increases. This is normal.

1. Fill a basin with clean water. Use a basin which is at least 40 cm by 40 cm (16" by 16") in size and deep enough to allow the endoscope to be completely immersed.
2. Insert the leakage tester connector into the output socket of the maintenance unit or the light source and turn the maintenance unit or the light source ON. Set the light source's airflow regulator switch to "HIGH" or "3".
3. Confirm that the leakage tester is emitting air by gently depressing the pin located inside the leakage tester's connector cap.

4. Connect the leakage tester's connector cap to the venting connector of the water-resistant cap (MH-553) (see Figures 3.19 or 3.20).

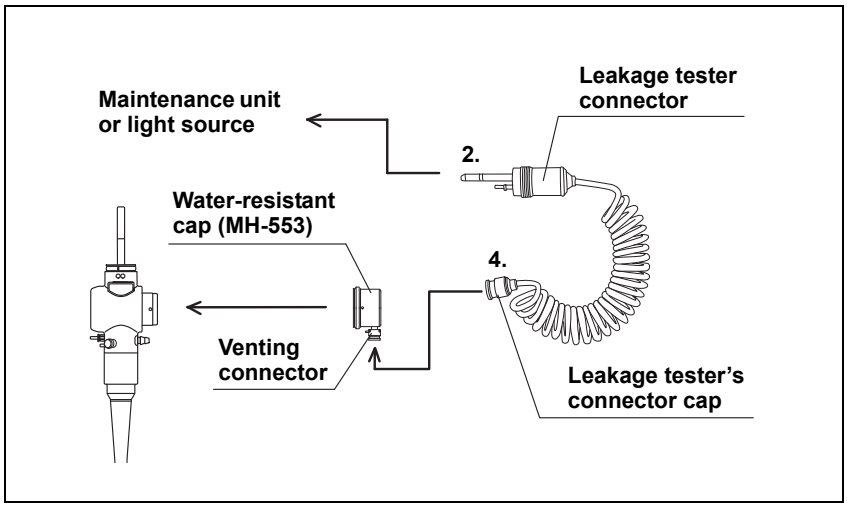



Figure 3.19

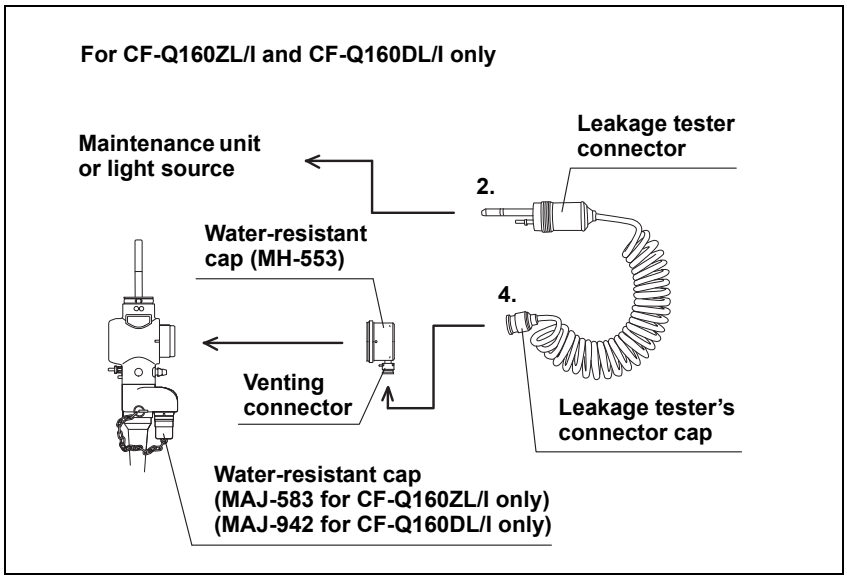



Figure 3.20

5. With the leakage tester connected, immerse the endoscope in water and observe for approximately 30 seconds while angulating the bending section. Confirm that there is no location on the endoscope from which a continuous series of bubbles emerges.

6. Remove the endoscope from the basin with the leakage tester attached.

7. Turn the maintenance unit or the light source OFF.

8. Disconnect the leakage tester from the maintenance unit or the light source.

9. Wait 30 seconds, or until the covering of the bending section contracts to its pre-expansion size. Disconnect the leakage tester's connector cap from the venting connector.
10. Thoroughly dry the leakage tester.

## 3.5 Manual cleaning

After completing the leakage test, perform manual cleaning according to the procedures described below.

### Equipment needed

Prepare the following equipment:

- Personal protective equipment
- Soft brush
- Clean, lint-free cloths
- Large basins
- Detergent solution
- Clean water
- Suction pump
- 30 $cm^3$ (30 ml) syringe
- Suction cleaning adapter (MH-856)
- Channel plug (MH-944)
- Injection tube (MH-946)
- Channel cleaning brush (BW-20T)
- Channel cleaning brush (BW-17K for GIF-XTQ160 only)
- Channel-opening cleaning brush (MH-507)
- Auxiliary water tube (MAJ-855 for endoscopes with auxiliary water feeding only)

**CAUTION**

To prevent damage to the endoscope, never immerse it together with objects other than the reprocessing accessories.

## Cleaning the external surface

1. Fill a basin with water and detergent solution at the temperature and concentration recommended by the detergent manufacturer. Use a basin which is at least 40 cm by 40 cm (16” by 16”) in size and deep enough to allow the endoscope to be completely immersed.
2. Immerse the endoscope in the detergent solution.
3. With the endoscope immersed, use a soft brush or lint-free cloth to thoroughly brush or wipe all external surfaces of the endoscope. Pay particular attention to the air/water nozzle opening and ensure that all surfaces of the distal end are cleaned thoroughly (see Figure 3.21).

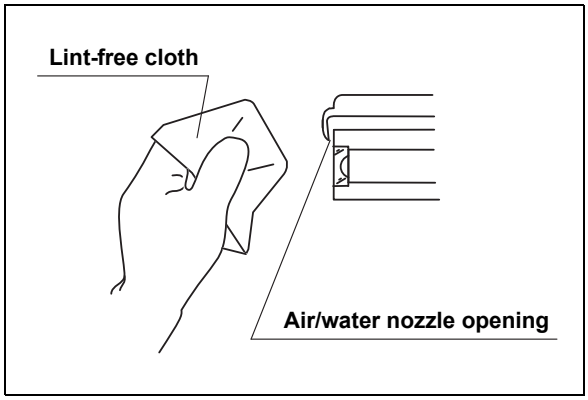



Figure 3.21

## Brushing the channels

**WARNING**

- To avoid splattering detergent solution when the channel cleaning brush is pulled out, keep the endoscope submerged.
- The channel cleaning brush is a consumable item that is subject to wear. If the brush head is bent or kinked during use, the brush may come off. Confirm that the brush is free from any damages or irregularities before and after each use. Should a part of the brush head come off, immediately retrieve it and carefully confirm that no parts are left inside the channel of the endoscope by passing a new cleaning brush or other endo-therapy accessories through it. Any part left in the channel, may drop into the patient during the procedure. Depending on the location, the missing part may not be recoverable by passing a new brush or other endo-therapy accessory through the channel. In this case, contact Olympus.

**CAUTION**

Withdraw the channel cleaning brush from the suction channel gently, ensuring its shaft does not rub against the external opening of the suction cylinder, as this may damage the brush and may wear a groove in the opening, leading to impaired suction and liquid leakage.

While the endoscope is submerged, brush the instrument and suction channels, suction cylinder and instrument channel port according to the following procedures (see Figure 3.22).

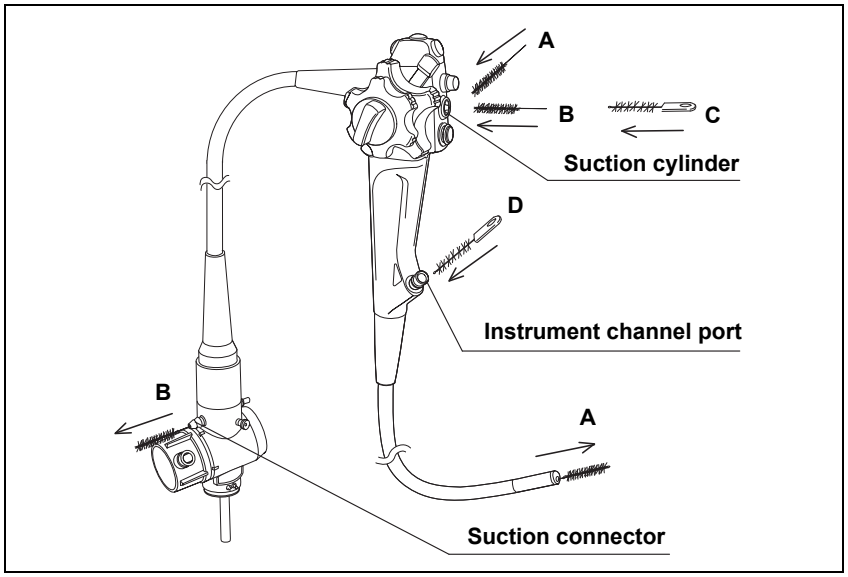



Figure 3.22

**CAUTION**

Use the channel cleaning brush (BW-17K) to brush the instrument channel of the GIF-XTQ160. If the BW-17K is not used on this endoscope, effective cleaning of the instrument channel will not be possible.

### ❍ Brushing the instrument/suction channel in the insertion tube (location A) (except for GIF-XTQ160)

1. Straighten the endoscope's bending section. Grip the channel cleaning brush (BW-20T) at a point 3 cm from the bristles.
2. Insert the channel cleaning brush (BW-20T) at a 45° angle into the opening located in the side wall of the suction cylinder as illustrated by A in Figure 3.22. Using short strokes, feed the brush through the insertion tube until it emerges from the distal end of the endoscope.
3. Clean the bristles with your fingertips in the detergent solution. Carefully pull the brush out through the channel.
4. Clean the bristles in the detergent solution again.
5. Repeat until all debris is removed.

### ❍ Brushing the instrument/suction channel in the insertion tube (location A) (for GIF-XTQ160 only)

**CAUTION**

Use the channel cleaning brush (BW-17K) to brush the instrument channel of the GIF-XTQ160. If the BW-17K is not used on this endoscope, effective cleaning of the instrument channel will not be possible.

1. Straighten the endoscope's bending section. Grip the channel cleaning brush (BW-17K) at a point 3 cm from the bristles.
2. Insert the channel cleaning brush (BW-17K) at a 45° angle into the opening located in the side wall of the suction cylinder as illustrated by A in Figure 3.22. Using short strokes, feed the brush through the insertion tube until it emerges from the distal end of the endoscope.
3. Clean the bristles with your fingertips in the detergent solution. Carefully pull the brush out through the channel.
4. Clean the bristles in the detergent solution again.
5. Repeat until all debris is removed.

### ❍ Brushing the suction channel in the universal cord (location B)

**CAUTION**

Use the channel cleaning brush (BW-20T) to brush the suction channel in the universal cord. If the BW-20T is not used on this endoscope, effective cleaning of the suction channel will not be possible.

1. Grip the channel cleaning brush (BW-20T) at a point 3 cm from the bristles.
2. Insert the channel cleaning brush (BW-20T) straight into the opening of the suction cylinder as illustrated by B in Figure 3.22. Using short strokes, feed the brush through the universal cord until it emerges from the suction connector on the endoscope connector.
3. Clean the bristles with your fingertips in the detergent solution. Carefully pull the brush out through the channel.
4. Clean the bristles in the detergent solution again.
5. Repeat until all debris is removed.

### ❍ Brushing the suction cylinder (location C)

**CAUTION**

When inserting the channel-opening cleaning brush into the suction cylinder, do not forcibly insert the brush beyond the middle of the brush section. Otherwise, the brush may become stuck in the suction cylinder.

1. Insert the channel-opening cleaning brush into the suction cylinder as illustrated by C in Figure 3.22, until half of the brush section is inserted.
2. Turn the inserted brush once.
3. Pull the brush out and clean the bristles in the detergent solution.
4. Repeat until all debris is removed.

### ❍ Brushing the instrument channel port (location D)

1. Insert the channel-opening cleaning brush into the instrument channel port until the brush handle touches the channel opening as illustrated by D in Figure 3.22.
2. Turn the inserted brush once.
3. Pull the brush out and clean the bristles in the detergent solution.
4. Repeat until all debris is removed.
5. Reprocess the cleaning brushes (BW-17K, BW-20T and MH-507) as described in Section 3.9, “Cleaning, disinfection and sterilization procedures for reusable parts and reprocessing equipment”.

## *Aspirating detergent solution into the suction channels*

1. Attach the suction cleaning adapter to the instrument channel port (see Figures 3.23 and 3.24).
2. Connect the suction tube from the suction pump to the suction connector on the endoscope connector. Turn the suction pump ON.
3. Immerse both the endoscope’s distal end and the weighted end of the suction cleaning adapter in the detergent solution.
4. Cover the suction cylinder with your finger and aspirate detergent solution for approximately 30 seconds.
5. Turn the suction pump OFF.
6. Disconnect the suction tube and the suction cleaning adapter.

7. Reprocess the suction cleaning adapter as described in Section 3.9, “Cleaning, disinfection and sterilization procedures for reusable parts and reprocessing equipment”.

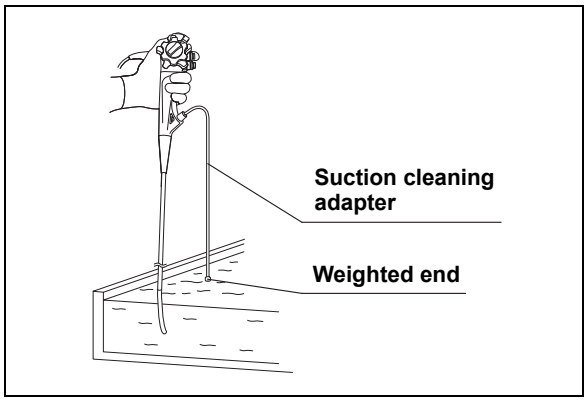



Figure 3.23

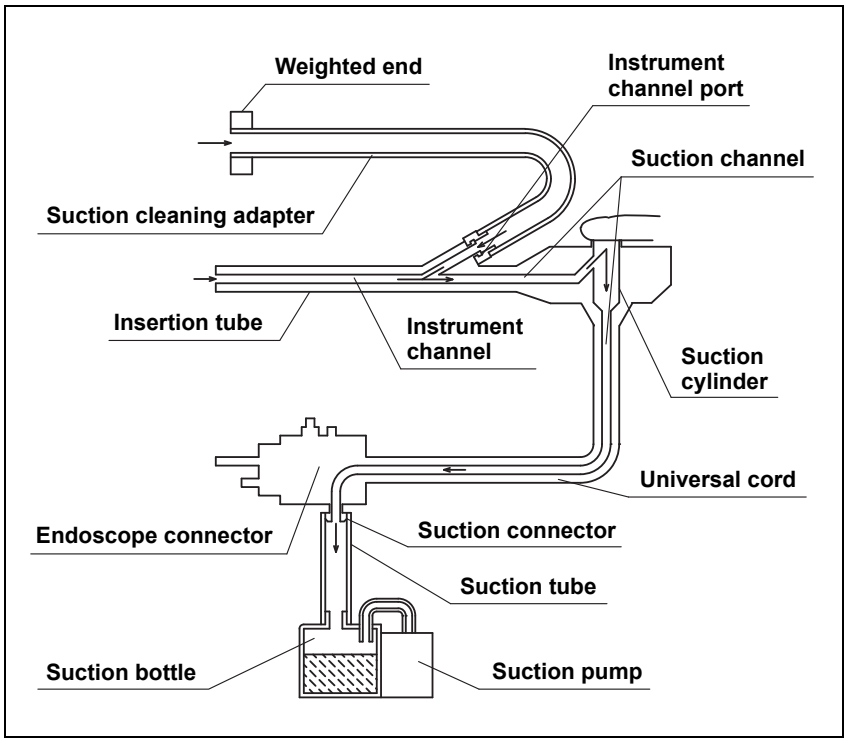



Figure 3.24

## *Flushing detergent solution into the air/water channels*

1. Attach the channel plug's biopsy valve cap to the instrument channel port (see Figure 3.25).
2. Lower the channel plug's cylinder plug onto the air/water and suction cylinders and slide the plug until it stops (see Figure 3.25).

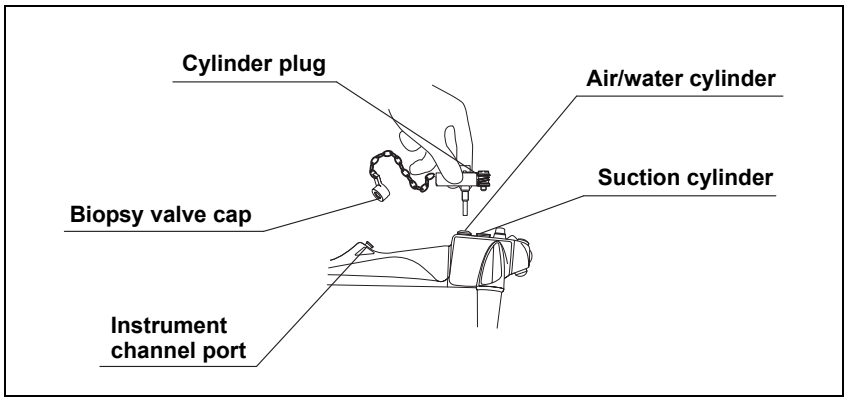



Figure 3.25

3. Attach the injection tube's connector plug to the air and water supply connectors on the endoscope connector (see Figure 3.26).
4. Attach the injection tube's air pipe port to the air pipe on the endoscope connector (see Figure 3.26).
5. Attach the injection tube's suction channel tube to the suction connector on the endoscope connector (see Figure 3.26).
6. Immerse the suction port of the injection tube in the detergent solution.

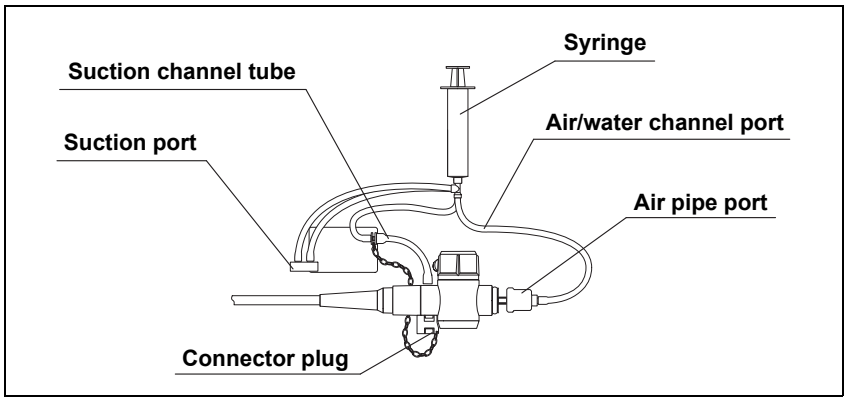



Figure 3.26

7. Attach the 30 $cm^3$ (30 ml) syringe to the injection tube's air/water channel port (see Figure 3.27).
8. Inject 90 $cm^3$ (90 ml) of detergent solution into the air/water channel.
9. Disconnect the channel plug and injection tube from the endoscope, and leave all items immersed.

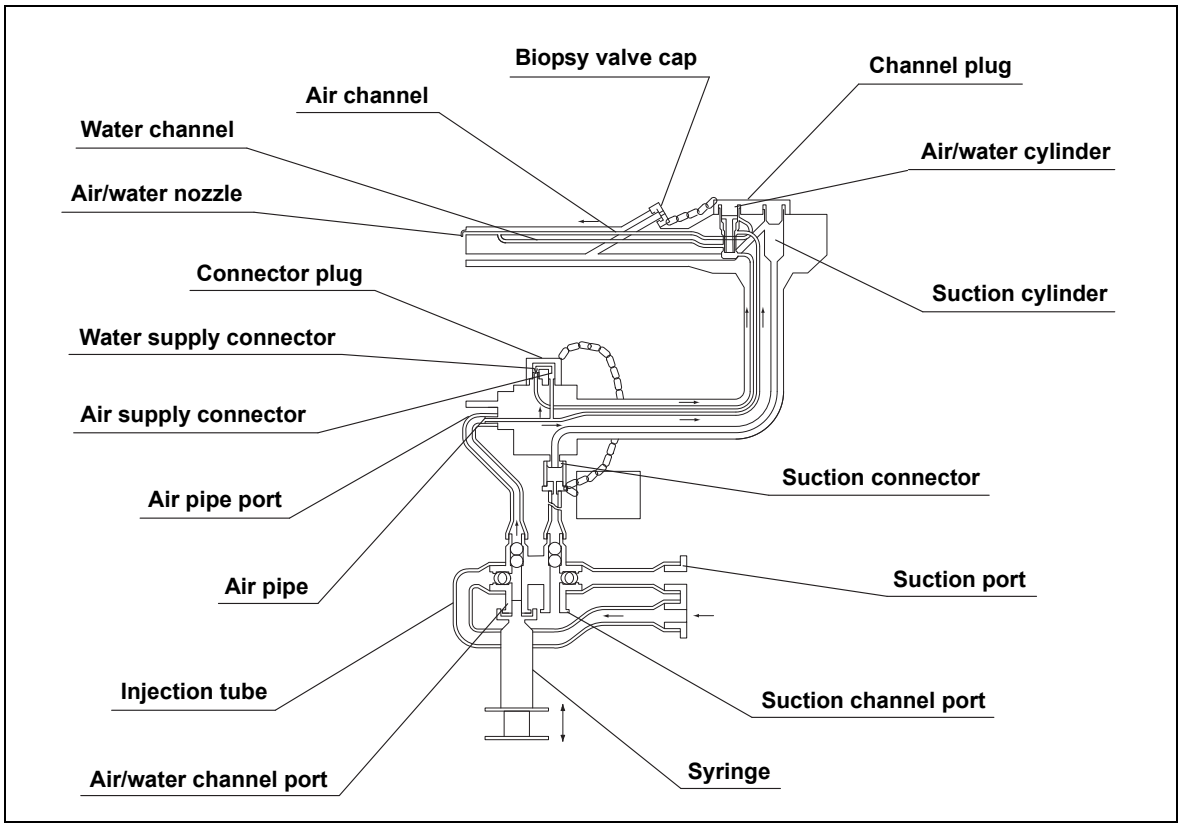



Figure 3.27

## *Flushing detergent solution into the auxiliary water channel (for endoscopes with auxiliary water feeding only)*

Using the auxiliary water tube and 30 $cm^3$ (30 ml) syringe, inject detergent solution into the auxiliary water channel.

1. Attach the auxiliary water tube to the auxiliary water inlet (see Figures 3.28 and 3.29).
2. Using the 30 $cm^3$ (30 ml) syringe, inject 90 $cm^3$ (90 ml) of detergent solution.
3. Disconnect the auxiliary water tube from the endoscope and immerse it in detergent solution.

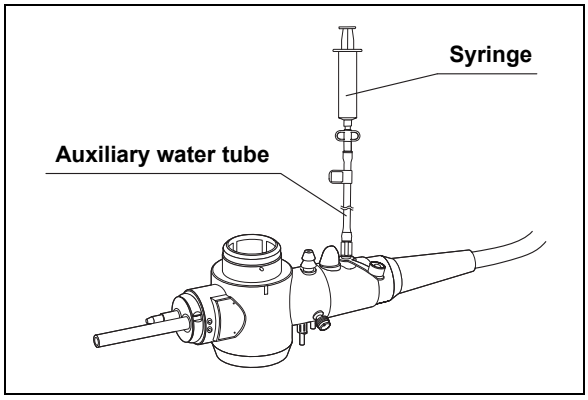



Figure 3.28

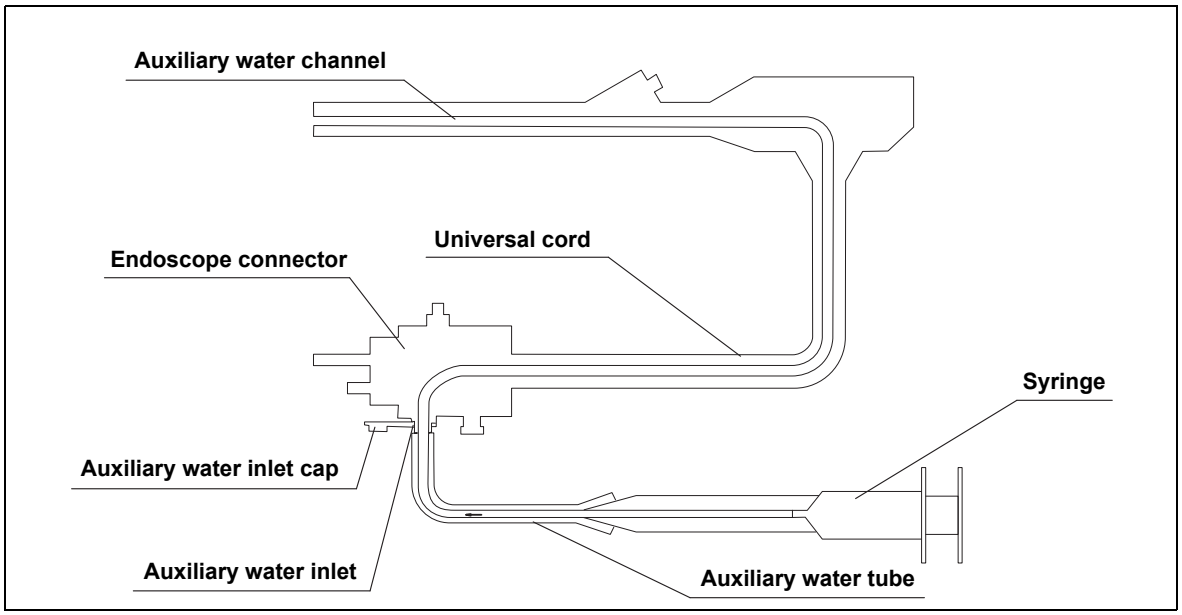



Figure 3.29

## Soaking the endoscope and all equipment in detergent solution

1. Using a clean, lint-free cloth, wipe all debris from the endoscope's external surfaces while the endoscope is immersed in the detergent solution.
2. Cover the basin with a tight fitting lid to minimize the release of detergent vapors.
3. Soak the endoscope and all equipment for the amount of time and at the temperature recommended by the detergent manufacturer.

## Removing and rinsing the endoscope and all equipment

1. Remove the endoscope and all equipment from the detergent solution and place them in clean water.
2. Gently agitate them to thoroughly rinse.

## Removing detergent solution from all channels

1. Connect the channel plug and the injection tube to the endoscope. Place the suction port in clean water.
2. Attach the 30 $cm^3$ (30 ml) syringe to the injection tube's air/water channel port and inject 90 $cm^3$ (90 ml) of clean water into the air/water channel (see Figure 3.27).
3. Attach the 30 $cm^3$ (30 ml) syringe to the suction channel port and inject 90 $cm^3$ (90 ml) of clean water into the suction channel (see Figure 3.30).
4. Attach the auxiliary water tube to the auxiliary water inlet (for endoscopes with auxiliary water feeding only).
5. Attach the 30 $cm^3$ (30 ml) syringe to the luer port of the auxiliary water tube and inject 90 $cm^3$ (90 ml) of clean water to the auxiliary water channel (for endoscopes with auxiliary water feeding only).
6. Remove the endoscope, together with all equipment, from the water.
7. Attach the 30 $cm^3$ (30 ml) syringe to the suction channel port and flush the suction channel with 90 $cm^3$ (90 ml) of air (see Figure 3.30).
8. Attach the 30 $cm^3$ (30 ml) syringe to the injection tube's air/water channel port and flush the air/water channel with 90 $cm^3$ (90 ml) of air (see Figure 3.27).
9. Attach the 30 $cm^3$ (30 ml) syringe to the luer port of the auxiliary water tube and flush the auxiliary water channel with 90 $cm^3$ (90 ml) of air (for endoscopes with auxiliary water feeding only).

10. Detach the channel plug and injection tube from the endoscope.
11. Detach the auxiliary water tube from the endoscope (for endoscopes with auxiliary water feeding only).

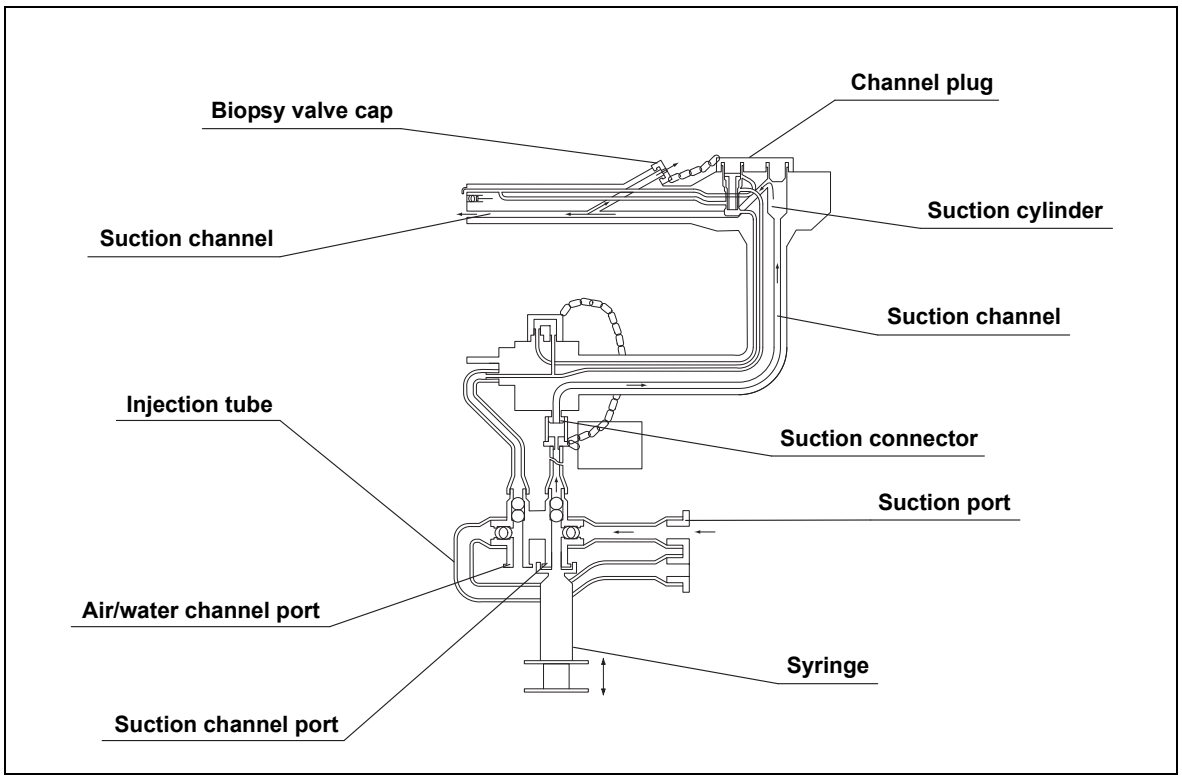



Figure 3.30

## Dry external surfaces

1. Using a clean, lint-free cloth, thoroughly wipe and dry the external surfaces of the endoscope, channel plug and injection tube.
2. Inspect the endoscope for residual debris. Should debris remain, repeat the procedures given in this section.

## *Presoak for excessive bleeding and/or delayed reprocessing*

**CAUTION**

Follow the steps below only in case of excessive bleeding and/or delayed reprocessing; unnecessary immersions should be avoided. Consecutive extended immersions may damage the endoscope.

Preclean and perform a leakage test on the endoscope as described in Section 3.3, “Precleaning” and Section 3.4, “Leakage testing”.

1. Fill a basin with detergent solution at the temperature and concentration recommended by the detergent manufacturer. Use a basin which is at least 40 cm by 40 cm (16” by 16”) in size and deep enough to allow the endoscope to be completely immersed.
2. Carefully coil the endoscope’s insertion tube and universal cord, and completely immerse the endoscope in the detergent solution.

**CAUTION**

Do not coil the insertion tube or universal cord with a diameter of less than 12 cm. Equipment damage can result.

3. Fill all the channels with the detergent solution following the procedures described in this section.
4. Soak the endoscope for 10 hours at the temperature recommended by the detergent manufacturer.
5. Remove the endoscope from the detergent solution.
6. After soaking the endoscope, manually clean it following the procedures described in this section, then disinfect or sterilize the endoscope following the procedures described in Section 3.6, “High-level disinfection” or Section 3.8, “Sterilization”.

# 3.6 High-level disinfection

After manual cleaning, disinfect the endoscope according to the procedures described below.

## Equipment needed

Prepare the following equipment:

- Personal protective equipment
- Clean, lint-free cloths
- Large basin
- Disinfectant solution
- Channel plug (MH-944)
- Injection tube (MH-946)
- Auxiliary water tube (MAJ-855 for endoscopes with auxiliary water feeding only)

**WARNING**

All disinfection steps should be performed with the endoscope and all equipment completely immersed. While they are immersed, if the equipment is connected to the endoscope or any part of them is not immersed completely, disinfectant solution may not adequately contact all surfaces of the equipment.

## Preparation

1. Fill a basin with disinfectant solution at the temperature and concentration recommended by the disinfectant manufacturer. Use a basin which is at least 40 cm by 40 cm (16” by 16”) in size and deep enough to allow the endoscope to be completely immersed.
2. Connect the channel plug and the injection tube to the endoscope.
3. Attach the auxiliary water tube to the auxiliary water inlet (for endoscopes with auxiliary water feeding only).

## Flushing disinfectant solution into all channels

1. Immerse the endoscope and all equipment in the disinfectant solution.
2. Using the 30 $cm^3$ (30 ml) syringe, flush at least 90 $cm^3$ (90 ml) of disinfectant solution through the air/water and suction channels respectively. Confirm that no bubbles exit the distal end of the endoscope.
3. Using the 30 $cm^3$ (30 ml) syringe, flush at least 90 $cm^3$ (90 ml) of disinfectant solution through the auxiliary water channel. Confirm that no bubbles exit the distal end of the endoscope (for endoscopes with auxiliary water feeding only).
4. With the endoscope, channel plug, injection tube and auxiliary water tube completely immersed in the disinfectant solution, disconnect all equipment from the endoscope. Leave the endoscope and all equipment immersed in the disinfectant solution.

## Soaking the endoscope and all equipment in disinfectant solution

1. If air bubbles adhere to the surfaces of the endoscope, channel plug, injection tube or the auxiliary water tube, remove them using a clean, lint-free cloth.
2. Cover the basin with a tight fitting lid to minimize the release of disinfectant vapors.
3. Soak the endoscope and all equipment in disinfectant solution for the amount of time and at the temperature recommended by the disinfectant manufacturer.

## Removing the endoscope and all equipment from disinfectant solution

1. Before removing the endoscope from the disinfectant solution, connect the channel plug and injection tube to the endoscope.
2. Before removing the endoscope from the disinfectant solution, attach the auxiliary water tube to the endoscope (for endoscopes with auxiliary water feeding only).
3. Remove the injection tube's suction port from the disinfectant solution.
4. Attach the 30 $cm^3$ (30 ml) syringe to the injection tube's air/water channel port and flush the air/water channel with 90 $cm^3$ (90 ml) of air.
5. Attach the 30 $cm^3$ (30 ml) syringe to the injection tube's suction channel port and flush the suction channel with 90 $cm^3$ (90 ml) of air.

6. Attach the 30 $cm^3$ (30 ml) syringe to the luer port of the auxiliary water tube and flush the auxiliary water channel with 90 $cm^3$ (90 ml) of air (for endoscopes with auxiliary water feeding only).
7. Remove the endoscope and all equipment from the disinfectant solution.
8. Disconnect all equipment from the endoscope.

## 3.7 Rinsing after high-level disinfection

**WARNING**

After reprocessing, purge the channels of the endoscope to thoroughly dry them. Otherwise, bacteria may proliferate in the channels and pose an infection-control risk to the patient and/or operators performing the next procedure with the endoscope.

After high-level disinfection, rinse the endoscope according to the procedures described below.
Use water of appropriate microbiological quality. Once removed from disinfectant solution, the instrument must be thoroughly rinsed with sterile water to remove any disinfectant residue. If sterile water is not available, fresh potable tap water or water which has been processed (e.g. filtered) to improve its microbiological quality may be used with 70% ethyl or isopropyl alcohol rinse (see “Non-sterile water rinse and alcohol flush” on page 55). Consult with your hospital’s infection control committee.

## Equipment needed

Prepare the following equipment:

- Personal protective equipment
- Sterile, lint-free cloths
- Large basin
- Sterile water (for sterile water rinse)
- Suction pump (with sterile suction tube)
- 30 $cm^3$ (30 ml) syringe
- Sterile cotton swabs
- 70% ethyl or isopropyl alcohol
- Channel plug (MH-944)
- Injection tube (MH-946)
- Auxiliary water tube (MAJ-855 for endoscopes with auxiliary water feeding only)
- Clean water (for non-sterile water rinse)
- Small container

## Sterile water rinse

1. Fill a basin with sterile water. Use a basin which is at least 40 cm by 40 cm (16” by 16”) in size and deep enough to allow the endoscope to be completely immersed.
2. Immerse the endoscope, channel plug and injection tube in the sterile water. Using a sterile, lint-free cloth, thoroughly rinse and wipe all external surfaces.
3. Immerse the auxiliary water tube in the sterile water. Using a sterile, lint-free cloth, thoroughly rinse and wipe all external surfaces (for endoscopes with auxiliary water feeding only).
4. Connect the channel plug and the injection tube to the endoscope. Place the suction port in sterile water.
5. Attach the 30 $cm^3$ (30 ml) syringe to the injection tube’s air/water channel port and inject 90 $cm^3$ (90 ml) of sterile water into the air/water channel.
6. Attach the 30 $cm^3$ (30 ml) syringe to the suction channel port and inject 90 $cm^3$ (90 ml) of sterile water into the suction channel.
7. Attach the auxiliary water tube to the auxiliary water inlet (for endoscopes with auxiliary water feeding only).
8. Using the 30 $cm^3$ (30 ml) syringe, inject 90 $cm^3$ (90 ml) of sterile water into the auxiliary water channel (for endoscopes with auxiliary water feeding only).
9. Remove the endoscope, together with all equipment, from the water.
10. Using the 30 $cm^3$ (30 ml) syringe, flush the air/water and suction channels with 90 $cm^3$ (90 ml) of air.
11. Using the 30 $cm^3$ (30 ml) syringe, flush the auxiliary water channel with 90 $cm^3$ (90 ml) of air (for endoscopes with auxiliary water feeding only).
12. Disconnect the injection tube only. Connect a sterile suction tube from the suction pump to the suction connector on the endoscope. Turn the suction pump ON and aspirate air for at least 15 seconds.
13. Turn the suction pump OFF and disconnect all equipment from the endoscope.
14. Using a sterile, lint-free cloth, thoroughly wipe and dry the external surfaces of the endoscope and all equipment.

NOTE

Flushing the channels with 70% ethyl or isopropyl alcohol after rinsing them with sterile water facilitates drying inside the channels.

### ❍ Non-sterile water rinse and alcohol flush

**CAUTION**

Alcohol is flammable. Handle with care.

1. Fill a small container with 70% ethyl or isopropyl alcohol.
2. Inject non-sterile water and air following the procedures given in “Sterile water rinse” on page 54.
3. Immerse the suction port of the injection tube in the alcohol. Using the 30 $cm^3$ (30 ml) syringe, flush the air/water and suction channels with 90 $cm^3$ (90 ml) of the alcohol respectively.
4. Remove the suction port of the injection tube from the alcohol. Flush the air/water and the suction channels with 90 $cm^3$ (90 ml) of air.
5. Using the 30 $cm^3$ (30 ml) syringe, flush the auxiliary water channel with 90 $cm^3$ (90 ml) of the alcohol (for endoscopes with auxiliary water feeding only).
6. Using the 30 $cm^3$ (30 ml) syringe, flush the auxiliary water channel with 90 $cm^3$ (90 ml) of air (for endoscopes with auxiliary water feeding only).
7. Disconnect all equipment from the endoscope.
8. Remove all equipment and the endoscope from the basin.
9. Using a sterile, lint-free cloth, thoroughly wipe and dry the external surfaces of the endoscope and all equipment.
10. Using a sterile, lint-free cloth moistened with alcohol, thoroughly wipe the external surfaces of the endoscope and all equipment.
11. Connect the channel plug and injection tube to the endoscope. Using the 30 $cm^3$ (30 ml) syringe, flush the air/water channel with 90 $cm^3$ (90 ml) of air.
12. Connect the auxiliary water tube to the endoscope. Using the 30 $cm^3$ (30 ml) syringe, flush the auxiliary water channel with 90 $cm^3$ (90 ml) of air (for endoscopes with auxiliary water feeding only).
13. Disconnect the injection tube only. Connect a clean suction tube from the suction pump to the suction connector on the endoscope and aspirate air for 15 seconds.

14. Disconnect all equipment from the endoscope.
15. Using sterile cotton swabs, dry the inside of the air/water cylinder, suction cylinder and instrument channel port.

# 3.8 Sterilization

## ETO gas sterilization

As an alternative to high-level disinfection, the endoscope can be sterilized by ethylene oxide (ETO) gas. After performing manual cleaning and drying as described in Section 3.3, “Precleaning” and Section 3.5, “Manual cleaning”, follow the procedures given below.

**WARNING**

Exceeding the recommended parameters may cause equipment damage.

**CAUTION**

If ETO gas sterilization is performed while the water-resistant cap is attached, the covering of the bending section can be damaged.

1. Remove the water-resistant cap (MH-553) before ETO gas sterilization (see Figure 3.31).
2. Remove the water-resistant cap (MAJ-583) before ETO gas sterilization (see Figure 3.32, for CF-Q160ZL/I only).
3. Remove the water-resistant cap (MAJ-942) before ETO gas sterilization (see Figure 3.32, for CF-Q160DL/I only).

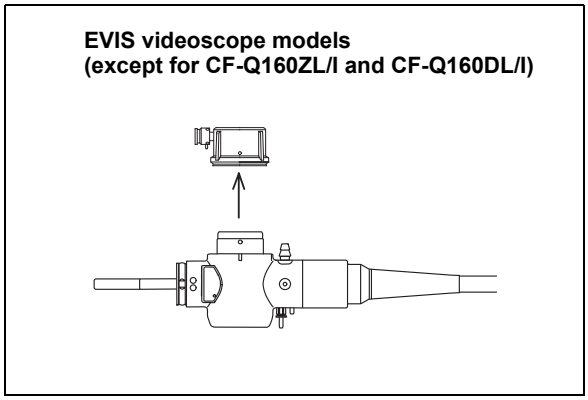



Figure 3.31

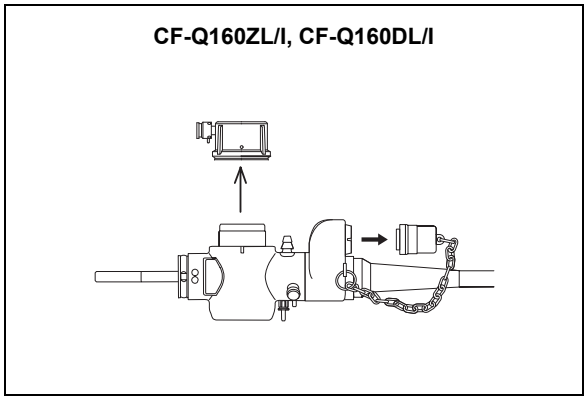



Figure 3.32

4. Seal the instrument in a package appropriate for ETO gas sterilization according to your hospital's protocol.
5. Sterilize the package according to the recommended ETO gas exposure parameters described in Section 2.5, "ETO gas sterilization" and the sterilizer manufacturer's instructions.
6. Aerate the components following the minimum aeration parameters specified in Section 2.5, "ETO gas sterilization".
7. Store the components following the instructions given in Chapter 5, "Storage and Disposal".

# 3.9 Cleaning, disinfection and sterilization procedures for reusable parts and reprocessing equipment

This section includes the cleaning, disinfection and sterilization procedures for the reusable parts and reprocessing equipment listed below. For all other parts, refer to their respective instruction manuals. For compatible reprocessing methods, refer to Section 2.1, “Compatibility summary”.

## Equipment needed

- Personal protective equipment
- Soft brush
- Large basin
- Detergent solution
- Clean water (for non-sterile water rinse)
- Clean, lint-free cloths
- Disinfectant solution
- Sterile water (for sterile water rinse)
- Sterile, lint-free cloths
- Small container
- 70% ethyl or isopropyl alcohol
- 30 $cm^3$ (30 ml) syringe

### ❍ Reusable parts which are normally reprocessed with the endoscope

| | |
|---|---|
| • Channel plug | (MH-944) |
| • Injection tube | (MH-946) |
| • Water-resistant cap | (see Table 1.1) |

### ❍ Reusable parts which are normally reprocessed separately from the endoscope

| | |
|---|---|
| • Air/water valve | (MH-438) |
| • Suction valve | (MH-443) |
| • Biopsy valve | (MB-358) |
| • Mouthpiece | (MA-474, MB-142) |
| • AW channel cleaning adapter | (MH-948) |
| • Suction cleaning adapter | (MH-856) |
| • Channel cleaning brush | (BW-20T) |
| • Channel cleaning brush | (BW-17K for GIF-XTQ160 only) |
| • Channel-opening cleaning brush | (MH-507) |
| • Auxiliary water tube | (MAJ-855 for endoscopes with auxiliary water feeding only) |

## *Manual cleaning*

**CAUTION**

- Make sure that the items immersed in detergent solution do not contact one another.
- Make sure not to scratch the seals on the air/water valve and AW channel cleaning adapter with brushes, etc.

1. Fill a basin with clean water and low-foaming detergent solution at the temperature and concentration recommended by the detergent manufacturer. Use a basin which is deep enough to allow all equipment to be completely immersed.
2. Immerse all equipment in the detergent solution. For the biopsy valve, remove the cap from the body. Using a clean, soft brush or lint-free cloth, meticulously clean all external surfaces in detergent solution.
3. Clean the bristles of the channel cleaning brushes thoroughly while the brushes are immersed.
4. While immersed, depress and release the pistons of the air/water valve, suction valve and AW channel cleaning adapter.
5. Using the channel cleaning brush, thoroughly brush the openings of the suction valve, air/water valve and biopsy valve until no debris can be seen. Clean the bristles of the brush while it is immersed in the detergent solution.
6. To clean the suction cleaning adapter, attach the 30 $cm^3$ (30 ml) syringe and flush the tube thoroughly with detergent solution.

7. To clean the auxiliary water tube, attach the 30 $cm^3$ (30 ml) syringe to the luer port of the auxiliary water tube and flush the tube thoroughly with detergent solution (for endoscopes with auxiliary water feeding only).
8. Soak all equipment for the amount of time and at the temperature recommended by the detergent manufacturer.
9. Remove all equipment from the detergent solution and place it in clean water.
10. Inspect all equipment. If debris remains, ultrasonically clean at 38 – 47 kHz for 5 minutes.
11. While immersed, depress and release the pistons of the air/water valve, suction valve and AW channel cleaning adapter.
12. Attach the 30 $cm^3$ (30 ml) syringe to the suction cleaning adapter and flush the tube with clean water.
13. Attach the 30 $cm^3$ (30 ml) syringe to the luer port of the auxiliary water tube and flush the tube with water (for endoscopes with auxiliary water feeding only).
14. Remove all equipment from the clean water.
15. Attach the 30 $cm^3$ (30 ml) syringe to the suction cleaning adapter and flush air to remove the clean water.
16. Attach the 30 $cm^3$ (30 ml) syringe to the luer port of the auxiliary water tube and flush air to remove the water (for endoscopes with auxiliary water feeding only).
17. Using a clean, lint-free cloth, thoroughly wipe and dry all external surfaces of all equipment.

## High-level disinfection

1. Fill a basin with disinfectant solution at the temperature and concentration recommended by the disinfectant manufacturer. Use a basin which is deep enough to allow all equipment to be completely immersed.
2. Immerse all equipment in the disinfectant solution.
3. While immersed, depress and release the pistons of the valves and AW channel cleaning adapter.
4. Using the 30 $cm^3$ (30 ml) syringe, flush the interior and recessed parts of them while they are immersed. Ensure that all air bubbles are expelled.
5. Using the 30 $cm^3$ (30 ml) syringe, flush the interior and recessed parts of the cap of the biopsy valve. Ensure that all air bubbles are expelled.
6. Attach the 30 $cm^3$ (30 ml) syringe to the suction cleaning adapter and flush the tube with disinfectant solution. Ensure that all air bubbles are expelled.
7. Attach the 30 $cm^3$ (30 ml) syringe to the luer port of the auxiliary water tube and flush the tube with disinfectant solution. Ensure that all air bubbles are expelled (for endoscopes with auxiliary water feeding only).
8. Using a sterile, lint-free cloth and/or 30 $cm^3$ (30 ml) syringe, wipe and/or flush all surfaces with the disinfectant solution to remove all air bubbles.
9. Rub the bristles of the cleaning brushes to remove all air bubbles.
10. Soak all equipment for the amount of time and at the temperature recommended by the disinfectant manufacturer.

## Rinsing after high-level disinfection

After high-level disinfection, rinse all equipment according to the procedures described below.
Use water of appropriate microbiological quality. Once removed from disinfectant solution, the instrument must be thoroughly rinsed with sterile water to remove any disinfectant residue. If sterile water is not available, fresh potable tap water or water which has been processed (e.g. filtered) to improve its microbiological quality may be used with 70% ethyl or isopropyl alcohol rinse (see “Non-sterile water rinse and alcohol flush” on page 63). Consult with your hospital’s infection control committee.

## Sterile water rinse

1. Fill a basin with sterile water. Use a basin which is deep enough to allow all equipment to be completely immersed.
2. Remove the suction cleaning adapter from the disinfectant solution and attach the 30 $cm^3$ (30 ml) syringe. Flush air to expel all disinfectant solution. Immerse the suction cleaning adapter in the sterile water.
3. Remove the auxiliary water tube from the disinfectant solution and attach the 30 $cm^3$ (30 ml) syringe. Flush air to expel all disinfectant solution. Immerse the auxiliary water tube in the sterile water (for endoscopes with auxiliary water feeding only).
4. Remove the remaining equipment from the disinfectant solution and immerse it in the sterile water.
5. While immersed, depress and release the pistons of the air/water valve, suction valve and AW channel cleaning adapter.
6. Attach the 30 $cm^3$ (30 ml) syringe to the suction cleaning adapter and flush the tube with sterile water.
7. Attach the 30 $cm^3$ (30 ml) syringe to the luer port of the auxiliary water tube and flush the tube with sterile water (for endoscopes with auxiliary water feeding only).
8. Gently agitate all equipment to thoroughly rinse them.
9. Remove all equipment from the sterile water.
10. Attach the 30 $cm^3$ (30 ml) syringe to the suction cleaning adapter and flush air to dry the inside of the tube.
11. Attach the 30 $cm^3$ (30 ml) syringe to the luer port of the auxiliary water tube and flush air to dry the inside of the tube (for endoscopes with auxiliary water feeding only).
12. Using a sterile, lint-free cloth, thoroughly wipe and dry all external surfaces.

NOTE

Flushing the channels with 70% ethyl or isopropyl alcohol after rinsing them with sterile water facilitates drying inside the channels.

## Non-sterile water rinse and alcohol flush

**CAUTION**

Alcohol is flammable. Handle with care.

1. Fill a small container with 70% ethyl or isopropyl alcohol.
2. Immerse all equipment in non-sterile water following all procedures given in “Sterile water rinse” on page 62.
3. Attach the 30 $cm^3$ (30 ml) syringe to the suction cleaning adapter and flush the tube with alcohol.
4. Attach the 30 $cm^3$ (30 ml) syringe to the luer port of the auxiliary water tube and flush the tube with alcohol (for endoscopes with auxiliary water feeding only).
5. Immerse all equipment in the alcohol and gently agitate them.
6. While immersed, depress and release the pistons of the air/water valve, suction valve and AW channel cleaning adapter.
7. Remove all equipment from the alcohol.
8. Attach the 30 $cm^3$ (30 ml) syringe to the suction cleaning adapter and flush air to dry the inside of the tube.
9. Attach the 30 $cm^3$ (30 ml) syringe to the luer port of the auxiliary water tube and flush air to dry the inside of the tube (for endoscopes with auxiliary water feeding only).
10. Using a sterile, lint-free cloth, thoroughly wipe and dry all external surfaces.

## Sterilization

### ❍ ETO gas sterilization

**CAUTION**

The cleaning brushes are not compatible with ETO gas sterilization.

After cleaning and drying as described in “Manual cleaning” on page 59, follow the procedures given below.

1. Before sterilization, confirm that the parts of the equipment are thoroughly cleaned and dried.
2. Seal the individual parts or equipment separately in packages appropriate for ETO gas sterilization according to your hospital’s protocol.
3. Sterilize the packages according to the recommended ETO gas exposure parameters as described in Section 2.5, “ETO gas sterilization” and the sterilizer manufacturer’s instructions.
4. Aerate the components following the minimum aeration parameters specified in Section 2.5, “ETO gas sterilization”.
5. Store the components following the instructions given in Chapter 5, “Storage and Disposal”.

### ❍ Steam sterilization (autoclaving)

After cleaning as described in “Manual cleaning” on page 59, steam sterilize (autoclave) according to the procedures given below.

1. Seal the individual parts or equipment separately in packages appropriate for steam sterilization (autoclaving) according to your hospital’s protocol.
2. Steam sterilize the packages according to the recommended steam sterilization (autoclaving) exposure parameters as described in Section 2.6, “Steam sterilization (autoclaving) of accessories” and the sterilizer manufacturer’s instructions.
3. Following steam sterilization (autoclaving), let all components gradually cool down to room temperature. Sudden changes in temperature may damage the instruments.

# Chapter 4 Cleaning and Disinfection Equipment

The endoscope is compatible with some endoscope reprocessors recommended by Olympus. Refer to the instruction manual of endoscope reprocessor for details on operation.

**WARNING**

- Thoroughly clean the endoscope as described in Chapter 3, “Cleaning, Disinfection and Sterilization Procedures” before cleaning and disinfection of an endoscope in an endoscope reprocessor. If the endoscope reprocessor is used with an endoscope with a large amount of debris attached to it, cleaning and disinfection may pose an infection-control risk to the patients and/or operators who perform the next procedure with it. Note that cleaning of the endoscope becomes difficult if debris is allowed to solidify because of a delay before cleaning following the procedure. Refer to the instruction manual of endoscope reprocessor for details.
- Olympus confirms validation of the endoscope reprocessors recommended by Olympus only. If using endoscope reprocessor that are not recommended by Olympus, the endoscope reprocessor manufacturers are responsible for validation of the endoscope reprocessor with the endoscope models listed in its intended use statement. If using an endoscope reprocessor, confirm that it is capable of reprocessing endoscope including all channels. If there are channels and/or other parts which cannot be cleaned and high-level disinfected by the endoscope reprocessor, have to undergo manual cleaning and high-level disinfection or sterilization as described in Chapter 3, “Cleaning, Disinfection and Sterilization Procedures” after using the endoscope reprocessor. Otherwise, insufficient cleaning and disinfection or sterilization of the endoscope may pose an infection control risk to the patient and/or operators performing the next procedure with the endoscope. If you are uncertain as to the ability of your endoscope reprocessor to clean and high-level disinfect endoscope including all channels, contact the endoscope reprocessor supplier for specific instructions and/or connectors.

- Use connectors special to each model when cleaning and disinfecting the endoscope with the endoscope reprocessor. Otherwise, insufficient cleaning and disinfection or sterilization of the endoscope may pose an infection control risk to the patient and/or operators performing the next procedure with the endoscope. The applicable connectors for each endoscope model should be listed in the automated endoscope reprocessor instruction manual. If your endoscope model is not listed in this table, please contact the manufacturer of the endoscope reprocessor.

# Chapter 5 Storage and Disposal

## 5.1 Storage

**CAUTION**

- The storage cabinet must be clean, dry, well ventilated and maintained at ambient temperature. Storing the endoscope in direct sunlight, at high temperatures, in high humidity or exposed to X-rays and ultraviolet-rays may damage the endoscope or present an infection control risk.
- Prior to storage, detach all removable parts from the endoscope. It will allow air to circulate through the internal lumens of the endoscope and will assist drying.
- Prior to storage, uncap the auxiliary water inlet. This will allow air to circulate through the internal lumen of the endoscope and will assist drying (for endoscopes with auxiliary water feeding only).
- Do not store the endoscope in the carrying case. Use the carrying case only for shipping the endoscope. Routinely storing the endoscope in a humid, non-ventilated environment such as the carrying case may present an infection control risk.
- When storing an endoscope that has the flexibility adjustment mechanism, make sure that the insertion tube is set to the softest condition (indicated by the "●" mark on the flexibility adjustment ring). If the endoscope is stored while the insertion tube is too stiff, the endoscope may be damaged (for endoscopes with flexibility adjustment only).

1. Before storage of a high-level disinfected endoscope, thoroughly dry all parts of the endoscope (especially all internal lumens, the distal end, lenses and electrical contacts) and all accessories.
2. Using a cotton swab moistened with 70% ethyl or isopropyl alcohol, carefully wipe the lenses at the distal end.
3. If the endoscope has the flexibility adjustment mechanism, make sure that the insertion tube is set to the softest condition by aligning the "●" mark on the flexibility adjustment ring with the " ▌ " mark at the bottom of the grip section (for endoscopes with flexibility adjustment only).

4. Turn the endoscope's angulation locks to the "F▶" direction.
5. Hang the endoscope in the storage cabinet with the distal end hanging freely. Make sure that the insertion tube hangs vertically and as straight as possible.

## 5.2 Disposal

When disposing of the endoscope, or any of its components (such as valves), follow all applicable national and local laws and guidelines.

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