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| **POLICY**: | **Reprocessing of Flexible Endoscopes** |
| **Program Area:** | **Medical Device Reprocessing** |
| **Section:** | **General** |
| **Reference Number:** | **CLI.5510.PL.004** |
| **Approved by:** | **Regional Lead – Acute Care & Chief Nursing Officer** |
| **Date:** | Issued 2024/November/19<br>Revised 2024/December/30 |

## PURPOSE:

To outline the proper reprocessing of flexible endoscope so that the risk to patients is minimized and it prevents healthcare associated transmission of micro-organisms.

## BOARD POLICY REFERENCE:

Executive Limitation (EL-02) Treatment of Clients
Executive Limitation (EL-07) Corporate Risk

## POLICY:

Reprocessing flexible endoscopes is done in a manner that minimizes patient risk and prevents healthcare associated transmission of micro-organisms.

## DEFINITIONS:

**Biofilm** - refers to a matrix of different types of bacteria and extracellular material that can tightly adhere to the interior surfaces of endoscopes.

**Enzymatic Detergent** - refers to low-foaming detergents which add enzymes capable of digesting organic material such as blood and mucous.

**Flexible Endoscope** - flexible instrument used to visualize the inside of a body cavity, lumen or structure. Flexible endoscopes include, are not limited to gastrointestinal (GI) scopes, bronchoscopes, cystoscopes, ureterscopes, nephroscopes, nasopharyngoscopes, rhinolaryngoscopes, and intubation scopes.

**High-level Disinfectant (HLD)** - used for the destruction of all microorganisms except for high levels of bacterial spores.

**Personal Protective Equipment (PPE)** - gloves, waterproof gowns or gowns appropriate to the task, masks, protective eyewear and face protection used according to risk of exposure to prevent transmission of micro-organisms

**Reprocessing** - steps performed to appropriately prepare a reusable medical device for reuse. The steps may include the collection and transportation of soiled devices, cleaning, inspection, disinfection, sterilization, packaging, clean transportation, and storage of clean and disinfected/sterilized devices.

**IMPORTANT POINTS TO CONSIDER:**

- All staff involved with reprocessing of endoscopes confirm their skill level annually through annual competency assessment.
  - Reprocessing of minimum one colonoscope and one gastroscope, loading, unloading, and operation of each type of Automated Endoscope Reprocessor (AER) and automated cleaning equipment.
- To maintain competency, all required staff are to participate in continuing education at regular intervals to maintain knowledge and skills.
- Documentation related to reprocessing a flexible endoscope is kept for 7 years. When there is an incident, documentation is kept for 25 years.
- If manually reprocessing with reusable high-level disinfectants, RESERT is tested prior to each endoscope being reprocessed, to assure that RESERT remains above its Minimum Effective Concentration (MEC).
- Use a product-specific test strip and record results in CLI.5510.PL.006.FORM.01 Endoscope HLD Log Form.
- Cultures are indicated when a specific Infection Prevention & Control issue or outbreak occurs. Routine microbiologic testing of endoscopes for quality assurance purposes is not recommended.

**Note:** If due to time constraints, it is not possible to complete the reprocessing within the one-hour time frame refer to CLI.5510.PL.003 Presoak of the Flexible Endoscopes Following Excessive Bleeding and/or Delayed Reprocessing. Immediately, the endoscope is leak-tested, flushed, brushed, and allowed to soak in a detergent solution until it can be thoroughly reprocessed. Follow manufacturer's recommendations for the maximum liquid exposure time.

**PROCEDURE:**

**Step One – PRECLEANING**

The initial steps in the reprocessing protocol begin in the patient room immediately after removal of the insertion tube from the patient and prior to disconnecting the endoscope from the power source.
Have the following available:

- Personal protective equipment (neoprene or nitrile gloves, impervious long sleeve gown, full face; shield or protective eyewear along with a simple surgical mask that will not trap vapors),
- Sponge or soft, lint-free cloth,
- Air and water channel cleaning adapters per manufacturer's instruction,
- Protective video caps (if using video endoscopes),
- 500ml container of water – either filtered, potable tap water processed water (deionized or purified), and
- The patient stamped addressograph.

Document the time on CLI.5510.FORM.01 Endoscope Log Form.

1. Don appropriate personal protective equipment.
2. Turn the video system centre and light source off.
3. Immediately after the endoscope is removed from the patient, dip a clean, lint-free wet cloth or sponge in the water and wipe the entire insertion section of the endoscope. Wipe from the boot at the control section toward the distal end. Dispose of the cloth/sponge.
4. Flexibility adjustment ring is set to the most flexible.

5. Immerse the distal end of the insertion section of the endoscope into a 500ml container of water. Depress the suction valve on the endoscope and aspirate the water through the endoscope for 30 seconds. Remove the distal end from the water. Depress the suction valve and aspirate air for 10 seconds.
6. Detach the Air/Water (A/W) valve and place it in a container of water. Attach the A/W channel cleaning adapter.
7. Immerse the distal end in water.
8. Hold the button of the A/W channel cleaning adapter to flush the A/W channel, with water from the water container, for 30 seconds.
9. Release the button to flush air for 10 seconds.
10. For endoscopes with auxiliary water feeding line, flush the auxiliary channel either manually or using an Olympus Flushing Pump (OFP).

**For Manual Flushing of Auxiliary Water Line:**

- Ensure the water inlet is not covered during the reprocessing. Connect the auxiliary water tube to the auxiliary water inlet of the endoscope.
- Immerse the distal end of the insertion section in water.
- Fill and attach a clean 30ml syringe and slowly flush water through the channel until no bubbles exit.
- Using the same syringe slowly flush air through the channel until a steady flow of bubbles exit.

**For Flushing with an Olympus Flushing Pump of Auxiliary Water Line:**

- Ensure the auxiliary water tube is attached to the auxiliary water inlet of the endoscope.
- Confirm the filter and the irrigation tube of the OFP pump is attached to the auxiliary water tube.
- Immerse the distal end of the insertion section in the water.
- Activate the pump according to the OFP instructions, flush the auxiliary water channel with water for 10 seconds.
- Detach the filter and the irrigation tube from the auxiliary water tube. Leave the auxiliary water tube attached to the endoscope.
    1. Detach the endoscope from the light source and suction pump.
    2. Attach protective video cap (if using video endoscope) by pushing it straight onto the scope connector and turn it clockwise.
    3. Transport the endoscope and accessories to the decontamination area in a covered, leak proof container.
    4. Detach the A/W channel cleaning adaptor, the suction valve, and the biopsy valve from the endoscope and place them in the detergent solution.

**Note**:

- Ensure containers, sinks, and basins are large enough that the endoscope is not damaged by being coiled too tightly.
- A covered, leak proof container prevents contamination during transport.

**Step Two: LEAK TESTING**

Leak testing detects damage to the interior or exterior of the endoscope. If a leak is identified, remove the endoscope from the water with the water-resistant cap and the leakage tester still attached and contact the facility Maintenance Manager for instructions. Do not put it through the washer.

1. Don appropriate personal protective equipment.
2. Fill a sink with enough water to cover the endoscope completely.
3. Attach the leak tester connector and turn the power source on.
4. Confirm that the connector cap of the leak tester and the venting connector of the water-resistant cap are dry. If not, dry with a clean, lint-free cloth. Depress the pin located inside the connector cap of the

leakage tester and listen to confirm that air is emitted from the connector cap. Attach the connector cap to the venting connector by pushing on and rotating clockwise.

5. With the leakage tester attached, Immerse the endoscope in the water. Ensure all 3 tension dials are set to the neutral position. Observe for 1 minute while deflecting the distal, bending section of the endoscope by turning the endoscope's UP/DOWN and RIGHT/LEFT angulations control knobs. Observe that there is no continuous series of air bubbles coming from the interior of the endoscope which would indicate a leak. Inspect buttons on the control handle for cracks, push all buttons while observing for bubbles.
6. Remove the endoscope from the water with the leak tester still attached.
7. Turn the power source off and detach the leak tester from the light source.
8. Wait 30 seconds for the bending section to contract to its pre-expansion size. Detach the leak tester from the water-resistant cap.
9. Thoroughly dry the leak tester using a clean lint-free cloth or sponge.

**Step Three: MANUAL CLEANING**

Cleaning is the first and most important step in removing the microbial bioburden from an endoscope. Retained debris may inactivate or interfere with the capability of the active ingredient of the chemical solution to effectively kill and/or inactivate microorganisms. (January 2023) CSA Z314:23 12.4.7 "Reprocessing of flexible endoscopes (point-of-use cleaning, manual and/or automated cleaning) shall be completed within 1 h following the procedure". The fully cleaned and rinsed endoscope should not sit more than 30 min. prior to HLD stage. On the Endoscope Log CLI.5510.PL.004.FORM.01 note the time regarding manual cleaning.

1. Fill a sink with freshly prepared low-suds enzymatic detergent at the concentration recommended by the detergent manufacturer. Fresh detergent solution is used for each endoscope to prevent cross-contamination.
2. Immerse the endoscope in the detergent solution.
3. Wipe all debris from the exterior of the endoscope by brushing and wiping the instrument while submerged in the detergent solution. The instrument is left under water during the cleaning process to prevent splashing of contaminated fluid and aerosolization of bioburden.
4. Detach and dispose of single use valves, the biopsy channel cover, and all other removable disposable parts. The endoscope is completely disassembled so that all surfaces may be reached for thorough cleaning.
5. Straighten the bending section of the endoscope. Insert the brush at a 45° angle into the suction cylinder and push it through using short strokes. After each passage, rinse the brush in the detergent solution, removing any visible debris before retracting and reinserting it. Continue brushing until there is no debris visible on the brush or a minimum of three passes.
6. Insert the brush straight into the suction cylinder. Rotate the brush and pull the brush out of the cylinder. Continue brushing until there is no debris visible on the brush or a minimum of three passes.
7. Brush all accessible endoscope channels including the body, insertion tube and the umbilicus of the endoscope. Use a brush size compatible with each channel. Rotate the inserted brush before pulling the brush back. Continue brushing until there is no debris visible on the brush or a minimum of three passes. Use short channel opening cleaning brush to clean both the suction port and instrument channel port. Repeat brushing three time

   **Note: if using the Medivator AER proceed with the following steps. If using the Olympus AER proceed to Step #35**
8. Attach the suction cleaning adapter to the instrument channel port.
9. Attach the suction tube from the suction pump to the suction connector on the endoscope connector. Turn the suction on.

10. Immerse the distal end of the insertion section and the weighted end of the suction cleaning adapter in the detergent solution.
11. Cover the suction cylinder of the endoscope with your gloved finger and aspirate the detergent solution through the instrument channel and the suction channel of the endoscope for 30 seconds.
12. Turn the suction off and detach the suction tube and the suction adapter.
13. Attach Instru-flush to endoscope as per manufacturer's instructions and proceed with Instru-flush cleaning.
14. For manual flushing if Instru-flush is not available, flush the A/W channel with detergent by attaching the biopsy valve cap of the channel plug to the instrument channel port of the endoscope.
15. Attach the channel plug to the A/W and suction cylinder of the endoscope by inserting the plug frame (consisting of the A/W plug, the suction plug) and pushing it towards the control section and sliding it towards switch 1 until it is firmly locked in place.
16. Attach the connector plug of the injection tube to the air and water supply connectors on the endoscope connector. Attach the air pipe port of the injection tube to the air pipe on the endoscope connector. Attach the suction channel tube of the injection tube to the suction connector on the endoscope connector.
17. Immerse the suction port of the injection tube in the detergent solution.
18. Attach a clean 30ml syringe to the suction port of the injection tube and flush with 90ml detergent by pumping syringe times 3.
19. Attach a clean 30ml syringe to the air/water channel port of the injection tube.
20. Flush the air/water channel with 90ml of the detergent solution by pumping the syringe 3 times.
21. If the endoscope has an auxiliary water channel attach the auxiliary water tube to the auxiliary water inlet of the endoscope connector.
22. Fill and attach a clean 30ml syringe to the auxiliary water tube and flush with 90ml of detergent solution.
23. Remove the endoscope with attached accessories from the detergent solution.
24. Fill a sink with water and completely immerse the endoscope in the water and thoroughly rinse.
25. Attach a clean 30ml syringe to the suction channel port and flush with 90ml of water (pump the syringe at least 3 times).
26. Move the syringe to the A/W channel port and flush with 90ml of water (pump the syringe at least 3 times).
27. Fill and attach the syringe to the auxiliary water channel and flush with 90 ml of water. Move the syringe to the A/W channel port and flush with 90ml of water (pump the syringe at least 3 times).
28. Remove the endoscope with attached accessories from the water and place them in a clean basin and cover the distal end and control section with a clean, lint-free cloth to prevent splashing from the channel openings.
29. Attach the syringe to the suction channel port of the injection tube and flush with 90ml of air.
30. Move the syringe to the A/W channel port and flush with 90ml of air.
31. Fill and attach the syringe to the auxiliary water tube and flush the auxiliary water channel with 90ml of air.
32. Remove the cloth from the endoscope and detach the channel plug, the injection tube and the auxiliary water tube from the endoscope.
33. Dry the external surfaces with a clean, lint free cloth or sponge.
34. Dispose of single use brushes.
35. Follow Manufactures Instructions for Use (MIFU) for Channel Check test kit and test the channels of the scope for cleanliness.

**Step Four: DISINFECTION**

**Automated Disinfection / Reprocessing**

1. Follow all the above steps of pre-cleaning, leak testing and cleaning.
2. Prepare the endoscope AER according to manufacturer's guidelines.
3. Document the patient's identification, Endoscopist name, endoscope identifier, procedure performed and the name of the individual performing the reprocessing in the CLI.5510.PL.004.FORM.01 Endoscope Log.
4. Place the endoscope in the AER and attach all channel adapters according to manufacturer's instructions.
5. Place valves and other removable parts into the soaking basin of the AER. Unless the AER has a dedicated space for accessories, reprocess these items separately.
6. If the machine has a cycle that uses enzymatic detergent, use a product that is compatible with the AER and the endoscope.
7. Start the machine and allow it to complete all cycles/phases.

**Note**: if cycles/phases are interrupted, HLD cannot be ensured.

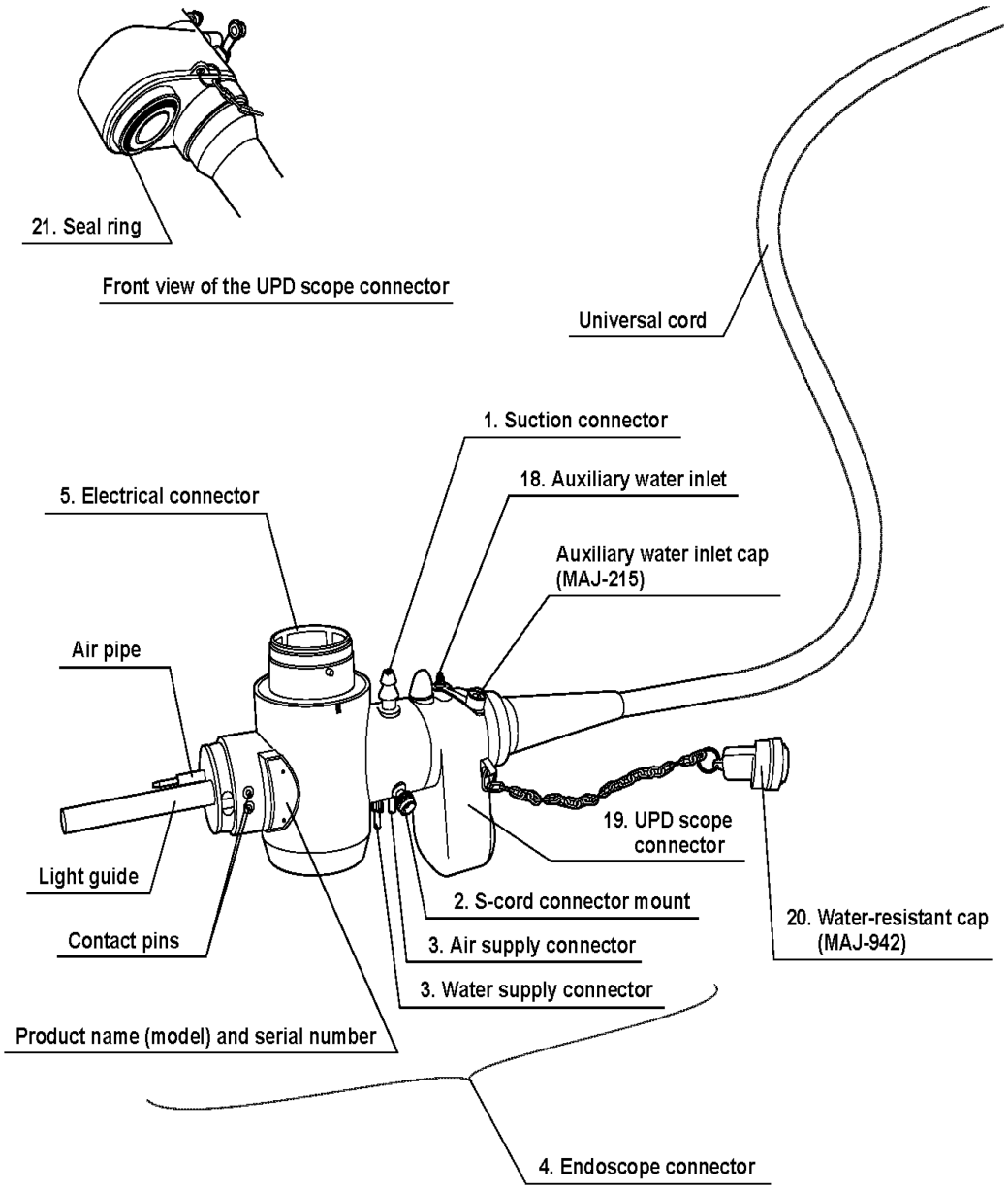
1. If a final alcohol rinse cycle is not included in the automated AER, this step should be done manually by using a sterile 30ml syringe. Flush all the ports with 90ml of alcohol followed by flushing all ports with 90mls. of air. Cover the distal end and the control section of the endoscope with a clean lint free cloth to prevent splashing alcohol from the channel openings.
2. Remove the endoscope from the AER immediately upon completion of the cycle i.e. within 30 minutes of cycle completion. If the flexible endoscope cannot be removed immediately, then the complete AER cycle is repeated prior to patient use.
3. Thoroughly dry the inside of the suction cylinder, the A/W cylinder and the instrument channel port of the endoscope using medical air or automatic endoscope drying unit.

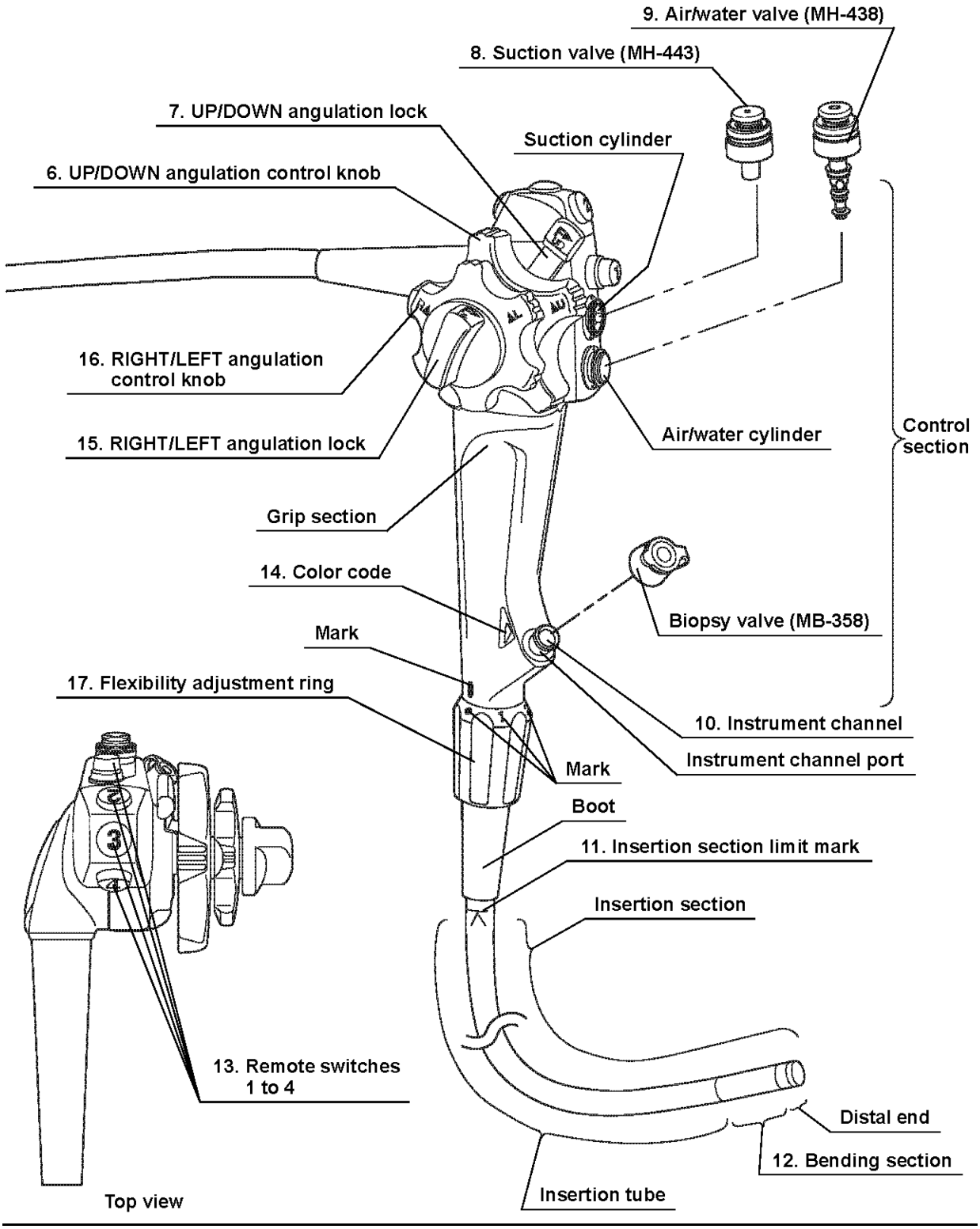
**Step Five: STORAGE**

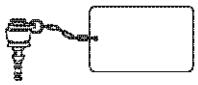
1. Hang the endoscope vertically with the distal tip hanging freely in a well-ventilated with HEPA filtration dust-free cabinet which permits full length hanging on appropriate support structures in a manner preventing contamination or damage.
    - Padding the lower portion of the storage area with non-porous material may prevent damage to the distal end of the scope.
    - Store endoscope with all valves, caps and protective video cap removed.
2. Endoscopes stored in a cupboard longer than seven days are reprocessed prior to use on a patient/client.
3. Storage cupboard(s) are cleaned weekly with a hospital approved disinfectant and documented on Scopes and Scope Cabinet Cleaning Record CLI.5510.PL.004.FORM.01.

## EQUIPMENT/SUPPLIES:

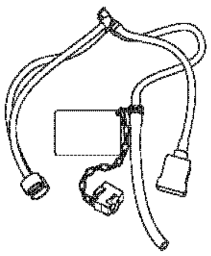
1. PPE to include impervious gown, face and eye shield, nitrile gloves.
2. Endoscope leak tester.
3. Automatic endoscope cleaning flushing unit.
4. Sink for detergent and water cleaning
5. Sink for clean rinse water.
6. Lint free cloths.
7. Disposable scope channel cleaning brushes
8. Automatic Endoscopic Reprocessor (AER)



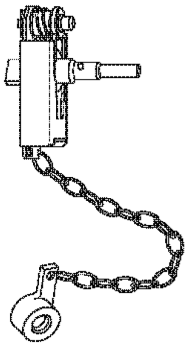




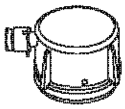
AW channel cleaning adapter
(MH-948)



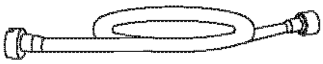
Injection tube
(MH-946)



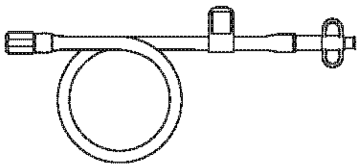
Channel plug
(MH-944)



Water-resistant cap
(MH-553)

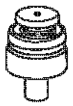


Suction cleaning adapter
(MH-856)



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

Biopsy valve
(MB-358, 10 pcs)



Suction valve
(MH-443, 2 pcs)

Air/water valve
(MH-438, 2 pcs)

Single use channel
cleaning brush
(BW-201T, 3 pcs)

Single use channel
cleaning b
(BW-201T,

Single use channel-opening
cleaning brush
(MAJ-1339, 3 pcs)

Channel-opening cleaning
brush (MH-507)

**SUPPORTING DOCUMENTS:**

| | |
|---|---|
| CLI.5510.PL.004.FORM.01 | Scope Reprocessing and Cabinet Cleaning Form |
| CLI.5510.PL.004.SD.01 | Scope Reprocessing and Cabinet Cleaning Form Sample |
| CLI.5510.PL.003 | Presoak of the Flexible Endoscopes 180 and 190 series Following Excessive Bleeding and/or Delayed Reprocessing |

**REFERENCES:**

Best Practices for Cleaning, Disinfection and Sterilization in all Healthcare Settings, Provincial Infectious Diseases Advisory Committee (PIDAC). (2006, March). Ontario Ministry of Health and Long-Term Care. Retrieved January 28, 2010 from the World Wide Web:
http://www.health.gov.on.ca/english/providers/program/infectious/diseases/bestprac/bp cds 2.pdf

CSA Standards Decontamination of Re-useable Medical Devices Z314:23 section 12 (January 2023).

Olympus Reprocessing Manual Instructions, EVIS EXERA II, GIF/CF/PCF TYPE 180 and 190 Series REPROCESSING MANUAL. January 15, 2021.