



Hygiene & Reprocessing Training Material

Reprocessing Basics of Thermolabile Endoscopes

Start training 

OLYMPUS **CONTINUUM**™

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The Content is a summary of the steps necessary to properly reprocess thermolabile endoscopes.

Always follow the detailed steps instructed in the latest **endoscope instruction for use (reprocessing manual)**.

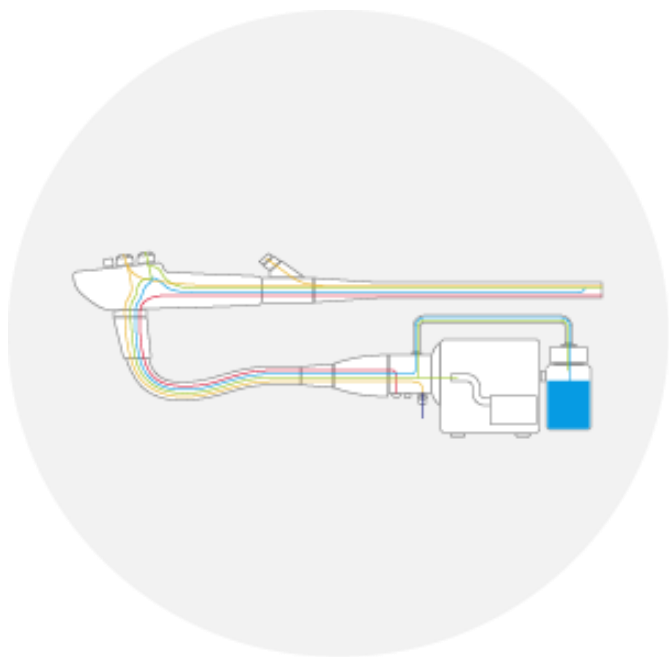
Click on the „I agree“-button to start with the training.



Prerequisites



Knowledge of relevant reprocessing steps depending on medical device and its field of application



Knowledge of instruments' design



Personal protective equipment (PPE)



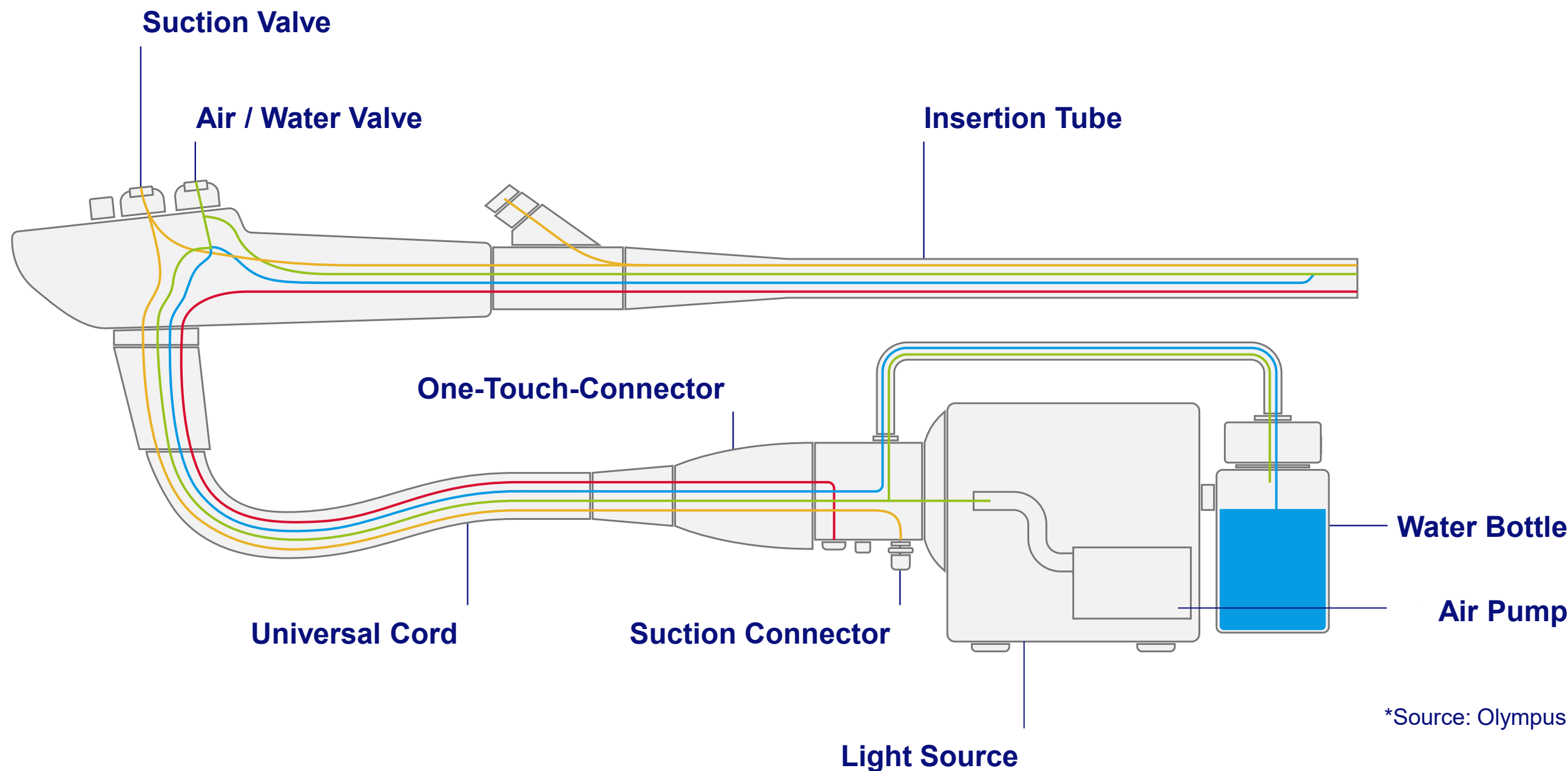
Appropriate reprocessing equipment

Prerequisites for Processing of Medical Devices

Design of GI Endoscopes

Example*:

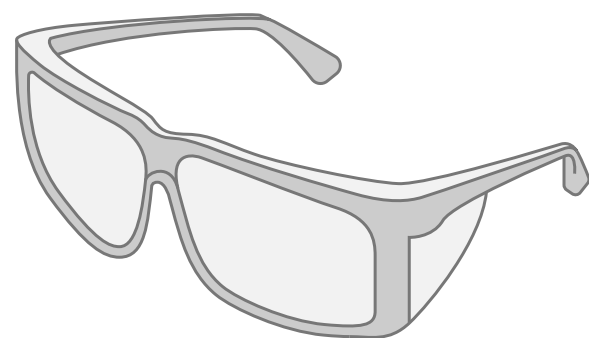
- Instrument / Suction Channel
- Air Channel
- Water Channel
- Auxiliary Water Channel



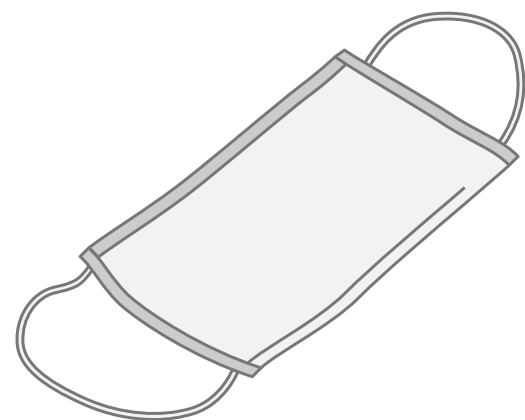
*Source: Olympus

Prerequisites | Personal Protective Equipment (PPE)

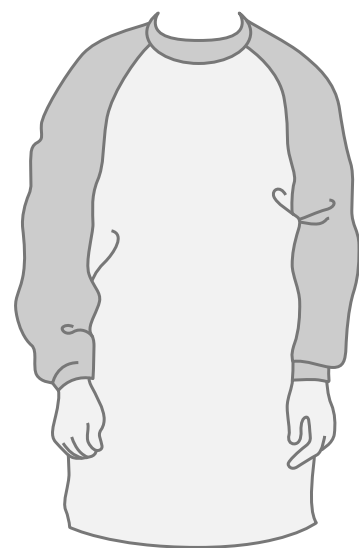
Examples*:



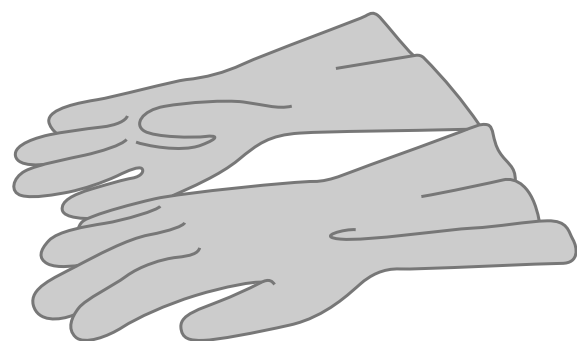
Eyewear



Face Mask



**Moisture-Resistant
Clothing**



**Chemical-Resistant
Gloves**

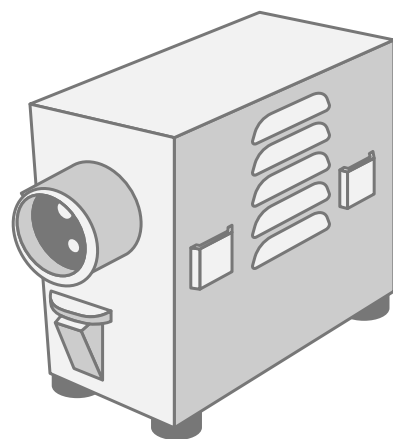
*Source: Olympus

Prerequisites | Appropriate Reprocessing Equipment

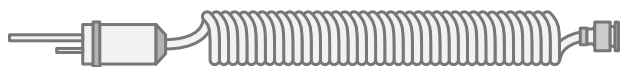
Examples*:



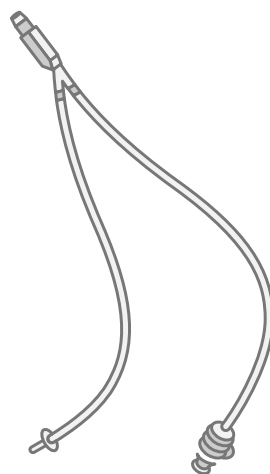
„Use basins which are at least 25 (W) x 10 (H) x 50 (D) cm in size and deep enough to allow the endoscope to be completely immersed.“



Maintenance Unit



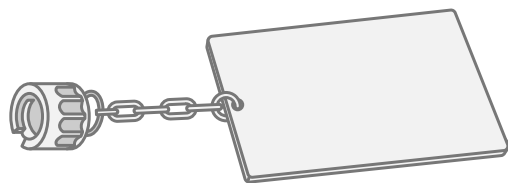
Leakage Tester



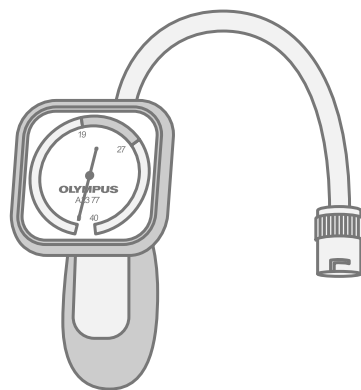
Suction Cleaning Adapter



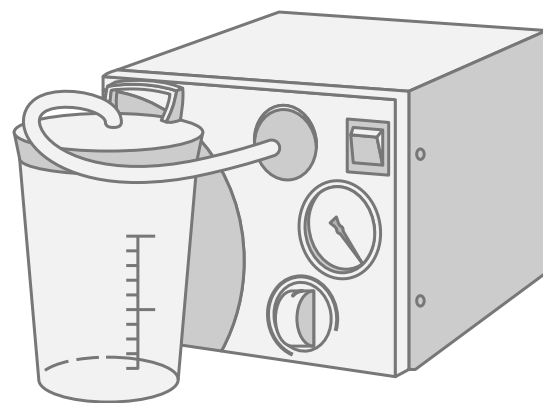
Single-use Combination Cleaning Brush



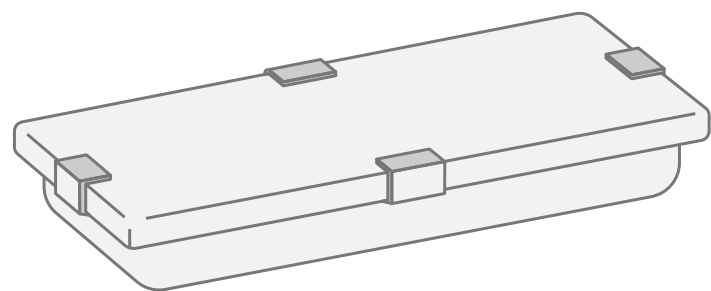
ETO Cap



Leakage Tester



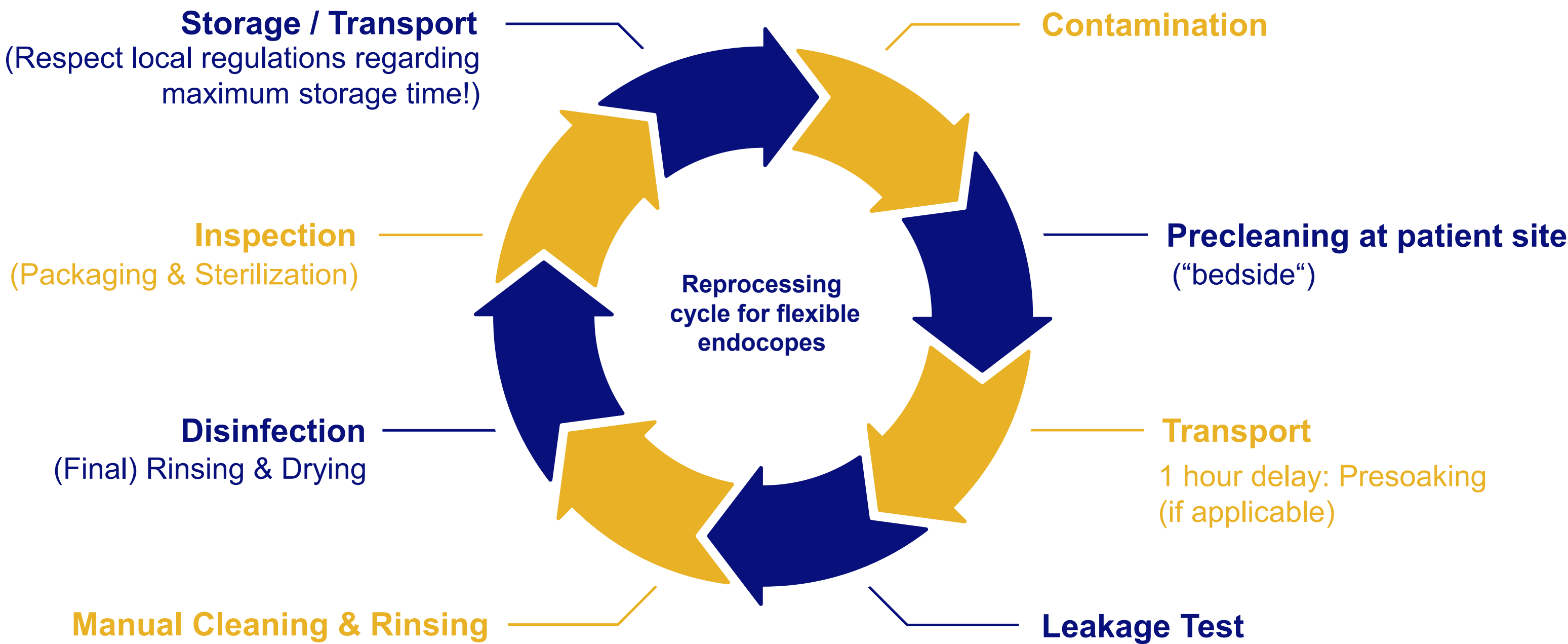
Suction Pump



Sterilization Tray

*Source: Olympus. Please refer to the respective IFU for details.

Reprocessing Cycle for Flexible Endoscopes | Endoscope Manufacturer's IFU (Instruction For Use)



Manual Cleaning of Flexible Endoscopes



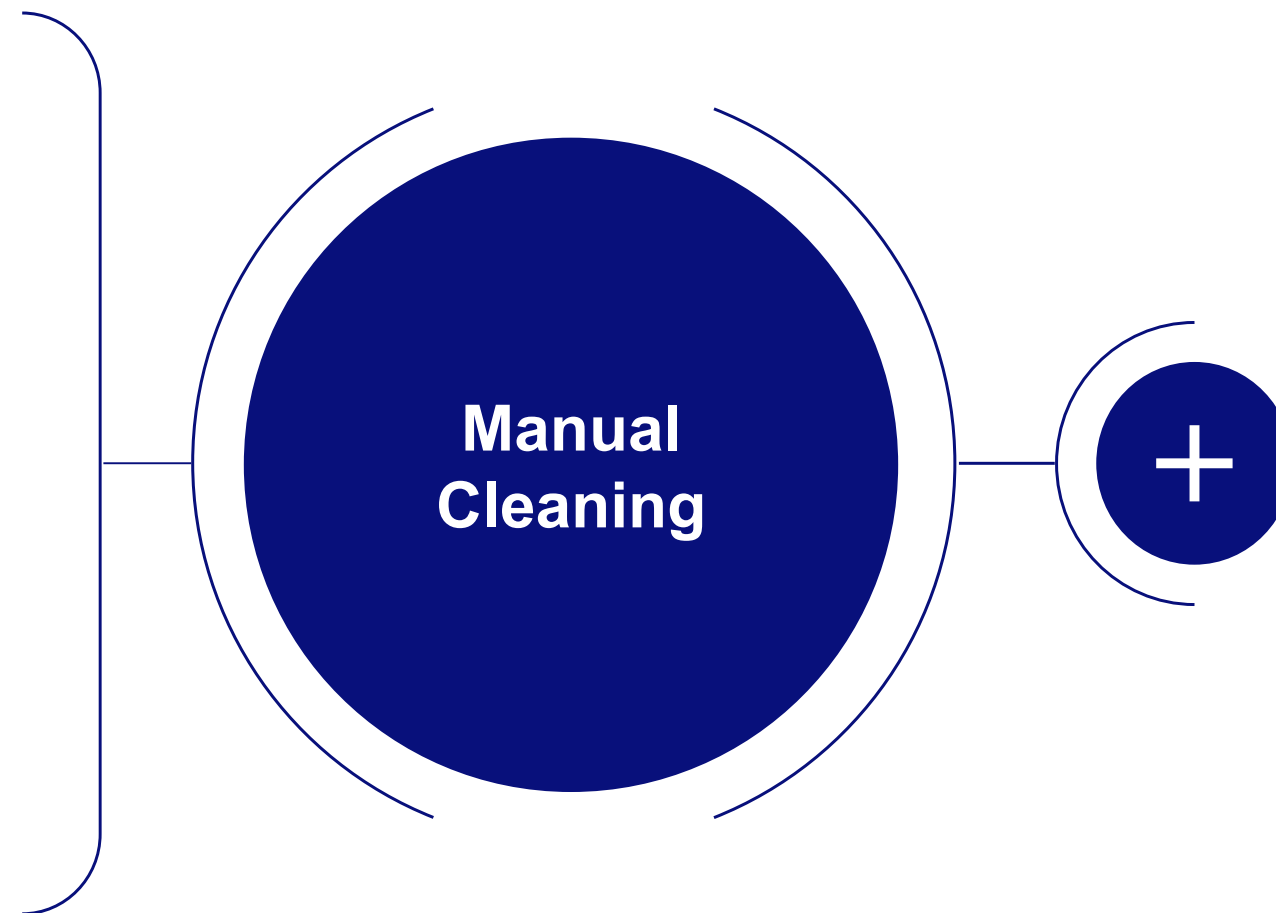
Click on the plus symbols for more information.

Manual Cleaning of Flexible Endoscopes

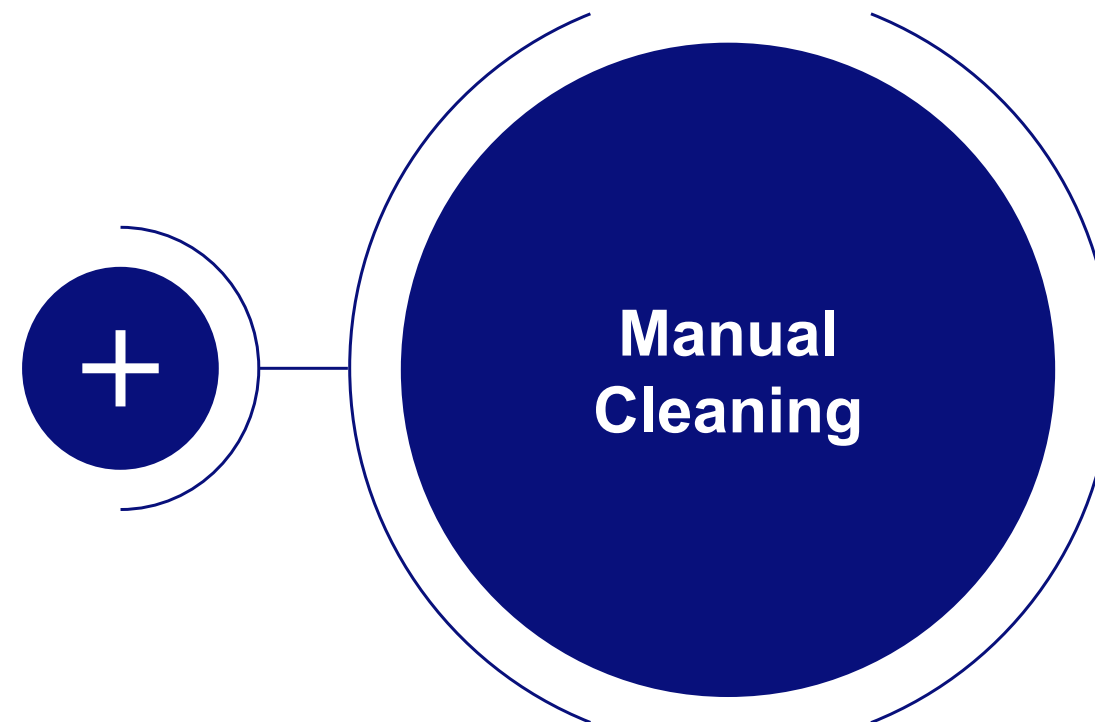
Purpose

Removal of most microorganisms and residues, such as:

- Fluids
- Blood, mucus, faeces
- Debris
- Pharmacological substances (e.g., contrast agents, lubricants)



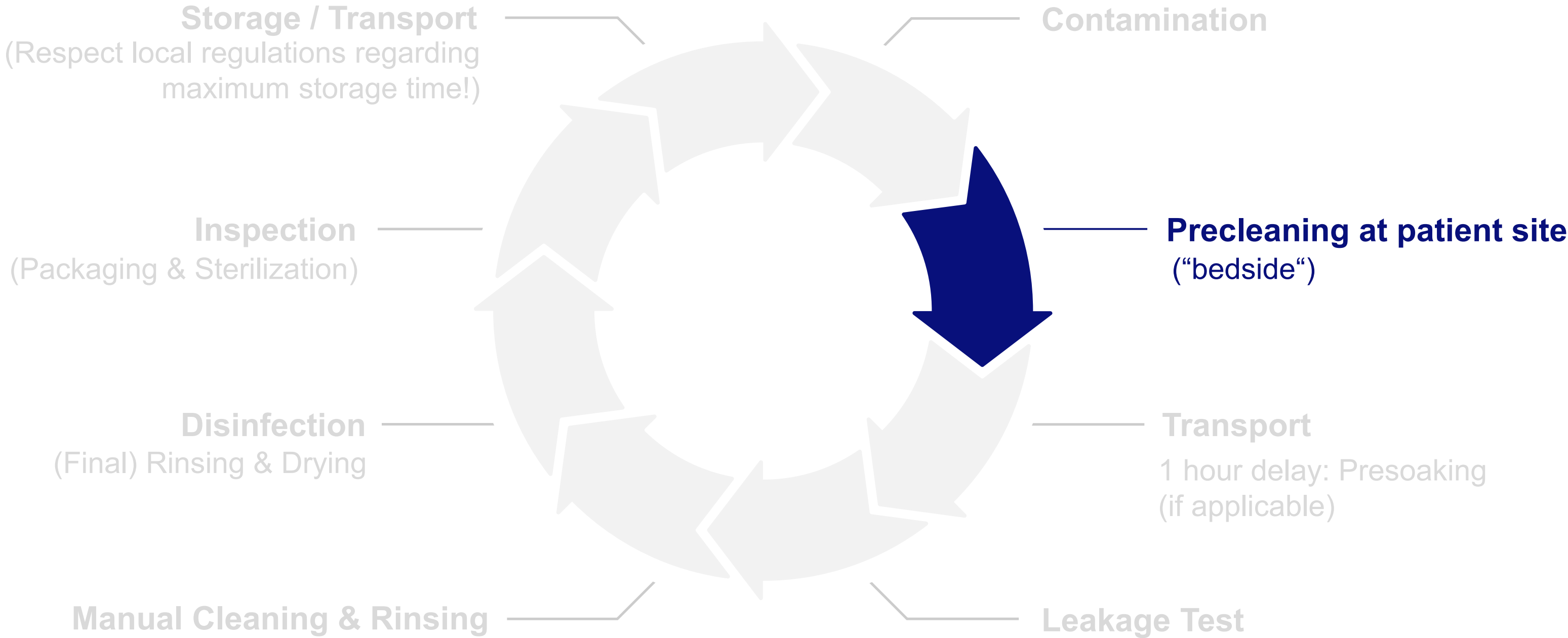
Manual Cleaning of Flexible Endoscopes



Cleaning solutions

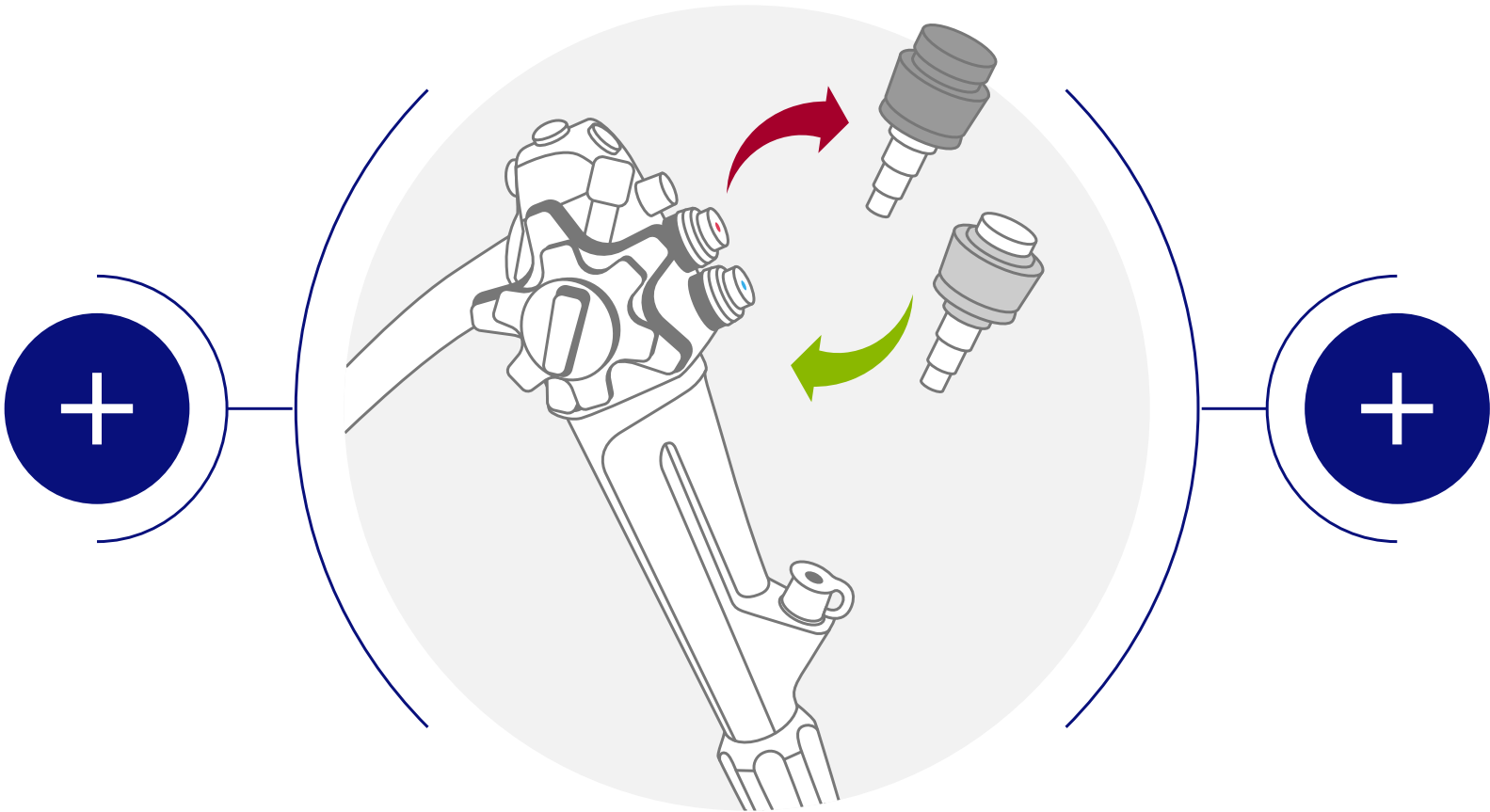
- Surfactants, low-foaming substances, with/without enzymes, neutral to mild-alkaline (10,8) pH
 - Clear superiority of individual substances not found
- Without fixative properties (e.g., aldehydes, alcohols, peracetic acids)
- Freshly prepared for each endoscope
- No internationally standardized requirements for cleaners

Reprocessing Cycle for Flexible Endoscopes | Endoscope Manufacturer's IFU (Instruction For Use)



Manual Cleaning | Precleaning at Patient Site

Example*:



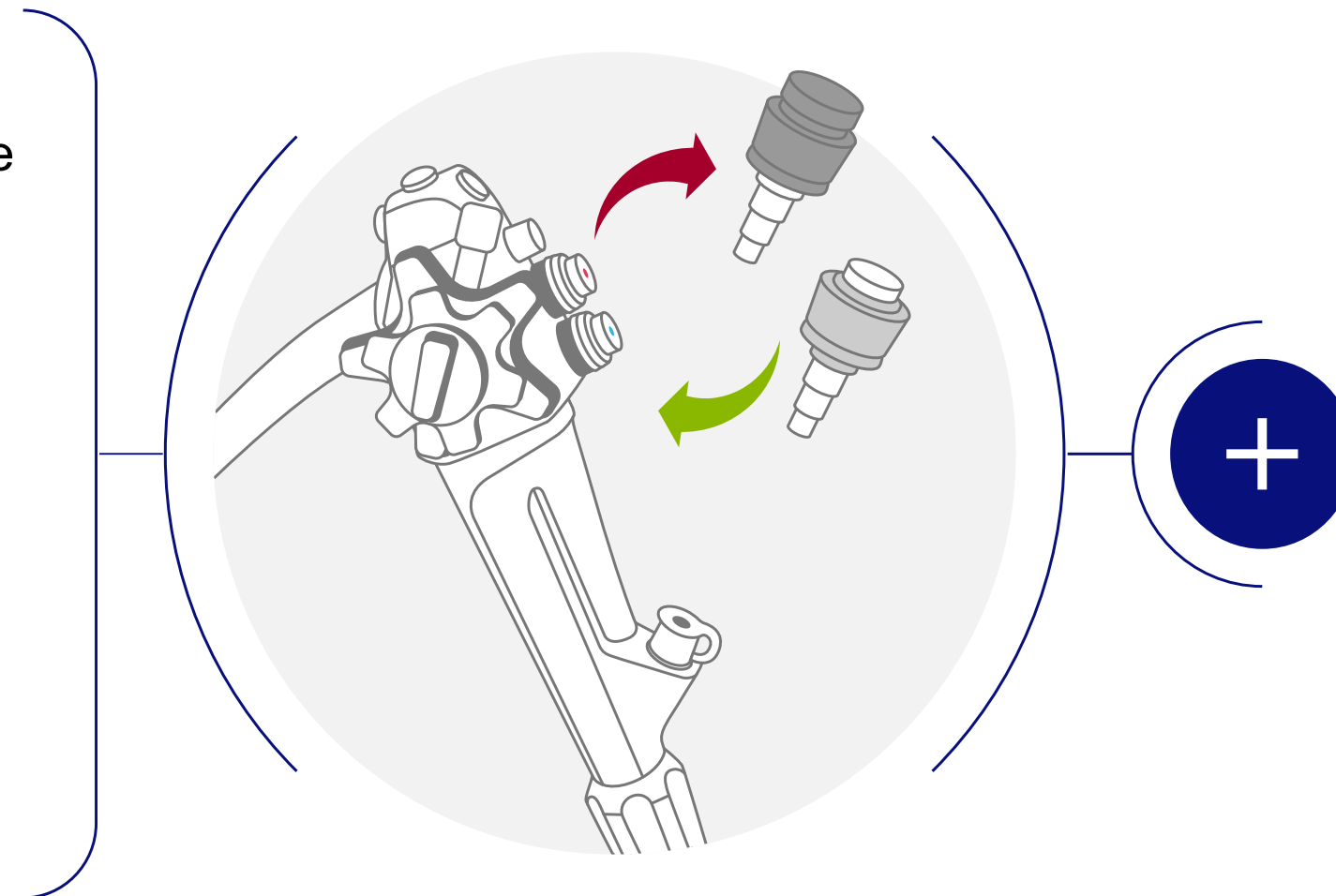
*Source: Olympus

Click on the plus symbols for more information.

Manual Cleaning | Precleaning at Patient Site

- **Immediately** after patient procedure with endoscope still connected to the video system center
- Use of detergent or water (acc. to IFU)
- Wipe external surface of insertion tube with a wet lint-free cloth
- Use of cleaning adapters

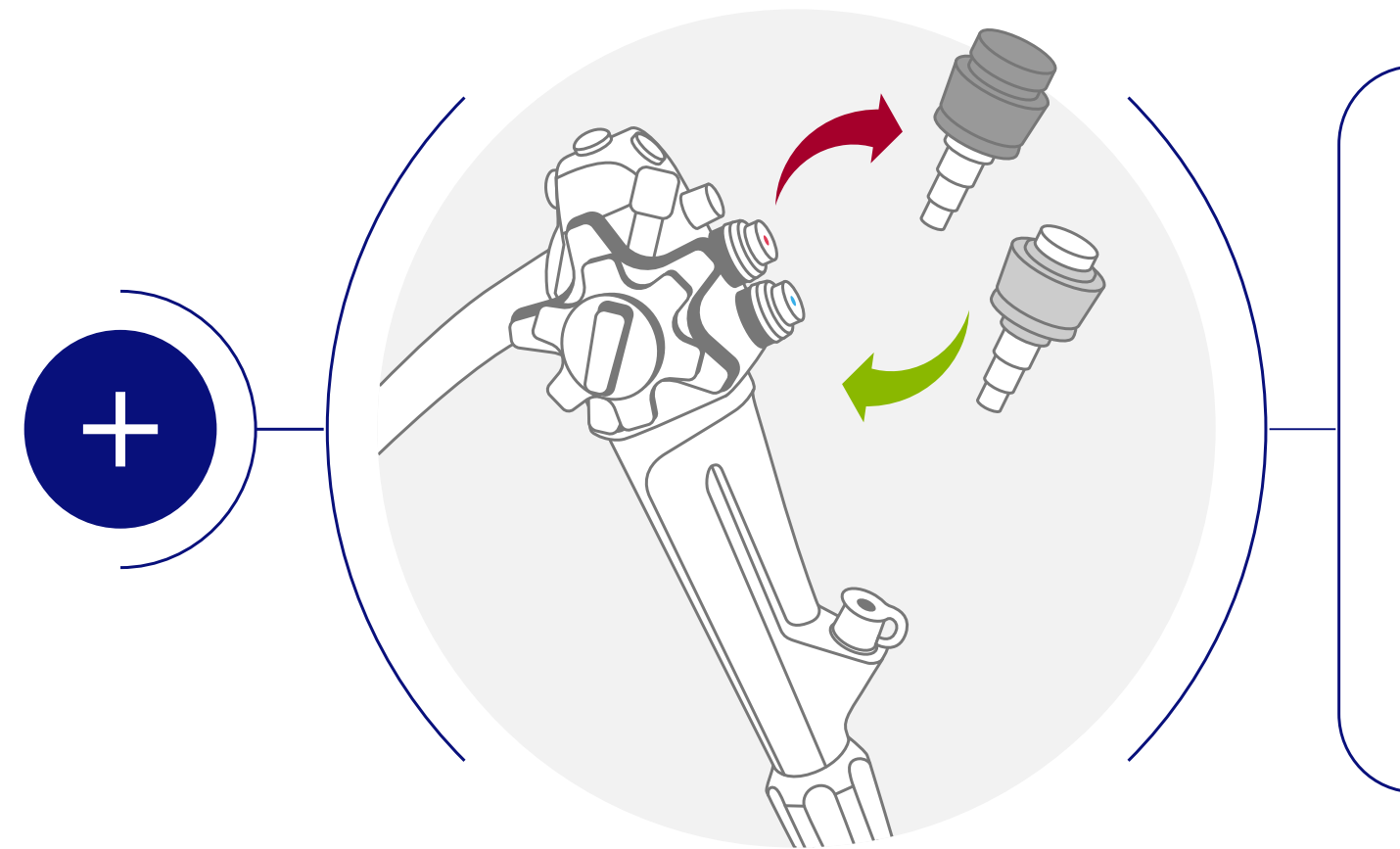
Example*:



*Source: Olympus

Manual Cleaning | Precleaning at Patient Site

Example*:



Rinse **all** channel

- Aspiration through instrument/suction channel
- Flush air and water channels with fluid and air
- Flush all additional channels with fluid and air, if applicable

*Source: Olympus

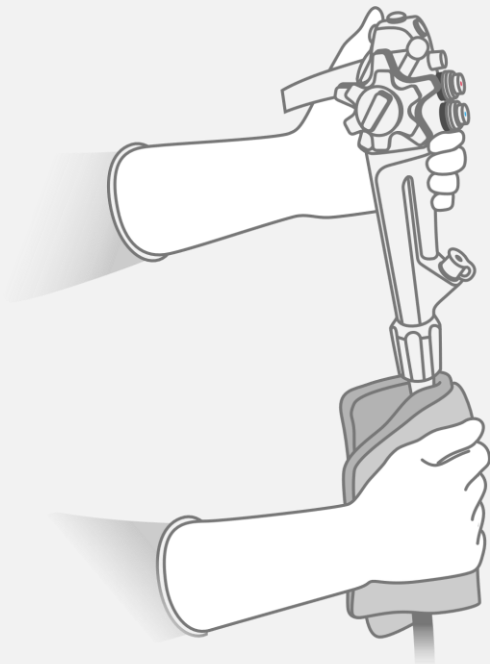
Manual Cleaning | Precleaning at Patient Site

Example*:

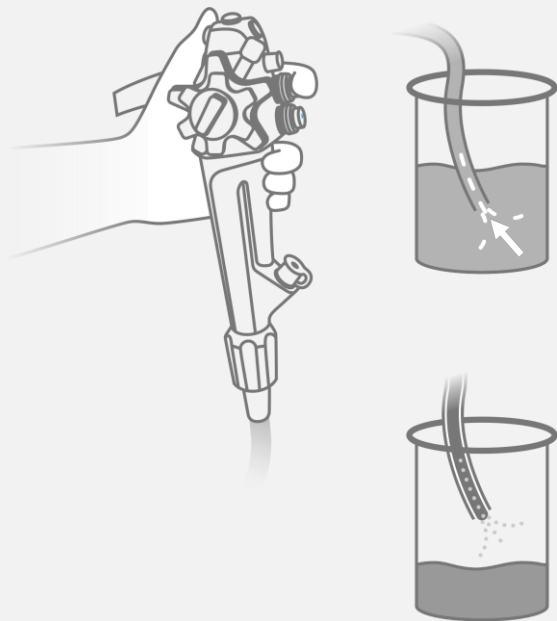
Wipe insertion section



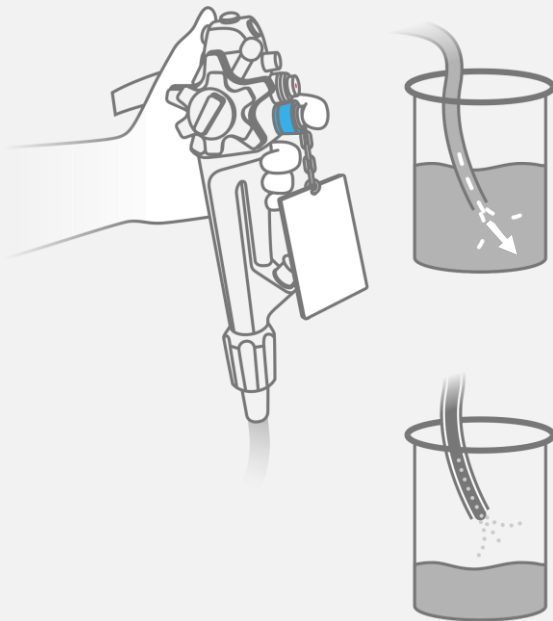
Remove
distal end cap



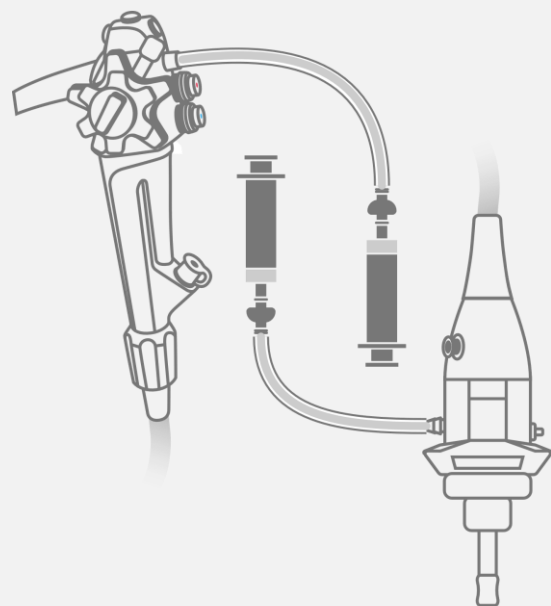
Aspirate instrument
/suction channel



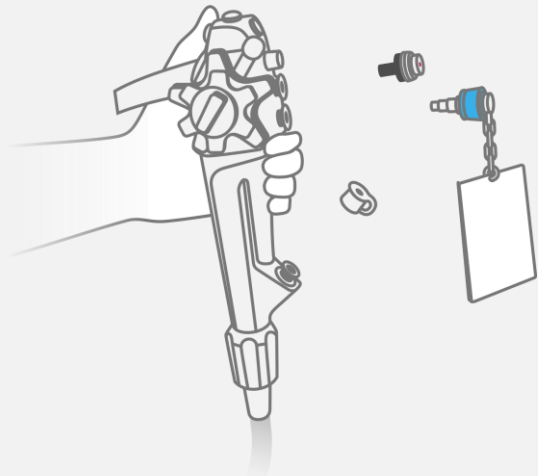
Flush air/water
channel



Optional: Auxiliary water
elevator-wire channel
(Reprocess even
when not used)

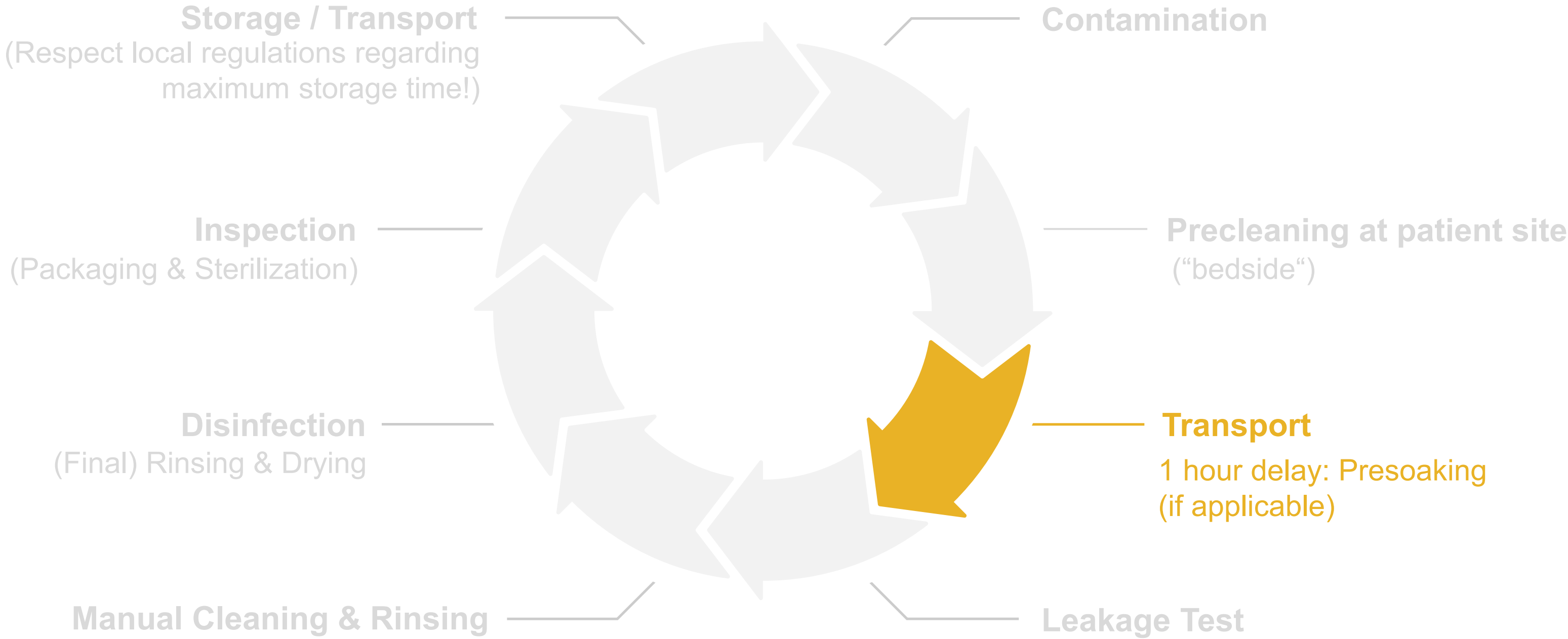


Remove accessories



*Source: Olympus

Reprocessing Cycle for Flexible Endoscopes | Endoscope Manufacturer's IFU (Instruction For Use)



Transport into the Reprocessing Area



Click on the plus symbols
for more information.

Transport into the Reprocessing Area

Example*:

- Hold the instrument carefully in one or two hands
 - Hold the control section, light source connector and distal end
- Create large radius loops



*Source: Olympus

Transport into the Reprocessing Area

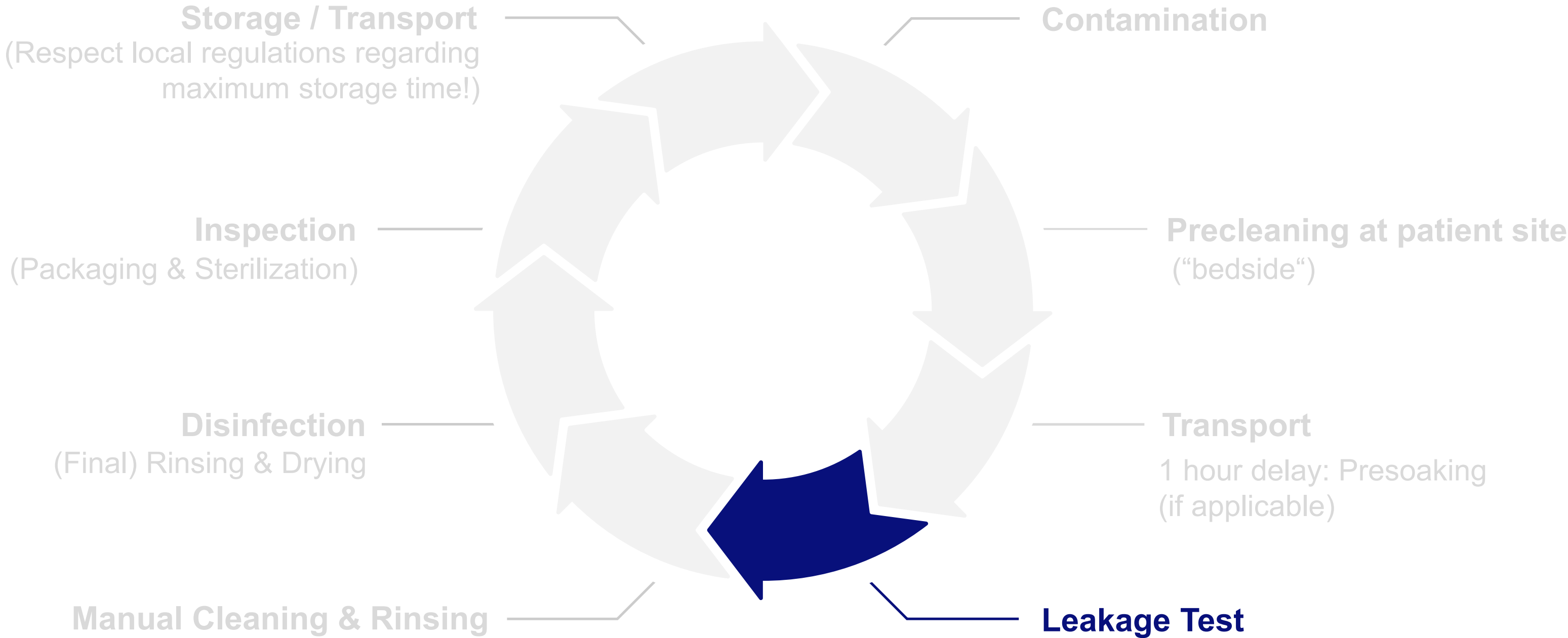
Example*:



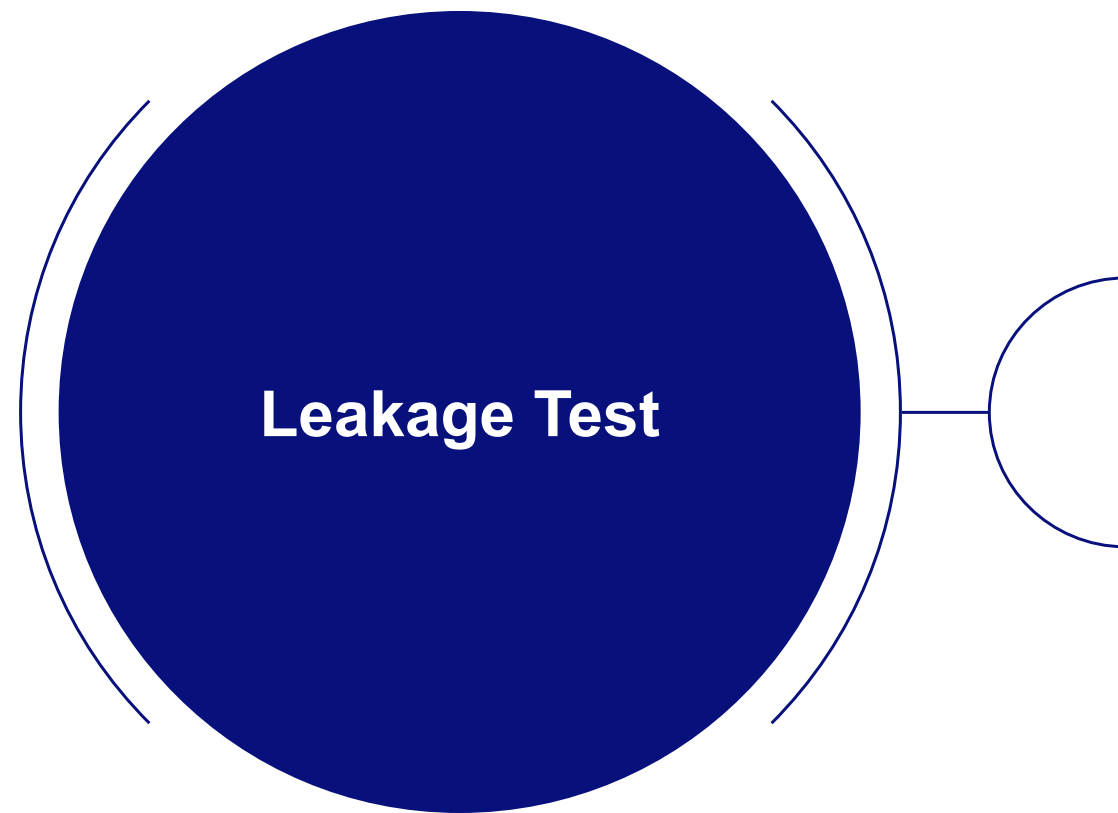
- Use a covered container to avoid environmental contamination
- Do not transport endoscopes and accessories together in the same container to avoid damages

*Source: Olympus

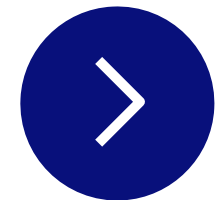
Reprocessing Cycle for Flexible Endoscopes | Endoscope Manufacturer's IFU (Instruction For Use)



Preparation before Manual Cleaning | Leakage Test

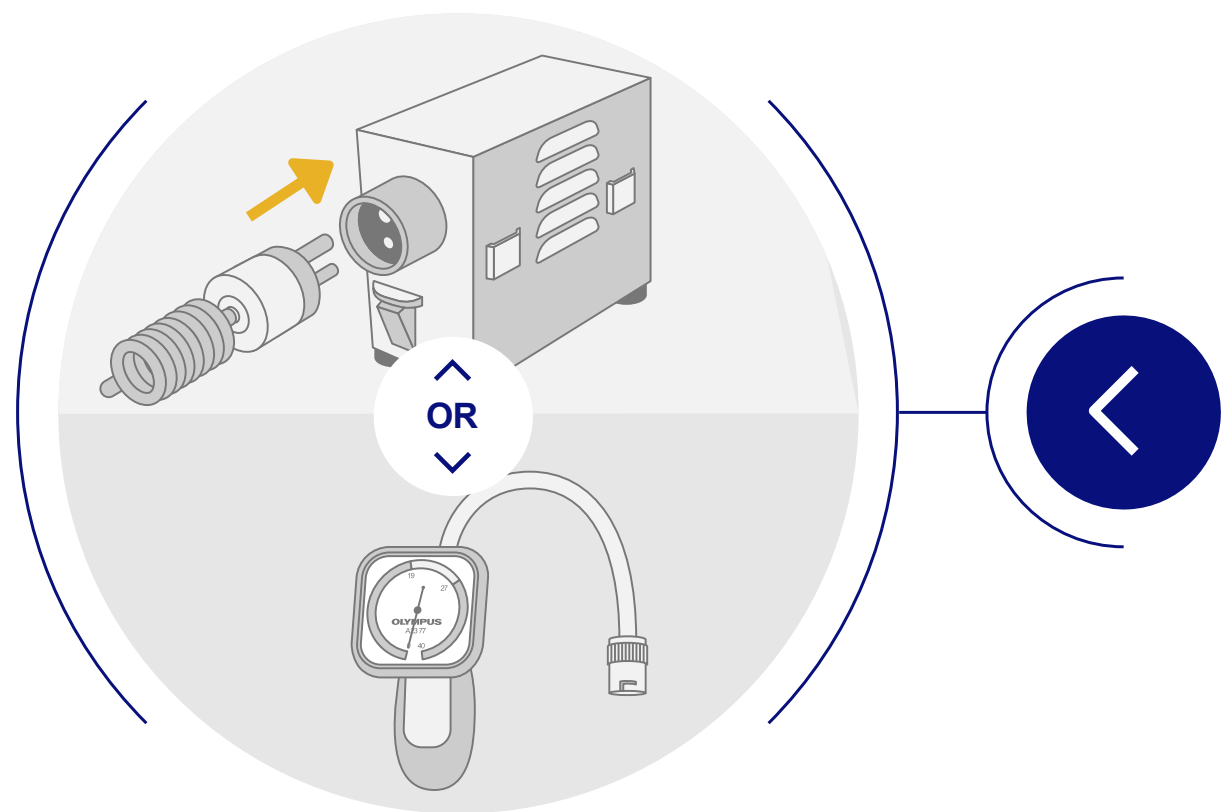


- **Before immersing** the endoscope in any liquid, confirm that:
 - Confirm that the insertion tube is set to the most flexible condition, if applicable
 - All components and accessories are detached from the endoscope
 - Water resistant cap is attached (where applicable)



Preparation before Manual Cleaning | Leakage Test

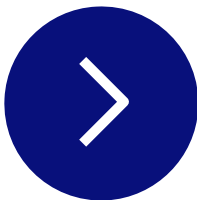
Example*:



*Source: Olympus

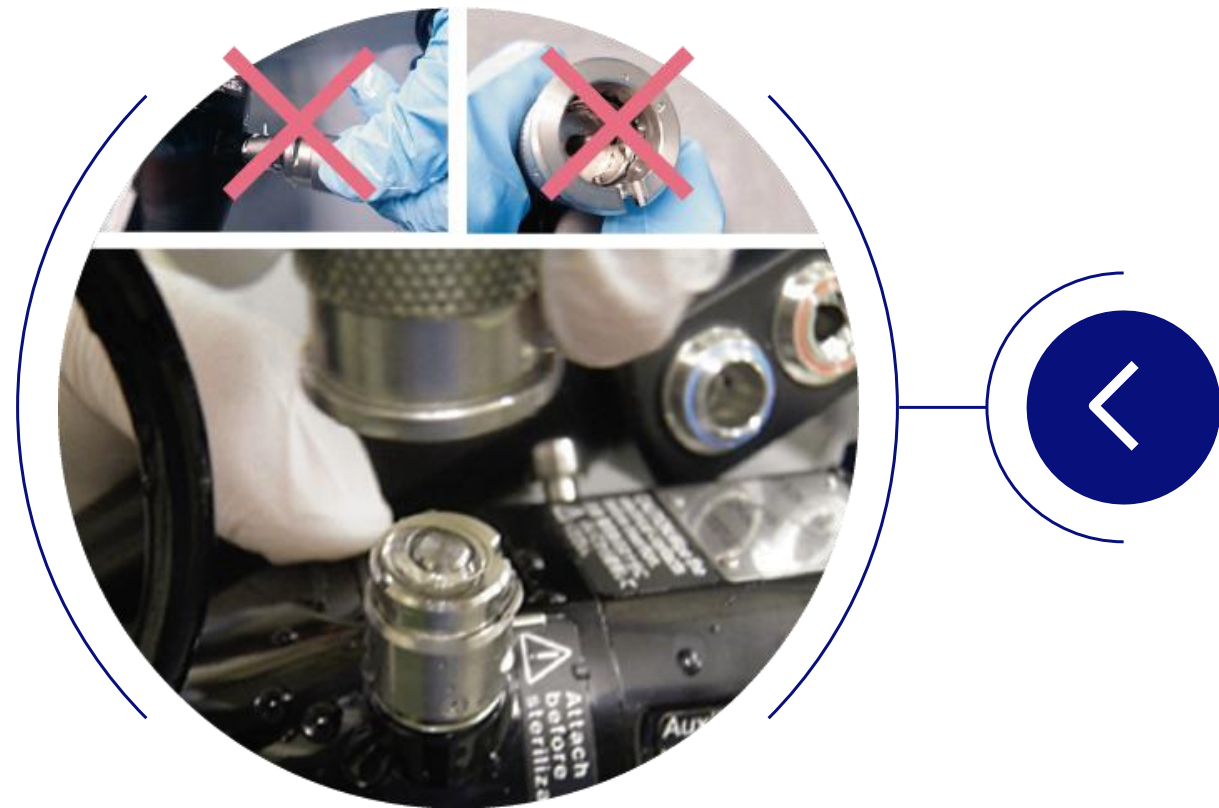
- Connect leakage tester to Maintenance Unit (MU-1)
- Or use manual leakage tester*

* only if applicable (refer to IFU)



Preparation before Manual Cleaning | Leakage Test

Example*:



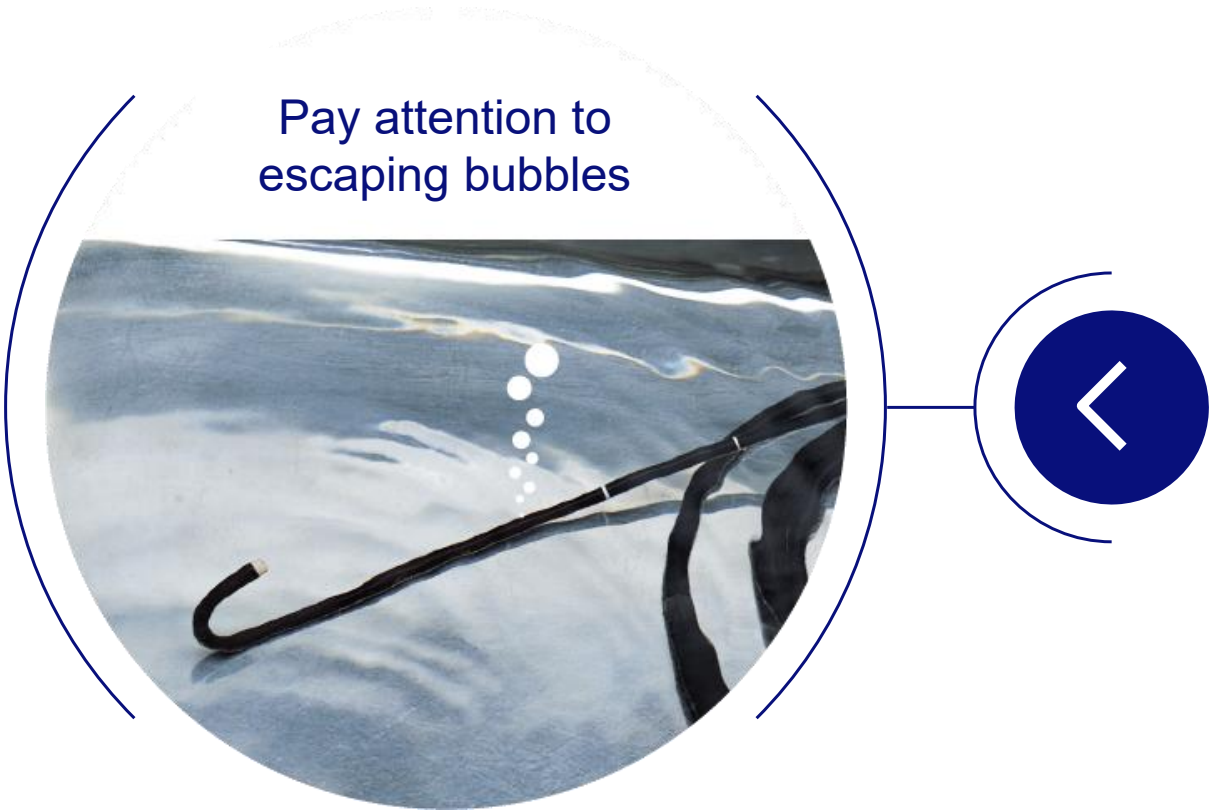
*Source: Olympus

- Make sure that both leakage tester cap and endoscopes' venting connector are completely dry
- Attach/detach the MB-155 always while the endoscope is NOT immersed



Preparation before Manual Cleaning | Leakage Test

Example*:



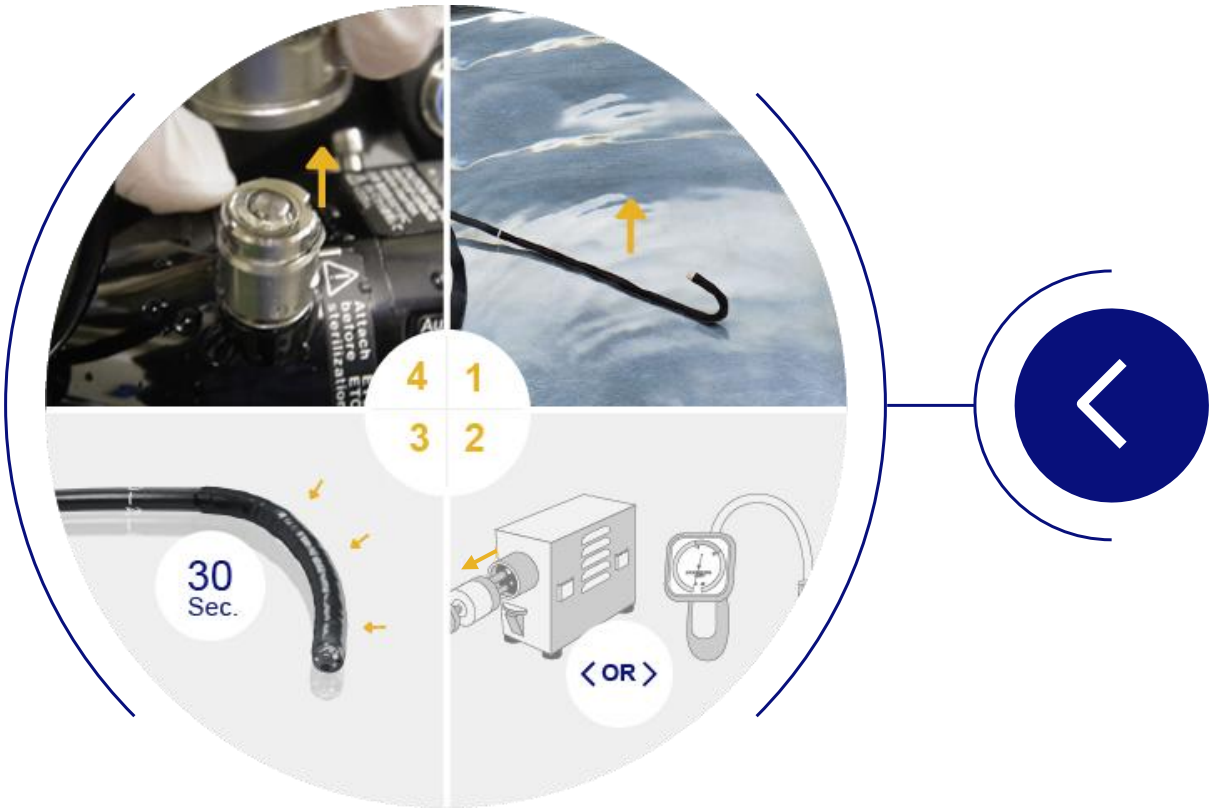
*Source: Olympus

- Check for leakages for min. 30 sec. while deflecting the bending section of the endoscope by turning the UP/DOWN and RIGHT/LEFT angulation control knobs



Preparation before Manual Cleaning | Leakage Test

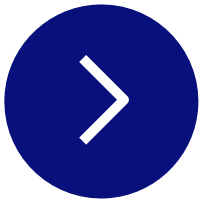
Example*:



*Source: Olympus

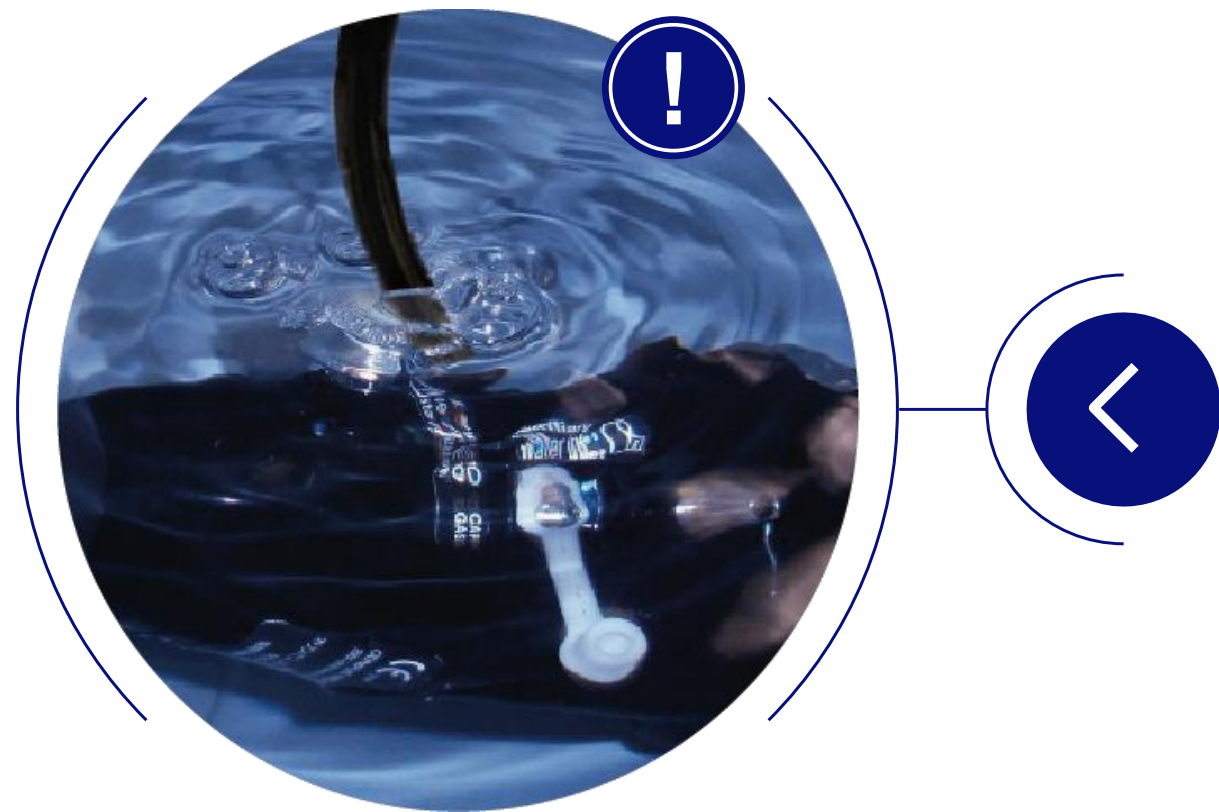
After leakage test:

- 1 Remove the endoscope from the water
- 2 Disconnect the leakage tester (MB-155) from the Maintenance Unit (MU-1) or release pressure of manual leak tester
- 3 Wait 30 s until the rubber cover of the bending section deflates to its pre-expansion size
- 4 Detach the leakage tester from the endoscope



Preparation before Manual Cleaning | Leakage Test

Example*:



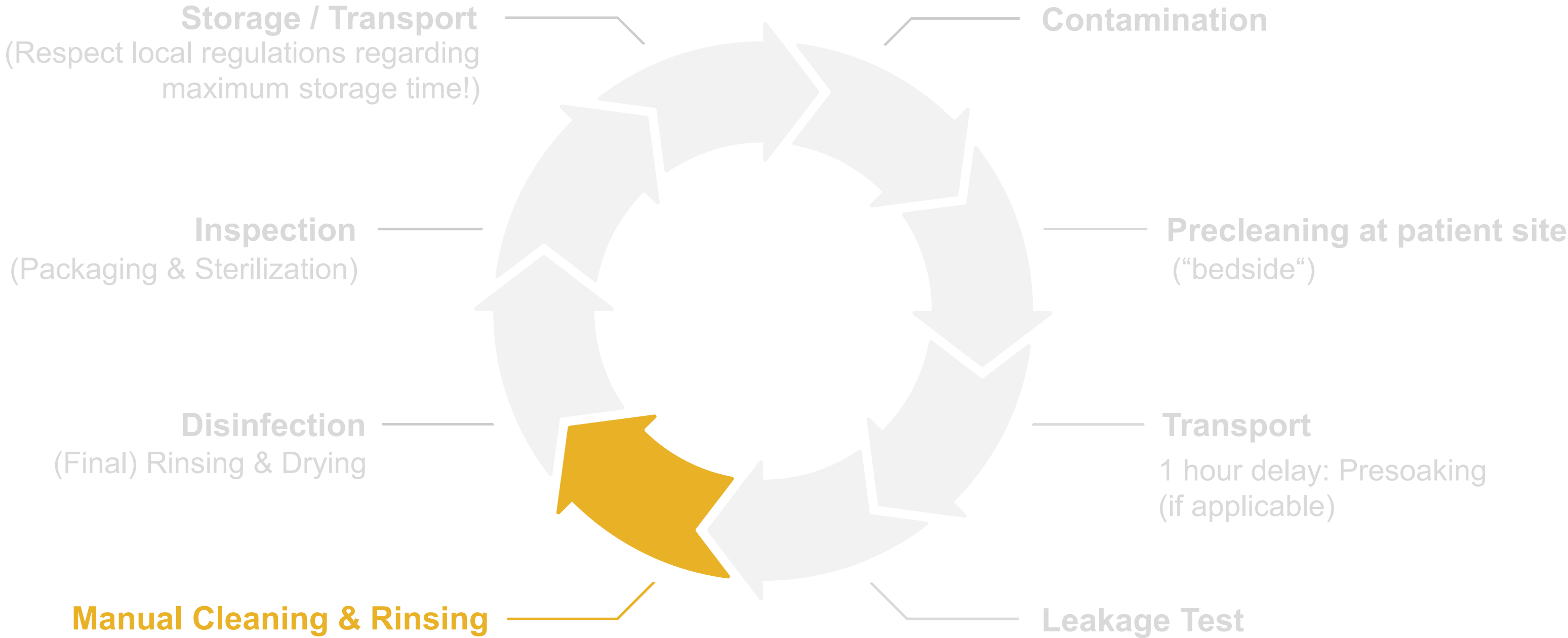
*Source: Olympus

In case of a leak

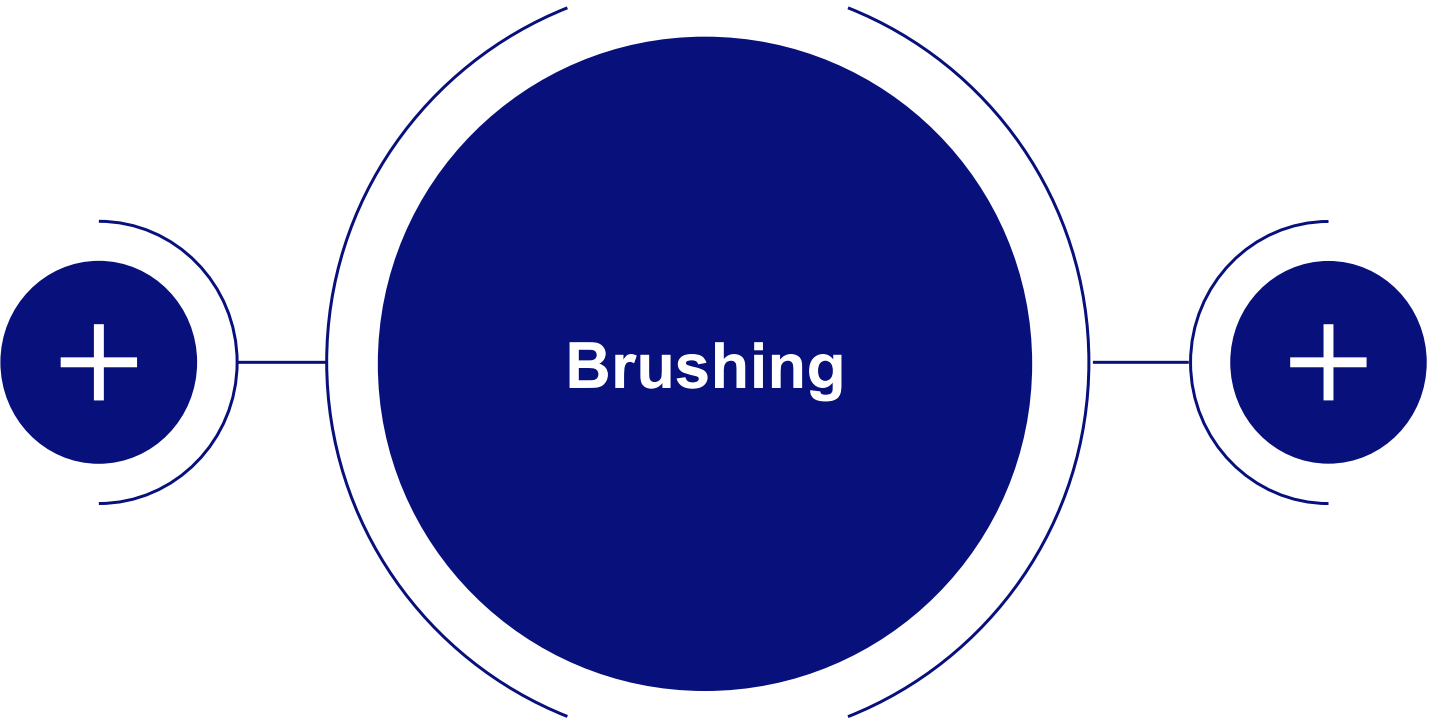
- Continuous series of bubbles
- Immediately **STOP** further reprocessing
 - Dry the endoscope
 - Wrap into a foil
 - Initiate shipment to next endoscope Manufacturer's repair center



Reprocessing Cycle for Flexible Endoscopes | Endoscope Manufacturer's IFU (Instruction For Use)



Manual Cleaning | Brushing

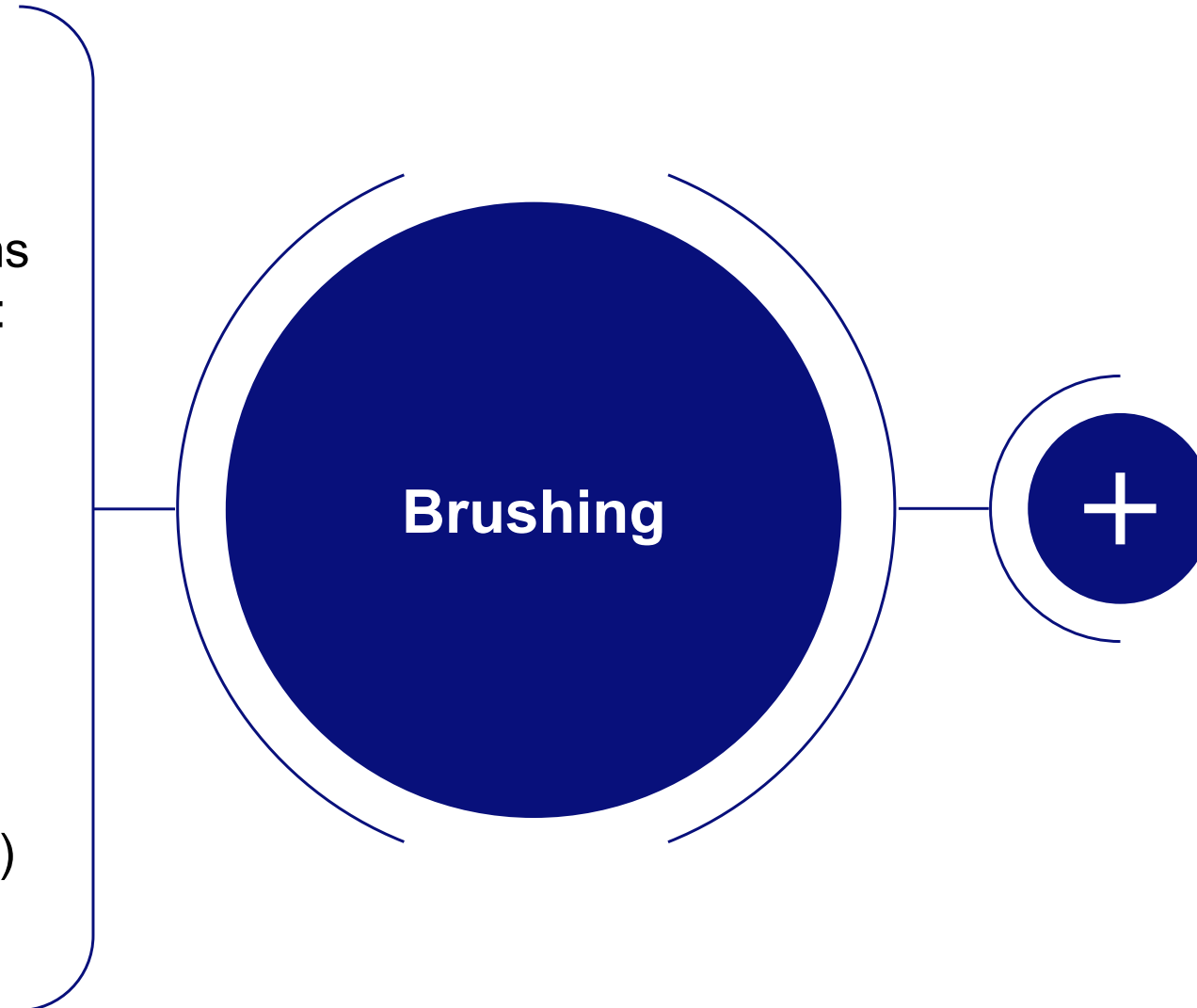


Click on the plus symbols for more information.

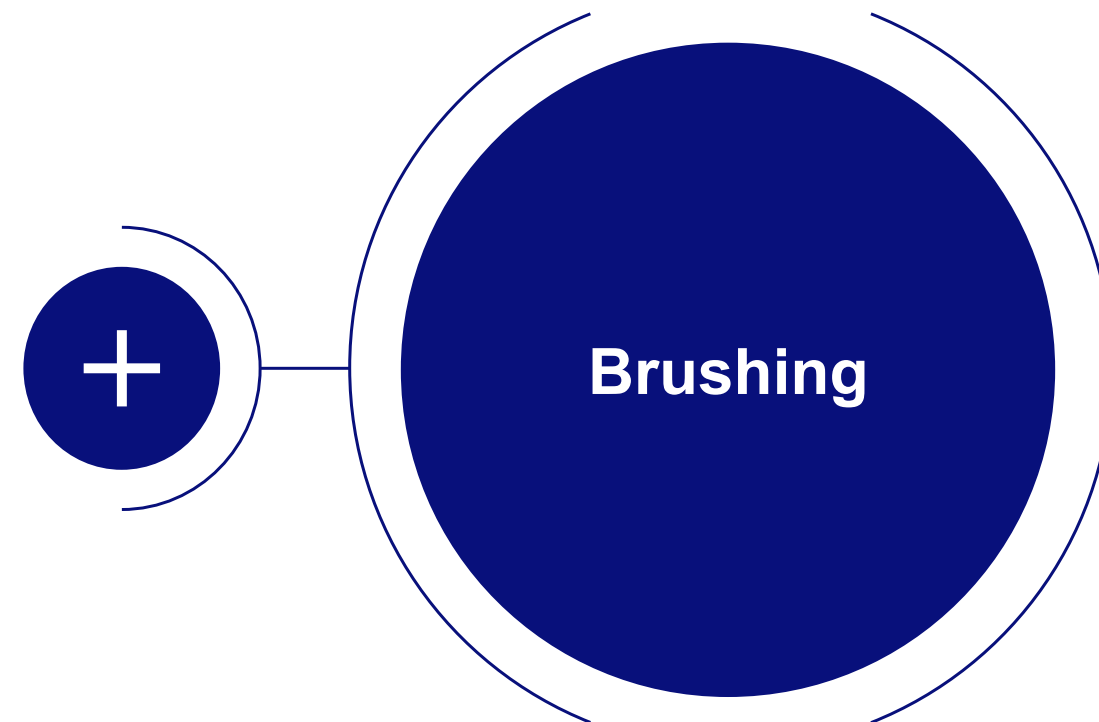
Manual Cleaning | Brushing

Purpose

- Reduction of most microorganisms and removal of residues, such as:
 - Fluids
 - Blood, mucus, faeces
 - Debris
 - Pharmacological substances (e.g., contrast agents, lubricants)



Manual Cleaning | Brushing

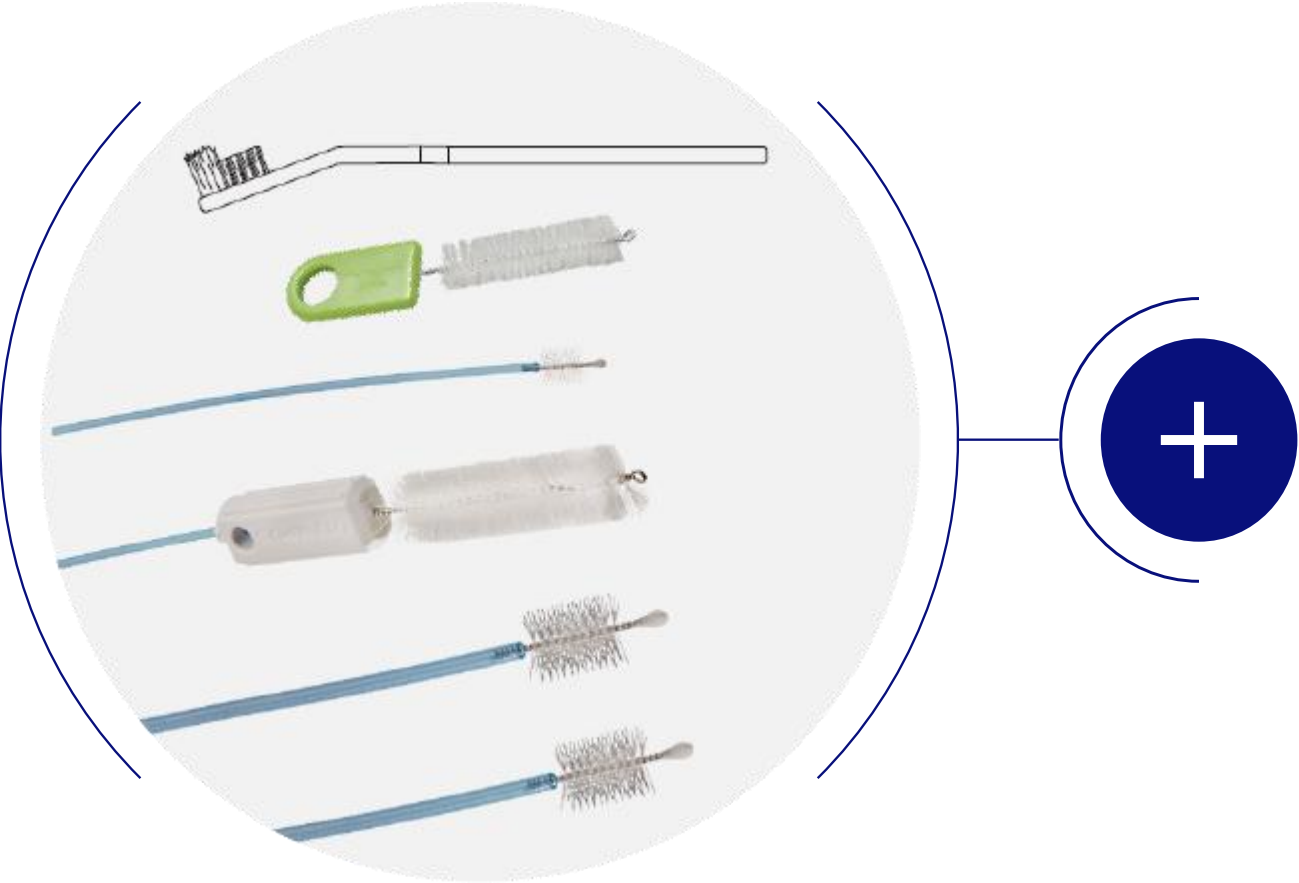


Cleaning Solutions

- Surfactants, low-foaming substances, with/without enzymes, neutral to mild-alkaline (10,8) pH
 - Clear superiority of individual substances not found
- Without fixative properties (e.g., aldehydes, alcohols, peracetic acids)
- Freshly prepared for each endoscope
- No internationally standardized requirements for cleaners
- Should be the same or compatible to the solution used during bedside cleaning to avoid any chemical reactions

Manual Cleaning | Brushing

Example*:

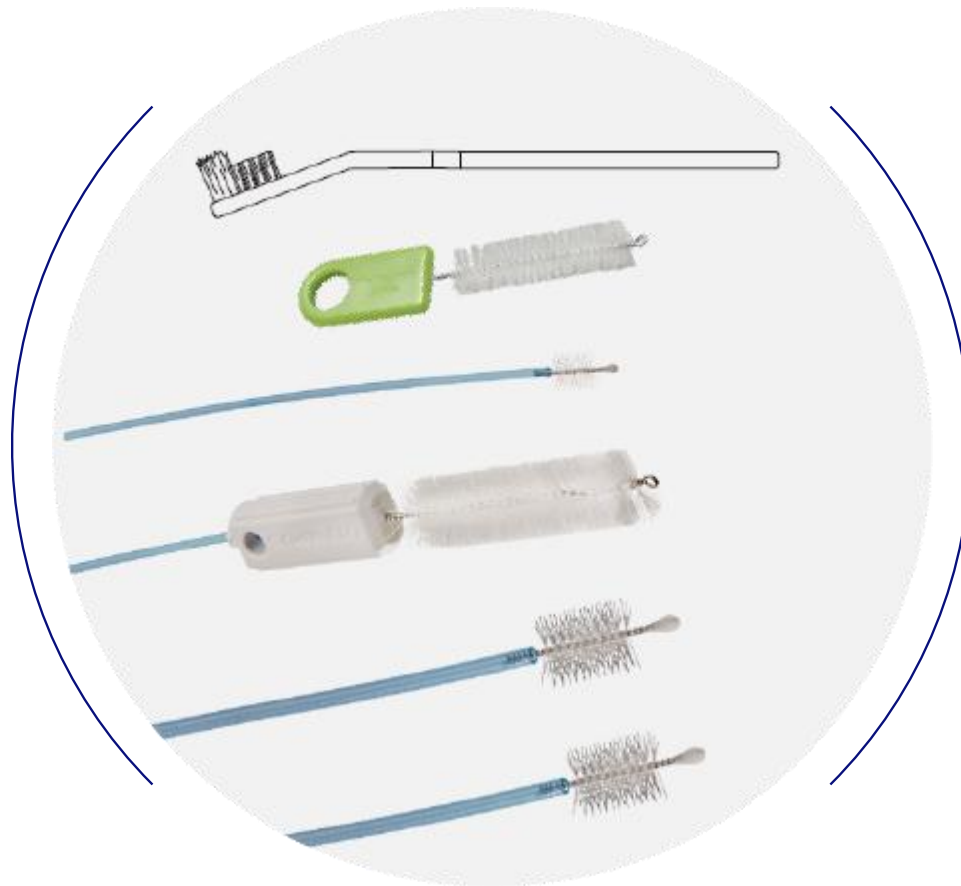


*Source: Olympus

Click on the plus symbol for more information.

Manual Cleaning | Brushing

Example*:



*Source: Olympus

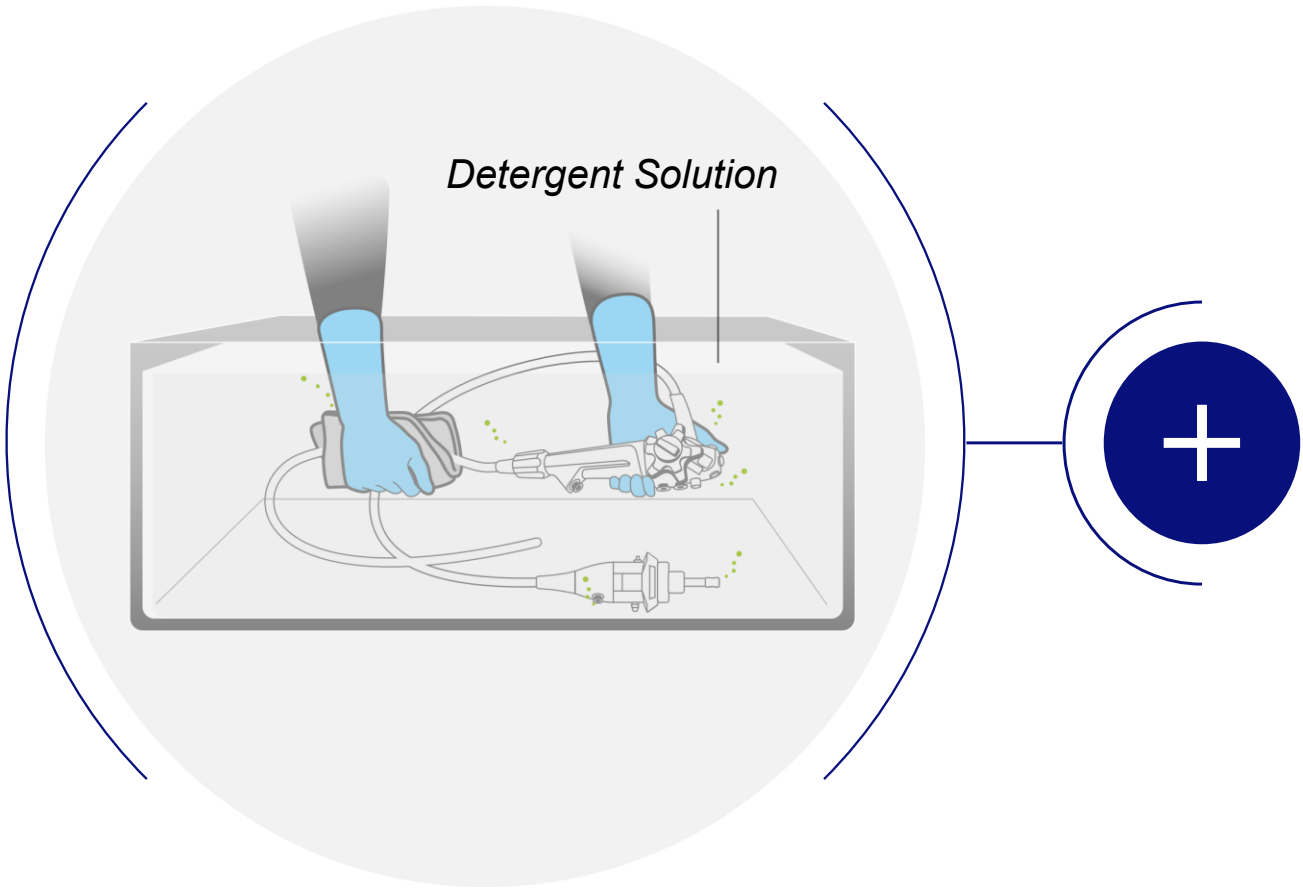
- Disposable brush
 - Only used for brushing 1 endoscope
 - Pull-through system
 - Forward-backward brushing
- Reusable brush
 - Used for multiple endoscopes
 - Reprocess after every endoscope
 - Carefully check brush prior to use
- Exchange brush if abnormalities are shown
- For defined endoscopes, special care must be applied when brushing the distal end



At all times: visibly
check the cleanliness

Manual Cleaning | Brushing

Example*:



*Source: Olympus

Click on the plus symbol for more information.

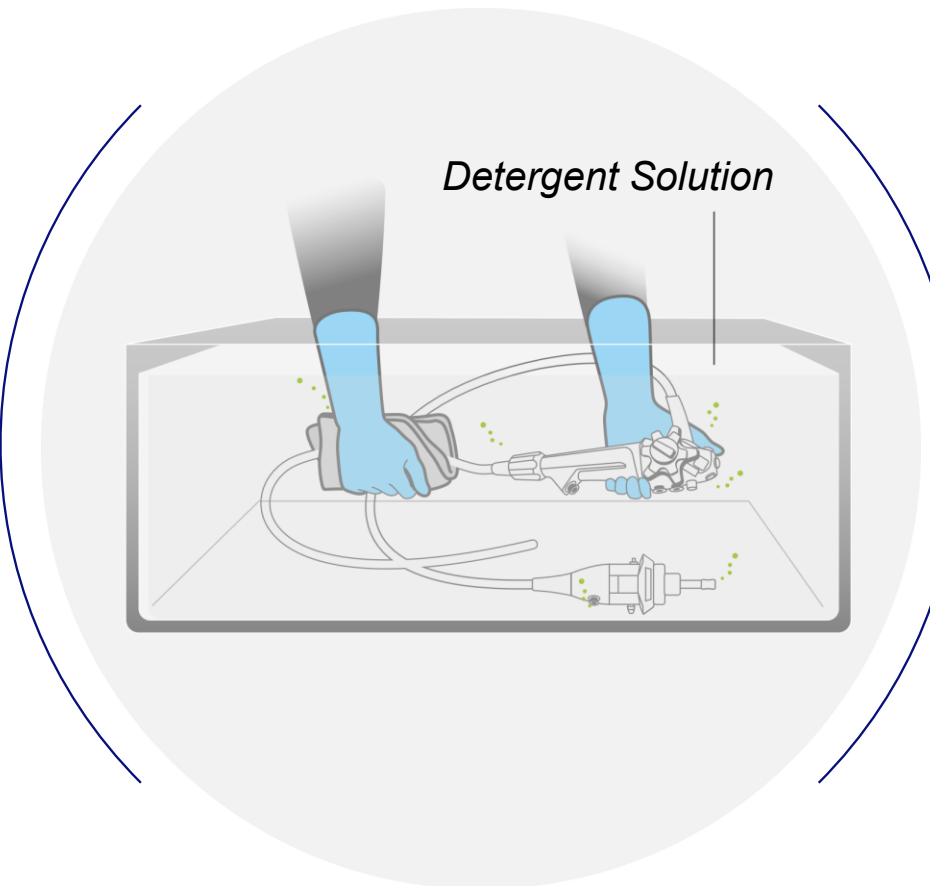


At all times: visibly check the cleanliness

Manual Cleaning | Brushing

- Preparation of Detergent Solution
 - Follow instructions of process chemical manufacturer in terms of concentration, exposure time and temperature
- Fully immerse the endoscope in detergent solution
 - Do not immerse the endoscope with objects other than the equipment used for reprocessing the endoscope
- Thoroughly wipe or brush all external surfaces

Example*:



*Source: Olympus

While Immersed

- Immerse the endoscope in the detergent solution.
- Clean all external surfaces, especially the air/water nozzle opening at the distal end. Ensure that all surfaces of the distal end are thoroughly cleaned

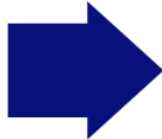
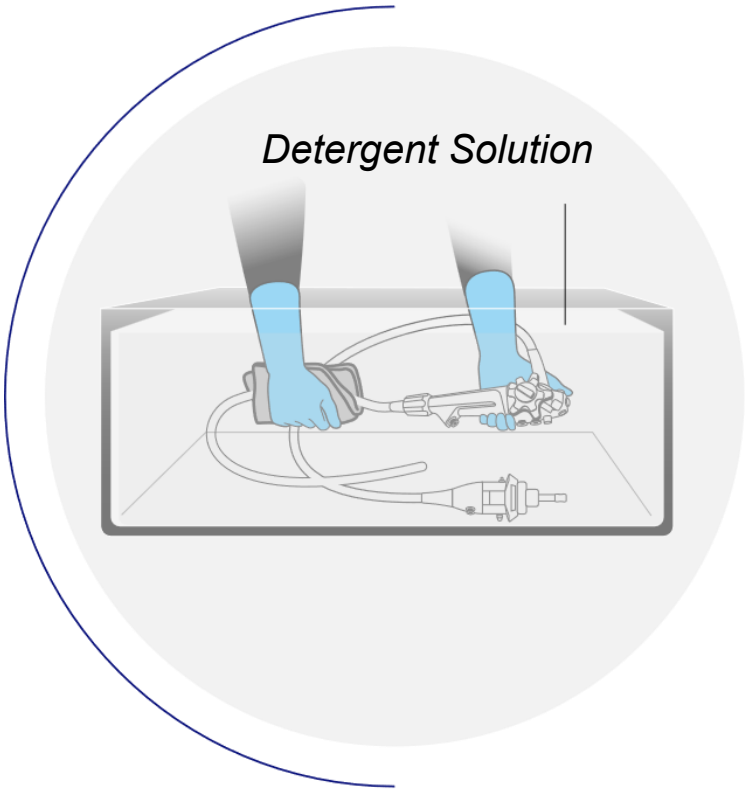


At all times: visibly
check the cleanliness

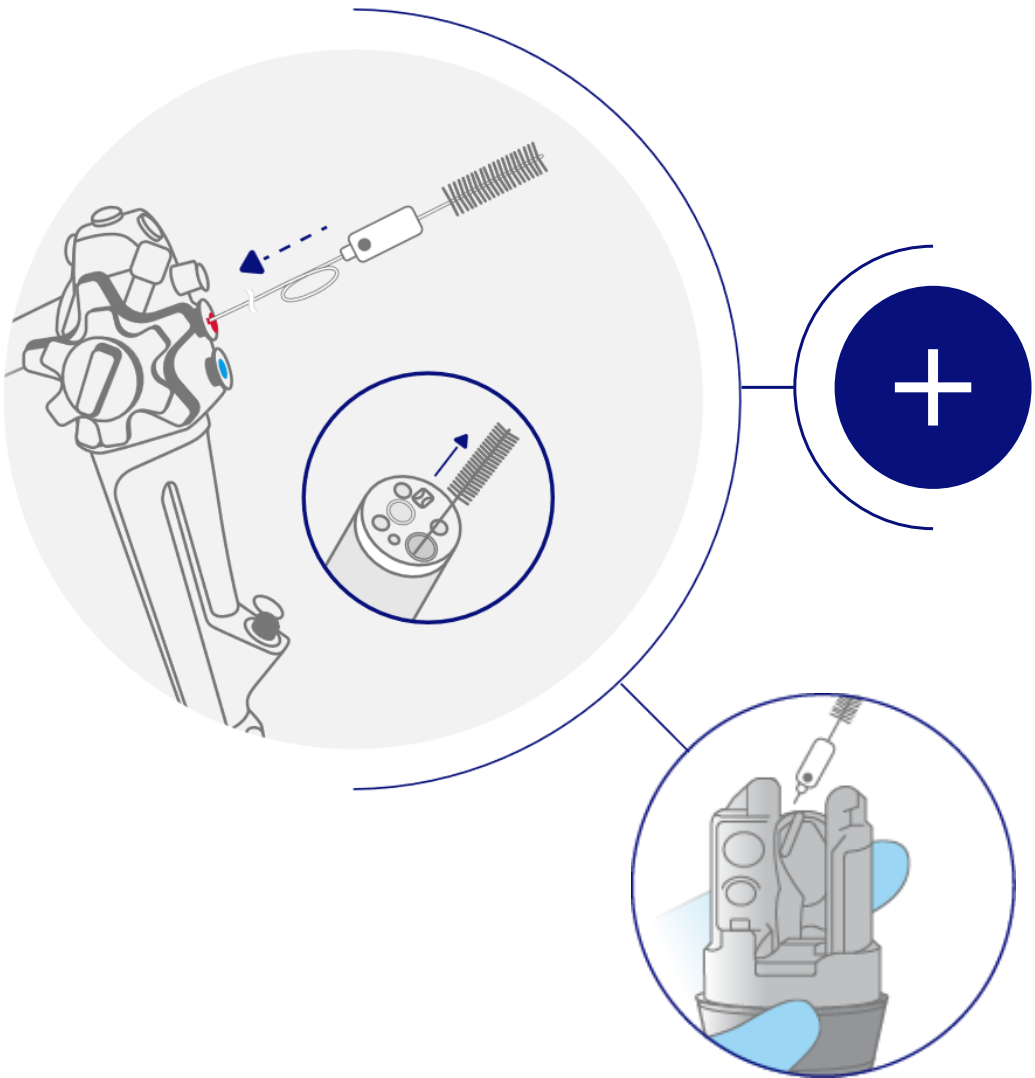
Manual Cleaning

Example*:

Immerse & wipe



Brush while immersed



*Source: Olympus

For duodenoscopes there are additional steps necessary



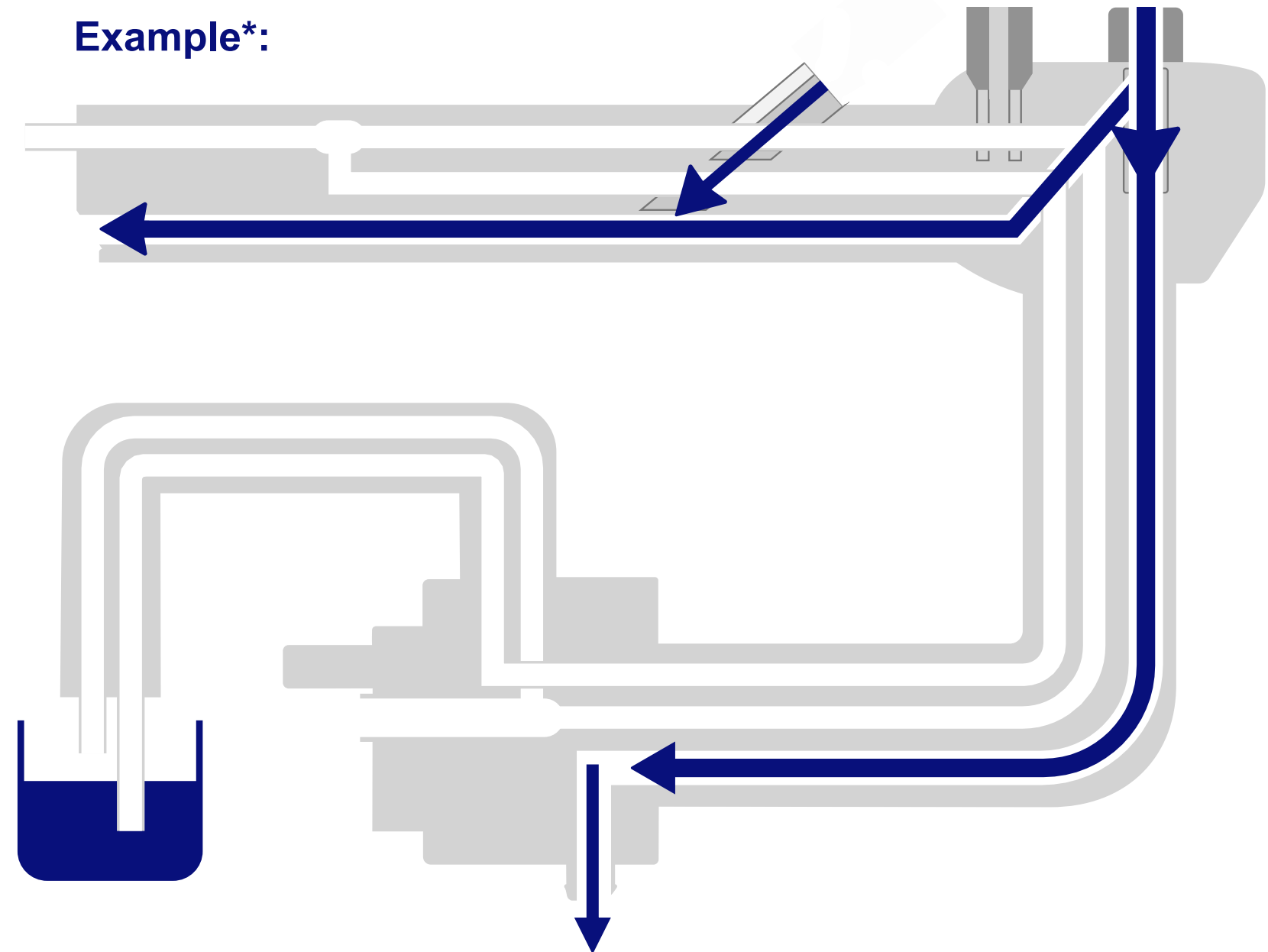
Click on the plus symbol for more information.

Manual Cleaning | Brushing the Instrument / Suction Channel

While the endoscope is completely immersed, brush all accessible channels, suction cylinder and instrument channel entrance port with appropriate brushes

- Brush size adopted to the channel size according to IFU
- Follow brush order and direction as given in IFU

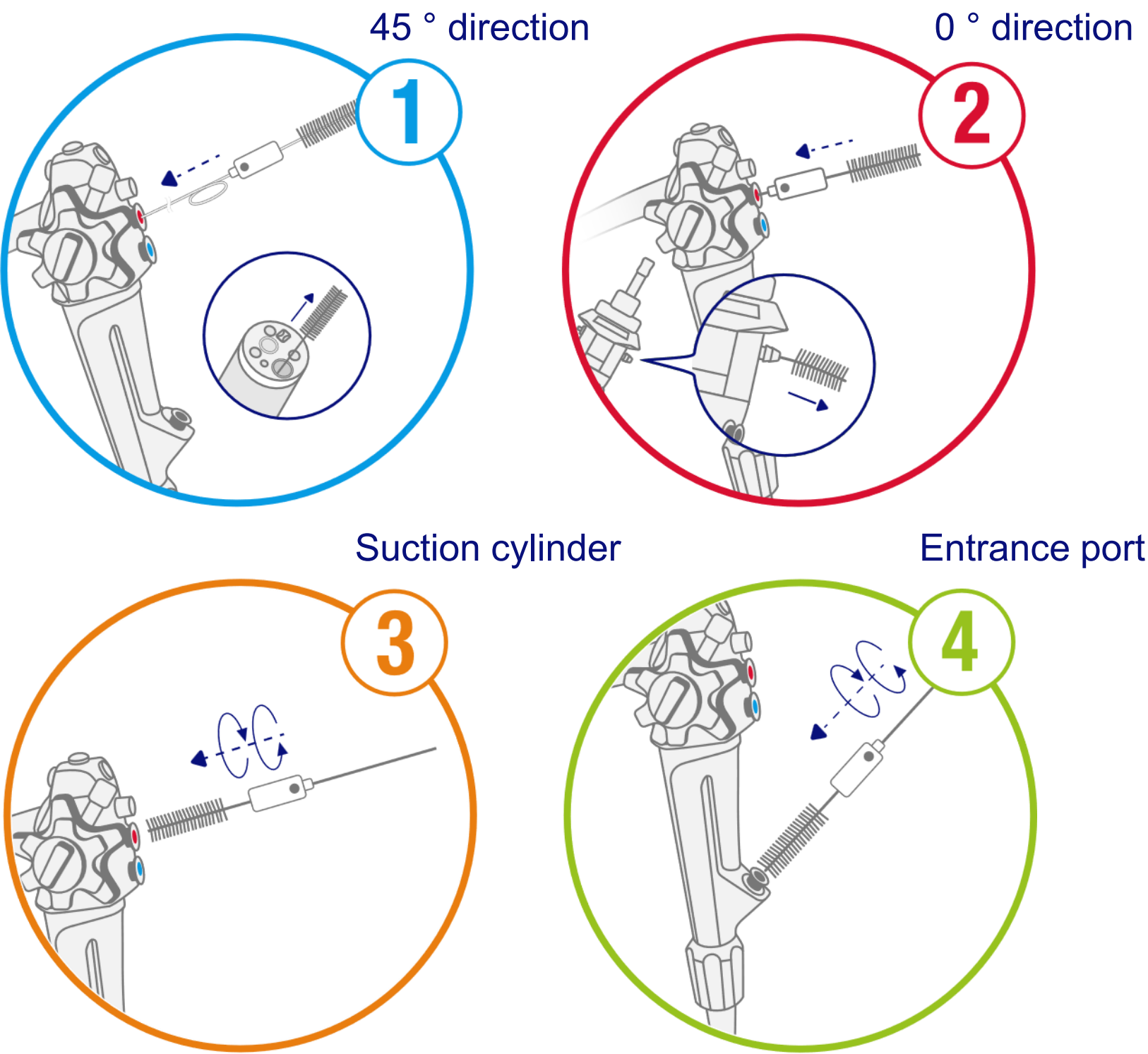
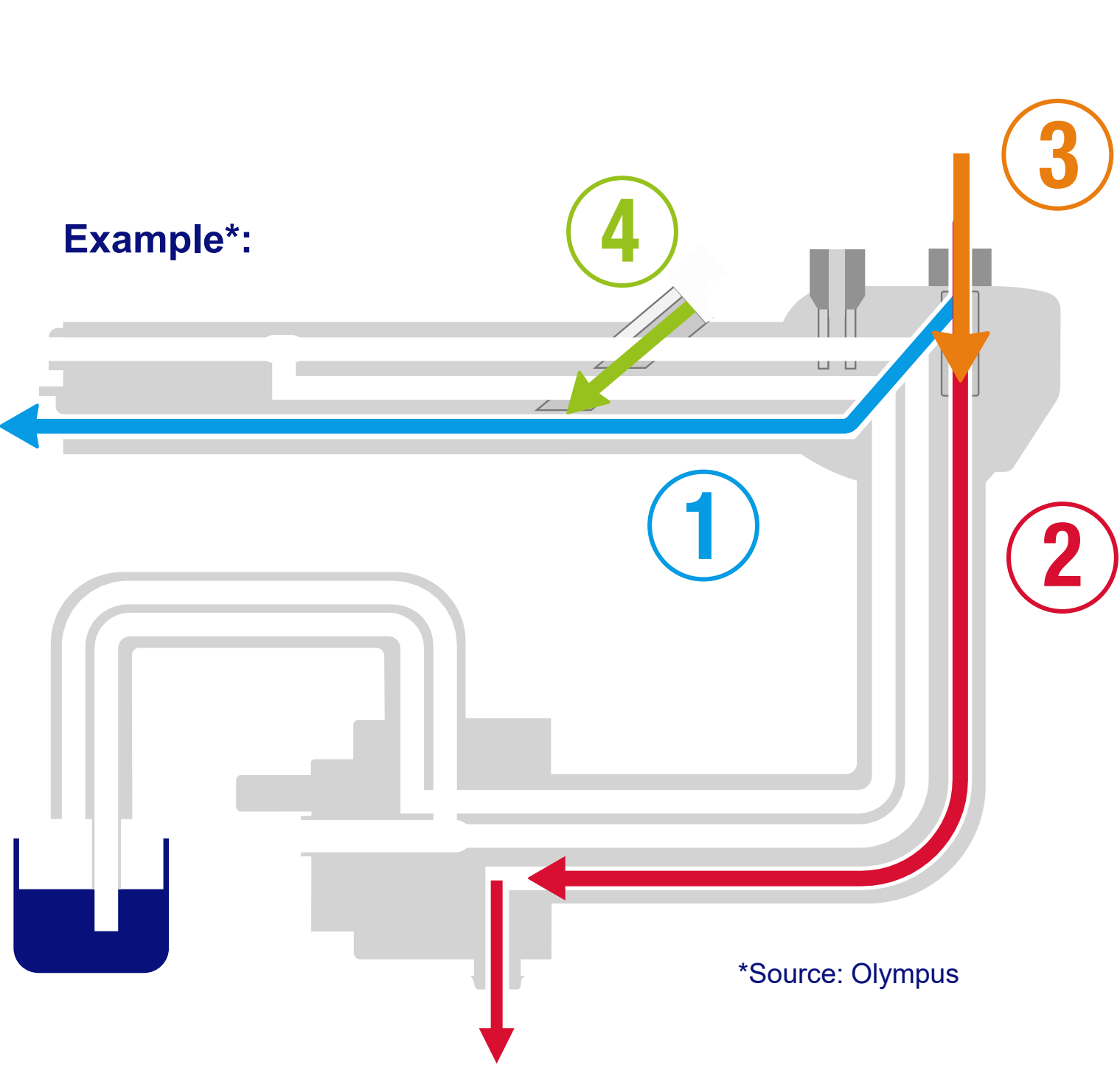
Example*:



*Source: Olympus

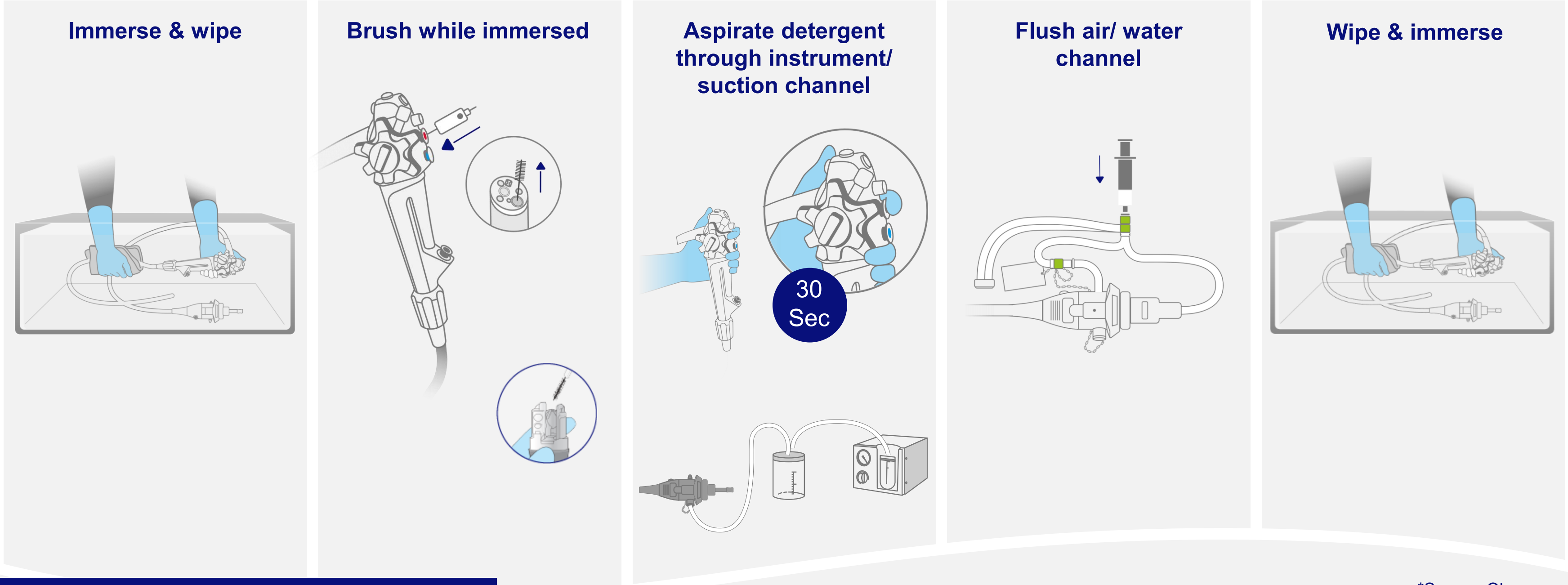
[Back to overview](#)

Manual Cleaning | Brushing the Instrument / Suction Channel



Manual Cleaning

Example*:



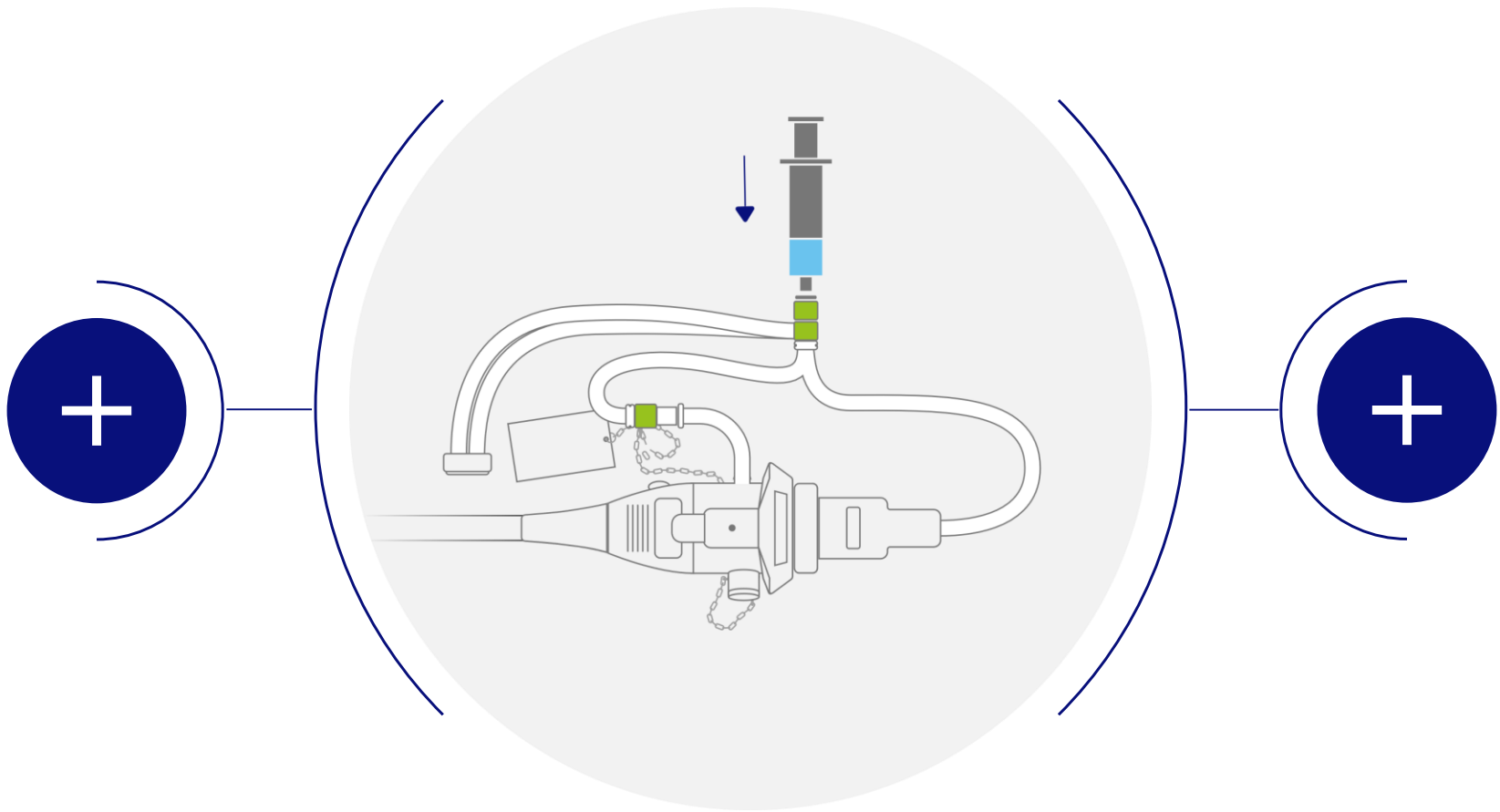
For duodenoscopes there are additional steps necessary



*Source: Olympus

Manual Cleaning | Rinsing

Example*:



*Source: Olympus

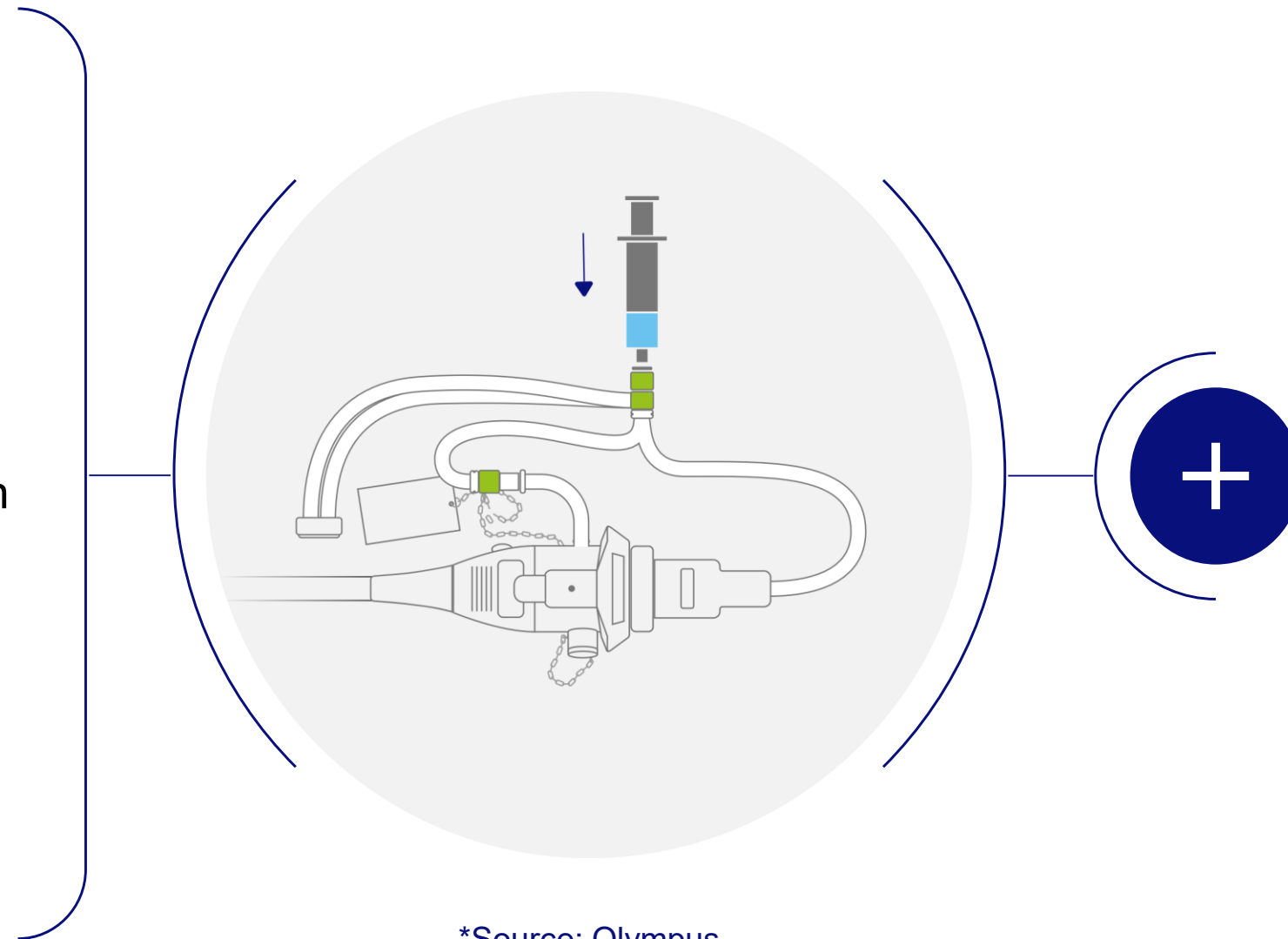
Click on the plus symbols
for more information.

Manual Cleaning | Rinsing

Purpose

- Removal of cleaning solution
- Reduction of organic load
- Avoidance of interactions with disinfection solution
- Take care on water quality (see IFU)

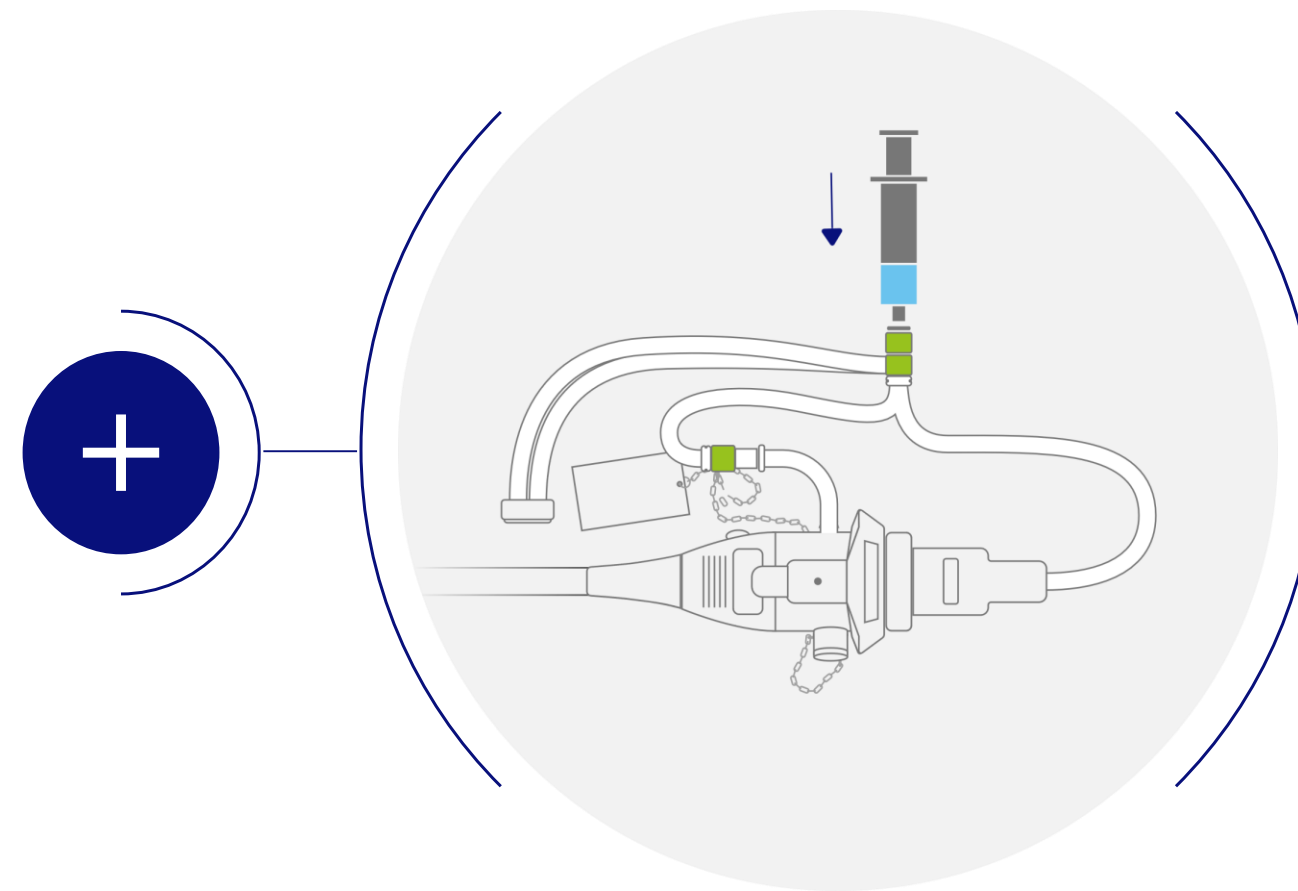
Example*:



*Source: Olympus

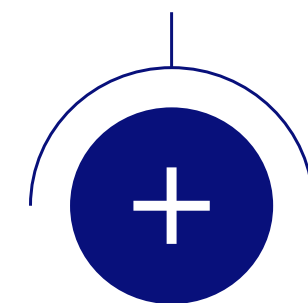
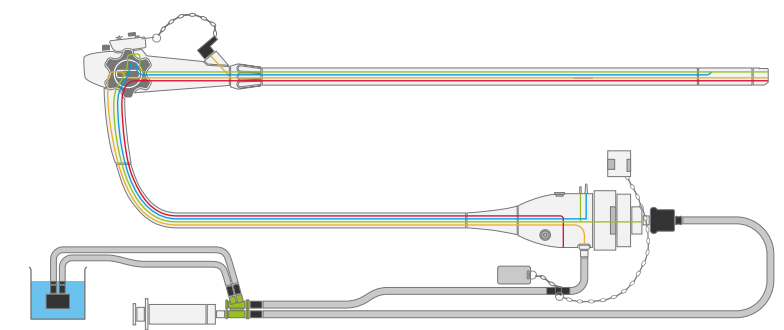
Manual Cleaning | Rinsing

Example*:



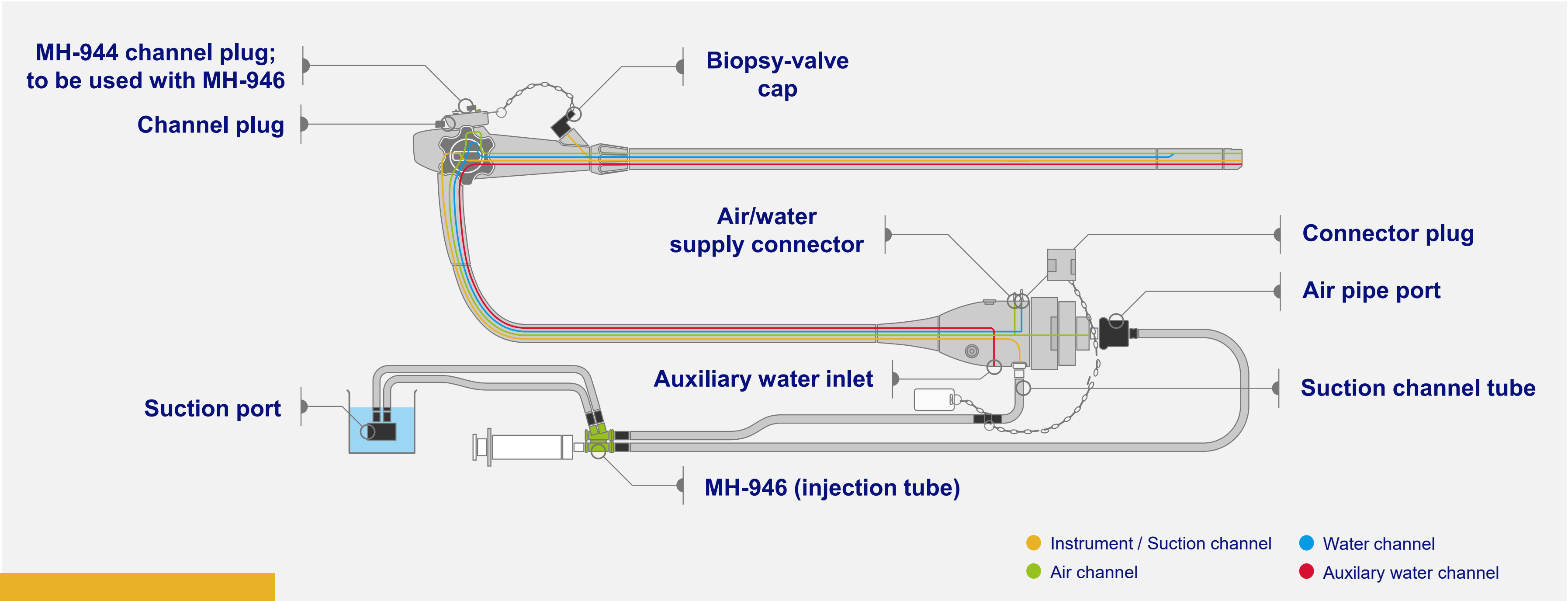
*Source: Olympus

- Prepare a clean, large basin with fresh water and completely immerse the endoscope
- Flush / aspirate all channels with water
 - Use of corresponding cleaning adapters



Manual Cleaning | Rinsing

Example*:

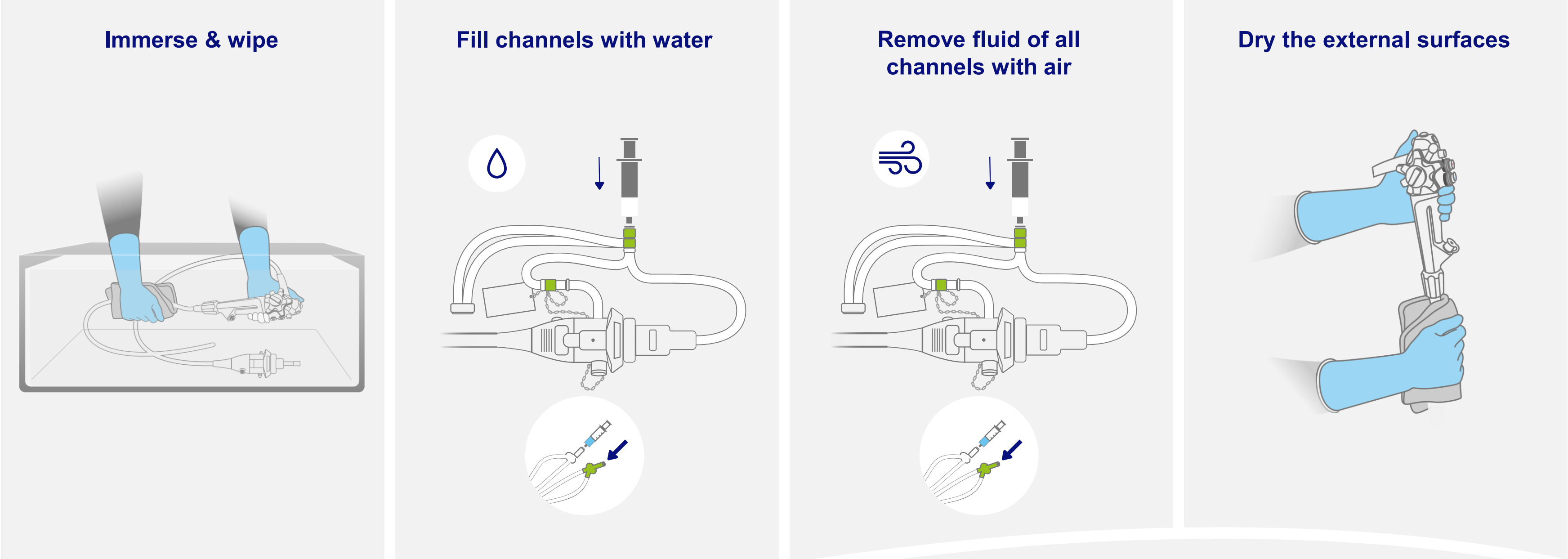


[Back to overview](#)

*Source: Olympus

Manual Cleaning | Rinsing

Example*:



For duodenoscopes there are additional steps necessary



*Source: Olympus

Manual Cleaning | Quick Reference Guides

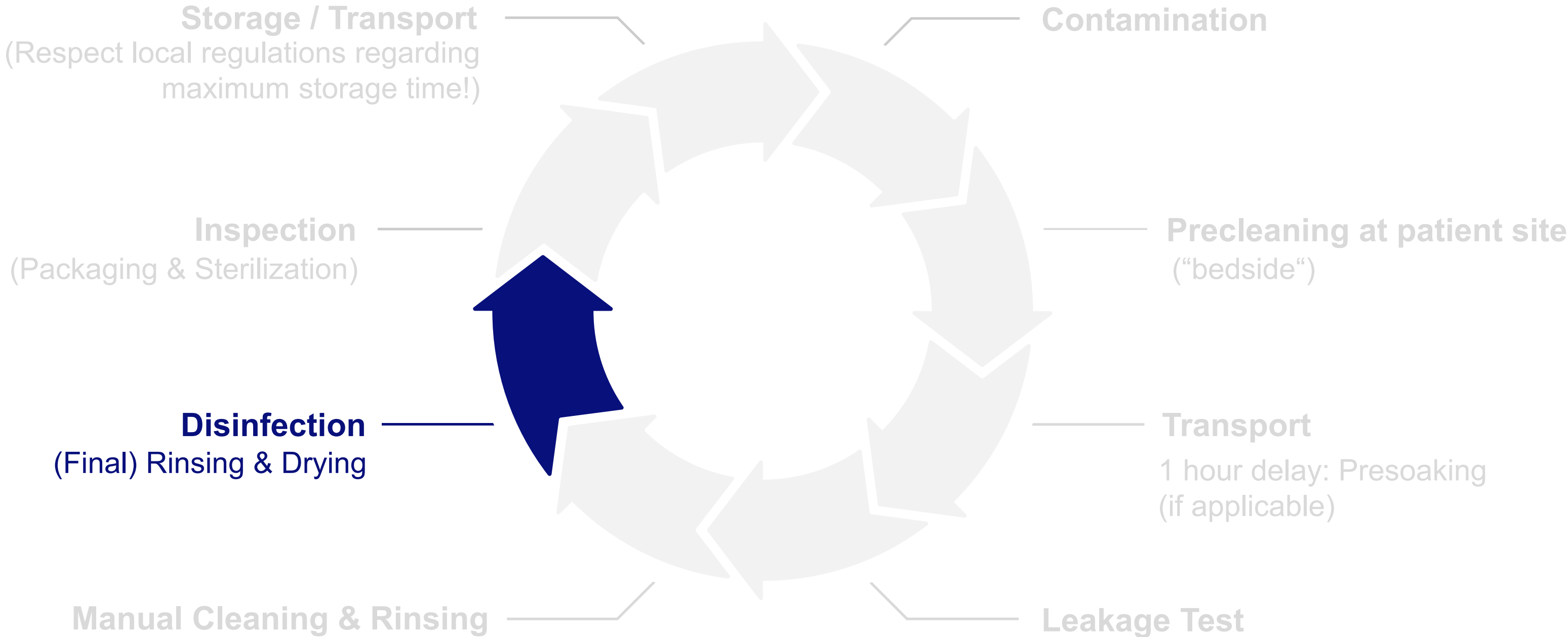
- Use of available wallcharts:
 - The manual reprocessing steps in colored pictures on a laminated document

Example*:

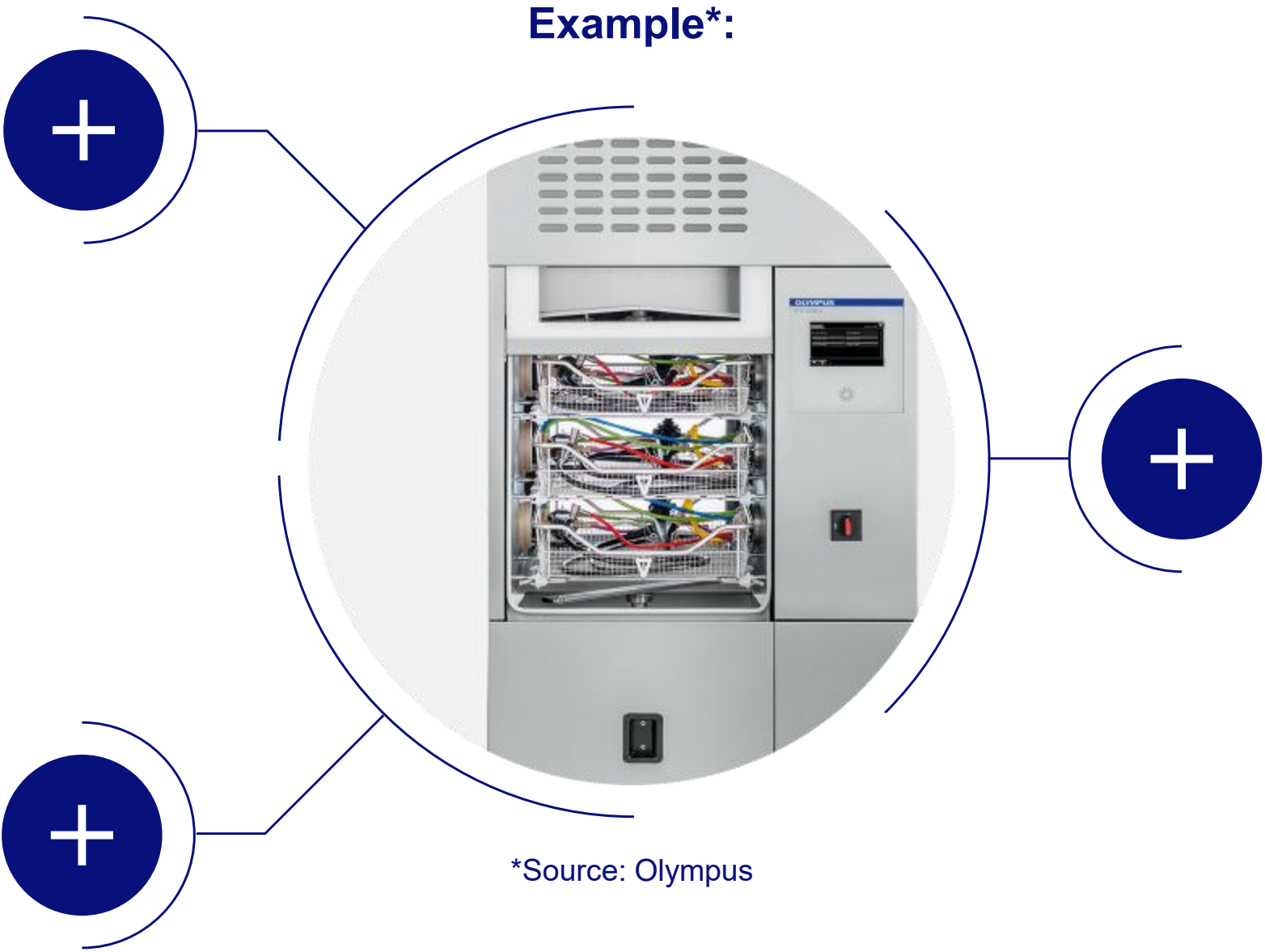


*Source: Olympus

Reprocessing Cycle for Flexible Endoscopes | Endoscope Manufacturer's IFU (Instruction For Use)



Disinfection



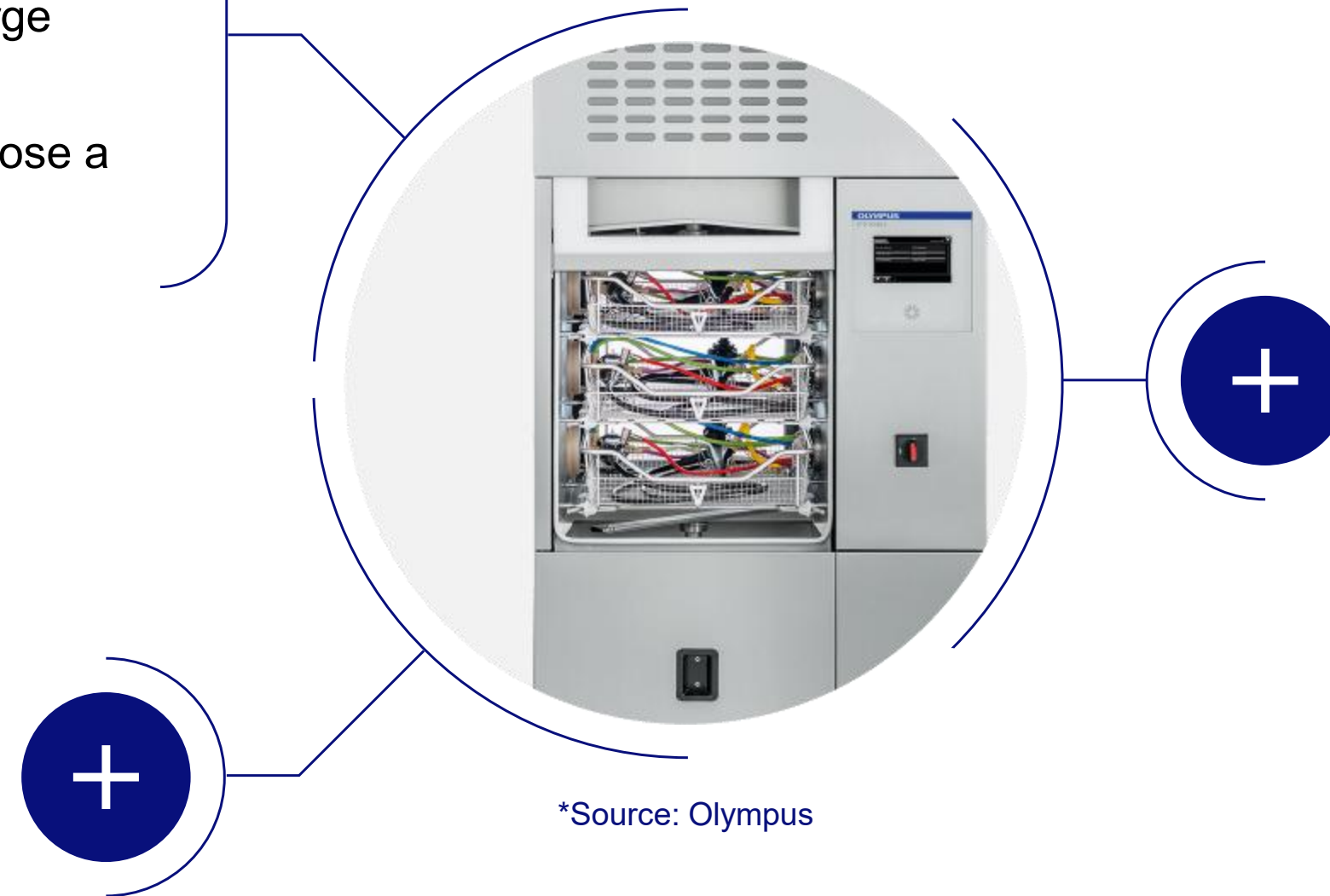
Click on the plus symbols
for more information.

Disinfection

Purpose

- Killing / inactivation of microorganisms except for large numbers of bacterial spores
 - Medical product does not pose a risk of infection

Example*:



Disinfection

Methods

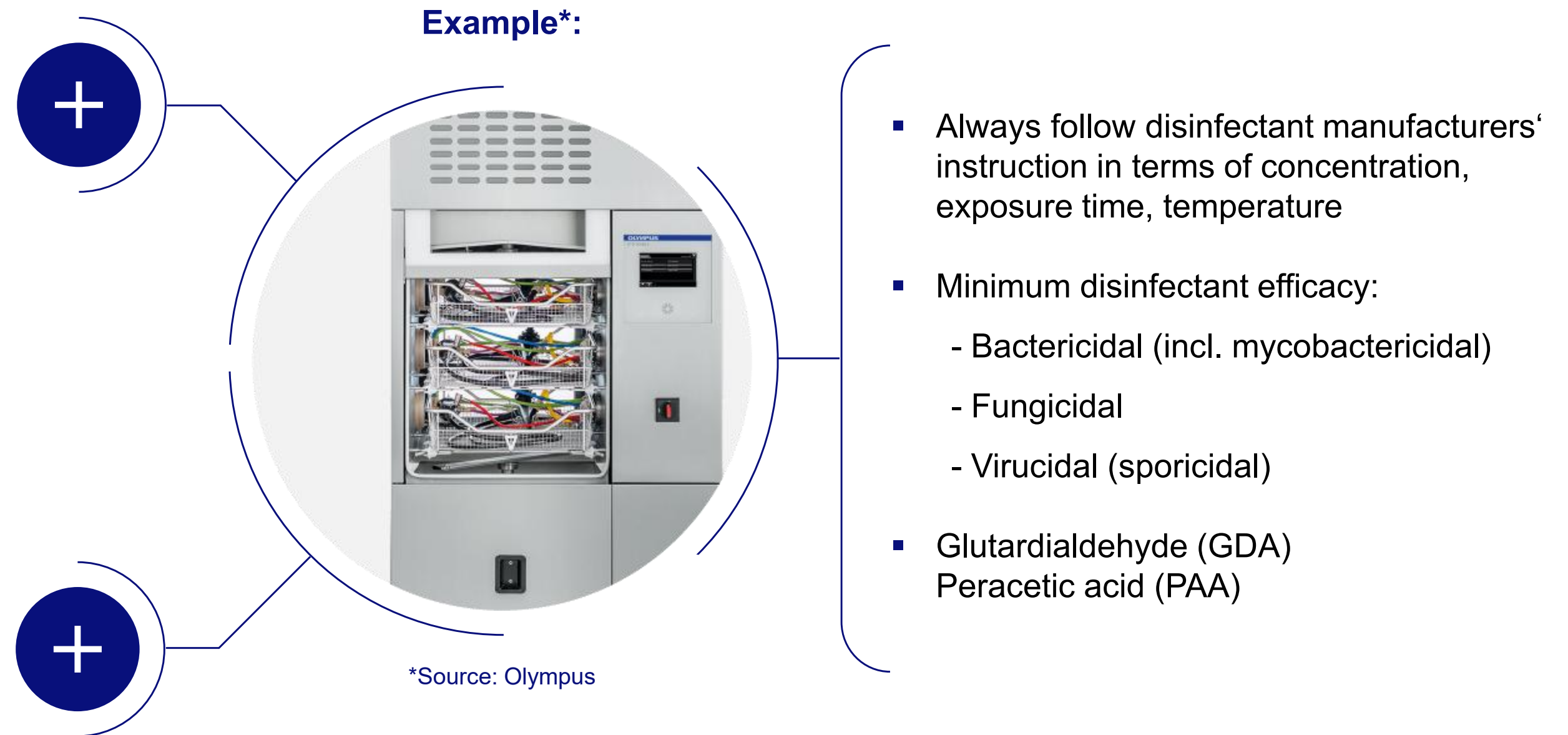
- Chemical
 - At room temperature
- Chemo-thermal
 - Max. temperature 60 °C
- Thermal
(for heat-stable medical devices only)
 - Without chemicals at approx. 90 °C

Example*:



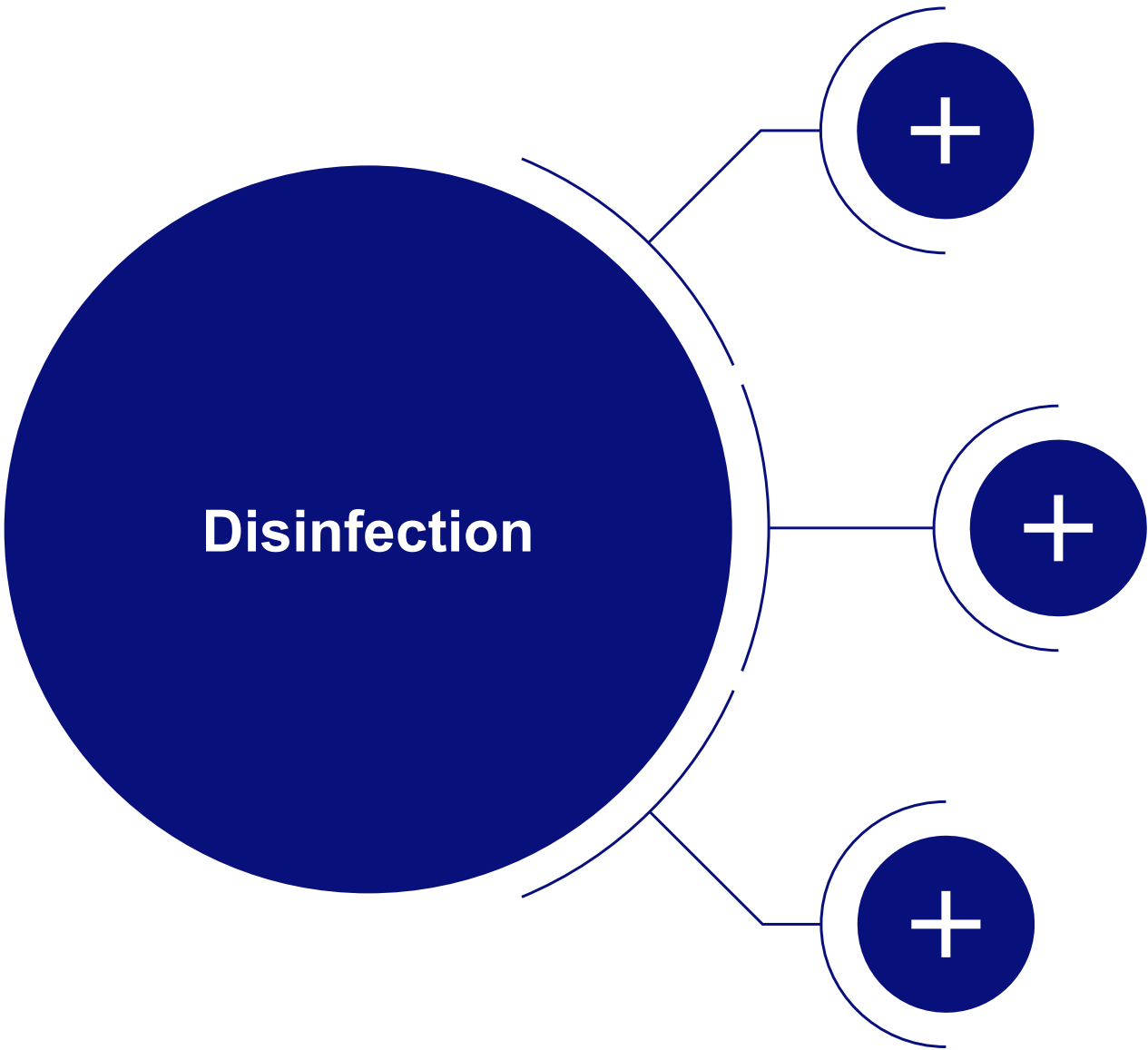
*Source: Olympus

Disinfection



Disinfection

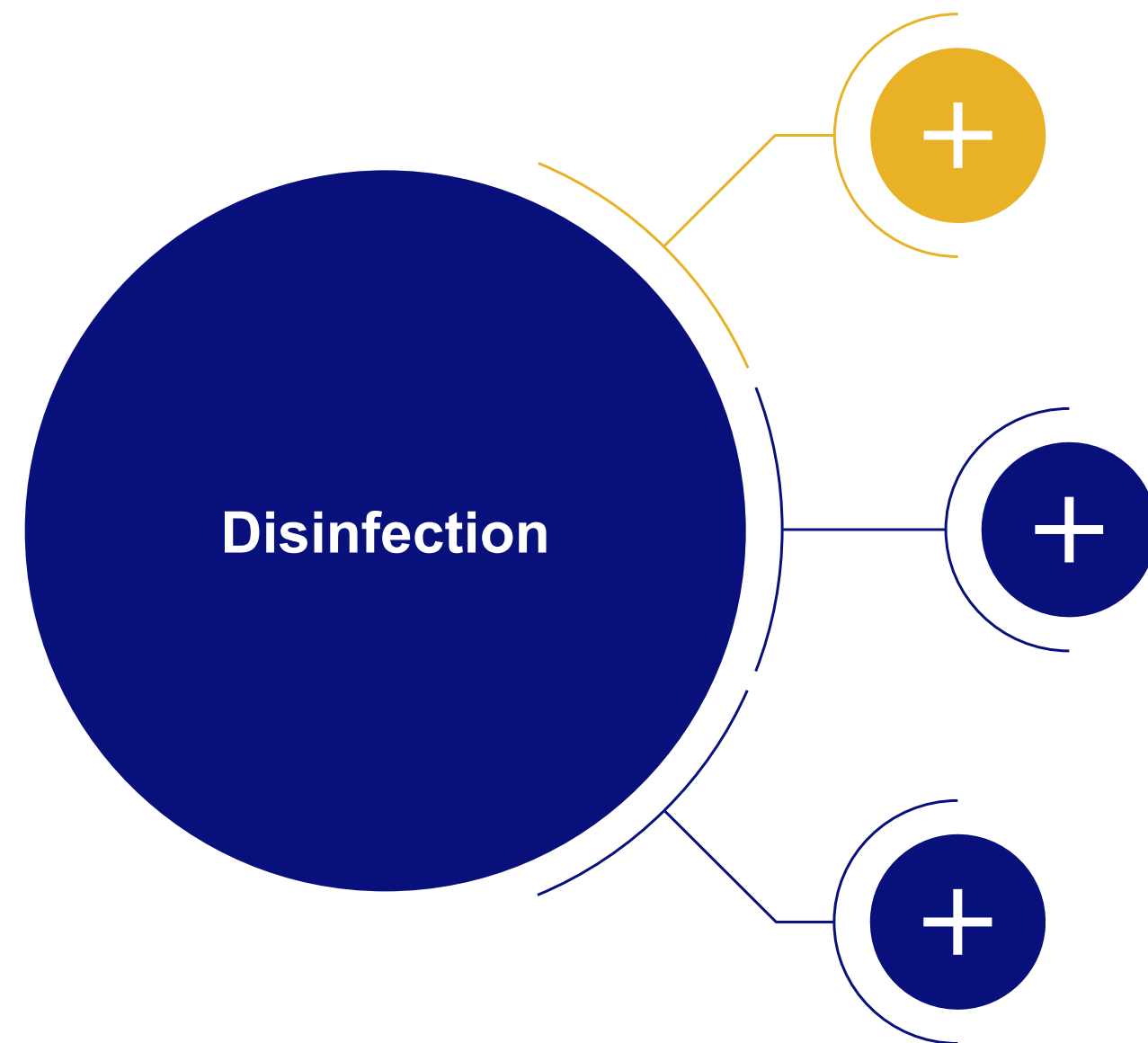
Reprocessing can now go on manually or automated



Click on the plus symbols for more information.

Disinfection

Reprocessing can now go on manually or automated

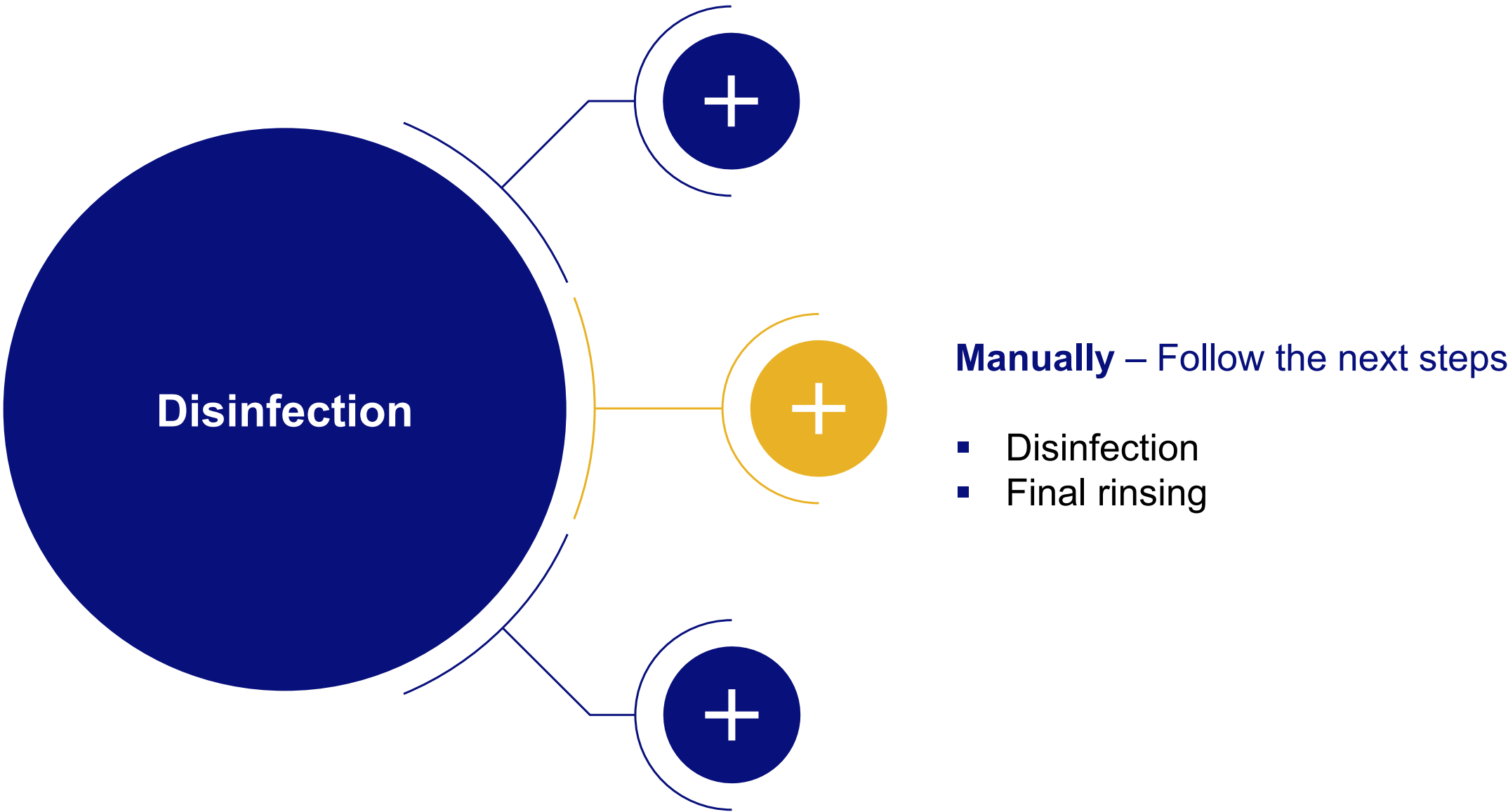


Automated by endoscope washer-disinfector/automated endoscope reprocessor (EWD/AER) – Follow the next steps

- Connecting the endoscope with the EWD/AER adapters
- Start the appropriate EWD/AER program
- Pay attention to the EWD/ AER manufacturers' IFU

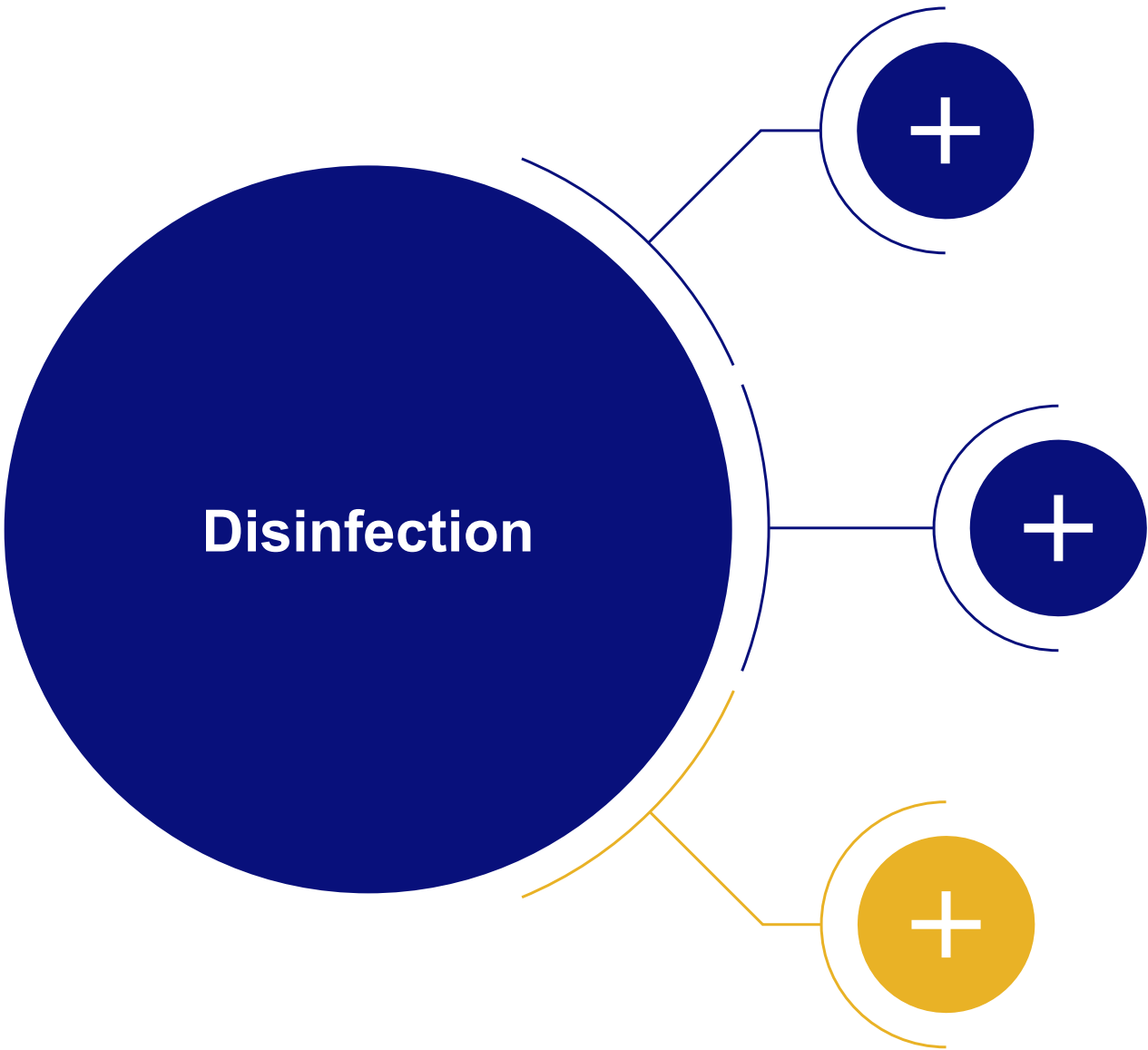
Disinfection

Reprocessing can now go on manually or automated



Disinfection

Reprocessing can now go on manually or automated



Semi-Automated – Follow the next steps

- Supported by a circulation pump or
- Disinfection device

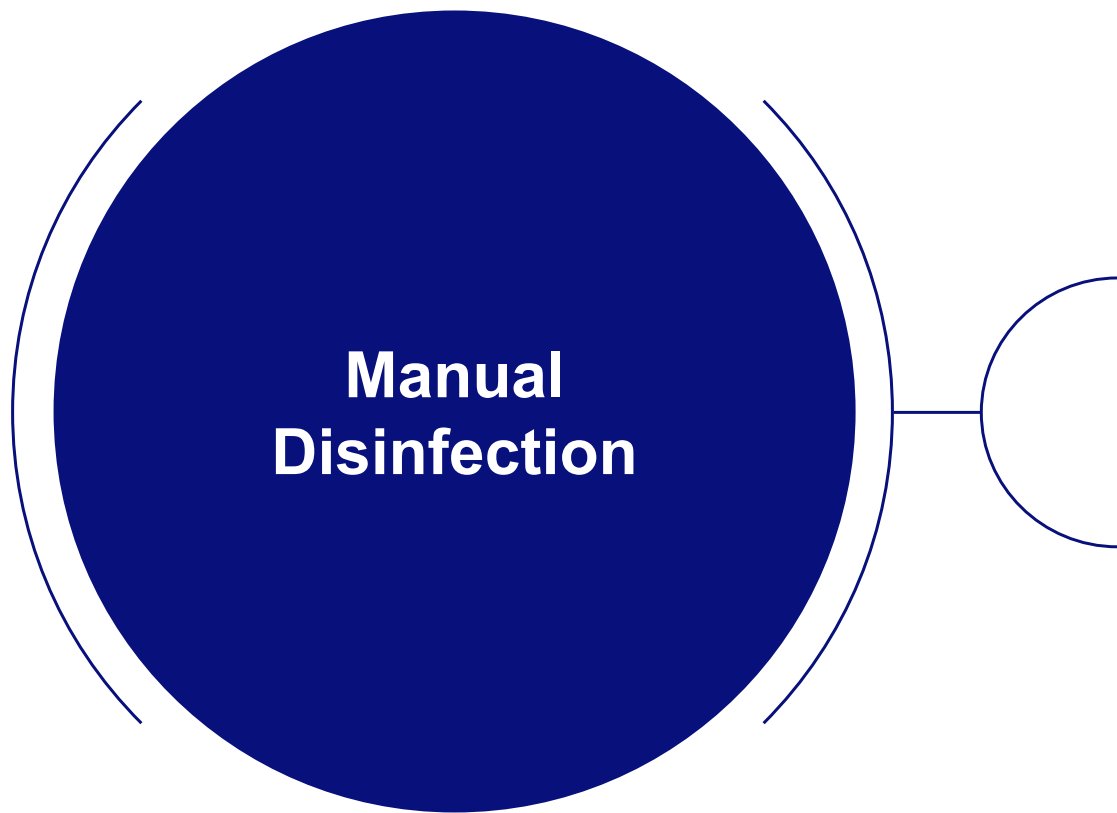
EWD/AER: Cleaning and Disinfection

- Ensure that EWD/AER is compliant to EN ISO 15883 series
- Leakage test connection and endoscopes' venting connector **must be dry**
- Connection of channels according to EWD/AER IFU

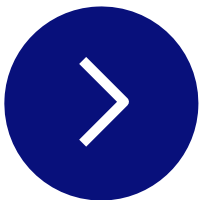


- Responsibility of the EWD/AER manufacturer:
 - Ensure, that the endoscopes are compatible in his EWD/AER
 - Provide the correct adapters (if necessary) to connect the endoscope to the EWD/AER
- If applicable, depending on the EWD/AER process, **an additional drying step** after EWD/AER may be necessary, either manually or by putting the endoscope into a drying and storage cabinet

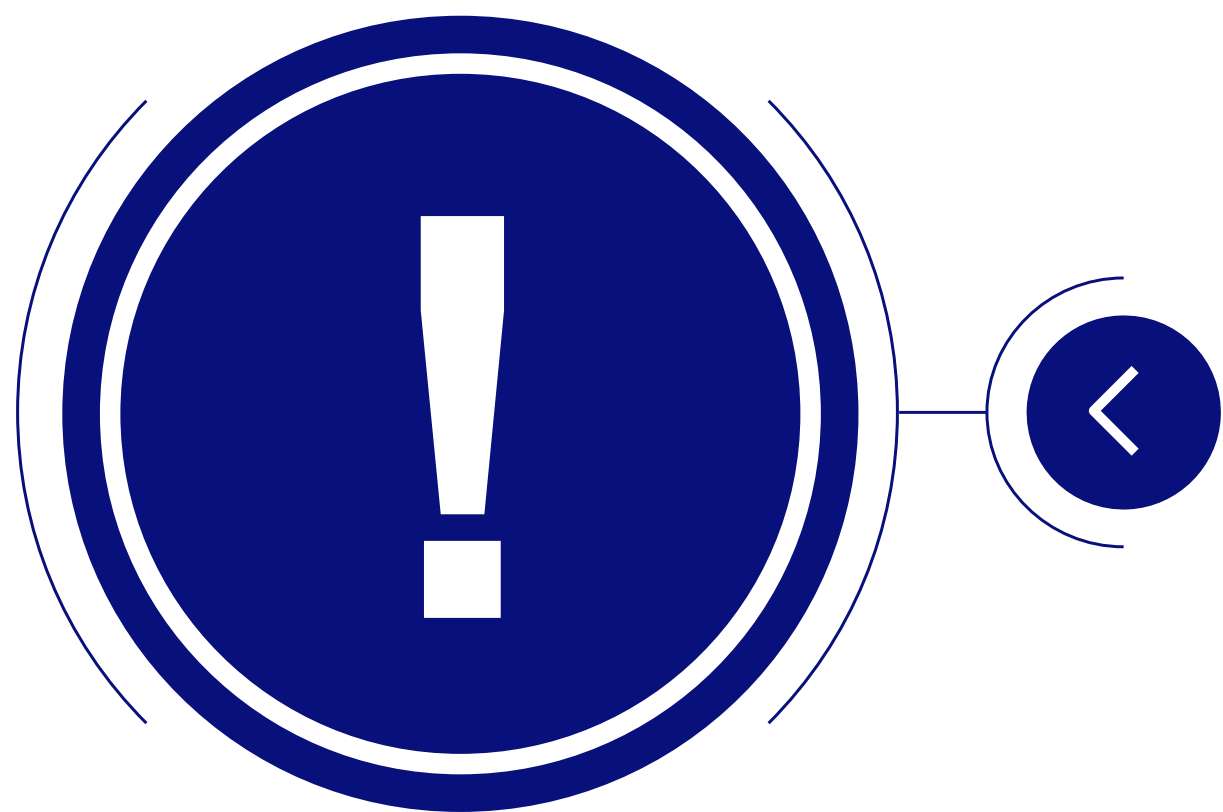
Manual Disinfection



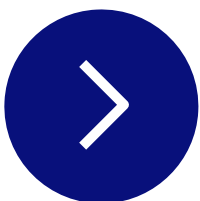
- Manual preparation of disinfection solution
- Follow disinfectant manufacturers' instructions in terms of concentration, exposure time and temperature



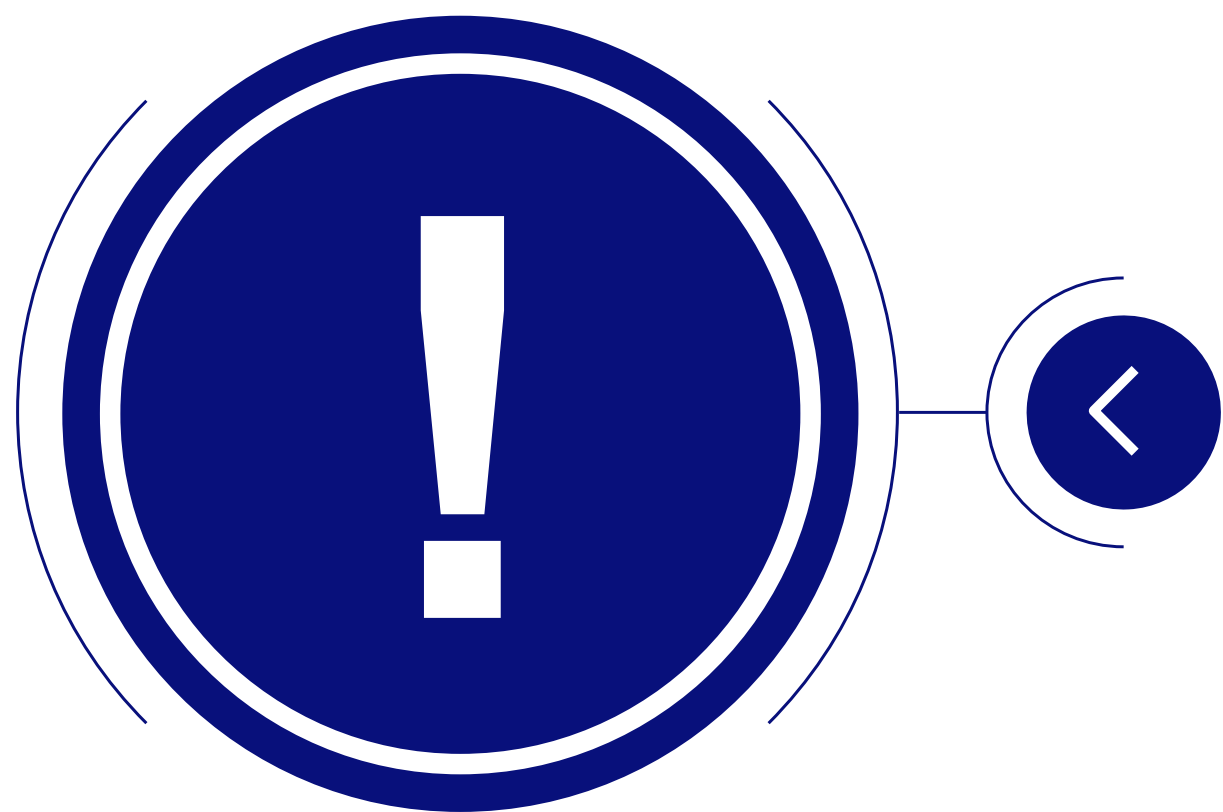
Manual Disinfection



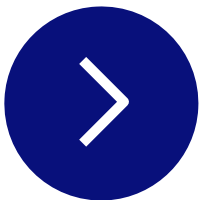
- **Fully immerse** the endoscope in disinfection solution
- Do not immerse the endoscope with objects other than the equipment used for reprocessing the endoscope



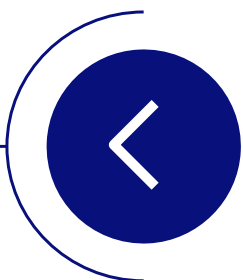
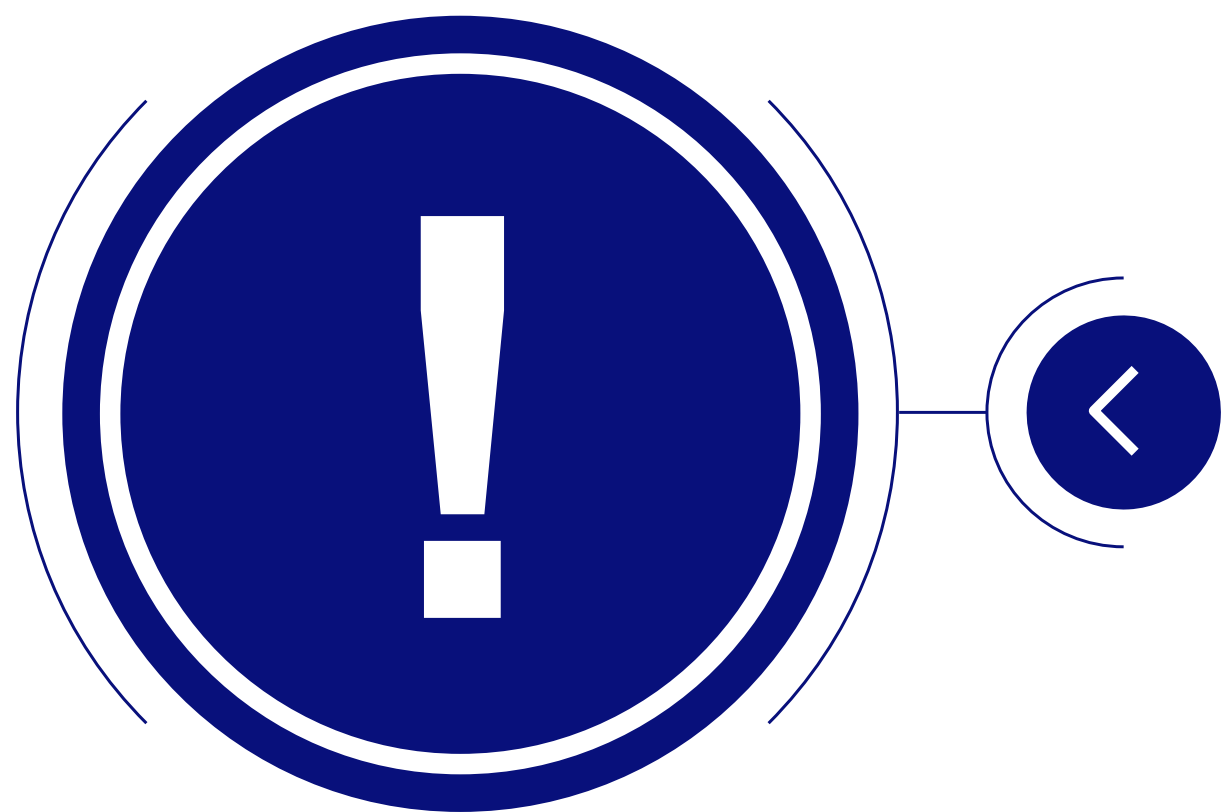
Manual Disinfection



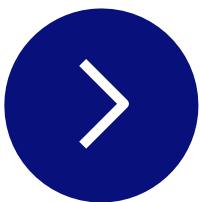
- Thoroughly **flush all channels** and wipe or brush **all external surfaces**



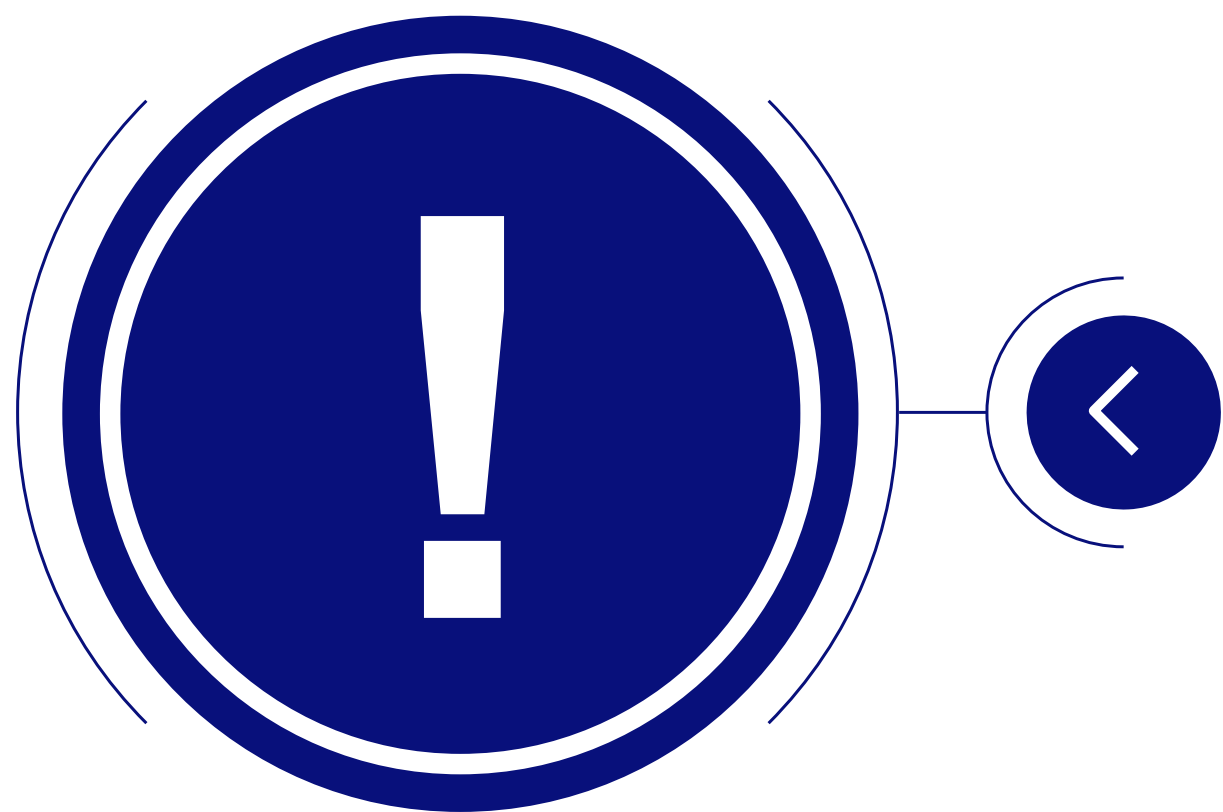
Manual Disinfection



- Detach all cleaning adapters during immersion time



Manual Disinfection

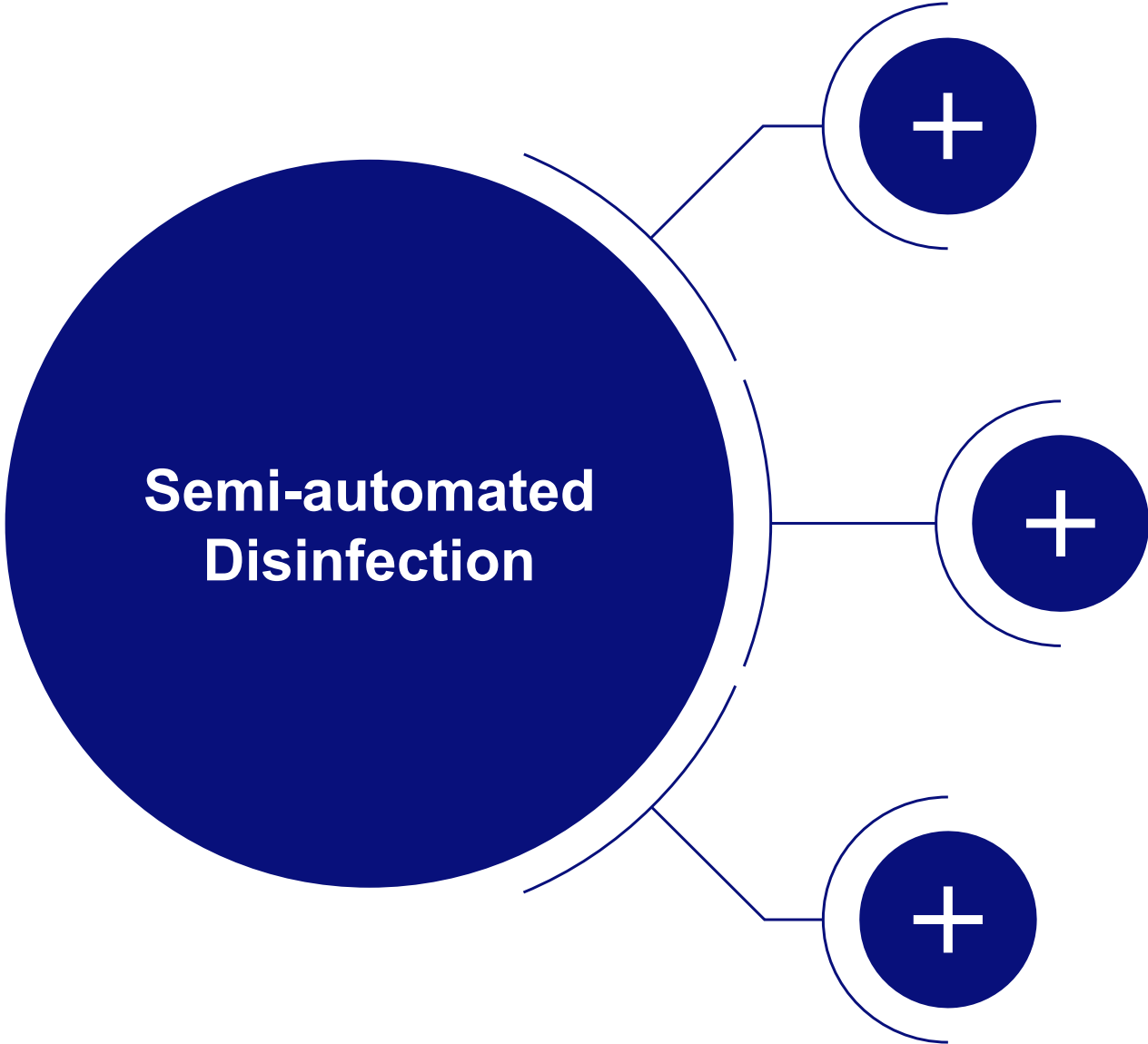


- For manual disinfection, repeat all steps from manual cleaning (wiping from outside and flushing all channels with disinfection solution by using cleaning adapters)



Semi-automated Disinfection

State-of-the-art and preferred reprocessing method is automated reprocessing in an EWD/AE 



Click on the plus symbols for more information.

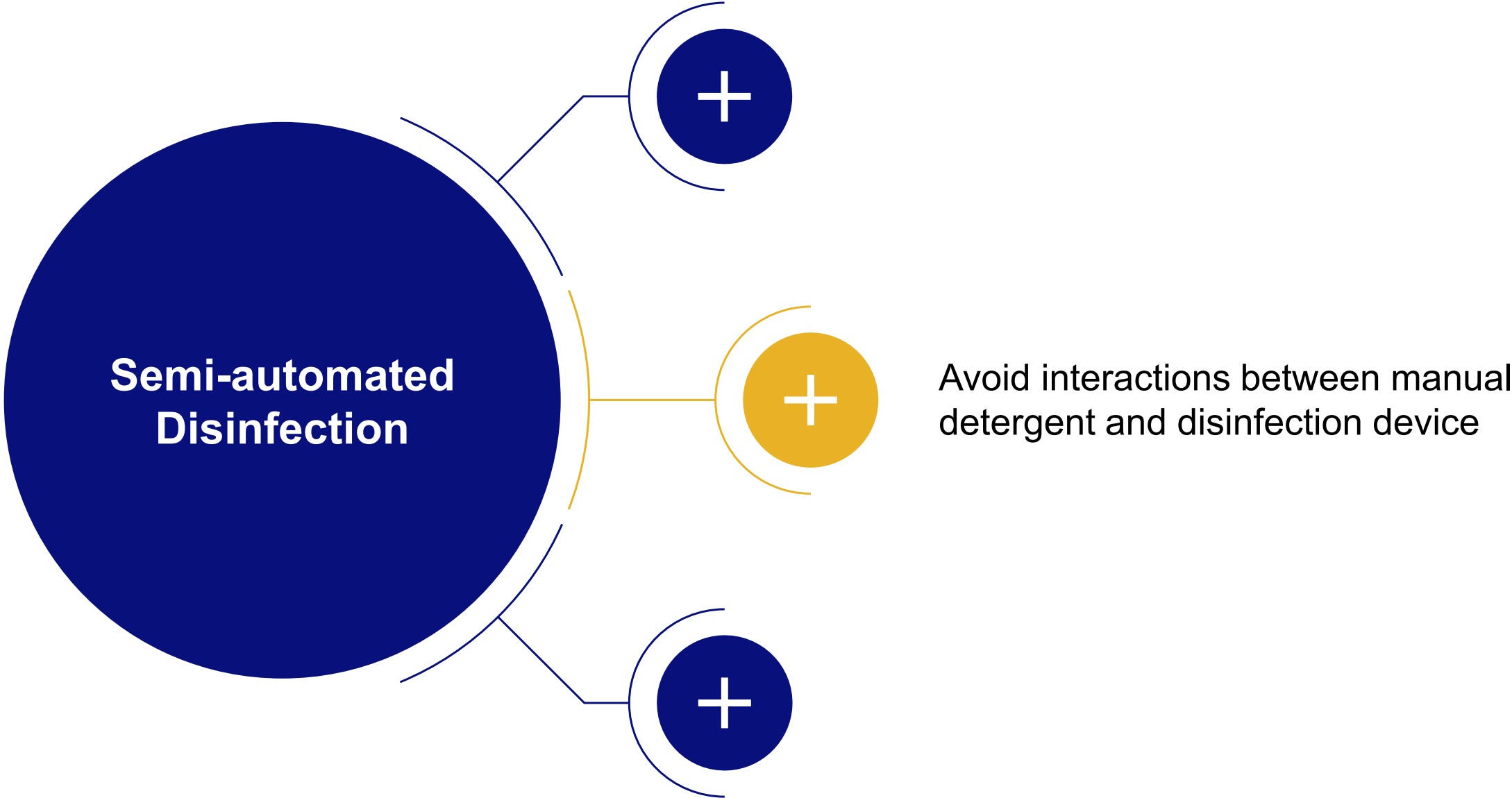
Semi-automated Disinfection

State-of-the-art and preferred reprocessing method is automated reprocessing in an EWD/AE 



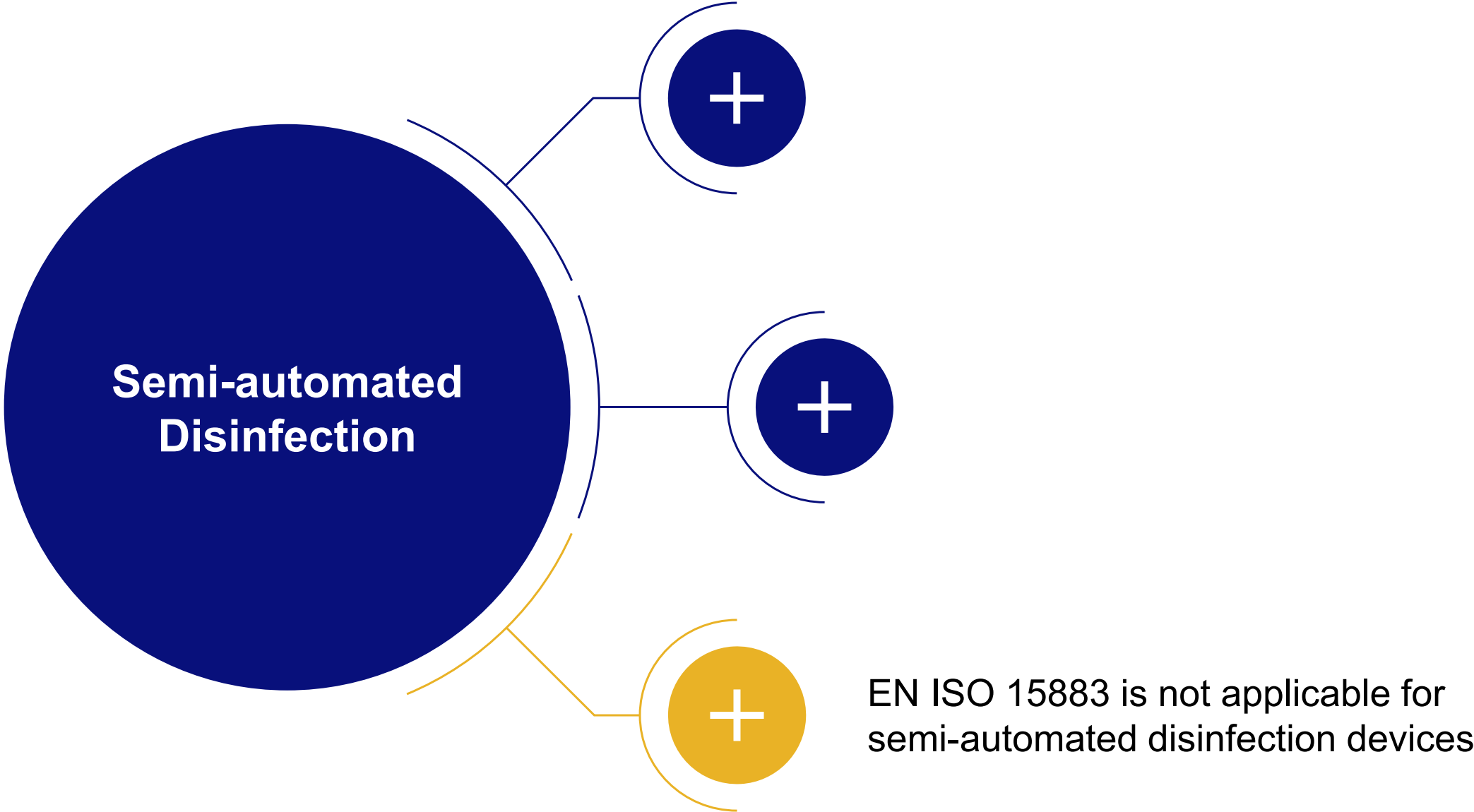
Semi-automated Disinfection

State-of-the-art and preferred reprocessing method is automated reprocessing in an EWD/AE 

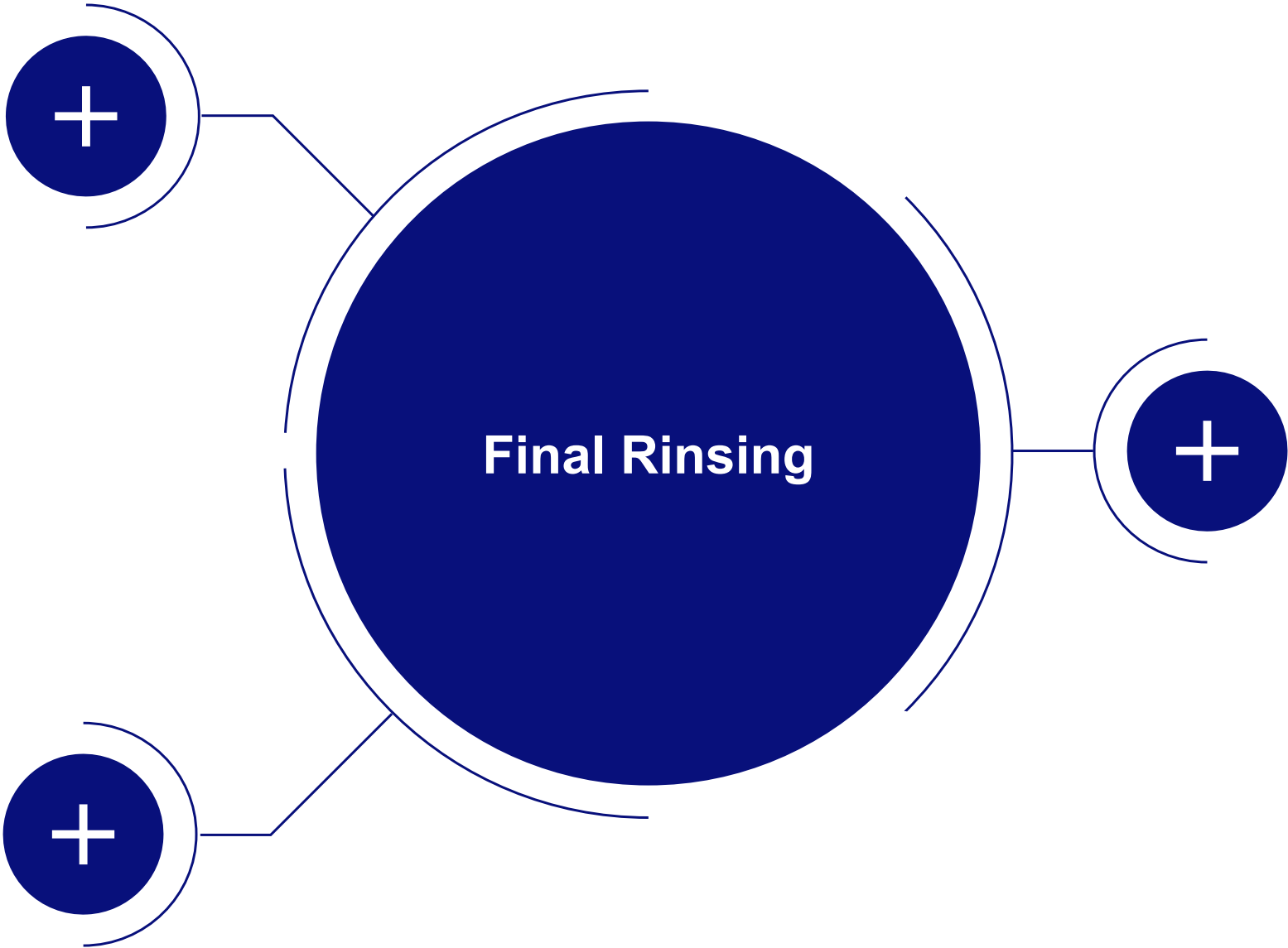


Semi-automated Disinfection

State-of-the-art and preferred reprocessing method is automated reprocessing in an EWD/AE 



Final Rinsing

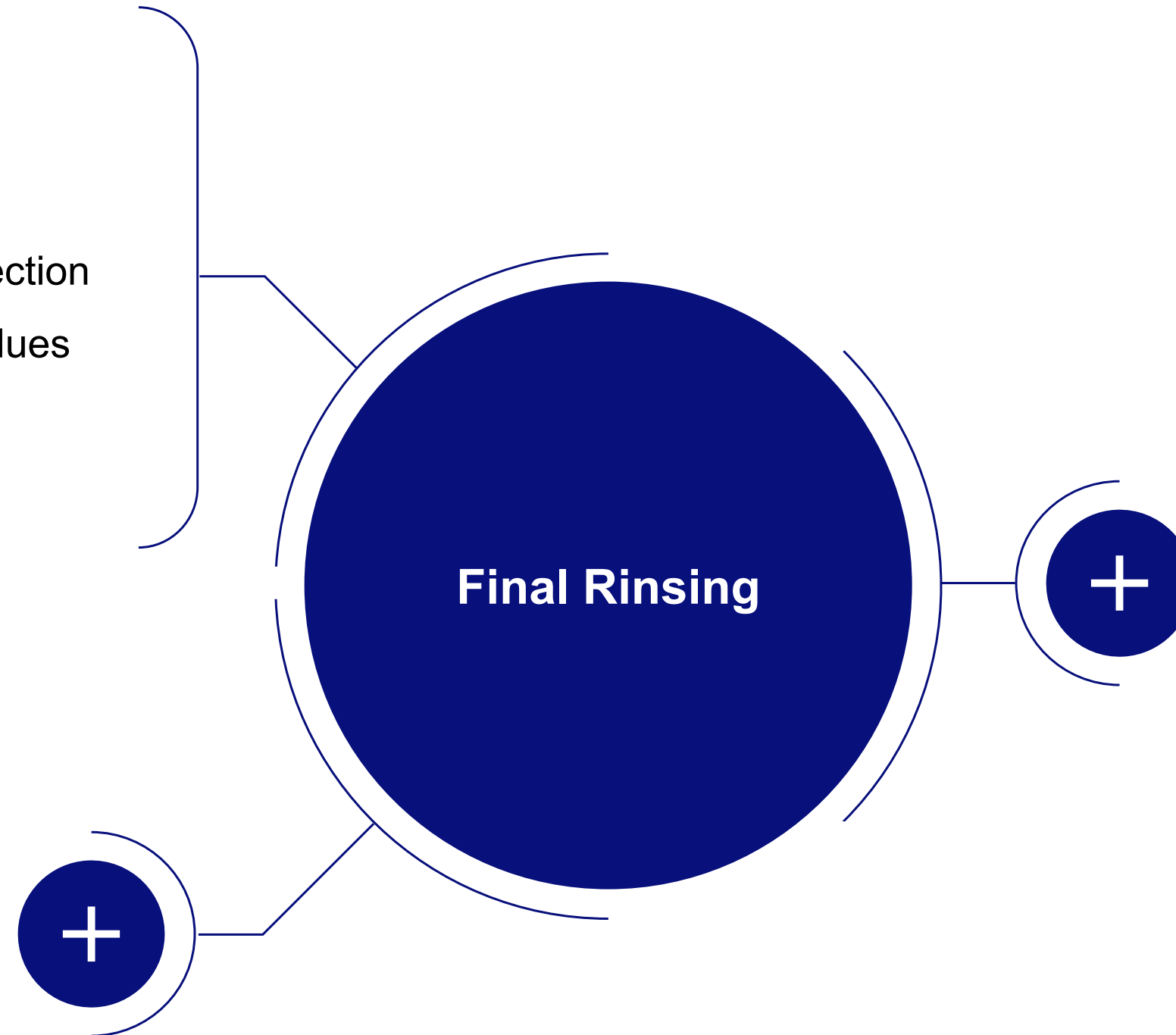


Click on the plus symbols for more information.

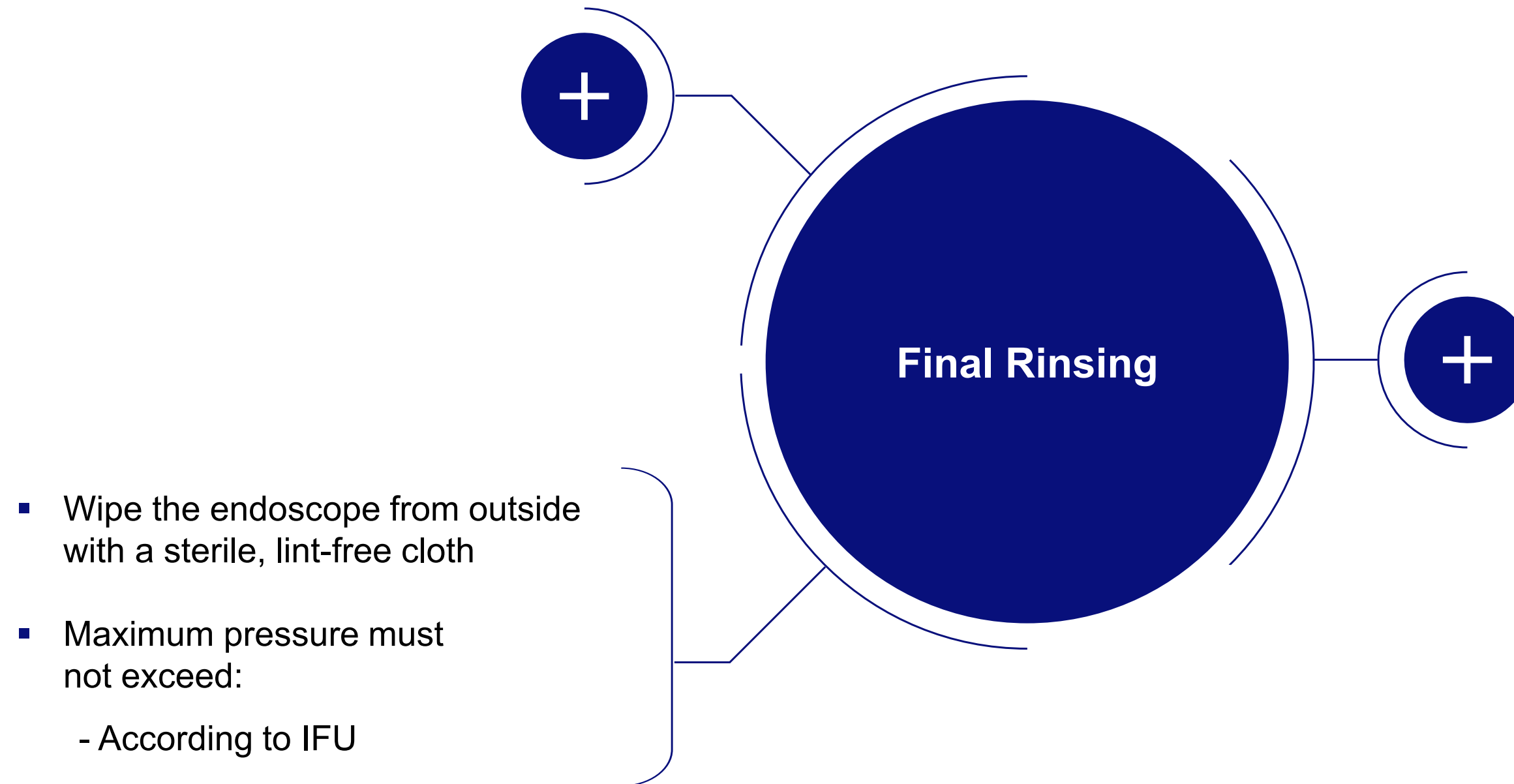
Final Rinsing

Purpose

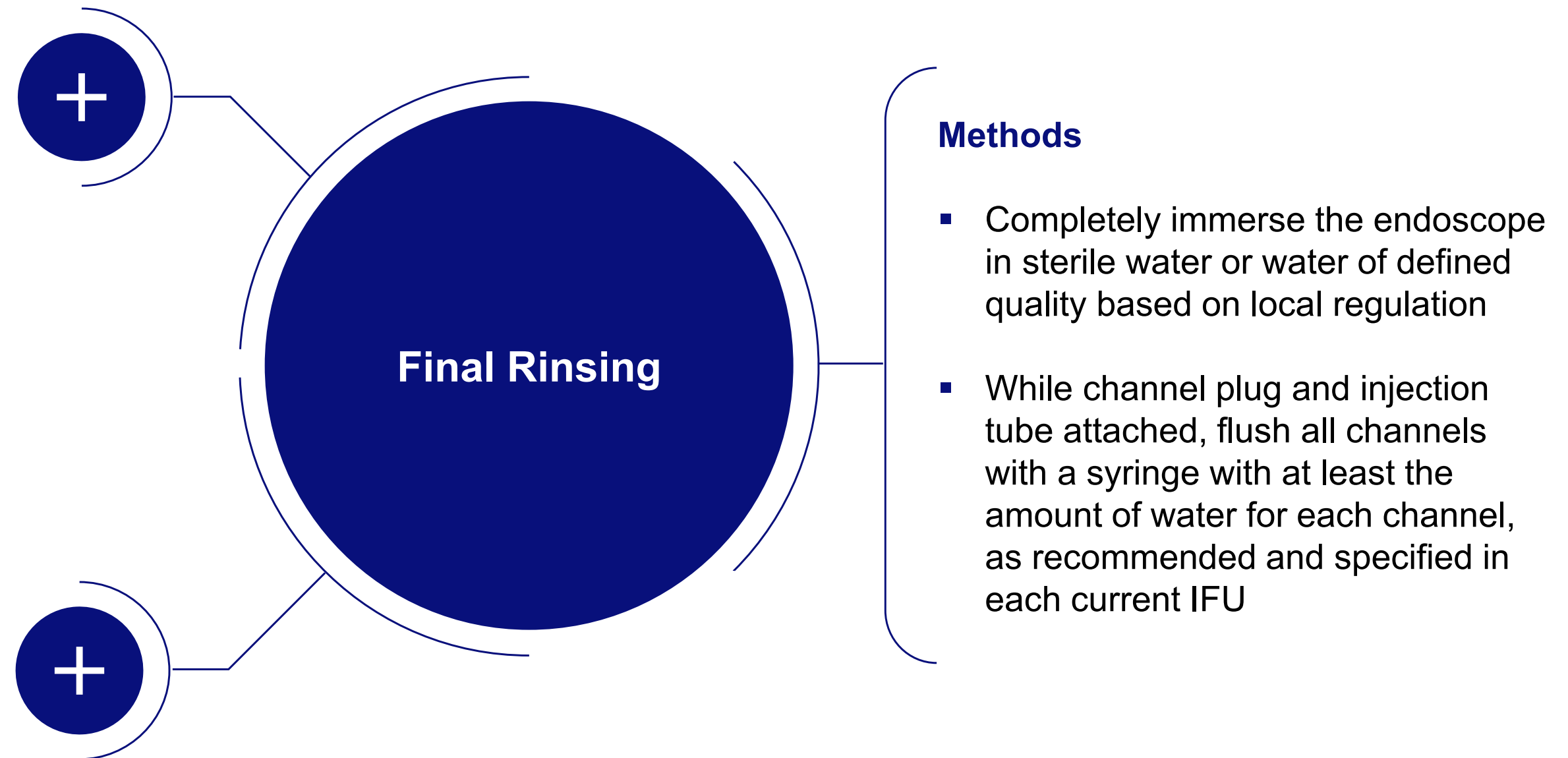
- Final rinsing of external and internal surfaces after disinfection
 - Removal of chemical residues (GDA / PAA colitis)



Final Rinsing



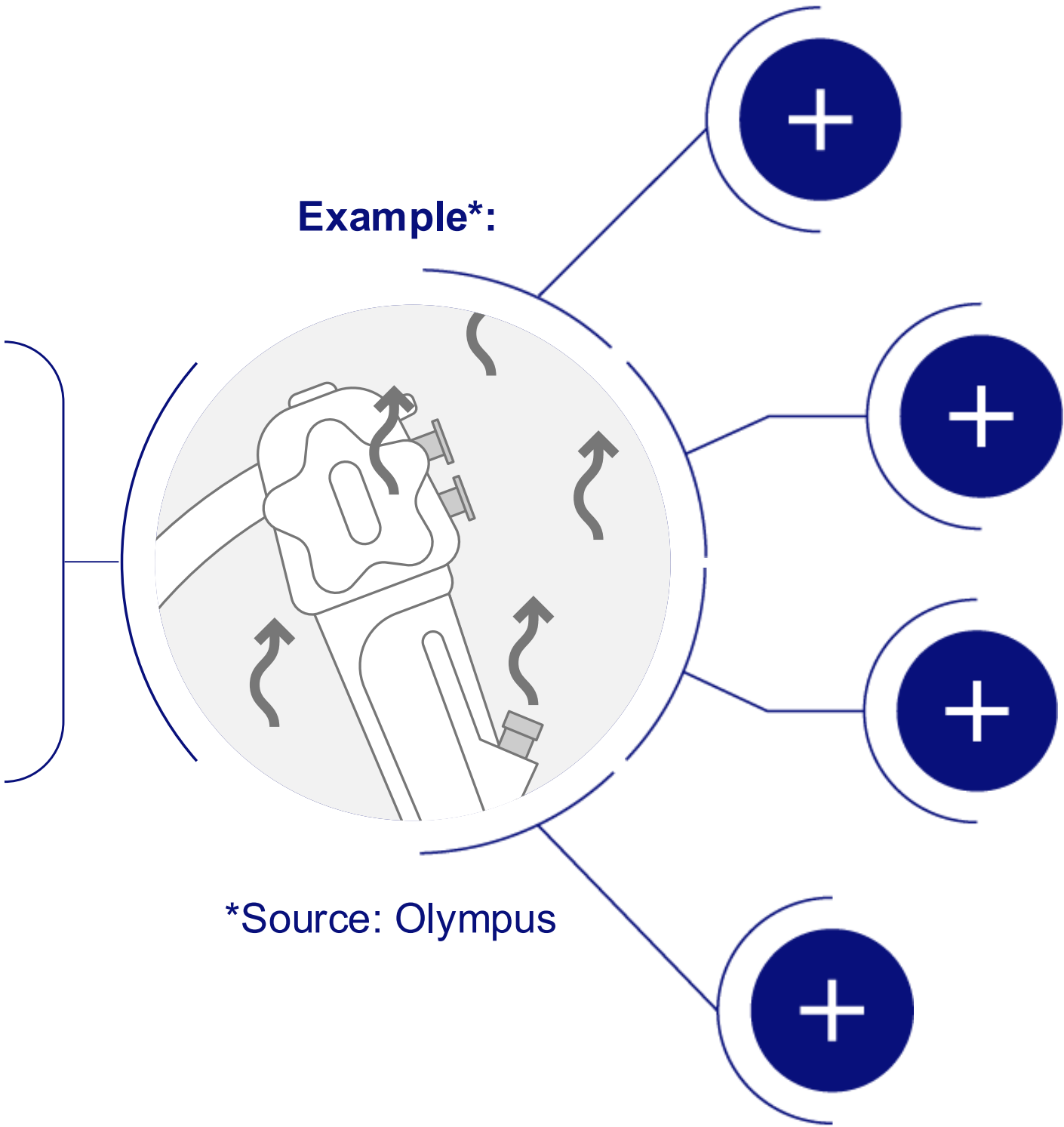
Final Rinsing



Drying

Purpose

- Part of an operating cycle that is dedicated to remove moisture from the load



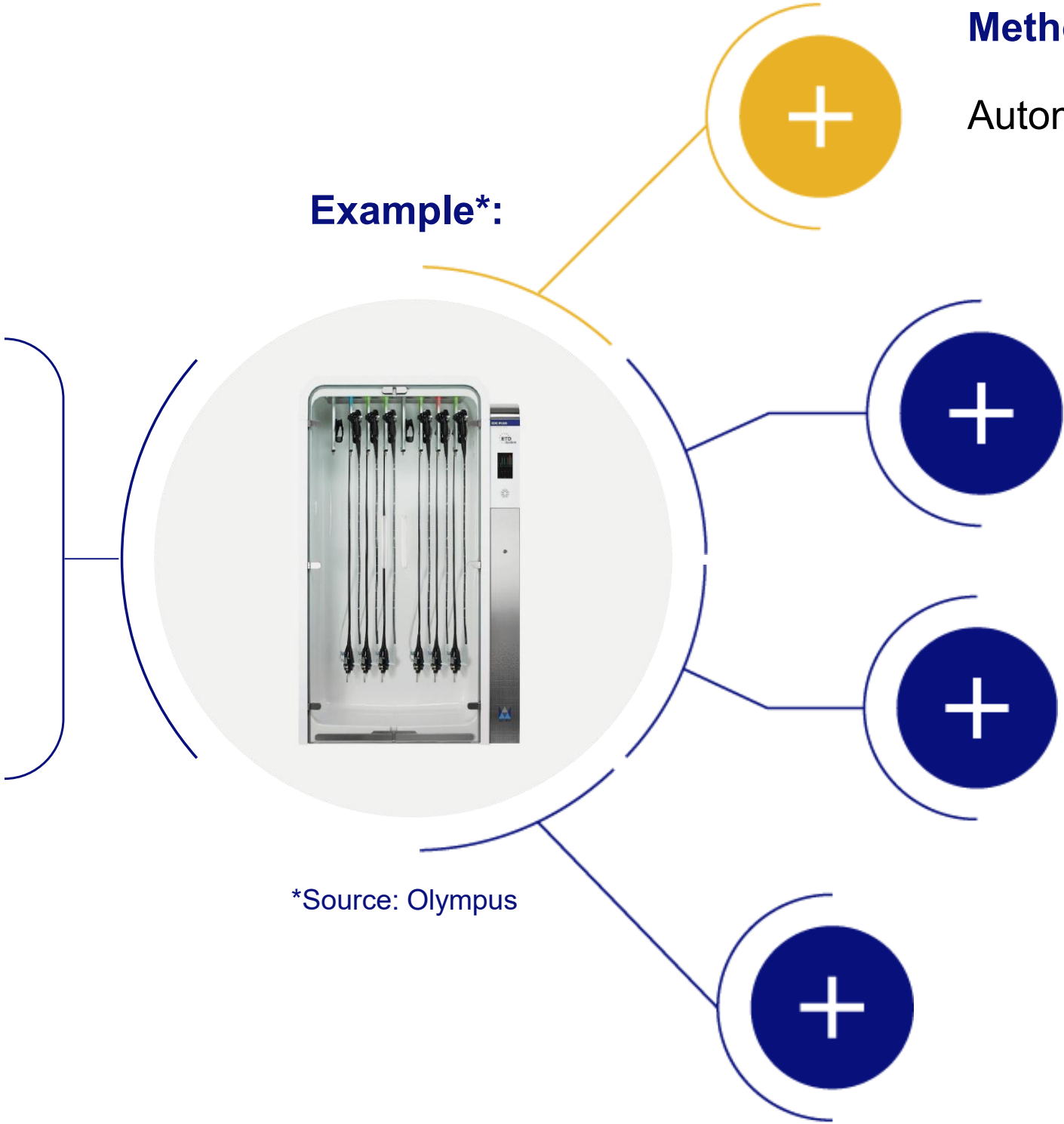
Click on the plus symbols for more information.

Drying

Purpose

- Part of an operating cycle that is dedicated to remove moisture from the load

Example*:



Methods

Automated in a drying cabinet

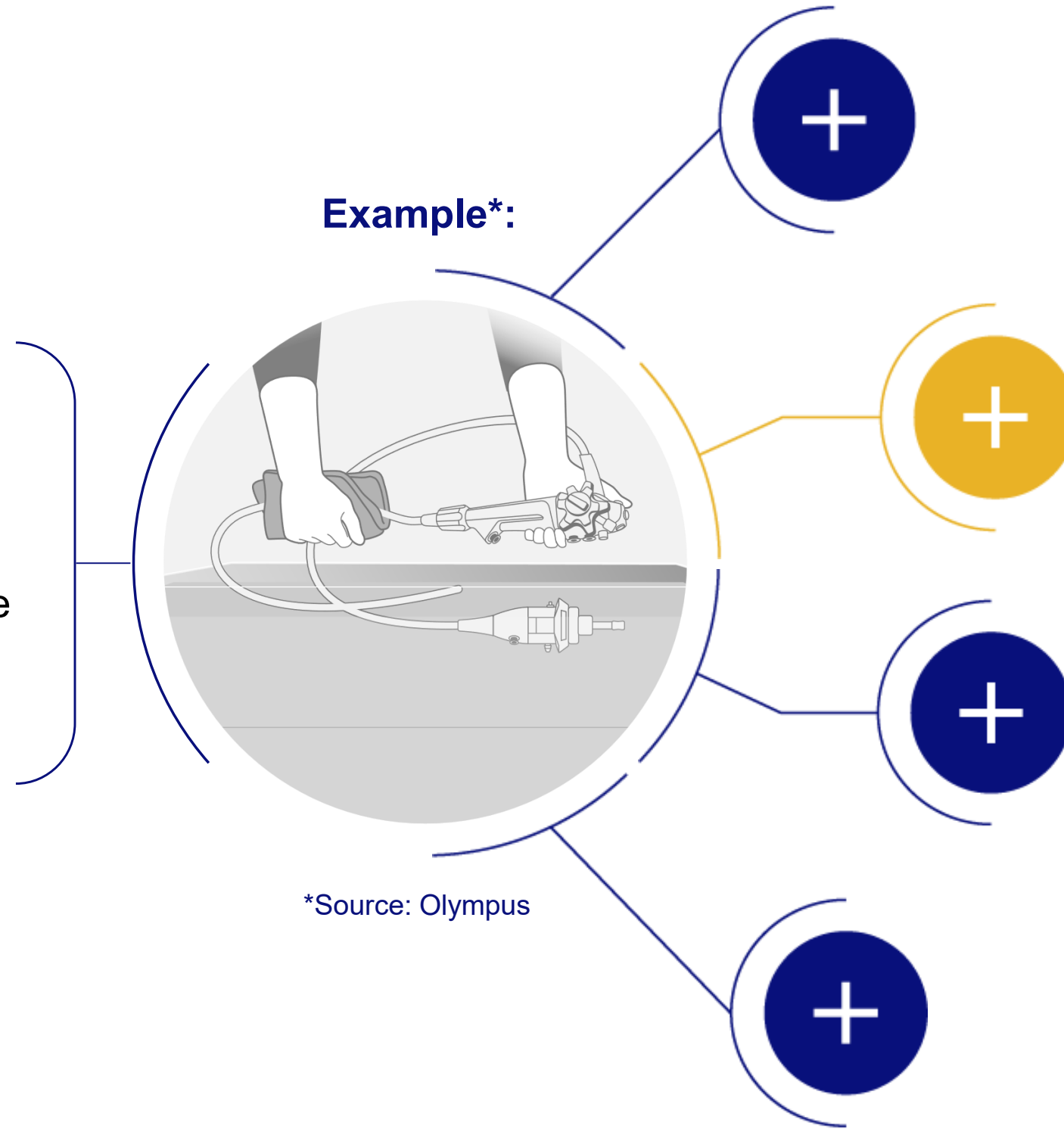
*Source: Olympus

Drying

Purpose

- Part of an operating cycle that is dedicated to remove moisture from the load

Example*:



*Source: Olympus

Methods

Manually:
Remove the endoscope from the rinse basin and place into a sterile basin

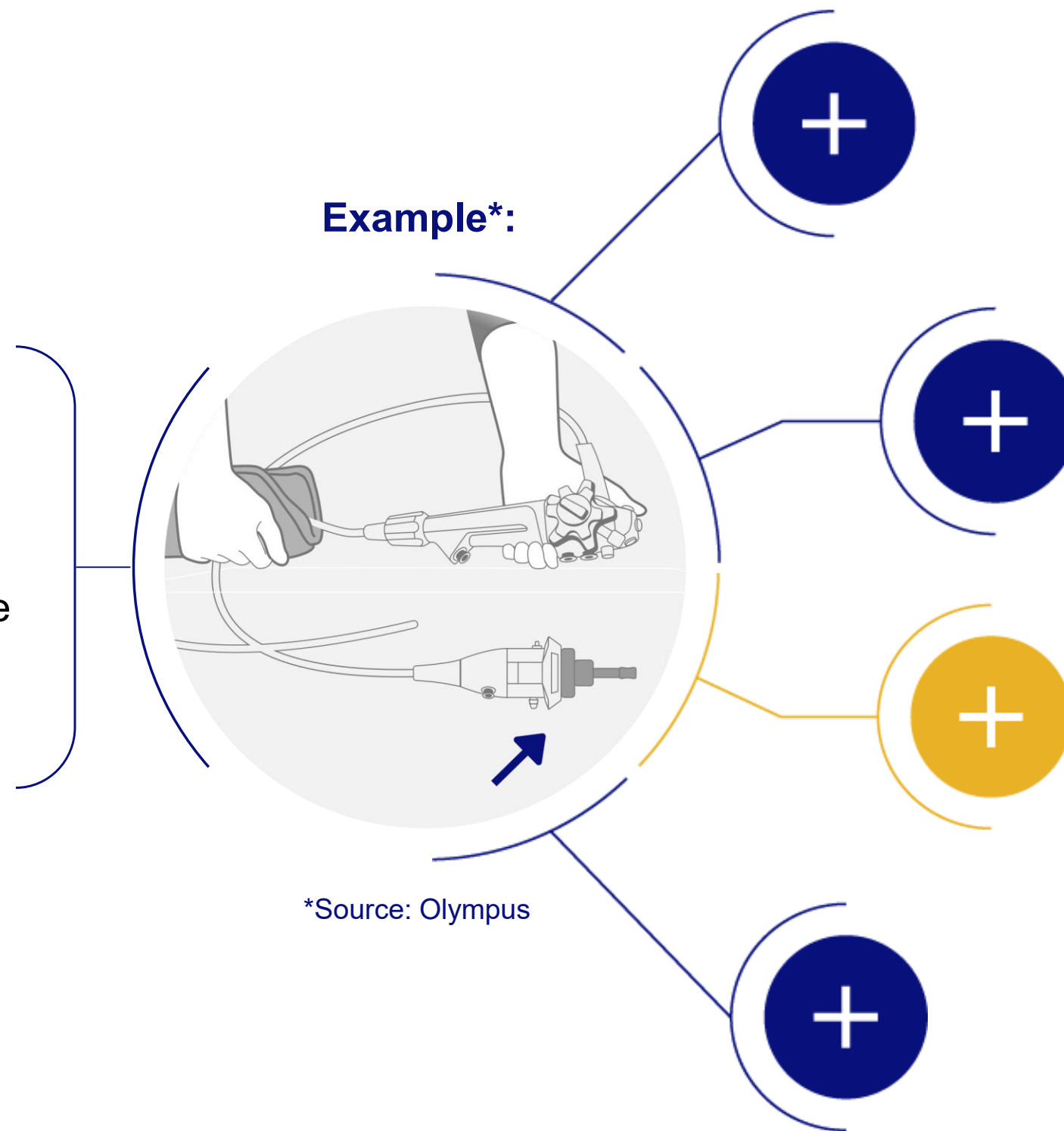
- **Purge** the channels with **air of a quality defined in local regulation**
- Never touch the cylinders / openings of the reprocessed endoscope with the air gun

Drying

Purpose

- Part of an operating cycle that is dedicated to remove moisture from the load

Example*:



Methods

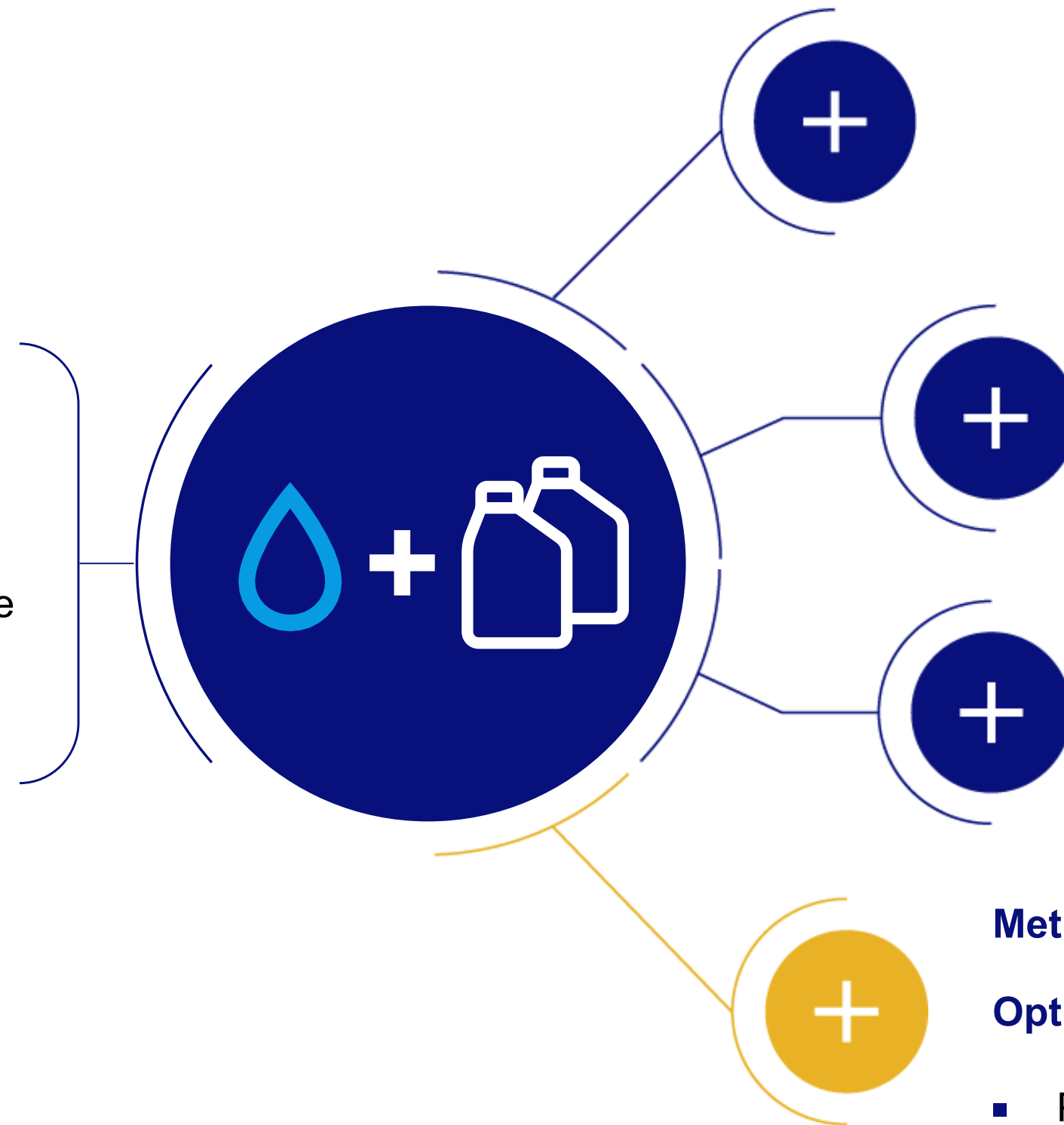
Wipe electrical contacts with a lint-free, sterile cloth

- Especially the electrical contacts of the One-Touch connector

Drying

Purpose

- Part of an operating cycle that is dedicated to remove moisture from the load



Methods

Optional (depending on local regulations)

- Potable water + 70 % isopropyl or ethyl alcohol

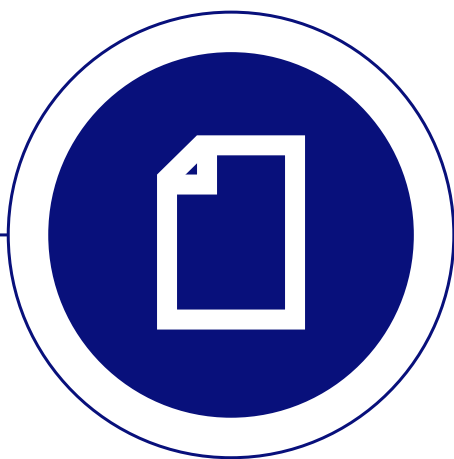
Manual Drying



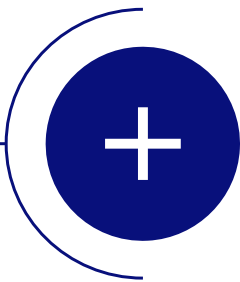
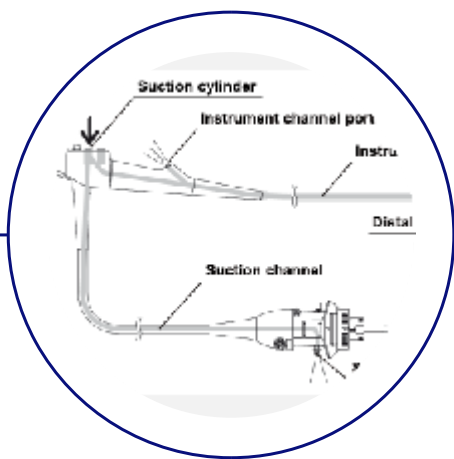
For manual drying use compressed, filtered air with a pressure as stated in the corresponding IFU



- By using compressed filtered air, take care on the allowed pressure (see latest IFU)



- Follow the air gun manufacturers' IFU with regard to its cleaning & disinfection

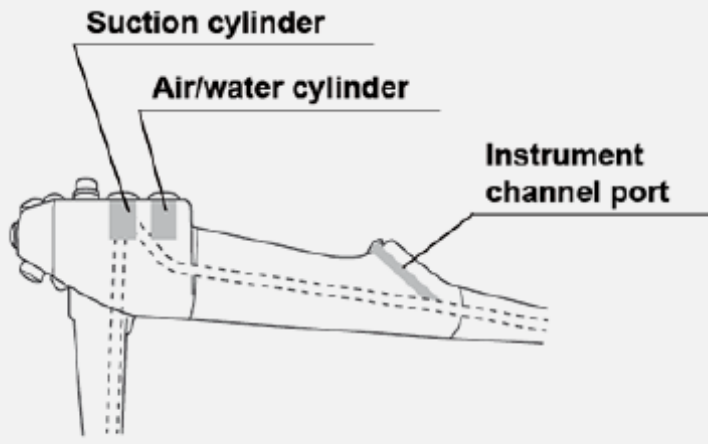
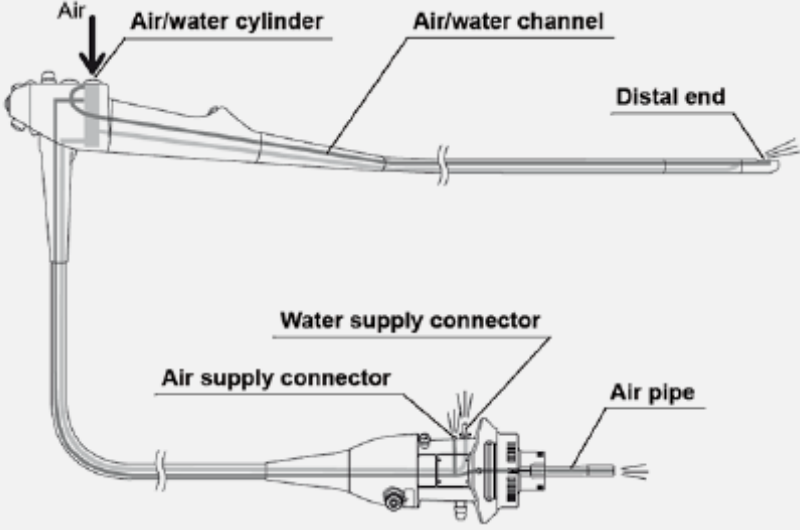
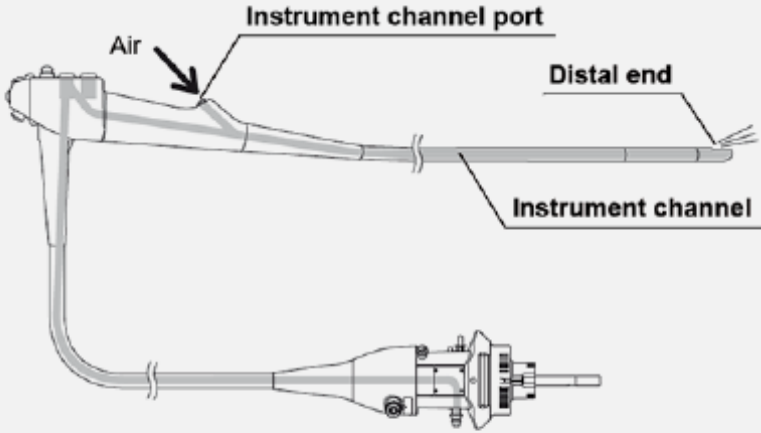
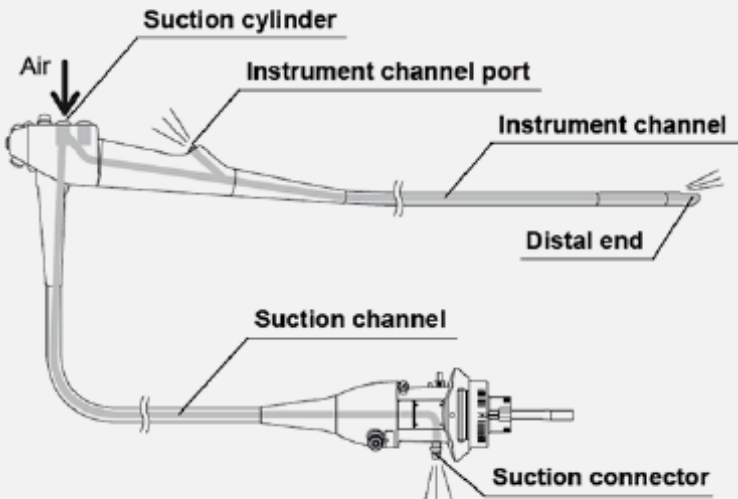
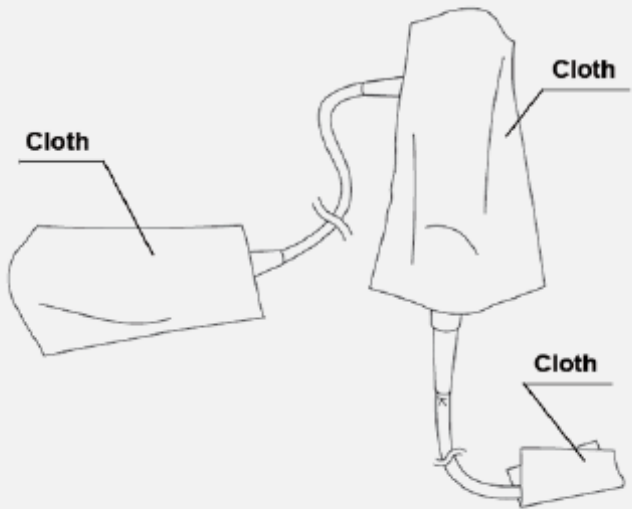


- Dry the inside of valve cylinders, instrument channel port, and (in case of reprocessing a duo-dendoscope) the elevator recess by using a sterile cotton swab

Click on the plus symbols for more information.

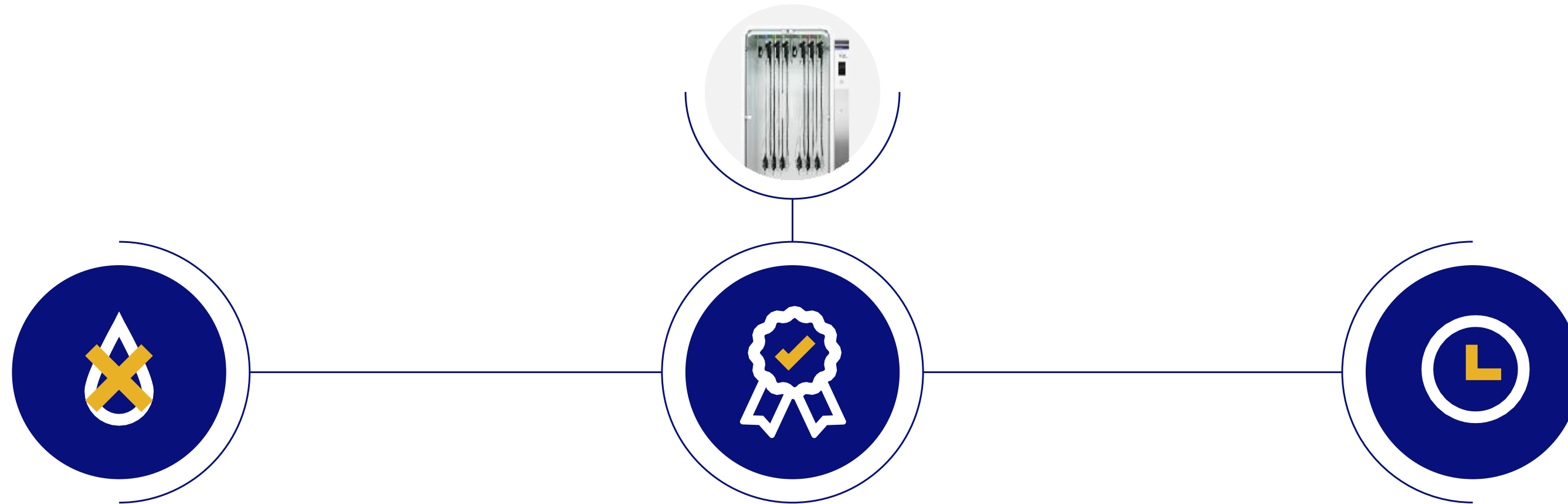
Manual Drying

Examples*:



*Source: Olympus

Drying by Drying and Storage Cabinet (if applicable)



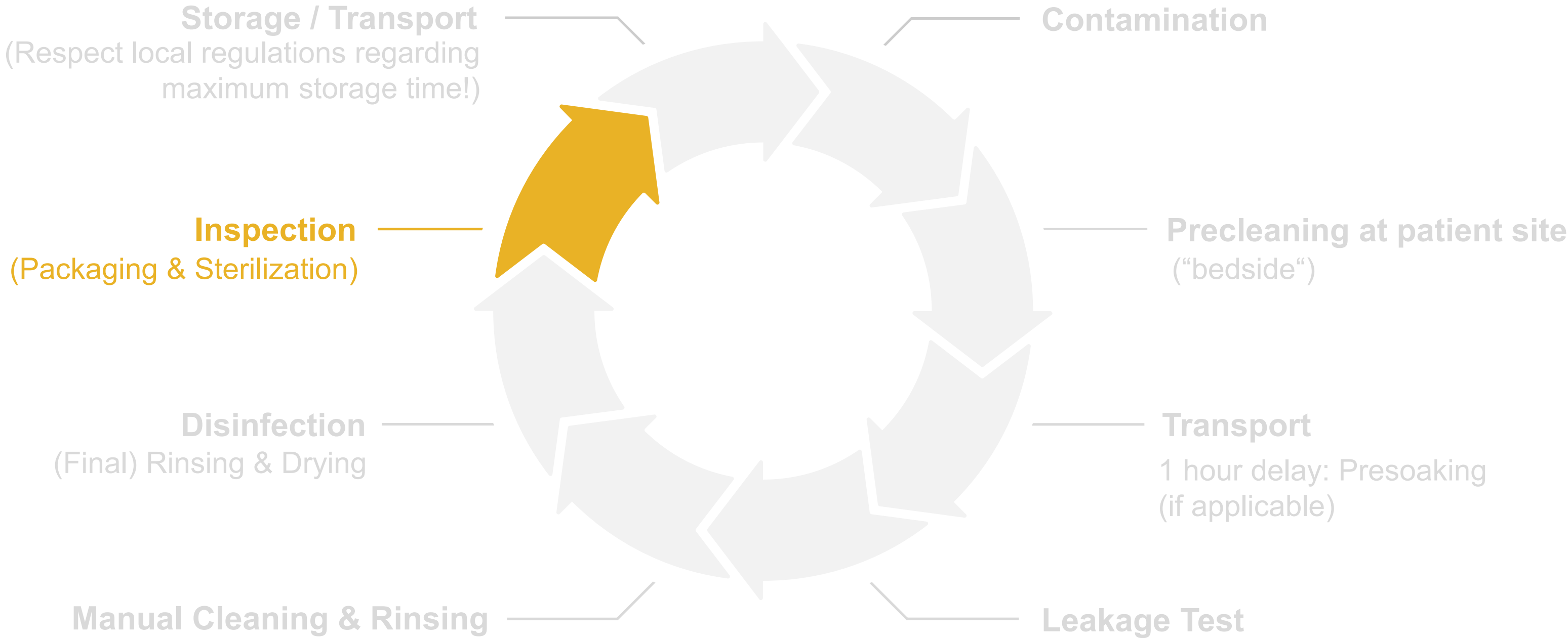
- Complete removal of all humidity inside and outside of the endoscope

- Conserves the microbial quality of the endoscope after disinfection (No deterioration!)

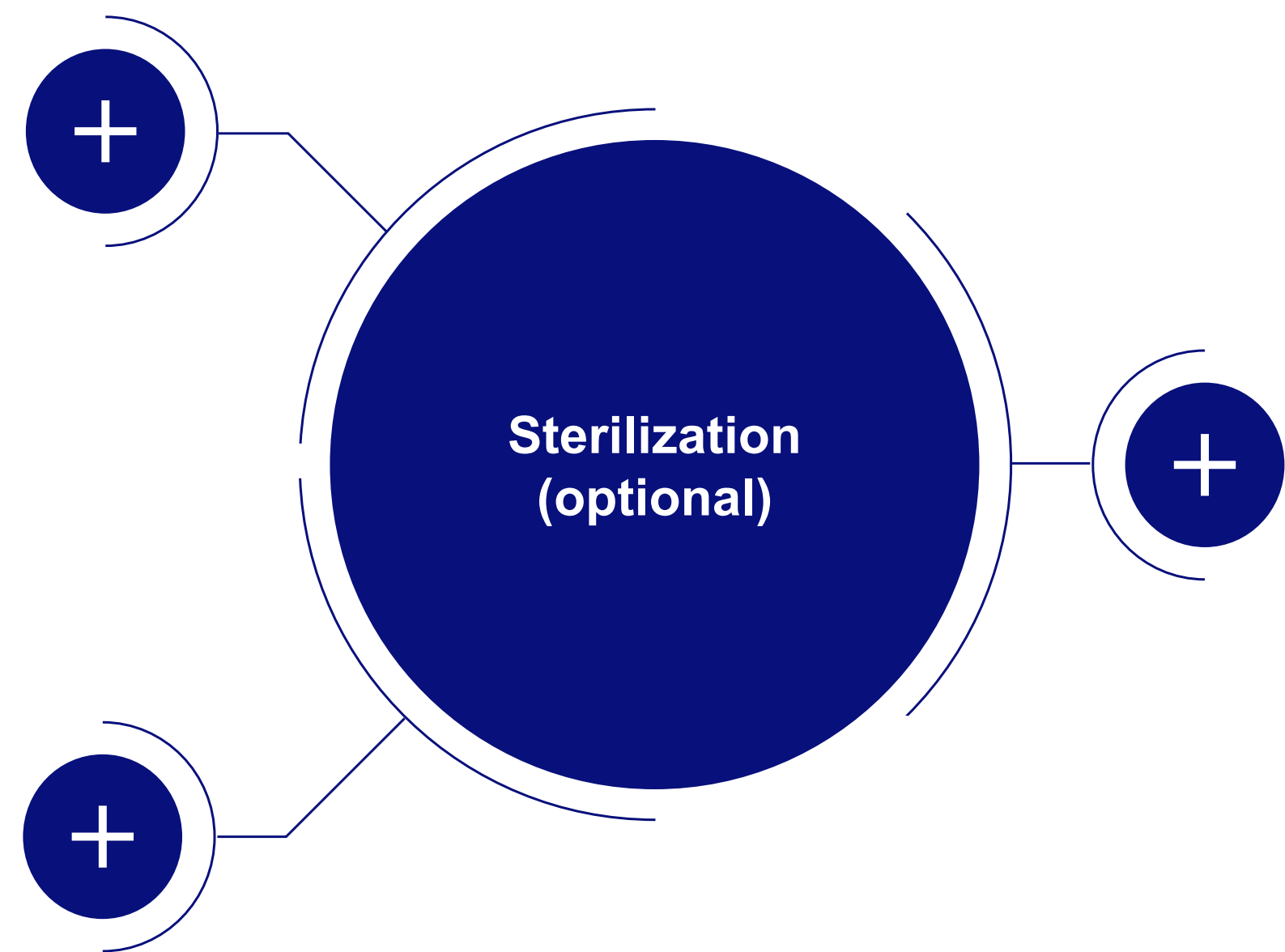
- Prolonged storage time* of endoscopes without the need for reprocessing again

* depending on local regulations

Reprocessing Cycle for Flexible Endoscopes | Endoscope Manufacturer's IFU (Instruction For Use)



Sterilization (optional)

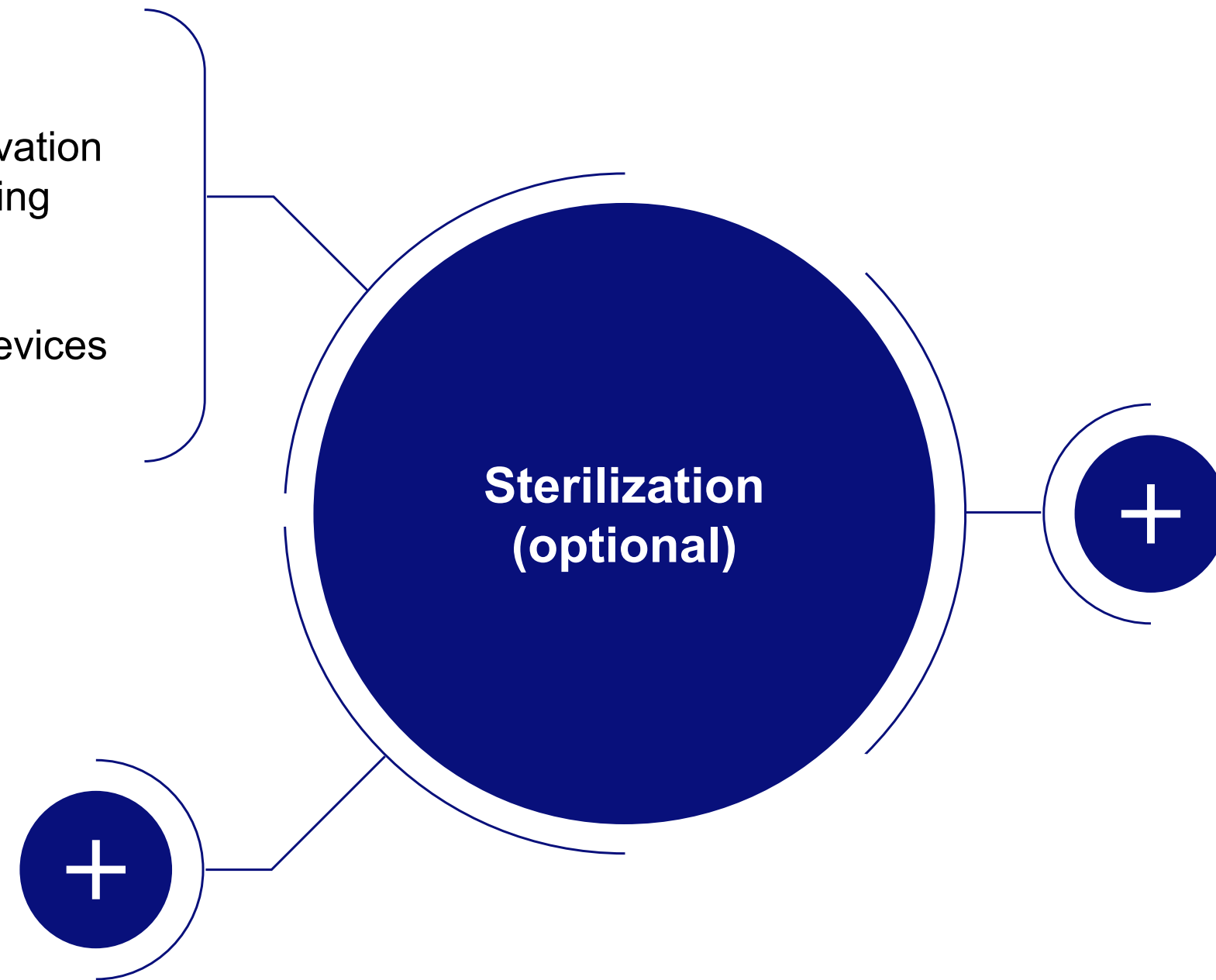


Click on the plus symbols for more information.

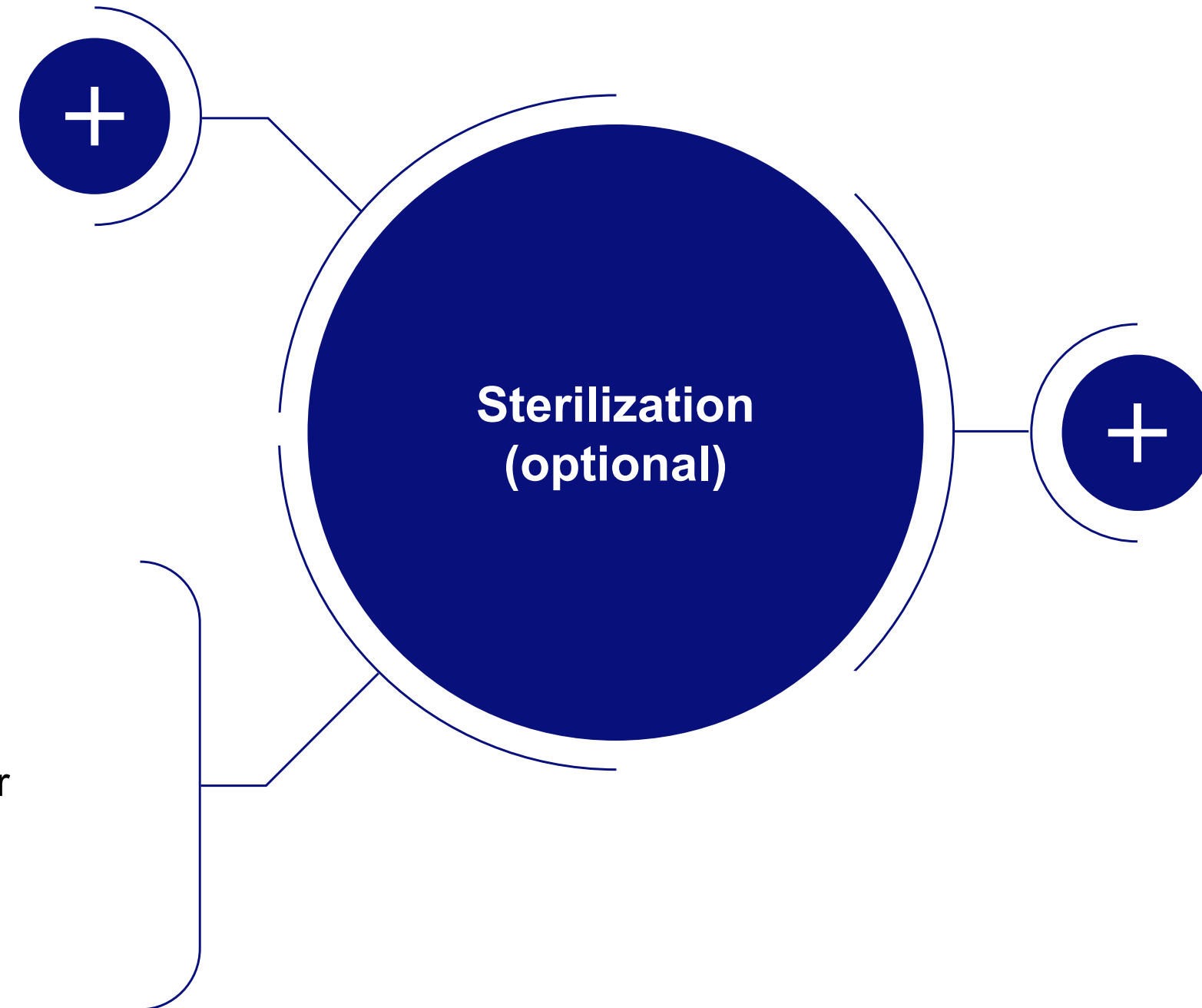
Sterilization (optional)

Purpose

- Complete destruction or inactivation of ALL microorganisms, including bacterial spores
- Required for critical medical devices (Spaulding classification)



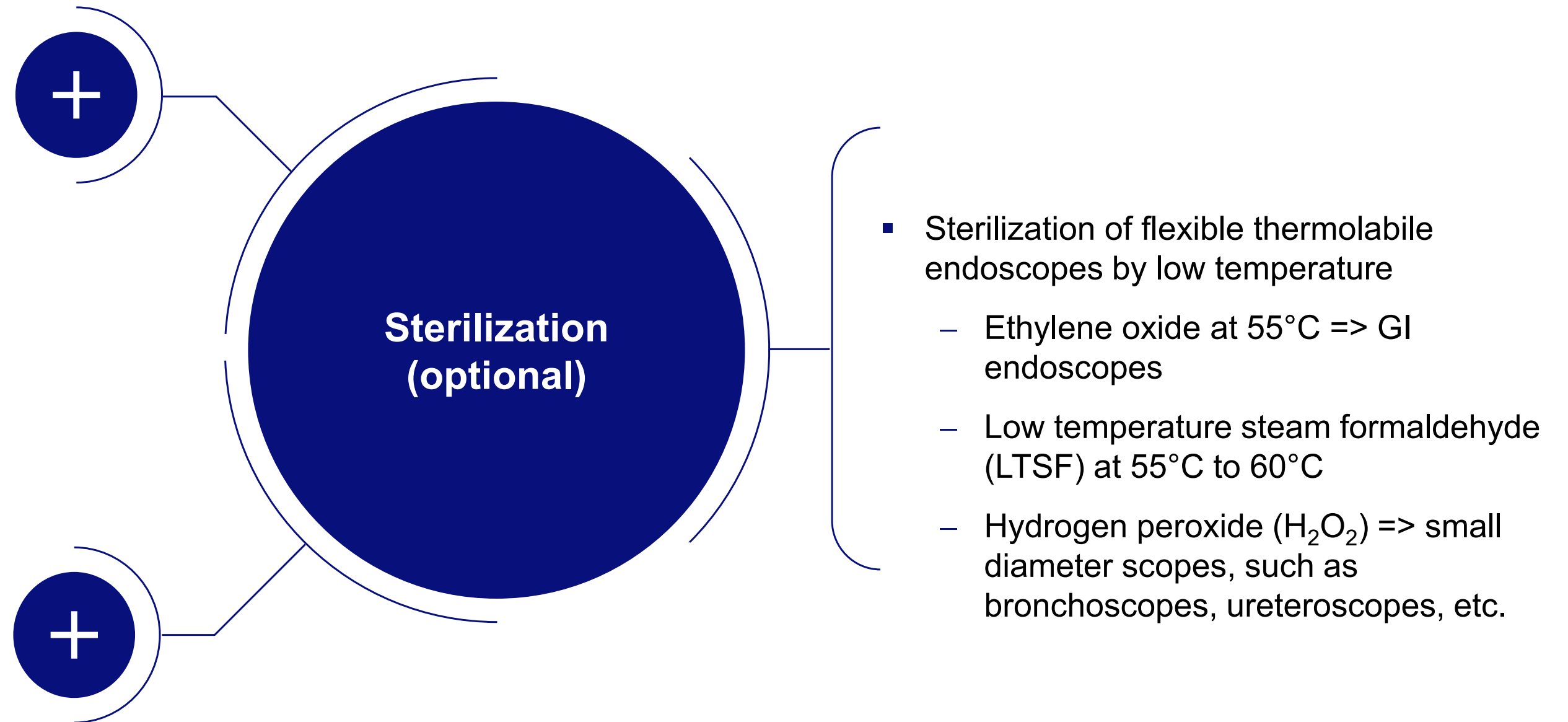
Sterilization (optional)



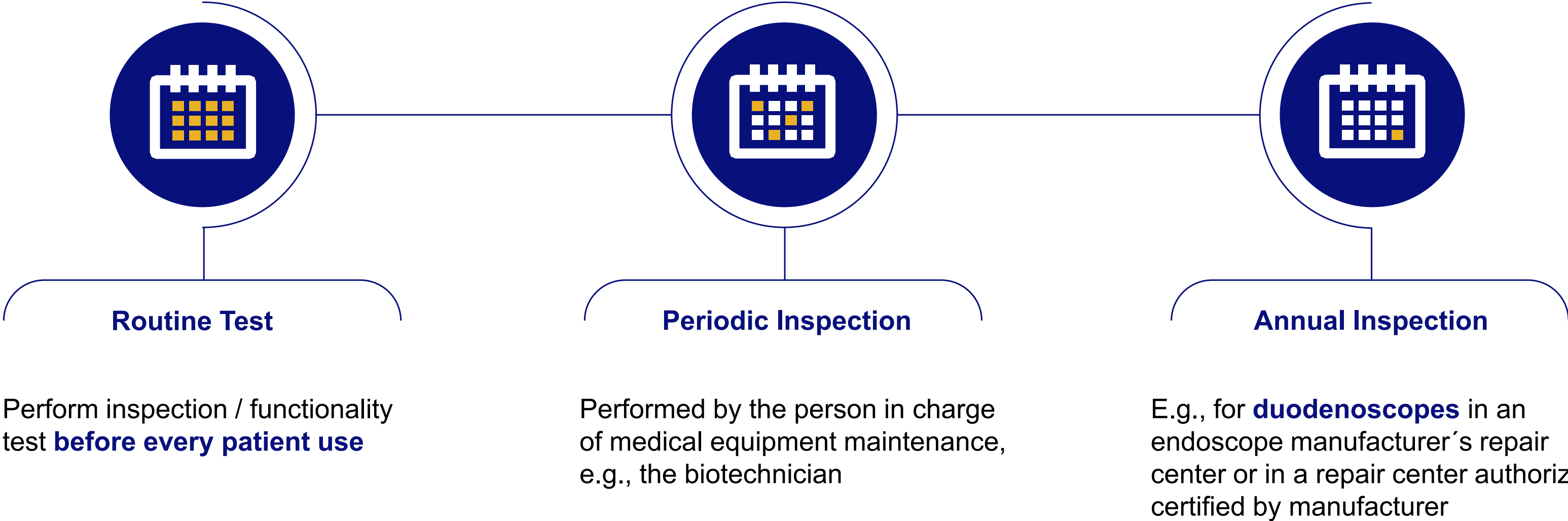
Methods

- **Attach ETO cap / detach the water-resistant cap** for proper pressure exchange
- Use appropriate packaging

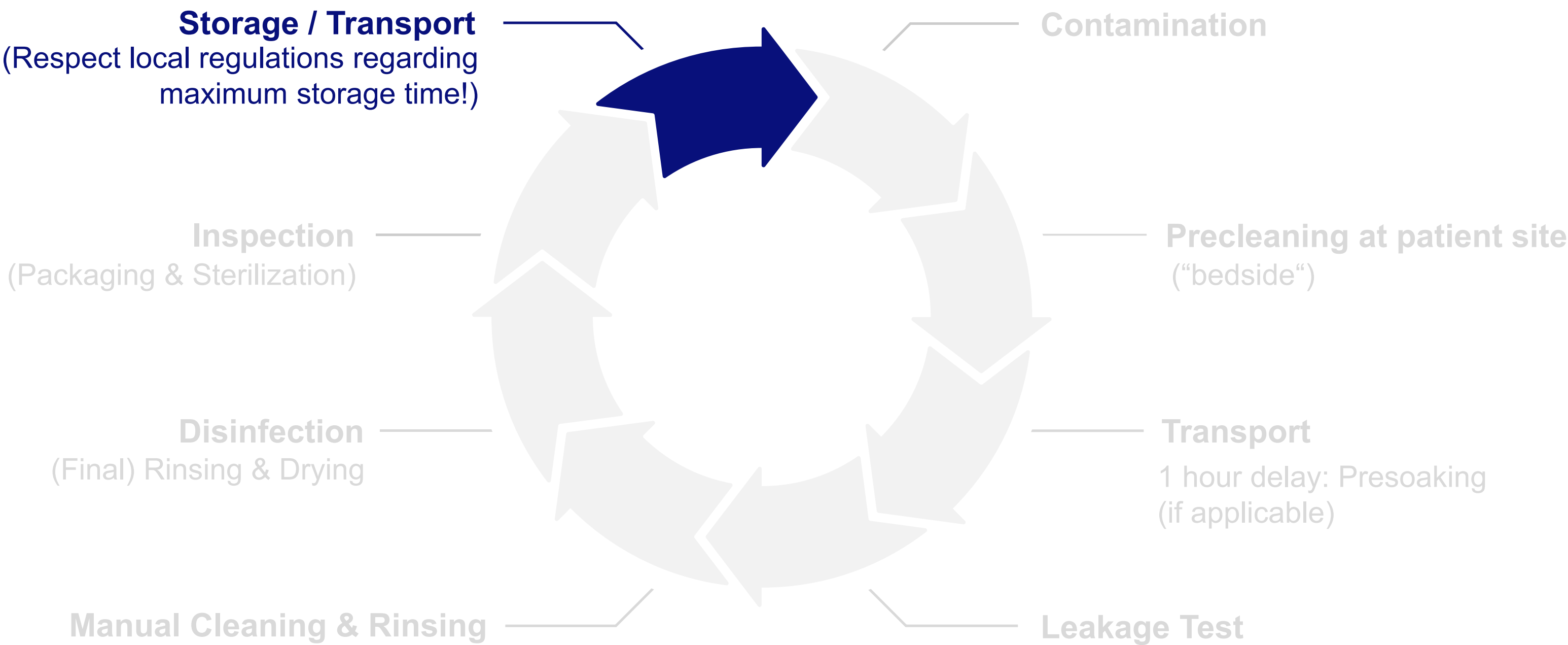
Sterilization (optional)



Inspection according to Operation Manual



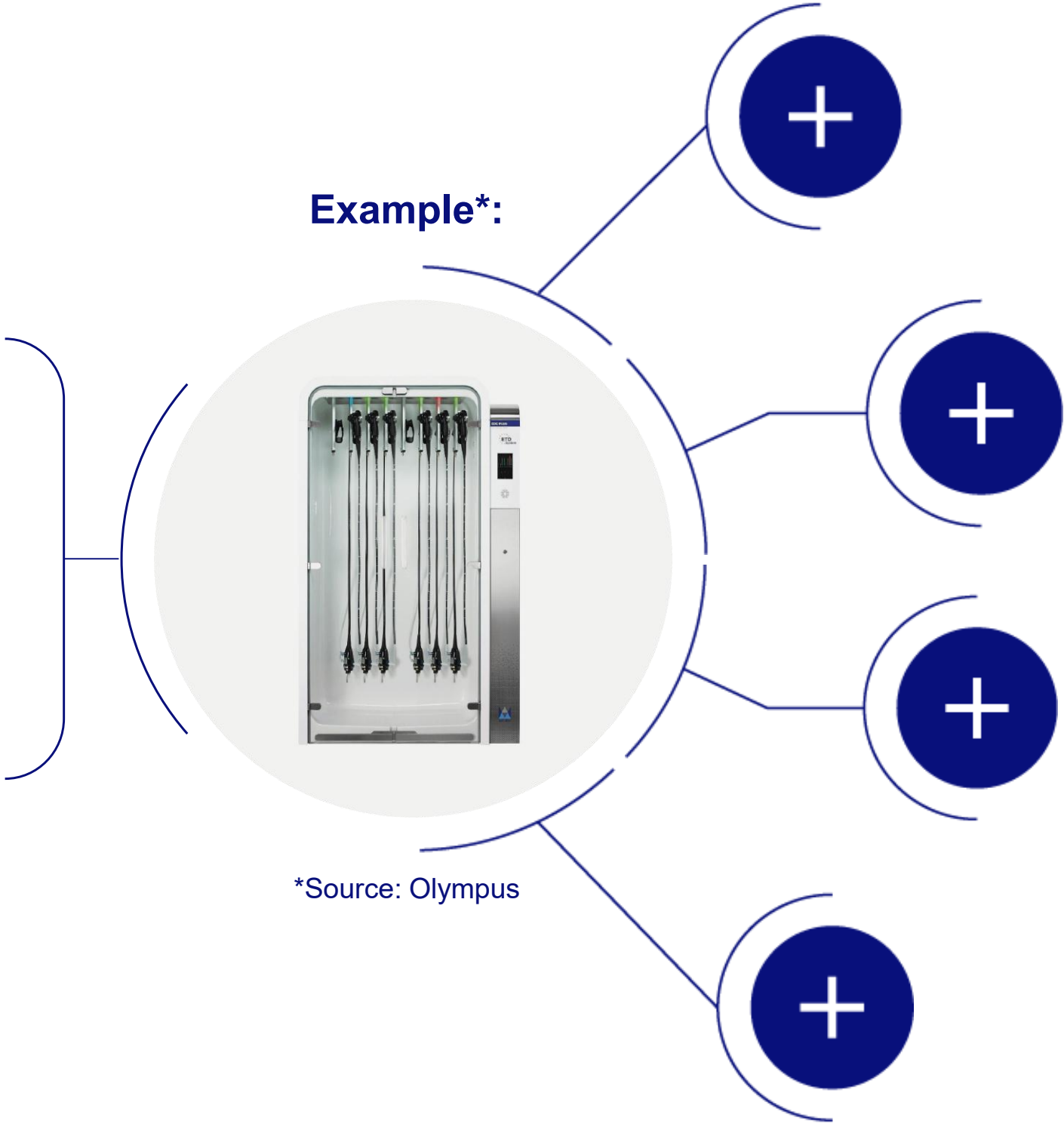
Reprocessing Cycle for Flexible Endoscopes | Endoscope Manufacturer's IFU (Instruction For Use)



Storage

Purpose

- Avoidance of recontamination and damage



Click on the plus symbols for more information.

Storage

Purpose

- Avoidance of recontamination and damage



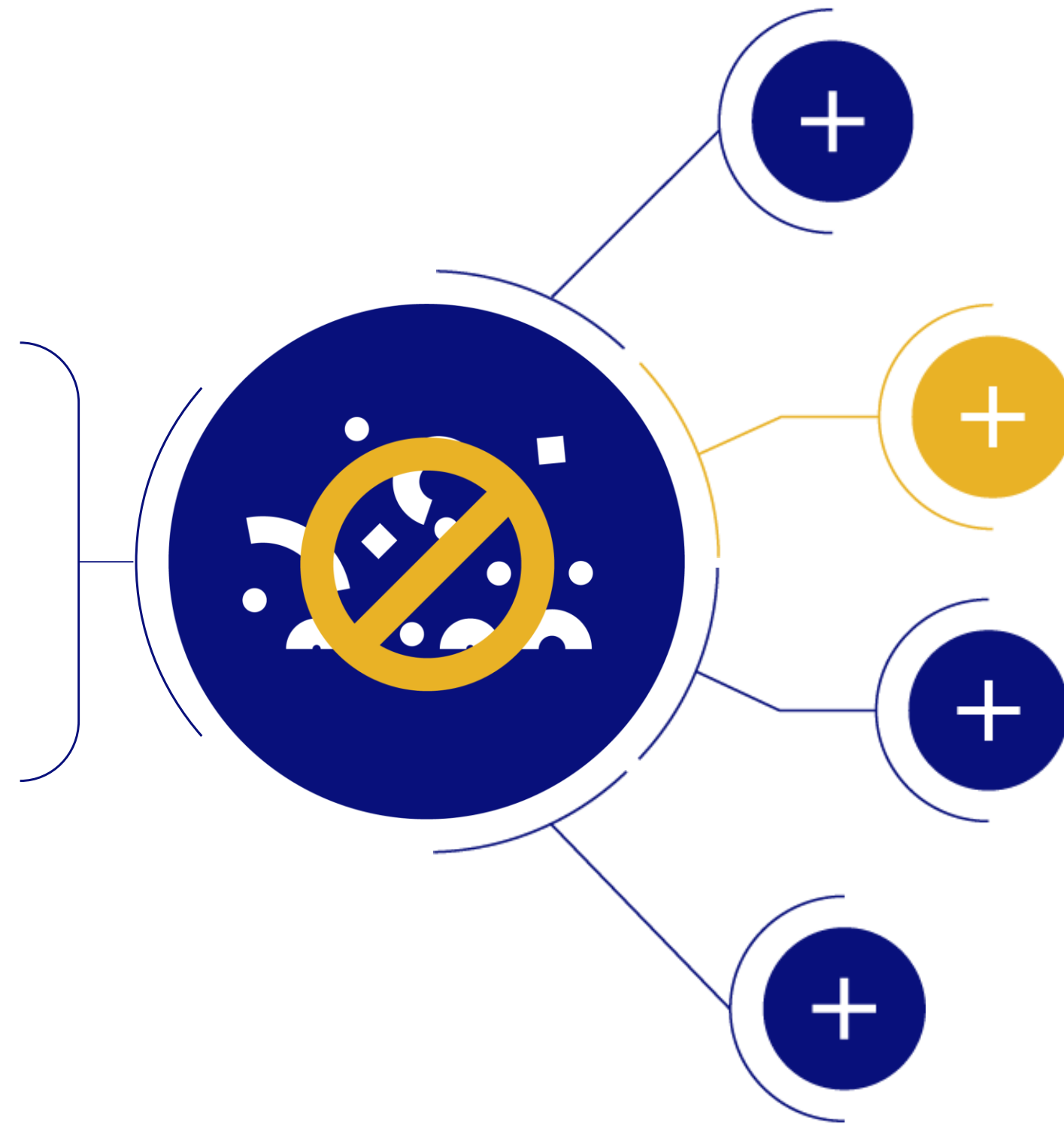
Methods

Standard for manufacturer of drying and/or storage cabinets: **EN 16442**

Storage

Purpose

- Avoidance of recontamination and damage



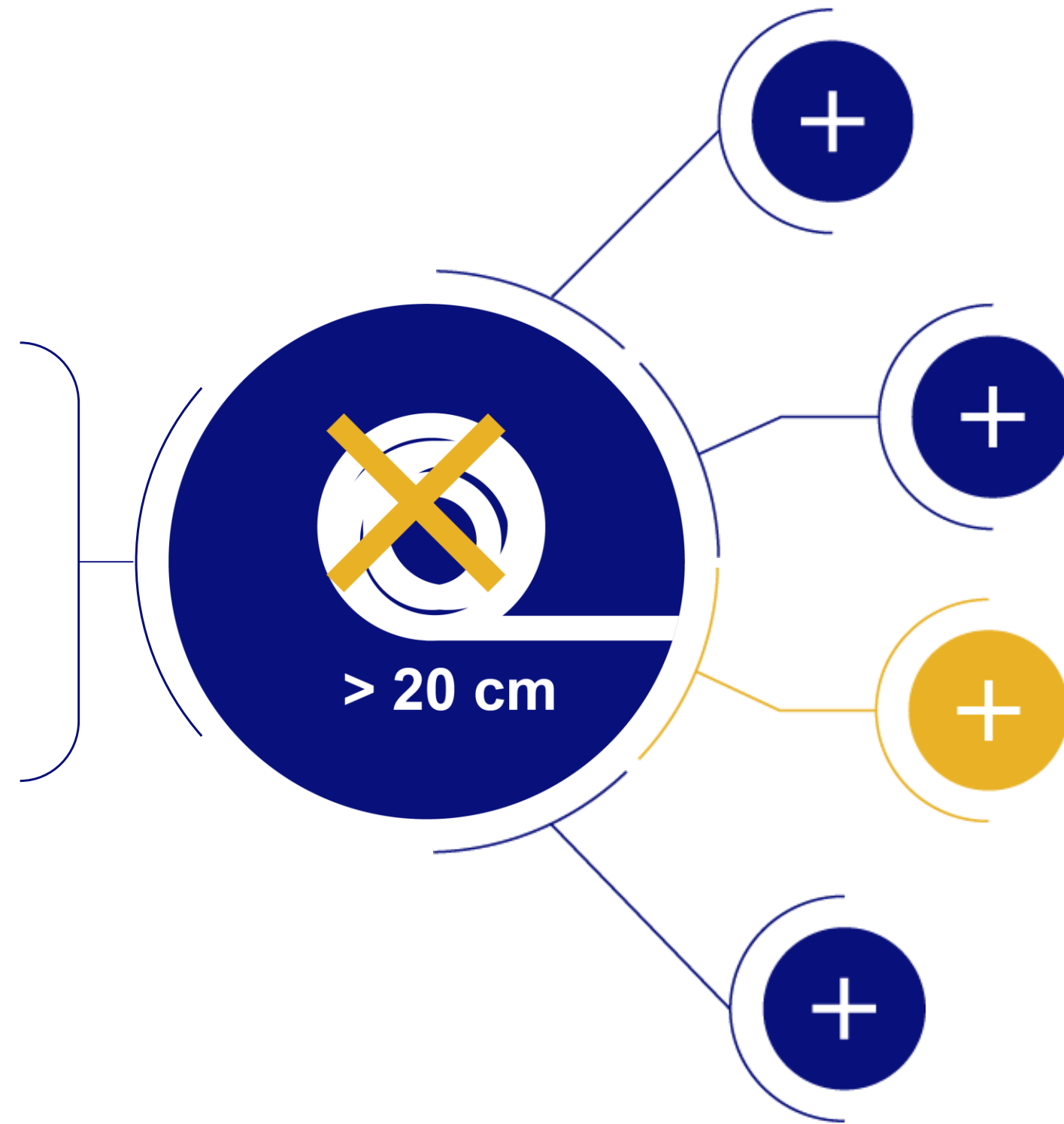
Methods

Closed, dust-free cabinets

Storage

Purpose

- Avoidance of recontamination and damage



Methods

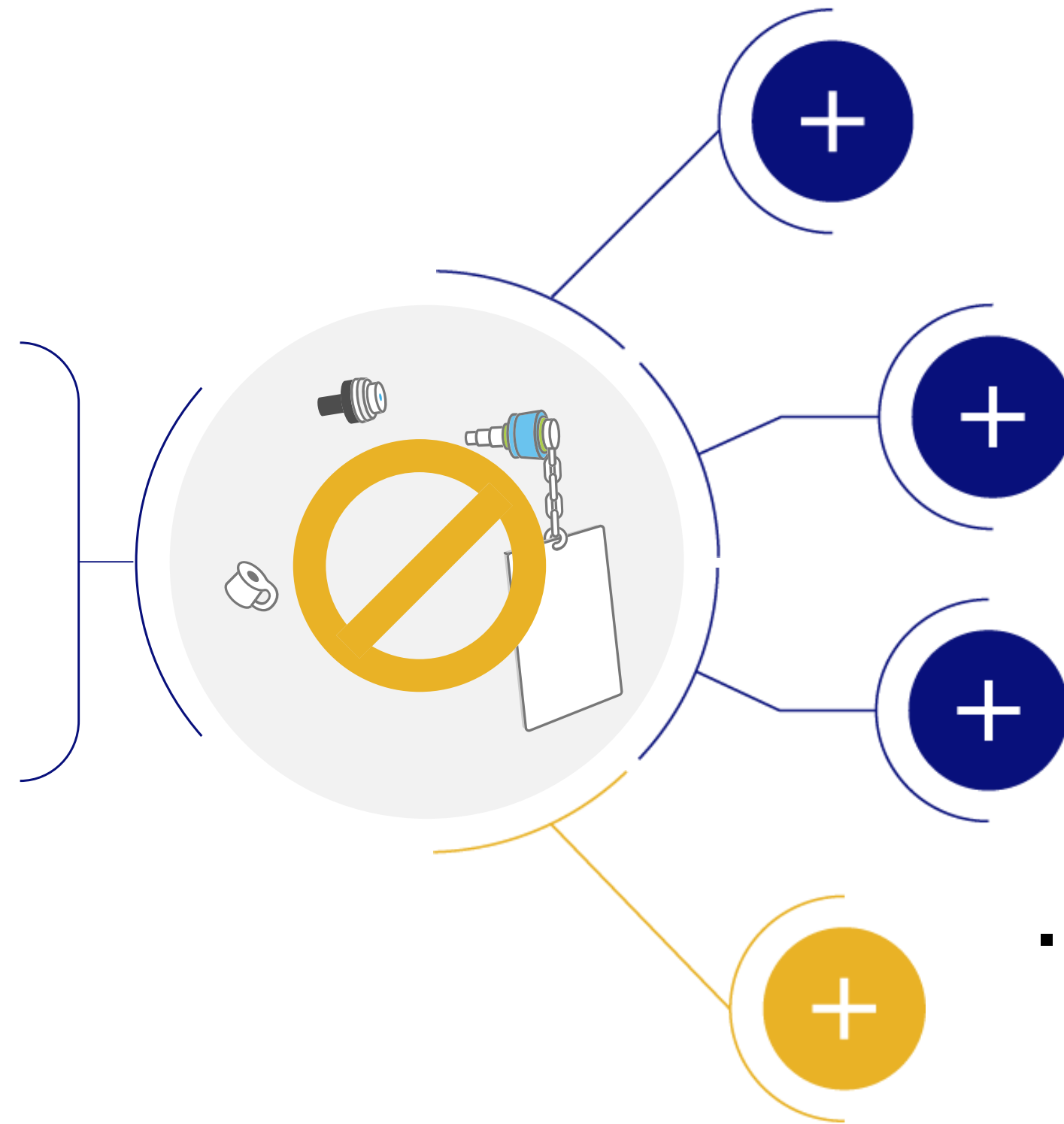
Vertically hanging recommended

- In case of horizontal storage:
do not coil the endoscope insertion
tube or universal cord with a diameter
< 20 cm

Storage

Purpose

- Avoidance of recontamination and damage



- Store without accessories attached, like:
 - Valves
 - Water resistant cap
 - ETO cap



If following and correctly performing all reprocessing steps according to the endoscope manufacturer's IFU, endoscopes can be safely used on patients!

OLYMPUS

 Restart