

Hygiene & Reprocessing Training Material

Reprocessing Basics of Thermolabile Endoscopes, Adapters & Accessories

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)**.

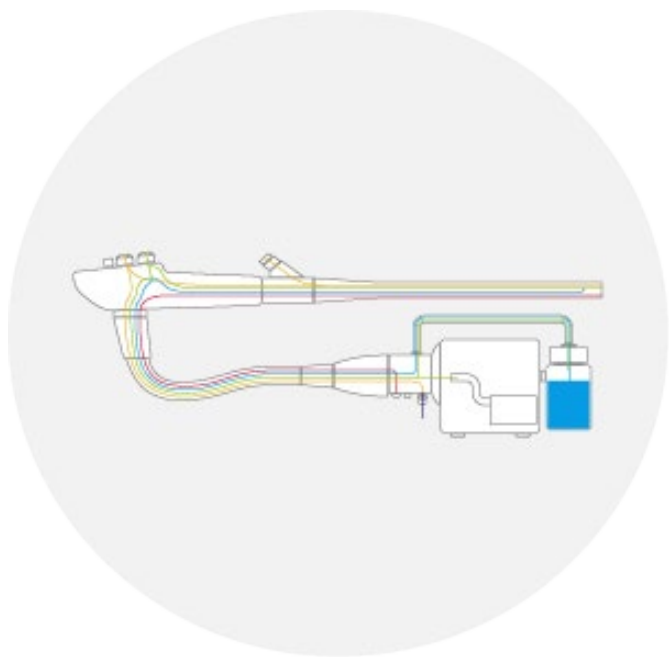
Click on the „I agree“-button to start with the training.



Prerequisites



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



Knowledge of instruments' design



Personal protective equipment (PPE)



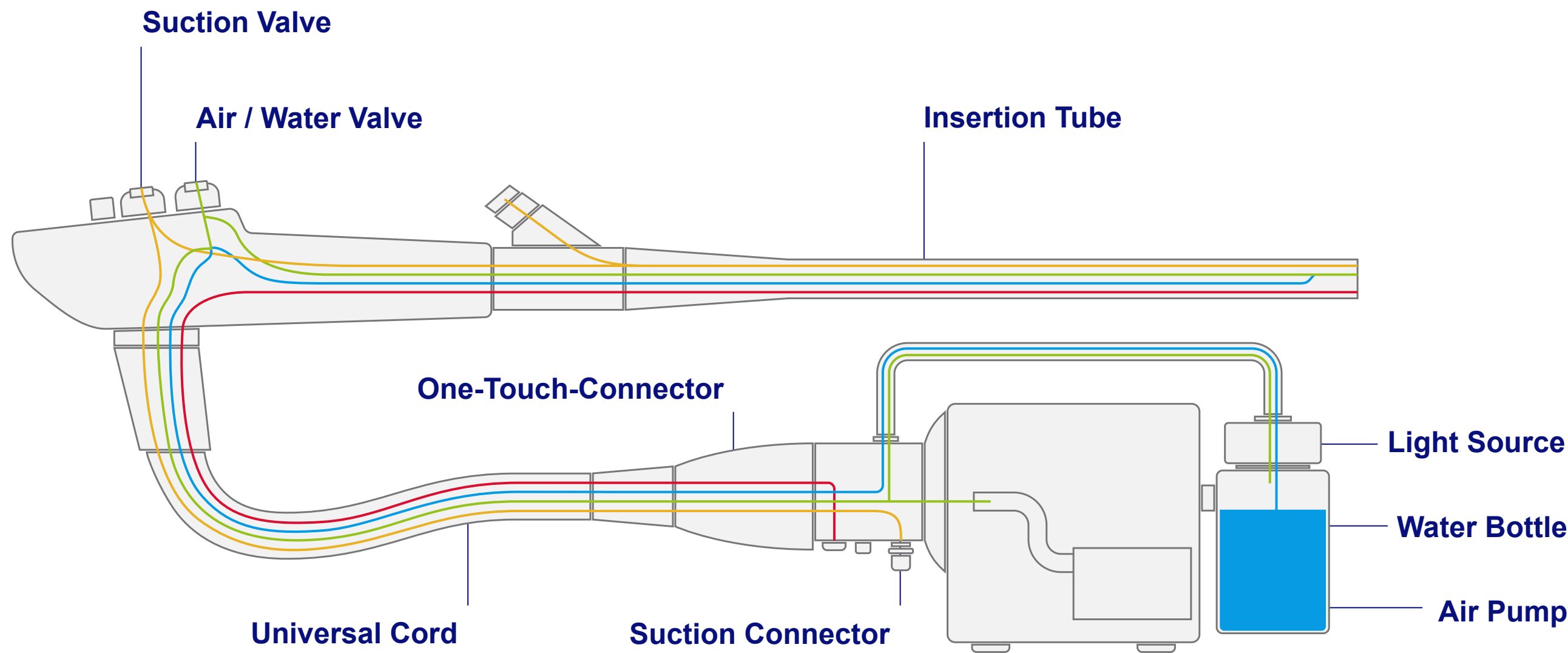
Appropriate reprocessing equipment

Prerequisites for Processing of Medical Devices

Design of GI Endoscopes

Example*:

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

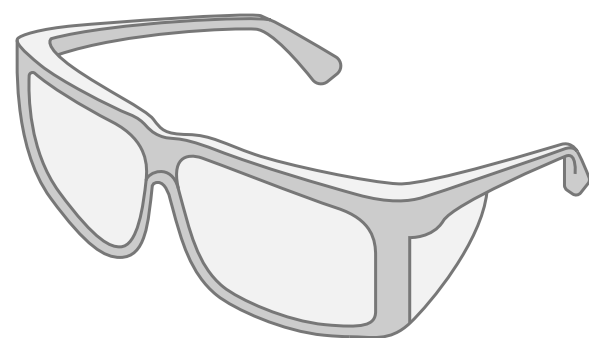


Adequate reprocessing is only possible, if the structure / channels of the endoscope are well known!

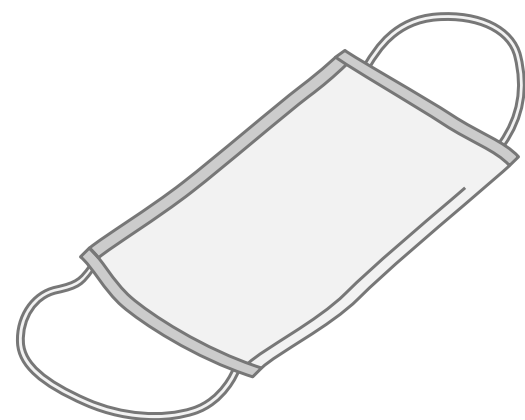
*Source: Olympus

Prerequisites | Personal Protective Equipment (PPE)

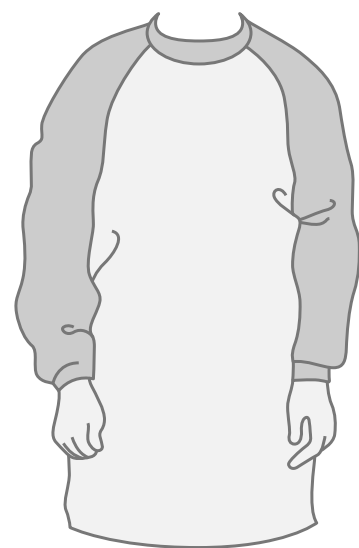
Examples*:



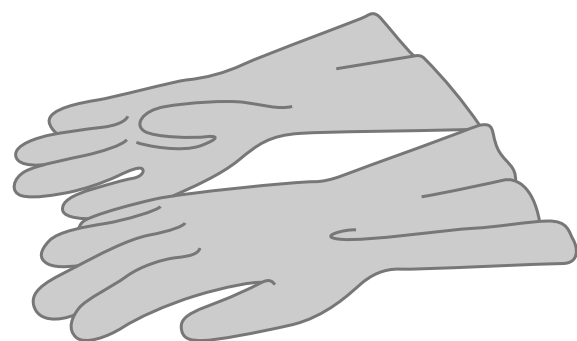
Eyewear



Face-mask



Moisture-resistant clothing



Chemical-resistant gloves

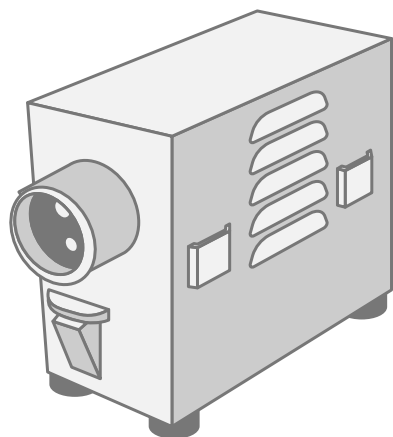
*Source: Olympus

Prerequisites | Appropriate Reprocessing Equipment

Examples*:



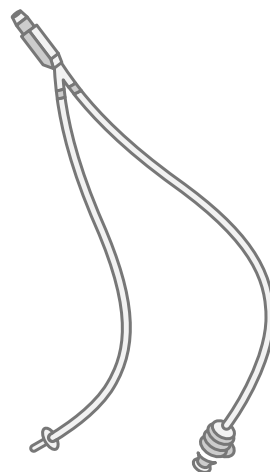
„Use Basins which are at least 25 (W) x 10 (H) x 50 (D) cm in size and deep enough to allow the endoscope to be completely immersed.“



Maintenance Unit



Leakage Tester



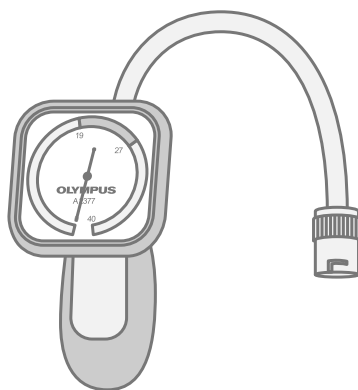
Suction Cleaning Adapter



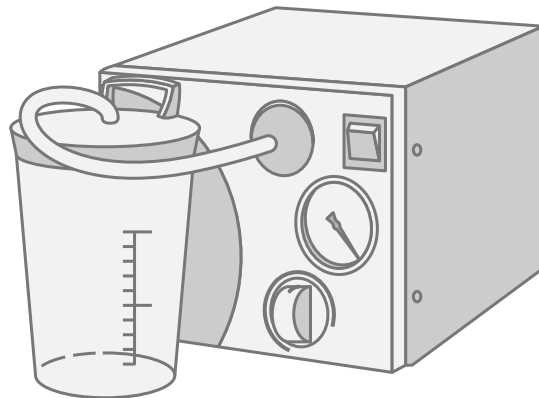
Single-use Combination Cleaning Brush



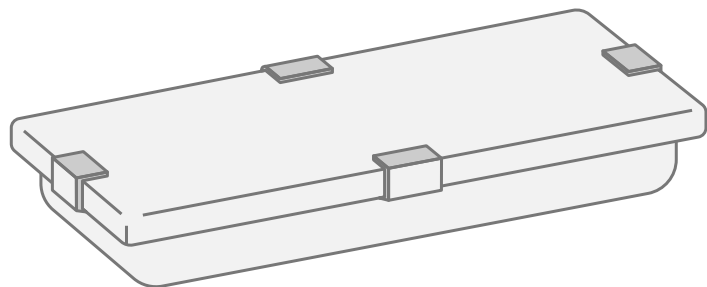
ETO Cap



Leakage Tester



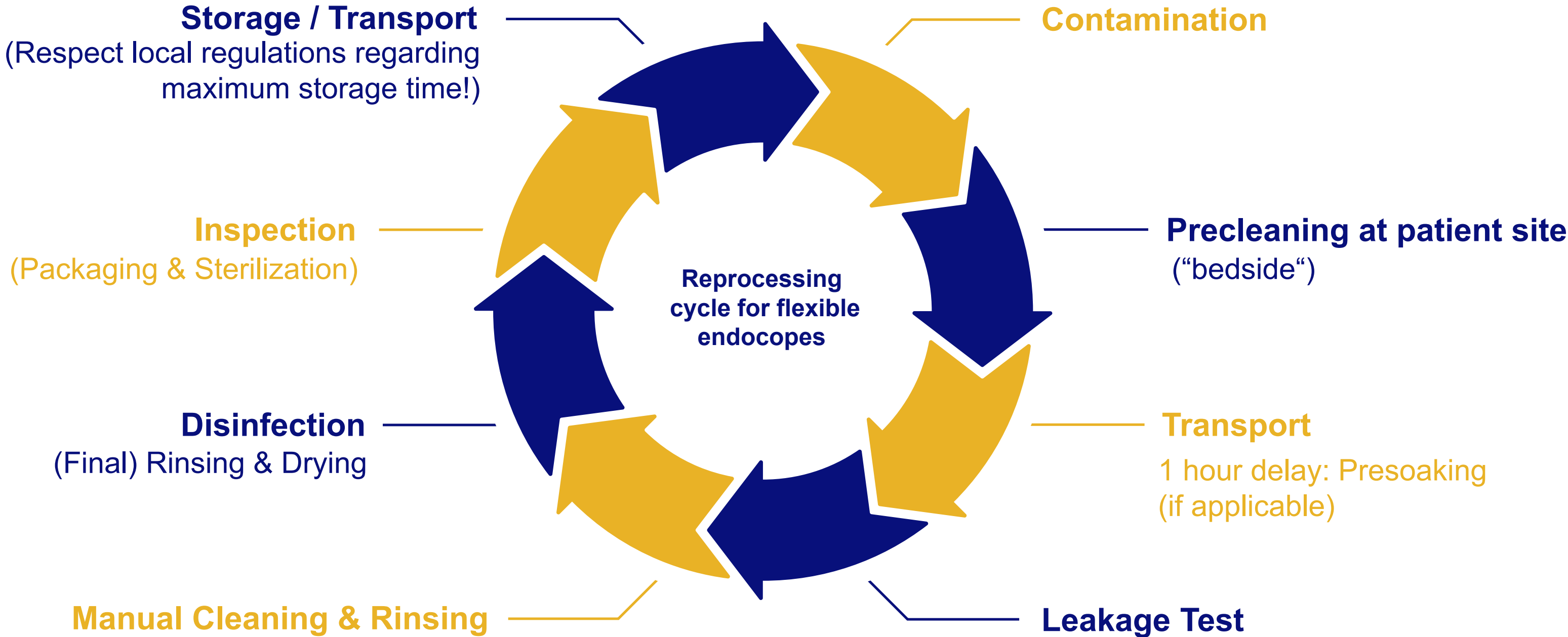
Suction Pump



Sterilization Tray

*Source: Olympus

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



Manual Cleaning of Flexible Endoscopes

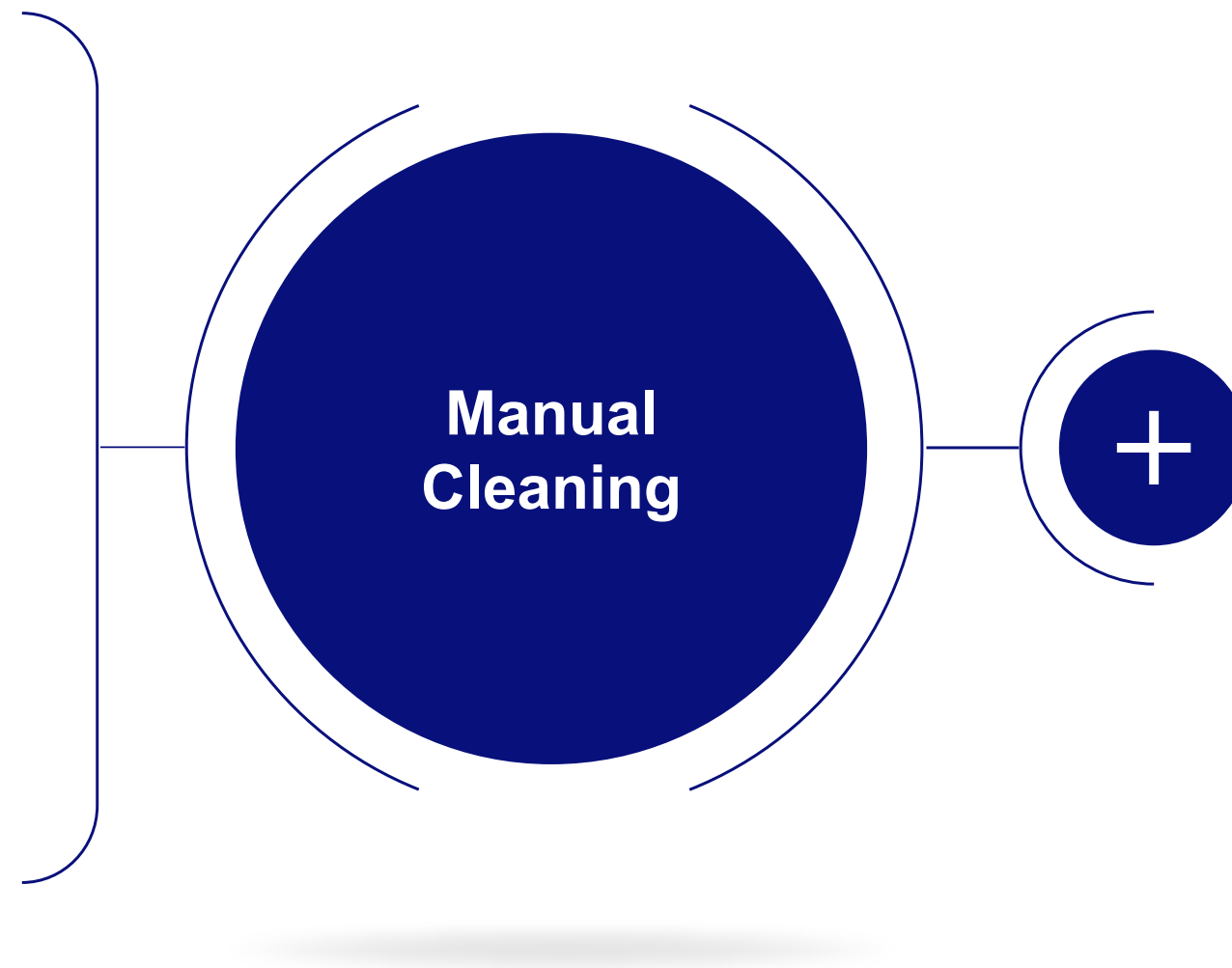


Manual Cleaning of Flexible Endoscopes

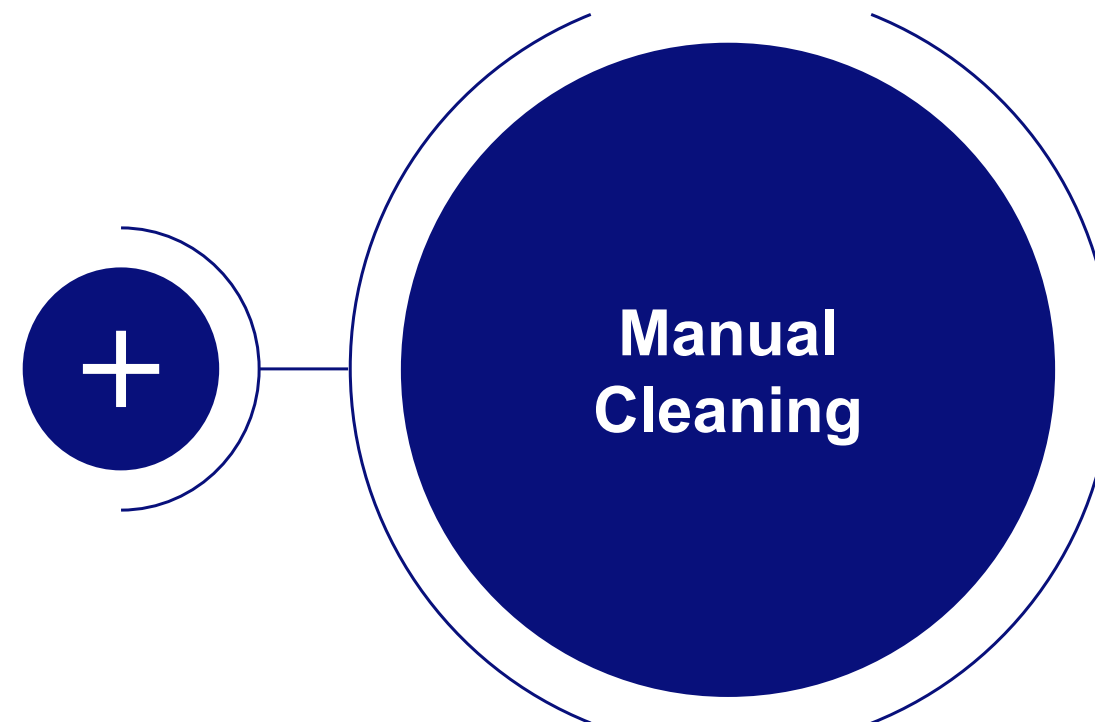
Purpose

Removal of most microorganisms and residues, such as:

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



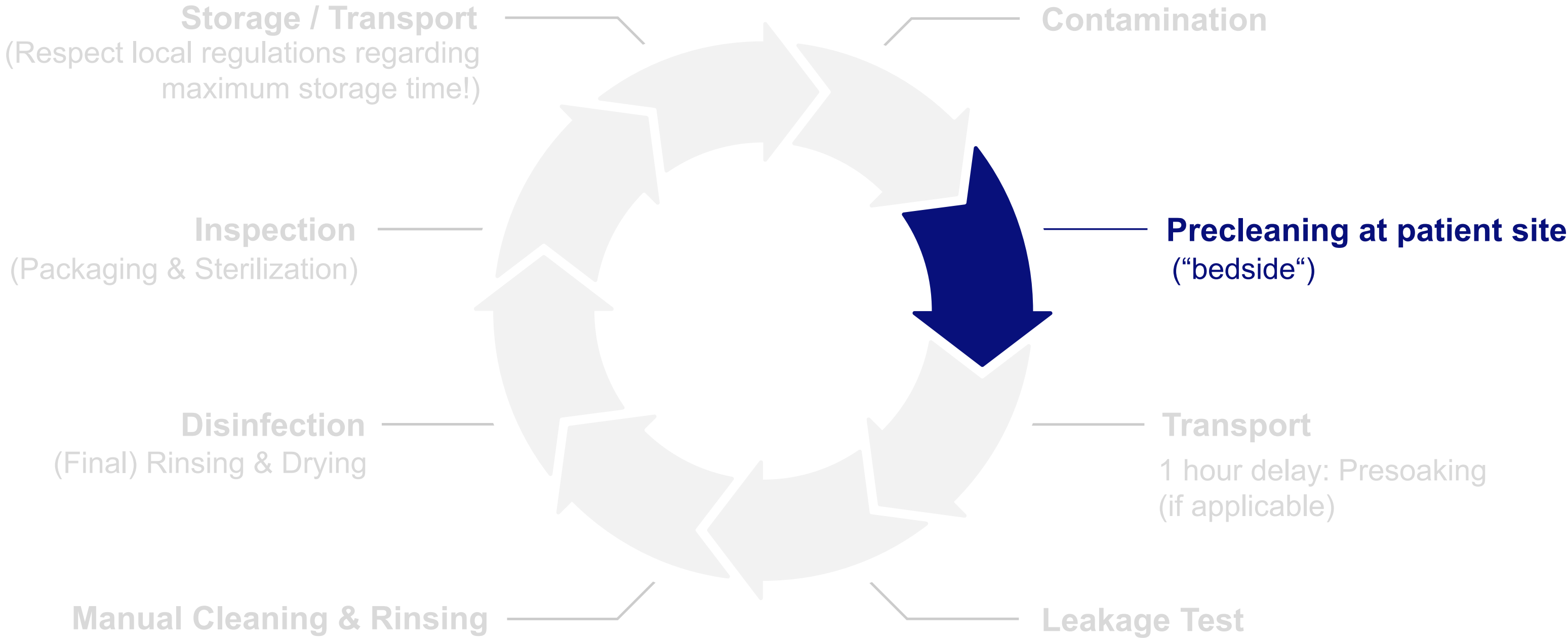
Manual Cleaning of Flexible Endoscopes



Cleaning solutions

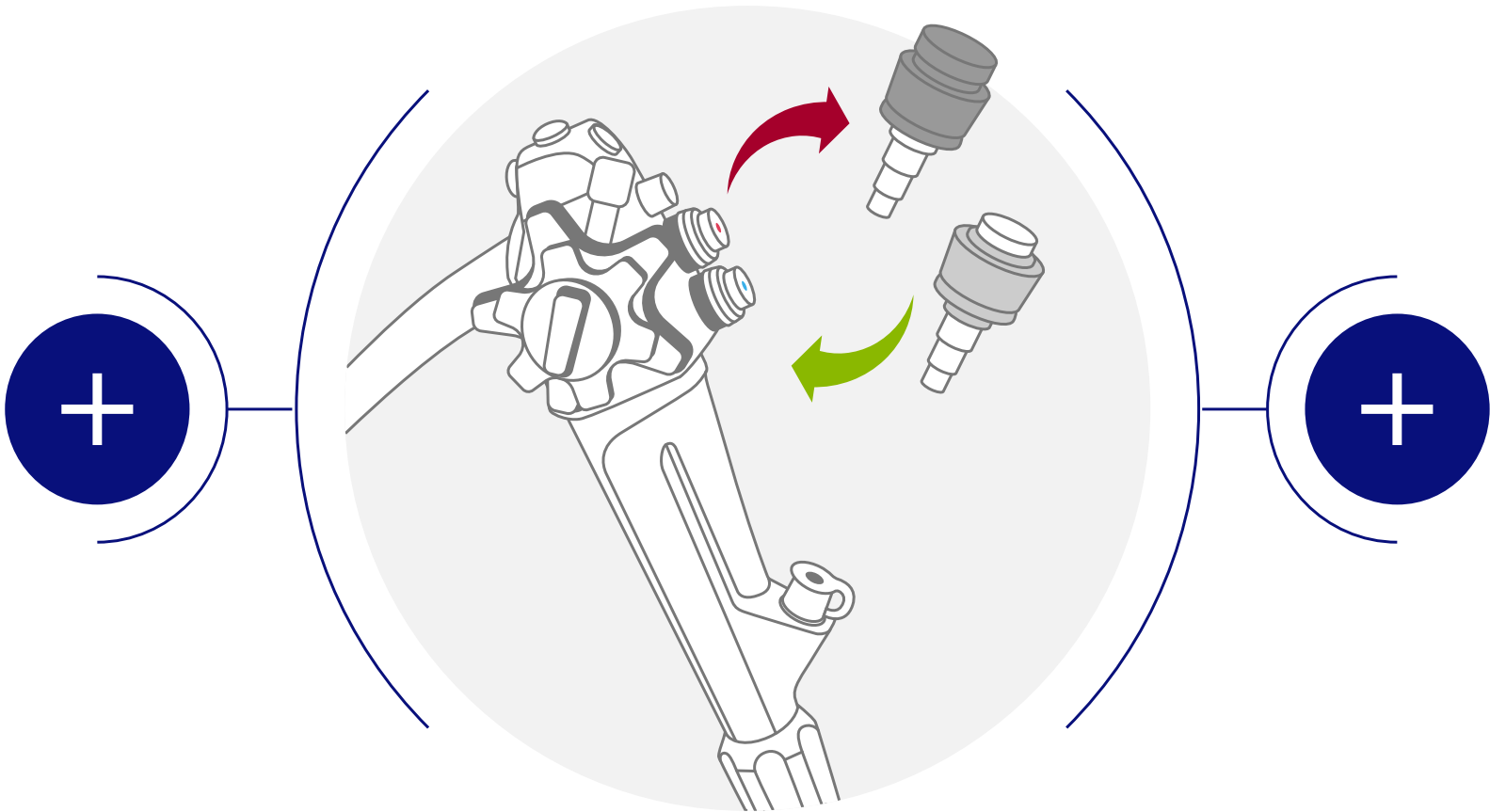
- Surfactants, low-foaming substances, with/without enzymes, neutral pH
 - Clear superiority of individual substances not found
- Without fixative properties (e.g. aldehydes, alcohols, peracetic acids)
- Change at least every working day; immediately in case of visible contamination
- No internationally standardized requirements for cleaners

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



Manual Cleaning | Precleaning at Patient Site

Example*:

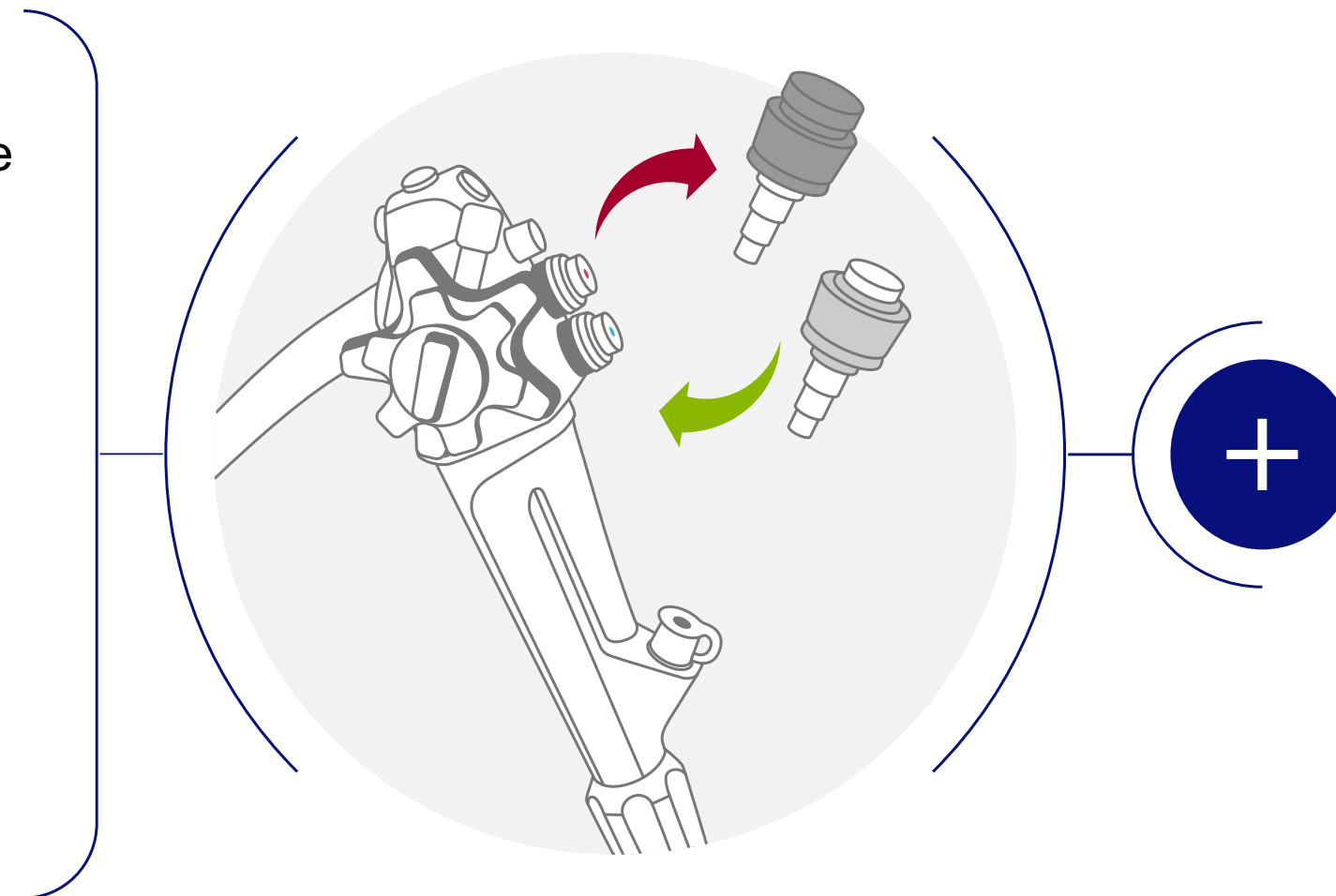


*Source: Olympus

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 cloth
- Use of cleaning adapters

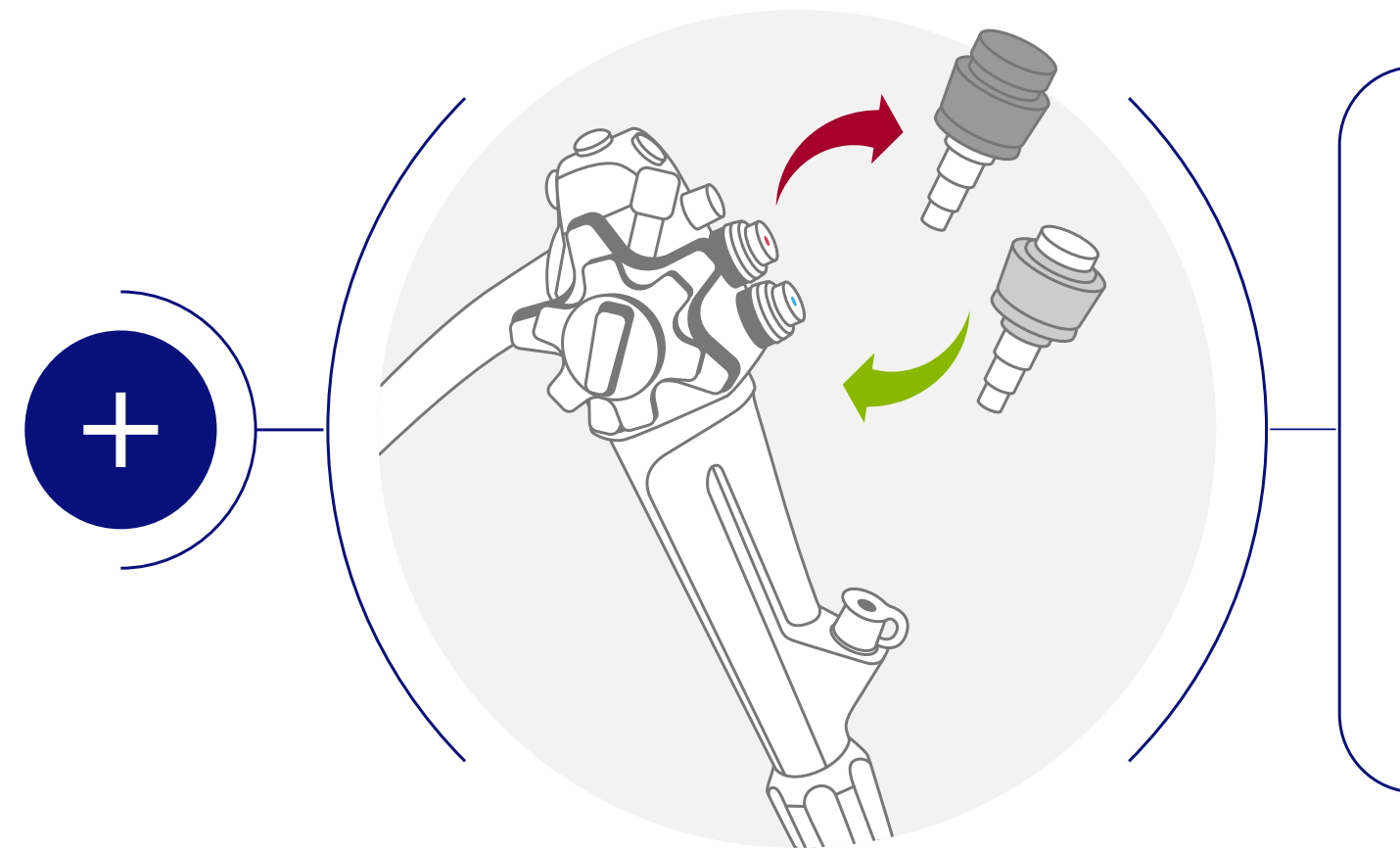
Example*:



*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

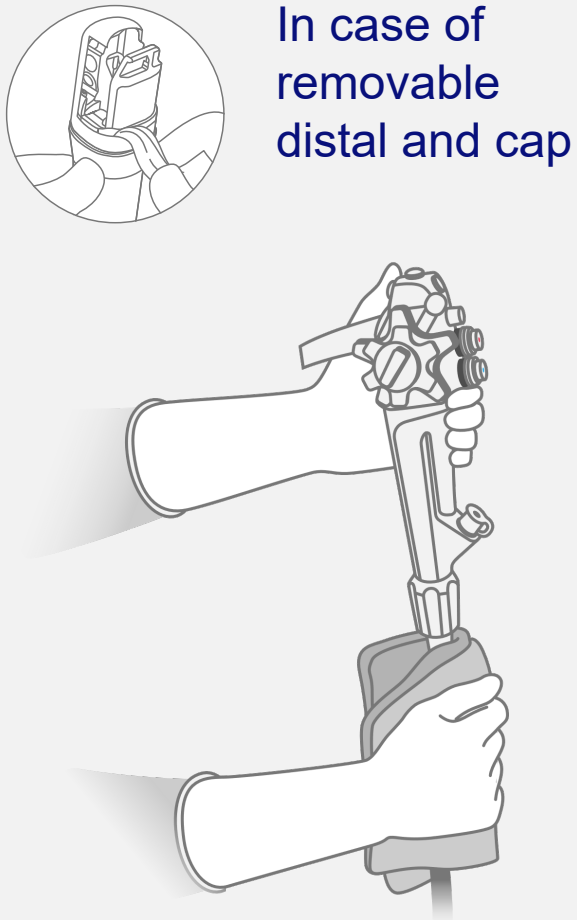
*Source: Olympus

Manual Cleaning | Precleaning at Patient Site

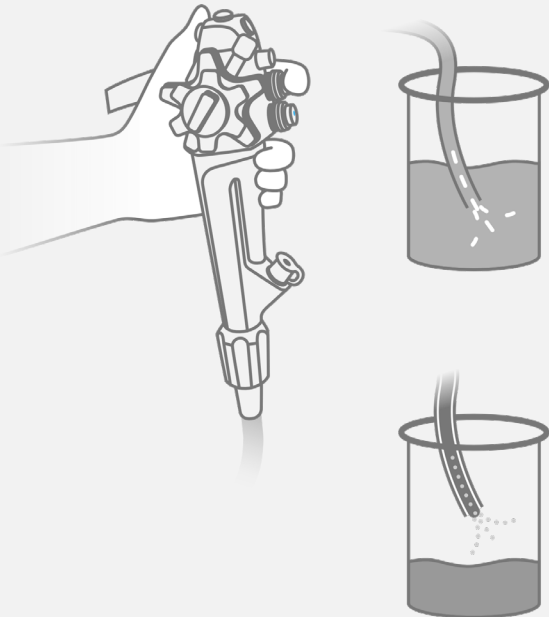
Example*:

Wipe

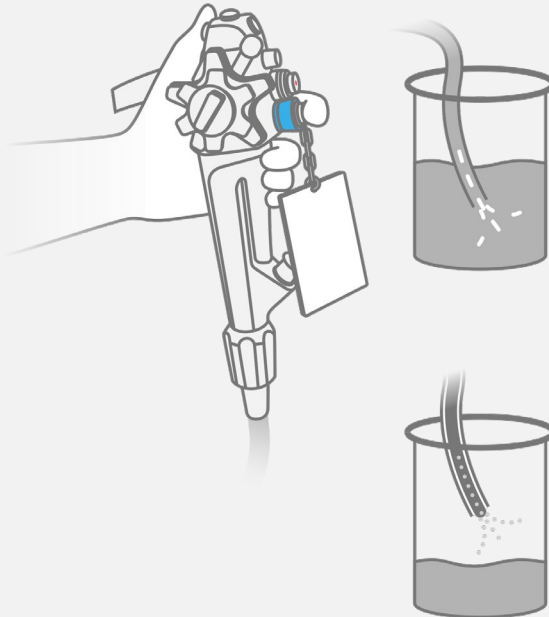
In case of removable distal and cap



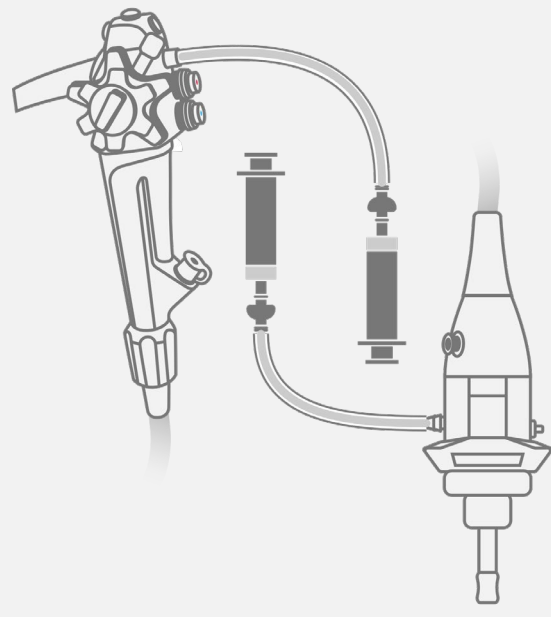
Aspirate suction channel



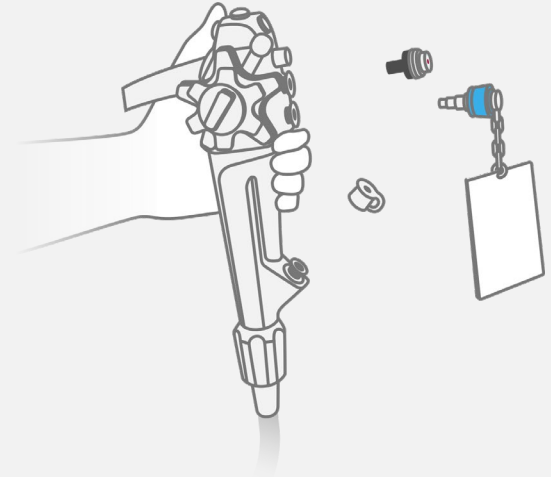
Flush air/water channel



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

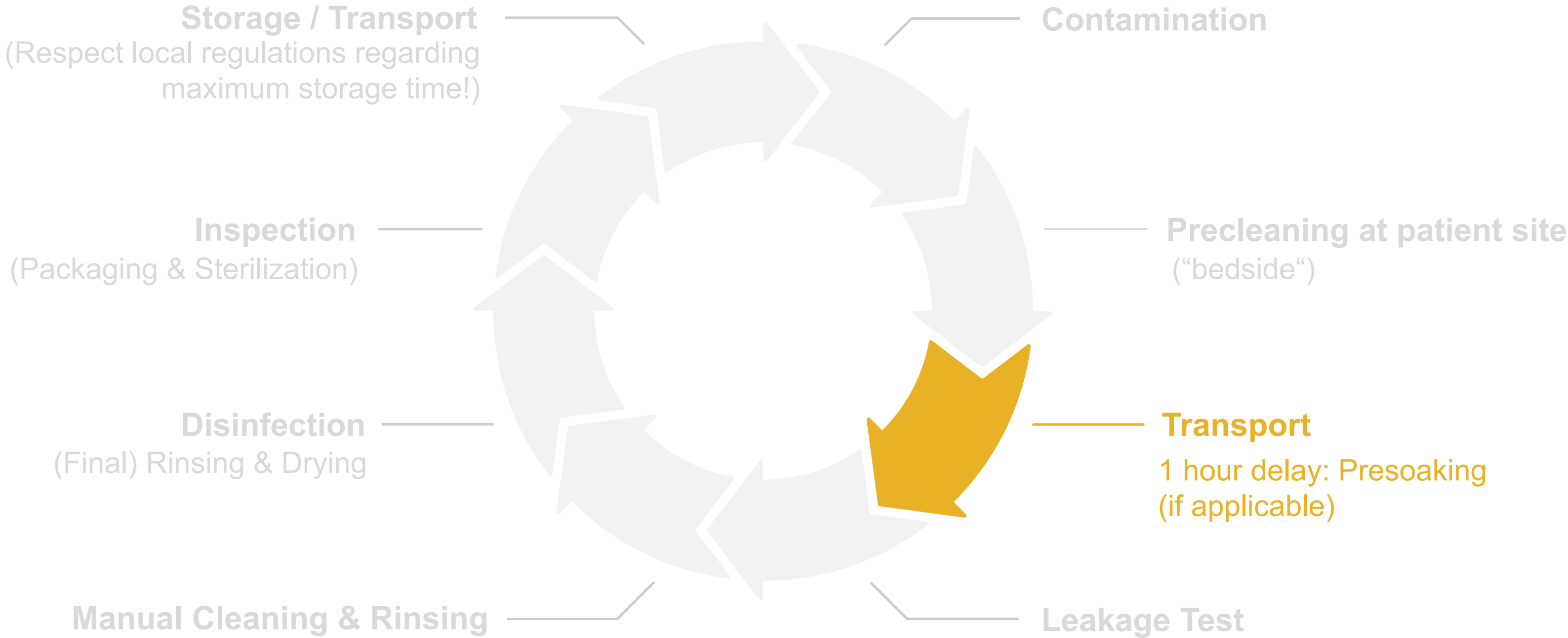


Remove accessories



*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 further 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

Click on the Plus-Symbols
for further information.

Transport into the Reprocessing Area

Example*:

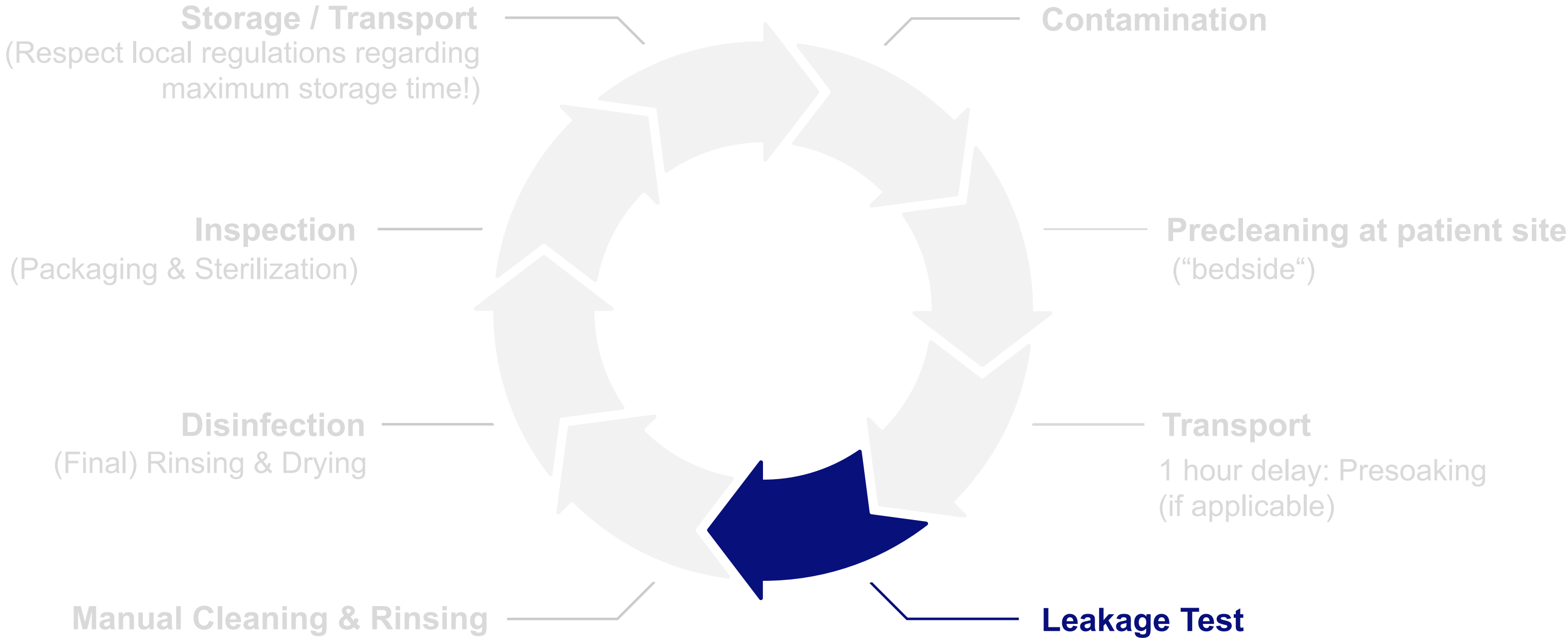


- Use a covered container to avoid environmental contamination
- Do not transport endoscopes and accessories together in the same container to avoid damages

*Source: Olympus

Click on the Plus-Symbols
for further information.

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

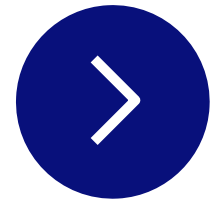


Preparation before Manual Cleaning | Leakage Test



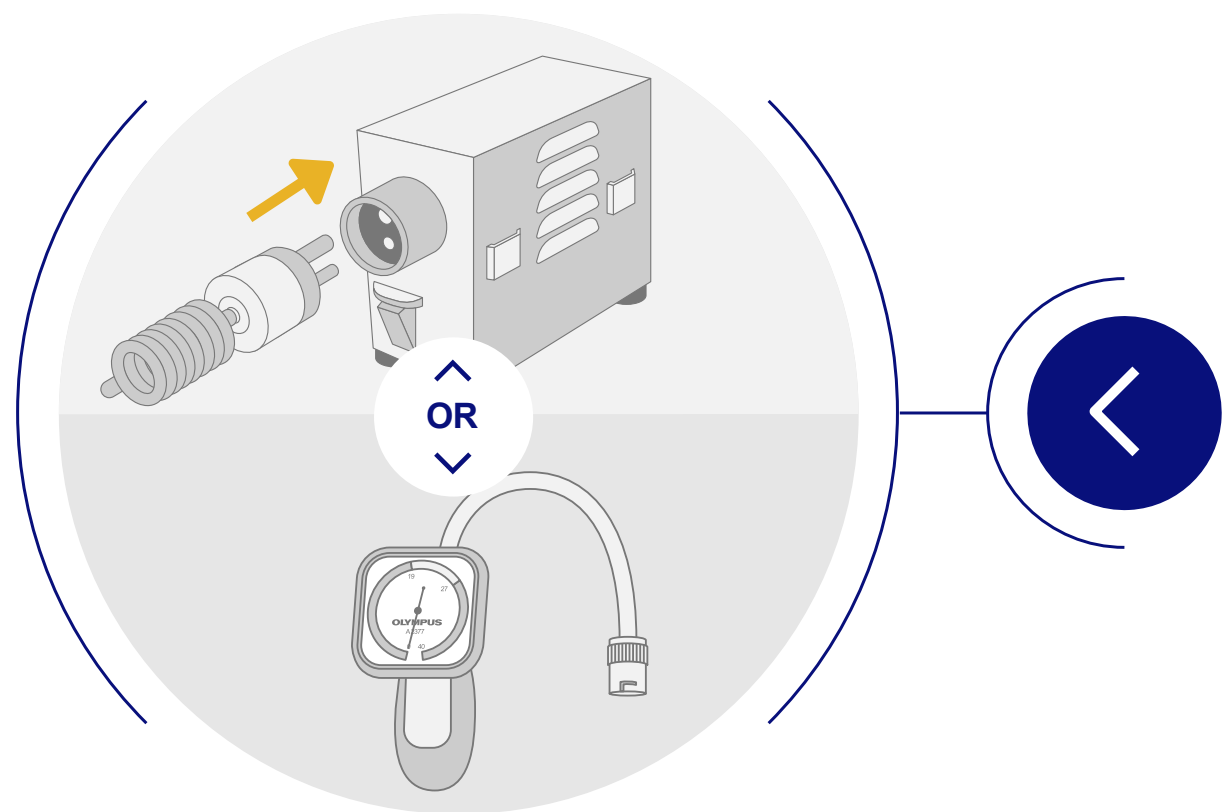
Leakage Test

- **Before immersing** the endoscope in any liquid, confirm that:
 - All components and accessories are detached from the endoscope
 - Water resistant cap is attached (where applicable)



Preparation before Manual Cleaning | Leakage Test

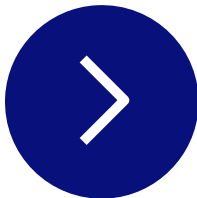
Example*:



*Source: Olympus

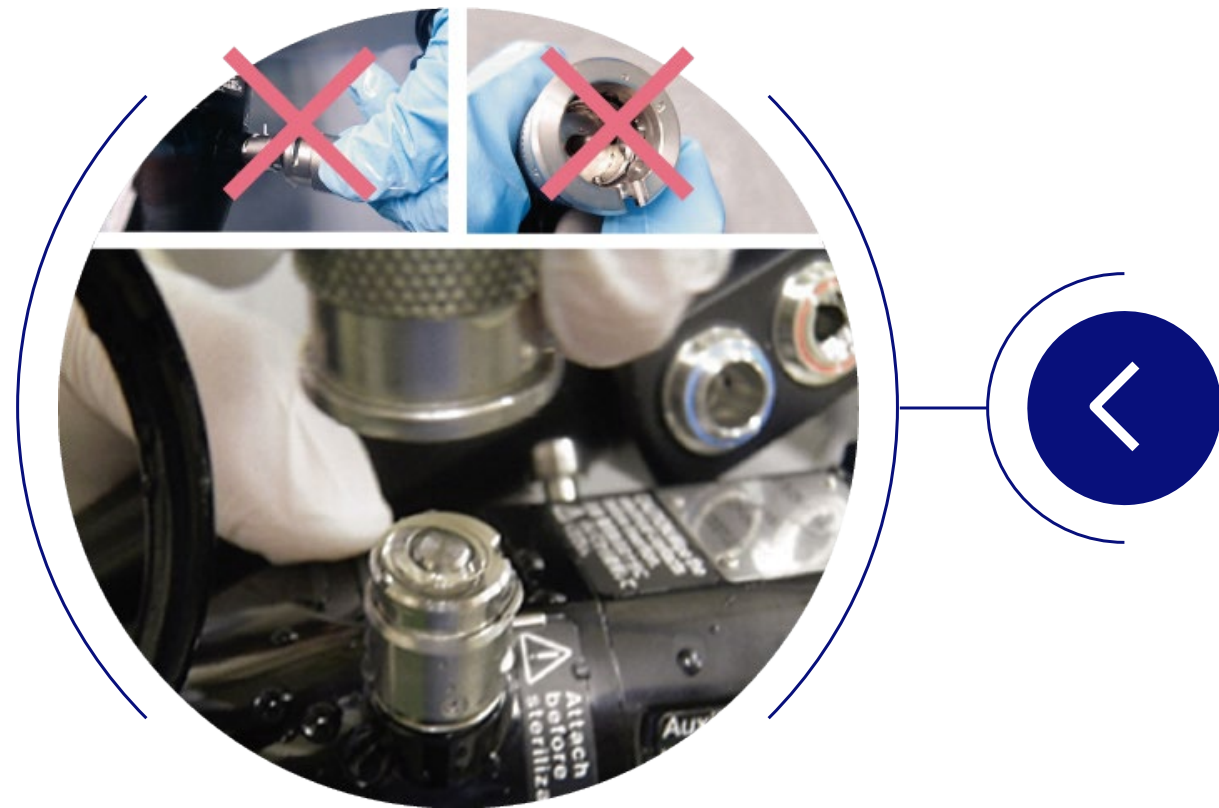
- Connect leakage tester to Maintenance Unit (MU-1)
- Or use manual leakage tester*

* only if applicable (refer to IFU)



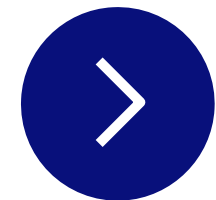
Preparation before Manual Cleaning | Leakage Test

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



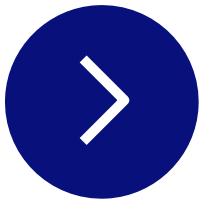
Preparation before Manual Cleaning | Leakage Test

Example*:



*Source: Olympus

- Check for leakages for approx. 1 min. 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

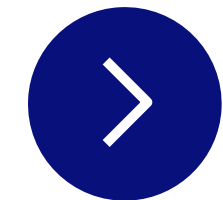
Example*:



*Source: Olympus

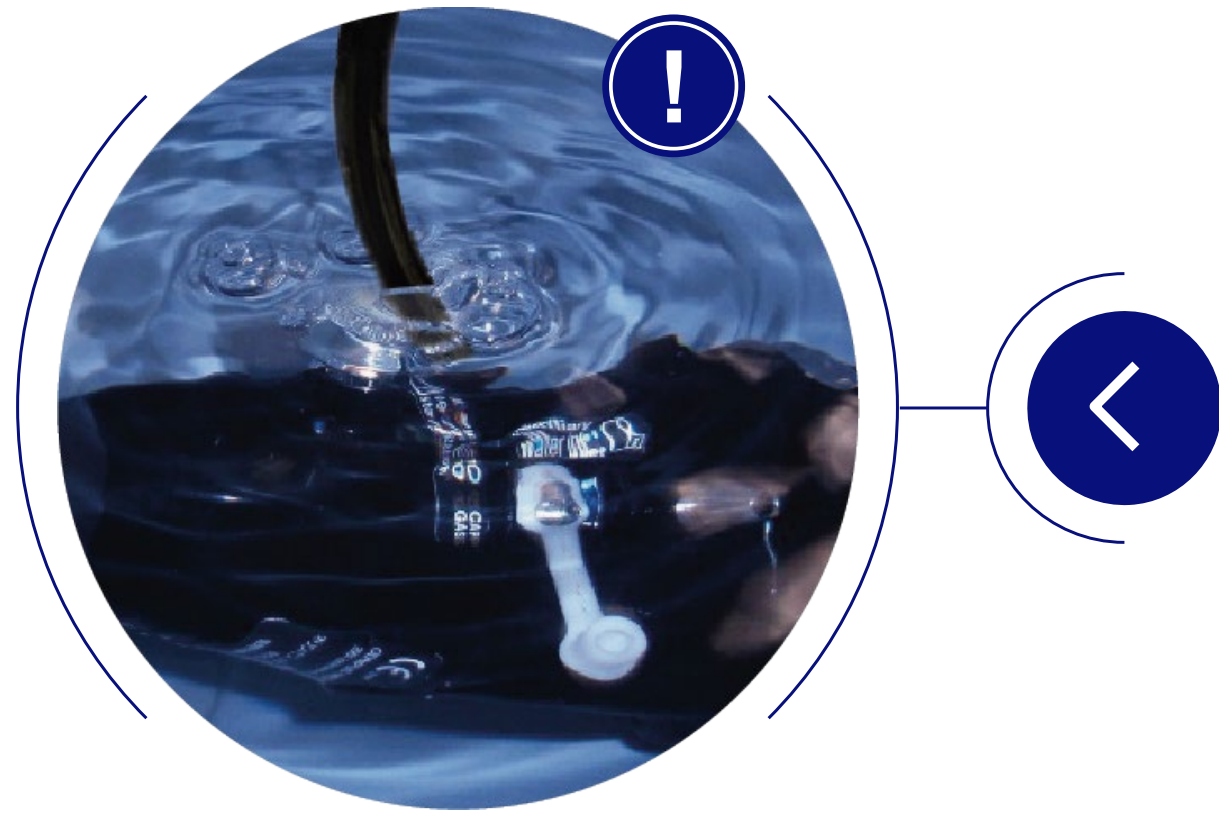
After leakage test:

- 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*:



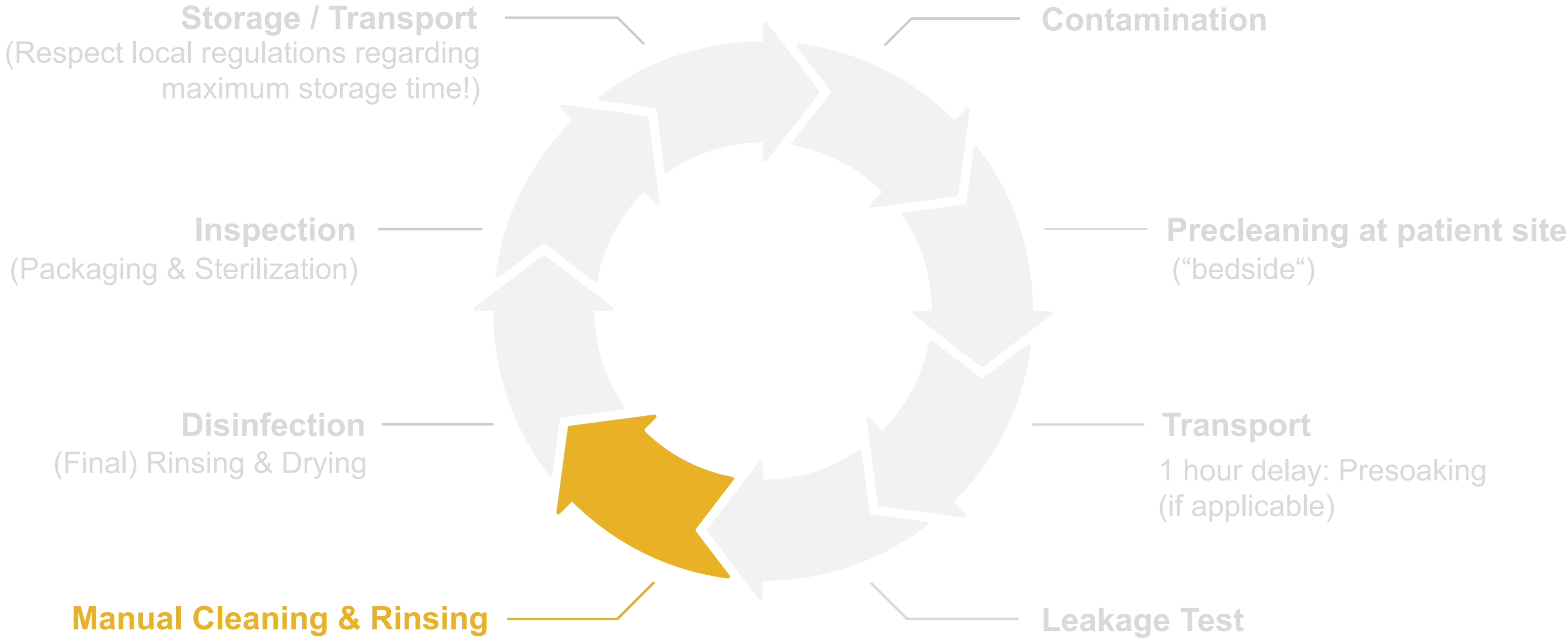
*Source: Olympus

In case of a leak

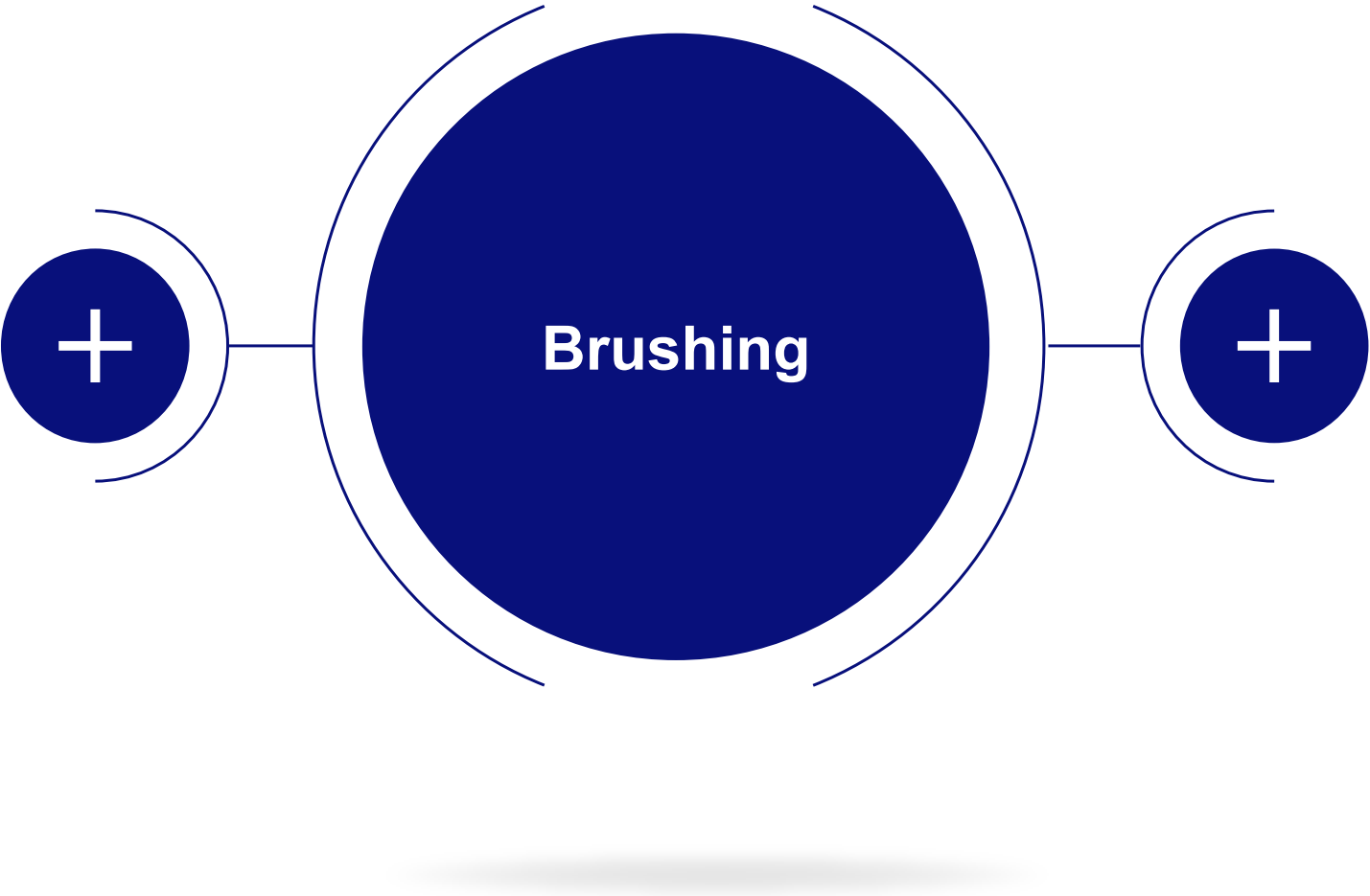
- Continuous series of bubbles
- Immediately stop further reprocessing
 - Dry the endoscope
 - Wrap into a foil
 - Initiate shipment to next endoscope Manufacturer's repair center



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



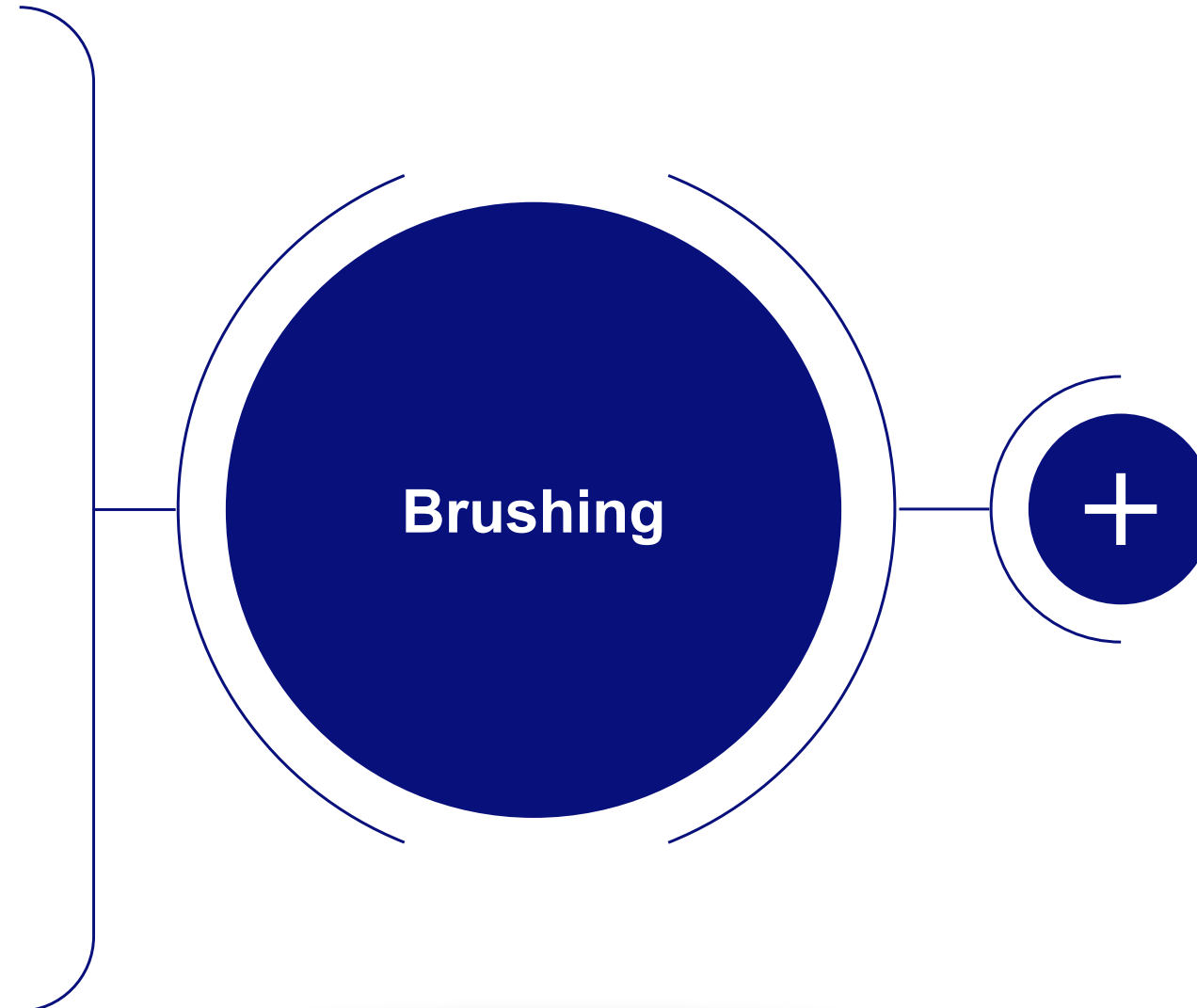
Manual Cleaning | Brushing



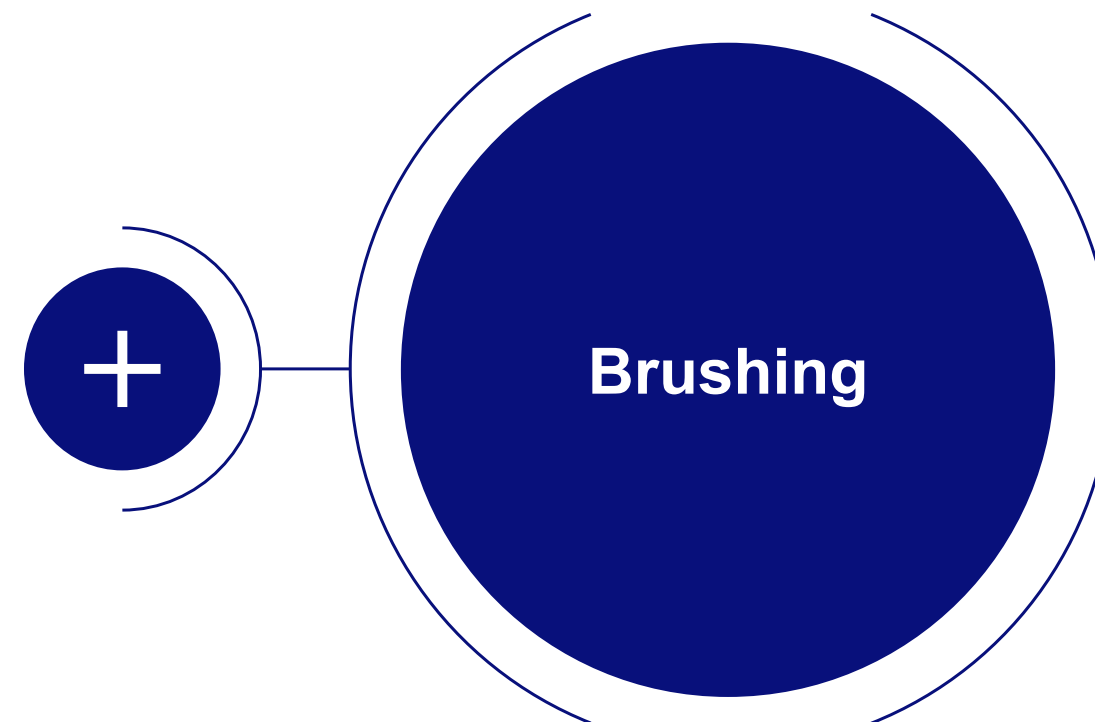
Manual Cleaning | Brushing

Purpose

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



Manual Cleaning | Brushing

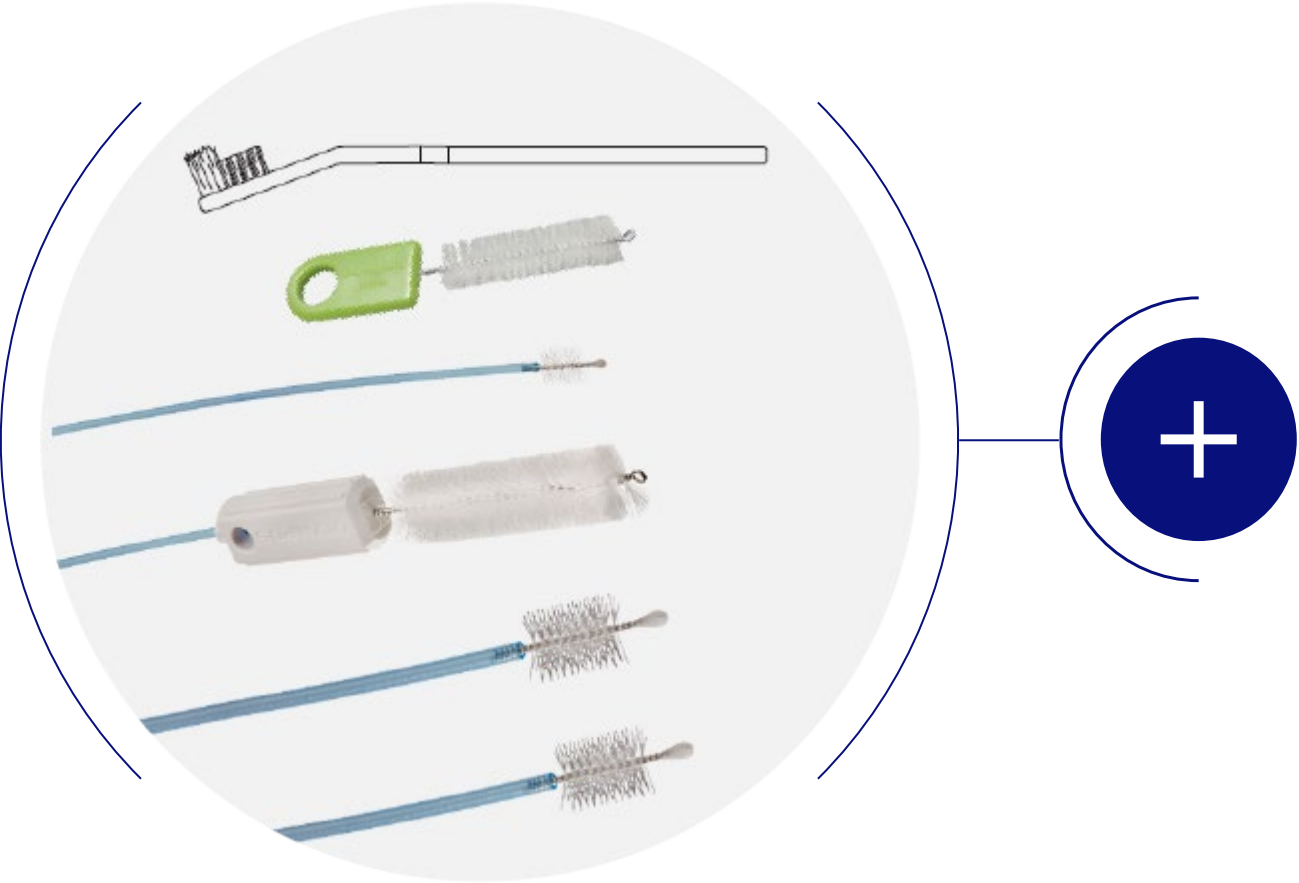


Cleaning Solutions

- Surfactants, low-foaming substances, with/without enzymes, neutral pH
 - Clear superiority of individual substances not found
- Without fixative properties (e.g. aldehydes, alcohols, peracetic acids)
- Change at least every working day; Immediately in case of visible contamination
- 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*:

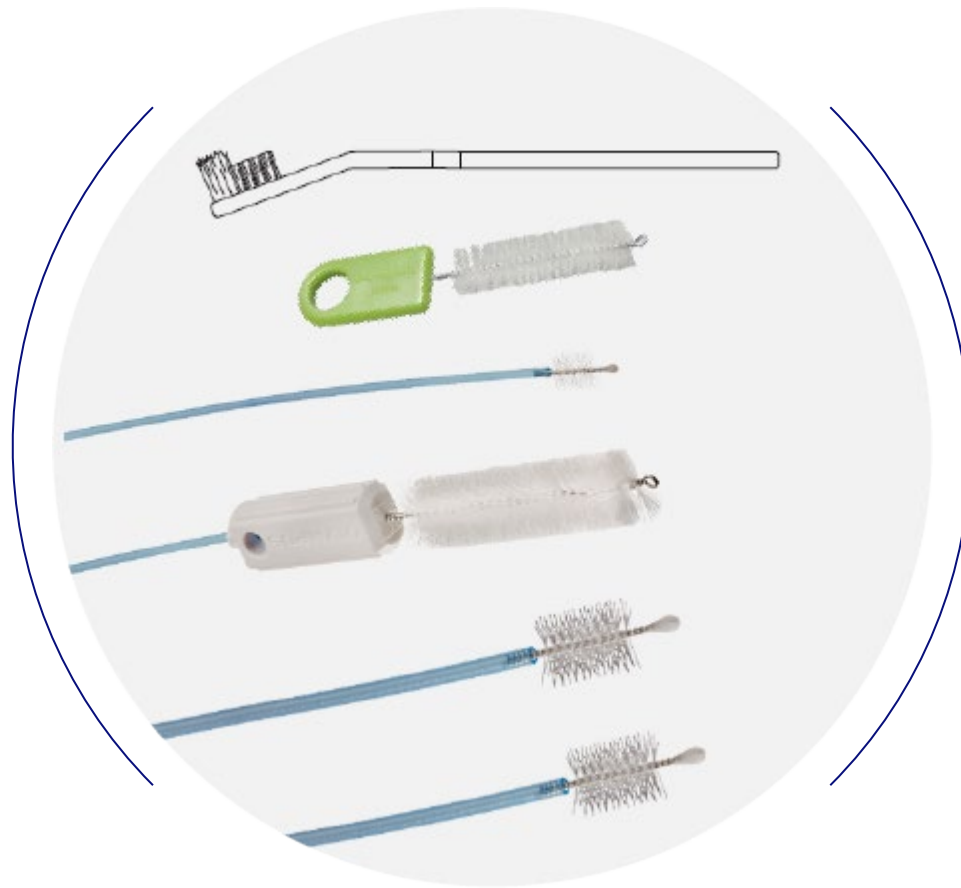


*Source: Olympus

Click on the Plus-Symbol
for further information.

Manual Cleaning | Brushing

Example*:



*Source: Olympus

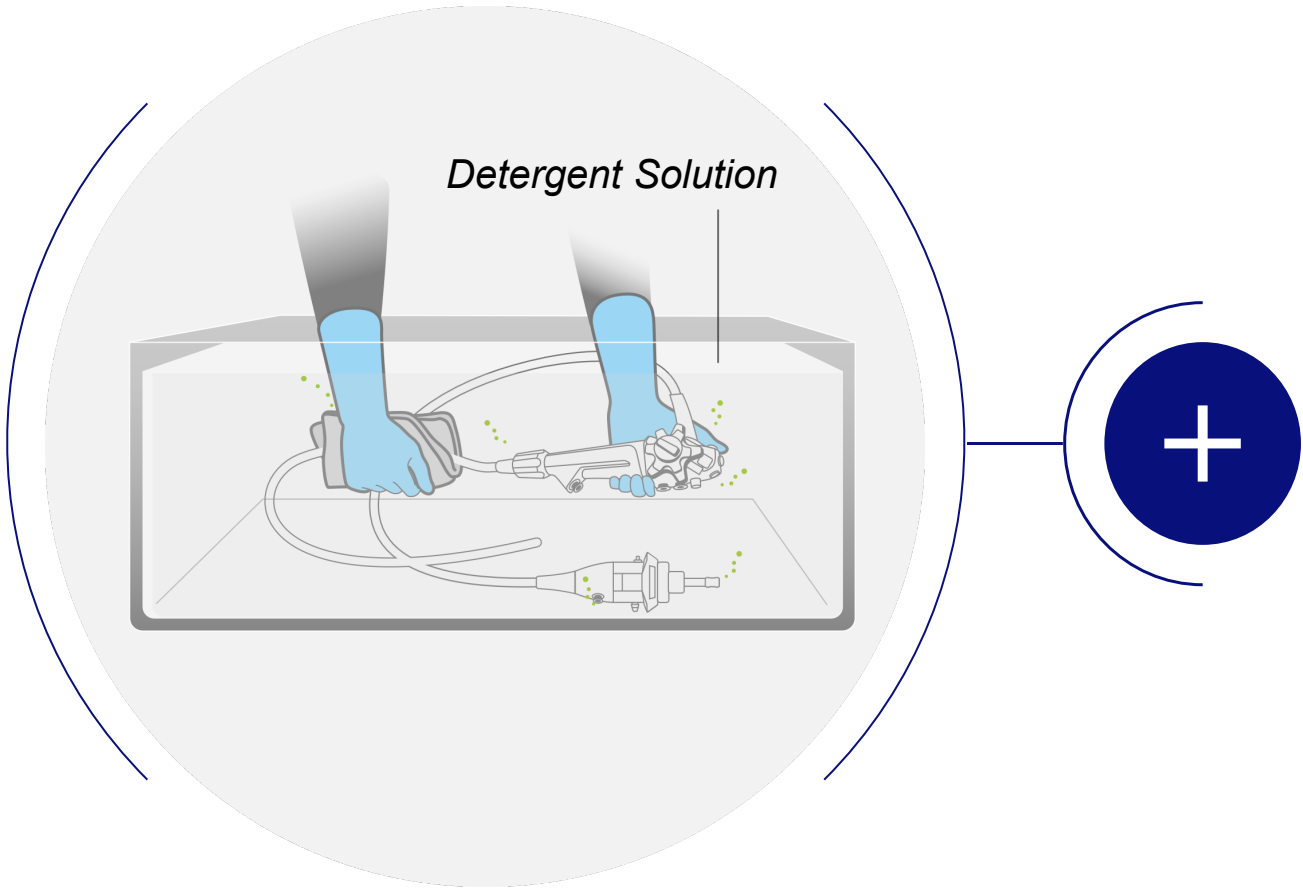
- Disposable brush
 - Only used for brushing 1 endoscope
 - Pull-through system
 - Forward-backward brushing
- Reusable brush
 - Used for multiple endoscopes
 - Reprocess after every endoscope
 - Carefully check brush prior to use
- Exchange brush if abnormalities are shown
- For defined endoscopes, 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-Symbols
for further information.

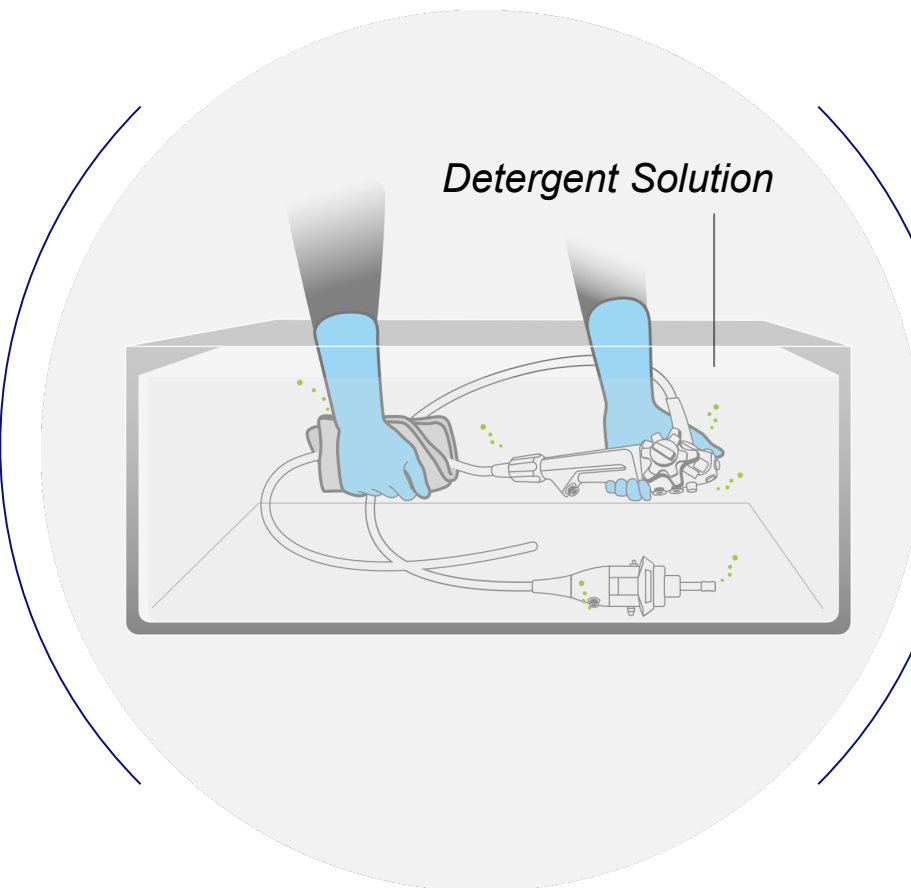


At all times: visibly
check the cleanliness

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

Click on the Plus-Symbols for further information.

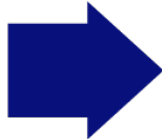
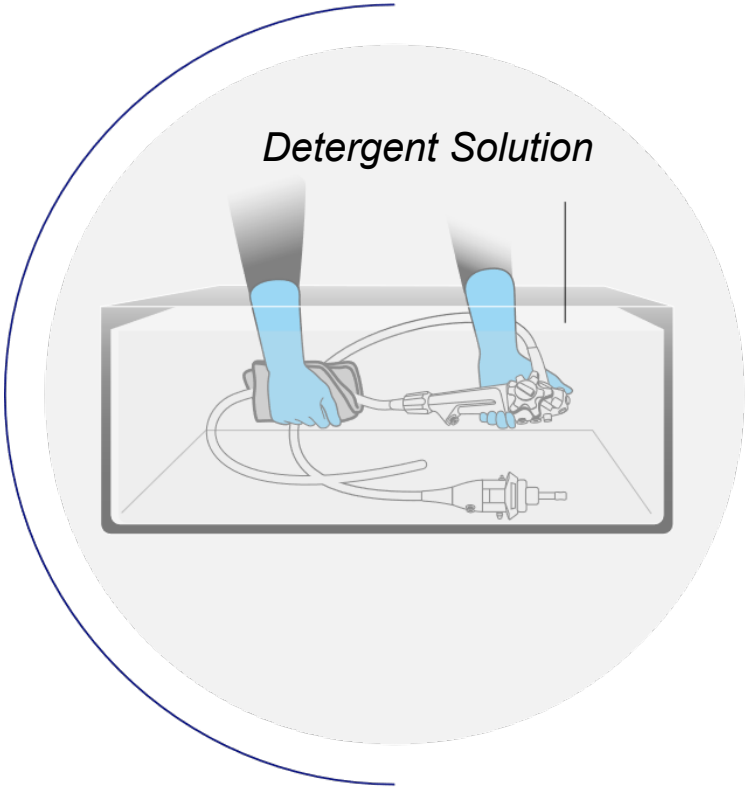


At all times: visibly check the cleanliness

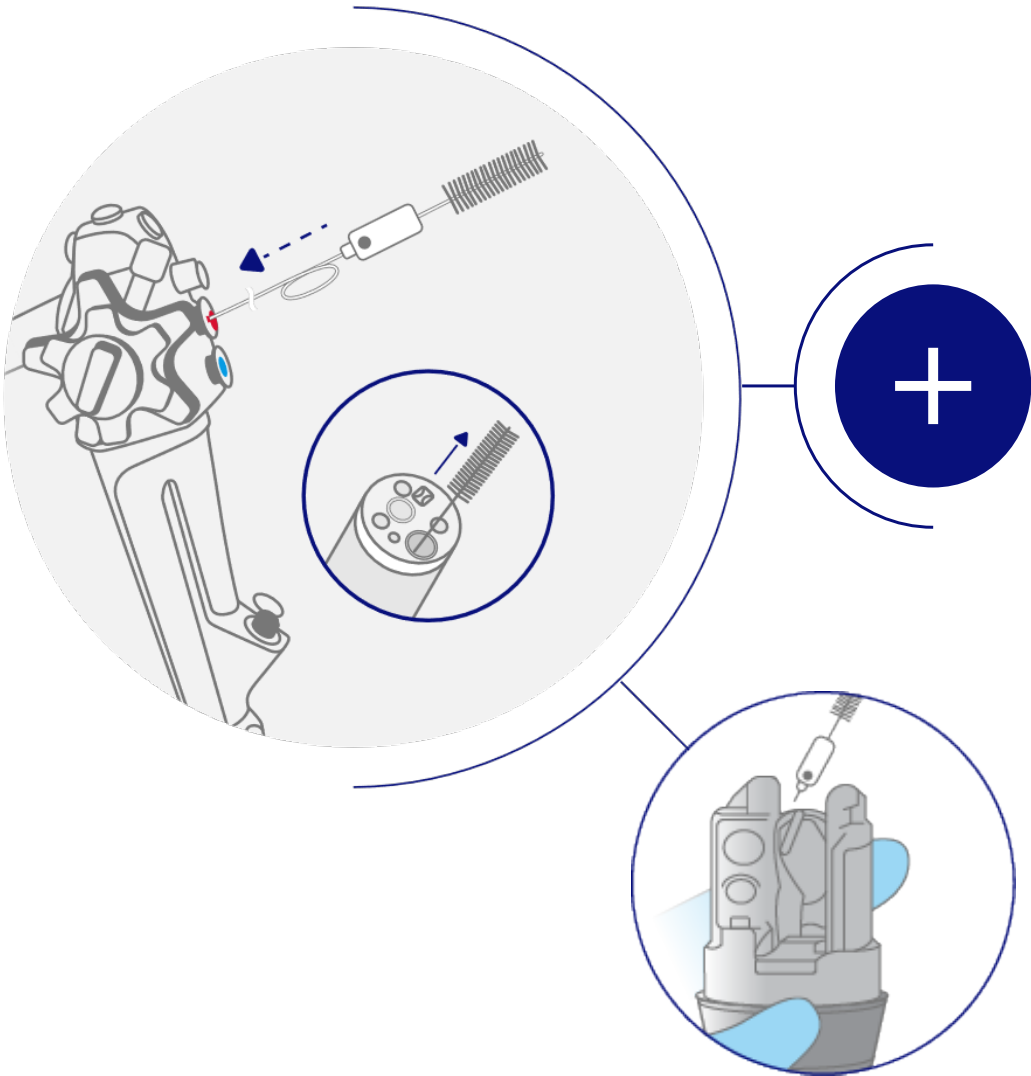
Manual Cleaning

Example*:

Immerse & wipe



Brush while immersed



For duodenoscopes
there are additional
steps necessary

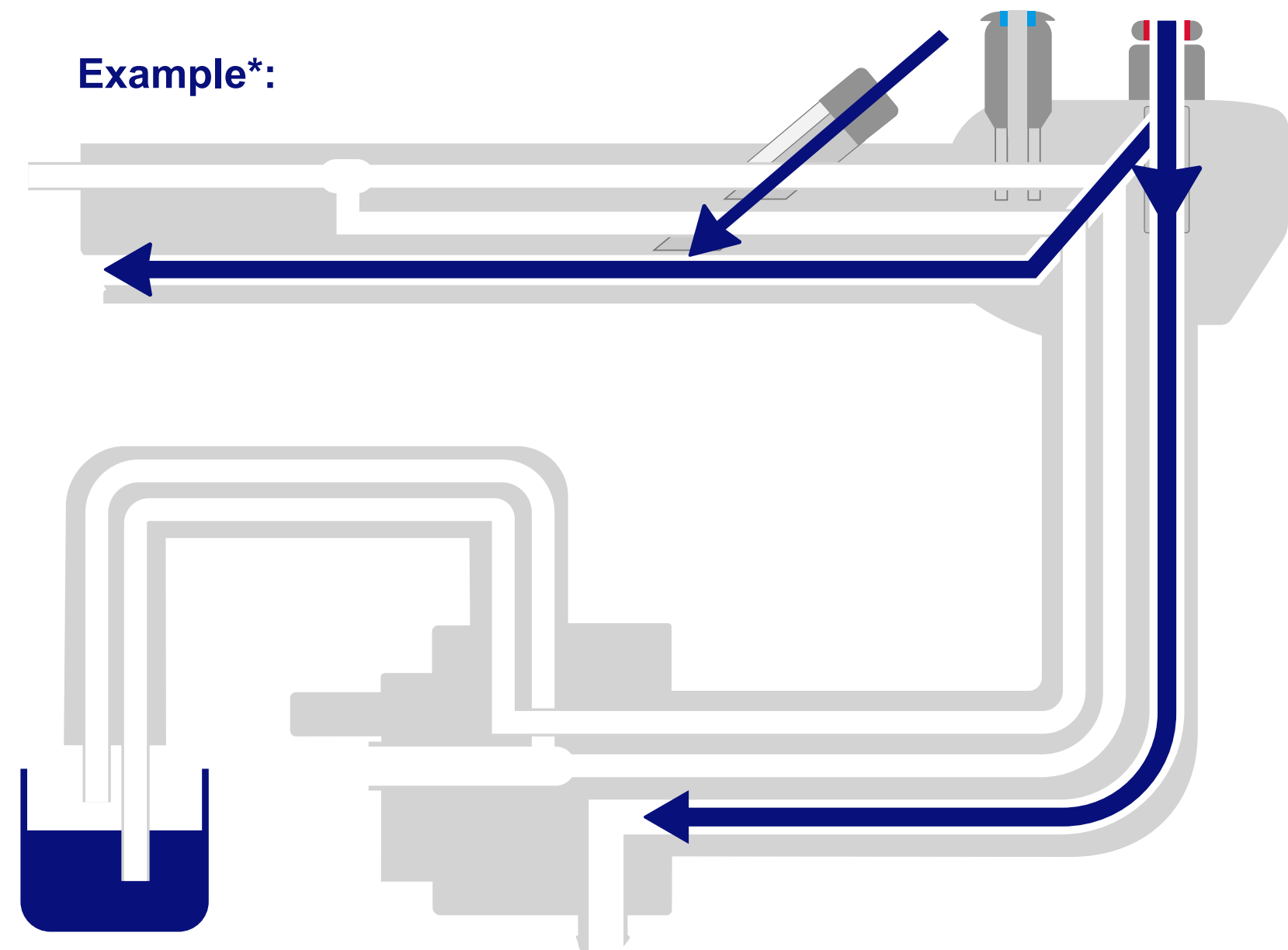
*Source: Olympus

Click on the Plus-Symbol
for further 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

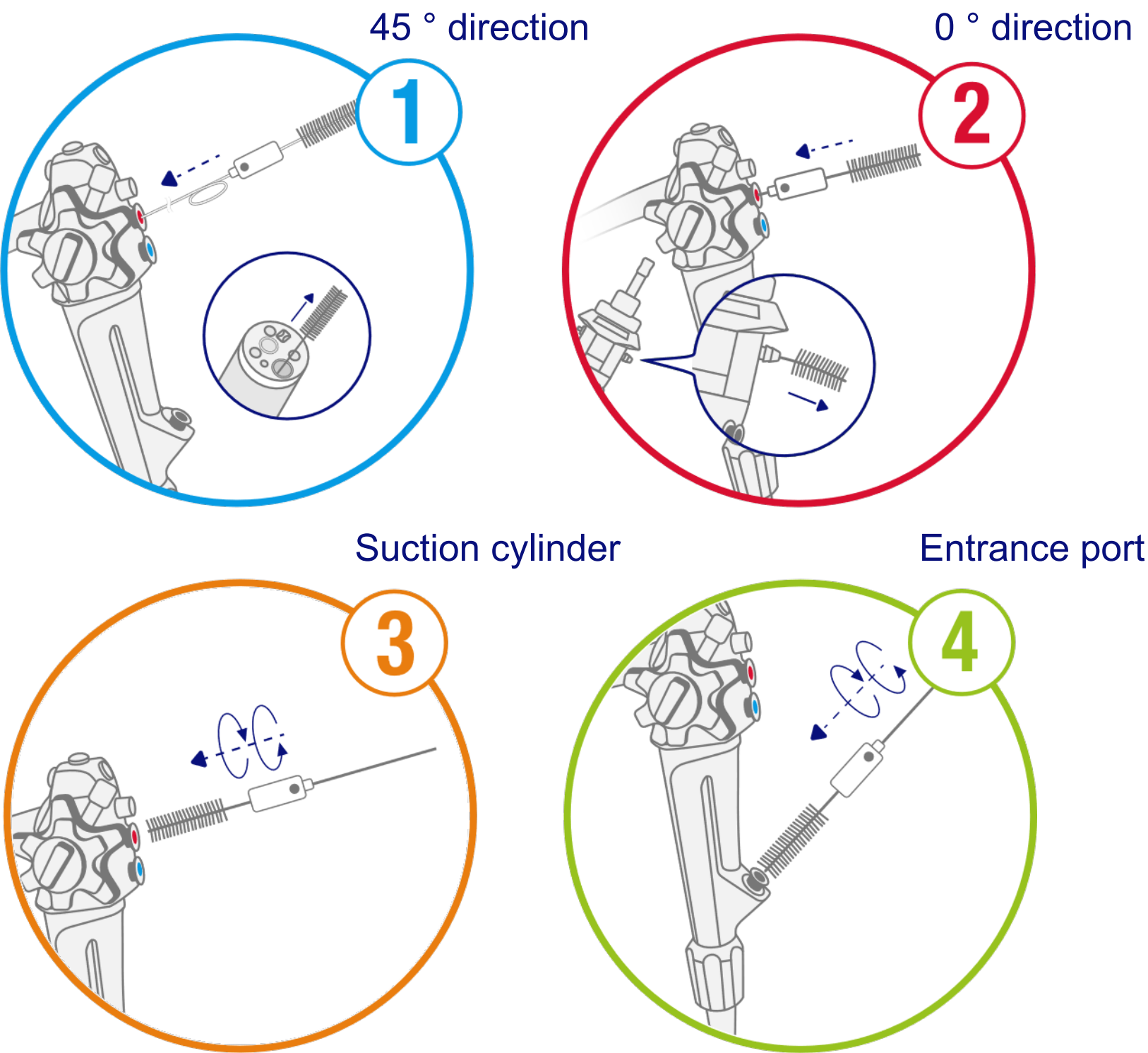
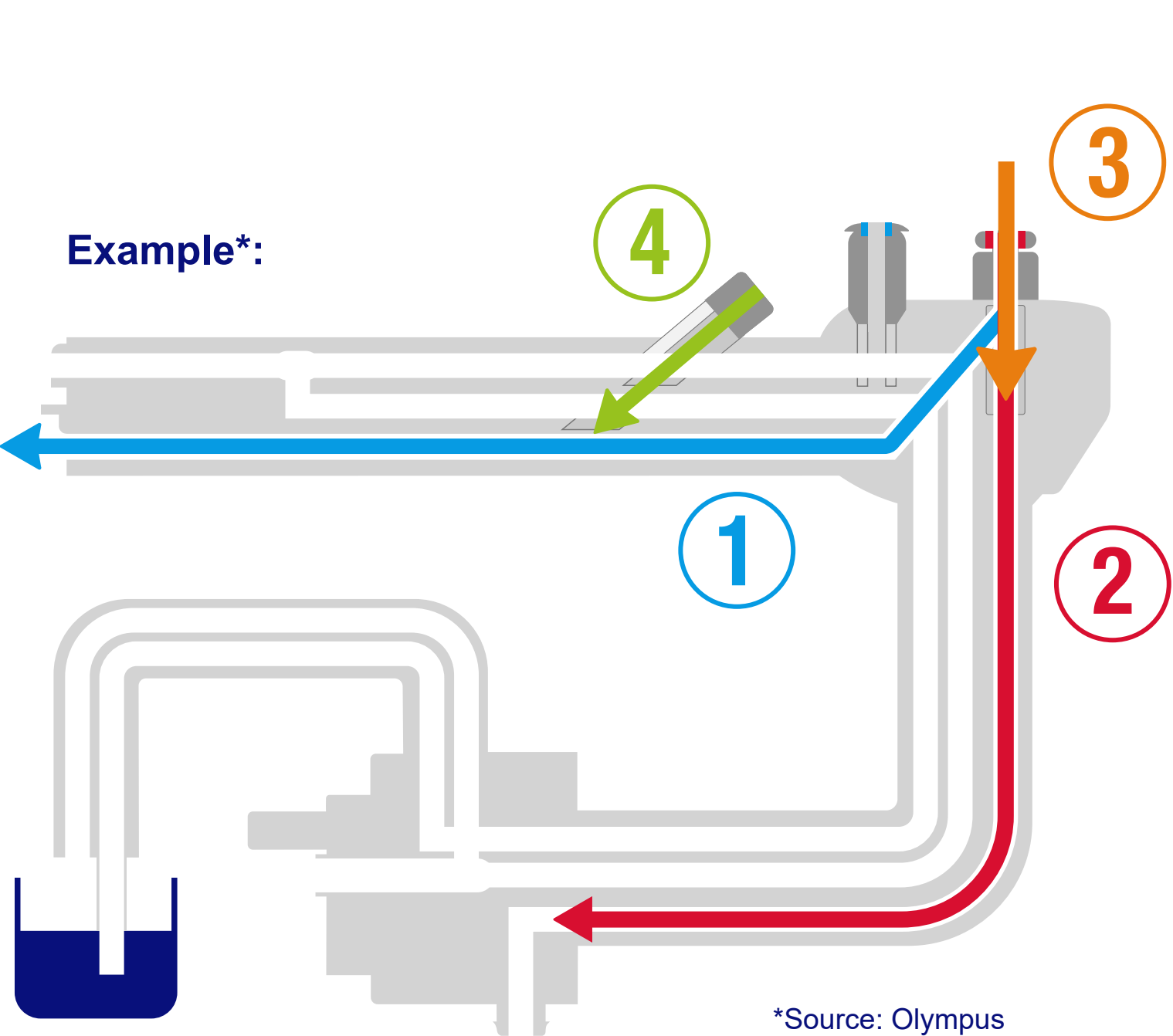
- Brush size adopted to the channel size according to IFU
- Follow brush order and direction as given in IFU



*Source: Olympus

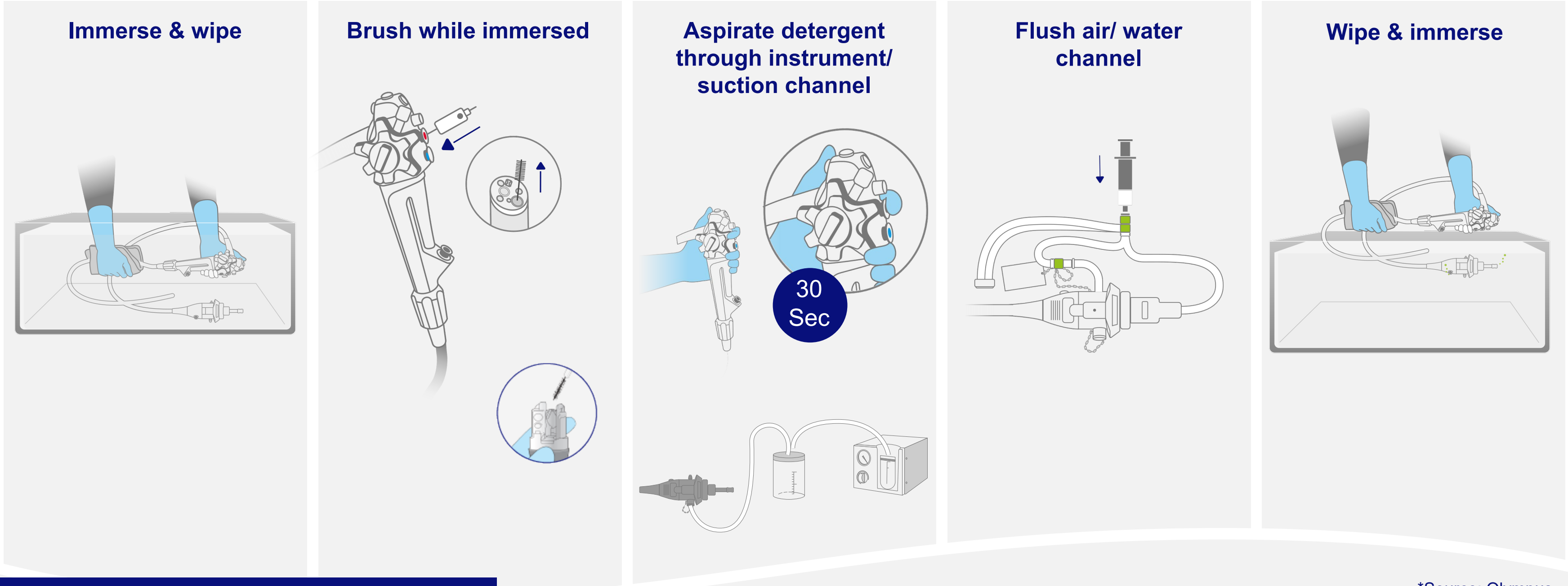
[Back to Overview](#)

Manual Cleaning | Brushing the Instrument / Suction Channel



Manual Cleaning

Example*:



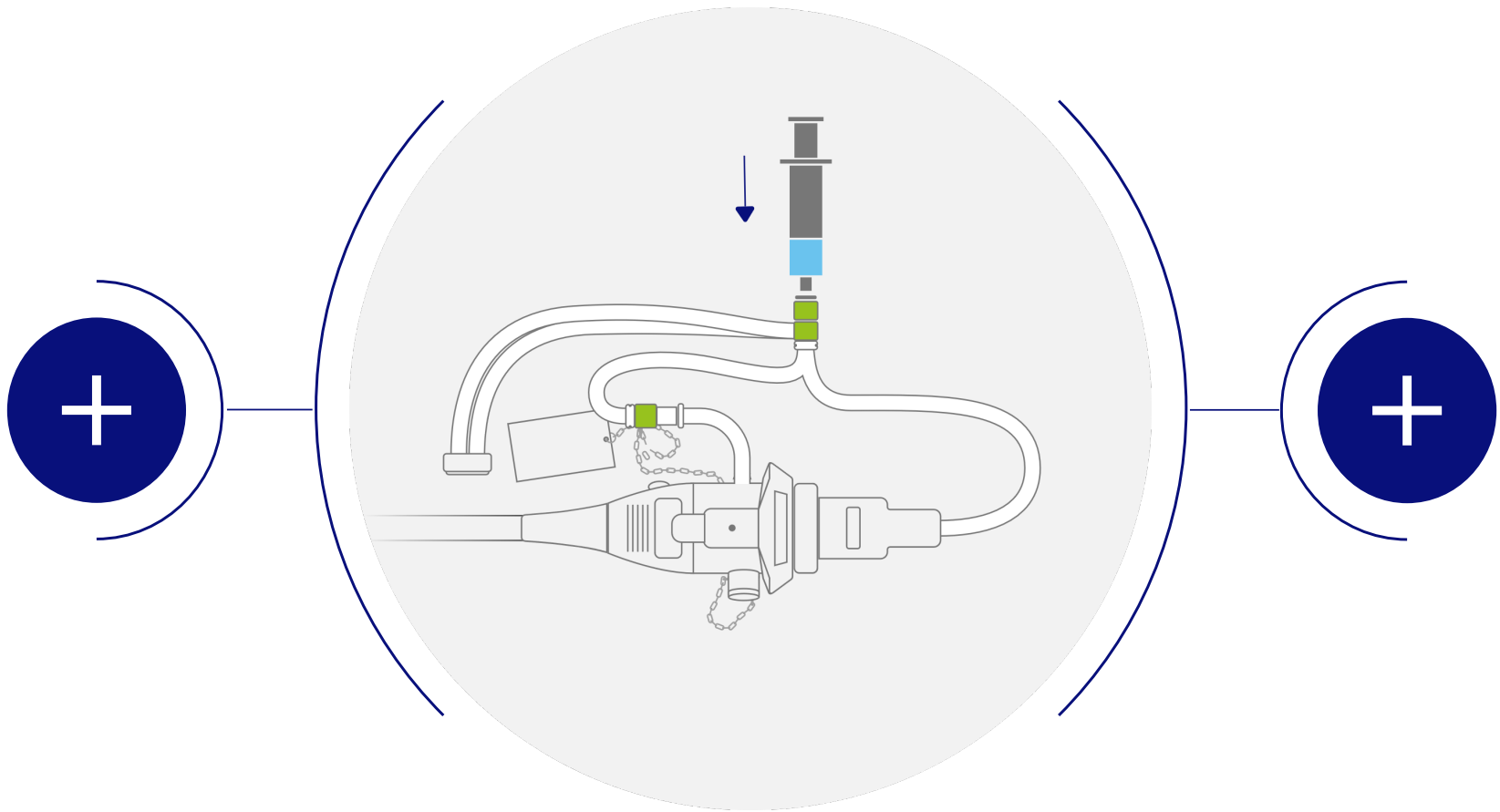
For duodenoscopes there are additional steps necessary



*Source: Olympus

Manual Cleaning | Rinsing

Example*:



*Source: Olympus

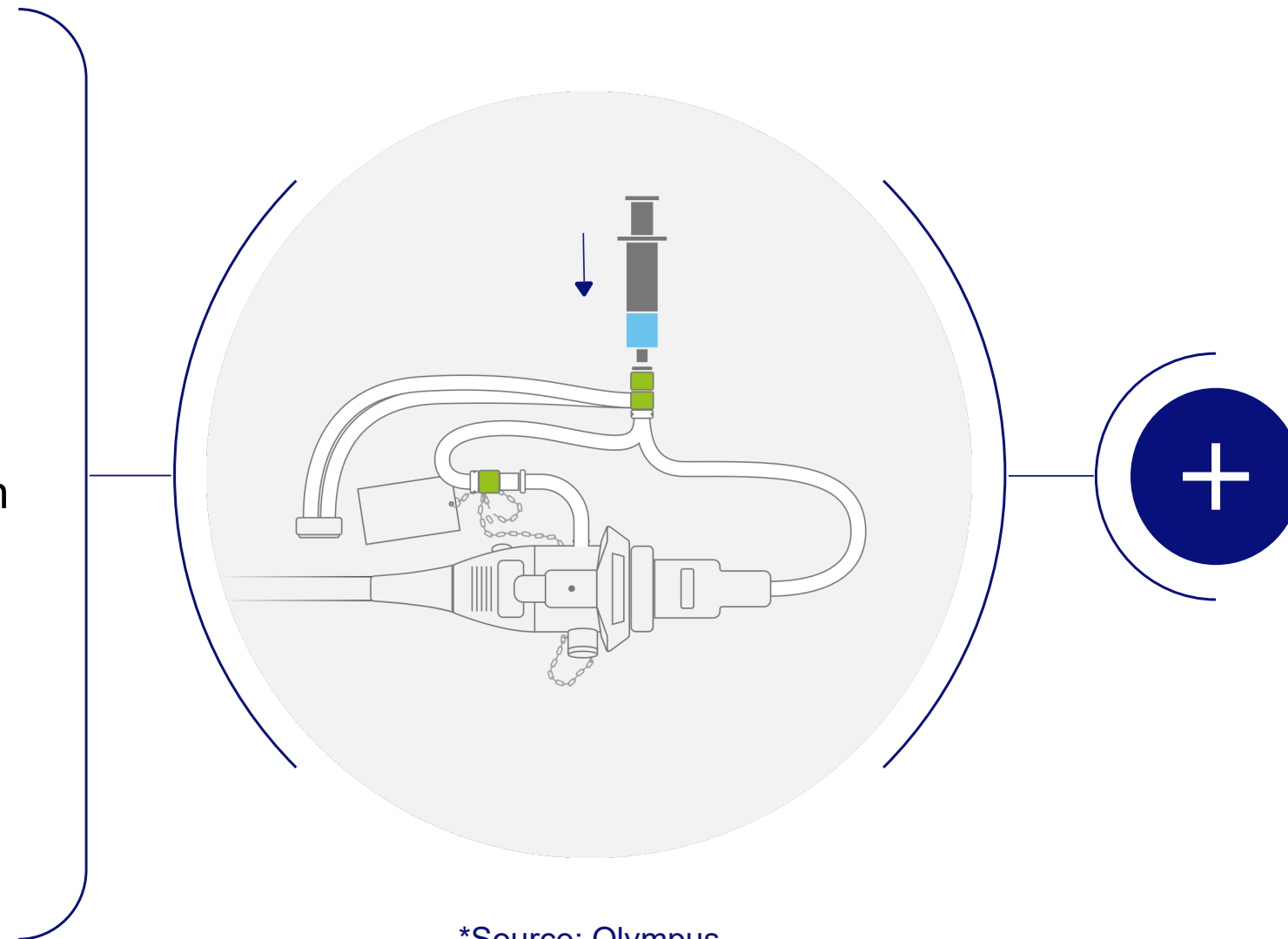
Click on the Plus-Symbols
for further information.

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)

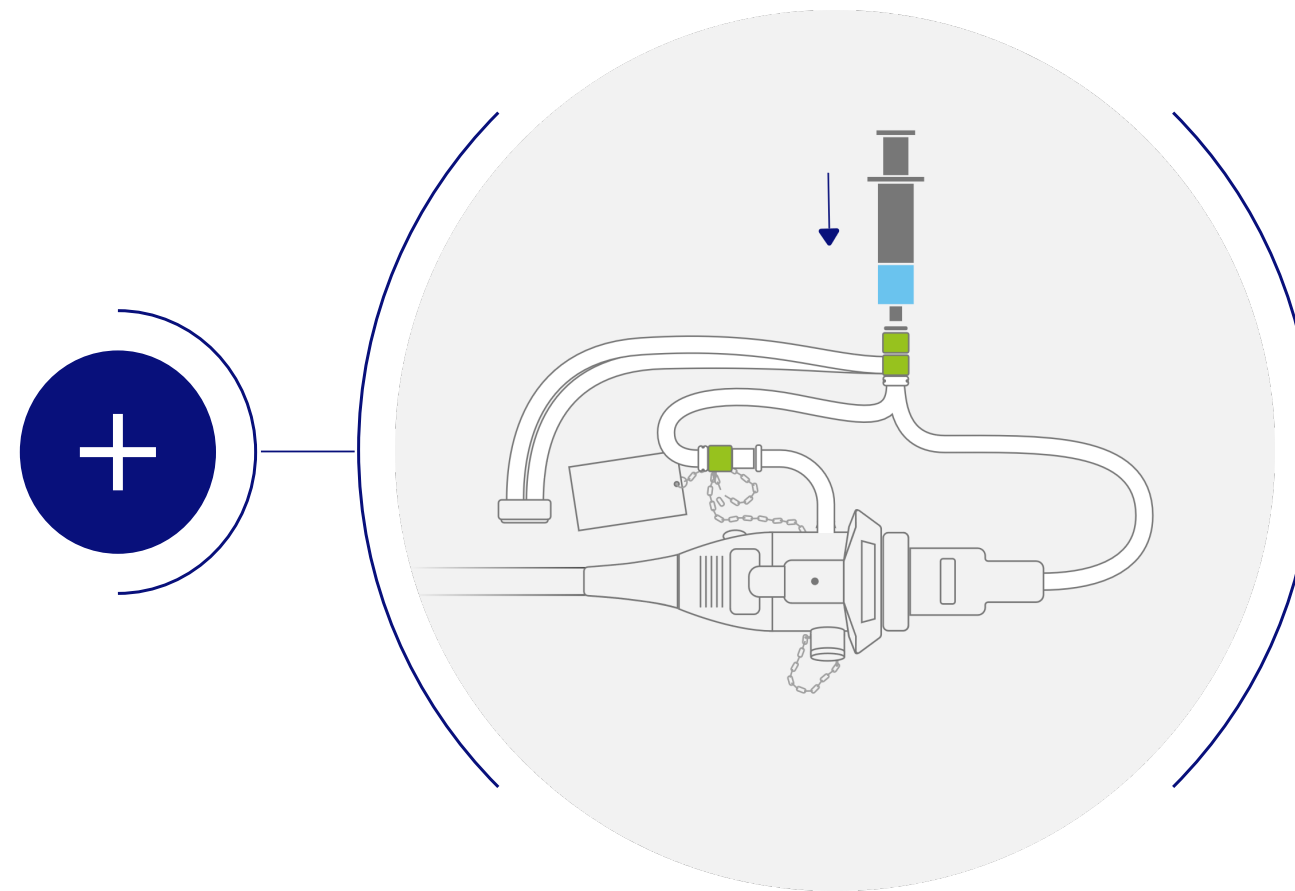
Example*:



*Source: Olympus

Manual Cleaning | Rinsing

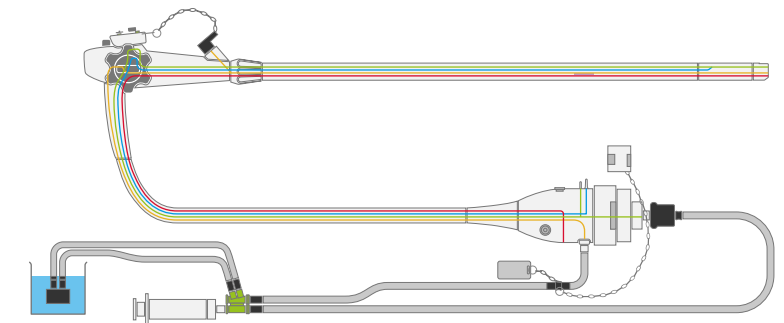
Example*:



*Source: Olympus

Cleaning Solutions

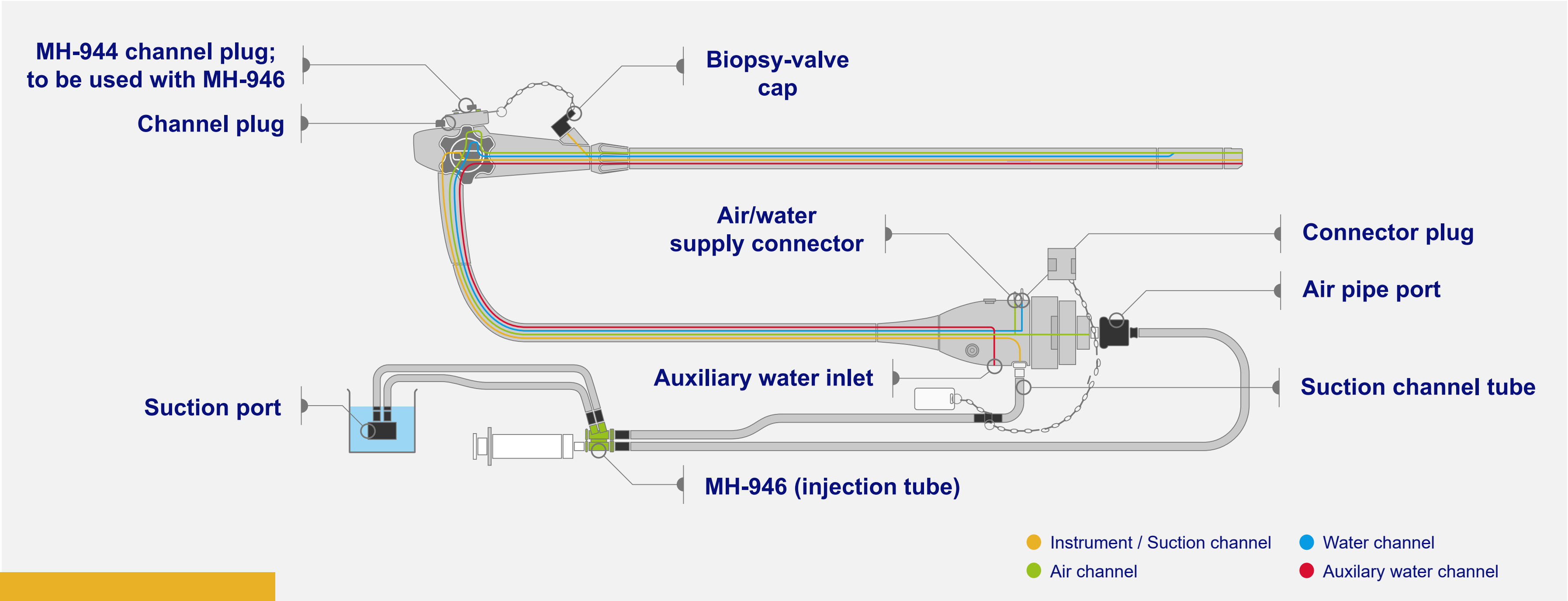
- Flush / aspirate all channels with water
- Use of corresponding cleaning adapters



Click on the Plus-Symbol for further information.

Manual Cleaning | Rinsing

Example*:

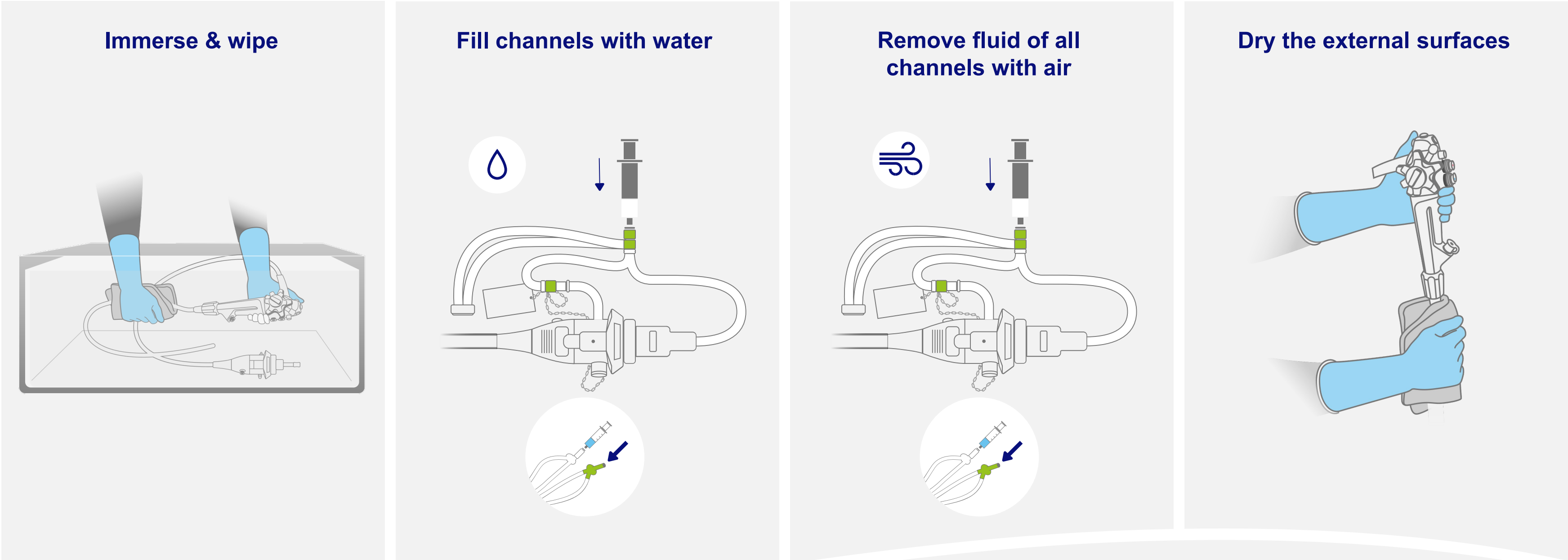


*Source: Olympus

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Manual Cleaning | Rinsing

Example*:



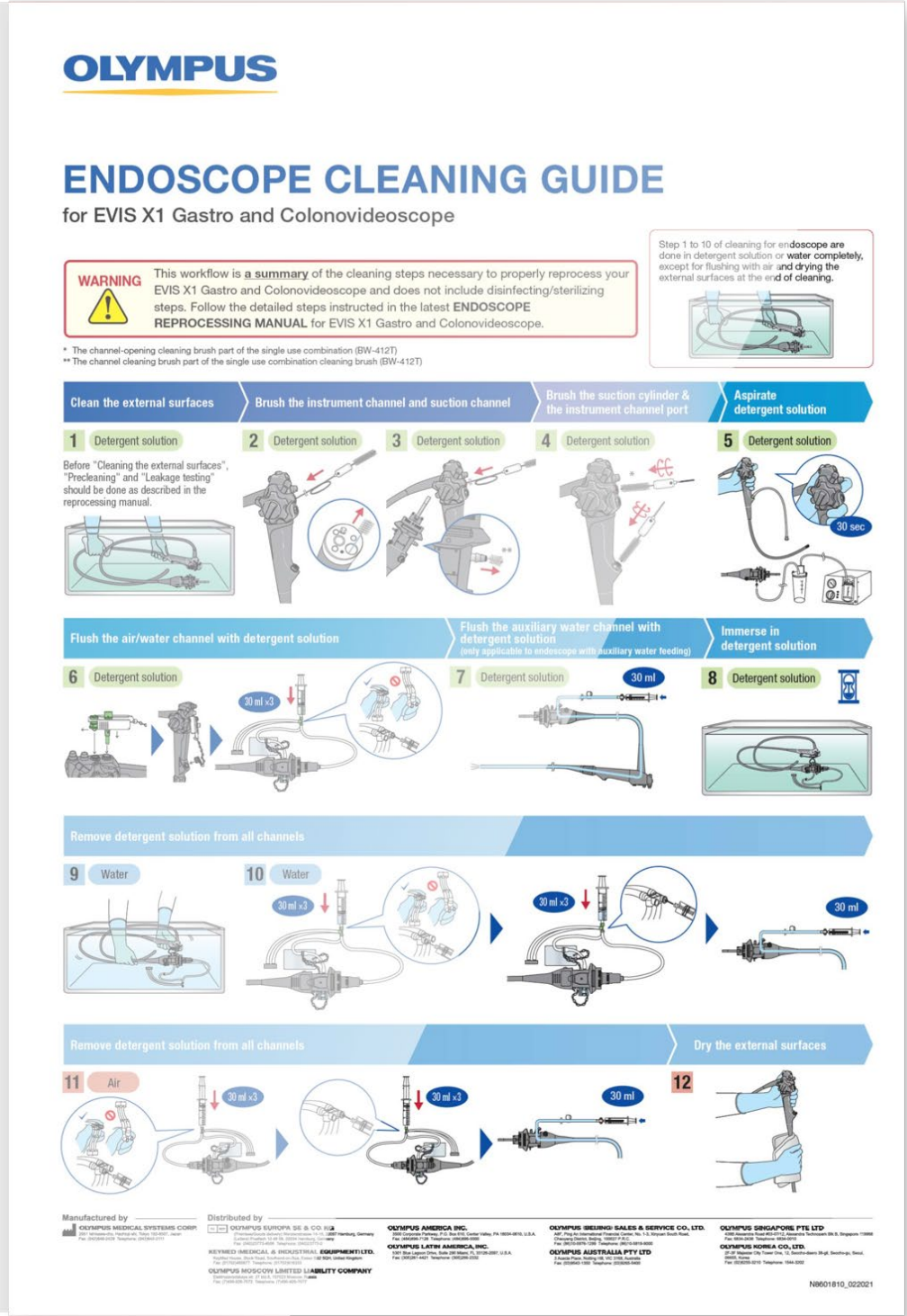
For duodenoscopes there are additional steps necessary

*Source: Olympus

Manual Cleaning | Quick Reference Guides

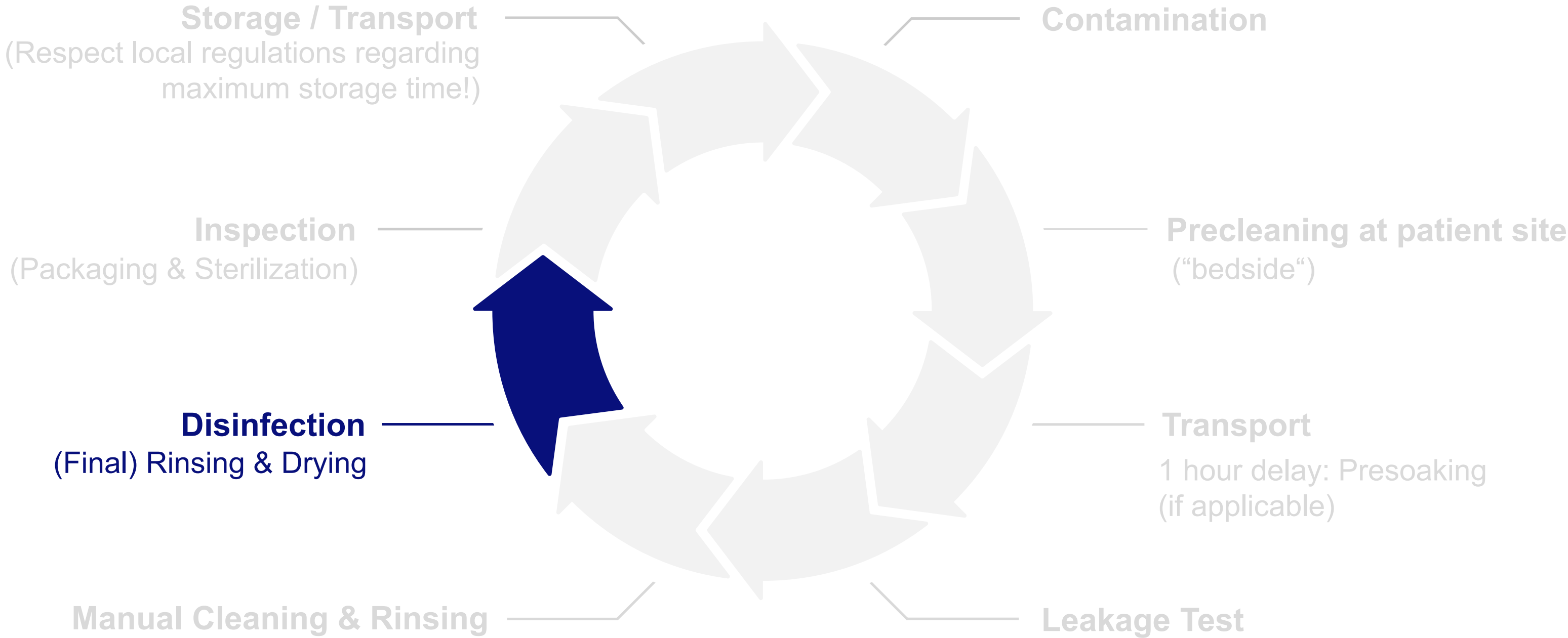
Example*:

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

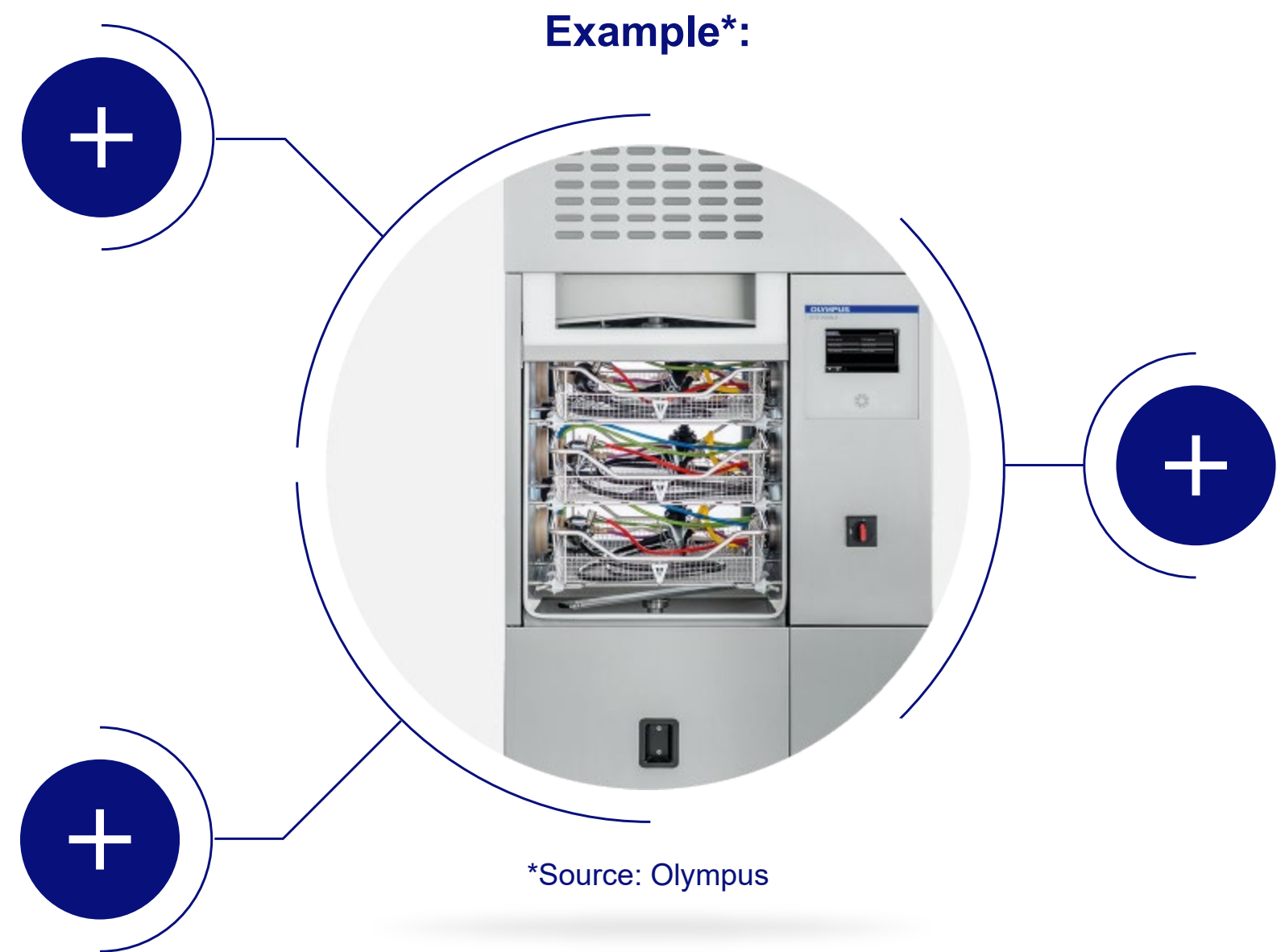


*Source: Olympus

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



Disinfection

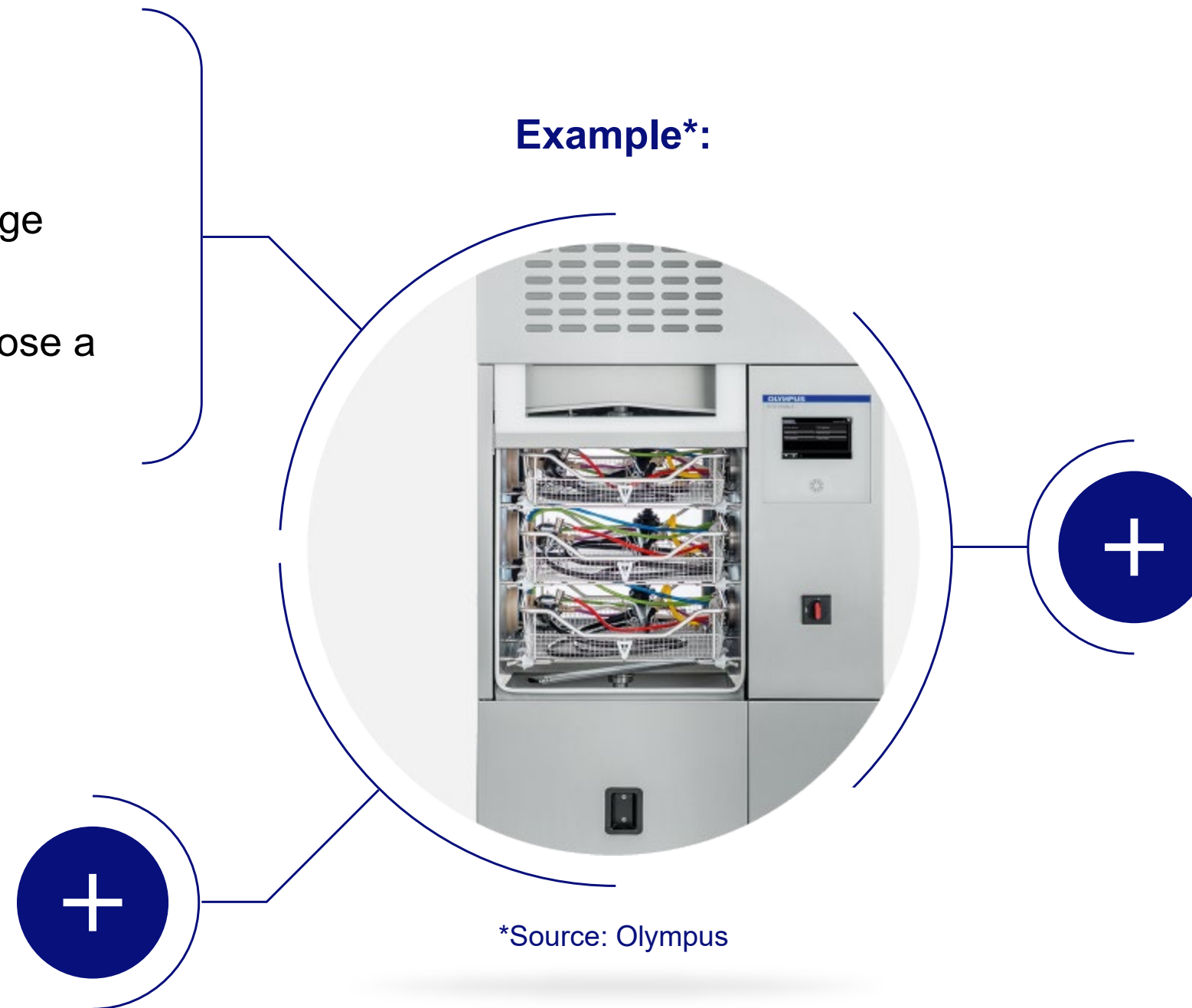


Disinfection

Purpose

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

Example*:



Disinfection

Methods

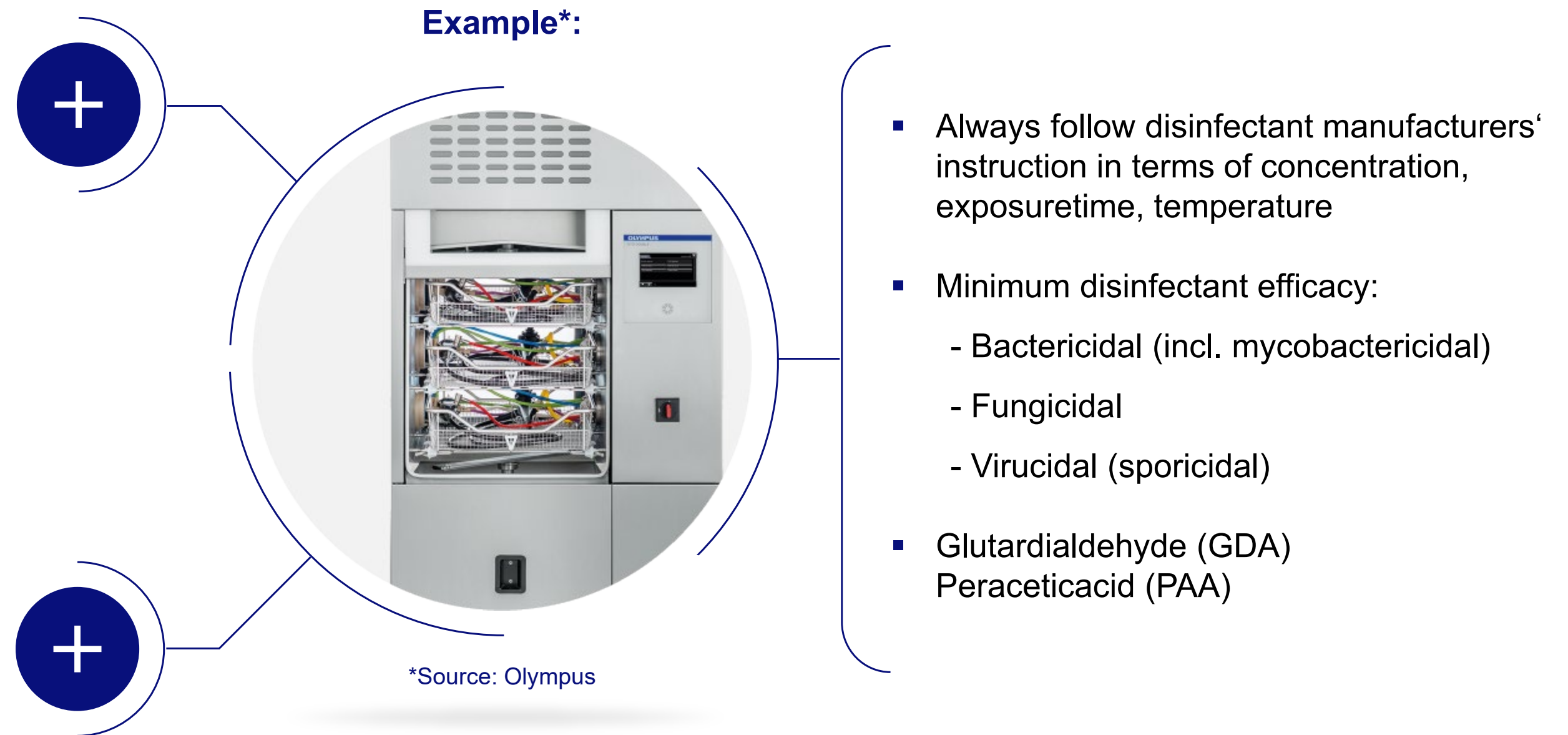
- Chemical
 - At room temperature
- Chemo-thermal
 - Max. temperature 60 °C
- Thermal
(for heat-stable medical devices only)
 - Without chemicals at approx. 90 °C

Example*:



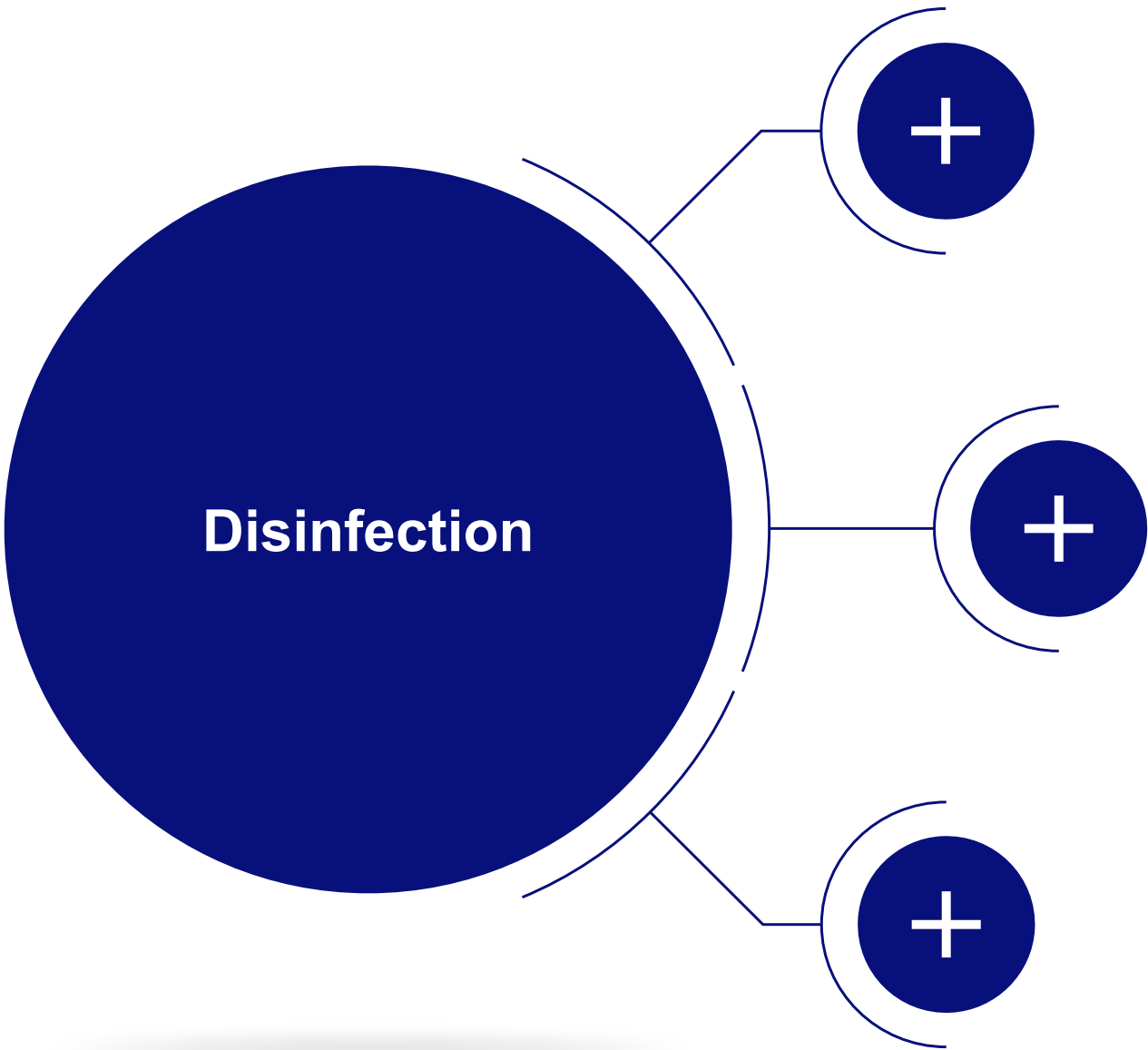
*Source: Olympus

Disinfection



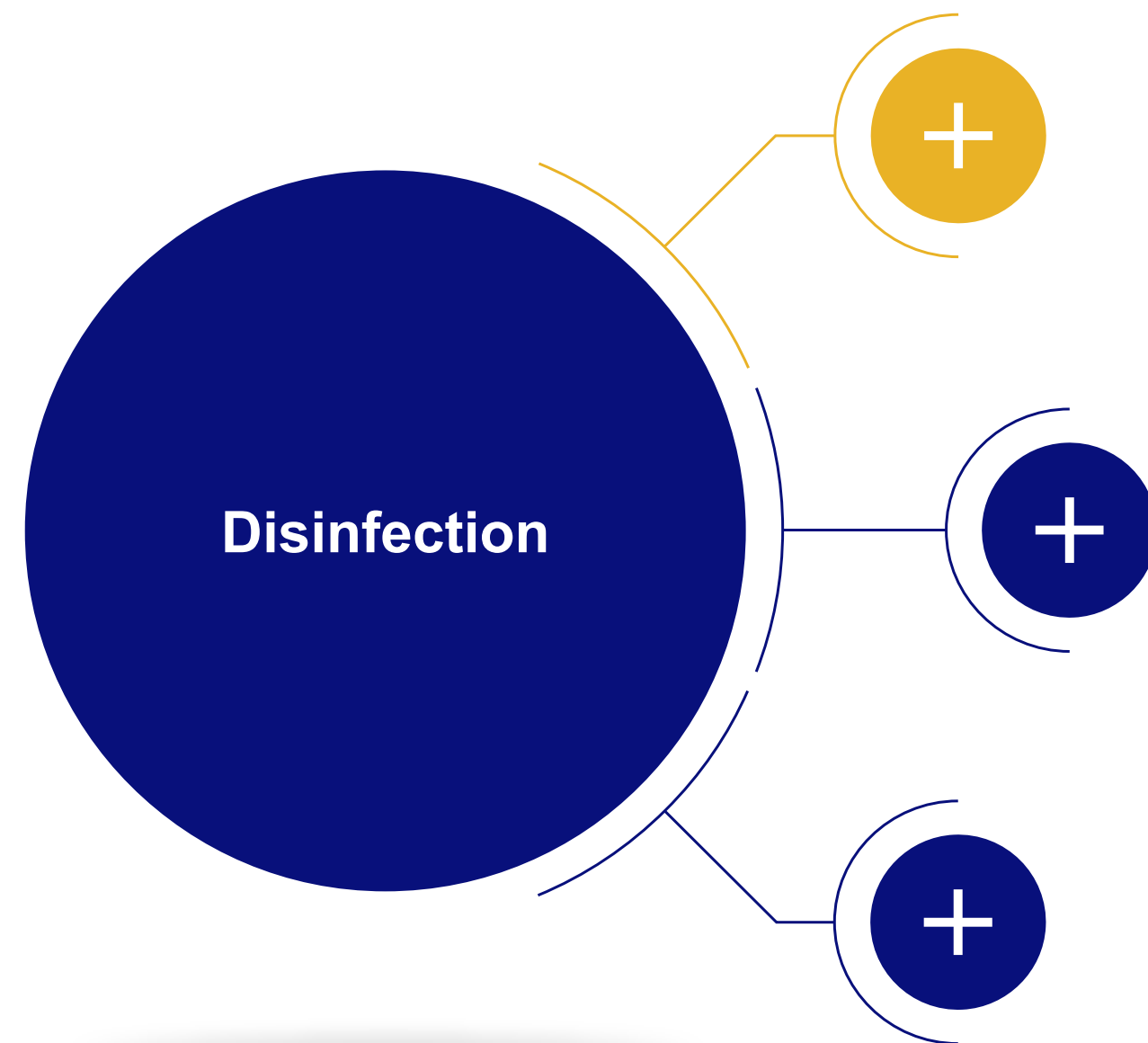
Disinfection

Reprocessing can now go on manually or automated



Disinfection

Reprocessing can now go on manually or automated

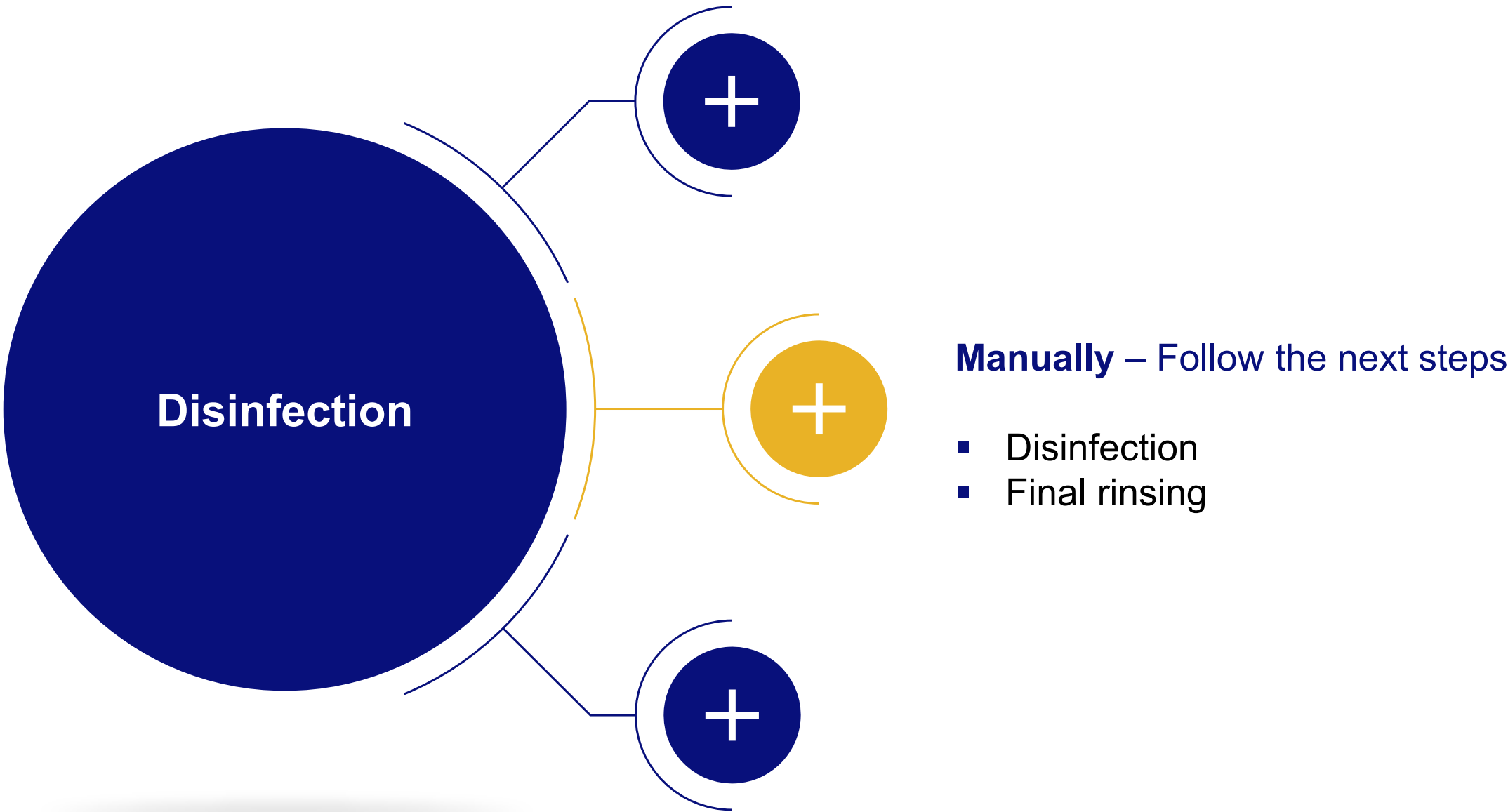


Automated by endoscope washer-disinfector/automated endoscope reprocessor (EWD/AER) – Follow the next steps

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

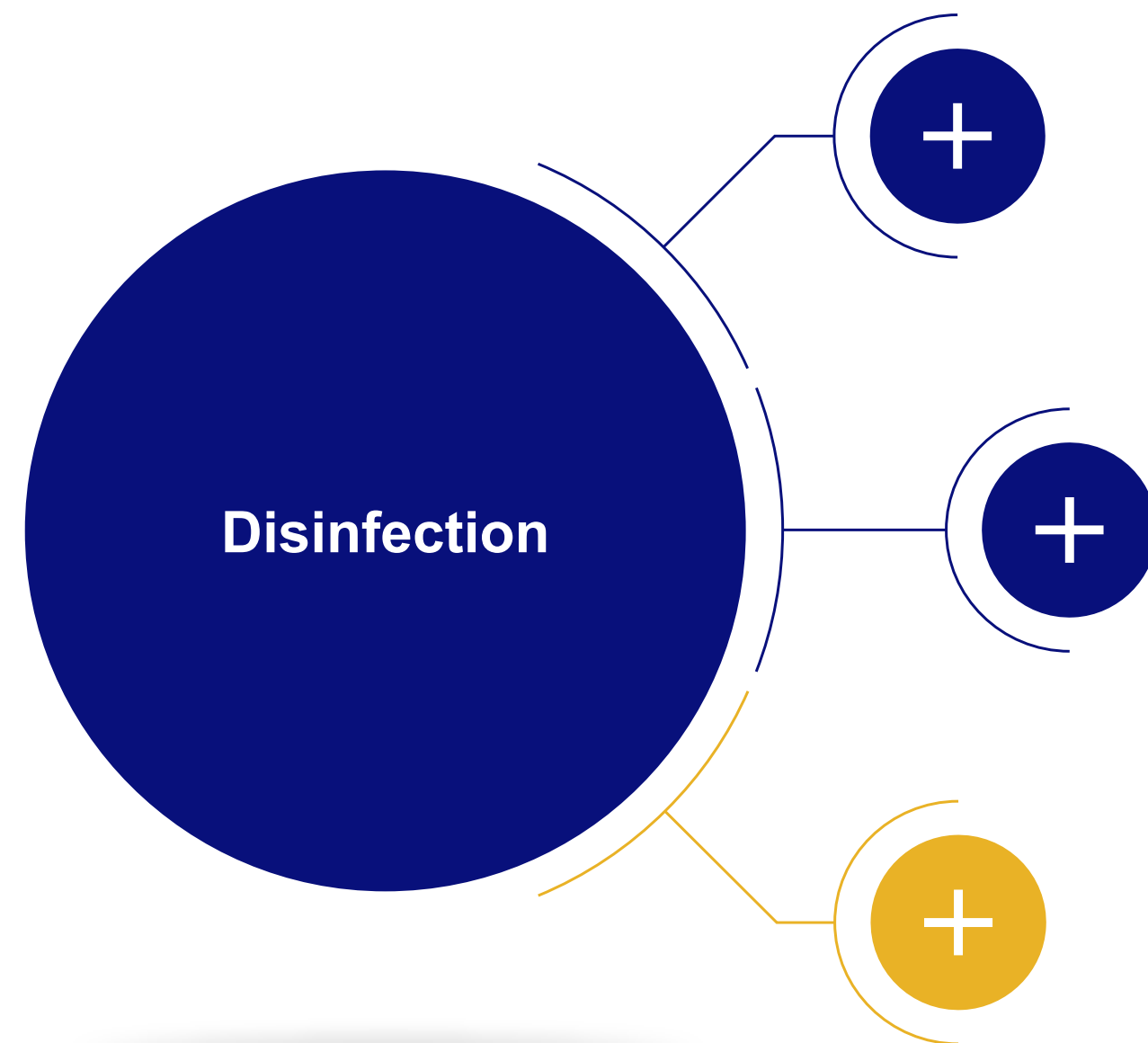
Disinfection

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

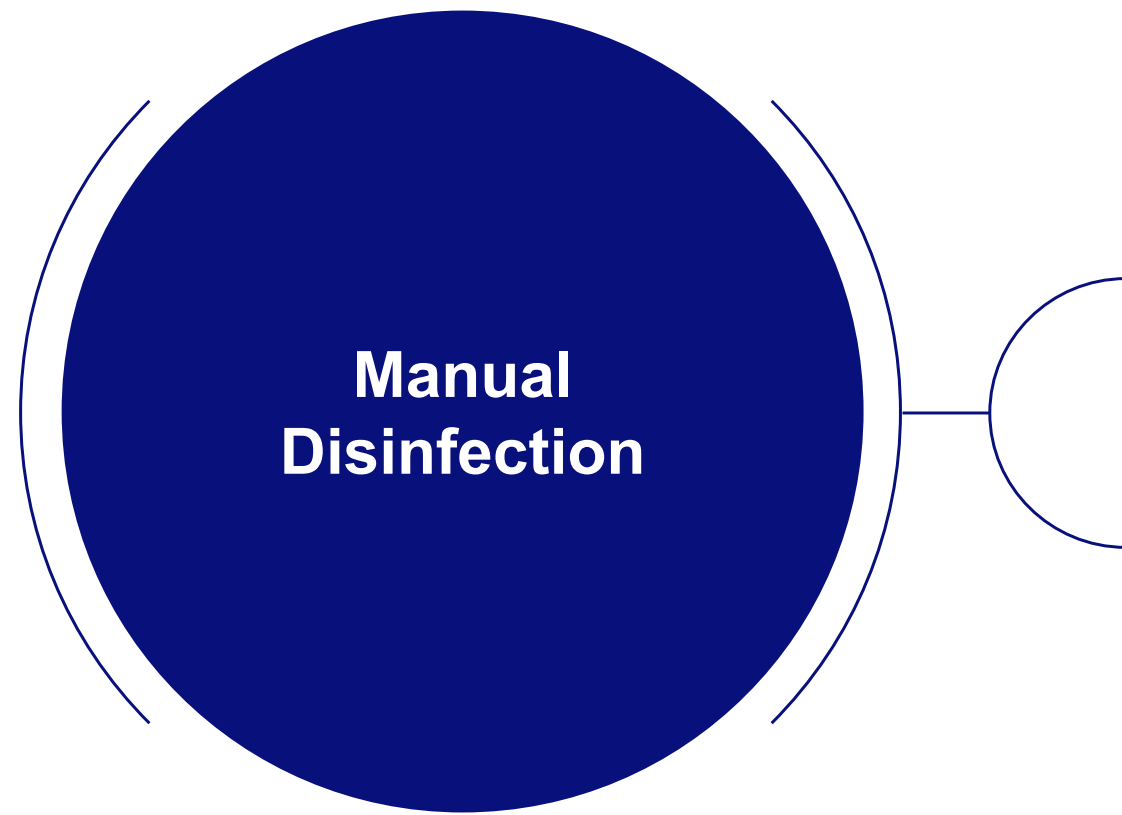
EWD/AER: Cleaning and Disinfection

- 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

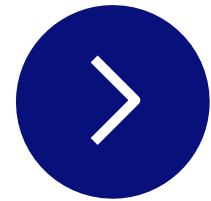


- Responsibility of the EWD/AER manufacturer:
 - Ensure, that the endoscopes are compatible in his EWD/AER
 - Provide the correct adapters (if necessary) to connect the endoscope to the EWD/AER
- If applicable, depending on the EWD/AER process, **an additional drying step** after EWD/AER may be necessary,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

Manual Disinfection



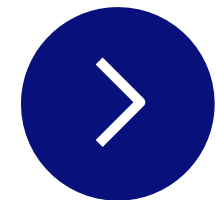
- Manual preparation of disinfection solution
 - Follow disinfectant manufacturers'
 - instructions in terms of concentration,
 - exposure time and temperature



Manual Disinfection



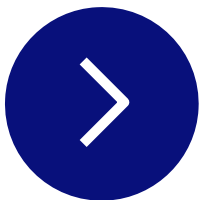
- **Fully immerse** the endoscope in disinfection solution
 - Do not immerse the endoscope with objects other than the equipment used for reprocessing the endoscope



Manual Disinfection



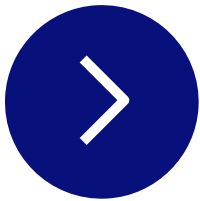
- Thoroughly **flush all channels** and wipe or brush **all external surfaces**



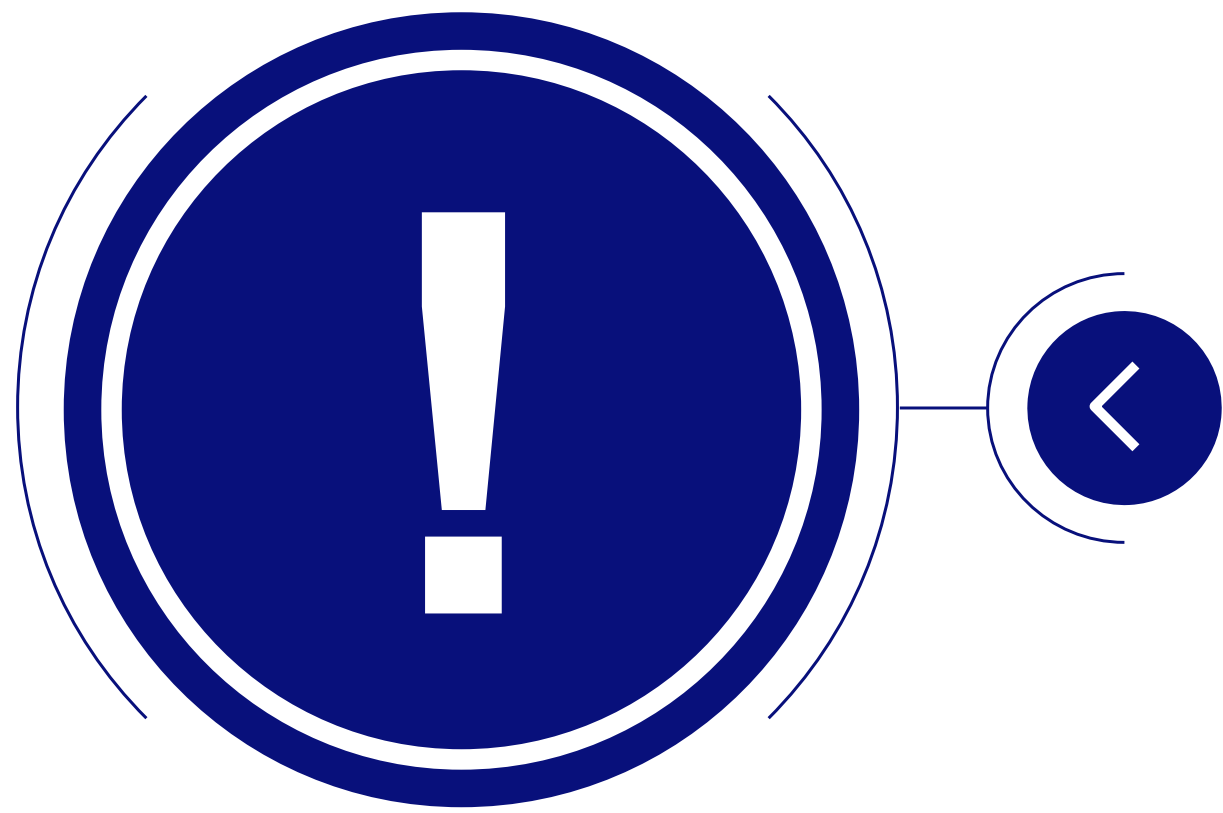
Manual Disinfection



- Detach all cleaning adapters during immersion time



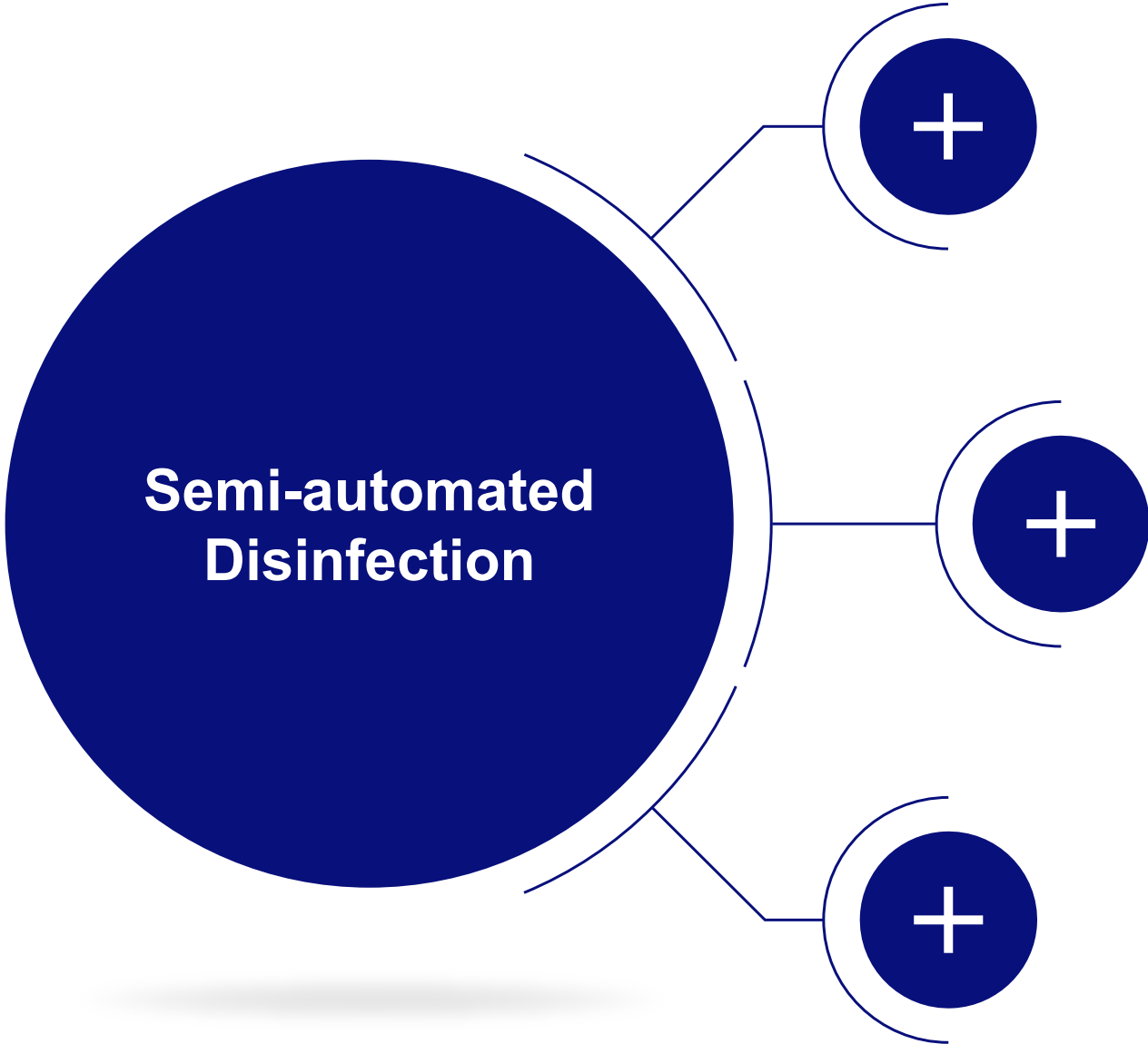
Manual Disinfection



- 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



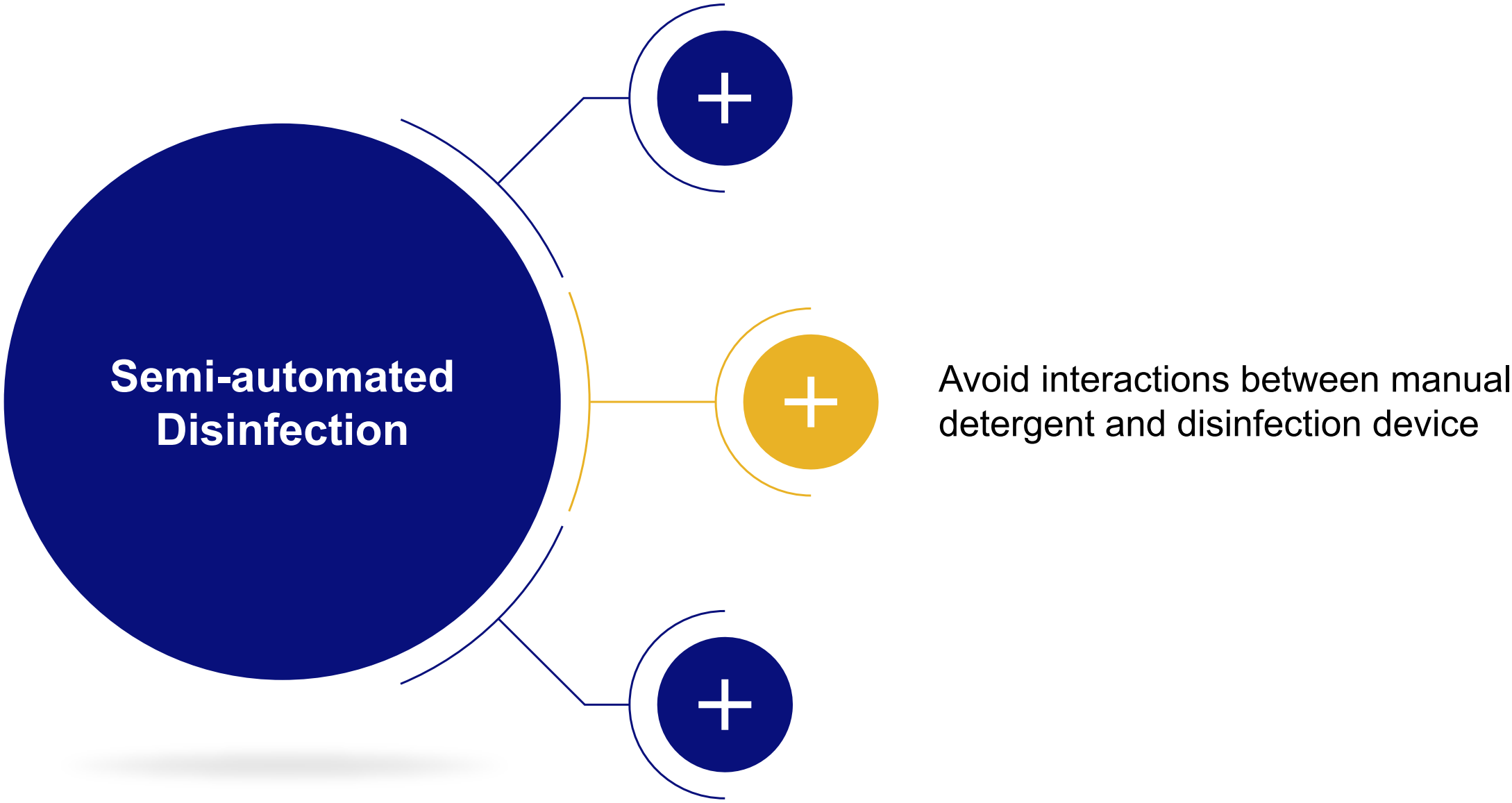
State-of-the-art and preferred reprocessing method is automated reprocessing in an EWD/AE 

Semi-automated Disinfection



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

Semi-automated Disinfection



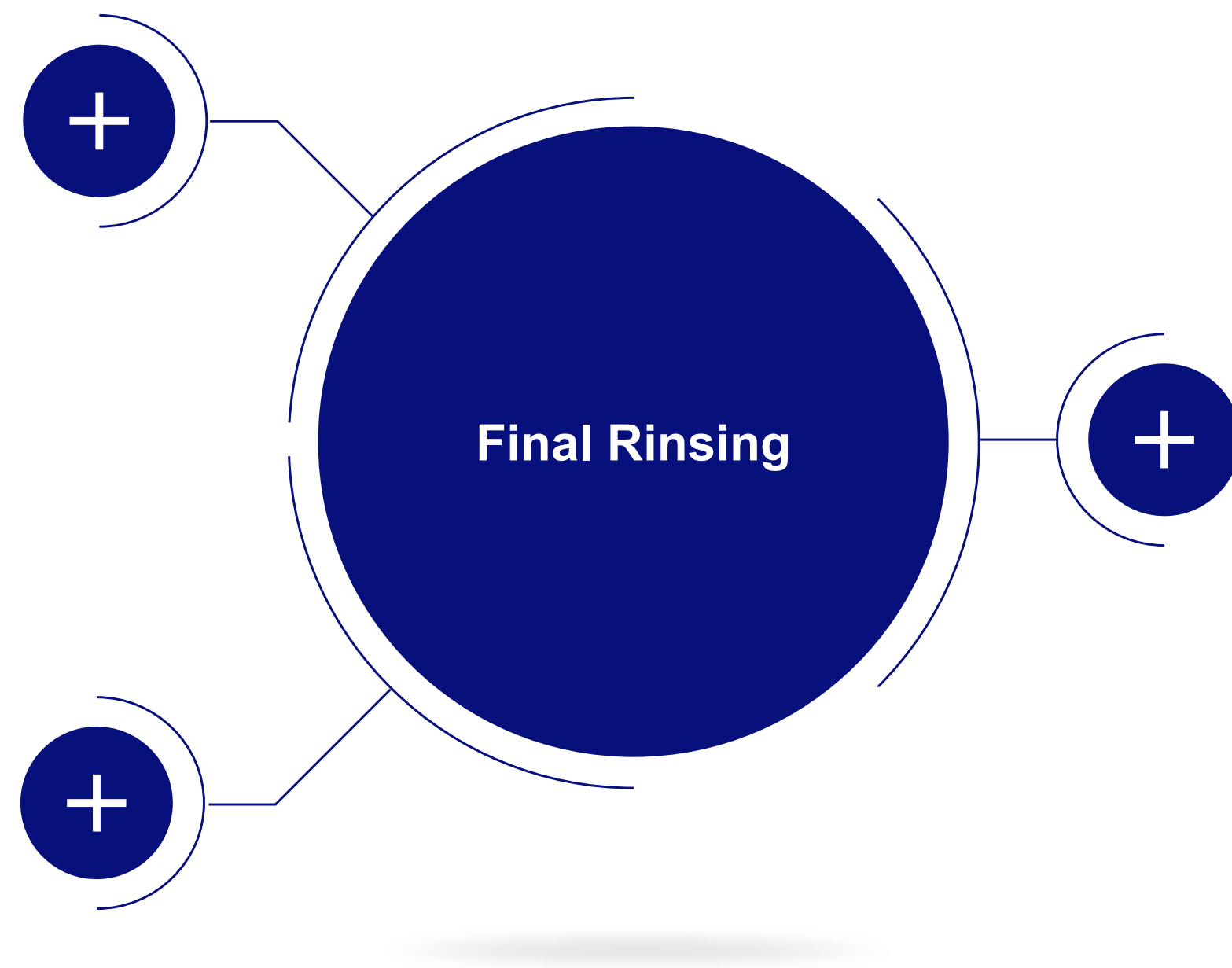
State-of-the-art and preferred reprocessing method is automated reprocessing in an EWD/AE 

Semi-automated Disinfection



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

Final Rinsing



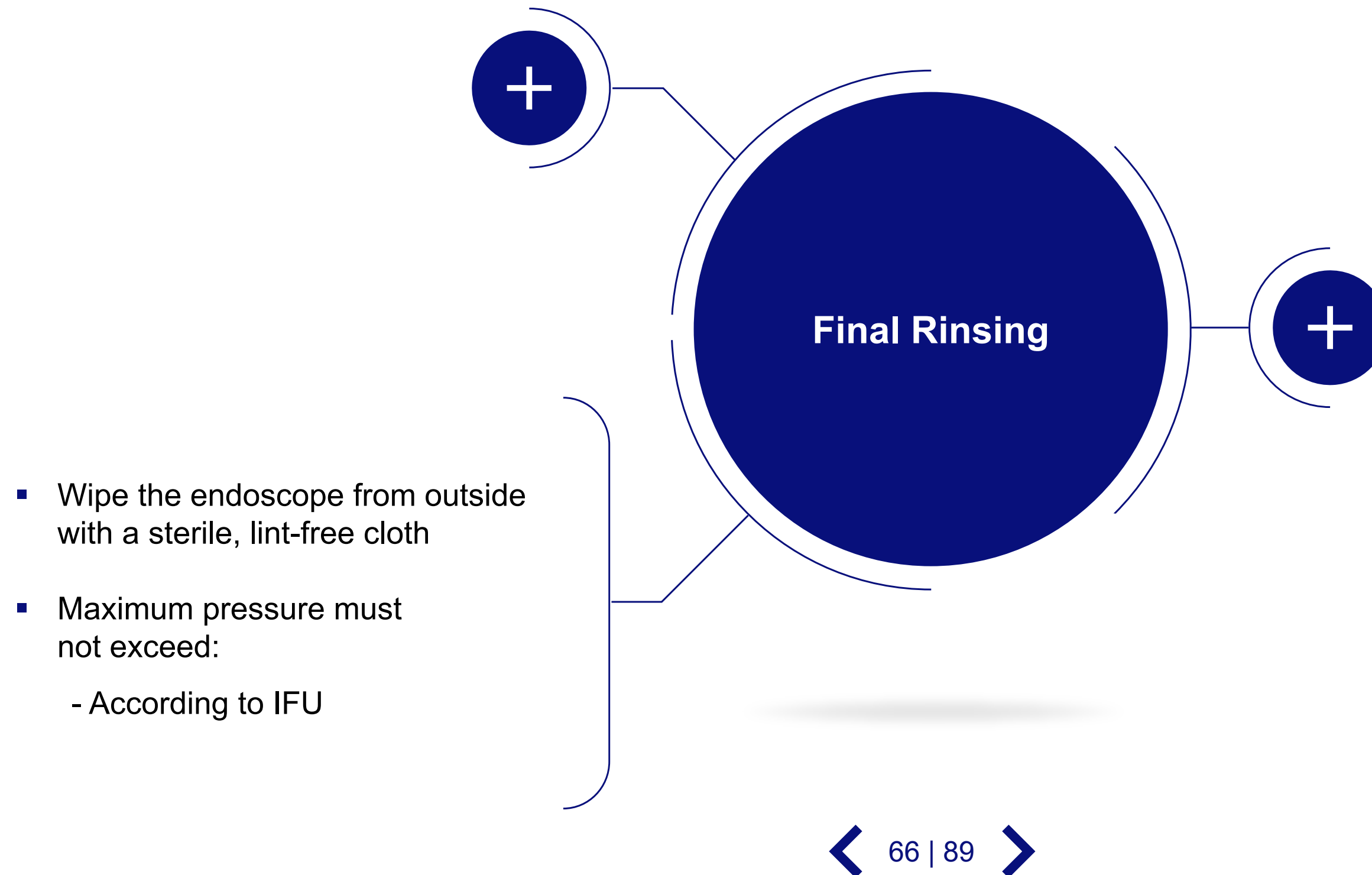
Final Rinsing

Purpose

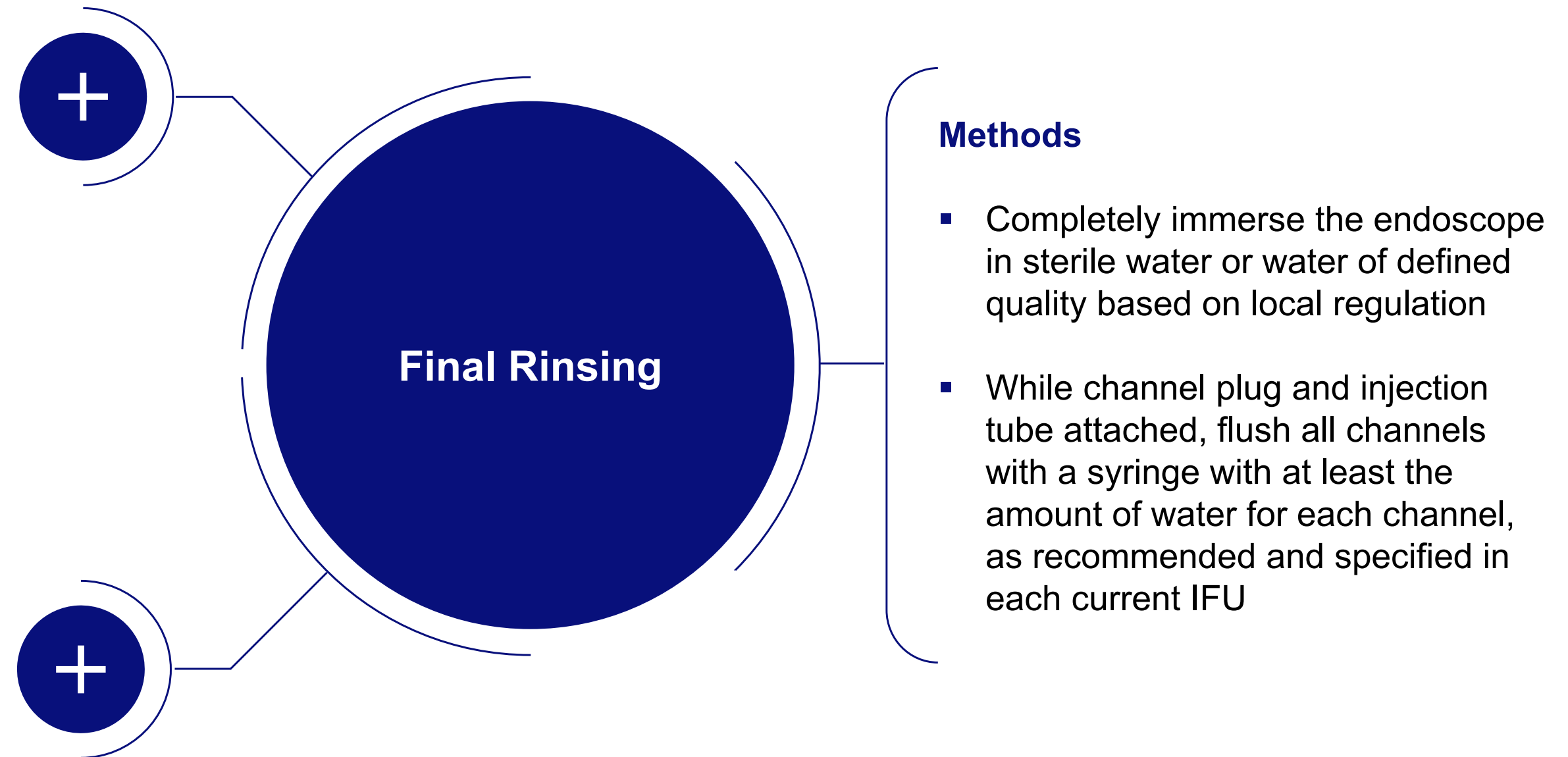
- Final rinsing of external and internal surfaces
 - Removal of chemical residues (GDA / PAA colitis)



Final Rinsing



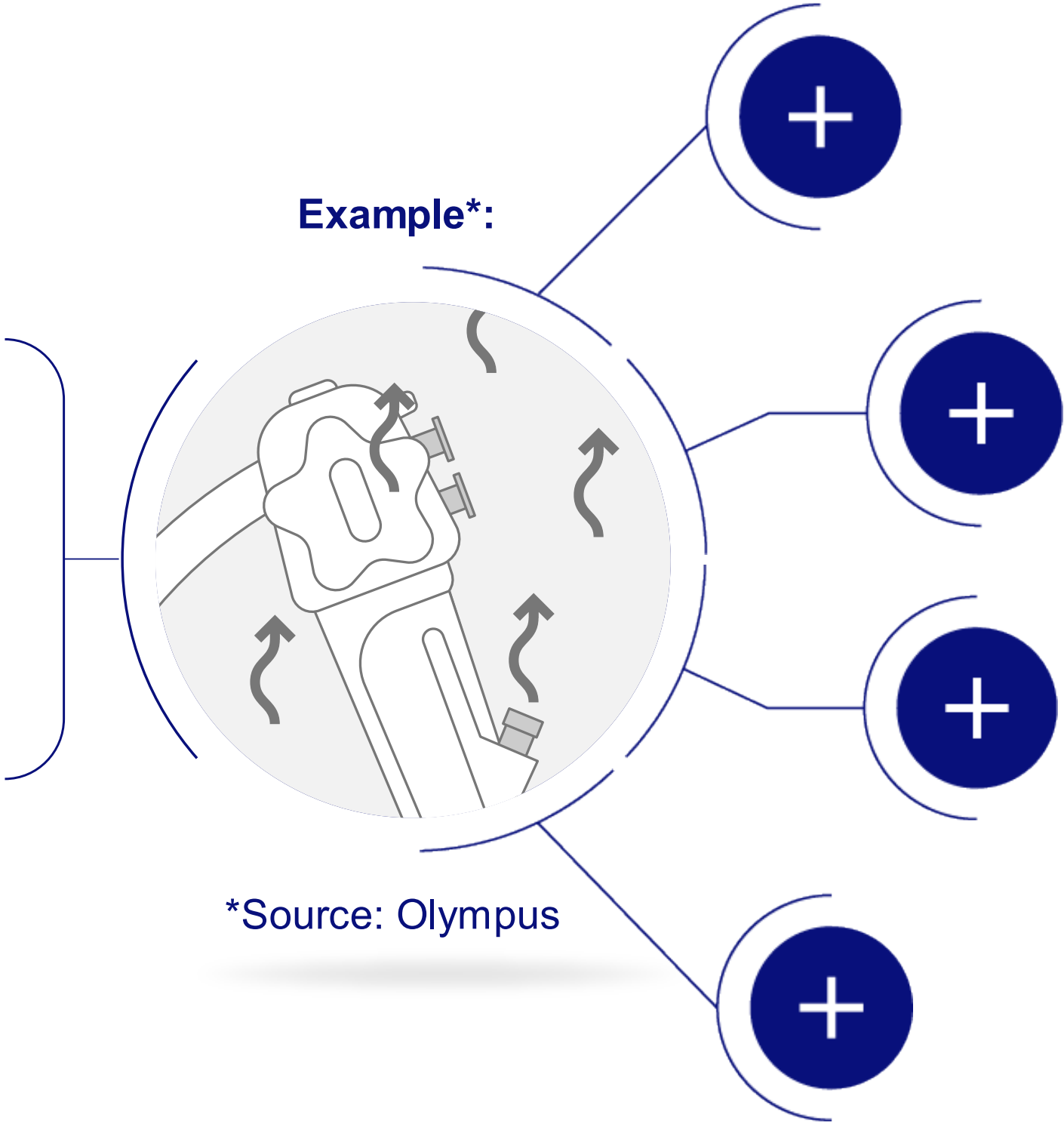
Final Rinsing



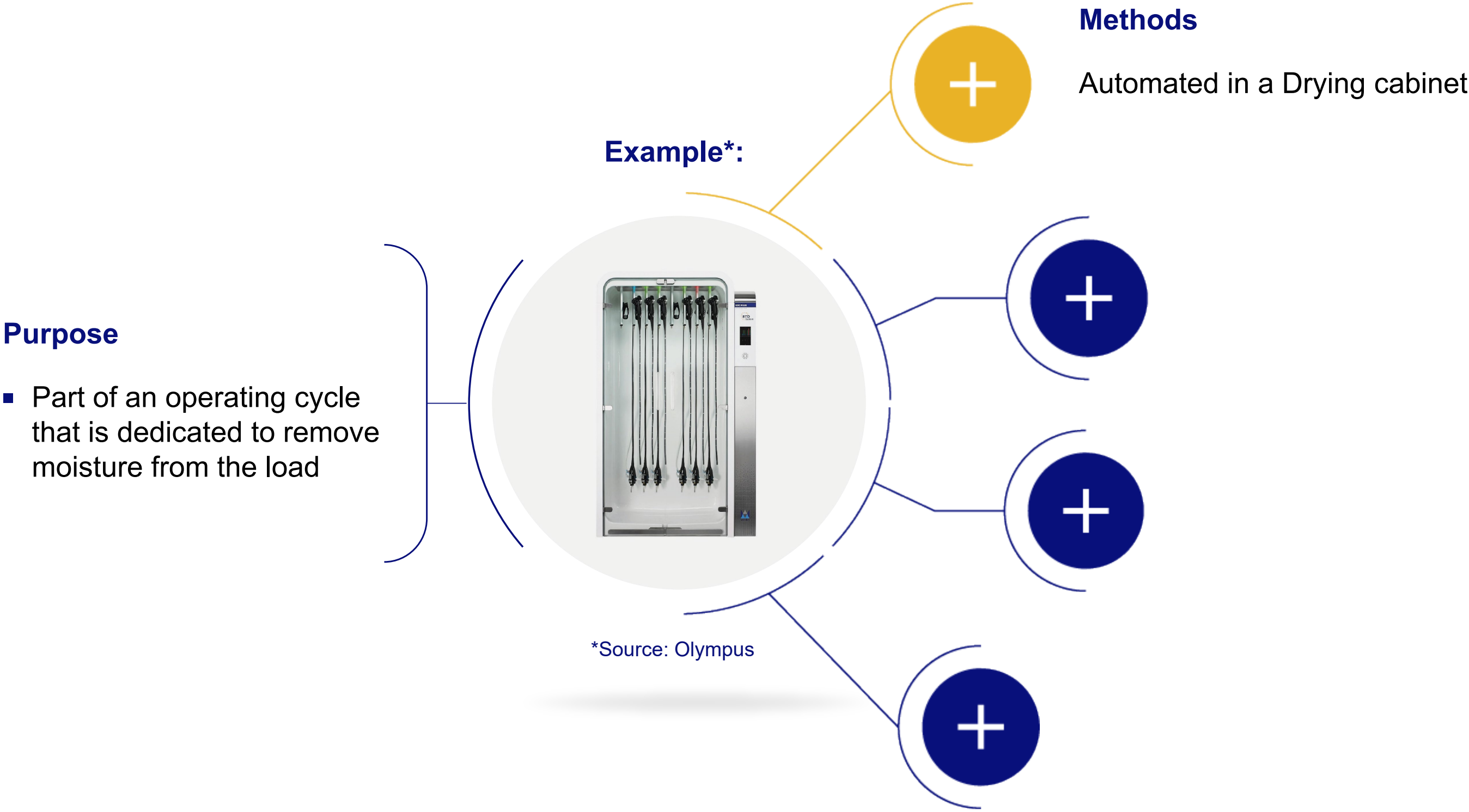
Drying

Purpose

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



Drying

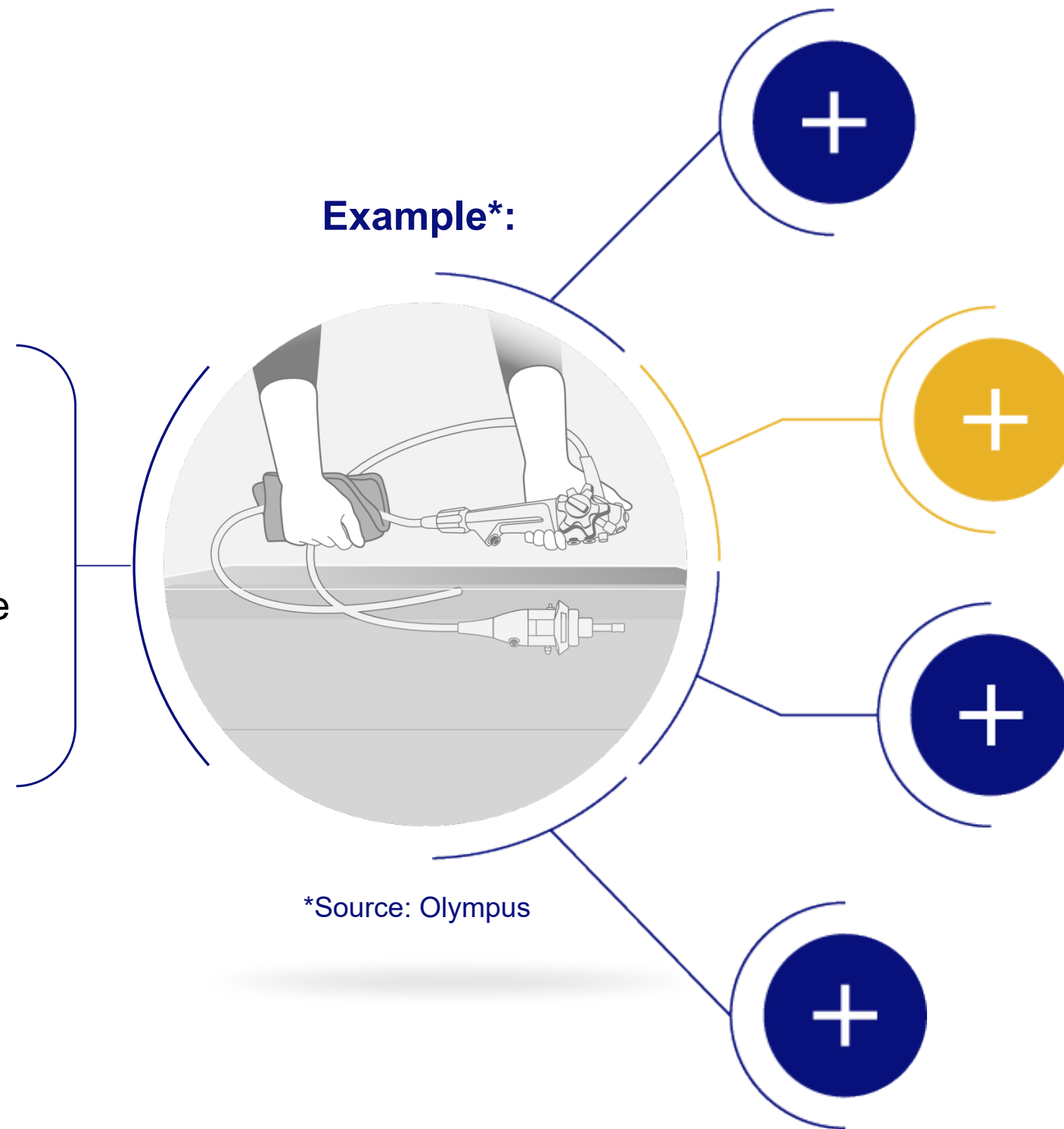


Drying

Purpose

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

Example*:



Methods

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

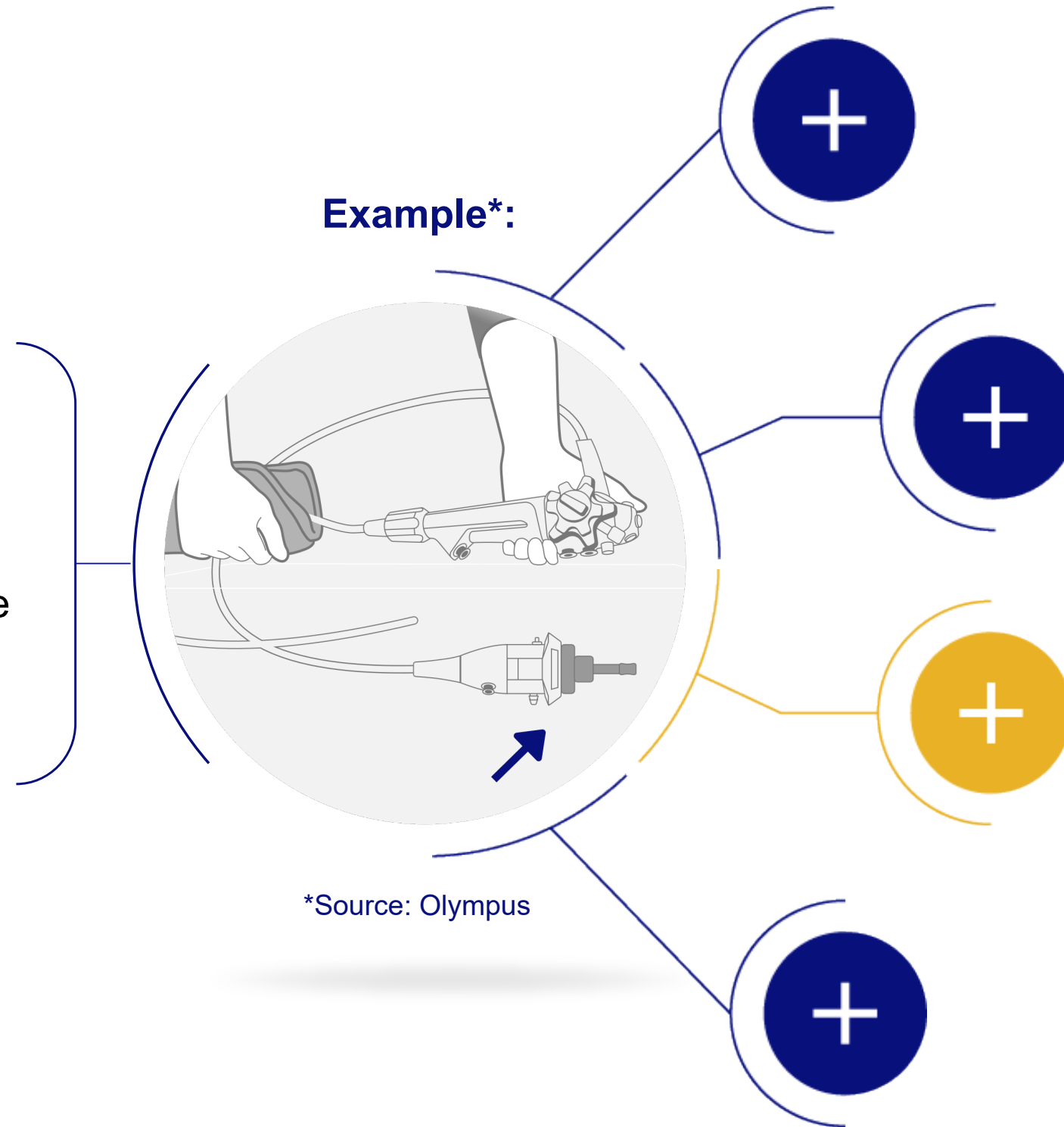
- **Purge** the channels with **air of a quality defined in local regulation**
- Never touch the cylinders / openings of the reprocessed endoscope with the air gun

Drying

Purpose

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

Example*:



Methods

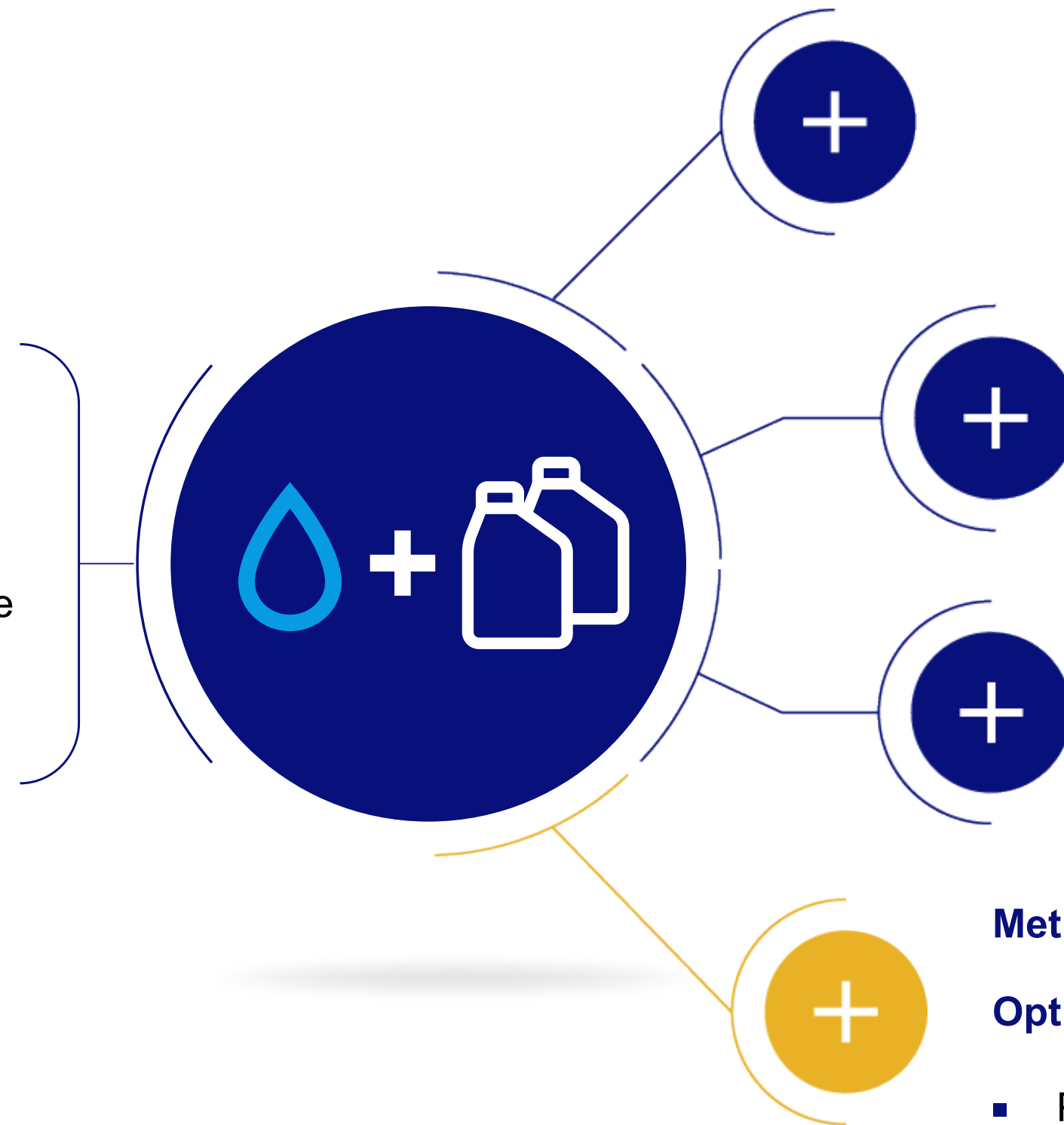
Wipe electrical contacts with a lint-free, sterile cloth

- 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



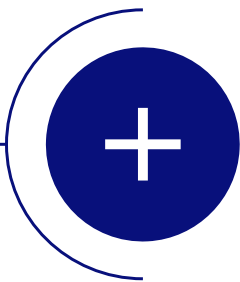
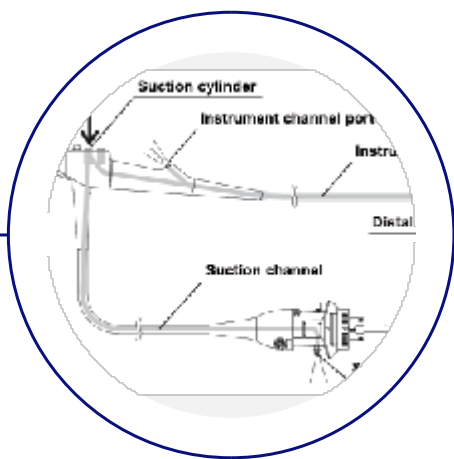
For manual drying use compressed, filtered air with a pressure as stated in the corresponding IFU



- 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

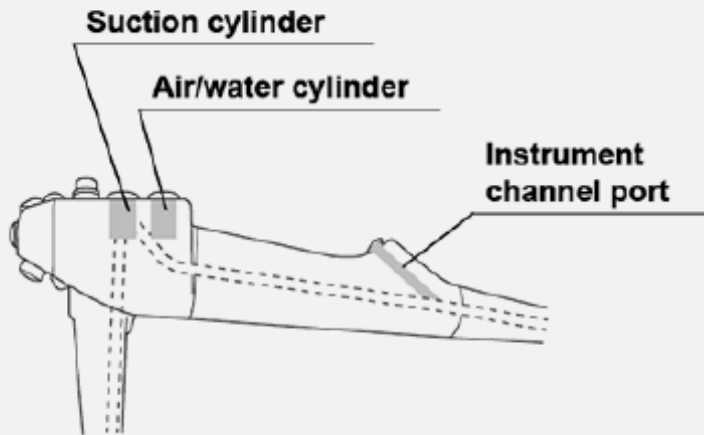
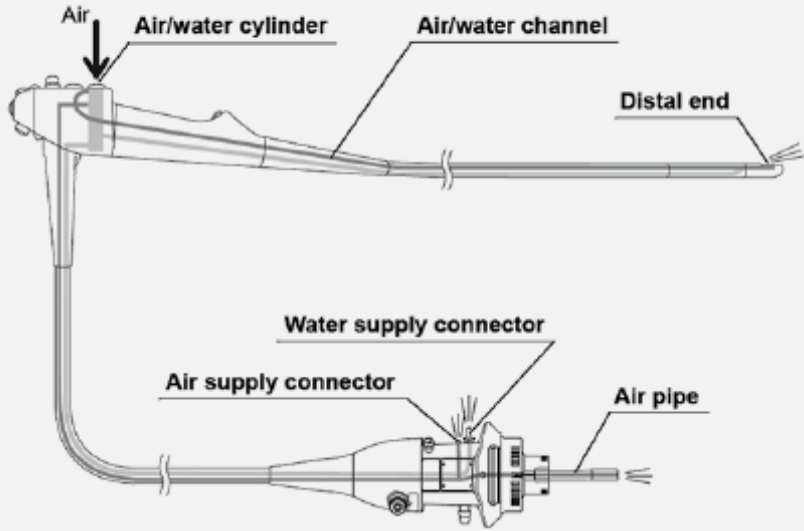
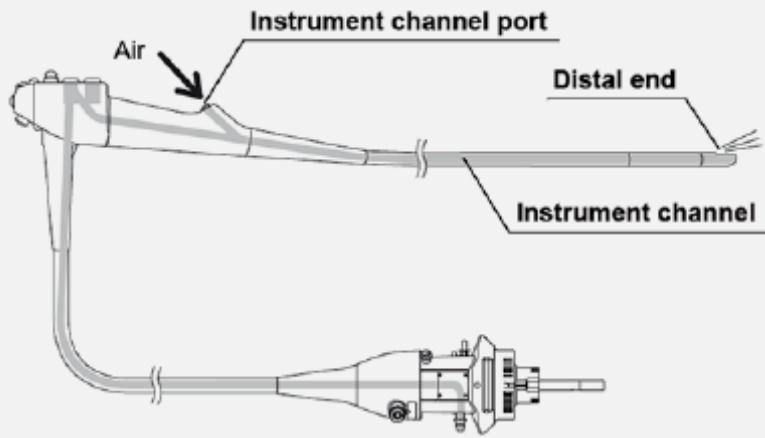
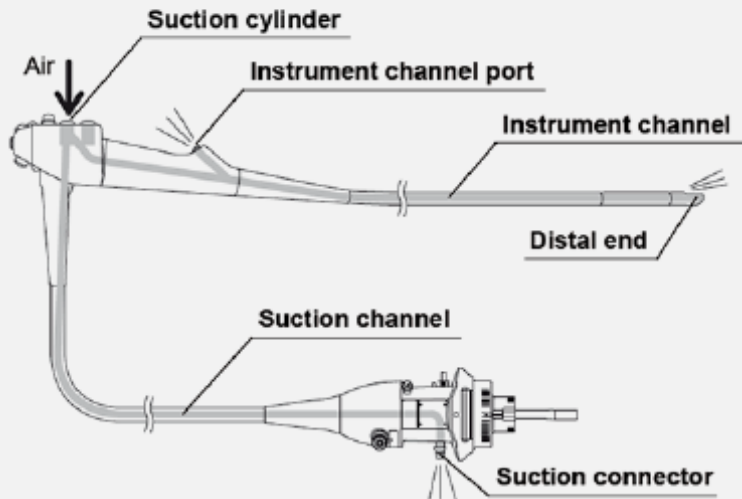
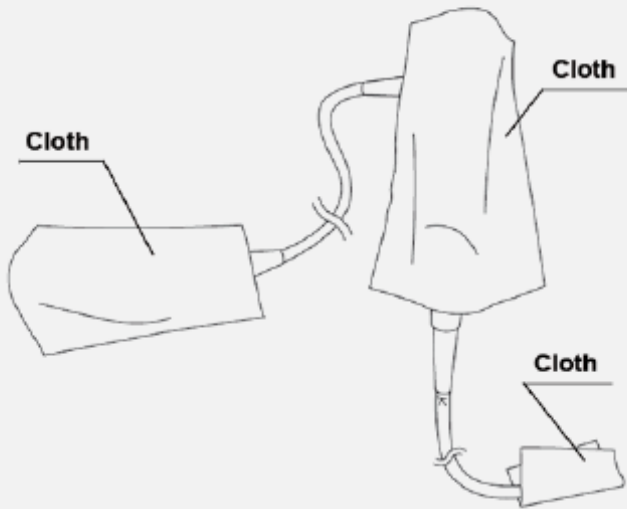


- Dry the inside of valve cylinders, instrument channel port, and (in case of reprocessing a duo-dendoscope) the elevator recess by using a sterile cotton swab

Click on the Plus-Symbol for further information.

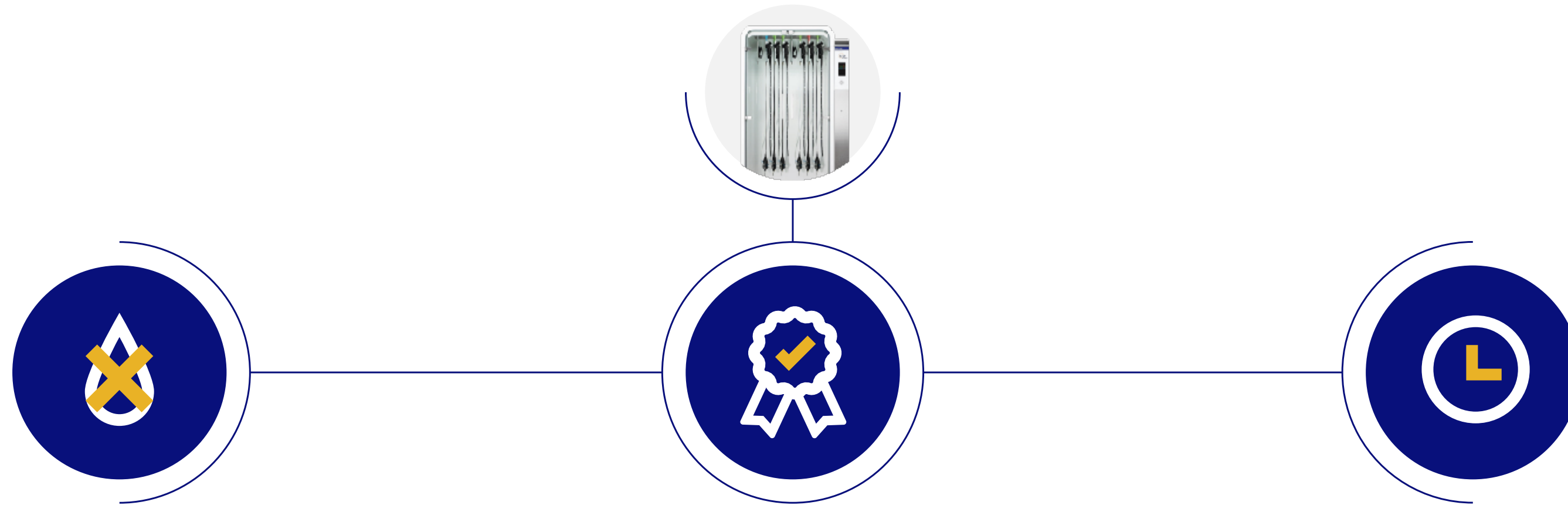
Manual Drying

Examples*:



*Source: Olympus

Drying by Drying and Storage Cabinet (if applicable)



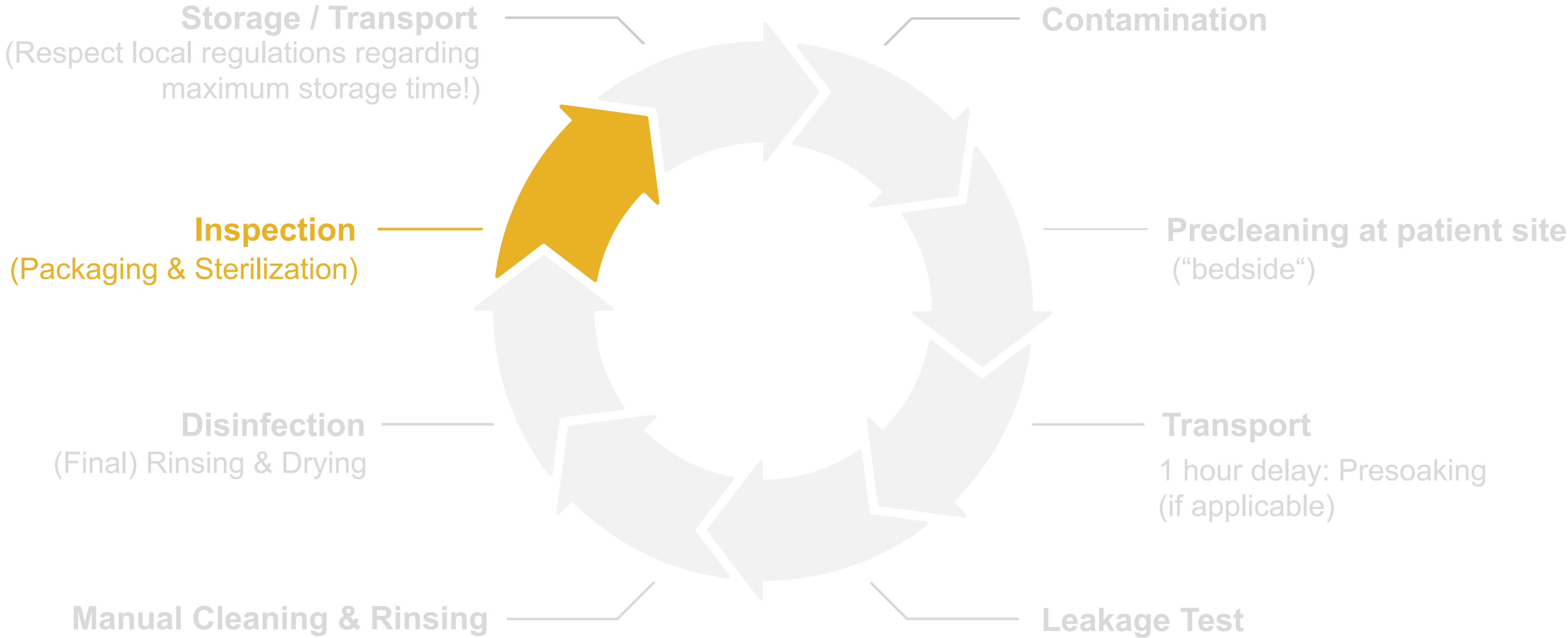
- Complete removal of all humidity inside and outside of the endoscope

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

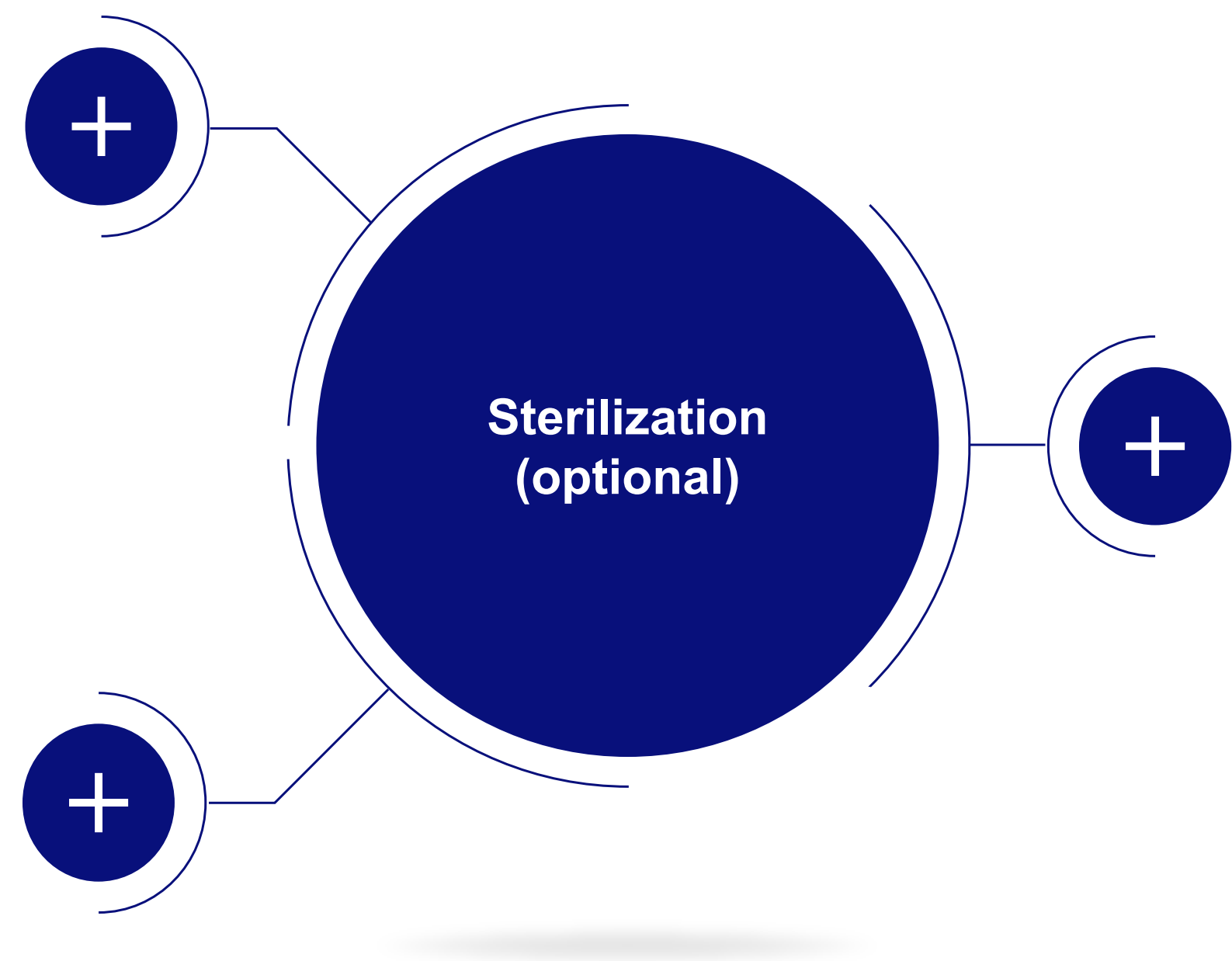
- Prolonged storage time* of endoscopes without the need for reprocessing again

* depending on local regulations

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



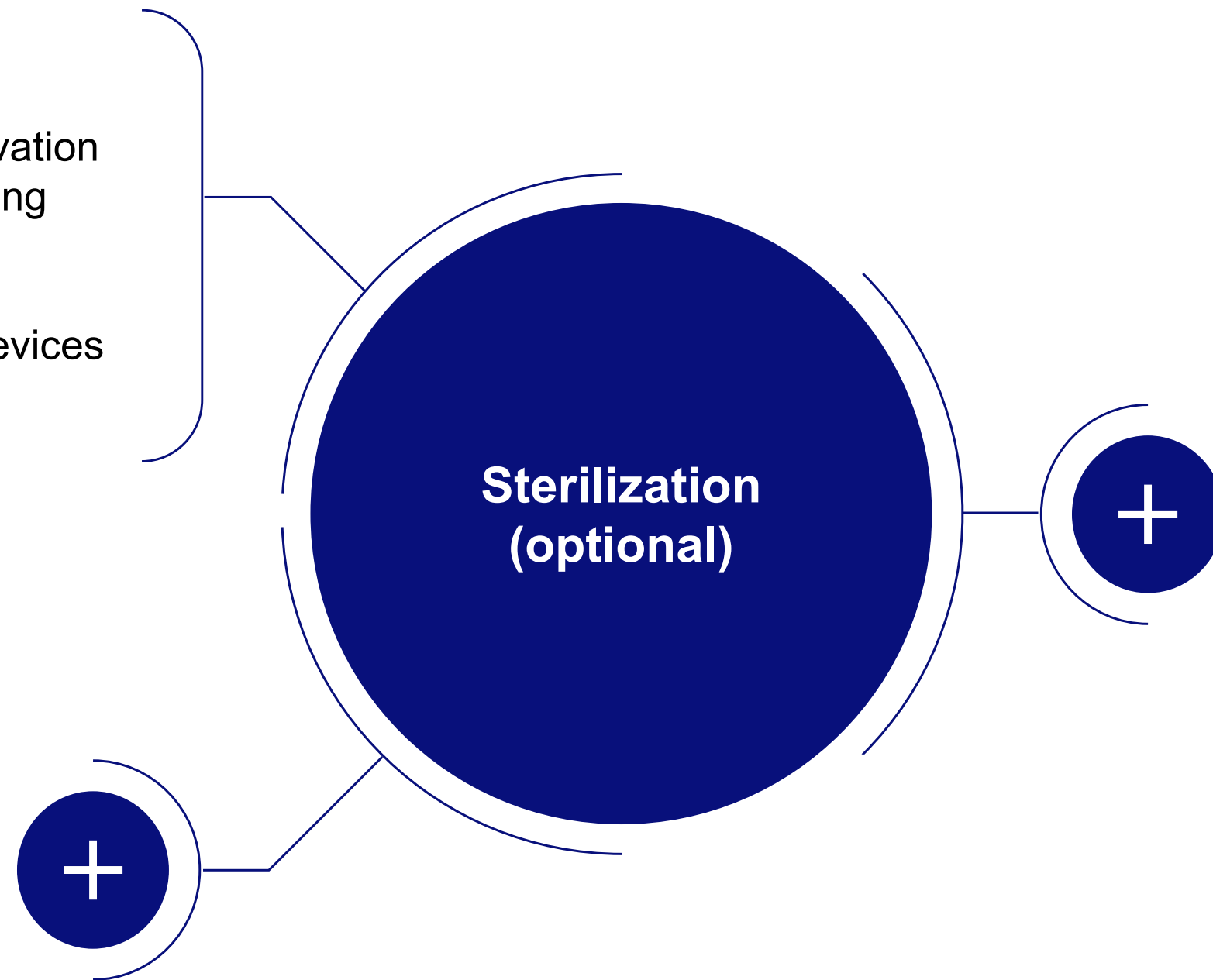
Sterilization (optional)



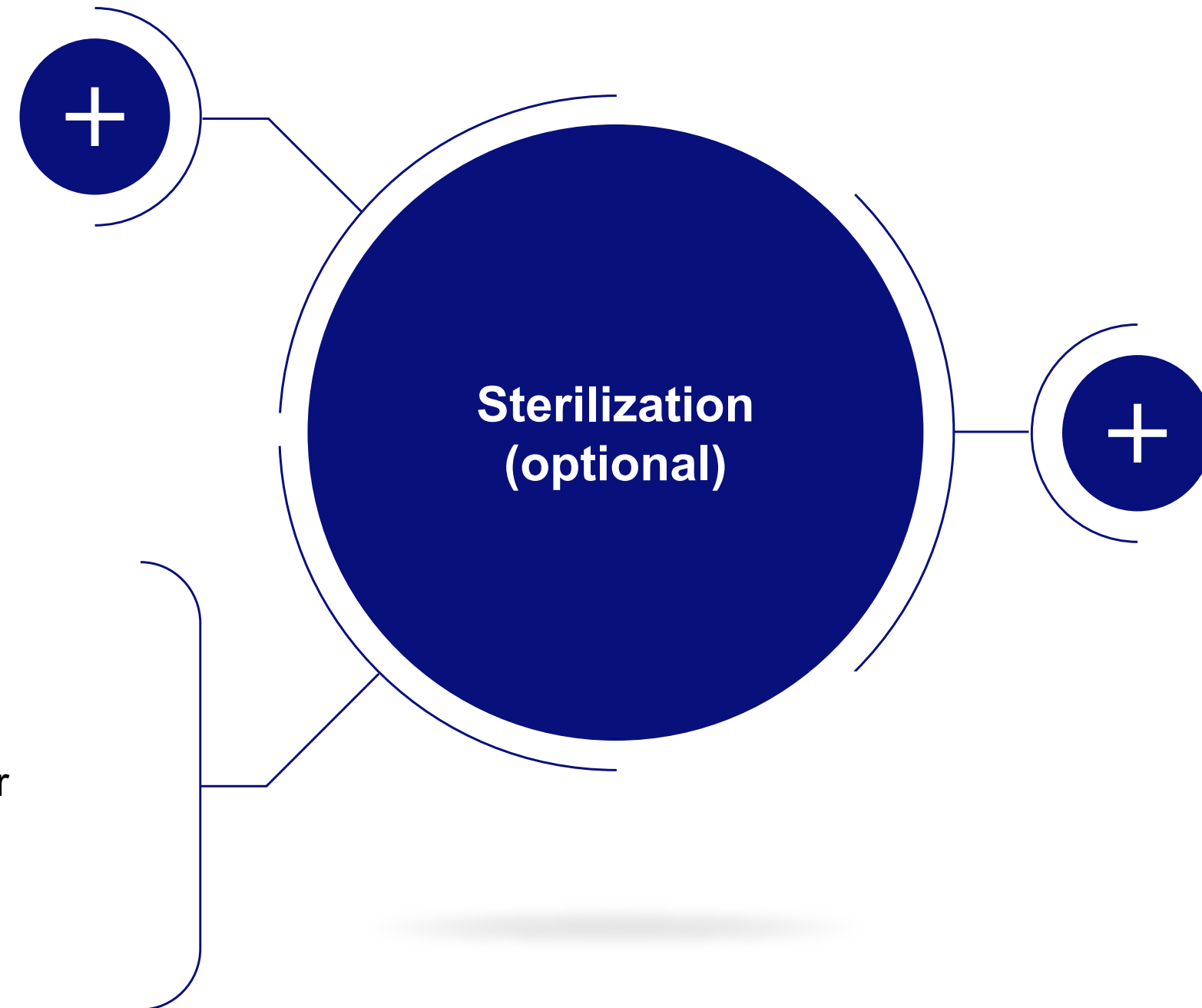
Sterilization (optional)

Purpose

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



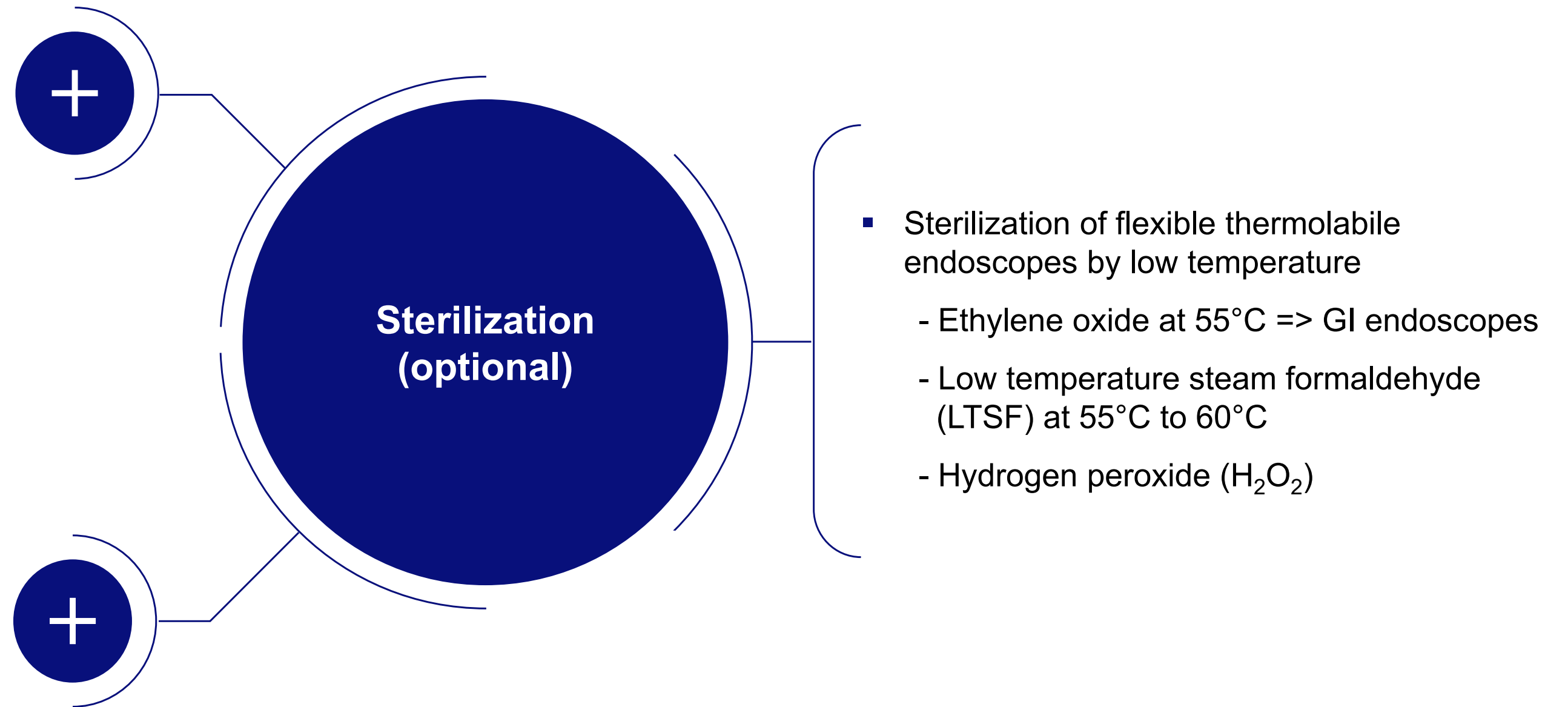
Sterilization (optional)



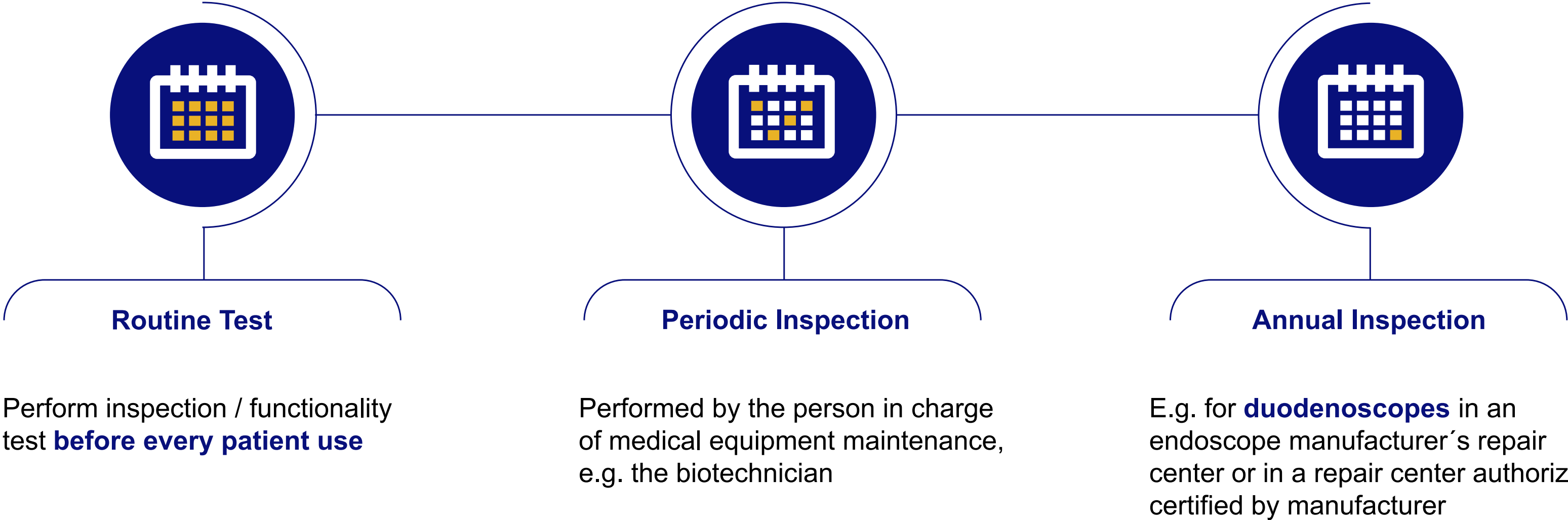
Methods

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

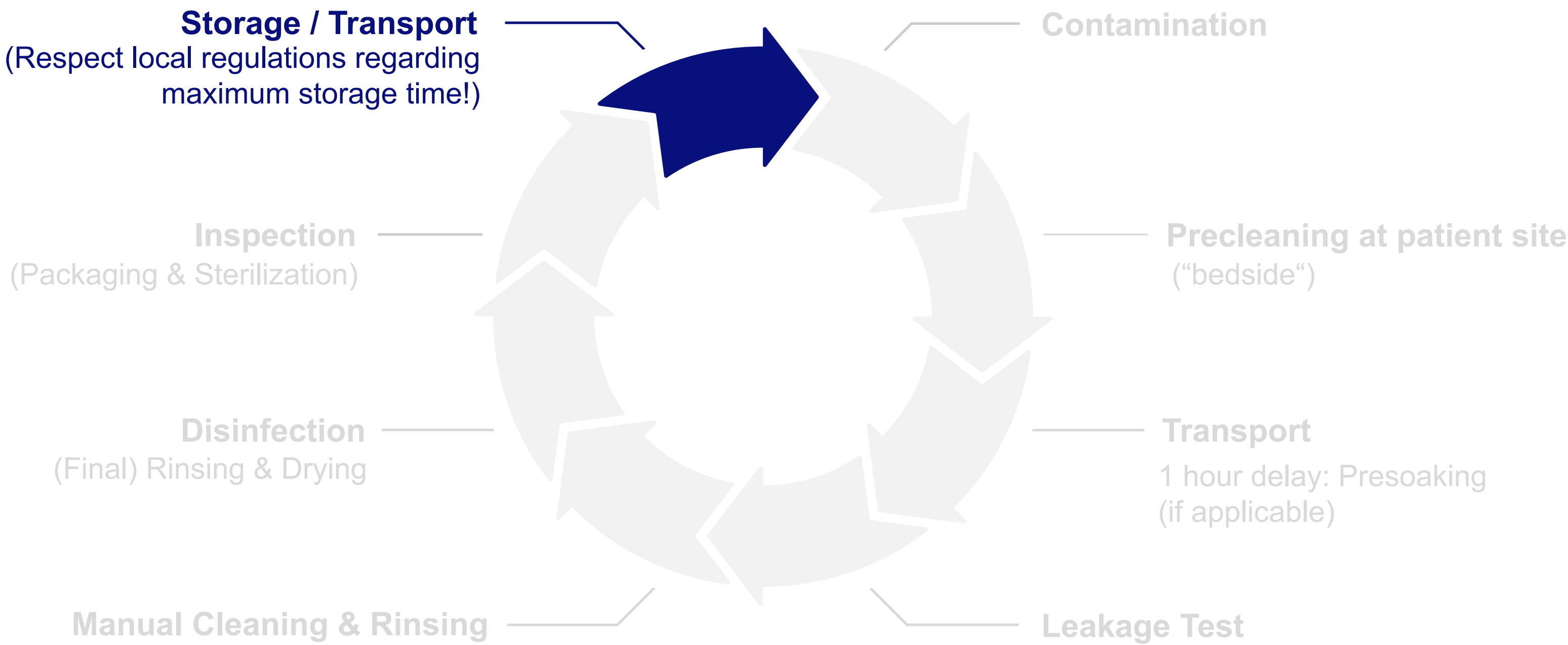
Sterilization (optional)



Inspection according to Operation Manual



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

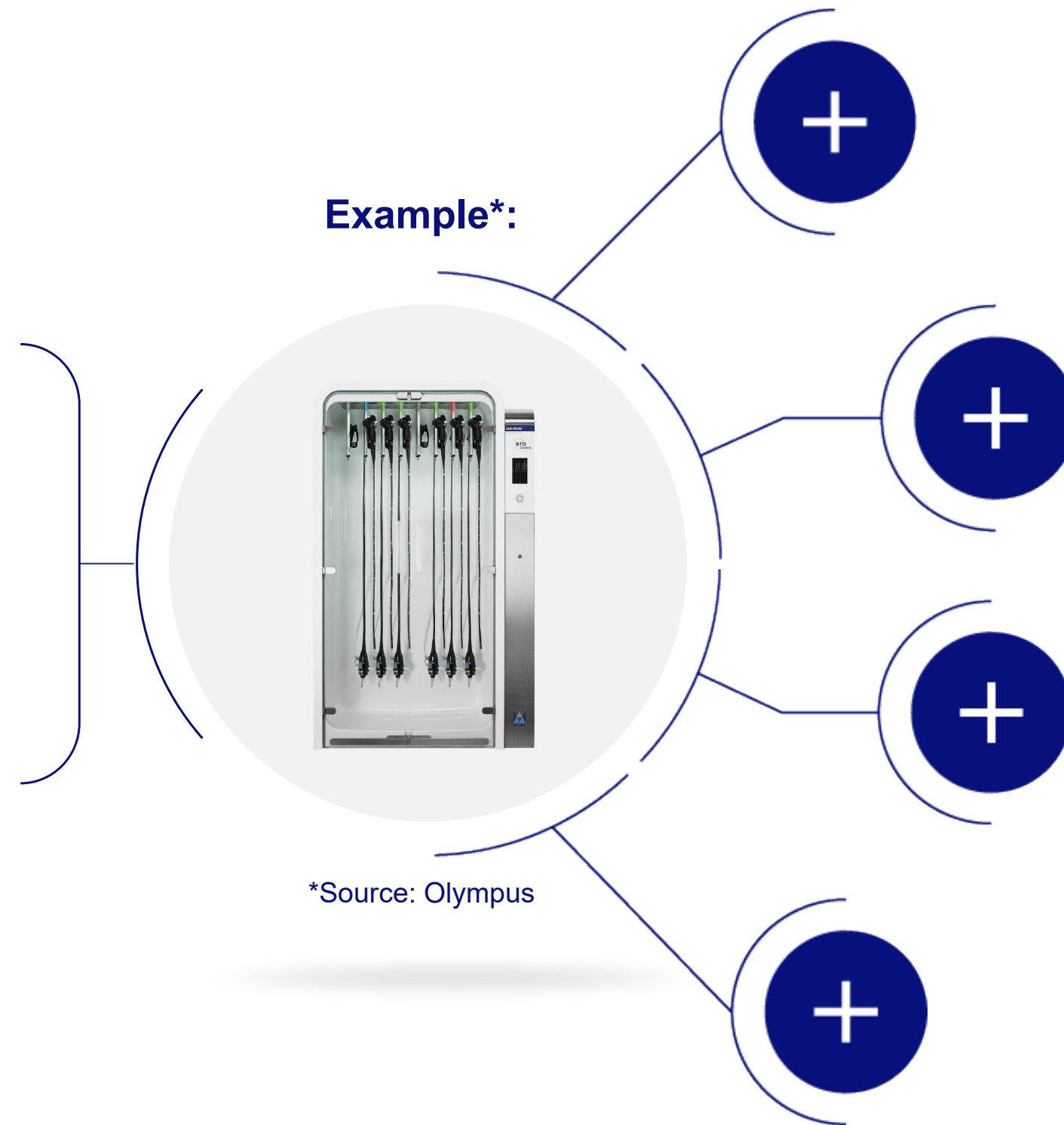


Storage

Purpose

- Avoidance of recontamination and damage

Example*:



*Source: Olympus

Storage

Purpose

- Avoidance of recontamination and damage



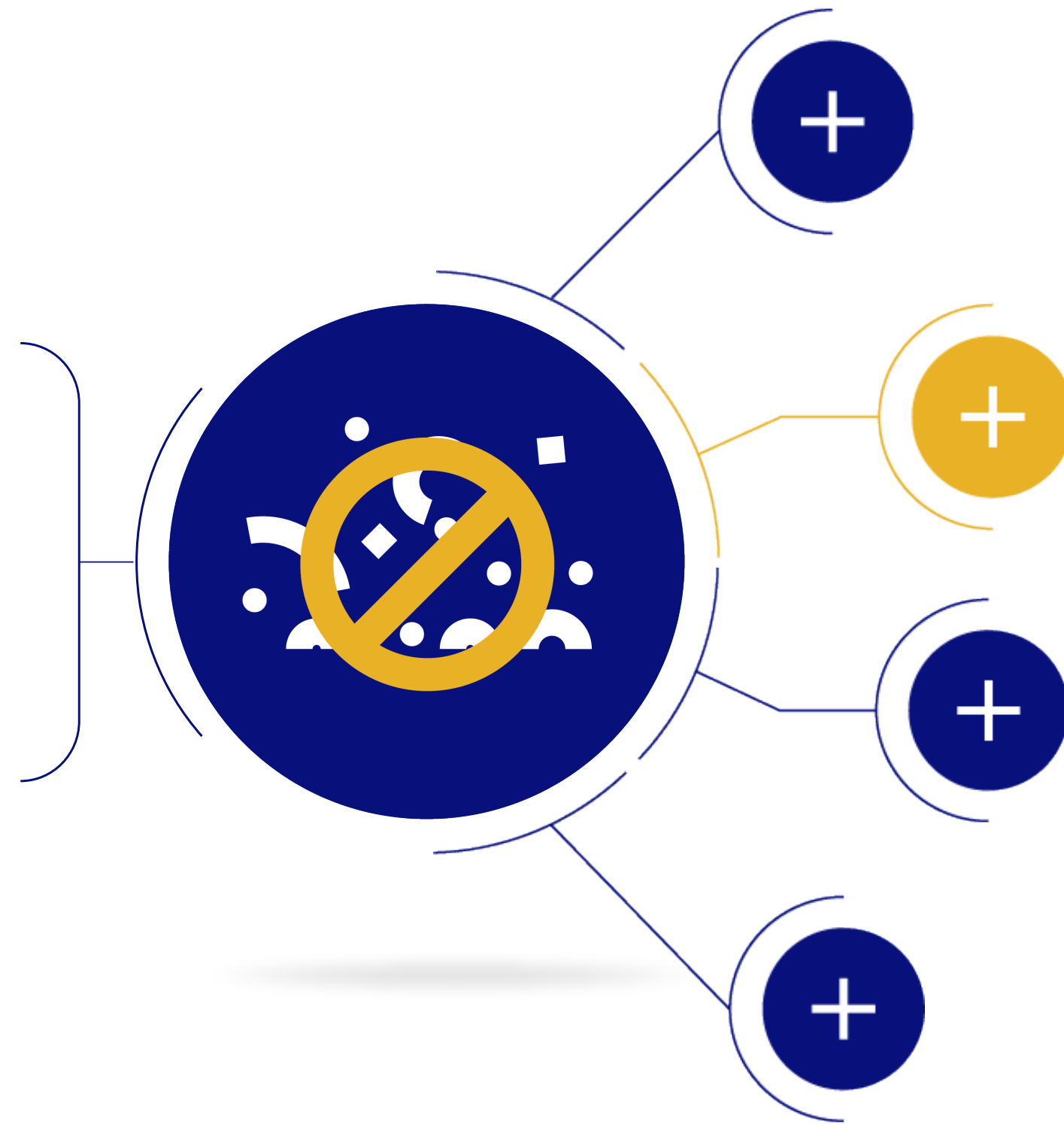
Methods

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 diam-
eter < 20 cm

Storage

Purpose

- Avoidance of recontamination and damage



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



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



OLYMPUS

 Restart