

2. Push the drain connector into the disinfectant removal port until it clicks.

WARNING

When connecting the drain connector to the disinfectant removal port, do not push the connector's head. Otherwise, disinfectant solution will leak out of it.

3. Place the prepared container below the drain connector, push the connector's head, and collect the drained disinfectant solution until it is deep enough to immerse the reaction area of a test strip.



Figure 3.20

4. While taking care not to inhale the disinfectant solution vapor, immerse the test strip in the disinfectant solution in the container to check the concentration. If the concentration is below the effective level, replace the disinfectant solution as described in Section 7.12, "Replacing the disinfectant solution" on page 176.
5. Place the prepared cloth under the drain connector, hold the lock lever and slowly disconnect the connector. Wipe off any disinfectant solution if it leaks.

NOTE

Aldahol III is indicated for use and reuse for the high-level disinfection of thoroughly cleaned, heat-sensitive medical equipment for 14 days or until the glutaraldehyde concentration decreases to 2.1%, whichever comes first.

6. Wipe the disinfectant removal port with a clean cloth and put the rubber cap back on. Rinse the disinfectant drain connector thoroughly in running water, dry it thoroughly and store in a clean place.
7. Close the front door.

NOTE

The front door cannot be closed unless the rubber cap is attached.

3.9 Inspecting the printer paper roll

CAUTION

Do not start printing if the end of the printer paper roll is not projecting from the slit on the printer cover. Otherwise, the printer paper roll may jam and/or printing may fail.

1. Confirm that the end of the printer paper roll is projecting from the slit on the printer cover. If not, open the printer cover, unroll about 10 cm of paper and pass it through the slit.

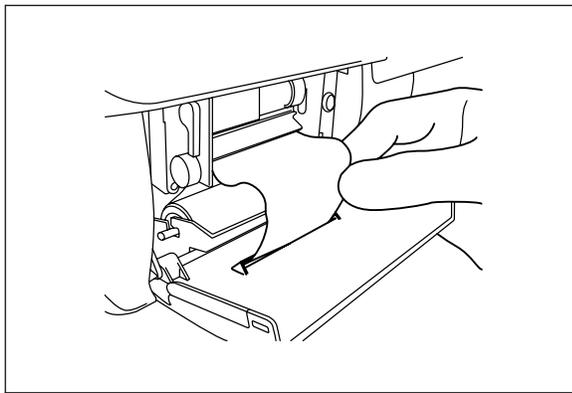


Figure 3.21

2. Close the printer cover and cut any excess paper projecting from the slit.

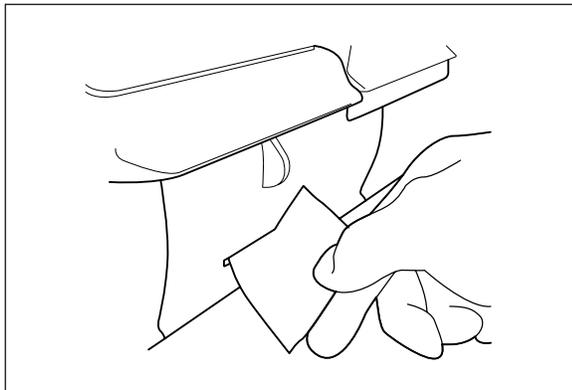


Figure 3.22

Chapter 4 Basic Endoscope Reprocessing Operations

Before using this equipment for the first time or when it has not been used for a long period, full setup is required including installing accessories, connecting power and water supplies and disinfecting the equipment's internal piping. Refer to Instructions-Installation Manual for details.

Be sure to perform the preliminary checks before reprocessing scopes with this equipment and the post-operation checks afterwards. Otherwise, the equipment may not function at optimal levels. See Chapter 3, "Inspection Before Use" for details on the preliminary checks and Chapter 5, "End-of-Day Checks" for details on the final checks at the end of the day.

Endoscopes must be precleaned before they are reprocessed with this equipment. Immediately after each examination, perform bedside cleaning, clean the outer surfaces, brush the forceps elevator areas and suction channel, and clean the valves, by referring to the cleaning, disinfection, and sterilization procedures described in the endoscopes' instruction manuals.

WARNING

- When using the disinfectant solution and alcohol, Olympus recommends the use of gas filters and running this equipment in well-ventilated areas.
 - Wear a facemask, gloves, and protective clothes to minimize aspiration and skin contact.
 - Wear goggles for eye protection.

Refer to the following association's guidelines related to ventilation:

SGNA	(Society of Gastroenterology Nurses and Associates)
ASGE	(American Society of Gastroenterological Endoscopy)
APIC	(Association for Professionals of Infection Control and Epidemiology)
AORN	(Association of Preoperative Registered Nurses)
ASTM	(American Society for Testing and Materials)
OSHA	(Occupational Safety and Health Administration)
ACGIH	(American Conference of Governmental Industrial Hygienists)

NIOSH (National Institute for Occupational Safety and Health)

AIA (American Institute of Architects)

Do not handle the equipment if the operator shows any allergic symptoms even while wearing protective gear.

- Always wear appropriate personal protective equipment, such as eye wear, face mask, moisture-resistant clothing, and chemical-resistant gloves that fit properly and are long enough so that your skin is not exposed. Otherwise, blood and mucus attached to the scopes could cause an infection.
- All personal protective equipment should be inspected before use and replaced periodically before it is damaged.
- Before cleaning and disinfecting an endoscope with this equipment, first connect the provided connector jigs to this equipment and then run through the cleaning and disinfecting process to disinfect the internal tubing. If the equipment is not properly disinfected, the endoscopes will not be properly reprocessed.
- There is no data guaranteeing the sterilization effect of this equipment. Therefore, after cleaning/disinfecting an endoscope that requires sterilization, always be sure to sterilize the endoscope as instructed in its instruction manual.
- Certain endoscopes cannot be reprocessed with this equipment. Refer to the provided "List of compatible Endoscopes/Connecting Tubes <OER-Pro>" to see which endoscopes are compatible. Do not attempt to reprocess an endoscope and its accessories that are not designated for use with the equipment or that are modified by a third party repair company; not only will the equipment be unable to function at optimal levels, the safety of the patient and operator may be endangered and this equipment and/or the endoscope may be damaged. Any repairs required as a result of reprocessing a non-designated endoscope will not be covered by the warranty, even if they occur before expiration of the warranty period.

The following figure shows the general flow of reprocessing with this equipment. For reliable reprocessing, it is important to understand the cleaning and disinfection procedures thoroughly before using the equipment.

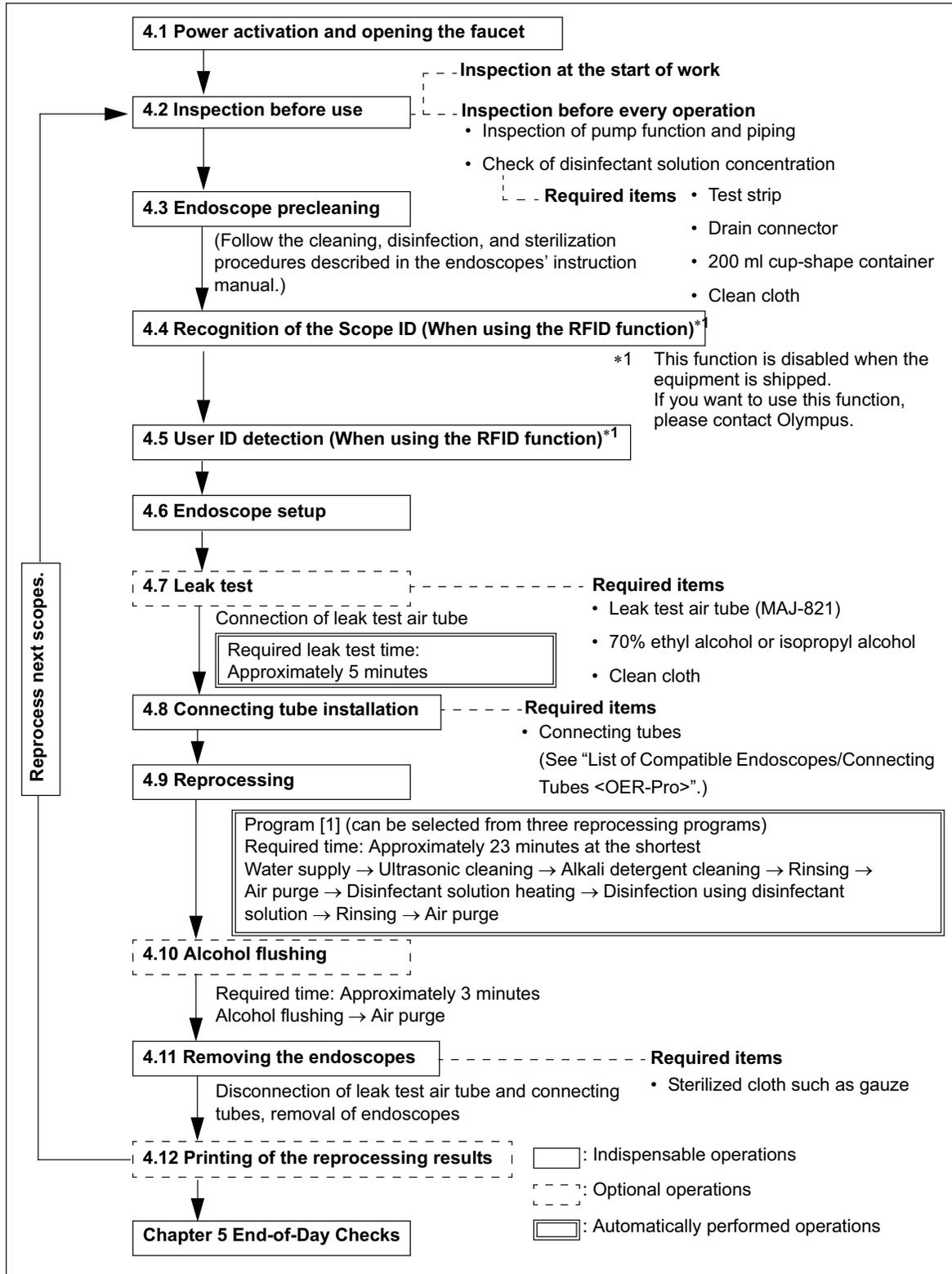


Figure 4.1

4.1 Power activation and opening the faucet

CAUTION

If the Periodical Maintenance indicator on the main control panel blinks at the moment the equipment is turned ON, the equipment needs maintenance. Turn it OFF and contact Olympus.

1. Press the power switch ON. When it is turned ON, the lamp (green) in the power switch should light up and the main and subcontrol panel displays should turn ON.

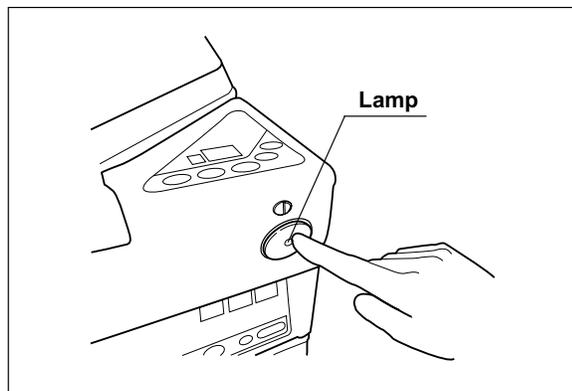


Figure 4.2

2. Open the water supply faucet. Make sure that no water leaks from the equipment and the connections on the water supply devices to the equipment: the faucet, the water supply hose, and the water supply adapter.

○ If the main and subcontrol panel displays do not turn ON

Set the power switch to OFF, wait for about 5 seconds, and then set the power switch to ON again. If the same problem recurs, set the power switch to OFF and contact Olympus.

CAUTION

Do not set the power switch to ON in less than 5 seconds after setting it to OFF. Otherwise, the equipment may malfunction or fail.

○ If the lamp in the power switch does not turn ON

If the lamp in the power switch does not turn ON, check the equipment with the following procedure. If the problem still persists after checking, set the power switch to OFF and contact Olympus.

DANGER

- Before removing the fuse box, be sure to set the power switch to OFF and unplug the power cord from the connector on the equipment and the hospital-grade power outlet. Otherwise, a fire or an electric shock may result.
- To prevent an electric shock, do not check or inspect the equipment with wet hands.

1. Ensure that the power cord is connected securely to the connector on the equipment and to the hospital-grade power outlet.
2. Set the power switch to OFF and unplug the power cord from the hospital-grade power outlet.
3. Unplug the power cord from the power cord receptacle on the equipment.
4. Push the tabs on the fuse box in the directions shown and take out the fuses (see Figure 4.3).

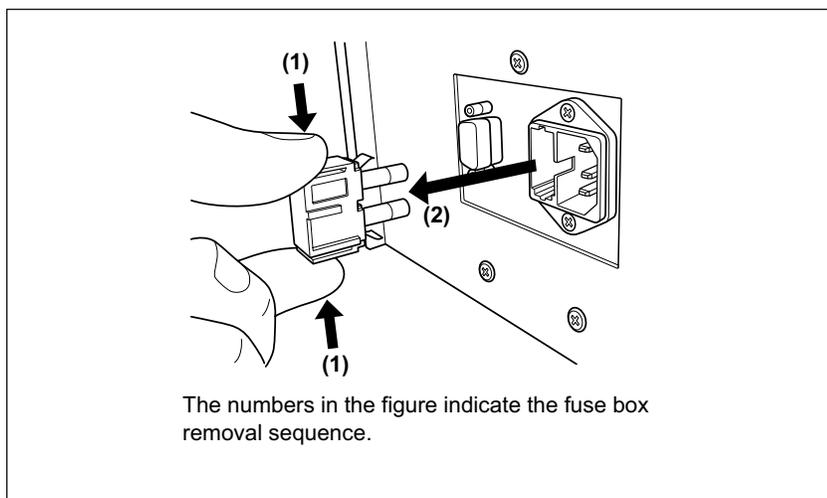


Figure 4.3

5. Visually confirm that neither fuse is blown.

WARNING

Always use the fuses specified below. Otherwise, malfunction or failure of the equipment may cause a fire or an electric shock.

- Spare fuses: DB181500

CAUTION

If the lamp in the power switch does not light even when neither fuse is blown or after the fuses are replaced, contact Olympus.

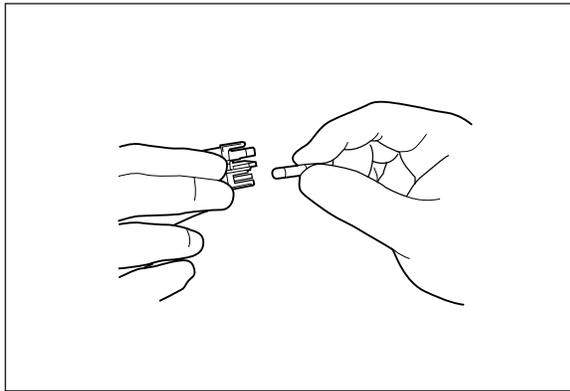


Figure 4.4

6. Push the fuse box into the equipment until it clicks. Confirm that both of the tabs above and below the fuse box are fitted firmly into the equipment body.
7. Connect the power cord, set the power switch to ON and confirm that the lamp in the power switch is illuminated.

DANGER

If the lamp in the power switch does not light even after the fuses are replaced, be sure to unplug the power cord from the power outlet. Otherwise, an electric shock may result.

4.2 Inspection before use

The equipment should be inspected before use to ensure safe operation. For details on the items to check and how to check them, see Chapter 3, “Inspection Before Use”.

4.3 Endoscope precleaning

Endoscopes must be precleaned before they can be reprocessed with this equipment. Immediately after each examination, perform bedside cleaning by cleaning the outer surfaces, brushing the forceps elevator areas and the suction channel, and cleaning the valves, by referring to the cleaning, disinfection and sterilization procedures described in the endoscopes’ instruction manuals.

WARNING

- Always preclean each endoscope immediately after examination. If precleaning is not executed promptly, debris will attach to the endoscope and may prevent effective reprocessing.
- Failure to preclean will leave excessive amounts of debris adhering to the endoscope and may compromise the effectiveness of the reprocessing. It may also result in debris accumulating in the equipment and preventing it from working correctly.

4.4 Recognition of the Scope ID

To keep an endoscope reprocessing log, this equipment is capable of recognizing the individual scope ID that identifies the endoscope being reprocessed. The RFID function that enables this operation is deactivated at the factory. If you want to use this function, contact Olympus. When the RFID function is disabled, neither the scope nor user ID is detected. Skip this section and the following sections and go to Section 4.6, "Endoscope setup" on page 66.

WARNING

This equipment can be set up to use the RFID function. Please be aware that the radio waves emitted from the equipment may cause medical devices such as pacemakers to malfunction.

CAUTION

- When reprocessing two endoscopes simultaneously, be sure to read the scope IDs of both scopes. Otherwise, the reprocessing log will not be accurate.
- Be careful not to bang the scope ID tag on the ID reader section of the equipment during scope ID recognition. Otherwise, the scope ID tag or ID reader section may be damaged.
- An electromagnetic interference with other devices may shorten the communications distance of the designated ID tag and cause signals to become unreadable. Try to take mitigation measures such as keeping the affecting device away from this equipment.

NOTE

- The START button on the main control panel will not function until the scope ID has been recognized.
- You can print out the reprocessing log for each endoscope with the printer, including the timing and method of cleaning and disinfection.
- The RFID function is not available unless the RFID function was activated at the factory.
- If the equipment fails to detect the scope ID, apply the provided scope ID master card to the ID reader section so that the equipment recognizes the scope ID as the master ID. If a problem with the scope ID is suspected, contact Olympus.
- For addition or reissue of a scope ID, contact Olympus.

1. Hold the internal ID-type endoscope connector or the external ID tag to the ID reader section of the equipment, and scan the tag with the reader until a short beep sounds.

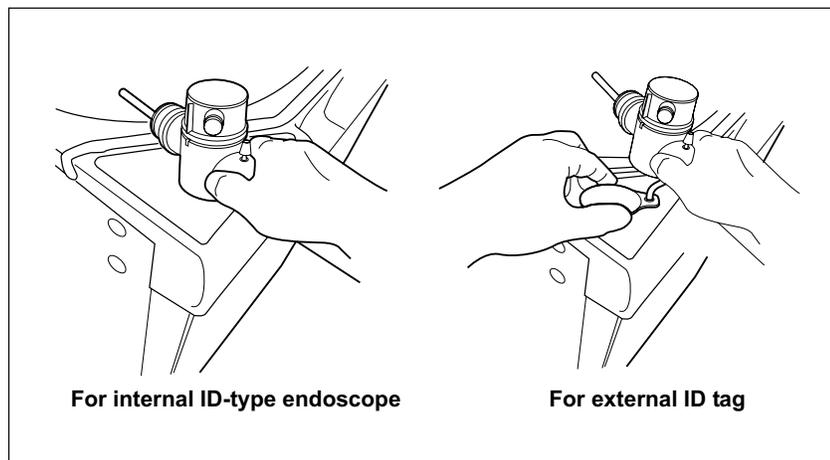


Figure 4.5

2. Make sure that the Scope ID Detection indicator on the main control panel lights up.

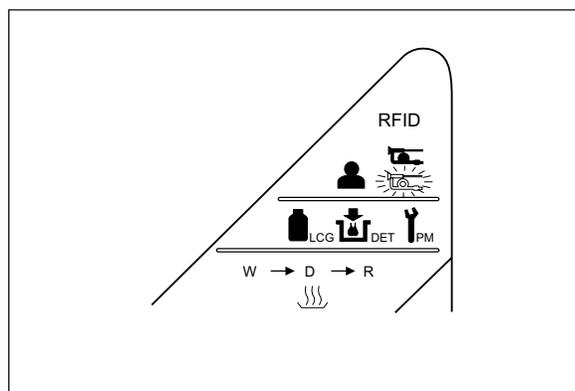


Figure 4.6

3. When reprocessing two endoscopes, ensure that the second scope ID is detected by repeating Steps 1 and 2 with the second endoscope.

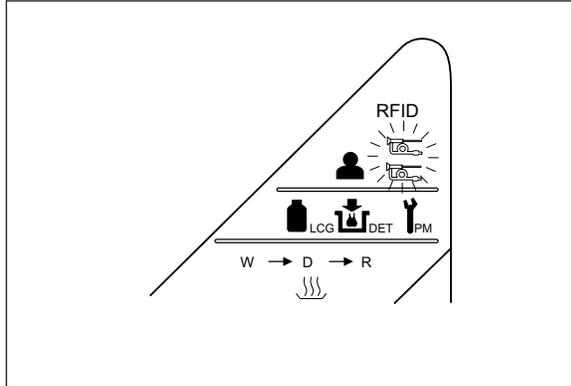


Figure 4.7

NOTE

- The lower Scope ID Detection indicator lights when the first scope ID has been detected, and the upper Scope ID Detection indicator lights when the second scope ID has been detected.
- Up to two scope IDs can be recognized at a time. Error code [E91] is displayed if you attempt to have the equipment detect a third scope ID. If this error code is displayed, press the STOP/RESET button to clear it and restart the scope ID detection procedure from the first endoscope.

4.5 User ID detection

To keep an endoscope reprocessing log, this equipment is capable of recognizing the user ID that identifies the reprocessing operator.

The RFID function that enables this operation is deactivated at the factory. If you want to use this function, contact Olympus. When the RFID function is disabled, neither the endoscope nor user ID is detected. Skip this section and the following sections and go to Section 4.6, “Endoscope setup” on page 66.

WARNING

- This equipment can be set up to use the RFID function. Please be aware that the radio waves emitted from the equipment may cause medical devices such as pacemakers to malfunction.
- An electromagnetic interference with other devices may shorten the communications distance of the designated ID tag and cause signals to become unreadable. Try to take mitigation measures such as keeping the affecting device away from this equipment.

NOTE

- The START button on the main control panel will not function until the user ID card has been recognized.
- Do not leave a user ID card near the ID reader section.
- You can print out the user name read from the user ID card with the printer.
- For addition or re-issue of a user ID card, contact Olympus.
- The RFID function is not available unless the RFID function was activated at the factory.
- If the equipment fails to detect the user ID, apply the provided user ID master card to the ID reader section so that the equipment recognizes the user ID as the master ID. If a problem with the scope ID is suspected, contact Olympus.

1. Hold the reprocessing operator's user ID card parallel to the ID reader and scan the card with the reader until the equipment generates a short beep.

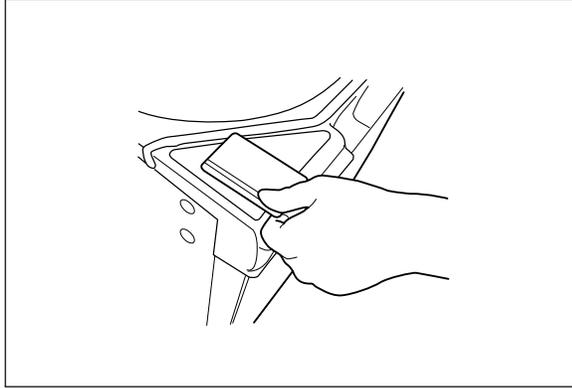


Figure 4.8

2. Make sure that the User ID Detection indicator on the main control panel lights up.

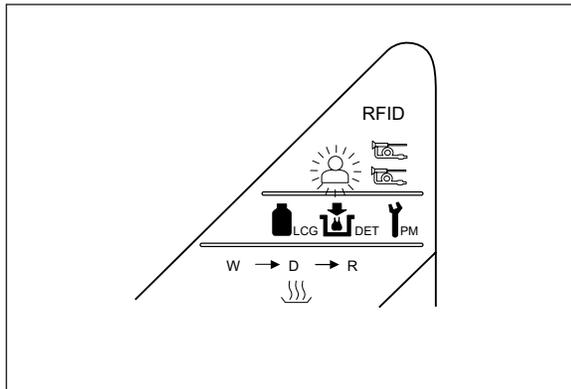


Figure 4.9

NOTE

- If the User ID Detection indicator on the main control panel does not light up, the equipment has not recognized the user ID card. Try scanning the user ID card with the ID reader section again.
- Only one user ID can be recognized at a time. Error code [E91] is displayed if you attempt to have the equipment recognize a second user ID. If this error code is displayed, press the STOP/RESET button to clear it and restart the user ID recognition procedure.

4.6 Endoscope setup

Place the endoscopes to be reprocessed in the cleaning tub.

WARNING

- When placing the endoscopes in the tub, make sure that the major parts such as the insertion tube and universal cord are not piled each other. If the endoscopes are placed carelessly with many parts piled on each other, reprocessing may be insufficient.
- Do not attempt to reprocess an endoscope that is not designated for use with the equipment or reprocess two endoscopes that should not be reprocessed simultaneously with each other. Doing so will prevent the equipment from functioning properly and may endanger the safety of the patient and operator. In this case, the durability of the equipment and its ancillary equipment cannot be guaranteed. Any repairs required as a result of such use will not be covered under warranty, even if they occur before expiration of the warranty period.
- Place only the valves and other specified endoscope components in the washing case in the cleaning tub. If any object other than those specified is placed in the washing case, reprocessing of the endoscope valves will not be effective.
- If the endoscope has a forceps elevator, raise the forceps elevator to an angle of approximately 45° and set it so that the back of the forceps elevator can be sufficiently cleaned and disinfected.
- The biopsy valve should be opened before being placed in the cleaning tub. Also, other accessories that can be disassembled should be disassembled before being placed in the washing case. Otherwise, they may not be sufficiently reprocessed.
- If the distal end cap of an endoscope is removable, remove the distal end cap before putting the endoscope in the cleaning tub. Otherwise, reprocessing may be insufficient.
- Do not clog the circulation port inside the cleaning tub. Otherwise, the liquid feed pressure on the endoscopes will be decreased and reprocessing will be insufficient.

- When placing endoscopes into the cleaning tub, confirm that the endoscopes do not come into contact with any areas that have not been exposed to disinfectant solution such as the edge of the tub or the outer surface of the equipment. Dirt on the endoscopes could contaminate the reprocessor or other equipment. If the endoscopes touch any of these areas, wipe them clean with a cloth moistened with 70% ethyl alcohol or isopropyl alcohol.

CAUTION

- When placing an endoscope that requires a water-resistant cap (EVIS video endoscope, ultrasonic endoscope, etc.) in the tube, be sure to attach the water-resistant cap as described in the endoscope's instruction manual. If you forget to attach the water-resistant cap or if you attach the water-resistant cap when it's wet inside, the endoscope may malfunction.
- When setting up each endoscope, confirm that it is not excessively scratched, which could result in water leakage. If any irregularities are observed, do not place the endoscope in the equipment and contact Olympus for repair.
- To prevent damage, make sure to set up the endoscopes so that the distal ends will not fall out of the retaining rack or come in direct contact with the wall of the cleaning tub.
- When reprocessing an ultrasonic endoscope, always use the specially designed MAJ-840 retaining rack (optional). Otherwise, the endoscope or this equipment may be damaged.
- When heating the disinfectant solution, disconnect the leak test air tube from the equipment and take it out from the cleaning tub. Otherwise, disinfectant solution gets inside the leak test air tube and the endoscope. This could cause them malfunction.

Endoscope setup sequence and positions

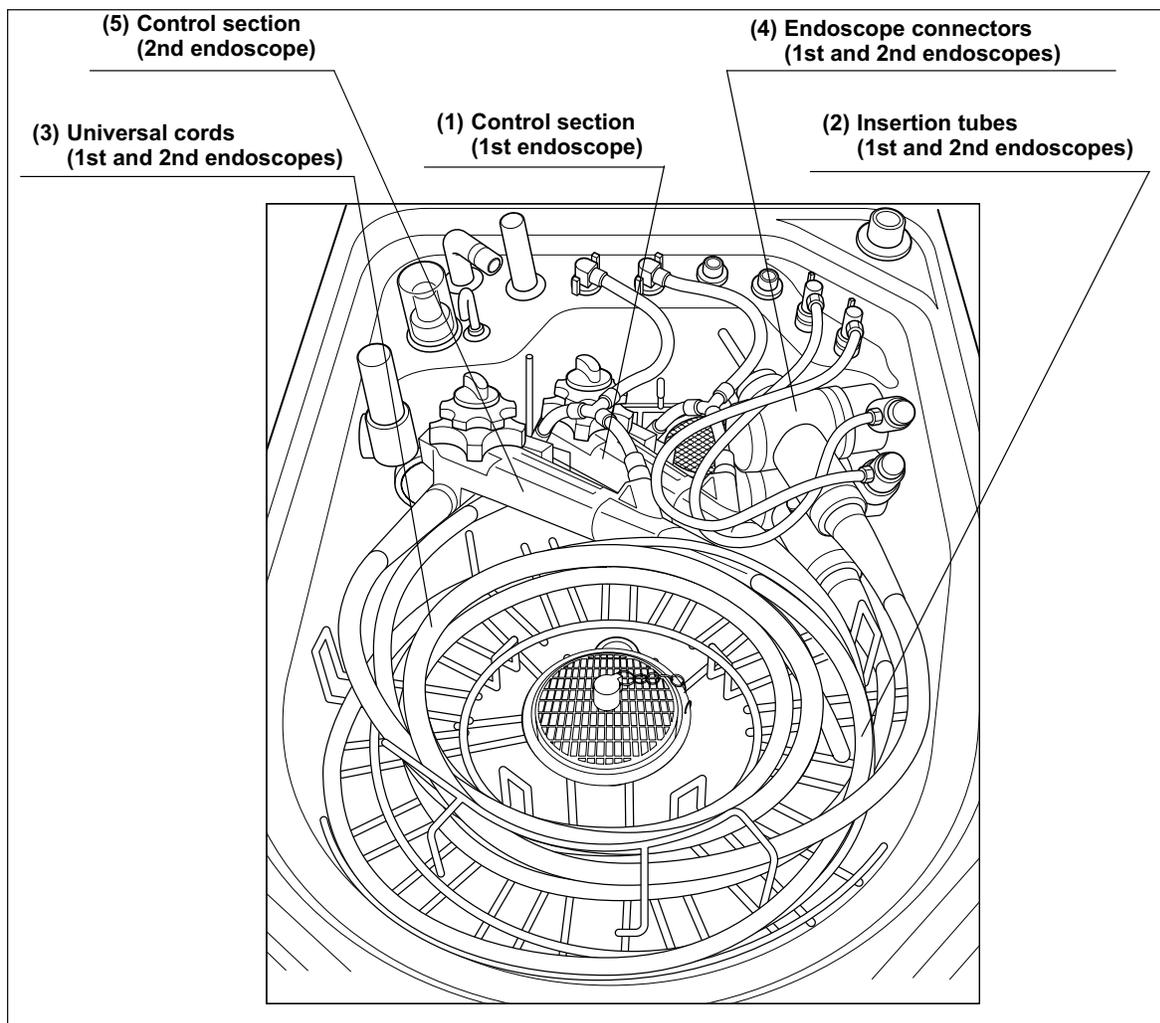


Figure 4.10

When placing one endoscope:

(1) Control section (1st endoscope)



(2) Insertion tube



(3) Universal cord



(4) Endoscope connector

When placing the second endoscope:

(5) Control section (2nd endoscope)



(2) Insertion tube



(3) Universal cord



(4) Endoscope connector

1. Step the foot pedal to open the lid.
2. Gently place the control section of the endoscope in the specified position (between markings) in the retaining rack so that it will not be scratched (place it in the deep part of the cleaning tub so that the control section is below the tip of the left index pin).

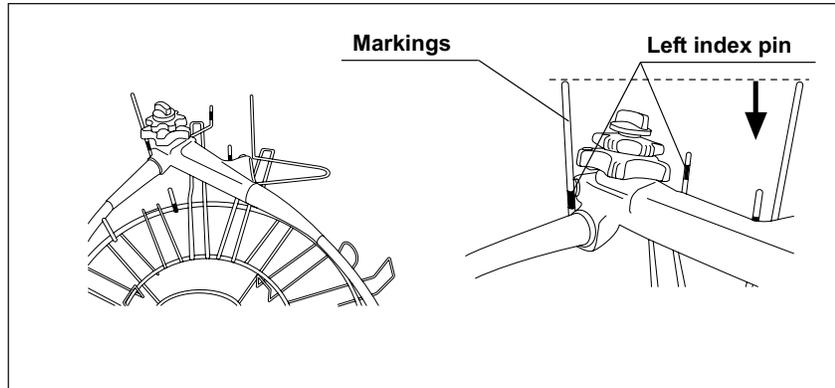


Figure 4.11

3. Wrap the insertion tube clockwise around the retaining rack from the perimeter in (wrap the first turn outside the markings and the second turn inside them).

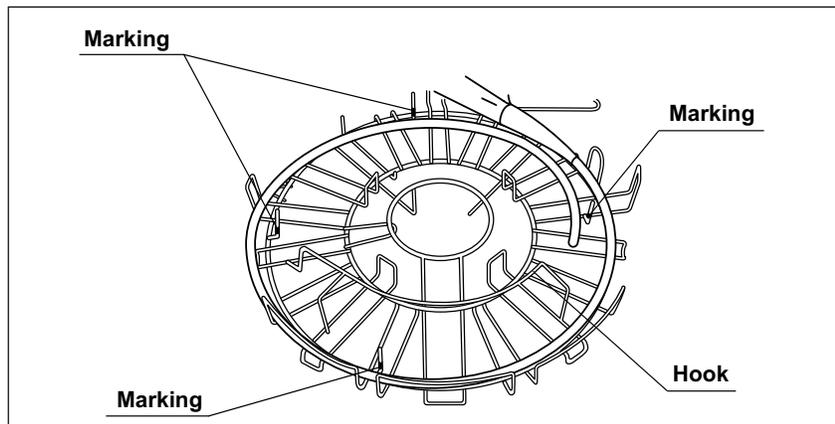


Figure 4.12

4. Wrap the universal cord counterclockwise on the inner side of the insertion tube until the inner side of the hook. Move the scope ID tag toward the endoscope connector. Straighten the ID tag's band if it is twisted.

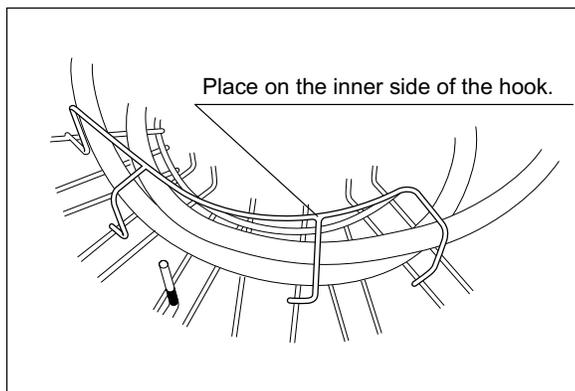


Figure 4.13

5. Place the endoscope connector gently in the specified position (on the right of the right index pin), rear right of the cleaning tub. Place the scope ID tag in the position shown below.

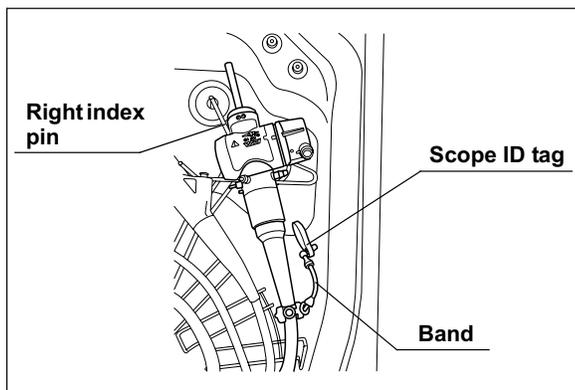


Figure 4.14

6. If part of the insertion tube or universal cord is in contact with another part, adjust the position to avoid overlapping as much as possible. Also, adjust the positioning of the insertion tube's distal end by turning the lever on the control section.
7. When placing a second endoscope, repeat Steps 1 to 5 above. The control section of the second endoscope should be placed to the left of the first endoscope as shown below. The second endoscope connector should be carefully placed to the deep right side of the cleaning tub (the right side of right index pin). At this time, make sure that the endoscope is located below the index pin that marks the disinfecting liquid level.

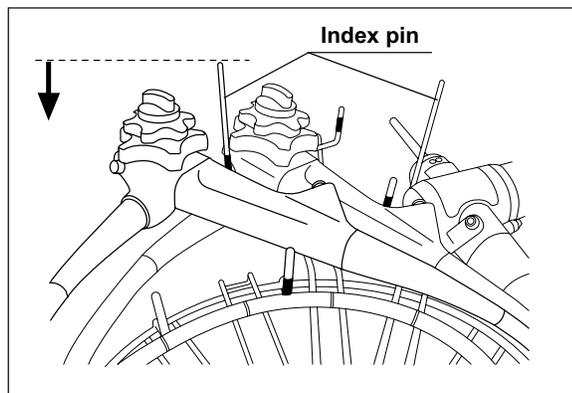


Figure 4.15

8. Put the valves and other specified endoscope components in the washing case on the center of the retaining rack. Be sure to remove the biopsy valve, auxiliary water inlet cap and leave them open.

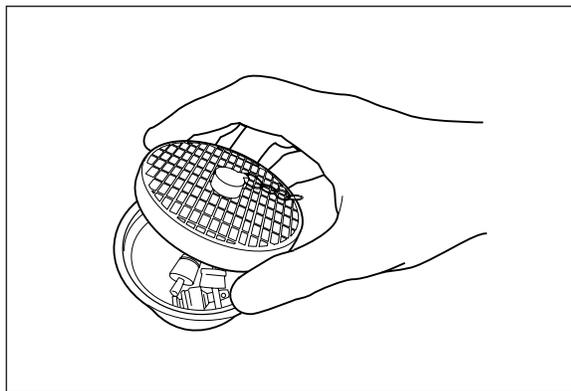


Figure 4.16

9. Close the cover of the washing case.

4.7 Leak test

To prevent endoscope damage due to water leakage, always check for leaks before reprocessing the endoscope to ensure that you discover any irregularities, such as small holes, at an early stage.

CAUTION

- The leak test air tube will disconnect easily if it is not attached properly or if the lock lever is degraded. Air cannot be fed properly if the leak test air tube is bent. In these cases, accurate leak test is not possible.
- Make sure that there are no cracks, breaks, fissures, scratches, or stains on the leak test air tube. Using an abnormal or damaged leak test air tube may result in inaccurate leak test or cause the endoscope to malfunction.
- Do not connect the leak test air tube if the inside of the tube, the endoscope's venting connector, or the equipment's leak test connector is wet. Doing so could allow water to get inside the endoscope and cause it to malfunction.
- When connecting the leak test air tube, ensure that the tube connector is fully and properly attached. Improper connection will prevent the endoscope interiors from being pressurized, preventing accurate leak test. This could also allow water to get inside the endoscope and cause it to malfunction.
- Disconnect the connecting tubes before proceeding to leak test. Otherwise, irregularities in the endoscope may not be detected.
- Do not attempt to disconnect the leak test air tube from the endoscope while the test is underway or while water remains in the tub. Doing so will allow water to get inside the endoscope or prevent the endoscope from depressurizing, resulting in damage to the endoscope.
- If water does not start filling the tub about 10 seconds after leak test has started, press the STOP/RESET button to temporarily stop testing. Check whether the faucet is open. If not, open it and start leak test again.
- If an irregularity is found with the leak test air tube, replace it with a new one and retry leak test.

- Continuous production of air bubbles from a point on the endoscope or the leak test air tube means that water may penetrate at that point. If air bubbles are produced continuously during leak test, discontinue leak test, withdraw the endoscope or leak test air tube from the cleaning tub and contact Olympus.

NOTE

- During leak test, the angulating section's rubber covering may expand. This is not a malfunction.
- To discontinue leak test while water is being supplied, press the STOP/RESET button.

1. Place the endoscope carefully, checking the following:
 - The distal end of the insertion tube is straight.
 - The distal end of the insertion tube is not on or beneath another object.
 - The leak test air tube is not twisted.
 - The endoscope is not pressed by the lid.
 - The connecting tube is not connected.
2. Wipe the venting connector of the endoscope's waterproof cap (in the case of fiberscopes, venting connector) with a clean cloth moistened with 70% ethyl alcohol or other solution.
3. Align the groove on the metal-side connector of the leak test air tube (MAJ-821) with the pin on the venting connector of the endoscope's waterproof cap, and turn the connector clockwise by 90° to connect it (if it's a fiberscope, connect the connector to the fiberscope's venting connector).
4. If the leak test connector (black) of the cleaning tub is wet, wipe the entire connector with a clean cloth.

5. Connect the leak test air tube connector (black) (MAJ-821) to the cleaning tub's leak test connector (black).

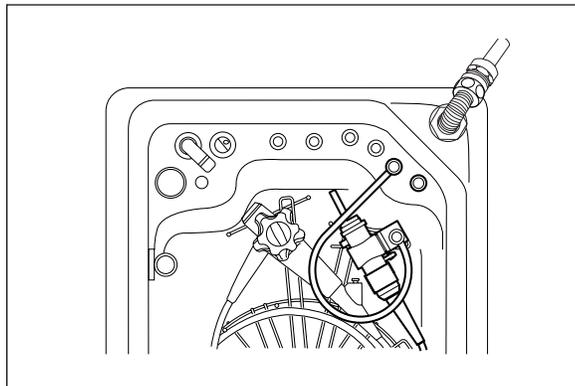


Figure 4.17

6. Close the lid by pushing it until it clicks.

Including leak test in a reprocessing program

Leak test can be incorporated in a reprocessing program.

The leak test consists of filling the cleaning tub with water and observing the endoscope's outer surfaces and the leak test air tube to ensure that air bubbles are not produced continuously from any point and that there is no sound of air leakage.

1. Perform Step 1 of the procedure in Section 4.9, "Reprocessing" on page 80.
2. Make sure that the water supply faucet is open, and then press the LEAK TEST button on the main control panel to select LEAK TEST, and press the START button. The water supply will start and water will fill the cleaning tub.

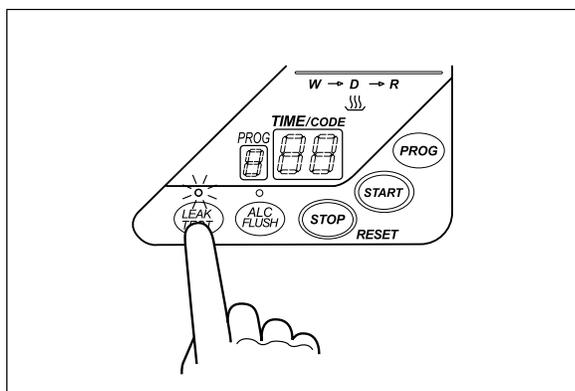


Figure 4.18

3. When the cleaning tub is filled with water, the buzzer beeps three times and the lid is unlocked.
4. Make sure that the supply of water has stopped and then step the foot pedal to open the lid.
5. Bend the angulating section of the endoscope and make sure that air bubbles are not produced continuously from the outer surfaces of the endoscope and leak test air tube.
6. With the lid open and cleaning fluid in the tub, perform the procedure in Section 4.8, "Connecting tube installation" on page 78 and close the lid. The reprocessing process will start.

NOTE

Even when leak test is performed without closing the lid, the water will drain and the testing will finish automatically in about 10 minutes. At this time, the main control panel displays the error code [E92].

Performing leak test independently

1. Press the FUNC SEL button on the subcontrol panel to select "LEAK TEST".

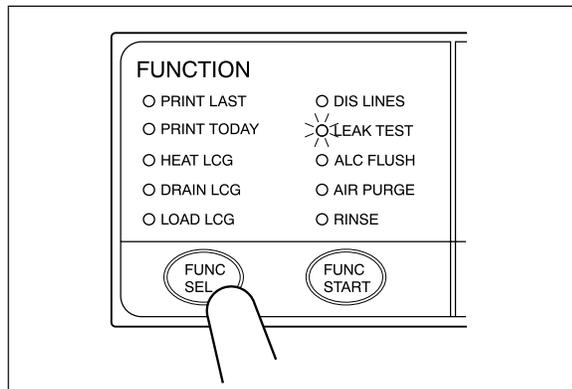


Figure 4.19

2. Press the FUNC START button on the subcontrol panel to start the water supply. When water supply starts, the TIME/CODE display on the main control panel shows a [] mark spinning as shown below.

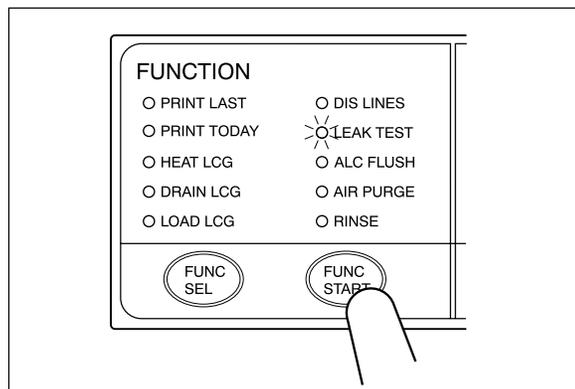


Figure 4.20

3. When the water supply completes, the buzzer beeps three times and the TIME/CODE display shows [10], which indicates 10 minutes. The time displayed on the main control panel counts down every minute.
4. When the lid is unlocked, make sure that the supply of water has stopped, and then step the foot pedal to open the lid.

NOTE

When the lid is opened, the TIME/CODE display on the main control panel is reset to [10] and the countdown restarts.

5. Bend the angulating section of the endoscope and make sure that air bubbles are not produced continuously from the outer surfaces of the endoscope and leak test air tube.

6. Close the lid to drain the cleaning fluid and finish leak test. At this time, the buzzer beeps and the main control panel displays [- -] to indicate the end of testing.

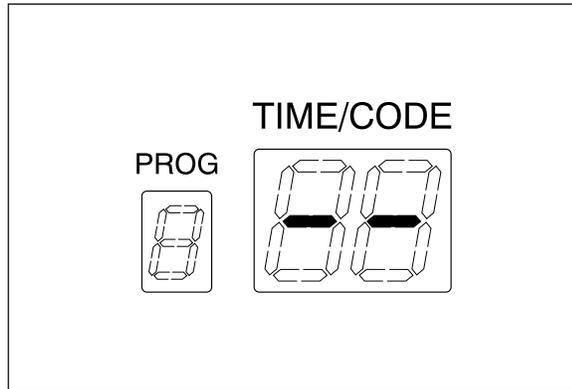


Figure 4.21

WARNING

Once the air leak test tube has been connected to a non-reprocessed endoscope, the outer surfaces of the tube should be disinfected. Put the tube through the reprocessing process without removing it from the endoscope.

NOTE

Even when testing is finished without closing the lid, the water will drain and the testing will end automatically in about 10 minutes. At this time, the main control panel displays error code [E92].

4.8 Connecting tube installation

Connect the equipment and endoscopes using the connecting tubes. To find out what connecting tubes can be used, refer to the “List of Compatible Endoscopes/Connecting Tubes <OER-Pro>” provided with this equipment. This section explains how to connect the provided connecting tubes to a typical gastrointestinal endoscope, focusing on how to connect to this equipment. For details on connecting the tubes to the endoscope, refer to the instruction manual provided with each connecting tube.

WARNING

- Attach all of the connecting tubes specified according to the type of the endoscope. If reprocessing is performed without attaching all of the required connecting tubes, reprocessing may be ineffective. Although the “List of Compatible Endoscopes/Connecting Tubes <OER-Pro>” shows the applicable connecting tubes for each endoscope, it may not list the latest endoscope models. If your endoscope model is not listed, contact Olympus for more information.
- Connect each connecting tube to the connector without folding or bending the tube. If the tube is bent or connected improperly, the fluid feed may be insufficient. This can reduce the effectiveness of sufficient reprocessing.
- Disconnect the connecting tubes from the connectors on the equipment whenever the tubes are not used. If reprocessing is performed while the tubes are connected, the effectiveness of cleaning/disinfection may be reduced.
- When closing the lid, be careful not to get the connecting tube caught between the cleaning tub and lid and make sure the endoscopes and the washing case are not touching the lid. Close the lid after ensuring that the cover of the washing case is closed. If the endoscopes and the washing case are touching the lid, adjust their positions and close the lid. If the lid is closed with pressing the endoscopes or accessories such as the washing case and the connecting tubes, the endoscopes, the accessories and the equipment may get damaged or water leakage may result.

CAUTION

When heating the disinfectant solution, disconnect the leak test air tube from the equipment and take it out from the cleaning tub.

Otherwise, disinfectant solution gets inside the leak test air tube and the endoscope. This could cause them malfunction.

1. Apply the connector on the endoscope side of the MAJ-1500 connecting tube into the suction cylinder and air/water feed cylinder of the endoscope, push the connecting tube straight into the cylinders and, while continuing to push, slide the tube toward the eyepiece/remote switches to secure it.
2. Attach the rubber cap of the MAJ-1500 connecting tube by pushing the cap into the instrument channel port of the endoscope.

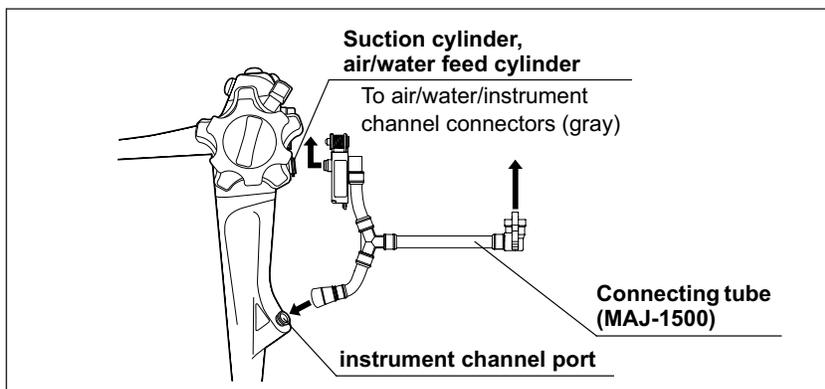


Figure 4.22

3. Connect the equipment-side connector of the connecting tube to the same-colored connector at the rear center of the cleaning tub by pushing the tube's connector until it clicks.

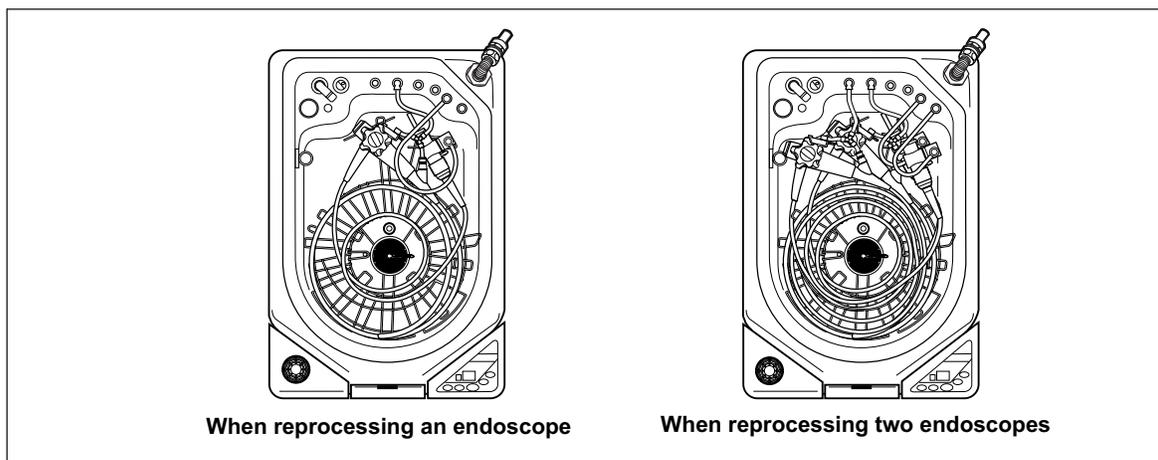


Figure 4.23

4. Check the following.

- The endoscopes should not touch the lid.
- The endoscopes should be located below the pin that marks the disinfecting liquid level.
- The scope ID tags should be located in the specified positions.
- The cover of the washing case should be closed and the washing case should be located in the specified position.

5. Close the lid by pushing it until it clicks.

4.9 Reprocessing

This section explains how to clean and disinfect endoscopes. Select from three different reprocessing programs [1] to [3]. If the selected reprocessing program incorporates the disinfectant solution heating process, the disinfectant solution is heated during reprocessing. For details on how to set the reprocessing programs, see Section 6.3, “Setting the reprocessing programs” on page 122.

WARNING

- When using one of the user-set programs [2] or [3], be sure to thoroughly check the cleaning/disinfection effects of the selected program beforehand.
- There is no data guaranteeing the sterilization effect of this equipment. Therefore, after cleaning/disinfecting an endoscope that requires sterilization, always be sure to sterilize the endoscope as instructed in its instruction manual.
- Make sure that the endoscopes are not touching the lid. If they are touching the lid, reprocessing may not be effective. Adjust the positions of the endoscopes whenever they are touching the lid.
- If the pipes in the equipment are clogged or suffered other problem, it will not be possible to properly feed fluids into the endoscope channels and the endoscope may not be effectively reprocessed. Be sure to confirm that the jets from the connecting tube connectors and the jet on the lid dome are functioning during reprocessing.

- Before starting the reprocessing process, always confirm the Program No. display of the main control panel and the INFO display (WASH/CYCLE, DIS/DAY, TEMP°C) of the subcontrol panel. Press the INFO SEL on the subcontrol panel to select PROGRAM INFO and check the cleaning time, disinfecting time, and disinfectant temperature. Then, press the INFO SEL again to select LCG USAGE and check the disinfection operation count and elapsed day count. If the cleaning time, disinfecting time and disinfection operation count are inappropriate, endoscope reprocessing may not have been effective.

1. Press the PROG button on the main control panel to select a program [1] to [3].

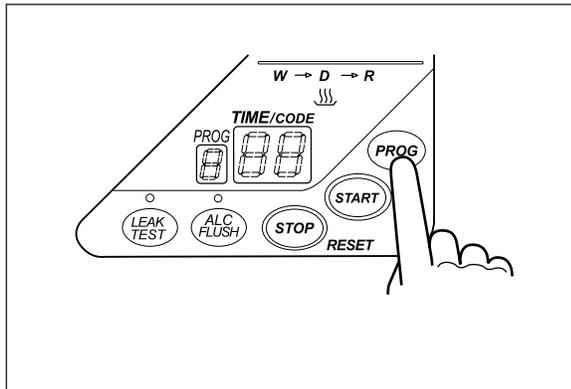


Figure 4.24

2. Press the START button on the main panel. In about 10 seconds, the water supply starts and the TIME/CODE display shows the remaining reprocessing time.

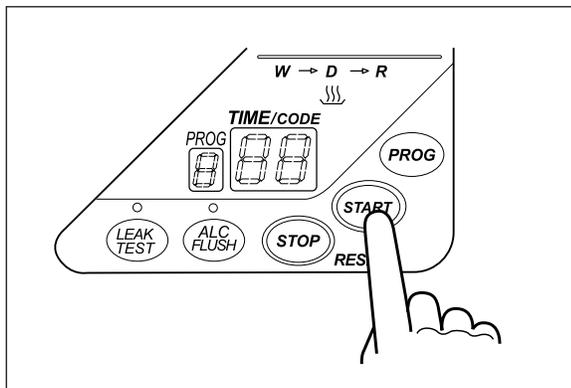


Figure 4.25

3. A jet of water is output from the hole on the connecting tube during reprocessing. Make sure that the water hits the lid (i.e., the air/water supply channels are not clogged or abnormal).

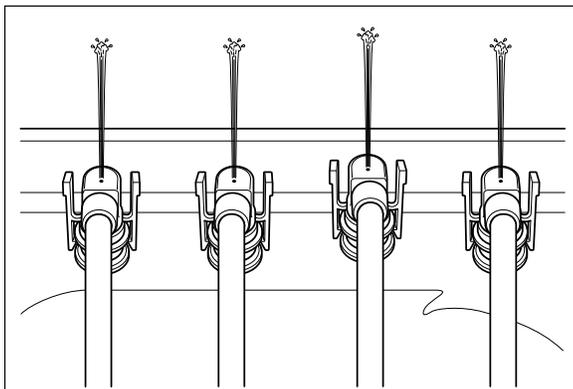


Figure 4.26

4. Make sure that a jet of water is output from the water supply/circulation nozzle to the dome of lid (i.e., the cleaning pump is not clogged or abnormal).

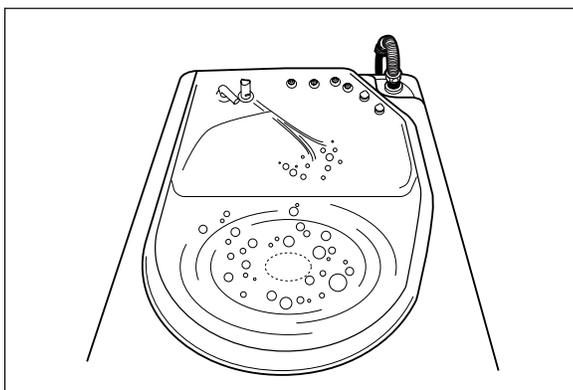


Figure 4.27

5. When reprocessing is finished, the buzzer beeps and the TIME/CODE display shows [- -] indicating that the process has ended.

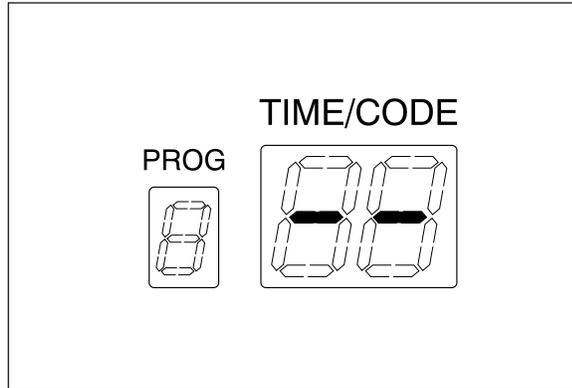


Figure 4.28

NOTE

- When the process is started, the standard time required to complete the process will blink on the display.
- The minimum required time for program [1] is about 23 minutes. This varies depending on the models and number of endoscopes, outside temperature, and water supply quantity.
- To display the correct time information, the equipment measures the water supply time of the first process, calculates the required process time automatically, and corrects the displayed value automatically at the beginning of cleaning (or end of water supply) during the reprocessing process.
- The equipment may also update the displayed time information during the rinsing process.

- The PRINT LAST lamp on the subcontrol panel lights up at the end of reprocessing. Press the FUNC START button if you want to print the reprocessing data.

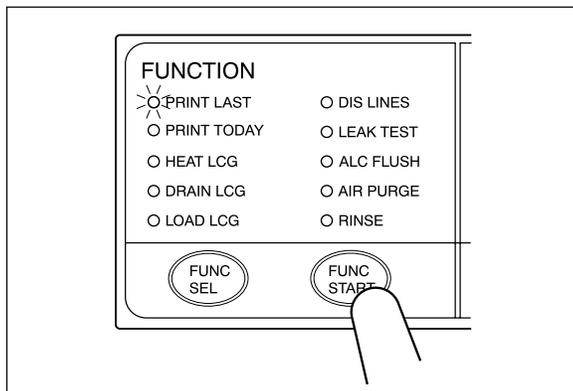


Figure 4.29

○ When the error code [E95] is displayed even though there is enough detergent in the tank

When the error code [E95] is displayed and the equipment has stopped even when detergent is left in the detergent tank, manually fill the detergent pipe with detergent as described below.

Check	Required items
	Syringe
	Tube

Table 4.1

WARNING

Before handling the detergent, read the precautions carefully and use it as instructed. Be sure that you fully understand what measures need to be taken if you get any detergent on your skin.

CAUTION

When handling the detergent, always wear appropriate personal protective equipment, such as eye wear, face mask, moisture-resistant clothing, and chemical-resistant gloves that fit properly and are long enough so that your skin is not exposed. All personal protective equipment should be inspected before use and replaced periodically before it is damaged.

1. Set the power switch to OFF.
2. Confirm that the equipment is not running, and step the foot pedal to open the lid.
3. Connect the provided syringe and tube.

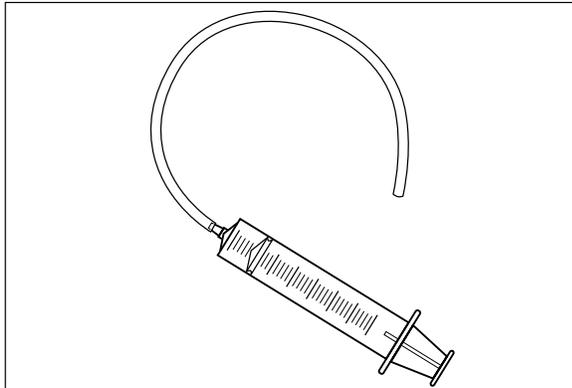


Figure 4.30

4. Connect the tube to the detergent nozzle inside the cleaning tub and suction it with the syringe until detergent comes out.

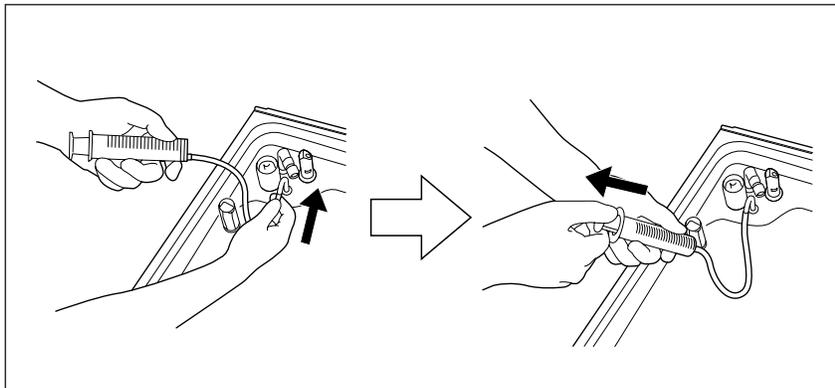


Figure 4.31

5. Pinch the tube at the closest extremity to the detergent nozzle with your fingers and disconnect the tube from the detergent nozzle.

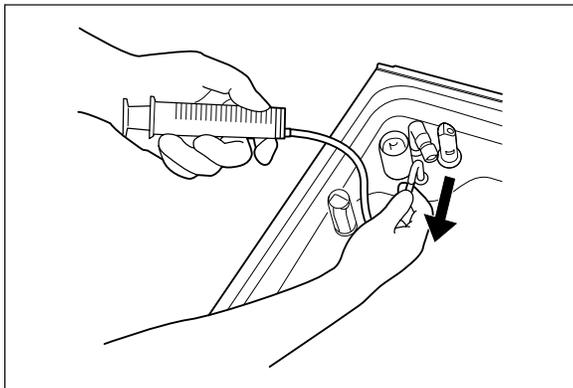


Figure 4.32

6. Rinse the syringe and tube thoroughly in running water, dry them well and store in a clean place.

4.10 Alcohol flushing

This process automatically flushes the endoscope channels with alcohol followed by air to help dry the channels.

WARNING

- When using the disinfectant solution and alcohol, Olympus recommends the use of gas filters and running this equipment in well-ventilated areas.
 - Wear a facemask, gloves, and protective clothes to minimize aspiration and skin contact.
 - Wear goggles for eye protection.

Refer to the following association's guidelines related to ventilation:

SGNA	(Society of Gastroenterology Nurses and Associates)
ASGE	(American Society of Gastroenterological Endoscopy)
APIC	(Association for Professionals of Infection Control and Epidemiology)
AORN	(Association of Preoperative Registered Nurses)
ASTM	(American Society for Testing and Materials)
OSHA	(Occupational Safety and Health Administration)
ACGIH	(American Conference of Governmental Industrial Hygienists)
NIOSH	(National Institute for Occupational Safety and Health)
AIA	(American Institute of Architects)

Do not handle the equipment if the operator shows any allergic symptoms even while wearing protective gear.

- When the alcohol flushing process is stopped due to an equipment error, do not use the endoscope and start the alcohol flushing process again from the beginning. Otherwise, alcohol may remain in the endoscope channel causing negative effects to the human body.

CAUTION

Do not perform alcohol flushing without connecting the connecting tubes. Otherwise, excessive pressure on the pipes in the equipment may damage it.

1. Make sure that the water supply faucet is open.
2. Make sure that the lid is closed.
3. Check the ALCOHOL indicator on the equipment's detergent/alcohol drawer to confirm that the alcohol level is above "MIN.". If the amount of alcohol is below the "MIN." line, add more alcohol as described in Section 3.5, "Inspecting the remaining quantity of alcohol, and replenishment" on page 43.

NOTE

Alcohol flushing includes the water feed and drain operations. These operations are intended to drain alcohol while diluting it.

○ Including alcohol flushing in a reprocessing program

Alcohol flushing can be incorporated in a reprocessing program.

1. Perform Step 1 of the procedure in Section 4.9, "Reprocessing" on page 80.
2. Press the ALC FLUSH button on the main control panel to select "ALC FLUSH".

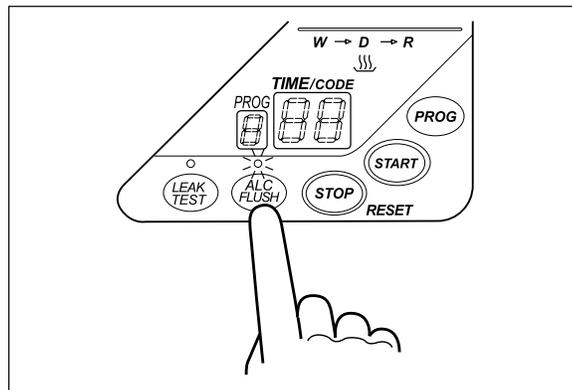


Figure 4.33

NOTE

The time required for the program is increased by 3 minutes when alcohol flushing is incorporated.

3. Go to Step 2 in the procedure in Section 4.9, "Reprocessing" on page 80 and follow the remaining steps.
4. When the reprocessing program finishes, the alcohol flushing process begins automatically.

5. When the alcohol flushing process finishes, the buzzer beeps and the TIME/CODE display shows [- -].

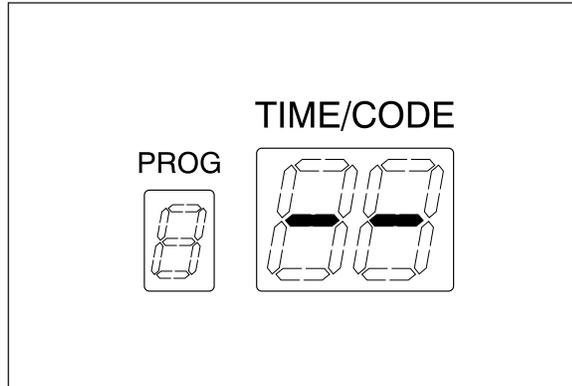


Figure 4.34

○ Performing alcohol flushing independently

1. Press the FUNC SEL button on the subcontrol panel to select “ALC FLUSH”.
2. Press the FUNC START button on the subcontrol panel. The TIME/CODE display of the main control panel shows [03], which indicates 3 minutes. The time displayed on the main control panel counts down every minute.
3. When the alcohol flushing process finishes, the buzzer beeps and the TIME/CODE display shows [- -].

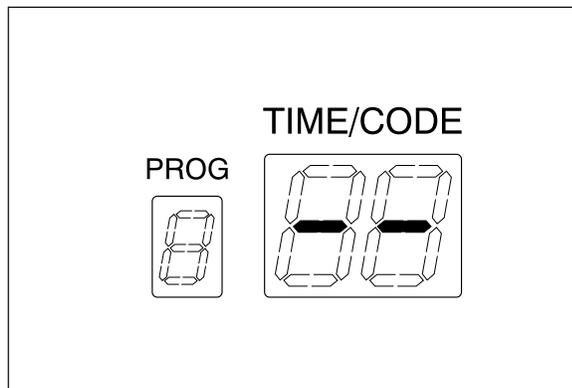


Figure 4.35

○ **If error code [E93] is displayed while alcohol is still present in the alcohol tank:**

If error code [E93] is displayed and the equipment is stopped while alcohol is still present in the alcohol tank, perform the following steps.

WARNING

- The alcohol used with the equipment should be 70% ethyl alcohol or isopropyl alcohol. Using any other kind of alcohol may result in malfunction of the equipment or the endoscope, difficulty drying the endoscope, or a hazard due to toxic vapor emitted from the alcohol.
- Alcohol is flammable and should be handled with extra care. At the end of the working day, be sure to drain the alcohol from the tank or to remove the tank from the equipment and store it at a safe distance from the equipment. For more information on draining the alcohol or removing the alcohol tank, refer to Section 5.3, "Removal or storage of alcohol" on page 113. Leaving alcohol in the tank could pose a fire hazard.
- Remove the alcohol in the alcohol tank and replace it with new alcohol at least once a week. Otherwise, the alcohol in the alcohol tank may degrade.
- Before handling the alcohol, read the precautions carefully and use it as instructed.

1. Connect the connecting tube to the connector at the rear center of the cleaning tub by pushing the tube's connector until it clicks.
2. Close the lid and make sure that the power switch is ON.
3. Connect the provided syringe and tube.

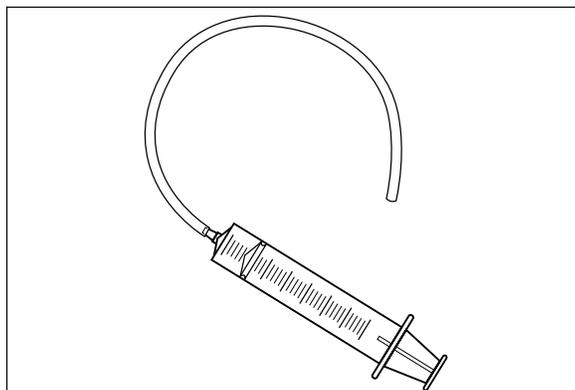


Figure 4.36

4. Disconnect the ventilation tube from the guide of the alcohol tank.

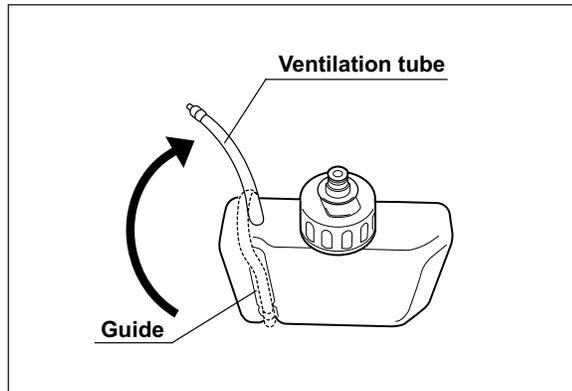


Figure 4.37

5. Fill the syringe with air and insert the tube connected to the syringe all the way into the far end of the alcohol tank ventilation tube.

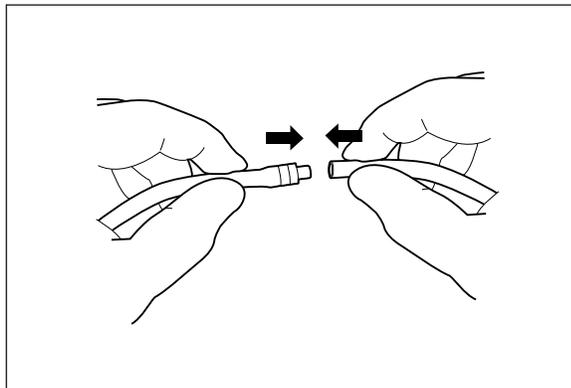


Figure 4.38

6. Press the FUNC SEL button on the subcontrol panel to select “ALC FLUSH”, and press the FUNC START button. Flush air in the syringe within 30 seconds.

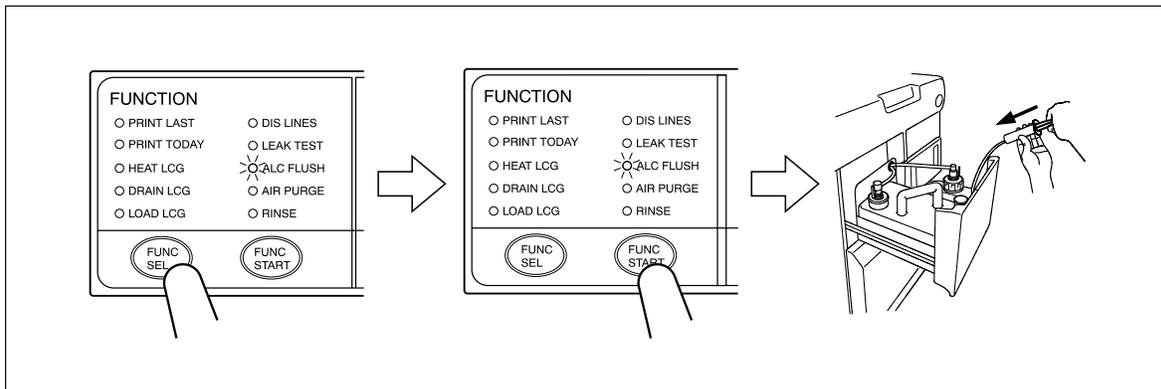


Figure 4.39

7. Press the STOP/RESET button on the main control panel to stop alcohol flushing, and then disconnect the syringe's tube from the ventilation tube.

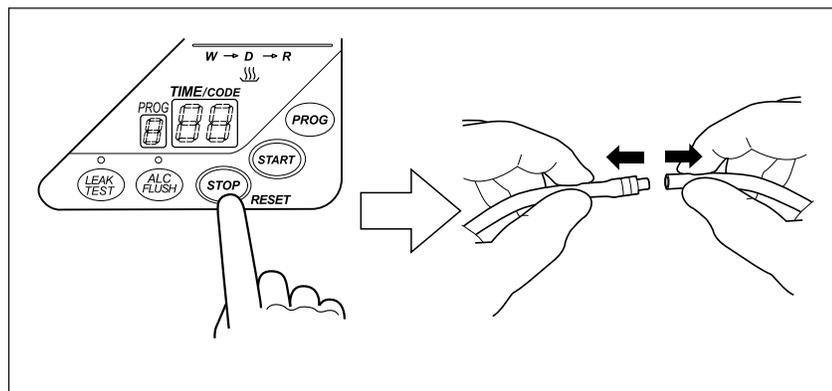


Figure 4.40

8. Disconnect the tube from the cap on the alcohol tank, remove the tank from the detergent/alcohol drawer and insert the ventilation tube into the guide.

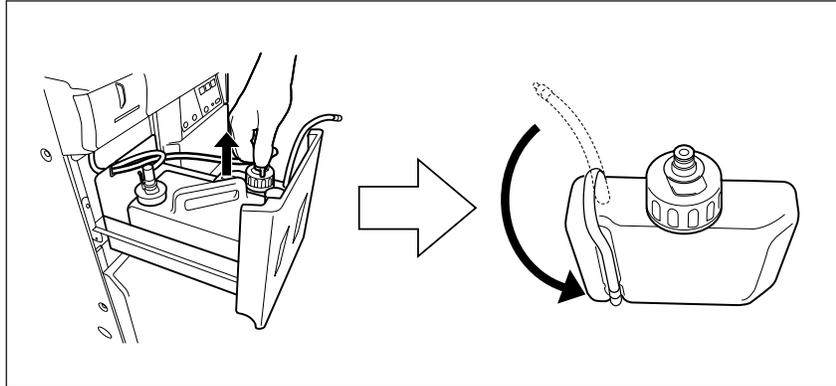


Figure 4.41

9. After confirming that alcohol is not spilled from the alcohol tank, place the alcohol tank on the detergent/alcohol drawer and connect the tube that was connected to the cap.

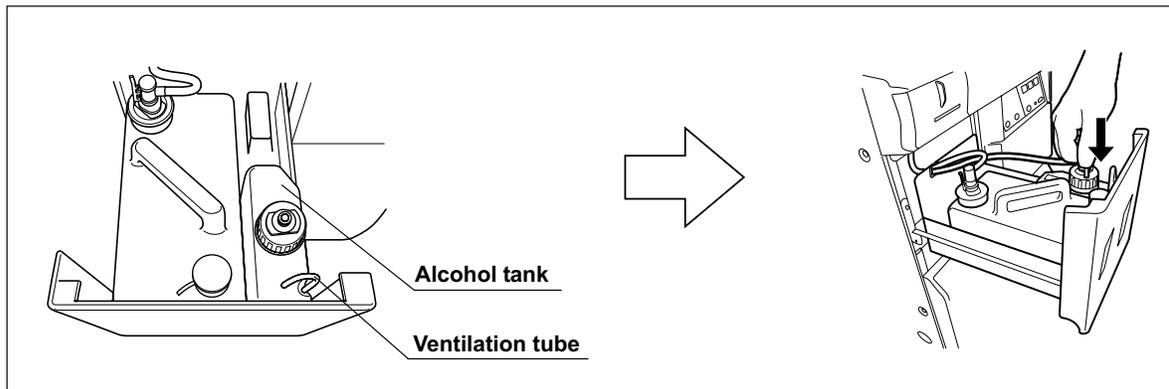


Figure 4.42

10. Close the detergent/alcohol drawer.
11. Rinse the syringe and tube with running water, dry them completely and store in a clean place.

4.11 Removing the endoscopes

This section describes how to take the endoscopes out of the cleaning tub after disconnecting the connecting tubes. Also be sure to remove the valves and other items from the washing case.

WARNING

- Disinfectant vapor may still be in the cleaning basin immediately after the lid is opened. Be careful not to inhale too much vapor.
- If a connecting tube is bent or is not properly connected to the connector on the equipment or endoscope, reprocessing may not have been effective. Before disconnecting the connecting tube from the endoscope, check the connection by gently pulling the connecting tube.
- If any irregularity is observed with the connecting tube connection, connect it correctly and reprocess the endoscopes again. Also, if any irregularity is observed with a connecting tube, replace it with a new one before reprocessing the endoscopes again. Otherwise, the effectiveness of reprocessing may be reduced.
- When taking the endoscopes out of the equipment, make sure the endoscopes don't touch any parts of the reprocessor that have not been disinfected. This may contaminate the endoscopes. If this happens, you must reprocess the endoscope again.
- Wear sterilized gloves when taking reprocessed endoscopes out of the equipment. Otherwise, the endoscopes may be contaminated and cause infections.

CAUTION

Prevent water from getting into the leak test air tube or the endoscope may be damaged the next time it is used.

1. Make sure that the program number on the main control panel shows the selected program number and the TIME/CODE display shows [- -] that the reprocessing process is completed.
2. Step the foot pedal to open the lid.
3. Check the condition of the connecting tubes.
 - The connecting tubes should not be bent.
 - The connecting tubes should be connected firmly to the connectors.
 - The connecting tubes should be free of abnormalities including such as cracks, scratches, etc.
4. Disconnect the connecting tubes and leak test air tube from each endoscope.
5. Take the endoscopes and valves out of the cleaning tub. Wipe off any water using a piece of sterilized gauze. Attach the auxiliary water inlet cap to the auxiliary water inlet.
6. Store the endoscopes and valves in a clean place.
7. Take the connecting tubes and leak test air tubes out of the cleaning tub, wipe off any water using a piece of sterilized gauze, and store them in a clean place.

4.12 Printing of the reprocessing results

You can print the reprocessing results and the details of any error codes. The printed data can be selected from “PRINT PREVIOUS”, “PRINT ONE DAY” and “PRINT FULL LOG”.

Print Option	Subcontrol panel lamps	Description
PRINT PREVIOUS	“PRINT LAST”	Prints the results of the last reprocessing process or the latest error code output.
PRINT ONE DAY	“PRINT TODAY”	Prints the results of all of the reprocessing process performed that day.
PRINT FULL LOG	“PRINT LAST” and “PRINT TODAY”	Prints up to 60 of all the last reprocessing process stored in the equipment.

Table 4.2

WARNING

Do not touch the printer and the area around it during and immediately after printing as they will be very hot and may cause skin burns.

CAUTION

- The printed information does not guarantee the reprocessing of endoscopes. Use the printed sheets as a log of the equipment's operations.
- Printed data may be lost as the paper ages and deteriorates. If you want to store this information for a long period, transfer it to a medium with long-term storage capability.
- To prevent printer failure or printer paper roll discoloration, do not touch the printer or printer paper roll with wet hands.
- To prevent the equipment from malfunctioning, do not moisten the printer or printer paper roll.
- Always keep the printer cover closed. Otherwise, the printer and/or printer paper roll may get wet and cause a malfunction.
- To avoid damage to or deterioration of the printout, do not allow the paper to make contact with the following:
 - Alcohol or EndoRapid 980 ml pack (Olympus-designated detergent)
 - Oil, fat, organic solvents, or chemicals (medical, industrial or cosmetic)
 - Stamp ink
 - Water
 - Materials containing plasticizer (PVC film, desk mat, leather products, journal cover, etc.)
 - Certain stationery (plastic tape, mending tape, fluorescent-ink pen, oil-ink pen, adhesives other than starchy paste)
- To prevent discoloration of unused paper, store the printer paper roll without opening in a place meeting the following conditions.
 - Dark, cool place
 - Place not exposed to NO_x, SO_x, or O₃ (ozone)

- To prevent discoloration of paper after printing, store it in a place meeting the following conditions. If it is required to store the printed results for a long period, it is recommended to copy the information printed on the paper to durable sheets and store the copies.
 - Dark, cool place
 - Place not exposed to NO_x, SO_x, or O₃ (ozone)
- When red lines appear on both sides of the printer paper roll during printing, replace the printer paper roll.

Print Previous (Printing the results of the last reprocessing process)

1. At the end of the reprocessing process, make sure that “PRINT LAST” is selected on the subcontrol panel.

NOTE

The “PRINT LAST” selection on the subcontrol panel is deselected when any button is pressed after the end of the process. If this happens, press the FUNC SEL button on the subcontrol panel to select “PRINT LAST”.

2. Press the FUNC START button on the subcontrol panel. The printer prints the results of the last reprocessing process.

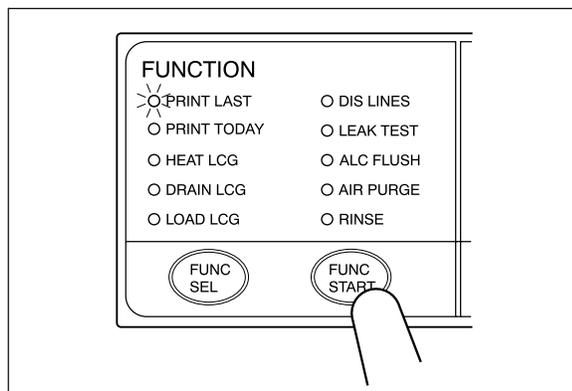


Figure 4.43

3. The buzzer beeps and the paper feed stops when printing completes. Cut the printed part of paper and ensure that information is printed correctly.

NOTE

- If the printout is not satisfactory, printing can be restarted. Press the FUNC SEL button on the subcontrol panel to select “Print Previous” and then press the FUNC START button.
- The same information can be printed several times until the next reprocessing process is started.
- For the printed information (see Figure 4.44).
- If the RFID function has not been enabled at the factory, the columns for the serial numbers of endoscopes, model names of endoscopes, user number, and user name will be left blank.

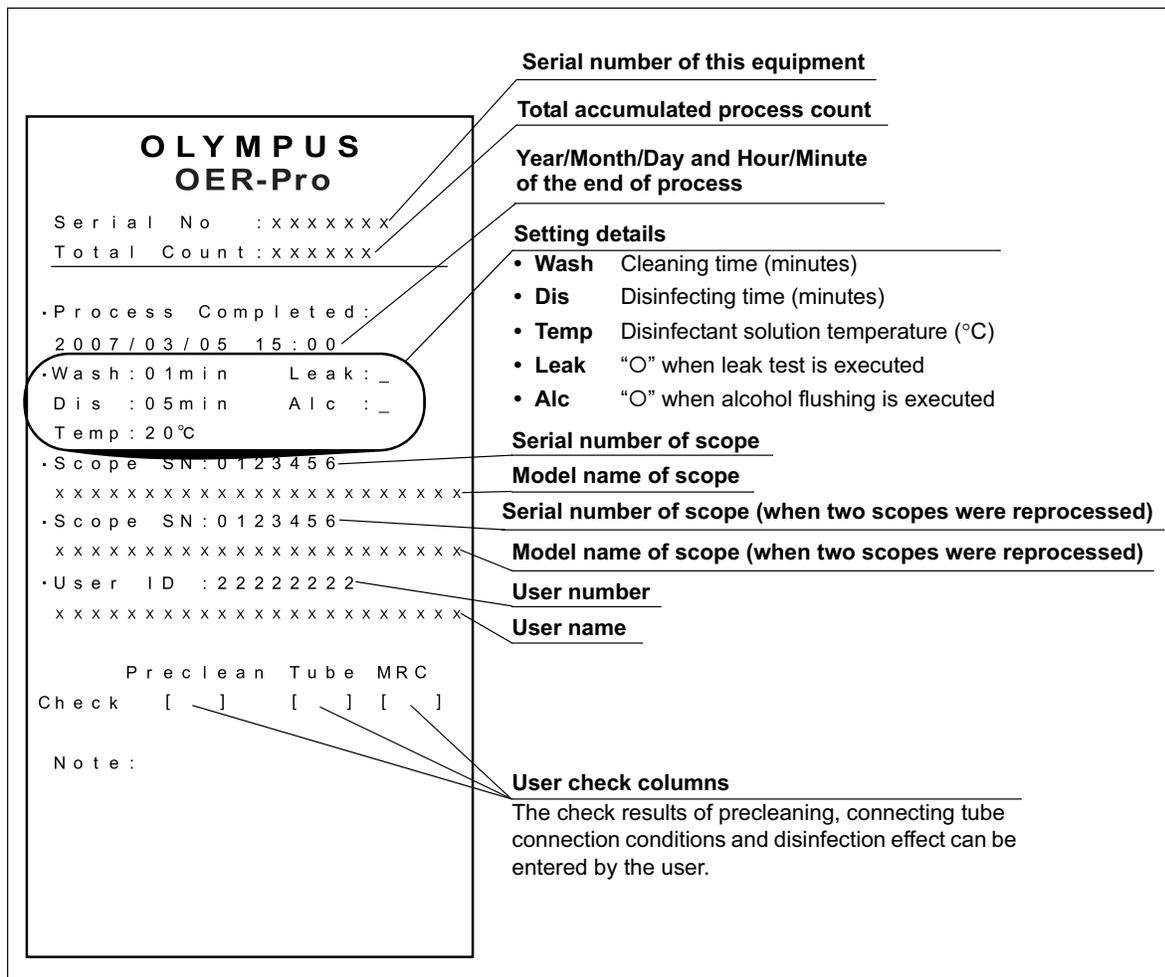


Figure 4.44

If error code [E94] is displayed during printing

1. If the paper runs out while printing, the main control panel displays error code [E94]. Press the STOP/RESET button on the main control panel to clear the error code.
2. Replace the printer paper roll.
3. After the roll has been replaced, press the FUNC SEL button on the subcontrol panel to select "PRINT LAST".
4. Press the FUNC START button on the subcontrol panel. The printer starts printing the reprocessing results again from the beginning.
5. If you want to print only the information after the point where printing was stopped with error code [E94], do not clear the error code and simply replace the printer paper roll.

○ If the printer paper roll is jammed

CAUTION

- If the end of the already-printed printer paper roll is jammed in the printer, do not pull the paper by force. Doing so could damage the printer.
- When the printer paper roll is replaced without clearing error code [E94], printing restarts at the moment the printer paper roll is inserted in the printer so there is a risk of jamming the end of the printer paper roll in the printer. When replacing the printer paper roll without clearing error code [E94], be sure to hold the end of the printer paper roll.

1. Press the STOP/RESET button to stop printing.
2. Raise the release lever, rotate the paper feed roller toward the inner part of the printer and take the printer paper roll out of the printer.
3. Install the printer paper roll again as described in Section 7.17, "Installing the printer paper roll" on page 211.

Print Daily (Prints the results of all of the reprocessing events for that day.)

1. Press the FUNC SEL button on the subcontrol panel to select “PRINT TODAY”.
2. Press the FUNC START button on the subcontrol panel. The printer prints the results of the day’s reprocessing events in reverse order, beginning with the most recent.

NOTE

Only the results of successfully completed reprocessing events are printed. The results of processes that were aborted due to an error code are not printed out.

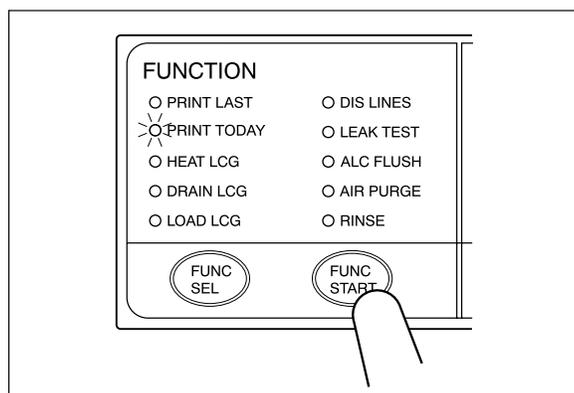


Figure 4.45

3. The buzzer beeps and paper feed stops when printing is finished. Cut the printed part of paper and ensure that information is printed correctly.

NOTE

- If the printout is not satisfactory, printing can be restarted. Press the FUNC SEL button on the subcontrol panel to select “PRINT TODAY” and then press the FUNC START button.
- The same information can be printed several times in the same day, until the next reprocessing process is started.
- For the printed information (see Figure 4.46).
- If the RFID function has not been enabled at the factory, the columns for the serial numbers of endoscopes, model names of endoscopes, user number, and user name will be left blank.

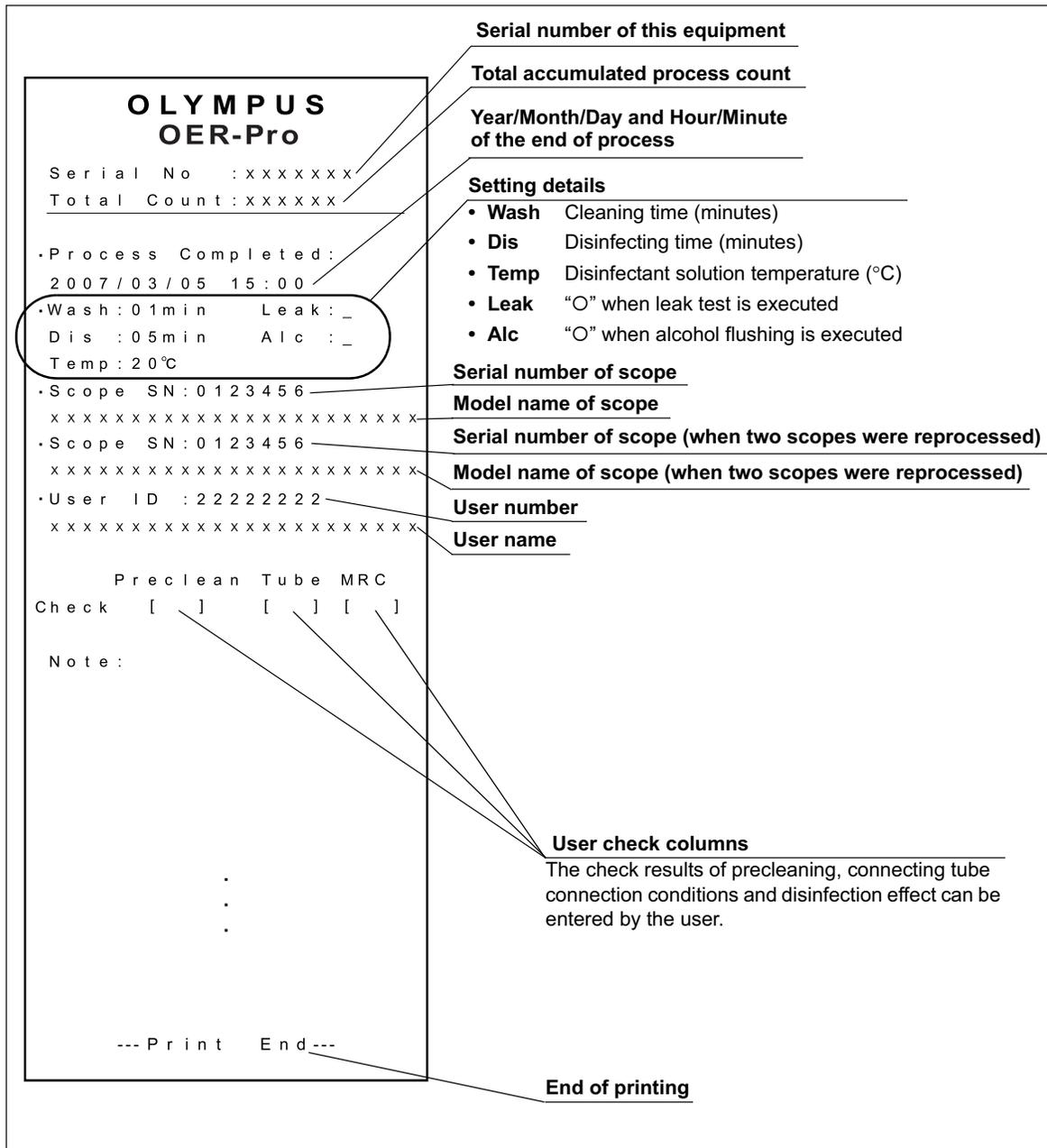


Figure 4.46

If error code [E94] is displayed during printing

1. If the paper runs out while printing, the main control panel displays error code [E94]. Press the STOP/RESET button on the main control panel to clear the error code.
2. Replace the printer paper roll.
3. After replacing the printer paper roll, press the FUNC SEL button on the subcontrol panel to select "PRINT TODAY".
4. Press the FUNC START button on the subcontrol panel. The printer starts printing the reprocessing results again from the beginning.
5. If you want to print only the information after the point where printing was stopped with error code [E94], do not clear the error code and simply replace the printer paper roll.

○ If the printer paper roll is jammed

CAUTION

- If the end of the already-printed printer paper roll is jammed in the printer, do not pull the paper by force. Doing so could damage the printer.
- When the printer paper roll is replaced without clearing error code [E94], printing restarts at the moment the printer paper roll is inserted in the printer so there is a risk of jamming the end of the printer paper roll in the printer. When replacing the printer paper roll without clearing error code [E94], be sure to hold the end of the printer paper roll.

1. Press the STOP/RESET button to stop printing.
2. Raise the release lever, rotate the paper feed roller toward the inner part of the printer and take the printer paper roll out of the printer.
3. Install the printer paper roll again as described in Section 7.17, "Installing the printer paper roll" on page 211.

Print Full Log (Printing of all the reprocessing results stored in equipment.)

1. Press the FUNC SEL button on the subcontrol panel so that both the PRINT LAST and PRINT TODAY indicators light up.
2. Press the FUNC START button on the subcontrol panel. The printer prints the results of all of the reprocessing events stored in memory in reverse order, beginning with the most recent.

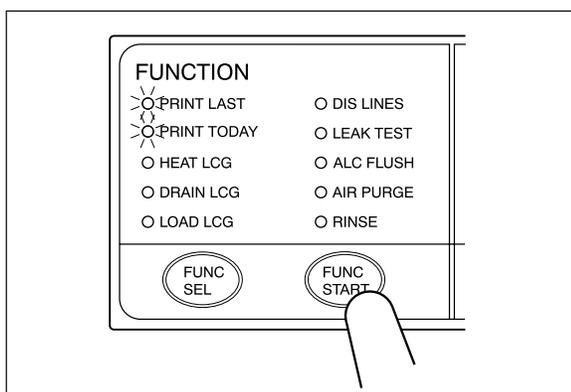


Figure 4.47

3. The buzzer beeps and paper feed stops when printing is finished. Cut the printed part of paper and ensure that the information is printed correctly.

NOTE

- To light the PRINT LAST and PRINT TODAY indicators simultaneously, first press the FUNC SEL button so that the PRINT LAST indicator lights and then press the FUNC SEL button again.
- Only the results of successfully completed reprocessing events are printed. The results of processes that were aborted due to an error code are not printed out.
- If the printout is not satisfactory, printing can be restarted. Press the FUNC SEL button on the subcontrol panel so that both the PRINT LAST and PRINT TODAY indicators light up and then press the FUNC START button.
- The same information can be printed several times until the next reprocessing process is started.
- For the printed information (see Figure 4.48).

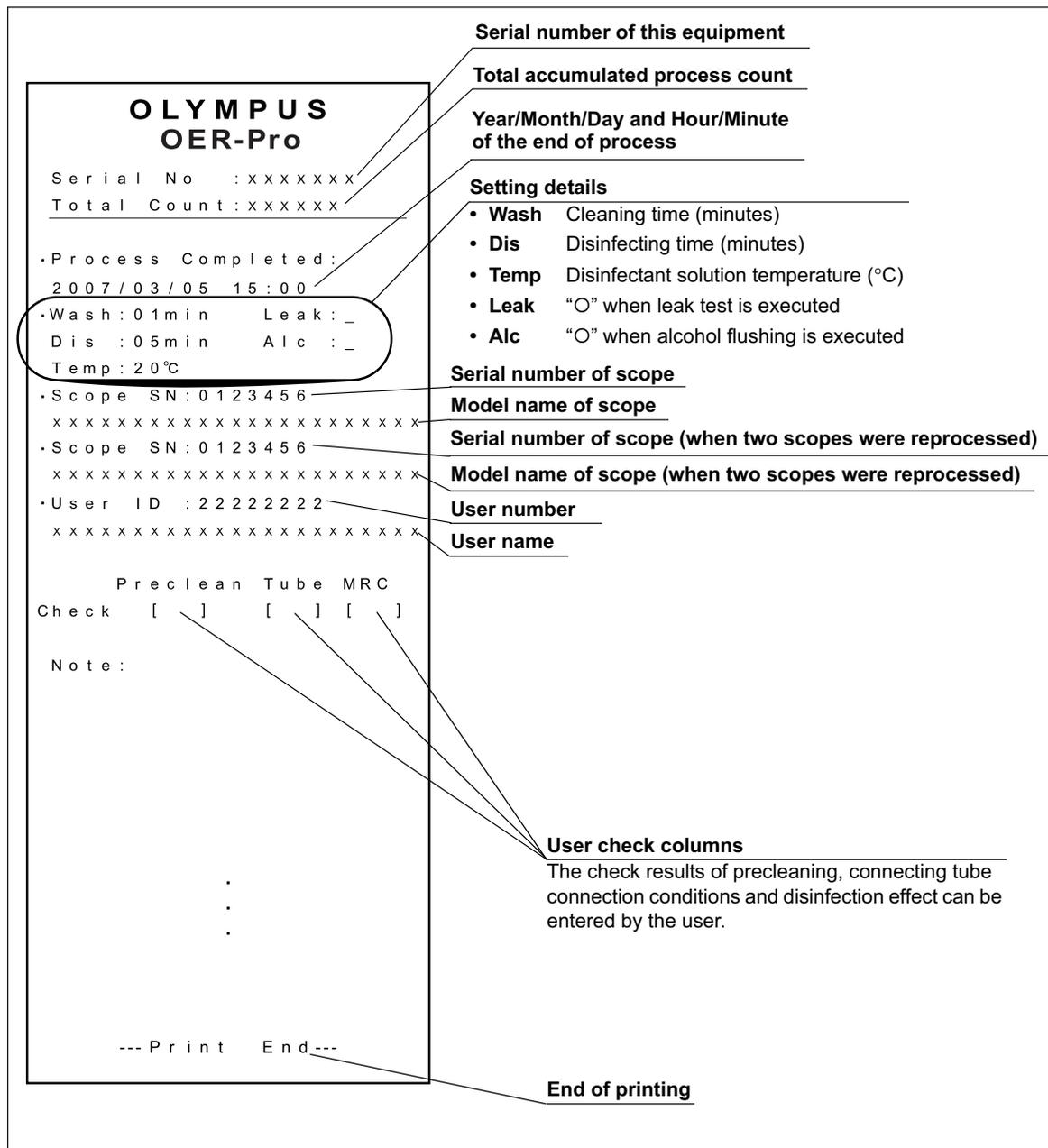


Figure 4.48

If error code [E94] is displayed during printing

1. If the paper runs out while printing, the main control panel displays error code [E94]. Press the STOP/RESET button on the main control panel to clear the error code.
2. Replace the printer paper roll.
3. After replacement, press the FUNC SEL button on the subcontrol panel so that both the PRINT LAST and PRINT TODAY indicators light up.
4. Press the FUNC START button on the subcontrol panel. The printer starts printing all of the stored reprocessing results again from the beginning.
5. If you want to print only the information after the point where printing was stopped with error code [E94], do not clear the error code and simply replace the printer paper roll.

○ If the printer paper roll is jammed

CAUTION

- If the end of the already-printed printer paper roll is jammed in the printer, do not pull the paper by force. Doing so could damage the printer.
- When the printer paper roll is replaced without clearing error code [E94], printing restarts at the moment the printer paper roll is inserted in the printer so there is a risk of jamming the end of the printer paper roll in the printer. When replacing the printer paper roll without clearing error code [E94], be sure to hold the end of the printer paper roll.

1. Press the STOP/RESET button to stop printing.
2. Raise the release lever, rotate the paper feed roller toward the inner part of the printer and take the printer paper roll out of the printer.
3. Install the printer paper roll again as described in Section 7.17, "Installing the printer paper roll" on page 211.

Printing the error code details

1. When an error code is displayed, press the FUNC SEL button on the subcontrol panel to select "PRINT LAST".
2. Press the FUNC START button on the subcontrol panel. The printer prints the error code detail information.

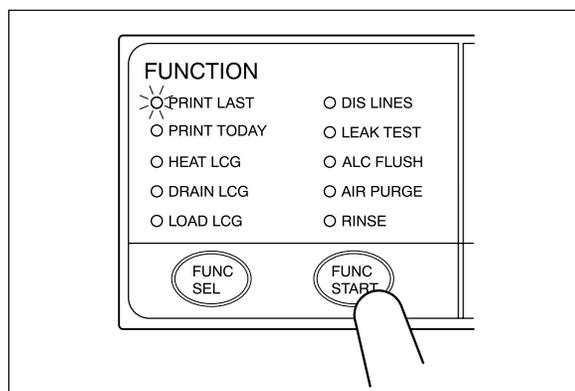


Figure 4.49

3. The buzzer beeps and paper feed stops when printing is finished. Cut the printed part of paper and ensure that the information is printed correctly.

NOTE

- If the printout is not satisfactory, printing can be restarted. Press the FUNC SEL button on the subcontrol panel so that both the PRINT LAST and PRINT TODAY indicators light up and then press the FUNC START button.
- The same information can be printed several times until the next reprocessing process is started.
- For the printed information (see Figure 4.50).
- If the RFID function has not been enabled at the factory, the columns for the serial numbers of endoscopes, model names of endoscopes, user number, and user name will be left blank.

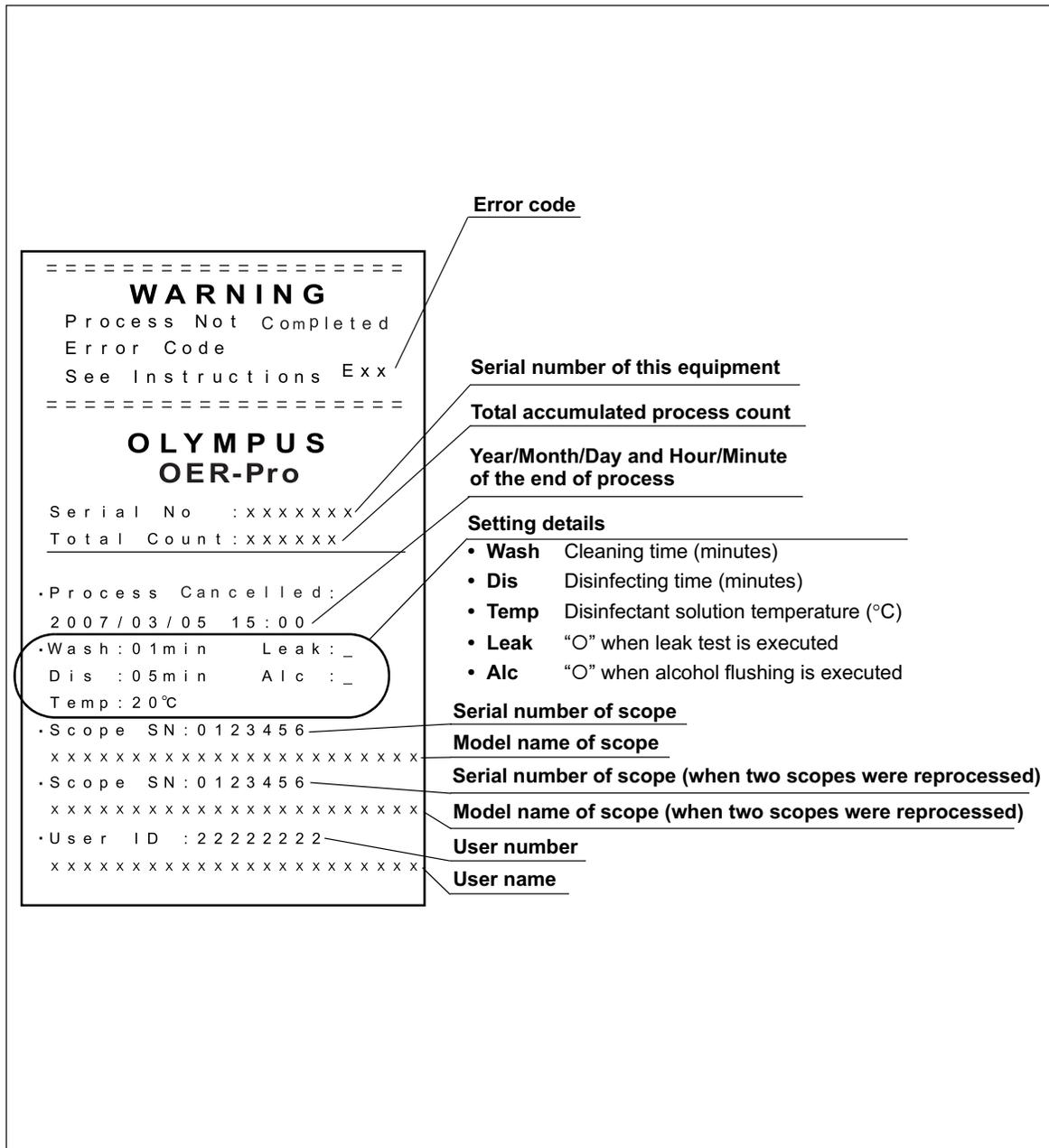


Figure 4.50

If error code [E94] is displayed during printing

1. If the paper runs out while printing, the main control panel displays error code [E94]. Press the STOP/RESET button on the main control panel to clear the error code.
2. Replace the printer paper roll.
3. After the roll has been replaced, press the FUNC SEL button on the subcontrol panel to select "PRINT LAST".
4. Press the FUNC START button on the subcontrol panel. The printer starts printing the reprocessing results again from the beginning.
5. If you want to print only the information after the point where printing was stopped with error code [E94], do not clear the error code and simply replace the printer paper roll.

○ If the printer paper roll is jammed

CAUTION

- If the end of the already-printed printer paper roll is jammed in the printer, do not pull the paper by force, as this could damage the printer.
- When the printer paper roll is replaced without clearing error code [E94], printing restarts at the moment the printer paper roll is inserted in the printer so there is a risk of jamming the end of the printer paper roll in the printer. When replacing the printer paper roll without clearing error code [E94], be sure to hold the end of the printer paper roll.

1. Press the STOP/RESET button to stop printing.
2. Raise the release lever, rotate the paper feed roller toward the inner part of the printer and take the printer paper roll out of the printer.
3. Install the printer paper roll again as described in Section 7.17, "Installing the printer paper roll" on page 211.