

Chapter 5 End-of-Day Checks

To ensure safe, reliable operation, inspect and clean all parts of the device regularly.

Check	Checks at the end of every working day
	5.1 Turning the power OFF, closing the faucet and cleaning the outer surface
	5.2 Cleaning the mesh filters
	5.3 Removal or storage of alcohol
	5.4 Cleaning the fluid level sensor

Table 5.1

Check	Required items
	70% ethyl alcohol or isopropyl alcohol
	Clean cloth
	Filter cleaning brush

Table 5.2

WARNING

- Be sure to inspect and clean the equipment as described in this chapter. Otherwise, the functions and performance of the equipment may not operate properly.
- If any irregularity is observed, do not use the device and contact Olympus. If the device is used when an irregularity is observed, the device may malfunction. Water leakage, electric shock, burns, and/or fire may also result.
- When inspecting the device, 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.

5.1 Turning the power OFF, closing the faucet and cleaning the outer surface

WARNING

- To prevent water leakage, be sure to close the water faucet at the end of the working day.
- After using the device, dry it thoroughly (so that no water remains in the cleaning tub) and close the lid before storage. Otherwise, germs may penetrate the device and prevent effective reprocessing the next time the unit is used.
- If the equipment has been stored after closing the lid without drying the cleaning tub completely, thoroughly wipe the inside of the cleaning tub with a cloth moistened with 70% ethyl alcohol or isopropyl alcohol before the next use.

1. Close the water faucet.
2. Press the power switch to OFF.
3. Using a clean cloth moistened with neutral detergent solution, clean every part of the device including the front and back of the lid, the lid packing, the edge and inside of the cleaning tub and the control panel, then wipe with a dry clean cloth. To prevent growth of various germs, it is also recommended to wipe every part of the equipment with a cloth moistened with 70% ethyl alcohol or isopropyl alcohol.

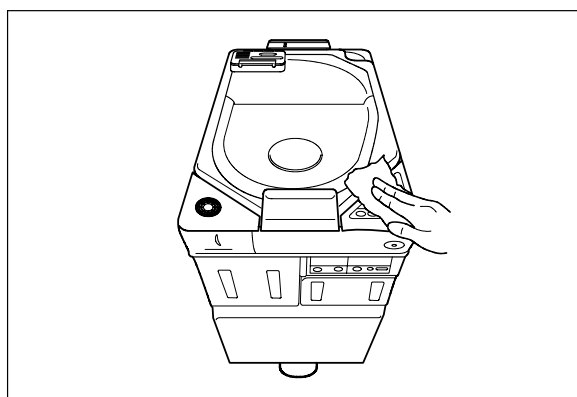


Figure 5.1

4. Step the foot pedal to open the lid, let the inside of the cleaning tub dry completely (so that no water remains in the tub), and close the lid. If the device has been stored after closing the lid without drying the cleaning tub completely, wipe the inside of the cleaning tub with a cloth moistened with 70% ethyl alcohol or isopropyl alcohol completely before the next use.

5.2 *Cleaning the mesh filters*

Clean the two circulation port mesh filters and the drain port mesh filter.

WARNING

Clogging a mesh filter not only impairs the operation of the device but may also cause a scope malfunction or prevent effective reprocessing.

CAUTION

- If the mesh filters have been removed, be sure to put them back in their original positions before using the device. If you forget to attach the mesh filters, the pump may malfunction and/or foreign objects might get into the pipes or scope nozzles and clog them.
- When cleaning the mesh filters, take care not to leave brush hair or cotton swab fiber in the meshes. Otherwise, their filtering effectiveness may be reduced.
- If a mesh filter is dropped or subjected to an impact, make sure that the mesh shape is not deformed. Otherwise, the filtering effect may degrade.
- Two mesh filters are installed on the outer and inner sides of the circulation port. Be sure to remove, inspect, and clean both of them.

1. Step the foot pedal to open the lid.
2. Remove the mesh filters from the cleaning tub.

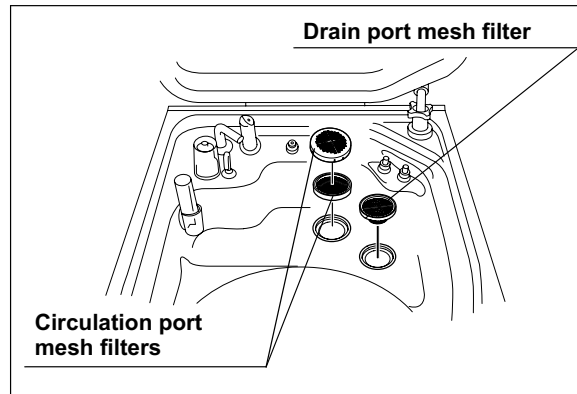


Figure 5.2

3. Clean each mesh filter in running water using a brush, cotton swab, etc.

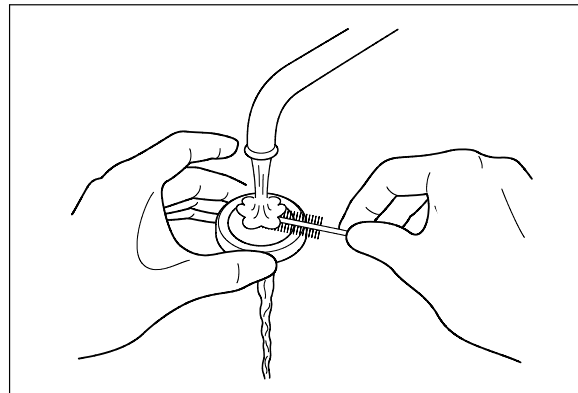


Figure 5.3

4. Attach the mesh filters in their original positions.

5.3 Removal or storage of alcohol

If alcohol is left in the tank after work, a fire hazard may occur. Be sure to remove alcohol from the tank or take the tank out of the equipment and store it safely away from the device at the end of the working day.

WARNING

Before handling the alcohol, read the precautions carefully and use it as instructed.

CAUTION

Do not tilt the alcohol tank while alcohol is inside. Otherwise, the alcohol may spill.

○ Removing alcohol from the alcohol tank

1. Pull out the detergent/alcohol drawer.

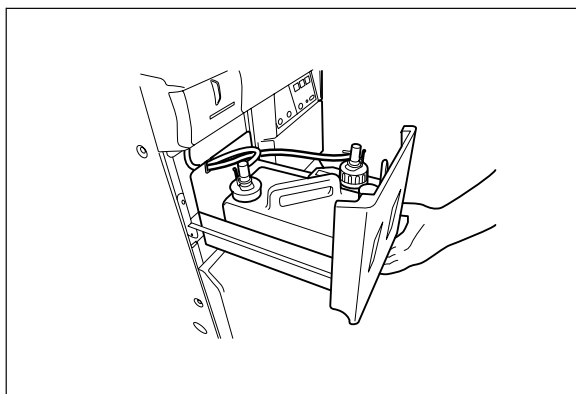


Figure 5.4

2. While pushing the lock lever on the connector of the tube connected to the cap of the alcohol tank.

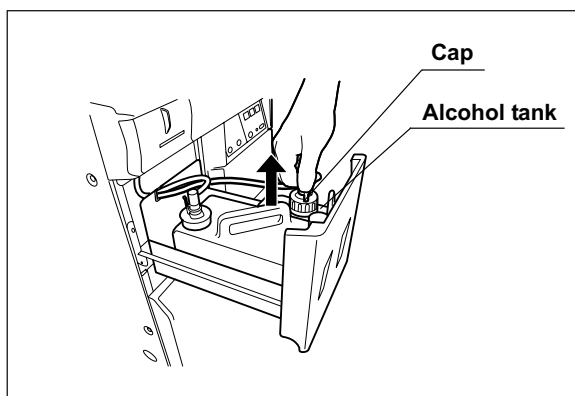


Figure 5.5

3. Take the alcohol tank out of the device.
4. Turn the alcohol tank cap to remove it, discharge the alcohol from the tank and dry the inside.

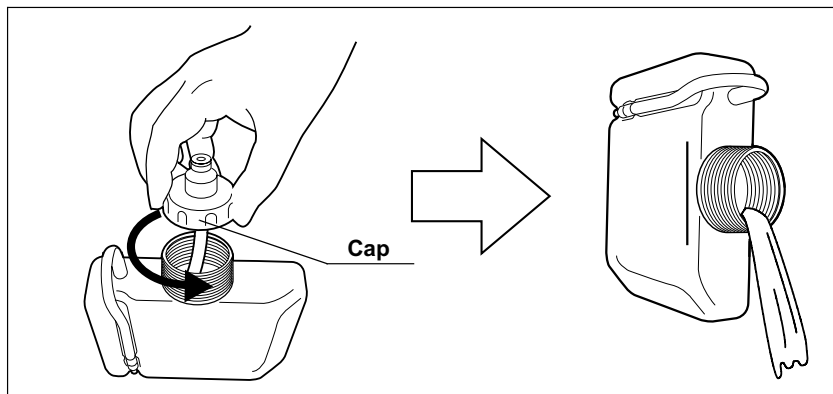


Figure 5.6

5. Attach the alcohol tank cap, place the alcohol tank in the detergent/alcohol drawer and connect the tube to the alcohol tank cap.

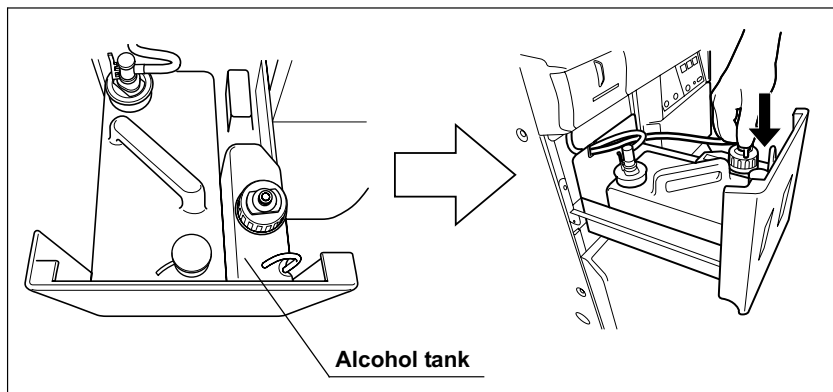


Figure 5.7

6. Close the detergent/alcohol drawer.

○ Storing alcohol tank outside the device

WARNING

Remove the alcohol in the alcohol tank and replace with new alcohol at least every week. Otherwise, the alcohol in the alcohol tank may degrade.

1. Pull out the detergent/alcohol drawer.

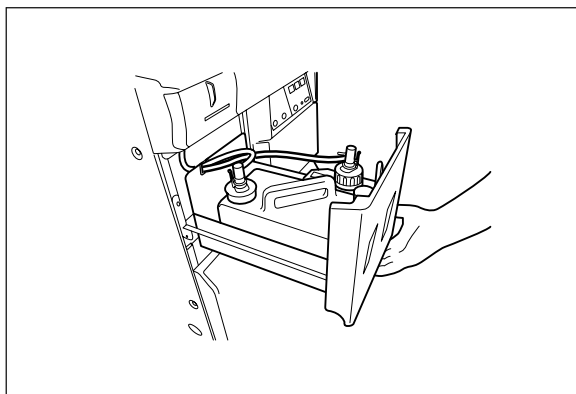


Figure 5.8

2. While pushing the lock lever on the connector of the tube connected to cap of the alcohol tank, disconnect the tube.

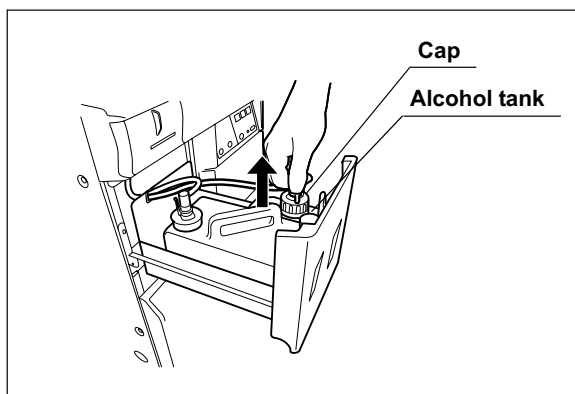


Figure 5.9

3. Take the alcohol tank out of the device.

4. Disconnect the ventilation tube of the alcohol tank from the guide, and insert the end of the ventilation tube all the way into the opening on the cap.

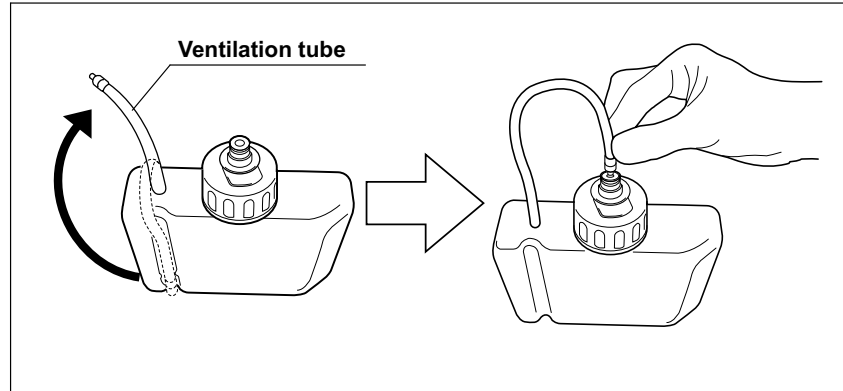


Figure 5.10

5. Seal the alcohol tank and store it in a place away from the device.
6. Close the detergent/alcohol drawer.

5.4 Cleaning the fluid level sensor

After using the device, clean the fluid level sensor to ensure correct detection of the fluid level in the cleaning tub.

CAUTION

- Do not use the detergent to clean the fluid level sensor. If any detergent is left in the sensor, it may not be able to correctly detect the water level and an error stoppage due to erroneous detection may occur.
- Take care not to damage the fluid level sensor when cleaning it. If the sensor is damaged, it may not be able to correctly detect water level and an error stoppage due to erroneous detection may occur.
- Be sure to wipe any moisture completely off the fluid level sensor. Otherwise, the sensor may not be able to correctly detect the water level.
- Be sure to turn the device OFF before cleaning the fluid level sensor. Otherwise, the device may malfunction.
- Be sure to attach the covers to the fluid level sensor after cleaning. Otherwise, the sensor may not be able to correctly detect the water level and the device may malfunction.

1. Press the power switch to OFF.
2. Push the water sensor cover (upper) and lift it up to remove as shown with the arrow in Figure 5.11.

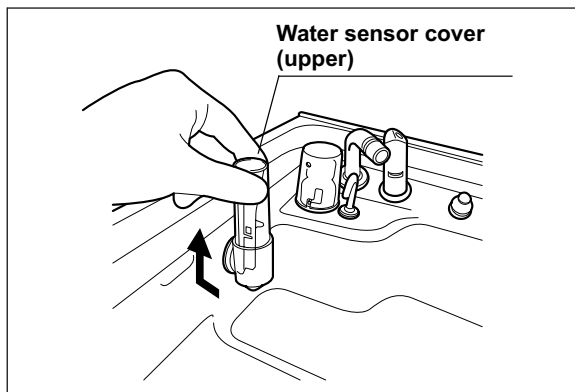


Figure 5.11

3. Lift the lower part of the water sensor cover (lower) and pull it up to remove as shown with the arrow in Figure 5.12.

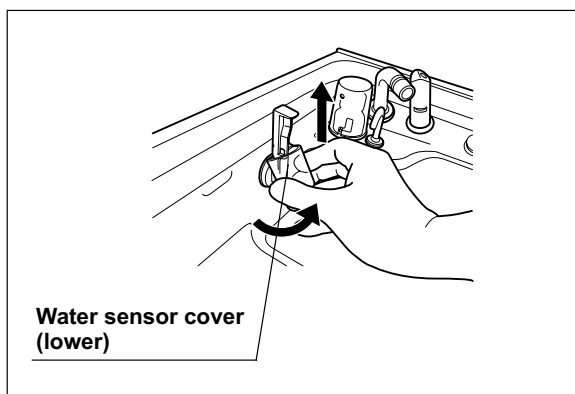


Figure 5.12

4. Clean the fluid level sensor using a soft cloth moistened with 70% ethyl alcohol or isopropyl alcohol.

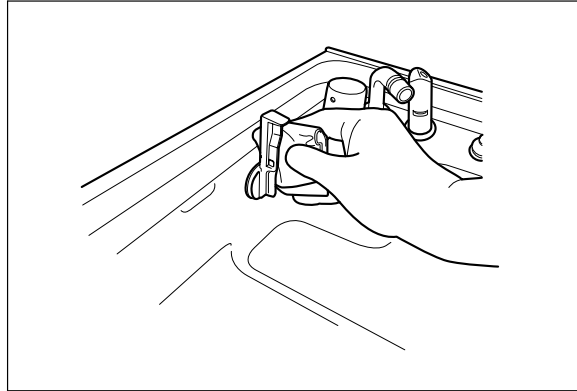


Figure 5.13

5. Wipe away all moisture from the fluid level sensor using a clean soft cloth.
6. Clean the fluid level sensor covers (upper, lower) in running water and remove moisture.
7. Attach the fluid level sensor covers (upper, lower) to their original positions around the fluid level sensor.

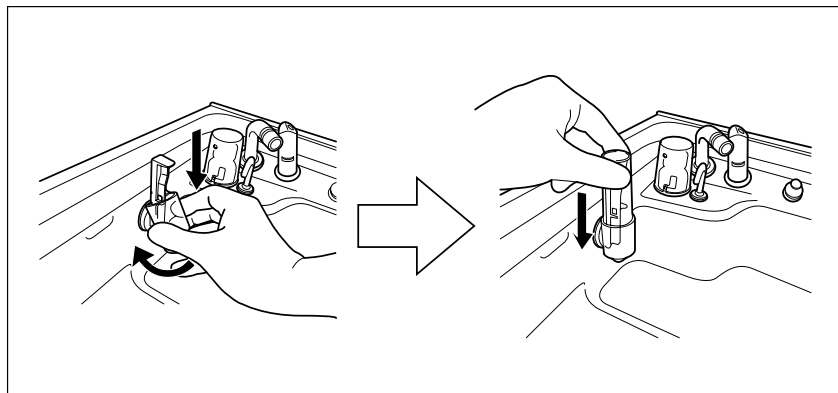


Figure 5.14

Chapter 6 Other Functions

6.1 Confirming the disinfectant solution temperature

Check the temperature of the disinfectant solution as described below.

1. Set the power switch to ON.
2. Press the INFO SEL button on the subcontrol panel to select "PROGRAM INFO".

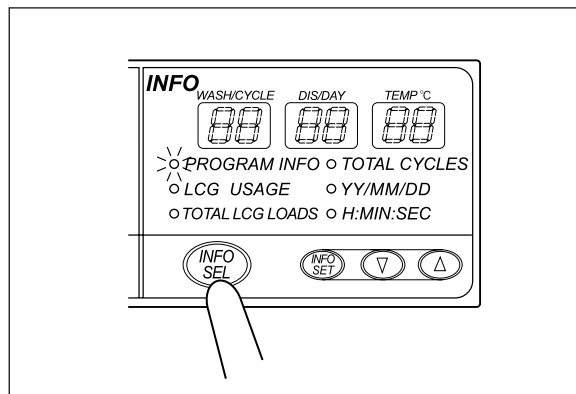


Figure 6.1

3. The current temperature of the disinfectant solution is displayed on the TEMP°C display on the subcontrol panel.

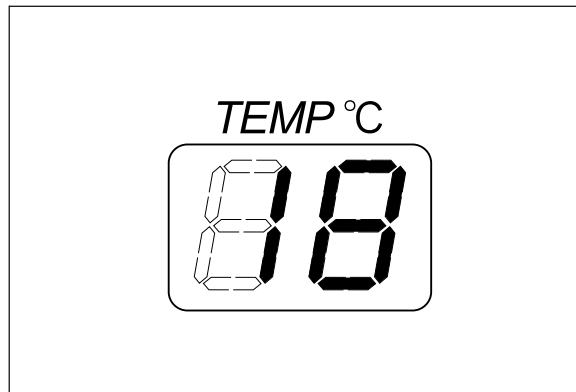


Figure 6.2

NOTE

- The following temperatures are displayed if the current disinfectant solution temperature is as described below.

Temperature	Display
1°C (34°F) or less	1°C
20°C (68°F) or more	20°C

Table 6.1

- When the current disinfectant solution temperature is below 20°C (68°F) and the program includes heating of disinfectant solution, the temperature display blinks. It stays lit if the program does not include heating.

6.2 Heating the disinfectant solution

This section explains how to heat the disinfectant solution independently of the reprocessing programs. The operation consists of heating disinfectant solution to 20°C (68°F) when the disinfectant solution temperature is below 20°C (68°F). For details on how to incorporate the disinfectant solution heating in a reprocessing program, see Section 6.3, “Setting the reprocessing programs” on page 122.

WARNING

When heating the disinfectant solution, disconnect the connecting tubes from the equipment. Otherwise, disinfectant solution may spout out of the connecting tubes, and leak from the cleaning tub.

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.

NOTE

For details on how to check the disinfectant solution temperature, see Section 6.1, “Confirming the disinfectant solution temperature”.

1. Close the lid.
2. Press the FUNC SEL button on the subcontrol panel to select “HEAT LCG”.

3. Press the FUNC START button on the subcontrol panel. The heat disinfectant indicator will light to indicate that the operation is in progress and the TIME/CODE display on the main control panel shows a spinning [] mark as shown below. Disinfectant solution is then poured into the cleaning tub and the heating process starts.

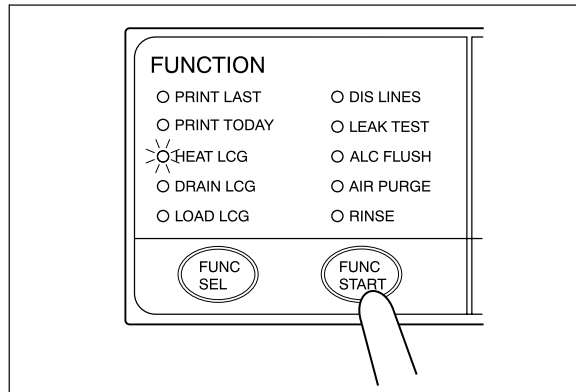


Figure 6.3

NOTE

- The disinfectant solution temperature takes about 4 minutes to be increased by 1°C.
 - The disinfectant solution is heated to slightly above 20°C (68°F) to compensate for the decrease in temperature inside the equipment.
4. When the disinfectant solution temperature reaches the specified level, the disinfectant solution is automatically collected and the cleaning tub is rinsed.
 5. When heating of the disinfectant solution is completed, the buzzer should beep and the TIME/CODE display on the main control panel should show [- -] indicating the end of the process.

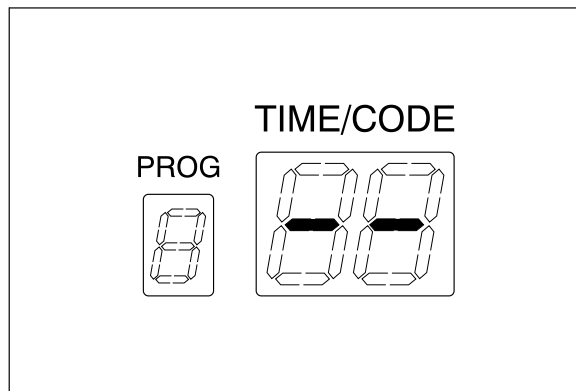


Figure 6.4

6.3 Setting the reprocessing programs

Cleaning time can be set in reprocessing programs [2] and [3]. If the temperature of the disinfectant solution in the cleaning tub is below 20°C (68°F), it will be heated to 20°C (68°F) before the disinfection process starts.

	Program [1] setup	Program [2] and [3] setting ranges
Cleaning time	2 min	2 – 10 min. (in 1 min. steps)
Disinfecting time		10 min
Disinfectant solution heating		20°C (68°F)

Table 6.2

NOTE

- Program [1] is preset to the values (cleaning time, disinfecting time and disinfectant solution heating) that Olympus has confirmed provide effective reprocessing. The settings of this program cannot be altered.
- The disinfectant solution temperature takes about 4 minutes to be increased by 1°C.

1. Set the power switch to ON.
2. Press the PROG button on the main control panel to select the program to be set.

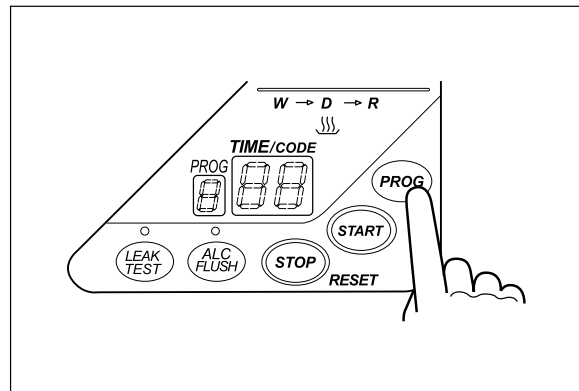


Figure 6.5

3. Press the INFO SEL button on the subcontrol panel to select "PROGRAM INFO".

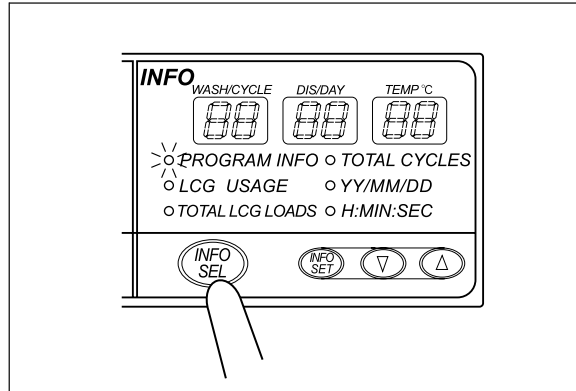


Figure 6.6

4. Press the INFO SET button on the subcontrol panel. The WASH/CYCLE display starts to blink.

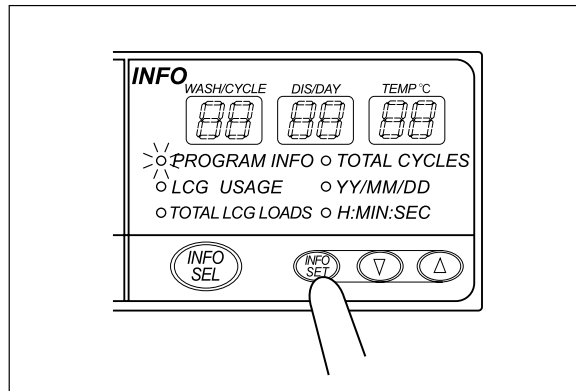


Figure 6.7

5. Press the “▲” or “▼” button on the subcontrol panel to select the cleaning time.

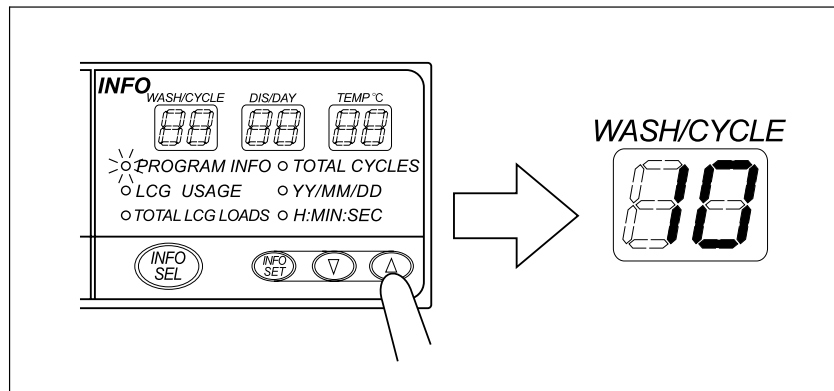


Figure 6.8

6. Press the INFO SET button on the subcontrol panel to set the cleaning time. The DIS/DAY display should start to blink.

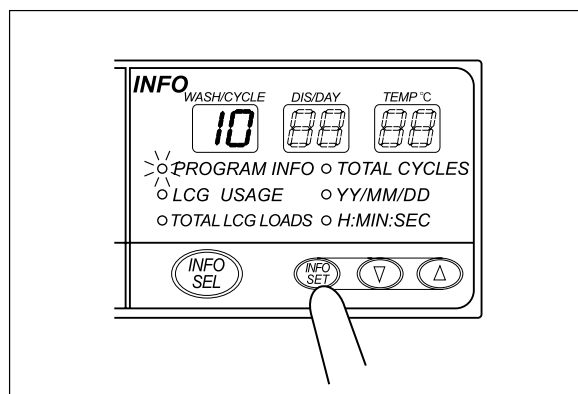


Figure 6.9

7. Check the disinfecting time.

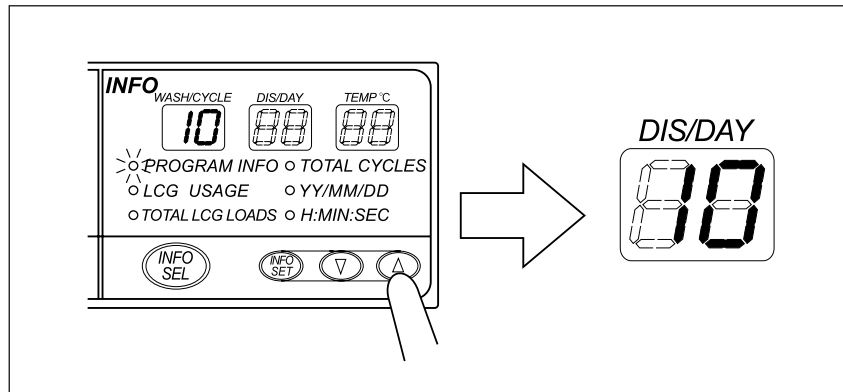


Figure 6.10

8. Press the INFO SET on the subcontrol panel to set the cleaning time. The TEMP °C display should start to blink.

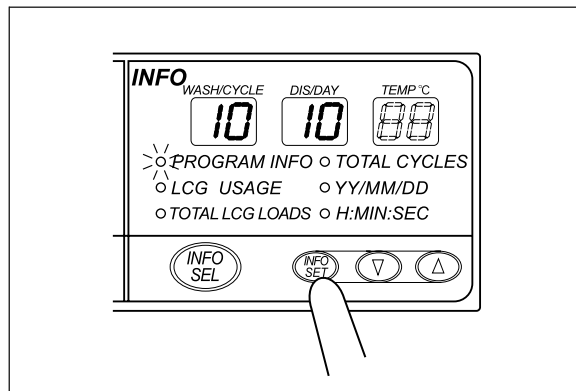


Figure 6.11

9. Check the temperature.

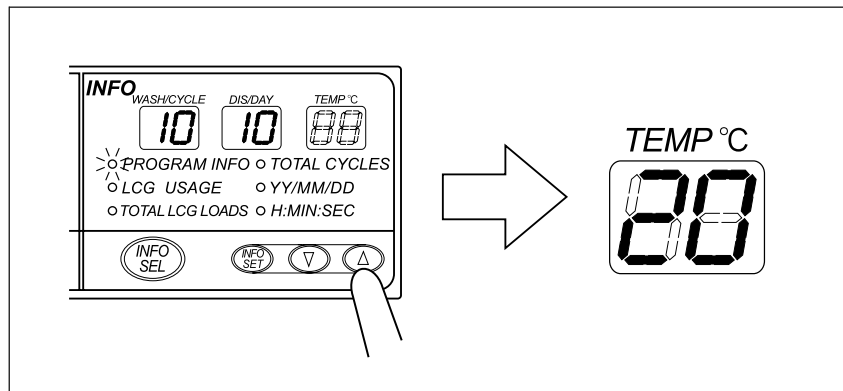


Figure 6.12

10. Press the INFO SET button on the subcontrol panel to finalize the reprocessing program setup.

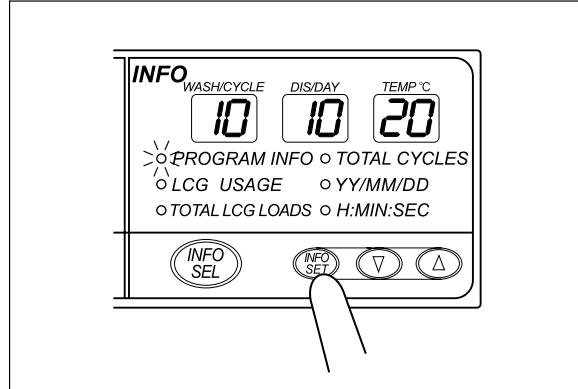


Figure 6.13

6.4 Setting the disinfectant solution counter

You can set the number of days and the number of disinfection operations between replacement of the disinfectant solution. The equipment indicates the replacement timing when the set value for the elapsed days or operations is reached. Note that this equipment does not automatically determine the age of the disinfectant solution.

WARNING

Be sure to check the concentration of the disinfectant solution by using the separately available test strips. The disinfectant solution counter does not precisely determine the effectiveness of the disinfectant solution. The expiration of the disinfectant solution varies depending on many factors including the drain condition, the temperature of the environment where the equipment is installed, and the various types of endoscopes that have been reprocessed. The disinfectant solution counter does not take these and other factors into consideration.

○ Note on the disinfectant solution counter function

When the test strip indicates that the disinfectant solution is no longer effective, it is possible to enter and register the number of disinfection operations and days that have elapsed since preparation/addition of the disinfectant solution. The disinfectant counter lamp on the main control panel will light up when either the set disinfection operation count or elapsed day count is reached so that this information can be used as a reference or reminder for disinfectant solution replacement. Although this function cannot precisely determine when the disinfectant is no longer effective, the display can be used as a reference for preparing the disinfectant solution replacement or as a reminder. It is recommended to update the operation count and elapsed day count data of this function according to changes in the operating environment, etc.

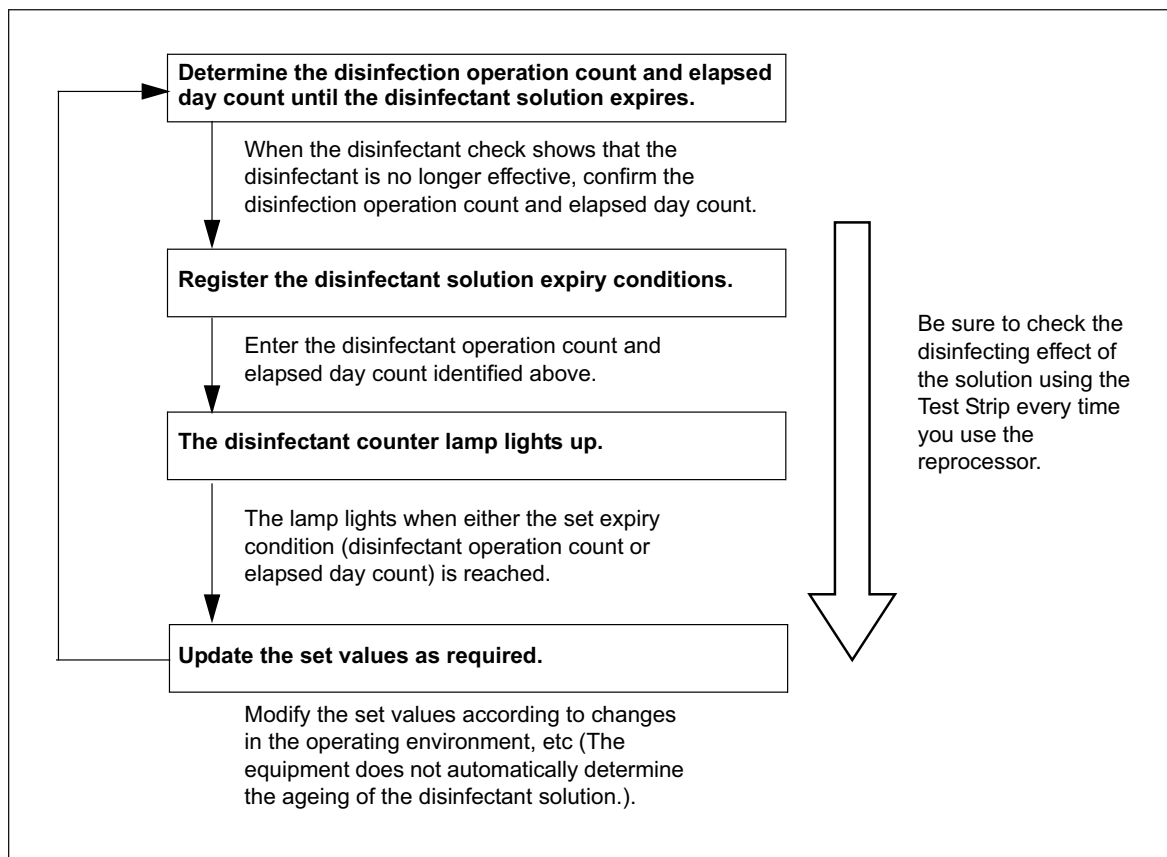
Setting range	
Disinfection operation count	No setting or 1 – 99 times (Setting possible per time)
Elapsed day count	No setting or 1 – 14 days (Setting possible per day)

Table 6.3

NOTE

- The “disinfection operation count” is set to 15 and the “elapsed day count” is set to 3 at the factory.
- The disinfectant counter lamp on the main control panel blinks when either the disinfectant operation count or elapsed day count reaches its set value.

○ Setting workflow



Setting the disinfection operation count and elapsed day count

1. Check the effectiveness of the disinfectant solution every time before reprocessing scopes using the test strip (see Section 3.8, “Inspecting the disinfectant solution’s concentration level” on page 50).
2. When the disinfectant has been identified as no longer effective, press the INFO SEL button on the subcontrol panel to select “LCG USAGE”, and then press the INFO SET button. The WASH/CYCLE display starts to blink.

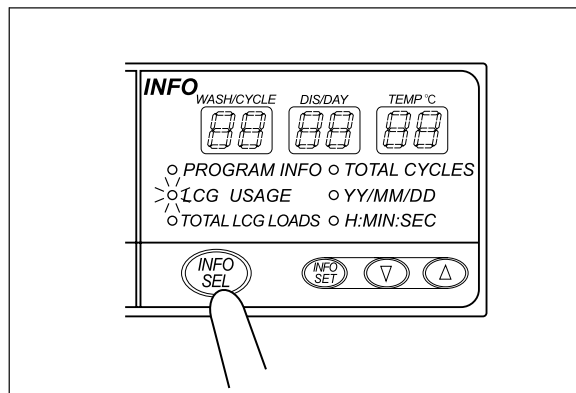


Figure 6.14

3. Press the “▲” or “▼” button on the subcontrol panel to set the disinfection operation count.

NOTE

Set [- -] if you do not want to set the disinfection operation count.

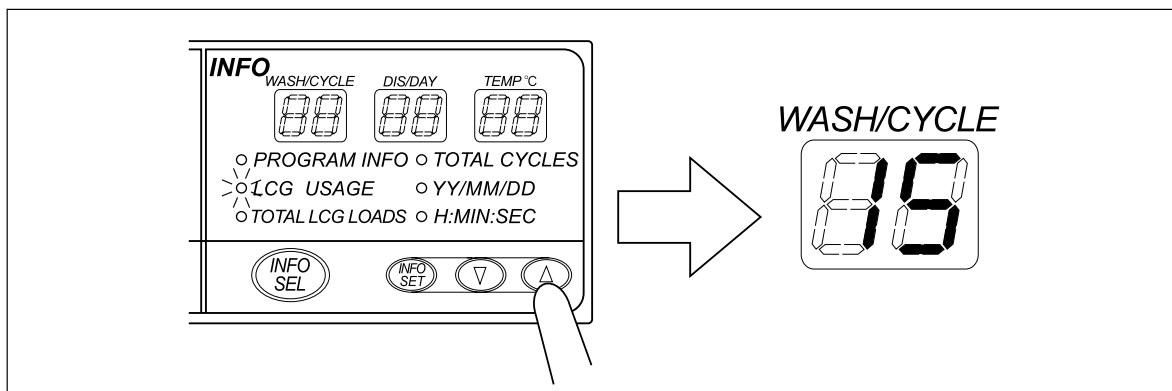


Figure 6.15

4. Press the INFO SET button on the subcontrol panel. The DIS/DAY display should start to blink.

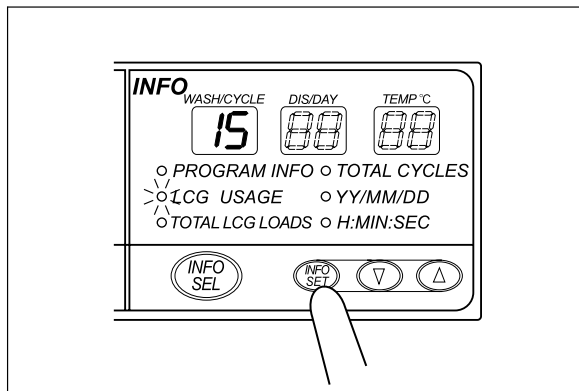


Figure 6.16

5. Press the "▲" or "▼" button on the subcontrol panel to set the elapsed day count.

NOTE

Set [- -] if you do not want to set the elapsed day count.

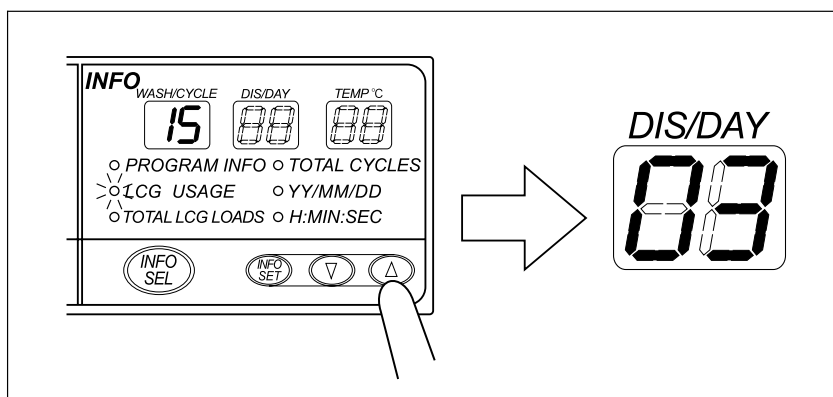


Figure 6.17

6. Press the INFO SET button on the subcontrol panel to finish the setting.

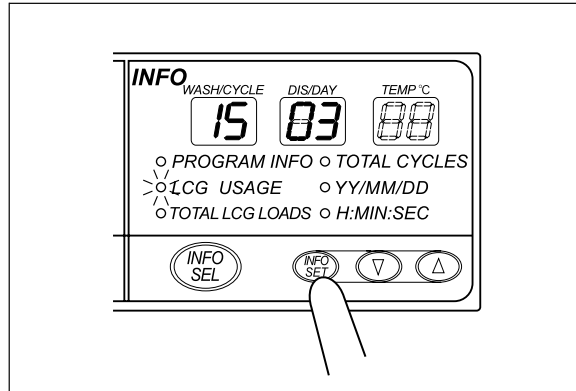


Figure 6.18

6.5 **Display of the total number of times the disinfectant solution was supplied**

The equipment can display the total number of times the disinfectant solution was supplied.

Press the INFO SEL button on the subcontrol panel to select “TOTAL LCG LOADS”. The subcontrol panel displays the total number of disinfectant bottles used in 6 digits.

NOTE

The total number of times the disinfectant solution was supplied is counted automatically. It cannot be set by the user.

6.6 **Display the total operation count of the equipment**

The equipment can display the total number of reprocessing operations executed.

Press the INFO SEL button on the subcontrol panel to select “TOTAL CYCLES”. The subcontrol panel displays the total number of reprocessing operations in 6 digits.

NOTE

The total number of operations is counted automatically. It cannot be set by the user.

6.7 Air purge

Air purge is performed to drain the remaining cleaning fluid and disinfectant solution from the tub after an irregularity occurs, or if the process is stopped before it completes. Air purge also eliminates residual fluid from the endoscope channels.

1. Close the lid.
2. Press the FUNC SEL button on the subcontrol panel to select “AIR PURGE”.

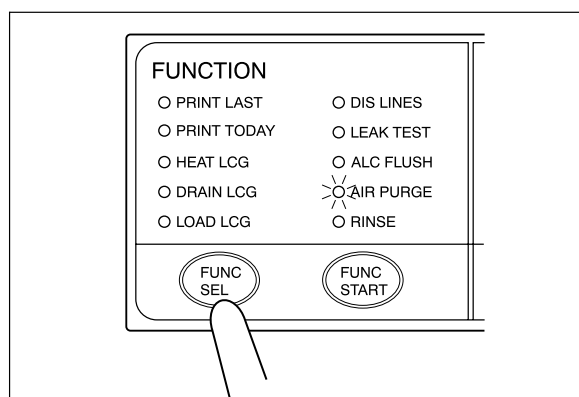


Figure 6.19

3. Press the FUNC START button on the subcontrol panel to start air purge. The TIME/CODE display on the main control panel shows [10], which indicates 10 minutes. The elapsed time displayed on the main control panel counts down every minute.
4. The buzzer beeps and air purge is completed in 10 minutes. The main control panel displays [- -] to indicate the end of air purge.

NOTE

To stop the air purge process midway, press the STOP/RESET button on the main control panel.

6.8 Rinsing

If cleaning fluid or disinfectant solution remains in the cleaning tub or in the endoscopes after an irregularity occurs or the process is stopped midway, perform the rinsing process after the air purge process.

CAUTION

Be sure to perform air purge first if cleaning fluid or disinfectant solution is still in the cleaning tub or endoscopes. Otherwise, rinsing may be insufficient.

1. Close the lid.
2. Press the FUNC SEL button on the subcontrol panel to select "RINSE".

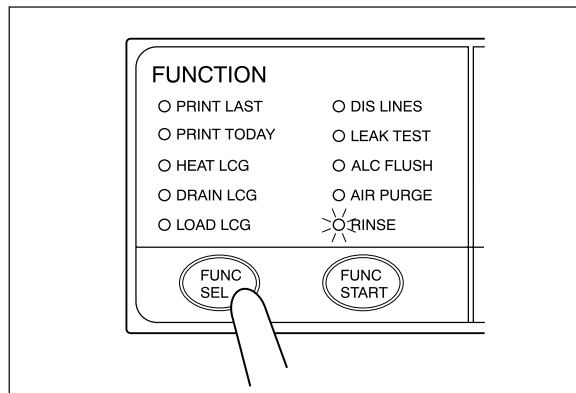


Figure 6.20

3. Press the FUNC START button on the subcontrol panel.

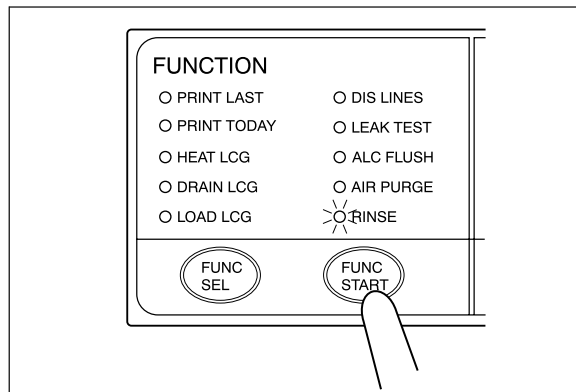


Figure 6.21

4. When rinsing is finished, the buzzer beeps to indicate the end of the process. At this time, the TIME/CODE display on the main control panel shows [- -].

6.9 **Emergency stop and automatic processing after stopping**

The equipment can be stopped at any time during operation by pressing the STOP/RESET button on the main control panel. The main control panel will display error code [E00] at this time. When the equipment is stopped, it identifies the situation in which it was stopped and automatically performs the required processing operations (including draining of the cleaning tub), after which it stops completely.

WARNING

- When a process is interrupted, be sure to execute it again from the beginning. Otherwise, the scope reprocessing may be insufficient.
- If the process is stopped because of a problem with the equipment, contact Olympus.

CAUTION

- Do not set the power switch to OFF to stop the equipment during operation. Otherwise, the fluid will remain in the cleaning tub and the equipment may malfunction.
- Do not set the power switch to OFF during automatic processing. Otherwise, the fluid will remain in the cleaning tub without automatic processing, and the equipment may malfunction.

There are cases in which automatic processing can be interrupted in the middle and those in which it cannot. Whether or not automatic processing can be interrupted should be determined according to the displayed error code.

- When the displayed error code remains lit
Pressing the STOP/RESET can interrupt the automatic processing.
- When the displayed error code is blinking
Automatic Processing cannot be interrupted.

○ **Treatment after automatic processing has completed**

Remove the cause of the equipment stoppage, and start the process again from the beginning.

○ **Processing after automatic processing is interrupted**

Remove the cause of the interruption. If water or cleaning fluid remains in the cleaning tub, clean the tub with the following procedure. Also, the stopped process should be started again from the beginning.

1. Press the FUNC SEL button on the subcontrol panel to select "AIR PURGE".
2. Press the FUNC START button on the subcontrol panel to drain the remaining water or fluid.
3. When air purge is finished, press the FUNC SEL button to select "RINSE".
4. Press the FUNC START button on the subcontrol panel to start the rinsing process.

Chapter 7 Routine Maintenance

To ensure safe operation of the device, it should be cleaned and inspected regularly. Parts and consumables should be added or replaced as required.

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.

- Be sure to perform all the inspections, cleaning, replacement of consumables and other tasks described in this chapter. Otherwise, this equipment may not continue operate and perform as expected.

- When inspecting or cleaning this equipment, 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.
- If you find any problems or suspect an irregularity, do not use the equipment and contact Olympus. If the device is used when an irregularity is suspected, the device may malfunction. Water leakage, electric shock, burns, and/or fire may also result.
- Alcohol is flammable and should be handled with extra care.
- Before handling the alcohol, carefully read the precautions for use, get fully accustomed to the content, and use the alcohol as instructed.

Check	Monthly maintenance
	7.1 Replacing the gas filter (MAJ-822)
	7.2 Replacing the water filter (MAJ-824)
	7.3 Disinfecting the water supply piping
	7.5 Replacing the air filter (MAJ-823)
	7.6 Cleaning the float switch
	7.7 Checking the lid and lid packing
	7.8 Cleaning the detergent/alcohol drawer
	7.9 Cleaning the detergent tank
	7.10 Cleaning the accessories and accessory holders

Table 7.1

Check	Weekly maintenance
	7.11 Cleaning the alcohol tank

Table 7.2

Check	Work to be performed as required
	7.12 Replacing the disinfectant solution
	7.13 Cleaning the mesh filter in the water supply adapter connector
	7.14 Replacing the fuse
	7.15 Disinfecting the detergent/alcohol pipe
	7.16 Preparing the reprocessor for long-term storage
	7.17 Installing the printer paper roll
	7.18 Care and maintenance after long-term storage

Table 7.3

7.1 Replacing the gas filter (MAJ-822)

Replace the gas filter every month or whenever the odor of the disinfectant solution seems to have increased.

Check	Required items
	Gas filter (MAJ-822) (× 2 pieces)
	Indelible pen or other writing implement

Table 7.4

WARNING

The disinfectant vapor generated by the device has been proven safe in in-house testing. Nevertheless, as individual reactions to the disinfectant may vary, Olympus recommend the use of gas filters and enhanced protection by observing the ventilation conditions given in “Ensuring the safety of reprocessing personnel” on page 8.

CAUTION

- Do not block the ventilation openings on the gas filter cases with the replacement date indication sticker or any other label. Blocking the ventilation not only hinders deodorization but may also cause the device to malfunction.
- If the odor of the disinfectant solution seems to have increased after replacement of gas filters, contact Olympus.

1. Remove the gas filter case from the deep part of the lid.

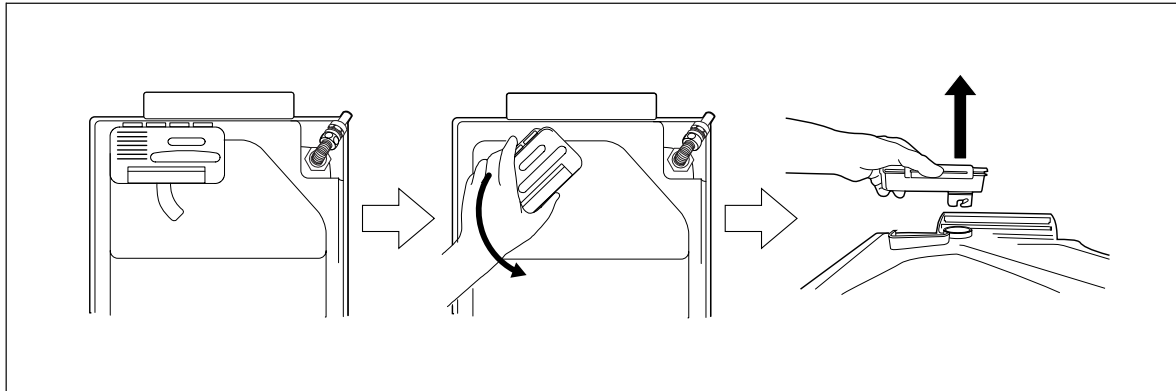


Figure 7.1

NOTE

When the device is shipped from the factory, the gas filters are not installed in the device.

2. Open the front door and remove the gas filter case from the top right position.

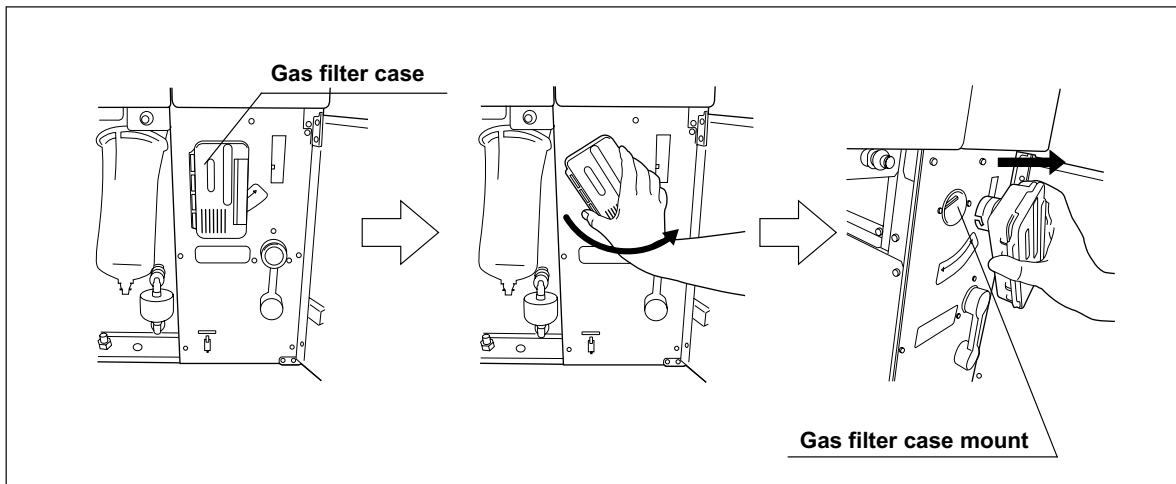


Figure 7.2

3. Unlock each gas filter case cover and open it.

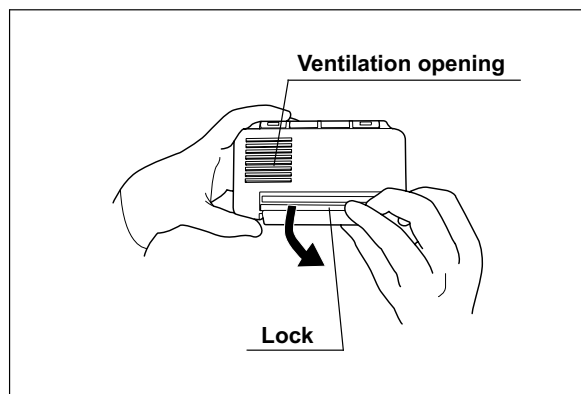


Figure 7.3

4. Remove the old gas filter. The gas filter case designed for the lid has an adapter inside of it to prevent water droplet penetration.

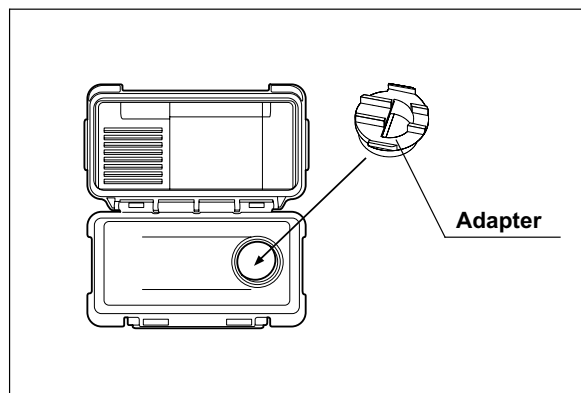


Figure 7.4

5. Place a new gas filter in each gas filter case.

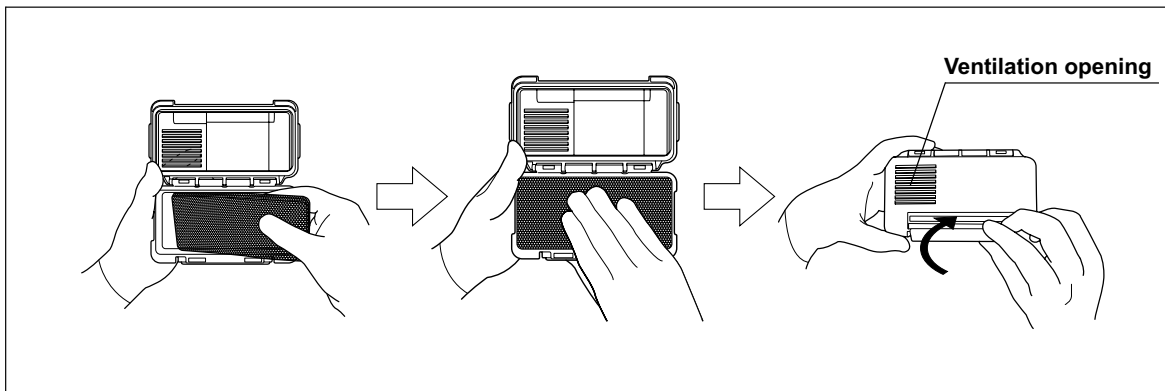


Figure 7.5

6. Close and lock the cover. Be careful not to catch the gas filter when closing the cover.
7. Enter the data on the replacement date indication stickers provided with each gas filter, and attach the stickers to the gas filter cases. Be careful not to block the ventilation opening (remove the previous replacement date indication sticker before attaching the new sticker).
8. Insert the gas filter case designed for the cleaning tub (the one with adapter attached to it) into the mount on the deep part of the lid, and then turn it all the way in the direction shown below until it is stopped.

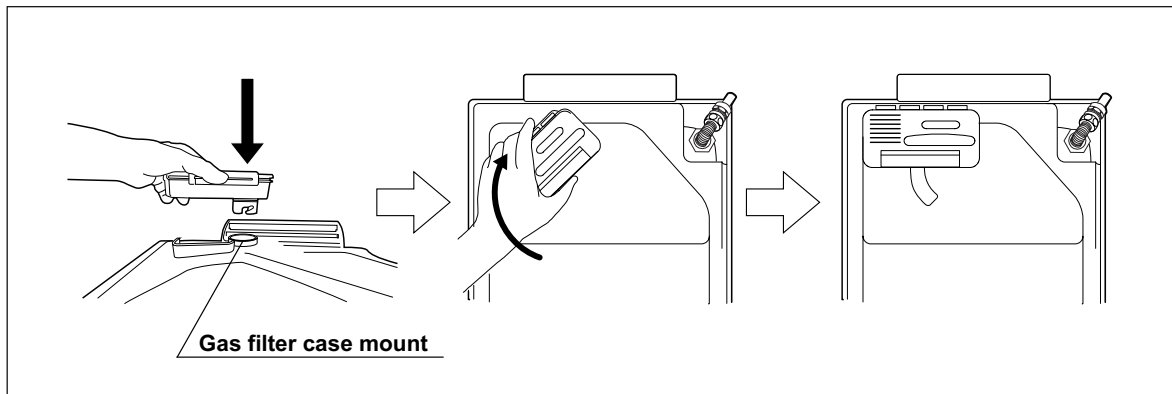


Figure 7.6

9. Insert the gas filter case designed for the disinfectant solution tank into the gas filter case mount at the top right of the inside of the front door, and then turn it all the way in the direction shown below until it is stopped.

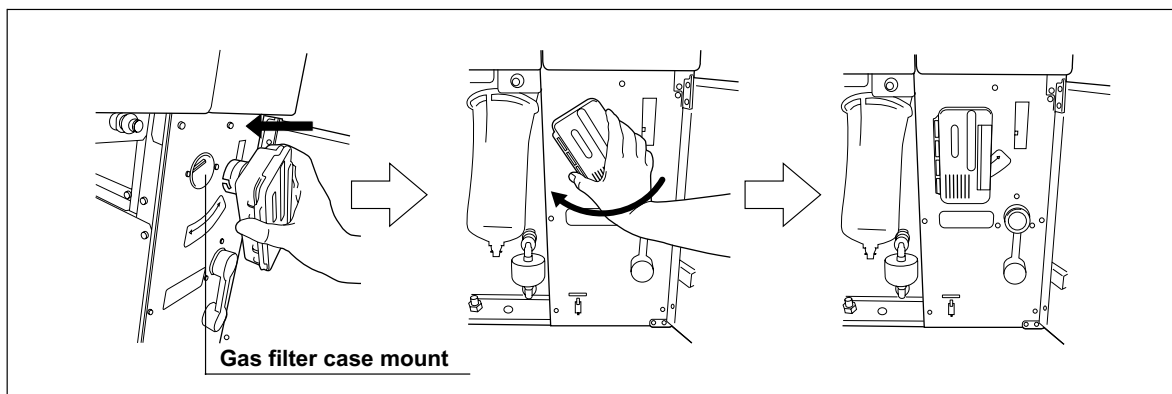


Figure 7.7

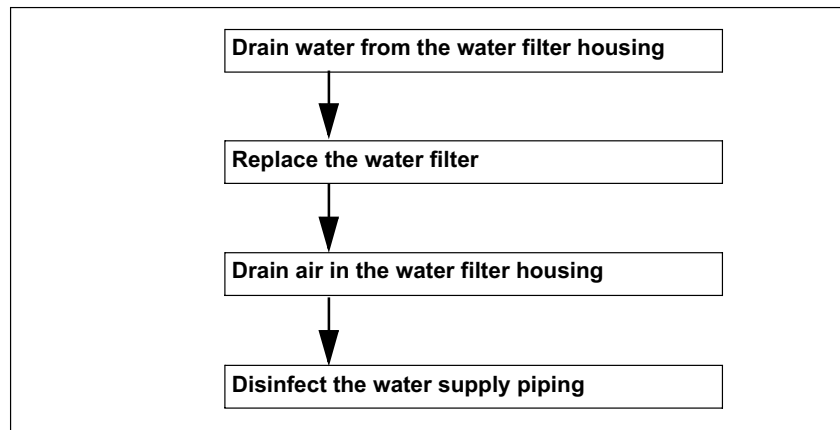
10. Close the front door.

7.2 Replacing the water filter (MAJ-824)

Replace the water filter at least once a month to prevent contamination of the rinse water. The water filter should also be replaced whenever an error code indicating water supply insufficiency [E01] is displayed. The water filter should be replaced by following the flow shown below.

NOTE

Using a commercially available prefilter can extend the life of the water filter. For information on the prefilter, contact Olympus.



Check	Required items
	Water filter (MAJ-824)
	Water filter wrench
	Water filter tubes (× 2)
	Container with 2 L or larger capacity (wide-mouthed container such as a vat)
	Indelible pen or other writing implement

Table 7.5

WARNING

- Replace the water filter in a clean environment. Do not touch the inner side of the water filter or allow dust to get in it.
- After replacing the water filter, be sure to perform the operation described in Section 7.3, “Disinfecting the water supply piping” on page 152 to prevent multiplication of miscellaneous germs and staining inside the water supply pipes. Failure to perform this operation could result in contamination of the device piping and/or the scope, preventing effective reprocessing.

- Always be sure to attach the water filter. Otherwise, miscellaneous germs and stains in the water may contaminate the device piping and/or the scope and prevent effective reprocessing.

CAUTION

- If air gets in the water filter housing, it may extend the process time. In case of an irregularity such as extension of the process time or lack of water supply, drain the air as described in “Draining air in the water filter housing” on page 149.
- Be careful not to drop the removed water filter housing to avoid damaging the connector below the water filter housing. Make sure that the O-ring at the head of the water filter housing is free of abnormalities such as cracks, breaks, rips, scratches, or stains. Water leakage may result if the O-ring is not attached or is abnormal.

○ Draining water from the water filter housing

1. Make sure that the power switch is ON.
2. Close the lid by pushing it until it clicks.
3. Open the front door of the device.
4. Place the container with a capacity of 2 L or more in front of the device.
5. Put the tube-side ends of the two filter tubes in the container placed above.
6. Insert the connector ends of the two filter tubes into the connector below the water filter housing and the connector above the water filter housing until they click. Water will start to flow from the tube connected to the connector below the water filter housing.
7. After water has been collected, press the FUNC SEL button on the subcontrol panel to select “AIR PURGE”.

8. Press the FUNC START button on the subcontrol panel.

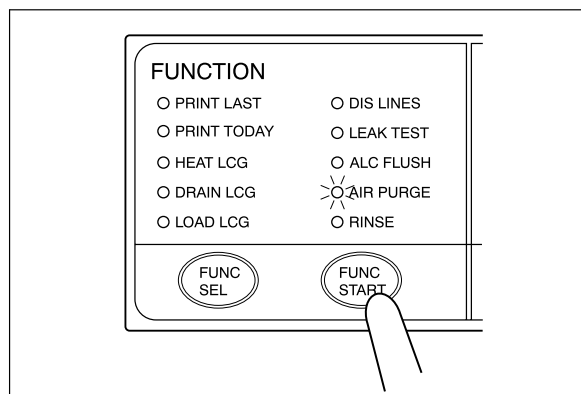


Figure 7.8

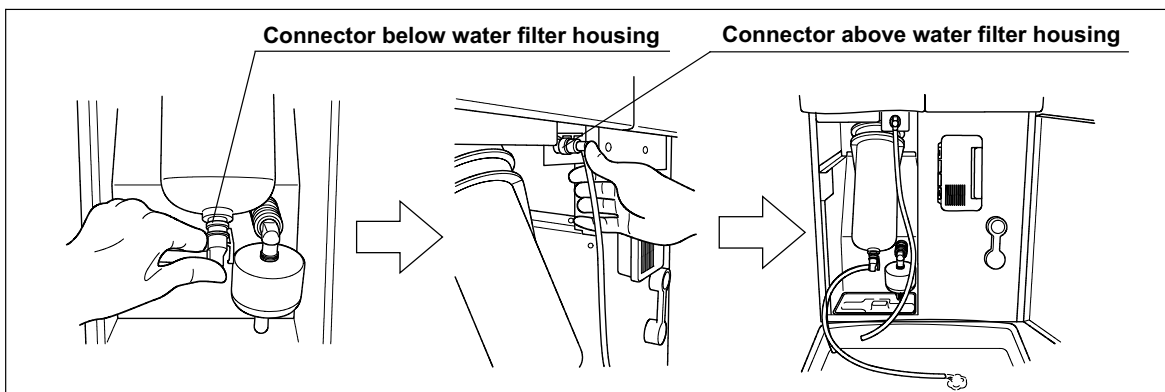


Figure 7.9

9. When the water flow stops, press the STOP/RESET button to end the air purge process, and disconnect the two filter tubes by pushing the lock levers on their connectors.

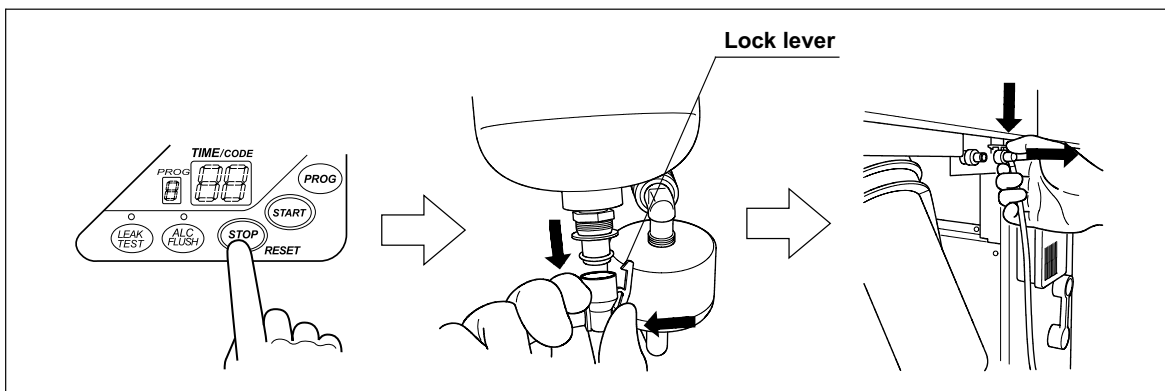


Figure 7.10

○ Replacing the water filter

WARNING

- Replace the water filter in a clean environment. Do not touch the inner side of the water filter or allow dust to get in it.
- Always be sure to attach the water filter. Otherwise, miscellaneous germs and stains in the water may contaminate the device piping and/or the scope and prevent effective reprocessing.

CAUTION

Hold the water filter wrench at a point closer to you than to the projection on the grip. If you hold it at a point closer to the water filter housing connector than the projection, you might catch your finger in the mechanism.

1. Insert the water filter wrench from below the water case and rotate the tool as shown below to loosen the water filter housing.

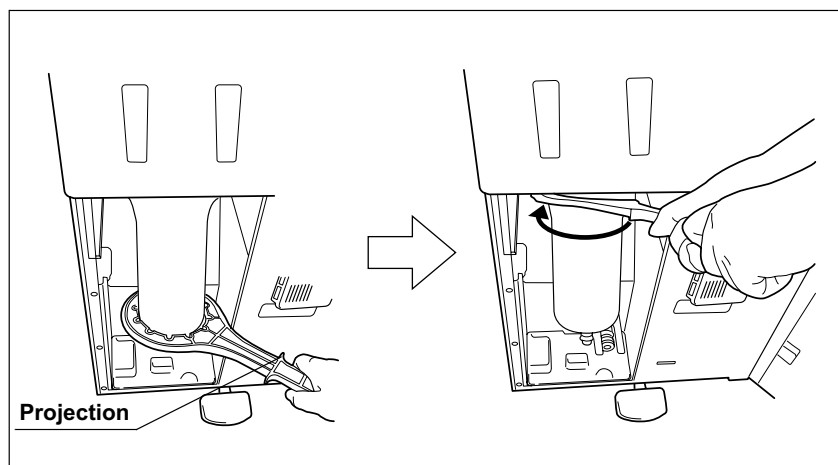


Figure 7.11

CAUTION

- Once the water filter housing has been fully loosened, hold it with both hands and remove it. If the case is not fully loosened, your hands may slip and you could be injured.
- When the water filter is removed, residual water flows from the connectors. Therefore, you should cover the water filter with the water filter housing when removing so that the residual water is caught in the case. If the water tray fills with residual water, remove the water tray and drain it.

2. Hold the water filter housing with both hands and rotate it in the direction shown to remove it.

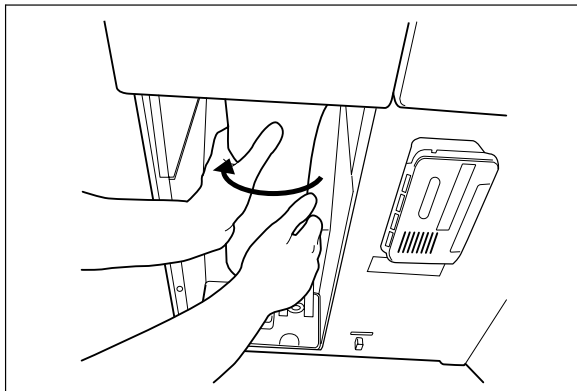


Figure 7.12

3. Pull the old water filter downward to remove.

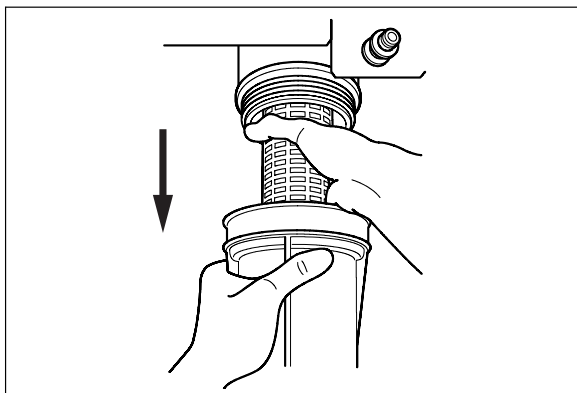


Figure 7.13

NOTE

When the device is shipped from the factory, the water filter is not mounted in the water filter housing.

4. Open the bottom (the side without the O-ring) of the package containing the new water filter.

5. Drop the new water filter directly from the bag into the water filter housing.

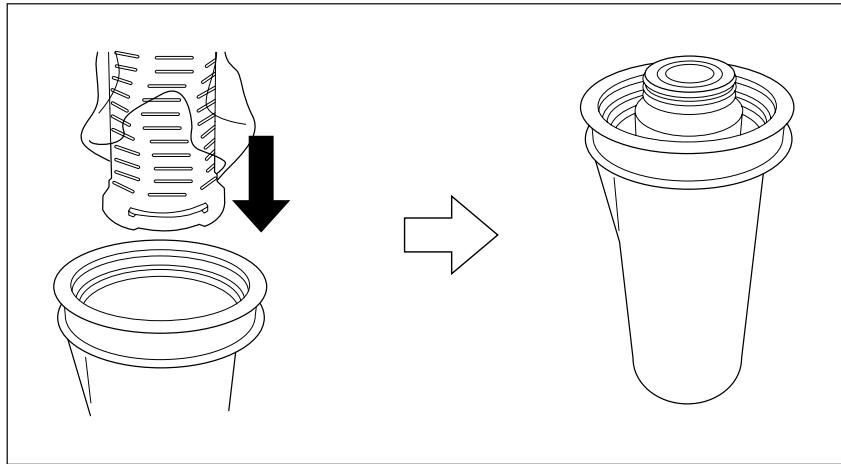


Figure 7.14

6. Rotate the water filter housing in the direction shown to secure temporarily.

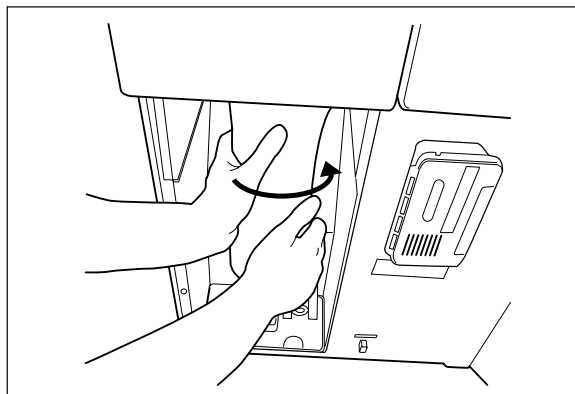


Figure 7.15

NOTE

- To ensure smooth installation, it is recommended to moisten the O-ring at the head of the water filter with clean water or ethanol before securing it temporarily.
- The rotation drag increases during temporary securing, but rotate the case all the way until it is stopped.

7. Attach the water filter wrench and rotate it slowly in the direction shown to tighten.

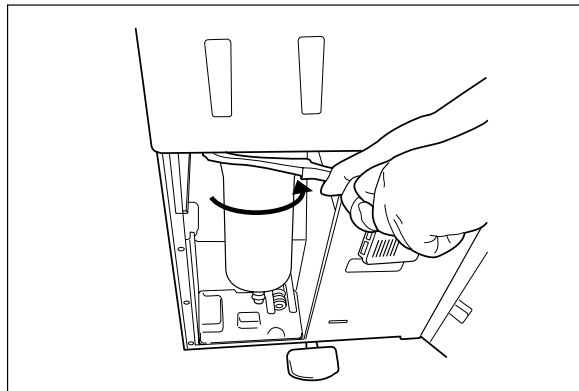


Figure 7.16

8. Remove the water filter wrench and place it in the space on the left of the water filter housing.

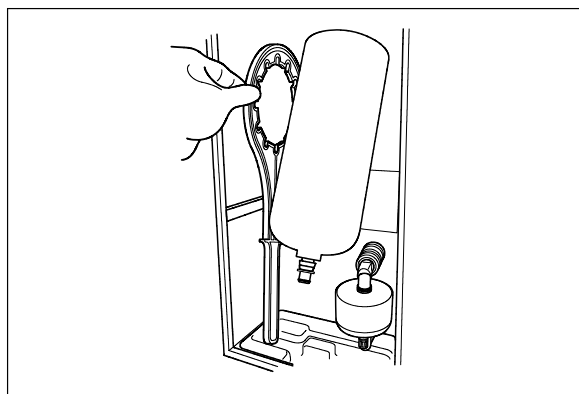


Figure 7.17

9. Enter the date on the replacement date indication sticker provided with the water filter using an indelible ink pen, and attach the sticker to the device where it will be easily visible (Remove the previous replacement date indication sticker before attaching the new sticker).

○ Draining air in the water filter housing

CAUTION

Be sure to drain air from the newly attached water filter. If air gets in the water filter housing, the process time may be extended. Air should also be drained from the water filter housing whenever there is an irregularity such as extension of the process time.

Check	Required items
	Filter tube (× 1)
	Container with 2 L or larger capacity (wide-mouthed container such as a vat)

Table 7.6

1. Make sure that the water supply faucet is open.
2. Close the lid by pushing it until it clicks.
3. Open the front door of the device.
4. Place a container with a capacity of 2 L or more in front of the device.
5. Put the tube-side end of the filter tube in the container, and insert the connector end of the filter tube into the connector above the water filter housing until it clicks. Do not connect anything to the connector below the water filter housing.

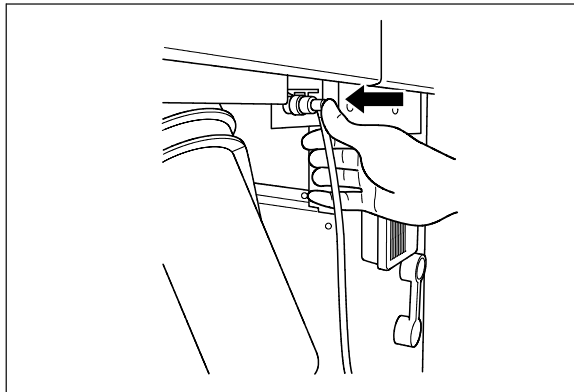


Figure 7.18

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

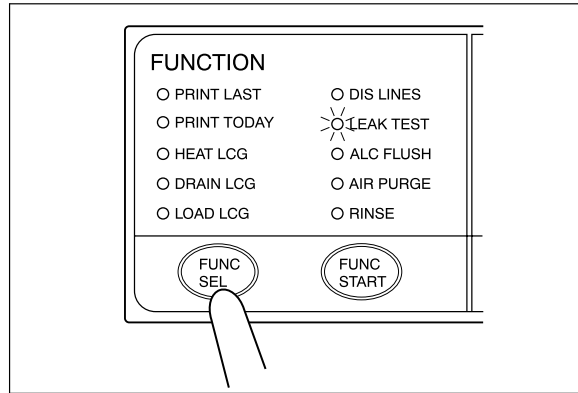


Figure 7.19

7. Press the FUNC START button on the subcontrol panel.

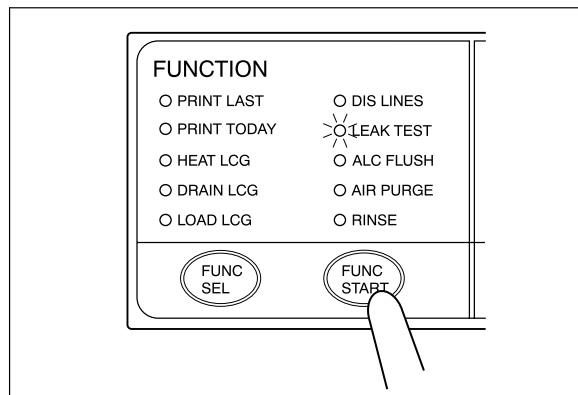


Figure 7.20

8. When water starts to flow continuously from the filter tube, disconnect the tube by pushing its lock lever. Water flow should stop when the filter tube is disconnected.

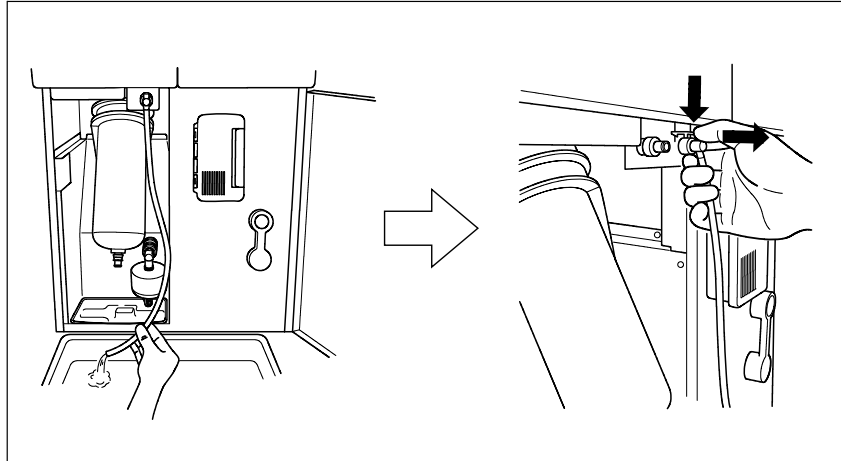


Figure 7.21

9. Make sure that no water leaks from the water filter housing. If a water leak is observed, immediately press the STOP/RESET button to stop water supply and re-install the water filter (restart procedures beginning with “Draining water from the water filter housing” on page 143).
10. Press the STOP/RESET button to drain water from the cleaning tub.
11. Close the front door.
12. Rinse the filter tube with running water, dry it completely and store in a clean place.
13. Go to Section 7.3, “Disinfecting the water supply piping” and follow the instructions.

7.3 Disinfecting the water supply piping

Check	Required items
	Container with 2 L or larger capacity (wide-mouthed container such as a vat)
	Filter tube (× 1)
	Water supply piping disinfecting hose

Table 7.7

Disinfection of water supply piping is required in the following cases.

- Before using this equipment for the first time (after installation of the water filter).
- Immediately after replacement of the water filter.
- Whenever bacteria in the water supply piping is identified.
- Before using the device when it has not been used for a long period.

The disinfectant solution stored in the equipment is used for disinfection of the water supply piping.

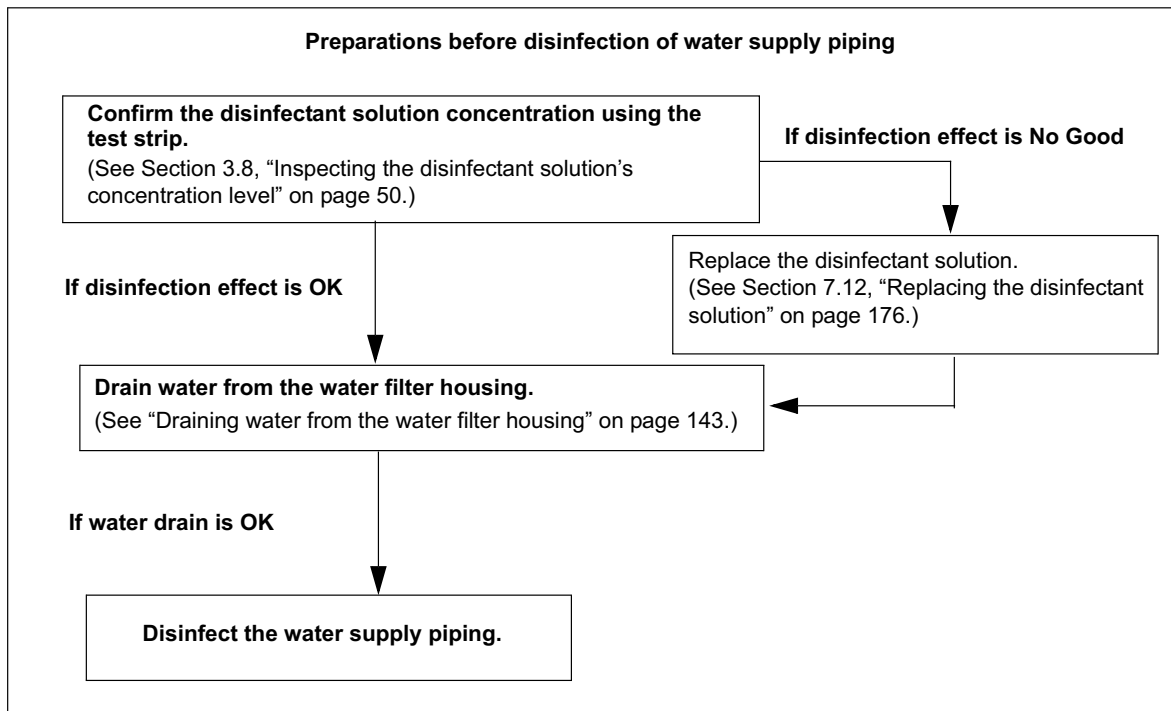


Figure 7.22

WARNING

- Before disinfecting the water supply piping, check the potency of the disinfectant solution with the test strip, and replace the disinfectant solution if the disinfectant effect is below the required level. If this check is not performed, disinfection may be insufficient.
- Disinfection of the water supply piping is required each time the water filter is replaced (i.e., at least once a month). Since bacteria may infect the pipes frequently depending on the operating environment, perform microbiological examination of rinse water and disinfect the water supply piping whenever it seems necessary.
- Disconnect the connecting tubes from the connectors on the device before disinfecting the water supply piping. Otherwise, a jet of disinfectant solution may be output from the connecting tubes and leak from a connector such as the gas filter case connector.
- Before handling the disinfectant solution, read the precautions carefully and use it as instructed. It is especially important to know what to do if the disinfectant solution comes in contact with your skin.
- When handling the disinfectant solution, wear personal protective equipment to prevent any disinfectant from getting on your skin or being inhaled. To avoid adverse physical effects, be careful not to touch the disinfectant solution directly or to inhale too much vapor. If any disinfectant solution gets in your eyes, immediately rinse with a large amount of fresh water and then consult a medical specialist. 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.

NOTE

- For details on replacing the disinfectant solution, see Section 7.12, “Replacing the disinfectant solution” on page 176.
- After disinfection of the water supply piping, the quantity or concentration of the disinfectant solution is reduced, making it unusable in subsequent disinfections. Therefore, the following operation is recommended immediately before replacing the disinfectant solution.

1. Check the concentration of the disinfectant solution as described in Section “Inspecting the disinfectant solution’s concentration level” on page 50.
2. Drain water from the water filter housing as described in “Draining water from water filter housing” in Section 7.2, “Replacing the water filter (MAJ-824)” on page 142.
3. Make sure that the water supply faucet is open.
4. Step the foot pedal to open the lid.
5. Connect the water supply piping disinfection hose between the Air/water/instrument channel connector (gray) in the cleaning tub and the water supply piping disinfection connector.

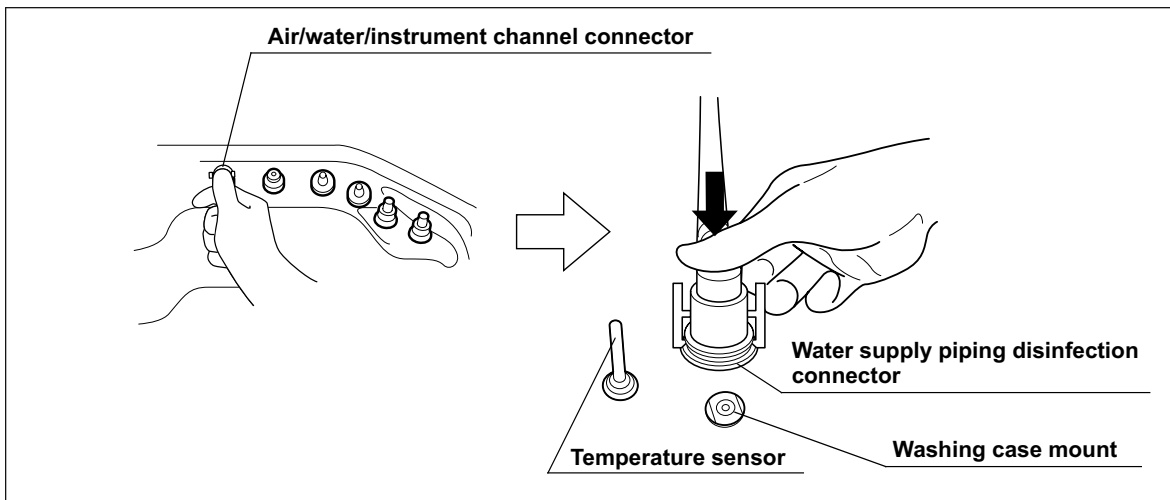


Figure 7.23

6. Close the lid.

7. Press the FUNC SEL button on the subcontrol panel to select "DIS LINES".

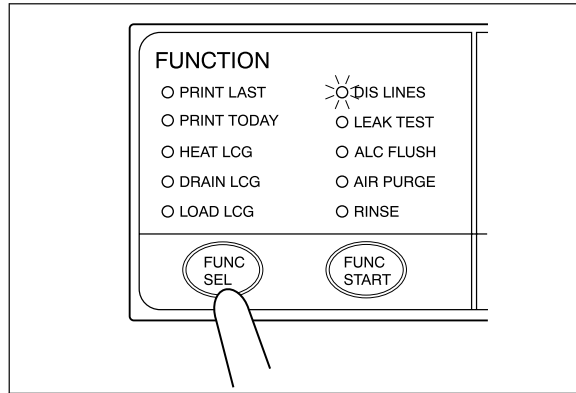


Figure 7.24

8. Press the FUNC START button on the subcontrol panel. The TIME/CODE display on the main control panel shows the remaining time, which is counted down every minute.

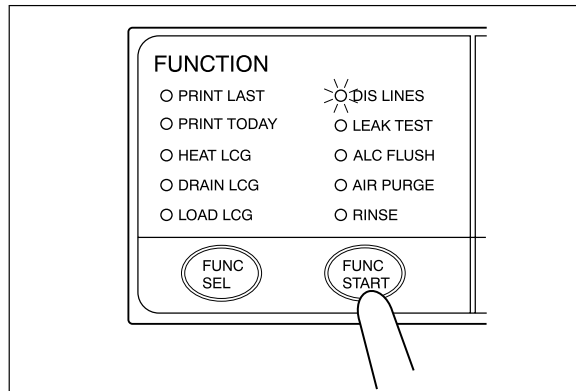


Figure 7.25

9. When the cleaning tub is filled with disinfectant solution, three buzzer beeps are generated and the TIME/CODE display on the main control panel blinks.
10. Push the area marked "PUSH" on the front door to open it.
11. Prepare a container with a capacity of 2 L or more and place it in front of the device.
12. Hold the tube-side end of the filter tube and put it in the container.

13. Insert the connector end of the filter tube into the connector above the water filter housing.

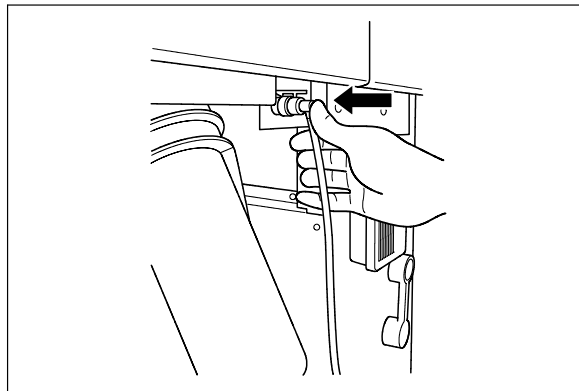


Figure 7.26

NOTE

Do not connect a filter tube to the connector below the water filter housing.

14. Press the FUNC START button on the subcontrol panel shows again.

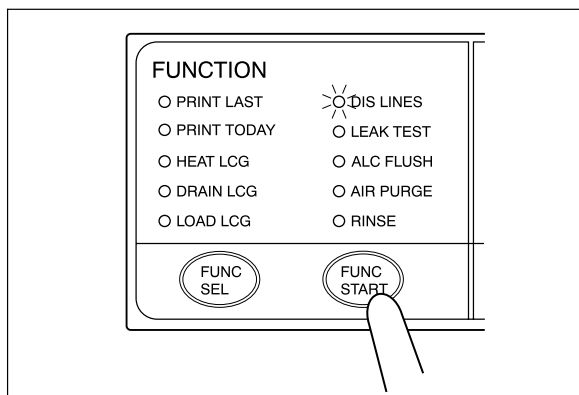


Figure 7.27

15. Disconnect the filter tube as soon as water starts to flow from it continuously.

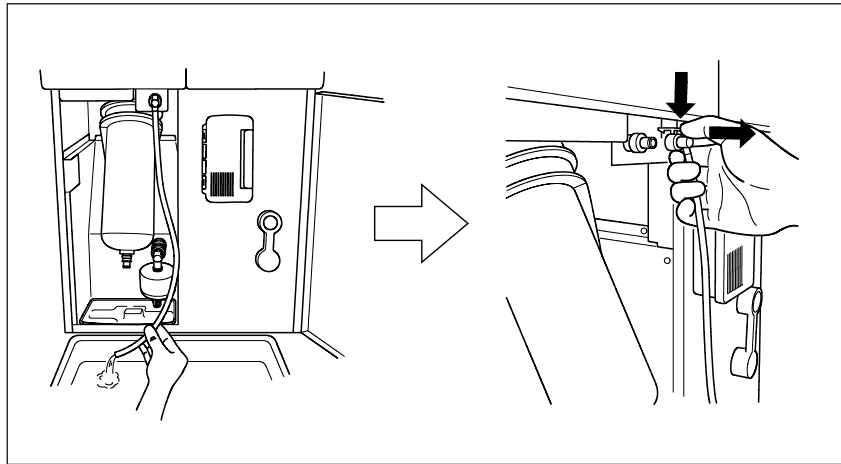


Figure 7.28

NOTE

If the temperature of the disinfectant solution is below 20°C (68°F), it is heated to 20°C (68°F). During heating, the TIME/CODE display blinks without counting down. It restarts countdown after completion of heating.

16. When the remaining time displayed on the main control panel reaches [00], the buzzer beeps and the TIME/CODE display shows a [] mark rotating as shown below.

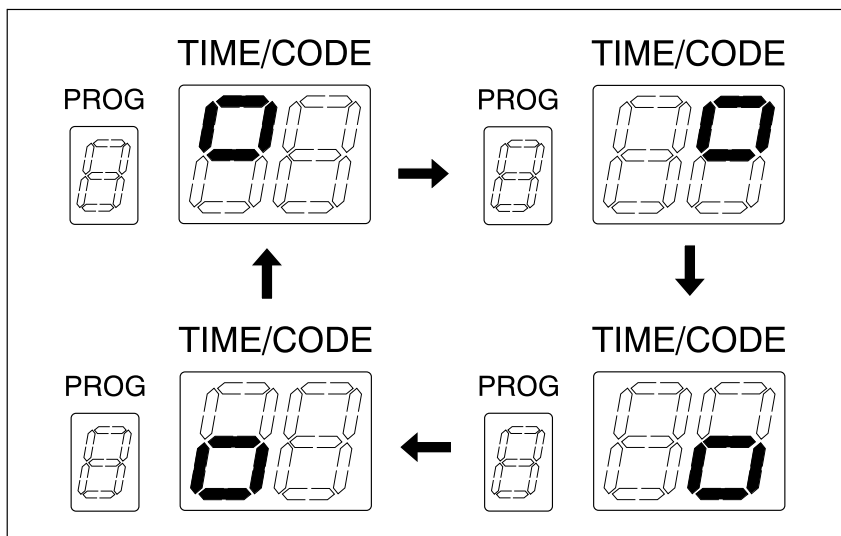


Figure 7.29

17. With the tube-side end of the filter tube kept placed in the container placed above, insert the connector end of the filter tube into the connector above water filter housing until it clicks. Do not connect anything to the connector below water filter housing.

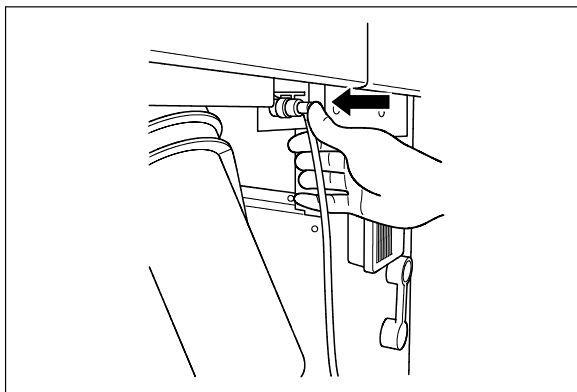


Figure 7.30

18. Press the FUNC START button on the subcontrol panel once again.

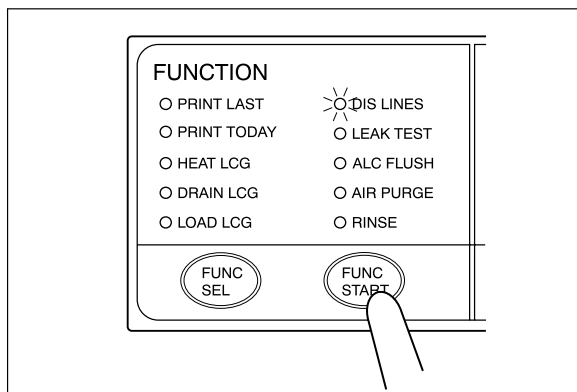


Figure 7.31

19. Water flows continuously from the filter tube. In about 15 seconds, the buzzer beeps indicating the end of process (the CODE/TIME display on the main control panel shows [- -]).

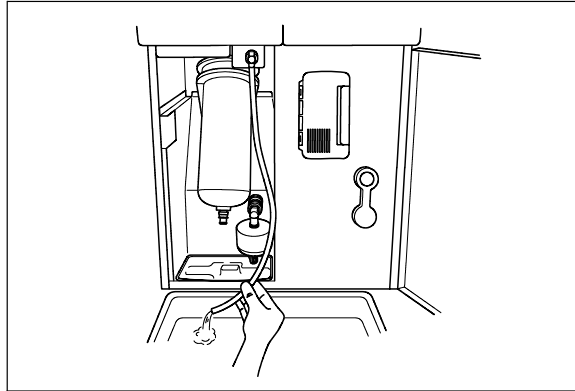


Figure 7.32

20. Disconnect the filter tube by pushing its lock lever.
21. Close the front door.
22. Step the foot pedal to open the lid.

WARNING

When disconnecting the water supply piping disinfection hose from the connector, cover the end of the hose with a hand wearing a waterproof glove so that the water inside the hose does not splash.

23. Disconnect the water supply piping disinfection hose and close the lid.

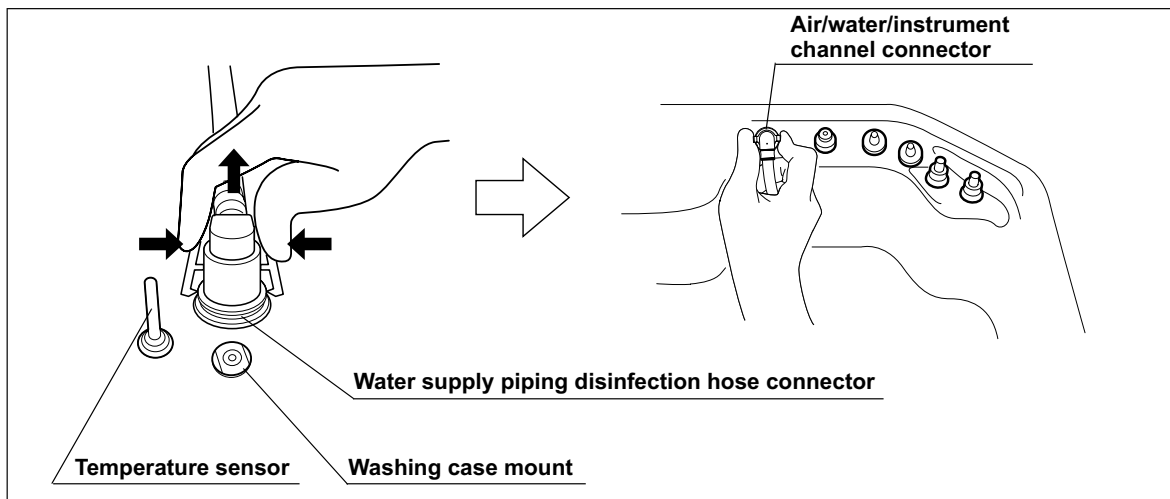


Figure 7.33

24. Rinse the filter tube and water supply piping disinfection hose thoroughly in running water, dry them thoroughly and store in a clean place.

7.4 Microbiological surveillance

Perform the microbiological examination whenever it seems necessary. Sampling from the inner piping of the equipment should be conducted by following methods.

Check	Required items
	Sampling tube (gray)
	Container with 2 L or large capacity (wide-mouthed container such as a vat)
	Sterilized bottle

Table 7.8

1. Connect the sampling tube connector to the same-colored connector at the rear center of the cleaning tub by pushing the tube's connector until it clicks (see Figure 7.34).

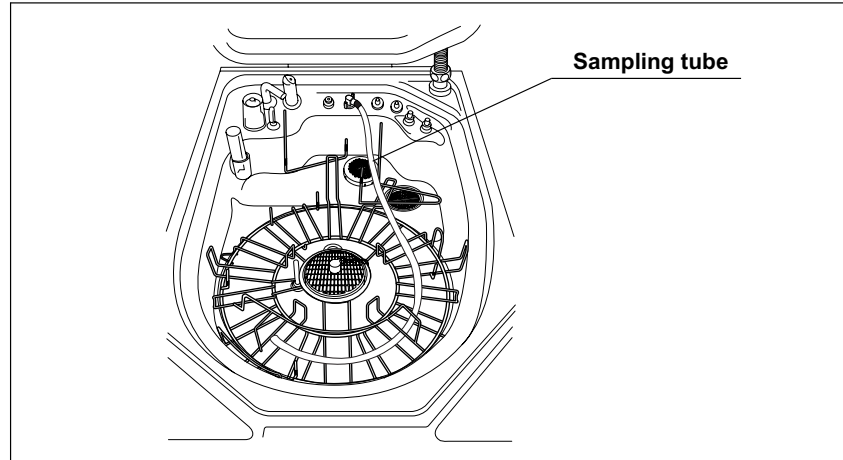


Figure 7.34

WARNING

Make sure that the sampling tube is not buckled after connected. If the sampling tube is not kept straight, the cleaning/disinfection of the sampling tube may become insufficient, or it may cause the malfunction of the equipment.

2. Close the lid.
3. Press the PROG button on the main control panel to select a program [1] to [3] (see Figure 7.35).

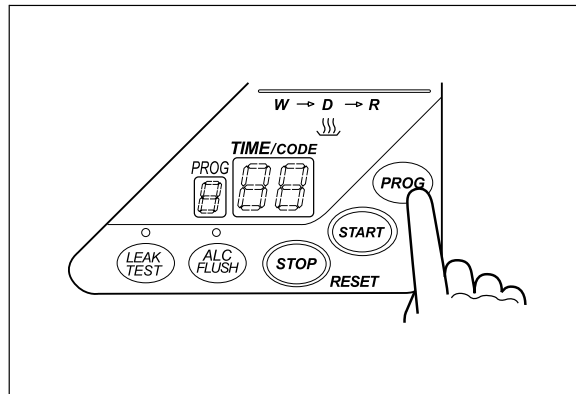


Figure 7.35

NOTE

The sampling tube is disinfected first.

4. 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.

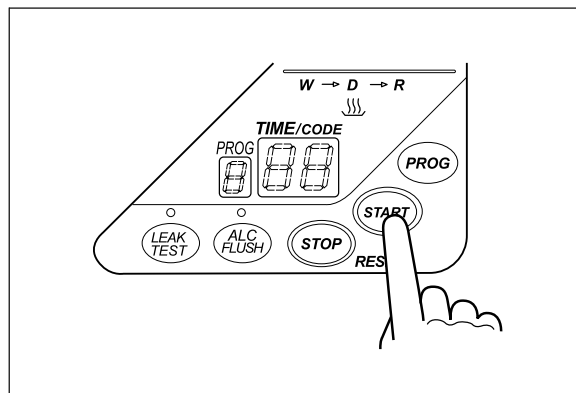


Figure 7.36

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

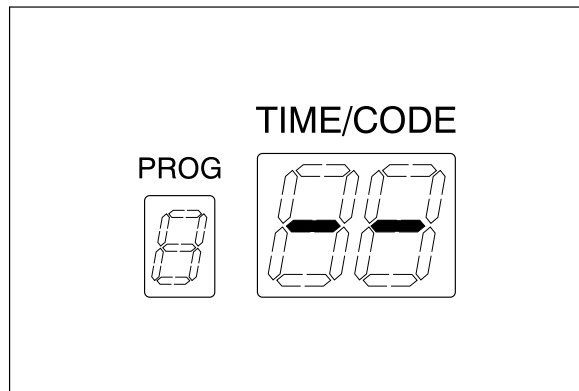


Figure 7.37

6. Step the foot pedal to open the lid.
7. Remove the gas filter case from the deep part of the lid.

CAUTION

- Be sure to wear sterilized gloves when touching the cleaned/disinfected sampling tube in order to prevent contamination. Do not touch the lid, the cleaning tub, the container or any area wearing sterilized gloves. Otherwise, collected water may be contaminated by the bacterium.
- Make sure that the end of the sampling tube does not come into contact with the lid, the cleaning tub, the container, or any area. Otherwise, collected water is contaminated by the bacterium.

8. Close the lid while taking the sampling tube out of the gas filter case mount (see Figure 7.38).

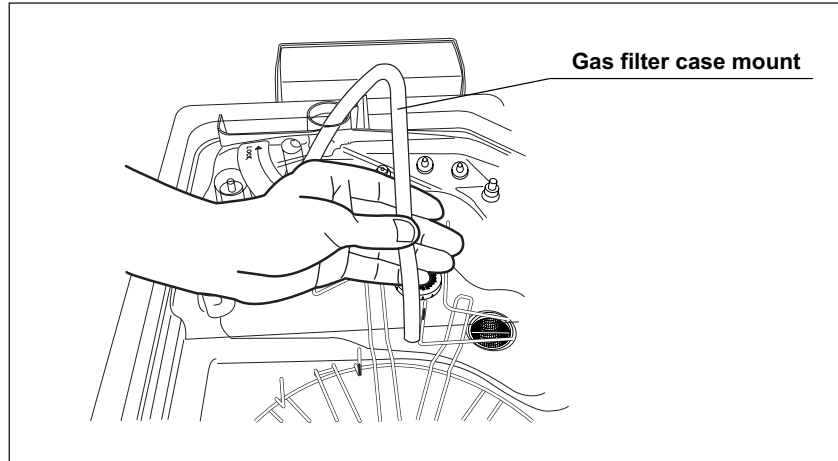


Figure 7.38

9. Place a container with 2 L or large capacity under the end of the sampling tube.
10. Press the FUNC SEL button on the subcontrol panel to select "RINSE" (see Figure 7.39).

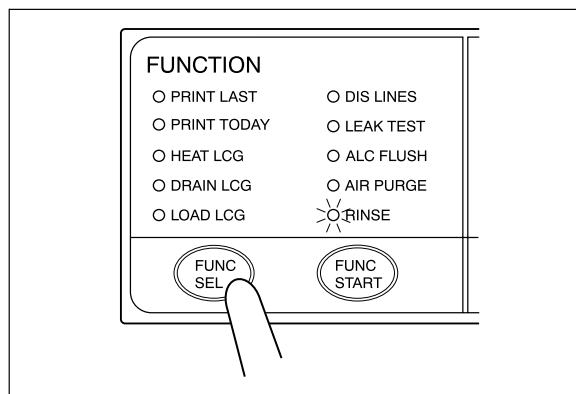


Figure 7.39

CAUTION

During rinse, hold the end of the sampling tube. Otherwise, the water may spout out of the sampling tube, and leak from the container.

11. Press the FUNC START button on the subcontrol panel (see Figure).

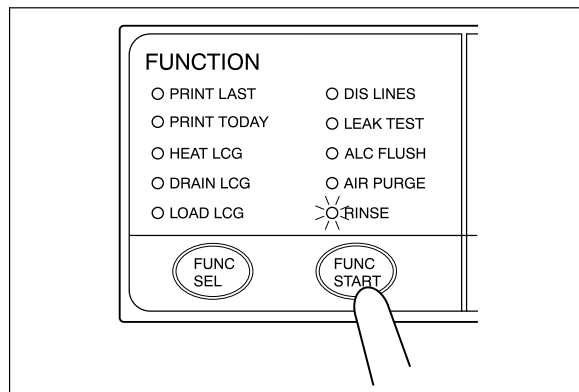


Figure 7.40

12. Make sure that water comes out from the end of the sampling tube and the sampling tube is filled with water (see Figure).

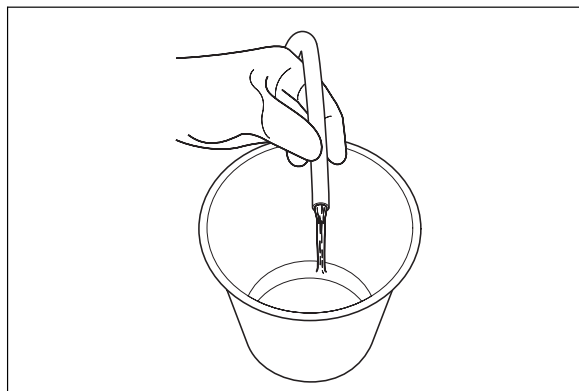


Figure 7.41

13. Put the end of sampling tube in the sterilized bottle. Collect the certain amount of water required for the microbiological examination.
14. After collection, press the STOP button and wait during the automatic processing (As the TIME/CODE display on the main control panel will show [E00], while automatic processing).

7.5 Replacing the air filter (MAJ-823)

To prevent deterioration of air feed capability due to clogging and contamination of the air feed pipe, replace the air filter every month.

Check	Required items
	Air filter (MAJ-823)
	Indelible pen or other writing implement

Table 7.9

1. Open the front door of the device.
2. Remove the old air filter by pushing the sleeves on the two connectors toward the device.

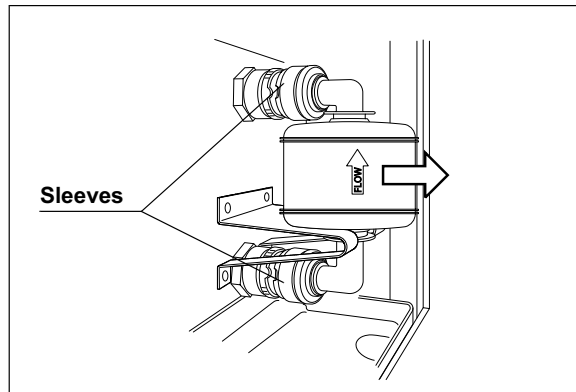


Figure 7.42

NOTE

The air filter is not installed on the device when it is shipped from the factory.

3. With the FLOW indicator pointing upwards, attach a new air filter by fitting into the two connectors until they click (see Figure 7.43).

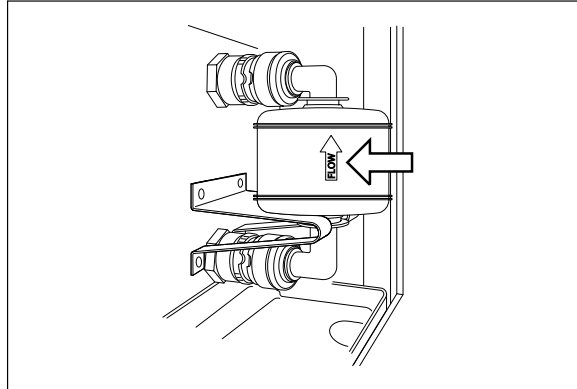


Figure 7.43

4. Enter the date on the replacement date indication sticker provided with the air filter using an indelible ink pen, and attach the sticker to the device where it will be easily visible (remove the previous replacement date indication sticker before attaching the new sticker).
5. Make sure that the power switch of the device is ON.
6. Close the lid by pushing it until it clicks.
7. Press the FUNC SEL button on the subcontrol panel to select "AIR PURGE".
8. Press the FUNC START button on the subcontrol panel.

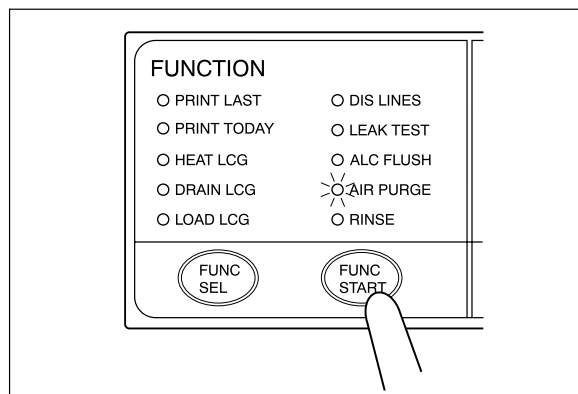


Figure 7.44

NOTE

After the FUNC START button is pressed, it takes about 40 seconds before actual air purge starts.

9. When air purge has started, touch the air filter connectors to ensure that air is not leaking out. Also, ensure that the connectors do not produce a whistling sound, which would mean there is an air leak.

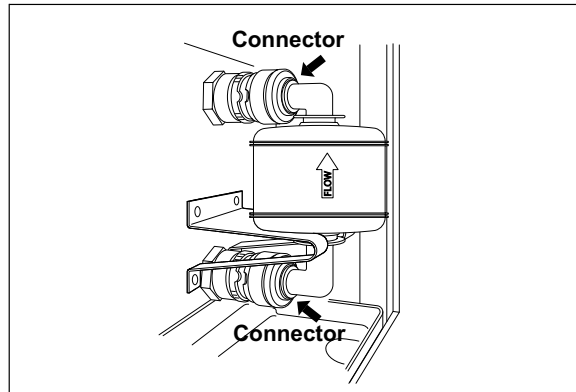


Figure 7.45

10. Press the STOP/RESET button to end air purge. If an air leak is detected, reinstall the air filter as described in Section 3.10, "Installation of air filter (MAJ-823)" in the "Instructions-Installation Manual".
11. Close the front door.

7.6 Cleaning the float switch

Check	Required items
	Detergent
	Brush

Table 7.10

CAUTION

Always press the power switch OFF before cleaning the float switch. Moving the float switch while the power switch is ON will be detected as an error by the device and result in error processing.

1. Make sure that the power switch is OFF.
2. Turn the float switch cover in the direction shown to remove.

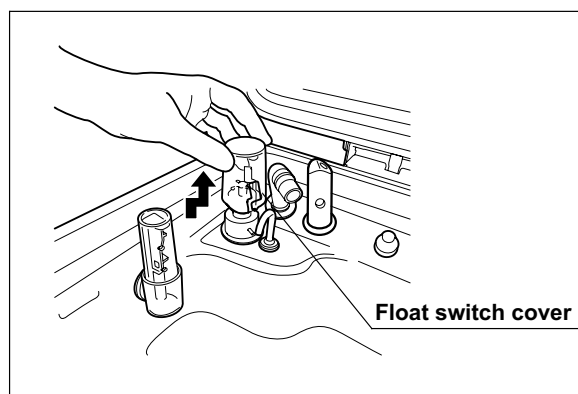


Figure 7.46

3. Clean the float switch cover in running water. Remove dirt using a soft brush with detergent.

4. While applying clean water to the float switch, clean the stem using the brush. Move the float up and down manually and thoroughly clean around the stem. Rinse the float switch by pouring clean water over it.

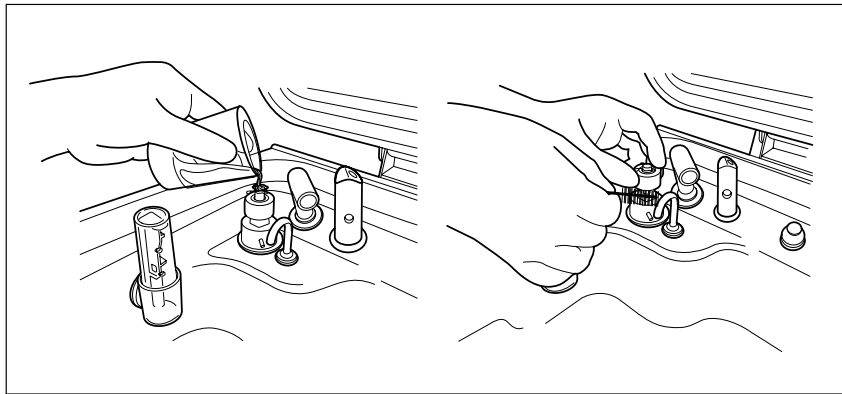


Figure 7.47

5. Wipe the moisture around the float switch using a clean cloth.
6. Attach the float switch cover to the original position above the float switch.

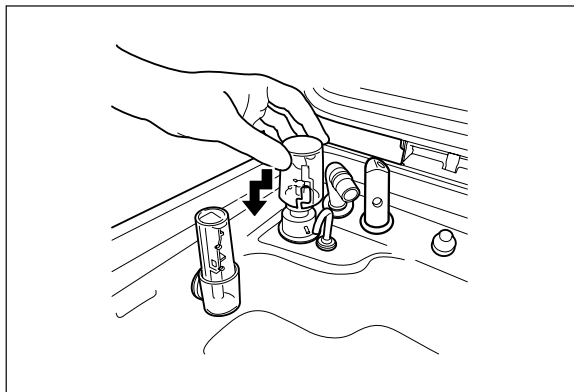


Figure 7.48

7.7 Checking the lid and lid packing

Repeated or extended use of the lid can lead to deterioration of the packing on the back of the cover and result in water leaking through the packing. Before using the device, always check the following points visually.

- The lid is not cracked, torn, or otherwise damaged.
- The packing is not cracked, torn, or otherwise damaged.
- The packing is not separated or detached from the lid.
- The lid can be opened and closed properly.

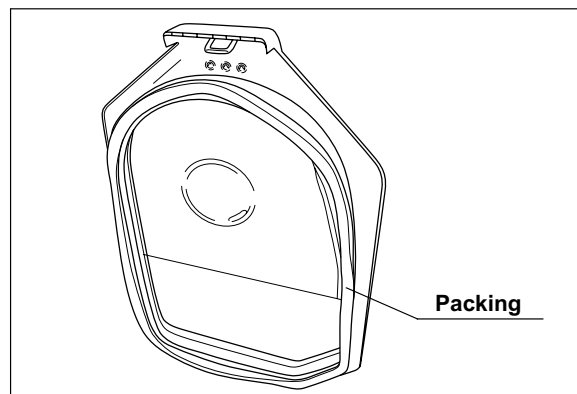


Figure 7.49

CAUTION

Do not use the packing if it is abnormal. Otherwise, the cleaning fluid or disinfectant solution may leak. If any irregularity is observed with the packing, please contact Olympus.

7.8 Cleaning the detergent/alcohol drawer

CAUTION

Be careful not to injure your hand by hitting the detergent/alcohol drawer.

1. Pull out the detergent/alcohol drawer.
2. Disconnect the tubes from the detergent tank and alcohol tank, and take the tanks out of the drawer.
3. Take the detergent/alcohol inner tray out of the detergent/alcohol drawer.
4. Clean the detergent/alcohol inner tray in fresh running water.
5. After cleaning, dry it thoroughly with a clean cloth.
6. Place the detergent/alcohol inner tray back on the detergent/alcohol drawer.
7. Place the detergent tank and alcohol tank on the detergent/alcohol drawer and connect the tubes to the original positions on the tanks.
8. Turn the connectors to correct the orientations of the tubes as shown below.

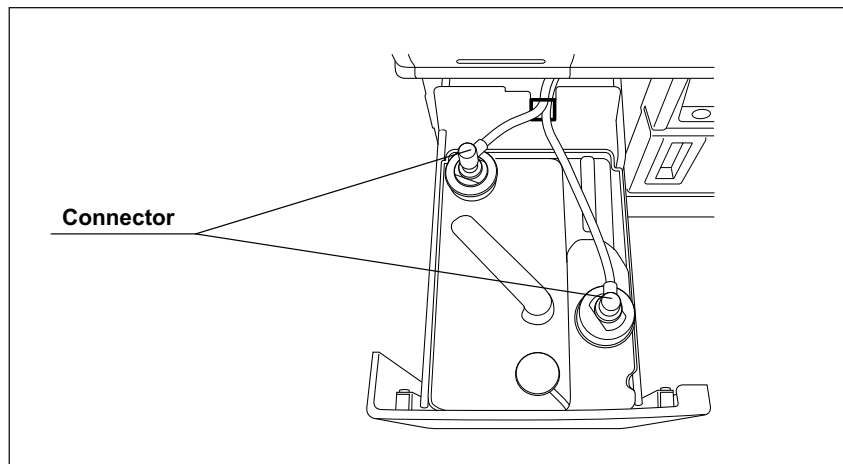


Figure 7.50

9. Close the detergent/alcohol drawer.

7.9 Cleaning the detergent tank

CAUTION

Do not tilt the alcohol or detergent tank while there is still fluid inside. Otherwise, the fluid may spill.

1. Pull out the detergent/alcohol drawer.
2. Disconnect the tube from the detergent tank and take the tank out of the detergent/alcohol drawer.
3. Empty the tank.
4. Using a cloth moistened with neutral detergent solution, clean the external surface. Rinse the internal and external surfaces of the tank in running water, and wipe the external surface with a clean cloth. To prevent bacterial growth, it is also recommended to wipe the outside of the tank with a cloth moistened with 70% ethyl alcohol or isopropyl alcohol.
5. Drain out the water inside the detergent tank, dry it thoroughly, put it back on the detergent/alcohol drawer and attach the cap and tube to it.
6. Turn the connectors to correct the orientations of the tubes as shown below.

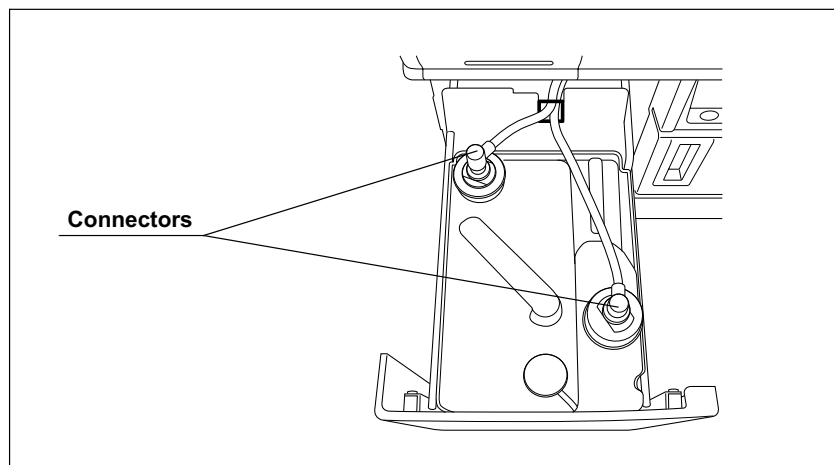


Figure 7.51

7. Close the detergent/alcohol drawer.

7.10 Cleaning the accessories and accessory holders

As the accessories listed below tend to attract dirt and dust, they should be cleaned periodically and stored in a clean environment. The accessory holder used for storage should also be kept clean in the same way.

- Connecting tubes
- Filter tubes
- Hoses
- Gas filter case excluding the gas filter
- Adapters, etc.
- Accessory holder
- Card holders

Check	Required items
	70% ethyl alcohol or isopropyl alcohol
	Clean cloth

Table 7.11

1. Remove the accessory holder from the back side of the front door by loosening the two retaining screws.

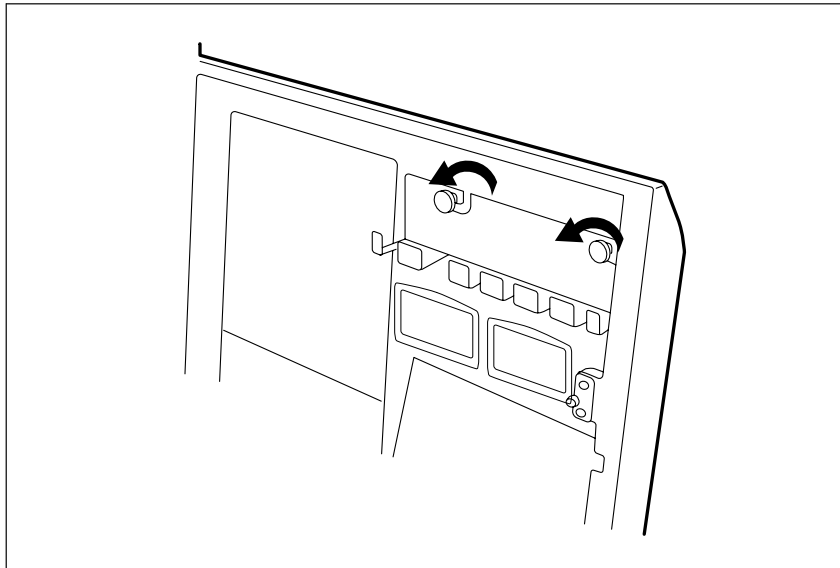


Figure 7.52