

For cleaning and disinfection, only the following maintenance items are extracted.
20.3 Preventive Maintenance Performed by the User

OPERATION MANUAL
FOR
DIAGNOSTIC ULTRASOUND SYSTEM
Aplio i900 / Aplio i800 / Aplio i700
MODELS TUS-AI900/TUS-AI800/TUS-AI700
[FUNDAMENTALS]
(2B771-447EN*F)

CAUTION:

In the USA, federal law restricts this device to sale and use by or on the order of a physician.

IMPORTANT!

Read and understand this manual before operating the equipment. After reading, keep this manual in an easily accessible place.

CANON MEDICAL SYSTEMS CORPORATION

© CANON MEDICAL SYSTEMS CORPORATION 2020-2021

ALL RIGHTS RESERVED

Issued : 2021-10

20.3 Preventive Maintenance Performed by the User

20.3.1 Cleaning the system

- ⚠ CAUTION:**
1. Before cleaning the system, be sure to disconnect the system power plug from the outlet of the facility. If the system is defective, an electric shock may occur.
 2. Do not spill or spray liquids such as water onto the system or peripheral units. If a liquid such as water enters the system or peripheral units, an electric shock may occur.
 3. Do not use any chemicals or methods other than those specified to clean the system. If this is not observed, deterioration or discoloration of the surface of the system may result.

NOTICE: Do not use solvents (such as paint thinner, benzine, or alcohol) or abrasive cleansers to clean the system. These substances may cause deterioration or discoloration of the system.

1 Cleaning the transducer



Clean, disinfect, and sterilize the transducer referring to the operation manual provided with the transducer.

2 Cleaning the transducer holder and gel holder



- (a) Wipe off any stains on the transducer holder and gel holder using a soft, dry cloth.
 - (b) If it is difficult to remove stains, wipe them off using a soft cloth moistened with mild detergent.
-

3 Cleaning the reference signal cable

- NOTICE:**
1. Do not allow the reference signal cables to become wet (with water or chemical solution). If wet clips are used, the ECG tracing will not be displayed correctly.
 2. Do not immerse the connector in water or chemical solution. If moisture enters the connector, the system may fail. Wipe the connector with a dry cloth only.



Clean the reference signal cable regularly.

- (a) Wipe off all organic materials (such as blood or other body fluids) from the reference signal cable using a soft cloth moistened with any of the following (as appropriate).
 - Purified water
 - Mild detergent diluted with purified water
 - Ethanol for disinfection (76.9 to 81.4 vol% at 15°C)
 - (b) Wipe the cables with a clean, soft, dry cloth and then dry the cables. When drying the cables, do not use heat.
 - (c) Confirm that the cables show no signs of damage, deformation, or peeling.
-

4 Cleaning the ECG limb clips (clip-type electrodes)

NOTICE: Before drying the ECG limb clips, make sure that there is no electrolyte cream remaining on the clips, and that all water and chemical solution has been wiped off. Otherwise, ECG tracing will not be displayed correctly.



Clean the ECG limb clips regularly.

- (a) Wipe off all organic materials (such as blood or other body fluids) from the ECG limb clips using a soft cloth moistened with any of the following (as appropriate).
 - Purified water
 - Mild detergent diluted with warm water (39°C or less)
 - Cationic detergent diluted with warm water (39°C or less)
 - Ethanol for disinfection (76.9 to 81.4 vol% at 15°C)
- (b) Wipe the ECG limb clips with a clean, soft, dry cloth and then dry them. Do not use heat to dry the electrodes.
- (c) Confirm that the ECG limb clips show no signs of damage, deformation, or peeling.

5 Cleaning the PCG sensor and the pulse sensor

NOTICE: Do not immerse the PCG sensor or the pulse sensor in water or chemical solution. If moisture enters the connector, the system may fail.



PCG sensor



Pulse sensor

Clean the PCG sensor and the pulse sensor regularly.

- (a) Wipe off all organic materials (such as blood or other body fluids) from the PCG sensor or the pulse sensor using a soft cloth moistened with any of the following.
 - Purified water
 - Mild detergent diluted with purified water
 - Ethanol for disinfection (76.9 to 81.4 vol% at 15°C)
- (b) Wipe the PCG sensor or the pulse sensor with a clean, soft, dry cloth and then dry the PCG sensor or the pulse sensor. Do not use heat to dry it.
- (c) Confirm that the PCG sensor or the pulse sensor shows no signs of damage, deformation, or peeling.

6 Cleaning the monitor

- NOTICE:**
1. Do not hit or apply excessive force to the LCD screen during cleaning. Doing so may damage the monitor.
 2. Never use a stiff or hard cloth to clean the monitor. Doing so may damage the monitor cover or LCD screen.
 3. Do not allow liquid droplets to remain on the LCD screen. The droplets may cause small stains when they dry or may enter the LCD screen, possibly resulting in failure.



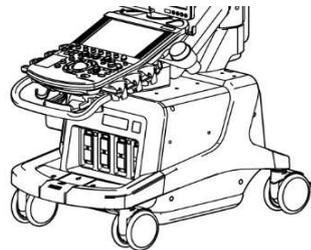
- (a) Monitor cover
 - Clean the monitor cover using a soft cloth moistened with mild detergent.
- (b) LCD screen
 - Use a soft cotton cloth or lens cleaning paper to clean the LCD screen.
 - If stains on the LCD screen are difficult to remove, wipe the screen gently with a soft cloth slightly moistened with water or mild detergent and then wipe it dry with a soft, dry cloth.

7 Cleaning the surface of the touch panel



- (a) Clean the surface of the touch panel using a commercially available lens cleaning cloth (non-woven rayon cloth etc.).
- (b) If necessary, use a piece of soft cloth moistened with water or mild detergent and then tightly wrung out.

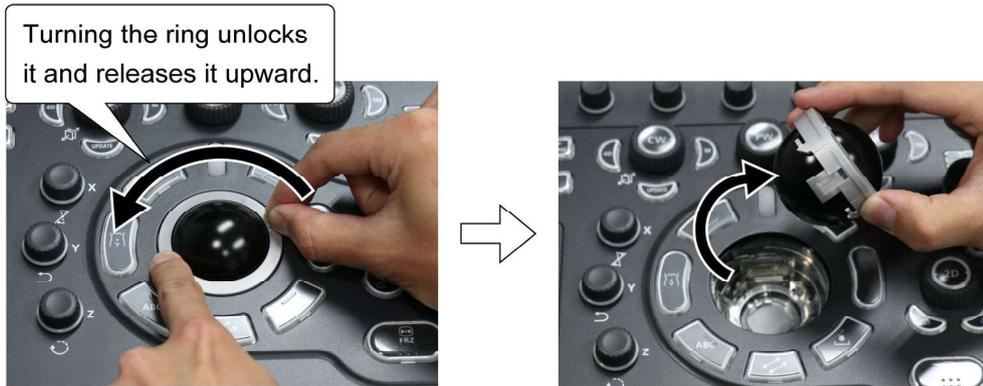
8 Cleaning the system, main panel, and transducer connector



- (a) Wipe the system using a soft cloth moistened with mild detergent.
 - (b) Clean around the switches or keys on the main panel using cotton buds.
 - (c) Wipe the transducer connector with a soft, dry cloth. If it is difficult to remove all the stains with a dry cloth, use a soft cloth moistened with water.
-

9 To clean the trackball

- (a) Turn the trackball ring in the direction of the arrow in the left figure below and remove it together with the trackball.



NOTICE: To prevent malfunction, be careful when removing the ring.

- (b) Remove the ball from the ring, taking care not to damage the ball.



* Keep the removed ball in a box to prevent it from being dropped inadvertently.

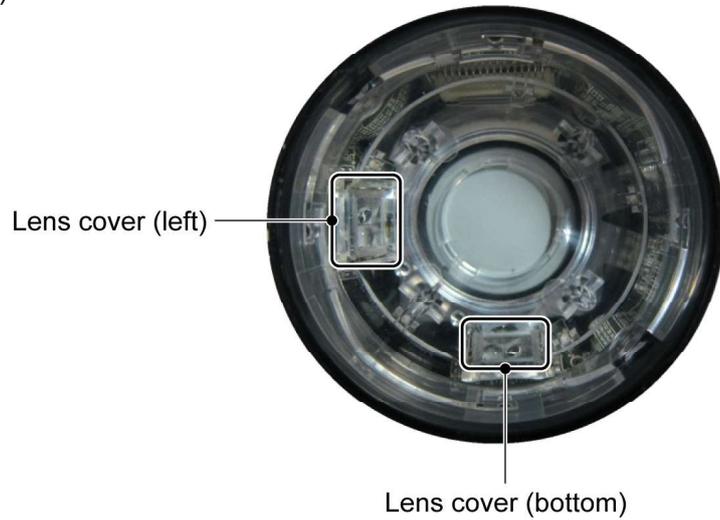
- (c) Remove the inner ring (dustproofing) from the ring and remove any dust and dirt on the contact surface.



Contact surface

Inner ring

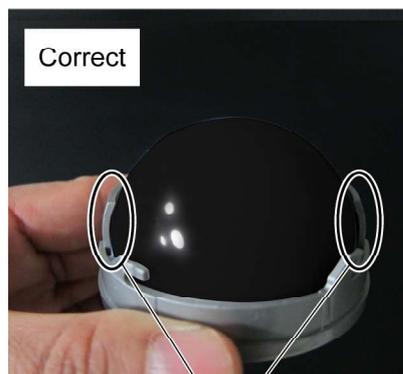
- (d) Remove all foreign matter from the ball and from the interior of the case using a soft cloth or gauze. Do not use sharp or hard materials to clean inside the case. In addition, use a microfiber cloth to clean lens cover sections (left and bottom).



- (e) Set the ball in the ring.



NOTE: Be sure to insert the inner ring when setting the ball. If the inner ring is not fitted properly, the ball may not rotate properly. Be sure to fit the inner ring properly.

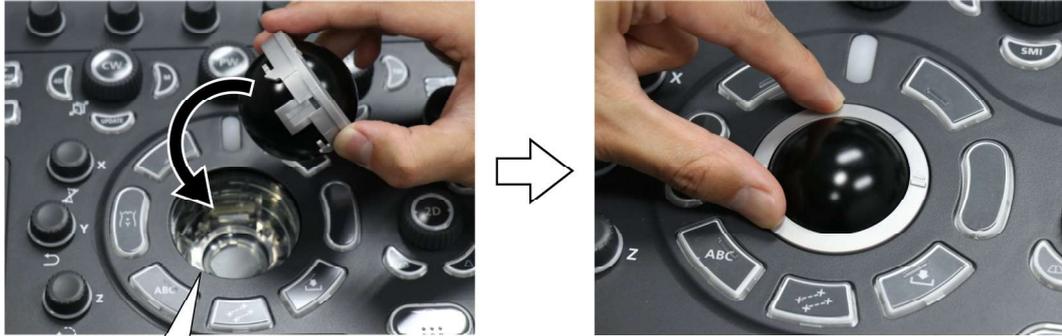


Tall flap



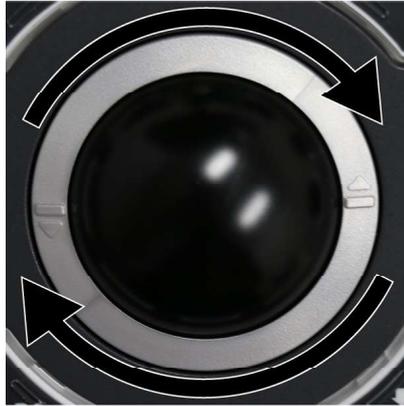
Inner ring

- (f) Gently set the ring in the unit and rotate the ring so that the \triangle mark is at the position shown below.



Make sure that there is no foreign matter inside the trackball assembly.

- (g) Turn the ring in the direction of the arrows until it is locked (fixed).



- (h) After the trackball is installed, check the following.

- Operate the ball and confirm that there is no unevenness in the operating force required, that there is no noise during operation, and that the ball does not come loose during operation.
- Turn ON the power and confirm that the trackball operation is normal.

10 Cleaning the air filter

Check and clean the air filter to prevent overheating of the system or reduction in system performance/reliability due to clogging of the filter.

NOTICE:

- Do not boot up the system while the air filter is removed. The system may malfunction.
- The air filter cannot be washed with water. Doing so may damage it.

- (a) Lock the casters with the left and right front wheels facing the movement direction of the system.
- (b) Remove the air filter (1 location).



Air filter

- (c) Remove all dust from the filter using a vacuum cleaner at a location away from the system.
 - (d) Remount the air filter.
-

20.3.2 Disinfecting the system

This subsection describes the procedures and precautions for disinfecting the system.

For disinfection of transducers, refer to the operation manuals provided with the transducers.

⚠DANGER: After disinfecting the system, ventilate the room fully before turning the system ON.
If a flammable or explosive gas remains near or in the system, it may cause a fire or explosion.

⚠WARNING:

1. Before disinfecting the system, be sure to disconnect the system power cable plug from the outlet of the facility. If the system is defective, an electric shock may occur.
2. Do not spill or spray liquids such as water onto the system or peripheral units. If a liquid such as water enters the system or peripheral units, an electric shock may occur.

⚠CAUTION:

1. Observe the following precautions to prevent infection.
 - Wear sterile protective gloves.
 - Wear new sterile protective gloves each time disinfection is performed.
2. Do not disinfect the system using a method or chemical other than those specified in this manual. Doing so may result in the system not being disinfected properly or in the surface of the system deteriorating or becoming discolored.
3. After chemical disinfection, dry the surface of the system fully.
4. The efficacy of disinfectants is not guaranteed by Canon Medical Systems. Contact the manufacturer of the relevant chemical for information on its efficacy.
5. Determine the effectiveness of the chemical based on the criteria (effective period, number of times of use, discoloration of the chemical, results of testing using effectiveness test kits, etc.) described in the documentation provided by the manufacturer of the chemical.

NOTICE:

1. When chemical disinfection is repeated over time, the surface of the system changes gradually.
2. If any abnormality related to functions of the product is observed after disinfection, stop using the product and contact your Canon Medical Systems service representative for repair.

1 Chemicals acceptable for use

The chemicals listed below are acceptable for use. For details of the handling procedures for a chemical, refer to the documentation provided by its manufacturer.

NOTICE: Do not use hypochlorite for disinfecting the reference signal cable.

Chemical name	System main unit	Monitor	UIOM-001A Organic EL monitor	Footswitch	Reference signal cable / ECG limb clips	PCG sensor / Pulse wave sensor
Cleanisept® wipes: Quaternary ammonium compounds (0.75%) *2	✓	✓		✓		
SANI-CLOTH® PLUS: Quaternary ammonium chlorides (0.25%)	✓	✓		✓		
SANI-CLOTH® AF3: Quaternary ammonium chlorides (0.28%)	✓	✓		✓		
SUPER SANI-CLOTH®: Quaternary ammonium chlorides (0.50%)	✓	✓		✓		
Dispatch® Hospital Cleaner: Sodium hypochlorite (0.65%)	✓	✓		✓		
Clorox Healthcare™ Bleach Germicidal Cleaner: Sodium hypochlorite (0.65%)	✓	✓		✓		
BIOSPOT® (5000 ppm): Chlorine tablets, sodium dichloroisocyanurate (NaDCC)	✓	✓		✓		
Clinell® Universal Wipes: Polyhexamethylene biguanide (PHMB)	✓	✓		✓		
CaviWipes™ : Isopropyl alcohol	✓	✓		✓		
CaviWipes1™ : Isopropanol	✓	✓		✓		
Tristel Duo™ ULT: Chlorine dioxide	✓	✓		✓		
WIP'ANIOS EXCEL: Didecyldimethylammonium chlorides *2	✓	✓		✓		

Chemical name	System main unit	Monitor	UIOM-001A Organic EL monitor	Footswitch	Reference signal cable / ECG limb clips	PCG sensor / Pulse wave sensor
Trophon® Companion Cleaning Wipes: Octyl decyl dimethyl ammonium chloride	✓	✓		✓		
Mikrozyd® PAA wipes: Peracetic acid	✓			✓*1		
Mikrozyd® universal wipes premium: Propan-2-ol Ethanol *2	✓	✓		✓		
Mikrozyd® sensitive wipes: Didecyldimethylammonium chlorides *2	✓	✓		✓		
Mikrozyd® AF liquid: Propan-1-ol Ethanol *2	✓	✓		✓		
Mikrozyd® AF wipes: Propan-1-ol Ethanol *2	✓	✓		✓		
Isopropyl alcohol 70 vol%	✓	✓	✓	✓		
Ethanol for disinfection (76.9 to 81.4 vol% at 15°C)	✓	✓	✓	✓		✓
Alkyldiaminoethylglycine hydrochloride (0.5%): Tego-51 etc.					✓	
Benzalkonium chloride (0.2 w/v%): Osvan etc.					✓	
Benzethonium chloride: Hyamine® etc.					✓	
Chlorhexidine gluconate (0.5 w/v%): Hibitane etc.					✓	

✓ : Can be used.

*1: Cannot be used on the footswitch joint section (metal part).

*2: Not available in the USA.

<<Peripheral devices (printer etc.)>>

Refer to the documentation provided with the peripheral device.

2 Disinfection procedures

Perform the disinfection work according to the instructions of a disinfection professional.

- (a) Turn the system power OFF and disconnect the power cable plug from the outlet of the facility.
 - (b) Wear protective gloves to prevent infection. Wear new sterile protective gloves each time disinfection is performed.
 - (c) Be sure to perform cleaning before performing disinfection.
 - (d) Moisten a piece of soft cloth with a liquid chemical disinfectant, squeeze it lightly, and wipe the surface of the unit. Be extremely careful not to allow the detergent to enter the unit.
 - (e) After disinfection with chemicals, wipe the system with sterile or deionized water to remove any residual disinfectant from the surface of the system. Do not reuse the sterile or deionized water.
 - (f) Dry off the surface of the system using a piece of soft sterile cloth or gauze.
Do not use heat to dry the system.
Confirm that there is no residual disinfectant. For detailed information concerning handling of the disinfectant, refer to the manual provided with the disinfectant.
To ensure that the disinfectant is effective, confirm the working concentration, replacement interval, and temperature of the disinfectant. To ensure that the disinfectant is effective, be sure to observe the use criteria (such as the effective period, number of times to be used, discoloration, and the results obtained using the effectiveness test kit) described in the manual provided with the disinfectant.
 - (g) Confirm that the disinfected parts are not damaged or deformed.
 - (h) After disinfecting the system, ventilate the room fully before turning ON the system.
-

- | |
|---|
| <p>NOTICE:</p> <ol style="list-style-type: none">1. Do not leave the reference signal cable or ECG limb clips wet with water or chemical solution. Incorrect display of ECG waveforms may result.2. Do not immerse the reference signal cable connector in water or chemical solution. If moisture enters the connector, the system may fail.3. The PCG sensor and the pulse sensor are not waterproof. Do not immerse the PCG sensor or the pulse sensor in water or chemical solution.4. Do not boil the ECG limb clips. They may be damaged. |
|---|