M99

Arterial Puncture Wrist

Production supervision
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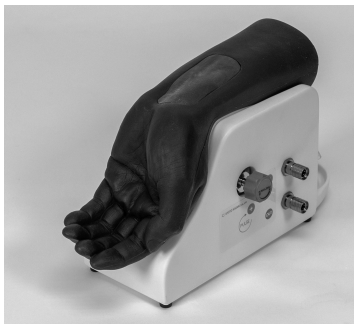
Instruction manual

Contents



Arterial Puncture Wrist Dark tone

Arterial Puncture Wrist Light tone

Movie Site

English Site

https://youtu.be/5TVn4bw3Kkw

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⚠Caution | Do not mark on the model and other components with pen nor leave printed materials contacted on surface.
Ink marks on the models cannot be removed.

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Manufacturer's note

Radial artery puncture is a common approach for blood collection and arterial line placement.
This innovative simulator is designed to provide training in arterial puncture with true-to-life feeling.
Any use not in accordance with the enclosed instructions is strongly discouraged.

Features

Arterial pulsation is palpable.
Realistic resistance of tissue and artery wall felt with the injection needle.
Natural flashback of artificial blood into the needle can be observed.
Radial arterial line placement can be simulated.
No puncture trace remains on the injection site.
One-touch, leak-free connections.
Easy clean up.

Manufacturer's note
DOs and DON'Ts

⚠ DOs and DON'Ts

DOs

●Operate the system under the designated circumstances

Power input: AC100V～240V plus or minus 10%, 50Hz/60Hz
Temperature range: between 0 degrees C and 40 degrees C (no congelation)
Relative humidity; between 0% to 80% (no condensation)
*Connecting to power source outside of the designated range may lead to fire.

●Safe disposition

To avoid short circuit, do not run the simulator set above a power receptacle.

●Handle the power plug and cord observing following precautions

1. Clean the head of the plug periodically.
2. Plug in the plug to the outlet firmly to the end.
3. Always hold the plug when unplugging. Do not pull the cable.
4. Do not force to bend, twist the cable and avoid scratching or cutting on it.

Failing to follow the above precautions can result in damage in the plug and the cable, constituting risk of fire or shock.

●When the electric parts get warm or produce smoke, immediately turn off the power and unplug from the power source

For safety reasons, always maintain an appropriate space around the circulation pump while running the system so as to allow the operator to unplug the power supply in case of system malfunction.
Risk of fire. Contact your distributor or the manufacturer for repair.

●Handle with care

The materials for the models are special compositions of soft resin.
Please handle them with utmost care at all times.
The manikin skin may be cleaned with a wet cloth, if necessary, using mildly soapy water or diluted detergent.

●Storage

Store the simulator at room temperature, away from heat, moisture and direct sunlight.
Storage under the temperature above 50 degrees C may reduce the performance quality of the simulator.
Storage in a dark, cool space will help prevent the skin color from fading.

DON'Ts

●Do not disassemble or open electric or precision components

Do not open up or disassemble the housing for electric parts or precision components.
Refrain from opening up any lids, caps or covers for such areas, and never run the system while any of such covers are open.
*Never disassemble the electric components, power plug and cable as it may create a risk of fire, shock or injury. Contact your distributor or the manufacturer for repair.

●Never wipe the product and components with thinner or organic solvent

●Ink marks on the soft surface won't be removable

Don't mark on the product and components with pen or leave any printed materials in contact with their surface.

●Do not drop or give shocks

The electric components are precision instruments. Strong shocks or continuous vibration may cause breakages of its internal structure.

●Do not run the system continuously over 2 hours

Take at least 30 minutes shutdown, turning off the power, every 2 hours.

●Do not wet the electric components

Do not pour or spill water or liquid detergent over the electric components, power cable and power plug. Running the system while the electric components are wet may create a shock hazard or a risk of fire.

●Do not handle the power plug with wet hands

Risk of shock.

●No fire

Do not put the product close to fire. It may lead to discoloration or deformation of the product as well as short circuit, creating a risk of fire.

The color of the tube or soft resin parts may change over time, but this has no effect on simulator's functionality.

The safety rules below focus on the safety of the user; please read carefully before using the product.

● The signs below represent uses that may be dangerous or harmful.

⚠ Warning	**This sign represents dangerous use that may lead to fire hazards or electrocution.**
⚠ Caution	**This sign represents harmful use toward the simulator or its parts that may lead to permanent damage or disfiguration.**

● These signs below represent strongly recommended uses for safety.

	**A circle with a cross represents actions that are strongly discouraged. This sign asks users not to attempt taking the simulator apart.**
	**This sign represents rules that we strongly encourage users to follow.**

⚠ Warning

When the manikin or the control box becomes hot or begins to smoke, immediately unplug the power cord.

This is a major fire hazard. Please contact your local distributor or Kyoto Kagaku CO., LTD for repairs.

Unplug the power cord when the simulator is not in use.

This will prevent electrocution or fire hazards that may cause burns and damages.

Remove any dust that has accumulated on the power plug and insert the plug completely into the power socket.

Dust and incomplete connection can lead to a major fire hazard.

Keep the manikin, its machinery and power cord away from water or detergent.

Wet system can lead to fire hazards and/or electrocution.

Do not handle the power cord with wet hands.

This is to avoid electrocution.

Keep flammable materials away from the product.

Such materials can lead to fire hazards and damages to the simulator.

Use the designated power supply.

Misuse may lead to damages and fire hazards.

When unplugging the power cord, hold by the plug and pull.

Unplugging by holding the cord may lead to damages to the cord itself, fire hazards or electrocution.

Do not attempt to take apart or remodel the product.

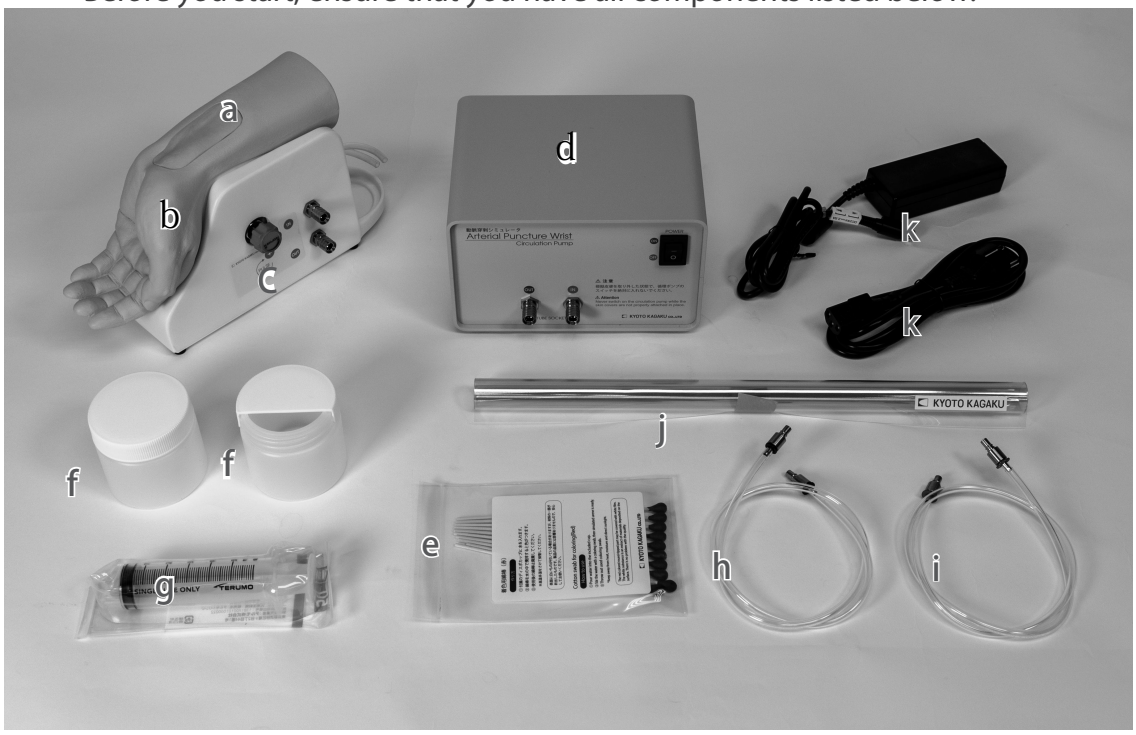
This could lead to fire hazards, electrocution and injuries. Please contact your local distributor or Kyoto Kagaku CO.,LTD for repairs.

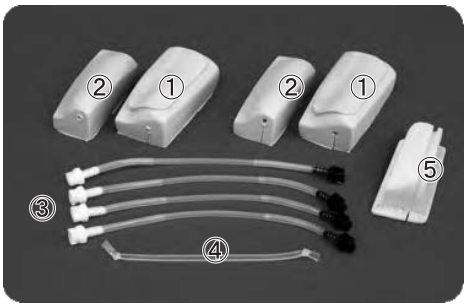
Do not bend, twist or damage the power cord.

This is to avoid to fire hazards and electro cution.

Set Includes

Before you start, ensure that you have all components listed below.





a. Puncture unit
  ① Skin(outer) 2
  ② Skin (inner) 2
  ③ Artery tube 4
  ④ silicon tape 1
  (Attached to Radius base)
  ⑤ Radius base 1

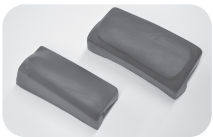
b. Hand-wrist model 1
c. Simulator base 1
d. Circulation pump 1

e. Simulated blood (Swab type) 10
f. Jar 2
g. Syring(50mL) 1
h. Tube (Irrigation: black ring) 1
i. Tube (Drainage: red ring) 1
j. Vinyl sheet 1
k. AC adapter and power cable 1
l. Instruction manual 1

Note: The needle holes on the brand new artery tubes are intentionally made to control pressure, and not a product defect.

Replacement parts

Parts name	Quantity	Product code
Skin covers	One set (each one of outer and inner skin)	11351-010／010-D
Silicon tape	A set of four	11351-030
Artery tube	A set of four	11351-040
Simulated blood (Swab type)	A set of 10	11388-400


11351-010-D

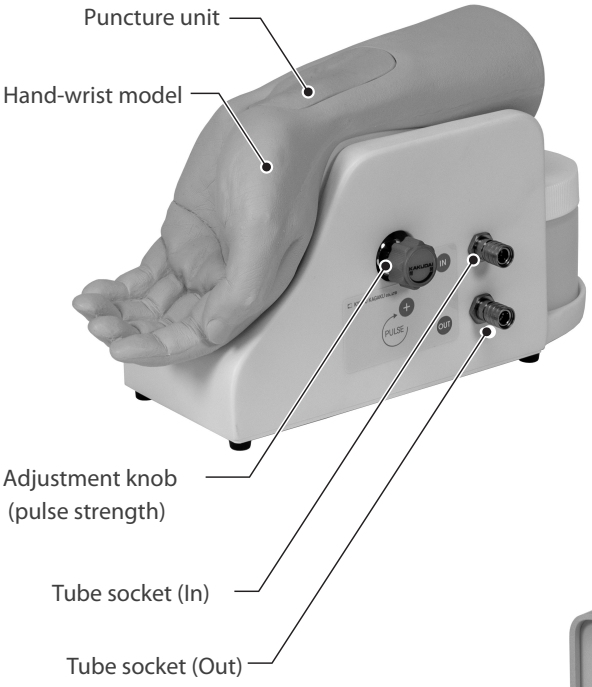

11351-010

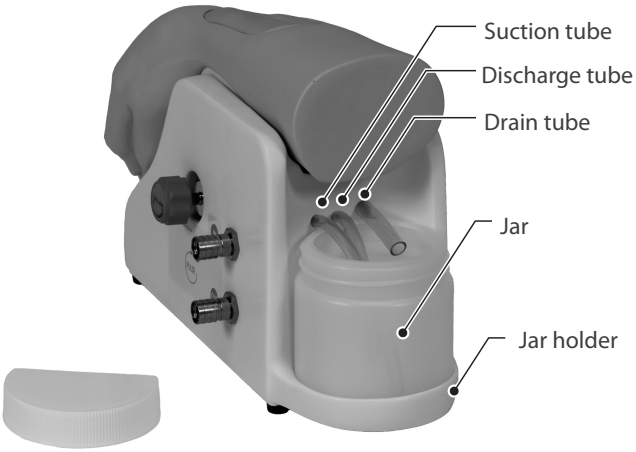

11351-030


11351-040

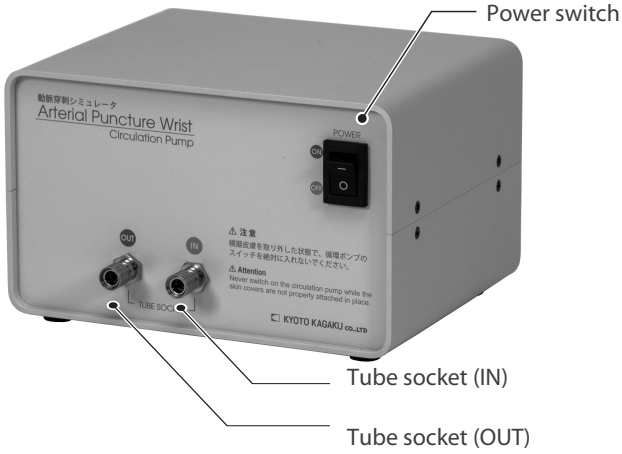

11388-400

Parts name and functions





AC adapter and power cable



Recommended operation environment for the circulation pump

Environmental conditions: 0 degrees C. - 40 degrees C

Relative humidity: Less than 80 per cent (no condensation)

Working environment: Indoor
Avoid exposure to the elements

Altitude: 2000 meters above sea-level

Installation category: Ⅱ (2)

Pollution degree: Ⅱ (2)

Supply voltage: AC 100V-240V～ 1.45A 47 - 63Hz

Preparation

Preparation of simulated blood
Connection of the circulation pump

Please note: We recommend performing preparation and training on the included vinyl sheet.

1 Preparation of simulated blood

1. Pour 1000mL of water into the plastic beaker. Put the simulated blood (swab type) into the beaker and stir the water sufficiently to prepare the simulated blood.

※ The plastic beaker in this picture is not included.

⚠ Attention

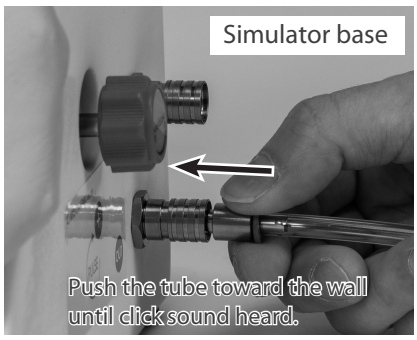
Take care not to drop simuleted blood on clothes as simuleted blood stains can be very difficult to remove.

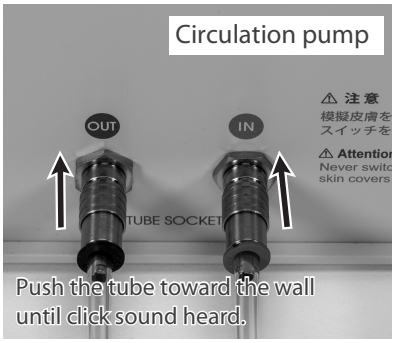
2. Place the jar on the jar holder at the back side of the simulator base.

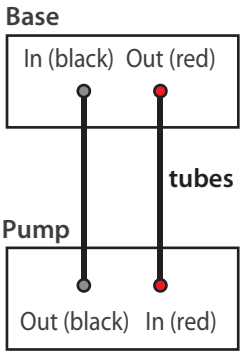
3. Insert the suction/discharge tubes into the simulated blood. Make sure the tips of the both tubes are properly placed undersurface of the fluid.
The tip of the drain tube is to be above the surface.

2 Connection of the circulation pump

1. Connect the simulator base and circulation pump with tubes.

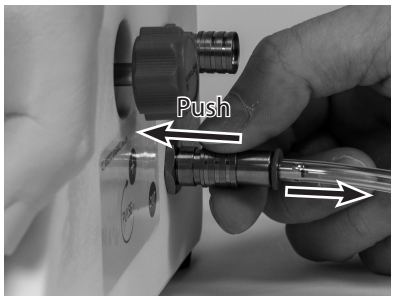


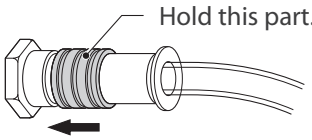




Insert the ends of the tube to the tube sockets on the circulation pump and simulator base so that the sockets marked with same color sign are properly connected.

【Disconnection of the tubes】





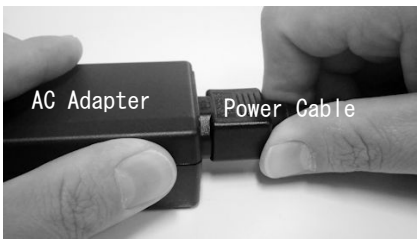
Hold the metal sleeve on the tube socket and push it toward the pump/simulator base wall to unlock the connection.

⚠ Caution

Do not disconnect the tubes while the simulator is running. Before disconnecting the tubes, make sure to discharge all fluid from the pump and tubes, and switch the power off (see page12). Do not pull the tube by holding the vinyl tube. Otherwise, the tube may detach from the connector.

1. Connect the circulation pump and AC Adapter.

Insert the plug of the AC Adapter into the jack until the cable clicks into place.



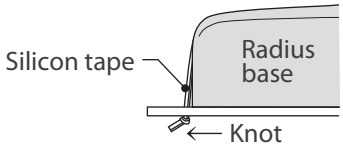
Connect power cable to AC Adapter.

Setting up the wrist model and puncture unit

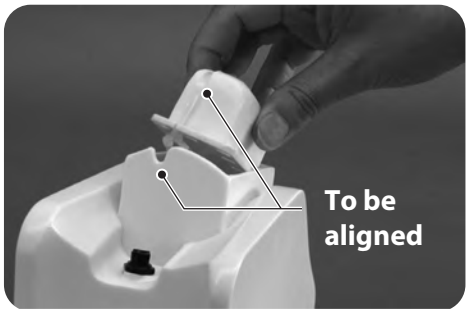
3 Setting up the wrist model and puncture unit

① Set the silicon tape on the radius base.

1. Insert one end of the silicon tape to one of the slits on the radius base edge so that the tape is anchored by the knot.



2. Pulling the silicon tape, place it in the gutter on the base and fix it by inserting the other end into the slit on the opposite side. Make sure not to twist the tape.



3. Put the radius base with the silicon tape to the simulator base, noting that the tape and notch on the simulator base are aligned.

⚠ Attention

The silicon tape is replaceable.

② Set the artery tube

1. Connect the white connecter at the end of artery tube to the white socket on the simulator base.

Note: The needle holes on the brand new artery tubes are intentionally made to control pressure, and not a product defect.

2. Lock each connection by turning the socket clockwise until it clicks.

⚠ Attention

If the lock is incomplete, the tube may come off and simulated blood may leak.

3 Setting up the wrist model and puncture unit

3. Place the tube in the gutter on the radius base, connect the other end of the tube to the black socket and lock it by turning clockwise until it clicks.

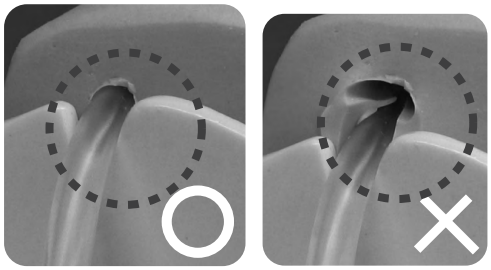
⚠ Attention

If the lock is incomplete, the tube may come off and simulated blood may leak.

③ Set the skin cover

1. Cover the radius base with the inner skin cover, noting the direction so that the artery tube is inserted in the slits on the walls of the skin cover.

2. Likewise, cover the puncture area with the outer skin cover. Make sure the all edges of the skin cover are placed inside of the walls of the puncture unit holder.



⚠ Attention

Make sure that the artery tube is properly placed in the slits on the skin cover without being flattened.

④ Set up the hand-wrist model

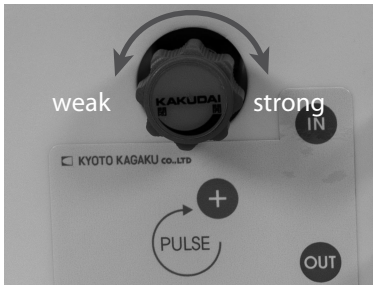
Put the hand-wrist model on the simulator base.
Be careful not to catch the artery tube in between.

Training
Discharge the simulated blood

1 Training

1. Connect the power plug to a power supply.

2. Turn the knob counter-clockwise until it stops to release the pressure to the tube. Then switch on the circulation pump and run for a few minutes to let the simulated blood fill the tubing.



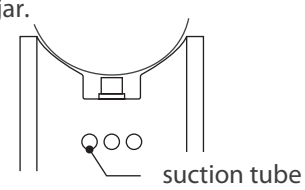
3. Strength of the pulses can be adjusted by turning the adjustment knob on the simulator base.
   To make the pulse stronger, turn the knob clockwise.

⚠ Caution **Excessive force may cause the knob to break. Please handle it with care.**

4. If the strength of the pulse does not increase with the knob adjustments, replace the artery tube with a new tube. Do not turn the knob with excessive force.

1 Discharge the simulated blood

1. Discharge the simulated blood from the system.
   Lift the suction tube so that the end of the tube comes above the fluid surface and run the circulation pump until all the fluid in the tubes has drained out into the jar.



⚠ Caution **Be careful so that the end of the tube is always inside the jar wall.**

2. Replace the jar of the simulated blood with a jar of clear water. Put the tips of suction and discharge tubes into the water and run the circulation pump until the inside of the tubes are cleaned.

3. Discharge the water from the simulator following the procedure of discharging simulated blood.

4. When the hand-wrist model is stained, quickly wipe it off with cloth or wash the model with water.

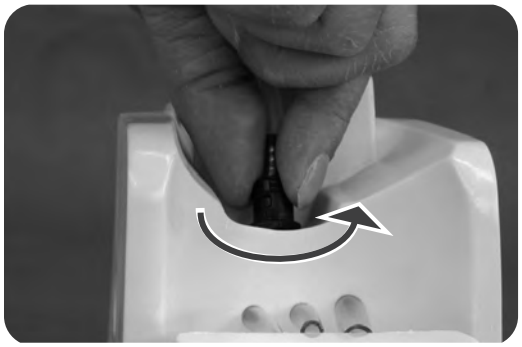
2 Disassemble the hand-wrist model and puncture unit

① Take off the hand-wrist model

1. Holding the puncture unit with one hand, lift the back of the hand-wrist model and remove from the simulator base.

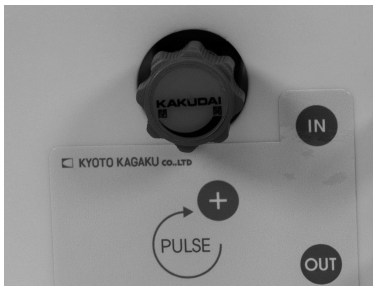
② Remove the skin covers

1. Remove the outer and inner skin covers one by one. Be careful not to pull them strongly, since excessive force may lead to tear(s).



③ Disconnect the artery tube

1. Unlock each connector by turning it counter-clockwise until it clicks and pull it straight off.

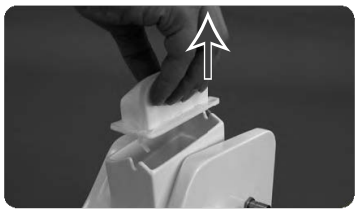


④ Turn the adjustment knob counter clockwise to release the pressure from the tubings.

Caution

Do not pull the artery tube or any parts with force. Otherwise it may cause breakage in the simulator.

2 Disassemble the hand-wrist model and puncture unit



④ Take off the radius base

1.Take off the radius base from the simulator base.

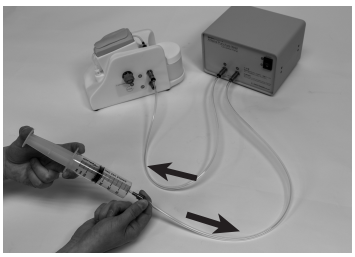
3 Cleaning

① The skin covers

1. Wipe off the simulated blood inside of the skin covers with a soft cloth.

② The simulator base

1. Wipe off the simulated blood on the simulator base, especially around the puncture unit holder, with a piece soft cloth.



③ Outside of the circulation pump

1. Wipe the surface of the circulation pump with a damp cloth.

④ Inside of the circulation pump

1. Periodical cleaning of the inside of the pump is recommended. This process is to be done before disassembling the unit.

1) Stop the circulation pump.

2) Disconnect the tube connector marked 'OUT' (red) on the simulator base.

3) Fill the syringe with clear water and connect the syringe tip to the free end of the tube.

4) Inject the water to the tube until the injected water flow into the jar. (approx. 20cc.)

5) Connect the tube back to the simulator base and discharge water by following the instruction on page 10.

⚠ Caution

Do not use any organic solvent or alcohol on any parts of the simulator.
When the simulator gets heavily stained, use soap or neutral detergent.

4 AC Adapter

Sliding the cover of dedicated AC adapter, pull it out.

Trouble shooting

Quick check-up before calling the customer service

Use the table if you have problems using the system. Look in this section for a description of the problem to find a possible solution.

Trouble	Possible Reason	What to Do
The system cannot be powered on. (Circulation pump does not run)	Power plug is not properly connected to the power source.	Connect to the power source.
	Power switch is turned off.	Switch it on.
	Power does not come to the outlet.	Check the breaker, etc.
Circulation pump runs but simulated blood does not flow.	Connection of the tubes is wrong.	Reset the connection following the instruction manual.(see page 7)
	The pulse pressure is too strong (too tight).	Loosen the adjustment knob by turning it counter-clockwise.
Flash-back of the simulated blood is not seen.	Wear of internal parts of the circulation pump.	Turn off the pump and then remove the lubber plug at its bottom. In case water flow out from this port, malfuction of the pump is suspected. Consult your supplier for inspection and repair.
	Air accumulation is occurred in the tube(s).	Turning the knob counter-clockwise fully , pulse pressure comes weak. Run the pump in this condition until air accumulation is ejected.(see page 10)
	The artery tube is worn out.	Replace it with a new artery tube.(see page 6,7,8,9,11)
	The tip of the suction / discharge tube is out of the simulated blood.	Put in the tips of the both tubes to the simulated blood.(see page 10)
	Syringe is worn or the needle is clogged.	Replace them with new syringe and needle.
	The pulse pressure is too weak.	Adjust it by turning the adjustment knob clockwise. (see page 10)
The simulated blood heavily leaks from around the puncture unit.	Skin covers are not set properly.	Set the cover again following the instruction manual. (see page 9)
	The artery tube and/or skin covers are worn out.	Replace it/them by new one(s).
	The pulse pressure is too strong.	Adjust it by turning the adjustment knob counter-clockwise.
Bubbles appear in the simulated blood in the tubes.	The pump is sucking the bubbles coming from the discharge tube.	Make a little distance between the ends of suction and discharge tubes.
	The artery tube is worn out.	Replace it with a new tube.(see page 6,7,8,9,11)
	None of above is the case.	Make the pulse pressure weak (turn the knob counter-clockwise), and run the pump until the bubbles come off. Then return the pulse pressure to an appropriate strength.
Simulated blood leaks from the simulator base or pump.	Tube sockets are not properly locked.	Check the sockets and lock them.(see page 6,7,8,9)

⚠ Caution

Do not mark on the model and other components with pen or leave printed materials contacted on their surface.
Ink marks on the models will be irremovable.

・For inquiries and service, please contact your distributor or KYOTO KAGAKU CO., LTD.

KYOTO KAGAKU co.,LTD

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