⚠Caution | Don't 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.

MW49

Simulator Intravenous Arm Ⅲ

(Two arm and circulation pump set)

Instruction Manual

Contents

A life-like simulator for venous blood collection and intravenous injection, this unique device accurately reproduces not only vein location, but also the circulation of human blood - including flash-back confirmation as with an actual patient.

The simulator is designed for training of healthcare professionals.

Please read the instruction carefully before use. Do not use the system in a way other than hereinafter prescribed by the manufacturer.

KYOTO KAGAKU co.,LTD

Features

- Life-like touch and resistance of the injection sites allows vein palpation in the same way with a real patient.
- Resistance of the soft tissue and veins felt through the injection needle are closely simulated.
- Circulation pump reproduces human circulation flow.
- Realistic flash-back of the fluid into the injection needle.
- Easy replacement of injection pads.
- No puncture traces of injection needle remain.
- Life-size arm/hand models with supporting stands.
- Easy to set up, one-touch connections.
- Quiet pump.
- Durable blood vessels.
- Leakage free and easy clean up.

⚠ DOs and DON'Ts

DOs

Operate the system under the designated circumstances

Power input: AC 100V～230V plus or minus10%, 50Hz/ 60Hz

Temperature range: between 0 degrees C and 40 degrees C (no congelation)

Relative humidity:between 0% to 80 % (no condensation)

Follow the instruction on labels

"Warning label" indicates there is a danger of an electric shock when the part is opened up.

Opening up any lids, caps or covers with warning labels is discouraged.

Never run the system while the warning-labeled lids or covers are open.

Safe disposition

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

Handle with care

The materials for the models are special compositions of soft resin.

Please handle them with utmost care at all times.

Storage

Store the training set 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.

DON'Ts

Never wipe the models and pads with thinner or organic solvent.

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

Ink marks on the models won't be removable.

Do not give shocks

The circulation pump is a precision instrument. Strong shock or continuous vibration may cause breakages of its internal structure.

Do not run the pump continuously over 2 hours.

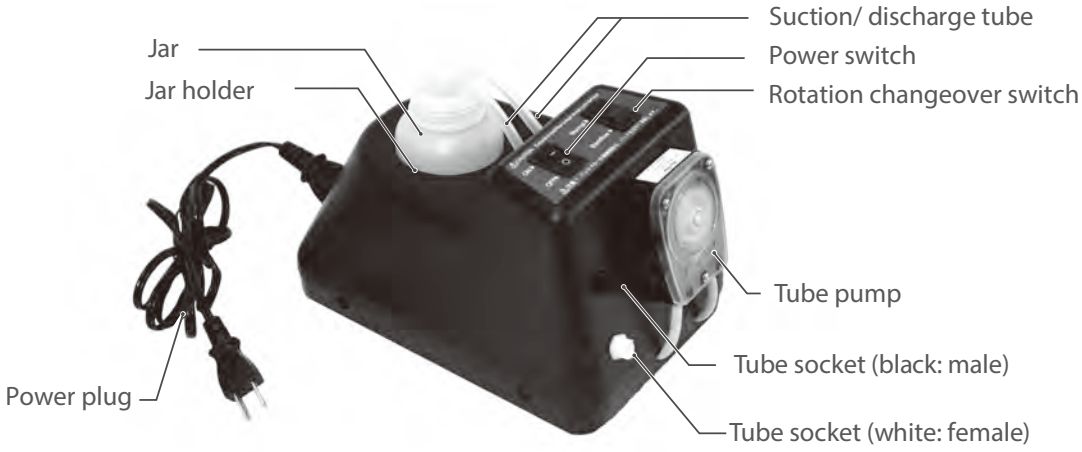
Take at least 30 minutes shutdown, turning off the power, every 2 hours.

***We recommend using an elastic tourniquet without metal or plastic parts, as a tourniquet made of hard materials may damage the simulator arm.**

Part names and functions
Set includes

Part names and functions

Circulation pump



Set Includes

Before your first use, ensure that you have all components listed below.

a. Arm model · 2
b. Supporter stand for Arm · · · · · · · · · · · 2
c. Injection pad (regular type) · · · · · · · · 2
d. Injection pad (double type) · · · · · · · · 2
e. Injection pad (forearm/antebrachial) · · · 4
f. Injection pad (back of hand) · · · · · · · · · · · 2
g. Circulation pump · · · · · · · · · · · · · · · · · 1
h. Bottle for simulated blood · · · · · · · · · · · · 1
i. Syringe (50 ml, with lock) · · · · · · · · · · · · 1
j. Simulated blood (Swab type) · · · · · · · · · · 10
k. Arm Vessels Anatomy sleevelet · · · · · · · · 1

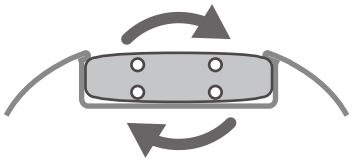
Injection pad

regular／double type

● Injection pad (regular)
Training pad with realistic tactile feeling and needle-tip sensation. Suitable for training sessions and skills assessment.
Three lines of vessels are embedded in each pad.

○Ulnar cutaneous vein
○Median cutaneous vein
○Cephalic vein

● Injection pad (double type)
Durable materials with longer life. Suitable for self-learning and skills drills.
Two lines of vessels are embedded in each face of the pad, allowing greater numbers of trainings by using both sides of the pad.



⚠ Caution

Be sure to store the T(double type) pad in plastic bags, avoiding contact with other resin products or printed materials. The pad may also be kept attached on the arm model.

Preparation of simulated blood
Replacement of consumables

1 Preparation of simulated blood

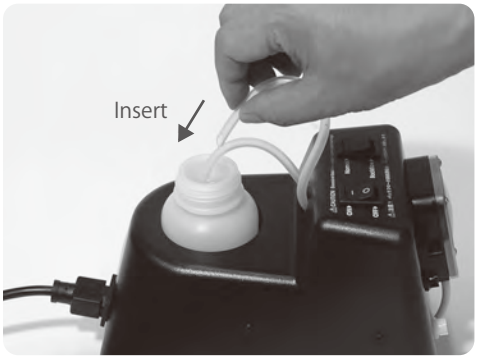
1. Take blood powder with the tip of the provided small spoon.
2. Dissolve it in half a jar of water. (approx. 150cc)
3. Place the jar into the jar holder of the circulation pump.
4. Insert the suction/discharge tubes into the simulated blood.

Make sure the both tips of tubes are properly placed undersurface of the fluid.

PLEASE NOTE

The solution is not designed for prolonged storage.

Prepare new simulated blood for each session.



2 Replacement of Consumables

Select the type of the pad for the session

At the time of delivery, T (double type) pad is set on the arm model. To use the regular pad, remove the T pad in the reverse order of the setting procedures described in page 5.

Injection pad (regular)

Training pad with realistic tactile feeling and needle- tip sensation. Suitable for training sessions and skills assessment. Three lines of vessels are embedded in each pad.

Injection pad (double type)

Durable materials with longer life. Suitable for self-learning and skills drills.
Two lines of vessels are embedded in each face of the pad, allowing greater numbers of trainings by using both sides of the pad.

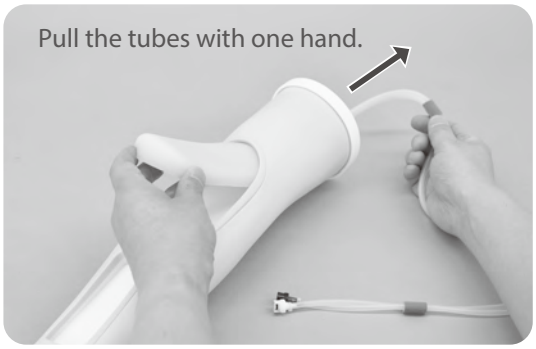
⚠ Caution

One arm can accommodate one pad at a time.
To use the two types of pads simultaneously, use two arm models.

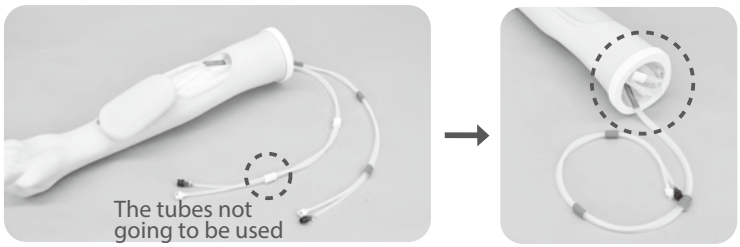
Replacement of Consumables
Setting up the circulation pump

2 Replacement of Consumables

1. Put the two (in case of double type pad, 4) tubes through the opening in the pit for the pad made in the arm model.



2. Holding the pad with one hand, pull the two (or four) tubes with the other hand to fit the pad in the pit of the arm model.

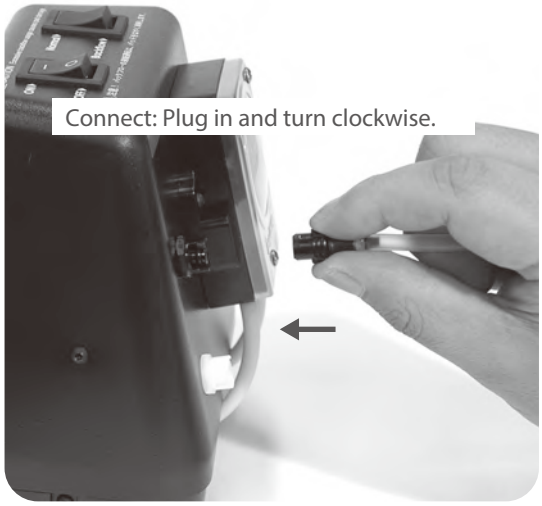


※When using double type pad, roll the unused pair of tubes into a ball and store them inside the arm model.
※Two pair of the tubes are marked with blue and white tapes to differentiate sides of the pad.

⚠ Caution

The simulated blood will not circulate properly when the tube of the pad is bent or folded.
When facing difficulties in fitting the pad into the place, or its surface coat gets wrinkles, put a small amount of talcum powder on the surface of the pad and the pit.

3 Setting up the circulation pump



Plug the tips of tubes from an arm/hand unit into the tube sockets at the side of the pump in accordance with colors.
Then fix the plugs by turning them clockwise.
Connection: Plug in and turn clockwise.
Disconnection: Turn the plug counterclockwise and pull it out.

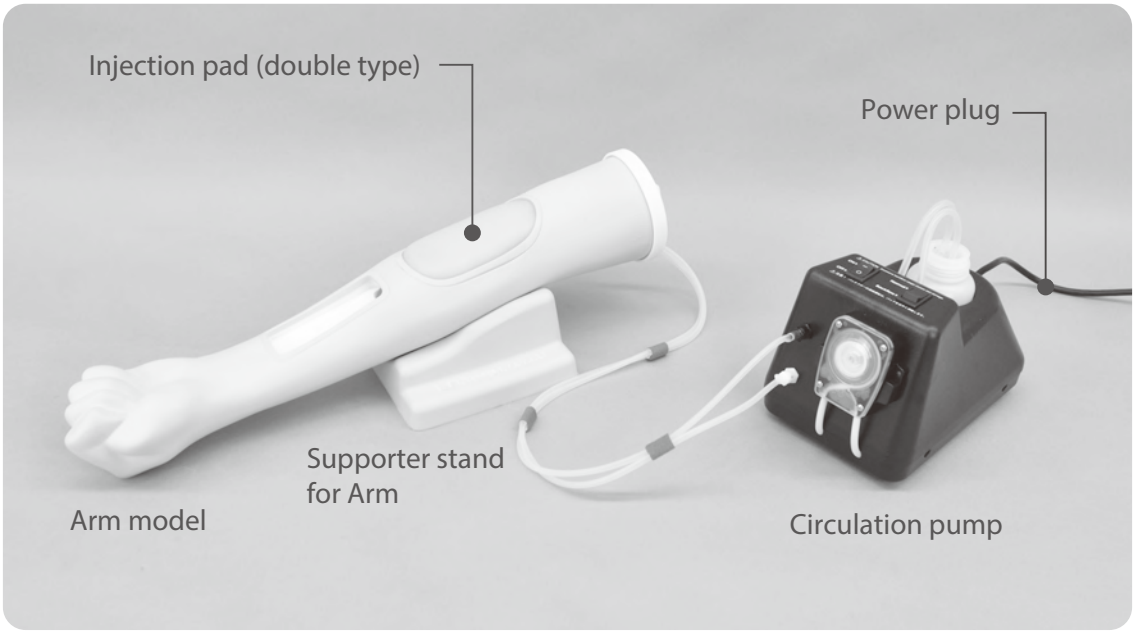
PLEASE NOTE

To avoid leakage, turn off the pump before disengaging the tube connectors.
Be sure to hold the plastic plug when pulling. Otherwise the tube may separate from the plug.

4 Ready

●Connection completed

1. Place the arm model on the supporter stand and connect the cable to the power. Now the simulator is ready for training.



⚠ Caution

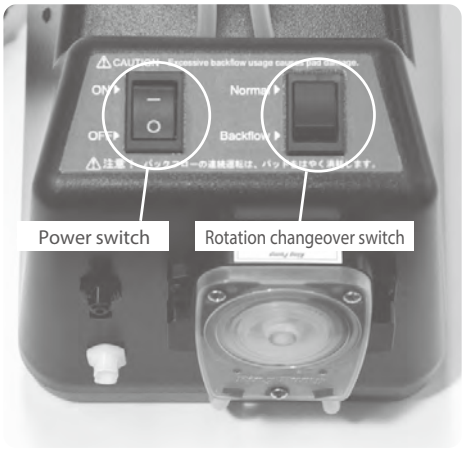
We recommend using an elastic tourniquet without metal or plastic parts, as a tourniquet made of hard materials may damage the simulator arm.

●Connection of plural arm model units

・To connect the tube to the pump, match the connectors of the same color (white-white, black-black). To connect between two arm models, connect white and black connectors.

5 Function of changeover switch

1. Ensure that the changeover switch is set at “Normal”.
2. Connect the power plug to the power source and turn the power on, then let the fluid fill the tubings.
3. Start training session.



Function of changeover switch

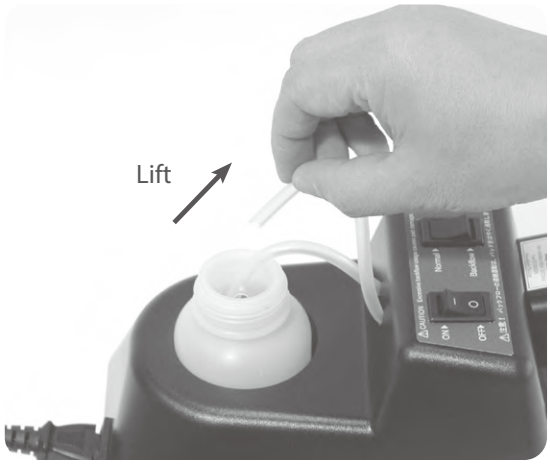
NORMAL: Fluid circulates CLOCKWISE to produce negative pressure in the vessel tubes.
Back Flow: Fluid circulates COUNTER-CLOCKWISE to produce positive pressure in the vessel tubes.

PLEASE NOTE

Back Flow [BF] function is for “flash-back” confirmation procedure only. When the “flash” is seen, turn the changeover switch back to Normal before continue.

※ Do not leave the pump running at [BF] mode too long while training, otherwise it may lead to shorter life of the puncture pad or leakage of the fluid.

6 Discharge the simulated blood



1. Discharge the simulated blood.
   Lift the tips of the suction/discharge tubes slowly above the surface of the fluid and run the pump.
2. When all the fluid has returns into the jar, stop the pump and discharge the fluid in the jar and fill it with clear water.
3. Set the water filled jar to the pump and run the pump with the both tube-tips under the water.
   Then, discharge the water by running the pump with the tube-tips above the water.
4. Discharge the water in the jar and dry the pump naturally.

7 Cleaning

1. Wipe the models gently with dry soft cloth and wipe the pump with a wet cloth.

CAUTION: Never wipe the models with thinner or organic solvent.

8 Dismantle and Storage

1. Turn the power switch off.
2. Disconnect the tubes.

Injection pad

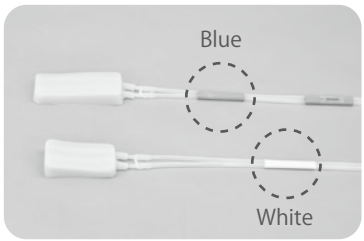
forearm/back of hand

●forearm/antebrachial

●back of hand

Caution

・Shape of the pad for forearm sites and the one for dorsal vein of hand is different.



forearm/antebrachial

back of hand

Preparation the simulated blood

1 Preparation the simulated blood

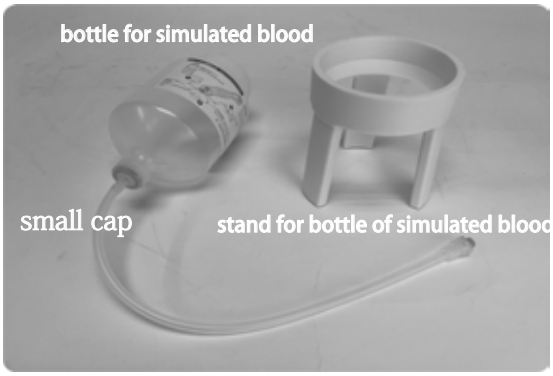
Prepare the simulated blood.

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.

⚠ Caution

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

2. Set the bottle for simulated blood on the bottle stand.



⚠ Caution

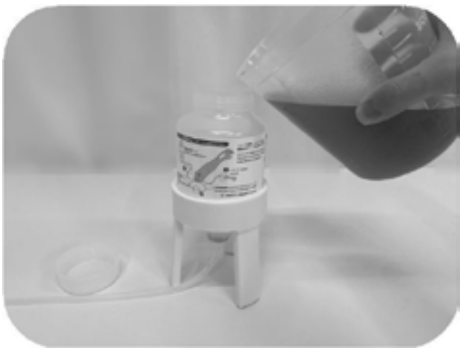
Make sure to insert the cap firmly into the container.

The loose small cap could lead to a water leak.

Preparation the simulated blood
Connection of the tube

1 Preparation the simulated blood

3. Take the lid off the bottle for simulated blood and pour approx. 450mL of the simulated blood into the bottle. The level of the simulated blood must be above the level indicated by the arrow ↑ on the bottle surface.
Put aside the remaining simulated blood for replenishment during the training.



⚠ Caution

The level of the simulated blood must be above the level indicated by the arrow on ↑ the bottle surface.
If the level of the simulated blood is under the indicated level, you cannot check blood return (flashback) because the pressure on the simulated blood decreases.

Always replenish simulated blood into the bottle when it decreases under the level during the training.

4. Close the lid of the bottle securely after pouring the simulated blood into it.
Now the simulated blood has been prepared.

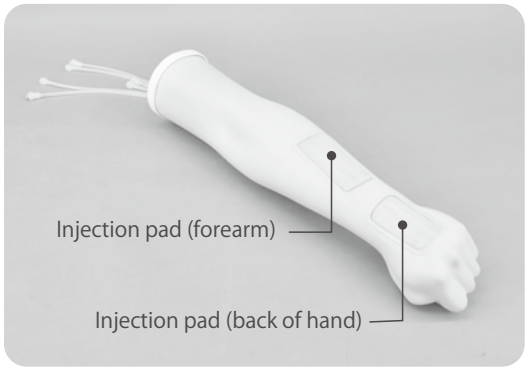
* The connector on the tip of the simulated blood bottle tube (SurePlug) is locked when it is not connected with the other connector. This will prevent the simulated blood from leaking from the tube.

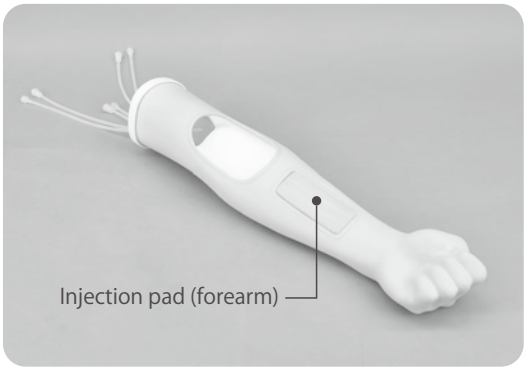
2 Replacement of Consumables

① Put the two tubes through the opening in the pit for the pad made in the arm model. Holding the pad with one hand and pulling the tubes with the other, put the pad into the pit from its upper (the side with tubes) edge.

② Then fit the peripheral edge into the pit. Attach two other pads with the same procedures.

③Now pads are ready for training.





※To remove the pads, follow the reverse order of the process described above.

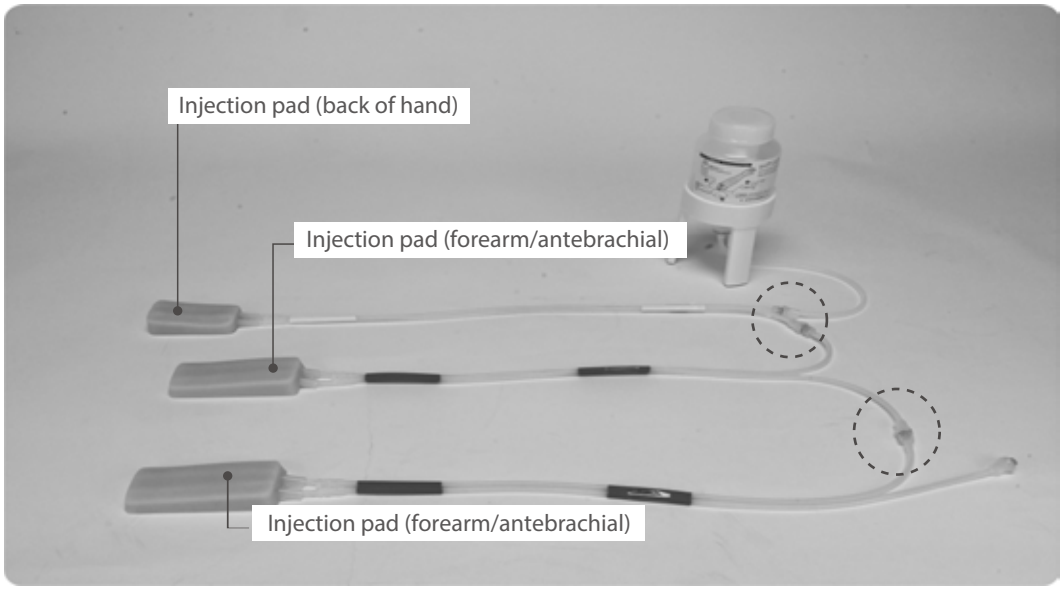
⚠ Caution

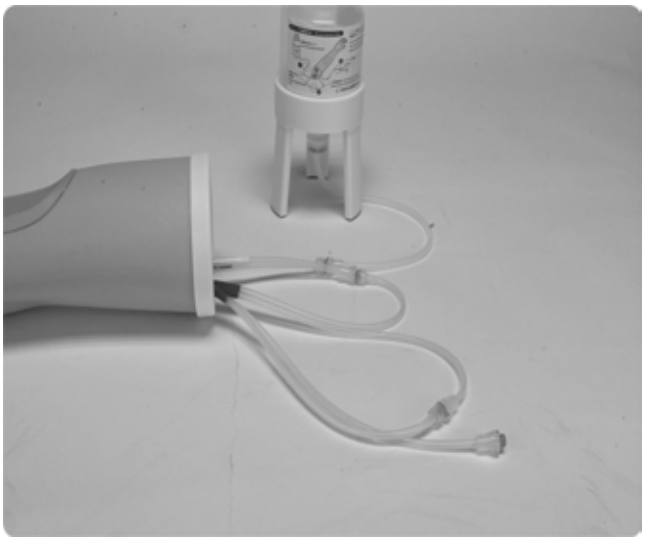
When setting or removing the pad. be sure to hold the pad with one hand while pulling the tube with the other. Do not pull the pad by holding the tubes or the pad only as the action may damage the connection between the pad and the tube.

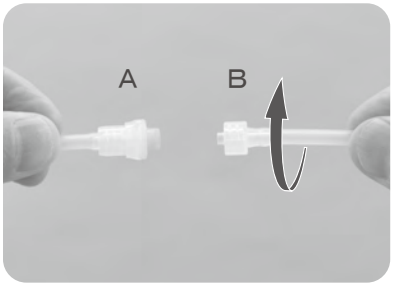
Connection of the tube

3 Connection of the tube

Connect the tubes from the pads and the bottle as shown below.







To connect two tubes, joint the connector type A and B.
Insert the tip of the connector B into the tip of the connector A, screwing them clockwise.

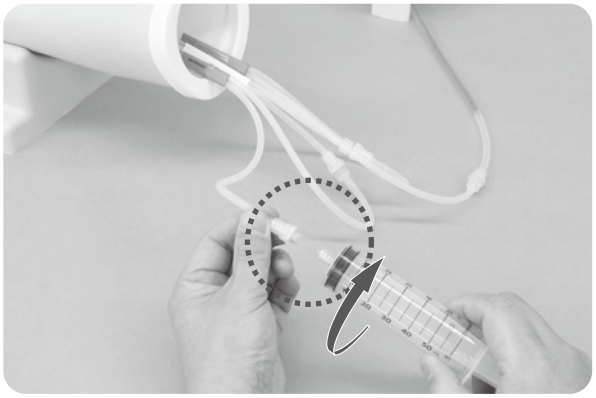
⚠ Caution

Screw in the tips of the connectors firmly to the end.
If the connection is incomplete, tubes are locked preventing the flow of the liquid.

Fill the simulated blood

4 Fill the simulated blood

①Connect the included syringe (50mL) to the connector at the tip of the tube from the pad for dorsal vein of the hand.



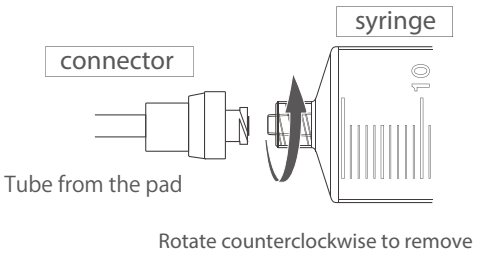
2. Draw the piston of the syringe slowly to fill the tubes and pads with the simulated blood

⚠ Caution

Draw the piston of the syringe slowly.
The tube within the pad might be damaged if you draw the piston too quickly.

When the simulated blood does not flow into the tube, check if the connectors are securely fastened.
Do not draw the piston forcibly.

3. After the simulated blood reaches the syringe, remove the syringe from the tube. Now the simulator is ready for training session.



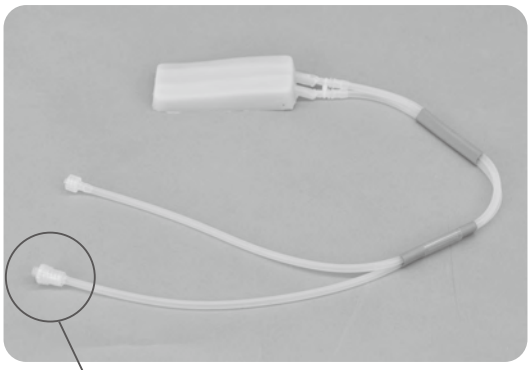
⚠ Caution

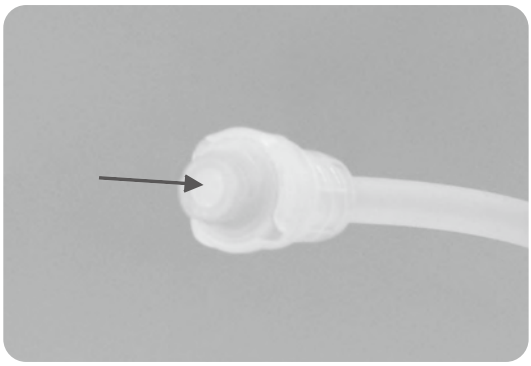
In case the fluid cannot be aspirated with the syringe, the connector might possibly be clogged. Try the method described in the next page.

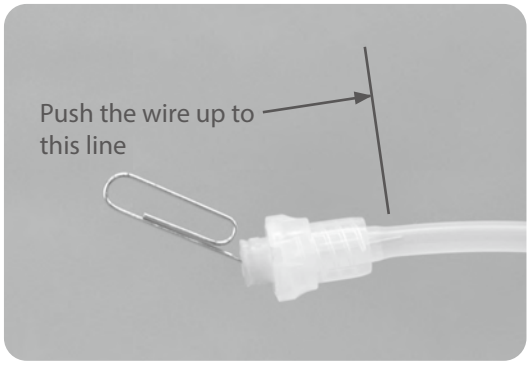
Testing the connector

5 Testing the connector

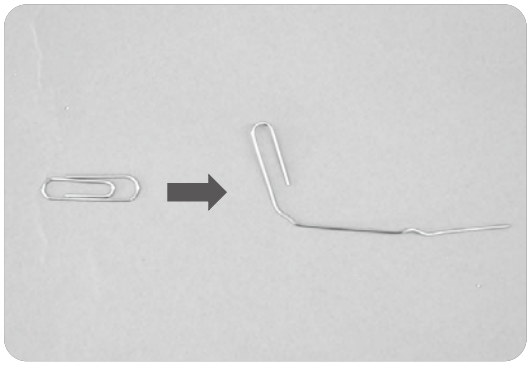
In case the simulated blood cannot flow in the tube by the syringe, the connector may be clogged. Test and reopen the connector as instructed below.







Insert a wire※ to the connector.
Push the wire until the tip of it appears in the tube.



*Wire or stick can be prepared using a paper clip.

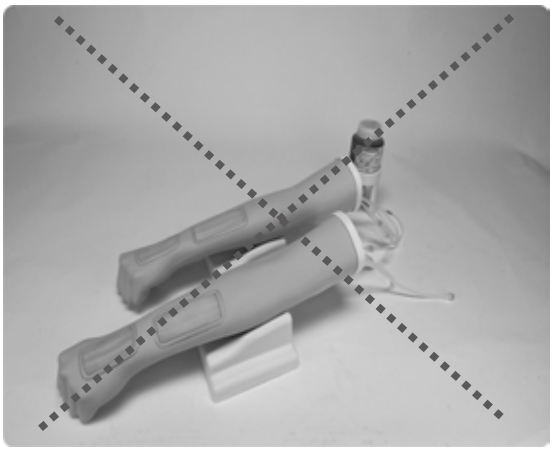
6 Ready

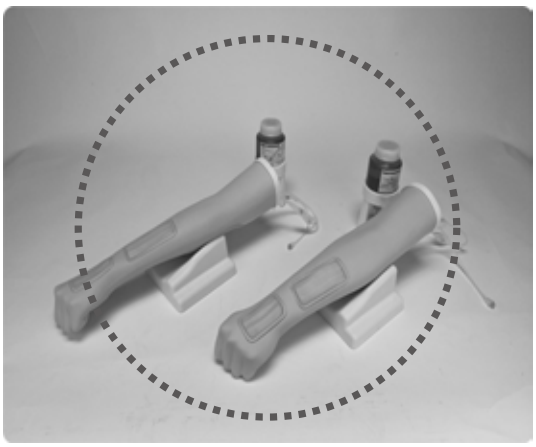
Caution

We recommend using an elastic tourniquet without metal or plastic parts, as a tourniquet made of hard materials may damage the simulator arm.

To use two arm models simultaneously

If two arm models are connected to one bottle, flash-back may not be simulated since the water pressure will be insufficient.
When using two arms, connect one bottle to each arm.





Caution

Two bottles cannot be connected to one arm model at a time.
To use two arm models, connect one bottle to each arm model.

7 Training for the peripheral venous cannulation

Skills training

Drip infusion, blood collection and intravenous injection at median arterial vein of forearm, dorsal vein of hand (dorsal metacarpal veins).
Recommended needle size is 23G or smaller (both for the venous catheters or the butterfly needles) .
We recommend using an elastic tourniquet without metal or plastic parts, as a tourniquet made of hard materials may damage the simulator arm.

Puncture with IV cannula
(It is possible to stretch the skin.)

Confirmation of flash back

Angiopressure management and decannulation

Confirmation of natural instillation

Fixing of the puncture site

Injection of medical solution from injection sub port

Training skills:

1. Tourniquet application
2. Confirmation of puncture site
3. Sterilization of puncture site
4. Puncture with IV cannula
5. Confirmation of flash back in puncture
6. Angiopressure management and decannulation
7. Setting of Infusion tube
8. Confirmation of natural instillation
9. Fixing of the puncture site
10. Injection of medical solution from injection sub port

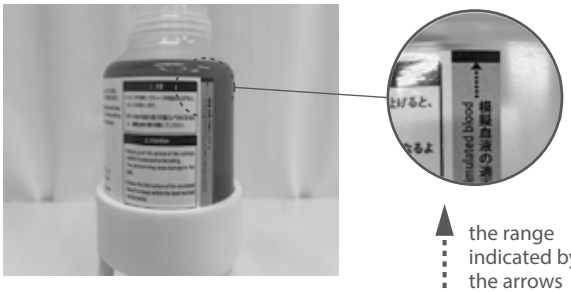
⚠ Caution

Always use water training. Fluid other than water can accelerate the deterioration of the tubes within the pads and cause clogging in the tube.
Immediately wipe off the simulated blood that has dropped on the main body of the arm model to avoid staining the model.

⚠ Caution

The level of the simulated blood must be above the level indicated by the arrow on the bottle surface.
If the level of the simulated blood is under the indicated level, you cannot check blood return(flashback) because the pressure on the simulated blood decreases.

Always replenish simulated blood into the bottle when it decreases under the level during the training.



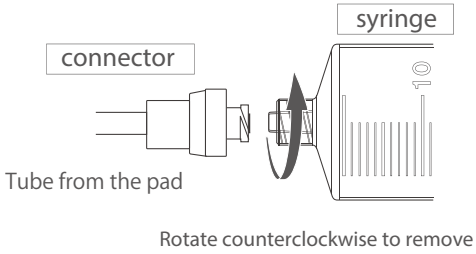
the range indicated by the arrows

After the Training

8 After the Training

Discard the simulated blood from the pads and tubes after practice.

1. Discard the simulated blood left in the blood bottle.



2. Connect the syringe (50mL) to the connector at the free end of the tube. Draw the piston slowly to pull the simulated blood in the tube. Discard the simulated blood in the syringe.

3. Pour approx. 50mL of water into the empty blood bottle. Then draw the water with the syringe to clean the inside of the tubes. Suck up the water to empty the tubes completely.

⚠ Caution

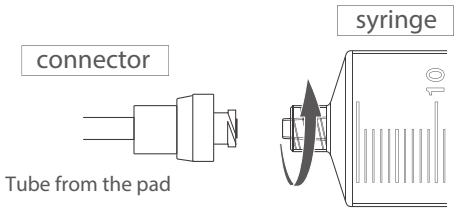
Always draw the piston of the syringe slowly and carefully.

The tubes in the pads could be damaged if you push the piston of the syringe, which increases the internal pressure of the tube, or draw the piston too quickly.

Discharge the simulated blood

8 Discharge the simulated blood

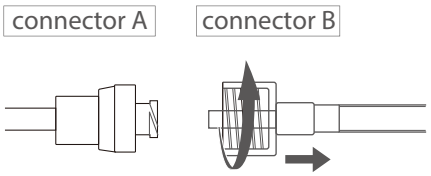
4. After the inside of the tubes is cleaned, disconnect the connectors that join the syringe and the tubes.



Rotate counterclockwise to remove

To disconnect the tubes from the pad and bottle, turn connector B counterclockwise.

5. Detach the bottle from the stand.



Rotate connector B counterclockwise

⚠ Caution

Store all the cleaned components in the storage case after they have dried completely.

Trouble Shooting

Quick check-up before calling the customer service.
Look in this section for a description of the problem to find a possible solution. (Tel +81-75-605-2510)

TROUBLE SHOOTING		
Trouble	Possible causes	Solution
Circulation pump doesn't run.	Is power plug connected?	Plug to the power supply.
	Is the power switch turned on?	Turn it on.
	Is the power at the power source?	Throw a circuit breaker or try other power points.
	Is the fuse intact?	Replace the fuse.
Pump runs but fluid doesn't flow.	Aren't the tubes folded?	Lift the pad gently and straighten the tubes.
	One or both tips of the suction/discharge tubes are in the air.	Put the tube tips in the fluid.
	Injection pad is worn out and bubbles are in the tube.	Replace with a new pad
Injection pad gets deformed.	Has not any fluid or air been injected outside of the vein tube?	Suck out the additional air or fluid by the syringe and dry the pad naturally.
The simulated blood heavily leaks from the injection pad.	Isn't the changeover switch set at BF position?	Turn it to NORMAL position.
	Injection pad is worn out.	Replace with a new pad.

Caution

Don't 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.

The contents of the instruction manual are subject to change without prior notice.
No part of this instruction manual may be reproduced or transmitted in any form without permission from the manufacturer.
Please contact manufacturer for extra copies of this manual which may contain important updates and revisions.
Please contact manufacturer with any discrepancies, typos, or mistakes in this manual or product feedback. Your cooperation is greatly appreciated.

Consumable parts

code	name
11267-300-03	Injection pad (regular type) (a set of2)
11430-020	Injection pad (double type)(a set of2)
11388-200	Injection pad (forearm/antebrachial)(a set of2)
11388-300	Injection pad (back of hand) (a set of2)

code	name
11388-400	Simulated blood (Swab type: a set of10)
11267-300-02	Supporter stand for Arm
11267-300-05	Circulation pump

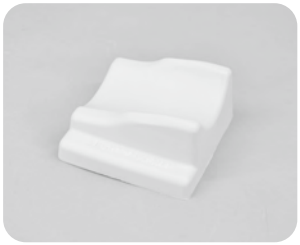
11267-300-03
Injection pad (regular type)
(a set of2)

11430-020
Injection pad (double type)
(a set of2)

11388-400
Simulated blood (Swab type : a set of 10)

11388-200
Injection pad (forearm/antebrachial)
(a set of2)

11388-300
Injection pad (back of hand)
(a set of2)



11267-300-02
Supporter stand for Arm

11267-300-05
Circulation pump

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