



USER GUIDE
VERSION 2



CentralLineMan™

Central Venous Access Catheterization Trainer

**SIMULAB**
CORPORATION

Shown with optional Articulating Head (AH-10)

www.simulab.com



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SYSTEM OVERVIEW



The CentralineMan System (CLM-50) has been designed to provide your training program with a realistic anatomical model complete with internal landmarks that allows users to practice a wide range of subclavian, supraclavicular, and interjugular access techniques. The tissue responds to ultrasound imaging for needle guidance.

CentralineMan uses two colors of simulated blood to differentiate the arteries and veins. The arterial pulse and all necessary anatomical landmarks are present to help avoid or detect errors. While using the simulator the user will experience natural resistance, a realistic flashback of blood and it has self-sealing vessels and skin, which allows multiple practices. Additionally, the venous pressure can be quickly adjusted to simulate a low venous pressure patient.

Each model has replaceable tissue sets allowing for multiple users per tissue. For each site, the tissues should last for approximately 50–100 full catheter insertions or hundreds of needle sticks.

This guide provides users with an overview of the CentralineMan System; how to unpack, inspect and prepare the system; how to refill simulated blood; how to reload a replaceable tissue; and troubleshooting information.

ANATOMICAL OVERVIEW

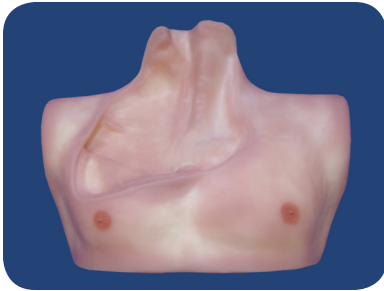
The body form is oriented as if the head is turned to the left. Landmarks on the patient's right side include:

- » Clavicle
- » 1st rib
- » Sternal notch
- » Trachea
- » Sternocleidomastoid muscle

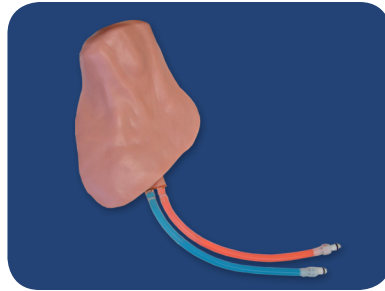
Tissue Sets:

- » VEIN (blue): subclavian and internal jugular
- » ARTERY (red): subclavian and carotid

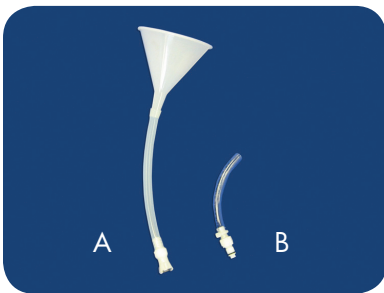
SYSTEM COMPONENTS



Body Form



Replaceable Tissue



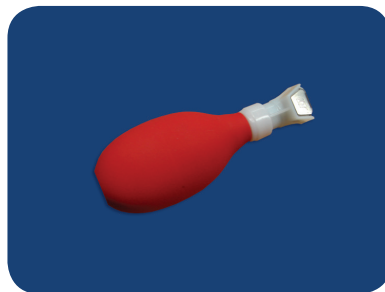
A) Fill Port with funnel – Female Connector
B) Fill Line – Male Connector



Pre-mixed fluid
MA16 – 8 oz. Red; MV8 – 9 oz. Blue



Venous Pressure Regulator
(filled with blue fluid)



Pulse Bulb
(filled with red fluid)

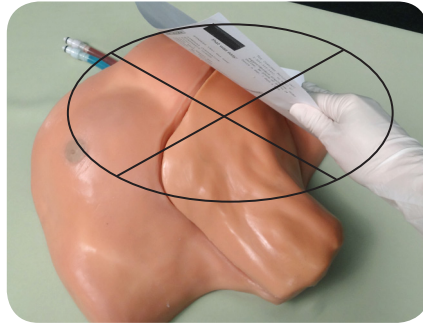


Carrying Case

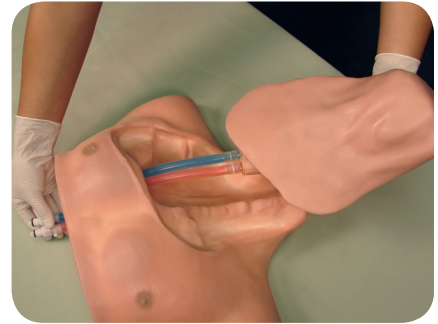
PREPARATION, MAINTENANCE, AND STORAGE



1. Check that all system components are in the carrying case (additional replaceable tissues ordered will also be included). Contact Simulab for assistance if any system component is damaged or missing.



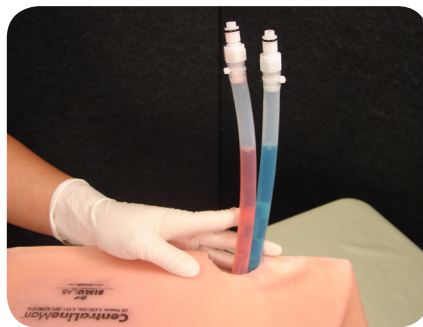
2. Please note that due to the properties of this tissue, contact with ink or other colors will result in permanent transfer.



3. Before attaching the arterial pulse bulb or the venous pressure syringe, insert the replaceable tissue into the body form. For more detailed instructions go to the “Replacing a Tissue” section.



4. Next, check for excess air in the tubes. To do this, stand the simulator up and hold the vessels up. This will allow any trapped air to rise to the top.



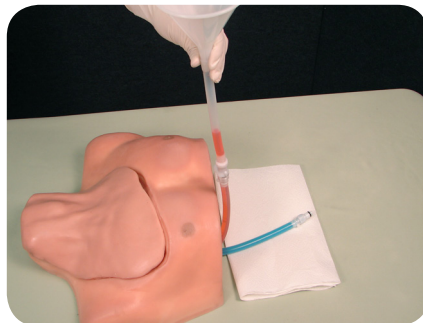
5. If there is any air in the vessels, go to the Refilling Fluid Reservoirs section for further instructions.



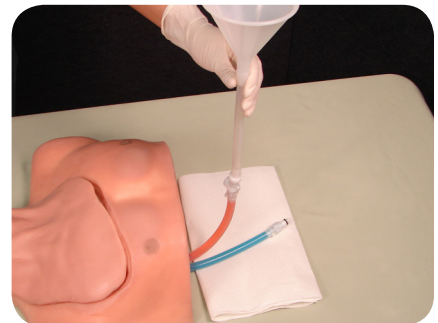
6. Throughout the course, periodically tilt the model to check for trapped air that may be caused by putting blood back into the vessels.



7. Check both the vein (blue) and artery (red) for over-pressurization. Attach the filling port to one of the lines and hold up the funnel so that the connector is even with the top of the body form.

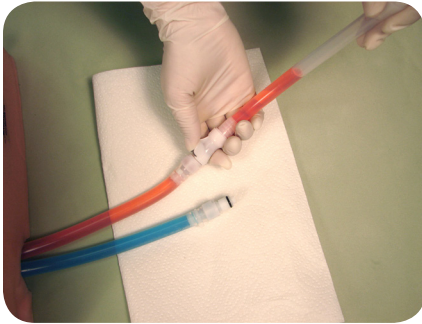


8. Fluid released into the funnel line indicates the vessel is over-pressurized. Allow the funnel to fill and disconnect over a paper towel once it stops.

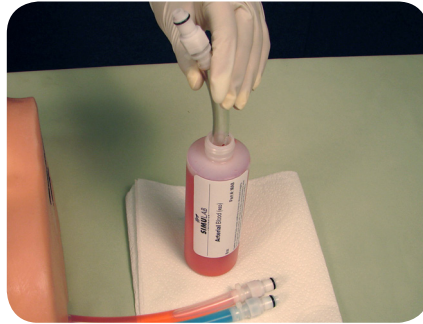


9. If fluid does not appear in the funnel above the connectors, check if the vessel accepts additional fluid – if it does, continue until it is full.

PREPARATION, MAINTENANCE, AND STORAGE



10. Once neutral pressure is achieved, disconnect the funnel from the fill line over paper towel.



11. If you need to drain the funnel, begin by placing the fill line into the appropriate simulated blood bottle.



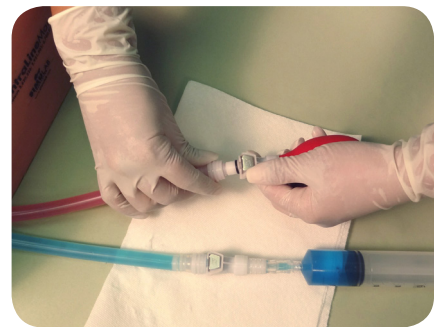
12. Then attach the funnel to the fill line and the fluid will empty into the bottle.



13. To create an arterial pulse, attach the pulse bulb to the artery (red line). It is pre-filled with red simulated blood. Should any air get into the pulse bulb, go to "Refilling Fluid Reservoirs".



14. Adjust the venous pressure (blue line) by attaching the syringe, which is pre-filled with blue fluid to the vein.



15. When removing either the syringe or the bulb, do so over a paper towel – there will be a small release of fluid.



16. After each class, remove the replaceable tissue and place it into a zip lock bag for storage or disposal. The bag will contain any leakage that may occur.

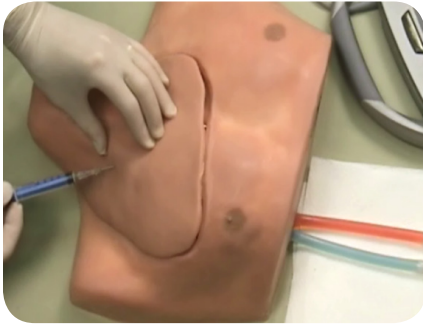


17. The body form should be cleaned after each class with soap and warm water. This will help preserve the body form and minimize any major staining from the simulated blood.



18. When repacking the body form, make sure the neck is positioned towards the case's handle. This ensures that the simulator stands upright when the case is closed and carried.

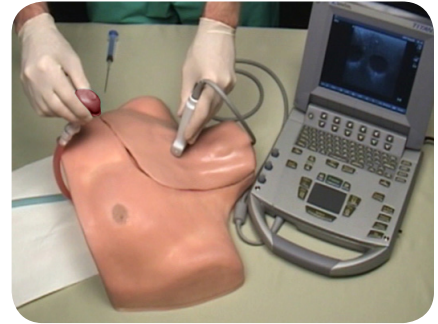
USING THE SYSTEM



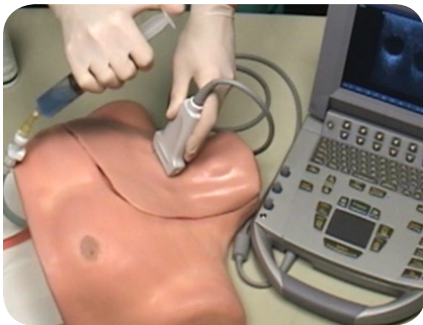
1. CentraLineMan's prominent landmarks are located on the patient's right and include the trachea; the clavicle; the first rib, the sternal notch, and the sternocleidomastoid muscle.



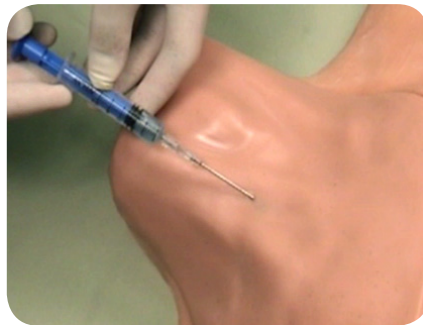
2. An ultrasound imaging unit can be incorporated into this procedure, if desired.



3. To achieve arterial pulse, lightly pump the bulb that is attached to the artery. It is pre-filled with red fluid.



4. To achieve low venous pressure, withdraw 20 ml of venous fluid using the syringe. To attain normal venous pressure, reinject the fluid.



5. Students should always reinject fluid back into the vessel before pulling the needle out. Make sure the fluid is returned to the same vessel so that the colors do not get mixed.



6. To remove excess air in the vessels and add fluid, refer to the "Refilling Fluid Reservoirs" section.

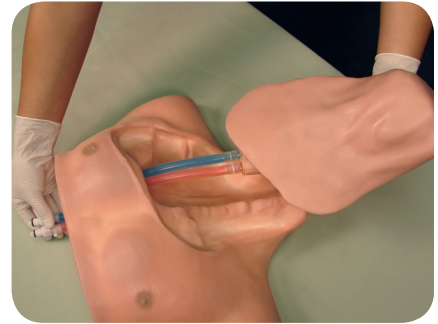
REPLACING A TISSUE



1. When not in use, store replaceable tissues in a plastic zip lock bag. This will contain any leakage.



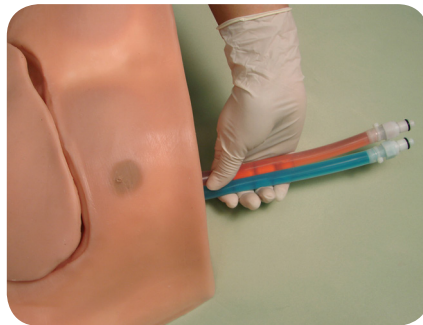
2. To replace a used tissue, remove the bulb and syringe over a paper towel – there will be some leakage. Then pull the tissue out of the body form.



3. Next, insert the extending lines of the new tissue through the opening on the lower portion of the torso's base.



4. Make sure the tubing ends on the replaceable tissue are tucked into the body form's notch. This creates a snug fit.



5. Gently pull the vessels away from the body form to make sure there are no kinks.

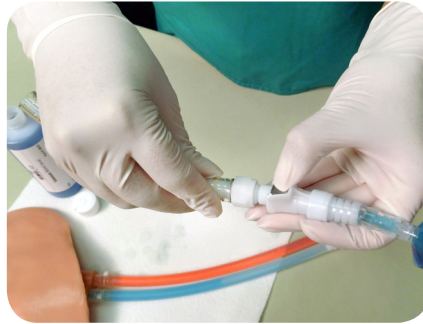


6. Attach the pulse bulb and the syringe (if desired) and the system is ready for use.

REFILLING FLUID RESERVOIRS



1. If there is air present in either of the vessels, it should always be replaced with fluid for optimum performance and ultrasound image.



2. To refill fluid in the vein (blue), start by attaching the fill line to the syringe.



3. Fill the syringe with the included blue fluid and slowly pull it out of the blue fluid bottle. Use paper towels to absorb any spilled fluid.



4. Remove any air from the syringe and then remove the fill line over a paper towel - there will be a small release of fluid - and reattach it to the tissue.



5. Attach the syringe to the vein (blue).



6. Begin by pressing on the plunger to add fluid and pulling back on the plunger to remove air.



7. Repeat this process until all of the air has been replaced by fluid.

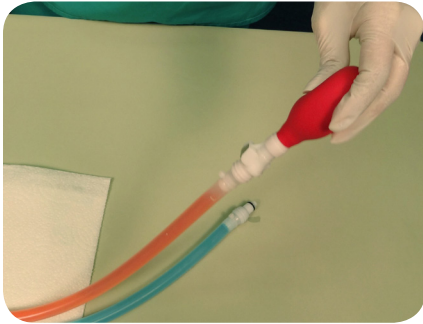


8. Pat the tissue while holding the vessel up to ensure that all air has been replaced by fluid.

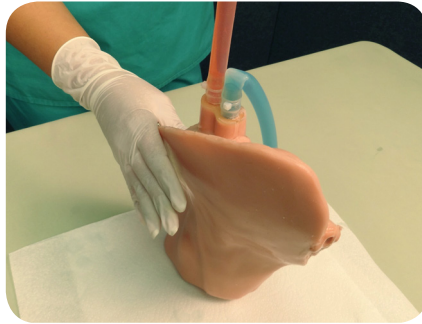


9. To refill fluid in the artery (red), start by attaching the pulse bulb to the vessel. If the pulse bulb is not full of red fluid, it will need to be refilled prior to this step.

REFILLING FLUID RESERVOIRS



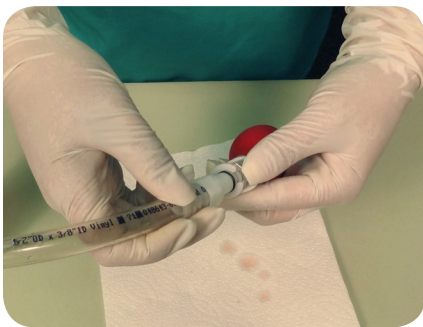
10. Squeeze on the bulb. This will replace any air in the vessel with fluid.



11. Pat the tissue while holding the vessel up to ensure that all air has been replaced by fluid.



12. Make sure that the bulb is filled with fluid before reattaching it to the body form.



14. To add fluid to the bulb, start by attaching the fill line.



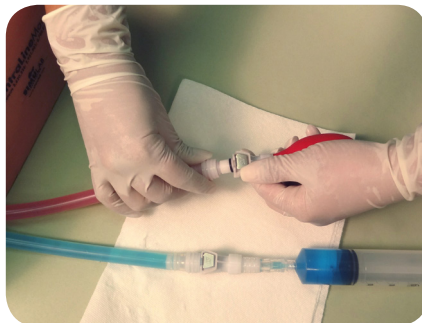
15. Add red fluid to the line.



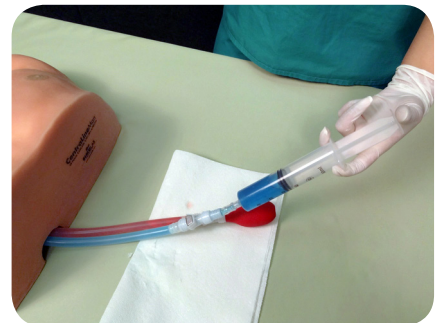
16. Squeeze the bulb and the air will be replaced by fluid.



17. Do this until the bulb does not take any additional fluid.



18. Remove the fill line over a paper towel - there will be a small release of fluid - and reattach to the tissue.



19. Note: the syringe only needs to be attached to the vessel to adjust the venous pressure or to remove air. Fluid only needs to be injected if the fluid level is low.

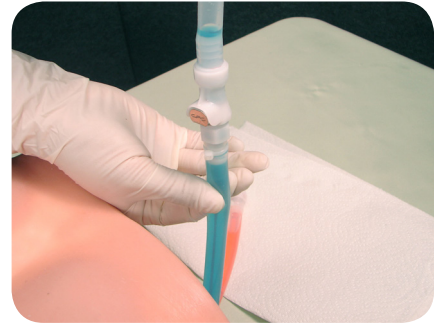
REFILLING FLUID RESERVOIRS



20. Fluids can also be added to the vessels using the included funnel. Start by attaching the fill port with the funnel to the vessel that needs refilling.



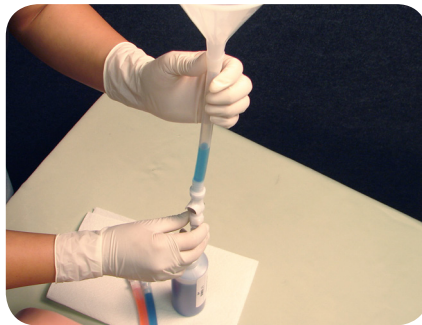
21. Slowly add the fluid using the funnel. Make sure to use the proper color of fluid for each vessel.



22. To fill the vessel and release all the air, gently squeeze the fill port's tubing to allow the air to rise up and the fluid to enter the vessel.



23. Once filled, release the port from the simulator, using paper towels to absorb any leakage. Place the fill line into the appropriate bottle of fluid.



24. Then attach the funnel to the fill line and the fluid will drain.

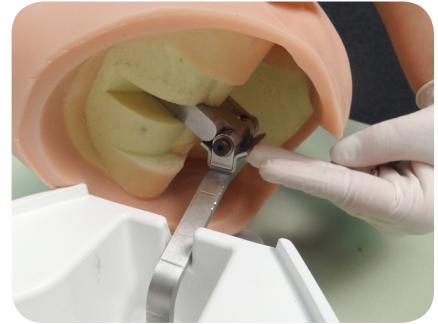
ADJUSTING THE TENSION ON THE ARTICULATING HEAD



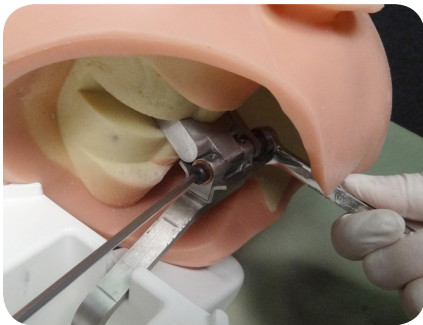
1. If the articulating head's left to right movement becomes loose or does not provide the desired amount of tension, it can be adjusted.



2. To adjust the side to side tension, you will need a 3/8" open end or box wrench and a 1/8" allen wrench.



3. With the body form removed, turn the head to one side - there are two metal plates that will stop the head from over-rotating.



4. Place a 3/8" open end or box wrench on the nut at the top of the mechanism and a 1/8" allen wrench into the screw at the bottom.



5. Turn the wrench about 1/4 of a turn and check the tension. Keep tightening to achieve the desired tension.



6. If the articulating head's forward to back movement becomes loose or does not provide the desired amount of tension, it can also be adjusted.

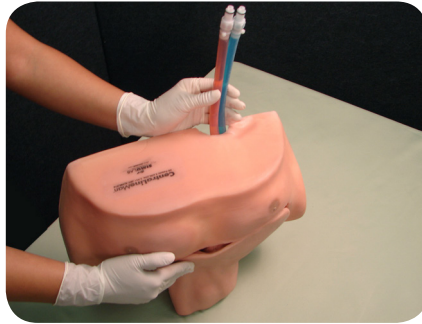


7. After adjusting the head, the body form can be easily placed on the tray to continue with training.

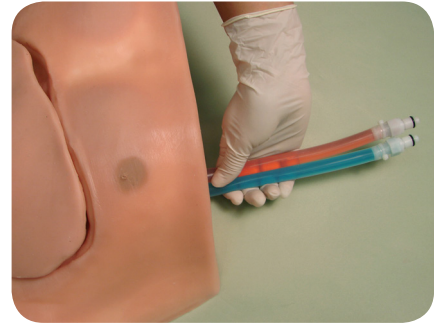
TROUBLESHOOTING



1. If you experience difficulty getting a realistic ultrasound image, there may be air in the vein or artery.



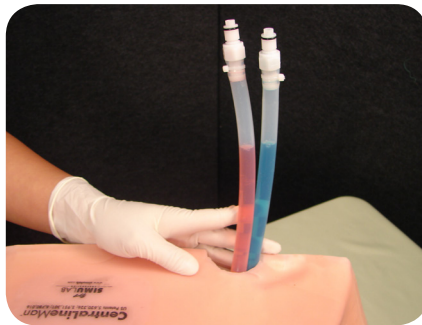
2. To check for air, stand body up on it's end and raise fluid lines all the way above the body form.



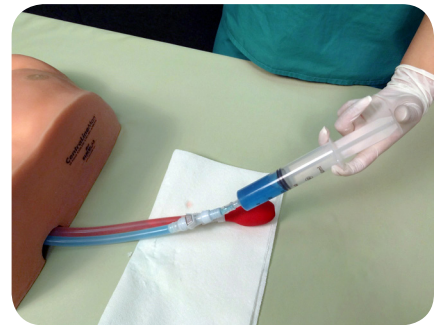
3. Gently tug the vessels away from the body form to make sure there are no kinks.



4. Gently pat the tissue to make sure all trapped air has escaped.



5. If any air bubbles rise, they should be replaced with fluid.



6. Use the pulse bulb or syringe, depending on the vessel to replace the air with fluid. If air remains, refer to the "Refilling Fluid Reservoirs" section.



7. If you experience difficulty passing the guidewire, apply positive pressure to the vein.

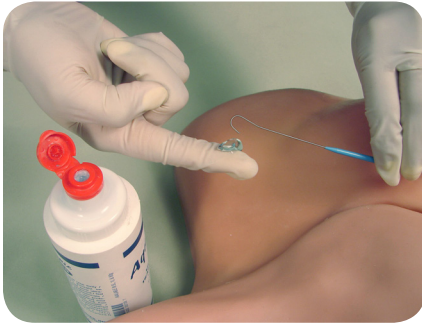


8. To do this, slowly add blue fluid to the vein using the syringe.

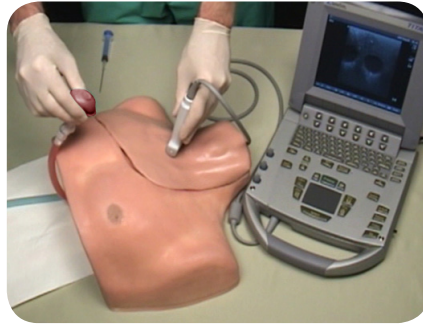


9. Positive pressure is indicated when a small amount of fluid leaks from previous needle tracks.

TROUBLESHOOTING



10. If the problem persists, apply a small amount of ultrasound gel to the guidewire.



11. If you have difficulty only compressing the vein with the ultrasound probe, apply steady pressure to the pulse bulb – this will ensure that only the vein compresses.



12. If the ultrasound image you are seeing is not optimum, reset to vascular setting or default settings by turning machine “off” and then “on”.

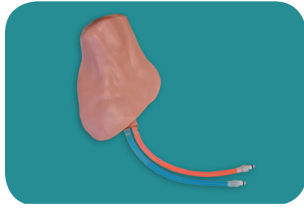


13. It may be necessary to adjust the gain, depth, penetration, and exam settings on the ultrasound machine to achieve a very realistic image.

Penetration and Exam settings for SonoSite ultrasound machines:

Probe Model	Exam Setting	Penetration Setting
L25	Ven	Res
L38	Ven	Res
L38 HFL	Ven	Res
L50 HFL	Ven	Res

REPLACEMENT PARTS CATALOG



CLMT-50
Replacement Tissue



CLM-52
CentralLineMan Base



CLP-1001
Venous Pressure
Regulator



CLP-1008
Pulse Bulb

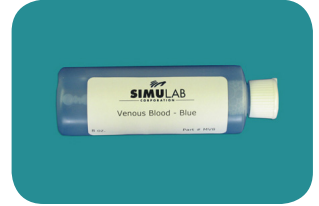


CLP-1003
Fill Port with Funnel

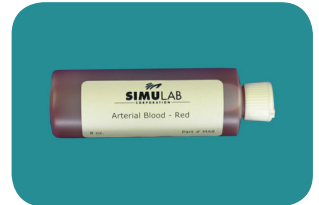
CLP-1004
Fill Line



MV-16
16 oz. Blue
Simulated Blood



MA-16
16 oz. Red
Simulated Blood



CLP-1007
Carrying Case



CLP-1009
User's Guide

