



**Femoral Vessels and Nerves**  
**Central Venous Access and Regional Anesthesia**  
**BPF1400 series**

**Instructions and User Guide**

Revision date 11-25-2008



## **Giving you the confidence only experience can offer™**

Congratulations on your purchase of Blue Phantom's™ ultrasound simulation model(s) for hands-on training. Every product we manufacture at Blue Phantom is specifically designed to be the most realistic and resilient ultrasound simulation phantoms available anywhere. Our high standards for quality manufacturing and design guarantee that you receive only the absolute best.

## **About Blue Phantom**

Blue Phantom™ brings you the most realistic and durable ultrasound hands-on training models available anywhere. At Blue Phantom we know that learning to use ultrasound requires practice. You gain confidence and skill through experience. That is why we offer you the best ultrasound simulation training available.

## **Blue Phantom Warranty**

Blue Phantom takes pride in its quality design and manufacturing standards. Our products are warranted to you by Blue Phantom for 1 year from the date of purchase against defects in workmanship and materials. During the warranty period, a defective part or product will be replaced either with a new or reconditioned part or product, depending on the availability at the time.

This warranty covers normal consumer usage and does not cover damage incurred through use not consistent with the product design. Failure that results from alteration, accident, misuse, vandalism, or neglect is not covered under this warranty. This warranty does not extend to any products that have been used in violation of written instructions.

## **WARNING**

TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR ACCESS PORT) OF MODELS CONTAINING AUTOMATED PUMPING SYSTEMS. REFER SERVICING TO QUALIFIED PERSONNEL. DO NOT EXPOSE ANY ELECTRONIC COMPONENTS TO RAIN OR MOISTURE. DO NOT SUBMERGE TO CLEAN. UNPLUG UNIT FROM WALL OUTLET BEFORE CLEANING.

## **IMPORTANT SAFEGUARDS**

1. Read Instructions – All safety and operating instructions should be read before the unit is operated.
2. Upon receiving unit, inspect to make sure that all electronic access ports are sealed shut. If any are open or accessible, please report this immediately to Blue Phantom  
Telephone: (425) 881-8830  
Email: [customersupport@bluephantom.com](mailto:customersupport@bluephantom.com)  
Web: [www.bluephantom.com](http://www.bluephantom.com)
3. Retain Instructions – The safety and operating instructions should be retained for future reference.
4. Heed Warnings – All warnings in the operating instructions should be adhered to.
5. Follow instructions – All operating and maintenance instructions should be followed.
6. Unplug unit when not in use
7. Never push objects of any kind into the unit as they may touch dangerous voltage points or short out parts that could result in fire or electric shock. Never spill liquid of any kind into the unit.
8. Cleaning – unplug unit from the wall outlet before cleaning.
9. Water and Moisture – Do not use this unit near water – for example near a bathtub, wash bowl, sink, in a wet environment, or the like.
10. Accessories – Do not place this unit on an unstable cart, stand, tripod, bracket, or table. The unit may fall causing serious injury to a child of adult, and serious injury to the unit.
11. CAUTION: Please use extreme care when using needles and sharp objects as to not accidentally injure yourself during training.
12. Servicing – Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified personnel.
13. Power Sources – units with electronics should only be operated from the type of power source indicated on the marking label. If you are not sure of the type of power supply you are using, consult your local power company.
14. Grounding or Polarization – This unit may be equipped with either a polarized 2 wire AC (Alternating Current) line plug (a plug having one blade wider than the other) or 3-wire grounding type plug, a plug having a third (grounding) pin.
15. The 2-wire polarized plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug still fails to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety features of the polarized plug.
16. The 3-wire grounding type plug will fit into a grounding type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety features of the polarized plug.
17. Power cord protection – Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon them or against them, paying particular attention to cords of plugs, convenience receptacles, and the point where they exit from the unit.

## Femoral Vessels and Nerves Model Use and Care Instructions

Model # BPF1400-NP/ BPF1401-HP/ BPF1402-AP

### Included in this package

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- Torso with femoral vessel and nerves imaging platform
- Simulated Blood Refill Solution (reorder # BRS30 Blue, BRS30 Red)
- Use and Care Instructions
- Low voltage transformer (AC pumping models only)
- Replacement tissue insert BPF1410 (no pump), BPF1411-HP (hand pump), BPF1412-AP (automated pump). (Option)

### Additional Items Required for Training not included in this package

- 21 Gauge needle for optimal performance (18 gauge acceptable)
- Ultrasound gel
- Ultrasound system with vascular access transducer
- Catheter kit

### Introduction to Your Training Model

This model is intended as a platform for central venous access and regional anesthesia hands-on technique training. It performs equally well whether you are using ultrasound guidance or utilizing “blind” insertion techniques for central venous access. The model is designed to be extremely realistic and its self sealing design provides you with superb durability. In order to get the most out of your training platform, it is important that you properly care for your model.

### Care Instructions

#### Anatomy of Your Training Model

Remove your training model from its shipping container and make sure that you have received all of the items listed in the “Included in this package” above. If you did not receive one or more of the listed items, please contact Blue Phantom Customer Support immediately by calling (425) 881-8830 or emailing [customersupport@bluephantom.com](mailto:customersupport@bluephantom.com)

Begin by familiarizing yourself with the anatomy of your training model.

### Using Your Training Model

1. Place the model in the proper orientation by positioning the simulated patient in the supine position.
2. If you are not using ultrasound, please skip to the next section.
3. Place ultrasound gel on the model or on the ultrasound transducer in adequate quantities so that the probe slides effortlessly across the surface of the model. Add more gel as necessary.
4. Adjust the ultrasound system controls per the manufacturer’s instructions, increasing and decreasing the depth and gain controls until the desired image is obtained.

### Using Needles and Catheters

1. In order to experience the best performance from your training platform, it is IMPORTANT that you use the appropriate sized needles and catheters on your model. For the best performance, we recommend that you utilize a new 18 - 21 gauge needle and similarly sized catheter kits when accessing the vessels in the model. While Blue Phantom tissue simulation materials will tolerate larger bore needles, their use may cause needle tracks to take longer to absorb or even become permanent. Do not use any needle larger than 18 gauge or permanent damage to your model may occur. Smaller bore needles (>22 gauge) used aggressively can bend during use and damage your model as the needle tip is dragged through the material rather than coursing smoothly through the tissue. Dull needle tips create the same dragging effect and may also cause permanent damage to the tissue. Therefore it is important to replace needles about every ten cannulations.

**CAUTION:** Please use extreme care when using needles and sharp objects as to not accidentally injure yourself during training.

## Using the Automated and Hand Pump Models

### Hand Pump

1. Position the model in the supine position. Please observe the Quick Fill port located on the superior portion of the torso and the Arterial Quick Release Fitting next to it. The Quick Release Fitting attaches to the manual pump cord and will simulate a pulsating artery when squeezed.
2. Note the combination seal between the Quick Release Fitting and the manual pumping cord. This will allow you to remove the cord from the Release Fitting without any leakage of blood to clean and/or replace the ultrasound tissue insert.

CAUTION: Accessing arteries with the Pulsed models may result in the presence of simulated blood dimples at the site of previous cannulations.

CAUTION: Threading catheters into the arteries of the automated pumping models may result in damage to the pumping mechanism.

### Automated Pump

1. Position the model into the supine position. Please observe the Quick Fill port located on the superior aspect of the torso and the low voltage transformer cord next to it. The transformer attaches to the cord exiting the superior aspect of the torso proximal to the Quick Fill port and will simulate a pulsating artery when activated. Activation of the transformer will automatically occur when it is plugged into a power outlet.

CAUTION: Accessing arteries with the Pulsed models may result in the presence of simulated blood dimples at the site of previous cannulations.

CAUTION: Threading catheters into the arteries of the automated pulsing models may result in damage to the pumping mechanism.

## Accessing & Refilling the Simulated Vessels

1. The simulated blood contained within the model's blood vessels is a specially formulated fluid offering optimal performance of the model. It is very important that you only utilize Blue Phantom's simulated blood refill solution. Using other fluid will cause problems including; change in the imaging qualities of the blood vessels, reduction in the ability to thread catheters, and fungal and bacterial growth within the vessels.

USING FLUID OTHER THAN THAT SUPPLIED BY OR PURCHASED THROUGH BLUE PHANTOM WILL VOID YOUR WARRANTY.

2. One of the methods of differentiating between the simulated arteries and veins is the color of the fluid contained within the vessels. Red fluid is consistent with the blood in the arteries and blue fluid identifies the veins.
3. Users with models containing an automated pumping system (BPF-1402-AP) will also be able to differentiate between the arteries and veins by visually observing the pulsatility of the arteries with ultrasound imaging.
4. Users can remove fluid after the veins have been properly accessed to confirm needle placement. Please note that any fluid withdrawn from the vessel will require refilling.
5. It is important to maintain a good fluid level within the simulated blood vessels.
  - A. Using ultrasound: An optimally filled vessel will be identified by the presence of a black echo-free lumen (refer to image C below). A low fluid environment is identified by the inability to visualize the vessel(s) during normal imaging situations. This is due to the presence of air within the vessels which will reflect all of the sound energy (refer to image D below).
  - B. Non-imaging; the presence of air in the Quick Fill tube.

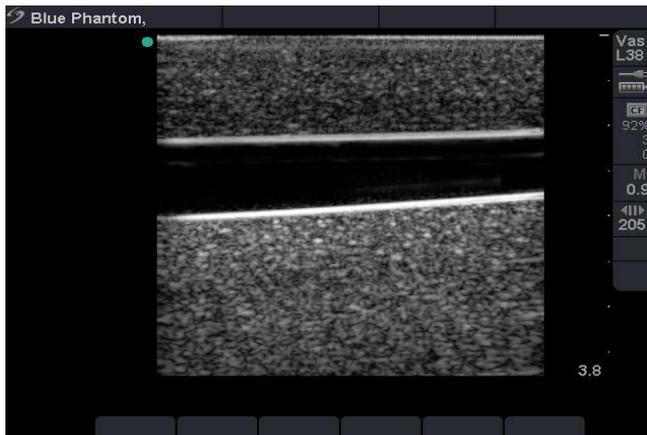


Image C



Image D

6. There are a number of acceptable ways to refill the simulated vessels. Choose the method that works best for your training environment.
- Injecting fluid after each cannulation.** By far the simplest way to maintain a good fluid level in the vessels is to have users inject the accessed fluid back into the model after gaining access to the vessel. This is limited to users that are not performing the entire catheter placement procedure.
  - Using the Quick Fill luer lock fill port.** High volume users will benefit from connecting an I.V. bag containing Blue Phantom™ Simulated Blood Refill Solution to the luer lock located on the superior portion of the training platform. As users withdraw fluid from the veins, the fluid automatically refills the vessels. Please note that this will only ensure the femoral veins are optimally filled with fluid; the femoral artery requires syringe filling (refer to letter D below).
  - Users can also use a syringe and Quick Fill port.** Fill a syringe with the Simulated Blue Phantom refill solution with approximately 5 ml. Place the model in an upright position and note whether air is present in the Quick Fill tube. If you cannot visually confirm the presence of fluid in this tube, the vessels require refilling. Connect the filled syringe's luer lock female connector to the male connector on the Quick Fill Port. Slowly inject fluid into the tube making sure that you remove air after each 5 ml insertion. Remove air by pulling back on the syringe plunger after each 5 ml injection. Continue these processes until the vessels are full and all air is purged from the model's vessels. Care must be taken as to avoid overfilling the vessels with fluid or not purging air from the vessels.

**CAUTION:** Use refill solution as directed. Not intended for human consumption. If accidental consumption occurs, drink a glass of water and consult a physician. May irritate eyes; flush well with water. May contain pigments that may stain clothing; wash immediately with cold soapy water. Keep out of reach of children.

### Overfilling the Vessels

It is possible for you to overfill the vessels if you inject too much fluid into the vessels during the refill process. If you use an IV bag, it is much less likely that this will occur unless the I.V. bag is placed at an elevation significantly higher than the training platform. It will be obvious when the vessels are overfilled when small dimples of simulated blood appear on the surface of the model at the site of previous cannulations. Simply removing excess fluid and air from the vessels will alleviate this issue. Overfilling the vessels will unlikely cause any permanent problems with your model but take care to avoid overfilling.

**If you are uncomfortable refilling the vessel for any reason, contact us and we can refill the phantom for you for a nominal fee.**

## Replacing the Tissue Insert

You can expect a long life from your model. However, after significant use, the tissue insert module will require replacement. You will know it is time for replacement when the visible surface of the model shows significant signs of wear or considerable degradation to the image quality obtained with ultrasound. If you question whether the insert requires replacement, please feel free to contact us with questions.

What you will need to replace the tissue insert module;

- Model with worn tissue insert module
- Replacement tissue insert module
- 5ml syringe
- 1 ml of liquid soap
- 4 ml of tap water

## Removing the Tissue Insert Module

1. Using a clear workspace, place the model in a standing position so that you can access the Quick Fill Port area on the model's superior segment.
2. Fill the syringe with 1 ml of liquid soap and 4 ml of tap water.
3. Squirt the contents of the syringe into the hole that surrounds the Quick Fill Port tube. This mixture will allow the fill tube to be easily removed from the model.

**DO NOT INJECT THE SOAPY FLUID INTO THE QUICK FILL PORT ITSELF.**

4. Place the model in a supine position.
5. Disconnect the hand pump bulb (BPF1410 only) using the inferior portion of the tissue insert module to hold onto, lift the tissue insert module anteriorly so that it pulls both the tissue insert module and the Quick Fill Tube out of the model. The soapy mixture should make this a simple process.
6. Completely remove the tissue insert module and the Quick Fill Tube from the head/neck platform.
7. Pour out the excess soapy fluid from the holes that surround the Quick Fill tube but do not completely clean out since you will need the soapy fluid as a conduit to thread the new Quick Fill Tube into the model.

## Inserting a New Tissue Insert Module

1. Remove the old tissue insert module per the instructions above.
2. Place the tip of the Quick Fill Tube into the base of the tissue insert module recess located in the foam torso.
3. Thread the tube into the model until the base of the tissue insert module is positioned near the top of the insert recess.
4. Place the superior base of the tissue insert module into the foam torso recess until it is positioned flush with the chest surface of the torso.
5. Make adjustments to the tissue insert module so that it is seated flush to the surface of the torso.



### **Cleaning and Storing Your Model**

After each use your model can be easily cleaned using mild soapy water. Use a soft cloth to dry after cleaning. It is preferred to dab the tissue insert module dry rather than rubbing it as this will help preserve the finish of the tissue insert model by minimizing scuffing. The model can be stored at room temperature either in the storage container or in the open.

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### **Help and Technical Assistance**

Blue Phantom is committed to providing you with superb products and uncompromising customer support. Should you require assistance feel free to contact us directly at (425) 881-8830.