Gphantom

# Gphantom Manual
# Central Venous Access

This manual contains information and instructions about the Gphantom Central Venous Access model.


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Gphantom

Thank you for choosing Gphantom!

We are a company specialized in developing solutions for medical training. Here we will help you handle and optimize the durability of your product. If you are looking for specific models for your training, please contact us.

Your Gphantom Central Venous Acess is eligible for the Loyalty Program Gphantom.

See conditions.

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# Receiving your Gphantom

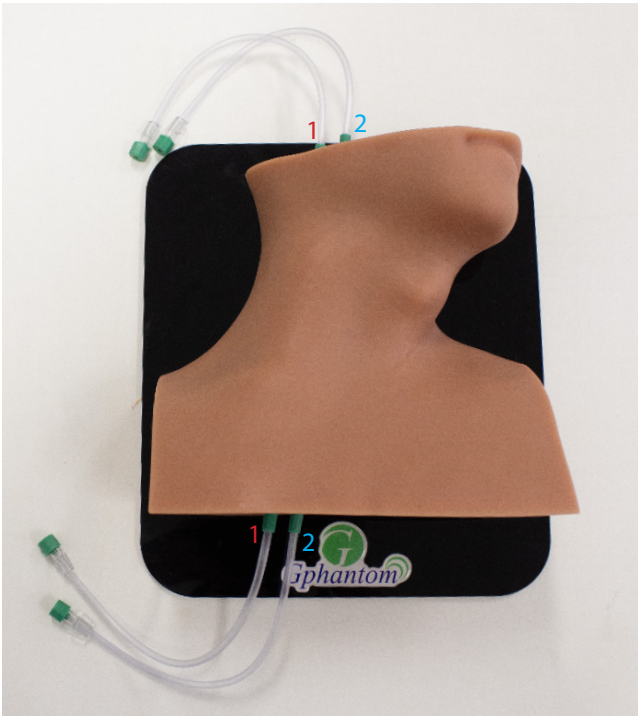
The Gphantom Central Venous Access is designed to provide a realistic learning experience in ultrasound-guided central venous access. This model presents the external morphology of the neck region to facilitate the identification of insertion areas and appropriate needle orientation. Equipped with two venous structures, the simulator allows the practice of venipuncture and the introduction of catheters, allowing students to carry out repetitive training in a safe environment, without risk to patients.

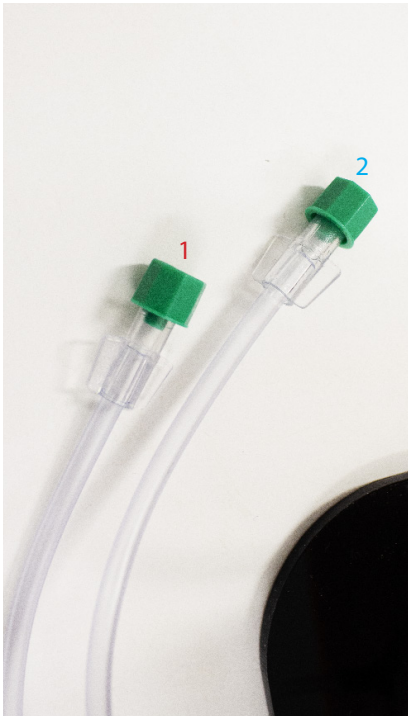
In addition to simulating the texture and strength of tissues, the model offers a precise tactile response to touch and needle insertion, allowing students to gain confidence in using ultrasound to locate and access central veins. In this way, the Gphantom Central Access becomes an important tool for developing technical skills and visual-tactile coordination, essential for performing central venous access in a safe and effective way.

# Receiving your Gphantom

The packaging of your Gphantom Central Venous Access contains:

- Transport case;
- Model packed in bubble wrap;
- QR code card to access manuals.

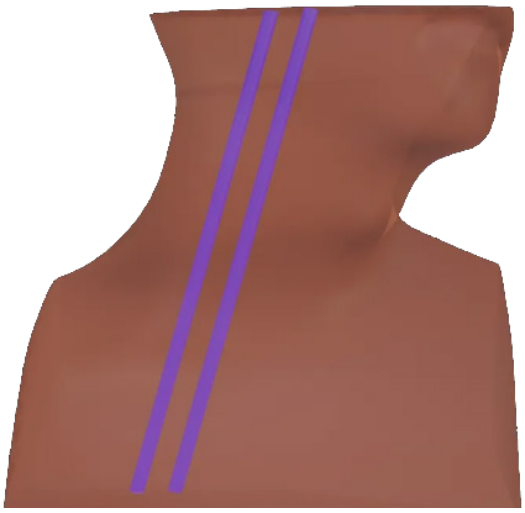


## Starting your training

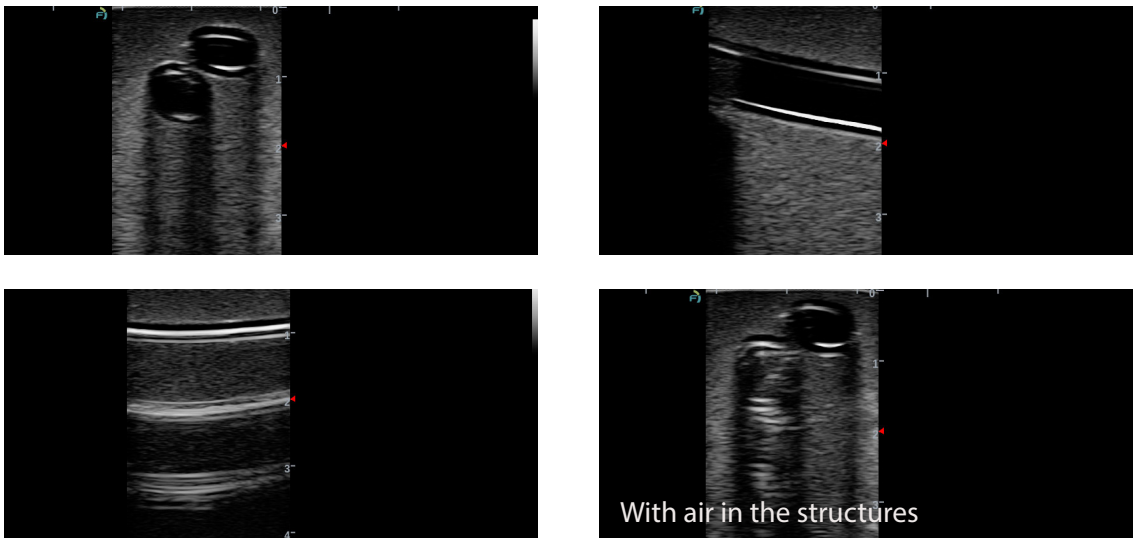
- Remove the model from the packaging, keeping the product on the original base;
- Prepare your ultrasound system and equipment;
- Separate needles and other necessary materials;
- Access our ebook (ebook.gphantom.com.br) to make the most of your training.

## Internal structures



Vein

| | |
|---|---|
| Length | 20 cm |
| Hight | 20 cm |
| Width | 10 cm |




B-mode ultrasound images of the model.

# Conections

- Connections in the model can occur in two ways: using a flow pump (with 1 or 2 channels) or a syringe with a luer lock.

- In Figure 1a, there is an illustration showing how to use flow pumps with the model. If the flow pump has a single channel, the opposite connections must be closed so that one side functions as the fluid inlet and the other as the outlet. If the flow pump has two channels, it is important to note that the connections work in pairs, meaning the model would simulate two distinct structures in this configuration.

- Figure 1b represents the situation where syringes are used to inject fluids via a luer lock. In this case, to fill the structure, two syringes must be connected—one at the inlet and the other at the outlet.

- To simulate an artery, the fluid outlet end must be closed, i.e., with a closed luer lock. This allows the structure to acquire the ability to collapse.

WARNING: Under no circumstances should a pump be used with one of the systems closed (Artery simulation).

- For vein simulation, the fluid outlet must remain open, allowing the structure to collapse.

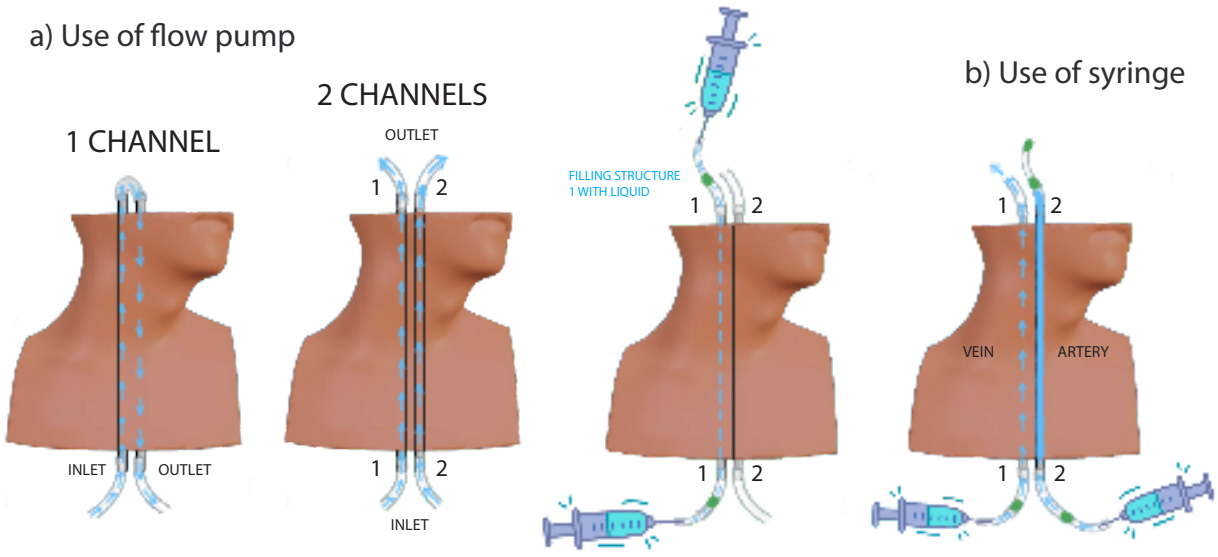


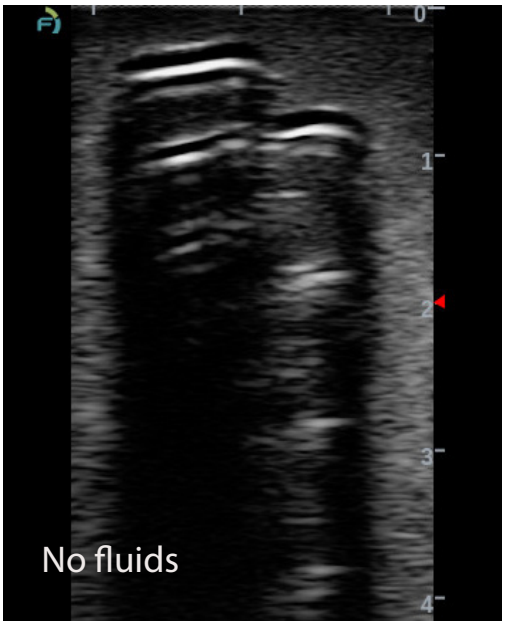

Figure 1 – Demonstration of how to use the connections with a flow pump or syringe.

# Fluid Injection

- Eliminate all air from the needle before infusing fluids into the connections.

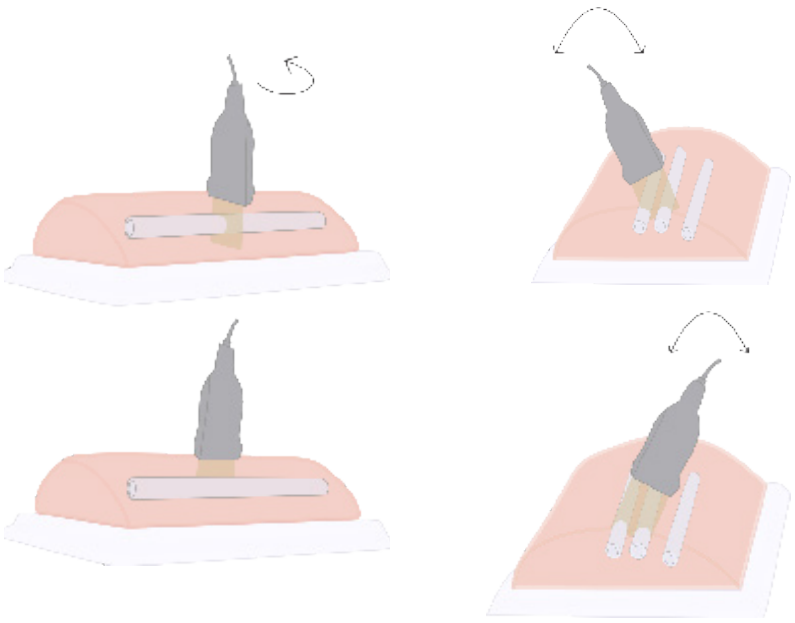
NOTE: Accidentally infusing air into connections during training may cause air to remain in the tissue or needle path. Remove trapped air by injecting the same access point with fluid until the air is expelled from the system.

- Inject the fluid, preferably use saline solution, otherwise use water.
- After the injection procedure is complete, remove the fluid from the model by pulling the syringe plunger to withdraw the infused fluid.
- Connections work in pairs (1-1 and 2-2); Open both ends of each pair to allow the fluid to pass through; Insert a syringe with solution through the first connection until the liquid comes out through the opposite connection, ensuring that the structure is filled; Close both ends to keep the fluid inside; Allowed to pass guide wire inside the venous structure to simulate insertion.

# Ultrasound scanning

- Position the model correctly to use ultrasound on it;
- Apply a small layer of product contact gel or to the transducer, in an amount sufficient to slide the transducer easily across the model. Add more gel if necessary;
- Adjust the ultrasound control system according to your protocol; Adjust the image according to your needs;
- The structures are imaged in different planes, depending on the positioning and angle of the transducer in relation to the tissue. Optimizing a B-Mode image depends on several factors, such as equipment adjustments and transducer positioning. Therefore, it is important to understand the relationship between the ultrasound image plane and the morphology of the imaged tissue. For more information, return to our online ebook presented at the beginning of this manual;
- The correct positioning of the transducer, which allows obtaining precise images with optimized brightness, occurs with the probe in a perpendicular position to the tissue. When the transducer is tilted, forming an angle less than 90° with the tissue surface, the image brightness reduces and the representation of the structure is distorted.



# Needling

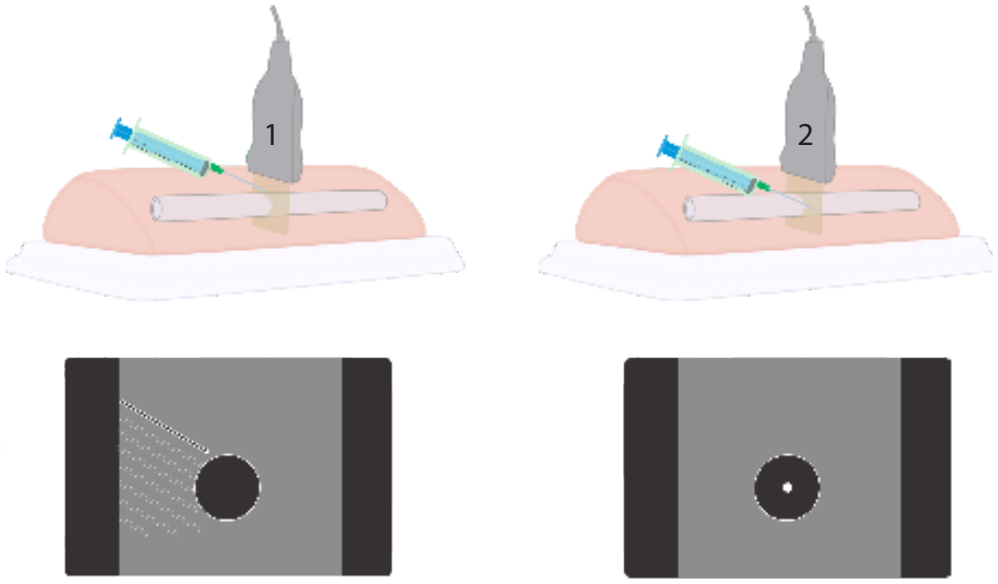
- For best needle mark recovery results, we recommend using needles up to 23G. However, some of our customers use it for Core-Biopsy training, taking advantage of the length of the training block models. Even though the use of larger gauge needles reduces the useful life of the Gphantoms, our needle mark recovery technology continues to work on the models, ensuring good durability.

1. IN PLANE

- In the in-plane approach, the entire length of the needle is visualized, in a longitudinal view. It is possible to obtain a continuous visualization of the needle trajectory and its tip.

2. OUT OF PLAN

- In the out-of-plane approach, the needle is inserted orthogonally to the imaging plane, obtaining a transverse image of the position of its tip, which is visualized as a bright point.



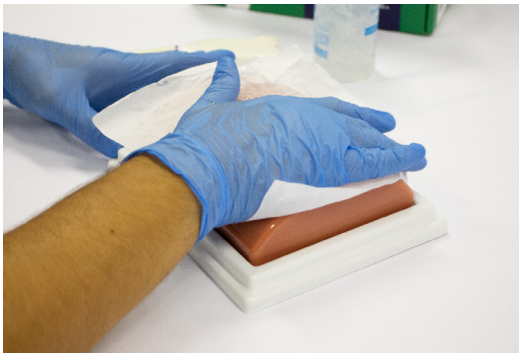
# Handling and Maintenance

- Only perform the procedures supported by each product as described in this guide;
- Only use needles to access fluids;
- Do not use or store other sharp objects, such as scissors, scalpels or box cutters, next to your Gphantom;
- Do not insert any objects or tools into the model except medical equipment, accessories, or supplies intended for use with this model;
- Do not use chemical solvents on models;
- Always store your product in its packaging and in a cool place, away from the sun;

- Exposing your Gphantom to temperatures above 30°C for long periods may cause changes in the product's properties. After training, clean the product with a paper towel, removing excess ultrasound gel, and then wash it under running water, without removing it from the base;
- Do not store Gphantom with excess gel, as this may cause the proliferation of microorganisms that could damage the product;
- Do not use detergents or sponges, as these will damage the product!

## Cleaning

- Clean the training model only with water and a light soap solution, if necessary, wash under running water. Do not immerse the model or use large amounts of liquid to wash it;
- Do not remove the product from the base.



## Storage and Transport

- Always store the product in a cool place, away from the sun;
- Transport the product in its original packaging;
- Make sure there is nothing inside the packaging that could damage your product.

# CONTACT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Gphantom


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Gphantom


Consult the feasibility of custom development
of a Gphantom product for your needs.

Gphantoms have a 3-month warranty against manufacturing defects from the issuance of the invoice.