



Gphantom Manual Knee

This manual contains information and instructions on setting up Gphantom Knee.



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Thank you for choosing Gphantom!

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

Your **Gphantom Knee** is eligible for the Gphantom Loyalty Program.

See conditions.

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Receiving your Gphantom

The Gphantom Knee is an anatomical simulator of the anterior region of the knee intended for training ultrasound-guided procedures. Made with Gphantom material, which offers realistic tactile sensation and precise anatomy, the model simulates bone structures (patella, tibia and femur), synovial bursa and quadriceps and patellar tendons. It is indicated for practice, training and learning of ultrasound-guided procedures, such as periarticular anesthesia, joint infiltrations, synovial fluid aspiration, biopsies, among others.



Receiving your Gphantom

The packaging of your Gphantom Knee contains:

- 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.



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.

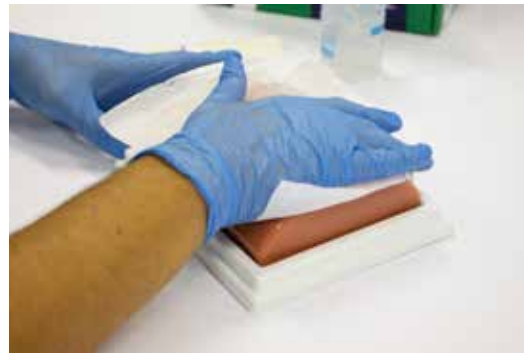


- Exposing your Gphantom to temperatures above 30°C for long periods may cause deformation and loss of properties.
- For training, remove the model from the packaging, keeping the product on the original base.
- After training, clean the product with a paper towel, removing excess ultrasound gel, and then wash it under running water, without removing it from the base.
- Do not store Gphantom with excess gel, as this may cause a bad smell, thus reducing the product's durability.
- 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 submerge the model or use large amounts of liquid to wash it.
- Do not remove the product from the base.
- The product contains between 10mL of liquid, do not add more than that, and do not insert it with a syringe, so as not to add pressure to the structure.



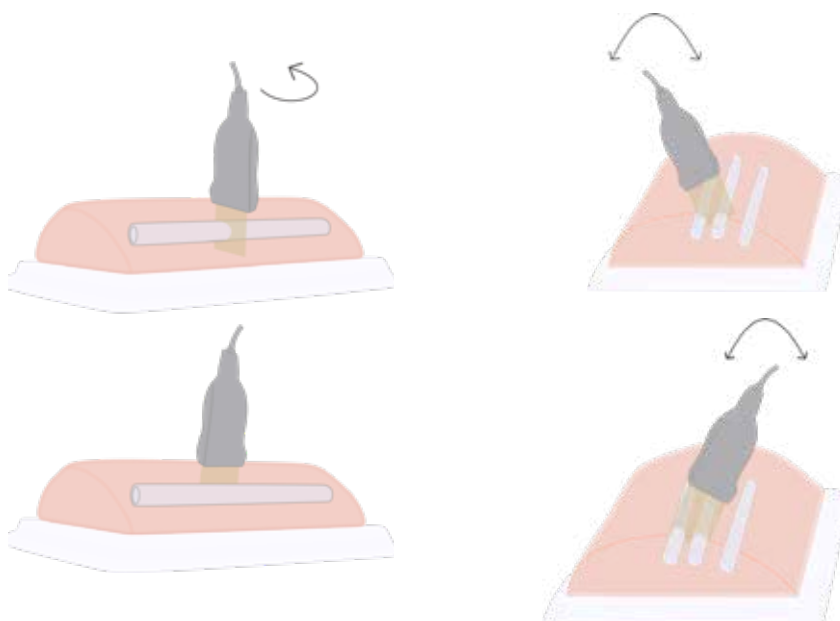
Storage and Transport

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



Ultrasound scanning

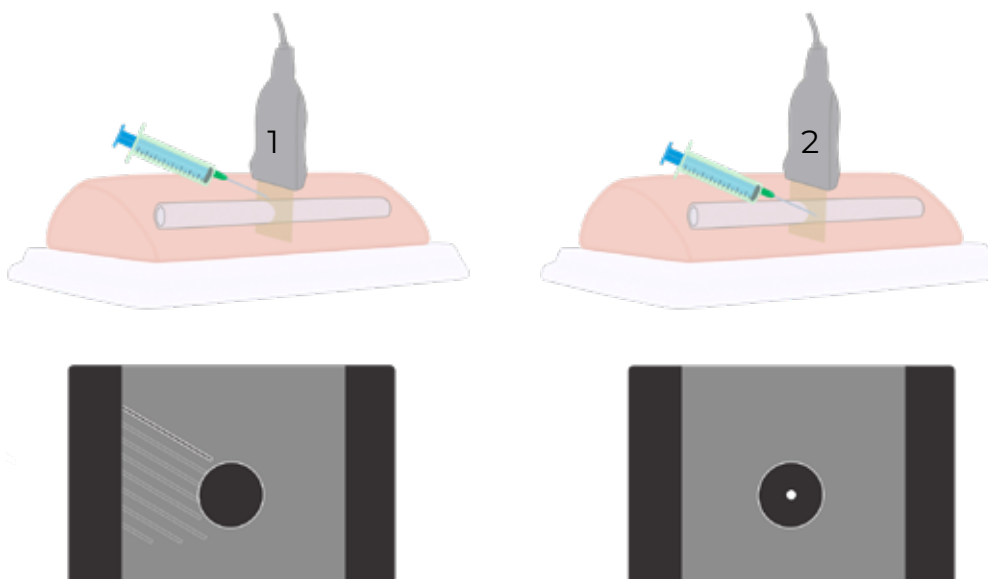
- Position the model correctly to use ultrasound on it.
- Apply a small layer of contact gel to the product or the transducer, in an amount sufficient to slide the transducer easily across the model. Add more gel if necessary.
- Adjust the ultrasound control system according to your protocol.
- Position the image according to your need.
- 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, it is possible to use Gphantom 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 trajectory of the needle 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.





Fluid Replacement

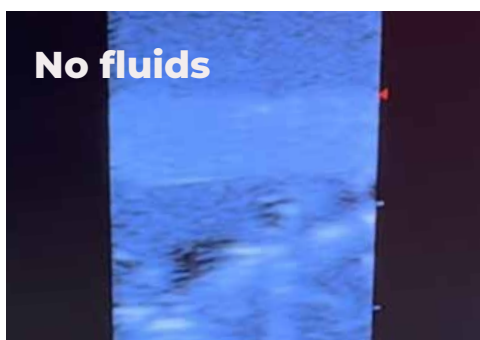
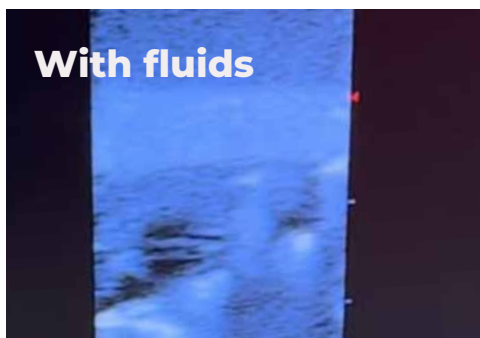
- For greater durability of your Gphantom, we do not recommend injecting or sucking liquids from the materials. However, if this is an alternative to application training, here are some tips to optimize the use of your model.
- Eliminate all air from the needle before infusing simulated anesthetics into the model.

NOTE: Accidentally infusing air into the model 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.

NOTE: Maximum 10mL.

- After the injection procedure is complete, remove the fluid from the model by pulling the syringe plunger to withdraw the infused fluid.

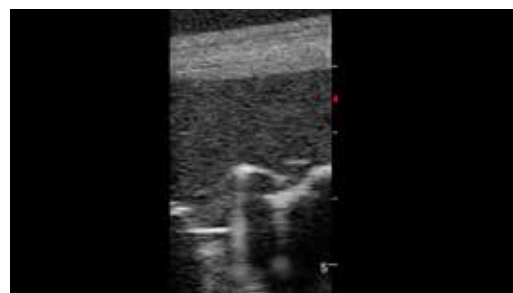
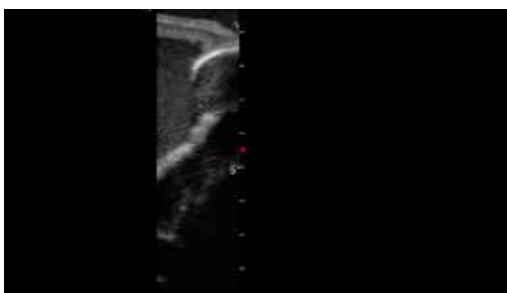
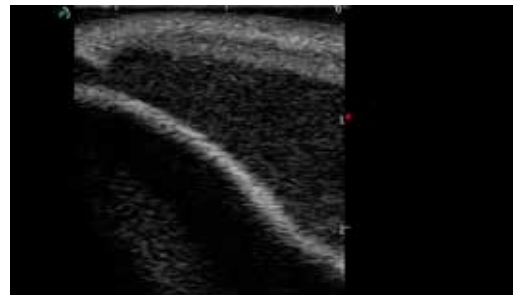
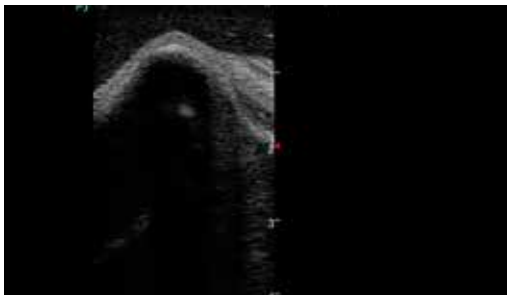




Internal structures



Product code	PBD050511
Weight approx. (without packaging)	3,7 g
Length	15 cm
Height	10,3 cm
Width	25 cm



B-mode ultrasound images of the model.



CONTACT



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Gphantom

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