WARRANTY
THE PHANTOM LABORATORY INCORPORATED (“Seller”) warrants that this product shall remain in good working order and free of all material defects for a period of one (1) year following the date of purchase. If, prior to the expiration of the one (1) year warranty period, the product becomes defective, Buyer shall return the product to the Seller at:

By Truck
The Phantom Laboratory, Incorporated
2727 State Route 29
Greenwich, NY12834

By Mail
The Phantom Laboratory, Incorporated
PO Box 511
Salem, NY 12865-0511

Seller shall, at Seller’s sole option, repair or replace the defective product. The Warranty does not cover damage to the product resulting from accident or misuse.

IF THE PRODUCT IS NOT IN GOOD WORKING ORDER AS WARRANTED, THE SOLE AND EXCLUSIVE REMEDY SHALL BE REPAIR OR REPLACEMENT, AT SELLER’S OPTION. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY DAMAGES IN EXCESS OF THE PURCHASE PRICE OF THE PRODUCT. THIS LIMITATION APPLIES TO DAMAGES OF ANY KIND, INCLUDING, BUT NOT LIMITED TO, DIRECT OR INDIRECT DAMAGES, LOST PROFITS, OR OTHER SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, WHETHER FOR BREACH OF CONTRACT, TORT OR OTHERWISE, OR WHETHER ARISING OUT OF THE USE OF OR INABILITY TO USE THE PRODUCT. ALL OTHER EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTY OF MERCHANT ABILITY AND FITNESS FOR PARTICULAR PURPOSE, ARE HEREBY DISCLAIMED.

WARNING
This product has an FH3-4 mm/min flame rating and is considered to be flammable. It is advised not to expose this product to open flame or high temperature (over 125° Celsius or 250° Fahrenheit) heating elements.
Phantom Patient™ Manual

Contents

Warranty 1
Introduction 5
Removing the Phantom From the Storage Case 6
Connecting and Disconnecting the Arms 7
Connecting and Disconnecting the Legs 9
Connecting and Disconnecting the Head 10
Organs 11
Aorta Arterial Tree 11
Introduction

The Phantom Patient™ is designed for training in positioning and uses of radiographic imaging machines. The phantom represents an average-size man, molded from the radiation-equivalent RANDO® material and RANDO® lung material cast around a natural human skeleton. The Phantom Patient™ design provides sufficient movement to assume many standard positions for radiography. The use of the RANDO® materials yield human-like radiographs when standard human technical factors are used. Part thicknesses should be measured as for a patient, and equipment adjusted accordingly.

Numerous artifacts will be found in the phantom, reflecting its synthetic nature. Long bones may be cut for shortening or lengthening to suit molds of the limb segments. Flesh and bone cutouts are needed, although held to a minimum, to permit function.

Additional features of the Phantom Patient™ enable the use of contrast media in its internal organs. The Phantom Patient™ may be disassembled for simultaneous use of its various segments.

This manual provides the basic information required to assemble and care for the Phantom Patient™.

If you have any additional questions please contact The Phantom Laboratory at:
Phone: 800-525-1190 or 518-692-1190
Fax: 518-692-3329
email: sales@phantomlab.com
Additional product information is available at: www.phantomlab.com
Removing the Phantom From the Storage Case

The Phantom Patient™ is shipped in a wooden storage case. The assembled phantom can fit into the case, however because of its large size and weight, it is shipped partially disassembled to prevent injuries when removing it from the case.

The weight of the Phantom Patient™ parts are 3.5kg (7.5lbs) for each arm, 10.5kg (23lbs) for each leg and 34kg (75lbs) for the torso and head.

You will need a solid table that can support the phantom for assembly. After opening the case, disconnect the buckles on the black retention straps and remove the torso. Be careful to support the head when lifting the torso out of the case. After removing the arms and legs, refer to the instructions described on pages 7 & 9 for attaching to the phantom.
Connecting and Disconnecting the Arms

All the limb joints are pinned in place using different sized connecting rods. However, the threaded T wrench can be used to remove, and in some cases, insert connecting rods into the phantom.

Note: The phantom is shipped with the shoulder and hip rods already in place.

There are rod entrances on the superior aspects of the shoulders. The arms are held to the shoulder sockets by rubber belts. The belts are run around a plastic tube that is anchored to the body by the shoulder rod (The shoulder rods are long with one rounded end). Because the rubber belts have some tension on them when the arm is installed, blue foam spacers are used to help place the plastic tube deep enough into the torso to allow the aluminum shoulder rod to pass through.

Note: Sometimes the plastic tubes move during installation. They can be repositioned by referencing the picture above.
Because the shoulder rod requires some twisting and pressing to pass through the plastic tube, the T wrench will need to be threaded into the shoulder rod. Thread the T wrench approximately 1 cm (3/8") into the shoulder rod, turn and then tighten the wing nut as shown below. Next, insert the rod into the shoulder making sure the rod is pulled out far enough so that the plastic tube will slide into the phantom.

While supporting the arm, insert it into the arm socket and hold it firmly in place. Next, press and twist the shoulder rod into the torso so the rod is fully recessed into the shoulder. The blue foam is no longer required and will fall out when the arm is extended, but should be saved for future assemblies.

To remove the arm, insert the T wrench into the shoulder rod and remove it from the torso. Once the shoulder rod has been removed, the arm can be removed from the torso.
Connecting and Disconnecting the Legs

Partially press the hip rod (long rod with one flat end) into the torso allowing 5cm (2”) of the rod to protrude above the torso. Insert the leg so the aluminum leg connector will be able to slide into the torso.

While holding the leg in position, press the hip rod into the torso so the end is flush with the torso's surface.

To remove each leg, first thread the T-wrench into the hip rod, and pull the rod out of the torso. Then, making sure to use two hands, pull the leg (at the hip) straight out from the torso.
Connecting and Disconnecting the Head

The head is held onto the torso by a nylon nut located at the top of the head. A socket wrench is provided for removing this nut. Between the neck and the torso is a flexible joint which contains one vertebra and flexible foam. This is fit over a flexible rod and covered by flexible fabric. The fabric is held in place by o-rings. To remove the head, first slide the upper o-rings up the neck and off the fabric and then remove the nylon nut at the top of the head. Now the head will slide off the end of the flexible rod.

To reassemble, position the foam and vertebra on the flexible rod with the cloth band held in position on the torso with the o-rings and the upper neck o-rings slid up on the neck. Slide the head onto the flexible rod and attached it with the nylon nut. After securing the head, pull the flexible cloth over the upper o-ring groves and place the o-rings over the cloth to hold it in place.
**Organs**

A stomach, gall bladder, bladder and sigmoid flexure with rectum are contained within The Phantom Patient™. These organs may be filled with water to make them virtually invisible, or they may be used empty, thus providing air as a contrast medium, or filled with liquid contrast media.

It is recommended that organs be filled with ordinary tap water for two or three days before contrast media are used in order that maximum initial absorption takes place without contrast media. A solution of sodium iodide in water is a suitable filling material for the organs, but iodized oil may also be used. If the Phantom Patient™ is to be stored, it is recommended that contrast media be drained and replaced with tap water or rinsed out during this period.

A rubber syringe with a plastic tube extension is provided for filling and emptying organs. Be sure to move the tip of the plastic tube against the deepest surfaces of the organ for complete removal of fluid.

**Aorta Arterial Tree**

A simplified aorta arterial tree is an integral hollow network within the trunk. The tree begins with the aortal arch, bifurcating into the carotid arteries at the base of the neck and into the femoral arteries at the groins. Ducts lead to the surface of the trunk from the aortal arch, and from each of the four termination points. The arterial tree is filled by the same rubber syringe used for the organs.

Fill through the top ports with the torso tilted, so that the top ports are higher than the chest port and those in the groin area. Remove both top port caps and loosen the port caps on the chest and in the groin area so that the o-ring does not seal, thus permitting air to bleed out along the screw threads for complete filling. When a few drops appear at these caps, they may be tightened. When liquid appears in either of the top ports, replace the cap and continue filling until it appears in the other top port.