PH-63

Thorax Phantom for RI

Instruction Manual

Contents

KYOTO KAGAKU co.,LTD

KKAmerica
Kyoto Kagaku America Inc.

Description of parts

Before your first use, please ensure that you have all components listed below.

1.	Thorax Body	1	2.	Lungs (Left and Right)	2
3.	Hearts	4	4.	Liver	1
5.	Kidney	2	6.	Rib cage and Spine	1
7.	Breast	2	8.	Hot spots	3
9.	Base	1	10.	Plastic Pins	Several
11.	Supporting bars	4	12.	Flat bar ring for Base	2
13.	Tubes	4	14.	Syringe	1
15.	Nuts and Bolts	Several	16.	Water Tank	1

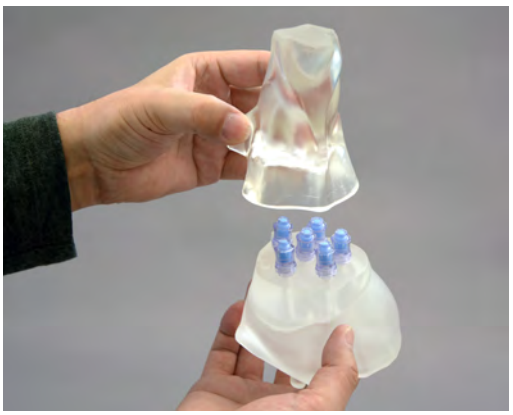
Assembly of base and supports

1. Place supporting bars on the base.
   Secure support bars to the base with plastic pins.

2. Place kidneys on the support bars and secure with pins.


3. Attach the liver on the support bars and secure with pins.


4. Combine the upper and the lower halves of the heart. Position the heart inbetween the lungs.




Assembly of base and supports

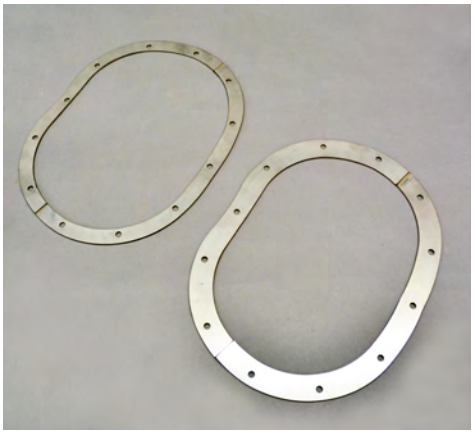
5. Place the heart and lungs onto the liver.

6. Secure organs in place by installing the Rib Cage / Thoracic Spine assembly to the base and secure wit h pin.

7. Apply petroleum jelly on the bottom flange to ensure air and water tightness.

Assembly of base and supports

8. Cover the internal organ parts with the thorax body, fix the base, thorax body and flat bar ring together with hardware. There are two (2) types of flat bar ring. The wider one goes to top, the narrow one goes to bottom. Take care to tighten evenly and to not over tighten.

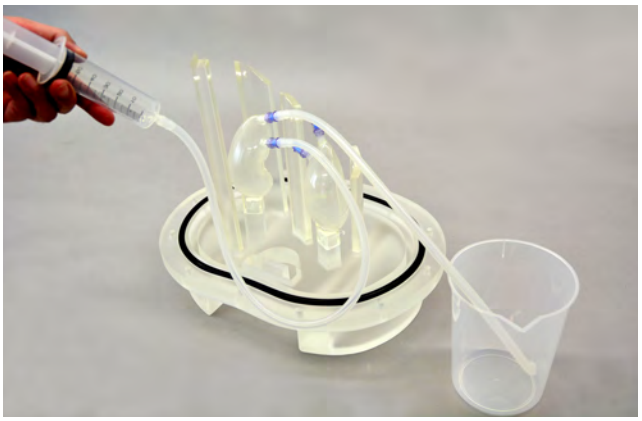



9. Completed model with the breast attached.

Filling of RI solution or water for each organ

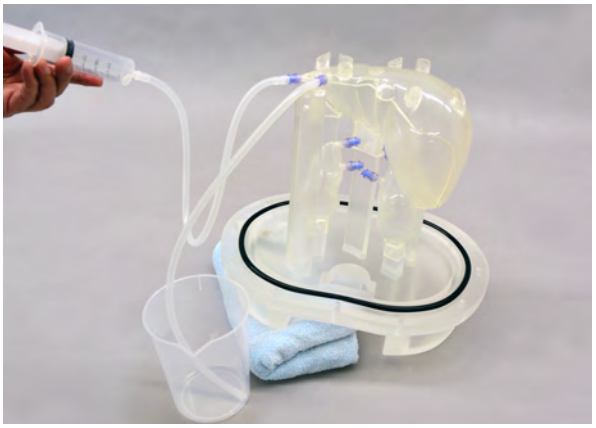
1. Kidneys

Connect syringe/tubing with Solution to the lower fill port. Connect overflow tube to the upper port for ventilation and overflow. Inject solution while tilting the unit as needed to expel air.



2. Liver

Connect syringe/tubing with Solution to the fill port. Connect overflow tube to the upper port for ventilation and overflow. Inject solution while tilting the unit as needed to expel air.



3. Hearts

a) Anatomical Heart.

There are three chambers for left/ right ventercles and myocardium. Each Chamber has a fill and overflow port. Inject the solution into each chamber individually while expelling excess air with tubing attached to the overflow port.

Filling of RI solution or water for each organ

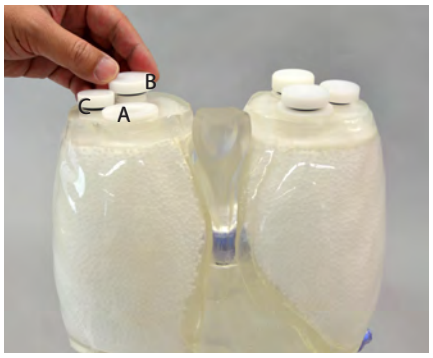
3. Hearts

b) Geometric QA heart.

There are two (2) chambers, ventercle and myocardium. Each Chamber has a fill and overflow port. Inject the solution into each chamber individually while expelling excess air with tubing attached to the overflow port.

4. Lungs

Open port A (meshed) and loose port B to vent, and keep the mesh filter in the port. Inject the solution to the port A by syringe.
Do not remove maintenance caps during the filling process. Internal Lung material is lighter than fluid and will spill out of the lung cavity.



5. Thorax

Attach fill / overflow tubing to the connectors on both shoulders. Fill phantom with water (or Solution of choice) using provided Water Tank.

Drainage of RI solution or water

1. Thorax

Attach tubing to the bottom connector and connector on the shoulder. Drain solution into container. Make sure the cock is closed first, and open it to drain.

Opened

Closed

2. Liver

Connect the tubing to a port for ventilation, remove drainage cap and drain solution into container.

3. Hearts

a) Anatomical Heart.

Connect tubing to both ports of each chamber and inject air to expel the solution into container.

Drainage of RI solution or water

3. Hearts

b) Geometric QA heart.

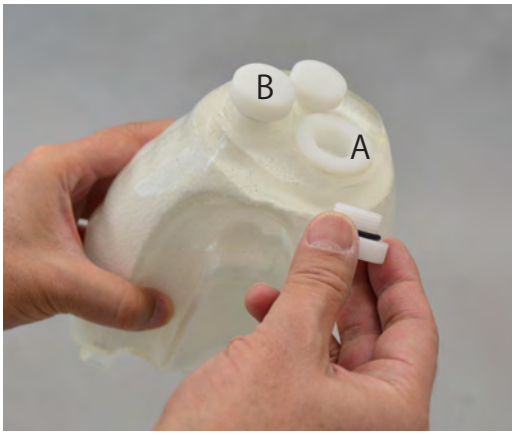
Connect tubing to both ports of each chamber and inject air to expel the solution into container.

4. Kidney

Connect tubing to both ports and inject air to expel the solution into container.

5. Lung

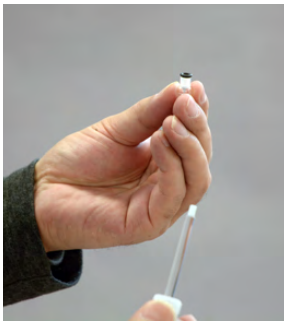
Open port A (meshed), and loose port B to vent. Drain the solution into the container.



Filling of RI solution for Hot Spots

1. Liver- Fill the capsule with RI and attach extension rod. Place the Hot Spot into the liver.

2. Lung- Fill the capsule with RI and attach extension rod. Place the Hot Spot into the lungs.

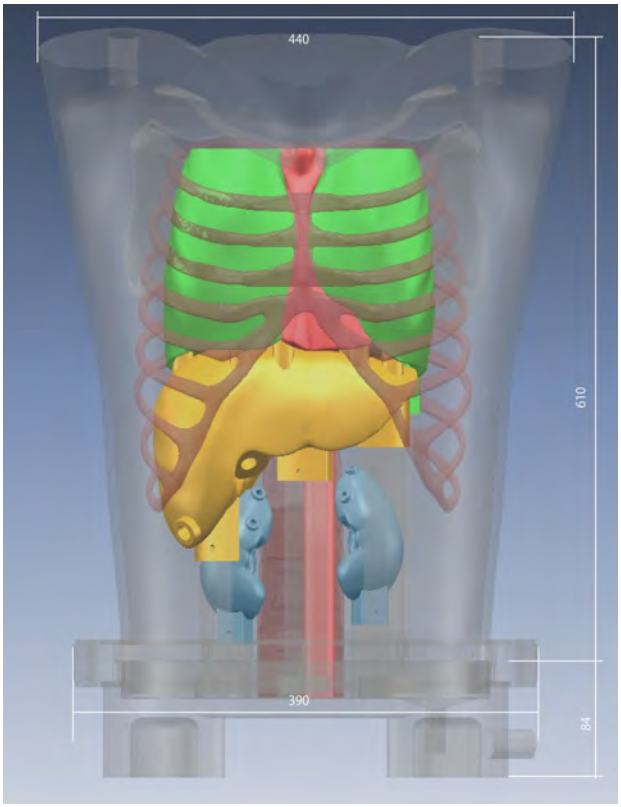


3. Breast- Fill the capsule with RI and embed the Hot Spot in the breast from the reverse side of the breast.

4. Once the phantom is in the Supine position, you can attach the Breasts to the Thorax body as shown.

Specifications

Phantom Dimension
Unit: mm



1) Material

Soft tissue: transparent polyurethane
Bone materials: using considered materials in mutual reaction under RI
Lungs: materials with density 0.4 g/cm3. (Capable to inject RI solution.)

2) Weight

a) Weight of phantom itself is 21kg.
b) Phantom weight with filled water is 37.5kg.

3) CT value of each part

a) Bone: 370HU
b) Lung: -900HU
c) Organ shell material: 100HU, and 1.18g/cm3 in density

4) Recommended radio density

a) Myocardium, Liver and Kidney: 80KBq/ml
b) Lung: 30KBq/ml

5) Hot spots for PET can be set in liver, lungs, and breast.

Specifications

6) Evaluation Features

a) Left ventricle, planer images and SPECT images of myocardial sections
b) Detection of negative and positive image by SPECT of myocardium.
c) Quantitative analysis of myocardium
d) Myocardial uptake rate
e) Scattering radiation from liver to myocardium
f) Attenuation correction
g) Scatter correction
h) Evaluation of the arti
i) Evaluation of image reconstruction

7) Actual volume of each organ

Organ		Internal Volume	Injectable Volume	Note
Geometrically shaped heart (normal)	Ventricle Myocardium	44ml 81ml		
Geometrically shaped heart (Abnormal)	Ventricle Myocardium Defect	44ml 79ml 1.0ml x 2 pc		
Anatomically shaped heart (Normal)	Left ventricle Right ventricle Myocardium	31ml 41ml 75ml		
Anatomically shaped heart (Abnormal)	Left ventricle Right ventricle Myocardium Defect	31ml 41ml 73ml 1.0ml x 2 pc.		
Liver		1350ml		
Lung	Right Left	1195ml 1090ml	460ml 430ml	Specific Gravity 0.4 Specific Gravity 0.4
Kidney	Right Left	109ml 103ml		
Simulated tumors		0.3ml		Lung, Liver , Breast

Kyoto Kagaku Warranty Policy

By this limited warranty, Kyoto Kagaku Co., Ltd. warrants to the original purchaser the product to be free from defects in materials and workmanship during normal use for a period of one (1) year from the date of the original purchase.
A 2nd year warranty is optional and is available to purchase.
If during this period of warranty the product proves defective due to improper materials or workmanship, Kyoto Kagaku will, at its discretion, repair or replace the product or its defective parts without charge for labor or parts, upon the terms and conditions set forth below.This warranty will not cover the replacement of consumable parts after use.

Conditions

1. This warranty will be granted only when the original invoice or sales receipt (indicating the date of purchase, product type and distributor's name) is presented together with the defective product. Kyoto Kagaku reserves the right to refuse free-of-charge warranty service if the above document cannot be presented or if the information contained in it is incomplete or illegible.

2. This warranty will not cover the damage resulting from adaptations or adjustments, which may be made to the product without the prior written consent of Kyoto Kagaku.

3. This warranty will not apply if the lot or serial number on the product has been altered, deleted, removed or made illegible.

4. This warranty covers none of the following:
   a. Necessary maintenance and repair or replacement of parts due to normal wear and tear;
   b. Any adaptation or changes to upgrade the product from its normal purpose as described in the Instruction for Use, without the prior written consent of Kyoto Kagaku;
   c. Transport costs and all risks of transport relating directly or indirectly to the warranty of the product;
   d. Batteries, electrodes, clothing, fuses, normal wear and tear, staining, discoloration or other cosmetic irregularity which does not impede or degrade product performance;
   e. Damage resulting from:
   i) Misuse, including but not limited to failure to use the product for its intended use or in accordance with Kyoto Kagaku's instructions on the proper use and maintenance;
   ii) Repair done by non-authorized Service Representative or Distributor, or the customer himself;
   iii) Accidents, lightning, water, fire, improper ventilation or any cause beyond the control of Kyoto Kagaku.
   iv) Defects of the system into which this product is incorporated.

This warranty does not affect the customer's statutory rights under applicable national laws in force, nor the customer's rights against the distributor arising from their sales/ purchase contract.

This limited warranty is the sole and exclusive remedy, offered in lieu of all other warranties, expressed or implied. Kyoto Kagaku will not be liable for any indirect, incidental, contingent, or consequential damages arising from use of this product.

Some states do not allow the exclusion or limitation of implied warranties or liability for incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may have other rights, which vary from state to state.

⚠ Warning

Please handle with care. The phantom is made of hard resinous material; the phantom can be damaged if dropped or hit by a hard object.	Please clean the phantom with water or pH neutral detergent. Please do not use organic detergent such as thinner.
Please do not store in high temperatures, high humidity or in direct sunlight. It may lead to deformation or damages.	Please do not write with a pen. Writing directly on the phantom with felttip pen or permanent marker will not wash off.

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