



TRUE PHANTOM
SOLUTIONS

Adult Full Human Body Phantom

USER GUIDE

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Pediatric Adult Full Human Body X-ray, CT & MR Imaging



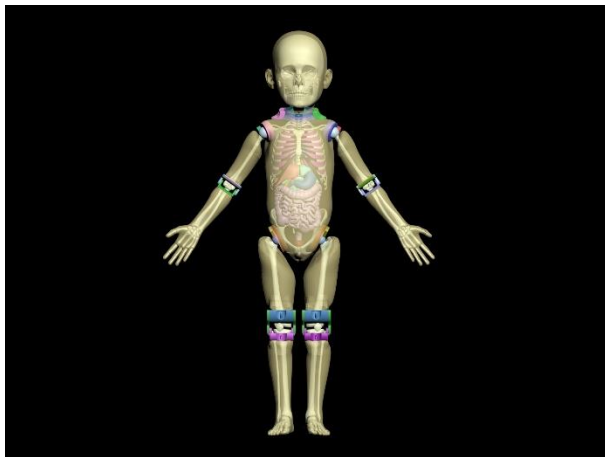
Part Number: FB-P01

1. Introduction

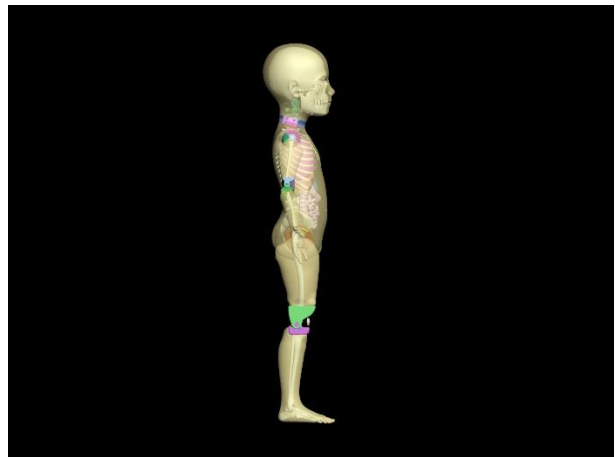
Pediatric Full Human Body Phantom is an X-RAY CT and MR compatible training product. It is primarily used to train various patient positioning techniques. Often purchased by medical schools & teaching hospitals to train their radiology students & other medical professionals.

The design of this phantom is based on the model of a 4-year-old child of 40" (100 cm) in height. This phantom is a life-size, full-body anthropomorphic phantom with anatomically correct organs and bones constituted in 10 body parts. The phantom weighs about 20 Kgs. Other uses include visual evaluation in finding out optimal scanning conditions.

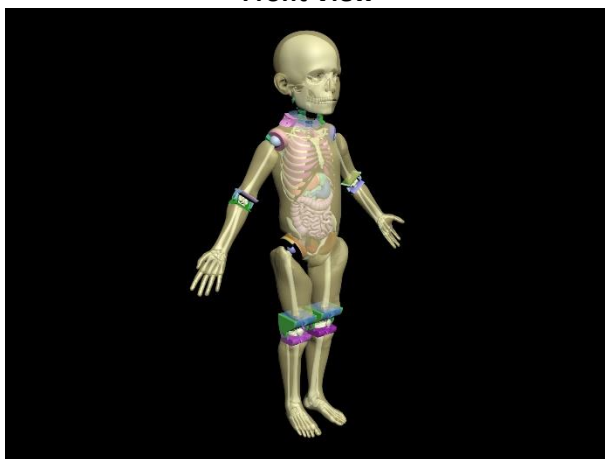
2. Full 3D design of the Phantom



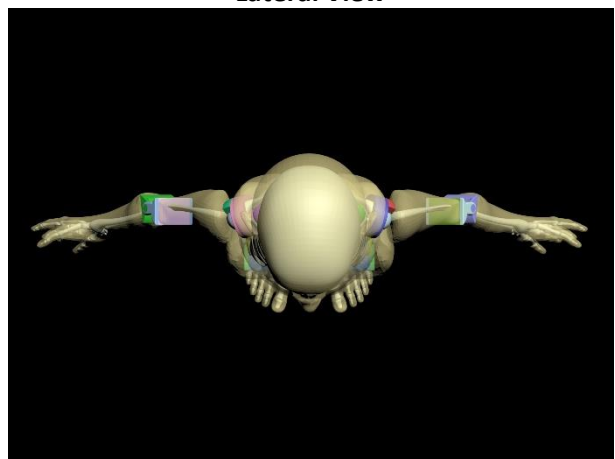
Front View



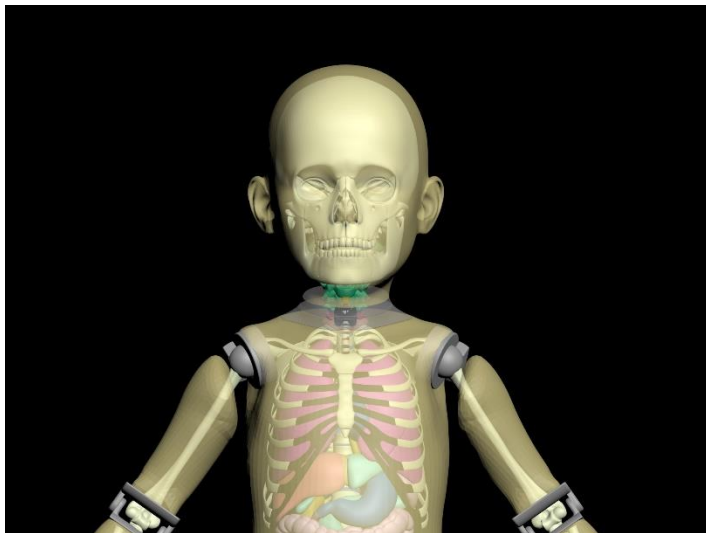
Lateral View



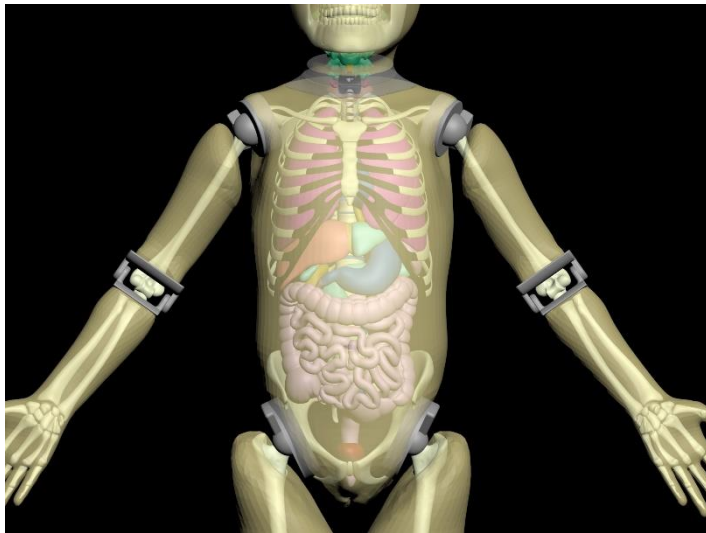
Perspective View



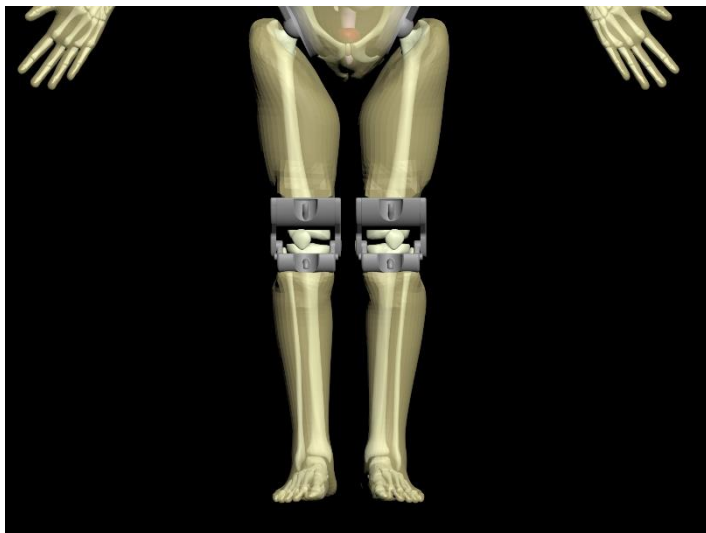
Top View



Head View



Torso View



Legs View

3. Features

- Anatomically correct full body divided into 10 parts as explained below.
- Realistic body tissue-mimicking material, compatible with CT & MR imaging.
- Useful to train/perform several patient positioning techniques under radiology.
- Shoulders can be rotated 360 degrees round ways and 180 degrees sideways.
- Movable Hip joints, knees, and elbows at respective degrees.
- Detachable Head, Torso & limbs.
- The bones have realistic properties and structure.
- Customizable with different pathologies (lesion, tumor, infection, abnormality) upon request.
- The phantom can be ordered in a transparent or skin-colored version.

4. Components



**Head Phantom.
HD-P01 – 1 Unit**



**Torso Phantom.
TO-P01 – 1 Unit**



**Arm Phantom.
AR-P01 – Left**



**Arm Phantom.
AR-P01 – Right**



**Leg Phantom.
LG-P01 – Left**



**Leg Phantom.
LG-P01 – Right**

Pediatric Human Head for X-Ray CT and MRI training [SKU: HD-P01 – 1 Unit](#)

- Anatomically correct realistic skull phantom
- Realistic brain tissue
- Gray matter (contrast x)
- Cervical spine

Pediatric Human Torso for X-RAY CT and MRI training [SKU:TO-P01 – 1 Unit](#)

- **Bones included:**
 - Complete Spine
 - Complete Ribcage
 - Shoulder (Clavicle & Scapula)
 - Pelvis
- **Thoracic organs included:**
 - Trachea and bronchi
 - Anatomically correct Heart
 - Lungs with lung vessels
- **Major abdominal organs included:**
 - Stomach
 - Liver
 - Kidneys
 - Spleen
 - Pancreas
 - Bladder
 - Gallbladder
 - Large & small intestines

Pediatric Human Arms for X-RAY CT and MRI training [SKU: AR-P01 – 2 Units](#)

- Arm (Humerus)
- Elbow joints
- Forearm (Radius, Ulna)
- Hand (wrist with fingers)
- Realistic skin-mimicking material surrounding the arm

Pediatric Human Legs for X-RAY CT and MRI training [SKU: LG-P01 – 2 Units](#)

- Thigh (Femur)
- Knee joints
- Leg (Tibia, Fibula)
- Foot (Finger bones)
- Realistic correct skin-mimicking material surrounding the arm

5. HU Values of Tissue Mimicking Materials

No.	Tissue Type	HU Value (average)
1	Body tissue:	-25
2	Trabecular bone:	800
3	Cortical bone:	1300
4	Trachea:	80(Tissue part), -1000(Air filled part)
5	Pancreas:	110
6	Spleen:	110
7	Kidneys:	110
8	Bladder	35
9	Rectum wall:	100
10	Sigmoid Colon Wall:	100
11	Heart:	40
12	Liver:	110
13	Gallbladder:	35

6. Selected Technical Properties of Hard Tissues

Type of the tissues:	Sound velocity [m/s]	Density [g/cm ³]	Hardness [Shore 00]	T2 [ms]	Speckles	Attenuation measured at 2.25 MHz [dB/cm]
Cortical bone material used to fabricate the skull bone phantom	3000 ± 30	2.31	N/A	N/A	N/A	6.4 ± 0.3
Trabecular bone material used to fabricate the trabecular layer within the bone phantom	2800 ± 50	2.03	N/A	N/A	N/A	21 ± 2

7. Thermal Properties of our Bone Mimicking Material

Thermal Conductivity:	Volumetric Specific Heat Capacity:	Thermal Diffusivity:	Thermal Resistivity:	Specific Heat:	Speed of Sound:
0.776 W/ m K	1.040 MJ/ m ³ K	0.746 mm ² / s	1.289 m K/ W	0.978 J/ g Deg Celsius	3070 m/s

8. Selected Technical Properties of Brain & Skin Material:

Type of the tissues:	Sound velocity [m/s]	Density [g/cm ³]	Hardness [Shore 00]	T2 [ms]	Speckles	Attenuation measured at 2.25 MHz [dB/cm]
Brain tissue	1400 ± 10	0.99	20	70	YES	1.0 ± 0.2
Skin tissue	1400 ± 10	1.02	60	50	NO	1.7 ± 0.2

9. Materials Used

- Soft tissue and organs:
Composition of urethane base soft resin
- Synthetic bones:
Patented ceramic-reinforced epoxy-based composite material

10. Height and Weight of the Phantom

- Height: 102 CMS (approx.)
- Weight: 16 kgs (approx.)

11. Your Order Will Include

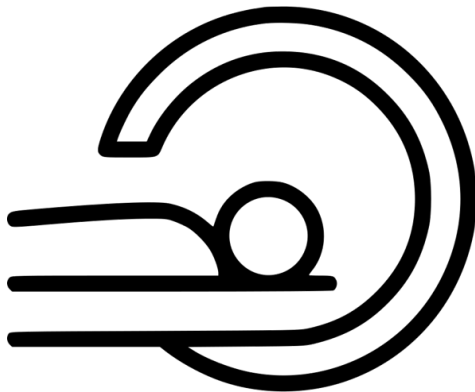
- Full body divided into 10 parts
- Design video
- Manual
- 1 Pelican Hard carry & storage case with wheels

12. Logistic Arrangement

- **Total boxes:** 1 Pelican Hard carry & storage case
- **Shipment Total weight:** 40 KGS
- **Shipment Total dimensions:** 120 x 65 x 45 CMS

13. Handling Instructions

1. Scanning



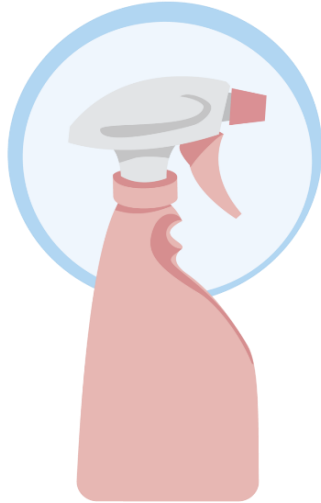
- The phantom is fabricated based on the anatomy of the real human body. It can be scanned as per the standard protocols used while positioning a real person.
- The phantom can be put on horizontal as well as vertical positions for scanning purposes.
- Anterior, Lateral and Posterior techniques can also be performed.

2. Storage and handling



- The phantom is made out of urethane-based material, and it should be protected from direct exposure to any intense UV light.
- The experiments conducted on phantom can be performed in a sunny lab, but it is not recommended to leave the phantom under direct sunlight for weeks or months. If the phantom is not in use, we strongly recommend storing it in a dry and dark place or cover it with a plastic sheet/foil.

3. Cleaning



- The phantom is water-resistant, and it can be cleaned after its use. It is ideal for cleaning it either with water or with soapy water.
- It is also quite resistant to chemicals, but if stronger solvents are meant to be used with the phantom, we recommend doing a small test on the bottom part of the neck or legs. The phantom should be placed on its belly, and the chosen solvent can be applied on a small selected surface of the phantom for a few hours. If there is no visible effect on the phantom's surface, it is safe to assume that the phantom is resistant to the tested chemical, and it is safe to use it for the rest of the phantom. In other cases, avoid the solvent or contact us for alternatives.

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