

Caution:

Don't mark on the phantom with pen or leave printed materials contacted on its surface.  
Ink marks on the phantom will be irremovable.

PH-2

# Whole Body Phantom PBU-50

## Instruction manual

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## Whole body phantom PBU-50

The PBU-50 is life-size human phantom with a life-size synthetic skeleton embedded in radiological soft tissue substitute.

There are no metal parts that would impair realistic imaging. The joints, knees, elbows, shoulders and hip-joints, are flexible and able to maintain the necessary positions.

The phantom is separable into 10 parts facilitating a variety of application. A positioning stand for the head part comes with the set.

## Specifications

### Whole body phantom PBU-50

Intended application: Positioning phantom for plain radiography

Length: approx. 165cm

Weight: approx. 50kg

Can be dismantled at: shoulders elbows, hip joints, knees, neck

Embedded organs: lungs with vessels, heart, liver and kidneys

\* The product has two 3mm dia holes made in the chest wall to prevent the damage caused by atmospheric pressure change that may occur in transit.

Movable joints and their range of movement

Shoulders: rotate 360 degrees to back and forward, 180 degrees side-ways

Cubital joints (bilateral): bend inward up to 90 degree

Coxae (bilateral): rotate forward up to 90 degrees, then rotate outward up to 45 degrees each.

Articulatio genus (bilateral): bend up to 90 degrees.

Materials: Human tissue substitute (urethane, epoxy, etc.,)

Accessories: Positioning head stand 1 piece

Flat head screwdriver 1 piece

Sample images 1 set

Hand positioning belt 1 piece

Replacement parts: screws and connection tapes for Patella.

HU numbers of each organ:

liver 70

kidney 30

\* The Hounsfield numbers shown above are approximate figures of the calculated values and not actual measurement values.



## Please note

- 1) Bone trabeculae are observed only at hands.
- 2) Contours of the bones are slightly stranger than actual human x-ray image, to facilitate clear understanding.
- 3) Basically the phantom is designed to be radiographed under same setting as human body, though, the joints areas may require some adjustment to have better image.

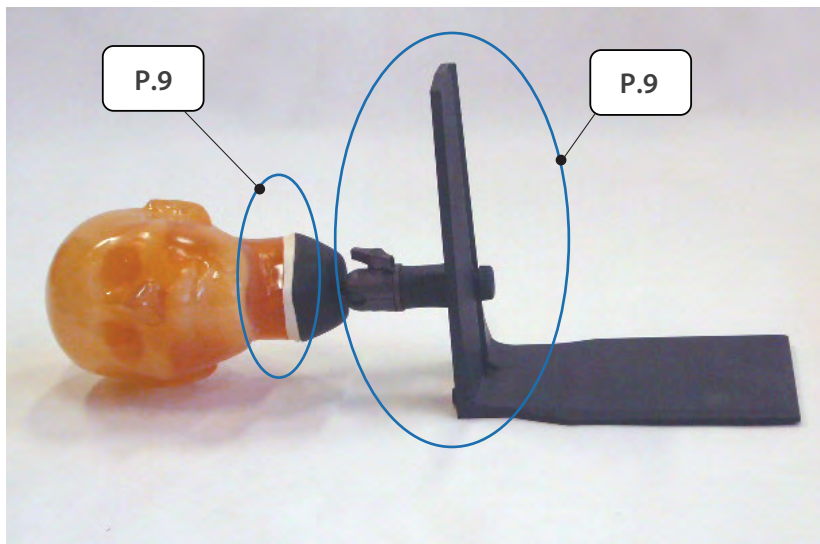
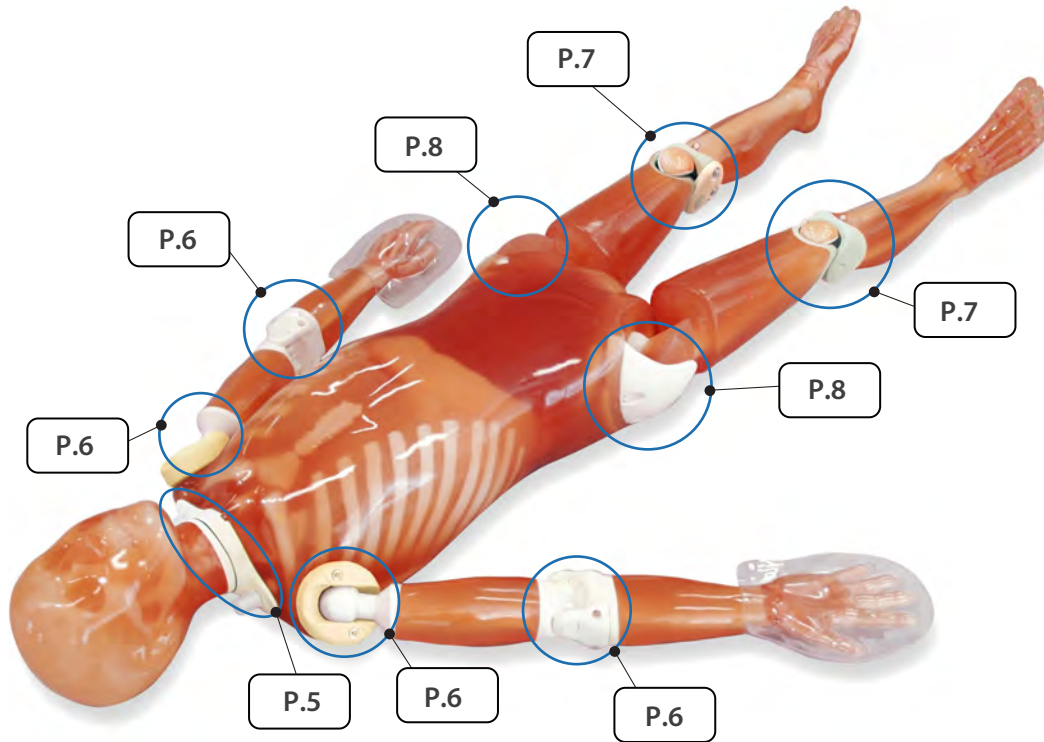


## Caution

- 1) Do not make the phantom to take the position unintended by the manufacturer.  
It may cause the breakage in the phantom if the joints are forced to bend or rotate to the directions or degrees of angles outside of designed movable range.
- 2) **Do not remove the plastic protectors on the phantom's hands.** The protector prevents the phantom fingers from breaking.
- 3) Do not attempt to lift or carry the phantom if the head or limbs are attached to the trunk.  
Detach the joints before moving to avoid the excessive force on the joints.
- 4) When the training with the phantom is not made for a while, pay attention to storage condition (posture) of the phantom so as to avoid the burden to the connection area.  
For example, condition the head has been resting on the pillow for a while can cause the breakage to the neck connection area.
- 5) Do not fasten the screws too tight.
- 6) The phantom is heavy and could cause damage not only to itself but to people or other objects. When you need to handle the assembled phantom, always do it by two or more people with utmost care.
- 7) Don't mark on the phantom with pen or leave printed materials contacted on its surface.  
Ink marks on the phantom will be irremovable.

**PBU-50 Components**

Parts #	Parts name	QTY	Parts #	Parts name	QTY
1	Head	1	21	Connector for left hip joint	1
2	Neck-head connection plate	1	22	Supporting plate for right hip joint	1
3	Trunk	1	23	Supporting plate for left hip joint	1
4	Right upper arm	1	24	Connector for right knee	1
5	Left upper arm	1	25	Connector for left knee	1
6	Right forearm	1	26	Screw bolt for neck connection M12	2
7	Left forearm	1	27	Screw bolt for neck connection M10×15	2
8	Right thigh	1	28	Screw bolt for shoulder connection Screw bolt for parts # 22.23 M 8×13	10
9	Left thigh	1	29	Screw bolt for elbow joint M 6×60	4
10	Right lower leg	1	30	Screw nut for elbow joint M 6	4
11	Left lower leg	1	31	Screw bolt for hip joint M8×35	6
12	Right patella	1	32	Screw bolt for knee joint M12×20	4
13	Left patella	1	33	Connection tape for the patellae	2
14	Connector for shoulder A (Right or left)	2	34	Height adjustment panel	1
15	Connector for shoulder B (Right or left)	2	35	Base panel	1
16	Connector for right elbow (lateral side)	1	36	Neck connector	1
17	Connector for right elbow (medial side)	1	37	Neck connector fixture	1
18	Connector for left elbow (lateral side)	1	38	Screw for fixture	1
19	Connector for left elbow (medial side)	1	39	Screw bolt M6×18	2
20	Connector for right hip joint	1	40	Hand positioning belt	1



The number indicated on the photos above correspond to the page numbers in this manual.

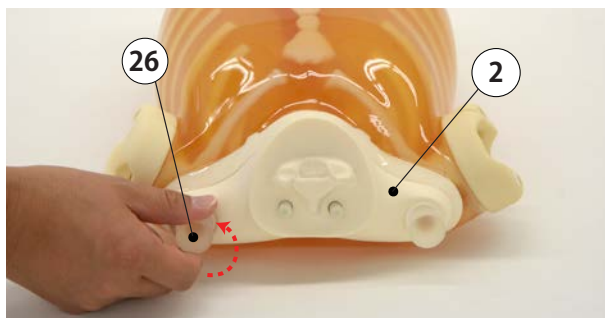
# Assembly manual

※ The circled numbers in the assembly images are parts numbers on the components table on page 3.

## < NECK AND HEAD >

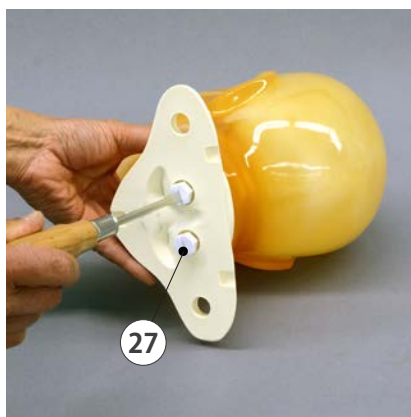
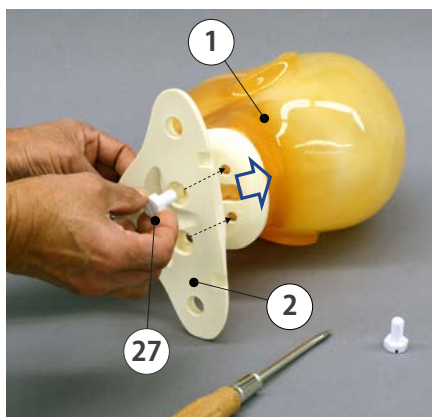
1. Remove the two bolts for the neck connection (part #26) and remove the neck head connection plate (part #2) from the trunk.

②⑥ Screw bolt for neck connection M12×20



### [ Neck sub-assembly ]

2. Screw the neck head connection plate (part #2) on the head (part #1).



②⑦ Screw bolt for neck connection M10×15×2

### [ Connection of the head and the trunk ]



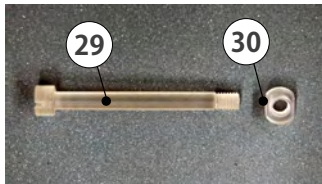
3. Mount the assembled parts (parts #1 and #2) to the trunk and secure each side with a screw bolt (part #26).

# Assembly manual

## < ELBOWS >

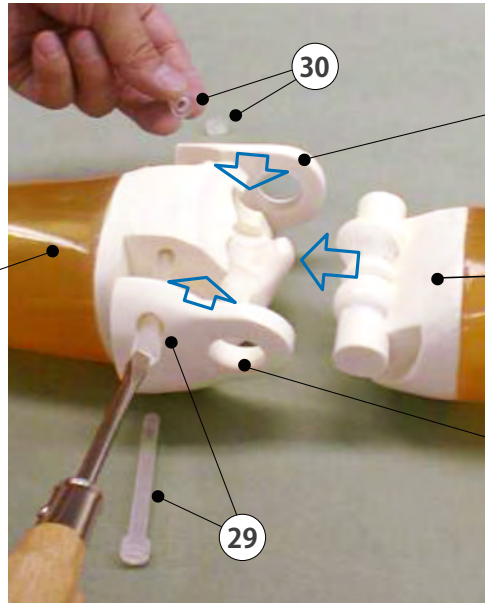
Assemble upper arm parts (part #4 or 5) and forearm parts (part #6 or 7) at joint section. Fix these parts with elbow connectors (part #16 or 18 and #17 or 19).

- (29) Screw bolt for elbow joint M 6×60×4
- (30) Screw nut for elbow joint M 6×4



Left and right forearm

(7)  
(6)



Connector for left and right elbow (medial side)

(19)

(17)

(4)

(5)

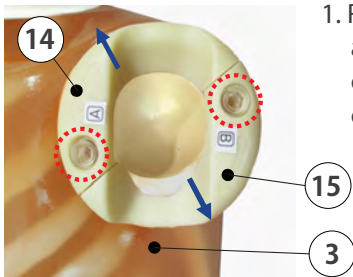
Left and right upper arm

(18)

(16)

Connector for left and right elbow (lateral side)

## < SHOULDERS >



1. Remove the two clear bolts (part #28) and remove the external shoulder connector parts A (part #14) and connector parts B (part #15).

(28)

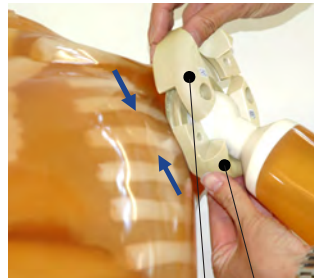
Screw bolt for shoulder connection M 8×13×4



2. Then attach the upper arms (parts #4 and #5) at the ball joint to the trunk and place over the two connectors for the shoulder (parts #14 and #15). Secure the connectors with the clear bolts (part #28). Follow these steps for both left and right side of the trunk.



Left and right upper arm (4) (5)



Connector for shoulder (14) (15)

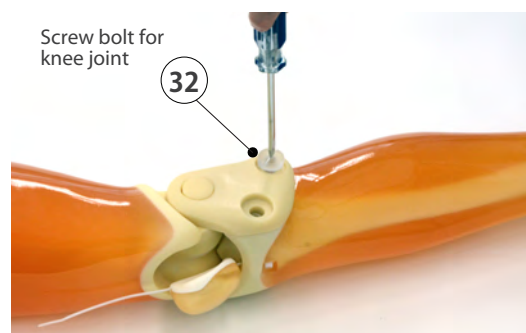
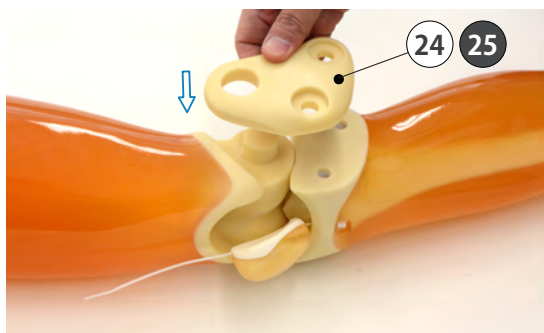
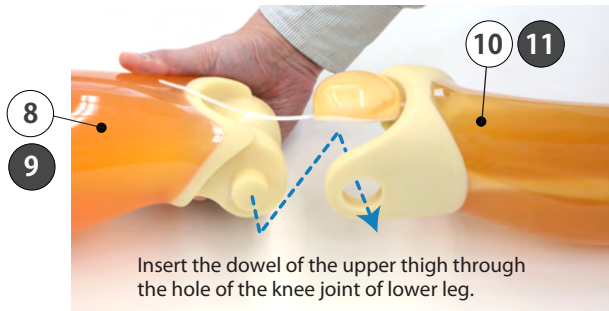


.....  
Screw the bolts after confirming the position of the screw hole.  
Be careful not to mix up part #4 and 5. The shape of right and left arms are different.

# Assembly manual

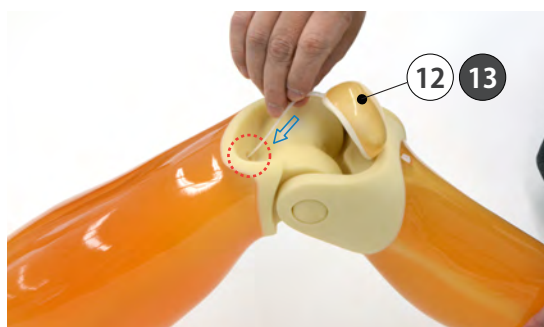
## < KNEES >

1. Connect the thigh (#8, 9) and lower leg (#10, 11) at the knee joint. Insert the dowel of the upper thigh through the hole of knee joint of lower leg. Set the connector for knee (#24, 25) to the medial side then screw the knee joint bolt (#32) to fix it.



32 Screw bolt for knee joint  
M12×20×4

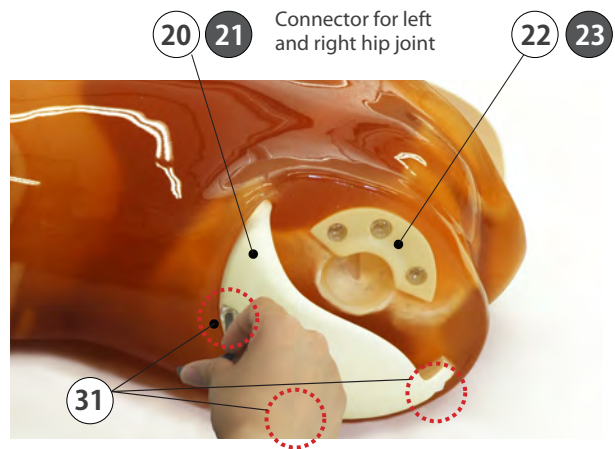
2. After fixing the knee joint, bend the knee and insert the connection tape of the patella (#12, 13) to the guide aperture of the thigh.



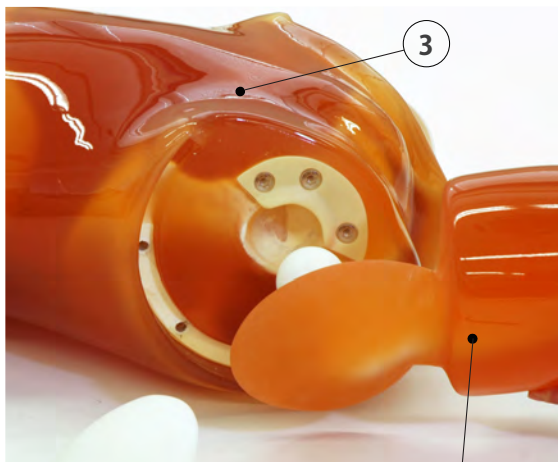
## < HIP JOINTS >

1. Remove the three bolts (part #31) to remove the hip joint connectors (parts #20 and #21). The supporting plates (parts #22 and #23) are already attached at the time of delivery.

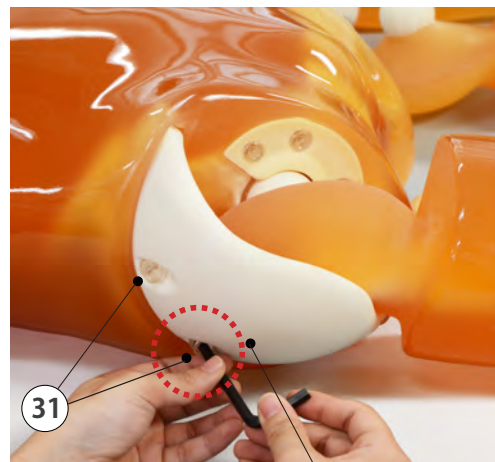
**31**  
Screw bolt for  
hip joint  
M8x35x6



2. Mount the thighs (part#8, 9) so that the femur heads fit in the hip sockets and hold them in place with hip joints connectors (part# 20,21). Each hip joint connector is fixed to the trunk with three screws. Start from the screw in the center and move to the sides. Hold the thigh upright when you fix the screw at the rear end. Be careful not to confuse parts for left and for right.



Left and right thigh **8 9**



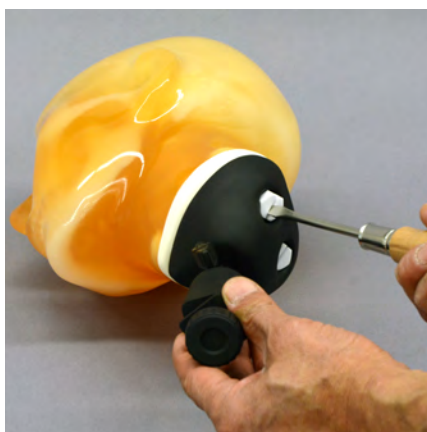
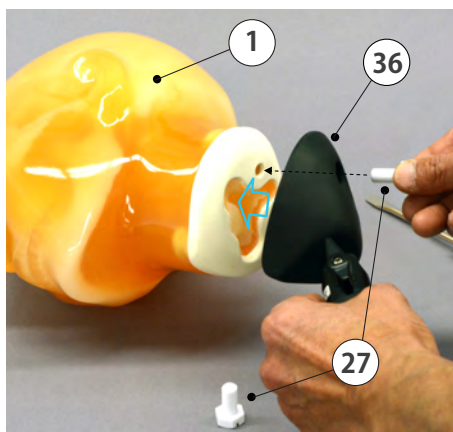
Connector for left  
and right hip joint **20 21**



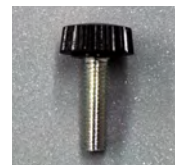
# Assembly manual

## < HEAD AND STAND >

1. Mount the head phantom to the neck connector and fix it with two screws.



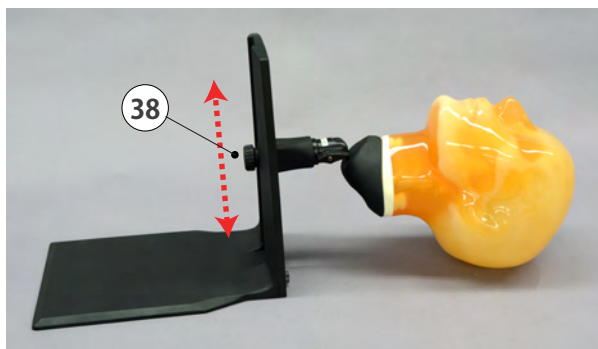
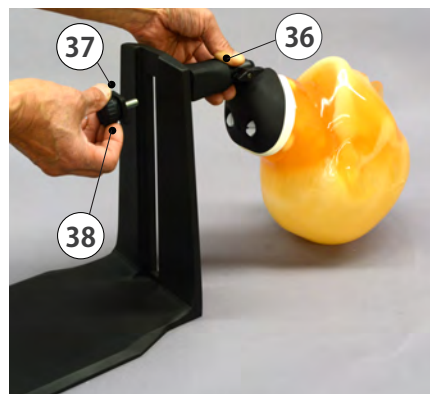
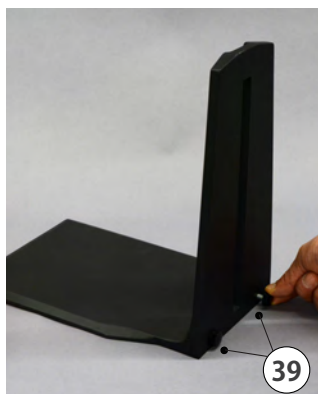
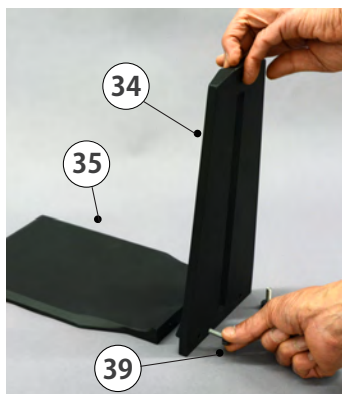
27 Screw bolt for neck connection M10×15×2



39 Screw bolt M6×18×2

2. Assemble the two panels. Attach the height adjustment panel (#34) to the base panel (#35) at right angle and fix with two screws.

Then, insert the end of the neck connector (#36) in the slit in the panel and fix it with the fixture (#37).



3. The phantom is ready.

Adjust the height of the neck as needed, by loosen the fixture and slide it through the slit. Tighten the fixture again at the designated height.



## Caution

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2020.06

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