



User Guide

Chest Drain & Needle Decompression Trainer

Part No: 60230



Part No: 065-969

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Chest Drain & Needle Decompression Trainer

Notes

Part No: **60230**

This brand new Limbs & Things simulator has been designed to meet the specific requirements of healthcare professionals training in surgical or guidewire assisted thoracostomy and thoracentesis. This product, using interchangeable pads, allows for a variety of chest drain insertion techniques to be performed including ultrasound-guided techniques.

Skills

- Needle decompression of tension pneumothorax
- Ultrasound-guided chest drain insertion (Seldinger-type), including insertion of needle under direct vision, and ultrasonic recognition of chest structures
- Open, or cut-down chest drain insertion: recognition of correct position, surgical incision, blunt dissection through chest wall, perforation of pleura, and finger sweep
- Suture of tube to chest wall

Features

- Representation of adult male thorax with arms raised
- Suitable for supine, sitting, or leaning forwards positions
- Bony and soft tissue landmarks: manubriosternal joint, clavicles, ribs, pectoralis major and latissimus dorsi
- Bilateral chest drain and needle decompression pads
- Internal ultrasound anatomy: diaphragmatic structures and collapsed lung
- Reservoirs can be filled with fluid or mock blood to represent pleural effusion
- Needle decompression air reservoirs provide realistic release of air on insertion of needle
- Affordable replaceable pads

Package supplied

- 1 **Needle Decompression Pads (Pack of 2)** Part No: **60231**
- 1 **Advanced Chest Drain Pads (Pack of 2)** Part No: **60232**
- 1 **Standard Chest Drain Pads (Pack of 2)** Part No: **60234**
- 1 **Chest Drain Ribs (Pack of 12)** Part No: **60240**
- 1 Torso
- 1 Carry case

Product Care and Cleaning

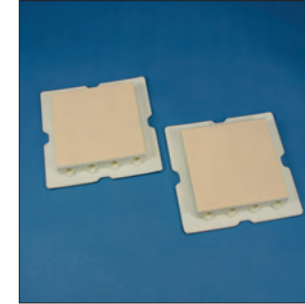
- All silicone components can be cleaned using warm water with a small amount of detergent
- Remove old pads after use and wipe off any lubricant residue from ribs, clamp, and torso
- If fluids have been used, ensure chest cavities have been fully drained at end of session, and preferably wipe dry
- Flush out chest cavity and tubes with warm water if model has been used with mock blood
- If product is not used it must be stored dry

Notes

Components

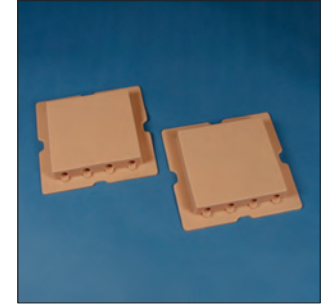


Torso



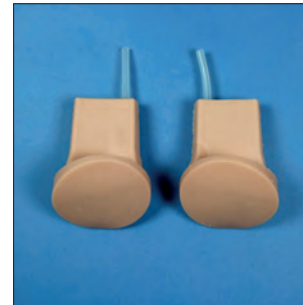
Standard Chest Drain Pads (Pack of 2)

Part No: **60234**



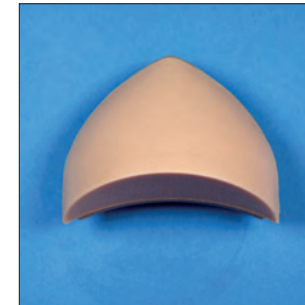
Advanced Chest Drain Pads (Pack of 2)

Part No: **60232**



Needle Decompression Pads (Pair)

Part No: **60231**



Chest Drain Lungs x2



Chest Drain Diaphragms x2



Chest Drain Ribs (Pack of 12)

Part No: **60240**



Chest Drain Pump: Respiratory Swing



Chest Drain Pump: Needle Decompression

Components (continued)



2.5l Jerry Can



Plastic funnel



Chest Drain Retaining Knobs (Pack of 2)

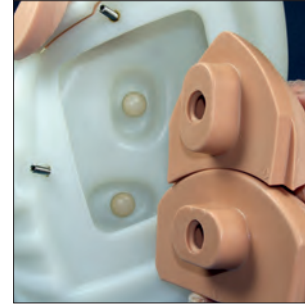


Water-based Lubricant

Part No: **00293**

Fitting the Lung & Diaphragm

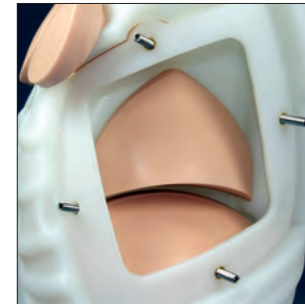
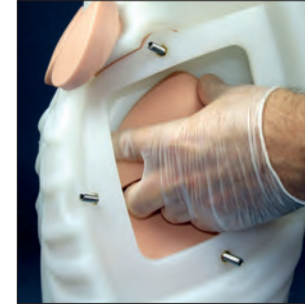
1



The Lung and Diaphragm have different shaped connectors to ensure they cannot be installed incorrectly.

Replace the Diaphragm first. If necessary, lubricate the locating lug and the outside of the Diaphragm itself.

2

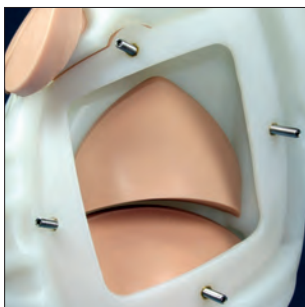
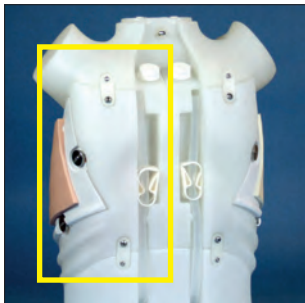


Replace the Lung the same way.

Replace the Frame, Pad and Torso Skin.

Removing the Lung & Diaphragm

1

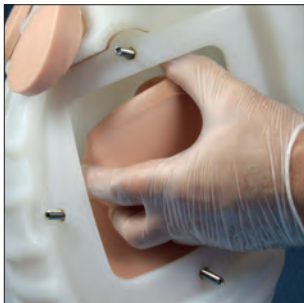


Carry out this procedure if you need to clean the chest cavity, or replace a Lung or Diaphragm.

Ensure that the reservoir on the side with the Lung and Diaphragm you want to remove is empty of liquid.

Remove the Torso Skin, Pad and Pad Frame.

2



Remove the Lung from the socket on the back wall of the chest cavity by gripping the harder part of the rubber at the back of the Lung.

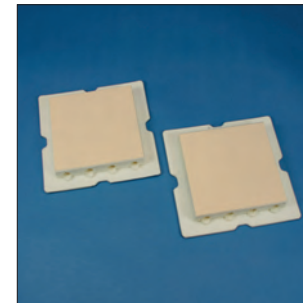
Remove the Diaphragm the same way.

Pad usage information



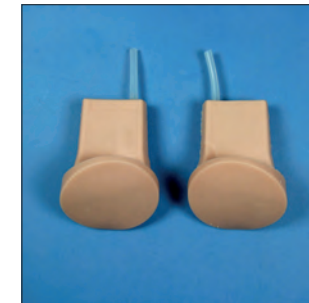
Advanced Chest Drain Pads

- Ultrasoundable
- For use with liquids – e.g. effusion, or haemothorax
- Needle, guide-wire, dilator, and drain-tube can all be realistically inserted
- For open/surgical techniques where effusion or haemothorax are required
- Can be sutured
- Guidewire insertions will self-seal allowing multiple uses
- Open/surgical incisions will not self-seal
- Improved respiratory swing
- Recommend usage of 12 FG catheter



Standard Chest Drain Pads

- For open/surgical techniques
- Can also be used for guide wire techniques where no fluid is required
- Not ultrasoundable
- Not suitable for use with liquids
- Tough skin for incision and suturing
- Foam chest wall for blunt dissection
- Pleural layer, providing realistic give, or “pop”, on puncture
- Can be used with adhesive dressings

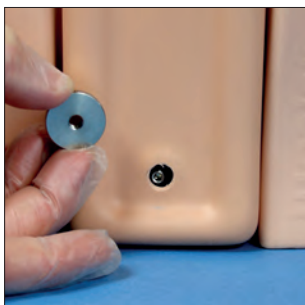


Needle Decompression Pads

- Needle insertion produces realistic “hiss” of air escape, or bubbles if saline-filled syringe is used
- Use of fresh pad advised where inflation may be some time before use
- Pad life prolonged by use of thinner gauge needles eg 21g

Removing the Torso Skin

1



Before you can remove the Torso Skin, the Backing Plate needs to be removed.

Undo the lower Retaining Knob.

2



Undo the upper Knob.

Lift the Backing Plate away

3



Peel off one side of the Skin.

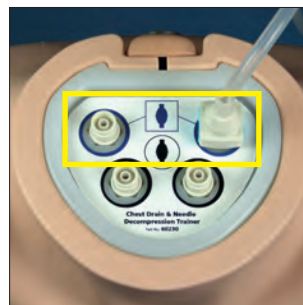
And then the other.

To refit the Skin reverse the procedure. Make sure that the Skin fits snugly around the Pads (especially the Needle Decompression Pads).

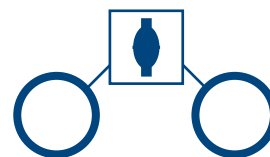
Note: To quickly change the Pads on one side of the Trainer, peel the Skin off from that side only.

Using the Respiratory Swing Pump

1



Connect the air line from the Respiratory Swing Pump, to the left or right rear ports on the top of the torso. The ports are marked:



The left and right systems function independently.

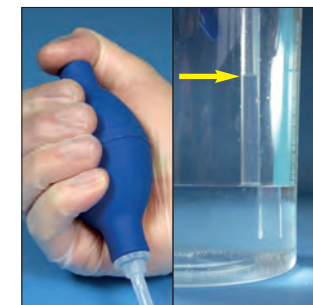
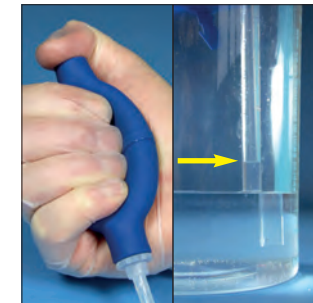
2



Squeeze the pump and place your thumb over the inlet on the top.

Keeping your thumb in position, allow the pump to reinflate, which draws fluid up into the down tube in the collecting bottle.

3



To reproduce respiratory swing: keep your thumb in position and alternately squeeze and release the pump to make the fluid level rise and fall.

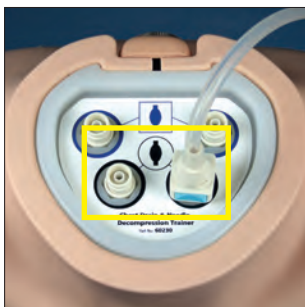
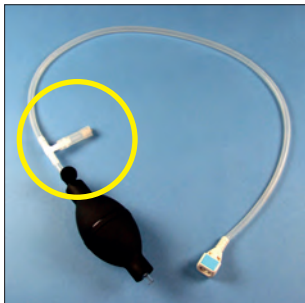
To reproduce the bubbling effect of coughing, squeeze the pump hard while keeping your thumb over the inlet.

Practice the above sequences to get the best results.

Note: If the fluid level falls too low, reprime the system by repeating stage 2.

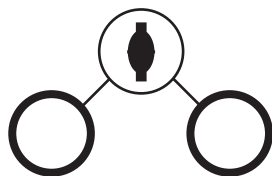
Using the Needle Decompression Pump

1



Note: A safety valve on the pump tubing prevents over-pressurisation of the system.

Connect the air line from the Needle Decompression Pump to the left or right front port on the top of the torso. The ports are marked:



The left and right systems function independently.

2



Release any residual air in the system, by turning the bleed valve fully anticlockwise.

Now close the bleed valve by turning it fully clockwise.

3



Pressurise the system with **one or two** squeezes of the pump only.

The Trainer is now ready for needle decompression.

Note: the system can be tested by opening the bleed valve after inflation and listening for air release. If this fails to happen, check the Needle Decompression Pad for damage. Also check that the air supply connector to it is fitted properly.

Inserting the Ribs into a Pad

1



The Standard and Advanced Pads are supplied without Ribs.

Apply lubricant to the Rib and the corresponding hole in the Pad. Lubricant eases fitting and improves the ultrasound picture on the Advanced Pads (shown here).

2

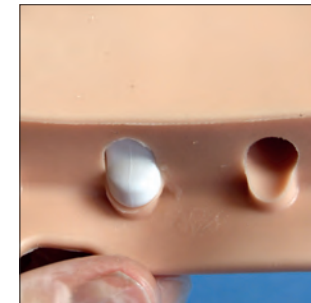


Push the Rib into the hole.

To ease insertion, rotate the Rib using a corkscrew motion whilst pushing.

Note: Make sure that all of the Ribs curve in the same direction after full insertion.

3



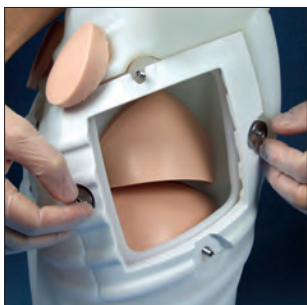
The ends of the Ribs should be flush with the 'ledge' under them.

The bottom image shows the finished Pad with the outer side at the top and the inner side (with the 'lip') at the bottom. The apex of the curve should be on the top of the Pad.

Important: Remove and retain the Ribs before disposing of used Pads

Fitting a Pad

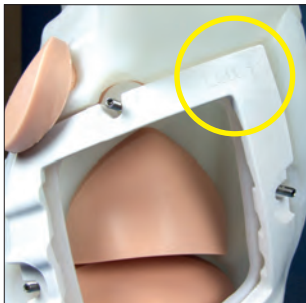
1



First remove the Torso Skin to expose the Pad Frame and Retaining Knobs on the side of the Trainer in which you want to install a Pad.

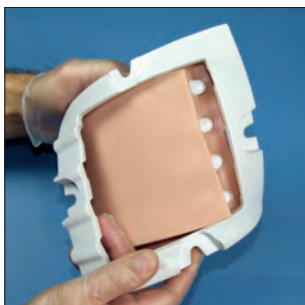
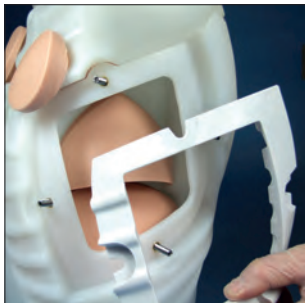
Unscrew the Knobs and set them safely to one side.

2



Note: Use the description and arrow to correctly orientate the Pad Frame when fitting it. The Frames are not interchangeable and are clearly labelled Left and Right, with an arrow to indicate the top corner.

3



Remove the Frame.

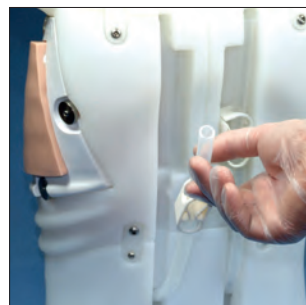
Push the Pad (with Ribs fitted) up from the underside of the Frame.

Make sure the ends of the Ribs line up with the corresponding recesses on the underside of the Frame.

3

Emptying the Chest reservoirs

1



The Left and Right reservoirs are emptied separately.

Remove the Torso Skin.

Undo the reservoir cap and pull out the emptying tube.

2



Make sure the drain tube is level.

Place the end of the tube over a sink or into a container (eg the supplied jerry can).

3



Release the white clamp on the drain tube and allow the reservoir to fully drain.

When empty: close the clamp on the tube, push it back into position and replace the cap.

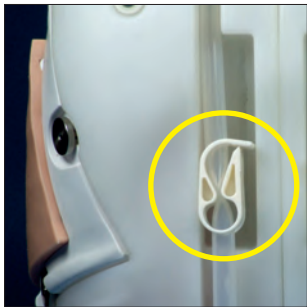
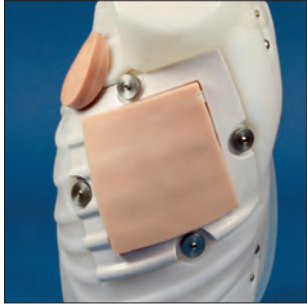
Note: If fluids have been used, ensure the chest cavities are fully drained and wiped dry at the end of a session.

Note: Flush out the chest cavity and tubes with warm water if Mock Blood has been used.

8

Filling the Chest reservoirs

1



Use water for ultrasound or effusion. Use diluted Limbs & Things Concentrated Venous Blood Part No: **00021** for haemothorax.

The Left and Right reservoirs are filled separately.

Remove the Torso Skin, ensure an Advanced Pad is fitted, and the four Retaining Knobs on the Pad Frame are tightened securely.

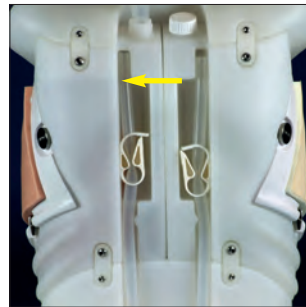
Ensure the white clamp on the emptying tube (on the same side of the fitted Pad) is clipped shut.

2



Remove the reservoir cap. Insert the plastic funnel into the reservoir.

3

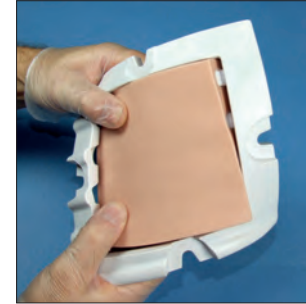


Fill the jerry can with water (approx. 2.5l), and pour it into the reservoir. **While pouring, check the Pad Frame for leaks. Tighten the Knobs on the Frame if required.**

Check the fluid level of the reservoir through the translucent wall of the thorax. Stop filling at the required level of effusion. Replace the reservoir cap and the Skin.

For ultrasound, allow the Trainer to stand for 5-10 minutes before use and rock the Trainer to dislodge air bubbles from the wall of the chest.

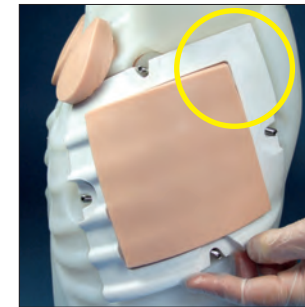
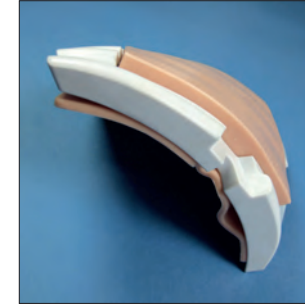
4



Push one edge of the Pad into position.

And then the other.

5



Make sure the Pad is pushed all the way into the Frame.

Fit the Frame back into the Trainer and the correct way up (see stage 2).

6



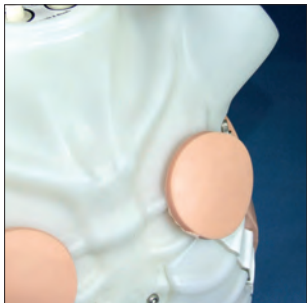
Refit the Knobs.

Note: Good finger-tightness should ensure a water-tight seal on the Advanced Pads.

Note: For speed, and if no seal is required, Standard Pads can be fitted using two Knobs only.

Removing the Needle Decompression Pads

1



Remove the Torso Skin.

Grip the Pad tightly just behind the disc and pull it away from the chest slightly.

2



Grip the newly exposed part of the Pad...

... and pull the Pad completely free.

3



Disconnect the air supply.

Ensure that the white connector stays with the air supply tube on the Trainer.

5

Fitting the Needle Decompression Pads

1



Choose the correct Pad for the Left or Right side of the chest (the thinnest edge of the Pad should be pointing towards the sternum).

Connect the air supply from the chest to the Pad.

2



Apply lubricant to the upper edge of the Pad.

Apply lubricant to the lower edge of the Pad hole in the chest.

3



Push the Pad fully into position...

...so that it fits flush with the chest.

6