

Femorodistal Anastomosis (FA) & Femoral Popliteal Bypass (FPB) Trainer User Guide



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Femorodistal Anastomosis (FA) Trainer

Part No: **60640**

Femoral Popliteal Bypass (FPB) Trainer

Part No: **60630**

For practising open techniques associated with FA and FPB surgery.

Designed in collaboration with St Mary's Hospital Vascular Unit, London, UK for use by Higher Surgical Trainees (HST).

Skills

- Management of pre-incised skin & soft tissue using the correct surgical instruments to provide adequate access to the relevant vessel
- Identification of the internal structures around the vessel
- Maintaining access and conducting delicate manoeuvres within a confined space
- Anastomosis of arterial grafts
- Fluid flush test

Features

- Anatomically accurate vessels with relevant soft tissue landmarks
- Realistic tissue response
- Vessels will withstand a fluid flush test to demonstrate the integrity of the repair
- Lightweight and portable
- Mock Blood Flow System supplied to allow user to connect the FA and the FPB to the Mock Blood Flow Kit (Available separately. Part No: **60650**. Consists of Mock Blood Giving Set and Mock Blood)

FA Package supplied

- 1 FA Trainer Skin **60641**
- 1 Femoral Trainer Soft Tissue **60631**
- 1 Femoral Trainer Tray & Base **60632**
- 1 FA Cartridge **60643**
- 4 FA Vein & Nerve **60642**
- 7 4mm x 140mm artery **60663**
- 6 Graft Patches (8mm dia x 100mm) **60644**
- 1 Mock Blood Flow System
- 1 bag of clips

FPB Package supplied

- 1 FPB Trainer Skin **60633**
- 1 Femoral Trainer Soft Tissue **60631**
- 1 Femoral Trainer Tray & Base **60632**
- 1 FPB Cartridge **60636**
- 1 Insert for FPB cartridge **60635**
- 4 FPB Vein & Nerve **60634**
- 7 8mm x 140mm Artery **60665**
- 6 Graft Patches (8mm dia x 100mm) **60644**
- 2 Cartridge to Giving Set Adaptors **60637**
- 1 Mock Blood Flow System
- 1 bag of clips

IMPORTANT

Use only Limbs & Things Mock Blood with the FA and FPB Trainer: it has a neutral water base enabling easy flushing and stain removal. Blood from other manufacturers will compromise the model if used.

Components: FA Trainer



FA Trainer Skin
Part No: **60641**



Femoral Trainer Soft Tissue
Part No: **60631**



Femoral Trainer Tray & Base
Part No: **60632**



FA Cartridge
Part No: **60643**



FA Vein & Nerve
Part No: **60642**



4mm x 140m Artery
Part No: **60663**



Graft (8mm dia x 100mm)
Part No: **60644**



Mock Blood Flow System

Components: FPB Trainer



FPB Trainer Skin
Part No: **60633**



Femoral Trainer Soft Tissue
Part No: **60631**



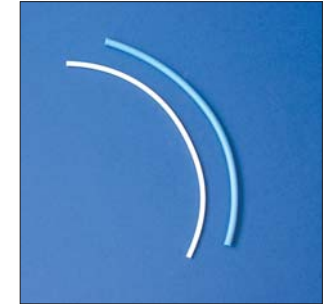
Femoral Trainer Tray & Base
Part No: **60632**



FPB Cartridge
Part No: **60636**



Insert for FPB Cartridge
Part No: **60635**



FPB Vein & Nerve
Part No: **60634**



8mm x 140m Artery
Part No: **60665**



Graft (8mm dia x 100mm)
Part No: **60644**



Cartridge to Giving Set Adaptors
Part No: **60637**

Cartridge Replacement

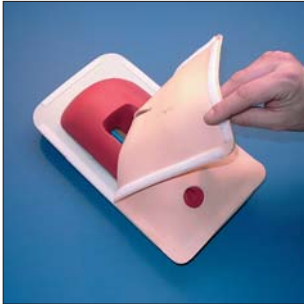
1



2



3



Both the FA and FPB Cartridges share the same Tray and Soft Tissue.

For the purposes of the explanation on this page we are using the FPB Trainer.

Remove the Trainer Skin to expose the Soft Tissue.

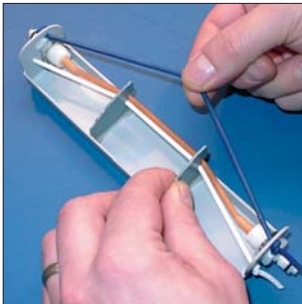
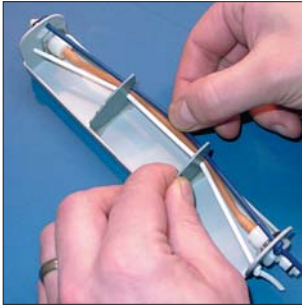
Remove the Soft Tissue to expose the Cartridge.

Remove the Cartridge from the Tray.

Reverse these stages to replace the Cartridge and to prepare the Trainer for use again.

Artery Replacement

1



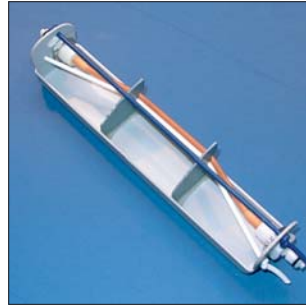
Both the FA and FPB Cartridges have replaceable arteries.

For the purposes of the explanation on this page we are using the FA Cartridge. The procedure is identical for the FPB Trainer.

To allow the artery to be easily removed the vein (blue cord) needs to be moved.

Gently grasp the vein and lift it away from the retaining fins.

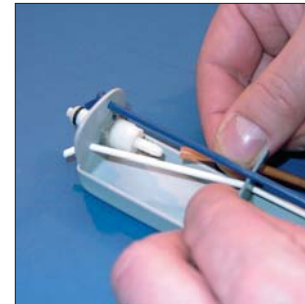
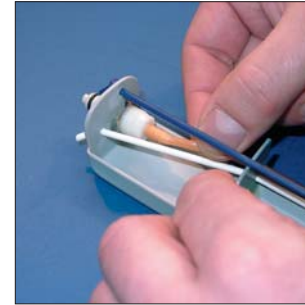
2



Bring the vein up onto the top of the cartridge.

The artery is now clear.

3



Gently grasp the end of the artery and pull it free from the fluid flow connector. Do this for the other end.

Reverse these stages to replace the artery and to prepare the Cartridge for use in the Trainer again.

4



NB: To facilitate ease of access when removing and fitting vessels on the FPB please note that the middle section, which incorporates the retaining fins, is removable.

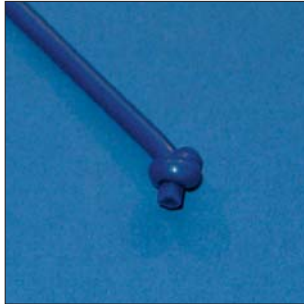
Vein & Nerve Replacement



Both the FA and FPB Cartridges have replaceable veins (blue cord) and nerves (white cord).

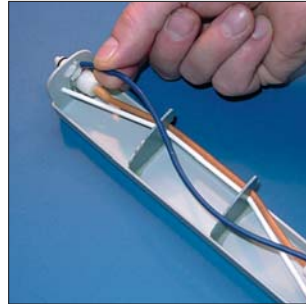
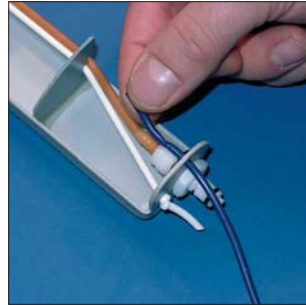
For the purposes of the explanation on this page we are using the FA Cartridge and will be replacing the vein. The procedure is identical for replacing a nerve.

1



One end of the replacement vein will need a knot tying in it prior to insertion into the Cartridge.

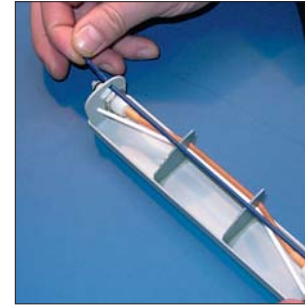
2



Having removed the old vein, feed the unknotted end of the new vein through the hole in the end of the cartridge.

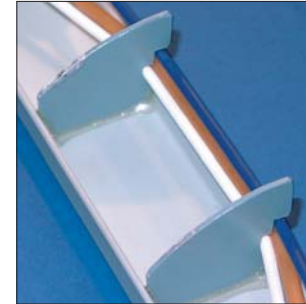
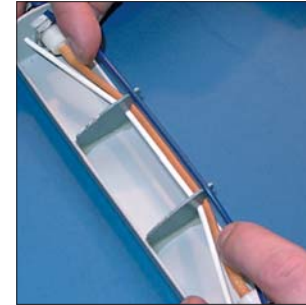
Pull the vein across to the other end of the cartridge and feed it through the corresponding hole.

3



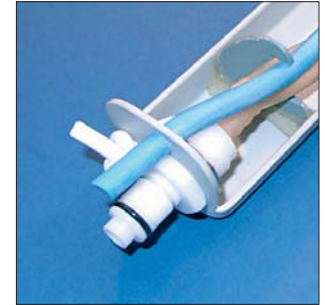
Pull the vein taut and tie a knot in the free end.

4



Bring the vein down onto the side of the cartridge and ensure it is held in the correct position by the retaining fins.

The final configuration of vessels and nerve should look like the above.



NB The FPB Vein does not require knotting. It is self retaining.

Mock Blood Flow System: Overview

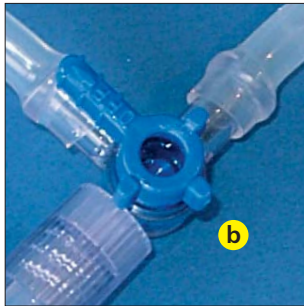
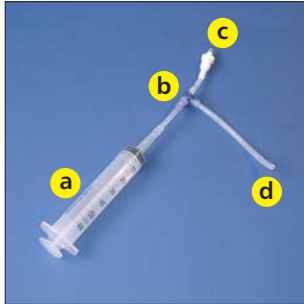
1



The Mock Blood Flow System consists of:

- Flow Tubing (connects vessels to the Pump and Mock Blood Giving Set)
- Pump (for managing Mock Blood within the Flow Tubing and attached vessel)

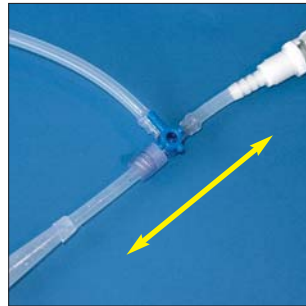
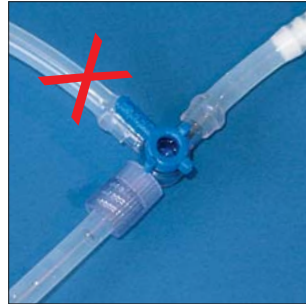
2



The Pump consists of:

- syringe **a**
- valve **b**
- primary tube **c** (with connector for attaching to Flow Tubing)
- secondary tube **d**

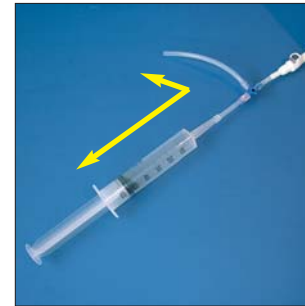
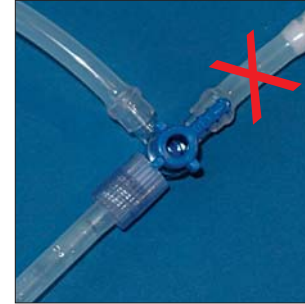
3



To manage Mock Blood directly to and from the Flow Tubing (and the vessel), align the 'OFF' arm of the valve with the secondary tube. (Red cross indicates tube which is closed off.)

The direction of flow is controlled by the syringe.

4



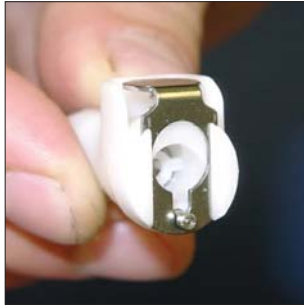
To manage Mock Blood to and from the secondary tube align the 'OFF' arm of the valve with the primary tube. (Red cross indicates tube which is closed off.)

The direction of flow is controlled by the syringe.

The maximum capacity of the syringe is 60ml so stages 3 & 4 will need to be combined several times when managing large amounts of Mock Blood.

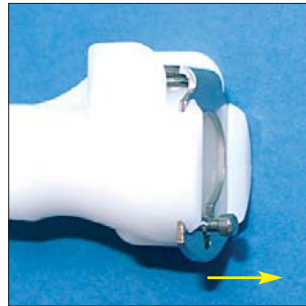
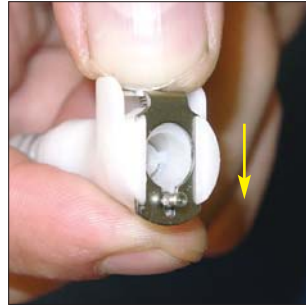
Mock Blood Flow System: Connectors

1



Connector in the locked position, preventing items from being attached to it.

2



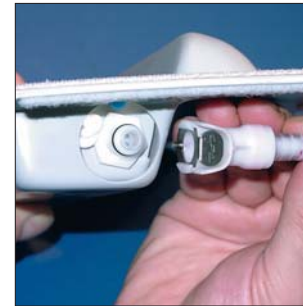
Unlock the connector by depressing the metal clip.

The connector is reset and ready to use when the pin pops out.

Should any of the Mock Blood Flow System connectors fail to attach they will need to be 'reset'.

FPB Trainer: Attaching the Giving Set Adaptors

1



In order to attach the Limbs & Things Giving Set, the Cartridge to Giving Set Adaptors need to be fitted to the FPB Trainer

The metal button on the Adaptor Connector should be facing sideways. The button will need to be depressed to remove the Adaptor.

2



Push the Adaptor onto the end of the Cartridge. It should 'click' when properly engaged. See page 12 if the connector fails to attach.

Repeat this for the other end of the Cartridge.

Replace the Soft Tissue and Trainer Skin. The Trainer is now ready to be connected to the Mock Blood Flow System and ready for use.

Connecting the Mock Blood Flow System

1



Place the Trainer on the work surface. Place the Flow Tubing on the work surface, as shown.

First, attach the single Flow Tubing connector to the proximal (upper) end.

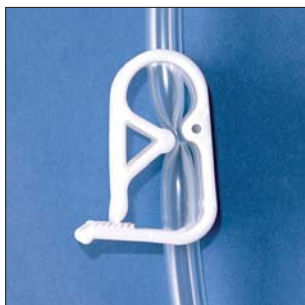
2



Ensure the connector is firmly attached: it should 'click' when properly engaged. See page 12 if the connector fails to attach.

Then attach one of the dual Flow Tubing connectors to the distal (lower) end of the Base.

3



NB: Please note that if you purchased the FA or FPB Trainer by itself you will need to purchase a Limbs & Things Mock Blood Flow Kit (Part No: **60650**) to connect the Trainer to a blood supply. (The Mock Blood Flow Kit is supplied as standard with the Arterial Procedures Trainer.)

Attach the white plastic connector on the end of the blood bag tube to the open end of the Flow Tubing.

Engage the white clamp on the tube leading from the bottom of the blood bag.

4



Open the cap on top of the blood bag.

Insert the large funnel.

NB: Use only Limbs & Things Mock Blood with the CE Trainer: it has a neutral water base enabling easy flushing and stain removal. Blood from other manufacturers will compromise the model if used.

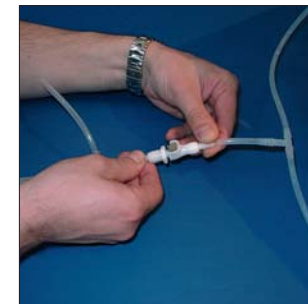
5



Support the funnel and neck of the blood bag carefully with one hand.

Slowly pour 500ml (0.8 pints) of Mock Blood into the blood bag.

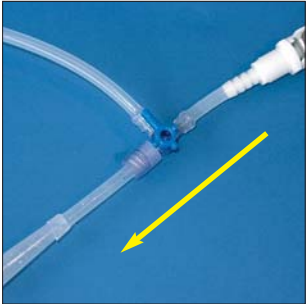
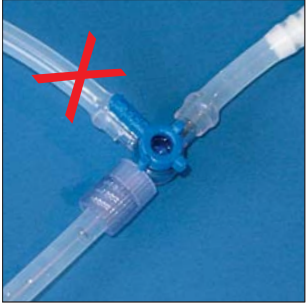
6



Attach the Pump to the remaining connector on the Flow Tubing.

Release the white clamp on the tube at the bottom of the blood bag. Mock Blood will start to fill the Flow Tubing.

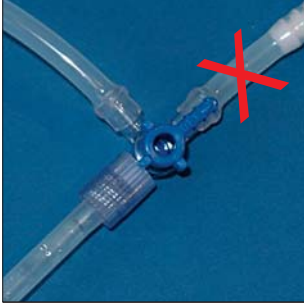
7



To draw the Mock Blood through the rest of the Flow Tubing and into the artery align the 'OFF' arm of the valve with the secondary tube. The red cross indicates the tube which is closed off.

Slowly pull the plunger allowing air to fill the syringe.

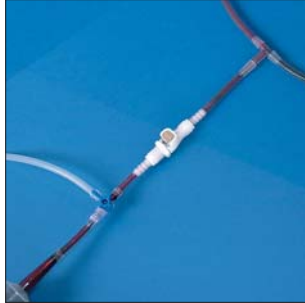
8



Align the 'OFF' arm of the valve with the primary tube. The red cross indicates the tube which is closed off.

Slowly push the plunger expelling air from the syringe and out of the pump via the secondary tube.

9

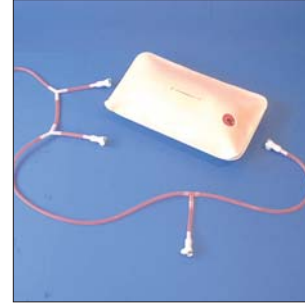


Repeat stages 7 & 8 until all the air has been removed and blood is drawn into the syringe. Expel any Mock Blood from the syringe back into the bottle for storage.

The Trainer is ready to use.

Cleaning the Mock Blood Flow System

1



Disconnect the Flow Tubing from the Trainer.

Remove the Skin

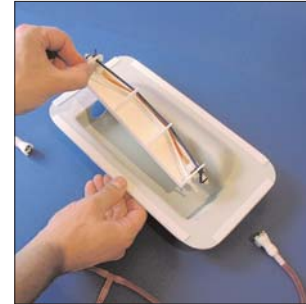


2

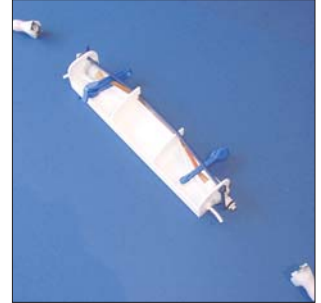


Remove the Soft Tissue.

Remove the Cartridge.



3

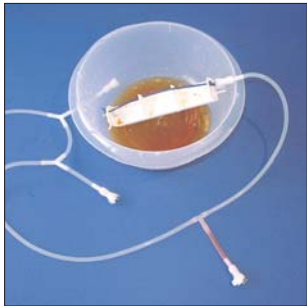
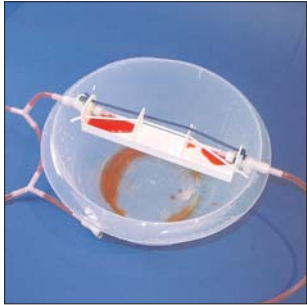


Clamp off the artery using the blue clips. (This will ensure minimal spillage when the artery is disconnected). Remove the artery.

Pour any remaining Mock Blood back into the bottle for storage. Rehang the blood bag and fill with 500ml (0.8 pints) of water.



4

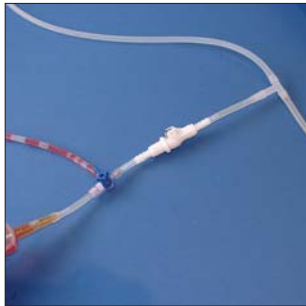
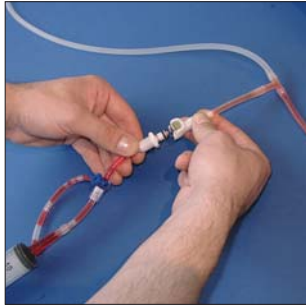


Place the Cartridge in a bowl (not supplied) and reconnect the Flow Tubing. Ensure the white clamp on the tube at the bottom of the blood bag is open.

Flush out each of the dual connectors in turn, disconnecting them only when they run completely clear of blood.

Allow the single connector to run clear of blood. Once the fluid is clear disconnect the Flow Tubing. Empty the bowl out in a sink.

5



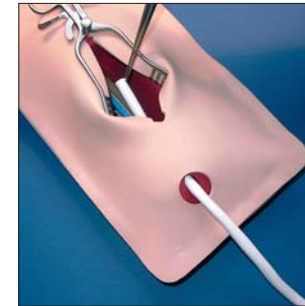
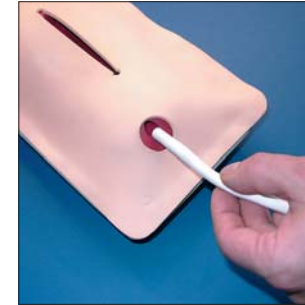
Any remaining Mock Blood can be removed from the Flow Tubing by using the Pump. See stages 3 & 4 of 'Mock Blood Flow System: Overview' page 10. Repeat stages as necessary.

Excess Mock Blood can be poured back into the bottle for storage. Rinse out the blood bag, Cartridge and Tray. Wipe the Cartridge and Tray dry and hang the blood bag up to dry. Rinse out the Pump and allow to dry.

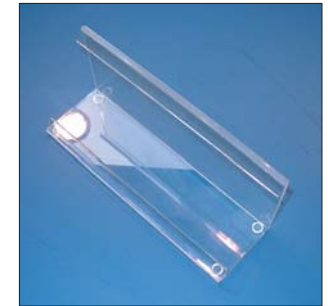
Surgical Setup



For enhanced realism all Limbs & Things arterial trainers can be covered with surgical drapes.



On the FA and FPB Trainers a hole is provided at the proximal end to allow for the introduction of tubular grafts.



Both the FA and FPB Trainers should be at the correct anatomical angle when practising the procedure. This is ensured by placing the Trainers in the supplied base.

