

PLS Circuit Priming

PLS priming - step by step instructions

Equipment required	Consumables required
ECMO PLS console PLS Circuit CO ₂ cylinder Large Trolley	Sterile gloves / gown / mask / hat 5 x 3-way tap with extension 2 x 1000ml 0.9% NaCl 2 x Sterile drapes (fenestrated) Cable ties & cable gun Lovells Bag 1 x 20ml syringe

Staff 1 sterile primer, 1 non sterile assistant

Trolley and circuit set up

- Prepare trolley with Viraclean
- Sterile primer to perform surgical scrub, gown, glove, mask and hat. Hat and mask for assistant
- Prepare sterile surface with fenestrated drapes (2 x drapes to cover fenestrations with current drapes). Keep smaller drapes to place on floor later
- Assistant to open PLS circuit box. (Easier to leave box on the floor or low table)
- Remove Velcro attachments (4x) and move PLS circuit onto sterile surface.
- In addition take out green tubing, large bags, scissors and cable tie
- Do NOT Discard small bags and extensions contained with PLS circuit.

Completing the circuit

- Cut the 2 x access ports (single cut) out of the access limb of circuit
- Connect circuit to pump head. Note cable tie must be applied to this connection at the end of the prime.
- Cut U-bend connector from circuit (2 x cuts).
- Connect Lovells bag to circuit – Y-limb connects to BLUE (access) limb; RED (return) to the other single line.
- Connect 5 x 3-way taps with extensions directly to the circuit: 2 between pump and oxygenator, 1 pre-oxygenator, 1 post-oxygenator, 1 onto oxygenator

Carbon dioxide Prime

- Connect CO₂ filter to one 3-way extension between pump and oxygenator, connect green tubing to CO₂ filter and hand to assistant to connect to CO₂ cylinder.
- Clamp before or after the 3-way tap and the pump head and oxygenator.
- Turn on CO₂ cylinder and run CO₂ at 1-2 L/min.
- Once Lovells bag is filled with CO₂, briefly remove red cap clamp and flush fluid line with CO₂ before reapplying clamp.
- Reduce CO₂ flow to 0-1 L/min.
- Flush each 3-way tap - Sterile primer does this by applying gentle pressure to CO₂ reservoir in Lovells bag. Listen for hissing noise from each port.
- Switch clamp to the other side of the 3-way extension with CO₂ attached.
- Repeat process of flushing each 3-way tap on circuit.
- Disconnect and discard CO₂ priming line from circuit.

Fluid Prime

- Pass fluid attachment from Lovells bag to assistant. Leave clamped. Attach to first 1000ml bag of 0.9% NaCl.
- Ensure other ports to Lovells bag are CLAMPED.
- Fill Lovells bag with ~1500ml of 0.9% NaCl by removing clamp from fluid line (gravity is your friend).
- When Lovells bag has been filled reapply clamp to fluid line.

ECMO Console (nonsterile step)

Please try to minimize tangling of the lines at this stage.

- Remove yellow cap from oxygenator but do not discard.
- Hang up the priming bag and allow to prime by removing clamps on table.
- Attach oxygenator to holder and place pump head into pump.
- Use gravity to remove any macroscopic bubbles from circuit. NB. This is likely to require some manipulation of the circuit and briefly removing the pump head from the pump and the oxygenator from its holder.
- Assistant to plug ECMO console into power and turn on console.
- Silence alarm. Turn flows up, then down to zero until display shows '0' LPM flow.
- Gradually increase to approximately 2000RPM until the fluid remaining in the Lovells bag shows evidence of 'gentle agitation'.
- Ensure no further bubbles in ECMO circuit.
- Sterile primer then aspirates from each 3-way tap attachment on circuit using 20ml Syringe.

ECMO prime complete

- Replace yellow cap onto oxygenator.
- Apply cable tie to attachment made on pump head.
- Turn off ECMO console.
- Clamp attachments to Lovells bag using blue clamps included in PLS equipment.
- Remove cap from oxygen attachment to oxygenator.
- Cover circuit and return to ECMO area.
- Complete [Priming paperwork](#) and attach to circuit cover.