SNS COLLEGE OF ALLIED HEALTH SCIENCES

SNS Kalvi Nagar, Coimbatore - 35

Affiliated to Dr MGR Medical University, Chennai

DEPARTMENT OF CARDIO PULMONARY PERFUSION CARE TECHNOLOGY

COURSE NAME : PRINCIPLES OF PERFUSION

2ND YEAR

TOPIC : ASSEMBLING OF THE CIRCUIT

Safety Checks and Setup of the Circuit

Checking the heart–lung machine and accessories

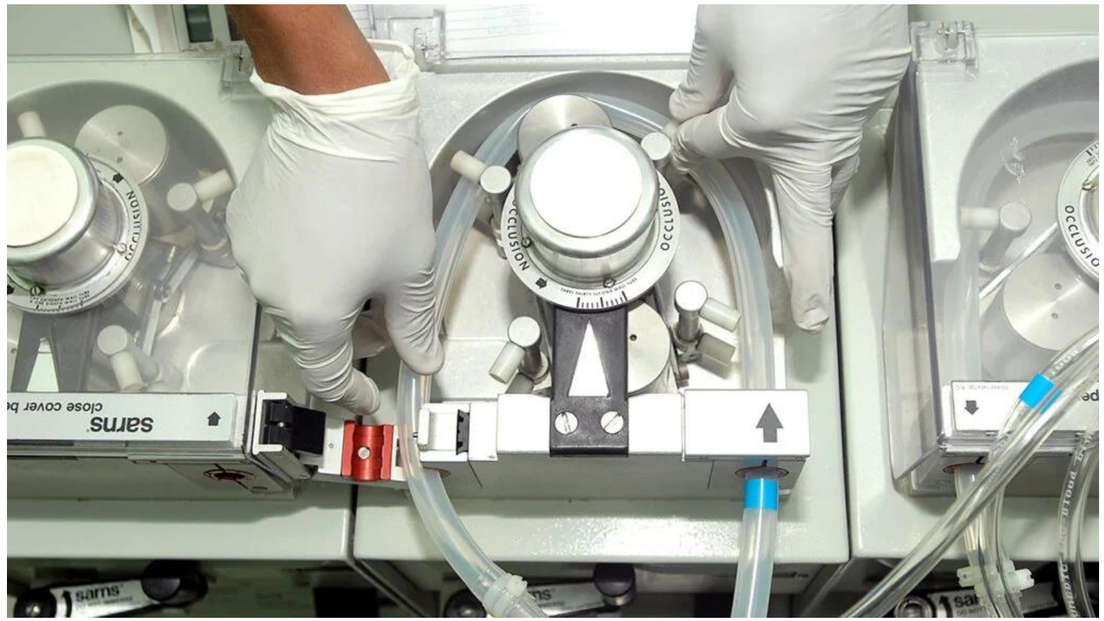
1: Connection checks:

- Checking the cables, plugs, and sockets.
- All cables should be placed away from movement to avoid any accidents, or cable damage.
- Checking the power supply for the heater-cooler and pump light.
- Connect the gas hoses to the gas source, and Checking the gas supplies of air and oxygen
- Checking the mixers flow meters for leaks.

Safety Checks and Setup of the Circuit (cont)

2: Pump head checks:

- Power on.
- The pump heads are free from foreign bodies.
- The Rollers and guides move smoothly.
- The pump heads rotate in the correct direction.
- Calibrate flow scale rpm to lpm on control panels for roller pumps.



2: Pump head checks (cont)

- Availability of winding handles in case of power failure is a must.
- The size of tubing inserts are correct for the tubes size used.
- The tubing should be aligned within the pump housing.
- Properly assembled roller pump tubing must resembles a **"U" shape**, advantages of that are: avoiding more tight non needed occlusion, lowering the load on head pump, decreasing spallation and hemolysis

3: Electrical safety device checks:

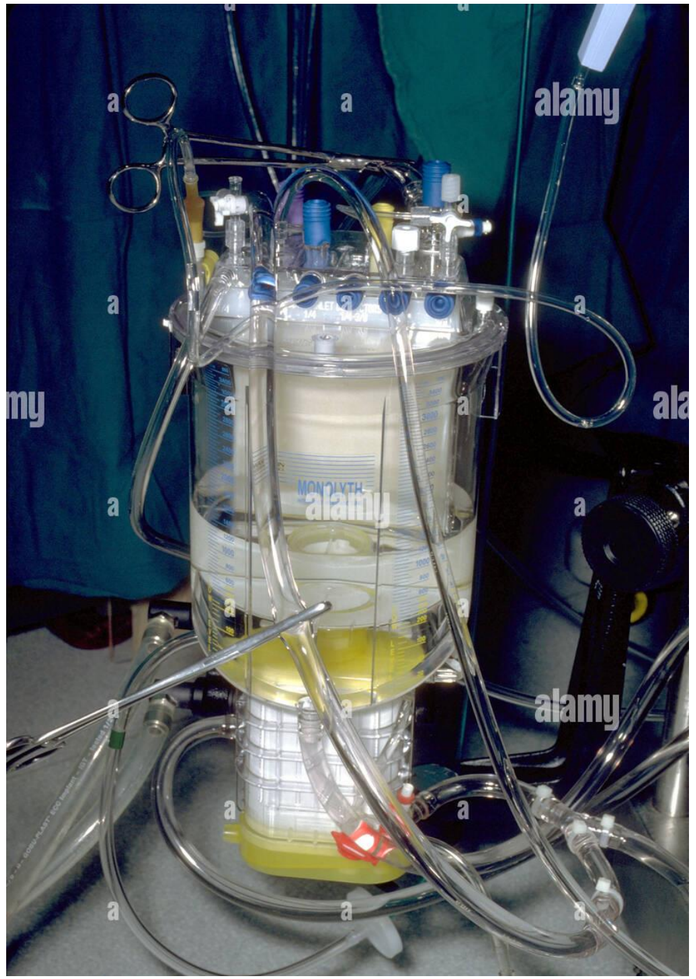
- Battery backup (UPS) is charged.

- Turn on the pump heads, and unplug the power cable of the CPB machine to ascertain that the power failure alarm, and backup battery are working properly.

- Pressure transducers are calibrated.

- Level detectors are working properly .

- Bubble detectors are working properly



Setup of disposable heart lung equipment

Set up time

- The responsible Perfusionist takes 10-15 minutes to set up a CPB circuit.

Set up shelf life

- The set up can be kept on standby for up to 3 weeks without priming (Dry).
- **When assembling CPB circuits using a sterile technique, all ports should be sealed (closed) tightly with provided caps, and water lines are not connected with the oxygenator.**

Setup of disposable heart lung equipment (cont)

1. The Hard shell Venous Reservoir setup:

A. It should be check expire dates.

B. It should be check sterility for pack (if the pack opened or damaged don't use the materials inside), then removed it from the package and examined for any defects.

C. Place the venous reservoir on its holder and orient it to allow full view of the reservoir

D. Remove the yellow gas vent port cap located on the top of the reservoir.

E. Connect the pump header line to the venous reservoir outlet and oxygenator (membrane) inlet.

F. Connect the venous line to the venous inlet port.

G. Connect any suction port required. (**Warning: Unused ports should be sealed (closed) tightly with provided caps.)**

H. Connect the recirculation line to the recirculation port on the venous inlet.

2: The oxygenator (membranes) setup:

A. It should be check expire dates.

B. It should be check sterility for pack (if the pack opened or damaged don't use the materials inside), then removed it from the package and examined for any defects.

C. Place the membrane carefully on its holder. Be sure that the venous reservoir is higher than the membrane.

D. Connect the water inlet and outlet lines to the heat exchanger water ports. Start water flow and check for leaks from the water compartment.

E. Connect the gas line to the gas inlet port.

F. Remove the cap from the gas outlet port.

G. In integrated arterial filters without self-venting the premembrane air purge line must remain open to ensure proper air removal.

3: Arterial line filters setup if demanded:

A. It should be check expire dates.

B. It should be check sterility for pack (if the pack opened or damaged don’t use the materials inside),then removed it from the package and examined for any defects.

C. Place the arterial filter carefully on its holder avoiding any kinking of lines.

D. Connect the pressure line to the vent port of the arterial filter (on 3-ways stopcock) and connect the end of the pressure line to the pressure transducer inlet.

E. Enter the pressure setting (warning and limit) in the control monitor.

- If the pressure exceeds a **set warning** (usually 300 mmHg) **the pump will alarming**.
- If the line pressure exceeds **a set limit** (usually350 mmHg), **the pump will stop**.

4: The cardioplegia system setup if demanded:

A. It should be check expire dates.

B. It should be check sterility for pack (if the pack opened or damaged don’t use the materials inside), then removed it from the package and examined for any defects.

C. Place the cardioplegia carefully on its holder.

D. Connect the water lines to the cardioplegia administration set, and start water flow to ensure that it is free from leaks.

E. Assemble circuit according to the instructions from the manufacturer’s manual.

F. The cardioplegia pressure transducer and purge lines are connected to the cardioplegia delivery device.

5: The centrifugal pump setup if demanded:

A. It should be check expire dates.

B. It should be check sterility for pack (if the pack opened or damaged don’t use the materials inside), then removed it from the package and examined for any defects.

C. Checked the head motor is free from dirt or foreign bodies to maintain the function of the device.

D. Place the centrifugal cones carefully on the centrifugal head motor.

E. Connect the PVC tube to the outlet of the venous reservoir and connect the other end of the tube to the inlet port of the centrifugal cones.

F. Connect another tube to the outlet port of the centrifugal cones and connect the other end of the tube to the oxygenator inlet port.

G. Ensure that the relevant handles-crank is available in case of power failure.

THANK YOU