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 TECHNOLOGY I

II YEAR

TOPIC : RESERVOIR

VENOUS RESERVOIR

- It is a device used in CPB for contain the volume of blood that displacement out of the human circulation during the operation

- Reservoir is high capacitance (low pressure)receiving chamber for venous return

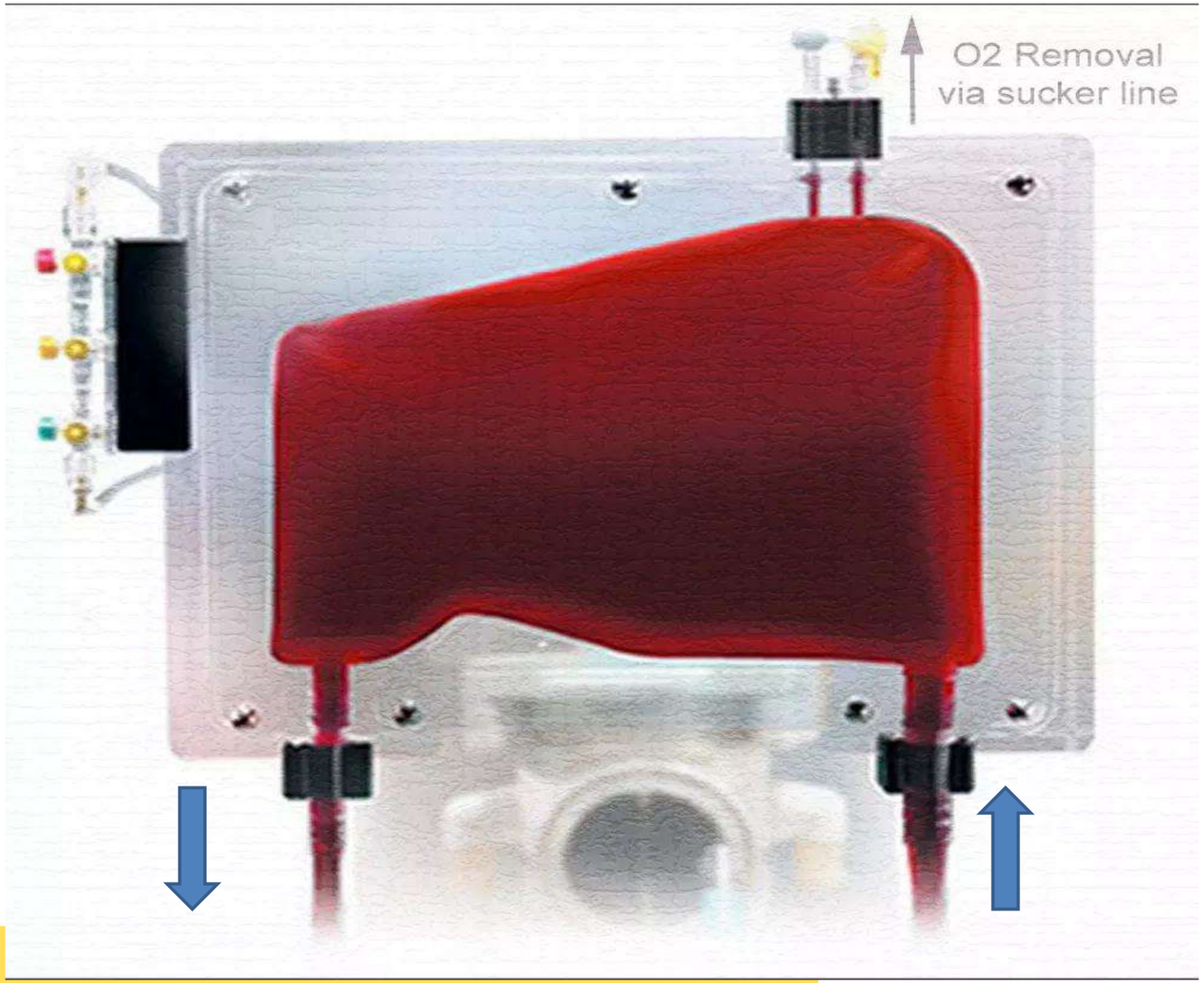
- It facilitates gravity drainage

- Can add drugs fluids or blood

- Can hold 1-3L of blood when patient on full CPB

SOFT SHELL RESERVOIR

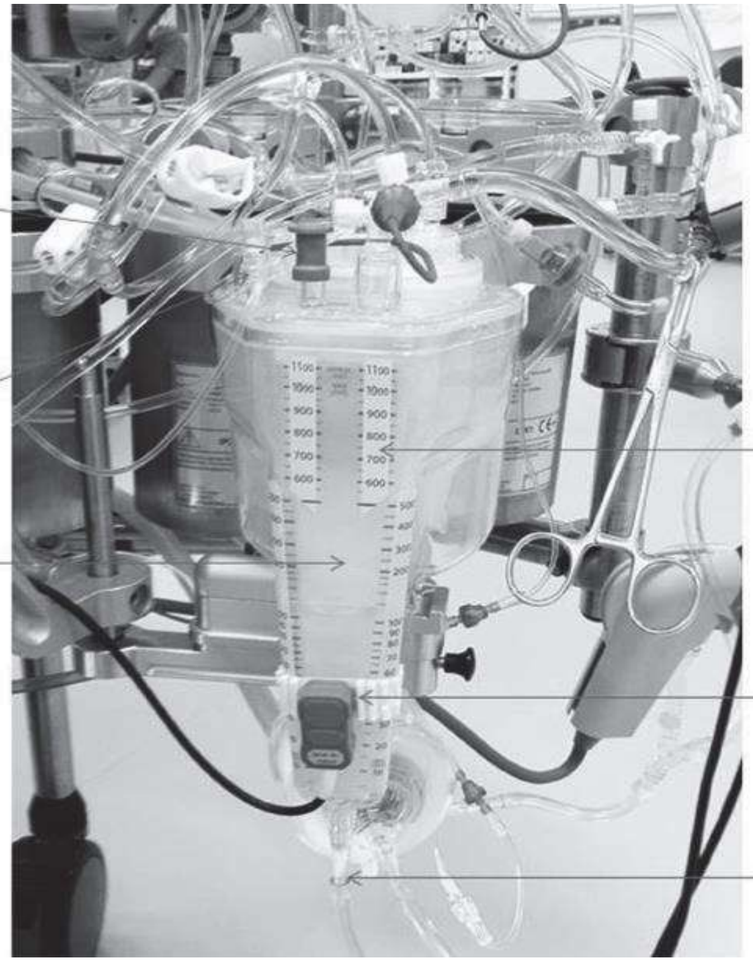
- The soft shell reservoir(flexible venous reservoir) have the advantage of increase and reduce its size according to the amount of blood that they contain
- They are not have airspace , that prevent the accidental delivery of air to patient
- Air collected in the bag is removed through purging ports situated at the top of the bag.
- Does not have direct deforming capacity
- Bag collapses, so it does not allow air to enter the membrane.


O2 Removal
via sucker line

HARD SHELL VENOUS RESERVOIR

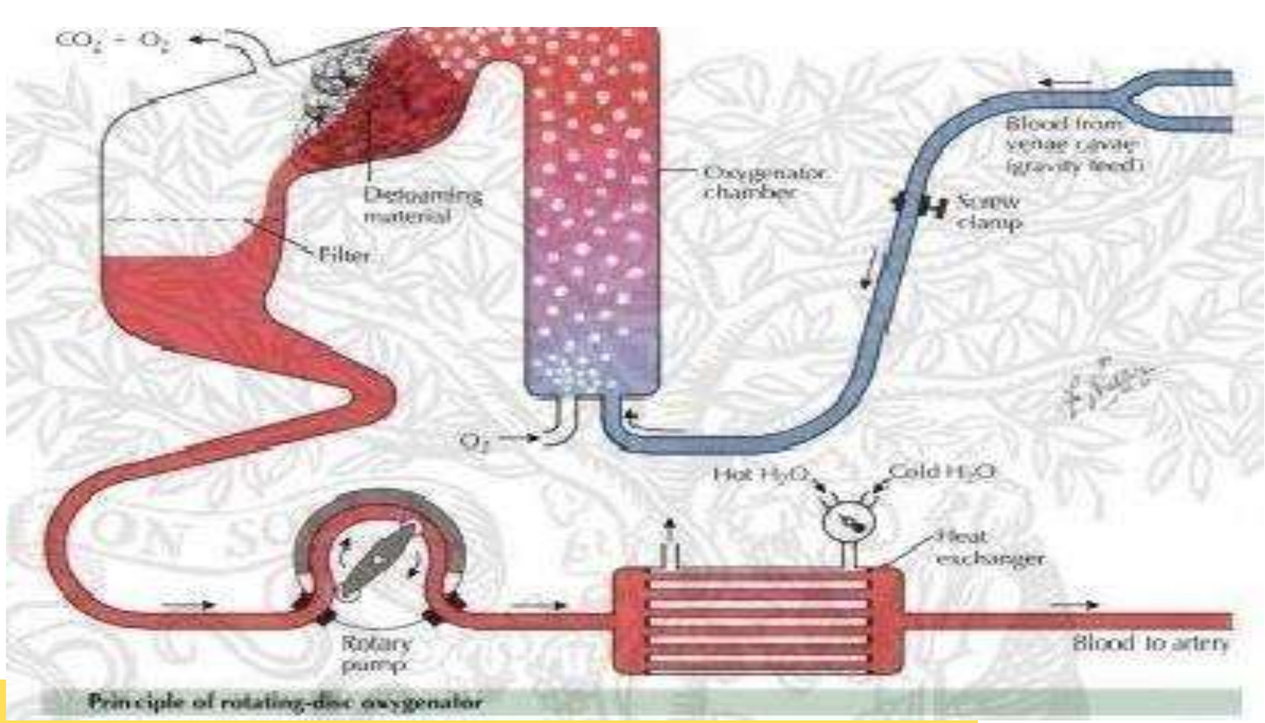
- Hard shell reservoir is a hard plastic container made of **polycarbonate** contains an integral filter mechanism
- The venous blood enter from venous inlet port and passes through a **defoamer**(polyurethane foam), **depth filter**(polyester or Dacron wool) and **screen filters**(polyester or polypropylene) which result to filtration the blood from particulate materials(clots, blood cell aggregates, fat emboli, fibrin and contamination before leaving the venous outlet of cardiotomy.
- Blood is exposed to air.

- Advantage –easy volume measurement and management of venous air, better visibility, large volume capacity, easy to prime.


Venous inflow
Cardiotomy suction inflow
Filter
Graduated filling level
Reservoir level alarm
Outlet to CPB pump

RESERVOIR IN BUBBLE OXYGENATOR

- The reservoir is placed beyond the oxygenating and defoaming chambers and it is usually included as the integral part of the oxygenator.
- It is referred to as an ***arterial reservoir***.



Principle of rotating-disc oxygenator

FUNCTIONS OF RESERVOIR

- Reservoir serves as a ***high capacitance*** (i.e., low pressure) receiving chambers for the venous return
- It facilitates the ***gravity drainage*** of the venous blood
- Reservoir also serves as a gross ***bubble trap*** for the air that enters the venous tubings.
- It serves as a **buffer** for fluctuation and imbalance between venous return and arterial flow
- The **pore size** of venous reservoir filter is 150 –200 µ
- Acts as a site, where **blood and fluids can be added**
- Acts as a site of **taking sampling** of blood for ABG and VBG
- Provides time for perfusionist to act at the **reaction time**, and reduce the risk of air embolism.