

محاضرة رقم 5

نظري

Theoretical

أسس أجهزة التخدير الكورس الاول

Breathing system of the anesthesia machine

Sawa University

جامعة ساوة الاهلية

College of health and medical techniques

كلية التقنيات الصحية والطبية

Department of Anesthesia

قسم تقنيات التخدير

.....second..... Stage

.....المرحلة الثانية

Lecture No5

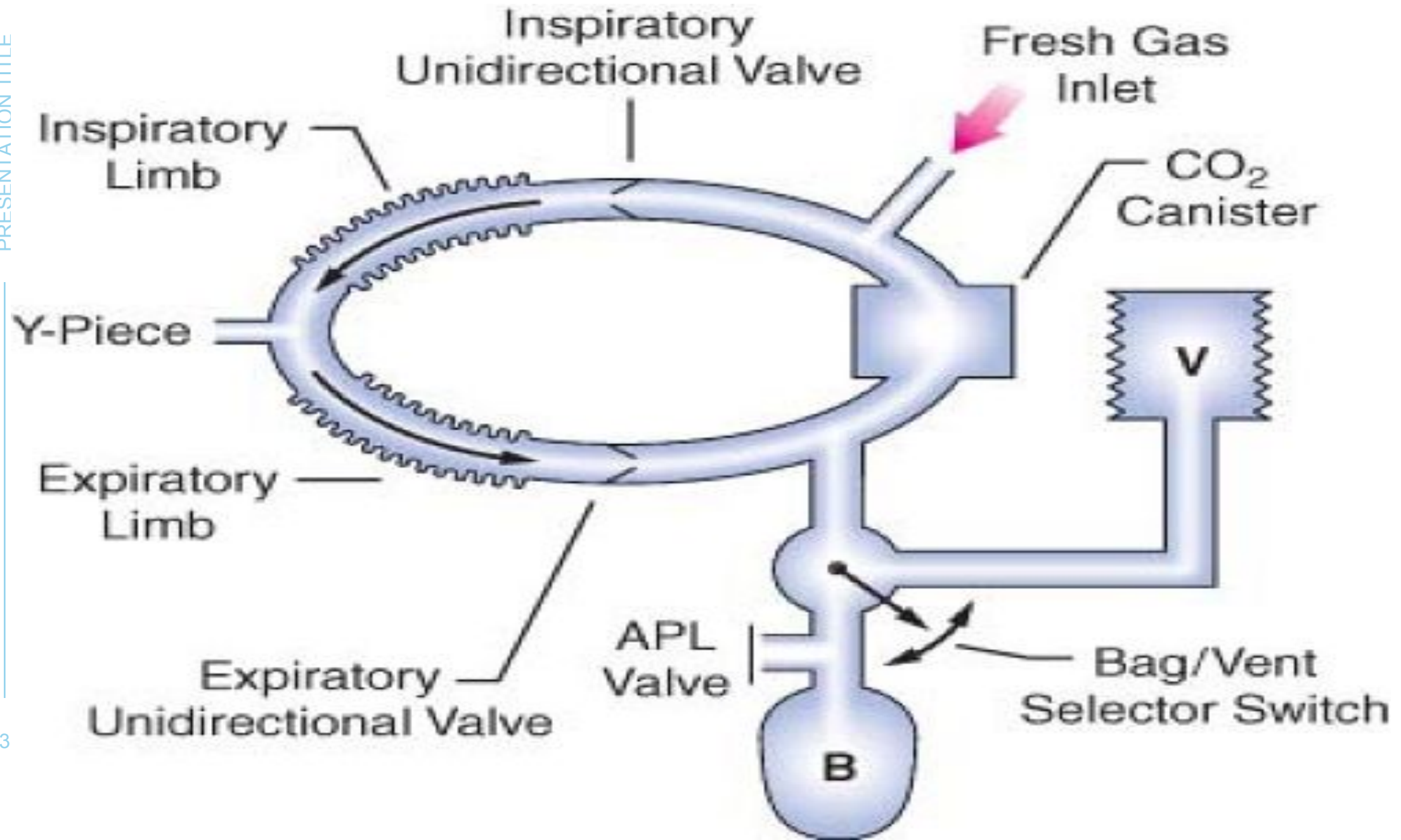
استاذ المادة د. حسن جساب البركي

Breathing system or **breathing circuit** is a medical device used to deliver oxygen, remove carbon dioxide, and deliver inhalational anesthetic agents to a patient.

Breathing systems must fulfill three objectives:

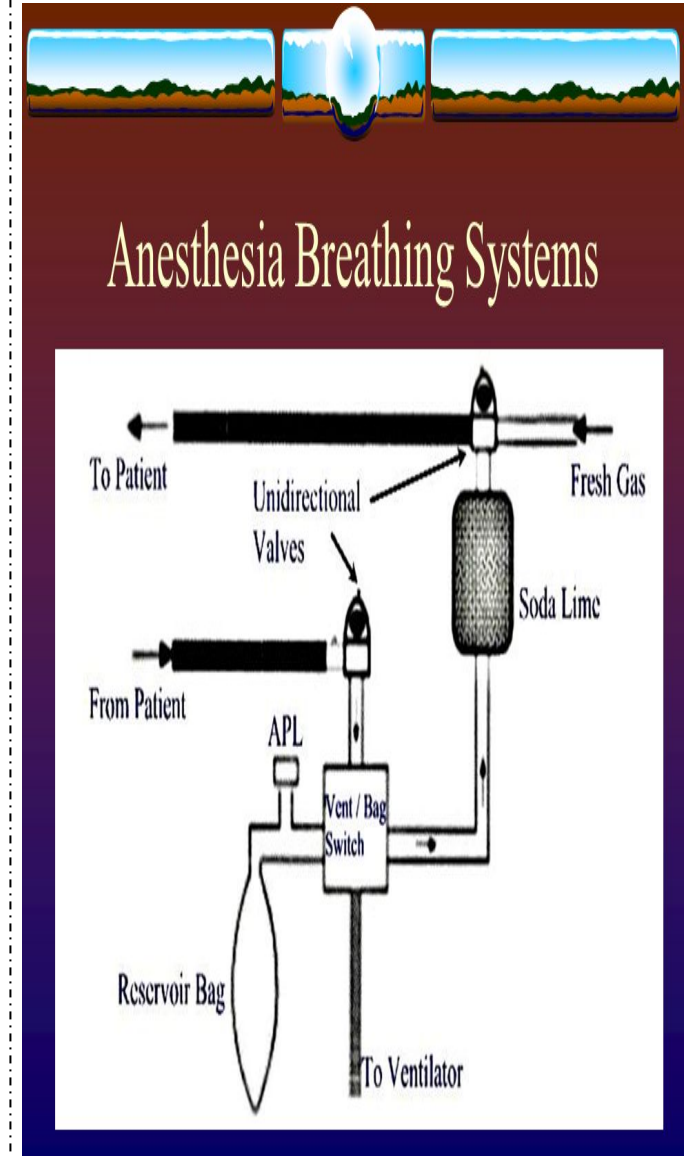
1. delivery of oxygen
2. removal of carbon dioxide from the patient
3. delivery of inhaled anesthetic agent





BREATHING SYSTEMS COMPONENTS

- 1-fresh gas inlet from the common gas outlet of the anesthetic Machine
- 2-Inspiratory and expiratory corrugated tubing
- 3-inspiratory and expiratory valves
- 4 canister containing carbon dioxide absorbent
- 5 reservoir bag
- 6-an adjustable pressure limiting (APL) valve
- 7-Y - piece connector



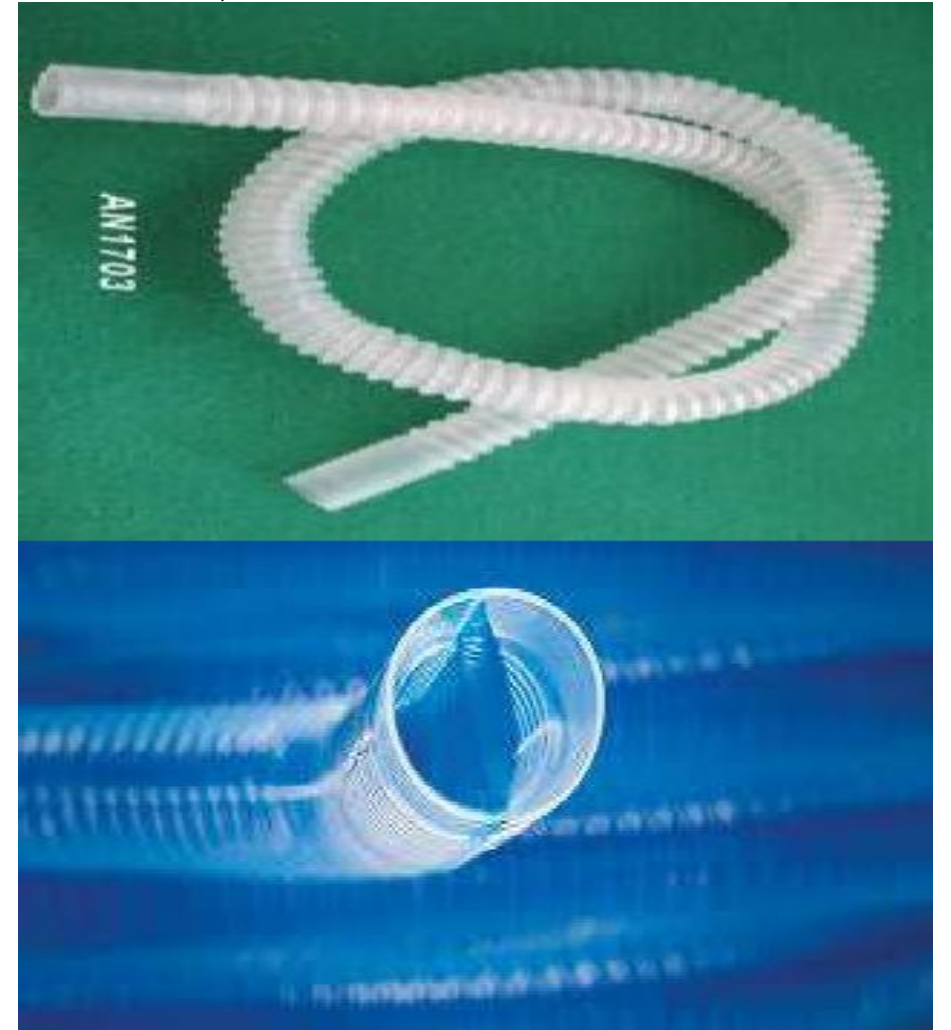
RESERVOIR BAGS

- ❑ Composition: Rubber, synthetic latex, neoprene.
Ellipsoidal in shape.
- ❑ Available in sizes 0.5L to 3L.
- ❑ A normal size adult bag holds a volume exceeding the patients inspiratory capacity.
- ❑ pressure rises to peak of about 50- 70cmH₂O but falls late with massive distension



Breathing Tubes

1. Made of rubber or plastic or silicone.
2. It may be coaxial or side by side.
3. Can be impregnated with silver to add antimicrobial effect.
4. Length is variable.
5. Internal diameter
 - ❖ Adults – 22mm.
 - ❖ Pediatric – 15mm.
6. Internal volume
 - ❖ 400 500ml/metre.



Breathing Tubes

7. Corrugations prevent kinking & increased flexibility.

Functions

1. Act as reservoir in certain systems.
2. They provide connection from 1 part of system to another.

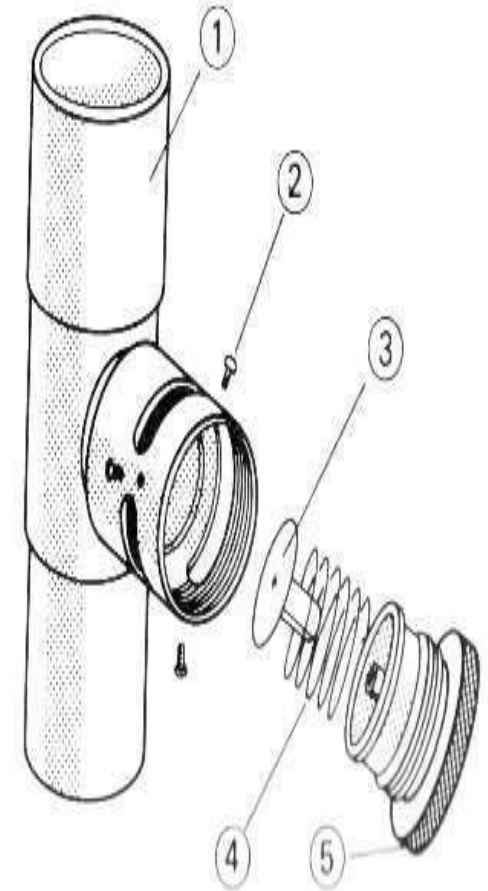


Adjustable Pressure Limiting Valve (APL Valve)

Also called as expiratory valve, pressure relief valve, pop off valve

Parts of Spring Loaded Disc

1. Female taper
2. Retaining screw
3. Stem with disc
4. Spring
5. Valve tap



"Y" Piece

Standard 22 mm male connections for breathing hoses.

Patient connection port is a 15 mm female fitting or a 15 mm female port coaxial within a 22 mm male fitting.

Common source of leaks.



Anesthesia Breathing Systems

Circle systems

1. Most commonly used
2. Adult and child appropriate sizes
3. Uses chemical neutralization of CO₂
4. Conservation of moisture and body heat
5. Allows for mechanical ventilation of the lungs using the attached ventilator
6. Allows for adjustment of ventilatory pressure
7. Is easily scavenged to avoid pollution of OR environment
8. Low FGF's saves money



Disadvantages of Circle System:

- Greater size, less portability
- Increased complexity
- Higher risk of disconnection or malfunction.
- Difficulty of predicting inspired gas concentration during low fresh gas flow



Any questions?

*Thank
You*