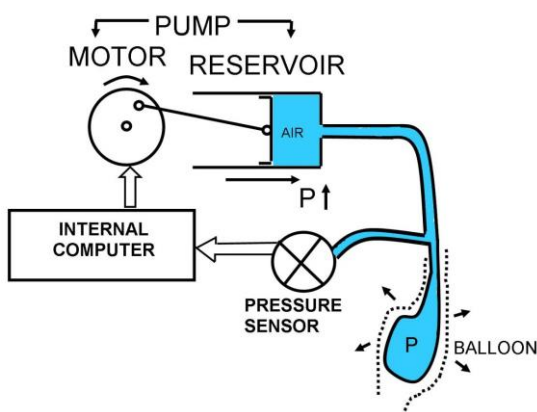


BAROSTAT FAQ

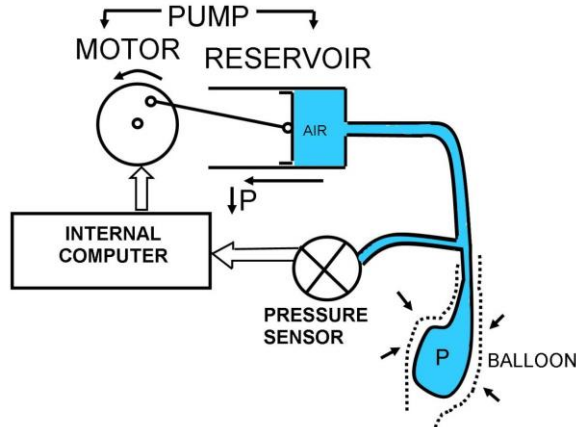
What is a barostat?

A barostat is a pneumatic device which allows for the indirect measurement of variations in tone within a hollow viscus; such as, the esophagus, stomach, small bowel, colon or rectum. The instrument accomplishes this by maintaining or 'clamping' the air pressure in an intraluminal balloon constant. The pressure is held constant through variations in the volume of the barostat's reservoir system.

How does a barostat create isobaric conditions in a balloon?



Organ relaxation causes the reservoir to inject air, keeping balloon pressure constant.

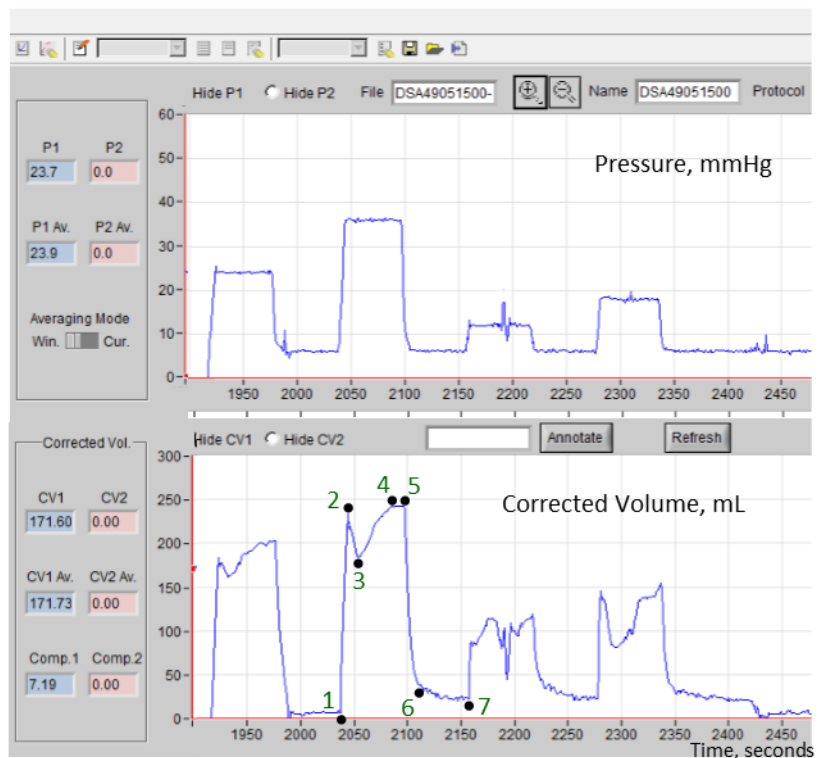


Organ contraction causes the reservoir to remove air, keeping balloon pressure constant.

What is the range of flow rates that can be expected in a typical rectal distension?

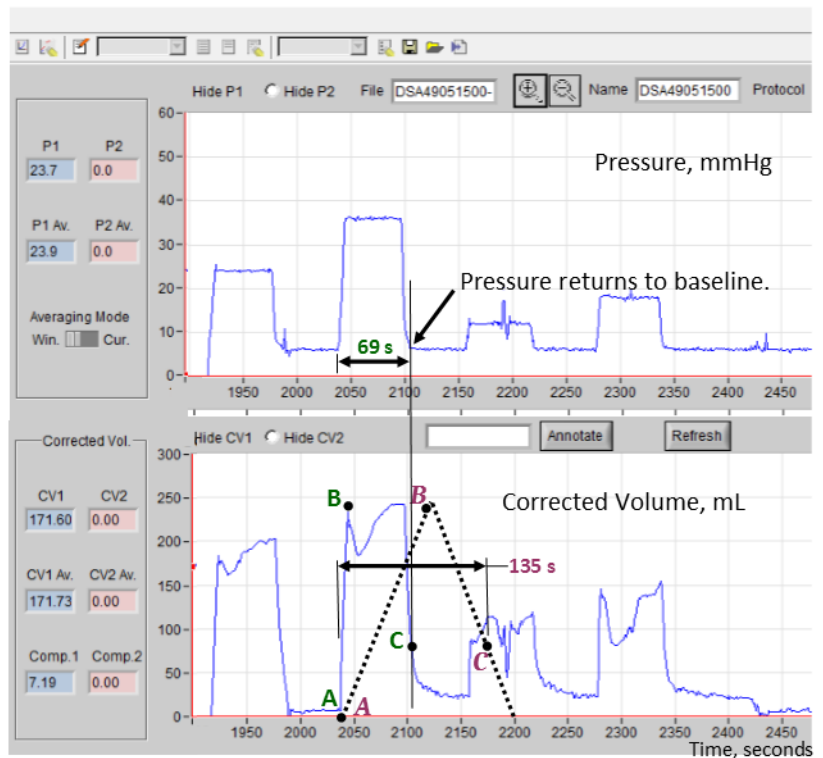
Due to the rectal reflex response, the barostat's flow must be able to vary greatly at different times to maintain isobaric conditions. This plot illustrates that the flow can be as low as 0mL/s and peak at 32mL/s during the course of a typical 60s distension from baseline pressure.

Points	Flow mL/s
1→2	32
2→3	5
3→4	1.9
4→5	0.1
5→6	17
6→7	0.3
Total Time 1→7, 120 seconds	



What is the impact of a low flow rate on completing a typical 60s distension?

Using the Distender Series II high flow rate barostat to complete the distension cycle (A, B, C) or (6, 36, 6 mmHg) takes **69 seconds**. Using a **3 mL/s** linear flow rate to distend to the same organ volumes (A, B, C) takes **135 seconds**. In a research protocol, typical distension pressure steps last 60 seconds each. Hence, at 3 mL/s totally different organ responses might be expected when compared to established norms. An event such as the rectal reflex (2, 3, 4) shown in the previous diagram might not be detected.



What is the advantage of a motor driven Piston Reservoir?

With a piston pump a zero leak totally sealed system is created and accurate volume readings are obtained. In a study, often the system may cycle between distension pressures. These pressure changes are accomplished simply by the repositioning of the piston. It is also an easy task to dynamically adjust the flow with motor speed. Furthermore, correction of the volume reading for the compressibility of air is made easy as the exact position of the piston is always known.

Conclusion

When choosing a barostat it is important to purchase an instrument that is capable of generating the necessary flow rates to create adequate distension pressures, rapidly. Devices that deliver only low flow rates would result in sluggish responses, leading to missing potentially important data.

The Distender Series II barostat is capable of generating high flow rates and automatically adjusts the flow to provide the most dynamic response to organ contraction and relaxation.

