

Cavitation Demonstration - F1-28

This equipment demonstrates to students visually, audibly and numerically the phenomenon of cavitation and its association with the vapour pressure of a liquid.



F1-28 Vacuum gauge



Experimental content

- ▶ To demonstrate the appearance and sound of cavitation in a hydraulic system
- ▶ To demonstrate the conditions for cavitation to occur (liquid at its vapour pressure)
- ▶ To observe the difference between air release from the water and true cavitation
- ▶ To show how cavitation can be prevented by raising the static pressure of a liquid above its vapour pressure
- ▶ Verification of Bernoulli's equation
- ▶ Comparison of theoretical and actual pressure at cavitation conditions

Description

This accessory consists of a circular Venturi-shaped test section manufactured from clear acrylic to enable visualisation inside the section.

As the flow of water increases, the pressure at the throat falls in accordance with the Bernoulli equation until a limit is reached corresponding to the vapour pressure of the liquid. At this low pressure small bubbles of vapour form then collapse violently as the pressure rises again downstream.

This process is called cavitation.

Bourdon gauges indicate the pressure upstream of the contraction, inside the throat and downstream of the expansion in the test section. Flow control valves upstream and downstream of the test section enable the flow and pressure to be adjusted, enabling cavitation to be clearly demonstrated.

Technical specifications

Upstream pressure gauge

| | |
|----------|------------|
| Diameter | 63mm |
| Range | 0 to 2 bar |

Throat vacuum gauge

| | |
|----------|-------------|
| Diameter | 100mm |
| Range | -1 to 0 bar |

Downstream pressure gauge

| | |
|----------|------------|
| Diameter | 63mm |
| Range | 0 to 1 bar |

Requires Hydraulics Bench Service unit F1-10/F1-10-2

Overall dimensions

| | |
|--------|-------|
| Length | 0.55m |
| Width | 0.23m |
| Height | 0.19m |

Ordering codes

- ▶ F1-28