

PRESSURE IN A FLOW – VENTURI TUBE

MED 19.08



Material:

Item Code	Qty	Description
DS101-1G	1	Support base, large, L=500 mm
DS103-7G	1	Sliding saddle, H=70 mm
DS200-04	1	Stand tube, H=40 mm
DM701-2L	1	Blower 12 V
P3130-2Q	1	Fixed voltage transformer 12V DC/10 A
DM701-2K	1	Tube adapter for blower
DM730-1A	1	Venturi tube

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Purpose

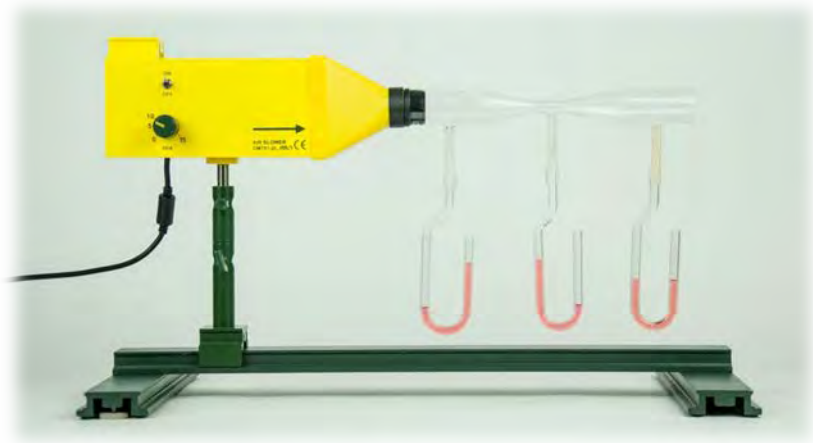
Demonstrating the flow of pressure in a tube with bottleneck

Preparation

- the sliding saddle is fixed on the support base; afterwards the stand tube is inserted
- afterwards the blower is inserted into the stand tube and screwed down tightly
- the rotary knob for the flow speed of the blower is turned to the very left
- the blower is powered by a fixed voltage transformer (12 V DC, min. 6 A)
- the tube adapter is put onto the blower
- afterwards the Venturi tube is put onto the tube adapter
- the U-tubes are removed from the Venturi tube
- with the help of a small syringe we fill the tubes with colored water to the same level and put them onto the Venturi tube again

Experiment

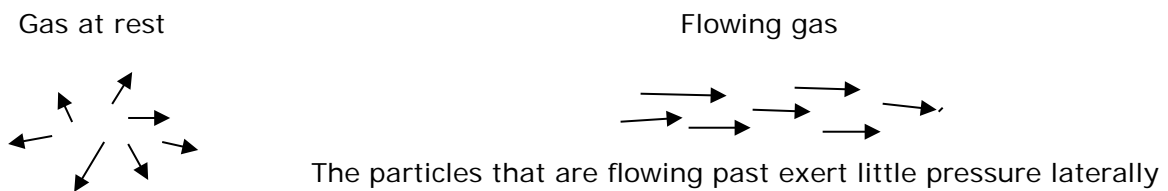
We turn on the blower and slowly increase the flow speed. Observe the manometer levels at different stages of the blower



Result

Negative pressure can be determined at the bottleneck. The bigger flow speed is at this part, the lower the (static) pressure will be.

Model for understanding:



Notes:

The pressure in the right manometer tube should theoretically be the same as in the left manometer tube and is therefore also displayed in many books in such a schematic way.

In practice this is not the case because there are turbulences in the flow after the bottleneck which makes it impossible to do a proper measurement of the pressure. Therefore the measurement on the right manometer tube can be skipped.