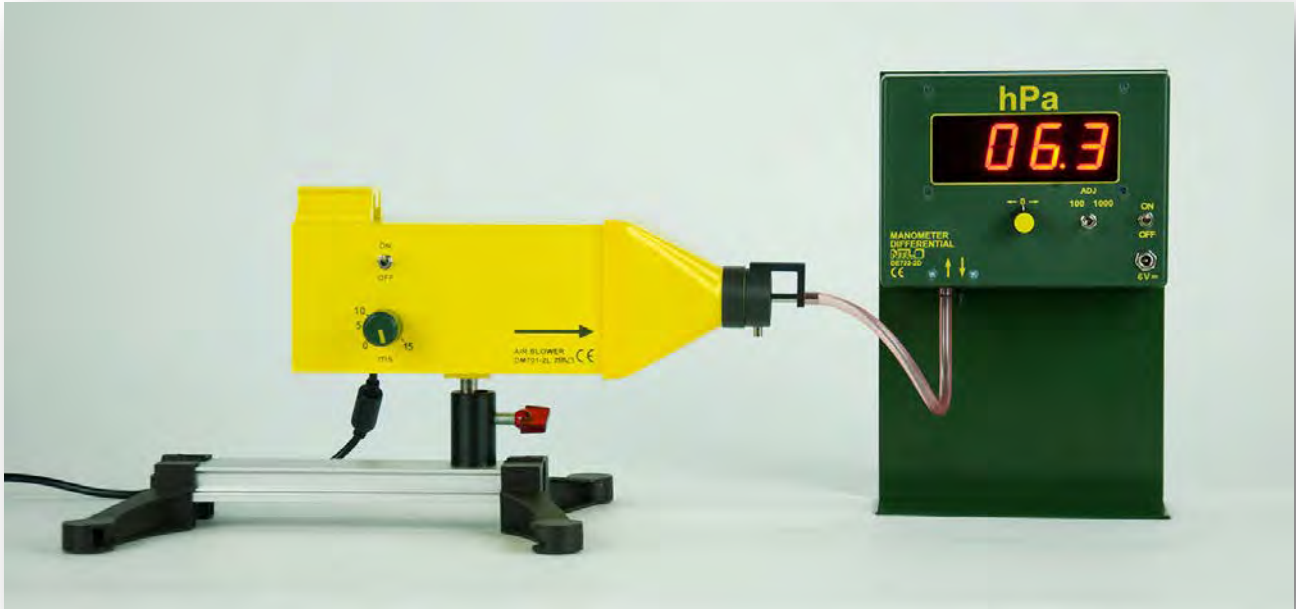




Material:

Item Code	Qty	Description
DS090-3K	1	Claw base "Sepp", 260 x 220 mm
DM701-2L	1	Blower 12 V
P3130-2Q	1	Fixed voltage transformer 12V DC/10 A
DM701-2K	1	Tube adapter for blower
DM713-1S	1	Pitot tube, apparatus set
DE722-2D	1	Manometer, differential, "inno"
P3120-4A	1	L-shaped assembly platform

Purpose

In any flow stream (liquids and gases) are different types of pressure.
In this experiment we measure the pressure directly within the direction of flow.
This pressure is called „total pressure“ (p_{tot})

Preparation

- the blower is fixed to the saddle on the support base and screwed down tightly
- the tube adapter for blower is fixed on the blower
- the Manometer is attached to the S-shaped assembly platform
- a silicone hose (approx. 20 cm) is inserted into the axial tube of the Pitot tube
- the hose is then connected with the Manometer (inlet - arrow pointing upwards)
- 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)

Experiment

We select the range 100 hPa at the Manometer and adjust the displayed value to 0 with the help of the regulator.

We turn on the blower and slowly increase the flow speed.
We observe the flow speed and the measured pressure.

Pressure (p_{tot}) at maximum flow speed: hPa

Conclusion

The higher the flow speed the higher is also the total pressure (p_{tot}).

Note

The measuring unit that was built in this experiment is often called „Pitot tube“.

Attention

The measured pressure may deviate from theoretically calculated values since the air flow in our experiment is not ideally laminar.

We produce the air flow with a fan blade which clearly creates turbulences and whirls, which can of course affect the measured values.