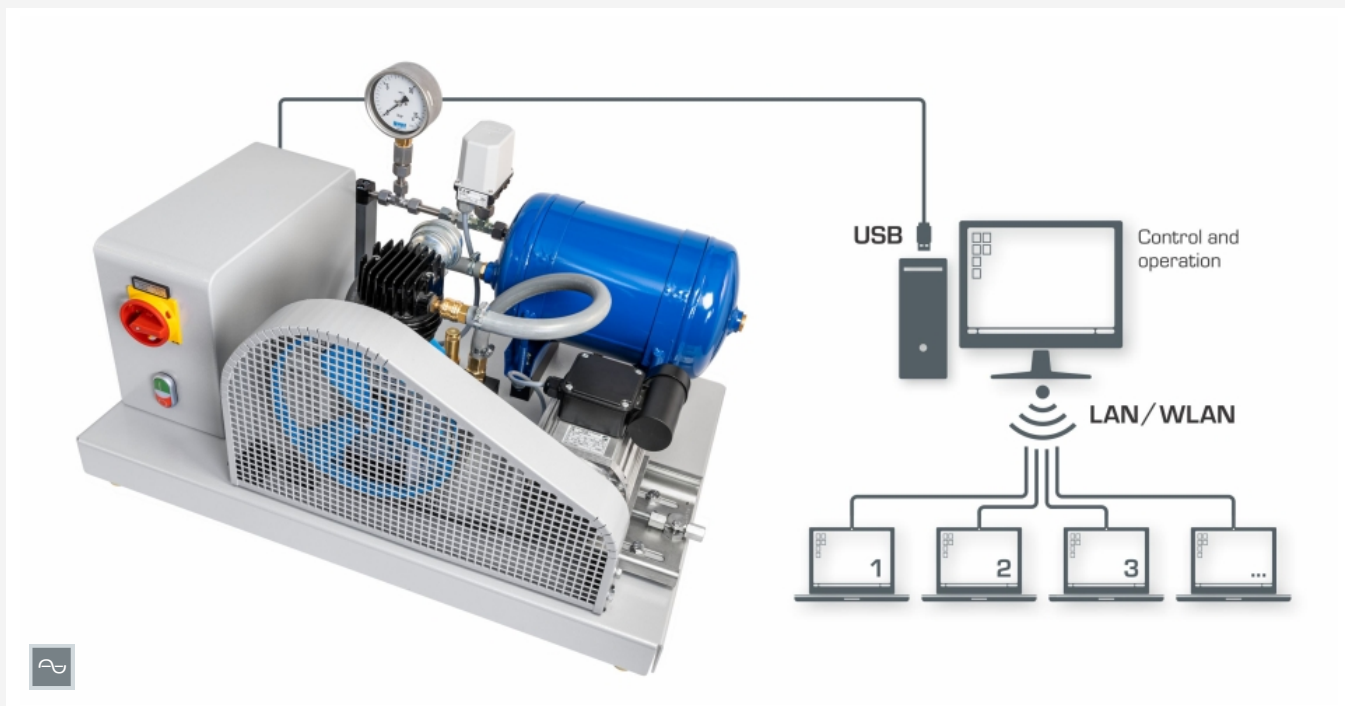


MT 142

Energy efficiency in piston compressors



The illustration shows the test device together with the MT 141 piston compressor; up to ten workstations in the customer's own network with GUNT software can be used to observe and analyse the experiments

Description

- **test device for the MT 141 piston compressor**
- **network capability: observe, acquire, analyse experiments via customer's own network**

The MT 142 test device is used together with the MT 141 piston compressor assembly exercise. The fully assembled piston compressor is placed in the test device. This is where the entire system is professionally assembled, including alignment of the drive motor and piston compressor. A successfully completed assembly project can then be concluded with a formal final test.

The test device contains an electric motor with belt pulley as the drive, a compressed air tank with pressure indicator, safety valve and pressure monitor. The fully assembled piston compressor (MT 141) is installed in the test device and connected to the drive motor via a belt drive. A protective grid prevents accidental contact with the rotating parts.

During the functional test, the pressure increase in the compressed air tank and the electric power of the electric motor are recorded over time. A pure functional test can be carried out without using the software.

When used in conjunction with the GUNT software, it is possible to create an energy balance. To do this, the electrical power, mechanical power and pneumatic power are recorded over time while the device is running. The efficiency is then calculated from the energy absorbed. The measured values are transmitted directly to a PC via USB where they can be displayed graphically using the software included.

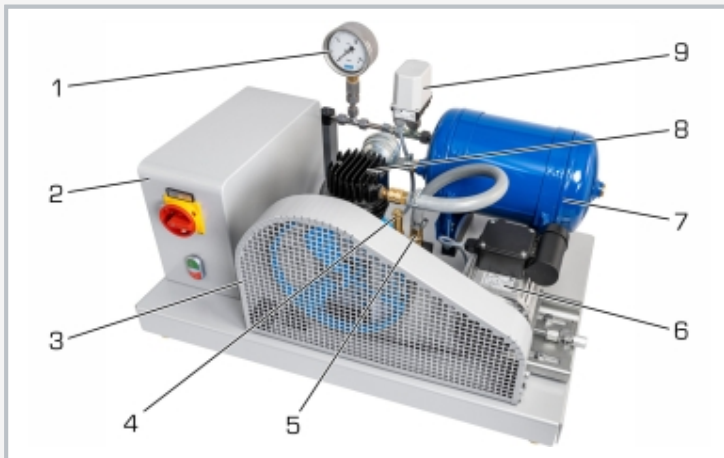
Learning objectives/experiments

together with the piston compressor from MT 141

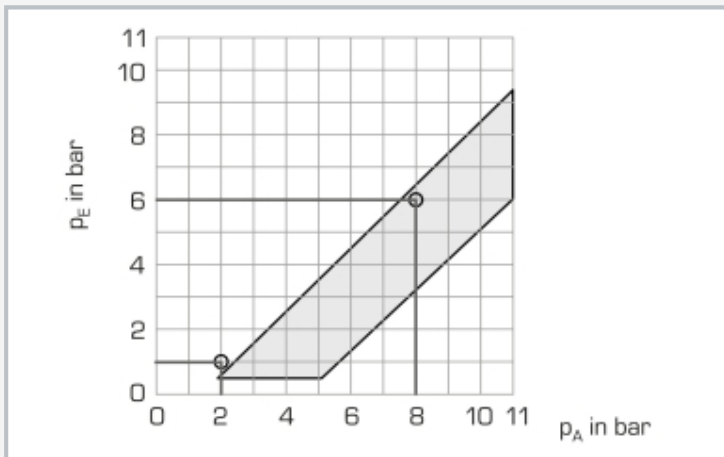
- functional test of a piston compressor
- pressure increase in the compressed air tank as a function of time
- power consumption of the drive motor as a function of pressure
- energy balance
- familiarisation with the pressure generation system and its components
- function and operation of safety elements: pressure switch, non-return valve, safety valve
- professional installation of the piston compressor in the test device incl. adjustment and alignment procedures

MT 142

Energy efficiency in piston compressors



1 manometer, 2 switch cabinet, 3 protective grid, 4 safety valve, 5 non-return valve, 6 drive motor, 7 compressed air tank, 8 piston compressor (MT 141), 9 pressure switch



Pressure diagram of the pressure switch: p_E switch-on pressure, p_A switch-off pressure, grey area: permissible values of the pressure switch



Screenshot of the software: balancing of energies

Specification

- [1] test device for professional assembly as well as alignment of drive motor and piston compressor
- [2] use together with the MT 141 piston compressor assembly exercise
- [3] control and operation at the switch cabinet or via PC
- [4] drive via electric motor and belt drive
- [5] single-phase electric motor on adjustable motor slide
- [6] compressed air tank with adjustable pressure switch and manometer
- [7] protective devices: pressure switch, safety valve, protective grid for belt drive, emergency stop switch
- [8] GUNT software via USB under Windows 10
- [9] network capability: observe, acquire, analyse experiments via customer's own network

Technical data

Drive

- electric motor with belt drive
- power: 250W
- speed: 1405min⁻¹

Compressed air tank

- volume: 10L
- max. pressure: 10bar

Pressure switch: 4...13bar

Safety valve: 10bar

Measuring ranges

- pressure: 0...16bar
- current: 0...4A

230V, 50Hz, 1 phase; 230V, 60Hz, 1 phase

120V, 60Hz, 1 phase; UL/CSA optional

LxWxH: 820x550x500mm

Weight: approx. 52kg

Required for operation

MT 141, PC with Windows recommended

Scope of delivery

- 1 experimental unit
- 1 set of tools
- 1 oil (0,5L)
- 1 GUNT software + USB cable
- 1 set of instructional material

MT 142

Energy efficiency in piston compressors

Required accessories

MT 141 Assembly exercise: piston compressor

Optional accessories

WP 300.09 Laboratory trolley