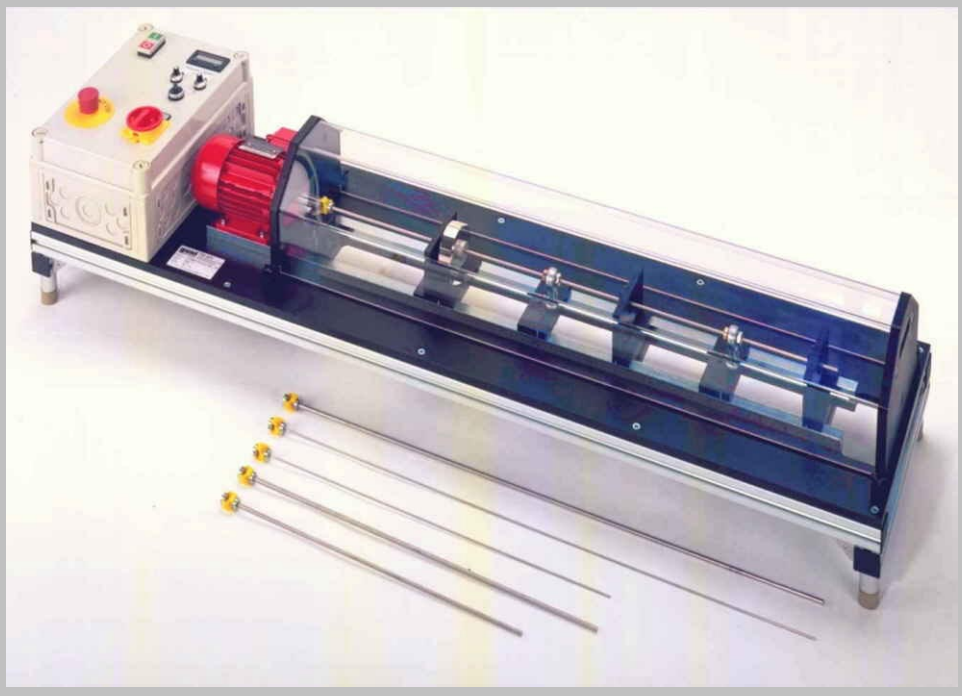
TM 625 WHIRLING SHAFT APPARATUS



- **Laval - rotor, self-centering**
- **Mode shapes of continuous rotor shafts**
- **Variation of bearing spacing and shaft diameter**
- **Transparent protective cover enables the experiment to be optimally observed**

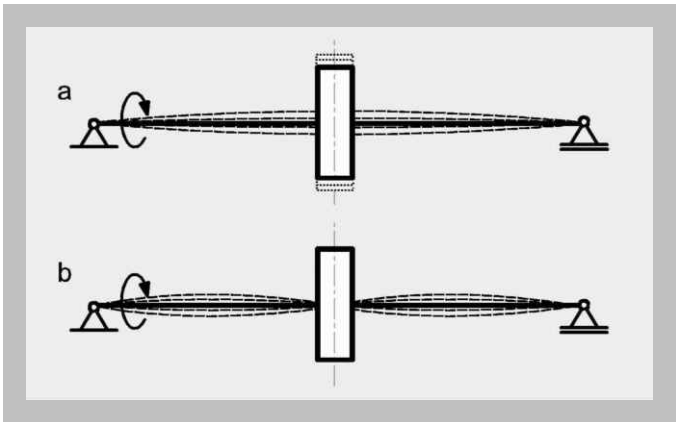
Experiments

Speed-dependent experiments on rotation

- Modes of oscillation of a rotor shaft with individual masses (Laval rotor)
  - Critical speed
  - Self-centering
- Modes of oscillation of a continuous rotor shaft
  - For varying bearing spacing
  - For varying shaft diameter

Technical description

The modes of oscillation and resonances of rotors with continuous mass distribution can be clearly demonstrated using this unit. Due to the use of thin, elastic rotor shafts made of high-strength steel, the oscillatory phenomena can be easily understood. A range of shaft diameters and the free choice of the bearing arrangement make it possible to perform a wide variety of experiments. Adapters in the bearings compensate for different diameters, catch bearings limit the amplitude of the oscillation. The freedom of movement of the rotor is assured by an elastic coupling. A Laval rotor with discrete mass distribution can be assembled using a mass disc. As a supplement to this unit, a set of vibration sensors, TM 625.01, is available. These enable the path of the rotor to be displayed on an oscilloscope.



Oscillatory modes of a Laval rotor
a) critical rotational speed, resonance ; b) super critical rotational speed, self-centering

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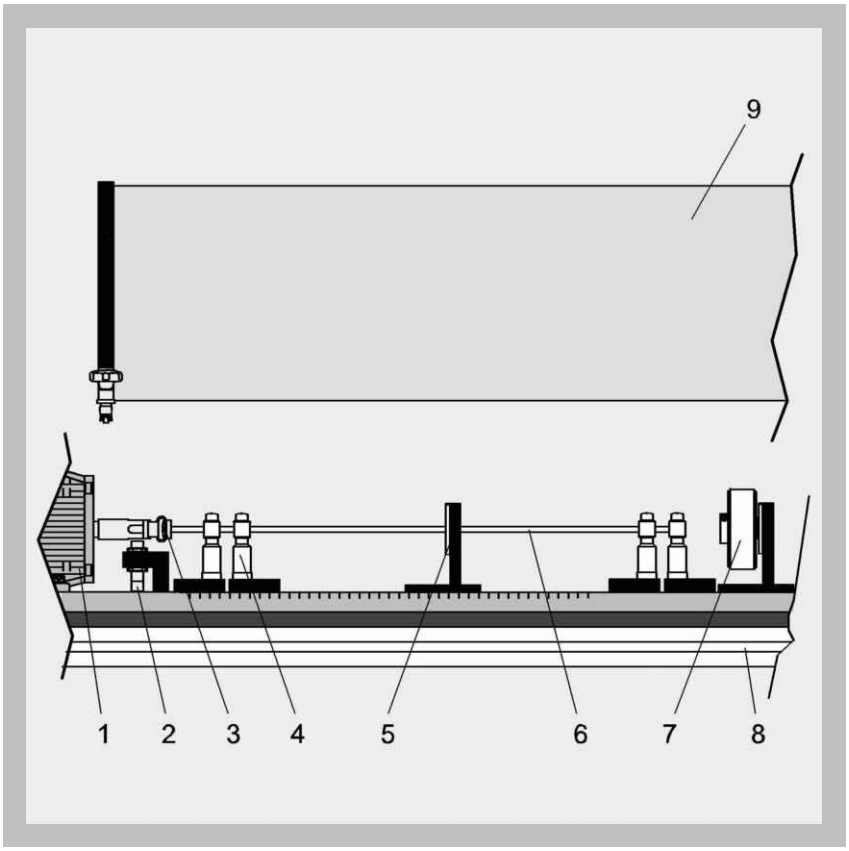


1 drive motor, 2 inductive speed sensor, 3 elastic coupling, 4 self-aligning bearings, 5 rotor shaft, 6 catch bearings, 7 rotor mass disc, 8 base frame made of aluminium profile, 9 protective cover made of transparent plastic

Specification

[1] Table-top experiment on critical rotational speeds on simply loaded and continuous shafts
[2] Six rotor shafts made of high-strength steel, diameters: Ø3mm, Ø6mm, Ø7mm
[3] Rotor shaft length: 600mm and 900mm
[4] Rotor disc: Ø80mm, 1kg, steel
[5] Drive via elastic coupling
[6] Motor: 0.37kW, rotational speed 0...6000rpm, electronically regulated, digital display, adjustment with 10-turn potentiometers, two rotational speeds can be preselected, can be switched as required
[7] Up to four self-aligning bearings on the rotor shaft
[8] Up to three securing catch bearings with plastic packing can be positioned on the rotor
[9] Protective cover made of transparent plastic
[10] l x w x h 1550x375x355mm

Technical data

Rotor shafts made of steel,
Diameter: Ø3, Ø6, Ø7mm
Length: 600mm, 900mm
Rotor disc: Ø80mm, 1kg, steel
Rotational speed: 0...6000rpm, electronically regulated, digital display
Motor: 0.37kW
Rotor bearing with up to four self-aligning ball bearings

Dimensions and weight

l x w x h : 1550 x 375 x 355 mm
Weight : approx. 65 kg

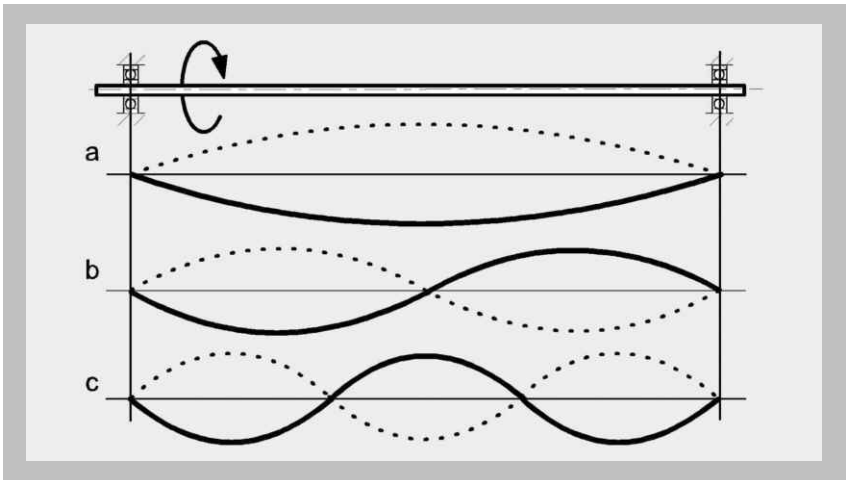
Connections

230V , ~50Hz

Scope of delivery

1 complete experimental apparatus, 6 rotor shafts, 1 rotor disc, 1 instruction manual

Example of possible modes of oscillation



Mode shapes of a continuous rotor shaft
a) 1st mode, b) 2nd mode, b) 3rd mode

Order details

040.62500 TM 625 Whirling Shaft Apparatus

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Available Accessories

Product no.	Ordertext
040.62501	TM 625.01 vibration sensors with clamping set