

PT 500.10

Elastic shaft kit



Description

- flexural vibration of the elastic shaft
- resonance and critical speed

This accessory setup enables the response of an elastic rotor to unbalanced excitation to be studied. The subcritical, supercritical and resonance running states can be demonstrated. A comparison of the orbits (path curves) in the subcritical and supercritical range is of particular interest.

The field balancing of elastic rotors is another area which can be investigated. The supplied pendulum ball bearings ensure full mobility of the shaft. The safety bearing limits the amplitudes to harmless values at speeds close to resonance.

The accessory setup is mounted on the base plate of the machinery diagnostic base system PT 500.

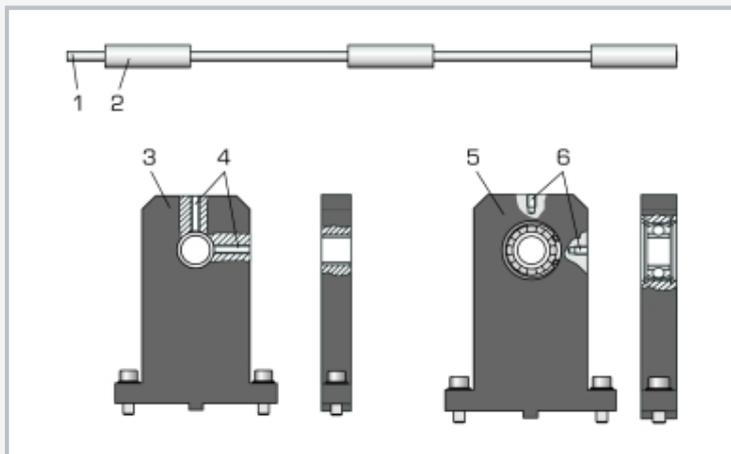
To measure and evaluate the experiment, the computerised vibration analyser PT 500.04 and two displacement sensors PT 500.41 are required. It includes all the necessary sensors, a measuring amplifier and analysis software to record the vibration phenomena.

Learning objectives/experiments

- familiarisation with the terms "critical speed" and "resonance"
- influence of unbalanced excitation
- alignment of the elastic rotor
- influence of alignment errors
- understanding and interpreting frequency spectra
- use of a computerised vibration analyser
- together with two displacement sensors PT 500.41
 - ▶ study of the orbit in the subcritical and supercritical range

PT 500.10

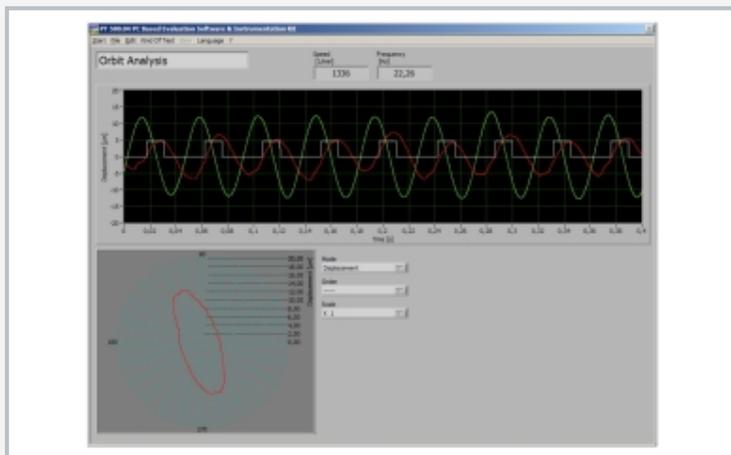
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1 elastic shaft, 2 bearing, 3 safety bearing, 4 bores for displacement sensors, 5 bearing block with pendulum ball bearing, 6 bores for acceleration sensors



The illustration shows PT 500.10 together with PT 500, PT 500.01 and PT 500.04.



Screenshot of evaluation software
above: vibration signals as a function of time
below: orbit view for vibration on two planes

Specification

- [1] investigation of flexural vibration of an elastic shaft
- [2] stainless steel elastic shaft
- [3] 2 bearing blocks with pendulum ball bearing
- [4] 1 bearing
- [5] bearing blocks and safety bearing with bores for sensor mounting
- [6] accessory set for machinery diagnostic training system PT 500
- [7] stackable storage system to house the components

Technical data

Elastic shaft

- min. diameter: $\varnothing=10\text{mm}$
- diameter at bearings: $\varnothing=20\text{mm}$
- length: 530mm
- nominal length between bearings: 450mm

LxWxH: 600x400x120mm (storage system)

Weight: approx. 6kg

Scope of delivery

- 1 elastic shaft
- 2 bearing blocks
- 1 safety bearing
- 1 storage system with foam inlay
- 1 manual

PT 500.10

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Required accessories

PT 500	Machinery diagnostic system, base unit
PT 500.04	Computerised vibration analyser
PT 500.41	Two displacement sensors

Optional accessories

PT 500.01	Laboratory trolley
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