

PT 500.18

Vibrations in fans kit



Description

- vibration measurements on fans
- simulation of blade-induced vibrations

Vibration measurements on fans and blowers play a major role in field monitoring operations. In addition to the usual signals caused by bearings and imbalance, the vibrations induced by the fan blades can be measured. The vibrations are induced by inhomogeneous flow fields.

The PT 500.18 accessory set induces the vibrations magnetically. Three impellers with differing numbers of blades can be investigated. A protective disk covers the rotating fans. An obliquely-mounted mass disk is used to investigate the gyroscopic effect. Just as in actual practice, the fan model can also be driven directly via a flexible coupling or by the belt drive PT 500.14.

The accessory set PT 500.18 is mounted on the base plate of the machinery diagnostic base system PT 500.

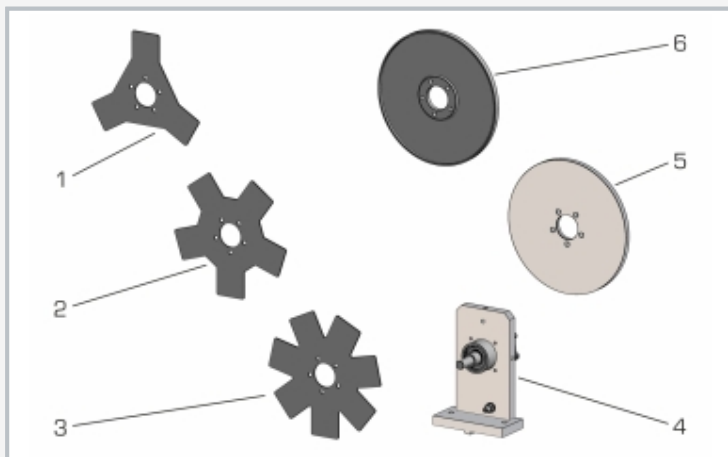
To measure and evaluate the experiment, the computerised vibration analyser PT 500.04 is required. It includes all the necessary sensors, a measuring amplifier and analysis software to record the vibration phenomena.

Learning objectives/experiments

- vibration measurement on fans
- measurement of blade pass frequency
- identification of the vibration induced by the blades from the vibration spectrum
- effect of dynamic imbalance on the fan
- understanding and interpreting frequency spectra
- use of a computerised vibration analyser

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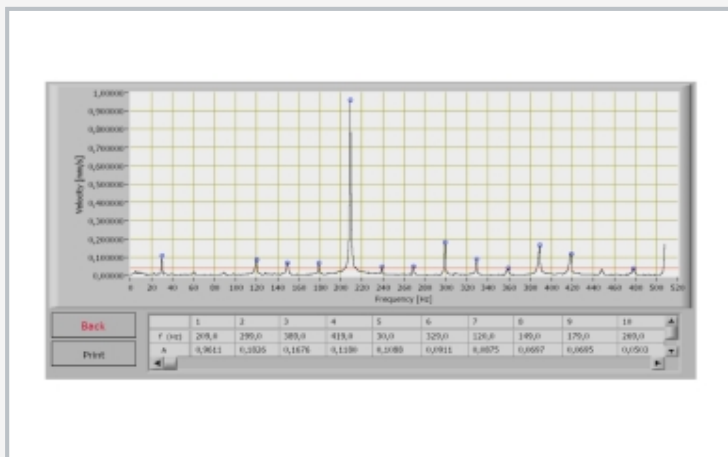
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1 impeller with 3 blades, 2 impeller with 5 blades, 3 impeller with 7 blades, 4 bearing block, 5 mass disk to simulate axial forces, 6 protective disk



The illustration shows PT 500.18 together with PT 500 and PT 500.04



Frequency spectrum of impeller with 7 blades: clear blade passing frequency at 210Hz

Specification

- [1] investigation of the vibrations of fans
- [2] experiment carried out in conjunction with the PT 500 training system and PT 500.04 for measurement and evaluation
- [3] model of an axial fan with blades
- [4] magnetic induction of blade forces
- [5] obliquely-mounted mass disk to investigate gyroscopic effects
- [6] three impellers with different numbers of blades
- [7] protective disk for impellers
- [8] gap between magnet and blades adjustable
- [9] can be used with belt drive PT 500.14
- [10] stackable storage system to house the components

Technical data

Impellers made of stainless steel

- quantity of blades 3/5/7
- Ø 204mm
- max. speed: 3000min⁻¹

Protective disk made of PVC: Ø 220mm

Mass disk made of aluminium: Ø 220mm

LxWxH: 400x300x320mm [storage system]

Weight: approx. 6kg

Scope of delivery

- 3 impellers
- 1 mass disk
- 1 holder
- 1 protective disk
- 1 storage system with foam inlay
- 1 manual

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Required accessories

PT 500	Machinery diagnostic system, base unit
PT 500.04	Computerised vibration analyser

Optional accessories

PT 500.14	Belt drive kit
PT 500.01	Laboratory trolley