

PT 500.14

Belt drive kit



Description

- vibrations in belt drives
- resonance and critical speed

When properly designed, manufactured, and correctly set; belt drives are low-maintenance, low-noise, long-life drive units. It is important that the belt should not vibrate and/or slip.

The PT 500.14 accessory setup can be used to investigate conditions that cause vibration or slip. The effect of disparate elongation on multiple belt drives can be demonstrated by means of individually-adjustable tensioning rollers. The belt drive is a dual belt drive with a belt tensioner. It can, however, also be operated with only one belt. An eccentrically-bored small belt pulley and a damaged V-belt enhance the range of possible experiments.

The brake and PT 500.05 load unit is required to conduct the experiment. The accessory set PT 500.14 can also be used to apply transverse loads in other experiments.

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

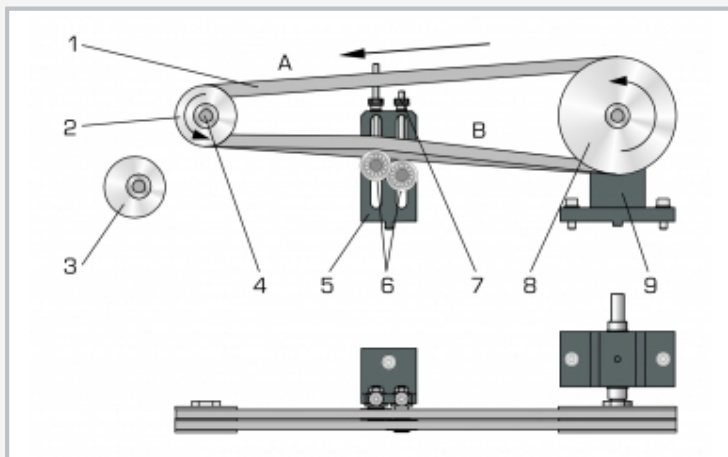
To measure and evaluate the experiment, the computerised vibration analyser PT 500.04 is required. It includes all the necessary sensors, a measuring amplifier and analysis software to record the vibration phenomena.

Learning objectives/experiments

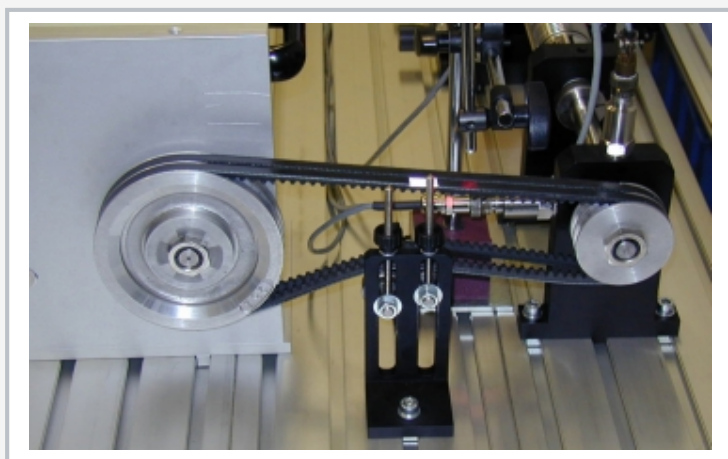
- influence of belt tension on vibration behaviour
- influence of speed on vibration behaviour
- influence of pulleys running untrue, and off-track running
- power split across multiple belt drive
- influence of slip on vibration running spectrum
- comparison between fault-free and damaged belts
- understanding and interpreting frequency spectra
- use of a computerised vibration analyser

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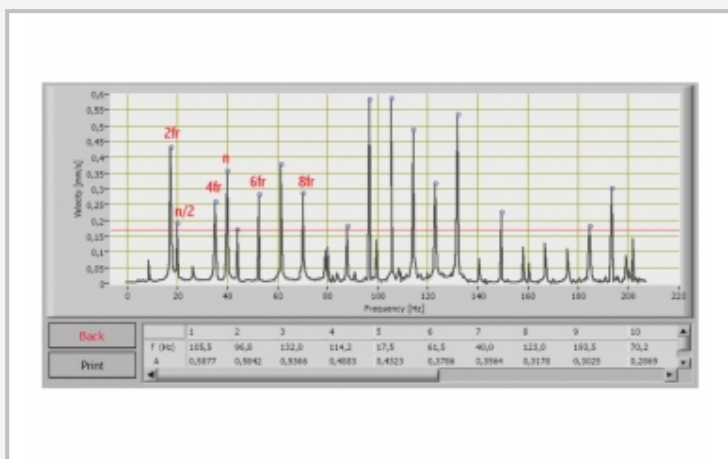
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1 belt, 2 small belt pulley (driving), 3 small eccentric V-belt pulley, 4 clamp set, 5 belt tensioner, 6 tensioning rollers, 7 adjustment of V-belt tension, 8 large V-belt pulley, 9 bearing block



The illustration shows PT 500.14 together with PT 500.05.



Frequency spectrum on the belt drive
belt frequency f_r with harmonic waves $2f_r$, $4f_r$, $6f_r$, drive speed n , $n/2$

Specification

- [1] investigation of the vibrations of belt drives
- [2] dual belt drive with V-belt
- [3] belt drive can be operated with one belt
- [4] individually-adjustable tensioning rollers
- [5] belt drive with radial run-out
- [6] damaged V-belt
- [7] belt pre-tension measuring unit 0...150N
- [8] suitable for applying transverse loads on other systems within the accessory sets of the PT 500 series
- [9] brake and load unit PT 500.05 required for experiments on the belt drive
- [10] accessory set for PT 500 machinery diagnostic training system
- [11] stackable storage system to house the components

Technical data

- V-belt pulleys
- large: $\varnothing=125\text{mm}$
 - small: $\varnothing=63\text{mm}$
 - small, eccentric: $\varnothing=63\text{mm}$

Axle centres: 300mm

- V-belt
- SPZ, approx. 10mm wide
 - belt length: 912mm

LxWxH: 600x400x170mm (storage system)
Weight: approx. 6kg

Scope of delivery

- 3 V-belts
- 3 belt pulleys
- 1 tensioning roller set
- 1 belt pre-tension measuring unit
- 1 storage system with foam inlay
- 1 manual

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Required accessories

052.50000	PT 500	Machinery diagnostic system, base unit
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Optional accessories

052.50004	PT 500.04	Computerised vibration analyser
052.50005	PT 500.05	Brake & load unit