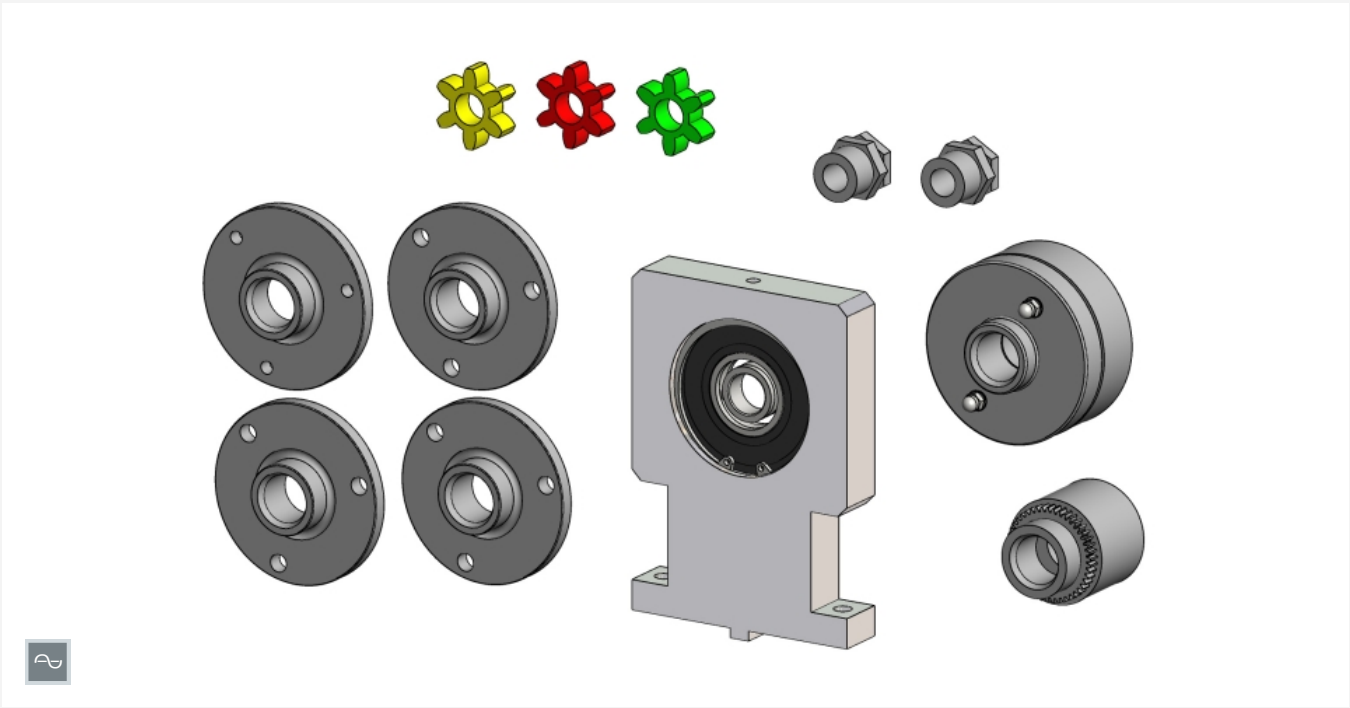
# PT 500.13
## Couplings kit



### Description

- **vibration analysis of couplings**
- **radial run-out, axial run-out and pitch fault**
- **properties of different coupling types: pin coupling, curved teeth coupling, flange coupling, claw coupling**

Rotating machine elements are interconnected by way of couplings. A coupling exhibiting production or assembly faults generates machine vibrations which can be analysed to give an indication of specific faults or damage.

The PT 500.13 accessory set can be used to simulate various faults and investigate their effects on vibration behaviour. The properties of various coupling types can also be compared. The curved teeth, pin, flange and claw coupling types are investigated. The couplings are installed between the motor and the shaft. The PT 500.05 load unit will also be required to investigate the behaviour of the couplings under load.

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 is required. It includes all the necessary sensors, a measuring amplifier and analysis software to record the vibration phenomena.

### Learning objectives/experiments

- effects of alignment errors on different coupling types
  - pin coupling with offset
  - claw coupling with offset
- effects of production faults such as radial run-out axial run-out and pitch fault, on the running of the machine
  - flange coupling with no fault
  - flange coupling with radial run-out
  - flange coupling with axial run-out
  - pin coupling with no fault
  - pin coupling with pitch fault
- identification of coupling faults from the vibration signal
- load dependency of running behaviour
- influence of gear rim hardness on claw couplings
- comparison of curved teeth, pin, flange and claw couplings
- understanding and interpreting frequency spectra
- use of a computerised vibration analyser

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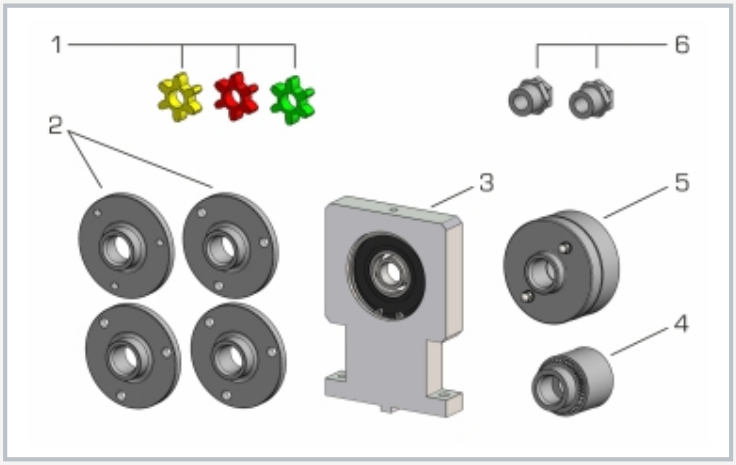
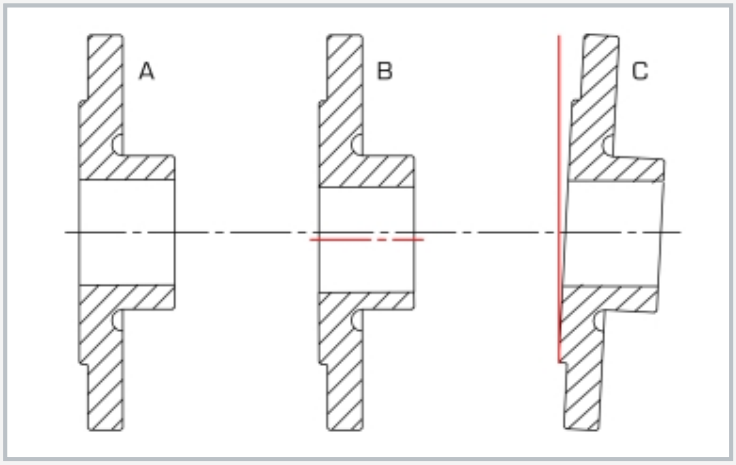
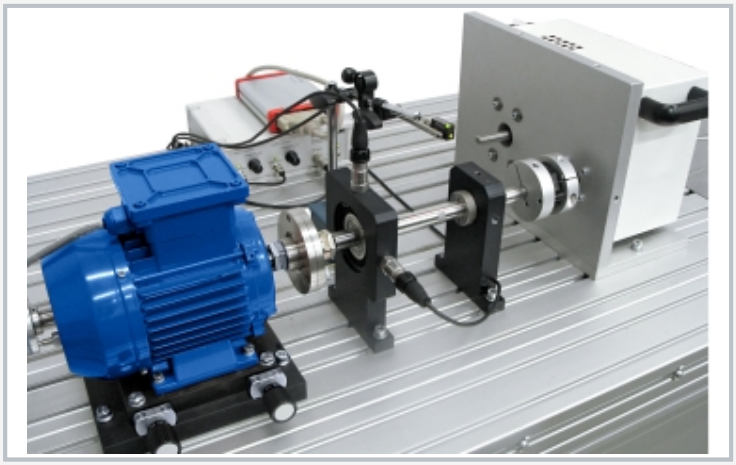



1 coupling stars, 2 flange coupling, 3 bearing block with elastic bearing, 4 curved teeth coupling, 5 pin coupling, 6 clamping set




Flange coupling halves: A without fault, B eccentricity, C wobble



The illustration shows PT 500.13 together with PT 500, PT 500.01, PT 500.05 and PT 500.04.

### Specification

[1] investigation of the vibration behaviour of various coupling types with and without faults
[2] curved teeth coupling
[3] 3 different coupling stars for the elastic claw coupling of the base unit PT 500
[4] flange coupling with no fault
[5] flange coupling with radial run-out
[6] flange coupling with axial run-out
[7] pin coupling with and without pitch fault
[8] experimental setup can be used with brake and load unit PT 500.05
[9] accessory set for PT 500 machinery diagnostic training system
[10] stackable storage system to house the components

### Technical data

Pin coupling
- 1x centric pin
- 1x eccentric pin
  - eccentricity of pin: 1mm
- max. pitch fault: 180° ±1,909°

Coupling stars for claw coupling
- 98 Shore A (red)
- 92 Shore A (yellow)
- 64 Shore D (green)
- 80 Shore A (blue, included in PT 500)

Flange coupling
- radial run-out (centre offset): 0,2mm
- axial run-out: 0,4 ±0,1mm

LxWxH: 400x300x170mm (storage system)
Weight: approx. 6kg

### Scope of delivery

| | |
|---|---|
| 1 | curved teeth coupling |
| 1 | flange coupling with no fault |
| 1 | flange coupling with radial run-out |
| 1 | flange coupling with axial run-out |
| 1 | pin coupling with adjustable pitch fault |
| 3 | coupling stars |
| 1 | bearing block |
| 1 | set of tools |
| 1 | storage system with foam inlay |
| 1 | manual |

# PT 500.13
## Couplings kit

Required accessories

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

Optional accessories

| | |
|---|---|
| PT 500.05 | Brake & load unit |
| PT 500.01 | Laboratory trolley |