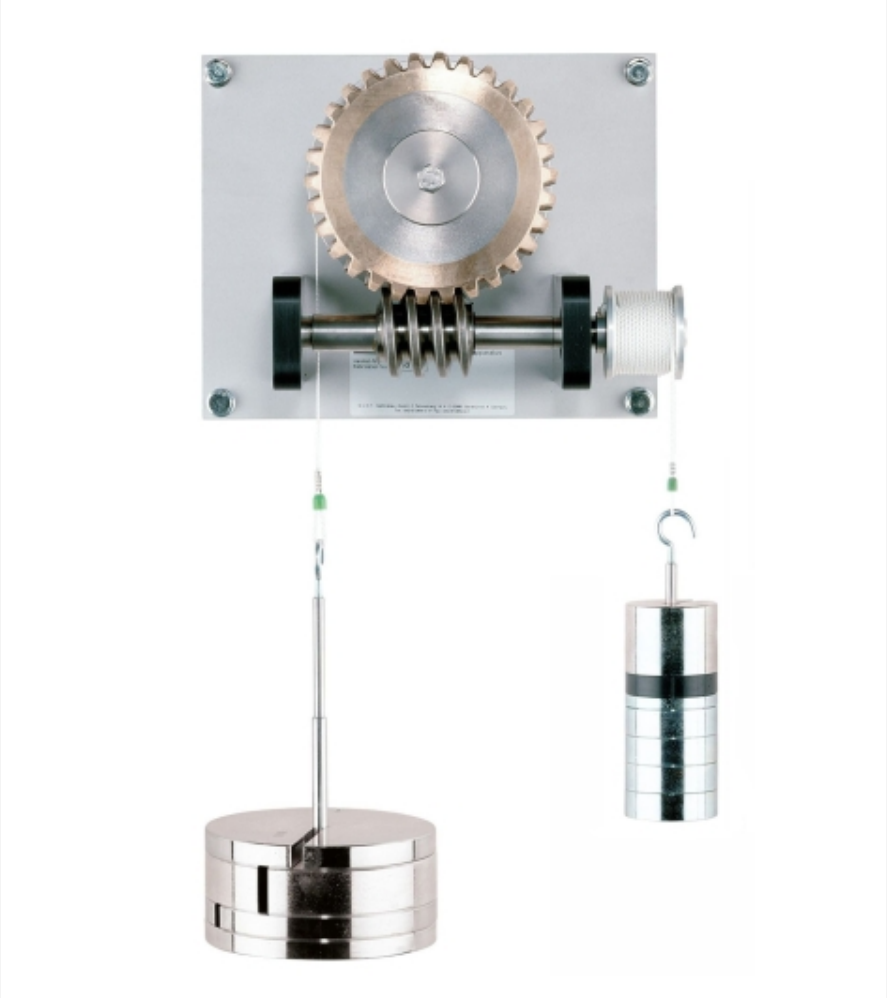
TM 124
Worm gear unit



Description

■ design and principle of worm gears

Worm gears are a category of helical rolling gears that are classified as transmission or conversion elements within machine elements. This type of gear comprises the usual driving worm and the driven worm wheel. Worm gears are quiet and have a damping effect. They are smaller and easier to operate than spur gears or bevel gears of the same performance and gear ratios.

The TM 124 experimental unit is used to study their torque ratios and efficiency. The transmission ratio of the gear can be determined. The basic concepts of toothing such as tooth number and gear number, module, pitch and centre distance are illustrated.

The worm wheel and worm are mounted on ball bearings. The forces are generated by weights and can be varied quickly and easily.

Learning objectives/experiments

- development of the main variables and relationships in a worm gear
  - ▸ investigation of transmission ratio, torque, friction and self-locking
  - ▸ determine the efficiency

Specification

[1] function and design of worm gears
[2] bronze worm wheel
[3] steel worm
[4] 2 aluminium cable drums
[5] worm, worm wheel and pulleys mounted on ball bearings
[6] anodised aluminium base plate

Technical data

Cable drum
- worm shaft diameter: Ø=40mm
- worm wheel shaft diameter: Ø=120mm

Worm gear
- centre distance: 80mm
- gear ratio: 30:1
- module: m=4mm
- number of gears: 1
- force transmission: 10

Weights on the worm side
- 1x 50N
- 1x 20N
- 2x 10N
- 1x 10N (hanger with equalising mass)

Weights on worm wheel
- 1x 5N
- 4x 2N
- 1x 1N
- 1x 0,5N
- 1x 0,5N (hanger)

LxWxH: 250x150x200mm
Weight: approx. 22kg

Scope of delivery

1 experimental unit
1 worm
1 worm wheel
1 set of weights
1 set of instructional material