

MT 152

Assembly spur gear



Learning objectives/experiments

- function and design of a helical spur gear unit
- planning and presentation of the assembly process
- assembly and disassembly, including for the purposes of maintenance and repair
- read and understand engineering drawings
- dimensioning exercises, gauging of parts
- familiarisation with various machine elements: ball bearings, shaft seals
- familiarisation with assembly aids and jigs
- material selection criteria

Description

- **practical assembly kit based on a spur gear unit**
- **broad scope of learning with interdisciplinary problems**
- **part of the GUNT-Practice Line for assembly, maintenance and repair**

Gears transfer rotary motion. They adapt the torques and speeds of a consumer drive according to demand.

The MT 152 unit is a spur gear unit with helical gear wheels. The gear is single stage and has a fixed transmission ratio (fixed gear unit). It is a standalone gear unit, i.e. a self-contained transmission in its own gear housing. Self-contained gear units are usually arranged between the motor and the driven machine, or are used as installation kits in machines.

By contrast, open-running gear-wheel pairs forming part of a machine are termed non-self-contained gears.

Helically cut gear wheels run more smoothly and quietly than straight-toothed gears because the gear teeth intermesh gradually and multiple teeth are engaged. They are suitable for higher speeds, and can withstand greater loading than comparable straight-toothed gears.

The MT 152 assembly kit is part of the GUNT-Practice Line for assembly, maintenance and repair, which has been designed for technical colleges and company training centres. The close link between theory and practice-based learning content is evident.

The assembly and disassembly processes can be completed easily within standard lesson times. Only basic tools are required for assembly, all of which are supplied with the kit. The fit seatings of the gear unit are designed to allow the complete assembly process to be performed by hand.

The unit is of most benefit in teaching if two or three students work together in a small group. The group has a defined task to perform, with clear assignments to complete.

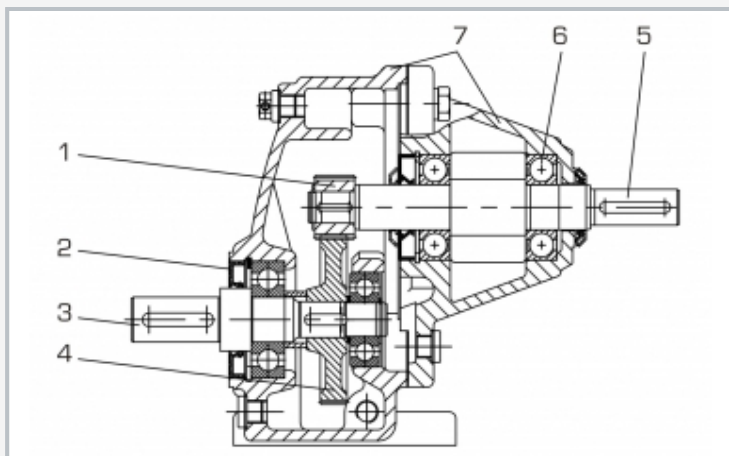
The comprehensive instructional material focuses on practical needs. It includes a complete set of drawings with a general arrangement drawing, parts list and single-part drawings.

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The illustration shows the assembled spur gear unit



1 pinion, 2 shaft seal, 3 driven shaft, 4 gear wheel, 5 drive shaft, 6 ball bearings, 7 housing parts

Specification

- [1] assembly kit of a spur gear unit
- [2] part of the GUNT-Practice Line for assembly, maintenance and repair
- [3] disassembled spur gear with set of small parts and 4 assembly jigs, housed in a sturdy case with foam insert
- [4] helical spur gear wheels
- [5] gear unit comprising input housing, pedestal housing, input and output shafts, input gear and output pinion, as well as bearings

Technical data

Gear dimensions without shaft connections

■ LxWxH: 160x135x175mm

Transmission ratio

■ pinion: number of teeth: $z=24$, real pitch module: $m=1\text{mm}$

■ gear wheel: number of teeth: $z=68$, real pitch module: $m=1\text{mm}$

■ transmission ratio: $i=2,83$

Max. drive torque: 54Nm at 494min^{-1}

Materials

■ housing: cast iron

■ shafts: tempered steel

■ spur wheels: alloyed case-hardened steel

Shaft connections

■ drive: DxD: $16 \times 40\text{mm}$

■ driven: DxD: $20 \times 40\text{mm}$

LxWxH: $600 \times 450 \times 180\text{mm}$ (case)

Weight: approx. 18kg

Scope of delivery

- 1 complete assembly kit of a spur gear unit
- 1 set of tools
- 1 set of instructional material