

MT 186

Assembly & maintenance exercise: gear pump



The illustration shows the tool box with kit and tools. The fully assembled pump is shown in the foreground.

Description

- **practical exercise on the assembly and maintenance of a gear pump**
- **comprehensive and well-structured instructional material**

Gear pumps are piston-type rotary pumps which operate on the positive-displacement principle. They are simple in design, and easy to handle. Gear pumps can generate operating pressures of up to 40bar and flow rates of up to 60m³/h. Their pulse-free delivery increases linearly with speed. High-viscosity media (oils, paints, adhesives, etc.) can also be pumped. Gear pumps are sensitive to hard solid-matter particles in the flow.

The materials used in the construction of the pump presented here make it resistant to most corrosive and aggressive chemicals. The plastic / metal gear wheel pairing results in relatively quiet running.

The MT 186 kit forms part of the GUNT assembly, maintenance and repair practice line designed for training at technical colleges and in company training centres.

A close link between theory and practice is key to the learning content. The kit is ideally suited to project-based learning with a particular emphasis on 'hands-on' work. Independent working by the students is assisted and encouraged. Performing exercises in a small team offers a useful learning format.

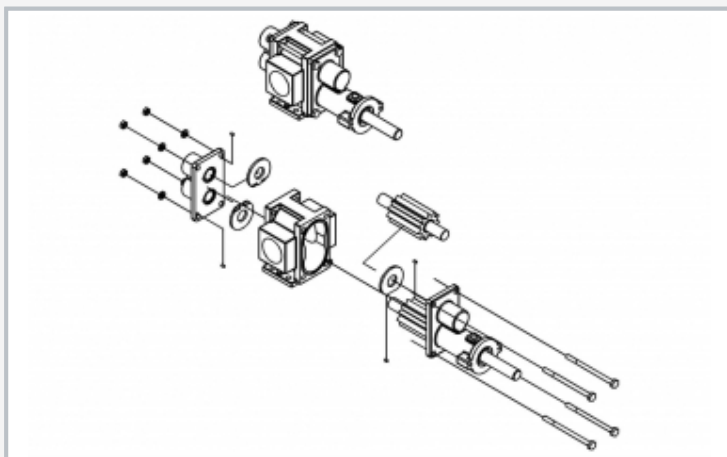
MT 186 enables a typical gear pump to be assembled and maintained. Students become familiar with all the pump components and their modes of operation. The parts are clearly laid out in a tool box. Systematic assembly and disassembly of a pump is practiced. The instructional material details the individual steps involved in the exercise, and provides additional information on the areas of application, mode of operation and design of the pump.

Learning objectives/experiments

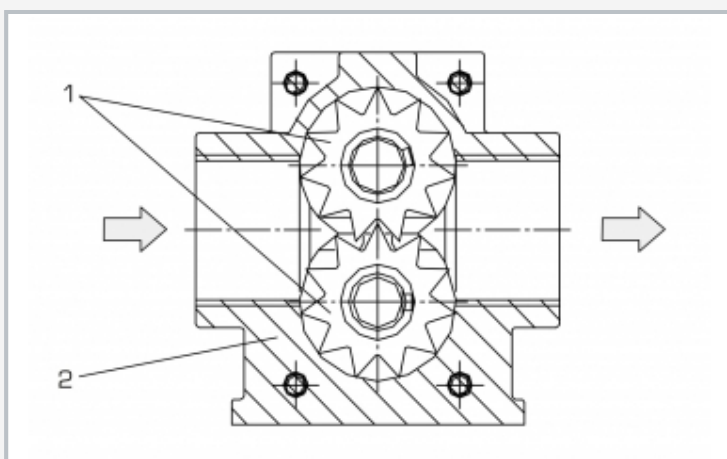
- design and function of a gear pump and its components
- assembly and disassembly for maintenance and repair purposes
- replacing components (e.g. seals)
- troubleshooting, fault assessment
- planning and assessment of maintenance and repair operations
- reading and understanding engineering drawings and operating instructions

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Exploded-view drawing of the gear pump



Function of a gear pump: 1 gear pair, 2 housing



Assembly of the centrifugal pump: assembling the driving shaft

Specification

- [1] learning concept for maintenance and repair exercises on a gear pump
- [2] relatively quiet running owing to the plastic/metal gear wheel pairing
- [3] pump shaft: sealing with floating ringseal
- [4] suitable for solids-free media with dynamic viscosity up to 0...10000mPas
- [5] pump parts and tools housed in a tool box
- [6] the kit forms part of the GUNT assembly, maintenance and repair practice line

Technical data

Gear pump

- power consumption: max. 2kW
- max. flow rate: 80L/min
- max. head: 70m
- motor speed: 300...1750min⁻¹
- intake connection thread: R 1 1/4"
- delivery connection thread: R 1 1/4"
- pump materials
- housing: stainless steel 316 (1.4401)
- gear wheels: stainless steel 316 (1.4401)/PTFE
- wearing plates: PTFE
- bearings: PTFE
- speed-dependent viscosities
- n=300min⁻¹: 10000mPas,
- n=1750min⁻¹: 3000mPas

LxWxH: 690x360x312mm (tool box)

Weight: approx. 20kg

Scope of delivery

- 1 complete kit of a gear pump
- 1 set of tools, consisting of: 2 combination wrenches size 11; 1 hexagonal screwdriver, size 3/32"; 2 screwdrivers; 1 round wire snap ring for shafts
- 1 roll of PTFE sealing tape
- 1 box for small parts
- 1 tool box with foam inlay
- 1 set of instructional material, consisting of: technical description of system, complete set of drawings with individual parts and parts list, description of maintenance and repair operations, suggested exercises; 1 operator's manual for the industrial pump