

High performance series

## Micro annular gear pump m zr<sup>®</sup>-2505

For industrial production and process technology



- **High dosage precision**  
precision CV < 1 % at low volumes
- **High differential pressures**  
achievable also for low viscosity liquids
- **Compact dimensions**  
length 140 mm, including controller
- **Broad viscosity range**  
methanol, water, solvents, adhesives, grease, gel
- **Low pulsation delivery, low shear stress**  
rotary micro annular gear technology
- **Long service life**  
wear-resistant tungsten carbide
- **Precision motor and sophisticated control**  
DC-servomotor with integrated microcontroller

The micro annular gear pump m zr-2505 covers the flow rate range 0.0015 - 9 ml/min. To the main assets of the device belong high precision, low pulsation, low volume dosage even of non-lubricating liquids or at high

pressures, compact design and an integrated microcontroller. The pump allows dosage in a broad viscosity range and shows small, economic dimensions. The m zr-2505 targets applications in industrial production and process

technology. The pump has been designed for continuous delivery and discrete dosage of water, watery solutions, solvents, methanol, oil, lubricants, adhesives, inks and paints as well as other high viscosity liquids.

### Applications

- Chemical processing
- Industrial and plant engineering
- Packaging
- Medical and pharmaceutical industry
- Mini plant technology
- Spray technology
- Dispensing of adhesives
- Ink and paint dosage
- Vacuum applications

Even if single parameters are within the indicated performance range of technical data, certain parameter combinations may not be achievable. Single parameters may exceed their indicated performance range under adequate circumstances. For detailed evaluation please contact HNP Mikrosysteme. Actual performance may vary. Specifications are subject to change without notice.

### Technical data

Flow rate	0.0015 – 9 ml/min (min. 10 µl/h *)
Smallest dosage volume	0.25 µl
Displacement volume	1.5 µl
Differential pressure range	0 – 2.5 bar (36 psi) for water, 0 – 15 bar (217 psi) for oil
Max. inlet pressure	5 bar (73 psi); 10 bar * (145 psi *)
Liquid temperature range	-5 ... +60 °C (-20 ... +150 °C *)
Viscosity range	0.3 – 25,000 mPas
Dosage precision	< 1 % Coefficient of Variation CV
Pulsation	< 1.5 %
Speed range	1 – 6000 rpm
Fluid connection	1/4"–28 UNF, frontal; optional: inlet 1/8" NPT internal thread, lateral
Wetted parts	stainless steel 316L (1.4404, 1.4435), tungsten carbide Ni-based; shaft seal: graphite-reinforced PTFE, 316L static seals: FPM, optional: EPDM, FFPM
Motor	DC-servomotor, 24 V DC, 44 W
Controller	integrated 16-bit microcontroller
Interface	0–10 V, RS-232, 1 digital input/output
Dimensions (L x W x H)	140 x 45 x 65 mm
Weight	approx. 780 g

Customized solutions on request. \* with optional by-pass module, fluidic seal module, heat insulation module, heating module

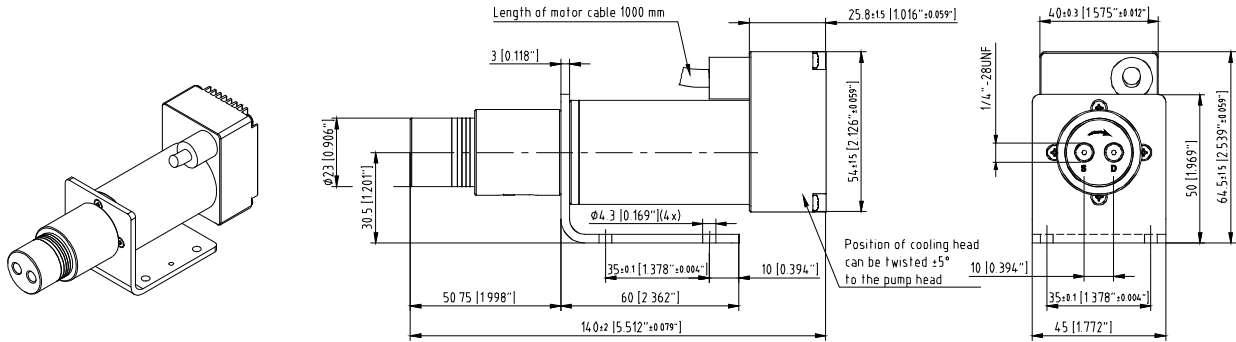
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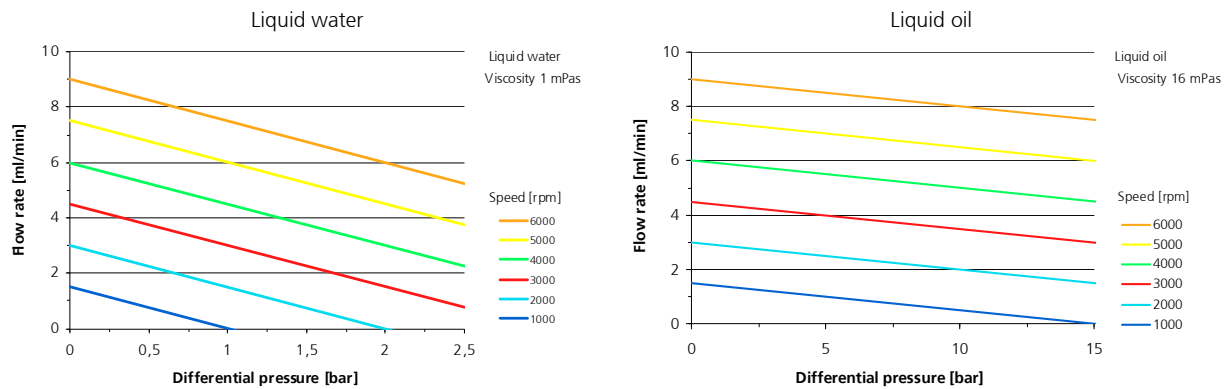
e-mail [info@hnp-mikrosysteme.de](mailto:info@hnp-mikrosysteme.de)  
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## Dimensions

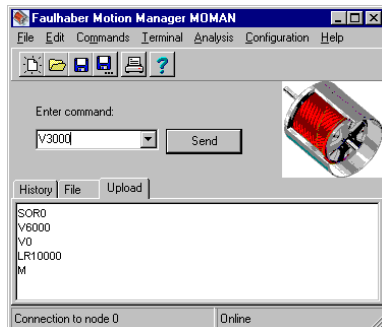


Subject to technical changes.

## Flow charts



## Control and software



- speed and position control for continuous and discrete dispensing tasks
- terminal box S-G05 with potentiometer for speed control
- power supply with DIN 45323 socket or screw terminal
- RS-232 9-pole SUB-D connector for direct connection to a PC or a SPC
- analog input 0-10 V, 0 (4)-20 mA with screw terminal
- EEPROM program memory
- temperature and current limiting
- simple ASCII command language for the parameter setting (velocity profiles) and programming of the motor
- programming with Windows® software »Motion Manager«
- online dynamic drive analysis
- simultaneous operation of up to 255 pumps with additional multiplexer modules

## Item number

10 01 02 05

10 01 02 06

pump mzr-2505, inlet and outlet 1/4"–28 UNF, frontal;  
terminal box S-G05, null-modem cable and software »Motion Manager«

pump mzr-2505 S/F, inlet 1/8" NPT, lateral; outlet 1/4"–28 UNF, frontal;  
terminal box S-G05, null-modem cable and software »Motion Manager«

## Accessories

*Liquid supply accessories*

*Fluidic seal module*

*Heat insulation module*

*Heating module*

*Console drive module*

*Multiplexer module*

threaded fluid connectors, tubes, filters etc.

use with liquids sensitive to air or water or for vacuum applications

use for increased liquid temperature of up to 150 °C

active heating of the pump head up to 150 °C operating temperature

diecast aluminum chassis mzr-S05 with control elements and display

simultaneous operation of up to 255 pumps with a single RS-232 interface

Micro annular gear pumps (and housings) are protected by assigned patents: EP 1115979 B1, US 6,520,757 B1, EP 852674 B1, US 6,179,596 B1, EP 1354135, US 7,698,818 B2. Patents pending DE 10 2011 001 041.6, PCT/IB2011/055108, EP 11 81 3388.3, US 13/884,088, CN 2011 8006 5051.7, HK 13 11 2934.9, DE 10 2011 051 486.4, PCT/EP2012/061514, EP 12 728264.8, US 9,404,492 B2, CN 2012 8003 8326.2. In the US, Europe and China additional patents are pending. mzr®, MoDoS®, µ-Clamp®, HNPM® are registered German trademarks of HNP Mikrosysteme GmbH.