

## Hermetic, chemically inert pump series

### Micro annular gear pump mzm<sup>®</sup>-6355

For mini plant and microreaction technology



- **High resistance to corrosion**  
oxidizing and reducing media, acids and bases
- **Long service life**  
wear-resistant ceramic components
- **Hermetically sealed**  
magnetic coupling (NdFeB)
- **Compact, chemically inert pump head**  
146 mm long, alloy C22, SSiC, Al<sub>2</sub>O<sub>3</sub> and ZrO<sub>2</sub> ceramics
- **Precision motor and user-friendly control**  
dynamic DC-servomotor with encoder and microcontroller, RS-232 or CAN-Bus, analog, I/O
- **Precise dosage, low pulsation**  
rotary micro annular gear technology, no valves

The mzm-6355 micro annular gear pump of the hermetic and chemically inert series is, considering its almost universal suitability for aggressive and corrosive media, a revolution in the pump technology. Its rotors and functional ele-

ments being made of ceramics, the pump shows the highest chemical resistance and an outstanding resistance to wear. Thanks to the use of SSiC (pressureless sintered silicon carbide) as bearing and shaft material, a

magnetic coupling, and case components made out of alloy C22 (DIN 2.4602), this pump will take up any challenge in the chemical industry applications.

#### Application fields

- Mini plant technology
- Microreaction technology

#### Technical data

Flow rate	0.024 – 144 ml/min
Smallest dosage volume	15 µl
Displacement volume	24 µl
Max. system pressure	80 bar (1160 psi) (inlet pressure+differential pressure)
Differential pressure range	0 – 15 bar (1 mPas); 0 – 40 bar (> 16 mPas)
Liquid temperature range	-5 ... +60 °C (-20 ... +150 °C *)
Viscosity range	0.3 – 1000 mPas
Dosage precision	< 1 % Coefficient of variation CV
Pulsation	< 1.5 %
Speed	1 – 6000 rpm
Fluid connection	1/8" NPT internal thread, lateral
Wetted parts	Pump case alloy C22 (2.4602), optional: stainless steel 316L; seals FFKM (Kalrez <sup>®</sup> Spectrum <sup>™</sup> 6375), optional: FPM, EPDM; shaft/bearing sintered silicon carbide (SSiC); bearing and wetted functional parts Al <sub>2</sub> O <sub>3</sub> ceramics; rotors partially stabilized ZrO <sub>2</sub> , optional: tungsten carbide Ni-based
Coupling	8-pole connector NdFeB magnetic coupling
Drive and control	DC-servomotor, 24 V DC, 44 W, with microcontroller
Interface	0–10 V, 0 (4) –20 mA, RS-232, 1 digital input/output, optional: CAN-Bus
Dimensions (L x W x H)	146 x 70 x 72 mm
Weight	approx. 1650 g

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.

Customized version on request.

\* Additional modules / depending on operating parameters

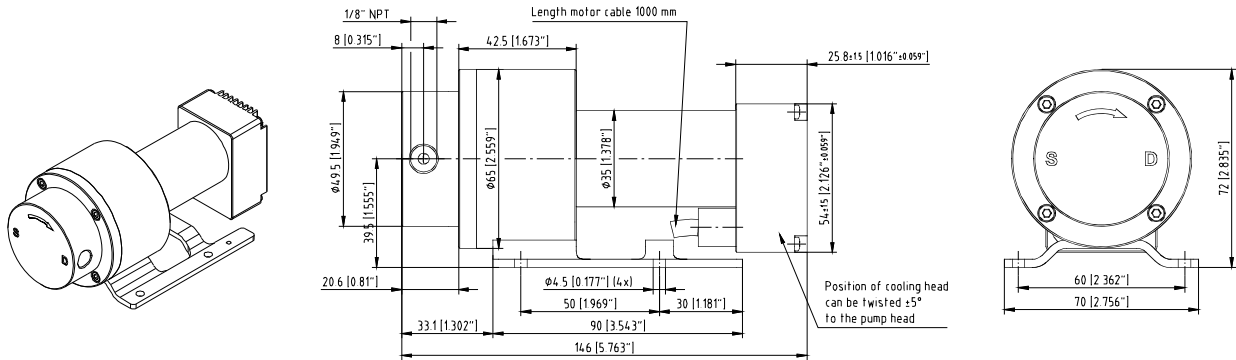
#### Contact

HNP Mikrosysteme GmbH  
Bleicherufer 25 · D-19053 Schwerin

phone +49 385 52190-301  
fax +49 385 52190-333

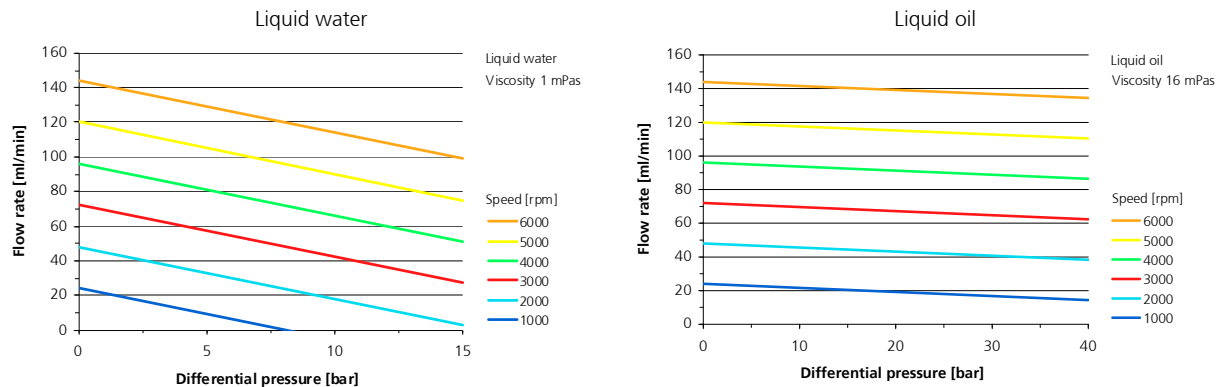
e-mail [info@hnp-mikrosysteme.de](mailto:info@hnp-mikrosysteme.de)  
<http://www.hnp-mikrosysteme.de>

## Dimensions

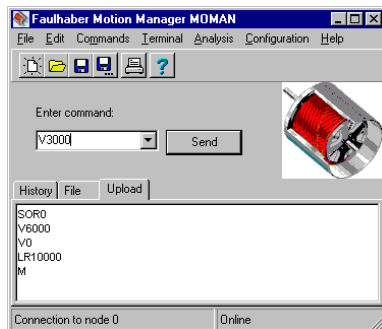


Subject to technical changes.

## Flow charts



## Control and software



- speed and position control for continuous and discrete dispensing tasks
- RS-232 connection interface to PC or SPC, optional CANopen
- analog input 0-10 V, 0 (4)-20 mA
- monitoring of voltage, temperature and power supply to the motor
- terminal box with potentiometer for speed control, 9-pole interface plug, CE-conform
- EEPROM program memory
- simple ASCII command language for parameter setting (speed profile) and programming of the motor
- programming with Windows® software »Motion Manager«
- online dynamic drive analysis
- power supply with a plug socket according to DIN45323 or a terminal screw
- simultaneous operation of up to 255 pumps via RS-232 with additional multiplexer modules

## Item number

13 04 03 01	pump mzr-6355-cy, materials: alloy C22, Al <sub>2</sub> O <sub>3</sub> , stabilized ZrO <sub>2</sub>
13 04 02 01	pump mzr-6355-cs, materials: stainless steel 316L, Al <sub>2</sub> O <sub>3</sub> , stabilized ZrO <sub>2</sub>
13 04 04 01	pump mzr-6355-hy, materials: alloy C22, tungsten carbide Ni-based
13 04 01 01	pump mzr-6355-hs, materials: stainless steel 316L, tungsten carbide Ni-based

## Optional equipment

*Liquid supply accessories*  
*Heat insulation module*  
*Multiplexer module*

threaded fluid connectors, tubes, filters etc.  
enables to keep the temperature of the liquid at up to 100 °C (optional 150 °C)  
simultaneous operation of up to 255 pumps with a common 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®, HNPMP® are registered German trademarks of HNP Mikrosysteme GmbH. Kalrez® Spectrum™ is a registered trademark of DuPont.