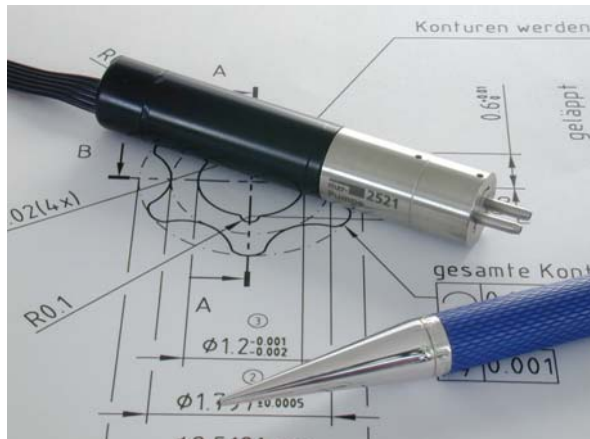


Low pressure series

## Micro annular gear pump mzr®-2521

Dosing pump for analytical instrumentation



- **Compact dimensions**  
diameter 13 mm, length 75 mm
- **Small dosage volumes, high flow rates**  
smallest volume 0.25 µl, flow up to 9 ml/min
- **High dosage precision**  
precision CV 1 % at low volumes
- **Long service life**  
wear-resistant tungsten carbide or ceramics
- **Low pulsation delivery, low shear stress**  
rotary micro annular gear technology

The compact micro annular gear pump mzr-2521 of the low pressure series is an innovative pump concept for use in analytical instrumentation. The pump generates a low pulsation, highly

precise flow featuring low shear stress. It dispenses at a high precision the lowest volumes in microliter range. Due to its compact design small dimensions have been achieved.

The pump is suitable for dosage of low viscosity liquids such as deionized water, watery solutions, methanol, solvents, oil and lubricants.

### Applications

- Analytical instrumentation
- Fuel cells
- Laboratory automation
- In vitro diagnostics

### Technical data

Flow rate	0.15 – 9 ml/min (min. 0.0015 ml/min *)
Smallest dosage volume	0.25 µl
Displacement volume	1.5 µl
Differential pressure range	0 – 1.5 bar (22 psi)
Max. inlet pressure	1 bar (15 psi)
Liquid temperature range	-20 ... +60 °C
Viscosity range	0.3 ... 100 mPas (max. 1000 mPas *)
Dosage precision	1 % Coefficient of Variation CV
Speed range	100 – 6000 rpm (min. 1 rpm *)
Fluid connection	slip fittings, outside diameter 2 mm optional: manifold assembly M2.1
Wetted parts	stainless steel 316L, ceramics, tungsten carbide Ni-based, epoxy resin, optional: alloy C22 (2.4602) instead of stainless steel, ceramics instead of tungsten carbide; shaft seal: graphite-reinforced PTFE, stainless steel 316L, optional: alloy C276 (2.4819) instead of stainless steel; static seals: FPM, optional: EPDM, FFKM
Motor	DC-motor with graphite brushes, assigned power rating 3 W, nominal voltage 18 V, digital magnet encoder 16 counts per turn
Electrical connection	10-pole connector
Dimensions	diameter 13 mm, length 75 mm
Weight	approx. 50 g (manifold assembly approx. 65 g)

Customized solutions on request. \* with optional high resolution encoder, gear box

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.

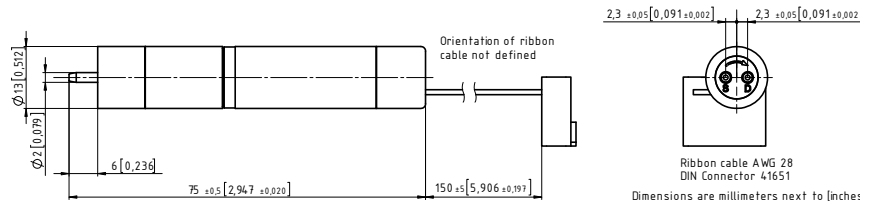
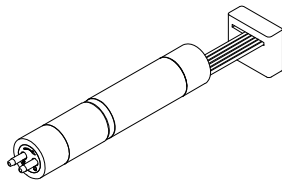
### Contact

HNP Mikrosysteme GmbH  
Bleicherufer 25 · D-19053 Schwerin

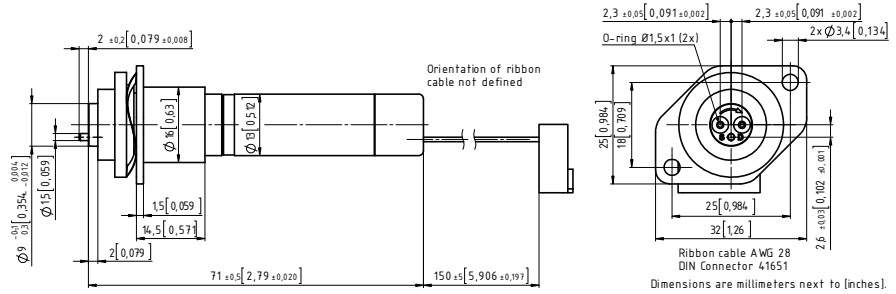
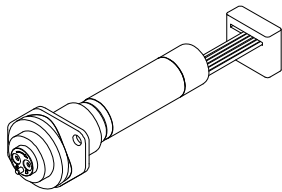
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## Dimensions



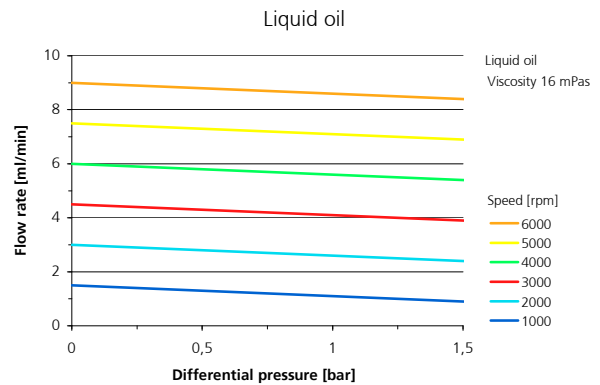
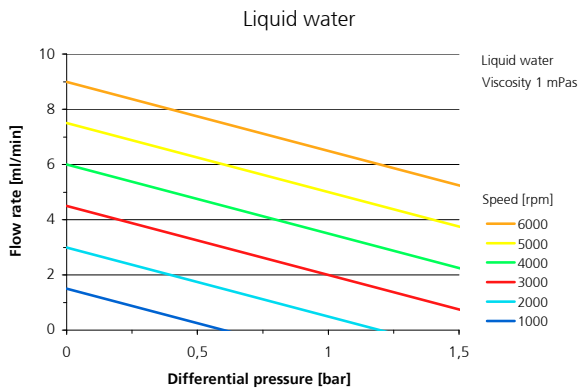
Configuration with slip fittings OD 2 mm



Configuration with manifold assembly M2.1

Subject to technical changes.

## Flow charts



## Accessories

*Liquid supply accessories*

tubes, filters etc.

*Reduction gear*

gears 4.1:1, 17:1, 67:1 reduce speed for low volume dispensing and liquids featuring higher viscosity

*Alternative drives*

motor with digital encoder with 256 impulses/turn for higher uniformity and precision at low speeds

*Control*

S-KG-21: control for continuous delivery

S-ND: programmable microcontroller-based control for continuous delivery and discrete dosage

*Console drive module*

diecast aluminum chassis mzs-S06 for laboratory and testing

*Multiplexer module*

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 852674 B1, US 6,520,757 B1, EP 1354135, US 7,698,818 B2, DE 10 2011 001 041.6, CN 103 348 141 B, CN 103 732 921 B, US 9,404,492 B2. Patents pending: PCT/IB2011/055108, EP 11 81 3388.3, US 13/884,088, HK 13 11 2934.9, DE 10 2011 051 486.4, PCT/EP2012/061514, EP 12 72 8264.8. In the US, Europe and China additional patents are pending. HNPM®, mzs®, MoDoS®, µ-Clamp®, µDispense® are registered German trademarks of HNP Mikrosysteme GmbH.

## Item numbers

11 01 01 03	low pressure series pump mZR-2521-HS-VB with a DC-motor, encoder 16 counts per turn, materials: tungsten carbide Ni-based, stainless steel, fluid connector: slip fittings OD 2 mm
11 01 02 04	low pressure series pump mZR-2521-HS-VB M2.1, with a DC-motor, encoder 16 counts per turn, materials: tungsten carbide Ni-based, stainless steel, fluid connector: manifold assembly M2.1
11 01 02 09	low pressure series pump mZR-2521-CS-FB with a DC-motor, encoder 16 counts per turn, materials: ceramics, stainless steel, fluid connector: slip fittings OD 2 mm
11 01 02 10	low pressure series pump mZR-2521-CS-FB M2.1, with a DC-motor, encoder 16 counts per turn, materials: ceramics, stainless steel, fluid connector: manifold assembly M2.1
11 01 02 11	low pressure series pump mZR-2521-CY-FB with a DC-motor, encoder 16 counts per turn, materials: ceramics, alloy C22/C276, fluid connector: slip fittings OD 2 mm
11 01 02 12	low pressure series pump mZR-2521-CY-FB M2.1, with a DC-motor, encoder 16 counts per turn, materials: ceramics, alloy C22/C276, fluid connector: manifold assembly M2.1