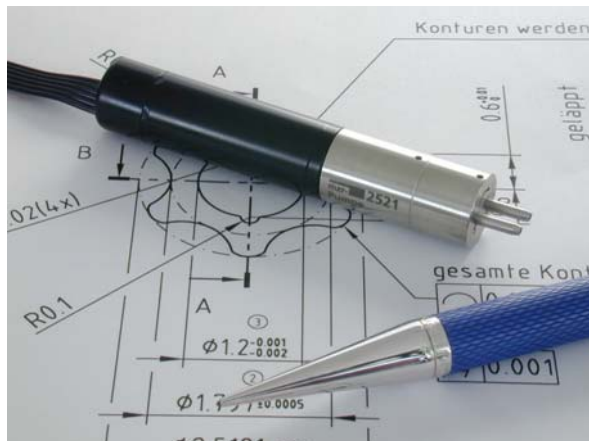


Low pressure series

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
- **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) |
| Pulsation | 1.5 % |
| 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 |
| Wetted parts | stainless steel 316L, ceramics, tungsten carbide Ni-based, epoxy resin shaft seal: graphite-reinforced PTFE, stainless steel 316L static seals: FPM, optional: EPDM, FFFPM |
| 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. 56 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 solutions on request. * with optional high resolution encoder, gear box

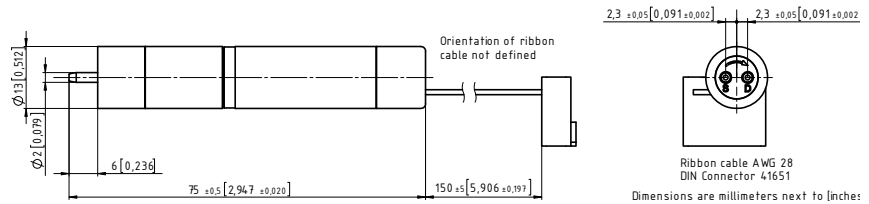
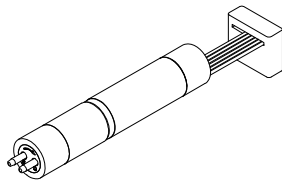
Contact

HNP Mikrosysteme GmbH
Bleicherufer 25 · D-19053 Schwerin

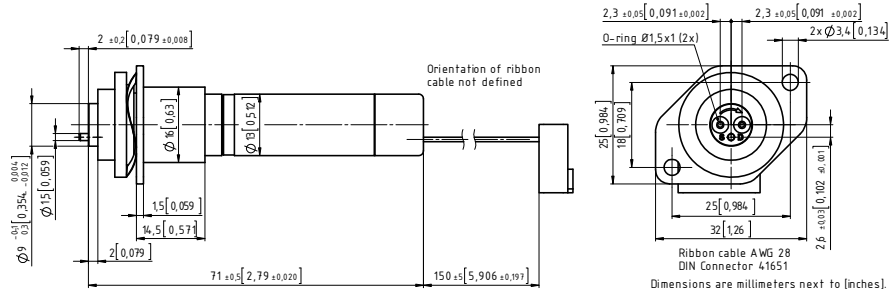
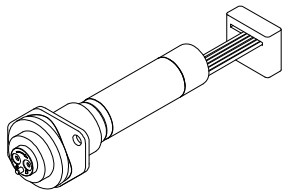
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Dimensions



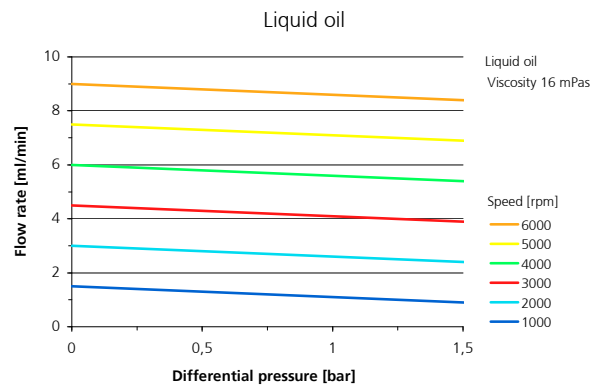
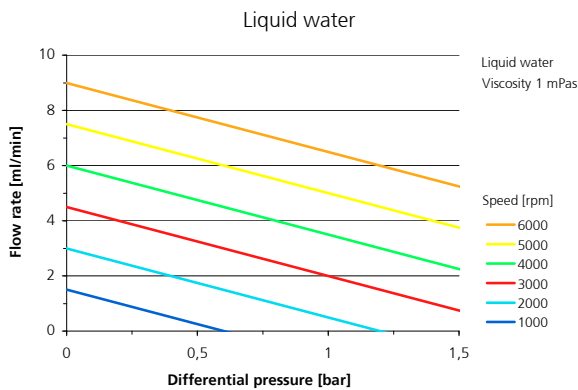
Configuration with slip fittings OD 2 mm



Configuration with the manifold assembly M2.1

Subject to technical changes.

Flow charts



Item number

| | |
|-------------|-------------------------------------------------------------------------------------------------------------------------|
| 11 01 01 03 | low pressure series pump mZR-2521 with a DC-motor, encoder 16 counts per turn, fluid connector: slip fittings OD 2 mm |
| 11 01 02 04 | low pressure series pump mZR-2521 M2.1, with a DC-motor, encoder 16 counts per turn, fluid connector: manifold assembly |

Accessories

| | |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Liquid supply accessories</i> | tubes, filters etc. |
| <i>Reduction gear</i> | gears 4.1:1, 17:1, 67:1 reduce speed for low volume dispensing and liquids featuring higher viscosity |
| <i>Alternative drives</i> | motor with digital encoder with 256 impulses/turn for higher uniformity and precision at low speeds |
| <i>Control</i> | S-KG-21: control for continuous delivery S-ND: programmable microcontroller-based control for continuous delivery and discrete dosage |
| <i>Console drive module</i> | diecast aluminum chassis mZR-S06 for laboratory and testing |
| <i>Multiplexer module</i> | 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®, HNPMP® are registered German trademarks of HNP Mikrosysteme GmbH.