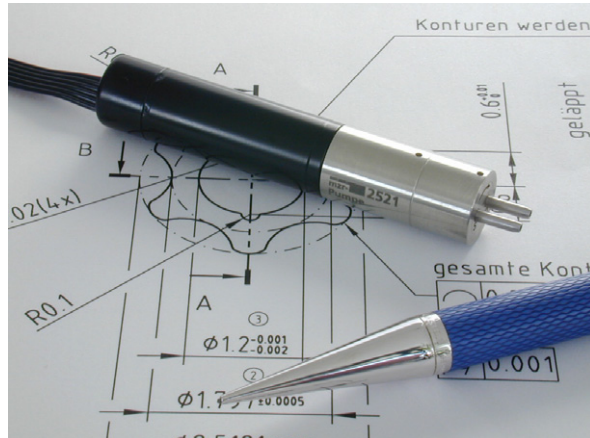


Low pressure series

## Micro annular gear pump mzr<sup>®</sup>-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
- **Pulseless 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 pulseless, 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 technology
- 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 %
Operating temperature range	-20 ... +60 °C
Viscosity range	0.3 ... 100 mPas (max. 1000 mPas *)
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
Measurements	diameter 13 mm, length 75 mm
Weight	approx. 56 g

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

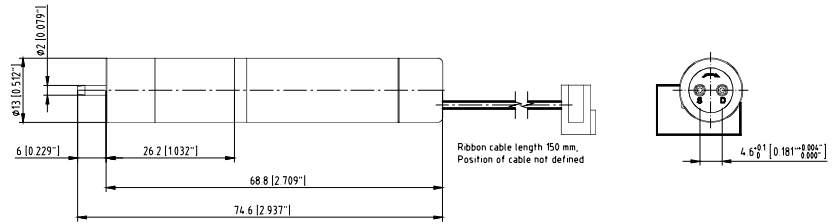
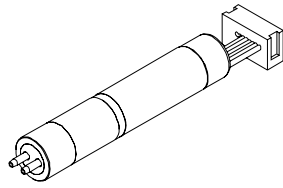
### Contact

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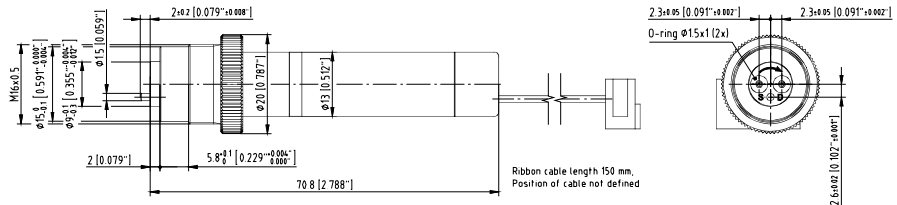
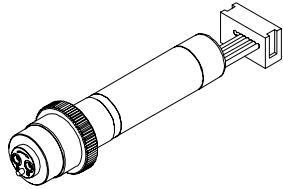
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## Measurements



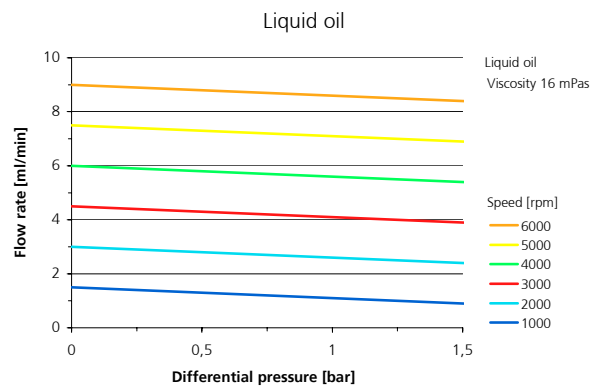
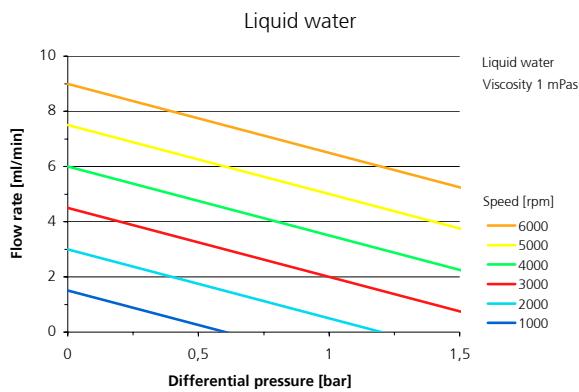
Configuration with slip fittings OD 2 mm



Configuration with the manifold assembly M2

Subject to technical changes.

## Flow charts



## Item number

11 01 01 02	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 03	low pressure series pump mZR-2521 M2, with a DC-motor, encoder 16 counts per turn, fluid connector: manifold assembly

## 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 mZR-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: DE 198 43 161 C2, EP 1115979 B1, US 6,520,757 B1, EP 852674 B1, US 6,179,596 B1, EP 1354135. Patents pending: DE 101 46 793, US 10,466,792, DE 10 2004 052 866. In the US, Europe and Japan additional patents are pending. mZR® is a registered German trademark of HNP Mikrosysteme GmbH.