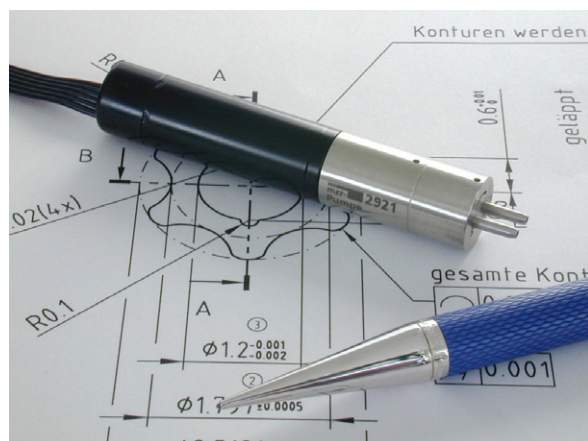


Low pressure series

Micro annular gear pump mzs[®]-2921

Dosing pump for analytical instrumentation



- **Compact dimensions**
diameter 13 mm, length 75 mm
- **Small dosage volumes, high flow rates**
smallest volume 0.5 µl – flow up to 18 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 mzs-2921 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	0.3 – 18 ml/min (min. 0.003 ml/min *)
Smallest dosage volume	0.5 µl
Displacement volume	3 µl
Differential pressure range	0 – 3 bar (44 psi)
Max. inlet pressure	1 bar (15 psi)
Pulsation	6 %
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 with 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, 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
Measurements	diameter 13 mm, length 75 mm
Weight	approx. 56 g

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

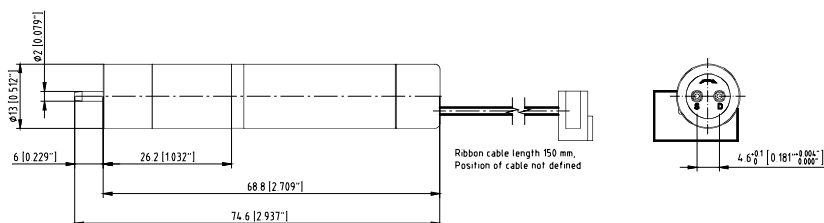
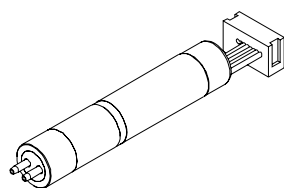
Contact

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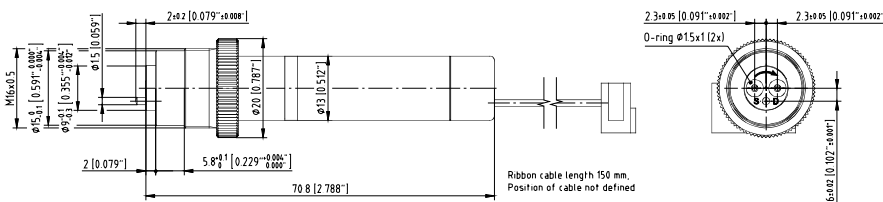
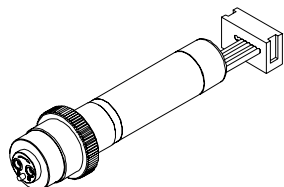
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Measurements



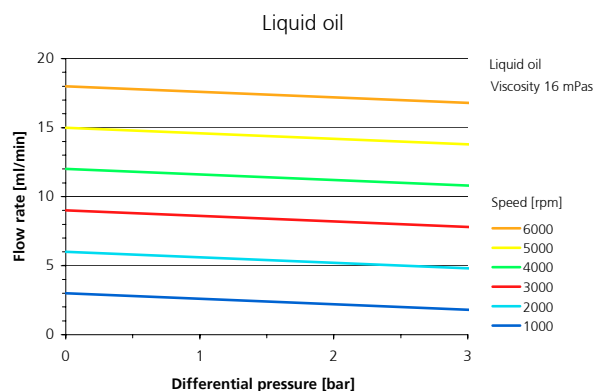
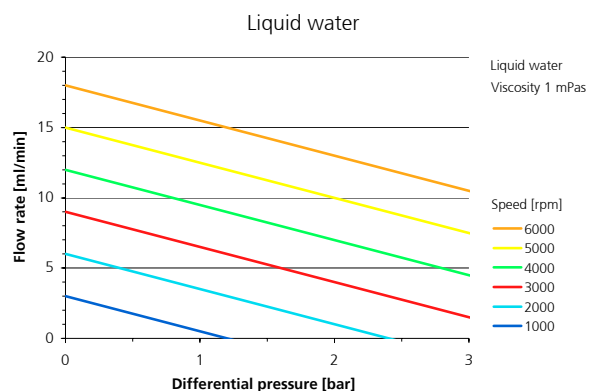
Configuration with slip fittings OD 2 mm



Configuration with manifold assembly M2

Subject to technical changes.

Flow charts



Item number

11 02 01 02

low pressure series pump m2r-2921 with a DC-motor, encoder 16 counts per turn, fluid connection slip fittings OD 2 mm

11 02 02 03

low pressure series pump m2r-2921 M2 with a DC-motor, encoder 16 counts per turn, fluid connection manifold assembly

Accessories

Liquid supply accessories

Reduction gear

Alternative drives

Control

Console drive module

Multiplexer module

tubes, filters etc.

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

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

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

S-KD-21: control for continuous delivery

diecast aluminum chassis m2r-S06 for laboratory and testing

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. m2r® is a registered German trademark of HNP Mikrosysteme GmbH.