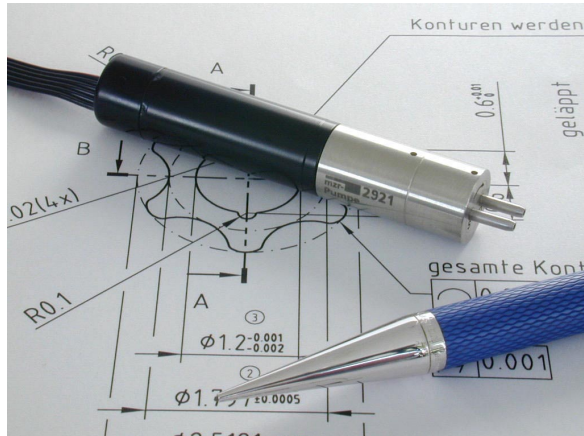


Low pressure series

Micro annular gear pumps m zr[®]-2921

Pump for dosage in analytical instrumentation



- **compact measurements**
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 %
- **high service life**
wear resistant tungsten carbide
- **pulseless delivery – low shear stress**
rotary micro annular gear technology

The compact micro annular gear pump m zr-2921 out of the low pressure series is an attractive and innovative pump option in analytical instrumentation. The m zr-pump generates a pulseless,

highly precise but also dynamic flow with low shear stress. It is capable of dispensing smallest volumes in the micro liter range at high precision. With its compact design smallest measurements can

be achieved. The pumps are suitable for dosage of low viscous liquids such as deionized water, watery solutions, methanol, solvents, oil and lubricants.

Applications

- Analysis technology
- Fuel cells
- Biotechnology
- Laboratory automation
- Micro reaction technology

Technical data

Flow rate	0.003 *– 18 ml/min (min. 10 µl/h *)
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	0.5 ... 100 mPas (max. 1000 mPas *)
Precision	1 % Coefficient of Variation CV
Speed range	1 *– 6000 rpm
Fluid connections	slip fittings with outside diameter 2 mm optional: manifold assembly
Wetted parts	nickel-silver/ stainless steel 316L, ceramics, tungsten carbide Ni-based, epoxy resin shaft seal: graphite reinforced Teflon [®] , 316L static seals: FPM Viton [®] , 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 accessories

Contact

Sanwa Tsusho Co., Ltd.

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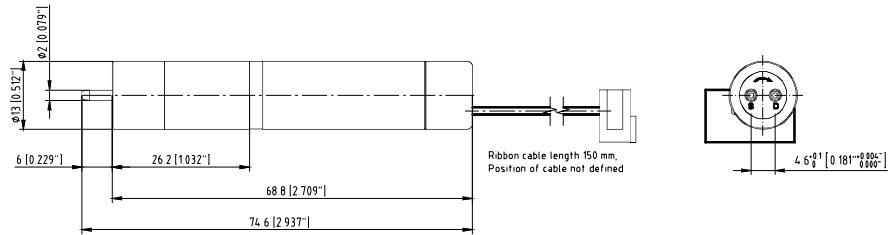
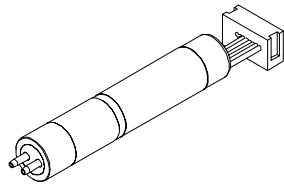
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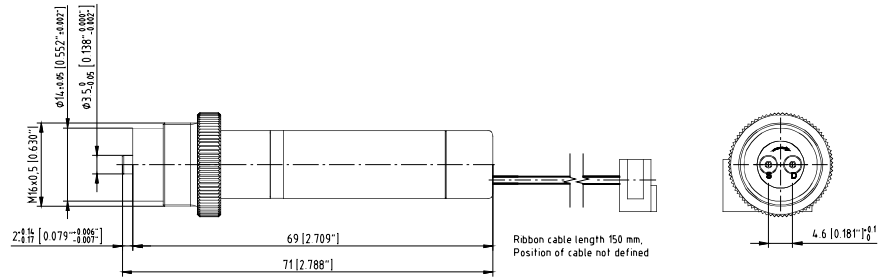
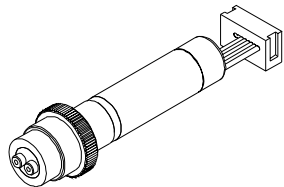
e-mail mailto@sanwatsusho.com

<http://www.sanwatsusho.com>

Measurements



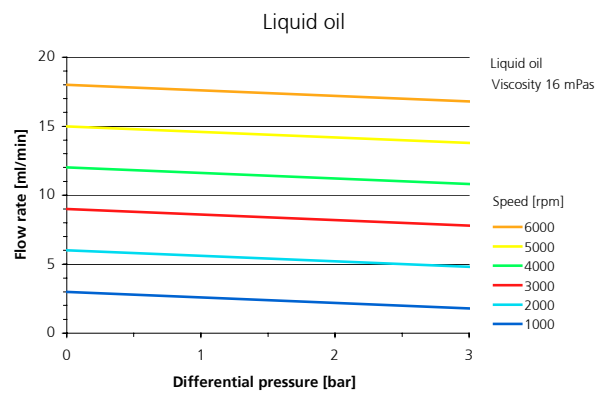
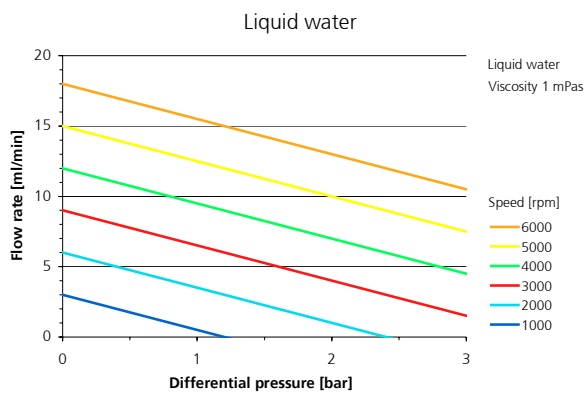
Configuration slip fittings OD 2 mm



Configuration manifold assembly

Subject to technical changes.

Flow charts



Item number

11 02 01 01	low pressure series pump mzs-2921, with DC-motor, encoder 16 counts per turn, fluid connections slip fittings OD 2 mm
11 02 02 01	low pressure series pump mzs-2921, with DC-motor, encoder 16 counts per turn, fluid connections manifold assembly

Accessories

<i>Fluidic accessories</i>	tubes, filters etc.
<i>Reduction gear</i>	gears 4.1:1, 17:1, 67:1 reduce speed for small volume dispensing and the metering of more viscous liquid
<i>Alternative drives</i>	motor with digital encoder with 256 impulses/turn for higher uniformity and precision at low rotational speeds
<i>Control</i>	S-ND: programmable microcontroller based control for continuous and discrete dosage S-KD-21: control for continuous dosage
<i>Console drive module</i>	diecast aluminum chassis mzs-S06 for laboratory and testing
<i>Multiplexer module</i>	operation of up to 255 pumps with a single RS-232 interface

Micro annular gear pumps (and housings) are protected by assigned patents: EP 852 674 B1, US 6,179,596, US 6,520,757 B1, DE 198 43 161. In the US, Europe and Japan are additional patents pending. mzs® is a registered German trademark of HNP Mikrosysteme GmbH. Teflon® is a registered trademark of DuPont. Viton® is a registered trademark of DuPont Dow Elastomers.