

High performance series 

Micro annular gear pumps m zr[®]-2909 Ex, m zr[®]-4609 Ex, m zr[®]-7209 Ex

Ex-pumps for application in chemical and process technology



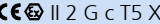

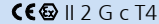
- **Ex-certification ATEX**
conform with EU directive 94/9/EEC
- **High dosage precision**
precision CV < 1 % at low volumes
- **Compact dimensions**
length < 295 mm, including Ex-motor
- **Broad viscosity range**
methanol, solvents, adhesives, grease, gel
- **Long service life**
wear-resistant tungsten carbide
- **Pulseless delivery, low shear stress**
rotary micro annular gear technology

The micro annular gear pumps m zr-2909 Ex, m zr-4609 Ex and m zr-7209 Ex cover the flow range 0.003-225 ml/min. The highly precise, pulseless small volume dosage even of non-lubricating liquids or at high pressure, the

compact design of the Ex-pumps, the broad viscosity range and the small measurements are unique features of this pump series. The pumps are applied in the field of chemical and process technology and are suitable for both

continuous delivery and discrete dosage of watery solutions, solvents, oil and other viscous liquids. Accessories extending the operating parameters of the device are available.

Technical data

	m zr-2909 Ex	m zr-4609 Ex	m zr-7209 Ex
Flow rate	0.003 – 14 ml/min	0.012 – 56 ml/min	0.048 – 225 ml/min
Smallest dosage volume	0.5 µl	2 µl	30 µl
Displacement volume	3 µl	12 µl	48 µl
Differential pressure range	0 – 5 bar	0 – 10 bar	0 – 40 bar
Max. inlet pressure	5 bar (10 bar *)	5 bar (10 bar *)	5 bar (10 bar *)
Ambient temperature range	-5 ... +40 °C	-5 ... +40 °C	-5 ... +40 °C
Liquid temperature range	-5 ... +40 °C	-5 ... +40 °C	-5 ... +40 °C
Viscosity range	0.3 – 5000 mPas	0.3 – 5000 mPas	0.3 – 5000 mPas
Pulsation	< 6 %	< 6 %	< 6 %
Precision (Coefficient of Variation CV)	< 1 %	< 1 %	< 1 %
Ex-certification			
Place of installation	Ex-area zone 1, 2		
Wetted parts	stainless steel 316L (1.4404, 1.4435), Ni-based tungsten carbide shaft seal: graphite-reinforced PTFE, 316L static seals: FPM, optional: EPDM, FFPM		
Drive	DC-motor, 24 V DC, 2 A, 53 W, encoder: 500 counts per turn, type HEDL 5540		
Speed range	1 – 4700 rpm		
Cable length	10 m		
Weight	ca. 2700 g		

Customized solutions on request.

* with optional fluidic seal module

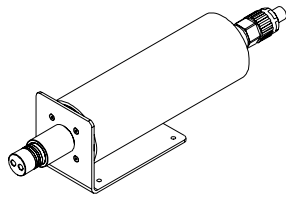
Contact

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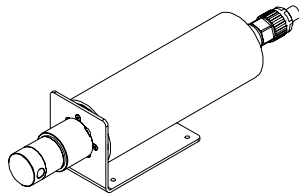
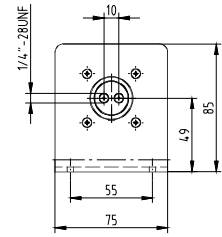
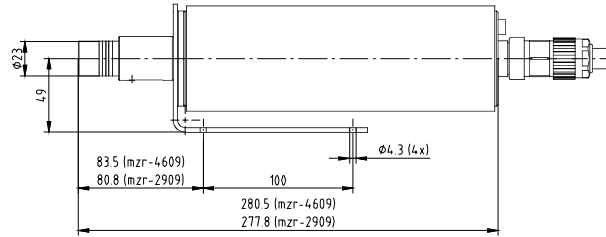
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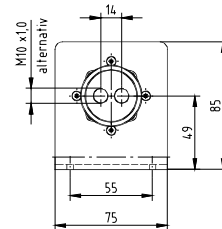
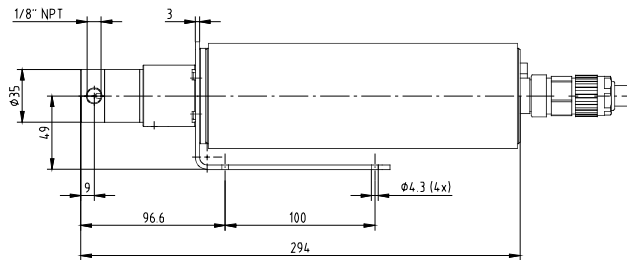
Measurements



mZR-2909 Ex, mZR-4609 Ex

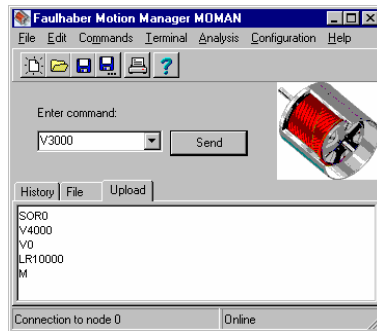


mZR-7209 S Ex



Subject to technical changes.
For flow charts refer to individual product sheets mZR-2905, mZR-4605, mZR-7205

Control and software (Accessories)



- speed and position control for continuous and discrete dispensing tasks
- terminal box with potentiometer for speed control
- RS-232 9-pole SUB-D connector to connect directly to a PC or a SPC
- analog input with terminal screw
- power supply with DIN 45323 socket, pin plug or terminal screw
- EEPROM program memory
- simple ASCII command language for parameter setting (velocity profiles) and programming of the motor
- programming with Windows® software »Motion Manager«
- temperature and current limiting
- online dynamic drive analysis
- simultaneous operation of up to 255 pumps with additional multiplexer modules

Item number

10 03 01 23
10 03 01 24
10 03 01 31

pump mZR-2909 Ex, fluid connection 1/4"-28 UNF, frontal
pump mZR-4609 Ex, fluid connection 1/4"-28 UNF, frontal
pump mZR-7209 S Ex, fluid connection 1/8" NPT, lateral

Accessories

Liquid supply accessories

threaded fluid connectors, tubes, filters etc.

Fluidic seal module

use of liquids sensitive to air or water or for vacuum applications

Control

S-HD: programmable microcontroller-based control for continuous delivery and discrete dosage, installed outside of the Ex-area

Console drive module

diecast aluminum chassis mZR-S05 ES with control elements and display, installed outside of the Ex-area

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.