

High performance series **Micro annular gear pumps m zr[®]-2909, m zr[®]-4609, m zr[®]-7209** Ex-pumps for applications in chemical and process technology

New product
May 2004



- **Ex-certification ATEX**
in accordance with EU directive 94/9/EEC
- **High dosage precision**
precision CV better 1 %
- **Compact measurements**
length < 295 mm, incl. Ex-motor
- **Broad viscosity range**
methanol, solvents, adhesives, grease, gel
- **High service life**
wear resistant tungsten carbide
- **Pulseless delivery – low shear stress**
rotary micro annular gear technology

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

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

suitable for the continuous and discrete dosage of watery solutions, solvents, oil and other viscous liquids. Accessories for enhancing functions are available.

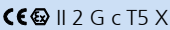
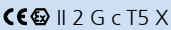
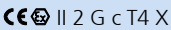
Fluidic data

	m zr-2909	m zr-4609	m zr-7209
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	5 µl
Displacement volume	3 µl	12 µl	48 µl
Differential pressure range	0 – 5 bar	0 – 10 bar	0 – 20 bar
Max. inlet pressure	5 bar (10 bar *)	5 bar (10 bar *)	5 bar (10 bar *)
Pulsation	< 6 %	< 6 %	< 6 %
Precision (Coefficient of Variation CV)	< 1 %	< 1 %	< 1 %

Customized solutions on request.

* with accessories

Technical data

Ex-certification			
Installation place	Ex-area zone 1, 2		
Wetted parts	stainless steel 316L (1.4404, 1.4435), tungsten carbide Ni-based shaft seal: graphite reinforced Teflon [®] , 316L static seals: FPM Viton [®] , optional: EPDM, TFE/P, FFPM		
DC-motor	24 V DC, 2 A, 53 W, encoder: 500 counts per turn, type HEDL 5540		
Speed range	1 – 4700 rpm		
Length of the cable	5 m, optional 10 m		
Operating temperature range	0 ... +40 °C		
Weight	ca. 2700 g		

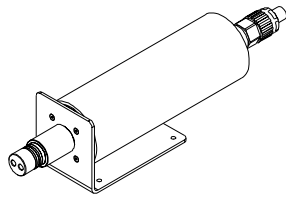
Contact

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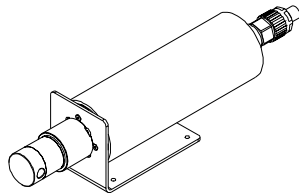
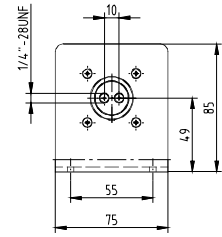
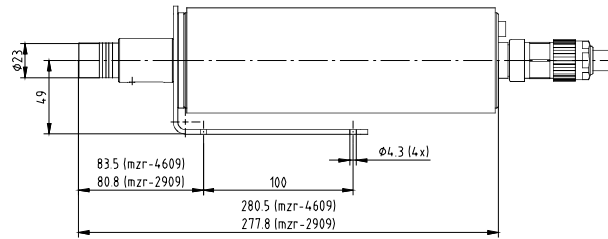
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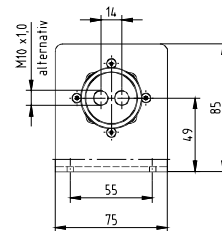
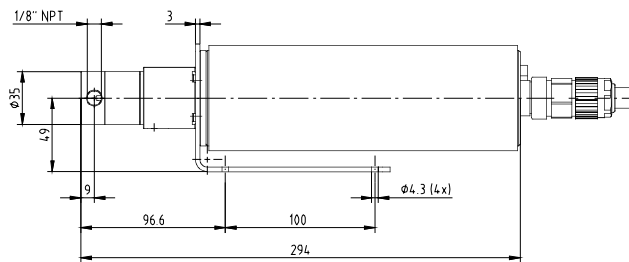
Measurements



mZR-2909, mZR-4609

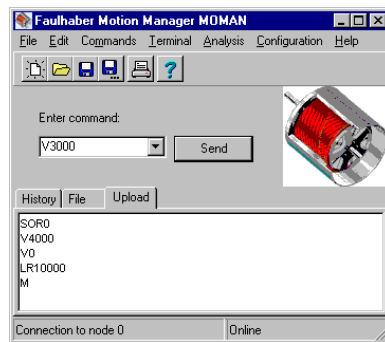


mZR-7209



Subject to technical changes.
Flow charts see product information mZR-2905, mZR-4605, mZR-7205

Control and software (Accessories)



- speed and position control for continuous and discrete dispensing tasks
- connection board 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 the 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
10 03 01 32

pump mZR-2909, fluid connections 1/4"-28 UNF on the face
pump mZR-4609, fluid connections 1/4"-28 UNF on the face
pump mZR-7209, fluid connections 1/8" NPT internal thread, lateral
pump mZR-7209, fluid connections M10 x 1.0 on the face

Accessories

Fluidic accessories
Fluidic seal module
Control

Console drive module

Multiplexer module

threaded fluidic connectors, tubes, filters etc.
use of air- and water-sensitive fluids or for vacuum applications
S-HD: programmable microcontroller based control for continuous and discrete dosage, installed outside of the Ex-area
diecast aluminum chassis mZR-S05 ES with control elements and display, installed outside of the Ex-area
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 Europe, US and Japan are additional patents pending. mZR® 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.