

High performance series 

## Micro annular gear pumps m zr<sup>®</sup>-2509 Ex / 2909 Ex / 4609 Ex / 7209 Ex

Ex-pumps for application in chemical and process technology






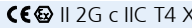
- **Ex-certification ATEX**  
conform with EU Directive 2014/34/EU
- **High dosage precision**  
precision CV < 1 % at low volumes
- **Compact dimensions**  
length < 295 mm, including Ex-motor
- **Broad viscosity range**  
methanol, solvents, adhesives, grease, gel
- **Long service life**  
wear-resistant tungsten carbide
- **Low pulsation delivery, low shear stress**  
rotary micro annular gear technology

The micro annular gear pumps m zr-2509 Ex, m zr-2909 Ex, m zr-4609 Ex and m zr-7209 Ex cover the flow range 0.003-226 ml/min. The highly precise, low pulsation 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 dimensions 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-2509 Ex  | m zr-2909 Ex  | m zr-4609 Ex   | m zr-7209 Ex  |
|---|---|---|--|---|
| Flow rate                               | 0.0015 – 7 ml/min   | 0.003 – 14 ml/min   | 0.012 – 56 ml/min  | 0.048 – 226 ml/min  |
| Smallest dosage volume                  | 0.25 µl   | 0.5 µl  | 2 µl   | 30 µl   |
| Displacement volume                     | 1.5 µl  | 3 µl  | 12 µl  | 48 µl   |
| Differential pressure range             | 0 – 5 bar   | 0 – 5 bar   | 0 – 10 bar   | 0 – 40 bar  |
| Max. inlet pressure                     | 5 bar (10 bar *)  | 5 bar (10 bar *)  | 5 bar (10 bar *)   | 5 bar (10 bar *)  |
| Ambient temperature range               | 0 ... +40 °C  | 0 ... +40 °C  | 0 ... +40 °C   | 0 ... +40 °C  |
| Liquid temperature range                | -5 ... +40 °C   | -5 ... +40 °C   | -5 ... +40 °C  | -5 ... +40 °C   |
| Viscosity range                         | 0.3 – 5000 mPas   | 0.3 – 5000 mPas   | 0.3 – 5000 mPas  | 0.3 – 5000 mPas   |
| Precision (Coefficient of Variation CV) | < 1 %   | < 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<br>shaft seal: graphite-reinforced PTFE, 316L<br>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. 2500 g  |   |  |   |

Customized solutions on request.

\* with optional fluidic seal module

Even if single parameters are within the indicated performance range of technical data, certain parameter combinations may not be achievable. Single parameters may exceed their indicated performance range under adequate circumstances. For detailed evaluation please contact HNP Mikrosysteme. Actual performance may vary. Specifications are subject to change without notice.

### Contact

HNP Mikrosysteme GmbH  
Bleicherufer 25 · D-19053 Schwerin

phone +49 385 52190-301  
fax +49 385 52190-333

e-mail [info@hnp-mikrosysteme.de](mailto:info@hnp-mikrosysteme.de)  
<http://www.hnp-mikrosysteme.de>

