



Product summary

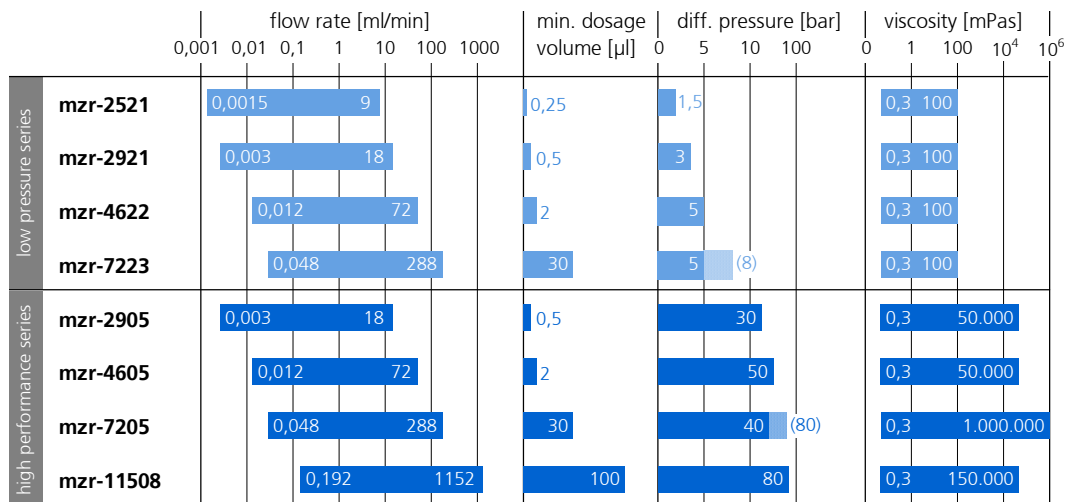
Micro annular gear pumps

High performance series, low pressure series



Micro annular gear pumps

Technology	<ul style="list-style-type: none"> Precise dosage Compact dimensions Pulseless delivery Lowest flow rates Low shear stress 	<ul style="list-style-type: none"> Suitable for non-lubricating liquids DC-drives Long service life due to tungsten carbide and ceramic components Large choice of accessories
Series	<h4>Low pressure series</h4>  <p>mZR-7223 mZR-4622 mZR-2921 mZR-2521</p>	<h4>High performance series</h4>  <p>mZR-11508 mZR-7205 mZR-4605 mZR-2905</p>
Applications	<ul style="list-style-type: none"> Analytical instrumentation Biotechnology Fuel cells 	<ul style="list-style-type: none"> Chemical processing Industrial and plant engineering Packaging and dosage
Specification	<ul style="list-style-type: none"> compact dimensions low pressure range low viscosity liquids DC-motor with graphite brushes 	<ul style="list-style-type: none"> industrial equipment medium pressure range low/high viscosity liquids integrated, programmable controller



The values mentioned above may differ depending on viscosity and pump configuration. At appropriate conditions they may be increased or decreased.

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Product characteristics micro annular gear pumps

Pump series Pump size	High performance				Low pressure				
	2905	4605	7205	11508	2521	2921	4622	7223	
1. Construction									
Displacement volume [µl]	3	12	48	192	1.5	3	12	48	
Measurements [mm]	L x W x H or Ø x L	140 x 45 x 65	143 x 45 x 65	155 x 50 x 69	309 x 108 x 124	Ø 13 x 75	Ø 13 x 75	Ø 16 x 87	Ø 25 x 147
[inch]	L x W x H or Ø x L, ca.	5.5 x 1.8 x 2.6	5.6 x 1.8 x 2.6	6.1 x 2.0 x 2.7	12.2 x 4.3 x 4.9	0.51 x 2.95	0.51 x 2.95	0.63 x 3.50	0.98 x 5.12
Weight [g]		780	800	1080	ca. 8000	56	56	100	370
[lbs]		0.354	0.363	0.490	ca. 3.63	0.025	0.025	0.045	0.168
Internal volume [µl]		85	109	525	8506	65	67	85	238
Gear material	Tungsten carbide (WC-Ni)	●	●	●	●	●	●	●	●
Case material	Stainless Steel	316L (1.4404/35)	316L (1.4404/35)	316L (1.4404/35)	316L (1.4435)	⊙	⊙	⊙	⊙
	Nickel silver	-	-	-	-	●	●	●	●
	Epoxy resin	-	-	-	-	●	●	●	●
Bearing material	Tungsten carbide (WC-Ni)	●	●	●	●	⊙	⊙	⊙	⊙
	Ceramics Al ₂ O ₃	-	-	-	-	●	●	●	●
Dynamic seal material	PTFE graphite reinforced	●	●	●	●	●	●	●	●
Static seal material	FPM (Viton®)	●	●	●	●	●	●	●	●
	EPDM	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	FFPM	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
Fluid connection	Slip fittings	-	-	-	-	2 mm	2 mm	2 mm	5 mm
	Manifold assembly	-	-	-	-	⊙	⊙	⊙	⊙
	1/4" -28 UNF	●	●	-	-	-	-	-	●
	1/8" NPT	-	-	●	-	-	-	-	-
	M10x1.0	-	-	●	-	-	-	-	-
	3/8" NPT	-	-	-	●	-	-	-	-
Tubing-ID		1/16"	1/16"	4 mm	10 mm	1/16"	1/16"	1/16"	1/16", 4 mm
Tubing-OD		1/8"	1/8"	6 mm	12 mm	1/8"	1/8"	1/8"	1/8", 6 mm
Shaft coupling	Bellow type	●	●	●	●	-	-	-	-
	Rubber type	-	-	-	-	●	●	●	●
2. Characteristics									
Flow rate Q [ml/min]	min.	0.003	0.012	0.048	0.19	0.0015 *	0.003 *	0.012 *	0.048
	[ml/min]	max.	18	72	288	9	18	72	288
	[l/h]	max.	1.08	4.3	17.28	0.54	1.08	4.32	17.28
Min. dosage volume [µl]		0.5	2	30	100	0.25	0.5	2	30
Differential pressure [bar]	(for viscosity 1 mPas)	5	10	40 (80 *)	80	1.5	3	5	5 (8 *)
	[psi]	73	145	580 (1160 *)	80	22	44	73	73 (116 *)
Differential pressure [bar]	(for viscosity 16 mPas)	30	50	40 (80 *)	5	1.5	3	5	5 (8 *)
	[psi]	435	725	580 (1160 *)	10 - 40 *	22	44	73	73 (116 *)
Max. inlet pressure [bar]		5	5	5	5	1	1	1	1
	[psi]	73	73	73	73	15	15	15	15
Viscosity η [mPas]	min.	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	max.	50,000	50,000	50,000	150,000	100	100	100	100
	with accessories			1,000,000		1,000	1,000	1,000	1,000
Precision CV [%]		< 1	< 1	< 1	< 1	1	1	1	1
Pulsation [%]		6	6	6	6	1.5	6	6	6
NPSH _R [m]		0.9	5.7	0.5		0.6	0.6	0.5	0.4
	with accessories	0.4	0.5	0.5		-	-	-	-
Operating temperature [°C]	min.	-5	-5	-5	-5	-20	-20	-20	-20
	max.	60	60	60	60	60	60	60	60
	with accessories	150	150	150	120	-	-	-	-
3. Accessories									
Console drive module		mzr-S05 (E)	mzr-S05 (E)	mzr-S05 E	-	mzr-S06	mzr-S06	mzr-S06	mzr-S06 E
Fluidic seal module		●	●	●	●	-	-	-	-
Heat isolation module		●	●	●	●	-	-	-	-
Heating module		●	●	●	●	-	-	-	-
Double shell heating module		●	●	●	●	-	-	-	-
Gear box		-	●	●	●	●	●	-	-
Dosage module		●	●	-	-	●	●	-	-
Bypass module (1/2/6 port)		⊙	⊙	-	-	●	●	●	-
4. Drive									
DC-Motor with graphite brushes		-	-	-	-	18V / 3W	18V / 3W	24V / 4.5W	24V / 20W
DC-Motor brushless	mzr-xx06	-	-	24-48V / 200W	-	⊙	⊙	⊙	⊙
DC-Servomotor	mzr-xx05	24V / 44W	24V / 44W	24V / 44W	-	-	-	-	-
	mzr-xx08	-	-	24V / 201W	42V / 368W	-	-	-	-
AC-Motor, three-phase	mzr-xx07	-	-	400V / 140W	400V / 400W	-	-	-	-
DC-Explosion-proof motor	mzr-xx09	24V / 50W	24V / 50W	24V / 50W	-	-	-	-	-
5. Control									
Discrete dosage and continuous delivery	mzr-xx05	integrated	integrated	integrated	-	S-ND	S-ND	S-ND	S-HD
	mzr-xx08	-	-	S-HP	S-HP	-	-	-	-
	mzr-xx09	S-HD	S-HD	S-HD	-	-	-	-	-
Continuous delivery	mzr-xx06	-	-	S-HV	-	S-KG-21	S-KG-21	S-KG-22	-
	mzr-xx07	-	-	S-FU	S-FU	S-KD-21	S-KD-21	S-KD-22	S-KD-23
	mzr-xx08	-	-	S-HV	S-HV	-	-	-	-

Values are valid for standard version. Customized solutions on request.

Depending on liquid viscosity and pump configuration values for pressure and precision may differ from those mentioned above.

Legend:

- applicable / available
- ⊙ option / customized solution
- not applicable / not available
- * with accessories

CV Coefficient of Variation

NPSH_R Net Positive Suction Head Required

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