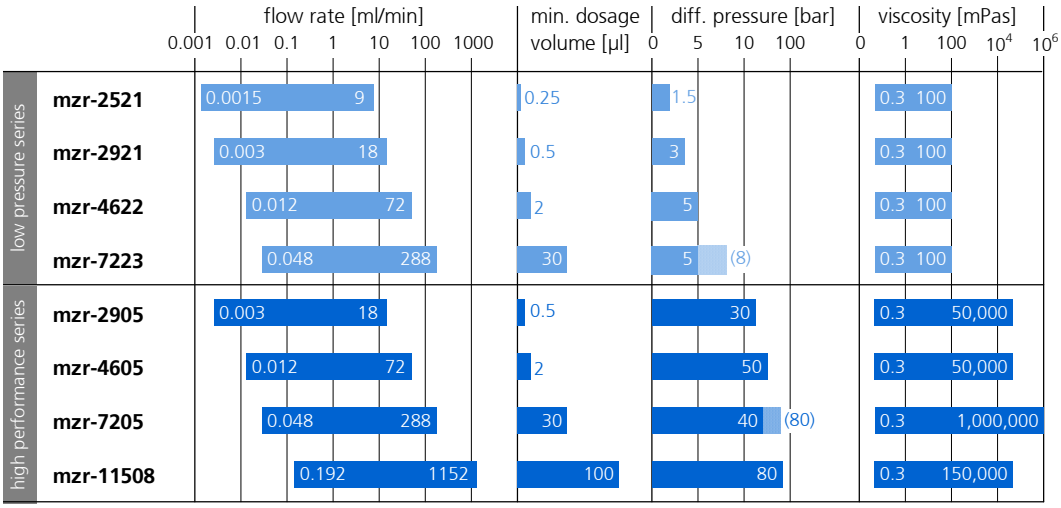
Product summary
Micro annular gear pumps
High performance series, low pressure series

	Micro annular gear pumps	
Technology	• Precise dosage • Compact dimensions • Pulseless delivery • Lowest flow rates • Low shear stress	• Suitable for non-lubricating liquids • DC-drives • Long service life due to tungsten carbide and ceramic components • Large choice of accessories
Series	**Low pressure series**	**High performance series**
	 mzr-7223 mzr-4622 mzr-2921 mzr-2521	 mzr-11508 mzr-7205 mzr-4605 mzr-2905
Applications	– Analytical instrumentation – Biotechnology – Fuel cells	– Chemical processing – Industrial and plant engineering – Packaging and dosage
Specification	– compact dimensions – low pressure range – low viscosity liquids – DC-motor with graphite brushes	– industrial equipment – medium pressure range – low/high viscosity liquids – integrated, programmable controller



The material property of a liquid (e.g. viscosity, lubricating property, particle content, corrosiveness) impacts the technical data and the service life of pumps.
At appropriate conditions the characteristic values may be increased or decreased.

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Product characteristics micro annular gear pumps

Pump series		High performance				Low pressure			
Pump size		**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_2O_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	–	–	●	–	–	–	–	–
	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	1152	9	18	72	288
[l/h]	max.	1.08	4.3	17.28	69.12	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 □ [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	mzr-xx05	integrated	integrated	integrated	–	S-ND	S-ND	S-ND	S-HD
continuous delivery	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-FI	S-FI	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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