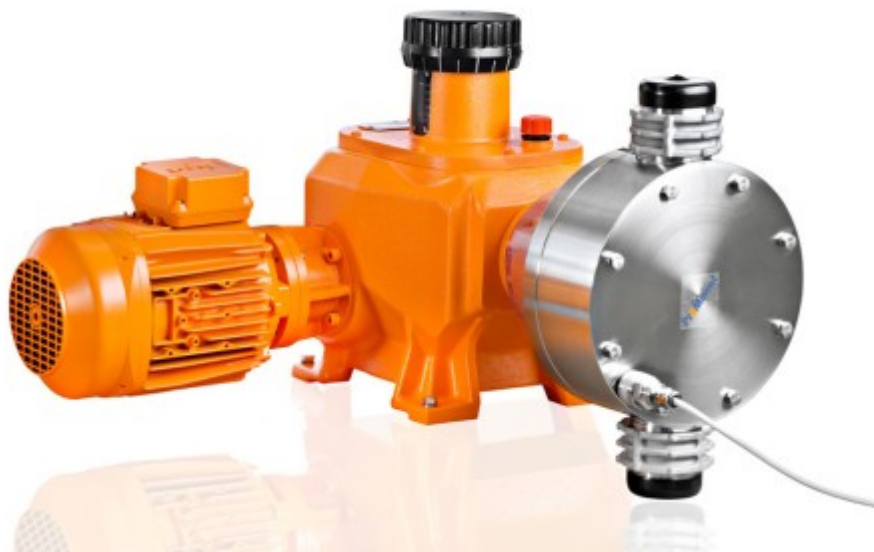


Plunger Metering Pump Makro TZ

Powerful, built to last with a plunger



Capacity range of single head pump: 8 – 1,141 l/h, 320 – 11 bar

The plunger metering pump Makro TZ (TZKa) has an adjustable eccentric drive mechanism and, together with the Makro TZ diaphragm metering pump, forms a range of drive

mechanisms with stroke lengths of 10 and/or 20 mm. A wide range of drive versions is available, including some for use in Exe and Exde areas with ATEX certification.

Your benefits

Process reliability:

- Metering reproducibility is better than $\pm 0.5\%$ within the 10 – 100% stroke length range under defined conditions and with correct installation

Excellent flexibility:

- The modular construction with single and double head versions permits a wide range of applications, with the double head designs being operated in push-pull mode
- It is possible to combine up to 4 metering units, even with different pump capacities, in multiple pump systems
- 4 different gear ratios are available
- Customised designs are available on request

Field of application

- Volume-proportional metering of chemicals/additives in water treatment
- Metering of reactants and catalysts in the chemical industry
- Level-dependent metering of additives in industrial production engineering

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Technical Data

Makro TZ Metering Pump Actuators

Makro TZ stroke length actuator/control drive

Makro TZ actuator

Servomotor for automatic stroke length adjustment, actuating period approx. 1 sec for 1 % stroke length, including 1 k Ω feedback potentiometer for stroke position response signal, IP 54 degree of protection. Electrical connection 230 V (± 10 %), 50/60 Hz, 40 W mech. stroke length display fitted on the Makro TZ power end.

Special voltage/higher degrees of protection/explosion protection upon request.

Makro TZ control drive

Control drive consisting of an actuator with servomotor and integral microprocessor controller for stroke length adjustment via a standard signal. Technical data see actuator.

Design:

Standard signal current input 0/4-20 mA corresponds to stroke length 0 -100 %, manual /automatic operation switch, key switch for stroke adjustment in manual mode. Actual value output 0/4-20 mA for remote display.

Variable speed motors with integrated frequency converter (identity code specification V)

The following functions are integrated in the terminal box cover:

- Start/Stop switch
- Manual/external operation switch (0/4 - 20 mA)
- Potentiometer for speed control in manual mode
- Onn request externally controllable via PROFIBUS® DP

Speed controllers with frequency converter (identity code specification Z)

The speed controller (complete) comprises a frequency converter and a variable speed motor (see also identity code specification R). The frequency converter is accommodated in an IP 55 rated protective housing with integral control unit and main switch.

Externally controllable with 0/4 - 20 mA or 0 - 10 V corresponding to 0 - 50 (60) Hz output frequency.

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Type TZKa	With 1500 rpm motor at 50 Hz				With 1800 rpm motor at 60 Hz			Suction lift	Connection, suction/ discharge side	Shipping weight	Plunger Ø
	Delivery rate at max. back pressure			Max. stroke rate	Delivery rate at max. back pressure		Max. stroke rate				
	bar	l/h	ml/stroke		Strokes/min	psi				l/h/gph (US)	Strokes/min
320009	320	8.7	2.0	72	4,627	10/2.6	86	4.0	Rp 1/4**–8	50	12
320012	320	11.6	2.0	96	4,627	14/3.7	115	4.0	Rp 1/4**–8	50	12
320014	320	14.5	2.0	120	4,627	17/4.5	144	4.0	Rp 1/4**–8	50	12
320017	320	17.4	2.0	144	4,627	21/5.5	173	4.0	Rp 1/4**–8	50	12
320018	320	17.7	4.1	72	4,627	21/5.5	86	4.0	Rp 1/4**–8	50	17
320024	320	23.6	4.1	96	4,627	28/7.4	115	4.0	Rp 1/4**–8	54	17
320030	320	29.5	4.1	120	4,627	35/9.2	144	4.0	Rp 1/4**–8	54	17
313035	313	35.4	4.1	144	4,526	42/11.1	173	4.0	Rp 1/4**–8	54	17
192033	192	32.9	7.6	72	2,776	39/10.3	86	4.0	Rp 3/8**–10	55	23
192044	192	43.9	7.6	96	2,776	59/15.6	115	4.0	Rp 3/8**–10	55	23
192055	192	54.8	7.6	120	2,776	66/17.4	144	4.0	Rp 3/8**–10	55	23
168066	168	65.8	7.6	144	2,437	79/20.9	173	4.0	Rp 3/8**–10	55	23
113057	113	57.5	13.3	72	1,634	69/18.2	86	4.0	Rp 3/8**–10	56	30
113077	113	76.6	13.3	96	1,634	92/24.3	115	4.0	Rp 3/8**–10	56	30
113096	113	95.8	13.3	120	1,634	115/30.4	144	4.0	Rp 3/8**–10	56	30
096115	96	114.9	13.3	144	1,392	138/36.5	173	4.0	Rp 3/8**–10	56	30
063104	63	104.3	24.2	72	911	125/33.0	86	4.0	G 1 1/4–20	58	40
063139	63	139.0	24.2	96	911	167/44.1	115	4.0	G 1 1/4–20	58	40
063174	63	173.8	24.2	120	914	209/55.2	144	4.0	G 1 1/4–20	58	40
052208	52	208.5	24.2	144	754	250/66.0	173	4.0	G 1 1/4–20	58	40
040163	40	162.9	37.7	72	578	195/51.5	86	4.0	G 1 1/4–20	58	50
040217	40	217.2	37.7	96	578	261/68.9	115	4.0	G 1 1/4–20	58	50
040271	40	271.5	37.7	120	580	326/86.1	144	4.0	G 1 1/4–20	58	50
033326	33	325.8	37.7	144	479	391/103.3	173	4.0	G 1 1/4–20	58	50
028237	28	237.0	54.9	72	405	284/75.0	86	4.0	G 1 1/2–25	62	60
028316	28	315.9	54.9	96	405	379/100.1	115	4.0	G 1 1/2–25	62	60
027395	27	394.9	54.9	120	392	474/125.2	144	4.0	G 1 1/2–25	62	60
022474	22	473.9	54.9	144	319	569/150.3	173	4.0	G 1 1/2–25	62	60
020322	20	322.5	74.7	72	289	387/102.2	86	4.0	G 1 1/2–25	62	70
020430	20	430.0	74.7	96	289	516/136.3	115	4.0	G 1 1/2–25	62	70
020538	20	537.6	74.7	120	290	645/170.4	144	4.0	G 1 1/2–25	62	70
016645	16	645.1	74.7	144	232	774/204.5	173	4.0	G 1 1/2–25	62	70
014475	14	475.1	110.0	72	202	571/150.8	86	4.0	G 2 1/4–40	68	85
014634	14	634.1	110.0	96	202	761/201.0	115	4.0	G 2 1/4–40	68	85
013793	13	792.6	110.0	120	189	951/251.2	144	4.0	G 2 1/4–40	68	85
011951	11	951.1	110.0	144	160	1,141/301.4	173	4.0	G 2 1/4–40	68	85

Other gear reduction ratios are available upon request.

The permissible admission pressure on the suction side is approx. 50% of the max. permissible back pressure.

** The suction and discharge connectors Rp 1/4 and Rp 3/8 are inner threaded and fitted with double ball valves.

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Materials in Contact With the Medium

Pump type	Hydraulic Ø mm	Dosing head connection	Suction/ pressure seals	Ball seat	Valve balls	Plunger
SST	...12 S to 50 S	Stainless steel 1.4571/1.4404	1.4571/1.4404	SS/PTFE	Oxide ceramic	Stainless steel/ ceramic
SST	...60 S to 70 S	Stainless steel 1.4571/1.4404	1.4581	PTFE/PTFE	Stainless steel 1.4404	Stainless steel/ ceramic
SST	...85 S	Stainless steel 1.4571/1.4404	1.4581	PTFE/PTFE	1.4404 (plate) Hast. C (spring)	Stainless steel/ ceramic

Motor Data

Identity code specification		Power supply			Remarks
S	3-phase, IP 55	220 – 240 V/380 – 420 V 250 – 280 V/440 – 480 V	50 Hz 60 Hz	1.5 kW	
R	3-phase, IP 55	230 V/400 V	50/60 Hz	2.2 kW	with PTC, speed control range 1:20 with external fan 1-phase 230 V; 50/60 Hz
V0	3-phase, IP 55	400 V ±10 %	50/60 Hz	3.0 kW	Variable speed motor with integrated frequency converter
L1	3-phase, II 2G Ex eb IIC T3 Gb	220 – 240 V/380 – 420 V	50 Hz	1.5 kW	
L2	3-phase, II 2G Ex db IIC T4 Gb	220 – 240 V/380 – 420 V	50 Hz	1.5 kW	with PTC, speed control range 1:5
P1	3-phase, II 2G Ex e IIC T3	250 – 280 V/440 – 480 V	60 Hz	2.0 kW	
P2	3-phase, II 2G Ex de IIC T4	250 – 280 V/440 – 480 V	60 Hz	1.5 kW	with PTC, speed control range 1:5
V2	3-phase, II 2G Ex de IIC T4	400 V ±10 %	50/60 Hz	2.2 kW	Ex-variable speed motor with integrated frequency converter

Motor data sheets can be requested for more information. Special motors or special motor flanges are available on request.

The motors are designed in compliance with the Ecodesign Directive 2009/125/EC.

Information for use in areas at risk from explosion

Only use pumps with the appropriate labelling in line with the ATEX Directive 2014/34/EU in premises at risk from explosion. Ensure that the explosion group, category and degree of protection specified on the label corresponds to or is better than the conditions prevalent in the intended field of application.