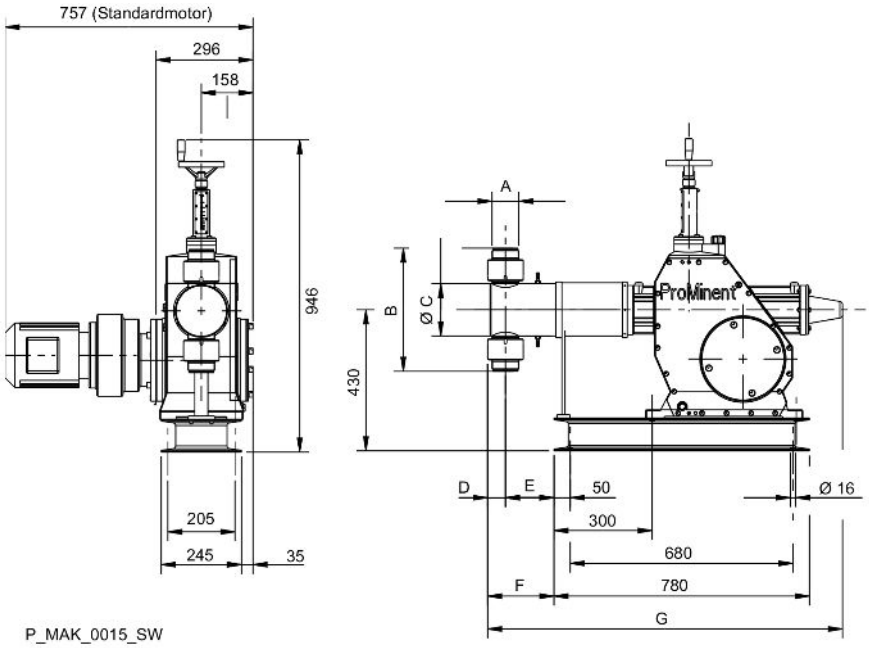
Plunger Metering Pump Makro/ 5

Powerful, built to last with a plunger



Exemplary representation. The dimensions depend on the configuration chosen.

The plunger metering pump Makro/ 5 can virtually be used throughout the low-pressure range and its modular construction enables it to be outstandingly adapted to the performance requirements of the respective application.

Technical Details

- Stroke length: 0-50 mm
- Rod force: 10,000 N
- Stroke length adjustment range: 0 – 100%
- Stroke length adjustment: manually using manual adjustment wheel and scaled display in 0.5% increments (optionally with electric control drive)
- Metering reproducibility is better than ± 0.5 % within the 10 – 100% stroke length range under defined conditions and with correct installation. Observe the information in the operating instructions
- High-performance ceramic-coated stainless steel piston
- Wetted materials: Stainless steel 1.4571, special materials are available on request
- A wide range of power end versions is available: Three-phase standard AC motors, motors for use in areas at risk from explosion and different flange designs for use in customer-specific motors
- Degree of protection: IP 55
- Salt water-resistant, acrylic resin-coated cast aluminium housing
- For reasons of safety, provide suitable overflow devices during installation for all plunger metering pumps
- Design in compliance with API 675 among others

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Control of MAKRO M5Ka metering pumps

Stroke length controller MAKRO M5Ka

Control drive consisting of an actuator with servomotor and integral microprocessor controller for stroke length adjustment via a standard signal. Actuating period approx. 100 sec for 100% stroke length, equipped with 2 limit switches for min./max. position, degree of protection: IP 54. Electrical connection 230 V (±10%), 50/60 Hz, approx. 40 W mechanical stroke length display fitted on the Makro/ 5 drive.

Special voltage/higher degrees of protection/explosion protection available on request.

Design with:

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

Frequency converter for controlling speed in metal housing with IP 54 degree of protection

The frequency converter is accommodated in an IP 54 rated protective housing with integral control unit and main switch, suitable for motor capacity listed below.

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

Integrated control unit with versatile functions, such as switching between external/internal control; frequency specified using arrow keys with internal control, multilingual fault message display etc.

With evaluation equipment for monitoring temperature of motor (thermistor protection).

Stroke sensor with Namur signal

Mounting on the crank drive mechanism of the Makro/ 5 gearbox. For precise measurement of each metering stroke, comprising electronic cams and inductive proximity switches, switching signal according to Namur. In combination with electronic pre-selection meters suitable for batch metering or proportional metering in conjunction with proportional control.

Retrospective fitting only possible in the factory.

Approved for explosion protection operation with degree of protection EEx ia II C T6.

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Technical Data

Type	Capacity at max. back pressure with 1500 rpm motor at 50 Hz				Capacity at max. back pressure with 1800 rpm motor at 60 Hz				Suction lift	Connector Suction/ Discharge Side	Shipping weight	Plunger Ø
				Max. stroke rate				Max. stroke rate				
	l/h	bar	ml/ stroke	Strokes/min	l/h	psi	gph (US)	Strokes/ min	m WC	G-DN	kg	mm
3200066	66	320	11	103	78	4,640	21	123	3.0	Rp 1/4–8	300	17
3200038	38	320	11	60	44	4,640	12	71	3.0	Rp 1/4–8	300	17
3200048	48	320	11	75	56	4,640	15	89	3.0	Rp 1/4–8	300	17
3200085	85	320	11	133	101	4,640	27	159	3.0	Rp 3/8–10	300	17
3200100	100	320	11	156	-	-	-	-	3.0	Rp 3/8–10	300	17
1700184	184	170	21	156	-	-	-	-	3.0	G 1–15	300	23
2160157	157	216	21	133	187	3,132	49	159	3.0	Rp 3/8–10	300	23
2400070	70	240	21	60	82	3,480	22	71	3.0	Rp 3/8–10	300	23
2400088	88	240	21	75	104	3,480	27	89	3.0	Rp 3/8–10	300	23
2400121	121	240	21	103	144	3,480	38	123	3.0	Rp 3/8–10	300	23
1000314	314	100	35	156	-	-	-	-	3.0	G 1 1/4–20	302	30
1270267	267	127	35	133	319	1,842	84	159	3.0	G 1 1/4–20	302	30
1400120	120	140	35	60	142	2,030	38	71	3.0	G 1–15	302	30
1400151	151	140	35	75	179	2,030	47	89	3.0	G 1–15	302	30
1400207	207	140	35	103	247	2,030	65	123	3.0	G 1–15	302	30
0800214	214	80	63	60	253	1,160	67	71	3.0	G 1 1/4–20	303	40
0560558	558	56	63	156	-	-	-	-	3.0	G 1 1/2–25	303	40
0700476	476	70	63	133	569	1,015	150	159	3.0	G 1 1/2–25	303	40
0800268	268	80	63	75	318	1,160	84	89	3.0	G 1 1/4–20	303	40
0800368	368	80	63	103	439	1,160	116	123	3.0	G 1 1/4–20	303	40
0350872	872	35	98	156	-	-	-	-	3.0	G 1 1/2–25	303	50
0450744	744	45	98	133	889	653	235	159	3.0	G 1 1/2–25	303	50
0500335	335	50	98	60	396	725	105	71	3.0	G 1 1/2–25	303	50
0500419	419	50	98	75	497	725	131	89	3.0	G 1 1/2–25	303	50
0500576	576	50	98	103	687	725	181	123	3.0	G 1 1/2–25	303	50
0251257	1,257	25	141	156	-	-	-	-	3.0	G 2–32	311	60
0301071	1,071	30	141	133	1,280	435	338	159	3.0	G 2–32	311	60
0350483	483	35	141	60	571	508	151	71	3.0	G 1 1/2–25	311	60
0350604	604	35	141	75	716	508	189	89	3.0	G 1 1/2–25	311	60
0350829	829	35	141	103	989	508	261	123	3.0	G 2–32	311	60
0250658	658	25	192	60	778	363	206	71	3.0	G 2–32	311	70
0181710	1,710	18	192	156	-	-	-	-	3.0	G 2 1/4–40	311	70
0231458	1,458	23	192	133	1,743	334	460	159	3.0	G 2 1/4–40	311	70
0250822	822	25	192	75	975	363	258	89	3.0	G 2–32	311	70
0251129	1,129	25	192	103	1,348	363	356	123	3.0	G 2–32	311	70
0161665	1,665	16	284	103	1,988	232	525	123	3.0	G 2 1/4–40	317	85
0160970	970	16	284	60	1,147	232	303	71	3.0	G 2 1/4–40	317	85
0161212	1,212	16	284	75	1,438	232	380	89	3.0	G 2 1/4–40	317	85
0162150	2,150	16	284	133	2,570	232	679	159	3.0	G 2 3/4–50	317	85
0162522	2,522	16	284	156	-	-	-	-	3.0	G 2 3/4–50	317	85
0103491	3,491	10	393	156	-	-	-	-	3.0	G 2 3/4–50	331	100
0121343	1,343	12	393	60	1,589	174	420	71	3.0	G 2 3/4–50	331	100
0121678	1,678	12	393	75	1,991	174	526	89	3.0	G 2 3/4–50	331	100
0122305	2,305	12	393	103	2,752	174	727	123	3.0	G 2 3/4–50	331	100
0122977	2,977	12	393	133	3,558	174	940	159	3.0	G 2 3/4–50	331	100
0063896	3,896	6	664	103	4,652	87	1,229	123	3.0	G 2 1/2–65	350	130
0062269	2,269	6	664	60	2,684	87	709	71	3.0	G 2 1/2–65	350	130

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Materials in Contact with the Medium

Type	Identity code of material	Dosing head	Connection on suction/discharge side	Valve seat/seals	Valve balls	Plungers
M5Ka	DN 8 - DN 10	Stainless steel 1.4571/1.4404	Stainless steel 1.4571/1.4404	Stainless steel/PTFE	Oxide ceramic	Stainless steel/ ceramic
M5Ka	DN 15 - DN 25	Stainless steel 1.4571/1.4404	Stainless steel 1.4581	PTFE	Stainless steel 1.4401	Stainless steel/ ceramic
M5Ka	DN 32 - DN 65	Stainless steel 1.4571/1.4404	Stainless steel 1.4581/1.4404	PTFE	Stainless steel 1.4404 (plate/spring)	Stainless steel/ ceramic

The permissible priming pressure on the suction side is approximately 50% of the max. permitted back pressure.

Motor Data

Identity code specification		Power supply			Remarks
S	3-phase, IP 55*	230 V/400 V	50 Hz	3 kW	
R	3-phase, IP 55*	230 V/400 V	50/60 Hz	3 kW	With PTC, speed control range 1:5
V0	3-phase, IP 55	400 V	50 Hz	3 kW	Variable speed stroke control motor with integrated frequency converter
L2	3-phase, II 2G Ex de IIC T4 Gb	230 V/400 V	50 Hz	4 kW	With PTC, speed control range 1:5
P2	3-phase, II 2G Ex de IIC T4	265 V/460 V	60 Hz	4 kW	With PTC, speed control range 1:5

* Three-phase motor according to IEC 60034-1
Motor data sheets can be requested for more information. Versions 265/460V - 60Hz, special motors or special motor flanges are available on request.

Information for use in areas at risk from explosion

Only use pumps with the appropriate labelling in line with the ATEX Directive 2014/34/EC in premises at risk from explosion. Ensure that the explosion group, category and degree of protection specified on the label correspond to or are superior to the conditions prevalent in the intended application.

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