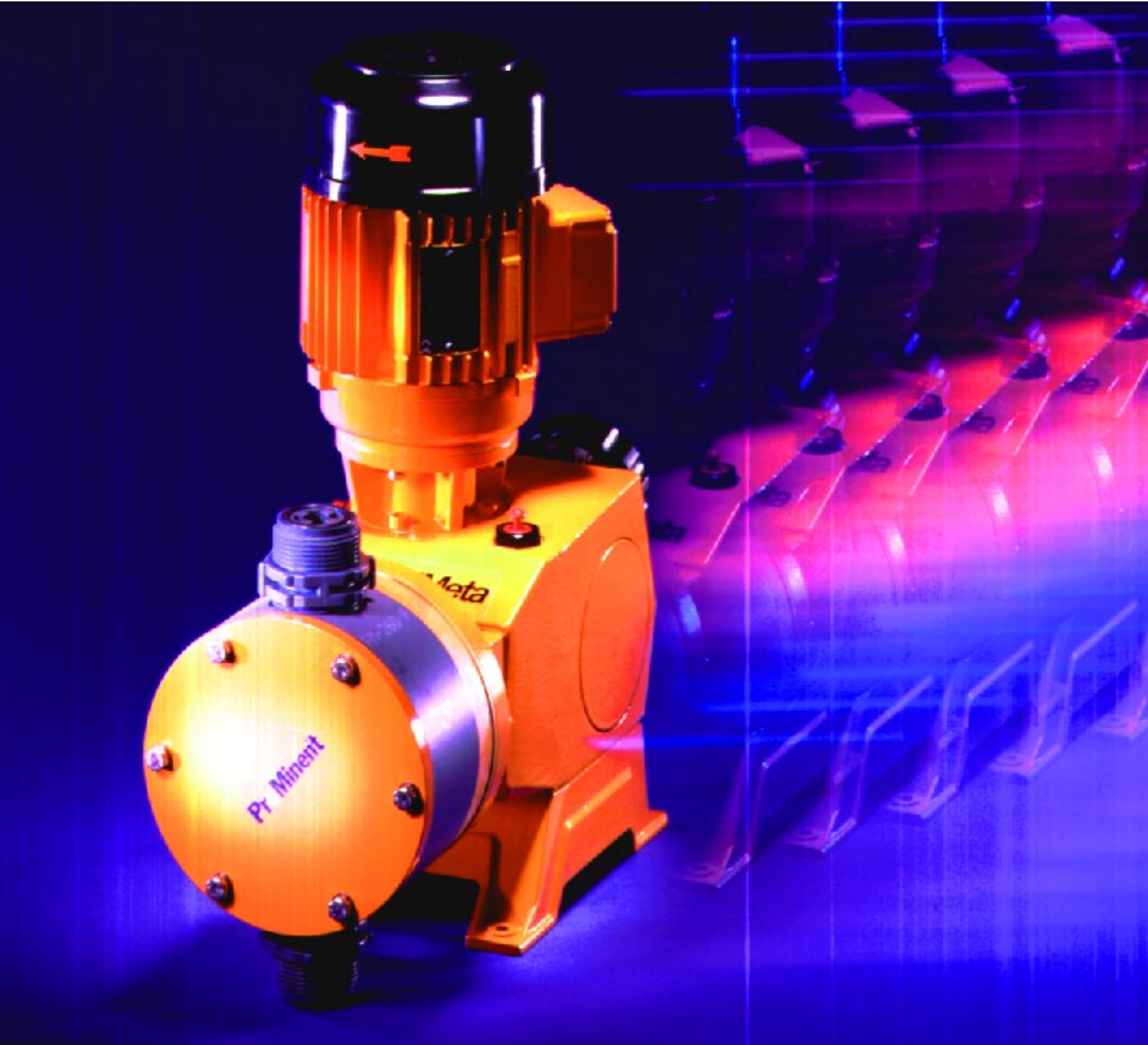


ProMinent® Meta METERING PUMPS



Compact design

Easy operation and control

Pump Types

The ProMinent Meta is an adjustable, reciprocating positive displacement metering pump. The Meta-HM diaphragm pumps range in capacity between 20 and 208 gph (78 to 790 L/h) with maximum backpressure to 174 psig (12 bar). The Meta-HK packed-plunger pumps offer capacities from 1.9 to 15.6 gph (7 to 60 L/h) and maximum backpressure to 3480 psig (240 bar).

Multiplexing is available on both types up to six heads.



ProMinent® Meta HM diaphragm metering pumps

Principles of Design

The rotating motion of the drive motor is stepped down by means of a wormgear and converted into a repeatable motion via eccentric cam and follower. A return spring presses the follower firmly against the cam bearing; thus a lag-free and repeatable reciprocating motion is obtained throughout the life of the pump. The stroke length can be finely adjusted by limiting the travel of the follower.

Direct Drive with Standard Motor

The heavy-duty, acrylic resin coated cast aluminum housing is equipped with a flange to directly couple any NEMA 56C motor to the pump for direct drive. This allows for the use of motors of any voltage or frequency, single or three phase, or any enclosure (such as explosion-proof or washdown duty) required by the application.

Liquid End Separate from Drive

The liquid end, whether diaphragm or packed-plunger type, is physically separated from the drive unit, with two extra wiper seals on the backplate and housing bore to prevent chemicals from seeping into the drive. Unlike some hydraulically-driven pumps which can cross-contaminate process fluids and hydraulic oil, there is no chance of contaminating either the pumping fluid or the gear oil. A reliable, low cost leak detector is available for the diaphragm-type pumps.

Capable of High Viscosity or Slurry Metering

The single ball, low flow resistance check valves are designed to handle highly viscous fluids, especially when equipped with optional valve springs. With optional manual or automatic flushing devices to periodically flush the valves, the diaphragm-type pumps are capable of handling a wide variety of abrasive materials such as diatomaceous earth, powdered activated carbon or lime.

Versatile Output Control

Stroke frequency may be constant, as when driven by a standard four-pole (1725 RPM) AC motor. Variable stroke frequency is possible with an AC inverter controlling an AC motor, or with an SCR drive controlling a DC motor. Frequency adjustments may be manual at the controller, or may be auto-external analog signal.

With the optional stroke counter and PLWS proportional open-loop control system, external pulse signals may be used to start and stop the motor for a set number of strokes per pulse (between one and nine, or in steps of ten between 10 and 90). This allows use of low cost, pulse-type water meters or process controllers to actuate a high capacity pump.

Stroke length adjustment (displacement per stroke) may be manual, or optional motorized stroke positioners are available that accept analog or 3P control signals.

Proportional feed via water meter signal or process control (e.g. pH) is possible

The Meta pump offers:

- 3 diaphragm diameters
- 3 packed-plunger diameters
- 4 stroking rates (gear ratios)
- 4 liquid end materials
- 2 stroke length sizes
- 30 pressure ratings from 45 to 3,480 psig (3 to 240 bar).

Typical Applications:

- water treatment
- wastewater treatment
- chemical process
- food and beverage preparation
- bleaching

using either stroke frequency or stroke length adjustment. For flow-through control systems with varying flow and demand, a water meter and process controller can adjust both pump frequency and stroke length simultaneously.

With the optional stroke sensor and PCWS predetermined counter, discrete batches of fluid, up to 9999 strokes, may be delivered with the touch of a button.



ProMinent® Meta with automatic stroke length adjuster

ProMinent® Meta HM/AM

Diaphragm-type metering pump



ProMinent® Meta. The choice is impressive... (PTFE, SS, Polypropylene and PVC liquid ends)

High Capacity and Low Maintenance

The Meta HM is a mechanically-driven diaphragm metering pump offering the repeatability of a hydraulic pump without the maintenance headaches. The unparalleled ease of maintenance makes it a growing favorite of plant operators. Diaphragm replacement is as simple as removing eight capscrews, unscrewing the diaphragm, threading on a new diaphragm and retightening the head.

The Meta pump's reliability is due in part to the DEVELOPAN® diaphragm,

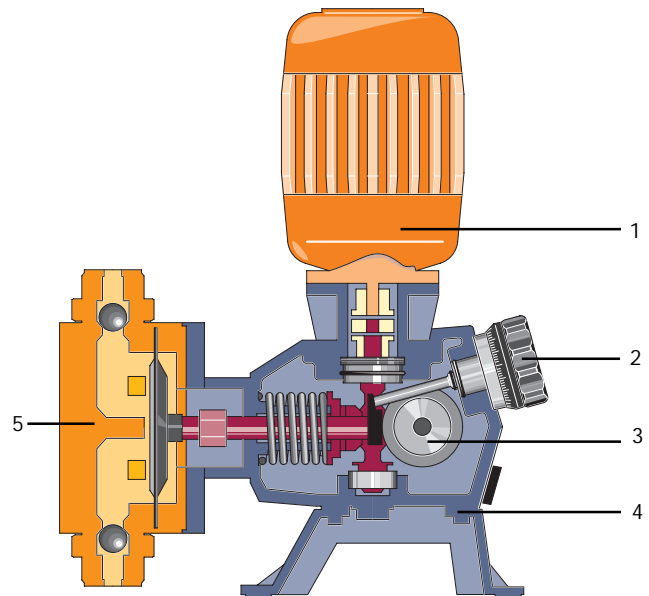


DEVELOPAN® diaphragm

with a large diameter steel core and minimal flex area. Short stroke lengths, with maximum travel of only 4 mm or 6 mm, minimize stress and provide a long service life. Constructed of PTFE-faced, nylon reinforced EPDM, the diaphragm is compatible with virtually any process chemical. Dual seal ridges ensure no leakage at the pump head.

Liquid end materials include PVC, polypropylene, PTFE or 316 stainless steel, with various elastomeric seals to suit the application. Half-union pipe connections with NPT threads allow easy connection and removal of the pump from service without disturbing the piping.

Under defined conditions and with correct installation, the pump's repeatability is better than ± 2 percent in the stroke length range of 30% - 100%.



Working principle underlying ProMinent® diaphragm metering pump

- | | |
|----------------------------|--------------|
| 1 motor | 4 casing |
| 2 stroke length adjustment | 5 liquid end |
| 3 gears | |

ProMinent® Meta HK/AK

Packed plunger-type metering pump



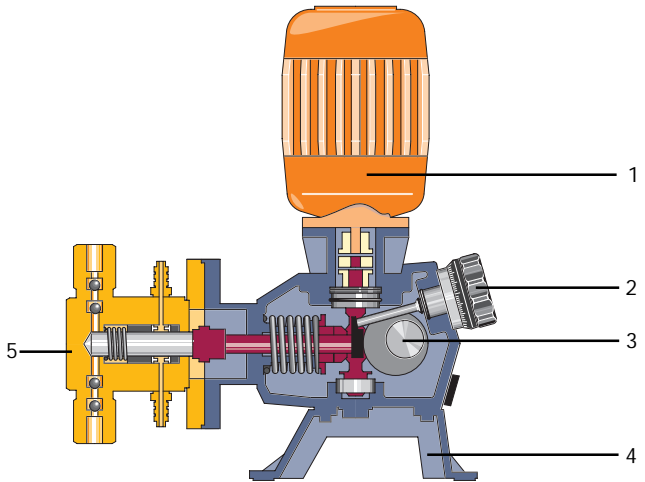
ProMinent® Meta packed-plunger metering pump

High Pressure and Repeatability

With the proven Meta drive unit and a packed-plunger liquid end, the Meta HK offers discharge pressures to 3,480 psig (240 bar) for applications such as boiler, chemical reactor and pipeline feed. Capacities range from 1.9 gph (7 L/h) to 15.6 gph (60 L/h). Meta AK

add-on pumps satisfy higher flow requirements, with up to six liquid ends possible.

The Meta HK is also perfect for low pressure applications requiring superior repeatability, such as product manufacturing or container filling. The repeatability is better than ± 0.5 percent of the rated capacity.



Working principle underlying ProMinent® plunger metering pump

- | | |
|----------------------------|--------------|
| 1 motor | 4 casing |
| 2 stroke length adjustment | 5 liquid end |
| 3 gears | |

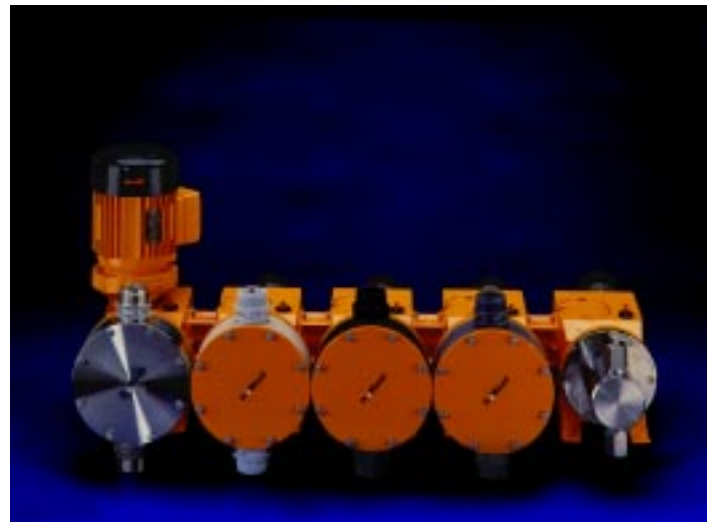
Packing glands never need adjustment because the special V-packing is automatically spring-tensioned as discharge pressures change. Zero leakage requirements may be met by means of the seal flushing rings.

Materials of construction are 316 stainless steel housing, noble aluminum oxide ceramic plunger and PTFE packing for broad chemical compatibility.

Multiplexing Made Easy: AM and AK Add-on Pumps

Meta AM (diaphragm-type) and AK (packed-plunger-type) add-on pumps may be connected to any HM or HK main pump for duplex, triplex or multiplex configurations up to five add-ons. All multiplex pumps are driven by the same motor for identical stroke frequency. Each has independent stroke length control allowing for varying flow rates.

Duplex add-on pumps stroke 180 degrees out of phase from the main pump, doubling capacity with no additional horsepower requirement. Triplex pumps are 120 degrees out of phase, minimizing fluid pulsation. Multiplexed pumps may draw from and discharge to common manifolds, or they may meter different chemicals at different rates for product blending.

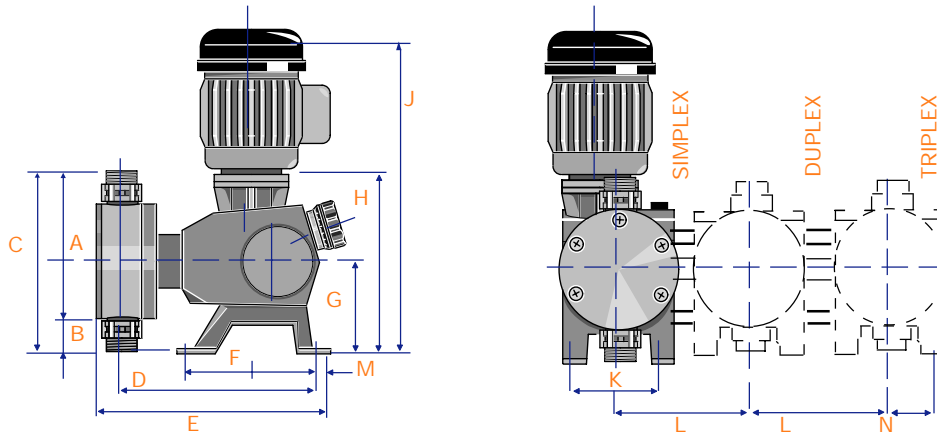


Fully-assembled ...and tailored to your requirements

Dimension Data: ProMinent® Meta

Dimensions in inches (mm)

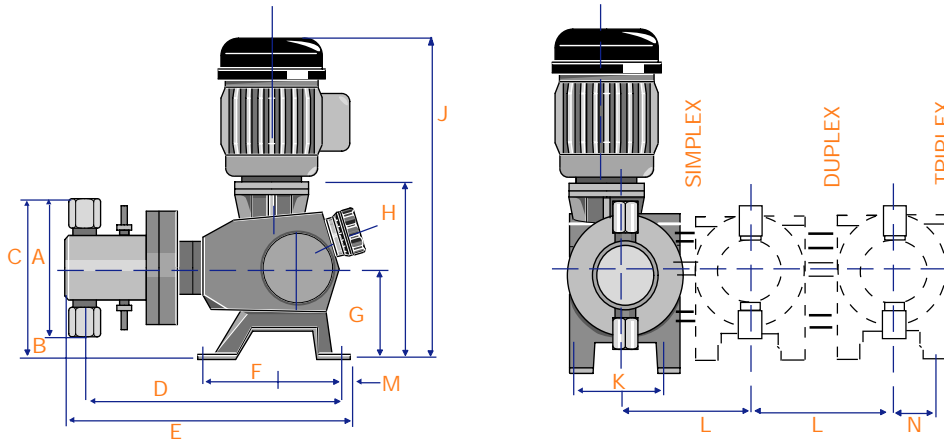
Meta HM/AM



Liquid end	O.D. Head	CONN MNPT	A	B	C	D	E	F	G	H	J*	K	L	M	N
130	5.72 (145)	3/4	10.78 (274)	1.78 (45)	12.56 (319)	10.5 (267)	12.0 (305)	6.69 (170)	4.52 (115)	9.56 (243)	17.91 (455)	4.33 (110)	7.17 (182)	0.41 (10.5)	2.16 (55)
260	5.72 (145)	3/4	10.78 (274)	1.78 (45)	12.56 (319)	10.5 (267)	12.0 (305)	6.69 (170)	4.52 (115)	9.56 (243)	17.91 (455)	4.33 (110)	7.17 (182)	0.41 (10.5)	2.16 (55)
530	7.08 (180)	1	12.69 (322)	3.63 (92)	16.31 (414)	10.6 (270)	12.2 (310)	6.69 (170)	4.52 (115)	9.56 (243)	17.91 (455)	4.33 (110)	7.17 (182)	0.41 (10.5)	2.16 (55)

*Overall height varies with motor selected.

Meta HK/AK



Liquid end	O.D. Head	CONN MNPT	A	B	C	D	E	F	G	H	J*	K	L	M	N
12.5	3.12 (79.3)	1/4	6.5 (165)	1.28 (32.5)	7.78 (198)	12.33 (313)	13.32 (338)	6.69 (170)	4.52 (115)	9.56 (243)	18.75 (476)	4.33 (110)	7.17 (182)	0.41 (10.5)	2.16 (55)
25	3.12 (79.3)	1/4	6.5 (165)	1.28 (32.5)	7.78 (198)	12.33 (313)	13.32 (338)	6.69 (170)	4.52 (115)	9.56 (243)	18.75 (476)	4.33 (110)	7.17 (182)	0.41 (10.5)	2.16 (55)
50	3.5 (89.3)	3/8	6.9 (175)	1.08 (27.5)	7.98 (203)	12.33 (313)	13.32 (338)	6.69 (170)	4.52 (115)	9.56 (243)	18.75 (476)	4.33 (110)	7.17 (182)	0.41 (10.5)	2.16 (55)

*Overall height varies with motor selected.

Technical Data - ProMinent® Meta MTMa Diaphragm Metering Pumps

ProMinent Meta MTMa Diaphragm Pumps - 4mm Stroke Length

Pump version	Liquid end	Maximum back-pressure		Capacity at maximum backpressure		Stroking rate at 1725 RPM		Suction lift ft. (m)	Motor Horse-power HP	Suction & discharge valve thread in. DN		Shipping weight (w/o motor) lbs. (kg)		
		psig	(bar)	U.S. GPH	(L/h)	mL/stroke	Strokes/min.			1	2	3	4	
12065*	130	145	(10)	20.6	(78)	15.0	86	16	(5)	1/2	3/4	20	25	(11.5)
12086*	130	145	(10)	27.5	(104)	15.0	115	16	(5)	1/2	3/4	20	25	(11.5)
12108*	130	145	(10)	34.3	(130)	15.0	144	16	(5)	1/2	3/4	20	25	(11.5)
12130*	130	145	(10)	41.2	(156)	15.0	173	16	(5)	1/2	3/4	20	25	(11.5)
10130	260	145	(10)	41.2	(156)	30	86	9.8	(3)	1/2	3/4	20	25	(11.5)
09173	260	131	(9)	54.9	(208)	30	115	9.8	(3)	1/2	3/4	20	25	(11.5)
07216	260	109	(7.5)	68.7	(260)	30	144	9.8	(3)	1/2	3/4	20	25	(11.5)
06260	260	87	(6)	82.4	(312)	30	173	9.8	(3)	1/2	3/4	20	25	(11.5)
05265	530	72.5	(5)	84.0	(318)	61.3	86	6.5	(2)	1/2	1	25	33	(15.0)
04353	530	65.3	(4.5)	112	(424)	61.3	115	6.5	(2)	1/2	1	25	33	(15.0)
03441	530	50.8	(3.5)	140	(530)	61.3	144	6.5	(2)	1/2	1	25	33	(15.0)
03530	530	43.5	(3)	168	(637)	61.3	173	6.5	(2)	1/2	1	25	33	(15.0)
10173	260	145	(10)	54.9	(208)	30	115	9.8	(3)	3/4	3/4	20	25	(11.5)
10216	260	145	(10)	68.7	(260)	30	144	9.8	(3)	3/4	3/4	20	25	(11.5)
10260	260	145	(10)	82.4	(312)	30	173	9.8	(3)	3/4	3/4	20	25	(11.5)
05440	530	72.5	(5)	140	(530)	61.3	144	6.5	(2)	3/4	1	25	33	(15)
05530	530	72.5	(5)	168	(636)	61.3	173	6.5	(2)	3/4	1	25	33	(15)

*Maximum 174 psig (12 bar) for 316 stainless steel liquid ends. Motor not included and must be ordered separately.

ProMinent Meta MTMa Diaphragm Pumps - NEW 6mm Stroke Length

Pump version	Liquid end	Maximum back-pressure		Capacity at maximum backpressure		Stroking rate at 1725 RPM		Suction lift ft. (m)	Motor Horse-power HP	Suction & discharge valve thread in. DN		Shipping weight (w/o motor) lbs. (kg)		
		psig	(bar)	U.S. GPH	(L/h)	mL/stroke	Strokes/min.			1	2	3	4	
10200	260	145	(10)	62	(236)	44.8	88	9.8	(3)	3/4	3/4	20	25	(11.5)
10263	260	145	(10)	83	(314)	44.8	117	9.8	(3)	3/4	3/4	20	25	(11.5)
10330	260	145	(10)	103	(392)	44.8	146	9.8	(3)	3/4	3/4	20	25	(11.5)
09395†	260	131	(9)	104	(395)	44.8	147	9.8	(3)	3/4	3/4	20	25	(11.5)
04400	530	58	(4)	125	(473)	89.7	88	6.5	(2)	3/4	1	25	33	(15.0)
04527	530	58	(4)	166	(629)	89.7	117	6.5	(2)	3/4	1	25	33	(15.0)
03662	530	43.5	(3)	207	(785)	89.7	146	6.5	(2)	3/4	1	25	33	(15.0)
03790†	530	43.5	(3)	208	(790)	89.7	147	6.5	(2)	3/4	1	25	33	(15.0)

† Types 09395 and 03790 may only be operated with a 1450 rpm or less motor (50 Hz). Capacities shown are operating at 1450 rpm.

Note: Ratings, except types 09395 and 03790, based on a 1725 rpm motor. Motor not included and must be ordered separately.

Liquid End Materials

4mm	6mm	Liquid End	Suction/Discharge Valves	Seals	Valve balls
PPE	PPT	Polypropylene	Polypropylene/PVDF*	EPDM/PTFE*	Borosilicate Glass
PCA/PCE	PCT	PVC	PVC/PVDF*	Viton A/EPDM/PTFE*	Borosilicate Glass
TTT	TTT	carbon reinforced PTFE	carbon reinforced PTFE/PVDF*	PTFE	Ceramic
SST	SST	316 stainless steel	316 stainless steel	PTFE	316 stainless steel

*Materials for MTMa with 6mm stroke length.

DEVELOPAN® diaphragm is EPDM with PTFE face on media-contact side.

Technical Data - ProMinent® Meta MTKa

Packed-plunger metering pumps

ProMinent Meta MTKa packed-plunger type metering pumps

Pump version	Liquid end	Maximum back-pressure	Capacity at maximum backpressure		Stroking rate at 1725 RPM	Suction lift		Motor Horse-power	Suction & discharge valve thread in.	Shipping weight (w/o motor)	
		psig (bar)	U.S. GPH	L/h	mL/stroke	Strokes/min.	ft.	(m)	HP	in.	lbs.
21606	12.5	3132 (216)	1.9 (7.3)	1.42	86	13	(4)	1/2	1/4	30	(13.5)
24006*	12.5	3479 (240)	1.9 (7.3)	1.42	86	13	(4)	3/4	1/4	34	(15)
16208	12.5	2349 (162)	2.5 (9.8)	1.42	115	13	(4)	1/2	1/4	30	(13.5)
22508	12.5	3262 (225)	2.5 (9.8)	1.42	115	13	(4)	3/4	1/4	34	(15)
12910	12.5	1870 (129)	3.2 (12.2)	1.42	144	13	(4)	1/2	1/4	30	(13.5)
21610	12.5	3132 (216)	3.2 (12.2)	1.42	144	13	(4)	3/4	1/4	34	(15)
10812	12.5	1566 (108)	3.8 (14.7)	1.42	173	13	(4)	1/2	1/4	30	(13.5)
21012	12.5	3045 (210)	3.8 (14.7)	1.42	173	13	(4)	3/4	1/4	34	(15)
10213	25	1479 (102)	4.0 (15.6)	3.01	86	13	(4)	1/2	1/4	30	(13.5)
11313	25	1644 (113)	4.0 (15.6)	3.01	86	13	(4)	3/4	1/4	34	(15)
07617	25	1109 (76)	5.4 (20.8)	3.01	115	13	(4)	1/2	1/4	30	(13.5)
10617	25	1541 (106)	5.4 (20.8)	3.01	115	13	(4)	3/4	1/4	34	(15)
06122	25	888 (61)	6.8 (26.0)	3.01	144	13	(4)	1/2	1/4	30	(13.5)
10222	25	1479 (102)	6.8 (26.0)	3.01	144	13	(4)	3/4	1/4	34	(15)
05126	25	740 (51)	8.2 (31.2)	3.01	173	13	(4)	1/2	1/4	30	(13.5)
09926	25	1438 (99)	8.2 (31.2)	3.01	173	13	(4)	3/4	1/4	34	(15)
05425	50	782 (54)	7.7 (29.5)	5.71	86	13	(4)	1/2	3/8	30	(13.5)
06025	50	869 (60)	7.7 (29.5)	5.71	86	13	(4)	3/4	3/8	34	(15)
04033	50	587 (40)	10.3 (39.4)	5.71	115	13	(4)	1/2	3/8	30	(13.5)
05633	50	815 (56)	10.3 (39.4)	5.71	115	13	(4)	3/4	3/8	34	(15)
03241	50	469 (32)	12.9 (49.3)	5.71	144	13	(4)	1/2	3/8	30	(13.5)
05441	50	782 (54)	12.9 (49.3)	5.71	144	13	(4)	3/4	3/8	34	(15)
02749	50	391 (27)	15.6 (59.2)	5.71	173	13	(4)	1/2	3/8	30	(13.5)
05249	50	761 (52)	15.6 (59.2)	5.71	173	13	(4)	3/4	3/8	34	(15)

Note: Ratings based on a 1725 rpm motor. Motor not included and must be ordered separately.

Liquid End Materials

Components in contact with chemicals: materials for standard "SST" type.

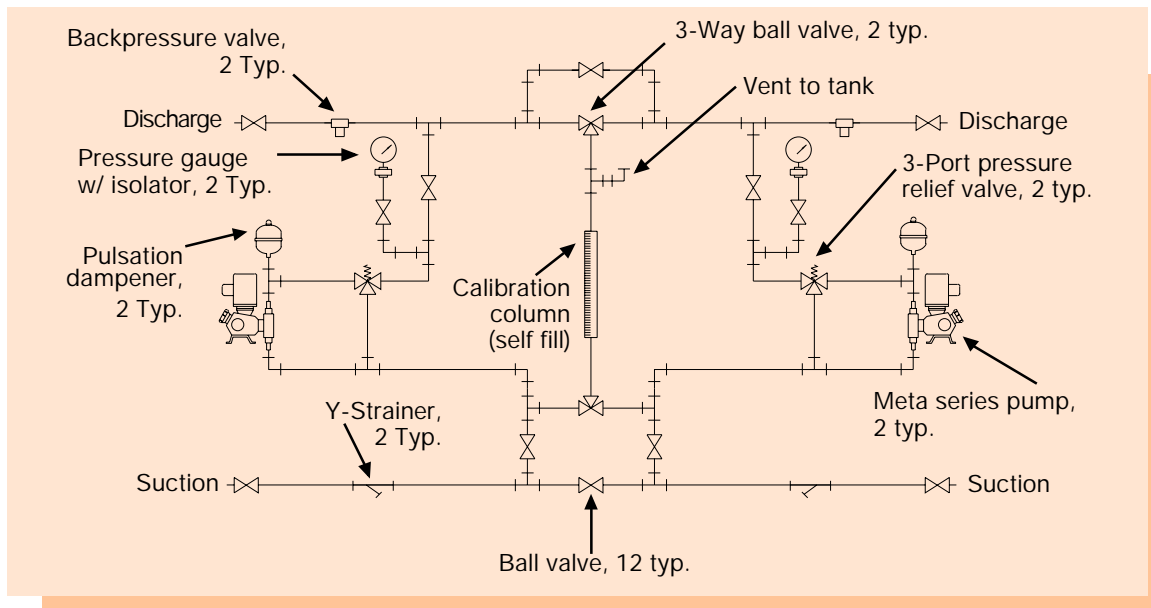
Liquid End:	316 stainless steel
Suction/Discharge Connectors:	316 stainless steel
Seals:	PTFE
Packing Spring:	Hastelloy C
Packed Plunger:	Ceramic oxide
Valve balls:	Ceramic oxide

Pre-engineered Packaged Systems

Standard pre-engineered metering packages available with the Meta series pumps include the single metering pump (M1) and dual metering pump (M2) dosing systems.

- Systems are corrosion-resistant, self-contained units with chemical metering pump(s), piping, fittings, and optional accessories.

- Production capabilities include threaded, welded and thermal fusion joining systems for pipe; system assembly; wiring and equipment support and testing (with criteria for electrical, control, mechanical and aesthetic features).
- All systems are factory assembled and tested prior to shipment.
- Engineering services include process design, P&ID development, CAD drawings, general arrangements, shop electrical drawings, as built, custom operation instructions and maintenance manuals.



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