

ProMinent® ProMus Hydraulic Diaphragm Metering Pumps

Overview: ProMus

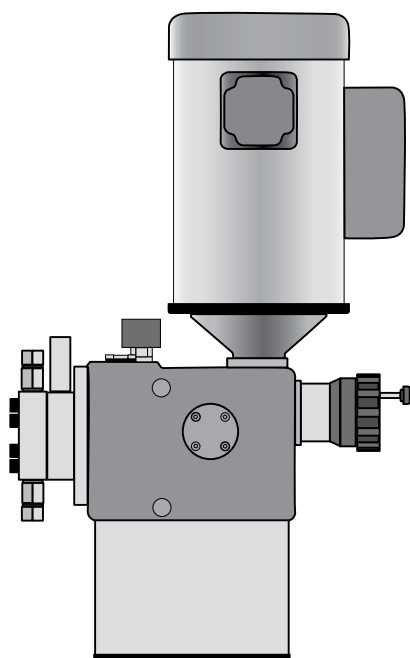
High pressure chemical process metering

~~(see page 135 for spare parts)~~

The ProMus is a motor driven metering pump with a hydraulically actuated diaphragm. The drive case and the hydraulic unit are filled with a liquid that functions as a hydraulic coupling. A plunger connects the drive case with the hydraulic unit. The dosing diaphragm separates the hydraulic part of the pump from the dosing unit. The movement of the diaphragm depends on the amount of liquid displaced by the plunger.

ProMus Design Specifications

The ProMinent ProMus is a motor driven metering pump incorporating a hydraulically balanced Teflon diaphragm. The drive case is cast iron incorporating a worm gear set (5 Ratios available) driving a rotating eccentric. The locking stroke adjuster varies the flow from 100% to 0% in 1% increments. The pump is built in accordance to API 675 standards. The hydraulic system transfers the rotating eccentric motion to diaphragm movement by way of a reciprocating plunger (8 plunger diameters available). The plunger and diaphragm are hydraulically coupled (no mechanical connection). Coupling compliance is precisely controlled by a mechanically actuated replenishment valve, which senses diaphragm position to admit coupling fluid as required. The coupling fluid is automatically degassed to maintain accuracy and drive case is protected from overload by a simple acting relief valve. The hydraulic system is separated from the fluid end by a Teflon diaphragm completely isolating the pumped fluid from the surroundings. The liquid end is currently available in PVDF, Stainless Steel, Hastelloy C and Alloy 20.



ProMus Benefits

- Flow rates up to 101 gph (382 L/h) and Pressures up to 3500 psi (241 bar)
- Hydraulically actuated diaphragm ensuring a sealed pumping system for corrosive or toxic chemicals with superior leak protection
- Built in accordance to API 675 standards suitable for heavy industrial applications and specifications
- Robust cast iron drive construction ideal for applications such as boiler feeds, catalyst feed, dye injection and petrochemicals
- Flexible design for a wide range of applications including water treatment and high pressure chemical refining
- Fast and easy field maintenance with minimal downtime

ProMinent® ProMus Hydraulic Diaphragm Metering Pumps

Specifications

Pump type:	Hydraulically actuated diaphragm type liquid end
Maximum stroke length:	20mm
Materials of construction:	
Housing:	Cast iron
Diaphragm:	Flat Teflon
Required Motor HP:	1/2 HP (if 12.5:1 gear is selected 3/4 hp might be used)
Full load RPM:	1725
Drive:	Uses a hydraulic piston and mechanically actuated Oil replenishment valve to transfer the reciprocating Motion to a flat Teflon diaphragm
Gear ratios:	5 gear ratios; 12.5:1, 15:1, 30:1, 40:1, 50:1* Note: minimum stroke rate is 29 spm
Motor mounting flange:	Fits all NEMA 56 C frame motors (Optional IEC 71 with B5 flange)
Motor coupling:	Direct coupled to worm gear shaft
Check valves:	PVDF/PTFE: size 17 double inlet & outlet; sizes 30/40 single inlet & outlet
Metal:	1) single inlet & outlet 2) double inlet & outlet 3) single inlet & double outlet (Double ball needed for pressures over 500 psi)
Repeatability:	Steady state flow accuracy is +/- 1% over turndown Ratio of 10:1
Max fluid operating temp:	constant: 195 F (90 C) short term 250 F (120 C)
Max solids size :	0.3mm; if larger than this provisions must be made to remove them prior to suction inlet
Max viscosity:	200 mPas
Recommend oil:	Mobilube SCH 75w-90 ProMinent PN: 1005823
Oil quantity:	1.5 quart (1.42 l)
Oil change interval:	Every 5000 hours
Stroke length adjustment:	Manual adjustment. Automatic stroke length adjustment via 4 to 20 mA available as an option
Pressure relief:	Integrated pressure relief to protect pump. External pressure relief must be used to protect system
Warranty:	2 years on drive, 1 year on liquid end
Factory testing:	each pump is tested for capacity at rated pressure
Maximum inlet pressure:	14.5 psi (1 bar)

*50:1 not available for 50 Hz operation

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Capacity Data

At 60 Hz (1750 rpm)		Capacity at Max. Backpressure				Gear Ratio		Max. Stroke Rate	At 50 Hz (1458 rpm)		Typical suct./dis. Connection		
Plunger (in.)	psig (PVDF)	Bar (PVDF)	psig (metal)	Bar (metal)	U.S. GPH	(l/h)		Stroke/ min.	U.S. GPH	(l/h)	Stroke/ min	FNPT/BS P (metal)	MNPT/BSP (PVDF)
Size 17	3/8" Plunger	230	16	3500	172	0.61	(2.3)	50	35	*	*	*	*
	3/8" Plunger	230	16	3500	172	0.76	(2.8)	40	43	0.63	2.45	36	1/4 1/4
	3/8" Plunger	230	16	3500	172	1.02	(3.8)	30	58	0.85	3.29	48	1/4 1/4
	3/8" Plunger	230	16	3500	172	2.03	(7.6)	15	115	1.69	6.56	96	1/4 1/4
	3/8" Plunger	230	16	3500	172	2.44	(9.2)	12.5	138	2.03	7.88	115	1/4 1/4
	7/16" Plunger	230	16	3500	172	0.83	(3.1)	50	35	*	*	*	*
	7/16" Plunger	230	16	3500	172	1.04	(3.9)	40	43	0.87	3.36	36	1/4 1/4
	7/16" Plunger	230	16	3500	172	1.38	(5.2)	30	58	1.15	4.46	48	1/4 1/4
	7/16" Plunger	230	16	3500	172	2.77	(10.4)	15	115	2.31	8.94	96	1/4 1/4
Size 30	7/16" Plunger	230	16	3500	172	3.32	(12.5)	12.5	138	2.77	10.72	115	1/4 1/4
	5/8" Plunger	230	16	2080	143	1.8	(6.8)	50	35	*	*	*	*
	5/8" Plunger	230	16	2080	143	2.2	(8.5)	40	43	1.87	7.26	36	1/4 1/2
	5/8" Plunger	230	16	2080	143	3.0	(11.3)	30	58	2.50	9.68	48	1/4 1/2
	5/8" Plunger	230	16	2080	143	6.0	(22.7)	15	115	5.00	19.37	96	1/4 1/2
	5/8" Plunger	230	16	2080	143	7.2	(27.2)	12.5	138	6.00	23.24	115	1/4 1/2
	13/16" Plunger	230	16	1230	85	3.0	(11.5)	50	35	*	*	*	*
	13/16" Plunger	230	16	1230	85	3.8	(14.3)	40	43	3.17	12.27	36	3/8 1/2
	13/16" Plunger	230	16	1230	85	5.1	(19.1)	30	58	4.22	16.37	48	3/8 1/2
	13/16" Plunger	230	16	1230	85	10.1	(38.2)	15	115	8.45	32.73	96	3/8 1/2
	13/16" Plunger	230	16	1230	85	12.2	(46.1)	12.5	138	10.14	39.28	115	3/8 1/2
	1-1/8" Plunger	230	16	640	44	6.3	(24.0)	50	35	*	*	*	*
	1-1/8" Plunger	230	16	640	44	7.9	(30.0)	40	43	6.61	25.61	36	3/8 1/2
	1-1/8" Plunger	230	16	640	44	10.6	(40.1)	30	58	8.81	34.14	48	3/8 1/2
	1-1/8" Plunger	230	16	640	44	21.1	(79.8)	15	115	17.62	68.29	96	3/8 1/2
	1-1/8" Plunger	230	16	640	44	25.4	(96.1)	12.5	138	21.15	81.95	115	3/8 1/2
Size 40	1-3/4" Plunger	230	16	265	18	15.4	(58.2)	50	35	*	*	*	*
	1-3/4" Plunger	230	16	265	18	19.2	(72.6)	40	43	15.99	61.97	36	3/4 3/4
	1-3/4" Plunger	230	16	265	18	25.6	(96.9)	30	58	21.32	82.62	48	3/4 3/4
	1-3/4" Plunger	230	16	265	18	51.2	(193.8)	15	115	42.64	165.24	96	3/4 3/4
	1-3/4" Plunger	230	16	265	18	61.4	(232.4)	12.5	138	51.17	198.29	115	3/4 3/4
	2" Plunger	200	14	200	14	20.1	(76.0)	50	35	*	*	*	*
	2" Plunger	200	14	200	14	25.1	(95.0)	40	43	20.89	80.94	36	3/4 3/4
	2" Plunger	200	14	200	14	33.4	(126.4)	30	58	27.85	107.91	48	3/4 3/4
	2" Plunger	200	14	200	14	66.8	(252.8)	15	115	55.70	215.83	96	3/4 3/4
	2" Plunger	200	14	200	14	80.2	(303.5)	12.5	138	66.84	258.99	115	3/4 3/4
	2-1/4" Plunger	160	11	160	11	25.4	(96.1)	50	35	*	*	*	*
	2-1/4" Plunger	160	11	160	11	31.7	(119.9)	40	43	26.43	102.43	36	3/4 3/4
	2-1/4" Plunger	160	11	160	11	42.3	(160.1)	30	58	35.25	136.58	48	3/4 3/4
	2-1/4" Plunger	160	11	160	11	84.6	(327.8)	15	115	70.49	273.16	96	3/4 3/4
	2-1/4" Plunger	160	11	160	11	101.5	(384.2)	12.5	138	84.59	327.79	115	3/4 3/4

*not available for 50 Hz operation

Materials In Contact With Chemicals

Material	Liquid End	Suction/Discharge connector	Seals/ball seat	Valve Balls
SS	stainless steel	stainless steel	PTFE/SS	stainless steel
A2	alloy 20	alloy 20	PTFE/A2	alloy 20
HC	hastelloy C	hastelloy C	PTFE/HC	hastelloy C
PVT	PVDF	PVDF	PTFE/PVDF	ceramic

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Identcode Ordering System ProMus

ProMus1

Pump version:

17A	Size 17 liquid end with 3/8" Plunger
17B	Size 17 liquid end with 7/16" Plunger
30A	Size 30 liquid end with 5/8" Plunger
30B	Size 30 liquid end with 13/16" Plunger
30C	Size 30 liquid end with 1-1/8" Plunger
40A	Size 40 liquid end with 1-3/4" Plunger
40B	Size 40 liquid end with 2" Plunger
40C	Size 40 liquid end with 2-1/4" Plunger

Liquid end material:

SS1	316 Stainless steel Single ball check
SS2	316 Stainless steel Double ball check (*Needed for applications above 500 psi)
SS3	316 St. steel Single inlet, double outlet (Recommended for Flooded suction w/ discharge pressure above 500 psi)
HC1	Hastelloy C Single ball check
HC2	Hastelloy C Double ball check (Needed for applications above 500 psi)
HC3	Hastelloy C Single inlet, double outlet (Recommended for Flooded suction with discharge pressure above 500 psi)
A21	Alloy 20 single ball check
A22	Alloy 20 Double ball check (Needed for applications above 500 psi)
A23	Alloy 20 Single inlet, double outlet (Recommended for Flooded suction with discharge pressure above 500 psi)
PVT	PVDF/PTFE size 17 double inlet & outlet; sizes 30/40 single inlet & outlet

Connectors:

0	NPT
1	BSP taper

Gear ratio:

01	12.5:1 56C
02	15:1 56C
03	30:1 56C
04	40:1 56C
05	50:1 56C
06	12.5:1 IEC (IEC 71 with B5 flange)
07	15:1 IEC (IEC 71 with B5 flange)
08	30:1 IEC (IEC 71 with B5 flange)
09	40:1 IEC (IEC 71 with B5 flange)

Motor:

X	No motor included
D	Standard motor (1/2 HP, 115V, single phase ,TEFC, NEMA 56C)

Base:

0	Standard Base
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Stroke adjustment:

1	Manual stroke adjustment
7	Explosion proof stroke positioning motor

Internal relief valve:

A	3500 psi/size 17
B	2080 psi/size 17
C	1230 psi/size 17
D	640 psi/size 17
E	300 psi/size 17
F	2080 psi/size 30
G	1230 psi/size 30
H	640 psi/size 30
I	265 psi/sizes 30 & 40
J	200 psi/sizes 30 & 40
K	160 psi (30B,C & 40)

Hydraulic oil:

0	Standard
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