

ProMinent **Evolution** Series

Hydraulic Diaphragm Metering Pumps

ProMinent®



Evolution (EF2a) metering pumps with Metallic and PVDF liquid ends

Evolution Series

The Evolution Series

- The **ProMinent® Evolution Series** pumps are API 675, 3rd Edition compliant and meet the most exacting safety requirements as an extremely robust hydraulic diaphragm metering pump design.

Standard Features

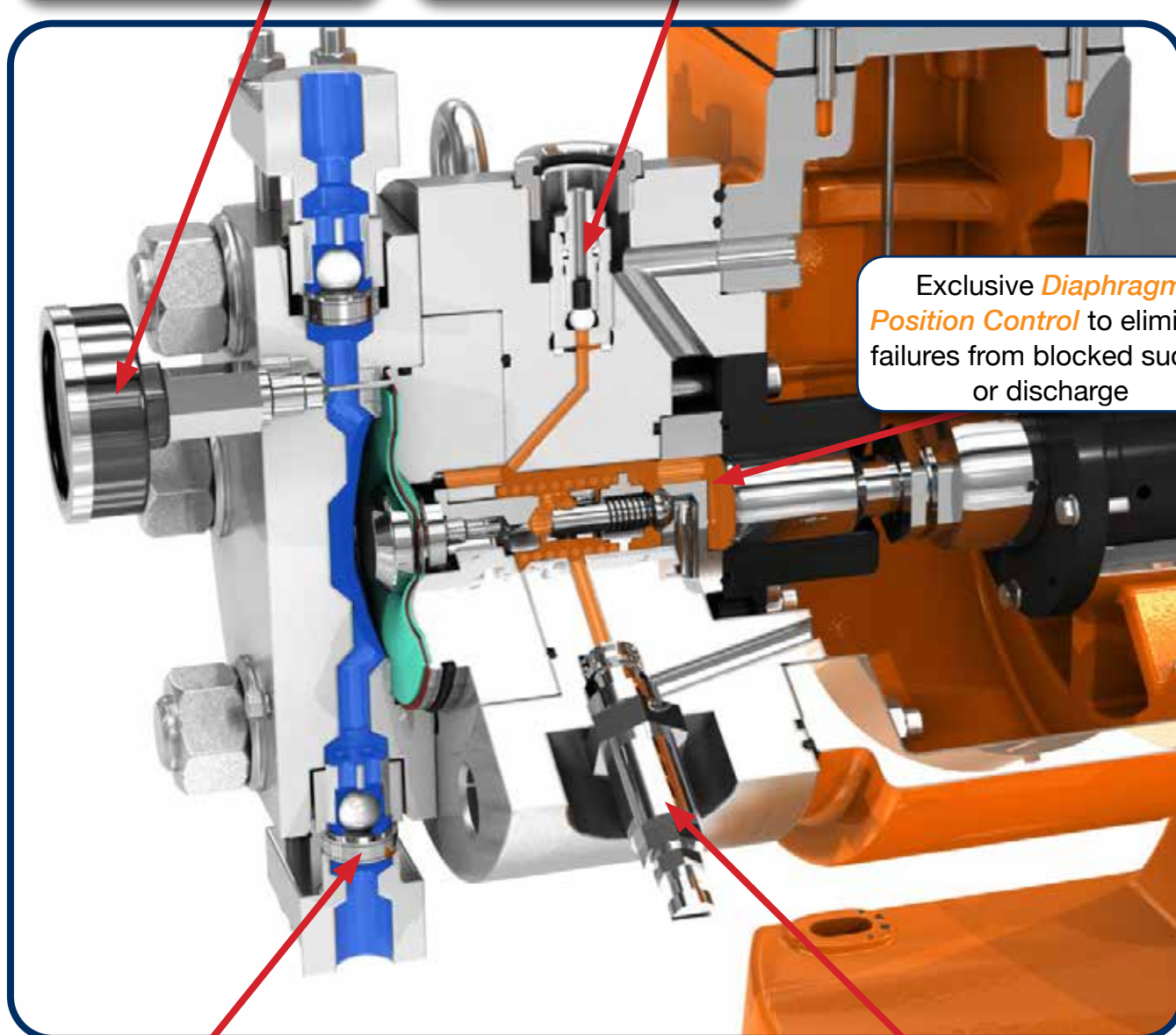
- Flow rates from 0.48 to 1932.48 gph per head
- Operating Pressures up to 5802 psig
- Variable eccentric drive for accurate, robust operation and a smaller footprint
- Four frame sizes to cover a broad range of applications
- PTFE multi-layer diaphragm with integral diaphragm rupture warning system is standard on all pumps
- Liquid End Materials in 316ss and Alloy 20, additional materials available on demand
- **Exclusive Diaphragm Position Control** protects the pump against operating faults (e.g. no damage in the event of a blockage on either the suction or discharge side). This advance in pump design technology means a more reliable metering pump in every application
- Metering reproducibility is better than $\pm 1\%$ within the 10 – 100 % stroke length range under defined conditions and with correct installation
- Continuous air bleeding of the hydraulic oil chamber ensures reliable operation
- Integral adjustable internal hydraulic pressure relief valve with features that allow for oil cooling during extended periods of process upset conditions
- Excellent flexibility
- The Evolution's modular compact construction allows for a wide range of applications
- Up to five (6) metering units of identical or varying pump capacities can be multiplexed for the greatest application adaptability
- A rotatable drive housing allows for installation of motor in a vertical or horizontal position to better meet specific footprint requirements
- Custom designs are possible to meet a variety of application demands

Available Options

- Electronic stroke control (4-20mA, BUS Interfaces, etc.)
- Jacketed liquid ends
- Diaphragm leak detection
 - Gauge only (Standard)
 - Pressure Switches
 - Pressure Transmitters
 - Suitable for Classified Areas
- Check valve configurations
 - Ball (single and double)
 - Cone type
 - Plate type
- Custom painting per specification
- Custom wetted materials (Hastelloy, Monel, Zirconium, etc.)
- Flanged and threaded connections to meet most ANSI or DIN/ISO requirements
- Pump selections for high or low temperature applications

Double diaphragm leak detection standard

Hydraulic oil air bleed valve for reliable service



Exclusive *Diaphragm Position Control* to eliminate failures from blocked suction or discharge

Ball or cone check valves for a variety of services

Internal pressure relief for process safety and control



• Please scan the QR Code to view Animated videos of the ProMinent® Evolution Pump in action

Technical data for **Metallic** EF1a, EF2a, EF3a and EF4a single pump 60 Hz

Important Note:

The data in the tables are an abridged version of the available product range. Contact ProMinent if specific capacities are needed for your application.

EF1a								
Plunger Ø	Stroke Volume	Pump capacity in gph at strokes/min (60 Hz & 1800 rpm)					Maximum Discharge Pressure	Maximum Motor Power
	Strokes per minute	88	117	141	176	200		
mm	ml/stroke	gph ¹	gph ¹	gph ¹	gph ¹	gph ¹	psig	HP ²
8	0.75	0.48	0.61	0.74	0.91	1.04	5802	1/2
17	3.40	3.62	4.86	5.86	7.32	8.32	1470	1/2
25	7.36	8.55	11.37	13.61	17.0	19.34	680	1/2
32	12.06	14.96	19.94	23.95	30.00	34.00	415	1/2
44	22.81	28.62	38.16	45.81	57.24	65.07	219	1/2
58	39.63	53.65	71.49	85.75	107.29	121.84	125	1/2
EF2a								
mm	ml/stroke	gph ¹	gph ¹	gph ¹	gph ¹	gph ¹	psig	HP ²
12	1.70	1.71	2.27	2.72	3.41	3.88	5802	1/3
21	5.20	5.4	7.28	8.7	10.88	12.38	2261	3/4
32	12.06	14.61	19.48	23.4	29.31	33.23	974	1-1/2
44	22.81	28.62	38.16	45.81	56.97	19.11	515	1-1/2
58	39.63	53.0	70.75	84.86	106.17	120.57	296	2
70	57.73	75.67	100.96	115.92	144.90	172.02	204	2
EF3a								
mm	ml/stroke	gph ¹	gph ¹	gph ¹	gph ¹	gph ¹	psig	HP ²
17	5.67	5.4	7.19	8.63	10.62	12.26	5112	3/4
38	8.66	37.43	49.9	59.88	74.85	85.05	1023	3
50	49.09	66.44	88.56	106.21	132.79	150.93	591	5
63	11.31	106.99	142.64	171.19	213.98	243.10	372	7-1/2
75	110.45	151.0	201.29	241.57	301.93	343.0	263	7-1/2
100	16.51	279.91	373.23	447.88	559.85	636.18	147	7-1/2
EF4a								
mm	ml/stroke	gph ¹	gph ¹	gph ¹	gph ¹	gph ¹	psig	HP ²
22	15.21	15.06	20.10	24.07	30.11	34.23	5802	2
44	60.82	76.32	101.79	122.13	152.73	173.52	1498	5
70	153.94	201.81	269.12	322.89	403.63	458.72	592	5
86	232.35	311.14	414.82	497.76	622.28	707.14	392	5
110	380.13	519.59	692.86	831.43	1039.19	1180.90	240	7-1/2
140	615.75	850.32	1133.75	1360.46	1700.53	1932.48	147.9	7-1/2

(1) Capacities are based on operating pressures up to 1500 psig. Derate flow 0.5% for each 100 psig over 1500 psig

(2) Motor horsepower is based on maximum flow rate at 1500 psig discharge pressure. For pressures above 1500 psig or flows lower than the maximum consult the factory for horsepower required.

Technical data for **PVC/PVDF** EF1a, EF2a, EF3a and EF4a single pump **60 Hz**

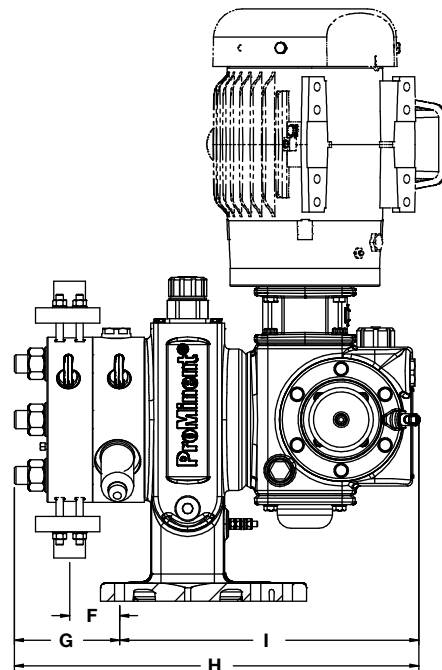
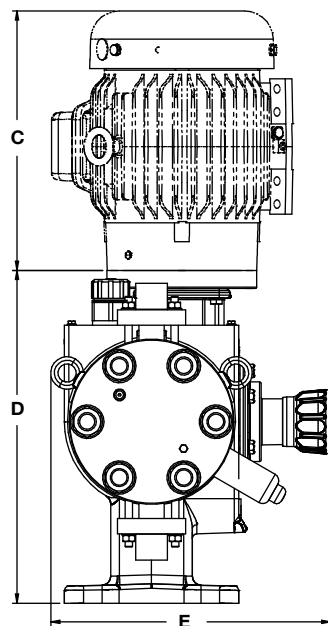
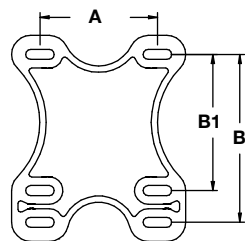
Important Note:

The data in the tables are an abridged version of the available product range. Contact ProMinent if specific capacities are needed for your application.

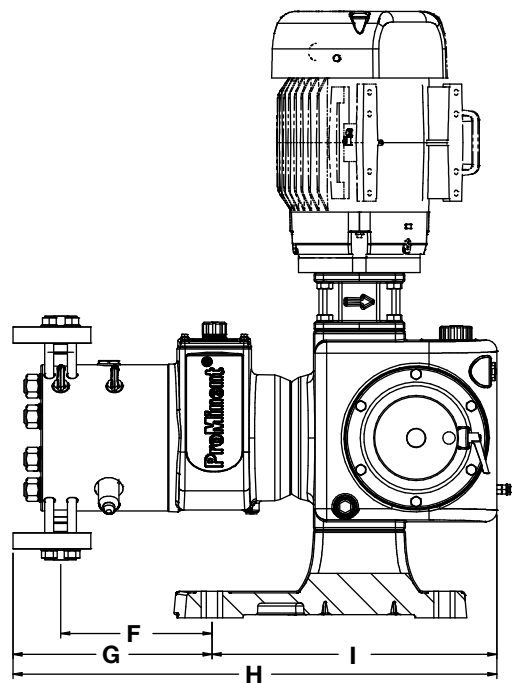
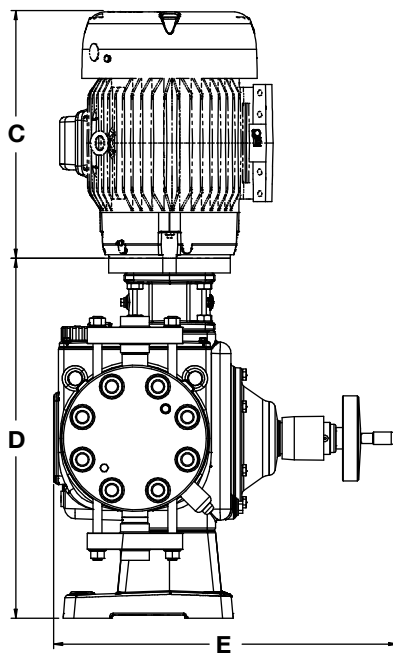
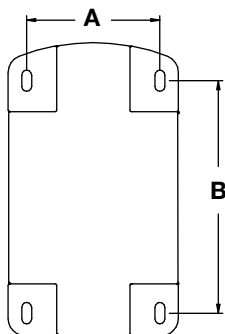
EF1a								
Plunger Ø	Stroke Volume	Pump capacity in gph at strokes/min (60 Hz & 1800 rpm)					Maximum Discharge Pressure	Maximum Motor Power
	Strokes per minute	88	117	140	175	199		
mm	ml/stroke	gph ¹	gph ¹	gph ¹	gph ¹	gph ¹	psig ¹	HP ²
8	0.75	0.72	0.91	1.11	1.37	1.56	232	1/2
12	1.70	1.87	2.48	2.97	3.72	4.23	232	1/2
21	5.20	5.92	7.78	9.32	11.67	13.29	232	1/2
29	9.91	11.87	15.91	18.92	23.65	26.92	232	1/2
44	22.81	29.89	39.75	47.57	59.46	67.64	145	1/2
60	42.41	56.74	75.46	90.34	112.90	128.45	116	1/2
EF2a								
mm	ml/stroke	gph ¹	gph ¹	gph ¹	gph ¹	gph ¹	psig	HP
11	1.43	1.39	1.72	2.18	2.64	2.97	232	1/3
21	5.20	5.76	8.10	9.40	11.75	13.29	232	3/4
29	9.91	11.8	15.9	18.83	23.62	26.80	232	1
44	22.81	29.80	39.77	47.66	59.60	67.68	145	1-1/2
50	29.45	38.89	51.94	61.98	77.53	88.33	145	1-1/2
60	42.41	57.43	75.86	91.18	114.08	129.69	116	1-1/2
EF3a								
mm	ml/stroke	gph ¹	gph ¹	gph ¹	gph ¹	gph ¹	psig ¹	HP ²
63	77.93	102.98	136.99	164.35	205.30	233.43	145	1-1/2
67	88.14	116.66	155.33	185.73	232.18	264.01	145	1-1/2
70	96.21	128.07	170.69	204.96	256.13	291.08	145	1-1/2
75	110.45	149.38	198.56	237.85	297.21	337.95	145	1-1/2
EF4a								
mm	ml/stroke	gph ¹	gph ¹	gph ¹	gph ¹	gph ¹	psig ¹	HP ²
70	153.94	201.82	268.47	321.11	401.29	456.37	145	5
86	232.35	311.14	413.67	495.08	618.82	639.84	145	7-1/2
110	380.13	519.5	691.00	826.63	1033.22	1175.02	145	7-1/2
140	858.8	1027.80	1352.64	1690.83	1630.53	1922.78	145	7-1/2

Evolution Series

Evolution 1 and 2 - Metallic



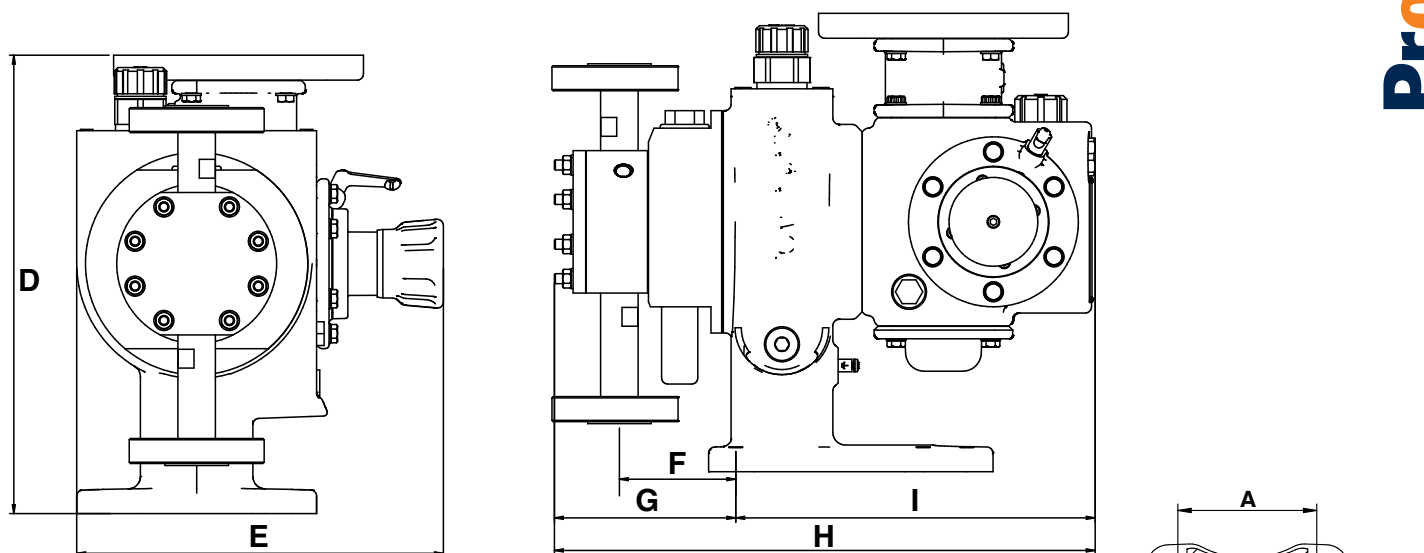
Evolution 3 and 4 - Metallic



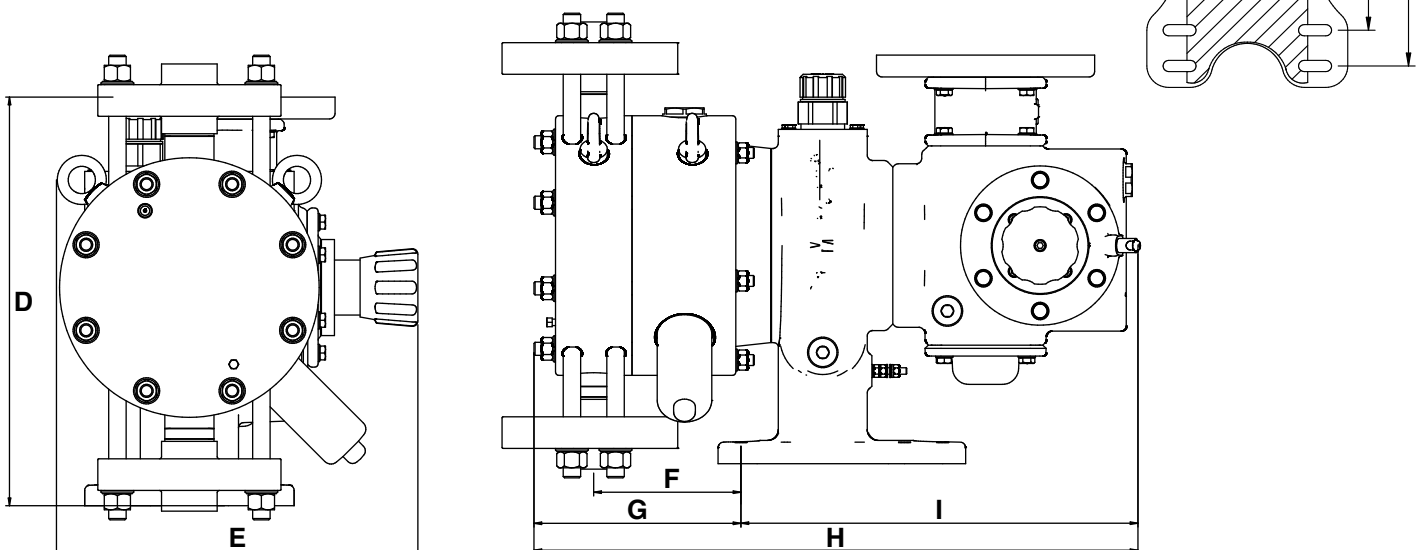
Evolution	A	B	B1	C	D	E	F	G	H	I	Approx. WT (lbs)
1	5.1	7.3	5.9	*	14.4	11.5-12.2	2.1-3.8	5.9-7.7	18.8-20.7	13.0	143-198
2	5.1	7.3	5.9	*	14.8	12.0-13.0	2.1-5.3	6.2-9.8	20.6-24.2	14.4	197-283
3	6.9	12.2	-	*	20.0	23.3-24.3	7.1-9.2	11.1-13.8	25.9-28.6	14.8	396-506
4	9.2	16.1	-	*	25.0	24.5-24.9	9.8-12.5	14.3-17.8	34.1-37.5	19.8	836-1067

Note: all measurements are in inches
* Motor dimensions are project dependent

Evolution 1 - PVC/PVDF



Evolution 2 - PVC/PVDF



Evolution	A**	B**	B1**	D	E	F	G	H	I	Approx. WT (lbs)
1	5.1	7.3	5.9	14.4	11.5-12.2	2.1-3.8	5.9-7.7	18.8-20.7	13.0	143-198
2	5.1	7.3	5.9	14.8	12.0-13.0	2.1-5.3	6.2-9.8	20.6-24.2	14.4	197-283

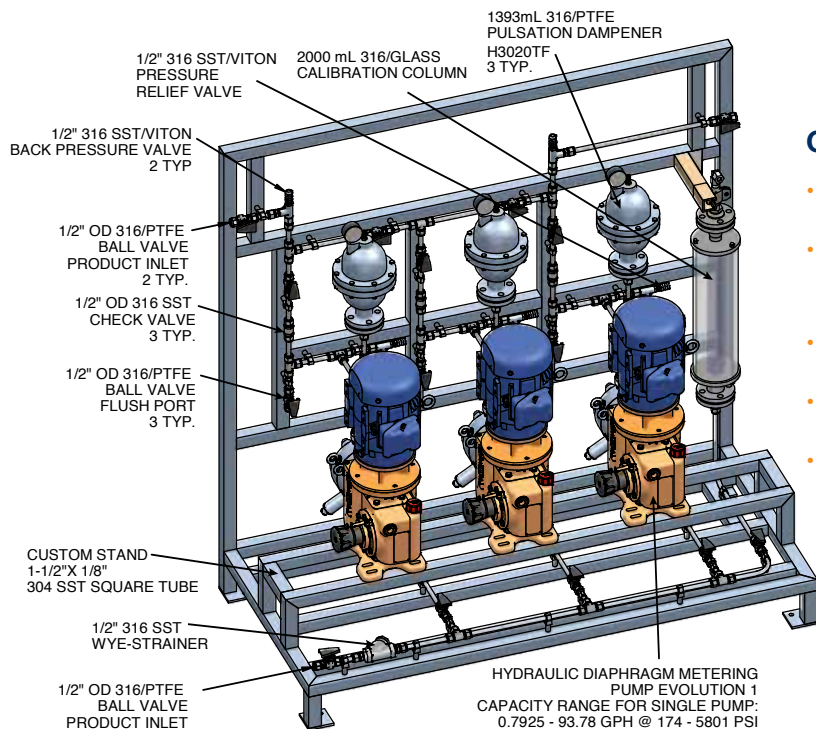
Note: all measurements are in inches

*Motor dimensions are project dependent

**Base Dims. Are the same for the EVO 1 & 2 PVC/PVDF

Evolution Series

Custom Chemical Feed Systems/ Evolution 1, Three Pump Feed System



Complete Chemical Feed Systems

- Interconnecting piping, valves, & fittings
- Materials in 316ss, Alloy 20, Hastelloy, PVC, CPVC, Kynar and others
- All chemical feed system accessories
- UL 508 Control Panels
- Single source responsibility

Additional ProMinent® Process Pump Solutions

In addition to the Evolution Series pumps ProMinent® still offers several other process oriented chemical metering pump lines including:

- **Orlita MfS Series** – Flows up to 2,200 gph @ pressures ranging up to 9,000 psig. Teflon diaphragm, API 675 compliant pump
- **Orlita MhS Series** – Flows up to 200 gph @ pressures ranging up to 11,000 psig and with some designs up to 42,000 psig. Metal diaphragm, API 675 compliant pump
- **Orlita DR Series** – Specialty rotating piston pump for use with high viscosity fluids (up to 1,000,000 cp)
- **Hydro Series** - Flows up to 380 gph @ pressures ranging up to 1,450 psi. Teflon diaphragm, API 675 compliant pump
- **ProMus Series** - Flows up to 100 gph @ pressure ranging up to 3,500 psig. Teflon diaphragm, API 675 compliant pump
- **Extronic Series** – Flows up to 15 gph @ pressure ranging up to 232 psig. Explosion proof rated solenoid pump



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