ProMinent introduces The Gamma/L, with NEW optional Flow Monitor providing ...

ADVANCED FLOW VERIFICATION

EXPERTS IN CHEM FEED

ProMinent®

The gamma/L offers features that take the guesswork out of operation and ensures low maintenance for the operator.

OPTIONAL FEATURES

- NEW Optional flow monitor ensures FLOW VERIFICATION
- NEW 4-20 mA input and output
- Large illuminated status display, readable at an offset angle of 45°
- Field bus connection for remote monitor and control via a SCADA/PLC system
- Integral, programmable, 2 week timer
- Access to pump feed rate externally, via 4-20 mA output

ACCURACY AND PRECISION

- Auto-degassing liquid ends for sodium hypochlorite and aqueous ammonia
- Output can be set to display in either U.S. gallons/hour or Liters/hour
- Stroke Length is set and is displayed digitally from 1 to 100%
- Totalized output in gallons or Liters
- Adjustable backpressure control
- Manual and external 1:1 control. Optional analog control and/or pulse contact (multiplier/divider)

BUILT-IN WARNINGS AND ALARMS

- Direct calibration with a +/-10% built-in warning system
- Flow monitor with adjustable error setting up to 125 strokes
- Three LED lights to indicate operational status; green for normal, yellow to warn, red for pump stop
- Relay outputs for fault indication and/or pacing relay; retrofittable on-site
- Access code available to prevent unauthorized adjustment to programmed settings

STANDARD FUNCTIONS

Calibration: Direct and easy calibration of flow with warning indicator when leaving the calibrated range (+/- 10% of stroke length setting).

Pressure Level: Adjustable backpressure control dependant on pump's maximum psig.

Auxiliary Frequency: Programmable, default value can be enabled via an optional control cable.

Flow: Stops pump if insufficient fluid is discharged for a predetermined number of strokes (up to 125) when used in conjunction with a flow monitor.

Float Switch: Warns when chemical levels are low or stops pump at insufficient supply. Requires optional two-stage float switch.

Gamma/l with NEW optional flow monitor

PRINCIPLES OF OPERATION

THE DRIVE UNIT

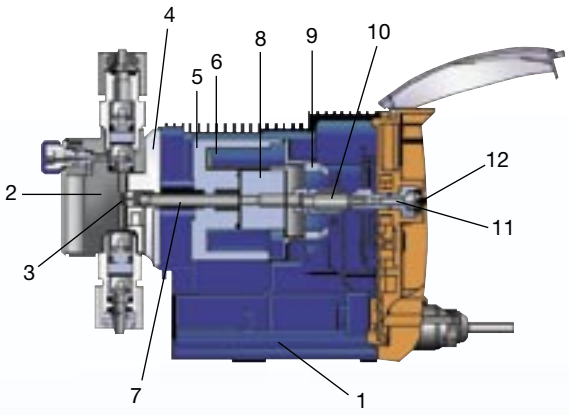
The drive unit houses a short-stroke solenoid with a maximum stroke length 0.05" (1.25mm). It is equipped with a noise suppressing mechanism for quiet operation and has only one moving part, the armature.

Operating on pulse action, each pulse generates a magnetic field in the solenoid coil. This magnetic field moves the armature forward. At the end of the armature is the diaphragm. The diaphragm pushes into the dosing head cavity forcing chemical out of the discharge valve. When the magnetic field is de-energized, a spring returns the armature and diaphragm to their original position. This return movement draws chemical into the dosing head cavity through the suction valve.

In the event of a diaphragm rupture, the liquid end has a weep hole on the bottom of the backplate to direct chemical out of the pump and away from the solenoid. An optional diaphragm failure monitor can be used to stop the pump and indicate a problem.

The stroke-length adjusting mechanism is directly connected to the solenoid. Adjustment results in an accurate self-locking stroke length setting.

Cutaway View of ProMinent Gamma/L Solenoid-Driven Metering Pump



1 Housing
2 Liquid end
3 Diaphragm
4 Backplate
5 Solenoid
6 Solenoid coil
7 Solenoid axle
8 Armature
9 Cover
10 Stroke adjustment screw
11 Stroke adjustment axle
12 Stroke adjustment knob

FEED RATE

Feed rate is determined by stroke length and stroke rate. Stroke length is manually adjustable from 1 to 100% in increments of 1% via the stroke length knob.

Stroke rate can be set to a maximum of 180 strokes per minute. An illuminated LCD displays stroke length, stroke rate and an accumulative stroke counter, which can be cleared and reset.

Pump capacity output is displayed in either U.S. gph or L/h, set by the operator. Output is accumulated and totalized. Capacity is also displayed in either U.S. gallons or liters.

MICROPROCESSOR CONTROL

Four control modes are available for the gamma/L pump: manual, external contact 1:1, external contact with pulse control (multiplier/divider), or analog control.

SPECIFICATIONS

Housing: Fiberglass-reinforced PPE plastic, NEMA 4X enclosure rating.

Diaphragm: PTFE-faced EPDM with plastic core standard. Other materials optional.

Repeatability: +/-2% under constant conditions and at minimum 30% stroke length when used according to operating instructions.

Industry Standard: CE, CSA and UL approved.

Auto-Degassing and High Viscosity Liquid Ends

Liquid end materials for the gamma/L pump are available in six versions:

- PVDF (High Viscosity)
- Polypropylene (PP)
- PVC (PC)
- Acrylic/PVC (NP)
- PTFE (TT)
- 316 Stainless Steel (SS)

A manual bleed valve for easy priming and continuous bleeding is available with versions 1000-0420 PP, NP and PC liquid ends.

An automatic degassing liquid end is available for PP and NP versions (except 1000 and 0232).

This new style liquid end discharges from the center and degasses from the top to prevent air build-up in the chamber or loss of prime for fluids that tend to off-gas.

Repeatability with the auto-degassing liquid end is +/-2% under constant conditions and at minimum 50% stroke length when used according to operating instructions.

Suction and discharge ports on all liquid ends are equipped with double ball check valves for maximum repeatability.

Liquid end materials

Version	Liquid End	Suction/Discharge valves	Seals	Valve balls	Diaphragm
PVT*	PVDF	PVDF	PTFE	Ceramic	PTFE
PPE	Polypropylene	Polypropylene	EPDM	Ceramic	PTFE
PPB	Polypropylene	Polypropylene	Viton®	Ceramic	PTFE
PCE	PVC	PVC	EPDM	Ceramic	PTFE
PCB	PVC	PVC	Viton®	Ceramic	PTFE
NPE	Acrylic	PVC	EPDM	Ceramic	PTFE
NPB	Acrylic	PVC	Viton®	Ceramic	PTFE
TTT	PTFE with carbon	PTFE with carbon	PTFE	Ceramic	PTFE
SST	316 Stainless steel	316 Stainless steel	PTFE	Ceramic	PTFE

* For High Viscosity Liquid Ends only.
Auto-degassing type with Hastelloy C valve spring and PVDF valve seat.
Viton® is a registered trademark of DuPont Dow Elastomers.

OPTIONS

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Fault Annunciating Relay: For low tank level, loss of flow, system faults and fuse/power supply failure.

Fault and Pacing Relay: Fault plus a contact closure is issued with every pump stroke allowing a second pump to be paced synchronously, or to totalize flow with an external stroke counter.

Access Code: A programmable access code to prevent unauthorized changes to programmed settings.

4-20 mA Analog Output

A 4-20 mA analog output option is available for use with pumps that operate in the manual mode or by a remote 4-20 mA analog reference signal. The 4-20 mA analog output signal is linear to pump frequency multiplied by the percentage of stroke length. The output signal is isolated and can drive up to 300 Ohms impedance. Analog output can be used for status feedback to higher level control systems for closed loop control or for monitoring chemical usage. This option is available in combination with either the fault annunciating or pacing relay.

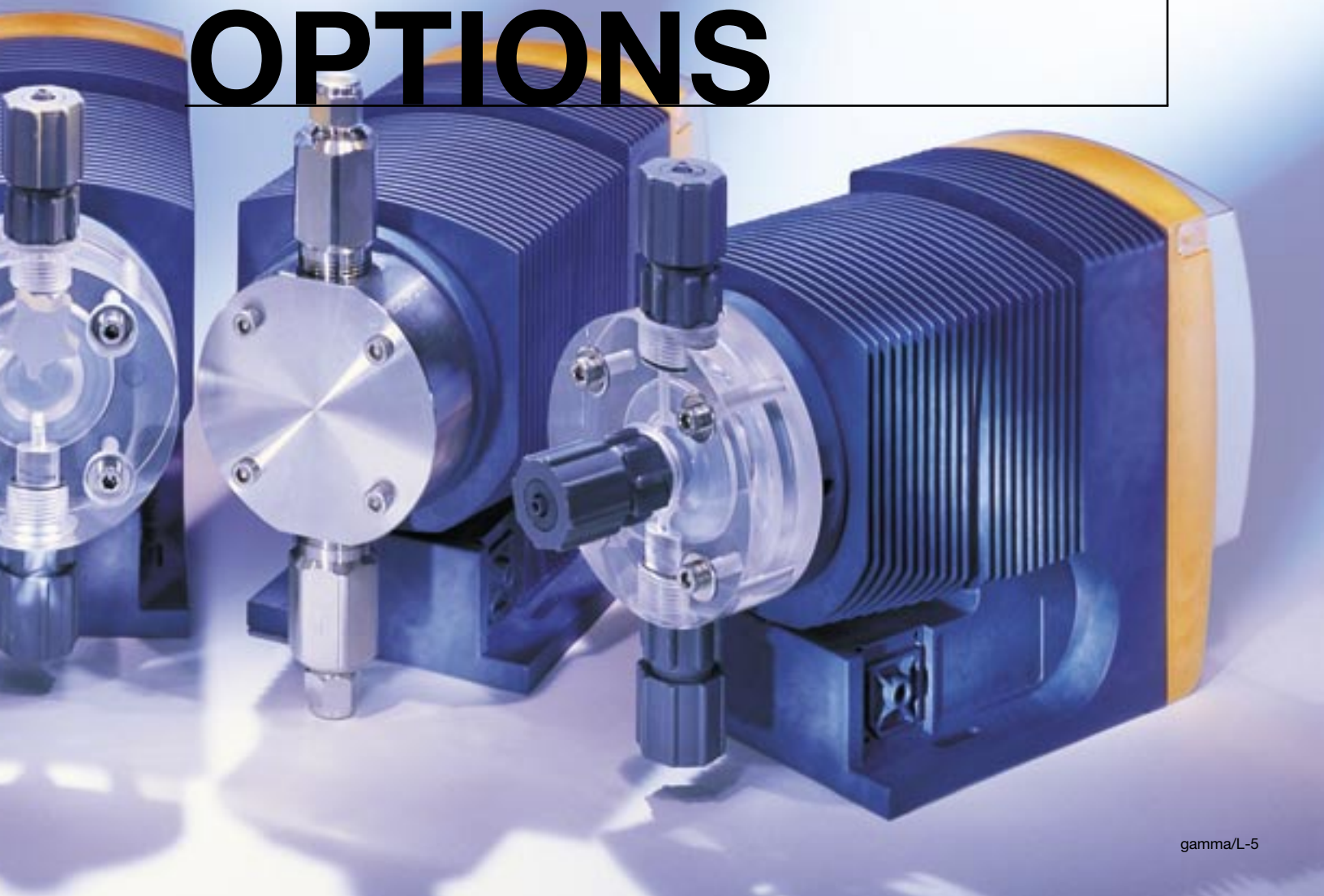
Timer Relay:

The optional integrated 2-week timer offers 81 programmable events. It can be set to hourly, daily, work days, weekend, weekly or two-week periods with switch-on times from 1 second to two weeks. The timer can be programmed to change operation mode, frequency and the function of two relays. All the functions can be programmed independently of one another. Up to 13 delay times can be programmed into the timer function.

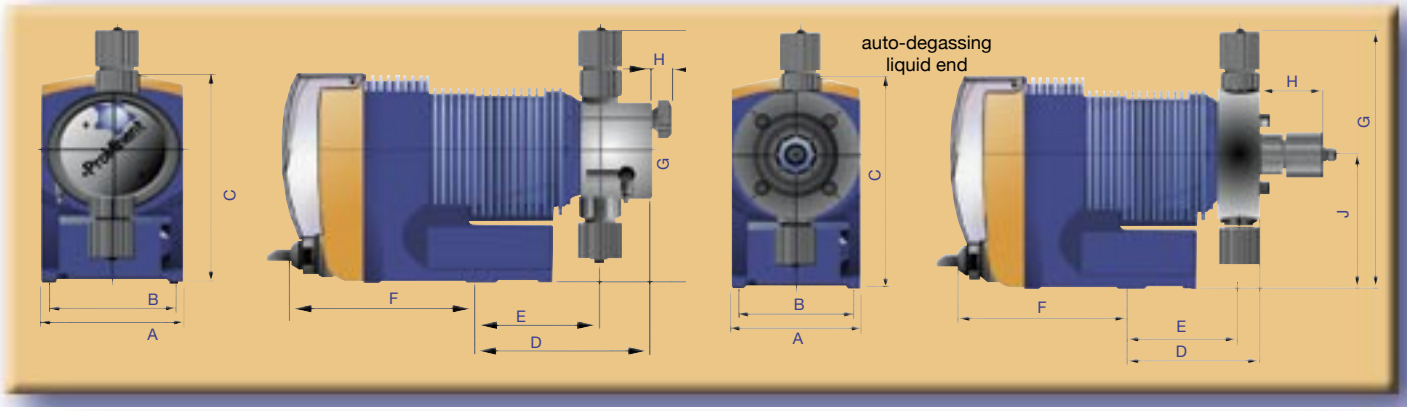
The range of applications exceeds that of a "standard timer". Typical application is disinfection in cooling towers, process water, etc., with the ability to automatically program shock dosages or increase the concentration at a certain interval.

Field Bus Connection: Monitor and control of operating status and selected settings via SCADA/PLC system.

The "i" key is used to scroll information screens for stroke rate, stroke length, stroke counter, flow output and totalized output. Other information is available depending on control mode.



GAMMA/L DIMENSIONS



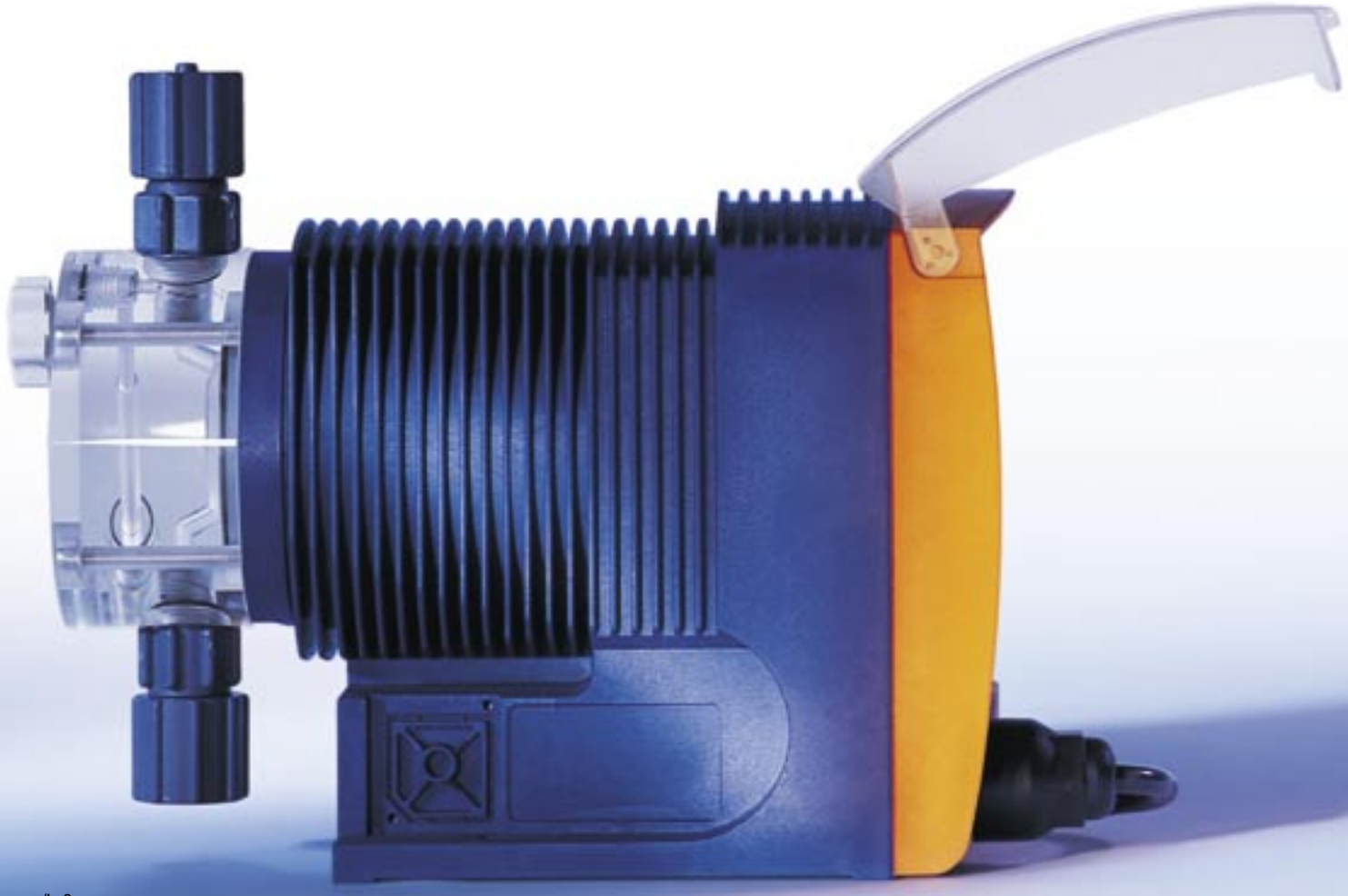
Dimensions in inches (mm). *Actual dimensions dependent on liquid end material.

Pump	A	B	C	D*	E*	F	G*	H*	J
GALa	4.0 (102)	3.1 (80)	6.3 (160)	3.3-4.3 (85-110)	2.8-3.1 (71-80)	5.8 (147)	6.4-8.5 (162-217)	0.5-0.6 (12-14)	-
with auto-degassing liquid end									
GALa	4.0 (102)	3.1 (80)	6.3 (160)	3.5-3.6 (89-92)	2.9-3.0 (74-77)	5.8 (147)	6.7-7.4 (177-189)	1.7 (44)	4.0 (101)

Power Supply: 100-230 VAC. 1 phase, 50/60 Hz, +/- 10%

Warranty: 2 years on drive, 1 year on liquid end

Standard Production Test: All pumps are tested for capacity at maximum pressure prior to shipment



The gamma/L series metering pump exemplifies the quality and performance standards of ProMinent products. The versatility offered allows adaptability into a variety of processes, industries, and environments.

TECHNICAL INFORMATION

Pump Version	Capacity at Maximum Backpressure					Capacity at 1/2 Maximum Backpressure					Pre-Primed Suction Lift		Max. Stroking Rate	Tubing Connectors**	Shipping Weight (higher weights are for SS)	
	psig	(bar)	U.S. GPH	(L/h)	mL/ stroke	psig	(bar)	U.S. GPH	(L/h)	mL/ stroke	ft.	(m)	spm	O.D. x I.D. inches	lbs.	(kg)
GALa																
1000	145	(10)	0.19	(0.74)	0.07	73	(5)	0.21	(0.82)	0.08	19.6	(6)	180	1/4 x 3/16	7.5-8.6	(3.4-3.9)
1601	253	(17.5)	0.29	(1.1)	0.10	126	(8.75)	0.37	(1.4)	0.13	19.6	(6)	180	1/4 x 3/16	7.5-8.6	(3.4-3.9)
1602	253	(17.5)	0.55	(2.1)	0.19	126	(8.75)	0.66	(2.5)	0.24	19.6	(6)	180	1/4 x 3/16	7.5-8.8	(3.4-4.0)
1005	145	(10)	1.1	(4.4)	0.41	73	(5)	1.32	(5.0)	0.46	19.6	(6)	180	1/2 x 3/8	7.7-9.0	(3.5-4.1)
0708	101	(7)	1.9	(7.1)	0.66	50.5	(3.5)	2.22	(8.4)	0.78	19.6	(6)	180	1/2 x 3/8	7.7-11.0	(3.5-5.0)
0413	58	(4)	3.2	(12.3)	1.14	29	(2)	3.75	(14.2)	1.31	9.8	(3)	180	1/2 x 3/8	7.7-11.0	(3.5-5.0)
0220	29	(2)	5.0	(19.0)	1.76	14.5	(1)	5.52	(20.9)	1.94	6.5	(2)	180	1/2 x 3/8	7.7-11.0	(3.5-5.0)
1605	253	(17.5)	1.1	(4.1)	0.38	126	(8.75)	1.29	(4.9)	0.45	19.6	(6)	180	1/2 x 3/8	9.3-10.8	(4.2-4.9)
1008	145	(10)	1.8	(6.8)	0.63	73	(5)	2.19	(8.3)	0.76	19.6	(6)	180	1/2 x 3/8	9.5-12.8	(4.3-5.8)
0713	101	(7)	2.9	(11.0)	1.02	50.5	(3.5)	3.46	(13.1)	1.21	13.1	(4)	180	1/2 x 3/8	9.5-12.8	(4.3-5.8)
0420	58	(4)	4.5	(17.1)	1.58	29	(2)	5.04	(19.1)	1.77	9.8	(3)	180	1/2 x 3/8	9.5-12.8	(4.3-5.8)
0232*	29	(2)	8.4	(32.0)	2.96	14.5	(1)	9.56	(36.2)	3.35	6.5	(2)	180	1/2 x 3/8	9.9-13.9	(4.5-6.3)
GALa *with auto-degassing liquid ends*																
1601	253	(17.5)	0.16	(0.59)	0.055	126	(8.75)	0.21	(0.78)	0.07	5.9	(1.8)	180	1/4 x 3/16	7.7	(3.5)
1602	253	(17.5)	0.37	(1.4)	0.13	126	(8.75)	0.45	(1.7)	0.16	6.9	(2.1)	180	1/4 x 3/16	7.7	(3.5)
1005	145	(10)	0.95	(3.6)	0.33	73	(5)	1.05	(4.0)	0.37	8.8	(2.7)	180	1/2 x 3/8	7.7	(3.5)
0708	101	(7)	1.74	(6.6)	0.61	50.5	(3.5)	1.98	(7.5)	0.69	6.5	(2.0)	180	1/2 x 3/8	7.7	(3.5)
0413	58	(4)	2.8	(10.8)	1.00	29	(2)	3.3	(12.6)	1.17	6.5	(2.0)	180	1/2 x 3/8	7.9	(3.6)
0220	29	(2)	4.3	(16.2)	1.50	14.5	(1)	4.7	(18.0)	1.67	6.5	(2.0)	180	1/2 x 3/8	7.9	(3.6)
1605	253	(17.5)	0.87	(3.3)	0.31	126	(8.75)	1.00	(3.8)	0.35	9.8	(3)	180	1/2 x 3/8	9.5	(4.3)
1008	145	(10)	1.66	(6.3)	0.58	73	(5)	1.98	(7.5)	0.69	9.8	(3)	180	1/2 x 3/8	9.5	(4.3)
0713	101	(7)	2.77	(10.5)	0.97	50.5	(3.5)	3.2	(12.3)	1.14	8.2	(2.5)	180	1/2 x 3/8	9.5	(4.3)
0420	58	(4)	4.12	(15.6)	1.44	29	(2)	4.6	(17.4)	1.61	8.2	(2.5)	180	1/2 x 3/8	9.5	(4.3)

Above capacities and suction lift refer to pumps tested on water at 115 VAC, 60 Hz, and an ambient temperature of 70°F (20°C). Higher specific gravity fluids will reduce suction lift. Higher viscosity fluids will reduce capacity.

Liquid ends for highly viscous media have 10-20% less metering capacity and are not self-priming. Standard connectors are 1/2" MNPT or 5/8" hose barb. Positive suction is recommended.

* Not available with bleed valve.
** SS versions use 1/4" female threads except models 0220, 0420, and 0232 which use 3/8" female threads.

Systems Integration

RECOMMENDED ACCESSORIES

Control Cables: Universal 5-wire control cable with 5-pole round connectors. For metering pump control via contact closure (pulse), standard process signal (analog), voltage-free contact for remote pause control, and auxiliary frequency default settings.

New Flow Monitor: To monitor actual flow output per pump stroke and sense faults. An optional fault relay issues an alarm. Installed directly to discharge valve.

Two-Level Float Switch: To monitor chemical levels in the source tank and signal low level warning.

Calibration Column: PVC calibration column for use when calibrating pump.

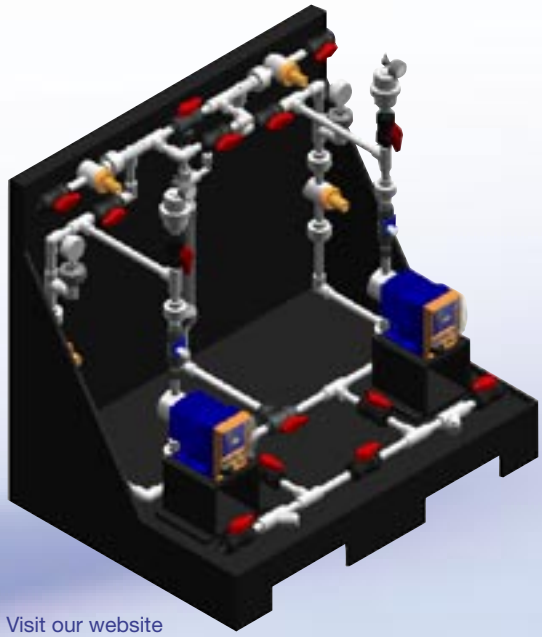
Accessory Kits: Includes suction and discharge tubing, foot and injection valve.

PRE-ENGINEERED PACKAGED SYSTEMS

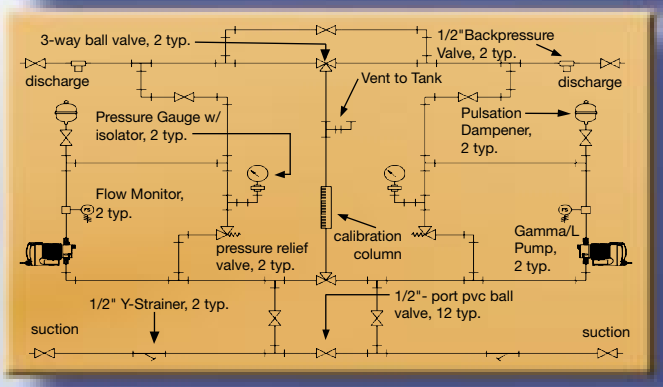
Standard pre-engineered metering packages available with the gamma series pumps include the single metering pump (S1) and dual metering pump (S2) dosing systems.

- Systems are corrosion-resistant, self-contained units with chemical metering pump(s), piping, fittings, and optional accessories.
- Engineering services include process design, P&ID development, producing CAD drawings for layout, general arrangements, shop electrical drawings, as-builts, custom operation instructions and maintenance manuals.
- 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.

S1 single pump system with ProMinent metering pump, integrated calibration column, pressure relief valve, back-pressure valve, pulsation dampener, flow monitor and pressure gauge.



S2 TYPICAL PIPING SCHEMATIC



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