

The Vario motor-driven pump series from ProMinent
Adaptable to a wide range of applications



VARIO METERING PUMP



Modular design allows selection of the features you need



- Three diaphragm sizes
- Three stroking rates (gear ratios)
- Two liquid end materials
- Eight pressure ranges
- Four control types
- Two voltage ranges
- ProMinent's pre-engineered systems - The Complete Package!



Principles of Operation

The Design principle

The ProMinent Vario is a reciprocating, positive-displacement, diaphragm type metering pump with an integral AC motor drive. The motor speed is reduced by a worm gear and transmitted to the push rod by means of an eccentric cam to produce the reciprocating motion. A return spring presses the push rod firmly against the eccentric cam, producing a smooth suction and discharge stroke.

Capacities can be varied at increments of 1% by a self-locking stroke length adjusting knob or an optional stroke positioning motor. Maximum stroke length is 0.12" (3 mm).

The Vario series can be paced externally (e.g. by means of a pulse-type water meter for proportional chemical feed). The pulse signals are fed into the contact input of the pump by an optional universal control cable. The pump output is directly proportional to the incoming pulse rate, up to the pump's maximum stroke rate.

The Diaphragm

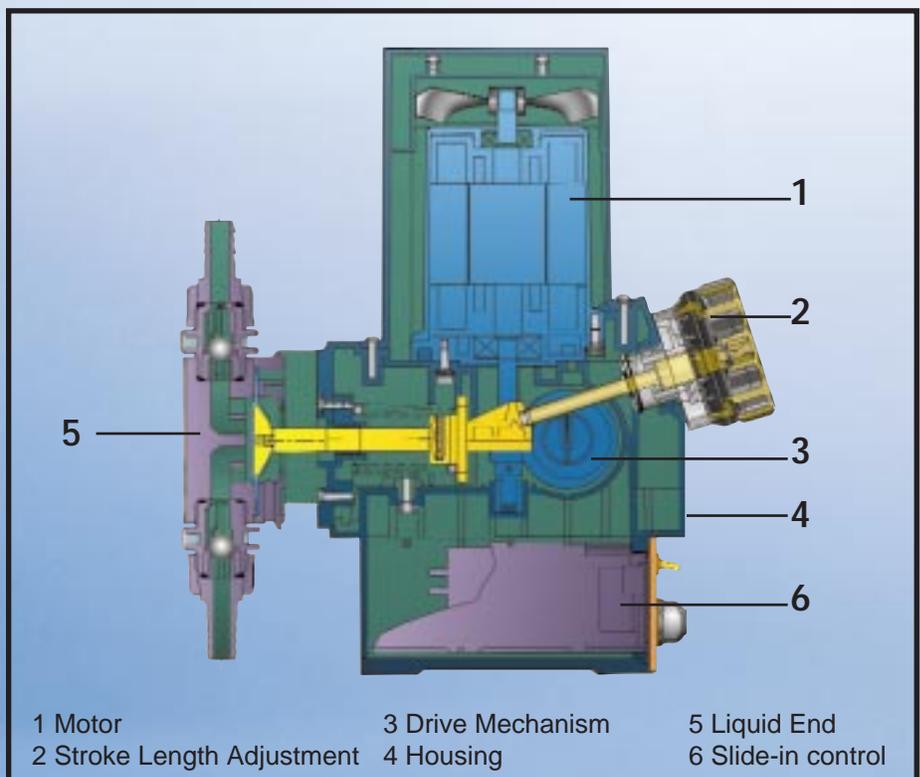
ProMinent diaphragms are designed for dependability and repeatability under constant use. The PTFE faced EPDM diaphragm features a large steel core and Nylon reinforcement. Dual sealing ribs prevent leakage and the short stroke length minimizes stress allowing for a long diaphragm life. The diaphragm is mounted directly from the steel core to the push rod (female to male threading). Dosing repeatability is +/- 2% when installed and used according to operating instructions.

The Housing

The pump is enclosed in a rugged corrosion and chemical resistant pump housing constructed of Glass-Filled Luranyl (PPE) and rated NEMA 4 (IP 65) for indoor applications.

The Motor

The Vario can be equipped with a single phase, 1/8 HP (0.10kW) AC motor; available as 115 V 60 Hz or 230 V 50/60 Hz. A 3-phase motor is also available at 220/460 V, 60 Hz in the basic pump version.



The Liquid End:
Precise and safe metering for diverse applications



The stainless steel liquid end for harsh applications



Single ball check valve and large port liquid end design for viscous fluids



Liquid End Materials:
• PVDF
• 316 SS



Control remotely using the universal dosing controller Dos-Control



Microprocessor Control

A variety of interchangeable slide-in electronic control units offering external pump control by either pulse or analog signals (e.g. 0/4-20 mA)

Control options for the Vario pump include basic, pulse or pulse with memory control, and analog. With basic control, the pump capacity is set manually via the stroke length knob. Analog and pulse control utilize a method of varying the pump output where the pump varies both the number of strokes per motor start and the number of motor starts per minute in proportion to an external analog signal or the frequency of an external pulse input. The industrial duty motor is designed to provide up to 2000 motor starts and stops per hour (33.3/min.) on a continuous basis.

External control can also be provided via an optional stroke positioning motor. This could be used with a basic pump; for example, to provide flow proportional to a water meter signal. It can also be used with an external frequency controlled pump for compound loop control; for example, from both a water meter and pH controller. Motor, power switch (on/off, yellow pilot light) and fuse are standard on all pumps.

Pulse control:

External pacing by means of pulse signals (voltage-free contacts, open collector). Six input pulse rates are available to match nearly any water meter or process controller.

Pulse memory function:

Internal memory for incoming pulses if the input rate is too high. Once the incoming pulse rate drops below maximum, the pump works off all pulses in memory.

Analog control:

External pacing by means of an analog signal (0/4-20 mA).

Vario pumps with pulse or analog control feature a voltage-free remote pause function, auto fault diagnosis and LED fault annunciation, motor overload protection, and an internal/external switch for either continuous metering or external control. Connectors for options include metering monitor, two-stage float switch, and relay outputs. A universal control cable is required and must be ordered separately.

Options

Remote pause:

The pump operation can be switched on or off via a voltage free dry contact through the optional control cable. The pump operates on a closed contact. If the contact is open, the pump stops and the green LED shuts off.

Auto-fault diagnosis:

The electronic control circuit monitors itself continuously. Any fault of the microprocessor, the thermal motor overload protection or the rotational motor overload protection stops the pump and issues an alarm (with fault annunciating relay option). The red LED lights.

Relay outputs:

This option allows you to transmit alarm messages, to start a back-up pump, indicate pump status or to pace a second ProMinent metering pump synchronously. This option is selectable as:

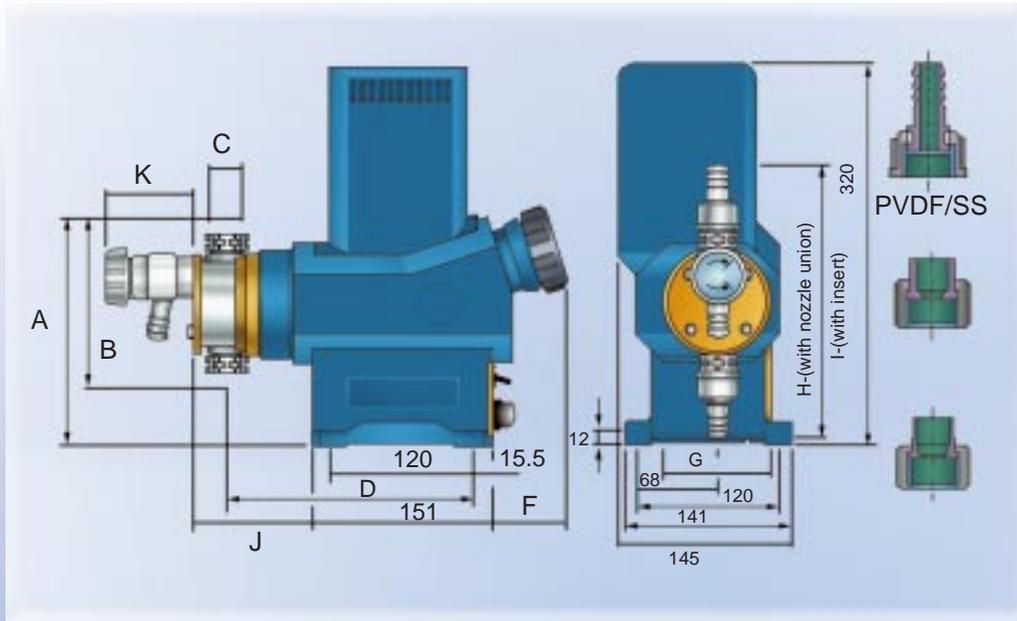
Pacing relay:

A contact closure is issued with every pump stroke (contact duration 150 ms). This allows a second ProMinent metering pump to be paced synchronously or to totalize flow with an external stroke counter.

Fault annunciating relay:

For low tank level (float switch), loss of flow (flow monitor) and system faults. Can be ordered with a normally energized or normally de-energized function.

VARIO DIMENSIONS



DIMENSIONS IN INCHES (MM)

Version	Material	A	B	Suction/ Discharge Valve Thread C	Half Union Pipe Adapter	D	F	G	H	I	J	K
12017, 12026, 12042	PVDF	7.5 (190)	5.5 (140)	DN 10	1/2" MNPT	8.2 (208)	2.5 (65)	3.3 (85)	8.9 (225)	-	3.6 (92)	2.9 (74)
	SS	7.5 (190)	5.5 (140)	DN 10	3/8" FNPT	8.2 (208)	2.5 (65)	3.3 (85)	-	7.0 (175)	3.5 (90)	2.9 (74)
10025, 09039, 07063	PVDF	7.5 (190)	5.5 (140)	DN 10	1/2" MNPT	8.2 (208)	2.5 (65)	3.3 (85)	8.9 (225)	-	3.6 (92)	2.9 (74)
	SS	7.5 (190)	5.5 (140)	DN 10	3/8" FNPT	8.2 (208)	2.5 (65)	3.3 (85)	-	7.0 (175)	3.5 (90)	2.9 (74)
06047, 05075, 04120	PVDF	8.6 (218)	7.7 (195)	DN 15	3/4" MNPT	8.3 (210)	2.5 (65)	5.3 (135)	12.8 (325)	-	4.2 (106)	2.7 (69)
	SS	8.6 (218)	7.7 (195)	DN 15	1/2" FNPT	8.3 (210)	2.5 (65)	5.3 (135)	-	9.5 (235)	3.9 (98)	2.7 (69)



Specifications

Dosing repeatability:	+/- 2% when installed and used according to the operating instructions		
Power cord:	6 foot (2 m) 2 wire + ground		
Ambient temperature range:	14°F (-10°C) to 104°F (40°C)		
Max. fluid operating temperatures:	<u>Material</u>	<u>Constant</u>	<u>Short Term</u>
	PVDF	149°F (65°C)	212°F (100°C)
	316 SS	122°F (50°C)	248°F (120°C)
Maximum solids size in fluid:	0.2 mm		
Warranty:	Two years on drive; one year on liquid end		
Factory testing:	Each pump is tested for rated flow and pressure		
Industry standards:	CSA approval available at additional cost in U.S., standard in Canada CE approved		

Technical Data

60 Hz (3450 RPM motor)									
Pump version Vario/b	psig (bar)	Capacity at max. backpressure U.S. gph (L/h)	Max. stroking rate strokes/min.	mL/stroke	Max. suction lift ft. (m)	Maximum suction side pressure psig (bar)	Suction/discharge connector inches NPT hose barb		Shipping weight lbs. (kg)
12017 PVT	145 (10)	5.3 (20)	92	3.6	22.9 (7.0)	40.6 (2.8)	1/2M	5/8	14.5 (6.6)
12017 SST	174 (12)	5.3 (20)	92	3.6	22.9 (7.0)	40.6 (2.8)	3/8F	5/8	18.9 (8.6)
12026 PVT	145 (10)	8.3 (31.4)	146	3.6	22.9 (7.0)	40.6 (2.8)	1/2M	5/8	14.5 (6.6)
12026 SST	174 (12)	8.3 (31.4)	146	3.6	22.9 (7.0)	40.6 (2.8)	3/8F	5/8	18.9 (8.6)
12042 PVT	145 (10)	13.3 (50.4)	234	3.6	22.9 (7.0)	40.6 (2.8)	1/2M	5/8	14.5 (6.6)
12042 SST	174 (12)	13.3 (50.4)	234	3.6	22.9 (7.0)	40.6 (2.8)	3/8F	5/8	18.9 (8.6)
10025 PVT	145 (10)	7.9 (29.8)	92	5.4	13.1 (4.0)	24.6 (1.7)	1/2M	5/8	14.5 (6.6)
10025 SST	145 (10)	7.9 (29.8)	92	5.4	13.1 (4.0)	24.6 (1.7)	3/8F	5/8	18.9 (8.6)
09039 PVT	123 (8.5)	12.5 (47.3)	146	5.4	13.1 (4.0)	24.6 (1.7)	1/2M	5/8	14.5 (6.6)
09039 SST	123 (8.5)	12.5 (47.3)	146	5.4	13.1 (4.0)	24.6 (1.7)	3/8F	5/8	18.9 (8.6)
07063 PVT	94 (6.5)	20 (75.6)	234	5.4	13.1 (4.0)	24.6 (1.7)	1/2M	5/8	14.5 (6.6)
07063 SST	94 (6.5)	20 (75.6)	234	5.4	13.1 (4.0)	24.6 (1.7)	3/8F	5/8	18.9 (8.6)
06047 PVT	80 (5.5)	15 (56.9)	92	10.2	9.8 (3.0)	11.6 (0.8)	3/4M	3/4	16.5 (7.5)
06047 SST	80 (5.5)	15 (56.9)	92	10.2	9.8 (3.0)	11.6 (0.8)	1/2F	3/4	29.7 (13.5)
05075 PVT	65 (4.5)	23.8 (90)	146	10.2	9.8 (3.0)	11.6 (0.8)	3/4M	3/4	16.5 (7.5)
05075 SST	65 (4.5)	23.8 (90)	146	10.2	9.8 (3.0)	11.6 (0.8)	1/2F	3/4	29.7 (13.5)
04120 PVT	50(3.5)/33(2.3)*	38 (144)	234	10.2	9.8 (3.0)	11.6 (0.8)	3/4M	3/4	16.5 (7.5)
04120 SST	50(3.5)/33(2.3)*	38 (144)	234	10.2	9.8 (3.0)	11.6 (0.8)	1/2F	3/4	29.7 (13.5)

When switching off the single phase AC motor via the main power supply, the maximum inlet pressure should be 20 – 50% of the maximum stated operating pressure.

*The value in brackets is the maximum permissible discharge pressure for the “pause” function or for a single stroke when externally controlled.

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.

Flow monitor: To monitor actual flow

output per pump stroke and sense faults. An optional fault relay issues an alarm.

Two-stage 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.

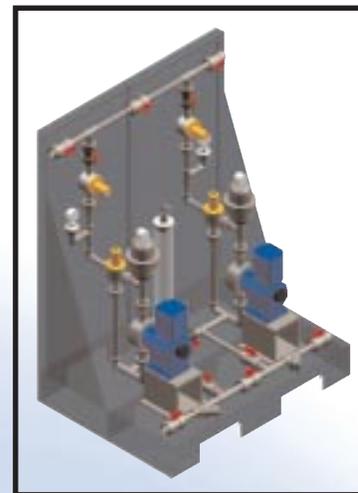


SYSTEMS

Pre-engineered Packaged Systems

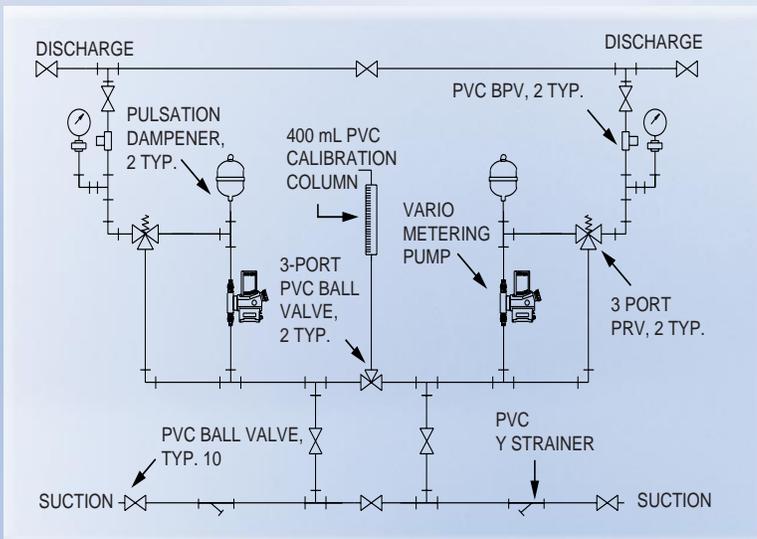
Standard pre-engineered metering packages available with the Vario series pumps include the single metering pump (S1/M1) and dual metering pump (S2/M2) dosing systems.

- 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, CAD drawings, general arrangements, shop



electrical drawings, as-built, 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.



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