

Wallace & Tiernan® Liquid Feed Systems

Encore® 100 Diaphragm Metering Pump

The Encore® 100 Diaphragm Metering Pump combines the robustness of hydraulic diaphragm drives with the unparalleled economy, simplicity, and serviceability of mechanical diaphragm liquid ends.

The pump is ideal for metering chemicals commonly used in the treatment of water and wastewater as well as industrial processes. It handles capacities up to 197 l/h (52 USGPH) at back pressure to 10 bar (150 psi). Precision engineered liquid ends suitable for mild solutions, aggressive chemicals, high viscosity polymers and slurries are available. Clear cartridge valves provide fast, service and built in visual indication of operation.

The Encore® 100 Diaphragm Metering Pump provides high metering accuracy even at varying pressure. Its rugged industrial construction, yet compact and light-weight design provides long lasting service.

Key Benefits

- Ideal for metering most chemicals used in water and wastewater or industrial applications
- Capacities to 197 l/h (52 USGPH), back pressures to 10 bar (150 psi)
- Built-in indication or operating status with clear PVC cartridge valves
- High metering accuracy even with varying discharge pressures
- Efficient metering through precision engineered liquid ends
- Single or double liquid end configuration



Product Sheet

Features

Manual Control

A five-turn micrometer gives continuous feed-rate adjustment over a 10:1 range. A percent scale and vernier indicate stroke length setting to 1 part in 100. Stroke length is infinitely adjustable from 0 to 100%.



Start-Stop Control

Encore® 100 pumps are easily wired into the circuit of a transfer pump, switch, timer, or controller.

Variable Speed Control or Variable Frequency Control

Precise and accurate feed rate control via stroke speed control using a DC motor or a variable frequency drive for inverter duty motor is available. Stroke frequency can be regulated manually by a potentiometer setting, or automatically via a 4-20 mA process variable input signal (optional). Closed loop speed regulation provides feed rate control accurate to 1% of full scale. Flow proportional control dosing or scaling of a process variable can be accomplished by means of a SCU used in conjunction with a variable speed or variable frequency drive.

For more compound loop control, a PCU can be used to provide set point control in response to two variables, such as flow and chlorine residual.

Advantages

Available with standard induction or optional variable speed / inverter duty motors for wider operating ranges and automatic process control.



This robust mechanical assembly includes an epoxy-painted cast iron gearbox for superior corrosion resistance, heavy duty ball bearings, robust gears, and a hardened steel cam and spring drive for incomparable simplicity and economy.

Double simplex capability: If your process changes or grows, a second drive with independent capacity control can be added quickly, easily, and economically. The corrosion resistant PVC liquid end adapter completely separates and seats the pump head from the drive unit. This isolating design eliminates the risk of cross-contaminating gearbox lubricant and process fluid.

Obtain precise and highly repeatable feed rate settings with a five-turn micrometer type stroke length adjuster. A percent scale and vernier indicate stroke length in 1% increments. Feedrate is infinitely adjustable from 0 to 100%.

High precision guided ball-and-seat clear PVC cartridge valves provide built-in sight flow indication and fast service. The design includes wide flow paths and four-point guides to control ball rise and assure proper seating. The valve housing is compression sealed to the pump head and pipe connectors by o-rings, and removes easily for service or replacement.

Short suction and discharge porting minimizes friction losses and cavitation, improving hydraulic characteristics and providing far more efficient fluid metering than conventional liquid end designs.

Our premium composite diaphragm is manufactured to a stringent specification to ensure long life even under the most demanding applications. The design incorporates Teflon® coated facing, for the highest degree of chemical resistance, and nylon reinforcements, all bonded to a pre-formed elastomeric support. We've added convolutions for unconstrained rolling action, a steel backing plate to assure volumetric accuracy even at varying discharge pressures and an o-ring groove in the head's diaphragm cavity for complete sealing.

An optional diaphragm leak detection system senses the early stages of diaphragm failure. The system consists of a solid-state, electro-optic sensor that mounts on the liquid end, and a control box. This box, which can be mounted at the pump, or up to 100 feet away, can monitor two liquid ends. LED's and a relay provide both local and remote indication of failure.

Single and double ball valves are available to handle mild solutions, aggressive chemicals, high-viscosity polymers, and slurries. Kynar® head and valve arrangements are also offered for high temperature applications. Traditional grey PVC threaded valves can also be supplied.

Chemical Metering Integrated Systems

Low cost packaged systems can be custom configured from standard stock components including tanks, mixers, instrumentation and a wide range of controls. For example, combine an Encore® 100 metering pump with variable speed control, a Wallace & Tiernan® Residual Analyzer and a PCU Process Control Unit for an economical hypochlorite disinfection control system. All systems are shipped assembled, prewired and ready to install.

Accessories

Our comprehensive range of coordinated accessories provide the ability to produce the best possible installation. Choose from Backpressure Valves, Pressure Relief Valves, Anti-syphon Valves, Multifunction Valves, DeGas Valves, Main Connections, Strainers, Pulsation Dampeners, Calibration Chambers, Solution Tanks, Mixers, Liquid Level Switches, Slurry Flushing Systems and numerous mounting accessories, just to name a few.

Replacement Parts

Genuine Wallace & Tiernan® replacement parts not only protect your investment in Wallace & Tiernan® equipment, they also offer assurance against failure in critical health related applications. Avoid the hazard and hidden costs of cheap imitations. Siemens Water Technologies offers fast delivery of original quality replacement parts from a large parts inventory.

PM Kit® Package

PM Kit preventive maintenance packages contain original Wallace & Tiernan® replacements for those parts most susceptible to wear. They facilitate scheduled maintenance and help maintain equipment in good working order, eliminating equipment breakdowns and costly downtime.



Side View

Technical Information

Accuracy

Repeatable metering accuracy is $\pm 2\%$ of full scale, at constant hydraulic conditions, over a 10:1 operating range.

Stroke Length

4.8mm (0.18 inches)

Feed Rate Adjustment

Feed rate is infinitely adjustable from 0 through 100%. A percent scale and vernier indicate stroke length settings in 1% increments. Each revolution of the knob changes stroke length by 20%.

Operating Range

Stroke length is adjustable over a 10:1 range; stroke frequency is adjustable over a 20:1 range (using an optional variable speed DC motor), and 10:1 (using an optional variable frequency drive and inverter duty motor). Total combined maximum operating turndown can be as high as 200:1. Above 100:1 continuous turndown, total available operating range should be evaluated against specific chemicals being metered. Minimum recommended stroke length and frequency adjustment is 10%.

Suction Lift

The pump will self-prime with 3m (10 ft) of water suction lift (wetted valves, zero back pressure, full stroke and speed, water like solutions). Once primed, the pump will operate with a 3m (10 ft) of water suction lift. Flooded suction is recommended.

Temperature Limits

With PVC liquid end: Ambient temperatures from 2 to 52° C (35 to 125°F), process fluid temperatures up to 52°C (125°F).
With Kynar® liquid end: Process fluid temperatures up to 62°C (144°F).

Control Modes

Manual, remote-manual, start-stop, variable speed, flow proportional, direct residual and compound loop.

Electrical Requirements

Standard induction motor arrangement is 1450 or 1725 rpm, 115/230 Volt, 50/60Hz single phase, TEFC, UL listed, CSA approved. Motors with other electrical characteristics are available as an option. Diaphragm leak detector requires 115/230 Volts. Relay rating 5 Amps @ 250 Volts, 30 VDC. Variable speed drive control unit requires 115/230 Volt, 50/60 Hz single phase, 2.5 to 10 Amps.

Materials of Construction

Gear box: epoxy-painted cast iron

Liquid end adapter: PVC

Pump head: PVC and Kynar® standard; stainless steel optional
Suction and discharge valve housings: clear PVC, grey PVC, Kynar®

Valve balls: 316 stainless, TFE, ceramic, glass and polyurethane (for slurry service)

Valve seals: Hypalon® and Viton®

Diaphragm: TFE-faced, fabric reinforced, elastomer backed, with a steel backing plate

Mounting base: ABS

Polymer and Slurry Handling Capabilities

Polymer solutions up to 5000 centipose (Brookfield Viscometer with No. 2 spindle @12 rpm) under any condition. Higher viscosities with decreased capacity. Hydrated lime slurries up to 0.45 kg/l (3.8 lb/gal) of water; activated carbon slurries up to 0.13 kg/l (1.1 lb/gal); Diatomaceous earth slurries up to 0.20 kg/l (1.7 lb/gal) of water.

Weight and Shipping Weight

Single simplex: 20 kg; 24 kg (44 lb; 53 lb)

Double simplex: 25 kg; 29 kg (55 lb; 64 lb)

Dimensions

See WT.440.050.100.UA.CN and WT.440.050.102.UA.CN



Top View

Capacity Chart

Diaphragm Size (inches)	50 Hz 1450 RPM			60 Hz 1725 RPM			Maximum Discharge Pressure		Motor Induction (Variable Speed)		Connections NPT (BSP) [tubing]
	Stroke Frequency Strokes / min	Simplex Capacity ¹		Stroke Frequency strokes / min	Simplex Capacity ¹						
		l/h	usgph		l/h	usgph					
35 mm (1-1/2")	36	4.9	1.3	43	5.7	1.5	10	150	.18 (.37)	1/4 (1/2)	R1/2" (1/2") [3/8" ID x 1/2" OD]
	72	10.6	2.8	86	11.3	3.0					
	120	15.9	4.2	144	18.9	5.0					
	144	18.9	5.0	---	---	---					
50 mm (2")	36	24.6	6.5	43	29.3	7.7	10	150	.18 (.37)	1/4 (1/2)	R1/2" (1/2") [3/8" ID x 1/2" OD]
	72	49.2	13.0	86	58.8	15.5					
	120	82	21.7	144	98.4	26					
	144	98.4	26.0	---	---	---					
*100 mm (4")	36	35	9.2	43	41.8	11.4	4	60	.18 (.37)	1/4 (1/2)	R3/4 (3/4")
	72	70	18.5	86	83.6	22.1					
	120	116	30.6	144	140	37					
	144	140	37	---	---	---					

* Note: 100mm (4") head is an application special. Available as simplex arrangement only.

¹The capacity table reflects simplex capacities. Double simplex arrangements must be configured with the same stroke frequency on both liquid ends.

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