Neptune® is a premier manufacturer of hydraulic and mechanical diaphragm metering pumps, chemical feed systems, mixers, and accessories. Since 1961, Neptune has been delivering accurate, precise and quality solutions for a variety of industries, including agriculture, oil and gas exploration, power generation, chemical processing, and water/wastewater treatment. Headquartered in Grand Terrace, CA, USA, Neptune is part of PSG®, a Dover company.

HYDRAULIC AND MECHANICAL DIAPHRAGM PUMPS

How it Works

Hollow piston 1 reciprocates within a cylinder. Metering rod 2 fits into the piston. Note the front of the piston, or “nose,” has a reduced diameter. The liquid seal forms 3 where the full diameter of the piston contacts the cylinder.

When the piston moves forward, oil by-passes over the reduced nose, through port 4 to the center of the piston and back to the gearbox. As the piston continues forward, port 4 is blocked by the tip of the metering rod 2 stopping the by-pass. Oil is now pushed through port 5 to the diaphragm.

- Hydraulically balanced diaphragm eliminates diaphragm stress associated with mechanically flexed units.
- Antisiphon spring provides back pressure when pumping against low pressure.
- EZE-CLEAN™ Valves – feature cartridges that can be removed for cleaning without disturbing the piping to the pump.
- Micrometer dial – provides all Neptune "dia-Pumps” the ability to adjust capacity from 10% to 100%.
- Variable Oil By-Pass™ Stroke Adjustment – provides a better valve performance when compared to variable linkage designs. This increase in performance is the result of valve checks that have extra time to seat even in viscous liquids since they are idle during the by-pass portion of the suction and discharge strokes.
- Vent—Refill mechanism operates once per stroke.
- Power train operates in oil for extended service.

Turning the micrometer dial moves the metering rod and changes the pump capacity. When the metering rod is moved in, the tip of the metering rod closes port 4 sooner in the stroke allowing for less by-pass and more pumping action. Likewise, when the metering rod is moved out, the tip of the metering rod closes port 4 later in the stroke allowing more by-pass and less pumping.

The motion of the piston pushes and pulls the hydraulic fluid through port 5, into and out of the diaphragm chamber. The action of the fluid pushes and pulls the diaphragm which, in turn, pushes and pulls chemical through port 6. The action of the check valves controls the direction of the liquid.
Series 500A
Standard "dia-Pump". Available in simplex option only.
• Simplex capacities from 1 gph (3.7 lph) to 18 gph (68 lph)
• Pressures to 1100 psi (77 kg/cm²)
Request Bulletin DP-1100 for more information

Series 500E
Economy liquid head. Available in simplex option only.
• Simplex capacities from 3 gph (11.4 lph) to 29 gph (109.8 lph)
• Pressures to 1100 psi (77 kg/cm²)
Request Bulletin DP-500E for more information

Series 500S/500D
The original "dia-Pump". Available in simplex or duplex options.
• Simplex capacities from 0.2 gph (0.75 lph) to 94 gph (355.8 lph)
• Pressures to 3000 psi (210 kg/cm²)
Request Bulletin DP-1100 for more information

Series 500VS
Special application pump for light slurries and viscous fluids to 5,000 cPs. Available in simplex or duplex.
• Simplex capacities from 2 gph (7.5 lph) to 29 gph (109.8 lph)
• Pressures to 900 psi (63 kg/cm²)
Request Bulletin VP for more information

Series 600
Suited for high volume and high pressure applications. Available in simplex only.
• Simplex capacities to 240 gph (907 lph)
• Pressures to 4,000 psi (281 kg/cm²)
Request Bulletin DP-2000 for more information

Series MP-7000/7100
Series MP-7000 mechanically actuated diaphragm metering pumps are designed to self-prime, handle viscosities in excess of 5,000 cPs, and a suction lift exceeding 20 ft (6 m).
• Simplex capacities from 2.3 gph (8.7 lph) to 275 gph (1,041 lph)
• Pressures to 235 psi (16.5 kg/cm²)
Request Bulletin DP-7000 or DP-7100 for more information
HYDRAULIC AND MECHANICAL DIAPHRAGM PUMPS

**Series PZ Pumps**
Series PZ electronic diaphragm metering pumps are designed for accurate, reliable injection of a wide variety of liquids.
- Operates on any single phase voltage from 94 VAC to 264 VAC
- Manual, 4-20 mA or water meter pulse controlled
- Variety of liquid end materials

Request Bulletin PZ for more information

**Double Diaphragm Leak Detection Option with Sensor/Transmitter**
Leak detection option available for applications where process fluid contamination from hydraulic fluid cannot be tolerated or where diaphragm failure must be sensed immediately.

Request Bulletin DP-1100 for more information

**Portable EZE-GRAB Platform**
Molded polyethylene base provides elevated platform for use indoors or outdoors. Handles allow the pump to be moved easily.

Request Bulletin DP-1100 for more information

**Electronic Stroke Control**
Allows the capacity of any Series 500 or Series 600 pump to be automatically controlled in response to a process signal.

Request Bulletin ESC for more information

**PERISTALTIC HOSE PUMPS**
**Abaque™ Series Peristaltic (Hose) Pumps**
Abaque™ pumps feature a seal-less design that eliminates leaks and product contamination, and have the ability to continuously run dry without adversely affecting the pump’s performance, pressure and accuracy (no slip).
- No seals, valves, or mechanical seals to wear or replace
- Handles extremely abrasive and aggressive fluids, solid loaded liquids, as well as shear sensitive and viscous materials

Request Bulletin 1101-001 E for more information
Packaged Chemical Feed Systems
Available with up to 500 gallons with bottom-mounted or top-mounted pumps. Top-mounted pumps offer a space saving and economical solution.

Request Bulletin FDP/CFS for more information

Glycol Feeders
Automatically adds glycol solution to make up for leakage in closed loop water systems.

Request Bulletin GLY for more information

Semi-Custom Skid Flexible Pump Packages
Available with two, three or four pump units with a corrosion resistant poly base. Containment is also available. Compact and easily customized with choice of piping materials, accessories and controls.

Request Bulletin FDP/CFS for more information

Containment Systems
Completely packaged chemical feed systems mounted within a containment to efficiently contain chemical leaks and spills; ideal for drumless chemical programs.

Portable Mini-Tank Feeders
Compact, portable and economical solution.

Request Bulletin FDP/CFS for more information
By-Pass Feeders
Neptune By-Pass Feeders are a convenient method of introducing treatment chemicals into closed circulating water systems.
- Dish bottom-in or dish bottom-out models available
- Standard high-pressure cap rated to 20.7 bar (300 psi)
- Filter bags available in 1, 5, 20 and 50 micron ratings
- Vertical options to 12 gallons
- Pressures to 300 psi
- Temperatures to 200ºF

Request Bulletin BF for more information

Polymaster™ Chemical Feed System
Polymaster™ Series polymer blend and feed systems dilute, mix and thoroughly activate emulsion, dispersion and solution polymers, including new high molecular weight products.
- Patented Gatlin distribution head ensures the optimum mixing required to achieve maximum polymer efficiency
- Provides maximum activation; not affected by fluctuating water pressure or dilution water ration changes

Request Bulletin PM for more information

Bromine Feeders
Bromine feeders are an efficient way to properly feed solid biocides or other corrosive water treatment chemicals.
- Offered in two body material options: vinylester resin and clear PVC
- Designed to easily handle ball, stick, tablet and other forms of bromine
- Excel in applications involving feeding chemicals into cooling towers
- Available in 15-300 lb. capacities
- Feed rates to 230 lb/day
- Pressures to 150 psi
- Temperatures to 150ºF

Request Bulletin BRD and CLR for more information
Neptune offers and manufactures a complete line of portable mixers that are ideal for a wide variety of blending/mixing operations.

**Portable Mixers**

Neptune’s line of direct drive mixers for small batches of low viscosity fluids.

**Drum Mixers**

Drum mixers are available in styles for water-like solutions using a folding propeller, and styles for viscous fluids using permanent blades with higher horsepower.

- Series F: Clamp-on
- Series E: Screws into 2” bung
- Available with 1/4 to 1HP options
- Available with electric or air motors powered by 1/4 to 1 HP

**Heavy-Duty Portable Mixers**

These mixers have been designed, engineered and manufactured to provide long life and trouble-free service, and can be clamp- or base-mounted on beams, tank walls and other supports.

- Available with electric or air motors powered by 1/3 HP to 5 HP
- Gear drives (up to 350 rpm) and direct drives (up to 1750 rpm) available

**Bulk Container Mixers**

Mounting to the tank or using the optional universal bracket, Neptune bulk container mixers are designed to allow mixing in semi-bulk shipping containers.

- Available with electric or air motor powered to 1 HP
ACCESSORIES

Neptune offers a wide range of accessories for all your application needs, including:

Calibration Columns
Provide a fast, easy economical way to check the flow rate of a chemical metering pump.
- Standard sizes 100, 250, 500, 1000 and 4000 ml
Request Bulletin CC for more information

Corporation Stops With Quills
Used for injecting chemicals pumped into tanks, mains, cooling towers and process systems to provide a more rapid, uniform dispersion of injected chemical. Allow injection quills to be inserted or removed without having to drain or shut down the system.
- Available in PVC, Kynar, 316SS and Alloy 20 materials
Request Bulletin BP for more information

Pulsation Dampeners
Remove the pulsating flow caused by a pump’s reciprocating action, ensuring a smooth, laminar flow.
- Bodies available in PVC, polypropylene, 316SS and Alloy 20 with Viton or EPDM bladders
Request Bulletin PD for more information

Back Pressure Valves and Pressure Relief Valves
Back pressure valves are adjustable to a maximum of 50 psi (3.5 kg/cm²). Ensure the set pressure is maintained at the pump outlet port (discharge) to assure accurate metering and prevent siphoning. Required accessory when pumping to a low-pressure injection point below the tank level or when pumping from a bulk tank with a high head pressure. Relief valves protect piping and system from overpressure.
- Standard PVC, 316SS, Kynar and Alloy 20 materials
- Available in 1/2” through 1-1/2” options
Request Bulletin RV for more information

High-Pressure Injection Quills
Used to inject chemicals pumped into turbulent-flow zone of high-pressure water or steam lines.
- Available in PVC, Kynar, 316SS and Alloy 20 materials
- Special lengths are available up to 24” for CPVC and Kynar; up to 36” for 316SS and Alloy 20
Request Bulletin CS for more information

Sample Coolers
Cool hot water or steam samples for easy handling and effective sample collection. Suitable for use on hot water, saturated steam or super-heated steam services.
- 316 and Inconel materials available
Request Bulletin SC for more information

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Where Innovation Flows

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