



GENERAL
BULLETIN



Where Innovation Flows

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HYDRAULIC METERING PUMPS
MECHANICAL METERING PUMPS
CHEMICAL FEED EQUIPMENT
MIXERS



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%.

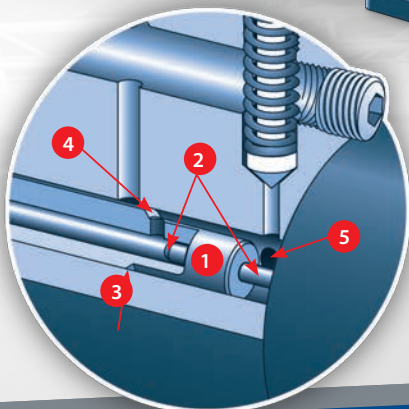
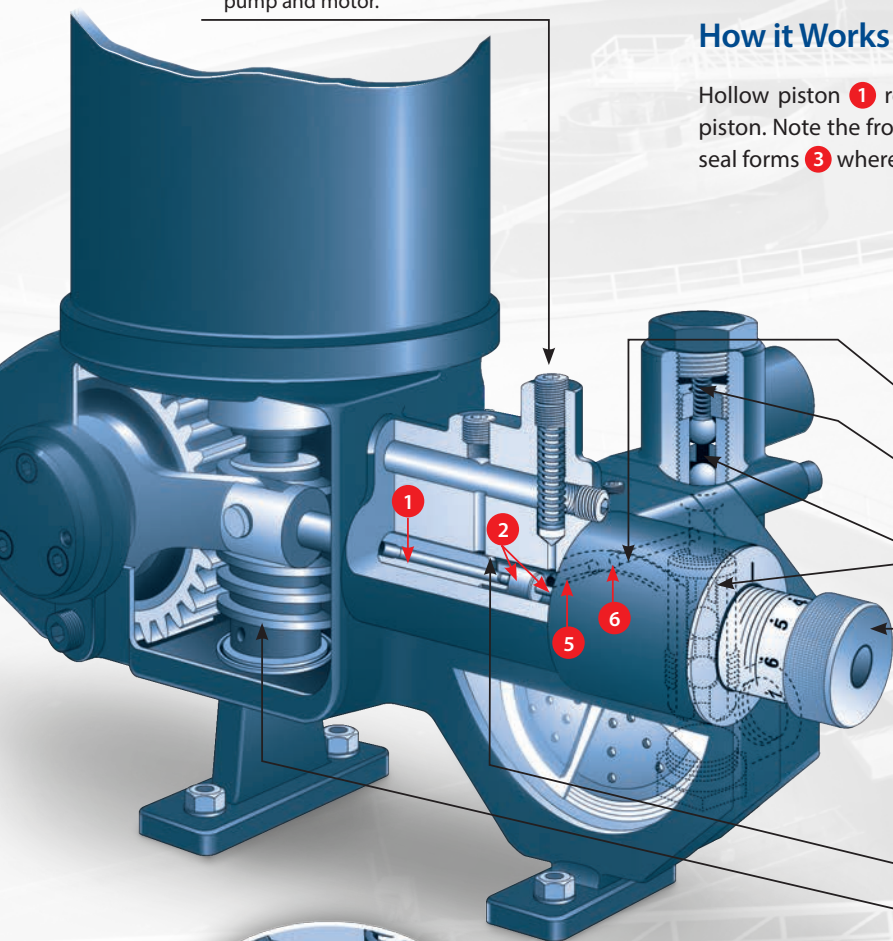
Variable Oil By-Pass™ Stroke Adjustment – provides a better valve performance when compared to variable linkage designs. This increase in performance is the result of valve checks that have extra time to seat even in viscous liquids since they are idle during the by-pass portion of the suction and discharge 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.

- Internal relief valve protects pump and motor.





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)

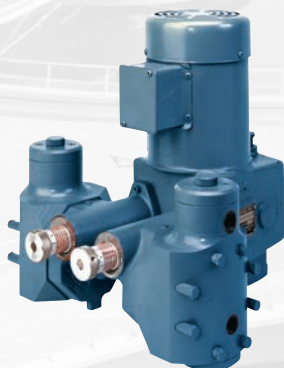
Request Bulletin DP-500E for more information

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



MP-7000

MP-7100



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



PZ Pump with
PVC Liquid Head

PZ Pump with
PVDF Liquid Head

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 seats, 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



CHEMICAL FEED EQUIPMENT



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**



Two Pumps Bottom Mounted Top Mount Bottom Mount

Glycol Feeders

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

**Request Bulletin
GLY for more
vinformation**



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

Electronic pumps with a
corrosion resistant poly base



Containment Systems

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



Open Containment System

Portable Mini-Tank Feeders

Compact, portable and economical solution.

**Request Bulletin FDP/CFS
for more information**



Without containment

With containment

CHEMICAL AND FEED EQUIPMENT



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 150°F

Request Bulletin BRD and CLR 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 200°F

Request Bulletin BF for more information



Type VTF



Type DBF



Filter Feeder with Filter Bag in Basket Type FTF

- 1 to 50 micron rating



By-Pass Feeder with Cartridge Filter, Type DBFC

- 5 and 20 micron pleated filter

MIXERS

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 1 HP options
- Available with electric or air motors powered by 1/4 to 1 HP

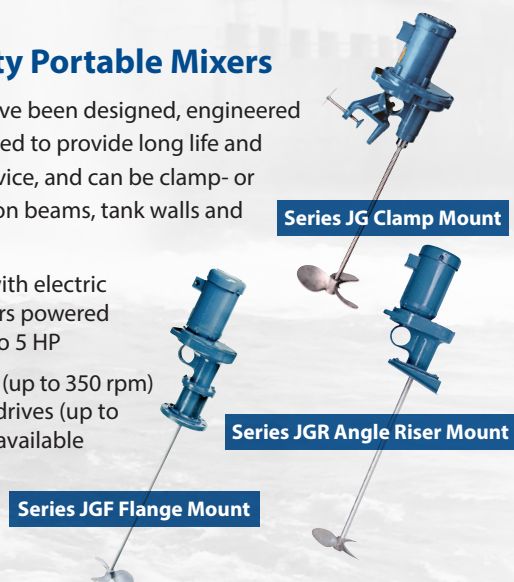


Series F Clamp-on

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.

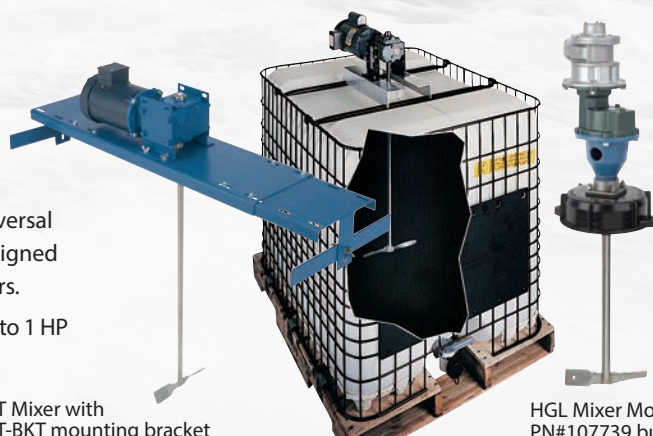
- Available with electric or air motors powered by 1/3 HP to 5 HP
- Gear drives (up to 350 rpm) and direct drives (up to 1750 rpm) available



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



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.

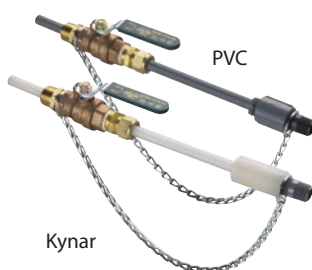
- Standard PVC, 316SS, Kynar and Alloy 20 materials
- Available in 1/2" through 1-1/2" options

Request Bulletin BP for more information
Request Bulletin RV 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



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



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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