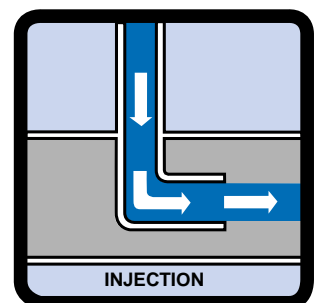
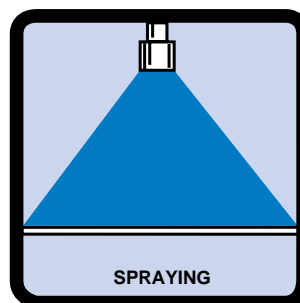
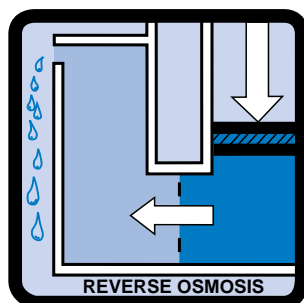
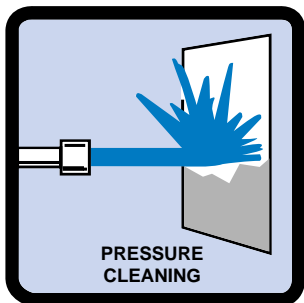




OIL, GAS, PETROCHEM AND REVERSE OSMOSIS INDUSTRY



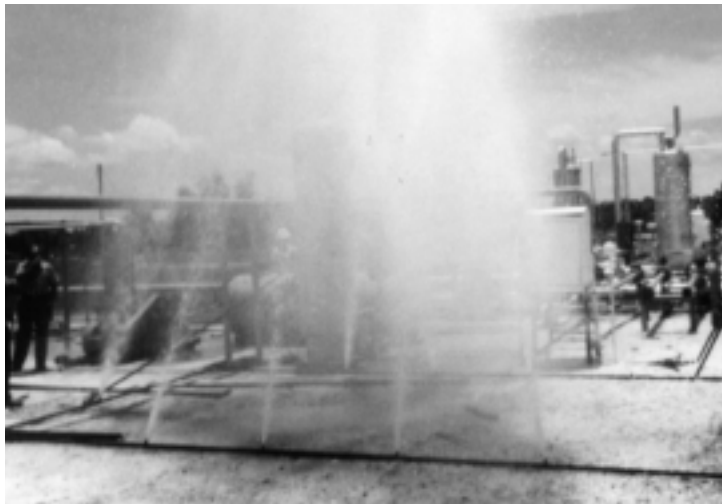
“Customer confidence is our greatest asset”



SEAL GLAND FLUSHING



WASH DOWN



FIRE PROTECTION

WASTEWATER RE-INJECTION (Cover)

Heavy-duty pumps capable of pumping contaminated fluids at high pressure to overcome ground pressures are required for this saltwater injection system.

High maintenance costs, due to frequent breakdowns and **difficulty securing parts** and **high energy costs**, due to excessive horsepower were two critical obstacles to avoid in this application.

Dual 60 GPM CAT PUMPS replaced a single large centrifugal pump and now operate on demand conserving energy when full capacity is not needed. The high quality materials and proven performance of the CAT PUMP eliminated frequent breakdowns and costly maintenance. With the dual system, maintenance can be done on one pump while the other continues to run, so there is no interruption in the re-injection process.

SEAL GLAND FLUSHING

Some oil production sights require the disposal of hundreds of gallons of waste water. In this particular application a large can-type pump (vertical turbine multiple stage centrifugal pump) running at 350-400 GPM is required to inject the salt water back into the ground.

The Goal was to eliminate the costly downtime and servicing often experienced with centrifugal pumps. Abrasives in the water become trapped in the seal area causing wear and premature failure of the seal glands. To overcome the situation, a CAT PUMP was installed to flush the seal area. Since the centrifugal pump was operating near 2000 PSI, a pump capable of **continuous duty** and overcoming the **high pressure** was essential. The CAT PUMP satisfied both these requirements perfectly.

The CAT PUMPS' compact size allowed it to **fit conveniently into the system**. The seal glands are positioned just below the stuffing box to seal off the fluid from the shaft. Salt water and abrasive material in the pumped fluid can attack these seals quickly. The CAT PUMP is capable of injecting high pressure water into the stuffing box to flush any impurities from the seal glands and eliminate costly and troublesome failures. The regulator on the system assures constant pressure. With the addition of the CAT PUMP injection system, the **seal gland life has improved** from two to three months without flushing to **approximately one year with flushing**.

WASHDOWN

High pressure cleaning saves time and energy and can reduce safety hazards and maintenance problems. Grease and oil which has accumulated on cat walks, stairs, etc. can be quickly and effectively removed. Routine clean-up of machines can be easily accomplished. Keeping machines clean prevents excessive wear caused by dirt in seals and bearings and makes it easier to spot potential problems before they become major breakdowns. The efficient CAT PUMP is a vital part of any cleaning system.

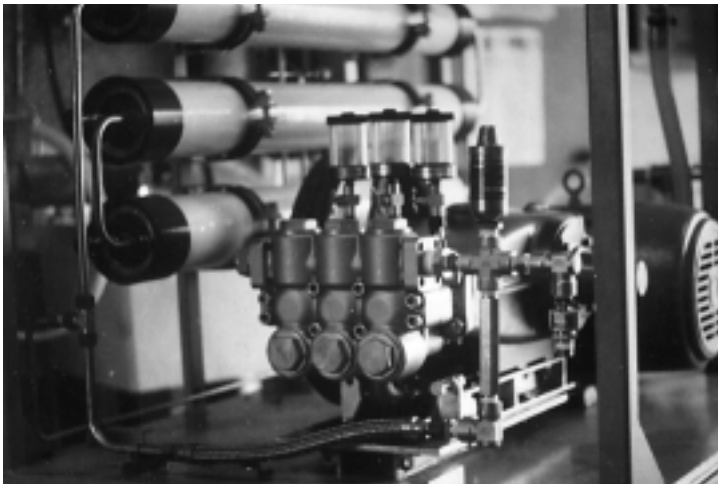
By adding a simple wet sandblasting attachment, you can win the saltwater battle. This wet sandblasting is dust-free, which eliminates health hazards and dust-coated equipment on the rig whenever blasting is necessary.

FIRE PROTECTION

Six large engine compressors used to pressurize natural gas are **protected against fire or overheating** by the 60 GPM, 1000 PSI system with a Model 6020 CAT PUMP.

The installation also provides a six-station central cleaning system which makes it easier to clean oil spills, grease and dirt and improve worker safety.

This combination of fail-safe, effective fire protection system and high pressure central cleaning system results in a safer, cleaner plant—with lower insurance costs!



REVERSE OSMOSIS

REVERSE OSMOSIS

Fresh water is essential to ships' crews, offshore platform workers, or for those in remote areas where access to quantities of quality water is limited. Supplying fresh clean water can be difficult and costly. The reverse osmosis technology of membranes, filters and pumps offers an efficient, practical way to obtain sufficient quantities of good tasting water at remote locations.

You can stop worrying about pump breakdowns when your reverse osmosis system includes a CAT PUMP. When continuous performance is critical, you need the proven "Nine Lives" of the heavy-duty triplex pump and built in quality features which assure "minimum downtime for maintenance or repair". CAT PUMPS' all 316 Stainless Steel construction assure long-term performance.

ACCUMULATOR CHARGING

Reliable safety devices are a critical component at a well site. The long life, continuous-duty performance of the CAT PUMP and its high pressure capabilities make it ideal for this hydrostatic application.

Blow-off preventors are installed at each well sight. They are activated by accumulators which have been charged by the CAT PUMP to the well head pressure and held in readiness for a possible blow-off emergency. Single or multiple accumulators may be charged to meet the pressure demands of the well head and close the preventor in the event a well blows.

OIL TRANSFER PUMP

24 hour duty under adverse conditions is demanded of a pump in this crude oil transfer application. Fluid compatibility is also a critical factor to efficient operation. The CAT PUMPS' 316 stainless steel construction and proven long life are ideal. CAT PUMPS are also very compact and can be easily fitted into the piping system. Single pumps up to 70 GPM or multiple pumps can be installed for larger transfer applications.

FRACKING

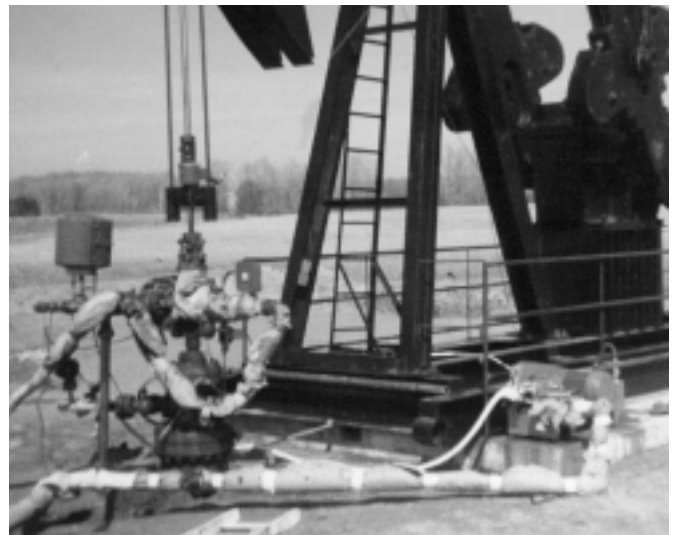
In the process of pumping oil from the ground, a paraffin build-up occurs in the well casing. Periodically this must be removed to keep operation efficient. The CAT PUMP is capable of delivering 180-190°F hi-temp water to break down this paraffin. This system is also used for cleaning and degreasing the entire pumping module prior to maintenance.



ACCUMULATOR CHARGING



OIL TRANSFER PUMPS



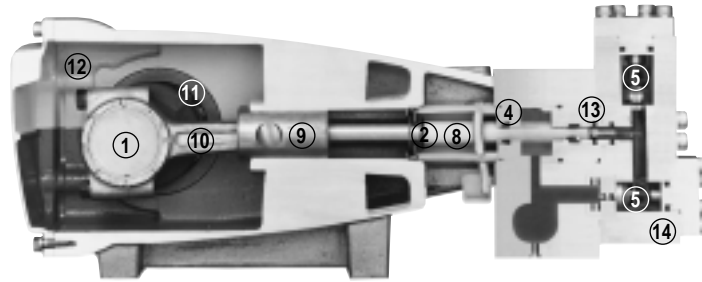
FRACKING

World Leader in Triplex Piston and Plunger Pumps

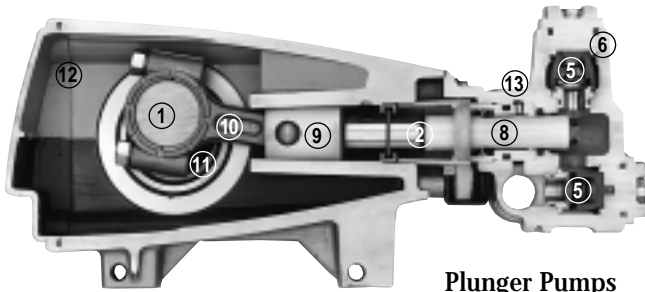
100-7,000 P.S.I., 1-70 G.P.M.

Proven design and quality components assure long-term performance.

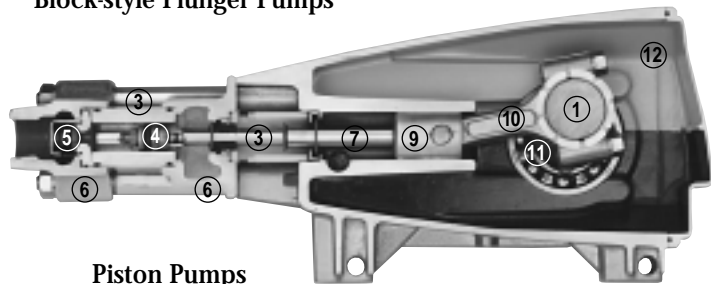
CAT PUMPS are constructed of the highest materials manufactured under close tolerance control and fully tested before leaving the factory. No other pump offers such consistently high standards.



Block-style Plunger Pumps



Plunger Pumps



Piston Pumps

- ① Chrome-moly crankshaft provides unmatched strength and surface hardness for long life.
- ② The stainless steel slinger provides back-up protection for the piston rod seal, keeping pumped fluids out of the crankcase.
- ③ The cylinder and sleeve wear surfaces are hard chrome-plated stainless steel for longer service life.
- ④ **Standard Models:** Lo-Pressure Seals and V-Packings are completely lubricated and cooled by the fluid being pumped.
- ④ **Flushed Models:** Special ported inlet manifold permits fluid to cool or flush between V-Packings and Lo-Pressure Seals providing protection against high temperatures or contaminating pumped fluids.
- ⑤ Stainless steel valves, seats, and springs provide corrosion-resistance, positive seating, and long life.
- ⑥ High strength forged brass manifolds are also available in 316 stainless for special corrosion resistance.
- ⑦ The patented stepped piston rod with hard chrome-plated sleeve provides a durable wear surface and easy wet end servicing.
- ⑧ Special concentric, high density, polished, graphite impregnated, solid ceramic plungers are abrasion resistant and result in extended seal life.
- ⑨ The high strength stainless steel plunger rods have a 360° supported crosshead providing uncompromising plunger rod alignment.
- ⑩ Matched oversized connecting rods are made of high strength material with exceptional bearing quality.
- ⑪ Oversized ball bearings or tapered roller bearings provide extended bearing life.
- ⑫ Die cast aluminum crankcase means high strength, lightweight, and excellent tolerance control.
- ⑬ Specially formulated, CAT PUMP exclusive Hi-Pressure Seal offers unmatched performance and seal life.
- ⑭ Block-style 316 stainless steel manifolds offer flushing and cooling and high inlet pressure capabilities.

UNLIMITED APPLICATION VERSATILITY. . . . Select the pump model best suited for your industrial needs. Special 316 stainless steel construction, direct drive options or complete custom designed Power Units are available.

- ◆ Accumulator Charging
- ◆ Waste Water Injection
- ◆ Anti-Rust Injection
- ◆ Seal Gland Flushing
- ◆ Hydrostatic Testing
- ◆ Metering
- ◆ Oil Transfer
- ◆ Tank Cleaning
- ◆ Fracking
- ◆ Equipment and Vehicle Wash
- ◆ Rig Washdown
- ◆ Wet Sandblasting
- ◆ Fire Prevention System
- ◆ Reverse Osmosis
- ◆ Paint Preparation, Phosphatizing
- ◆ Water Flooding
- ◆ Spraying – Misting – Odor Control

Products described hereon are covered by one or more of the following U.S. patents 3558244, 3652188, 3809508, 3920356, 3930756 and 5035580

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