Plunger Lift Solutions for Horizontal Wells
The Challenge: Horizontal Wells

Horizontal, or directional, wells are drilled at multiple angles to further reach and produce oil and gas reserves. By drilling horizontally, companies are able to access multiple wells from one well pad, reducing the cost for well pad setups and overall maintenance.

During their natural lives, most gas wells experience some type of liquid loading, when water and oil accumulate in the tubing and well bore. As the volume of those liquids increases and the well loses energy, artificial lift is needed to remove the liquids and extend the life of the well. Artificial lift systems often achieve liquid production; however, because of the tight turns and long laterals in horizontal wells, many artificial lift methods are limited or restricted.
The Solution: Plunger Lift

Plunger Lift by PCS Ferguson offers you a low-cost, highly effective method for preventing liquid loading and removing accumulated liquids from deviated and horizontal wells.

Supported by the best plunger lift experts in the world, PCS Ferguson Plunger Lift systems are quick and easy to set up. Requiring low capital investment and minimal operating expense, plunger lift provides an excellent return on investment, producing production gains that can offset the cost of the system in as little as a few weeks and almost always within a few months.

Our plunger lift products are thoroughly tested, manufactured to the highest standards, and backed by our decades of experience in the field.

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**INCREASED PRODUCTION**
Plunger lift increases production and extends the economic life of the well.

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**MINIMAL COST**
PCS Ferguson Plunger Lift systems are quick and easy to implement. With low capital investment and operating costs, it is an ideal solution for removing accumulated liquids.

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**QUALITY AND EXPERTISE**
PCS Ferguson provides unrivaled expertise, service, training, and line out assistance. We offer the largest selection of custom-engineered equipment addressing the full range of well conditions and employ only the highest quality manufacturing processes and materials.
PCS Ferguson designs and manufactures a comprehensive line of plunger lift equipment for wells with deviations and long laterals, including surface and downhole equipment, to meet even the most challenging conditions.

**Surface Equipment**

From lubricators to well site controllers, PCS Ferguson offers a full array of surface equipment to handle unique challenges in horizontal wells.

**Low Temperature Lubricators**

PCS Ferguson lubricators are backed by more than 30 years of development to ensure maximum durability, safety and efficiency. Our lubricators can withstand arrival speeds up to 5,000 ft/min.

- All lubricator designs are engineered in-house and stamped by a Professional Engineer
- Rigorous quality control and testing of each part
- Designed and manufactured to API 6A standards
- Material 100% traced from mill to field
- Patented PCS Ferguson Poly-Spring™ maintains optimal impact absorption through a range of impact speeds
- Optional long length cap improves safety and allows easier access to the plunger

**New Lubricator Caps**

PCS Ferguson developed an ACME Threaded Dome Nut for the Lubricator Cap. The new cap will allow you to remove the cap with standard field tools, and inspect and replace components on site.
Bypass Plunger Rods

Located in the lubricator cap, PCS Ferguson offers different rod styles and lengths for our Bypass Plungers, including our Two-Piece Plungers, and Friction Bypass Plungers. Using the correct rod for each plunger is imperative to the success of the plunger lift applications.

PCS Ferguson 8000 Series Controllers

The PCS Ferguson 8000 Series® Controllers are the backbone of the Well Site SCADA® Automation solution. Combining the smarts of our proven algorithms with the flexibility of a programmable logic controller (PLC), the 8000 Series Controllers can manage virtually all of the facilities on your site. With the ability to manage by exception, you’re empowered to allocate manpower where it’s needed most.

Built on an open architecture, the 8000 Series Controllers easily integrate with gas measurement, host systems, and other third-party devices. You gain true supervisory control at the well head, plus remote monitoring and control of tank levels, chemical injection, gas volumes, pressures, temperatures, flow rates, compressor set points, and more.
Two-Piece Plungers

If you have a high volume gas and liquid well, our Two-Piece Plungers, *First Responders*, are the first choice in the well’s life cycle. They can reduce or even eliminate shut-in times, while maximizing production. These plungers make more trips with faster fall times, delivering continuous fluid removal.

Friction Bypass Plungers

If you have a high volume gas and liquid well that requires too much shut-in time for standard plungers, our Bypass Plungers can reduce or even eliminate shut-in times.

Our Flow-Thru Plungers open and close an adjustable bypass valve, enabling it to fall against flow so that the well can continue production as the plunger works. You can control your plunger speeds with various slot size options.
Sliding Sleeve Bypass Plungers

The sliding sleeve plungers are for higher flowing gas wells. They make more trips with faster fall times, delivering continuous fluid removal with little or no shut-in time.

Solid Plungers

If a well has a high gas volume or produces paraffin, we suggest our Solid Plungers. They are able to cut through paraffin and has faster fall times.

A Solid Plunger has an economical and durable one-piece design. A heavy plunger with grooves, it can cut through paraffin, sand or salt to enable faster fall times. The grooves are also designed to trap and remove gas in wells with high gas volumes.

FALL SPEEDS

Refer to the PCS Ferguson Flow-Thru Plunger Guide for information on fall speeds.
Multi-Stage Plunger Tools

If a well with low gas and high liquids is unable to lift liquids to the surface, the Multi-Stage Tool delivers results. It utilizes more of a well’s own energy to help marginal wells lift liquids and increase productivity.

During the first cycle, the lower plunger carries fluids up the tubing and through the tool. Upon shut-in, the tool’s ball check engages, retaining the fluids until the upper plunger falls from the surface, settles through the liquids and lands at the tool. Simultaneously, the lower plunger falls back to the bottom. During the next cycle, the upper plunger delivers fluids from the tool to the surface, while the lower plunger delivers more fluids to the tool. Both plungers work in tandem in subsequent cycles. By creating two plunger lift systems in one well, the multi-stage tool allows the well to produce liquid in stages, allowing the well to effectively and efficiently produce larger volumes of liquids utilizing only its own energy.

Bottom Hole Bumper Springs

A Bottom Hole Bumper Spring protects the plunger and downhole tubing equipment from damage by absorbing the impact of the plunger when there are limited or no liquids in the well to cushion its fall.

The Bottom Hole Bumper Spring sits at the end of the tubing string above the seating nipple. It absorbs the impact of the plunger when it lands at the bottom to prevent damage to the seating nipple and tubing. It minimizes downhole restrictions which often yields increased production. A Bottom Hole Bumper Spring is dropped from the surface or installed by wireline. If needed, a ball and seat can be added to retain liquid in the tubing.
Latch Down Springs

Latch Down Springs can be latched to any standard fishing neck. Normally used when a “special” stop is required or a down hole device is already in the well. The spring force is calculated to withstand plunger impact.

Pack-off Tools

Pack-Off Tools are used in wells with a tubing stop to pack off tubing to hold fluid.

Tubing Stops

Attached to the Pack-Off Tool, Tubing Stops are used in wells with worn seat nipples or seat nipples set too deep to run a plunger. They set a stopping point for the tubing string, without the use of couplings, to set the collar stops.
**Plunger Selection**

The graph below represents the life of a well and presents the different plunger types that PCS Ferguson recommends for each stage of the well’s life. Keep in mind, this graph should only be used as a baseline. All wells are have different challenges, which means there are exceptions to this general guideline.
Partner with the best team in the business.

Apergy offers a comprehensive line of artificial lift equipment, accessories, and services strategically designed to drive the operational excellence of each of our customers.

- Decades of experience recommending and servicing lift systems to accommodate changing well conditions
- Unrivaled expertise in plunger lift, gas lift, hydraulic lift, well control, and well unloading
- The best performing, highest quality, and safest products designed, engineered, and manufactured in-house
- Experienced and responsive field support staff with extensive local knowledge
- The highest commitment to the protection and safety of our employees, our customers, and the environment
- Comprehensive customer training and product support

PCS Ferguson products and services are available in the following North American locations:

**Administrative & Manufacturing**

Frederick, CO ................................. 720.407.3550

**Canada**

Calgary, AB ................................. 403.464.5782
Edson, AB ................................. 780.723.2759
Grande Prairie, AB ................................. 780.532.0804
Red Deer, AB ................................. 403.464.5782

**Arkansas**

Conway ................................. 501.932.0449

**Colorado**

Evans ................................. 970.539.9003
Parachute ................................. 970.285.9652

**New Mexico**

Farmington ................................. 505.326.4239
Hobbs ................................. 575.397.0040

**North Dakota**

Mohall ................................. 701.756.6934
Watford City ................................. 701.842.2231

**Oklahoma**

Oklahoma City ................................. 405.603.7492
Stigler ................................. 918.967.3236
Woodward ................................. 580.256.1317

**Pennsylvania**

Brookville ................................. 724.227.3263

**Texas**

Buffalo ................................. 903.390.7615
Fort Worth ................................. 817.769.8584
Karnes City ................................. 830.299.8508
Perryton ................................. 405.213.8114
Pleasanton ................................. 830.299.9745
Odessa ................................. 432.231.9987
Sonora ................................. 325.387.6260
Tyler ................................. 903.533.8266

**Utah**

Roosevelt ................................. 435.722.4520
Vernal ................................. 435.789.2031

**Wyoming**

Rock Springs ................................. 307.362.6010