

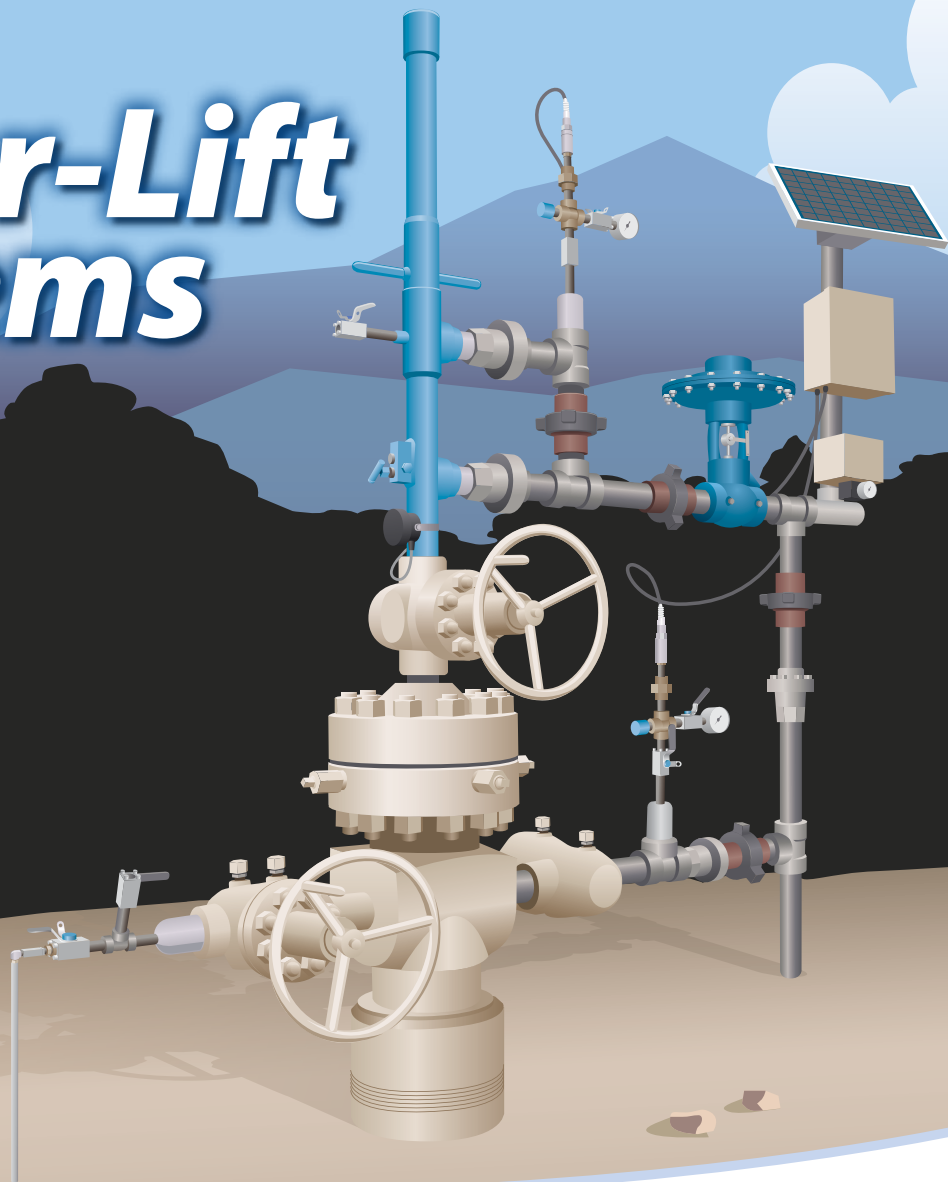


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PLUNGER-LIFT

# Plunger-Lift Systems



The use of plunger-lift systems has become an increasingly popular way to maximize the production returns on mature and underperforming gas and oil wells since they serve as a cost-effective alternative to other technologies and yield significant economic and environmental benefits. Typical benefits of plunger-lift systems include:

- Lower capital cost for installation
- Lower well maintenance and need for remedial treatments like swabbing or blowdowns
- Continuous operation improves gas-production rates and efficiency
- Reduced paraffin and scale buildup



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## Plunger-Lift Systems

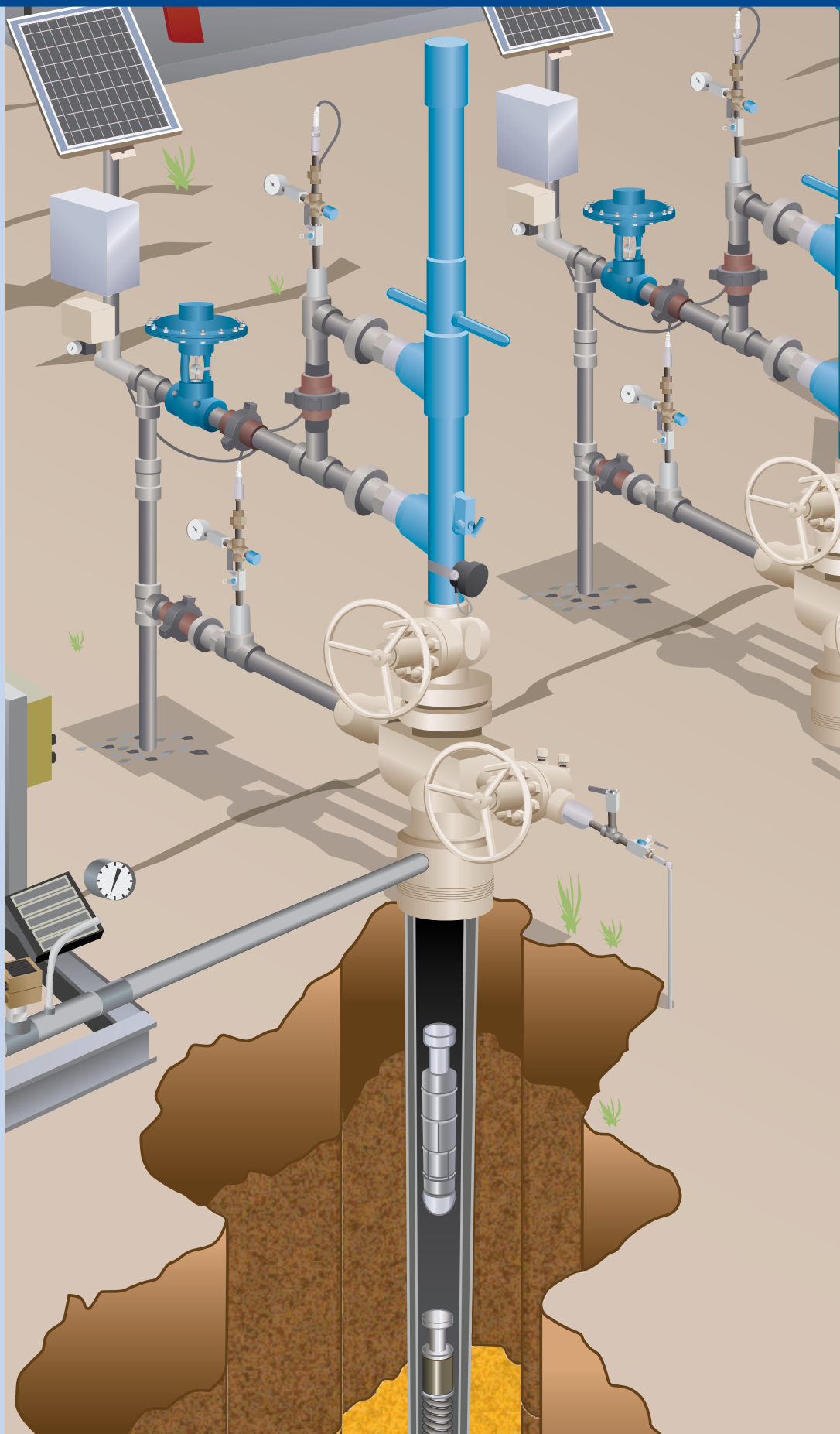
Ferguson Beaugard plunger-lift systems are low-cost, efficient methods of increasing and optimizing production in oil and gas wells that have marginal flow characteristics.

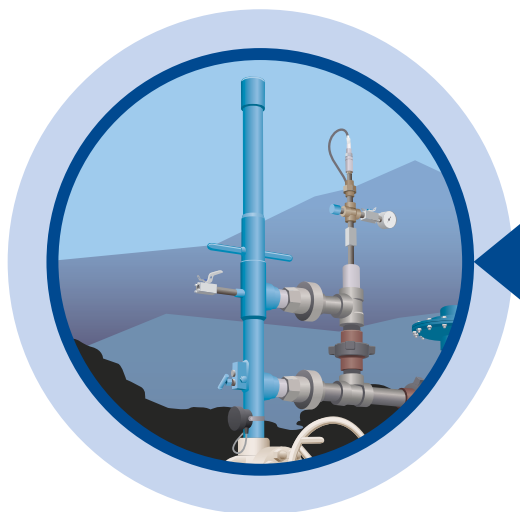
Functionally, they provide a mechanical interface between the produced liquids and gas. Using the well's own energy for lift, liquids are pushed to the surface by the movement of a free-traveling plunger ascending from the bottom of the well to the surface. This mechanical interface eliminates liquid fallback, thus boosting the well's lifting efficiency. In turn, the reduction of average flowing bottom-hole pressure increases inflow.

Plunger travel is normally provided by formation gas stored in the casing annulus during a shut-in period. As the well is opened and the tubing pressure is allowed to decrease, the stored casing gas moves around the end of the tubing and pushes the plunger to the surface. This intermittent operation is repeated several times per day. Plunger-lift is especially appropriate in these four applications:

- Gas Wells
- High-Ratio Oil Wells
- Intermittent Gas-Lift Wells
- Paraffin and Hydrate Control

Enhance your operations with affordable, effective Ferguson Beaugard plunger-lift systems. When you want your mature or marginal wells to remain economically viable, a plunger-lift system is the right choice for product optimization and operational efficiency.



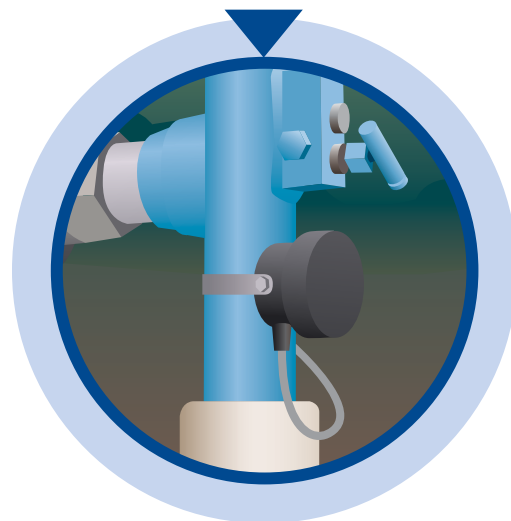


### Lubricator/Catcher

This piece of equipment is installed at the wellhead and “catches” the plunger upon its arrival at the surface. It is designed to allow gas-flow passage even when the plunger is in the lubricator. Available in a variety of sizes and in special materials of construction for severe-service operations.

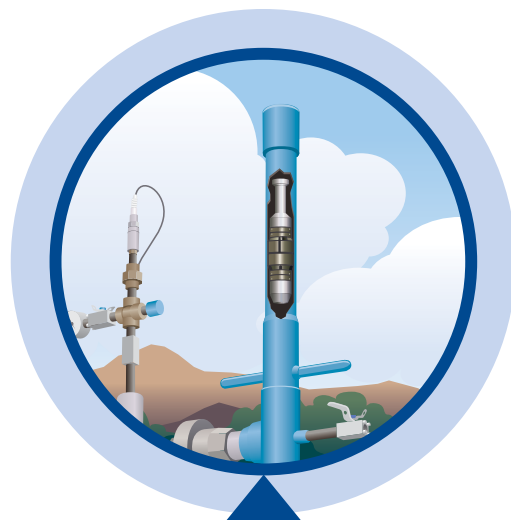
### Inductive Sensors

These sensors are mounted to the wellhead to detect plunger arrival, which lets the operator more easily monitor applications where plunger detection is difficult or unreliable. After strap-on installation, it uses the controller's power supply for operation and its sensitivity can be adjusted to gain an optimum signal.



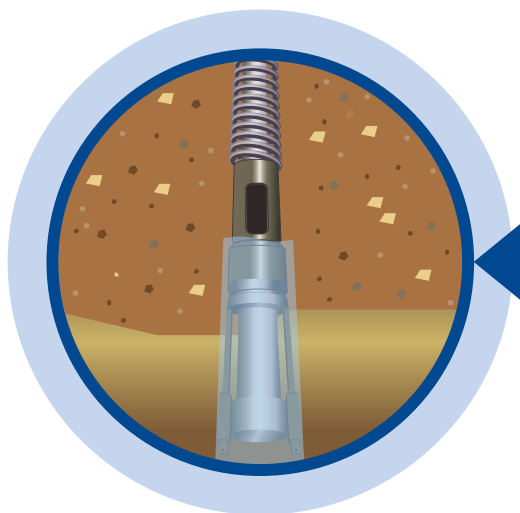
### Electronic Controller

Ideal for use where operators want to utilize time or pressure settings for plunger lift control and where applications have fluctuating line pressures. Uses a patented Auto-Cycle algorithm to offer multiple control modes, including plunger lift, gas-assisted plunger lift, annular flow and Plunger Enhanced Chamber Lift (PECL).



### Plungers

Available in a wide variety of designs made for the unique characteristics of individual wells, all styles of Ferguson Beauregard plungers are created to improve production rates and lower maintenance costs, which in turn save the operator time and money.



### Bumper Springs

Available in four styles depending on well features, Ferguson Beauregard bumper-spring formulations are installed at the bottom of the well tubing and offer easy installation and low maintenance and replacement costs.



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## Plunger Types

- **Bar Stock** – A bar stock plunger is a solid or hollow piece of metal machined with grooves, spirals or other shapes on the surface of the plunger. These shapes are cut into the plunger to the turbulence needed to form the seal between the plunger and tubing wall.
- **Pad** – Pad plungers incorporate spring-loaded metal pads fitted on a mandrel that expands to keep in contact with the tubing walls, increasing plunger durability and seal. Because of this, they fall more slowly, while sand can deposit behind the pads.
- **Sealed Pad Plunger** – A sealed pad plunger has seals behind pads, eliminating gas slippage. The seals may be made of metal, rubber polymer or a tortuous path that creates turbulence, though care should be taken that the sealing material is compatible with well fluids.
- **Brush Plunger** – A brush plunger has good sealing characteristics and can be used in applications that are not suitable for pad plungers. This type of plunger typically falls more rapidly due to less friction on the tube walls.
- **Internal Bypass Plunger** – An internal bypass plunger can be built into any type of plunger. Similar to a retractable pad plunger, there is a shift rod that causes the bypass to open at the surface and close at the plunger stop.
- **Side Pocket Mandrel Plunger** – A side pocket mandrel plunger is designed for use with gas-lift side pocket mandrels. It has seals on both ends and is used to bridge large ID increases across gas-lift mandrels. This type of plunger keeps either the top or bottom seals in contact with normal tubing ID, allowing a continuous seal in the tubing as the plunger passes through the large ID.

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*For more information, contact your local field technician, or call our main office.*

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