

## MULTI-STAGE TOOL

Our multi-stage tool allows you to extend the range of plunger lift applications. By creating the equivalent of two or more plunger lift installations in a single well, the tool allows liquids to be removed in stages, requiring less pressure and reducing shut-in time.

Plunger lift is a cost-effective method of removing liquids from a well. However, there are instances when a single plunger lift system is not enough. In a particularly deep well or a well with low gas and high liquids (low GLR), the patented PCS Ferguson Multi-Stage Tool can be utilized to create multiple plunger lift systems in one well. By lifting the liquids in stages, the well can more efficiently utilize its own energy to remove fluids.

In a typical multi-stage plunger lift system, the multi-stage tool is placed by wireline down the well tubing above a plunger lift installation. A second plunger is then installed on top of the tool. A spring built into the bottom of the tool absorbs the impact of the ascending bottom plunger. A free-floating spring on top of the tool absorbs the impact of the descending top plunger.

During the first cycle, the bottom plunger carries fluids up to the multi-stage tool. The tool holds the fluids until the top plunger falls down and lands at the tool to retrieve and lift these fluids. As the top plunger falls toward the tool, the bottom plunger simultaneously falls back to the bottom.

During the next cycle, the top plunger delivers its fluids to the surface while the bottom plunger delivers more fluids to the tool. Both plungers work in tandem, lifting smaller and more frequent liquid loads in stages and allowing the well to remove more liquids and increase production.

At PCS Ferguson, we go beyond the basics. Our continuously improved Multi-Stage Tool offers you a number of valuable benefits. Here are just a few:

- Resettable locking mechanism and innovative pack-off design make moving or retrieving the tool clean and easy, saving you time and money
- Extends the range of plunger lift applications and is an economical form of artificial lift in low GLR wells
- Offers a cost-effective alternative to typical pump jack installations

Choosing the right artificial lift system and partnering with the best equipment provider are big decisions. Take a closer look at the patented PCS Ferguson Multi-Stage Tool, and it's plain to see that this tool isn't just the best choice, it's the only choice.



# Multi-Stage Tool Features

## 1 Ball and Seat (Flow Cage)

- Maintains one-way flow of liquids up the tubing
- Retains fluids delivered by the bottom plunger until the top plunger retrieves fluids for delivery to the surface

## 2 Resettable Locking Mechanism

- Holds the tool in 'Open' position for easy installation
- Sets into 'Closed' position when the tool reaches the appropriate depth
- Easily resets inside the tubing for moving

## 3 Seal Element (Pack Off)

- Unique design remains intact during resetting and removal
- Seals tight as fluids are delivered
- Retains fluids above the flow cage and prevents liquid slippage

## 4 Collar Stop

- Easier to set and release than typical tubing stop
- Easily removed
- More reliable than shear pin construction

## 5 Bumper Spring

- Absorbs impact of arriving plunger and allows liquids to flow through
- Heavy-duty one-piece construction is strong and durable

