

Plunger Lift Product Catalog



Flowco
Production Solutions

Built to Optimize

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Choosing Flowco means working with the most adaptable equipment available and a team of field operators who go above and beyond – every day. From a new plunger lift installation to optimizing existing under-performing systems, Flowco can maximize well performance on all types of plunger lift systems quickly and efficiently. We spare you costly downtimes, the concern of declining production and see to it every well has the best opportunity for daily optimal production.

Flowco is the largest privately owned artificial lift company in the lower 48. With service centers strategically located throughout North America, we help producers achieve higher returns and reduce costs with reliable, custom-designed solutions tailored to the needs of each well. Led by founders of the artificial lift industry, Flowco offers unmatched experience and manufactures its equipment to the highest technical standards. When you choose Flowco – you're making *The Quality Choice*.



Plunger Lift Systems

Flowco's plunger lift systems are engineered and built based on decades of experience of listening to customers. Flowco is focused on providing innovative solutions that create immediate results and provide long term value for oil and gas producers.

Every well is different. Whether you have sand, scale or paraffin problems, or simply a low volume, low pressure well, Flowco has the system and components to maximize your production, quickly and efficiently.

Conventional Plunger Lift System

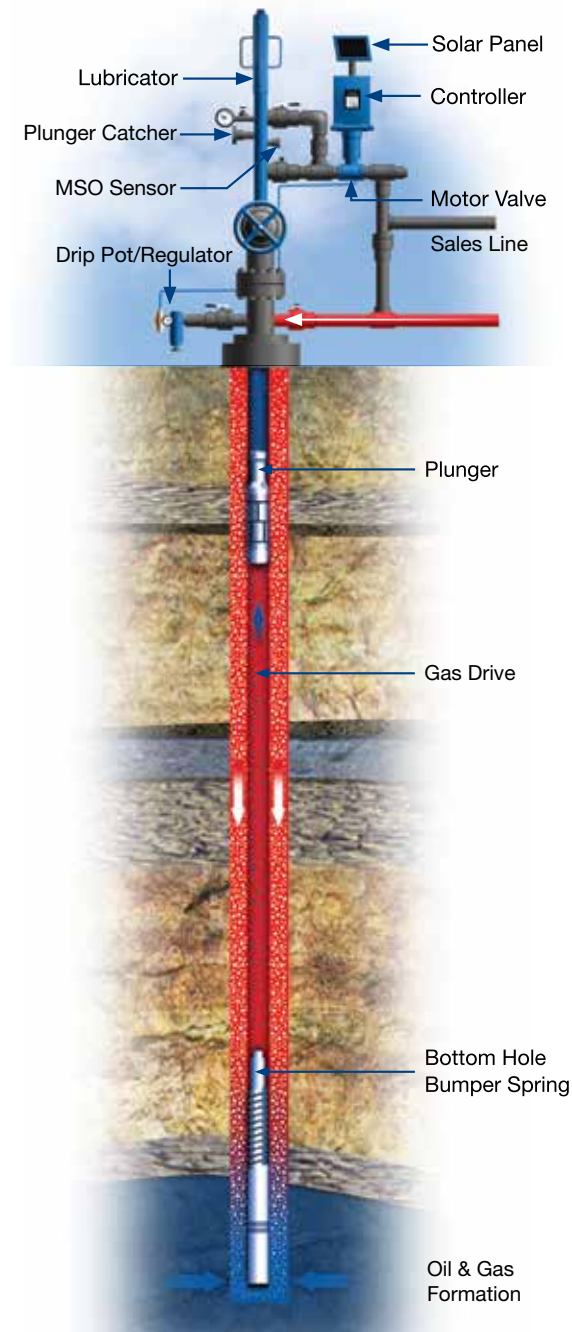
A conventional plunger is a great application if you have a low volume, low pressure or marginal well. Typical production rates for conventional plunger lift systems are wells that produce under 50 bbl/d and/or under 200mcf/d. This type of plunger is also ideal for wells with tubing irregularities or wells producing less than critical flow rates.

- + Efficient seal
- + Maintains a full OD seal
- + Moves fluids at low velocities
- + Long plunger life
- + Durable and cost effective

Continuous Flow Plunger Lift System

A continuous flow plunger is a great application for high volume or flowing wells because it allows a well to continue production as it works. A by-pass valve allows the plunger to bring a continuous flow of fluid removal with minimal shut-in time so you will frequently see an improvement in production. Typical production rates for continuous flow plunger applications are wells that can produce over 300mcf/d and/or fluid rates from 5-500bbl/d depending on tubing size.

- + Shorter shut-in times for your high volume gas and liquid wells
- + High gas and fluid rates
- + Paraffin control
- + One-piece design for operation
- + Bar stock and pad designs
- + Require minimal or no shut-in time
- + Average fall speed in fluid: 700 feet/min
- + Potential fall speed in shut-in well: 2,000 feet/min.



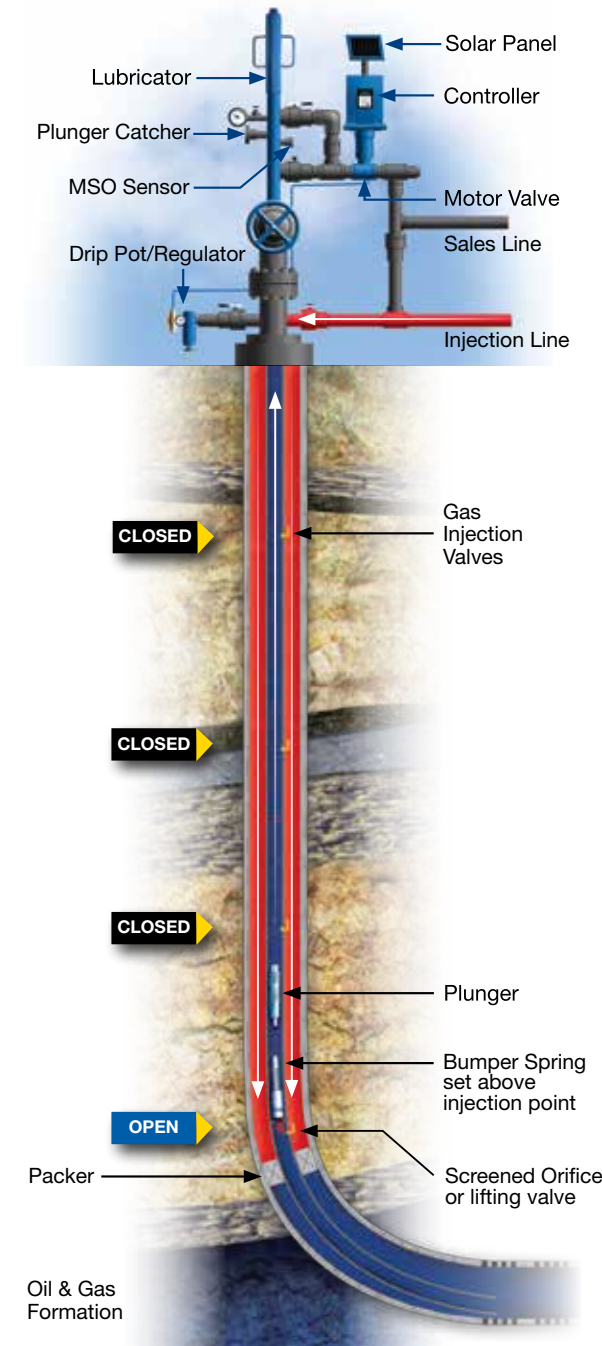
Gas Assisted Plunger Lift

Just as there are two types of gas lift systems, there are two ways to combine gas lift and plunger lift for custom artificial lift solutions.

Continuous Flow Gas Lift System with a Continuous Flow Plunger

There are several reasons/scenarios why you should consider a continuous flow plunger introduced to a continuous flow gas lift system:

- + To lift fluids more efficiently than a standalone gas lift system
- + To mitigate or eliminate paraffin or scale build up in the tubing
- + To reduce the required gas lift injection volumes on single well sites or field gas lift systems thereby saving on compression costs or possibly eliminating compression

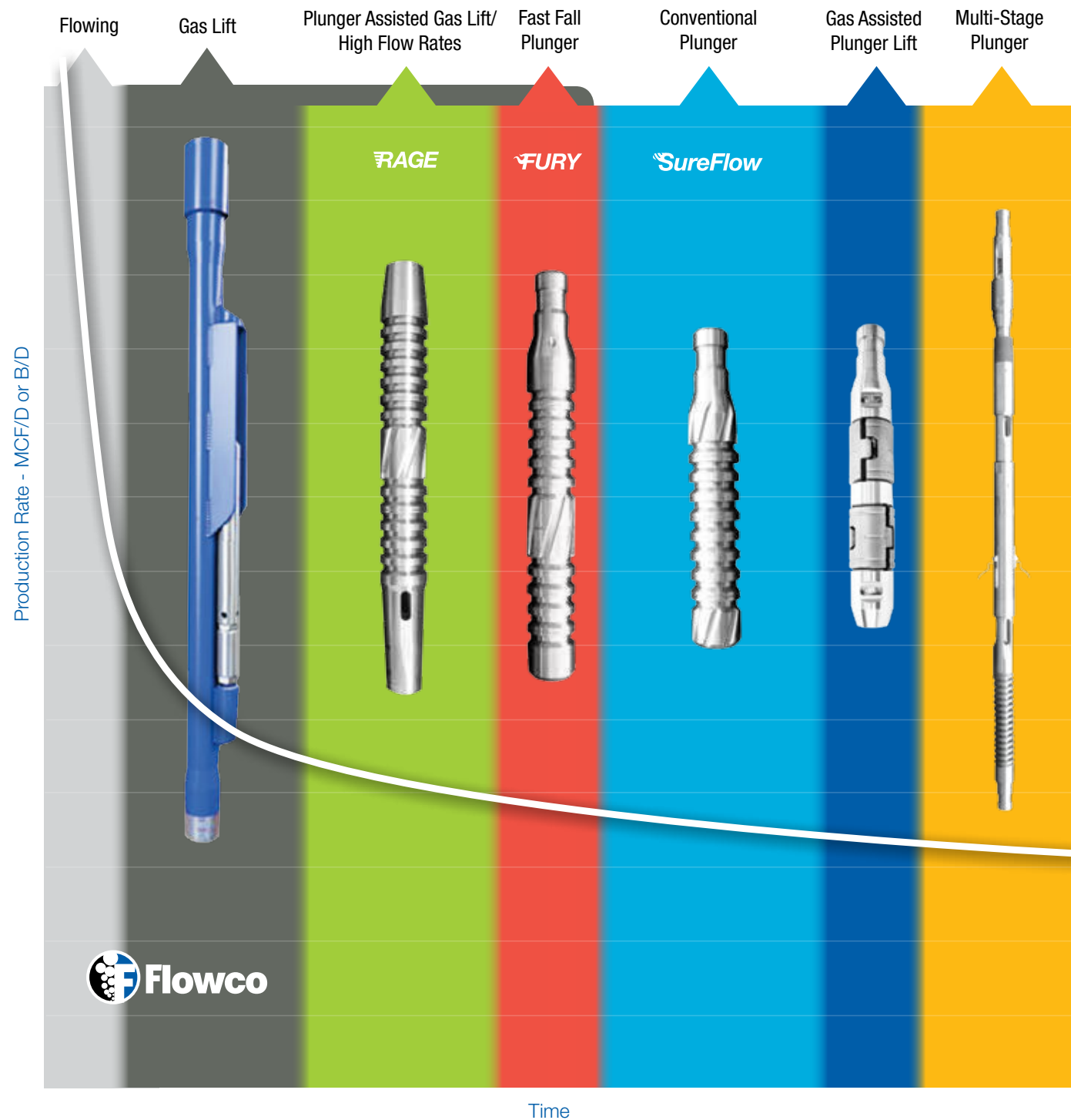


Intermittent Gas Lift System with a Conventional Plunger Lift System

An intermittent gas lift system by itself can prove to produce less than desirable results in deeper wells, strictly due to the liquid fallback and the total liquid recovered per cycle. Liquid fallback in the tubing per cycle can be as much as 10% of the initial liquid slug per 1000' of lift. With the addition of a conventional plunger, liquid fallback can be significantly reduced and more of the slug is delivered to the surface each cycle.



Flowco Applications Life Cycle



Flowco applications change over the life cycle of a well. Refer to the Applications Guide to determine which Flowco series plunger best fits your well.

FlexPak Series®

One-Piece, PATENTED Mandrel Design



Bumper Springs

Bumper Springs

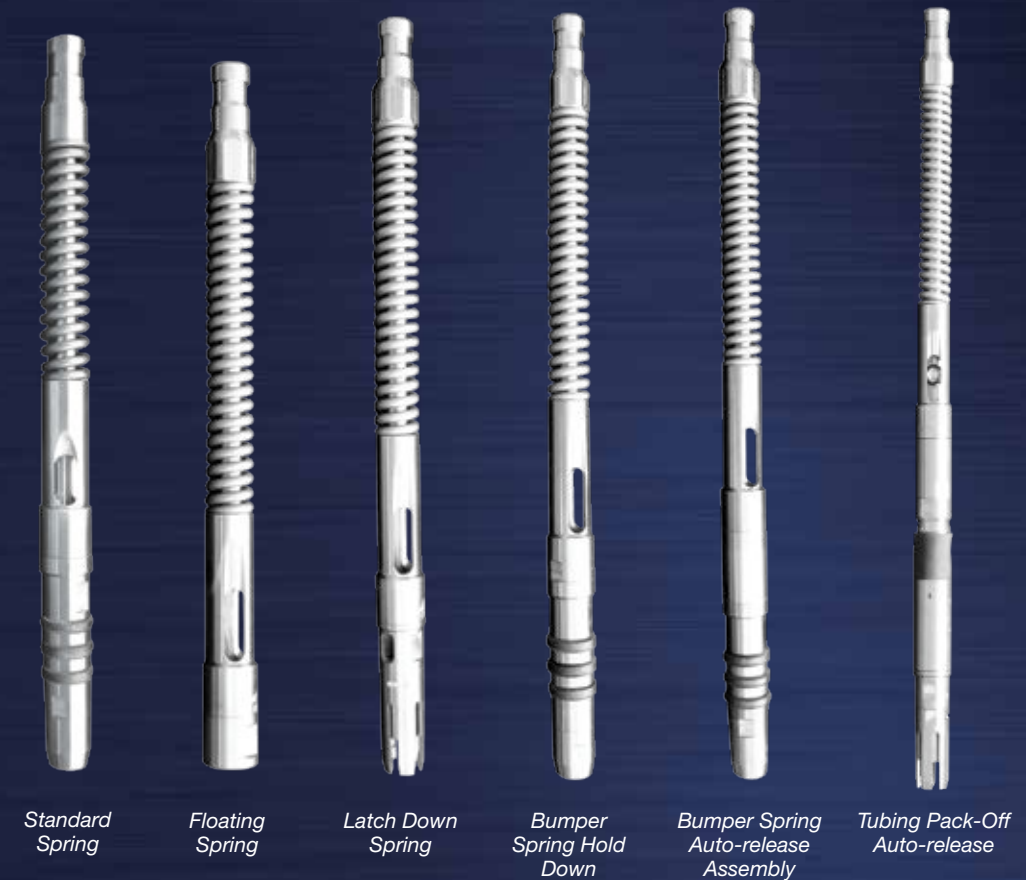
Bumper Springs have traditionally been designed and built around conventional plungers to endure normal wear and tear. At Flowco, we started from scratch, designing our PATENTED springs to the needs of the current market: to endure more cycles and faster falling plungers. One-piece Flowco bumper springs are manufactured for vigorous use in high producing rate wells.

US PATENT #9,624,996

FLEXPAK BUMPER SPRINGS

- + **Standard Spring:** Recommended for conventional plunger lift applications.
- + **Floating Spring:** Economic benefit in wells that typically produce less than 150 mcf/day, also used in conjunction with stage tool and pack off applications.
- + **Latch Down Spring:** Used to latch to collar stop, tubing stop, pack-off assembly, or multi-stage tool.
- + **Bumper Spring Hold-down:** Used in majority of plunger lift installs when seating nipple or profile nipple is present.
- + **Bumper Spring/Auto-release Assembly:** Used in low (35/bbls or less) liquid producers to trap fluid in tubing during shut-in time. Controls hydrostatic pressure above standing valve to release fluid for optimal plunger lift operations, can also be used to chemically treat tubing below the standing valve.
- + **Tubing pack-off/Auto-release:** Used when no seating nipple is present and trapping fluid is required.

Bumper Springs



FlexPak Series®

One-Piece, PATENTED Mandrel Design



RAGE Series®

High-efficiency & CONTINUOUS FLOW



Bumper Springs & Downhole Tools

Multiple Sizes Available

Head/Mandrel

- + Stabilizers and improved flow
- + Solid one-piece design
- + Exceptional fastening method

Cage

- + O.D. sweeps and back slot sweeps = Improved escape
- + Ball & seat ready

Seating

- + Seating cups
- + Tubing stop
- + Collar stop

US PATENT #9,624,996

FLEXPAK DOWNHOLE TOOLS

- + **Bumper Spring Combo:** Used to strategically place the assembly in the tubing string, often used in plunger assisted gas lift operations.
- + **Collar Stop & Tubing Stop Stage Tools:** Ideal for lower GLR applications, easy to set and remove using slicklines with no workover rig required, convenient one piece design, re-buildable for long term use, new & improved design allowing for maximum flow-through area compared to any tool on the market, available for sweet and sour applications.
- + **Springless Standing Valve:** Test tubing or as check valve for gas lift wells. Conventional plunger lift applications when needed.
- + **Sand Screens:** Sand control adapter for the bumper-spring in plunger lift operations. Works well in sandy wells that make just enough sand to hang up the plunger or wear out plungers quicker than normal.



Rage® Bypass Plungers

Application

High Flowrate wells that require minimal close time and/or constant cycling for optimal liquid removal.

Multiple Sizes Available

Body Area

- + Solid ONE piece design
- + Alloy or stainless steel
- + Exceptional “crimple” fastening method
- + Incorporated wear rings
- + Centralized fluted design (other options available)
- + Multitude of slot sizes available for various production rates

US PATENT #9,677,389

RAGE SERIES PLUNGERS

- + **Shorty:** Deviation and low volume.
- + **Standard Groove:** Low deviation/high volume wells. Paraffin control.
- + **Center Flute:** High deviation/high volume wells. Used for paraffin control and for more consistent plunger wear.
- + **Single Pad:** Better seal/deviated wells.
- + **Dual Pad:** Best seal/low volume wells.
- + **Ball and Sleeve:** For high flowrates and/or wells that produce sand and/or solids.
- + **Titanium Sliding Sleeve:** Used for deviated and more gassy wells. Does not require a stinger rod for operation. Used for higher rate wells as well.
- + **Standard Sliding Sleeve:** 4-port adjustable/flexible, port selection varies based on your needs, you can plug a port as the wells production changes
- + **Padded Sliding Sleeve:** Fast falling plunger with no shifter rod required. Provides all the benefits of sliding sleeve options with the sealing efficiency of a dual pad. Unique pad design allows for maximum sealing efficiency and increased longevity, patented fastening method allows for no pins or welds throughout the plunger.

Downhole Tools



Collar Stop



Tubing Stop



Standing Valve



Collar Stop Stage Tool



Tubing Stop Stage Tool



2-Piece Multi-Stage Tool



Sand Screen

Rage® Series Plungers



Shorty Bypass



Center Flute Bypass



Standard Groove Bypass



Single Pad Bypass



Dual Pad Bypass



Ball and Sleeve



Titanium Sliding Sleeve



Standard Sliding Sleeve



Padded Sliding Sleeve



Fury® Plungers

Application

Wells that require some close time and need the plunger to fall quickly to bottom under a controlled fall speed.

Multiple Sizes Available

Ideal for:

- + Wells with sand and/or scale problems
- + Wells with Lower BHP
- + Wells that have recently been completed
- + Horizontal applications or deviated wells

Plunger Design

- + Fluted design for even wear
- + Precision placed flow ports for optimal cleanout and accelerated fall times
- + Lower shut in times
- + Groove technology for clean out action

FURY SERIES PLUNGERS

- + **Single Pad:**
- + **Dual Pad:**
- + **Spin Fury:** Great for wells that make solids (sand, salt, scale and paraffin).
- + **Quick Lift:** Used in wells with sand/paraffin and where increased plunger fall times are desired without bypass mechanism.

SureFlow® Conventional Plungers

Application

Wells that require an excellent seal. The close time for required pressure build-up correlates with the fall speed of the conventional plunger type. The plunger arrives at the bottom before the well opens.

Multiple Sizes Available

Available in:

- + Single, Dual and Triple Pad

Plunger Design

- + Patent-pending crimple lockdown*
- + Durable in extreme environments
- + Wear indicator on pads
- + Interlocking pad design feature

* PATENT PENDING

SURE FLOW SERIES PLUNGERS

- + **Single Pad:** Low fluid producers. Also good for deviated wells.
- + **Dual Pad:** Best seal in low volume and /or low pressure wells.
- + **Triple Pad:** For lowest rate wells that require the best of seal.
- + **Shorty Solid Groove:** Sand, paraffin, or scale preset.
- + **Full Length Solid Groove:** Length for more seal. Weight for paraffin, scale or sand to fall easier.
- + **Magnet:** Used for retrieval purposes
- + **Bypass Retrieval:** Used to retrieve stuck bypass plungers

Fury® Series Plungers



Single Pad



Dual Pad



Spin Fury



Quick Lift 4

SureFlow® Series Plungers



Single pad



Dual Pad



Triple Pad



Z Pad



Magnum



Shorty Solid Groove



Full length solid groove



Magnet



Bypass Retrieval

LiftMind II®

- + Innovative well production optimization utilizing the latest hardware and control algorithms
- + Plunger Lift or Intermittent control options with High/Low shut-in
- + Auto Adjust cycle based on plunger speed with time or pressure
- + Ability to open and close injection valve to control injection time with Gas assisted plunger lift operations
- + Simple upgrade to Automation with built-in Modbus protocol with every controller
- + Live data polls every 90 seconds

Options

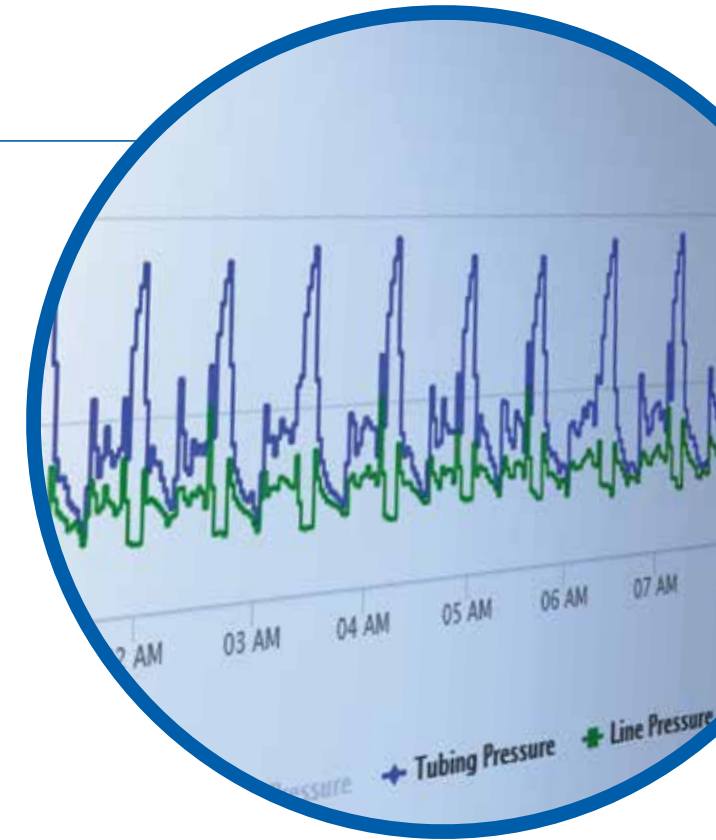
- + Stand-alone controller or fully automated controller
- + Hardwire and wireless RS485 data highway options
- + Low power 6 volt or 12 volt options
- + Optional Flowco cloud based Host service for quick turn around communication utilizing cellular and satellite options with your well upon installation



Well Optimization with LiftMind II

Access anytime and anywhere with Flowco's easy to use and secure cloud based host system. Merge Flowco LiftMind II into your existing network system at anytime using the controller's Modbus protocol.

- + Data monitoring and safety control
- + Intermittent
- + Plunger Lift Controller
- + Gas assisted plunger lift controller
- + Gas injection controller



LiftMind II Controller



Plunger Sensor



Flowco's Plunger Arrival Sensor can be utilized with any 6 volt or 12 volt controller system to precisely measure plunger arrival speeds.



Lubricators

The EASIEST, MOST ADAPTABLE Universal Plunger Lubricator

Flowco Lubricators

Design

- + Working pressures of 3,000 and 5,000 psi.
- + Threaded, all flanged, or a combination of threaded and flanged designs available.
- + Easy removal of lubricator cap where spring and anvil are not integrated into the cap. Easily inspect components housed in the lubricator cap (anvil spring, rod spring, O-ring, anvil).
- + Universal conversion for ALL conventional and bypass plungers on the market today.
- + Manual or auto catcher options.

Available in:

- + 2 3/8"
- + 2 7/8"



All Forged & Flanged Lubricators

The only ALL-FORGED-ZERO-WELDS Lubricator

Forged & Flanged Lubricators

- + The only ALL FORGED ZERO WELDS Lubricators
- + All Bowen top assemblies
- + 5K or 10K inlet connection
- + 5K or 10K flanged, threaded NPT
- + Dual outlet configurations
- + 4130 material
- + -50° to 180° temperature rating
- + NACE compliant construction

Forged equipment, 5K & 10K PSI Rated

- + 5K – R24 x NPT, R24 x R24, R24 x Hammer union, BX152 x NPT
- + 10K – BX152 x BX151, BX152 x Hammer union
- + Currently available only in 2 3/8" sizes (2 7/8" coming soon)

Accessories

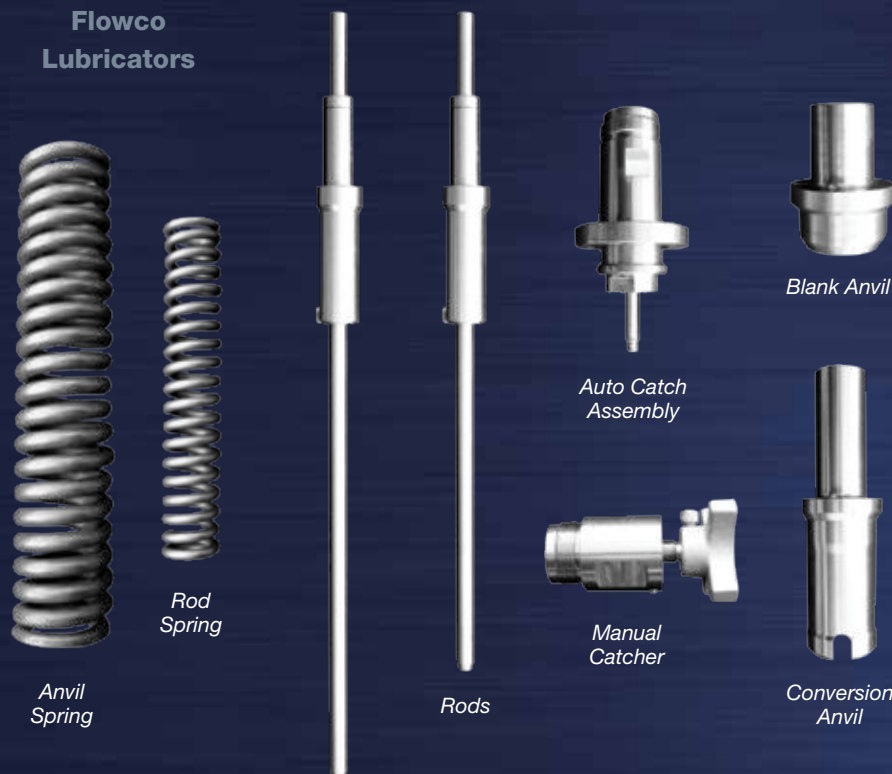
- + Kimray compatible Auto-Catch
- + Custom Low Pressure Cylinder Auto-Catch
- + Custom High Pressure Cylinder Auto-Catch

* PATENT PENDING



Custom machined lubricators

Flowco Lubricators



Anvil Spring

Rod Spring

Rods

Auto Catch Assembly

Manual Catcher

Blank Anvil

Conversion Anvil

Lubricator Body & Cap

Forged Lubricators



Inlet Connection Lubricator

5K or 10K Flanged Lubricator

Threaded NPT Lubricator

Welded Lubricators



Welded Lubricator

Flanged Welded Lubricator

Flowco Manufacturing

In-house manufacturing of products ensures ultimate quality control in every customer driven solution.

Manufacturing Facility

Flowco artificial lift products are designed and manufactured using the latest software and precision machining tools at our in-house facilities in Cleburne and Houston, Texas. Decades of machining and oilfield experience, along with the insights of one of the founders of artificial lift technology go into every Gas Lift and Plunger Lift product, guaranteeing their performance and durability in the field.

Skilled Craftsmen

Flowco's skilled machinists and fabricators work hand in hand with our dedicated engineers to continuously enhance our capabilities and processes. A proficient support staff aids in our ability to get new products to market fast. With Flowco's "Do it right the first time" attitude you are guaranteed to receive the very best plunger lift and gas lift products in the business.



Parts & Service

Flowco parts and service is available 24/7 through any of our national Service Centers. To request parts, service or even a full well analysis, call 281.528.6298, visit our website at www.flowcosolutions.com or contact your local representative.



Custom Design Engineering

- + Specialized software is utilized to design components and create virtual assemblies to ensure fit and function of every component before manufacturing occurs

Design and Manufacturing

- + Decades of experience, including oilfield experience, among our machinists and engineers
- + Understanding of materials and what types of materials should be utilized for which applications
- + CNC machining for precision tools



Flowco Production Solutions

Flowco's focus will always be to provide unrivaled plunger lift tool designs, optimization services, and training that equip our customer's to reach their production goals.

Flowco Service Centers

Strategically located to serve oil and gas basins throughout the continental US, Flowco has a dedicated service center near you.

Corporate Headquarters

- Houston, TX

Service Centers

- Admore, OK
- Aztec, NM
- Bridgeville, PA
- Carlsbad, NM
- Charleston, AR
- Cleburne, TX
- Edmonton, Alberta
- Edson, Alberta
- Greeley, CO
- Haslet, TX
- Houston, TX
- La Vernia, TX
- Lafayette, LA
- Midland, TX
- New Waverly, TX
- Oklahoma City, OK
- Ohio
- Overton, TX
- Red Deer, Alberta
- Rock Springs, WY
- San Angelo, TX
- Weatherford, TX
- Woodward, OK



For service or to request a well analysis, call 281.528.6298, visit www.flowcosolutions.com or contact your local representative.



Built to Optimize

Flowco Corporate Headquarters

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www.flowcosolutions.com

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