



High Angle Reciprocating Pump

Overview

An innovative artificial lift solution providing high compression in any downhole inclination and reducing issues commonly encountered in wellbores with large volumes of entrained gas.

The Raise Production Rod Pump is specifically designed to be run at high angles downhole. The pump will operate in varied and challenging flow regimes commonly plaguing both deviated and horizontal wellbores. Exclusively manufactured for unique applications including elevated GLRs, fluid levels below the tangent, excessive rod or tubing wear, high fluid volumes, and premature failure of surface equipment.

Description

Unique Valve and Cage Design

An engineered valve assembly guarantees that the valve will always reseal. This means that the pump can be landed in horizontal sections, with angles ranging from 45° to 95°. The design also prevents the need to run the pump at high speeds in order for the valve to return to its position, which in turn lengthens the life of the components.

Sliding Top Valve to Eliminate Gas Lock

Use of a sliding top valve, in addition to the traveling valve and standing valve, provides positive arrest of the hydrostatic head and ensures that the traveling valve opens on the downstroke. This increases efficiency by eliminating non-producing compression strokes that ultimately shorten the pump run life.

One of a Kind Spring Design

Springs are tested and maintain a constant load through a minimum of 3 million cycles, ensuring that there will be no risk of fatigue failure. High quality nickel alloy materials stand up to corrosive environments and perform safely in high temperature conditions. The engineered springs provide uniform seating with the mating parts and reduce buckling tendencies.

Pioneered to Combat Wear

Leading edge technology specifically targets deflection tendencies rigid pumps face in deviated wells. An optional articulated plunger bends more than 10°, and a swiveling joint at the hold down reduces side loads. The plunger can be stroked easily, which alleviates stress on the surface drive equipment.



**Raise Production
High Angle
Reciprocating Pump**

Features

Valve System

- Valve and seat are lapped for a perfect seal
- Energized to ensure valve will reseal
- Works at any angle, even greater than 90°

Diverse Flow Regimes

- Optimal for high gas/liquid ratios
- Pump is operational at slow speeds

Maximum Efficiency

- Gas locking avoided with sliding top valve
- Pump uses more of the stroke to pull in fluid
- No redundant gas compression stroking

Wear Resistance

- Articulated plunger reduces wear in doglegs
- Swiveling joint minimizes friction in deflected barrels
- Minimal force required to stroke plunger
- Slow pumping lengthens life of equipment

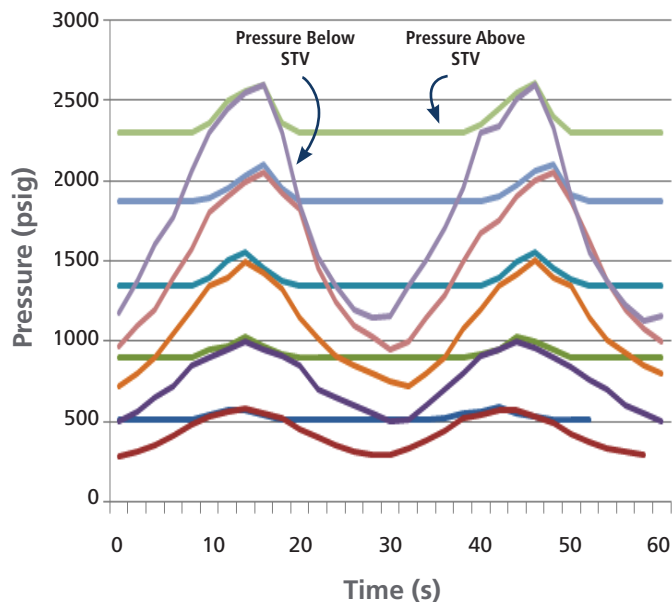
High Volume Capabilities

- Large barrel alternative
- Deeper landing angles improve drawdown

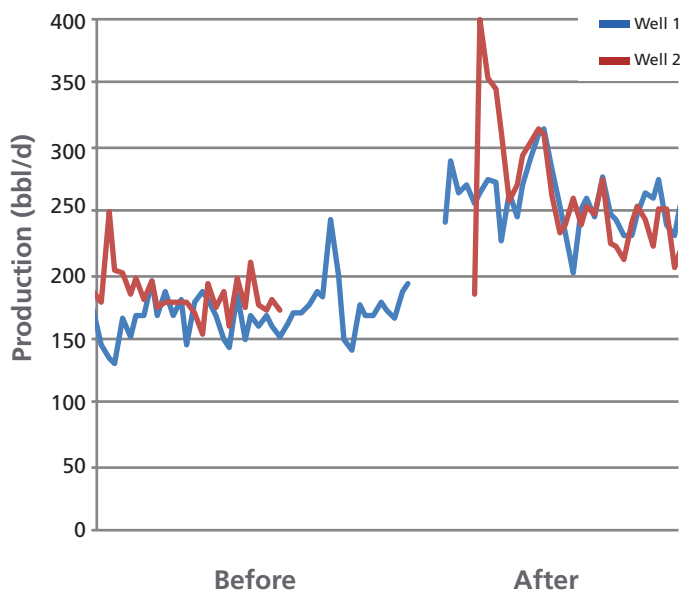
Spring Technology

- Cycle tested to determine spring fatigue life
- Materials selected to resist degradation

Pressure Vs. Time Sliding Top Valve Operations



Production Before and After Installing Raise Pump



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