

STINGER VALVE™

Never-Lock Traveling Valve



Operation

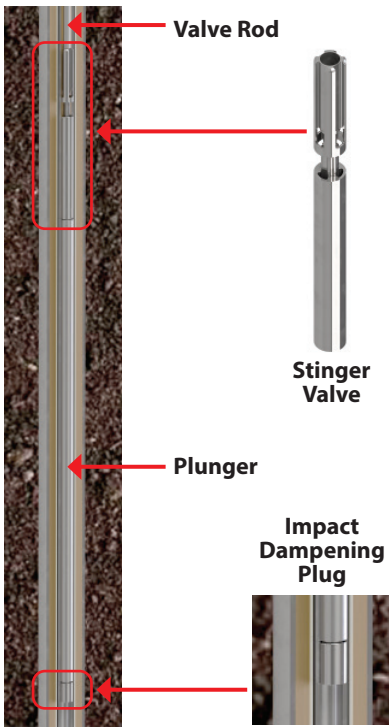
The Stinger is a mechanical-lock traveling valve used in artificial lift wells which utilizes rod pump configurations. Replacing the traditional ball and seat traveling valve, the Stinger's upper threads connect directly to the valve rod, and the lower threads interface with standard plungers.

Benefits

- Eliminates gas lock
- Increases production
- Allows pumping under extreme bottom pressure without loss of fluid efficiency
- Reduces operation and well servicing costs
- Oversized internal ports allow solids to pass through valve
- Reduces fluid pound and rod compression
- Increases pump efficiency and pump fillage in multiple applications

Fluid Efficiency

- Engineered with a mechanical locking action that prevents high bottom pressure blow-by on upstroke
- Mechanical actuation opens and closes regardless of pressure differential
- Prevents loss of fluid recovery by locking open on down stroke

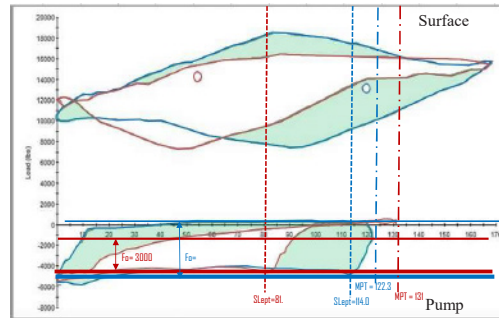


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Design Features

- Stainless steel for durability
- Upgrade available for H₂S environment
- Low friction sealing surfaces for extended life
- Mechanically opens and closes on every stroke to prevent gas interference or gas lock

Dynometer Card Output



Rod Pump Dyno Statistics Trend

	Ball Valve	Stinger
SL _{opt}	81.1	114.0
F _o	3000	5200
MPT	131	122.3

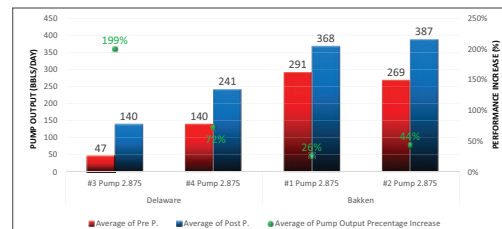
GREEN SHADED AREA = Increased Efficiencies

Dynometer card output chart based on rough estimation from graph provided to DTI by the operator.

Graphical overlay of test well dyno cards, before and after install of the Stinger valve.

RED = 2" Ball and Seat Valve **BLUE** = 1.75" Stinger Valve **GREEN** shaded areas highlight well improvements

Ball and Seat vs. Stinger



Objective

Operators in various basins shared production data pre-installation and post-installation of the Stinger valve for a true side-by-side analysis. Comparable benchmark markers were:

- 1) Stroke Length Effective Plunger Travel (SL_{opt})
- 2) Fluid Load (F_o)
- 3) Pre/Post Pump Fluid Volumes

Gas interference issues have been eliminated by the Stinger valve due to mechanical operation.

Drilling Tools International
Slick Tools International
3701 Briarpark Dr • Ste 150
Houston, TX 77042
832.742.8500

Other DTI Centers:

North America Land Operations
20104 E Hardy Rd
Houston, TX 77073
281.645.2010

Offshore/International & Manufacturing
1149 Smede Hwy
Broussard, LA 70518
337.856.0333

Midland, TX • 432.563.0676

Odessa, TX • 432.248.8350

New Iberia, LA • 337.256.5848

Shreveport, LA • 318.464.2259

Oklahoma City, OK • 405.604.2763

Bakersfield, CA • 661.869.1752

Casper, WY • 307.237.5248

Charleroi, PA • 724.565.5682

Watford City, ND • 701.482.6500

Nisku, Canada • 877.570.1962

Newfoundland, Canada • 709.782.0087

Dubai, UAE

Corporate

3701 Briarpark Dr • Ste 150
Houston, TX 77042
832.742.8500

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Our Quality Management System is certified in compliance to ISO 9001, and API Spec Q1 and our manufacturing is licensed to API Spec 7-1. Our Quality Management System governs all of our processes from planning, to process control, to delivery. This ensures that we consistently manufacture products that not only meet API standards but also meet the ever-changing needs of our customers.