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RHINO

MAX FLOW | HD MAX FLOW

INTRODUCTION

Having the proper down hole equipment is key to maintaining a fully functional plunger lift system. Well Master offers a diverse range of materials and geometries tailored to meet the latest requirements for bottom hole spring assemblies.

APPLICATIONS

- The latest aerodynamic geometry combined with secure hold-downs excel in high velocity applications. The compact design of the ***Max Flow*** spring retains all the latest industry-leading features and performance benefits, while the shorter geometry offers the lowest drag on the market. Alongside maximizing flow-through capabilities, these springs have numerous integrated safety features to safeguard functionality throughout the equipment's lifecycle.
- For the most demanding applications, the ***Heavy Duty Max Flow*** spring offers superior energy absorption, making it the ideal candidate for heavier fast falling impacts. The extended length of the Heavy Duty spring offers additional energy absorption without sacrificing any of the latest features or performance characteristics.

EFFORTLESS CUSTOMIZATION

A diverse range of premium materials is available, featuring 7,542 different combinations to meet specific needs. Mix and match spring tops with a variety of hold downs and materials to get the right down hole equipment for any application. 2-3/8"and 2-7/8" in stock; other sizes available upon request.

BHP2000MNX25ALXP60Q

*BH PRSV, 2-3/8", Max Flow, SS & Inconel, 1/4 BBL, 2 Cup, L80, X Profile, Poly +60

BHS2000HTNTLFF

*BHS, 2-3/8", Heavy Duty, Titanium & SS, 3 Cup, L80, F Profile, Fiber

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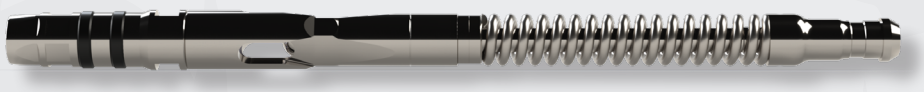
FEATURES & BENEFITS

- **Reduced Drag-**Experience seamless performance with our spring design! The uniform cross-sectional area ensures consistent flow and significantly reduces pressure drops, delivering optimal efficiency.
- **Additional Space-**The added space between the no-go and the first cup ensures a perfect seal for both cups, enhancing overall performance.
- **Trippled Life Span-**Spring is built to endure over 19,000 cycles, maintaining excellent condition throughout. It operates flawlessly at the designed deflection, without taking a set or going solid, ensuring long-lasting performance.
- **Integral Stop in PRSV Seat-**Integral stop in the pressure relieving seat allows pump through and protection from both wear as well as overstress.
- **Dual Connection Fishneck-**The coarse thread design offers increased surface area for better engagement, while the crimp feature effectively prevents the threads from unscrewing, ensuring security.
- **Pressure Relief Seat & Spring-**The innovative seat design prevents the spring from going solid and allows backflow through the seat's openings, ensuring the spring does not overstress.
- **Cage Design-**A new cage design features a robust structure with stronger walls and increased space for the ball to hide.This allows the ball to direct flow without making contact with the rod, ensuring durability. All Rhino Springs seal at inclinations up to 68°.

BHP2000MNX25ALXP60Q



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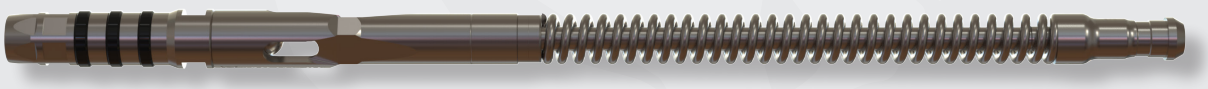

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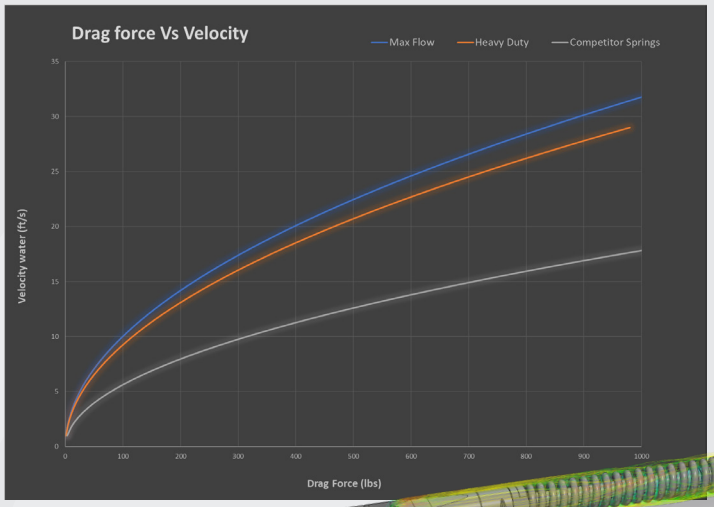
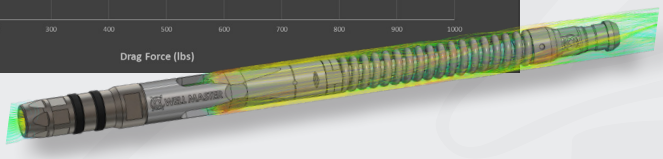
MAX FLOW | HD MAX FLOW: PERFORMANCE

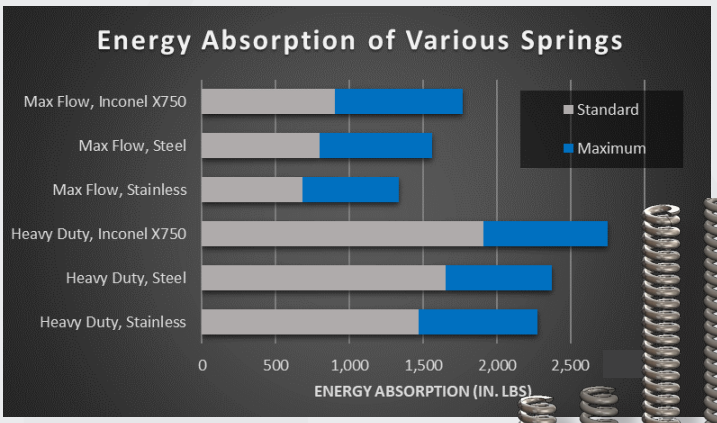




*Curve shows force caused by water to simulate worst-case highest density of flowing medium; nodal analysis should be used to determine velocities at depth of downhole equipment.

FLOW SIMULATION

Computational fluid dynamics utilized throughout the design of the new Rhino Spring to identify any flow constriction and assess the impact of each geometry change on flow. The outcome is a resilient design that maintains optimal flow-through without compromise.



*Standard is based on infinite life for the material. Maximum energy absorption indicates where integral stop is engaged.

ENERGY ABSORPTION

Working closely with spring manufacturers, the latest coil design achieves the highest performance for each material. Springs pictured from left to right: **Max Flow Stainless, Max Flow Steel, Heavy-Duty Stainless, and Heavy-Duty Steel.**

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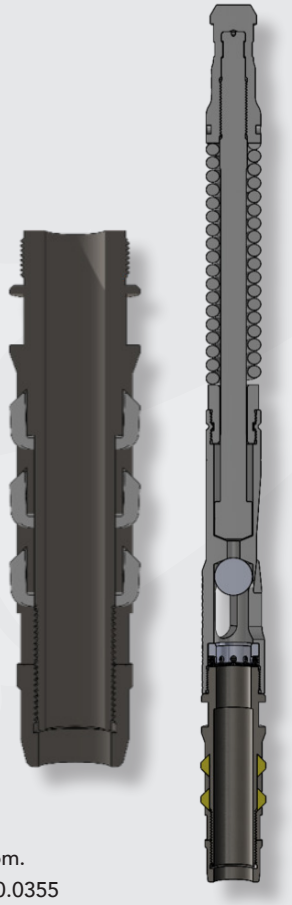
CUSTOMIZATION

Modular assembly allows for a wide variety of hold downs and material combinations to build application-specific spring assemblies.

- **BHP-** pressure relieving valve holds fluid above equipment for various volumes ranging from 1/8 BBL to 1 BBL to prevent excess liquid retention
- **BHP (C)-** pressure relieving compression spring
- **BHV-** standing valve for wells with high gas-liquid ratio or high set tubing when high liquid retention is desired
- **BHS-** flow through spring, a simple solution when liquid retention is not required

INSIDE LOOK

- **Damper Effect-** Where the spring provides higher force with increased displacement, this connecting rod and piston act like damper, providing more force with higher velocity impacts and provides a more even force over the deflection range and reduce stress on the coil.
- **Pressure Relieving Seat-** Integral stop in the pressure relieving seat prevents the spring from exceeding max safe deflection during pump jobs and provides a barrier between potential corrosion caused by high velocity flow.
- **Dual Connection Fishneck-** Rigorous impact testing has proven this duplicate connection combines the strength and precision of threads with the permanent joinery of deforming materials to provide the most robust connection.



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HOLD DOWNS

A-2 Cup: seals in a landing nipple, seating cups available in fiber or hi-temp polymer

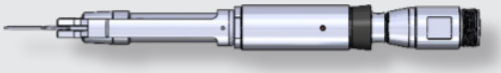
B-Tubing Stop: for setting bumper spring in production tubing

C-Collet: to be used in conjunction with a tubing stop or collar (sold separately)

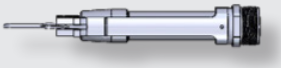
DB-Packoff Tubing Stop: to isolate liquid above the spring anywhere in production tubing without requiring a landing nipple

DC-Packoff Collet: used in combination with a stand alone collar stop or tubing stop

DF-Packoff Collar Stop: hold fluid above discrete joints along production tubing



F-Collar Stop: for setting at discrete tubing joints



T-3 Cup: a stronger hold down in a landing nipple

TH- 3 HR Cup: HR Style seating cup (now available

Z-Zero Cup: when seal in landing nipple is not required

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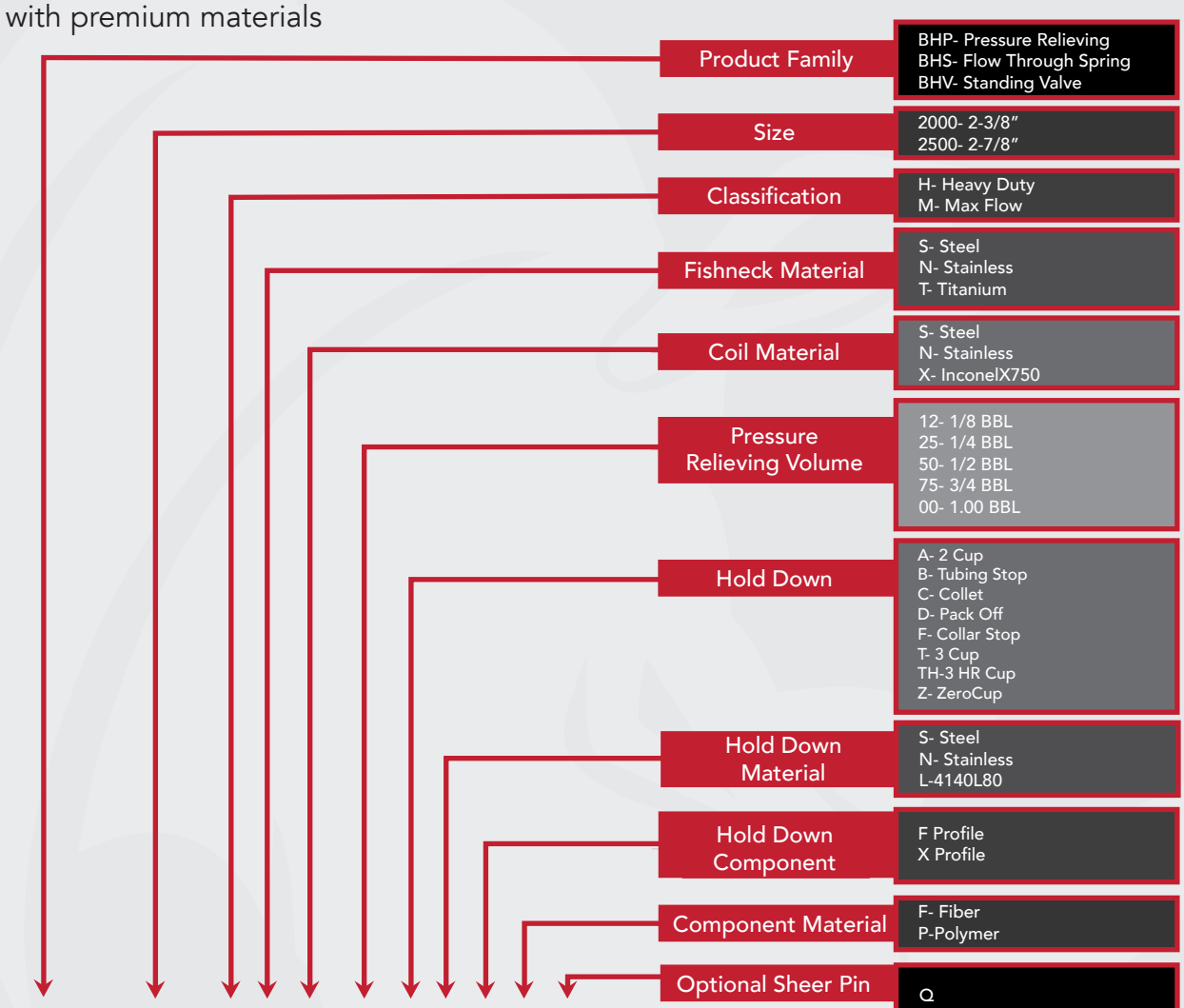
PART NUMBER BREAKDOWN

Customizable modular assembly allows for wide variety of hold downs and material combinations to build application specific spring assemblies. Diverse offering available with premium materials



Example Part number:

BHS2000MNNASFPQ- BHS, 2-3/8", MF, SS, 2 Cup, Steel, F Profile, Poly W/ Shear Pin BHV2000HTNDLCN- BH Valve, 2-3/8", HD, Titanium & SS, Pack Off, L80, Collet, SS

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