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Small Valve, Big Responsibility: Barksdale Shear-Seal Control In BOP Systems

The Barksdale Shear-Seal Valve is a high-pressure hydraulic control valve used in oilfield regulation systems, including the hydraulic circuits that operate Blowout Preventers (BOPs).

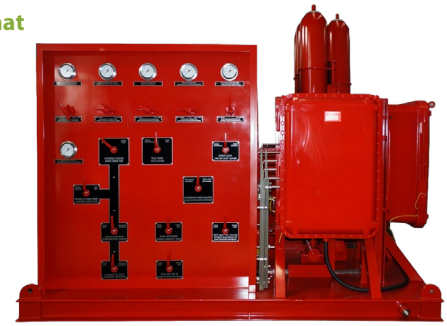
Although the valve does not physically seal the well itself, it plays a crucial role in controlling the hydraulic fluid that actuates BOP components such as pipe rams, blind or shear rams and annular preventers. In this way, the valve acts as part of the hydraulic control system that enables the BOP to perform its well-control function.

In a typical operation, a command from the driller's control panel initiates the process. This command activates the shear-seal valve, causing it to shift and route hydraulic fluid from the accumulator system to the appropriate actuator. The hydraulic pressure then moves the BOP component, allowing it to open or close as required. Through this process, the valve functions as a directional control device that directs hydraulic pressure, isolates circuits when necessary and ensures reliable operation under the high pressures common in drilling environments.

The shear-seal design differs significantly from traditional spool valves. Instead of relying on cylindrical spools, the valve uses precision-machined sliding plates that move across each other to create a metal-to-metal seal. As these plates shift, they shear away contaminants from the sealing surfaces, producing a self-cleaning action that minimizes internal leakage even in contaminated hydraulic systems. This design provides extremely tight sealing and dependable performance in demanding oilfield conditions.

Because of their durability, compact design, fast response and extremely low leakage, Barksdale shear-seal valves are widely used in safety-critical equipment like BOP systems. Their reliability ensures that hydraulic commands are transmitted accurately and quickly, helping maintain effective well control and reducing the risk of blowouts during drilling operations.

Blowout Preventer



Shear-seal valves are mounted on hydraulic manifolds inside the BOP control unit

Barksdale have developed a major OEM in Sara Sae, developers of major oilfield systems, to whom they supplied Shear Seal Valves worth in excess of $1M in 2024. The valves were integrated into hydraulic control panels and BOP actuation systems.

Sara Sae Private Limited is a manufacturer and exporter of well-control equipment, supplying products used in drilling, pressure control, and well intervention operations. The company produces a wide range of equipment using advanced design methods and CNC-based manufacturing facilities in India.

With more than four decades of experience, the company operates as an OEM supplier of oilfield equipment, focusing on well-control and flowline products that help ensure safe drilling operations and pressure management in oil and gas wells.

Barksdale Shear-Seal Valve Advantages:

- *Patented metal-to-metal Shear-Seal design*
- *Handles contaminated hydraulic fluids*
- *Virtually zero leakage*
- *Self-lapping sealing surfaces for long life*
- *High flow with low pressure drop*
- *High pressure capability*
- *Rugged construction for harsh environments*

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