



Weatherford®

Hydraulic Flow Control

ROSS® Remotely Operated Sliding Sleeve

Weatherford's *ROSS* remotely operated sliding sleeve is used in intelligent wells to help enhance reservoir management and optimize production. This tubing-mounted sliding sleeve allows selective communication between the annulus and the tubing without intervention with conventional coiled tubing or wireline shifting tools.

The *ROSS* tool features a balanced-piston design that requires two control lines per sliding sleeve. Application of hydraulic pressure to one line while venting the opposite line provides substantial axial force to either fully open or close the sliding sleeve, depending on which line is receiving pressure. The control lines are connected to the *ROSS* tool, clamped along the tubing string, and routed to the surface, where they are connected to an appropriate hydraulic pressure source.

Applications

- Intelligent wells—to enhance reservoir management and optimize production
- Wells that require shutoff of excess water or gas production
- Injection wells requiring selective isolation for improved sweep efficiency
- Remote locations that cannot be accessed with intervention equipment
- Subsea or high-day-rate platforms, where intervention is cost prohibitive
- Small satellite wells with limited deck space, or footprint, for temporary installation and operation of intervention equipment
- Horizontal or highly deviated wells that require threaded pipe or coiled tubing for sliding-sleeve manipulation
- Completions that require opening and closing of a sliding sleeve but do not allow through-tubing access
- Regions where governmental regulations prohibit commingling of production fluids from multi-layered reservoirs





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Features, Advantages and Benefits

- Balanced hydraulic piston allows application of high axial force in either direction and eliminates setting-depth limitations.
- Control-line connections can be externally tested to ensure proper metal-to-metal sealing of connection points, enhancing system reliability.
- Non-elastomeric sealing system ensures seal integrity for a longer life cycle in harsh environments.
- Large flow areas through ports minimize pressure drops to eliminate the potential for erosion, scale deposition, and production losses.
- Optimized external profile allows maximum flow bypass across hydraulic chamber section when required to bypass sliding sleeve.
- Mechanical shift override allows redundancy in shifting the sliding sleeve in the event the sliding sleeve cannot be opened with pressure applied through control lines.
- Bypass of encapsulated control lines eliminates rig time required for stripping lines to bypass the sliding sleeve while maintaining maximum protection of the control lines.

Specifications

Tool size	2-7/8 in.	3-1/2 in.	4-1/2 in.	5-1/2 in.
Maximum OD	4.675 in. 118.75 mm	5.500 in. 139.70 mm	6.500 in. 165.10 mm	7.500 in. 190.50 mm
Minimum ID	2.312 in. 58.75 mm	2.750 to 2.812 in. 69.85 to 71.42 mm	3.813 in. 96.85 mm	4.562 in. 115.87 mm
Overall length	5.58 ft 1.70 m		6.03 ft 1.84 m	6.53 ft 1.99 m
Burst and collapse	10,000 psi 68.9 MPa	7,500 psi 51.7 MPa		
Operating temperature	70° to 300°F 21° to 149°C			
Maximum control-line pressure	10,000 psi 68.9 MPa			
Maximum differential opening pressure	2,500 psi 17.2 MPa			
Maximum number and size of control-line bypasses	Three 0.906 × 0.472 in. (23 × 12 mm)	Three 0.906 × 0.472 in. (23 × 12 mm) and one 0.433 × 0.433 in. (11 × 11 mm)		
Standard material	13% chrome, 80-ksi minimum yield strength			