

Workstring Orientation Tool

ORIENTATION ACCURACY IN MULTILATERAL COMPLETION OPERATIONS

OVERVIEW

Correct orientation of multilateral completion components is critical in maintaining service quality while constructing TAML level 5 junctions. Misalignment has the potential to damage junctions, seal interfaces and result in a loss of through-bore capabilities. Measurement-while-drilling (MWD) tools are used during multilateral well construction to achieve the correct equipment orientation prior to landing. However, because MWD tools are typically supplied by the directional drilling vendor, additional rigsite setup is usually required.

The Workstring Orientation Tool (WOT) replaces conventional MWD equipment in multilateral completion operations, helping eliminate an additional vendor interface and expanding Halliburton multilateral capabilities. With its through-bore ID designed for cementing darts and setting balls, deployment of the WOT string complexity by eliminating the requirement for inner string hang-off collars to be run below the liner hanger or packer setting tool and subsequently reducing online rig floor preparations.

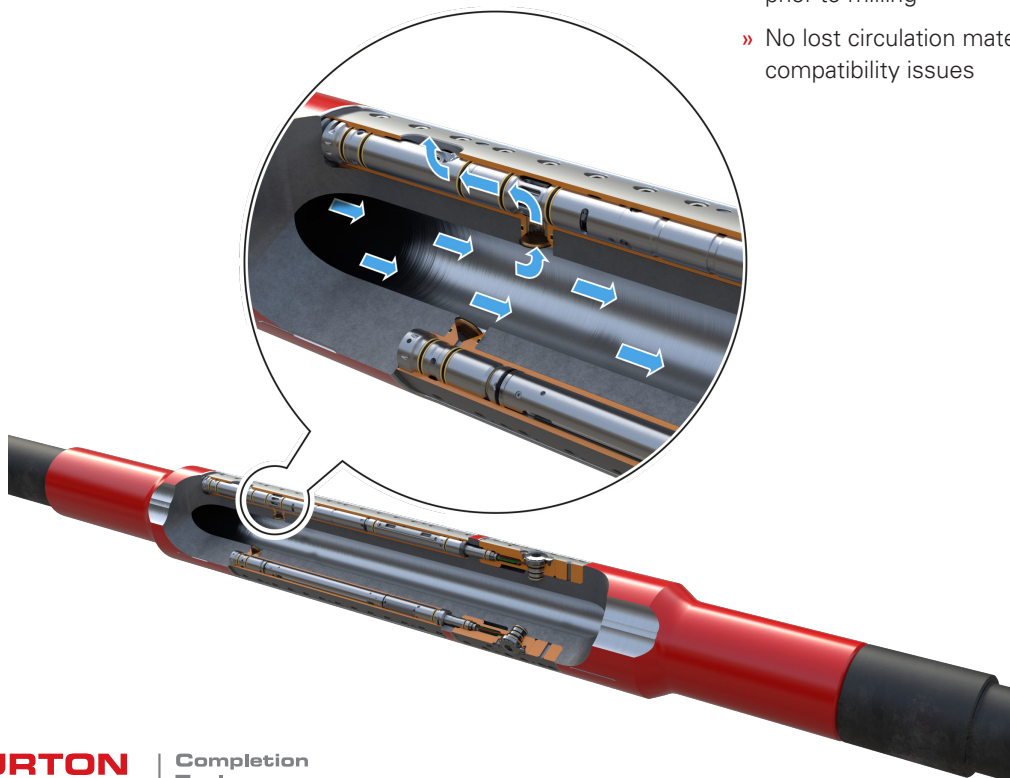
The tool creates mud pulses by venting tubing pressure to the annulus; the time between pulses is indicative of the orientation. These pulses are received and interpreted through the dedicated surface system, enabling real-time operational decisions.

FEATURES

- » Azimuth angle confirmation for multilateral completion operations
- » Available in API NC50 and 5 1/2-inch full-hole (FH) drillpipe connections
- » Through-bore access for setting ball and cementing dart compatibility
- » 6,000-psi design available for use with VersaFlex® liner hanger systems
- » Magnetic and electronic switch versions available

BENEFITS

- » No rigsite preparation required
- » Helps eliminate additional handling associated with inner-string makeup
- » Allows assurance of whipstock orientation prior to milling
- » No lost circulation material (LCM) compatibility issues



Workstring Orientation Tool Specifications

System Type	9 1/4-in. Standard	8 1/4-in. Standard	8 1/4-in. Electronic switch
Top Connection	5 1/2 FH Box	4 1/2 NC50 Box	
Bottom Connection	5 1/2 FH Pin	4 1/2 NC50 Pin	
Switch Method	Magnetic bolt switch		Electronic switch
Total Length in. (m)	104 (2.65)		
Maximum OD in. (mm)	9.25 (234.95)	8.25 (209.55)	
Tensile Rating	As per workstring connections		
Torsional Rating			
Differential Pressure psi (bar): OPERATING MODE	3,000 (206.89)		
Differential Pressure psi (bar): OFF MODE	4,200 (289.65)*	6,000 (413.79)	
Hydrostatic Pressure Rating psi (bar)	30,000 (2068.96)		
Temperature Rating °F (°C)	257 (125)		
Maximum Operating Depth ft (m)	16,200 (5000)		

* OFF MODE pressure ratings on standard tools can be increased through firmware updates

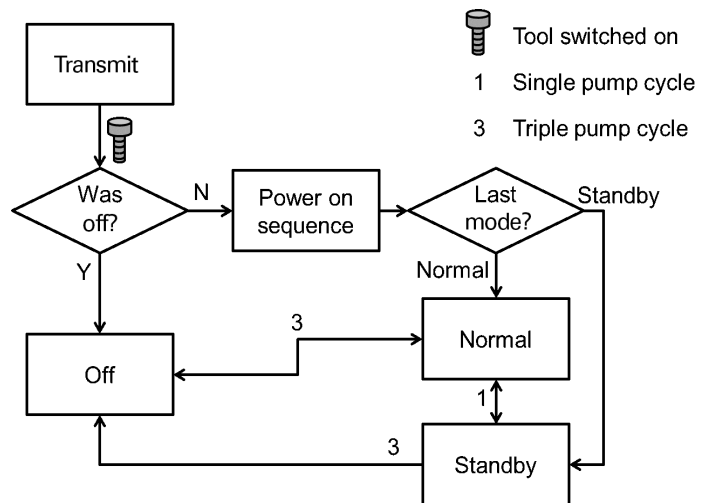
TOOL OPERATIONAL MODES

The tool has three downhole modes:

- » **STANDBY MODE:** Tool will monitor mud flow but will not transmit, used to conserve battery life.
- » **OPERATING MODE:** Tool monitors and transmits tool face every 45 seconds.
- » **OFF MODE:** Tool will monitor mud flow only but will not transmit, should be placed in final mode upon completion of operations.

Mode changes are made through mud-pump cycles at surface.

For more information, contact your local Halliburton representative or visit us on the web at www.halliburton.com



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