



WOS Hybrid Drillout System

Drillout plugs and land tubing in a single run



WOS Hybrid Drillout System

- ② Introduction to tool
- ② Features
- ② Benefits
- ② How it works
- ② WOS System Expendables
- ② Specs & Accessories
- ② Contact Information
- ② WOS Overview and Locations



WOS Hybrid Drillout System

- The Workover Solutions Hybrid Drillout System allows for plug milling and the landing of production tubing to be performed in one trip using an integral BHA.
- During milling operations, the Hybrid System is rated for pump rates and torsional values that exceed that of downhole motors and production strings.
- The built-in dual flapper safety valves provide a well control barrier until the tubing is landed.
- Once tubing is landed a dissolvable ball is dropped to shift a mandrel through the safety valves, exposing a ported sub, which allows for production to start through the Hybrid tool.
- The ball eventually dissolves allowing for secondary production through the tool.



Features

- ② Single trip mill out and landing of the production tubing
- ② Dual flapper system ensures well control throughout the operation
- ② Incorporates a mixed string design of standard drill pipe and production tubing
- ② Ball drop system allow for retrieval and drop off of essential tools
- ② The Hybrid System can be run with or without a downhole motor for plug milling



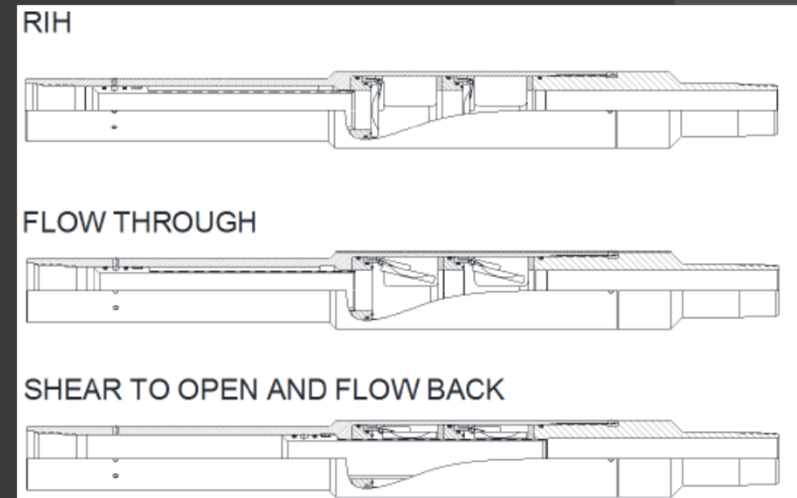
Benefits

- ④ Maintains a pipe-heavy scenario throughout operation eliminating the cause for pipe ejection and injury
- ④ Drives down cost and increases safety by reducing costly pipe trips
- ④ Significantly reduces the handling of, and risks associated with, tubulars
- ④ Eliminates the dangers associated with working over a live well
- ④ Allows for wells to be put on production immediately



How it works (non flowback tool)

- The WOS Hybrid Drillout System is the solution for a safe and effective frac plug drill-out.
 - Eliminates the need to flow back tools to surface.
 - The Hybrid NFB is deployed above the pump off bit sub in a way that simplifies the typical drill-out and tube-up process
 - Achieves and maintains a higher safety standard, stemming from three competent pressure barriers.
 - Ran in with a split string of EUE production tubing on bottom and PH6 string on top
- Basic Procedure
 - Run the tool above the disconnect
 - Mill out plugs
 - Disconnect from the BHA and still maintain well control
 - POOH with the PH6
 - Set Production Tubing
 - Drop a ball and open the NFB Tool
 - The well is now online



WOS System Expendables

- The WOS expendable motor is designed to be run with the split string and is critical in extended reach lateral sections where weight on bit and torque could be an issue
 - Torque - Flow range of 2.5 to 5.0 barrels per minute, motor outputs 630 ft-lbs of torque ensures efficient and effective milling of plugs
 - Fluids - The motor has withstood 19,000 barrels of fluid pumped through it over the course of long mill-out operations
 - Fishing - Each motor is equipped with a rotor catch in the event the motor was fail, ensuring the motor comes out of the hole in one piece and prevents a costly fishing job.
 - Design – With a high end rotor and stator, the WOS expendable motor is design with a proprietary bearing package instead of a typical sealed bearing package. This allows the motor to be economical and left down hole but also withstand the rigors of milling plugs on extended reach laterals.
- The WOS disconnect is a proprietary design for use on WOS expendable motor applications and non-motor applications in the event high torque is needed. The design allows for torque to be transferred through the tool without loss of integrity in the disconnect operations. The WOS disconnect has been rigorously tested to withstand max pull on 2-3/8 and 2-7/8 EUE and PH6 tubing.
 - Torque Tested to 5,000 ft-lbs of torque over 200 times
 - Pull tested and function tested after torque testing
 - Rated for 10,000 psi at 325F.
- Operator Choice of bit

Specs & Accessories

WOS Hybrid System Specs - Non-Flowback						
Size	Max Working Pressure	Shear Pins (+/- 10%)	Max OD	Min ID	RIH Overall Length	Ball Size
2-7/8" EUE	10,000 PSI	4 @332 PSI - 1328 over well PSI	3.875"	2.10"	36.7"	2.175"
2-3/8" EUE	10,000 PSI	4 @295 PSI - 1180 over well PSI	3.75"	1.685"	36.7"	1.750"
All tools are pinned according to well PSI to ensure they will shear below wellhead ratings						

WOS Hybrid System Specs - Flowback					
Size	Max Working Pressure	Shear Pins (+/- 10%)	Nipple Description	RIH Overall Length	Flowback Overall Length
2-7/8" EUE	10,000 PSI	3-4 @1000 PSI	2.313" X-Nipple P110 EUE	33.38"	31.13
2-7/8" PH6	10,000 PSI	6 @ 1000 PSI	2.188" R-Nipple P110 PH6 Box EUE Pin	33.63"	31.38
2-3/8" EUE	10,000 PSI	3-4 @1000 PSI	1.875" X-Nipple P110 EUE	31.13"	28.87
2-3/8" PH6	10,000 PSI	6 @ 1000 PSI	1.710" R-Nipple P110 PH6 Box EUP Pin	31.13	28.87
All tools are pinned according to well PSI to ensure they will shear below wellhead ratings					

🌀 System Includes

- WOS Drop Off Motor, Bit and Disconnect
- WOS Hybrid System Check Valves
- X and XN profiles
- Wireline Guide at desired end of tubing

Contact Information

To secure the highest quality of tools engineered, manufactured and tested in the USA contact your local WOS representative or contacts below

Main phone - 346-774-4433

Email - sales@wos.com

WOS Company Overview

- 🌀 Started Operations in Q3 2015
- 🌀 Fully Supported Downhole Tool Division
 - Design & Engineering
 - Machining & Fabrication
 - Field Operations
 - Rebuild & Redress
 - Evaluate Performance
- 🌀 Wireline
 - 4 trucks in the Northeast and 2 in West Texas
 - Started operations in July 2018
- 🌀 Operational Coverage
 - Pennsylvania, Ohio, West Virginia, and New York
 - Texas, New Mexico
 - North Dakota, Wyoming
 - Louisiana



WOS Locations

