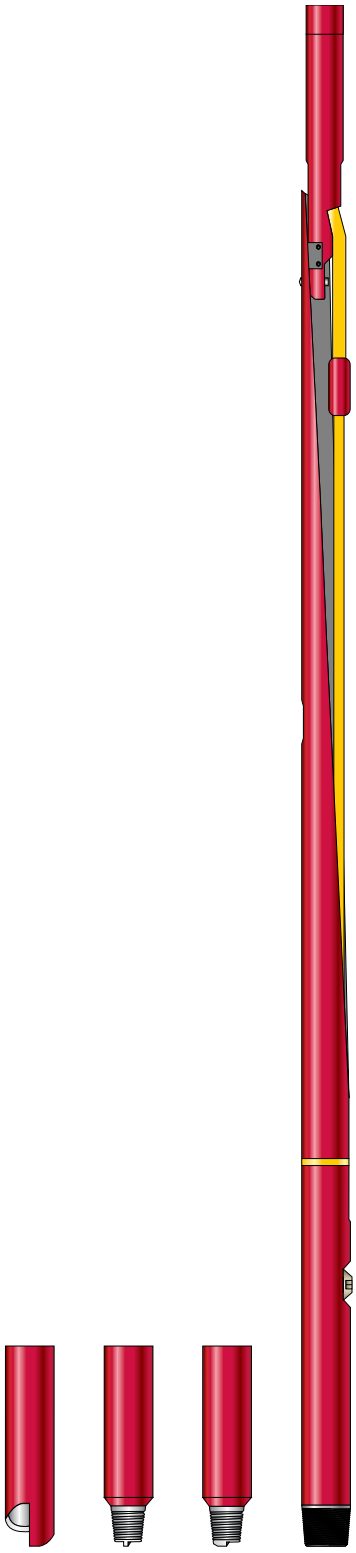
Openhole Whipstock System

Screw-In Type Anchor



Weatherford's openhole whipstock system is a single trip, screw-in style, concave assembly that uses multiple attachment options to provide anchoring of the whipstock assembly in an openhole environment. The specific anchoring attachment component is determined by the particular wellbore requirements and operating conditions. Attachment options include cut-lip, screw-in sub, box tap, or overshot, where an exposed fish top can be readily and easily engaged.

This unique system can also utilize perforated tailpipe when cementing operations are required to achieve lateral departure from the main bore in highly compressive formations. Selected whipstock sizes also provide an inflatable packer anchor option when off-bottom departure is required without use of a false bottom or cement. The whipstock assembly, including high-torque running tool, is picked up and run to the required depth where the fish top, or exposed stuck pipe, is located.

With the appropriate bottom profile, rotary-shouldered pin connection or threaded-cut lip, the fish top is engaged and rotated. Once the fish is engaged with the preferred attachment, the running tool can be sheared from the whipstock assembly. When using stuck fish as an anchor, the shearing event can be performed in either direction for operational ease. If cementing is required (and circulation is available), cementing is performed before shearing the running tool from the whipstock assembly. The drilling bottom hole assembly (BHA) is then picked up and sidetracking is performed.

Applications

- Efficient, cost-effective sidetracking of an existing openhole wellbore with a stuck fish or exposed stuck pipe
- Tough to drill formations where cementing operations alone are in-effective
- Inflatable anchor option allows selective open hole sidetracks after target zones have been identified by openhole logging

Openhole Whipstock System
Screw-In Type Anchor

Features, Advantages and Benefits

- The whipstock has a high-torque running tool for makeup onto the fish, providing a more secure and stronger connection since the whipstock can be torqued to 75% of the fish makeup torque.
- The whipstock can use three fishing attachment styles: rotary-shouldered pin connection, threaded-cut-lip guide, or threaded-tang profile, providing flexibility in the field.
- The whipstock through bore circulation enables debris circulation from the wellbore, conditioning of wellbore fluid and cementing operations.
- Inflatable anchor option available in 6 to 6 1/4-in., 7 7/8-in., and 8 1/2 to 8 3/4-in. openhole sizes.

Specifications

Whipstock		Concave Face Angle (degree)	Concave Pin Connection (in.)	Setting Tool	Setting Tool Box Connection (in.)	Stationary Pad		Assembly Stack Height (in./*mm*)	Running OD		Open Hole ID (in./*mm*)
OD (in./*mm*)	Part Number					Part Number	Height (in./*mm*)		Nominal (in./*mm*)	Maximum (in./*mm*)	
5-1/2 *139.7*	64309-001	3.00°	3-1/2 IF	64889-001	3-1/2 IF	64014-003	1.059 *26.900*	5.63 *143.00*	5.76 *146.30*	5.86 *148.84*	6.00 *152.40*
	64309-002					64014-004	0.997 *25.324*		5.70 *144.78*	5.81 *147.57*	5.88 *149.35*
6 *152.4*	64065-001					84014-001	1.136 *28.855*	5.99 *152.10*	6.26 *159.04*	6.36 *161.55*	6.50 *165.10*
	64065-002					64014-002	1.282 *32.563*		6.41 *162.81*	6.50 *165.10*	6.75 *171.45*
7 *177.8*	63949-001		4-1/2 IF			63951-003	1.285 *32.639*	6.37 *161.80*	7.49 *190.25*	7.60 *193.04*	7.88 *200.15*
	63949-002					63951-001	1.137 *28.880*		7.34 *186.44*	7.48 *189.99*	7.63 *193.80*
8 *203.2*	64557-002	3.00°	4-1/2 XH	64559-001	4-1/2 IF	63951-002	1.059 *26.900*	8.15 *207.00*	8.26 *209.80*	8.38 *212.85*	8.50 *215.90*
	64557-004					63951-004	1.206 *30.632*		8.41 *213.61*	8.52 *216.41*	8.75 *222.25*
9 *228.6*	64638-001	3.18°	4-1/2 XH	64559-002	4-1/2 IF	63951-005	1.132 *28.800*	8.24 *209.30*	9.33 *236.98*	9.46 *240.28*	9.63 *244.60*
10 *254.0*	64635-001	3.58°				64589-002	1.138 *28.905*	8.58 *217.93*	10.34 *262.64*	10.50 *266.70*	10.63 *270.00*
	64635-002					64589-003	1.356 *34.442*		10.56 *268.22*	10.72 *272.29*	11.00 *279.40*
11-1/2 *292.1*	64611-001	3.88°	4-1/2 XH	64559-003	4-1/2 IF	64589-001	1.202 *30.531*	8.43 *214.10*	11.90 *302.26*	12.06 *306.32*	12.25 *311.15*
13-1/2 *342.9*	65029		6-5/8 Reg	65026		65023	1.800 *45.720*	10.91 *277.10*	13.99 *355.35*	14.15 *359.41*	14.75 *374.65*

Openhole Whipstock System
Screw-In Type Anchor

Specifications *(continued)*

Burst Pressure (psi/*kPa*)	Tube Part Number	Tube	
		ID (in./*mm*)	OD (in./*mm*)
3,800 *26,197*	13911	0.822 *20.9*	1.050 *26.7*
3,400 *23,440*	63662	1.049 *26.6*	1.315 *33.4*
3,100 *21,371*	63576	1.380 *35.1*	1.660 *42.2*

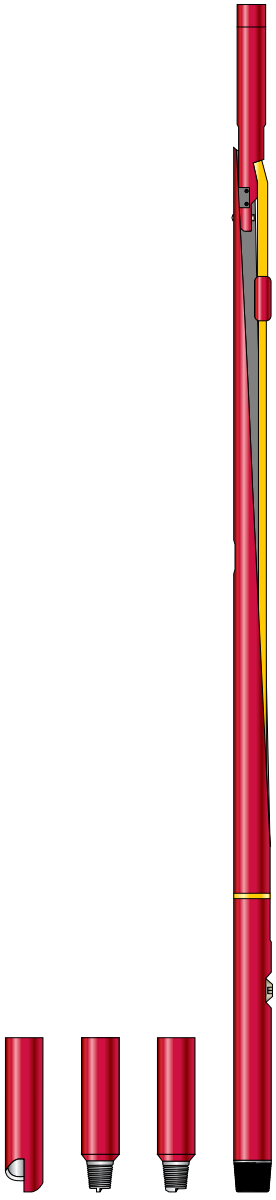
Shear Values for Standard Shear Stud	
Whipstock Diameter (in./*mm*)	Shear Load Required (lb/*kg*)
5-1/2 *139.7*	18,000 *8,182*
6 *152.4*	
7 *177.8*	
8 *203.2*	20,000 *9,091*
9 *228.6*	23,000 *10,455*
10 *254.0*	
11-1/2 292.1	38,000 *17,273*

Options

- A series “150” double bowl overshot with opposing grapples can also be utilized in stuck fish situations where the fish neck is accessible and directional control required.
- The 13 1/2-in. OD concave assembly can be also used in 17 1/2-in. openhole; the concave radius will accommodate a 17 1/2-in. OD drill bit.
- Mechanical orientation device is available when using stuck fish as an anchor. Four-quadrant section is achievable when directional control is required. Device accommodates 8-in., 9-in., and 10-in. OD concaves.
- High-temperature element package is available for inflatable installations in harsh environments.

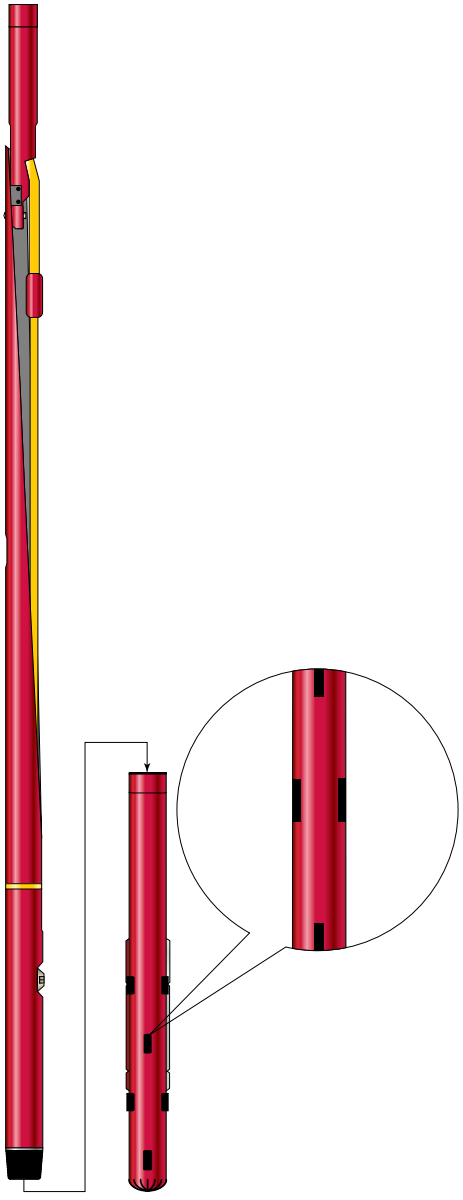
Openhole Whipstock System
Screw-In Type Anchor

Additional Attachment Options

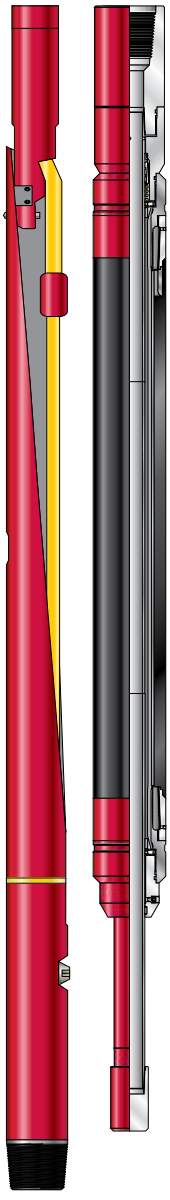


Standard Screw-In Assembly

(Up or down shear to release running tool.)



Cement Style Assembly with Perforated Tail Pipe
(Down shear to release running tool.)

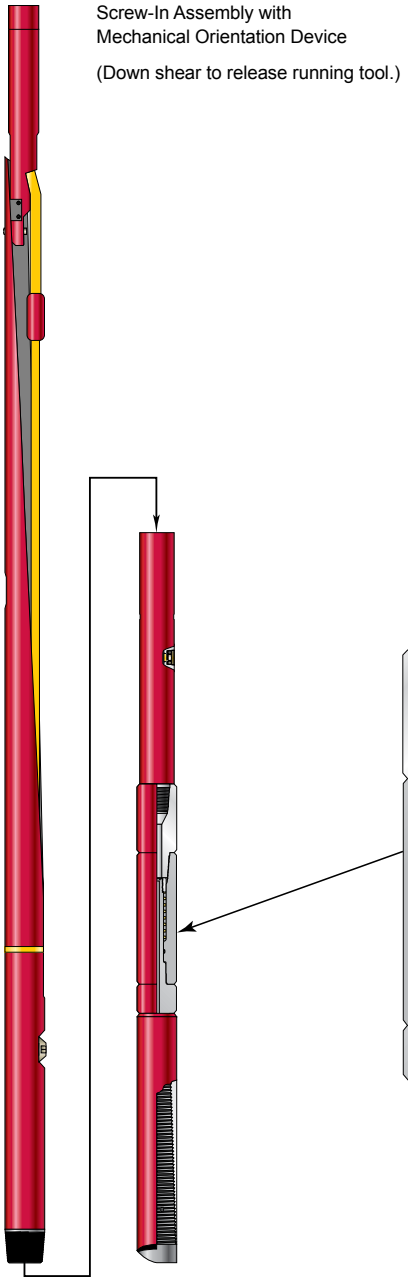


Standard Screw-In Assembly with Inflatable Anchor

(Up or down shear to release running tool.)

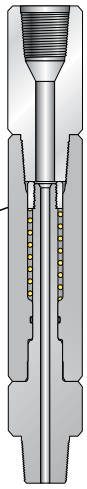
Openhole Whipstock System
Screw-In Type Anchor

Additional Attachment Options (continued)

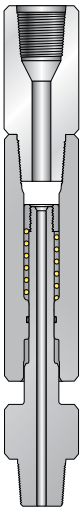


Screw-In Assembly with
Mechanical Orientation Device

(Down shear to release running tool.)



Spring tension retains the mechanical orientation device in the closed position while tripping in the well, preventing debris interference.



After the fish has been engaged with the box tap, the mechanical orientation device is picked up to pull the sleeve apart for orientation. When correct orientation has been confirmed, weight is slacked off to close the gap, torque is applied to verify that the sleeve is in the closed or locked position, and the running tool is sheared off.