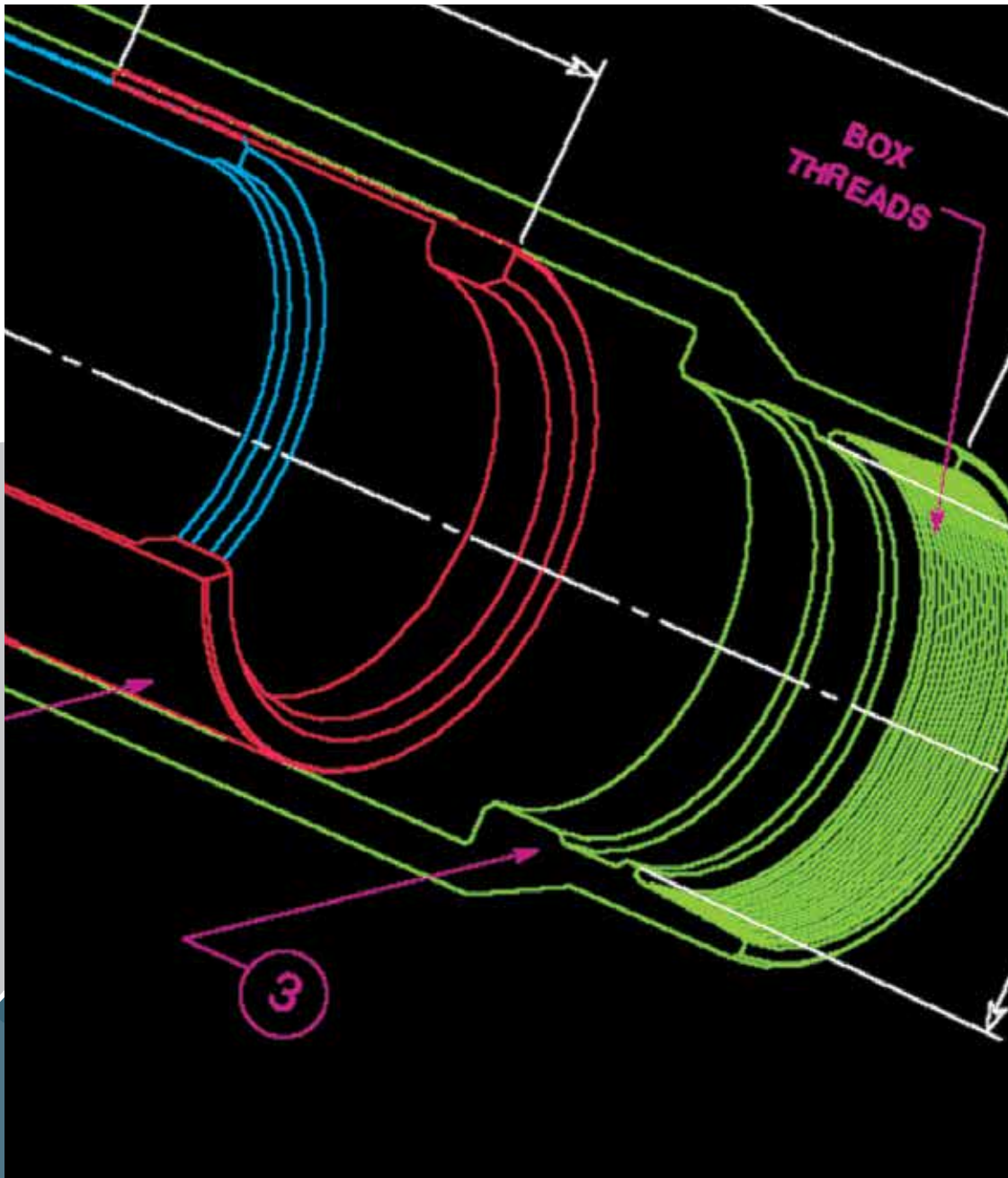




Setting a Global Standard



www.dril-quip.com

Adjustment Sub

ADJUSTMENT SUB™



The DRIL-QUIP Adjustment Sub precludes the need to cut casing and set slip-type hanger assemblies in the Surface Wellhead System. This feature eliminates BOP stack nipple up/nipple down procedures, thus saving valuable rig time and providing for safer drilling operations.

FEATURES

- Fast and safe operation
- Compatible with standard casing programs
- Metal-to-metal seals provide pressure capacity compatible with the casing
- Provides adjustment of the casing string length between two fixed points
- Eliminates the need for slip-type casing hangers
- Engineering analyzed for strength and pressure integrity
- Sized for specific applications - Model ADJ-ST supplies stronger load-carrying capacity; Model ADJ-HP supplies higher pressure integrity
- Available for standard or H₂S service
- Full bore design
- Field proven

ADJUSTMENT SUB APPLICATIONS

Prior to the introduction of the DRIL-QUIP Adjustment Sub, mandrel-type hangers could not be used in conjunction with mudline suspension systems, but the problem of landing casing on two shoulders simultaneously is now solved. The Adjustment Sub provides the means for modifying the length of the casing string to land the mandrel-type hanger on its seat inside the surface wellhead while allowing the mudline hanger to support the casing weight. Mudline tools can be rotated to the left or right

from the surface because the Adjustment Sub transmits torque through the casing string.

The Adjustment Sub provides a solution to costly stuck-casing situations occurring in floating, bottom or land drilling operations. The use of the Adjustment Sub in conjunction with the DRIL-QUIP emergency backout system, makes cutting and patching stuck casing a thing of the past. Contact your nearest DRIL-QUIP office for additional information on the DRIL-QUIP Adjustment Sub.

ADJUSTMENT SLEEVE

The threaded section of the Adjustment Sleeve is designed to transmit the load in shear, rather than tension, resulting in high load carrying capacity. Torque requirements are reduced because the Adjustment Sleeve thread is not subjected to tension loads during setting operations.

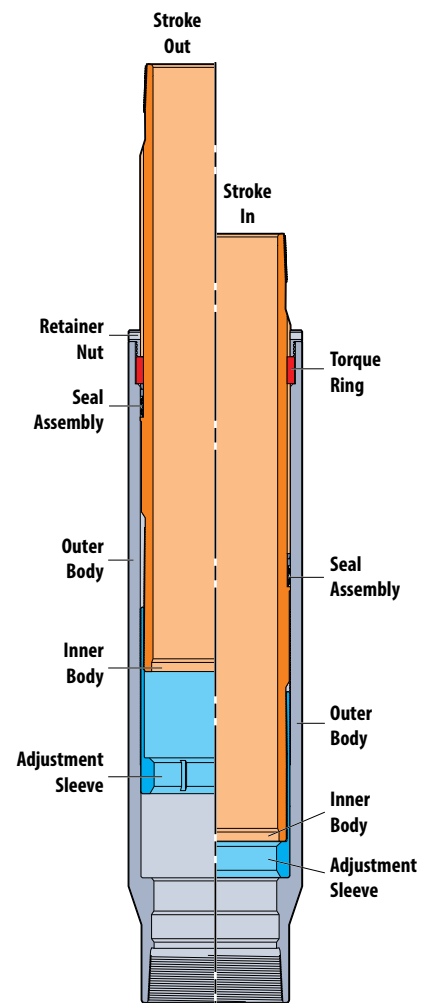
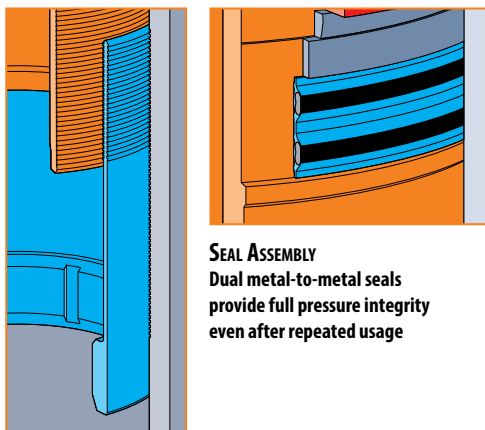


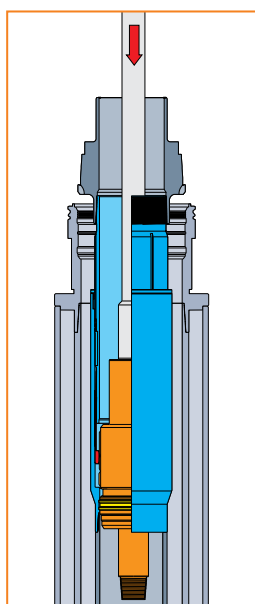
Illustration of Adjustment Sub and its components

Adjustment Sub Technical Data (Model ADJ-ST)						Standard Service		H ₂ S Service	
Nom. Size (in)	Max. OD (in)	Min. ID (in)	Approximate Length (in)	Adjustment Length (in)	Estimated Weight (lbs)	Internal Yield (psi)	Tensile Yield (million lb)	Internal Yield (psi)	Tensile Yield (million lb)
7	8.255	5.900	151	18	700	12,600	0.737	10,100	0.590
7 5/8	9.220	6.530	149	18	820	12,310	1.185	9,500	0.948
9 5/8	11.817	8.557	139	18	1130	12,725	1.428	9,250	1.203
10 3/4	12.880	9.510	141	18	1230	11,300	1.750	9,050	1.500
13 3/8	16.510	12.303	140	18	1980	10,100	2.510	7,110	1.770

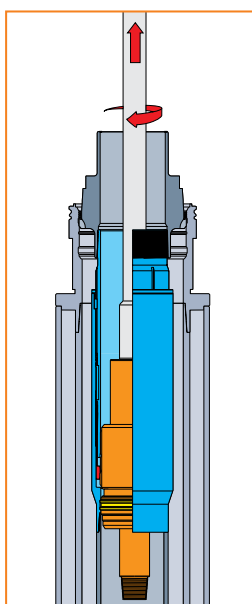
Adjustment Sub Technical Data (Model ADJ-HP)								
Nom. Size (in)	Max. OD (in)	Min. ID (in)	Approximate Length (in)	Adjustment Length (in)	Estimated Weight (lbs)	Internal Yield (psi)	Tensile Yield (million lb)	Tensile Yield w/inconel inner body (million lb)
7	8.260	5.900	128	12	750	15,000	0.350	0.520
9 5/8	11.875	8.557	128	12	1210	15,000	0.888	1.280
10 5/8	12.250	9.510	128	12	1300	11,450	1.500
13 3/4	16.510	12.308	128	12	2100	12,210	1.770

SEQUENCE OF OPERATIONS

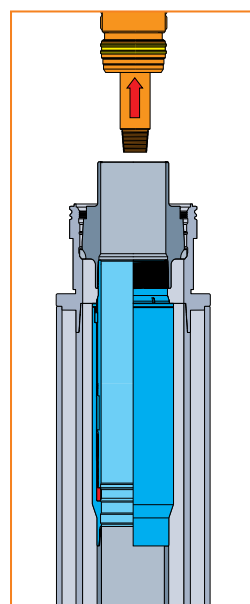
The Adjustment Sub is run in the casing string, directly below the mandrel casing hanger. Setting of the Adjustment Sub is accomplished with an Adjustment Sub Setting Tool run on drill pipe.



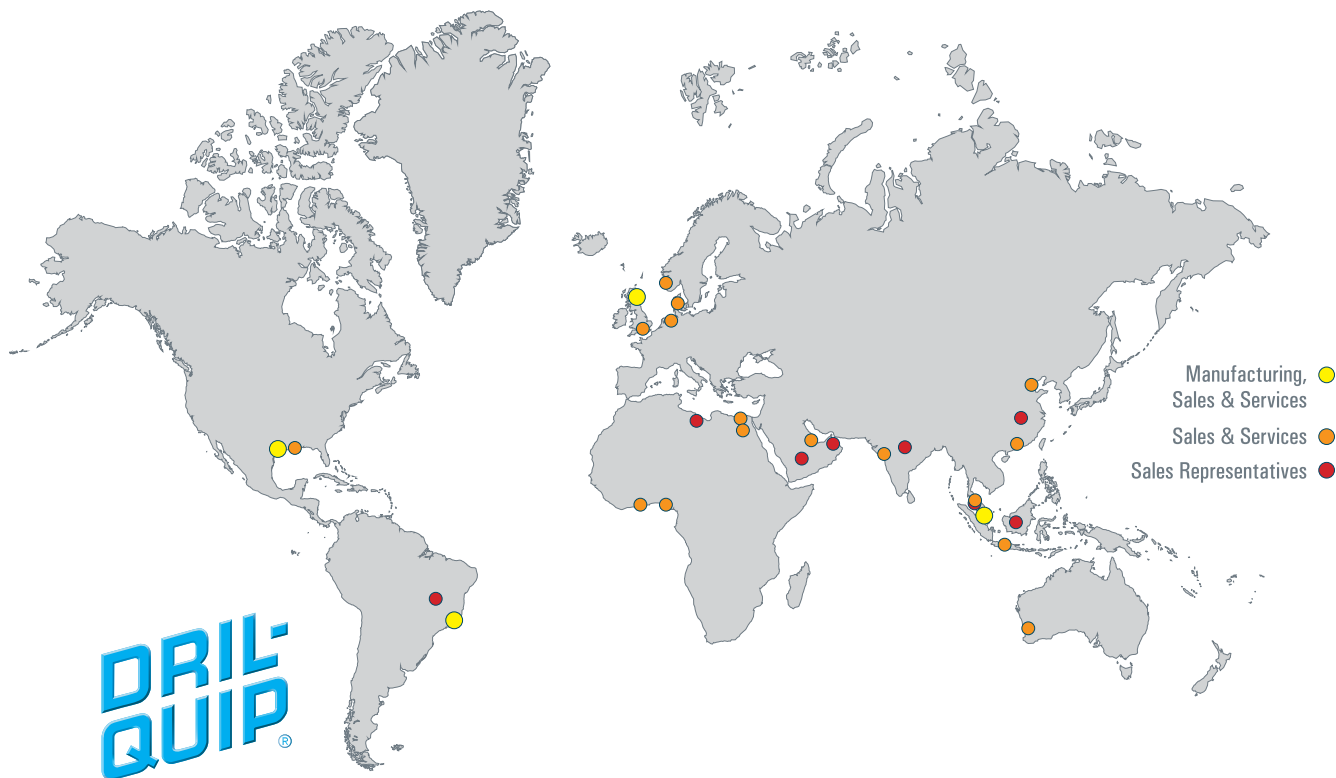
Step 1:
Run the Setting Tool on drill pipe. Lock the Setting Tool to the Adjustment Sub with pressure through the drill pipe.



Step 2:
Overpull the casing to the desired tension. Rotate the Setting Tool to the right to adjust the casing length and land the Mandrel Casing Hanger on its seat.



Step 3:
Release and retrieve the Setting Tool. The Mandrel Casing Hanger will be positioned inside the Wellhead with casing in tension. Pressure test the casing, if desired.



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