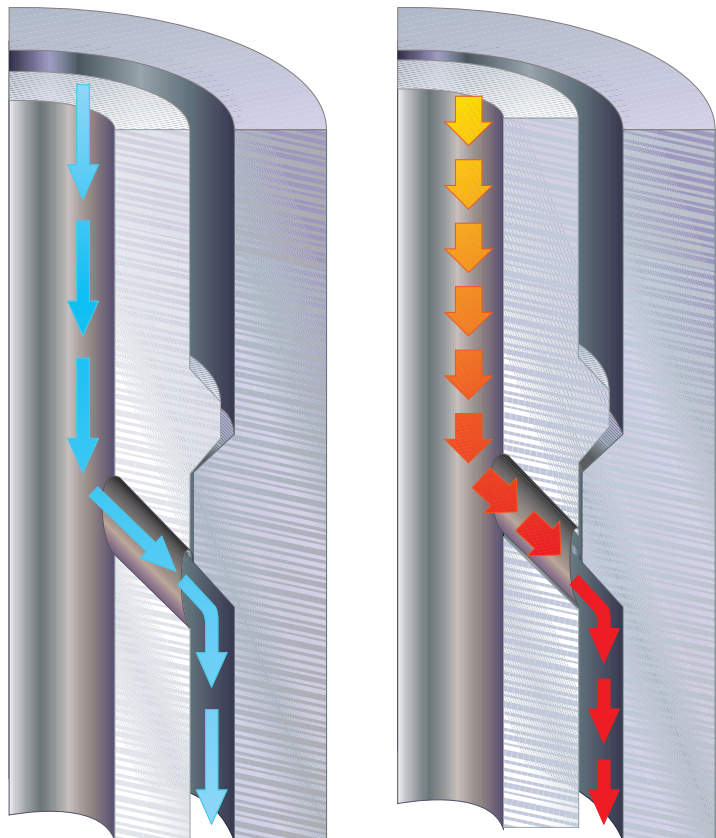
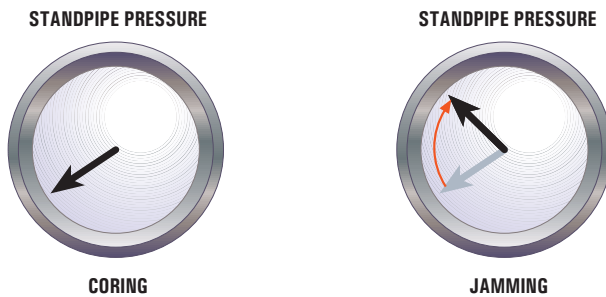


Conventional Coring

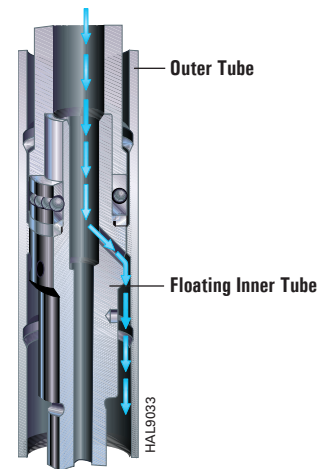
Hydro-Seat Barrel (HSB™)

The Hydro-Seat Barrel (HSB) system provides an instantaneous, clear indication on the rig floor when core jamming occurs in the inner barrel. Core quality is also enhanced by the flexible receiving tube that offers significantly less core stress at entry. HSB is an optional feature of our conventional core barrel system and a standard feature on our Triple Tube Wireline System.



LEFT. The inner barrel is free floating, held on its seat by hydraulic pressure. RIGHT. Jamming lifts the inner barrel and restricts mud flow, increasing the pressure reading at the surface. The hydraulic force can be easily modified to suit the operation.

The HSB system consists of a heavy-duty outer assembly and a seated inner assembly. Outer tubes are 30 ft long for standard stability, 15 ft for extra stability. HSB is fully compatible with all types of Halliburton inner tubes and core heads.



Rig time is reduced.
The free floating inner barrel allows for easier handling and quicker spacing adjustment.

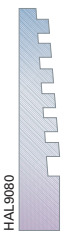
Rugged design and Heavy-Duty Threadforms (patented) make HSB suitable for longer core barrel applications.

Longer bearing life.
Mud lubricates the inner barrel with constant hydraulic force, resulting in less bearing wear.

Hydro-Seat Barrel and Full Closure System Technical Specifications

SYSTEM (BARREL X CORE SIZE)	6-3/4" X 4"		8" X 5-1/4"	
	IMPERIAL	METRIC	IMPERIAL	METRIC
Hole Size Compatibility	8 to 9 in.	203 to 229 mm	9 to 12-1/4 in.	229 to 311 mm
Maximum Flow Rate	300 gpm	1,363 lpm	350 gpm	1,591 lpm
Core Size	4 in.	101.6 mm	5-1/4 in.	133.4 mm
Minimum Unit Length	30 ft	9.14 m	30 ft	9.14 m
Core Barrel Type	HDT 6-3/4	HDT 6-3/4	HDT 8	HDT 8
OUTER ASSEMBLY				
Top Connection (Box-API)	4-1/2 IF	4-1/2 IF	6-5/8 REG	6-5/8 REG
Minimum Unit Length	30 ft	9.14 m	30 ft	9.14 m
Outer Barrel (OD x ID)	6-3/4 x 5-3/8 in.	171.5 x 136.5 mm	8 x 6-5/8 in.	203.2 x 168.3 mm
Pulling Capacity *	506,000 lbs	228 T	626,000 lbs	282 T
Maximum Torque **	39,000 ft-lbs	5,300 daNm	55,500 ft-lbs	7,500 daNm
Make-up Torque ***	25,800 ft-lbs	3,500 daNm	36,900 ft-lbs	5,000 daNm
INNER TUBE ASSEMBLY				
Minimum Unit Length	30 ft	9.14 m	30 ft	9.14 m
Maximum OD	5.28 in.	134.0 mm	6.69 in.	170.0 mm
Ball Size (1st and 2nd)	11/16 in. and 13/16 in.	17.5 mm and 20.6 mm	13/16 and 15/16 in.	20.6 and 23.8 mm
Steel Inner Tube (OD x ID)	4-3/4 x 4-1/4 in.	120.7 x 108 mm	6-1/4 x 5-1/2 in.	158.8 x 139.7 mm
Slick Aluminum Inner Tube (OD x ID)	4-3/4 x 4-1/4 in.	120.7 x 108 mm	6-1/4 x 5-1/2 in.	158.8 x 139.7 mm
Fluted Aluminum Inner Tube (OD x ID)	4-3/4 x 4-1/8 in.	120.7 x 104.8 mm	6-1/4 x 5-3/8 in.	158.8 x 136.5 mm
Fiber Inner Tube (OD x ID)	4-3/4 x 4-1/4 in.	120.7 x 108 mm	6-1/4 x 5-1/2 in.	158.8 x 139.7 mm
(*) P.C. calculated with tensile stress = 80% of the yield strength				
(**) Maximum Torque is about 80% of the yield torque				
(***) M.U.T. is based on torque test performed in Halliburton lab facilities				

Threadform Comparison

HEAVY DUTY THREADFORM (patented)		STANDARD THREADFORM		
	Maximum Torque	39,000 ft-lbs	Maximum Torque	14,800 ft-lbs
	Make-up Torque	25,800 ft-lbs	Make-up Torque	9,600 ft-lbs
	Maximum Pull	506,000 lbs	Maximum Pull	471,000 lbs
	Static Bending	17 deg./100 ft	Static Bending	14 deg./100 ft
	Maximum Dogleg Severity	10 deg./100 ft	Maximum Dogleg Severity	2 deg./100 ft
	Fatigue Life	> 1,000%	Fatigue Life	100%
	