

# Retrievable DwC Hydraulic Locking Device

Enables locking the latch into the profile collar

## Applications

- Performing retrievable drilling-with-casing (DwC) operations in vertical, inclined, and extended-reach-drilling wells

## Features and Benefits

- The hydraulic locking device (HLD) gives operators the ability to retrieve the bottomhole assembly (BHA), replace one or more components, and lock the assembly back into the profile collar. This capability eliminates the need to pull the entire casing string to replace any components.
- The position of the bypass port in the HLD corresponds to the position of the top bypass port in the latch, which eliminates the surge and swab effect when tripping the latch and BHA inside the casing.
- The full release of pressure immediately after activation indicates successful locking of the latch.
- Running the drill disconnect tool above the HLD is recommended to mitigate the risk of sacrificing drillpipe because of a stuck BHA.

## Tool Description

The Weatherford retrievable DwC system enables operators to drill or ream with casing and retrieve the BHA before and after reaching the target depth. The system includes four key components: the workstring release-retrieval device (WRRD), latch, hydraulic releasing device, and HLD.

The HLD enables locking the latch and BHA into the profile collar. At the surface, the HLD is screwed onto the top connection of the latch. The entire BHA, latch, and HLD assembly is then tripped via drillpipe inside casing until the latch is seated in the profile collar. Dropping a steel ball causes pressure buildup that eventually triggers the locking mechanism. The latch then mechanically locks into the profile collar, which prevents the BHA from retracting upward. Pressure bleed-off confirms proper locking of the BHA. The HLD can subsequently be tripped out of the casing using the same drillpipe.



The retrievable DwC HLD helps to lock the latch and BHA into the casing string to transmit axial and torsional loads and circulate mud from the casing to the BHA.



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## Specifications

Casing size	9.625 in. (244.5 mm)
Casing weight	36 to 53.5 lb/ft (53.5 to 79.6 kg/m)
Maximum OD	8.25 in. (209.5 mm)
Minimum ID	1.75 in. (44.5 mm)
Length	77 in. (1,955.8 mm)
Weight	660 lb (299.4 kg)
Maximum flow rate	560 gal/min (2,120 L/min)
Axial load capacity	600,000 lb (113,398 kg)
Torque load capacity	50,000 ft-lb (51,240 N-m)
Required activation pressure	1,000 psi (6.89 MPa)
Operating temperature	30°F to 300°F (-1°C to 149°C)
Drop ball diameter	2 in. (50.8 mm)
Top connections	NC50 box
Bottom connections	LH ACME box



The HLD and other retrievable DwC components reduce nonproductive time and hazards associated with casing-running operations that require pulling the entire casing string to retrieve the BHA.

