

AlphaV™ Single-Trip Casing-Exit System

Eliminates wellbore preparation runs and increases tripping speeds during cased-hole re-entry operations

Applications

- Sidetracking operations in vertical, deviated, and horizontal wells, both onshore and offshore, including:
 - Wells requiring a full bore after lateral is drilled
 - Wells needing to accommodate long rotary steerable systems
 - Wells involving complex completion strings and expandables
 - Wells undergoing abandonment to eliminate multiple plugs
 - Extended-reach drilling (ERD) wells to reduce severe-dogleg inclination
 - ERD wells preventing the application of workstring loading for shear release after the whipstock is set at the target depth
- Exiting through multiple strings of casing

Features and Benefits

- Gauge mill and scraper assembly eliminate the need for a separate wellbore preparation run to save rigtime
- Exclusive hydraulic mill release (HMR) delivers high-torque and load-bearing capabilities, increasing tripping speeds
- HMR enhances safety in tripping operations when abrupt workstring movement can cause premature shear-release of the whipstock assembly
- Aggressive lead-mill geometry improves rate of penetration and gauge-retention to minimize trips related to mill-gauge loss
- Unique lug technology protects the whipstock during cut-out to accurately direct the mill into the casing wall
- A 2-degree, single-angle concave creates a smooth transition from the parent bore into the lateral section
- QuickChange shear disconnection technology provides debris management and enables changing from one anchor type to another
- Packer withstands pressures up to 3,500 psi (24,132 kPa) and temps up to 275°F (135°C) to meet both API 11-D1 and ISO 14310 V3 specifications
- System minimizes dogleg severity in ERD wells and delivers ratholes that accommodate long rotary-steerable systems
- AccuView® software helps to plan and execute re-entry operations

Tool Description

The Weatherford AlphaV single-trip casing-exit system delivers reliable sidetracking in onshore and offshore wells requiring a full-bore exit—through single or multiple strings. AlphaV eliminates the wellbore preparation run via its integrated gauge mill and scraper assembly. This system does not utilize a shear bolt to release the milling assembly from the whipstock, once set. A patented, hydraulic mill-release system eliminates risk of premature shearing while running in hole and doubles trip speed. AccuSet™ technology then delivers consistent packer actuation regardless of depth, inclination, wellbore fluid loss, or solids contamination. The milling BHA and whipstock provide a safe, quick makeup to improve rigfloor efficiency and reduce installation costs. The BHA is open-ended, which enables continuous flow to maintain well control or perform logging and measurement-while-drilling operations before activating the packer.



The AlphaV casing-exit system eliminates wellbore preparation runs by including a gauge-mill and scraper-assembly on the toolstring.



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Specifications

AlphaV Assembly Strengths*

Casing size	9-5/8 in. (244.4mm)	9-7/8 in. (250.8 mm)	13-3/8 in. (339.7 mm)	13-5/8 in. (346.1 mm)
Weight range	43.5-58.4 lbs/ft (64.7-86.9 kg/m)	62.8 lbs/ft (93.6 kg/m)	48-72 lbs/ft (71.6-107.4 kg/m)	88.2 lbs/ft (131.5 kg/m)
Mill to whipstock HMR system load rating (presetting/ tripping-in)	Down weight	100,000 lbs (45,454 kg)		
	Tension	70,000 lbs (31,818 kg)	80,000 lbs (36,363 kg)	
	Secondary mill release (tension)	90,000 lbs (40,909 kg)	100,000 lbs (45,454 kg)	
	Torque	20,000 ft-lbs (27,116 Nm)		
QuickChange packer connector	Whipstock release (tension)	125,000 lbs (56,818 kg)	150,000 lbs (68,181 kg)	

*Strengths referred to in the table are for the AlphaV assembly while running in hole or when releasing the milling assembly from the whipstock assembly, once set. Different strength limits apply for the PHS or RHS packer once set in the casing and for the milling assembly once released and in operation.

Milling Assemblies

Casing	OD	9-5/8 in. (244.5 mm)			13-3/8 in. (339.7 mm)	
	Weight	43.5-53.5SD lbs/ft (64.7-79.6 kg/m)	53.5 lbs/ft (79.6 kg/m)	58.4 lbs/ft (86.9 kg/m)	48.0-72.0SD lbs/ft (71.6-107.4 kg/m)	72 lbs/ft (107.1 kg/m)
Lead mill	OD	8-1/2 in. (215.9 mm)	8-3/8 in. (212.7 mm)	8-1/4 in. (209.5 mm)	12-1/4 in. (311.2 mm)	12-1/8 in. (307.9mm)
	Pilot OD	6-3/8 in. (161.9 mm)			10 in. (254.0 mm)	
	Box connection	4-1/2 in. reg.			6-5/8 in. reg.	
Secondary mill	OD	8-1/2 in. (215.9 mm)	8-3/8 in. (212.7 mm)	8-1/4 in. (209.5 mm)	12-1/4 in. (311.2 mm)	12-1/8 in. (307.9mm)
	Connection box x pin	4-1/2 IF x 4-1/2 reg.			6-5/8 in. reg.	
	Flex mandrel connection, box x pin	4-1/2 IF				
Steering mill	OD	8-1/2 in. (215.9 mm)	8-3/8 in. (212.7 mm)	8-1/4 in. (209.5 mm)	12-1/4 in. (311.2 mm)	12-1/8 in. (307.9mm)
	Connection box x pin	4-1/2 IF			6-5/8 in. reg.	



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Specifications (continued)

Whipstock Assemblies

Casing	OD	9-5/8 in. (244.5 mm)			13-3/8 in. (339.7 mm)		
	Weight	43.5-53.5 SD lbs/ft (64.7-79.6 kg/m)	53.5 lbs/ft (79.6 kg/m)	58.4 lbs/ft (86.9 kg/m)	48.0-54.4 lbs/ft (71.4-80.9 kg/m)	61.0-72.0 SD lbs/ft (90.7-107.1 kg/m)	72.0 lbs/ft (107.1 kg/m)
Concave	OD	8.0 in. (203.2 mm)			11.5 in. (292.1 mm)		
	Face length	19.5 ft (5.9 m)			27.5 ft (8.4 m)		
Packer anchor	Setting ID	Min	8.44 in. (214.3 mm)			12.35 in. (313.6 mm)	
		Max	8.84 in. (224.4 mm)			12.72 in. (322.9 mm)	
PHS packer (perm.)	Max OD	8.0 in. (203.20 mm)			11-7/8 in. (301.6 mm)		
	Temp	275 °F (135 °C)					
	Torque	20,000 lbs/ft (27,116 Nm)			25,000 lbs/ft (33,895 Nm)		
	Differential pressure*	5,000 psi (34,473 kPa)			3,500 psi (24,132 kPa)		
Bottom drift mill	OD	8-1/2 in. (215.9 mm)	8-3/8 in. (212.7 mm)	8-1/4 in. (209.5 mm)	12-3/8 in. (314.3 mm)	12-1/4 in. (311.2 mm)	12-1/8 in. (308 mm)
Assembly**	Overall length	29.3 ft (8.9 m)			41.9 ft (12.8 m)		

*At 275 °F (135 °C)

**Assembly OAL w/PHS Packer

