

Well Construction

Cementing Technologies

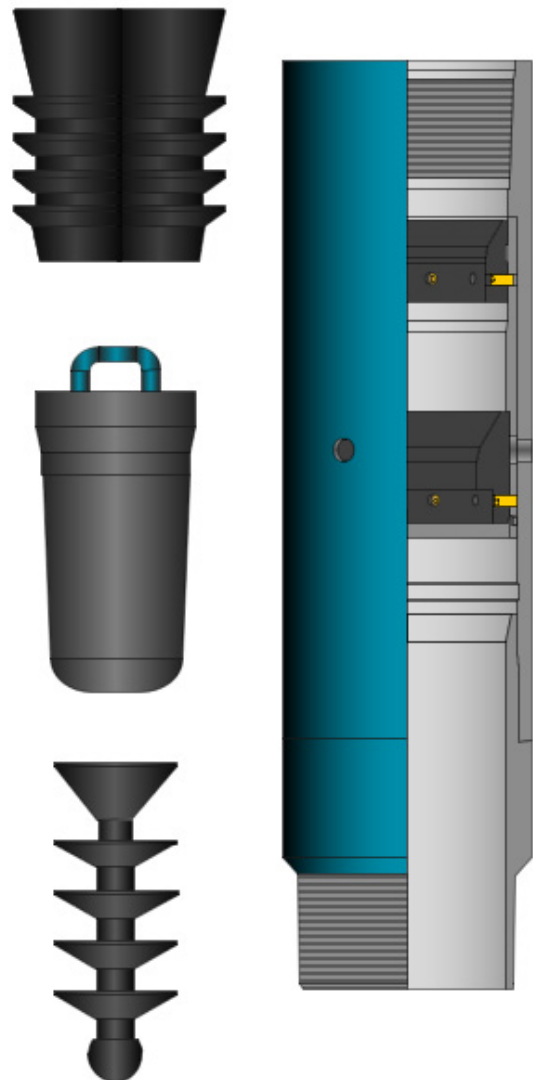
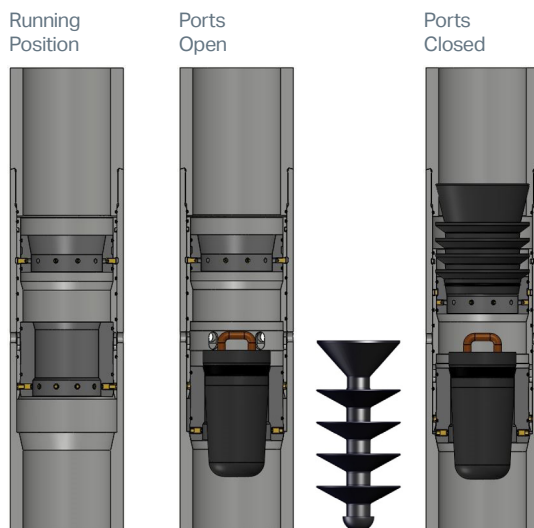
Mechanical Stage Tool

The Mechanical Stage Tool has been streamlined for optimized PDC drillability utilizing composite internal components and plug sets, reducing the amount of rubber and aluminum in the drill path. The tool has been designed to meet or exceed standard API casing ratings.

Features and benefits

- Optimized composite components for improved PDC drillability
- New design targeting improved opening/closing performance
- Consistent and adjustable shifting pressure
- Internal shear screws reduce leak paths through the tool
- Locking and anti-rotation features reduce drill out time
- Standard tools are furnished with API L80 material suitable for sour gas service
- Standard Viton (FKM) seals rated for +15°F to +400°F suitable for sour service and high-pressure gas environments
- Plug sets for different cementing applications available
- Various grades of steel and premium connections available
- Can be combined with packer for pack-off stage tool applications

Mechanical Operational Sequence





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Specifications

Size in. (mm)	Weight Range lb/ft (kg/m)	OD in. (mm)	Maximum Drillout ID in. (mm)	Seat ID		L80			P110			Max Temp. °F (°C)
				Opening in. (mm)	Closing in. (mm)	Burst psi (bar)	Collapse psi (bar)	Tensile 1,000 lb (1,000 kg)	Burst psi (bar)	Collapse psi (bar)	Tensile 1,000 lb (1,000 kg)	
13.375 (339.7)	54.50 -81.1	15.000 (381.0)	12.479 (317.0)	9.500 (241.3)	10.500 (266.7)	5,946 (410.0)	5,535 (381.6)	1,739 (788.8)	8,176 (563.7)	7,610 (524.7)	2,391 (164.9)	400 (204)
	61.00 - 72.00 (90.8 - 107.1)		12.379 (314.4)			6,584 (454.0)	6,083 (419.4)	1,887 (855.9)	9,270 (639.1)	8,549 (589.4)	2,606 (179.7)	
9.625 (244.5)	32.30 - 40.00 (48.1 - 59.5)	11.125 (282.6)	8.855 (224.9)	6.250 (158.8)	7.000 (177.8)	7,680 (529.5)	6,460 (445.4)	1,244 (564.3)	10,560 (728.1)	7,790 (537.1)	1,710 (775.6)	400 (204)
	43.50 - 53.50 (64.7 - 79.6)		8.609 (218.7)			9,680 (667.4)	9,100 (627.4)		13,310 (917.7)	12,160 (838.4)		
8.625 (219.1)	24.00 - 36.00 (35.7 - 53.6)	10.125 (257.2)	7.982 (202.7)	5.750 (146.1)	6.500 (165.1)	7,820 (539.2)	6,680 (473.0)	827 (375.1)	11,282 (777.9)	10,232 (705.5)	1,355 (614.6)	400 (204)
	40.00 - 44.00 (59.5 - 65.5)		7.654 (194.4)			9,650 (665.3)	9,070 (625.4)		11,290 (778.4)	10,239 (706.0)		
7.625 (193.7)	26.40 - 29.70 (39.3 - 44.2)	9.000 (228.6)	6.854 (174.1)	4.875 (124.1)	5.500 (139.7)	8,480 (584.7)	7,668 (528.7)	863 (391.4)	11,661 (804.0)	10,543 (726.9)	1,187 (538.4)	400 (204)
	33.70 - 39.00 (50.2 - 58.0)		6.650 (168.9)			10,848 (747.9)	9,553 (658.7)		929 (421.4)	14,916 (1028.4)		
7.000 (177.8)	20.00 - 26.00 (29.8 - 38.7)	8.250 (209.6)	6.341 (161.1)	4.375 (111.1)	5.000 (127.0)	8,665 (597.4)	7,818 (539.0)	759 (344.3)	11,914 (821.4)	10,750 (741.2)	1,043 (473.1)	400 (204)
	29.00 - 32.00 (43.2 - 47.6)		6.069 (154.2)			9,223 (635.9)	10,503 (724.2)		12,681 (874.3)	11,370 (783.9)		

*All ratings exclude casing connections

*All ratings shown are representative of the tool in the closed position

*Temperature rating is limited by seal material