

Cement Swivel Tool

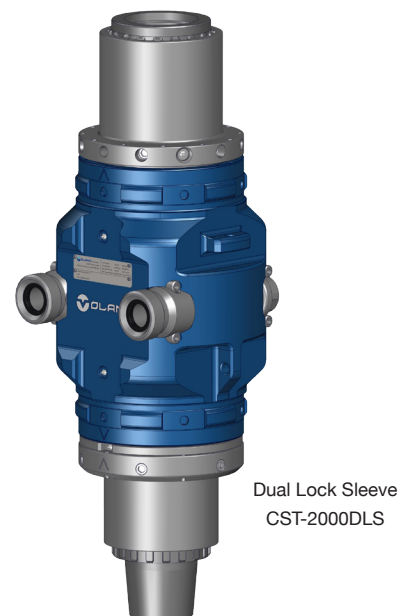
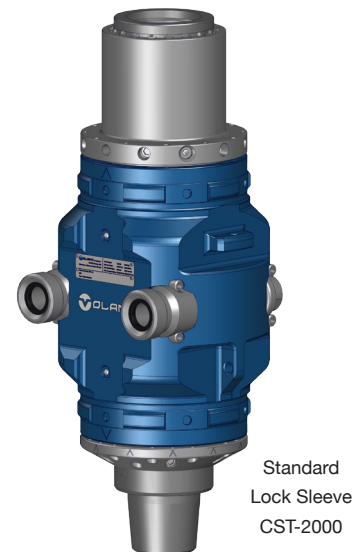
Volant's Cement Swivel connects in-line with the top drive quill and allows for cement to be pumped through two side-entry ports while maintaining the ability to rotate and reciprocate the casing string, improving the integrity of the cement job. The Cement Swivel circumvents the need to pump cement through the top drive, eliminating the risk of cement setting in the top drive components when operated in-line with a Kelly Valve (or similar). This tool is designed to enable cementing through Volant CRTi™ and CRTe™ casing running tools to reduce non-productive time required for tool changeover between casing running and cementing.

Tool Model: CST-2000 Specification Summary

Base Tool Characteristics		Standard Lock Sleeve	Dual Lock Sleeve
		CST-2000	CST-2000DLS
Pressure Limit ¹	psi (MPa)	10,000 (68.9)	10,000 (68.9)
Apparent Diameter	in (mm)	23.7 (605)	23.7 (605)
Working Length	in (mm)	38.5 (980)	46 (1,170)
Tool Weight	lbs (kg)	1,320 (600)	1,490 (680)
Maximum Flow Rate	US gpm (m ³ /min)	634 (2.40)	634 (2.40)
Maximum Rotational Speed ²	RPM	70	70
Cement Inlets (Qty. 2)	Type	2in 1502	2in 1502
Bore Diameter	in (mm)	2.38 (60.5)	2.38 (60.5)
Maximum Tool Temperature	°F (°C)	194 (90)	194 (90)
Minimum Tool Temperature	°F (°C)	-40 (-40)	-40 (-40)

Connection Specific Characteristics		
Connection	Rated Hoist Capacity ¹	Maximum Makeup Torque ³
	ton (tonne)	ft.lbs (N.m)
6.63" REG Box and Pin	690 (625)	85,000 (115,200)
4.5" IF Box and Pin	480 (435)	50,000 (67,700)

1. Rated Hoist Capacity and Pressure Limit are based on API Specification 8C.
2. See Figure 1 for Pressure-Rotational Speed operating envelope.
3. Torque Capacity may be limited by thread connection types and must take into account the capacity of mating pin and box connections. Maximum Makeup Torque is based on API Specification 7.



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Pressure-Rotational Speed Operating Envelope

The graph shown in Figure 1 is intended as a guideline for maintaining tool temperature below the maximum of 194 °F (90 °C). The Cement Swivel can be operated **intermittently** within the *Operational Limit* and **continuously** within the *Operating Envelopes*. Contact Volant Support if planned operating conditions exceed the *Operating Envelopes* presented.

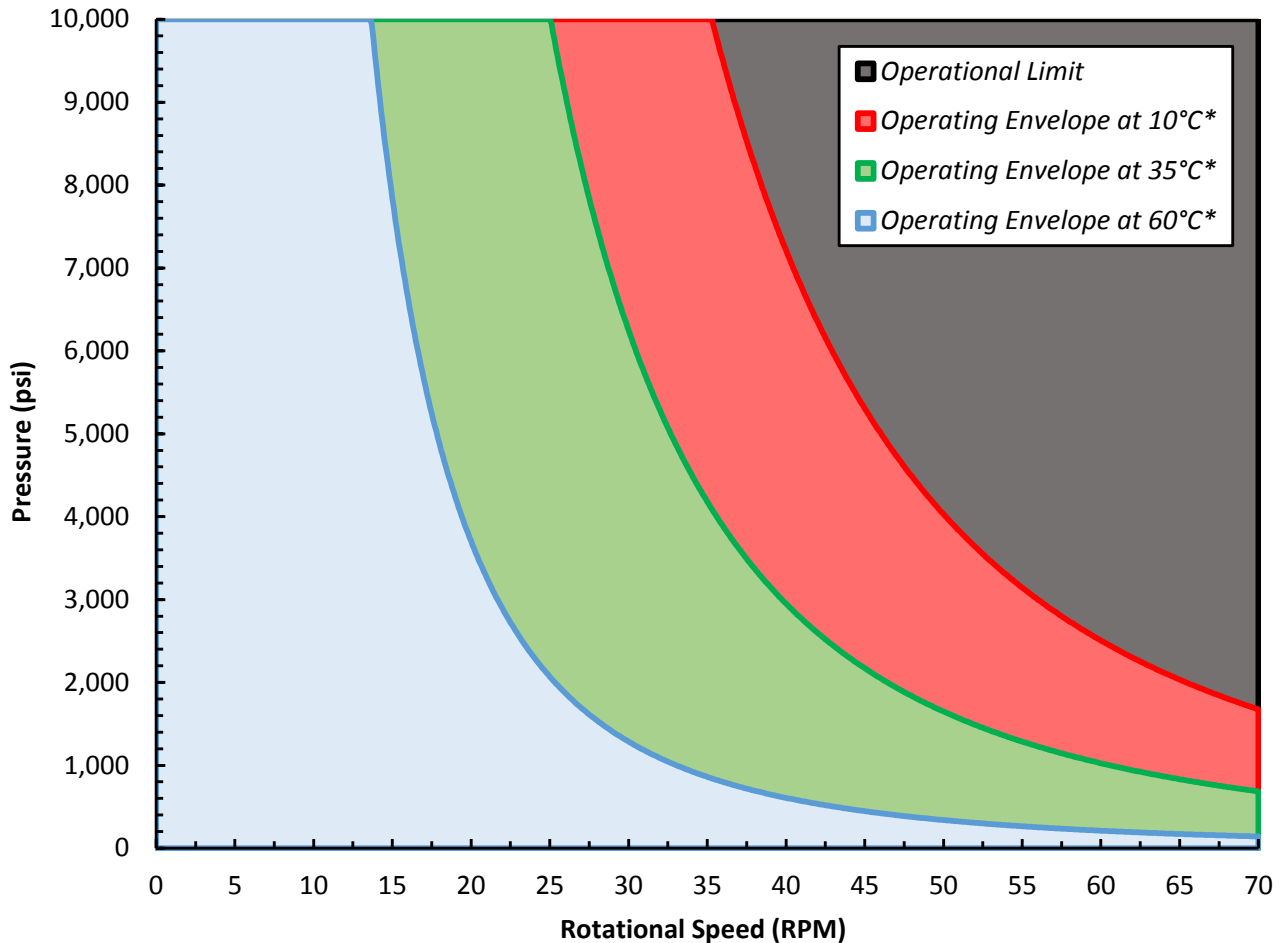


Figure 1: Pressure-Rotational Speed operating envelope

*Operating Envelopes assume equal fluid and surrounding air temperatures as stated in the legend.

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