

Well Construction

Cementing Technologies

Top-Drive Swivel

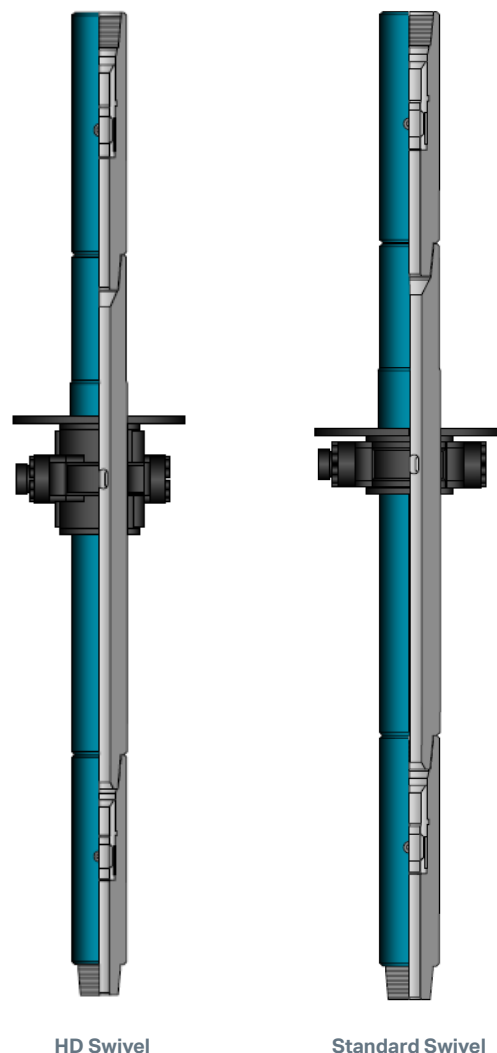
Expro's Top Drive Swivel permits work string rotation and reciprocation during high-pressure completion and circulating fluid displacements.

Features and benefits

- Two side port inlets available with 2" or 3" WECO 1502 connections
- No welded connections on pressure or tensile-bearing components
- Upper and lower isolation valves provide high-pressure isolation of the swivel mandrel
- Drill pipe handling pups allow tool to be quickly and easily rigged up/ rigged down to minimize additional rig time
- Completion, remedial, and/or repair work can be completed with minimal trips into the derrick, reducing rig time and improving safety
- Multiple pumping operations can be performed without breaking flow lines, saving rig time
- Protects the top drive from corrosive or abrasive flow during circulation while rotating
- Upper and lower isolation valves provide well control, improving safety
- Adaptable to essentially any high pressure, rotating, displacement application
- HD Swivel - High-pressure swivel facilitates rotation while pumping high-rate completion/circulating fluids
- HD Swivel - Redundant seals allow for prolonged rotation times over conventional side-entry swivels
- HD Swivel - Extended rotation times allow for high-volume, long-duration displacement operations

Applications

- Displacing well with completion fluid; reverse circulation operations
- Remedial squeeze operations – settings packers (BST Cement Retainers, Retrievable Packers, etc.) without sending service personnel repeatedly above the rig floor
- Changing Top Drive swivel seals / packing while continuing to rotate with the rotary, prevents need to POOH to perform repairs
- Allows for rigs with dynamic positioning to rotate without stopping cementing or displacement operations
- Setting balanced cement plugs for P&A and T&A operations



Well Construction

Cementing Technologies

Top-Drive Swivel

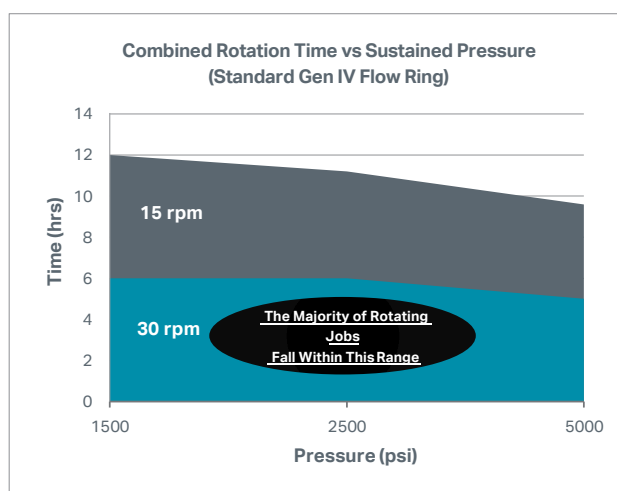
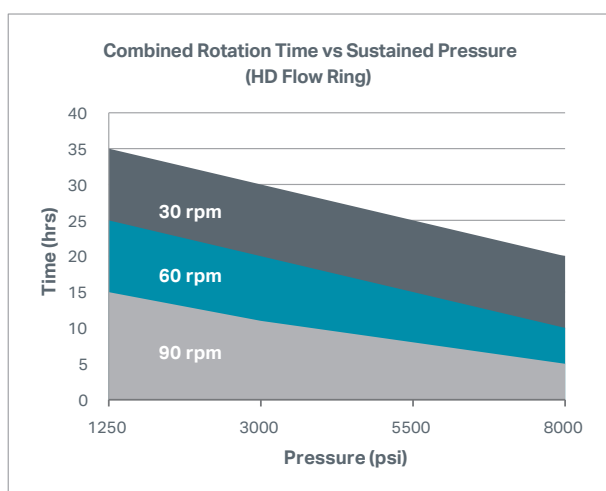
Specifications - HD and Standard Top Drive Swivel

Connections	6-5/8" API FH, 8.50" OD, 3.500" ID, 150 ksi	API NC-50 BXP, 8.50" OD, 3.250" ID, 150 ksi	6.625" API REG BXP 3.500" ID, 150 ksi
Maximum Hookload (lbf) (SF=1.0)	5,808,000	3,903,210	5,808,000
Maximum Hookload (lbf) (SF=1.5)	3,872,000	2,602,140	3,872,000
Maximum Hookload (lbf) (SF=2.25)	2,851,333	1,734,760	2,851,333
Maximum Working Pressure (psi)	10,000		
Maximum Rotating Pressure (psi)	Application Specific ¹ - See Tables Below		
Torque-Thru Tool Rating (ft-lb)	100,000		
Maximum Pump Rates	35 bpm through top drive 15 bpm through 2" 1502 20 bpm through 3" 1502		
HD Swivel - Tool Weight (lbf)	1,662	1,461	1,601
Standard Swivel - Tool Weight (lbf)	1,122	922	1,016

Notes:

- Hookload ratings do not include drill pipe connections, handling pups or full-open isolation valves.
- Expro recommends using 1.5 SF for maximum working hookload unless reviewed and approved by Expro's engineering and operations.
- All weights should be field verified.

Rotational Performance Envelope with Internal Pressure



1. Maximum rotating pressure is a performance specification based on anticipated RPM, duration, and fluid properties. Expro will determine application-specific maximum rotating pressure ratings utilizing these parameters upon request.