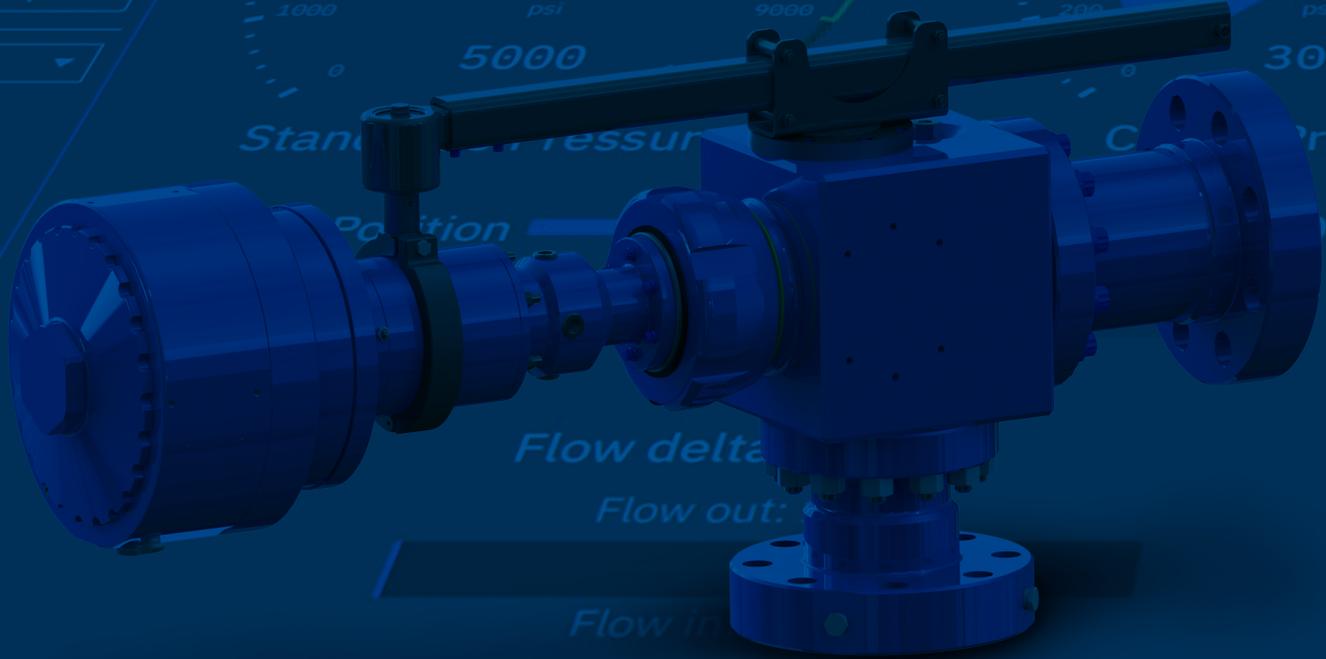


RCD/MPD Solutions




PREMIUM[™]
Oilfield Technologies

Choke A Position

Current position 57.0%

<< < 57 > >>

Full Close Full Open

Choke B



The Most Economical and Accurate Set-Point Pressure Control for Your Well

Tru-Flow™ MPD Systems

Set-Point Pressure Control

- Either choke or quarter-turn valve can automatically maintain set-point pressure input by user, thus automatically holding back-pressure
- Easy to operate software, no on-site engineer required
- Create custom ramp schedules to adjust for changing flow rates
- Smaller footprint – requires just choke, HMI, and cables
- Very accurate control of surface back pressure
- Competitive pricing, even compared to non-automated systems

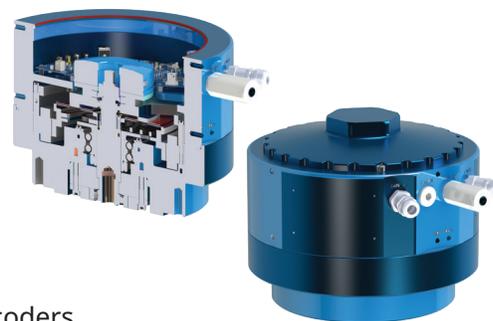
Purpose Built for MPD

- **Cost:** Competitive pricing, designed for drill crew operation, reduced POB, less equipment
- **Safety:** Closed loop system, eliminate ballooning, maintain constant BHP, mitigate and control influxes
- **Efficiency:** Reduced NPT, lighter mud weights, increased ROP, eliminate casing strings
- **Control:** Drill through narrow drilling windows, depleted formations, & HPHT environments, maintain wellbore stability, reduced ECD systems

Sur-Tork EX Actuators

Sur-Tork EX Actuator

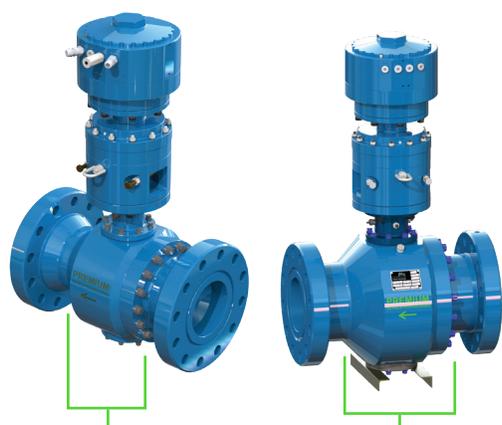
- Utilizes a high torque and fully integrated servo drive system to achieve the most precise movement in the industry
- Autonomous internal system provides unmatched resolution and control through its integrated pressure control algorithm that analyzes active torque data
- Acts as a brain for multiple devices and offers optional connections, eliminating the need for additional power, communications and encoders



Power supply	90-240V <10 Amps @ 120V	Angular resolution	10 Arc seconds
EX rating	C-UL: CL,I, DIV 1, GP. C & D, T4 EN/IEC 60079-0: Ex d IIB T4	Temp range	-40 to 150°F
Connection	ISO F25/0.750" coupling	Communication protocols	Ethernet
Torque	20Nm continuous, 60Nm peak	Analog communication	Qty 4: 4-20mA analog loops for local connectivity to transmitters and instruments
Speed	Up to 320 RPM-Continuous Duty Cycle		

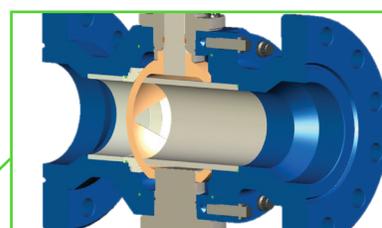
Sur-Tork EX Quarter Turn Valve

- World's first and only quarter-turn valve capable of set-point pressure control, with the industry's fastest and most precise control
- Rugged design and high-torque output ensure continuous duty and provide the user with optional connections, eliminating the need for multiple boxes and devices.
- Paired with a MP-680 or MP-880 Control Valve, the Sur-Tork EX operator is a simple and elegant solution for maintaining back pressure when connected directly to the RCD outlet.



MP-680 & MP-880 Control Valve Specifications

Valve Type	6" Control Valve	8" Control Valve
Dimensions	L=29.12", H=49.5" with actuator mounted	L=29.12", H=52.7" with actuator mounted
Flange Type & PSI Rating	9" 3K API flange, 3000psi static, 200psi dynamic	
Weight	Valve 1065 lbs, with gear & actuator 1470 lbs	Valve 1275 lbs, with gear & actuator 1680 lbs
Ball Type	6" segmented ball, 60deg v or full bore	8" segmented ball, 60deg v or full bore
Gear Torque with RTM-20N Sur-TORK Actuator	6400 ft/lbs peak 2000 ft/lbs continuous modulating (6 seconds open-close @ 230V)	
Backlash	10 arc minutes	8 arc minutes
Interface	ISO 5211 F16	
Shaft Size	2.00" x 1/2" sq key	2.50" x 5/8" sq key



Tru-Flow™ Products

Tru-Flow MPD Choke

- Designed specifically for MPD applications offering the finest control in the modern oilfield
- Small footprint design allows for easier handling while the connection options provide maximum flexibility
- Best-in-class trim design ensuring precise control and allowing for the passing of large cuttings while in operation
- Sur-Tork EX precision electric servo actuators come standard on all Tru-Flow chokes, giving the user additional connection options for valves and sensors



Inlet	4-1/16" 5K	Debris passage	1.75" maximum
Pressure rating	3000 psi	Temp range	-40 to 250°F
Outlet	4-1/16" 5K	Actuator	Electric – Class I Div 1 fully integrated Servo Motor, drive, encoder, torque sensor, pressure transmitter, 10 Arc sec resolution, 90-240V AC single phase 10A, ethernet connectivity -40 to 150°F
Trim size	3.00" maximum		
Travel	3.00" maximum	Actuator speed	Open-close time = 3 Sec (220V)

Tru-Flow™ MPD Mini Skid

Purpose built for MPD, allowing for fast and safe installation
Small footprint for quick integration while providing the benefits of a full MPD system.

- Isolation valves for the quick maintenance of the choke



Choke Manifold	4" 3000 psi rated electric choke and 2x isolation valves	Temp range	-40 to 250°F
Choke trim size	3.00" maximum	Actuator	Electric - Class I Div 1 fully integrated Servo Motor, drive, encoder, torque sensor, pressure transmitter, 10 Arc sec resolution, 90-240V AC single phase 10A, ethernet connectivity -40 to 150°F
Choke trim travel	3.00" maximum		
Debris passage	1.75" maximum	Actuator speed	Open-close time = 3 Sec (220V)
Dimensions	58" x 84" x 55"	Weight	3900lbs

Tru-Flow™ Products

Tru-Flow™ MPD Single Leg Choke Manifold

- Small footprint manifold designed for simple rig integration
- Single choke leg upgradeable to a second choke and Coriolis meter
- EX Rated – Class I, Div 1, 90-240 VAC low amp power supply
- Functionalities include static position, pressure or ramp schedule mode (automated connection schedule)
- Integrated pop-off for overpressure protection



Skid dimensions	8' long x 4' wide x 6' tall	Debris passage	1.75" maximum
Pressure rating	3000 psi	Temp range	-40 – 250°F
Inlet/outlet Flanges	4" Fig' 602	Actuator	Electric – Class I Div 1 Fully integrated servo motor, drive, encoder, torque sensor, pressure transmitter, 10 Arc sec resolution. 90-240V AC single phase 10A, ethernet connectivity -40 to 150°F
Choke trim size	3.00" maximum	Actuation speed	Open – close = 3 sec (220V)
Choke Leg	3" 3000 psi MPD chokes with electric actuation	PRV	Integrated pop off valve included for overpressure protection

Tru-Flow™ MPD Dual Leg MPD Manifold

- Small footprint manifold designed for simple rig integration
- Dual choke leg manifold for redundancy with option for Coriolis meter
- EX Rated – Class I, Div 1, 90-240 VAC low amp power supply
- Functionalities include static position, pressure or ramp schedule mode (automated connection schedule)
- Second choke can be operated as a pressure relief valve for overpressure protection

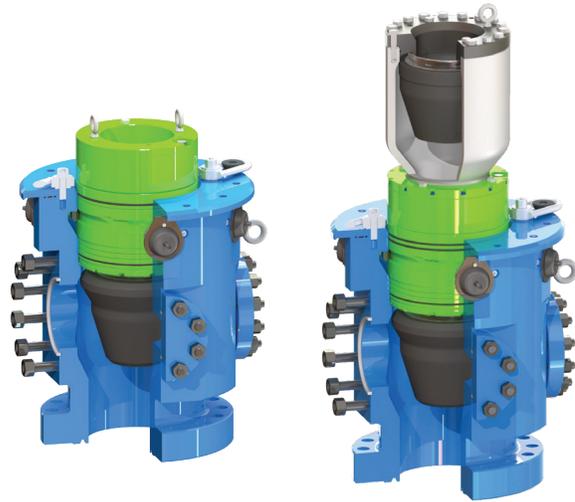


Skid dimensions	8' long x 4' wide x 6' tall	Debris passage	1.75" maximum
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Choke trim size	3.00" maximum	Actuation speed	Open – Close = 3 Sec (220V)
Choke Leg	3" 3000 psi MPD chokes with electric actuation	PRV	Second choke leg can be configured as a pressure relief choke

RCD Products

RCD Model T-3000

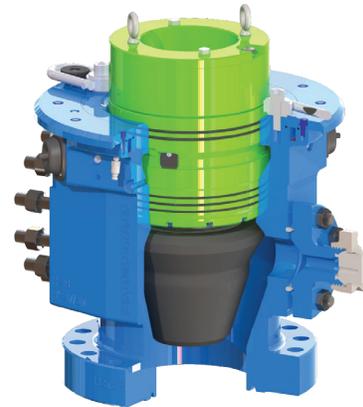
- Low profile RCD measuring 43" tall with bearing assembly installed
- High pressure – 3000 psi static / 1800 psi @ 100 rpm
- Hands-free bearing latch system – no HPU required
- Self-lubricated – sealed bearing assemblies with oil level inspection port
- 9" pass through for up to 6-5/8" drillpipe
- Rated for up to 220 RPM
- Quick change sealing element system
- Single or dual element bearing offerings



Dimensions	Low profile – 43" OAL with bearing assembly	Latching mechanism	Fail safe closed - hydraulic latch (no HPU required)
Pressure Rating	3000 psi static, 1800 psi dynamic	Bottom flange	13-5/8" 5K or 11" 5K
RPM Rating	220 rpm max	Outlet flanges	(2) 4-1/16" 5K, 7-1/16" 3K, 9" 3K
Bearing Lubrication	Self lubricated bearing – integrated reservoir	Sealing elements	Single or dual elements – nitrile, polyurethane – slip on style

RCD Model T-2000

- Low profile RCD measuring 33.25" tall with bearing assembly installed
- High pressure – 2000 psi static / 1200 psi @ 100 rpm
- Hands-free bearing latch system – no HPU required
- Self-lubricated – sealed-bearing assemblies with oil level inspection port
- 9" pass through for up to 6-5/8" drillpipe
- Rated for up to 220 rpm
- Quick change sealing element system



Dimensions	Lowest profile – 33.25" OAL with bearing assembly	Latching mechanism	Fail safe closed - hydraulic latch (no HPU required)
Pressure rating	2000 psi static, 1200 psi dynamic	Bottom flange	13-5/8" 5K
RPM rating	220 rpm max	Outlet flanges	4-1/16" 5K, 9" 2K
Bearing lubrication	Self lubricated bearing – integrated reservoir	Sealing elements	Single element – nitrile, polyurethane – slip on style

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