

PressurePro[®] Set-Point Choke

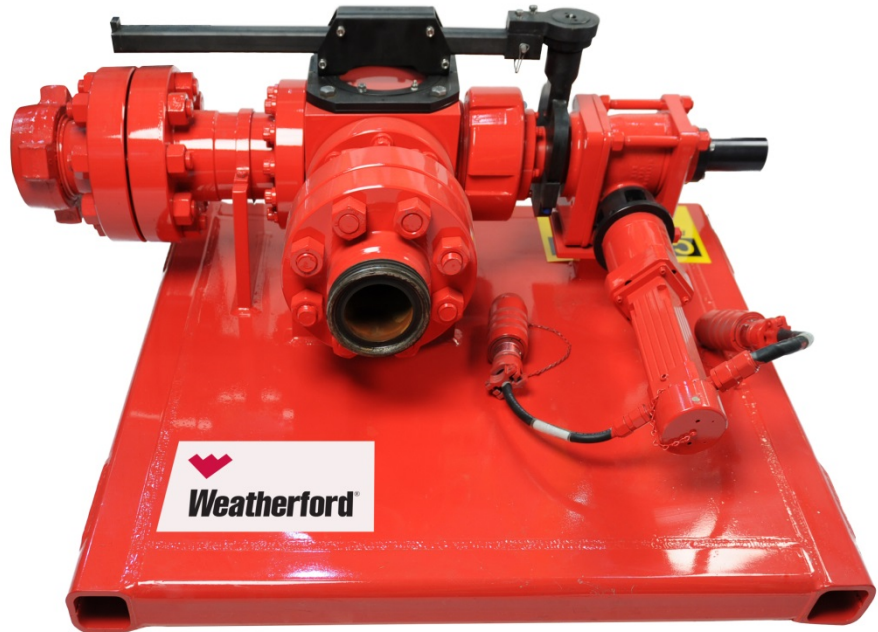
Automatically adjusts the choke position to proactively manage wellbore pressures and to enhance drilling safety

Applications

- Conventional drilling programs
- Managed pressure drilling
- Underbalanced drilling
- Gas-to-surface event reduction

Features and Benefits

- The PressurePro set-point choke reduces the risk of exceeding the mud-gas separator capacity, which enables safe drilling in narrow, shifting, and unknown mud-weight windows.
- The set-point choke easily integrates into existing flowline equipment, which enables equivalent-circulating-density management of wellbore fluid. This can help to eliminate a casing or contingency casing string and reduce mud-weight changes from spud to total depth.
- Hydraulic modeling or other engineering calculations determine the surface backpressure set points for drilling and multistage pump ramp control on connections. The calculations reduce the potential for operational error and enable precise, continual management of the primary well-control barrier.
- Electric stepper technology facilitates fast and precise open-and-close choke positioning to manage wellbore pressure and equivalent mud weight and to suppress reservoir fluid influxes.
- A coordinating data-acquisition system records data that helps to determine operations and equipment—such as advanced flow detection and fully automated systems—that can further reduce drilling risks and optimize drilling in future wells.



The Weatherford electric set-point choke makes automatic adjustments to maintain pressures within the critical parameters of the circulating fluids system.

Tool Description

The Weatherford PressurePro set-point choke manages pressures within the circulating fluids system to enhance drilling safety, reduce risk of reservoir damage, and eliminate discharge to the environment.

Engineered calculations based on depth, circulating rate, bottomhole pressure, mud weight, and mud-gas separator capacity determine the required amount of surface backpressure—or set point—for actions such as maintaining constant equivalent mud weight during pipe connections or circulating out a kick. Then, the choke operator inputs the set point, and the choke automatically adjusts its position based on pressure or pump rate variations. Compared to manual or hydraulic systems that reactively apply surface backpressure, the choke provides more accurate and precise pressure control—within ± 5 psi (± 0.03 MPa) of the pressure point set and at a $\pm 0.1\%$ fail-safe rate.

The set-point choke works with the industry-leading Weatherford SafeShield[®] rotating control device (RCD) portfolio, which creates a closed, pressurizable system for precise management of wellbore pressures and fluids. Pairing the set-point choke with an RCD creates the PressurePro control system for safe, effective managed pressure drilling and underbalanced drilling to reduce nonproductive time, mud costs, and risks.



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Specifications

Choke

Inner-diameter trim	3 in. (76 mm)
Connections (5,000 API RTJ 6BX)	4-1/16 in. (103.12 mm)
Rated pressure	5,000 psi (34 MPa)
Pressure-control resolution	±5 psi (±0.03 MPa)
Operating temperature	-20 to 350°F (-28 to 176°C)
Shipping weight	1,000 lb (453 kg)
Model	Cortec model CX3 15KAS, H ₂ S service

Control Unit

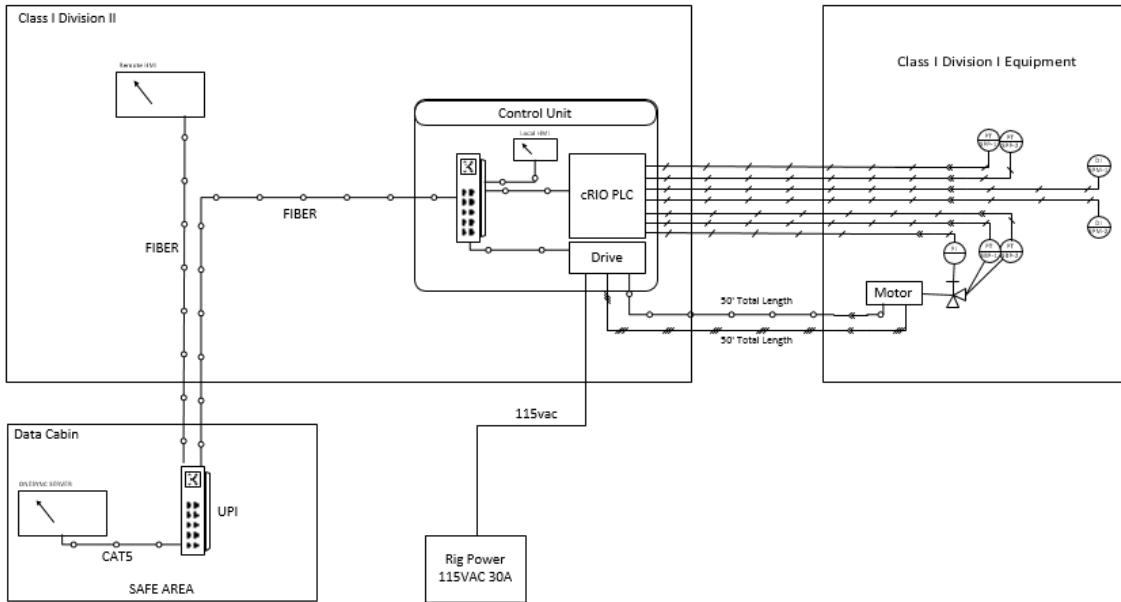
Operating temperature	-4 to 104°F (-20 to 40°C)
Power required	20 to 110 Vac, 50 to 60 Hz
Cables between control unit and choke	50 ft (15 m)
Shipping weight	800 lb (362 kg)
Full stroke time	15 sec

Hazardous Area Certification

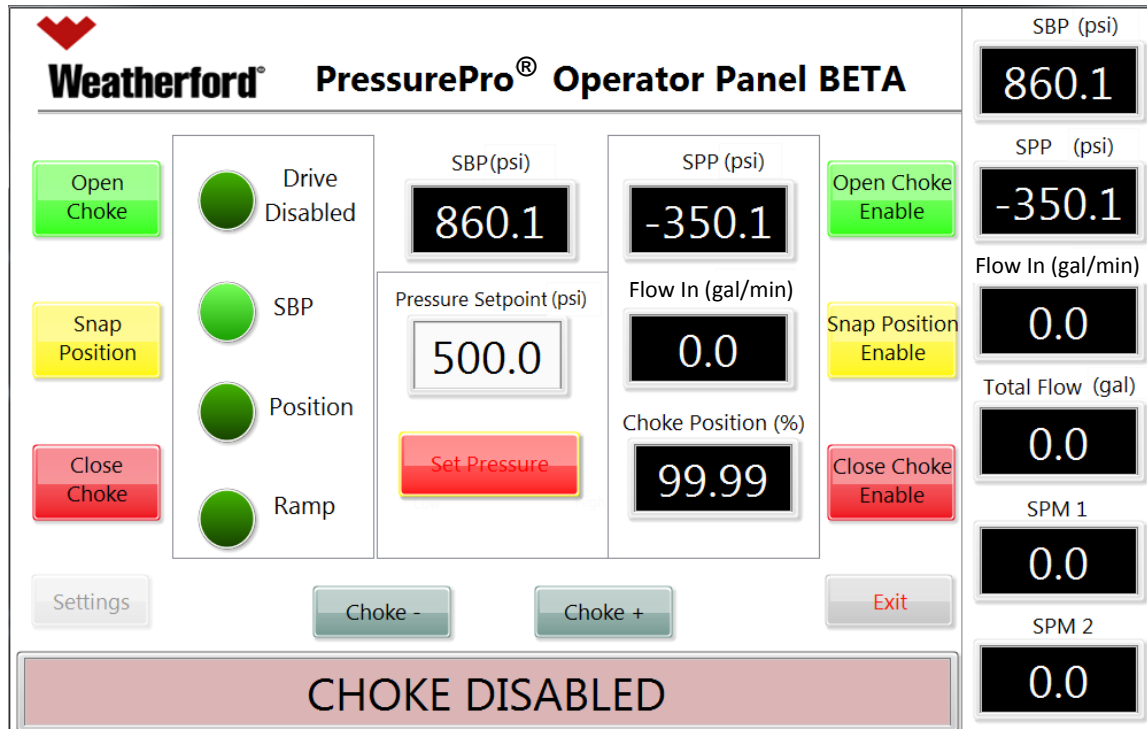
Actuator and choke	Class 1, Division 1
Control panel and local human machine interface (HMI)	Class 1, Division 2, Purge
Drill floor HMI	Class 1, Division 2, Zone 2



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The above piping and instrumentation diagram outlines hazardous areas and interconnecting components.



The above image shows the remote operator's interface panel, from which the operator controls the PressurePro set-point choke.

