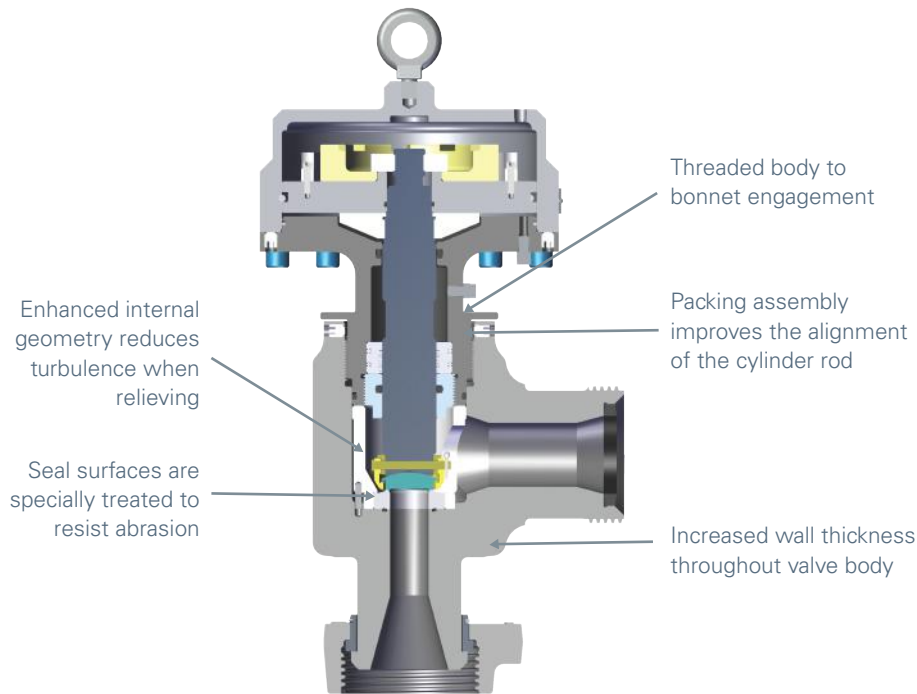


SPM® EXL Back Pressure Relief Valve

WEIR

Oil & Gas



The SPM® EXL back pressure relief valve is engineered to provide over pressure protection while reducing downtime due to its enhanced maintenance and automatic reseating features. The latest in the line of SPM® nitrogen relief valves, the EXL relief valve incorporates a more robust valve body, threaded body to bonnet connection, and improved internal geometry to reduce washout and improve its high pressure sealing capabilities.

Unlike full open relief valves, which require a substantial pressure drop before reseating, this valve has the capability to reseal near the sequencing pressure. This, in turn, allows for uninterrupted pumping stages and equates to less downtime and improved production.

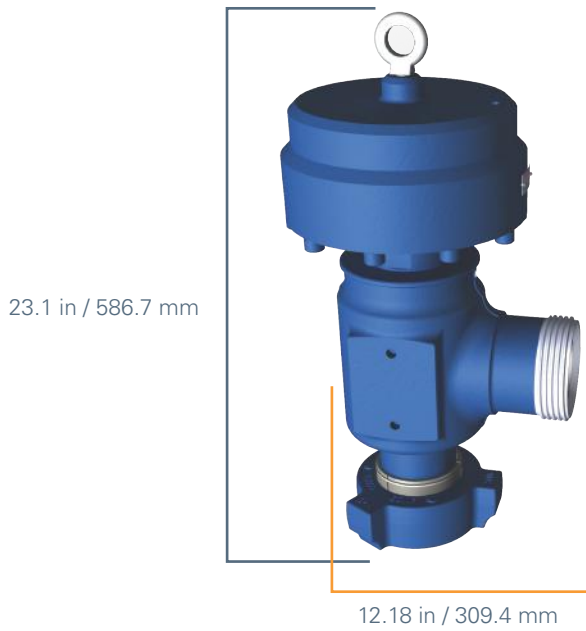
Hydraulic fracturing operations have become increasingly sophisticated and capital intensive. Over pressure events can have costly repercussions, including scrapped equipment, prolonged downtime, and more frequent inspection intervals. In combination with the SPM® automated relief valve control (A.R.C.) System, the SPM® EXL back pressure relief valve can provide a precise, effective, and simple solution to increase equipment uptime, improve reliability, and reduce personnel exposure at the well site.

Design Features and Benefits

With its enhanced internal geometry, unique sealing components, and robust forging, the SPM® EXL back pressure relief valve provides over-pressure protection on site, while improving efficiencies through reduced downtime and lower maintenance costs.

- Enhanced internal geometry results in reduced turbulence and sand accumulation in the valve
- Newly designed packing assembly and updated cylinder rod design improve sealing capabilities during normal cycling of the valve
- Threaded body to bonnet configuration incorporates a robust design margin to allow for safe operations in the event of an obstructed discharge port
- Support and transport stand available upon request

SPM® EXL Back Pressure Relief Valve Envelope Dimensions



Quick Reference

Configuration	Inlet: 3 in; Figure 1502 male Outlet: 3 in; Figure 1502 female
Weight	269 lb / 122 kg
Max working pressure	15000 psi
Operating temperature	-30°C to 110°C -22°F to 230°F
Envelope dimensions	Height: 23.1 in / 586.7 mm Width (outlet side): 12.18 in / 309.4 mm
Max flow rate	2000 gpm*

* Note: This value is intended to be referenced for general sizing purposes. The actual discharge capacity is dependent on pressure differential and type of fluid media being discharged. Please contact Weir Engineering for specific information.

Weir Oil & Gas

601 Weir Way
Fort Worth, TX 76108
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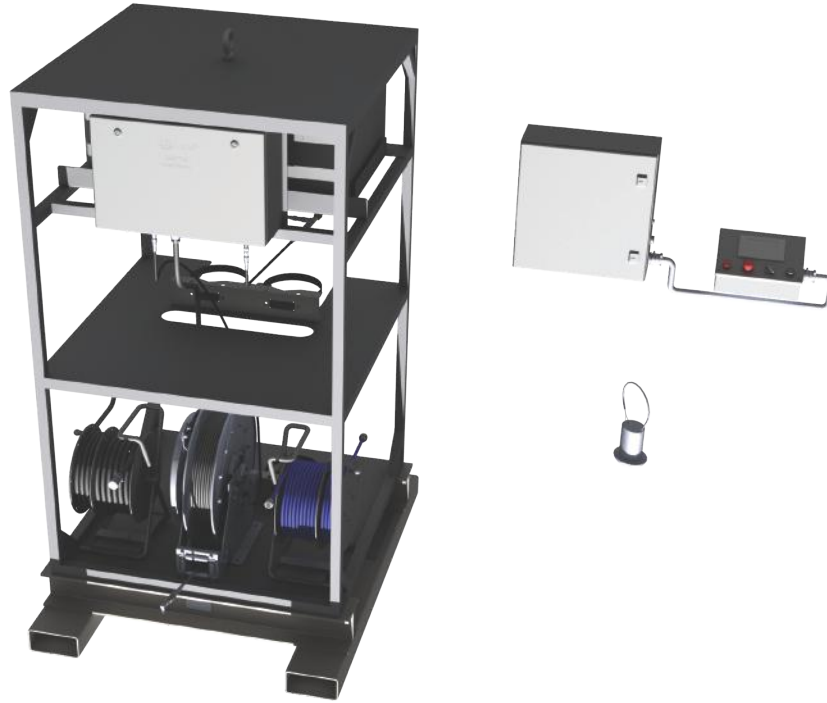
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SPM[®] Automated Relief Valve Control (A.R.C.) System

WEIR

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Design Features and System Benefits

- Simplified, accurate setting reduces valve chattering, extending life
- Recalibration without full system shutdown
- Advanced notice of low nitrogen pressure
- UL tested electronic components
- PSI to MPa units toggle
- Adjustable reaction time

The SPM[®] A.R.C. system provides an accurate and convenient method for operating the line of SPM[®] nitrogen relief valves. By using a remote electronic control system to regulate the nitrogen input to the valve, service companies can further improve pumping efficiency while limiting personnel exposure to pressurized zones. Operators can calibrate the system's sequencing pressure safely and accurately with the touch screen panel located away from the flow line even while pumping operations are ongoing.

This system offers fast calibration with the ability to span and zero out the transducer. The user-friendly interface contains visual warnings and audible alarms indicating low nitrogen input, lost system pressure, or lost power. A 30-minute backup battery will operate in the event of a primary power source failure, and the valve will default to the open position should total power loss occur. If shutdown becomes necessary, an emergency dump valve button is located on the user interface to manually open the relief valve.

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