Smart Hydraulic Flow Monitoring

Digital Sight Glass (DSG)

Patent pending

Reliable operation of diaphragm compressors requires consistent hydraulic fluid flow throughout the system. Traditionally, confirmation of overpump flow through the hydraulic relief valve has relied on visual inspection of a mechanical sight glass, which can be ambiguous due to poor visibility of fluid film movement.

PDC's Digital Sight Glass replaces this visual check with an easy-to-read, color-coded gauge that clearly indicates overpump flow status at a glance. The DSG also transmits an analog signal to the PLC, allowing overpump flow to be used as an interlock to shut down the compressor preemptively and prevent costly failures such as cavitation-related diaphragm damage and piston-sleeve wear.

During startup, hydraulic prime is confirmed by steady overpump flow measured by the DSG. During operation, flow deviations are continuously monitored and trended for predictive maintenance.

Key benefits include:

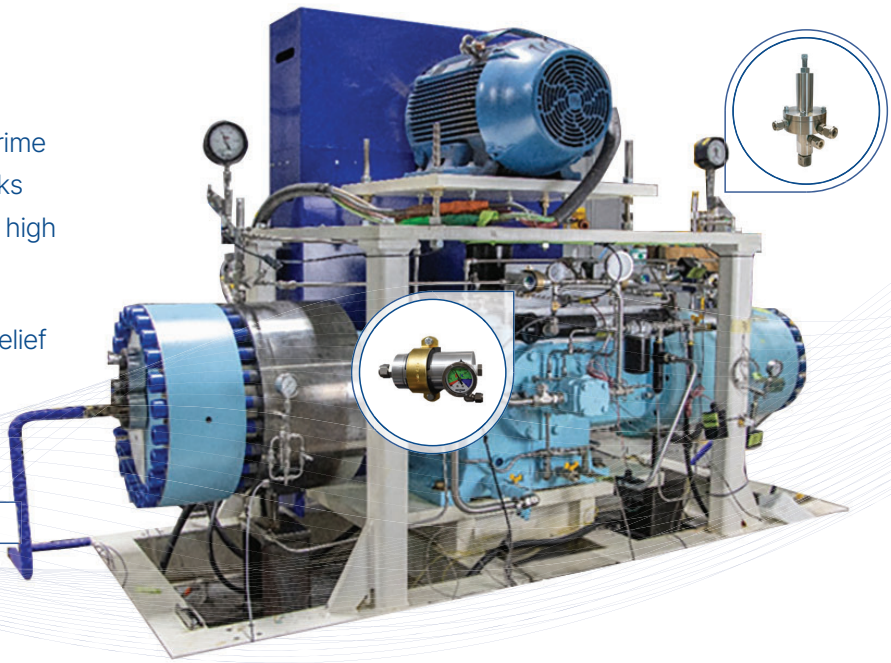
- Clear, unambiguous confirmation of hydraulic prime
- PLC-ready analog output for protective interlocks
- Improved reliability for remote, intermittent, and high run-hour compressors

The DSG may be paired with the PDC-Prime Oil Relief Valve to reduce priming time by up to 70 percent.

Automates health monitoring of the hydraulic system via measurement of flow through the hydraulic relief valve.

Confirms state of prime during normal operation and post-maintenance startup.

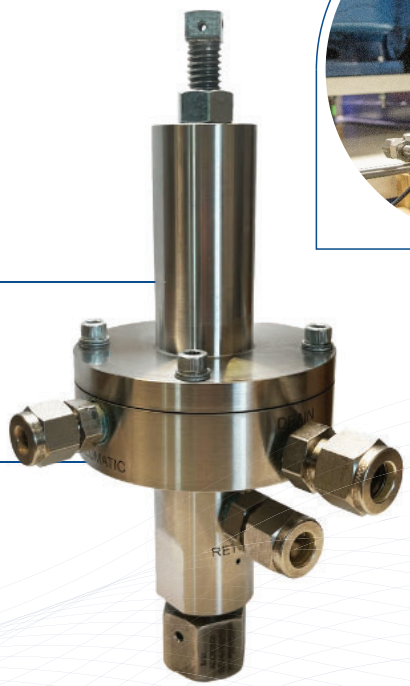
Provides digital feedback to the control system for predictive maintenance and risk management.



Detects less than half a drop of oil per cycle

PDC Prime Oil Relief Valve

Patent number: US 20220145874A1



Automates hydraulic priming to eliminate operator intervention during startup.

Ensures consistent priming conditions, regardless of compressor model.

Reduces time required for system to reach complete prime.

Proper compressor priming before startup is essential to ensure internal components are fully lubricated and prepared for high-pressure operation. Inadequate priming can lead to cavitation-related diaphragm damage and increased operating costs due to premature wear of critical components.

The PDC-Prime Oil Relief Valve operates with predetermined pressure setpoints optimized for both unloaded startup and fully loaded conditions. By reducing oil pressure during priming, when high pressure is unnecessary, the system enables a more controlled startup and significantly reduces priming time compared to conventional fixed relief valves.

This reduction in differential stress improves reliability and extends component life.

The PDC-Prime system is particularly beneficial for:

- Remotely operated compressors
- Systems with intermittent operation
- High discharge pressure

For proper operation, the PDC-Prime Oil Relief Valve must be paired with PDC's Digital Sight Glass (DSG) to confirm hydraulic prime through overpump flow measurement.

The global authority on diaphragm compression solutions. **pdcmachines.com**