

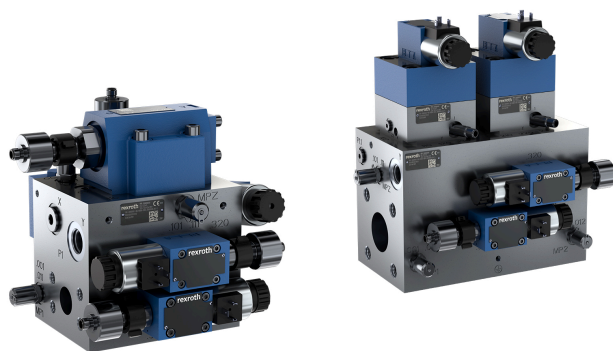
PRESS INFORMATION

Functional safety out of the box

Manuela Kessler | 22.10.2024 | Lohr am Main / Germany | PI 034/24

New standardized STO manifolds for new designs and retrofits increase plant safety in metallurgy, presses and test benches in accordance with ISO 13849

- Modular, standardized design shortens engineering and integration times
- Energy-efficient operation with the latest high-flow logic valves
- Closing times under 300 ms, maximized decompression volume flow



Functional safety of hydraulic systems: The new, standardized STO manifolds STOM save time in engineering. (Image source: Bosch Rexroth AG)

With the new STO manifolds, Bosch Rexroth presents a pioneering out of the box solution for the efficient implementation of functional safety in hydraulic systems in accordance with ISO 13849 up to the highest control category Cat 4 PLe. The manifolds act as an area shut off and can be used as a shut-off function for entire machines or system areas across all industries. The standardized design with preferred components enables significant time savings compared to in-house development. Innovative components such as the new generation of LC2A logic valves maximize performance and increase energy efficiency. Depending on the system pressure and oil viscosity, closing times of less than 300 ms can be achieved.

In hydraulically driven presses, test benches and metallurgical plants such as rolling mills or extrusion presses, functional safety in accordance with the ISO 13849 Machine Safety Directive is an important aspect for both new designs and modernizations. The standard defines safety functions such as the safe shutdown of the torque or the safe disconnection from the hydraulic power supply (Safe Torque Off, STO), the safe depressurization pressurized pipes (Safe De-Energizing, SDE) or the safe limitation of the volume flow for set-up operation (Safe Limited Speed, SLS).

With the new STO manifolds STOM (STO Manifolds), machine manufacturers and system integrators can rely on a standardized solution to implement the hydraulic partial safety functions STO, SDE and SLS up to control category 4 with minimal time expenditure. The high level of effort involved in project planning, design, installation and in particular safety assessment is significantly reduced. Detailed installation instructions and documentation also contribute to this.

The STOM portfolio offers three basic variants for different requirements: The highest safety level enables a double position-monitored shut-off connected in series (STO) in accordance with Cat 4 PLe. The integrated bypass can also be used to implement an SDE and SLS function in the same control category. If the SLS function is also used for pre-compression, switching shocks and pressure peaks can be reduced when opening the main valves. This has a positive effect on noise levels and the service life of the components.

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The second variant offers the same range of functions for Cat 3 PLd, whereby the bypass functions are validated via an integrated pressure sensor. This eliminates the need for additional equipment with pressure sensors in the system. The third basic variant without bypass fulfills the requirements for a redundant shut-off function (STO) in accordance with Cat 4 PLe.

The new hydraulic shut-off manifolds are suitable for both new systems and modernizations. In addition to mineral oil based hydraulic fluids (HLP), low-flammability fluids (HFC and HFDU) can also be used. The surface of the STOM is galvanized for long-term corrosion protection.

With a nominal flow rate of up to 1500 l/min and a maximum operating pressure of 315 bar, the STOMs achieve measured closing times of less than 300 ms in most operating conditions, depending on the system pressure and oil viscosity.

Easy selection and ordering

The appropriate STOM variant can be easily determined and ordered using just four values for pressure, volume flow, achievable performance level (control category) and fluid. The standardized design with a uniform drilled base block significantly shortens the delivery time. The STOMs are available in sizes 20 to 40, with sizes 32 and 40 achieving maximum performance and high energy efficiency thanks to the latest generation of the LC2A high-performance logic valve. All variants allow leakage-free shut-off in the main line from P1 to P2.

Bosch Rexroth also offers ctrlX CORE control units and ctrlX SAFETY safety solutions for the new STOM portfolio.

Basic Information Bosch Rexroth

As one of the world's leading suppliers of drive and control technologies, Bosch Rexroth ensures efficient, powerful and safe movement in machines and systems of any size. The company bundles global application experience in the market segments of Mobile and Industrial Applications as well as Factory Automation. With its intelligent components, customized system solutions, engineering and services, Bosch Rexroth is creating the necessary environment for fully connected applications. Bosch Rexroth offers its customers hydraulics, electric drive and control technology, gear technology and linear motion and assembly technology, including software and interfaces to the Internet of Things. With locations in over 80 countries, around 33,800 associates generated sales revenue of 7.6 billion euros in 2023.

Basic Information Bosch

The Bosch Group is a leading global supplier of technology and services. It employs roughly 429,000 associates worldwide (as of December 31, 2023). The company generated sales of 91.6 billion euros in 2023. Its operations are divided into four business sectors: Mobility, Industrial Technology, Consumer Goods, and Energy and Building Technology. With its business activities, the company aims to use technology to help shape universal trends such as automation, electrification, digitalization, connectivity, and an orientation to sustainability. In this context, Bosch's broad diversification across regions and industries strengthens its innovativeness and robustness. Bosch uses its proven expertise in sensor technology, software, and services to offer customers cross-domain solutions from a single source. It also applies its expertise in connectivity and artificial intelligence in order to develop and manufacture user-friendly, sustainable products. With technology that is "Invented for life," Bosch wants to help improve quality of life and conserve natural resources. The Bosch Group comprises Robert Bosch GmbH and its roughly 470 subsidiary and regional companies in over 60 countries. Including sales and service partners, Bosch's global manufacturing, engineering, and sales network covers nearly every country in the world. Bosch's innovative strength is key to the company's further development. At 136 locations across the globe, Bosch employs some 90,000 associates in research and development, of which nearly 48,000 are software engineers.

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