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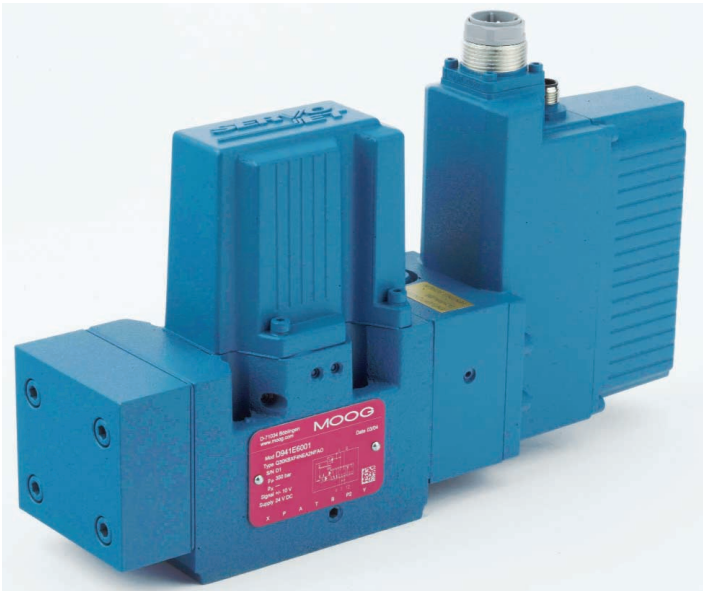
FLUID POWER



HIGH FLOW: Moog's D941 Series Servo-Proportional Valve combines digital electronics with high flow capacities.

Digital Hydraulics Extended to High-Flow Products

Configure these valves through software

Digital hydraulics have been gaining momentum in recent years, but a new valve from Moog Inc. (East Aurora, NY) takes the technology a step further by adding high-flow and high-force characteristics to the digital regime.

Engineers from Moog describe the new valve as a "game changer" because it brings the capabilities of the electromechanical world to the high-force applications that have traditionally been the province of hydraulics. The company's engineers foresee its use in large, complex machines, such as web printing systems and factory automation machines that call for large numbers of axes and high volumes of wiring.

"By extending our digital capabilities into servo proportional valves, we can increase the flow and the force that's available to actuate the (valve's) spool," notes Dave Fijas, deputy general manager of Moog, Inc.'s Industrial Controls Division. "That changes the game because it changes the size of the products that people are able to apply."

The new product, known as the Series D941 Series Servo-Proportional Valve, is offered in flow capacities of up to 80 lpm (21.1 gpm) at pressures to 5 bar (75 psi).

Moog engineers say that the ability to bring digital control to such high flow capacities is critical because it enables users, for the first time, to configure those valves through software, rather than through changes in mechanical parts or through passive electronic components.

"It makes life simpler for users," Fijas says. "They don't need to stock a lot of custom part modifications and, in many cases, it means we don't need to send an engineer out to tune the valve."

Moog, which makes both kinds of actuators, believes that digital technology places electromechanical and hydraulic actuation systems on an equal footing in many applications.

"Over the past few years, electromechanical systems have been eroding electro-hydraulic market share," Fijas says. He adds that installation of digital electromechanical systems is often easier and less costly, mainly as a result of simplified wiring. Digital electromechnical systems typically use a two-wire databus for communication between devices, whereas analog-based hydraulic systems have employed bundles of point-to-point wiring between devices, he notes.

To solve that problem, the D941 includes CANbus (controller area network bus) communication capabilities. CAN, which is commonly used throughout many industries, serves as a databus for interfacing with other devices ranging from sensors to actuators.

Diagnostic demand

"CAN is easy to use and has sufficient bandwidth for the types of applications that engineers have today, many of which involve passing diagnostic information back and forth," Fijas notes.

By enabling high-flow-capacity valves to do diagnostics, Fijas believes the D941 will provide another feature that analog-based systems have lacked. "Machine builders have been demanding diagnostics in recent years," Fijas says. "Users want to know not just that the machine went down, but which component failed and why."

Although Moog and other hydraulic equipment manufacturers have rolled out digital valves previously, the technology isn't widespread yet, particularly in such high-flow control products as servo-proportional valves. Part of the reason is that the fluid power industry, unlike the world of electric motors, isn't heavily populated with electronics experts.

"With this valve, you can tune those parameters in software," Fijas states. "It's immensely easier to do the tuning when you have a digital valve," he adds.