

THE MOOG DIGITAL CONTROL PUMP

THE MOST ADVANCED VARIABLE SERVOPUMP TECHNOLOGY AVAILABLE TO THE PLASTICS INDUSTRY

The Digital Control Pump combines a Radial Piston Pump with a new proportional solenoid pilot valve with digital on-board electronics for local loop closure, tuning and diagnostics. It is the result of Moog's extensive research and development into motion control solutions for plastics applications and provides performance and system optimizations such as "one-parameter tuning" of the pressure regulator never before possible with a servopump. It can be digitally controlled on the valve via the CANopen interface or can be run as an analog device for maximum flexibility and functionality.

The Digital Control Pump is available in seven sizes (19-140 cm³/rev) and can be used in multiple arrangements such as master-slave and hybrid modes.

The challenges

- Maintaining precise control of velocity and force for better repeatability and improved part quality
- Shortening cycle times for demanding injection molding applications performed on servopump machines
- Maximizing machine uptime and lowering maintenance costs
- Providing more flexible control architectures
- Meeting customer requirements for quieter machines
- Simplifying startup procedures

Our solution

Better repeatability and higher quality

Moog's Digital Control Pump is the only pump that allows the parameter set to be adapted on the fly to the single steps of a sequential machine process. Sixteen different parameter sets are available for optimal setting of different actuators for better repeatability.

The Digital Control Pump is equipped with a fully digital control structure for the internal (position control of the stroke ring and the pilot valve) and external (pressure control regulation) control loops, resulting in better repeatability and higher part quality.

Faster response and higher pressure

The Moog Digital Control Pump provides better dynamics with fast servo control, and high pressure ranges with continuous operating pressure up to 35 MPa.

Reliable

The unique radial design of the Digital Control Pump provides the longest service life under the harshest of operating conditions. No radial forces act on the bearing or pistons and a sliding stroke ring is used.

Greater flexibility and increased functionality

This pump can be digitally controlled via the CANopen interface on the valve or run as an analog device for greater flexibility in control architecture and increased functionality. It is the only pump that permits its digital control features to be utilized also in analog mode.

Quieter operation

The Digital Control Pump employs a nine-piston design to reduce noise emissions.

Faster setup and simple tuning

Parameter setting, adjustments and diagnostics can be performed easily by either the machine's HMI or a laptop with the MoVaCo (Moog Valve Configuration) software. The Digital Control Pump permits "one-parameter tuning" (method applied to help define connected hydraulic capacity (C_{H1})) and parameter files can be uploaded from a PC and downloaded to other machines for faster setup.

Making a good solution better

Moog's Digital Valve Technology

Moog is a leader in the development of servo-proportional valves with on-board digital intelligence. The new D930 Series proportional solenoid valve was developed to enhance the control of the Digital Control Pump through advanced features such as parameterization, diagnostics and tuning.

Moog Valve Configuration Software

The Digital Control Pump can be adjusted via the machine's HMI or a laptop with the MoVaCo (Moog Valve Configuration) software provided free by Moog. Users can easily adjust up to 16 different parameter sets to optimize machine operation (including setting the pressure regulator), defining operational modes (e.g. master-slave, hybrid) and selecting pressure sensors. This software allows users to change factory settings of the pump, configure the CAN-communication, perform diagnostics, manage parameter files and operate the pump, independently of the machine PLC.

Supported by Moog expertise

Moog has a wealth of experience in providing OEMs with innovative hydraulic motion control solutions for injection molding applications. Moog revolutionized the plastics industry in the late 1970s when we designed the world's first closed-loop injection motion control. Today Moog is still setting the industry on its heels with the application of digital control to servo hydraulic technology to create leading edge solutions such as the Digital Control Pump.

Our design engineers work collaboratively with customers, providing the guidance, support and expertise they need to overcome their toughest motion control challenges and move their ideas forward.



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