

Compact alternative to solenoid valves:

Bürkert offers economical motor valves for energy-efficient production processes



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Compact alternative to solenoid valves

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The new electrically driven motor valves from Bürkert for neutral fluids and gases expand the spectrum of components for fluid control with additional capabilities. They are compact and energy-saving and achieve a very fine linear characteristic with a low hysteresis in the control of fluid flows.

Energy savings and higher energy efficiency in production processes continue to be a worthwhile goal, even in view of decreasing energy prices. Each single component that can contribute to higher efficiency is important. In view of this situation, Bürkert Fluid Control Systems has developed a new series of compact motor valves. These valves, which are equipped with an electric stepper motor drive, remain in position without electric current and therefore consume almost no energy as long as there is no change in position. The new valves offer an alternative to solenoid control valves and servo-assisted solenoid valves.

Compact design for all orifices

The new compact valves from Bürkert use two different drive and valve concepts, depending on the orifice. The first is based on linear drive seat valves for orifices DN2 to DN6 (Type 3270: shut-off valve, Type 3280: proportional valve). For the larger orifices DN8 to DN25 the fluid technology specialists from Ingelfingen rely on rotary drive disc valves. They are likewise available as shut-off valves (Type 3275) and as proportional valves (Type 3285). In the seat valves, the direction of flow against the seat is from below. They feature high leak tightness and short closure times. In the disc valves the



direction of flow against the seat is from above. They are impressive due to their pressure insensitivity. In the development of the new motor valves Bürkert focused especially on a compact design, even in the case of larger orifices. All sizes of the Types 3270 and 3280 are housed in a standard body with dimensions of 137 mm x 55 mm x 64 mm (HxWxD). For Types 3275 and 3285 there are three compact sizes due to the larger spectrum of diameters. The valve bodies are available in brass or stainless steel.

Technology with specific advantages

The new motor valves offer an ideal alternative to the known solenoid valves in less dynamic applications which do not require response times in the millisecond range. Compared with valves of competitors, the motor actuated valves from Bürkert are nevertheless very dynamic with closure times of only a few seconds. They also feature low energy consumption, due to negligible holding power for a defined valve opening position and extremely precise positioning thanks to high-quality electric stepper motors. In addition, they achieve a higher flow coefficient in comparison to solenoid valves with the same orifice. The compact valves can be used with combustible gases at pressures from 0 to 3 bar, with neutral gases and liquids up to 6 bar. Seals of FKM or NBR and a body of polyphenylene sulfide and polycarbonate make them very robust. The compact valves are designed for an ambient temperature from -10 to 60 °C and fluid temperatures from 0 to 70 °C. The closure time (100 % to 0 % valve opening) is only 2.5 s (ca. 4 s for disc valves). The maximum power consumption is 8 W (12 W for disc valves) and the holding power at standstill is ca. 1 W. The electrical connection to the power supply, measuring lines and process controller is achieved in the standard version of the compact valves (with end position detection) by means of a standard M12 connector (8-pin).

Characteristics of the shut-off valves

The direct-acting Type 3270 and 3275 universal motor valves are designed as two-way valves and are used to shut off liquids and gases. A stepper motor as actuator drives the compact and robust valves. Each valve size is tight closing in its respective nominal pressure range. In case of a power outage the valve remains in its current position. The motor uses no energy in opened or closed state. Energy is consumed by the motor only during the switching processes. This feature can drastically reduce the energy consumption of a system, making it much more cost-effective. The operating direction of the input signal or the switching time can be customized.



Type 3280, valve for orifices DN2 to DN6.

Characteristics of the solenoid control valves

The likewise direct-acting Type 3280 and 3285 motor solenoid control valves are used as actuators in process control circuits. They are controlled by analogue setpoint signals that are processed by the integrated control electronics. The motor needs no electricity to maintain a particular orifice. The motor consumes energy only during setpoint changes. Without electric current, the valve remains in its present position. This valve type is ideal for

demanding control tasks requiring a high control range or repeat accuracy, for example. Especially noteworthy is the outstanding control range of 1:100. The hysteresis is below 5 %, while the repeatability and the sensitivity ratings are below 1 %. In the case of Types 3280 and 3285, the setpoint signal, operation direction, regulating speed and low-power function can be adjusted manually.

Communication for the future

The new motor valves will be available in three versions in the future. The standard version with end position detection described here is already available. It will be followed by the positioner version for fieldbus communication with an integrated displacement measuring system. The process controller version will be based on the positioner, however with additional signal inputs for sensors.



Proportional valve Type 3285 for the orifices DN8 to DN25.

Contact

Do you have questions or can we show you our newest controlling technology? Just contact

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