Digital valve control system

Model	Model Code	Maximum Working Pressure MPa	Maximum Flow L/min	Page
Digital relief valves (for remote operations)	D-CG-02	21	(up to ~2)	K1-1
Digital relief valves	D-CG	21	03 06 10	K1-1
Digital flow control valves (with temperature compensation)	D-FG-01	21	(up to ~10)	K2-1
Digital flow control valves (series type)	D-FG	21	02 03 06 10	K2-1
Digital flow control valves (bypass type)	D-FRG	21	02 03 06 10	K2-1
Digital directional & flow control valves	D-DFG D-DFRG	21	01 03 04 06 10	K3-1

Model	Model Code	Applicable digital valve (built-in motor category), etc.	Page
Digital valve controllers	DC-A2M	2-phase motor (previously referred to as a 4-phase motor*) type	K4-1
	DC-AX4	5-phase motor type	K5-1
Harness for connecting digital valves	DC-H-DV	For connection between the digital valve controller and digital valve	K5-2

* This designation which is derived from the structure of the stepping motor has now been changed to "2-phase motor."
The designation "4-phase motor" may still be found in some places in Tokyo Keiki's catalog and in the operating instructions, but the motor itself is the same one as before.

- Digital valve concept
  A digital valve is a hydraulic control valve which is intended to achieve control with a high level of repeatability with an open-loop format. A stepping motor is incorporated inside as the electromagnetic actuator which drives the valve body in order to achieve this high repeatability.
- Control features of digital valves
  A stepping motor is a motor used for positioning control, and it has the high level of repeatability in the stop position. Another feature of this motor is the high level of repeatability which is achieved even with such a transient phenomenon as that when the motor is activated. These features are utilized to ensure the high-cycle shock-less operation of hydraulic systems (mother systems). They also come into their own when controlling such time-based changes as in the force (thrust force) of the actuator (to increase or reduce the pressure).
- Safety of digital valves
  Incorporated inside a digital valve is a return spring. This spring triggers a force that always returns the valve to the origin point (unload for a relief valve or fully closed for other valves). Using this setup, an origin point return mechanism that works reliably is provided.
- Maintainability of digital valves
  The rotating shaft of the internal stepping motor that drives the valve body is equipped with an indicator, and it is possible to check the operational status of the valve by directly viewing the operational status of the valve body.

K 0-1

Digital Valve Control Systems

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