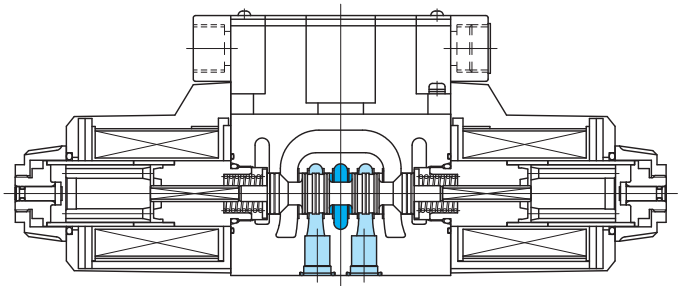
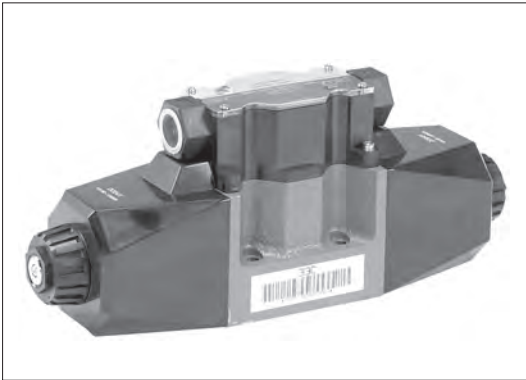


Fine current signal solenoid operated directional control valves

DG4VC-5



- Integrated solid state relay.
- Valve can be directly driven by connecting signal terminal to PLC, etc.
- Performance same as standard DG4V-5 solenoid valve.

E
7-1

Directional Control Valves

Model Code

(F3)-DG4VC-5-2A(L)-M-PS2-H-7-40-(P10)

1 2 3 4 5 6 7 8 9 10 11 12

- 1 Hydraulic fluid
Omit: mineral oil based fluid, water-glycol based fluid
F3: Phosphate ester
- 2 Fine current signal solenoid operated directional control valve (gasket mounting)
Wet armature type
- 3 Mounting dimensions
5: ISO 4401-AC-05-4-A
- 4 Spool type
See page E3-2 and E3-3
- 5 Spool/spring arrangement
A: Spring offset, A type (2 position, single solenoid)
B: Spring offset, B type (2 position, single solenoid)
C: Spring centered type (3 position, double solenoid)
N: No spring detented type (2 position, double solenoid)
- 6 Solenoid assembly configuration (for spring sets, type A and B)
Omit: standard (energized: P to B, A to T)
L: Left hand build (energized: P to A, B to T)
- 7 Electrical wiring (configuration, wiring connection port side)
P: Plug-in solenoids, conduit box, G 1/2
- 8 Contact point input type
S2: Sink
N2: Source

- 9 Solenoid voltage
H: DC24 V
- 10 Allowable T port back pressure
7: 20.6 MPa
- 11 Design no.
- 12 Port orifice (option)
Omitted for no port orifices (standard)
Port orifices
<Example 1> P10 (1.0 mm orifice in P port)
Orifice Diameter
Port (A, B, P and T)
<Example 2> B12 (1.2 mm orifice in B port)
<Example 3> 2 port combinations
Combination sequence, PTAB
P10T12, P10B10

- Note:
- T port orifice is used in T port on A port side.
 - When using T port orifice, make sure that surge pressures do not exceed allowed back pressure.
 - When using port orifices, keep circuit pressure below 21 MPa.
 - When using in stacked module assemblies, consult Tokyo Keiki regarding use of port orifices.

Specifications

| Model Code | Max. Working Pressure MPa | Max. Flow L/min | Allowable Tank Port Back Pressure MPa | Max. Switching Frequency (cycles/min) | Weight kg | |
|------------|---------------------------|------------------------|---------------------------------------|---------------------------------------|------------------|------------------|
| | | | | | Single Solenoids | Double Solenoids |
| DG4VC-5 | 31.5 | See page E3-2 and E3-3 | 20.6 | 180 | 4.4 | 6.1 |

Electrical Specifications

| Contact Point Input Type | Voltage Code | Supply Voltage | Holding Current | Power Consumption | Solenoid | | Allowable Contact Voltage | | Contact Current | |
|--------------------------|--------------|----------------|-----------------|-------------------|------------------|-----------------------|---------------------------|-------------|-----------------|-------------|
| | | | | | Insulation Class | Allowable Temperature | Solenoid OFF | Solenoid ON | Solenoid OFF | Solenoid ON |
| PS2 | H | DC24V±10% | 1.58A | 38W | H | 180 °C | DC24V or open | 0V±0.1V | Less than 100μA | 10mA |
| PN2 | | | | | | | 0V±0.1V or open | DC2~24V | Less than 100μA | 15mA |

Note: Current values and power consumption varies with temperature conditions. Values shown in table are based on 20°C.

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Spool Types and Pressure-Flow Characteristics

Spool types and pressure-flow characteristics are same as DG4V-5. See pages E3-2 and 3-3 for DC solenoid values.

Characteristics Curve

Pressure Drop Characteristics

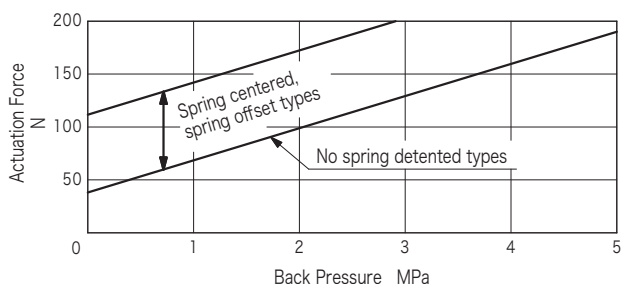
Pressure drop characteristics are the same as DG4V-5 (see page E3-4).

Switching Times

Switching times are same as DG4V-5. See page E3-5 (DC).

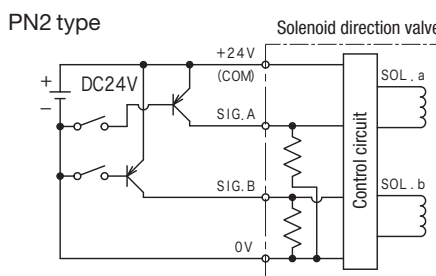
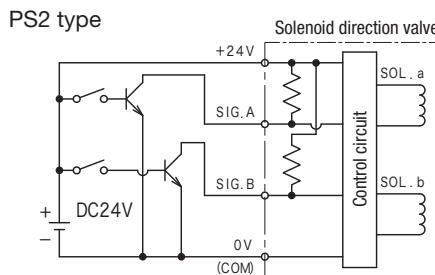
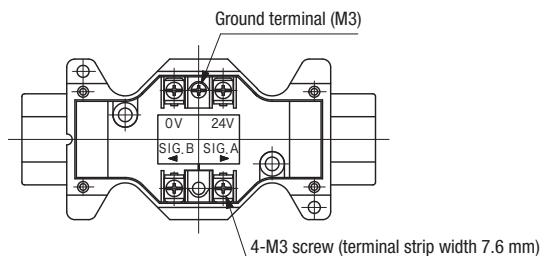
Notes on Operation

- **Mounting orientation**
To ensure sure switching of no spring detented type valves, mount valves so spool axis is horizontal. There are no mounting attitude restrictions for other spool/spring arrangements.
- **Solenoid energization**
Always ensure that one side of solenoid is deenergized before energizing the opposite side. For spring centered and spring offset valves, solenoid should be continuously energized during circuit switching. Deenergization of solenoid will cause spool to return to prescribed position by spring force. For no spring detented type valves, spool will be maintained in switched position by the detent but to ensure sure circuit switching, solenoid should be energized for more than 0.1 second.
- **T (tank) port piping**
Prevent abnormal pressure surges above the allowable back pressure rating from being generated in T port. Valve is wet armature type so ensure that valve is always filled with oil.
- **Using valves as two-way and three-way**
Valve is designed as four-way and max. flow is limited when using as two or three-way valves. Consult Tokyo Keiki for details.
- **Long periods of solenoid energization**
Care should be paid as long periods of solenoid energization at high pressure may cause spool sticking and switching malfunction.
- **Malfunctions due to surge pressure**
Avoid combining flows of tank lines prone to surge pressures. Surge pressures in T port may lead to spool malfunctions. No spring detented type valves are susceptible to such malfunctions during deenergization.
- **Manual operation**
For manual switching, push the manual override pin. Be aware that actuation force increases with higher back pressure. (See graph)



- **Solenoid indicator lamp**
Lamps will light when current flows to the solenoid.

- **Conduit box wiring**
Solenoid and conduit box are pre-wired. Refer to below diagrams for wiring from power source or control circuit to conduit box.



- **Terminal wiring**
 - Power source terminals should be connected to smoothed power source and always kept energized.
 - Signal terminals should be connected to relays and open collector transistors (PS2 type: NPN type, PN2 type: PNP type).
 - Programmable controllers, etc., used should have leakage current of less than 200 μ A.
 - DO NOT reverse connect COM terminals (0 V or 24 V) and signal terminals (SIG. A, SIG. B) as it may damage programmable controller, etc.

Mounting Bolts (JIS B 1176, Strength Class 12.9)

| Hex Socket Bolts | Qty |
|------------------|-----|
| M6 × 40 | 4 |

- Mounting bolts must be ordered separately.
- Tightening torque of mounting bolts: 12 to 15 N•m

Subplate

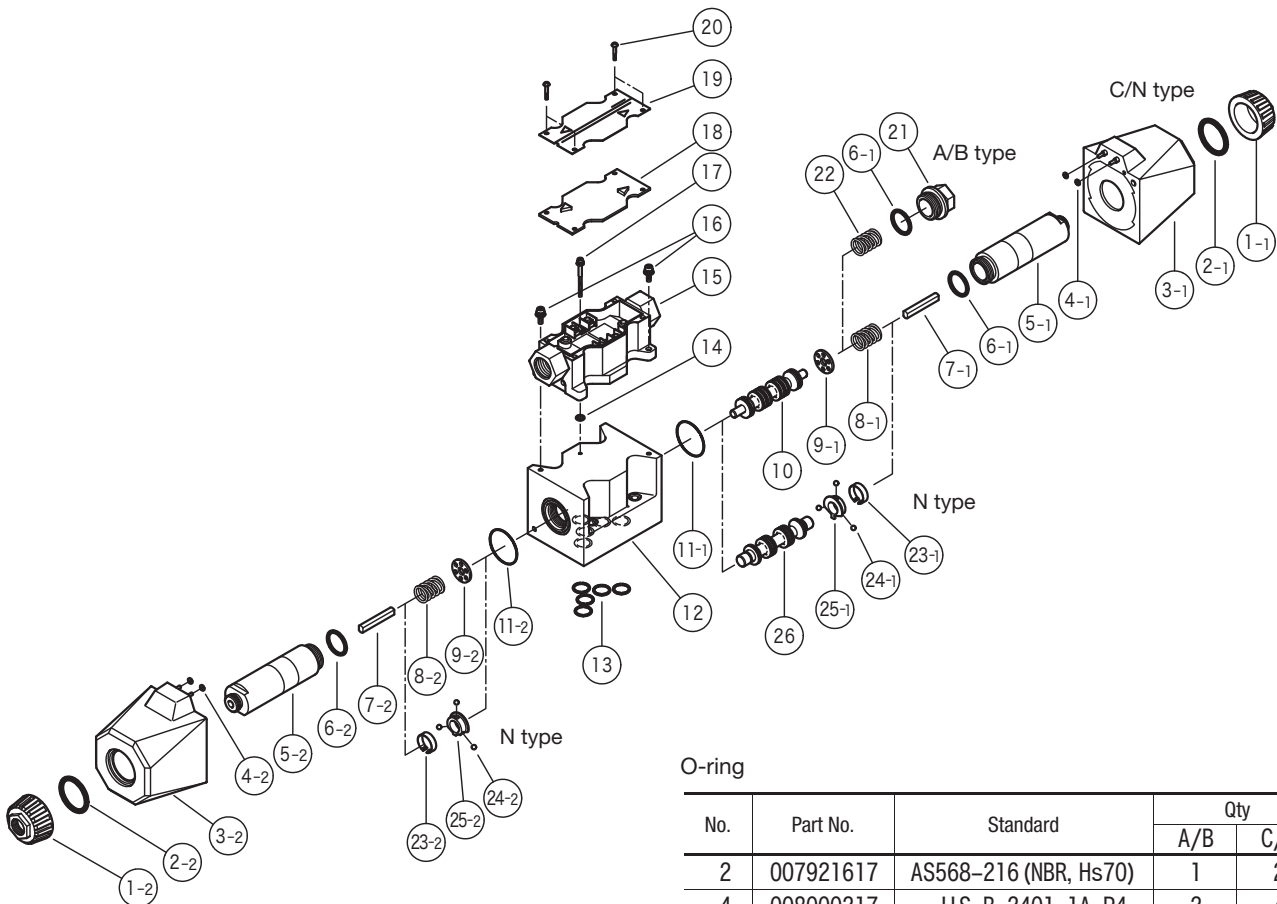
| Subplate | Connection Port Dia. Rc |
|------------------|----------------------------|
| DGSM-01X-10-JA-M | 3/8 |
| DGSM-01Y-10-JA-M | 1/2 |

- Subplate and bolts must be ordered separately.
- See page R6-7 for dimensions.
- See page R6-7 for plural mount subplates.
- Max. working pressure is 21 MPa. For higher pressures, valve should be mounted on manifold block.

Dimensions

Dimensions and mounting are same as DG4V-5. See page E3-6 (Mounting) and E3-7 (Dimensions).

Construction



O-ring

| No. | Part No. | Standard | Qty | |
|-----|-----------|-----------------------|-----|-----|
| | | | A/B | C/N |
| 2 | 007921617 | AS568-216 (NBR, Hs70) | 1 | 2 |
| 4 | 008000217 | JIS B 2401 1A-P4 | 2 | 4 |
| 6 | 007911729 | AS568-117 (FKM, Hs90) | 2 | 2 |
| 11 | 007902617 | AS568-026 (NBR, Hs70) | 1 | 2 |
| 13 | 007901419 | AS568-014 (NBR, Hs90) | 5 | 5 |
| 14 | 007900817 | AS568-008 (NBR, Hs70) | 1 | 1 |

Solenoid coil

| No. | Voltage Code | Part No. |
|-----|--------------|----------|
| 3 | H | 40018938 |