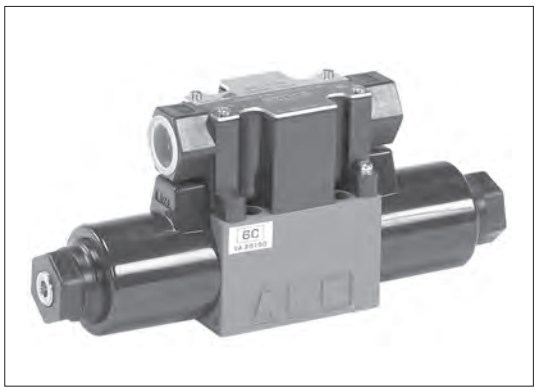
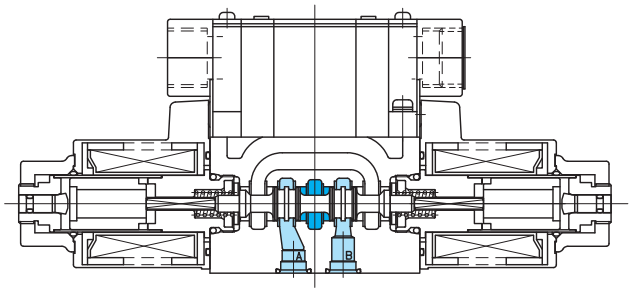
Fine current signal solenoid operated directional control valves DG4VC-3





- Integrated solid state relay.
- Valve can be directly driven by connecting signal terminal to PLC, etc.
- Performance same as standard DG4V-3 solenoid valve.

Model Code

(F3)-DG4VC-3-2A(L)-M-PS2-H-7-(P08)-54

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
3: ISO 4401-03

4 Spool type
See page E2-6 and E2-7

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 Port orifice (option)
Omit: no port orifices (standard)
Port orifices
<Example 1> P08 (0.8 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, P08B10

12 Design no.

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–3	35	See page E2-6 and E2-7	20. 6	300	1. 6	2. 0

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. 16A	28W	H	180 ˚C	DC24V or open	0V±0. 1V	Less than 100μA	10mA
PN2							0 V±0.1 V 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 30°C.

Specifications

Spool Types and Pressure-Flow Characteristics

Spool type and pressure-flow characteristics are the same as DG4V-3 (see page E2-6, 2-7).

Characteristics Curve

Pressure Drop Characteristics

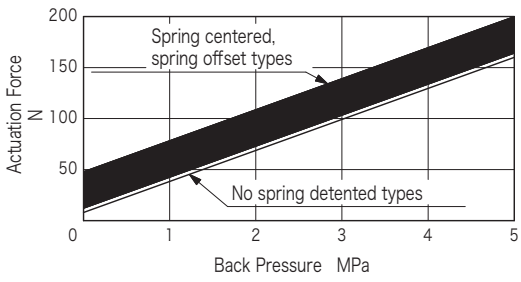
Pressure drop characteristics are the same as DG4V-3 (see page E2-8).

Switching Times

Switching times are the same as DG4V-3 (see page E2-8, DC power source).

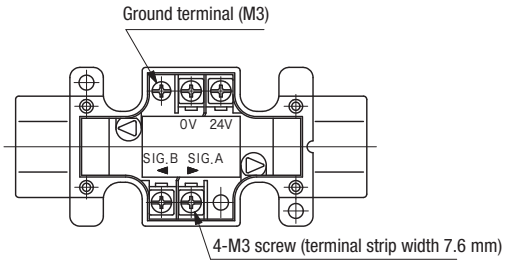
Notes on Operation

- 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)

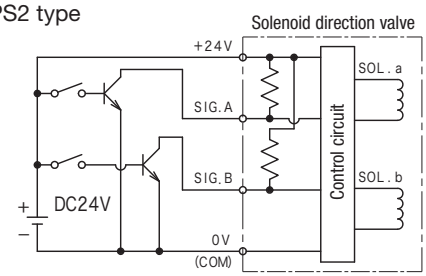


- Solenoid indicator lamp
  Lamps will light when current flows to the solenoid.

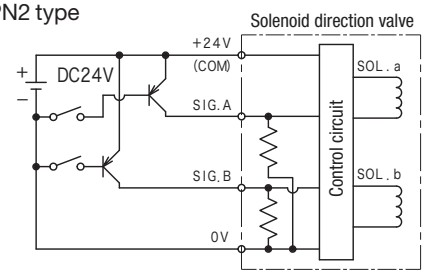
- Conduit box wiring
  Solenoid and conduit box are pre-wired. Refer to below diagrams for wiring from power source or control circuit to conduit box.



PS2 type



PN2 type



- 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 200μA.
  - 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
M5 × 50	4

- Mounting bolts must be ordered separately.
- Tightening torque of mounting bolts: 7 to 8 N·m

Subplate

Subplate		Connection Port Dia. Rc
Side Piping	DGMS-3-1E-10-T-JA-J	3/8
Bottom Piping	DGVM-3-10-T-JA-J	

- Subplate and bolts must be ordered separately.
- See page R6-6 for dimensions.
- See page R6-6 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-3. See page E2-9 (Mounting) and E2-11 (Dimensions).

Construction

O-ring

No.	Part No.	Standard	Qty A/B	Qty C/N
2	008001817	JIS B 2401 1A-P20	1	2
4	008000217	JIS B 2401 1A-P4	2	4
5	007902617	AS568-026 (NBR, Hs70)	1	2
7	007911429	AS568-114 (FKM, Hs90)	1	2
12	007901219	AS568-012 (NBR, Hs90)	4	4
18	007911419	AS568-114 (NBR, Hs90)	1	—
27	007900817	AS568-008 (NBR, Hs70)	1	1

Solenoid coil

No.	Voltage Code	Part No.
3	H	40078305