TGM-7, 50 series (ISO 4401-07)

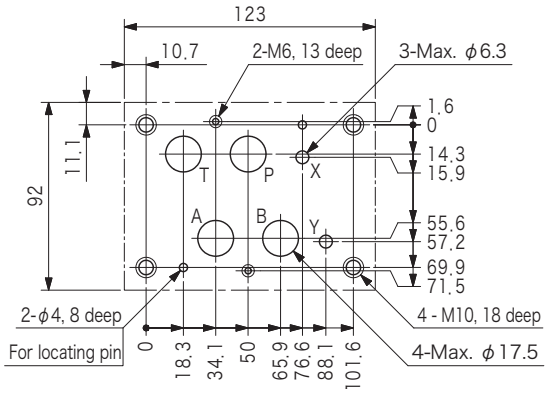
Common Specifications

- Max. working pressure: 21 MPa
- Max. flow: 300 L/min
- Ambient temperature: –20°C～+80°C
- Hydraulic fluid
  - ○ Working temperature: –20°C～+80°C (mineral oil)
    +10°C～+54°C (water based)
    Max. recommended temperature:
    +65°C (to prevent fluid deterioration)
  - ○ Recommended viscosity: 13～54 mm²/s
    At startup (max.): 500 mm²/s
- Seals and fluids
  Standard seals are nitrile rubber which are suitable for anti-wear hydraulic fluids, and water-glycol fluids.
- Mounting dimensions (see Fig. 1)
  Drain port W is not provided with the TGM-7 series of valves so it is not possible to stack pressure centered solenoid pilot or pilot operated directional valves for use.
- Mounting bolts
  - ○ Use strength class 12.9 mounting bolts - JIS B 1176 (hex socket bolts).
  - ○ Set the length of the mounting bolts to +15 or more for M10 and +9 or more for M6 relative to the “uppermost valve bolt tightening length” + “total height of stacked valves”.
  - ○ Tightening torque
    M6: 9～14 N·m
    M10: 50～60 N·m
  - ○ Mounting bolts must be ordered separately.
- Valves can be mounted at any attitude.
- Characteristics curve
  Characteristics curve is based on fluid viscosity 32 mm²/s (fluid temperature 40°C), specific gravity 0.87. (see “Notes”.)

Notes:
1. For pressure drops ($\triangle P_1$) of viscosities other than 32 mm²/s, calculate using multiplier coefficients shown in below table.
2. The formula to calculate pressure drops ($\triangle P_1$) for specific gravities other than 0.87 is as follows.
   $\triangle P_1 = \triangle P \times G_1 / G$
   $\triangle P$.... Values according to characteristics curve
   G 0.87
   G_1... Desired specific gravity value

Viscosity mm²/s	10	20	30	32	40	50	60	70	80	90	100	110	120	130	140	150
Coefficient	0. 75	0. 89	0. 98	1. 00	1. 06	1. 12	1. 17	1. 22	1. 26	1. 30	1. 33	1. 36	1. 39	1. 42	1. 45	1. 47

Fig. 1: Mounting dimensions



- Normal mounting-related dimensional tolerance ±0.2 (unless otherwise indicated)
- Mounting surface machining accuracy

Surface Roughness	1. 6μm Ra	1. 6
Flatness	Less than 0.01 (□ per 100 mm)	0. 01 / □100

Note: The broken lines indicate the dimensions of the minimum required seating surface.

Subplate

Subplate Model	Connection Port Dia.	
	P T A B	X Y
DGSMV-04-10	Rc1/2	Rc1/4
DGSMV-04X-10	Rc3/4	

- Subplate must be ordered separately.
- See page R6-5 for dimensions.
- Max. working pressure is 21 MPa.

Precautions for configuring systems with stack valves

Modular Circuit Stack Restrictions

Depending on the valve function, there may be restrictions on the stacking order of some of the valves which are similar to restrictions when using valves other than stack valves.
The illustrations below show some recommended configurations for smooth flow control and leakage measures.

Name	Incorrect Stacking Example	Correct Stacking Example	Description
	Figure A_1	Figure A_2	• One-way restrictor (meter out) and pilot operated check valve In Fig. A_1, when the cylinder rod is retracted, meter out control by the one-way restrictor in B line causes back pressure in the area indicated by the arrow. Because of this back pressure, although the pilot operated check valve in B line will act to close the valve, when the check valve is closed, back pressure in the area indicated by the arrow will cause the check valve to reopen. This may cause unstable operation and result in "knocking" of the cylinder. Fig. A_2 is example of the recommended configuration which prevents this problem.
	Figure B_1	Figure B_2	• One-way restrictor (meter out) and reducing valve (A, B line pilot) In Fig. B_1, when the cylinder rod is retracted, meter out control by the one-way restrictor in B line causes back pressure in the area indicated by the arrow. Pilot pressure to the reducing valve taken from B line may cause the spool to close and block flow. Fig. B_2 is example of the recommended configuration which prevents this problem.
	Figure C_1	Figure C_2	• Pilot operated check valve and reducing valve (A, B line pilot) In Fig. C_1, when cylinder is stopped in mid-position, the cylinder may not be able to maintain its position due to internal leakage from the pilot line of the B line reducing valve. Fig. C_2 is example of the recommended configuration which prevents this problem.