

Electronic pressure switch ESP



Function Symbol



- Discriminates output signals which use strain gauges from the pressure-sensing area by a electronic circuit for Open-Collector Output of transistor.

Model Code

ESPP-H(2)-H(20)-10

1 2 3 4 5 6 7

1 Electronic pressure switch

2 Mounting thread

P: R1/4

F: G1/4 O-ring seal

3 Sensing pressure setting range

L1: 0.02 to 1 MPa

L2: 0.2 to 10 MPa

H: 0.7 to 35 MPa

H1: 1 to 50 MPa

4 No. of contacts, deadband adjustment

Omit: 1 contact, variable deadband

2: 2 contacts, fixed deadband

3: 1 contact, fixed deadband

5 Power supply, output rating

H: Power supply DC24V(10 to 28V)

Output NPN open collector output DC30V, 80mA MAX.

HN: Power supply DC24V(10 to 28V) (*1)

Output PNP open collector output DC30V, 80mA MAX.

6 Construction, accuracy (see "Specifications")

Omit: drip proof

20: water proof (*2)

7 Design no.

Note:

*1. HN type not applicable with 4 'Omitted for 1 contact, variable deadband'.

*2. 620: Water proof type is applicable with 4 '3: 1 contact, fixed deadband'.

Specifications

● Sensing, Output

Rated pressure:

Code	L1	L	H	H1
MPa	1	10	35	50

Sensing pressure setting method: rotary variable resistor (3 turns)

Contact method: upper limit contact (transistor ON when pressure rises to setting pressure)

Deadband:

Variable	2~10%F.S.
Fixed	1%F.S. (TYP.)

Indicator: LED

Power supply and output rating: see "Model Code"

Cable: 3 core (4 core) cable 2000 mm

Repeatability: less than $\pm 0.2\%$ F.S.

Temperature characteristic:

Drip proof	Less than $\pm 0.05\%$ F.S.
Water proof	Less than $\pm 0.1\%$ F.S.

Response: less than 1ms

Fluctuating voltage effect: less than $\pm 0.1\%$ F.S.

● Environment, Construction

Working temperature range: -20 to $+70^{\circ}\text{C}$

Allowable humidity range: 5 to 90%RH

Insulation resistance: Above 100 M Ω (at DC50V)

Voltage resistance: AC350 V 1 min.

(measured current above 5 mA)

Vibration resistance: JIS D 1601 steps 70 X, Y, Z direction

Shock resistance: JIS C 0912-1984 196 m/s² X, Y, Z direction

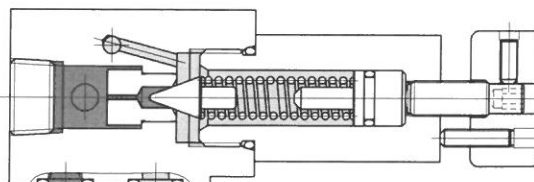
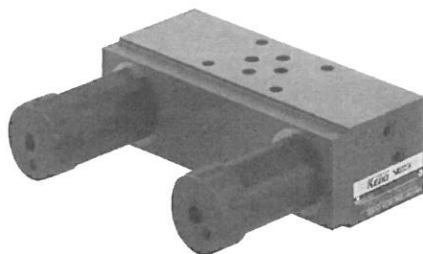
Cycle durability: above 10⁷ times

Note: When measuring the insulation resistance, do not apply a voltage of DC 50V or higher.

Remote control relief valves TGMCR-3

C
7-1

Pressure Control Valves



- Used for 2 pressure, 2 pressure & unload, and 3 pressure multistage control by connecting to remote control vent port of relief valve, and by stacking with DG4V-3 solenoid valve.

Functional Symbols and Control Functions

Model Code	Control Function	Functional Symbol
TGMCR10	2 pressure & unload • Solenoid deenergized for unload • Solenoid a energized for remote pressure setting • Solenoid b energized for setting pressure of main valve	
	2 pressure control • Solenoid deenergized for remote pressure setting • Solenoid energized for setting pressure of main valve	
	2 pressure control • Solenoid deenergized for setting pressure of main valve • Solenoid energized for remote pressure setting	
TGMCR11	2 pressure & unload • Solenoid deenergized for unload • Solenoid a energized for setting pressure of main valve • Solenoid b energized for remote pressure setting	
	2 pressure control • Solenoid deenergized for setting pressure of main valve • Solenoid energized for remote pressure setting	
	2 pressure control • Solenoid deenergized for remote pressure setting • Solenoid energized for setting pressure of main valve	

Model Code	Control Function	Functional Symbol
TGMCR21	3 pressure control • Solenoid deenergized for setting pressure of main valve • Solenoid a energized for remote (L) setting pressure • Solenoid b energized for remote (R) setting pressure	
	2 pressure & unload • Solenoid deenergized for unload • Solenoid a energized for remote (L) setting pressure • Solenoid b energized for remote (R) setting pressure • remote (L) and (R) free setting pressure	
TGMCR30	3 pressure control • Solenoid deenergized for remote (C) setting pressure • Solenoid a energized for remote (L) setting pressure • Solenoid b energized for remote (R) setting pressure • remote (C), (L), (R) free setting pressure	

Note:

- (C), (L), (R) in the symbols indicate position of adjustment section. (See "Dimensions".)
- Solenoid directional valve, DG4V-3, is not included.
- Always use with main valve setting pressure greater than setting pressure of this valve.

Model Code

(F3)-TGMCR30-3-CHBHFH-60

1 2 3 4 5 6 7 8 9 10 11

- 1 Hydraulic fluid
Omit: mineral oil based fluid, water-glycol based fluid
F3: phosphate ester fluid
- 2 Remote control relief module
- 3 Control function (see Functional Symbols)
10: B line, 2 pressure control (and unload)
11: A line, 2 pressure control (and unload)
21: A, B line, 2 pressure control and unload or 3 pressure control
30: P, A, B line, 3 pressure control
- 4 Mounting dimensions
3: ISO 4401-03
- 5 R side max. adjustable pressure
Refer to "Specifications".
- 6 R side adjuster
H: knob
E: acorn nut, hex head adjustment screw (standard)
- 7 C side max. adjustable pressure
Refer to "Specifications".
- 8 C side adjuster
H: knob
E: acorn nut, hex head adjustment screw (standard)

- 9 L side max. adjustable pressure
Refer to "Specifications".
- 10 L side adjuster
H: knob
E: acorn nut, hex head adjustment screw (standard)
- 11 Design no.

Specifications

Model Code	Size	Max. Working Pressure MPa	Rated Flow L/min	Max. Adjustable Pressure		Weight kg
				Code	MPa	
TGMCR10	02	21	1.7	A	3.5	10/11:2.0 21:2.8 30:2.9
TGMCR11				B	7	
TGMCR21				C	14	
TGMCR30				F	21	

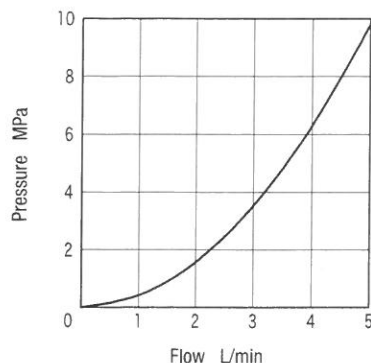
Note: Minimum adjustable pressure will differ with flow. See characteristics curves for reference.

C
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Pressure Control Valves

Characteristics Curve (at 20 mm²/s) (typical examples)

● Pressure Drop Characteristics (Flow-Minimum Adjustable Pressure Characteristics)



Mounting Bolts (JIS B 1176, Strength Class 12.9)

- When DG4V-3 solenoid valve is mounted
Hex socket bolts M5×90 4 pcs
- Mounting bolts must be ordered separately.
- Tightening torque of mounting bolts: 7 to 8 N·m

Notes on Operation

- Do not connect piping of tank port and piping of other tanks, each should be directly returned to tank. Ensure that end of the piping is always below the fluid level.
- When the piping to the main valve is lengthy resulting in a high displacement in the pipe line, the control pressure may become unstable.
- Loosen the knob fixing screw and turn handle clockwise to increase the setting pressure and counterclockwise to decrease the setting pressure.
- For TGMCR10, 11 and TGMCR21 three pressure control, ensure that the main valve is set at the highest pressure.
- With TGMCR30 and TGMCR21 two pressure control and unload, either close the main valve or raise sufficiently setting pressure of the TGMCR.

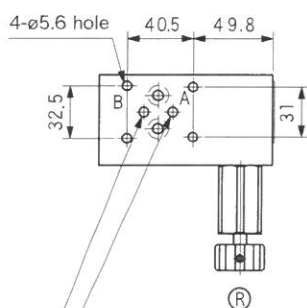
Subplate

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

- Subplate must be ordered separately.
- Mounting bolts are not included.
- See page R6-6 for dimensions.

Dimensions

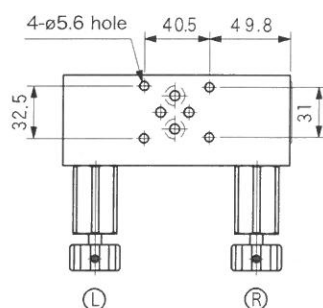
TGMCR10/11



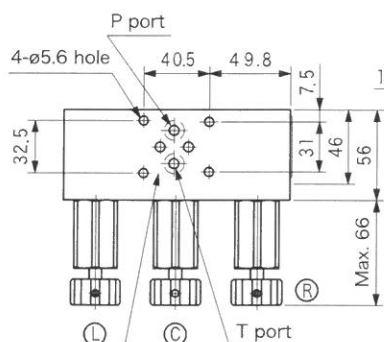
A port not available with TGMCR10

B port not available with TGMCR11

TGMCR21

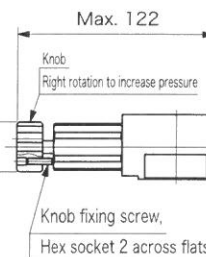
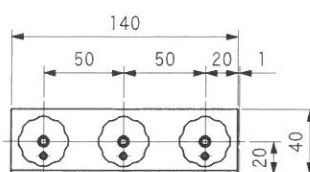
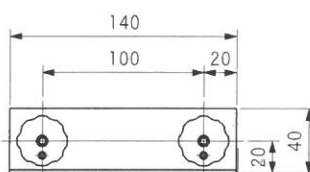
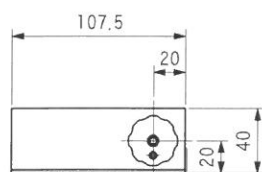


TGMCR30



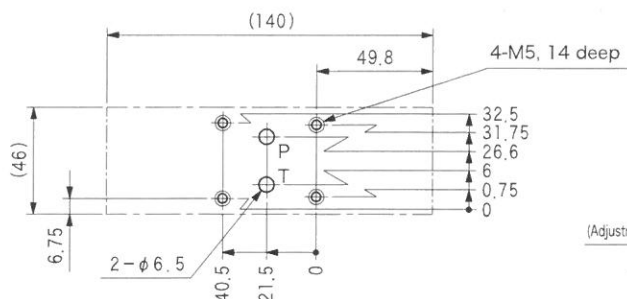
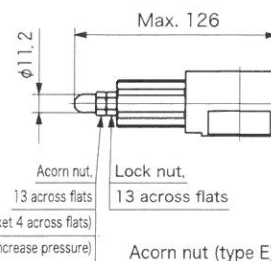
Solenoid valve mounting dimensions

ISO 4401-03

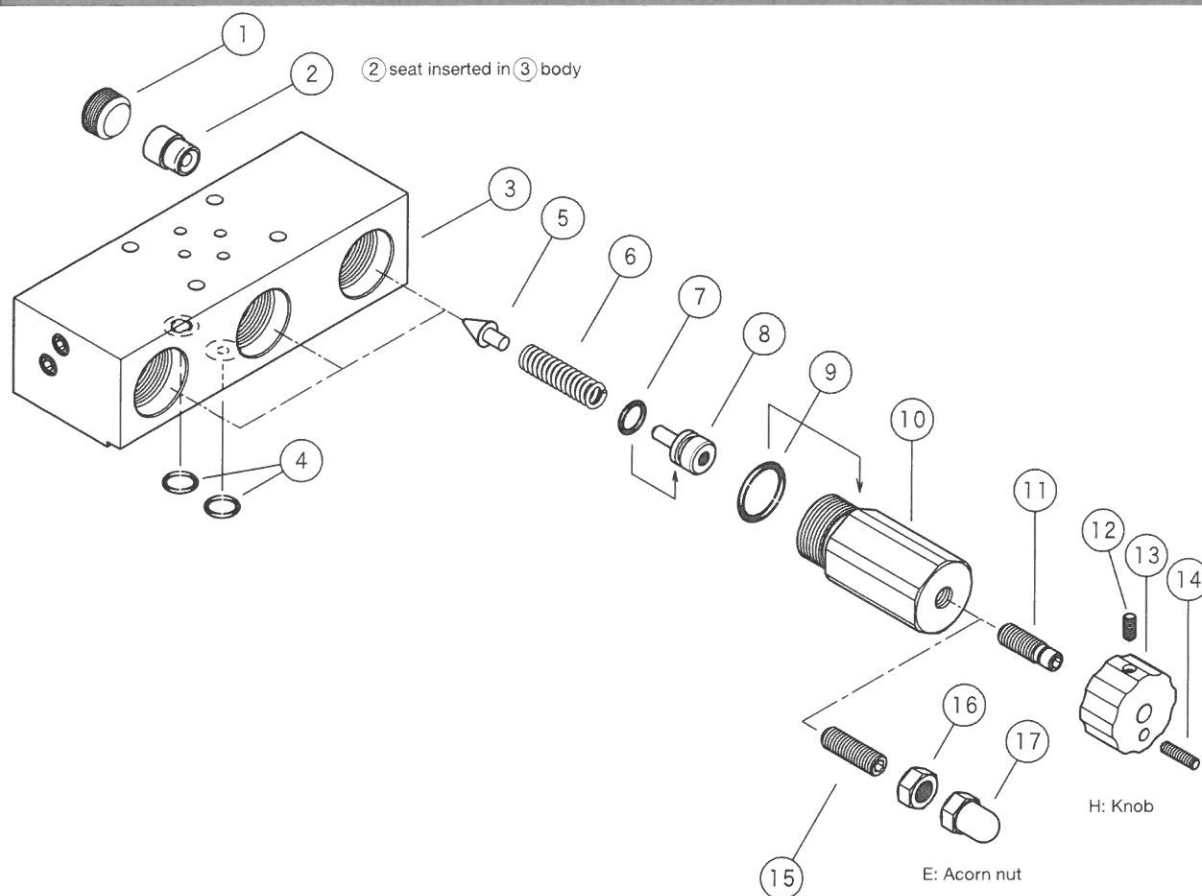


Knob (type H)

● Mounting dimensions

(Adjustment screw hex socket 4 across flats)
(Right rotation to increase pressure)

Construction



⑥ Spring

Code	Part No.
A	VA15409
B	VP2280
C	VA15049
F	VP2281

No.	Name	Part No.	Standard	Quantity		
				TGMCR 10/11	TGMCR 21	TGMCR 30
4	O-ring	007901219	AS568-012 (NBR, Hs90)	2	2	2
7	O-ring	007901219	AS568-012 (NBR, Hs90)	1	2	3
9	O-ring	007991019	AS568-910 (NBR, Hs90)	1	2	3

Note: TGMCR10/11, one pressure adjuster; TGMCR21, two pressure adjusters; TGMCR30, three pressure adjusters.