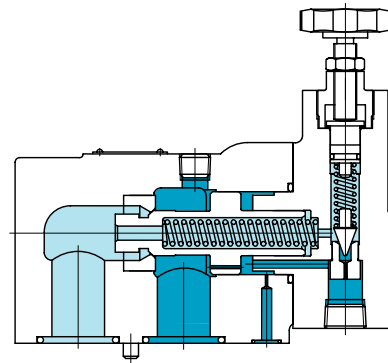


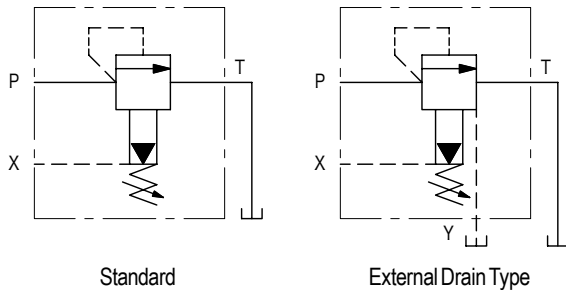


Pressure control valves

Relief Valves TCG20



Functional Symbols



- In addition to providing safety valve function which releases hydraulic fluid in the case of excessive pressure in the hydraulic circuit, the TCG20 also provides good control of circuit
- Remote setting of circuit pressure is possible by connecting a remote control valve to the vent port line.
- The valve can function as an unloading valve by utilizing the vent port.

Model Code

(F3) - TCG20 - 06 - C (V)(Y) (D4) (L) - (R) - 12

1 2 3 4 5 6 7 8 9 10

- 1 Fluid
Omit for mineral oil, water glycol
F3: phosphate ester
- 2 Relief valve
- 3 Size
See 'Specifications'
- 4 Max. adjustable pressure
See 'Specifications'
- 5 Vent pressure
Omit for low vent pressure (st'd)
V: high vent pressure
- 6 Drain
Omit for internal drain (st'd)
Y: external drain
- 7 Adjustment
Omit for knob (st'd)
E: acorn nut, sq. head adj. screw
D4: knob with digital counter
- 8 Digital counter attitude
Omit for up (st'd)
L: left
R: right
U: down

- 9 Adjustment section orientation
Omit for up (st'd)
L: left
R: right
See 'Dimensions'

- 10 Design no.
TCG20-03: 12
TCG20-06: 12
TCG20-10: 12

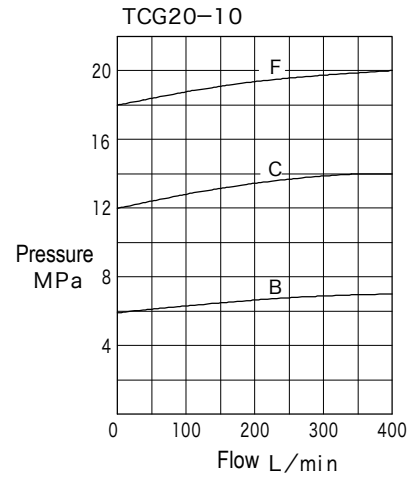
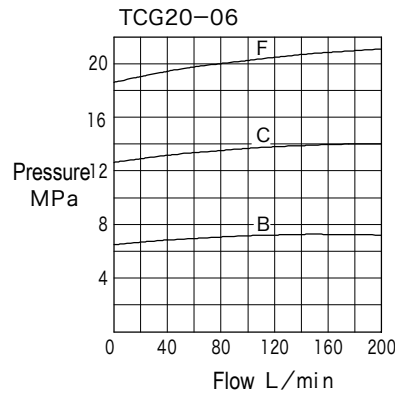
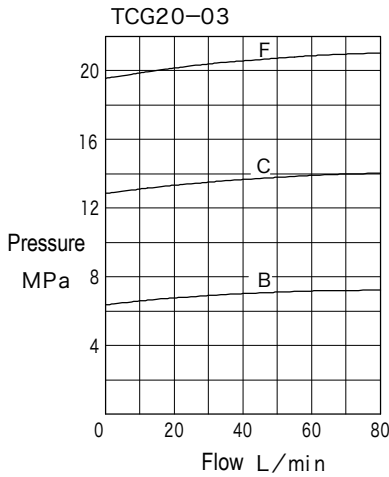
Specifications

| Model | Size | Max. Wkg. Press. MPa | Max. Flow L/min | Max. Adj. Press. MPa | Weight kg |
|----------|------|----------------------|-----------------|--------------------------|-----------|
| TCG20-03 | 03 | 21 | 80 | A (V) : 3.5 | 4.8 |
| TCG20-06 | 06 | | 200 | B (V) : 7 | 6.9 |
| TCG20-10 | 10 | | 400 | C (V) : 14 F (V) : 21 | 10.5 |

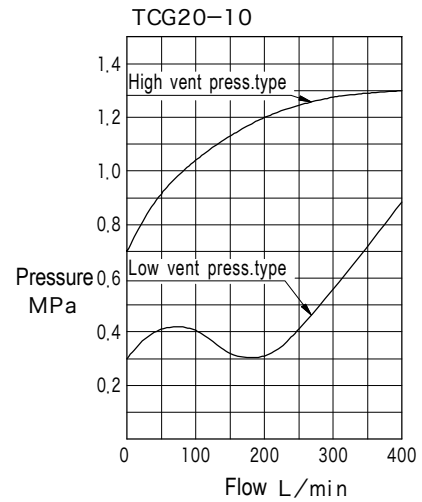
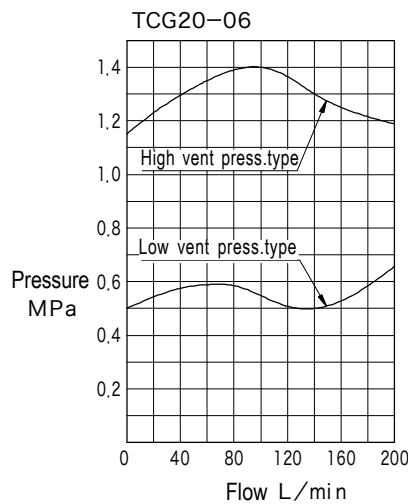
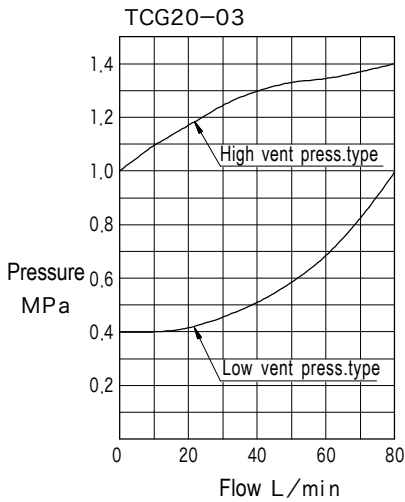
Note: Minimum adjustable pressure will differ with flow. See characteristics curves for reference.

Performance Curves (at 20 mm²/s)

● Flow-Pressure Characteristics



● Flow-Minimum Adjustable Pressure Characteristics



Notes On Use

- Use external drain type (Y) in cases of high tank line pressure or large pressure fluctuations and connect drain line directly to tank.
- For faster unload to onload response, use high vent pressure type (V).
- Control at low flows may cause pressure instability. Please maintain minimum flows above the following.
TCG20-03 Series: 3L/min
TCG20-06 Series: 5L/min
TCG20-10 Series: 5L/min
- Loosen locknut and turn to the right for increase setting pressure and left to decrease setting pressure.
- When using external drain type mounted on subplate, connect drain line directly from valve.

Mounting Bolts (JIS B1176, Strength Class 12.9)

| Valve Model | Hex. Socket Bolts | | Qty |
|-------------|-------------------|-------------------|-----|
| | Metric | Unified | |
| TCG20-03 | M12 × 80 | 1/2-13UNC × 82.5 | 4 |
| TCG20-06 | M16 × 85 | 5/8-11UNC × 82.5 | 4 |
| TCG20-10 | M20 × 100 | 3/4-10UNC × 101.6 | 4 |

- Mounting bolts must be ordered separately.
- Mounting bolt tightening torque
TCG20-03: 72~88 Nm
TCG20-06: 90~110 Nm
TCG20-10: 180~220 Nm

Subplate

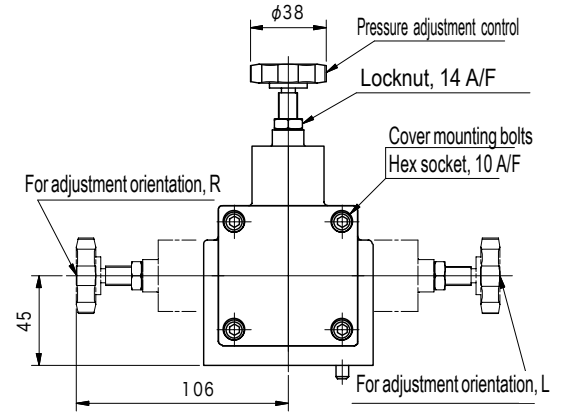
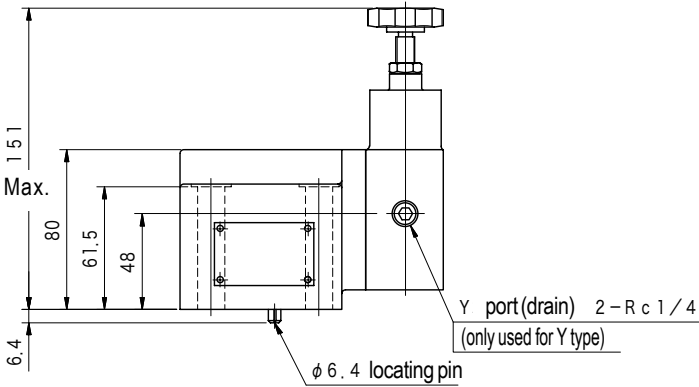
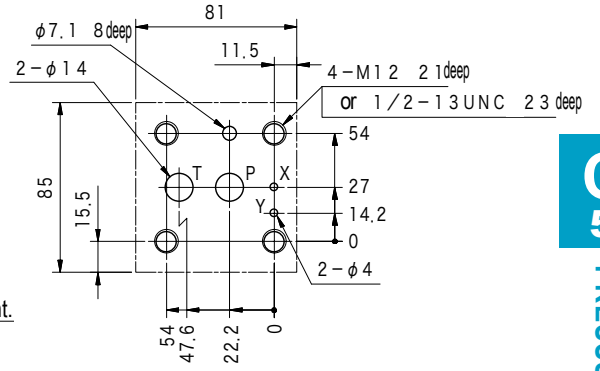
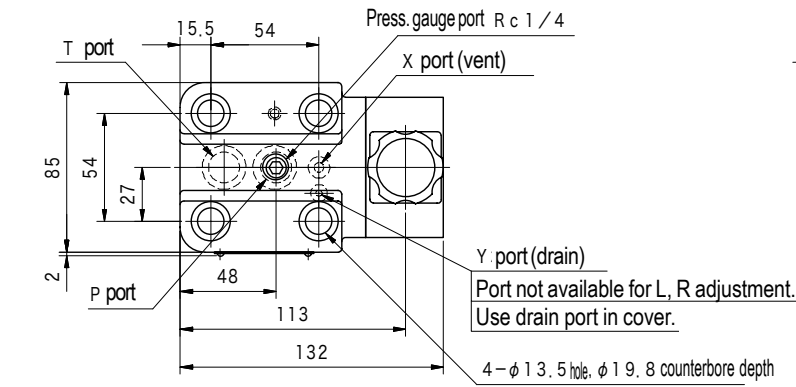
| Valve Model | Subplate | Connection Port Dia. Rc |
|-------------|------------------|-------------------------|
| TCG20-03 | TCGMT-03-10-JA-J | 3/8 |
| TCG20-06 | CGM-06-10-JA-J | 3/4 |
| TCG20-10 | CGM-10-10-JA-J | 1-1/4 |

- Hex socket valve mounting bolts included (unified thread).
- Subplate must be ordered separately.
- See page Q3 for dimensions.

Dimensions

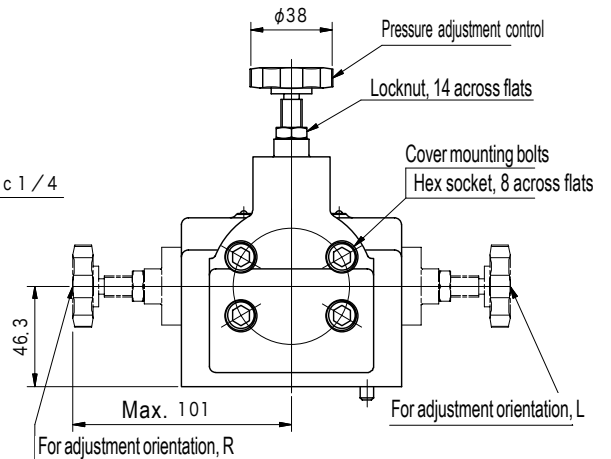
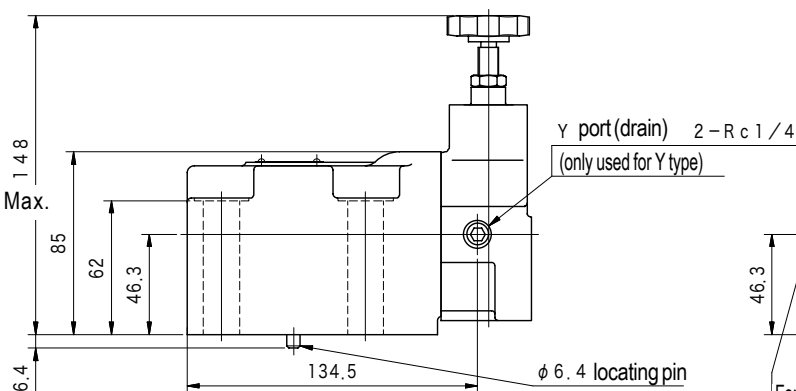
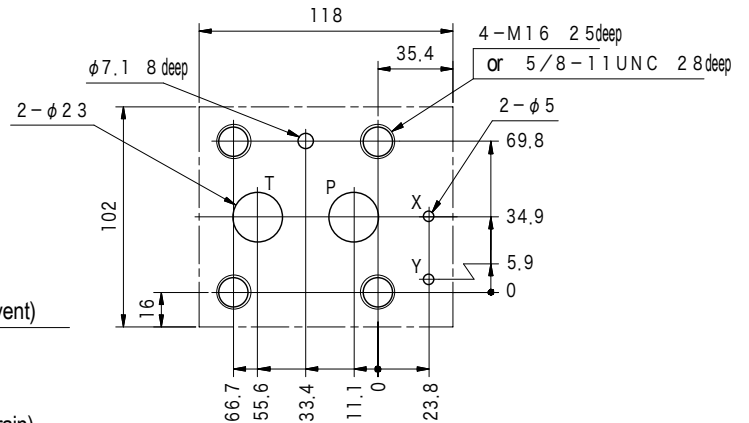
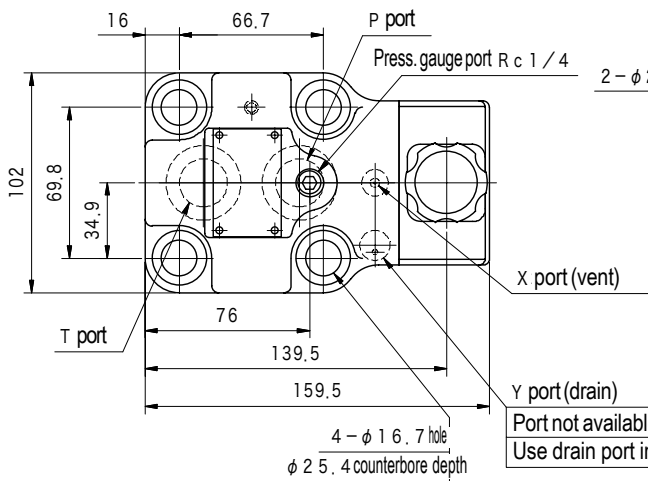
TCG20-03

Mounting Dimensions (ISO 6264-06-A)



TCG20-06

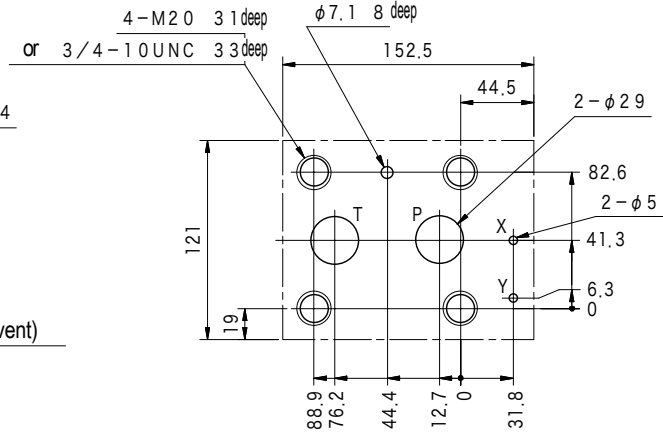
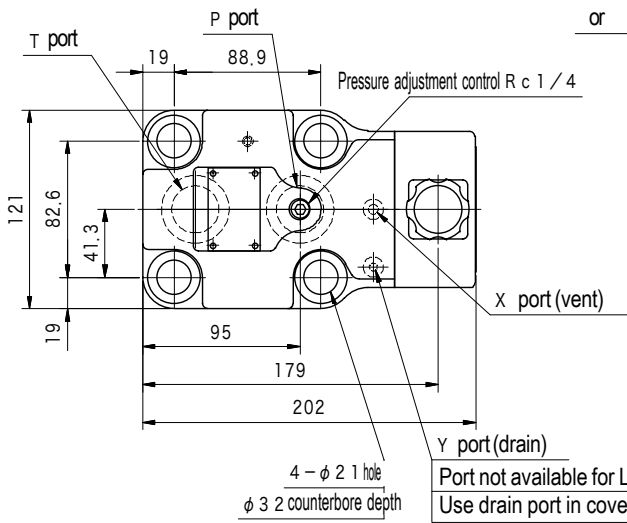
Mounting Dimensions (ISO 6264-08-A)



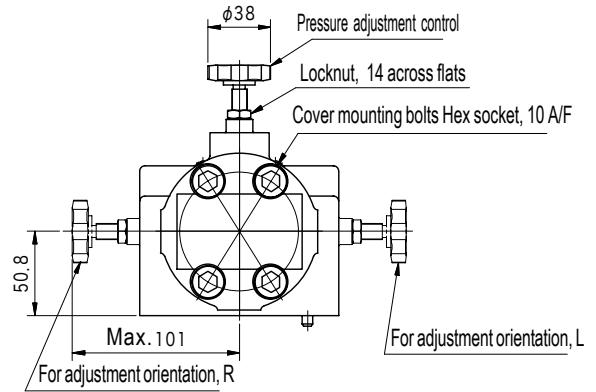
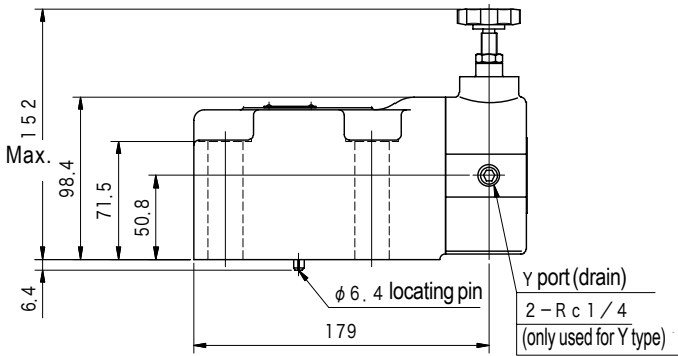
Dimensions

TCG20-10

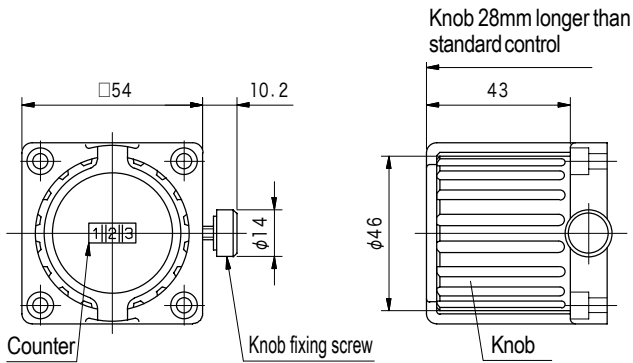
Mounting Dimensions (ISO 6264-10-A)



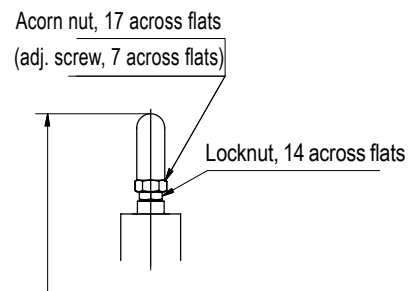
Port not available for L, R adjustment.
Use drain port in cover.



Adjustment with Digital Dial (D4)

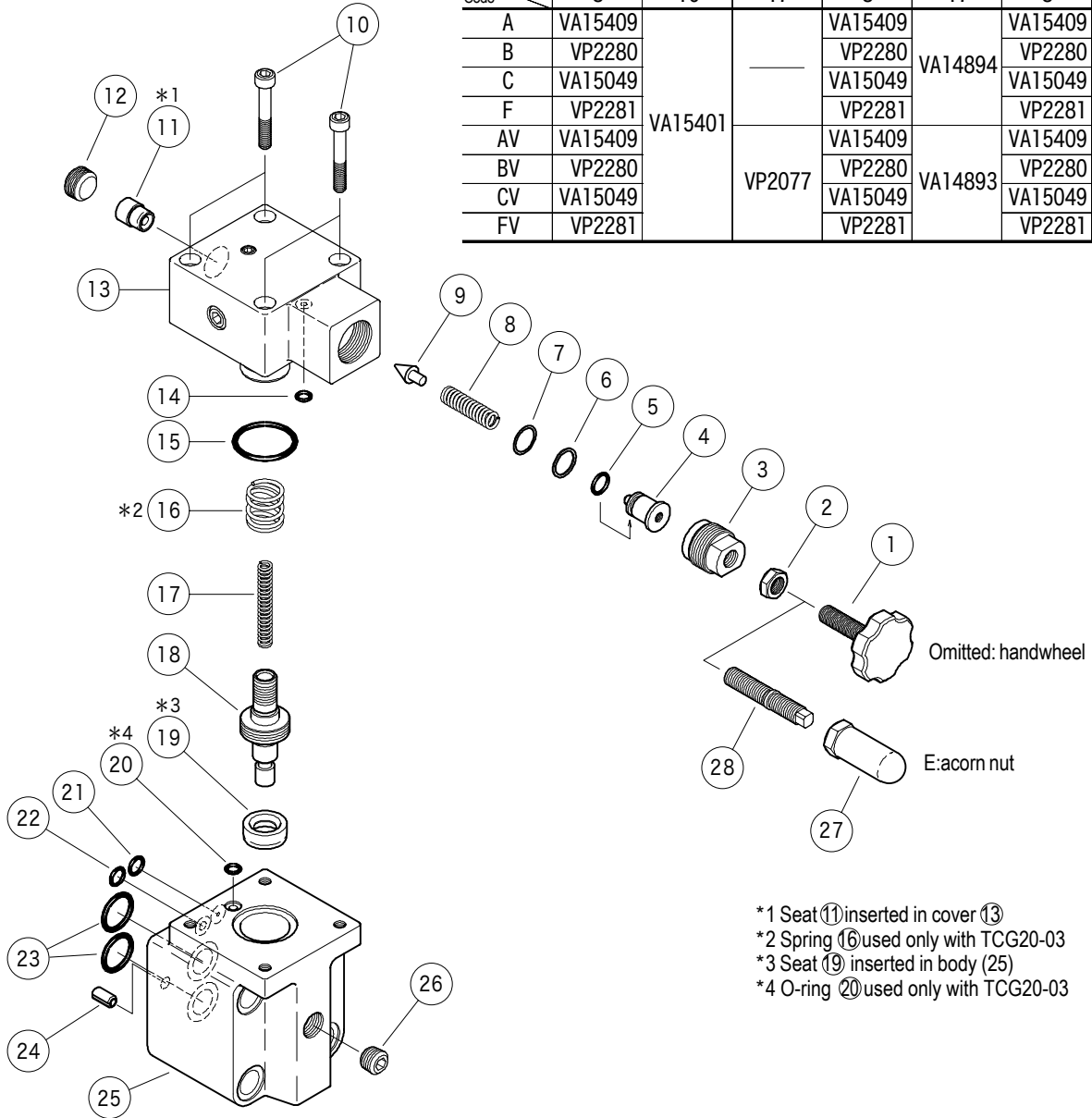


Adjustment with acorn nut (E)



Springs

| Model Code | TCG20-03 | | | TCG20-06 | | TCG20-10 | | | |
|------------|----------|---------|----|----------|---------|----------|---------|---------|---------|
| | No. | 8 | 16 | 8 | 17 | 8 | 17 | | |
| A | VA15409 | VA15401 | | VA15409 | VA14894 | VA15409 | VA15105 | | |
| B | VP2280 | | | VP2280 | | | | | |
| C | VA15049 | | | VA15049 | | | | | |
| F | VP2281 | | | VP2281 | | | | | |
| AV | VA15409 | | | VP2077 | | VA15409 | VA14893 | VA15409 | VA16509 |
| BV | VP2280 | | | | | VP2280 | | | |
| CV | VA15049 | | | | | VA15049 | | | |
| FV | VP2281 | | | | | VP2281 | | | |



- * 1 Seat ⑪ inserted in cover ⑬
- * 2 Spring ⑯ used only with TCG20-03
- * 3 Seat ⑲ inserted in body (25)
- * 4 O-ring ⑳ used only with TCG20-03

O-Rings

TCG20-03

| No. | P/N | Standard | Qty | |
|-----|-----------|-----------------------|-----|--------|
| | | | Std | Y Type |
| 5 | 007901217 | AS568-012 (NBR, Hs70) | 1 | 1 |
| 14 | 007900919 | AS568-009 (NBR, Hs90) | — | 1 |
| 15 | 007912219 | AS568-122 (NBR, Hs90) | 1 | 1 |
| 20 | 007900919 | AS568-009 (NBR, Hs90) | 1 | 1 |
| 21 | 007901119 | AS568-011 (NBR, Hs90) | — | 1 |
| 22 | 007901119 | AS568-011 (NBR, Hs90) | 1 | 1 |
| 23 | 007911519 | AS568-115 (NBR, Hs90) | 2 | 2 |

Note: For type D4, ⑤ 007901517 used for O-ring,

TCG20-10

| No. | P/N | Standard | Qty | |
|-----|-----------|-----------------------|-----|--------|
| | | | Std | Y Type |
| 5 | 007901217 | AS568-012 (NBR, Hs70) | 1 | 1 |
| 14 | 007901219 | AS568-012 (NBR, Hs90) | — | 1 |
| 15 | 007922419 | AS568-224 (NBR, Hs90) | 1 | 1 |
| 21 | 007901219 | AS568-012 (NBR, Hs90) | — | 1 |
| 22 | 007901219 | AS568-012 (NBR, Hs90) | 1 | 1 |
| 23 | 007922019 | AS568-220 (NBR, Hs90) | 2 | 2 |

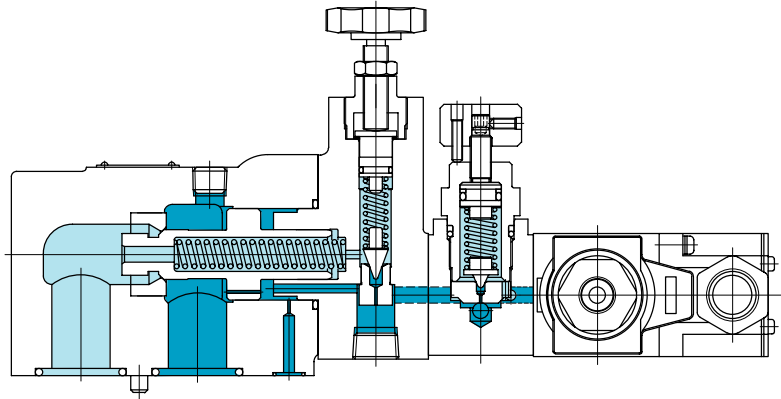
Note: For type D4, ⑤ 007901517 used for O-ring,

TCG20-06

| No. | P/N | Standard | Qty | |
|-----|-----------|-----------------------|-----|--------|
| | | | Std | Y Type |
| 5 | 007901217 | AS568-012 (NBR, Hs70) | 1 | 1 |
| 14 | 007900819 | AS568-008 (NBR, Hs90) | — | 1 |
| 15 | VA11168 | — | 1 | 1 |
| 21 | 007911019 | AS568-110 (NBR, Hs90) | — | 1 |
| 22 | 007901219 | AS568-012 (NBR, Hs90) | 1 | 1 |
| 23 | 007921619 | AS568-216 (NBR, Hs90) | 2 | 2 |

Note: For type D4, ⑤ 007901517 used for O-ring,

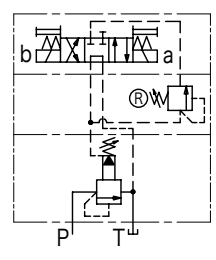
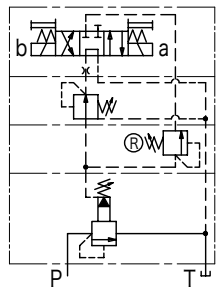
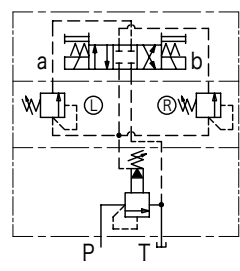
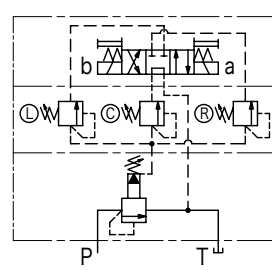
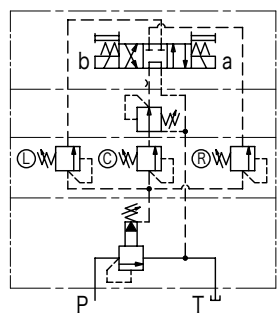
Solenoid controlled multi pressure relief valves TCG50 ~ 80



- In addition to providing safety valve function which releases hydraulic fluid in the case of excessive pressure in the hydraulic circuit, the TCG20 also provides good control of circuit
- Pressure can be set in 2~3 stages by solenoid valve.

Functional Symbols

| Model | Press. Control | Solenoid Energize - Pressure Relationship | | | | Hydraulic Symbol (Internal Drain) | | |
|-------|-----------------|---|------------------------------------|-----|----------------------|-----------------------------------|----------|-------------------------------|
| | | Main Valve Setting Pressure | Remote Control Setting Press. | | | Unload | Standard | w/Vent Unload Shockless Valve |
| | | | Adj. Section Position (See Symbol) | | | | | |
| (L) | (C) | (R) | | | | | | |
| TCG50 | 1Press. Control | Solenoid Energize | --- | --- | --- | --- | | |
| | | --- | --- | --- | Solenoid De-energize | | | |
| TCG60 | 2Press. Control | Solenoid Energize | --- | --- | --- | --- | --- | |
| | | --- | --- | --- | Solenoid De-energize | | | |
| TCG61 | 2Press. Control | --- | --- | --- | Solenoid Energize | --- | --- | |
| | | Solenoid De-energize | --- | --- | --- | | | |
| TCG62 | 2Press. Control | Solenoid a Energize | --- | --- | --- | --- | | |
| | | --- | --- | --- | Solenoid b Energize | --- | | |
| | | --- | --- | --- | --- | Solenoid De-energize | | |

| Model | Press. Control | Solenoid Energize - Pressure Relationship | | | | Hydraulic Symbol (Internal Drain) | | |
|-------|-----------------|---|------------------------------------|-------|---------------------|---|--|-------------------------------|
| | | Main Valve Setting Pressure | Remote Control Setting Press. | | | Unload | Standard | w/Vent Unload Shockless Valve |
| | | | Adj. Section Position (see Symbol) | | | | | |
| | | (L) | (C) | (R) | | | | |
| TCG63 | 3Press. Control | Solenoid a Energize | | | |  |  | |
| | | _____ | _____ | _____ | Solenoid b Energize | | | |
| | | _____ | | | | | | Solenoid De-energize |
| TCG70 | 3Press. Control | _____ | Solenoid a Energize | | |  | _____ | |
| | | _____ | | | | | | Solenoid b Energize |
| | | Solenoid De-energize | _____ | | | | | |
| TCG80 | 3Press. Control | _____ | Solenoid a Energize | | |  |  | |
| | | _____ | | | | | | Solenoid b Energize |
| | | _____ | | | | | | Solenoid De-energize |

Specifications

| Model | Size | Max. Wkg. Press. MPa | Max. Flow L/min | Max. Adjustable Pressure MPa |
|----------------------|------|----------------------|-----------------|------------------------------|
| TCG { 50 80 } -03 | 03 | 21 | 80 | A (V) : 3.5 |
| TCG { 50 80 } -06 | 06 | | 200 | B (V) : 7 |
| TCG { 50 80 } -10 | 10 | | 400 | C (V) : 14 |
| | | | | F (V) : 21 |

Note: Minimum adjustable pressure may differ according to flow. See TCG20 characteristics curve (page C4).

| Model | Weight kg |
|-------------|-----------|
| TCG50-03 | 6.4 |
| TCG60/61-03 | 8.4 |
| TCG62/63-03 | 8.8 |
| TCG70-03 | 9.6 |
| TCG80-03 | 10.4 |
| TCG50-06 | 8.5 |
| TCG60/61-06 | 10.5 |
| TCG62/63-06 | 10.9 |
| TCG70-06 | 11.7 |
| TCG80-06 | 12.5 |
| TCG50-10 | 12.1 |
| TCG60/61-10 | 14.1 |
| TCG62/63-10 | 14.5 |
| TCG70-10 | 15.3 |
| TCG80-10 | 16.1 |

Note: Weights in table are for valves without vent unload shockless valve. Add 1.3kg to above weights for valves with vent unload shockless valve.

Model Code

(F3) - TCG 80 - 06 - F (E) (V) (Y)- A (E) B (E) C (E)- P 2 - T - (R)- 15 - (LH) - (SH)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

- 1** Fluid
Omit for mineral oil, water glycol
F3: phosphate ester
- 2** Solenoid controlled multi-pressure relief valve
- 3** Size
50: 1 pressure control + unload
60: 2 pressure control
61: 2 pressure control
62: 2 pressure control + unload
63: 2 pressure control + unload
70: 3 pressure control
80: 3 pressure control
- 4** Size
See 'Specifications'
- 5** Main valve max. adjustment pressure
See 'Specifications'
- 6** Main valve pressure adjustment
Omit for knob
E: acorn nut, sq. head adj. screw (st'd)
- 7** Vent pressure
Omit for low vent pressure (st'd)
V: high vent pressure
- 8** Drain
Omit for internal drain (st'd)
Y: external drain
- 9** R side remote control valve max. adjustment pressure
See 'Specifications'
- 10** R side remote control valve pressure adjustment
Omit for knob (st'd)
E: acorn nut, sq. head adj. screw
- 11** C side remote control valve max. adjustment pressure
See 'Specifications'
- 12** C side remote control valve pressure adjustment
Omit for knob (st'd)
E: acorn nut, sq. head adj. screw
- 13** L side remote control valve max. adjustment pressure
See 'Specifications'
- 14** L side remote control valve pressure adjustment
Omit for knob (st'd)
E: acorn nut, sq. head adj. screw
- 15** Electrical wiring (configuration, wiring connection port side)
See solenoid valve 'DG4V-3' (page E9)
- 16** Solenoid valve electrical accessories
See solenoid valve 'DG4V-3' (page E9)
- 17** Solenoid valve power supply
See solenoid valve 'DG4V-3' (page E9)
- 18** Pressure adjustment orientation
Omit for up (st'd)
L: left
R: right
) See 'Specifications'
- 19** Design no.
- 20** Solenoid valve, coil orientation (for TCG50, 60, 61)
Omit for right side as viewed from adjust knob side (st'd)
LH: left side as viewed from adj. knob side (for TCG60, 61, solenoid energize, deenergize and setting pressure relationship will be reversed)
- 21** Shockless function
Omit for without shockless function
SH: vent unload shockless valve (TGMSL-3) for TCG50, 62, 63, 80

Notes On Use

- In the case of high tank line pressure or when pressure fluctuation is large, connect drain line directly to tank by using the external drain (Y) type valve.
- Pressure setting may be unstable in the case of low flow. To avoid this, the 03 series should be used at flows above 3 L/min, 06, 10 series at flows above 5 L/min.
- For faster response from unload to onload, use the high vent pressure (V) model.
- For multistage pressure control, the TGMCR-**-3 module is incorporated below the solenoid valve. For multistage pressure control of the TCG62, 63, and 70, the main valve should be set at the highest pressure. For TCG80, the main valve pressure should be set at the highest multistage control pressure.
- Loosen the lock nut and turn handle to the right to increase the setting pressure and left to decrease the setting.
- The main valve of the vent unload shockless valve (TGMSL-3) will function only during unload. (It will be in effect only when solenoid of TCG50, 62, and 63 is off or when the adjustment section (C) of the TCG80 is set at unload.)
- The vent unload shockless valve will not function when the adjustment screw is loosened. When the screw is in the completed loosened position, the vent line closes and the main valve will not unload, so adjust to an optimal midposition.
- When using an external drain valve with subplate, pipe drain from valve directly.

Mounting Bolts (JIS B1176, Strength Class 12.9)

| Valve Model | Hex. Socket Bolts | | Qty |
|-------------|-------------------|-------------------|-----|
| | Metric | Unified | |
| TCG**-03 | M12 × 80 | 1/2-13UNC × 82.5 | 4 |
| TCG**-06 | M16 × 85 | 5/8-11UNC × 82.5 | 4 |
| TCG**-10 | M20 × 100 | 3/4-10UNC × 101.6 | 4 |

- Mounting bolts must be ordered separately.
- Mounting bolts tightening torque
TCG**-03: 72~88 Nm
TCG**-06: 90~110 Nm
TCG**-10: 180~220 Nm

Subplate

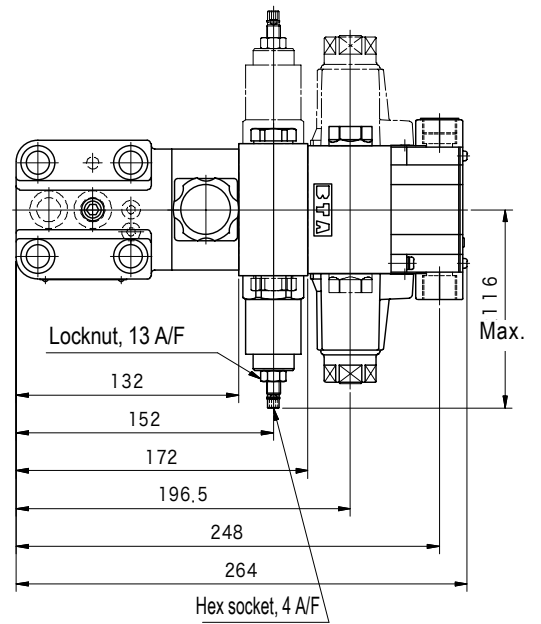
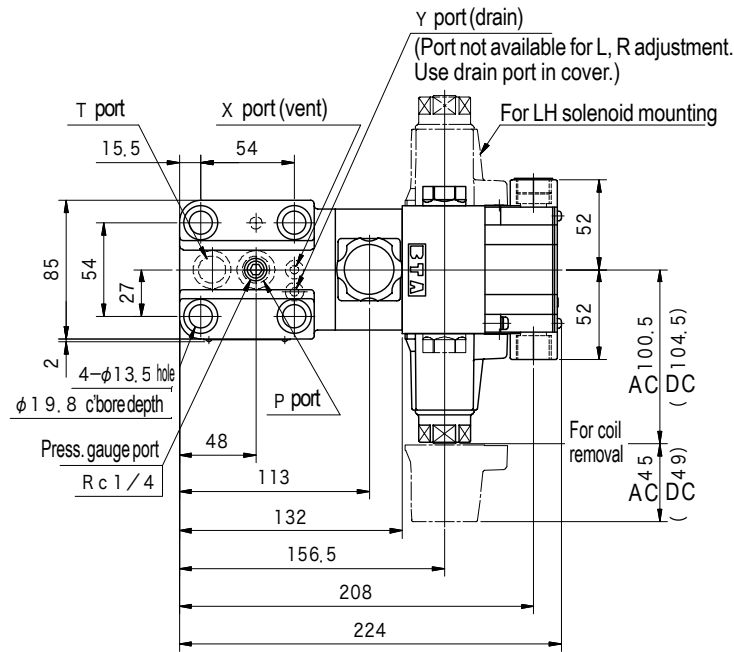
| Valve Model | Subplate | Connection Port Dia. Rc |
|-------------|------------------|-------------------------|
| TCG**-03 | TCGMT-03-10-JA-J | 3/8 |
| TCG**-06 | CGM-06-10-JA-J | 3/4 |
| TCG**-10 | CGM-10-10-JA-J | 1-1/4 |

- Hex socket bolts for valve mounting are provided (unified thread).
- Order subplates separately.
- See page Q3 for details on dimensions.

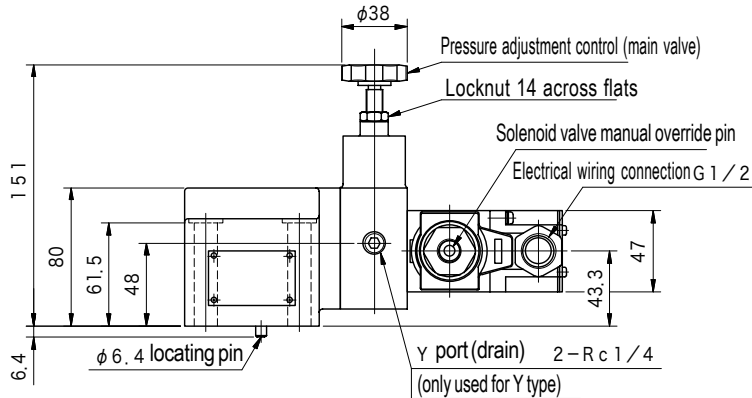
Dimensions

TCG50-03

With Vent Unload Shockless Valve (S H)



Example of valve with plug-in coil and conduit box type solenoid pilot directional valve

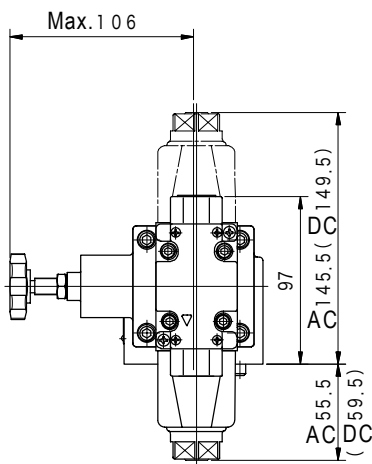


■ Press. adjustment control orientation, per Model Code 18

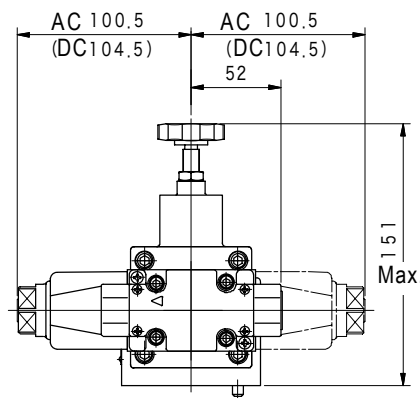
● Gasket surface drain port not used for types, R, L

● Solenoid valve configurations

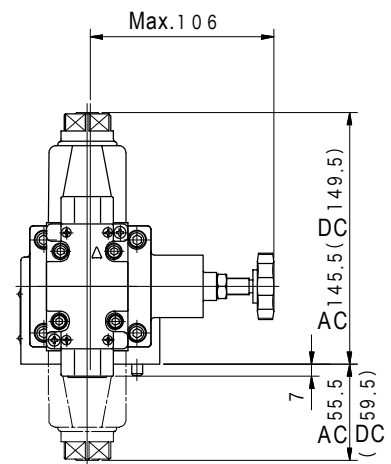
TCG50, TCG60, TCG61 solid lines
 TCG50-LH, TCG60-LH, TCG61-LH dash lines
 TCG62, TCG63, TCG70, TCG80 solid - dash lines



R Type



Omitted (Standard)



L Type



PRESSURE CONTROL VALVES

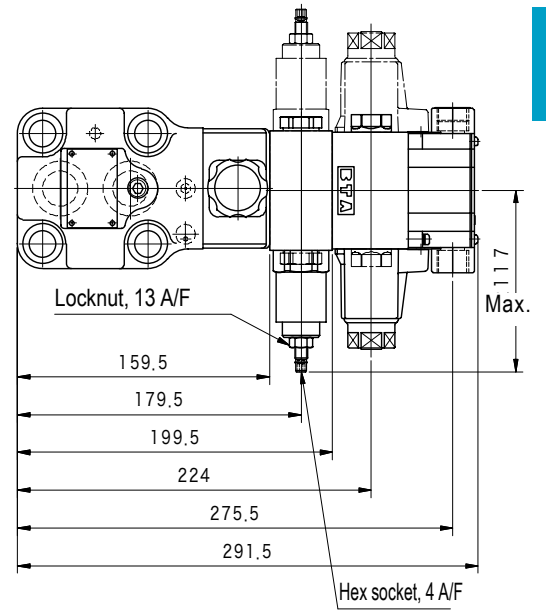
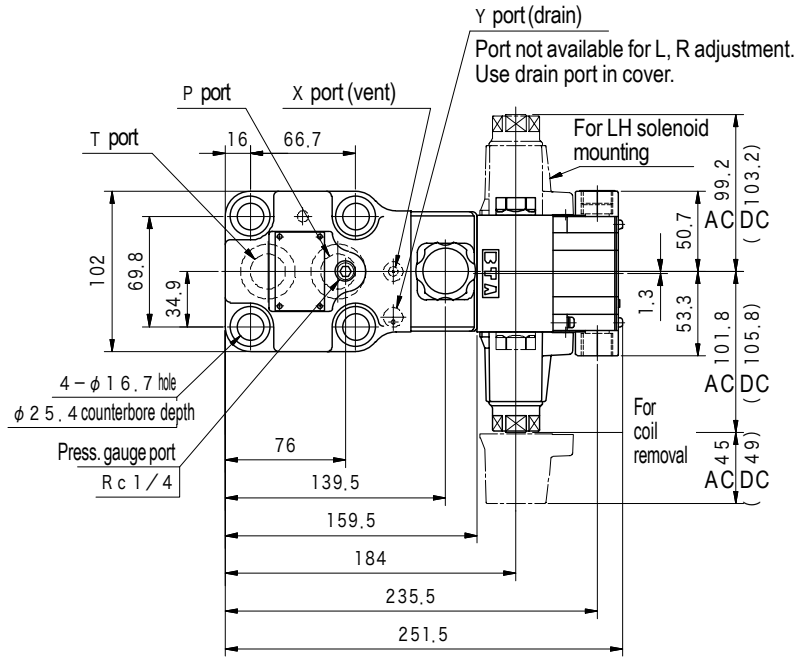
Dimensions

TCG50-06

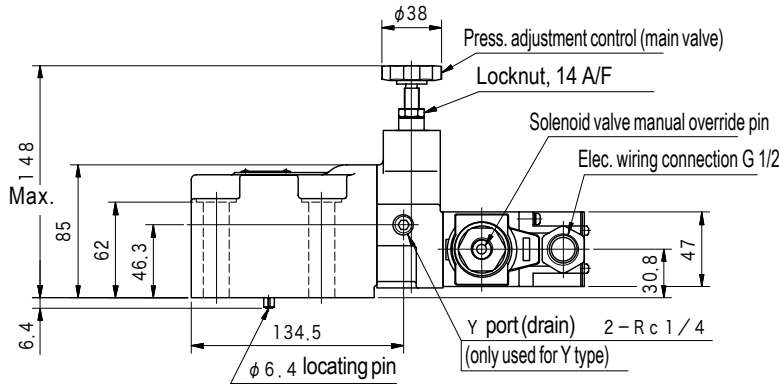
With Vent Unload Shockless Valve (S H)



PRESSURE CONTROL VALVES



Example of valve with plug-in coil and conduit box type solenoid pilot directional valve



■ Press. adjustment control orientation, per Model Code 18

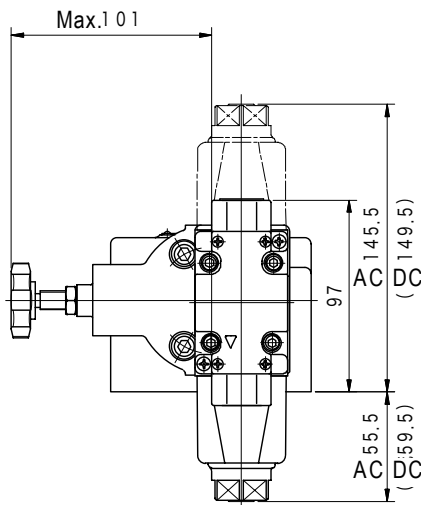
● Gasket surface drain port not used for types, R, L

● Solenoid valve configurations

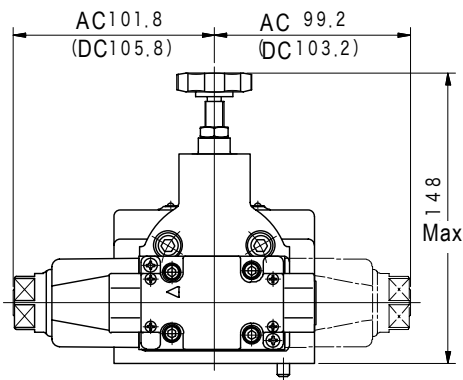
TCG50, TCG60, TCG61 solid lines

TCG50-LH, TCG60-LH, TCG61-LH dash lines

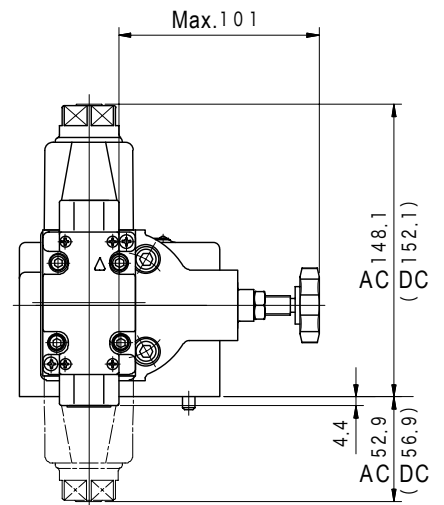
TCG62, TCG63, TCG70, TCG80 solid - dash lines



R Type



Omitted (Standard)

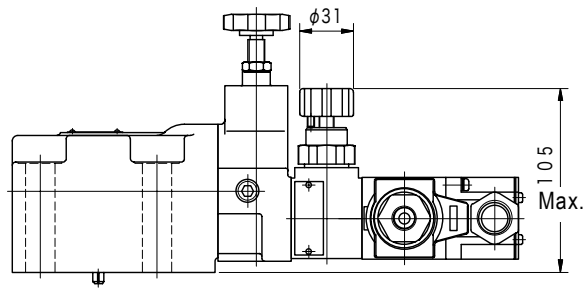
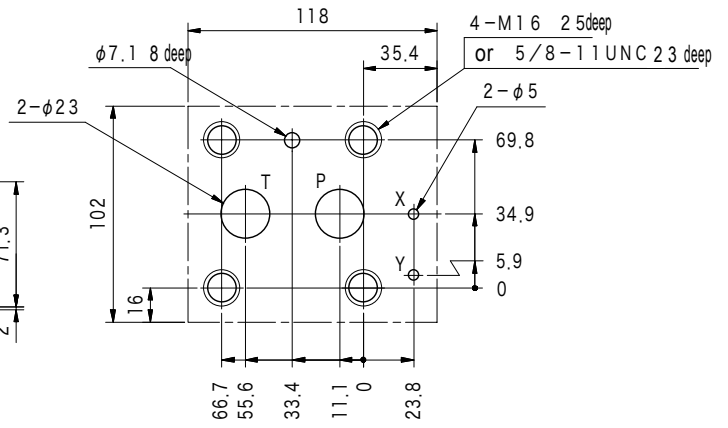
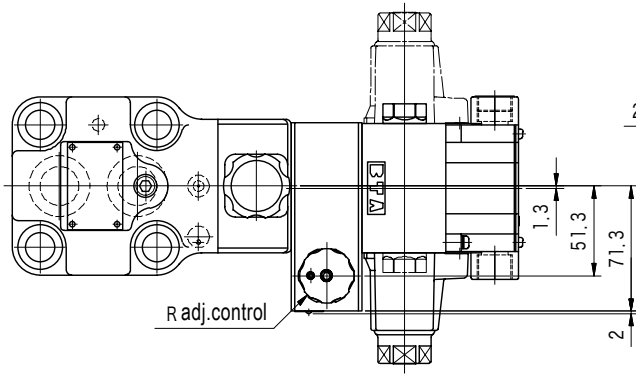


L Type

Dimensions

TCG60/61-06

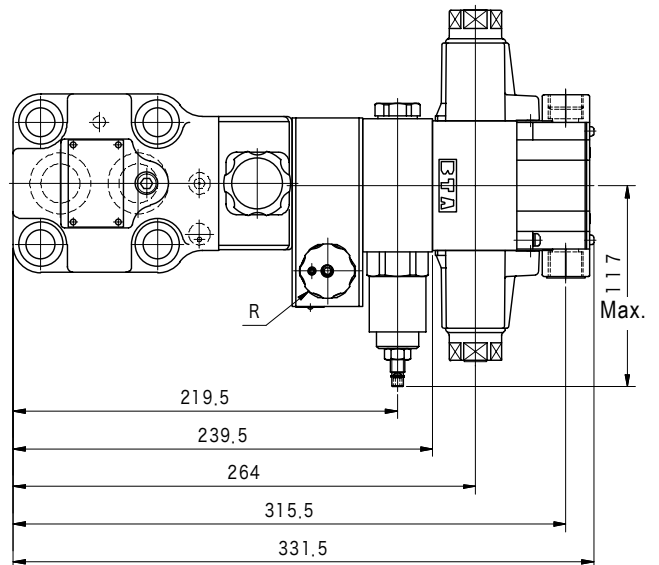
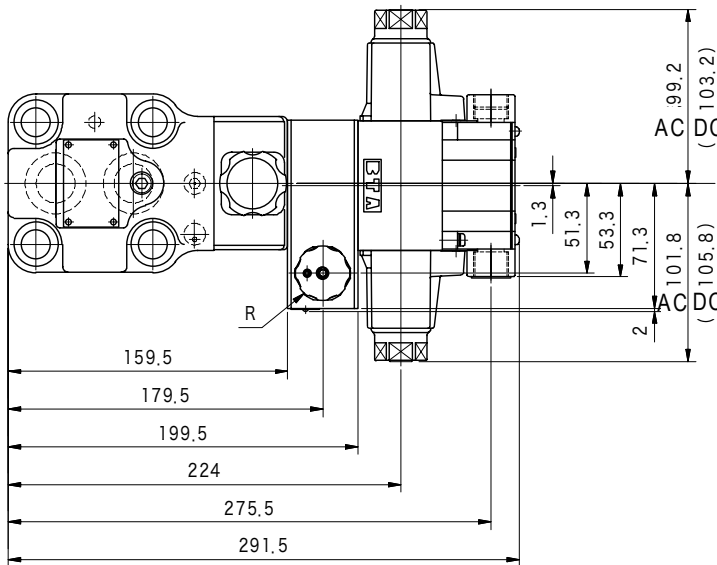
Mounting Dimensions (ISO 6264-08-A)



C14 PRESSURE CONTROL VALVES

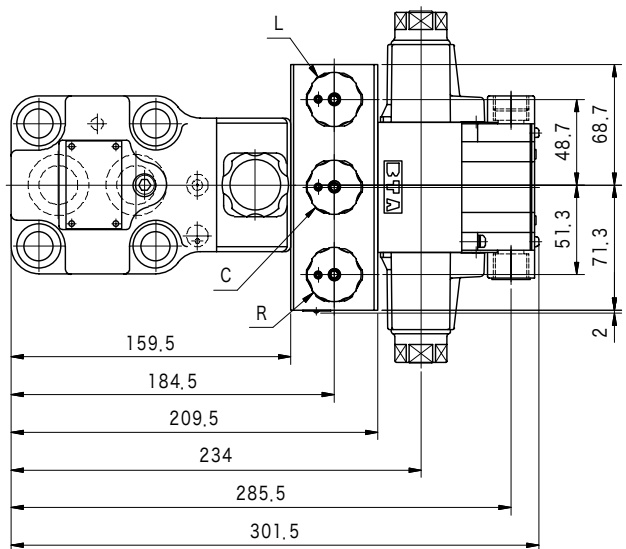
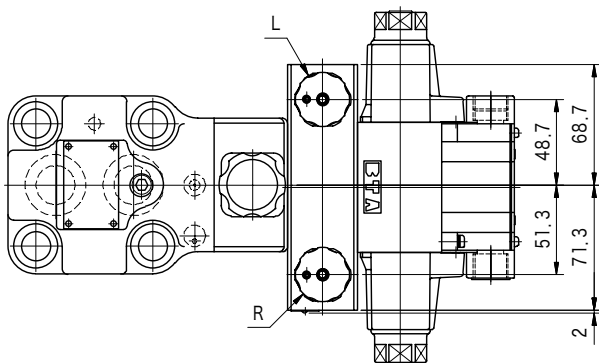
TCG62/63-06

TCG62/63-06-SH



TCG70-06

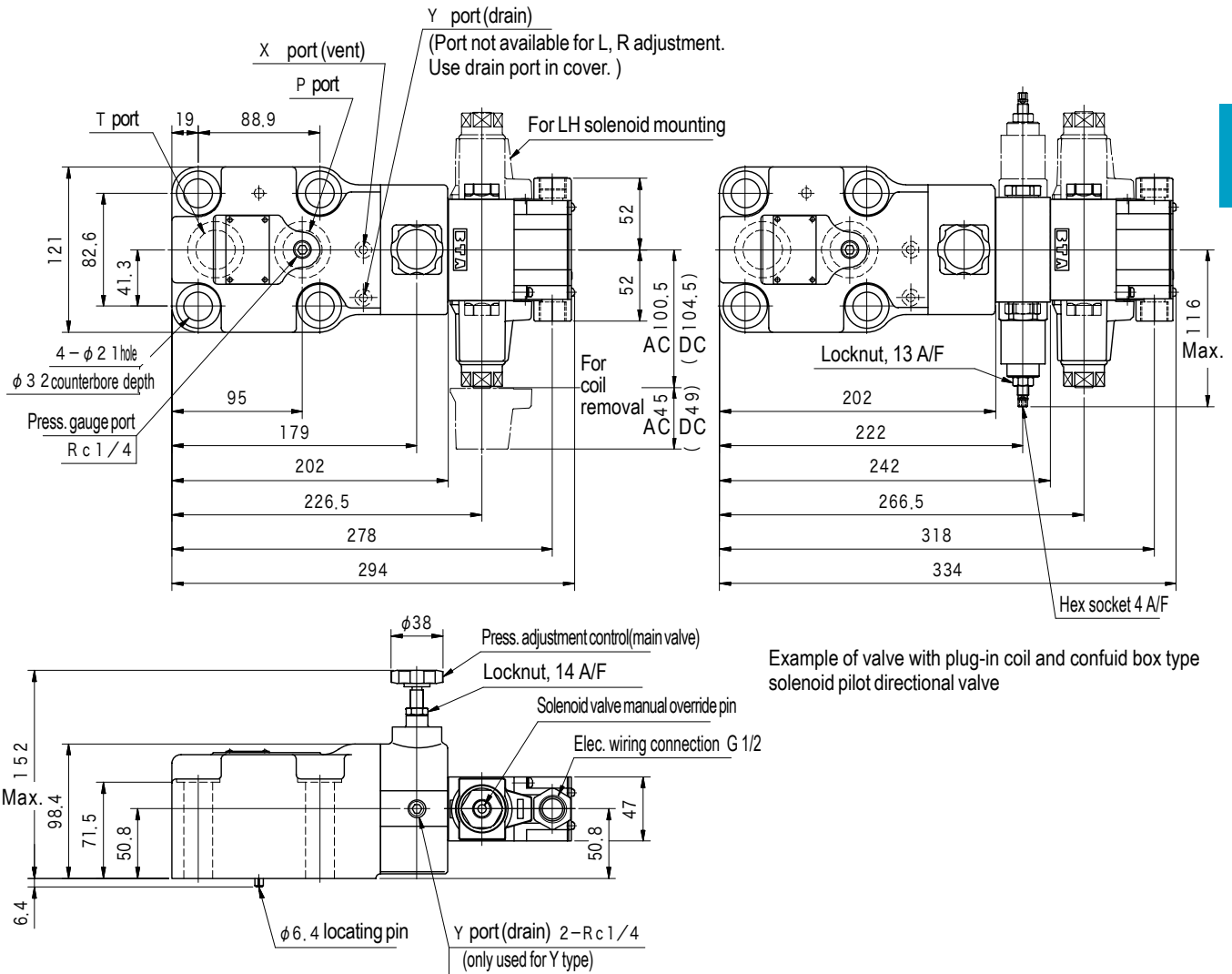
TCG80-06



Dimensions

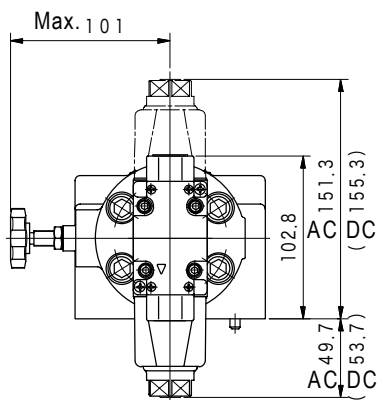
TCG50-10

With Vent Unload Shockless Valve (S H)

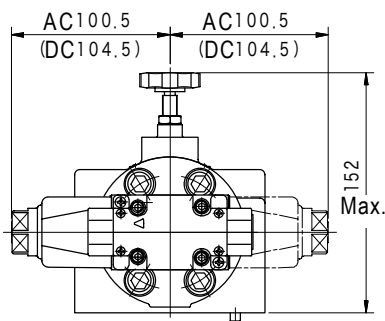


Example of valve with plug-in coil and confuid box type solenoid pilot directional valve

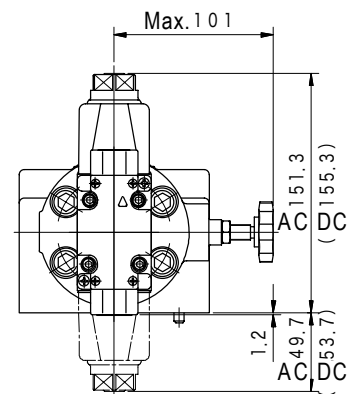
- Press. adjustment control orientation, per Model Code 18
 - Gasket surface drain port not used for types, R, L
 - Solenoid valve configurations
- TCG50, TCG60, TCG61 solid lines
- TCG50-LH, TCG60-LH, TCG61-LH..... dashed lines
- TCG62, TCG63, TCG70, TCG80 solid - dashed lines



R Type



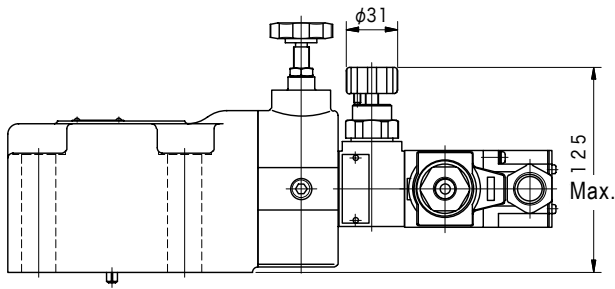
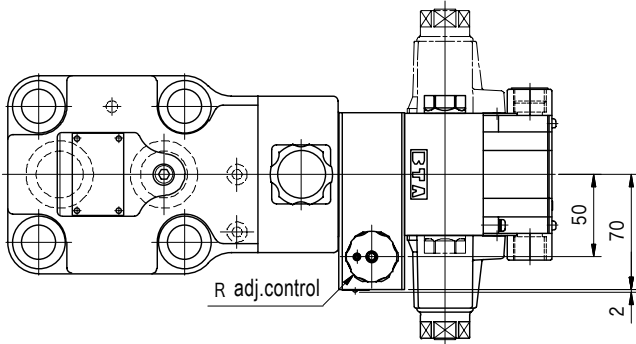
Omitted (Standard)



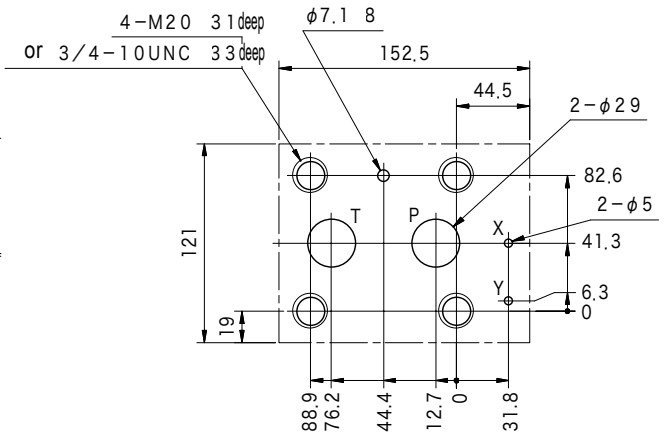
L Type

Dimensions

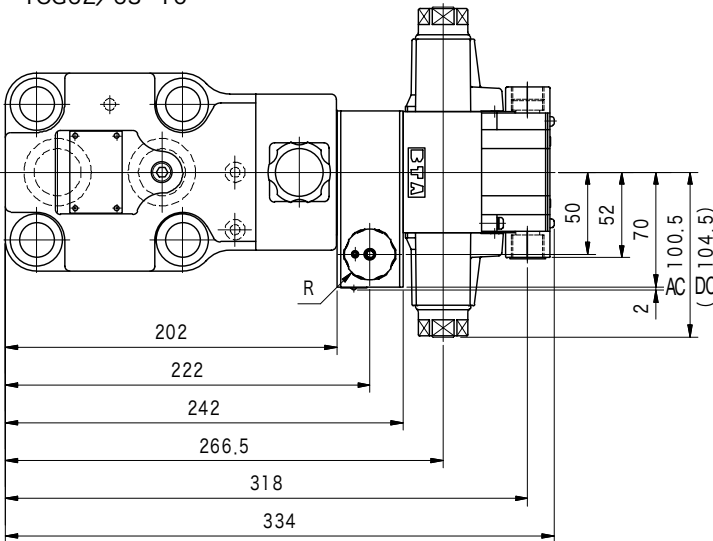
TCG60/61-10



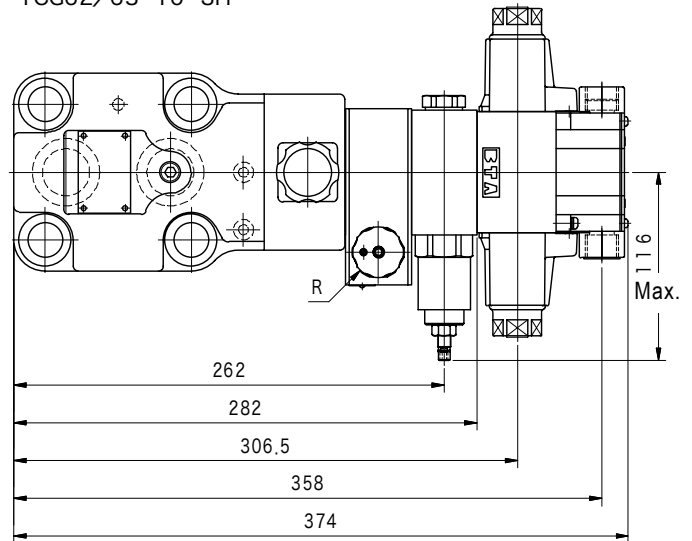
Mounting Dimensions (ISO 6264-10-A)



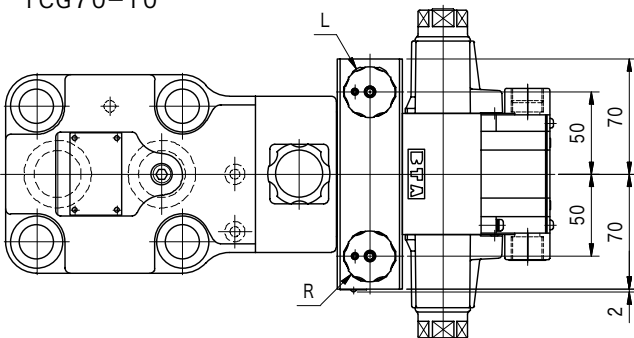
TCG62/63-10



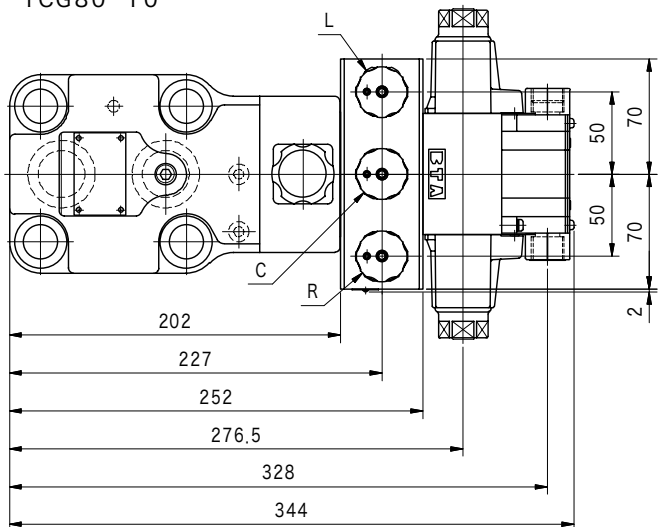
TCG62/63-10-SH



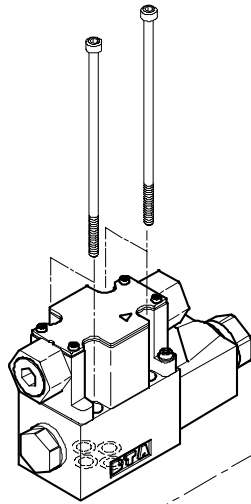
TCG70-10



TCG80-10



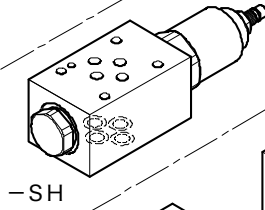
See DG4V-3
(page E9)



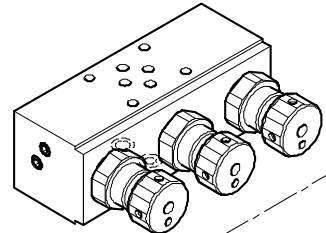
TCG62, 63, 70, 80

TCG50, 60, 61

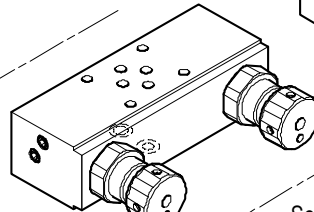
See TGMSL-3
(page C36)



-SH

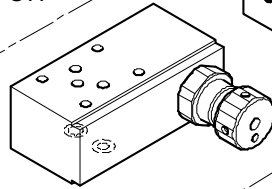


TCG80



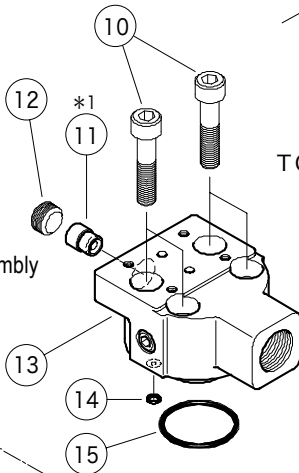
TCG70

See TGMCR-3
(page C32)

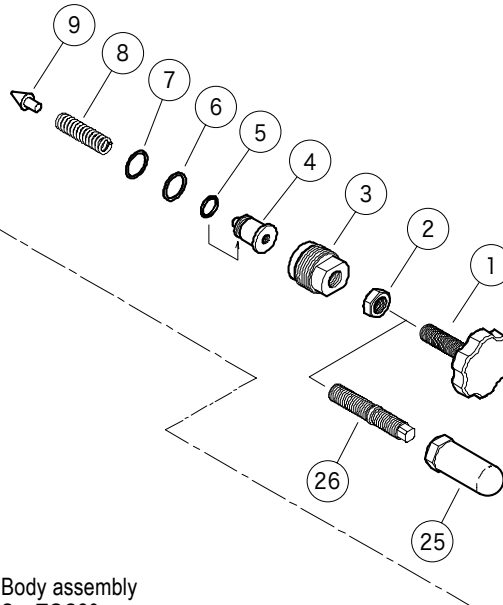


TCG60, 61, 62, 63

Cover assembly
See TGC20
(page C7)



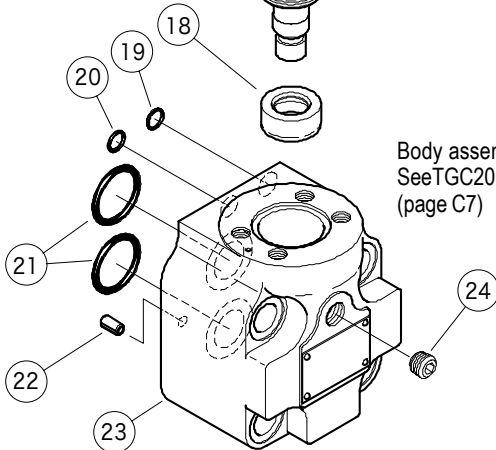
● See TCG20 for O-ring, spring P/Ns
(page C7)



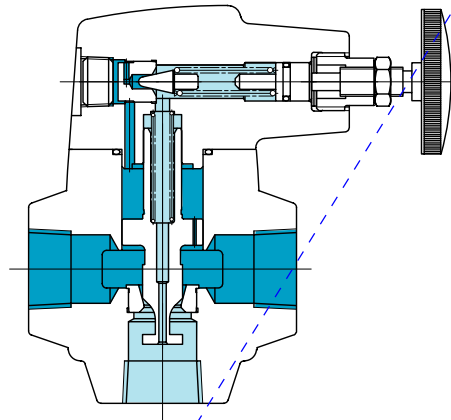
Omitted: handwheel

E: acorn nut

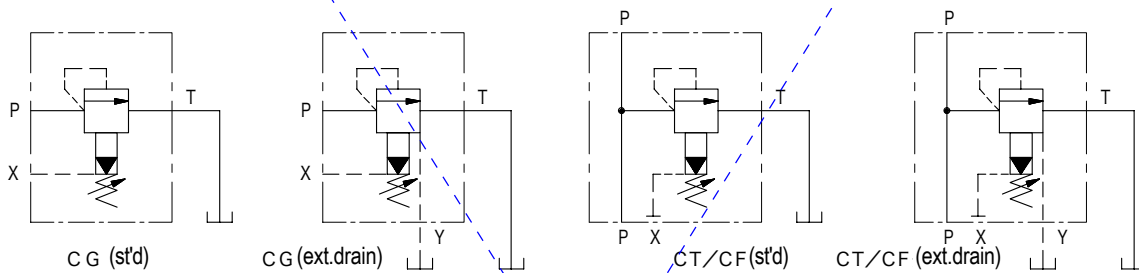
Body assembly
See TGC20
(page C7)



Relief valves CG,CT,CF



Functional Symbols



Model Code

(F3) - CG-03 - B(V) (Y)-15 - (S81) - JA - J (except for CT-03)

1 2 3 4 5 6 7 8

(F3) - CG-03 - B(V) (Y) - JA - 10 - (S81) - J (for CT-03)

1 2 3 4 5 6 7 8

NOT AVAILABLE
SEE TCG20

- | | |
|--|--|
| <p>1 Fluid Omit for mineral oil, water-glycol F3: phosphate ester</p> <p>2 Relief valve CG: gasket mount CT: thread connection CF: flange connection</p> <p>3 Size See 'Specifications'</p> <p>4 Max. adjustment pressure See 'Specifications'</p> <p>5 Vent pressure Omit for low vent pressure (st'd) V: high vent pressure</p> | <p>6 Drain Omit for internal drain (st'd) Y: external drain</p> <p>7 Design no. 10: CT-03, CF-16, CF-24 15: CG-03 20: CT-10 40: CT-06</p> <p>8 Adjuster configuration (for CG/CT-03 only) Omit for sq. head adj. screw S81: handwheel (omit for CT-06/10, CR-16/24, handwheel st'd)</p> <p>9 Control code 'J' except for CG-03 with internal drain</p> |
|--|--|

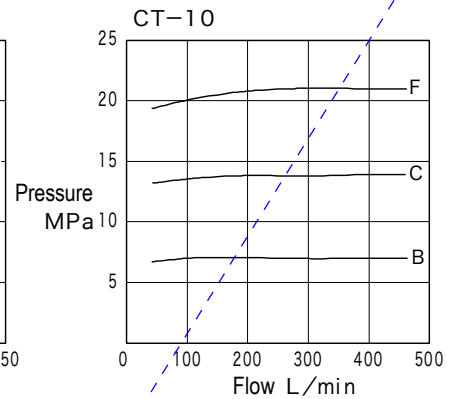
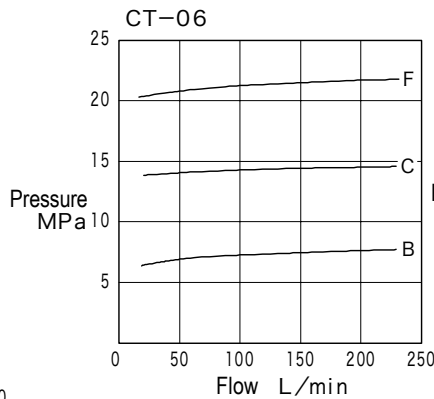
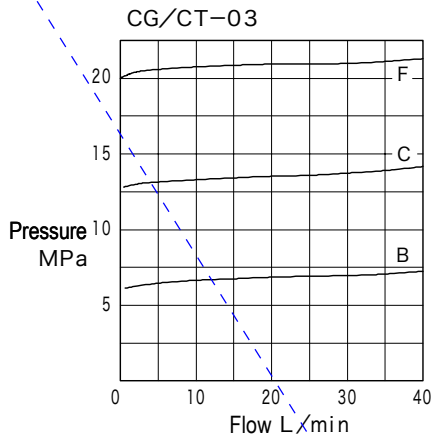
Specifications

| Model Code | | | Size | Max. Wkg. Pressure MPa | Max. Flow L/min | Maximum Adjustable Pressure MPa | Weight kg |
|--------------|---------------------|-------------------|------|------------------------|-----------------|---------------------------------|----------------------|
| Gasket Mount | Threaded Connection | Flange Connection | | | | | |
| CG-03 | CT-03 | — | 03 | 21 | 40 | B (V) : 7 | CG : 3.0 CT : 2.5 |
| — | CT-06 | — | 06 | | 200 | C (V) : 14 | 2.7 |
| — | CT-10 | — | 10 | | 400 | | 4.6 |
| — | — | CF-16 | 16 | | 500 | F (V) : 21 | 17 |
| — | — | CF-24 | 24 | | 1200 | | 46 |
| — | — | — | — | | — | — | — |

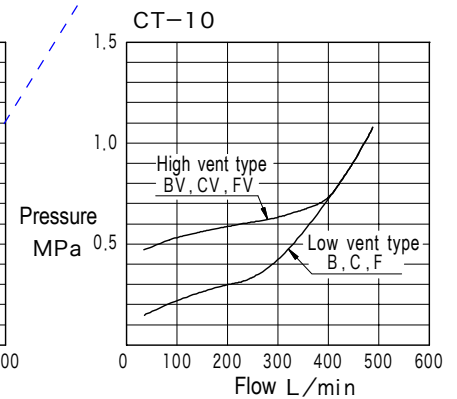
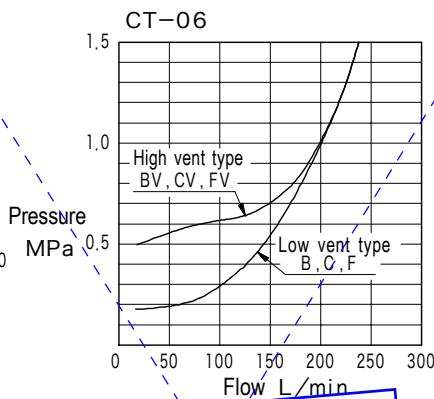
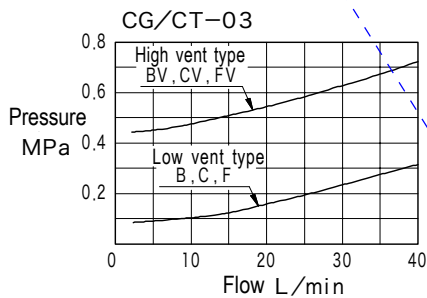
Note: Minimum adjustable pressure may vary with flow. See characteristics curves.

Performance Curves (at 20 mm²/s)

● Flow-Pressure Characteristics



● Flow-Minimum Adjustable Pressure Characteristics



NOT AVAILABLE

Notes On Use

- When pressure in the tank line is high or when pressure fluctuation is large, use external drain (Y) type valve and pipe drain line directly to tank.
- For faster response from unload to onload, use high vent pressure (V) type.
- Pay attention to flow-pressure characteristics when setting pressure.
- When using as unload valve, refer to flow-minimum adjustment pressure characteristics to select valve size.
- Pressure adjustment handle is not supplied with CG/CT-03. If handle is desired, specify S81 at the end of the model code after the design no.
- Loosen locknut and turn handle to right to increase setting pressure and left to decrease.

Mounting Bolts (JIS B1176, Strength Class 12.9)

| Valve Model | Hex. Socket Bolts | | Qty |
|-------------|-------------------|------------------|-----|
| | Metric | Unified | |
| CG-03 | M12 × 55 | 1/2-13UNC × 57.1 | 4 |

- Mounting bolts must be ordered separately.
- Mounting bolts tightening torque: 72~88 Nm

Subplate

| Valve Model | Subplate | Connection Port Dia. Rc |
|-------------|-----------------|----------------------------|
| CG-03 | CGMT-03-10-JA-J | 3/8 |

- Hex socket bolts for valve mounting are provided (unified thread).
- Order subplates separately.
- See page Q3 for details on dimensions.

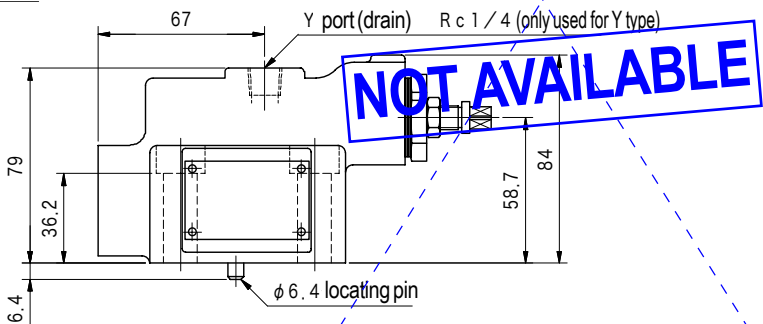
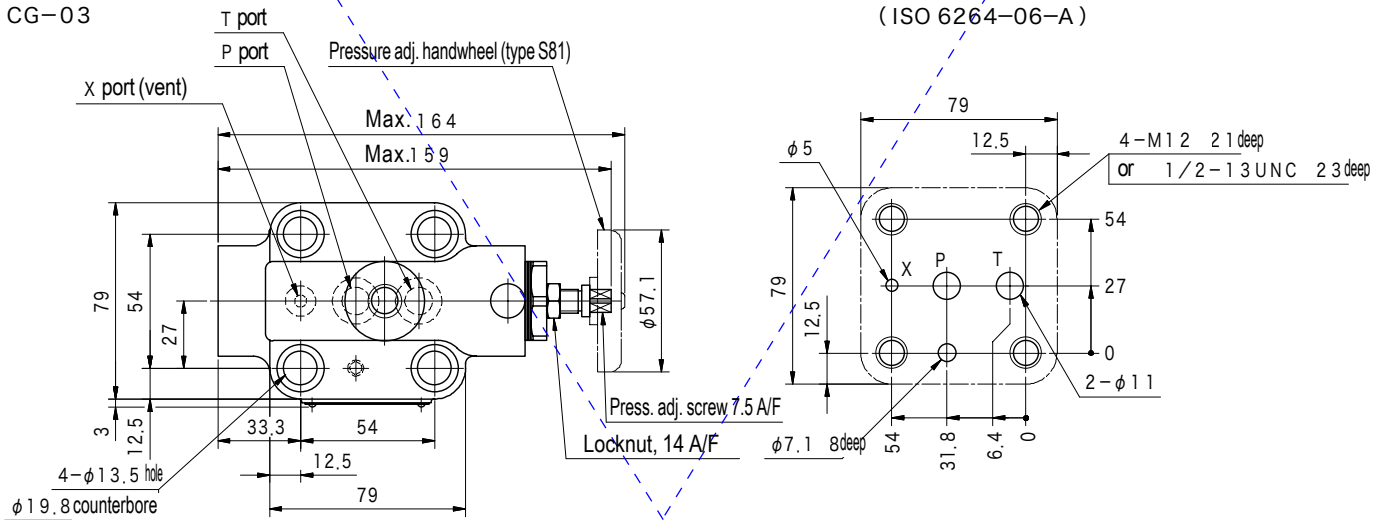
Piping Flange

| Valve Model | Flange | | | |
|-------------|--------------------|------------------|-------|--------------------|
| | Connection Port Rc | Threaded | Size | Welded |
| | | Straight Flange | | Straight Flange |
| CF-16 | 1-1/2 | FL-12-PS-20-JA-J | 1-1/2 | FL-12-TS-20-JA-S18 |
| | 2 | FL-16-PS-20-JA-J | 2 | FL-16-TS-20-JA-S18 |
| CF-24 | 2-1/2 | FL-20-PS-20-JA-J | 2-1/2 | FL-20-TS-20-JA-S18 |
| | 3 | FL-24-PS-20-JA-J | 3 | FL-24-TS-20-JA-S18 |

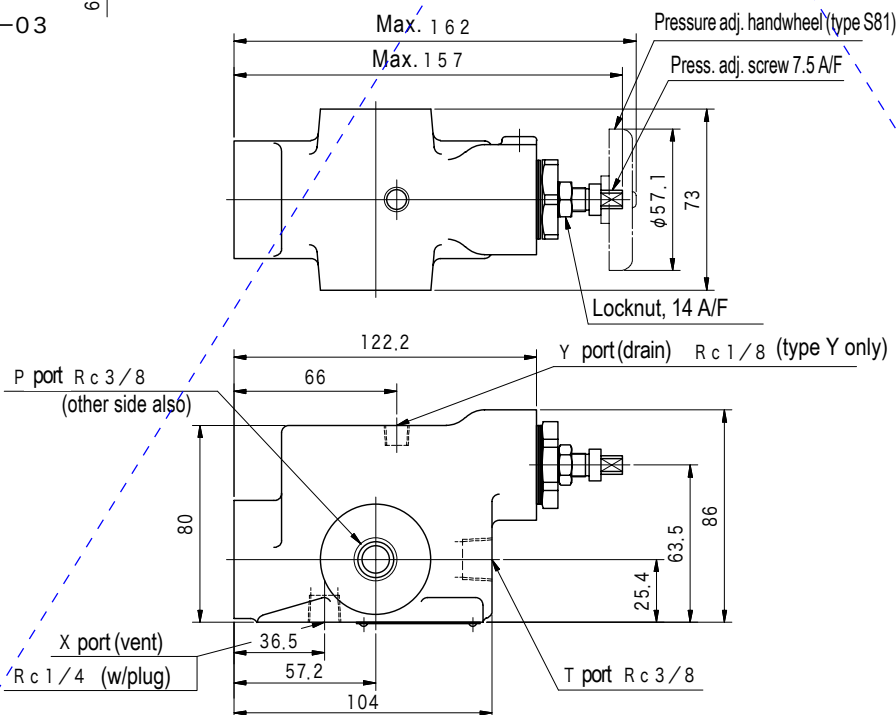
- Mounting bolts, spring washers, and O-rings.
- Flanges must be ordered separately.
- See page Q14 for dimensions.
- Mounting bolts tightening torque
 CF-16: 108~132 Nm
 CF-24: 200~300 Nm

Dimensions

CG-03

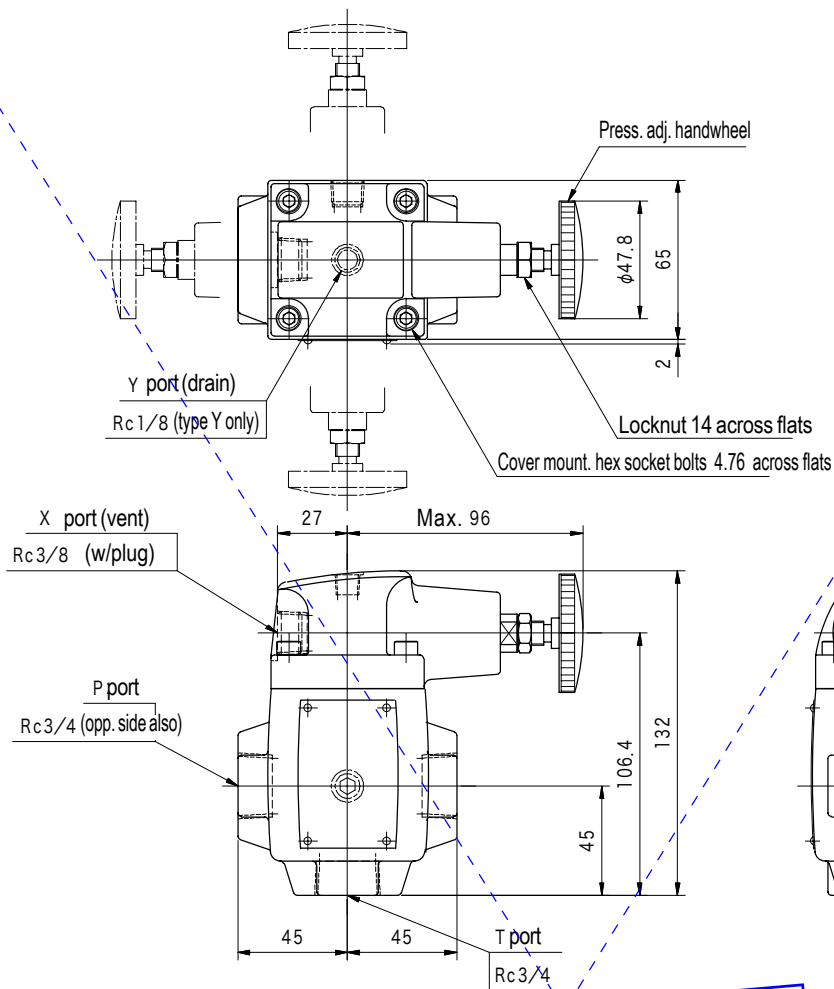


CT-03



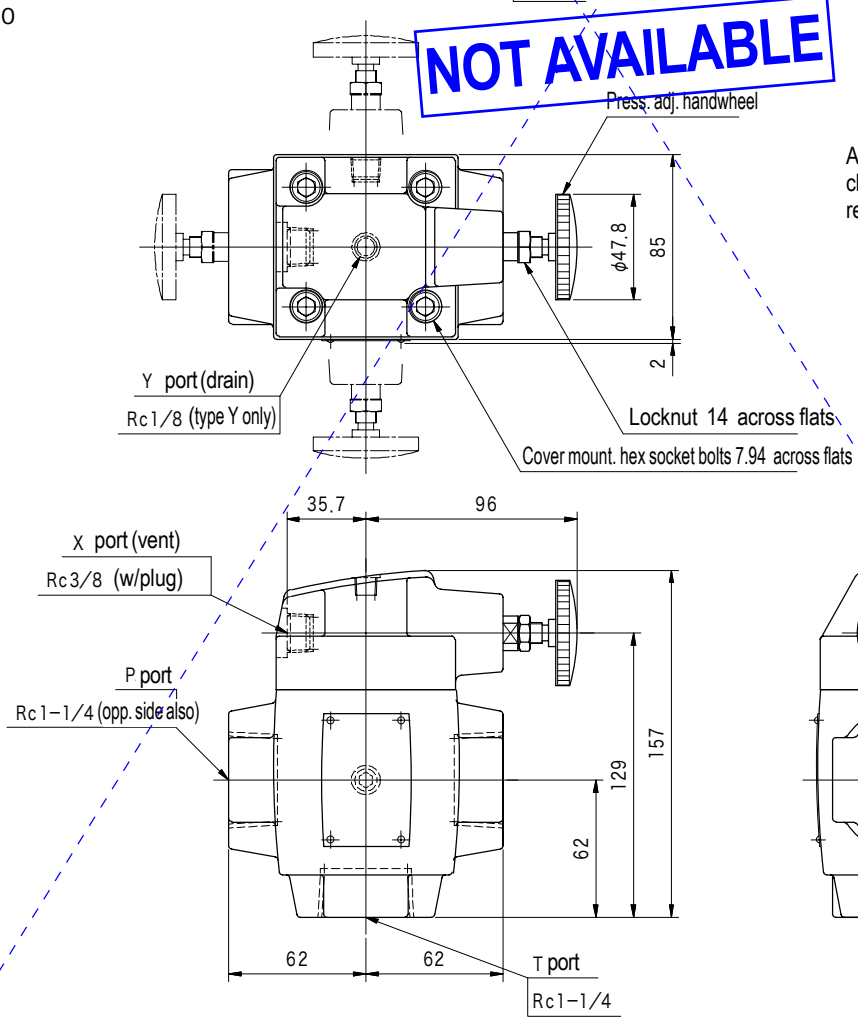
Dimensions

CT-06



Adj. control handwheel orientation can be changed in 90 degree increments by removing cover bolts and rotating cover.

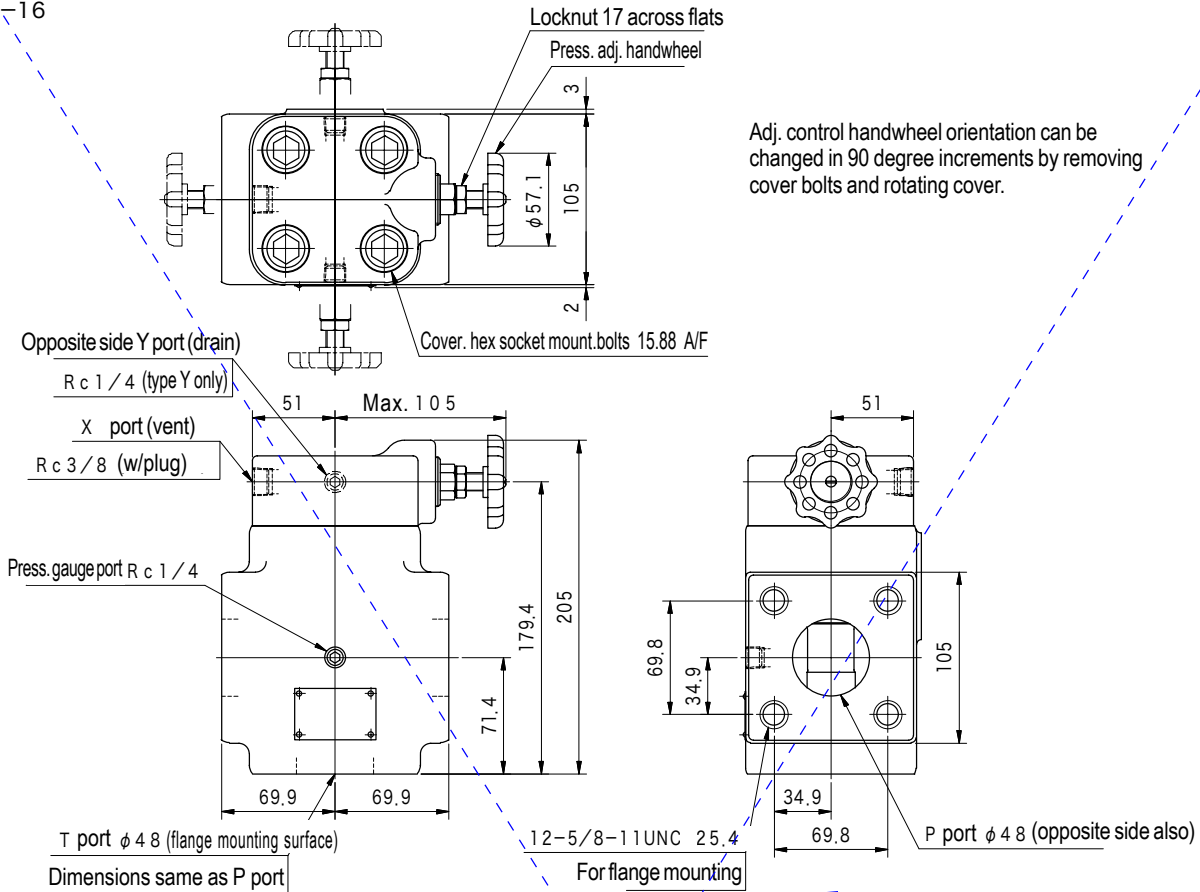
CT-10



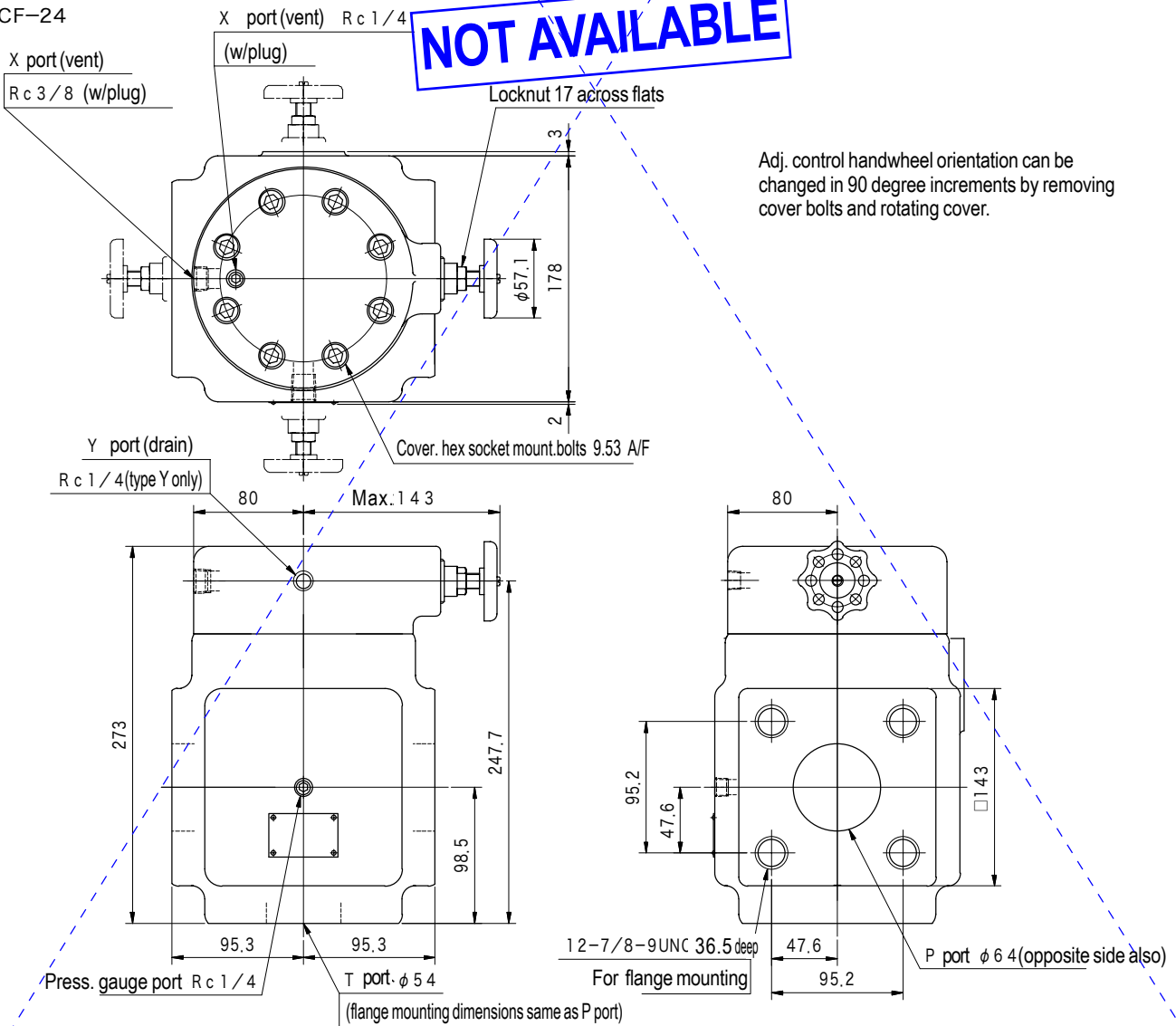
Adj. control handwheel orientation can be changed in 90 degree increments by removing cover bolts and rotating cover.

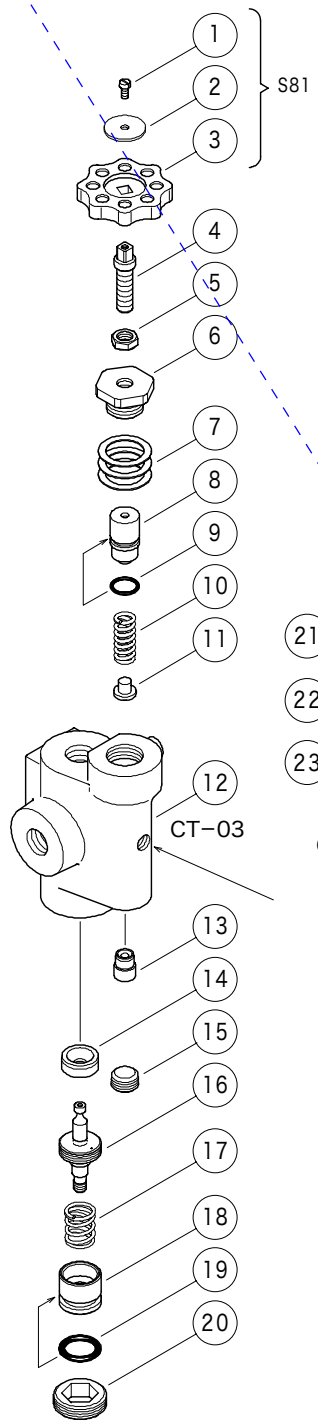
Dimensions

CF-16



CF-24





Springs (CG/CT-03)

| Code | ⑰ Part No | ⑩ Part No |
|------|-----------|-----------|
| B | VP175070 | VP175071 |
| C | | VP175072 |
| F | | VP175073 |
| BV | VP184458 | VP175071 |
| CV | | VP175072 |
| FV | | VP175073 |

O-Rings

| Model | | CG-03 | | | CT-03 | | |
|-------|-----------|-----------------------|-----|-----------|-----------------------|-----|--|
| No. | Part No | Standard | Qty | Part No | Standard | Qty | |
| 9 | 007901517 | AS568-015 (NBR, Hs70) | 1 | 007901517 | AS568-015 (NBR, Hs70) | 1 | |
| 19 | 007921017 | AS568-210 (NBR, Hs70) | 1 | 007921017 | AS568-210 (NBR, Hs70) | 1 | |
| 22 | 007911317 | AS568-113 (NBR, Hs70) | 2 | | | | |
| 23 | 007901117 | AS568-011 (NBR, Hs70) | 1 | | | | |

Springs (CT-06/10)

| Model | | CT-06 | | | CT-10 | | |
|-------|---------|--------|---|---|---------|----------|----------|
| Code | No. | ⑨ | ⑰ | ⑱ | ⑨ | ⑰ | |
| B | VP2280 | VP2077 | | | VP2280 | VP291822 | |
| C | VP2282 | | | | VP2282 | | |
| F | VA14233 | | | | VA14233 | | |
| BV | VP2280 | | | | VA16462 | VP2280 | VP291821 |
| CV | VP2282 | | | | | VP2282 | |
| FV | VA14233 | | | | | VA14233 | |

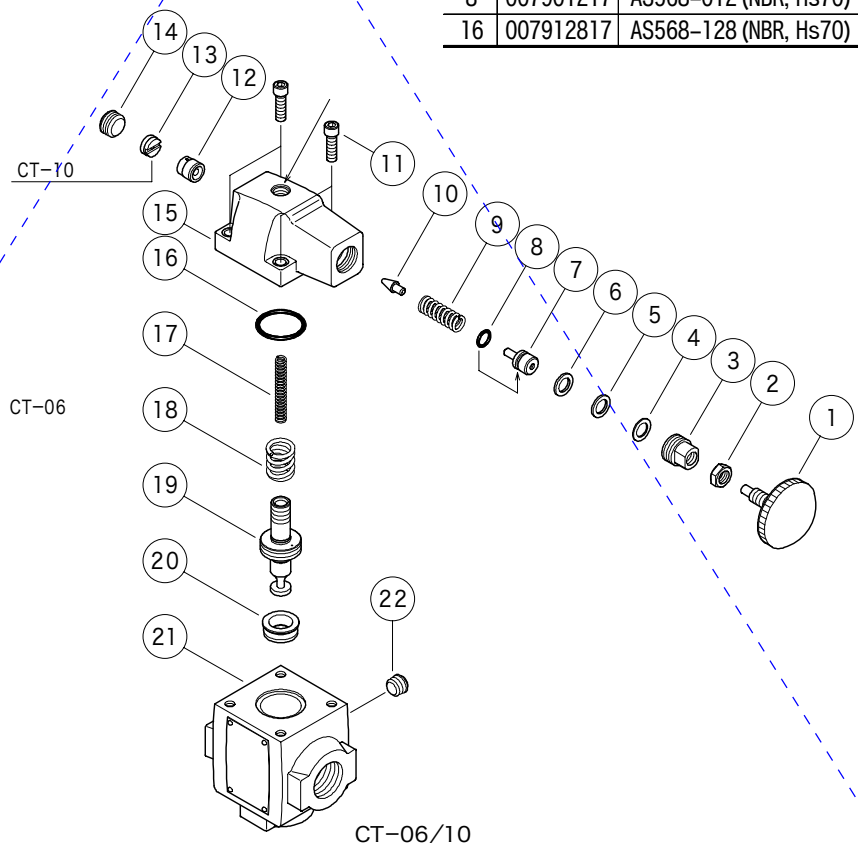
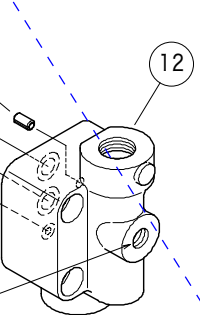
O-Rings (CT-06)

| No. | Part No | Standard | Qty |
|-----|-----------|-----------------------|-----|
| 8 | 007901217 | AS568-012 (NBR, Hs70) | 1 |
| 16 | 007912217 | AS568-122 (NBR, Hs70) | 1 |

O-Rings (CT-10)

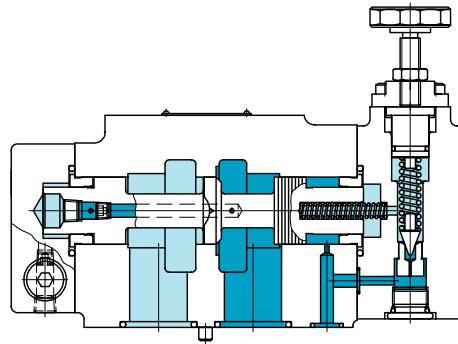
| No. | Part No | Standard | Qty |
|-----|-----------|-----------------------|-----|
| 8 | 007901217 | AS568-012 (NBR, Hs70) | 1 |
| 16 | 007912817 | AS568-128 (NBR, Hs70) | 1 |

NOT AVAILABLE

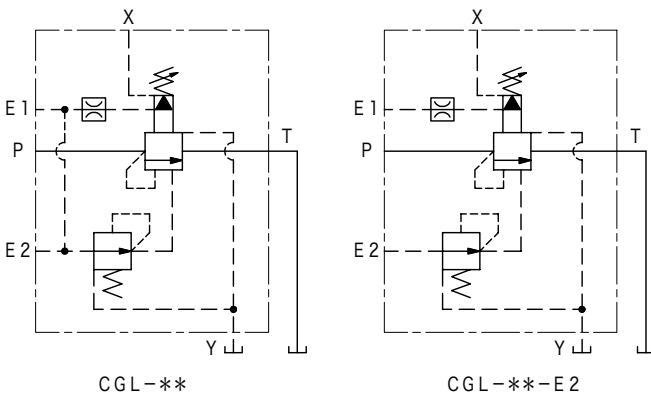


CT-06/10

Low pressure control valves CGL



Functional Symbols



- This low pressure control valve provides stable control over the low pressure range from almost 0 MPa to 4 MPa.
- The E2 version enables 3 stage - all close, pressure control, all open - control by directing the pilot pressure in the marked direction to the pilot port.
- Valve is ideal for low back pressure control of the injection cylinder of injection molding machines.

Model Code

(F3) - CGL - 03 - A (10) - (E2) - Y - 12

1 2 3 4 5 6 7 8

- | | |
|--|--|
| <p>1 Fluid Omit for mineral oil, water-glycol F3: phosphate ester</p> <p>2 Low pressure control valve (gasket mounting)</p> <p>3 Size See 'Specifications'</p> <p>4 Max. adjustable pressure See 'Specifications'</p> <p>5 Pilot pressure See 'Specifications'</p> | <p>6 Pilot port type (see functional symbols) Omit for E1, E2 port (common) E2: E1, E2 port (differentiated)</p> <p>7 Drain Omit for internal drain Y: external drain (st'd)</p> <p>8 Design no.</p> |
|--|--|

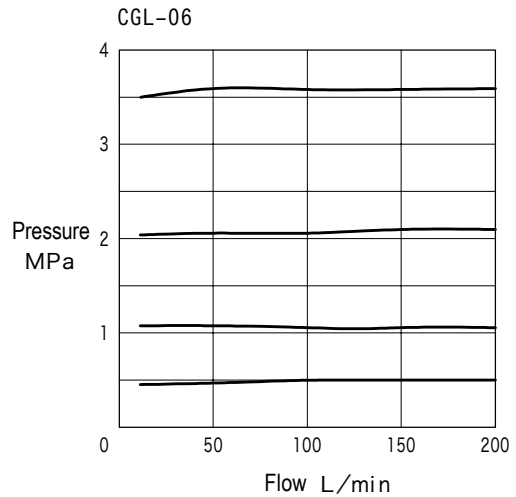
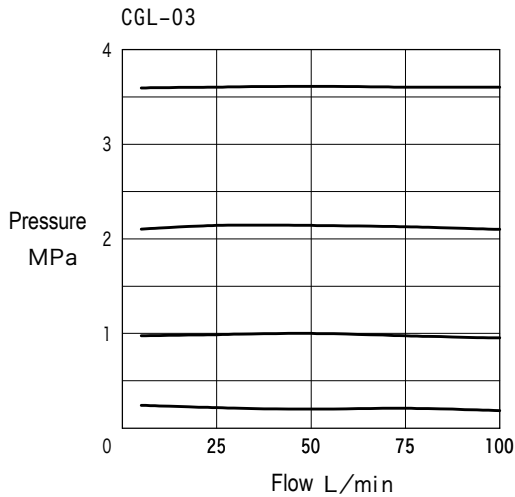
Specifications

| Model | Size | Max. Wkg. Pressure MPa | Rated Flow L/min | Max. Adjustable Pressure | | Pilot Pressure | | Minimum Pilot Flow L/min | Weight kg |
|--------|------|------------------------|------------------|--------------------------|-----|----------------|--------------------------|--------------------------|-----------|
| | | | | Code | MPa | Code | MPa | | |
| CGL-03 | 03 | 21 | 90 | A | 4 | 10 | ControlPress. Above +1.2 | 2 | 8.2 |
| CGL-06 | 06 | | 170 | | | 20 | ControlPress. Above +2.4 | | |

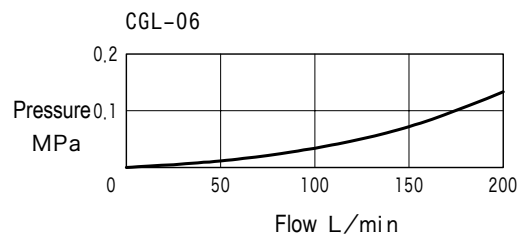
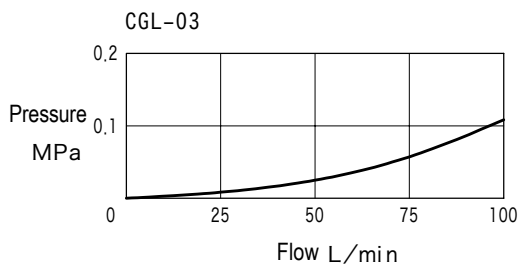
Note: Minimum adjustable pressure may vary according to flow. See characteristics curves.

Performance Curves (at 20 mm²/s)

● Flow-Pressure Characteristics



● Flow-Minimum Adjustable Pressure Characteristics



Notes On Use

- For type E2, the relationship of pilot pressure to valve operation is as the following table.

| | | | |
|-------------------|------------------|------------------|------------------|
| E1 port condition | pressure applied | pressure applied | release to tank |
| E2 port condition | pressure applied | release to tank | pressure applied |
| Valve operation | pressure control | all close | all open |

- Do not connect piping of drain, tank, and piping of other tanks, each should be directly piped to tank. Ensure that end of the piping is always below the fluid level.
- Loosen lock nut and turn adjustment handle clockwise for increase pressure setting, and counterclockwise to decrease pressure setting.

Subplate

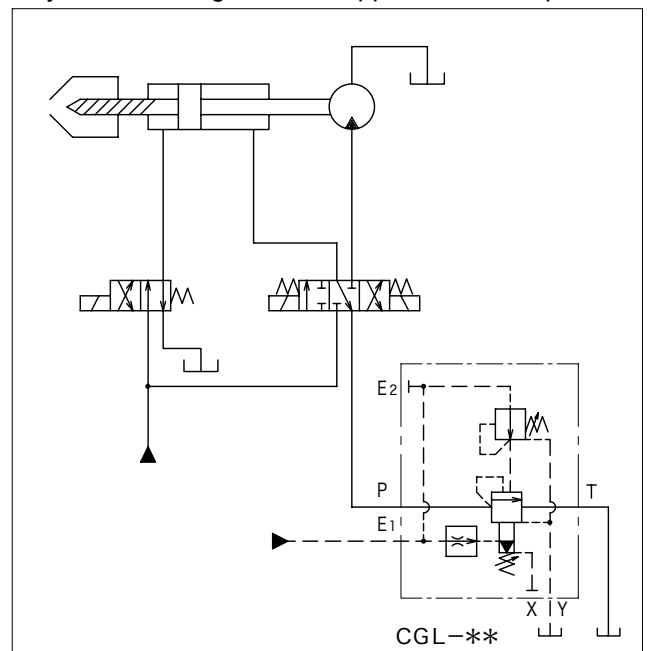
There is no subplate for this valve. Mount on manifold block for application.

Mounting Bolts (JIS B1176, Strength Class 12.9)

| Model | Hex Socket Bolts | Qty |
|--------|------------------|-----|
| CGL-03 | M12 × 90 | 4 |
| CGL-06 | M16 × 115 | 4 |

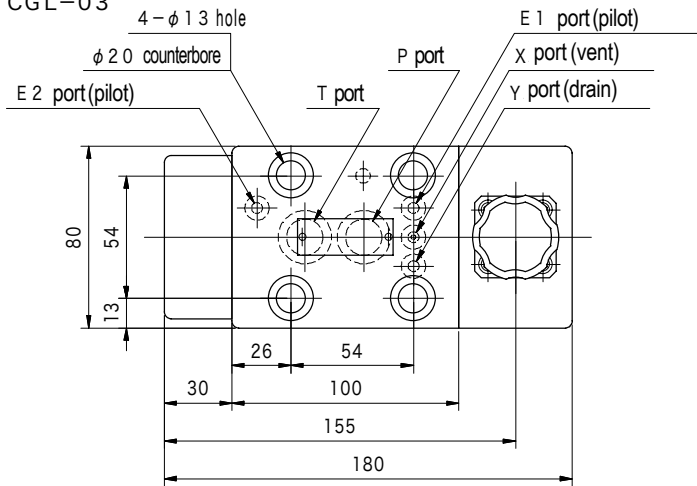
- Order mounting bolts separately.
- Mounting bolt tightening torque
CGL-03: 72~88 Nm
CGL-06: 90~110 Nm

• Injection Molding Machine Application Example

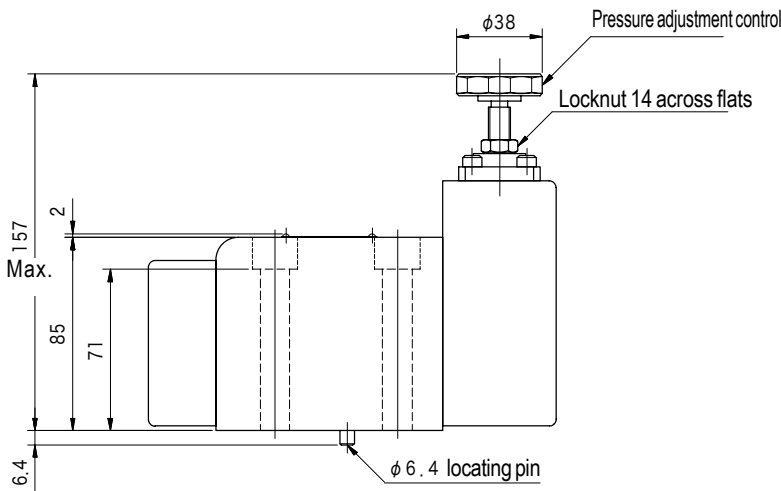
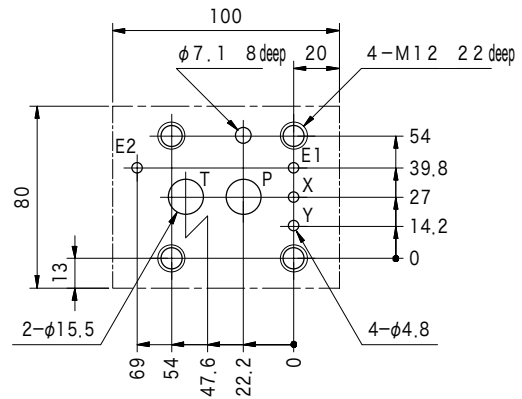


Dimensions

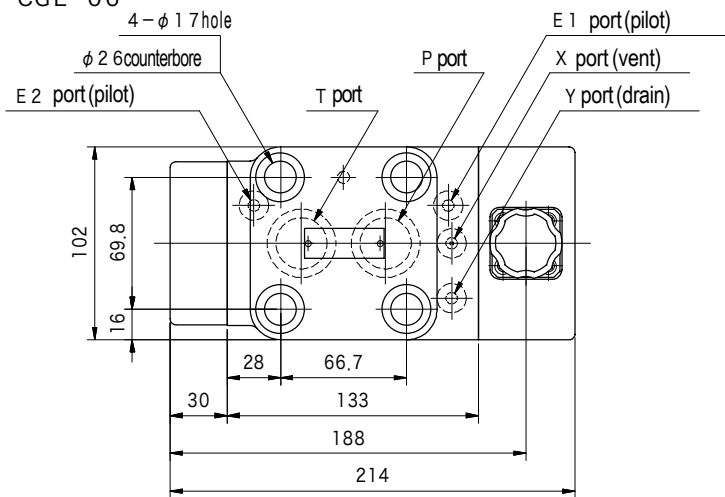
CGL-03



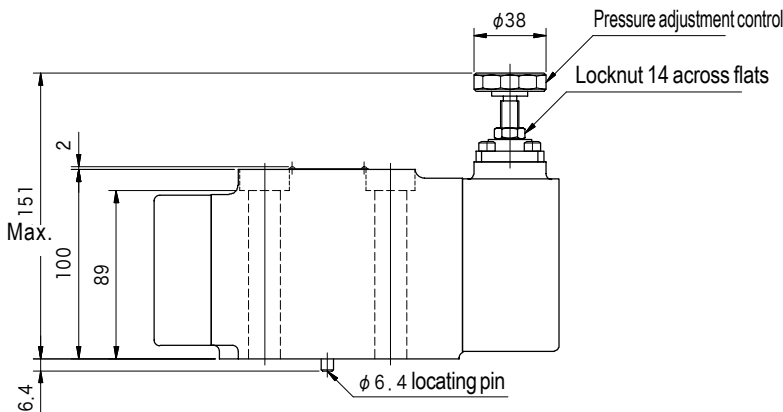
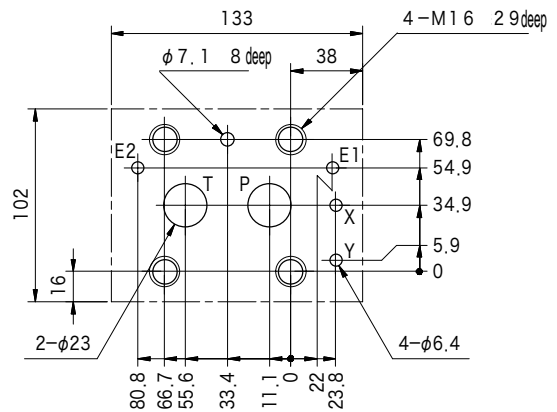
Mounting Dimensions (ISO 6264-06-Aequiv.)

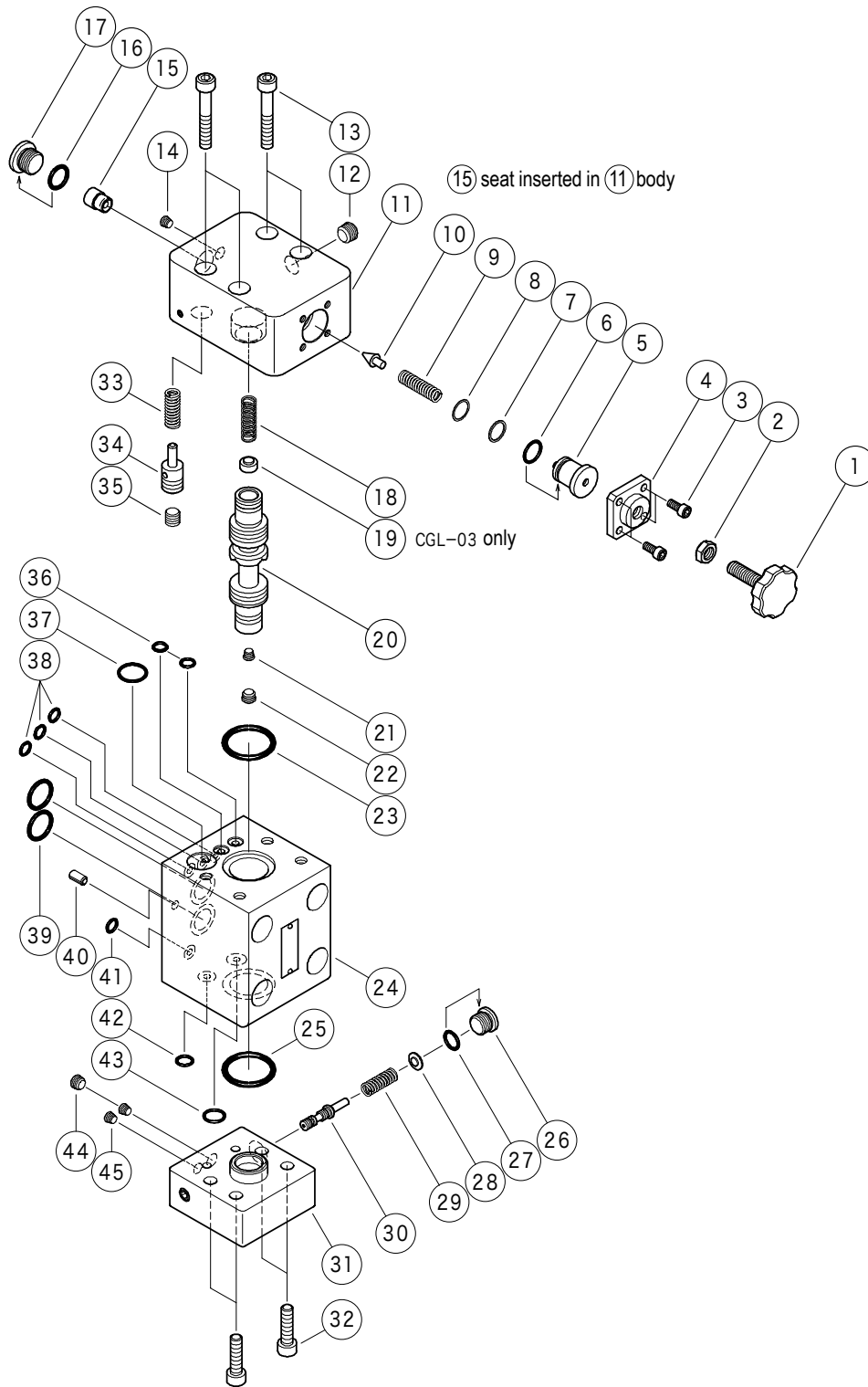


CGL-06



Mounting Dimensions (ISO 6264-08-A equiv.)





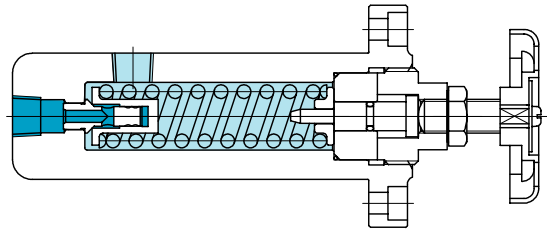
O-Rings

| Model | CGL-03 | | | CGL-06 | | | |
|-------|--------|-----------|-----------------------|--------|-----------|-----------------------|-----|
| | No. | Part No | Standard | Qty | Part No | Standard | Qty |
| | 6 | 007901519 | AS568-015 (NBR, Hs90) | 1 | 007901519 | AS568-015 (NBR, Hs90) | 1 |
| | 16 | 008001419 | JIS B 2401 1B-P14 | 1 | 008001419 | JIS B 2401 1B-P14 | 1 |
| | 23 | 007921717 | AS568-217 (NBR, Hs70) | 1 | 007922117 | AS568-221 (NBR, Hs70) | 1 |
| | 25 | 007921717 | AS568-217 (NBR, Hs70) | 1 | 007922117 | AS568-221 (NBR, Hs70) | 1 |
| | 27 | 007990619 | AS568-906 (NBR, Hs90) | 1 | 007990619 | AS568-906 (NBR, Hs90) | 1 |
| | 36 | 007901119 | AS568-011 (NBR, Hs90) | 2 | 007901219 | AS568-012 (NBR, Hs90) | 2 |
| | 37 | 007901719 | AS568-017 (NBR, Hs90) | 1 | 007901719 | AS568-017 (NBR, Hs90) | 1 |
| | 38 | 007901119 | AS568-011 (NBR, Hs90) | 3 | 007911119 | AS568-111 (NBR, Hs90) | 3 |
| | 39 | 007911619 | AS568-116 (NBR, Hs90) | 2 | 007921719 | AS568-217 (NBR, Hs90) | 2 |
| | 41 | 007901119 | AS568-011 (NBR, Hs90) | 1 | 007911119 | AS568-111 (NBR, Hs90) | 1 |
| | 42 | 007901319 | AS568-013 (NBR, Hs90) | 1 | 007901319 | AS568-013 (NBR, Hs90) | 1 |
| | 43 | 007901219 | AS568-012 (NBR, Hs90) | 1 | 007901219 | AS568-012 (NBR, Hs90) | 1 |

Direct relief valves C-175

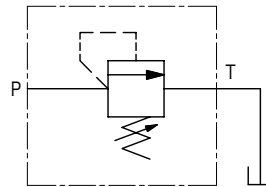
C
28

PRESSURE CONTROL VALVES



- This valve is used to control max. pressure in small flow circuits (standard type).
- S1 type is used for adjustment of main valve setting pressure remotely when connected to remote vent port of relief, reducing, etc., pressure control valves.

Functional Symbols



Model Code

C-175 - B - 11 - JA - (S1) - J

1 2 3 4 5

- | | |
|--|--|
| <ul style="list-style-type: none"> 1 Fluid Omitted for mineral oil,, water glycol 2 Direct acting relief valve (threaded type) 3 Pressure adjustment range See 'Specifications' | <ul style="list-style-type: none"> 4 Design no. 5 Special suffix S1: Remote operation type (rated flow 1.7 L/min.) |
|--|--|

Specifications

| Model | Size | Max. Wkg. MPa | Rated Flow L/min | Press. Adj. Range | | Weight kg |
|-------|------|---------------|------------------|-------------------|---------|-----------|
| | | | | | MPa | |
| C-175 | 02 | 21 | *11 | B | 0.5~7 | 2 |
| | | | | C | 3.5~14 | |
| | | | | F | 10.5~21 | |

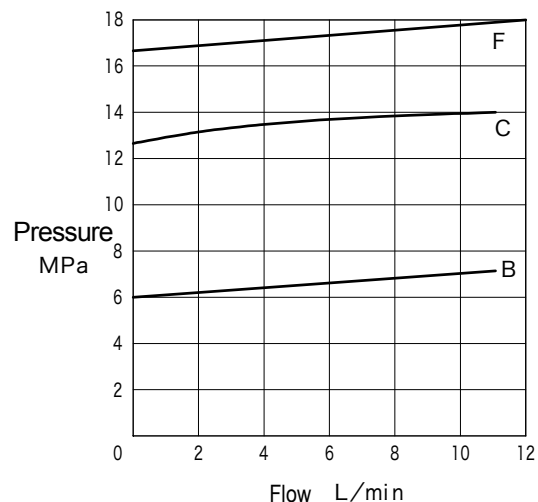
*Rated flow of S1 is 1.7 L/min

Notes On Use

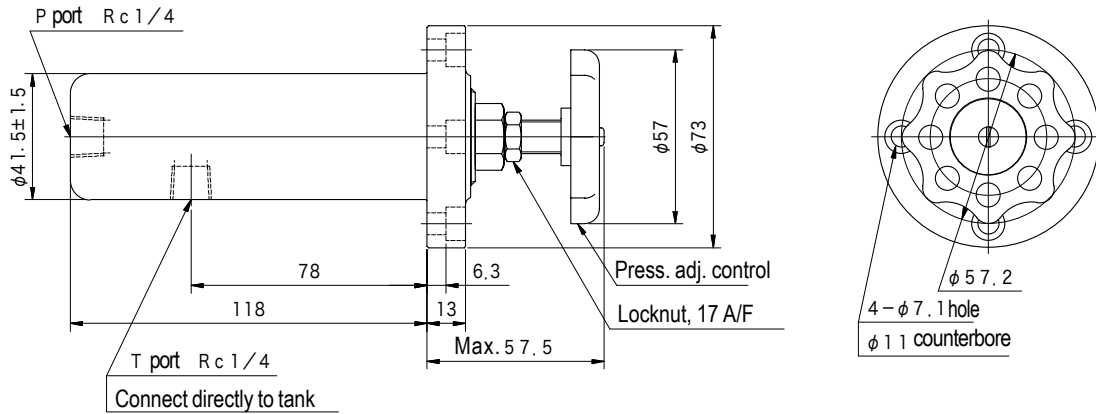
- Do not connect piping of drain, tank, and piping of other tanks, each should be directly piped to tank. Ensure that end of the piping is always below the fluid level.
- Loosen lock nut and turn adjustment handle clockwise for increase pressure setting, and counterclockwise to decrease pressure setting.
- When tightening the pressure adjustment handle, circuit pressure will equal that of the setting pressure of the main valve. (S1 type)
- In the case of type S1, beware that if piping to main valve is long resulting in large internal displacement, pressure control may be come unstable.

Performance Curves (at 20 mm²/s)

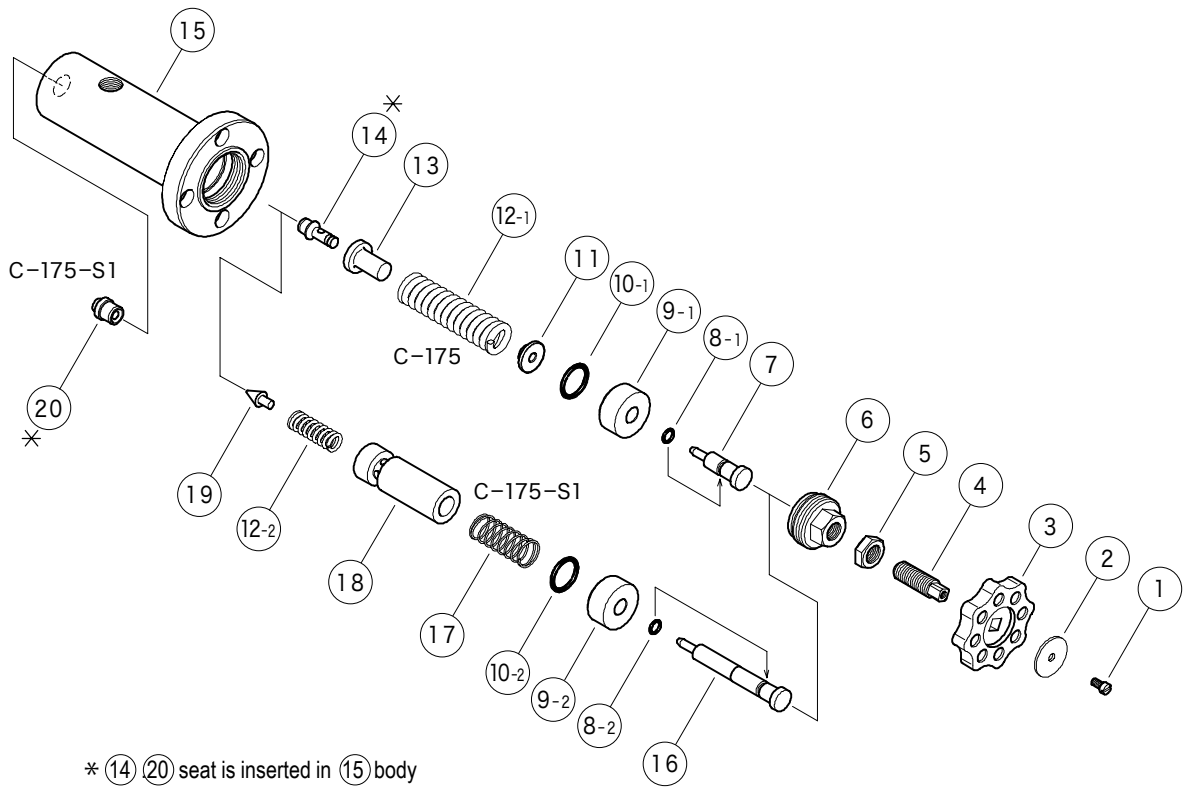
- Flow-Pressure Characteristics



Dimensions



Construction



⑫ Springs

| Code | C-175 | C-175-S1 |
|------|----------|----------|
| | Part No. | Part No. |
| B | VP152609 | VP2280 |
| C | VA4861 | VP2282 |
| F | VA4763 | VP2281 |

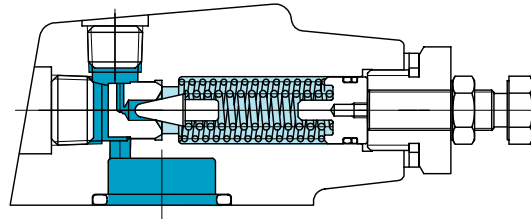
O-ring

| No. | Part No. | Standard | Qty |
|-----|-----------|-----------------------|-----|
| 8 | 007901017 | AS568-010 (NBR, Hs70) | 1 |
| 10 | VP153999 | — | 1 |

Remote control relief valves CGR-02

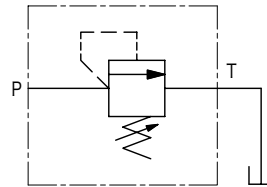
C30

PRESSURE CONTROL VALVES



This valve is used for adjustment of main valve setting pressure remotely when connected to remote vent port of relief, reducing, etc., pressure control valves.

Functional Symbol



Model Code

(F3) - CGR-02 - A (K)-20-JA-J

1 2 3 4 5 6

- 1 Fluid
Omit for mineral oil, water-glycol
F3: phosphate ester
- 2 Remote control relief (gasket mounting)
- 3 Size: 02

- 4 Max. adjustable pressure
See 'Specifications'
- 5 Adjuster
Omit for hex head screw (st'd)
K: knob
- 6 Design no.

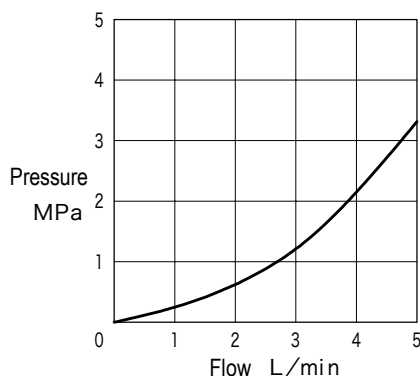
Specifications

| Model | Size | Max. Wkg. Pressure MPa | Rated Flow L/min | Max. Control Press. | | Weight kg |
|--------|------|------------------------|------------------|---------------------|-----|-----------|
| | | | | Code | MPa | |
| CGR-02 | 02 | 21 | 1.7 | A | 3.5 | 1.4 |
| | | | | B | 7 | |
| | | | | C | 14 | |
| | | | | F | 21 | |

Note: Minimum adjustable pressure may vary according to flow. See characteristics curve)

Performance Curves (at 20 mm²/s)

• Pressure drop characteristics (flow - mim. adj. pressure characteristics)



Notes On Use

- Do not connect piping of drain, tank, and piping of other tanks, each should be directly piped to tank. Ensure that end of the piping is always below the fluid level.
- In the case of type S1, beware that if piping to main valve is long resulting in large internal displacement, pressure control may be come unstable.
- Loosen lock nut and turn adjustment handle clock wise for increase pressure setting, and counterclock wise to decrease pressure setting.
- When tightening the pressure adjustment handle, circuit pressure will equal that of the setting pressure of the main valve. (S1 type)

Mounting Bolts (JIS B1176, Strength Class 12.9)

| Hex Socket Bolts | | Qty |
|------------------|----------------|-----|
| Metric | Unified | |
| M10×30 | 3/8-16UNC×31.8 | 4 |

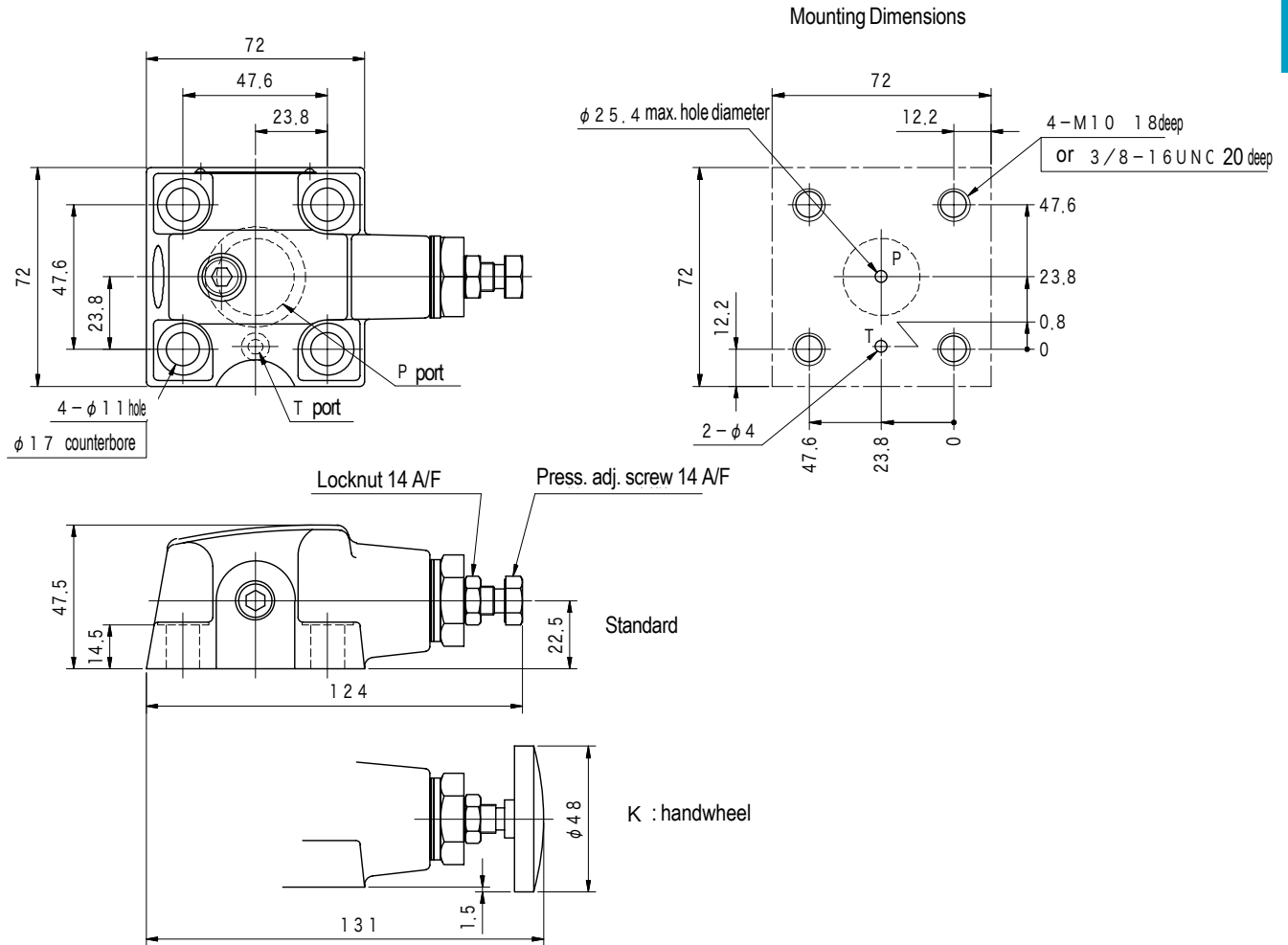
- Order mounting bolts separately.
- Mounting bolt tightening torque, 54 ~ 66 Nm

Subplate

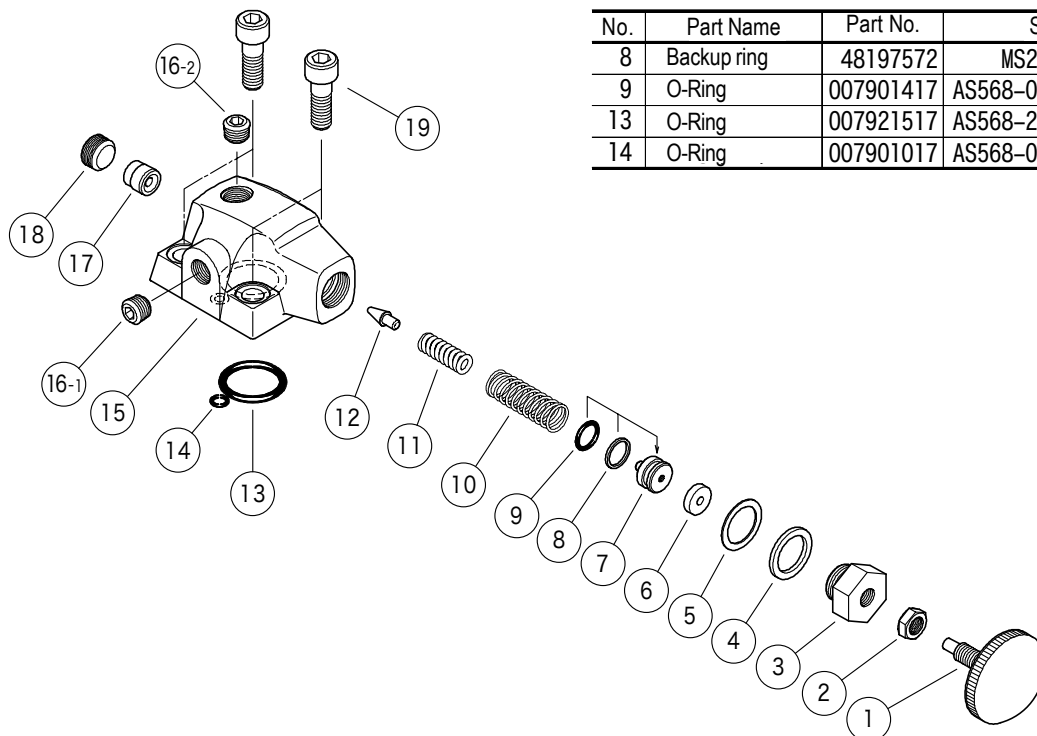
| Subplate | Connection Port Rc |
|--------------|--------------------|
| CGRM-02-20-J | 1/4 |

- Subplate must be ordered separately.
- Hex socket bolt for valve mounting supplied. (metric thread)
- See page Q3 for dimensions.

Dimensions

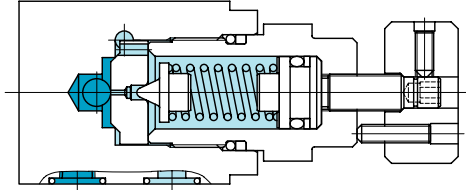


Construction



| No. | Part Name | Part No. | Standard | Qty |
|-----|-------------|-----------|-----------------------|-----|
| 8 | Backup ring | 48197572 | MS28774-014 | 1 |
| 9 | O-Ring | 007901417 | AS568-014 (NBR, Hs70) | 1 |
| 13 | O-Ring | 007921517 | AS568-215 (NBR, Hs70) | 1 |
| 14 | O-Ring | 007901017 | AS568-010 (NBR, Hs70) | 1 |

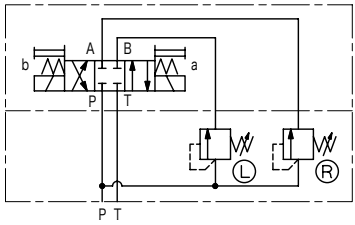
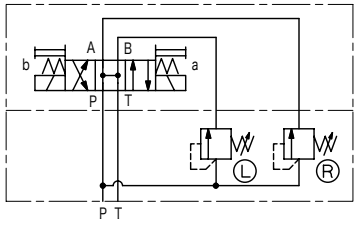
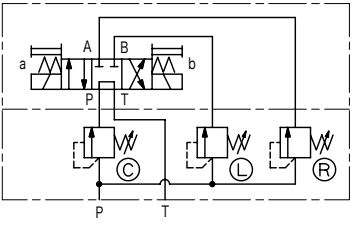
Remote control relief modules TGMCR-3



- Connected to vent port for remote control of relief valve, sandwiched with DG4V-3 solenoid valve and used for two pressure, two pressure & unload, and three pressure multi-stage control.

Control Functions and Functional Symbols

| Model | Control Function | Functional Symbol |
|---------|---|-------------------|
| TGMCR10 | Two pressure & unload • solenoid deenergized for unload • solenoid a energized for remote pressure setting • solenoid b energized for pressure setting of main valve | |
| | Two pressure control • solenoid deenergized for remote pressure setting • solenoid energized for pressure setting of main valve | |
| | Two pressure control • solenoid deenergized for pressure setting of main valve • solenoid energized for remote pressure setting | |
| TGMCR11 | Two pressure & unload • solenoid deenergized for unload • solenoid a energized for remote pressure setting • solenoid b energized for pressure setting of main valve | |
| | Two pressure control • solenoid deenergized for pressure setting of main valve • solenoid energized for remote pressure setting | |
| | Two pressure control • solenoid deenergized for remote control pressure setting • solenoid energized for pressure setting of main valve | |

| Model | Control Function | Functional Symbol |
|---------|---|---|
| TGMCR21 | Three pressure control <ul style="list-style-type: none"> • solenoid deenergized for pressure setting of main valve • solenoid a energized for remote (L) setting pressure • solenoid b energized for remote (R) setting pressure |  |
| | Two pressure control & unload <ul style="list-style-type: none"> • solenoid deenergized for unload • solenoid a energized for remote (L) setting pressure • solenoid b energized for remote (R) setting pressure • free remote (L) and (R) pressure setting |  |
| TGMCR30 | Three pressure control <ul style="list-style-type: none"> • solenoid deenergized for remote (C) setting pressure • solenoid a energized for remote (L) setting pressure • solenoid b energized for remote (R) setting pressure • free remote (C), (L), (R) pressure setting |  |

Note 1) (C), (L), (R) in the symbols indicate position of adjustment section.

Note 2) Solenoid directional valve, DG4V-3, is not included.

Note 3) Always use with main valve setting pressure greater than setting pressure of this valve.

Model Code

(F3) - TGMCR 30-3-CHBHFH - 50

1 2 3 4 5 6 7 8 9 10 11

- 1 Fluid
Omit for mineral oil, water-glycol
F3: phosphate ester
- 2 Remote relief valve 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
3: ISO 4401-03
- 5 R side max. adjustable pressure
See 'Specifications'
- 6 R side adjuster
H: knob
E: acorn nut, hex socket adjustment screw (st'd)
- 7 C side max. adjustable pressure
See 'Specifications'
- 8 C side adjuster
H: knob
E: acorn nut, hex socket adjustment screw (st'd)
- 9 L side max. adjustable pressure
See 'Specifications'

- 10 L side adjuster
H: knob
E: acorn nut, hex socket adjustment screw (st'd)

- 11 Design no.

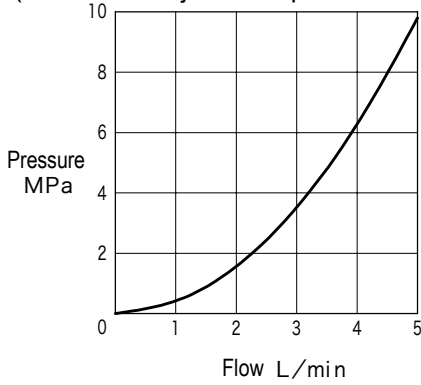
Specifications

| Model | Size | Max. Wkg MPa | Rated Flow L/min | Max. Control Press. | | Weight kg |
|---------|------|-----------------|---------------------|---------------------|-----|--------------|
| | | | | Code | MPa | |
| TGMCR10 | 02 | 21 | 1.7 | A | 3.5 | 10/11: 2.0 |
| TGMCR11 | | | | B | 7 | |
| TGMCR21 | | | | C | 14 | 30: 3.6 |
| TGMCR30 | | | | F | 21 | |

Note: Minimum adjustable pressure may vary with flow. See characteristics curve.

Performance Curves (at 20 mm²/s)

- Pressure drop characteristics (flow - min. adjustment pressure characteristics)



Mounting Bolts (JIS B1176, Strength Class 12.9)

- When DG4V-3 solenoid valve is mounted
Hex socket bolts M5×90 ——— 4 pcs
- Mounting bolts must be ordered separately.
- Mounting bolt tightening torque
7~8 Nm

Notes On Use

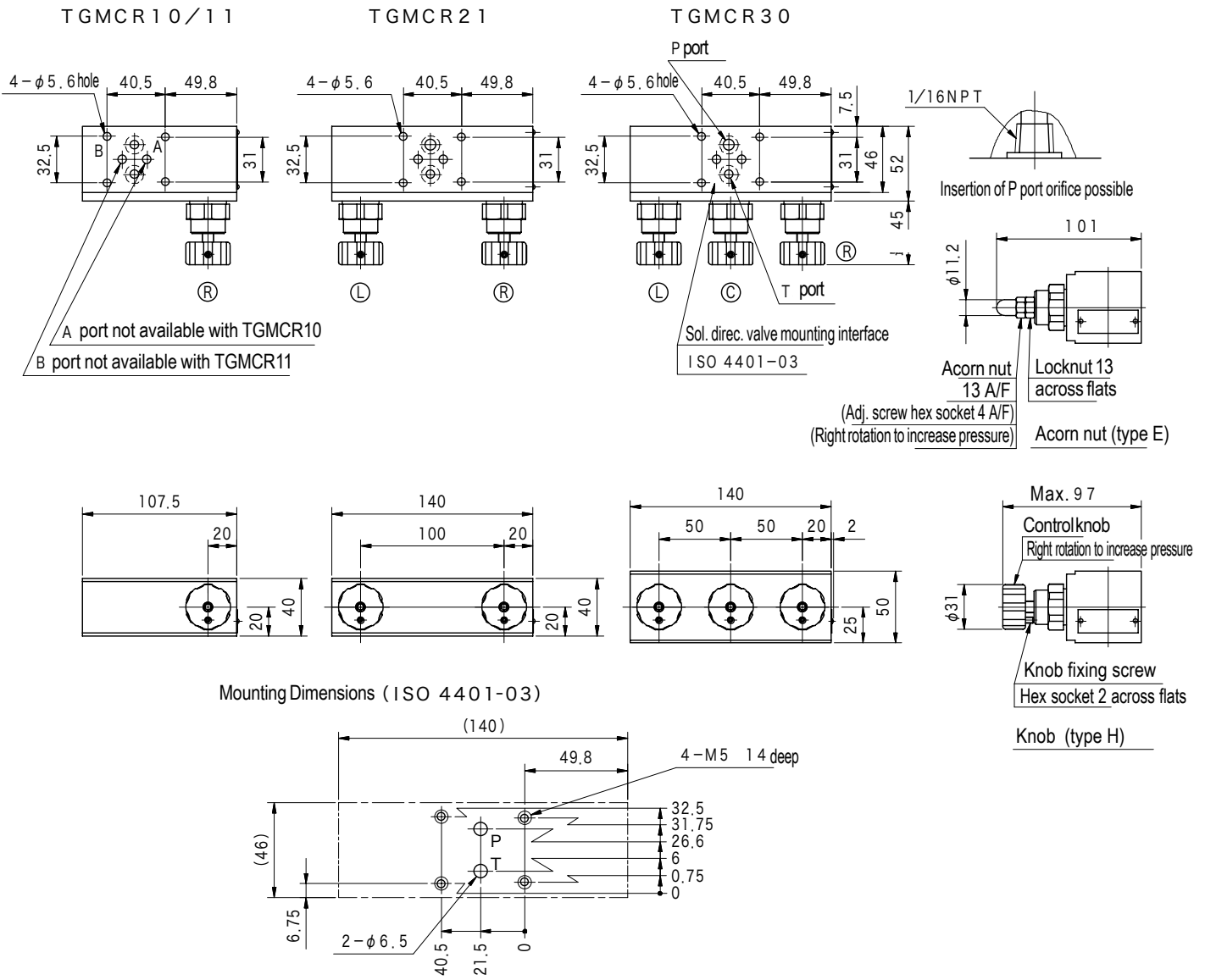
- Do not connect piping of drain, tank, and piping of other tanks, each should be directly piped to tank. Ensure that end of the piping is always below the fluid level.
- Loosen lock nut and turn adjustment handle clockwise to increase pressure setting, and counterclockwise to decrease pressure setting.
- 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.

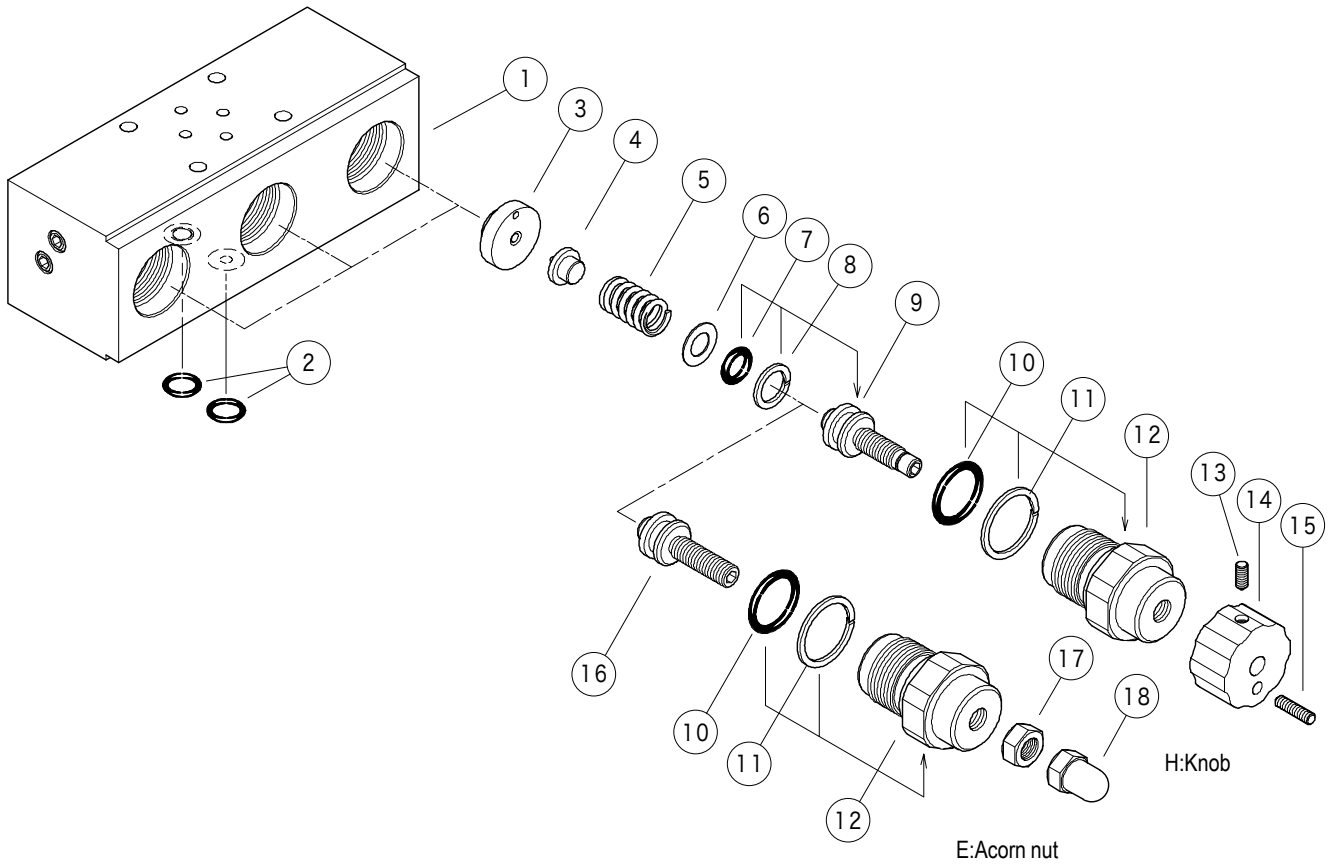
Subplate

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

- Order mounting bolts not included.
- Subplate must be ordered separately.
- See page Q8 for dimensions.

Dimensions





⑤ Springs

| Code | Part No. |
|------|----------|
| A | 40027195 |
| B | 40027196 |
| C | 40027197 |
| F | 40027198 |

| No. | Part Name | Part No. | Standard | Quantity | | |
|-----|-------------|-----------|-----------------------|-------------|----------|----------|
| | | | | TGMCR 10/11 | TGMCR 21 | TGMCR 30 |
| 2 | O-Ring | 007901219 | AS568-012 (NBR, Hs90) | 2 | 2 | 2 |
| 7 | O-Ring | 007911117 | AS568-111 (NBR, Hs70) | 1 | 2 | 3 |
| 8 | Backup ring | 40025057 | MS28774-111 | 1 | 2 | 3 |
| 10 | O-Ring | 007911717 | AS568-117 (NBR, Hs70) | 1 | 2 | 3 |
| 11 | Backup ring | 40025061 | MS28774-117 | 1 | 2 | 3 |

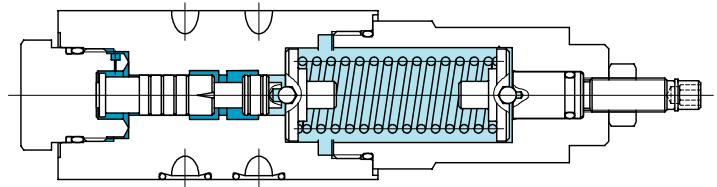
• TGMCR10./11, one pressure adjustment control: TGMCR21, two pressure adjustment controls; TGMCR30, three pressure adjustment controls.

Vent-unloading shockless modules

TGMSL-3

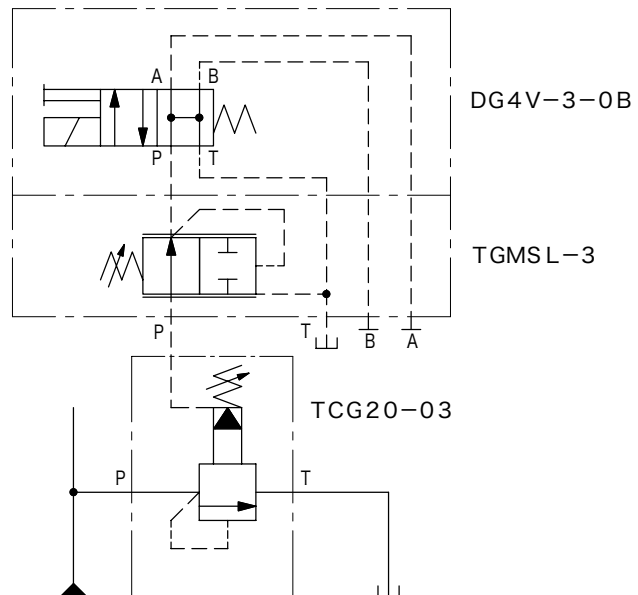
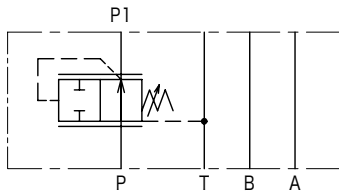
36

PRESSURE CONTROL VALVES



- This product is designed to reduce shock during vent unload of the relief valve. In the application example below, the TGMSL-3 is sandwiched between the DG4V-3 solenoid valve and is connected to the vent port of the pilot operated relief valve.

Functional Symbols



Application example

Model Code

(F3) - TGMSL - 3 - (L) - 50

1 2 3 4 5

- 1 Fluid
Omit for mineral oil, water-glycol
F3: phosphate ester
- 2 Vent unload shockless valve module
- 3 Mounting
3: ISO 4401-03

- 4 Adjuster
Omit for B port side adjuster (st'd)
L: adjuster on A port side
- 5 Design no.

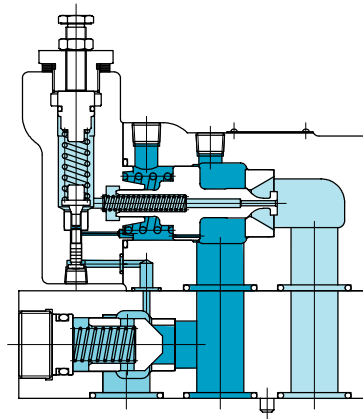
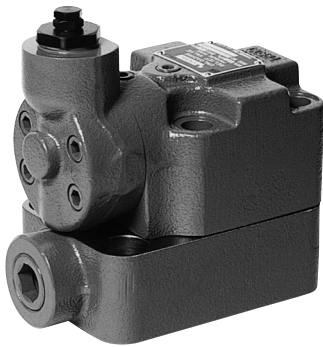
Specifications

| Model Code | Max. Wkg. Pressure MPa | Rated Flow L/min | Weight kg |
|------------|------------------------|------------------|-----------|
| TGMSL-3 | 31.5 | 1.7 | 1.3 |

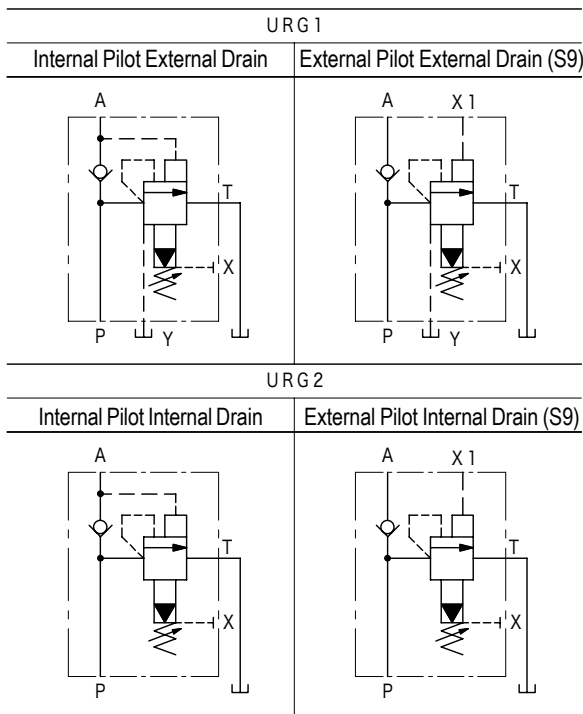
Notes On Use

- Valve will not operate with adjustment screw fully tightened and may cause shock in system. Also if adjustment screw is completely loose, the vent line will close and the main valve will not unload. Adjust screw to a mid-point position.

Unloading relief valves URG

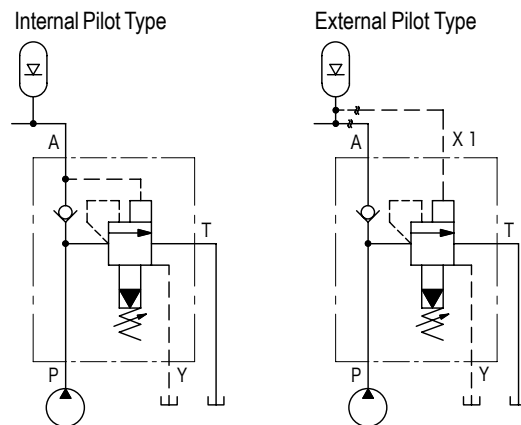


Functional Symbols



- Valve is used in accumulator circuits. When circuit pressure rises to the setting pressure, valve acts to automatically unload pump.
- When circuit pressure falls to 85 or 95% of the setting pressure, the valve unloads the pump to recharge the accumulators.

Application Examples



Model Code

(F3) - URG 1 - 10 - B(V) - 12 - (S9) - JA - (S1) - J/M

1 2 3 4 5 6 7 8 9 10

- | | |
|--|---|
| <p>1 Fluid Omit for mineral oil, water-glycol F3: phosphate ester</p> <p>2 Unload relief valve (gasket mounting)</p> <p>3 Drain 1: external drain 2: internal 'drain'</p> <p>4 Size</p> <p>5 Pressure adjustment range See 'Specifications'</p> <p>6 Vent pressure Omit for low vent pressure (st'd) V: high vent pressure</p> | <p>7 Design no. 12: URG*-10 13: URG*-06</p> <p>8 Pilot Omit for internal pilot (st'd) S9: external pilot</p> <p>9 Cut-in pressure Omit for 85% of setting pressure (st'd) S1: 90% of setting pressure</p> <p>10 Mounting bolts URG*-06 Enter J (main valve for both unified and thread bolts) URG*-10</p> |
|--|---|

J: 3/4-10UNC

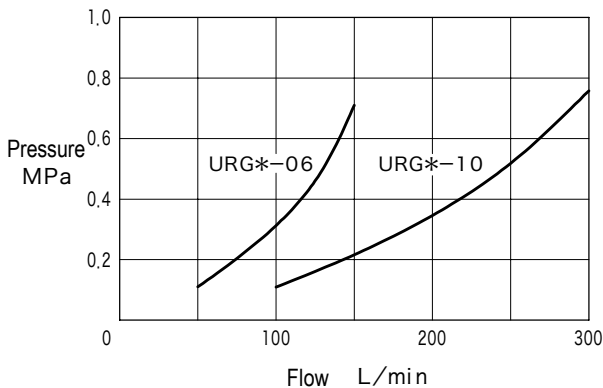
M: M20

Specifications

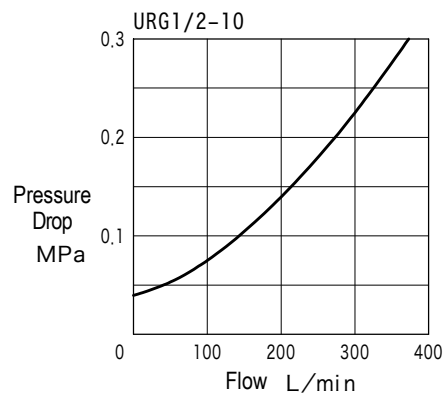
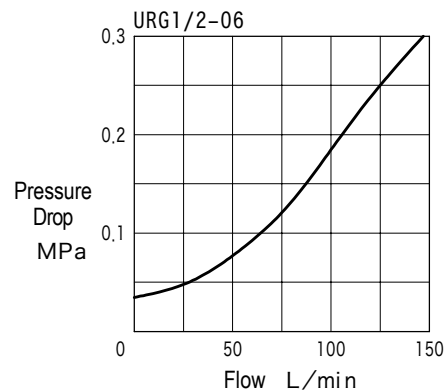
| Model | Size | Max. W/kg Pressure MPa | Rated Flow L/min | Press. Adjustment Range MPa | Weight kg |
|--------------------|------|------------------------|------------------|-----------------------------|-----------|
| URG1-06 URG2-06 | 06 | 21 | 100 | B : 2.5~7 C : 3.5~14 | 11.5 |
| URG1-10 URG2-10 | 10 | 21 | 250 | F : 10.5~21 | 22 |

Performance Curves (at 20 mm²/s)

- Flow - unload pressure characteristics



- Check valve pressure drop characteristics



Notes On Use

- If distance between valve and accumulator is long (piping) and internal pilot type (standard) valve is used, piping resistance may cause valve to cutoff prematurely before setting pressure of valve to accumulator is reached. In this case, use external pilot type (S9) valve with pilot pressure taken from point close to accumulator and connected to external pilot port $\times 1$. (Rc1/4 taper thread connection)
- Use internal drain type (URG2) with condition of setting pressure less than 5% of tank line back pressure. If back pressure exceeds this condition, use external drain (URG1).
- Do not connect drain line with other tank lines and return drain directly to tank. Ensure that end of the pipe is below fluid level.
- If faster response from unload to onload is desired, use high vent pressure type (V).
- Loosing locknut of pressure adjustment screw and turning it clockwise will raise setting pressure and turning it counterclockwise will lower the setting pressure.

Mounting Bolts (JIS B1176, Strength Class 12.9)

| Valve Model | Metric | Unified | Qty |
|-------------|------------------|--------------------------|-----|
| URG1-06 | M16 \times 60 | 5/8-11UNC \times 57.1 | 2 |
| URG2-06 | M16 \times 130 | 5/8-11UNC \times 133.4 | 4 |
| URG1-10 | M20 \times 80 | 3/4-10UNC \times 76.2 | 2 |
| URG2-10 | M20 \times 170 | 3/4-10UNC \times 165.1 | 4 |

- Order mounting bolts separately.
- Mounting bolt tightening torque

URG1-06 : 90 ~ 110 Nm
 URG2-06 : 90 ~ 110 Nm
 URG1-10 : 80 ~ 220 Nm
 URG2-10 : 80 ~ 220 Nm

Subplate

| Valve Model | Subplate | Connection Port Dia. Rc |
|--------------------|------------------|-------------------------|
| URG1-06 URG2-06 | URG1M-06-10-JA-J | 3/4 |
| URG1-10 URG2-10 | URG1M-10-10-JA-J | 1-1/4 |

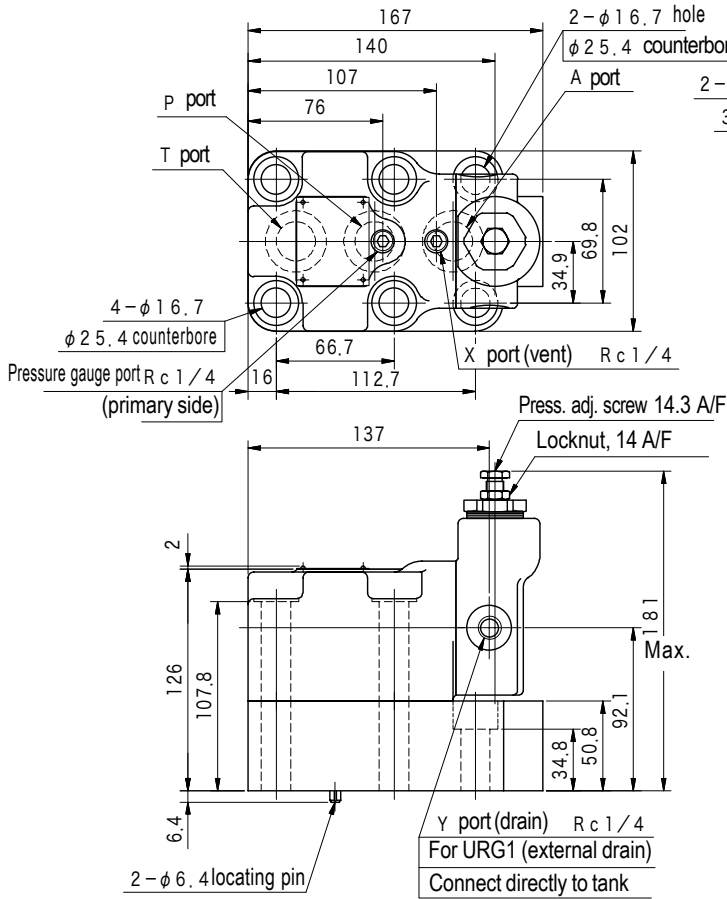
- Hex socket bolts for mounting valve are included (unified thread)
- Hex socket bolt for valve mounting supplied. (metric thread)
- See page Q4 for dimensions.

Dimensions

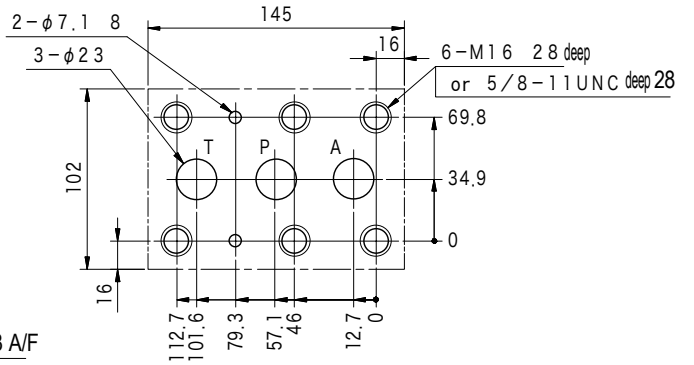
URG1-06
URG2-06

09

PRESSURE CONTROL VALVES

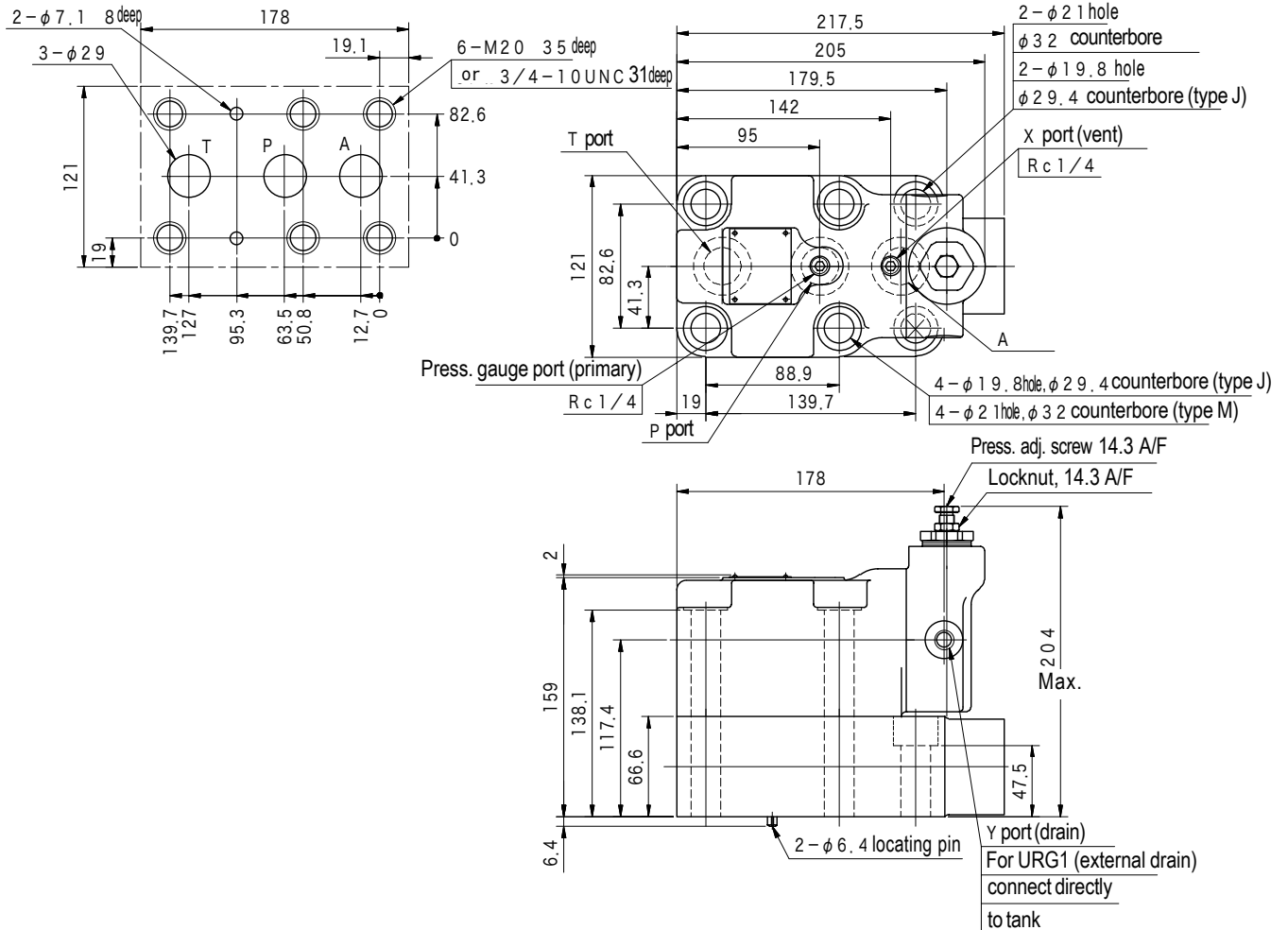


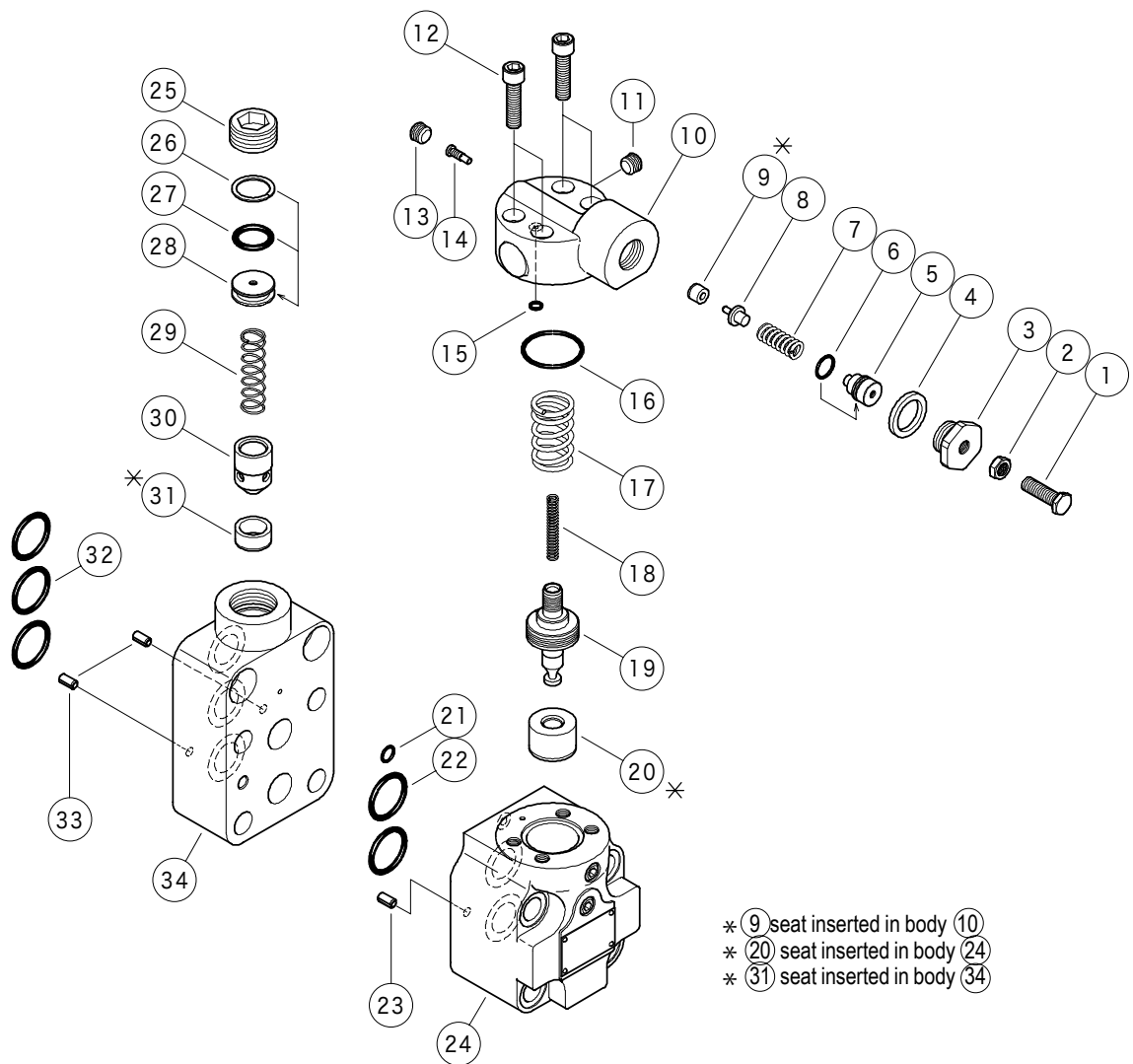
Mounting Dimensions



URG1-10
URG2-10

Mounting Dimensions



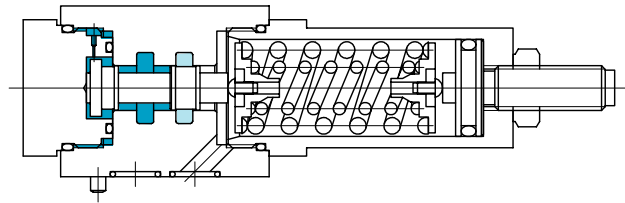


| Valve Size | | 06 | | 10 | | Qty |
|------------|-------------|-----------|-----------------------|-----------|-----------------------|-----|
| No. | Part Name | Part No. | Standard | Part No. | Standard | |
| 6 | O-Ring | 007901517 | AS568-015 (NBR, Hs70) | 007901517 | AS568-015 (NBR, Hs70) | 1 |
| 15 | O-Ring | 007901019 | AS568-010 (NBR, Hs90) | 007901019 | AS568-010 (NBR, Hs90) | 1 |
| 16 | O-Ring | VA11168 | — | 007922419 | AS568-224 (NBR, Hs90) | 1 |
| 21 | O-Ring | 007901319 | AS568-013 (NBR, Hs90) | 007901319 | AS568-013 (NBR, Hs90) | 1 |
| 22 | O-Ring | 007921619 | AS568-216 (NBR, Hs90) | 007922019 | AS568-220 (NBR, Hs90) | 2 |
| 26 | Backup ring | 48197629 | MS28774-212 | 48197637 | MS28774-220 | 1 |
| 27 | O-Ring | 007921217 | AS568-212 (NBR, Hs70) | 007922017 | AS568-220 (NBR, Hs70) | 1 |
| 32 | O-Ring | 007921619 | AS568-216 (NBR, Hs90) | 007922019 | AS568-220 (NBR, Hs90) | 3 |

Pressure control valves (subplate mounted) RG-3F

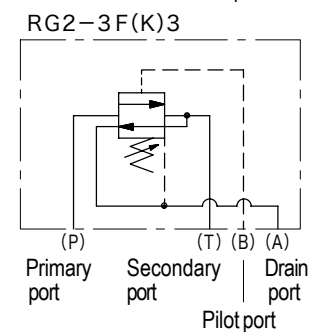
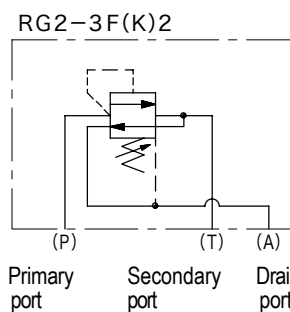
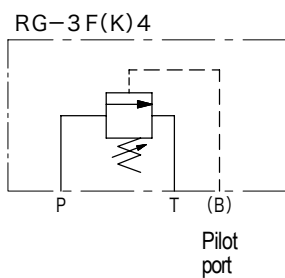
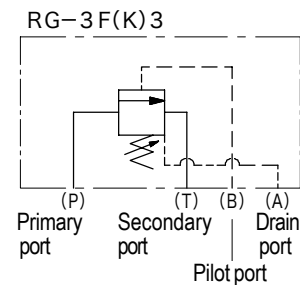
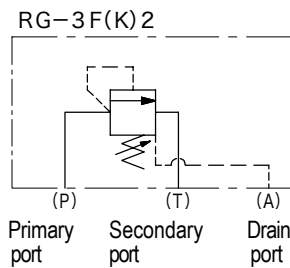
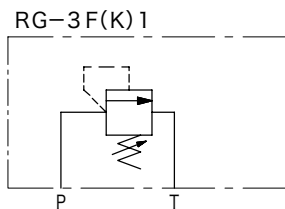
C
42

PRESSURE CONTROL VALVES



- This is a direct acting type pressure adjustment valve and depending on the internal or external pilot pressure and drain combinations can be used as sequence, counterbalance, relief, or unload valves.
- Stacked with check valve DM8M-3B, valve can be used as sequence valve, or counterbalance valve.

Functional Symbols



Model Code

(F3) - RG(2) - 3 F (K) 1 - 30 - JA

1 2 3 4 5 6 7

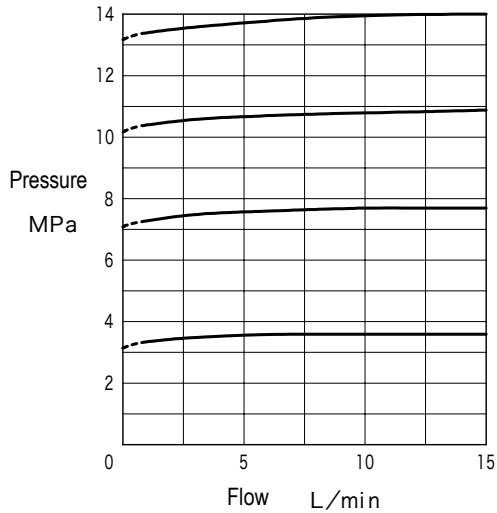
- | | |
|--|--|
| <p>1 Fluid Omit for mineral oil, water-glycol F3: phosphate ester</p> <p>2 Pressure adjustment valve (gasket mounting)</p> <p>3 Secondary side venting Omit for no vent 2: secondary side vent at less than setting pressure</p> <p>4 Pressure adjustment range F: 0.35~14 MPa</p> | <p>5 Adjuster Omit for slotted adjustment screw (st'd) K: knob</p> <p>6 Valve function 1: internal pilot, external drain (except for RG2) 2: internal pilot, external drain 3: external pilot, external drain 4: external pilot, internal drain (except RG2)</p> <p>7 Design no.</p> |
|--|--|

Specifications

| Model | Max. Wkg. Pressure MPa | Rated Flow L/min | Press. Adj. Range MPa | Weight kg |
|-------|---------------------------|---------------------|--------------------------|--------------|
| RG(2) | 17.5 | 11.3 | 0.35~14 | 0.7 |

Performance Curves (at 20 mm²/s)

Flow - Pressure Characteristics



Notes On Use

- Loosen locknut of adjustment screw and turning clockwise will raise pressure, and turning counterclockwise will lower pressure.

Mounting Bolts (JIS B1176, Strength Class 12.9)

| Hex Socket Bolts | | Qty |
|------------------|------------------|-----|
| Metric | Unified | |
| M6 × 40 | 1/4-20UNC × 38.1 | 4 |

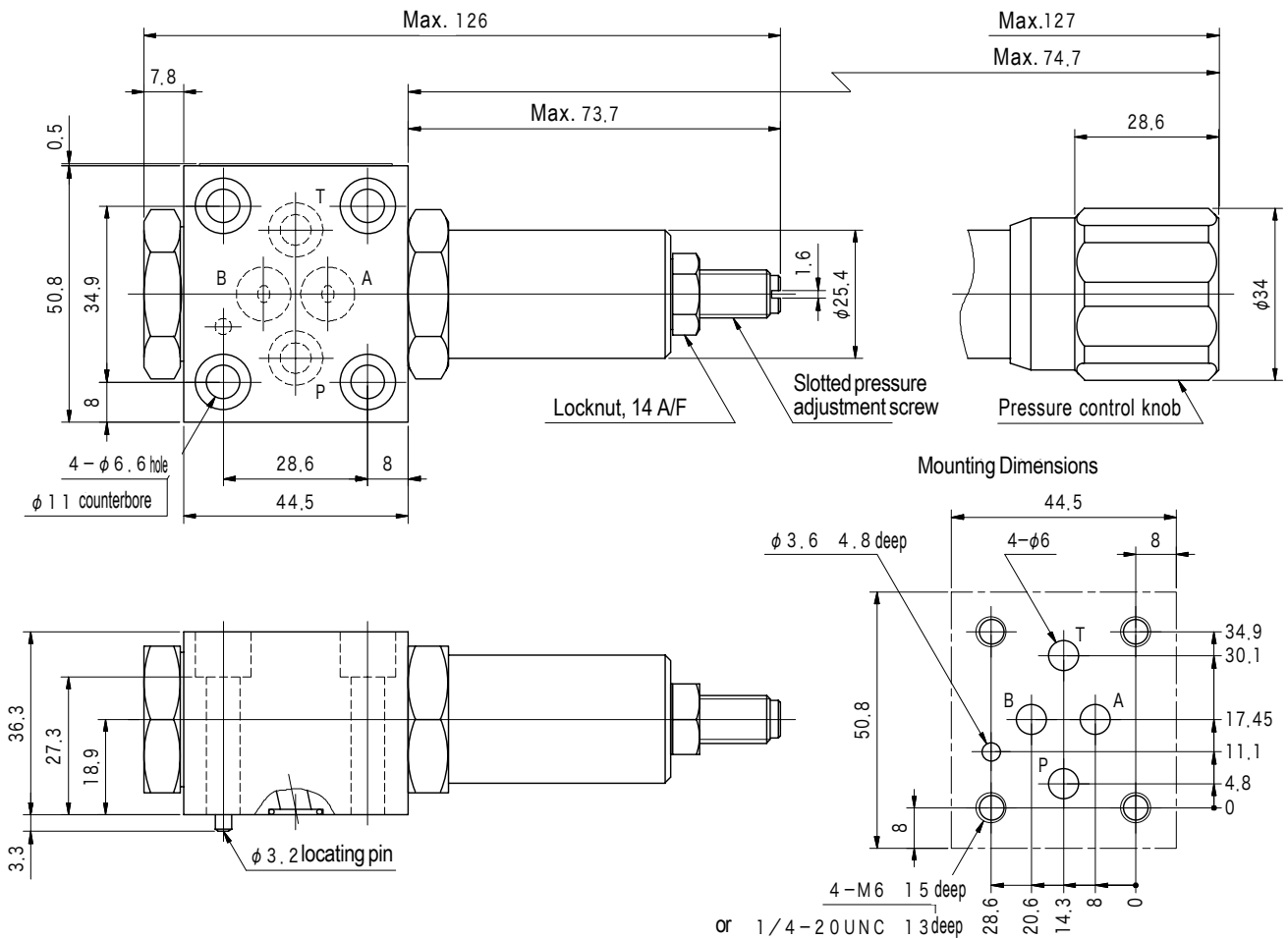
- Order mounting bolts separately.
- Mounting bolt tightening torque: 8~10 Nm

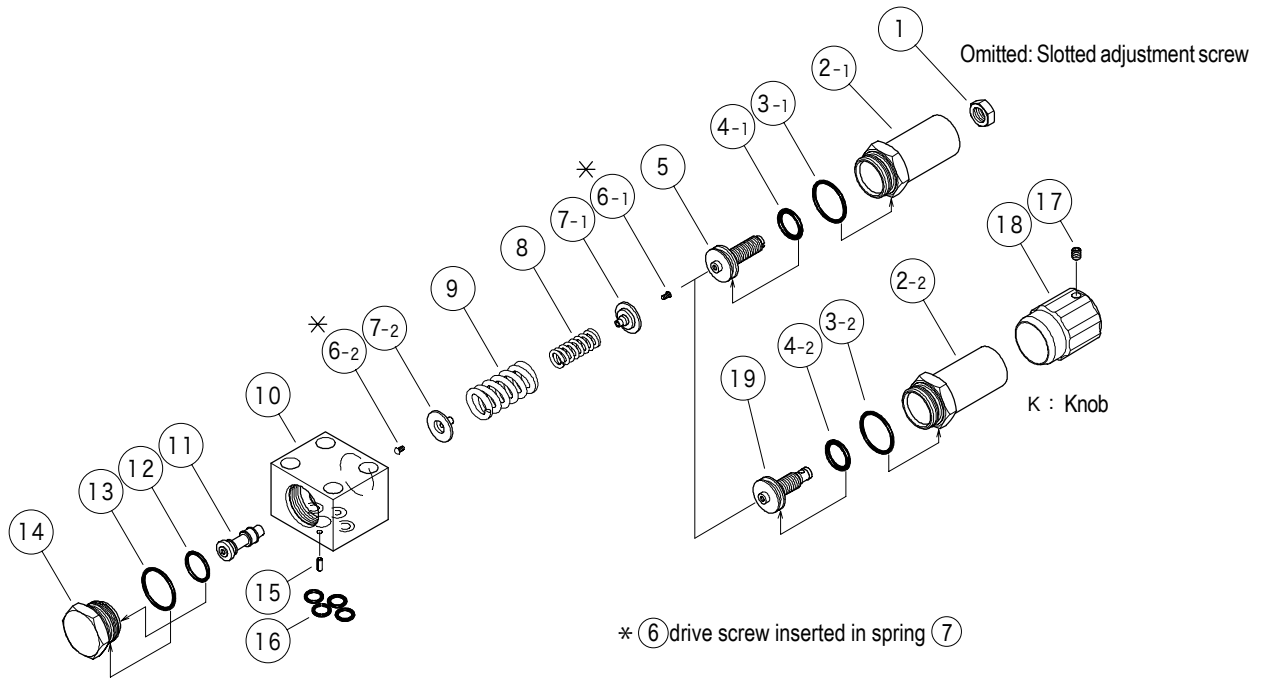
Subplate

| Connect Port Orientation | Mounting Bolts | Subplate | Connec. Port Rc |
|--------------------------|----------------|-------------------|-----------------|
| Bottom Piping | M6 | DGM-02-JA-20-R-J | 1/4 |
| | | DGM-03-JA-20-R-J | 3/8 |
| | 1/4-20UNC | DGM-02-JA-20-B-J | 1/4 |
| | | DGM-03-JA-20-B-J | 3/8 |
| Side Piping | M6 | DGME-02-JA-20-R-J | 1/4 |
| | | DGME-03-JA-20-R-J | 3/8 |
| | 1/4-20UNC | DGME-02-JA-20-B-J | 1/4 |
| | | DGME-03-JA-20-B-J | 3/8 |

- Subplates should be ordered separately.
- Mounting bolts are not included.
- See page Q7 for dimensions.

Dimensions



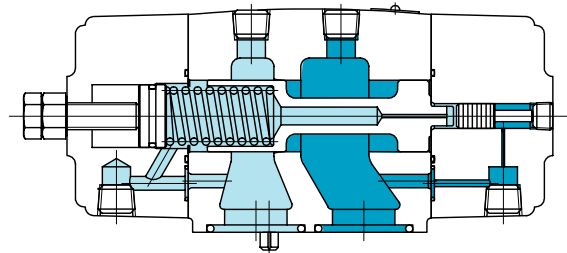


O-Rings

| No. | Part No. | Standard | Qty |
|-----|-----------|-----------------------|-----|
| 3 | 007902119 | AS568-021 (NBR, Hs90) | 1 |
| 4 | 007911417 | AS568-114 (NBR, Hs70) | 1 |
| 12 | 007901617 | AS568-016 (NBR, Hs70) | 1 |
| 13 | 007902119 | AS568-021 (NBR, Hs90) | 1 |
| 16 | 007901117 | AS568-011 (NBR, Hs70) | 4 |

Pressure control valves

(sequence, counterbalance, relief, unloading valves) R(C)G



- Direct acting type pressure control valve. Valve can be configured in differing internal/external pilot pressure and drain combinations to provide sequence, counterbalance, relief, and unload functions.
- As sequence or counterbalance valve, reverse flow from secondary side to primary side is enabled with an integrated check valve.
- As sequence valve, valve is used to control multiple actuators which operate in succession. When pressure in primary side A exceeds setting pressure, pressurized flow is delivered to secondary side B.
- As counterbalance valve, valve generates pressure in the actuator

return side to prevent runaway loads caused by gravity, etc. Pressurized oil is not released until primary side A pressure exceeds the setting pressure.

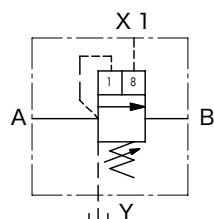
- As relief valve, in addition to functioning as a safety valve to prevent excessive pressure in the circuit, acts to maintain fixed maximum circuit pressure. Pressurized oil is released to tank when pressure in primary side A exceeds the setting pressure.
- As unload valve, pressurized oil is released to tank when external pilot pressure exceeds the pressure setting to unload the circuit.

Functional Symbols

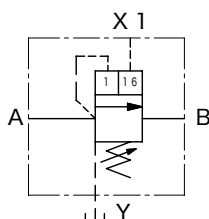
| | | Type 1 | Type 2 | Type 3 | Type 4 |
|----------------|-------|--------------------------|----------------------------------|----------------------------------|--------------------------|
| | | Internal Pilot | | External Pilot | |
| | | Internal Drain | External Drain | | Internal Drain |
| Gasket Mounted | RG | Relief Valve | Sequence Valve | Sequence Valve | Unload Valve |
| | R(C)G | Counterbalance Valve | Sequence Valve w/Check Valve | Sequence Valve w/Check Valve | Counterbalance Valve |

P Type with auxiliary pilot function (typical example RG-2)

• For pressure adjustment range A, B, D



• For pressure adjustment range F



- If the auxiliary pilot port is used, for pressure adjustment range F, valve will operate at 1/16 the setting pressure; for pressure adjustment range A, B, D, valve will operate at 1/8 the setting pressure. The pressure of the auxiliary pilot port should be less than 14 MPa.
- For P type auxiliary pilot port, there is no X, Y, Z pressure adjustment range.

Model Code

(F3) - R(C)G - 03-B (P) 1-22 - J A - (S100) - J

1 2 3 4 5 6 7 8

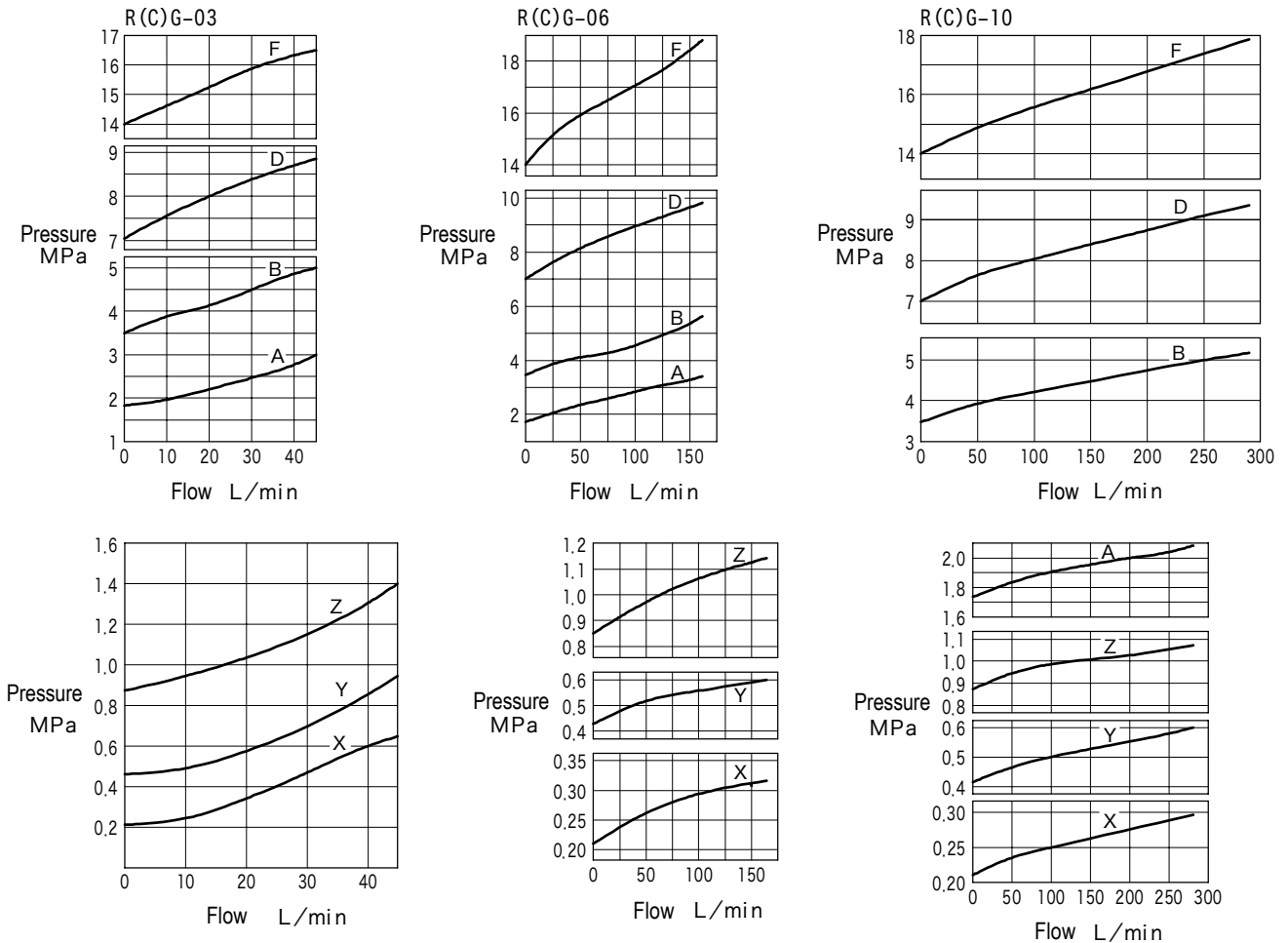
- | | |
|---|--|
| <p>1 Fluid Omitted for mineral oil, water glycol F3:Phosphate ester</p> <p>2 Pressure control valve RG:Gasket mounting Pressure control valve with check valve RCG:Gasket mounting</p> <p>3 Size See 'Specifications'</p> <p>4 Pressure adjustment range See 'Specifications'</p> | <p>5 Auxiliary pilot port Omitted for no auxiliary pilot port (st'd) P:Auxiliary pilot port (Press. control range: A, B, D, F only)</p> <p>6 Valve function See 'Functional Symbols'</p> <p>7 Design no. 22:All series</p> <p>8 Code 03, 06 sizes only</p> |
|---|--|

Specifications

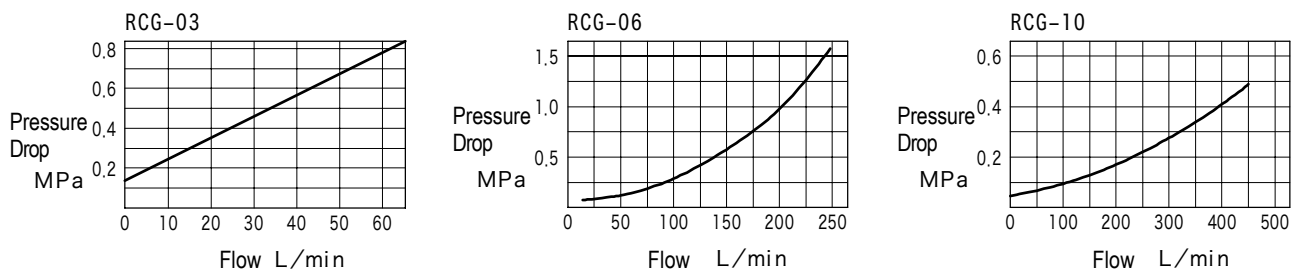
| Model | | Size | Max. Wkg. Pressure MPa | Max. Flow L/min | Pressure Adjustment Range MPa | Weight kg | |
|-----------------|--|------|------------------------|-----------------|---|-----------|-----|
| Gasket Mounting | | | | | | RG | RCG |
| R(C)G-03 | | 03 | 21 | 45 | X : 0.07~ 0.21 Y : 0.14~ 0.42 Z : 0.25~ 0.88 A : 0.53~ 1.75 B : 0.88~ 3.5 D : 1.75~ 7 F : 3.5 ~14 | 3.5 | 4 |
| R(C)G-06 | | 06 | | 115 | | 6.5 | 7 |
| R(C)G-10 | | 10 | | 285 | | 12 | 13 |
| — | | 12 | | | | | |
| — | | 16 | | | | | |

Performance Curves (at 20 mm²/s)

• Flow - Pressure Characteristics



• Pressure Drop Characteristics (check valve free flow direction)



Notes On Use

- The drain line of the type 2, 3 function valve and secondary line of the type 1 relief valve, type 4 unload valve should be returned directly to the tank. Ensure that the end of the pipe is below the fluid level of the tank.
- The setting pressure of the valve should differ at least 2MPa from other relief valves in the circuit (setting pressure of this valve lower).
- Loosen locknut of adjustment screw and turning clockwise will raise pressure, and turning counterclockwise will lower pressure.

Mounting Bolts (JIS B1176, Strength Class 12.9)

| Valve Model | Metric | Unified | Qty |
|-------------|-----------|-------------------|-----|
| R (C) G-03 | M10 × 70 | 3/8-16UNC × 69.8 | 4 |
| R (C) G-06 | M10 × 85 | 3/8-16UNC × 82.5 | 4 |
| R (C) G-10 | M10 × 110 | 3/8-16UNC × 107.9 | 6 |

- Order mounting bolts separately.
- Mounting bolt tightening torque: R(C)G-03/06/10: 54~66Nm

Subplate

| Valve Model | Subplate | Connec.Port Dia Rc |
|-------------|------------------|--------------------|
| R (C) G-03 | RXGM-03-20-JA-J | 3/8 |
| | RXGM-03X-20-JA-J | 1/2 |
| R (C) G-06 | RXGM-06-20-JA-J | 3/4 |
| | RXGM-06X-20-JA-J | 1 |
| R (C) G-10 | RXGM-10-20-JA-J | 1-1/4 |
| | RXGM-10X-20-JA-J | 1-1/2 |

- Subplates should be ordered separately.
- Mounting bolts are not included.
- See page Q4 for dimensions.

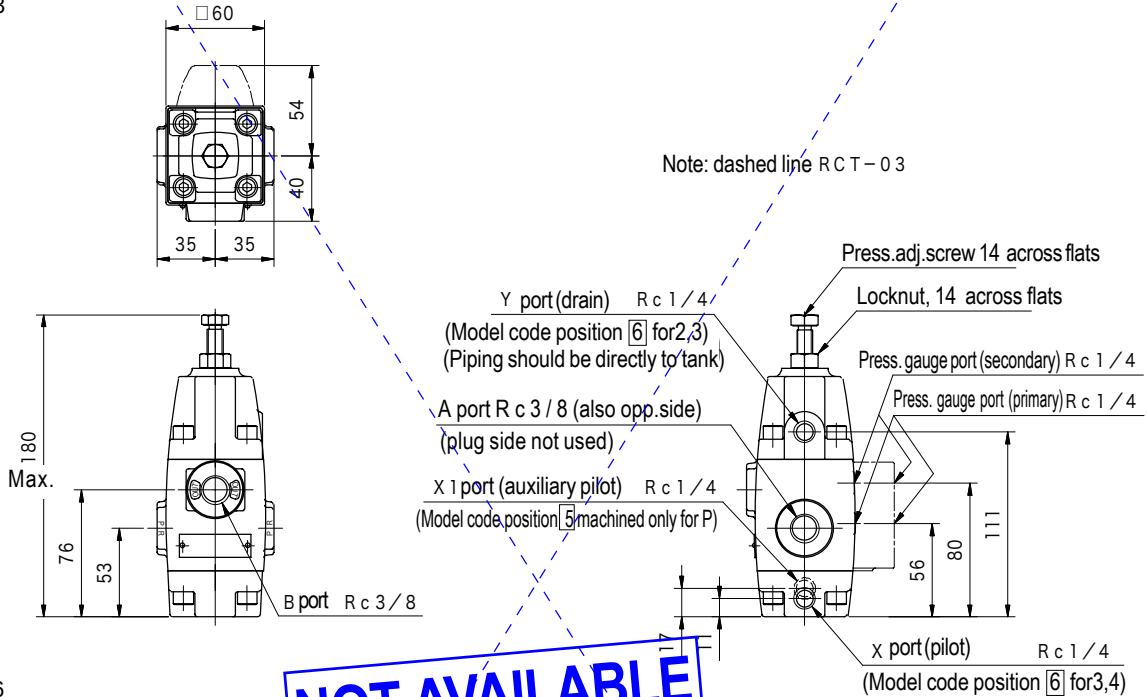
Piping Flange

| Valve Model | Flange | | | |
|-------------|--------------------|------------------|--|--------------------|
| | Connection Port Rc | Threaded | | Welded |
| | | Straight Flange | | Straight Flange |
| RF-16 | 1-1/2 | FL-12-PS-20-JA-J | | FL-12-TS-20-JA-S18 |
| | 2 | FL-16-PS-20-JA-J | | FL-16-TS-20-JA-S18 |

- Flanges should be ordered separately.
- Mounting bolts, spring washer, O rings included.
- See page Q14 for dimensions.
- Mounting bolt tightening torque: 108 ~ 132 Nm

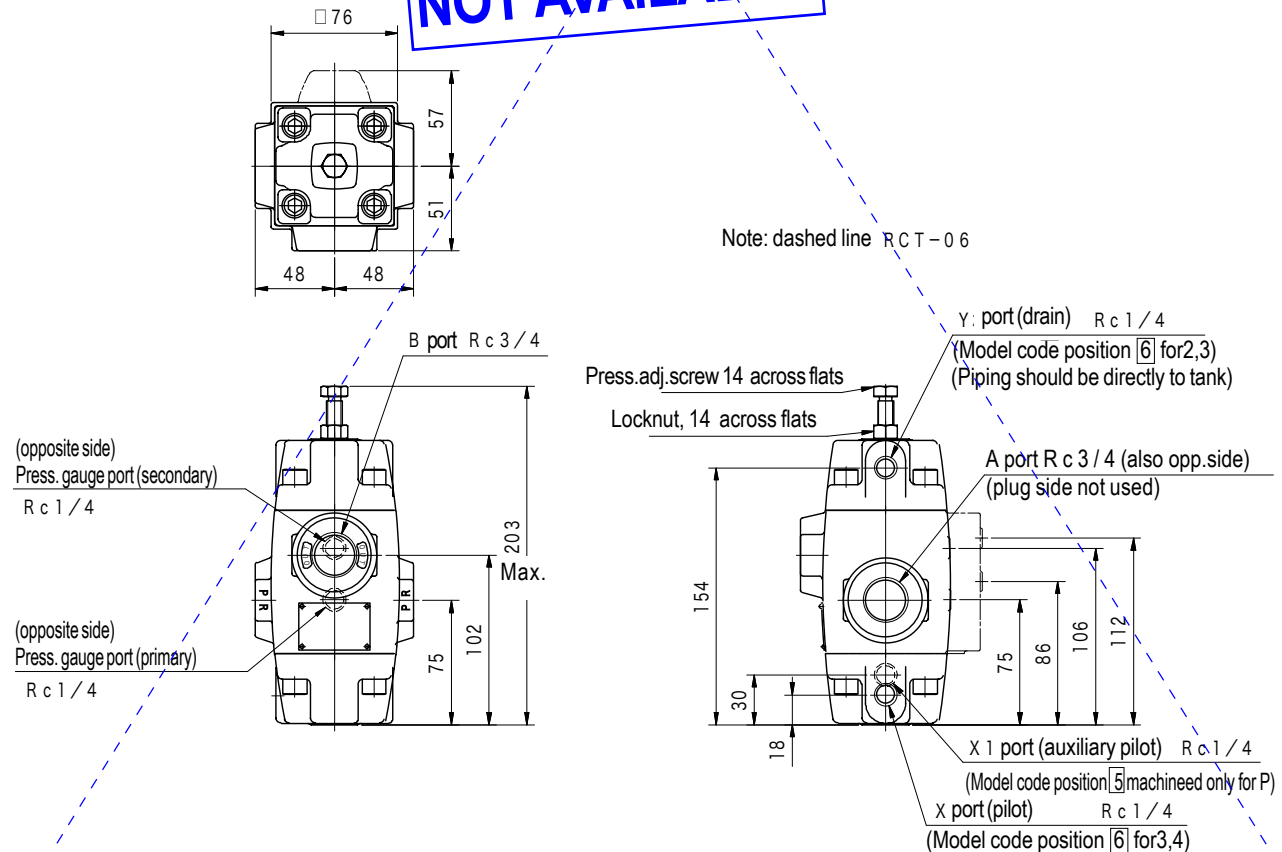
Dimensions

R(C)T-03



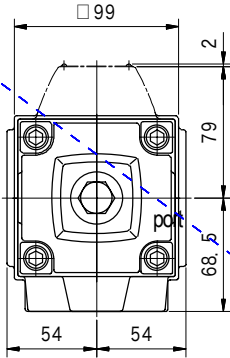
R(C)T-06

NOT AVAILABLE



Dimensions

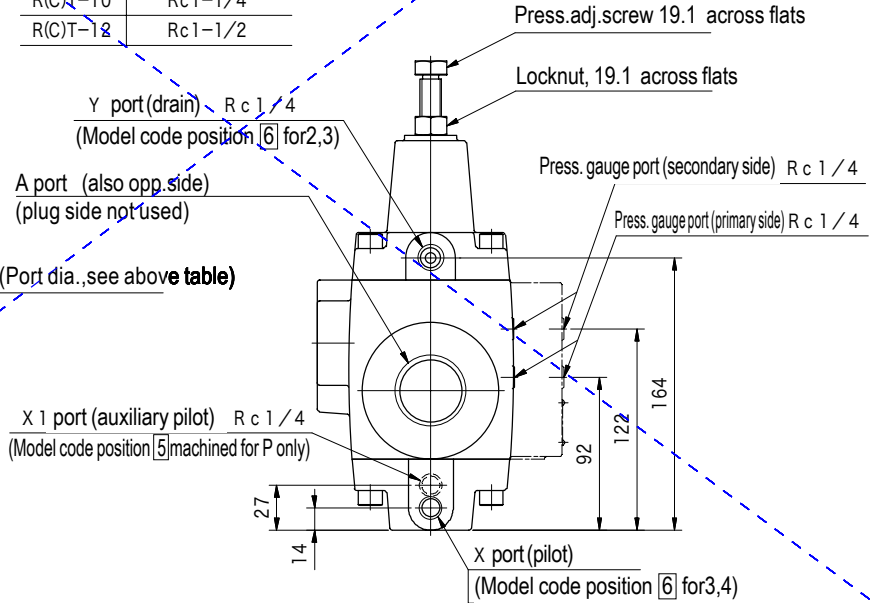
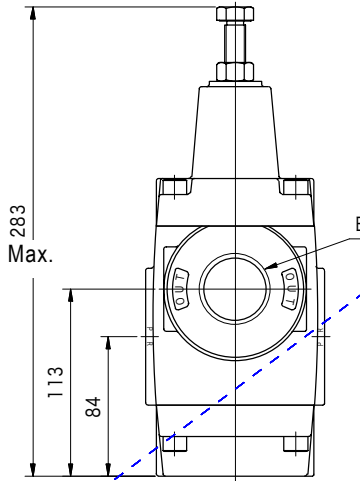
R(C)T-10
R(C)T-12



NOT AVAILABLE

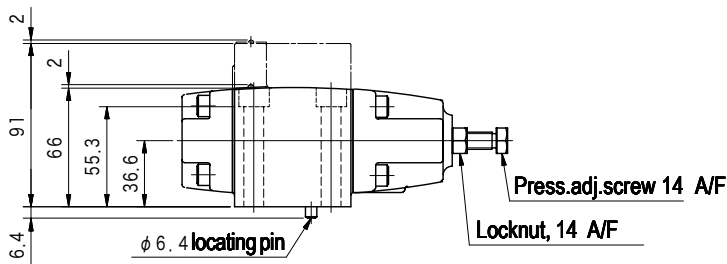
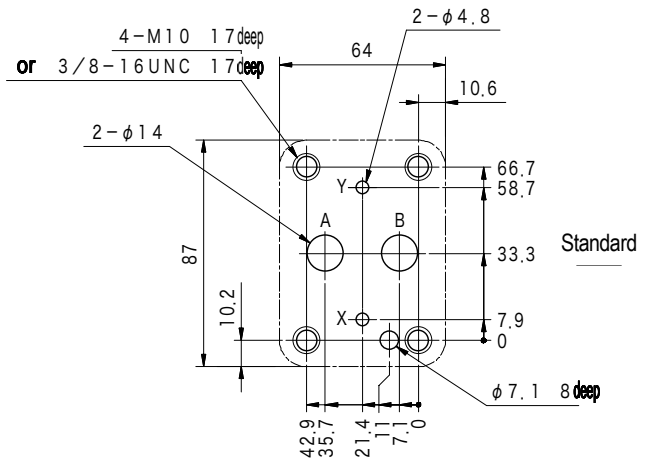
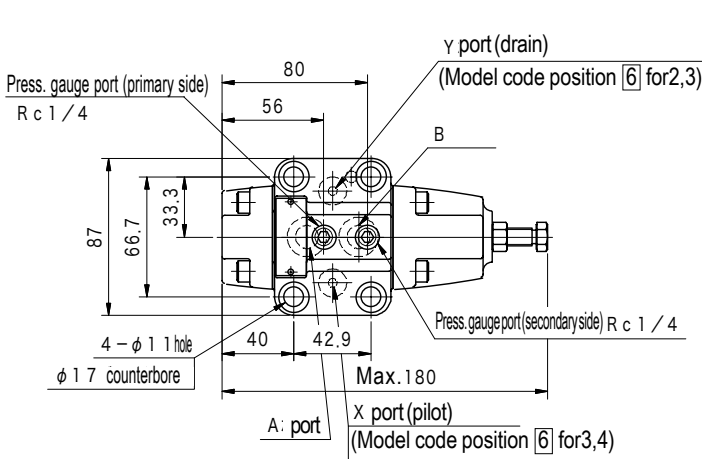
| Model | A, B | Port Dia. |
|----------|------|-----------|
| R(C)T-10 | | Rc1-1/4 |
| R(C)T-12 | | Rc1-1/2 |

Note: dashed line RCT-10/12

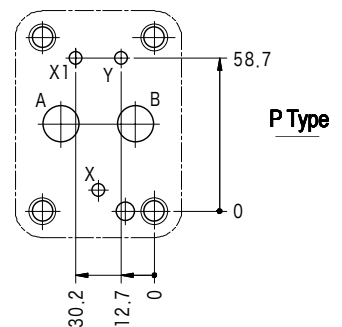


R(C)G-03

Mounting Dimensions (ISO 6264-06-Bequiv.)

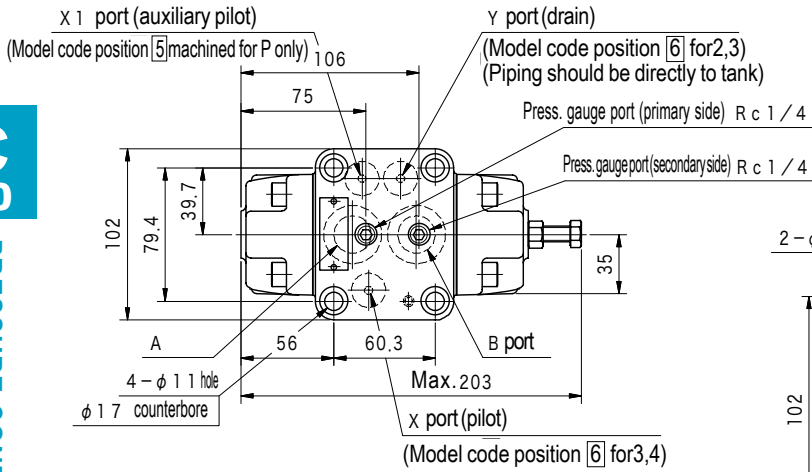


Note: dashed line RCG-03

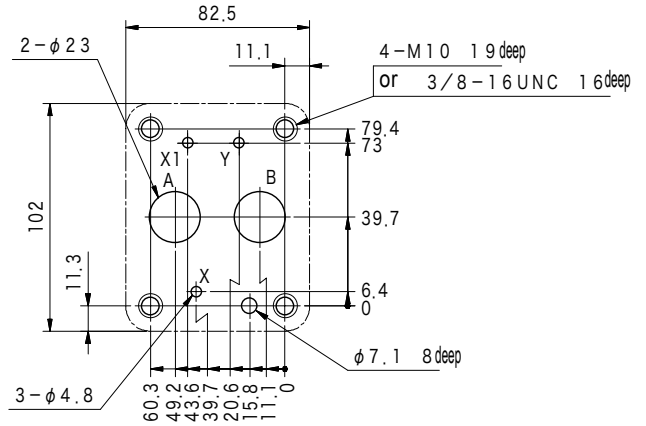


Dimensions

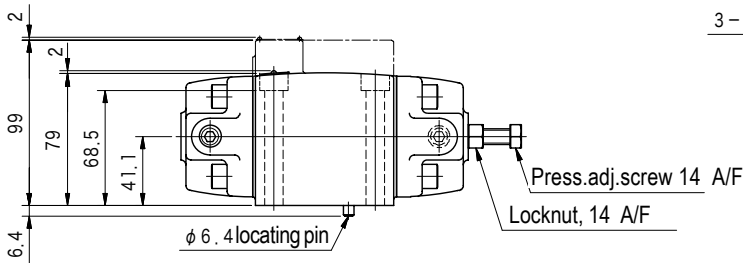
R(C)G-06



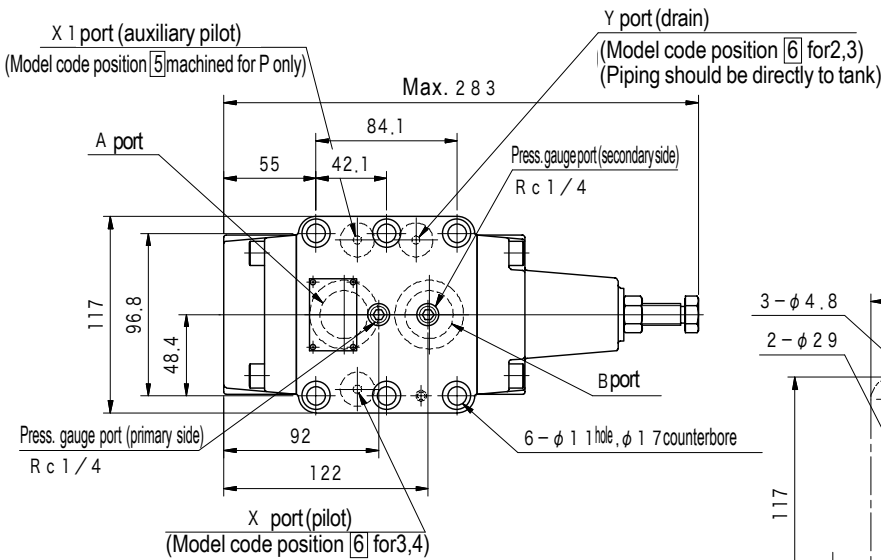
Mounting Dimensions
(ISO 6264-08-Bequiv.)



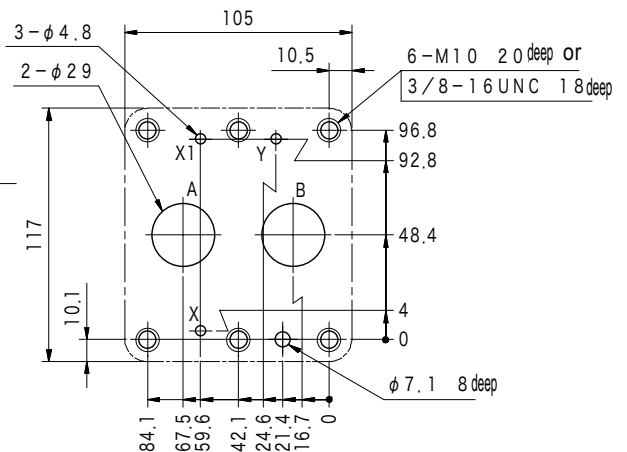
Note: dashed line RCG-06



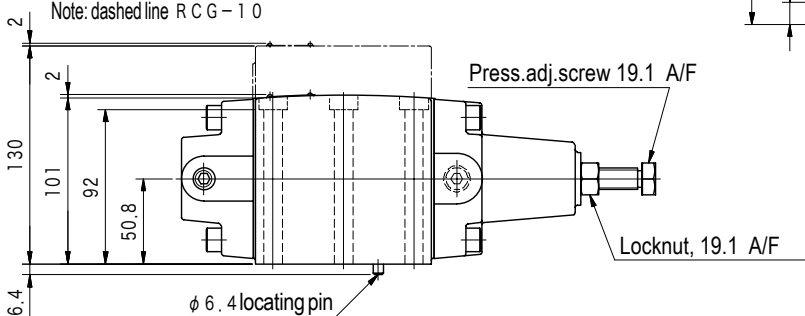
R(C)G-10



Mounting Dimensions
(ISO 6264-10-Bequiv.)

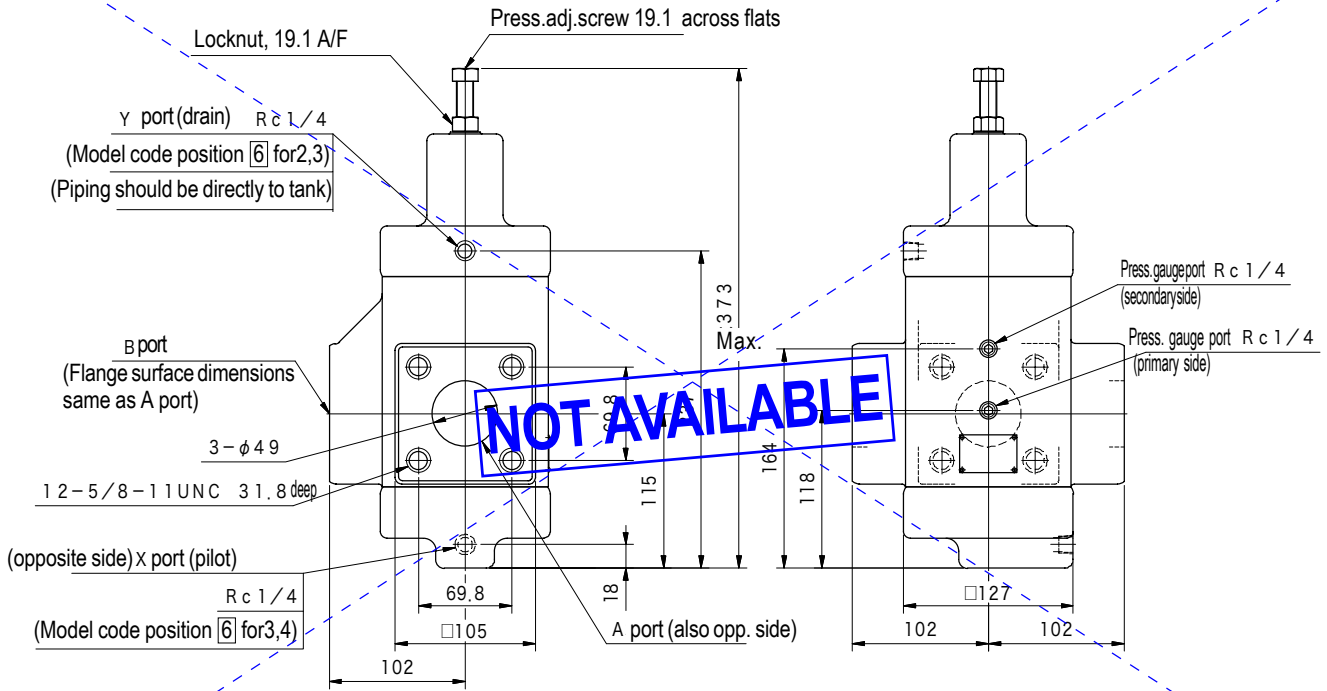


Note: dashed line RCG-10

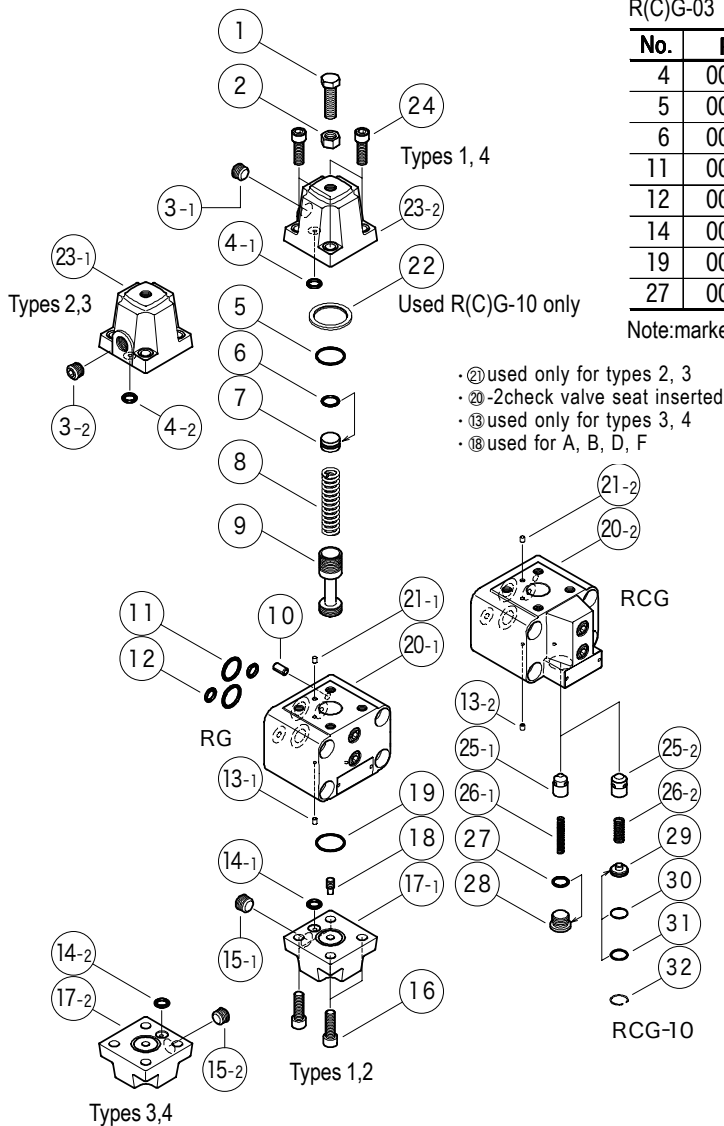


Dimensions

RF-16



Construction



R(C)G-03 O-rings

| No. | Part No. | Standard | Qty |
|-----|-----------|-----------------------|-----|
| 4 | 007901117 | AS568-011 (NBR, Hs70) | 1 |
| 5 | 007902017 | AS568-020 (NBR, Hs70) | 1 |
| 6 | 007901417 | AS568-014 (NBR, Hs70) | 1 |
| 11 | 007911517 | AS568-115 (NBR, Hs70) | 2 |
| 12 | 007911117 | AS568-111 (NBR, Hs70) | 2※ |
| 14 | 007901117 | AS568-011 (NBR, Hs70) | 1 |
| 19 | 007902017 | AS568-020 (NBR, Hs70) | 1 |
| 27 | 007990619 | AS568-906 (NBR, Hs90) | 1 |

Note: marked O-rings, qty 3 for P type with auxiliary pilot

R(C)G-06 O-rings

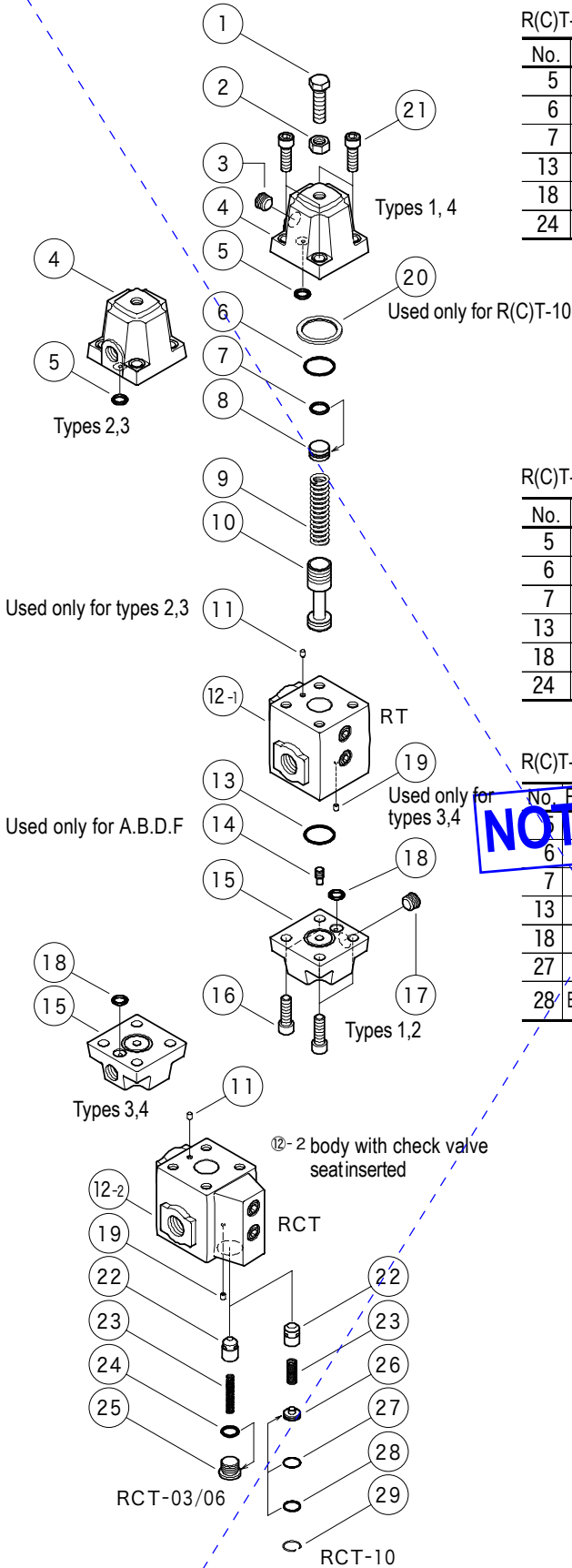
| No. | Part No. | Standard | Qty |
|-----|-----------|-----------------------|-----|
| 4 | 007901217 | AS568-012 (NBR, Hs70) | 1 |
| 5 | 007902517 | AS568-025 (NBR, Hs70) | 1 |
| 6 | 007901819 | AS568-018 (NBR, Hs90) | 1 |
| 11 | 007921617 | AS568-216 (NBR, Hs70) | 2 |
| 12 | 007911417 | AS568-114 (NBR, Hs70) | 2※ |
| 14 | 007901217 | AS568-012 (NBR, Hs70) | 1 |
| 19 | 007902517 | AS568-025 (NBR, Hs70) | 1 |
| 27 | 007990819 | AS568-908 (NBR, Hs90) | 1 |

Note: marked O-rings, qty 3 for P type with auxiliary pilot

R(C)G-10

| No. | Pt. Name | Part No. | Standard | Qty |
|-----|-------------|-----------|-----------------------|-----|
| 4 | O-ring | 007911017 | AS568-110 (NBR, Hs70) | 1 |
| 5 | O-ring | 007922217 | AS568-222 (NBR, Hs70) | 1 |
| 6 | O-ring | 007902119 | AS568-021 (NBR, Hs90) | 1 |
| 11 | O-ring | 007922017 | AS568-220 (NBR, Hs70) | 1 |
| 12 | O-ring | 007911417 | AS568-114 (NBR, Hs70) | 2※ |
| 14 | O-ring | 007911017 | AS568-110 (NBR, Hs70) | 1 |
| 19 | O-ring | 007922217 | AS568-222 (NBR, Hs70) | 1 |
| 30 | O-ring | 007902419 | AS568-024 (NBR, Hs90) | 1 |
| 31 | Backup Ring | 48197582 | MS28774-024 | 1 |

Note: marked O-rings, qty 3 for P type with auxiliary pilot



R(C)T-03 O-rings

| No. | Part No. | Standard | Qty |
|-----|-----------|-----------------------|-----|
| 5 | 007901117 | AS568-011 (NBR, Hs70) | 1 |
| 6 | 007902017 | AS568-020 (NBR, Hs70) | 1 |
| 7 | 007901417 | AS568-014 (NBR, Hs70) | 1 |
| 13 | 007902017 | AS568-020 (NBR, Hs70) | 1 |
| 18 | 007901117 | AS568-011 (NBR, Hs70) | 1 |
| 24 | 007990619 | AS568-906 (NBR, Hs90) | 1 |

R(C)T-06 O-rings

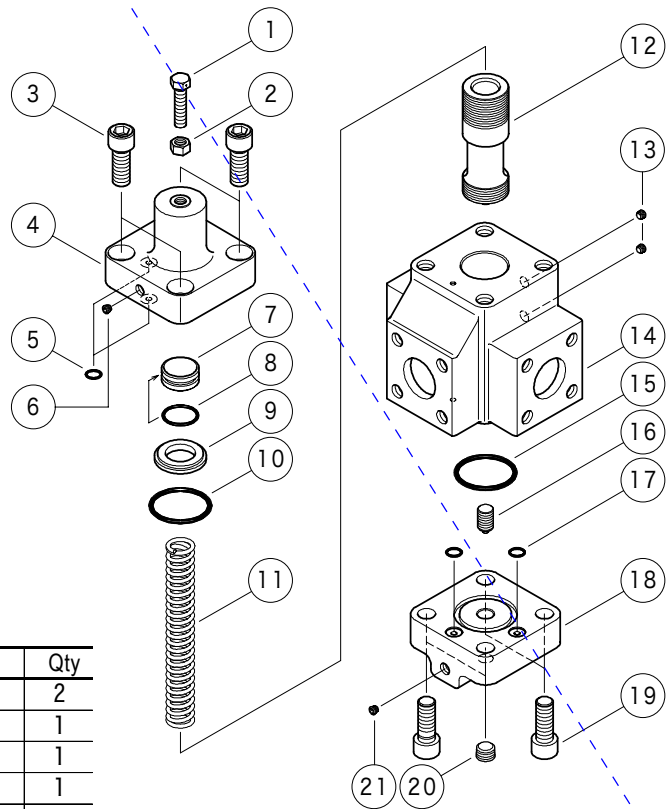
| No. | Part No. | Standard | Qty |
|-----|-----------|-----------------------|-----|
| 5 | 007901217 | AS568-012 (NBR, Hs70) | 1 |
| 6 | 007902517 | AS568-025 (NBR, Hs70) | 1 |
| 7 | 007901819 | AS568-018 (NBR, Hs90) | 1 |
| 13 | 007902517 | AS568-025 (NBR, Hs70) | 1 |
| 18 | 007901217 | AS568-012 (NBR, Hs70) | 1 |
| 24 | 007990819 | AS568-908 (NBR, Hs90) | 1 |

R(C)T-10

| No. | Pt. Name | Part No. | Standard | Qty |
|-----|--------------|-----------|-----------------------|-----|
| 6 | O-rings | 007922217 | AS568-222 (NBR, Hs70) | 1 |
| 7 | O-rings | 007902119 | AS568-021 (NBR, Hs90) | 1 |
| 13 | O-rings | 007922217 | AS568-222 (NBR, Hs70) | 1 |
| 18 | O-rings | 007911017 | AS568-110 (NBR, Hs70) | 1 |
| 27 | O-rings | 007902419 | AS568-024 (NBR, Hs90) | 1 |
| 28 | Backup Rings | 48197582 | MS28774-024 | 1 |

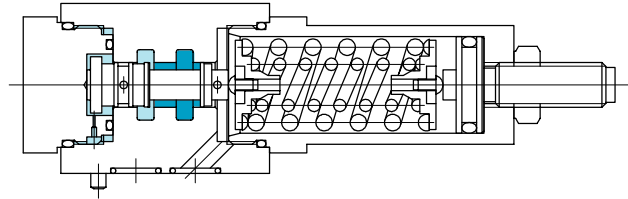
RF-16 O-rings

| No. | Part No. | Standard | Qty |
|-----|-----------|-----------------------|-----|
| 5 | 007911317 | AS568-113 (NBR, Hs70) | 2 |
| 8 | 007922017 | AS568-220 (NBR, Hs70) | 1 |
| 10 | 007933217 | AS568-332 (NBR, Hs70) | 1 |
| 15 | 007933217 | AS568-332 (NBR, Hs70) | 1 |
| 17 | 007911317 | AS568-113 (NBR, Hs70) | 2 |



RF-16

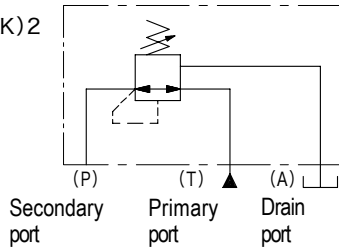
Pressure reducing valves (subplate mounted) XG1



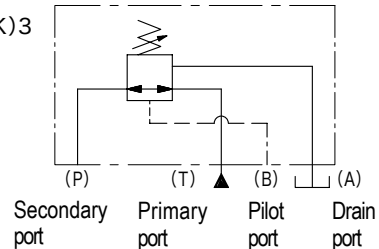
- Valve is used for branch circuits which operate at pressure lower than main circuit pressure.
- Reduced pressure in secondary is maintained at fixed pressure regardless of pressure fluctuations in the main (primary) circuit.
- Stacked with modular check valve DM8M-3A, valve can be used as reducing valve with check valve.

Functional Symbols

XG1-3F(K)2



XG1-3F(K)3



Model Code

(F3) - XG1 - 3 F (K) 2 - 30 - JA - (S1)

1 2 3 4 5 6 7

- 1 Fluid
Omit for mineral oil, water-glycol
F3: phosphate ester
- 2 Direct acting reducing valve (gasket mounting)
- 3 Pressure adjustment range
See 'Specifications'
- 4 Adjuster
Omit for slotted adjustment screw (st'd)
K: knob

- 5 Pilot
2: internal pilot
3: external pilot
- 6 Design no.
- 7 Special feature
S1: adjustable pressure range, 0.1 - 1 MPa
(max. flow 3 L/min)

Specifications

| Model | Max. Wkg. Pressure MPa | Max. Flow L/min | Press. Adj. Range MPa | Weight kg |
|-------|------------------------|-----------------|-----------------------|-----------|
| XG1 | 17.5 | 11.3 | 0.35~14 | 0.7 |

Notes On Use

- Loosen locknut of adjustment screw and turning clockwise will raise pressure, and turning counterclockwise will lower pressure.

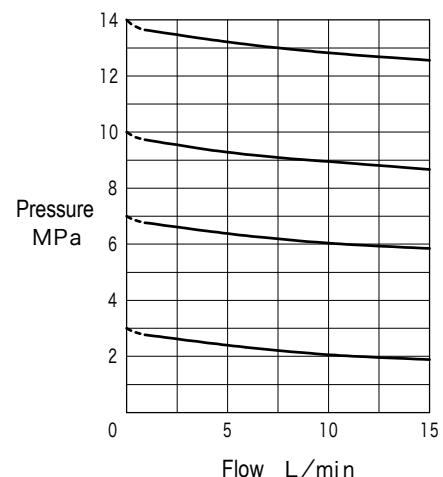
Mounting Bolts (JIS B1176, Strength Class 12.9)

| Hex Socket Bolts | | Qty |
|------------------|------------------|-----|
| Metric | Unified | 4 |
| M6 × 40 | 1/4-20UNC × 38.1 | |

- Order mounting bolts separately.
- Mounting bolt tightening torque: 8~10Nm

Performance Curves (at 20 mm²/s)

- Flow - Pressure Characteristics

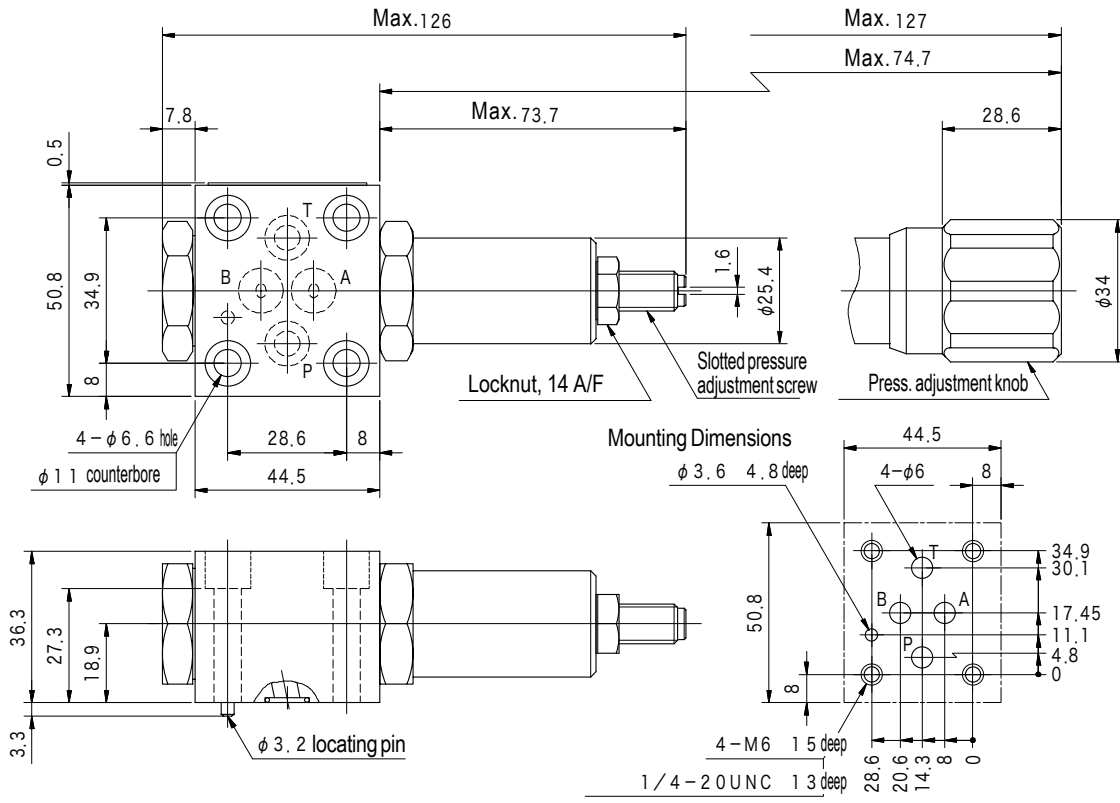


Subplate

| Connection Port Orientation | Mounting Bolts | Subplate | Connection Port Dia. RC |
|-----------------------------|----------------|-------------------|-------------------------|
| Bottom Piping | M6 | DGM-02-JA-20-R-J | 1/4 |
| | | DGM-03-JA-20-R-J | 3/8 |
| | 1/4-20UNC | DGM-02-JA-20-B-J | 1/4 |
| | | DGM-03-JA-20-B-J | 3/8 |
| Side Piping | M6 | DGME-02-JA-20-R-J | 1/4 |
| | | DGME-03-JA-20-R-J | 3/8 |
| | 1/4-20UNC | DGME-02-JA-20-B-J | 1/4 |
| | | DGME-03-JA-20-B-J | 3/8 |

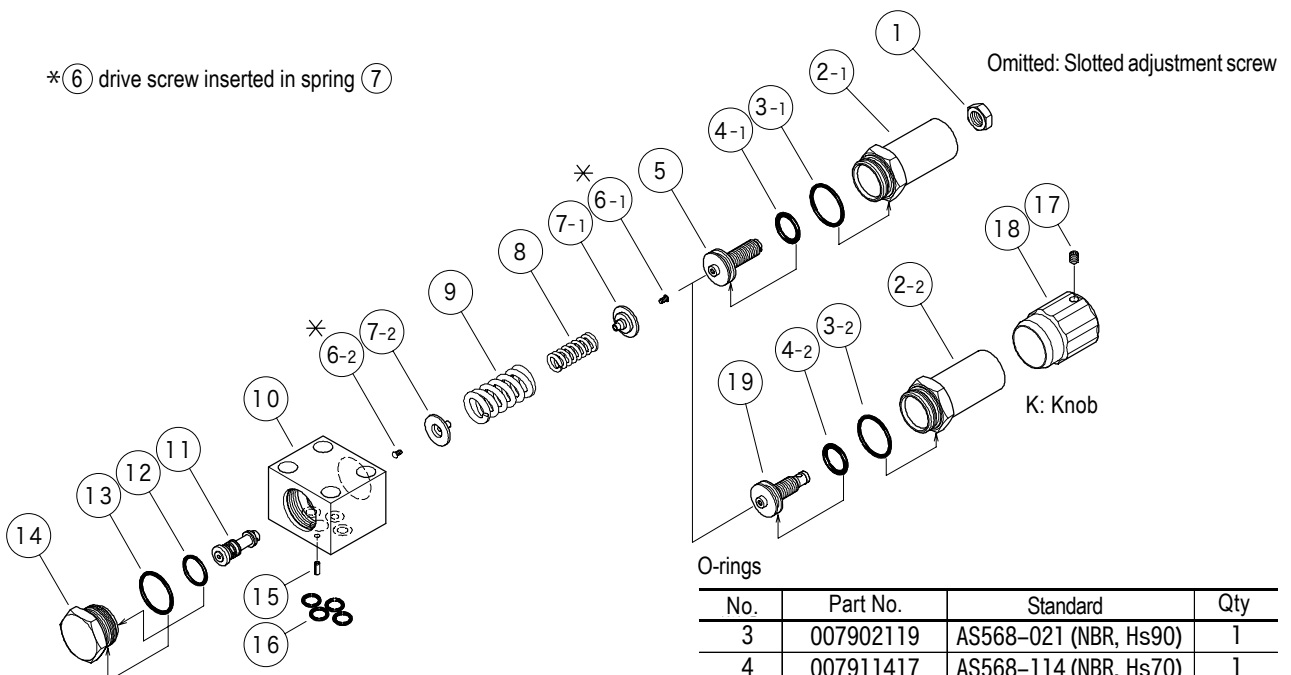
- Mounting bolts are not included.
- Subplates should be ordered separately.
- See page Q7 for dimensions.

Dimensions



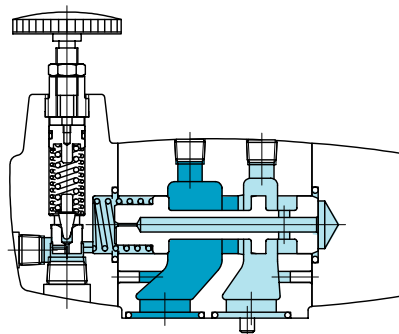
Construction

* ⑥ drive screw inserted in spring ⑦



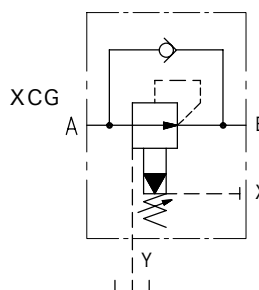
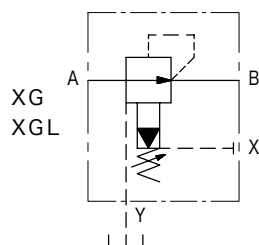
| No. | Part No. | Standard | Qty |
|-----|-----------|-----------------------|-----|
| 3 | 007902119 | AS568-021 (NBR, Hs90) | 1 |
| 4 | 007911417 | AS568-114 (NBR, Hs70) | 1 |
| 12 | 007901617 | AS568-016 (NBR, Hs70) | 1 |
| 13 | 007902119 | AS568-021 (NBR, Hs90) | 1 |
| 16 | 007901117 | AS568-011 (NBR, Hs70) | 4 |

Pressure reducing valves (with check valve) X(C)G, XGL



- Valve is used to set pressure in branch circuit lower than pressure of the main circuit.
- By connecting remote control valve (CGR-02, C-175, etc.) to vent port, branch circuit pressure can be set remotely.
- Reducing valve with check valve will allow free flow from the reduced pressure circuit B to A

Functional Symbols



Model Code

(F3)-X(C)G-03-F-20-JA-J

1 2 3 4 5

- 1 Fluid
Omitted for mineral oil, water glycol
F3:Phosphate ester
- 2 Pressure reducing valve
XG:Gasket mounting
XGL:Gasket mounting (for low pressure)
Reducing valve with check valve
XCG:Gasket mounting

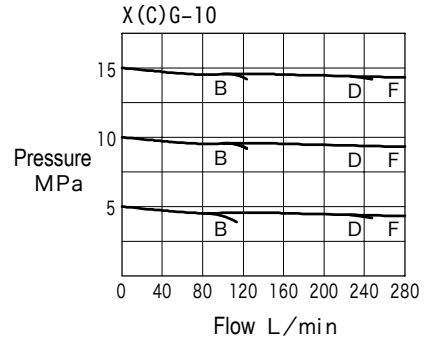
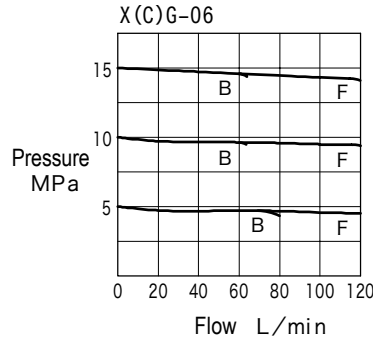
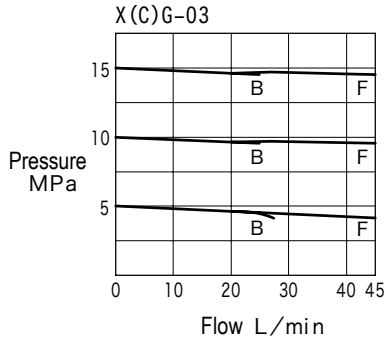
- 3 Size
See 'Specifications'
- 4 Pressure adjustment range
See 'Specifications'
- 5 Design no.
10:XGL-03
20:XG-03,06,10,XCG-03,06,10

Specifications

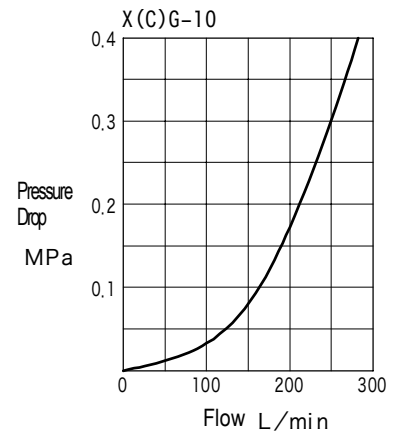
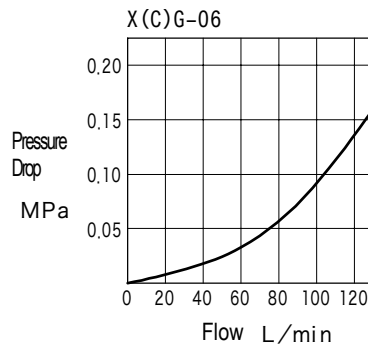
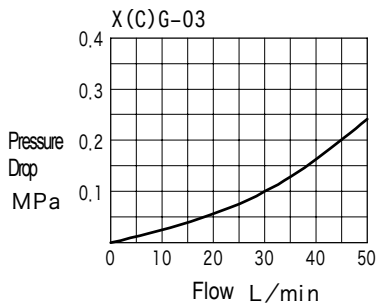
| Model | | Size | Max. Working Pressure MPa | Max. Flow L/min | Pressure Adjustment Range | | Weight kg | |
|-----------------|--|------|---------------------------|-----------------|---------------------------|---------|-----------|-----|
| Gasket Mounting | | | | | MPa | | XG | XCG |
| X(C)G-03 | | 03 | 21 | 23 | B | 0.56~20 | 4.0 | 4.2 |
| | | | | 50 | F | 1.05~20 | | |
| X(C)G-06 | | 06 | 21 | 57 | B | 0.56~20 | 6.0 | 6.5 |
| | | | | 110 | F | 1.4~20 | | |
| X(C)G-10 | | 10 | 21 | 95 | B | 0.7~20 | 12 | 13 |
| | | | | 190 | D | 1.16~20 | | |
| | | | | 280 | F | 1.58~20 | | |
| | | 16 | | 500 | F | 0.7~20 | 36.5 | |
| XGL-03 | | 03 | 14 | 30 | B | 0.18~7 | 4.0 | |

Performance Curves (at 20 mm²/s)

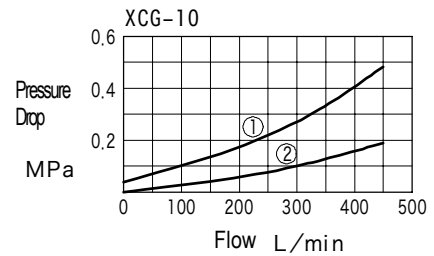
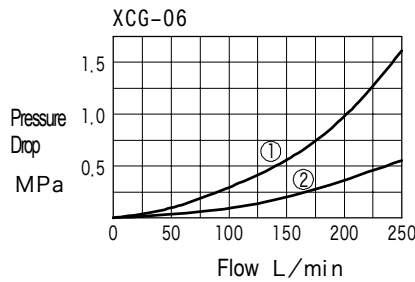
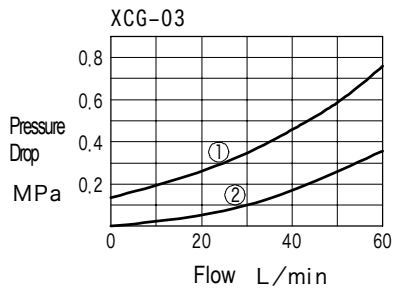
Flow-Pressure Characteristics



Pressure Drop Characteristics (before reducing, high pressure port to reduced pressure port)



Pressure drop characteristics ((check valve free flow direction, reducing port to high pressure port) ① main valve closed, ② main valve open)



Notes On Use

- To obtain good reducing operation, pressure differential of at least 1 MPa should be maintained between the high pressure (primary) side and the reduced pressure (secondary) side.
- Drain line should not be connected to other tank lines but should be returned directly to tank.
- Loosen locknut of adjustment screw and turning clockwise will raise pressure, and turning counterclockwise will lower pressure.

Mounting Bolts (JIS B1176, Strength Class 12.9)

| Valve Model | Flange | | Qty |
|-------------|-----------|-------------------|-----|
| | Metric | Unified | |
| X(C)G-03 | M10 × 70 | 3/8-16UNC × 69.8 | 4 |
| X(C)G-06 | M10 × 85 | 3/8-16UNC × 82.5 | 4 |
| X(C)G-10 | M10 × 110 | 3/8-16UNC × 107.9 | 6 |
| XGL-03 | M8 × 75 | 5/16-18UNC × 76.2 | 4 |

- Order mounting bolts separately.
- Mounting bolt tightening torque:
X(C)G-03/06/10: 54~66 Nm
XGL-03: 27~33Nm

Subplate

| Valve Model | Subplate | Connection Port Dia Rc |
|-------------|------------------|------------------------|
| X (C) G-03 | RXGM-03-20-JA-J | 3/8 |
| | RXGM-03X-20-JA-J | 1/2 |
| X (C) G-06 | RXGM-06-20-JA-J | 3/4 |
| | RXGM-06X-20-JA-J | 1 |
| X (C) G-10 | RXGM-10-20-JA-J | 1-1/4 |
| | RXGM-10X-20-JA-J | 1-1/2 |
| XGL-03 | XGLM-03-10-JA-J | 3/8 |

- Hex socket mounting bolts are included (unified thread).
- Subplates should be ordered separately.
- See page Q4, Q5 for dimensions.

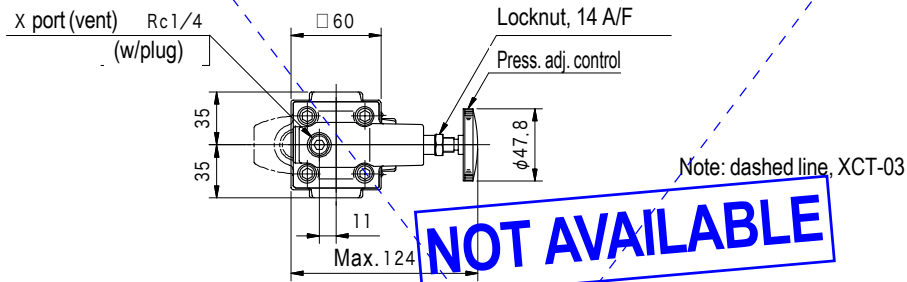
Piping Flange

| Valve Model | Flange | | | |
|-------------|------------------------|------------------|--------|--------------------|
| | threaded | | Welded | |
| | Connection Port Dia Rc | Straight Flange | Size | Straight Flange |
| XF-16 | 1-1/2 | FL-12-PS-20-JA-J | 1-1/2 | FL-12-TS-20-JA-S18 |
| | 2 | FL-16-PS-20-JA-J | 2 | FL-16-TS-20-JA-S18 |

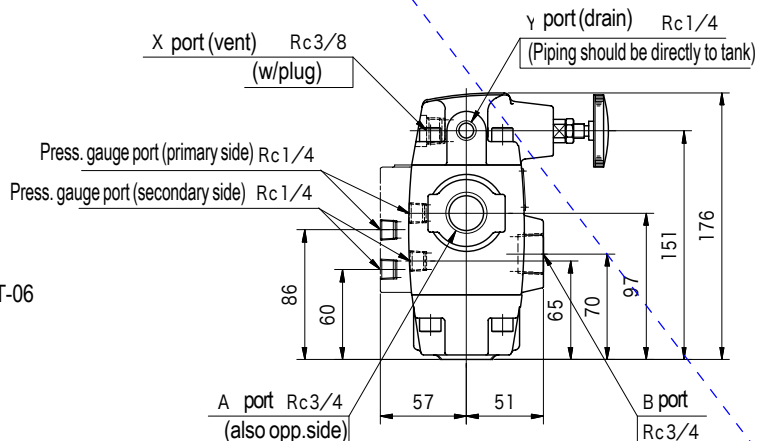
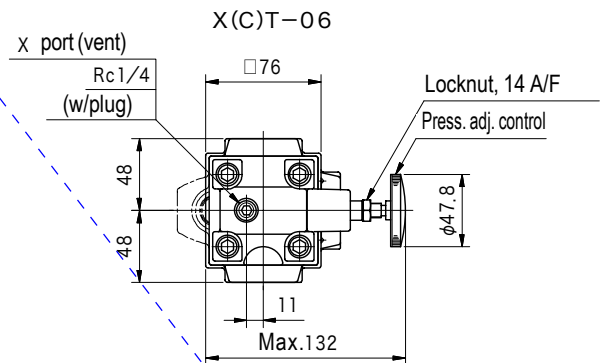
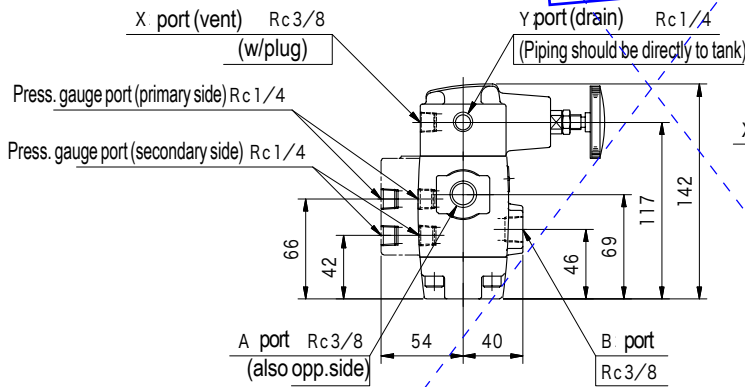
- Mounting bolts, spring washer, O rings included.
- Flanges should be ordered separately.
- See page Q14 for dimensions.
- Mounting bolt tightening torque: 108~132 Nm

Dimensions

X(C)T-03



NOT AVAILABLE

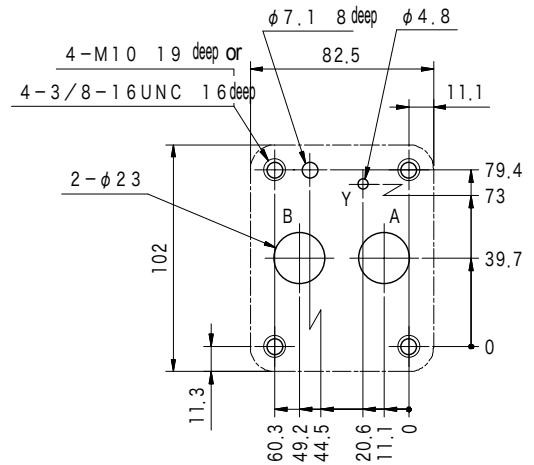
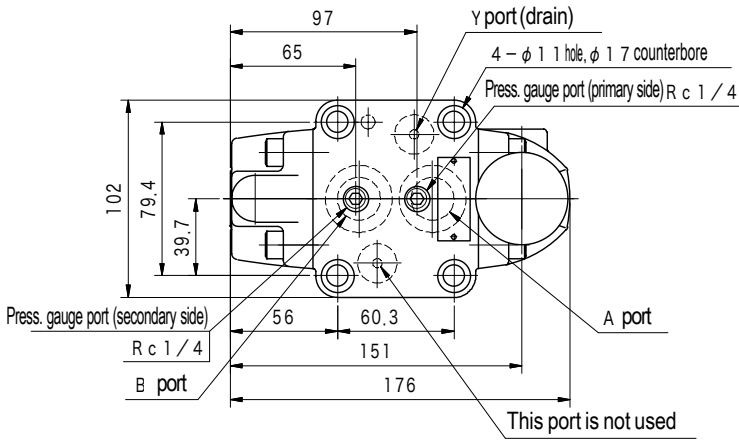


Note: dashed line, XCT-06

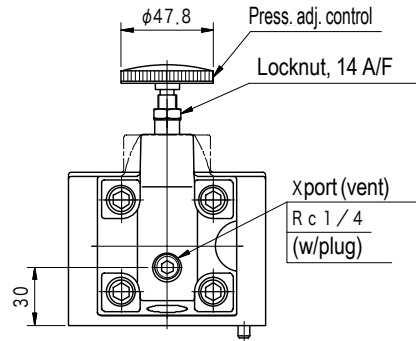
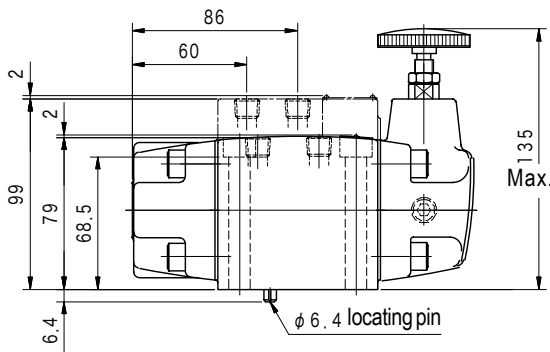
Dimensions

X(C)G-06

Mounting Dimensions (ISO 5781-08-Aequiv)

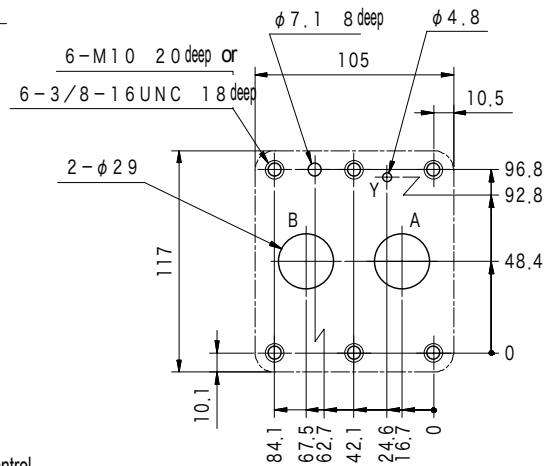
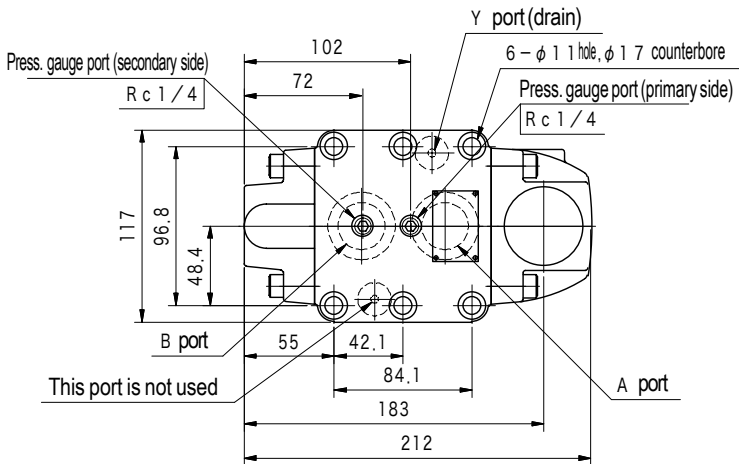


Note: dashed line, XCG-06

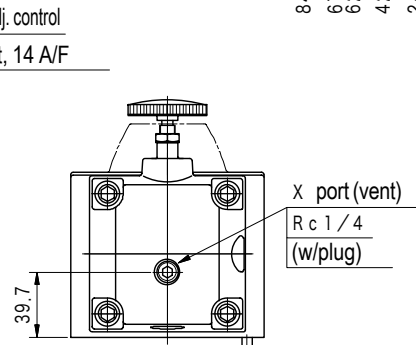
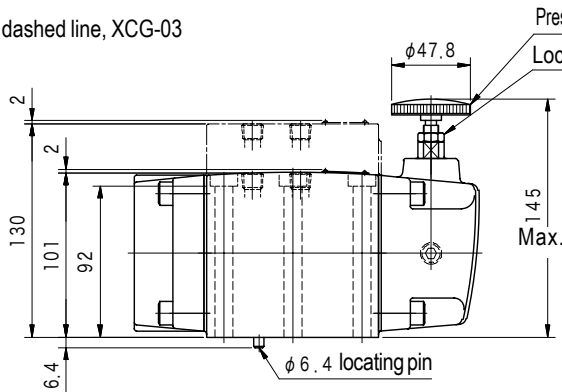


X(C)G-10

Mounting Dimensions (ISO 5781-10-Aequiv)

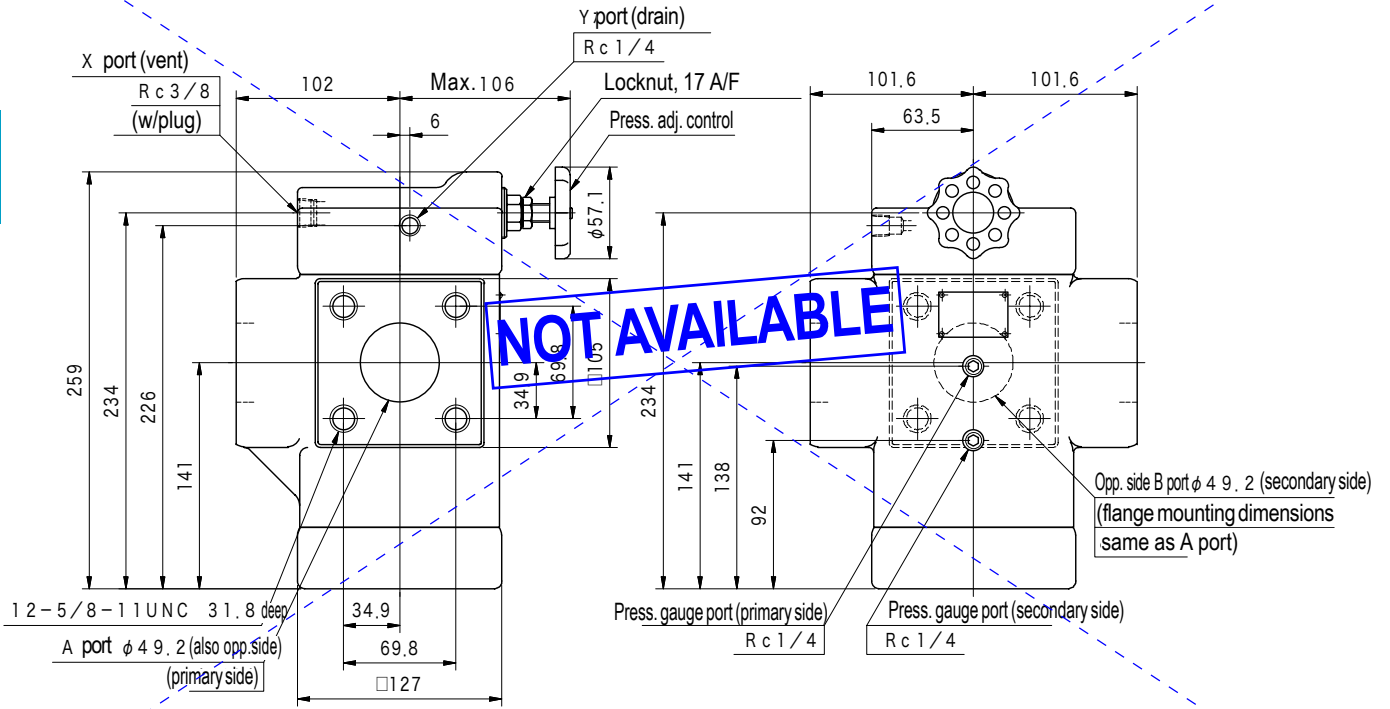


Note: dashed line, XCG-03



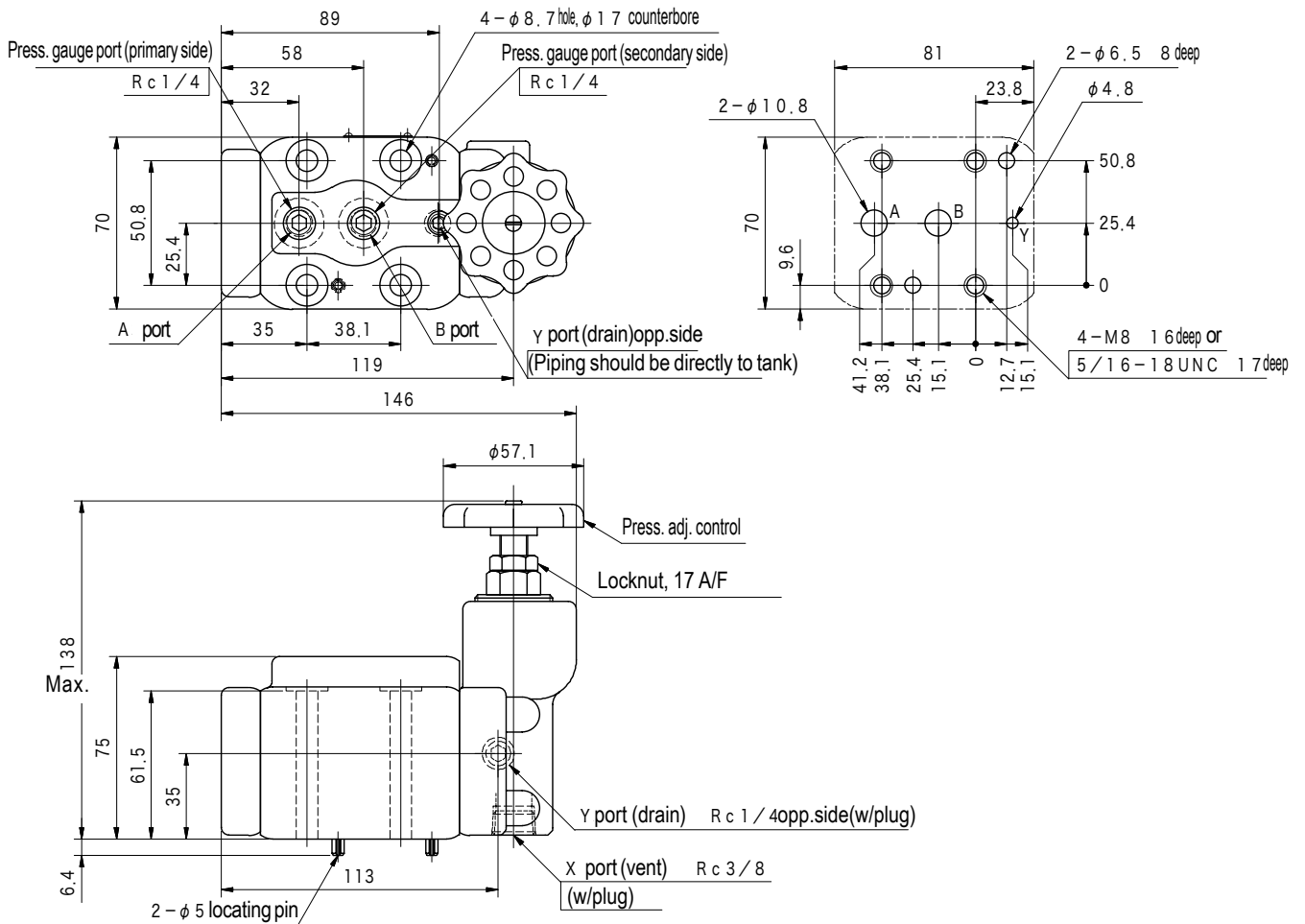
Dimensions

XF-16



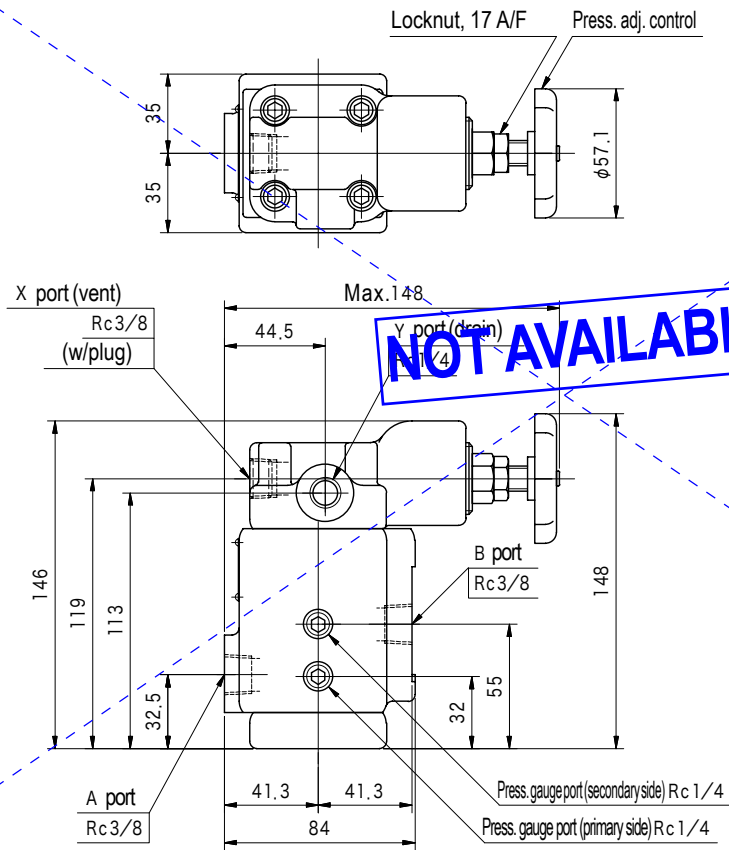
Mounting Dimensions

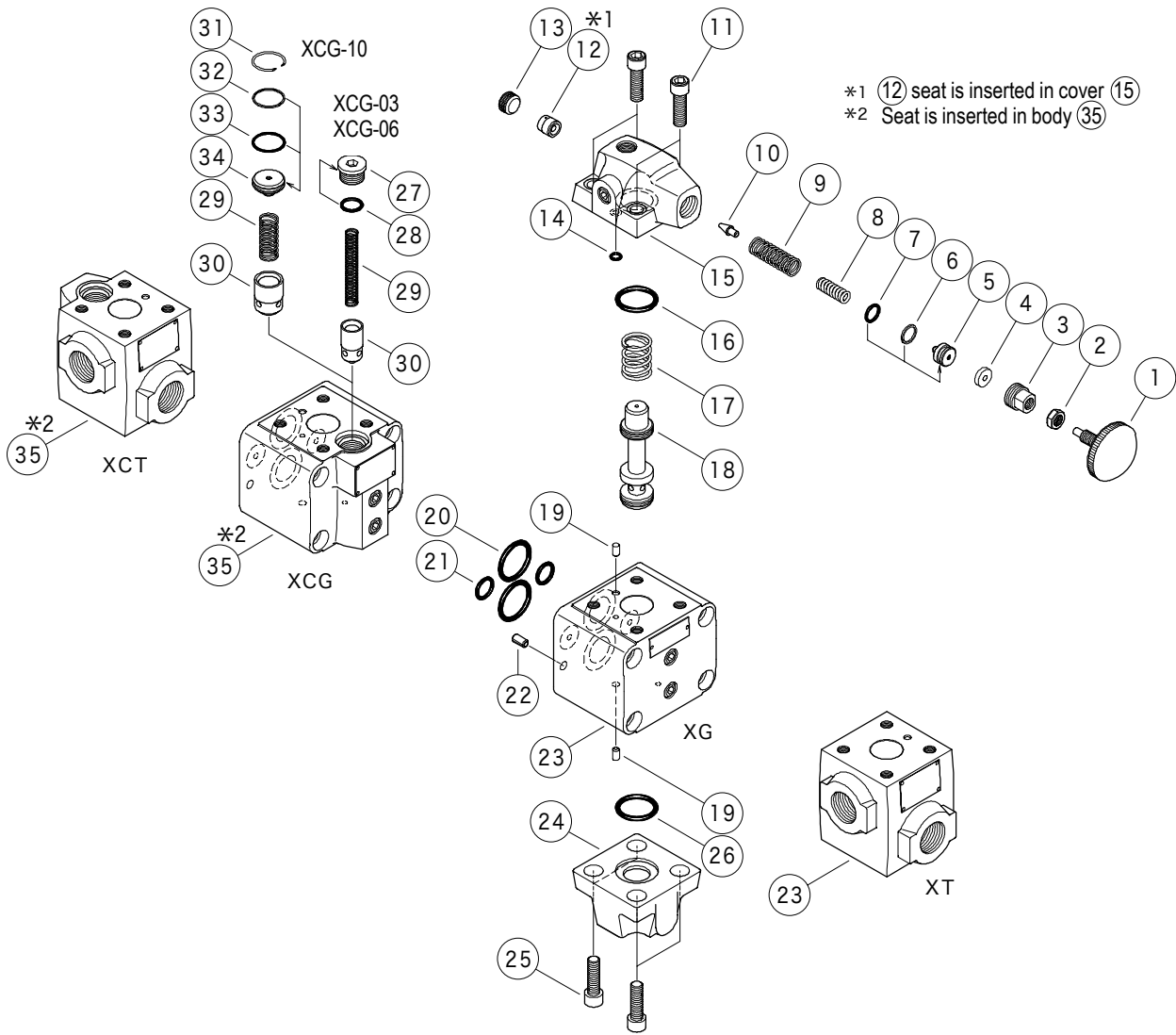
XGL-03



Dimensions

XTL-03





17 Springs

| Code | Size | | |
|------|----------|----------|----------|
| | 03 | 06 | 10 |
| B | VP350854 | VP322653 | VP359342 |
| D | — | — | VP359340 |
| F | VP350855 | VP348614 | VP359341 |

X(C)G-06

| No. | Part Name | Part No. | Standard | Qty |
|-----|-------------|-----------|-----------------------|-----|
| 6 | O-Ring | 48197572 | MS28774-014 | 1 |
| 7 | O-Ring | 007901417 | AS568-014 (NBR, Hs70) | 1 |
| 14 | O-Ring | 007901017 | AS568-010 (NBR, Hs70) | 1 |
| 16 | O-Ring | 007921517 | AS568-215 (NBR, Hs70) | 1 |
| 20 | O-Ring *3 | 007921617 | AS568-216 (NBR, Hs70) | 2 |
| 21 | O-Ring *3 | 007911417 | AS568-114 (NBR, Hs70) | 2 |
| 26 | Backup ring | 007921517 | AS568-215 (NBR, Hs70) | 1 |
| 28 | O-Ring *4 | 007990819 | AS568-908 (NBR, Hs90) | 1 |

*3 Used in XG, XCG *4 Used in XCG

X(C)G-03

| No. | Part Name | Part No. | Standard | Qty |
|-----|-------------|-----------|-----------------------|-----|
| 6 | O-Ring | 48197572 | MS28774-014 | 1 |
| 7 | O-Ring | 007901417 | AS568-014 (NBR, Hs70) | 1 |
| 14 | O-Ring | 007900817 | AS568-008 (NBR, Hs70) | 1 |
| 16 | O-Ring | 007911817 | AS568-118 (NBR, Hs70) | 1 |
| 20 | O-Ring *3 | 007911517 | AS568-115 (NBR, Hs70) | 2 |
| 21 | O-Ring *3 | 007911117 | AS568-111 (NBR, Hs70) | 2 |
| 26 | Backup ring | 007911817 | AS568-118 (NBR, Hs70) | 1 |
| 28 | O-Ring *4 | 007990619 | AS568-906 (NBR, Hs90) | 1 |

*3 Used in XG, XCG *4 Used in XCG

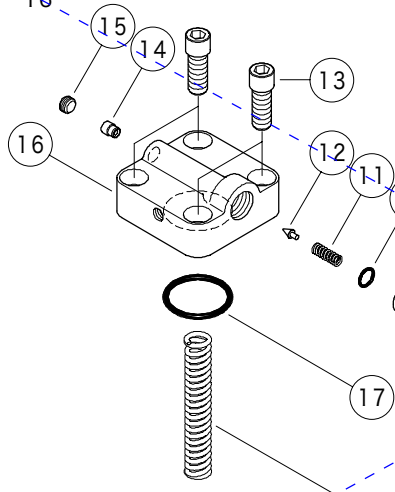
X(C)G-10

| No. | Part Name | Part No. | Standard | Qty |
|-----|----------------|-----------|-----------------------|-----|
| 6 | O-Ring | 48197572 | MS28774-014 | 1 |
| 7 | O-Ring | 007901417 | AS568-014 (NBR, Hs70) | 1 |
| 14 | O-Ring | 007911017 | AS568-110 (NBR, Hs70) | 1 |
| 16 | O-Ring | 007922217 | AS568-222 (NBR, Hs70) | 1 |
| 20 | O-Ring *3 | 007922017 | AS568-220 (NBR, Hs70) | 2 |
| 21 | O-Ring *3 | 007911417 | AS568-114 (NBR, Hs70) | 2 |
| 26 | Backup ring | 007922217 | AS568-222 (NBR, Hs70) | 1 |
| 32 | O-Ring *4 | 48197582 | MS28774-024 | 1 |
| 33 | Backup ring *4 | 007902419 | AS568-024 (NBR, Hs90) | 1 |

*3 Used in XG, XCG *4 Used in XCG

Construction

XF-16

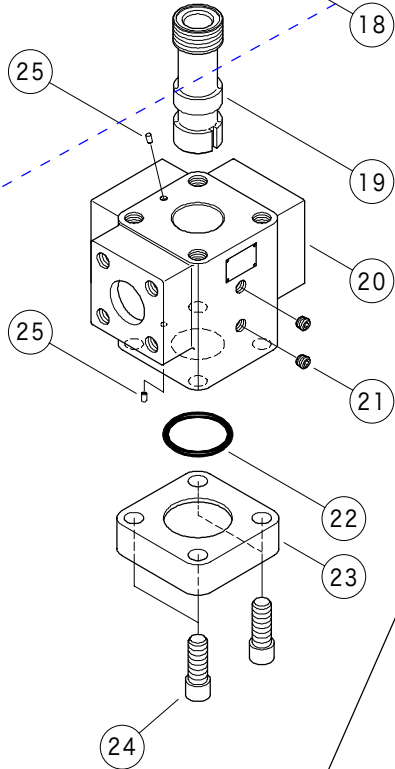


XF-16
O-Ring

| No. | Part No. | Standard | Qty |
|-----|-----------|-----------------------|-----|
| 8 | 007901017 | AS568-010 (NBR, Hs70) | 1 |
| 10 | 007911517 | AS568-115 (NBR, Hs70) | 1 |
| 17 | 007933217 | AS568-332 (NBR, Hs70) | 1 |
| 22 | 007933217 | AS568-332 (NBR, Hs70) | 1 |

Note: (14) inserted in (16)

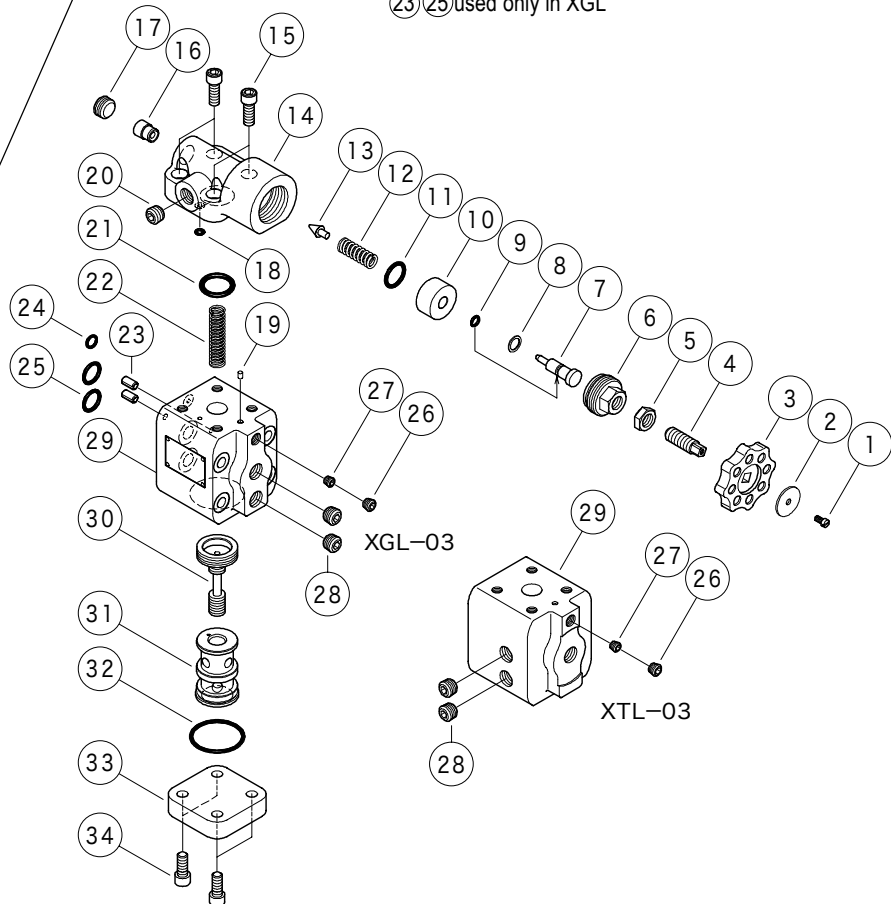
NOT AVAILABLE



XGL-03
O-Ring

| No. | Part No. | Standard | Qty |
|-----|-----------|-----------------------|-----|
| 9 | 007901017 | AS568-010 (NBR, Hs70) | 1 |
| 11 | 007911517 | AS568-115 (NBR, Hs70) | 1 |
| 18 | 007900817 | AS568-008 (NBR, Hs70) | 1 |
| 21 | 007921117 | AS568-211 (NBR, Hs70) | 1 |
| 24 | 007901117 | AS568-011 (NBR, Hs70) | 1 |
| 25 | 007911417 | AS568-114 (NBR, Hs70) | 2 |
| 32 | 007912817 | AS568-128 (NBR, Hs70) | 1 |

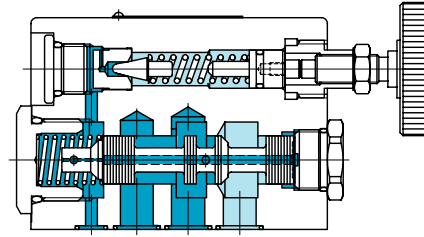
Note: (17) inserted in (15)
(23) (25) used only in XGL



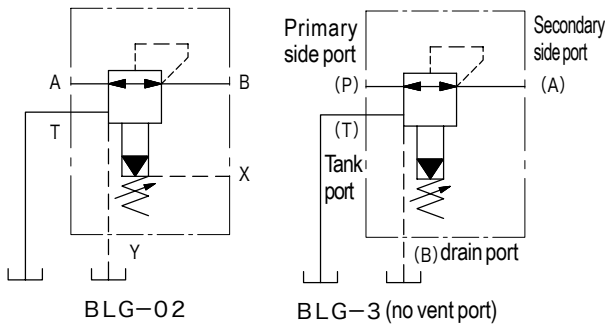
Balancer valves (pressure reducing & relief valves) BLG

64

PRESSURE CONTROL VALVES



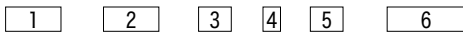
Functional Symbols



- The BLG balancer valve is a multi-function pressure control valve which supplies freely selected balanced pressure to the auxiliary cylinder for smooth ascent/descent drive operation of large load tables, etc. The valve integrates reducing and counterbalance (relief) functions and balance pressure can be freely changed by handle operation in the case of increasing or decreasing load.
- Compared to conventional circuits which utilize reducing valve, counterbalance (relief) valve, and check valve, these functions can be integrated into a single valve with the BLG.

Model Code

(F3) - BLG - 02 - B - 12 (-S20)



- Fluid
Omit for mineral oil, water-glycol
F3: phosphate ester
- Balancing valve (gasket mounting)
- Size and mounting (02, 3)
- Press. adjustment. range
B: 1-7 MPa
- Design no.
10: BLG-3 12: BLG-02
- Pressure gauge port
Omit for gauge port
S20: no gauge port (BLG-02 only)
Note: S20 is st'd for BLG-02

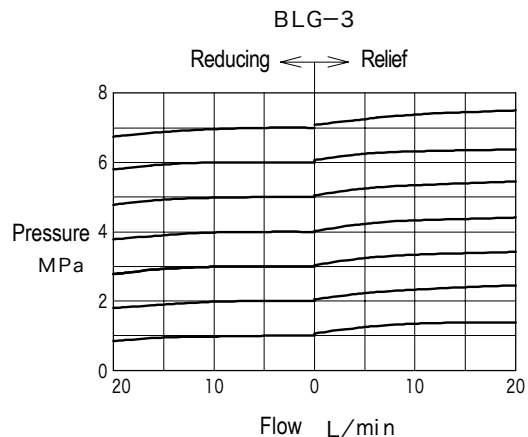
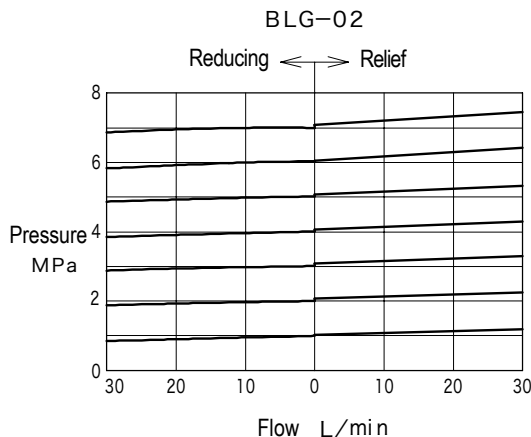
Specifications

| Model | Size | Max. Wkg. Pressure MPa | Max. Flow L/min | Press. Adj. Range MPa | Weight kg |
|--------|---------|------------------------|-----------------|-----------------------|-----------|
| BLG-3 | 02 (*1) | 10.5 | 20 | 1~7 | 1.8 |
| BLG-02 | 02 | 10.5 | 30 | | 2.9 |

*1: Mounting interface ISO 4401-03

Performance Curves (at 20 mm²/s)

• Flow-Pressure Characteristics



Notes On Use

- Drain line should not be connected to other tank lines but should be returned directly to tank.
- Loosen locknut of adjustment screw and turning clockwise will raise pressure, and turning counterclockwise will lower pressure.

Mounting Bolts (JIS B1176, Strength Class 12.9)

| Valve Model | Hex Socket Bolt | Quantity |
|-------------|-----------------|----------|
| BLG-3 | M5 × 50 | 4 |
| BLG-02 | M8 × 30 | 4 |

- Mounting bolt tightening torque:
BLG-3: 7~8 Nm
BLG-02: 27~33 Nm

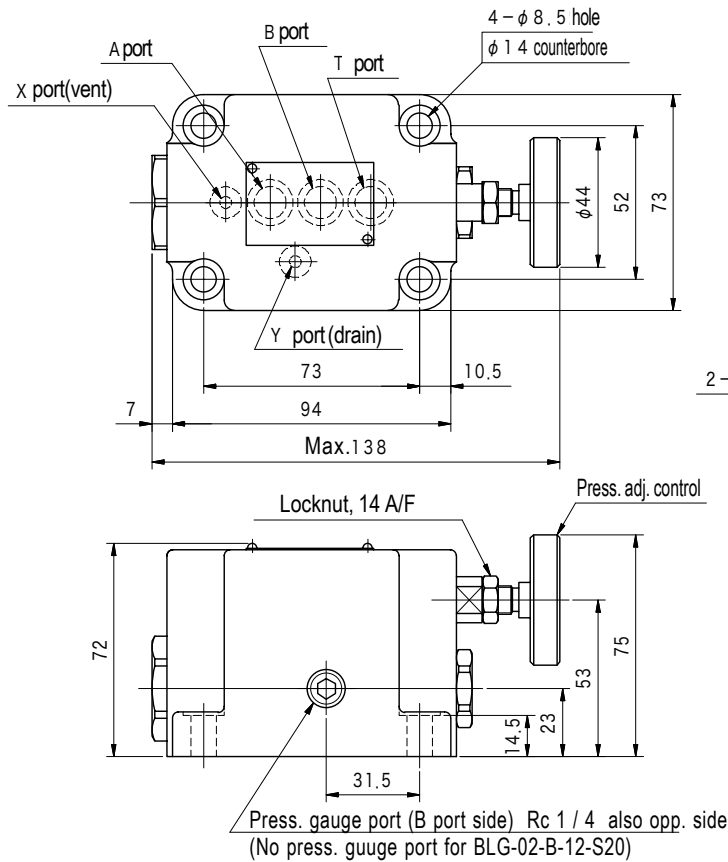
Subplate

| Valve Model | Connection Port Orientation | Subplate | Connection port Dia. Rc |
|-------------|-----------------------------|---------------------|-------------------------|
| BLG-3 | Bottom Piping | DGVM-3-10-T-JA-J | 3/8 |
| | Side Piping | DGMS-3-1E-10-T-JA-J | |

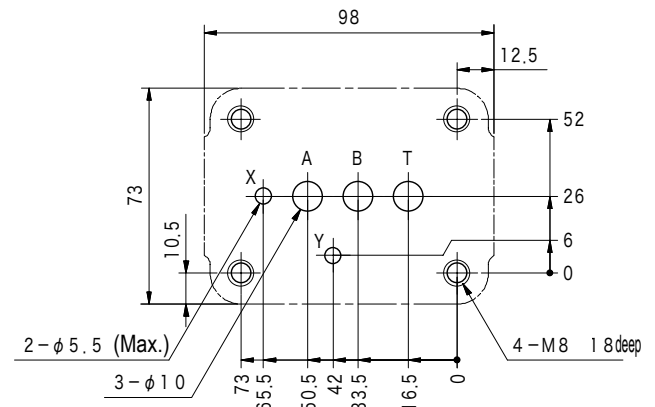
- Mounting bolts are not included.
- Subplates should be ordered separately.
- See page Q8 for dimensions.
- BLG-02 should be mounting on manifold block.

Dimensions

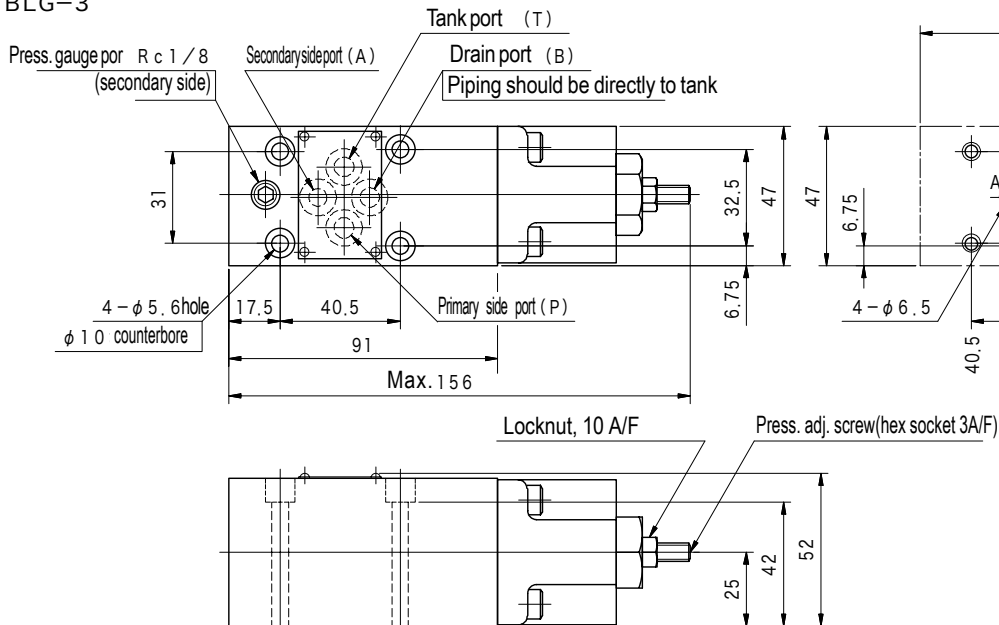
BLG-02



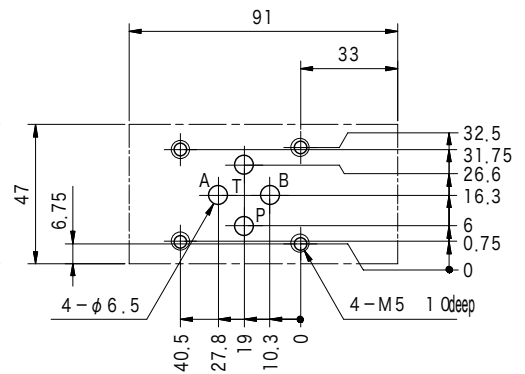
Mounting Dimensions



BLG-3



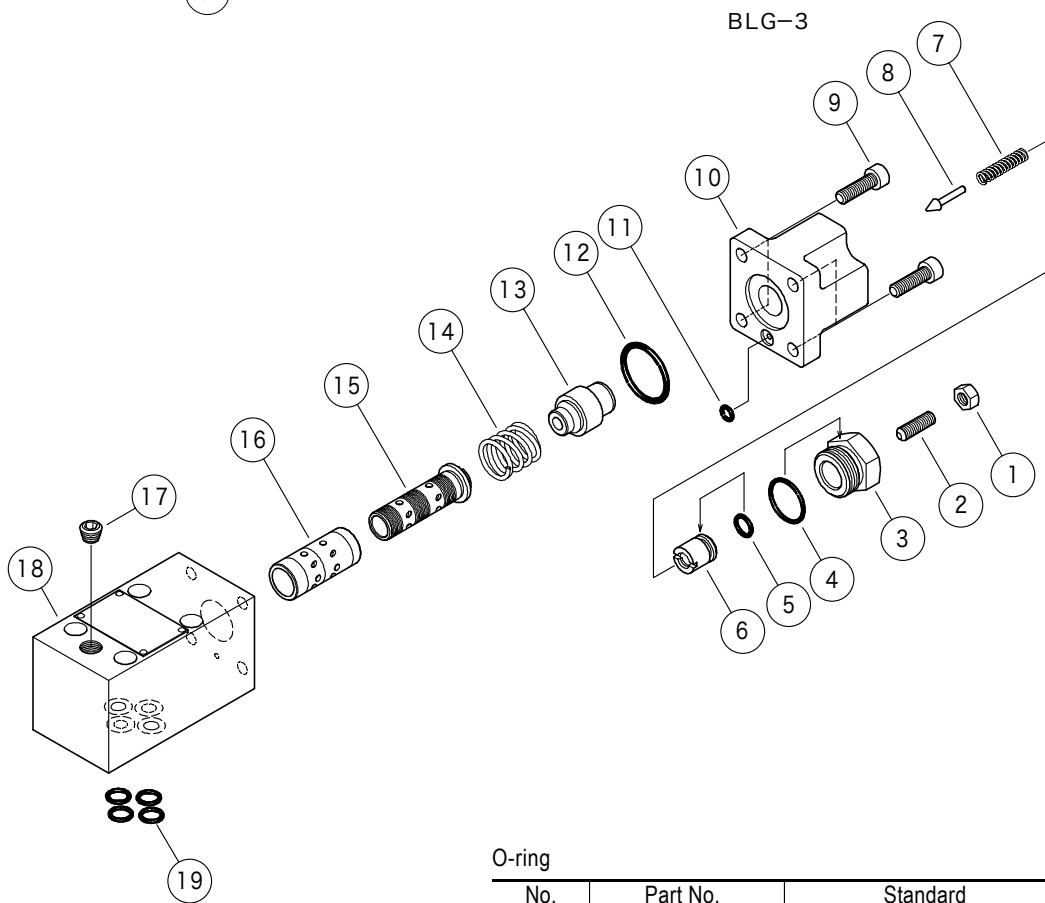
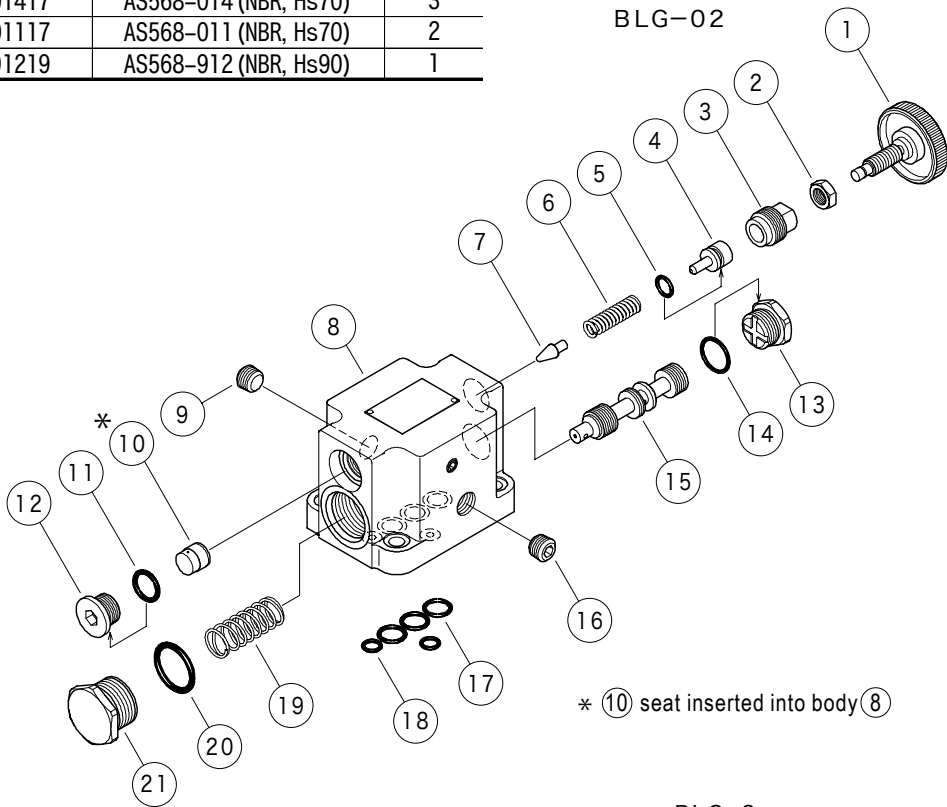
Mounting Dimensions



Construction

O-ring

| No. | Part No. | Standard | Qty |
|-----|-----------|-----------------------|-----|
| 5 | 007901217 | AS568-012 (NBR, Hs70) | 1 |
| 11 | 008001419 | JIS B 2401 1B-P14 | 1 |
| 14 | 007901719 | AS568-017 (NBR, Hs90) | 1 |
| 17 | 007901417 | AS568-014 (NBR, Hs70) | 3 |
| 18 | 007901117 | AS568-011 (NBR, Hs70) | 2 |
| 20 | 007991219 | AS568-912 (NBR, Hs90) | 1 |



O-ring

| No. | Part No. | Standard | Qty |
|-----|-----------|-----------------------|-----|
| 4 | 007901817 | AS568-018 (NBR, Hs70) | 1 |
| 5 | 007901217 | AS568-012 (NBR, Hs70) | 1 |
| 11 | 007900817 | AS568-008 (NBR, Hs70) | 1 |
| 12 | 007911817 | AS568-118 (NBR, Hs70) | 1 |
| 19 | 007901217 | AS568-012 (NBR, Hs70) | 4 |