



E

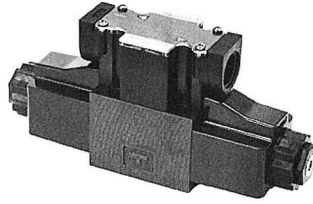
DIRECTIONAL CONTROLS

- Solenoid Operated Directional Valves..... E-5
- Solenoid Controlled Pilot Operated Directional Valves..... E-5
- Pilot Mechanically Operated Directional Valves..... E-5
- Check/Pilot Controlled Check Valves..... E-63

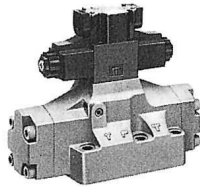
■ Directional Valves

These valve are used for shifting oil flow direction of hydraulic circuit and for actuator starting/stopping as well as the operating direction shifting of actuator.

● Solenoid Operated Directional Valve



● Solenoid Controlled Pilot Operated Directional Valve



● Pilot / Mechanically Operated Directional Valves



● Check / Pilot Controlled Check Valves



Hydraulic Fluids

1. Type of Fluids

Any type of hydraulic fluid, listed in the table below can be used.

| Type of Fluids | Petroleum Base Oils |
|--------------------------------|--|
| Petroleum Base Oil | Use fluids equivalent to ISO VG32 or VG46. |
| Synthetic Fluids ¹⁾ | Use phosphate ester or polyol ester type. When phosphate ester type fluid is to be used, prefix "F-" to the model number because a special seal (fluororubber) will be used. |
| Water Containing Fluids | Use water-glycol fluids or W/O emulsion type fluids. |

Note 1. For use with hydraulic fluids other than those listed above, please consult your SEWON representatives in advance.

2. Recommended Viscosity and Oil Temperatures



Use hydraulic fluids which satisfy the both recommended viscosity and oil temperatures given in the table below.

| Name | Viscosity | Oil Temperature | Degree of contamination |
|--|--------------------------------|-----------------|--------------------------------|
| Solenoid Operated Directional Valves Solenoid Controlled Pilot Operated Directional Valves Poppet Type Solenoid Operated Directional Valves Mechanically Operated Directional Valves Check Valves Pilot Controlled Check Valves | 15~400mm ² /s {cSt} | -15℃ ~ +70℃ | ISO 21/18 NAS 1638-Grade 12 |

3. Control of Contamination

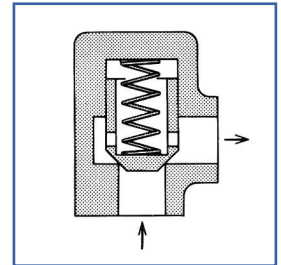
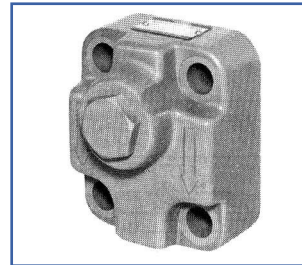
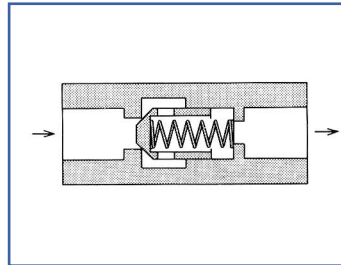
Due caution must be paid to maintaining control over contamination of the hydraulic fluids which may otherwise lead to breakdowns and shorter the life of the valve. Please maintain the degree of contamination within NAS 1638-Grade 12. Use 25 μm or finer line filter.

Check/ Pilot Controlled Check Valves

| Valve Type | Graphic Symbols | Max. Operating MPa {kgf/cm ² } | Maximum Flow L/min | | | | | | | | | | | | | | | Page |
|-----------------------------|---|--|---|----|----|----|----|----|-----|-----|-----|------|------|------|--|--|--|------|
| | | | 1 | 2 | 5 | 10 | 20 | 50 | 100 | 200 | 500 | 1000 | 2000 | 5000 | | | | |
| Check Valves |  | 25 {255} | In-Line (CIT) | | | | | | | | | | | | | | | E-64 |
| | | | 02 | 03 | 04 | 06 | 08 | 10 | | | | | | | | | | |
| | | | Right Angle (CRT/CRG) | | | | | | | | | | | | | | | E-67 |
| Pilot Operated Check Valves |  | 25 {255} | Threaded Connection(CP※T) Sub-plate Mounting(CP※G) | | | | | | | | | | | | | | | E-71 |
| | | | 03 | 06 | 10 | | | | | | | | | | | | | |

In-Line Check Valves

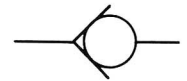
These valves allow free flow in one direction and prevent flow in the reverse direction. Cracking pressure specified is the pressure required to open the valve and allow free flow.



Ratings

| Model Numbers | | Rated Flow L/min | Max. Operating Pres. MPa { kgf/cm ² } | Cracking Pres. MPa { kgf/cm ² } | Approx. Mass kg | |
|---------------------|--------------------|---------------------|--|--|----------------------|----------|
| Threaded Connection | Sub-plate Mounting | | | | CIT Type CRT Type | CRG Type |
| CIT-02-※-50 | — | 12 | 25 {255} | 0.035 {0.35} 0.35 {3.6} 0.5 {5.1} | 0.1 | — |
| CIT-03-※-50 | — | 30 | | | 0.18 | — |
| CIT-04-※-50 | — | 53 | | | 0.45 | — |
| CIT-06-※-50 | — | 152 | | | 0.65 | — |
| CIT-08-※-50 | — | 80 | | | 1.4 | — |
| CIT-10-※-50 | — | 200 | | | 2.1 | — |
| CRT-03-※-31 | CRG-03-※-30 | 30 | | | 0.8 | 2.3 |
| CRT-06-※-31 | CRG-06-※-30 | 100 | | | 1.6 | 4.1 |
| - | CRG-10-※-30 | 250 | | | - | 7.8 |

KS Graphic Symbol



Rated flow is the approximate flow rate, when there is a free flow pressure drop of maximum 0.3MPa {3.1kgf/cm²}, the fluid has a specific gravity of 0.85 and a kinematic viscosity of 20mm²/s (cSt), and the cracking pressure is 0.04MPa {0.4kgf/cm²}.

Model Number Designation

| CR | T | -03 | -5 | -31 |
|-----------------------------------|--------------------------|------------|---|---------------|
| Series Number | Type of Connection | Valve Size | Cracking Pressure MPa(kgf/cm ²) | Design Number |
| CI: In-Line Check Valve | T: Threaded Connection | 02 | 04:0.035 {0.35} | 50 |
| | | 03 | | 50 |
| | | 04 | 35:0.35 {3.6} | 50 |
| | | 06 | | 50 |
| | | 08 | 50:0.5 {5.1} | 50 |
| | | 10 | | 50 |
| CR: Right Angle Check Valve | T: Threaded Connection | 03 | 5:0.035 {0.35} | 31 |
| | | 06 | 50:0.35 {3.6} | 31 |
| | G: Sub-plate Mounting | 03 | | 30 |
| | | 06 | 75:0.5 {5.1} | 30 |
| | | 10 | | 30 |

Note)

- We have phosphate ester fluids type products. Phosphate ester fluid type products is to be used, prefix "F" to the model number because a special seal (fluororubber) will be used.
- For in-line check valves, standard type (for petroleum based oil) can be used phosphate ester type fluid.
- Number of products designed for improvement may change without notice.
In case of design number change a single-digit number remains mounting dimensions and performance specifications.
- We can offer In-line check valve "CIT-04" & "CIT-08". For details, contact us.
- We can offer also "50" design angle Type Check Valve. Refer to the page E-69.

Sub-plate

| Valve Model Numbers | Sub-plate Model Numbers | Thread Size | Apprx. Mass |
|---------------------|-------------------------|-------------------|-------------|
| CRG-03 | CRGM-03-30 | Rc $\frac{3}{8}$ | 0.9 |
| CRG-06 | CRGM-06-30 | Rc $\frac{3}{4}$ | 2.7 |
| CRG-10 | CRGM-10-30 | Rc1 $\frac{1}{4}$ | 6.6 |

- Sub-plates are available. Specify the sub-plate model number from the table above. When sub-plates are not used, the mounting surface should have a good machined finish.

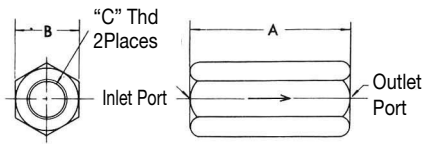
Attachment

Mounting Bolts

| Valve Model Numbers | Socket Head Cap Screw |
|---------------------|-----------------------|
| CRG-03 | M10×60L 4pcs |
| CRG-06 | M16×60L 4pcs |
| CRG-10 | M20×75L 4pcs |

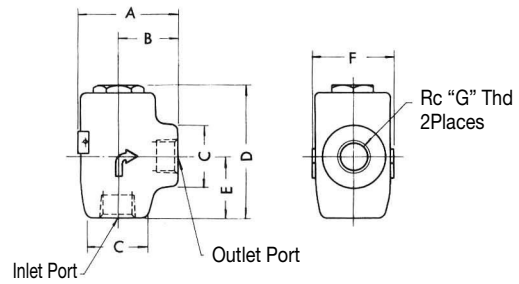
DIRECTIONAL CONTROLS

CIT-02, 03, 06, 10



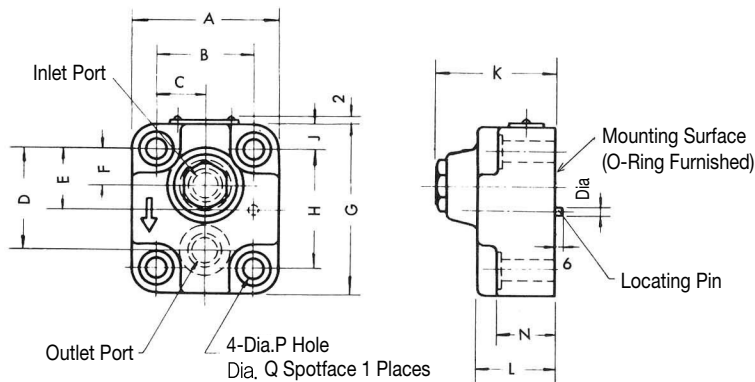
| Model Numbers | A | B | C |
|---------------|-----|----|-------|
| CIT-02 | 58 | 19 | 1/4 |
| CIT-03 | 70 | 23 | 3/8 |
| CIT-06 | 95 | 38 | 3/4 |
| CIT-10 | 132 | 58 | 1 1/4 |

CRT-03, 06



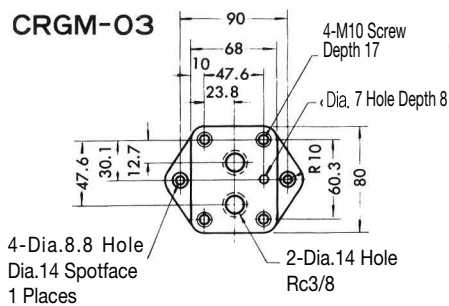
| Model Numbers | A | B | C | D | E | F | G |
|---------------|------|----|-------|-----|----|----|-----|
| CRT-03 | 59 | 36 | Dia36 | 78 | 33 | 47 | 3/8 |
| CRT-06 | 74.5 | 47 | Dia45 | 106 | 51 | 57 | 3/4 |

CRG-03, 06, 10

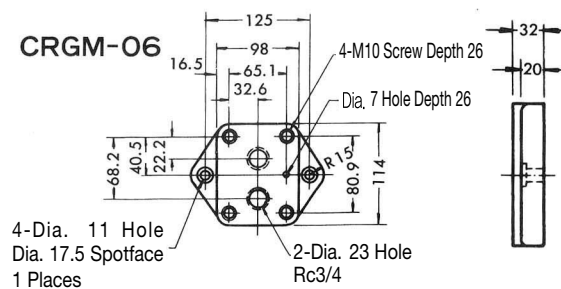


| Model Numbers | A | B | C | D | E | F | G | H | J | K | L | N | P | Q |
|---------------|-----|------|------|------|------|------|-----|------|------|----|----|----|------|------|
| CRG-03 | 68 | 47.6 | 23.8 | 47.6 | 30.1 | 12.7 | 80 | 60.3 | 10 | 72 | 55 | 46 | 11 | 17.5 |
| CRG-06 | 98 | 65.1 | 32.6 | 68.2 | 40.5 | 22.2 | 114 | 80.9 | 16.5 | 81 | 53 | 38 | 17.5 | 26 |
| CRG-10 | 130 | 92.1 | 46.1 | 71.4 | 46 | 20.6 | 130 | 92.1 | 19 | 96 | 65 | 47 | 21.5 | 32 |

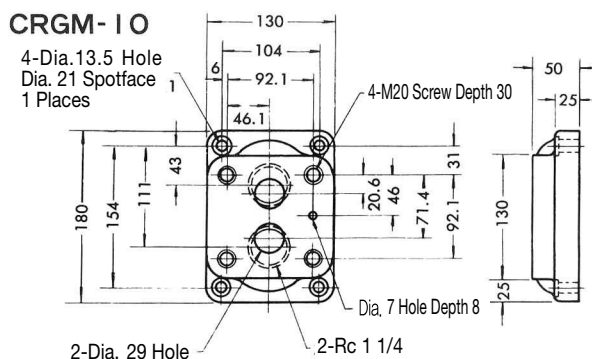
CRGM-03



CRGM-06



CRGM-10

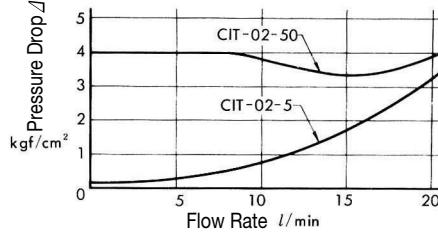


SEWON Hydraulics

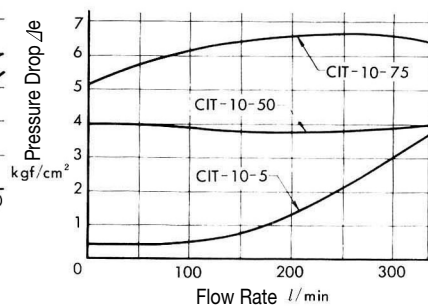
■ Pressure Drop

Hydraulic Fluid: Viscosity 30mm²/s

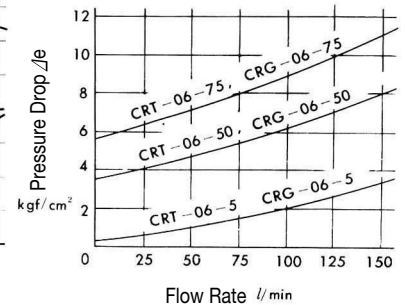
● CIT-02



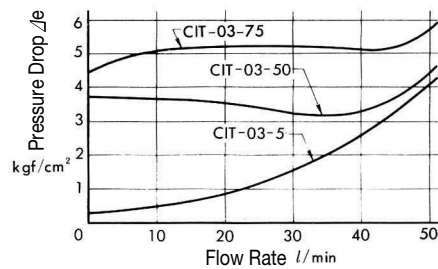
● CIT-10



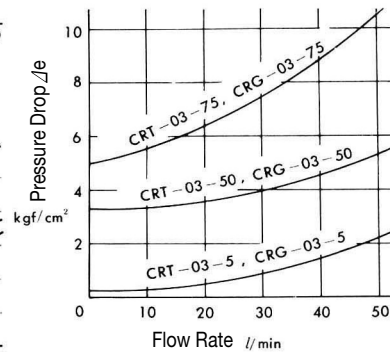
● CRT-06 CRG-06



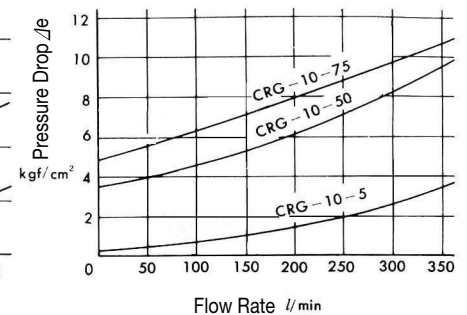
● CIT-03



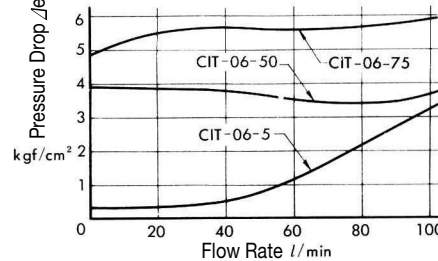
● CRT-03 CRG-03



● CRG-10

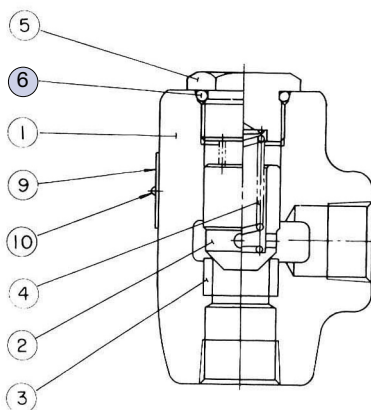


● CIT-06

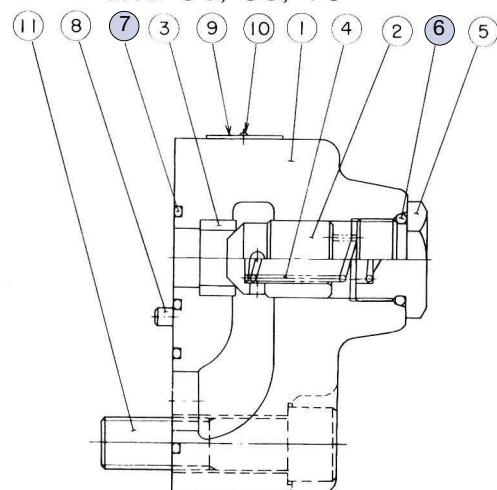


■ List of Seals

CRT-03, 06



CRG-03, 06, 10

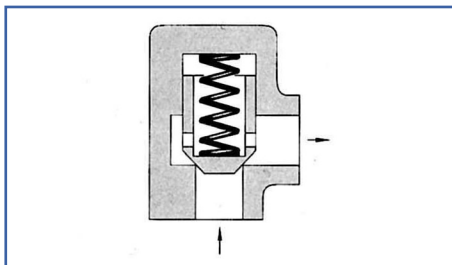
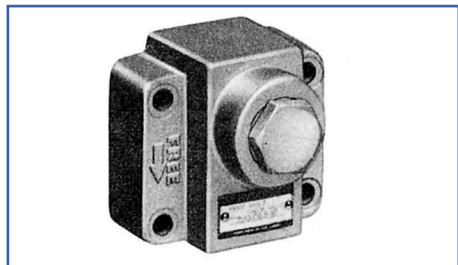


| Item | Name of Parts | Part Numbers | | | Qty. |
|------|---------------|--------------------|-------------------|-------------------|------|
| | | CRT-03 CRG-03 | CRT-06 CRG-06 | CRG-10 | |
| 6 | O-Ring | JIS B 2401-1B-P18 | JIS B 2401-1B-P24 | JIS B 2401-1B-P32 | 1 |
| 7 | O-Ring | JIS B 2401-1B-P22A | JIS B 2401-1B-P28 | JIS B 2401-1B-P38 | 2 |

Note: There are item No. 7 O-Ring only sub-plates mounting type valve (CRG).

Right Angle Check Valves

These valves allow free flow in one direction and prevent flow in the reverse direction. Cracking pressure specified is the pressure required to open the valve and allow free flow.



KS Graphic Symbol



Rating

| Model Numbers | | Rated Flow* L/min | Max. Operating Pres. MPa {kgf/cm ² } | Cracking Pres. MPa {kgf/cm ² } | Approx. Mass kg |
|--------------------|-------------|----------------------|--|--|--------------------|
| Sub-plate Mounting | CRG-03-※-50 | 40 | 25 {255} | 0.04 {0.4} | 1.7 |
| | CRG-06-※-50 | 125 | | 0.35 {3.6} | 2.9 |
| | CRG-10-※-50 | 250 | | 0.5 {5.1} | 5.5 |

★ Rated flow is the approximate flow rate when there is a free flow pressure drop of 0.3MPa {3.1kgf/cm²}, the fluid has a specific gravity of 0.85 and a kinematic viscosity of 20mm²/s (cSt), and the cracking pressure is 0.04MPa {0.4kgf/cm²}.

Model Number Designation

| CR | G | -03 | -04 | -50 |
|---------------------------------|---------------------------|------------|---|---------------|
| Series Number | Type of Connection | Valve Size | Cracking Pressuer MPa {kgf/cm ² } | Design Number |
| CR : Right Angle Check Valve | G : Sub-plate Mounting | 03 | 04 : 0.04 {0.4} | 50 |
| | | 06 | 35 : 0.35 {3.6} | 50 |
| | | 10 | 50 : 0.5 {5.1} | 50 |

NOTE : We have phosphate ester fluids type products. Phosphate ester fluid type products is to be used, prefix "F" to the model number because a special seal (fluororubber) will be used.

Attachment

| Valve Model Numbers | Sub-plate Model Numbers | Thread Size Rc(PT) | Approx. Mass kg |
|---------------------|-------------------------|-----------------------|--------------------|
| CRG-03 | CRGM-03-50 | 3/8 | 1.6 |
| | CRGM-03X-50 | 1/2 | 1.6 |
| CRG-06 | CRGM-06-50 | 3/4 | 2.4 |
| | CRGM-06X-50 | 1 | 3.0 |
| CRG-10 | CRGM-10-50 | 1 1/4 | 4.8 |
| | CRGM-10X-50 | 1 1/2 | 5.7 |

Attachment

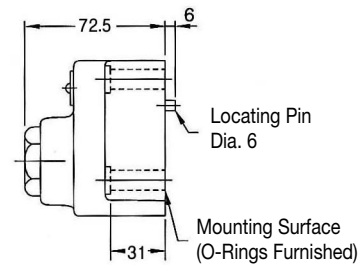
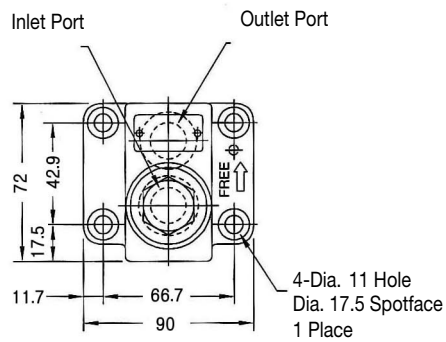
Mounting Bolts

| Valve Model Numbers | Socket Head Cap Screw | Qty. |
|---------------------|-----------------------|------|
| CRG-03 | M10×45L | 4 |
| CRG-06 | M10×50L | 4 |
| CRG-10 | M10×55L | 6 |

● Sub-plates are available. Specify the sub-plate model number from the table above. When sub-plates are not used, the mounting surface should have a good machined finish.

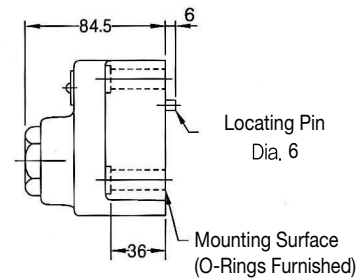
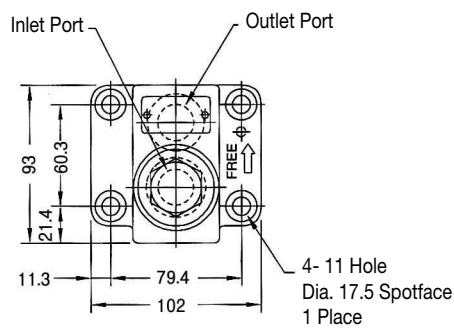
CRG- 03

Mounting surface:ISO5781-AG-06-2-A



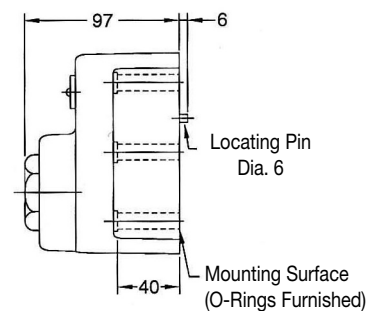
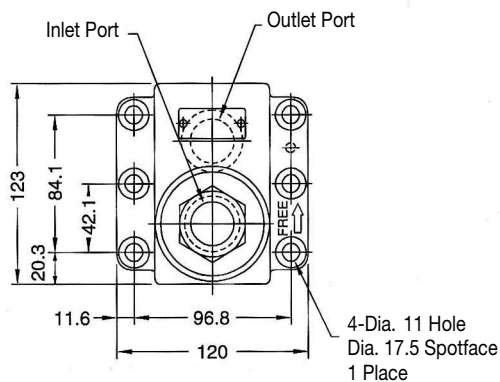
CRG- 06

Mounting surface:ISO5781-AH-08-2-A



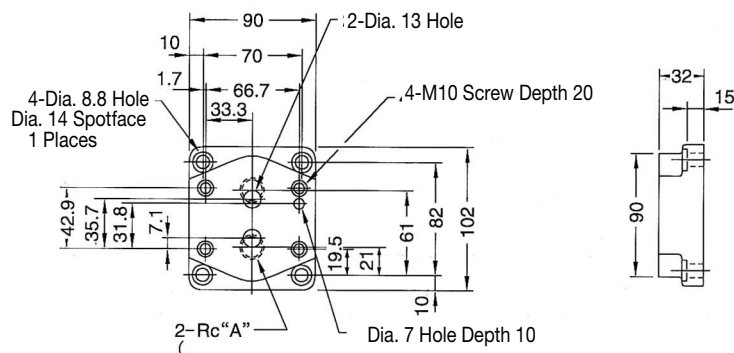
CRG-10

Mounting surface:ISO5781-AJ-10-2-A



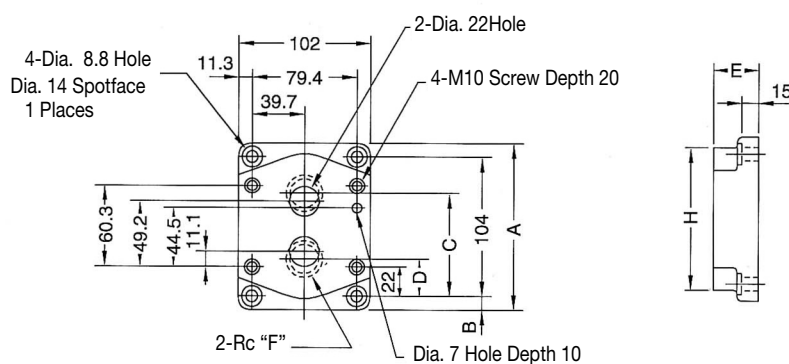
● Sub-Plates

CRGM-03, 03X



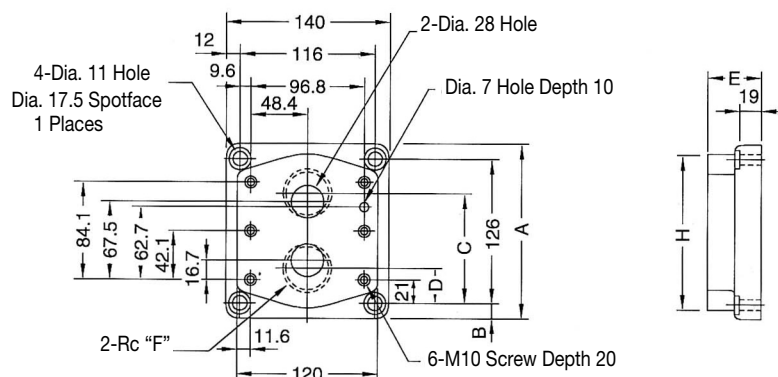
| Sub-plate Model Numbers | A |
|-------------------------|---------------|
| CRGM-03-50 | $\frac{3}{8}$ |
| CRGM-03X-50 | $\frac{1}{2}$ |

CRGM-06, 06X



| Sub-plate Model Numbers | A | B | C | D | E | F | H |
|-------------------------|-----|----|------|----|----|---------------|-----|
| CRGM-06-50 | 124 | 10 | 77 | 27 | 36 | $\frac{3}{4}$ | 110 |
| CRGM-06X-50 | 136 | 16 | 82.3 | 22 | 45 | 1 | 130 |

CRGM-10, 10X

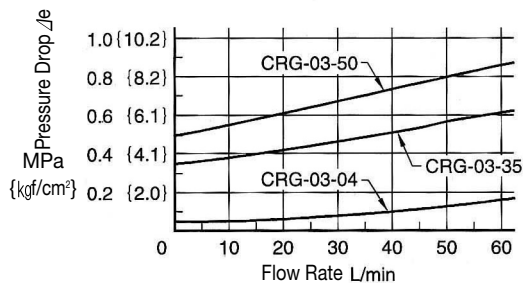


| Sub-plate Model Numbers | A | B | C | D | E | F | H |
|-------------------------|-----|------|-----|----|----|----------------|-----|
| CRGM-10-50 | 150 | 12 | 96 | 30 | 45 | $1\frac{1}{4}$ | 135 |
| CRGM-10X-50 | 177 | 25.5 | 104 | 22 | 50 | $1\frac{1}{2}$ | 167 |

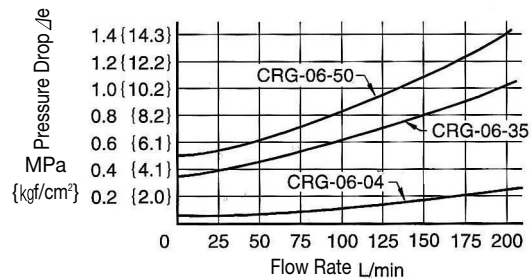
■ Pressure Drop

Hydraulic Fluid: Viscosity 30mm²/s

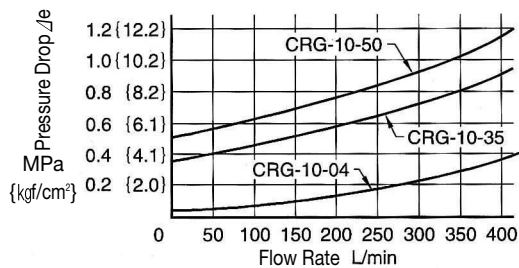
● CRG-03



● CRG-06



● CRG-10

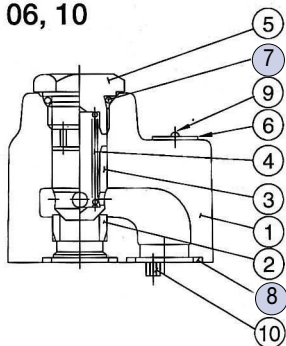


! CAUTION

When making replacement of seals, please do it carefully after reading through the relevant instructions in the Operator's Manual.

■ List of Seals

CRG-03, 06, 10



| Item | Name of Parts | Part Numbers | | | Qty. |
|------|---------------|-----------------------|-----------------------|-----------------------|------|
| | | CRG-03 | CRG-06 | CRG-10 | |
| 7 | O-Ring | JIS B 2401 -1B-P21 | JIS B 2401 -1B-P24 | JIS B 2401 -1B-P32 | 1 |
| 8 | O-Ring | JIS B 2401 -1B-P18 | JIS B 2401 -1B-P28 | JIS B 2401 -1B-P32 | 2 |