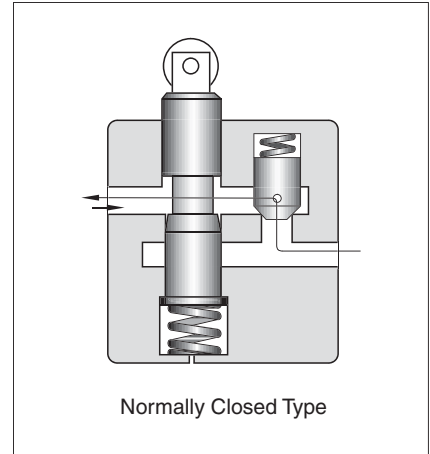
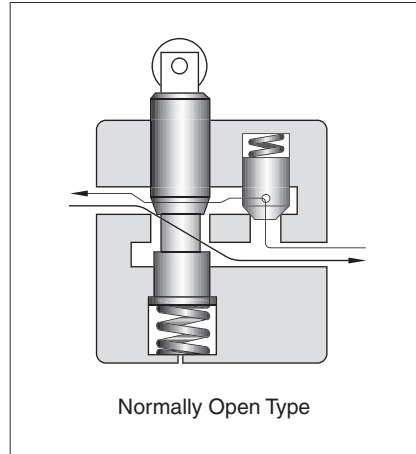


Deceleration Valves / Deceleration and Check Valves

These valves are available either with or without an integral check valve which allows free reverse flow. Flow rate through the valve is regulated by the movement of the spool, which is operated by a cam. When the spool is depressed, the flow is decreased in Normally Open type valves and increased in Normally Closed type valves. Their principal use is to control the speed of actuators in machine tools and similar applications.



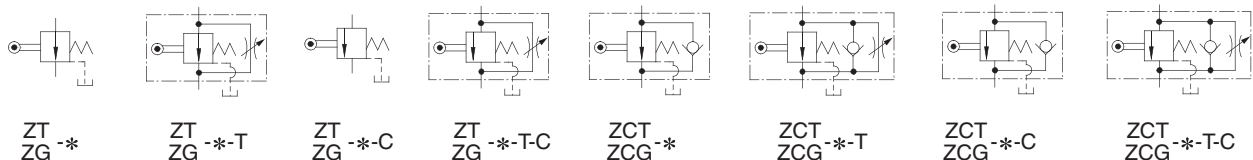
Specifications

| Model Numbers | | Max. Flow L/min (U.S.GPM) | Max. Operating Pressure MPa (PSI) | Approx. Mass kg (lbs.) | |
|----------------------------|-----------------------|------------------------------|---|------------------------|------------|
| Threaded Connection | Sub-plate Mounting | | | Z*T | Z*G |
| ZT/ZCT-03-*-*-22/2280/2290 | ZG/ZCG-03-*-*-22/2290 | 30 (7.9) | 21 (3050) | 4.3 (9.5) | 4.3 (9.5) |
| ZT/ZCT-06-*-*-22/2280/2290 | ZG/ZCG-06-*-*-22/2290 | 80 (21.1) | | 8.7 (19.2) | 8.7 (19.2) |
| ZT/ZCT-10-*-*-22/2280/2290 | ZG/ZCG-10-*-*-22/2290 | 200 (52.8) | | 17 (37.5) | 17 (37.5) |

Model Number Designation

| F- | ZC | T | -03 | -T | -C | -22 | * | | |
|---|--|----------------------------------|--|--|------------------------------------|-----------------------------------|---|---|---|
| Special Seals | Series Number | Type of Mounting | Valve Size | With Adjustable Needle Valve for By-Pass Line | Spool Type | Design Number | Design Standards | | |
| F: Special Seals for Phosphate Ester Type Fluids (Omit if not required) | Z: Deceleration Valve | T: Threaded Connection | 03 | T: With Adjustable Needle Valve (Omit if not required) | None: Normally Open Type | 22 | None: Japanese Std. "JIS" 80: European Design Std. 90: N. American Design Std. | | |
| | | | 06 | | | 22 | | | |
| | | | 10 | | | 22 | | | |
| | | G: Sub-plate Mounting | 03 | | | C: Normally Closed Type | 22 | None: Japanese Std. "JIS" & European Design Std. 90: N. American Design Std. | |
| | | | 06 | | | | 22 | | |
| | | | 10 | | | | 22 | | |
| | ZC: Deceleration and Check Valve | T: Threaded Connection | T: With Adjustable Needle Valve (Omit if not required) | 03 | None: Normally Open Type | C: Normally Closed Type | 22 | None: Japanese Std. "JIS" 80: European Design Std. 90: N. American Design Std. | |
| | | | | 06 | | | 22 | | |
| | | | | 10 | | | 22 | | |
| | | G: Sub-plate Mounting | | 03 | | | C: Normally Closed Type | 22 | None: Japanese Std. "JIS" & European Design Std. 90: N. American Design Std. |
| | | | | 06 | | | | 22 | |
| | | | | 10 | | | | 22 | |

Graphic Symbols



Instructions

Force to Depress Spool

| Model Numbers | Force N (lbs.) |
|---------------------|----------------|
| ZY/ZG ZCT/ZCG-03 | 150 (337) |
| ZY/ZG ZCT/ZCG-06 | 270 (607) |
| ZY/ZG ZCT/ZCG-10 | 400 (899) |

Total Leakage at Spool Fully Closed [Viscosity:20 mm²/s (98 SSU)]

| Model Numbers | Total Leakage cm ³ /min (cu.in./min) | | | | |
|---------------------|---|-----------|----------|-----------|------------|
| | Pressure MPa (PSI) | | | | |
| | 1 (145) | 2 (290) | 5 (730) | 10 (1450) | 21 (3050) |
| ZY/ZG ZCT/ZCG-03 | 9 (.55) | 18 (1.10) | 44 (2.7) | 88 (5.4) | 185 (11.3) |
| ZY/ZG ZCT/ZCG-06 | 9 (.55) | 17 (1.04) | 43 (2.6) | 86 (5.2) | 180 (11.0) |
| ZY/ZG ZCT/ZCG-10 | 10 (.61) | 20 (1.22) | 49 (3.0) | 98 (6.0) | 205 (12.5) |

Drain Port Back Pressure

Limit the drain port back pressure to 0.1 MPa (15 PSI).

In addition, connect the drain pipe independently and directly to the tank.

Attachment

Mounting Bolts

| Valve Model Numbers | Socket Head Cap Screw | | Qty. |
|---------------------|--|-------------------------|------|
| | Japanese Std. "JIS" and European Design Std. | N. American Design Std. | |
| ZG/ZCG-03 | M8 × 75 Lg. | 5/16-18 UNC × 3 Lg. | 4 |
| ZG/ZCG-06 | M10 × 100 Lg. | 3/8-16 UNC × 4 Lg. | 4 |
| ZG/ZCG-10 | M12 × 120 Lg. | 1/2-13 UNC × 4-3/4 Lg. | 4 |

Option

Bypass throttle valves

To allow a metred flow between ports even when the flow is stopped by the spool.

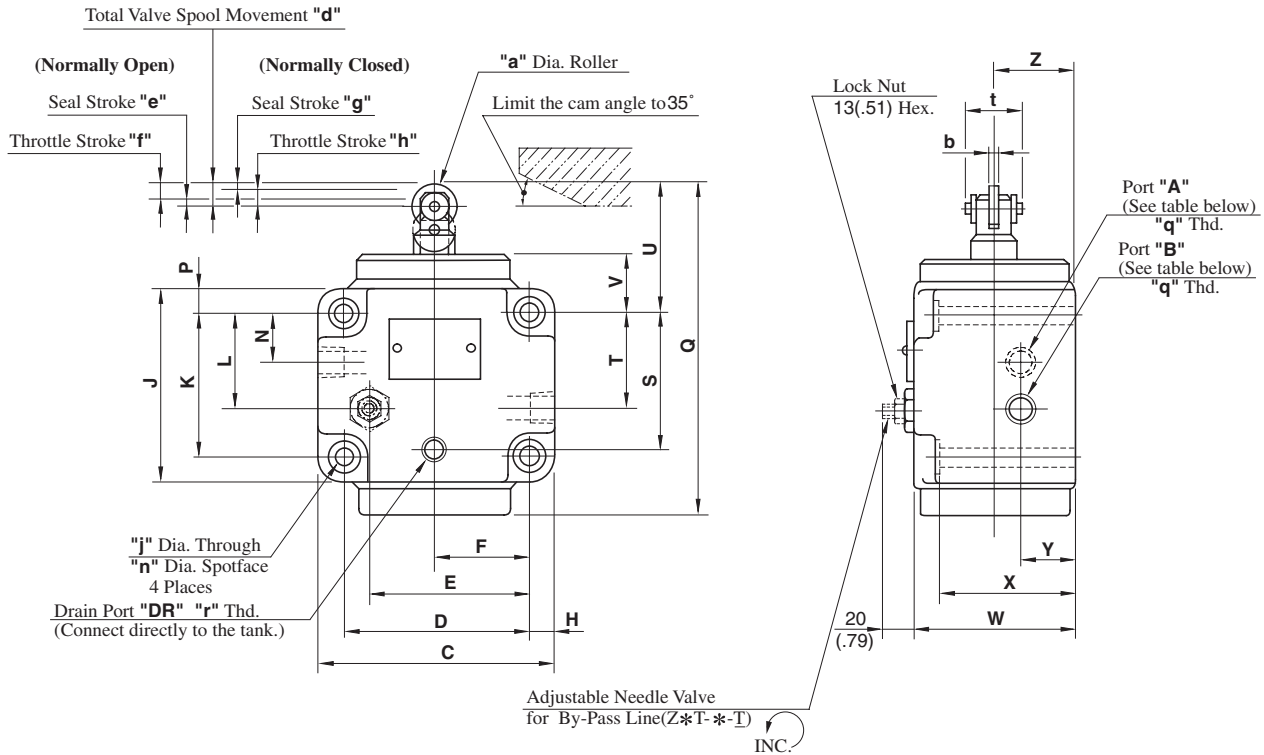
Sub-plate

| Valve Model Numbers | Japanese Standard "JIS" | | European Design Standard | | N.American Design Standard | | Approx. Mass kg (lbs.) |
|---------------------|-------------------------|-------------|--------------------------|-------------|----------------------------|-------------|------------------------|
| | Sub-plate Model No. | Thread Size | Sub-plate Model No. | Thread Size | Sub-plate Model No. | Thread Size | |
| ZG/ZCG-03 | ZGM-03-21 | Rc 3/8 | ZGM-03-2180 | 3/8 BSP.F | ZGM-03-2190 | 3/8 NPT | 2 (4.4) |
| ZG/ZCG-06 | ZGM-06-21 | Rc 3/4 | ZGM-06-2180 | 3/4 BSP.F | ZGM-06-2190 | 3/4 NPT | 3.8 (8.4) |
| ZG/ZCG-10 | ZGM-10-21 | Rc 1-1/4 | ZGM-10-2180 | 1-1/4 BSP.F | ZGM-10-2190 | 1-1/4 NPT | 9 (19.8) |

- 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.

ZT/ZCT-03-*-22/2280/2290
 ZT/ZCT-06-*-22/2280/2290
 ZT/ZCT-10-*-22/2280/2290

**DIMENSIONS IN
 MILLIMETRES (INCHES)**



| Model Numbers | Port "A" | Port "B" |
|---------------|--|--|
| ZT-* | Controlled flow inlet | Controlled flow outlet |
| ZCT-* | Controlled flow inlet or Reversed free flow outlet | Controlled flow outlet or Reversed free flow inlet |

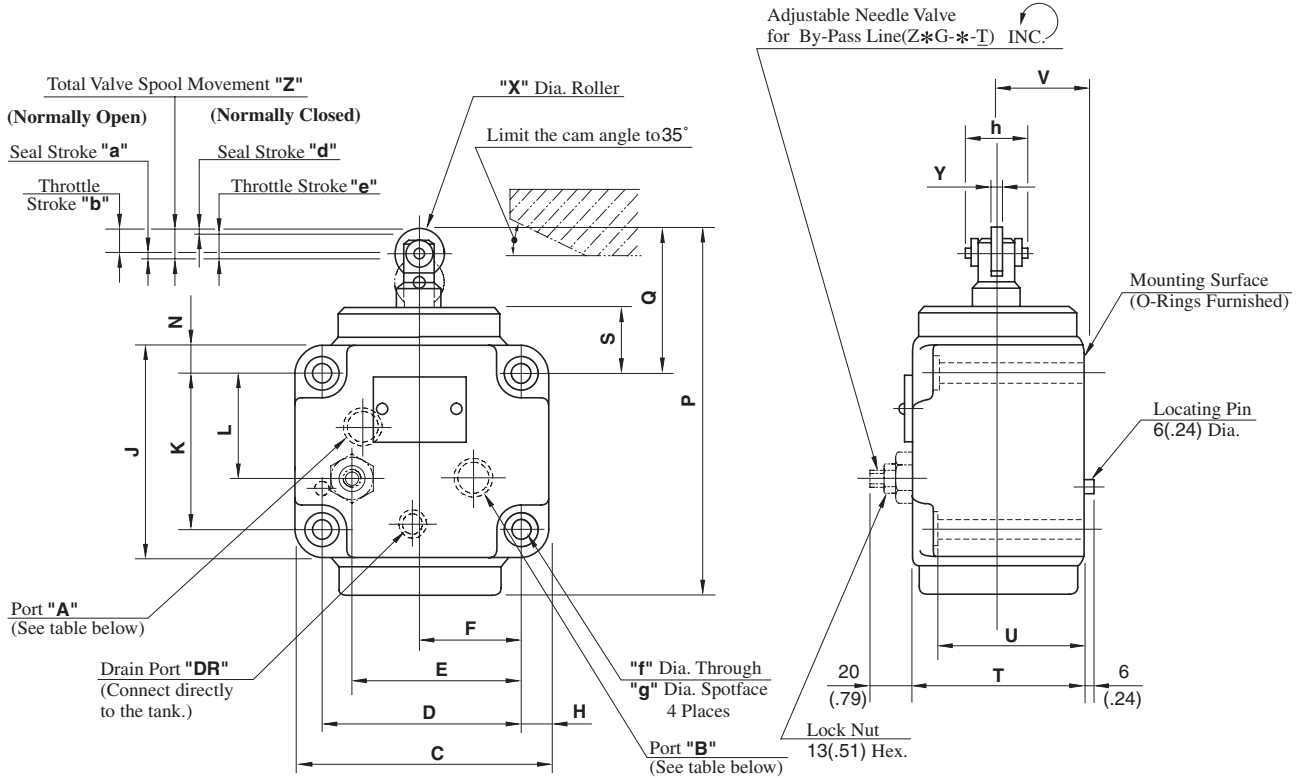
| Model Numbers | "q" Thd. | "r" Thd. |
|------------------|-------------|-----------|
| ZT/ZCT-03-*-22 | Rc 3/8 | Rc 1/4 |
| ZT/ZCT-03-*-2280 | 3/8 BSP.F | 1/4 BSP.F |
| ZT/ZCT-03-*-2290 | 3/8 NPT | 1/4 NPT |
| ZT/ZCT-06-*-22 | Rc 3/4 | Rc 1/4 |
| ZT/ZCT-06-*-2280 | 3/4 BSP.F | 1/4 BSP.F |
| ZT/ZCT-06-*-2290 | 3/4 NPT | 1/4 NPT |
| ZT/ZCT-10-*-22 | Rc 1-1/4 | Rc 1/4 |
| ZT/ZCT-10-*-2280 | 1-1/4 BSP.F | 1/4 BSP.F |
| ZT/ZCT-10-*-2290 | 1-1/4 NPT | 1/4 NPT |

| Model Numbers | Dimensions mm (Inches) | | | | | | | | | | | | | | | |
|---------------|------------------------|---------------|---------------|--------------|-------------|---------------|---------------|--------------|--------------|-------------|---------------|---------------|--------------|--------------|--------------|---------------|
| | C | D | E | F | H | J | K | L | N | P | Q | S | T | U | V | W |
| ZT/ZCT-03 | 102 (4.02) | 80 (3.15) | 66 (2.60) | 40 (1.57) | 11 (.43) | 82 (3.23) | 60 (2.36) | 41 (1.61) | 20 (.79) | 11 (.43) | 141 (5.55) | 58 (2.28) | 40 (1.57) | 56 (2.20) | 25 (.98) | 70 (2.76) |
| ZT/ZCT-06 | 120 (4.72) | 98 (3.86) | 82 (3.23) | 49 (1.93) | 11 (.43) | 106 (4.17) | 84 (3.31) | 57 (2.24) | 32 (1.26) | 11 (.43) | 176 (6.93) | 81 (3.19) | 57 (2.24) | 65 (2.56) | 27 (1.06) | 95 (3.74) |
| ZT/ZCT-10 | 160 (6.30) | 132 (5.20) | 103 (4.06) | 66 (2.60) | 14 (.55) | 140 (5.51) | 112 (4.41) | 75 (2.95) | 40 (1.57) | 14 (.55) | 224 (8.82) | 106 (4.17) | 75 (2.95) | 80 (3.15) | 32 (1.26) | 110 (4.33) |

| Model Numbers | Dimensions mm (Inches) | | | | | | | | | | | | |
|---------------|------------------------|--------------|--------------|--------------|-------------|-------------|------------|-------------|------------|-------------|---------------|---------------|---------------|
| | X | Y | Z | a | b | d | e | f | g | h | j | n | t |
| ZT/ZCT-03 | 60 (2.36) | 25 (.98) | 35 (1.38) | 18 (.71) | 6 (.24) | 10 (.39) | 2 (.08) | 8 (.31) | 2 (.08) | 8 (.31) | 8.8 (.35) | 14 (.55) | 24.5 (.96) |
| ZT/ZCT-06 | 85 (3.35) | 32 (1.26) | 50 (1.97) | 22 (.87) | 8 (.31) | 13 (.51) | 3 (.12) | 10 (.39) | 3 (.12) | 10 (.39) | 11 (.43) | 17.5 (.69) | 29 (1.14) |
| ZT/ZCT-10 | 96 (3.78) | 40 (1.57) | 55 (2.17) | 28 (1.10) | 10 (.39) | 18 (.71) | 3 (.12) | 15 (.59) | 3 (.12) | 15 (.59) | 13.5 (.53) | 21 (.83) | 34 (1.34) |

ZG/ZCG-03-*-22/2290
 ZG/ZCG-06-*-22/2290
 ZG/ZCG-10-*-22/2290

DIMENSIONS IN
 MILLIMETRES (INCHES)



| Model Numbers | Port "A" | Port "B" |
|---------------|--|--|
| ZG-* | Controlled flow inlet | Controlled flow outlet |
| ZCG-* | Controlled flow inlet or Reversed free flow outlet | Controlled flow outlet or Reversed free flow inlet |

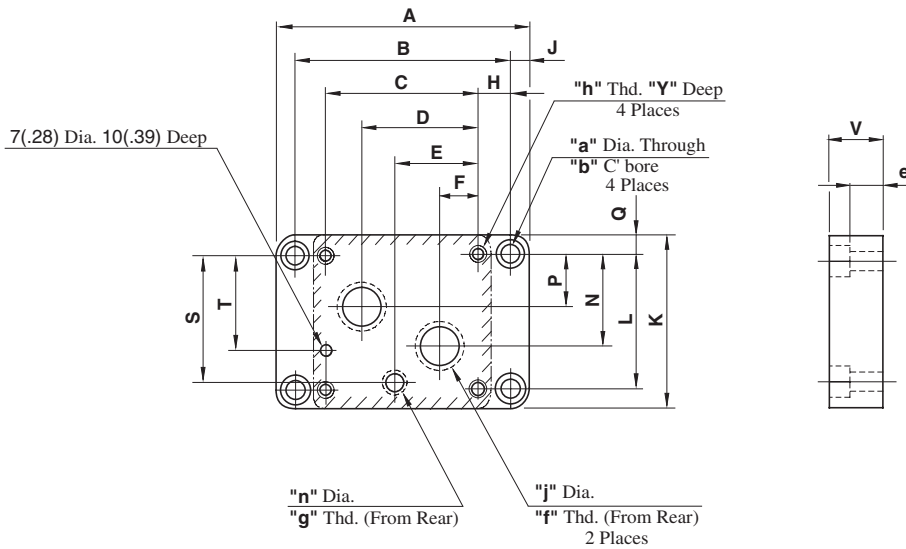
| Model Numbers | Dimensions mm (Inches) | | | | | | | | | | | | |
|---------------|------------------------|---------------|---------------|--------------|-------------|---------------|---------------|--------------|-------------|---------------|--------------|--------------|---------------|
| | C | D | E | F | H | J | K | L | N | P | Q | S | T |
| ZG/ZCG-03 | 102 (4.02) | 80 (3.15) | 66 (2.60) | 40 (1.57) | 11 (.43) | 82 (3.23) | 60 (2.36) | 41 (1.61) | 11 (.43) | 141 (5.55) | 56 (2.20) | 25 (.98) | 70 (2.76) |
| ZG/ZCG-06 | 120 (4.72) | 98 (3.86) | 82 (3.23) | 49 (1.93) | 11 (.43) | 106 (4.17) | 84 (3.31) | 57 (2.24) | 11 (.43) | 176 (6.93) | 65 (2.56) | 27 (1.06) | 95 (3.74) |
| ZG/ZCG-10 | 160 (6.30) | 132 (5.20) | 103 (4.06) | 66 (2.60) | 14 (.55) | 140 (5.51) | 112 (4.41) | 75 (2.95) | 14 (.55) | 224 (8.82) | 80 (3.15) | 32 (1.26) | 110 (4.33) |

| Model Numbers | Dimensions mm (Inches) | | | | | | | | | | | |
|---------------|------------------------|--------------|--------------|-------------|-------------|------------|-------------|------------|-------------|---------------|---------------|---------------|
| | U | V | X | Y | Z | a | b | d | e | f | g | h |
| ZG/ZCG-03 | 60 (2.36) | 35 (1.38) | 18 (.71) | 6 (.24) | 10 (.39) | 2 (.08) | 8 (.31) | 2 (.08) | 8 (.31) | 8.8 (.35) | 14 (.55) | 24.5 (.96) |
| ZG/ZCG-06 | 85 (3.35) | 50 (1.97) | 22 (.87) | 8 (.31) | 13 (.51) | 3 (.12) | 10 (.39) | 3 (.12) | 10 (.39) | 11 (.43) | 17.5 (.69) | 29 (1.14) |
| ZG/ZCG-10 | 96 (3.78) | 55 (2.17) | 28 (1.10) | 10 (.39) | 18 (.71) | 3 (.12) | 15 (.59) | 3 (.12) | 15 (.59) | 13.5 (.53) | 21 (.83) | 34 (1.34) |

D
 Deceleration Valves
 Deceleration and Check Valves

ZGM-03-21/2180/2190
 ZGM-06-21/2180/2190
 ZGM-10-21/2180/2190

**DIMENSIONS IN
 MILLIMETRES (INCHES)**



| Model Numbers | Thd. Size | | | mm (Inches) | |
|---------------|------------|----------|----------|-------------|------------|
| | "f" Thd. | "g" Thd. | "h" Thd. | j | n |
| ZGM-03-21 | Rc 3/8 | Rc 1/4 | M8 | 14 (.55) | 6.2 (.24) |
| ZGM-03-2180 | 3/8 BSPF | 1/4 BSPF | | 15 (.59) | |
| ZGM-03-2190 | 3/8 NPT | 1/4 NPT | | 14 (.55) | |
| ZGM-06-21 | Rc 3/4 | Rc 1/4 | M10 | 23 (.91) | 11 (.43) |
| ZGM-06-2180 | 3/4 BSPF | 1/4 BSPF | | 24.5 (.96) | |
| ZGM-06-2190 | 3/4 NPT | 1/4 NPT | | 23 (.91) | |
| ZGM-10-21 | Rc 1-1/4 | Rc 1/4 | M12 | 29 (1.14) | 11 (.43) |
| ZGM-10-2180 | 1-1/4 BSPF | 1/4 BSPF | | | 11.7 (.46) |
| ZGM-10-2190 | 1-1/4 NPT | 1/4 NPT | | | 11 (.43) |

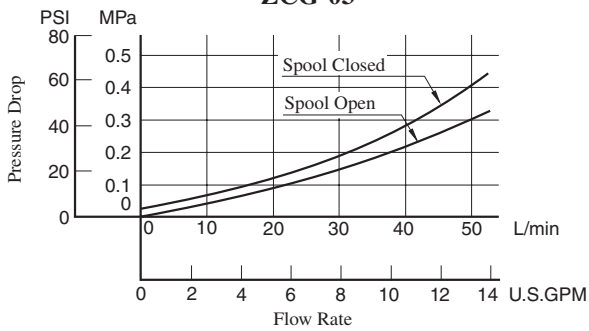
| Model Numbers | Dimensions mm (Inches) | | | | | | | | | | | | | |
|---------------|------------------------|---------------|---------------|--------------|--------------|--------------|--------------|-------------|---------------|---------------|--------------|--------------|---------------|---------------|
| | A | B | C | D | E | F | H | J | K | L | N | P | Q | S |
| ZGM-03 | 146 (5.75) | 124 (4.88) | 80 (3.15) | 60 (2.36) | 42 (1.65) | 20 (.79) | 22 (.87) | 11 (.43) | 85 (3.35) | 60 (2.36) | 40 (1.57) | 20 (.79) | 12.5 (.49) | 58 (2.28) |
| ZGM-06 | 160 (6.30) | 138 (5.43) | 98 (3.86) | 74 (2.91) | 53 (2.09) | 24 (.94) | 20 (.79) | 11 (.43) | 108 (4.25) | 84 (3.31) | 57 (2.24) | 32 (1.26) | 12 (.47) | 81 (3.19) |
| ZGM-10 | 218 (8.58) | 190 (7.48) | 132 (5.20) | 98 (3.86) | 70 (2.76) | 34 (1.34) | 29 (1.14) | 14 (.55) | 140 (5.51) | 112 (4.41) | 75 (2.95) | 40 (1.57) | 14 (.55) | 106 (4.17) |

| Model Numbers | Dimensions mm (Inches) | | | | | |
|---------------|------------------------|--------------|-------------|-------------|---------------|----------------|
| | T | V | Y | a | b | e |
| ZGM-03 | 44 (1.73) | 26 (1.02) | 18 (.71) | 11 (.43) | 17.5 (.69) | 15.2 (.60) |
| ZGM-06 | 60 (2.36) | 35 (1.38) | 18 (.71) | 11 (.43) | 17.5 (.69) | 24.2 (.95) |
| ZGM-10 | 87 (3.43) | 45 (1.77) | 25 (.98) | 14 (.55) | 21 (.83) | 31.5 (1.24) |

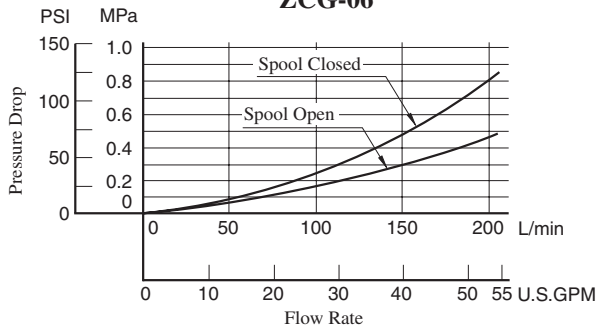
Hydraulic Fluid: Viscosity 20 mm²/s (98 SSU), Specific Gravity 0.850

■ Pressure Drop for Reversed Free Flow

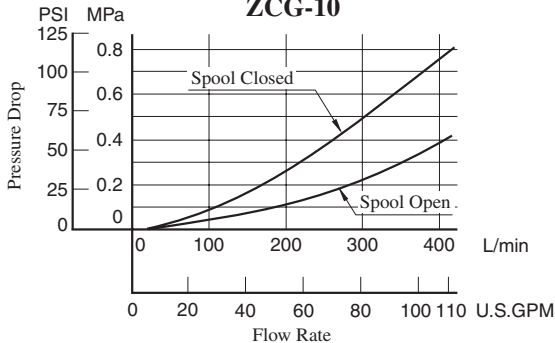
ZCT-03
ZCG-03



ZCT-06
ZCG-06

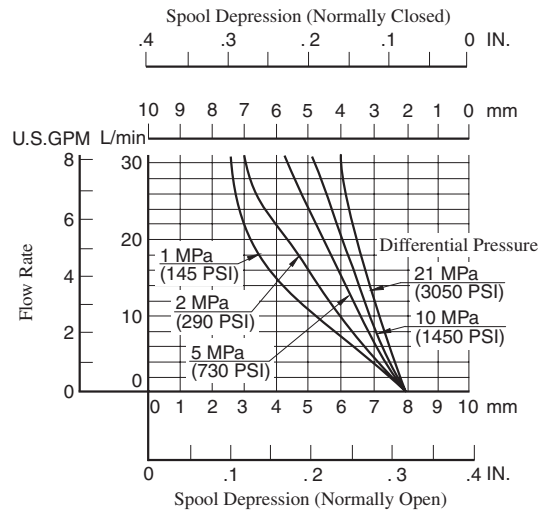


ZCT-10
ZCG-10

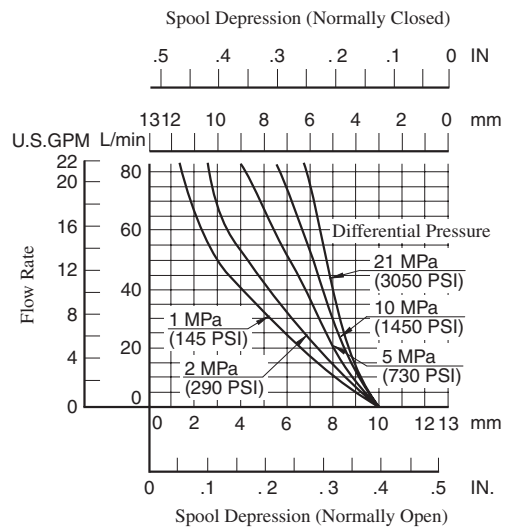


■ Metred Flow vs. Spool Depression

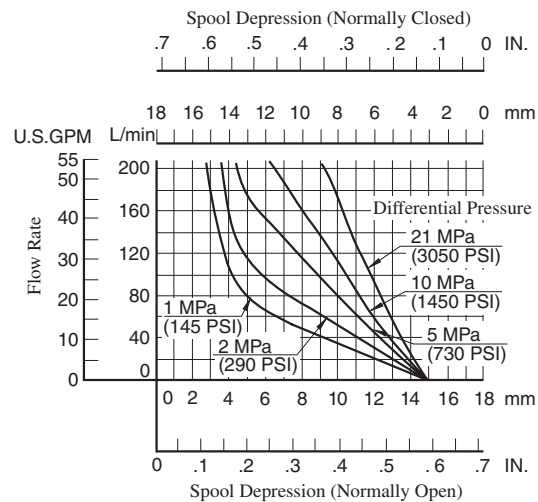
Z*T-03
Z*G-03



Z*T-06
Z*G-06



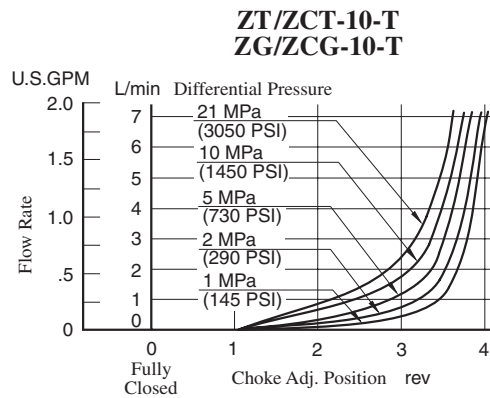
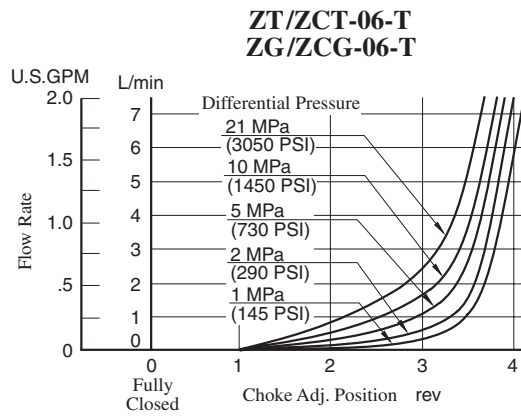
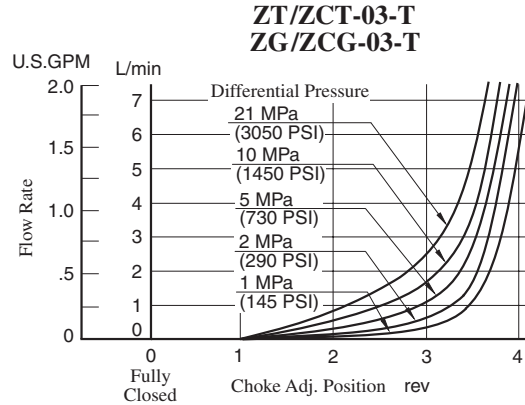
Z*T-10
Z*G-10



D
Deceleration Valves
Deceleration and Check Valves

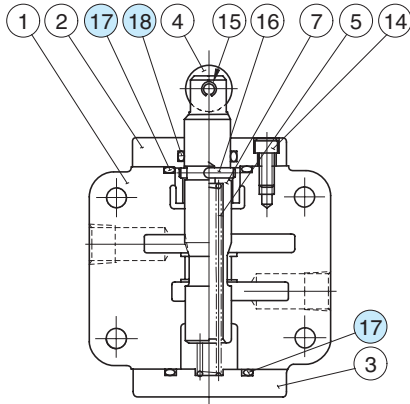
Hydraulic Fluid: Viscosity 20 mm²/s (98 SSU) , Specific Gravity 0.850

■ Metred Flow for Needle Valve

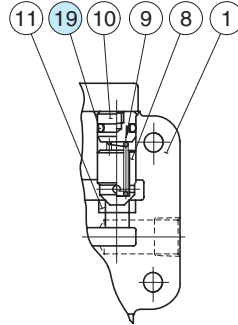


List of Seals

ZT/ZCT-03-*-22/2280/2290
 ZT/ZCT-06-*-22/2280/2290
 ZT/ZCT-10-*-22/2280/2290

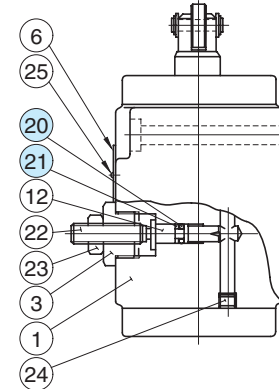


With Check Valve
(ZCT-*)



With Adjustable Needle Valve
for By-Pass Line

(ZT
ZCT-*T)



List of Seals

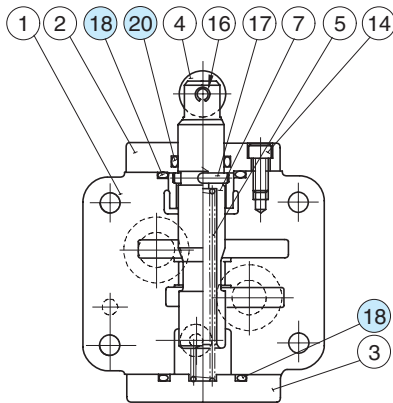
| Item | Name of Parts | Part Numbers | | | Qty. |
|------|---------------|--------------|--------------|--------------|------|
| | | ZT ZCT-03 | ZT ZCT-06 | ZT ZCT-10 | |
| 17 | O-Ring | SO-NB-P32 | SO-NB-P36 | SO-NB-P49 | 2 |
| 18 | O-Ring | SO-NA-P20 | SO-NA-P25 | SO-NA-P32 | 1 |
| 19 | O-Ring | SO-NB-P12 | SO-NB-P18 | SO-NB-P22A | 1 |
| 20 | O-Ring | SO-NA-P5 | SO-NA-P5 | SO-NA-P5 | 1 |
| 21 | Back Up Ring | SO-BB-P5 | SO-BB-P5 | SO-BB-P5 | 1 |

Note: When ordering the seals, please specify the seal kit number from the table right.

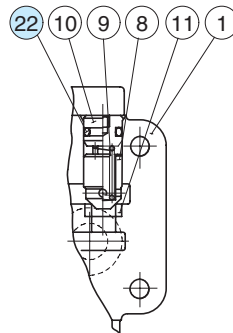
List of Seal Kits

| Valve Model Numbers | Seal Kit Numbers |
|---------------------|------------------|
| ZT-03 | KS-ZT-03-22 |
| ZT-06 | KS-ZT-06-22 |
| ZT-10 | KS-ZT-10-22 |
| ZCT-03 | KS-ZCT-03-22 |
| ZCT-06 | KS-ZCT-06-22 |
| ZCT-10 | KS-ZCT-10-22 |

ZG/ZCG-03-*-22/2290
 ZG/ZCG-06-*-22/2290
 ZG/ZCG-10-*-22/2290

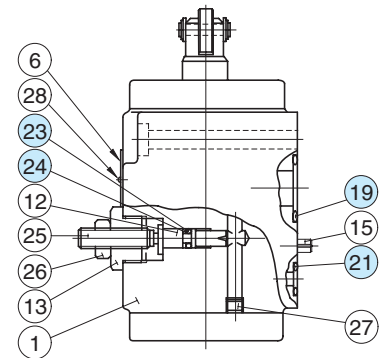


With Check Valve
(ZCG-*)



With Adjustable Needle Valve
for By-Pass Line

(ZG
ZCG-*T)



List of Seals

| Item | Name of Parts | Part Numbers | | | Qty. |
|------|---------------|--------------|--------------|--------------|------|
| | | ZG ZCG-03 | ZG ZCG-06 | ZG ZCG-10 | |
| 18 | O-Ring | SO-NB-P32 | SO-NB-P36 | SO-NB-P49 | 2 |
| 19 | O-Ring | SO-NB-P18 | SO-NB-P28 | SO-NB-P32 | 2 |
| 20 | O-Ring | SO-NA-P20 | SO-NA-P25 | SO-NA-P32 | 1 |
| 21 | O-Ring | SO-NB-P9 | SO-NB-P14 | SO-NB-P14 | 1 |
| 22 | O-Ring | SO-NB-P12 | SO-NB-P18 | SO-NB-P22A | 1 |
| 23 | O-Ring | SO-NA-P5 | SO-NA-P5 | SO-NA-P5 | 1 |
| 24 | Back Up Ring | SO-BB-P5 | SO-BB-P5 | SO-BB-P5 | 1 |

Note: When ordering the seals, please specify the seal kit number from the table right.

List of Seal Kits

| Valve Model Numbers | Seal Kit Numbers |
|---------------------|------------------|
| ZG-03 | KS-ZG-03-22 |
| ZG-06 | KS-ZG-06-22 |
| ZG-10 | KS-ZG-10-22 |
| ZCG-03 | KS-ZCG-03-22 |
| ZCG-06 | KS-ZCG-06-22 |
| ZCG-10 | KS-ZCG-10-22 |