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**Z-Tide Group**  
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ISO-9001 & CE0035 Approval



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Version 13.0



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# Water Piping Illustration

Pressure sustaining valve is utilized in the piping for users. It primarily matches up with the minimum working pressure inside the tap water pipe and maintains minimum standard working pressure at any point inside the pipeline during peacetime and emergency.

## Pressure Sustaining Valve



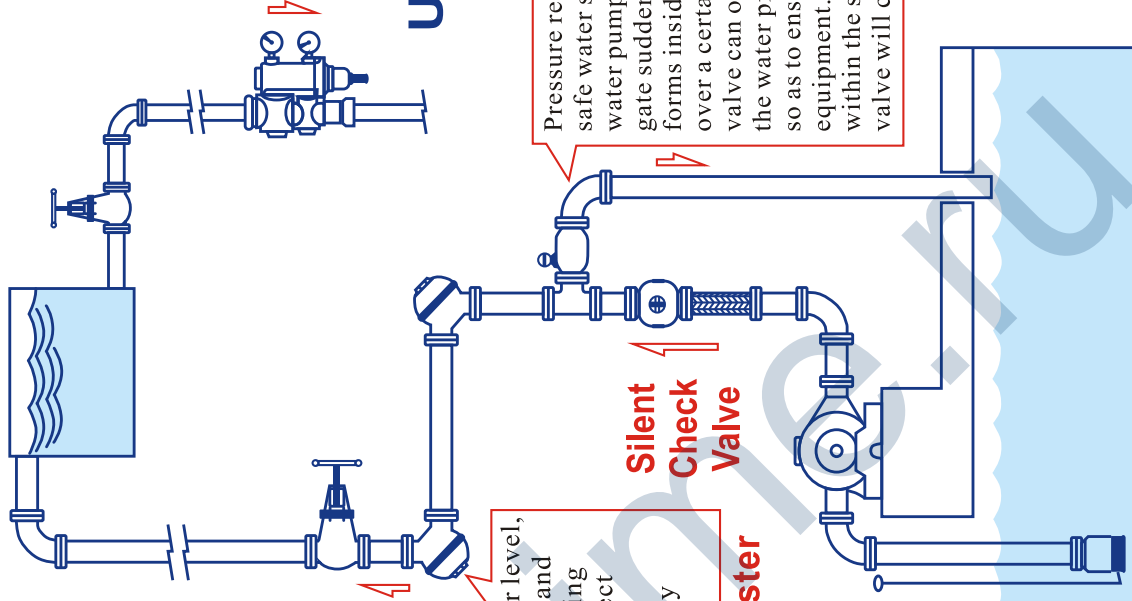
When the water approaches full water level, float valve will switch between open and close state due to fluctuation of floating ball, which means water hammer effect is generated (vibration and noise). This phenomenon can be prevented by using a water hammer arrester.

## Water Hammer Arrester

## Filter

## Float Valve

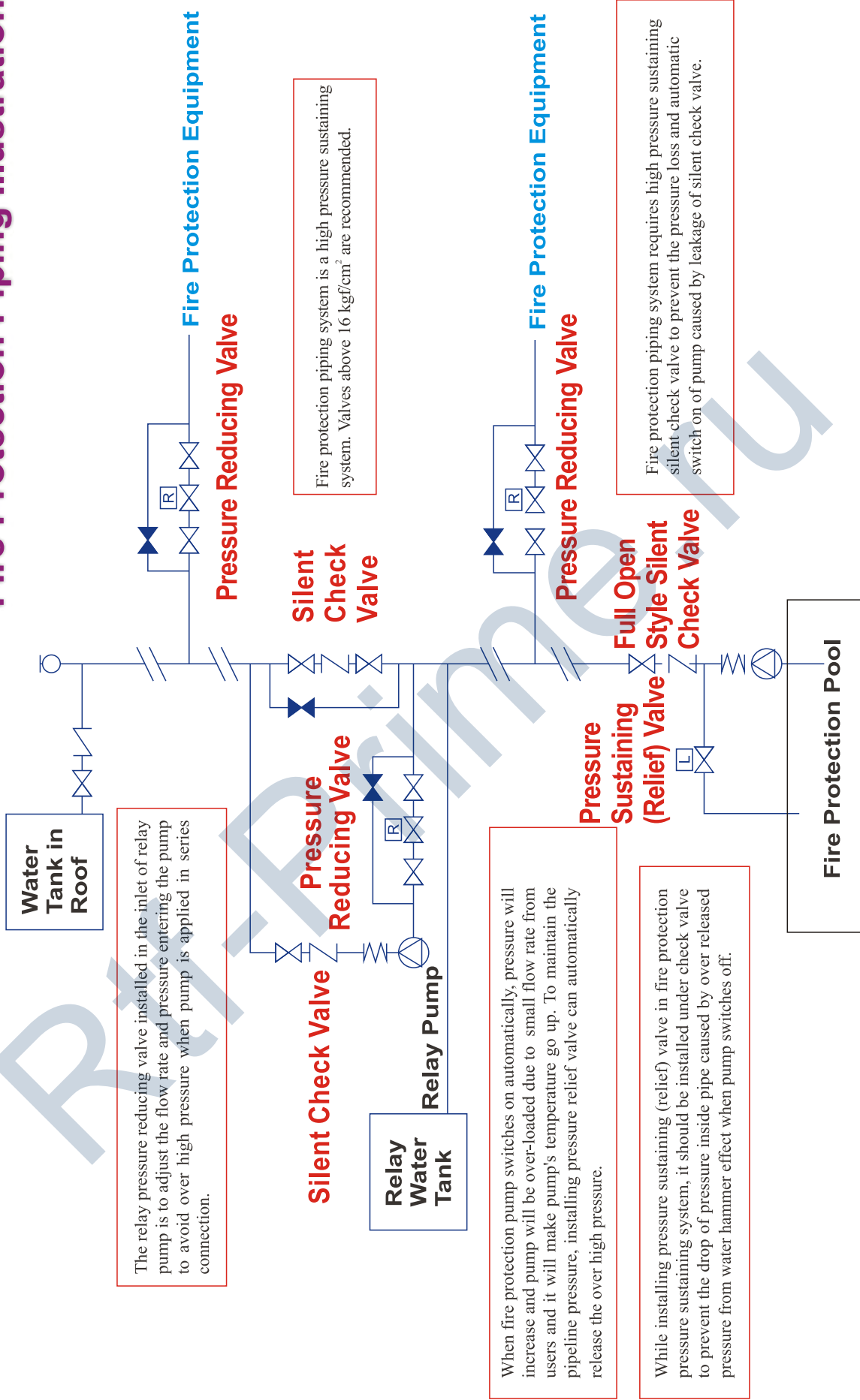
When using float valve, in order to save pool space and for easy maintenance, the valve should be placed outside the pool, with the float ball switch placing at the lowest point in pipeline, consequently impurities deposited and cause to malfunction. It's recommended that a filter should be installed to prevent pipe blocking.



## Pressure Relief Valve

Pressure relief valve is mainly for sustaining safe water supply pressure in the pipe. When water pump stops functioning or pipeline gate suddenly closes, abnormal pressure forms inside the pipe. As the pressure gets over a certain safety limit, pressure relief valve can open automatically and releases the water pressure above the safety limit, so as to ensure the safety of pipeline and equipment. When the pressure turns back within the safety limit, the pressure relief valve will close slowly.

# Fire Protection Piping Illustration



The relay pressure reducing valve installed in the inlet of relay pump is to adjust the flow rate and pressure entering the pump to avoid over high pressure when pump is applied in series connection.

Fire protection piping system is a high pressure sustaining system. Valves above 16 kgf/cm<sup>2</sup> are recommended.

When fire protection pump switches on automatically, pressure will increase and pump will be over-loaded due to small flow rate from users and it will make pump's temperature go up. To maintain the pipeline pressure, installing pressure relief valve can automatically release the over high pressure.

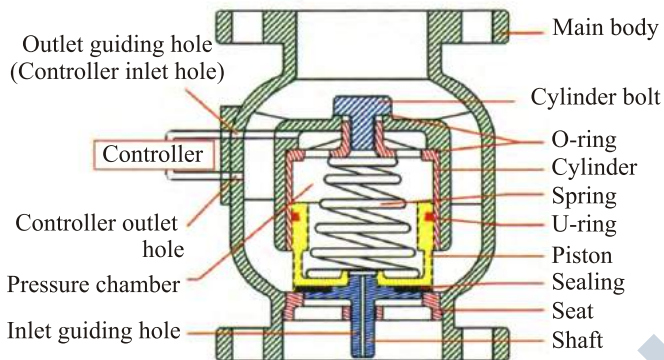
While installing pressure sustaining (relief) valve in fire protection pressure sustaining system, it should be installed under check valve to prevent the drop of pressure inside pipe caused by over released pressure from water hammer effect when pump switches off.

Fire protection piping system requires high pressure sustaining silent check valve to prevent the pressure loss and automatic switch on of pump caused by leakage of silent check valve.



# MULTI-FUNCTION AUTO-CONTROL VALVE

- ▶ Controller is fixed directly and designed of non-controller conduit. It reduces the damage of the controller conduit while transporting the equipment.
- ▶ Controller is designed to be quickly screw fastened, enabling fast and easy installation.
- ▶ The valve body can match with all types of controller without technical conversion, and all kinds of control valves can be formed.
- ▶ Cylinder design is adopted for the valve body structure, making the valve applicable to low and high pressure in both vertical and horizontal positions.
- ▶ Straight flow path is designed inside valve body. The large flow can reduce the malfunctions caused by impure water and effectively decrease turbulence and related bad effects.
- ▶ The valve body is shaped and formed as whole. Small volume, lightweight, and easy installation. Simple and elegant appearance.
- ▶ Professional manufacturers, best quality, and reasonable price.



▶ Patent Number : 135517

| Part Name     | Materials |              |        |        |             |
|---------------|-----------|--------------|--------|--------|-------------|
|               | Cast Iron | Ductile Iron | Bronze | SS 304 | SS 316      |
| Main body     | Cast Iron | Ductile Iron | Bronze | SS 304 | SS 316      |
| Cylinder bolt | Cast Iron | Ductile Iron | Brass  | SS 304 | SS 304      |
| O-ring        | NBR       | NBR          | NBR    | NBR    | NBR / Viton |
| Cylinder      | Bronze    | Bronze       | Bronze | SS 304 | SS 316      |
| Spring        | SS 304    | SS 304       | SS 304 | SS 304 | SS 304      |
| U-ring        | NBR       | NBR          | NBR    | NBR    | NBR / Viton |
| Piston        | Bronze    | Bronze       | Bronze | SS 304 | SS 316      |
| Sealing       | NBR       | NBR          | NBR    | NBR    | NBR / Viton |
| Seat          | Bronze    | Bronze       | Bronze | SS 304 | SS 316      |
| Shaft         | Bronze    | Bronze       | Bronze | SS 304 | SS 316      |
| Controller    | Brass     | Brass        | Brass  | SS 304 | SS 304      |

1. Applied conditions: Fluid & Air
2. Applied temperature: -15° ~ 80°C
3. Connection ends: Available for all international standards
4. Materials of valve body: Cast Iron, Ductile Iron, Bronze & Stainless Steel

The valve body of main valve becomes functional by an inlet-guiding hole. This hole transfers pressure to pressure chamber. When enough pressure accumulates in the pressure chamber, it generates pushing force that makes the piston close to valve seat and generates the closing motion. There is another outlet guiding hole inside the pressure chamber. When the hole is open, pressure in pressure chamber dissipates and valve gate is pushed open by incoming water pressure.

● Stock Items

| Flange End |           |              |        |                 |
|------------|-----------|--------------|--------|-----------------|
| Size       | Cast Iron | Ductile Iron | Bronze | Stainless Steel |
| 2"         | ●         | ●            | ●      | ●               |
| 2.5"       | ●         | ●            | ●      | ●               |
| 3"         | ●         | ●            | ●      | ●               |
| 4"         | ●         | ●            | ●      | ●               |
| 5"         | ●         | ●            | ●      | ●               |
| 6"         | ●         | ●            | ●      | ●               |
| 8"         | ●         | ●            | ●      | ●               |
| 10"        | ●         | ●            | ●      | ●               |
| 12"        | ●         | ●            | ●      | ●               |
| 14"        |           | ●            | ●      | ●               |

( 1 kgf/cm<sup>2</sup> = 14.2 psi )

| Working Pressure |                          | Test Pressure   |                          |
|------------------|--------------------------|-----------------|--------------------------|
| Cast Iron        | : 16 kgf/cm <sup>2</sup> | Cast Iron       | : 24 kgf/cm <sup>2</sup> |
| Ductile Iron     | : 20 kgf/cm <sup>2</sup> | Ductile Iron    | : 30 kgf/cm <sup>2</sup> |
| Bronze           | : 16 kgf/cm <sup>2</sup> | Bronze          | : 24 kgf/cm <sup>2</sup> |
| Stainless Steel  | : 25 kgf/cm <sup>2</sup> | Stainless Steel | : 38 kgf/cm <sup>2</sup> |

● Stock Items

| Thread End |           |        |                 |
|------------|-----------|--------|-----------------|
| Size       | Cast Iron | Bronze | Stainless Steel |
| 1.5"       |           | ●      | ●               |
| 2"         | ●         | ●      |                 |

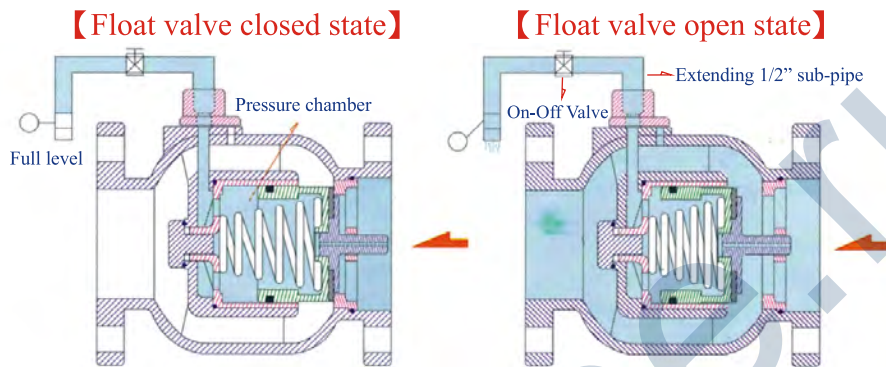
◎ Production Size: 1.5"~ 56"



# F L O A T V A L V E



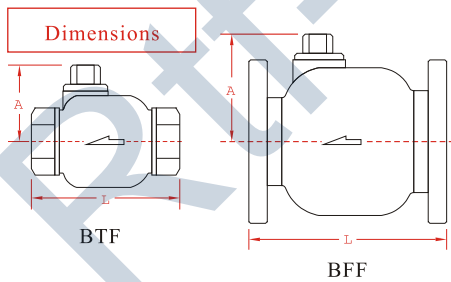
Float valve uses a sub-valve (float valve switch) to control the main valve. When the water level elevates to the full water level set by sub-valve (float valve switch), the sub-valve (float valve switch) closes and the back pressure chamber inside the main valve accumulates pressure rapidly, which reversely pushes the piston valve to close. By this mechanism, the float valve can thus control the water level. In order to save space inside the pool and for easy maintenance, it is recommended to install the float valve outside the pool.



⊙ At full water level, pressure accumulates in the pressure chamber and pushes the gate reversibly.

⊙ At low water level, pressure in pressure chamber dissipates, and water pressure inside the pipe pushes the gate open.

- ▶ The working pressure should be greater than  $0.3 \text{ kgf/cm}^2$  and gate fully open with  $1.5 \text{ kgf/cm}^2$ , please check the pressure before installation.
- ▶ Please remove impurities or metal dusts inside the pipe thoroughly. If possible, please add filter to prevent pipe blocking.
- ▶ Vertical and horizontal installation is acceptable. Avoid upside-down installation under insufficient flow.
- ▶ Float ball size is 4", and the connection end is 1/2" PT Thread (Max. Pressure  $10 \text{ kgf/cm}^2$ ).



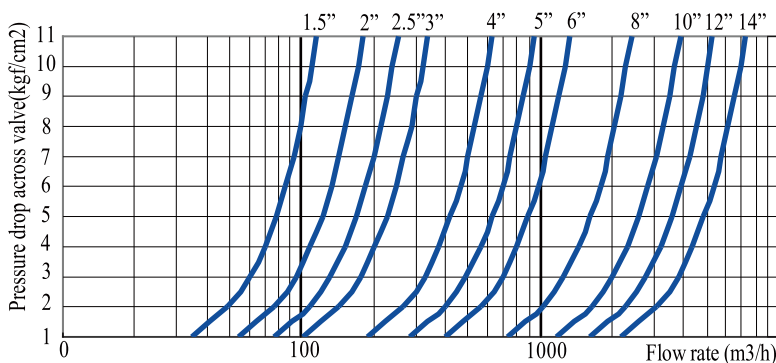
(Thread end)

| Item No | Size | L(mm) | A(mm) | Weight(kg) | CV |
|---------|------|-------|-------|------------|----|
| BTF-40  | 1.5" | 120   | 75    | 3          | 48 |
| BTF-50  | 2"   | 200   | 95    | 8          | 75 |

(Flange end)

| Item No | Size | L(mm) | A(mm) | Weight(kg) | CV   |
|---------|------|-------|-------|------------|------|
| BFF-50  | 2"   | 190   | 95    | 12         | 75   |
| BFF-65  | 2.5" | 210   | 100   | 14         | 105  |
| BFF-80  | 3"   | 225   | 115   | 19         | 140  |
| BFF-100 | 4"   | 250   | 127   | 26         | 260  |
| BFF-125 | 5"   | 280   | 150   | 37         | 390  |
| BFF-150 | 6"   | 310   | 165   | 50         | 550  |
| BFF-200 | 8"   | 420   | 205   | 94         | 1000 |
| BFF-250 | 10"  | 470   | 240   | 150        | 1600 |
| BFF-300 | 12"  | 530   | 275   | 200        | 2200 |
| BFF-350 | 14"  | 600   | 320   | 280        | 3000 |

Flow Chart of Float Valve



⊙ Production Size: 1.5" ~ 56"

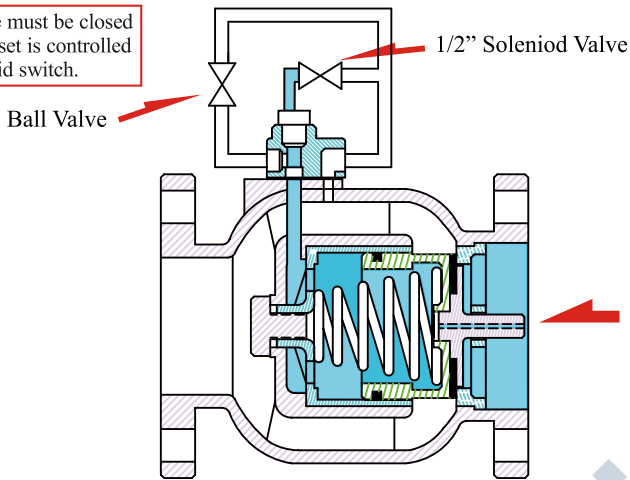


# SOLENOID CONTROL VALVE



► Solenoid control valve is a kind of isolation valve, which can substitute traditional gate valves, ball valves and butterfly valves. The gate functioning is easily controlled by electrical power. The valve can be installed in fire control facility, water supply, or distant location where it's difficult to control the gate opening. The controller is directly fixed and can be easily installed on piping site. Interchangeable between manual and solenoid control.

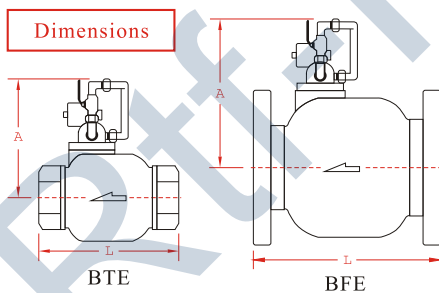
Ball valve must be closed when the set is controlled by solenoid switch.



## ※ Specification of Solenoid Control Switch

- Working Voltage : DC12V, DC24V, AC110V/220V, 50/60Hz
- Electrifying Time Range : 1 year continuously for 10,000 hours
- Allowable Voltage Range :  $\pm 10\%$
- Applied Temperature :  $-15 \sim 80^{\circ}\text{C}$
- Durability : 500,000 Cycles
- Applied Pressure Range :  $0.3 \sim 10 \text{ kgf/cm}^2$
- Generally NC type (open when switch on), special order is needed for NO type (close when switch off) .

- The working pressure should be greater than  $0.3 \text{ kgf/cm}^2$  and gate fully open with  $1.5 \text{ kgf/cm}^2$ , please check the pressure before installation.
- Please remove impurities or metal dusts inside the pipe thoroughly. If possible, please add filter to prevent pipe blocking.
- Avoid upside-down installation under insufficient flow. (Valve's inlet should face up when it is installed)



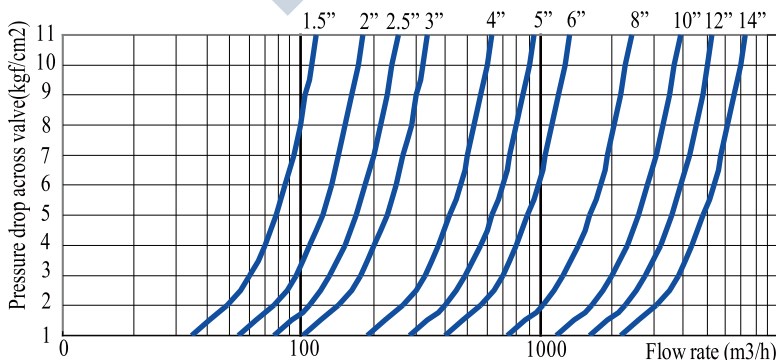
(Thread end)

| Item No | Size | L(mm) | A(mm) | Weight(kg) | CV |
|---------|------|-------|-------|------------|----|
| BTE-40  | 1.5" | 120   | 170   | 4          | 48 |
| BTE-50  | 2"   | 200   | 190   | 10         | 75 |

(Flange end)

| Item No | Size | L(mm) | A(mm) | Weight(kg) | CV   |
|---------|------|-------|-------|------------|------|
| BFE-50  | 2"   | 190   | 190   | 13         | 75   |
| BFE-65  | 2.5" | 210   | 195   | 15         | 105  |
| BFE-80  | 3"   | 225   | 210   | 20         | 140  |
| BFE-100 | 4"   | 250   | 222   | 26         | 260  |
| BFE-125 | 5"   | 280   | 245   | 38         | 390  |
| BFE-150 | 6"   | 310   | 260   | 51         | 550  |
| BFE-200 | 8"   | 420   | 300   | 95         | 1000 |
| BFE-250 | 10"  | 470   | 335   | 152        | 1600 |
| BFE-300 | 12"  | 530   | 370   | 202        | 2200 |
| BFE-350 | 14"  | 600   | 415   | 285        | 3000 |

Flow Chart of Solenoid Control Valve



◎Production Size: 1.5" ~ 56"

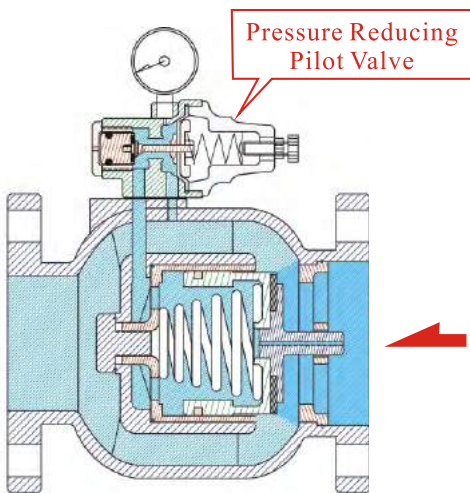




# PRESSURE REDUCING VALVE



- ▶ Pressure reducing valve can prevent pipeline breakage due to high pressure.
- ▶ Pressure reducing valve is installed in water supply pipeline and maintains the setting outlet pressure in main valve, regardless of the different inlet pressure.
- ▶ Pressure reducing valve can be installed in water supply, air conditioning and fire control systems to maintain the setting outlet pressure.

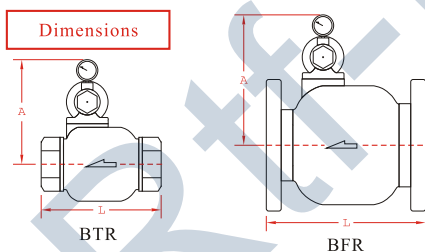


The pressure reducing valve uses a sub-valve (pressure reducing pilot valve) to control the main valve. When the outlet pressure reaches the setting range of pressure reducing pilot valve, the pilot valve will automatically sense the outlet pressure and adjust the pressure of the back pressure chamber in the main valve, so the valve gate can be opened and consequently maintains the outlet pressure.

- ▶ Pressure Adjusting Range : 1 ~ 7 kgf/cm<sup>2</sup>  
( 1 kgf/cm<sup>2</sup> = 14.2 psi)      4 ~ 12 kgf/cm<sup>2</sup>

◎Special order can be arranged for higher pressure adjustment range.

- ▶ The pressure meter on the pilot valve shows the outlet pressure. When the outlet opens, the value of the pressure meter is lower.
- ▶ When the outlet is used for large flow and the gate generates quick-close motion, the pilot valve will slowly respond to the main valve to close the gate. Under this situation, the outlet pressure gets a little higher, and a tiny pressure reducing valve can be added.



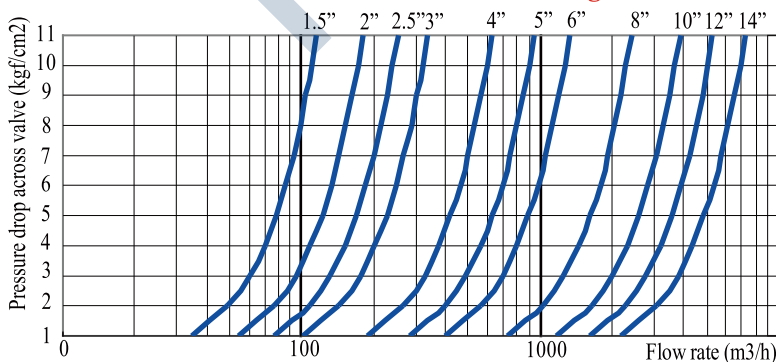
(Thread end)

| Item No | Size | L(mm) | A(mm) | Weight(kg) | CV |
|---------|------|-------|-------|------------|----|
| BTR-40  | 1.5" | 120   | 170   | 3          | 48 |
| BTR-50  | 2"   | 200   | 190   | 9          | 75 |

(Flange end)

| Item No | Size | L(mm) | A(mm) | Weight(kg) | CV   |
|---------|------|-------|-------|------------|------|
| BFR-50  | 2"   | 190   | 180   | 12         | 75   |
| BFR-65  | 2.5" | 210   | 185   | 14         | 105  |
| BFR-80  | 3"   | 225   | 200   | 19         | 140  |
| BFR-100 | 4"   | 250   | 222   | 26         | 260  |
| BFR-125 | 5"   | 280   | 235   | 37         | 390  |
| BFR-150 | 6"   | 310   | 260   | 50         | 550  |
| BFR-200 | 8"   | 420   | 300   | 94         | 1000 |
| BFR-250 | 10"  | 470   | 335   | 152        | 1600 |
| BFR-300 | 12"  | 530   | 370   | 202        | 2200 |
| BFR-350 | 14"  | 600   | 415   | 285        | 3000 |

**Flow Chart of Pressure Reducing Valve**



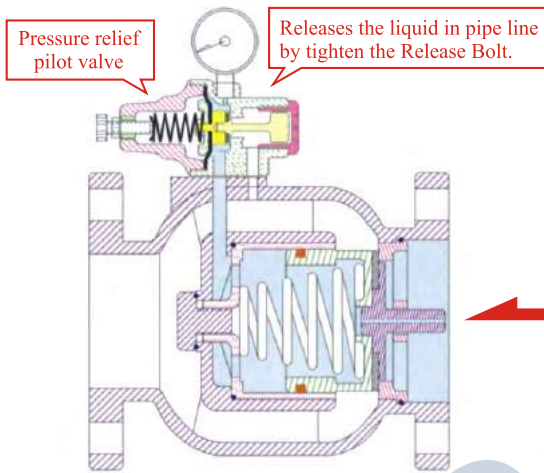
◎Production Size: 1.5" ~ 56"



# PRESSURE RELIEF VALVE



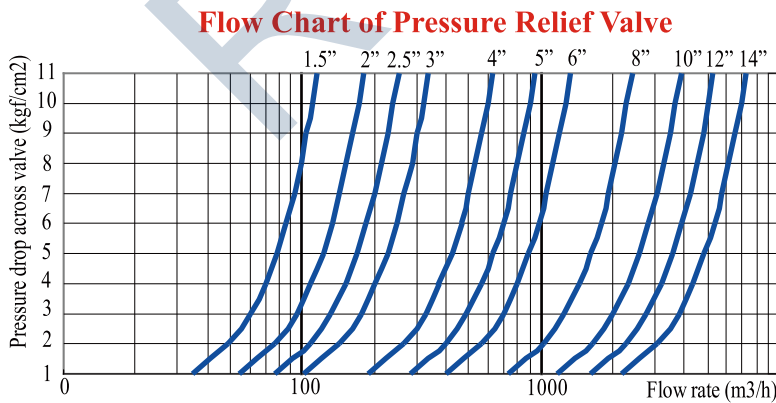
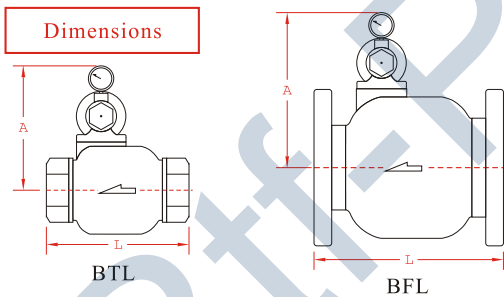
- ▶ Pressure relief valve is installed on the outlet pipe of water supply pipeline. It can maintain safe water supply pressure inside the pipe and prevent pipeline and equipment damage caused by accidental escalation of water pressure.
- ▶ When water pump stops functioning or pipeline gate suddenly closes, abnormal pressure forms inside the pipe. As the pressure gets over a certain safety limit, pressure relief valve can open automatically and releases the water pressure above the safety limit, so as to ensure the safety of pipeline and equipment. When the pressure turns back within the safety limit, the pressure relief will close slowly.



- ▶ Pressure Adjusting Range :  $0.2 \sim 4 \text{ kgf/cm}^2$   
 (  $1 \text{ kgf/cm}^2 = 14.2 \text{ psi}$  )      $2 \sim 8 \text{ kgf/cm}^2$   
     $5 \sim 13 \text{ kgf/cm}^2$

- ▶ The working pressure should be greater than  $0.3 \text{ kgf/cm}^2$  and gate fully open with  $1.5 \text{ kgf/cm}^2$ , please check the pressure before installation.

©Special order can be arranged for higher pressure adjustment range.



(Thread end)

| Item No | Size | L(mm) | A(mm) | Weight(kg) | CV |
|---------|------|-------|-------|------------|----|
| BTL-40  | 1.5" | 120   | 160   | 3          | 48 |
| BTL-50  | 2"   | 200   | 180   | 9          | 75 |

(Flange end)

| Item No | Size | L(mm) | A(mm) | Weight(kg) | CV   |
|---------|------|-------|-------|------------|------|
| BFL-50  | 2"   | 190   | 180   | 12         | 75   |
| BFL-65  | 2.5" | 210   | 185   | 14         | 105  |
| BFL-80  | 3"   | 225   | 200   | 19         | 140  |
| BFL-100 | 4"   | 250   | 222   | 26         | 260  |
| BFL-125 | 5"   | 280   | 235   | 37         | 390  |
| BFL-150 | 6"   | 310   | 260   | 50         | 550  |
| BFL-200 | 8"   | 420   | 300   | 94         | 1000 |
| BFL-250 | 10"  | 470   | 335   | 152        | 1600 |
| BFL-300 | 12"  | 530   | 370   | 202        | 2200 |
| BFL-350 | 14"  | 600   | 415   | 285        | 3000 |

©Production Size: 1.5" ~ 56"

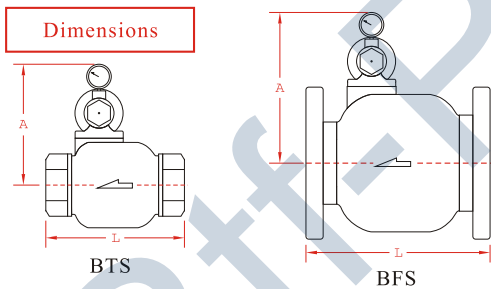
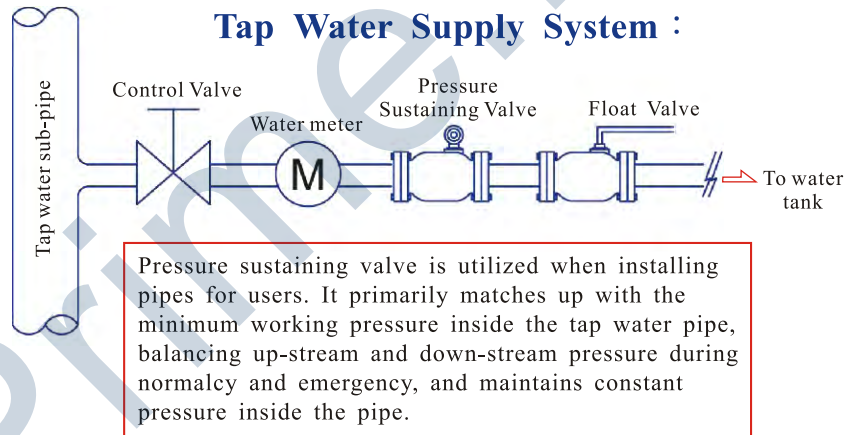
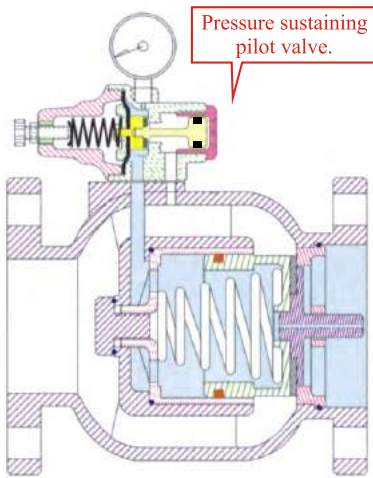


# PRESSURE SUSTAINING VALVE



- ▶ Pressure sustaining valve is utilized when installing pipes for users. It primarily matches up with the minimum working pressure inside the tap water pipe, balancing up-stream and down-stream pressure during normalcy and emergency, and maintains constant pressure inside the pipe.
- ▶ Pressure sustaining valve can sustain the maximum working pressure inside the pipe when installed in water supply areas.
- ▶ Pressure adjusting range :  $0.2 \sim 4 \text{ kgf/cm}^2$   
(  $1 \text{ kgf/cm}^2 = 14.2 \text{ psi}$  )  $3 \sim 10 \text{ kgf/cm}^2$

- ▶ The working pressure should be greater than  $0.3 \text{ kgf/cm}^2$  and gate fully open with  $1.5 \text{ kgf/cm}^2$ , please check the pressure before installation.



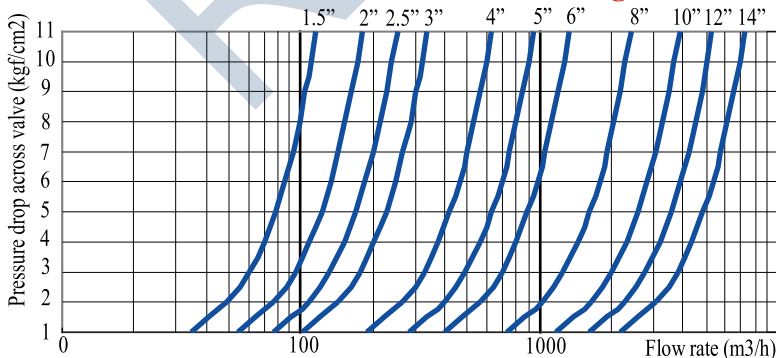
(Thread end)

| Item No | Size | L(mm) | A(mm) | Weight(kg) | CV |
|---------|------|-------|-------|------------|----|
| BTS-40  | 1.5" | 120   | 160   | 3          | 48 |
| BTS-50  | 2"   | 200   | 180   | 9          | 75 |

(Flange end)

| Item No | Size | L(mm) | A(mm) | Weight(kg) | CV   |
|---------|------|-------|-------|------------|------|
| BFS-50  | 2"   | 190   | 180   | 12         | 75   |
| BFS-65  | 2.5" | 210   | 185   | 14         | 105  |
| BFS-80  | 3"   | 225   | 200   | 19         | 140  |
| BFS-100 | 4"   | 250   | 222   | 26         | 260  |
| BFS-125 | 5"   | 280   | 235   | 37         | 390  |
| BFS-150 | 6"   | 310   | 260   | 50         | 550  |
| BFS-200 | 8"   | 420   | 300   | 94         | 1000 |
| BFS-250 | 10"  | 470   | 335   | 152        | 1600 |
| BFS-300 | 12"  | 530   | 370   | 202        | 2200 |
| BFS-350 | 14"  | 600   | 415   | 285        | 3000 |

**Flow Chart of Pressure Sustaining Valve**



©Production Size: 1.5" ~ 56"

## Corrosion Rate of Titanium, Stainless Steel & Bronze

| Media   | Percentage (%) | Temp (°C) | Titanium | S.S.304 | S.S.316 | Bronze |
|---|----------------|-----------|----------|---------|---------|--------|
| Hydrochloric acid (HCl)                         | 1              | RT        | ◎        | ○       | ◎       | ×      |
|   | 10             | RT        | ○        | ×       | ×       | ×      |
| Sulfuric acid (H <sub>2</sub> SO <sub>4</sub> ) | 1              | RT        | ◎        | ◎       | ◎       | ○      |
|   | 10             | RT        | ○        | ○       | ○       | ○      |
| Nitric acid (NO <sub>3</sub> )                  | 10             | RT        | ◎        | ◎       | ◎       | ×      |
|   | 65             | BT        | ◎        | ○       | ○       | ×      |
| Acetic Acid (CH <sub>3</sub> COOH)              | 60             | BT        | ◎        | ○       | ○       | ×      |
| Sodium hydroxide (NaOH)                         | 40             | RT        | ◎        | ◎       | ◎       | ◎      |
|   |                | BT        | ×        | ○       | ○       | ○      |
| (C <sub>12</sub> )                              | 100            | RT        | ◎        | ×       | ×       | ×      |
|   | wet            |           |          |         |         |        |
| Hydrogen sulfide (H <sub>2</sub> S)             | 100            | RT        | ◎        | ○       | ◎       | ×      |
|   | wet            |           |          |         |         |        |
| Sulfur dioxide (SO <sub>2</sub> )               | wet            | 30-90     | ◎        | ○       | ○       | ×      |
| Sea water                                       | Normal         | BT        | ◎        | ×       | ○       | ×      |

RT: Room Temperature BT: Boil Temperature

◎: Very Good

○: Good (0.125-0.5mm/year)

×: No Good (1.25mm/year)



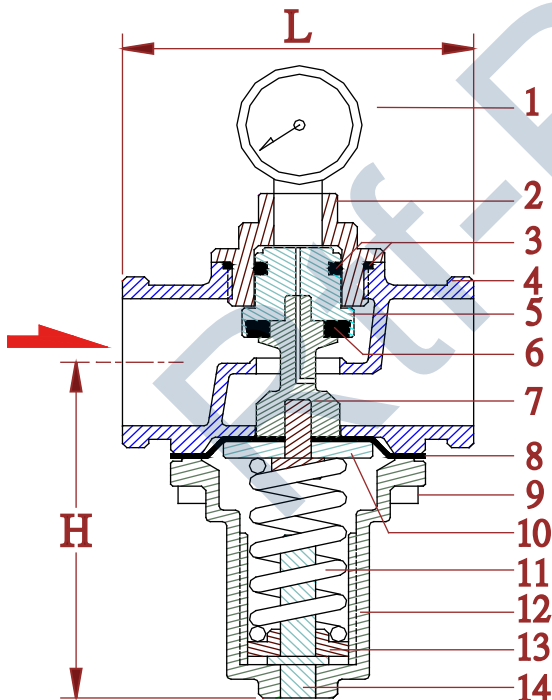
## DIRECT-ACTIVATED PRESSURE REDUCING VALVE ( Titanium - Offshore )

- ▶ Valve Body is made by Titanium, suitable for chemical, oil & gas, sea water, drink water, food, air, steam ...etc.
- ▶ The gate is balanced-pressure designed, which will not influence the outlet pressure caused by unstable inlet pressure.
- ▶ When the outlet pressure responds directly to the pressure control chamber and adjusts the setting pressure, it responds quickly and adjusts the pressure accurately.
- ▶ Design of piston and diaphragm improves the inability of sustaining pressure and leakage.



- ▶ Body Testing Pressure :  $24 \text{ kgf/cm}^2$
- ▶ Max Applied Pressure :  $16 \text{ kgf/cm}^2$
- ▶ Adjusting Range :  $1 \sim 6 \text{ kgf/cm}^2$   
 $4 \sim 10 \text{ kgf/cm}^2$
- ▶ Applied Temperature :  $-15 \sim 180 \text{ c}^\circ$

| No | Part Name      | Material                  |
|----|----------------|---------------------------|
| 1  | Pressure Gauge | Stainless Steel           |
| 2  | Upper Cover    | Titanium                  |
| 3  | U-Ring         | Viton(Teflon Coating)     |
| 4  | Main Body      | Titanium                  |
| 5  | Piston         | Titanium                  |
| 6  | Sealing Spacer | Viton / Teflon            |
| 7  | Shaft          | Titanium                  |
| 8  | Diaphragm      | CR Rubber(Teflon Coating) |
| 9  | Fixed Bolt     | Titanium                  |
| 10 | Washer         | Stainless Steel 304       |
| 11 | Spring         | Spring Steel              |
| 12 | Spring Cover   | Titanium/SS316            |
| 13 | Washer         | Stainless Steel 304       |
| 14 | Adjusting Stem | Stainless Steel 304       |



| Item No | Size  | H(mm) | L(mm) | Weight(kg) | CV |
|---------|-------|-------|-------|------------|----|
| RDT-15  | 1/2"  | 70    | 60    | 0.32       | 2  |
| RDT-20  | 3/4"  | 70    | 70    | 0.40       | 6  |
| RDT-25  | 1"    | 80    | 80    | 0.64       | 8  |
| RDT-32  | 1.25" | 85    | 90    | 1.20       | 16 |
| RDT-40  | 1.5"  | 110   | 110   | 2.00       | 18 |
| RDT-50  | 2"    | 115   | 115   | 2.40       | 21 |

(Thread End)



## DIRECT-ACTIVATED PRESSURE REDUCING VALVE ( Stainless Steel 316 )

- ▶ Valve Body is made by Stainless Steel #316, suitable for fluid, air and steam.
- ▶ The gate is balanced-pressure designed, which will not influence the outlet pressure caused by unstable inlet pressure. Pressure needed from fully-closed gate to fully-opened gate : 1.5 kgf/cm<sup>2</sup>.
- ▶ When the outlet pressure responds directly to the pressure control chamber and adjusts the setting pressure, it responds quickly and adjusts the pressure accurately.
- ▶ Design of piston and diaphragm improves the inability of sustaining pressure and leakage.



- ▶ Pressure Adjusting Range : 1~6 kgf/cm<sup>2</sup>  
( 1 kgf/cm<sup>2</sup> = 14.2 psi)      4~10 kgf/cm<sup>2</sup>  
8~13 kgf/cm<sup>2</sup>
- ▶ Applied Temperature : -15~100°C  
100~180°C (For steam)
- ▶ Valve Body Testing Pressure : 35 kgf/cm<sup>2</sup>
- ▶ Maximum Applied Pressure : 25 kgf/cm<sup>2</sup>
- ▶ Please cover steam pipelines with thermal materials

©Special order can be arranged for higher pressure adjustment range.

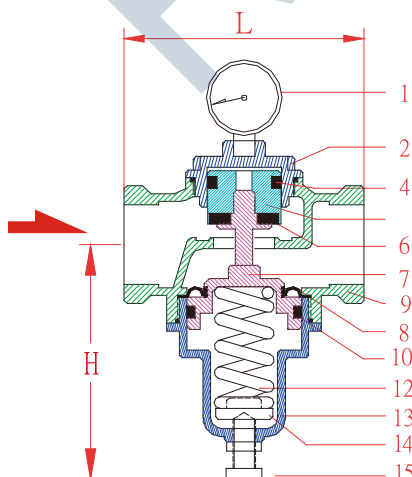
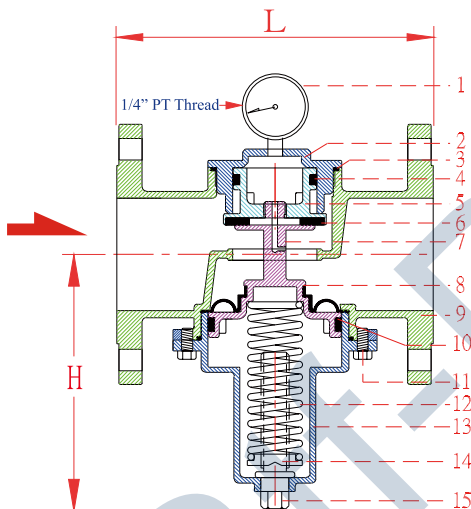
| No | Part Name      | Material             |
|----|----------------|----------------------|
| 1  | Pressure Gauge | Stainless Steel      |
| 2  | Upper Cover    | Stainless Steel 316  |
| 3  | O-ring         | NBR / Viton / Teflon |
| 4  | U-ring         | NBR / Viton          |
| 5  | Piston         | Stainless Steel 316  |
| 6  | Sealing Spacer | NBR / Viton / Teflon |
| 7  | Shaft          | Stainless Steel 316  |
| 8  | Diaphragm      | NBR / Viton          |
| 9  | Main Body      | Stainless Steel 316  |
| 10 | UH-ring        | NBR / Viton          |
| 11 | Fixed Bolt     | Stainless Steel 304  |
| 12 | Spring         | Spring Steel         |
| 13 | Lower Cover    | Stainless Steel 316  |
| 14 | Washer         | Brass                |
| 15 | Adjusting Stem | Stainless Steel 304  |

(Thread End)

| Item No | Size | H(mm) | L(mm) | Weight(kg) | CV   |
|---------|------|-------|-------|------------|------|
| RET15-S | 1/2" | 80    | 70    | 0.8        | 2.4  |
| RET20-S | 3/4" | 105   | 85    | 1.0        | 9.0  |
| RET25-S | 1"   | 105   | 92    | 1.1        | 11.0 |
| RET40-S | 1.5" | 130   | 115   | 2.2        | 21.0 |
| RET50-S | 2"   | 130   | 120   | 3.1        | 25.0 |

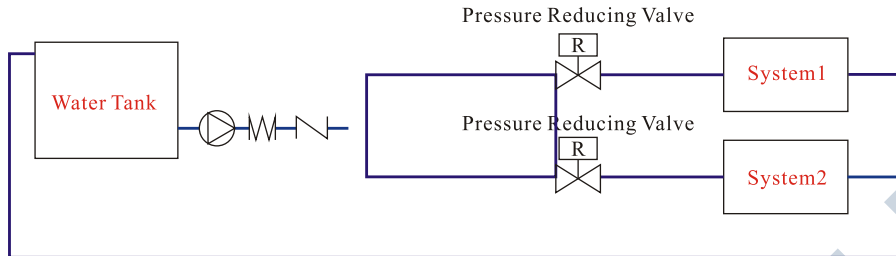
(Flange End)

| Item No  | Size | H(mm) | L(mm) | Weight(kg) | CV  |
|----------|------|-------|-------|------------|-----|
| REF15-S  | 1/2" | 85    | 150   | 2.0        | 2.4 |
| REF20-S  | 3/4" | 105   | 150   | 2.8        | 9   |
| REF25-S  | 1"   | 105   | 150   | 3.5        | 11  |
| REF40-S  | 1.5" | 130   | 190   | 5.9        | 21  |
| REF50-S  | 2"   | 130   | 190   | 6.5        | 25  |
| REF65-S  | 2.5" | 185   | 210   | 11.5       | 75  |
| REF80-S  | 3"   | 185   | 225   | 12.0       | 80  |
| REF100-S | 4"   | 230   | 250   | 19.0       | 120 |
| REF150-S | 6"   | 290   | 310   | 45.0       | 250 |



## Applied condition of Direct-activated Pressure Reducing Valve :

- ▶ Installing pressure reducing valve directly in sub-pipe can reduce fluid pressure inside the pipe.
- ▶ Installing a filter in the inlet of pressure reducing valve can prevent block of valve gate caused by impurities and limescale.
- ▶ Installing pressure relief valve downstream pressure reducing valve can protect the system.
- ▶ While using screws to connect pressure reducing valve, joints should be installed in the inlet and outlet to make maintenance easy.



## Pressure Setting and Flow Rate of Direct-activated Pressure Reducing Valve :

- ▶ Direct-activated pressure reducing valve directly opens and closes the valve gate by the outlet pressure. When outlet pressure is under setting pressure, valve gate automatically opens. To make valve gate fully open, adjustable pressure range and setting pressure are relative points.
- ▶  $A$  : Pressure drop needed for fully-opened valve gate =  $\frac{B}{4}$  ,  $B$ =Adjustable Pressure Range Maximum-Minimum
- $B$  : Adjustable Pressure Range (= Maximum Minimum Adjustable Pressure Rang )
- $C$  : Setting Pressure of Outlet
- $P$  : Pressure of fully-opened outlet valve gate,  $P=C-A$

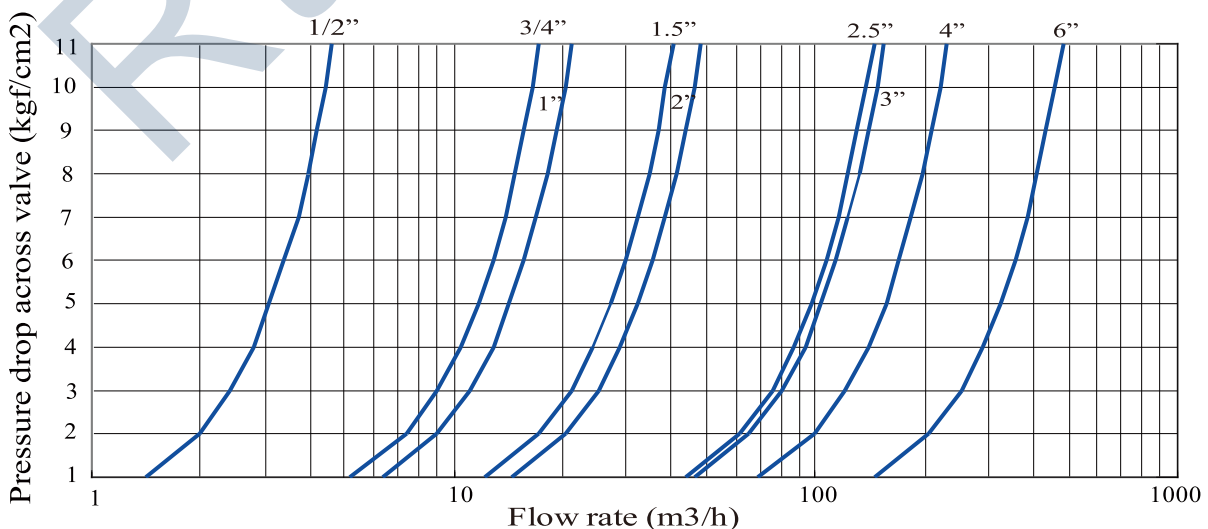
Example :

Pressure drop needed for fully-opened valve gate for adjusting pressure range 3~9 kgf/cm<sup>2</sup> of direct-activated pressure reducing valve.  $A = \frac{B}{4} = \frac{9-3}{4} = 1.5 \text{ kgf/cm}^2$

If the setting pressure of outlet is 6 kgf/cm<sup>2</sup>, pressure of fully-opened valve gate will be

$P = 6 - 1.5 = 4.5 \text{ kgf/cm}^2$  (Outlet pressure should go down under 4.5 kgf/cm<sup>2</sup> to make valve gate fully open)

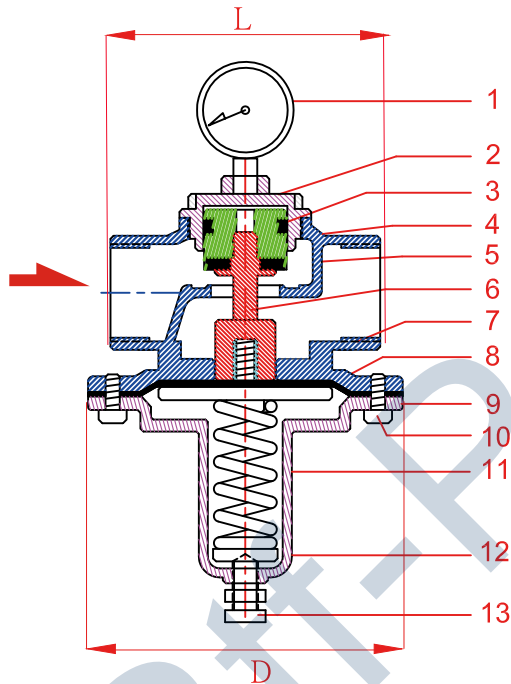
## Flow Chart of Direct-activated Pressure Reducing Valve





# LOW PRESSURE TYPE DIRECT-ACTIVATED PRESSURE REDUCING VALVE ( Stainless Steel 316 )

- ▶ Valve Body is made by Stainless Steel #316, suitable for fluid, air and oil.
- ▶ Larger diaphragm is more sensitive to pressure.



**Thread / Flange Type**

© Thread type does not have Part No. 10.

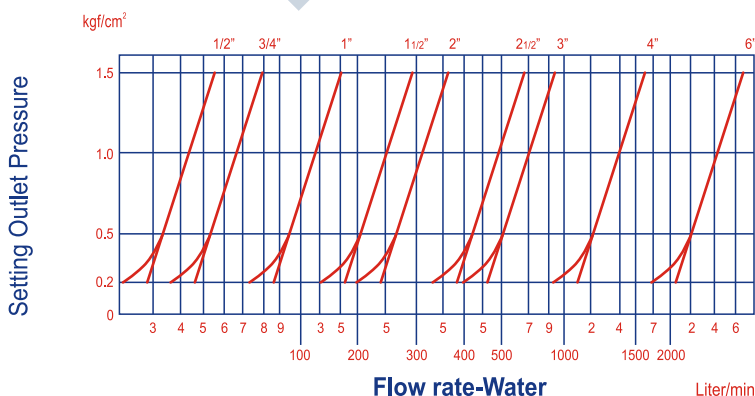
- ▶ Pressure Adjusting Range : 0.2 ~ 1.5 kgf/cm<sup>2</sup>
- ▶ Applied Temperature : -15 ~ 80°C
- ▶ Valve Body Testing Pressure : 16 kgf/cm<sup>2</sup>
- ▶ Maximum Applied Pressure : 10 kgf/cm<sup>2</sup>
- ▶ Horizontal installation (Adjusting stem points down) is obligatory

| No | Part Name      | Material             |
|----|----------------|----------------------|
| 1  | Pressure Gauge | Stainless Steel      |
| 2  | Upper Cover    | Stainless Steel 316  |
| 3  | U-ring         | NBR / Viton          |
| 4  | Piston         | Stainless Steel 316  |
| 5  | Sealing Spacer | NBR / Viton          |
| 6  | Shaft          | Stainless Steel 316  |
| 7  | Main Body      | Stainless Steel 316  |
| 8  | Diaphragm      | Nylon-CR/Nylon-Viton |
| 9  | Lower Cover    | Stainless Steel 316  |
| 10 | Fixed Bolt     | Stainless Steel 304  |
| 11 | Spring         | Spring Steel         |
| 12 | Washer         | Brass                |
| 13 | Adjusting Stem | Stainless Steel 304  |

(Thread End)

| Item No  | Size | H(mm) | L(mm) | D(mm) | Weight(kg) | CV   |
|----------|------|-------|-------|-------|------------|------|
| RELT15-S | 1/2" | 110   | 70    | 105   | 1.3        | 2.4  |
| RELT20-S | 3/4" | 125   | 85    | 105   | 1.5        | 9.0  |
| RELT25-S | 1"   | 125   | 90    | 105   | 1.6        | 11.0 |
| RELT40-S | 1.5" | 155   | 115   | 145   | 3.0        | 21.0 |
| RELT50-S | 2"   | 155   | 120   | 145   | 4.0        | 25.0 |

## Flow Chart of Direct-activated Pressure Reducing Valve



(Flange End)

| Item No  | Size | H(mm) | L(mm) | Weight(kg) | CV   |
|----------|------|-------|-------|------------|------|
| RELF15-S | 1/2" | 110   | 150   | 2.5        | 2.4  |
| RELF20-S | 3/4" | 125   | 150   | 3.5        | 9.0  |
| RELF25-S | 1"   | 125   | 150   | 5.6        | 11.0 |
| RELF40-S | 1.5" | 155   | 190   | 8.7        | 21.0 |
| RELF50-S | 2"   | 155   | 190   | 13.5       | 25.0 |



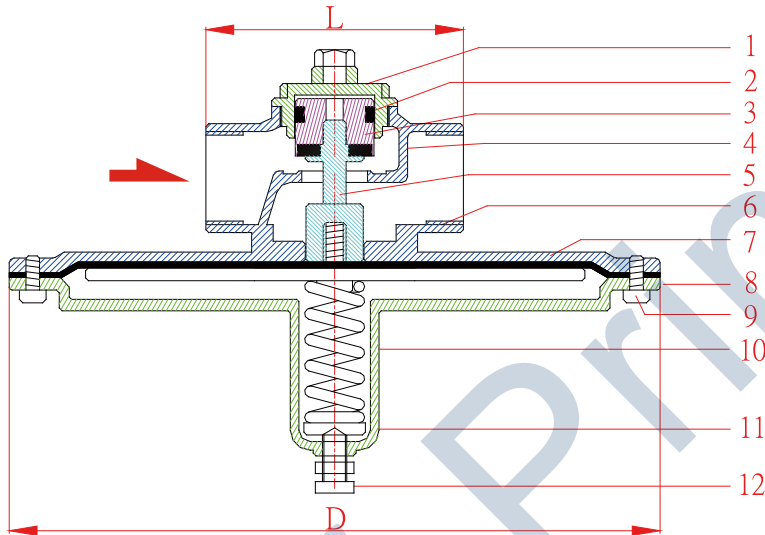


# MICRO PRESSURE TYPE DIRECT-ACTIVATED PRESSURE REDUCING VALVE (STAINLESS STEEL 316)

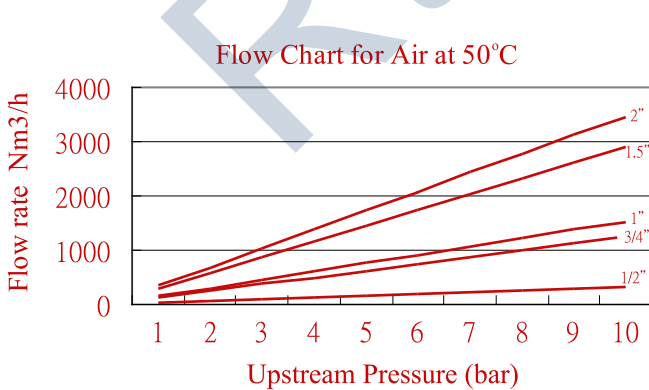
- ▶ Valve Body is made by Stainless Steel #316, suitable for fluid, air and oil.
- ▶ Larger diaphragm is more sensitive to pressure.



- ▶ Pressure Adjusting Range : 0.02 ~ 0.2 kgf/cm<sup>2</sup>
- ▶ Applied Temperature : -15 ~ 80°C
- ▶ Valve Body Testing Pressure : 16 kgf/cm<sup>2</sup>
- ▶ Maximum Applied Pressure : 10 kgf/cm<sup>2</sup>
- ▶ Horizontal installation (Adjusting stem points down) is obligatory



| No | Part Name    | Material             |
|----|--------------|----------------------|
| 1  | Cover        | Stainless Steel 316  |
| 2  | UH-Ring      | NBR                  |
| 3  | Piston       | Stainless Steel 316  |
| 4  | Sealing      | NBR                  |
| 5  | Shaft        | Stainless Steel 316  |
| 6  | Main Body    | Stainless Steel 316  |
| 7  | Diaphragm    | Nylon-CR/Nylon-Viton |
| 8  | Spring Cover | Stainless Steel 316  |
| 9  | Stem         | Stainless Steel 304  |
| 10 | Spring       | Spring Steel         |
| 11 | Washer       | Brass                |
| 12 | Stem         | Stainless Steel 304  |



(Thread End)

| ITEM NO.    | SIZE | L   | D   | Weight(kg) | CV   |
|-------------|------|-----|-----|------------|------|
| RELT-15-SLP | 1/2" | 70  | 310 | 12         | 2.4  |
| RELT-20-SLP | 3/4" | 85  | 310 | 12         | 9.0  |
| RELT-25-SLP | 1"   | 90  | 310 | 12         | 11.0 |
| RELT-40-SLP | 1.5" | 115 | 310 | 14         | 21.0 |
| RELT-50-SLP | 2"   | 120 | 310 | 16         | 25.0 |



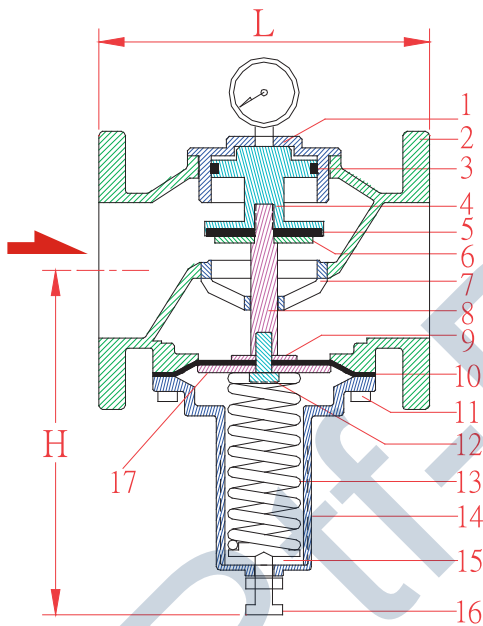
# DIRECT-ACTIVATED PRESSURE REDUCING VALVE (Ductile Iron / Flange Type)



- ▶ The gate is designed for opening status, which will not influence the water supply function under unstable inlet pressure condition.
- ▶ When the outlet pressure responds directly to the pressure control chamber and adjusts the setting pressure, it responds quickly and adjusts the pressure accurately.

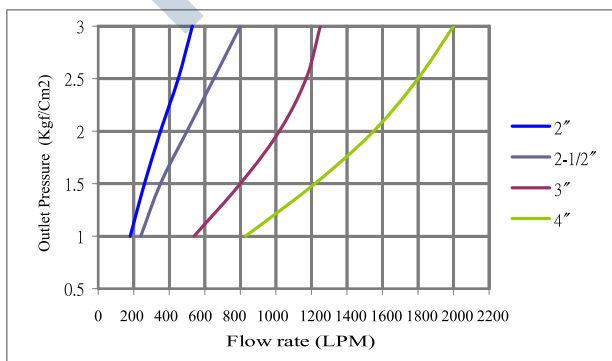
- ▶ Pressure Adjusting Range : 1 ~ 5 kgf/cm<sup>2</sup>  
(1 kgf/cm<sup>2</sup>=14.2 psi)      3 ~ 8 kgf/cm<sup>2</sup>
- ▶ Valve Body Testing Pressure : 21 kgf/cm<sup>2</sup>
- ▶ Maximum Applied Pressure : 16 kgf/cm<sup>2</sup>
- ▶ Applied Temperature : -15 ~ 80°C
- ▶ Applied Condition : Fluid & Air

◎Special order is needed for other material and specification.



| No | Part Name          | Material     | No | Part Name      | Material         |
|----|--------------------|--------------|----|----------------|------------------|
| 1  | Upper Cover        | Bronze       | 11 | Fixed Bolt     | SS 304           |
| 2  | Main Body          | Ductile Iron | 12 | Fixed Bolt     | SS 304           |
| 3  | U-ring             | NBR          | 13 | Spring         | Spring Steel     |
| 4  | Piston             | Bronze       | 14 | Lower Cover    | Ductile Iron     |
| 5  | Sealing Spacer     | NBR          | 15 | Washer         | Brass            |
| 6  | Sealing Washer     | Brass        | 16 | Adjusting Stem | SS 304           |
| 7  | Shaft Guiding Seat | Bronze       | 17 | Disk           | SS 304/Cast Iron |
| 8  | Center Shaft       | Brass        |    |                |                  |
| 9  | Diaphragm Washer   | SS 304       |    |                |                  |
| 10 | Diaphragm          | EPDM         |    |                |                  |

Flow Chart of Direct-activated Pressure Reducing Valve



(Flange End)

| Item No   | Size | H(mm) | L(mm) | Weight(kg) | CV   |
|-----------|------|-------|-------|------------|------|
| RDF-50-F  | 2"   | 150   | 190   | 12         | 17.2 |
| RDF-65-F  | 2.5" | 165   | 210   | 17         | 27.5 |
| RDF-80-F  | 3"   | 200   | 225   | 19         | 42.1 |
| RDF-100-F | 4"   | 220   | 250   | 24         | 66.7 |

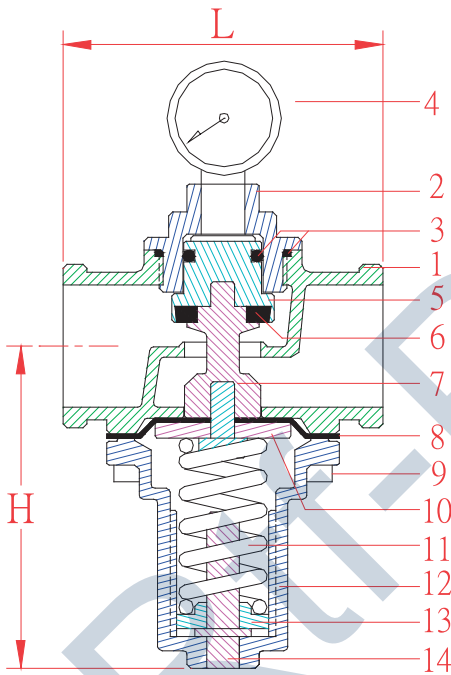


# DIRECT-ACTIVATED PRESSURE REDUCING VALVE

- ▶ The gate is designed for opening status, which will not influence the water supply function under unstable inlet pressure condition.
- ▶ When the outlet pressure responds directly to the pressure control chamber and adjusts the setting pressure, it responds quickly and adjusts the pressure accurately.



- ▶ Pressure Adjusting Range : 1~5 kgf/cm<sup>2</sup>  
4~9 kgf/cm<sup>2</sup>  
(special order is needed for other range)
- ▶ Valve Body Testing Pressure : 21 kgf/cm<sup>2</sup>
- ▶ Maximum Applied Pressure : 12 kgf/cm<sup>2</sup>
- ▶ Pressure needed from fully-closed gate to fully-opened gate : 1 kgf/cm<sup>2</sup> (1 kgf/cm<sup>2</sup>=14.2 psi)
- ▶ Applied Temperature : -15~80°C
- ▶ Applied Condition : Fluid & Air



| No | Part Name        | Material           |       |
|----|------------------|--------------------|-------|
| 1  | Body             | Bronze             | SS304 |
| 2  | Upper Cover      | Bronze             | SS304 |
| 3  | O-ring           | NBR                | NBR   |
| 4  | Gauge            | Iron               | SS304 |
| 5  | Piston           | Brass              | SS304 |
| 6  | Sealing          | NBR                | NBR   |
| 7  | Shaft            | Brass              | SS304 |
| 8  | Diaphragm        | NBR                |       |
| 9  | Fixed Bolt       | SS304              |       |
| 10 | Diaphragm Washer | SS304              |       |
| 11 | Spring           | Spring Steel       |       |
| 12 | Spring Cover     | Polyamide 66       |       |
| 13 | Spring Washer    | Electroplated Iron |       |
| 14 | Adjusting Bolt   | Brass              |       |

(Thread End)

| Item No | Size  | H(mm) | L(mm) | Weight(kg) | CV   |
|---------|-------|-------|-------|------------|------|
| RDT-15  | 1/2"  | 70    | 60    | 0.4        | 2.2  |
| RDT-20  | 3/4"  | 70    | 70    | 0.5        | 3.8  |
| RDT-25  | 1"    | 80    | 80    | 0.8        | 6.4  |
| RDT-32  | 1.25" | 85    | 90    | 1.5        | 10.3 |
| RDT-40  | 1.5"  | 110   | 110   | 2.5        | 12.6 |
| RDT-50  | 2"    | 115   | 115   | 3          | 17.2 |

$$CV = \frac{Q}{\sqrt{\Delta P/S}}$$

Q=GPM ( gallon/min )

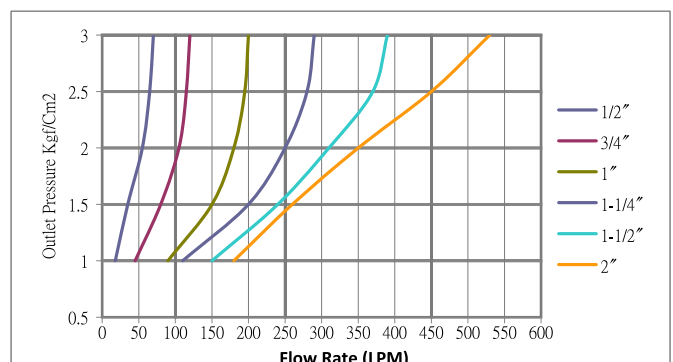
$\Delta P = P1 - P2$  ( p.s.i )

P1=Inlet absolute pressure

P2=Outlet absolute pressure

S=Fluid Density ( Water=1 )

1 gallon=3.785 liter





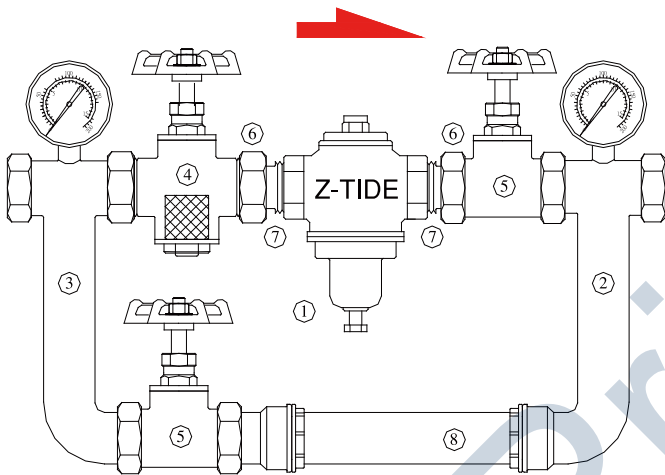
# PRESSURE REDUCING VALVE SET (Advanced Traditional Design)



- ▶ Whole Stainless Steel Model.
- ▶ Simple structure, precise tuning and easy operation.
- ▶ Designing for drinking water, Clearing System & Industrial Application.
- ▶ Equipped with strainer, saving space, easy to install & saving cost. Pressure needed from fully-closed gate to fully-opened gate :  $1.5 \text{ kgf/cm}^2$  ( $1 \text{ kgf/cm}^2 = 14.2 \text{ psi}$ )

Maximum Applied Pressure :  $16 \text{ kgf/cm}^2$

Testing Pressure :  $21 \text{ kgf/cm}^2$

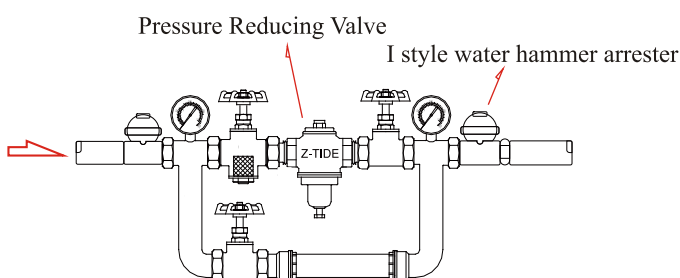


| No | Part Name                                | Material            |
|----|--|---------------------|
| 1  | Direct-Activated Pressure Reducing Valve | Stainless Steel     |
| 2  | Compression Tee                          | Stainless Steel 304 |
| 3  | Compression Tee                          | Stainless Steel 304 |
| 4  | Globe Valve (with Strainer)              | Stainless Steel 304 |
| 5  | Globe Valve                              | Stainless Steel 304 |
| 6  | Union                                    | Stainless Steel 304 |
| 7  | Coupling                                 | Stainless Steel 304 |
| 8  | Joint                                    | Stainless Steel 304 |

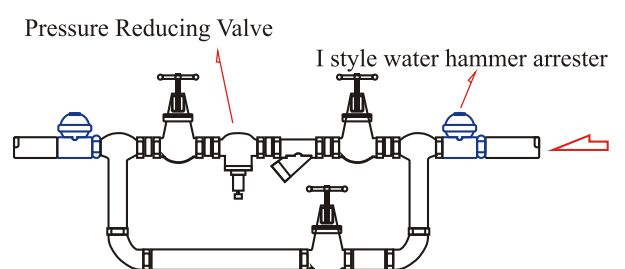
- ▶ Pressure Adjusting Range :  $1 \sim 7 \text{ kgf/cm}^2$   
 $4 \sim 10 \text{ kgf/cm}^2$
- ▶ Applied Temperature :  $-15 \sim 100^\circ\text{C}$
- ▶ The inlet pressure gauge indicates pressure before reducing, and outlet pressure gauge indicates pressure after reducing.

(Thread End)

| No.     | Size | Weight(kg) |
|---------|------|------------|
| RT-20-S | 3/4" | 2.0        |
| RT-25-S | 1"   | 3.0        |
| RT-40-S | 1.5" | 7.0        |
| RT-50-S | 2"   | 9.0        |



**New Traditional design**



**Traditional design**



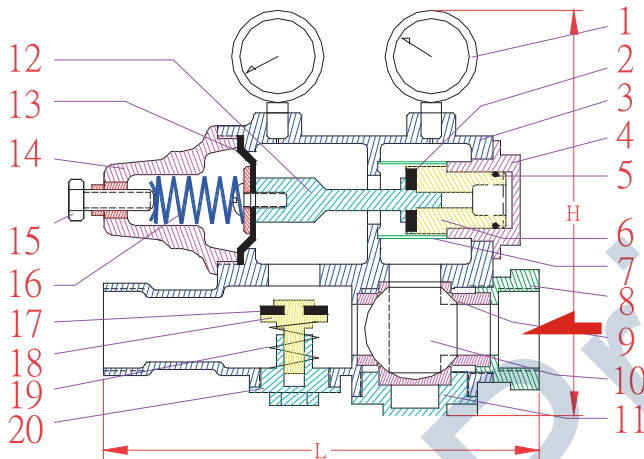
# PRESSURE REDUCING VALVE SET



- ▶ Module assembly, which means light structure, space-saving, easy installation and maintenance.
- ▶ Equipped with buffer check valve, unfavorable effect from water impulse can be eliminated.
- ▶ Simple structure, precise tuning and easy operation.
- ▶ Module assembly can decrease leakage coming from assembly connections due to long-term vibration.

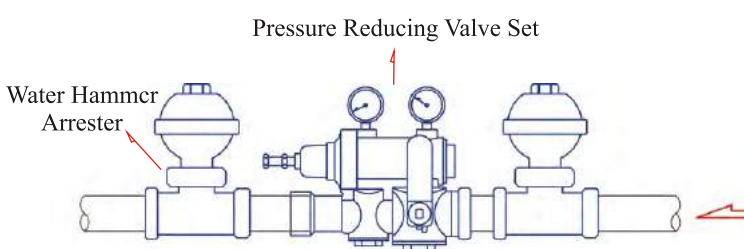
(Thread End)

| Item No | Type(PT) | L(mm) | H(mm) | Weight(kg) | CV  |
|---------|----------|-------|-------|------------|-----|
| RS-20   | 3/4"     | 140   | 120   | 1.5        | 4   |
| RS-25   | 1"       | 170   | 165   | 2.2        | 7.5 |

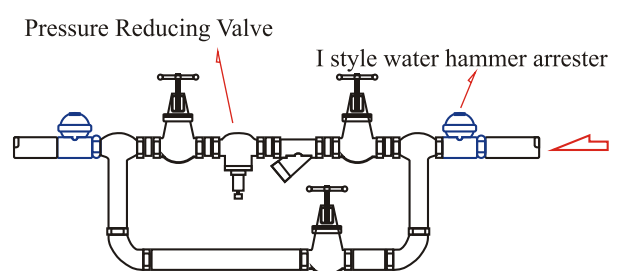


| No | Part Name        | Material     |
|----|------------------|--------------|
| 1  | Pressure meter   | Upon request |
| 2  | Sealing          | NBR          |
| 3  | Main body        | Bronze       |
| 4  | Cylinder         | Bronze       |
| 5  | Buffer spring    | SS 304       |
| 6  | Piston           | Brass        |
| 7  | Filter net       | SS 304       |
| 8  | Pipe connector   | Bronze       |
| 9  | PE washer        | PE           |
| 10 | Three-way ball   | Brass        |
| 11 | Nut              | Bronze       |
| 12 | Shaft            | Bronze       |
| 13 | Diaphragm        | Fabrics NBR  |
| 14 | Spring housing   | Polyamide 66 |
| 15 | Adjusting stem   | SS 304       |
| 16 | Pressure spring  | SS 304       |
| 17 | Sealing          | NBR          |
| 18 | Sealing retainer | Brass        |
| 19 | Spring           | SS 304       |
| 20 | Orientation seat | Bronze       |

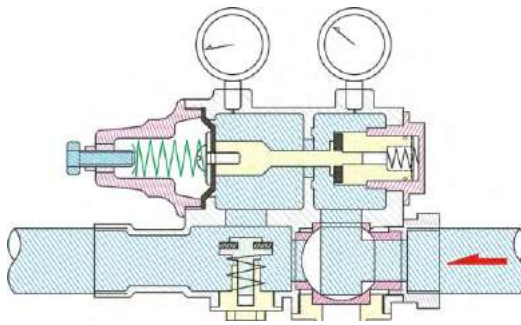
- ▶ Adjustment range : 0.5~5 kgf/cm<sup>2</sup>
- ▶ Applied temperature : -15~70°C
- ▶ Test pressure for valve body : 21 kgf/cm<sup>2</sup>
- ▶ The inlet pressure gauge indicates pressure before reducing, and outlet pressure gauge indicates pressure after reducing.
- ▶ When cleaning the impurities on the filter net, just take off the cylinder (component 4), then filter net (component 7) can be unloaded at the same time.



**5 in 1 design**



**Traditional design**

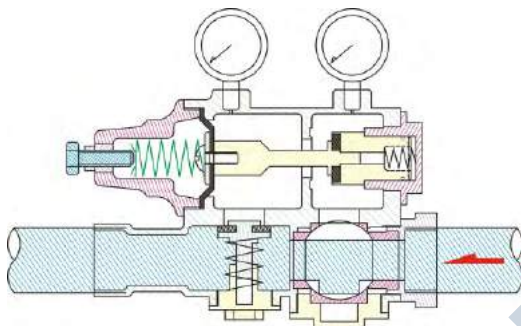


Open state

**ON**

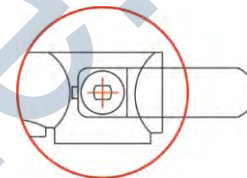


When the handle is rotated upward, pressure reducing valve set becomes pressure reducing open state.

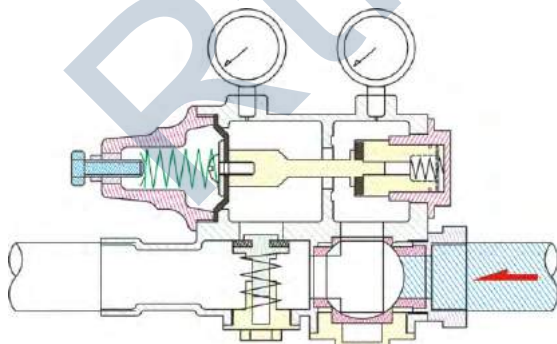


Bypass open state

**PASS**

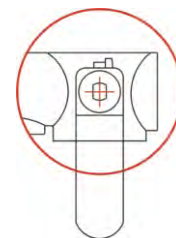


When the handle is rotated to horizontal position, pressure reducing valve set becomes bypass open state.



Closed state

**OFF**



When the handle is rotated downward, pressure reducing valve set becomes pressure reducing closed state.

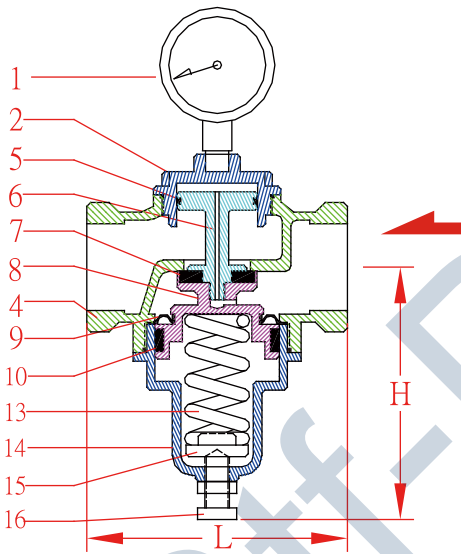


# DIRECT-ACTIVATED PRESSURE SUSTAINING / BACK PRESSURE VALVE

- ▶ The whole set is made by stainless steel #316, and it is suitable for the fluid of pure water, acid & alkaline fluid, steam or air. Pressure needed from fully-closed gate to fully-opened gate: 1.5 kgf/cm<sup>2</sup>.
- ▶ Back pressure valve can maintain required pressure.
- ▶ Design of piston and diaphragm improves the inability of sustaining pressure and leakage.
- ▶ Back pressure chamber controls the valve gate and let gate respond, quickly and adjust pressure accurately.



- ▶ Pressure Adjusting Range : 1~5 kgf/cm<sup>2</sup>  
(1 kgf/cm<sup>2</sup>=14.2 psi)      4~10 kgf/cm<sup>2</sup>
- ▶ Applied Temperature : -15~100°C  
100~180°C (For steam)
- ▶ Valve Body Testing Pressure : 35 kgf/cm<sup>2</sup>
- ▶ Maximum Applied Pressure : 25kgf/cm<sup>2</sup>
- ▶ Pressure gauge indicates the sustaining pressure.
- ▶ Please cover steam pipelines with thermal materials



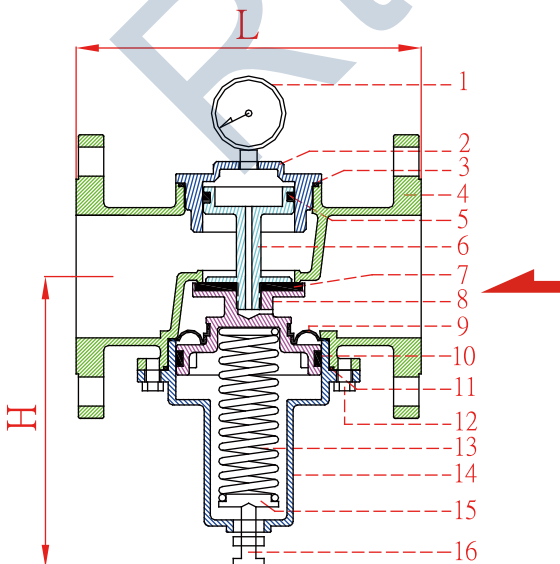
| No | Part Name      | Material             |
|----|----------------|----------------------|
| 1  | Gauge          | Stainless Steel      |
| 2  | Upper Cover    | Stainless Steel 316  |
| 3  | O-ring         | NBR / Viton          |
| 4  | Main Body      | Stainless Steel 316  |
| 5  | U-ring         | NBR / Viton          |
| 6  | Shaft          | Stainless Steel 316  |
| 7  | Sealing Spacer | NBR / Viton / Teflon |
| 8  | Seat           | Stainless Steel 316  |
| 9  | Diaphragm      | CR/ EPDM/ Viton      |
| 10 | UH-ring        | NBR / Viton          |
| 11 | O-ring         | NBR / Viton          |
| 12 | Fixed Bolt     | Stainless Steel 304  |
| 13 | Spring         | Spring Steel         |
| 14 | Lower Cover    | Stainless Steel 316  |
| 15 | Washer         | Brass                |
| 16 | Adjusting Stem | Stainless Steel 304  |

(Thread End)

| Item No | Size | H(mm) | L(mm) | Weight(kg) | CV   |
|---------|------|-------|-------|------------|------|
| RFT15-S | 1/2" | 80    | 70    | 0.8        | 2.4  |
| RFT20-S | 3/4" | 105   | 85    | 0.9        | 9.0  |
| RFT25-S | 1"   | 105   | 92    | 1.0        | 11.0 |
| RFT40-S | 1.5" | 130   | 115   | 2.2        | 21.0 |
| RFT50-S | 2"   | 130   | 120   | 3.1        | 25.0 |

(Flange End)

| Item No  | Size | H(mm) | L(mm) | Weight(kg) | CV  |
|----------|------|-------|-------|------------|-----|
| RFF15-S  | 1/2" | 85    | 150   | 2.0        | 2.4 |
| RFF20-S  | 3/4" | 105   | 150   | 2.8        | 9   |
| RFF25-S  | 1"   | 105   | 150   | 3.5        | 11  |
| RFF40-S  | 1.5" | 130   | 190   | 5.9        | 21  |
| RFF50-S  | 2"   | 130   | 190   | 6.5        | 25  |
| RFF65-S  | 2.5" | 185   | 210   | 11.5       | 75  |
| RFF80-S  | 3"   | 185   | 225   | 12.0       | 80  |
| RFF100-S | 4"   | 230   | 250   | 19.0       | 120 |
| RFF150-S | 6"   | 290   | 310   | 45.0       | 250 |



► **Back Pressure (Sustaining) Valve:**

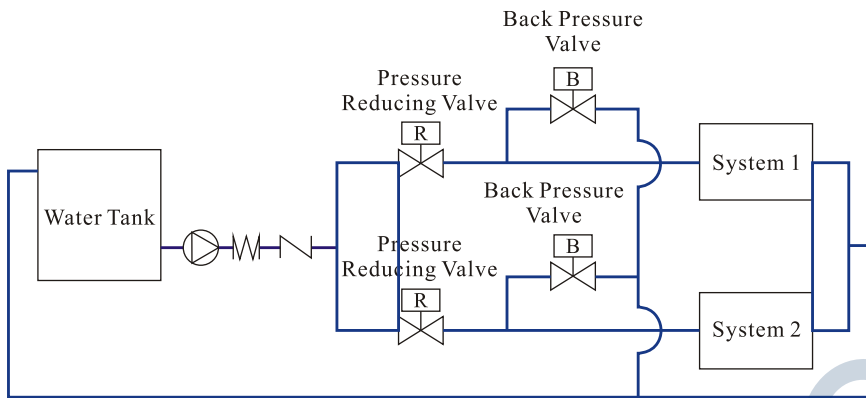
It's installed in branch pipe to maintain the stable pressure of fluid inside pipe. When pressure exceeds setting valve, it will automatically release over high pressure.

► **Pressure Relief Valve:**

It's installed in branch pipe. When pressure exceeds setting valve, valve gate will quickly and fully open to release pressure. As pipeline pressure goes down to certain level, valve gate will close slowly.

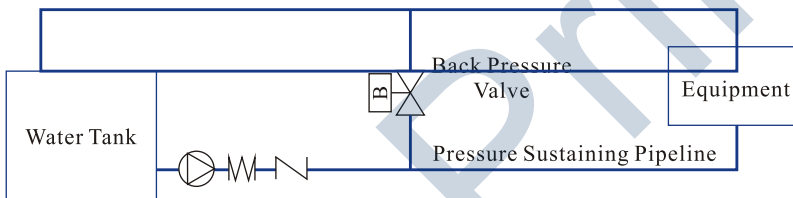
► **Applied condition of Back Pressure Valve:**

**Example 1**



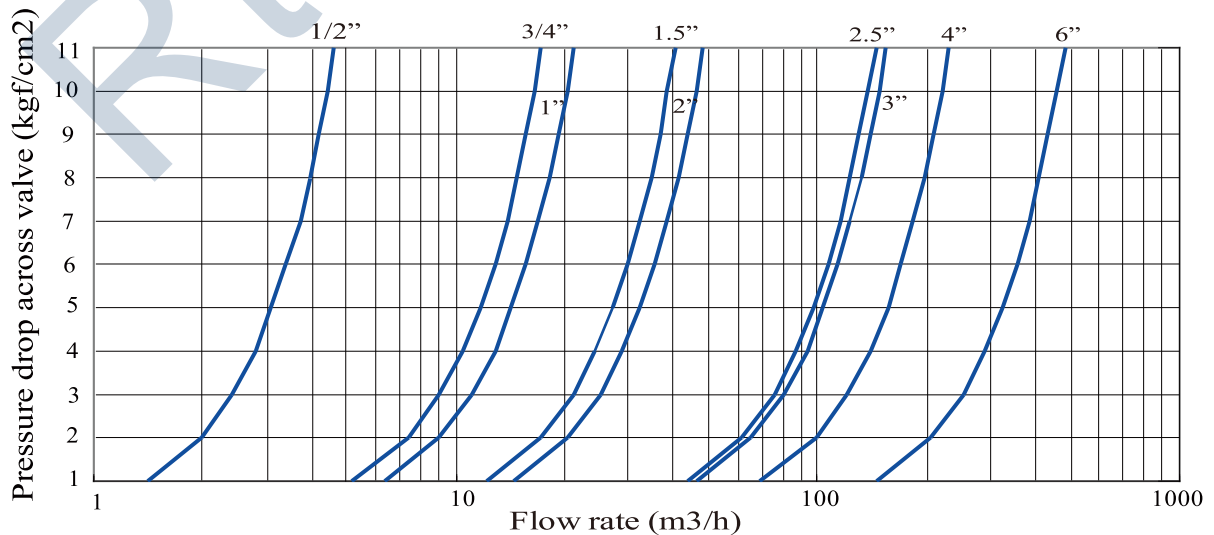
© In different pressure systems of processing pipelines, installing back pressure valve can maintain required pressure of the systems and ensure safe uses of equipments after pressure reducing valve reduces pressure.

**Example 2-**



© Installing back pressure valve enables largest flow application and also stabilize pipeline pressure.

**Flow Chart of Direct-activated Back Pressure Valve**





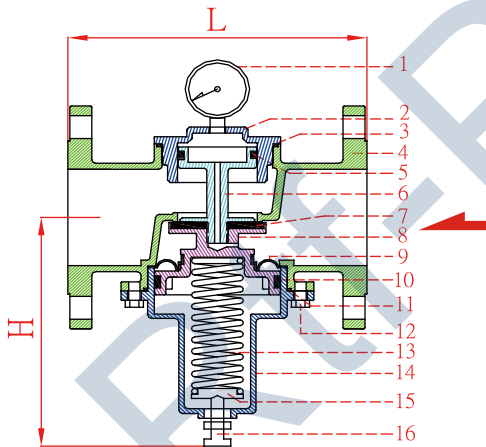
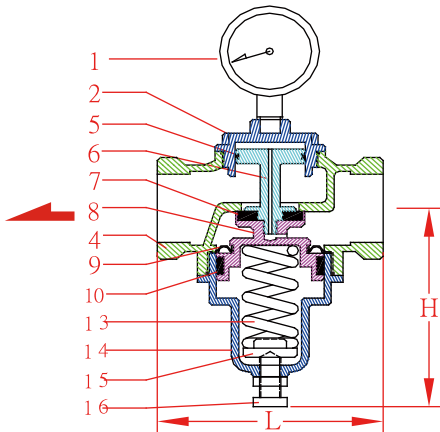


# DIRECT-ACTIVATED PRESSURE RELIEF VALVE



- ▶ The whole set is made by stainless steel #316, and it is suitable for water, steam, acid & alkaline fluid, or oil.
- ▶ Pressure Relief Valve is a safety device for pipes and it is normally closed. When pressure increases to setting value, pressure relief valve rapidly releases the over high pressure. When pressure returns to safety value, pressure relief valve will automatically close to ensure the safety of equipment.

- ▶ Pressure Adjusting Range : 0.5 ~ 10 kgf/cm<sup>2</sup>  
(1 kgf/cm<sup>2</sup> = 14.2 psi)      7 ~ 20 kgf/cm<sup>2</sup>
- ▶ Applied Temperature : -15 ~ 100°C  
100 ~ 180°C (For Steam)
- ▶ Valve Body Testing Pressure : 35 kgf/cm<sup>2</sup>
- ▶ Maximum Applied Pressure : 25 kgf/cm<sup>2</sup>



| No | Part Name      | Material            |
|----|----------------|---------------------|
| 1  | Gauge          | Stainless Steel     |
| 2  | Upper Cover    | Stainless Steel 316 |
| 3  | O-ring         | NBR / Viton         |
| 4  | Main Body      | Stainless Steel 316 |
| 5  | U-ring         | NBR / Viton         |
| 6  | Shaft          | Stainless Steel 316 |
| 7  | Sealing Spacer | NBR / Viton         |
| 8  | Seat           | Stainless Steel 316 |
| 9  | Diaphragm      | NBR / Viton         |
| 10 | UH-ring        | NBR / Viton         |
| 11 | O-ring         | NBR / Viton         |
| 12 | Fixed Bolt     | Stainless Steel 304 |
| 13 | Spring         | Spring Steel        |
| 14 | Lower Cover    | Stainless Steel 316 |
| 15 | Washer         | Brass               |
| 16 | Adjusting Stem | Stainless Steel 304 |

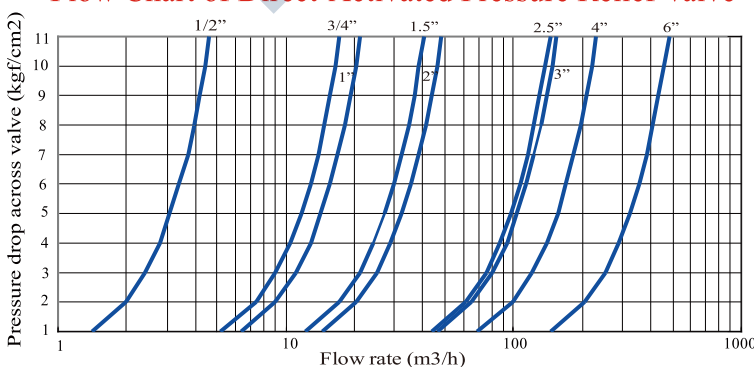
(Thread End)

| Item No | Size | H(mm) | L(mm) | Weight(kg) | CV   |
|---------|------|-------|-------|------------|------|
| RLT15-S | 1/2" | 85    | 70    | 0.8        | 2.4  |
| RLT20-S | 3/4" | 105   | 85    | 0.9        | 9.0  |
| RLT25-S | 1"   | 105   | 90    | 1.0        | 11.0 |
| RLT40-S | 1.5" | 130   | 115   | 2.2        | 21.0 |
| RLT50-S | 2"   | 130   | 120   | 3.1        | 25.0 |

(Flange End)

| Item No  | Size | H(mm) | L(mm) | Weight(kg) | CV    |
|----------|------|-------|-------|------------|-------|
| RLF15-S  | 1/2" | 85    | 150   | 2.0        | 2.4   |
| RLF20-S  | 3/4" | 105   | 150   | 2.8        | 9.0   |
| RLF25-S  | 1"   | 105   | 150   | 3.5        | 11.0  |
| RLF40-S  | 1.5" | 130   | 190   | 5.9        | 21.0  |
| RLF50-S  | 2"   | 130   | 190   | 6.5        | 25.0  |
| RLF65-S  | 2.5" | 185   | 210   | 11.5       | 75.0  |
| RLF80-S  | 3"   | 185   | 225   | 12.0       | 80.0  |
| RLF100-S | 4"   | 230   | 250   | 19.0       | 120.0 |
| RLF150-S | 6"   | 290   | 310   | 45.0       | 250.0 |

Flow Chart of Direct-Activated Pressure Relief Valve



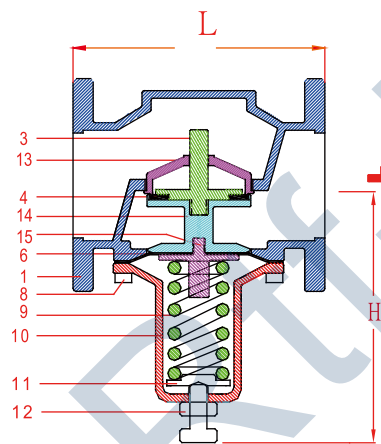
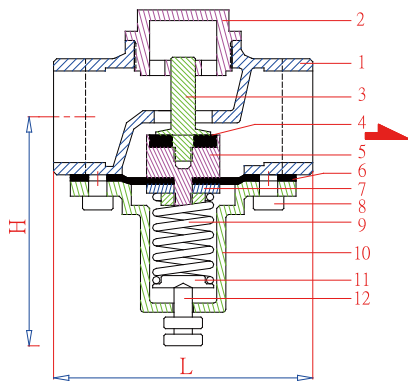


# DIRECT-ACTIVATED PRESSURE RELIEF VALVE (Diaphragm Type)



▶ Pressure Relief Valve is a safety device for pipes and it is normally closed. When pressure increases to setting value, pressure relief valve rapidly releases the over high pressure. When pressure returns to safety value, pressure relief valve will automatically close to ensure the safety of equipment.

- ▶ Pressure Adjusting Range : 2 ~ 8 kgf/cm<sup>2</sup>  
(1 kgf/cm<sup>2</sup>=14.2 psi)      5 ~ 12 kgf/cm<sup>2</sup>
- ▶ Maximum Valve Body Testing Pressure : 30 kgf/cm<sup>2</sup>
- ▶ Maximum Applied Pressure : 20 kgf/cm<sup>2</sup>
- ▶ Applied Temperature : -15~80°C
- ▶ Materials of valve body: Ductile Iron, Bronze
- ◎Special order is needed for other material and specification.
- ◎Pressure gauge shows the set pressure.



| No | Item Name          | Material           |                    |
|----|--------------------|--------------------|--------------------|
| 1  | Main Body          | Ductile Iron       | Bronze             |
| 2  | Cover              | Bronze             | Bronze             |
| 3  | Shaft              | Brass              | Brass              |
| 4  | Sealing Spacer     | NBR                | NBR                |
| 5  | Piston             | Brass              | Brass              |
| 6  | Diaphragm          | NBR                | NBR                |
| 7  | Washer             | Electroplated Iron | Electroplated Iron |
| 8  | Fixed Bolt         | Electroplated Iron | Electroplated Iron |
| 9  | Spring             | Spring Steel       | Spring Steel       |
| 10 | Lower Cover        | Bronze             | Polyamide 66       |
| 11 | Spring Positioner  | Electroplated Iron | Electroplated Iron |
| 12 | Adjusting Bolt     | Stainless Steel    | Stainless Steel    |
| 13 | Seat               | Bronze             |                    |
| 14 | Shaft Guiding Seat | Bronze             |                    |
| 15 | Diaphragm Washer   | Bronze             |                    |

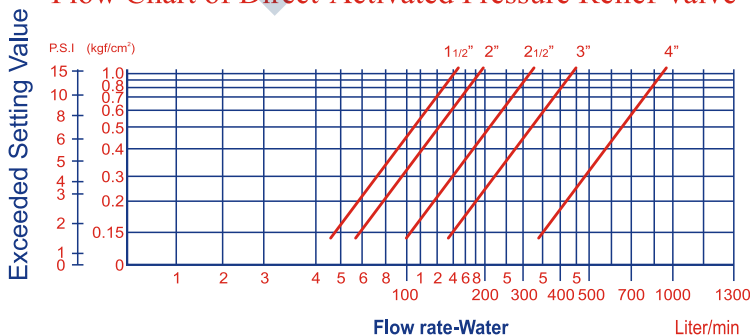
(Thread End)

| Item No | Size | H(mm) | L(mm) | Weight(kg) | CV |
|---------|------|-------|-------|------------|----|
| RKT-40  | 1.5" | 110   | 110   | 2.5        | 19 |
| RKT-50  | 2"   | 115   | 115   | 3          | 23 |

(Flange End)

| Item No | Size | H(mm) | L(mm) | Weight(kg) | CV  |
|---------|------|-------|-------|------------|-----|
| RKF-50  | 2"   | 150   | 190   | 12         | 23  |
| RKF-65  | 2.5" | 165   | 210   | 17         | 73  |
| RKF-80  | 3"   | 200   | 225   | 19         | 78  |
| RKF-100 | 4"   | 220   | 250   | 24         | 118 |

Flow Chart of Direct-Activated Pressure Relief Valve





## AIR RELEASE VALVE

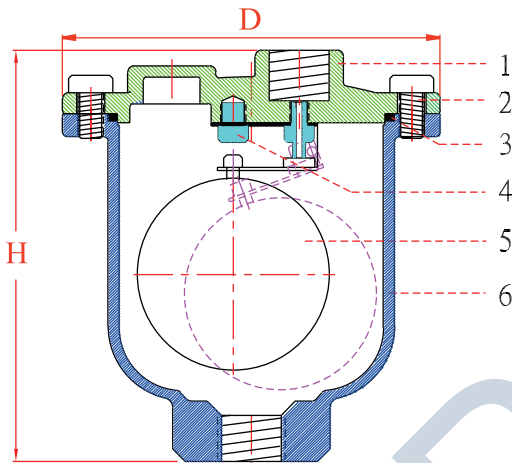


Air release valve can efficiently evacuate the air in the pipe to reduce the noise or the interference which causes by air.

Air release valve can only be installed vertically.

Installing air release valve at the highest part of pipe line will recommend.

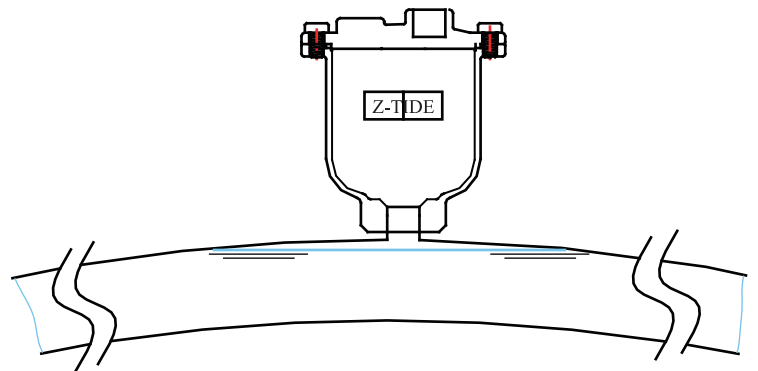
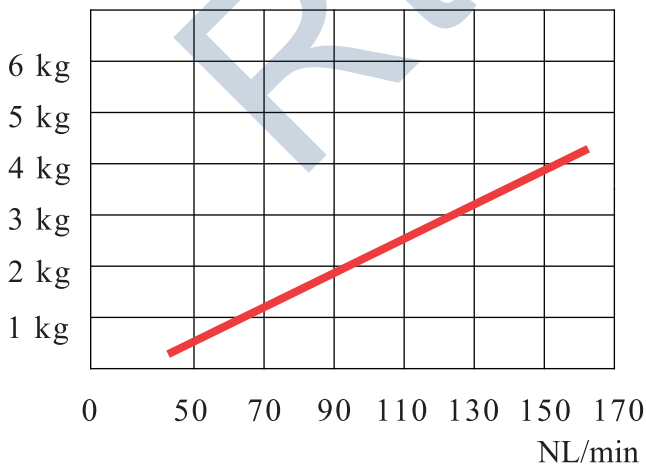
- ▶ Valve Body Testing Pressure: 21 kgf/cm<sup>2</sup>
- ▶ Valve Seat Testing Pressure: 15 kgf/cm<sup>2</sup>
- ▶ Maximum Applied Pressure: 10 kgf/cm<sup>2</sup>
- ▶ Maximum Applied Temperature: 80°C(NBR); 150°C(Silicone)
- ▶ Materials of valve body: Cast Iron, Stainless Steel
- ▶ Applied Conditions: Water



| No | Part Name      | Material        |                 |
|----|----------------|-----------------|-----------------|
| 1  | Cover          | Cast Iron       | Stainless Steel |
| 2  | Fixed Bolt     | Cast Iron       | Stainless Steel |
| 3  | Sealing        | NBR             | NBR/Silicone    |
| 4  | Plug           | Cast Iron       | Stainless Steel |
| 5  | Float Ball set | Stainless Steel | Stainless Steel |
| 6  | Body           | Cast Iron       | Stainless Steel |

| Item No  | Size | D(mm) | H(mm) | Weight(kg) |
|----------|------|-------|-------|------------|
| ATR-15-S | 1/2" | 120   | 131   | 2.5        |
| ATR-20-S | 3/4" | 120   | 131   | 2.5        |
| ATR-25-S | 1"   | 120   | 131   | 2.5        |

Gate Full Open, Normal atmospheric temperature



Installing air release valve at the pipe line where gather easily the air.



# DIAPHRAGM TYPE WATER HAMMER ARRESTER

## The occurrence and prevention of water hammer effect:

When the fluid flows in the pipe, if the gate closes suddenly and stops the flow, the kinetic energy will be changed into elastic resilience and create a serial positive and negative pressure wave vibrating back and forth in the pipe until the energy is lost by friction. Especially when the pump stops, the fluid still flows by inertia and gravity also causes the fluid to flow back, and these two forces will cause the positive and negative pressure waves. The friction caused by the two waves will make the pipe vibrate and create noise. Hence, the life of the pump and the piping accessories will be affected and, at the same time, cause the uncomfortable noise under such situation, to set up one or more sets of water hammer arrester will improve the situation. Our company make use of the airbag principle to design water hammer arresters which will reduce the vibration by pressing air when the in-pipe pressure transfers to air chamber.

## The features of water hammer arresters :

- ▶ The airbag adopts the ball-pressing-type design, which without friction, less function progresses, prompt and quick response and has obvious result. In addition, the life of the arrester will be increased several times.
- ▶ The arrester will absorb water hammer directly and has the functions of water hammer prevention and absorption.
- ▶ Special design of the air diaphragm rubber will not release pressure and its life won't be affected by the bad water quality.
- ▶ To prevent the air leakage, the pressed air chamber is covered by permeating prevention rubber.
- ▶ The design of structure is excellent and easy to maintain.

## The fluid pressure of the water hammer effect.

The water hammer effect caused by closing the valve should be added at the largest water head in the pipe to calculate the height of the pressure water head and fluid pressure .

$H_o$  = the pressure water head before closing the valve

$V_o$  = the flow speed before closing the valve

$T$  = the time needed to close the valve

$L$  = the pipe length between the inlet and outlet of free water surface

$Z_o$  = the largest pressure water head increased by water hammer effect

$H$  =full pressure water head after adding water hammer at the end of the pipe

Remark: the transferring speed of in-pipe pressure and acceleration  
(about 1000 m / second)

## Vensano's formula :

$$Z_o = \frac{2LV_o}{gT}$$

**Example :** Assume  $V_o = 5$  m/ sec,  $H_o = 72$  m,  $L = 210$  m, if the it takes 3 seconds to close the valve, then, what is the pressure of water hammer?

$$Z_o = \frac{2LV_o}{gT} = \frac{2 \times 210 \times 5}{9.81 \times 3} = \frac{2100}{29.43} = 71.35 \text{ m}$$

The full pressure water head including water hammer is :  $H = Z_o + H_o = 71.35 + 72 = 143.35$  m

Assume the pressure water head 10 m = 1 kgf/cm<sup>2</sup>

Then, The fluid pressure including water hammer is :  $143.35 / 10 = 14.335$  kgf/cm<sup>2</sup>

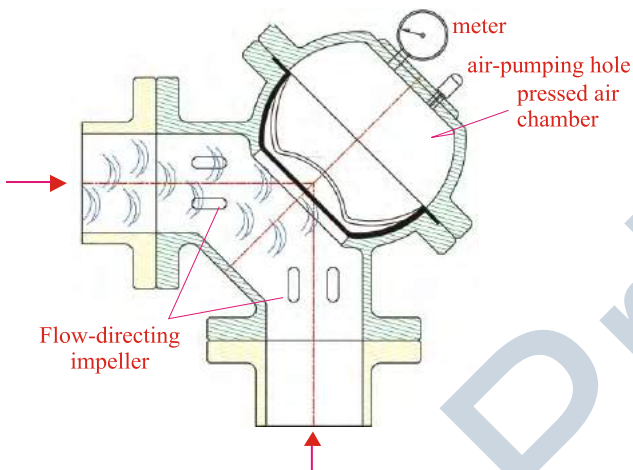


## L STYLE WATER HAMMER ARRESTER

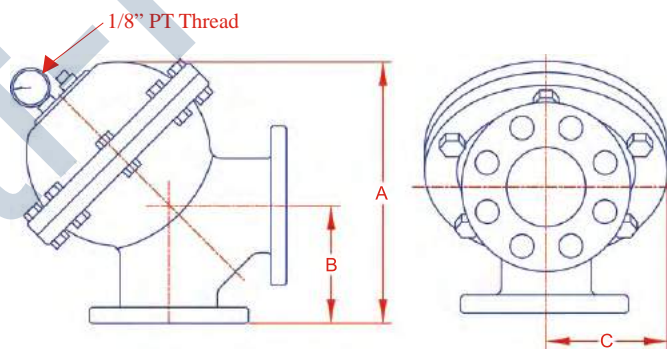


Patent Number : 131907

- ▶ The flow-directing mechanism in the valve can guide the flow and stabilize pressure.
- ▶ In the corner of pipe, the water hammer is the most obvious. The design is for meeting the requirement and set the arrester at the corner directly. This design not only saves the space and is easy to set up, but also can replace the traditional crooked head to reduce the cost of setting up.
- ▶ L style absorbs water hammer effect in two ways and brings excellent result.



- ▶ Applied Conditions: Fluid
- ▶ Applied Temperature: -15 ~ 80°C
- ▶ Diaphragm Material: NBR & Viton
- ▶ Normal air chamber pressure: 2.5 kgf/cm<sup>2</sup>
- ▶ The test pressure of valve body:
  - Cast Iron & Bronze : 21 kgf/cm<sup>2</sup>
  - Stainless Steel 304 & 316 : 30 kgf/cm<sup>2</sup>
- ▶ Maximum Applied pressure:
  - Cast Iron & Bronze : 12 kgf/cm<sup>2</sup>
  - Stainless Steel 304 & 316 : 20 kgf/cm<sup>2</sup>
 (1 kgf/cm<sup>2</sup>=14.2psi)



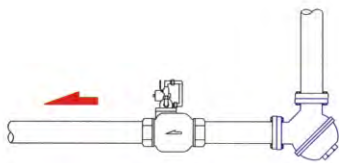
| Flange Type (Material: Cast Iron or Stainless 304 or 316) |      |       |       |       |            |                               |
|---|------|-------|-------|-------|------------|-------------------------------|
| Item No   | Size | A(mm) | B(mm) | C(mm) | Weight(kg) | Air Chamber(cm <sup>3</sup> ) |
| ALF-50  | 2"   | 230   | 110   | 105   | 17         | 1490                          |
| ALF-65  | 2.5" | 260   | 130   | 115   | 21         | 2130                          |
| ALF-80  | 3"   | 275   | 140   | 125   | 22         | 2465                          |
| ALF-100   | 4"   | 345   | 155   | 150   | 34         | 5535                          |
| ALF-150   | 6"   | 467   | 200   | 200   | 70         | 15325                         |
| ALF-200   | 8"   | 560   | 235   | 232   | 124        | 27230                         |

# THE INSTALLATION CONDITIONS OF L STYLE WATER HAMMER ARRESTER

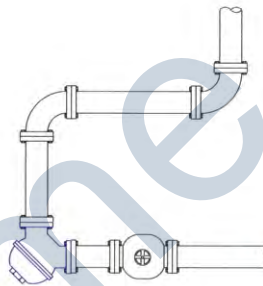
When pump shuts off, pressure decreases instantly and forms unstable gap of positive and negative pressure that causes water hammer effect and creates noise and pipe vibration. To set up water hammer arrester at the pipe corner upside of the pump (shown as the figure) can prevent the water hammer effect and protect the machine.

## ► Remark :

When lift is longer than 50m and pressure is above 5 kgf/cm<sup>2</sup>, we suggest to set up arresters each at the downside of the long pipe and the upside corner of the check valve.



It's easy to cause water hammer effect when the gate closes fast. To set up arrester at the first corner away from the fast-shut-down valve can absorb and prevent the water hammer effect directly and eliminate the noise.



► Silent Check valve

When the fluid flows through the serial corner, the change of flow speed and direction and friction effect will cause unstable pressure wave, which will lead to vibration and noise. To set up arrester and silent check valve can eliminate the pressure wave.

## Remark

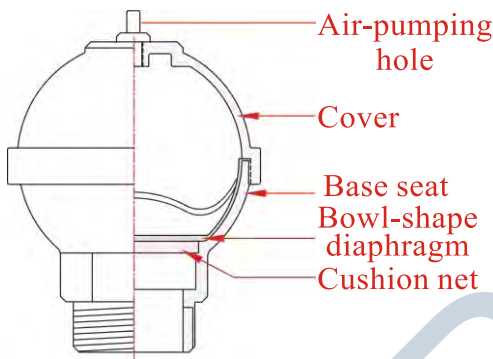
- The pressure meter on the valve shows the air chamber pressure before piping and will show the pipeline pressure after piping.
- To leave a 10 cm opening between valve and wall for easy to maintain.
- Considering the high-pressure situation, cast iron or stainless steel valve body is suggested for the valve which diameter is larger than 2".
- When lift is longer than 50m and pressure is above 5 kgf/cm<sup>2</sup>, we suggest to set up arrester each at the downside of the long pipe and the corner upside of the check valve.
- Before installation, make sure the pressure of water hammer arrester air chamber is lower than pipe pressure.
- When the pressure of the air chamber of the water hammer arrester is maintained at the 30% ~ 50% of pipe pressure, the arrester will have the best water-hammer-preventing result.
- If the water pressure in the pipe is lower or the air pressure of the arrester air chamber is lower, both can be corrected by pumped into air or release air from the air-pumping hole at the top of the arrester.
- When the outlet is under open pressure like float valve, bathroom equipment and faucet, input pressure 1 ~ 1.3 kgf/cm<sup>2</sup> is preferred.



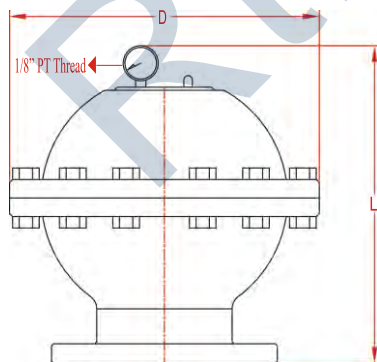
# I STYLE WATER HAMMER ARRESTER



Patent Number : 140580



▲ Thread end(AIT)  
Without Pressure Gauge



▲ Flang end (AIF)  
With Pressure Gauge

- ▶ If the fluid is acid/alkaline or oil, the air bag made of special material should be applied.
- ▶ Vertical, horizontal and upside-down installation is acceptable.
- ▶ Please contact us for special fluid and temperature.
- ▶ Normal air chamber pressure : 2.5 kgf/cm<sup>2</sup>
- ▶ Diaphragm material : NBR & Viton

- ▶ Applied conditions: Fluid
- ▶ Applied temperature: -15 ~ 80°C
- ▶ Diaphragm material: NBR & Viton
- ▶ Normal air chamber pressure: 2.5 kgf/cm<sup>2</sup>

- ▶ The test pressure of valve body:
  - Ductile Iron & Bronze : 21 kgf/cm<sup>2</sup>
  - Stainless Steel 304 & 316 : 30 kgf/cm<sup>2</sup>
- ▶ Maximum applied pressure:
  - Ductile Iron & Bronze : 12 kgf/cm<sup>2</sup>
  - Stainless Steel 304 & 316 : 20 kgf/cm<sup>2</sup>
 (1 kgf/cm<sup>2</sup>=14.2psi)

(Thread end)

| Item No | Thread(PT) | L (mm) | D (mm) | Weight(kg) | Air Chamber(cm <sup>3</sup> ) |
|---------|------------|--------|--------|------------|-------------------------------|
| AIT-15  | 1/2"       | 74     | 46     | 0.3        | 17                            |
| AIT-20  | 3/4"       | 82     | 52     | 0.4        | 30                            |
| AIT-25  | 1"         | 95     | 62     | 0.5        | 65                            |
| AIT-40  | 1.5"       | 120    | 110    | 1.4        | 250                           |
| AIT-50  | 2"         | 162    | 135    | 3.2        | 650                           |
| AIT-65  | 2.5"       | 180    | 155    | 3.9        | 1125                          |
| AIT-80  | 3"         | 218    | 188    | 9          | 2000                          |
| AIT-100 | 4"         | 260    | 238    | 14         | 4400                          |

(Flange end)

| Item No | Flange | L (mm) | D (mm) | Weight (kg) | Air Chamber(cm <sup>3</sup> ) |
|---------|--------|--------|--------|-------------|-------------------------------|
| AIF-80  | 3"     | 240    | 155    | 18          | 2465                          |
| AIF-100 | 4"     | 330    | 330    | 31          | 5535                          |
| AIF-125 | 5"     | 330    | 330    | 32          | 5535                          |
| AIF-150 | 6"     | 420    | 400    | 67          | 15325                         |
| AIF-200 | 8"     | 510    | 460    | 93          | 27230                         |
| AIF-250 | 10"    | 510    | 460    | 103         | 27230                         |
| AIF-300 | 12"    | 620    | 625    | 198         | 67860                         |



# FULL OPEN STYLE SILENT CHECK VALVE

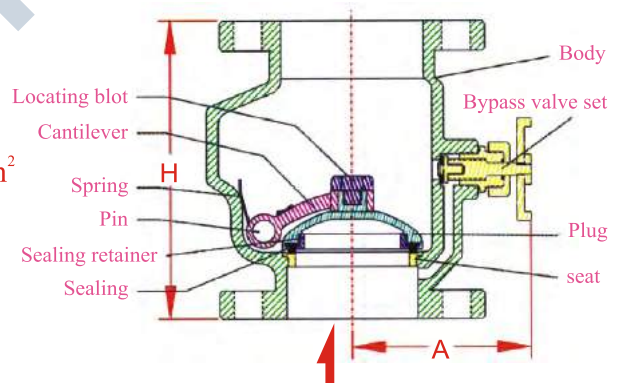
The silent check valve is applied on lift pipe or fluid pipe with pressure. The valve gate, with restoring force, will be closed at suitable speed when pump is shut down to separate the collision and noise between the inertia fluid (positive pressure) and the back flow (negative pressure) caused by power off.

The silent check valve plays an important role on piping, especially applied on the outlet of the pump. The silent check valve applied on the outlet of the pump should be selected carefully, and it must be able to resist the highest pressure, the largest water hammer effect and the biggest fluid impact. If the silent check valve is not good enough, when silent check valve is damaged, it will cause the fluid flowing back and losing pressure or, more serious, the damaged parts will fall on the blades and damage the pump seriously and, hence, loses more money.

To avoid the defects mentioned above, our company manufacture a more practical and economical model, called **" FULL OPEN STYLE SILENT CHECK VALVE"**

## Features:

- ▶ The design of the valve is full flow lift type and water flow does not directly push the valve gate. Hence, the valve can work for a long time and have huge flow rate.
- ▶ The design of plug is hang type and automatically locating. It can adjust the close position of the plug no matter high or low pressure.
- ▶ The design of sealing is "U" and it is suitable for high and/or low pressure condition. And the tightness of the valve gate is best.
- ▶ The design of plug is semi-round and can resist higher pressure.
- ▶ When the pressure is high, plug and seat work together to prevent the sealing from being pushed by the high pressure to lengthen the longevity of sealing.
- ▶ Test pressure : Stainless Steel : 35 kgf/cm<sup>2</sup> ; Ductile Iron : 35 kgf/cm<sup>2</sup> ; Cast Iron : 21 kgf/cm<sup>2</sup>
- ▶ Maximum applied pressure : Stainless Steel : 20 kgf/cm<sup>2</sup> ; Ductile Iron : 20 kgf/cm<sup>2</sup> ; Cast Iron : 16 kgf/cm<sup>2</sup>
- ▶ Applied temperature : -15~80°C
- ▶ Vertical and horizontal installation is acceptable.



(Flange End)

| Item No | Size | Connection type | H(mm) | A(mm)        | Weight (kg) | CV   |
|---------|------|-----------------|-------|--------------|-------------|------|
| CHF-50  | 2"   | Flange          | 183   | 122          | 9           | 180  |
| CHF-65  | 2.5" | Flange          | 200   | 132          | 12          | 270  |
| CHF-80  | 3"   | Flange          | 210   | 147          | 14          | 410  |
| CHF-100 | 4"   | Flange          | 220   | 160          | 16          | 720  |
| CHF-125 | 5"   | Flange          | 260   | 180          | 27          | 1050 |
| CHF-150 | 6"   | Flange          | 280   | 200          | 32          | 1615 |
| CHF-200 | 8"   | Flange          | 370   | Upon request | 61          | 2865 |
| CHF-250 | 10"  | Flange          | 450   | Upon request | 117         | 4025 |
| CHF-300 | 12"  | Flange          | 520   | Upon request | 138         | 5700 |

| Part Name        | Material        |                     |
|------------------|-----------------|---------------------|
| Body             | Cast Iron       | Stainless Steel 304 |
| Bypass valve set | Brass           | Stainless Steel 304 |
| Plug             | Brass           | Stainless Steel 304 |
| Seat             | Cast Iron       | Stainless Steel 304 |
| Locating bolt    | Brass           | Stainless Steel 304 |
| Cantilever       | Brass           | Stainless Steel 304 |
| Spring           | Stainless Steel | Stainless Steel 304 |
| Pin              | Stainless Steel | Stainless Steel 304 |
| Sealing retainer | Brass           | Stainless Steel 304 |
| Sealing          | NBR             | NBR                 |

©The bypass valve set won't be attached if the diameter is larger than 6 inches.

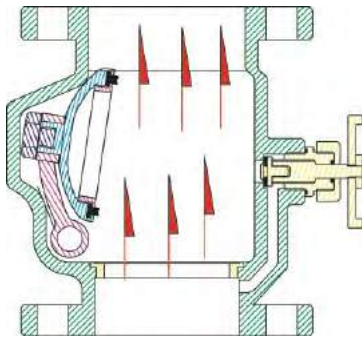




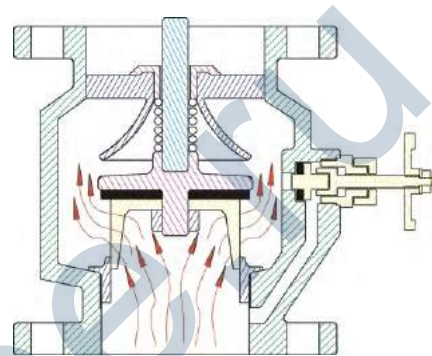
# IMPROVEMENT OF THE FLOW OF FULL OPEN STYLE SILENT CHECK VALVE

## The Improvement of Full Open Style Silent Check Valve on Flow Rate

The full open style silent check valve adapts the lift open style plug and the plug has hidden bypass design, which will bring the smallest flow resistance inside the valve body. When fluid flow through the valve, and hence, will reduce the loss of pump running effect and improve the power efficiency. Since that, the defects of traditional silent check valve, e.g. Many turning points, large resistance, not smooth flow way and fluid impact the valve directly and shorten the valve life, have been improved.

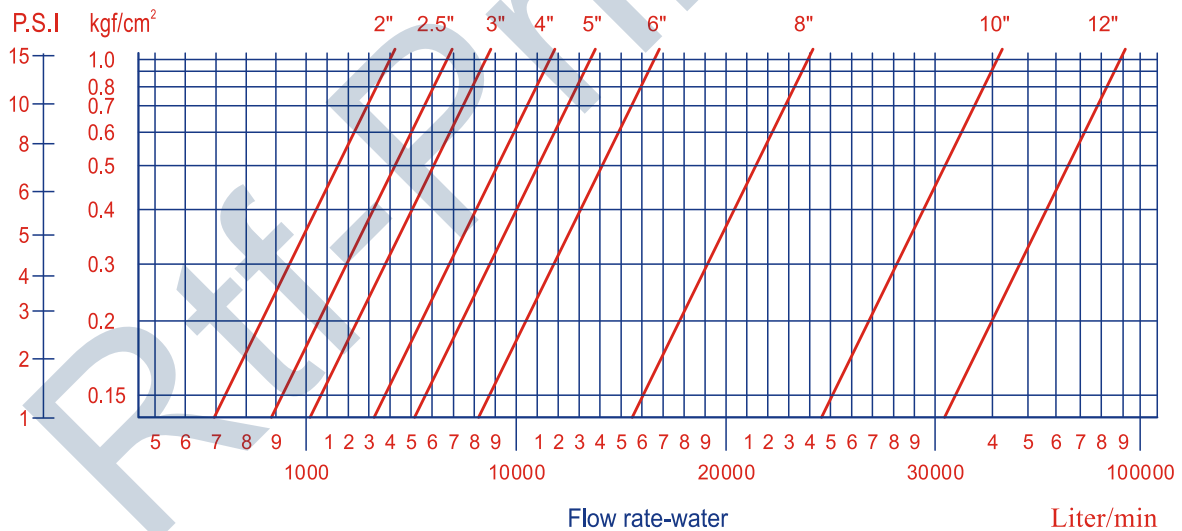


**Full Open Style Silent Check Valve**



**Traditional Silent Check Valve**

## Full Open Style Silent Check Valve Flow Chart



## The comparison of CV values between Full Open Style Silent Check Valve and Traditional Silent Valve

$$CV = \frac{Q}{\sqrt{\Delta P/S}}$$

Q=Rate of flow (GPM)

P=Pressure drop across valve (p.s.i)

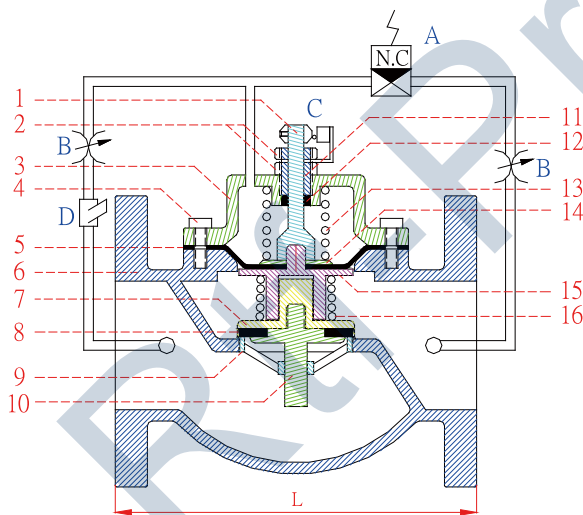
S=Fluid density (1 Gallon=3.785 Liter)

|                       | 2"  | 2.5" | 3"  | 4"  | 5"   | 6"   | 8"   | 10"  | 12"  |
|-----------------------|-----|------|-----|-----|------|------|------|------|------|
| Z-Tide full open type | 180 | 270  | 410 | 720 | 1050 | 1615 | 2866 | 4025 | 5700 |
| Traditional type      | 70  | 105  | 155 | 275 | 435  | 625  | 1115 | 1770 | 2500 |



# PUMP CONTROL VALVE

- ▶ Perfectly prevents water hammer effect.
- ▶ Pump Control Valve = Pump's Variable Drive + Check Valve + Water Hammer Arrester. No need to use “Inverter Duty Motor” and save costs.
- ▶ Speed of valve opening and closing are adjustable upon request.
- ▶ Simple installation and outstanding function.
- ▶ Piston design structure resists high pressure and makes maintenance & replacement easy.
- ▶ It is convenient to clean the impurities inside valve gate from the cleaning plug.



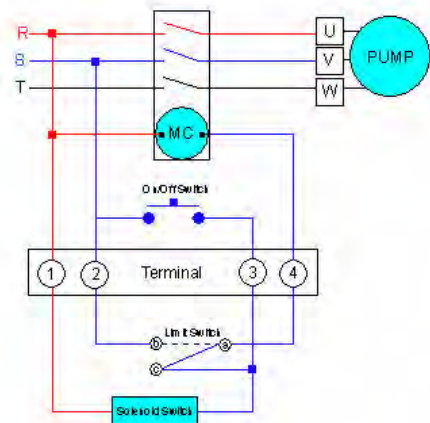
▶ Applied temperature:  $-15^{\circ} \sim 80^{\circ}\text{C}$

|                  | Cast Iron            | Ductile Iron         | Bronze               | Stainless Steel      |
|------------------|----------------------|----------------------|----------------------|----------------------|
| Testing Pressure | 24kg/cm <sup>2</sup> | 30kg/cm <sup>2</sup> | 24kg/cm <sup>2</sup> | 38kg/cm <sup>2</sup> |
| Working Pressure | 16kg/cm <sup>2</sup> | 20kg/cm <sup>2</sup> | 16kg/cm <sup>2</sup> | 25kg/cm <sup>2</sup> |

| No  | Part Name            | Material              |                     |
|-----|----------------------|-----------------------|---------------------|
| 1.  | Positioning Shaft    | Brass                 | Stainless Steel 304 |
| 2.  | Screw Nut            | Steel                 | Stainless Steel 304 |
| 3.  | Upper Cover          | Ductile Iron / Bronze | Stainless Steel 304 |
| 4.  | Cover Fixing Bolt    | Steel                 | Stainless Steel 304 |
| 5.  | Diaphragm            | CR Rubber + Nylon     | CR Rubber + Nylon   |
| 6.  | Main Body            | Ductile Iron / Bronze | Stainless Steel 304 |
| 7.  | Gate                 | Ductile Iron / Bronze | Stainless Steel 304 |
| 8.  | Sealing              | NBR                   | NBR                 |
| 9.  | Seat                 | Bronze                | Stainless Steel 304 |
| 10. | Gate Shaft           | Bronze                | Stainless Steel 304 |
| 11. | Fixing Ring          | Bronze                | Stainless Steel 304 |
| 12. | U-ring               | NBR / Viton           | NBR / Viton         |
| 13. | Back Pressure Spring | Stainless Steel 304   | Stainless Steel 304 |
| 14. | Washer               | Brass                 | Stainless Steel 304 |
| 15. | Shaft                | Ductile Iron / Bronze | Stainless Steel 304 |
| 16. | Gate Spring          | Stainless Steel 304   | Stainless Steel 304 |
| A.  | Solenoid Valve       | Bronze                | Stainless Steel 304 |
| B.  | Needle Valve         | Bronze                | Stainless Steel 304 |
| C.  | Limit Switch         | Normal Type           | Normal Type         |
| D.  | Filter               | Bronze                | Stainless Steel 304 |

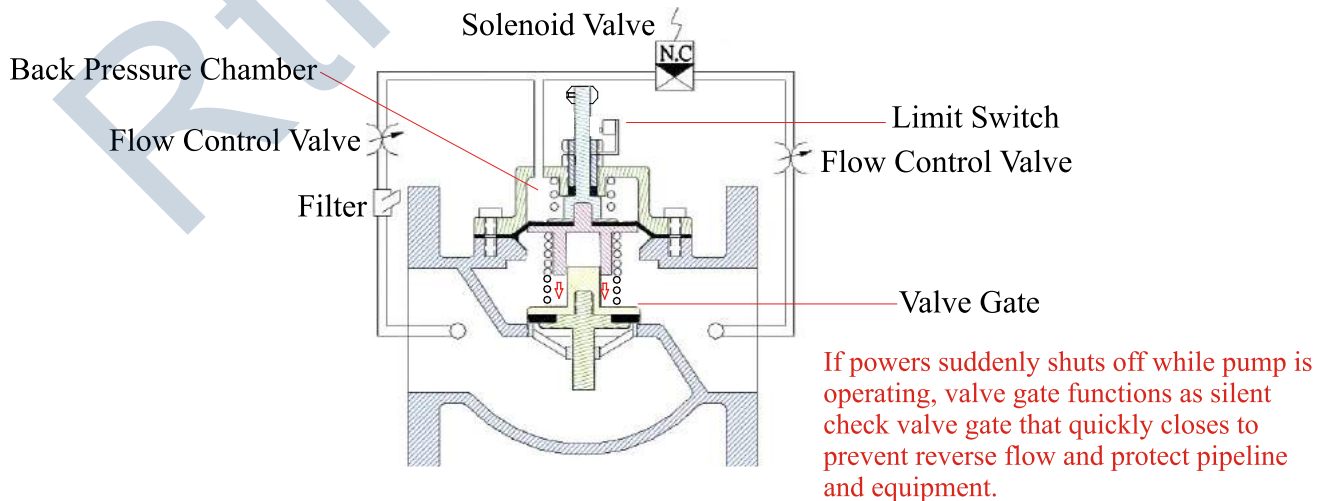
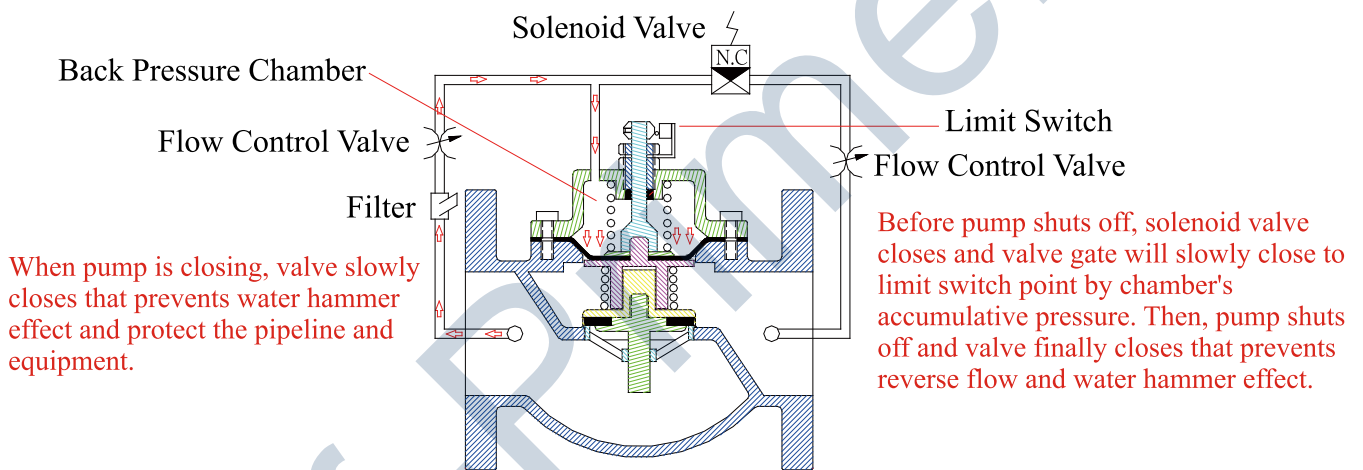
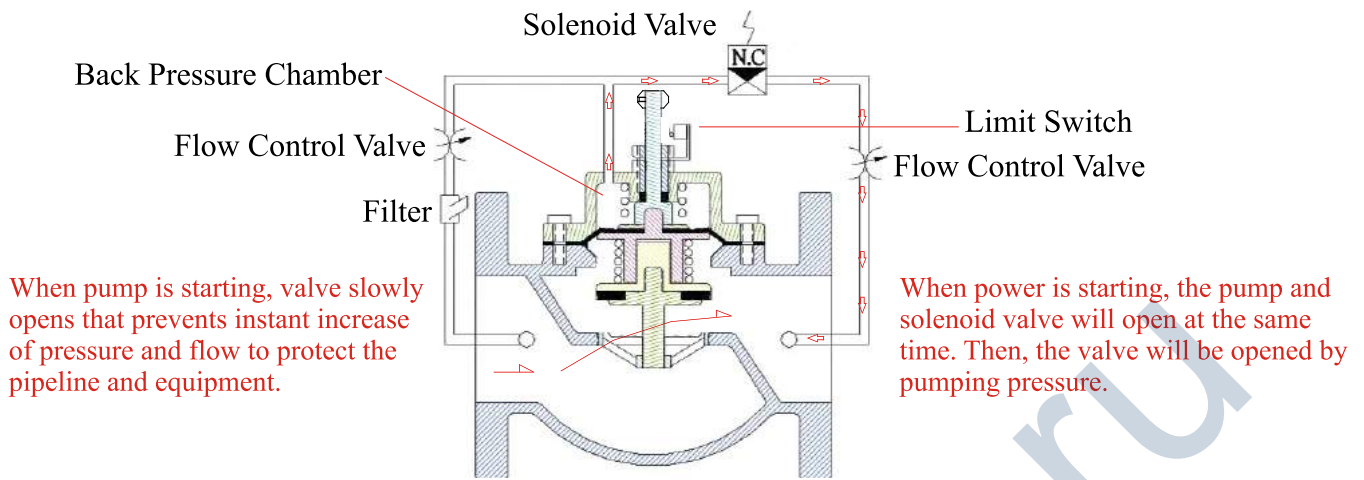
(Flange End)

| No.     | Size | L   | CV   | Weight(kg) |
|---------|------|-----|------|------------|
| RPF-50  | 2"   | 190 | 30   | 14         |
| RPF-65  | 2.5" | 210 | 85   | 18         |
| RPF-80  | 3"   | 225 | 95   | 19         |
| RPF-100 | 4"   | 250 | 150  | 26         |
| RPF-150 | 6"   | 310 | 320  | 52         |
| RPF-200 | 8"   | 420 | 750  | 115        |
| RPF-250 | 10"  | 530 | 1400 | 150        |



Power Distribution Chart

# Function of Pump Control Valve



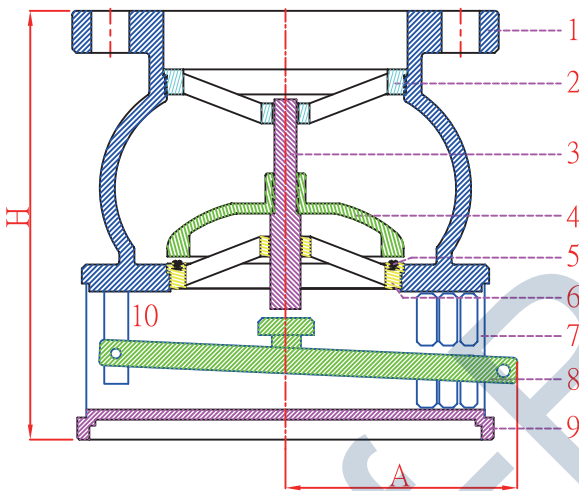


# FOOT VALVE (With Clean Lever)

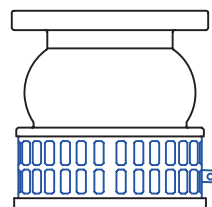


Foot valve is for use as inlet of suction pipe. A modified check valve that has a screen on the suction end to prevent debris from entering the pump or pipe. It protects against loss of prime, aids in priming the pump and protects the pump from large debris. (Only Vertical installation)

- ▶ Fluid : Water
- ▶ Max Working Pressure :  
Cast Iron : 12 kg/cm<sup>2</sup>  
Ductile Iron & Stainless Steel : 20 kg/cm<sup>2</sup>



|    | Part Name   | Material        |                 |                 |
|----|-------------|-----------------|-----------------|-----------------|
| 1  | Main Body   | Cast Iron       | Ductile Iron    | Stainless Steel |
| 2  | Upper Seat  | Brass           | Brass           | Stainless Steel |
| 3  | Shaft       | Brass           | Brass           | Stainless Steel |
| 4  | Disc        | Ductile Iron    | Ductile Iron    | Stainless Steel |
| 5  | Sealing     | NBR             | NBR             | NBR             |
| 6  | Seat        | Brass           | Brass           | Stainless Steel |
| 7  | Screen      | Stainless Steel | Stainless Steel | Stainless Steel |
| 8  | Clean Lever | Ductile Iron    | Ductile Iron    | Stainless Steel |
| 9  | Screen Seat | Ductile Iron    | Ductile Iron    | Stainless Steel |
| 10 | Lever Stand | Ductile Iron    | Ductile Iron    | Stainless Steel |



Model : FVF

(Flange End)

| Item No. | Size | H   | A   | Weight(kg) |
|----------|------|-----|-----|------------|
| FVF-50   | 2"   | 160 | 95  | 7          |
| FVF-65   | 2.5" | 165 | 105 | 8          |
| FVF-80   | 3"   | 210 | 115 | 11         |
| FVF-100  | 4"   | 215 | 125 | 14         |
| FVF-125  | 5"   | 240 | 145 | 20         |
| FVF-150  | 6"   | 275 | 160 | 27         |
| FVF-200  | 8"   | 380 | 185 | 46         |



Model : FVT

(Thread End)

| Item No. | Size   | H   | A   | Weight(kg) |
|----------|--------|-----|-----|------------|
| FVT-50   | 2"     | 160 | 95  | 5          |
| FVT-65   | 2 1/2" | 165 | 105 | 6          |

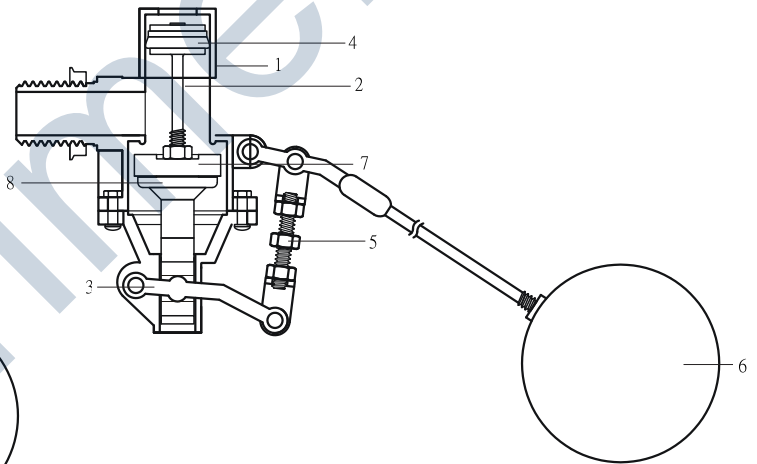
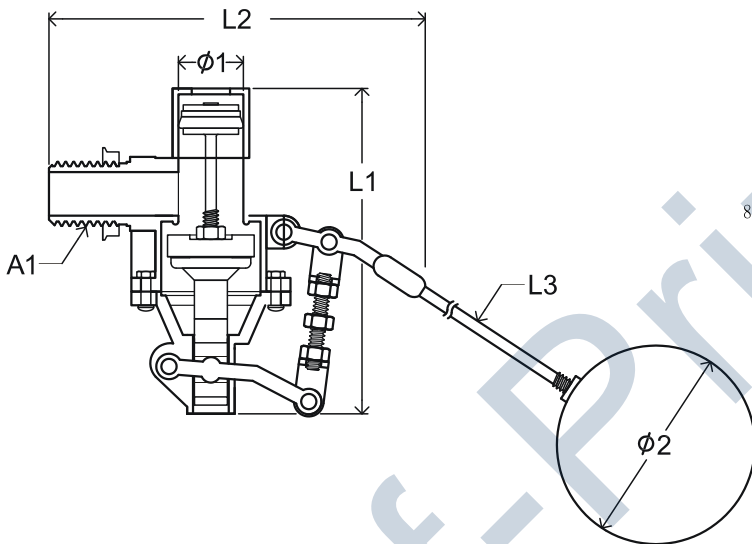


# Float Valve Switch



- All 304 stainless steel construction.
- Polished float ball.
- Pressure range up to 10 Bar. 20 Bar Upon Request
- Silicone/EPDM seat.
- Working temperature up to 80°C.
- Fullbore for high flow.
- Connections in Thread or Flanged.

- ▶ Size Range: DN15 (1/2") - DN80(3")
- ▶ Temperature Range: 0°C ~ 80°C
- ▶ Connections : DN10 - DN25 (Threaded)  
DN40 - DN80 (Threaded)



| Table of Valve Size (mm) |     |     |    | SS304 Float Ball |     | Weight(kg) |
|--------------------------|-----|-----|----|------------------|-----|------------|
| A1<br>G Threaded         | L1  | L2  | Ø1 | L3               | Ø2  |            |
| 1/2"                     | 110 | 133 | 20 | 170              | 100 | 0.67       |
| 3/4"                     | 110 | 145 | 20 | 170              | 100 | 0.72       |
| 1"                       | 110 | 145 | 20 | 170              | 100 | 0.76       |
| 1 1/2"                   | 170 | 120 | 30 | 300              | 150 | 1.75       |
| 2"                       | 210 | 130 | 40 | 400              | 150 | 2.42       |
| 3"                       | 240 | 160 | 60 | 420              | 200 | 5.67       |

| No | Part Name       | Material            |
|----|-----------------|---------------------|
| 1  | Main Body       | Stainless Steel 304 |
| 2  | Shaft           | Stainless Steel 304 |
| 3  | Lifting Gear    | Stainless Steel 304 |
| 4  | U-Ring          | EPDM/Silicone       |
| 5  | Adjusting Screw | Stainless Steel 304 |
| 6  | Float Ball      | Stainless Steel 304 |
| 7  | U-Ring          | EPDM/Silicone       |
| 8  | Piston          | Stainless Steel 304 |

○ Water Supply System



○ Fire Protection System



○ Air Processing System



○ Air-Conditioning System

