

Model GD-45 PRESSURE REDUCING VALVE

Installation & Operation Manual

Please read this bulletin thoroughly before using the pressure reducing valve, so that you may do so correctly and safely. Please carefully store this bulletin in a handy place. The following safety symbols are used in this manual.

⚠ Warning

This symbol indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.

⚠ Caution

This symbol indicates a hazardous situation that, if not avoided, may result in minor or moderate injury. ("Caution" may also be used to indicate other unsafe practices or risks of property damage.)

Specifications

Model	GD-45	
Size	15,20,25A	
Fluid	Steam	
Connection	JIS Rc Screwed	
Inlet Pressure	2.0MPa or less	
Reduced Pressure	Spring Color	Setting Pressure range
	Yellow	0.02~0.1MPa
	Blue	0.05~0.4 MPa
	Yellow-green	0.35~1.0 MPa
Minimum differential Pressure	0.05 MPa	
Max. pressure reducing ratio	10:1	
Max. Temperature	220°C	
Valve Seat Leakage	Rated leakage is 0.1% or less of rated flow	
Material	Body	Ductile Cast Iron
	Cap	Ductile Cast Iron
	Bellows	Bronze
	Spring Chamber	Cast Iron
	Valve seat	Stainless Steel
	Valve	Stainless Steel

⚠ Caution

Please collate with attached nameplate and specification of ordered model.
 ※Please consult factory in case they do not match each other.

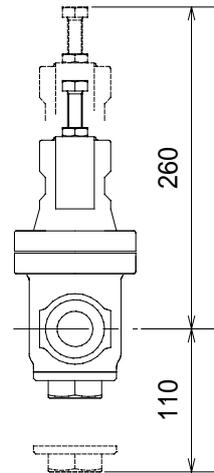
Precautions during installation

⚠ Caution

- (1) Do not disassemble the valve unreasonably.
 ※Disassembling the valve at your discretion may affect the original performance.
- (2) Remove foreign matter and scales from the lines before connecting the valve.
 ※Failure to do so may result in the valve from functioning incorrectly.
- (3) Install a strainer (Recommendation: 60-mesh or close) at the valve inlet side.
 ※Failure to do so may hamper correct pressure control, which affects the original performance.
- (4) Install a safety valve at the valve outlet sides as safety device for equipment.
 ※Failure to do so cannot identify PRV problem, resulting in equipment damage.

- (5) Install a pressure gauge at both the inlet and outlet sides of the valve.
※Failure to do so may hamper correct pressure adjustment.
- (6) Install a steam trap to the inlet sides of the valve to prevent drainage problems.
※Failure to do so may result in drainage problem, affecting the original performance.
- (7) When installing quick open and close valves, such as a solenoid valve, install it at inlet side as much as possible, and secure at least 3 m from the valve.
※Failure to do so may result in malfunction or drastically shortened service life.
- (8) When pressure reducing in two stages, secure at least 3 m between the valves.
※Failure to do so may result in malfunction, affecting the original performance.
- (9) Install the valve in proper direction of the fluid flow.
※Failure to do so may affect the original performance.
- (10) Do not apply excessive load, torque or vibration to the valve.
※Doing so may result in malfunction or drastically shortened service life.

- (11) Install the valve perpendicularly to horizontal lines.
- (12) Set pressure of safety relief valve should be higher than the pressure reducing valve's pressure.
- (13) When the reducing ratio is large, install a reducer to keep the flow velocity in the pipe 30 m/s.
- (14) Provide space on the top and bottom of the valve so that the valve can be easily disassembled and inspected.



Precautions during operation

⚠ Warning

- (1) Do not touch the valve directly with bare hands.
※Doing so may result in burns.

⚠ Caution

- (1) Close the stop valves before and after the reducing valve, and remove all foreign matter and scales via the by-pass line before operation. And, open each stop valve slowly.
Failure to do so may prevent the valve from functioning correctly. And, It may cause hunting, water hammer, etc., resulting in damage to the valve and other equipment when the stop valve is opened quickly.
- (2) Secondary pressure at by-pass line must be lower than set pressure.
Safety valve blows in case secondary pressure at by-pass line becomes higher than set pressure.
- (3) When adjusting pressure, slowly turn the handle. Incorrect adjustment may cause hunting, water hammer, etc., it may result in damage to the valve and other equipment.
- (4) Remove fluid completely from the line, and close the stop valves before and after the valve when not using it for long periods of times.
※Rust generated in the valves and lines may cause malfunction.

Adjustment Procedure

Follow the steps below, and slowly turn the adjusting screw to set pressure. Incorrect adjustment may cause hunting, water hammer, etc., resulting in damage to the valve and other equipment.

- (1) Close the stop valve at inlet and outlet side of the pressure reducing valve, and taking sufficient time not to blow the safety valve, blow off the fluid to remove foreign matter via the by-pass line. After blowing, close the by-pass line stop valve.

- (2) Slowly open the stop valve at the inlet side of the pressure reducing valve, and adjust the travel of the stop valve at the outlet side of the pressure reducing valve so that a little fluid flows.
- (3) Loosen the lock nut, and slowly turn the adjusting screw to achieve the desired pressure (clockwise to increase, counterclockwise to reduce) while observing the pressure gauge on the outlet side.
- (4) Slowly open the stop valve at the outlet of the pressure reducing valve, and readjust the desired pressure.
- (5) After adjustment, tighten the lock nut.

Troubleshooting

Problem	Cause	Solution
Pressure does not rise to the desired level.	1. Incorrect pressure is being used. 2. Nominal size is too small for these specifications. 3. Incorrect adjustment. 4. Strainer installed before pressure reducing valve is clogged. 5. Screen is clogged. 6. Pressure gauge malfunction.	1. Correct the pressure. 2. Replace with the correct nominal sized item. 3. Re-adjust according to the adjustment procedure. 4. Disassemble and clean. 5. Disassemble and clean. 6. Replace the pressure gauge.
Reduced pressure exceeds prescribed level.	1. Foreign matter is embedded in the valve and/or valve seat, or else scratches exist. 2. Reduced pressure sensing hole is clogged with foreign matter. 3. By-pass valve is leaking.	1. Disassemble and clean. If scratches exist, polish them away. 2. Disassemble and clean. 3. Repair or replace the valve.
Abnormal noise is heard.	1. Pressure reduction ratio is too large. 2. Drainage problem. 3. An abrupt open/close valve is located too close to the pressure reducing valve.	1. Use a two-stage reduction. 2. Install a trap. 3. Move distance as much as possible between the valves.

- Foreign matter and scales in a pipe may cause most of problems of pressure reducing valve. Be careful sufficiently to foreign matter in a pipe.
- Phenomenon alike valve trouble may happen by fault of pressure gauge, fluid leakage from by-pass valve, forgetting to close the by-pass valve, clogging strainer, and etc. First, check the said particulars before above troubleshooting.
- Consult factory when cannot make a judgement whether parts need replacement or not.

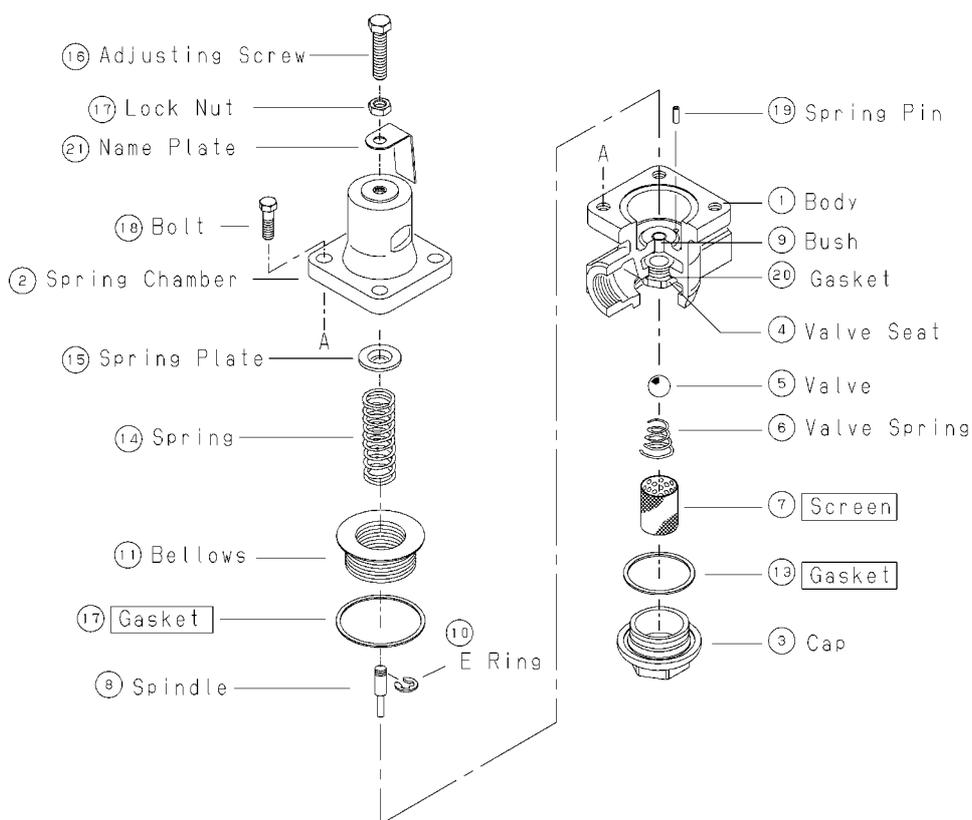
Disassembly procedure

<p>⚠ Warning</p> <p>Completely discharge internal pressure from the valves, lines, and equipment, and cool the valve down to a level where you can touch it with bare hands before disassembly and inspection.</p> <p>※ Failure to do so may result in injury or burns due to residual pressure or spillage around the valve.</p>
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Be sure that the stop valves at inlet and outlet side of pressure reducing valve is closed and all internal pressure and condensate have discharged before disassembling the valve.

1. Loosen the lock nut [17] and turn the adjusting screw [16] to release the spring [14] (no compression).
2. Remove the bolt [18] of the spring chamber [2]. Remove the spring chamber, spring, the spring plate [15], the bellows [11], and the spindle [8].
3. Loosen and remove the cap [3]. Then remove the valve spring [6], the screen [7] and the valve [5].

Exploded drawing



※Part names shown in boxes are consumable items.

After Sales Service

1. Warranty application and period

Products delivered to user are manufactured with our high level of engineering techniques under strict quality control. Please observe the descriptions in this instruction manual or precautions on the hazard labels attached to the product. Should the product be faulty due to material or factors in our manufacturing processes, we will repair the product at no charge.

This warranty is valid for one (1) year after delivery to users.

2. Repairs will be charged even during the warranty period in the following cases:

- (1) Damage and failure due to user's incorrect operation, repairs and remodeling upon user's discretion.
- (2) Damage and failure due to location change of the product after delivery and drop of the product
- (3) Damage and failure due to use under severe conditions beyond design specifications or incorrect operation
- (4) Damage or failure due to natural disasters, such as fire, earthquake, lightning, corrosion due to salt, gas, wind, and water, and abnormal voltage.
- (5) Replacement of excessive worn parts

Yoshitake
INC.

YOSHITAKE INC. INTERNATIONAL DEPT.
7-3, FUTANO-CHO, MIZUHO-KU, NAGOYA,
467-0861, JAPAN
TEL:81-52-881-7199 FAX:81-52-881-7201