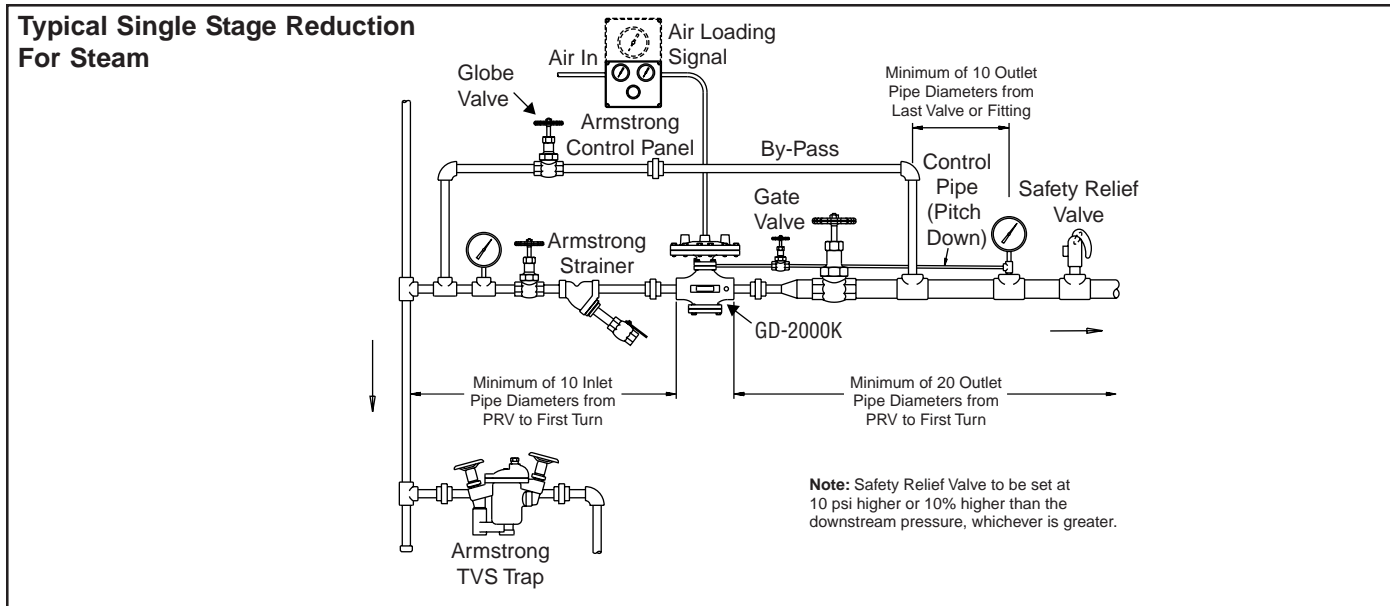




Model GD-2000K Pressure Reducing Valve Installation and Maintenance Instructions



This bulletin should be used by experienced personnel as a guide to the installation of the Model GD-2000K Pressure Reducing Valve. Selection or installation of equipment should always be accompanied by competent technical assistance. You are encouraged to contact Armstrong International, Inc. or its local representative for additional information.

Installation Instructions

1. An Armstrong Inverted Bucket Steam Trap is recommended to drain condensate at inlet of PRV.
2. An Armstrong Y-strainer should be installed before the PRV to reduce the chance of dirt fouling.
3. Pressure gauges should be installed before and after the PRV. The downstream gauge should be installed in or near the control pipe (5/16" O.D.).
4. Control pipe connects into a 1/4" tapping on the side of the main valve. Be certain the control pipe is **pitched away** from the PRV. Erratic control could result if this is not done. Pipe length should be a minimum of 10 outlet pipe diameters.
5. If two stage reduction is needed, a minimum of 20 pipe diameters between valves is recommended.
6. By-pass line around PRV will allow system operation while valve is being serviced.
7. Install PRV with main diaphragm housing up and making sure the flow is in the direction of the arrow on the PRV body.
8. Do not install quick opening and closing valve on the downstream side of PRV.

GD-2000K Startup and Adjustment Procedures

Improper adjustment of the pressure reducing valve may cause hunting, improper control and possible damage to the valve itself. Adjust the valve as follows:

1. Check to make sure all stop valves are closed.
2. Open the stop valve for the trap installed before the pressure reducing valve.
3. Open the stop valve and adjust the valve travel of the by-pass line globe valve. Blowdown the fluid to remove foreign matter. After blowing it down, close the by-pass line globe valve.
4. Set the operating air pressure to "no-pressure".
5. Open the sensing pipe gate valve.
6. Open the stop valve at the outlet side of the pressure reducing valve. Adjust the position of the stop valve so that a little fluid flows.

7. Confirm that the condensate is discharged from the inside of the pressure reducing valve, and slowly open the stop valve on the inlet side.
8. Be sure to allow some bleed-off the operating air pressure to the needle valve. (For standard unit needle valves, the valve opening should be turned 1/2 to 1 turn.)
9. While watching the outlet pressure gauge, increase the operating air pressure (at standard control unit, etc.), until the desired pressure is reached.
10. After the system stabilizes, make any necessary adjustments.
11. When the adjustment is completed, secure the handle of the standard control unit's pressure reducing valve.
12. Check for leakage. Retighten if necessary.

Troubleshooting Guide

Problem	Cause	Solution
Pressure does not reach the desired value.	Incorrect pressure is being used.	Correct the pressure. (Note that the reduced pressure must be 90% or below the inlet pressure (gauge pressure).
	Main diaphragm (11) is damaged.	Remove plug (24-1) and open the by-pass valve. If the fluid runs out from plug, replace the main diaphragm.
	Sensing pipe is clogged.	Disassemble and clean.
	Nominal size is too small for the specifications.	Change the nominal size appropriately.
	Pressure is not adjusted correctly.	Observe the adjustment steps and readjust pressure.
	Strainer installed before pressure reducing valve is clogged.	Disassemble and clean.
	Pressure gauge is faulty.	Replace.
Outlet pressure raises above the specified value.	Check for foreign matter stuck to main valve (5) and main valve seat (6), or for scratches on components.	Set the operating air pressure to "no-pressure". If fluid runs out from tee when it is supplied from inlet side of the pressure reducing valve, clean the main valve and main valve seat. When any scratches are identified, lap the main valve and main valve seat.
	Reduced pressure is not adjusted correctly.	Observe the adjustment steps and readjust pressure.
	Foreign matter is stuck to clearance between main spindle (8) and guide (9).	Remove them for inspection and cleaning.
	Trap is not provided for dead end pipe.	Install a trap.
	Fluid leaks from by-pass valve.	Repair or replace.
Valve operation is not stable.	Flow at the connection of the sensing pipe fluctuates excessively.	Examine the connecting pipe and change it if scale build-up is present.
	Condensate remains in the sensing pipe.	Connect the sensing pipe in upward slope to pressure reducing valve.
	Sliding movement of main spindle (8) and guide (9) is sticking.	Disassemble and clean the valve, or replace the parts for proper movement.
	The operating air pressure is too high or insufficient.	Observe the adjustment steps and readjust pressure. Check gauges for proper function.

Disassembly

Main Valve

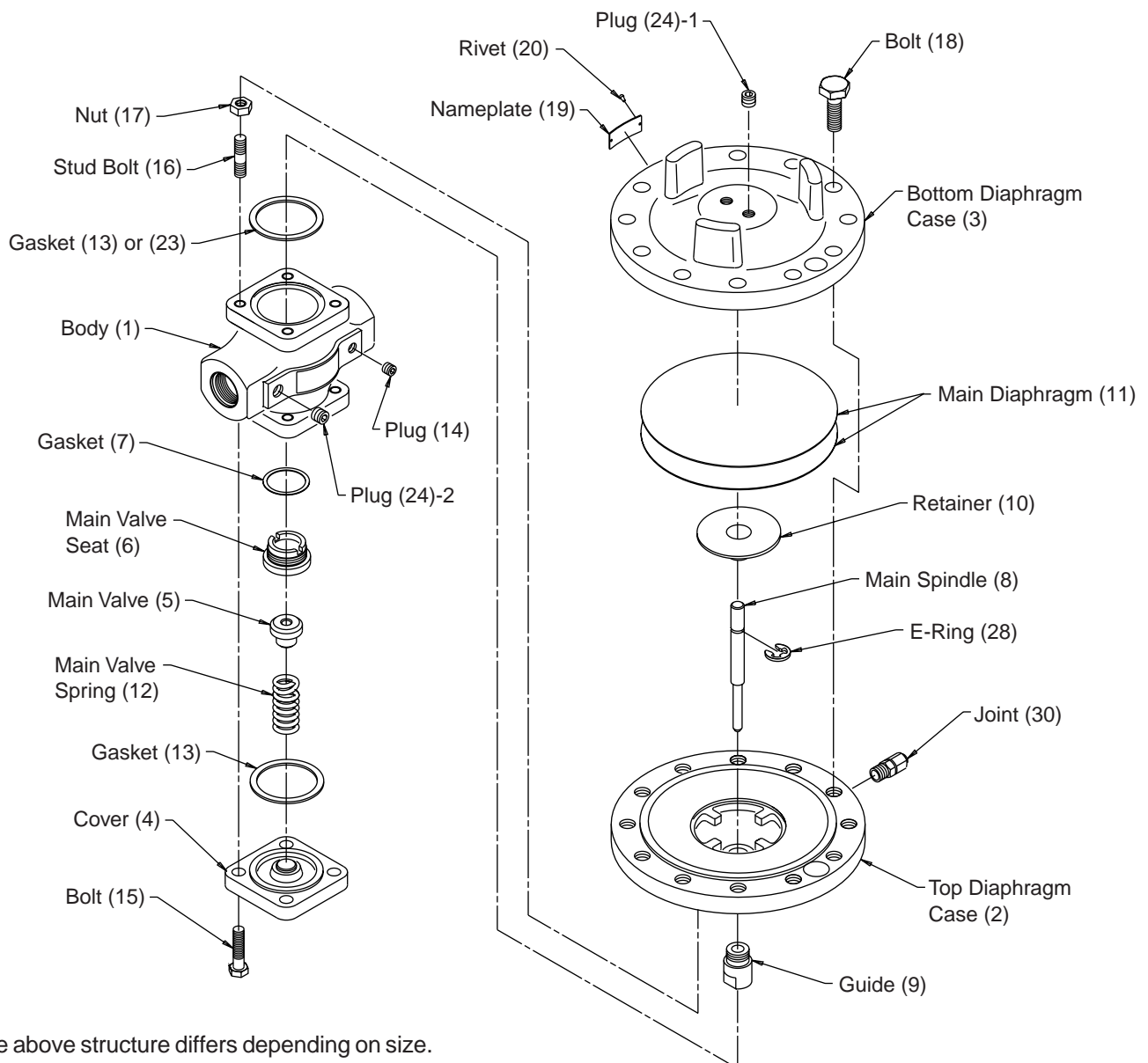
1. Remove bolts from cover (4). Remove the cover from the body (1) and remove main valve spring (12) and main valve (5).
2. Special tools are required when removing main valve seat (6) due to dimensions unique to Armstrong-Yoshitake.

Main Diaphragm

1. Remove bolt (18) of bottom diaphragm case (3). Remove the bottom diaphragm case, main diaphragm (11) and retainer (10).

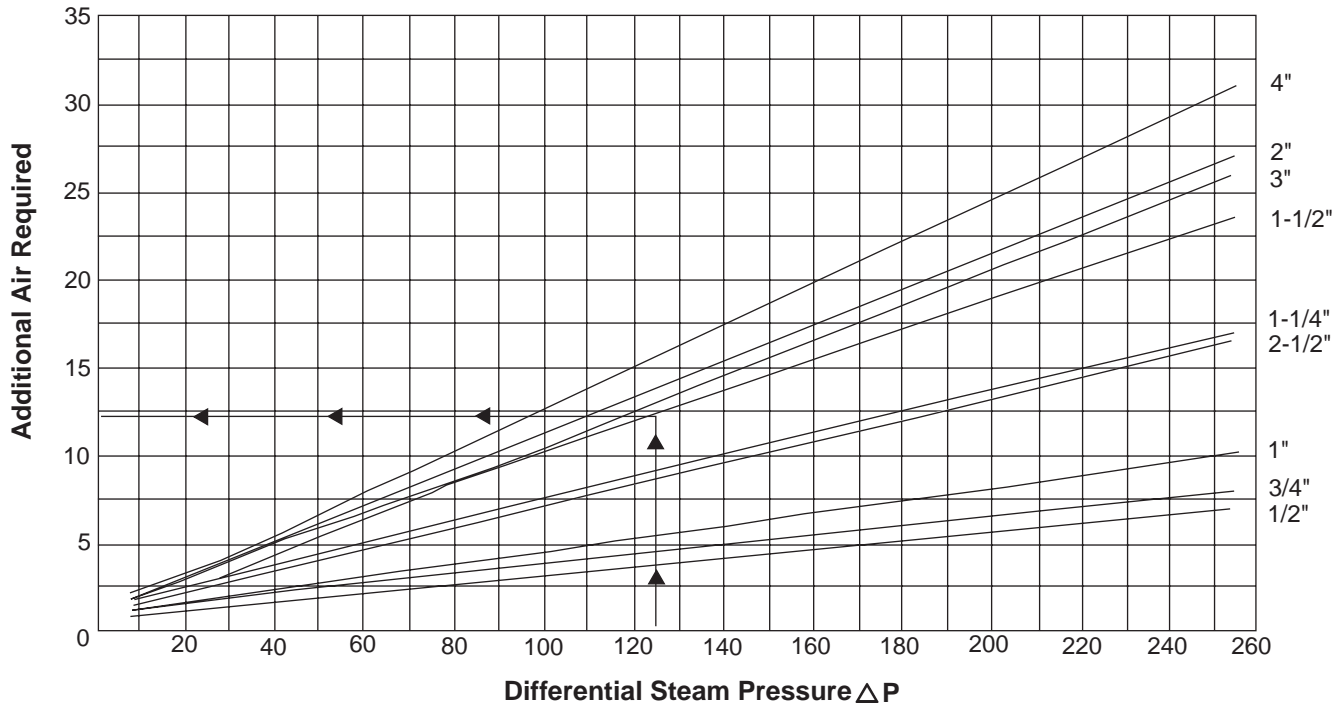
Reassembly

1. Check that there is no damage on the main valve, main valve seat, pilot valve, and pilot valve seat. Any damage on the sealing surface may cause leakage.
 2. Move the sliding section (pilot valve, main spindle, etc.) two or three times and confirm they are moving smoothly. If they do not move smoothly, original performance may be affected. Re-lap and cleaning must be performed. (See Bulletin AY-768).
 3. After the main valve, spring and spring plate are assembled correctly, mount the main diaphragm. Incorrect assembly may affect the original performance.
 4. Replace gaskets with new ones when disassembling. Using old gaskets may cause steam leakage, resulting in burns.
 5. Tighten the nuts evenly. Tightening insufficiently may cause steam leakage, resulting in burns.
 6. Assemble in the reverse order of disassembly.
- Note:** Apply a fluid sealant (heat and steam resistant) to the bottom sealing surface of the top and bottom sealing surface of the main diaphragm.



The above structure differs depending on size.

GD-2000K Air Loading vs. Steam Outlet



Use this chart to determine the air loading pressure you need to control a specific steam outlet pressure.

Air Loading vs. Steam Outlet (Selection Example)

Example: Using 1-1/2" GD-2000K

Steam initial pressure $P_1 = 200$ psig
 Steam outlet pressure $P_2 = 75$ psig
 Differential pressure $\Delta P = 125$ psig

Read horizontally across the bottom of the chart to the 125 psig ΔP line. Then read vertically up to the diagonal line that corresponds to a 1-1/2" GD-11K. Then read horizontally to the left for additional air signal required.

Outlet pressure $P_2 = 75$ psig
 Additional air $\Delta P_{air} = 12$ psig
 Total air pressure required = 87 psig



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