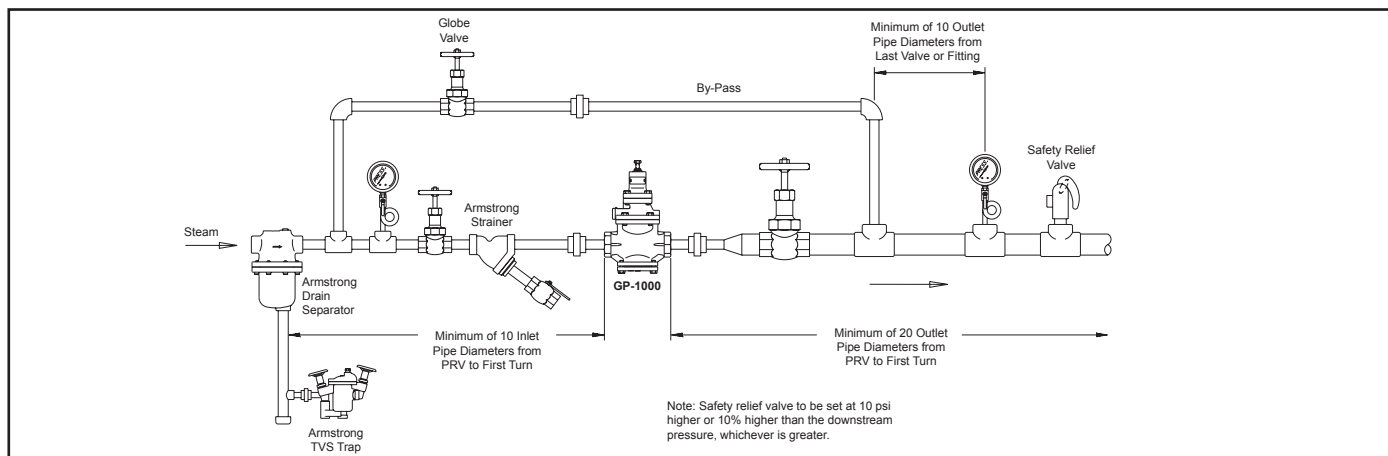




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Model GP-1000
Pressure Reducing Valve
For Steam Service
Installation and Maintenance Instructions

Bulletin No. AY-114-A



This bulletin should be used by experienced personnel as a guide to the installation of the Model GP-1000 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 Hints

- Step 1.** An Armstrong inverted bucket steam trap is recommended to drain condensate at the inlet of the pressure reducing valve (PRV).
- Step 2.** An Armstrong 100 mesh Y strainer with blowdown valve should be installed before the PRV to reduce the chance of dirt fouling.
- Step 3.** Pressure gauges should be installed before and after the PRV.
- Step 4.** Piping a by-pass line with a globe valve around the PRV will allow system operation while the PRV is being serviced. It is also recommended to flush out system prior to start-up.
- Step 5.** Do not install quick opening or closing valves downstream of PRV.
- Step 6.** Install the PRV with the flow in the direction of the arrow on the body.
- Step 7.** Piping immediately downstream of PRV should be expanded to account for low pressure expansion of steam. (Reference Catalog 326)

GP-1000 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:

- Step 1.** Close the gate valves before and after the pressure reducing valve and blowdown the strainer. If strainer blowdown valve is not available blowdown can be done through the bypass line, adjusting the opening of the bypass globe valve so as not to blow the safety relief valve. After draining, be sure to close the bypass globe valve.
- Step 2.** Loosen the lock nut and adjusting screw to relieve the tension on the adjusting spring.
- Step 3.** Adjustment must be made while steam is being consumed at least 1/2 to 3/4 of maximum flow for best results.
- Step 4.** **Slowly** open the inlet side gate valve to the full open position, and open the outlet side gate valve enough so that a little fluid can flow through.
- Step 5.** **Slowly** turn the adjusting screw clockwise until desired pressure is obtained while watching the pressure gauge at the outlet side.
- Step 6.** Slowly open the outlet side valve to the full open position.
- Step 7.** After adjustment, tighten the lock nut to secure the adjusting screw.

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Troubleshooting Guide

Problem	Causes	Solutions
The desired pressure cannot be obtained.	The inlet pressure is too low or too high.	Change the pressure to the appropriate level.
	The strainer (28) in the pilot body is clogged by foreign matter.	Disassemble and clean the strainer.
	The piston-cylinder, clearance is clogged by foreign matter.	Disassemble and clean the piston and the cylinder. If a flaw is found, refinish the surface by using a file or sand paper.
	The valve is smaller than what is required.	Change to the appropriate valve size.
	The adjustment is not appropriate.	Readjust according to the adjustment procedure.
	The inlet strainer is clogged by foreign matter.	Disassemble and clean the strainer.
	The pressure gauge is not functioning properly.	Replace the gauge.
The outlet pressure rises higher than the specified pressure.	The main valve or valve seat is contaminated by foreign matter.	Disassemble and clean the valve or seat.
	The pilot valve or pilot valve seat is contaminated by foreign matter.	Disassemble and clean the valve or seat.
	The piston-cylinder clearance is clogged by foreign matter.	Disassemble and clean the piston and cylinder.
	The by-pass valve is leaking.	Repair or replace the bypass valve.
Abnormal noise is heard	The valve size is larger than what is required.	Install the correct size valve.
	The reducing ratio is greater than 20:1.	Reduce pressure by staging with second PRV.
	Water hammer.	Install a steam trap at the reducing valve inlet.
	There is a fast closing valve near the PRV.	Provide as long a distance as possible between the two valves.
Others	Spring or diaphragms are damaged.	Replace damaged springs or diaphragms.

Disassembly

Caution: Be sure that the isolation valves at inlet and outlet side of pressure reducing valve are closed and all internal pressure has been relieved before disassembly of the valve.

Pilot Valve Disassembly

- Loosen the lock nut (10) and turn the adjusting screw (9) to release the spring (8) no compression.
- Remove the bolts (33) of the spring chamber (4). Remove the spring chamber, spring, top spring plate (6), bottom spring plate (7), and diaphragm (5).
- Remove the pilot valve assembly (19 and 20).

Piston Disassembly

- Remove the bolts (34) of the pilot body (2). Pick up the spindle (18), and remove the piston ring (16) and the inner ring (17).

Main Valve Disassembly

- Remove the bolts (35) of the bottom cover (3). Remove the bottom cover, main valve spring (13), and main valve (11).

Reassembly

- Make sure that the main valve and seat, pilot valve and seat have no flaws. Even a small flaw on the valve or seat may cause leaking.
- Make sure the sliding movement of piston and cylinder is smooth.
- Be sure to replace all gaskets and diaphragms.
- Reassemble in the reverse order of disassembly.

