



Steam Pressure Reducing Valve Selection and Installation Guide

1. Required Parameters for Quotation & Selection

Accurate valve selection depends on complete working condition data. Pipe diameter alone cannot confirm the correct valve model and trim size. Please provide the following parameters:

- Steam type: saturated steam or superheated steam
- Inlet pressure & adjustable outlet pressure range
- Working temperature and maximum flow rate (kg/h)
- Nominal size and pressure class (PN16/PN25/PN40, ANSI 150/300)
- Connection type: flange RF/RJ, NPT or BSP thread
- Body and trim material: Ductile iron, WCB, stainless steel or alloy steel
- Control accuracy and special working conditions (large pressure difference, fluctuating load, low noise requirement)

2. Valve Type Selection

Direct-acting PRV: Simple and cost-effective, suitable for small flow, stable load and small pressure difference for general heating and auxiliary steam systems.

Pilot Piston PRV: Adopts rigid piston actuation structure with strong pressure resistance and wide adjustable pressure range. It withstands high inlet pressure, large pressure differentials and fluctuating steam loads steadily. With excellent wear resistance and long service life, it is widely used for heavy-duty industrial steam main pipelines, central pressure reducing stations and high-pressure steam systems.

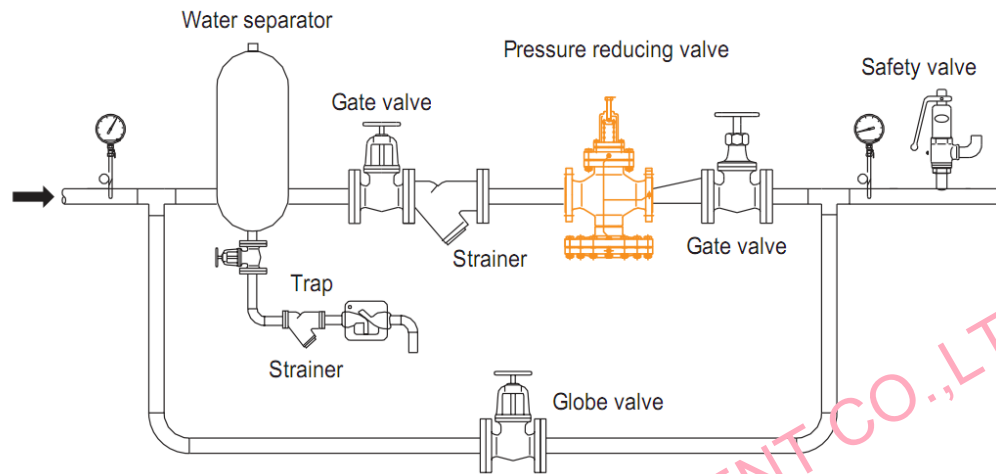
Pilot Diaphragm PRV: Equipped with flexible diaphragm sensing element with zero sliding friction, delivering ultra-sensitive response and higher pressure control accuracy. It maintains extremely stable outlet pressure under small flow and frequent load changes. Suitable for precision process systems, heating equipment and medium-low pressure steam pipelines requiring strict pressure stability.

3. Core Selection Rules

- Valve capacity is determined by flow rate and pressure difference, not merely pipe diameter, to avoid vibration, hunting and insufficient decompression capacity.
- Reserve sufficient pressure grade margin to ensure safe operation under peak working pressure.
- Match high-temperature resistant trim for superheated steam to prevent thermal deformation and leakage.
- Pilot-operated structure is mandatory for systems with large load changes and excessive pressure difference.

4. Installation & System Requirements

■ Steam Pressure Reducing Valve Installation Diagram



- The steam pressure reducing valve must be installed on a horizontal pipeline.
- A strainer must be installed upstream of the pressure reducing valve, utilizing a stainless steel mesh of 100 mesh or finer.
- For safety reasons, it is recommended to install a safety valve on the downstream (secondary) side of the pressure reducing valve. When selecting a safety valve, its flow capacity should ideally be 10% of the pressure reducing valve's maximum flow capacity. The safety valve's discharge pressure should generally be set according to the following standards: if the pressure reducing valve's set pressure is below 4 kgf/cm², the safety valve's discharge pressure should be set to the set pressure + 0.8 kgf/cm²; if the set pressure exceeds 4 kgf/cm², it should be set to the set pressure + 1.2 kgf/cm².
- To ensure continuous steam supply during maintenance of the pressure reducing valve, a bypass line must be installed.
- To prevent pipeline weight or thermal stress from affecting the pressure reducing valve, the valve must be secured to a support bracket or pillar.
- The pressure reducing valve should be installed close to the point of use; using a smaller diameter pipe upstream reduces piping costs, and proximity to the point of use ensures higher pressure control precision.
- Malfunctions in pressure reducing valves within new piping systems are often caused by welding debris; therefore, before operation, allow the fluid to flow through the bypass line for approximately 30 minutes to completely flush out impurities.
- The ingress of condensate is a major cause of pressure reducing valve malfunction; consequently, a steam-water separator or steam trap must be installed upstream of the pressure reducing valve and strainer.