INSTALLATION PROCEDURE

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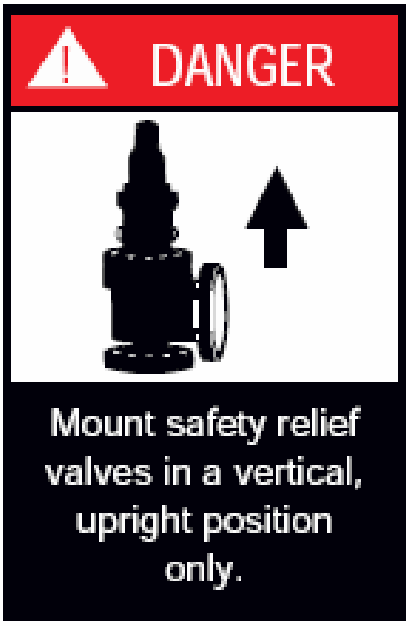
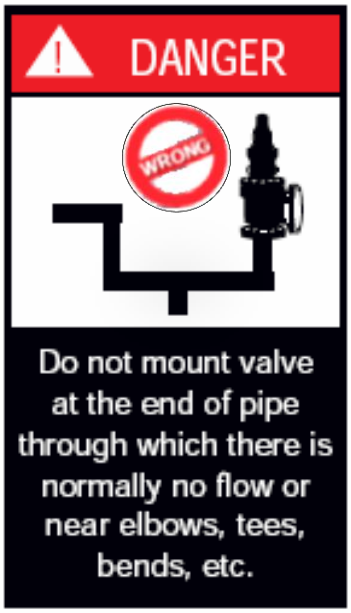
Mount SRVs in a vertical (upright) position (in accordance with API RP 520). Installing a safety relief valve in any position other than vertical (±1 degree) will adversely affect its operation as a result of the induced misalignment of moving parts. A stop valve may be placed between the pressure vessel and its relief valve only as permitted by code regulations. If a stop valve is located between the pressure vessel and SRV, the stop valve port area should equal or exceed the nominal internal area associated with the pipe size of the SRV inlet. The pressure drop from the vessel to the SRV shall not exceed 3% of the valve's set pressure, when flowing at full capacity.
Ensure the flanges and sealing faces of the valve and connective piping are free from dirt, sediment, and scale.
Ensure all flange bolts are drawn evenly to prevent distortion of the valve body and the inlet nozzle.
Position SRVs for easy access and/or removal so that servicing can be properly performed. Ensure sufficient working space is provided around and above the valve.





Inlet Piping

The inlet piping (see Figure 1) to the valve should be short and directly from the vessel or equipment being protected. The radius of the connection to the vessel should permit smooth flow to the valve. Avoid sharp corners. If this is not practical, then the inlet should be at least one additional pipe diameter larger.
The pressure drop from the vessel to the valve shall not exceed 3% of valve set pressure when the valve is allowing full capacity flow. The inlet piping should never be smaller in diameter than the inlet connection of the valve. Excessive pressure drop in gas, vapor, or flashing-liquid service at the inlet of the SRV will cause the extremely rapid opening and closing of the valve, which is known as "chattering." Chattering will result in lowered capacity and damage to the seating surfaces. The most desirable installation is that in which the nominal size of the inlet piping is the same as, or greater than, the

Nominal size of the valve inlet flange; and in which the length does not exceed the face-to-face dimensions of a standard tee of the required pressure class.
Do not locate SRV inlets where excessive turbulence is present, such as near elbows, tees, bends, orifice plates or throttling valves.
Section VIII of the ASME Boiler and Pressure Vessel Code requires the inlet connection design to consider stress conditions during valve operation, caused by external loading, vibration, and loads due to thermal expansion of the discharge piping. The determination of reaction forces during valve discharge is the responsibility of the vessel and/or piping designer. Dresser publishes certain technical information about reaction forces under various fluid flow conditions, but assumes no liability for the calculations and design of the inlet piping.

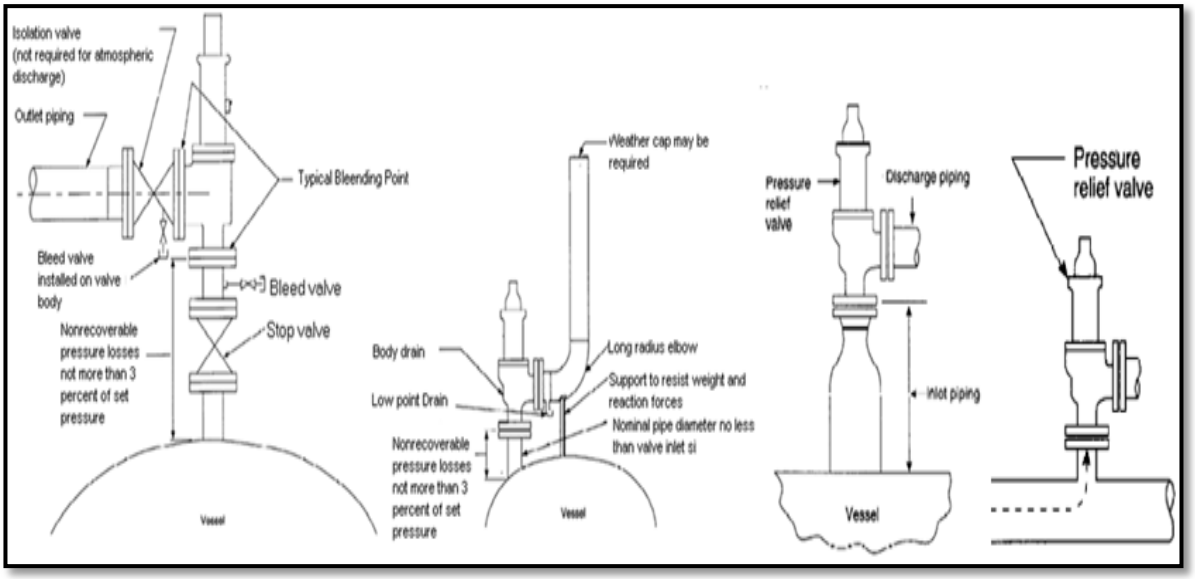


Figure 1-Pressure Drop on the Inlet Piping

External loading, by poorly designed discharge piping and support systems, and forced alignment of discharge piping can cause excessive stresses and distortions in the valve as well as the inlet piping. The stresses in the valve may cause a malfunction or leak. Therefore, discharge piping must be independently supported and carefully aligned.
Vibrations in the inlet piping systems may cause valve seat leakage and/or fatigue failure. These vibrations may cause the disc seat to slide back and forth across the nozzle seat and may result in damage to the seating surfaces. Also, vibration may cause separation of the seating surfaces and premature wear to valve parts. High-frequency vibrations are more detrimental to SRV tightness than low-frequency vibrations. This effect can be minimized by providing a larger difference between the operating pressure of the system and the set pressure of the valve, particularly under high frequency conditions.

Temperature changes in the discharge piping may be caused by fluid flowing from the discharge of the valve or by prolonged exposure to the sun or heat radiated from nearby equipment. A change in the discharge piping temperature will cause a change in the length of the piping, which may cause stresses to be transmitted to the SRV and its inlet piping. Proper support, anchoring or provision for flexibility of the discharge piping can prevent stresses caused by thermal changes. Do not use fixed supports.

Outlet Piping

Alignment of the internal parts of the SRV is important to ensure proper operation (see Figure 2). Although the valve body will withstand a considerable mechanical load, unsupported discharge piping consisting of more than a companion flange, long-radius elbow, and a short vertical pipe is not recommended. Use spring supports to connect outlet piping to prevent thermal expansion from creating strains on the valve. The discharge piping should be designed to allow for vessel expansion as well as expansion of the discharge pipe itself. This is particularly important on long distance lines.

A continual oscillation of the discharge piping (wind loads) may induce stress distortion in the valve body. The resultant movement of the valve's internal parts may cause leakage.

Where possible, use properly supported drainage piping to prevent the collection of water or corrosive liquid in the valve body. When two or more valves are piped to discharge into a common header, the built-up backpressure resulting from the opening of one (or more) valve(s) may cause a superimposed backpressure in the remaining valves. Under these conditions, the use of bellows valves is recommended. The use of bellows valves may also permit the use of a smaller-size manifold.

In every case, the nominal discharge pipe size should be at least as large as the nominal size of the SRV outlet flange. In the case of long discharge piping, the nominal discharge pipe size must sometimes be much larger.

ATTENTION
All non-bellows valves should have a bonnet plug installed. Bellows valves must have an open bonnet vent.

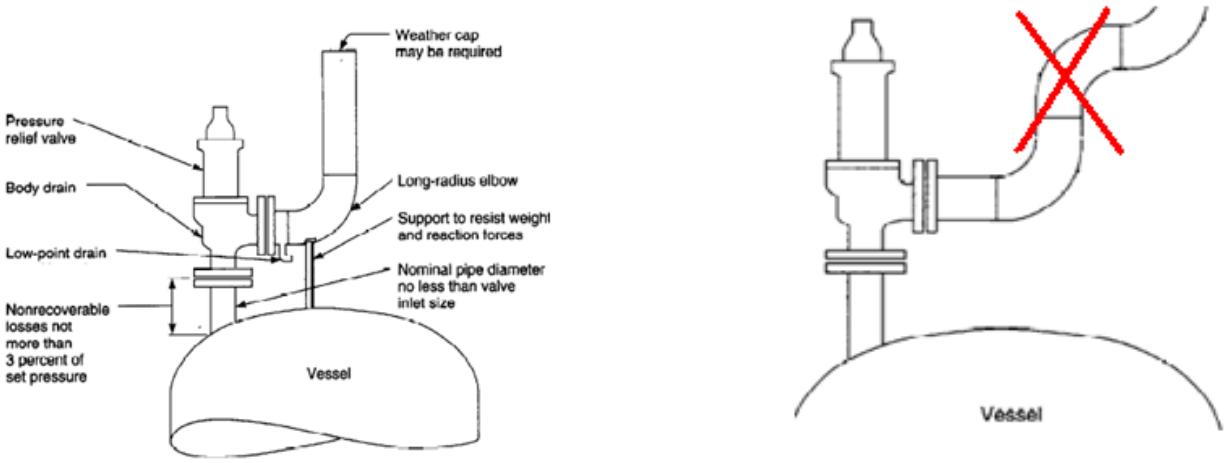


Figure 2-SRV Parts Alignment