

valve is supported rigidly, but the support design requires

3.7.1 Pipe Support. Where necessary, it is recommended that the support near the valve discharge be connected to the main pipe, header, or vessel rather than to adjacent structures in order to minimize differential thermal expansion and seismic interactions.

Each end of the discharge piping should have a support to resist the forces that act. If the piping is not of the rigid type, it should be as near as possible to an adjacent structure. When a large piping system has a plant, the piping if possible, should be supported normal to the plane of the piping. If the piping is not rigid, the piping should be supported in that direction. Dynamic analyses of these systems have shown that out-of-phase motions can be a problem.

3.7.2 Supports. Supports are often used to provide a support or a stop against a rapidly applied load, such as the reaction force of a blowing valve or the pressure-momentum transient in a closed piping system. Since supports generally displace a small distance before becoming rigid, the displacement must be considered in the analysis. In addition, if the load is applied to the support for relatively long time, the support performance characteristics should be reviewed to assure that the support will perform during the time period of interest. The support should be designed to resist the forces caused by the valve reaction and the pressure-momentum transient.

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be aligned and provided with adequate drains if low points are unavoidable in the layout.

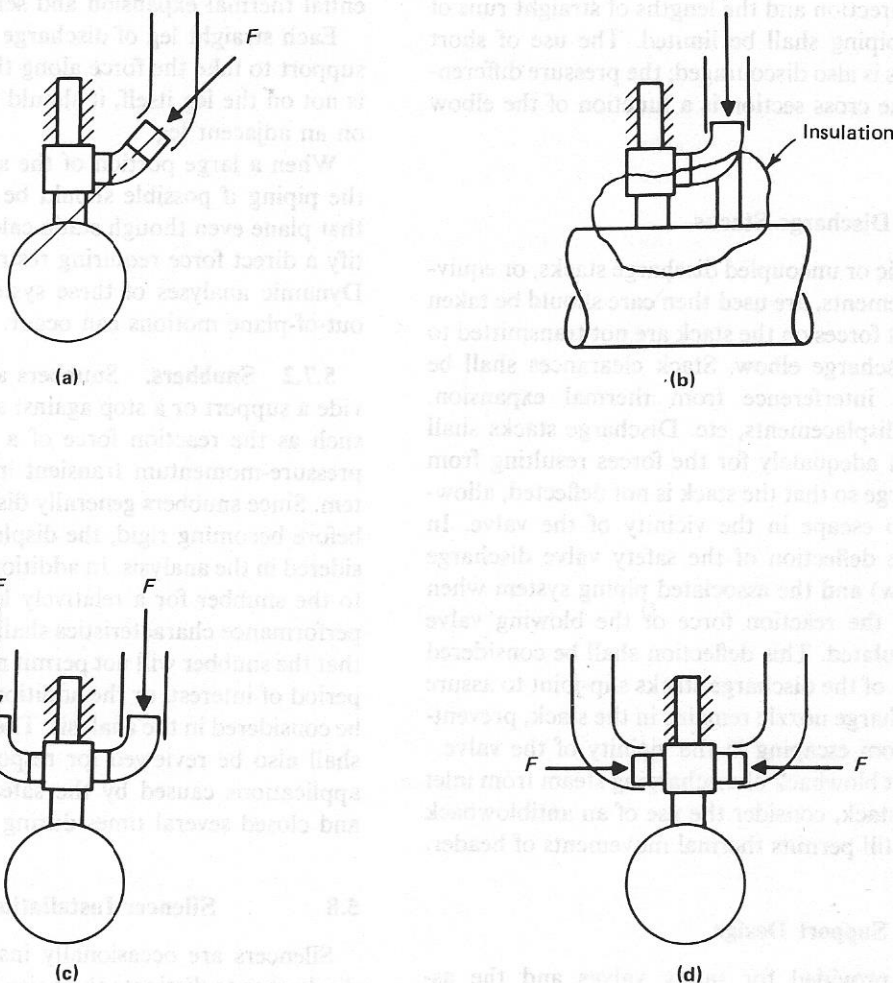
3.7.8 Water Seals. Where water seals are used ahead of the safety valve, the total water volume in the seals shall be minimized. To minimize forces due to slug flow or water seal expansion, the number of changes of direction and the length of straight runs of installation piping shall be limited. The use of short radius elbows is also discouraged. The pressure differential across the cross section of the elbow shall be limited.

3.7.9 Discharge Piping. If telescopic or telescopic-like stacks or expansion joints are used, they should be taken into account in the design. The stacks should be designed to resist the forces resulting from the valve discharge blowdown. The expansion joints should be checked for interference from thermal expansion. Earthquake displacements are Design Basis loads. The valve discharge should be supported adequately for the forces resulting from valve discharge so that the stack is not deflected, allowing steam to escape in the vicinity of the valve. In addition, the deflection of the safety valve discharge nozzle (elbow) and the associated piping system when subjected to the reaction force of the blowing valve shall be considered. The deflection shall be considered in the design of the nozzle and piping to assure that the discharge is not obstructed. The piping system shall be designed to resist the forces caused by the valve reaction and the pressure-momentum transient.

3.7.10 Support Loads. Supports are often used to provide a support or a stop against a rapidly applied load, such as the reaction force of a blowing valve or the pressure-momentum transient in a closed piping system. Since supports generally displace a small distance before becoming rigid, the displacement must be considered in the analysis. In addition, if the load is applied to the support for relatively long time, the support performance characteristics should be reviewed to assure that the support will perform during the time period of interest. The support should be designed to resist the forces caused by the valve reaction and the pressure-momentum transient.

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F = Reaction force

FIG. 6-1