

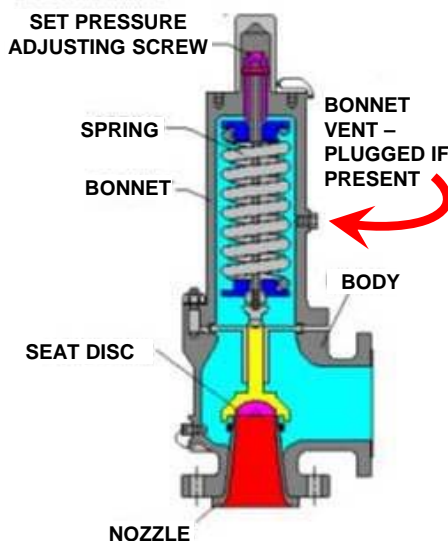
Pressure relief valve bonnets - to plug or not to plug?

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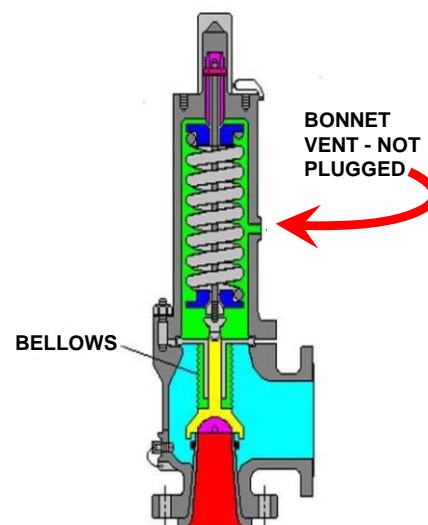
The left photograph and diagram show a conventional spring loaded pressure relief valve. There may be a vent in the bonnet of the relief valve as shown in the diagram at bottom left. If the vent is present, it is normally supposed to be plugged when the valve is in service.

The photograph and diagram on the right show a different kind of pressure relief valve – a balanced bellows pressure relief valve. This valve has a bellows between the process and the valve bonnet. The bellows (when the bonnet is vented to atmosphere) prevents back pressure from assisting the spring in keeping the relief valve closed, and also protects the spring from corrosion. Note that it may be difficult to tell what kind of relief valve is installed from the external appearance of the relief valve.

A balanced bellows relief valve may be used when the relief valve discharges to a collection header instead of directly to the atmosphere. In a conventional relief valve, the bonnet pressure is equal to the downstream pressure, while in a properly vented balanced bellows relief valve the bonnet pressure is atmospheric pressure. For the valve to function as designed, the bonnet of a balanced bellows relief valve must be vented to atmospheric pressure - the vent must not be plugged. It must also vent to a safe place. Note that, in spite of a warning sign, there is a plug in the vent of the balanced bellows relief valve in the picture at top right (red arrow).



CONVENTIONAL



BALANCED BELLOWS

What can you do?

- ➔ Understand what kind of pressure relief valves you have in your plant, and know what you must do to ensure that they work properly.
- ➔ Ask if you have balanced bellows pressure relief valves in your plant. If so, make sure they are clearly identified, and post signs near the valves to remind people that the vent on the valve bonnet must not be plugged. Signs may be the only clear indication of the type of valve to plant operators and maintenance workers, so the signs must be kept in place and visible.
- ➔ If you see a balanced bellows relief valve with the vent plugged, report it so that it can be corrected.

Understand your plant relief valves!