



PRESSURE RELIEF VALVES

OPERATION

All BTI pressure relief valves are spring loaded – pressure actuated devices consisting of a poppet held in the closed position against a sealing face by means of a coil spring. The pressure in the system pushes on the poppet which will open the valve; however, the spring load should be set to ensure that normal operating pressures will not open the valve. When the pressure in the system is equal to the load exerted by the spring, the poppet will begin to lift and release air. If the system pressure holds at this pressure, the spring load will remain in equilibrium and cause a “fluttering” of the poppet on the sealing face which will result in little air being relieved from the system. This point is commonly called warning, cracking or hissing pressure.

If the pressure in the system continues to rise, the pressure pushing on the poppet will also rise and will begin to exceed the load exerted by the spring. When the system pressure exceeds the spring load the poppet will open and release air and will continue to do so as long as the system pressure exceeds the spring load. This point is commonly called set or opening pressure.

If the system pressure continues to rise, the poppet will continue to move farther off the seat and consequently relieve more and more air until the valve is completely open. At this point the valve will be relieving close to its maximum flow rate. As the system pressure decreases the relieving air flow rate will decrease and will continue to do so until the poppet reseats on the sealing face and shuts off. This is commonly called Reseating Pressure.

In practice the valve should be matched to the system it is protecting so that the maximum flow rate of the valve is never utilized. The valve should be capable relieving enough volume flow rate of air to significantly drop the system pressure. The relieving air flow rate should be well in excess of the system input flow rate at the same pressure.

Maintenance, Cleaning and Inspection

MAINTENANCE NOTICE: BTI pressure relief valves are designed and built to be the most accurate and durable valves on the market today. To ensure continued trouble free service it is recommended that periodic maintenance, cleaning and inspection be performed.

When BTI relief valves are used in particulate laden services it is possible that the valve can become contaminated.

For large particle services such as grains and plastic pellets it is possible for them to get trapped between the poppet and the seal surface, this can prevent the valve from re setting.

For services involving fine particles such as cement, fly ash, flour and lime it is possible for the contamination to “cement” the poppet to the valve seat which can lead to inconsistent opening and closing of the valve.

To prevent inconsistent operation we recommend that all relief valves are regularly inspected and cleaned if necessary. Primary attention should be paid to the poppet and seal area of the relief valve, the small vent hole in the cover must also remain free of obstruction in order for the valve to operate as designed.

We recommend the Maintenance, Cleaning and Inspection of these valves be performed with the valve removed from the system.

The maintenance of these products should be carried out by qualified personnel in a clean work environment.