

SELECTING THE SUITABLE VALVE

Selecting the suitable pressure relief valve requires knowledge of the following data :

- The maximum pressure likely to be applied to the valve in normal working conditions, i.e. when it is not supposed to open, either the maximum static pressure, or, in case of pump delivery piping, the zero discharge pressure of pumps.
- The discharge to be released.
- The maximum allowable pressure rise (overpressure) during this discharge.

The discharge generally results from a surge research of piping system. At a rough guess, it can be considered equal to the nominal flow rate of the pipe or, at least, to the maximum flow variation which may occur in a period of L/500 seconds, L being the pipe length in metres.

when once the three above mentioned data have been stated, the specification of the suitable pressure relief valve can be easily laid down.

In case the discharge required exceeds the capacity of the largest available valve or the pressure rise is more than allowable, two or more pressure relief valve can be fitted in parallel.

Example :

Maximum pressure for normal operation is 113mCE. it is required to discharge 270L/s without pressure exceeding 135mCE.

Sealing pressure will be taken as : $113 + 5\% = 119\text{mCE}$.

The 125/32 valve seems to be suitable.

This valve is set for 151mCE, it will discharge 428L/s at a pressure of 171mCE, 20mCE pressure rise. if it is set for 118mCE the maximum pressure will be $118 + 20 = 138\text{mCE}$.

Discharge at this pressure will be :


$$428 \sqrt{\frac{138}{171}} = 384 \text{ L/s}$$

The pressure rise for a discharge of 270L/s will be :
 $20 \times (270/384) = 14\text{mCE}$

The pressure rise for a discharge of 270L/s will be :
 $118 + 14 = 132\text{mCE}$, that means less than 135mCE. The 125/32 valve is therefore suitable.

If the maximum pressure should not exceed 128mCE (pressure rise less than 10mCE) for the same discharge of 270L/s, two 125/32 118mCE valves in parallel would be necessary, each with a discharge of 135L/s.

The pressure rise would be then : $20 \times (135/384) = 7\text{mCE}$
 and the maximum pressure : $118 + 7 = 125\text{mCE}$.

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												PRESSURE RELIEF VALVE				155715			
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