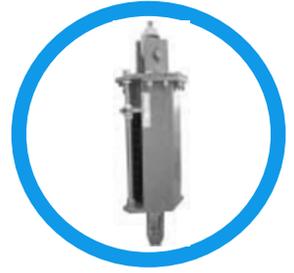
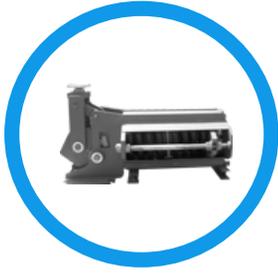


NEWSLETTER

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Variable Spring Hanger vs Constant Load Hanger

One of the critical decisions in the selection of hangers and supports is the selection of the type of spring hanger – **variable** spring hanger or **constant** load hanger.

The main criteria for the selection of the type of spring hangers are:

- 1) variability factor
- 2) value of the thermal movement

1) Variability factor is defined by **MSS SP-58*** as follows:

1.1 Variability factor = (Pipe travel in mm X Spring Rate in Newton/mm)/Operating load in Newton

Pipe travel is the movement of the pipe from cold to hot condition

Spring Rate is the load required for unit deflection of the spring

Operating load is the load supported by the hanger in hot condition

* MSS SP-58 is the widely accepted standard for materials, design, manufacture, selection, application and Installation for pipe hangers.

1.2 While it would have possibly been more appropriate to define the denominator as weight load, it has been probably defined in this way as hot setting of springs is the more prevalent practise. In the practise of hot setting of springs, the **operating load corresponds to the weight of the piping system.**

1.3 MSS-SP 58 specifies the **maximum value of variability factor as 25 %**. In case it is not possible to select a variable spring hanger conforming to this limiting value, then a constant load hanger would have to be selected.

- 1.4 Selection of variable spring hangers is based on either cold setting or hot setting. When cold setting approach is adopted, the weight of the piping system is properly balanced in the cold condition while in the case of hot setting the weight is properly balanced in the hot condition. Since the supporting effort of the variable spring hanger changes with thermal movement, the weight can be properly balanced only in either cold or hot condition and will be unbalanced in the other condition. **Variability factor is a measure of this unbalanced force.** Since it is advisable to limit the unbalanced force, a maximum value is specified for variability factor.
- 1.5 Though the value of 25% is widely adopted, there are many who recommend a much lower value ranging from 6-10 % for critical piping such as Main Steam, Hot Reheat, HP and LP bypass. The flip side of having a very low limiting variability factor is that more of Constant Load hangers will be selected. This causes the piping to be very flexible and reduces its ability to limit the deflection caused by variations in weight.
- 2) Another criterion that is specified in tenders in India is that Constant Load hangers are to be selected **where thermal movement exceeds 40 mm.** This was first specified in the tenders of a major central power utility and has since been adopted by others also.

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Chennai factory: Plot No. 29, Industrial Estate, Perungudi, Chennai - 600 096, India.

Thanjavur factory, Plot No. 18-20, 22, 23. SIDCO Industrial Estate, Nanjikottai, Thanjavur - 613 006 India.

Enquiries: sales@pipehangers.in Tel: +91 44 2496 7711 - 15.