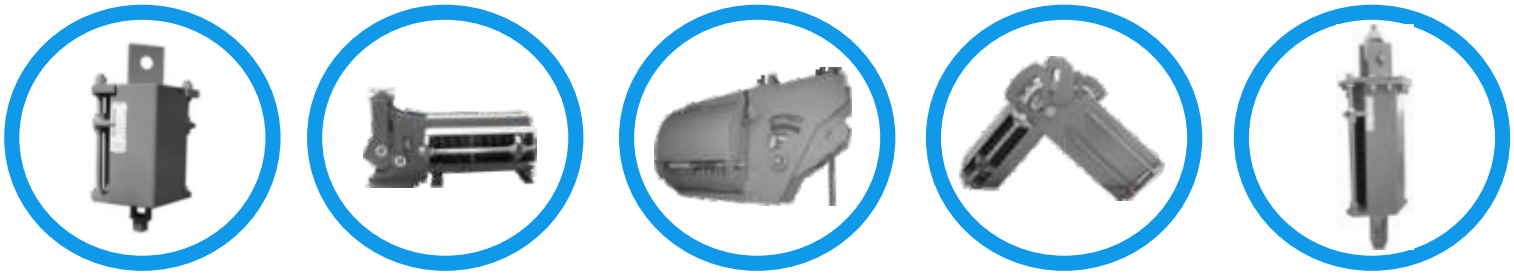
NEWSLETTER

NOVEMBER / 2015



1) In the October-2015 newsletter we have seen that the Cold load is less as compared to (Hot) Operating load (herein after let us call it as Hot load for simplicity) by 50 kg when the Vertical movement of pipe is (-Y).

2. Let us use the same example, with Vertical movement (Y) = +5mm. (herein call it as Y movement & some may refer this as Z movement).

3. In that case the Cold load = Hot load + (+5xS.R) kg = 500+5x10=550 kg (S.R=Spring Rate).

4. So the pipe load in Cold condition (at normal room temp) is Higher by 50 Kg than the Hot load.

5. Either way we now find that depending on the vertical movement (± Y), the cold load acting on the pipe is more or less by 50 Kg, for the same S.R.

6. Referring to the above formula to arrive at the Cold load, the only value that can be changed is S.R (the Spring rate) so that the cold load can be different. (Hot load & Y movement does not change as they are decided by stress analysis for a given pipe routing & load condition).

7. This can be explained by another example.

Hot load = 500 kg
Spring used = 1000/200 Kg/mm
So S.R = 5 Kg/mm (this means a load of 5 Kg is to be applied to compress the spring by 1mm
(When we use spring of 1000/100 Kg/mm the S. R was 10 kg/mm)

Vertical movement(Y) =+5 mm
Now the Cold load = Hot load+ (+5 x S.R)kg= 500+5x5=525 kg. That is in cold condition (normal temp.)
The cold load is 525 Kg & it is Higher only by 25 Kg, as compared to the earlier example. (Which was 550 Kg, ie Higher by 50 Kg).
This means now that by selecting a spring with different value of S.R., the Cold load can be changed.

8. With this present example, let us find the Variability Factor
Variability Factor (V.F) = { (Hot load- Cold load) } / Hot load x100
= {500-525 / 500} x100 or { (Y movement X S.R)/Hot load}x100
= 25/ 500 x 100 = {5x5/500}x100
= 5 % only. When we used S.R= 10 kg/mm this Variability Factor was 10% (first example).

9. So now it is clear, in order to limit the V.F within 25% which is a code requirement, Spring with appropriate S.R value is to be selected.

10. When Y movements are very high say >50 or more, even in some cases it will be in 3 digits, we CAN NOT select Springs satisfying code requirement of 25%.

11. As mentioned in earlier newsletter, some Customers Do NOT recommend selecting Spring Hanger when the ± Y movement is $\geq$ 50 mm.
In such cases “Constant Support hangers” or merely Constant Hangers comes to the rescue & we select them.

12. In fact it is misnomer to call it as “Constant Hangers”, it is more apt to be called as “Constant moment Hangers”. But the former only is in vogue. Let us see how it works in the next Newsletter. Till then bye!