

NEWSLETTER

DECEMBER / 2015



1. We were talking about Constant hangers in the earlier news letter. In a simple form this can be compared with our “Sea saw” which our children play in school or in parks. In this sea saw by properly balancing the weight of each child, we can make them oscillating with respect to the central pivot/fulcrum.

i.e. the weight of child on one side & its distance from pivot at centre is balanced by the weight of the 2nd child on the other side & its distance to the pivot..

2. In the same way in a constant hanger also, we balance the pipe load & load acting distance with supporting force & force acting distance with reference to a common pivot. In a nutshell, the moments (Moment 1 = Load x load acting distance; Moment 2 = Force x Force acting distance) are balanced. (Ref. Fig.1 attached)

i.e. **Load x Load arm = Force x Force arm** (with reference to a pivot point/fulcrum)

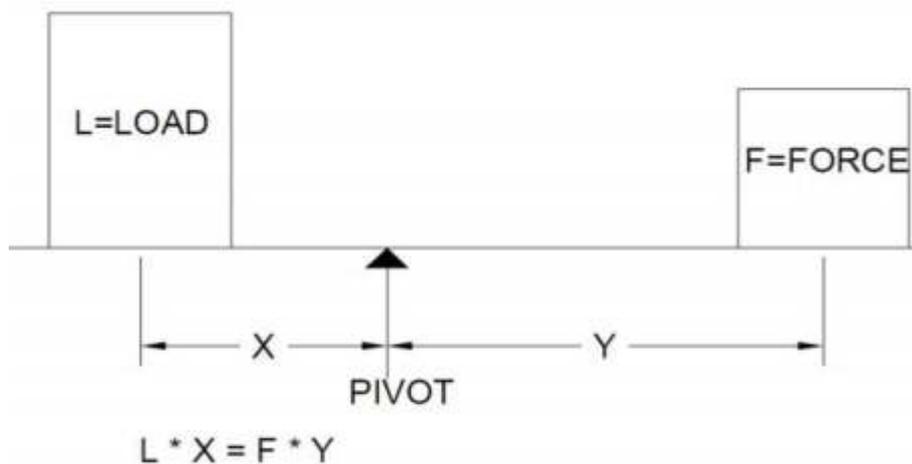


FIG 1

3. This means that by balancing the moments, constant hangers are made to support the same load both in Hot & Cold condition irrespective of any Y movement (the load is not changing for any given vertical movement like spring hangers). Thus by selecting Constant hangers there will be no change in load both in Cold & Hot condition. (Hence we get rid of the code restriction of 25%)

4. Further, spring assembly & constant hanger assembly can be classified in various ways.

In case of spring hanger it is classified based on its spring load Vs compression. In other words S.R value. We have varying Compression values for the same spring load range in order to take care of reasonable value of $\pm Y$ movement.

In our PHS design, for the same range of load (min/max load) spring will have varying compression Like 35, 70, 140, 210 mm respectively. As the compression value increases, the spring is called soft, softer, softest type of spring in a broader sense.

5. Having discussed about spring / constant hangers, let us discuss the types of supports & how they are classified. Broadly depending on the type of load the supports can be classified as the supports for STATIC Load & Supports for DYNAMIC Load (this was briefed in earlier newsletter).

Let us see the details of each a bit more.

6. **STATIC LOAD Supports** (Non cyclic in nature)

The supports that are used to take care of the load/Y movements acting on pipe due to dead weight of pipe insulation, valves & other fittings, of course subjected to temperature of the fluid flowing through the pipe.

7. In these loads, Y movements are got from normal stress analysis (static) through typical well known software named CAESAR (Computer Aided Engineering Stress Analysis Review). This load will be existing so long as pipe is there may be with or without insulation. It does not act sudden & stay momentarily. Hence this load is called "Static Load".

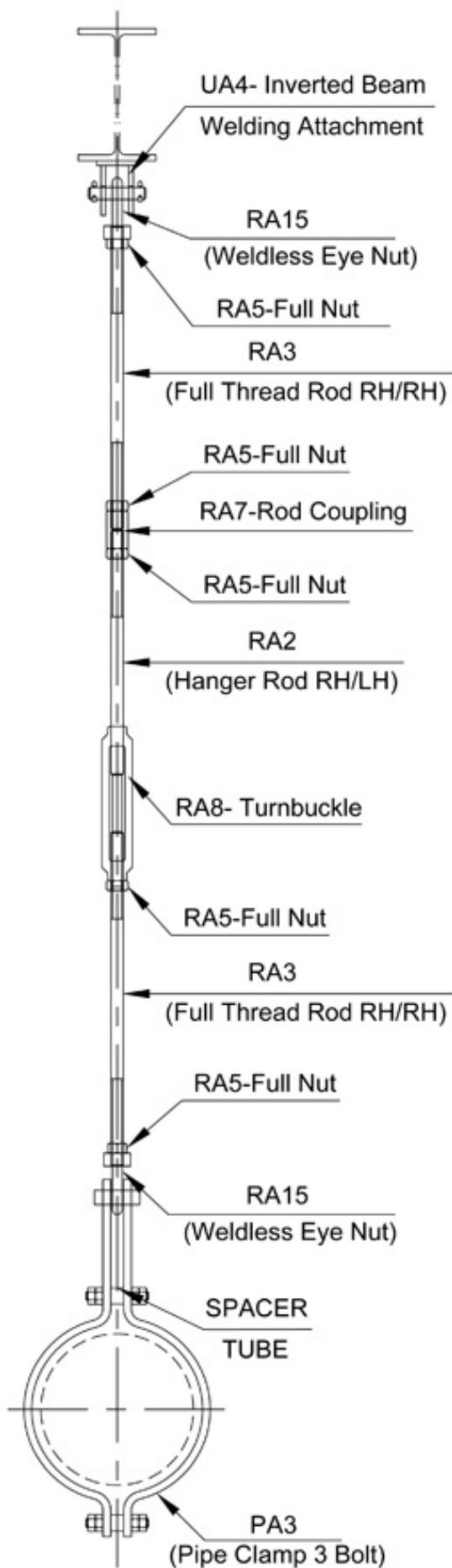
8. Hangers under Static load type can be further classified as

- a. Rigid rod hangers
- b. Spring hangers
- c. Constant Hangers

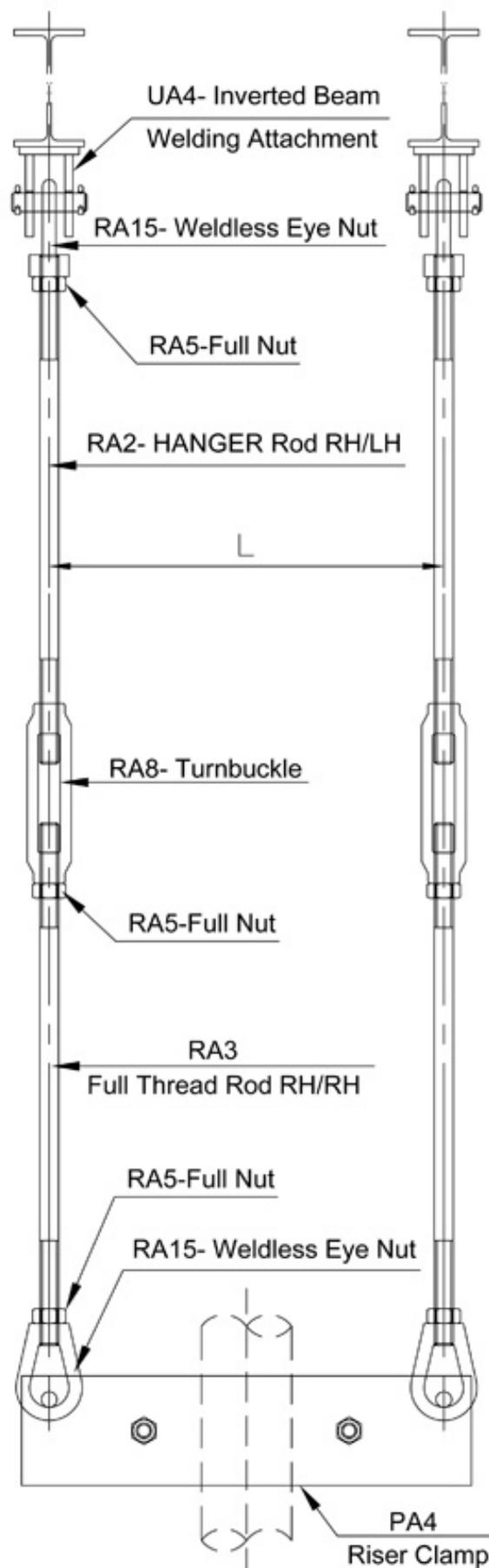
Each of the above hangers may be single, double, special (horizontal, vertical or inclined pipe).

9. Depending on the Arrangement, it is named as single spring hanger for horizontal pipe, Double spring hanger for Horizontal/vertical pipe etc.

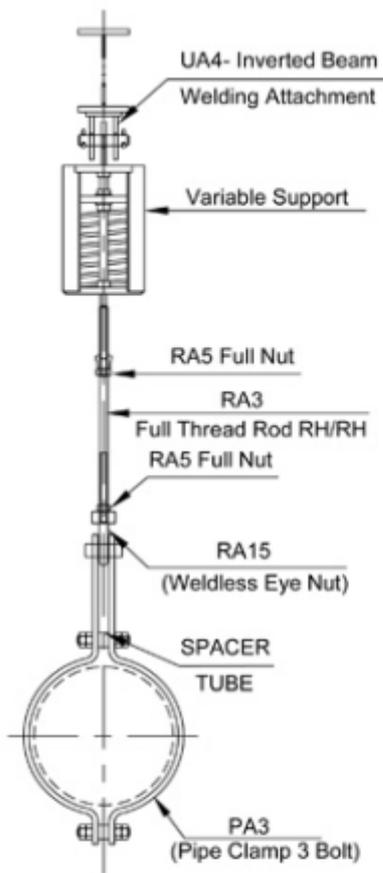
This can be easily understood by the sketches given below.



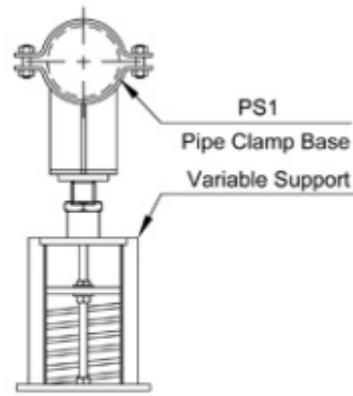
SINGLE - RIGID HANGER
(HORIZONTAL PIPE)



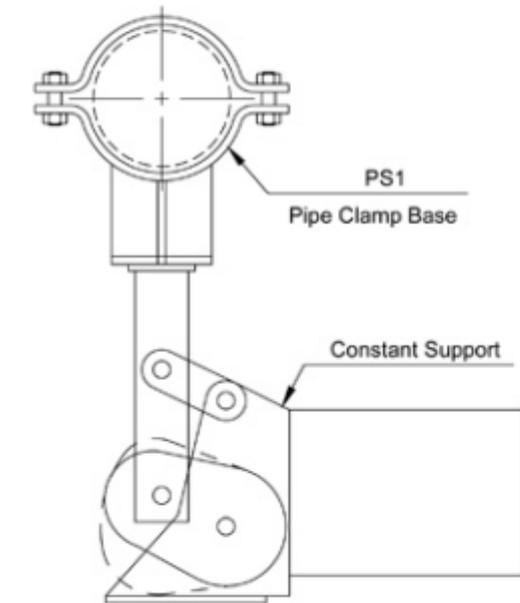
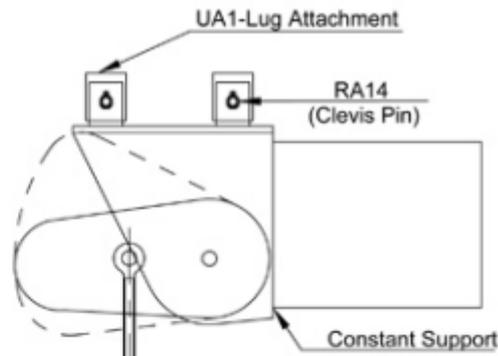
TWIN- RIGID HANGER
(VERTICAL PIPE)



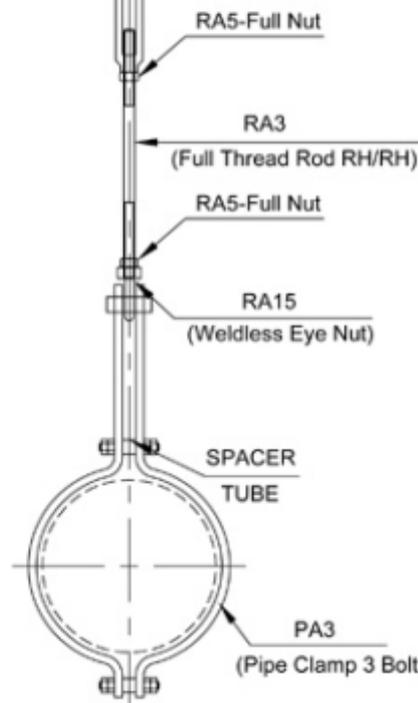
**SINGLE - VARIABLE SPRING HANGER
(HORIZONTAL PIPE)**



**BASE MOUNTED - VARIABLE SUPPORT
(HORIZONTAL PIPE)**



**BASE MOUNTED - CONSTANT SUPPORT
(HORIZONTAL PIPE)**



**SUSPENDED - CONSTANT SUPPORT
(HORIZONTAL PIPE)**

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