

October 15, 2008

To: General Distribution

Re: Calculating Stuffing Box Pressures

The most important thing to know when calculating stuffing box pressures is that there is a WIDE variation of pressures that pumps see in the field. We have found that approximately 90% of the centrifugal pumps that we deal with have a stuffing box pressure of less than 100 psi. But there are exceptions.

The rules for *estimating* the pressure of the fluid at the throat of the stuffing box (the stuffing box pressure) vary with the type of pump design.

For single stage centrifugal pumps the method is as follows:

$$\text{Stuffing box pressure} = \text{Suction} + [(\text{Discharge} - \text{Suction}) / 3]$$

(Some people use a 4 rather than a 3 in this equation - it is an estimate)

For Double suction split case pumps:

$$\text{Stuffing box pressure} = \text{Suction}$$

For most Vertical pumps:

$$\text{Stuffing box pressure} = \text{Discharge}$$

For Multi-Stage Centrifugal pumps the rules are more complicated. On one side of the pump, the stuffing box will see very near suction pressure. On the other side of the pump, the stuffing box pressure is more difficult to determine. In fact, I do not know of any method that can be used. It will vary based on the number of impellers, the pump design, and whether or not they use some type of pressure equalization line between the two stuffing boxes.

The *pressure* in the stuffing box is not dependent on the clearance at the throat. It is dependent upon the location of the stuffing box relative to the area where the impeller is turning, and the pump and impeller design.

Please feel free to contact Applications Engineering should you require anything further.

Sincerely,



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