



Rules of Thumb—Tech Talk April 2014

Did you ever notice how few technical books exist in the average plant maintenance shop? That’s because we learn procedures that govern the best operation of our equipment and we stick to them...if we are smart. We also develop or learn our own rules of thumb that allow us to do quick calculations without getting bogged down in absolutes. I have listed some below that I have learned and used to my advantage over the years, showing how close the approximation is to the exact value.

For those of you who would like to learn more, I offer this 478 page pdf download, 4MB, of an interesting book “Rules of Thumb in Engineering Practice” http://hollandindustrial.com/PDF%20Files/Rules_Thumb_Engineering.pdf

To Find	Further	Error
Motor Current @ 460v, 3Φ	HP x 1.25	
Motor Current @230v.3Φ	HP x 2.5	
Motor Current @ 575v, 3Φ	HP x 1	
For π use 3	π is actually 22/7=3.14286	error is 3/3.14286 =0.9545 So by using 3 as pi the error will be 100-95.45 = 4.55 %,so less than 5% off
Circumference of circle is 3 x Diameter	So 8 in pulley has circumference of 24 in	so now much easier to calculate fpm,if shaft turning @ 20 rpm,the fpm of belt on an 8 in dia conveyor pulley is 8/12 x3 x20 =40 fpm
Use 1 mm as 40 thou	1/25.4 = 0.0393	so error is 40/39.3= 1.0178,so error is 1.78% ≤ 2%
Use 750 watts = 1 HP or 1HP =3/4 KW	actual 746 out of 750 746/750=99.47%	so error is 0.53% , ≤ 1%....example 20HP= 20 x 3/4 =15 KW
Use 1 liter = 1 quart	1 liter actually 1.057 quarts	so % error is 5.7 %

Obviously if we are machining a part or need to be exact we do not use approximations

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