

February 8, 1996

VALVE TORQUE CALCULATIONS

1) Calculate the packing surface area (A):

$$A = \frac{(D^2 - d^2) \pi}{4}$$

Where: D = Stuffing box bore (in)
d = Stem diameter (in)

2) Determine the load factor (LF):

When using a 9000-EVSP Simplified set or a 98/GRAPH-LOCK® set,
LF = 1.5 X System Pressure or 3800 psi (whichever is greater)

When using a braided packing set design,
LF = 1.5 X System Pressure or 5500 psi (whichever is greater)

3) Calculate the force on the gland follower (F):

$$F = A \times LF$$

Where: A = Packing surface area (sq. in.)
LF = Load factor (psi)

4) Calculate the gland bolt torque (T): (resultant value in units of in-lbs.)

$$T = \frac{(0.2 \times F \times \Phi)}{B}$$

Where: F = Force exerted by gland (lbs)
 Φ = Gland Bolt diameter (in)
B = Number of gland bolts