

<b>Bolt Torque Required for Sealing Flanges with Gaskets Calculator</b>		
Blocks shown as light blue are editable		
external bending moment, $M =$	15.000	in.-lb
diameter at location of gasket load reaction, $G =$	6.000	in
test pressure, $P_r =$	450.000	psi
internal pressure, $P =$	90.000	psi
effective gasket seating diameter width, $b =$	3.0000	in
gasket factor, $m =$	1.0000	-
gasket unit seating load, $y =$	35.0000	psi
cross-sectional area of bolts, $A_b =$	1.1800	in <sup>2</sup>
modulus of elasticity of bolting material at temperature, $E_b =$	65000.00	psi
thickness of gasket, $t_g =$	0.0800	in
modulus of elasticity of gasket material at temperature, $E_g =$	26.00	psi
effective length of bolt, mid nut to mid nut, $l_b =$	1.0000	in
Total friction factor between bolt/nut and nut/ flange face, $K =$	0.2500	-
Diameter of bolt/fastener $D =$	0.5000	in
pitch diameter of threads, $d_m =$	0.4485	in
number of bolts, $n =$	6	#
<b>Results</b>		
Eq. 1, Equivalent Pressure $P_c =$	106.269	lb
Eq. 2, Hydrostatic end force $H =$	3004.690	lb
Eq. 3, Total joint-contact-surface compression load $H_p =$	12018.760	lb
Eq. 4, Minimum required bolt load for gasket seating $W_{m2} =$	1979.203	lb
Eq. 5, Actual joint area contact for gasket $A_g =$	113.097	in <sup>2</sup>
Eq. 6, Decreasing compression force in gasket $\Delta F =$	973.432	lb
Eq. 7, Initial required tightening force (tension) $F_{b0} =$	12992.192	lb
Eq. 8, Total tightening force required to seal joint, $W =$	12992.192	lb
Eq. 9, Required torque $T =$	20.233	lb-ft