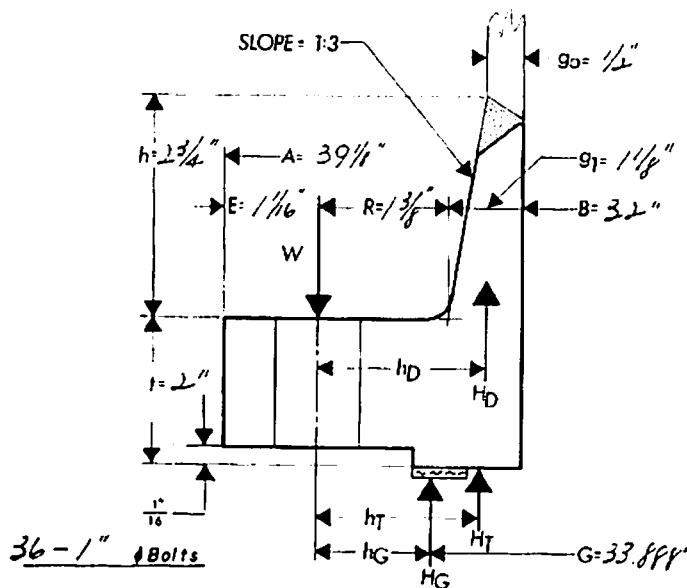


# EXAMPLE 1

# WELDING NECK FLANGE DESIGN

1 DESIGN CONDITIONS			2 GASKET	FACE	3 FROM Fig. UA-49
Design Pressure, P	200		33" ID X 36" OD X 1/16"  TH'K. ASB. COMP.	34 1/2" OD X 1/16" RF	N = 0.750"
Design Temperature	500°F				b = 0.306"
Flange Material	A105				G = 33.888"
Boiling Material	A193-B7				r = 3700
Corrosion Allowance	0		m = 2.750		
			4 LOAD AND BOLT CALCULATIONS		
Allowable Stress	Flange	Design Temp., S <sub>10</sub>	17,500	W <sub>m2</sub> = bπGγ = 120609	A <sub>m</sub> = $\frac{W_{m2}}{S_0}$ or $\frac{W_{m1}}{S_b}$ = 17.299
		Atm. Temp., S <sub>10</sub>	17,500	H <sub>m</sub> = 2bπGmP = 71713	A <sub>b</sub> = 19.836
	Bolting	Design Temp., S <sub>b</sub>	25,000	H = G²πP/4 = 360771	W = .5(A <sub>m</sub> + A <sub>b</sub> )S <sub>c</sub> = 264192
		Atm. Temp., S <sub>b</sub>	25,000	W <sub>m</sub> = H <sub>m</sub> + H = 432484	
CONDITION					
		LOAD	X	LEVER ARM	MOMENT
5	Operating	H <sub>D</sub> = πB²P/4 = 321699	h <sub>D</sub> = R1 .5g <sub>1</sub> = 1.938"	M <sub>D</sub> = H <sub>D</sub> h <sub>D</sub> = 623292	
		H <sub>G</sub> = W <sub>m1</sub> - H = 71713	h <sub>G</sub> = .5(C - G) = 1.556"	M <sub>G</sub> = H <sub>G</sub> h <sub>G</sub> = 111599	
		H <sub>T</sub> = H - H <sub>D</sub> = 39072	h <sub>T</sub> = .5(R + g + h <sub>G</sub> ) = 2.028"	M <sub>T</sub> = H <sub>T</sub> h <sub>T</sub> = 79242	
				M <sub>0</sub> = 814133	
Seating	H <sub>C</sub> = W = 264192	h <sub>C</sub> = .5(C - G) = 1.556"	M <sub>C</sub> = 722371		
8 Allowable Stress					
STRESS CALCULATION—Operating					
1.5 S <sub>10</sub>	Long. Hub, S <sub>H</sub> = f <sub>m0</sub> /λg <sub>1</sub> ² = 22865	6 K AND HUB FACTORS			
S <sub>10</sub>	Radial Flg., S <sub>R</sub> = βm <sub>0</sub> /λt² = 10982	K = A/B = 1.223	h/h <sub>0</sub> = 0.688		
S <sub>10</sub>	Tang. Flg., S <sub>T</sub> = m <sub>0</sub> Y/t² - ZS <sub>R</sub> = 6800	T = 1.830	F = 0.777		
S <sub>10</sub>	$\frac{g_1}{g_0}$ or .5(S <sub>H</sub> + S <sub>R</sub> ) or .5(S <sub>H</sub> + S <sub>T</sub> ) = 16923	Z = 5.041	V = 0.162		
		Y = 9.773	I = 1.000		
9 Allowable Stress	STRESS CALCULATION—seating		U = 10.740	e = t/h <sub>0</sub> = 0.194	
	1.5 S <sub>10</sub>	Long. Hub, S <sub>H</sub> = f <sub>m0</sub> /λg <sub>1</sub> ² = 20288	g <sub>1</sub> /g <sub>0</sub> = 2.250	d = $\frac{U}{V} t_0 g_0^2 = 66.4P$	
	S <sub>10</sub>	Radial Flg., S <sub>R</sub> = βm <sub>0</sub> /λt² = 9744	h <sub>0</sub> = √8g <sub>0</sub> = 4.000		
	S <sub>10</sub>	Tang. Flg., S <sub>T</sub> = m <sub>0</sub> Y/t² - ZS <sub>R</sub> = 6033	7 STRESS FORMULA FACTORS		
S <sub>10</sub>	$\frac{g_1}{g_0}$ or .5(S <sub>H</sub> + S <sub>R</sub> ) or .5(S <sub>H</sub> + S <sub>T</sub> ) = 15016	f = 2.000"			



G+W Taylor-Bonney Division



Computed DLS Date 7-17-79  
Checked \_\_\_\_\_ Number \_\_\_\_\_