



Anchor flanges to be dimensioned in accordance to ASME VIII (Example of calculation)

This calculation is according to ASME VIII Div.1 App.2

Outside Diameter of Pipe	18
Schedule Number	SPECIAL
Pipe Material	A350 LF9 (Forgings)
Design Pressure	P = 69 bar
Test Pressure	P _{TEST} = 69 bar
Installation Temperature	T _{INST} = 50 °C
Maximum Temperature	T _{MAX} = 85 °C
Minimum Temperature	T _{MIN} = -4 °C
Test Temperature	T _{TEST} = 20 °C
Corrosion Allowance	c = 0.0 mm
Types of Flange	Integral Type Flange
Size of Flange	Heavy Size Flange
Flange Material	A350 LF9 (Forgings)
Type of Conglomerate	Normale 325

imperial unit		metric unit
A = 24.75		628.65
DF = 19.38		492.25
C = 18		457.20
B = 17.25		438.14
	H = 2.380	60.45
	T = 2.250	57.15
	H = 2.380	60.45
	g₀ = 0.375	9.53
	g₁ = 1.065	27.06

CALCULATION					
DESCRIPTION	DEF.	Imperial		Metric	
		Values	Unit of Measure	Values	Unit of Measure
INPUT					
Outside Diameter of Pipe	DN	18.000	in	457.20	mm
Pipe Wall Thickness	t	0.375	in	9.53	mm
Pipe Inside Diameter	d	17.250	in	438.14	mm
Corrosion Allowance	c	0.000	in	0	mm
Design Pressure	P	1001	psi	6.90	MPa
Design Pressure at Test Temperature	P _{TEST}	1001	psi	6.90	MPa
Installation Temperature	T _{INST}	122	°F	50	°C
Maximum Temperature	T _{MAX}	185	°F	85	°C
Minimum Temperature	T _{MIN}	24.8	°F	-4	°C
Test Temperature	T _{TEST}	68	°F	20	°C
Allowable Pipe Stress at Operating Condition	S _{p,OP}	20000	psi	138	MPa
Allowable Pipe Stress at Test Temperature	S _{p,TEST}	37500	psi	259	MPa
Allowable Flange Stress at Operating Condition	S _{af,OP}	37500	psi	259	MPa
Allowable Flange Stress at Test Temperature	S _{af,TEST}	37500	psi	259	MPa
Allowable Bearing Stress	S _b	4714	psi	32.5	MPa
Modulus of Elasticity at Operating Condition	E	2.72E+07	psi	187405	MPa
Modulus of Elasticity at Test Temperature	E _{TEST}	2.85E+07	psi	196549	MPa
Mean Coefficient of Thermal Expansion at Operating Condition	CT	6.67E-06	in/in/°F	1.20E-05	mm/mm/°C
Mean Coefficient of Thermal Expansion at Test Temperature	CT _{TEST}	6.40E-06	in/in/°F	1.15E-05	mm/mm/°C