

**Table 2 Thermal Expansion of Pipe per 100 feet**

Linear thermal expansion of pipe per 100 feet between 70°F and the tabulated temperature.

The tabulated values in Columns 5 and 6 are measured in inches per 100 feet of pipe run.

Saturated Steam		Temperature		Carbon Steel Pipe	Austenitic Stainless Steel
Vacuum (Hg)	Pressure (psig)	°F	°C		
		-50	-46	-0.84	-1.24
		0	-18	-0.49	-0.72
		25	-4	-0.32	-0.46
29.7		32	0	-0.27	-0.40
29.6		50	10	-0.14	-0.21
29.2		70	21	0	0
28.0		100	38	0.23	0.34
26.0		125	52	0.42	0.62
22.4		150	66	0.61	0.90
16.3		175	80	0.80	1.18
6.0		200	93	0.99	1.46
0		212	100	1.10	1.60
	4	225	107	1.21	1.75
	5	250	121	1.40	2.03
	31	275	135	1.61	2.32
	52	300	149	1.82	2.61
	82	325	163	2.04	2.90
	120	350	177	2.26	3.20
	169	375	191	2.48	3.50
	232	400	205	2.70	3.80
	311	425	219	2.93	4.10
	407	450	232	3.16	4.41
	525	475	246	3.39	4.71
	664	500	260	3.62	5.01
1	2	3	4	5	6

**Table 3 Pressure Thrust and Seal Force Data/Series 6500 Packed Expansion Joints**

Nominal Size (NPS)	Effective Area (square inches)	Joint Seal Force (lbs)	Tabulated Force (pounds) for Individual Pressure					
			50 psig	100 psig	150 psig	225 psig	300 psig	450 psig
2	4.0	1700	199	398	596	895	1193	1789
2 1/2	5.9	2125	297	594	891	1337	1782	2673
3	8.9	2550	447	895	1342	2013	2684	4026
4	15.0	3400	752	1503	2255	3382	4510	6765
5	23.2	4250	1161	2322	3483	5225	6966	10449
6	32.5	5100	1627	3255	4882	7323	9764	14647
8	55.9	6800	2796	5591	8387	12581	16774	25161
10	86.6	8500	4330	8659	12989	19483	25977	38966
12	123.0	10,200	6136	12272	18480	27612	36816	55224
14	148.0	11,900	7424	14849	22274	33410	44547	66821
16	195.0	13,600	9742	19483	29225	43837	58449	87674
18	247.0	15,300	12373	24745	37118	55676	74235	111353
20	306.0	17,000	15318	30636	45954	68931	91908	137862
24	443.0	20,400	22151	44301	66452	99677	132903	199355
1	2	3	4	5	6	7	8	9

The Seal Force, Column 3, is the maximum value allowed. Each joint is cycled and the value measured for quality assurance.