

Universal Fiberglass LLC

Elongation (in/in) for each pipe described at various load (to know actual stretch in inches multiply Elongation by length of pipe **IN INCHES not in feet**)

Pipe Size (ID in Inches)	Description	Cross Sectional Area (in ²)	Max. Rated Tension (lbs)	Stress At peak (psi)	Modulus (ksi)	Load (lbs)																							
						0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	12000	15000	20000	25000	30000	35000	40000	45000	50000	55000	60000		
6	Standard -8bolts pattern	6.395	37000	5798	2506	0	0.00064440	0.00012872	0.00019271	0.00025621	0.000319	0.000381	0.000444	0.00050587	0.0005679	0.00063011	0.00075563	0.00094524	0.001273	0.0016259	0.002308	0.037274							
6	WaterLube-8Bolts pattern	6.562	34660	5282	2438	0	0.00068413	0.00013334	0.00019784	0.00026168	0.000325	0.000389	0.000451	0.00051422	0.00057671	0.00063901	0.00076366	0.00095185	0.001317	0.0016862	0.002219	Br point							
8	Standard -10Bolts pattern	9.099	49300	5420	2872	0	0.000045013	0.000083496	0.00012041	0.00015821	0.000196	0.000234	0.000272	0.00031051	0.00034955	0.00038816	0.00046659	0.00058729	0.000793	0.0010072	0.001229	0.001457	0.001702	0.001962	Br Point				
8	WaterLube-8Bolts pattern	8.718	45915	5267	3116	0	0.000041578	0.000078426	0.00011543	0.00015316	0.000191	0.00023	0.000269	0.00030742	0.00034517	0.00038221	0.00045525	0.00056633	0.000775	0.0010404	0.001261	0.00149	0.00175	0.002054	Br Point				
8	Heavy Duty-10bolts pattern	9.045	46660	5159	2622	0	0.000043254	0.000085612	0.00012801	0.0001707	0.000213	0.000256	0.000298	0.00034177	0.00038433	0.00042678	0.00051094	0.0006371	0.000849	0.0010701	0.001296	0.00153	0.001785	0.002094	Br Point				
8	Hand Woven Flange-10bolts	8.500	43485	5116	2714	0	0.000044953	0.000088494	0.00013158	0.00017479	0.000218	0.000261	0.000304	0.00034768	0.00039115	0.00043464	0.00052211	0.00065404	0.000879	0.0011339	0.001386	0.001672	0.002012	Br Point					
8	Fiber System Flanges-10bolts	8.690	42309	4869	2598	0	0.000045843	0.000089999	0.00013369	0.00017774	0.000222	0.000266	0.000311	0.00035596	0.00040116	0.00044616	0.00053816	0.00067841	0.000915	0.0011802	0.001467	0.001795	0.002207	Br Point					
8	Nipple Coupling-8 Bolts	9.017	57455	6372	2710	0	0.000041274	0.000081384	0.00013071	0.00016972	0.000209	0.000249	0.000289	0.00032882	0.00036895	0.00040946	0.00049366	0.00062286	0.000836	0.0010469	0.001261	0.001475	0.001702	0.001966	0.002324	0.0027945			
10	Standard -12 bolts pattern	13.035	50000*	3836*	2424	0	0.000031837	0.000062469	0.000093501	0.00012512	0.000157	0.000189	0.000221	0.00025304	0.00028549	0.00031744	0.00038219	0.00047992	0.000645	0.0008125	0.000984	0.001157	0.001336	0.001525	0.001798	By extrap.			
10	WaterLube-10Bolts pattern	13.239	60000**	4532	2632	0	0.00003044	0.000058113	0.000085755	0.00011453	0.000143	0.000172	0.000202	0.00023066	0.00026027	0.00028979	0.00034967	0.00043879	0.00059	0.0007469	0.000901	0.001058	0.001221	0.013883	0.001555	0.0017443	0.0020112		
10	Nipple Coupling-12 Bolts	13.817	60000**	4341	2743	0	0.000017024	0.00004088	0.000065476	0.000091476	0.000119	0.000146	0.000175	0.0002034	0.00023218	0.00026114	0.00031949	0.00041075	0.000575	0.0007334	0.000897	0.001054	0.001204	0.001353	0.001504	0.0016459	0.0018003		

*initial test was stopped at 50000lbs (test limit in method was set at 50000lbs max later changed to 60000lbs)

**Test reached the limit of the equipment at 60000lbs and was stopped

NOTE: Minimum thickness requirements for this table to be valid:

Diameter	Wall thickness
6 inches	0.335
8 inches	0.345
10 inches	0.420