



PULLOUT LOADS IN STEEL AND CONCRETE



Performance Tables

FASTENERS IN STEEL

PART NUMBER SERIES	SHANK DIA. (INCH)	TYPE OF SHANK	INSTALLED IN A36 STRUCTURAL STEEL—STEEL THICKNESS (INCHES)									
			ALLOWABLE LOAD — <i>Ultimate Load</i>									
			3/16		1/4		3/8		1/2		3/4	
TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	
1500/1600	0.145	SMOOTH	81 790	373 2039	181 1269	273 1642	397 2169	489 2771	243 1328 ⁸	277 1514 ⁸	----	----
		KNURLED	296 1633	636 3516	584 3384	659 3822	680 3755	730 4030	253 1459 ⁸	293 1632 ⁸	----	----
SP	0.150	SMOOTH	385 2107	662 3618	445 2549	477 2736	393 2145	574 3137	948 5180	597 3500	234 1244 ⁸	356 1895 ⁸
3300	0.180	SMOOTH	281 1536	580 3169	385 2212	507 2931	460 2631	644 3518	641 3499	684 3739	----	----
9100	0.205	KNURLED	160 1469	931 5084	350 3115	617 3542	843 4605	803 4391	565 3086 ⁹	547 3373 ⁹	----	----

PART NUMBER SERIES	SHANK DIA. (INCH)	TYPE OF SHANK	INSTALLED IN A572 GRADE 50 STRUCTURAL STEEL—STEEL THICKNESS (INCHES)									
			ALLOWABLE LOAD — <i>Ultimate Load</i>									
			3/16		1/4		3/8		1/2		3/4	
TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	
1500/1600	0.145	SMOOTH	----	----	----	----	----	----	----	----	----	----
		KNURLED	260 1609	499 3182	579 3411	725 4272	383 2216 ⁷	595 3431 ⁷	----	----	----	----
SP	0.150	SMOOTH	356 2123	569 3394	554 3232	637 3710	604 3447	602 3437	814 4473 ⁹	820 4503 ⁹	243 1362 ⁸	381 2141 ⁸
3300	0.180	SMOOTH	----	----	----	----	----	----	----	----	----	----
9100	0.205	KNURLED	365 2175	903 5385	697 4061	907 5285	155 842 ⁷	376 2143 ⁷	----	----	----	----

Note 1: ALLOWABLE loads are shown in the **LARGE BOLD** font, *Ultimate* loads are shown in *smaller italic* font. **Note 2:** Testing conducted in accordance with ICC AC70 & ASTM E1190. **Note 3:** Safety factors are based on coefficient of variation. In accordance with ICC AC70, the safety factor will be no less than 5. **Note 4:** Cyclic, fatigue, shock loads, and other design criteria may require a different safety factor. **Note 5:** Job site testing may be required to determine actual job site values. **Note 6:** Values shown are for fastenings that have the entire pointed end of the fastener driven through the steel plate; except as noted below. **Note 7:** Fastener penetration is 3/8" minimum. **Note 8:** Fastener penetration is 7/16" minimum. **Note 9:** Fastener penetration is 1/2" minimum. **Note 10:** For Sl: 1 lbf = 4.448 N, 1 inch = 25.4 mm, 1 ksi = 6.89MPa

Tables converted to metric are available on our website.

FASTENERS IN LIGHTWEIGHT CONCRETE

PART NUMBER SERIES	SHANK DIAMETER (INCH)	MINIMUM PENETRATION (INCH)	ALLOWABLE WORKING VALUES INSTALLED IN 3000 PSI LIGHTWEIGHT CONCRETE							
			ALLOWABLE LOAD — <i>Ultimate Load</i>							
			3000 PSI LIGHTWEIGHT W/DECKING				3000 PSI LIGHTWEIGHT			
LOWER FLUTE TENSION		LOWER FLUTE SHEAR		TENSION		SHEAR				
1500 SERIES	0.145	3/4	76	395	260	1409	167	837	179	894
		1	134	668	265	1505	200	998	228	1141
		1-1/4	157	784	269	1344	333	1664	400	2090
		1-1/2	233	1163	346	1728	391	1957	410	2050
SP SERIES	.150/.180	1	119	593	336	1679	226	1129	250	1249
		1-1/4	175	957	372	1860	329	1644	377	1885
		1-1/2	179	1055	426	2128	406	2030	380	1900
9100 SERIES	0.205	3/4	70	351	277	1386	----	----	----	----
		1	112	559	378	1891	----	----	----	----
		1-1/4	118	689	----	----	----	----	----	----

Note 1: ALLOWABLE loads are shown in the **LARGE BOLD** font, *Ultimate* loads are shown in *smaller italic* font. **Note 2:** Testing conducted in accordance with ICC AC70 & ASTM E1190. **Note 3:** Safety factors are based on coefficient of variation. In accordance with ICC AC70, the safety factor will be no less than 5. **Note 4:** Values shown in concrete are for the fastener only. Connected members must be investigated separately. **Note 5:** Cyclic, fatigue, shock loads, and other design criteria may require a different safety factor. **Note 6:** Job site testing may be required to determine actual job site values. **Note 7:** For Sl: 1 lbf = 4.448 N, 1 inch = 25.4 mm, 1 ksi = 6.89MPa

Tables converted to metric are available on our website.

Performance/
Submittal