

3.6.4.3 TECHNICAL DATA

Ultimate tensile strengths - pullout (tension), lb (kN)^{1,2,3,4,5,8}

Screw designation	Nominal diameter in.	Thickness of member not in contact with the screw head										
		Steel ⁶ , ga (in.) or in.								Aluminum ⁷ , in.		
		18 (0.048)	16 (0.060)	14 (0.075)	12 (0.105)	1/8	3/16	1/4	5/16	1/8	1/4	3/8
#10-16	0.190	410 (1.82)	580 (2.58)	710 (3.16)	920 (4.09)	890 (3.96)	-	-	-	920 (4.09)	-	-
#12-14	0.216	395 (1.76)	615 (2.74)	790 (3.51)	985 (4.38)	1530 (6.81)	1995 (8.87)	-	-	630 (2.80)	2745 (12.21)	-
1/4-14	0.250	395 (1.76)	620 (2.76)	765 (3.40)	1025 (4.56)	1685 (7.50)	2695 (11.99)	-	-	720 (3.20)	2905 (12.92)	-
1/4-20	0.250	-	610 (2.71)	780 (3.47)	1270 (5.65)	1570 (6.98)	2740 (12.19)	3130 (13.92)	3620 (16.10)	690 (3.07)	2100 (9.34)	4365 (19.42)
5/16-18	0.313	-	-	-	1560 (6.94)	2120 (9.43)	-	-	-	-	-	-
5/16-24	0.313	-	-	-	1375 (6.12)	1910 (8.50)	2170 (9.65)	3565 (15.86)	4270 (18.99)	-	-	-

- The lower of the ultimate pullout, pullover, and tension fastener strength of screw should be used for design.
- Load values based upon testing completed in accordance with AISI S905.
- AISI S100 recommends a safety factor of 3.0 be applied for allowable strength design, a Φ factor of 0.5 be applied for LRFD design and a Φ factor of 0.4 be applied for LSD design.
- ANSI/ASME standard screw diameters were used in the calculations and are listed in the tables.
- The screw diameters in the table above are available in head styles of pan, hex washer head, pancake, flat, wafer and bugle.
- The load data in the table is based upon sheet steel with $F_u = 45$ ksi. For $F_u = 55$ ksi steel, multiply values by 1.22. For $F_u = 65$ ksi steel, multiply values by 1.44.
- Load values based upon testing in 6063-T5 aluminum alloy.
- Refer to Section 3.6.4.5 to ensure drilling capacities.

Ultimate tensile strengths - pullover (tension), lb (kN)^{1,2,4,5,7}

Screw designation	Washer or head diameter in.	Thickness of member in contact with the screw head								
		Steel ⁶ , ga (in.) or in.								
		18 (0.048) ³	16 (0.060)	14 (0.075)	12 (0.105)	1/8	3/16	1/4	5/16	
Hex Washer Head (HWH)										
#10-16	0.384	1245 (5.54)	1445 (6.43)	1445 (6.43)	1445 (6.43)	1445 (6.43)	-	-	-	-
#12-14 #12-24	0.398	1290 (5.74)	1610 ³ (7.16)	2015 ³ (8.96)	2200 (9.79)	2200 (9.79)	2200 (9.79)	-	-	-
1/4-14	0.480	1555 (6.92)	1945 ³ (8.65)	2430 ³ (10.81)	3380 (15.03)	3380 (15.03)	3380 (15.03)	-	-	-
1/4-20	0.480	-	1945 ³ (8.65)	2430 ³ (10.81)	3380 (15.03)	3380 (15.03)	3380 (15.03)	3380 (15.03)	3380 (15.03)	3380 (15.03)
5/16-18	0.600	-	-	-	3505 (15.59)	3505 (15.59)	-	-	-	-
5/16-24	0.600	-	-	-	3980 (17.70)	3980 (17.70)	3980 (17.70)	3980 (17.70)	3980 (17.70)	3980 (17.70)
Phillips Pan Head (PPH)										
#10	0.357	1160 (5.16)	1445 (6.43)	1805 (8.03)	2530 (11.25)	3010 (13.39)	-	-	-	-

- The lower of the ultimate pullout, pullover, and tension fastener strength of screw should be used for design.
- Unless otherwise noted, load values based upon testing completed in accordance with AISI S905.
- Load values for 18 gauge and noted 16 and 14 gauge steel are based upon calculations done in accordance with Section J4 of AISI S100. ANSI/ASME standard screw head diameters were used in the calculations and are listed in the table.
- AISI S100 recommends a safety factor of 3.0 be applied for allowable strength design, a Φ factor of 0.5 be applied for LRFD design and a Φ factor of 0.4 be applied for LSD design.
- Pancake Framing Head Undercut (PFHUC) and Phillips Wafer Head (PWH) styles are not covered by this table because they are not used for attachment of steel to steel.
- The load data in the table is based upon sheet steel with $F_u = 45$ ksi. For $F_u = 55$ ksi steel, multiply values by 1.22.
- Refer to Section 3.6.4.5 to ensure drilling capacities.