

Pullout In Steel - Average Ultimate (lbs) (Carbon and Stainless Steel Screws)

Fastener Information (Drill Points)		PULLOUT ULTIMATE LOAD IN POUNDS Calculated Values In Accordance to AISI S100 Section E4														
Screw Size	Nom Dia. (in.)	Grade 50 per ASTM A1011 60Ksi Min. Steel					Grade 50 per ASTM A792/A653/A572/A529 65Ksi Min. Steel									
		26 Ga. (.018")	25 Ga. (.021")	24 Ga. (.024")	22 Ga. (.030")	20 Ga. (.036")	18 Ga. (.048")	16 Ga. (.060")	14 Ga. (.075")	12 Ga. (.105")	1/8" (.125")	10 ga (.135")	1/4" (.250")	3/8" (.375")	1/2" (.500")	
#10-16	.190"	174	203	233	291	349	504	630	787	1102	1312					
#10-24	.190"								787	1102	1312					
#12-14	.216"	198	231	264	330	397	573	716	895	1253	1492	1611				
#12-24	.216"									1492	1611	2984	*4475	*5967		
#14-13	.235"	216	252	288	360	341	623	779	974							
1/4-14	.250"							829	1036	1450	1727	1865	3453	*5180	*6906	

Tested values are available upon request.
Revised: 0220AR

NOTE: * exceeds tensile strength of the screw.

PULLOVER

Screw	Tee Clip 24 ga. (Ave. Ultimate)	Zee Clip 24 ga. (Ave. Ultimate)
#10	415 lbs.	510 lbs.
#12	430 lbs.	692 lbs.
#14 DP1	407 lbs.	677 lbs.

* Berridge Clips
REV.JES082712

APPROVALS

Factory Mutual: 1/4-14 DP3 CONCEALOR.
FM Approval Standard 4481 Class 1 - Wall Fastener
Miami Dade: #10 GP CONCEALOR TRI-SEAL AZR

MEETS FLORIDA BUILDING CODE 1506.6
& R904.5.2 (TRI-SEAL® & SS ONLY)

Pullout In Wood - Average Ultimate (lbs)

Screw Size and Point type	PLYWOOD - CDX			OSB			SYP
	15/32" (1/2" Nom)	19/32" (5/8" Nom)	23/32" (3/4" Nom)	7/16"	19/32"	23/32"	2 x 4
#10-9 GP	383	395	574	136	256	514	813
#10-12 BB *		450	706	258	381		648*
#10-13 GP	375	505	654	166	357	442	737
#12-11 GP	418	455	624	*164	379	573	918
#14-13 DP1	434	475	626	153	327	457	991

Farabaugh Engineering Test: Project No. T279-10 & * T282-15 REV JS042220



Decking fasteners tested with full thread embedment. 2 x 4 SYP with 1" embedment in side

* Test Report # T279-17 & T299-17 | Farabaugh Engineering.
NOTE: * 1" embedment into face of 2x. Deeper embedment will increase pullout.

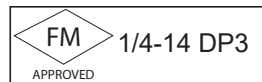
Pullout In Concrete - Average Ultimate (lbs)

Fastener Dia. & Point	3,000 psi Concrete	
	1" Embedment	
#14-13 DP1	740 lbs.	

TF Test: 10.15.09

Drill Bit Size: 3/16" Masonry Bit. Depth of hole > 2".
(Screw should not exceed 1" embedment.)

REV JS1218



PERFORMANCE SPECIFICATIONS

Fastener Diameter & Material	Minimum Ultimate			
	Thread Diameter	Tensile (lbs.)	Shear (lbs.)	Torsional (lbs-in)
#10-9 / Carbon	0.200"	1,520	1,150	60
#10-9 / 410SS	0.200"	2,500	1,625	85
#10-13 / Carbon	0.195"	1,725	1,125	60
#10-13 / 302SS	0.195"	1,040	701	45
#10-16 / Carbon	0.186"	2,100	1,400	61
#10-16 / 410SS	0.186"	3,200	2,130	92
#12-11 / Carbon	0.220"	2,500	2,000	95
#12-14 / Carbon	0.212"	2,778	2,000	100
#12-14 / 304SS	0.212"	2,630	1,978	85
#12-24 / Carbon	0.213"	3,450	2,420	110
1/4-14 / Carbon	0.243"	3,850	2,600	150
#14-13 / Carbon	0.235"	2,600	1,500	95
#14-13 / 304SS	0.235"	2,000	1,200	77

FASTENER PROPERTIES

REV JS0120

Thread Type and Point	Thread Major Dia.	Material	Head Dia.	Head Thickness	Drive	Finish
#10-16 DP2	.180"	C1022	.450"	.095"	#2 Sq	.0003" Zinc & Yellow
#10-24 DP3	.185"	C1022	.450"	.095"	#2 Sq	.0003" Zinc & Yellow
#10-12 BB	.185"	C1022	.450"	.095"	#2 Sq	TRI-SEAL® Coated
#10-13 GP	.190"	C1022 302 SS	.450"	.095"	#2 Sq	CS: TRI-SEAL® Coated SS: Passivated
#10-16 DP3	.180"	C1022 410 SS	.450"	.095"	#2 Sq	CS: TRI-SEAL® Coated SS: .0002" Zinc & Clear for lubricity
#10-9 GP (ULP)	.200"	C1022 410 SS	.450"	.040"	#2 Sq	TRI-SEAL® Coated Passivated
#12-11 GP	.220"	C1022 302 SS	.450"	.095"	#2 Sq	CS: TRI-SEAL® Coated SS: Passivated
#12-14 DP3 (SD300)	.210"	C1022 304 SS	.450"	.080"	#2 Sq	.0003" Zinc & Yellow
#12-24 DP5	.210"	C1022	.450"	.095"	#3 Sq	.0003" Zinc & Yellow TRI-SEAL® Coated
#14-13 DP1	.235"	C1022 304SS	.500"	.095"	#2 Sq	CS: TRI-SEAL® Coated SS: Passivated & Coated for lubricity
1/4-14 DP3	.245"	C1022	.500" (1") .625" (>2")	.095"	#2 Sq #3 Sq	TRI-SEAL® Coated

SALT SPRAY

The chart below provides general corrosion information about various plating and coatings. Contact TFC for detailed information.

SALT SPRAY Per ASTM F1941 & B117 (0% red rust) Rev. 120313

Coating	Salt Spray
.0002" min. (6um) zinc plating with clear chromate	24hrs
.0002" Zinc Plating / Coated	60hrs
.0005" min. (12 um) zinc plating with clear chromate	72hrs
.0003" min. (8 um) zinc plating with yellow dichromate	120hrs
.0002" Zinc Plated 410 Stainless Steel	450hrs
Passivated Coated 410 Stainless Steel	500hrs
TRI-SEAL™ Long-life coating	1,000hrs
Passivated 302 & 304 SS	>2,000hrs

NOTE: 304SS and 410SS screws are zinc plated or TRI-SEAL® coated to provide lubricity and improve tapping performance.

TOOLING | Do not use impact tools!

Screw-gun RPM

Carbon Steel & 410SS Screws: 2,500 RPM Max.

DP5, 1/4" & 5/16" DP3: 2,000 RPM Max.

302 & 304 Stainless Steel Tapping Screws: 1,000 RPM Max.

For optimal performance, use screw-guns with torque control feature.

DO NOT OVER-TORQUE FASTENERS.

Fastening Tips

- A minimum of 3 factors of safety should be used for most self-drilling or self-tapping fasteners in metal | 5-6 for wood. Consult a design professional for appropriate values.
- Install fastener perpendicular to the work surface and tighten to no more than approximately 70% of the torsional strength.
- Allow at least three full threads to extend beyond the material. For wood applications, allow 1" minimum embedment or full thread embedment in plywood and OSB for optimal pullout resistance.

FASTENER MATERIAL SELECTION BASED ON THE GALVANIC SERIES OF METALS

BASE METAL		FASTENER MATERIAL			
		STEEL Zinc Plated	STAINLESS STEEL Type 410	STAINLESS STEEL Type 302, 304, 316	ALUMINUM
Zinc Galvanized ZN/Al Coated Steel	Aluminum	A	Not Recommended	B	A
	Steel / Cast Iron	A,D	C	B	A
	Brass, Copper, Bronze	A,D,E	A	B	A,E
	Stainless Steel 300 Series	A,D,E	A	A	A,E

Key

- The corrosion of the base metal is not increased by the fastener.
- The corrosion of the base metal is slightly increased by the fastener.
- The corrosion of the base metal may be considerably increased by the fastener material.
- The plating on the fastener is rapidly consumed.
- The corrosion of the fastener is increased by the base metal.

*NOTE: Marine environments can cause galvanic corrosion. Consult panel manufacture for compatible fasteners to minimize galvanic corrosion.

DISCLAIMER: ALL DATA AND SPECIFICATIONS ARE BASED ON LABORATORY TESTS. APPROPRIATE SAFETY FACTORS SHOULD BE USED BY THE USER OR SPECIFIER. DETERMINING THE PROPER FASTENER IS THE RESPONSIBILITY OF THE USER OR SPECIFIER. BECAUSE APPLICATION CONDITIONS VARY, WE ASSUME NO LIABILITY FOR THE USE OF THIS INFORMATION.