

## Pullout In Steel - Average Ultimate in Pounds

Fastener Information (Drill Points)		PULLOUT   ULTIMATE LOAD IN POUNDS Grade 80 and Grade 50 Steel per ASTM A792/A1011/A653/A572/A529 Calculated Values In Accordance to AISI S100   Section E4													
Thread Type	Nom Dia. (in.)	Grade 80 62Ksi Min.							Grade 50 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"	180	220	251	315	378	504	630	787	1102	1312				
#10-24	.190"								787	1102	1312				
#12-14	.216"	205	251	286	358	430	573	716	895	1253	1492	1611			
#12-24	.216"										1492	1611	2984	*4475	*5967
#14-13	.235"	223	273	312	390	467	623	779	974						
1/4-14	.250"							829	1036	1450	1727	1865	3453	*5180	*6906



## PULLOVER

Screw	Tee Clip 24 ga. (Ave. Ultimate)	Zee Clip 24 ga. (Ave. Ultimate)
#10 DP3	415 lbs.	510 lbs.
#12 GP	430 lbs.	692 lbs.
#14 DP1	407 lbs.	677 lbs.

\* Berridge Clips  
REV.JES082712

Tested values are available upon request.

NOTE: \* exceeds tensile strength of the screw.

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## Pullout In Wood - Average Ultimate in Pounds

Fastener Dia. & Point	Wood Type							
	1/2" Ply	5/8" Ply	3/4" Ply	7/16" OSB	19/32" OSB	23/32" OSB	2 x 4 SYP	
#10-13 GP	375	505	654	166	357	442	737	
#10-9 GP	383	395	574	136	256	514	813	
#12-11 GP	418	455	624	*164	379	573	918	
#14-13 DP1	434	475	626	153	327	457	991	



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

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

REV JS110615

## PERFORMANCE SPECIFICATIONS

Fastener Diameter & Material	Thread Diameter	Minimum Ultimate		
		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 / 302SS	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"	3,620	2,500	115

## FASTENER PROPERTIES

REV JS1117

Thread Type and Point	Thread Major Dia.	Material	Head Dia.	Head Thickness	Drive	Finish
#10-16 DP2	.180"	C1022	.435"	.080"	#2 Sq	.0003" Zinc & Yellow
#10-24 DP3	.185"	C1022	.435"	.080"	#2 Sq	.0003" Zinc & Yellow
#10-13 GP	.190"	C1022 302 SS	.450"	.080"	#2 Sq	TRI-SEAL™ Coated Passivated
#10-16 DP3	.180"	C1022 410 SS	.450"	.080"	#2 Sq	TRI-SEAL™ Coated .0002" Zinc & Clear
#10-9 GP (ULP)	.200"	C1022 410 SS	.435"	.040"	#2 Sq	TRI-SEAL™ Coated Passivated
#12-11 GP	.220"	C1022 302 SS	.450"	.080"	#2 Sq	TRI-SEAL™ Coated Passivated
#12-14 DP3 (SD300)	.210"	C1022 304 SS	.450" .500"	.080" .090"	#2 Sq T-30 Torx	.0003" Zinc & Yellow TRI-SEAL™ Coated
#12-24 DP5	.210"	C1022	.425"	.110"	#3 Sq	.0003" Zinc & Yellow TRI-SEAL™ Coated
#14-13 DP1	.235"	C1022	.500"	.090"	#2 Sq	.0003" Zinc & Yellow TRI-SEAL™ Coated
1/4-14 DP3	.245"	C1022	.500" (1") .625" (>2")	.080" .100"	#2 Sq #3 Sq	TRI-SEAL™ Coated

## SALT SPRAY

The chart below provides general information with regard to corrosion resistance of various plating and coatings. Contact TFC for detailed information.

**SALT SPRAY Per ASTM F1941 & B117 (0% red rust)**

Rev. 120313

Carbon steel and 410 stainless steel materials

### Coating

.00015" min. (3 um) zinc plating with clear chromate	15hrs
.0002" min. (6um) zinc plating with clear chromate	24hrs
Passivated 410 Stainless Steel	48hrs
.0003" min. (8 um) zinc plating with clear chromate	48hrs
.0003" min. (8 um) zinc plating with yellow di-chromate	120hrs
.0005" min. (12 um) zinc plating with clear chromate	72hrs
.0007" min. (14 um) mechanical zinc with clear chromate	72hrs
Epoxy (E-Coat) (ACQ Compatible)	100hrs
TRI-SEAL™ Long-life coating	1,000hrs
Passivated 302 & 304 SS	>2,000hrs

### Salt Spray

## 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	A	C	C	B
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.