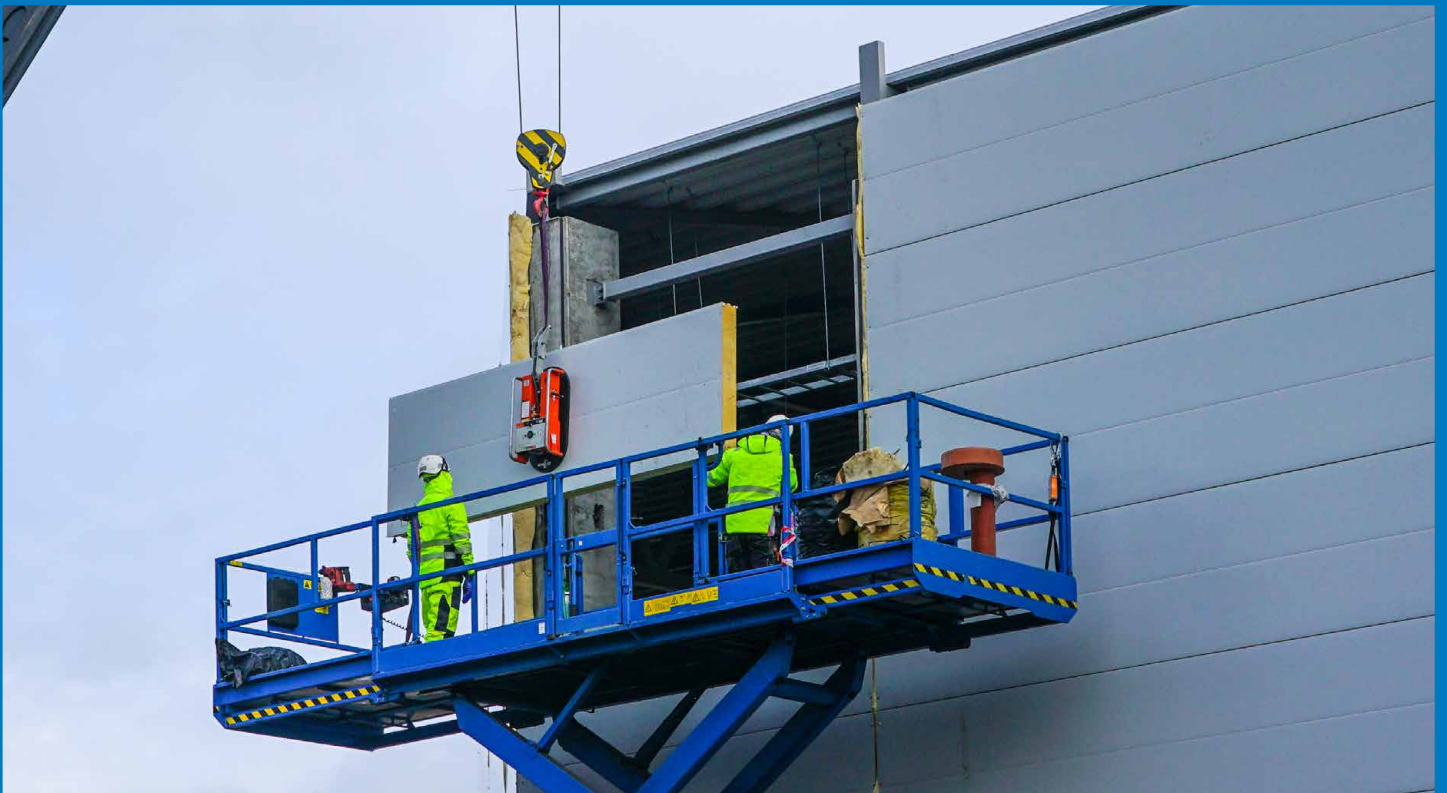


PRODUCT SELECTION GUIDE

Fasteners • Sealants • Flashings • Technical Data



APPLICATION: INSULATED METAL PANELS



Better Connections by TFC!



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www.trianglefastener.com

MD386 0223



TRIANGLE FASTENER CORPORATION

OUR VALUE PROPOSITION

From the time we pick up the phone to long after the product is used, we are here to help you!

We provide the most innovative products, superior service, and a focused approach to your specific requirements. Our commitment to developing quality products and programs assure easy installation at low cost.

With every product we supply, you'll get the most comprehensive support programs.



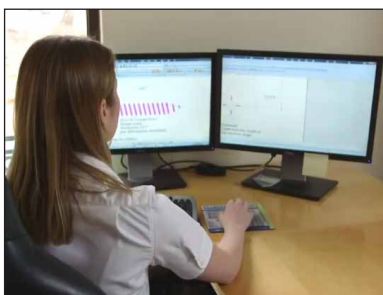
DISTRIBUTION

25 locations are stocked full of standard and specialty fastening system solutions.



MARKET SPECIALISTS

Each location is supported by our product and application specialists.



PRODUCT DESIGN

Our TFC Fastening Systems Design Center can custom design products to meet your application requirements.



PRODUCT RESEARCH

The TFC TECH CENTER provides additional research and technical support to fit your specific needs.

We service the following industries with the a full line of fasteners, sealants & tools.



- Metal Building
- Metal Roofing
- Post Frame
- Misc. Wall Cladding



- Low Slope Roofing



- Interior Construction

"TFC SPECIFIC" Products and Programs

We design them to provide higher performance and easier installation.

- APS 500® Advanced Polymer Sealant
- BLAZER® High Performance Drill Screws
- BRACER® Bracing System Washers
- BURR-BUSTER™ Self Piercing Screw
- BUTYL TAPE-SEAL™ Butyl Tape
- CONCEALOR® Low Profile Head Fastener
- GET-A-GRIP™ In-Stock Painted Rivets
- KALIDA-KOTE™ Paint For Fasteners, Rivets, Closures
- NEED-IT-NOW!™ Market Specific Product Program
- PANEL-TITE® Metal to Wood Fasteners
- PIPE-MASTER® Metal Roofing Pipe Flashing
- PAK-ONE™ Job Pack Program
- SENTRY PLUS FIVE® High Performance Roofing Screws
- STRESS-LESS® Stress Reducing Fastener
- STRESS-LOK® Load Distributing Washer
- TRACER® High Performance Drywall Screws
- TWISTER® Pre-tied Wire
- ULP™ Ultra Low Profile Fasteners
- ULTRA 1000™ Sealant for Metal
- VRT® Vibration Resistant Thread Technology

DISCLAIMER: All information is non-binding and without guarantee. Before using the products, all specifications and calculations must be checked by a suitably qualified person and local regulations must be observed. This document is subject to revision. We reserve the right to make technical changes. 03.21-1

TFC VALUE PROPOSITION

Large Selection

Lengths to meet your application needs.

Best Quality

Assures low in-place cost.

Fast Delivery / Need-it-Now!

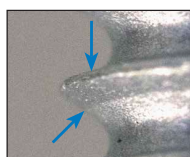
Reduces your inventory costs.

SS Denotes available sizes in stainless steel

Here is why we use a special thread...

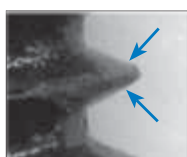
We use a buttress thread that provides exceptional clamping loads and is specified in many metal roofing systems to attached SSR clips over rigid insulation into metal deck.

CONCEALOR® with Buttress Thread

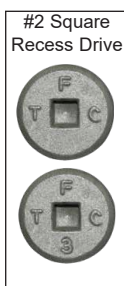


"Flat" thread keeps the joint tight

Ordinary Thread Form



A "Tapered" thread tends to cause the joint to loosen



- Attach to metal, wood, and concrete -

CARBON STEEL

- TRI-SEAL® coated provides over 10-times more corrosion resistance than black epoxy coated screws
- Drill and tap up to *16ga steel
- Can be used in concrete applications.

* The hardness of the steel can affect the drill and tap performance and may require predrilling. For concrete, predrill using a 3/16" masonry bit.

304 STAINLESS STEEL

- 304 Stainless Steel Bi-Metal provides superior corrosion resistance
- Drill and tap up to *18ga steel
- TRI-SEAL® coated provides lubricity that minimizes thread roll-over

SIZES

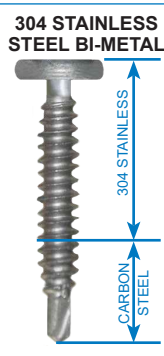
* Denotes 4-1/2" Thread Length

Description	Load Bearing Length	Part Number	Carton Quantity	Wt Per Carton	PRICE
#14-13 x 3/4" DP1	.125"	14075SPC1CSTS	3,000 pcs	21 lbs	
#14-13 x 1-1/2" DP1	.750"	CS: 14150SPC1CSTS 304SS: 14150SPC1BM	2,500 pcs	34 lbs	
#14-13 x 2" DP1	1.250"	CS: 14200SPC1CSTS 304SS: 14200SPC1BM	1,000 pcs	18 lbs	
#14-13 x 3" DP1	.125" - 2.250"	CS: 14300SPC1CSTS 304SS: 14300SPC1BM	1,000 pcs	24 lbs	
#14-13 x 4" DP1	.125" - 3.250"	14400SPC1CSTS	500 pcs	16 lbs	
#14-13 x 4-1/2" DP1	.625" - 3.375"	14450SPC1CSTS	500 pcs	17 lbs	
#14-13 x 5" DP1*	1.250" - 4.250"	14500SPC1CSTS	500 pcs	19 lbs	
#14-13 x 6" DP1*	2.125" - 5.250"	14600SPC1CSTS	500 pcs	23 lbs	
#14-13 x 7" DP1*	3.875" - 6.250"	CS: 14700SPC1CSTS 304SS: 14700SPC1BM	500 pcs	28 lbs	
#14-13 x 8" DP1*	4.875" - 7.250"	14800SPC1CSTS	250 pcs	17 lbs	
#14-13 x 9" DP1*	5.875" - 8.250"	14900SPC1CSTS	250 pcs	19 lbs	

Installation: DO NOT USE IMPACT DRIVERS!

Use 2,500 RPM max variable speed screw drivers with torque control or depth sensing nosepiece.

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

Technical Info

Refer to page MD28 for complete technical data.



1/4-14 DP3 - DRILL AND TAP UP TO 1/4" THICK STEEL

#14 DP3 CONCEALOR® pancake head screws are designed for heavy gauge applications and can drill and tap up to 1/4" steel. The 1/4-14 thread produces greater strength and resists bending compared to smaller diameter screws. Originally designed for IMP!

These screws are coated with TRI-SEAL™ long-life coating that exceeds ASTM B633 specifications providing 1,000-hours salt spray performance, and FM4470 per ASTM G87 Sulfur Dioxide Test.

SPECIAL HEAD DESIGN



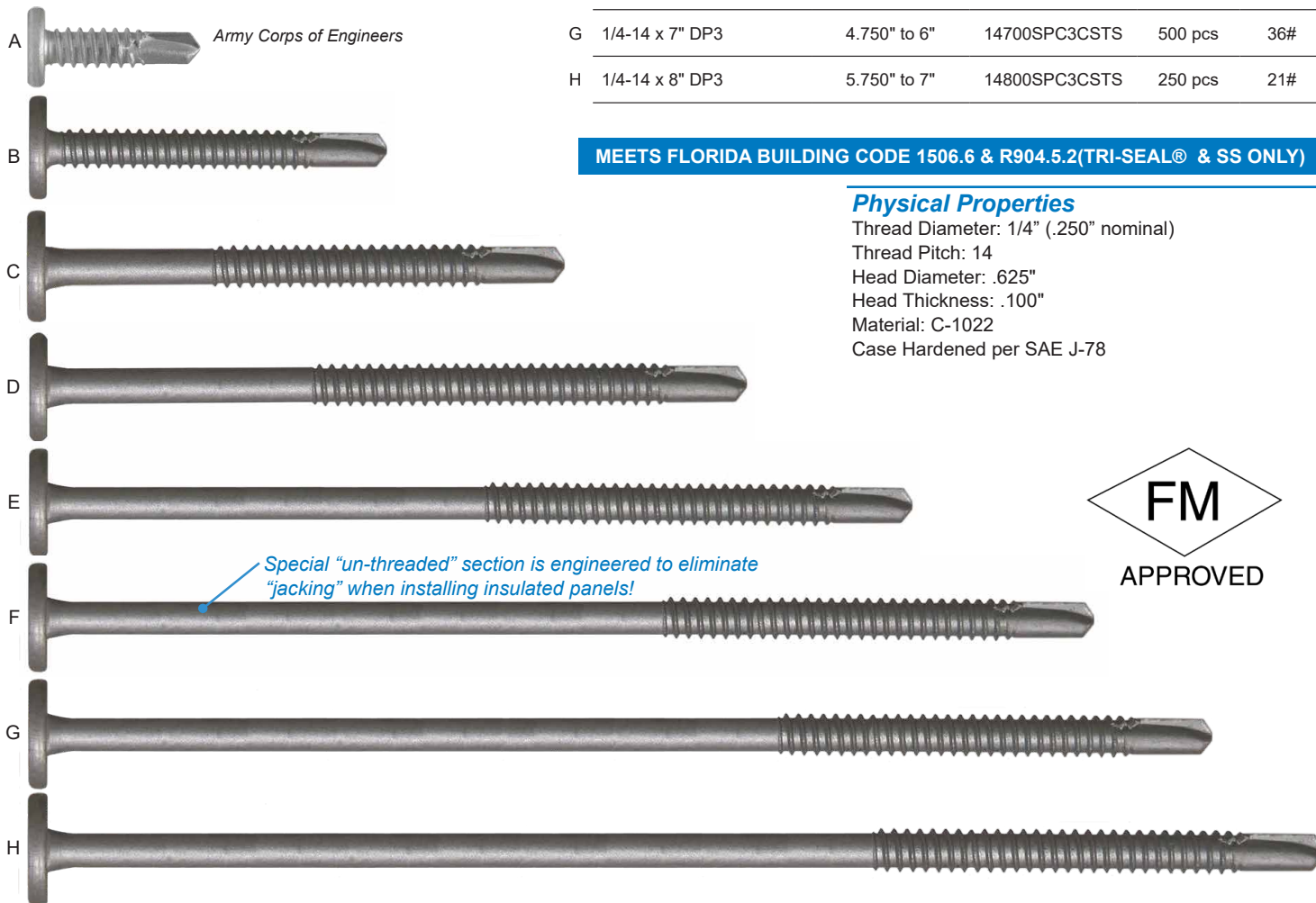
- 5/8" diameter head increases pullover strength and minimizes dimpling.
- #3 square recess drive provides stability during installation.

	Description	Load Bearing Length (MAX)	Part Number	Carton Quantity	Wt Per Carton
A	1/4-14 X 1" DP3	.325"	14100SPC3CS	2,500 pcs	27#
B	1/4-14 x 2" DP3	1.000"	14200SPC3CSTS	1,000 pcs	23#
C	1/4-14 x 3" DP3	1.375" to 2"	14300SPC3CSTS	1,000 pcs	33#
D	1/4-14 x 4" DP3	1.625" to 3"	14400SPC3CSTS	500 pcs	21#
E	1/4-14 x 5" DP3	2.750" to 4"	14500SPC3CSTS	500 pcs	25#
F	1/4-14 x 6" DP3	3.750" to 5"	14600SPC3CSTS	500 pcs	30#
G	1/4-14 x 7" DP3	4.750" to 6"	14700SPC3CSTS	500 pcs	36#
H	1/4-14 x 8" DP3	5.750" to 7"	14800SPC3CSTS	250 pcs	21#

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

Physical Properties

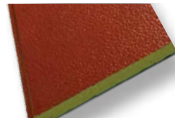
Thread Diameter: 1/4" (.250" nominal)
Thread Pitch: 14
Head Diameter: .625"
Head Thickness: .100"
Material: C-1022
Case Hardened per SAE J-78



SPECIAL APPLICATIONS

Use to attach a variety of material to steel up to 1/4" thick!

ARCHITECTURAL
INSULATED PANELS



STRUCTURAL
INSULATED PANELS



NAIL
BASE



METAL ROOF
CLIPS



TOOLING: Install using a 2,000 RPM screw-gun with torque control. (DeWalt DW267)
Do not use impact tools.

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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	431	623	779							
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 Date: #10 GP CONCEALOR

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"	
#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



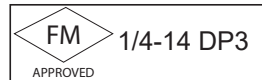
Decking fasteners tested with full thread embedment.
2 x 4 SYP with 1" embedment in side

* 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 TRI-SEAL Coated
#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	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.

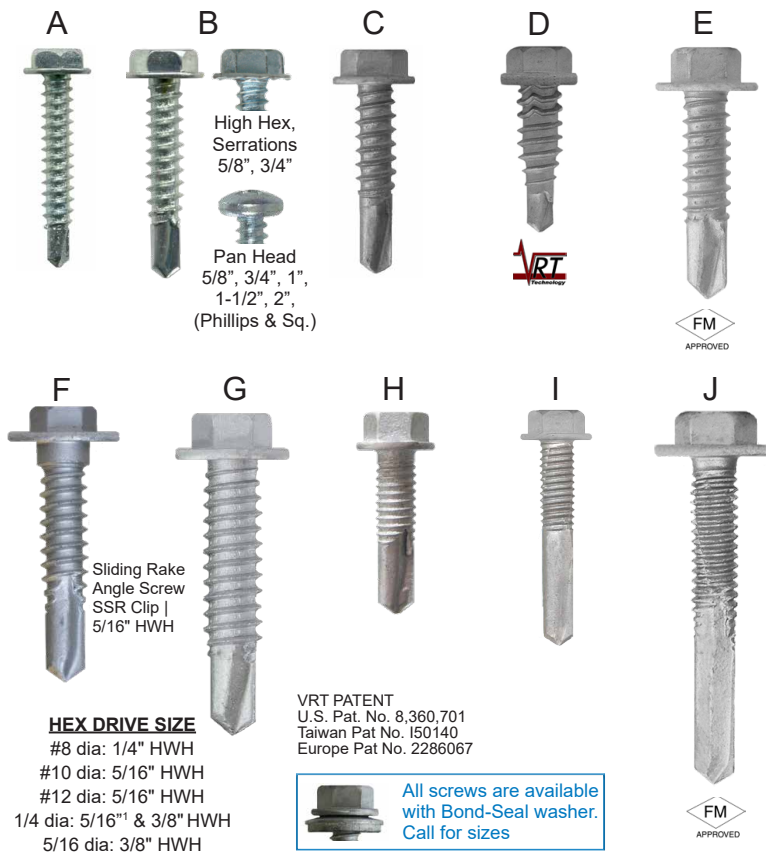
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- The hex washer head is the most popular drive system and provides the best stability during installation.
- Available with TRI-SEAL® long life coating for the ultimate corrosion protection...1,000 hrs salt spray with no red rust!

SIZES

****Blue colored sizes denotes popular DC items****

ITEM	SIZE	Point Type	LENGTHS	Load Bearing Length (MAX)	Box Qty
A	#8-18	DP2	1/2"	.100"	10M
			5/8"	.125"	10M
			3/4"	.250"	10M
			1"	.500"	7.5M
			1-1/4"	.750"	5M
			1-1/2"	1"	5M
B	#10-16	DP3	2"	1.5"	1.5M
			1/2"	.100"	10M
			5/8"	.125"	5M
			3/4"	.250"	5M
			3/4" HH/SERR	.250"	5M
			1"	.500"	5M
C	#12-14	DP3	1-1/2"	1"	3.5M
			2"	1.500"	2M
			3"	2.500"	1M
			3/4"	.125"	5M
			1"	.250"	3.5M
			1-1/4"	.625"	3M
D	1/4-14 ¹ VRT	DP1	1-1/2"	.750"	2M
			2"	1.25"	2M
			2-1/2"	1.75"	1M
			3"	2.25"	1M
			4"	3.75"	500
			7/8" VRT	.325"	2.5M
E	1/4-14	DP3	3/4"	.125"	2.5M
			1"	.250"	2.5M
			1-1/4" ¹	.625"	2M
			1-1/2" ¹	.875"	2M
			2"	1"	1.5M
			2-1/2"	1.50"	1M
F	1/4-14 SHLDR	DP3	3"	1.25" - 2.25"	1M
			4"	1.73" - 3.25"	500
			5"	2.6" - 4.25"	500
			6"	3.6" - 5.25"	250
			8"	5.6" - 7.25"	250
			10"	7.6" - 9.25"	500
G	5/16-12	DP3	1-1/4"	.625"	3.5M
			1"	.250"	1.5M
			1-1/2"	.875"	1M
			2"	1.25"	1M
			3"	2.25"	750
			4"	3.25"	500
H	#12-24	DP4	5"	1.38 - 4.25"	500
			6"	2.50 - 5"	500
			8"	4.25" - 7"	200
			7/8"	.325"	5M
			1-1/4"	.500"	2.5M
			1-1/2"	.625"	1.5M
I	#12-24	DP5	2"	.750"	1.5M
			1-1/2"	.500"	2M
			2-1/4"	1.250"	1M
			2-1/2"	1.500"	1M
			3-1/8"	2.125"	1M
			4"	3"	250
J	5/8" OD washer face	DP5	5"	4"	250
			6"	2.50" - 5"	250
			7"	3.38" - 6"	500
			8"	4.25" - 7"	500



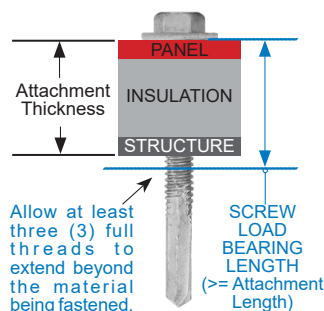
Drill Point and Length Selection

1. Determine the Screw Drill Point Type

- Add up the total thickness that will be drilled by the screw.
- Select the desired drill point (DP) type and screw size located on the size chart below.



Drilling and Tapping Thickness													
Gauge	24	20	18	16	14	12	10						
Inch	.024	.036	.048	.060	.075	.100	.105	.135	.175	.210	.250	.375	.500
1/4-14 DP1	.024" - .072"												
#8-18 DP2	.024" - .100"												
#10-16 DP3	.024" - .175"												
#10-24 DP3	.048" - .210"												
#12-14 DP3	.024" - .210"												
1/4-14 DP3	.035" - .250"												
5/16-12 DP3	.048" - .175"												
#12-24 DP4	.175" - .375"												
#12-24 DP5	.175" - .500"												
1/4-20 DP5	.175" - .500"												



2. Determine Screw Length

- Measure from the top surface of the material being fastened to the underside of the metal that will be drilled and tapped. Be sure to allow for any void or insulation. This is called the attachment thickness.
- Select a screw length where the attachment thickness is less than or equal to the Load Bearing Length listed on the chart to the right.

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BLAZER® STAINLESS CAP HEAD WITH EPDM SEALING WASHER



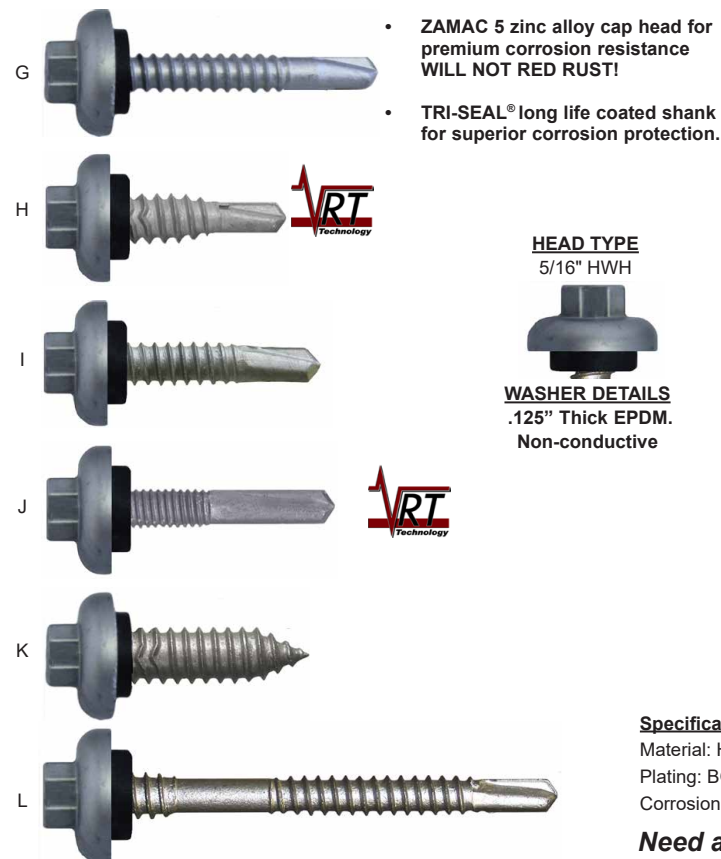
SIZES AND PERFORMANCE SPECIFICATIONS

DIAMETER AND POINT		LENGTH	Load Bearing Length (Max)	Box Qty	LIST PRICE
A	#12-14 BLAZER-2/3 LP	x 1"	.250"	3.5M	
		x 1-1/4"	.625"	2M	
		x 1-1/2"	.750"	1.5M	
		x 2"	1.25"	1.5M	
		x 3"	2.25"	2.5M	
B	1/4-14 BLAZER-1 VRT	x *7/8" VRT	.325"	2M	
		x 1-1/8" VRT	.750"	2M	
C	1/4-14 BLAZER-3	x *1-1/4"	.625"	2M	
		x 3"	2"	1M	
		x 4"	3"	500	
D	#17-14 x 1" TYPE AB W/VRT	x 1"	.750"	2.5M	
E	#12-24 BLAZER-5	x 1-1/4"	.500"	2.5M	
		x 1-1/2"	.625"	2.5M	
		x 2"	.750"	3M	
F	#12-14 1/4-14 BLAZER-3	x 1-7/8"	.875" - 1.125"	2M	
		x 2-3/8"	1.250" - 1.625"	1M	
		x 3-1/4"	1.750" - 2.437"	1m	
		x 4"	2.500" - 3.1875"	500	

LP denotes long-pilot design for metal roofing and siding

SCREW AND POINT	DRILL AND TAP CAPACITIES					
	.036"	.100"	.175"	.210"	.250"	.375"
#8-18 BLAZER-2						
#10-16 BLAZER-3						
#12-14 BLAZER-3						
#12-24 BLAZER-4						
#12-24 BLAZER-5						
1/4-14 BLAZER-1 VRT						
5/16-12 BLAZER-3						
1/4-14 BLAZER-3						
1/4-20 BLAZER-5						

BLAZER® ZINC CAP HEAD WITH EPDM SEALING WASHER



SIZES AND PERFORMANCE SPECIFICATIONS

DIAMETER AND POINT		LENGTH	Load Bearing Length (Max)	Box Qty	LIST PRICE
G	#12-14 BLAZER-2/3 LP	x 1"	.250"	3.5M	
		x 1-1/4"	.625"	2.5M	
		x 1-1/2"	.750"	2.5M	
		x 2"	1.25"	2M	
		x 2-1/2"	1.5"	1M	
H	1/4-14 BLAZER-1 VRT	x *7/8" VRT	.325"	2.5M	
		x 1-1/8" VRT	.750"	2M	
i	1/4-14 BLAZER-3	x *1-1/4"	.625"	2M	
		x 1-1/2"	.750"	2m	
		x 2"	1"	2m	
		x 3"	2"	1M	
J	#12-24 BLAZER-5	x 3"	2"	1M	
		x 4"	3"	500	
		x 1-1/4"	.500"	2.5M	
J	#12-24 BLAZER-5	x 1-1/2"	.625"	2.5M	
		x 2"	.750"	3M	
K	#17-14 x 1" TYPE AB W/VRT	x 1"	.750"	2.5M	
L	#12-14 1/4-14 BLAZER-3	x 1-7/8"	.875" - 1.125"	2M	
		x 2-3/8"	1.250" - 1.625"	1M	
		x 3-1/4"	1.750" - 2.437"	1m	
		x 4"	2.500" - 3.1875"	500	

LP denotes long-pilot design for metal roofing and siding

Specifications

Material: HEAD - Zamac 5 Zinc Alloy; THREAD - Carbon Steel

Plating: BODY - TRI-SEAL® Long-life Coating.

Corrosion Resistance: HEAD - No Red Rust; BODY - 1,000hrs Salt Spray

Need a 3/8" Hex Washer Head? Contact us for available sizes.



BACK-OUT RESISTANT SCREWS



U.S. Pat. No. 8,360,701
Taiwan Pat No. I50140
Europe Pat No. 2286067

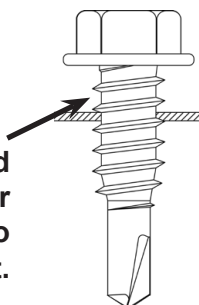
Our Vibration Resistant Thread (VRT®) is designed to significantly increase back-out torque and reduce the potential for leaks. VRT® keeps the fastener tighter in applications where expansion, contraction and vibration are a concern. Independent tests verify that VRT® produces 3-1/2 times more back-out resistance than a standard thread.

PROBLEM



Screws with standard threads can back-out easily with little force. This can cause joint failure resulting in leaks.

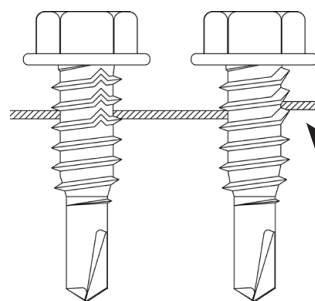
Notice how standard screw threads offer little resistance to back-out.



SOLUTION



Our Vibration Resistant Thread (VRT) is designed to significantly increase back-out torque and reduce the potential for leaks.



Innovative patented VRT® thread increases friction as the screw loosens.

Why VRT™?

You can see how the shape of VRT® is designed to increase the resistance to back-out compared to a standard thread. VRT® keeps the fastener tighter in applications where expansion, contraction and vibration are a concern.

VRT
Thread

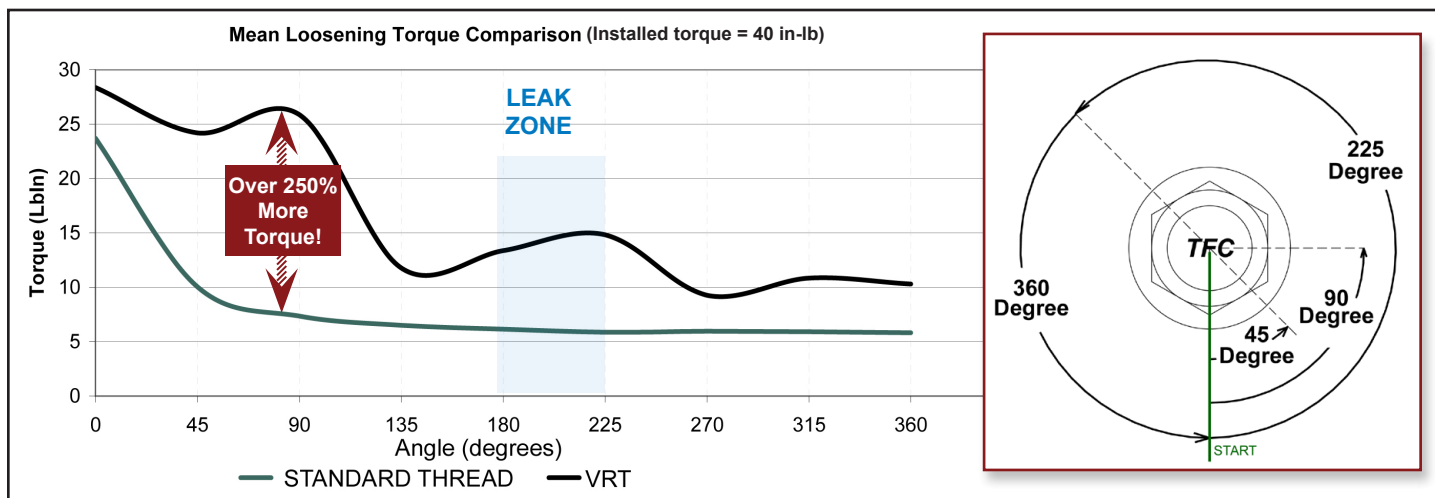


Standard
Thread



Test Results

Independent tests verify that VRT produces over 3-1/2 times more back-out resistance than standard threads due to its innovative thread design that increases friction.



All information is non-binding and without guarantee. Before using the products, all specifications and calculations must be checked by a suitably qualified person and local regulations must be observed. This document is subject to revision. We reserve the right to make technical changes. (0321-1) Copyright 2017 Triangle Fastener Corporation



Our Vibration Resistant Thread (VRT®) is designed to significantly increase back-out torque and reduce the potential for leaks.

VRT® keeps the fastener tighter in applications where expansion, contraction and vibration are a concern.

Independent tests verify that VRT® produces 3 -1/2 times more back-out resistance than a standard thread.



U.S. Pat. No. 8,360,701
Taiwan Pat No. I502140
Europe Pat No. 2286067

BACK-OUT RESISTANT SCREWS

Sizes and Technical Data Sheet

Light Gauge Applications

Maximum Drilling Thickness: .090"

	Description	Part Number	Carton Quantity	WT Per M Pcs
	1/4" -14 X 7/8" DP1/LAP w/VRT® CONCEALOR® Pancake Head w/Bonded Sealing Washer TRI-SEAL™ Coated 1,000Hrs Salt Spray	14087C1TSVBW	2,500 pcs 250/Bag	13.5#
	1/4" -14 X 7/8" DP1/LAP w/VRT® BLAZER® Flange Head w/Sealing Washer TRI-SEAL™ Coated 1,000Hrs Salt Spray	14087HW1CSTSVW	2,500 pcs 250/Bag	13.5#
	1/4" -14 X 7/8" DP1/LAP w/VRT® BLAZER® TRI-SEAL™ Coated 1,000Hrs Salt Spray	14087HW1CSTSV	2,500 pcs 250/Bag	10.2#
	1/4" -14 X 7/8" DP1/LAP w/VRT® BLAZER® w/Bonded Sealing Washer TRI-SEAL™ Coated 1,000Hrs Salt Spray	14087HW1CSTSVBW	2,500 pcs 250/Bag	13.5#
	1/4" -14 X 7/8" DP1/LAP w/VRT® BLAZER® Stainless Cap Head w/Sealing Washer TRI-SEAL™ Coated 1,000Hrs Salt Spray	14087HW1CSTSVWSC	2,500 pcs 250/Bag	13.5#
	1/4" -14 X 7/8" DP1/LAP w/VRT® BLAZER® Zinc Cap Head w/Sealing Washer TRI-SEAL™ Coated 1,000Hrs Salt Spray	14087HW1CSTSVWZC	2,000 pcs 250/Bag	13.5#
	1/4" -14 X 1-1/8" DP1/LAP w/VRT® BLAZER® Stainless Cap Head w/Sealing Washer TRI-SEAL™ Coated 1,000Hrs Salt Spray	14112HW1CSTSVWSC	2,000 pcs 250/Bag	19.3#
	#17-14 X 1" TYPE AB w/VRT® TAPPER w/Bonded Sealing Washer (3/4"OD) TRI-SEAL™ Coated 1,000Hrs Salt Spray	17100HWABCSTSVBW	2,000 pcs 250/Bag	20#

Technical Data

Specifications

BLAZER Drill Screws conforms to SAE J-78 for self-drilling tapping screws.

#17 TAPPER conforms to ANSI/ASME B18.6.4 for tapping screws.

Material

Carbon Steel: C1022
Stainless Cap: 304 SS
Zinc Cap: Zamac 5

Tensile Strength

1/4-14: 4,275 lbs.
#17-14: 5,200 lbs.

Torsional Strength

1/4-14: 150 lbs-inch
#17-14: 175 lbs-inch

Corrosion Resistance

TRI-SEAL®
Salt Spray: 1,000 hrs minimum.

Sealing Washers

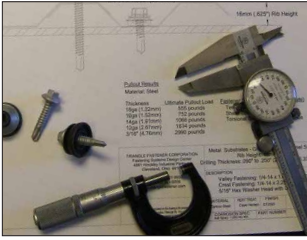
Flange Head:
EPDM Cut Tubular

Bonded Washer

EPDM Vulcanized to
G-90 Galvanized
Steel.
(15MM O.D.).

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BLAZER® ENGINEERING DATA



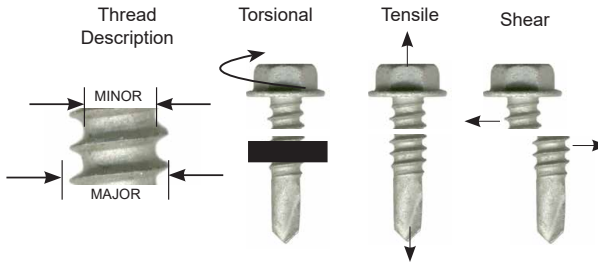
The following information is compiled to assist the design professional in selecting the appropriate fastener for the application. This data is compiled from fastener standards and independent tests. An engineering professional should be consulted to determine expected loads on the connection, environmental effects, and any other conditions that could effect the performance of the fastener. Selecting a fastener is the responsibility of the engineer and changes to a fastener should not be made without approval. Using the wrong fastener can lead to failure.

TFC WILL NOT WARRANTY, EITHER EXPRESSED OR IMPLIED, THE USE OF THIS INFORMATION.

TECHNICAL DATA



BLAZER® self-drilling fasteners are produced and perform to SAEJ78, ASME B18.6.4 and AISI TS-4-02 specifications. Conforms to ICCES AC118 acceptance criteria for tapping screw fasteners.



Gauge Thickness	Decimal	Metric
29 GA	.013"	.33mm
28 GA	.015"	.38mm
26 GA	.018"	.46mm
24 GA	.024"	.61mm
22 GA	.030"	.76mm
20 GA	.036"	.91mm
18 GA	.048"	1.22mm
16 GA	.060"	1.52mm
14 GA	.075"	1.91mm
12 GA	.105"	2.67mm
1/8"	.125"	3.18mm
10 GA	.135"	3.43mm
1/4"	.250"	6.35mm
5/16"	.312"	7.92mm
3/8"	.375"	9.53mm
1/2"	.500"	12.7mm

Physical Properties

Fastener Diameter	Nominal Screw Diameter	Major Diameter (inch)		Minor Diameter (inch)		Area Of Minor Dia. (sq in.)	Torsional (Lb-In.)	Tensile (Pounds)	Shear (Pounds)
		Max	Min	Max	Min				
#6-20	0.138	0.139	0.135	0.104	0.099	0.0077	24	1,125	750
#8-18	0.164	0.166	0.161	0.122	0.116	0.0106	42	1,575	1,000
#10-16	0.190	0.189	0.183	0.141	0.135	0.0143	61	2,100	1,400
#10-24	0.190	0.190	0.182	0.144	0.137	0.0147	65	3,400	2,275
#12-14	0.216	0.215	0.209	0.164	0.157	0.0194	92	2,778	2,000
#12-24	0.216	0.216	0.209	0.189	0.185	0.0269	100	3,188	2,100
1/4-14	0.250	0.246	0.240	0.192	0.185	0.0269	150	3,850	2,600
1/4-20	0.250	0.250	0.242	0.218	0.214	0.0360	156	4,275	2,700
#18-9	0.306	0.306	0.300	0.217	0.209	0.0343	196	4,550	2,576
5/16-12	0.313	0.315	0.306	0.244	0.236	0.0702	290	5,439	3,264

Material: C1018-C1022 / 410 SS
Heat Treatment: Case Harden
Case Hardness: 52-58 Rockwell C
Case Depth:
#6 Dia = .002" - .007"
#8, #10, #12 Dia = .004" - .009"
1/4" = .005" - .011"
Core Hardness
Carbon Steel: 32-40 Rockwell C
410 Stainless: 42-48 Rockwell C

Ductility: 5 Degree minimum bend

English to Metric

Formula to Use

Inch to Millimeter Decimal x 25.4

PSI to Newton / Millimeters² PSI x .007

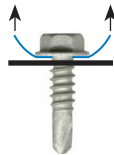
Pounds Force to Newtons Pounds Force x 4.448

FM APPROVED	1/4-14 DP3 1/4-20 DP5
sdi	#10-16 DP3 #12-14 DP3 #12-24 DP5 1/4-14 DP3 1/4-20 DP5

PULLOVER TEST RESULTS

These pullover results are for self-sealing fasteners listed in this catalog.

Note: Estimated pullover for fasteners without sealing washers can be calculated using the following formula per AISI S100.



Pounds - Ultimate Average

Steel Thickness	BOND-SEALER		FLANGE SEALER	ZINC CAP HEAD	STAINLESS CAP HEAD
	12.7MM OD	15MM OD			
22 ga	945	1,249	1,298	1,647	1,298
24 ga	704	1,056	1,102	1,310	1,102
26 ga	519	654	692	794	692

Pullover force = 1.5 -x- Thickness of the member in contact with the screw head -x- Larger of the screw head diameter or washer diameter. -x- Tensile strength of the member in contact with the screw head.

PULLOUT TEST RESULTS

* Denotes load exceeds tensile strength of screw.

Fastener Information		PULLOUT ULTIMATE LOAD IN POUNDS													
		Calculated Values In Accordance to AISI S100 Section E4													
		Grade 50 per ASTM A1011 60Ksi Min. Steel					Grade 50 per ASTM A792/A653/A572/A529 65Ksi Min. Steel								
Screw Size	Nom Dia. (in.)	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")
#8-18	.164"	151	177	202	252	303	435	543							
#10-16	.190"	174	203	233	291	349	504	627	786	1,101	1,311				
#10-24	.190"						504	627	786	1,101	1,311				
#12-14	.216"	198	231	264	330	397	573	716	895	1,253	1,492	1,611			
#12-24	.216"										1,492	1,611	2,984	*4,475	*5,967
1/4-14	.250"	230	268	306	383	459	633	829	1,036	1,450	1,727	1,865	3,453		
1/4-20	.250"										1,727	1,865	3,453	*5,180	*6,906
5/16-12	.3125"						829	1,036	1,295	1,813	2,158	2,331			

Pullout Loads for Carbon Steel, 304 Stainless Steel & 410 Stainless Steel Screws
The tensile strength of the substrate that is used in the chart below is typical for metal building and roofing applications. Contact TFC if other substrate tensile strengths are required.

For allowable loads, please apply an appropriate Factor of Safety as required by local and national code requirements.

AISI S100 Section E4 recommends a Factor of Safety of 3 for allowable loads.

DISCLAIMER: All information is non-binding and without guarantee. Before using the products, all specifications and calculations must be checked by a suitably qualified person and local regulations must be observed. This document is subject to revision. We reserve the right to make technical changes. (0321-1)

FASTENER PULLOUT LOADS | DRILL SCREWS

Because the tensile strength of the substrate dramatically affects the pullout of the fastener, TFC provides published pullout results based on a calculation developed by AISI.

The following pullout loads were calculated per AISI S100 | Section 4 of the Supplement No. 2 to the American Specification for the Design of Cold-Form Steel Structural members (S100-07/S2-10).

Many tests were conducted with compressible fiberglass insulation placed between steel sheet samples. It was determined by the results that the equations are valid for steel connections including applications that use compressible insulation. Refer to AISI S100 for more details.

- The pullout calculation requires the use of the nominal diameter of the screw and the tensile strength of the substrate.

• Because substrate tensile and specific fastener details like point diameter effects

USE MD18



Pullout
Carbon S
 The tens
 Contact

Actual
tensile

ons.

Fastener Information		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")
#8-18	.164"	151	177	202	252	303	435	543							
#10-16	.190"	174	203	233	291	349	504	627	786	1,101	1,311				
#10-24	.190"						504	627	786	1,101	1,311				
#12-14	.216"	198	231	264	330	397	573	716	895	1,253	1,492	1,611			
#12-24	.216"										1,492	1,611	2,984	*4,475	*5,967
1/4-14	.250"	230	268	306	383	459	633	829	1,036	1,450	1,727	1,865	3,453		
1/4-20	.250"										1,727	1,865	3,453	*5,180	*6,906
5/16-12	.3125"						829	1,036	1,295	1,813	2,158	2,331			

* Denotes load exceeds tensile strength of screw.

For allowable loads, please apply an appropriate Factor of Safety as required by local and national code requirements.

AISI S100 Section E4 recommends a Factor of Safety of 3 for allowable loads.

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The largest selection of 304 stainless steel bi-metal self-drilling screws
The head and threads are made of 304 stainless steel, providing exceptional corrosion protection and ductility. The drill point is made of hardened carbon steel welded to the body. Sizes that will drill and tap steel up to 1/2" thick!

Sizes • Specifications • Part Numbers

Head Style		Description	Drilling Thickness	'Load Bearing Length W/W	Part Number	
					No Washer	With Washer
5/16" AF HWH	A	#12-14 x 1" DP1	.090" max	.470"		12100HWT1S3BMBW
	B	#12-14 x 1" DP3	.059" - .236"	.350"	12100HWT3S3BMBW	12100HWT3S3BMBW
		#12-14 x 1-1/4" DP3		.550"	12125HWT3S3BMBW	12125HWT3S3BMBW
		#12-14 x 1-3/8" DP3		.750"	12137HWT3S3BMBW	12137HWT3S3BMBW
		#12-14 x 2" DP3		1.375"	12200HWT3S3BMBW	12200HWT3S3BMBW
		#12-14 x 1-1/2" DP5		.500"	12150HWT5S3BMBW	12150HWT5S3BMBW
	C	#12-14 x 2-1/4" DP5	.157" - .472"	1.220"	12225HWT5S3BMBW	12225HWT5S3BMBW
	3/8" AF HWH	D	1/4-14 x 1" DP2	.047" - .118" (AL = .125")	.468"	14100HWT2S3BMBW
1/4-14 x 1-1/2" DP2			.970"		14150HWT2S3BMBW	14150HWT2S3BMBW
1/4-14 x 2" DP2			1.4327"		14200HWT2S3BMBW	14200HWT2S3BMBW
E		1/4-20 x 1-1/8 DP4	.100" - .312"	.375"	14112HWT4S3BMBW	14112HWT4S3BMBW
		1/4-20 x 1-1/2" DP4		.718"	14150HWT4S3BMBW	14150HWT4S3BMBW
		1/4-20 x 2" DP4		1.203"	14200HWT4S3BMBW	14200HWT4S3BMBW
F		1/4-20 x 2" DP5	.125" - .500"	.937"	14200HWT5S3BMBW	14200HWT5S3BMBW
		1/4-20 x 4" DP5		1.3968"	14400HWT5S3BMBW	14400HWT5S3BMBW
T25 TORX	G	#12-14 x 1" DP2	.047" - .118"	.340" (n/w)	12100TPCULT2S3BM	
#2 Square	H	#12-14 x 1" DP3	.059" - .210"	.375"	12100SPC3BM	
	I	#12-14 x 2" DP3		1.750"	12200SPC3BM	
T-25 TORX	J	#12-14 x 1" DP1	.090" max	.475"		12100TBT1S3BMBW
	K	#12-14 x 2" DP2	.059" - .118"	1.475"	12200TBT2S3BM	12200TBT2S3BMBW
		#12-14 x 1" DP3		.350"	12100TBT3S3BM	12100TBT3S3BMBW
	L	#12-14 x 1-3/8" DP3	.059" - .236"	.750"	12137TBT3S3BM	12137TBT3S3BMBW
		#12-14 x 1-1/2" DP5		.157" - .472"	.510"	12150TBT5S3BM
	M	T-25 TORX WEDGE BIT			Part Number: TB25W	

Notes

1. Add .125" to bearing length for no washer.
2. TORX Recess: Must use a T25W Torx Wedge bit.



MATERIAL

Body: 304 Stainless Steel
Drill Tip: Carbon Steel

PLATING

#12 Dia.: Zinc and Wax
1/4" Dia.: Zinc with TRI-SEAL Topcoat

SEALING WASHERS (BOND-SEAL)

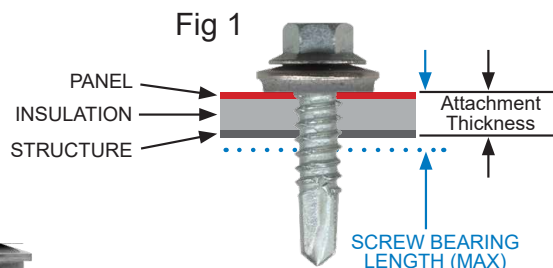
15MM OD. 304SS Stainless Steel
Backing to Non-conductive EPDM

Installation Information

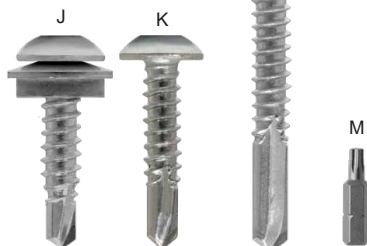
Use a 2,000 rpm max screw-gun with torque control or depth sensing.

Screw Length Selection

The attachment thickness should not exceed the load bearing length of the screw. Refer to fig 1 below.



NEW!
#12 Pancake with #2 Sq Drive TRI-SEAL® Coated



MANY MORE SIZES AVAILABLE!
Checkout our CONCEALOR® pancake line of screws!

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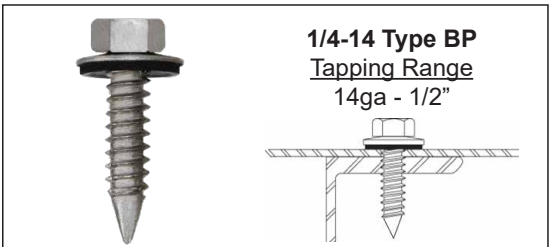
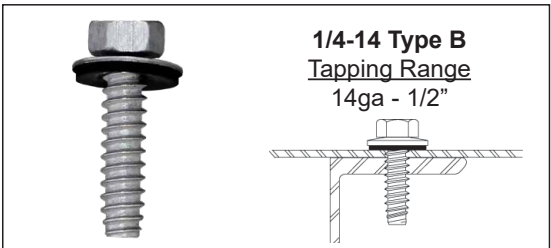
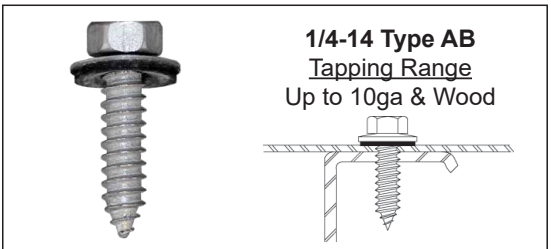
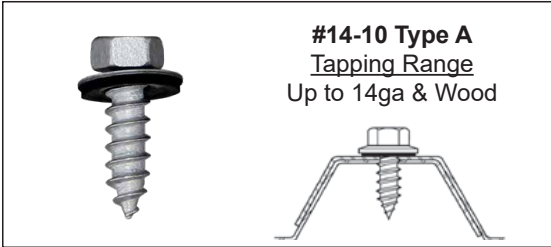


CARBON STEEL & 304 STAINLESS STEEL TYPE A, AB, B, BP SELF-TAPPING SCREWS

You want 'em... we got 'em!

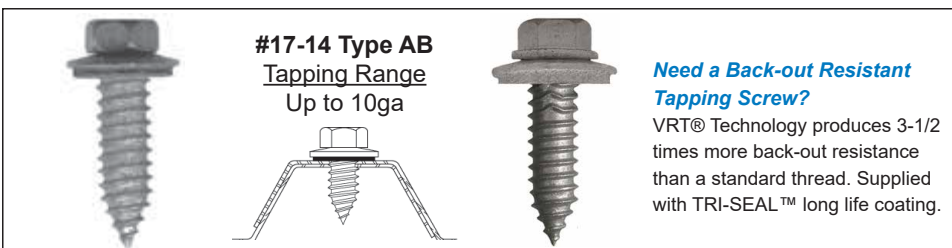
We stock the largest selection of carbon steel self-tapping "sheeting" screws in the USA!

- Select from carbon steel, 304 stainless steel, zinc cap head or stainless steel cap head.
- Available with and without BOND-SEAL sealing washers.
- Available with TRI-SEAL® long life coating providing over 1,000 hours salt spray resistance (ASTM B117).
- Lengths up to 8" long!
- Can be painted with our KALIDA-KOTE™ paint process to match your specific color.



Used for alignment into structure.

Oversize or special sealing washers available!



Need a Back-out Resistant Tapping Screw?

VRT® Technology produces 3-1/2 times more back-out resistance than a standard thread. Supplied with TRI-SEAL™ long life coating.

Sizes (X = Available)

Description	Point Type	Carbon Steel	304 SS	Stainless Cap Head	Zinc Cap Head	Box Qty.	Wgt. Per M
#14-10 x 3/4"	Type A	X	X			2,500	10.8
#14-10 x 1"		X	X		X	2,500	14.2
#14-10 x 1-1/2"		X	X		X	1,500	19.1
#14-10 x 2"		X	X			1,000	23.4
#14-10 x 2-1/2"		X	X			1,000	28.1
#14-10 x 3"		X	X			500	34.1
#14-10 x 4"		X	X			500	45.5
#14-10 x 5"		X	X			300	52.8
#14-10 x 6"		X				250	60.1
1/4-14 x 3/4"	Type AB	X	X	X	X	2,500	12.5
1/4-14 x 1"		X	X	X	X	2,500	14.9
1/4-14 x 1-1/2"		X	X			1,500	19.7
1/4-14 x 1-3/4"			X			2,000	23.4
1/4-14 x 2-1/2"	Type B		X			1,000	28.7
1/4-14 x 1"		X	X			2,500	14.1
1/4-14 x 1-1/2"		X	X			1,500	19.5
1/4-14 x 2"		X	X			1,000	23.1
1/4-14 x 2-1/2"		X	X			1,000	29.0
1/4-14 x 3"		X	X			500	33.3
1/4-14 x 4"		X	X			500	43.4
1/4-14 x 5"		X	X			300	53.5
1/4-14 x 6"	Type BP		X			250	62.2
1/4-14 x 8"						200	81.0
1/4-14 x 1"						2,000	17.0
1/4-14 x 1-3/4"	Type AB		X			2,000	23.4
*#17-14 x 1"		X	X	X	X	2,000	18.9
*#17-14 x 1-1/2"		X			X	1,500	28.4

*Available with VRT® technology.

Refer to the back for technical information and drill bit size.

Screwgun Speed: 1,000 rpm maximum

Available Head Styles



**3/8" Hex Head
(Standard)**



**3/8" Hex Washer Head
(#17-14 VRT® Only)**



3/8" Zinc Cap Head



5/16" Stainless Cap Head

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CARBON STEEL & STAINLESS STEEL SELF-TAPPING SCREWS

Fastener Data and Submittal Sheet



Material Information

Product: TFC Tapping Screws
General Specification: ANSI B18.6.4, AC 118)

Material: C 1018 / C 1022
410 Stainless Steel
Heat Treat: Case Hardened
Finish: .0003" Zinc Plated - 24 hrs salt spray /
No red rust
Optional: TRI-SEAL Coated – 1,000 hrs
salt spray / No red rust

Material: Type 304 Stainless Steel (18-8)
Heat Treat: None
Finish: Type B & BP: .0003" Min. Cad Plating (For lubricity)
Type A & AB: .0003" Min. Zinc Plating (For lubricity)
Salt Spray: >2,000 hrs / No red rust

Pressure Treated or Fire Treated Wood Connections

Screw made of 410 or 300 series stainless steel are recommended. Carbon steel screws must be hot dipped galvanized or TRI-SEAL® coated. Do not use standard, zinc plated, carbon steel screws.

Sealing Washer Information

Carbon Steel Screws: 15MM O.D. Galvanized Steel / EPDM.
Stainless Steel Screws: 15MM O.D. Stainless Steel / EPDM.
#17 with VRT® Screws: 3/4" O.D. Galvanized Steel / EPDM.
Zinc Cap Head and Stainless Cap Head: 5/8" O.D. Head / EPDM.

Application and Description

Carbon Steel Screws

These general purpose screws are designed for normal atmospheric conditions. They should not be used in heavy industrial applications or close proximity to the ocean where corrosion can occur. They are case hardened and can tap up to 1/2" thick steel using the appropriate hole size listed on this sheet.

410 Stainless Steel Screws

These screws can be used in mild atmospheres, steam, and many mild chemical environments. They provide superior strength and are plated or coated to provide lubricity during tapping. 410 screws may show signs of red rust but will not rust as quickly as carbon steel screws. Not recommended for use in aluminum connection. Expansion of the aluminum may stress the screw to failure due to the screw's hardness.

304 Stainless Steel Screws

These screws are used in applications that require superior corrosion resistance or ductility. The chromium in the material reacts with oxygen forming a thin, invisible, non-reactive chromium oxide film. It is resistant to ordinary rusting in wastewater treatment, food-processing environments, and a wide variety of chemicals. 304 stainless steel screws are slightly magnetic caused during head and thread forming. They are not heat treated and are plated to provide lubricity that helps minimize thread roll-over caused during tapping.

Mechanical Properties

Screw Type	Major Dia.	Torsional Lb-in.	Material	Tensile Lbs.	Shear Lbs.
#14-10 Type A	.235" .246"	125	Carbon Steel	3,150	2,150
			304 SS	2,925	1,925
1/4-14 Type AB & B	.237" .246"	150	Carbon Steel	3,850	2,575
			304 SS	3,700	2,800
#17-14 Type AB	.280" .290"	170	Carbon Steel	5,890	3,285
			304 SS	5,200	3,125

Hole Size and Pullout Values - Tapping Screws

Rev 1221JS

Pullout Loads | Ultimate in Pounds Force

Carbon Steel, 304SS, & 410SS Tapping Screws

The tensile strength of the substrate that is used in this chart below is typical for metal building and roofing applications.

Contact TFC if other substrate tensile strengths are required.

For allowable loads, please apply an appropriate Factor of Safety as required by local and national code requirements.

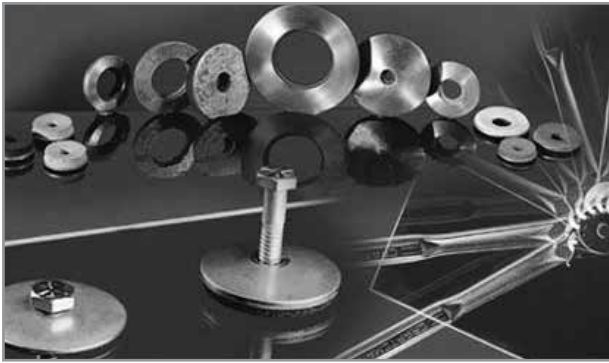
AISI S100 Section E4 recommends a Factor of Safety of 3 for allowable loads

Use 135° split point drill bits for optimal performance.



Fastener Information		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")	
#14-10 1/4-14	.250"	230	268	306	383	459	633	829	1,036	1,450	1,727	1,865	*3,453	*5,180	*5,967	
Drill Bit size		1/8" (.125")		5/32" (.156")			3/16"		#7 (.201")		#2 (.221")		#1 (.228")			
Point Type		A, AB		A, AB			A, AB, BP		AB, B, BP		AB, B, BP		B, BP			
		*Denotes exceeds tensile strength of screw														
Point Type		AB														
Drill Bit Size		3/16" (.187")					1/4" (.250")					Not Recommended				
#17-14	.285"	262	305	348	432	523	756	945	1,181	1,653	1,968	2,126				
Screw Size	Nom Dia. (in.)	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")	

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MASTER SEAL™ Washers

Provide An Air, Vapor Or Liquid-Tight Seal

AZTEC MasterSeal washers are a practical and simple, yet sturdy and reliable. They are engineered to prevent delamination of metal and sealant.

Features and Benefits

- Vulcanized for optimal strength.
- Aluminum, stainless steel or galvanized steel backing standard; Monel backing also available.
- EPDM sealer standard; neoprene and silicone also available.
- Deflectable, tapered lip on inside diameter assures inner seal around fastener.
- Sealant evenly compresses to create a uniform seal.
- Resists shearing and tearing during application.
- Retains positive seal regardless of position on flat surfaces and many curved surfaces.
- Allows visual confirmation of proper seating.

SIZES

Sealant: EPDM

20 Gage Galvanized Steel Backing

Outside Diameter	Screw Size
1/2" (9mm)	#10, #12, 1/4", #14
9/16"	#12
5/8" (15mm)	#10, #12, 1/4", #14, #17, 5/16"
.729"	1/4", #14, #16, 5/16", 3/8
1"	5/16", 1/2"
1-1/8"	1/4", #14
1-13/16"	5/16"
1-1/2"	1/4", #14, 5/16"

20 Gage 304 Stainless Steel Backing

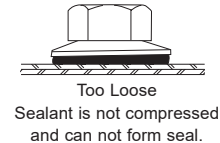
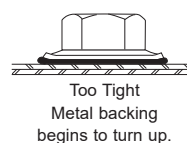
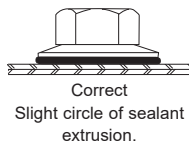
Outside Diameter	Screw Size
1/2" (9mm)	#10, #12, 1/4", #14
9/16"	#12
5/8" (15mm)	#10, #12, 1/4", #14, #17, 5/16"
.729"	1/4", #14, 5/16", 3/8
7/8"	3/8"
1"	5/16", 1/2"

.040 Aluminum 5052 Backing

Outside Diameter	Screw Size
9/16"	#12, 1/4", #14
5/8" (15mm)	#10, #12, 1/4", #14
.729"	5/16", 3/8
1"	5/16"
1-3/16"	5/16"
1-1/2"	5/16"

Installation

Extrusion of sealant at outer edge of properly seated washer provides easy conformation of proper fastener seal.



Typical properties of Bonded EPDM Sealing Washer Material

Property	Value	Test Method
Base Material	Cross-Linked EPDM (Ethylene propylene di ene terpolymer)	N/A
Color	Black	N/A
Test Level	3	Grade
Test Temperature	B 100 degrees C	Type
Volume Swell	A No Requirement	Class
Durometer Hardness	70 +/- 5ASTM	D2240
Tensile Strength	10 MPa (1450 PSI) Minimum	ASTM D412
Ultimate Elongation	250% Minimum	ASTM 412 A/C
Heat Resistance	Heat aging 70 hrs @ 100 degrees C	ASTM D573
	Change / Hardness Maximum + 10 Points	
	Change / Tensile Maximum - 25%	
	Change / Ultimate Elongation Maximum - 25%	
Compression Set	Maximum 25%	ASTM D395B
Ozone Resistance	No observed effect (70 hrs. @ 50 pphm)	ASTM D1171
	100% Quality Retention Facing	
Low Temperature Brittleness	Non-brittle 3 minutes@ -55 degrees C	ASTM D2137
UV Resistance	Excellent	
Resistance To Aging	Excellent	
Non-standing	Pass	

SADDLE WASHERS

We can provide saddle washers for a variety of panel types. Contact TFC for sizes.



Styles for flat and curved ribs



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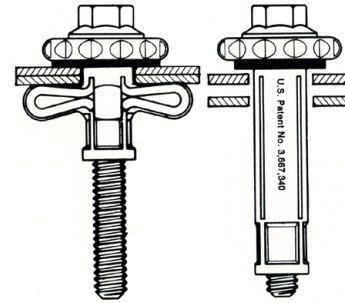
We Stock a Full-Line for Immediate Shipping!

FAB-LOK® fasteners were designed to maintain panel integrity in high-stress environments such as: high wind areas, expansion and contraction, severe vibration, racking and the repair of oversized holes.

Sizes

Material	Size	Penetrating Length	Grip Range	Wt. / M
Carbon Steel	FAS 10-4	1.373"	.062"-.250"	23
	FAS 10-8	1.612"	.250"-.500"	24
	FAS10-12	1.807"	.500"-.750"	28
H-3 (300 series) Stainless Steel	FAC10-4	1.373"	.062"-.250"	23
	FAC 10-8	1.612"	.250"-.500"	24
	FAC 10-12	1.807"	.500"-.750"	28

WEATH-R-SEAL Washers	
Part	Description
Aluminum Bonded Weath-R-Seal Washers	.729" O.D. - .040 Aluminum
	1" O.D. - .040" Aluminum
304 Stainless Steel Bonded Weath-R-Seal Washers	.729" O.D. 20 gauge 304 S/S
	1" O.D. 20 gauge 304 S/S



Vibration, either from inside or outside a building, can make ordinary fasteners loosen and back out.

FAB-LOK® fasteners combine a slotted aluminum sleeve and fastener to provide the simplicity and strength of both elements.

Installation

1. Pre-drill with a 5/16" diameter drill bit
2. Insert FABLOK into hole. Use the FABLOK holding sleeve with a DEWALT screw-gun (DW268 or DW267)

Holding Sleeve
p.n. : EZL900



Technical Information

Pull-out tests were performed on a Model L Dillon Dynamometer. FAB-LOK® fasteners were installed in single sheet and two sheets of metal and pulled over the tines of the FAB-LOK® to determine holding values.

Clamping Force

FAB-LOK® Type
Maximum 900 lbs.
Residual 860 lbs.

Comparison: FAB-LOK® & Sheet Metal SC

Sheet Material	FAB-LOK® FAS-10-4	#14 Sheet Metal Screw
Strip test in .032" Aluminum	75 inch-lbs.*	65 inch-lbs.*
Strip test in 26 ga. Steel	75 inch-lbs.*	45 inch-lbs.*
Strip test in 24 ga. Steel	75 inch-lbs.*	55 inch-lbs.*

Single Shear Strength

FAB-LOK® Type	FAC	FAS
Avg. shear	1885 lbs.	2400 lbs.

Hydrostatic Test

FAB-LOK® Type	H2O Pressure	Length of test	Result
FAC - 10-4	100 psi	5 days	No leaks

Type Fac - Single Sheet

Sheet Material	Sheet Thickness	Failure lbs.*	Type of Failure
Steel	24 ga.	833	Sheet Split
	20 ga.	858	Sheet Split
	18 ga.	1050	Sheet Split
	16 ga.	1293	Sheet Split
	14 ga.	1400	Fastener Broke

Fatigue Tests

Two thicknesses of 26 gauge metal fastened with FAB-LOK® and tested on 5000 lb. capacity machine at 1500 cycles per minute, sustained 1,775,500 cycles when failure of sheets occurred. Fastener did not fail.

FAB-LOK® fastening 1/8" aluminum plate to 3/16" steel of a railroad freight car, held without failure when the car was subjected to jarring vibration by a Hewitt-Robins Car Shaker at 900 cycles for ten minutes.

INFORMATION PROVIDED HERE IS BASED UPON TESTS BELIEVED TO BE RELIABLE. IN AS MUCH AS ELCO FASTENING SYSTEMS HAS NO CONTROL OVER THE EXACT MANNER IN WHICH OTHERS MAY USE THIS INFORMATION, IT DOES NOT GUARANTEE THE RESULTS TO BE OBTAINED NOR DOES THE COMPANY MAKE ANY EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE CONCERNING THE EFFECTS OR RESULTS OF SUCH USE.



Grommet Seal Fasteners are compression fasteners used in side-lap applications which utilize fiberglass, plastic or composite sheeting.

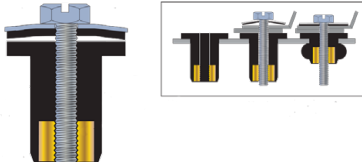
Sizes and Specifications

Grommet Size	1/4" x 1"	3/8" x 1"
Body Length	.948	.812
Nut Insert	6-32	10-32
Durometer (sleeve)	70	60
Ultimate Tensile	50 lbs.	80 lbs.

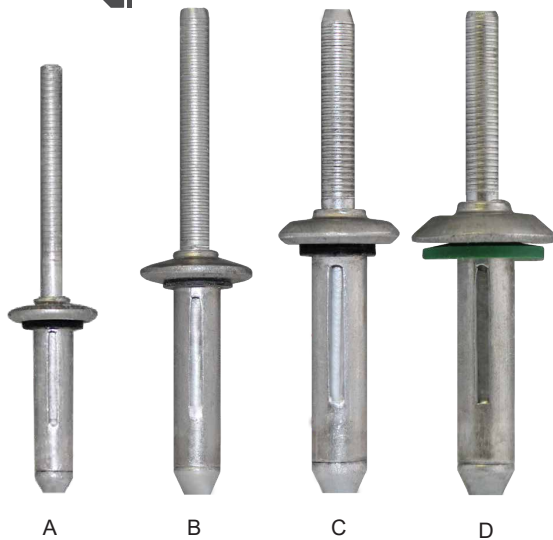
*Also available in 316 stainless steel.

Installation

The grommet is installed by placing it into a pre-drilled 1/4" or 3/8" hole and tightened using a screw gun with a standard 1/4" or 5/16" socket. The machine screw engages the nut insert, forcing the sleeve to expand against the inner wall of the materials. Grommets become an excellent sealant against air, moisture and vibration.



Machine Screw Size	6-32" x 1"	10-32" x 1"
Hex Size	1/4"	5/16"
Material	302 HQ	302 HQ
Bonded Washer	304 SS/EPDM	304 SS/EPDM
Sleeve	EPDM	EPDM
Nut Insert	Brass	Brass
Recommended		
Hole Size	.250	.375
Grip Range	.375-.607	.312-.450



More than forty years ago, the first Bulb-Tite® was developed to solve application requirements in the pre-engineered metal building, roofing and siding industry.

The Bulb-Tite® rivet body folds into three separate legs forming a large blind-side head. This large bearing head evenly distributes the Bulb-Tite® high clamp force in soft, thin or brittle materials while providing high pull through resistance. The Bulb-Tite® wide grip range enables a single Bulb-Tite® to work in a greater variation of thickness. Some versions of the Bulb-Tite® feature a special flush break mandrel that effectively seals the rivet bore and adds greater shear strength.

The standard Bulb-Tite® rivets are made of aluminum alloy, providing a durable non-rusting fastener that can withstand weather-related corrosion.

Bulb-Tite® Rivets handle your attaching problems with ease providing greater pull-through.



Sizes

With Sealing washer

	DIAMETER	TFC Part Number	GRIP	HOLE SIZE	SHEAR	TENSILE
A	3/16"	RV6604-6-4W	.062" - .250"	.209" - .221" (#4)	675	450
B	1/4"	RV6604-8-6W	.062" - .250"	.250" - .263" (1/4")	1,100	675
C	9/32"	RV6603-9-6W	.032" - .375"	.308" - .327" (5/16")	1,500	1,100
D	9/32"	RV6605-9-6W	.042" - .375"	.308" - .327" (5/16")	1,500	1,100

TOOLS

Tools designed to install Bulb-Tite® Rivets in metal clad building application.



Contact TFC for availability!

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Largest Selection of Painted Rivets...**IN STOCK!**

- #43 and #44 Stainless Steel
- Over 50 colors in-stock for same day ship!
- Chip resistant paint is formulated to resist fading caused by UV rays.
- 250 pieces per bag for easy handling.

WE'LL SHIP ONE BAG!

Popular Sizes and Technical Information

Body Dia.	Rivet #	Grip Range	Rivet Length	Head Dia.	Head Height	Drill Hole
1/8"	43	.126 - .187	.337	.250	.040	#30 (.129" - .133")
	44	.188 - .250	.400			
3/16"	63	.126 - .187	.337	.375	.060	#11 (.192" - .196")
	64	.188 - .250	.400			

BLIND RIVETS | DOMED HEAD
TFC standard rivets are all stainless, all aluminum or all steel

Use the correct hole size to assure the rivet performs properly. Refer to size chart for hole size.

Drill Bit Type
High Speed / 135° Split Point

Pullout in Steel

1/8" BLIND RIVET (#42, #43, #44) STAINLESS STEEL					
	Steel Thickness and Tensile				
	0.021"	0.032"	0.047"	0.074"	
	49 ksi	44 ksi	112 ksi	63 ksi	66 ksi
PULLOUT (lbs)	106 ¹	175 ¹	571 ¹	647 ²	631 ²

Farabaugh Report: T311-16

Pullover in Steel

1/8" BLIND RIVET (#42, #43, #44) STAINLESS STEEL			
	Steel Thickness and Tensile		
	0.021"	0.032"	0.074"
	49 ksi	44 ksi	66 ksi
PULLOVER (lbs)	306 ¹	425 ¹	644 ²

Farabaugh Report: T175-21

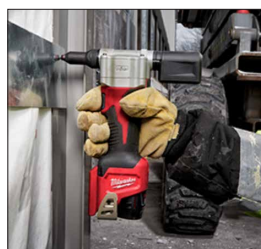
Rivet Strengths

RIVET	Tensile	Shear
1/8" SS	600	520
1/8" AL	180	150
3/16" SS	1300	1150
3/16" AL	700	440

Country of Origin: USA

Tools

Milwaukee® M12™ Tool 12 Volt Cordless



Delivers fast, easy riveting while maintaining performance, durability, and consistency.

Model: M12 - 2550-22 Tool Kit

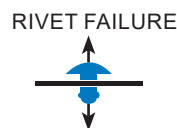
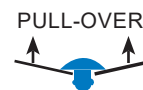
Capability | One full Charge
3/16" stainless steel rivets (250 rivets)
1/8" steel rivets (450 rivets)



Tool Kit includes battery, charger, bag.

Manual

The Rivet King model RK-65 hand rivet tool can set blind rivets up to 3/16" in diameter.



FAILURE MODES
1. Pullover or Pullout
2. Rivet

Pullout in Aluminum

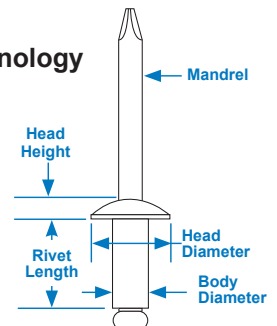
1/8" BLIND RIVET (#42, #43, #44)		
ALUMINIUM THICKNESS (6063 T5)	0.040"	0.125"
STAINLESS RIVET PULLOUT (lbs)	102 ¹	561 ¹
ALUMINUM RIVET PULLOUT (LBS)	103 ¹	194 ²

3/16" BLIND RIVET (#62, #63, #64)		
ALUMINIUM THICKNESS (6063 T5)	.040"	0.125"
STAINLESS RIVET PULLOUT (lbs)	124 ¹	1,082 ¹
ALUMINUM RIVET PULLOUT (lbs)	128 ¹	512 ²

Farabaugh Report: T220-16 & T305-20

All tests conducted at Farabaugh Engineering and Testing

Rivet Terminology



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Specifically Formulated for Fasteners, Rivets, & Metal Closures

Triangle Fastener offers Kalida-Kote painting process, producing perfect color matched fasteners, rivets, and metal closure. We start by using a special formula polyurethane enamel with UV protection that is expertly color matched.

After spraying, we cure the finish by baking to produce a tough chip resistant finish assuring long-life. Kalida-Kote is compatible with Kynar paint finishes.

Specifications

Finish: Gloss Enamel 85 units minimum at 60 degrees
Exterior Catalyst

Thickness: 1.6 - 2.0 mils

Adhesion: ASTM D 3359 - Excellent
No peeling or removal

Impact Resistance: ASTM D 2794 Good: > 10 in.lbs.

Abrasion Resistance: ASTM D 4060 Good

Corrosion Resistance: Salt Spray - 1,000 hrs
(< 5% red rust) Kesternich - 30 cycles

Abrasion & ME Abuse	Excellent	Acids	Excellent
Alkalies	Excellent	Color & Glass Retention	Excellent
Humidity	Excellent	Salts	Excellent
Solvents	Very Good	Weather	Excellent

KALIDA-KOTE™ is compatible with Kynar® paint finishes.



- Polyurethane enamel can be matched to any color and is UV resistant!
- Baked on finish provides a tough, chip resistant finish.
- Customized painting of metal closure and gutter straps.
- Special colors in 3 days or less!!

Our 4-step process assures a perfect color match and durable finish!

STEP 1

Color Matching

We color match using a spectrophotometer that provides consistent color matching.

STEP 2

Priming

Special etching primer provides a superior base for the application of the paint.

STEP 3

Spraying

Polyurethane enamel is applied uniformly to provide superior coverage.

STEP 4

CURING

We cure the paint to produce a tough chip resistant finish.



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TRI-SEAL® LONG-LIFE COATING

TRI-SEAL® Long-Life Coating is a high performance dip spin finish, developed to minimize corrosion when used in exterior building applications. It consists of three layers; the first layer is a metallic zinc layer, the second layer is a high-grade anti-corrosion chemical conversion film and the third, outer layer, is a baked ceramic surface coating.

The distinguishing feature of **TRI-SEAL®** is the tight joining of the baked ceramic surface coating and the chemical conversion film. These two layers are bonded together through chemical reactions, and this unique method of combining layers result in a rigid combination of the coating films.

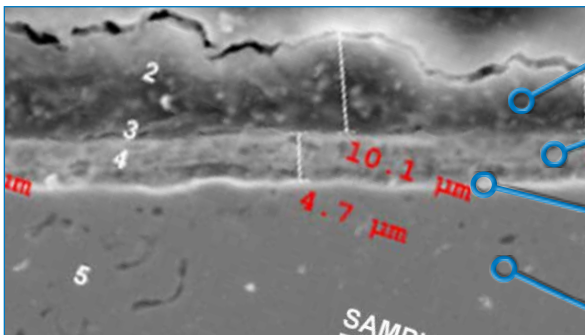
Salt Spray Test Results

1,000hrs Per ASTM B117 - No Red Rust

Applications: Exceeds salt spray requirement specified in ASTM B633, B659, & F1941 (zinc plating).
Compatible for use in treated lumber

- Excellent resistance against gas, weather, and other kinds of corrosion factors, including salt water.
- Compatible for use in ACQ and Fire Treated Lumber.
- Composite layers minimize the effect of scratches on the protection coating.
- Compatible for use in aluminum applications.
- UV resistant. Does not chalk or fade

SEM IMAGING



Layer 1 - Baked Ceramic Surface Coating Layer

Corrosive elements are intercepted by the strong paint film made of ceramic materials.

Layer 2 - Chemical Conversion Coating Layer

Rust proof performance is improved as the chemical conversion inactivates the zinc plated surface and creates a tight adhesion between the chemically converted layer and the paint layer.

Layer 3 - Metallic Zinc Layer

The steel / iron substrate is protected from corrosion by the self-sacrificial galvanic effect of the zinc coating.

Layer 4 - Fastener

MATERIAL PROPERTIES

Test Items	Test Methods	Test Results
Hardness	Peeling test by pencil hardness	Over 4H
Adhesion	Peeling test by adhesive tape on cross scribed test piece in 1 mm width	Nothing abnormal
Acid Resistance	Immersion in 5% sulfuric acid solution for 24 hours	Nothing abnormal
Alkali Resistance	Immersion in 5% sodium hydroxide solution for 72 hours	Nothing abnormal
Heat Resistance	Exposure to 250 C (482 F) heat for an hour	Nothing abnormal
Accelerated Weathering	Sunshine weather-0-meter test for 1,000 hours	Free from red rust
Contact Corrosion w/other Metals	Corrosive investigation after Salt Spray Test (JIS Z2371) done comparatively on surface treated steel bolts/nuts tightened on a stainless steel plate	Clearly superior to zinc electroplated (colored chromate) and hot dip galvanizing

Corrosion Testing

Salt Spray: 1,000hrs.
Per ASTM B117.
No red rust

Kesternich:
30 cycles | 1.0 L
15 cycles | 2.0 L
ASTM G87
No Red Rust

UV Resistant

Exceeds salt spray requirements specified in ASTM B633, B695, & F1941 (zinc plating).

Contact TFC for additional details on TRI-SEAL®.

APS 500®

ADVANCED POLYMER SEALANT

APS 500® is formulated to provide superior adhesion, excellent resistance to weathering and is compatible for use with a variety of substrates. Supplied in plastic tubes with screw-on nozzles. Available in smooth or textured finish.

Over 24 Colors Available!

*Denotes standard colors.



Applications

- Window Trim
- Doors & Skylights
- Siding
- Metal Architecture
- Curtain Walls & Joints
- Coated Metal Roofs

Performance

- Paintable
- VOC Compliant
- Fast Curing
- Installs at -40 - 200°F
- Non-Yellowing
- UV Resistant

Need a custom color?
We can color match!

		APPROXIMATE® LINEAR FEET/COVERAGE PER 10.1 FL. OZ. CARTRIDGE (298 ML)							
		WIDTH							
DEPTH	1/8"	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	1"	
	99	49	33	24	20	16	14	12	
	1/4"		24	20	12	10	8	7	6
	3/8"			11	8	6	5	5	4
	1/2"				6	5	4	3	3

Adheres to Kynar®, Galvanize, Galvalume®, Copper, Stainless Steel, Zinc

NOTE: Colors listed do not represent actual colors. Contact your local distributor for the APS500® color selector swatches for accurate color match.

Product Specifications

Physical Property	Test Method	Typical Value
Tensile Strength	ASTM D412	205 psi
Elongation	ASTM D412	300%
Shore Hardness	ASTM C661	30 +/- 5
Service Temperature		-40°F to 200°F
Joint Sealant Designation	ASTM C920	Type S, Grade NS, Class 50, use T, NT, G, M
Adhesion and Cohesion	ASTM C719	Pass on glass, Aluminum and concrete for ± 50% movement
Adhesion-in-Peel, 2 inches/minute @ 25°, N (lbf)	ASTM C794	Aluminum 37 pli
		Glass 35 pli
		Concrete 34 pli
Staining	ASTM D2203	None
Density	Industrial Method	1678 g/L
VOC	EPA Method 24	14 g/L
HAP	EPA Method 311	0.08 g/L (0.005% by weight)
Low Temp. Flexibility	ASTM C 711	Pass -10° F. 1/4 inch mandrel
High Temp. Flexibility	Industrial Method	Up to 200° F
Cure Rate	Industrial Method	48 hours
Skin Time Cure Time	Industrial Method	40° F at 40% humidity 40 minute 2-3 days
		75° F at 50% humidity 10 minute < 24 hours
		95° F at 95% humidity 5 minute

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Bonds To



Limited Warranty: Satisfaction guaranteed when handled and applied according to label.

TFC BUTYL

NON-SKINNING TUBE SEALANT

Developed for the metal roofing industry
and provides long-life performance!

TFC BUTYL™ is a single component, non-skinning butyl-based solvent release sealant. It is designed to deliver excellent adhesion to metal panels while remaining permanently pliable.

The product is the ideal choice in applications where the combination of moisture and cold temperatures would cause the break-down of other sealants.

PERFORMANCE

- Non-Skinning
- Non-Staining
- Permanently Pliable
- Moisture Resistant
- Non-Paintable

APPLICATIONS

- Metal Roofing
- Insulated Metal Panels
- Use on Painted Metal, Kynar®, Galvalume® & Galvanized Steel, Aluminum

SPECIFICATIONS: Meets or exceeds AAMA 809.2

COLORS: Gray (Item Number TFCNSBGY)

White (Item Number TFCNSBWH)

SURFACE PREPARATIONS: For best results, the substrate should be clean, dry, frost free, sound and free of any oils, greases or incompatible sealers, paints or coatings that may interfere with adhesion. Do not apply if surface is contaminated. It is recommended to test all substrates prior to applications.

INSTALLATION: Cut nozzle to desired bead size. Apply with caulking gun, forcing sealant onto the substrate, then tool if needed. Clean excess material with mineral spirits or similar solvent.

STORAGE: Material is to be stored under controlled dry environment (below 75° F). Use within 12 months from date of manufacture.

PACKAGING: 10.3 fl. oz. per tube | 24 tubes per carton

APPROXIMATE* LINEAR FEET/COVERAGE
PER 10.1 FL. OZ. CARTRIDGE (298 ML)

DEPTH	WIDTH							
	1/8"	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	1"
1/8"	99	49	33	24	20	16	14	12
1/4"		24	20	12	10	8	7	6
3/8"			11	8	6	5	5	4
1/2"				6	5	4	3	3

PROPERTIES

Total Solids (ASTM C 681)85%
Volume Shrinkage (ASTM D 2453) ...<20%
Wt/U.S. Gallon (ASTM D 1475) ...10.5 +/- 0.40lbs
Staining (ASTM D 2202)None
Blistering or BleedingNone
UV ResistanceExcellent
Sag0.15" Max Full Button
Service Temperature-40deg F to 250deg F
Application Temp Range40deg F to 95deg F
Extrudability (ASTM D 2452)40 seconds max
Flexibility (ASTM C 711)No loss of adhesion at -60deg F
Fungus/MildewResistant to growth
Heat Aging ...No loss of surface tack or adhesion
Weatherability (ASTM G 154) ...No cracking, bleeding, or loss of rubbery characteristics

Chemical ResistanceExcellent to water, ozone, water vapor, alcohols. Fair to weak for acids and bases. Poor to organic solvents.
Static Water Pressure Head Test ...Passes 6" of static water pressure head, no water leakage
Air Leakage (ASTM E 1680)Infiltration @1.57psf 0.0510 cfm/sq ft and 0.0680 cfm/ft & Infiltration @ 6.24 psf 0.1024 cfm/sq ft and 0.1365 cfm/ft
Water Penetration (ASTM E 1646) ...Passed, no leakage
Wet Flammability (ASTM D 56) ...110deg F flash point
Vehicle Bleedout (ASTM C 772) ...No visible exudation of vehicle from sealant after three weeks at 158deg F on painted or unpainted metal surface.
Aged Tack (ASTM D 2377)Permanently Tacky
Hardness (Shore OO Durometer) ...30 - 40

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BUTYL TAPE-SEAL™ was designed specifically for the metal building industry to provide optimal sealing in the harshest environments.

It adheres to most clean, dry metal surfaces and does not harden, bleed or stain. With pressure, it fills minor irregularities in the surface and seals the joints providing an effective barrier against water, moisture, dust, and dirt.

BUTYL TAPE-SEAL™ is an excellent choice for use around windows, doors, roof vents, stacks, access doors, and other penetration points.

SIZES

Stocked sizes - Others available upon request

Size (T x W x L)	TFC P.N.	Rolls/ Ctns	Ctns/ Pallet
3/32" x 3/8" x 45'	0937BCT	48	30
3/32" x 1/2" x 50'	0950BCT	22	50
3/32" x 1" x 45'	0910BCT	24	30
1/8" x 1/2" x 50'	1250BCT50	13	48
1/8" x 1" x 50'	1210BCT50	8	48
3/16" x 1/4" x 40'	1825BCT	20	48
3/16" x 7/8" x 40' *DB	1887BCT	10	48
3/16" x 7/8" x 25' *TB	1887BCT25TRI	8	64
3/16" x 2-1/2" x 20' *TB	TC826W	6	60



*DB denotes double bead

*TB denotes triple bead

PACKAGING

BUTYL TAPE-SEAL™ is extruded butyl material with a silicone backed release paper that is rolled and cut to specific lengths.

Our master cartons are constructed of 200 pound test material and the rolls are separated by silicone divider pads and protected by upright stacking cores.



APPLICATION

For optimum sealing the surfaces should be free of oil, dust, dirt and moisture. Light films of lubricant on unpainted metals should not adversely affect performance. It can be applied in cold temperatures however, at temperatures below 40°F, any condensation or frost present should first be removed. Position product in desired location and press in place through the release paper. When using to seal applications involving fasteners, position on the entry side to prevent penetration of weather elements through fastener holes. Remove release paper prior to assembly / fastening of adjoining surface.

CLEAN UP

Mineral spirits will readily facilitate the cleaning of tools and equipment.

Adheres To

- Painted Metal
- Galvalume®
- Kynar®
- Aluminized Metal

Easy to install!



Property	Value
Color	Off-White / Gray
Specific Gravity	(ASTM D792)- 1.6 ± 5
Percent Solids	(ASTM C771)- 100%
Cone Penetration	(ASTM D217)- 80 - 95
Tensile Adhesive Strength	(ASTM C907)- 15 - 18 psi
Application Temperature Range	-5°F to 120°F -20°C to 49°C
Service Temperature Range	-40°F to 200°F -40°C to 93°C
Sag	(AAMA 800)- None
Elongation	(ASTM C908) > 1000%
Low Temperature Flexibility	(ASTM C734 -40°F/-40°C)- No cracking or loss of adhesion
Peel Adhesion	(ASTM D3330) > 8 psi
Staining	(ASTM D925)- Will not stain painted/ unpainted surfaces
Water Penetration / Static Water Pressure	(ASTM E2140) - Pass/No leakage
Shelf Life	18 Months

TFC122012

BUTYL TAPE-SEAL™ meets or exceeds the following specifications:

MIL-C-1969B, Type II, Class B
TT-C-1796A, Type II, Class B (supersedes MIL-C-18909B) AAMA 804.3-92 and 807.3-92 USDA Acceptable Freight Classification: Caulking Compound, NOIBN, NFMC #149610, Class 55



PIPE-MASTER PIPE FLASHING

Standard Applications



- Flexible, weather resistant EPDM rubber or silicone.
- Aluminum base is flexible to conform to any panel profile
- Grey EPDM is ozone and ultraviolet resistant

Fastening Recommendation



Corrosion resistant fasteners should be used around the base one every 1-1/2 inches as per the United Plumbing Code (UPC) recommendations. Refer to size chart for the quantity to use.

1/4-14 x 1-1/8" DP1 BLAZER Stainless Cap Head with VRT Technology

Sealant Recommendation



Ultra 1000® or APS 500 sealant should be used under the base to assure a proper seal. If you prefer, additional sealant can be applied around base after installation.

Material Specifications

	EPDM	Silicone
Advanced Ozone Resistance	70 hours @ 500 pphm	70 hours @ 500 pphm
High Temp Resistance		
Intermittent	+135° C (275° F)	+260° C (+500° F)
Continuous	+100° C (212° F)	+225° C (+437° F)
Low Temp Resistance	-55° C (65° F)	-74° C (-100° F)
Tensile Strength (min)	10 MPa (1450 psi)	5 MOPa (700 psi)
Compression Set (max)	25%	50%

Size#	mini	#1	#2	#3	#4	#5	#6	#7	#8	#9	#maxi
Box Qty (pcs)	30	15	15	15	10	10	10	10	5	5	5

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Pipe Size Outside Diameter	Flash Number	Flashing Details	TFC Part Number	Number of Fasteners
1/4" - 2 1/2" EPDM	#1	Top Opening Diameter: Closed Overall Height: 2.77" Base Diameter: 4.75"	001DEKR	10
1 3/4" - 3" EPDM	#2	Top Opening Diameter: 1.44" Overall Height: 3.53" Base Diameter: 6.21"	002DEKR	13
1/4" - 5" EPDM *Silicone	#3	Top Opening Diameter: Closed Overall Height: 3.64" Base Diameter: 7.74"	003DEKR 003DEKS	16 16
3" - 6 1/4" EPDM	#4	Top Opening Diameter: 2.38" Overall Height: 5.05" Base Diameter: 9.26"	004DEKR	19
4 1/4" - 7 3/4" EPDM *Silicone	#5	Top Opening Diameter: 3.50" Overall Height: 4.43" Base Diameter: 10.75"	005DEKR 005DEKS	22 22
5" - 9" EPDM	#6	Top Opening Diameter: 4.25" Overall Height: 5.60" Base Diameter: 12.50"	006DEKR	26
6" - 11" EPDM	#7	Top Opening Diameter: 4.90" Overall Height: 5.84" Base Diameter: 14.60"	007DEKR	30
7" - 13" EPDM *Silicone	#8	Top Opening Diameter: 5.80" Overall Height: 7.53" Base Diameter: 16.5"	008DEKR 008DEKS	35 35
9" - 19" EPDM *Silicone	#9	Top Opening Diameter: 7.45" Overall Height: 8.09" Base Diameter: 25.25"	009DEKR 009DEKS	54 54
15" - 24" EPDM	#10	Pipe Size: 15"-24" Diameter (Square Base only)	010DEKRSQ	148

Note: #1 and #3 are closed top. When flashing a steep pitch roof greater than 20° or a profile with a rib height of 1-1/2" or more, use the next larger flashing for increased flexibility.



RETROFIT FLASHING

PIPE SIZE	US PART NUM	FLASHING DETAILS
#1 3/4"- 2-3/4"	Black RF 101 BS Gray RF 101 GS Silicone RF 102 RD	Opening diameter 3/4" Pipe size 3/4"- 2-3/4" Base dimensions 6 - 3/10"
#2 2"- 7-1/4"	Black RF 201 BS Gray RF 201 GS Silicone RF 202 RD	Opening diameter 2" Pipe size 2" - 7 -1/4" Base dimensions 10 - 3/4"
#3 3-1/4" - 10"	Black RF 301 BS Gray RF 301 GS Silicone RF 302 RD	Opening diameter 3 - 1/4" Pipe size 3 - 1/4" - 10" Base dimensions 14 - 1/2"

Available COLORS



Available in 11 colors to match your roof!

#3 - Pipe diameter 1/4" to 4"

#5 - Pipe diameter 4 1/4" to 7 3/4"

Material: EPDM



FASTENER SELECTION GUIDE FOR EXPOSED METAL BUILDING AND ROOFING APPLICATIONS

Environments



Select a fastener based on the environment and the panel type.

To minimize galvanic corrosion, it is important that the fastener material is compatible with the roofing material. The following list of fasteners were selected based on specifications from various panel producers throughout the world. **Harsh environments can corrode metals quickly.** Contact the panel manufacturer for their specific recommendations.

NOTE: Electroplated zinc plated screws are not for use in exterior applications and will corrode quickly.



PANEL MATERIAL

Fasteners



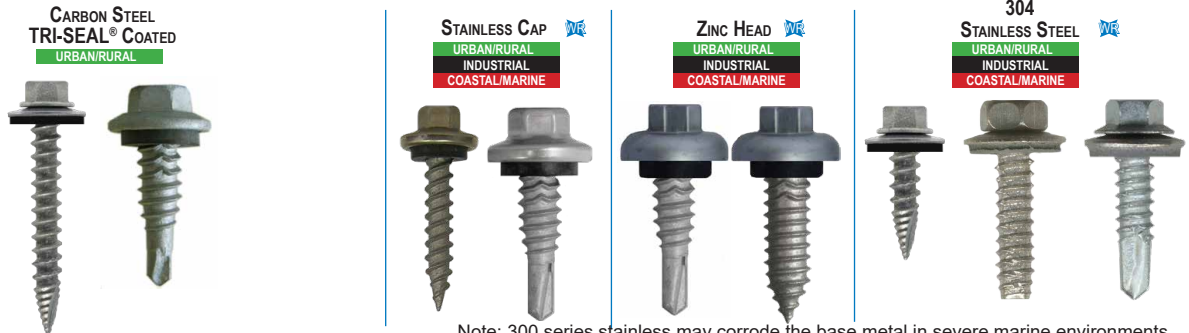
- Galvanized
- Zinc/Aluminum
- Painted Metal



Note: 300 series stainless may corrode the base metal in severe marine environments. Consult the panel manufacturer for specific conditions

PANEL MATERIAL

Fasteners



Note: 300 series stainless may corrode the base metal in severe marine environments. Consult the panel manufacturer for specific conditions

PANEL MATERIAL

Fasteners



PANEL MATERIAL

Fasteners



For detailed product information, please view our product page located on our website or our PRODUCT QUICK FACTS sheet.



- TRI-SEAL® Coated | Carbon Steel
- Stainless Cap or Zinc Head
- 410 Stainless Steel



- TRI-SEAL® Coated | Carbon Steel
- Stainless Steel Cap Head Screws
- 304 Stainless Steel



- TRI-SEAL® Coated | Carbon Steel
- Stainless Steel Cap Head
- 304 Stainless Steel



- 304 Stainless Steel Bi-Metal Drill Screws

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Our inventory management programs are designed to reduce lead times and reduce your inventory investment. You can complete your project fast with the best quality products and services.

Choose the best inventory program that best fits your needs.

NEED-IT-NOW! Product Program



We will inventory the products you need and ship them fast!

- Use this selection guide to help you use the best products for your application.
- We will develop a stocking program based on your needs to assure we have what you need.
- We can develop your own Product Guide with your specific items that can assist you in bidding a job.

Our local branch will help you to determine the products you need, and we will stock them so you have them...*when you NEED-IT-NOW!*

PAK-ONE Job Pack Program



We will pack and ship products for your specific job.

Purchase only what you need for the job...

- You reduce your inventory investment.
 - Improve your cash flow.
 - Eliminate dead inventory.
 - Reduce "hidden" warehouse and procurement costs.
1. We can develop a list of items that meet your requirements.
 2. You select specific items for a particular job and develop a "cut-list" for your project.
 3. We consolidate and ship the fasteners, sealants, flashings, tools, and accessories needed for the job.

NEED-IT-NOW! CABINET INVENTORY PROGRAM



Stock your critical items in a secured storage cabinet for fast access

- Select from a wide variety of commercial grade products.
- We supply a FREE heavy duty, locking storage cabinet.
- We will organize the items you selected and setup the cabinet in your shop.
- You can return any unused items and replace them with new ones.



We offer the following services at no charge to you!

- Product development
- Application testing
- Quality assurance

- Engineering support
- Product and application training
- Fastener recommendations

Do you need technical assistance?
Contact us and we are happy to help!



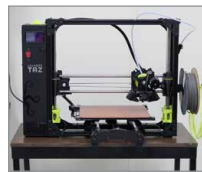
Tensile & Compression (10kips max)

We can conduct pullout, shear, and compression testing for fasteners.



Hardness Test (Rockwell Scales B & C)

The hardness of the substrate affects the pull-out and shear loads of the fastener. That is why we check the hardness of the steel and include that information with our results.



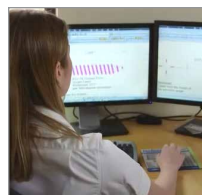
3D Printer

We use the most up-to-date tools to develop the newest innovations in fastening technologies.



Lath, Mill, Grinder, Brake, Shear, Table & Mitre Saw

We can fabricate samples to help in testing and product evaluation.



Product Conformance

We QC all of our products for dimensional, mechanical, and physical performance.



Drill / Pierce Test Machine

We test our fasteners to assure that they drill or pierce quickly and consistently.

Our specifications exceed industry standards, assuring the performance of our products.

Our state of the art drill test machine is capable of testing fasteners up to 8" long.

PRODUCT AND APPLICATION TRAINING



Training for up to 20 people

Our TECH CENTER is equipped to train you on fastener installation using a hands-on approach.

We can help you learn about the best product for your application, provide the best installation techniques and keep you informed on the latest tool technology.

We can simulate your specific application, and help you develop a fastener that meets your needs.

TFC TECH CENTER LOCATION

4661 Hinckley Parkway • Cleveland, OH 44109

P: 216.351.9933 • www.trianglefastener.com

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NEED-IT-NOW?

We can help!

- Fasteners, Tools, Sealants and Contractor Supplies
- Delivery and Stocking Programs
- Technical Support
- Product Development
- Job-site Assistance

FASTENING SYSTEMS AND SOLUTIONS FOR COMMERCIAL CONSTRUCTION

MARKETS



Application Focused

- Flat Roofing
- Metal Building and Roofing
- Post Frame
- Misc. Cladding | Curtain Wall
- Drywall | Interior
- HVAC / Electrical / Mechanical

25 LOCATIONS

How Can We Help You?

Contact us toll free at 800.486.1832

Alabama - Birmingham
3800 1st Ave. North
Birmingham, AL 35222
P: 205.595.3444 | F: 205.595.7544

Florida - Orlando
114 Atlantic Annex Pt.
Maitland, FL 32751
P: 407.660.0167 | F: 407.660.1256

North Carolina - Charlotte
3317 Pelton Street
Charlotte, NC 28217
P: 704.586.0400 | F: 704.586.0300

Tennessee - Madison
213 Nesbitt Lane
Madison, TN 37115
P: 615.865.0007 | F: 615.868.7257

Alabama - Mobile
764 Lakeside Drive Suite A
Mobile, AL 36693
P: 251.665.5000 | F: 251.665.5001

Florida - Tampa
10111 Woodberry Road
Tampa, FL 33619
P: 813.689.6877 | F: 813.689.6717

North Carolina - Raleigh
79 Rupert Rd.
Raleigh, NC 27603
P: 919.733.1845 | F: 919.856.4910

Texas - Dallas
2801 West Airport Freeway
Irving, TX 75062
P: 972.659.9400 | F: 972.659.9403

Alabama - Montgomery
508 Hackel Drive
Montgomery, AL 36117
P: 334.270.8800 | F: 334.270.0331

Georgia - Atlanta
5800 Oakbrook Parkway, Suite A
Norcross, GA 30093
P: 770.417.1515 | F: 770.409.1451

Ohio - Cincinnati
1021 W. 8th Street
Cincinnati, OH 45203
P: 513.242.5802 | F: 513.242.8209

Texas - Houston
5210 Brittmoore Rd.
Houston, TX 77041
P: 713.466.7758 | F: 713.466.8390

California - San Jose
1425 Koll Circle
San Jose, CA 95112
P: 408-982-0581

Indiana - Indianapolis
7768 Zionsville Rd #400
Indianapolis, IN 46268
P: 317.872.3944 | F: 317.879.2181

Ohio - Cleveland
4661 Hinckley Ind. Pkwy.
Cleveland, OH 44109
P: 216.351.9933 | F: 216.351.5008

Texas - San Antonio
12746 O'Connor Road
San Antonio, TX 78233

Delaware - New Castle
243-C Quigley Blvd.
New Castle, DE 19720
P: 302.322.0600 | F: 302.322.5102

Maryland - Baltimore
6550 Moravia Park Dr.
Baltimore, MD 21237
P: 410.485.8665 | F: 410.485.4560

Ohio - Columbus
1244 West Goodale Blvd.
Columbus, OH 43212
P: 614.487.8800 | F: 614.487.1634

Virginia - Richmond
6529 Dickens Place
Richmond, VA 23230
P: 804.282.2360 | F: 804.282.4069

Florida - Ft Lauderdale
5600 NW 12th Ave Suite 303
Ft. Lauderdale, FL 33309
P: 954.771.5232 | F: 954.771.5441

Michigan - Detroit Sales
Mark Enderle
Sales | Michigan / NW Ohio
C: 734.674.2466 | F: 216.351.5008

Pennsylvania - Pittsburgh
2001 Preble Ave.
Pittsburgh, PA 15233
P: 412.321.5000 | F: 412.321.7838

Washington - Seattle
8459 South 208th Street
Kent, WA 98031
P: 206.575.0144 | F: 206.575.1118

Florida - Jacksonville
6800 Suemac Place, Suite 2
Jacksonville, FL 32254
P: 904.695.0404 | F: 904.695.0062

Mississippi - Jackson
102 Diane Dr.
Richland, MS 39218
P: 601.664.3449 | F: 601.664.7185

Pennsylvania - Pittsburg (Corp.)
1925 Preble Ave.
Pittsburgh, PA 15233
P: 412.321.5021 | F: 412.321.7838