TRIANGLE FASTENER CORPORATION

SELECTION GUIDE *Fasteners • Sealants • Tools*


JULY 2020

RETRO-FIT ROOFING AND SIDING

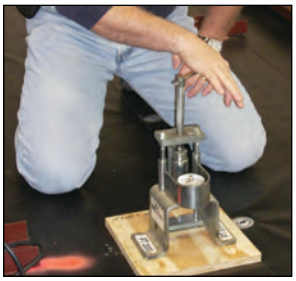
FRAMING AND BASE ATTACHMENTS

800.486.1832

www.trianglefastener.com

INSTALLATION TIPS
RETRO-FIT ROOF BASE ATTACHMENT

This guide is designed to help you with the selection and installation of fasteners to attach framing to an existing wall or roof substrate. Care should be taken to use a fastener that meets or exceeds the load requirements specified by the engineer or specifier. Contact TFC for additional assistance.

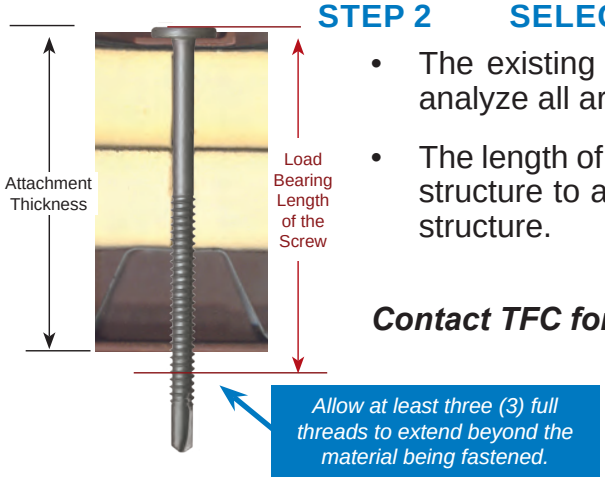


STEP 1 ANALYZE ROOF

Conduct pullout and compression tests prior to bid to determine if the existing roof can support the new roof system. Pullout testing will help in selecting the proper diameter and length of fastener.

Contact TFC...we offer job-site pullout testing.

STEP 2 SELECTION OF FASTENER

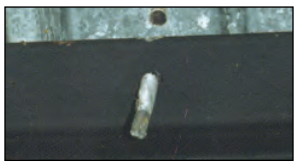


- The existing roof system can consist of various materials. Be sure to analyze all areas of the failed roof to determine the proper fasteners.
- The length of the screw must extends a minimum of 7/8" beyond the steel structure to assure that at least three (3) full threads extend beyond the structure.

Contact TFC for assistance.

EXAMPLE: Attachment Thickness | METAL
Measure from the top surface of the material being fastened to the underside of the metal. Be sure to allow for any void or insulation.

Select a screw length (BLAZER® or CONCEALOR®) where the "Load Bearing Length" is greater than or equal to the "Attachment Length".



STEP 3 INSTALLATION

- Screws install best at 2,000 rpm screw-gun speed.
- Install fasteners perpendicular to the existing roof.
- Do not apply excessive pressure during installation taking great care to attach to the existing structure.
- Sealant should be used under bearing plates to seal penetration in case moisture is present prior to installation of the new roof system
- Use only high quality sealants to seal all penetrations.

Contact TFC for assistance.

TFC can provide job-site assistance and technical support to assist in selecting the proper fastener for your application. Selecting the fastener is responsibility of the user or specifier. Because job-site conditions vary, TFC assumes no liability for the use of this information.

HELPFUL TIPS

- Analyze existing roof to determine pull-out load & fastener.
- Attach base to existing structure concrete deck
- 1/4” diameter or larger should be used.
- Fasteners should be long life coated or stainless steel.
- All penetrations should be sealed prior to installation of the new roof system.

BLAZER® DRILL SCREWS

Drill and tap up to 1/2” steel

SUBSTRATE: STEEL

Material: Carbon Steel and 304SS Bi-Metal

Finish: TRI-SEAL® 1,000 Hour Salt Spray Coating

Head Style: 3/8” Hex Washer

Concerned about bending?
5/16” Diameter screws are available in lengths up to 8” long.

Diameter	Screw Length	Load Bearing Length (MAX)	Box Qty
1/4-14 BLAZER-3	3"	2"	1M
	4"	3"	500
	5"	4"	
	6"	5"	250
	8"	7"	
	10"	9"	
1/4-20 BLAZER-5	3-1/8"	2.125"	1M
	4"	3"	250
	5"	4"	
	6"	5"	
	7”	6”	500
	8"	7"	
5/16-12 BLAZER-3	4"	3.25"	500
	5”	1.38 - 4.25”	
	6"	2.50 - 5"	
	8"	4.25" - 7"	200

DEKFAST™ LOW SLOPE ROOFING SCREWS

#15-13 DP1 TRUSS HEAD

SUBSTRATE: STEEL, WOOD, CONCRETE

Material: Carbon Steel

Finish: Epoxy coating (black) meets or exceeds FM4470 corrosion standards. Do not use in exposed applications.

Head Style: #3 Phillips Truss Head

PRE-DRILL
METAL: For thickness 14ga and thicker, predrill with 1/4”split point drill bit
WOOD: NONE
CONCRETE: 7/32” Carbide tip masonry bit.

Diameter	Screw Length	Load Bearing Length (MAX)	Box Qty.
#15-13 SP5	10”	9.125”	500
	11”	10.125”	
	12”	11.125”	
	14”	14.125”	250
	16”	16.125”	
	18”	17.125”	
	20”	19.125”	
	22”	21.125”	
	24”	23.125”	

TFC TAPPERS

1/4-14 TYPE AB & B

SUBSTRATE: STEEL

NOTE: PRE-DRILL REQUIRED INTO STEEL
Recommended screw-gun speed: 2,000 RPM MAX

Diameter	Screw Length	Carbon Steel	304 Stainless Steel
1/4-14	4”	X	X
	5”	X	X
	6”		X
	8”		X

Drill Bit Size Chart

Screw Type	14ga (.075”)	12ga (.105”)	1/8” (.125”)	10ga (.134”)	3/16” (.187”)	1/4” (.250”)	3/8” (.375”)	1/2” (.500”)
1/4-14 Type AB	#7				Not recommended			
1/4-14 Type B	#7				#1			

1/4-14 TYPE A HEX HEAD

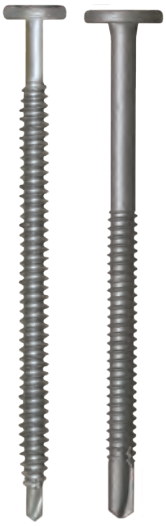
SUBSTRATE: WOOD

NOTE: NO PRE-DRILL REQUIRED INTO WOOD.
Recommended screw-gun speed: 2,000 RPM MAX

Material: Carbon Steel | 304 Stainless Steel
Finish: Carbon Steel - TRI-SEAL 1,000 Hrs Salt Spray
Head Size: 3/8” Hex Head

Diameter	Screw Length	Carbon Steel	304 Stainless Steel
#14-10 Type A	4”	X	X
	5”	X	X
	6”		X

Allow a minimum of 1-1/2” embedment into the wood.



CONCEALOR® PANCAKE HEAD SCREWS

Material: Carbon Steel | 304 Stainless Steel
Finish: TRI-SEAL® 1,000 Hour Salt Spray Coating
Head Style: Pancake | #2 and #3 Square Recess
Allow a minimum of 1-1/2" embedment into the wood.
CONCRETE: Pre-drill using a 3/16" carbide tip drill bit.

SUBSTRATE
STEEL
WOOD
CONCRETE

STEEL THICKNESS AND SCREW SIZE
<=16ga use #14 DP1
14ga to 1/4" use 1/4" DP3
> 1/4" steel use 1/4-14 DP3 and pre-drill with #1 drill bit

OPTION: Attaching clip directly to wood, use #10 GP, #12GP or #14 DP1 | 1", 1-1/8,1-1/2", 1-5/8", 2" Lengths

#14-13 DP1	1/4-14 DP3	Length	Load Bearing Length (MAX)
	x	1"	.250"
x		1-1/2	.750"
x	x	2	1.000"
x	x	3"	2.000"
x	x	4"	3.000"
x		4-1/2"	3.375"
x	x	5"	4.000"
x	x	6"	5.000"
x	x	7"	6.000"
x	x	8"	7.000"
x		9"	8.250"

WEDGE ANCHOR

Carbon Steel HDG | 304 Stainless Steel

Drill Bit Size: 3/8" Carbide Tip Drill Bit
Tooling: Hammer Drill

SUBSTRATE
CONCRETE

Anchor Size	Anchor Length	Max Attachment Thickness
3/8-16	3-3/4"	1-7/8"
	5"	3-1/8"
	7"	5-1/8"

Other sizes available

THREADED CONCRETE SCREWS

Carbon Steel | Long-Life Coated | 410 Stainless Steel
316 Stainless Steel

Drill Bit Size
5/16" Screw: 1/4" Carbide Tip Drill Bit
3/8" Screw: 3/8" Carbide Tip Drill Bit

Tooling: Hammer Drill

SUBSTRATE
CONCRETE

Screw Size	Anchor Length	Attachment Thickness
5/16"	4"	2-1/2" - 3"
	5"	3-1/2" - 4"
	6"	4-1/2" - 5"
3/8"	4"	2-1/2" - 3"
	5"	3-1/2" - 4"
	6"	4-1/2" - 5"

TECHNICAL INFORMATION | Pull-out - Avg Ult Lbs

Job site pull-out test should be performed to help determine roof condition and fastener type. This sections provides load data based on laboratory conditions and should be used to compare actual job-site results.

Contact TFC for assistance.

SUBSTRATE
WOOD

Fastener Size	Pull-out Values in WOOD		
	2x SYP	5/8" Plywood	3/4" Plywood
#10-13 GP CONCEALOR	737	505	654
#10-9 GP CONCEALOR ULP	813	395	574
#14-13 DP1 CONCEALOR	991	475	625
#14-10 TYPE A TFC TAPPER	1030	475	626
#15-13 DP1 SENTRY PLUS FIVE	1165	525	685

SUBSTRATE
STEEL

Predrill required for #15-13 DP1 and 1/4-14 Type B / AB
Pull-out Values in 65 Ksi Steel

Fastener Size	Ultimate Load in Pounds | Calculated per AISI S100					
	14 Ga. (.075")	12 Ga. (.105")	1/8" (.125")	3/16" (.188")	1/4" (.250")	1/2" (500")
1/4-14 DP3	1036	1450	1727	1865		
1/4-20 DP5					*3453	*6906
#15-13 DP1 (Pre-Drill)	1077	1508	1796	2693	3591	*7182
1/4-14 Type AB/B (Pre-Drill)	1036	1450*	1727	1865	*3453	*6906

*Denotes load exceeds tensile strength of fastener

SUBSTRATE
CONCRETE

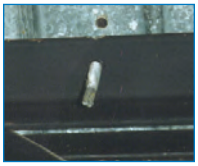
Fastener Size	EMBEDMENT DEPTH	Pull-out Values in CONCRETE	
		4,000 PSI	3,000 PSI
#14-13 DP1 CONCEALOR	1"		740
#15-13 DP1 SP5	1"		1,002
5/16" THREADED ANCHOR	1-3/4"		2,785
3/8" THREADED ANCHOR	2-1/2"		5,445
3/8-16 WEDGE ANCHOR	1-1/2"	2,240	

RETRO-FIT BASE ATTACHMENT
TECTUM | GYPSUM

Due to low pullout loads, it is not recommended to fasten the new framing system directly into tectum or gypsum.

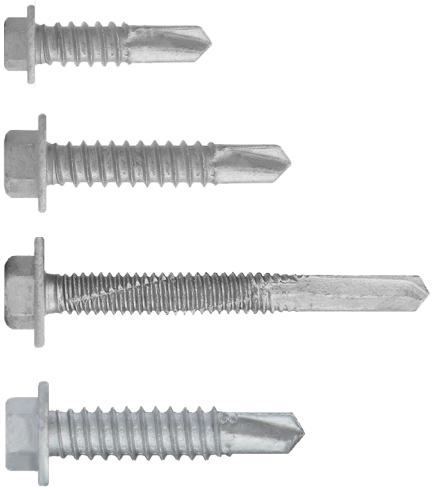
The structure should be located and the appropriate fastener be selected based meeting uplift load requirements.

Contact TFC for assistance in selection of the fastener.



RETRO-FIT FRAMING SYSTEM
FRAMING SCREWS

BLAZER® DRILL SCREWS



Carbon Steel | TRI-SEAL® Coated

HELPFUL TIPS

- Framing screws should be corrosion resistant to reduce the chance of corrosion failure due to stress. A minimum diameter of 1/4” is recommended.
- Do not use impact screw-guns to install drill screws. This can stress the fastener and lead to premature failure.
- 1/4” diameter screws are recommended for framing applications for additional strength.

BLAZER DRILL SCREWS

Screw Size	Length	Head Style
1/4-14 BLAZER-3 Drill and tap up to 1/4” steel	7/8”	5/16” HWH
	1”	3/8” HWH
	1-1/2”	3/8” HWH
1/4-20 BLAZER-5 Drill and tap 1/4”-1/2” steel	1-1/2”	3/8” HWH
	2”	3/8” HWH
5/16” BLAZER-3 Drill and tap up to 3/16” steel	1”	3/8” HWH
	1-1/2”	3/8” HWH

STRESSLESS® FRAMING SCREW

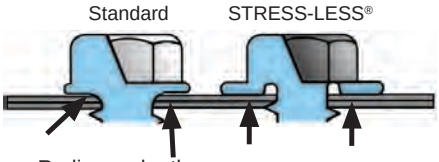
Reduces stress concentration under the head.

PROBLEM

Undersized screws can fail due to stress and corrosion

SOLUTION

Material: Carbon Steel
TRI-SEAL® COATED



SIZE	Head Style
1/4-14 x 7/8” BLAZER-3	5/16” HWH

TECHNICALINFORMATION

Job site pull-out test should be performed to help determine roof condition and fastener type.

Contact TFC for assistance.

Avg. Ult. Lbs

Fastener Size	Pull-out Values in Steel								
	20ga (.036”)	18ga (.048”)	16ga (.060”)	14ga (.075”)	12ga (.105”)	1/8” (.125”)	3/16” (.188”)	1/4” (.250”)	1/2” (500”)
1/4-14 DP3	343	533	579	1077	2170	2060	3863	4493*	
1/4-20 DP5							3853	4283*	4680*
5/16” DP3	457	706	1609	1707	2831	2915	3745		

PULL-OUT TEST FORM

PULLOUT TESTING

Conduct pull-out tests prior to bidding the job to help determine the condition of the substrate, load values, and fastener type. Contact TFC for assistance.

PULLOUT TESTER

Use a calibrated pullout tester. Choose a tester that has a maximum load capacity of approximately 2X greater than your expected pullout load needs.

COMPRESSION CHECK

Utilize a 12” x 12” bearing plate between the bottom of the tester and the existing roof. If the bearing base compresses the existing roof before pull-out occurs, than the load recorded is the compression load per square foot.

SEALANT

Use a compatible sealant to seal all penetration caused by the pullout test.

DATE	
JOB NAME	
DESCRIBE EXISTING ROOF , WALL, AND THICKNESSES	

SELECT SUBSTRATE

STEEL	
WOOD	
CONCRETE	

OTHER

Note size and type of drill bit if used for test

TESTED BY _____

FASTENER TESTED	PULLOUT TEST RESULTS | Pounds Force						FAILURE MODE PULLOUT (P), TENSILE (T) OR COMPRESSION (C)
	1	2	3	4	5	AVG.	
COMMENTS							

FASTENING TIPS
Using the Proper Tools

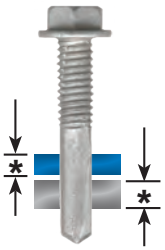
We provide a complete line of RAMSET tools to attach steel framing and wood sheathing to concrete or steel substrates.

Contact TFC for assistance.

DETERMINE DRILL POINT TYPE

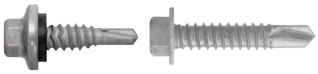
Drilling Thickness (Drill Point Type)
Add up the total thickness that will be drilled by the screw and select a drill point type that meets the required drilling thickness range. (Do not include pre-punched materials that will not be drilled by the screw.)

Select the desired drill point type located on the size chart of the BLAZER® / CONCEALOR® sell sheet (i.e. BLAZER-5).



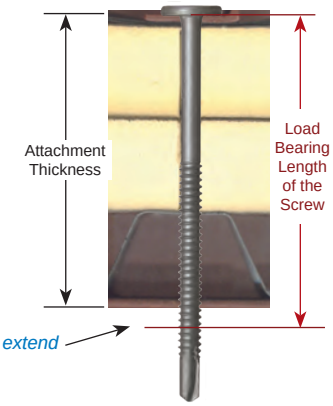
** Drilling Thickness*

DETERMINE FASTENER LENGTH



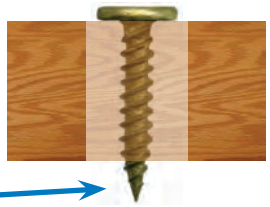
Attachment Thickness | METAL
Measure from the top surface of the material being fastened to the underside of the metal. Be sure to allow for any void or insulation.

Select a screw length listed in the BLAZER® or CONCEALOR® sell sheet (Load Bearing Length).



Allow at least three (3) full threads to extend beyond the material being fastened.

Attachment Thickness | WOOD
Allow full penetration into wood decks so the screw point extends beyond the bottom side. Allow at least 1" screw embedment in 2 x structures to maintain designed pull out resistance. Greater penetration can achieve higher pull out values.



Allow screw tip to extend beyond decking.

INSTALLATION TECHNIQUES

Recommended Screw-Gun Speed

Using the proper tooling is important for producing consistent installation. It also minimizes potential screw or application failure caused by over-driven and under-driven fasteners.

Screw Size	Max RPM
#6, #8, #10	2,500
All wood screws	2,500
#12, 1/4", 5/16"	2,000
All DP5	2,000
304 Stainless Screws	1,200

WARNING! DO NOT USE IMPACT TOOLS FOR INSTALLATION!

Using impact tools to install pancake head screws can cause the head to separate from the body due to the high torque and impulse generate by the tool. HWH screws can also be easily overtighten which can lead to connection failure.

TFC is not responsible for failures caused by the use of improper tooling or improper installation.

Do

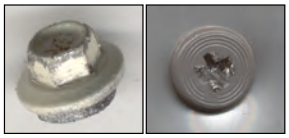
- Install fastener perpendicular to the work surface.
- Let the drill point do the work.
- Use a tool with torque control or depth sensing nose piece to prevent over-torqued and under-torqued screws.
- Allow all material to be drilled before tapping into the steel.

Do Not

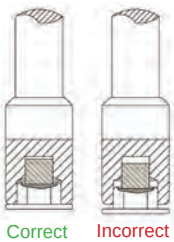
- Do not exert excessive pressure!
- Do not over drive the screw!
- ***Do not use impact tools! (They can torque the screw to failure!)***

ACCESSORY TIPS

Look familiar?



Worn out drive bits and sockets produces poor drilling, can strip the recess, and damage painted fasteners.

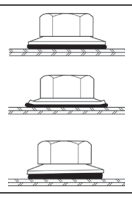


Correct Incorrect

SET THE MAGNET! Be sure screw head engages into the socket completely. This will eliminate screw wobble, improve the drilling performance, and reduce damage to painted screw heads.

SEALING WASHERS

To assure a proper seal, tighten the screw until the EPDM sealant extrudes just to the outer edge of the backing material. This also is a great way to visually inspect the screw to assure it is properly sealed.



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TFC VALUE PROPOSITION

LARGE SELECTION - BEST QUALITY - TECHNICAL SUPPORT - INVENTORY PROGRAMS




NEED-IT-NOW?

We can help!

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

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- Metal Building and Roofing
- Post Frame
- Sheathing | Curtain Wall
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- HVAC / Electrical / Mechanical

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Birmingham, AL 35222
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Alabama -Mobile
764 Lakeside Drive Suite A
Mobile, AL 36693
P:251.665.5000 | F: 251.665.5001

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

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

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

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

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

Florida - Orlando
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Maitland, FL 32751
P: 407.660.0167 | F: 407.660.1256

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

Georgia - Atlanta
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Norcross, GA 30093
P: 770.417.1515 | F: 770.409.1451

Indiana - Indianapolis
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Indianapolis, IN 46268
P: 317.872.3944 | F: 317.879.2181

Maryland - Baltimore
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Baltimore, MD 21237
P: 410.485.8665 | F: 410.485.4560

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

Mississippi - Jackson
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Richland, MS 39218
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North Carolina - Charlotte
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Charlotte, NC 28217
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North Carolina - Raleigh
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1021 W. 8th Street
Cincinnati, OH 45203
P: 513.242.5802 | F: 513.242.8209

Ohio - Cleveland
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Cleveland, OH 44109
P: 216.351.9933 | F: 216.351.5008

Ohio - Columbus
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Columbus, OH 43212
P: 614.487.8800 | F: 614.487.1634

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

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

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

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

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

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

Washington - Seattle
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Kent, WA 98031
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