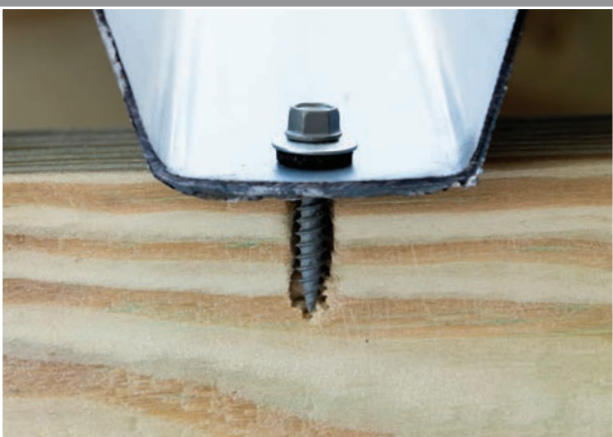
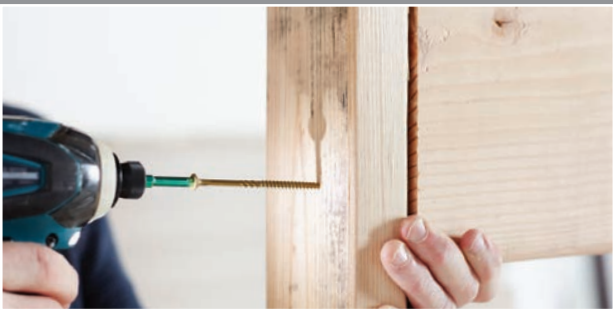




***Pro Solutions Designed to
Fit into Every Project Plan.***



For more information, please visit the specialty website listed:



www.grkfasteners.com



www.redheadanchoring.com



www.tapcon.com



www.ramset.com

Table of Contents

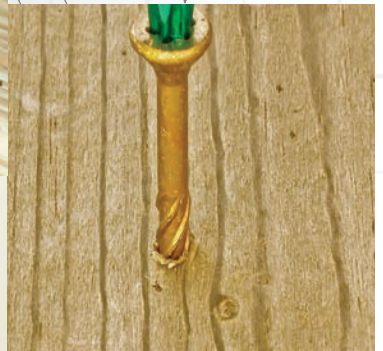
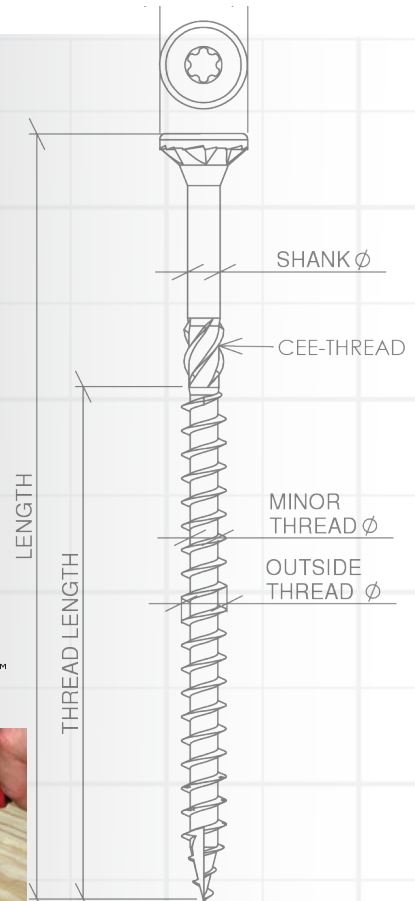
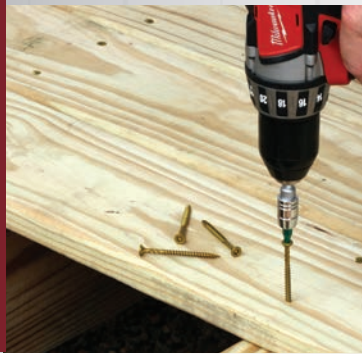
SECTION 1: <i>R4™ MULTI-PURPOSE FRAMING & DECKING SCREWS</i>	4-5	SECTION 9: <i>TAPCON® CONCRETE SCREW ANCHORS</i>	20-21
SECTION 2: <i>RSS™ RUGGED STRUCTURAL SCREWS</i>	6-7	SECTION 10: <i>TAPCON+® CONCRETE SCREW ANCHORS</i>	22-23
SECTION 3: <i>FIN/TRIM™ TRIM HEAD SCREWS</i>	8-9	SECTION 11: <i>RED HEAD® CONCRETE ANCHORS</i> <i>RED HEAD® A7+ ADHESIVE ANCHORS</i>	24-25
SECTION 4: <i>RT COMPOSITE™ TRIM HEAD SCREWS</i>	10-11	SECTION 12: <i>RAMSET® P.A.T. TOOLS & ACCESSORIES</i>	26-27
SECTION 5: <i>PHEINOX™ STAINLESS STEEL SCREWS</i> - 305 Stainless - 316 Marine Grade Stainless	12-13	SECTION 13: <i>TEKS® METAL FASTENING SCREWS</i>	28-29
SECTION 6: <i>LOW PROFILE CABINET™ SCREWS</i>	14-15	SECTION 14: <i>CEMENT BOARD SCREWS, CBS</i> <i>STAR DRIVE BITS & ACCESSORIES</i>	30-31
SECTION 7: <i>CALIBURN™ CONCRETE SCREWS</i> <i>TOP STAR™ SHIM SCREWS</i>	16-17	SECTION 15: <i>MERCHANDISERS & DISPLAYS FASTENER</i> <i>TECHNICAL DATA</i>	32-41
SECTION 8: <i>MSS™ METAL SIDING SCREWS</i> <i>E-Z ANCHOR® MULTI-USE ANCHORS</i>	18-19	SECTION 16: <i>FASTENER TECHNICAL BULLETIN</i>	42-50

GRK's R4™ self-countersinking screw has a patented underhead with saw-blade like cutting teeth and six self-contained cutting pockets. Together they act similar to a circular saw-blade, transporting the drill dust away from the edge of the screw hole while cutting a perfectly clean hole into even the most brittle materials without cracking any surface treatment.

This design enhances the R4™'s versatility by allowing the fastener to countersink into even the hardest woods. The head of the screw closes the hole off with precision, leaving no damaged fibers around the head.

R4™ screws 3-1/8" and longer have a four threaded CEE Thread. This enlarges the screw hole for the non-threaded portion of the fastener, allowing the wood to settle easily. It increases the screw's drawing strength and reduces the friction on the screw shank that lowers the driving torque.

GRK
FASTENERS™



R4™ MULTI-PURPOSE FRAMING & DECKING SCREWS

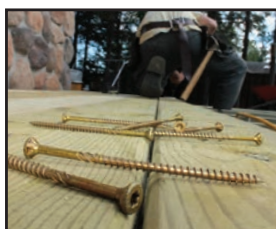
Frame with Ease and Confidence



**AC257 Treated
Lumber Approved**

- **Recessed Star Drive:** Zero Stripping, with 6 points of contact
- **CEE Thread:** Enlarges hole to reduce splitting
- **W-Cut™:** Low torque, faster drive
- **Zip-Tip™:** No pre-drilling, faster penetration
- **Cutting Pockets:** provide a clean hole, reduces splitting, and bore with precision.
- **ESR-3201 Approved** for structural application.
- **Case Hardened Steel:** for high tensile, torque and shear strength.
- **Climatek™ Coating is AC257** code approved for use in treated lumber.
- For interior / exterior use in; wood, plastic, cement fiber board, particle board, sheet metal, wood decking and melamine.
- Also available in **PHEINOX™** 305 and 316 grade Stainless Steel.

	U.S. (Std.) Size (Dia. x Length)	Bulk Part No.	Bulk Box Qty.	Pro-Pak Part No.	Pro-Pak Pail Qty.	Handy-Pak Part No.	Handy-Pak Ctn. Size/Qty.
 T-15	#6 x 1-1/4"	00051†	13,000				
	#6 x 1-1/2"	00055†	8,000				
 T-15	#8 x 1-1/4"	00069†	10,000	01069†	1,300	02069†	S/100
	#8 x 1-1/2"	00073†	6,500	01073†	1,000	02073†	S/100
	#8 x 1-3/4"	00075†	6,000	01075†	925	02075†	S/100
	#8 x 2"	00077	4,500	01077	850	02077	S/100
	#8 x 2-1/2"	00079	3,500	01079	650	02079	S/100
 T-25	#9 x 1-1/4"	00091†	8,000	01091†	1,000		
	#9 x 1-1/2"	00095†	5,200	01095†	820	02095†	S/100
	#9 x 1-3/4"	00097†	4,500	01097†	750		
	#9 x 2"	00099	3,700	01099	690	02099	M/100
	#9 x 2-1/2"	00101	2,900	01101	575	02101	M/100
	#9 x 2-3/4"	00103	2,000	01103	480	02103	M/100
	#9 x 3-1/8"	00105	1,900	01105	425	02105	M/100
 T-25	#10 x 2"	00131	3,200				
	#10 x 2-1/2"	00133	2,500	01133	470	02133	M/100
	#10 x 2-3/4"	00135	2,000				
	#10 x 3-1/8"	00137	1,500	01137	350	02137	M/100
	#10 x 3-1/2"	00139	1,200	01139	300	02139	M/50
	#10 x 4"	00141	1,000	01141	270	02141	M/50
	#10 x 4-3/4"	00143	800	01143	230	02143	M/50
 T-25	#12/14 x 4-3/4"	00169	700			02169	M/50
	#12/14 x 5-5/8"	00173	600			02173	M/50
	#12/14 x 6-3/8"	00177	1,000			02177	9/50
	#12/14 x 8"	00181	500			02181	9/50
	#12/14 x 10"					02187	12/50
	#12/14 x 12"					02193	12/50



Some sizes available in **PHEINOX™** hardened Stainless Steel; refer to Section 6. 2" bit included in Pro-Paks. 1" bit w/Handy-Paks. *Does not come with the Zip-Tip™ feature. †Does not have the added CEE-THREAD™ feature.
NOTE: Pro-Paks need to be ordered in multiples of two.

GRK's RSS™ screw is made of specially hardened steel to provide you with high tensile, torque and shear strength. The sharp threads and points bite instantly into the material (including hardwood), reducing the splitting effect due to smaller shanks.

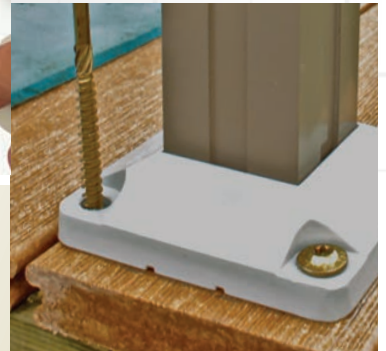
RSS™ screws that are 3-1/8" and longer have CEE Threads which enlarge the screw hole for the non-threaded portion of the fastener, allowing the wood to settle easily and increases the screw's drawing strength. The CEE Thread also reduces the friction on the screw shank which can result in lowering the driving torque and the likelihood of splitting the wood. This is why the RSS™ screw is an efficient lag screw alternative.

Our round head with built-in shield (washer type head) has no sharp edges like conventional lag screws. The added shoulder (nominal diameter) underneath the washer has the ability to center the RSS™ screw in pre-drilled hardware like hinges and connector plates.

RSS™ JTS - Used for joists and trusses



GRK
FASTENERS™



RSS™ RUGGED STRUCTURAL SCREWS

Easy to Install Lag Alternative



AC257 Treated
Lumber Approved



- **Recessed Star Drive:** Zero Stripping, with 6 points of contact
- **CEE Thread:** Enlarges hole to reduce splitting
- **W-Cut™:** Low torque, faster drive
- **Zip-Tip™:** No pre-drilling, faster penetration
- **Washer Head:** for immense holding power
- **Cutting Pockets:** provide a clean hole and reduces splitting, and bore with precision.
- **ESR-2442 Approved** for structural application.
- **Case Hardened Steel:** for high tensile, torque and shear strength.
- **Climatek™ Coating is AC257** code approved for use in treated lumber.
- For interior / exterior use in; carrying beams, ledger boards, stair rails, deck posts, playground equipment and other professional applications.
- Also available in **PHEINOX™** 305 and 316 grade Stainless Steel.



U.S. (Std.) Size (Dia. x Length)	Bulk Part No.	Bulk Box Qty.	Pro-Pak Part No.	Pro-Pak Pail Qty.	Handy-Pak Part No.	Handy-Pak Ctn. Size/Qty.
#10 x 2"					12131*†	S/50
#10 x 2-1/2"	10133†	1,000			12133†	M/50
#10 x 3-1/8"	10137	800	11137	236	12137	M/50



1/4" x 1-1/2"	10151*†	1,000			12151*†	M/50
1/4" x 2"	10155*†	800			12155*†	M/50
1/4" x 2-1/2"	10157†	700			12157†	M/50
1/4" x 3-1/8"	10161	500			12161	M/50



5/16" x 2-1/2"	10217†	600			12217†	9/100
5/16" x 2-3/4"	10219†	500			12219†	12/100
5/16" x 3-1/8"	10221	500			12221	12/100
5/16" x 3-1/2"	10223	500			12223	12/100
5/16" x 4"	10225	400			12225	12/100
5/16" x 5-1/8"	10231	300			12231	9/50
5/16" x 6"	10235	300			12235	9/50



3/8" x 3-1/8"	10273	400				
3/8" x 4"	10275	400			12275	9/50
3/8" x 6"	10281	300			12281	12/50
3/8" x 7-1/4"	10285	200			12285	12/50
3/8" x 8"	10287	300			12287	12/50
3/8" x 10"	10293	300			12293	12/50
3/8" x 12"	10299	300			12299	12/50
3/8" x 14-1/8"	10307	200			12307	16/50
3/8" x 16"	10311	100			12311	16/50

RSS™ JTS - JOIST AND TRUSS SCREW



1/4" x 5"					93735	9/50
1/4" x 6-3/4"	91743	300			93743	9/50

RSS™ MINI HANDY-PAK

U.S. (std.)	Pt. No.	Qty.
5/16" x 3-1/8"	14221	M/25
5/16" x 4"	14225	M/25
5/16" x 5-1/8"	14231	M/20
5/16" x 6"	14235	M/20

RSS™ INDIVIDUALLY TAGGED

U.S. (std.)	Pt. No.	Qty./Ctn.
5/16" x 3-1/8"	96001	1/50
5/16" x 4"	96005	1/50
5/16" x 5-1/8"	96010	1/50
5/16" x 6"	96015	1/40
3/8" x 8"	96020	1/25
3/8" x 10"	96025	1/25
3/8" x 12"	96030	1/20

Some sizes available in **PHENOX™** hardened Stainless Steel; refer to Section 6.

NOTE: Pro-Paks need to be ordered in multiples of two. *Does not come with the Zip-Tip™ feature.

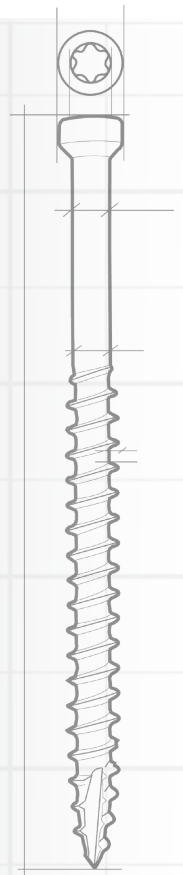
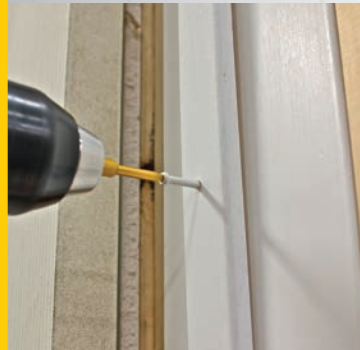
†Does not have the added CEE-THREAD™ feature. 2" bit included in Pro-Paks. 1" bit with Handy-Paks.

GRK's Trim™ Head screws are an excellent choice for most fine carpentry applications, as well as window extension jambs, joining cabinets and more. Our Trim™ Head screws have the smallest screw head available; with screw lengths from 1-1/4" (30 mm) to 5" (125 mm).

Most material splitting is prevented because of the Trim™ Head screw's exceptionally small head and the W-Cut thread design.

Fin/Trim™ screws are also available in white finish to blend in with white wooden trim boards.

GRK
FASTENERS™



FIN/TRIM™ FINISHING TRIM HEAD SCREWS

Install Right the First Time



- **Recessed Star Drive:** Zero Stripping, with 6 points of contact.
- **Trim Head:** for a clean finished look.
- **W-Cut™:** Low torque, faster drive.
- **Zip-Tip™:** No pre-drilling, faster penetration.
- **ESR-3201 Approved** for structural application.
- **Case Hardened Steel:** for high tensile, torque and shear strength.
- **Climatek™ Coating is AC257** code approved for use in treated lumber.
- For interior / exterior use.
- Available in **Climatek™** or white finish.
- Also available in **PHEINOX™** 305 and 316 grade Stainless Steel.



U.S. (Std.)Size (Dia.x Length)	Bulk Part No.	Bulk Box Qty.	Pro-Pak Part No.	Pro-Pak Pail Qty.	Handy-Pak Part No.	Handy-Pak Ctn. Size/Qty.
#8 x 1-1/4"			16720	995	17720	S/100
#8 x 1-1/2"	15724	6,500	16724	915	17724	S/100
#8 x 2"	15728	4,500	16728	725	17728	S/100
#8 x 2-1/2"	15730	3,500	16730	605	17730	S/100
#8 x 2-3/4"					17732	S/100
#8 x 3-1/8"	15734	2,500	16734	514	17734	M/100
#9 x 4"	15760	1,000			17760	M/50
#9 x 5"	15766	800			17766	M/50
WHITE FIN / TRIM™						
#8 x 2"			16828	605	17828	S/100
#8 x 2-1/2"			16830	505	17830	S/100

Some sizes available in **PHEINOX™** hardened Stainless Steel; refer to Section 6
NOTE: Pro-Paks need to be ordered in multiples of two. 2" bit included in Pro-Paks. 1" bit with Handy-Paks.

Excellent for all of
your trimwork and fine
carpentry finishing.

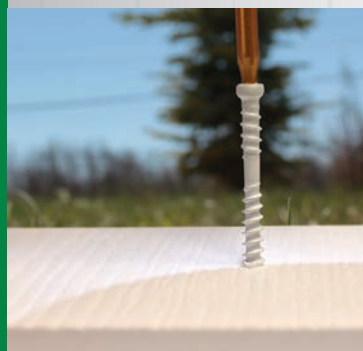


GRK has modified its innovative FIN/Trim™ Head screw to include reverse threading under the head of the fastener. This technology makes the RT Composite™ Trim Screw ideal for use in composite and cellular PVC trim.

Based on extensive tests, GRK has found that the reverse thread helps the screw head disappear beneath the surface of the classic wood composite material, reducing or eliminating the dimple that sometimes appears when using the FIN/Trim™ screw.

The reverse thread feature is available in RT Composite™ screws from 2" to 3-1/8" in length in both regular Climatek™ coating and in white Climatek™ coated finish to blend in with popular white exterior composite and cellular PVC trim.

GRK
FASTENERS™



RT COMPOSITE™ EXTERIOR TRIM SCREWS

Install Right the First Time



**AC257 Treated
Lumber Approved**



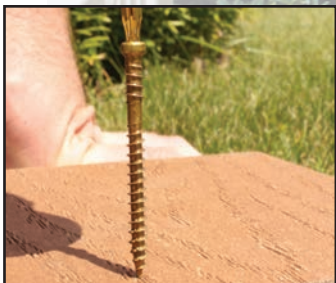
- **Recessed Star Drive:** Zero Stripping, with 6 points of contact.
- **Reverse Threads** eliminate mushrooming.
- **Trim Head:** for a clean finished look.
- **W-Cut™:** Low torque, faster drive.
- **Zip-Tip™:** No pre-drilling, faster penetration.
- **ESR-3201 Approved** for structural application.
- **Case Hardened Steel:** for high tensile, torque and shear strength.
- **Climatek™ Coating is AC257** code approved for use in treated lumber.
- For interior / exterior use in; exterior PVC trim (Azek™, Klear™, Koma™), no pre-drilling is necessary. Climatek™ coated screws work well with CAMO system.
- Available in **Climatek™** or white Climatek™ coated finish.
- Also available in **PHEINOX™** 305 and 316 grade Stainless Steel.

	U.S. (Std.)Size (Dia.x Length)	Bulk Part No.	Bulk Box Qty.	Pro-Pak Part No.	Pro-Pak Pail Qty.	Handy-Pak Part No.	Handy-Pak Ctn. Size/Qty.
 T-10	#8 x 2"			16077	725	17077	S/100
	#8 x 2-1/2"	15079	3,500	16079	605	17079	S/100
	#8 x 3-1/8"	15083	2,500	16083	514	17083	M/100
 T-15	#9 x 2-1/2"	15101	2,900	16101	408		
	#9 x 3-1/8"	15105	1,900	16105	348	17105	M/100
WHITE RT COMPOSITE™							
 T-10	#8 x 2"			16628	605	17628	S/100
	#8 x 2-1/2"			16630	505	17630	S/100
	#8 x 2-3/4"					17632	S/100
	#8 x 3-1/8"					17634	M/100

Some sizes available in **PHEINOX™** hardened Stainless Steel; refer to Section 6

NOTE: Pro-Paks need to be ordered in multiples of two. 2" bit included in Pro-Paks. 1" bit with Handy-Paks.

Supreme Drawing Power
is perfect for trimwork and
deck construction.





305 STAINLESS STEEL
Corrosion Resistance for Harsh Environments



316 STAINLESS STEEL
Marine Grade Protection for Superior Corrosion Resistance

PHEINOX™ STAINLESS STEEL SCREWS



PHEINOX™ 305 Stainless Steel screws are corrosion and stain resistant fasteners designed to withstand wet environments. PHEINOX™ 316 Stainless Steel screws are designed for coastal applications. GRK's patented R4, RSS, FIN/TRIM and RT composite screws are available in PHEINOX™ stainless steel.

GRK recommends PHEINOX™ 305 stainless steel screws for applications that require superior corrosion resistance in wet environments such as decks, boardwalks, pools, and hot tubs. PHEINOX™ 305 stainless is also recommended for use with cedar, red-wood and various other wood substrates that have higher acid content as well as for composite deck boards. PHEINOX™ 305 stainless steel screws are recommended for applications located more than 1 mile from the coast.

PHEINOX™ 316 stainless steel screws are recommended for applications exposed to salt water or located within 1 mile of the salt water shoreline.

The Zip-Tip™ feature of the screw allows a faster start and eliminates the need for pre-drilling. Hardened stainless steel provides superior strength and unmatched performance by maximizing torque and increasing bending yield.

PHEINOX™ 305	PHEINOX™ 316 
• For use in cedar, redwood and specialty hardwood • Corrosion resistance for harsh environments • Corrosion resistance for wet environments • Stain resistant in specialty wood	• For use within 1 mile of the coast • Marine-Grade protection for Superior corrosion resistance • Superior Corrosion resistance for coastal environments • Stain resistant in specialty wood



AC257 Treated Lumber Approved



Applies to 305 stainless only





T-25



T-25



T-25



T-30



T-10



T-15



T-10



T-10



T-15



T-15



T-25



T-10



T-10



T-30

U.S. (Std.)Size (Dia.x Length)	Bulk Part No.	Bulk Box Qty.	Pro-Pak Part No.	Pro-Pak Pail Qty.	Handy-Pak Part No.	Handy-Pak Ctn. Size/Qty.
R4™ SCREWS : PHEINOX™ 305						
#9 x 2"	25099	4,000	26099	609		
#10 x 2-1/2"	25133	2,500	26133	425	27133	M/100
#10 x 2-3/4"			26135	350		
#10 x 3-1/8"	25137	1,500	26137	305	27137	M/100
#10 x 4"			26141	247		
RSS™ SCREWS: PHEINOX™ 305						
1/4" x 1-1/2"	30151*†	1,000				
1/4" x 2"	30155*†	800				
5/16" x 2-1/2"	30217†	600				
5/16" x 3-1/8"	30221	500			32221	12/100
5/16" x 4"	30225	400			32225	12/100
5/16" x 5-1/8"	30231	300				
5/16" x 6"	30235	300			32235	9/50
RT COMPOSITE™ TRIM SCREWS: PHEINOX™ 305						
#8 x 2"			36077	600		
#8 x 2-1/2"	35079	3,500	36079	560	37079	S/100
#8 x 3-1/8"			36083	385		
#9 x 2-1/2"			36101	365		
#9 x 3-1/8"			36105	275		
#8 x 2" White Hd.	35628	4,500				
FIN / TRIM™ SCREWS: PHEINOX™ 305						
#8 x 1-1/2"					37724	S/100
#8 x 2"			36728	600	37728	S/100
#8 x 2-1/2"	35730	3,500	36730	560	37730	S/100
#8 x 3-1/8"			36734	385	37734	M/100
#9 x 2-1/2"			36752	365		
CABINET™ SCREWS: PHEINOX™ 305						
#8 x 1-1/4"	30069	4,000				
R4™ SCREWS: PHEINOX™ 316						
#10 x 2-1/2"			36133	425	37133	M/100
#10 x 3-1/8"			36137	305	37137	M/100
FIN / TRIM™ SCREWS: PHEINOX™ 316						
#8 x 2"			46728	600		
#8 x 2-1/2"			46730	560	47730	S/100
RT COMPOSITE™ TRIM SCREWS: PHEINOX™ 316						
#8 x 2-1/2"			46079	560	47079	S/100
RSS™ PHEINOX™ 316 MINI HANDY-PAK						
U.S. (Std.)Size (Dia.x Length)	Part No.	Quantity				
5/16" x 4"	44225	M/25				

2" bit included in Pro-Paks. 1" bit with Handy-Paks. *Does not come with the Zip-Tip™ feature. †Does not have the added CEE-THREAD™ feature.

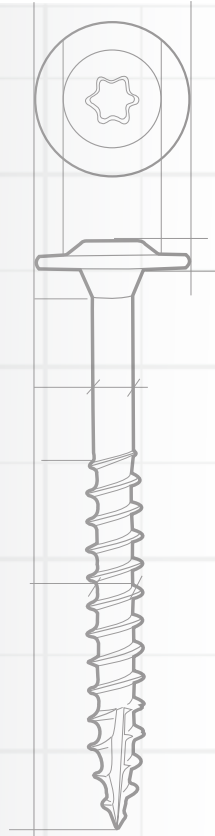
GRK's Cabinet™ screws are designed specifically for use in cabinet construction and installation. Cabinet™ screws are manufactured in a #8 gauge (4 mm) diameter for universal size convenience.

These screws are thin enough to prevent most material splitting, while providing sufficient strength to guarantee a secure installation. The washer head design presses flush against any material surface.

The Cabinet screw can also be used for light duty framing applications where a smaller diameter shank is necessary, yet a need exists for drawing power delivered by the washer head.

White Cabinet Screws match perfectly with white cabinet frames without the need of sticker covers. Specialized Powder Coated heads will not chip while being driven in, allowing for a clean finish. They are ideally suited for a wide variety of interior applications including, closets & garage organizational systems.

GRK
FASTENERS™



LOW PROFILE CABINET™ SCREWS

Quick and Secure Installation

- **Recessed Star Drive:** Zero Stripping, with 6 points of contact.
- **Washer Head:** Creates a flush, clean hold for a strong and secure installation.
- **W-Cut™:** Low torque, faster drive.
- **Zip-Tip™:** No pre-drilling, faster penetration.
- **Case Hardened Steel:** for high tensile, torque and shear strength.
- **Climatek™ Coating is AC257** code approved for use in treated lumber.
- For interior / exterior use.
- Also available in **PHEINOX™** 305 grade Stainless Steel.
- **White Cabinet Screw:** For interior use only.





T-15

U.S. (Std.) Size (Dia.x Length)	Bulk Part No.	Bulk Box Qty.	Pro-Pak Part No.	Pro-Pak Pail Qty.	Handy-Pak Part No.	Handy-Pak Ctn. Size/Qty.
#8 x 1-1/4"	10069	4,000	11069	1085	12069	S/100
#8 x 1-1/2"	10073	3,000	11073	930	12073	M/100
#8 x 1-3/4"	10075	2,000			12075	M/100
#8 x 2"	10077	2,000	11077	650	12077	M/100
#8 x 2-1/2"	10079	1,500	11079	563	12079	M/100
#8 x 2-3/4"					12081	M/100
#8 x 3-1/8"	10083	1,000	11083	400	12083	M/50



T-15

WHITE LOW PROFILE™ CABINET SCREWS

#8 x 1-1/4"					120680	M/80
#8 x 1-1/2"					120670	M/80
#8 x 2-1/2"					120660	M/80

Some sizes available in **PHEINOX™** hardened Stainless Steel; refer to Section 6
NOTE: Pro-Paks need to be ordered in multiples of two. 2" bit included in Pro-Paks.



***Ideal for Cabinets...
and so much more.
Also excellent for a
variety of interior or
exterior jobs.***



Caliburn™ Concrete screws are professionally engineered fasteners with a patented thread design for ease of driving the screw in concrete and similar applications.

- **Recessed Star Drive:** Zero Stripping, with 6 points of contact.
- **Aggressive Heavy duty threads** lock into concrete and can be removed and reinserted without screw damage.
- **ESR-3251** approved for use in anchoring into concrete.
- **Countersinking Bugle Head** locks wood to concrete for complete installation and effective anchoring.
- **Caliburn™ PH** pan head, which is ideal for an exposed finished look including installation of electrical boxes.
- **Caliburn™ XL** washer head design for superior holding power.
- **Climatek™ Coating is AC257** code approved for use in treated lumber.
- Ideal for use in anchoring to concrete or wood to concrete applications including basement framing and sheds.

GRK
FASTENERS™



CALIBURN™ CONCRETE SCREWS

Heavy Duty Concrete and Masonry Fastener

U.S. (Std.)Size (Dia.x Length)	Bulk Part No.	Bulk Box Qty.	Pro-Pak Part No.	Pro-Pak Pail Qty.	Handy-Pak Part No.	Handy-Pak Ctn. Size/Qty.
1/4" x 1-3/4"	55159	1,000	N/A	N/A	57153	M/50
1/4" x 2-1/4"					57156	M/50
1/4" x 2-3/4"					57159	M/50
1/4" x 3-1/2"					57163	M/50
1/4" x 5"					57171	M/50
CALIBURN™ PH						
1/4" x 1-3/4"			N/A	N/A	57828	M/50
1/4" x 2-1/4"					57831	M/50
CALIBURN™ XL						
19/64" x 2-3/4"	55778	400	N/A	N/A	57774	M/25
19/64" x 3-1/2"					57778	M/25
19/64" x 5"					57785	M/25

1" bit included in Handy-Paks



**AC257 Treated
Lumber Approved**

GRK's adjustable Top Star™ shim screw, is in fact a screw within a screw that allows you to install wooden doors or windows without the use of shims.

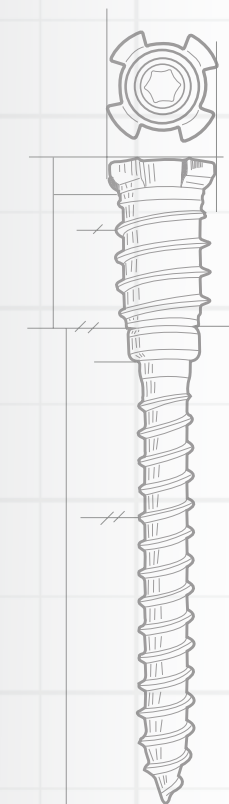
The quick and easy system reduces labor and allows for hassle free adjustment to ensure plumb installation.

- **Recessed Star Drive:** Zero Stripping, with 6 points of contact
- **4-point 3/8" diameter Threaded Sleeve** provides a secure hold in your wooden frame
- **Micro-Adjustments** allow for an absolutely plumb installation
- **Use with GRK's Top Star™ Crown and T-15 Star bit system.**
- **White Zinc Plated** finish for lasting durability.
- **For Shim Free installation** of wooden doors, windows, insulation, paneling, built-in wall units and cabinets.

GRK
FASTENERS™



Door stop or cover caps will hide hole



TOP STAR™ ADJUSTABLE SHIM SCREWS

For Plumb Installation of Wooden Doors and Windows. No More Shims!

The Complete Top Star™ System Includes:

BIT **CROWN** **THREADED SLEEVE**



NOTE: Pro-Paks need to be ordered in multiples of two.

The Bit drives the Top Star™ into the material when the Crown and Bit are combined. Using the Bit without the Crown adjusts the distance.

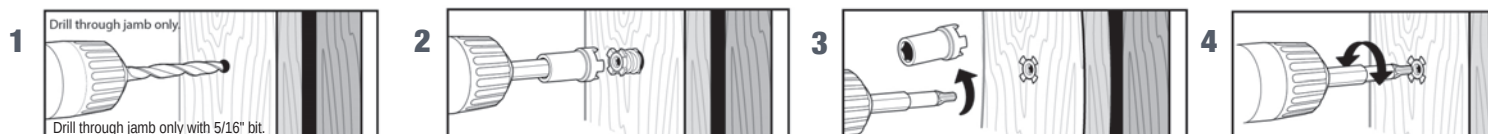
The Threaded Sleeve moves independently from the Top Star™ unless locked by the Crown. When locked, the Top Star™ gets driven into the material.

Unlocked, the installed Top Star™ is ready for levelling.

U.S. (Std.) Size (Dia. x Length)	Pro-Pak Part No.	Pro-Pak Box Qty.
3/8" x 2-1/2"	20157	100
3/8" x 3-1/8"	20161	100

CROWN / BIT	Blister-Pak Part No.	Blister-Pak/Qty
 Includes: (1) Crown / Bit with each	86465	1

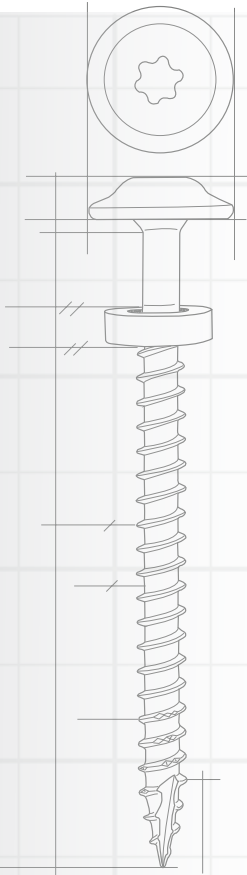
NOTE: Crown and Star bit system included in each bulk box. 5/16" drill bit not included.



The MSS™ was developed and patented based on the RSS™ model. This screw has an integrated washer-head and is complemented by a rubber washer below the screw head.

This feature also helps protect the washer from prolonged exposure to the sun for long lasting, secure siding installations.

- **White Color, Low Profile Head** produces a clean, finished look which is preferred for moldings, closet organizers and metal siding.
- **Washer Head** increases holding power.
- **Rubber Washer** seals drill hole from the elements.
- **W-Cut™ Thread Design** tiny saw blades reduce torque by cutting through the material.
- **ZIP-TIP™** for easy starts and no pre-drilling.
- For use in interior or exterior applications including metal siding, garage door trim and even closet organizers. Not for use with treated lumber.



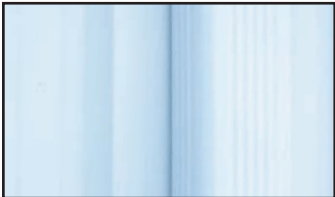
MSS™ METAL SIDING SCREWS

Integrated Head Design with Powder Coating Finish

U.S. (Std.)Size (Dia.x Length)	Bulk Part No.	Bulk Box Qty.	Pro-Pak Part No.	Pro-Pak Pail Qty.	Handy-Pak Part No.	Handy-Pak Ctn. Size/Qty.
#9 x 1-1/2"	40090	3,000	N/A	N/A	44090	M/100
#9 x 2"	40120	2,000				



1" bit included in Handy-Paks



Self-tapping screws with integrated washer head, for fastening metal siding to a wooden framed structures.

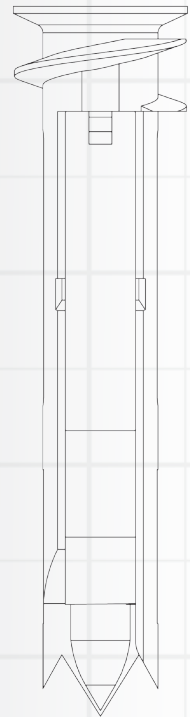
E-Z Anchors® are ideal for hanging accessories, signs, fixtures, and shelving units on drywall. Designed to self-drill flush into drywall for easy and fast installations. No pre-drilling necessary. The threads are formed to provide increased stability and a secure hold.

E-Z Anchor® Twist-N-Lock is designed for light to medium-duty applications. The audible click provides confirmation of the anchor being firmly set. Threads cut deeply to resist pull-out and provide a secure hold.

E-Z Anchor® Stud Solver is designed for light to medium-duty applications. Installs anywhere on a wall, even if you hit a wood stud behind the drywall. Threads cut deeply to resist pull-out and provide a secure hold.

E-Z Anchor® Toggle Lock is designed for heavy-duty drywall applications. The superior 1-piece assembly prevents losing extra pieces behind the wall. The toggle bar swivels easily during assembly to provide a secure hold.

Buildex® Stucco Anchor is designed for light to medium-duty applications in stucco. The zinc plating is designed to be durable in exterior and interior applications. Kits include a drill bit for installation.



E-Z Anchor® Multi-Use Anchors

Heavy Duty Anchors for a Variety of Applications

U.S. (Std.) Size (Max Load)	Lg. Pack Part No.	Lg. Pack Qty.	Med. Pack Part No.	Med. Pack Qty.	Small Pack Part No.	Small Pack Qty.
E-Z Anchor Twist-N-Lock Anchors						
50 lbs.	25350	50	25200	25	11353	6
75 lbs.	25310	50	25210	20	11364	4
E-Z Anchor Stud Solver Anchors						
40 lbs.			25225	25	25125	4
50 lbs.	25316	50	25216	20	29503	5
E-Z Anchor / E-Z Toggle Lock Anchor						
100 lbs.	25320	25	25220	10	10006	2
Buildex® Stucco Anchors						
3/16"x 1-1/2" Hex Hd			31810	25	31710	4
3/16"x 1-1/2" Flat Hd			31820	25	31720	4
1/4"x 2-7/8"			31840	25	31740	4

- **No Pre-Drilling:** E-Z Anchor® Screws directly into drywall.
- **Self-Piercing Tip:** Provides smooth drive performance into drywall.
- **Flush Fit:** Installs flush against the wall to prevent items from wobbling.
- **Clean Finish:** Creates a small hole for easy installation, cleanup, and removal.
- **White Zinc Plated** finish for lasting durability.

Warning: Do not use for ceiling applications. Do not use for mounting televisions. Load ratings are for items hung flush to the wall. Load ratings decrease when hanging items that project from the wall.

For decades, Tapcon products have enabled professionals to get their light to medium-duty concrete anchoring jobs done right the first time, every time. Designed to deliver 30% less torque and 20% more holding power, Tapcon anchors are the #1 choice of professionals.

Tapcon concrete screw anchors are designed to deliver superior holding power in all forms of masonry (concrete, CMU, and brick). The advanced WERCS threadform turns any anchoring job into a fast and easy process.

Offering everything from the anchors needed to fasten any fixture to concrete, to the drill bits that deliver a more precise hole and maximize holding power, to the Tapcon Pro Installation Kit that makes jobs faster and easier, Tapcon provides professionals with all the tools they need for confidence in a job done right.

Buildex
Tapcon®



TAPCON® CONCRETE SCREW ANCHORS

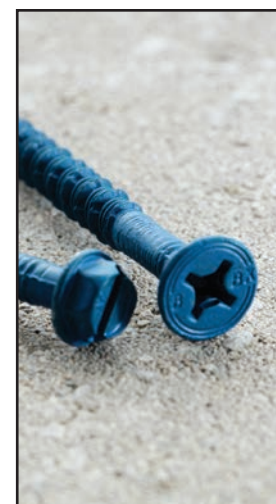
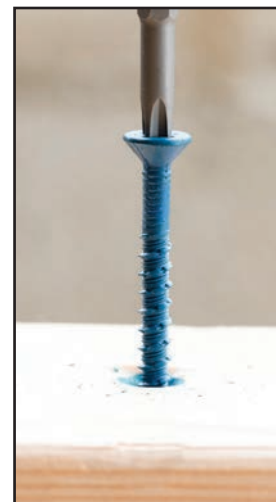
Nothing Anchors Like Tapcon

- **Superior Holding Strength** for confidence in a job done right.
- **Corrosion-resistance and long-lasting performance** from the innovative Climaseal blue coating.
- **Advanced WERCS Threadform** reduces the installation torque & allows for use in a wider range of materials.
- **ICC-ES** approved for use in anchoring into concrete (ESR-2202).
- A long-standing reputation for quality, strength and ease of installation from industry professionals.

With over one billion anchors sold, Tapcon concrete anchors deliver the ease of use, superior precision and unparalleled performance that professionals demand.



U.S. (Std.)Size (Dia.x Length)	Bucket Part No.	Bucket Qty.	Lg. Clam Part No.	Lg. Clam Qty.	Med. Pack Part No.	Med. Pack Qty.	Sm. Pack Part No.	Sm. Pack Qty.
PHILLIPS HEAD								
3/16" x 1-1/4"	24550	225	24350	75	24250	25	24150	8
3/16" x 1-3/4"	24555	225	24355	75	24255	25	24155	8
3/16" x 2-1/4"	24560	225	24360	75	24260	25	24160	8
3/16" x 2-3/4"	24565	225	24365	75	24265	25	24165	8
1/4" x 1-3/4"			24375	75	24275	25	24175	8
1/4" x 2-1/4"			24380	75	24280	25	24180	8
1/4" x 2-3/4"	24585	150	24385	75	24285	25	24185	8
1/4" x 3-3/4"			24395	75	24390	25		
1/4" x 4"					24397	25		
HEX HEAD								
3/16" x 1-1/4"			24300	75	24200	25	24100	8
3/16" x 1-3/4"			24305	75	24205	25	24105	8
3/16" x 2-3/4"			24310	75	24210	25	24110	8
1/4" x 1-1/4"	24515	225	24315	75	24215	25	24115	8
1/4" x 1-3/4"	24520	225	24320	75	24220	25	24120	8
1/4" x 2-1/4"			24325	75	24225	25	24125	8
1/4" x 2-3/4"	24530	150	24330	75	24230	25	24130	8
1/4" x 3-1/4"			24301	75	24335	25	24101	8
1/4" x 3-3/4"			24340	75				
1/4" x 4"					24345	25		
WHITE ULTRASHIELD TAPCON								
3/16" x 3-1/4"			24371	75			24171	8
3/16" x 2-1/4"			24372	75			24172	8
3/16" x 2-3/4"			24367	75			24167	8
1/4" x 2-3/4"			24388	75	24288	25	24188	8
1/4" x 3-1/4"			24391	75				
1/4" x 3-3/4"			24392	75				
410 STAINLESS STEEL TAPCON								
3/16" x 1-3/4"							26155	8
3/16" x 2-3/4"							26165	8
1/4" x 1-3/4"							26120	8
1/4" x 2-3/4"							26130	8
MAXI-SET TAPCON								
1/4" x 1-3/4"			24321	75				
1/4" x 1-3/4"			24322	75				
White								
1/4" x 2-1/4"			24326	50				
1/4" x 2-1/4"			24323	50				
White								
TAPCON DRILL BITS								
5/32" x 3-1/2"					11249	4	11256	1
5/32" x 4-1/2"							11247	1
5/32" x 5-1/2"							11363	1
3/16" x 3-1/2"							11257	1
3/16" x 4-1/2"					11250	4	11248	1
3/16" x 5-1/2"							11362	1
5/32" x 7" SDS							11492	1
3/16" x 7" SDS							11491	1
1/4" x 7" SDS							11493	1
3/8" x 8" SDS							11494	1
1/2" x 10" SDS							11495	1
TAPCON PRO INSTALLATION KIT								
Tapcon Pro Install Tool							79012	1

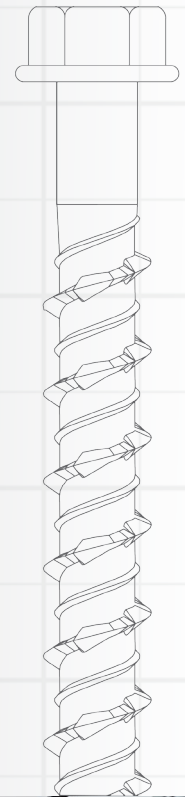
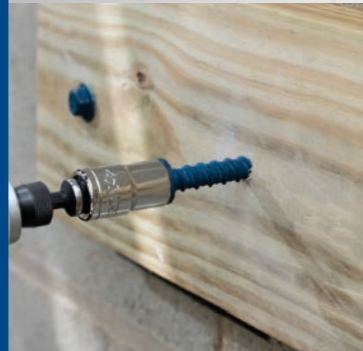


Ideal for projects that require heavy-duty holding power, Tapcon+ concrete screw anchors are the stronger, faster, and easier masonry anchoring solution. This heavy-duty screw anchor features a high-strength body that's built to resist both high wind and seismic tension and is ICC-ES approved for use in both cracked and un-cracked concrete.

Superior to wedge and sleeve anchors, Tapcon+ installs in less than half the time while delivering 20% more holding power and the flexibility to install closer to the edge of the concrete and closer to one another.

- **ICC-ES Approved** for use in uncracked & cracked concrete and seismic conditions (ESR-3699).
- **Heavy-Duty Holding Power** in all concrete conditions.
- **Flexibility** to install closer to the edge & closer together with confidence.
- A long-standing reputation for quality, strength and ease of installation from industry professionals.

Buildex
Tapcon+



TAPCON+ CONCRETE SCREW ANCHORS

Stronger. Faster. Easier.

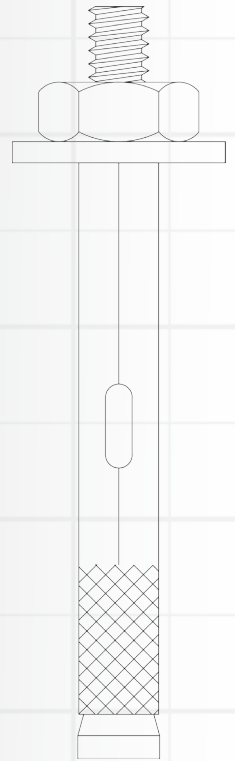
U.S. (Std.) Size (Dia. x Length)	Pro-Pak Part No.	Pro-Pak Qty.	Handy-Pak Part No.	Handy-Pak Pail Qty.	Part No.	Qty.
5/16" x 2-1/4"			24292	15	24192	4
5/16" x 3"			24293	15	24193	4
3/8" x 3"	11413	10			50403	2
3/8" x 4"	11414	10			50404	2
1/2" x 4"	11420	10			50408	2
1/2" x 6"	11421	10			50426	2



As the company that invented concrete anchoring technology, Red Head holds a unique place in the history of construction and building. The Red Head brand has become synonymous with the anchoring product category it invented. That's why Red Head can help you get any job done right, from heavy-duty ceiling applications to light duty work in block and brick.

Our sleeve anchor line is our most versatile anchor with the ability to fasten in block, brick, masonry, and solid concrete.

For a lighter duty project, Poly-Set and Hammer-Set are great choices for block, brick and concrete and allow for quick and easy installation. For heavy-duty overhead applications, use our Drop-In anchors. Use the complete family of anchors and SDS bits to ensure precise hole depth and diameter when using our anchors.



RED HEAD® CONCRETE ANCHORS

Versatile Anchoring Solutions for Construction & Building

U.S. (Std.) Size (Dia. x Length)	Pro-Pak Part No.	Pro-Pak Qty.	Handy-Pak Part No.	Handy-Pak Pail Qty.	Poly-Bag Part No.	Poly-Bag Qty.
SLEEVE ANCHORS						
1/4" x 2-1/4" Acorn Hd					50122	1
1/4" x 2-1/4" Threshold Hd					50123	1
1/4" x 3-1/8" Flat Hd					50121	1
5/16" x 1-1/2" Hex Hd					50112	1
5/16" x 2-1/2" Hex Hd					50113	1
3/8" x 1-7/8" Hex Hd					50114	1
3/8" x 3" Hex Hd	11281	50	11013	15	50115	1
1/2" x 2-1/4" Hex Hd					50116	1
1/2" x 3" Hex Hd	11283	25	11014	10	50117	1
1/2" x 4" Hex Hd	11285	25	11018	10	50118	1
5/8" x 4-1/4" Hex Hd					50119	1
5/8" x 6" Hex Hd					50120	1
POLY-SET ANCHORS						
1-1/4"			35220	50		
1-7/16"			35225	50		
HAMMER-SET ANCHORS						
1/4" x 1"	35300	75	35200	25		
1/4" x 1-1/2"	35303	50	35203	15		
1/4" x 2"	35305	50	35205	15		
DROP-IN ANCHORS						
3/8" Anchor					50125	1
1/2" Anchor					50126	1
3/8" Setting Tool					07499	1
1/2" Setting Tool					07501	1



For jobs requiring versatility, high performance, and efficiency, Red Head's A7+ Concrete Adhesive Anchor is the one anchoring solution that does it all. A7+ takes only 45 minutes to fully cure and can be used in challenging conditions like cold temperatures and water-filled holes. A7+ is also ICC-ES approved for cracked concrete and seismic building code requirements.

A7+ can also be used in any standard medium-duty caulk gun, eliminating the inconvenience of needing a special dispensing tool. Combine the simplicity of dispensing with the quick-curing product, and installation is fast, easy, and doesn't take time away from the rest of the project.

The A7+ concrete adhesive anchoring solution is a high-performing anchor that rivals other products on the market in both price and features. This high performance and efficiency allows for less time on the job and more productivity.

Providing code approved performance and a fast 45 minute cure time, Red Head A7+ is the concrete anchoring adhesive that delivers.



RED HEAD® A7+ ADHESIVE ANCHORS

High Strength Adhesive Anchoring Solution for Harsh Conditions



- **ICC-ES Approved** for use in cracked concrete and seismic conditions (ICC-ES ESR-3903).
- **Quick 45 Minute Cure Time** for fast installation.
- **Easy Dispensing** with a standard caulk gun, eliminating the need for any special tools.
- A successful cure in cold temperatures, as low as 14° F.
- Increased productivity with a successful cure in saturated concrete and water-filled holes.
- A long-standing reputation for quality, strength and ease of installation from industry professionals.

U.S. (Std.)Size	Part No.	Qty.
9.5 oz. Cartridge	07111	1



RED HEAD® CONCRETE ANCHORS

RED HEAD A7+® ADHESIVE ANCHORS

Ramset is a leading line of powder actuated tools and fasteners for residential and commercial remodeling. As the developer of the very first powder actuated tool in 1948, Ramset has a history of reliability, innovation, and market-leading performance. Ramset has supplied more than a million tools to professional contractors specialty tradesmen and continues to deliver products that drive jobsite speed. Utilizing the whole line of Ramset tools, powder loads, and fasteners increases jobsite productivity and leads to a job done right.

From tools that display the market leading innovation, like Cobra+ and MasterShot, to the full range of drive pins and powder loads for your applications, you can be sure to find what you need with the Ramset family of products.



RAMSET® TOOLS AND FASTENERS

Powder Actuated Tools for Residential & Commercial Remodeling.

- For use in solid concrete
- Drives jobsite speed through quick and efficient fastening
- Market leading tool innovations help you get the job done right
- The Powder Actuated Tool choice for PROs

Item / Tools	Part No.	Qty.
HammerShot .22 Caliber Single-Shot Powder Actuated Tool	00022	1
TriggerShot .22 Caliber Single-Shot Powder Actuated Tool	40066	1
MasterShot .22 Caliber Single-Shot Powder Actuated Tool	40088	1
Cobra+ .27 Caliber Semi-Automatic Powder Actuated Tool	16942	1



U.S. (Std.)Size	Large Box Part No.	Large Box Quantity	Small Clam Part No.	Small Clam Quantity
-----------------	-----------------------	-----------------------	------------------------	------------------------

DRIVE PINS

.300 x 1/2" Drive Pin	06171	100		
.300 x 3/4" Drive Pin	00747	100		
.300 x 1" Drive Pin	00759	100		
.300 x 1-1/2" Drive Pin	00774	100		
.300 x 2" Drive Pin	00780	100		
.300 x 2-1/2" Drive Pin	00786	100	00787	25
.300 x 3" Drive Pin	00794	100		
.300 x 2-1/2" Drive Pin w/Ramguard	09167	100		

DRIVE PINS W/WASHERS

.300 x 1" Washered Drive Pin	00797	100		
.300 x 1-1/2" Washered Drive Pin	00803	100	00804	25
.300 x 1-1/4" Washered Drive Pin	00800	100		
.300 x 2" Washered Drive Pin	00806	100		
.300 x 2-1/2" Washered Drive Pin	00809	100	00810	25
.300 x 2-1/2" Washered Drive Pin w/ Ramguard	09173	100		
.300 x 3" Washered Drive Pin	07886	100	07887	25
.300 x 3" Washered Drive Pin w/Ramguard	09176	100		

U.S. (Std.)Size	Strip Load Part No.	Qty.	Single Shot Box Pt. #	Single Shot Box Qty.	Single Shot Blister Pt.#	Single Shot Blister Qty.
-----------------	------------------------	------	--------------------------	-------------------------	-----------------------------	-----------------------------

POWDER LOADS

.22 Caliber Brown Powder Load			00594	100		
.22 Caliber Green Powder Load			00601	100		
.22 Caliber Yellow Powder Load			00607	100	50077	25
.27 Caliber Green Strip Load	00652	100				
.27 Caliber Yellow Strip Load	00667	100				
.27 Caliber Red Strip Load	00682	100				

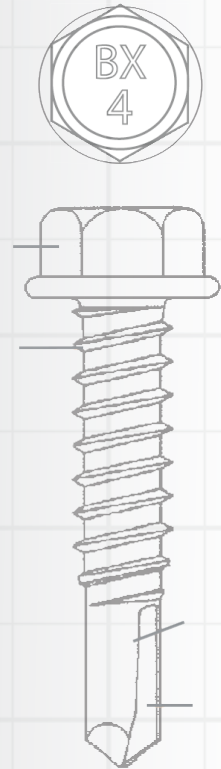


Teks® fasteners are the leading choice of self-tapping screws for use in interior/exterior applications; including metal-to-metal, wood-to-metal, and roofing applications. Professionals are able to drill faster with less force even in heavy gauge metal. The self-tapping threads are designed to tap holes while providing superior holding power ensuring strong connections between materials.

Teks® fasteners are offered in sharp and drill points that easily penetrate light to heavy gauge metal and wood. Professionals no longer have to struggle when engaging their work surface.

Teks® fasteners are offered in a wide variety of head styles to meet professionals installation needs. No tool slippage or cam-outs even with old sockets and worn bits. Professionals can drill, tap, and fasten – all in one motion.

Teks®



TEKS® METAL FASTENERS

Pro Known. Pro Used. Pro Trusted.

- **Drive surface and recess:** Reduces cam-outs to prevent slipping during installation.
- **Drill Points:** Self-drills through light to heavy gauge metal with ease.
- **Sharp Points:** Self-pierces into light gauge metal to start drilling faster.
- **Self-Tapping Threads:** Taps their own threads to provide less effort when fastening into metal.
- **Corrosion Resistant Finish:** Protects the job's appearance with long lasting coating.
- **Neoprene Washer:** Roofing screws feature a neoprene washer that provides a waterproof seal.
- **Reamer Wings:** Winged screws self-drill into wood and engage metal to provide a secure hold.
- **Lath head:** Lath Screws feature a low-profile head for a semi-flush finish for virtually any application.

U.S. (Std.)Size (Dia.x Length)	Pro-Pak Part No.	Pro-Pak Pail Qty.	Handy-Pak Part No.	Handy-Pak Ctn. Size/Qty.
TEKS® SELF-TAPPING SCREWS				
HEX WASHER HEAD / DRILL POINT (METAL TO METAL)				
8 x 1/2"	21322	450	21308	S/280
8 x 3/4"			21312	S/180
8 x 1"			21316	S/170
8/18 x 2-1/2"			21800	S/280
10 x 5/8"			21396	S/170
10 x 3/4"			21320	S/150
10 x 1"			21328	M/140
10 x 1-1/2"			21332	M/90
10/16 x 3/4"			21806	S/150
10/16 x 1"			21808	S/140
10/16 x 1-1/2"	21341	400	21810	S/90
12 x 3/4"			21336	M/120
12 x 1"			21340	M/100
12 x 1-1/2"			21344	M/80
12 x 2"			21348	M/60
12/14 x 1"			21816	M/100
12/14 x 2"			21820	M/60
14 x 3/4"			21349	S/100
14 x 1"			21351	S/60
14 x 1-1/2"			21358	120
14 x 2-1/2"	21356	M/30		
1/4-14 x 1"	21824	S/60		
HEX WASHER HEAD / SHARP POINT (METAL TO METAL)				
6 x 1/2"			21301	S/320
6 x 3/4"			21302	S/200
7 x 1/2"			21305	S/310
7 x 3/4"			21390	S/190
8 x 1/2"			21310	S/300
8 x 3/4"			21314	S/180
8 x 1-1/2"			21318	M/85
8 x 2"			21319	M/60
10 x 3/4"			21327	M/150
PAN HEAD / DRILL POINT (METAL TO METAL)				
8 x 1/2"			21360	S/300
8 x 3/4"			21364	S/240
10 x 3/4"			21372	S/170
10/16 x 3/4"			21870	M/170
PAN HEAD / SHARP POINT (METAL TO METAL)				
6 x 1/2"			21359	S/300
PANCAKE HEAD / DRILL POINT (METAL TO METAL)				
10 x 5/8"			21376	S/190
PHILLIPS WAFER HEAD / DRILL POINT W/REAMER WINGS (WOOD TO METAL)				
1/4-20 x 3"	21381	300	21378	M/40
10 x 1-7/16"			21380	S/100
12 x 2-3/4"			21384	S/40

U.S. (Std.)Size (Dia.x Length)	Pro-Pak Part No.	Pro-Pak Pail Qty.	Handy-Pak Part No.	Handy-Pak Ctn. Size/Qty.
TEKS® ROOFING SCREWS				
HEX WASHER HEAD / SHARP POINT (METAL TO WOOD)				
9 x 1"	21401	360	21400	M/120
9 x 1-1/2"	21406	400	21404	M/100
9 x 2-1/2"			21407	M/60
HEX WASHER HEAD / DRILL POINT (METAL TO METAL)				
12 x 3/4"			21408	M/90
12 x 1"	21418	400	21412	M/80
12 x 1-1/2"	21422	300		
12 x 2"	21427	150	21416	M/50
TEKS® LATH SCREWS				
MODIFIED TRUSS HEAD / SHARP POINT (METAL TO METAL)				
8 x 1/2"			21500	S/260
8 x 3/4"	21506	600	21504	S/200
8 x 1"	21510	398	21508	S/170
8 x 1-1/4"			21512	M/140
8 x 1-5/8"			21516	M/120
8 x 2"			21518	M/100
8 x 2-1/2"			21519	M/80
MODIFIED TRUSS HEAD / DRILL POINT (METAL TO METAL)				
8 x 1/2"			21520	S/260
8 x 3/4"	21525	600	21524	S/200
8 x 1"	21530	510	21528	S/170
8 x 1-1/4"			21532	M/140
8 x 1-5/8"			21536	M/120
8 x 2"			21538	M/100
8 x 2-1/2"			21540	M/80

Pro-Paks and Handy-Paks must be ordered in eaches but in Master Carton Quantities.



Hex Washer Head



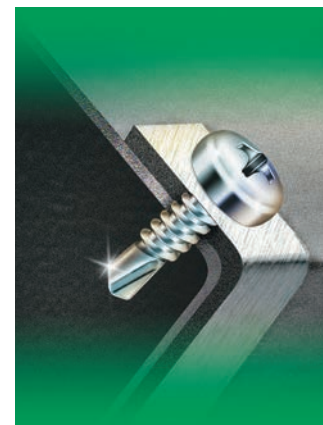
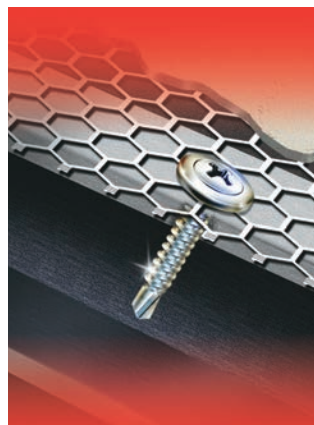
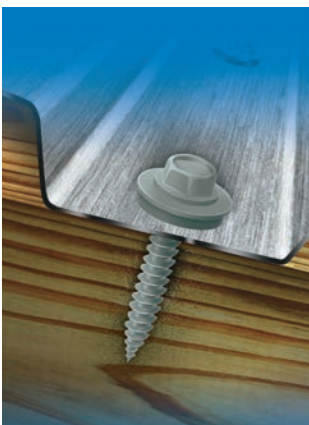
Wafer Head



Pan Head



Lath Head



Backer-On® and Rock-On® cement board screws comply with ANSI standards for cement board installation as specified by cement board manufacturers. Cement board manufacturers require ANSI compliance in order to remain eligible for warranty.

- **Serrated head:** Designed to drive flush even at an angle.
- **Star drive with T-25 bit:** provides Stikfit™ for easy one-handed installation and eliminates cam-outs.
- **Hi-Lo / Single Threads:** starts quickly and drives smooth in cement boards.
- **Sharp points:** Offers immediate pick-up and eliminates the need to pre-drill.
- **Climacoat finish:** Corrosion resistant for preventing rust from bleeding into tile.

CEMENT BOARD SCREWS

ROCK-ON® / BACKER-ON® Patented Serrated Head for Flush Seating



U.S. (Std.)Size (Dia.x Length)	Pro-Pak Part No.	Pro-Pak Pail Qty.	Handy-Pak Part No.	Handy-Pak Ctn. Size/Qty.
BACKER-ON® SCREWS				
#9 x 1-1/4"	23406	750	23401	M/185
#9 x 1-5/8"	23416	575	23411	M/140
#9 x 2-1/4"			23421	M/100
ROCK-ON® SCREWS				
#9 x 1-1/4"	23306	750	23301	M/185
#9 x 1-5/8"	23316	575	23311	M/140
#9 x 2-1/4"			23321	M/100

Pro Tip: Standard roofing nails, dry wall screws, and other alternatives to cement board screws are typically not specified by cement board manufacturers and not ANSI compliant.



Star Drive Bits, Crown / Bit



CEMENT BOARD SCREWS

STAR DRIVE BITS & ACCESSORIES

Bit Size	Bit Color	Fits	Bulk Part No.	Bulk Box Qty.	Carded Part No.	Carded Qty/per pack
T-10 2" T-10 3"	yellow yellow	Trim™ Head #8	86419	25	187419 87421	2 2
T-15 2" T-15 3"	red red	R4™ Screw #6 & 8 Trim™ Head #9 Cabinet™ Screw Vinyl Window #8	86427	25	187427 87429	2 2
T-20 2"	purple		86435	25	187435	2
T-25 2" T-25 3"	green green	R4™ #9,10 &12, Caliburn™, RSS™ #10 & 1/4" MSS™ #9	86443 86445	25 25	187443 87445	2 2
T-30 2" T-30 3"	black black	RSS™ Structural Screw 5/16" & 3/8", Caliburn™ & Caliburn PH™	86451	25	187451 87453	2 2
T-40 2"	blue	Caliburn XL™ Screws RSS™ Structural Screw 3/8"	86459	25	187459	2
CROWN / BIT						
		TOP STAR™			86465	1

High Impact Merchandisers Designed to Drive Sales

Displays are free with qualifying order.

Rolling Rack:

GRK5432 Formerly #89001-GRK
(includes header)

Ideal for secondary placement. Can be moved around retail space. Holds Pro-Paks, Handy-Paks, Blister-Paks and/or open stock in bins.

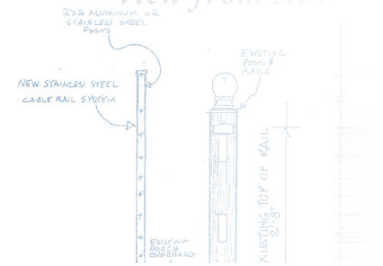


Universal Display:

GRK# 99900
(includes header)

Ideal for end-cap with large selection of GRK product.





FASTENER TECHNICAL DATA

RSS™

TABLE 1—RSS™ FASTENER SPECIFICATIONS

FASTENER DESIGNATION	LENGTH ¹ (inches)	THREAD LENGTH ² (inches)	MINOR THREAD DIAMETER (inch)	SHANK DIAMETER (inch)	OUTSIDE THREAD DIAMETER (inch)	NOMINAL BENDING YIELD STRENGTH ³ F _{yb} (psi)	ALLOWABLE STEEL STRENGTH	
							TENSILE (lbf)	SHEAR (lbf)
RSS	1/4 x 2 1/2"	2 3/8	1 1/2	0.152	0.169	170,400	1112	754
	1/4 x 2 3/4"	2 3/4	1 3/4					
	1/4 x 3 1/8"	3 1/8	2					
	1/4 x 3 1/2"	3 1/2	2 3/8					
	5/16 x 2 1/2"	2 3/8	1 1/2	0.167	0.195	190,900	1415	982
	5/16 x 2 3/4"	2 3/4	1 3/4					
	5/16 x 3 1/8"	3 1/8	2 1/8					
	5/16 x 3 1/2"	3 1/2	2 1/2					
	5/16 x 4"	3 7/8	2 3/4					
	5/16 x 5 1/8"	5	3 1/2					
	5/16 x 6"	5 7/8	3 7/8					
	3/8 x 3 1/8"	3 1/8	2 1/8	0.191	0.219	178,000	1941	1231
	3/8 x 4"	3 7/8	2 3/4					
	3/8 x 5 1/8"	5 1/8	3 1/2					
	3/8 x 6"	5 7/8	4					
	3/8 x 7 1/4"	7	4 1/2					
	3/8 x 8"	7 7/8	4 3/8					
	3/8 x 10"	9 3/4	5					
	3/8 x 12"	11 7/8	5 7/8					
	3/8 x 14 1/8"	14 1/8	5 7/8					
	3/8 x 16"	15 5/8	5 3/4					
LPS	1/4 x 8"	7 7/8	2 7/8	0.152	0.171	172,600	1051	666
LTF	3/8 x 8"	7 7/8	3 7/8	0.191	0.219	167,600	1714	1094
	3/8 x 10"	9 7/8	3 7/8					
	3/8 x 12"	11 3/4	3 7/8					
RSS PHEInox	1/4 x 2 1/2"	2 3/8	1 1/2	0.152	0.169	111,400	628	546
	1/4 x 3 1/8"	3 1/8	2					
	5/16 x 2 1/2"	2 3/8	1 5/8	.167	0.195	118,300	806	668
	5/16 x 3 1/8"	3 1/8	2 1/8					
	5/16 x 4"	3 7/8	2 1/2					
	5/16 x 5 1/8"	5 1/8	3 3/8					
	5/16 x 6"	5 7/8	3 7/8					
JTS	1/4 x 3 3/8"	3 3/8	1 3/8	0.152	0.171	226,300	1104	769
	1/4 x 5"	5	1 5/8					
	1/4 x 6 3/4"	6 3/4	1 1/2					

For SI: 1 inch = 25.4 mm; 1 psi = 6.9 kPa; 1 lbf = 4.4 N.

¹The length of fasteners is measured from the underside of the head to bottom of the tip. See Figure 1.

²Length of thread includes tip. See Figure 1.

³Bending yield strength determined in accordance with ASTM F1575 using the minor thread diameter.

⁴See Figure 1 for additional dimensional information.

RSS™

TABLE 2—RSS™ REFERENCE WITHDRAWAL (W) AND PULL-THROUGH (P) DESIGN VALUES¹

FASTENER DESIGNATION		THREAD LENGTH (inches)	W (lbf/in.) ²		P (lbf) ³		WET SERVICE FACTOR, C _M
			For Specific Gravities of:		For Specific Gravities of:		
			0.42 ≤ G < 0.55	0.55 ≤ G < 0.67	0.42 ≤ G < 0.55	0.55 ≤ G < 0.67	
RSS	1/4 x 2 1/2"	1 1/2	151	186	165	275	0.70
	1/4 x 2 3/4"	1 3/4					
	1/4 x 3 1/8"	2					
	1/4 x 3 1/2"	2 3/8					
	5/16 x 2 1/2"	1 1/2	165	227	207	418	
	5/16 x 2 3/4"	1 3/4					
	5/16 x 3 1/8"	2 1/8					
	5/16 x 3 1/2"	2 1/2					
	5/16 x 4"	2 3/4	180	259	196	351	
	5/16 x 5 1/8"	3 1/2					
	5/16 x 6"	3 7/8					
	3/8 x 3 1/8"	2 1/8					
	3/8 x 4"	2 3/4					
	3/8 x 5 1/8"	3 1/2					
	3/8 x 6"	4					
	3/8 x 7 1/4"	4 1/2					
	3/8 x 8"	4 3/8					
	3/8 x 10"	5					
	3/8 x 12"	5 7/8					
	3/8 x 14 1/8"	5 7/8					
	3/8 x 16"	5 3/4					
LPS	1/4 x 8"	2 7/8	128	201	136	395	0.52
LTF	3/8 x 8"	3 7/8	163	216	202	373	0.70
	3/8 x 10"	3 7/8					
	3/8 x 12"	3 7/8					
PHEinox	1/4 x 2 1/2"	1 1/2	134	187	162	306	0.70
	1/4 x 3 1/8"	2					
	5/16 x 2 1/2"	1 5/8	136	202	199	254	
	5/16 x 3 1/8"	2 1/8					
	5/16 x 4"	2 1/2					
	5/16 x 5 1/8"	3 3/8					
	5/16 x 6"	3 7/8					
JTS	1/4 x 3 3/8"	1 3/8	152	191	154	372	0.68
	1/4 x 5"	1 5/8					
	1/4 x 6 3/4"	1 1/2					

For SI: 1 inch = 25.4 mm; 1 lbf = 4.4 N.

¹Values must be multiplied by all applicable adjustment factors, in accordance with the NDS. When the fasteners are used in wet service conditions, the wet service factors shown in the table are applicable.

²Tabulated reference withdrawal design values are in pounds per inch of thread penetration into the side grain of the main member, and must be multiplied by the thread length embedded in the member in order to get the total withdrawal design value in pounds. Length of CEE threads must not be included in the withdrawal value determination.

³Tabulated pull-through design values are based on a minimum side member thickness of 3/4 inch.

**These figures are only offered as a guide and are not reduce by any safety factor.
For safety factor requirements in your area, contact your local building official, architect or engineer.**

TABLE 3—RSS™ REFERENCE LATERAL DESIGN VALUES (Z) FOR SINGLE SHEAR (TWO-MEMBER) CONNECTIONS¹
[For Sawn Lumber with Both Members of Identical Specific Gravity]

FASTENER DESIGNATION		SIDE MEMBER THICKNESS, t (inches)	FASTENER PENETRATION INTO MAIN MEMBER, p (inches)	REFERENCE LATERAL DESIGN VALUE, Z (lbf) FOR SPECIFIC GRAVITIES OF:				WET SERVICE FACTOR, C _M
				0.42 ≤ G < 0.55		0.55 ≤ G < 0.67		
				Parallel to Grain, Z _∥	Perpendicular to Grain, Z _⊥	Parallel to Grain, Z _∥	Perpendicular to Grain, Z _⊥	
RSS	1/4 × 2 1/2"	3/4	1 5/8	153	137	175	175	0.70
	1/4 × 2 3/4"	3/4	2					
	1/4 × 3 1/8"	3/4	2 3/8					
	1/4 × 3 1/2"	3/4	2 3/4					
	5/16 × 2 1/2"	3/4	1 5/8	168	133	214	178	
	5/16 × 2 3/4"	3/4	2					
	5/16 × 3 1/8"	3/4	2 3/8					
	5/16 × 3 1/2"	3/4	2 3/4					
	5/16 × 4"	1 1/2	2 3/8	239	236	333	257	
	5/16 × 5 1/8"	1 1/2	3 1/2					
	5/16 × 6"	2	3 7/8	265	299	472	289	
	3/8 × 3 1/8"	3/4	2 3/8	188	156	251	220	
	3/8 × 4"	1 1/2	2 3/8	224	205	274	264	
	3/8 × 5 1/8"	1 1/2	3 5/8					
	3/8 × 6"	2	3 7/8	270	296	325	288	
	3/8 × 7 1/4"	2 3/4	4 1/4	423	291	593	304	
	3/8 × 8"	3 1/2	4 3/8					
	3/8 × 10"	3 1/2	6 1/4					
3/8 × 12"	3 1/2	8 3/8						
3/8 × 14 1/8"	3 1/2	10 5/8						
3/8 × 16"	3 1/2	12 1/8						
LPS	1/4 × 8"	5	2 7/8	249	257	358	219	0.62
LTF	3/8 × 8"	4	3 7/8	433	315	556	402	0.70
	3/8 × 10"	6	3 7/8					
	3/8 × 12"	8	3 3/4					
PHEinox	1/4 × 2 1/2"	3/4	1 5/8	162	134	215	185	0.70
	1/4 × 3 1/8"	3/4	2 3/8					
	5/16 × 2 1/2"	3/4	1 5/8	151	149	181	175	
	5/16 × 3 1/8"	3/4	2 3/8					
	5/16 × 4"	1 1/2	2 3/8	249	229	337	272	
	5/16 × 5 1/8"	1 1/2	3 5/8					
	5/16 × 6"	2	3 7/8	302	340	449	358	
JTS	1/4 × 3 3/8"	1 3/4	1 5/8	157	168	217	217	0.70
	1/4 × 5"	1 3/4	3 1/4	168	221	241	237	
	1/4 × 6 3/4"	1 3/4	5					

For SI: 1 inch = 25.4 mm ; 1 lbf = 4.4 N.

¹Values must be multiplied by all applicable adjustment factors, in accordance with the NDS. When the fasteners are used in wet service conditions, the wet service factors shown in the table are applicable.

These figures are only offered as a guide and are not reduce by any safety factor.
For safety factor requirements in your area, contact your local building official, architect or engineer.

FASTENER TECHNICAL DATA

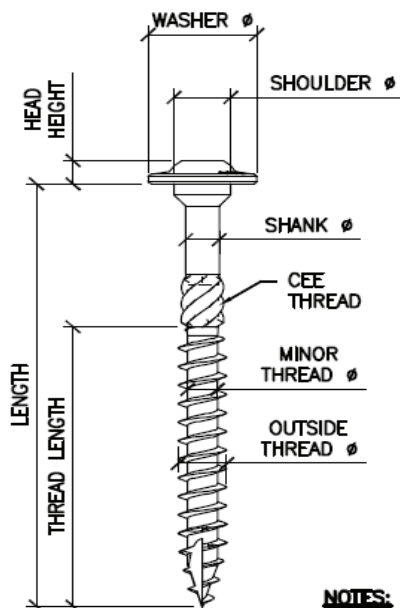
RSS™

TABLE 4 - CONNECTION GEOMETRY

CONNECTION GEOMETRY / CRITERIA	DIAMETERS ¹	RSS, LPS, JTS & PHEINOX 1/4" NOMINAL DIAMETER (inches)	RSS & PHEINOX 5/16" NOMINAL DIAMETER (inches)	RSS & LTF 3/8" NOMINAL DIAMETER (inches)
Minimum Edge Distance				
Loading Parallel to Grain	8	1 1/2	1 5/8	1 7/8
Loading Perpendicular to grain, Loaded Edge	8	1 1/2	1 5/8	1 7/8
Loading Perpendicular to grain, Unloaded Edge	8	1 1/2	1 5/8	1 7/8
Minimum End Distance				
Tension Load Parallel to Grain	15	2 5/8	3	3 3/8
Compression Load Parallel to Grain	10	1 3/4	2	2 1/4
Load Perpendicular to Grain	10	1 3/4	2	2 1/4
Spacing (Pitch) Between Fasteners in a Row				
Parallel to Grain	15	2 5/8	3	3 3/8
Perpendicular to Grain	10	1 3/4	2	2 1/4
Spacing (Gage) Between Rows of Fasteners				
In-Line	5	7/8	1	1 1/8
Staggered	2.5	1/2	1/2	5/8
Minimum Penetration into Main Member For Single Shear Connections	6	1 1/8	1 1/4	1 3/8

For SI: 1 inch = 25.4 mm

¹ Diameter is the shank diameter as specified in Table 1.



SCREW TYPE	HEAD STAMP	WASHER Ø ± 0.020	HEAD HEIGHT ± 0.010	SHOULDER Ø ± 0.010	CEE THREAD ²
RSS 1/4 (6.0mm)		0.533	0.110	0.244	LENGTH ≥ 3/8"
RSS 5/16 (7.0mm)		0.620	0.157	0.301	LENGTH ≥ 3/8"
RSS 3/8 (8.0mm)		0.689	0.181	0.364	LENGTH ≥ 3/8"
LTF 3/8 (8.0mm)		0.688	0.181	0.364	LENGTH ≥ 3/8"
LPS 1/4 (6.0mm)		0.535	0.090	0.244	NO
JTS 1/4 (6.3mm)		0.534	0.090	0.244	LENGTH ≥ 5"

NOTES:

- SEE TABLE 1 FOR OVERALL LENGTH, THREAD LENGTH, SHANK DIAMETER, OUTSIDE THREAD DIAMETER AND MINOR THREAD DIAMETER.
- CEE THREAD ON SCREWS WITH LENGTHS GREATER THAN OR EQUAL TO THOSE INDICATED. NOT USED FOR CALCULATIONS.

FIGURE 1 — FASTENER DIMENSIONS

FASTENER TECHNICAL DATA

R4™, Trim™



TABLE 1A—CARBON STEEL FASTENER SPECIFICATIONS

FASTENER DESIGNATION	OVERALL LENGTH ¹ (inches)	THREAD LENGTH ² (inches)	HEAD DIAMETER (inch)	HEAD RECESS	ROOT DIAMETER (inch)	SHANK DIAMETER (inch)	OUTSIDE THREAD DIAMETER (inch)	SPECIFIED BENDING YIELD STRENGTH ³ F _y (psi)	ALLOWABLE STEEL STRENGTH	
									Tensile (lbf)	Shear (lbf)
R4	9x2"	2	1 1/4	Star drive T-25	0.112	0.128	0.173	158800	627	428
	9x2 1/2"	2 1/8	1 5/8							
	9x2 3/4"	2 1/4	1 7/8							
	9x3 1/8"	3 1/8	2 1/8							
	10x2 1/2"	2 1/8	1 5/8	Star drive T-25	0.124	0.142	0.193	143590	846	542
	10x2 3/4"	2 1/4	1 7/8							
	10x3 1/8"	3 1/8	2 1/8							
	10x3 1/2"	3 1/2	2 1/8							
	10x4"	3 1/8	2 3/8	Star drive T-25	0.148	0.171	0.234	134280	1134	655
	10x4 3/4"	4 1/8	3							
	12x2 1/2"	2 1/8	1 5/8							
	12x2 3/4"	2 3/4	1 7/8							
	12x3 1/8"	3 1/8	2 1/8							
	12x3 1/2"	3 1/2	2 1/8							
	12x4"	3 1/8	2 3/8							
	12x4 3/4"	4 1/8	3							
	12x5 1/8"	5 1/2	3							
	12x6 1/8"	6 1/4	3							
	12x7 1/4"	7	3							
	12x8"	7 1/8	3							
	12x10"	9 1/4	3							
	12x12"	11 1/4	3							
TRIM	8x2 1/2"	2 1/8	1 5/8	Star drive T-10	0.100	0.111	0.156	148410	499	360
	8x2 3/4"	2 3/4	1 7/8							
	8x3 1/8"	3 1/8	2 1/8							
	9x2 1/2"	2 3/8	1 5/8	Star drive T-15	0.112	0.128	0.175	147280	576	425
	9x2 3/4"	2 3/4	1 7/8							
	9x3 1/8"	3 1/8	2 1/8							

TABLE 1B—PHEINOX™ FASTENER SPECIFICATIONS

FASTENER DESIGNATION	OVERALL LENGTH ¹ (inches)	THREAD LENGTH ² (inches)	HEAD DIAMETER (inch)	DRIVER SIZE	ROOT DIAMETER (inch)	SHANK DIAMETER (inch)	OUTSIDE THREAD DIAMETER (inch)	SPECIFIED BENDING YIELD STRENGTH ³ F _y (psi)	ALLOWABLE STEEL STRENGTH	
									Tensile (lbf)	Shear (lbf)
R4	9x2"	2	1 1/4	Star drive T-25	0.112	0.128	0.173	113340	467	334
	10x2 1/2"	2 1/2	1 5/8	Star drive T-25	0.124	0.142	0.193	170220	490	424
	10x2 3/4"	2 3/4	1 7/8							
	10x3 1/8"	3 1/8	2 1/8							
	10x4"	3 1/8	2 3/8							
	12x2 1/2"	2 1/2	1 5/8	Star drive T-25	0.148	0.171	0.234	159920	681	507
	12x3 1/8"	3 1/8	2 1/8							
	12x4"	3 1/8	2 3/8							
	12x4 3/4"	4 1/8	3							
TRIM	8x2 1/2"	2 1/2	1 5/8	Star drive T-10	0.100	0.111	0.156	117540	350	267
	8x2 3/4"	2 3/4	1 7/8							
	8x3 1/8"	3 1/8	2 1/8							
	9x2 1/2"	2 1/2	1 5/8	Star drive T-15	0.112	0.128	0.175	66340	394	319
	9x2 3/4"	2 3/4	1 7/8							
	9x3 1/8"	3 1/8	2 1/8							

For SI: 1 inch = 25.4 mm; 1 psi = 6.9 kPa.

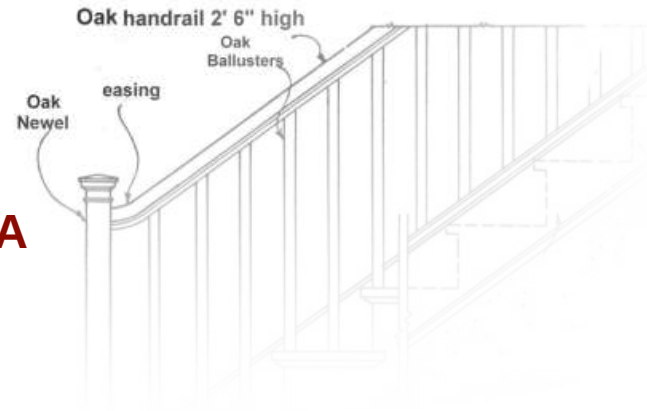
¹Overall length of fastener is measured from the top of the head to bottom of the tip. See Figure 1.

²Length of thread includes tip. See detailed illustrations in Figure 1.

³Bending yield strength determined in accordance with ASTM F1575 using the root diameter.

FASTENER TECHNICAL DATA

R4™, Trim™



**TABLE 2A—CLIMATEK™ COATED FASTENER
REFERENCE WITHDRAWAL
DESIGN VALUES (W)^{1,2}**

[Tabulated Withdrawal Design Values (W) Are in Pounds per Inch of Thread Penetration into Side Grain of Main Member]

FASTENER DESIGNATION	THREAD LENGTH ¹ , (inches)	WITHDRAWAL, W (lbs./in.) ³ FOR SPECIFIC GRAVITY =0.67
R4	9x2"	1 ¹ / ₄
	9x2 ¹ / ₂ "	1 ⁵ / ₈
	9x2 ³ / ₄ "	1 ⁷ / ₈
	9x3 ¹ / ₈ "	2 ¹ / ₈
	10x2 ¹ / ₂ "	1 ⁵ / ₈
	10x2 ³ / ₄ "	1 ⁷ / ₈
	10x3 ¹ / ₈ "	2 ¹ / ₈
	10x3 ¹ / ₂ "	2 ³ / ₈
	10x4"	2 ⁵ / ₈
	10x4 ³ / ₄ "	3
	12x2 ¹ / ₂ "	1 ⁵ / ₈
	12x2 ³ / ₄ "	1 ⁷ / ₈
	12x3 ¹ / ₈ "	2 ¹ / ₈
	12x3 ¹ / ₂ "	2 ³ / ₈
	12x4"	2 ⁵ / ₈
	12x4 ³ / ₄ "	3
TRIM	12x5 ⁵ / ₈ "	3
	12x6 ³ / ₈ "	3
	12x7 ¹ / ₄ "	3
	12x8"	3
	12x10"	3
	12x12"	3
	8x2 ¹ / ₂ "	1 ⁵ / ₈
	8x2 ³ / ₄ "	1 ⁷ / ₈
	8x3 ¹ / ₈ "	2 ¹ / ₈
	9x2 ¹ / ₂ "	1 ⁵ / ₈
TRIM	9x2 ³ / ₄ "	1 ⁷ / ₈
	9x3 ¹ / ₈ "	2 ¹ / ₈

Pilot hole requirements:
70% of the root diameter of the screw

For SI: 1 inch = 25.4 mm; 1 lbf/in = 175 N/m.

¹Values must not be multiplied by any adjustment factors.

²Fastener withdrawal was tested in accordance with ASTM D1761.

³Reference withdrawal design values (W) shall be multiplied by the length of thread penetration in the main member (including tip).

**TABLE 2B—PHEINOX™ STAINLESS STEEL FASTENER
REFERENCE WITHDRAWAL
DESIGN VALUES (W)^{1,2}**

[Tabulated Withdrawal Design Values (W) Are in Pounds per Inch of Thread Penetration into Side Grain of Main Member]

FASTENER DESIGNATION	THREAD LENGTH ¹ , (inches)	WITHDRAWAL, W (lbs./in.) ³ FOR SPECIFIC GRAVITY =0.67
R4	9x2"	1 ¹ / ₄
	10x2 ¹ / ₂ "	1 ⁵ / ₈
	10x2 ³ / ₄ "	1 ⁷ / ₈
	10x3 ¹ / ₈ "	2 ¹ / ₈
	10x4"	2 ⁵ / ₈
	12x2 ¹ / ₂ "	1 ⁵ / ₈
	12x3 ¹ / ₈ "	2 ¹ / ₈
	12x4"	2 ⁵ / ₈
TRIM	12x4 ³ / ₄ "	3
	8x2 ¹ / ₂ "	1 ⁵ / ₈
	8x2 ³ / ₄ "	1 ⁷ / ₈
	8x3 ¹ / ₈ "	2 ¹ / ₈
	9x2 ¹ / ₂ "	1 ⁵ / ₈
	9x2 ³ / ₄ "	1 ⁷ / ₈
	9x3 ¹ / ₈ "	2 ¹ / ₈
	9x3 ¹ / ₂ "	2 ³ / ₈

Pilot hole requirements:
80% of the root diameter of the screw

For SI: 1 inch = 25.4 mm; 1 lbf/in = 175 N/m.

¹Values must not be multiplied by any adjustment factors.

²Fastener withdrawal was tested in accordance with ASTM D1761.

³Reference withdrawal design values (W) shall be multiplied by the length of thread penetration in the main member (including tip).

**TABLE 3B—PHEINOX™ STAINLESS STEEL FASTENER
REFERENCE PULL-THROUGH
DESIGN VALUES (P)¹**

[Tabulated Pull-Through Design Values (P) are in Pounds]

FASTENER DESIGNATION	MINIMUM SIDE MEMBER THICKNESS (inch)	PULL-THROUGH, P (lbf) FOR SPECIFIC GRAVITY = 0.67
R4	9x2"	184
	10x2 ¹ / ₂ "	220
	10x2 ³ / ₄ "	220
	10x3 ¹ / ₈ "	220
	10x4"	220
	12x2 ¹ / ₂ "	336
	12x3 ¹ / ₈ "	336
	12x4"	336
TRIM	12x4 ³ / ₄ "	336
	8x2 ¹ / ₂ "	70
	8x2 ³ / ₄ "	70
	8x3 ¹ / ₈ "	70
	9x2 ¹ / ₂ "	124
	9x2 ³ / ₄ "	124

Pilot hole requirements:
90% of the root diameter of the screw

For SI: 1 inch = 25.4 mm; 1 lbf = 4.4N.

¹Values shall be multiplied by all applicable adjustment factors (see NDS Table 10.3.1) as applicable to withdrawal.

**TABLE 3A—CLIMATEK™ COATED FASTENER
REFERENCE PULL-THROUGH
DESIGN VALUES (P)¹**

[Tabulated Pull-Through Design Values (P) are in Pounds]

FASTENER DESIGNATION	MINIMUM SIDE MEMBER THICKNESS (inch)	PULL-THROUGH, P (lbf) FOR SPECIFIC GRAVITY = 0.67
R4	9x2"	162
	9x2 ¹ / ₂ "	162
	9x2 ³ / ₄ "	162
	9x3 ¹ / ₈ "	162
	10x2 ¹ / ₂ "	275
	10x2 ³ / ₄ "	275
	10x3 ¹ / ₈ "	275
	10x3 ¹ / ₂ "	275
	10x4"	275
	10x4 ³ / ₄ "	275
	12x2 ¹ / ₂ "	407
	12x2 ³ / ₄ "	407
	12x3 ¹ / ₈ "	407
	12x3 ¹ / ₂ "	407
	12x4"	407
	12x4 ³ / ₄ "	407
TRIM	12x5 ⁵ / ₈ "	407
	12x6 ³ / ₈ "	407
	12x7 ¹ / ₄ "	407
	12x8"	407
	12x10"	407
	12x12"	407
	8x2 ¹ / ₂ "	61
	8x2 ³ / ₄ "	61
TRIM	8x3 ¹ / ₈ "	61
	9x2 ¹ / ₂ "	94
	9x2 ³ / ₄ "	94
	9x3 ¹ / ₈ "	94

Pilot hole requirements:
90% of the root diameter of the screw

For SI: 1 inch = 25.4 mm; 1 lbf = 4.4N

¹Values shall be multiplied by all applicable adjustment factors (see NDS Table 10.3.1) as applicable to withdrawal.



FASTENER TECHNICAL DATA

R4™, Trim™



**TABLE 4A—CLIMATEK™ COATED FASTENER
REFERENCE LATERAL DESIGN VALUES (Z) FOR SINGLE
SHEAR (TWO-MEMBER) CONNECTIONS^{1,2}
[For Sawn Lumber with Both Members of Identical Specific
Gravity]**

FASTENER DESIGNATION	SIDE MEMBER THICKNESS, t_s (inch)	FASTENER PENETRATION, P (inches)	REFERENCE LATERAL DESIGN VALUE, Z (pounds) FOR SPECIFIC GRAVITY OF: 0.67 Parallel to Grain, $Z_{ }$
R4	9x2"	$\frac{3}{4}$	$1\frac{1}{8}$
	9x2 $\frac{1}{2}$ "	$\frac{3}{4}$	$1\frac{1}{2}$
	9x2 $\frac{3}{4}$ "	$\frac{3}{4}$	2
	9x3 $\frac{1}{8}$ "	$\frac{3}{4}$	2 $\frac{3}{8}$
	10x2 $\frac{1}{2}$ "	$\frac{3}{4}$	$1\frac{1}{2}$
	10x2 $\frac{3}{4}$ "	$\frac{3}{4}$	2
	10x3 $\frac{1}{8}$ "	$\frac{3}{4}$	2 $\frac{3}{8}$
	10x3 $\frac{1}{2}$ "	$\frac{3}{4}$	2 $\frac{3}{4}$
	10x4"	$\frac{3}{4}$	3 $\frac{1}{8}$
	10x4 $\frac{3}{4}$ "	$\frac{3}{4}$	3 $\frac{1}{8}$
	12x2 $\frac{1}{2}$ "	$\frac{3}{4}$	$1\frac{1}{2}$
	12x2 $\frac{3}{4}$ "	$\frac{3}{4}$	2
	12x3 $\frac{1}{8}$ "	$\frac{3}{4}$	2 $\frac{3}{8}$
	12x3 $\frac{1}{2}$ "	$\frac{3}{4}$	2 $\frac{3}{4}$
	12x4"	$\frac{3}{4}$	3 $\frac{1}{8}$
	12x4 $\frac{3}{4}$ "	$\frac{3}{4}$	3 $\frac{1}{8}$
	12x5 $\frac{5}{8}$ "	$\frac{3}{4}$	4 $\frac{3}{4}$
	12x6 $\frac{3}{8}$ "	$\frac{3}{4}$	5 $\frac{1}{2}$
	12x7 $\frac{1}{4}$ "	$\frac{3}{4}$	6 $\frac{1}{4}$
TRIM	8x2 $\frac{1}{2}$ "	$\frac{3}{4}$	$1\frac{1}{2}$
	8x2 $\frac{3}{4}$ "	$\frac{3}{4}$	2
	8x3 $\frac{1}{8}$ "	$\frac{3}{4}$	2 $\frac{1}{2}$
	9x2 $\frac{1}{2}$ "	$\frac{3}{4}$	$1\frac{1}{2}$
	9x2 $\frac{3}{4}$ "	$\frac{3}{4}$	2
	9x3 $\frac{1}{8}$ "	$\frac{3}{4}$	2 $\frac{3}{8}$

Pilot hole requirements:
90% of the root diameter of the screw

For **SI**: 1 inch = 25.4 mm.

¹Values shall be multiplied by all applicable adjustment factors (see NDS Table 10.3.1).

²Lateral load testing was performed in accordance with ASTM D1761.



**TABLE 4B—PHEINOX™ STAINLESS STEEL FASTENER
REFERENCE LATERAL DESIGN VALUES (Z) FOR SINGLE
SHEAR (TWO-MEMBER) CONNECTIONS^{1,2}
[For Sawn Lumber with Both Members of Identical Specific
Gravity]**

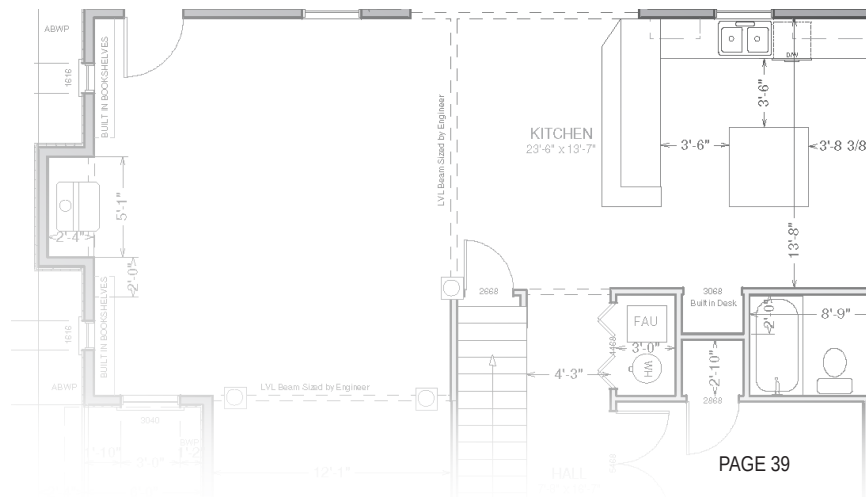
FASTENER DESIGNATION	SIDE MEMBER THICKNESS, t_s (inch)	FASTENER PENETRATION, P (inches)	REFERENCE LATERAL DESIGN VALUE, Z (pounds) FOR SPECIFIC GRAVITY OF: 0.67 Parallel to Grain, $Z_{ }$
R4	9x2"	$\frac{3}{4}$	$1\frac{1}{8}$
	10x2 $\frac{1}{2}$ "	$\frac{3}{4}$	$1\frac{1}{2}$
	10x2 $\frac{3}{4}$ "	$\frac{3}{4}$	2
	10x3 $\frac{1}{8}$ "	$\frac{3}{4}$	2 $\frac{3}{8}$
	10x4"	$\frac{3}{4}$	3 $\frac{1}{8}$
	12x2 $\frac{1}{2}$ "	$\frac{3}{4}$	1 $\frac{5}{8}$
	12x3 $\frac{1}{8}$ "	$\frac{3}{4}$	2 $\frac{3}{8}$
	12x4"	$\frac{3}{4}$	3 $\frac{1}{8}$
	12x4 $\frac{3}{4}$ "	$\frac{3}{4}$	3 $\frac{1}{8}$
	8x2 $\frac{1}{2}$ "	$\frac{3}{4}$	1 $\frac{5}{8}$
TRIM	8x2 $\frac{3}{4}$ "	$\frac{3}{4}$	2
	8x3 $\frac{1}{8}$ "	$\frac{3}{4}$	2 $\frac{3}{8}$
	9x2 $\frac{1}{2}$ "	$\frac{3}{4}$	1 $\frac{5}{8}$
	9x2 $\frac{3}{4}$ "	$\frac{3}{4}$	2
	9x3 $\frac{1}{8}$ "	$\frac{3}{4}$	2 $\frac{3}{8}$
RT COMPOSITE	8x2 $\frac{1}{2}$ "	$\frac{3}{4}$	$1\frac{1}{2}$
	8x2 $\frac{3}{4}$ "	$\frac{3}{4}$	2
	8x3 $\frac{1}{8}$ "	$\frac{3}{4}$	2 $\frac{3}{8}$
	9x2 $\frac{1}{2}$ "	$\frac{3}{4}$	$1\frac{1}{2}$
	9x2 $\frac{3}{4}$ "	$\frac{3}{4}$	2
	9x3 $\frac{1}{8}$ "	$\frac{3}{4}$	2 $\frac{3}{8}$

Pilot hole requirements:
90% of the root diameter of the screw

For **SI**: 1 inch = 25.4 mm.

¹Values shall be multiplied by all applicable adjustment factors (see NDS Table 10.3.1).

²Lateral load testing was performed in accordance with ASTM D1761.



FASTENER TECHNICAL DATA

R4™, Trim™

TABLE 5—CONNECTION GEOMETRY REQUIREMENTS^{1,2}

CONDITION		MINIMUM DISTANCE OR SPACING (inches)			
		D = 0.111"	D = 0.128-0.134"	D = 0.142"	D = 0.171
End distance	Loading toward end	2	2	2 1/8	2 5/8
	Loading away from end	1 1/8	1 1/4	1 3/8	1 3/4
	Loading perpendicular to grain	NA ³	NA ³	NA ³	NA ³
Edge distance	Loading parallel to grain	1	1	1 1/8	1 3/8
	Loading perpendicular to grain	NA ³	NA ³	NA ³	NA ³
Spacing between fasteners in a row	Loading parallel to grain	1 3/4	2	2 1/8	2 5/8
	Loading perpendicular to grain	NA ³	NA ³	NA ³	NA ³
Spacing between rows	In-line rows	5/8	5/8	3/4	7/8
	Staggered rows ⁴	1/4	3/8	3/8	3/8

For SI: 1 inch = 25.4 mm.

¹ End distances, edge distances and screw spacing must be sufficient to prevent splitting of the wood, or as required by this table, whichever is the more restrictive. See Section 4.2.

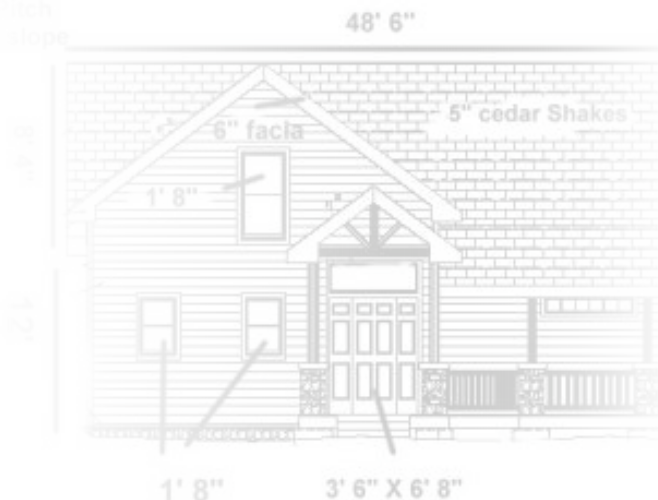
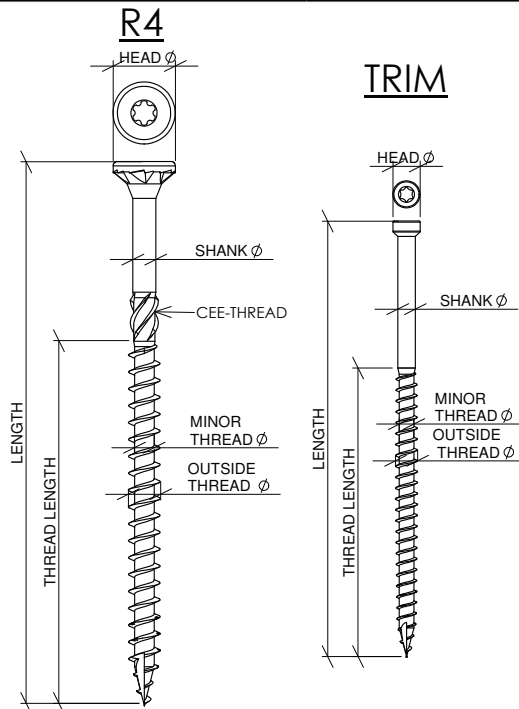
² The term *D* is the shank diameter, as specified in Table 1.

³ Loading perpendicular to grain is outside the scope of this evaluation report.

⁴ Values for spacing between staggered rows apply where screws in adjacent rows are offset by half of the spacing between screws in a row.

TABLE 6—EXPOSURE CONDITIONS FOR FASTENERS WITH INTENDED USE AND LIMITATIONS OF RECOGNITION

EXPOSURE CONDITION	TYPICAL APPLICATIONS	RECOGNITION LIMITATIONS
Corrosion Resistance of Fasteners		
1	Treated wood in dry use applications	Limited to use where equilibrium moisture content of the chemically treated wood meets the dry service conditions as described in the NDS.
3	General construction	Limited to freshwater and chemically treated wood exposure, i.e., no saltwater exposure.





FASTENER TECHNICAL DATA

Caliburn™ XL



FOOTING SCHEDULE

HOUSE WALLS	20
DECKS & PORCHES	18
BEARING WALL	20
GARAGE WALL	18

Min 2 #4 Rebar Horizontal
on undisturbed or compacted

INSULATION SCHEDULE

Ceilings
Wall above grade

TABLE 1—GRK CALIBURN XL 7.5 SCREW ANCHORS INSTALLATION SPECIFICATIONS

ANCHOR PROPERTY / SETTING INFORMATION	SYMBOL	UNITS	NOMINAL ANCHOR SIZE ¹⁹ / ₆₄ INCH (7.5 mm)	
Nominal anchor diameter	$d_a [d_o]^1$	in. (mm)	0.295 (7.5)	
Minimum diameter of hole clearance in fixture	d_h	in. (mm)	⁵ / ₁₆ (7.9)	
Nominal drill bit diameter	d_{bit}	mm	6	
Bit tolerance range	-	mm	6.15 to 6.40	
Maximum impact torque power rating	$T_{impact,max}$	ft-lb. (Nm)	33 (45)	
Screw length	L	in. (mm)	3.62 (92)	4.92 (125)
Minimum nominal embedment depth	h_{nom}	in. (mm)	2.76 (70)	3.35 (85)
Length of thread	l_{gew}	in. (mm)	2.83 (72)	3.43 (87)
Minimum member thickness	h_{min}	in. (mm)	4.33 (110)	5.32 (135)
Minimum edge distance	$c_{min} = c_{ac}$	in. (mm)	5.67 (144)	5.67 (144)
Minimum spacing distance	s_{min}	in. (mm)	7.56 (192)	7.56 (192)
Minimum hole depth	h_o	in. (mm)	3.35 (85)	3.94 (100)

For SI: 1 inch = 25.4 mm, 1 ft-lb = 1.356 N-m.

¹The notation in brackets is for the 2006 IBC.

Note:

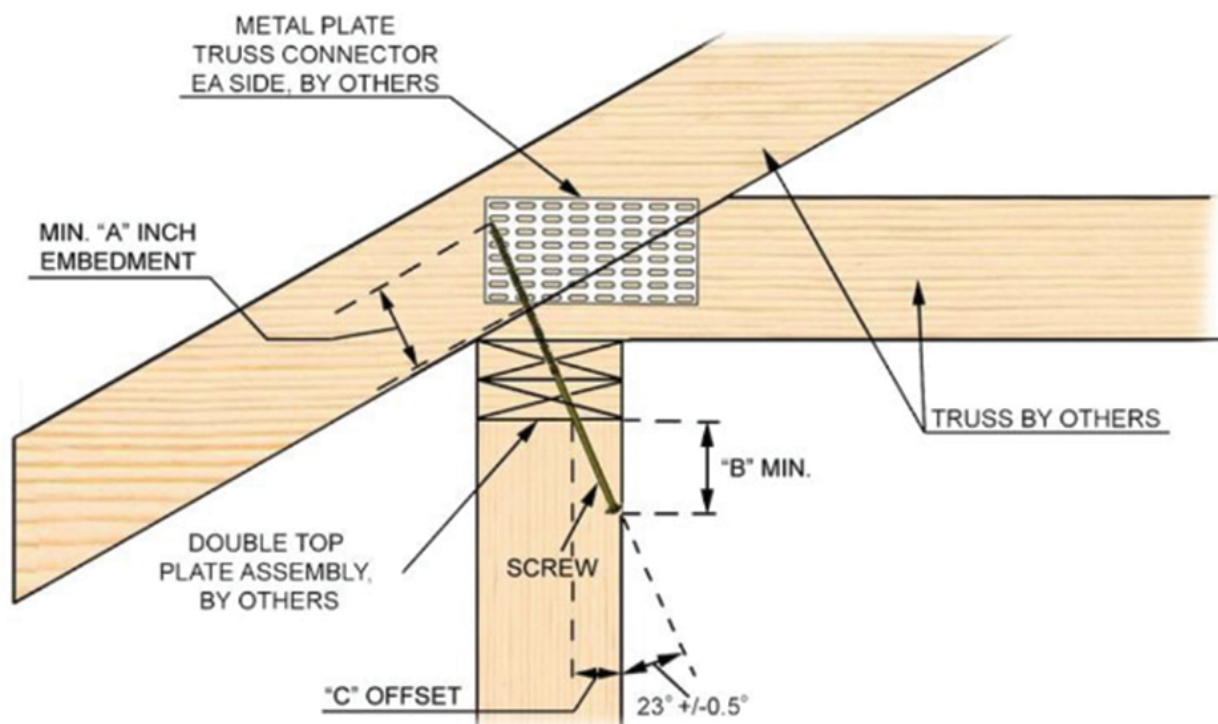
For safety factor requirements in your area, contact your local building official, architect or engineer. Testing was performed according to ASTM standard E-488-96. **The Caliburn™ XL is on the ICC Report ESR-3251.** For most current information and specifications visit our website: www.grkfasteners.com.

Roof Joist or Roof Truss to Top Plate or Stud Connection

Table 1 Allowable Design Loads for Roof Joist or Roof Truss to Top Plate Connections

Load Type	Screw Type	Wood Species		
		SP (Southern Pine)	DFL (Douglas Fir Larch)	SPF (Spruce Pine Fir)
Allowable Uplift in lbs	Ø3/8 RSS	1230	1017	717
Allowable Shear / Lateral in lbs		528	480	393
Allowable Uplift in lbs	# 12 R4	873	722	509
Allowable Shear / Lateral in lbs		352	322	273
Allowable Uplift in lbs	Ø1/4 LPS/RSS	562	465	328
Allowable Shear / Lateral in lbs		242	221	188

FIGURE 1 Typical Connection Details



Multiple Sawn Lumber & Engineered Wood Beams

Table 1 MFR Lumber G=0.5

JTS Screw	# of Screw rows	Fastener Spacing in inches	Allowable Face Mounted Loads Per Foot (PLF) Assembly per Table 3					
			A	B	C	D	E	F
¼ x 3-3/8"	2	24	212					
	2	16	318					
	2	12	424					
	3	24	318					
	3	16	477					
	3	12	636					
¼ x 5"	2	24		212		238		
	2	16		318		357		
	2	12		424		476		
	3	24		318		357		
	3	16		477		536		
	3	12		636		714		
¼ x 6-3/4"	2	24			212		255	238
	2	16			318		383	357
	2	12			424		510	476
	3	24			318		383	357
	3	16			477		575	536
	3	12			636		766	714

Note: 1. Applied load from joist are assumed to be uniform
2. Fastener capacity is based on fastener spacing, not joist spacing

Table 2 Sawn Lumber with Varying Specific Gravity values

RSS	# of Screw rows	Fastener Spacing in inches	Allowable Face Mounted Loads Per Foot (PLF)			
			S.Pine G=0.55	D.Fir G=0.50	SPF G=0.42	Assembly per Table 3
¼ x 2-3/4"	2	24	190	165	127	G
	2	16	285	248	191	
	2	12	380	330	254	
	3	24	285	248	191	
	3	16	428	372	286	
	3	12	570	495	381	
5/16 x 4"	2	24	257	214	210	H
	2	16	386	321	315	
	2	12	514	428	420	
	3	24	386	321	315	
	3	16	578	482	473	
	3	12	771	642	630	
5/16 x 6"	2	24	257	214	210	I
	2	16	386	321	315	
	2	12	514	428	420	
	3	24	386	321	315	
	3	16	578	482	473	
	3	12	771	642	630	

Note: 1. Applied load from joist are assumed to be uniform
2. Fastener capacity is based on fastener spacing, not joist spacing

Table 3 Assembly Types (Cutting Plane 'A-A' per Fig.3)

MFR Lumber		
A 2 x 1-3/4"	B 3 x 1-3/4"	C 4 x 1-3/4"
D 1 x 1-3/4" to 3-1/2"	E 2 x 3-1/2"	F 1-3/4" ES of 3- 1/2"
Sawn Lumber		
G 2 x 1-1/2"	H 3 x 1-1/2"	I 4 x 1-1/2"

Note: Load should be applied to the face w/the screw head

ABBREVIATIONS:

D.Fir = Douglas Fir-Larch
ES = each side
H. Fir = Hem-Fir
JTS = Joist and Truss Screw
MFR = Manufactured structural composite lumber
PLF = Pounds per linear foot
RSS = Rugged Structural Screw
SPF = Spruce-Pine-Fir
S.Pine = Southern Pine
tm = Thickness of main member
ts = Thickness of side member
TYP = Typical
o.c. = on center

Minimum Spacing Geometry - perpendicular to grain loading

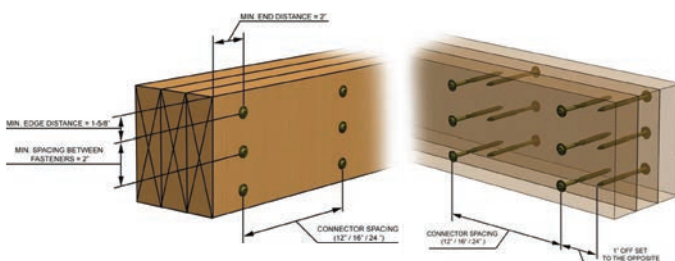


Figure 1a

Figure 1b

Multi-Ply Beam with One Face Loaded

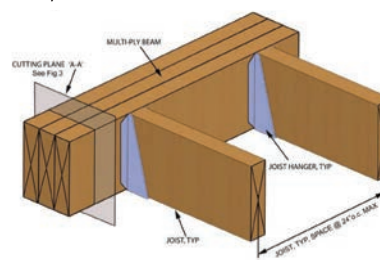


Figure 2

Cutting Plane 'A-A'

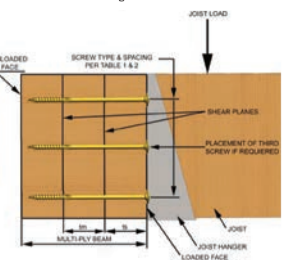
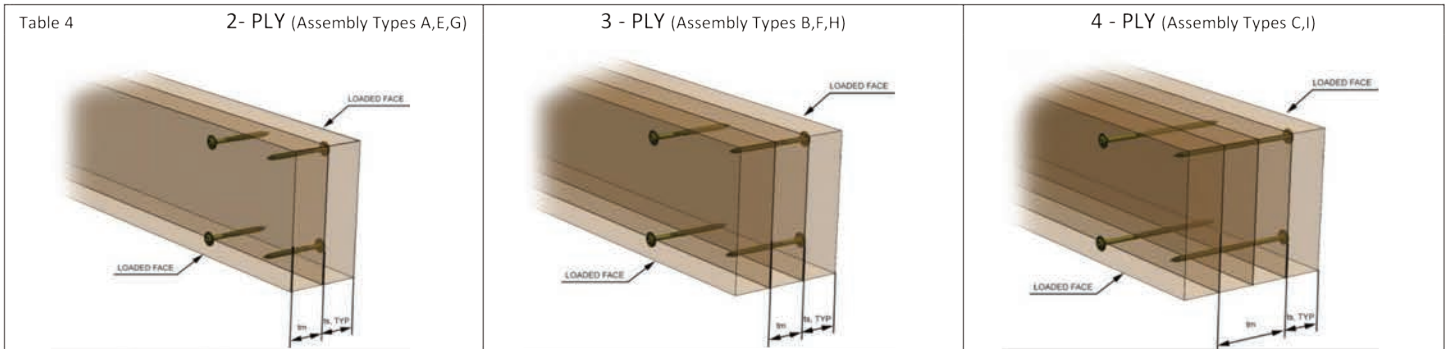


Figure 3

Multi-Ply Beams w/loads on Both Faces



Note: 1. See Tables 1 & 2 for load carrying capacity.
2. RSS/JTS screws shall be sized to penetrate laminations from both sides.

Multi-Ply Beam Point Load

Table 5 MFR Lumber G=0.5

JTS Screw	# Screws	Max Point Load to One Side of Member **					
		A	B	C	D	E	F
1/4 x 3-3/8"	4	848					
	6	1272					
	8	1696					
1/4 x 5"	4		848		952		
	6		1272		1428		
	8		1696		1904		
1/4 x 6-3/4"	4			848		1020	952
	6			1272		1530	1428
	8			1696		2040	1904

Table 6 Sawn Lumber with Varying Specific Gravity values

RSS	# Screws	Max Point Load to One Side of Member **			
		S.Pine G=0.55	D.Fir G=0.50	SPF G=0.42	Assembly
1/4 x 2-3/4"	4	760	660	508	G
	6	1140	990	762	
	8	1520	1320	1016	
5/16 x 4"	4	1028	856	840	H
	6	1542	1284	1260	
	8	2056	1712	1680	
5/16 x 6"	4	1028	856	840	I
	6	1542	1284	1260	
	8	2056	1712	1680	

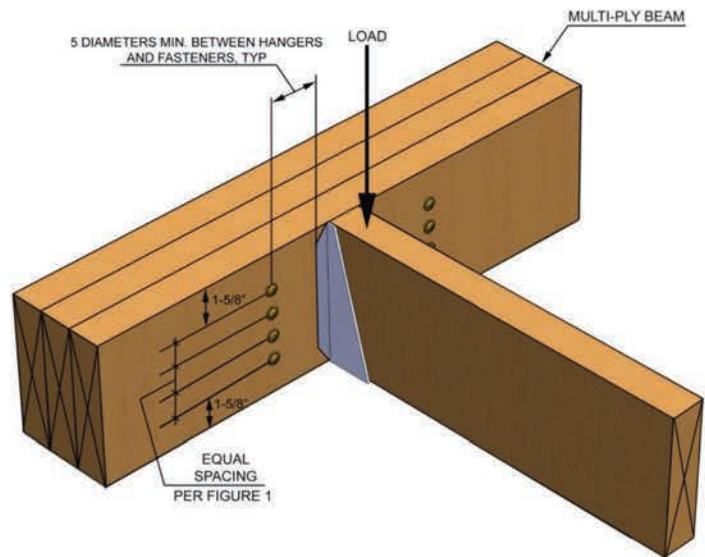


Figure 5

** Note when applying loads on both faces of built up beam, screws determined from table 5 & 6 shall be installed on both sides 1" offset for rows on opposite face.

Multi-Ply Beam Top-Loaded

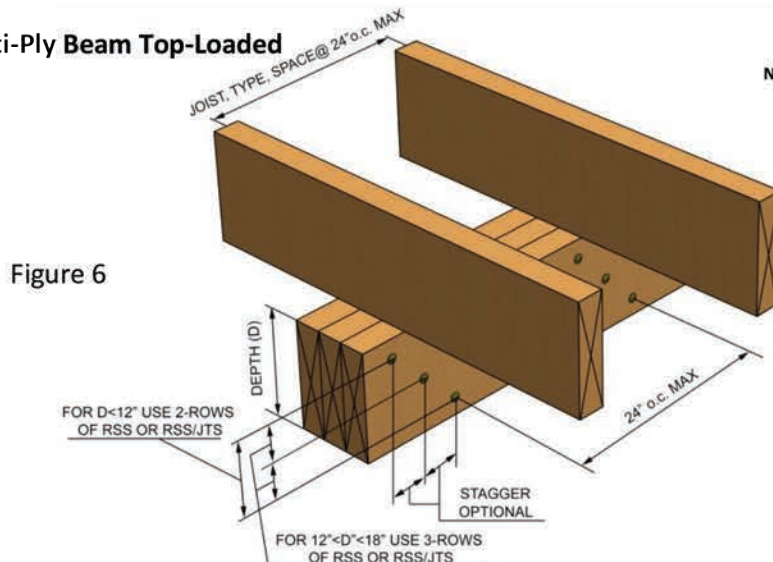


Figure 6

Note: 1. Load must be applied evenly across entire beam width. Otherwise, use connection for side-loaded beams.
2. RSS/JTS screw shall be sized to penetrate through all plies
3. For beams with 4 or more plies, install screws on both faces 1" offset between rows on opposite faces.

For ICC Report ESR-2442,
please visit:
www.icc-es.org/reports/pdf-files/icc-es/ESR-2442.pdf

Ledger Board: Structural Screw

Table 1

RSS 5/16 x 4"			Joist span				
			6 ft	8 ft	10 ft	12 ft	14 ft
Live load (psf)	Wood Species	Screw Shear Capacity (lb/ft)	Screw Spacing in inches				
40	G = 0.42 / SPF	182	14	10	8	7	6
40	G = 0.50 / DF-PSL-LVL-LSV	213	17	12	10	8	7
40	G = 0.55 / SP	252	20	15	12	10	8
60	G = 0.42 / SPF	182	10	7	6	5	4
60	G = 0.50 / DF-PSL-LVL-LSV	213	12	9	7	6	5
60	G = 0.55 / SP	252	14	10	8	7	6

NOTE: 1. Deck Dead Load = 10 psf

Table 2 (wet-use in- service)

RSS 5/16 x 4"			Joist span				
			6 ft	8 ft	10 ft	12 ft	14 ft
Live load (psf)	Wood Species	Screw Shear Capacity (lb/ft)	Screw Spacing in inches/ <u>wet-use in- service</u>				
40	G = 0.42 / SPF	127	10	7	6	5	4
40	G = 0.50 / DF-PSL-LVL-LSV	150	12	9	7	6	5
40	G = 0.55 / SP	176	14	10	8	7	6
60	G = 0.42 / SPF	127	7	5	4	3	3
60	G = 0.50 / DF-PSL-LVL-LSV	150	8	6	5	4	3
60	G = 0.55 / SP	176	10	7	6	5	4

NOTE: 1. Deck Dead Load = 10 psf

Table 3

PHEINOX RSS 5/16 x 4" (Stainless steel)			Joist span				
			6 ft	8 ft	10 ft	12 ft	14 ft
Live load (psf)	Wood Species	Screw Shear Capacity (lb/ft)	Screw Spacing in inches				
40	G = 0.42 / SPF	151	12	9	7	6	5
40	G = 0.50 / DF-PSL-LVL-LSV	187	14	11	8	7	6
40	G = 0.55 / SP	204	16	12	9	8	6
60	G = 0.42 / SPF	151	8	6	5	4	3
60	G = 0.50 / DF-PSL-LVL-LSV	187	10	8	6	5	4
60	G = 0.55 / SP	204	11	8	6	5	4

NOTE: 1. Deck Dead Load = 10 psf

Table 4 (wet-use in- service)

PHEINOX RSS 5/16 x 4" (Stainless steel)			Joist span				
			6 ft	8 ft	10 ft	12 ft	14 ft
Live load (psf)	Wood Species	Screw Shear Capacity (lb/ft)	Screw Spacing in inches/ <u>wet-use in- service</u>				
40	G = 0.42 / SPF	106	8	6	5	4	3
40	G = 0.50 / DF-PSL-LVL-LSV	131	10	7	6	5	4
40	G = 0.55 / SP	143	11	8	6	5	4
60	G = 0.42 / SPF	106	6	4	3	3	2
60	G = 0.50 / DF-PSL-LVL-LSV	131	7	5	4	3	3
60	G = 0.55 / SP	143	8	6	4	4	3

NOTE: 1. Deck Dead Load = 10 psf

Table 5 Wood Species Specific Gravities

Species	Specific Gravity (G)
Spruce-Pine Fir (SPF)	G = 0.42
Hem-Fir (HF)	G = 0.43
Douglas Fir Larch (DFL)	G = 0.50
Parallel Strand Lumber (PSL)	G = 0.50
Laminated Veneer Lumber (LVL)	G = 0.50
Laminated Strand Lumber (LSL)	G = 0.50
Southern Pine (SP)	G = 0.55

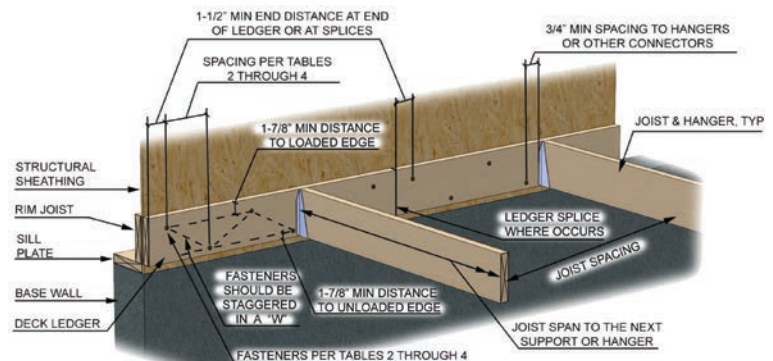


TABLE 2—TENSION STRENGTH DESIGN INFORMATION FOR TAPCON® SCREW ANCHOR¹

CHARACTERISTIC	SYMBOL ⁵	UNITS	NOMINAL ANCHOR DIAMETER (inch) ⁴	
			³ / ₁₆	¹ / ₄
Head Style	—	—	Hex Head/ Phillips Head	Hex Head/ Phillips Head
Drill bit specification		in.	⁵ / ₃₂ Tapcon® Bit	³ / ₁₆ Tapcon® Bit
Anchor category	1, 2 or 3	—	1	1
Effective embedment depth	h_{ef}	in.	1.50	1.50
Minimum concrete member thickness	h_{min}	in.	4	4
Critical edge distance	c_{ac}	in.	4	4
Data for Steel Strength in Tension				
Minimum specified yield strength	f_y	psi	100,000	100,000
Minimum specified ultimate strength	$f_{uta} (f_u)^5$	psi	125,000	125,000
Effective tensile stress area	A_{se}	in ²	0.0147	0.0241
Steel strength in tension	N_{sa}	lbf	2,025	3,800
Strength reduction factor ϕ for tension, steel failure modes ²	ϕ_{sa}	—	0.65	0.65
Data for Concrete Breakout Strength in Tension				
Effectiveness factor -uncracked concrete	k_{unscr}	—	24	24
Modification factor for cracked and uncracked concrete ³	$\Psi_{c,N} (\Psi_3)^4$	—	1.0	1.0
Strength reduction factor ϕ for tension, concrete failure modes, Condition B ³	ϕ_{cb}	—	0.65	0.65
Data for Pullout Strength in Tension				
Pullout strength, uncracked concrete	$N_{p,unscr}$	lbf	590	795
Strength reduction factor ϕ for tension, pullout failure modes, Condition B ³	ϕ_p	—	0.65	0.65
Additional Anchor Data				
Axial stiffness in service load range in uncracked concrete	β_{unscr}	lbf /in	317,000	467,000

For SI: 1 inch = 25.4 mm, 1 ft-lbf = 1.356 N-m.

TABLE 3—SHEAR STRENGTH DESIGN INFORMATION FOR TAPCON® SCREW ANCHOR¹

CHARACTERISTIC	SYMBOL ⁵	UNITS	NOMINAL ANCHOR DIAMETER (inch) ⁴	
			³ / ₁₆	¹ / ₄
Head Style	—	—	Hex Head/Phillips Head	Hex Head/Phillips Head
Drill bit specification		in.	⁵ / ₃₂ Tapcon® Bit	³ / ₁₆ Tapcon® Bit
Anchor category	1, 2 or 3	—	1	1
Effective embedment depth	h_{ef}	in.	1.50	1.50
Minimum concrete member thickness	h_{min}	in.	4	4
Critical edge distance	c_{ac}	in.	4	4
Data for Steel Strengths in Shear				
Minimum specified yield strength	f_y	psi	100,000	100,000
Minimum specified ultimate strength	$f_{uta} (f_u)^4$	psi	125,000	125,000
Effective shear stress area	A_{se}	in ²	0.0147	0.0241
Steel strength in shear - static	V_{sa}	lbf	715	1,300
Strength reduction factor ϕ for shear, steel failure modes ²	ϕ_{sa}	—	0.60	0.60
Data for Concrete Breakout and Concrete Pryout Strengths in Shear				
Nominal Outside diameter (shank)	$d_a (d_o)^4$	in.	0.15	0.19
Load bearing length of anchor	ℓ_e	—	1.50	1.50
Coefficient for Pryout Strength	κ_{cp}	—	1.0	1.0
Strength reduction factor for shear, concrete breakout ³	ϕ_{cb}	—	0.70	0.70
Strength reduction factor for shear, pryout ³	ϕ_{cp}	—	0.70	0.70

For SI: 1 inch = 25.4 mm, 1 ft-lbf = 1.356 N-m.

TABLE 1—INSTALLATION INFORMATION FOR TAPCON+ SCREW ANCHORS

CHARACTERISTIC	SYMBOL	UNITS	NOMINAL ANCHOR DIAMETER (inch)								
			¹ / ₄		¹ / ₄	³ / ₈	¹ / ₂				
Head Style	—	—			Hex Head	Hex Head		Hex Head			
Nominal Outside diameter (Shank)	d_s (d_o) ³	in.	0.25		0.25	0.38		0.50			
Nominal Outside diameter (threads)	—	in.	0.33		0.33	0.46		0.59			
Drill bit specification	d_{bit}	in.	¹ / ₄ Tapcon+ Bit		¹ / ₄ Tapcon+ Bit	¹ / ₄ ANSI Bit	³ / ₈ ANSI Bit	¹ / ₂ ANSI Bit			
Minimum base plate clearance hole diameter	d_h	in.	Not applicable ²		³ / ₈		¹ / ₂	⁵ / ₈			
Maximum installation torque ⁵	$T_{inst, max}$	ft-lbf	Not applicable ⁴		20		50		70		
Maximum Impact Wrench Torque Rating	$T_{impact, max}$	ft-lbf	Not applicable ⁴		115		200		345		
Effective embedment depth	h_{ef}	in.	1.67		1.45		1.78	1.32	2.17	3.02	
Minimum nominal embedment depth ⁶	h_{nom}	in.	2 ¹ / ₄		2		2 ¹ / ₂		2	3	4
Minimum hole depth	h_{hole}	in.	2 ¹ / ₂		2 ¹ / ₄		2 ³ / ₄		2 ¹ / ₄	3 ¹ / ₄	4 ¹ / ₄
Minimum concrete member thickness	h_{min}	in.	4		4		4		4	6	
Critical edge distance	c_{ac}	in.	2 ¹ / ₂		2 ¹ / ₂		4 ¹ / ₂		3	4	5
Minimum edge distance	c_{min}	in.	1 ¹ / ₂		1 ¹ / ₂		1 ¹ / ₂		2 ¹ / ₂	1 ³ / ₄	2 ¹ / ₂
Minimum spacing	s_{min}	in.	3		3		3		3	3 ¹ / ₂	3

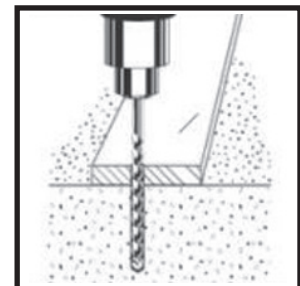
For SI: 1 inch = 25.4 mm, 1 ft-lbf = 1.356 N-m.



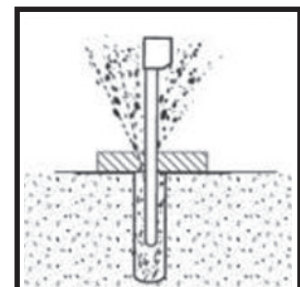
TABLE 2—TENSION STRENGTH DESIGN INFORMATION FOR TAPCON+ SCREW ANCHORS

CHARACTERISTIC	SYMBOL	UNITS	NOMINAL ANCHOR DIAMETER (inch)								
			$\frac{1}{4}$		$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$				
Head Style	—	—			Hex Head	Hex Head		Hex Head			
Drill bit specification		in.	$\frac{1}{4}$ Tapcon+ Bit		$\frac{1}{4}$ Tapcon+ Bit	$\frac{1}{4}$ ANSI Bit	$\frac{3}{8}$ ANSI Bit	$\frac{1}{2}$ ANSI Bit			
Anchor category	1, 2 or 3	—	1		1	2	1	1			
Effective embedment depth	h_{ef}	in.	1.45 ⁶		1.45		1.78		1.32	2.17	3.02
Minimum concrete member thickness	h_{min}	in.	4		4		4		6		
Critical edge distance	c_{ac}	in.	$2\frac{1}{2}$		$2\frac{1}{2}$		$4\frac{1}{2}$		3	4	5
Data for Steel Strength in Tension											
Minimum specified yield strength	f_y	psi	Not applicable			100,000		100,000		100,000	
Minimum specified ultimate strength	f_{uts} (f_{ut}) ⁵	psi	Not applicable			125,000		125,000		125,000	
Effective tensile stress area	A_{se}	in ²	Not applicable			0.0470		0.098		0.1850	
Steel strength in tension	N_{sa}	lbf	1,822 ⁷			5,900		12,250		23,125	
Strength reduction factor ϕ for tension, steel failure modes ²	ϕ_{sa}	—	0.65			0.65		0.65		0.65	
Data for Concrete Breakout Strength in Tension											
Effectiveness factor - uncracked concrete	k_{uncr}	—	24			24		27		30	
Effectiveness factor - cracked concrete	k_{cr}	—	17			17		17		17	
Modification factor for cracked and uncracked concrete ³	$\psi_{c,N}$ (ψ_3) ⁵	—	1.0			1.0		1.0		1.0	
Strength reduction factor ϕ for tension, concrete failure modes, Condition B ³	ϕ_{cb}	—	0.65			0.65		0.55	0.65		0.65
Data for Pullout Strength in Tension											
Pullout strength, uncracked concrete	$N_{p,uncr}$	lbf	2,107			2,107		See Footnote 4		See Footnote 4	
Pullout strength, cracked concrete	$N_{p,cr}$	lbf	857			857		1,837		See Footnote 4	
Pullout strength for seismic loads	$N_{p,eq}$	lbf	857			857		1,677		See Footnote 4	
Strength reduction factor ϕ for tension, pullout failure modes, Condition B ³	ϕ_p	—	0.65			0.65		0.55	0.65		See Footnote 4
Additional Anchor Data											
Axial stiffness in service load range in uncracked concrete	β_{uncr}	lbf/in	385,000			385,000		800,000		800,000	
Axial stiffness in service load range in cracked concrete	β_{cr}	lbf/in	225,000			225,000		365,000		365,000	

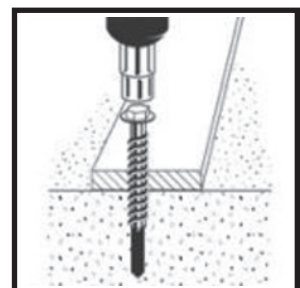
For SI: 1 inch = 25.4 mm, 1 ft-lbf = 1.356 N-m.



1



2



3

TABLE 3—SHEAR STRENGTH DESIGN INFORMATION FOR TAPCON+ SCREW ANCHORS

CHARACTERISTIC	SYMBOL	UNITS	NOMINAL ANCHOR DIAMETER (inch)					
			1/4	1/4	3/8	1/2		
Head Style	—	—		Hex Head	Hex Head	Hex Head		
Drill bit specification		in.	1/4 Tapcon+ Bit	1/4 Tapcon+ Bit	1/4 ANSI Bit	3/8 ANSI Bit	1/2 ANSI Bit	
Anchor category	1, 2 or 3	—	1	1	2	1	1	
Minimum effective embedment depth	h_{ef}	in.	1.45 ⁶	1.45		1.78	1.32	2.17 3.02
Minimum concrete member thickness	h_{min}	in.	4	4		4	4	6
Critical edge distance	c_{ac}	in.	2 1/2	2 1/2		4 1/2	3	4 5
Data for Steel Strengths in Shear								
Minimum specified yield strength	f_y	psi	Not applicable	100,000		100,000		100,000
Minimum specified ultimate strength	$f_{uta} (f_{ut})^d$	psi	Not applicable	125,000		125,000		125,000
Effective shear stress area	A_{se}	in ²	Not applicable	0.047		0.098		0.185
Steel strength in shear - static	V_{sa}	lbf	905 ⁷	2,045		3,621		12,610
Steel strength in shear - seismic	$V_{sa,eq}$		Not applicable ⁵	1,350		2,920		9,300
Strength reduction factor ϕ for shear, steel failure modes ²	ϕ_{sa}	—	0.60	0.60		0.60		0.60
Data for Concrete Breakout and Concrete Pryout Strengths in Shear								
Nominal Outside diameter (shank)	$d_o (d_o)^d$	in.	0.25	0.25		0.38		0.50
Load bearing length of anchor	ℓ_e	—	1.67	1.45		1.78	1.32	2.17 3.02
Coefficient for Pryout Strength	K_{cp}	—	1.0	1.0		1.0	1.0	2.0
Strength reduction factor for shear, concrete breakout ³	ϕ_{cb}	—	0.70	0.70		0.70		0.70
Strength reduction factor for shear, pryout ³	ϕ_{cp}	—	0.70	0.70		0.70		0.70

For SI: 1 inch = 25.4 mm, 1 ft-lbf = 1.356 N-m.

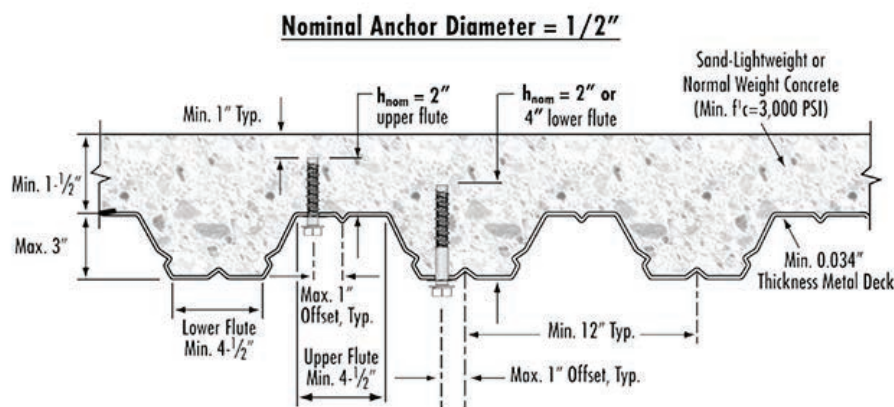


FIGURE 6—TAPCON+ SCREW ANCHOR LOCATED IN THE SOFFIT OF CONCRETE OVER STEEL DECK FLOOR AND ROOF ASSEMBLIES
(1 inch = 25.4 mm)

TABLE 2—CONCRETE BREAKOUT DESIGN INFORMATION FOR U.S. CUSTOMARY UNIT THREADED ROD ⁽¹⁾

CHARACTERISTIC	SYMBOL	UNITS	NOMINAL ROD DIAMETER (inch)						
			$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$
Effectiveness factor for uncracked concrete	k_{uncr}	-	24	24	24	24	24	24	24
Effectiveness factor for cracked concrete	k_{cr}	-	17	17	17	17	17	17	17
Minimum concrete thickness	h_{min}	in.	$h_{ef} + 1\frac{1}{4}$		$h_{ef} + 2d_o$				
Anchor embedment depth - minimum	$h_{ef,min}$	in.	$2\frac{3}{8}$	$2\frac{3}{4}$	$3\frac{1}{8}$	$3\frac{1}{2}$	$3\frac{1}{2}$	4	5
Minimum spacing	s_{min}	in.	$\frac{15}{16}$	$1\frac{1}{2}$	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5
Minimum edge distance	c_{min}	in.	$\frac{15}{16}$	$1\frac{1}{2}$	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5
Critical edge distance	c_{ac}	in.	See Section 4.1.10 of this report						
Strength reduction factor for tension, concrete failure mode ¹	ϕ	Cond. B	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Strength reduction factor for shear, concrete failure mode ¹	ϕ	Cond. B	0.70	0.70	0.70	0.70	0.70	0.70	0.70

For SI: 1 inch = 25.4mm, 1 lbf = 4.45N, 1ft-lbf = 1.356 N-M, 1 psi = 0.006895 MPa.

TABLE 3—RED HEAD EPCON A7+ ADHESIVE ANCHOR BOND STRENGTH DESIGN INFORMATION FOR U.S. CUSTOMARY UNIT THREADED ROD ^(1,4)

CHARACTERISTIC		SYMBOL	UNITS	NOMINAL ROD DIAMETER (inch)						
				$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$
Anchor embedment depth - minimum		h_{ef}	in.	$2\frac{3}{8}$	$2\frac{3}{4}$	$3\frac{1}{8}$	$3\frac{1}{2}$	$3\frac{1}{2}$	4	5
Anchor embedment depth - maximum		h_{ef}	in.	$7\frac{1}{2}$	10	$12\frac{1}{2}$	15	$17\frac{1}{2}$	20	25
Temperature Range A ²	Characteristic Bond Strength for Uncracked Concrete	$\mathcal{T}_{k,uncr}$	psi	1,770	1,770	1,770	1,770	1,490	1,490	1,490
	Characteristic Bond Strength for Cracked Concrete	$\mathcal{T}_{k,cr}$	psi	1,060	790	860	890	695	655	585
Temperature Range B ³	Characteristic Bond Strength for Uncracked Concrete	$\mathcal{T}_{k,uncr}$	psi	1,275	1,275	1,275	1,275	1,080	1,080	1,080
	Characteristic Bond Strength for Cracked Concrete	$\mathcal{T}_{k,cr}$	psi	765	570	620	640	500	475	420
Continuous Inspection	Strength Reduction Factor - Dry Concrete	$\phi_{dry, ci}$	-	0.65	0.65	0.65	0.65	0.65	0.65	0.65
	Strength Reduction Factor - Water-Saturated Concrete	$\phi_{sat, ci}$	-	0.65	0.65	0.65	0.65	0.65	0.65	0.65
	Strength Reduction Factor - Water-Filled Holes	$\phi_{wf, ci}$	-	0.65	0.65	0.65	0.65	0.65	0.65	0.65
	Strength Reduction Factor - Submerged Concrete	$\phi_{sub, ci}$	-	0.65	0.55	0.55	0.65	0.65	0.55	0.65
Periodic Inspection	Strength Reduction Factor - Dry Concrete	$\phi_{dry, pi}$	-	0.55	0.55	0.55	0.55	0.55	0.55	0.65
	Strength Reduction Factor - Water-Saturated Concrete	$\phi_{sat, pi}$	-	0.65	0.65	0.65	0.65	0.65	0.65	0.65
	Strength Reduction Factor - Water-Filled Holes	$\phi_{wf, pi}$	-	0.65	0.65	0.65	0.65	0.65	0.65	0.65
	Strength Reduction Factor - Submerged Concrete	$\phi_{sub, pi}$	-	0.65	0.45	0.45	0.65	0.55	0.45	0.65
Reduction factor for seismic tension		$\alpha_{N,seis}$	-	0.89	0.75	0.76	0.66	0.77	0.80	0.80

For SI: 1 inch = 25.4mm, 1 lbf = 4.45N, 1ft-lbf = 1.356 N-M, 1 psi = 0.006895 MPa.



LIABILITY AND WARRANTIES

GRK Fasteners™ is a distributor of commercial grade fasteners. Conformance to “IFI” specifications is formally requested from our suppliers. The parts that we supply are quality inspected by independent labs.

We maintain lot traceability on all products listed in this catalog as long as they are in their original bulk boxes. Certifications are maintained on all fasteners.

Hydrogen Embrittlement: We require our platers and suppliers of plated fasteners to bake case hardened parts to “IFI” specifications. However, this process does not guarantee that hydrogen embrittlement will not still be present after baking or that it will not occur at a later date while in service. Specialized testing or a substitute part may be required, depending on the application.

Liability: Claims against GRK Fasteners™ shall be limited to a refund or credit for the price billed or paid for faulty or incorrect merchandise. Seller shall not be responsible for buyer's manufacturing costs, labor, alternate purchases, extra freight, replating, plating, lost profit, good will, recall costs, or other incidental or consequential damages.

Warranties: GRK Fasteners™ (“GRK”) warrants to the first retail purchaser that its Climatek™ coated and PHEINOX™ stainless steel screws will not rust under normal environmental conditions when used in accordance with the recommendations listed in GRK's Screw Selection Guide for the life of the project. This warranty is not transferable. Visit www.grkfasteners.com for more information.

Mechanical Fastening Warranty: (Includes Tapcon, Red Head, Ramset, Teks, Rock-On, Backer-On, and E-Z Anchor). ITW Brands warrants that this product is free from defects in material and workmanship. ITW Brands’ sole liability for any breach of this warranty shall be to replace this product or refund the purchase price.

Refunds: In order to receive a refund, the customer must return to us at least 50 of the defective screws (including screw heads) for verification.

THERE ARE NO UNDERSTANDINGS, AGREEMENTS, REPRESENTATIONS OR ADDITIONAL WARRANTIES, EXPRESSED OR IMPLIED (INCLUDING ANY REGARDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE), NOT SPECIFIED HEREIN, RESPECTING ANY SALE OF PRODUCTS BY GRK FASTENERS™, (TO THE EXTENT PERMITTED BY LAW).

